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COOPER Crouse-Hinds

Catalog Navigation Features

Welcome to the enhanced and expanded Cooper Crouse-Hinds catalog. This catalog contains several features designed to help you easily navigate the catalog to find the right products and information fast.

Catalog Organization / **Page Layout Guide -** For detailed information on the overall organization of the catalog and individual page layout, please refer to pages G62 and G63.

Fold Out Tabs - We've increased the number of easy-to-use tabs, allowing you to quickly get to the product lines you use most. Refer to the back of each tab for a list of new products in the catalog.

Product Index by Catalog Number - Looking for a specific Cooper Crouse-Hinds catalog number? Refer to the Catalog Number Index starting on page G5.

Product Index by Description and/or Trade Name - Starting on page G2, refer to this index when looking for a type of product or a Cooper Crouse-Hinds brand name.

Product Line Table of Contents - Know which product line you want, but don't know where to go from there? The first page after each fold-out-tab contains an overview of the type of products found within each section of the product line.

Section-Specific Table of Contents - Located on the first page of each product section, they allow you to quickly locate the products within each section.

New Products Identification - Look for this logo at the top of the page to quickly find the products that are new to this catalog.



Lightning Service™ Delivery Service - Looking for job specific products to meet tight deadlines? Then specify Lightning Service. All products available with Lightning Service delivery will be marked with a checkmark. Look for pages with the Lightning Service Logo located at the top of the page. See page G77 for complete details about this delivery option.



The product information published in our catalogs and literature is not guaranteed. It has been compiled with care and is sufficiently accurate for most purposes. It is subject to change without notice. Occasionally, it may be necessary to modify the materials, finishes, or other components of the product. These changes will in no way reduce the performance or function for which the product is intended.

All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. The accuracy or completeness thereof are not guaranteed. In accordance with Cooper Crouse-Hinds' *Terms and Conditions of Sale*, and since conditions of use are outside our control, the purchaser should determine the suitability of the product for his/her intended use and assumes all risk and liability whatsoever in connection therewith.

All sales of Cooper Crouse-Hinds products are specifically subject to the Terms and Conditions of Sale as shown on Cooper Crouse-Hinds distributor or trade sheets.

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Product Index

By description and/or trade name

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G General Information

Organization of catalog

Organization of the Catalog

The Cooper Crouse-Hinds catalog includes products from six major offerings; Fittings, Control and Apparatus, Corrosion Resistant, Industrial Lighting, Plugs and Receptacles, and Signals and Alarms.

Major Sections

The six product lines are broken down into seven major product sections to catalog similar items in a section. The sections are:

Product Line	Major Section
Fittings	Section F – Fittings
Commercial Products	Section CP – Commercial Products
Control & Apparatus	Section C – Motor Control
	Section A – Apparatus
Corrosion Resistant	Section N – Corrosion Resistant Products
Industrial Lighting	Section L – Lighting
Plugs & Receptacles	Section P – Plugs & Receptacles
Signals & Alarms	Section S – Signals and Alarms

Product Sections

Each of the six major product sections is broken down into minor product sections to make it easier to find and select desired items. Each minor product section has an index for that section.

Product Line	Major Section	Minor Sections
Fittings	Section F – Fittings	1F – 8F
Commercial Products	Section CP – Commercial Products	CP
Control & Apparatus	Section C – Motor Control	1C – 8C
	Section A – Apparatus	1A – 4A
Corrosion Resistant	Section N – Corrosion Resistant Products	N
Industrial Lighting	Section L – Lighting	1L – 12L
Plugs & Receptacles	Section P – Plugs & Receptacles	1P – 9P
Signals & Alarms	Section S – Signals & Alarms	S

Tabs & Symbols

Fold out tabs clearly identify each product section for easy reference. Additionally, a symbol on the tab is used to denote the general acceptable areas for use for the products listed in the section. The specific catalog page for the product should be carefully reviewed to ensure appropriateness of use in a particular area, but the tabs provide a quick and easy starting point.

The symbols are:

◯ – Products for Non-Hazardous Areas

◑ – Products for Both Non-Hazardous and Hazardous Areas

● – Products for Hazardous Areas

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To make it easier to find specific information about a product, all catalog pages follow the same general layout. A sample follows.

Product Section and Product Family

Typical Product Applications & Key Product Features

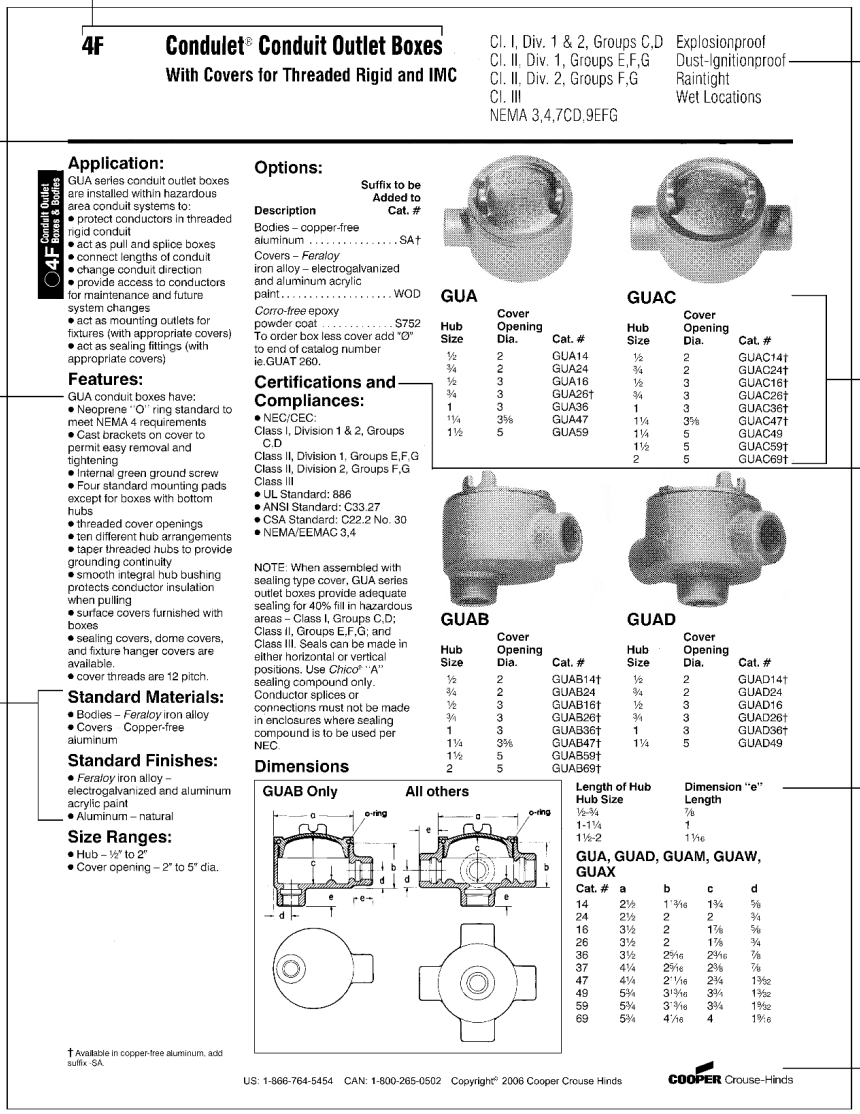
Hazardous (Classified) Locations Suitability

Catalog Number/ Ordering Information

Certifications and Compliances

Standard Materials & Standard Finishes of Construction

Dimensional Information



4F Condulet® Conduit Outlet Boxes
With Covers for Threaded Rigid and IMC

Cl. I, Div. 1 & 2, Groups C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,4,7CD,9EFG

4F Conduit Outlet Boxes & Bodies

Application:
GUA series conduit outlet boxes are installed within hazardous area conduit systems to:
- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- connect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes
- act as mounting outlets for fixtures (with appropriate covers)
- act as sealing fittings (with appropriate covers)

Features:
GUA conduit boxes have:
- Neoprene "O" ring standard to meet NEMA 4 requirements
- Cast brackets on cover to permit easy removal and tightening
- Internal green ground screw
- Four standard mounting pads except for boxes with bottom hubs
- threaded cover openings
- ten different hub arrangements
- taper threaded hubs to provide grounding continuity
- smooth integral hub bushing protects conductor insulation when pulling
- surface covers furnished with boxes
- sealing covers, dome covers, and fixture hanger covers are available.
- cover threads are 12 pitch.

Standard Materials:
- Bodies – *Feraloy* iron alloy
- Covers Copper-free aluminum

Standard Finishes:
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Size Ranges:
- Hub – ½" to 2"
- Cover opening – 2" to 5" dia.

Options:

Description	Suffix to be Added to Cat. #
Bodies – copper-free aluminum	SA†
Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint	WOD
Corro-free epoxy powder coat	S752

To order box less cover add "O" to end of catalog number ie.GUAT 260.

Certifications and Compliances:
- NEC/CEC: Class I, Division 1 & 2, Groups C,D; Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G; Class III
- UL Standard: 886
- ANSI Standard: C33.27
- CSA Standard: C22.2 No. 30
- NEMA/EEMAC 3,4

NOTE: When assembled with sealing type cover, GUA series outlet boxes provide adequate sealing for 40% fill in hazardous areas – Class I, Groups C,D; Class II, Groups E,F,G; and Class III. Seals can be made in either horizontal or vertical positions. Use *Chico*® "A" sealing compound only. Conductor splices or connections must not be made in enclosures where sealing compound is to be used per NEC.

GUA

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUA14
¾	2	GUA24
½	3	GUA16
¾	3	GUA26†
1	3	GUA36
1¼	3⅝	GUA47
1½	5	GUA59

GUAC

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAC14†
¾	2	GUAC24†
½	3	GUAC16†
¾	3	GUAC26†
1	3	GUAC36†
1¼	3⅝	GUAC47†
1¼	5	GUAC49
1½	5	GUAC59†
2	5	GUAC69†

GUAB

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAB14†
¾	2	GUAB24
½	3	GUAB16†
¾	3	GUAB26†
1	3	GUAB36†
1¼	3⅝	GUAB47†
1½	5	GUAB59†
2	5	GUAB69†

GUAD

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAD14†
¾	2	GUAD24
½	3	GUAD16
¾	3	GUAD26†
1	3	GUAD36†
1¼	5	GUAD49

Dimensions

GUAB Only / All others

Length of Hub Hub Size	Dimension "e" Length
½-¾	⅞
1-1¼	1
1½-2	1 1/16

GUA, GUAD, GUAM, GUAW, GUAX

Cat. #	a	b	c	d
14	2½	1 3/16	1¾	⅝
24	2½	2	2	¾
16	3½	2	1⅞	⅝
26	3½	2	1⅞	¾
36	3½	2 5/16	2 3/16	⅞
37	4¼	2 5/16	2⅜	⅞
47	4¼	2 1/16	2¾	1 3/32
49	5¾	3 13/16	3¾	1 3/32
59	5¾	3 3/16	3¾	1 3/32
69	5¾	4 1/16	4	1 9/16

† Available in copper-free aluminum, add suffix -SA.

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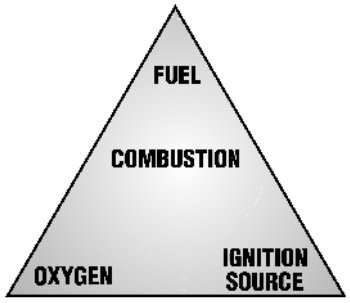
G General Information

Reference Information
Hazardous (Classified) Locations

The installation and maintenance of equipment for use in Hazardous (Classified) Locations is governed by the National Electrical Code® (NEC), Canadian Electrical Code® (CEC), and/or other local codes. The information that follows is not intended to be a comprehensive discussion of Hazardous Areas, but a general overview which can be used to assist in the selection of appropriate equipment.

Hazardous (Classified) Locations

A source of energy is all that is needed to touch off an explosion when flammable gases, vapors or combustible dusts are mixed in the proper proportion with air. The explosion triangle is an effective way to remember this principle.



COMBUSTION TRIANGLE

In an industrial enviroment, sparks or heat from electrical equipment can be the source of ignition, which can ignite surrounding gases or combustible dusts with disastrous results.

Users, insurance underwriters and engineering companies classify hazardous areas. Cooper Crouse-Hinds cannot classify hazardous areas.

There are two methods for classifying hazardous areas: Classes and Zones.

Using the Classes methodology, hazardous areas are broken down into three distinct classes based upon the material that makes the area hazardous.

Classes:

Class I areas are hazardous because of the presence of Gases & Vapors. Examples of areas that may have Class 1 areas are: refineries, chemical plants, paint spray areas, waste water treatment facilities, printing presses, and pharmaceutical facilites.

Class II areas are hazardous because of the presence of Combustible Dusts. Examples of areas that may have Class II areas are: grain processing and storage facilities, coal handling and storage areas, cocoa plants, metal grinding areas, and munitions plants.

Class III areas are hazardous because of the presence of Easily Ignitable Fibers & Flyings. Examples of areas that may have Class III areas are: textile mills, wood cutting and pulverizing facilities, insulation manufacturing areas, cotton mills and wool processing areas.

Divisions:

Within the Classes classification, areas are divided into two distinct Divisions; Division 1 and Division 2.

Division 1 atmospheres cover locations where the hazardous material can exist under normal operating conditions. Division 1 is referred to as *''normally hazardous''*. An example of an area that could be rated as Class I, Division 1 would be an area surrounding a vat where a product is being produced and flammable vapors are released as a normal by-product of the manufacturing process.

Division 2 atmospheres cover locations where the hazardous material does not typically exist. Division 2 is referred to as *''not normally hazardous''*. Examples of areas that could be rated as Class I, Division 2 would be a location where flammable gases or vapors are handled in a closed system, or confined within suitable enclosures, or where hazardous concentrations are normally prevented by positive mechanical ventilation. Areas adjacent to Division 1 locations, into which gases might occasionally flow, would also belong to Division 2.

Class II areas are also divided into Division 1 and Division 2 depending on the quantity of dust present in the area. In Class II, Division 1 areas the combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures. In Class II, Division 2 areas the combustible dust is not normally in the air in quantities sufficent to produce explosive or ignitible mixtures.

A Class III, Division 1 location is a location in which easily ignitible fibers or materials producing combustible flyings are manufactured or used.

A Class III, Division 2 location is a location in which easily ignitible fibers are stored or handled other than in the process of manufacture.

Groups:

Hazardous areas are then broken down into sub-categories grouped based on the characteristics of the materials. Class I areas (gases and vapors) are divided into four groups; A, B, C, D.

Class II areas (dusts) are divided into three groups; E, F, G. (For areas rated Class II, Group E there is no Division 2, only Division 1).

There are no groups for Class III (easily ignitible fibers and flyings).

The chart below shows typical hazardous material for each group.

Class I - (Gases & Vapors)	Class II (Dusts)	Class III (Fibers & Flyings)
A – Acetylene	E – Metal	No groups
B – Hydrogen	F – Carbonaceous	
C – Ethylene	G – Grain (organic)	
D – Propane		

In selecting equipment, equipment must be approved not only for the class of location but also for the explosive, combustible, or ignitible properties of the specific gas, vapor, dust, fiber or flyings that will be present. In addition, heat producing equipment, such as light fixtures and heaters, must not operate with temperatures, as appropriately measured, that are above the temperature, which could potentially be a source of ignition. An identification number is used to identify the maximum temperature of the equipment and is marked on the equipment. The identification number is referred to as a ''T-number''.

The chart below shows maximum temperature for each of the 14 T-numbers.

Temperature Identification Numbers.

Maximum Temperature		Identification Number
Deg.C	Deg.F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Zones:

The 1996 edition of the NEC and the 1998 edition of the CEC gave industries in North America a choice of how to classify hazardous areas.

The Zone Classification addresses areas made hazardous due to the presence of flammable gases or vapors, or flammable liquids and is based upon the IEC three zone system.

A Class I, Zone 0 location is a location in which ignitible concentrations of flammable gases or vapors are present continuously or for long periods of time. An example of an area that could be classified as Class I, Zone 0 is the vapor space within a vented tank.

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General Information

Reference Information
Hazardous (Classified) Locations

A Class I, Zone 1 location is a location in which ignitible concentrations of flammable gases or vapors are likely to exist under normal operating conditions. An area adjacent to a Class I, Zone 0 location would also be a Zone 1 location.
An example of an area that could be classified Class I, Zone 1 would be a container filling area in a refinery.

(Zone 0 and Zone 1 locations are similar to Division 1).

A Class I, Zone 2 location is a location in which ignitible concentrations of flammable gases or vapors are not likely to occur in normal operation and if they do occur will exist only for a short period.
An example of an area that could be classified Class I, Zone 2 would be a container storage area.

(Zone 2 locations are similar to Division 2).

Groups:

Similar to the Classes method of classifying hazardous areas, the Zone method also groups the hazardous gases or vapors together based upon characteristics of those gases or vapors. In the Zone classification system, there are three groups; IIC, IIB, and IIA.

The chart below shows typical hazardous material for each group.

Group	Typical Gas or Vapor
IIC	Acetylene and Hydrogen
IIB	Acetaldehyde and Ethylene
IIA	Methane, Gasoline, and Propane

Also similiar to the Class method, the Zone method requires equipment be marked to show the operating temperature or temperature range. The temperature range is identified through the use of an identification number.

The table below shows the maximum surface temperature for the six temperature classes.

Classification of Maximum Surface Temperature for Group II Electrical Equipment						
Temp. Class	T1	T2	T3	T4	T5	T6
Max. Surface Temp. (°C)	≤ 450	≤ 300	≤ 200	≤ 135	≤ 100	≤ 85

Methods of Protection

Many of the products offered in this Cooper Crouse-Hinds catalog are designed and manufactured for safe use within a hazardous (classified) location, when properly installed and maintained. Some of the more commonly used protection techniques incorporated into product design and manufacture are listed below.

Explosionproof equipment contains the explosion and allows gases to cool as they escape the enclosure across threaded, flat or serrated joints. These metallic enclosures are drilled and tapped for conduit or cable glands.

Intrinsic Safety allows instrumentation and control circuits to operate properly under normal conditions, but protects them if an electrical fault occurs, by limiting the voltage and current, thus preventing ignition from sparks or overheating.

Flameproof enclosures – With this type of protection those parts that are capable of igniting an explosive atmosphere are built into a flameproof enclosure that withstands the explosion pressure if a flammable mixture is ignited inside it. The transmission of the explosion to the surrounding atmosphere is prevented.

Increased Safety – This type of protection is used for electrical apparatus that, under normal operating conditions, does not form an ignition. Apparatus that produces arcs or sparks in the course of normal operation or apparatus that generates ‘‘excessive’’ heat are not suitable for this type of protection. Therefore, this type of protection in not used for equipment such as switchgear, pushbuttons and motors.

Dust-ignition Proof – This type of protection used for applications in Class II (dusts) in North America excludes ignitible concentrations of dusts and offers cool operating temperatures.

Please note, the above information is provided only as an overview of hazardous (classified) locations and protection techniques. For more detailed information, including a comprehensive list of hazardous atmospheres and their characteristics as well as a glossary of terms, consult the appropriate governing code, the Cooper Crouse-Hinds Code Digest, or contact your local Cooper Crouse-Hinds representative.

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G General Information

Reference Information
Gases and Vapors — Hazardous Substances Used in Business and Industry

TABLE I

Class I* Group	Substance	Auto-* Ignition Temp. °F	Auto-* Ignition Temp. °C	Flash** Point °F	Flash** Point °C	Flammable Limits** Percent by Volume Lower	Flammable Limits** Percent by Volume Upper	Vapor** Density (Air Equals 1.0)
C	Acetaldehyde	347	175	-38	-39	4.0	60	1.5
D	Acetic Acid	867	464	103	39	4.0	19.9 @ 200°F	2.1
D	Acetic Anhydride	600	316	120	49	2.7	10.3	3.5
D	Acetone	869	465	-4	-20	2.5	13	2.0
D	Acetone Cyanohydrin	1270	688	165	74	2.2	12.0	2.9
D	Acetonitrile	975	524	42	6	3.0	16.0	1.4
A	Acetylene	581	305	gas	gas	2.5	100	0.9
B(C)	Acrolein (inhibited)[1]	455	235	-15	-26	2.8	31.0	1.9
D	Acrylic Acid	820	438	122	50	2.4	8.0	2.5
D	Acrylonitrile	898	481	32	0	3.0	17	1.8
D	Adiponitrile	—	—	200	93	—	—	—
C	Allyl Alcohol	713	378	70	21	2.5	18.0	2.0
D	Allyl Chloride	905	485	-25	-32	2.9	11.1	2.6
B(C)	Allyl Glycidyl Ether[1]	—	—	—	—	—	—	—
D	Ammonia[2]	928	498	gas	gas	15	28	0.6
D	n-Amyl Acetate	680	360	60	16	1.1	7.5	4.5
D	sec-Amyl Acetate	—	—	89	32	—	—	4.5
D	Aniline	1139	615	158	70	1.3	11	3.2
D	Benzene	928	498	12	-11	1.3	7.9	2.8
D	Benzyl Chloride	1085	585	153	67	1.1	—	4.4
B(D)	1,3-Butadiene[1]	788	420	gas	gas	2.0	12.0	1.9
D	Butane	550	288	-76	-60	1.6	8.4	2.0
D	1-Butanol	650	343	98	37	1.4	11.2	2.6
D	2-Butanol	761	405	75	24	1.7 @ 212°F	9.8 @ 212°F	2.6
D	n-Butyl Acetate	790	421	72	22	1.7	7.6	4.0
D	iso-Butyl Acetate	790	421	—	—	—	—	—
D	sec-Butyl Acetate	—	—	88	31	1.7	9.8	4.0
D	t-Butyl Acetate	—	—	—	—	—	—	—
D	n-Butyl Acrylate (inhibited)	559	293	118	48	1.5	9.9	4.4
C	n-Butyl Formal	—	—	—	—	—	—	—
B(C)	n-Butyl Glycidyl Ether[1]	—	—	—	—	—	—	—
C	Butyl Mercaptan	—	—	35	2	—	—	3.1
D	t-Butyl Toluene	—	—	—	—	—	—	—
D	Butylamine	594	312	10	-12	1.7	9.8	2.5
D	Butylene	725	385	gas	gas	1.6	10.0	1.9
C	n-Butyraldehyde	425	218	-8	-22	1.9	12.5	2.5
D	n-Butyric Acid	830	443	161	72	2.0	10.0	3.0
-[3]	Carbon Disulfide	194	90	-22	-30	1.3	50.0	2.6
C	Carbon Monoxide	1128	609	gas	gas	12.5	74.0	1.0
C	Chloroacetaldehyde	—	—	—	—	—	—	—
D	Chlorobenzene	1099	593	82	28	1.3	9.6	3.9
C	1-Chloro-1-Nitropropane	—	—	144	62	—	—	4.3
D	Chloroprene	—	—	-4	-20	4.0	20.0	3.0
D	Cresol	1038-1110	559-599	178-187	81-86	1.1-1.4	—	—
C	Crotonaldehyde	450	232	55	13	2.1	15.5	2.4
D	Cumene	795	424	96	36	0.9	6.5	4.1
D	Cyclohexane	473	245	-4	-20	1.3	8.0	2.9
D	Cyclohexanol	572	300	154	68	—	—	3.5
D	Cyclohexanone	473	245	111	44	1.1 @212°	9.4	3.4
D	Cyclohexene	471	244	<20	<-7	—	—	2.8
D	Cyclopropane	938	503	gas	gas	2.4	10.4	1.5
D	p-Cymene	817	436	117	47	0.7 @212°F	5.6	4.6
C	n-Decaldehyde	—	—	—	—	—	—	—
D	n-Decanol	550	288	180	82	—	—	5.5
D	Decene	455	235	<131	<55	—	—	4.84
D	Diacetone Alcohol	1118	603	148	64	1.8	6.9	4.0
D	o-Dichlorobenzene	1198	647	151	66	2.2	9.2	5.1
D	1,1-Dichloroethane	820	438	22	-6	5.6	—	—
D	1,2-Dichloroethylene	860	460	36	2	5.6	12.8	3.4
C	1,1-Dichloro-1-Nitroethane	—	—	168	76	—	—	5.0
D	1,3-Dichloropropene	—	—	95	35	5.3	14.5	3.8
C	Dicyclopentadiene	937	503	90	32	—	—	—
D	Diethyl Benzene	743-842	395-450	133-135	56-57	—	—	4.6
C	Diethyl Ether	320	160	-49	-45	1.9	36.0	2.6
C	Diethylamine	594	312	-9	-23	1.8	10.1	2.5
C	Diethylaminoethanol	—	—	—	—	—	—	—
C	Diethylene Glycol Monobutyl Ether	442	228	172	78	0.85	24.6	5.6
C	Diethylene Glycol Monomethyl Ether	465	241	205	96	—	—	—
D	Di-isobutyl Ketone	745	396	120	49	0.8 @ 200°F	7.1 @ 200°F	4.9
D	Di-isobutylene	736	391	23	-5	0.8	4.8	3.9
C	Di-isopropylamine	600	316	30	-1	1.1	7.1	3.5
C	N-N-Dimethyl Aniline	700	371	145	63	—	—	4.2
D	Dimethyl Formamide	833	455	136	58	2.2 @ 212°F	15.2	2.5
D	Dimethyl Sulfate	370	188	182	83	—	—	4.4
C	Dimethylamine	752	400	gas	gas	2.8	14.4	1.6
C	1,4-Dioxane	356	180	54	12	2.0	22	3.0
D	Dipentene	458	237	113	45	0.7 @ 302°F	6.1 @ 302°F	4.7
C	Di-n-propylamine	570	299	63	17	—	—	3.5
C	Dipropylene Glycol Methyl Ether	—	—	186	86	—	—	5.11
D	Dodecene	491	255	—	—	—	—	—
C	Epichlorohydrin	772	411	88	31	3.8	21.0	3.2
D	Ethane	882	472	gas	gas	3.0	12.5	1.0

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Gases and Vapors — Hazardous Substances Used in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto-* Ignition Temp. °F	Auto-* Ignition Temp. °C	Flash** Point °F	Flash** Point °C	Flammable Limits** Percent by Volume Lower	Flammable Limits** Percent by Volume Upper	Vapor** Density (Air Equals 1.0)
D	Ethanol	685	363	55	13	3.3	19	1.6
D	Ethyl Acetate	800	427	24	-4	2.0	11.5	3.0
D	Ethyl Acrylate (inhibited)	702	372	50	10	1.4	14	3.5
D	Ethyl sec-Amyl Ketone	—	—	—	—	—	—	—
D	Ethyl Benzene	810	432	70	21	0.8	6.7	3.7
D	Ethyl Butanol	—	—	—	—	—	—	—
D	Ethyl Butyl Ketone	—	—	115	46	—	—	4.0
D	Ethyl Chloride	966	519	-58	-50	3.8	15.4	2.2
D	Ethyl Formate	851	455	-4	-20	2.8	16.0	2.6
D	2-Ethyl Hexanol	448	231	164	73	0.88	9.7	4.5
D	2-Ethyl Hexyl Acrylate	485	252	180	82	—	—	—
C	Ethyl Mercaptan	572	300	<0	<-18	2.8	18.0	2.1
C	n-Ethyl Morpholine	—	—	—	—	—	—	—
C	2-Ethyl-3-Propyl Acrolein	—	—	155	68	—	—	4.4
D	Ethyl Silicate	—	—	125	52	—	—	7.2
D	Ethylamine	725	385	<0	<-18	3.5	14.0	1.6
C	Ethylene	842	450	gas	gas	2.7	36.0	1.0
D	Ethylene Chlorohydrin	797	425	140	60	4.9	15.9	2.8
D	Ethylene Dichloride	775	413	56	13	6.2	16	3.4
C	Ethylene Glycol Monobutyl Ether	460	238	143	62	1.1 @ 200°F	12.7 @ 275°F	4.1
C	Ethylene Glycol Monobutyl Ether Acetate	645	340	160	71	0.88 @ 200°F	8.54 @ 275°F	—
C	Ethylene Glycol Monoethyl Ether	455	235	110	43	1.7 @ 200°F	15.6 @ 200°F	3.0
C	Ethylene Glycol Monoethyl Ether Acetate	715	379	124	52	1.7	—	4.72
D	Ethylene Glycol Monomethyl ether	545	285	102	39	1.8 @ STP	14 @ STP	2.6
B(C)	Ethylene Oxide[1]	804	429	-20	-28	3.0	100	1.5
D	Ethylenediamine	725	385	104	40	2.5	12.0	2.1
C	Ethylenimine	608	320	12	-11	3.3	54.8	1.5
C	2-Ethylhexaldehyde	375	191	112	44	0.85 @ 200°F	7.2 @ 275°F	4.4
B	Formaldehyde (Gas)	795	429	gas	gas	7.0	73	1.0
D	Formic Acid (90%)	813	434	122	50	18	57	1.6
B	Fuel and Combustible Process Gas (containing more than 30 percent H_2 by volume)	—	—	—	—	—	—	—
D	Fuel Oils	410-765	210-407	100-336	38-169	0.7	5	—
C	Furfural	600	316	140	60	2.1	19.3	3.3
C	Furfuryl Alcohol	915	490	167	75	1.8	16.3	3.4
D	Gasoline	536-880	280-471	-36 to -50	-38 to -46	1.2-1.5	7.1-7.6	3-4
D	Heptane	399	204	25	-4	1.05	6.7	3.5
D	Heptene	500	260	<32	<0	—	—	3.39
D	Hexane	437	225	-7	-22	1.1	7.5	3.0
D	Hexanol	—	—	145	63	—	—	3.5
D	2-Hexanone	795	424	77	25	—	8	3.5
D	Hexenes	473	245	<20	<-7	—	—	3.0
D	sec-Hexyl Acetate	—	—	—	—	—	—	—
C	Hydrazine	74-518	23-270	100	38	2.9	9.8	1.1
B	Hydrogen	968	520	gas	gas	4.0	75	0.1
C	Hydrogen Cyanide	1000	538	0	-18	5.6	40.0	0.9
C	Hydrogen Selenide	—	—	—	—	—	—	—
C	Hydrogen Sulfide	500	260	gas	gas	4.0	44.0	1.2
D	Isoamyl Acetate	680	360	77	25	1.0 @ 212°F	7.5	4.5
D	Isoamyl Alcohol	662	350	109	43	1.2	9.0 @ 212°F	3.0
D	Isobutyl Acrylate	800	427	86	30	—	—	4.42
C	Isobutyraldehyde	385	196	-1	-18	1.6	10.6	2.5
C	Isodecaldehyde	—	—	185	85	—	—	5.4
C	Iso-octyl Alcohol	—	—	180	82	—	—	—
C	Iso-octyl Aldehyde	387	197	—	—	—	—	—
D	Isophorone	860	460	184	84	0.8	3.8	—
D	Isoprene	428	220	-65	-54	1.5	8.9	2.4
D	Isopropyl Acetate	860	460	35	2	1.8 @ 100°F	8	3.5
D	Isopropyl Ether	830	443	-18	-28	1.4	7.9	3.5
C	Isopropyl Glycidyl Ether	—	—	—	—	—	—	—
D	Isopropylamine	756	402	-35	-37	—	—	2.0
D	Kerosene	410	210	110-162	43-72	0.7	5	—
D	Liquefied Petroleum Gas	761-842	405-450	—	—	—	—	—
	Manufactured Gas (see Fuel and Combustible Process Gas)	—	—	—	—	—	—	—
D	Mesityl Oxide	652	344	87	31	1.4	7.2	3.4
D	Methane	999	537	gas	gas	5.0	15.0	0.6
D	Methanol	725	385	52	11	6.0	36	1.1
D	Methyl Acetate	850	454	14	-10	3.1	16	2.8
D	Methyl Acrylate	875	468	27	-3	2.8	25	3.0
D	Methyl Amyl Alcohol	—	—	106	41	1.0	5.5	—
D	Methyl n-Amyl Ketone	740	393	102	39	1.1 @ 151°F	7.9 @ 250°F	3.9
C	Methyl Ether	662	350	gas	gas	3.4	27.0	1.6
D	Methyl Ethyl Ketone	759	404	16	-9	1.7 @ 200°F	11.4 @ 200°F	2.5
D	2-Methyl-5-Ethyl Pyridine	—	—	155	68	1.1	6.6	4.2
C	Methyl Formal	460	238	—	—	—	—	—
D	Methyl Formate	840	449	-2	-19	4.5	23	2.1

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G General Information

Reference Information
Gases and Vapors — Hazardous Substances Used in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto-* Ignition Temp. °F	Auto-* Ignition Temp. °C	Flash** Point °F	Flash** Point °C	Flammable Limits** Percent by Volume Lower	Flammable Limits** Percent by Volume Upper	Vapor** Density (Air Equals 1.0)
D	Methyl Isobutyl Ketone	840	440	64	18	1.2 @ 200°F	8.0 @ 200°F	3.5
D	Methyl Isocyanate	994	534	19	-7	5.3	26	1.97
C	Methyl Mercaptan	—	—	—	—	3.9	21.8	1.7
D	Methyl Methacrylate	792	422	50	10	1.7	8.2	3.6
D	2-Methyl-1-Propanol	780	416	82	28	1.7 @ 123°F	10.6 @ 202°F	2.6
D	2-Methyl-2-Propanol	892	478	52	11	2.4	8.0	2.6
D	alpha-Methyl Styrene	1066	574	129	54	1.9	6.1	—
C	Methylacetylene	—	—	gas	gas	1.7	—	1.4
C	Methylacetylene-Propadiene (stabilized)	—	—	—	—	—	—	—
D	Methylamine	806	430	gas	gas	4.9	20.7	1.0
D	Methylcyclohexane	482	250	25	-4	1.2	6.7	3.4
D	Methylcyclohexanol	565	296	149	65	—	—	3.9
D	o-Methylcyclohexanone	—	—	118	48	—	—	3.9
D	Monoethanolamine	770	410	185	85	—	—	2.1
D	Monoisopropanolamine	705	374	171	77	—	—	2.6
C	Monomethyl Aniline	900	482	185	85	—	—	3.7
C	Monomethyl Hydrazine	382	194	17	-8	2.5	92	1.6
C	Morpholine	590	310	98	37	1.4	11.2	3.0
D	Naphtha (Coal Tar)	531	277	107	42	—	—	—
D	Naphtha (Petroleum)[4]	550	288	<0	<-18	1.1	5.9	2.5
D	Nitrobenzene	900	482	190	88	1.8 @ 200°F	—	4.3
C	Nitroethane	778	414	82	28	3.4	—	2.6
C	Nitromethane	785	418	95	35	7.3	—	2.1
C	1-Nitropropane	789	421	96	36	2.2	—	3.1
C	2-Nitropropane	802	428	75	24	2.6	11.0	3.1
D	Nonane	401	205	88	31	0.8	2.9	4.4
D	Nonene	—	—	78	26	—	—	4.35
D	Nonyl Alcohol	—	—	165	74	0.8 @ 212°F	6.1 @ 212°F	5.0
D	Octane	403	206	56	13	1.0	6.5	3.9
D	Octene	446	230	70	21	—	—	3.9
D	n-Octyl Alcohol	—	—	178	81	—	—	4.5
D	Pentane	470	243	<-40	<-40	1.5	7.8	2.5
D	1-Pentanol	572	300	91	33	1.2	10.0 @ 212°F	3.0
D	2-Pentanone	846	452	45	7	1.5	8.2	3.0
D	1-Pentene	527	275	0	-18	1.5	8.7	2.4
D	Phenylhydrazine	—	—	190	88	—	—	—
D	Propane	842	450	gas	gas	2.1	9.5	1.6
D	1-Propanol	775	413	74	23	2.2	13.7	2.1
D	2-Propanol	750	399	53	12	2.0	12.7 @ 200°F	2.1
D	Propiolactone	—	—	165	74	2.9	—	2.5
C	Propionaldehyde	405	207	-22	-30	2.6	17	2.0
D	Propionic Acid	870	466	126	52	2.9	12.1	2.5
D	Propionic Anhydride	545	285	145	63	1.3	9.5	4.5
D	n-Propyl Acetate	842	450	55	13	1.7 @ 100°F	8	3.5
C	n-Propyl Ether	419	215	70	21	1.3	7.0	3.53
B	Propyl Nitrate	347	175	68	20	2	100	—
D	Propylene	851	455	gas	gas	2.0	11.1	1.5
D	Propylene Dichloride	1035	557	60	16	3.4	14.5	3.9
B(C)	Propylene Oxide[1]	840	449	-35	-37	2.3	36	2.0
D	Pyridine	900	482	68	20	1.8	12.4	2.7
D	Styrene	914	490	88	31	0.9	6.8	3.6
C	Tetrahydrofuran	610	321	6	-14	2.0	11.8	2.5
D	Tetrahydronaphthalene	725	385	160	71	0.8 @ 212°F	5.0 @ 302°F	4.6
C	Tetramethyl Lead	—	—	100	38	—	—	6.5
D	Toluene	896	480	40	4	1.1	7.1	3.1
D	Tridecene	—	—	—	—	—	—	—
C	Triethylamine	480**	249**	16	-9	1.2	8.0	3.5
D	Triethylbenzene	—	—	181	83	—	—	5.6
D	Tripropylamine	—	—	105	41	—	—	4.9
D	Turpentine	488	253	95	35	0.8	—	—
D	Undecene	—	—	—	—	—	—	—
C	Unsymmetrical Dimethyl Hydrazine (UDMH)	480	249	5	-15	2	95	2.0
C	Valeraldehyde	432	222	54	12	—	—	3.0
D	Vinyl Acetate	756	402	18	-8	2.6	13.4	3.0
D	Vinyl Chloride	882	472	-108.4	-78	3.6	33.0	2.2
D	Vinyl Toluene	921	494	127	53	0.8	11.0	4.1
D	Vinylidene Chloride	1058	570	-19	-28	6.5	15.5	3.4
D	Xylenes	867-984	464-529	81-90	27-32	1.0-1.1	7.0	3.7

[1] If equipment is isolated by sealing all conduit ½ in. or larger, in accordance with Section 501.15(A) of NFPA 70, National Electrical Code, equipment for the group classification shown in parentheses is permitted.

[2] For classification of areas involving Ammonia, see Safety Code for Mechanical Refrigeration, ANSI/ASHRAE 15, and Safety Requirements for the Storage and Handling of Anhydrous Ammonia, ANSI/CGA G2.1.

[3] Certain chemicals may have characteristics that require safeguards beyond those required for any of the above groups. Carbon disulfide is one of these chemicals because of its low autoignition temperature and the small joint clearance to arrest its flame propagation.

[4] Petroleum Naphtha is a saturated hydrocarbon mixture whose boiling range is 20° to 135°C. It is also known as benzine, ligroin, petroleum ether, and naphtha.

* Data from NFPA 497M-1991, Classification of Gases, Vapors, and Dusts for Electrical Equipment in Hazardous (Classified) Locations.

** Data from NFPA 325M-1991, Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids.

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General Information

Reference Information
Dusts — Hazardous Substances Used in Business and Industry

TABLE II

Class II, Group E	Minimum Cloud or Layer Ignition Temp.[1]		
Material[2]	**°F**		**°C**
Aluminum, atomized collector fines	1022	Cl	550
Aluminum, A422 flake	608		320
Aluminum — cobalt alloy (60-40)	1058		570
Aluminum — copper alloy (50-50)	1526		830
Aluminum — lithium alloy (15% Li)	752		400
Aluminum — magnesium alloy (Dowmetal)	806	Cl	430
Aluminum — nickel alloy (58-42)	1004		540
Aluminum — silicon alloy (12% Si)	1238	NL	670
Boron, commercial-amorphous (85% B)	752		400
Calcium Silicide	1004		540
Chromium, (97%) electrolytic, milled	752		400
Ferromanganese, medium carbon	554		290
Ferrosilicon (88%, 9% Fe)	1472		800
Ferrotitanium (19% Ti, 74.1% Fe, 0.06% C)	698	Cl	370
Iron, 98%, H_2 reduced	554		290
Iron, 99%, Carbonyl	590		310
Magnesium, Grade B, milled	806		430
Manganese	464		240
Silicon, 96%, milled	1436	Cl	780
Tantalum	572		300
Thorium, 1.2%, O_2	518	Cl	270
Tin, 96%, atomized (2% Pb)	806		430
Titanium, 99%	626	Cl	330
Titanium Hydride, (95% Ti, 3.8% H_2)	896	Cl	480
Vanadium, 86.4%	914		490
Zirconium Hydride, (93.6% Zr, 2.1% H_2)	518		270
Class II, Group F			
CARBONACEOUS DUSTS			
Asphalt, (Blown Petroleum Resin)	950	Cl	510
Charcoal	356		180
Coal, Kentucky Bituminous	356		180
Coal, Pittsburgh Experimental	338		170
Coal, Wyoming	—		—
Gilsonite	932		500
Lignite, California	356		180
Pitch, Coal Tar	1310	NL	710
Pitch, Petroleum	1166	NL	630
Shale, Oil	—		—
Class II, Group G			
AGRICULTURAL DUSTS			
Alfalfa Meal	392		200
Almond Shell	392		200
Apricot Pit	446		230
Cellulose	500		260
Cherry Pit	428		220
Cinnamon	446		230
Citrus Peel	518		270
Cocoa Bean Shell	698		370
Cocoa, natural, 19% fat	464		240
Coconut Shell	428		220
Corn	482		250
Corncob Grit	464		240
Corn Dextrine	698		370
Cornstarch, commercial	626		330
Cornstarch, modified	392		200
Cork	410		210
Cottonseed Meal	392		200
Cube Root, South Amer.	446		230
Flax Shive	446		230
Garlic, dehydrated	680	NL	360
Guar Seed	932	NL	500
Gum, Arabic	500		260
Gum, Karaya	464		240
Gum, Manila (copal)	680	Cl	360
Gum, Tragacanth	500		260
Hemp Hurd	428		220
Lycopodium	590		310
Malt Barley	482		250
Milk, Skimmed	392		200
Pea Flour	500		260
Peach Pit Shell	410		210
Peanut Hull	410		210
Peat, Sphagnum	464		240
Pecan Nut Shell	410		210

Class II, Group G (cont'd)	Minimum Cloud or Layer Ignition Temp.		
	°F		**°C**
Pectin	392		200
Potato Starch, Dextrinated	824	NL	440
Pyrethrum	410		210
Rauwolfia Vomitoria Root	446		230
Rice	428		220
Rice Bran	914	NL	490
Rice Hull	428		220
Safflower Meal	410		210
Soy Flour	374		190
Soy Protein	500		260
Sucrose	662	Cl	350
Sugar, Powdered	698	Cl	370
Tung, Kernels, Oil-Free	464		240
Walnut Shell, Black	428		220
Wheat	428		220
Wheat Flour	680		360
Wheat Gluten, gum	968	NL	520
Wheat Starch	716	NL	380
Wheat Straw	428		220
Woodbark, Ground	482		250
Wood Flour	500		260
Yeast, Torula	500		260
CHEMICALS			
Acetoacetanilide	824	M	440
Acetoacet-p-phenetidide	1040	NL	560
Adipic Acid	1022	M	550
Anthranilic Acid	1076	M	580
Aryl-nitrosomethylamide	914	NL	490
Azelaic Acid	1130	M	610
2,2-Azo-bis-butyronitrile	662		350
Benzoic Acid	824	M	440
Benzotriazole	824	M	440
Bisphenol-A	1058	M	570
Chloroacetoacetanilide	1184	M	640
Diallyl Phthalate	896	M	480
Dicumyl Peroxide (suspended on $CaCO_3$), 40-60	356		180
Dicyclopentadiene Dioxide	788	NL	420
Dihydroacetic Acid	806	NL	430
Dimethyl Isophthalate	1076	M	580
Dimethyl Terephthalate	1058	M	570
3,5 - Dinitrobenzoic Acid	860	NL	460
Dinitrotoluamide	932	NL	500
Diphenyl	1166	M	630
Ditertiary Butyl Paracresol	878	NL	470
Ethyl Hydroxyethyl Cellulose	734	NL	390
Fumaric Acid	968	M	520
Hexamethylene Tetramine	770	S	410
Hydroxyethyl Cellulose	770	NL	410
Isotoic Anhydride	1292	NL	700
Methionine	680		360
Nitrosoamine	518	NL	270
Para-oxy-benzaldehyde	716	Cl	380
Paraphenylene Diamine	1148	M	620
Paratertiary Butyl Benzoic Acid	1040	M	560
Pentaerythritol	752	M	400
Phenylbetanaphthylamine	1256	NL	680
Phthalic Anydride	1202	M	650
Phthalimide	1166	M	630
Salicylanilide	1130	M	610
Sorbic Acid	860		460
Stearic Acid, Aluminum Salt	572		300
Stearic Acid, Zinc Salt	950	M	510
Sulfur	428		220
Terephthalic Acid	1256	NL	680
DRUGS			
2-Acetylamino-5-nitrothiazole	842		450
2-Amino-5-nitrothiazole	860		460
Aspirin	1220	M	660
Gulasonic Acid, Diacetone	788	NL	420
Mannitol	860	M	460
Nitropyridone	806	M	430
1-Sorbose	698	M	370
Vitamin B1, mononitrate	680	NL	360
Vitamin C (Ascorbic Acid)	536		280

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G General Information

Reference Information
Dusts — Hazardous Substances Used in Business and Industry

TABLE II

Class II, Group G (cont'd)	Minimum Cloud or Layer Ignition Temp.[1] °F		°C
DYES, PIGMENTS, INTERMEDIATES			
Beta-naphthalene-azo-Dimethylaniline	347		175
Green Base Harmon Dye	347		175
Red Dye Intermediate	347		175
Violet 200 Dye	347		175
PESTICIDES			
Benzethonium Chloride	716	Cl	380
Bis(2-Hydroxy-5-chlorophenyl) methane	1058	NL	570
Crag No. 974	590	Cl	310
Dieldrin (20%)	1022	NL	550
2, 6-Ditertiary-butyl-paracresol	788	NL	420
Dithane	356		180
Ferbam	302		150
Manganese Vancide	248		120
Sevin	284		140
☒☒ - Trithiobis (N,N-Dimethylthio-formamide)	446		230
THERMOPLASTIC RESINS AND MOLDING COMPOUNDS			
Acetal Resins			
Acetal, Linear (Polyformaldehyde)	824	NL	440
Acrylic Resins			
Acrylamide Polymer	464		240
Acrylonitrile Polymer	860		460
Acrylonitrile-Vinyl Pyridine Copolymer	464		240
Acrylonitrile-Vinyl Chloride-Vinylidene Chloride Copolymer (70-20-10)	410		210
Methyl Methacrylate Polymer	824	NL	440
Methyl Methacrylate-Ethyl Acrylate Copolymer	896	NL	480
Methyl Methacrylate-Ethyl Acrylate-Styrene Copolymer	824	NL	440
Methyl Methacrylate-Styrene-Butadiene-Acrylonitrile Copolymer Methacrylic Acid Polymer	896 554	NL	480 290
Cellulosic Resins			
Cellulose Acetate	644		340
Cellulose Triacetate	806	NL	430
Cellulose Acetate Butyrate	698	NL	370
Cellulose Propionate	860	NL	460
Ethyl Cellulose	608	Cl	320
Methyl Cellulose	644		340
Carboxymethyl Cellulose	554		290
Hydroxyethyl Cellulose	644		340
Chlorinated Polyether Resins			
Chlorinated Polyether Alcohol	860		460
Nylon (Polyamide) Resins			
Nylon Polymer (Polyhexa-methylene Adipamide)	806		430
Polycarbonate Resins			
Polycarbonate	1310	NL	710
Polyethylene Resins			
Polyethylene, High Pressure Process	716		380
Polyethylene, Low Pressure Process	788	NL	420
Polyethylene Wax	752	NL	400
Polymethylene Resins			
Carboxypolymethylene	968	NL	520

Class II, Group G (cont'd)	Minimum Cloud or Layer Ignition Temp. °F		°C
Polypropylene Resins			
Polypropylene (No Antioxidant)	788	NL	420
Rayon Resins			
Rayon (Viscose) Flock	482		250
Styrene Resins			
Polystyrene Molding Cmpd.	1040	NL	560
Polystyrene Latex	932		500
Styrene-Acrylonitrile (70-30)	932	NL	500
Styrene-Butadiene Latex (>75% Styrene; Alum Coagulated)	824	NL	440
Vinyl Resins			
Polyvinyl Acetate	1022	NL	550
Polyvinyl Acetate/Alcohol	824		440
Polyvinyl Butyral	734	NL	390
Vinyl Chloride-Acrylonitrile Copolymer	878		470
Polyvinyl Chloride-Dioctyl Phthalate Mixture	608	NL	320
Vinyl Toluene-Acrylonitrile Butadiene Copolymer	936	NL	530
THERMOSETTING RESINS AND MOLDING COMPOUNDS			
Allyl Resins			
Allyl Alcohol Derivative (CR-39)	932	NL	500
Amino Resins			
Urea Formaldehyde Molding Compound	860	NL	460
Urea Formaldehyde-Phenol Formaldehyde Molding Compound (Wood Flour Filler)	464		240
Epoxy Resins			
Epoxy	1004	NL	540
Epoxy - Bisphenol A	950	NL	510
Phenol Furfural	590		310
Phenolic Resins			
Phenol Formaldehyde	1076	NL	580
Phenol Formaldehyde Molding Cmpd. (Wood Flour Filler)	932	NL	500
Phenol Formaldehyde, Polyalkylene-Polyamine Modified	554		290
Polyester Resins			
Polyethylene Terephthalate	932	NL	500
Styrene Modified Polyester-Glass Fiber Mixture	680		360
Polyurethane Resins			
Polyurethane Foam, No Fire Retardant	824		440
Polyurethane Foam, Fire Retardant	734		390
SPECIAL RESINS AND MOLDING COMPOUNDS			
Alkyl Ketone Dimer Sizing Compound	320		160
Cashew Oil, Phenolic, Hard	356		180
Chlorinated Phenol	1058	NL	570
Coumarone-Indene, Hard	968	NL	520
Ethylene Oxide Polymer	662	NL	350
Ethylene-Maleic Anhydride Copolymer	1004	NL	540
Lignin, Hydrolized, Wood-Type, Fines	842	NL	450
Petrin Acrylate Monomer	428	NL	220
Petroleum Resin (Blown Asphalt)	932		500
Rosin, DK	734	NL	390
Rubber, Crude, Hard	662	NL	350
Rubber, Synthetic, Hard (33% S)	608	NL	320
Shellac	752	NL	400
Sodium Resinate	428		220
Styrene — Maleic Anhydride Copolymer	878	Cl	470

[1] Normally, the minimum ignition temperature of a layer of a specific dust is lower than the minimum ignition temperature of a cloud of that dust. Since this is not universally true, the lower of the two minimum ignition temperatures is listed. If no symbol appears between the two temperature columns, then the layer ignition temperature is shown. ''Cl'' means the cloud ignition temperature is shown. "NL" means that no layer ignition temperature is available and the cloud ignition temperature is shown. ''M'' signifies that the dust layer melts before it ignites; the cloud ignition temperature is shown. ''S'' signifies that the dust layer sublimes before it ignites; the cloud ignition temperature is shown.

[2] Certain metal dusts may have characteristics that require safeguards beyond those required for atmospheres containing the dusts of aluminum, magnesium, and their commercial alloys. For example, zirconium, thorium, and uranium dusts have extremely low ignition temperatures (as low as 20°C) and minimum ignition energies lower than any material classified in any of the Class I or Class II groups.

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Reference Information
Standard Materials and Finishes

Standard Materials and Finishes

Cooper Crouse-Hinds offers products of numerous types of materials with numerous finishes to have an offering for virtually all types of applications.
The information below summarizes some of the most commonly used materials and finishes. For information relating to materials and finishes for a particular product or product family, consult the specific catalog page.

Standard Finishes

Zinc Electroplate and Aluminum Acrylic Paint:
- Electrolytically deposited zinc plate
- Finished with aluminum acrylic paint on all cast *Feraloy*® iron alloy products unless otherwise specified

Electrogalvanized and Chromate Treatment:
- Applied to steel parts

Zinc Chromate Primer and Aluminum Acrylic Paint:
- Applied to certain ferrous castings

Zinc Mechanical Plating:
- Applied to certain ferrous castings and steel parts

Hot Dip Galvanize:
- Zinc plate by dipping in molten zinc

Natural Finish:
- Unplated, unpainted (non-ferrous metals only)

***Corro-free*™ Epoxy Powder Coat:**
- *Corro-free*™ powdered epoxy finish is applied electrostatically, resulting in a tough, durable coating. Powder epoxy finish has many advantages over enamel, lacquer, aluminum paint, or epoxy paint. Powder epoxy finish has superior adhesion. Coating over the entire casting is uniform, even in hidden crevices. Electrostatic application reduces galvanic action.

Standard Materials:

***Feraloy*® Iron Alloy:**
- *Feraloy*, a Cooper Crouse-Hinds proprietary gray-iron alloy, offers strength, versatility, adaptability, and economy. Cast iron generally resists corrosion from alkalies, organic compounds, neutral and slightly acidic solutions, and certain concentrated acids and neutral brines. Cast *Feraloy* products are normally supplied with a finish of electrolytically deposited zinc plate covered with an aluminum acrylic paint. Physical properties similar to ASTM-A48 Class 30A (30,000 psi tensile)
- *Feraloy* iron alloy with zinc electroplate or hot dip galvanize finish resists corrosion.

Aluminum:
- **Copper-free aluminum is particularly resistant to salt atmospheres, sulfur gases and ammonium nitrate.** Cooper Crouse-Hinds copper-free aluminum alloy contains a maximum of 4/10 of 1% copper. Above this level, the rate of corrosion due to galvanic action within the structure of the metal increases rapidly. Cooper Crouse-Hinds copper-free aluminum products provide optimum protection against galvanic corrosion.
- Sand cast copper-free – contains maximum of 4/10 of 1% copper (21,000-25,000 psi tensile)
- Permanent mold copper-free contains maximum of 4/10 of 1% copper (21,000-25,000 psi tensile).
- Die-cast copper-free – ASTM B85 except with maximum of 4/10 of 1% copper

***Krydon*® Material:**
- *Krydon* is the trade name for Cooper Crouse-Hinds properietary formulation of fiberglass-reinforced polyester. It is specifically formulated for electrical products intended for use in the harshest corrosive environments. *Krydon* material has proven itself superior to all other commercially available materials used in corrosive environments.

Besides being corrosion resistant, *Krydon* material has high impact strength, is fire retardant, heat resistant and withstands weathering – even over extended periods of time.

Brass:
- ASTM B16

Diallyl Phthalate (DAP):
- Acme #1-502 compound or equal

Glass-Filled Alkyd:
- Glaskyd #3001 or equal

Malleable iron:
- ASTM A47

Neoprene:
- ASTM D2000

Nylon:
- Type 6/6

Silicon Bronze:
- This metal was developed for structural and engineering uses requiring metals with high strength and fabrication capabilities, along with a corrosion resistance equal to that of copper. Silicon bronze is resistant to most dry gases and has excellent marine, industrial and rural atmospheric corrosion resistance. With variation of temper and chemical composition, a variety of non-magnetic, high strength, readily fabricated copper-silicon alloys can be achieved.
- ASTM B584

Stainless Steel:
- Turned (bar) – ASTM A582
- Stamped (sheet) – ASTM A167

Tellurium Copper:
- ASTM B301

Vellum:
- ASTM F104

Vestamid™:
- Thermoplastic polymer, corrosion and weather resistant

Wrought Aluminum:
- Turned (bar) – ASTM B211
- Stamped (sheet) – ASTM B209

Wrought Steel:
- Turned (bar) – ASTM A108 leaded
- Stamped (sheet) – ASTM A366

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G General Information

Reference Information
Corrosion Resistant Materials

Cooper Crouse-Hinds Products Available in Corrosion Resistant Materials

The following guide is intended as a convenient aid in quickly selecting the material or finish best suited to reducing your corrosion problem. Refer to previous page for more detailed information on standard materials and finishes available for all products.

Products Material Guide	Product Quick Selector Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Engineered Plastics
Conduit Outlet Bodies & Boxes	●	●	●	●	
Cable & Cord Fittings	●	●	●		
Junction Boxes	●	●	●	●	
Unions, Couplings, Plugs, Grounding Devices & Seals	●	●	●		
Motor Control & Circuit Breakers	●	●	●	●	
Control Stations	●	●	●	●	●
Panelboards	●	●	●	●	●
Switches	●	●	●	●	●†
Incandescent Fixtures	●	●	●	●	
Fluorescent Fixtures		●	●	●	●*
HID Fixtures		●	●	●	●*
Lighting Accessories	●	●	●	●	
Heavy Duty Plugs & Receptacles	●	●	●	●	
Interlocked Plugs & Receptacles	●	●	●	●	●†
Emergency Lighting	●	●	●	●	

NOTE – Product types shown above are available as standard in materials indicated. Availability of those not shown depends on specific requirements.
† CSR Compact Interlock and NSR disconnect switches manufactured from Valox®
* N2MV Champ lighting fixtures available in PPS.

For more detailed information, or assistance in selecting a product material and finish for your specific application, please see the Combatting Corrosion Material & Finish Selector Guide found in the ''Resources'' area of the Cooper Crouse-Hinds web site, www.Cooper crouse-hinds.com, or contact your local Copper Cooper Crouse-Hinds Sales Representative.

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General Information

Reference Information
General Guide for Product Material Selection

When designing a new facility or improving an old one, corrosion control can mean the difference between trouble-free operation and costly downtime.

At Cooper Crouse-Hinds, our years of experience in corrosion control can help you reduce equipment failures, costly repairs and loss of production.

The general guide below can help you in selecting the most suitable material for products used in corrosive enviroments.

A = Excellent B = Good C = Adequate D = Unsatisfactory

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Acetic Acid	A	C	C	C	C	A	A	A
Acetic Anhydride	A	A	D	C	C	A	A	C
Acetone	A	A	A	C	A	A	A	C
Acetylene	A	A	A	A	D	A	A	B
Aluminum Chloride	A	D	D	A	C	D	A	B
Aluminum Sulfate	A	C	D	A	C	B	A	B
Ammonium Carbonate	A	A	A	A	D	A	C	C
Ammonium Chloride	A	D	D	A	D	D	A	C
Ammonium Hydroxide	A	A	B	A	D	B	A	D
Ammonium Nitrate	A	A	B	A	D	A	A	B
Ammonium Phosphate	A	C	B	A	D	B	A	B
Amyl Acetate	A	A	B	C	A	A	A	D
Amyl Alcohol	A	A	A	A	A	B	B	D
Aniline	A	B	D	B	C	A	A	D
Arsenious Acid	A	A	D	A	C	B	D	B
Asphalt	A	A	A	A	A	A	B	A
Barium Carbonate	A	D	A	A	A	B	B	B
Barium Chloride	A	D	D	A	C	B	B	A
Barium Hydroxide	A	D	A	A	A	A	B	C
Beer	A	A	A	A	A	A	B	A
Beet Sugar Liquors	A	A	A	A	A	A	B	A
Benzene	A	A	A	C	A	A	A	D
Benzoic Acid	A	A	D	A	A	A	A	D
Borax	A	B	A	A	A	A	B	A
Boric Acid	A	B	A	A	A	B	B	B
Bromine, Wet	B	D	D	C	C	D	D	D
Butane	A	A	A	A	A	B	B	B
Butyl Alcohol	A	A	B	A	A	A	B	A
Butyric Acid	A	A	D	C	A	B	A	B
Calcium Bisulfite	A	A	D	A	C	D	B	B
Calcium Chloride	A	C	B	A	A	D	A	A
Calcium Hydroxide	A	D	A	A	A	B	A	B
Calcium Hypochlorite	A	B	D	A	C	D	D	C

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Calcium Sulfate	A	A	A	A	A	B	B	B
Cane Sugar Liquors	A	A	A	A	A	A	A	B
Carbon Dioxide, Dry	A	A	A	A	A	A	B	A
Carbon Dioxide, Wet	A	A	B	A	C	A	C	A
Carbon Disulfide	A	A	B	C	C	B	B	C
Carbon Tetrachloride	A	A	B	C	A	A	C	C
Carbonic Acid	A	A	B	A	C	B	C	B
Castor Oil	A	A	A	A	A	B	A	B
Chlorine	A	D	A	B	D	B	D	C
Chloroform	B	B	C	B	A	C	C	D
Citric Acid	A	A	D	A	A	B	A	A
Cottonseed Oil	A	A	A	A	A	B	B	C
Chromic Acid	A	B	B	C	D	C	B	D
Crude Oil	A	A	A	A	A	A	A	C
Ethyl Acetate	A	A	A	C	A	B	A	D
Ethyl Alcohol	A	A	A	A	A	A	B	B
Ethyl Chloride	A	B	B	B	A	A	B	B
Ethylene Dichloride	B	A	A	C	A	B	B	D
Ethylene Glycol	A	A	A	A	A	B	A	B
Fatty Acids	A	A	B	A	C	B	A	C
Ferric Chloride	A	D	D	A	D	D	B	B
Ferric Sulfate	A	D	D	A	D	B	A	B
Formaldehyde	A	A	B	A	A	B	B	D
Formic Acid	A	B	D	A	A	B	C	B
Freons, Dry	A	A	A	A	A	B	A	A
Fuel Oil	A	A	A	A	A	B	B	A
Furfural	D	A	A	C	A	B	A	C
Gasoline	A	A	A	A	A	A	A	A
Glue	A	A	A	A	A	B	B	B
Glycerine	A	A	A	A	A	A	A	C
Concd. Hydrochloric Acid	C	D	D	C	D	D	D	B
Hydrofluoric Acid	D	D	D	C	D	D	C	D
Hydrogen	A	A	A	A	A	A	A	A

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G General Information

Reference Information
General Guide for Product Material Selection

When designing a new facility or improving an old one, corrosion control can mean the difference between trouble-free operation and costly downtime.

At Cooper Crouse-Hinds, our years of experience in corrosion control can help you reduce equipment failures, costly repairs and loss of production.

The general guide below can help you in selecting the most suitable material for products used in corrosive enviroments.

A = Excellent B = Good C = Adequate D = Unsatisfactory

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Hydrogen Peroxide	A	A	D	C	C	B	D	C
Hydrogen Sulfide	A	A	C	A	B	B	B	C
Kerosene	A	A	A	A	A	B	A	C
Ketones	A	A	A	C	A	B	A	D
Lacquers	A	A	B	A	A	A	C	B
Lacquer Solvents	A	A	B	C	A	A	C	C
Lactic Acid	A	B	D	B	B	B	A	B
Lime	B	B	A	B	A	B	C	C
Linseed Oil	A	A	A	A	A	B	A	A
Magnesium Chloride	A	B	D	A	A	B	A	B
Magnesium Hydroxide	A	D	A	A	A	A	A	C
Magnesium Sulfate	A	A	A	A	A	B	A	B
Marine Atmosphere	A	A	D	A	A	B	A	A
Mercuric Chloride	A	D	D	A	D	D	D	B
Mercury	A	D	B	A	D	A	D	B
Methyl Alcohol	A	A	A	A	A	B	B	D
Methyl Chloride	B	D	B	D	B	A	A	D
Methyl Ethyl Ketone	A	A	B	B	A	B	B	D
Mine Waters	A	B	D	B	B	A	B	B
Motor Oil	A	A	A	A	A	B	A	A
Nickel Chloride	A	D	D	A	D	D	D	A
Nickel Sulfate	A	D	D	A	C	B	B	B
Nitric Acid	C	A	D	A	D	B	D	B
Oleic Acid	A	A	B	A	B	B	D	C
Oxalic Acid	A	B	B	A	A	D	B	D
Oxygen	A	A	A	A	A	B	B	A
Perchloric Acid	A	D	D	C	D	D	D	C
Phenol	A	A	B	B	A	A	A	C
Phosphoric Acid	A	D	C	B	B	C	B	C
Picric Acid	A	A	B	B	D	B	D	C
Potassium Carbonate	A	B	A	A	A	A	A	A
Potassium Chloride	A	D	B	A	B	B	A	B
Potassium Cyanide	A	D	B	A	D	B	A	B
Potassium Hydroxide	C	D	A	B	C	B	A	B
Potassium Nitrate	A	A	A	A	B	B	A	A
Potassium Sulfate	A	A	A	A	A	A	A	A

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Propane	A	A	A	A	A	B	B	B
Rosin	A	A	B	A	A	A	C	C
Sea Water	A	B	D	A	A	B	A	B
Sodium Bicarbonate	A	A	B	A	A	A	A	A
Sodium Bisulfate	A	B	D	A	A	B	B	B
Sodium Bisulfite	A	B	D	A	B	B	B	B
Sodium Carbonate	A	C	A	A	A	B	A	A
Sodium Chloride	A	D	B	A	A	B	A	B
Sodium Cyanide	A	D	B	A	D	A	B	B
Sodium Hydroxide	B	D	A	B	B	B	B	C
Sodium Hypochlorite	A	D	D	B	B	C	D	C
Sodium Nitrate	A	A	A	A	B	B	A	A
Sodium Phosphate	A	D	A	A	B	B	B	B
Sodium Silicate	A	B	A	A	A	A	A	B
Sodium Sulfate	A	A	A	A	A	A	A	C
Sodium Sulfite	A	A	B	A	A	B	A	C
Stearic Acid	A	A	B	A	B	A	A	B
Sulfur	A	A	A	A	D	A	A	A
Sulfur Dioxide, Dry	A	B	A	A	A	B	B	B
Sulfur Trioxide, Dry	A	A	A	A	A	B	C	C
Sulfur Trioxide, Wet	A	D	D	B	C	C	C	C
Sulfuric Acid	A	A	D	B	C	D	A	B
Sulfurous Acid	A	B	D	B	B	D	B	B
Tannic Acid	A	A	B	A	A	B	B	B
Tar	A	A	A	A	A	A	D	C
Tartaric Acid	A	A	B	B	B	A	A	C
Toluene	A	A	A	C	A	A	A	D
Trichlorethylene	A	A	B	C	A	B	C	C
Turpentine	A	A	A	A	A	A	A	C
Vegetable Oils	A	A	A	A	A	A	B	A
Vinegar	A	B	B	A	A	B	B	A
Vinyl Chloride	A	B	B	B	D	B	D	D
Waxes	A	A	A	A	A	B	B	A
Xylene	A	A	A	C	A	B	A	D
Zinc Chloride	A	B	B	A	D	B	B	B
Zinc Sulfate	A	B	B	A	C	A	C	A

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General Information

Reference Information
Enclosure Type/Levels of Protection

Enclosure Type:
NEMA, CEC and NEC Types

A North American system of rating standard levels of protection provided to electrical apparatus by enclosures for (1) the protection of persons against contact with live or moving parts inside the enclosure; (2) the protection provided by enclosure against ingress of solids and/or liquids; (3) the protection provided by the enclosure against the deleterious effects of corrosion; and (4) the protection provided by the enclosure against damage due to the formation of external ice. This enclosure type is in addition to (and not an alternative to) the types of protection necessary to ensure protection against ignition in hazardous (classified) locations.

The chart below shows typical NEMA, CEC and NEC types of enclosure.

NEMA Classification Typical NEMA, CEC and NEC types of enclosures are listed below:	
● Type 3 Enclosure	are intended for outdoor use primarily to provide a degree of protection against dust, rain, sleet, and external formation.
● Type 3R Enclosure	are intended for outdoor use primarily to provide a degree of protection against falling rain, and external ice formation.
● Type 4 Enclosure	are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and external ice formation.
● Type 4X Enclosure	are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and external ice formation.
● Type 7 Enclosure	are for use in indoor locations classified as Class I, Groups A, B, C, or D, as defined in the National Electrical Code®.
● Type 9 Enclosure	are for use in indoor locations classified as Class II, Groups E, F, or G, as defined in the National Electrical Code®.
● Type 12 Enclosure	are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids.

Degree of Protection (IP):

A system of rating standard levels of protection provided by apparatus for the protection of persons against contact with live or moving parts inside the apparatus, as well as the protection provided by apparatus against ingress of solids and/or liquids. This type of protection classification is in addition to (and not an alternative to) the types of protection necessary to ensure protection against ignition in hazardous (classified) locations.

The chart below shows ingress protection codes.

Ingress Protection: (IP) Codes

First Numeral Protection against solid bodies	Second Numeral Protection against liquid
0 – NO PROTECTION	0 – NO PROTECTION
1 – OBJECTS EQUAL TO OR GREATER THAN 50mm	1 – VERTICALLY DRIPPING WATER
2 – OBJECTS EQUAL TO OR GREATER THAN 12.5mm	2 – 75 TO 105° ANGLED DRIPPING WATER
3 – OBJECTS EQUAL TO OR GREATER THAN 2.5mm	3 – SPRAYING WATER
4 – OBJECTS EQUAL TO OR GREATER THAN 1.0mm	4 – SPLASHING WATER
5 – DUST-PROTECTED	5 – WATER JETS
6 – DUST-TIGHT	6 – HEAVY SEAS, POWERFUL WATER JETS
	7 – EFFECTS OF IMMERSION
	8 – INDEFINITE IMMERSION

i.e. An enclosure rated IP68 is rated to exclude dust (dust-tight) and rated for indefinite immersion.

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G General Information

Reference Information
Quality, Compliances & Third Party Certifications

Statement of Accuracy

The information published in this catalog and other literature has been compiled with great care and is sufficiently accurate for most purposes, but is not guaranteed. All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. This catalog and the products contained within is subject to change without notice. The purchaser should determine the suitabilty of the product for his or her application and assumes all risk and liability whatsoever in connection therewith.

Compliances & Third Party Certifications

The products described in this catalog are of the highest possible quality. Cooper Crouse-Hinds products have been tested and field proven in a wide variety of applications. Products are designed and manufactured to meet or exceed, in numerous products, multiple world wide standards.

- The designs of Cooper Crouse-Hinds products are original and proprietary. Some are patented.
- The product information in this catalog, though current at the catalog printing, is subject to improvements and modifications. Due to the breadth of our product offering with regard to the design, materials, components and the variations of these products available to our customers, it is impractical to adequately identify third-party certification of all items in this publication.
- Product improvements and other developments may at times affect third-party approval of testing laboratories such as Underwriters Laboratories, the Canadian Standards Association, Factory Mutual and others. To avoid publishing possibly superseded product certification information, Cooper Crouse-Hinds has elected not to show *specific* certification references in this catalog.
- Cooper Crouse-Hinds products are designed to meet or exceed the performance requirements of applicable standards. Where the term ''compliances'' is used in this catalog in conjunction with a UL/CSA standard number, it identifies the criteria which have governed the design and Company testing of the products listed on that page.
- The term ''compliances'' is not to be construed to mean that the products have been listed by the Underwriters' Laboratories/ CSA. Such listing is a matter of independent record signified by product marking, carton marking, or other approved means.
- The individual product offerings in this catalog comply with the national and third-party standards identified under the 'Certifications and Compliances' sections. To obtain specific third-party approval information for these products contact Cooper Crouse-Hinds or the applicable agency.

Worldwide Testing Authorities

Country	Testing Authority
USA	**Underwriters Laboratories**
USA	**Factory Mutual**
USA	**ETL**
Canada	**CSA**
Mexico	**ANCE**
Austria	**TUV-A**
Austria	**BVFA**
Belgium	**ISSEP**
Denmark	**DEMKO**
Finland	**VTT**

Country	Testing Authority
France	**INERIS**
France	**LCIE**
Italy	**CESI**
Netherlands	**KEMA**
Norway	**NEMKO**
Spain	**LOM**
Sweden	**SP**
United Kingdom	**BASEEFA/EECS**
United Kingdom	**SIRA**
Germany	**PTB**
Germany	**BVS**

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Quick Ship Delivery Services



NEED IT ON-SITE NOW?

THINK "SOS" SMALL ORDER EMERGENCY SERVICE

Request "SOS" Service through your distributor and we'll ship any of our 4,000+ stock items direct to your site the fastest way. The "SOS" program supplements your distributor's local inventory by providing same-day, premium (first- or second-day air) shipment of stock material from our distribution center. Your order can be shipped to the distributor warehouse or direct to your job site. Orders placed with us by your Cooper Crouse-Hinds distributor before 3:30 p.m.* can ship out that same day. Emergency service is available 24/7. Contact your distributor to facilitate.

*Orders received via fax after 3:30 p.m. Eastern time or via phone after 3:45 p.m. will be shipped the next day.



NEED A JOB-SPECIFIC ITEM FAST?

ASK FOR LIGHTNING SERVICE™ DELIVERY

Our commitment to getting you "what you need, when you need it" goes beyond in-stock inventory to include more than 15,000 build-to-order and hard-to-find products. We're ready to build, machine, package and ship what you need in a fraction of the time you might expect. Lightning Service is available for many of our most popular products, and we're adding more all the time. Visit the Quick Ship area of our website for the most up-to-date listing of Lightning Service products. Lightning Service products are also designated in the Cooper Crouse-Hinds price list. Look for "LIGHTNING" in the stock status column.

Lightning Service products are indicated throughout the catalog. Look for the symbol at the top of the catalog page.



LIGHTNING SERVICE™ PRODUCT CATEGORIES



Section 3L

CHAMP® HID LUMINAIRES

Same-day to 24-hour shipping.

Select from VMV, VMV High Wattage, DMV and LMV Low Profile Series. Two ordering options are available: components or complete fixture unit pack (complete fixture packed by components in a single carton). Just choose the alternative that works best for you. Complete fixtures must be made up of the components listed below.

Whether you order CHAMP components or a complete fixture, we'll ship it the same day if your distributor's order requesting same-day Lightning Service is placed with us before 12:00 p.m. Eastern time.

Ballast Housings

High-Pressure Sodium

DMVS100/MT	LMVS070/120	VMVS070/MT	VMVS250/MT	
DMVS150/MT-LX	LMVS100/120	VMVS100/MT	VMVS400/MT	
		VMVS150/MT-LX		

Metal Halide

VMVM100/MT	VMVM250/MT
VMVM175/MT	VMVM400/MT

Top Hats		Globes	Guards	Refractors*	Reflectors*	
APM2	HPM2	G24	P21	G241	GRD4	RD636 (RD66)
APM3	TWM2	G54	P241	G245	RA636 (RA66)	RD70
CM2	JM5	G303	P33	GR305	RA70	RD739 (RD79)
CM3	PM5		P50		RA739 (RA79)	

Maximum line item quantities for Lightning Service:
VMVS250, VMVS400, VMVM250, VMVM400 — 12
All other CHAMP fixtures — 25
For larger quantities Consult Factory.

All fixtures ordered with suffixes BG, FA, IR, QTZ,
S658, S714 and S806 will ship in 4 weeks.
*Refractors and reflectors will ship in separate cartons

In Canada: Complete fixtures will be shipped as components. Unit pack not available. /MT not available on CSA certified fixtures – select /120 or /347 in place of /MT. Suffix S658 not available on CSA certified fixtures.

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G General Information

Reference Information
Quick Ship Delivery Services



Section 6L

NFL SERIES NONMETALLIC FLUORESCENT LUMINAIRES

Shipped from stock: NFL4232/UNV fixtures, 120-277V 50-60Hz

Maximum line item quantity for Lightning Service — 10
For larger quantities typically 2-4 weeks.
All fixtures ordered with suffixes FA or S658 will ship in 4 weeks.

In Canada: Suffix S658 not available on CSA certified fixtures.



Section 1L and 6L

VAPORGARD™ INCANDESCENT AND FLUORESCENT LUMINAIRES

Shipped within 48 hours

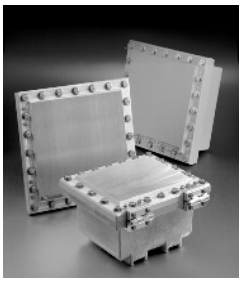
Two ordering options are available: components or complete fixture unit pack (complete fixture packed by components in a single carton).

Incandescent: All components and all complete fixtures (packed by components in a single carton).

Fluorescent: Complete fixtures consisting of VFH122, VFA222 and VFC222.

Maximum line item quantity for Lightning Service — 12
For larger quantities typically 2-4 weeks.
Refractors and reflectors will ship in separate cartons.

In Canada: Lightning Service not available for fluorescent fixtures



Section 6F

HAZARDOUS LOCATION EJB, GU AND GUB JUNCTION BOXES

Lightning Service for EJB, GU and GUB junction boxes lets you select various styles and sizes of boxes in the configurations that best meet your requirements.

Shipped from stock: GUB01, GUB02
Shipped within 24 hours: All enclosures listed below *without* drilled and tapped openings, hinges or a mounting plate.

Shipped within 72 hours: All enclosures listed below *with* standard drilled and tapped openings and/or hinges and/or a mounting plate. See Section 6F for details on ordering standard openings.

EJB (bolted covers)

Style C	*Style D*
EJB121206	EJB060404
EJB121208	EJB060404-SA
EJB161606	EJB080604
EJB161608	EJB080606
EJB241808	EJB080606-SA
	EJB100606
	EJB101008-SA
	EJB120804
	EJB120804-SA

GU/GUB (threaded covers)

GU
GU-SA
GUB01
GUB02

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory



Section 2A, 1C and 3C

SPECTRUM™ EBM HAZARDOUS LOCATION MOTOR CONTROL ENCLOSURES

Apparatus-ready circuit breaker enclosures and combination line starter enclosures are available from inventory. Additional larger size apparatus-ready enclosures and frequently ordered enclosures with circuit breakers installed are available to ship in two weeks.

Shipped from stock:

Apparatus-Ready Enclosures	
EBMBA	EBMCFB
EBMBB	EBMCFD

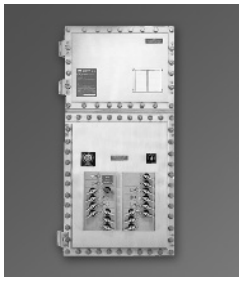
Shipped within 2 weeks:

Apparatus-Ready Enclosures		*Enclosures Complete with Circuit Breakers*	
EBMBG	EBMCFH	EBMBA	EBMBB
EBMBK	EBMCFL		
EBMBL	EBMCFM		

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory

In Canada: Lightning Service not available for Apparatus-Ready EBMBA, EBMBB, EBMCFB and EBMCFD. All other indicated Apparatus-Ready enclosures and enclosures complete with Circuit Breakers are shipped within 3 weeks.

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Section 1A

POWERPLUS™ FACTORY-SEALED HAZARDOUS LOCATION PANELBOARDS

Job-specific panelboards are available within 3 to 4 weeks to meet your power or lighting requirements in 1-, 2- or 3-pole configurations, with or without main circuit breakers. See the Cooper Crouse-Hinds catalog for complete ordering information.

Shipped within 3 weeks: EPL/D2L (Lighting Panel)

Shipped within 4 weeks: EXD/D2D (Power Panel)

Some panelboards require modifications for Group B, GFI and EPD branch breakers
Consult Factory for lead times. Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory.

In Canada: EPL/D2L shipped within 4 weeks. EXD/D2D shipped within 5 weeks.



Section 3P

ARKTITE® WSR AND WSRD INTERLOCK RECEPTACLES AND MATING AP PLUGS

Shipped from stock.

Many of the WSR and WSRD fusible and nonfusible interlock receptacles with enclosed disconnect switch and mating APJ plugs are readily available from inventory:

	30A	60A	100A
Interlocks	WSRD3352	WSRDW6352 WSRD6352 WSRD63542 WSR6352 WSR63542 WSRDW6352 CH S901 WSRD63541	WSRD10352

	30A	60A	100A
Mating Plugs	APJ3485 NPJ3483 NPJ3484	APJ6485 APJ6375 NPJ6484 NPJ6485	APJ10487 NPJ10486 NPJ10487

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory.



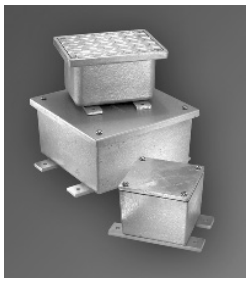
Section 4C and 6F

CUSTOM-BUILT EJB CONTROL PANELS

Shipped within 3 weeks

Your custom panel with windows, devices, drilled and tapped holes, etc. will be complete and available to ship within 3 weeks. Specify your exact requirements in the Custom Control Panel Ordering Brochure #3331 or the worksheet in the price list. Consult Factory for delivery on other combinations of control panels or for a copy of the ordering brochure. Also Consult Factory for delivery of control panels using EMP039 pushbuttons and EMP059, -079 or -089 selector switches.

In Canada: Shipped within 4 weeks



Section 6F

W-SERIES CAST-IRON WEATHERPROOF JUNCTION BOXES

Lightning Service is available for over 90 of the most popular size boxes in five different styles.

Shipped within 24 hours: All enclosures listed below *without* drilled and tapped openings or a mounting plate.

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory

Shipped within 72 hours: All enclosures listed below *with* standard drilled and tapped openings and/or a mounting plate. See the W-Series brochure #4740 for details on ordering standard openings.

In Canada: Enclosures *without* openings or mountings plate shipped within 1 week. Enclosures *with* standard openings or mounting plate shipped within 2 weeks.

WAB040402	WAB080808	WCB040403	WCB090604	WCB242408	WJBF080604	WJBF241810
WAB040403	WAB100804	WCB040404	WCB100804	WJB040404	WJBF080606	
WAB040404	WAB100806	WCB050503	WCB100806	WJB060604	WJBF080804	
WAB050503	WAB101006	WCB050504	WCB101006	WJB060606	WJBF080806	
WAB050504	WAB120604	WCB060403	WCB120604	WJB080606	WJBF080808	
WAB060403	WAB120606	WCB060404	WCB120606	WJB080804	WJBF101006	
WAB060404	WAB120806	WCB060603	WCB120805	WJB101006	WJBF101008	
WAB060603	WAB121204	WCB060604	WCB121204	WJB121206	WJBF120808	
WAB060604	WAB121206	WCB060606	WCB121206	WJB121208	WJBF121206	
WAB060606	WAB121208	WCB080604	WCB121208	WJB181208	WJBF121208	
WAB080604	WAB161208	WCB080606	WCB161208	WJBF040404	WJBF121212	
WAB080606	WAB181206	WCB080804	WCB181206	WJBF060404	WJBF161208	
WAB080804	WAB181806	WCB080806	WCB181806	WJBF060604	WJBF181208	
WAB080806	WAB181812	WCB080808	WCB181812	WJBF060606	WJBF181812	

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Notes Page

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Fittings

Section F



COOPER Crouse-Hinds

F Electrical Fittings

Table of Contents

Section F of the Cooper Crouse-Hinds Product Catalog lists a wide variety of conduit outlet bodies and boxes, cable fittings, unions, connectors, seals, breathers, and drains for both hazardous and non-hazardous area use. Information on applications, features, standard materials, standard finishes, options, size ranges, compliances and accessories is presented for ease of product selection.
Information relating to product families in Section F is grouped as follows:

Section 1F Condulet® Conduit Bodies (for non-hazardous areas)

For installation in conduit systems to act as pull outlets, make 90° bends, provide for splices, taps, mounting outlets, etc.

Form 7	Mogul	SLB
Form 8	LBD	LBY
Mark 9	LBNEC	ET
Form 5		
Series 5		
Form 7 SnapPack		

Section 2F Condulet Cast Outlet Boxes (for non-hazardous areas)

Round cast outlet boxes and accessories for use in conjunction with threaded rigid conduit to serve as junction boxes, pull outlets, accommodate wiring devices and support lighting fixtures.

GRF	VXF

Section 3F Condulet Cast Device Boxes (for non-hazardous areas)

For installation in conduit systems to:
- accommodate wiring devices
- act as pull boxes
- provide openings for taps and splices.

Provided in two box depths with a wide variety of hub configurations and sizes. Boxes can accommodate single or multiple devices.

FS	FD	COVERS

Section 4F Condulet Conduit Bodies and Outlet Bodies (for hazardous areas)

For use with rigid conduit systems:
- act as pull and splice boxes
- act as mounting outlets or supports for lighting fixtures
- act as sealing fittings

CPS	ET	LBH	STL
EAB	GUA	LBY	EAJ
EKC	HTL	OE	GUR

Section 5F Cable and Cord Fittings (for hazardous and non-hazardous areas)

Includes listings of cable and cord connectors and cable terminators for armored and unarmored cable and cord, and aluminum sheathed cable.
Used to:
- provide means for passing cord, cable or flexible conduit through bulkhead and into boxes and cabinets
- form watertight seal
- form non-slip connection or termination for flexible cord, cable or flexible conduit
- provide grounding continuity

CAPRI	LCC	TGC	TUCFB
CGB	LCCF	THRU-WALL	TUSC
CGFP	TAB	TMC	TWDC
EBY	TACFB	TMCX	

Section 6F Junction Boxes (for hazardous and non-hazardous areas)

Wide variety of boxes for use as:
- pull boxes
- enclosures for splices and taps
- mounting boxes for control stations
- housings for apparatus, instruments, etc.

EGJ	GUE, GUB	RS, RSM, RSS
EJB	GUAG	W Series
	GUP	Custom panels
	GUAH	NeXT Series
	GUAP	STB Series
		HVB Series
		QBX Series
		ExCell Series

Section 7F Elbows, Couplings, Hubs, Grounding Devices, Plugs, Reducers, Service Entrance and Unions (for hazardous and non-hazardous areas)

Includes:
- service entrance heads
- grounding receptacles and straps
- unions and elbows for threaded conduit systems
- couplings for use where allowance must be made in conduit system for difficult bends or vibration
- reducers for connecting conduit of different dimensions
- plugs for unused conduit openings and hubs

ECGJH	GC	LNR	UNA	UNY
ECLK	GCR	PLG	UNF	UNYL
EL	GCT	RE	UNFL	XD
F	HUBS	REC	UNL	XJG

Section 8F Seals, Breathers and Drains (for hazardous areas)

Includes:
- seals used to prevent passage of gases or flames in conduit runs and from device enclosures
- sealing/drain fittings for retrofit applications
- breathers used to provide ventilation for enclosures
- drains used to prevent accumulation of moisture in conduit systems and enclosures
- *Chico*® sealing compound and fiber

Seal	Seal and drain	Breather
EYS	EYD	and drain
EZS	EZD	ECD
EYSR	EYDX	CD
EYSX		

Secondary Proces Sealing Fitting
EYS Tool Kit

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Description	Page No.
Charts	
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LBD Series	13
LBNEC	12
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Covers	
Blank	
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1F Condulet® Conduit Bodies

Shape Selector Chart

SERIES **PAGE**

C



Form 7 6
Form 8 6
Mark 9 6
Form 5 6
Series 5 6

E



Form 7 6

LB



Form 7 6
Form 8 6
Mark 9 6
Form 5 6
Series 5 6

LL



Form 7 6
Form 8 6
Mark 9 6
Form 5 6
Series 5 6

LR



Form 7 6
Form 8 6
Mark 9 6
Form 5 6
Series 5 6

L



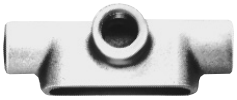
Form 7 6

TA



Form 7 6

T



Form 7 6
Form 8 6
Mark 9 6
Form 5 6
Series 5 6

TB



Form 7 6
Form 8 6
Mark 9 6
Form 5 6

X



Form 7 6
Form 8 6
Mark 9 6
Form 5 6

LBNEC



LBNEC 12

BC



Mogul 14

BLB



Mogul 14

BUB



Mogul 15

BT



Mogul 15

LBD



½ - 1″ 13

LBD



1¼ - 6″ 13

SLB



Service Entrance Elbows 16

LBY



Service Entrance Elbows 16

ET



Short Radius Elbows 16

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Application:

Conduit outlet bodies are installed in conduit systems to:
- act as pull outlets for conductors being installed
- provide openings for making splices and taps in conductors
- act as mounting outlets for lighting fixtures and wiring devices
- connect conduit sections
- provide taps for branch conduit runs
- make 90° bends in conduit runs
- provide for access to conductors for maintenance and future system changes

Features:

Conduit Outlet Bodies

- Form 7 Condulet outlet bodies approach conduit in size for neat, compact installations.
- Form 8 and Mark 9 bodies provide more room for heavier conductors
- Many shapes and sizes are available for rigid threaded conduit – see complete listings on page 6.
- Conduit hubs have tapered threads and feature integral bushings for protection of wire insulation.
- Form 7 has exclusive snaptight and wedge-nut cover attachment to provide clear, unobstructed cover opening.
- Built-in rollers on all Form 5 1¼″ to 4″ C and LB bodies to facilitate wire pulling.
- Series 5 bodies available in optional configuration with set screws on hubs for EMT conduit (add suffix -MT to catalog number).

Gaskets

Solid gaskets:
- are used with blank covers
- for Mark 9 and Form 5, can be converted to open type gaskets by tearing out center section along scored lines – ½″ to 2″ sizes
- for Form 7 are used with all covers

Open gaskets:
- for Form 8 – ½″ to 4″ sizes
- for Mark 9 – 2½″ to 4″ sizes

Blank Covers

Stainless steel cover screws are standard on Form 7, Form 8, Mark 9, Series 5 and Form 5 covers.
- Form 7

Wedge nut design facilitates installation and removal. Nuts are held captive in cover. Covers can be used with or without gaskets.

SNAPTIGHT™ Form 7 Covers with integral sealing gaskets are installed without the use of screws, reducing installation time and costs. Covers are reusable.
- Form 8

Two cover screws provided on all sizes to provide tight cover and gasket assembly. *Feraloy* iron alloy covers have dome shapes for added strength and extra wiring room.
- Mark 9

Self-retaining cover screws.

Standard Materials:

- Form 7, Form 8 outlet bodies – *Feraloy* iron alloy
- Mark 9 outlet bodies – copper-free aluminum
- Form 5 – malleable iron
- Series 5 – die cast aluminum

Standard Finishes:

- Form 7, Form 8 outlet bodies – electrogalvanized with aluminum acrylic paint
- Mark 9 outlet bodies – natural
- Form 5 – electrogalvanized with aluminum acrylic paint
- Series 5 – aluminum acrylic paint

Options:

Description	Suffix to be Added to Cat. #
Form 7 body and cover only:	
Copper-free aluminum.	SA
Corro-free™ epoxy powder coat.	add suffix S752

- Series 5 in an EMT version with set screws on all hubs .... add suffix -MT
- Series 5 pre-packaged with neoprene gasket and cover .... add suffix -CGN

Certifications and Compliances:

Outlet Bodies –
- UL Standard: 514B
- Fed. Spec.: W-C-586D
- CSA Standard 22.2 No. 18

Size comparison of 1½″ Form 7, Mark 9, Form 8, and Mogul bodies. Round backs on Form 7 and Mogul; flat backs on Form 8 and Mark 9. The round back conduit body is a registered trademark of Cooper Industries, Inc.
- Raintight (when installed with cover and gasket)



Form 7 ®



Mark 9



Form 8



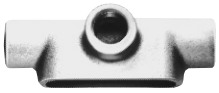
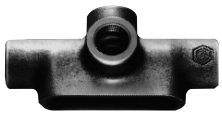
Mogul ®

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1F Condulet® Conduit Outlet Bodies

Dimensions Pgs. 9 to 11 (Dimensions for Form 5 – see Section CP)

Threaded Rigid Bodies

Shape	Style	Hub Size ½	¾	1	1¼	1½	2	2½	3	3½	4
	**C**										
	Form 7	C17	C27	C37	C47	C57	C67	C77	C87		
	Form 8	C18	C28	C38	C448	C58	C68	C78	C88		
	Mark 9	C19	C29	C39	C49	C59	C69	C789	C889	C989	C1089
	Form 5	C50M	C75M	C100M	C125M	C150M	C200M	C250M	C300M	C350M	C400M
	Series 5	C15	C25	C35	C45	C55	C65	C75	C85	C95	C105
	**E**										
	Form 7	E17	E27	E37							
	**L**										
	Form 7	L17	L27	L37	L47	L57	L67				
	Double faced – may be used as LL or LR – has 2 openings, one of which is furnished with a blank sheet steel cover										
	**LB**										
	Form 7	LB17	LB27	LB37	LB47	LB57	LB67	LB777	LB87	LB97	LB107
	Form 8	LB18	LB28	LB38	LB448	LB58	LB68	LB78	LB888	LB98	LB108
	Mark 9	LB19	LB29	LB39	LB49	LB59	LB69	LB789	LB889	LB989	LB1089
	Form 5	LB50M	LB75M	LB100M	LB125M	LB150M	LB200M	LB250M	LB300M	LB350M	LB400M
	Series 5	LB15	LB25	LB35	LB45	LB55	LB65	LB75	LB85	LB95	LB105
	**LL**										
	Form 7	LL17	LL27	LL37	LL47	LL57	LL67	LL777	LL87	LL97	LL107
	Form 8	LL18	LL28	LL38	LL448	LL58	LL68	LL78	LL888		
	Mark 9	LL19	LL29	LL39	LL49	LL59	LL69	LL789	LL889	LL989	LL1089
	Form 5	LL50M	LL75M	LL100M	LL125M	LL150M	LL200M	LL250M	LL300M	LL350M	LL400M
	Series 5	LL15	LL25	LL35	LL45	LL55	LL65	LL75	LL85	LL95	LL105
	**LR**										
	Form 7	LR17	LR27	LR37	LR47	LR57	LR67	LR777	LR87	LR97	LR107
	Form 8	LR18	LR28	LR38	LR448	LR58	LR68	LR78	LR888		
	Mark 9	LR19	LR29	LR39	LR49	LR59	LR69	LR789	LR889	LR989	LR1089
	Form 5	LR50M	LR75M	LR100M	LR125M	LR150M	LR200M	LR250M	LR300M	LR350M	LR400M
	Series 5	LR15	LR25	LR35	LR45	LR55	LR65	LR75	LR85	LR95	LR105
	**T**										
	Form 7	T17	T27	T37	T47	T57	T67	T77	T87	T97	T107
	Form 8	T18	T28	T38	T448	T58	T68	T78	T88		
	Mark 9	T19	T29	T39	T49	T59	T69	T789	T889	T989	T1089
	Form 5	T50M	T75M	T100M	T125M	T150M	T200M	T250M	T300M	T350M	T400M
	Series 5	T15	T25	T35	T45	T55	T65	T75	T85	T95	T105
	**TA**										
	Form 7	TA17	TA27	TA37	TA47	TA57	TA67				
	**TB**										
	Form 7	TB17	TB27	TB37	TB47	TB57	TB67				
	Form 8	TB18	TB28	TB38	TB448	TB58	TB68				
	Mark 9	TB19	TB29	TB39	TB49	TB59	TB69				
	Form 5	TB50M	TB75M	TB100M	TB125M	TB150M	TB200M				
	**X**										
	Form 7	X17	X27	X37	X47	X57	X67				
	Form 8	X18	X28	X38	X448	X58	X68				
	Mark 9	X19	X29	X39							
	Form 5	X50M	X75M	X100M	X125M	X150M	X200M				

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Condulet® Conduit Outlet Bodies

Covers and Gaskets
Dimensions Pgs. 9 to 11 (Dimensions for Form 5 – see Section CP)

Blank Covers





	Sheet Steel					
Size	Form 7 Wedgenut Cat. #	Form 7 Snaptight™ Covers‡ Cat. #	Form 7 Wedgenut w/Integral Gasket Cat. #	Form 8[x] Cat. #	Form 8 w/Integral Gasket Cat. #	Form 5 Cat. #
½	170	170-SG	170G	180	180G	K50S
¾	270	270-SG	270G	280	280G	K75S
1	370	370-SG	370G	380	380G	K100S
1¼	470	470-SG	470G	480	480G	K125S
1½	570	570-SG	570G	580	580G	K125S
2	670	670-SG	670G	680	680G	K200S
2½	870			880		K250S
3	870			880		K250S
3½	970			980		K350S
4	970			980		K350S





	Sheet Aluminum					*Feraloy*® Iron Alloy				Cast Aluminum
Size	Mark 9 Cat. #	Mark 9 w/Integral Gasket Cat. #	Form 7 Cat. #	Form 7 w/Integral Gasket Cat. #	Series 5 Cat. #	Form 7 Wedgenut Cat. #	Form 7 Wedgenut w/Integral Gasket Cat. #	Form 8[x] Cat. #	Form 5 ♦ Cat. #	Form 7 Wedgenut Cat. #
½	190	190G	170-SA	170G-SA	150	170F	170FG	180F	K50CM	170F-SA
¾	290	290G	270-SA	270G-SA	250	270F	270FG	280F	K75CM	270F-SA
1	390	390G	370-SA	370G-SA	350	370F	370FG	380F	K100CM	370F-SA
1¼	490	490G	470-SA	470G-SA	450	470F	470FG	480F	K125CM	470F-SA
1½	590	590G	570-SA	570G-SA	450	570F	570FG	580F	K125CM	570F-SA
2	690	690G	670-SA	670G-SA	650	670F	670FG	680F	K200CM	670F-SA
2½	889		870-SA		850D	870F		880F	K250CM	870F-SA
3	889		870-SA		850D	870F		880F	K250CM	870F-SA
3½	989		970-SA		950D	970F		980F	K350CM	970F-SA
4	989		970-SA		950D	970F		980F	K350CM	970F-SA

Solid Gaskets

Neoprene





Size	Form 7 Cat. #	Form 8* Cat. #	Mark 9† Cat. #	Form 5 Cat. #	Series 5 Cat. #
½	GASK571	GASK851N	GASK1941	GK50N	GASK015N
¾	GASK572	GASK852N	GASK1942	GK75N	GASK025N
1	GASK573	GASK853N	GASK1943	GK100N	GASK035N
1¼	GASK574	GASK854N	GASK1944	GK125N	GASK045N
1½	GASK575	GASK805N	GASK1945	GK125N	GASK045N
2	GASK576	GASK806N	GASK1946	GK200N	GASK065N
2½	GASK578	GASK808N	GASK808N	GK250N	GASK085N
3	GASK578	GASK808N	GASK808N	GK250N	GASK085N
3½	GASK579	GASK809N	GASK8089N	GK350N	GASK095N
4	GASK579	GASK8089N	GASK809N	GK350N	GASK095N

* ½ – 1¼ are solid gaskets; 1½ – 4 are open gaskets.
† ½ – 2 are solid gaskets; 2½ – 4 are open gaskets.
[x] Two cover screws on ½″ to 2″ Form 8 covers and four cover screws on 2½″ and larger Form 8 covers.
‡ Form 7 Snaptight covers with integral sealing gasket are installed without the use of screws.
♦ Malleable Iron Covers.

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1F Cast Conduit Outlet Bodies

Form 7 SnapPack™
Pre-Assembled Body, Gasket and Cover

Application:

Form 7 Condulets are installed in conduit systems to:
- act as pull outlets for conductors being installed
- provide an opening for making splices and taps in conductors
- connect conduit sections
- provide taps for branch conduit runs
- make 90-degree bends in conduit runs
- provide access to conductors in a conduit system for maintenance and future system changes

Features:

- All SnapPack product is individually bar coded to facilitate more efficient inventory control
- Distributors and end users need to stock a single SKU instead of three separate component numbers – order the body, cover and gasket with one catalog number – saving transaction costs, and making product selection and merchandising fast and easy
- Form 7 conduit bodies are compact with a round back design for neat, efficient installations
- Conduit hubs have tapered threads and integral bushings for protection of wire insulation
- Many shapes and trade sizes available
- Sheet-steel wedge nut cover is provided with integral gasket. The wedge nut design facilitates installation and removal. Nuts and screws are held captive in cover
- Cover screws are stainless steel with a combination slotted and Phillips head, for easy installation and superior corrosion protection

Standard Materials:

- Body – *Feraloy*® iron alloy
- Gasket – urethane
- Cover – sheet steel
- Cover screws – stainless steel

Standard Finishes:

- *Feraloy* – electrogalvanized with aluminum acrylic paint
- Sheet steel – electrogalvanized

Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18

Ordering Information:

Trade Size	Shape	Cat. #
½″	C	C17-CG
¾″	C	C27-CG
1″	C	C37-CG
1¼″	C	C47-CG
1½″	C	C57-CG
2″	C	C67-CG
½″	LB	LB17-CG
¾″	LB	LB27-CG
1″	LB	LB37-CG
1¼″	LB	LB47-CG
1½″	LB	LB57-CG
2″	LB	LB67-CG
½″	LL	LL17-CG
¾″	LL	LL27-CG
1″	LL	LL37-CG
1¼″	LL	LL47-CG
1½″	LL	LL57-CG
2″	LL	LL67-CG
½″	LR	LR17-CG
¾″	LR	LR27-CG
1″	LR	LR37-CG
1¼″	LR	LR47-CG
1½″	LR	LR57-CG
2″	LR	LR67-CG
½″	T	T17-CG
¾″	T	T27-CG
1″	T	T37-CG
1¼″	T	T47-CG
1½″	T	T57-CG
2″	T	T67-CG
½″	TB	TB17-CG
¾″	TB	TB27-CG
1″	TB	TB37-CG
1¼″	TB	TB47-CG
1½″	TB	TB57-CG
2″	TB	TB67-CG
½″	X	X17-CG
¾″	X	X27-CG
1″	X	X37-CG
1¼″	X	X47-CG
1½″	X	X57-CG
2″	X	X67-CG



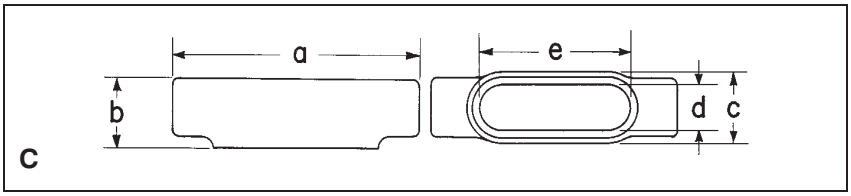




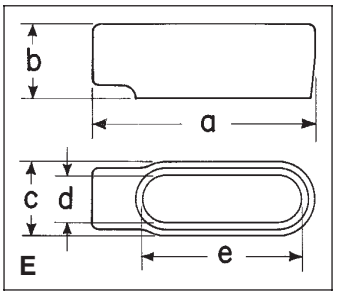


Note: Form 7 Condulets and covers are available in additional configurations, sizes and materials. For a complete listing of Form 7, Form 8 and Mark 9 conduit bodies and covers see pages 6 and 7.

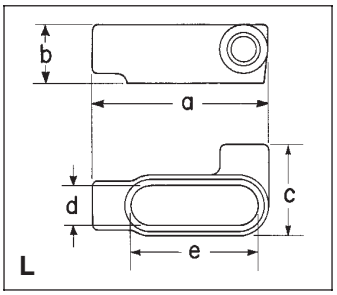
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Size	½	¾	1	1¼	1½	2	2½	3	3½	4
Form 7 C										
a	5 3/8	6	7	7 7/16	8 3/16	9 3/16	12	11 3/4		
b	1 3/8	1 5/8	1 7/8	2 5/16	2 9/16	3 1/8	3 5/8	4 3/8		
c	1 3/8	1 9/16	1 3/4	2 3/16	2 7/16	3	4 1/4	4 1/4		
d	15/16	1 1/8	1 3/8	1 3/4	1 15/16	2 7/16	3 9/16	3 9/16		
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8	8 3/8	8 3/8		
Form 8 C										
a	5 11/16	6 9/32	7 5/16	8 1/2	10 3/8	12 1/4	15 5/8	15 5/8		
b	1 7/16	1 11/16	1 15/16	2 3/8	2 25/32	3 9/16	4 7/16	4 13/16		
c	1 3/8	1 3/16	1 3/4	2 3/16	2 3/4	3 3/4	5	5		
d	1	1 3/16	1 3/8	1 3/4	2 1/8	3	4 1/4	4 1/4		
e	3 5/16	3 15/16	4 9/16	5 5/16	6 1/2	8 9/16	10 7/8	10 7/8		
Mark 9 C										
a	5	5 11/16	6 19/32	7 1/2	8 1/4	10 1/2	15 5/8	15 5/8	18 3/4	18 3/4
b	1 3/8	1 5/8	1 7/8	2 1/2	2 3/4	3 7/16	4 7/16	4 13/16	5 11/16	5 15/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 1/2	3 3/16	5	5	6 1/4	6 1/4
d	1 3/16	1 3/8	1 1/2	1 15/16	2 1/4	2 7/8	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6	8 1/16	10 7/8	10 7/8	13 7/16	13 7/16



Size	½	¾	1
Form 7 E			
a	4 9/16	5 3/16	6
b	1 3/8	1 5/8	1 7/8
c	1 3/8	1 9/16	1 3/4
d	15/16	1 1/8	1 3/8
e	3 3/16	3 13/16	4 1/2

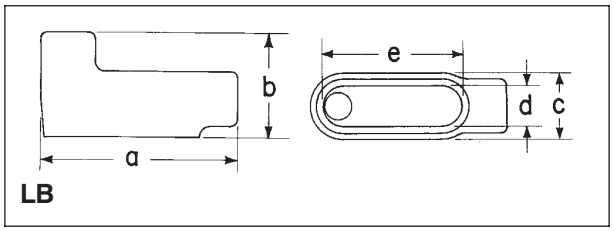


Size	½	¾	1	1¼	1½	2
Form 7 L						
a	4 9/16	5 3/16	6	6 1/2	7 1/8	3 1/8
b	1 3/8	1 5/8	1 7/8	2 5/16	2 9/16	3 1/8
c	2 1/4	2 7/16	2 3/4	3 3/16	3 9/16	4 1/8
d	15/16	1 1/8	1 3/8	1 3/4	1 15/16	2 7/16
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8

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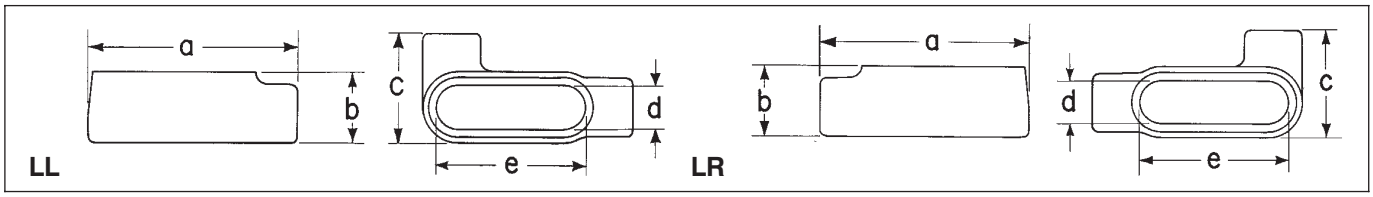
1F Condulet® Conduit Outlet Bodies

Dimensions



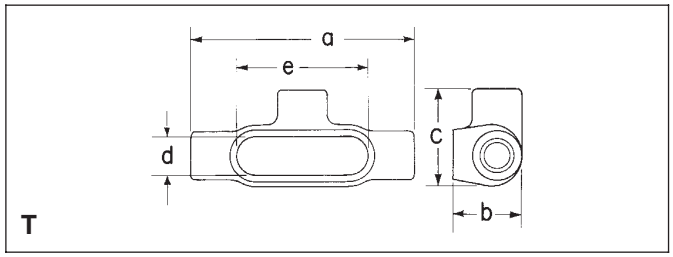
LB

Size	½	¾	1	1¼	1½	2	2½	3	3½	4
Form 7 LB										
a	4 9/16	5 3/16	6	6 1/2	7 1/8	8 1/8	10 1/2	10 1/2	12 11/16	12 11/16
b	2 1/4	2 1/2	2 7/8	3 5/16	3 11/16	4 1/4	5 1/8	5 7/8	6 9/16	7 1/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 7/16	3	4 1/4	4 1/4	5 1/4	5 1/4
d	15/16	1 1/8	1 3/8	1 3/4	1 15/16	2 7/16	3 9/16	3 9/16	4 1/2	4 1/2
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8	8 3/8	8 3/8	10 1/4	10 1/4
Form 8 LB										
a	4 15/16	5 9/16	6 15/32	7 17/32	9 1/8	11	13 15/16	13 15/16	16 7/8	16 7/8
b	2 7/32	2 7/16	2 13/16	3 11/32	4 1/32	4 13/16	6 1/8	6 1/2	7 9/16	7 13/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 3/4	3 3/4	5	5	6 1/4	6 1/4
d	1	1 3/16	1 3/8	1 3/4	2 1/8	3	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6 1/2	8 9/16	10 7/8	10 7/8	13 7/16	13 7/16
Mark 9 LB										
a	4 19/32	5 1/4	6 3/32	7 1/32	7 3/4	10 1/32	13 15/16	13 15/16	16 7/8	16 7/8
b	2 1/8	2 13/32	2 27/32	3 15/32	3 3/4	4 15/32	6 1/8	6 1/2	7 9/16	7 13/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 1/2	3 3/16	5	5	6 1/4	6 1/4
d	1 3/16	1 3/8	1 1/2	1 15/16	2 1/4	2 7/8	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6	8 1/16	10 7/8	10 7/8	13 7/16	13 7/16



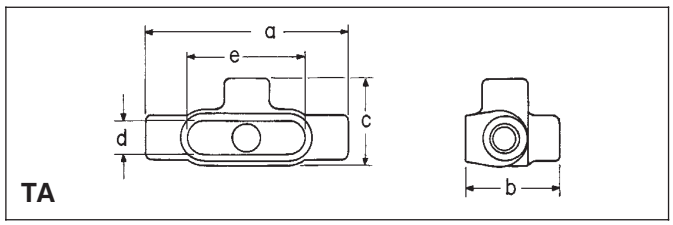
Size	½	¾	1	1¼	1½	2	2½	3	3½	4
Form 7 LL & LR										
a	4 9/16	5 3/16	6	6 1/2	7 1/8	8 1/8	10 1/2	10 1/2	12 11/16	12 11/16
b	1 3/8	1 5/8	1 7/8	2 5/16	2 9/16	3 1/8	3 5/8	4 3/8	4 7/8	5 3/8
c	2 1/4	2 7/16	2 3/4	3 3/16	3 9/16	4 1/8	5 3/4	5 3/4	6 15/16	6 15/16
d	15/16	1 1/8	1 3/8	1 3/4	1 15/16	2 7/16	3 9/16	3 9/16	4 1/2	4 1/2
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8	8 3/8	8 3/8	10 1/4	10 1/4
Form 8 LL & LR										
a	4 15/16	5 9/16	6 15/32	7 17/32	9 1/8	11	13 15/16	13 15/16		
b	1 7/16	1 11/16	1 15/16	2 3/8	2 25/32	3 9/16	4 7/16	4 13/16		
c	2 5/32	2 5/16	2 5/8	3 5/32	4	5	6 11/16	6 11/16		
d	1	1 3/16	1 3/8	1 3/4	2 1/8	3	4 1/4	4 1/4		
e	3 5/16	3 15/16	4 9/16	5 5/16	6 1/2	8 9/16	10 7/8	10 7/8		
Mark 9 LL & LR										
a	4 19/32	5 1/4	6 3/32	7 1/32	7 3/4	10 1/32	13 15/16	13 15/16	16 7/8	16 7/8
b	1 3/8	1 5/8	1 7/8	2 1/2	2 3/4	3 7/16	4 7/16	4 13/16	5 11/16	5 15/16
c	2 1/8	2 3/8	2 5/8	3 3/32	3 7/16	4 1/8	6 11/16	6 11/16	8 1/8	8 1/8
d	1 3/16	1 3/8	1 1/2	1 15/16	2 1/4	2 7/8	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6	8 1/16	10 7/8	10 7/8	13 7/16	13 7/16

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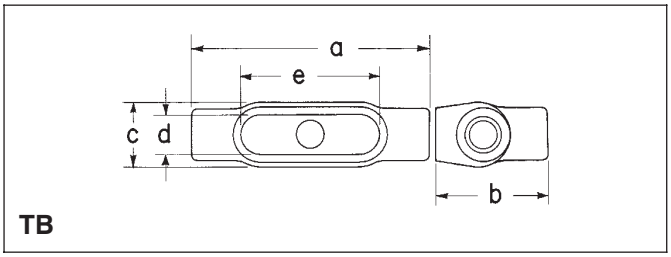
T

Size	a	b	c	d	e
Form 7T					
½	5 5/8	1 3/4	2 7/16	15/16	3 3/16
¾	6 1/4	2	2 5/8	1 1/8	3 13/16
1	7 1/4	2 1/4	3	1 3/8	4 1/2
1 1/4	7 7/16	2 5/16	3 3/16	1 3/4	5
1 1/2	8 3/16	2 9/16	3 9/16	1 15/16	5 7/16
2	9 3/16	3 1/8	4 1/8	2 7/16	6 3/8
2 1/2	12	3 5/8	5 3/4	3 9/16	8 3/8
3	12 1/16	4 3/8	5 3/4	3 9/16	8 3/8
3 1/2	14 5/16	4 7/8	6 15/16	4 1/2	10 1/4
4	14 5/16	5 3/8	6 15/16	4 1/2	10 1/4
Form 8T					
½	5 11/16	1 3/4	2 5/32	1	3 5/16
¾	6 9/32	2	2 5/16	1 3/16	3 15/16
1	7 5/16	2 1/4	2 5/8	1 3/8	4 9/16
1 1/4	8 1/2	2 5/8	3 5/32	1 3/4	5 5/16
1 1/2	10 3/8	2 25/32	4	2 1/8	6 1/2
2	12 1/4	3 9/16	5	3	8 9/16
2 1/2	15 5/8	4 7/16	6 11/16	4 1/4	10 7/8
3	15 5/8	4 13/16	6 11/16	4 1/4	10 7/8
Mark 9T					
½	5	1 3/8	2 1/8	1 3/16	3 5/16
¾	5 11/16	1 5/8	2 3/8	1 3/8	3 15/16
1	6 19/32	1 7/8	2 5/8	1 1/2	4 9/16
1 1/4	7 1/2	2 1/2	3 3/32	1 15/16	5 5/16
1 1/2	8 1/4	2 3/4	3 7/16	2 1/4	6
2	10 1/2	3 7/16	4 1/8	2 7/8	8 1/16
2 1/2	15 5/8	4 7/16	6 11/16	4 1/4	10 7/8
3	15 5/8	4 13/16	6 11/16	4 1/4	10 7/8
3 1/2	18 3/4	5 11/16	8 1/8	5 7/16	13 7/16
4	18 3/4	5 15/16	8 1/8	5 7/16	13 7/16



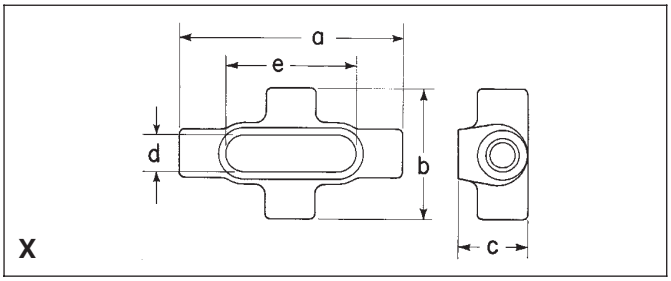
TA

Size	a	b	c	d	e
Form 7TA					
½	5 5/8	2 5/8	2 7/16	15/16	3 3/16
¾	6 1/4	2 7/8	2 5/8	1 1/8	3 13/16
1	7 1/4	3 1/4	3	1 3/8	4 1/2
1 1/4	7 7/16	3 5/16	3 3/16	1 3/4	5
1 1/2	8 3/16	3 11/16	3 9/16	1 15/16	5 7/16
2	9 3/16	4 1/4	4 1/8	2 7/16	6 3/8



TB

Size	a	b	c	d	e
Form 7TB					
½	5 5/8	2 5/8	1 9/16	15/16	3 3/16
¾	6 1/4	2 7/8	1 3/4	1 1/8	3 13/16
1	7 1/4	3 1/4	2	1 3/8	4 1/2
1 1/4	7 7/16	3 5/16	2 3/16	1 3/4	5
1 1/2	8 3/16	5	2 7/16	1 15/16	5 7/16
2	9 3/16	6 1/8	3	2 7/16	6 3/8
Form 8TB					
½	5 11/16	2 17/32	1 3/8	1	3 5/16
¾	6 9/32	2 3/4	1 9/16	1 3/16	3 15/16
1	7 5/16	3 1/8	1 3/4	1 3/8	4 9/16
1 1/4	8 1/2	3 11/32	2 3/16	1 3/4	5 5/16
1 1/2	10 3/8	4 1/32	2 3/4	2 1/8	6 1/2
2	12 1/4	4 13/16	3 3/4	3	8 9/16
Mark 9TB					
½	5	2 1/8	1 3/8	1 3/16	3 5/16
¾	5 11/16	2 13/32	1 9/16	1 3/8	3 15/16
1	6 19/32	2 27/32	1 3/4	1 1/2	4 9/16
1 1/4	7 1/2	3 15/32	2 3/16	1 15/16	5 5/16
1 1/2	8 11/32	3 7/8	2 1/2	2 5/32	5 7/8
2	10 5/8	4 19/32	3 7/32	2 13/16	8 3/32



X

Size	a	b	c	d	e
Form 7X					
½	5 5/8	3 5/16	1 3/4	15/16	3 3/16
¾	6 1/4	3 1/2	2	1 1/8	3 13/16
1	7 1/4	4	2 1/4	1 3/8	4 1/2
1 1/4	7 7/16	4 1/8	2 5/16	1 3/4	5
1 1/2	8 3/16	4 5/8	2 9/16	1 15/16	5 7/16
2	9 3/16	5 3/16	3 1/8	2 7/16	6 3/8
Form 8X					
½	5 11/16	2 29/32	1 3/4	1	3 5/16
¾	6 9/32	3 1/16	2	1 3/16	3 15/16
1	7 5/16	3 1/2	2 1/4	1 3/8	4 9/16
1 1/4	8 1/2	4 1/8	2 5/8	1 3/4	5 5/16
1 1/2	10 3/8	5 1/4	2 15/32	2 1/8	6 1/2
2	12 1/4	6 1/4	3 9/16	3	8 9/16
Mark 9X					
½	5 11/16	2 29/32	1 3/4	1	3 5/16
¾	6 9/32	3 1/16	2	1 3/16	3 15/16
1	7 5/16	3 1/2	2 1/4	1 3/8	4 9/16

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Application:

Die cast mogul pulling elbows are installed in conduit systems to provide:
- an accessible weather resistant chamber for containing heavy duty conductors
- a chamber for containing 90° turn in large stiff conductors. Used either to change conductor direction or to enter buildings
- a pull box for pulling large conductors
- a chamber for making splices and taps
- an accessible opening to accommodate future changes of the system

Features:

- Large dome cover permits easy, straight through pull
- Dimension from centerline of back hub to bushing of end hub exceeds six times the trade diameter of the conduit
- Tapered threads provide easy assembly, tight construction
- Heavy duty machine screws for cover
- Cover is gasketed
- Smooth design and finish make handling easy and complement any construction job

Standard Materials:

- Die cast copper-free aluminum

Standard Finishes:

- Aluminum lacquer

Certifications and Compliances:

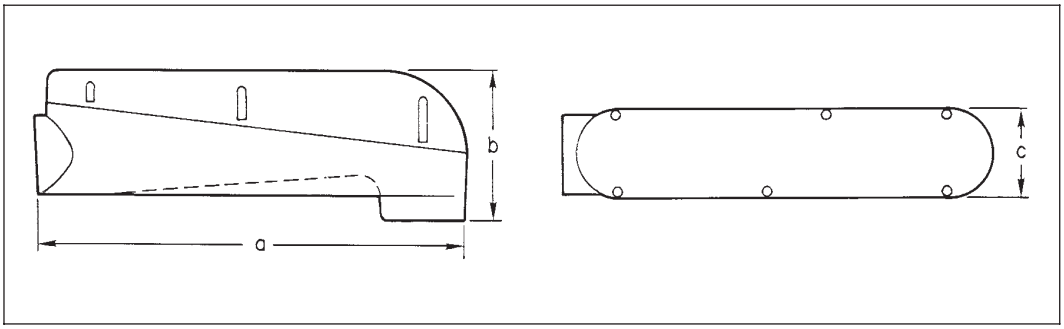
- UL Standard: 514B
- NEC: Article 370
- CSA C22.2 No. 18
- CEC: 22.1



LBNEC Furnished With Cover, Gasket and Screws

Size	Cat. #	Bending Radius
2½	LBNEC7	5¼
3	LBNEC8	5¾
3½	LBNEC9	7
4	LBNEC10	7⅜

Dimensions



Cat. #	Size	a	b	c
LBNEC7	2½	21 11/16	8 9/32	4½
LBNEC8	3	21 11/16	8 9/32	4½
LBNEC9	3½	28 11/16	9 7/32	5½
LBNEC10	4	28 11/16	9 7/32	5½

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Application:

LBD bodies are installed at 90° bends in rigid conduit to:
- act as pull outlets for conductors that are stiff due to large size or type of insulation
- make 90° bends in conduit system, allowing straight pull in either direction
- provide for conduit service entrance to buildings
- provide for conductor entrance to motors
- provide access to wiring for maintenance and future expansion

Features:

LBD bodies have:
- cover openings on an angle permitting conductors to be pulled straight thru hubs from either direction
- domed covers to permit easy conductor bends (relieves strain on insulation)
- cover and gasket furnished
- taper tapped hubs with integral bushings

Standard Materials:

- Body and cover – *Feraloy*® iron alloy
- Gasket – Neoprene

Standard Finishes:

- *Feraloy* iron alloy:
½″ to 4″ sizes, electrogalvanized and aluminum acrylic paint; 5″ and 6″ sizes, zinc chromate primer and aluminum lacquer.
- Neoprene – natural

Options:

Description	Suffix to be Added to Cat. #
Material – All sizes, copper-free aluminum	SA

Certifications and Compliances:

- UL Standard: 514B
- Fed. Spec.: W-C-586d
- CSA 22.2 No. 18



½ – 1″



1¼ – 2″, 5″ – 6″



2½ – 4″

LBD

Size	Cat. #	Size	Cat. #	Size	Cat. #
½	LBD1100	1¼	LBD4400	3½	LBD9900
¾	LBD2200	1½	LBD5500	4	LBD10900
1	LBD3300	2	LBD6600	5	LBD012
		2½	LBD7700	6	LBD014
		3	LBD8800		

Replacement Gaskets for Above Sizes

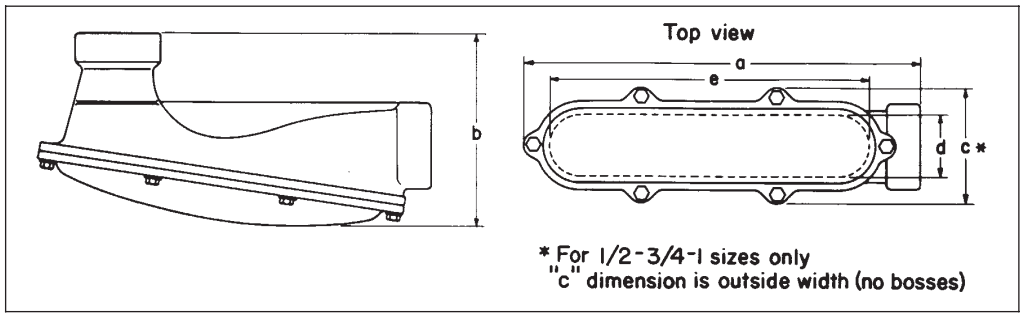
Rubber

Size	Cat. #	Size	Cat. #	Size	Cat. #
½	GASK680R	1¼	GASK683R	3½	GASK989R
¾	GASK681R	1½	GASK684R	4	GASK989R
1	GASK682R	2	GASK684R	5	GASK687R
		2½	GASK990R	6	GASK688R
		3	GASK990R		

Replacement Cover Assembly with Hardware

Size	Cat. #	Size	Cat. #	Size	Cat. #
½	LBD100	1¼	LBD400	3	LBD800
¾	LBD200	1½	LBD600	3½	LBD900
1	LBD300	2	LBD600	4	LBD900
		2½	LBD800	5	LBD120
				6	LBD140

Dimensions



Cat. #	Size	a	b	c	d	e
LBD1100	½	5	2 5/16	1 5/16	1	3 11/32
LBD2200	¾	6 1/4	2 5/8	1 9/16	1 1/4	4 17/32
LBD3300	1	6 1/4	2 15/16	1 13/16	1 1/2	4 11/32
LBD4400	1¼	8 5/8	4 1/4	3 1/2	1 13/16	7 3/16
LBD5500	1½	12 7/16	5 7/16	4 5/8	2 5/8	10 7/8
LBD6600	2	12 7/16	5 7/16	4 5/8	2 5/8	10 7/8
LBD7700	2½	19 11/16	9 9/16	5 5/8	3	15 3/4
LBD8800	3	19 11/16	9 9/16	5 5/8	3	15 3/4
LBD9900 (iron)	3½	20 7/8	10 7/8	7 3/4	4 3/4	19 7/8
LBD10900 (iron)	4	20 7/8	10 7/8	7 3/4	4 3/4	19 7/8
LBD9900 (-SA)	3½	27 13/16	11 7/8	7 1/8	4	24
LBD10900 (-SA)	4	27 13/16	11 7/8	7 1/8	4	24
LBD012	5	32 7/16	12 1/2	8 5/8	5 7/8	30
LBD014	6	41 1/2	15	9 3/4	7	39

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1F Condulet® Conduit Outlet Bodies

Covers with Gaskets on Page 15

Application:

Mogul bodies are installed in conduit systems to:
- act as pull outlets for conductors that are stiff, due to large size or type of insulation
- provide the longer openings needed when pulling large conductors
- prevent sharp bends and kinks in large conductors (protects insulation during installation)
- provide ample openings for splices and taps
- provide access to wiring for maintenance and future system changes

Features:

Mogul bodies have:
- long openings
- provision for easy bends
- taper tapped hubs with integral bushings
- Stainless Steel cover screws
- Covers are provided with integral gasket

Standard Materials:

- *Feraloy® iron alloy*

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint

Options:

Description	Suffix to be Added to Cat. #
Material – copper-free aluminum	SA

Certifications and Compliances:

- UL Standard: 514B
- Fed. Spec.: W-C-586d
- CSA Standard: C22.2 No. 18



BC

Mogul Series

Size	Cat. #
1	BC3
1¼	BC4
1½	BC5
2	BC6
2½	BC7
3	BC8
3½	BC9
4	BC10



BLB†

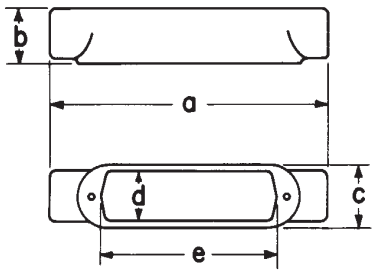
Mogul Series

Size	Cat. #
1	BLB3
1¼	BLB4
1½	BLB5
2	BLB6
2½	BLB7
3	BLB8
3½	BLB9
4	BLB10

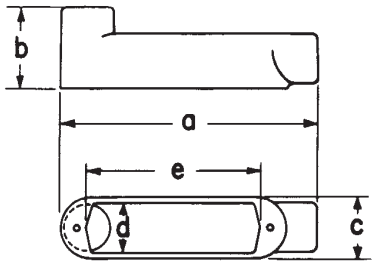
† For 5″ size use LBD012.
For 6″ size use LBD014.

Dimensions

BC



BLB



Size	1	1¼	1½	2	2½	3	3½	4
Mogul Series BC								
a	9 9/16	9 9/16	13 3/4	13 3/4	18 3/8	18 3/8	23 3/4	23 3/4
b	1 7/8	2 5/16	2 9/16	3 1/8	3 5/8	4 3/8	4 7/8	5 3/8
c	2 3/16	2 3/16	3	3	4 1/4	4 1/4	5 1/4	5 1/4
d	1 7/8	1 7/8	2 5/8	2 5/8	3 13/16	3 13/16	4 3/4	4 3/4
e	6	6	10	10	15	15	20	20
Mogul Series BLB								
a	8 19/32	8 19/32	12 11/16	12 11/16	16 29/32	16 29/32	22 1/8	22 1/8
b	2 27/32	3 9/32	3 5/8	4 3/16	5 3/32	5 27/32	6 1/2	7
c	2 3/16	2 3/16	3	3	4 1/4	4 1/4	5 1/4	5 1/4
d	1 7/8	1 7/8	2 5/8	2 5/8	3 13/16	3 13/16	4 3/4	4 3/4
e	6	6	10	10	15	15	20	20

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BUB

Mogul Series

Size	Cat. #
1	BUB3
1¼	BUB4
1½	BUB5
2	BUB6
2½	BUB7
3	BUB8
3½	BUB9
4	BUB10

BT

Mogul Series

Size	Cat. #
1	BT3
1¼	BT4
1½	BT5
2	BT6
2½	BT7
3	BT8
3½	BT9
4	BT10

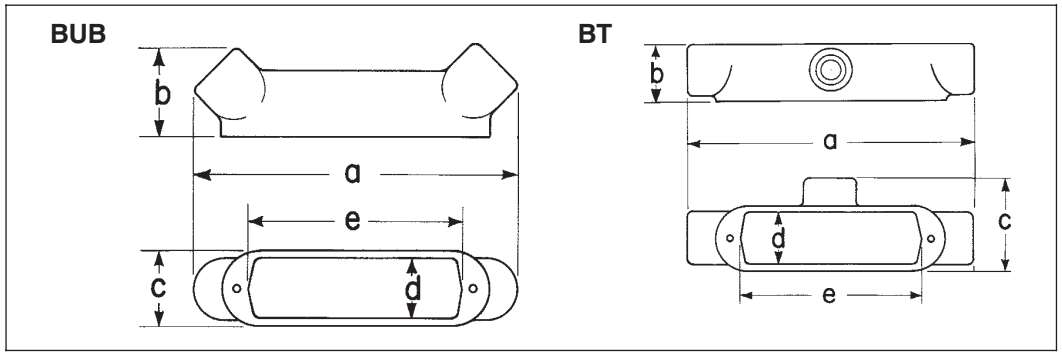
Blank Covers

For all Mogul Series

Feraloy® iron alloy

Size	With Round Neoprene Gasket Cat. #
1 or 1¼	BG48
1½ or 2	BG68
2½ or 3	BG88
3½ or 4	BG98

Dimensions



Size	1	1¼	1½	2	2½	3	3½	4
Mogul Series BUB								
a	9 3/16	9 5/16	13 1/2	13 1/2	17 3/4	17 7/8	23 3/8	23 1/4
b	2 11/16	3 3/16	3 1/2	4 1/8	4 13/16	5 5/8	6 3/8	6 13/16
c	2 3/16	2 3/16	3	3	4 1/4	4 1/4	5 1/4	5 1/4
d	1 7/8	1 7/8	2 5/8	2 5/8	3 13/16	3 13/16	4 3/4	4 3/4
e	6	6	10	10	15	15	20	20
Mogul Series BT								
a	9 9/16	9 9/16	13 3/4	13 3/4	18 3/8	18 3/8	23 3/4	23 3/4
b	1 7/8	2 5/16	2 9/16	3 1/8	3 5/8	4 3/8	4 7/8	5 3/8
c	3 5/32	3 5/32	4 1/16	4 1/16	5 19/32	5 23/32	6 7/8	6 7/8
d	1 7/8	1 7/8	2 5/8	2 5/8	3 13/16	3 13/16	4 3/4	4 3/4
e	6	6	10	10	15	15	20	20

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1F Condulet® Service Entrance Elbows and Tees

Application:

SLB and LBY elbows are installed in conduit systems to:
- act as service entrance elbows between service entrance and vertical weatherhead conduit runs
- make 90° bends in conduit systems where space is limited
- act as pull outlets
- provide access to conductors for maintenance and future system changes

ET short radius tees are installed in conduit systems:
- in concealed conduit runs allowing single conduit stub up to outlet boxes located above or below main conduit run. Eliminates separate feed and return conduits to flush floor box or junction box

Features:

SLB elbows have:
- compact overall size and short hubs
- taper tapped hubs and integral bushing for standard threaded conduit
- covers and gaskets furnished

LBY elbows have:
- maximum volume for bends within a compact overall size
- screw-on cover for ease of installation and removal
- cover openings on an angle, permitting conductors to be pulled straight through either hub
- taper tapped hubs and integral bushing for standard threaded conduit

ET short radius tees have:
- compact size, small radius of bend for use in concealed or open conduit systems. Particularly suited for use in shallow floors or partitions
- taper tapped hubs and integral bushing for standard threaded conduit

Standard Materials:

- SLB elbows – copper-free aluminum
- LBY elbows – *Feraloy*® iron alloy
- ET tees – *Feraloy* iron alloy

Standard Finishes:

- Copper-free aluminum – natural
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

Options:

- Finishes – LBY elbows:
  Corro-free™ epoxy power coat . . . . add suffix S752
- Material (LBY only) – copper-free aluminum construction . . . . . Add suffix –SA

Certifications and Compliances:

- UL Standard: 514B
- Fed. Spec.: W-C-586a



SLB (includes cover)

Size	Cat. #
½	SLB1
¾	SLB2
1	SLB3
1¼	SLB4
1½	SLB5
2	SLB6



LBY (includes cover)

Size	Cat. #
½	LBY15
¾	LBY25
1	LBY35
1¼	LBY45
1½	LBY55

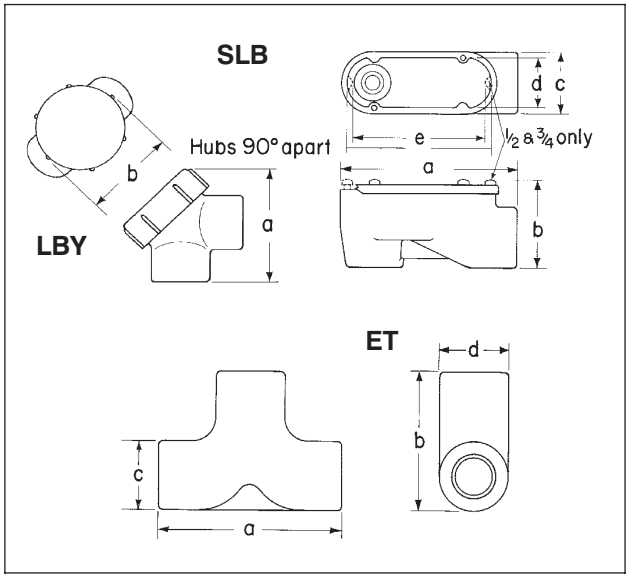


ET

Size	Cat. #
¾ – ½ – ½	ET218
¾ – ¾ – ¾	ET228
1 – ¾ – ¾	ET328

Largest hub shown at top of photo

Dimensions



	Size	½	¾	1	1¾	1½	2
SLB	a	3 1/8	3 1/2	4 1/8	5 3/8	6 23/32	7 3/4
	b	1 25/32	2	1 9/32	2 25/32	3 1/32	3 29/32
	c	1 3/16	1 3/8	1 11/16	2 3/32	2 3/8	3
	d	1	1 3/16	1 15/32	1 7/8	2 5/32	2 5/8
	e	2 11/16	2 15/16	3 11/32	4 3/4	6 1/32	6 31/32
LBY	a	2 13/16	3 3/16	3 1/4	3 25/32	4 1/4	
	b	2	2 1/4	2 1/2	2 15/16	3 3/8	

ET	Size	¾ – ½ – ½	¾ – ¾ – ¾	1 – ¾ – ¾
	a	4	4	4
	b	2 5/8	3	3
	c	1 1/4	1 1/2	1 1/2
	d	1 1/2	1 1/2	1 3/4

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Description	Page No.
Application/Selection	18
Condulet® Cast Outlet Boxes	
GRF Series	19
VXF Series	19

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2F Condulet® Cast Outlet Boxes

Application and Selection

Application:

Round cast outlet boxes are installed at appropriate locations in threaded rigid conduit systems to:

- act as support for lighting fixtures (with hub and fixture hanging covers)
- act as junction or fuse boxes when fitted with connection blocks or fuse blocks
- act as pull outlets for conductors to be installed in a conduit system (with blank covers; gasketed or ungasketed)
- act as mounting for wiring devices (wide variety available)
- provide openings for splices and taps in conductors
- provide access to conductors for maintenance and future system changes
- connect conduit sections and change direction of conduit runs

Considerations for Selection:

- Shape required – determine from configuration of conduit system and intended function of outlet boxes
- Size required – determine from conduit and conductor size
- Material required – determine from environmental conditions (corrosive fumes, buried in concrete, etc.)

Accessories:

- Blank & hub covers – for VXF, GRF
- Fixture hangers – for VXF, GRF series
- Gaskets – for VXF, GRF series

Options:

- *Corro-free*™ epoxy powder coat. Information available on request.

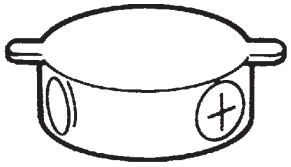
Quick Selector Chart

Series†	Conduit Sizes	Inside Dimensions Depth	Inside Dimensions Dia.	No. of Conduit Openings	Surface or Flush Mtg.	Standard Material	Finish	Covers
VXF	½ and ¾	1¾	4¼	4 or 5	S	Copper-free aluminum	Epoxy Enamel	When box is used as junction or pull box, install GRF covers, gaskets.
GRF	½ to 1	1⅜ to 3⅛	3 11⁄16	0 to 4	S – F	*Feraloy* iron alloy or aluminum	Electro-galvanized and aluminum paint	Blank, hub, standard 4″ octagonal box covers, wiring devices, lighting fixture hangers, gaskets.

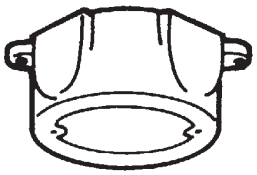
† Fit lighting fixture as follows: ARB & VGR

Shape Selector Chart

SERIES
VXF



GRF



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Application:

VXF and GRF cast outlet boxes are installed in threaded rigid conduit systems to:
- act as junction boxes
- act as pull outlets
- accept round base wiring devices and covers intended for use on 4″ outlet boxes (GRF boxes only)
- act as ceiling or wall mounting for *Vaporgard*™ lighting fixtures (VXF boxes)
- mount enclosed and gasketed lighting fixtures: Series ARB and VGR; Series ARB fixture hangers (GRF boxes)

Features VXF:

- Compact, shallow design
- Takes GRF covers
- Multiple tapped conduit openings and pipe plugs for versatility
- 4 hubs and 3 plugs on VXF10 and VXF20
- 5 hubs and 4 plugs on VXFT10 and VXFT20

Features GRF:

- Surface mounting. Flush mounting can be obtained by nailing box to concrete form through mounting lug
- Drilled mounting lugs
- Four conduit bosses spaced 90° apart on sides and one boss on back
- Blank or drilled and tapped bodies (with 4 side bosses tapped and plugged, plus blank back boss)

Standard Materials:

- VXF – copper-free aluminum
- GRF – *Feraloy*® iron alloy or copper-free aluminum

Standard Finishes:

- VXF – epoxy enamel
- GRF – electrogalvanized and aluminum acrylic paint

Certifications and Compliances:

- UL Standard: boxes and covers – 514A
- CSA Standard: C22.2



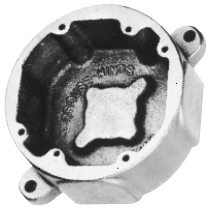
VXF Tapped Surface With Lugs 4 Hubs, 3 Plugs

Hub Size	Cat. #
½	VXF10
¾	VXF20

Surface With Lugs 5 Hubs, 4 Plugs

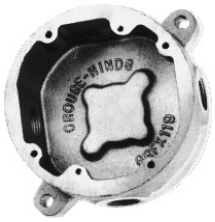
Hub Size	Cat. #
½	VXFT10
¾	VXFT20

NOTE: See lighting section **8L** for complete listing of lighting fixtures and hangers.



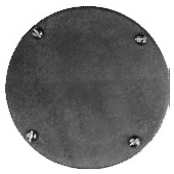
GRF Blank Surface With Lugs

Inside Depth	Cat. #
1⅜	GRF19
1 15/16	GRF29
3⅛	GRF39



GRFX Tapped Surface With Lugs 4 Hubs, 3 Plugs Blank Back Boss

Inside Depth	Size Tap	Iron Cat. #	Aluminum Cat. #
1⅜	½	GRFX119	GRF119
1⅜	¾	GRFX219	GRF219
2 1/16	½	GRFX129	GRF129
2 1/16	¾	GRFX229	GRF229
2 1/16	1	GRFX329	GRF329
3⅛	½	GRFX139	GRF139
3⅛	¾	GRFX239	GRF239
3⅛	1	GRFX339	GRF339



GRF Blank Cover

Description	Steel Cat. #	Aluminum Cat. #
Surface	GRF10	GRF110



Fixture weight to 125 lbs.

GRF Hub Covers

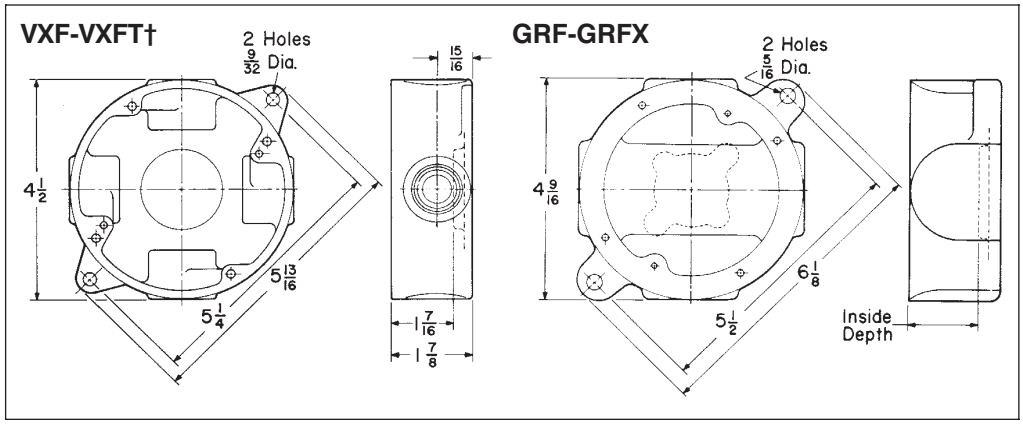
Description	Size	Iron Cat. #	Aluminum Cat. #
Surface	½	GRF11	GRF11-SA
Surface	¾	GRF12	GRF12-SA



GRF Gasket

Description	Cat. #
Neoprene	GASK643

Dimensions



† VXFT has hubs on 4 sides and back; VXF has hubs on 4 sides only.

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Notes Page

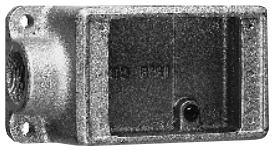
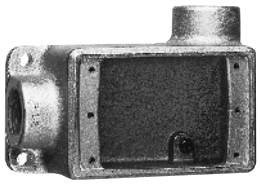
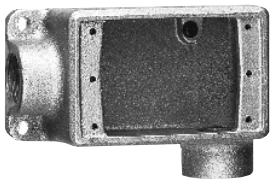
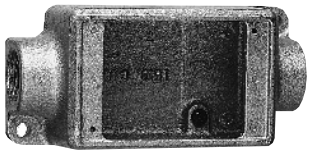
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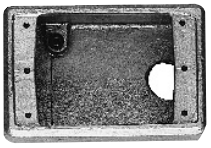
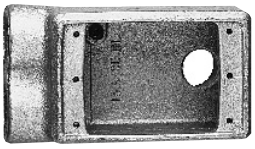
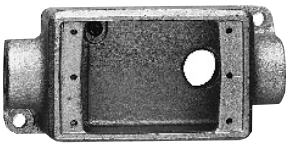
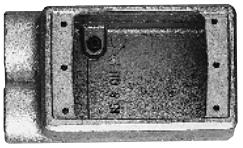
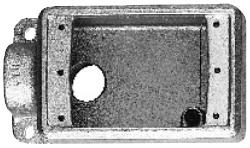
Description	Page No.
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Boxes	
Conduit Bodies	
FS/FD Series	
Accessories	**35-44**
Single gang	
Blank	**31-34**
Cast hubs	**25-28**
Multi-gang	
Blank	**31-34**
Cast hubs	**29-30**
Covers	
DS/S Series, WLRS, WLRD Wet Locations Covers For NEMA Configuration Receptacles	
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Pilot light	**42**
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Receptacle	**35-39, 43**
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DS/WP Series	**37**
FSE Series	**45**

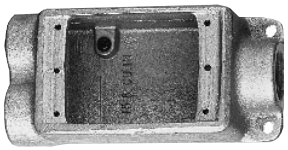
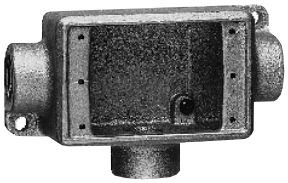
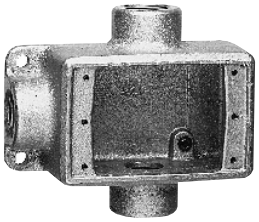
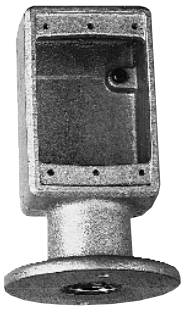
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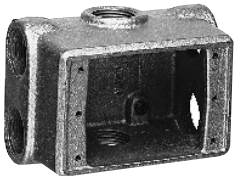
3F Condulet® Cast Device Boxes with Hubs

Single Gang Shape Selector Chart

SERIES	PAGE
	
FS/FD	25
FS (Double face)	28
FS-SA	25
	
FSR/FDR	25
	
FSL/FDL	25
	
FSC	25
FDC	25
FSC (Double face)	28
FSC-SA	25

SERIES	PAGE
	
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FSLA/FDLA	26

SERIES	PAGE
	
FSCC/FDCC	26
	
FSCT/FDCT	27
	
FST/FDT	27
	
FSY (With flange)	27

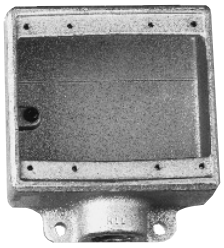
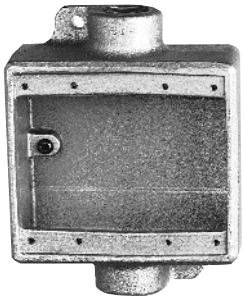
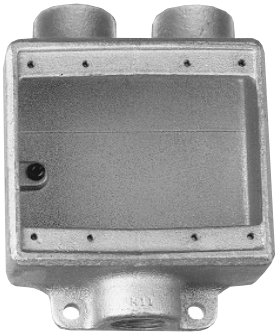
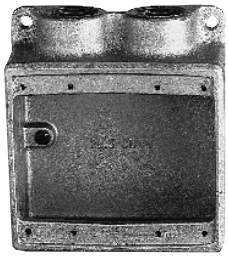
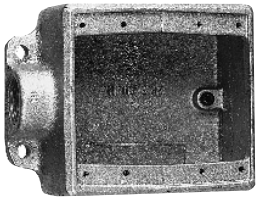
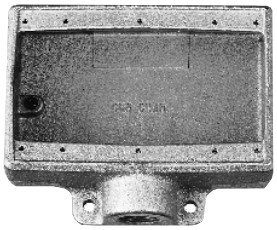
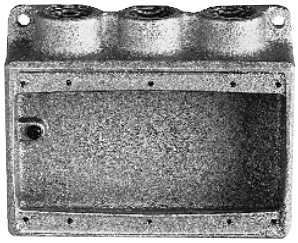
SERIES	PAGE
	
FSX/FDX	27
	
FDXC	27
	
FSCD	27

NOTE: If the hub configurations required are not available, drilled and tapped openings can be provided in blank boxes per your specifications. See pages 31 to 34 for details.

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Condulet® Cast Device Boxes with Hubs

Multi-Gang Shape Selector Chart

SERIES	PAGE
 FSC (Two gang tandem)	29
FS (Two gang tandem)	29
 FS/FD (Two gang)	29
 FSC/FDC (Two gang)	29
 FSD (Two gang)	30
 FSS/FDS (Two gang)	30
 FSE (Two gang)	29
 FS/FD (Three gang)	30
 FSS (Three gang)	30

NOTE: If the hub configurations required are not available, drilled and tapped openings can be provided in blank boxes per your specifications. See pages 31 to 34 for details.

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3F Condulet® Cast Device Boxes and Covers

Application and Selection

Application:

Cast device boxes are installed in conduit and cable systems to:
- Accommodate wiring devices
- Act as pull boxes for conductors in a conduit system
- Provide openings to make splices and taps in conductors
- Provide access to condutors for maintenance and future system changes

Considerations for Selection of Device Box

Type of conduit system:
- Should be compatible with conduit or cable system
- Boxes are standard with mounting lugs and internal green ground screw.
- Boxes are available for rigid steel, IMC; rigid aluminum; flexible conduit and cable systems.

Number of devices to be used in the box:
- Standard flush devices require one gang each

Depth:
- Two box types are available – standard (FS) and deep (FD), single through five gang.
- Standard flush wiring devices will normally fit in the FS boxes.
- Some special purpose devices of higher ratings will require the deeper box (FD).
- In addition, the need for additional wiring space will require the deep box.

Hub configuration and size:
- The layout of the conduit system dictates The conduit opening locations of the box.

The table below indicates the types of conduit and the boxes available. Drilled and tapped openings can be supplied in blank boxes to meet your requirements.
- Hub size is the same as conduit size. A variety of hub sizes are available. Where the specific hub size is not available, reducing bushings can be used.

Materials and finishes:
- The environment and the use of the box will determine the material and finish needed. Areas of the country with harsh weather and corrosive environments may require different materials and finishes for added protection.
- Standard material and finish is *Feraloy*® iron alloy with electrogalvanized and aluminum acrylic paint. Many items are also available in copper-free aluminum.
- Optional finishes can be obtained if environment warrants. See Options listings.

Considerations for Selection of Covers, Devices, and Accessories

Both general purpose and weatherproof, waterproof devices and covers are available. Selection will depend on individual conditions.

To provide for a wide variety of applications, the following covers and devices are available:

Covers	**Pg.**
General use snap switch	39-41, 43, 44
Pushbutton switch	41
Plug and receptacle	35-39, 43
Blank	38, 43, 44
Pilot light	42
Receptacle	35-39, 43

Devices	**Pg.**
Receptacle	37
Pilot lights	42
Wiring device	37

Accessories	**Pg.**
Gaskets	42
Box extensions	42
Flush mtg. adapter	42

Options:

- *Corro-free*™ epoxy powder coat – add suffix S752

Quick Selector Chart

Box	Depth	Gang	Conduit Type	Standard Material	Standard Finish
FS	1 11/16	1-3	Threaded rigid	*Feraloy* iron alloy (some are copper-free aluminum)	*Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint. Copper-free aluminum – natural
FD	2½	1-3	Threaded rigid	*Feraloy* iron alloy	*Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
FS blank bodies Drilled and tapped	1 15/16	1-4 1-3	Threaded rigid	*Feraloy* iron alloy	*Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
FD blank bodies Drilled & tapped	2½	1-5 1-3	Threaded rigid	*Feraloy* iron alloy	*Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

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Condulet® Single Gang Cast Device Boxes

With and Without Mounting Lugs for Threaded Rigid and IMC Conduit

Application:

Cast device boxes are installed to:
- accommodate wiring devices
- act as pull boxes for conductors in a conduit system
- provide openings to make splices and taps in conductors
- provide access to conductors for maintenance and future system changes
- connect conduit sections
- FSY boxes for mounting surface devices on floor or bench (used with single gang covers)

Features:

- Internal green ground screw standard on boxes
- Suitable for use in wet locations when used with gasketed covers
- Mounting lugs standard on most boxes
- Tapered threaded hubs (NPT) with integral bushing
- Available for surface mounting (with mounting lugs) or flush mounting (without mounting lugs) as listed
- Available as shallow (FS) or deep (FD) configuration. Use FD if device to be enclosed exceeds 1⅝″ in depth
- Ample wiring room provided in either FS or FD configuration
- Wide selection of surface or flush covers available in three materials (sheet steel, *Feraloy*®, aluminum)
- Covers for flush mounting extend to conceal the rough plaster line
- Available in single gang and multi-gang configurations with hubs, and as blank bodies for drilled and tapped openings

Standard Materials:

- *Feraloy* iron alloy or copper-free aluminum.

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Options:

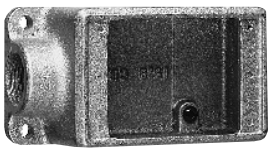
- Finishes:
  Corro-free™ epoxy powder coat – add suffix S752

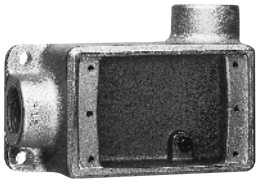
Size Ranges:

- Hubs – ½″ to 1″

Certifications and Compliances:

- UL Standard: 514
- ANSI Standard: C33.84
- Fed. Spec.: W-C-5860
- CSA Standard: C22.2 No. 18

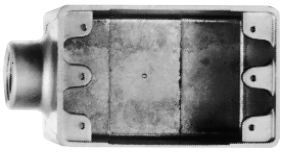




FS & FD

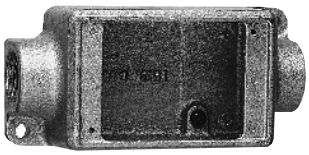
Size	Cat. #	Cat. #
½	FS1*	FD1**
¾	FS2*	FD2**
1	FS3**	FD3**

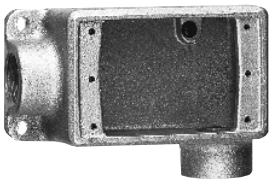
Size	Cat. #	Cat. #
½	FSR1	FDR1
¾	FSR2	FDR2**



Die Cast Aluminum†

Size	Cat. #	Cat. #
½	FS1-SA	FSC1-SA
¾	FS2-SA	FSC2-SA





Size	Cat. #	Cat. #
½	FSC1*	FDC1**
¾	FSC2*	FDC2**
1	FSC3**	FDC3**

Size	Cat. #	Cat. #
½	FSL1	FDL1
¾	FSL2	FDL2**

† Mounting lugs and ground screw are not offered with standard die cast box – add suffix SCA to Cat. No. for sand cast aluminum box with mounting lugs and ground screw. (Example: FS1-SCA)

* Available in sandcast copper-free aluminum – add suffix SCA to Cat. No.

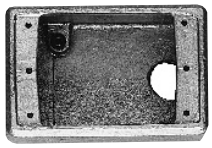
** Available in sandcast copper-free aluminum – add suffix SA to Cat. No.

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3F Condulet® Single Gang Cast Device Boxes

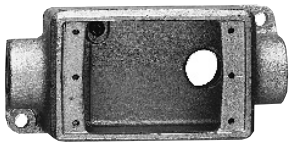
Accessories Pages 35 to 44

With and Without Mounting Lugs for Threaded Rigid and IMC Conduit

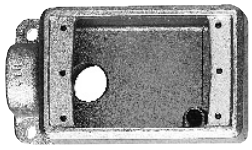


FS & FD

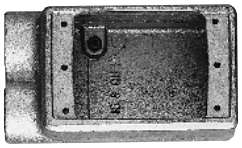
Size	Cat. # †	Cat. # †
½	FSA1	FDA1
¾	FSA2	FDA2



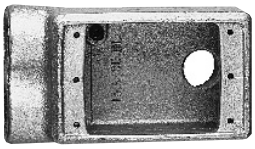
Size	Cat. #
½	FSCA1
¾	FSCA2



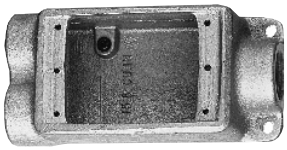
Size	Cat. #	Cat. #
½	FSLA1	FDLA1
¾	FSLA2*	FDLA2



Size	Cat. #†	Cat. #†
½	FSS1*	FDD1
¾	FSS2*	FDD2*
1	FSS3	FDD3

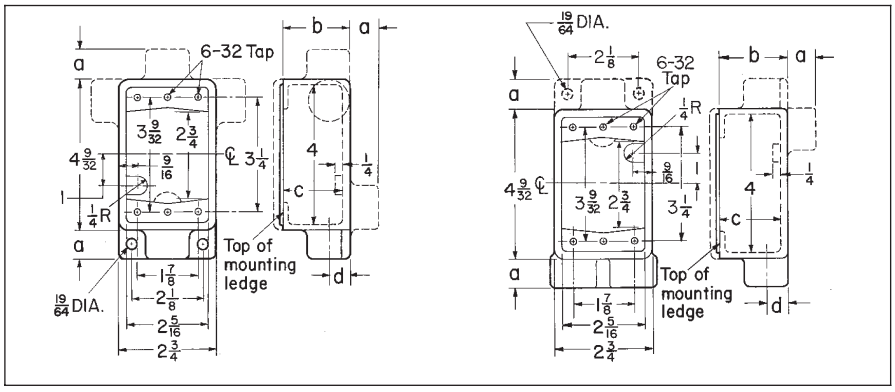


Size	Cat. #†
¾	FSSA2



Size	Cat. #	Cat. #
½	FSCC1	FDCC1
¾	FSCC2	FDCC2

Dimensions



Series	Hub Size	a	b	c	d
FS	½	⅞	1⅞	1 11⁄16	⅝
	¾	⅞	1⅞	1 11⁄16	¾
	1	1	1⅞	1 11⁄16	⅞
FD	½	⅞	2 11⁄16	2½	⅝
	¾	⅞	2 11⁄16	2½	¾
	1	1	2 11⁄16	2½	⅞

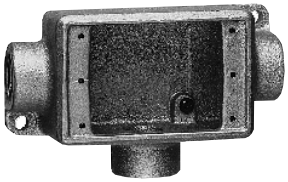
* Available in copper-free aluminum; add suffix "SA".
† Mounting lugs not available.

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COOPER Crouse-Hinds

Condulet® Single Gang Cast Device Boxes

With and Without Mounting Lugs for Threaded Rigid and IMC Conduit



FS and FD

Size	Cat. #	Cat. #
½	FSCT1	FDCT1
¾	FSCT2*	FDCT2*
1	FSCT3	FDCT3

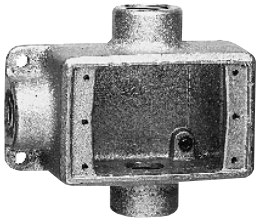


Size	Cat. #	Cat. #
½	FSX1	FDX1
¾	FSX2	FDX2
1		FDX3

† 6 Hubs – all ¾" pipe tap.

* Available in copper-free aluminum; add suffix "SA".

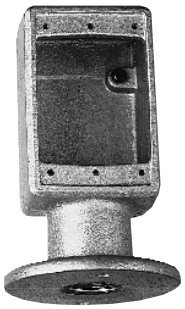
‡ Not avaliable with mounting lugs.



Size	Cat. #	Cat. #
½	FST1*	FDT1
¾	FST2*	FDT2
1		FDT3

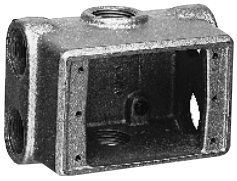


Size	Cat. #‡
½	FSCD1
¾	FSCD2



FSY

Description	Hub Size	Cat. # ‡
Single face	1	FSY311
Double face	1	FSY312

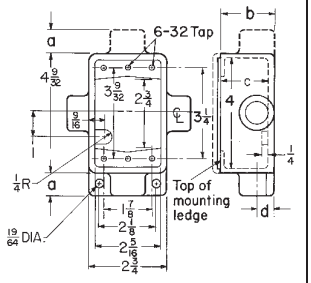


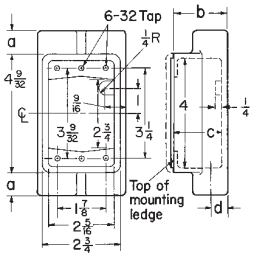
FDXC†

Hub Size	Cat. # ‡
¾	FDXC219

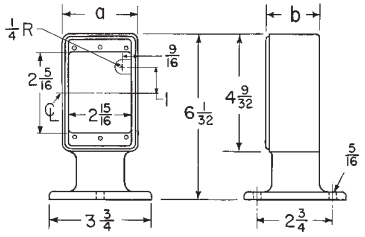
Dimensions

FSCT, FSX, FST, FSCD

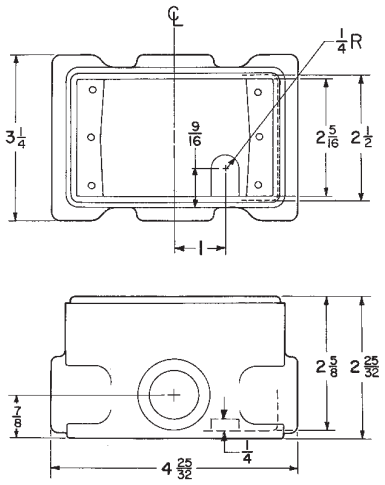




FSY



FDXC



FSCT, FSX, FST, FSCD

Series	Hub Size	a	b	c	d
FS	½	⅞	1⅞	1 11⁄16	⅝
	¾	⅞	1⅞	1 11⁄16	¾
	1	1	1⅞	1 11⁄16	⅞

FSY

Description	Hub Size	a	b
Single gang, single face	1	2¾	1 15⁄16
Single gang, double face	1	2¾	3⅜

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3F Condulet® Single Gang Cast Device Boxes

With and Without Mounting Lugs

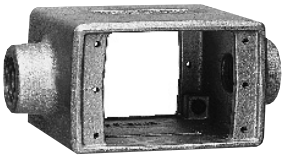
Accessories Pages 35 to 44



FS

Double Face

Size	Cat. # †
½	FS152
¾	FS252

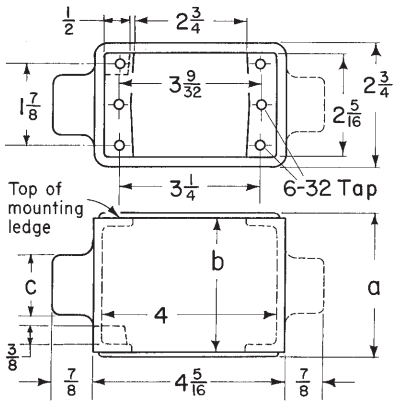


Double Face

Size	Cat. # †
½	FSC152
¾	FSC252

Dimensions

Double face



Series	Hub Size	a	b	c
FS	½	3 5/16	3⅛	1¼
	¾	3 11/16	3½	1½

† Mounting lugs not available.

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Condulet® Multi-Gang Cast Device Boxes

With and Without Mounting Lugs for Threaded Rigid and IMC Conduit



FS†

Two Gang Tandem

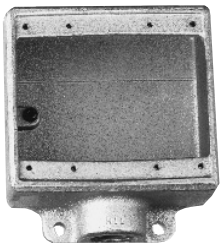
Size	Cat. #
½	FS17
¾	FS27



FSC†

Two Gang Tandem

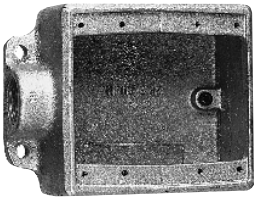
Size	Cat. #
½	FSC17
¾	FSC27



FS & FD

Two Gang

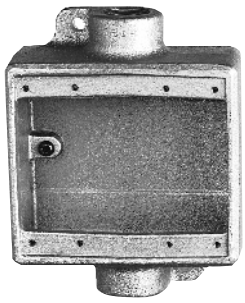
Size	Cat. #	Cat. #
½	FS12*	FD12
¾	FS22*	FD22*
1	FS32	FD32



FSE

Two Gang

Size	Cat. #
¾	FSE22



FSC & FDC

Two Gang

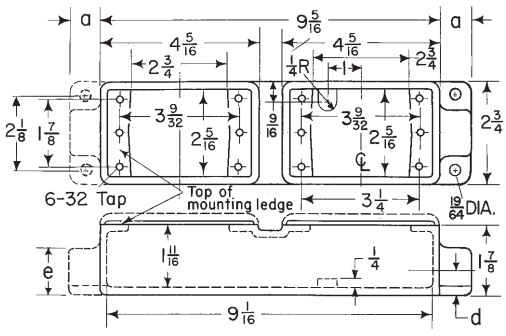
Size	Cat. #	Cat. #
½	FSC12	FDC12
¾	FSC222	FDC222*
1	FSC32	FDC32

* Available in copper-free aluminum; add suffix "SA".

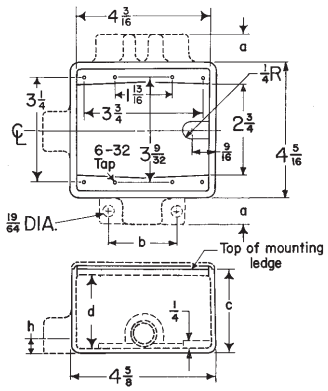
† Use single gang covers only.

Dimensions

Two gang tandem



Two gang



Two gang tandem

Series	Hub Size	a	d	e
	½	⅞	⅝	1¼
FS	¾	⅞	¾	1½

Two gang

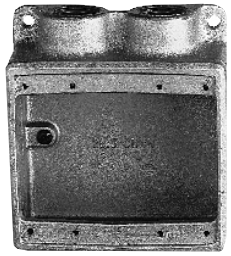
Series	Hub Size	a	b	c	d	h
	½	⅞	2¼	1⅞	1 11⁄16	⅝
FS	¾	⅞	2¼	1⅞	1 11⁄16	¾
	1	1	2½	1⅞	1 11⁄16	⅞
	½	⅞	2¼	2 11⁄16	2½	⅝
FD	¾	⅞	2¼	2 11⁄16	2½	¾
	1	1	2½	2 11⁄16	2½	⅞

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3F Condulet® Multi-Gang Cast Device Boxes

Accessories Pages 35 to 44

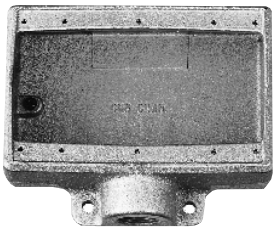
With and Without Mounting Lugs for Threaded Rigid and IMC Conduit



FSS & FDS

Two Gang

Size	Cat. #	Cat. #
¾	FSS222	FDS222



FS & FD

Three Gang

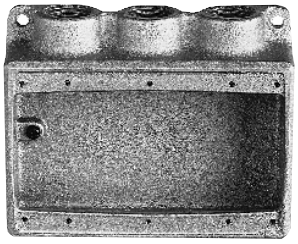
Size	Cat. #	Cat. #
¾	FS23	FD23
1	FS33	



FSD

Two Gang

Size	Cat. #
¾	FSD212*



FSS

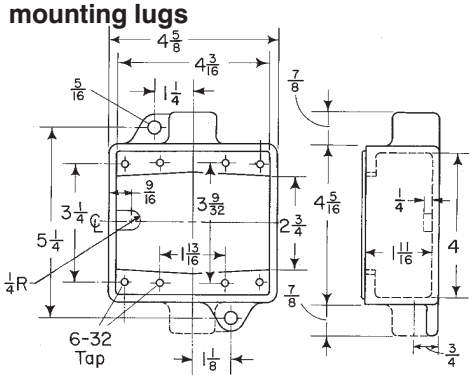
Three Gang

Size	Cat. #
¾	FSS23

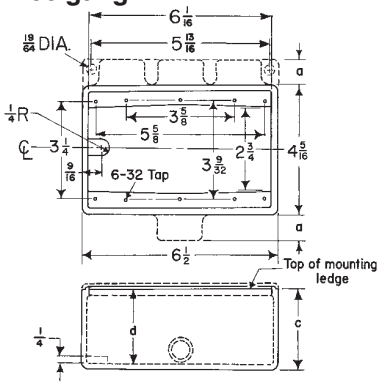
* Hubs on 2 hub side are ½".

Dimensions

Two gang with mounting lugs



Three gang



Three gang

Series	Hub Size	a	c	d
FS	¾	7/8	1 7/8	1 11/16
	1	1	1 7/8	1 11/16
FD	¾	7/8	2 11/16	2½

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Condulet® Cast Device Boxes

Blank Bodies With Mounting Lugs for Drilling and Tapping Single Gang, Multi-Gang, Tandem

Application:

- Blank cast device boxes are used:
- where several wiring devices are to be grouped together
- to assemble special combinations of wiring devices
- where special arrangements of conduit hubs or entrances are required

Features:

- Available in shallow (FS) or deep (FD) configurations.
- FS/FD bodies have thick walls for drilling and tapping conduit entrances.
- Internal green ground screw standard on boxes.
- Available in single, two, three, four and five gang and two gang tandem bodies.
- Cast mounting lugs at diagonally opposite corners.
- Wide selection of standard surface or flush covers listed on pages 35 to 44.

Standard Materials:

- *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint

Certifications and Compliances:

- UL Standard: 514A
- CSA Standard: C22.2 No. 18



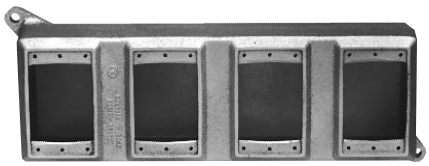
FS019
FD019
single gang



FS029
FD029
two gang



FS039, FD039 three gang



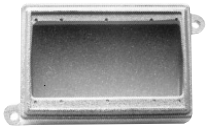
FD04 four gang



FD05 five gang



FS062
FD062
two gang



FS063
FD063
three gang



FS094
FD094
four gang



FS097
FD097
Two gang tandem

Ordering Information

Description	Shallow Cat. #	Deep Cat. #
Single gang	FS019	FD019*
Two gang	FS029	FD029*
Three gang	FS039	FD039*
Four gang		FD04
Five gang		FD05
Two gang (takes one two gang cover)	FS062	FD062
Three gang (takes one three gang cover)	FS063	FD063
Four gang (takes one four gang cover)	FS094	FD094
Two gang tandem	FS097	FD097

* Available in copper-free aluminum. To order add suffix SA to Cat. No.

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Ordering Information:

To order one of the blank bodies with drilled and tapped holes listed on page 31, proceed as follows:

Step 1
Select the required box.

Step 2
Select the arrangement that meets the requirements from Table 1.

Step 3
Determine the maximum size and spacing of conduit openings from Table 2.

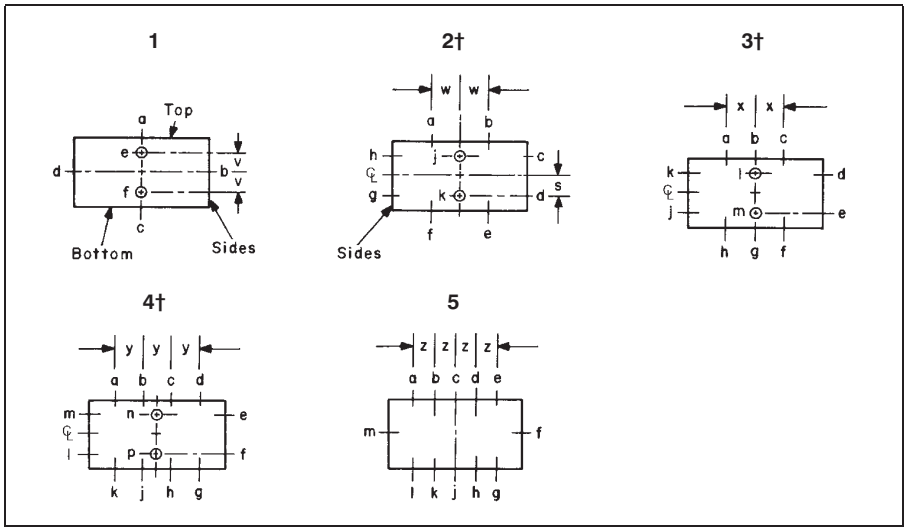
Step 4
Substitute the appropriate symbol from Table 4 for each conduit entrance, using ''0'' (zero) for those locations on arrangement where an entrance is not required.

Example:
Step 1 – box required FS062
Step 2 – arrangement 1
Step 3 – conduit entrances – ½″ at ''a'', none at ''b''; 1″ at ''c'' and ''d''; none at ''e'' and ''f''.
Step 4 – symbols are substituted and written in **alphabetical order starting with location ''a''.** For this example **A0CC00.**

Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit entrances. For this example:
FS062-1-A0CC00.

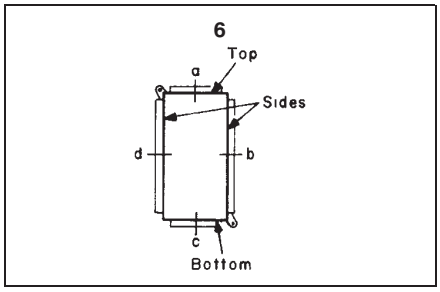
Table 1/Drilling and Tapping Arrangements*

Two, Three, Four and Five Gang

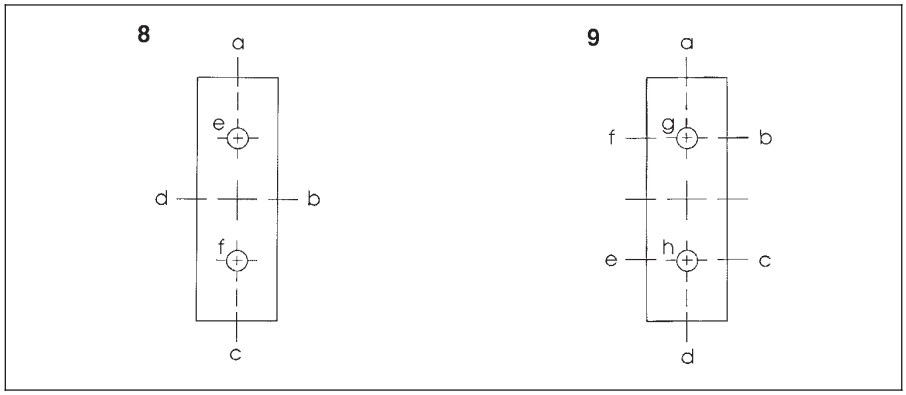


†If only one conduit entry is specified or permitted (see Table 2) on a side wall that conduit entry will be centered on the wall.

Single Gang Only (FS or FD019)



Two Gang Tandem (FS or FD097)



* Drilling and tapping arrangements other than those in Table 1 are available. Consult Cooper Crouse-Hinds.

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Table 2/Maximum Number, Size and Spacing of Conduit Openings

	Maximum Conduit Opening Size													
	Top and Bottom					Sides		Back	Spacings					
Cat. #	1	2	3	4	5	1	2	2	s	v	w	x	y	z
FS019	1					1								
FD019	1½					1½								
FS029	1	1	1	¾		1					1⅞	1⅞	1⁵⁄₁₆	
FD029	1½	1½	1	¾		1½					1⅞	1⅞	1⁵⁄₁₆	
FS039	1	1	1	1	1	1					3¾	3¾	2½	1⅞
FD039	1½	1½	1½	1½	1	1½					3¾	3¾	2½	1⅞
FD04	1½	1½	1½	1½		1½	1	1		1³⁄₁₆	1⅞	3¾	3¾	
FD05	1½	1½	1½	1½	1½	1½	1	1		1³⁄₁₆	3¾	3¾	3¾	3¾
FS062	1	1	¾			1	1	1		1¼	2⁹⁄₃₂	1⅝		
FD062	1½	1¼	¾			1½	1	1¼	1	1	1	1⅜		
FS063	1	1	1	¾		1	1	1		1¼	1¹³⁄₁₆	1¹³⁄₁₆	1⅝	
FD063	1½	1¼	1	¾		1½	1	1¼	1	1	1¹³⁄₁₆	2	1⁷⁄₁₆	
FS094	1	1	1	1	¾	1	1	1		1¼	1¹³⁄₁₆	1¹³⁄₁₆	1¹³⁄₁₆	1⅝
FD094	1½	1½	1½	1	¾	1½	1	1		1⅛	1½	2⅝	1¹³⁄₁₆	1⅝
FS097	1	½				1	1	1½		1⁵⁄₁₆	¾			
FD097	1½	1½				1½	1½	1½		1⁵⁄₁₆	¾			

Table 3/Distance From Mounting Surface to Centerline of Conduit Opening (“u”)

Cat. #	u
FS019	2⁹⁄₃₂
FD019	1⅜
FS029	2⁹⁄₃₂
FD029	1⅜
FS039	3¹⁄₃₂
FD039	1⅜
FD04	1⁹⁄₁₆
FD05	1⁹⁄₁₆
FS062	1⁵⁄₃₂
FD062	1⅝
FS063	1⁵⁄₃₂
FD063	1⅝
FS094	1⁵⁄₃₂
FD094	1⁹⁄₁₆
FS097	1⁵⁄₃₂
FD097	1⁹⁄₁₆

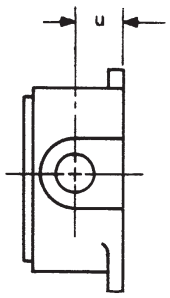


Table 4/Symbols for Openings

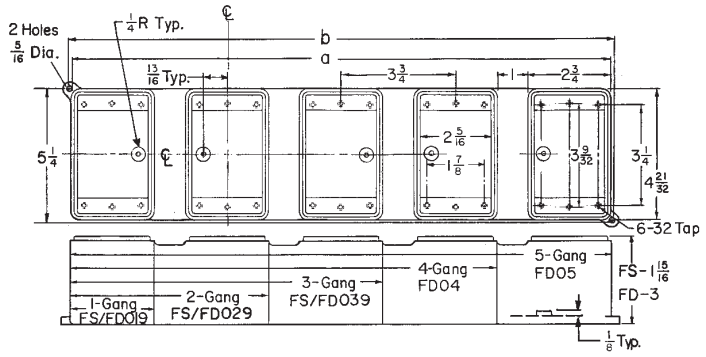
Conduit Size	Symbol
½	A
¾	B
1	C
1¼	E
1½	F
None	0

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3F Condulet® Cast Device Boxes

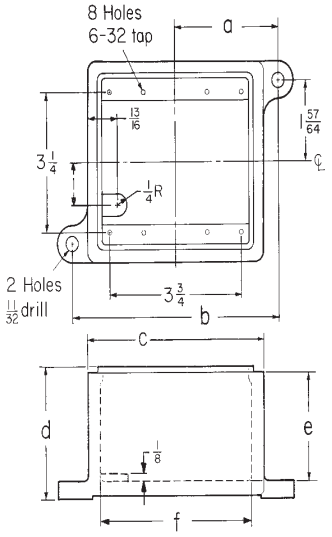
Blank Bodies for Drilling and Tapping
Single-Gang, Multi-Gang, Tandem

Dimensions



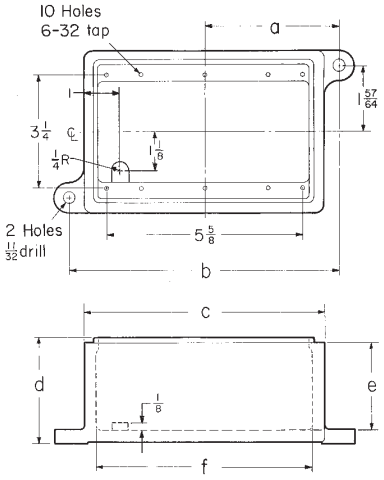
	a	b
FS/FD019	3¼	3¼
FS/FD029	7	7
FS/FD039	10¾	10¾
FD04	14⅜	15
FD05	18⅛	18¾

FS/FD062



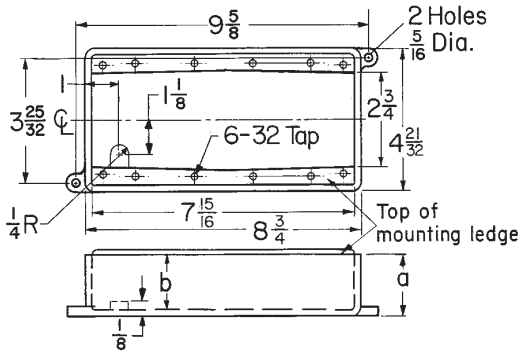
	a	b	c	d	e	f
FS062	2⅞	5¾	5	2³⁄₁₆	1½	4⅜
FD062	2¹⁵⁄₁₆	5⅞	5¹⁄₁₆	3¹⁄₁₆	2½	4⁵⁄₁₆

FS/FD063



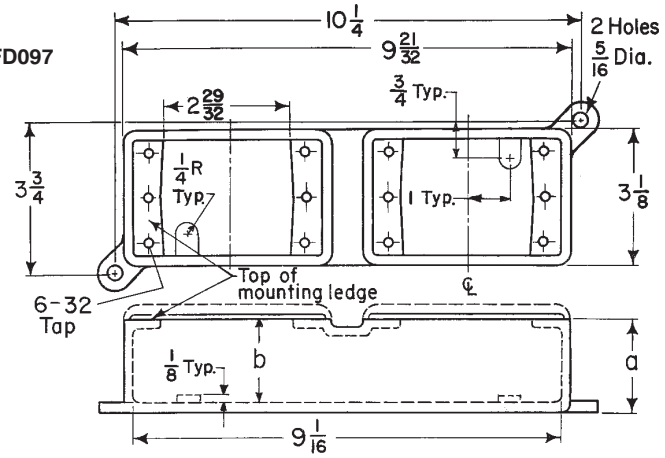
	a	b	c	d	e	f
FS063	3¹³⁄₁₆	7⅝	6⅞	2³⁄₁₆	1½	6¼
FD063	3⅞	7¼	7¹⁄₁₆	3¹⁄₃₂	2½	6³⁄₁₆

FS/FD094



	a	b
FS094	2³⁄₁₆	1⁴⁵⁄₆₄
FD094	3	2½

FS/FD097



	a	b
FS097	2¹⁄₃₂	1½
FD097	2²⁷⁄₃₂	2⁵⁄₁₆

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WLRS and WLRD Wet Location Covers

For NEMA Configuration Receptacle Interiors
For FS and FD Cast Device Boxes
Flush Device Boxes

Application:

WLRS and WLRD series wiring device covers are designed to meet the total NECode requirements for wet locations – Article 410-57:

''A receptacle installed in a wet location where the product intended to be plugged into it is not attended while in use shall have an enclosure that is weatherproof with the attachment plug cap inserted or removed.''

WLRS and WLRD series covers are suitable for use in wet and damp locations:

- wherever portable equipment is required
- as general purpose utility receptacle covers
- for industrial, commercial or residential use
- in areas where electrical requirements do not exceed medium duty ratings
- to mount FS and FD single-gang or multi-gang boxes having individual cover openings (see Sect. 3F for listings)
- to mount on most flush device boxes (see Accessories)

Features:

WLRS and WLRD covers:

- self closing spring door assures protection of wiring device at all times, in wet and damp locations
- one piece EPDM gasket provides environmental protection of wiring device at all times
- EPDM gasketing material offers excellent resistance to ozone, weather and temperature extremes of –50°F to 260°F
- die cast, copper-free aluminum construction with aluminum lacquer finish provides maximum corrosion resistance
- positive ground path ensured for all exposed metal parts

NEMA configuration receptacle interiors:

- comply with NEMA Standards WD-1 and WD-5
- grounded through an extra contact in all types except 3-phase applications; self grounded in duplex variety
- back and side wired
- offered in single and duplex configurations for use with standard plugs
- specification grade

Standard Materials:

- WLRS and WLRD face plate and cover – die cast copper-free aluminum
- Cover hinge spring – stainless steel
- Cover screws – corrosion resistant metal
- Gasket – ethylene propylene rubber (EPDM)

Standard Finishes:

- Copper-free aluminum – aluminum lacquer

Electrical Rating Ranges:

- 15 amperes; 125, 250, or 277 volts
- 20 and 30 amperes; 125, 250, 277, 480, 600, 125/250, 208/120, 480/277 or 600/347 volts

Accessories:

Flush mounting adapter – **WLRA-1** required for mounting on device boxes. (Order separately)

Certifications and Compliances:

- ANSI/UL Standard 514A
- NECode 410-57
- OSHA Standards, Subpart ''S''
- NEMA Standards WD-1, 1974 (Straight Blade) and WD-5, 1972 (Locking Type)



Typical installation

Spring Door Covers – with Gasket*

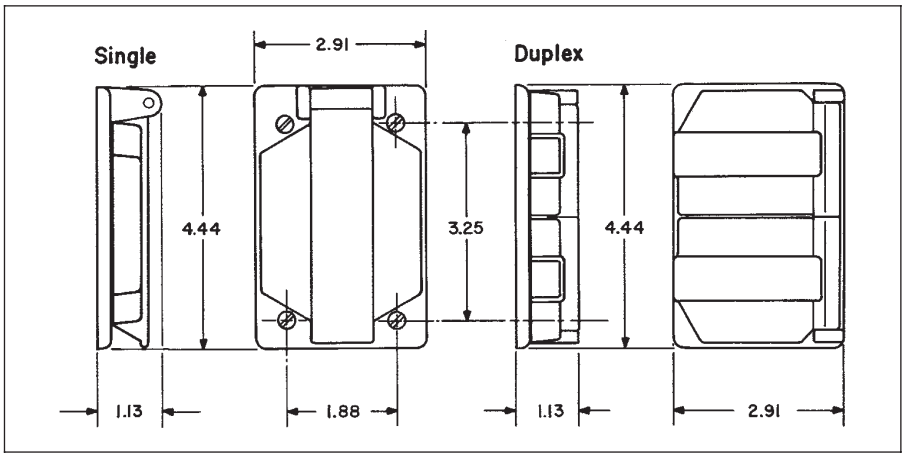




Description	Single cover	Diameter	Duplex cover	Diameter
Cat. #	WLRS-1	1⅜″	WLRD-1†	1⅜″
	WLRS-2	1½″		

* Patent Number 4,058,358

Dimensions



† Horizontal mount only.

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3F WLRS, WLRD and WLGF Wet Location Covers

Covers with and without NEMA Configuration Receptacles

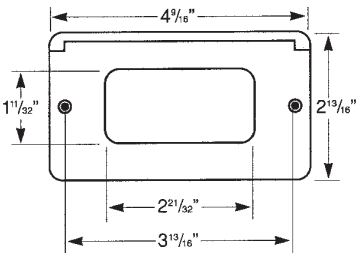
Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #‡
Single Device				
For Non-Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	5-15R	**WLRS-5-15**	**WLRS-1**
	250V	6-15R	**WLRS-6-15**	**WLRS-1**
2-Pole 3-Wire Grounding **20 Amp**	125V	5-20R	**WLRS-5-20**	**WLRS-1**
	250V	6-20R	**WLRS-6-20**	**WLRS-1**
For Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	L5-15R	**WLRS-L5-15**	**WLRS-1**
	250V	L6-15R	**WLRS-L6-15**	**WLRS-1**
2-Pole 3-Wire Grounding **20 Amp**	125V	L5-20R	**WLRS-L5-20**	**WLRS-2**
	250V	L6-20R	**WLRS-L6-20**	**WLRS-2**

Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #‡
Duplex Device				
For Non-Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	5-15R	**WLRD-5-15**	**WLRD-1**
	250V	6-15R	**WLRD-6-15**	**WLRD-1**
2-Pole 3-Wire Grounding **20 Amp**	125V	5-20R	**WLRD-5-20**	**WLRD-1**
	250V	6-20R	**WLRD-6-20**	**WLRD-1**
For Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	L5-15R	**WLRD-L5-15**	**WLRD-1**

Wet Location Covers for GFCI Duplex Receptacles

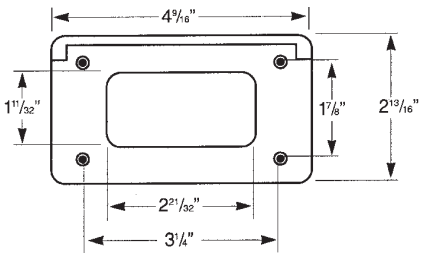


Cat. No.	Description
WLGF	**For Flush Device Boxes Spring Door Cover & Gasket Only Cat # WLFG**





Cat. No.	Description
WLGF-FS	**For FS and FD Cast Device Boxes Spring Door Cover & Gaset Only Cat. # WLGF-FS**



‡ Must be used with a wet locations rated wiring device.

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WP Plugs and DS Receptacles

For FS and FD Cast Device Boxes

Application:

WP plugs and DS receptacles are used:
- wherever dust, dirt, moisture and corrosion are a problem
- outdoors or in locations where frequent washdowns occur, as in dairies and food processing plants

Features:

DS receptacle housings are used:
- with FS and FD cast device boxes, either surface mounted or installed flush in a wall
- with single gang, two gang tandem and multiple gang boxes having individual cover openings
- a threaded cap which effectively seals housing when not in use

WP plugs include:
- a molded Neoprene hood with integral sleeve to seal the cord entrance
- an aluminum ring which clamps the hood to receptacle housing face, to complete watertight seal when plug is in use

Standard Materials:

- Receptacle housings: body – *Feraloy*® iron alloy cap – copper-free aluminum
- Plug exteriors: hood – Neoprene; fastening ring – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Neoprene – natural (black or yellow)

Electrical Rating Ranges:

- 15 amperes, 125 volts
- 20 amperes, 125, 250 volts

Certifications and Compliances:

- UL Standards: 498; 514A
- NEMA/EEMAC: WD-1; WD-5
- CSA Standard: C22.2 No. 42*



DS Receptacle housings



WP Plugs



CC Replacement receptacle

Grounding Type Receptacles

For Plugs with U shaped or Round Grounding Contacts

Rating	Cover With Recept. Cat. #	Diagram	Style	Plug Cat. #	Diagram	Cord Dia.	Repl. Recept. Cat. #
15 amps 125 volts	**DS96***	NEMA: 5-15R	2-wire, 3-pole†	**WP820**	NEMA: 5-15P	.500 to .625	**CC55**
20 amps, 125 volts	**DS222**	NEMA: 5-20R	2-wire, 3-pole†	**WP832**	NEMA: 5-20P	.500 to .625	**CC71**
20 amps, 250 volts	**DS290**	NEMA: 6-20R	2-wire, 3-pole†	**WP930**	NEMA: 6-20P	.500 to .625	**CC90**

NOTE: For listing of typical FS cast devices boxes, see pages 22 and 23

† Third pole grounded.

* Compliance.

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3F Covers

For FS and FD Condulet® Cast Device Boxes
Single Gang



Blank cover for enclosing splices and taps where device not used

Description	Material	Cat. #
Surface	Sheet aluminum	DS100
Flush	Sheet steel	DSS100



Blank cover with gasket for enclosing splices and taps where device not used

Description	Material	Cat. #
Surface or flush	Cast aluminum	DS100G



DS21 **DS21G**

For standard and 3-pole, 2-wire grounding type round flush receptacles. Opening diameter 1 7/16″.

Description	Material	Cat. #
Surface	Sheet steel	DS21
Surface	Sheet aluminum	DS21-SA
Surface or flush	*Feraloy*® iron alloy with gasket	DS21G



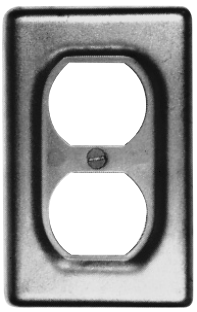
For GFI receptacles.

Description	Material	Cat. #
Surface	Sheet steel	DS23-GFI



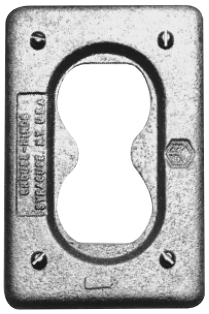
For flush plug receptacle requiring 1 5/8″ opening diameter.

Description	Material	Cat. #
Surface	Sheet steel	DS35



For duplex convenience receptacles.

Description	Material	Cat. #
Surface	Sheet steel	DS23
Surface	Sheet aluminum	DS23-SA
Flush	Sheet steel	DSS23



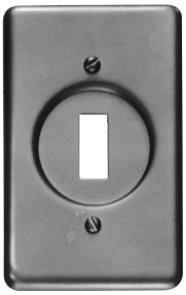
For standard and 3-pole, 2-wire grounding type duplex convenience receptacles. Gasket included.

Description	Material	Cat. #
Surface or flush	*Feraloy*® iron alloy	DS23G

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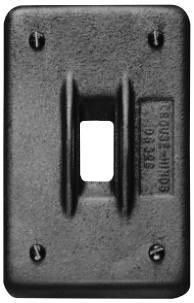
Covers

For FS and FD Condulet® Cast Device Boxes
Single Gang



For square handle general use snap or toggle switches – unguarded.

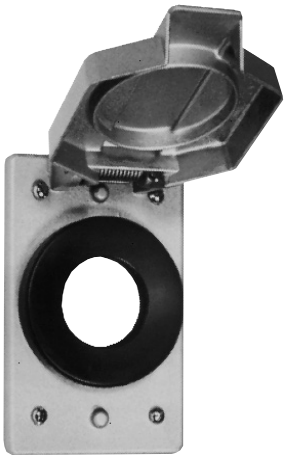
Description	Material	Cat. #
Surface	Sheet steel	DS32
Surface	Sheet aluminum	DS32-SA



For square handle general use snap or toggle switches – guarded.

Description	Material	Cat. #
Surface or flush	*Feraloy*® iron alloy with gasket	DS32G
Surface	Sheet steel	DS52

WLRS and WLRD Wet Locations Covers†
For NEMA Configuration Receptacles*



For single convenience receptacles

Spring door with gasket

WLRS-1 cover takes 15 and 20 ampere non-locking type and 15 ampere locking type receptacles*

WLRS-2 cover takes 20 ampere locking type receptacles*

Description	Material	Cat. #
Surface	Die cast aluminum	WLRS-1 WLRS-2

Use WLRA-1 adapter for mounting on flush device boxes



For duplex convenience receptacles*

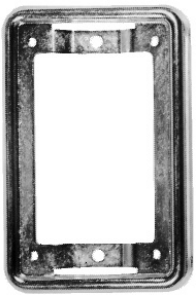
Spring doors with gasket

WLRD-1 cover takes 15 and 20 ampere non-locking type and 15 ampere locking type receptacles*

Description	Material	Cat. #
Surface	Die cast aluminum	WLRD-1

Use WLRA-1 adapter for mounting on flush device boxes.

Flush Device Adapter



Adapter plate for mounting WLRS/WLRD covers to flush device boxes.

Cat. #
WLRA-1

Also can be used to mount all covers with four corner screws listed on pages 35 to 42 to flush device boxes.

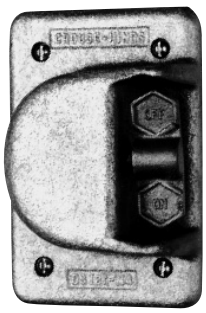
† Must be used with a wet locations rated wiring device.

* Refer to pages 37 and 38 for receptacle specifications and listings of complete receptacle/cover combinations.

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3F Raintight Covers (Gasket Included)

For FS and FD Condulet® Cast Device Boxes
Single Gang



For general use snap switches. Includes gasket.

Description	Material	Cat. #
For standard ON-OFF operation	Copper-free aluminum	DS181



For general use snap switches. Includes gasket.

Description	Material	Cat. #
For standard ON-OFF operation. With hole for lock	Die cast aluminum	DS185



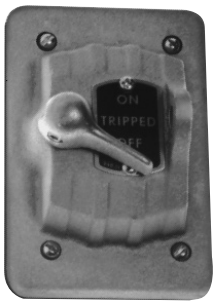
For general use snap switches. Includes gasket.

Description	Material	Cat. #
For standard operation. Marked ON-OFF handle	Cast aluminum	DS128

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Switches and Motor Control Push Button Covers

For FS and FD Condulet® Cast Device Boxes Single Gang



For manual motor starting switches. Fits FS and FD boxes. Takes Westinghouse switches MST01 (1-pole) and MST02 (2-pole). Includes gasket.

Description	Material	Cat. #
For standard ON-OFF operation	*Feraloy* iron alloy	DS199



Furnished with buttons for operating motor control push button switches. Includes gasket.

Push Buttons

Description	No.	Color	Material	Cat. #
Button (normally open) marked START	1	Green	*Feraloy* iron alloy	DS171F
Button (normally closed) marked STOP	1	Red	*Feraloy* iron alloy	DS171G
Button (normally open) marked START and button (normally closed) marked STOP	1 1	Green Red	*Feraloy* iron alloy	DS171

Description	No.	Color	Material	Cat. #
Two push button	2	Black	*Feraloy* iron alloy	DS171J

NOTE: Markings other than shown can be supplied.
Standard markings available are as follows:

HAND	CLOSE	OFF	AUTO.	UP	RUN
EMER.	DOWN	JOG	FORWARD	START	RESET
REVERSE	STOP	TRIP	OPEN	ON	TEST
LGT. ON					



Heavy duty motor control push button switch

No. of Buttons	Normal Positions		Cat. #
1	1 circuit universal		ED11
2	2 circuits universal		ED12

DS Covers use the switches shown in the list below.

Cover	Takes Switch	Cover	Takes Switch
DS171	ED12	DS171F	ED11
DS171G	ED11	DS266	ED12
DS265	ED11		

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3F Covers, Gaskets, Pilot Lights, Adapters

For FS and FD Condulet® Cast Device Boxes Single Gang



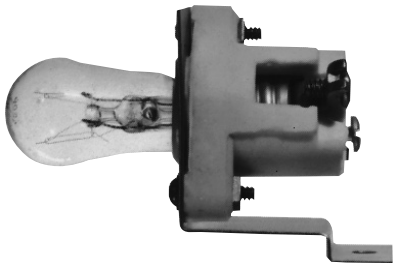
For pilot light units (furnished with jewels)

Description	Material	Jewel Color	Cat. #
Surface	Sheet steel	Red	DS24



For pilot light units (furnished with jewel and gasket).

Description	Material	Jewel Color	Cat. #
Surface or flush	*Feraloy* iron alloy	Red	DS24G



Pilot light unit (without transformer)

Circuit Voltage	Lamp Base	Watts	Cat. #
110	Candelabra	6	C3310



Pilot light (with transformer)†, FD only

Circuit Voltage	Lamp Base	Watts	Cat. #
440	Candelabra	6	C333



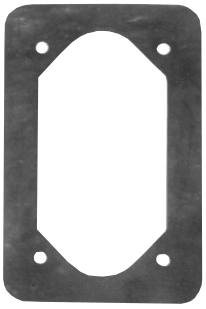
EXF Extensions (takes covers and flush rectangular wiring devices, or plug receptacles with housings)

Ext. Depth	Cat. #
1	EXF11
2½	EXF21



FS Flush mounting adapter (can be used with multi-gang bodies having individual cover openings. Furnished with gasket and screws)

Mtg. Style	Cat. #
Wall	FS031



Gaskets for use between device boxes and covers.

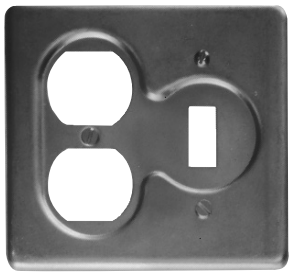
Material	Cat. #
Neoprene	GASK91‡

† Transformer 50-60 cycle, 440/110 volts.
‡ Not recommended as watertight.

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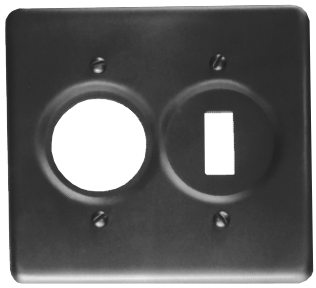
Covers

For FS and FD Condulet® Cast Device Boxes Two Gang



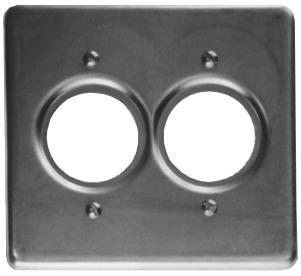
For flush general use snap switches with square handles

Description	Material	Cat. #
For standard duplex flush receptacles. Surface	Sheet steel	S32232



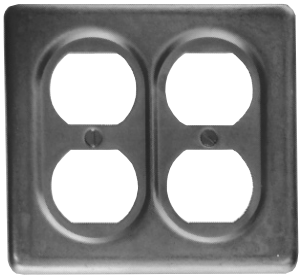
For flush general use snap switches with square handles

Description	Material	Cat. #
For round plug flush receptacles. Surface	Sheet steel	S32212



For standard and 2-wire, 3-pole grounding †

Description	Material	Cat. #
For round flush receptacles. Surface	Sheet steel	S212



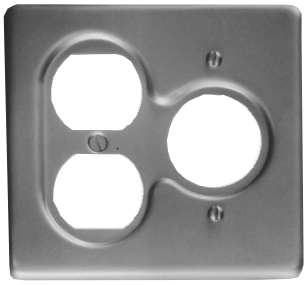
For duplex convenience receptacles, standard and 2-wire, 3-pole grounding

Description	Material	Cat. #
Surface	Sheet steel	S232



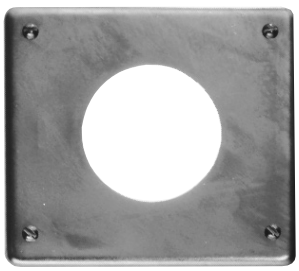
For GFI receptacles

Description	Material	Cat. #
Surface	Sheet steel	S232-GFI



For round flush receptacles, duplex convenience receptacles, standard and 2-wire, 3-pole grounding

Description	Material	Cat. #
Surface	Sheet steel	S21232



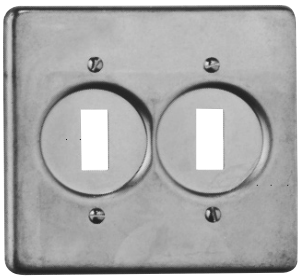
For 20 amp., 250 volt receptacles

Description	Material	Cat. #
2-pole,‡ Surface	Sheet steel	S612



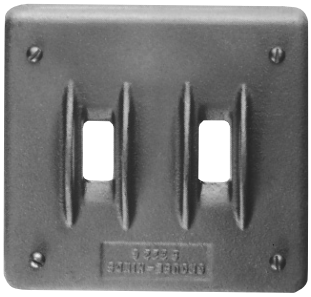
Blank. *Feraloy*® iron alloy

Description	Material	Cat. #
Surface	Sheet steel	S1002
Surface or flush	*Feraloy* iron alloy	S1002G*
Surface or flush	Copper-free aluminum	S1002G-SA



For flush general use snap switches with square handles

Description	Material	Cat. #
Surface	Sheet steel	S322



For flush general use snap switches with square handles

Description	Material	Cat. #
Surface or flush	*Feraloy* iron alloy	S322G

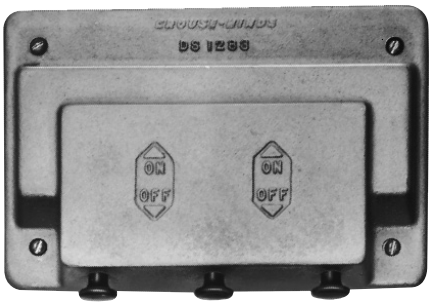
* Includes gasket.
★ Hole diameter 1.688″.
† Hole diameter 1.406″.
‡ Hole diameter 2 5/32″.

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With operating mechanism and gasket

Description	Material	Cat. #
Two gang. For operation of general use snap switches. Surface or flush	*Feraloy*® iron alloy	DS1282*

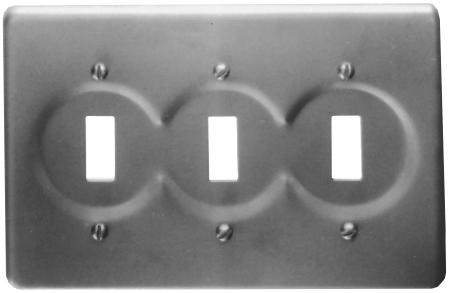


Description	Material	Cat. #
Three gang with gasket. For external operation of general use snap switches. Surface or flush. Includes gasket.	*Feraloy* iron alloy	DS1283*



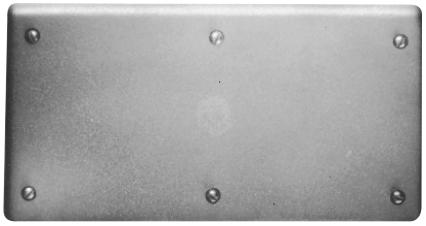
Blank.

Description	Material	Cat. #
Surface	Sheet steel	S1003
Surface or flush	*Feraloy* iron alloy	S1003G*
Surface or flush	Copper-free aluminum	S1003G-SA



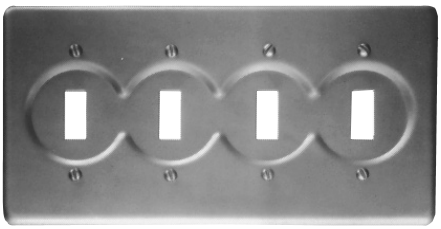
For flush general use snap switches with square handles

Description	Material	Cat. #
Surface, three gang	Sheet steel	S323



Blank. With gasket

Description	Material	Cat. #
Surface or flush	*Feraloy* iron alloy	S1004G



For flush general use snap switches with square handles

Description	Material	Cat. #
Surface, four gang†	Sheet steel	S324



Gasket for use between device box and cover

Description	Material	Cat. #
Two gang	Rubber	GASK434
Three gang	Rubber	GASK460
Four gang	Rubber	GASK461

† For FS094 and FD094 boxes.
* Includes gasket.

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FSE Receptacle and Breaker Assemblies

Application:

FSE series assemblies are used in outdoor areas for supplying power in remote locations, particularly parking lots, automobile engine block heaters, marinas, drive-in theatres, trailer camps etc.

Features:

- Compact design.
- Suitable for a variety of combinations.
- U ground duplex receptacle.
- Circuit breaker protection.
- Breakers cannot be manually tripped.

Size:

- 2″ integral hub for pole mounting.

Standard Materials:

- Body and cover – copper-free aluminum

Standard Finishes:

- Copper-free aluminum – natural

Electrical Ratings:

- 15A 120V

Certifications and Compliances:

- CSA Standard C22.2 No. 18



FSE 6121



FSE 612

Cat. #	Description
FSE 612	Double face receptacle body only
FSE 6121	Fitting complete with 1-15 amp. duplex receptacle and blank cover.
FSE 6122	Fitting complete with 2-15 amp. duplex receptacles.
FSE 61212	Fitting complete with 1-15 amp. duplex receptacle and two 1- pole Mini-breakers
FSE 61211	Fitting complete with 1-15 amp. duplex receptacle and one 1- pole Mini-breaker.
	Other combinations available on request.

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Notes Page

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Description	Page No.
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Conduit Bodies & Outlet Boxes	
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LBY	58
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OE	56
Round	
CPS	55
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Short Radius	
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4F Condulet® Conduit Bodies and Outlet Boxes

Application and Selection

Application:

Hazardous area conduit bodies and outlet boxes are installed in rigid conduit systems in Class I and II hazardous locations to:

- protect conductors
- act as pull and splice boxes
- connect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes
- act as mounting outlets for fixtures (with appropriate covers)
- act as sealing fittings (with appropriate covers)

Considerations for Selection:

- Determine the area classification per National Electrical Code Hazardous Area Groups. Based on this classification, select the product families that are acceptable for use in the particular location.
- Establish functional physical requirements – these will help to determine box size, cover, shape and mounting for the particular installation.
- Each product family has features suitable for specific functions:
  - i.e., boxes used as mountings for lighting fixtures are generally of a small size, and provided with mounting lugs when required to support lighting fixtures.
  - Boxes used for wire pulling should generally be larger to provide room for easy pulling.
  - Boxes used to splice and/or tap conductors should be large enough to permit ease of work and sufficient room for the required size and number of conductors.
  - Hub size and configuration – dependent on the conduit system configuration and the conduit size used.
- Material and finish – determine from environmental conditions (corrosive fumes, weather, buried in concrete, etc.)

Options and Accessories:

- Flat blank covers (surface and flanged flush), fixture support and sealing covers and extensions are available. See specific product listing for details.
- Lubricant (STL and HTL) are available to make joints raintight, provide for easy cover removal and to lubricate shafts over a wide temperature range.
- *Corro-free*™ epoxy powder coat – information available on request.

Quick Selector Chart

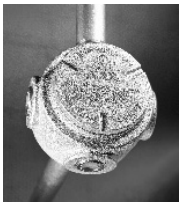
Series	NEC Class I & II Groups	Normal Function	Cover Opening Diameter	Hub Size†	Cover Type
GUA	C, D E, F, G	Mtg. ltg. fixt., taps, pulling, splicing	2-5	½-2	Threaded
EAJ	A, B, C, D E, F, G	Pulling, splicing, taps	3 3/16 & 5	½-2	Threaded
EAB	A, B, C, D E, F, G	Pulling, splicing, taps	3	½-1	Threaded
CPS	C, D E, F, G	Fixt. support, pulling, splicing	3½	½ & ¾	Ground joint
OE	C, D E, F, G	Pulling		½-1	Ground joint
ET	C, D E, F, G	Stub up		½-1	
LBY	C, D E, F, G	Pulling		½-1¼	Threaded
LBH	B, C, D E, F, G	Pulling		½-4	Ground joint
EKC	C, D E, F, G	Pulling		1-3	Ground joint
GUR	C, D E, F, G	Pulling, splicing		½-1	Threaded

† See following table for standard hub configuration.

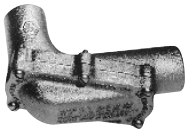
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Condulet® Conduit Bodies and Outlet Boxes

Standard Shape and Hub Selector

Shape		Hub Style										
SERIES	PAGE											
												
GUA	50-52	GUA	GUAB	GUAC	GUAD	GUAL	GUAM	GUAN	GUAT	GUAW	GUAX	
												
EAB	53			EABC		EABL			EABT		EABX	EABY
												
EAJ	54		EAJB	EAJC	EAJD	EAJL			EAJT		EAJX	
												
CPS	55											CPS
												
GUR	60											GUR
												
OE	56		OELB	OEC		OELL		OELR	OET			

The fittings below are available only in the configurations shown.



LBH **PAGE** 58



LBY **PAGE** 58



EKC **PAGE** 57



ET **PAGE** 58

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4F Condulet® Conduit Outlet Boxes

With Covers for Threaded Rigid and IMC

CI. I, Div. 1 & 2, Groups C,D
CI. II, Div. 1, Groups E,F,G
CI. II, Div. 2, Groups F,G
CI. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

GUA series conduit outlet boxes are installed within hazardous area conduit systems to:
- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- connect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes
- act as mounting outlets for fixtures (with appropriate covers)
- act as sealing fittings (with appropriate covers)

Features:

GUA conduit boxes have:
- Neoprene ''O'' ring standard to meet NEMA 4 requirements
- Cast ears on cover to permit easy removal and tightening
- Internal green ground screw
- Four standard mounting pads except for boxes with bottom hubs
- threaded cover openings
- ten different hub arrangements
- taper threaded hubs to provide grounding continuity
- smooth integral hub bushing protects conductor insulation when pulling
- surface covers furnished with boxes
- sealing covers, dome covers, and fixture hanger covers are available.
- cover threads are 12 pitch.

Standard Materials:

- Bodies – *Feraloy* iron alloy
- Covers – Copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Size Ranges:

- Hub – ½″ to 2″
- Cover opening – 2″ to 5″ dia.

Options:

Description	Suffix to be Added to Cat. #
Bodies – copper-free aluminum	SA †*
Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint	WOD
GUA Form 6 (with 3″ cover opening) are available with optional cover with viewing window.	-VW
Corro-free epoxy powder coat	S752

To order box less cover add ″0″ to end of catalog number ie.GUAT260.

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- ANSI Standard: C33.27
- CSA Standard: C22.2 No. 30
- NEMA/EEMAC 3,4

NOTE: When assembled with sealing type cover, GUA series outlet boxes provide adequate sealing for 40% fill in hazardous areas – Class I, Groups C,D; Class II, Groups E,F,G; and Class III. Seals can be made in either horizontal or vertical positions. Use *Chico*® ''A'' sealing compound or *Chico*® SpeedSeal only. Conductor splices or connections must not be made in enclosures where sealing compound is to be used per NEC.



GUA

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUA14
¾	2	GUA24
½	3	GUA16
¾	3	GUA26*
1	3	GUA36
1¼	3⅝	GUA47
1½	5	GUA59



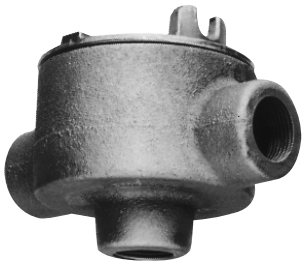
GUAC

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAC14†
¾	2	GUAC24†
½	3	GUAC16*
¾	3	GUAC26*
1	3	GUAC36*
1¼	3⅝	GUAC47†
1¼	5	GUAC49
1½	5	GUAC59†
2	5	GUAC69†



GUAB

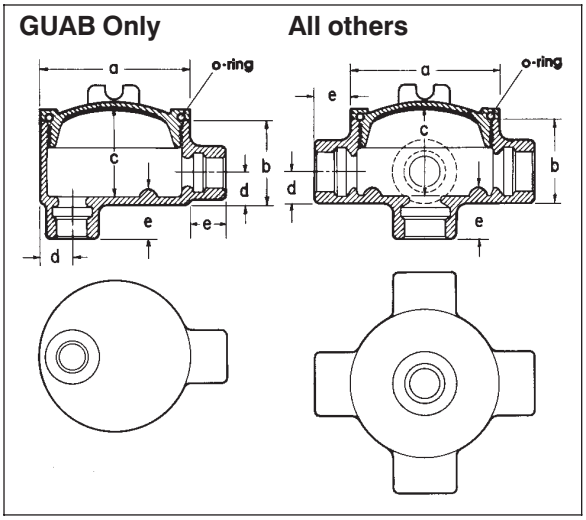
Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAB14†
¾	2	GUAB24
½	3	GUAB16*
¾	3	GUAB26*
1	3	GUAB36*
1¼	3⅝	GUAB47†
1½	5	GUAB59†
2	5	GUAB69†



GUAD

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAD14†
¾	2	GUAD24
½	3	GUAD16
¾	3	GUAD26†
1	3	GUAD36†
1¼	5	GUAD49

Dimensions



Length of Hub Hub Size	Dimension ''e'' Length
½-¾	⅞
1-1¼	1
1½-2	1 1/16

GUA, GUAD, GUAM, GUAW, GUAX

Cat. #	a	b	c	d
14	2½	1 13/16	1¾	⅝
24	2½	2	2	¾
16	3½	2	1⅞	⅝
26	3½	2	1⅞	¾
36	3½	2 5/16	2 3/16	⅞
37	4¼	2 5/16	2⅜	⅞
47	4¼	2 11/16	2¾	1 3/32
49	5¾	3 13/16	3¾	1 3/32
59	5¾	3 13/16	3¾	1 9/32
69	5¾	4 1/16	4	1 9/16

† Available in copper-free aluminum, add suffix -SA.

* Available in copper-free aluminum, add suffix -SA. GUA outlet boxes marked with * when ordered with suffix -SA are listed for Class I, Division 1 & 2, Groups B, C and D, Class II, Division 1, Groups E, F, G and Class III. Covers have 16 pitch threads. Replacement cover is a GUA06-GB.

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Condulet® Conduit Outlet Boxes

With Covers for Threaded Rigid and IMC

CI. I, Div. 1 & 2, Groups C,D
CI. II, Div. 1, Groups E,F,G
CI. II, Div. 2, Groups F,G
CI. III
NEMA 3,4,7CD,9EFG

Exposionproof
Dust-Ignitionproof
Raintight
Wet Locations



GUAL

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAL14†
¾	2	GUAL24†
½	3	GUAL16*
¾	3	GUAL26*
1	3	GUAL36*
1¼	3⅝	GUAL47†
1¼	5	GUAL49†
1½	5	GUAL59†
2	5	GUAL69†



GUAN

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAN14
¾	2	GUAN24
½	3	GUAN16
¾	3	GUAN26
1	3	GUAN36†
1¼	3⅝	GUAN47
1½	5	GUAN59†
2	5	GUAN69



GUAT

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAT14†
¾	2	GUAT24†
½	3	GUAT16*
¾	3	GUAT26*
1	3	GUAT36*
1	3⅝	GUAT37
1¼	3⅝	GUAT47†
1¼	5	GUAT49†
1½	5	GUAT59†
2	5	GUAT69†



GUAX

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAX14†
¾	2	GUAX24†
½	3	GUAX16*
¾	3	GUAX26*
1	3	GUAX36*
1	3⅝	GUAX37†
1¼	3⅝	GUAX47†
1¼	5	GUAX49
1½	5	GUAX59†
2	5	GUAX69†



GUAM

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAM14†
¾	2	GUAM24
½	3	GUAM16
¾	3	GUAM26
1	3	GUAM36
1¼	3⅝	GUAM47
2	5	GUAM69



GUAW

Hub Size	Cover Opening Dia.	Cat. #
½	2	GUAW14†
¾	2	GUAW24†
½	3	GUAW16
¾	3	GUAL26†

Dimensions

GUAC, GUAT

Cat. #	a	b	c	d
14	**2½**	**2¼**	**2³⁄₁₆**	**⅝**
24	**2½**	**2**	**2**	**¾**
16	**3½**	**2**	**1⅞**	**⅝**
26	**3½**	**2**	**1⅞**	**¾**
36	**3½**	**2⅝**	**2³⁄₁₆**	**⅞**
37	**4¼**	**2⅝**	**2⅜**	**⅞**
47	**4¼**	**2¹¹⁄₁₆**	**2¾**	**1³⁄₃₂**
49	**5¾**	**3¹³⁄₁₆**	**3¾**	**1⅝₃₂**
59	**5¾**	**3¹³⁄₁₆**	**3¾**	**1⁹⁄₃₂**
69	**5¾**	**4¹⁄₁₆**	**4**	**1⁹⁄₁₆**

GUAN

Cat. #	a	b	c	d
14	2½	2⅛	2¹⁄₁₆	⅝
24	2½	2⅝	2¼	¾
16	3½	2	1⅞	¾
26	3½	2	1⅞	¾
36	3½	2⅝	2⅜	⅞
47	4¼	2¹¹⁄₁₆	2¾	1³⁄₃₂
59	5¾	4¹⁄₁₆	4	1⁹⁄₃₂
69	5¾	4¹⁄₁₆	4	1⁹⁄₁₆

GUAB, GUAL

Cat. #	a	b	c	d
14	2½	2¼	2³⁄₁₆	⅝
24	2½	2½	2⁷⁄₁₆	¾
16	3½	2	1⅞	⅝
26	3½	2	1⅞	¾
36	3½	2⅝	2³⁄₁₆	⅞
47	4¼	2¹¹⁄₁₆	2¾	1³⁄₃₂
49	5¾	3¹³⁄₁₆	3¾	1⅝₃₂
59	5¾	3¹³⁄₁₆	3¾	1⁹⁄₃₂
69	5¾	4¹⁄₁₆	4	1⁹⁄₁₆

* Available in copper-free aluminum, add suffix -SA. GUA outlet boxes marked with * when ordered with suffix-SA are listed for Class I, Division 1&2, Groups B, C and D, Class II, Division 1, Groups E, F, G and Class III. Covers have 16 pitch threads. Replacement cover is a GUA06-GB.

† Available in copper-free aluminum, add suffix -SA.

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Application:

Threaded covers, canopies and extensions are used:
- to provide a seal in hazardous areas (sealing cover). See note at right
- to mount pendant lighting fixtures such as EVA listed in lighting section (fixture canopy)
- to mount EVA pendant lighting fixtures on cover which is then screwed into outlet box without twisting conductors (union hub cover)
- to mount pendant lighting fixtures on cover which is then screwed into outlet box as above, for wiring after fixture stem is installed (nipple cover)
- to provide means of increasing outlet box depth (threaded extension)

Features:

- Surface covers are supplied with GUA boxes
- Sealing cover has removable plug for filling enclosure with sealing compound after installation. Sealing cover meets 40% fill requirement of the NEC®. See note at right.
- Fixture canopy has a threaded cover in its side to provide access for making splices or taps. Fixture with its conduit stem and canopy can be assembled and wired before installation and conductors can be spliced in canopy after it has been screwed into the body
- Cover threads are 12 pitch.

Standard Materials:

- Surface and dome covers, union hub covers, nipple covers – copper-free aluminum
- Sealing covers, fixture canopies, threaded extensions – *Feraloy*® iron alloy

Standard Finishes:

- Aluminum – natural
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

Options:

- *Corro-free*™ epoxy powder coat – add suffix S752
- To order an iron surface cover, add suffix – WOD ie. GUA06 – WOD.

Size Ranges:

- Fixture stems – ¾″
- Body openings – 2″ to 5″

NOTE: Depth of sealing compound in body must satisfy requirements of NEC section 501-5 (C-3). Splices and taps in sealing fittings are prohibited by NEC.

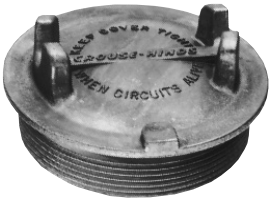


GUA Threaded Extension

Cover Opening Dia.	Ext. Depth	Cat. #
3	1¼	GUA0631

GUA

Cover Opening	Replacement O-Ring Gasket Cat. #
2″	GASK1713
3″	GASK1151
3⅝″	GASK1589
5″	GASK925



Surface Cover

Cover Opening Dia.	Thread Pitch	Cat. #
2	12	GUA04
3	12	GUA06
3	16	GUA06-GB*
3⅝	12	GUA07
5	12	GUA09



Dome Cover

Cover Opening Dia.	Ext. Depth	Thread Pitch	Cat. #
2	2	12	GUA047
3	2	12	GUA067
3⅝	2	12	GUA077
3⅝	4	12	GUA0716
5	4	12	GUA514
5	10	12	GUA5110



Sealing Cover

Cover Opening Dia.	Thread Pitch	Cat. #
2	12	GUA041
3	12	GUA062
3	16	GUA062-GB*
3⅝	12	GUA072†
5	12	GUA092



Nipple Cover

Cover Opening Dia.	Fixt. Stem Size	Thread Pitch	Cat. #
3	¾	12	GUA0672



Fixture Cover

Union Hub Type

Cover Opening Dia.	Fixt. Stem Size	Thread Pitch	Cat. #
3	¾	12	GUA0687



Fixture Canopy

Cover Opening Dia.	Fixt. Stem Size	Thread Pitch	Cat. #
3	¾	12	GUA068

† Also used with GUP bodies on page 138 or GU and GUE bodies on page 122.

* GUA covers with 16 pitch threads are used with GUA bodies ordered with -SA suffix identified with * symbol on pages 50 and 51.

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Condulet® Conduit Outlet Boxes With Covers

Cl. I, Div. 1 & 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7ABCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EAB series conduit outlet boxes are installed in conduit systems within hazardous areas to:
- provide protection against exterior explosion where acetylene, hydrogen and other hazardous gases are present
- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- interconnect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes

Features:

EAB series conduit outlet boxes have:
- five different hub configurations
- taper threaded hubs to provide ground continuity
- smooth integral hub bushing to protect conductor insulation when pulling
- threaded cover openings
- surface covers furnished with boxes
- Neoprene ''o''-ring gasket and green ground screw are both standard.
- Four standard mounting pads, except for EABY.
- Cover threads are 16 pitch.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Options:

Description	Suffix to be Added to Cat. #
Bodies – copper-free aluminum	SA†
Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint	WOD
Corro-free epoxy power coat	S752

Size Ranges:

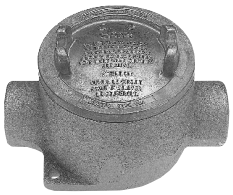
- Hub – ½″ to 1″
- Cover opening – 3″ dia.

Certifications and Compliances:

- NEC/CEC:

Class I, Division 1 & 2, Groups A,B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard: C22.2 No. 30



EABC

Hub Size	Cat. #
½	EABC16†
¾	EABC26†
1	EABC36†



EABL

Hub Size	Cat. #
½	EABL16†
¾	EABL26†
1	EABL36†



EABT

Hub Size	Cat. #
½	EABT16†
¾	EABT26†
1	EABT36†



EABX

Hub Size	Cat. #
½	EABX16†
¾	EABX26†
1	EABX36†



EABY

Hub Size	Cat. #
½	EABY16†
¾	EABY26†

Replacement Cover:

Size	Cat. #
3″	EAB06

Replacement O-Ring:

Cat. # GASK1151



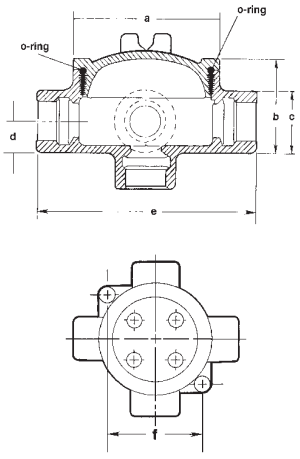
Fixture Cover:

Union Hub Type

Cover Opening Dia.	Fixt. Stem Size	Cat. #
3″	¾	EAB0687*

Dimensions

EAB Series



Cat. #	a	b	c	d	e	f
16	3¾	2 17/32	1½	¾	5 5/16	3 3/32
26	3¾	2 25/32	1¾	⅞	5 9/16	3 3/32
36	3¾	2 25/32	1¾	⅞	5 9/16	3 3/32

† Available in copper-free aluminum, add suffix -SA.

* EAB0687 is listed for Group C & D only.

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4F EAJ Condulet® Conduit Outlet Boxes With Covers

CI. I, Div. 1 & 2, Groups A‡,B,C,D Explosionproof
CI. II, Div. 1, Groups E,F,G Dust-Ignitionproof
CI. II, Div. 2, Groups F,G Raintight
CI. III Wet Locations
NEMA 3, 4, 7ABCD, 9EFG

Application:

EAJ series conduit outlet boxes are installed in conduit systems within hazardous areas to:
- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- interconnect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes

Features:

EAJ conduit outlet boxes have:
- water shedding cover – suitable for wet locations when mounted in upright position
- external cover threads on body protecting conductors from damage during pulling
- no pinching of conductors during cover installation
- six different hub arrangements
- taper threaded hubs to provide ground continuity
- smooth integral hub bushing to protect conductor insulation when pulling
- internally threaded cover openings for additional wiring room
- flat overlapping threaded covers furnished with boxes
- weather-resistant finish
- green ground screw standard in all boxes
- four standard mounting pads, except for EAJB and EAJD

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Size Ranges:

- Hub – ½″ to 2″
- Cover opening – 3³⁄₁₆″ to 5″ dia.

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups A‡,B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

Options:

Description	Suffix to be Added to Cat. #
Bodies – copper-free aluminum	SA†
Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint	WOD
Corro-free epoxy power coat	S752



EAJB

Cover Opening Dia.	Hub Size	Cat. #
3³⁄₁₆	½	EAJB16†
3³⁄₁₆	¾	EAJB26†
3³⁄₁₆	1	EAJB36†



EAJC

Cover Opening Dia.	Hub Size	Cat. #
3³⁄₁₆	½	EAJC16†
3³⁄₁₆	¾	EAJC26†
3³⁄₁₆	1	EAJC36†



EAJD

Cover Opening Dia.	Hub Size	Cat. #
3³⁄₁₆	½	EAJD16†
3³⁄₁₆	¾	EAJD26†
3³⁄₁₆	1	EAJD36†



EAJL

Cover Opening Dia.	Hub Size	Cat. #
3³⁄₁₆	½	EAJL16†
3³⁄₁₆	¾	EAJL26†
3³⁄₁₆	1	EAJL36†



EAJT

Cover Opening Dia.	Hub Size	Cat. #
3³⁄₁₆	½	EAJT16†
3³⁄₁₆	¾	EAJT26†
3³⁄₁₆	1	EAJT36†
5	1¼	EAJT49†‡
5	1½	EAJT59†‡
5	2	EAJT69†‡



EAJX

Cover Opening Dia.	Hub Size	Cat. #
3³⁄₁₆	½	EAJX16†
3³⁄₁₆	¾	EAJX26†
3³⁄₁₆	1	EAJX36†

EAJ Threaded Covers

Flat Covers

Cover Opening Diameter	Cat. #
3³⁄₁₆	EAJ06
5	EAJ09



Dome Covers

Cover Opening Dia.	Depth	Cat. #
3³⁄₁₆	2	EAJ0612



Fixture Covers Union Hub Type

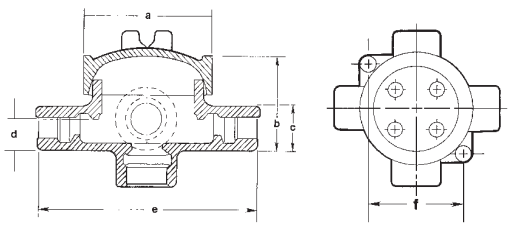
Cover Opening Dia.	Fixt. Stem Size	Cat. #
3³⁄₁₆	¾	EAJ0687*



† Available in copper-free aluminum, add suffix -SA.
‡ Form 9 products with 5″ cover opening are not suitable for Group A.

Dimensions

EAJ Series



Cat. #	a	b	c	d	e	f
16	3¾	2 17⁄32	1½	¾	5 5⁄16	3 3⁄32
26	3¾	2 25⁄32	1¾	⅞	5 9⁄16	3 3⁄32
36	3¾	2 25⁄32	1¾	⅞	5 9⁄16	3 3⁄32
49	5¾	4 1⁄16	2 3⁄16	1 3⁄32	7 5⁄16	4¾
59	5¾	4 1⁄16	3	1½	7 13⁄16	4¾
69	5¾	4 1⁄16	3	1½	7 13⁄16	4¾

* EAJ0687 is listed for Group C & D only.

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Application:

CPS series conduit outlet boxes are installed in conduit systems in hazardous areas to:

- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- change conduit direction
- interconnect lengths of conduit
- act as fixture hangers with hub covers
- provide access to conductors for maintenance and future system changes

Features:

CPS conduit outlet boxes have:

- two types of cover:
  - blank for splice or pull box use
  - threaded hub for mounting light fixtures
- wide, accurately machined body and cover mating surfaces, to insure flametight joint
- blind tapped holes for cover screws to further insure flametightness
- removable mounting feet for flush or surface mounting to wall or ceiling

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Options:

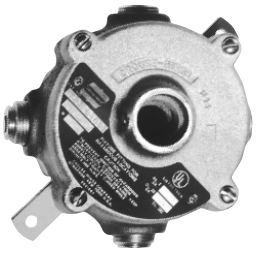
- *Corro-free*™ epoxy powder coat add suffix - S752

Certifications and Compliances:

- NEC/CEC:

Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard C22.2 No. 30



Box with Hub Cover

Hub Size		
Body‡	**Cover**	**Cat. #**
¾	½	CPS12021
¾	¾	CPS12022



Box with Blank Cover

Hub Size	Cat. #
¾	CPS12026

CPS Covers



Blank Covers

Description	Cat. #
Form 20	CPS026



Hub Covers*

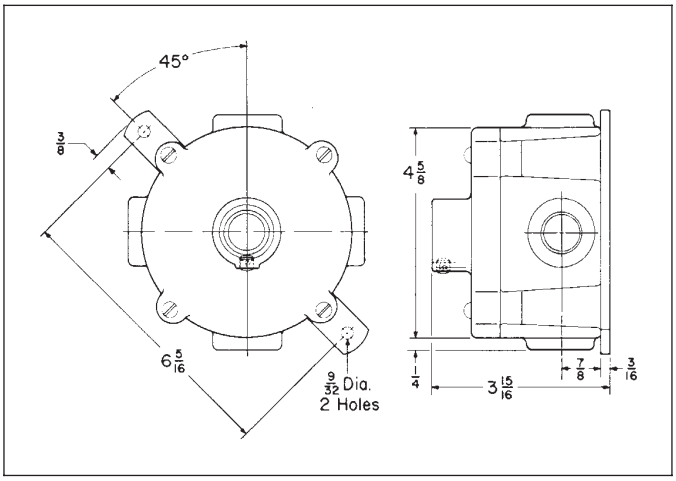
Description	Hub Size	Cat. #
Form 20	½	CPS021
Form 20	¾	CPS022

* Fixture weight up to 125 lbs.

Note: complete line of fixture hangers are located in section 8L of this catalog.

‡ Furnished with four ¾″ standard taper tapped, integrally bushed hubs. Three hubs are plugged.

Dimensions



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4F Condulet® Conduit Outlet Bodies With Covers

CI. I, Div. 1 & 2, Groups C,D
CI. II, Div. 1, Groups E,F,G
CI. II, Div. 2, Groups F,G
CI. III
NEMA 7CD,9EFG

Explosionproof
Dust-Ignitionproof

Application:

OE series are installed in conduit systems within hazardous areas to:
- protect conductors in threaded rigid conduit
- act as pulling and splice fittings
- interconnect lengths of conduit
- change direction of conduit
- provide access for maintenance and future system changes

Features:

OE conduit outlet bodies have:
- taper threaded hubs for ground continuity
- smooth integral hub bushings to protect conductor insulation when pulling
- five different hub arrangements
- accurately machined body with blind tapped screw holes
- most compact design of all hazardous area outlet bodies

Standard Materials:

- *Feraloy*® iron alloy (½″ and ¾″ fittings)
- Copper-free aluminum (1″ fittings)

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Options:

- *Corro-free*™ epoxy powder coat. . . . . add suffix - S752

Size Ranges:

- Hub – ½″ to 1″

Certifications and Compliances:

- NEC/CEC:

Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard: C22.2 No. 30



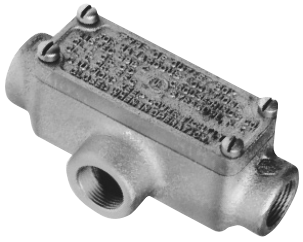
OEC

Hub Size	Cat. #
½	OEC1
¾	OEC2
1	OEC3-SA



OELL

Hub Size	Cat. #
½	OELL1
¾	OELL2
1	OELL3-SA



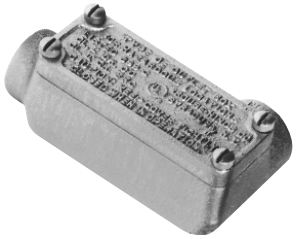
OET

Hub Size	Cat. #
½	OET1
¾	OET2
1	OET3-SA



OELB

Hub Size	Cat. #
½	OELB1
¾	OELB2
1	OELB3-SA

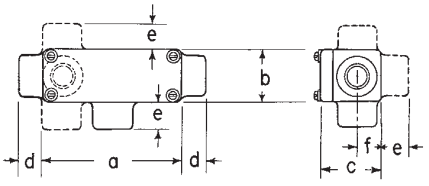


OELR

Hub Size	Cat. #
½	OELR1
¾	OELR2
1	OELR3-SA

Dimensions

OE Series



Hub Size	a	b	c	d	e	f
½	4 1/16	1 9/16	1 13/16	1 1/16	7/8	5/8
¾	4 5/16	1 7/8	2 1/16	1 1/16	7/8	3/4

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Application:

EKC series conduit outlet bodies are installed in conduit systems within hazardous areas to:
- provide convenient opening in conduit system for pulling or splicing conductors

Features:

EKC bodies have:
- accurately machined body and cover mating surfaces to ensure flametight joint when properly assembled
- extra long cover opening to facilitate pulling and splicing of conductors
- taper threaded hubs and integral bushing for rigid threaded conduit

Standard Materials:

- EKC bodies – *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint

Options:

- EKC series:
  Corro-free™ epoxy powder coat – . . . . . add suffix S752

Size Ranges:

- EKC bodies – hub size – 1″ to 3″

Certifications and Compliances:

- NEC:
  EKC 30 – 60
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
  EKC 70, 80
  Class I, Division 1 & 2, Group D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



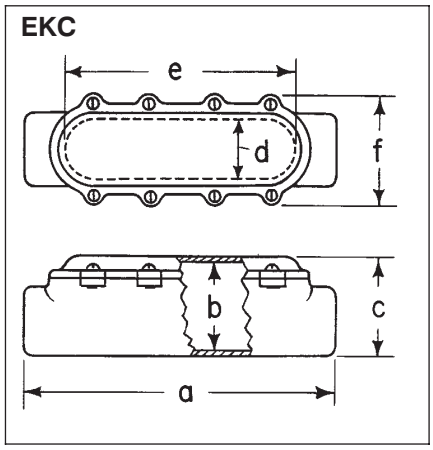
EKC

EKC Outlet Bodies

Hub Size	Cat. #
1	EKC30
1¼	EKC40
1½	EKC50
2	EKC60
2½	EKC70
3	EKC80

Dimensions

EKC



EKC

Size	a	b	c	d	e	f
1 – 1¼	12⅝	3 1/16	3 7/16	1¾	9	4
1½ – 2	**15 15/16**	**3⅞**	**4 5/16**	**2½**	**12**	**5**
2½ – 3	**21¾**	**5½**	**6**	**3¾**	**16**	**6⅝**

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4F Condulet® Conduit Outlet Bodies, Elbows and Tees

Cl. I, Div. 1 & 2, Groups A,B,C,D* Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 7ABCD,9EFG

Application:

LBH conduit outlet bodies are installed in hazardous areas to:
- act as pull outlets especially for conductors that are stiff due to large size or type of insulation
- make 90° bends in conduit system, allowing straight pull in either direction
- provide for conduit service entrance to buildings
- provide for conductor entrance to motors
- provide access to wiring for maintenance and future system changes

LBY elbows are installed in conduit systems within hazardous areas to:
- make 90° bends in conduit systems where space is limited
- act as pull outlets
- provide access to conductors for maintenance and future system changes

ET series short radius tees are installed in conduit systems within hazardous areas to:
- allow single conduit stub up to outlet and device boxes located above or below main conduit runs. Eliminates separate feed and return conduits

Features:

LBH bodies have:
- cover openings on an angle, permitting conductors to be pulled straight through hubs from either direction
- domed covers to permit easy conductor bends (relieves strain on insulation)
- taper threaded hubs with integral bushings

LBY elbows have:
- maximum volume for bends within a compact overall size
- screw on cover for ease of installation and removal
- cover opening on an angle, permitting conductors to be pulled straight through either hub
- taper threaded hubs and integral bushing for rigid threaded conduit

ET short radius tees have:
- compact size and small radius of bend for use in concealed, or open conduit systems. Particularly suited for use in shallow floors or partitions
- taper threaded hubs and integral bushing for rigid threaded conduit

‡ Largest hub is shown at top of photo.

Standard Materials:

- LBH, LBY and ET – *Feraloy*® iron alloy

Standard Finishes:

- LBH, LBY and ET – electrogalvanized and aluminum acrylic paint

Options:

Description	Suffix to be Added to Cat. #
LBH and LBY series – copper-free aluminum	SA
LBH and LBY series – *Corro-free*™ epoxy powder coat	add suffix S752

Size Ranges:

- LBH bodies – hub size ½″ to 4″
- LBY elbows – hub size ½″ to 1½

Certifications and Compliances:

- NEC:

LBH 10-20 –
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

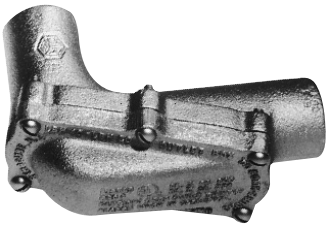
LBH 30-100
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

LBY –
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

ET –
Class I, Division 1 & 2, Groups A,B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard: C22.2 No. 30

* See Compliances for classification of each product.



LBH

Size	Cat. #
½	LBH10
¾	LBH20
1	LBH30
1¼	LBH40
1½	LBH50
2	LBH60
2½	LBH70
3	LBH80
3½	LBH90
4	LBH100



LBY

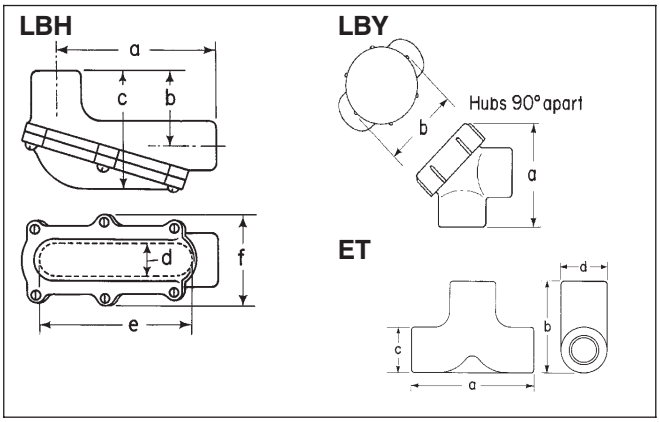
Size	Cat. #
½	LBY15
¾	LBY25
1	LBY35
1¼	LBY45
1½	LBY55



ET

Size	Cat. #
¾–½–½‡	ET218
¾–¾–¾‡	ET228
1–¾–¾‡	ET328

Dimensions



LBH

Size	a	b	c	d	e	f
½ – ¾	5 1/16	2 19/32	4	1 3/16	4	2¾
1 – 1¼	7⅞	3 13/32	5¼	1¾	7	4
1½	10 15/16	4½	7 3/32	2½	10	5
2	10 21/32	4 25/32	7 3/32	2½	10	5
2½ – 3	15⅝	5½	9½	3	15¾	5⅝
3½ – 4	23 9/16	6 11/16	11¾	4	24	7⅛

LBY

Size	a	b
½	2 9/16	2
¾	2 13/16	2¼
1	3 3/32	2½
1¼	3¾	2 15/16
1½	4¼	3⅜

ET

Size	a	b	c	d
¾–½–½	4	2⅝	1¼	1½
¾–¾–¾	4	3	1½	1½
1–¾–¾	4	3	1½	1¾

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Application:

- STL thread lubricant is used between any screw thread and its tapped opening, on any rotating shaft – threaded or plain, and to inhibit corrosion on any metal-to-metal joint of apparatus and control enclosures.
- HTL high temperature lubricant is used on lighting fixture threaded joints and on threaded joints of the enclosures of any heat-producing apparatus or control.

Features:

STL thread lubricant is lithium based, anti-galling and:

- is especially effective between parts made of dissimilar metals
- is effective and stable from –20°F to +300°F
- **maintains grounding continuity; should not be used on exposed current-carrying parts**
- has excellent adhesion qualities

A liberal application on threaded joints maintains raintightness and inhibits corrosion.

HTL is a high temperature, anti-seize, conductive thread lubricant:

- effective and stable from –70°F to +1800°F
- prevents seizure, galling, rust, galvanic action
- maintains grounding continuity; should not be used on exposed current-carrying parts
- effective between parts made of dissimilar metals







STL Thread Lubricant

Net Wt.	Cat. #
1¾ oz. (tube)	STL2
8 oz. (can)	STL8

HTL High Temperature Thread Lubricant

Net Wt.	Cat. #
4 oz. (tube)	HTL4

MSDS Sheets are available at www.crouse-hinds.com

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4F GUR Universal Outlet Box

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

GUR conduit outlet boxes are installed within hazardous areas:
- to protect conductors in threaded rigid conduit
- to act as pull and splice boxes
- to connect lengths of conduit
- to provide access to conductors for maintenance and future system changes
- to change conduit direction
- where space is limited, such as underneath gasoline pumps

Features:

GUR outlet boxes feature:
- neoprene O-ring standard in cover to meet NEMA 4/UL Type 4 requirements
- internal green ground screw
- five standard hubs with three pipe plugs included
- threaded cover opening
- recesses in cover to assist in cover tightening and removal
- smooth, integral hub bushing to protect conductor insulation when pulling
- compact design for confined spaces
- UL and cUL listing
- optional all-aluminum construction

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Aluminum – natural

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 and 2, Groups C and D
  Class II, Division 1, Groups E, F and G
  Class III
  Zone 1 and 2
- UL Standard 886
- cUL to CSA Standard C22.2 No. 30
- NEMA 4

Options:

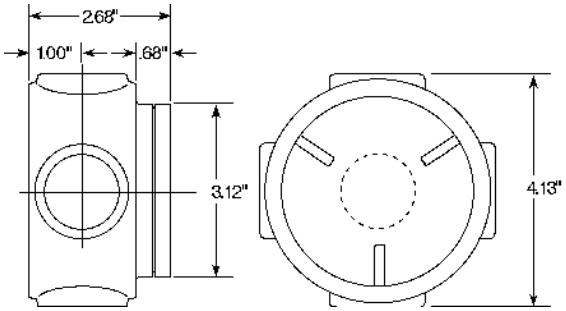
- Bodies – copper-free aluminum (add suffix -SA)

Ordering Information

Hub Size	Cat. #
½″	GUR1
¾″	GUR2
1″	GUR3



Dimensions



US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

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5F Cable and Cord Fittings

Application and Selection

Application:

Cord and cable fittings are installed to:
- provide means for passing a cord, cable (armored or unarmored) or flexible conduit into an enclosure, through a bulkhead or into a rigid conduit
- form a mechanical grip and water and/or oil resistant seal for cord and unarmored or jacketed armored, round cables
- form a non-slip connection or termination for flexible cord, cable (armored or unarmored), or flexible conduit
- provide grounding continuity for cable armor and flexible conduit

Cable fittings with sealing fitting or epoxy are installed to:
- provide means for passing armored, metal clad, jacketed or unjacketed and unarmored cables through a bulkhead or enclosure in hazardous areas. These fittings are suitable for use in Class I, Groups C, D, locations only when *Chico*® *A* sealing compound or TSC epoxy (TMCX) is used to make the seal in the fitting.*
- form a mechanical grip and water and/or oil-resistant termination
- provide ground continuity of cable armor and flexible conduit

TMC (non-hazardous) and TMCX (hazardous) fittings are designed for use with Type MC jacketed steel or aluminum metal clad cables with interlocked or corrugated armor and Type TC tray cable (TMCX).

LCC cable tray conduit clamps are used for installation on cable tray side rails with inside flanges (requiring inside tray mounting) and outside flanges; LCCF clamps are for use exclusively on inside flanges. LCC/LCCF series cable tray conduit clamps are installed to:
- provide a means of clamping metal conduit (rigid steel or aluminum, IMC and EMT) to cable tray for the exit of power and/or control cables from tray
- provide a means to firmly bond exiting conduit to cable tray for best grounding continuity

TW series THRU-WALL BARRIER® cable/conduit sealing devices are installed to:
- seal cables or conduits penetrating fire-rated walls, ceilings or floors
- restrict entrance of water and dust and contain treated air
- provide a seal for cable/conduit penetrations through steel, masonry or concrete; to restrict the entrance of contaminants through cable/conduit penetrations into clean areas

TGC cable tray grounding conductor clamp provides a means for securely attaching a grounding conductor to cable tray to provide grounding continuity for the entire tray system. TGC cable tray grounding conductor clamps provide a reliable method for carrying ground fault current for equipment protection. TGC clamp may be installed on most types of cable trays – with inside or outside flanges.

Considerations for Selection:

- Selection of the proper device or fitting involves consideration of the type of cable to be installed and the environment that will surround the cable after installation.
- A proper matching of the cable and its fitting is necessary to prevent physical damage to the cable when installed. Some types of cable fittings depend on gripping methods (set screws etc.) which may lead to damage of the cable outer covering. Cooper Crouse-Hinds cord and cable fittings utilize compression of split lead or tapered neoprene bushings to provide high gripping strength for adequate cable support and strain relief without damage to the cable sheath.
- Compression of bushing provides a strong electrical bond that assures grounding continuity.
- Compression of a tapered neoprene bushing, assures the watertight integrity of Cooper Crouse-Hinds fittings. Additional watertightness, to prevent water seepage into the fitting body, can be obtained by use of a potting head filled with a hot pouring compound.
- To meet National Electrical Code requirements for electrical installations in hazardous atmospheres, a sealing fitting may be required in conjunction with the cable or cord fitting.

Standard Materials:

- Cord and cable fittings ½″ through 1″ bodies and gland nuts – steel; larger sizes – *Feraloy*® iron alloy
- TMC/TMCX – copper free aluminum
- LCC/LCCF series bodies – cast malleable iron; hook, set screws and clamping nut – steel
- TW series frames and compression plates – cast malleable iron; sealing material – special elastomeric compound; clamping hardware – steel
- TGC clamp body – cast malleable iron; set screw and clamping screw – steel

Standard Finishes:

- *Feraloy* iron alloy, cast iron and cast malleable iron materials – electrogalvanized and aluminum acrylic paint
- Steel bodies and nuts – electrogalvanized and chromate treatment
- Steel hardware – electrogalvanized

Accessories:

CGB series:
- SG sealing gaskets – for use with locknuts to provide a watertight seal in slip holes of sheet metal structures and boxes

CGS series:
- Sealing compounds – for use in making field cable seals in hazardous locations

CGB, CGK, CGD and CGE series:
- Wire mesh grips – for strain relief of unarmored cable and portable cord

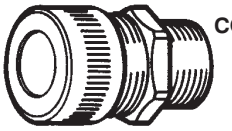
* With specific cords and cables when installed in accordance with NEC/CEC requirements.

† Registered trademark of E.I. DuPont de Nemours Company.

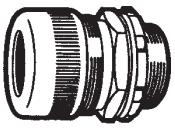
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Cable and Cord Fittings

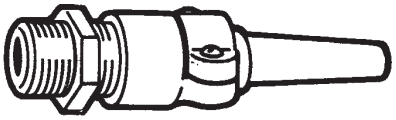
Quick Selector Chart



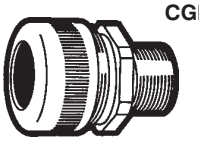
CGB/pg. 64



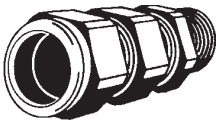
CGB-SG/pg. 68



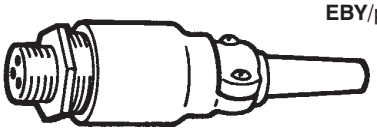
CGB 1013/pg. 72



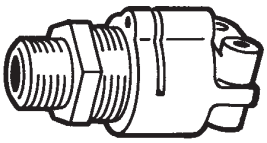
CGFP/pg. 73



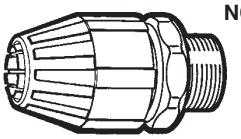
TMC/**TMCX**/pg. 74



EBY/pg. 97



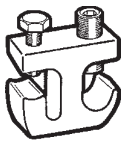
CGBS/pg. 98

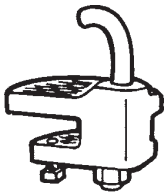


NCG/pg. 67

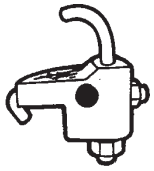
Series	Cable Type	Environment
CGB, CGD, CGE with neoprene bushing; CGB-SG	Portable cords and types MV (unarmored), PLTC, SE (round), TC and UF cables	Class I, Div. 2; dry or wet
CGB1013 series	Portable cord	Class I, Div. 2; dry or wet
CGFP	Portable cord and types MV, CLTC, SE (round), TC and UF jacketed unarmored cables	Class I, Div. 2; dry or wet
TMC/**TMCX**	Type MC jacketed steel or aluminum metal clad cables with interlocked or corrugated armor and Type TC tray cable (TMCX)	Non-hazardous, Class I, Div.; dry or wet
EBY	Portable cord	Class I, Groups B, C & D; Class II, Group G; dry
CGBS	Portable cord and types MV (unarmored), PLTC, SE (round), TC and UF cables	Class I, Groups C & D; Class II, Group G; Class III; wet
NCG	Type SO portable cords	Dry or wet
LCC/**LCCF**	Conduit only, to exit cables out of cable tray	Dry or wet
TGC	Grounding conductor to provide cable tray grounding continuity	Dry or wet
Thru Wall	Cable/conduit sealing device	Dry or wet
TECK	Teck cable	Class II, Groups E, F, G; dry or wet
TWDC	Steel wire armour lead sheath	EEx d IIC/EEx e II; dry or wet
TBDC	Steel wire braid	EEx d IIC/EEx e II; dry or wet
TAB/**TAS**	Steel wire armour, braided or steel tape	EEx d IIC/EEx e II; dry or wet
TACFB/**TACFS**	Steel wire armour, braided or steel tape	EEx d IIC/EEx e II; dry or wet
TUCFB/**TUCFS**	Unarmoured	EEx d IIC/EEx e II; dry or wet
TCCF	Conduit	EEx d IIC/EEx e II; dry or wet
TUSC	Unarmoured or braided	EEx d IIC/EEx e II; dry or wet
CAPRI	Steel wire armour, braided or steel tape	EEx d IIB/EEx e II; dry or wet
LSA	Conduit sealing system	Wet, corrosive, fire rated

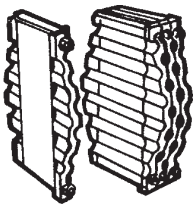
TGC/pg. 100





LCC/**LCCF**/pg. 99





TWB/pg. 101

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5F Cord and Cable Fittings

Straight Body Male Thread
Sizes 3/8″ – 3″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Wet Locations

Application:

CGB, CGD and CGE cord and cable fittings with neoprene bushing are for use with portable cords and Types MV (unarmored), PLTC, SE (round), TC and UF cables. CGB, CGD and CGE cord and cable fittings are installed to:

- provide means for passing a cord, cable (unarmored) or flexible conduit into an enclosure, through a bulkhead or into a rigid conduit
- form an environmental seal for cord or unarmored round cables
- form a secure connection or termination for flexible cord, cable (unarmored), or flexible conduit

Features:

- Rugged construction protects cord and cable from damage.
- Compact, permitting close grouping of several cords and/or cables
- Tightening one nut makes watertight seal
- Large range of NPT sizes for use with any conduit system
- Available for straight, 45° or 90° entrance
- Many combinations of gland nuts and bushings can be used to make up connectors, provided parts of the same form are used together

Standard Materials:

- CGB series – Form A through Form D bodies and gland nuts – steel. Form E & F bodies and gland nuts – *Feraloy*® iron alloy
- CGD & CGE series – all bodies are *Feraloy* iron alloy. Form A through Form D gland nuts – steel. Form E & F gland nuts – *Feraloy* iron alloy.
- Bushing – neoprene

Standard Finishes:

- Steel – zinc electroplate with chromate finish coat
- *Feraloy* – electrogalvanized and aluminum acrylic paint

Size Ranges:

- Cable O.D. – .125″ to 2.500″
- NPT thread – ⅜″ to 3 ″

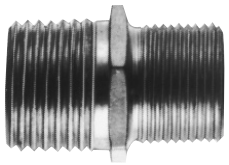
Certifications and Compliances:

- UL Standard: 514B
- NEC: Class I, Division 2*; Class II, Class III
- Wet locations
- CSA Standard: C22.2 No. 18, 25
- CEC: Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G; Class III

Complete with gland nut and Neoprene bushing



Body only



Neoprene bushing



CGB With Gland Nut and Tapered Neoprene Bushing‡

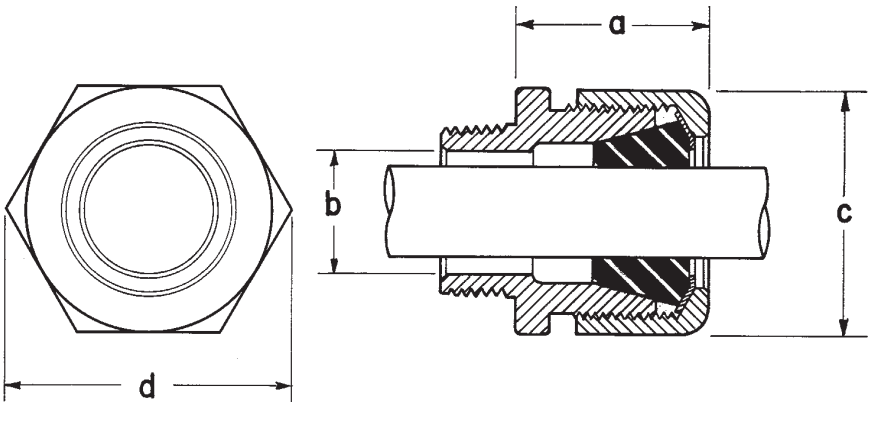
Male Thread NPT Trade Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #
⅜	A	.125 to .250	.469	CGB3814	CGB:17123B	BUSH214
⅜	A	.250 to .375	.469	CGB3816	CGB:17123B	BUSH216
⅜	A	.375 to .437	.469	CGB3817	CGB:17123B	BUSH217
⅜	B	.125 to .250	.500	CGB3892	CGB:4315A	BUSH92
⅜	B	.250 to .375	.500	CGB3893	CGB:4315A	BUSH93
⅜	B	.375 to .500†	.500	CGB3894	CGB:4315A	BUSH94
½	A	.125 to .250	.469	CGB114§	CGB:17122B	BUSH214
½	A	.250 to .375	.469	CGB116§	CGB:17122B	BUSH216
½	A	.375 to .437	.469	CGB117§	CGB:17122B	BUSH217
½	B	.125 to .250	.625	CGB192§	CGB:0104355	BUSH92
½	B	.250 to .375	.625	CGB193§	CGB:0104355	BUSH93
½	B	.375 to .500	.625	CGB194§	CGB:0104355	BUSH94
½	B	.500 to .625	.625	CGB195§	CGB:0104355	BUSH05
½	C	.625 to .750†	.625	CGB196§	CGB:1702A	BUSH96
½	C	.750 to .875†	.625	CGB197§	CGB:1702A	BUSH97
¾	B	.125 to .250	.688	CGB292§	CGB:0104438§	BUSH92
¾	B	.250 to .375	.688	CGB293§	CGB:0104438§	BUSH93
¾	B	.375 to .500	.688	CGB294§	CGB:0104438§	BUSH94
¾	B	.500 to .625	.688	CGB295§	CGB:0104438§	BUSH05
¾	C	.625 to .750†	.750	CGB296§	CGB:4318A	BUSH96
¾	C	.750 to .875†	.750	CGB297§	CGB:4318A	BUSH97
¾	D	.875 to 1.000†	.813	CGB298§	CGB:4320A	BUSH98

Continued on page 65.

Dimensions (see next page)

* §†‡ ♦ For description of symbols, see page 65.

CGB Series



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Cord and Cable Fittings

Straight Body Male Thread
Sizes 3/8″ – 3″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, DIV. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations

Gland nut



Wire mesh grip



Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
NUT217	
NUT217	
NUT217	
NUT94	
NUT94	
NUT94	RPE417-115
NUT217	
NUT217	
NUT217	
NUT94	
NUT94	
NUT94	RPE417-115
NUT94	RPE417-116
NUT95	RPE417-117
NUT95	RPE421-119
NUT94	
NUT94	
NUT94	RPE417-115
NUT94	RPE417-116
NUT95	RPE417-117
NUT95	RPE421-119
NUT98	16676N

Dimensions (see previous page for line art)

CGB assembly

Thread Size	Form	a	b	c	d
3/8	A	1 1/16	15/32	7/8	7/8
3/8	B	1 5/16	1/2	1 3/16	1 3/16
1/2	A	1	15/32	7/8	1 3/16
1/2	B	1 5/16	5/8	1 3/16	1 9/32
1/2	C	1 3/4	5/8	1 5/8	1 21/32
3/4	B	1 3/8	1 1/16	1 3/16	1 13/32
3/4	C	1 3/4	3/4	1 5/8	1 1/4
3/4	D	2 1/2	1 3/16	2 1/4	2 1/8
1	B	1 3/8	1 1/16	1 3/16	1 5/8
1	C	1 11/16	31/32	1 5/8	1 7/8
1	D	2 3/8	1 1/32	2 1/4	2 3/8
1 1/4	D	2 5/16	1 1/4	2 1/4	2 1/4
1 1/4	E	2 5/8	1 1/4	3 1/8	3
1 1/2	D	2 5/16	1 7/16	2 1/4	2 1/4
1 1/2	E	2 5/8	1 7/16	3 1/8	3
2	E	2 5/8	1 29/32	3 1/8	3
2	F	2 9/16	1 7/8	3 7/8	3 3/4
2 1/2	E	2 5/8	2 1/16	3 1/8	3 1/8
2 1/2	F	2 5/8	2 5/16	3 7/8	3 3/4
3	F	2 5/8	2 3/4	3 7/8	3 3/4

PORTABLE CORD SELECTION CHART**

2 conductors	Cord Type	SV0, SV, SVT	SJ, SJ0 SJT, SJT0			S, S0, ST, ST0															
	Cord Size	#18	#18	#16	#14	#18	#16	#14	#12	#10	#8	#6	#4	#3	#2	#1	#1/0	#2/0	#3/0	#4/0	#250
	Cord Diameter, prox.	.250	.305	.330	.365	.380	.400	.540	.615	.675	.810	.940	1.080	1.170	1.270	1.440	1.520	1.650	1.770	1.920	2.160

3 conductors	Cord Type	SV0, SV, SVT	SJ, SJ0 SJT, SJT0			S, S0, ST, ST0															
	Cord Size	#18	#18	#16	#14	#18	#16	#14	#12	#10	#8	#6	#4	#3	#2	#1	#1/0	#2/0	#3/0	#4/0	#250
	Cord Diameter, prox.	.255	.325	.350	.385	.390	.420	.565	.645	.710	.850	1.000	1.070	1.240	1.340	1.510	1.650	1.750	1.800	2.070	2.390

4 conductors	Cord Type	CORD TYPE SJ, SJ0, SJT, SJT0			S, S0, ST, ST0														
	Cord Size	#18	#16	#14	#18	#16	#14	#12	#10	#8	#6	#4	#3	#2	#1	#1/0	#2/0	#3/0	#4/0
	Cord Diameter, prox.	.355	.385	.425	.420	.450	.610	.700	.765	.970	1.100	1.270	1.340	1.480	1.580	1.790	1.930	2.070	2.260

5 conductors	Cord Type	CORD TYPE S, S0, ST, ST0						
	Cord Size	#18	#16	#14	#12	#10	#8	#6
	Cord Diameter, prox.	.500	.540	.695	.760	.830	1.060	1.180

** Cable diameters are approximate and may vary depending on the manufacturer. Check cord/cable manufacturer for actual diameters.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings providing all parts are of the same form.

♦ Order wire mesh grip separately.

§ Available in copper-free aluminum. To order, add suffix SA to Cat. No.

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

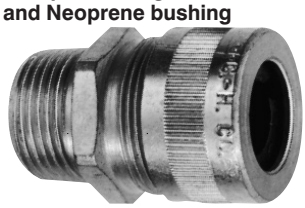
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5F Cord and Cable Fittings

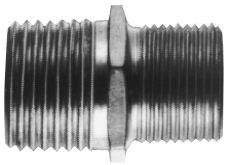
Straight Body Male Thread
Sizes 3/8″ – 3″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations

Complete with gland nut and Neoprene bushing



Body only



Neoprene bushing



Gland nut



Wire mesh grip



CGB With Gland Nut and Tapered Neoprene Bushing‡

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #	Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
1	B	.250 to .375	.688	CGB393§	CGB:19478A	BUSH93	NUT94	
1	B	.375 to .500	.688	CGB394§	CGB:19478A	BUSH94	NUT94	RPE417-115
1	C	.500 to .625	.969	CGB395§	CGB:4319A	BUSH95	NUT95	RPE417-129
1	C	.625 to .750	.969	CGB396§	CGB:4319A	BUSH96	NUT95	RPE417-117
1	C	.750 to .875	.969	CGB397§	CGB:4319A	BUSH97	NUT95	RPE421-119
1	C	.875 to 1.000†	.969	CGB3239§	CGB:4319A	BUSH239	NUT95	RPE421-120
1	D	.875 to 1.000†	1.031	CGB398§	CGB:4321A	BUSH98	NUT98	16676N
1	D	1.000 to 1.188†	1.031	CGB399§	CGB:4321A	BUSH99	NUT98	RPE421-121
1	D	1.188 to 1.375†	1.031	CGB3911§	CGB:4321A	BUSH911	NUT98	RPE433-122
1¼	D	.875 to 1.000	1.250	CGB498	CGB:4322A	BUSH98	NUT98	16676N
1¼	D	1.000 to 1.188	1.250	CGB499	CGB:4322A	BUSH99	NUT98	RPE421-121
1¼	D	1.188 to 1.375†	1.250	CGB4911	CGB:4322A	BUSH911	NUT98	RPE433-122
1¼	E	1.375 to 1.625†	1.250	CGB4913	CGB:5472B	BUSH913	NUT913	RPE433-123
1¼	E	1.625 to 1.875†	1.250	CGB4915	CGB:5472B	BUSH915	NUT913	17317N
1½	D	.875 to 1.000	1.438	CGB598	CGB:5397B	BUSH98	NUT98	16676N
1½	D	1.000 to 1.188	1.438	CGB599	CGB:5397B	BUSH99	NUT98	RPE421-121
1½	D	1.188 to 1.375	1.438	CGB5911	CGB:5397B	BUSH911	NUT98	RPE433-122
1½	E	1.375 to 1.625†	1.438	CGB5913	CGB:5473B	BUSH913	NUT913	RPE433-123
1½	E	1.625 to 1.875†	1.438	CGB5915	CGB:5473B	BUSH915	NUT913	17317N
2	E	1.375 to 1.625	1.875	CGB6913	CGB:5474B	BUSH913	NUT913	RPE433-123
2	E	1.625 to 1.875†	1.875	CGB6915	CGB:5474B	BUSH915	NUT913	17317N
2	F	1.875 to 2.188†	1.875	CGB6917	CGB:5475B	BUSH917	NUT917	17345N♦♦
2	F	2.188 to 2.500†	1.875	CGB6920	CGB:5475B	BUSH917	NUT917	16772N♦♦♦
2½	E	1.375 to 1.625	2.062	CGB7913	CGB:1278B	BUSH913	NUT913	RPE433-123
2½	E	1.625 to 1.875	2.062	CGB7915	CGB:1278B	BUSH915	NUT913	17317N
2½	F	1.875 to 2.188	2.313	CGB7917		BUSH917		17345N♦♦
2½	F	2.188 to 2.500	2.313	CGB7920		BUSH920		16772N♦♦♦
3	F	1.875 to 2.188	2.750	CGB8917		BUSH917		17345N♦♦
3	F	2.188 to 2.500	2.750	CGB8920		BUSH920		16772N♦♦♦

NOTE: Use CGFP series on page 73 for larger sizes.

See page 64 for dimensions.

§ Available in copper-free aluminum. To order, add suffix SA to Cat. No.

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings providing all parts are of the same form.

♦ Order wire mesh grip separately.

Diameter Cord Range Wire Mesh Grip	Neoprene Bushing
♦♦ 1.875 to 2.000	1.875 to 2.188
♦♦♦ 2.000 to 2.250	2.188 to 2.500

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Cord And Cable Connectors
NCG Series Nonmetallic Cord Grips

Applications

For use with portable cord, NCG Series watertight cord grips terminate and protect conductors from mechanical damage due to vibration and movement. A neoprene bushing seals out oils, coolants, water, dust and other abusive agents. NCG cord grips may be used with types S, SO, STO, SJ, SJT, SJTO and SVO portable cords.

Typical applications include the termination of wiring for:
- machine tools
- motors
- transformers
- food processing equipment
- robotics
- air conditioning units
- illuminated signs
- terminal boxes
- control cabinets

Standard Materials

- cable gland body and nut - polyamide 6
- bushing - neoprene
- locknut - polyamide 6

Features

- Available in ⅜″ to 1″ trade sizes.
- Neoprene bushings cover a large cable range, reducing the number of different fittings required.
- Polyamide nonmetallic construction stands up to most corrosive environments.
- Polyamide locknut available, order separately.
- UL listed and cUL third party certified.
- Rain-tight and watertight construction for outdoor use.
- Tightening one nut creates watertight seal.

Certifications & Compliances

- UL Standard 514B
- cUL to CSA Standard C22.2 No.18
- IP 68
- NEMA 4X Watertight
- Zone 2, Division 2 use per Code



Ordering Information

TRADE SIZE	CABLE RANGE INCHES (MM)	CATALOG NUMBER	CARTON QTY.
⅜″	0.1-0.35 (2.5-8)	NCG38-35	25
½″	0.20-0.50 (5-12)	NCG50-50	25
¾″	0.35-0.75 (9-18)	NCG75-75	25
1″	0.55-1.00 (14-25)	NCG100-100	20



Locknuts – must be ordered separately

TRADE SIZE	CATALOG NUMBER	CARTON QTY.
⅜″	10N	25
½″	11N	25
¾″	12N	25
1″	13N	20

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5F Cord and Cable Fittings

Straight Body Male Thread Sealing Gaskets and Locknuts Sizes 1/2″ – 1″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations

Application:

For use with portable cord and types MV (unarmored), PLTC, SE (round), TC and UF cables.
CGB – SG cord and cable fittings are installed to:
- provide means for passing a cord or cable into an enclosure or through a bulkhead
- form a seal for cord or cable

Features:

- Rugged construction protects cord and cable from damage
- Compact, permitting close grouping of several cords and/or cables
- Tightening one nut makes watertight seal
- Large range of NPT sizes for use with any conduit system
- Available for straight entrance
- Armored sealing gaskets facilitate assembly of connectors to sheet metal boxes and cabinets. The steel ring positively retains the PVC gasket for a distortion-free 100% seal; it can't squirt out of the body-to-box joint

Standard Materials:

- Form B through Form D bodies and gland nuts – steel. Forms E & F bodies and gland nuts – *Feraloy*® iron alloy
- Bushing – neoprene
- Sealing gasket – steel and PVC

Standard Finishes:

- Steel – electrogalvanized with chromate treatment
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- PVC – natural

Size Ranges:

- Cable O.D. – .125″ to 2.50″
- NPT thread – ½″ to 1″

Certifications and Compliances:

- UL Standard: 514B
- CSA Standards: C22.2
- NEC/CEC: Class I, Division 2*
- Wet locations

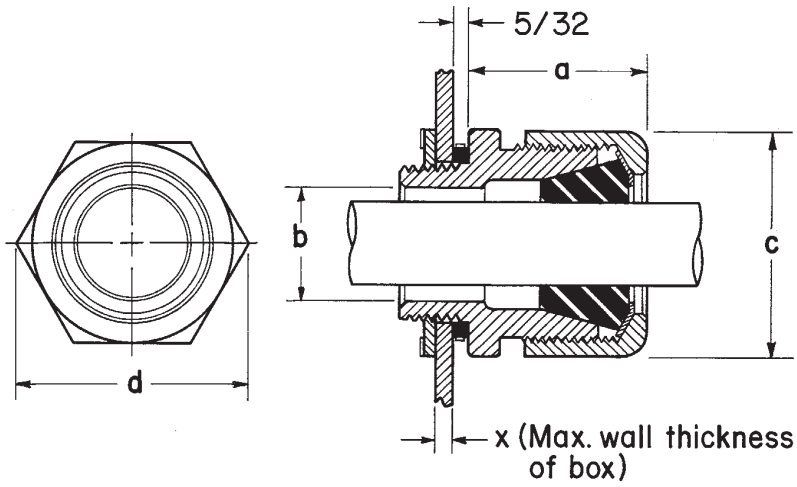


Complete with locknut, sealing gasket, gland nut and Neoprene bushing.

Dimensions

Thread Size	Form	a	b	c	d	x
½	B	1 5/16	5/8	1 3/16	1 9/32	3/16
½	C	1 3/4	5/8	1 5/8	1 21/32	3/16
¾	C	1 3/4	3/4	1 5/8	1 21/32	3/16
¾	D	2 1/2	13/16	2 1/4	2 1/8	3/16
1	C	1 11/16	31/32	1 5/8	1 7/8	1/4
1	D	2 3/8	1 1/32	2 1/4	2 3/8	3/16

CGB – SG Series



* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

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Cord and Cable Fittings

Straight Body Male Thread Sealing Gaskets and Locknuts Sizes 1/2″ – 1″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations*

Complete with locknut, sealing gasket, gland nut and Neoprene bushing



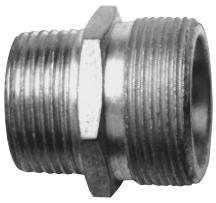
Locknut



Sealing gasket



Body only



Neoprene bushing



Gland nut



Wire mesh grip



CGB-SG With Locknut, Sealing Gasket, Gland Nut and Tapered Neoprene Bushing‡

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Locknut, Sealing Gasket, Gland Nut & Neoprene Bushing ♦ Cat. #	Sealing Gasket Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #	Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
½	B	.125 to .250	.625	CGB192-SG	SG1	CGB:0104355	BUSH92	NUT94	
½	B	.250 to .375	.625	CGB193-SG	SG1	CGB:0104355	BUSH93	NUT94	
½	B	.375 to .500	.625	CGB194-SG	SG1	CGB:0104355	BUSH94	NUT94	RPE417-115
½	B	.500 to .625	.625	CGB195-SG	SG1	CGB:0104355	BUSH05	NUT94	RPE417-116
½	C	.625 to .750†	.625	CGB196-SG	SG1	CGB:1702A	BUSH96	NUT95	RPE417-117
½	C	.750 to .875†	.625	CGB197-SG	SG1	CGB:1702A	BUSH97	NUT95	RPE421-119
¾	C	.625 to .750†	.750	CGB296-SG	SG2	CGB:4318A	BUSH96	NUT95	RPE417-117
¾	C	.750 to .875†	.750	CGB297-SG	SG2	CGB:4318A	BUSH97	NUT95	RPE421-119
¾	D	.875 to 1.000†	.813	CGB298-SG	SG2	CGB:4320A	BUSH98	NUT98	16676N
1	C	.500 to .625	.969	CGB395-SG	SG3	CGB:4319A	BUSH95	NUT95	RPE417-129
1	C	.625 to .750	.969	CGB396-SG	SG3	CGB:4319A	BUSH96	NUT95	RPE417-117
1	C	.750 to .875	.969	CGB397-SG	SG3	CGB:4319A	BUSH97	NUT95	RPE421-119
1	D	.875 to 1.000†	1.031	CGB398-SG	SG3	CGB:4321A	BUSH98	NUT98	16676N
1	D	1.000 to 1.188†	1.031	CGB399-SG	SG3	CGB:4321A	BUSH99	NUT98	RPE421-121
1	D	1.188 to 1.375†	1.031	CGB3911-SG	SG3	CGB:4321A	BUSH911	NUT98	RPE433-122

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings, providing all parts are of the same form.

♦ Order wire mesh grip separately.

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5F Cord and Cable Fittings

45° Angle Body Male Thread
Sizes 1/2″ - 3/4″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations*

Complete with gland nut and Neoprene bushing



Body only



Neoprene bushing



Gland nut



Wire mesh grip



CGD 45° With Gland Nut and Tapered Neoprene Bushing‡

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #	Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
½	B	.125 to .250	.500	CGD192	CGD:3832A	BUSH92	NUT94	
½	B	.250 to .375	.500	CGD193	CGD:3832A	BUSH93	NUT94	
½	B	.375 to .500†	.500	CGD194	CGD:3832A	BUSH94	NUT94	RPE417-115
½	B	.500 to .625†	.500	CGD195	CGD:3832A	BUSH05	NUT94	RPE417-116
½	C	.625 to .750†	.500	CGD196	CGD:5636B	BUSH96	NUT95	RPE417-117
½	C	.750 to .875†	.500	CGD197	CGD:5636B	BUSH97	NUT95	RPE421-119
¾	B	.125 to .250	.688	CGD292	CGD:3967B	BUSH92	NUT94	
¾	B	.250 to .375	.688	CGD293	CGD:3967B	BUSH93	NUT94	
¾	B	.375 to .500	.688	CGD294	CGD:3967B	BUSH94	NUT94	RPE417-115
¾	B	.500 to .625	.688	CGD295	CGD:3967B	BUSH05	NUT94	RPE417-116
¾	C	.625 to .750†	.688	CGD296	CGD:5643B	BUSH96	NUT95	RPE417-117
¾	C	.750 to .875†	.688	CGD297	CGD:5643B	BUSH97	NUT95	RPE421-119

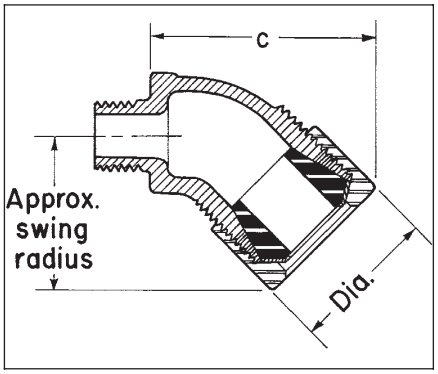
* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings, providing all parts are of the same form.

♦ Order wire mesh grip separately.

Dimensions



CGD assembly

Cat. #	Approx. Swing Radius	Dia.	c
CGD192	1 3/16	1 3/16	1 11/16
CGD193	1 3/16	1 3/16	1 11/16
CGD194	1 3/16	1 3/16	1 11/16
CGD195	1 3/16	1 3/16	1 11/16
CGD196	1 11/16	1 5/8	2 1/16
CGD197	1 11/16	1 5/8	2 1/16
CGD292	1 1/4	1 9/64	1 15/16
CGD293	1 1/4	1 9/64	1 15/16
CGD294	1 1/4	1 1/8	1 15/16
CGD295	1 1/4	1 1/8	1 15/16
CGD296	1 11/16	1 5/8	2
CGD297	1 11/16	1 5/8	2

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Cord and Cable Fittings

90° Angle Body Male Thread
Sizes 1/2″ - 1″

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations*



Body Only



Optional Sealing Gasket§ | Optional Locknut§



Neoprene Bushing



Gland Nut



Optional Wire Mesh Grip ♦



Complete with gland nut, Neoprene bushing, optional locknut and sealing gasket§

CGE 90° With Gland Nut and Tapered Neoprene Bushing

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Wire Mesh Grip ♦ Cat. #
½	B	.125 to .250	.531	CGE192	
½	B	.250 to .375	.531	CGE193	
½	B	.375 to .500	.531	CGE194	RPE417-115
½	B	.500 to .625†	.531	CGE195	RPE417-116
½	C	.625 to .750†	.500	CGE196	RPE417-117
½	C	.750 to .875†	.500	CGE197	RPE421-119
¾	B	.125 to .250	.688	CGE292	
¾	B	.250 to .375	.688	CGE293	
¾	B	.375 to .500	.688	CGE294	RPE417-115
¾	B	.500 to .625	.688	CGE295	RPE417-116
¾	C	.625 to .750†	.688	CGE296	RPE417-117
¾	C	.750 to .875†	.688	CGE297	RPE421-119
1	C	.500 to .625	.906	CGE395	RPE417-129
1	C	.625 to .750	.906	CGE396	RPE417-117
1	C	.750 to .875	.906	CGE397	RPE421-119
1	C	.875 to 1.000†	.906	CGE3239	RPE421-120
1	D	.875 to 1.000†	.906	CGE398	16676N
1	D	1.000 to 1.188†	.906	CGE399	RPE421-121
1	D	1.188 to 1.375†	.906	CGE3911	RPE433-122

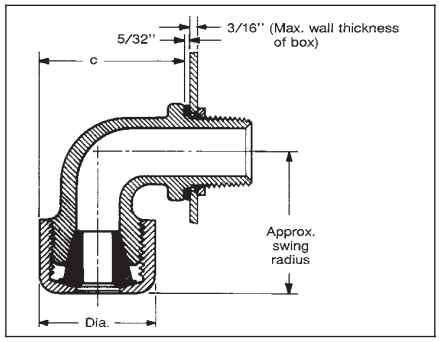
§½″ and ¾″ sizes can be furnished with sealing gasket and locknut. To order, add suffix ''SG'' to cat. no. For example: CGE192-SG. Application, features, materials and finishes are detailed on page 68.

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

♦ Order wire mesh grip separately.
Diameter Cord Range
Wire Mesh Grip

Dimensions



CGE assembly

Cat. #	Approx. Swing Radius	Dia.	c
CGE192	1 9/16	1 3/16	1 7/16
CGE193	1 9/16	1 3/16	1 7/16
CGE194	1 9/16	1 3/16	1 7/16
CGE195	1 9/16	1 3/16	1 7/16
CGE196	1 7/8	1 5/8	2
CGE197	1 7/8	1 5/8	2
CGE292	1 5/8	1 3/16	1 13/32
CGE293	1 5/8	1 3/16	1 13/32
CGE294	1 5/8	1 3/16	1 13/32
CGE295	1 5/8	1 3/16	1 13/32
CGE296	2	1 5/8	1 7/8
CGE297	2	1 5/8	1 7/8
CGE395	2 3/16	1 5/8	2 3/32
CGE396	2 3/16	1 5/8	2 3/32
CGE397	2 3/16	1 5/8	2 3/32
CGE398	2 5/8	2 1/4	2 21/32
CGE399	2 5/8	2 1/4	2 21/32
CGE3239	2 3/16	1 5/8	2 3/32
CGE3911	2 5/8	2 1/4	2 21/32

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5F Cord and Cable Fittings

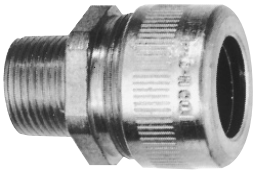
Straight Body Male Thread
Portable Cord

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations

For portable cord



With oil impregnated flax packing



CGB with Tapered Neoprene Bushing and Cable Clamp

For Portable Cord*

Size	Range Dia.	Cat. #
½	.312 to .437	CGB1013
½	.375 to .500	CGB1014
½	.500 to .625	CGB1015
¾	.312 to .437	CGB2013
¾	.375 to .500	CGB2014
¾	.500 to .625	CGB2015

CGB with Oil Impregnated Flax Packing

Size	Cable Dia.	Cat. #
½	.250 to .625	CGB1
¾	.594 to .688	CGB2
1	.688 to .968	CGB3
1¼	.906 to 1.219	CGB4
1½	1.219 to 1.438	CGB5
2	1.438 to 1.875	CGB6
2½	1.875 to 2.313	CGB7
3	2.313 to 2.625	CGB8

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

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Application:

- CGFP series for use with portable cords and Types MV (unarmored), PLTC, SE (round), TC and UF jacketed unarmored cables
- CGFP cord and cable fittings are installed to:
- Form a mechanically gripping water and/or oiltight termination
- SG series sealing gaskets can be use used with locknuts to provide a watertight seal in slip holes of sheet metal structures and boxes.

RSMP series terminating hub plates can be used on panels, junction boxes and bulkheads.

Features:

- Superior pull out strength.
- Rugged construction protects cable against mechanical damage.
- Compact size permitting close grouping of cables.
- Complete range of sizes for all types of cable.
- Provide double seal against water entry.

Standard Materials:

- ½″ to 1″ body and gland nut – turned steel
- Over 1″ body and gland nut – *Feraloy*® iron alloy

Standard Finishes:

- Steel – electrogalvanized and chromate treatment
- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint

Size Ranges:

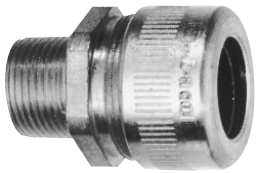
- Cable O.D. – .125″ to 3.500″
- NPT threads – ½″ to 4″

Certifications and Compliances:

- UL Standard: 514B
- NEC: Class I, Division 2*
- Wet locations

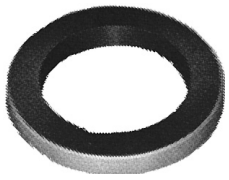
* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC requirements.

‡ All parts of the same form may be used together in an assembly.



CGFP With Neoprene Bushing for Wet Locations

Male Thread Size	O.D. Range	Form‡	Cat. #
½	.125 to .250	B	CGFP192
½	.250 to .375	B	CGFP193
½	.375 to .500	B	CGFP194
½	.500 to .625	B	CGFP195
¾	.625 to .750	C	CGFP296
¾	.750 to .875	C	CGFP297
¾	.875 to 1.000	C	CGFP2239
1	.625 to .750	C	CGFP396
1	.750 to .875	C	CGFP397
1	.875 to 1.000	C	CGFP3239
1¼	1.000 to 1.188	D	CGFP499
1¼	1.188 to 1.375	D	CGFP4911
1½	1.000 to 1.188	D	CGFP599
1½	1.188 to 1.375	D	CGFP5911
2	1.375 to 1.625	E	CGFP6913
2	1.625 to 1.875	E	CGFP6915
2½	1.875 to 2.188	F	CGFP7917
2½	2.188 to 2.500	F	CGFP7920
3	1.875 to 2.188	F	CGFP8917
3	2.188 to 2.500	F	CGFP8920
3½	2.500 to 3.000	G	CGFP923
3½	3.000 to 3.500	G	CGFP927
4	2.500 to 3.000	G	CGFP1023
4	3.000 to 3.500	G	CGFP1027



Sealing Gaskets

For CGF terminators

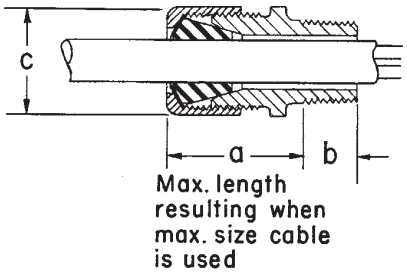
Armored sealing gaskets can be used with locknuts for watertight seals in slip holes of sheet metal structures and boxes. The steel ring positively retains the PVC gasket for a distortion-free 100% seal.

Conduit Size	Cat. #
⅜ – ½	SG1
¾	SG2
1	SG3
1¼	SG4
1½	SG5
2	SG6
2½	SG7
3	SG8
3½	SG9
4	SG10

Dimensions

CGFP Cat. #	a	b	c (max.)
CGFP192	1⅜	¾	1 9/32
CGFP193	1⅜	¾	1 9/32
CGFP194	1⅜	¾	1 9/32
CGFP195	1⅜	¾	1 9/32
CGFP296	1¾	¾	1 25/32
CGFP297	1¾	¾	1 25/32
CGFP2239	1¾	¾	1 25/32
CGFP396	1¾	15/16	1 25/32
CGFP397	1¾	15/16	1 25/32
CGFP3239	1¾	15/16	1 25/32
CGFP499	2⅜	15/16	2¼
CGFP4911	2⅜	15/16	2¼
CGFP599	2⅜	15/16	2¼
CGFP5911	2⅜	15/16	2¼
CGFP6913	3¼	1	3¼
CGFP6915	3¼	1	3¼
CGFP7917	3¼	1 7/16	3⅞
CFGP7920	3¼	1 7/16	3⅞
CGFP8917	3¼	1½	3⅞
CGFP8920	3¼	1½	3⅞
CGFP923	4¼	1 9/16	5½
CGFP927	4¼	1 9/16	5½
CGFP1023	4¼	1⅝	5½
CGFP1027	4¼	1⅝	5½

CGFP



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5F TERMINATOR™ Cable Fittings

for Metal Clad Cable and Tray Cable♦
TMC/TMCX Series

Cl. I, Div. 1†, Groups A*,B,C,D
Cl. II, Div. 1†, Groups F,G
Cl. III♦, Div. 1† & 2
Wet Locations

Application:

Terminator cable fittings are designed for use with the following cables:
- Type MC – corrugated aluminum, interlocked aluminum and interlocked steel
- Type TC Tray Cable♦

Terminator cable fittings are installed:
- to provide a means for terminating type MC and TC cable at junction boxes, control centers, panelboards and enclosures for motor control and electrical distribution equipment
- to form a mechanical watertight connection
- to provide ground continuity of cable armor
- indoors and outdoors in wet and dry locations
- in vertical and horizontal cable runs
- in non-hazardous and hazardous (classified) locations. Both TMC and TMCX series can be used in Class I and Class II, Division 2 locations. TMCX series may be used in Division 1 locations and when a seal is required.

Features:

- Ten fittings cover cable O.D. range of .440″ to 4.020″, in ½″ to 4″ NPT sizes.
- Quick and easy to install. No disassembly is required for TMC installation.
- Unique stainless steel grounding/retaining spring with copper plate finish provides positive ground continuity and superior pull-out resistance exceeding that required by UL/CSA.
- Neoprene bushing provides a watertight seal.
- Lightweight, corrosion-resistant/copper-free aluminum construction provides long, maintenance-free service life in industrial environments
- Optional all brass construction available.
- Hex design for easy wrenching.
- Compact size for close nesting of cables.
- TMCX fittings are furnished complete with epoxy sealing compound.‡
- TMCX fittings with sealing chamber have a red colored gland nut for easy identification.
- Hazardous location TMCX Terminators are reusable. An integral union feature simplifies installation on new construction and allows installed TMCX Terminator cable fittings to be disassembled and reused when performing repairs or replacement of equipment.
- Optional Cold-Shrink® Kit for extra corrosion protection against corrosive elements like salt water.

Standard Materials:

- Body, intermediate body, gland nut, and armor stop insert – copper-free aluminum
- Bushing – neoprene
- Grounding/retaining spring – stainless steel
- Slip washer and armor stop reducer – nylon
- Cold Shrink Kit — EPDM Rubber

Standard Finishes:

- Copper-free aluminum – natural
- Neoprene – natural
- Stainless steel – copper flash
- Nylon – natural

Options:

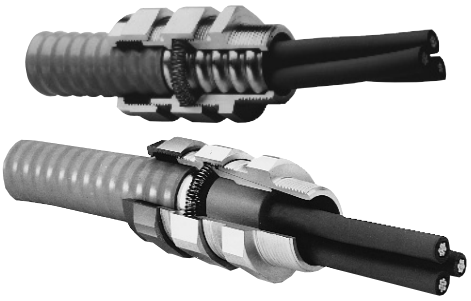
- All brass construction .... add suffix -BR to catalog number.
- All brass construction with nickel plate finish on entry threads .... add suffix -BR-NP to catalog number.



Certifications and Compliances:

- NEC: Class I, Groups A*,B,C,D
  Class II, Groups F,G
  Class III, Div. 1 and 2 (except when used with Tray Cable)
  Article 334, 340, 501-4(b), 502-4(b), 503-3(a)
- NEMA: FB1-1989
- UL Standards: 514B, 886
- Fed. Spec.: W-F-406B
- CSA Standard C22.2 No. 18-M1987
  Class I, A,B,C,D SL
  Class II, E,F,G
  Class III, Enc. 4 locations

NPT Thread Size	Armor O.D. Range	Non-Hazardous Cat. #	Hazardous Cat. #★	Optional Cold Shrink® Kit Cat. #
½	.440 to .650	TMC165	TMCX165♦	TMC-K1
¾	.600 to .850	TMC285	TMCX285♦	TMC-K2
1	.800 to 1.120	TMC3112	TMCX3112♦	TMC-K3
1¼	1.100 to 1.400	TMC4140	TMCX4140♦	TMC-K4
1½	1.330 to 1.610	TMC5161	TMCX5161♦	TMC-K5
2	1.570 to 2.060	TMC6206	TMCX6206♦	TMC-K6
2½	1.930 to 2.470	TMC7247	TMCX7247♦	TMC-K7
3	2.450 to 3.020	TMC8302	TMCX8302	TMC-K8
3½	2.950 to 3.520	TMC9352	TMCX9352	TMC-K9
4	3.500 to 4.020	TMC10402	TMCX10402	TMC-K10



TMC6206

TMCX6206

★ Hazardous location fittings are supplied with sealing compound for one termination. Additional compound may be ordered separately. See following page.

† TMCX series is suitable for use in hazardous locations when installed in accordance with NEC articles 501-4(b), 501-5(e), 502-4(b), 502-5 and 503-3(a).

♦ TMCX catalog numbers listed are suitable for use with Type TC tray cable in hazardous locations when installed in accordance with NEC articles 501-5(e) and 502-5. TMCX series is not suitable for use in Class III locations when used with tray cable.

‡ In Canada order separately Cat. # TSC1 - 1 oz. TSC4 - 4 oz.

* Terminators ordered in all brass construction (suffix – BR) are *not* suitable for Class I, Group A hazardous area environments.

TMC-K Corrosion Protection Kits

TMC-K Corrosion Protection Kits are specially designed for Cooper Crouse-Hinds TMC and TMCX fittings to provide protection against corrosive elements like salt spray and moisture. The TMC-K kit is made of a Cold Shrink material that is quick and easy to install on the fitting. The Cold Shrink material is made of EPDM rubber that contains no chlorides or sulfurs.







The protection kit installs easily over the fitting ***without*** the use of a heat source to shrink the material tightly over the fitting. Just slide the kit over the fitting and pull out the inner core. The kit shrinks tightly over the fitting forming a watertight seal. The Cold Shrink material can be removed easily from the fitting by simply cutting it off.

See ordering information for complete offering of TMC-K Cold Shrink kits for corrosion protection.

Cold Shrink is a registered trademark of the 3M Company.

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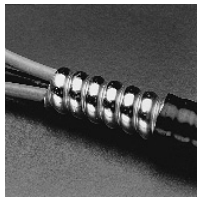
TERMINATOR™ Cable Fittings

for Metal Clad Cable and Tray Cable♦

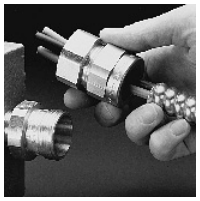
TMC/TMCX Series
Accessories, Dimensions

Cl. I, Div. 1†, Groups A,B,C,D
Cl. II, Div. 1†, Groups F,G
Cl. III, Div. 1† & 2
Wet Locations

Installing a TMCX *Terminator*



1. Prepare cable.



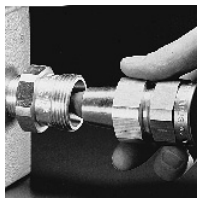
2. Install body into enclosure. Slide gland nut and intermediate body onto cable.



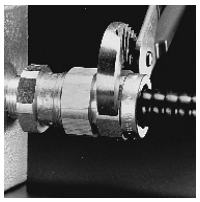
3. Mix sealing compound and pack conductors over armor.



4. Slide armor stop insert over conductor and sealing compound, then back against armor. Pack remaining sealing compound.



5. Insert cable assembly into body.



6. Thread intermediate body with gland nut onto body. Tighten intermediate body, then gland nut.



TSC Epoxy Sealing Compound

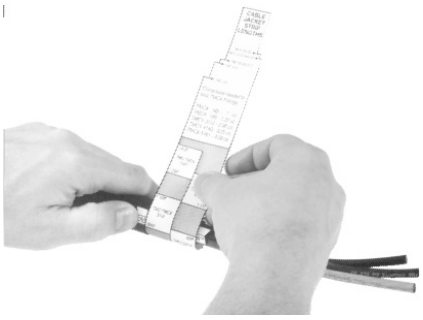
A two part epoxy sealing compound is used to seal TMCX cable fittings. It is quick and easy to measure, mix and install. The compound is kneaded until a uniform color is obtained. It is then packed around the conductors and cable armor to effectively seal the cable.

Each hazardous location fitting is supplied with enough sealing compound for one termination. Additional compound may be ordered separately in one and four ounce packages.

Std. Ctn. Qty.	Tube Size	Cat. #**
10	0.5 oz	TSC05
10	1.0 oz	TSC1
5	4.0 oz.	TSC4

Approximate Amount of Compound Required to Seal Fittings

NPT Size	Cat. #	Ounces Required
½	TMCX165	0.25
¾	TMCX285	0.50
1	TMCX3112	0.70
1¼	TMCX4140	1.50
1½	TMCX5161	1.85
2	TMCX6206	4.50
2½	TMCX7247	8.65
3	TMCX8302	15.75
3½	TMCX9352	25.55
4	TMCX10402	38.95



Cable Gauge and Sizer

TMC and TMCX cable fittings are supplied with a cable gauge and sizer. This installation tool is used:

- to measure the cable armor and select the proper cable fitting.
- to determine how much cable jacket should be removed to ensure proper installation, eliminating any guesswork.
- as a gauge of how much compound to pack around the cable in order to meet UL requirements and ensure a safe, proper installation for TMCX fittings.

† TMCX series is suitable for use in hazardous locations when installed in accordance with NEC articles 501-4(b), 501-5(e), 502-4(b), 502-5 and 503-3(a).

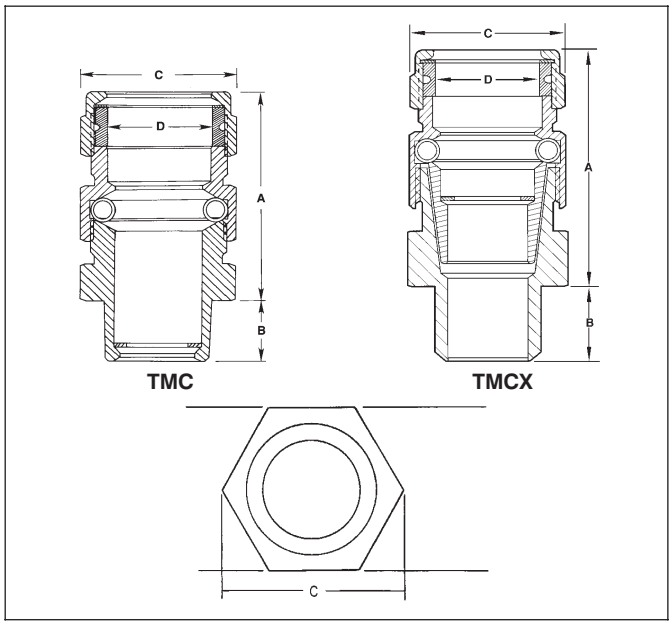
♦ TMCX catalog numbers listed are suitable for use with Type TC tray cable in hazardous locations when installed in accordance with NEC articles 501-5(e) and 502-5. TMCX series is not suitable for use in Class III locations when used with tray cable.

** Order quantity of one (1) TSC1 equals 10 1.0 oz. tubes; one (1) TSC4 equals 5 4.0 oz. tubes.

Dimensions

NPT Size	TMC Cat. #	A	TMCX Cat. #	A	TMC/TMCX B	C	D
½	TMC165	2 3/8	TMCX165	2 5/8	3/4	1 3/8	25/32
¾	TMC285	2 5/8	TMCX285	2 7/8	25/32	1 5/8	1
1	TMC3112	2 5/8	TMCX3112	3 1/8	15/16	2	1 5/16
1¼	TMC4140	2 3/4	TMCX4140	3 1/8	31/32	2 7/16	1 5/8
1½	TMC5161	2 3/4	TMCX5161	3 3/8	31/32	2 3/4	1 25/32
2	TMC6206	4 1/2	TMCX6206	5 5/16	1	3 1/2	2 5/16
2½	TMC7247	4 3/4	TMCX7247	6 1/16	1 7/16	4	2 23/32
3	TMC8302	4 7/8	TMCX8302	6 1/16	1 7/16	4 7/8	3 9/32
3½	TMC9352	5 3/8	TMCX9352	7 3/4	1 5/8	5 3/8	3 25/32
4	TMC10402	5 1/2	TMCX10402	8 5/16	1 5/8	5 7/8	4 9/32

(Dimensions also apply to brass product, suffix — BR)



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5F TECK TERMINATOR™ Cable Fittings

for Teck Cable

Cl. II, Division 1, Groups E,F,G
Cl. II, Division 2, Groups F,G
Cl. III
IP56
Wet Locations

Application:

TECK TERMINATORS have a wide array of applications in pulp and paper mills, chemical and petrochemical plants, petroleum refineries, waste treatment facilities, coal mines, electric power generating plants, grain handling and storage facilities, and many other industrial applications.

TECK TERMINATORS are CSA Certified for use with TECK armoured cable:

- to provide a means to terminate at junction boxes, control centers, panelboards, and enclosures for motor control and electrical distribution equipment
- to form a watertight (Encl 4/IP 56) seal around cable and at enclosure entry
- to provide ground continuity of cable armour
- to provide excellent cable pullout protection exceeding CSA requirements
- indoors or outdoors, in wet and dry locations
- in vertical or horizontal cable runs; and
- with TMC-K Series Cold Shrink™ corrosion protection kits to protect fitting from corrosive elements like salt water

Features:

- **CSA Certified** for ordinary and hazardous locations assuring a safe and reliable termination in adverse environments
- **No disassembly required**, resulting in a quick-and-easy installation and lower labour costs
- Available in aluminum, steel, stainless steel and PVC-coated aluminum construction for almost any type of corrosive environment
- **Unique stainless steel grounding spring** provides 360° positive grounding and superior pullout resistance
- Neoprene bushing creates a **watertight seal** to protect electrical equipment
- Neoprene O-ring on connector provides an **environmental seal** when fitting is installed in knockout
- **Hex surfaces** provide a large wrenching area for easy installation
- Hex surfaces on aluminum fittings have **slots for screwdriver tightening/loosening**
- **Compact design** allows close spacing of connectors
- Available in ½″ to 4″ trade sizes for application flexibility

Assembly Detail Shown with TECK Cable Installed



Standard Materials/Finishes:

- Body, Gland Nut – aluminum/natural, steel/zinc electrogalvanized, *Feraloy*®/zinc electrogalvanized, stainless steel/natural
- Drive Washer – aluminum/natural, steel/electrogalvanized, stainless steel/natural
- Bushing, O-ring – neoprene/natural
- Grounding Spring – stainless steel/copper-plated
- Cold Shrink Corrosion Protection Kit – EPDM rubber
- Slip Washer – nylon/natural

Certifications and Compliances:

- CEC: Class II, Division 1 and 2
  Groups E, F and G
  Class III
- CSA Standard: C22.2 No. 18
- Encl 4/IP 56

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TECK TERMINATOR™ Cable Fittings

for Teck Cable

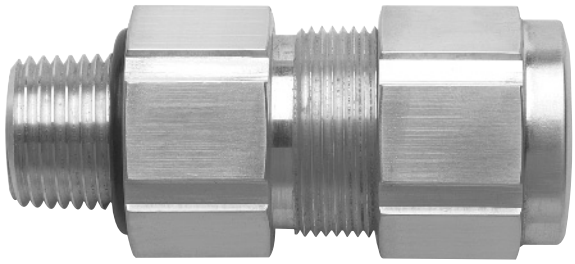
Cl. II, Division 1, Groups E,F,G
Cl. II, Division 2, Groups F,G
Cl. III
IP56
Wet Locations

Ordering Information:

					Range Over Jacket		Range Over Armour	
Hub Size	**Aluminum Cat. #**	**Steel Cat. #**	**Stainless Steel Cat. #**	**PVC Cat. #**	**Min.**	**Max.**	**Min.**	**Max.**
½″	TECK050-1	TECK050-1S	TECK050-1SS	TECK050-1PVC	0.525	0.650	0.415	0.570
½″	TECK050-2	TECK050-2S	TECK050-2SS	TECK050-2PVC	0.600	0.760	0.490	0.680
½″	TECK050-3	TECK050-3S	TECK050-3SS	TECK050-3PVC	0.725	0.885	0.615	0.805
½″	TECK050-4	TECK050-4S	TECK050-4SS	TECK050-4PVC	0.825	0.985	0.715	0.905
¾″	TECK075-5	TECK075-5S	TECK075-5SS	TECK075-5PVC	0.880	1.065	0.770	0.985
¾″	TECK075-6	TECK075-6S	TECK075-6SS	TECK075-6PVC	1.025	1.205	0.915	1.125
1″	TECK100-7	TECK100-7S	TECK100-7SS	TECK100-7PVC	1.187	1.375	1.077	1.295
1¼″	TECK125-8	TECK125-8S	–	TECK125-8PVC	1.350	1.625	1.240	1.545
1¼″	TECK125-9	TECK125-9S	–	TECK125-9PVC	1.500	1.625	1.390	1.545
1¼″	TECK125-10	TECK125-10S	–	TECK125-10PVC	1.600	1.875	1.490	1.795
1½″	TECK150-11	TECK150-11S	–	TECK150-11PVC	1.700	1.965	1.590	1.885
1½″	TECK150-12	TECK150-12S	–	TECK150-12PVC	1.900	2.187	1.790	2.107
2″	TECK200-13	TECK200-13S	–	TECK200-13PVC	1.900	2.187	1.790	2.107
2″	TECK200-14	TECK200-14S	–	TECK200-14PVC	2.100	2.375	1.990	2.280
2″	TECK200-15	TECK200-15S	–	TECK200-15PVC	2.300	2.565	2.190	2.485
2″	TECK200-16	TECK200-16S	–	TECK200-16PVC	2.500	2.750	2.390	2.656
2½″	TECK250-17	TECK250-17S	–	TECK250-17PVC	2.380	2.640	2.240	2.560
2½″	TECK250-18	TECK250-18S	–	TECK250-18PVC	2.580	2.840	2.440	2.750
3″	TECK300-19	TECK300-19S	–	TECK300-19PVC	2.790	3.060	2.640	2.970
3″	TECK300-20	TECK300-20S	–	TECK300-20PVC	3.000	3.270	2.870	3.190
3″	TECK300-21	TECK300-21S	–	TECK300-21PVC	3.210	3.480	3.042	3.390
3½″	TECK350-22	TECK350-22S	–	TECK350-22PVC	3.420	3.690	3.270	3.590
3½″	TECK350-23	TECK350-23S	–	TECK350-23PVC	3.610	3.870	3.440	3.770
4″	TECK400-24	TECK400-24S	–	–	3.810	4.030	3.600	3.930
4″	TECK400-25	TECK400-25S	–	–	3.965	4.185	3.755	4.065
4″	TECK400-26	TECK400-26S	–	–	4.120	4.340	3.910	4.220

Optional Cold Shrink Corrosion Protection Kits

Trade Size	Cat. #	Trade Size	Cat. #
½″	TMC-K1	2″	TMC-K6
¾″	TMC-K2	2½″	TMC-K7
1″	TMC-K3	3″	TMC-K8
1¼″	TMC-K4	3½″	TMC-K9
1½″	TMC-K5	4″	TMC-K10



Dimensions (inches)

Cat. #	A - Throat Dia.	B - Overall	C - Max.
TECK050-1	0.395	2.16	1.34
TECK050-2	0.485	2.24	1.47
TECK050-3	0.612	2.20	1.61
TECK050-4	0.612	2.24	1.61
TECK075-5	0.819	2.37	2.14
TECK075-6	0.819	2.42	2.14
TECK100-7	1.039	2.42	2.41
TECK125-8	1.184	3.42	3.20
TECK125-9	1.375	3.34	3.20
TECK125-10	1.375	3.34	3.20
TECK150-11	1.577	3.81	3.60
TECK150-12	1.600	3.81	3.72
TECK200-13	1.715	4.14	4.20
TECK200-14	1.995	4.06	4.20
TECK200-15	2.063	3.84	4.40
TECK200-16	2.063	3.92	4.40
TECK250-17	2.250	5.15	4.79
TECK250-18	2.437	5.10	4.79
TECK300-19	2.630	4.91	4.89
TECK300-20	2.875	4.97	5.30
TECK300-21	3.032	4.97	5.30
TECK350-22	3.260	5.12	5.90
TECK350-23	3.437	5.25	5.90
TECK400-24	3.594	4.90	6.53
TECK400-25	3.750	4.90	6.53
TECK400-26	3.900	4.90	6.53

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5F TWDC/TBDC SERIES

ATEX and CENELEC Range for Steel Wire Armour or Steel Wire Braid Cable

ATEX and CENELEC Dual E Exd IIC/E Exe II
Zone 1 or 2 Hazardous Areas
IP66/67



Certifications and Compliances

- ATEX E Exd IIC/E Exe II with SIRA 03ATEX2078X
- Standards EN50014:1998, EN50018:2000, EN50019:2000 and EN50281-1-1:1998
- IP66 and IP67

GOST R - Exd IICU/Exe IIU

Design Data (millimeters)

Gland Size	A (across corners)	B
16	25.5	16.0
20S	26.5	16.0
20	33.0	16.0
25	41.4	16.0
32	50.6	16.0
40	60.5	16.0
50S	71.5	16.0
50	71.5	16.0
63S	88.0	19.0
63	88.0	19.0
75S	99.0	19.0
75	99.0	19.0
80	115.2	25.0
80H	115.2	25.0
85	115.2	25.0
90	125.7	25.0
90H	125.7	25.0
100	125.7	25.0

Application

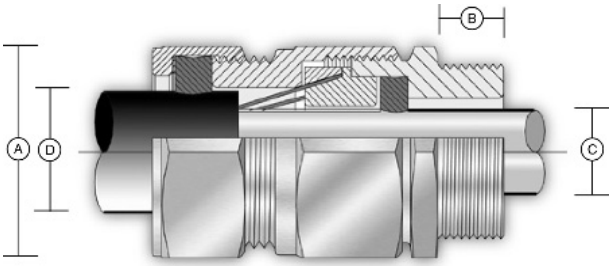
For use in Zone 1 or 2 hazardous areas with ATEX/CENELEC certified equipment and armoured or braided cable.

Features

All TWDC and TBDC glands offer:

- a flameproof or increased safety seal on the inner sheath of the cable
- mechanical clamping, providing retention of armour or braid
- a weatherproof seal to the outer sheath of the cable
- brass construction (optional stainless steel)
- optional nickel-plate finish
- metric or NPT threads

TW3DC/TB3DC cable glands offer a zero halogen version for extreme high and low temperature applications (-60°C to +180°C).



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TWDC/TBDC Brass Cable Glands

for Steel Wire Armour or Steel Wire Braid Cable

EEx d IIC
EEx e II
Zone 1 and 2
IP 66/67

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:
1. Select the Gland Type based on cable type and seal required (i.e., TW1DC)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT)

Ordering example:
TW1DC/NP/20S/075NPT

Step 1 – Select Gland Type from Table below:

Gland Types

Gland Type	Description
TW1DC	For steel wire armour with neoprene seal.
TW3DC	For steel wire armour with silicone seal for extreme temperatures.
TB1DC	For braided cable with neoprene seal.
TB3DC	For braided cable with silicone seal for extreme temperatures.

For optional nickel-plate finish add suffix/NP after Gland Type (i.e., TW1DC/NP).
For reduced bore gland add ''R'' at the end of Gland Type (i.e., TW1DCR).
For optional poly-bagged kit including gland, brass locknut, brass earth tag, sealing washer and PCP shroud, add ''K1'' at the end of Gland Type (i.e. TW1DCK1).
For stainless steel construction add ''S'' at the end of Gland Type (i.e., TW1DCS).

Step 2 – Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		Gland Seal Range: Cable Inner Sheath [C]		Gland Seal Range: Cable Outer Sheath [D] – Standard		Gland Seal Range: Cable Outer Sheath [D] – Reduced		Armour Acceptance Range		Shroud Size†
	Metric	NPT	Min	Max	Min	Max	Min	Max	SWA	Braided	
16	M20	½″or ¾″	3.5	8.4	8.4	13.5	4.9	10.0	0.90	0.15 – 0.35	L24
20S	M20	½″or ¾″	8.0	11.7	11.5	16.0	9.4	12.5	0.90 – 1.25	0.15 – 0.35	L24
20	M20	½″or ¾″	6.7	14.0	15.5	21.1	12.0	17.6	0.90 – 1.25	0.15 – 0.50	L30
25	M25	¾″or 1″	13.0	20.0	20.3	27.4	16.8	23.9	1.25 – 1.60	0.15 – 0.50	L38
32	M32	1″ or 1¼″	19.0	26.3	26.7	34.0	23.2	30.5	1.60 – 2.00	0.15 – 0.55	L46
40	M40	1¼″ or 1½″	25.0	32.2	33.0	40.6	28.6	36.2	1.60 – 2.00	0.20 – 0.60	L55
50S	M50	1½″ or 2″	31.5	38.2	39.4	46.7	34.8	42.4	2.00 – 2.50	0.20 – 0.60	L65
50	M50	2″	36.5	44.1	45.7	53.2	41.1	48.5	2.00 – 2.50	0.30 – 0.80	L65
63S	M63	2″ or 2½″	42.5	50.1	52.1	59.5	47.5	54.8	2.50	0.30 – 0.80	L80
63	M63	2½″	49.5	56.0	58.4	65.8	53.8	61.2	2.50	0.30 – 0.80	L80
75S	M75	2½″ or 3″	54.5	62.0	64.8	72.2	60.2	68.0	2.50	0.30 – 1.00	L90
75	M75	3″	60.5	68.0	71.1	78.0	66.5	73.4	2.50	0.30 – 1.00	L90
80	M80 × 2	3″ or 3½″	62.2	72.0	77.0	84.0	---	---	3.15	0.45 – 1.00	L104
80H	M80 × 2	3″ or 3½″	62.2	72.0	79.6	90.0	---	---	3.15	0.45 – 1.00	L104
85	M85 × 2	3″ or 3½″	69.0	78.0	79.6	90.0	75.0	85.4	3.15	0.45 – 1.00	L104
90	M90 × 2	3½″ or 4″	74.0	84.0	88.0	96.0	---	---	3.15	0.45 – 1.00	L114
90H	M90 × 2	3½″ or 4″	74.0	84.0	92.0	102.0	---	---	3.15	0.45 – 1.00	L114
100	M100 × 2	3½″ or 4″	82.0	90.0	92.0	102.0	87.4	97.4	3.15	0.45 – 1.00	L114

† For PVC or PCP shrouds see Accessories, page 93.

Step 3 – Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
½″ NPT	050NPT
¾″ NPT	075NPT
1″ NPT	100NPT
1¼″ NPT	125NPT
1½″ NPT	150NPT
2″ NPT	200NPT
2½″ NPT	250NPT
3″ NPT	300NPT
3½″ NPT	350NPT
4″ NPT	400NPT
–	–
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5F TAB/TAS UNIVERSAL SERIES

ATEX and CENELEC Range

ATEX and CENELEC Dual
E Exd IIC/E Exe II
CSA Exd IIC/Exe II
Class I, Zone 1

Zone 1 or 2 Hazardous Areas
IP66/68
Enclosure Type 4X
DTS01 1991 Deluge

NEW!



Certifications and Compliances

- ATEX E Exd IIC/E Exe II with SIRA 03ATEX2077X
- Standards EN50014:1998, EN50018:2000, EN50019:2000 and EN50281-1-1:1998
- IP66 and IP68 at 25 meters
- DTS01 1991 deluge
- CSA Exd IIC/Exe II, Class I, Zone 1
- Enclosure Type 4X
- Zone 1 and Zone 2
- Ignitible dusts, Zones 21 and 22
- GOST R - Exd IICU/Exe IIU

Design Data (millimeters)

Gland Size	A (across corners)	B
16	28.0	16
20S	28.0	16
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50S	71.5	16
50	71.5	16
63S	88.0	19
63	88.0	19
75S	99.0	19
75	99.0	25
80	115.2	25
80H	115.2	25
85	115.2	25
90	125.7	25
90H	125.7	25
100	125.7	25

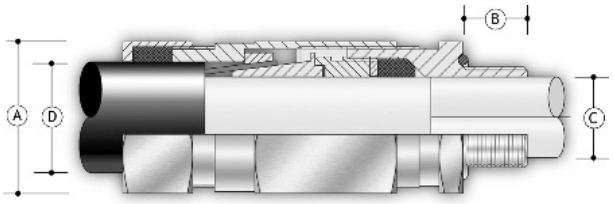
Application

For use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and wire, braided or tape armoured cables. For use in Zone 1 or 2 hazardous areas with CSA equipment with braided and marine shipboard cable.

Features

All TAB and TAS Cable glands:

- offer a universal armour clamp for all armoured cable types (wire, braided, tape, marine shipboard)
- come with no reversible components, eliminating installer error
- maintain Flameproof Exd and Increase Safety Exe methods of explosion protection
- provide a seal on the inner sheath
- provide a seal on the outer sheath offering IP66/68 and Type 4X protection
- provide an O-Ring on the entry seal (metric entry threads only)
- meet DTS01 1991 deluge requirements
- are constructed of all brass or all stainless steel material
- incorporate anti-twist assembly reducing the amount of cable twist during installation
- are available with metric or NPT threads
- are available with optional nickel-plate finish
- are available with optional silicone zero halogen seal for extreme high and low temperature applications (-60°C to +180°C).



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Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:
1. Select the Gland Type based on cable type and seal required (i.e., TAB1)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT) (Available sizes listed in step 2)

Ordering example:
TAB1/20S/075NPT

Step 1 – Select Gland Type from Table below:

Gland Types

Gland Type	Description
TAB1	Universal gland for steel wire, steel braid & steel tape with neoprene seal - brass construction
TAB3	Universal gland for steel wire, steel braid & steel tape with silicone seal - brass construction
TAS1	Universal gland for steel wire, steel braid & steel tape with neoprene seal - stainless steel construction
TAS3	Universal gland for steel wire, steel braid & steel tape with silicone seal - stainless steel construction

For optional nickel-plate finish add suffix /NP after Gland Type (i.e., TAB1/NP).
For reduced bore gland add ''R'' at the end of gland type (i.e. TAB1R).
For optional poly-bagged kit including gland, locknut, earth tag, sealing washer and PVC shroud, add ''K1'' at the end of Gland Type (i.e., TAB1K1).

Step 2 – Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		GLAND SEAL RANGE						Armour Acceptance Range	Shroud Size
			Cable Inner Sheath [C]		Cable Outer Sheath [D]					
					Standard		Reduced			
	Metric	NPT	Min	Max	Min	Max	Min	Max		
16	M20	½″ or ¾″	3.4	8.4	9.0	13.5	6.7	10.3	0.15 - 1.25	L24
20S	M20	½″ or ¾″	7.2	11.7	11.5	16.0	9.4	12.5	0.15 - 1.25	L24
20	M20	½″ or ¾″	9.4	14.0	15.5	21.1	12.0	17.6	0.15 - 1.25	EL30
25	M25	¾″ or 1″	13.5	20.0	20.3	27.4	16.8	23.9	0.15 - 1.60	EL38
32	M32	1″ or 1¼″	19.5	26.3	26.7	34.0	23.2	30.5	0.15 - 2.00	EL46
40	M40	1¼″ or 1½″	23.0	32.2	33.0	40.6	28.6	36.2	0.20 - 2.00	EL55
50S	M50	1½″ or 2″	28.1	38.2	39.4	46.7	34.8	42.4	0.30 - 2.50	EL65
50	M50	2″	33.1	44.1	45.7	53.2	41.1	48.5	0.30 - 2.50	EL65
63S	M63	2″ or 2½″	39.3	50.1	52.1	59.5	47.5	54.8	0.30 - 2.50	EL80
63	M63	2½″	46.7	56.0	58.4	65.8	53.8	61.2	0.30 - 2.50	EL80
75S	M75	2½″ or 3″	52.3	62.0	64.8	72.2	60.2	68.0	0.30 - 2.50	EL90
75	M75	3″	58.0	68.0	71.1	78.0	66.5	73.4	0.30 - 2.50	EL90
80	M80 x 2	3″ or 3½″	61.9	72.0	77.0	84.0	-	-	0.45 - 3.15	L104
80H	M80 x 2	3″ or 3½″	61.9	72.0	79.6	90.0	-	-	0.45 - 3.15	L104
85	M85 x 2	3″ or 3½″	69.1	78.0	79.6	90.0	75.0	85.4	0.45 - 3.15	L104
90	M90 x 2	3½″ or 4″	74.1	84.0	88.0	96.0	-	-	0.45 - 3.15	L114
90H	M90 x 2	3½″ or 4″	74.1	84.0	92.0	102.0	-	-	0.45 - 3.15	L114
100	M100 x 2	3½″ or 4″	81.8	90.0	92.0	102.0	87.4	97.4	0.45 - 3.15	L114

Step 3 – Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
½″ NPT	050NPT
¾″ NPT	075NPT
1″ NPT	100NPT
1¼″ NPT	125NPT
1½″ NPT	150NPT
2″ NPT	200NPT
2½″ NPT	250NPT
3″ NPT	300NPT
3½″ NPT	350NPT
4″ NPT	400NPT
–	–
–	–

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5F TACF Series Barrier Gland

Atex and CENELEC Range

NEW!

ATEX and CENELEC E Exd & IIC ATEX I M2 II 2 GD
Ignitible dusts, Zones 21 and 22 CSA Exc I IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/88
DTS01 1991 Deluge



TACF

Application

The TACF series is a flameproof E Exd compound filled barrier cable gland for use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and steel wire armoured, steel wire braided, steel tape armoured and unarmoured cables. Also, for use in Exd and Exe hazardous areas with CSA equipment and braided and marine shipboard cable. The TACF series will maintain the flameproof Exd integrity of any volume enclosure with an internal ignition source for all gas groups when used with any armoured or unarmoured cable types.

Features:

All TACF Cable glands:

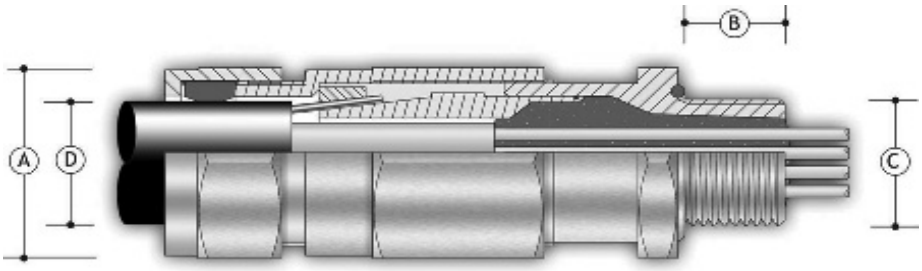
- are available in all brass or all stainless steel construction.
- offer a universal armour clamp for all armoured cable types (steel wire, steel braid, steel tape, marine shipboard) and unarmoured cable.
- are provided with sealing compound that cures in 4 hours at 21°C.
- come with no reversible components, eliminating installer error.
- maintain Flameproof Exd and Increase Safety Exe methods of explosion protection.
- provide a seal on the outer sheath offering IP66/68 and Type 4X protection.
- provide an entry thread seal (metric threads only).
- meet DTS01 1991 deluge requirements.
- may be terminated 1 hour after creation of seal.
- may be energized 4 hours after creation of seal.
- incorporate anti-twist assembly reducing the amount of cable twist during installation.
- are available with metric or NPT threads.
- are available with optional nickel-plate finish.
- are provided with silicone seals, temperature range -60°C to +85°C.

Certifications and Compliances

- ATEX E Exd I & IIC with SIRA 03ATEX1552X
- Standards EN50014, EN50018 and EN50281-1-1:1998
- IP66 and IP68 at 100 meters
- DTS01 1991 deluge
- CSA Exd I & IIC
- Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R-Exd I & IICU
- Mining Equipment Group I, M2

Design Data (millimeters)

Gland Size	A (across corners)	B
16	28.0	16
20S	28.0	16
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50S	71.5	16
50	71.5	16
63S	88.0	19
63	88.0	19
75S	99.0	19
75	99.0	19
80	115.2	25
85	115.2	25
90	125.7	25
100	125.7	25



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TACF Series Barrier Gland

Atex and CENELEC Range

ATEX and CENELEC E Exd & IIC ATEX I M2 II 2 GD
Ignitible dusts, Zones 21 and 22 CSA Exc I IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/88
DTS01 1991 Deluge

NEW!

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:
1. Select the Gland Type based on material required (i.e., TACFB)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT) (Available sizes listed in step 2)

Ordering example: TACFB/20S/075NPT

Step 1: Select Gland Type from Table below:

Gland Types

Gland Type	Description
TACFB	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Brass construction
TACFS	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Stainless steel construction

For optional nickel-plate finish on brass glands add suffix /NP after Gland Type (i.e., TACFB/NP).
For reduced bore gland add ''R'' at the end of Gland Type (i.e., TACFBR).
For optional poly-bagged kit including gland, locknut, earth tag, sealing washer and PVC shroud, add ''K1'' at the end of Gland Type (i.e., TACFBK1).

Step 2: Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		GLAND SEAL RANGE							Armour Acceptance Range	Shroud Size
			Cable Inner Sheath/Cores [C]			Cable Outer Sheath [D]					
						Standard		Reduced			
	Metric	NPT	Max No. of Cores	Max Over Cores	Max Inner Sheath	Min	Max	Min	Max		
16	M20	½″ or ¾″	7	9.0	11.7	9.0	13.5	6.7	10.3	0.15 - 1.25	L24
20S	M20	½″ or ¾″	8	10.4	11.7	11.5	16.0	9.4	12.5	0.15 - 1.25	L24
20	M20	½″ or ¾″	14	12.5	14.0	15.5	21.1	12.0	17.6	0.15 - 1.25	EL30
25	M25	¾″ or 1″	25	17.8	20.0	20.3	27.4	16.8	23.9	0.15 - 1.60	EL38
32	M32	1″ or 1¼″	50	23.5	26.3	26.7	34.0	23.2	30.5	0.15 - 2.00	EL46
40	M40	1¼″ or 1½″	80	28.8	32.2	33.0	40.6	28.6	36.2	0.20 - 2.00	EL55
50S	M50	2″	100	34.2	38.2	39.4	46.8	34.8	42.4	0.20 - 2.50	EL65
50	M50	2″	100	39.4	44.1	45.7	53.2	41.1	48.5	0.20 - 2.50	EL65
63S	M63	2½″	120	44.8	50.1	52.1	59.5	47.5	54.8	0.30 - 2.50	EL80
63	M63	2½″	120	50.0	56.0	58.4	65.8	53.8	61.2	0.30 - 2.50	EL80
75S	M75	3″	140	55.4	62.0	64.8	72.2	60.2	68.0	0.30 - 2.50	EL90
75	M75	3″	140	60.8	68.0	71.1	78.0	66.5	73.4	0.30 - 2.50	EL90
80	M80 x 2	3″ or 3½″	160	64.4	72.0	77.0	84.0	—	—	0.45 - 3.15	L104
85	M85 x 2	3″ or 3½″	180	69.8	78.0	79.6	90.0	75.0	85.4	0.45 - 3.15	L104
90	M90 x 2	3½″ or 4″	200	75.1	84.0	88.0	96.0	—	—	0.45 - 3.15	L114
100	M100 x 2	3½″ or 4″	220	80.5	90.0	92.0	102.0	87.4	97.4	0.45 - 3.15	L114

Step 3: Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
½″ NPT	050NPT
¾″ NPT	075NPT
1″ NPT	100NPT
1¼″ NPT	125NPT
1½″ NPT	150NPT
2″ NPT	200NPT
2½″ NPT	250NPT
3″ NPT	300NPT
3½″ NPT	350NPT
4″ NPT	400NPT
—	—
—	—

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TUSC SERIES

ATEX and CENELEC Range
For Unarmoured or Braided Cable

ATEX and CENELEC Dual E Exd IIC/E Exe II
Zone 1 or 2 Hazardous Areas
CSA Exd IIC/Exe II, Class I, Zone 1
Enclosure Type 4X
IP66/67/68



Certifications and Compliances

- ATEX E Exd IIC/E Exe II with SIRA 03ATEX2079X
- Standards EN50014:1998, EN50018:2000, EN50019:2000 and EN50281-1-1:1998
- Class I, Zone 1
- CSA Exd IIC/Exe II
- Enclosure Type 4X
- IP66, IP67 and IP68
- GOST R - Exd IICU/Exe IIU

Design Data (millimeters)

Gland Size	A (across corners)	B (thread length)
16	28.0	16.0
20S	28.0	16.0
20	33.0	16.0
25	41.4	16.0
32	50.6	16.0
40	60.5	16.0
50S	71.5	16.0
50	71.5	16.0
63S	88.0	19.0
63	88.0	19.0
75S	99.0	19.0
75	99.0	19.0
80	115.2	25.0
85	115.2	25.0
90	125.7	25.0
100	125.7	25.0

Application

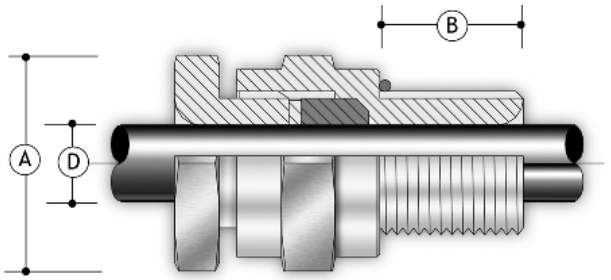
For use in Zone 1 or 2 hazardous areas with ATEX/CENELEC certified equipment and unarmoured, braided or marine shipboard cable.

Features

All TUSC cable glands offer:

- a flameproof or increased safety seal on the outer sheath of unarmoured or braided cable
- a weatherproof seal to the outer sheath of the cable
- integral entry thread seal (metric entry threads only)
- brass construction (optional stainless steel)
- optional nickel-plate finish
- metric or NPT threads

TU3SC cable glands offer a zero halogen version for extreme high and low temperature applications (-60°C to +180°C).



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TUSC Brass Cable Glands

ATEX and CENELEC Range for Unarmoured or Braided Cable

ATEX and CENELEC Dual E Exd IIC/E Exe II
Zone 1 or 2 Hazardous Areas
CSA Exd IIC/Exe II, Class I, Zone 1
Enclosure Type 4X
IP66/67/68

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:
1. Select the Gland Type (i.e., TU1SC)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT)

Ordering example:
TU1SC/NP/20S/075NPT

Step 1 – Select Gland Type from Table below:

Gland Types

Gland Type	Description
TU1SC	For Unarmoured or Braided cable with neoprene seal – brass construction.
TU3SC	For Unarmoured or Braided cable with silicone seal for extreme temp. – brass construction.
TU1SCS	For Unarmoured or Braided cable with neoprene seal – stainless steel construction.
TU3SCS	For Unarmoured or Braided cable with silicone seal for extreme temp. – stainless steel construction.

For optional nickel-plate finish add suffix /NP after Gland Type (i.e., TU1SC/NP).
For optional poly-bagged kit including gland, brass locknut, sealing washer and PCP shroud, add ''K1'' at the end of Gland Type (i.e. TU1SCK1).

Step 2 – Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		Cable Outer Sheath [D]		Shroud Size †
	Metric	NPT	Min	Max	
16	M20	½″ or ¾″	3.4	8.4	L24
20S	M20	½″ or ¾″	7.2	11.7	L24
20	M20	½″ or ¾″	9.6	14.0	L30
25	M25	¾″ or 1″	13.5	20.0	L38
32	M32	1″ or 1¼″	19.5	26.3	L46
40	M40	1¼″ or 1½″	23.0	32.2	L55
50S	M50	1½″ or 2″	28.2	38.2	L65
50	M50	2″	33.2	44.1	L65
63S	M63	2″ or 2½″	39.3	50.1	L80
63	M63	2½″	46.7	56.0	L80
75S	M75	2½″ or 3″	52.3	62.0	L90
75	M75	3″	58.1	68.0	L90
80	M80 × 2	3″ or 3½″	62.3	72.0	L104
85	M85 × 2	3″ or 3½″	69.1	78.0	L104
90	M90 × 2	3½″ or 4″	74.1	84.0	L114
100	M100 × 2	3½″ or 4″	82.1	90.0	L114

† For PVC or PCP shrouds see Accessories, page 93

Step 3 – Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
½″ NPT	050NPT
¾″ NPT	075NPT
1″ NPT	100NPT
1¼″ NPT	125NPT
1½″ NPT	150NPT
2″ NPT	200NPT
2½″ NPT	250NPT
3″ NPT	300NPT
3½″ NPT	350NPT
4″ NPT	400NPT
–	–
–	–

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5F TUCF Series Barrier Gland

Atex and CENELEC Range

NEW!

ATEX and CENELEC E Exd I & IIC ATEX I M2 II 2 GD
Ignitible dusts, Zones 21 and 22 CSA Exc I & IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/68
DTS01 1991 Deluge



TUCF

Application

The TUCF series is a flameproof E Exd compound filled barrier cable gland for use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and unarmoured cable. Also, for use in Exd and Exe hazardous areas with CSA equipment and unarmoured cable.
The TUCF series will maintain the flameproof Exd integrity of any volume enclosure with an internal ignition source for all gas groups when used with any unarmoured cable types.

Features:

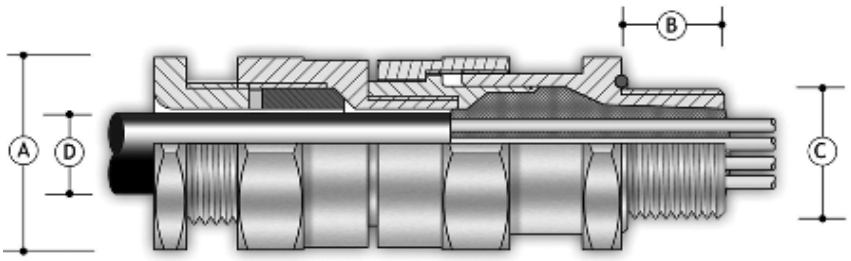
All TUCF Cable glands:
- are available in all brass or all stainless steel construction.
- are provided with sealing compound that cures in 4 hours at 21°C.
- maintain Flameproof Exd methods of explosion protection.
- provide a secondary seal on the outer sheath offering IP66/68 and Type 4X protection.
- provide an entry thread seal (metric threads only).
- meet DTS01 1991 deluge requirements.
- may be terminated 1 hour after creation of seal.
- may be energized 4 hours after creation of seal.
- are available with metric or NPT threads.
- are available with optional nickel-plate finish.
- are provided with silicone seals, temperature range -60°C to +85°C.

Certifications and Compliances

- ATEX E Exd I & IIC with SIRA 03ATEX1552X
- Standards EN50014, EN50018 and EN50281-1-1:1998
- IP66 and IP68 at 100 meters
- DTS01 1991 deluge
- CSA Exd I & IIC
- Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R-Exd I & IICU
- Mining Equipment Group I, M2

Design Data (millimeters)

Gland Size	A (across corners)	B
16	28.0	16
20S	28.0	16
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50S	71.5	16
50	71.5	16
63S	88.0	19
63	88.0	19
75S	99.0	19
75	99.0	19
80	115.2	25
85	115.2	25
90	125.7	25
100	125.7	25



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TUCF Series Barrier Gland

Atex and CENELEC Range

ATEX and CENELEC E Exd I & IIC ATEX I M2 II 2 GD
Ignitible dusts, Zones 21 and 22 CSA Exc I & IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/68
DTS01 1991 Deluge

NEW!

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:
1. Select the Gland Type based on material required (i.e., TUCFB)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT) (Available sizes listed in step 2)

Ordering example:
TUCFB/20S/075NPT

Step 1: Select Gland Type from Table below:

Gland Types

Gland Type	Description
TUCFB	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Brass construction
TUCFS	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Stainless steel construction

For optional nickel-plate finish on brass glands add suffix /NP after Gland Type (i.e., TUCFB/NP). For reduced bore gland add ''R'' at the end of Gland Type (i.e., TUCFBR).
For optional poly-bagged kit including gland, locknut, earth tag, sealing washer and PVC shroud, add ''K1'' at the end of Gland Type (i.e., TUCFBK1).

Step 2: Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		GLAND SEAL RANGE					Shroud Size
			Cable Inner Sheath/Cores [C]			Cable Outer Sheath [D] Standard		
	Metric	NPT	Max No. of Cores	Max Over Cores	Max Inner Sheath	Min	Max	
16	M20	½″ or ¾″	7	8.4	8.4	3.4	8.4	L24
20S	M20	½″ or ¾″	8	10.4	11.7	4.8	11.7	L24
20	M20	½″ or ¾″	14	12.5	14.0	9.5	14.0	EL30
25	M25	¾″ or 1″	25	17.8	20.0	11.7	20.0	EL38
32	M32	1″ or 1¼″	50	23.5	26.3	18.1	26.3	EL46
40	M40	1¼″ or 1½″	80	28.8	32.2	22.6	32.2	EL55
50S	M50	2″	100	34.2	38.2	28.2	38.2	EL65
50	M50	2″	100	39.4	44.1	33.1	44.1	EL65
63S	M63	2½″	120	44.8	50.1	39.3	50.1	EL80
63	M63	2½″	120	50.0	56.0	46.7	56.0	EL80
75S	M75	3″	140	55.4	62.0	52.3	62.0	EL90
75	M75	3″	140	60.8	68.0	58.0	68.0	EL90
80	M80 x 2	3″ or 3½″	160	64.4	72.0	61.9	72.0	L104
85	M85 x 2	3″ or 3½″	180	69.8	78.0	69.1	78.0	L104
90	M90 x 2	3½″ or 4″	200	75.1	84.0	74.1	84.0	L114
100	M100 x 2	3½″ or 4″	220	80.5	90.0	81.8	90.0	L114

Step 3: Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
½″ NPT	050NPT
¾″ NPT	075NPT
1″ NPT	100NPT
1¼″ NPT	125NPT
1½″ NPT	150NPT
2″ NPT	200NPT
2½″ NPT	250NPT
3″ NPT	300NPT
3½″ NPT	350NPT
4″ NPT	400NPT
—	—
—	—

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5F TCCF Series Barrier Gland

Atex and CENELEC Range

NEW!

ATEX and CENELEC E Exd I & IIC ATEX I M2 II 2 GD
Ignitible dusts, Zones 21 and 22 CSA Exd I & IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/68
DTS01 1991 Deluge



TCCF

Application

The TCCF series is a flameproof E Exd compound filled barrier cable gland for use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and conduit. The gland provides a flameproof Exd seal on the cables individual conductors within a conduit. Also, for use in Exd and Exe hazardous areas with CSA equipment and braided and marine shipboard cable. The TCCF series will maintain the flameproof Exd integrity of any volume enclosure with an internal ignition source for all gas groups when used with conduit.

Features:

All TCCF Cable glands:

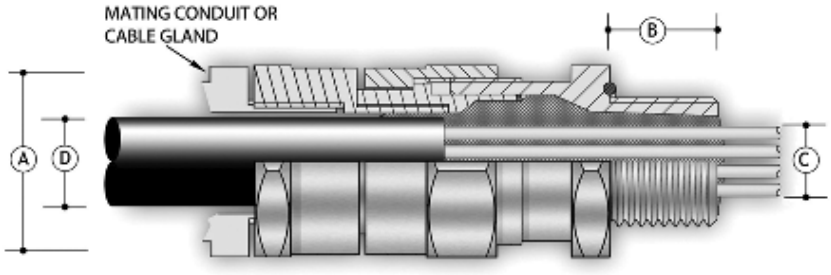
- are available in all brass or all stainless steel construction.
- are provided with sealing compound that cures in 4 hours at 21°C.
- maintain Flameproof Exd and Increase Safety Exe methods of explosion protection.
- provide a seal on the conduit offering IP66/68 and Type 4X protection.
- provide an entry thread seal (metric threads only).
- meet DTS01 1991 deluge requirements.
- may be terminated 1 hour after creation of seal.
- may be energized 4 hours after creation of seal.
- are available with metric or NPT threads.
- are available with optional nickel-plate finish.
- have a temperature range of -60°C to +85°C.

Certifications and Compliances

- ATEX E Exd I & IIC with SIRA 03ATEX1552X
- Standards EN50014, EN50018 and EN50281-1-1:1998
- IP66 and IP68 at 100 meters
- DTS01 1991 deluge
- CSA Exd I & IIC
- Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R-Exd I & IICU
- Mining Equipment Group I, M2

Design Data (millimeters)

Gland Size	A (across corners)	B
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50	71.5	16
63	88.0	19
75	99.0	19
80	115.2	25
85	115.2	25
90	125.7	25
100	125.7	25



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TCCF Series Barrier Gland

Atex and CENELEC Range

ATEX and CENELEC E Exd & IIC ATEX I M2 II 2 GD
Ignitible dusts, Zones 21 and 22 CSA Exc I IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/88
DTS01 1991 Deluge

NEW!

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:
1. Select the Gland Type based on material required (i.e., TCCFB)
2. Select the Fitting Size based on entry threads (i.e., 20)
3. Specify Male Entry Thread Size (i.e., 075NPT)
4. Specify Female Entry Thread Size (i.e., 075NPT)

Ordering example:
TCCFB/20S/075NPT

Step 1: Select Gland Type from Table below:

Gland Types

Gland Type	Description
TCCFB	Cable gland for conduit - Brass construction
TCCFS	Cable gland for conduit - Stainless steel construction

For optional nickel-plate finish on brass glands add suffix /NP after Gland Type (i.e., TCCFB/NP).

Step 2: Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Fitting Size Ref	Male Entry Threads		Female Entry Threads		SEALING RANGE Cable Conductors / Cores		
	Metric	NPT	Metric	NPT	Max No. of Cores	Max Over Cores [C]	Max Cable Inside Fitting [D]
20	M20	½″ or ¾″	M20	½″ or ¾″	14	12.5	14.0
25	M25	¾″ or 1″	M25	¾″ or 1″	25	17.8	20.0
32	M32	1″ or 1¼″	M32	1″ or 1¼″	50	23.5	26.3
40	M40	1¼″ or 1½″	M40	1¼″ or 1½″	80	28.8	32.2
50	M50	2″	M50	2″	100	39.4	44.1
63	M63	2½″	M63	2½″	120	50.0	56.0
75	M75	3″	M75	3″	140	60.8	68.0
80	M80 x 2	3″ or 3½″	M80 x 2	3″ or 3½″	160	64.4	72.0
85	M85 x 2	3″ or 3½″	M85 x 2	3″ or 3½″	180	69.8	78.0
90	M90 x 2	3½″ or 4″	M90 x 2	3½″ or 4″	200	75.1	84.0
100	M100 x 2	3½″ or 4″	M100 x 2	3½″ or 4″	220	80.5	90.0

Step 3: Specify Male Thread Size from Table Above:

Step 4: Specify Female Thread Size from Table Above:

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5F NEMA 4X BREATHER/DRAIN

ATEX and CENELEC Range

I M2 II 2GD, E Exe I & II (Stainless Steel & Brass only)
II 2GD, E Exe II (Nylon version)
CSA Class I, Division 2, Groups A, B, C & D, Exe II

Enclosure Type 4X
IP66



Certifications and Compliances

- SIRA 99 ATEX 3050U
- I M2 II 2GD, E Exe I & II (Stainless Steel & Brass only)
- II 2GD, E Exe II (Nylon only)
- CSA Class I, Division 2, Groups A, B, C & D, Exe II
- Enclosure Type 4X
- IP66

Operating Temperature

- –50°C to +85°C

Application

For use in enclosures to provide a method to effectively drain moisture while allowing the enclosure to breathe.

Features

All NEMA 4X breather/drains offer:

- Castellated locknuts that allow moisture to pass between the enclosure and the locknut to the drain holes in the fitting.
- Available in brass, stainless steel (Type 316) or 30% glass filled nylon.
- Captive ''O'' ring on recess of the face of the breather/drain to optimize ingress protection.
- ATEX and CSA Certified for worldwide market acceptance.
- Available with metric or NPT threads.

Ordering Information

NEMA 4X Breather/Drain

Entry Method	Material	Catalog Number
M20	Brass	ACDPEB/M20/15
M20	Stainless Steel	ACDPES/M20/15
M20	Nylon	ACDPEBN/M20/15
M25	Brass	ACDPEB/M25/15
M25	Stainless Steel	ACDPES/M25/15
M25	Nylon	ACDPEBN/M25/15
½″	Brass	ACDPEB/050NPT/15
½″	Stainless Steel	ACDPES/050NPT/15
¾″	Brass	ACDPEB/075NPT/15
¾″	Stainless Steel	ACDPES/075NPT/15

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Thread Data (Dimensions are all in millimeters)

Thread Size	Major Diameter	Pitch	Length	Min. Hex
M16	15.97	1.50	16.00	24
M20	19.97	1.50	16.00	30
M25	24.97	1.50	16.00	38
M32	31.97	1.50	16.00	46
M40	39.97	1.50	16.00	55
M50	49.97	1.50	16.00	65
M63	62.97	1.50	19.00	80
M75	74.97	1.50	19.00	90
M80	79.97	2.00	25.00	104
M85	84.97	2.00	25.00	104
M90	89.97	2.00	25.00	114
M100	99.97	2.00	25.00	114
½″ NPT	21.22	1.81	19.90	24
¾″ NPT	26.57	1.81	20.10	30
1″ NPT	33.23	2.20	25.00	38
1¼″ NPT	41.99	2.20	25.60	46
1½″ NPT	48.05	2.20	26.00	55
2″ NPT	60.09	2.20	26.90	65
2½″ NPT	72.7	3.18	39.90	80
3″ NPT	88.61	3.18	41.50	90
3½″ NPT	101.36	3.18	42.80	104
4″ NPT	113.97	3.18	44.00	114

Weight Data (Weights are all in grams)

Gland Size	TWDC/TBDC	TWCF/TBCF	TWSC/TBSC	TUSC	TUDC
16	141	–	116	85	139
20S	131	191	110	86	129
20	190	188	161	120	176
25	265	275	234	167	246
32	424	429	355	253	396
40	673	673	590	375	626
50S	966	962	532	588	898
50	743	740	616	459	691
63S	1389	–	1255	836	1258
63	1142	–	999	693	1030
75S	1690	–	1473	1091	1537
75	1347	–	1122	844	1225
80	2615	–	–	1690	2379
85	2335	–	–	1510	2124
90	3470	–	–	1650	3157
100	3090	–	–	1520	2811

Glossary of Terms

I M2 - Gas Group 1, M2 is the ATEX category for equipment suitable for Zones 21 & 22 (Mining applications).
II 2GD - Gas Group II, 2 is the ATEX category for equipment suitable for Zones 1 & 2, GD denotes suitability for both Gas and Dust atmospheres.
ATEX- The ATEX Directive (94/9/EC) applies to equipment and protective systems intended for use in potentially explosive atmospheres within Europe. The directive outlines the conformity assessment procedures and product classification for explosion protected (Ex) products. All explosion protected products placed on the market within Europe after 30th June 2003 must comply with these requirements.
Cable Glands - A fitting designed to terminate cable or flexible cord at junction boxes, control centers, lighting fixtures, panelboards and other enclosures. Also provides strain relief and environmental sealing.
CENELEC - The standards-writing body of the European Union.
Deluge Areas - A deluge area is one where the cable gland many be temporarily submersed in water.
(Shell DTS01 tested).
Earth Tag - Designed as a ground connection that is affixed to the entry threads of the cable gland.
E Exe I & II - Increased Safety, Gas Groups I (Mining) & II (Surface).
E Exe II - Increased Safety, Gas Group II (Surface).
GOST - Gosstandart is the state approvals and standards body of the Russian Federation.
IEC - International Electrotechnical Commission.
IP Rating - IP stands for ingress protection and is a term used by the IEC. The IP rating indicates the degree of protection provided by the cable gland from environmental elements. It is similar to NEMA ratings. IP54 is protected against dusts and no ingress of water sprayed from all directions. IP66 is completely dust proof and no ingress of water from jets similar to heavy seas. IP67 is completely dust proof and no ingress of water from immersion at 1 meter depth. IP68 is completely dust proof and no ingress of water from deeper and prolonged immersion.
PCP - polychloroprene.
PVC - poly-vinyl-chloride.
Reduced Bore - Options available on CENELEC certified Terminator Brass Cable Glands for a reduced bore on outer neoprene seal for smaller OD cable.
Shroud - A PVC, PCP or SIO accessory that is designed to cover the cable gland for added environmental protection.
SIO - Silicone, low smoke, zero halogen shroud.

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5F Brass Cable Gland Accessories

Locknuts, Earth Tags, Sealing Washers, Metric Adapters, PVC Shrouds, PCP Shrouds



Brass Locknut – Standard locknut to affix a hazardous area brass cable gland in a plain hole

Size	Cat. #	Size	Cat. #	Size	Cat. #
M16	BLN/M16	M80	BLN/M80	1½″	BLN/150NPT
M20	BLN/M20	M85	BLN/M85	2″	BLN/200NPT
M25	BLN/M25	M90	BLN/M90	2½″	BLN/250NPT
M32	BLN/M32	M100	BLN/M100	3″	BLN/300NPT
M40	BLN/M40	½″	BLN/050NPT	3½″	BLN/350NPT
M50	BLN/M50	¾″	BLN/075NPT	4″	BLN/400NPT
M63	BLN/M63	1″	BLN/100NPT	–	–
M75	BLN/M75	1¼″	BLN/125NPT	–	–



Brass Earth Tag – Standard earth connection for threaded cable glands

Size	Cat. #	Size	Cat. #	Size	Cat. #
M16	BET/M16	M80	BET/M80	1½″	BET/150NPT
M20	BET/M20	M85	BET/M85	2″	BET/200NPT
M25	BET/M25	M90	BET/M90	2½″	BET/250NPT
M32	BET/M32	M100	BET/M100	3″	BET/300NPT
M40	BET/M40	½″	BET/050NPT	3½″	BET/350NPT
M50	BET/M50	¾″	BET/075NPT	4″	BET/400NPT
M63	BET/M63	1″	BET/100NPT	–	–
M75	BET/M75	1¼″	BET/125NPT	–	–



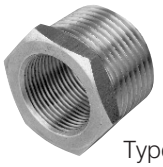
Sealing Washer – Required to maintain IP ratings above IP54

Size	Cat. #	Size	Cat. #	Size	Cat. #
M16	RNSW/M16	M80	RNSW/M80	1½″	RNSW/150NPT
M20	RNSW/M20	M85	RNSW/M85	2″	RNSW/200NPT
M25	RNSW/M25	M90	RNSW/M90	2½″	RNSW/250NPT
M32	RNSW/M32	M100	RNSW/M100	3″	RNSW/300NPT
M40	RNSW/M40	½″	RNSW/050NPT	3½″	RNSW/350NPT
M50	RNSW/M50	¾″	RNSW/075NPT	4″	RNSW/400NPT
M63	RNSW/M63	1″	RNSW/100NPT	–	–
M75	RNSW/M75	1¼″	RNSW/125NPT	–	–

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Brass Cable Gland Accessories

Locknuts, Earth Tags, Sealing Washers, Metric Adapters, PVC Shrouds, PCP Shrouds



Type A



Type B

Metric/NPT Thread Adapters – Brass adapters used to change the thread form and/or size

Adapters: NPT ➧ Metric — Class I, Zone I, Group IIC & Class II

Cat. #	Male Thread	Female Thread	Body Style
CAPRI: 740454	½″	20mm	B
CAPRI: 740714	½″	25mm	B
CAPRI: 740464	¾″	20mm	A
CAPRI: 740724	¾″	25mm	B
CAPRI: 740474	1″	20mm	A
CAPRI: 740734	1″	25mm	A
CAPRI: 740994	1″	32mm	B
CAPRI: 740744	1¼″	25mm	A
CAPRI: 741004	1¼″	32mm	A
CAPRI: 741274	1½″	40mm	A
CAPRI: 741284	2″	40mm	A
CAPRI: 741544	2″	50mm	A
CAPRI: 741804	2″	63mm	B
CAPRI: 741814	2½″	63mm	A

Adapters: Metric ➧ NPT — Class I, Zone I, Group IIC & Class II

CAPRI: 744704	20mm	½″	B
CAPRI: 744964	20mm	¾″	B
CAPRI: 744714	25mm	½″	A
CAPRI: 744974	25mm	¾″	B
CAPRI: 744984	32mm	¾″	A
CAPRI: 745244	32mm	1″	B
CAPRI: 745254	40mm	1″	A
CAPRI: 745514	40mm	1¼″	B
CAPRI: 745524	50mm	1¼″	A
CAPRI: 745794	63mm	1½″	A

Adapters are available with optional nickel-plate finish, add suffix -NP (i.e., ANM21-NP)



Black PVC Shroud – Covers the gland as added environmental protection

Size	Cat. #	Size	Cat. #
L24	PVC-L24	L65	PVC-L65
L30	PVC-L30	L80	PVC-L80
L38	PVC-L38	L90	PVC-L90
L46	PVC-L46	L104	PVC-L104
L55	PVC-L55	L114	PVC-L114



Black PCP Shroud – Covers the gland as added environmental protection†

Size	Cat. #†	Size	Cat. #†
L24	PCP-L24	L65	PCP-L65
L30	PCP-L30	L80	PCP-L80
L38	PCP-L38	L90	PCP-L90
L46	PCP-L46	L104	PCP-L104
L55	PCP-L55	–	–

† For a zero halogen version shroud, to be used with cable glands for extreme high and low temperature applications (i.e. TW3DC) change PCP catalog number to SIO (i.e., PCP-L24 becomes SIO-L24).

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5F CAPRI Series Brass Cable Glands

One Gland for Steel-Wire Armour, Steel Wire Braid and Steel-Tape Cable

EEx e II
EEx d IIB
Zone 1 or 2
IP 68

Universal clamping with standard nickel plate finish



Application

For terminating cable in Zone 1 or 2 hazardous areas with ATEX/ CENELEC certified equipment and steel wire armoured, braided or steel-tape cable.For use indoors or outdoors.
● E Exe II rating ● E Exd IIB rating ● E Exd IIC <2000 cm³

Features

All CAPRI Series brass cable glands offer:
- one gland for 3 types of cable.
- a standard nickel plate finish.
- clamping and bonding on the armour.
- a flameproof seal on the inner sheath of the cable.
- a weatherproof seal to the outer sheath of the cable.
- IP68 ingress protection.
- a neoprene bushing temperature range of -40°C to 100°C.
- an optional earthing washer for use with lead sheath cable.
- metric or NPT entry threads.
- a perfect fit for cables with an inner sheath diameter of 4 mm to 82 mm.

Certifications and Compliances

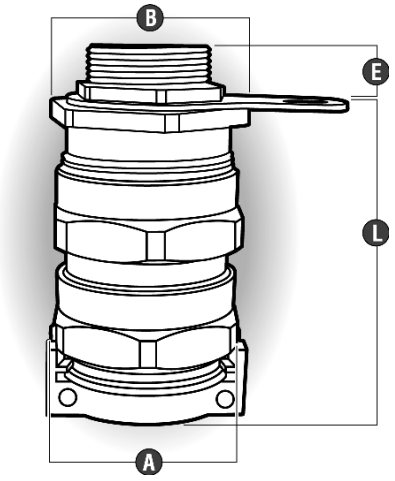
- ATEX E Exd IIC / E Exe II by Securite LCIE 97 ATEX 6006X
- Standards EN50014, EN50018, EN50019:2000, EN50281-1-1 and 2.
- IP68

Metric Design Data (millimeters)

Thread Size	Gland Size	A	B	E	L
16	5	19.0	19.0	15.0	36.0
16	6	24.0	24.0	15.0	42.0
20	5	19.0	24.0	15.0	36.0
20	6	24.0	24.0	15.0	42.0
20	7	30.0	30.0	15.0	46.0
25	6	24.0	30.0	15.0	42.0
25	7	30.0	30.0	15.0	46.0
25	8	41.0	41.0	15.0	56.0
32	8	41.0	41.0	15.0	56.0
32	9	48.0	48.0	15.0	63.0
40	9	48.0	48.0	15.0	63.0
40	10	55.0	55.0	15.0	68.0
50	10	55.0	55.0	16.0	68.0
50	11	64.0	64.0	16.0	74.0
63	12	72.0	72.0	17.0	77.0
63	13	85.0	85.0	17.0	85.0
75	13	85.0	85.0	18.0	85.0
75	14	95.0	95.0	18.0	92.0
80	14	95.0	95.0	20.0	92.0
80	15	110.0	110.0	20.0	104.0
90	15	110.0	110.0	22.0	104.0
90	16	120.0	110.0	22.0	108.0

NPT Design Data (millimeters)

Thread Size	Gland Size	A	B	E	L
½″	5	19.0	24.0	16.0	36.0
½″	6	24.0	24.0	16.0	42.0
½″	7	30.0	30.0	16.0	46.0
¾″	6	24.0	30.0	16.0	42.0
¾″	7	30.0	30.0	16.0	46.0
¾″	8	41.0	41.0	16.0	56.0
1″	8	41.0	41.0	20.0	46.0
1″	9	48.0	48.0	20.0	63.0
1¼″	9	48.0	48.0	20.0	63.0
1¼″	10	55.0	55.0	20.0	68.0
1½″	10	55.0	55.0	20.0	68.0
1½″	11	64.0	64.0	20.0	74.0
2″	12	72.0	72.0	20.0	77.0
2″	13	85.0	85.0	20.0	85.0
2½″	13	85.0	85.0	28.0	85.0
2½″	14	95.0	95.0	28.0	92.0
3″	15	110.0	110.0	30.0	104.0
3″	16	120.0	120.0	30.0	108.0



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CAPRI Series
Brass Cable Glands cont.

One Gland for Steel-Wire Armour, Steel Wire Braid and Steel-Tape Cable

EEx e II
EEx d IIB
Zone 1 or 2
IP 68

Ordering Information

Capri ADE 4F Series – Metric

Thread Size	Gland Size	GLAND SEAL RANGE				Armour Range	Catalog Number
		Cable Inner Sheath		Cable Outer Sheath			
		Min	Max	Min	Max		
16	5	4.0	8.5	6.0	12.0	0.90	CAPRI:846594
16	6	6.0	12.0	8.5	16.0	1.25	CAPRI:846504
20	5	4.0	8.5	6.0	12.0	0.90	CAPRI:846674
20	6	6.0	12.0	8.5	16.0	1.25	CAPRI:846694
20	7	8.5	15.5	12.0	21.0	1.25	CAPRI:846604
25	6	6.0	12.0	8.5	16.0	1.25	CAPRI:846774
25	7	8.5	16.0	12.0	21.0	1.25	CAPRI:846794
25	8	12.0	20.5	16.0	27.5	1.60	CAPRI:846704
32	8	12.0	21.0	16.0	27.5	1.25	CAPRI:846894
32	9	16.0	27.5	21.0	34.0	1.60	CAPRI:846804
40	9	16.0	27.5	21.0	34.0	2.00	CAPRI:846994
40	10	21.0	34.0	27.0	41.0	2.00	CAPRI:846904
50	10	21.0	34.0	27.0	41.0	2.50	CAPRI:847094
50	11	27.0	41.0	33.0	48.0	2.50	CAPRI:847004
63	12	33.0	48.0	40.0	56.0	2.50	CAPRI:847294
63	13	40.0	56.0	47.0	65.0	2.50	CAPRI:847204
75	13	40.0	56.0	47.0	65.0	2.50	CAPRI:847394
75	14	47.0	65.0	54.0	74.0	3.15	CAPRI:847304
80	14	47.0	65.0	54.0	74.0	3.15	CAPRI:847494
80	15	54.0	73.0	63.0	83.0	3.15	CAPRI:847404
90	15	54.0	74.0	63.0	83.0	3.15	CAPRI:847594
90	16	63.0	82.0	72.0	93.0	3.15	CAPRI:847504

Capri ADE 4F Series – NPT

Thread Size	Gland Size	GLAND SEAL RANGE				Armour Range	Catalog Number
		Cable Inner Sheath		Cable Outer Sheath			
		Min	Max	Min	Max		
½″	5	4.0	8.5	6.0	12.0	0.90	CAPRI:848674
½″	6	6.0	12.0	8.5	16.0	1.25	CAPRI:848694
½″	7	8.5	15.5	12.0	21.0	1.25	CAPRI:848604
¾″	6	6.0	12.0	8.5	16.0	1.25	CAPRI:848774
¾″	7	8.5	16.0	12.0	21.0	1.25	CAPRI:848794
¾″	8	12.0	20.5	16.0	27.5	1.60	CAPRI:848704
1″	8	12.0	21.0	16.0	27.5	1.25	CAPRI:848894
1″	9	16.0	26.0	21.0	34.0	1.60	CAPRI:848804
1 ¼″	9	16.0	27.5	21.0	34.0	2.00	CAPRI:848994
1 ¼″	10	21.0	34.0	27.0	41.0	2.00	CAPRI:848904
1 ½″	10	21.0	34.0	27.0	41.0	2.00	CAPRI:849094
1 ½″	11	27.0	41.0	33.0	48.0	2.50	CAPRI:849004
2″	12	33.0	48.0	40.0	56.0	2.50	CAPRI:849294
2″	13	40.0	53.0	47.0	65.0	2.50	CAPRI:849204
2 ½″	13	40.0	56.0	47.0	65.0	2.50	CAPRI:849494
2 ½″	14	47.0	62.5	54.0	74.0	2.50	CAPRI:849404
3″	15	54.0	74.0	63.0	83.0	3.15	CAPRI:849594
3″	16	63.0	78.0	72.0	93.0	3.15	CAPRI:849504

Clamping Module

Gland Size	Cable Dia.		Catalog Number
	Min	Max	
5	8.0	12.0	CAPRI:810534
6	8.5	16.0	CAPRI:810634
7	12.0	21.0	CAPRI:810734
8	16.0	27.5	CAPRI:810834
9	21.0	34.0	CAPRI:810934
10	27.0	41.0	CAPRI:811034
11	33.0	48.0	CAPRI:811134
12	40.0	56.0	CAPRI:811234
13	47.0	65.0	CAPRI:811334
14	54.0	74.0	CAPRI:811434
15	63.0	83.0	CAPRI:811534
16	72.0	93.0	CAPRI:811634

PVC Shroud

Gland Size	Cable Dia.		Catalog Number
	Min	Max	
5	6.0	12.0	CAPRI:506050
6	8.5	16.0	CAPRI:506060
7	12.0	21.0	CAPRI:506070
8	16.0	27.5	CAPRI:506080
9	21.0	34.0	CAPRI:506090
10	27.0	41.0	CAPRI:506100
11	33.0	48.0	CAPRI:506110
12	40.0	56.0	CAPRI:506120
13	47.0	65.0	CAPRI:506130
14	54.0	74.0	CAPRI:506140
15	63.0	83.0	CAPRI:506150
16	72.0	93.0	CAPRI:506160

Lead Sheath Earthing Washer

Gland Size	Catalog Number
5	CAPRI:506050
6	CAPRI:506060
7	CAPRI:506070
8	CAPRI:506080
9	CAPRI:506090
10	CAPRI:506100
11	CAPRI:506110
12	CAPRI:506120
13	CAPRI:506130
14	CAPRI:506140
15	CAPRI:506150
16	CAPRI:506160

Earth Tags, Locknuts, Washers – for CAPRI Series only

Thread Size	Nickel Plated Brass Earth Tag	Nickel Plated Brass Locknut	Neoprene Sealing Washer
½″	CAPRI:567064	CAPRI:280124	CAPRI:229012
¾″	CAPRI:567084	CAPRI:280134	CAPRI:229034
1″	CAPRI:567104	CAPRI:280144	CAPRI:229010
1 ¼″	CAPRI:567134	CAPRI:280154	CAPRI:229114
1 ½″	CAPRI:567154	CAPRI:280164	CAPRI:229112
2″	CAPRI:567174	CAPRI:280174	CAPRI:229020
2 ½″	CAPRI:567194	CAPRI:280184	CAPRI:229212

Thread Size	Nickel Plated Brass Earth Tag	Nickel Plated Brass Locknut	Neoprene Sealing Washer
M16	CAPRI:567034	CAPRI:221694	CAPRI:221649
M20	CAPRI:567054	CAPRI:222094	CAPRI:222049
M25	CAPRI:567074	CAPRI:222594	CAPRI:222549
M32	CAPRI:567094	CAPRI:223294	CAPRI:223249
M40	CAPRI:567124	CAPRI:224094	CAPRI:224049
M50	CAPRI:567154	CAPRI:225094	CAPRI:225049
M63	CAPRI:567184	CAPRI:226394	CAPRI:226349
M75	CAPRI:567194	CAPRI:227594	CAPRI:227549

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5F CD Series Ordinary Location Drain

Straight Body ● Male Thread

Application:

CD Series drains are for use in conduit systems to:
- Drain accumulated condensate.
- Provide ventilation to minimize condensation.

Drains are installed in hubs or drilled and tapped openings.

Standard Materials:

- CD bodies and nuts – steel or aluminum
- CD screen – stainless steel

Standard Finishes:

- Steel – electrogalvanized with chromate treatment.

Certifications and Compliances:

- UL Standard 514B

Options:

- Copper-free aluminum construction – add suffix -SA



Ordering Information:

Size	Cat. #
½	CD1
¾	CD2

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Portable Cord Connector

20A 460V AC/DC

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1 & 2, Group G
NEMA 3,4

Application:

EBY portable cord connectors are installed to:
- provide means for passing cord into an enclosure, through a bulkhead or into a rigid conduit in hazardous areas.
- form a non-slip connection or termination for cord

Features:

EBY portable cord connectors have:
- heavy duty rating
- factory sealing
- three, 12 inch long, #12 type SF-2 (150° C rating) stranded pigtails; 2 circuit wires and one identified grounding wire
- 3 pressure connectors for 3-conductor cord, range #18 to #12 AWG
- rugged construction to protect cable and cord from mechanical damage
- compact size permitting close grouping of several cords and/or cables
- cord clamp
- long neck bushings to prevent fraying of cord

Standard Materials:

- Copper-free aluminum
- Insulators – phenolic
- Bushing – Neoprene

Standard Finishes:

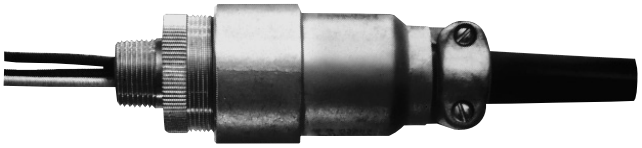
- Natural

Size Ranges:

- Thread – NPT ¾″ only
- Cord O.D. – .250″ to .625″

Certifications and Compliances:

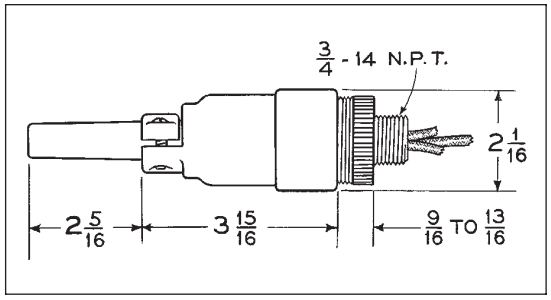
- NEC: Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1 & 2, Group G
- UL Standard: 886



EBY

Nipple Size	Cord Dia.	Cat. #
¾	.250 to .437	EBY2672
¾	.375 to .500	EBY2682
¾	.500 to .625	EBY26102

Dimensions



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5F Sealing Connector

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1 & 2, Group G
Cl. III

Application:

CGBS sealing connectors are for use with portable cords and types MV (unarmored), PLTC, SE (round), TC and UF cables. CGBS sealing connectors are installed to:

- provide means for passing cord into an enclosure, through a bulkhead or into a rigid conduit in hazardous areas

These connectors are suitable for use in Class I, Groups C, D, Class II, Group G, and Class III locations.

- form a watertight seal for cord
- form a non-slip connection of termination for cord

Features:

CGBS sealing connectors have:

- rugged construction to protect cable and cord from mechanical damage
- compact size permitting close grouping of several cords and/or cables
- body well for Chico A sealing compound
- watertight seal by tightening one nut
- cord clamp
- large range of NPT sizes to permit use with any conduit system
- long neck bushings prevent cord fraying

Standard Materials:

- Body – steel
- Gland nut – copper-free aluminum
- Bushing – Neoprene

Standard Finishes:

- Steel – electrogalvanized with chromate treatment
- Aluminum – natural

Size Ranges:

- Thread – NPT ½″ to 1¼″
- Cord O.D. – 5⁄16″ to 1 3⁄16″

Certifications and Compliances:

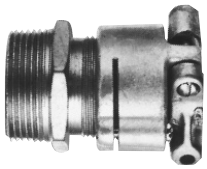
- NEC: Class I, Division 1 & 2, Groups C,D
  Class II, Division 1 & 2, Group G
  Class III

* Supplied complete with wire mesh grip in Canada.

Style A



Style B*

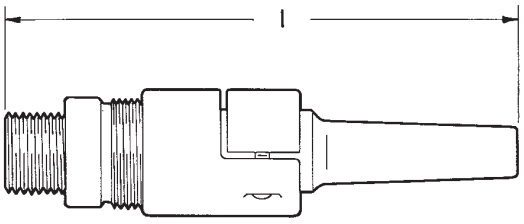


CGBS

Size	Style	Cord Dia.	Complete with Gland Nut and Neoprene Bushing Cat. #	Neoprene Bushing Cat. #
½	A	.312 to .437	CGBS1013	BUSH013
¾	A	.312 to .437	CGBS2013	BUSH013
¾	A	.375 to .500	CGBS2014	BUSH014
1	B	.500 to .625	CGBS3015	BUSH95
1	B	.625 to .750	CGBS3016	BUSH96
1¼	B	.750 to .875	CGBS4017	BUSH97
1¼	B	.875 to 1.000	CGBS4018	BUSH98
1¼	B	1.000 to 1.188	CGBS4019	BUSH99

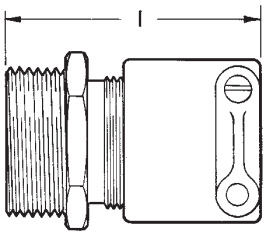
Note: See page 196 for Chico A Sealing Compound required to complete seal installation on CGBS series.

Dimensions



Style A

Cat. #	Style	l
CGBS1013	A	5¼
CGBS2013	A	5¼
CGBS2014	A	5¼
CGBS3015	B	2⅞
CGBS3016	B	2 15⁄16
CGBS4017	B	2 13⁄16
CGBS4018	B	3½
CGBS4019	B	3 9⁄16



Style B

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LCC Series Cable Tray Conduit Clamps

Application:

LCC cable tray conduit clamps are used for installation on cable tray side rails with inside flanges (requiring inside tray mounting) and outside flanges; LCCF clamps are for use exclusively on inside flanges.

LCC/LCCF cable tray conduit clamps:

- provide a means of clamping metal conduit (rigid steel or aluminum, IMC and EMT) to cable tray to provide for the exit of power and/or control cables from tray
- provide a means to firmly bond exit conduit to cable tray for best grounding continuity
- provide strong mechanical support for exit conduits and cables
- can be used indoors or outdoors, wherever cable tray systems are installed
- facilitate the safe exit of cables from tray – insure protection of cables from damage

Features:

- Quick and easy installation – low installed cost. Merely tighten clamp nut and/or set screw(s)
- Swivel hook clears conduit. No disassembly required for installation
- No drilling or welding necessary for installation
- Provides superior ground continuity between conduit and cable tray
- Clamps conduit at any angle with relation to tray – facilitates wire pulling, minimizes conduit bending
- Malleable iron body provides great strength
- Knurled body has no-slip surface for conduit and tray – positive grip assured
- Compact design has low profile – minimum tray space required for assembly
- Design accommodates all popular types of cable tray
- Accommodates wide range of conduit sizes – ½″ through 4″

LCCF features:

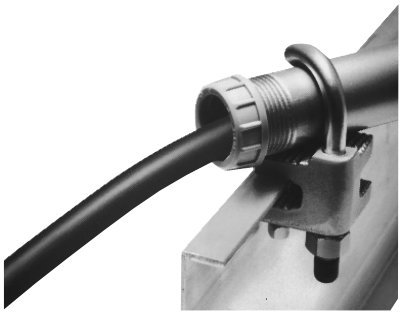
- Outside mounting facilitates inside rail installation
- Adjustable hook assures positive grip on inside rail
- Accommodates ¾″ through 1¾″ wide flange

Standard Materials:

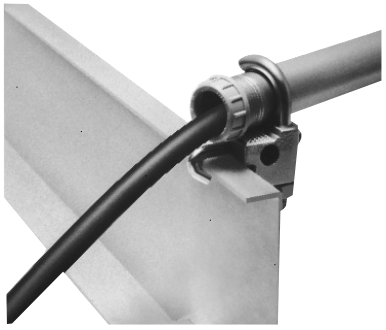
- Body – cast iron
- Hook – steel
- Set screws and clamping nut – steel
- Hook cap – vinyl

Standard Finishes:

- Cast iron – electrogalvanized and aluminum acrylic paint
- Steel – zinc electroplate
- Vinyl – natural



LCC – for use with outside rail tray



LCCF – for use with inside rail tray

Conduit Size Ranges:

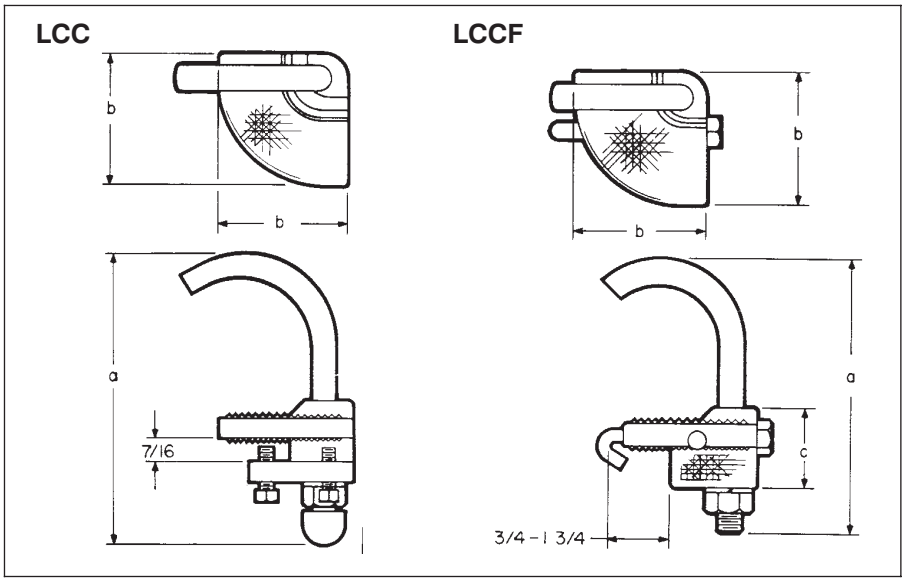
- ½″ to 4″

Certifications and Compliances:

- UL Standard: 467 (grounding and bonding equipment)

Conduit Size	Cat. #	Cat. #
½	LCC1	LCCF1
¾	LCC2	LCCF2
1	LCC3	LCCF3
1¼	LCC4	LCCF4
1½	LCC5	LCCF5
2	LCC6	LCCF6
2½	LCC7	LCCF7
3	LCC8	LCCF8
3½	LCC9	LCCF9
4	LCC010	LCCF010

Dimensions



Conduit Size	LCC a	LCC b
½	3 3/16	1 11/16
¾	3 7/16	1 11/16
1	3 9/16	1 11/16
1¼	4	1 11/16
1½	4 13/16	2 11/16
2	5 5/16	2 11/16
2½	5 13/16	2 11/16
3	6 13/16	3¾
3½	7 5/16	3¾
4	7 13/16	3¾

LCCF a	LCCF b	LCCF c
3⅛	1⅝	1 11/32
3 11/32	1⅝	1 11/32
3 19/32	1⅝	1 11/32
3 15/16	1⅝	1 11/32
4¾	2¾	1 11/16
5¼	2¾	1 11/16
5¾	2¾	1 11/16
6¾	3 11/16	2 3/16
7¼	3 11/16	2 3/16
7¾	3 11/16	2 3/16

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5F TGC Cable Tray Ground Conductor Clamp

Application:

Cable tray grounding conductor clamps are designed for use in heavy industrial applications:

- to provide a means for securely attaching a grounding conductor to cable tray to maintain grounding continuity for the entire cable tray system
- to provide protection of equipment through a reliable method for carrying ground fault currents
- to meet UL and NECode requirements
- for installation indoors or outdoors, with most types of cable trays with inside or outside flanges

Features:

- Meets requirements of NECode Article 318-7 for grounding and bonding
- Quick and easy installation – low installed cost. No drilling or special tools required.
- Accommodates solid (where suitable) or stranded aluminum or copper grounding conductors in sizes from #6 to 2/0
- Set screw bonds the clamp to the tray and another set screw securely attaches the grounding conductor to the clamp – outstanding pull-out and vibration resistance
- Design accommodates most popular types of cable tray
- Mechanical device – can be easily inspected
- Malleable iron body provides high strength

Standard Materials:

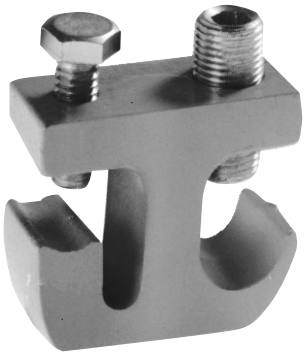
- Body – malleable iron
- Set screws – steel

Standard Finishes:

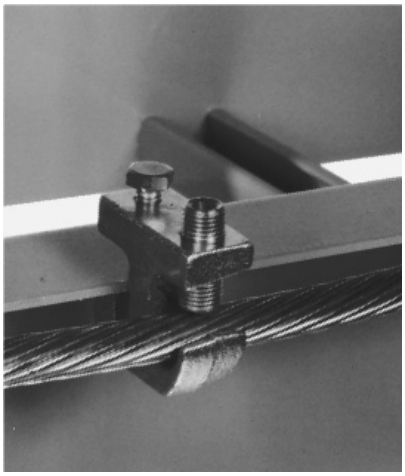
- Malleable iron and steel – electrogalvanized

Certifications and Compliances:

- UL Standard: 467 (Grounding and Bonding Equipment)

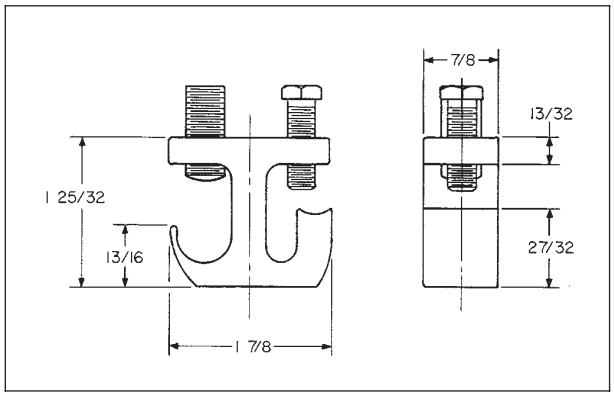


Ground Wire Size	Cat. #
#6 to 2/0	TGC40



TGC Clamp installs on cable trays with inside or outside flanges

Dimensions



US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

Ordering Information Pgs. 102 to 105
Dimensions Pgs. 105 and 106

Application:

THRU-WALL BARRIER cable/conduit sealing device is used wherever there is a need to seal cables or conduits penetrating fire- or non-fire-rated walls, ceilings, floors, bulkheads or decks. For non-fire-rated walls, ceilings, floors, bulkheads or decks, THRU-WALL BARRIER also restricts water and dust and will help contain treated air.
THRU-WALL BARRIER is designed:
- to provide a seal for cable/conduit penetrations through masonry, concrete or steel; to restrict the entrance of contaminants through cable/conduit penetrations into clean areas
- for use with most types of power, instrument and control cables as well as conduits
- to be used indoors or outdoors, in new construction or existing structures

Features:

System
- Few parts required to seal a wide range of diameters of cables or conduits
- Easy and fast installation, using factory assembled components
- High degree of flexibility with interchangeable sealing block assemblies and a selection of different sizes of frames

Mounting frame
- One-piece cast malleable iron or steel mounting frame can be cast into concrete during wall construction, grouted in masonry surfaces or welded into steel bulkheads at any time
- Retrofit frame allows for easy installation of frame where cables/conduit are already installed
- Available in sizes to accommodate a wide range of cable tray sizes and loadings including single and multiple layers of cables for power or instrument applications
- Cast keyways in mounting frame align and position sealing block assemblies
- Frames can be installed in wall such that sealing block assemblies can be inserted in either horizontal or vertical position

Sealing block assembly
- Specially formulated elastomeric material between cast malleable iron pressure plates protects cable from mechanical damage; provides high pullout resistance and positive cable separation; expands during fire to seal any voids left by burned cable insulation
- Interchangeable sealing block assemblies fit all THRU-WALL BARRIER mounting frames
- Cast stops on front pressure plate prevent sealing block assembly from slipping through mounting frame during installation
- Assemblies are offered for all cable/conduit outside diameters from .250″ to 4.500″ (6.4 mm to 114.3 mm). Cables with diameters less than .250″ can be accommodated – consult Cooper Crouse-Hinds.



- Sealing block openings will accommodate undersize and out-of-round cable
- Each sealing block assembly seals multiple cables/conduits. Compact design permits close nesting of cables, saving space.
- Reducers permit sealing block assemblies to accept cables with smaller O.D. than the specified range
- Plugs are used to fill unused openings in sealing block assemblies. Blank sealing block assemblies fill unused spaces in mounting frames, providing for future expansion.

Standard Materials:

- Mounting frame:
  TWF, TWFR – cast malleable iron
  TWFS – cast carbon steel, ASTM A27 Grade 60-30
- Pressure plate – cast malleable iron
- Sealing material – special elastomeric material
- Clamping hardware – steel

Standard Finish:

- Malleable iron and hardware – electrogalvanized
- Steel – aluminized weldable paint
- Special elastomeric material – natural

Certifications and Compliances:

- ASTM Standard E-119
- NFPA 251
- UL Classification per UL Standard 1479
- USCG Acceptance – consult Cooper Crouse-Hinds
- NAVSEA Approval – Electric Plant Installation Standard Methods No. S9300-AW-EDG-010/EPISM – TWFS/TWBS assemblies

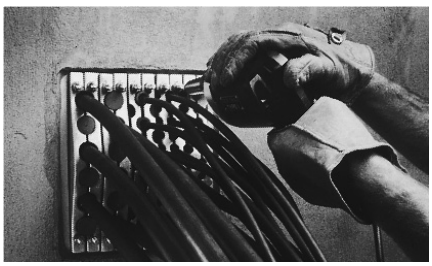
Easy three step installation



1. Cast, grout or weld the one-piece mounting frame into masonry or steel surface.



2. Feed cables/conduit through the frame.



3. Position cables/conduit, insert factory-assembled sealing blocks into keyways in mounting frame, and tightened nuts on clamping hardware to effect the seal.

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5F TW Series THRU-WALL BARRIER® Cable Conduit Sealing Device

Sealing Block Assemblies & Mounting Frames

Dimensions Pgs. 105 and 106

TWB Sealing Block Assemblies

TWB sealing block assemblies are offered for cable/conduit outside diameters (O.D.) from .250″ to 4.500″ (6.4 mm to 114.3 mm). Cables with diameters less than .250″ can be accommodated – consult Cooper Crouse-Hinds. Each assembly opening will accommodate a .250″ (6.4 mm) O.D. range. When clamping hardware is tightened, the elastomeric material is uniformly compressed around all cable/conduits for a completely tight fit.

Sealing block assemblies are offered for use in marine applications. Each assembly has the required lubrication and sealing gaskets to meet U.S. Navy Hydrostatic Pressure Test Requirements. Assemblies for marine applications are available for cable/conduit outside diameters (O.D.) from .250″ (6.4 mm) through 3.500″ (88.9 mm). To order, add suffix S to TWB sealing block assembly Cat. No. **Example: TWBS4036.**



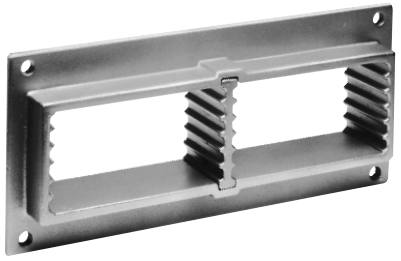
TWB2063
Depending on opening size range, a standard sealing block assembly will seal from one to eleven cables

Opening Size Range In. / mm	.250-.500 6.4-12.7		.500-.750 12.7-19.1		.750-1.000 19.1-25.4	1.000-1.250 25.4-31.8	1.250-1.500 31.8-38.1	1.500-1.750 38.1-44.5	1.750-2.000 44.5-50.8	2.000-2.250 50.8-57.2	2.250-2.500 57.2-63.5
No. Openings In Block	11	11 Added*	6	11 Added*	6	5	4	3	3	3	2
Sealing Block Assembly Cat. #	TWB2111 TWB1111		TWB2062 TWB2112		TWB2063	TWB3054	TWB3045	TWB30355	TWB4036	TWB40366	TWB5027
Frame Spaces Required	2	1	2	2	2	3	3	3	4	4	5
Plug Cat. #	TWP1				TWP3		TWP5		TWP6		TWP7
Reducer Cat. #§	— ◀		TWR2 ◀		TWR3 ◀	TWR4 ◀	TWR5 ◀	TWR55 ◀	TWR6 ◀	TWR66 ◀	TWR7 ◀

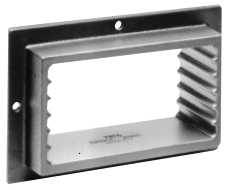
TWF Mounting Frames

TWF(S) mounting frames may be installed either horizontally or vertically. TWFR retrofit frames are used wherever cables/conduits are already installed through a fire- or non-fire-rated wall, floor or ceiling. They are designed with a removable section to permit installation around cables/conduits. TWFR retrofit frames can be grouted into walls, floors, or ceilings; or welded into steel bulkheads or decks. TWFR retrofit frames will perform in the same manner as the one-piece TWF(S) frames.

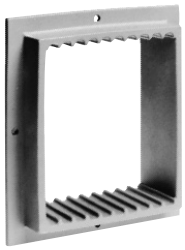
TWFS steel mounting frames are welded directly into steel bulkheads, decks and prepared sleeves. For marine applications, keeper bars are provided to securely hold TWBS sealing block assemblies in position when installed.



TWF12

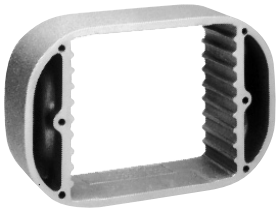


TWF6



TWF10

No. of Spaces Available	Frame Cat. #	Retrofit Frame Cat. #	Cast Steel Frame Cat. #
6	TWF6	TWFR6	
10	TWF10	TWFR10	TWFS10
12	TWF12♦	TWFR12♦	
20	TWF20	TWFR20	TWFS20
24	TWF24	TWFR24	
30	TWF30	TWFR30	TWFS30



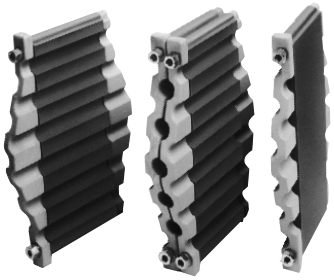
TWFS10

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TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

Plugs, Reducers, Closure Cover Kits, Anchors & Lubricant Ordering Information

TWB2062



TWB2112

TWP Plugs



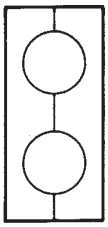
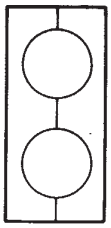
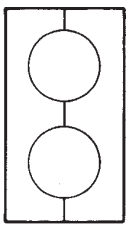
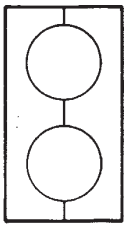
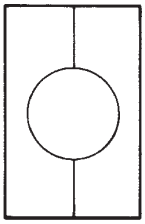
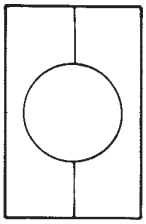
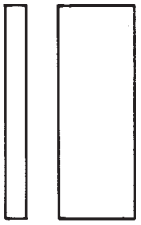
TWP plugs will close any unused openings in sealing block assemblies. See table for plug catalog numbers which match specific sealing block assemblies.

TWR Reducers



TWR reducers will reduce openings by .250″ (6.4 mm) in sealing block assemblies. See table for reducer catalog numbers which match specific sealing block assemblies. More than one reducer can be used in a single opening.

It is possible to increase cable fill density with double-sided sealing block assemblies (TWB1111 and TWB2112) sandwiched between halves of a standard assembly.

	2.500-2.750 63.5-69.9	2.750-3.000 69.9-76.2	3.000-3.250 76.2-82.6	3.250-3.500 82.6-88.9	3.500-4.250† 101.6-108.0	4.250-4.500 108.0-114.3	Blank – No Openings	
	2	2	2	2	1	1	None	None
								
	TWB50277	TWB5028	TWB60288	TWB6029	TWB7011010	TWB70111	TWB1	TWB3
	5	5	6	6	7	7	1	3
	TWP7	TWP8		TWP9	TWP10	TWP11	—	
◀	TWR77 ◀	TWR8 ◀	TWR88 ◀	TWR9 TWR99 ◀	TWR1010 TWR10 ◀	TWR11 ◀	—	

TWB Closure Cover Kits

TWB closure cover kits offer an optional method to close TWF frames installed for future expansion or those that are abandoned. Closure cover kits include two covers clamped to opposite sides of the frame with hardware provided. The insulating material provided is sandwiched between the two covers to maintain the fire rating of the assembly. See table below for closure kit catalog numbers.

No. of Spaces Available	Closure Cover Kit Cat. #**
6	TWB600
10	TWB1000
12	TWB600‡
20	TWB2000
24	TWB2400
30	TWB3000

TWK Anchors

TWK anchor assemblies are used to attach mounting frames to wall, ceiling or floor when grouting in frames.

Mounting Type	Cat. #
Flush	TWK1
Recessed	TWK2

† For 3.5″ - 4″ cable/conduit – use TWB7011010 assembly and reduce down using TWR reducers.

* Catalog # TWB1111 and TWB2112 are used between TWB2111 and TWB2062 in cases where the number of cables to be sealed in .250-.750 range exceeds the number of openings in standard assemblies. Use as many of these higher density assemblies as needed, sandwiched between halves of a standard assembly.

** TWB closure cover kits are not designed to provide a watertight seal in marine/shipboard applications or washdown areas. One kit seals one unused frame opening of same size. Example: use one TWB2000 kit to seal one TWF20, or TWFR20 frame.

‡ Use two TWB600 kits to seal one TWF12 or TWFR12 frame opening.

§ TWR reducers match TWB sealing block assemblies shown in column above Cat. No. and reduce openings to accept cable size ranges shown in adjacent column to the left (in direction of arrow).

◆ Includes removable partition.

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5F TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

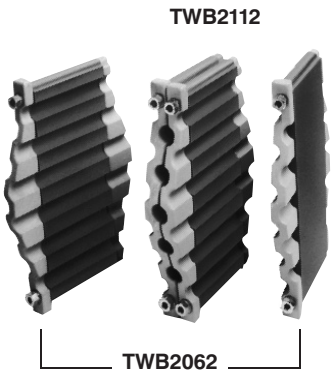
Ordering Information
Ordering Example A

Product Information

Selecting and specifying THRU-WALL BARRIER components is a simple procedure. Primary components for the THRU-WALL BARRIER consist of TWF mounting frames in various sizes and TWB sealing block assemblies for cable/conduit outside diameters (O.D.) in ¼-inch increments from .250″ to 4.500″ (6.4 mm to 114.3 mm). Cables with diameters less than .250″ can be accommodated – consult Cooper Crouse-Hinds.

Cable/conduit sizes can be mixed within a sealing block assembly by inserting TWR reducers to accommodate smaller diameters. The use of reducers can decrease the number of sealing block assemblies required. More than one reducer can be used in a single opening.

Another way to increase density is to use TWB1111 and TWB2112 sealing block assemblies wherever there is a large number of cables/conduits in sizes ranging from .250″ to .750″.



Shown here is a double-sided sealing block assembly (TWB2112) sandwiched between halves of a standard sealing block assembly (TWB2062). Additional double-sided sealing block assemblies may be used to accommodate larger quantities of cables or conduits.

Unused sealing block openings must be closed with TWP plugs. Blank sealing block assemblies TWB1 and TWB3 are used to fill each unused space in the mounting frame and permit future expansion of the system. Typical practice is to include space allowance of 20 to 50% for future expansion. TWB closure kits are used to seal entire frames and permit future system expansion.

Specifying & Ordering

The selection of components is based on the quantity and sizes of cables or conduits going through the penetrations. Once these are known, the sealing block assemblies and frames can be selected.

Step 1. Group cables/conduits by outside diameter (O.D.) and rank from the largest to the smallest.

Step 2. Keeping in mind that sealing block assemblies are available in one-quarter inch increments, group cables/conduits that fall within the same sealing block assembly O.D. size range.

Step 3. Starting with the largest cable/conduit O.D., select the sealing block assemblies required. All openings in each sealing block assembly must be filled. Specify TWR reducers to accommodate smaller diameter cables where possible and TWP plugs to fill openings not used.

Step 4. Total the frame spaces required for the specified sealing block assemblies and select an appropriate mounting frame(s). Frames are available in 6-, 10-, 12-, 20-, 24- and 30-space sizes. Keep future expansion requirements in mind when specifying frame. Specify blank sealing block assemblies to fill unused mounting frame space and TWB closure cover kits to fill unused frames.

Step 5. Check specification/order to be sure it includes 1) frames, 2) sealing block assemblies, 3) plugs and 4) reducers.

Ordering Example A:

Cable tray size: 24″
Cables specified: 5 power cables – sizes ranging from 1.960″ to 2.200″ O.D.
Spare capacity required: 50%

Step 1. Group cables by O.D. and rank from largest to smallest.

	Cable Qty.	Cable O.D.
	4	2.200
	1	1.960
Total	5	

Step 2. Group cables that fall within the same sealing block assembly size.

	Cable Qty.	Sealing Block O.D. Range
	4	2.000-2.250
	1	1.750-2.000
Total	5	

Step 3. Starting with the largest cable O.D., select the quantity of sealing block assemblies required. Specify TWR reducers to accommodate smaller diameter cables where possible and TWP plugs to fill openings not used. (See Example A diagram.)

Note: In the example, one TWR66 reducer is required to accommodate the cable with 1.960″ O.D. and one TWP6 plug is required for the unused opening.

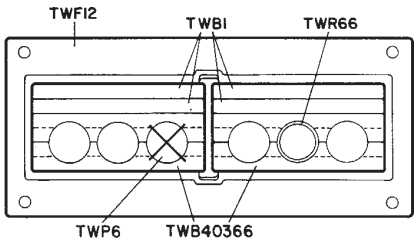
Step 4. Total the frame spaces required for sealing block assemblies and select appropriate size mounting frame. Factor in spare capacity required for future expansion.

Total frame spaces required	8
Specification requires 50% spare capacity	4
Total spaces	12

Selection: One TWF12 mounting frame with capacity of 12 spaces. Four TWB1 blank sealing block assemblies to fill unused frame space. (Choice of frame could vary based on future expansion needs and/or specific cable arrangement.)

Sealing Block Assy Cat. #	O.D. Range	Number of Openings	Cables to be Sealed	Openings Not Used	Frame Spaces Required
TWB40366	2.000-2.250	3	3	—	4
TWB40366	2.000-2.250	3	2	1	4
	Totals	6	5	1	8

Step 5. Bill of materials for specification/order should read:
(1) TWF12
(2) TWB40366
(4) TWB1
(1) TWR66
(1) TWP6



Example A diagram

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TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

Ordering Example B
Dimensions

Ordering Example B:

Cable tray size: 24″
Cables specified: 6 power cables – sizes ranging from 2.140″ to 2.180″ O.D.
31 control cables – sizes ranging from .550″ to .945″ O.D.
Spare capacity required: 25%

Step 1. Group cables by O.D. and rank from largest to smallest

	Cable Qty.	Cable O.D.
	4	2.180
	2	2.140
	1	.945
	4	.890
	7	.700
	9	.637
	10	.550
Total	37	

Step 2. Group cables that fall within the same sealing block assembly O.D. range.

Cable Qty.	Sealing Block O.D. Range
6	2.000-2.250
5	.750-1.000
26	.500- .750
Total 37	

Step 3. Starting with the largest cable O.D., select the quantity of sealing block assemblies required. Specify TWR reducers to accommodate smaller diameter cables where possible and TWP plugs to fill openings not used. (See Example B diagram.)

Sealing Block Assy Cat. #	O.D. Range	Number of Openings	Cables to be Sealed	Openings Not Used	Frame Spaces Required
TWB40366	2.000-2.250	3	3	—	4
TWB40366	2.000-2.250	3	3	—	4
TWB2063	.750-1.000	6	5	1	2
TWB2062	.500- .750	6	6	—	2
TWB2112	.500- .750	11	11	—	2
TWB2112	.500- .750	11	9	2	2
	Totals	40	37	3	16

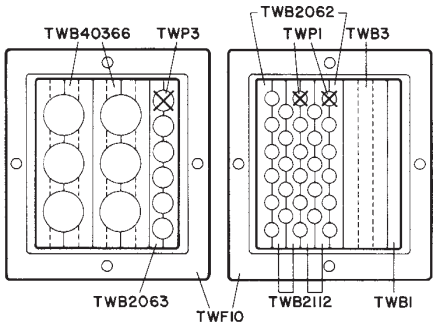
Note: In this example, two TWB2112 sealing block assemblies are sandwiched between two halves of a TWB2062. This dramatically increases cable density in minimum frame space. One TWP3 plug is required for unused opening in TWB2063 and two TWP1 plugs are required for unused openings in the TWB2112.

Step 4. Total the frame spaces required for sealing block assemblies and select appropriate size mounting frame(s). Factor in spare capacity required for future expansion.

Total frame spaces required	16
Specification requires 25% spare capacity	4
	Total 20 spaces

Selection: Two TWF10 (or one TWF20) mounting frames with total capacity of 20 spaces. One TWB3 and one TWB1 blank sealing block assembly to fill unused frame space. (Choice of frame could vary based on future expansion needs and/or specific cable/conduit arrangement.)

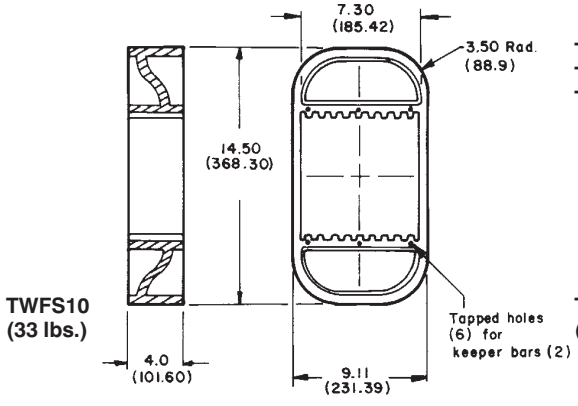
Step 5. Bill of materials for specification/order should read:
(2) TWF10 or (1) TWF20
(2) TWB40366
(1) TWB2063
(1) TWB2062
(2) TWB2112
(1) TWP3
(2) TWP1
(1) TWB3
(1) TWB1



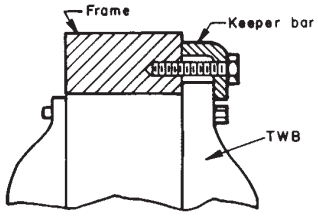
Example B diagram

* For TWFS mounting frame hole dimensions, contact Cooper Crouse-Hinds ECM field representative or headquarters.

Dimensions*

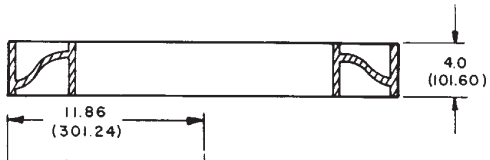


TWFS10 (33 lbs.)

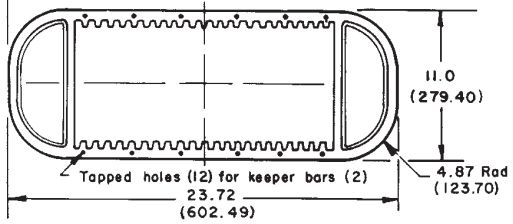


Detail – Typical assembly with keeper bar

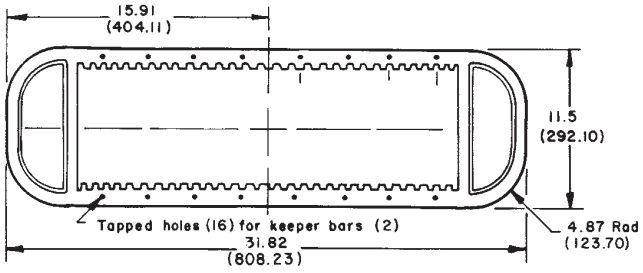
Typical – TWFS20, TWFS30



TWFS20 (55 lbs.)



TWFS30 (88 lbs.)

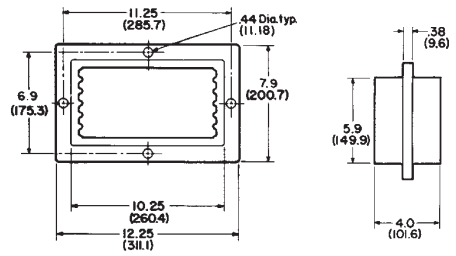


NOTE: Dimensions are shown as: inches (mm)

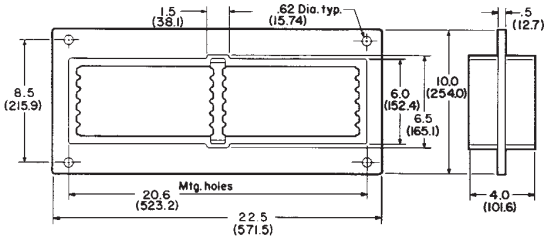
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5F TW Series THRU-WALL BARRIER®

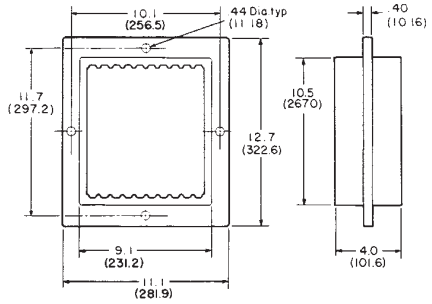
Cable/Conduit Sealing Device Dimensions*



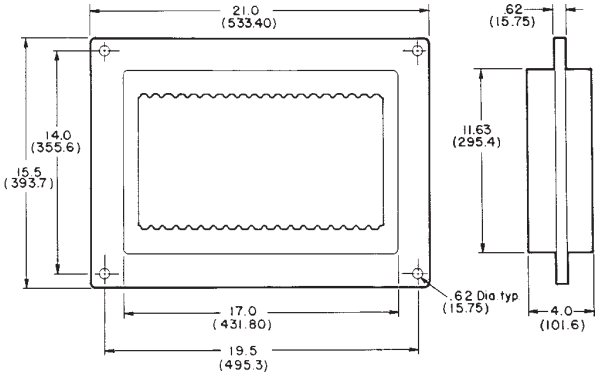
TWF6
(20 lbs.)



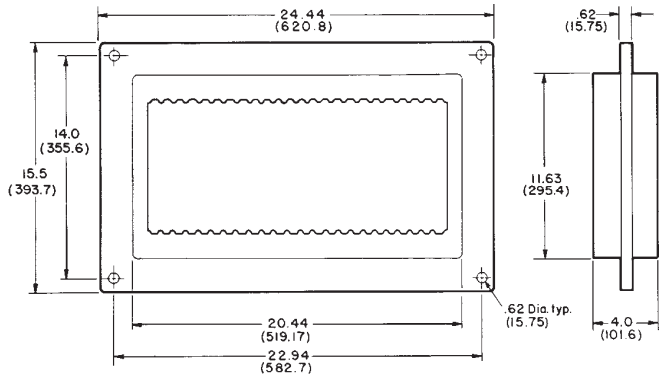
TWF12
(38 lbs.)



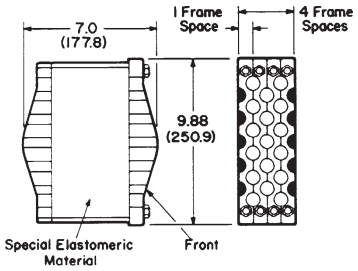
TWF10
(25 lbs.)



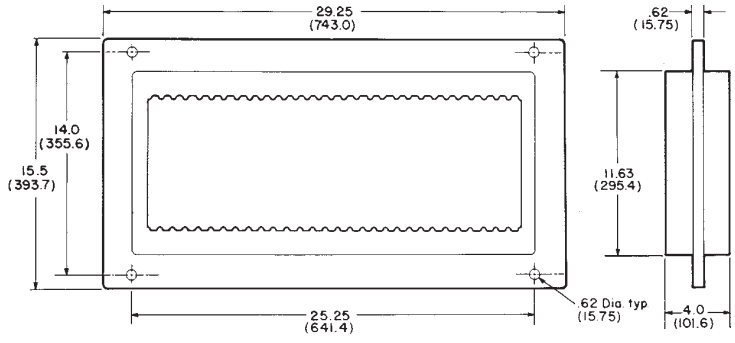
TWF20
(82 lbs.)



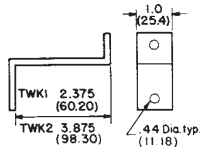
TWF24
(88 lbs.)



TWB



TWF30 (97 lbs.)



TWK

NOTES:
1. Dimensions are shown as inches (mm).
2. Dimensions shown for TWF frames also apply for TWFR retrofit frames.

* For TWF mounting frame hole dimensions, contact Cooper Crouse-Hinds ECM field representative or headquarters.

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Link-Seal Devices

Environmental Seal for Conduit passing through Concrete Walls, Floors or Ceilings

Link-Seal® Devices

Application:

Cooper Crouse-Hinds Link-Seal® is the quick, economical way to seal around conduit in concrete walls, floors and casings. Link-Seal is a modular mechanical seal used for any type of penetration.

Features & Benefits:

- Saves time and money – Link-Seal installs in up to 75% less time than competition products
- Positive Hydrostatic Sealing – properly installed, Link-Seal is rated at 20 psig (40 feet of head), which exceeds the performance requirements of most applications
- Environment Seals – Link-Seal environmental seal is designed for long life and use as a permanent seal. Seal elements are specially compounded to resist aging, ozone, sunlight, water and a wide range of chemicals
- Fire Seals – for fire protection in floor and wall penetrations Link-Seal is Factory Mutual approved
- Resistance to high and low temperatures – Link-Seal environmental seal is manufactured from special compounds that resist temperatures from –40°F to +250°F. Link-Seal Fire Seal is manufactured from a silicone material that resists temperatures from –67°F to +400°F
- Corrosion protection – where installation against galvanic corrosion (or electrolysis) is required, Link-Seal provides complete separation pipe and casing. Metal-to-metal contact is eliminated
- Compensates for misalignment – Link-Seal allows for some angular and off-center conduit conditions and still seals effectively
- Absorbs shock, sound and vibration – this inherent benefit of Link-Seal helps reduce conduit failure due to fatigue and threaded connections

Standard Materials:

- Rubber Seal Elements:

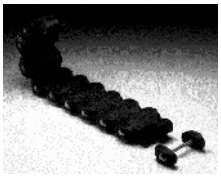
EPDM (Black) – Environmental Seals
Silicone (Grey) – Fire Seals

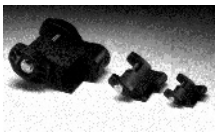
- Pressure Plates:

Glass Reinforced Nylon – Environmental Seals
Steel w/Zinc Dichromate Plate – Fire Seals

- Fasteners:

Carbon Steel, Zinc Dichromate Plate – Environmental Seals
316 Stainless Steel – Environmental with Option S316
Carbon Steel w/Zinc Dichromate – Fire Seals





Environmental Conduit Seal

Ordering Information:

It's easy. Locate the conduit size and type you are installing in the columns on the left. Then locate the seal and sleeve part numbers under the installation method you've selected. No sleeve is needed for cored or cast hole installation.

Cored or Cast Hole Method:

Note the appropriate hole diameter and select the seal part number. Example: For ¾″ EMT conduit through a cored hole – Core a 2″ diameter hole and install the conduit using Link-Seal Part number LSA200-C-04.

Sleeve Methods:

Select either the plastic or metal sleeve. Both types of sleeves are designed to be cast into concrete walls or floors. Sleeves are ordered separately. Remember to add the wall or floor thickness to the steel sleeve part number to insure the sleeve is provided in the proper length. Plastic sleeves are a standard 16″ long and can be modified in the field.

Materials:

The standard product for environmental conduit seals is made from EPDM supplied with steel bolts and nuts with a zinc dichromate finish. These seals are suitable for use in water, direct ground burial and atmospheric conditions. They provide electrical insulation where cathodic protection is required. EPDM rubber is resistant to most inorganic acids and alkalis, and some organic chemicals (acetone, alcohol, ketones).

Options:

To order the standard product with 316 stainless steel bolts and nuts, for corrosive environments, replace the ''C'' in the seal catalog number with ''S316''. For example, a ½″ seal for rigid steel conduit for a cored hole is an LSA200-C-04; ordered with stainless steel bolts and nuts the catalog number becomes LSA200-S316-04.

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Ordering Information

Environmental Conduit Seal

Conduit Nominal Size	Conduit Type*	Conduit Actual O.D. (inches)	Cast/Cored Hole Dia. (inches)	Seal for Cast/Cored Hole Cat. #	Plastic Sleeve Cat. #	Seal for Plastic Sleeve Cat. #	Steel Sleeve Cat. #	Seal for Steel Sleeve Cat. #
½″	EMT	.706	2.000	LSA275-C-04	LS-CS-2-16	LSA200-C-04	WS2-15-**	LSA275-C-04
½″	IMC	.815	2.000	LSA200-C-04	LS-CS-2-16	LSA200-C-04	WS2-21-**	LSA200-C-04
½″	RSC	.840	2.000	LSA200-C-04	LS-CS-2-16	LSA200-C-04	WS2-21-**	LSA200-C-04
¾″	EMT	.922	2.000	LSA200-C-04	LS-CS-3-16	LSA315-C-04	WS2-15-**	LSA200-C-04
¾″	IMC	1.029	2.500	LSA275-C-06	LS-CS-3-16	LSA315-C-04	WS2-15-**	LSA200-C-04
¾″	RSC	1.050	2.500	LSA275-C-06	LS-CS-3-16	LSA315-C-04	WS2.5-20-**	LSA275-C-06
1″	EMT	1.163	3.000	LSA315-C-04	LS-CS-3-16	LSA300-C-04	WS2.5-20-**	LSA275-C-06
1″	IMC	1.290	3.000	LSA300-C-04	LS-CS-3-16	LSA300-C-04	WS2.5-10-**	LSA275-C-06
1″	RSC	1.315	3.000	LSA300-C-04	LS-CS-3-16	LSA300-C-04	WS2.5-20-**	LSA200-C-05
1¼″	EMT	1.510	3.000	LSA300-C-04	LS-CS-3.5-16	LSA315-C-05	WS3.5-22-**	LSA315-C-05
1¼″	IMC	1.638	3.000	LSA275-C-07	LS-CS-3.5-16	LSA300-C-05	WS3.5-22-**	LSA315-C-05
1¼″	RSC	1.660	3.000	LSA275-C-07	LS-CS-3-16	LSA200-C-06	WS3.5-22-**	LSA315-C-05
1½″	EMT	1.740	3.500	LSA315-C-05	LS-CS-3.5-16	LSA300-C-05	WS3.5-32-**	LSA315-C-05
1½″	IMC	1.883	3.500	LSA300-C-05	LS-CS-3.5-16	LSA275-C-08	WS3.5-22-**	LSA300-C-05
1½″	RSC	1.900	3.500	LSA300-C-05	LS-CS-3.5-16	LSA275-C-08	WS3.5-22-**	LSA300-C-05
2″	EMT	2.197	4.000	LSA315-C-06	LS-CS-4-16	LSA315-C-06	WS4-23-**	LSA315-C-06
2″	IMC	2.360	4.000	LSA300-C-06	LS-CS-4-16	LSA300-C-06	WS4-23-**	LSA300-C-06
2″	RSC	2.375	4.000	LSA300-C-06	LS-CS-4-16	LSA300-C-06	WS4-23-**	LSA300-C-06
2½″	EMT/RSC	2.875	4.000	LSA200-C-09	LS-CS-4-16	LSA200-C-09	WS4-23-**	LSA200-C-09
2½″	IMC	2.857	4.000	LSA200-C-09	LS-CS-4-16	LSA200-C-09	WS4-23-**	LSA200-C-09
3″	EMT/RSC	3.500	5.000	LSA300-C-08	LS-CS-5-16	LSA300-C-08	WS5-25-**	LSA300-C-08
3″	IMC	3.476	5.000	LSA300-C-08	LS-CS-5-16	LSA300-C-08	WS5-25-**	LSA300-C-08
3½″	EMT/RSC	4.000	6.000	LSA325-C-05	LS-CS-6-16	LSA325-C-05	WS6-28-**	LSA325-C-05
3½″	IMC	3.971	6.000	LSA325-C-05	LS-CS-6-16	LSA325-C-05	WS6-28-**	LSA325-C-05
4″	EMT/RSC	4.500	6.000	LSA300-C-10	LS-CS-6-16	LSA300-C-10	WS6-28-**	LSA300-C-10
4″	IMC	4.466	6.000	LSA300-C-10	LS-CS-6-16	LSA300-C-10	WS6-28-**	LSA300-C-10
5″	RSC	5.563	8.000	LSA425-C-06	LS-CS-8-16	LSA425-C-06	WS8-32-**	LSA425-C-06
6″	RSC	6.625	10.000	LSA475-C-10	LS-CS-10-16	LSA475-C-10	WS8-18-**	LSA300-C-15

* EMT – Electrical Metallic Tubing; IMC – Intermediate Metal Conduit;
RSC – Rigid Steel Conduit

** Specify length of steel sleeve in inches. Example: WS6-28-08 is 8″ long. All plastic sleeves come in standard 16″ lengths and can be field cut to desired length.

Note: The last two digits of the seal part number indicate the number of links (and the number of bolts) per seal.

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Fire Seal for Conduit passing through Concrete Walls, Floors or Ceilings

Fire Conduit Seal

Ordering Information:

Locate the conduit size and type you are installing in the columns on the left. Then locate the seal and sleeve part number under the installation method you've selected. No sleeve is needed for cored or cast hole installation.

Cored or Cast Hole Method:

Note the appropriate hole diameter and select the seal part number. Example: For ¾″ EMT conduit through a cored hole – Core a 2″ diameter hole and install the conduit using Link-Seal Part number LSA200-T-04.

Sleeve Methods:

Select the appropriate metal sleeve for the size and type of conduit being installed. The sleeve should be ordered separately. Remember to add the wall or floor thickness to the steel sleeve part number to insure the sleeve is provided in the proper length.

Materials:

The standard product for fire conduit seals is made from grey silicone supplied with steel bolts and nuts with a zinc dichromate finish. These seals are Factory Mutual approved for use as a 1-hour fire stop and can handle temperature extremes of –67°F to +400°F.

Options:

To order the fire seal for a 3-hour rating, replace the ''T'' in the seal catalog number with a ''FS''. For example, a ½″ seal for rigid steel conduit for a cored hole is an LSA200-T-04; ordered with option FS the catalog number becomes LSA200-FS-04. A 3-hour fire seal can also be made by using two Model T's back-to-back.

The Model FS is basically two Model T's back-to-back. In Model FS, a tie rod tightens both seals simultaneously – for use when only one side of an opening is accessible.

Conduit Nominal Size	Conduit Type*	Conduit Actual O.D. (inches)	Cast/Cored Hole Dia. (inches)	Seal for Cast/Cored Hole Cat. #	Steel Sleeve Cat. #	Seal for Steel Sleeve Cat. #
½″	EMT	.706	2.000	LSA275-T-04	WS2-15-**	LSA275-T-04
½″	IMC	.815	2.000	LSA200-T-04	WS2-21-**	LSA200-T-04
½″	RSC	.840	2.000	LSA200-T-04	WS2-21-**	LSA200-T-04
¾″	EMT	.922	2.000	LSA200-T-04	WS2-15-**	LSA200-T-04
¾″	IMC	1.029	2.500	LSA275-T-06	WS2-15-**	LSA200-T-04
¾″	RSC	1.050	2.500	LSA275-T-06	WS2.5-20-**	LSA275-T-06
1″	EMT	1.163	3.000	LSA315-T-04	WS2.5-20-**	LSA275-T-06
1″	IMC	1.290	3.000	LSA300-T-04	WS2.5-10-**	LSA275-T-06
1″	RSC	1.315	3.000	LSA300-T-04	WS2.5-20-**	LSA200-T-05
1¼″	EMT	1.510	3.000	LSA300-T-04	WS3.5-22-**	LSA315-T-05
1¼″	IMC	1.638	3.000	LSA275-T-07	WS3.5-22-**	LSA315-T-05
1¼″	RSC	1.660	3.000	LSA275-T-07	WS3.5-22-**	LSA300-T-05
1½″	EMT	1.740	3.500	LSA315-T-05	WS3.5-32-**	LSA300-T-05
1½″	IMC	1.883	3.500	LSA300-T-05	WS3.5-22-**	LSA300-T-05
1½″	RSC	1.900	3.500	LSA300-T-05	WS3.5-22-**	LSA275-T-08
2″	EMT	2.197	4.000	LSA315-T-06	WS4-23-**	LSA315-T-06
2″	IMC	2.360	4.000	LSA300-T-06	WS4-23-**	LSA300-T-06
2″	RSC	2.375	4.000	LSA300-T-06	WS4-23-**	LSA300-T-06
2½″	EMT/RSC	2.875	4.000	LSA200-T-09	WS4-23-**	LSA200-T-09
2½″	IMC	2.857	4.000	LSA200-T-09	WS4-23-**	LSA200-T-09
3″	EMT/RSC	3.500	5.000	LSA300-T-08	WS5-25-**	LSA300-T-08
3″	IMC	3.476	5.000	LSA300-T-08	WS5-25-**	LSA300-T-08
3½″	EMT/RSC	4.000	6.000	LSA325-T-05	WS6-28-**	LSA325-T-05
3½″	IMC	3.971	6.000	LSA325-T-05	WS6-28-**	LSA325-T-05
4″	EMT/RSC	4.500	6.000	LSA300-T-10	WS6-28-**	LSA300-T-10
4″	IMC	4.466	6.000	LSA300-T-10	WS6-28-**	LSA300-T-10
5″	RSC	5.563	8.000	LSA425-T-06	WS8-32-**	LSA425-T-06
6″	RSC	6.625	10.000	LSA475-T-10	WS8-18-**	LSA300-T-15

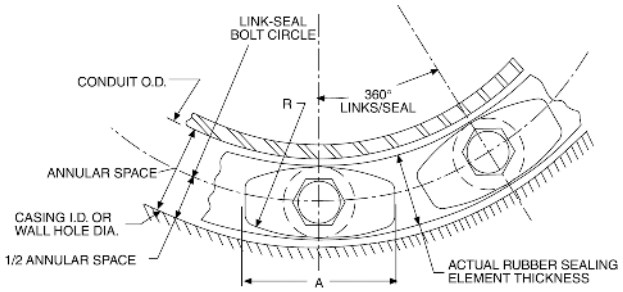
* EMT – Electrical Metallic Tubing; IMC – Intermediate Metal Conduit; RSC – Rigid Steel Conduit

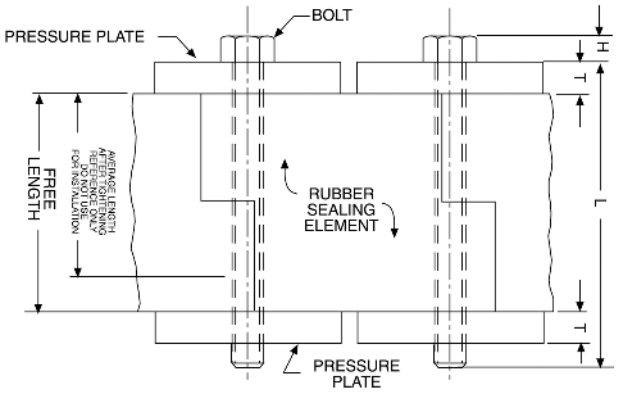
** Specify length of steel sleeve in inches. Example: WS6-28-08 is 8″ long.

Note: The last two digits of the seal part number indicate the number of links (and the number of bolts) per seal.

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Technical Information





	Rubber Sealing Element			Pressure Plate			Bolt			
Link-Seal Model #	**Actual Thickness (inches)**	**Free Length (inches)**	**Avg. Length After Tightening (inches)**	**A (inches)**	**R (inches)**	**T (inches)**	**Hex Across Flats**	**H (inches)**	**Thread Size (inches)**	**L**
LSA200-C	.478	1¾	1⅜	1⅛	2¼	5/16	M5 slotted hex	.180	M5	2½
LSA275-C	.607	1¾	1⅜	⅞	1⅞	5/16	M5 slotted hex	.180	M5	2½
LSA300-C	.687	2½	2	1½	2½	7/16	½	7/32	5/16–5/18	3½
LSA315-C	.807	2½	2	1 7/16	2½	7/16	½	7/32	5/16–5/18	3½
LSA325-C	.875	3	2⅜	3⅛	2	½	½	7/32	5/16–5/18	4
LSA425-C	1.062	3½	2¾	3½	3	¾	9/16	¼	3/8–3/16	5
LSA475-C	1.562	3½	2¾	3½	3½	½	9/16	¼	3/8–3/16	4½

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6F Junction Boxes

Application and Selection

Application:

Junction boxes, designed for hazardous and non-hazardous locations, are used in a variety of industries to perform the following functions:

- as a pull box
- to provide enclosures for splices and taps
- as a mounting box for multi-device control stations
- for housing apparatus, instruments, and other devices

Considerations for Selection:

- Environmental location – the physical location of the junction box will call for proper construction of the box to meet National Electrical Code requirements and will affect the material and finish needed to meet weather and corrosive conditions, if present.
- Number and size of conductors – combined with the function to be performed (i.e., splicing, pull box), determines the amount of space needed, and therefore, the required physical dimensions of the box.
- Conduit layout – determines the number, size, and location of the conduit openings in the box. It will also determine the type of mounting required (i.e., flush or surface positioning of the box).
- Flexibility required – if changes in the electrical system are anticipated, the box chosen should be easily adaptable, either by construction (i.e., detachable hub plates) or size to the future system.

Options and Accessories:

A wide variety of options and accessories for special application are available for the various junction box families. These can be selected once the type of junction box has been determined. These options are shown on the individual pages. Some of the options available include:

- Special covers
- Hinged covers
- Materials and finishes
- Equipment mounting plates
- Openings for control station and other device mounting
- *Corro-free*™ epoxy powder coat – information available on request

Quick Selector Chart

Junction Boxes	NEC/CEC Hazardous Area Compliance	Environmental Capability/Type Designation	Size Range† L, W, D Inside	Max. Conduit Opening Size	Mtg.	Type of Conduit Opening	Cover Type	Page No.
WAB		Raintight/Type 3, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Unflanged	113
WCB		Raintight/Type 3, Watertight/Type 4, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Overlapping	114
WJB		Raintight/Type 3, Watertight/Type 4	4 x 4 x 3 to 36 x 24 x 24	6	Surface	Drilled and tapped, slip holes	Flanged	115
WJBF		Raintight/Type 3, Watertight/Type 4	4 x 4 x 4 to 36 x 24 x 24	6	Flush	Drilled and tapped, slip holes	External flanged recessed sidewalk	116
WEB		Raintight/Type 3	4 x 4 x 3 to 36 x 36 x 12	6	Flush	Drilled and tapped, slip holes	Internal Flanged	117
RS, RSM, RSS		Raintight/Type 3	4½ x 4½ x 4 to 8½ x 8½ x 4	3	Surface	Detachable hub plates	Flanged	121
GU, GUE, GUB	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4‡ Hazardous/Types 7,9	4⅝ x 4⅝ x 4⅛ to 17 x 16⅜ x 17⅜	4	Surface	Drilled and tapped	Threaded, glass window and domed covers available	122
EJB	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4 (Style C only) Hazardous/Types 7,9	6 x 4 x 4 to 60 x 22 x 12*	6	Surface	Drilled and tapped	Ground joint	136
GUA	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4 Hazardous/Types 7,9	3⅜ x 3⅜ x 1⅞	1	Surface	Union hubs	Threaded	137
GUP	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4 Hazardous/Types 7,9	3⅜ x 3⅜ x 2¼	1	Surface	Drilled and tapped cast hubs	Threaded	138
EGJ	Cl. I, Div. 1 & 2, Groups D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Hazardous/Types 7,9	5½ x 5½ x 4 to 6¾ x 6¾ x 5	1	Flush	Drilled and tapped	Threaded	139

† Length and width are inside dimensions. Depth is inside dimension without cover.

‡ All except GUB01110 and GUB15151.

* EJB602212 is suitable for Class I, Div. 1, Groups C and D.

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WAB Junction Boxes

Heavy Duty
Unflanged for Surface Mounting

Ordering Info. Pages 118 to 120
Dimensions Pages 119 and 120

Dust-proof
Weatherproof
Raintight
NEMA 3



Application:

Where a heavy duty dustproof or weatherproof enclosure is desired, WAB boxes are installed in conduit system to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Covers are suitable for vehicular traffic (H-20 loading)
- Flat neoprene gasket cemented to the cover.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for ¼″ – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- *Feraloy*® iron alloy body
- Heavy-gauge steel cover
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- *Feraloy* iron alloy and heavy gauge steel – hot dip galvanized

Options:

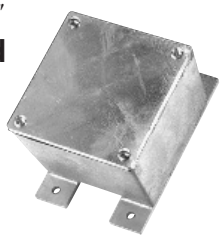
- Factory installed mounting plate... add suffix –MP.
- See Ordering Information, beginning pg. 118 for:
  Drilled and tapped conduit holes
  Slip holes

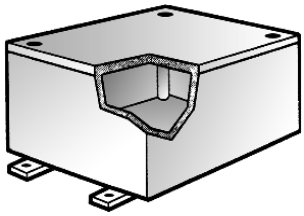
Size Ranges:

- 4″ x 4″ x 2″ to 24″ x 24″ x 8″

Certifications and Compliances:

- UL Standard: 50
- Dust-proof
- Weatherproof
- H-20 Vehicle Load Rating





Flat Covers

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WAB040402	5/32	4	4	2	✓
WAB040403	3/16	4	4	3	✓
WAB040404	1/4	4	4	4	✓
WAB050503	1/4	5	5	3	✓
WAB050504	1/4	5	5	4	✓
WAB060403	1/4	6	4	3	✓
WAB060404	7/32	6	4	4	✓
WAB060603	1/4	6	6	3	✓
WAB060604	3/16	6	6	4	✓
WAB060606	9/32	6	6	6	✓
WAB080403	5/16	8	4	3	
WAB080604	7/32	8	6	4	✓
WAB080606	5/16	8	6	6	✓
WAB080804	5/16	8	8	4	✓
WAB080806	5/16	8	8	6	✓
WAB080808	5/16	8	8	8	✓
WAB090604	5/16	9	6	4	
WAB100604	1/4	10	6	4	
WAB100804	1/4	10	8	4	✓
WAB100806	9/32	10	8	6	✓
WAB101006	1/4	10	10	6	✓
WAB120604	9/32	12	6	4	✓
WAB120606	9/32	12	6	6	✓
WAB120806	9/32	12	8	6	✓
WAB120808	3/8	12	8	8	
WAB121204	9/32	12	12	4	✓
WAB121206	9/32	12	12	6	✓
WAB121208	9/32	12	12	8	✓
WAB160606	1/4	16	6	6	
WAB161208	5/16	16	12	8	✓
WAB181206	5/16	18	12	6	✓
WAB181208	5/16	18	12	8	
WAB181210	3/8	18	12	10	
WAB181806	3/8	18	18	6	✓
WAB181812	7/16	18	18	12	✓
WAB241212	7/16	24	12	12	
WAB242408	11/32	24	24	8	

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™
See Section G for complete details

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6F WCB Junction Boxes



Heavy Duty
Overlapping Cover for Surface Mounting
Ordering Info. Pages 118 to 120
Dimensions Pages 119 and 120

Dust-tight
Weatherproof
Raintight
Watertight
NEMA 3,4

Application:

Where a heavy duty dust-tight, weatherproof, raintight, or watertight enclosure is desired, WCB boxes are installed in conduit systems to:
- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Flat neoprene gasket cemented to cover.
- Overlapping cover sheds environment.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits maximum flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for ¼″ – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- *Feraloy*® iron alloy cover and body
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- *Feraloy* iron alloy – hot dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 118, for:
  Drilled and tapped conduit holes
  Slip holes

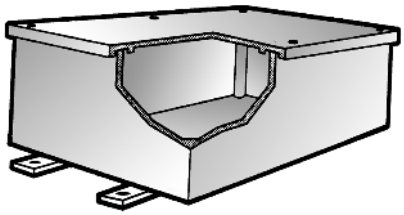
Size Ranges:

- 4″ x 4″ x 2″ to 24″ x 24″ x 8″

Certifications and Compliances:

- UL Standard: 50
- Dust-tight
- Weatherproof
- Raintight
- Watertight





Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WCB040402	5/32	4	4	2	
WCB040403	3/16	4	4	3	✓
WCB040404	1/4	4	4	4	✓
WCB050503	1/4	5	5	3	✓
WCB050504	1/4	5	5	4	✓
WCB060403	1/4	6	4	3	✓
WCB060404	7/32	6	4	4	✓
WCB060603	1/4	6	6	3	✓
WCB060604	3/16	6	6	4	✓
WCB060606	9/32	6	6	6	✓
WCB080403	5/16	8	4	3	
WCB080604	7/32	8	6	4	✓
WCB080606	5/16	8	6	6	✓
WCB080804	5/16	8	8	4	✓
WCB080806	5/16	8	8	6	✓
WCB080808	5/16	8	8	8	✓
WCB090604	5/16	9	6	4	✓
WCB100604	1/4	10	6	4	
WCB100804	1/4	10	8	4	✓
WCB100806	9/32	10	8	6	✓
WCB101006	1/4	10	10	6	✓
WCB120604	9/32	12	6	4	✓
WCB120606	9/32	12	6	6	✓
WCB120806	9/32	12	8	6	✓
WCB120808	3/8	12	8	8	
WCB121204	9/32	12	12	4	✓
WCB121206	9/32	12	12	6	✓
WCB121208	9/32	12	12	8	✓
WCB160606	1/4	16	6	6	
WCB161208	5/16	16	12	8	✓
WCB181206	5/16	18	12	6	✓
WCB181208	5/16	18	12	8	
WCB181210	3/8	18	12	10	
WCB181806	3/8	18	18	6	✓
WCB181812	7/16	18	18	12	✓
WCB241212	7/16	24	12	12	
WCB242408	11/32	24	24	8	✓

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™
See Section G for complete details

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WJB Junction Boxes

Heavy Duty
Flanged for Surface Mounting

Ordering Info Pages 118 to 120
Dimensions Pages 119 and 120

Weatherproof
Watertight
Raintight
NEMA 3,4



Application:

WJB boxes are standard with mounting straps and are primarily designed for surface mounting. WJB heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Covers are suitable for vehicular traffic (H-20 loading)
- Neoprene gasket cemented to cover.
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads may be drilled and tapped for ¼″ – 20 mounting screws.
- Blind tapped into internal mounting pads.

Standard Materials:

- *Feraloy*® iron alloy body
- Heavy-gauge steel – cover and mounting straps
- Neoprene gaskets

Standard Finishes:

- *Feraloy* iron alloy and heavy-gauge steel – hot-dip galvanized

Options:

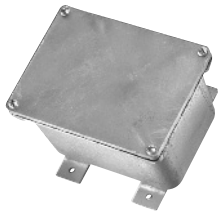
- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 118 for:
  - Drilled and tapped conduit holes
  - Slip holes

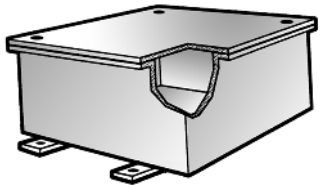
Size Ranges:

- 4″ x 4″ x 3″ to 36″ x 24″ x 24″

Certifications and Compliances:

- UL Standard: 50
- CSA Standard C22.2
- Weatherproof
- Watertight
- CEC: Class II, E,F,G
  Class III
  Encl. 3-4
- H-20 Vehicle Load Rating





Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJB040403	¼	4	4	3	
WJB040404	¼	4	4	4	✓
WJB060404	¼	6	4	4	
WJB060604	¼	6	6	4	✓
WJB060606	¼	6	6	6	✓
WJB080604	¼	8	6	4	
WJB080606	¼	8	6	6	✓
WJB080804	¼	8	8	4	✓
WJB080806	¼	8	8	6	
WJB080808	¼	8	8	8	
WJB100806	¼	10	8	6	
WJB100808	¼	10	8	8	
WJB101006	¼	10	10	6	✓
WJB101008	¼	10	10	8	
WJB120606	¼	12	6	6	
WJB120806	¼	12	8	6	
WJB120808	¼	12	8	8	
WJB120810	¼	12	8	10	
WJB121206	5⁄16	12	12	6	✓
WJB121208	5⁄16	12	12	8	✓
WJB121212	5⁄16	12	12	12	
WJB121218	5⁄16	12	12	18	
WJB140806	5⁄16	14	8	6	
WJB141410	5⁄16	14	14	10	
WJB161206	5⁄16	16	12	6	
WJB161208	5⁄16	16	12	8	
WJB161606	5⁄16	16	16	6	
WJB180806	5⁄16	18	8	6	
WJB180808	5⁄16	18	8	8	
WJB181006	5⁄16	18	10	6	
WJB181206	5⁄16	18	12	6	
WJB181208	5⁄16	18	12	8	✓
WJB181210	5⁄16	18	12	10	
WJB181212	5⁄16	18	12	12	
WJB181218	⅜	18	12	18	
WJB181806	⅜	18	18	6	
WJB181808	⅜	18	18	8	
WJB181812	⅜	18	18	12	
WJB181818	⅜	18	18	18	
WJB241208	⅜	24	12	8	
WJB241212	⅜	24	12	12	
WJB241808	⅜	24	18	8	
WJB241810	⅜	24	18	10	
WJB241812	⅜	24	18	12	
WJB241818	9⁄16	24	18	18	
WJB242412	9⁄16	24	24	12	
WJB242418	9⁄16	24	24	18	
WJB242424	9⁄16	24	24	24	
WJB302412	9⁄16	30	24	12	
WJB302418	9⁄16	30	24	18	
WJB362418	9⁄16	36	24	18	
WJB362424	9⁄16	36	24	24	

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™
See Section G for complete details

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6F WJBF Checkered Cover Sidewalk Junction Boxes



Heavy Duty
External Flanged for Flush Mounting

Ordering Information Pages 118 to 120
Dimensions Pages 119 and 120
Weatherproof
Watertight
Raintight
NEMA 3,4

Application:

WJBF boxes are standard with mounting feet and have a recessed flat checkered sidewalk cover for mounting in walls or floors. They may be ordered less mounting feet. WJBF heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductor for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Covers are suitable for vehicular traffic (H-20 loading)
- Neoprene gasket cemented to cover
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system
- Internal equipment mounting pads may be drilled and tapped for ¼″ – 20 mounting screws
- Blind tapped into internal mounting pads

Standard Materials:

- *Feraloy*® iron alloy – body
- Heavy-gauge steel (checkered) – cover, mounting straps
- Neoprene gaskets

Standard Finishes:

- Feraloy iron alloy and heavy-gauge steel – hot dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 118, for:
  - Drilled and tapped conduit holes
  - Slip holes

Size Ranges:

- 4″ x 4″ x 4″ to 36″ x 24″ x 24″

Certifications and Compliances:

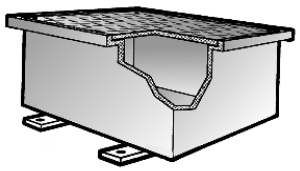
- UL Standard: 50
- CSA Standard C22.2 No. 40
- Weatherproof
- Watertight
- CEC:

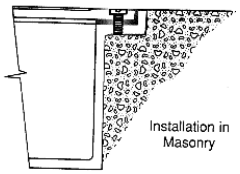
Class II, Division 1, Groups E,F,G
Class III
Encl. 3, 4

- H-20 Vehicle Load Rating

NOTE: For conduit liner ordering information, see page 140.
✓ – available with Lightning Service™
See Section G for complete details







Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJBF040404	¼	4	4	4	✓
WJBF060404	¼	6	4	4	✓
WJBF060604	¼	6	6	4	✓
WJBF060606	¼	6	6	6	✓
WJBF080604	¼	8	6	4	✓
WJBF080606	¼	8	6	6	✓
WJBF080804	¼	8	8	4	✓
WJBF080806	¼	8	8	6	✓
WJBF080808	¼	8	8	8	✓
WJBF100806	¼	10	8	6	
WJBF100808	¼	10	8	8	
WJBF101006	¼	10	10	6	✓
WJBF101008	¼	10	10	8	✓
WJBF120606	¼	12	6	6	
WJBF120806	¼	12	8	6	
WJBF120808	¼	12	8	8	✓
WJBF120810	5/16	12	8	10	
WJBF121206	¼	12	12	6	✓
WJBF121208	¼	12	12	8	✓
WJBF121212	5/16	12	12	12	✓
WJBF121218	5/16	12	12	18	
WJBF140806	¼	14	8	6	
WJBF141410	5/16	14	14	10	
WJBF161206	¼	16	12	6	
WJBF161208	¼	16	12	8	✓
WJBF161606	¼	16	16	6	
WJBF180806	¼	18	8	6	
WJBF180808	¼	18	8	8	
WJBF181006	5/16	18	10	6	
WJBF181206	5/16	18	12	6	
WJBF181208	5/16	18	12	8	✓
WJBF181210	3/8	18	12	10	
WJBF181212	5/16	18	12	12	
WJBF181218	3/8	18	12	18	
WJBF181806	3/8	18	18	6	
WJBF181808	3/8	18	18	8	
WJBF181812	3/8	18	18	12	✓
WJBF181818	3/8	18	18	18	
WJBF241208	3/8	24	12	8	
WJBF241212	3/8	24	12	12	
WJBF241808	3/8	24	18	8	
WJBF241810	3/8	24	18	10	✓
WJBF241812	3/8	24	18	12	
WJBF241818	3/8	24	18	18	
WJBF242412	3/8	24	24	12	
WJBF242418	3/8	24	24	18	
WJBF242424	3/8	24	24	24	
WJBF302412	3/8	30	24	12	
WJBF302418	3/8	30	24	18	
WJBF362418	3/8	36	24	18	
WJBF362424	3/8	36	24	24	

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WEB Junction Box

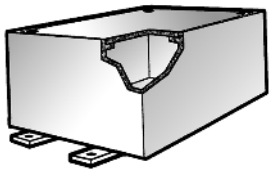
Heavy Duty
Internal Recess Flange
for Flush Mounting

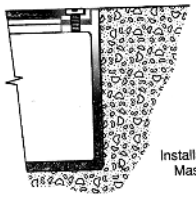
Dust-tight
Raintight
NEMA 3

Application:

WEB Junction Boxes are installed:
- Where a heavy duty, dust-tight or raintight enclosure is desired
- To act as pull box for conductors
- To provide openings and space for making splices and taps in conductors
- To provide for branch conduit runs
- To provide access to conductors for maintenance and future system changes
- To enclose and protect electrical devices







Features:

- Flat neoprene gasket cemented to cover
- Internal equipment mounting pads
- Standard attachable heavy-gauge steel straps for mounting box
- Stainless-steel cover screws
- Internal ground screw
- Optional drilled and tapped conduit entries or slip holes
- Optional mounting plate

Standard Materials:

- Body-*Feraloy*® iron alloy, hot dip galvanized
- Cover – heavy-gauge steel, hotdip galvanized
- Cover screws – stainless steel
- Mounting Strap – heavy-gauge steel, electrogalvanized
- Gasket – neoprene

Certifications and Compliances:

- UL Standard 50
- CSA certified C22.2

Options:

All boxes are available with optional mounting plate, add suffix -MP.
See ordering information beginning on pg. 118 for:
- Drilled and tapped conduit holes
- Slip holes

Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)
WEB040403	7/32	4	4	3
WEB040404	1/4	4	4	4
WEB060604	9/32	6	6	4
WEB060606	1/4	6	6	6
WEB080804	9/32	8	8	4
WEB080806	1/4	8	8	6
WEB121206	9/32	12	12	6
WEB160606	9/32	16	6	6
WEB160806	1/4	16	8	6
WEB180808	5/16	18	8	8
WEB240606	9/32	24	6	6
WEB240808	5/16	24	8	8
WEB241010	3/8	24	10	10
WEB241210	5/16	24	12	10
WEB241212	5/16	24	12	12
WEB241812	3/8	24	18	12
WEB361212	3/8	36	12	12
WEB361812	3/8	36	18	12
WEB362412	7/16	36	24	12
WEB363612	7/16	36	36	12

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DRILLED AND TAPPED CONDUIT OPENINGS OR SLIP HOLES

All W-Series cast-iron junction boxes may be ordered with drilled and tapped conduit openings or slip holes – subject to minimum spacing limitations listed in Table 1.

To order a box from the factory with conduit openings:

Options 1:

Send in a sketch of the box with openings specified (subject to spacing limitations specified in Table 1). **OR**

Option 2:

Step 1: Select one of the four standard arrangements in Table 2, based on number and location of conduit entries.
Step 2: Pick a symbol from Table 3 for each opening in the arrangement (see example).
Step 3: Table 4 lists the maximum size and number of conduit openings by box size and the spacing dimensions. Use Table 4 to verify the openings selected are permitted.

Example – Catalog number logic:

1. Select box required: WAB121208.
2. User wants one ½″ drilled and tapped hole in the top of the box, two 1″ drilled and tapped holes on both sides and three ½″ slip holes in the bottom of the box.
3. Select arrangement 3 because it allows up to three openings per side.
4. Next the symbols for the openings are substituted and written in clockwise order starting with location ''a''. The catalog number is written in three parts; part 1 – box number, part 2 – arrangement number, part 3 – symbols for the conduit openings.
5. For this example the box would be ordered as:

WAB121208-3-0AO C0C 1A1A1A C0C

Box Cat. # | Arrangement # | Symbols for openings

Table 1
Minimum spacing between centers of conduits

Size of Conduit	6″	5″	4″	3½″	3″	2½″	2″	1½″	1¼″	1″	¾″	½″
½″	5	4⅜	3⅝	3⅜	3	2⅝	2⅜	2	1⅞	1¾	1⅝	1½
¾″	5⅛	4½	3¾	3½	3⅛	2¾	2½	2⅛	2	1⅞	1¾	
1″	5¼	4⅝	4	3⅝	3¼	3	2⅝	2⅜	2¼	2		
1¼″	5½	4⅞	4⅛	3⅞	3½	3⅛	2⅞	2½	2⅜			
1½″	5⅝	5	4¼	4	3⅝	3¼	3	2⅝				
2″	6	5⅜	4⅝	4¼	3⅞	3⅝	3¼					
2½″	6¼	5⅝	4⅞	4⅝	4¼	3⅞						
3″	6⅝	6	5⅜	5	4⅝							
3½″	7	6¼	5⅝	5¼								
4″	7¼	6⅝	5⅞									
5″	8	7¼										
6″	8⅝											

Table 2
Standard conduit arrangements

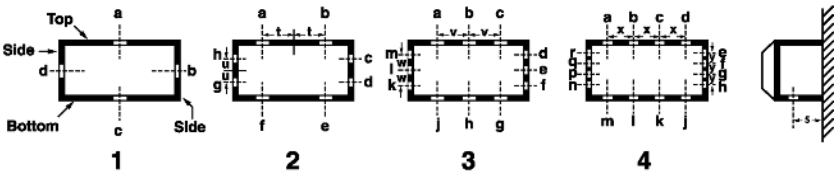
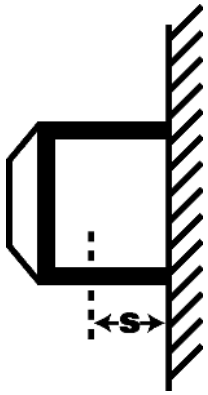


Table 3
Symbols for openings

Conduit Size	Drilled and Tapped Hole	Slip Hole
½″	A	1A
¾″	B	1B
1″	C	1C
1¼″	E	1E
1½″	F	1F
2″	G	1G
2½″	H	1H
3″	J	1J
3½″	K	1K
4″	L	1L
5″	M	1M
6″	N	1N
None	0 (Zero)	0 (Zero)



S = Dimension from wall to hole center line

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Table 4

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom‡ 1	2	3	4	Sides 1	2	3	4	Spacing Dimensions† s	t	u	v	w	x	y
040402	¾	¾	—	—	¾	¾	—	—	1¼	⅞	⅞	—	—	—	—
040403	1¼	¾	—	—	1¼	¾	—	—	1⅝	⅞	⅞	—	—	—	—
040404	2	¾	—	—	2	¾	—	—	2¼	⅞	⅞	—	—	—	—
050503	1¼	¾	—	—	1¼	¾	—	—	1⅝	1¼	1¼	—	—	—	—
050504	2	1	—	—	2	1	—	—	2¼	1¼	1¼	—	—	—	—
060403	1¼	¾	¾	—	1¼	¾	—	—	1⅝	1⅜	⅞	1¾	—	—	—
060404	2	1½	¾	—	2	¾	—	—	2¼	1⅜	⅞	1¾	—	—	—
060603	1¼	1¼	¾	—	1¼	1¼	¾	—	1¼	1⅜	1⅜	1¾	1¾	—	—
060604	2	1½	¾	—	2	1½	¾	—	2¼	1⅜	1⅜	1¾	1¾	—	—
060606	4	1½	¾	—	4	1½	¾	—	3⅜	1⅜	1⅜	1¾	1¾	—	—
080403	1¼	1¼	1	¾	1¼	¾	—	—	1⅝	1⅝	⅞	2½	—	—	—
080604	2	2	1	¾	2	1½	¾	—	2¼	1⅝	1⅜	2½	1¾	1¾	—
080606	4	2	1	¾	4	1½	¾	—	3⅜	1⅝	1⅜	2½	1¾	1¾	—
080804	2	2	1	¾	3	2	1	¾	2¼	1⅝	1⅝	2½	2½	1¾	1¾
080806	4	2	1	¾	4	2	1	¾	3⅜	1⅝	1⅝	2½	2½	1¾	1¾
080808	4	2	1	¾	4	2	1	¾	4¼	1⅝	1⅝	2½	2½	1¾	1¾
090604	2	1¼	1½	1	2	1½	¾	—	2¼	2¼	1⅜	3	1¾	2	—
100604	2	2	1½	1	2	1½	¾	—	2¼	2½	1⅜	2¾	1¾	2½	—
100804	2	2	1½	1	2	2	1	¾	2¼	2½	1⅝	2¾	2½	2½	1¾
100806	4	3	1½	1	4	2	1	¾	3⅜	2½	1⅝	2¾	1¾	2½	1¾
100808	5	3	1½	1	5	2	1	¾	4½	2½	1⅝	2¾	2½	2½	1¾
101006	4	3	1½	1	3	3	1½	1	2⅜	2½	2½	2¾	2¾	2½	2½
101008	5	3	1½	1	5	3	1½	1	4¼	2½	2½	2¾	2¾	2½	2½
120604	2	2	2	1½	2	1½	¾	—	2¼	3	1⅜	4	1¾	2¾	—
120606	4	4	2½	1½	4	1½	¾	—	3⅜	3	1⅜	4	1¾	2¾	—
120806	4	4	2½	2½	4	2	1	¾	3⅜	3	1⅝	4	2½	2¾	1¾
120808	5	4	2½	2½	5	2	1	¾	4¼	3	1⅝	4	2½	2¾	1¼
121204	2	2	2	1½	2	2	2	1½	2¼	3	3	4	4	2¾	2¾
121206	4	4	2½	1½	4	4	2½	1½	3⅜	3	3	4	4	2¾	2¾
121208	5	4	2½	1½	5	4	2½	1½	4¼	3	3	4	4	2¾	2¾
121212	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
121218	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
140806	4	4	3	2	4	2	1	¾	3⅜	3½	1⅝	4½	2½	3½	1¾
141206	4	4	3	2	4	4	2½	1½	3⅜	3½	3	4½	4	3½	2¾
141410	6	4	3	2	6	4	3	2	5	3½	3½	4½	4½	3½	3½
160606	4	4	3½	2½	4	1½	¾	—	3⅜	4	1½	5⅜	2	4	—
160806	4	4	3½	2½	4	2½	1½	¾	3⅜	4	2	5⅜	2⅝	4	2
161206	4	4	3½	2½	4	4	2½	1½	3⅜	4	3	5⅜	4	4	3
161208	5	5	3½	2½	5	4	2½	1½	4¼	4	3	5⅜	4	4	3
161606	4	4	3½	2½	4	4	3½	2½	3⅜	4	4	5⅜	5⅜	4	4
180806	4	4	4	2½	4	2½	1¼	¾	3⅜	4½	2	6	2⅝	4½	2
180808	5	5	4	2½	5	2½	1¼	¾	4¼	4½	2	6	2⅝	4½	2
181206	4	4	4	2½	4	4	2½	1½	3⅜	6½	2⅞	5½	3⅞	4	2¾
181208	5	5	4	2½	5	4	2½	1½	4¼	4½	3	5½	4	4	2¾
181210	6	5	4	2½	6	4	2½	1½	5	4¼	3	5½	4	4	2¾

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.
‡Top and bottom are the longer dimensions on enclosures which are not square.

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Table 4 (continued)

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom‡ 1	2	3	4	Sides 1	2	3	4	Spacing Dimensions† s	t	u	v	w	x	y
181212	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¼
181218	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¾
181806	4	4	4	2½	5	5	4	2½	3⅜	4½	4	6	5⅜	4½	4
181808	5	5	4	2½	5	5	3½	2½	4¼	4½	4	6	5⅜	4½	4
181812	6	6	4	2½	6	6	4	2½	5	4½	4½	6	6	4½	4½
240606	4	4	4	4	4	1½	¾	—	3⅜	6¾	1⅜	8	1¾	6	—
240808	5	5	5	4	5	2½	1¼	¾	4¼	6¾	4½	8	2⅝	6	2
241010	6	6	5	4	6	3	1½	1	5	6½	2½	7	2¾	5¾	2½
241208	5	5	5	4	5	4	2½	1½	4¼	6½	2⅞	7	3⅞	5¾	2¾
241210	6	6	5	4	6	4	2½	1½	5	6½	3	7	4	5¾	2¾
241212	6	6	5	4	6	4	2½	1½	5	6½	2⅞	7	3⅞	5¾	2¾
241808	5	5	5	4	5	5	4	2½	4¼	6½	4½	7	5¾	5¾	4
241810	6	6	5	4	6	6	4	2½	5	6½	4½	7	5¾	5¾	4
241812	6	6	5	4	6	5	4	2½	5	6½	4½	7	5¾	5¾	4
242408	5	5	5	4	5	5	5	4	4¼	6½	6½	7	7½	5¾	5¾
242412	6	6	5	4	6	6	5	4	5	6½	6½	7	7½	5¾	5¾
242424	6	6	5	4	6	6	5	4	6½	6¾	6½	7	7½	5¾	5¾
302412	6	6	6	5	6	6	5	4	5	7½	6¾	10	8	7½	6
361212	6	6	6	6	6	4	2½	1½	5	8¾	3	12	4	9	2¾
361812	6	6	6	6	6	5	4	2½	5	8¾	4½	12	4½	9	4
362412	6	6	6	6	6	6	5	4	5	8¾	6¾	12	8	9	6
363612	6	6	6	6	6	6	6	6	5	8¾	8¾	12	12	9	9

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.
‡Top and bottom are the longer dimensions on enclosures which are not square.

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Application:

RS, RSM, RSS junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes

Features:

- Junction box bodies accept wide range of hub plates permitting varied hub arrangements and sizes.
- Stocking a few components provides for many specific needs.
- Future system expansion easily accomplished by substituting hub plates for currently installed plates.
- Suitable for use where boxes with integral hubs cannot satisfy requirements.
- Suitable for surface mounting outdoors or indoors in rigid conduit runs.

Standard Materials:

- Bodies and hub plates – *Feraloy*® iron alloy
- Gaskets – cork

Standard Finishes:

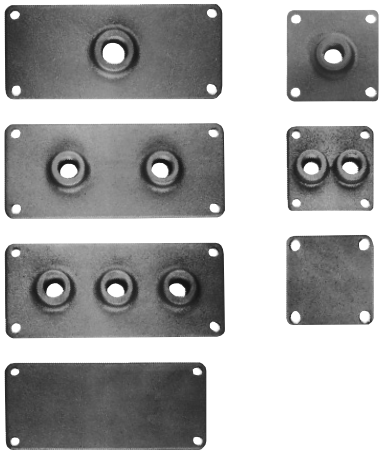
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

Certifications and Compliances:

- UL Standard: 514A
- CSA Standard: C22.2 No. 18







Junction Boxes†

Approximate Inside Dimensions

Size	Cat. #
8½ x 8½ x 4	RS1
8½ x 4½ x 4	RSM1
4½ x 4½ x 4	RSS1

Replacement Cover Gaskets

Size	Cat. #
8½ x 8½	GASK61
8½ x 4½	GASK63
4½ x 4½	GASK64

Conduit Hub Plates‡

For 8½ x 4 inch Sides of RS and RSM Boxes

Size	One Hub Cat. #	Two Hubs Cat. #	Three Hubs Cat. #
½	RSP1	RSP11	RSP111
¾	RSP2	RSP22	RSP222
1	RSP3	RSP33	RSP333
1¼	RSP4	RSP44	RSP444
1½	RSP5	RSP55	RSP555
2	RSP6	RSP66	
2½	RSP7		
3	RSP8		

Blank Hub Plate Cat. #
RSP0

For 4½ x 4 inch Sides of RSM and RSS Boxes

Size	One Hub Cat. #	Two Hubs Cat. #
½	RSMP1	RSMP11
¾	RSMP2	RSMP22
1	RSMP3	
1¼	RSMP4	
1½	RSMP5	
2	RSMP6	
2½	RSMP7	

Blank Hub Plate Cat. #
RSMP0

Replacement Hub Plate Gaskets



Size	Cat. #
8½ x 4	GASK66



Size	Cat. #
4½ x 4	GASK65

† Includes body, top cover with gasket, 4 gaskets for side plates, and 20 bolts.
‡ Hub plates only. Gaskets not included.

NOTE: For conduit liner ordering information, see page 140.

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6F GUE, GUB Junction Boxes



Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 4*, 7BCD, 9EFG
EEx d IIC T6, IP66†

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

GUE, GUB series junction boxes are used in threaded rigid conduit systems in hazardous areas:
- to function as a splice box, pull box or equipment and device enclosure
- indoors and outdoors

Features:

- Threaded construction throughout permits use in hazardous areas.
- Bodies have thick walls so they can be factory or field drilled and tapped to meet NEC/CEC requirements for Class I hazardous areas.
- Covers are provided with a neoprene ''O'' ring gasket to meet NEMA/EEMAC 4 requirements for a watertight seal*
- Internal grounding lug provides a means to ground enclosed equipment.
- Boxes are machined for field installed mounting plates.
- GUB boxes are CENELEC certified when ordered with Suffix SA ATEX.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – GU, GUE, GUB01, GUB02 – electrogalvanized and aluminum acrylic paint. All other boxes – zinc chromate primer and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

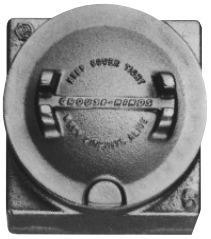
Description	Suffix to be Added to Cat. #
Material –	
Feraloy iron alloy covers	WOD
For GU, GUE, GUB01, GUB02, GUB03 and GUB06 to be furnished in copper-free aluminum	SA
Copper-free aluminum boxes with ATEX certification	SA ATEX
Factory installed mounting plate for relays, terminal blocks, electrical devices, etc	MP
Factory installed terminal blocks	Information on request

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30
- CENELEC: EEx d IIC, IP66† ATEX Certificate: PTB 01 ATEX 1019 U

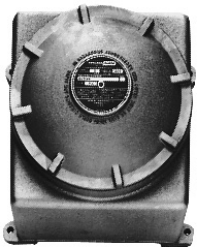
✓ – available with Lightning Service™
See Section G for complete details

Junction Boxes Without Hubs**



GU ✓
4 15⁄16″ x 4 15⁄16″ x 4 1⁄8
3 5⁄8″ cover opening

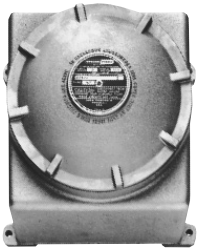
GUE
5 5⁄16″ x 5 5⁄16″ x 5 3⁄8
3 5⁄8″ cover opening



GUB01 ✓
6 1⁄2″ x 7″ x 5 3⁄4
5 3⁄8″ cover opening

GUB02 ✓
8″ x 10″ x 5 7⁄8
7″ cover opening

GUB06 8 1⁄2″ x 10″ x 6 7⁄8″
7″ cover opening



GUB03
11″ x 12″ x 8 13⁄16″
9 5⁄8″ cover opening

GUB01110★
14″ x 18″ x 13 1⁄2
12 1⁄4″ cover opening

GUB15151 19″ x 21″ x 16 5⁄8″
16 3⁄4″ cover opening



GUB04
11″ x 12″ x 8 11⁄16
9 5⁄8″ cover opening

GUB08
7″ cover opening
8 1⁄2″ x 10″ x 6 13⁄16

Ordering Information:

Junction boxes listed can be furnished with drilled and tapped conduit openings, subject to the limitations of maximum opening, number and spacing shown in Tables 1, 2 and 4.

To Order:

Step 1
Select the box required from photos at left and dimensional drawings on page 123.
Step 2
Select standard conduit arrangement from Table 1.
Step 3
Determine maximum size conduit opening required from Table 2 (consider conduit opening spacing from Table 4).
Step 4
Select appropriate symbol for required drilled and tapped holes from Table 3.
Example:
Step 1 – box required GUB06
Step 2 – arrangement 108
Step 3 – openings – 1 1⁄2″ at ''a'' and ''c''; 1″ at ''b'' and ''d''.
Step 4 – symbols are substituted and written in **clockwise order starting with location ''a''.** For this example: FCFC Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit openings. For this example: GUB06-108-FCFC. When no opening is required at a particular location, use symbol ''0'' (zero).

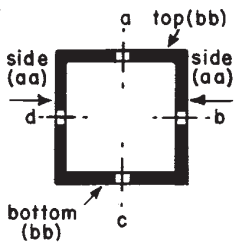
If none of the standard arrangements meet requirements, send a sketch showing junction box number with size and location of each opening desired.

* Not available on GUB01110 and GUB15151.
** External dimensions provided.
† Order suffix SA ATEX. GUB01110 and GUB15151 are rated IP54.

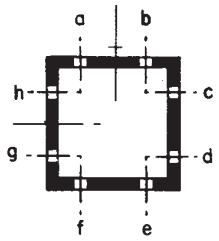
NOTE: For conduit liner ordering information, see page 140.
★GUB01110 listed for Class I, Div. 1, Groups C & D only in Canada (CSA).

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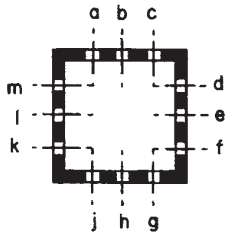
Table 1/Arrangements of Drilled and Tapped Conduit Openings – For other arrangements, send sketch and complete description



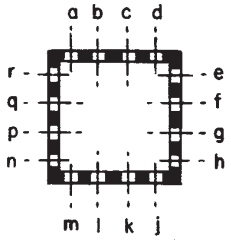
108



109



110



111

Conduit opening arrangements shown in the illustration should meet the majority of requirements.

These GUB junction boxes will be supplied with drilled and tapped openings up to the maximum size and number shown in Table 2.

Table 2/Maximum Size & No. of Drilled & Tapped Holes

	Top & Bottom (bb)†				Each Side (aa)†				Back‡			
Cat. #	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Group D*												
GU	1	1			1	1			3	1	¾	¾
GUE	2	1			2	1			2	1	¾	¾
GUB01	2	1½	¾		2	1½	1	½	1	¾	¾	¾
GUB02	2	2	1	¾	2	2	1½	1	¾	¾	¾	¾
GUB06	2	2	1	¾	2	2	1½	1	2	2	2	2
GUB08	2	2	1	¾	2	2	1½	1	2	2	2	2
GUB03	2	2	1½	1	2	2	2	1¼	4	4	3½	3
GUB04	2	2	1½	1	2	2	2	1¼	4	4	3½	3
GUB01110	2	2	2	1½	2	2	2	2	6	6	4	3½
GUB15151	5	4	3½	2½	5	4	4	3	6	6	6	6
Group C♦												
GU	1	1			1	1			3	1	¾	¾
GUE	2	1			2	1			2	1	¾	¾
GUB01	2	1¼	½		2	1¼	½		¾	¾	¾	¾
GUB02	2	1½	¾		2	2	1¼	½	¾	¾	¾	¾
GUB06	2	1½	¾		2	2	1¼	½	2	2	2	1½
GUB08	2	1½	¾		2	2	1¼	½	2	2	2	1½
GUB03	2	2	1¼	¾	2	2	1½	1	4	3½	2½	2½
GUB04	2	2	1¼	¾	2	2	1½	1	4	3½	2½	2½
GUB01110	2	2	2	1¼	2	2	2	2	6	6	4	3½
GUB15151	5	4	3	2	5	4	3½	2½	6	6	6	5
Group B♦ ♦												
GU	1	1			1	1			3	1	¾	¾
GUE	2	1			2	1			2	1	¾	¾
GUB01	2	1¼	½		2	1¼	½		¾	¾	¾	¾
GUB02	2	1½	¾		2	2	1¼	½	¾	¾	¾	¾
GUB06	2	1½	¾		2	2	1¼	½	2	2	2	1½
GUB08	2	1½	¾		2	2	1¼	½	2	2	2	1½
GUB03	2	2	1¼	¾	2	2	1½	1	4	3½	2½	2½
GUB04	2	2	1¼	¾	2	2	1½	1	4	3½	2½	2½
GUB01110	2	2	2	1¼	2	2	2	2	4	4	4	4
GUB15151	4	4	3½	2½	4	4	3½	2½	4	4	4	4

Table 3/Drilled & Tapped Holes

Size	Symbol
½	A
¾	B
1	C
1¼	E
1½	F
2	G
2½	H
3	J
3½	K
4	L
none	0

* Group D chart is based on use of staggered unions. If adjacent unions are desired, additional spacing may be necessary.

† Sidewall and top and bottom sizes are based on all openings being in line.

‡ Backwall sizes are based on: two per side – diagonal corners; four per side – one in each corner; three per side – triangular pattern with two on adjacent corners on long wall and third in center of opposite long wall.

♦ Conduit seals are required within 1½″ of all conduit entrances for Class I, Group C hazardous locations.

♦ ♦ Conduit seals are required within 1½″ of all conduit entrances for Class I, Group B hazardous locations.

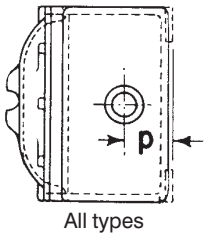
NOTE: For conduit liner ordering information, see page 140.

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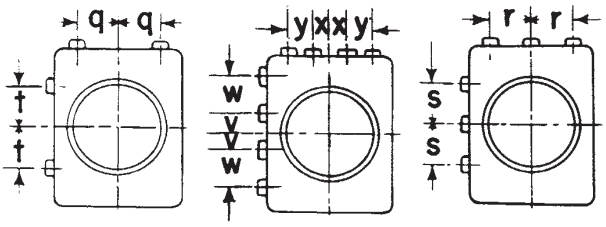
6F GUB Junction Boxes

Dimensions

Table 4/Conduit Spacings



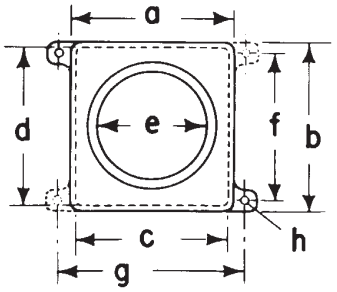
All types



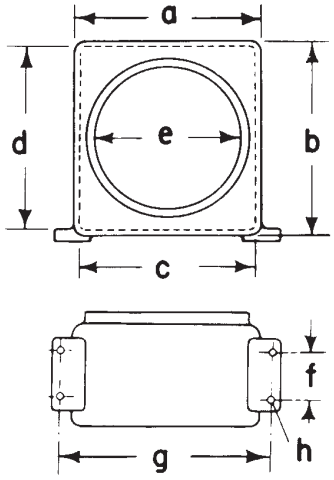
2, 3 or 4 entrances for conduit opening spacings on top, bottom or sides, all types.

Type	p	q	r	s	t	v	w	x	y
GU	1 3/8	1	—	—	1	—	—	—	—
GUE	1 7/8	1 1/8	1 1/8	—	1 1/8	—	—	—	—
GUB01	2 1/16	1 5/8	2 1/8	2 1/8	1 5/8	7/8	1 3/4	25/32	1 9/16
GUB02	2 1/16	1 21/32	2 1/16	2 5/16	1 21/32	1 1/32	2 1/16	7/8	1 3/4
GUB06	2 1/16	1 21/32	2 5/16	2 5/16	1 21/32	1 1/32	2 1/16	7/8	1 3/4
GUB08	2 1/16	1 21/32	2 1/16	2 1/16	1 21/32	1 1/32	2 1/16	7/8	1 3/4
GUB03	3 3/8	2 1/2	3 5/16	3 5/16	3	1 5/32	2 5/16	1 5/32	2 5/16
GUB04	3 3/8	1 21/32	3 5/16	3 5/16	3	1 5/32	2 5/16	1 5/32	2 5/16
GUB01110	4 3/4	3	4	6	4	2	4	1 21/32	3 5/16
GUB15151	6	4	5 1/4	5 7/8	4	2	4	2	4

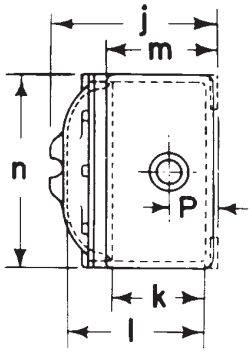
Dimensions



GUB 01, 02, 03, 06, 01110, and 15151. Dotted mounting feet are included on GUB 03, 01110, and 15151 only. GU and GUE are provided with attachable mounting strap.



GUB 04 and 08



All types

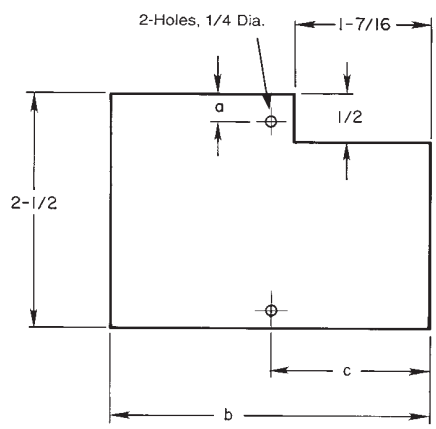
Type	a	b	c‡	d‡	e	f	g	h	j	k‡	l‡	m	n
GU	4 15/16	4 15/16	3 13/16	3 13/16	3 5/8	—	—	—	4 1/8	1 9/16	3 7/16	2 3/8	4 1/8
GUE	5 5/16	5 5/16	4 3/16	4 3/16	3 5/8	—	—	—	5 3/8	2 1/4	3 7/16	3 1/2	4 1/8
GUB01	6 1/2	7	6 1/2	5 7/8	5 3/8	5 3/4	7 1/2	13/32	5 3/4	3 1/16	4 1/2	4 1/16	6 1/4
GUB02	8	10	7 1/8	9 1/8	7	8 3/4	9	13/32	5 7/8	3	4 5/8	4 1/16	7 3/4
GUB06	8 1/2	10	7 3/8	8 7/8	7	8 3/4	9 1/2	7/16	7 3/8	4 1/4	5 13/16	5 1/4	7 3/4
GUB08	8 1/2	10	7 3/8	8 7/8	7	2 1/2	9 5/8	7/16	7 3/8	4 1/4	5 3/16	5 1/4	7 3/4
GUB03	11	12	9 3/4	10 3/4	9 5/8	10 3/4	12 1/8	7/16	8 13/16	5	7 3/8	6 5/8	11
GUB04	11	12	9 3/4	10 3/4	9 5/8	3 1/2	12 1/8	7/16	8 11/16	5	7 3/8	6 1/2	11
GUB01110	14 1/16	18 1/16	13	17	12 1/4	16	16	1	13 1/2	6 13/16	10 3/4	9 3/4	14
GUB15151	20 7/8	18 7/8	19 1/8	17 1/8	16 3/4	18	21	1	16 5/8	9	13 3/16	11 3/8	18

‡ Inside Dimensions

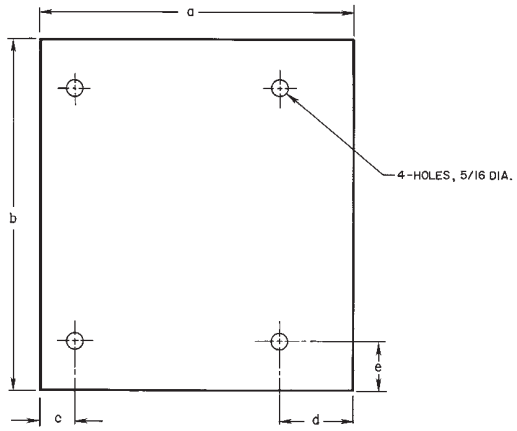
NOTE: For conduit liner ordering information, see page 140.

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Table 5/Mounting Plate Dimensions



GUE



GUB

Box Cat. #	Mounting Plate Kit Cat. #	a	b	c	d	e
GU	GU-MPK1	9/32	3 3/8	1 43/64	—	—
GUE	GUE-MPK1	9/32	3 3/8	1 43/64	—	—
GUB01	GUB-MP01	4 3/8	5	3/8	1	1
GUB02	GUB-MP02	5 9/16	6 1/4	5/8	1 5/16	7/8
GUB03	GUB-MP03	8	9	15/16	1 5/16	1 1/2
GUB04	GUB-MP03	8	9	15/16	1 5/16	1 1/2
GUB06	GUB-MP02	5 9/16	6 1/4	5/8	1P 5/16	7/8
GUB08	GUB-MP02	5 9/16	6 1/4	5/8	1 5/16	7/8
GUB01110	GUB-MP01110	8 3/4	12	7/16	1 7/16	1 3/4
GUB15151	GUB-MP15151	14	14	1 5/8	1 5/8	1 5/8

NOTE: For conduit liner ordering information, see page 140.

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6F Threaded Covers for GUB Junction Boxes

Cl. I, Div. 1 & 2, Groups B‡,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 7B‡CD,9EFG Watertight

Application:

GUB and EPC threaded covers are used with GUB boxes in control systems in hazardous areas:
- indoors and outdoors
- in three categories:

Flat – for normal use; furnished with standard GUB boxes
Glass window – to provide visibility of meter indications when used to enclose meters
Domed – for increasing volume of GUB to make it easier to splice and pull large conductors

Features:

- Domed – more suitable for use when splices of heavy conductors are made and enclosed, since the conductors may be pulled in with the ends outside the box. After the splices are made, they do not have to be crowded back into the box
- Glass window – has maximum diameter glass to give best visibility. In selecting, the diameter of the meter face should match or be slightly smaller than window diameter.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

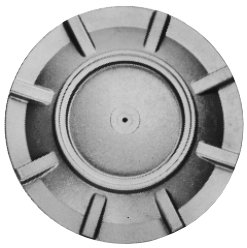
Certifications and Compliances:

- NEC:
  GUB0101, -0102, -0103, -714, -7110, EPC2110, EPC2151
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III

All other covers:
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- CEC:
  Class I, Division 1 & 2, Group D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III

Note: GUB covers are suitable for use in hazardous areas only when used with appropriate GUB series enclosures.



GUB flat cover



GUB glass cover



GUB dome cover

Body† Size	Flat Cover Cat. #	Glass Window Cover Cat. #	Dome Cover Cat. #	Dome Cover Nominal Depth
GUB01	GUB0101	GUB0110	GUB714 GUB7110	4 10
GUB02 GUB06 GUB08	GUB0102	GUB0108	GUB726	6
GUB03 GUB04	GUB0103	GUB0109	GUB738 GUB7316	10 17
GUB01110	EPC2110		EPC2115	5
GUB15151	EPC2151		EPC21116	16

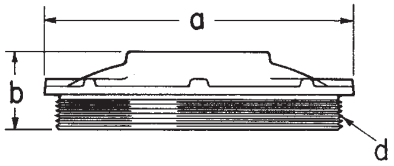
† Bodies are grouped by size of cover opening and take any of the covers shown in the group.

‡Check certifications and compliances for specific hazardous area ratings for each catalog #.

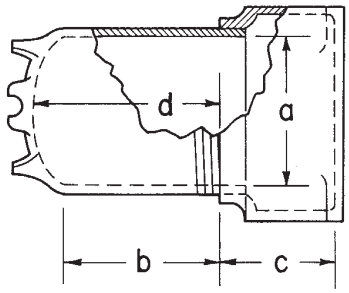
Specify body and conduit openings in normal manner (see page 120) and state Cat. No. of cover required.

Dimensions

Flat covers



GUB with dome covers



Flat Covers

Cat. #	a	b	Thread Size d
GUB0101	6 5/16	1 23/32	5 5/8-12
GUB0102	7 13/16	1 15/16	7 1/8-12
GUB0103	11 1/16	2 3/4	9 3/4-8
EPC2110	12 7/8	5 5/32	12.660-8
EPC2151	17	5 9/16	16.910-8

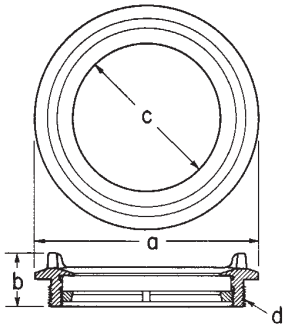
Glass Covers

Cat. #	a	b	Window Opening c	Thread Size d
GUB0110	6 5/16	1 13/16	3 5/8	5 5/8-12
GUB0108	7 13/16	2 1/16	4 3/4	7 1/8-12
GUB0109	11 1/16	1 15/16	6 13/16	9 3/4-8

Dome Covers

Cat. #	a	b	For Dimensions C GUB02	GUB06	GUB08	all others	d
GUB714	5 1/16	2 3/4				4 3/16	4
GUB7110	5 1/16	9 1/8				4 3/16	10 3/8
GUB726	6 3/8	5 1/8	4 1/8	5 1/8	5 1/8		6 3/4
GUB738	8 7/8	8				6 5/8	10 1/2
GUB7316	8 7/8	15 1/4				6 5/8	17 3/8
EPC2115	11 9/16	3 9/16				8 1/2	6 9/16
EPC21116	11 9/16	14 9/16				8 1/2	17 9/16

Glass covers



NOTE: For conduit liner ordering information, see page 140.

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GUB Equipment Housings

Cl. I, Div. 1 & 2, Groups B†,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 4,7B†CD,9EFG Watertight

Application:

GUB equipment housings are used in threaded rigid conduit systems in hazardous areas:
- to house relays, contactors, terminal blocks or other equipment and devices
- indoors or outdoors

Features:

- Supplied with dome cover and adjustable mounting position plate which extends into dome cover.
- Mounting plate is adjustable. It may be located in center of cover so small devices can be mounted on both sides of plate or toward either side of dome cover when larger devices are mounted on one side of plate (see dimension ''p'').

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum
- Mounting plates – sheet steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Sheet steel – zinc plated

Options:

Description	Suffix to be Added to Cat. #
Material – Bodies, copper-free aluminum	SA
Other sizes of boxes and covers available	Information on request

Certifications and Compliances:

- NEC:
  GUB3100, GUB3177
  Class I, Division 1 & 2, Group D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III

  GUB1440, GUB1100
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



GUB with cover removed showing mounting plate.



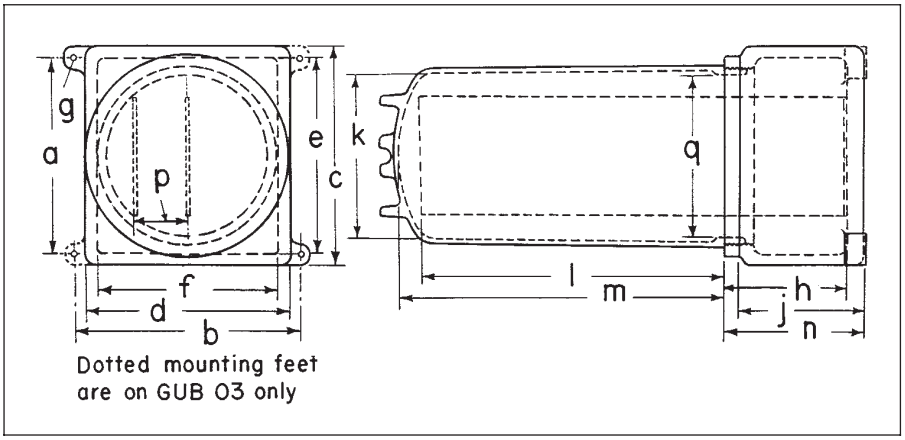
GUB with dome cover.

Body Size	Nominal Depth of Cover	Dimension l	Dimension m	Width of Mounting Plate	Cat. #
GUB01	4	3 5/16	4	3 13/16	GUB1440
	10	9 13/16	10 7/16		GUB1100
GUB03	10	9 1/8	10 1/16	6 1/2	GUB3100
	17	16 3/8	17 3/8		GUB3177

NOTE: Conduit seals are required within 1½″ of all conduit entrances for Class I, Division 1, Group B hazardous areas. For other sealing requirements consult the National Electrical Code®/Canadian Electrical Code.

†Check Certifications and Compliances for specific hazardous area ratings for each catalog #.

Dimensions



Body Size	GUB01	GUB03
a	5 3/4	10 3/4
b	7 1/2	12 1/8
c	7	12
d	6 1/2	11
e	6 1/2	10 3/4
f	5 7/8	9 3/4
g	13/32	7/16
h	4 3/16	6 5/8
j	4	6 5/8
k	5	9 1/8
l	see listing	
m	see listing	
n	4 7/8	7 5/8
p	1 1/2 max	2 7/8 max
q	5 1/16	8 7/8

NOTE: For conduit liner ordering information, see page 140.

6F EJB Junction Boxes

Dimensions Pg. 132

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7,9
EEx d IIB+H_2 T6, IP66**

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

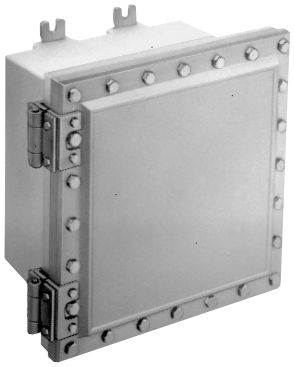
EJB junction boxes are used in threaded rigid conduit systems in hazardous areas:

- As a junction or pull box
- To provide enclosures for splices and branch circuit taps
- For housing terminal blocks, relays and other electrical devices
- Indoors or outdoors in damp, wet, dusty, corrosive, hazardous locations
- Where exposure to frequent or heavy rain, water, spray, moisture, and humidity is common; such as: offshore drilling facilities, cooling towers, coal preparation and handling facilities and sewage and waste water treatment plant
- In areas which are hazardous due to the presence of hydrogen or gases and vapors of equivalent hazard such as found in process industries, missile bases and gas manufacturing plants

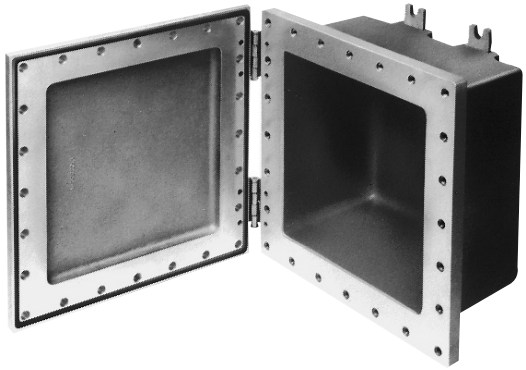
Features:

- Style C boxes provided with Aluminum plate cover as standard, allowing for field addition of cover device holes.
- Stainless steel cover bolts (Style C only).
- Ground joint cover opening provides maximum opening for pulling wires or mounting equipment.
- Walls of bodies may be drilled and tapped for conduit entries as shown in listings.
- Stud bolts in diagonally opposite corners of body aid in aligning cover to body during installation (not furnished with hinged covers).
- All Style C bodies are provided with captive, quick release hex head stainless steel bolts with spring loaded action which provides clear indication that cover bolts are fully retracted from the body.
- External flange design – wide unobstructed cover opening provides a completely accessible interior for wiring and electrical equipment.
- Square corners of enclosure body provide maximum interior space and area for conduit openings.
- Internal grounding lug provides a means to ground enclosed equipment.
- Special neoprene cover gasket provides a watertight seal to meet NEMA 4 requirements, and provides superior protection for enclosed equipment against water/corrosion.
- Enclosures are machined for field installed mounting plates.
- Detachable mounting feet provide mounting flexibility. No need to replace enclosure if mounting feet are broken.
- Optional stainless steel hinges provide convenient and easy access for inspection, maintenance and systems changes.
- Enclosures are machined to accept field installed hinges.
- CENELEC certified when ordered with suffix ATEX (Style C only).

NOTE: For conduit liner ordering information, see page 140.



EJB121208 with optional hinged cover



EJB121208 with optional hinged cover and standard neoprene cover gasket

Standard Materials:

- Body and cover – copper-free aluminum (suffix-SA items and Style C); *Feraloy*® iron alloy (Style D)
- Gasket – neoprene
- Cover bolts – stainless steel (Style C), steel (Style D)
- Hinges – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Extruded aluminum – natural

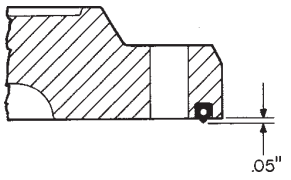
Certifications and Compliances:

- NEC/CEC
  Class I, Divisions 1 and 2, Groups B*, C† and D‡
  Class II, Division 1, Groups E, F and G
  Class II, Division 2, Groups F and G
  Class III
  Class I, Zones 1 and 2
- UL Standard 886
- cUL to CSA Standard C22.2 No. 30
- Style C only: CENELEC EEx d IIB + H_2 T6, IP66
  ATEX certificate: PTB 01 ATEX 1020 U (when ordered with-ATEX suffix)
- Enclosure Type 3, 3R, 4, 7BCD, 9EFG

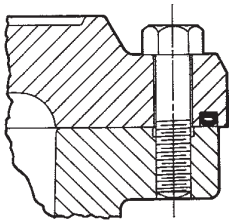
Options

Description	Suffix to be added to Cat. No.
Hinged covers. Hinges mounted on left (short side)	S598
Available on all Style C and the following Style D enclosures: EJB101008-SA, EJB120804, EJB120804-SA, EJB120808-SA, & EJB141006-SA	
Hinge kits for field installation (no field machining required) –	
EJB100806 through 361208	EJB KIT 1 (2 hinges)
EJB361808	EJB KIT 3 (3 hinges)
EJB362408	EJB KIT 4 (4 hinges)
For EJB101008-SA, EJB120804, EJB120804-SA, EJB120808-SA & EJB141006-SA	EJB KIT 5 (2 hinges)
Factory installed mounting plates for relays, terminal blocks, electrical devices, etc. – Aluminum	MP
Mounting plate kit for field installation (kit includes aluminum mounting plate, pillars and mounting hardware). No field machining required.	See Ordering Information on page 130
Factory installed terminal blocks	Information on request

Gasket Detail



Cross section of cover. Gasket extends beyond flange surface by .05″.



Bolted cover and body assembled. Compressed gasket forms watertight seal.

* For Group B, install sealing fitting in each conduit run within 18″ of the enclosure.

† EJB361208, 361808, 362408 and all style D enclosures require sealing fittings within 18″ of enclosure for each conduit run for Group C locations.

‡ Style D enclosures require sealing fittings within 18″ of enclosure for each conduit run for Group D locations.

* * Order suffix ATEX (style C only).

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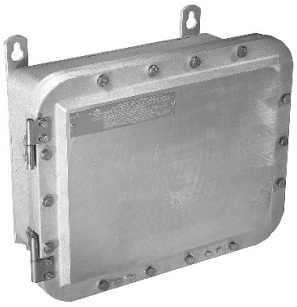
EJB Junction Boxes

Dimensions Pg. 132

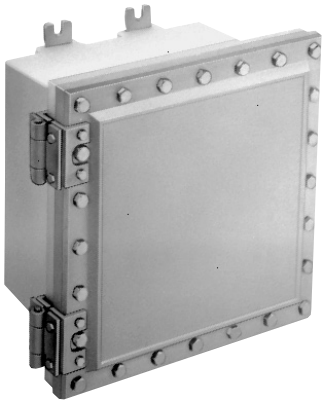
Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7,9
EEx d IIB+H_2 T6, IP66**

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations





Style D



Style C – EJB121208‡ with optional hinged cover

Style D

Cat. #	Nominal Inside Dimensions Sides (aa)	Top & Bottom (bb)	Depth
Iron			
EJB060404✓	4	6	4
EJB080604✓	6	8	4
EJB080606✓	6	8	6
EJB080806✓	8	8	6
EJB120804✓	8	12	4
EJB160404	4	16	4
Aluminum			
EJB060404-SA✓	4	6	4
EJB080604-SA	6	8	4
EJB080606-SA✓	6	8	6
EJB080806-SA	8	8	6
EJB120604-SA	6	12	4
EJB120804-SA✓	8	12	4
EJB120808-SA	8	12	8
EJB160404-SA	4	16	4
EJB101008-SA✓	10	10	8
EJB141006-SA✓	10	14	6

Style C

Cat. #	Nominal Inside Dimensions Sides (aa)	Top & Bottom (bb)	Depth
EJB100806	10	8	6
EJB121204	12	12	4
EJB121206✓	12	12	6
EJB121208✓	12	12	8
EJB161606✓	16	16	6
EJB161608✓	16	16	8
EJB181206	12	18	6
EJB181208	12	18	8
EJB241208	12	24	8
EJB241210	12	24	10
EJB241808✓	18	24	8
EJB242408	24	24	8
EJB242410	24	24	10
EJB361208	12	36	8
EJB361808	18	36	8
EJB362408	24	36	8
EJB602212†	60	22	12

Ordering Information:

Junction boxes listed can be furnished with drilled and tapped openings, subject to material required and the limitations of maximum size and number of openings as well as spacing, as shown in Tables 1 and 2.

To Order:

Step 1
Select the box required from photos at left, listings, and dimensional drawings on pages 130 to 132.
Step 2
Select standard conduit arrangement from Table 1 and maximum size conduit opening required from Table 2.
Step 3
Select appropriate symbol for required drilled and tapped opening from Table 3.
Example:
Step 1 – Box required – EJB080806
Step 2 – Arrangement – 2
Step 3 – Openings – two 1″ drilled and tapped holes in top and bottom and two 2″ drilled and tapped holes on each side.
Step 4 – Symbols are substituted and written in clockwise order starting with ‘‘a.’’ When no opening is required at a particular location, use symbol ‘‘0’’ (zero).
For this example: CC,GG,CC,GG. Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit openings. For this example:
EJB080806-2-CC-GG-CC-GG
If none of the standard arrangements meet requirements, send a sketch showing junction box number with size and location of each conduit opening desired.

EJB Mounting Plate Kits

(For Field Installation)
Select kit number that matches junction box number.
Example: EJB-MP1410 is used in EJB141006-SA

Cat. # Style C	Cat. # Style D
EJB-MP1008	EJB-MP0604
EJB-MP1212	EJB-MP0806
EJB-MP1616	EJB-MP0808
EJB-MP1812	EJB-MP1206
EJB-MP2412	EJB-MP1208
EJB-MP2418	EJB-MP1604
EJB-MP2424	EJB-MP1010
EJB-MP3612	EJB-MP1410
EJB-MP3618	
EJB-MP3624	

* See Compliances on page 128.
** Order suffix ATEX (Style C only).
† Class I, Div. 1 and 2, Groups C and D only.

NOTE: For conduit liner ordering information, see page 140.
✓ - Available with Lightning Service™. See Section G for complete details.

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6F EJB Junction Boxes

Ordering Information
Dimensions Pg. 132

Table 1/Conduit Arrangement Diagrams

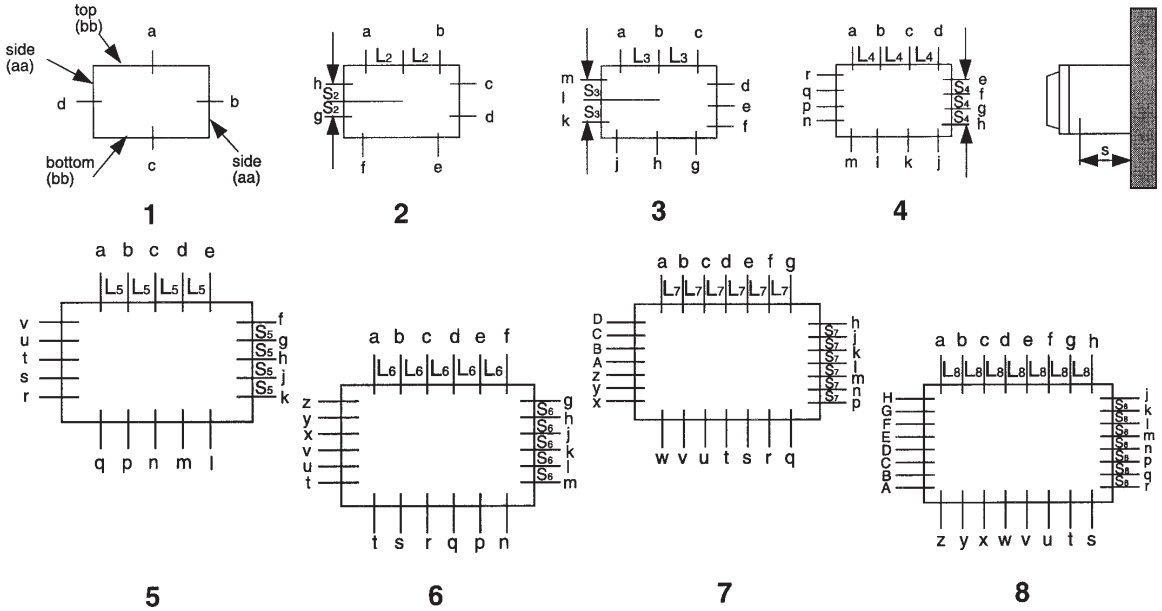


Table 2/Conduit Arrangements – Style D

	Maximum Trade Size and Number of Openings								Spacing Dimensions						
	Top and Bottom (bb)*				Sides (aa)										
Cat. #	1	2	3	4	1	2	3	4	S	L_2	S_2	L_3	S_3	L_4	S_4
EJB060404	2	1¼	½	—	2	½	—	—	2⅝	1⅝	1 1/16	2⅛	—	—	—
EJB080604	2	2	1	½	2	1¼	½	—	2⅝	2⅛	1⅝	2¾	2⅛	2 1/16	—
EJB080606	3½	2	1	½	3½	1¼	½	—	3¾	2¼	1⅝	2¾	2⅛	2 1/16	—
EJB080806	3½	2	1	½	3½	2	1	½	3¾	2¼	2¼	2¾	2¾	2 1/16	2 1/16
EJB101008	4	2½	1½	1	4	2½	1½	1	4¾	2¾	2¾	3⅝	3⅝	2 9/16	2 9/16
EJB120604	2	2	2	1¼	2	1½	½	—	2¾	3	1⅝	4⅛	2⅛	3⅛	—
EJB120804	2	2	2	1¼	2	2	1	½	2⅛	3	2¼	4⅛	2¾	3 1/16	2 1/16
EJB120808	4	4	2	1¼	4	2	1	½	4¾	3¼	2¼	4⅛	2¾	3 1/16	2 1/16
EJB141006	3½	3½	2½	1½	3½	2½	1½	1	3⅞	3¾	2¾	5	3 9/16	3⅝	2 9/16
EJB160404	2	2	2	2	2	½	—	—	2⅝	3	1 1/16	6	—	4⅛	—

NOTE: Conduit seals are required in all conduit entrances for Class I, Division 1, Group B hazardous areas, and for EJB361208, EJB361808, EJB362408, and all Style D enclosures when used in Class I, Division 1, Group C hazardous areas. For other sealing requirements, consult the National Electrical Code*. Where standard arrangements are not adequate, special drilling and tapping can be ordered, or instructions can be provided for field drilling and tapping. Breathers and drains must be ordered separately. Maximum trade size for Group B application is 4″.

* Top and bottom are longer dimensions on enclosures which are not square.

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Table 2/Conduit Arrangements (Continued)

Style C Drilled and Tapped Openings – Groups B*, C and D**

	Maximum Trade Size and Number of Openings															
	Top and Bottom (bb)**								Sides (aa)							
Cat. #	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
EJB100806	3½	3	1½	1¼	—	—	—	—	3½	2½	1½	1¼	—	—	—	—
EJB121204	1½	1½	1½	1¼	1	¾	½	—	1½	1½	1½	1¼	1	¾	½	—
EJB121206	3½	3½	1½	1¼	1	¾	½	—	3½	3½	1½	1¼	1	¾	½	—
EJB121208	5	3½	1½	1¼	1	¾	½	—	5	3½	1½	1¼	1	¾	½	—
EJB161606	3½	3½	2½	2	1½	1¼	1	¾	3½	3½	2½	2	1½	1¼	1	¾
EJB161608	5	5	3	2	1½	1¼	1	¾	5	5	3	2	1½	1¼	1	¾
EJB181206	3½	3½	3½	2½	1½	1½	1	¾	3½	3½	1½	1¼	1	¾	½	—
EJB181208	5	5	3½	2½	2	1½	1	1	5	3½	1½	1¼	1	¾	½	—
EJB241208	5	5	5	3½	3	2½	2	1½	5	3½	1½	1¼	1	1	½	—
EJB241210	6	6	5	3½	3	2½	2	1½	6	3½	1½	1¼	1	1	½	—
EJB241808	5	5	5	3½	3	2½	2	1½	5	5	3½	2½	2	1½	1¼	1
EJB242408	5	5	5	3½	3	2½	2	1½	5	5	5	3½	3	2½	2	1½
EJB242410	6	6	5	3½	3	2½	2	1½	6	6	5	3½	3	2½	2	1½
EJB361208	5	5	5	5	4	4	3½	2½	5	3½	1½	1¼	1	¾	½	—
EJB361808	5	5	5	5	4	4	3½	2½	5	5	3½	2½	2	1½	1¼	1
EJB362408	5	5	5	5	4	4	3½	2½	5	5	5	3½	3	2½	2	1½

Spacing Dimensions ◆ ◆

Cat. #	S	L_2	S_2	L_3	S_3	L_4	S_4	L_5	S_5	L_6	S_6	L_7	S_7	L_8	S_8
EJB100806	3⅜	2¾	1⅞	3	2⅜	2¼	1¾	—	—	—	—	—	—	—	—
EJB121204	3	2¼	2¼	3⅝	3⅝	3 1/16	3 1/16	2	2	1¾	1¾	1½	1½	—	—
EJB121206	3¾	3	3	3⅝	3⅝	3 1/16	3 1/16	2	2	1¾	1¾	1½	1½	—	—
EJB121208	4¾	3	3	3⅝	3⅝	3 1/16	3 1/16	2	2	1¾	1¾	1½	1½	—	—
EJB161606	3¾	3	3	4⅝	4⅝	4 3/16	4 3/16	2¾	2¾	2½	2½	2	2	1¾	1¾
EJB161608	4¾	3¼	3¼	4⅝	4⅝	4 3/16	4 3/16	2¾	2¾	2½	2½	2	2	1¾	1¾
EJB181206	3¾	3	3	6	3⅝	4⅝	3 1/16	2¾	2	2¾	1¾	2	1½	1¾	—
EJB181208	4¾	4 3/16	3	6	3⅝	4⅝	3 1/16	3¼	2	2¾	1¾	2	1½	2	—
EJB241208	5⅛	4 3/16	3	8 7/16	3⅝	6	3 1/16	4⅝	2	3⅞	2	3¼	1½	2¾	—
EJB241210	6⅛	4¾	3	8 7/16	3⅝	6	3 1/16	4⅝	2	3⅞	2	3¼	1½	2¾	—
EJB241808	5¼	4 3/16	4 3/16	8 7/16	6	6	4⅝	4⅝	3¼	3⅞	2¾	3¼	2½	2¾	2
EJB242408	5⅜	4 3/16	4 3/16	8 7/16	8 7/16	6	6	4⅝	4⅝	3⅞	3⅞	3¼	3¼	2¾	2¾
EJB242410	6⅜	4¾	4¾	8 7/16	8 7/16	6	6	4⅝	4⅝	3⅞	3⅞	3¼	3¼	2¾	2¾
EJB361208	4¾	4 7/16	3	8 7/16	3⅝	8 7/16	3 1/16	5¾	2	5¾	1¾	5⅛	1½	3⅞	—
EJB361808	5½	4 7/16	4 7/16	8 7/16	6	8 7/16	4⅝	5¾	3¼	5¾	2¾	5⅛	2½	3⅞	2
EJB362408	6	4¾	4 3/16	8 7/16	8 7/16	8 7/16	6	5¾	4⅝	5¾	3⅞	5⅛	3¼	3⅞	2¾

Table 3 / Symbols for Openings

Conduit Size	Drilled and Tapped Hole Symbol
½	A
¾	B
1	C
1¼	E
1½	F
2	G
2½	H
3	J
3½	K
4	L
5	M
6	N
None	0

NOTE: Conduit seals are required in all conduit entrances for Class I, Division 1, Group B hazardous areas, and for EJB361208, EJB361808 and EJB362408 enclosures when used in Class I, Division 1, Group C hazardous areas. For other sealing requirements, consult the National Electrical Code®. Where standard arrangements are not adequate, special drilling and tapping can be ordered, or instructions can be provided for field drilling and tapping. Breathers and drains must be ordered separately – see page 195.

** Top and bottom are longer dimensions on enclosures which are not square.

◆ ◆ Spacing dimensions for Group B boxes are based on use of EYS11-101 sealing fitting in conduit.

§ Drilled and tapped openings for vertical mounted enclosures with horizontal conduit entries – consult Cooper Crouse-Hinds for proper pouring space for seals.

NOTE: For conduit liner ordering information, see page 140.

*** Maximum trade size for Group B applications is 4″

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6F EJB Junction Boxes

Dimensions

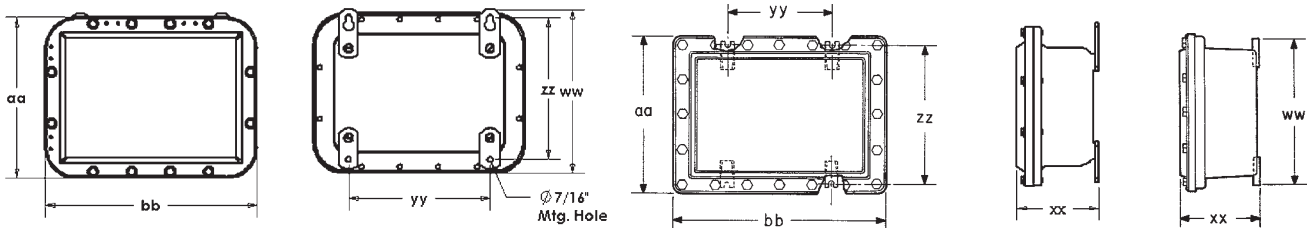


Table 4/Outside Dimensions

Cat. #†	Diagram	aa	bb	Mtg. Hole	ww	xx	yy	Net Weight (lbs.) With Cover zz	Net Weight (lbs.) With Cover w/Cover
EJB060404		8 11/32	10 11/32	7/16	8 3/4	6 1/8	5	7 1/8	43
EJB080604		10 15/32	12 15/32	7/16	10 25/32	6 3/16	7	9 1/8	64
EJB080606		10 15/32	12 15/32	7/16	10 25/32	8 3/16	7	9 1/8	84
EJB080806		12 15/32	12 15/32	7/16	12 25/32	8 7/32	7	11 1/8	98
EJB120804		12 1/2	16 1/2	7/16	12 13/16	6 3/8	11	11 1/8	103
EJB160404		8 1/2	20 1/2	7/16	8 13/16	6 5/32	15	7 1/8	86
EJB060404-SA		8 11/32	10 11/32	7/16	8 3/4	6 1/8	5	7 1/8	16
EJB080604-SA	A,	10 15/32	12 15/32	7/16	10 25/32	6 3/16	7	9 1/8	24
EJB080606-SA	B,	10 15/32	12 15/32	7/16	10 25/32	8 3/16	7	9 1/8	32
EJB080806-SA	D	12 15/32	12 15/32	7/16	12 25/32	8 7/32	7	11 1/8	37
EJB120604-SA		10 1/2	16 1/2	7/16	10 13/16	6 3/16	11	9 1/8	32
EJB120804-SA		12 1/2	16 1/2	7/16	12 13/18	6 3/8	11	11 1/8	39
EJB120808-SA		12 1/2	16 1/2	7/16	12 13/16	10 3/8	11	11 1/8	56
EJB160404-SA		8 1/2	20 1/2	7/16	8 13/16	6 5/32	15	7 1/8	33
EJB101008-SA		14 21/32	14 21/32	7/16	14 7/8	10 3/8	9	13 1/8	59
EJB141006-SA		14 21/32	18 21/32	7/16	14 7/8	8 15/32	13	13 1/8	66
EJB100806		13 1/32	15 1/32	9/16	12 1/4	8 9/16	5 1/2	11 1/4	60
EJB121204		17 1/16	17 1/16	9/16	16 1/8	6 13/16	5 1/2	15 1/8	60
EJB121206		17 1/16	17 1/16	9/16	16 1/8	8 7/8	5 1/2	15 1/8	70
EJB121208		17 1/16	17 1/16	9/16	16 1/8	10 7/8	5 1/2	15 1/8	80
EJB161606		21 3/16	21 3/16	9/16	20 1/8	8 7/8	9 1/2	19 1/8	103
EJB161608		21 3/16	21 3/16	9/16	20 1/8	10 7/8	9 1/2	19 1/8	113
EJB181206	C	17 5/16	23 5/16	9/16	16 1/8	8 7/8	11 1/2	15 1/8	101
EJB181208	and	17 5/16	23 5/16	9/16	16 1/8	10 7/8	11 1/2	15 1/8	110
EJB241208	E	17 9/16	29 9/16	9/16	16 1/8	11 3/4	17 1/2	15 5/8	149
EJB241210		17 9/16	29 9/16	9/16	16 1/8	13 3/4	17 1/2	15 5/8	160
EJB241808		23 9/16	29 5/8	11/16	23 1/2	12 1/4	17 1/4	21 7/8	243
EJB242408		29 9/16	29 9/16	11/16	29 1/2	12 5/16	16 1/4	27 7/8	296
EJB242410		29 9/16	29 9/16	11/16	29 1/2	14 5/16	16 1/4	27 7/8	322
EJB361208		17 1/16	41 1/16	9/16	16 1/8	11 11/16	29 1/2	15 1/8	185
EJB361808		23 15/16	41 15/16	11/16	23 1/2	12 7/16	28 1/4	21 7/8	351
EJB362408		30 3/16	42 3/16	11/16	31 1/4	12 5/8	28 1/4	29 1/2	571

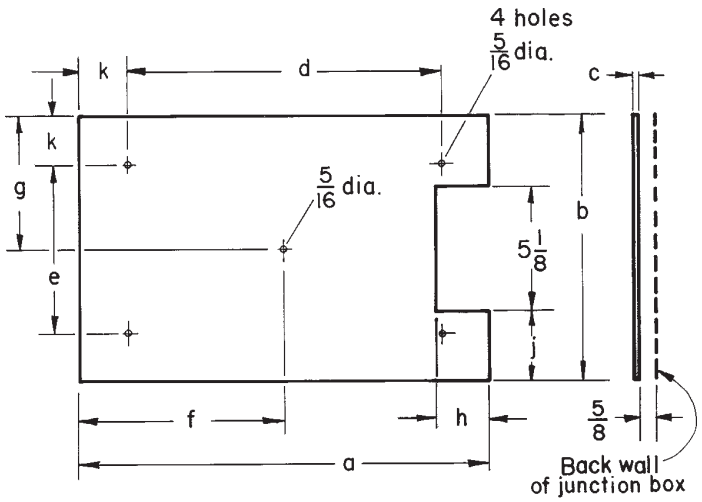
☆ Mounting strap location varies with body. In some cases, they extend beyond the sides.

* See Certifications and Compliances on page 128.

NOTE: For conduit liner ordering information, see page 140.

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Table 5/Mounting Plate Dimensions



Style C

Style C

Cat. #	a	b	c	d	e	f	g	h	j	k
EJB-MP1008‡	9	7	.125	7	5			1⅜	1½	1
EJB-MP1212‡	11	11	.125	9	9			1⅜	1½	1
EJB-MP1616‡	15	15	.125	13	13			1⅜	1½	1
EJB-MP1812	17	11	.125	13	7	8½	5½	2⅜	2½	2
EJB-MP2412	23	11	.125	19	7	11½	5½	2⅜	2½	2
EJB-MP2418	22	16	.125	19	13	11	8	1⅞	2	1½
EJB-MP2424	22	22	.125	19	19	11	11	1⅞	2	1½
EJB-MP3612	34	10	.125	31	7	17	5	1⅞	2	1½
EJB-MP3618	33½	15½	.125	31	13	16¾	7¾	1⅝	1¾	1¼
EJB-MP3624	34	22	.125	31	19	17	11	1⅞	2	1½

* See Certifications and Compliances on page 128.

‡ Plate has no center hole.

NOTE: For conduit liner ordering information, see page 140.

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6F EJB602212 Junction Box

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7,9

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EJB602212 junction box is used in threaded rigid conduit systems in hazardous areas:
- as a junction or pull box.
- as an enclosure for splices and branch circuit taps.
- for housing terminal blocks, relays, and other electrical devices.
- as a mounting box for multi-device control panels with EMP barrel assemblies (see section 4C).
- indoors or outdoors in damp, wet, dusty, corrosive locations.
- where exposure to frequent or heavy rain, water, spray, moisture, and humidity is common; such as: offshore drilling facilities, cooling towers, coal preparation and handling facilities, and sewage and waste water treatment plants.
- which are hazardous due to the presence of gases or vapors such as those found in process industries, missile bases, and gas manufacturing plants.

Features:

- Ground joint cover opening provides maximum opening for pulling wires or mounting equipment.
- Walls of enclosure may be drilled and tapped for conduit entries as shown in Table 2.
- External flange design – wide unobstructed cover opening provides a completely accessible interior for wiring and electrical equipment.
- Square corners of enclosure body provide maximum interior space and area for conduit openings.
- Flat cover provides maximum space for mounting a greater number of control devices.
- Internal grounding lug provides a means to ground enclosed equipment.
- Special neoprene cover gasket provides a watertight seal to meet UL Type 4 (NEMA 4) requirements, and provides superior protection for enclosed equipment against water/corrosion.
- Stainless steel cover bolts provide superior corrosion protection.
- Enclosure is machined for field installed mounting plates.
- Detachable mounting channels provide mounting flexibility. No need to replace enclosure if mounting channel is broken.
- Aluminum hinges provide convenient and easy access for inspection, maintenance, and systems changes.
- Safety chain attached to body and cover prevents accidental damage to hinges.

Standard Materials:

- Body and cover – copper-free aluminum
- Gasket – neoprene
- Cover bolts – stainless steel
- Hinges – extruded aluminum

NOTE: For conduit liner ordering information, see page 140.

Standard Finishes:

- Copper-free aluminum – natural
- Extruded aluminum – natural
- Stainless steel – natural
- Neoprene – natural

Certifications and Compliances:

- NEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- UL Raintight
- CSA 22.2 No. 18 and 30
- NEMA 3,4,7CD,9EFG

Options:

Mounting plate kit for field installation (kit includes aluminum mounting plate, pillars, and mounting hardware). EJB-MP6022
Factory installed aluminum mounting plate for relays, terminal blocks, electrical devices, etc. . . . . MP

Ordering Information:

EJB602212 can be furnished with drilled and tapped openings, subject to the limitations of maximum size and number of openings as well as spacing, as shown in Tables 1 and 2.

TO ORDER:

Step 1
Specify box catalog number – EJB602212

Step 2
Select standard conduit arrangement from Table 1 and maximum allowable size conduit opening from Table 2.

Step 3
Select appropriate symbol for required drilled and tapped opening from Table 3.

Example:
Step 1 – Box Cat. No. – EJB602212
Step 2 – Arrangement – 2
Step 3 – Openings – two 2″ drilled and tapped holes in top and bottom and two 2½″ drilled and tapped holes evenly spaced on each side.
Step 4 – Symbols are substituted and written in clockwise order starting with ‘‘a’’. When no opening is required at a particular location, use symbol ‘‘0’’ (zero). For this example: GG-0H0H0-GG-0H0H0. Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit openings. For this example the catalog number is: EJB602212-2-GG-0H0H0-GG-0H0H0.



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EJB602212 Junction Box

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7,9
Wet Locations

Explosionproof
Dust-Ignitionproof
Raintight

Table 1 / Conduit Arrangement Diagrams

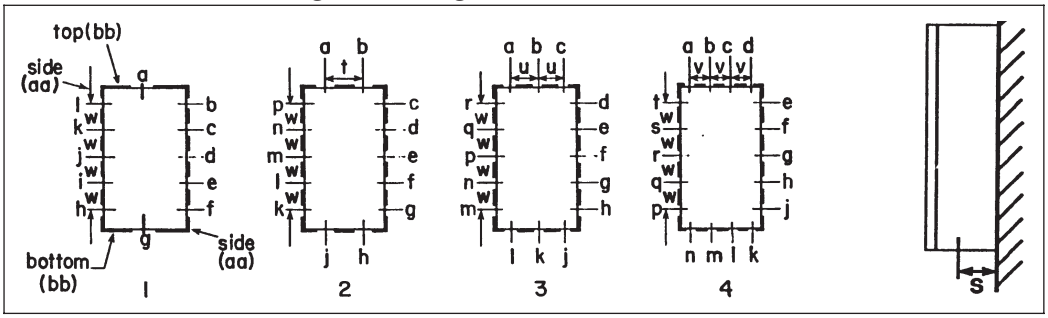


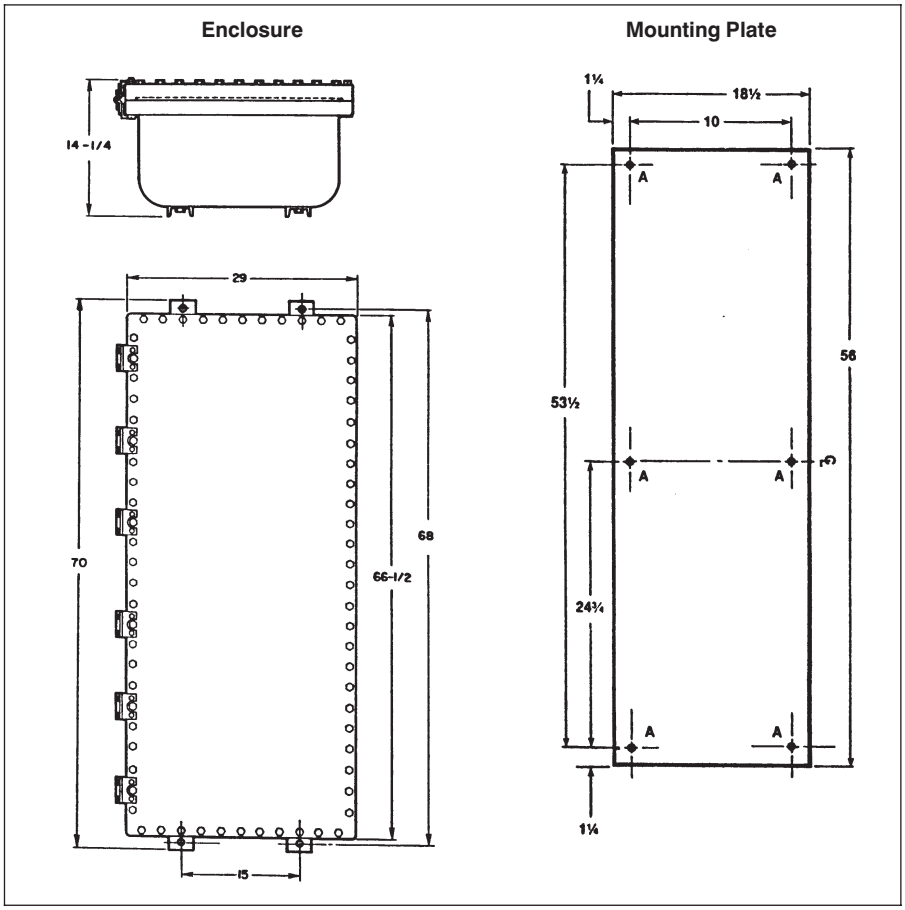
Table 2 / Conduit Arrangements

	MAXIMUM TRADE SIZE AND NUMBER OF OPENINGS									SPACING DIMENSIONS				
	Top and Bottom (bb)				Sides (aa)									
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**5**	**s**	**t**	**u**	**v**	**w**
EJB602212	6	6	4	3	6	6	6	6	6	6¾	10	7	5⅜	10

Table 3 / Symbols for Openings

Conduit Size	Drilled and Tapped Hole Symbol
1/2	A
3/4	B
1	C
1-1/4	E
1-1/2	F
2	G
2-1/2	H
3	J
3-1/2	K
4	L
5	M
6	N
none	0

Note: Conduit sealing fittings are required on all conduit entrances (within 18″ of the enclosure) when used in Class I, Division 1, Group C hazardous areas. For other sealing requirements consult the National Electrical Code.®



NOMINAL INSIDE DIMENSIONS		
Sides	Top & Bottom	Depth
60	22	12

NOTE: For conduit liner ordering information, see page 140.

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6F EJB Custom-Built Control Panels



Using EMP and EMPS Barrel Assemblies

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG
EEx d IIB+H_2 T6, IP66†

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EJB custom-built control panels are used with EMP and EMPS barrel assemblies:

- as a means of grouping control stations for centralized process control in hazardous areas in minimum space
- to provide the necessary pushbuttons, pilot lights, selector switches, tumbler switches and glass windows

Features:

- To reduce installation costs, panels can be supplied with control components factory wired to terminal blocks mounted in the box. Relays and other control devices can also be mounted in the boxes for special control functions
- Surface mounted control panels have the components assembled in the hinged cover, readily accessible for circuit checking and trouble shooting
- Panel mounted control assemblies have components installed in the back wall of the junction box. The protruding barrels are passed through holes drilled in the finished panel and locked to the panel in the same manner as individual EMP assemblies. Blank hinged covers are used, and are accessible from the rear of the panel to facilitate maintenance.
- Custom-built control panels to meet your exact requirements are a Cooper Crouse-Hinds specialty. Complete quotations will be supplied for any job, large or small.
- CENELEC certified when ordered with optional suffix ATEX.

Certifications and Compliances:

EJB panels –

- NEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA/EEMAC: 3, 7CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2 No. 30
- CEC:
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
- CENELEC: EEx d IIB + H_2 T6 IP66 † ATEX Certificate: PTB 01 ATEX 1117 (control panels)



EJB surface mounted control panel – cover closed



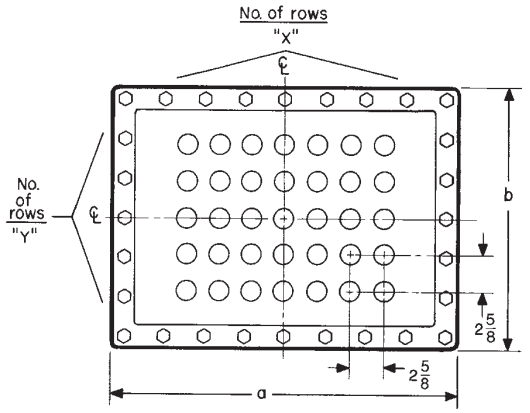
EJB panel mounted control assembly

Request Brochure # 3331 from your Cooper Crouse-Hinds sales representative or customer service to design your own custom control panel

Dimensions (in inches)*

Listed below are EJB boxes with standard spacing for most barrel assemblies. Depending on the number and type of barrel assemblies installed, closer spacing can be used and more devices assembled.

Standard spacing of barrel assemblies



Cat. #	a	b	x	y
EJB100806✓	15 1/32	13 1/32	3	3
EJB121204✓	17 1/16	17 1/16	4	4
EJB121206✓	17 1/16	17 1/16	4	4
EJB121208✓	17 1/16	17 1/16	4	4
EJB161606✓	21 3/16	21 3/16	6	6
EJB161608✓	21 3/16	21 3/16	6	6
EJB181206✓	23 5/16	23 5/16	6	4
EJB181208✓	23 5/16	17 5/16	6	4
EJB241208✓	29 9/16	17 9/16	9	4
EJB241210✓	29 9/16	17 9/16	9	4
EJB241808✓	29 5/8	23 9/16	9	6
EJB241810✓	29 5/8	23 9/16	9	6
EJB242408✓	29 9/16	29 9/16	9	9
EJB242410✓	29 9/16	29 9/16	9	9
EJB361208✓	40 5/16	16 5/16	13	4
EJB361808✓	41 15/16	23 15/16	13	6
EJB361810✓	41 15/16	23 15/16	13	6
EJB362408✓	42 3/16	30 3/16	13	9

Additional dimensional data for EJB is given on page 128.

✓ - Available with Lightning Service™. See Section G for complete details.

* Dimensions are approximate, not for construction purposes.
† Order with suffix ATEX.

NOTE: For conduit liner ordering information, see page 140.

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GUA Junction Boxes with Union Hubs

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

GUA junction boxes with union hubs are used in threaded rigid conduit systems in hazardous areas:
- to allow easy disassembly of conduit system
- to function as junction and pull box for multiple conductors and conduits
- indoors or outdoors where space is limited, such as in gasoline pumps

Features:

- Supplied with union hubs, which makes it a compact assembly.
- Have a variety of hub arrangements.
- Covers are threaded.
- Mounting straps are standard on all boxes.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description	Suffix to be Added to Cat. #
Feraloy iron alloy cover. . . .	WOD

Size Ranges:

- ½″ to 1″ hubs

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

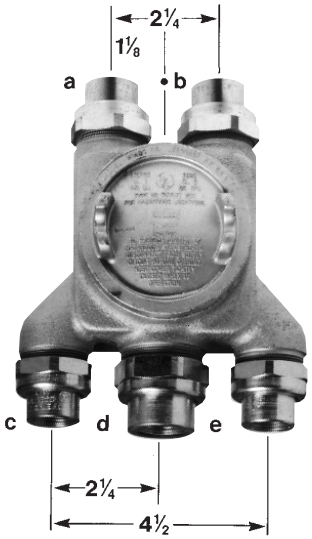
With nuts and sleeves*



GUAG



GUAH



GUAP

Hub Sizes a	b	c	d	e	Cat. # With Nuts and Sleeves*	Dimensions x	y
½	½	½			GUAG6665		
¾	¾	¾			GUAG7775	1⅛	2¼
½	¾	¾			GUAG6775		
¾	½	½			GUAG7665		
¾	1	1			GUAG7885		
¾	1	¾			GUAG7875		
1	¾	¾			GUAG8775	1 3⁄16	2⅜
1	¾	1			GUAG8785		
1	1	1			GUAG8885		
¾	¾	¾	¾		GUAH77775	See GUAH above	
¾	¾	¾	¾	¾	GUAP777775	See GUAP above	

Outside dimensions of body: length, 3¾″; depth, 1 15⁄16″ at corners, 3⅛″ over corners; nominal diameter of cover opening, 3″; width, 3¾″.

* Photo shown without standard mounting strap(s).

NOTE: For conduit liner ordering information, see page 140.

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6F GUP Junction Boxes

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight

NEW!

Application:

GUP series junction boxes are used in threaded rigid conduit systems in hazardous areas:
- to function as a junction or pull box
- where space is limited such as in gasoline pumps
- indoors or outdoors

Features:

- Compact in design.
- Supplied with a variety of hubs (6 hubs and 3 plugs or 10 hubs and 7 plugs).
- Cover sealed with standard ''O'' ring gasket for raintight enclosure.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description	Suffix to be Added to Cat. #
Feraloy iron alloy covers.	WOD

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard C22.2 No. 30

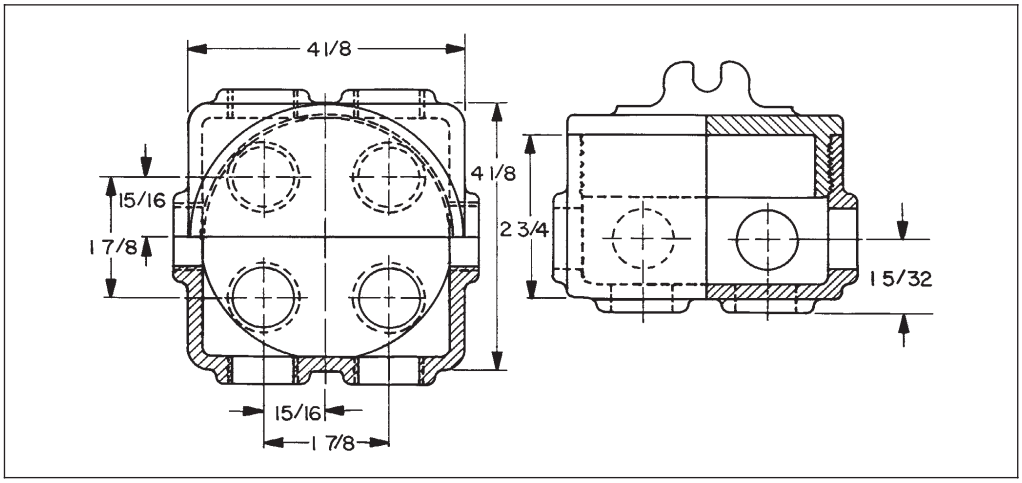


Ordering Information

Top Hubs	Bottom Hubs	Side Hubs	Back Hubs	Catalog #
2–¾″	2–¾″	1–¾″	None	GUP215*
2–¾″	2–¾″	1–¾″	4–¾″	GUP214**
2–¾″	2–¾″	1–¾″	4–1″	GUP314***

* Furnished with 3–¾″ pipe plugs.
** Furnished with 7–¾″ pipe plugs.
*** Furnished with 4–¾″ pipe plugs and 3-1″ pipe plugs

Dimensions



NOTE: For conduit liner ordering information, see page 140.

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Application:

The EGJ series junction boxes are designed for flush installation in the concrete pump island of gasoline service stations.

Features:

- Cover sealed with ''O'' ring gasket to make unit raintight.
- Cover recess will accept tool used to open cover of gasoline storage tank.
- Two drilled and tapped conduit entrances on the bottom and six on the sides.
- Plugs are provided for the two bottom entrances and four of the side entrances for choice of conduit arrangement.
- ES sealing hubs thread into the bottom to seal the mainfeed.
- Caulking compound supplied for filling space between cover flange and body rim to prevent accumulation of water, dirt and ice. Compound remains pliable and is easily removed.

NOTE: Unused conduit entrances must be securely plugged with type PLG threaded pipe plugs to maintain flametight conditions (see section 7F page 169). See illustration for method of constructing seals.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Group D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



EGJ421



EGJ422

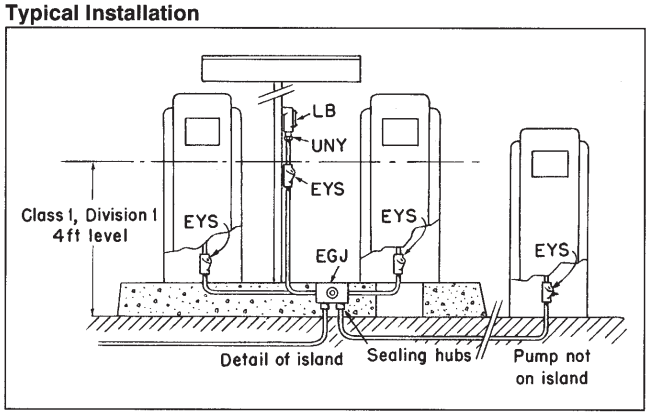
Body Size		Drilled and Tapped Conduit Entrances					Replacement Cover
Length & Width	Depth	No. of Hubs Side	Size	No. of Hubs Back	Size	Cat. #	Cat. #
5¾	4³⁄₁₆	6	¾	2	¾	EGJ421	EGJ:10706L
7	5⁹⁄₃₂	6	¾	2	1	EGJ422	EGJ:10705L

Sealing Hubs (order separately)

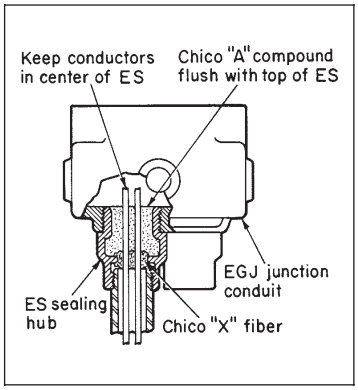


For	No.	Female Hub Size	Cat. #
EGJ421	2	1	ES53
EGJ422	2	1¼	ES64

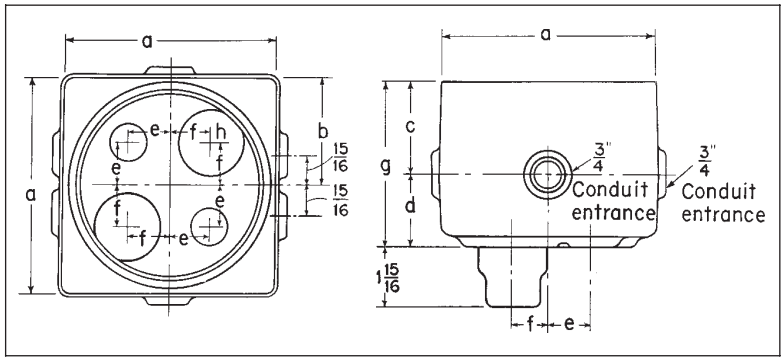
Typical Installation



How to construct seal



Dimensions



Cat. #	a	b	c	d	e	f	g	h
EGJ421	5¾	2⅞	2⁷⁄₁₆	1¾	1⅛	¹⁵⁄₁₆	4³⁄₁₆	1½″ entry
EGJ422	7	3½	3	2⁹⁄₃₂	1⅜	1⅜	5⁹⁄₃₂	2″ entry

NOTE: For conduit liner ordering information, see page 140.

NOTE: Both the EGJ421 and EGJ422 junction boxes have 4 drilled and tapped conduit entrances in the back (see drawing above). The 2 larger diameter holes are for the ES Sealing Hubs and there are provisions for 2 smaller diameter conduit entrances.

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6F LNR Conduit Liner

Application:

LNR conduit liners are installed in rigid metal conduit or IMC:
- to provide a smooth wire entry from conduit into enclosures to protect wires from abrasion as they are pulled.
- with thin wall or thick wall enclosures.
- entering drilled and tapped openings or slip holes.
- entering an enclosure vertically or horizontally.
- regardless of where the conduit ends in relation to the enclosure wall.

Features:

- UL listed and CSA certified.
- No need for threaded bushings, reducers, or special machining.
- Corrosion and heat resistant polypropylene material.
- Smooth flange providing easy wire pulling and protects conductors being installed.
- Space saving.
- Molded ribs ensure a tight fit, preventing the liner from sliding out while conductors are being pulled.
- Quick and easy to install.

Standard Materials:

- Polypropylene

Standard Finishes:

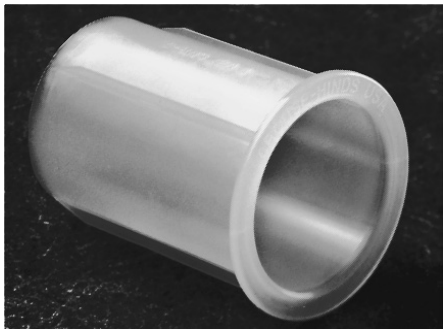
- Natural (clear)

Sizes:

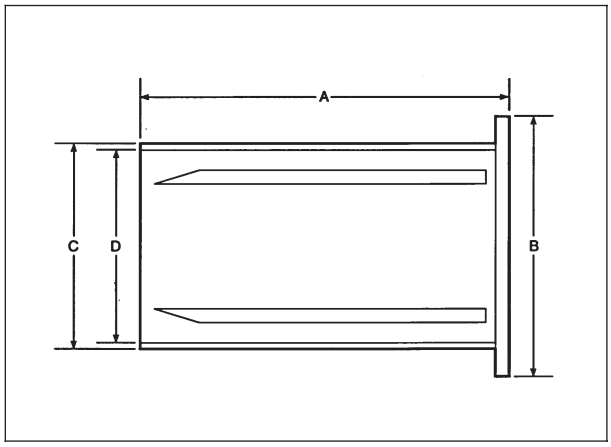
- ½″ through 4″

Certifications and Compliances:

- NEC Article 346-8.
- UL Standard 514B.
- CSA Standard C22.2 No. 18.
- U.S. Patent No. 5,383,688.



Dimensions:



Ordering Information:

Cat. #	Size	A	B	C	D
LNR1	½″	1 3/16″	7/8″	5/8″	9/16″
LNR2	¾″	1 9/16″	1 1/8″	13/16″	¾″
LNR3	1″	2 1/16″	1 3/8″	1 1/16″	7/8″
LNR4	1 1/4″	2 1/16″	1 3/4″	1 3/8″	1 1/4″
LNR5	1 1/2″	2 9/16″	2″	1 5/8″	1 7/16″
LNR6	2″	2 9/16″	2 7/16″	2 1/16″	1 7/8″
LNR7	2 1/2″	2 7/8″	2 7/16″	2 1/4″	
LNR8	3″	2 7/8″	3 9/16″	3 1/16″	2 7/8″
LNR9	3 1/2″	3 1/16″	4 1/16″	3 9/16″	3 3/8″
LNR10	4″	3 1/16″	4 9/16″	4″	3 7/8″

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Ex-CELL Enclosures

Stainless Steel 316L & 304

ATEX II 2 GD Eex e II T6
Certified IP66 to EN60529
cULus to UL50
C22.2 no. 94-M91
Type 3S and 4X

NEW!

Cooper Crouse-Hinds Ex-CELL Enclosures

Cooper Crouse-Hinds Ex-CELL enclosures are manufactured to meet the most demanding industrial and hazardous area environmental applications. Ex-CELL enclosures are available in a comprehensive range of sizes, each with various configurations for a multitude of applications. The Ex-CELL enclosure series is a UL/cUL and ATEX certified enclosure and termination solution for Type 3S, 4X and Zone 1 applications. They are certified to the impact, thermal and IP66 ingress requirements of EN 50014. The Ex-CELL series offers unique design features, precision manufacturing, and the highest quality materials making it the premier choice for instrumentation and electrical applications.



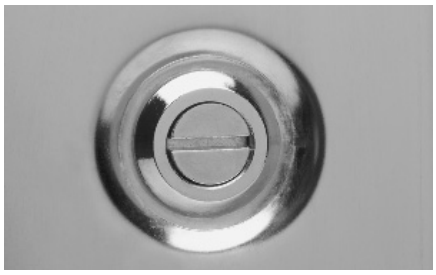
Certifications & Compliances

- ATEX II 2 GD EEx e II T6
- Certified IP66 to EN60529
- cULus to UL50
- C22.2 no. 94-M91
- Type 3S and 4X

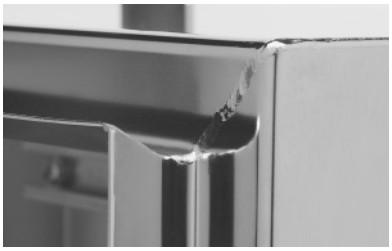
Materials & Finishes

Enclosure:	316L (1.4404 to EN 10088) Stainless Steel 304 (1.4301 to EN 10088) Stainless Steel
Finish:	Superior corrosion resistant ''Chromium enriched'' electro-polished surface
Gasket:	High integrity ''one piece'' foam-in-place polyurethane gasket
Keyed Lock Fastening Mechanism:	Chromium plated zinc metal die cast
Door Hardware:	Stainless steel hinges on door
Enclosure Mounting:	4 x external 3mm Stainless Steel welded lugs, 11mm ∅ holes/slots
Equipment Mounting:	4 x stand off pillars 9mm ∅, 25mm high, tapped M6 x10, for rail/ mounting plate
Enclosure Earth:	M10 external & internal brass earth stud assembly
Operating Temp:	-20°C to +60°C
Impact Resistance:	7 J (Nm) to EN 50014

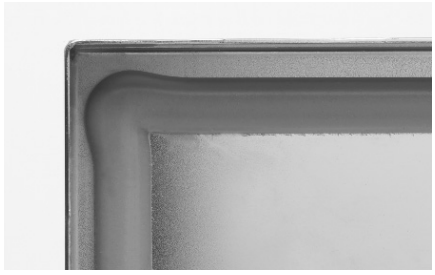
Features



The cover features a ¼ turn slotted lock fastening mechanism that provides a rapid means of achieving a rating of IP66 environmental seal for reliable environmental protection.



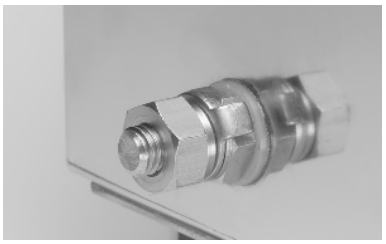
An integral drainage channel prevents liquids or other solid contaminates from running in or falling into the enclosure when the door is opened, and to minimize gasket path contamination.



The high integrity ''one piece'' sealing gasket provides an IP 66 rating and excellent recovery and re-sealing properties for continuous environmental protection



The enclosure is mounted by four heavy-duty 3mm thick surface welded and stainless steel lugs, with slotted bottom lugs for ease of mounting. These provide a secure, reliable means of mounting the enclosure.



This external & internal brass earth/ground stud assembly enables rapid and reliable protective earth/ground connection, which is mounted on the side of the enclosure for ease of access.



An option for up to 3 gland plates (3mm thick) on each side. Three possible combinations of 0, 1 or 3 gland-plates available. All sealed to IP 66 rating by a high integrity Chloroprene gasket and secured by rapid fixing ''Hytork'' fixing bolts.

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6F Ex-CELL Enclosures

Stainless Steel 316L & 304

NEW!

ATEX II 2 GD Eex e II T6
Certified IP66 to EN60529
cULus to UL50
C22.2 no. 94-M91
Type 3S and 4X

Ordering Information - For Enclosures

All enclosures are provided with a keyed lock fastening cover and 1 gland plate. For other configurations see OPTIONS below.

Enclosure Size Outside Dim. (In.) (H x W x D)	Enclosure Size Outside Dim. (mm) (H x W x D)	Description	Enclosure Cat. # with Vertical Mtg Feet	Enclosure Cat. # with Horizontal Mtg Feet
9″ x 6″ x 5″	229 x 152 x 127	316L Stainless Steel Enclosure	XLVS10906051	XLHS12315131
12″ x 8″ x 6″	305 x 203 x 152	316L Stainless Steel Enclosure	XLVS11208061	XLHS13020151
12″ x 12″ x 6″	305 x 305 x 152	316L Stainless Steel Enclosure	XLVS11212061	XLHS13030151
16″ x 12″ x 6″	406 x 305 x 152	316L Stainless Steel Enclosure	XLVS11612061	XLHS14030151
16″ x 12″ x 8″	406 x 305 x 203	316L Stainless Steel Enclosure	XLVS11612081	XLHS14030201
16″ x 16″ x 6″	406 x 406 x 152	316L Stainless Steel Enclosure	XLVS11616061	XLHS14040151
16″ x 16″ x 8″	406 x 406 x 203	316L Stainless Steel Enclosure	XLVS11616081	XLHS14040201
16″ x 20″ x 6″	406 x 508 x 152	316L Stainless Steel Enclosure	XLVS11620061	XLHS14050151
16″ x 20″ x 8″	406 x 508 x 203	316L Stainless Steel Enclosure	XLVS11620081	XLHS14050201
20″ x 16″ x 6″	508 x 406 x 152	316L Stainless Steel Enclosure	XLVS12016061	XLHS15040151
20″ x 16″ x 8″	508 x 406 x 203	316L Stainless Steel Enclosure	XLVS12016081	XLHS15040201
20″ x 20″ x 6″	508 x 508 x 152	316L Stainless Steel Enclosure	XLVS12020061	XLHS15050151
20″ x 20″ x 8″	508 x 508 x 203	316L Stainless Steel Enclosure	XLVS12020081	XLHS15050201
20″ x 24″ x 8″	508 x 610 x 203	316L Stainless Steel Enclosure	XLVS12024081	XLHS15060201
24″ x 16″ x 6″	610 x 406 x 152	316L Stainless Steel Enclosure	XLVS12416061	XLHS16040151
24″ x 16″ x 8″	610 x 406 x 203	316L Stainless Steel Enclosure	XLVS12416081	XLHS16040201
24″ x 20″ x 6″	610 x 508 x 152	316L Stainless Steel Enclosure	XLVS12420061	XLHS16050151
24″ x 20″ x 8″	610 x 508 x 203	316L Stainless Steel Enclosure	XLVS12420081	XLHS16050201
24″ x 24″ x 6″	610 x 610 x 152	316L Stainless Steel Enclosure	XLVS12424061	XLHS16060151
24″ x 24″ x 8″	610 x 610 x 203	316L Stainless Steel Enclosure	XLVS12424081	XLHS16060201
24″ x 30″ x 8″	610 x 762 x 203	316L Stainless Steel Enclosure	XLVS12430081	XLHS16076201
30″ x 20″ x 8″	762 x 508 x 203	316L Stainless Steel Enclosure	XLVS13020081	XLHS17650201
30″ x 24″ x 8″	762 x 610 x 203	316L Stainless Steel Enclosure	XLVS13024081	XLHS17660201
30″ x 30″ x 8″	762 x 762 x 203	316L Stainless Steel Enclosure	XLVS13030081	XLHS17676201

Options

Material - standard enclosure is type 316L stainless steel

- For a 304 Stainless Steel Enclosure... change S1 to S2 in catalog number. ie. XLVS10906051 becomes XLVS20906051

Gland Plate - standard enclosure comes with 1 gland plate

- For no gland plates... change last digit from 1 to 0. ie. XLVS10906051 becomes XLVS10906050
- For 3 gland plates... change last digit from 1 to 3. ie. XLVS10906051 becomes XLVS10906053

Cover Option - standard cover is a hinged cover with ''1-Step'' Keyed Lock Fastening device on ''vertical mount'' enclosures and double bit lock insert on ''horizontal mount'' enclosures.

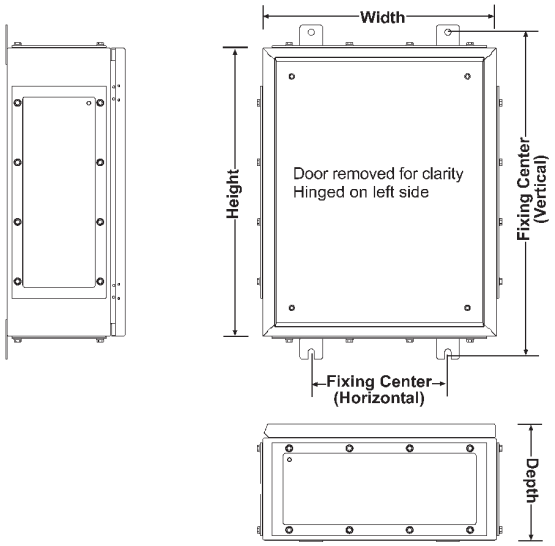
- For a bolted cover... Add a suffix B at end of catalog number. ie. XLVS10906051 becomes XLVS10906051B

Mounting Plates - Fits both enclosures with vertical or horizontal mounting feet

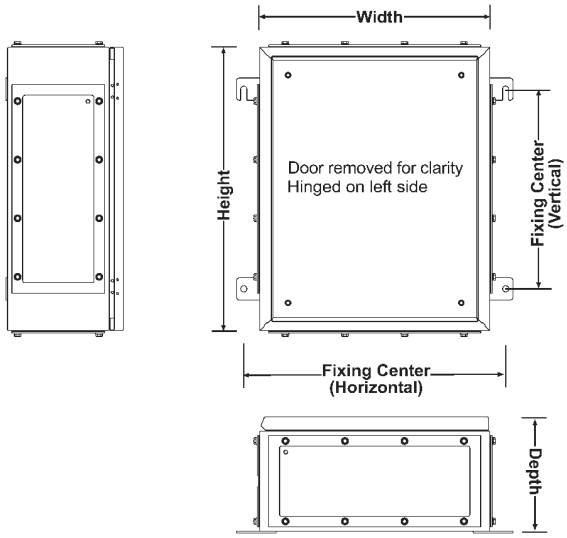
Enclosure Size (in.)	Enclosure Size (mm)	Catalog #	Enclosure Size (in.)	Enclosure Size (mm)	Catalog #
9″ x 6″ x 5″	229 x 152 x 127	XLHZTMP2315	20″ x 20″ x 8″	508 x 508 x 203	XLHZTMP5050
12″ x 8″ x 6″	305 x 203 x 152	XLHZTMP3020	20″ x 24″ x 8″	508 x 610 x 203	XLHZTMP5060
12″ x 12″ x 6″	305 x 305 x 152	XLHZTMP3030	24″ x 16″ x 6″	610 x 406 x 152	XLHZTMP6040
16″ x 12″ x 6″	406 x 305 x 152	XLHZTMP4030	24″ x 16″ x 8″	610 x 406 x 203	XLHZTMP6040
16″ x 12″ x 8″	406 x 305 x 203	XLHZTMP4030	24″ x 20″ x 6″	610 x 508 x 152	XLHZTMP6050
16″ x 16″ x 6″	406 x 406 x 152	XLHZTMP4040	24″ x 20″ x 8″	610 x 508 x 203	XLHZTMP6050
16″ x 16″ x 8″	406 x 406 x 203	XLHZTMP4040	24″ x 24″ x 6″	610 x 610 x 152	XLHZTMP6060
16″ x 20″ x 6″	406 x 508 x 152	XLHZTMP4050	24″ x 24″ x 8″	610 x 610 x 203	XLHZTMP6060
16″ x 20″ x 8″	406 x 508 x 203	XLHZTMP4050	24″ x 30″ x 8″	610 x 762 x 203	XLHZTMP6076
20″ x 16″ x 6″	508 x 406 x 152	XLHZTMP5040	30″ x 20″ x 8″	762 x 508 x 203	XLHZTMP7650
20″ x 16″ x 8″	508 x 406 x 203	XLHZTMP5040	30″ x 24″ x 8″	762 x 610 x 203	XLHZTMP7660
20″ x 20″ x 6″	508 x 508 x 152	XLHZTMP5050	30″ x 30″ x 8″	762 x 762 x 203	XLHZTMP7676

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DIMENSIONS
Vertical Mounting



DIMENSIONS
Horizontal Mounting



DIMENSIONS

Enclosures with vertical mtg feet	Enclosure Size Outside Dim. (In.) (H x W x D)	Mtg Hole Vertical (in.)	(Fixture Ctr.) Horizontal (in.)	Enclosures with horizontal mtg feet	Enclosures Size Outside Dim. (mm) (H x W x D)	Mtg Hole Vertical (mm)	(Fixture Ctr.) Horizontal (mm)
XLVS10906051	9″ x 6″ x 5″	10.24	3.5	XLHS12315131	229 x 152 x 127	152	208
XLVS11208061	12″ x 8″ x 6″	13.24	5.5	XLHS13020151	305 x 203 x 152	203	259
XLVS11212061	12″ x 12″ x 6″	13.24	9.5	XLHS13030151	305 x 305 x 152	203	361
XLVS11612061	16″ x 12″ x 6″	17.24	9.5	XLHS14030151	406 x 305 x 152	267	361
XLVS11612081	16″ x 12″ x 8″	17.24	9.5	XLHS14030201	406 x 305 x 203	267	361
XLVS11616061	16″ x 16″ x 6″	17.24	10	XLHS14040151	406 x 406 x 152	267	462
XLVS11616081	16″ x 16″ x 8″	17.24	10	XLHS14040201	406 x 406 x 203	267	462
XLVS11620061	16″ x 20″ x 6″	17.24	14	XLHS14050151	406 x 508 x 152	267	564
XLVS11620081	16″ x 20″ x 8″	17.24	14	XLHS14050201	406 x 508 x 203	267	564
XLVS12016061	20″ x 16″ x 6″	21.24	10	XLHS15040151	508 x 406 x 152	354	462
XLVS12016081	20″ x 16″ x 8″	21.24	10	XLHS15040201	508 x 406 x 203	354	462
XLVS12020061	20″ x 20″ x 6″	21.24	14	XLHS15050151	508 x 508 x 152	354	564
XLVS12020081	20″ x 20″ x 8″	21.24	14	XLHS15050201	508 x 508 x 203	354	564
XLVS12024081	20″ x 24″ x 8″	21.24	18	XLHS15060201	508 x 610 x 203	354	666
XLVS12416061	24″ x 16″ x 6″	25.24	10	XLHS16040151	610 x 406 x 152	445	462
XLVS12416081	24″ x 16″ x 8″	25.24	10	XLHS16040201	610 x 406 x 203	445	462
XLVS12420061	24″ x 20″ x 6″	25.24	14	XLHS16050151	610 x 508 x 152	445	564
XLVS12420081	24″ x 20″ x 8″	25.24	14	XLHS16050201	610 x 508 x 203	445	564
XLVS12424061	24″ x 24″ x 6″	25.24	18	XLHS16060151	610 x 610 x 152	445	666
XLVS12424081	24″ x 24″ x 8″	25.24	18	XLHS16060201	610 x 610 x 203	445	666
XLVS12430081	24″ x 30″ x 8″	25.24	24	XLHS16076201	610 x 762 x 203	445	818
XLVS13020081	30″ x 20″ x 8″	31.24	14	XLHS17650201	762 x 508 x 203	508	564
XLVS13024081	30″ x 24″ x 8″	31.24	18	XLHS17660201	762 x 610 x 203	508	666
XLVS13030081	30″ x 30″ x 8″	31.24	24	XLHS17676201	762 x 762 x 203	508	818

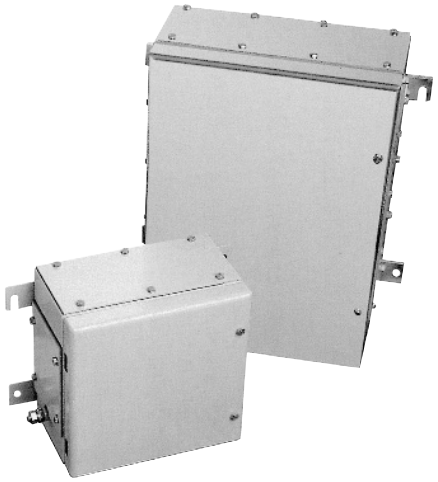
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6F NexT Series Junction Boxes

Sheet or Stainless Steel Hinged Cover

IP66
EEx e II
EEx ia IIC
EEx e ia IIC

NexT Series



Features/Applications:

The NexT series of enclosures available in two types of material finish have been designed to accommodate rail mounted terminals or other electrical components. Stainless steel is recommended to give maximum protection for components in outdoor/ aggressive environments.

Features of this series included thirteen basic sizes in two standard depths to optimize the accomodation of rail-mountable terminals or components.

- Fully removable hinged cover, concealed hinges provide 180° opening
- Cover mounting, two or three stainless steel captive screws on one side.
- Lip on upstand increases gasket contact area, ensuring high degree of ingress protection.
- Internal/external ground stud.
- 40mm wide mounting lugs for assembly on standard frames.
- Option of 0, 1, 2, 3 or 4 gland plates
- One piece gasket on cover and gland plates.
- Padlock hasp available optional.

Specifications:

Material	NXT 2215-5035 NXT 6245-9874 Gland plate	0.059″ sheet steel or 316L stainless steel 0.080″ sheet steel or 316L stainless steel 0.128″ sheet steel or 316L stainless steel
Finish	Painted 316L Stainless steel	RAL 7032 (Textured) Bright Chemical Dip (polished appearance)
Gasket	All types	Neoprene (standard)
Cover Mounting	All types	Fully detachable hinged cover with 2 or 3 x M6 hexagon head captive stainless steel screws
Grounding	All types	M10 internal/external ground stud
Box Mounting	All types	4 x external lugs, 0.394″ clearance holes/slots
Equipment Mounting	All types	4 x stand off pillars 0.394″ OD, tapped M6 x 0.394″
Ingress Protection	All types	IP66 to IEC529
Temperature Range	RA104 HT800	-49°F to 203°F -85°F to 275°F
Ambient Temperature	RA104 Gaskets HT800	-49°F to 104°F T6 -49°F to 131°F T5 -85°F to 104°F T6 -85°F to 131°F T5
Impact Resistance	All types	7 J (Nm) to EN 50014
Deluge Test	All types	Spec. No. DTS 01

Factory Options (Consult Factory):

Material	Special materials or thickness according to customer specification
Finish	Special colors according to customer specification
Sizes	Special sizes according to customer specification
Equipment	Terminals, glands, and Myers Hubs assembled according to customer specification
Gland plates	Drilled cable glands fitted to customer specification
Ground Studs	Also available fitted to gland plates and cover
EMC	Versions for maximum shielding from EMI/RFI, 0 gland plate only
Cover Attachments	e.g. Handles

Certifications and Compliances:

c UL us LISTED

UL50/C22.2 N094-M91 mild steel: Types 3S, 4; stainless steel: Type 4X.

CSA – selected sizes only
Germanischer Lloyd (GL)

ATEX 1. Component Certificate KEMA99ATEX3174 U

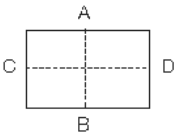
Codes		
Ex	II 2 G	EEx e II
	II 2 D	≥ IP64

ATEX 2. Certificate of Conformity KEMA99ATEX3172X

Codes		
Ex	II 2 G	EEx e II T6 or T5
	II 2 D	T100°C ≥ IP64
Ex	II 1 G	EEx ia IIC T6 or T5
	II 2 D	T100°C ≥ IP64
Ex	II 2 (1) G	EEx e ia IIC T6 or T5
	II 2 D	T100°C ≥ IP64

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Top A
Bottom B
Left hand side C
Right hand side D



	NXT 221513	NXT 262616	NXT 262620	NXT 303016
Height	9.02″	10.23″	10.23″	12.05″
Width	5.98″	10.23″	10.23″	12.05″
Depth	5.31″	6.30″	8.07″	6.30″
Weight	7.17 lb	12.13 lb	12.13 lb	15.43 lb
Gland Plate A/B	3.54/5.51″	4.72/10″	6.46/10″	4.33/11.42″
Gland Plate C/D	3.54/5.51″	4.72/6.06″	6.46/6.06″	4.33/7.48″

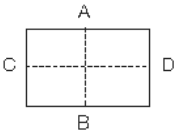
Ordering Data:

		Cat. No.	Cat. No.	Cat. No.	Cat. No.
0 Gland Plates	**Paint Finish**	NXTPS2215130	NXTPS2626160	NXTPS2626200	NXTPS3030160
	Stainless Steel Finish	NXTS12215130	NXTS12626160	NXTS12626200	NXTS13030160
1 Gland Plate Side B (Bottom)	**Paint Finish**	NXTPS2215131	NXTPS2626161	NXTPS2626201	NXTPS3030161
	Stainless Steel Finish	NXTS12215131	NXTS12626161	NXTS12626201	NXTS13030161
2 Gland Plates Sides A + B (Top and Bottom)	**Paint Finish**	NXTPS2215132	NXTPS2626162	NXTPS2626202	NXTPS3030162
	Stainless Steel Finish	NXTS12215132	NXTS12626162	NXTS12626202	NXTS13030162
3 Gland Plates Sides B, C + D (Bottom and Sides)	**Paint Finish**	NXTPS2215133	NXTPS2626163	NXTPS2626203	NXTPS3030163
	Stainless Steel Finish	NXTS12215133	NXTS12626163	NXTS12626203	NXTS13030163
4 Gland Plates Sides A, B, C + D (All Sides)	**Paint Finish**	NXTPS2215134	NXTPS2626164	NXTPS2626204	NXTPS3030164
	Stainless Steel Finish	NXTS12215134	NXTS12626164	NXTS12626204	NXTS13030164

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left	Right
Brass Glands	**M16**	6	6	20	9	33	18	26	20	26
Brass Glands	**M20**	3	3	10	6	15	9	14	10	14
Brass Glands	**M25**	2	2	6	3	12	5	8	8	8
Brass Glands	**M32**	1	1	3	2	6	4	4	3	4
Brass Glands	**M40**	1	1	3	1	5	2	3	3	3
Brass Glands	**M50**	1	1	2	1	3	1	3	2	3

Top A
Bottom B
Left hand side C
Right hand side D



	NXT 303020	NXT 382616	NXT 382620	NXT 453820
Height	12.05″	14.96″	14.96″	18.031″
Width	12.05″	10.24″	10.24″	15.039″
Depth	8.07″	6.29″	8.07″	8.071″
Weight	15.43 lb	15.43 lb	15.43 lb	21.45 lb
Gland Plate A/B	4.33/11.42″	4.72/10″	6.46/10″	4.33/14.57″
Gland Plate C/D	4.33/7.48″	4.72/10″	6.46/10″	4.33/14.57″

Ordering Data:

		Cat. No.	Cat. No.	Cat. No.	Cat. No.
0 Gland Plates	**Paint Finish**	NXTPS3030200	NXTPS3826160	NXTPS3826200	NXTPS4538200
	Stainless Steel Finish	NXTS13030200	NXTS13826160	NXTS13826200	NXTS14538200
1 Gland Plate Side B (Bottom)	**Paint Finish**	NXTPS3030201	NXTPS3826161	NXTPS3826201	NXTPS4538201
	Stainless Steel Finish	NXTS13030201	NXTS13826161	NXTS13826201	NXTS14538201
2 Gland Plates Sides A + B Top and Bottom	**Paint Finish**	NXTPS3030202	NXTPS3826162	NXTPS3826202	NXTPS4538202
	Stainless Steel Finish	NXTS13030202	NXTS13826162	NXTS13826202	NXTS14538202
3 Gland Plates Sides B, C + D (Bottom and Sides)	**Paint Finish**	NXTPS3030203	NXTPS3826163	NXTPS3826203	NXTPS4538203
	Stainless Steel Finish	NXTS13030203	NXTS13826163	NXTS13826203	NXTS14538203
4 Gland Plates Sides A, B, C + D (All Sides)	**Paint Finish**	NXTPS3030204	NXTPS3826164	NXTPS3826204	NXTPS4538204
	Stainless Steel Finish	NXTS13030204	NXTS13826164	NXTS13826204	NXTS14538204

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left	Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right
Brass Glands	**M16**	32	38	32	20	20	33	33	44	44
Brass Glands	**M20**	18	15	18	10	10	15	15	24	24
Brass Glands	**M25**	15	12	15	6	6	12	12	20	20
Brass Glands	**M32**	8	6	8	3	3	6	6	10	10
Brass Glands	**M40**	6	5	6	3	3	5	5	8	8
Brass Glands	**M50**	3	3	3	2	2	3	3	4	4

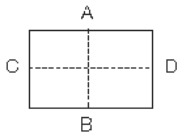
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6F NexT Series

Sheet or Stainless Steel Hinged Cover

IP66
EEx e II
EEx ia IIC
EEx e ia IIC

Top	A
Bottom	B
Left hand side	C
Right hand side	D



	NXT 484820	NXT 503520	NXT 624520	NXT 745520
Height	18.898″	19.685″	24.41″	29.13″
Width	18.898″	13.78″	17.72″	17.72″
Depth	8.071″	8.071″	8.07″	8.07″
Weight	22.88 lb	23.1 lb	37.48 lb	37.48 lb
Gland Plate A/B	4.33/14.57″	6.46/13.54″	6.46/17.48″	6.46/17.48″
Gland Plate C/D	4.33/14.57″	6.46/13.54″	6.46/17.48″	6.46/17.48″

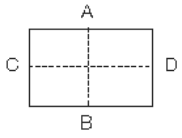
Ordering Data:

		Cat. No.	Cat. No.	Cat. No.	Cat. No.
0 Gland Plates	**Paint Finish**	NXTPS4848200	NXTPS5035200	NXTPS6245200	NXTPS7455200
	Stainless Steel Finish	NXTS14848200	NXTS15035200	NXTS16245200	NXTS17455200
1 Gland Plate Side B (Bottom)	**Paint Finish**	NXTPS4848201	NXTPS5035201	NXTPS6245201	NXTPS7455201
	Stainless Steel Finish	NXTS14848201	NXTS15035201	NXTS16245201	NXTS17455201
2 Gland Plates Sides A + B (Top and Bottom)	**Paint Finish**	NXTPS4848202	NXTPS5035202	NXTPS6245202	NXTPS7455202
	Stainless Steel Finish	NXTS14848202	NXTS15035202	NXTS16245202	NXTS17455202
3 Gland Plates Sides B, C + D (Bottom and Sides)	**Paint Finish**	NXTPS4848203	NXTPS5035203	NXTPS6245203	NXTPS7455203
	Stainless Steel Finish	NXTS14848203	NXTS15035203	NXTS16245203	NXTS17455203
4 Gland Plates Sides A, B, C + D (All Sides)	**Paint Finish**	NXTPS4848204	NXTPS5035204	NXTPS6345204	NXTPS7455204
	Stainless Steel Finish	NXTS14848204	NXTS15035204	NXTS16245204	NXTS17455204

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left	Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right
Brass Glands	**M16**	53	44	53	40	40	53	53	60	60
Brass Glands	**M20**	30	24	30	24	24	30	30	39	39
Brass Glands	**M25**	24	20	24	18	18	24	24	30	30
Brass Glands	**M32**	14	10	14	10	10	14	14	18	18
Brass Glands	**M40**	11	8	11	7	7	11	11	13	13
Brass Glands	**M50**	5	4	5	4	4	5	5	6	6

Top	A
Bottom	B
Left hand side	C
Right hand side	D



	NXT 765020	NXT 866420	NXT 916120	NXT 987420
Height	30″	33.86″	35.99″	38.58″
Width	20″	25.20″	24.02″	29.13″
Depth	8.07″	8.07″	8.07″	8.07″
Weight	51.81 lb	63.93 lb	68.34 lb	83.76 lb
Gland Plate A/B	4.33/19.69″	6.46/24.96″	5.512/23.62″	6.46/13.54″
Gland Plate C/D	4.33/19.69″	6.46/24.96″	5.512/23.62″	2x6.46/17.48″

Ordering Data:

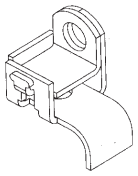
		Cat. No.	Cat. No.	Cat. No.	Cat. No.
0 Gland Plates	**Paint Finish**	NXTPS7650200	NXTPS8664200	NXTPS9161200	NXTPS9874200
	Stainless Steel Finish	NXTS17650200	NXTS18664200	NXTS19161200	NXTS19874200
1 Gland Plate Side B (Bottom)	**Paint Finish**	NXTPS7650201	NXTPS8664201	NXTPS9161201	NXTPS9874201
	Stainless Steel Finish	NXTS17650201	NXTS18664201	NXTS19161201	NXTS19874201
2 Gland Plates Sides A + B Top and Bottom	**Paint Finish**	NXTPS7650202	NXTPS8664202	NXTPS9161202	NXTPS9874202
	Stainless Steel Finish	NXTS17650202	NXTS18664202	NXTS19161202	NXTS19874202
3 Gland Plates Sides B, C + D (Bottom and Sides)	**Paint Finish**	NXTPS7650203	NXTPS8664203	NXTPS9161203	NXTPS9874203
	Stainless Steel Finish	NXTS17650203	NXTS18664203	NXTS19161203	NXTS19874203
4 Gland Plates Sides A, B, C + D (All Sides)	**Paint Finish**	NXTPS7650204	NXTS18664214	NXTPS9161204	NXTPS9874204
	Stainless Steel Finish	NXTS17650204	NXTS18664204	NXTS19161204	NXTS19874204

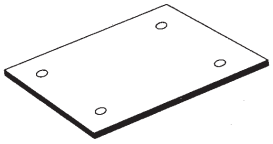
Gland Sizes (mm) Per Plate (Reference Only)

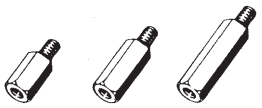
		Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right
Brass Glands	**M16**	53	72	72	40	72	72	40	53
Brass Glands	**M20**	30	45	45	24	42	42	24	30
Brass Glands	**M25**	24	35	35	18	24	24	18	24
Brass Glands	**M32**	14	20	20	10	18	18	10	14
Brass Glands	**M40**	11	13	13	7	8	8	7	11
Brass Glands	**M50**	5	7	7	4	7	7	4	5

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Accessories







Mounting Plates:

Material: Tufnol, zinc coated or stainless steel

Enclosure Size	Tufnol Cat. No.	Zinc Coated Steel Cat. No.	Stainless Steel Cat. No.
NXT2215	NXTTLMP2215	NXTZTMP2215	NXTS1MP2215
NXT2626	NXTTLMP2626	NXTZTMP2626	NXTS1MP2626
NXT3030	NXTTLMP3030	NXTZTMP3030	NXTS1MP3030
NXT3826	NXTTLMP3826	NXTZTMP3826	NXTS1MP3826
NXT4538	NXTTLMP4538	NXTZTMP4538	NXTS1MP4538
NXT4848	NXTTLMP4848	NXTZTMP4848	NXTS1MP4848
NXT5035	NXTTLMP5035	NXTZTMP5035	NXTS1MP5035
NXT6245	NXTTLMP6245	NXTZTMP6245	NXTS1MP6245
NXT7455	NXTTLMP7455	NXTZTMP7455	NXTS1MP7455
NXT7650	NXTTLMP7650	NXTZTMP7650	NXTS1MP7650
NXT8664	NXTTLMP8664	NXTZTMP8664	NXTS1MP8664
NXT9161	NXTTLMP9161	NXTZTMP9161	NXTS1MP9161
NXT9874	NXTTLMP9874	NXTZTMP9874	NXTS1MP9874

Stand-off Pillars

Type	Inches	Cat. No.
SP15	0.60	ACCSOP15
SP20	0.80	ACCSOP20
SP30	1.20	ACCSOP30

Lock:

Type	Cat. No.
NP6 Brass Lock and 2 Keys	NXTNP6BL2K

Hasp:

Type	Cat. No.
NPA6	NXTNPAHASP

Stainless Steel, for Type NP6 Padlocks
Mount on Enclosure by Removing Cover Screw and Fitting Hasp Between Cover and Screw.

Assembly Rail:

Type		Cat. No.
TS35	78.74″ length	ACCTS352M
TAS20	78.74″ length	ACCTAS202M

Ground Stud Kits:

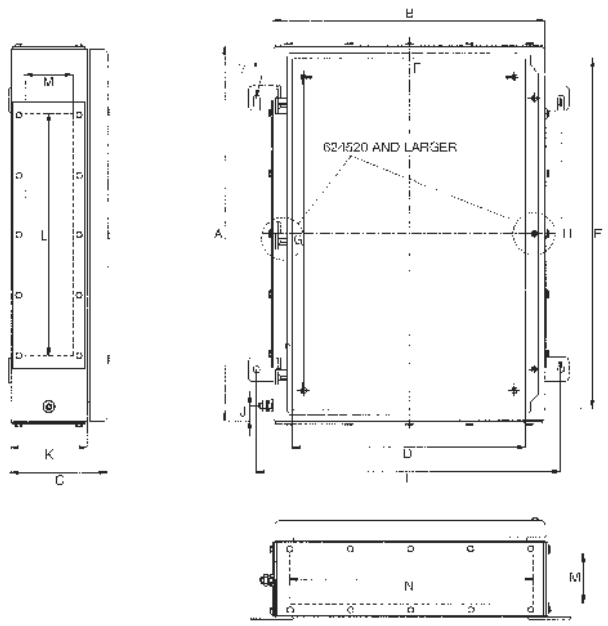
Type	Cat. No.
M10 Brass	ACCBSESM10KIT
M10 Stainless Steel	ACCS1ESM10KIT
M14 Brass	ACCBSESM14KIT

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6F NexT Series

Sheet or Stainless Steel Hinged Cover Dimensions

IP66
EEx e II
EEx ia IIC
EEx e ia IIC



NexT Enclosure Series Dimensions (in inches):

Dimensions:

Code	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N
NXT*	221513**	9.02	5.98	5.12	3.50	7.48	2.05	5**	5.98	8.19	0.98	4.01	4.25	2.28	4.25
NXT	262616 (262620)	10.24	10.24	6.30 (8.08)	7.76	8.70	6.30	6.30	6.69	12.44	0.98	4.96 (6.77)	4.49	3.15 (4.88)	8.43
NXT*	303016 (303020)	12.04	12.05	6.30 (8.08)	9.57	10.51	8.11	8.11	7.99	14.21	0.98	4.96 (6.77)	Left 8.43 Right 10.28	3.15 (4.88)	10.28
NXT	382616 (382620)	14.97	10.24	6.30 (8.08)	7.76	13.43	6.30	11.02	9.84	12.44	0.98	4.96 (6.77)	8.43	3.15 (4.88)	8.43
NXT*	453820	18.01	15.04	8.08	12.56	16.50	11.10	14.09	12.00	17.21	0.98	6.77	13.27	4.88	13.27
NXT*	484820	18.90	18.90	8.08	16.42	17.36	14.96	14.96	12.87	21.06	0.98	6.77	Left 13.27 Right 15.91	4.88	15.91
NXT	503520	19.69	13.79	8.08	11.30	18.15	9.84	15.75	13.78	15.98	0.98	6.77	11.97	4.88	11.97
NXT	624520	24.41	17.72	8.08	15.24	22.87	13.78	20.47	17.72	19.92	0.98	6.77	15.91	4.88	15.91
NXT	745520	29.13	21.66	8.08	19.18	27.60	17.72	25.18	21.26	23.86	0.98	6.77	19.84	4.88	19.84
NXT*	765020	30.00	20.00	8.08	17.52	28.47	16.06	26.06	20.00	22.21	0.98	6.77	23.39	4.25	18.27
NXT	866420	33.86	25.20	8.08	22.72	32.32	21.26	29.92	22.44	27.40	0.98	6.77	2 x 11.97	4.88	23.39
NXT*	916120	35.98	24.02	8.08	21.54	34.45	20.08	32.05	22.00	26.22	0.98	6.77	22.32	4.25	22.28
NXT	987420	38.58	29.13	8.08	26.65	37.05	25.20	34.65	27.56	31.34	0.98	6.77	2 x 15.91	4.88	2 x 11.97

*Note: Subtract 1.18" from dimension 'I' for mounting center when side gland plates are not used.
**Note: NXT 221513 has two stand off pillars only, mounted on the center line.

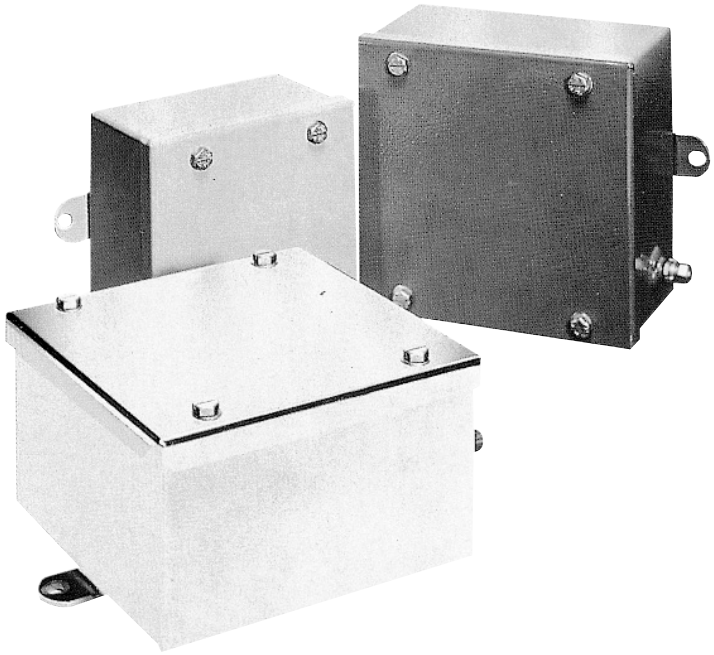
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STB Series
Small Sheet Steel Enclosures

Features/Applications:
The STB series of sheet steel enclosures are designed to meet the requirement for distribution and lighting junction boxes.

Available in eight sizes with standard finishes of painted or 316L stainless steel, together with the high IP rating make these enclosures suitable for all environmental conditions.

The stainless steel versions are particularly recommended for use in marine or other corrosive environments. Painting of these enclosure uses a two stage elecrophoretic dip coat system. Treatment includes iron phosphate and paint application followed by electrostatic polyester powder coating. When applied to a mild steel substrate gives a minimum of 500 hours salt spray resistance.



Specifications:

Material		0.059″ Sheet Steel 0.059″ 316L Stainless Steel
Finish		Painted – RAL 7032, Grey Stainless Steel – 'Bright Chemical Dip'
Gasket		HT800 Silicone
Cover Mounting		4 x M6 Slotted, Hexagon Head, Captive Screws
Grounding		M6 Internal/External Ground Stud
Box Mounting	STB 121208-252512 STB 163812-254013	2 x External Lugs with 0.315″ Clearance Holes 4 x External Lugs with 0.315″ Clearance Holes
Equipment Mounting		TAS 20 Rail Welded to Base of Enclosure, to Which Equipment is Mounted by Means of Sliding Mounting Nut and Screw (1 Rail STB 121208-191910, Rails STB 252512-254030)
Ingress Protection		IP66 BSEN 60529
Temperature Range		–85°F to +275°F
Ambient Temperature		T5 –85°F to +131°F T6 –85°F to +104°F
Impact Resistance		7 J(Nm) to EN 50014

Factory Options (Consult Factory):

Finishes Alternative paint colours
Assembly Supplied with terminals, glands, drilled or drilled and tapped entries, breather/drains, and Myers Hubs

Certifications and Compliances:

c UL us LISTED

UL50/C22.2 No. 94-M91 mild steel: Types 3S, 4; stainless steel: Type 4X.

Germanischer Lloyd (GL)
(Excluding STB151208 & STB 191509)

ATEX 1. Component Certificate KEMA99ATEX7895 U

Codes		
Ex	II 2 G	EEx e II
	II 2 D	≥ IP64

ATEX 2. Certificate of Conformity KEMA99ATEX7894 X

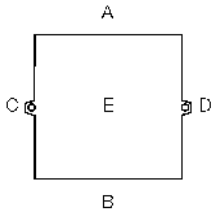
Codes		
Ex	II 2 G	EEx e II T6 or T5
	II 2 D	T100°C ≥ IP64
Ex	II 1 G	EEx ia IIC T6 or T5
	II 2 D	T100°C ≥ IP64
Ex	II 2 (1) G	EEx e ia IIC T6 or T5
	II 2 D	T100°C ≥ IP64

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6F STB Series Junction Boxes

Sheet or Stainless Steel Ordering Information

IP66
EEx e II
EEx ia IIC
EEx e ia IIC



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

STB 121208
Height 4.73″
Width 4.72″
Depth 3.15″
Weight 3.09 lb

STB 151208
Height 5.91″
Width 4.72″
Depth 3.15″
Weight 3.50 lb

Ordering Data:

Standard Paint Finish	STBPS121208UL	STBPS151208UL
Stainless Steel Finish	STBS1121208UL	STBS1151208UL

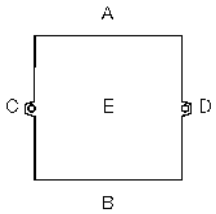
Guide to Gland Entries:

Max. Gland Area Dimensions

Sides	Size	Sides	Size
A, B, C	4.49″ x 2.48″	A, B	4.49″ x 2.48″
D	2.76″ x 2.48″	C	5.67″ x 2.48″
E	2.36″ x 2.36″	D	3.94″ x 2.48″
		E	3.54″ x 2.36″

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D	Side A	Side B	Side C	Side D
Brass Glands with Locknuts	**16**	5	5	6	4	6	5	7	5
	20	3	2	3	2	3	2	4	3
	25	2	2	2	1	2	2	3	2
	32	1	1	2	1	1	1	2	1
	40	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

STB 151509
Height 5.91″
Width 5.91″
Depth 3.54″
Weight 4.19lb

STB 191509
Height 5.91″
Width 7.48″
Depth 3.54″
Weight 5.40 lb

Ordering Data:

Standard Paint Finish	STBPS151509UL	STBPS191509UL
Stainless Steel Finish	STBS1151509UL	STBS1191509UL

Guide to Gland Entries:

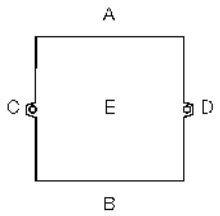
Max. Gland Area Dimensions

Sides	Size	Sides	Size
A, B, C	5.67″ x 2.87″	A, B	5.67″ x 2.87″
D	3.94″ x 2.87″	C	7.24″ x 2.87″
E	3.54″ x 3.54″	D	5.12″ x 2.87″
		E	5.12″ x 3.54″

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D	Side A	Side B	Side C	Side D
Brass Glands with Locknuts	**16**	8	8	8	6	9	8	12	8
	20	5	4	5	3	5	4	7	5
	25	3	3	3	2	3	3	4	3
	32	2	2	2	1	2	2	3	2
	40	1	1	2	1	2	1	2	2
	50	-	-	-	-	-	-	-	-

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A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

STB 191910
Height 7.48″
Width 7.48″
Depth 3.94″
Weight 6.61 lb

STB 252512
Height 9.84″
Width 9.84″
Depth 4.73″
Weight 8.16 lb

Ordering Data:

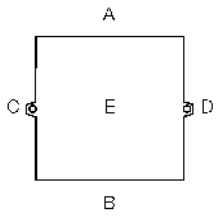
Standard Paint Finish	STBPS191910UL	STBPS252512UL
Stainless Steel Finish	STBS1191910UL	STBS1252512UL

Guide to Gland Entries:

	Sides	Size	Sides	Size
Max. Gland Area Dimensions	A, B, C	7.24″ x 3.27″	A, B, C	9.61″ x 4.05″
	D	5.51″ x 3.27″	D	7.87″ x 4.05″
	E	5.12″ x 5.12″	E	7.48″ x 7.48″

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D	Side A	Side B	Side C	Side D
Brass Glands with Locknuts	**16**	13	12	14	9	24	23	24	18
	20	8	7	8	6	13	12	13	10
	25	5	4	5	4	10	9	10	8
	32	3	3	3	2	5	5	5	4
	40	2	2	2	2	3	3	3	3
	50	2	1	2	1	3	2	3	2
	63	-	-	-	-	2	2	2	2



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

STB 163812
Height 8.30″
Width 14.96″
Depth 4.72″
Weight 8.14 lb

STB 254013
Height 9.84″
Width 15.74″
Depth 5.12″
Weight 11.88 lb

Ordering Data:

Standard Paint Finish	STBPS163812UL	STBPS254013UL
Stainless Steel Finish	STBS1163812UL	STBS1254413UL

Guide to Gland Entries:

	Sides	Size	Sides	Size
Max. Gland Area Dimensions	A, B, C	14.64″ x 4.05″	A, B, C	15.51″ x 4.45″
	D	12.99″ x 4.05″	D	13.78″ x 4.45″
	E	12.60″ x 3.93″	E	13.39″ x 7.48″

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D	Side A	Side B	Side C	Side D
Brass Glands with Locknuts	**16**	36	35	15	9	48	47	30	24
	20	21	21	7	5	27	27	17	14
	25	16	15	6	4	16	16	10	8
	32	9	9	3	2	11	11	7	6
	40	6	5	2	1	7	6	4	3
	50	4	4	1	1	5	5	3	2
	63	3	3	1	1	4	3	2	2

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6F STB Series Junction Boxes

Sheet or Stainless Steel Accessories and Dimensions

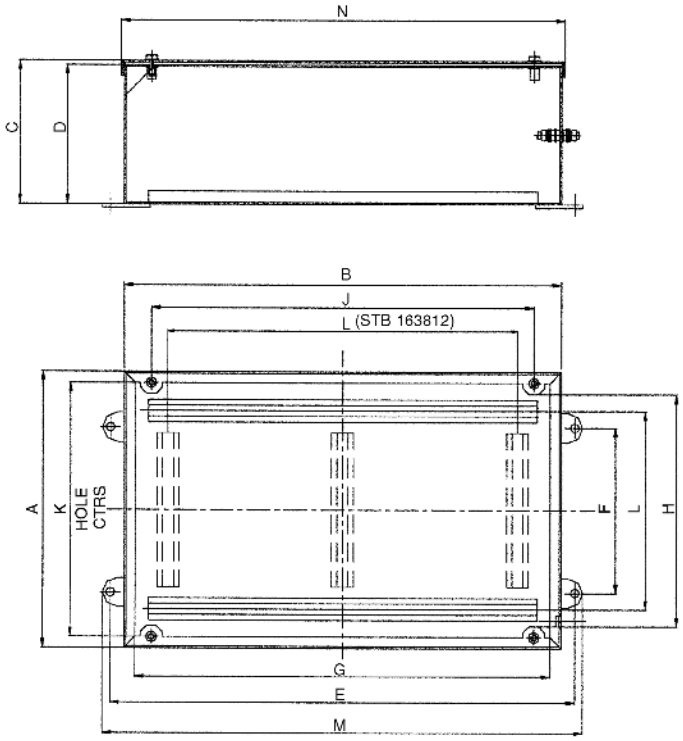
IP66
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Accessories:

Mounting Hardware
Sliding mounting nuts and screws for mounting assemblies or components to the support rail type TAS 20

	Type	Cat. No.
M5 screw for TS 32/TS 35	SFNS 5	ACCSFNM5
M4 screw for TS15	SFNS 4	ACCSFNM4
M3 screw for terminal strips	SFNS 3	ACCSFNM3

Ground Stud Kits	Type	Cat. No.
	M6 Brass	ACCBSESM6KIT



STB Enclosure Series Dimensions (in inches):

Catalog Number	A	B	C	D	E	F	G	H	J	K	L	M	N
STB 121208UL	4.72	4.72	3.15	2.99	5.71	N/A	3.94	3.15	2.76	3.94	N/A	6.26	4.96
STB 151208UL	5.90	4.72	3.15	2.99	5.71	N/A	5.12	3.15	3.94	3.94	N/A	6.26	6.14
STB 151509UL	5.90	5.90	3.54	3.39	6.89	N/A	3.94	5.12	3.94	5.12	N/A	7.44	6.14
STB 191509UL	7.48	5.90	3.54	3.39	6.89	N/A	6.69	4.33	5.12	5.51	N/A	7.44	7.72
STB 191910UL	7.48	7.48	3.94	3.78	8.46	N/A	6.69	5.90	5.51	6.69	N/A	9.02	7.72
STB 252512UL	9.84	9.84	4.72	4.57	10.83	N/A	9.05	8.27	9.05	9.05	7.09	11.38	16.08
STB 163812UL	6.30	14.96	4.72	4.57	15.94	3.15	14.17	4.72	12.99	5.51	11.81	16.50	15.20
STB 254030UL	9.84	15.75	5.12	4.96	16.73	5.90	14.96	8.27	13.78	9.05	7.09	17.28	15.98

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HVB Series Junction Boxes

Sheet or Stainless Steel High Voltage Junction Box

HVB Series High Voltage Junction Boxes

Features & Applications:

The high voltage junction boxes have been designed for the termination of high voltage pumps (''down hole'' pumps).

The HVB's are available in both stainless steel, fully polished or sheet steel with paint finish.

Gland plates are provided top and bottom for cable entry.

The units are complete with 3 or 4 pole assemblies to accept standard cable lugs up to 1.18″ wide and an M12 hole

Live parts are protected by a clear cover, giving protection to IP 2X

High voltage warning labels are fitted to the cover and enclosure cover.

When using the enclosures at their full potential (i.e. 6.6 kV), high voltage cable termination kits have to be used to avoid breakdown of the cable long term.



Specifications:

Material	HVB 463820	0.059″ steel or 316L stainless steel
	HVB 765120, 916120	0.080″ steel or 316L stainless steel
	Gland Plates	0.128″ steel or 316L stainless steel
Finish		Painted RAL 7032 Stainless Bright Chemical Dip (polished appearance)
Gasket		Neoprene (cover & gland plates)
Cover Mounting		Fully detachable hinged cover with 4 or 6 x M6 hexagon head captive screws
Grounding		M10 internal/external stud M14 internal/external stud for 5.91in² phase conductor only
Box Mounting		4 x external lugs with 0.39″ clearance holes/slots
Ingress Protection		IP66 & IP67 to IEC 529
Temperature Range		–4°F to 104°F (ambient)
Impact Resistance		7 J (Nm)
Gland Plates		Top & Bottom
Ratings	Voltage	6.6 kV 50Hz* ac 3 phase (grounded or ungrounded supply systems) *At frequencies above 50 Hz, current carrying capacities may require derating (e.g. motor variable speed controllers).

Maximium Current Rating (amps):

To allow American Wire Gauge (AWG) cables and current ratings for T6 to T4 temperature classes.

Conductor Size	Current A		
AWG (max. 5.91in²)	**T6 (185°F)**	**T5 (212°F)**	**T4 (275°F)**
6	42	59	65
4	55	80	88
3	64	92	102
2	73	107	118
1	81	121	134
1/0	101	141	156
2/0	150	173	192
3/0	160	180	200

Maximum Wiring Space for HV Cable Termination Kits:

Enclosure Type	Distance Between Bolt & Gland Plate
HVB 463820	7.09″
HVB 765120	13.19″
HVB 916126	16.14″

Connections:

3 or 4 pole, consists of 6 or 8 post insulators with 0.24″ brass busbars, tin lead plated. Cable alignment restrictors prevent misalignment of the conductors. Accepts standard cable lugs up to 1.18″ wide and an M12 hole.

Certifications and Compliances:

EEx'e' II T4 200A, T5 180A, T6 160A to EN 50019.
Certificate of Conformity Ex 91C3217X (enclosure & connection assembly)

UL50/C22.2 No. 94-M91 mild steel: Types 3S, 4; stainless steel: Type 4X

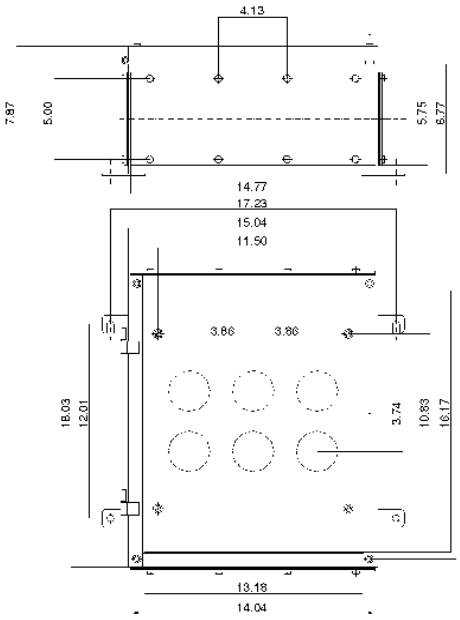
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6F HVB Series Junction Boxes

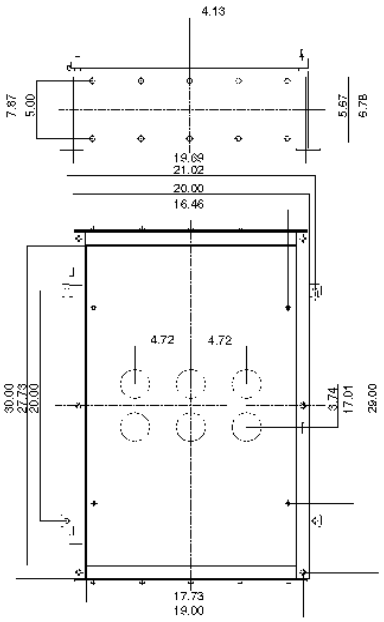
IP66 & IP67

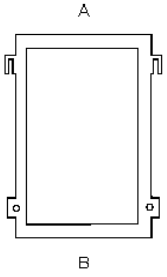
Sheet or Stainless Steel High Voltage Junction Box Ordering Information

HVB463820 (3 pole)



HVB765120 (3 pole)





A = Top
B = Bottom

For dimensions marked with a * subtract 1.18″ for 2 gland plate versions

All dimensions in inches.

		HVBPS463820M10 / HVBS1463820M10	HVBPS765120M10 / HVBS1765120M10
		Height 18.03″ Width 15.04″ Depth 7.87″ Weight 52.36 lb	Height 30″ Width 20″ Depth 7.87″ Weight 81.57 lb

Ordering Data:

		Cat. No.	Cat. No.
M10 Ground Stud Phase Conductor 4.72in² Max.	Standard Paint Finish	HVBPS463820M10	HVBPS765120M10
	Stainless Steel Finish	HVBS1463820M10	HVBS1765120M10
M14 Ground Stud Phase Conductor 5.91in² Only	Standard Paint Finish	HVBPS463820M14	HVBPS765120M14
	Stainless Steel Finish	HVBS1463820M14	HVBS1765120M14

Guide to Gland Entries:

	Side	Size	Side	Size
Max. Gland Area Dimensions	A + B	13.27″ x 4.25″	A + B	18.27″ x 4.25″

Gland Sizes (mm) Brass (Per Plate):

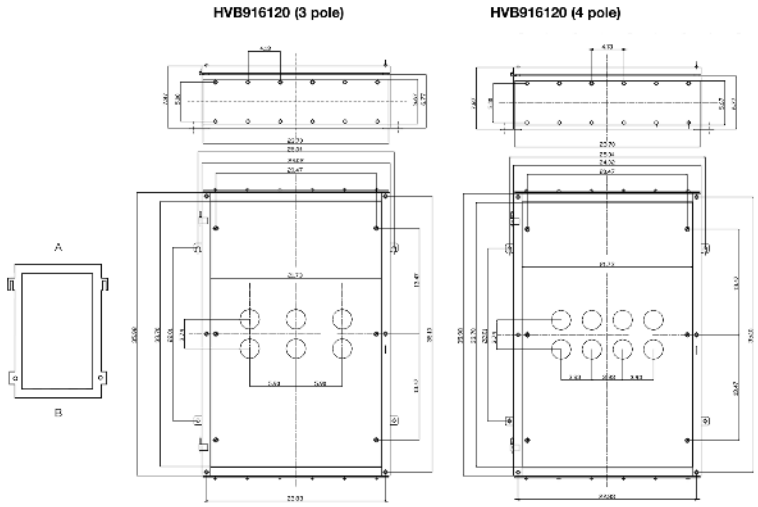
40	6	8
50	4	6
63	3	4
75	3	4

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Sheet or Stainless Steel High Voltage Junction Box Ordering Information

HVB916120 (3 pole) **HVB916120 (4 pole)**



A = Top
B = Bottom

For dimensions marked with a * subtract 1.18″ for 2 gland plate versions

All dimensions in inches.

		Height 35.98″ Width 24.20″ Depth 7.87″ Weight 99.21 lb	Height 35.98″ Width 24.02″ Depth 7.87″ Weight 103.62lb
Ordering Data:			
		Cat. No.	**Cat. No.**
M10 Ground Stud Phase	Standard Paint Finish	HVBPS916120M10	HVBPS916120M104P
Conductor 4.72in² Max.	Stainless Steel Finish	HVBS1916120M10	HVBS1916120M104P
M14 Ground Stud Phase	Standard Paint Finish	HVBPS916120M14	HVBPS916120M144P
Conductor 5.91in² Only	Stainless Steel Finish	HVBS1916120M14	HVBS1916120M144P
Guide to Gland Entries:			
		Side **Size**	**Side** **Size**
Max. Gland Area Dimensions		A + B 22.28″ x 4.25″	A + B 22.28″ x 4.25″

Gland Sizes (mm) Brass (Per Plate):

40	8	8
50	7	7
63	5	5
75	4	4

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6F QBX Series Junction Boxes

IP65

Sheet or Stainless Steel Removable Hinge Cover

QBX Series

Features/Applications:

The QBX series of enclosures are available in two types of material and have been developed for the light industrial market.

Stainless steel is recommended to give maximum protection for components in outdoor/aggressive environments.

Specifically designed for the accommodation of rail mounted terminals or other electro/pneumatic components. The QBX series is user friendly and offers good access internally.



- Fully removable hinged cover, concealed hinges provide 180° opening
- Cover mounting, one or two ¼ turn latches (slot shape)
- 10 key lockable variations
- Form-in-place polyurethane gasket
- M6 ground stud in box and cover
- Mounting through internal holes (types 3S and 4) or with external lugs (type 4X)
- Pole mounting kit available

Specifications:

Material	All Types	0.[illegible]el or 304 Stainless Steel
Finish	Flat Electro Polished Finish	Flat [illegible]ro Polished Finish
Gasket	All Types	[illegible]orm-In-Place Polyurethane
Cover Mounting	All Types	2 or 3 Hinges /1 or 2 ¼ Turn Latches
Gland Plates	QBX302012, 303012, 403012, 403022 All Other Sizes	1 Gland Plate Bottom Face 2 Gland Plates on Bottom Face
Grounding	All Types	M6 Studs in Base and Cover
Enclosure Mounting	All Types	Holes Through Back of Enclosure or Using External Mounting Lugs
Equipment Mounting	All Types	IP 65 to BSEN60529
Temperature Range	All Types	–4°F to +176°F

DISCONTINUED

Factory Options (Consult Factory)

Material	Sp[illegible]ial Materials or Thickness According to Customer Specification
Finish	[illegible]cial Colors According to Customer Specification
Sizes	Special Sizes According to Customer Specification
Equipment	Terminals, Myers Hubs, and Glands Assembled According to Customer Specification
Gland Plates	Drilled Cable Glands Fitted to Customer Specification
Ground Studs	Also Available Fitted to Gland Plates
Cover Attachments	e.g. Handles and Locks

Certifi[illegible]ons and Compliances:

c UL us LISTED UL50/C22.2 No. 94-M91 mild steel: Types 3S, 4; stainless steel: Type 4X

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QBX Series Junction Boxes

Sheet or Stainless Steel
Removable Hinge Cover
Ordering Information and Accessories

QBX Series Ordering Information

Painted Sheet Steel RAL 7032
Depth 4.72″

	Cat. No.	Weight (lb)
11.81″ × 7.87″	QBXPS302012UL	6.13
11.81″ × 11.81″	QBXPS303012UL	7.96
15.75″ × 11.81″	QBXPS403012UL	10.74
15.75″ × 15.75″	QBXPS404012UL	13.14
19.68″ × 15.75″	QBXPS504012UL	14.15
23.62″ × 15.75″	QBXPS604012UL	16.33

Stainless Steel (304) Brushed
Depth 4.72″

	Cat. No.	Weight (lb)
11.81″ × 7.87″	QBXS2302012UL	6.48
11.81″ × 11.81″	QBXS2303012UL	8.43
15.75″ × 11.81″	QBXS2403012UL	10.74
15.75″ × 15.75″	QBXS2404012UL	12.34
19.68″ × 15.75″	QBXS2504012UL	14.98
23.62″ × 15.75″	QBXS2604012UL	18.43

Painted Sheet Steel RAL 7032
Depth 8.66″

	Cat. No.	Weight (lb)
11.81″ × 11.18″	QBXPS303022UL	11.35
11.81″ × 15.75″	QBXPS304022UL	13.73
15.75″ × 11.81″	QBXPS403022UL	13.73
15.75″ × 15.75″	QBXPS404022UL	16.42
15.75″ × 19.68″	QBXPS405022UL	19.11
19.68″ × 15.75″	QBXPS504022UL	19.11
19.68″ × 19.68″	QBXPS505022UL	22.13
19.68″ × 23.62″	QBXPS506022UL	25.15
23.62″ × 15.75″	QBXPS604022UL	21.62
23.62″ × 19.68″	QBXPS605022UL	25.15
23.62″ × 23.62″	QBXPS606022UL	28.66
27.56″ × 19.68″	QBXPS705022UL	28.17
27.56″ × 23.62″	QBXPS706022UL	31.81
31.50″ × 23.62″	QBXPS806022UL	34.50

Stainless Steel (304) Brushed
Depth 8.66″

	Cat. No.	Weight (lb)
11.81″ × 11.81″	QBXS2303022UL	11.40
11.81″ × 15.75″	QBXS2304022UL	13.78
15.75″ × 11.81″	QBXS2403022UL	13.78
15.75″ × 15.75″	QBXS2404022UL	16.49
15.75″ × 19.68″	QBXS2405022UL	19.19
19.68″ × 15.75″	QBXS2504022UL	19.19
19.68″ × 19.68″	QBXS2505022UL	22.22
19.68″ × 23.62″	QBXS2506022UL	25.25
23.62″ × 15.75″	QBXS2604022UL	22.26
23.62″ × 19.68″	QBXS2605022UL	25.25
23.62″ × 23.62″	QBXS2606022UL	29.98
27.56″ × 19.68″	QBXS2705022UL	28.28
27.56″ × 23.62″	QBXS2706022UL	31.95
31.50″ × 23.62″	QBXS2806022UL	34.75

All enclosures are supplied with zinc coated mounting plate

DISCONTINUED

Accessories:

Stand-Off Pillars M6:

Type	Cat. No.	Length Inches
SP15 (Set of 2)	ACCSOP15	0.59″
SP20 (Set of 2)	ACCSOP20	0.79″
SP30 (Set of 2)	ACCSOP30	1.18″

Mounting Feet:

Type	Cat. No.	
QMF (Set of 4)	QBXPSMF	For All Types (Steel)
QSF (Set of 4)	QBXS1MF	For All Types (Stainless Steel)

Rail Mounting Bracket:

Type		Cat. No.
QZF	QBXRMB	For All Types

Further Accessories:

Type	Cat. No.
Ground Cable	QBXEARTHCAB
Grounding Accessory Kit	QBXEARTHKIT

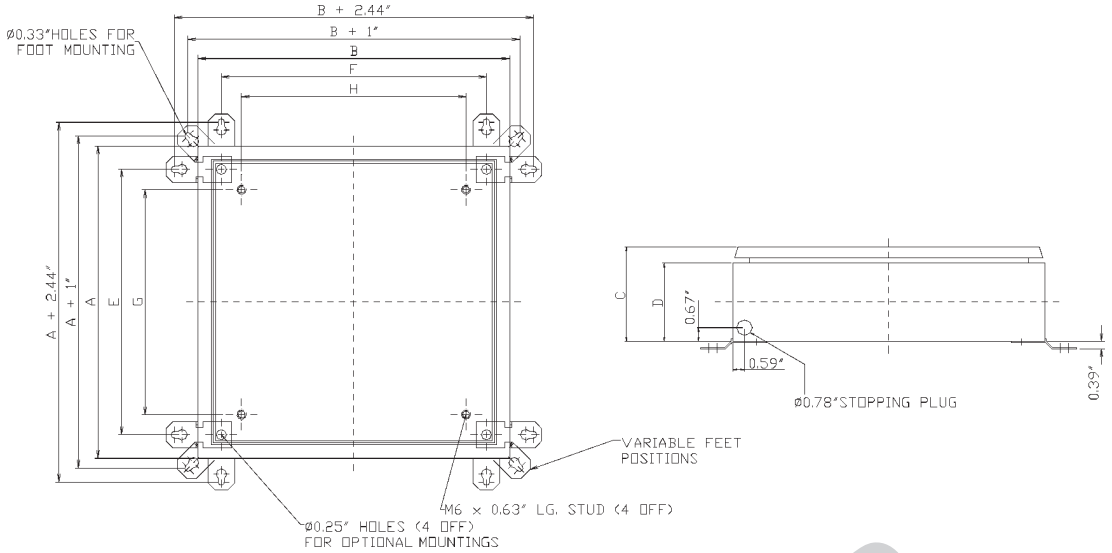
	Lock Inserts (Key Not Included Unless Stated)	Keys
Type	**Cat. No.**	**Cat. No.**
Slot Shape	QBXLKSLOT	N/A
Eastern European (D Shape)	QBXLKEE	QBXKEYEE
Double Bit Shape	QBXLKDBS	QBXKEYDBS
Square 8mm	QBXLKSQ8	QBXKEYSQ8
Square 7mm	QBXLKSQ7	QBXKEYSQ7
Triangular 8mm	QBXLKTR8	QBXKEYTR8
Triangular 7mm	QBXLKTR7	QBXKEYTR7
Crown Shape	QBXLKCWN	QBXKEYCWN
Wing Knob Insert with Standard Key	QBXLKWKI	QBXKEYWNI
L Padlockable Handle 10mm	QBXLKPAD	N/A

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6F QBX Series Junction Boxes

IP65

Sheet or Stainless Steel Removable Hinge Cover Dimensions



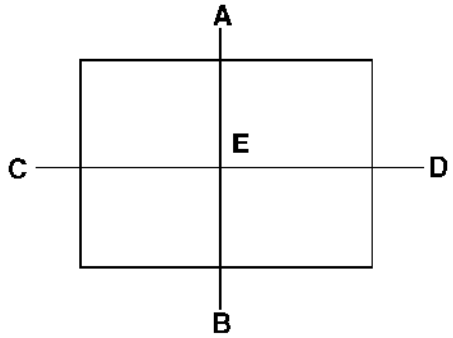
QBX Enclosure Series Dimensions (in inches):

Enclosure Type 4.72″ Depth	A Length	B Width	C Height	D	E	F	G	H
QBX302012	11.81	7.87	4.72	9.34	9.45	5.51	7.40	3.46
QBX303012	11.81	11.81	4.72	9.34	9.45	9.45	7.40	7.40
QBX403012	15.75	11.81	4.72	9.34	13.39	9.45	11.34	7.40
QBX404012	15.75	15.75	4.72	9.34	13.39	13.39	11.34	11.34
QBX504012	19.68	15.75	4.72	13.34	17.32	13.39	15.28	11.34
QBX604012	23.62	15.75	4.72	13.34	21.26	13.39	19.21	11.34

Enclosure Type 8.66″ Depth	A Length	B Width	C Height	D	E	F	G	H
QBX303022	11.81	11.81	8.66	7.87	9.45	9.45	7.40	7.40
QBX304022	11.81	15.75	8.66	7.87	9.45	13.39	7.40	11.34
QBX403022	15.75	11.81	8.66	7.87	13.39	9.45	11.34	7.40
QBX404022	15.75	15.75	8.66	7.87	13.39	13.39	11.34	11.34
QBX405022	15.75	19.68	8.66	7.87	13.39	17.32	11.34	15.28
QBX504022	19.68	15.75	8.66	7.87	17.32	13.39	15.28	11.34
QBX505022	19.68	19.68	8.66	7.87	17.32	17.32	15.28	15.28
QBX506022	19.68	23.62	8.66	7.87	17.32	21.26	15.28	19.21
QBX604022	23.62	15.75	8.66	7.87	21.26	13.39	19.21	11.34
QBX605022	23.62	19.68	8.66	7.87	21.26	17.32	19.21	15.28
QBX606022	23.62	23.62	8.66	7.87	21.26	21.26	19.21	19.21
QBX705022	27.56	19.68	8.66	7.87	25.20	17.32	23.15	15.28
QBX706022	27.56	23.62	8.66	7.87	25.20	21.26	23.15	19.21
QBX806022	31.49	23.62	8.66	7.87	29.15	21.26	27.08	19.21

DISCONTINUED

Enclosure side identification



A: Top
B: Bottom
C: Left
D: Right
E: Back

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Explosion Protected Terminal Boxes

Series GHG 744, 745, 746, 749

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H_2, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB ATEX CERTIFIED

EEx de IIC, T6, Zones 1 and 2
EEx de IIC, T6 Zones 21 and 22
IP66, NEMA 4X

Application:

Explosion protected terminal boxes are used in a metallic conduit or cable system for a marshalling cabinet between main circuits to the control room and branch circuits into the field.

- Junction boxes for intrinsically safe or increased safety connections
- Are designed for industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals and finishing areas where nonmetallic, weatherproof enclosures



Features:

- Enclosures can be mounted on walls, conduits or strut systems
- Connection terminals accessible from all sides
- Snap-out brass plates for metallic entry and grounding continuity
- Snap-out terminal rails
- Clip-in grounding PE rail
- Different sizes to accommodate any number of terminal connections

Standard Materials:

- Fiberglass - reinforced polyester housings
- Enclosure gasket - silicone
- Cover screws - stainless steel
- Metal entry plates - brass
- Conduit entries - zinc Myers hubs

Technical Data:

- Suitable from 1 to 296 terminal blocks (2.5mm²)
- Suitable for up to 90 - ¾″ hubs (largest size)
- Suitable for up to 72 - ¾″ metallic hubs
- Suitable for use as control panels
- Ex-e boxes and brass flanges can be field drilled

Ordering Data:

Contact factory for catalog numbers and pricing. Call 315 477-5531

Have the following information ready -

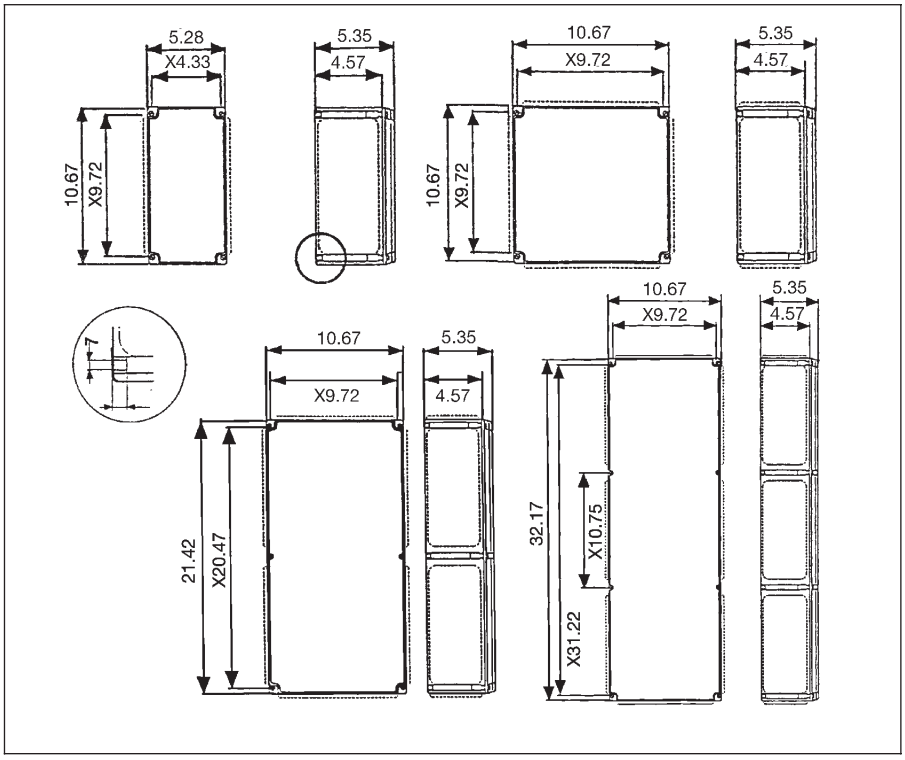
- Number and size of terminals (Table 1)
- Number, size and location of entries (Tables 2 & 3)
- Required ground points (Table 4)

Cooper Crouse-Hinds will provide you with an extended list

Certifications & Compliances:

- UL/cUL Listed
- Class I, Division 2, Groups A, B, C, D
- Class I, Zones 1 and 2, (A)Ex de IIB+H_2, T6
- Class II, Division 1, Groups E, F, G (cUL)
- CENELEC - PTB ATEX CERTIFIED
- EEx de IIC, T6, Zones 1 and 2
- EEx de IIC, T6, Zones 21 and 22
- IP 66, NEMA 4X

Dimensions:



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UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H_2, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB ATEX CERTIFIED

EEx de IIC, T6, Zones 1 and 2
EEx de IIC, T6 Zones 21 and 22
IP66, NEMA 4X

Panel and Side Designation

The sides of the enclosures are designated as W, X, Y & Z alphabetically in a clockwise rotation.
The narrow sides are always W & Y and the long sides are X & Z

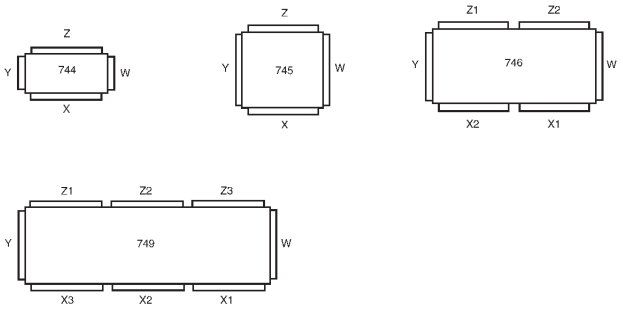


Table 1
Maximum number of built-in terminals supplied with enclosure

	Terminal cross section in mm²							
Type	**2.5**	**4**	**6**	**10**	**16**	**25**	**35**	**Length of terminal rail**
GHG 44	**40**	**33**	**25**	**20**	**17**	**17**	**–**	**(1) 230 mm**
GHG 45	**(2) 41**	**(2) 34**	**(2) 26**	**(2) 20**	**17**	**17**	**14**	**(2) 235 mm**
GHG 46	**(2) 94**	**(2) 78**	**(2) 26**	**(2) 20**	**40**	**40**	**32**	**(2) 510 mm**
GHG 49	**(2) 148**	**(2) 124**	**(2) 94**	**(2) 75**	**63**	**63**	**51**	**(2) 795 mm**

Table 2
Flange Arrangement for Each Enclosure

Enclosure	744	745	746	749
Removable Flanges	**2 total 1 - top & bottom**	**4 total 1 per side**	**6 total 2 top & bottom 1 each side**	**8 total 3 top and bottom 1 each side**
Covers *	**Shallow**	**Deep or shallow**	**Deep or shallow**	**Shallow**
# of DIN rails	**1**	**1 or 2**	**1, 2, or 4**	**1, 2, or 6**

* The shallow cover is standard for terminal boxes. The deep cover is used when mounting larger sized terminal (>95 mm²) or switches for 80 amps and larger.

Table 3
Maximum number of Glands per Side

Type	Side	M12	M16	M20	M25	M32	M40	M50	M63
NPT equivalent				**½″**	**¾″**	**1″**	**1¼″**	**1½″**	**2″**
GHG 744	**X/Z**	**60**	**36**	**26**	**18**	**10**	**7**	**4**	**3**
GHG 745	**X/Z**	**60**	**36**	**26**	**18**	**10**	**7**	**4**	**3**
GHG 746	**X/Z**	**120**	**72**	**52**	**36**	**20**	**14**	**8**	**6**
GHG 749	**X/Z**	**180**	**108**	**78**	**54**	**30**	**21**	**12**	**9**
# of glands /flange*		**46**	**25**	**20**	**11**	**8**	**4**	**3**	**2**
# of Myers hubs /flange*			**–**	**10**	**9**	**6**	**3**	**3**	**2**

If flanges are used, fewer glands can be installed. See Table 1 for flange arrangement.
Example: In the GHG 745 box a maximum of (10) ½″ Myers hubs can be installed on each brass flange plates. Each side will take one brass flange for a total of (40) ½″ Myers hubs.

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Ground Rails:

- Used to connect ground points to common ground
- PE "potential earth" - European designation
- Designated by 3 number ordering code (see Table 4)

Table 4
Explanation of 14 × 2 × 4 mm²

Number	Meaning	Example
1st	Number of screw terminals	14 screw terminals on strip
2nd	# wires that can be connected on each terminal	2 ground wires can be connected
3rd	Maximum conductor diameter	4 mm² conductors can be terminated on the ground rail (28 total, 14 terminals; 2 wires per terminal)

Use Table 5 as a conversion from AWG to mm²

Table 5
Equivalent of AWG Conductor to mm²

AWG	Area mm²
14	2.08
12	3.31
10	5.26
8	8.37
6	13.3
4	21.15
3	26.66
2	33.63
1	42.41
1/0	53.51
2/0	67.44
3/0	85.03
4/0	107.22

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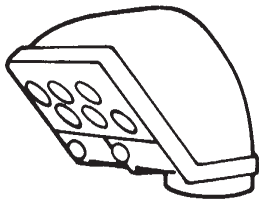
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Elbows, Couplings, Hubs, Grounding Devices, Plugs, Reducers, Service Entrance and Unions Hazardous and Non-Hazardous

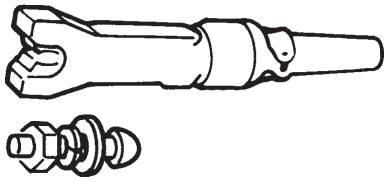
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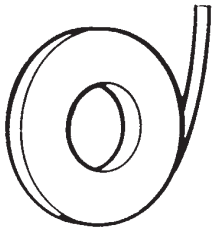
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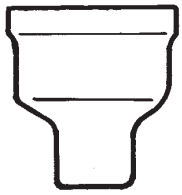
GCT 177



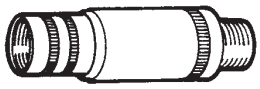
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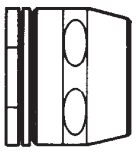
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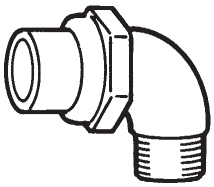
UNYL 168



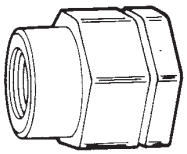
HUB 176



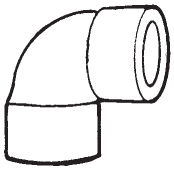
SERIES UNL PAGE 166



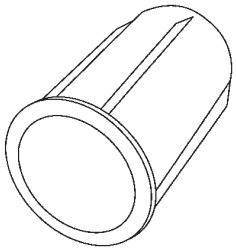
UNF 166



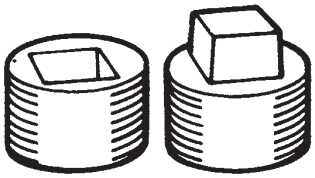
EL 167



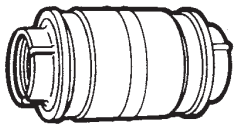
LNR 179



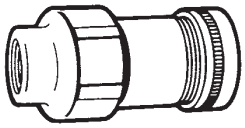
PLG 169



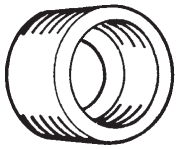
SERIES XD PAGE 172



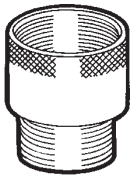
XJG 173



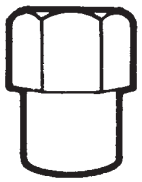
RE 169



REA 169



REC 169



EC 170



Application:

Service entrance heads, elbows, unions, couplings, grounding receptacle and stud and grounding straps with clamps are the miscellaneous fittings needed to complete an electrical conduit system from the overhead service entrance to machinery, lighting fixtures and/or final electrical outlets. These fittings are installed in conduit systems within non-hazardous areas to:

- Plug
- Connect
- Reduce
- Terminate
- Change direction
- Ground

Use in Hazardous Areas:

Most of the items shown above are also suitable for hazardous areas (see specific listings for compliance information).

Considerations for Selection:

Service Heads:

- Size required – determine from size and number of conductors in service and conduit or mast size.
- Type required – (threaded, slip fit, clamp) – determine from conduit used with service head.

Elbows, Unions, Reducers, Couplings and Grounding Receptacles/Connectors:

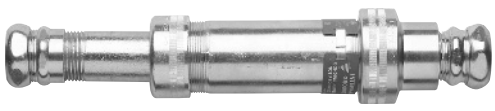
- Size required – determine from conduit size.
- Type required – determine from intended function in system (i.e. male and female thread for connecting conduit to outlet box etc.)
- Material and finish required – determine from environmental conditions (corrosive fumes, buried in concrete, etc.)

Options:

- *Corro-free*™ epoxy powder coat – ..... add suffix S752



XJGD
175



XJG-EMT
174

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Quick Selector Chart

Series	Description	Size Range	Conduit Type	Standard Materials
XD	Expansion/deflection coupling	1″ to 6″	Threaded rigid	*Feraloy*® iron alloy hubs, neoprene outer jacket, tinned copper grounding strap
F	Threaded service entrance head	½″ to 4″ conduit	Threaded rigid	Copper-free aluminum
F	Clamp type service entrance head	¾″ to 2″ conduit	Threadless rigid or EMT	Copper-free aluminum
GCT	Ground connector and stud	.312″ to .406″	Used to provide ‘‘quick connect’’ static electricity grounding connections with portable cable	Bronze connector body; aluminum cable clamp; brass stud
GC100	Grounding strap	50′ coil	Used for bonding and grounding	Flexible copper, tinned
GCR	Grounding receptacle	¾″ threaded grounding rod	Used to provide static electricity grounding connection	Bronze body, cap and chain; brass grounding stud
GC102	Grounding clamp	Adjustable	Used as clamp for GC100	Brass
HUB	Conduit hub	½″ to 4″	Threaded rigid	Steel or *Feraloy* iron alloy
UNL	Union, 90° angle; for connecting conduit to cast boxes	½″ - ½″ to ¾″ - ¾″	Threaded rigid	*Feraloy* iron alloy
UNY	Union, male; for connecting conduit to cast boxes	½″ to 6″	Threaded rigid	Steel or *Feraloy* iron alloy
	Expansion union, male; for connecting conduit to cast boxes	½″ to 1″	Threaded rigid	Steel
UNF	Union, female; for connecting conduit to conduit	½″ to 6″	Threaded rigid	Steel or *Feraloy* iron alloy
	Expansion union, female; for connecting conduit to conduit	½″ to 1″	Threaded rigid	Steel
UNA Male	Union, 90° to 180° adjustable; for connecting conduit to boxes for conduit support	½″ to 1″	Threaded rigid	*Feraloy* iron alloy
EL-45°	45° elbow, female	12″ to 4″	Threaded rigid	*Feraloy* iron alloy
EL-90°	90° elbow, male; 90° elbow, female; 90° elbow, male and female	½″ to 1¼″ male; ½″ to 2½″ female; ½″ to 1¼″ male and female	Threaded rigid	*Feraloy* iron alloy
RE	Reducer, threaded	½″ - ⅛″ to 6″ - 5″	Threaded rigid	Steel or *Feraloy* iron alloy
REA	Adapter fitting	½″ male to ¾″ female; ¾″ male to 1″ female; 1″ male to 1¼″ female	Threaded rigid	Steel
REC	Reducer coupling	¾″ - ½″ to 5″ - 4″	Threaded rigid	*Feraloy* iron alloy
PLG	Pipe plug, recessed head or square head	½″ to 4″	Threaded rigid	Steel or *Feraloy* iron alloy
EC	Flexible coupling	½″ to 4″	See catalog page 7F for details	
LNR	Conduit liner	½″ to 4″	Threaded rigid & IMC	Polypropylene
XJG	Expansion Fitting	½″ to 6″	Threaded rigid or IMC	*Feraloy* iron alloy
XJG-EMT	Expansion Fitting	½″ to 4″	EMT	*Feraloy* iron alloy
XJGD	Expansion-Deflection	1″ to 4″	Threaded rigid	*Feraloy* iron alloy

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Application:

UNY and UNF unions are installed in threaded thickwall conduit systems:

- UNY – to connect conduit to a conduit fitting, junction box or device enclosure
- UNF – to connect conduit to conduit, or to provide a means for future modification of the conduit system

UNA unions are used in conduit and fitting installations when entrance angle is between 90° and 180°.

EL elbows are installed in conduit run or in box or fitting hub:

- to change direction in threaded rigid conduit run by 90°, or when terminating at a box or fitting

Features:

UNY, UNF and UNL unions have:

- compact design which permits assembly with a minimum of clearance to other adjacent conduit and/or equipment
- strong and durable construction

UNA unions:

- have a single clamping nut on angle, making it both a union and a connector
- permit conduit joints at angles between 90° and 180°

EL elbows have a smooth interior and are both strong and compact.

Standard Materials:

- UNY, UNF unions – ½″ to 1″ – steel
- UNY, UNF unions – 1¼″ to 6″ – *Feraloy*® iron alloy
- UNL, UNA unions – *Feraloy* iron alloy
- EL elbows – *Feraloy* iron alloy or ductile iron

Standard Finishes:

- Steel – electrogalvanized with chromate treatment
- *Feraloy* iron alloy, malleable iron – electrogalvanized and aluminum acrylic paint

Options:

- Copper-free aluminum – add suffix SA to Cat. No. (not available on UNA or 5″ and 6″ UNY/UNF)

† See compliances for classification of each product.

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups A,B,C,D
  - Class II, Div. 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
    - EL ½″, ¾″, 1″
    - UNF/UNY 105, -215, -205, -305
    - UNL 105, -125, -215, -205

  - Class I, Division 1 & 2, Groups B,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
    - UNF/UNY406, -506, -606, -706, -806, -905, -1005

  - Class I, Division 1 & 2, Groups C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
    - EL, UNF, UNL, UNY - all sizes

  - Class I, Division 1 & 2, Group D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
    - UNA
- UL Standard: 886
- CSA Standard: C22.2 No. 30

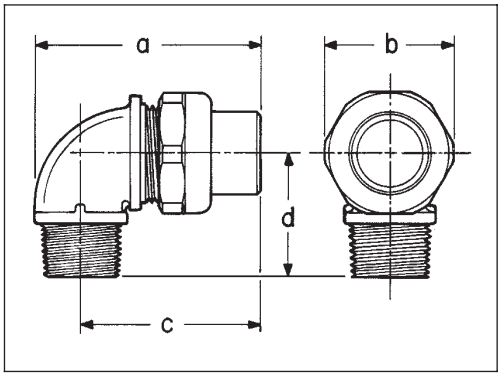


UNL

90° Angle

Size	Cat. #
½ to ½	UNL105
¾ female to ½ male	UNL125
½ female to ¾ male	UNL215
¾ to ¾	UNL205

Dimensions





½″ - 4″



½″ - 4″



5″ - 6″



5″ - 6″

UNY

Male

Size	Cat. #
½	UNY105
½ female to ¾ male	UNY215
¾	UNY205
1	UNY305
1¼	UNY405
1¼	UNY406
1½	UNY505
1½	UNY506
2	UNY605
2	UNY606
2½	UNY705
2½	UNY706
3	UNY805
3	UNY806
3½	UNY905
4	UNY1005
5	UNY012
6	UNY014

UNF

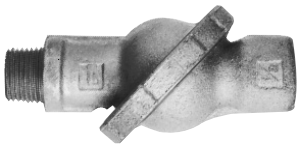
Female

Size	Cat. #
½	UNF105
¾ to ½	UNF215
¾	UNF205
1	UNF305
1¼	UNF405
1¼	UNF406
1½	UNF505
1½	UNF506
2	UNF605
2	UNF606
2½	UNF705
2½	UNF706
3	UNF805
3	UNF806
3½	UNF905
4	UNF1005
5	UNF012
6	UNF014

Size	UNY Length	UNY Max. Dia.	UNF Length	UNF Max. Dia.
½	2 3/8	1½	1 13/16	1½
¾-½	2 7/16	1 13/16	1¾	1 13/16
¾	2 7/16	1 13/16	1¾	1 13/16
1	2¾	1⅞	2	1⅞
1¼	3 3/16	2¾	2¼	2¾
1½	3 9/16	3 1/16	2⅝	3 1/16
2	3¾	3 13/16	2 9/16	3 13/16
2½	4⅝	4 5/16	3 9/16	4 5/16
3	5	5 1/16	3 7/16	5 1/16
3½	5½	5 11/16	4⅛	5 11/16
4	5⅝	6 9/16	4⅛	6 9/16
5	5¼	8 9/16	3 13/16	8 9/16
6	5⅜	9 5/16	3 13/16	9 5/16

Dim.	UNL 105	UNL 125	UNL 215	UNL 205
a	2 11/16	2 11/16	2⅞	2⅞
b	1 17/32	1 13/16	1 13/16	1 13/16
c	2 1/16	2 1/16	2¼	2¼
d	1 7/16	1 7/16	1⅝	1⅝

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Male (with removable nipple)



90° Male



90° Female



45° Female



90° Male and female

UNA

Male

Size	Cat. #
½	UNA16
¾	UNA26
1	UNA36

EL

90° Male

Size	Cat. #
½	EL195
¾	EL295
1	EL395

45° Female

Size	Cat. #
½	EL1
¾	EL2
1	EL3
1¼	EL4
1½	EL5
2	EL6
2½	EL7
3	EL8
3½	EL9
4	EL10

90° Female

Size	Cat. #
½	EL19*
¾	EL29*
1	EL39*
1¼	EL49*
1½	EL59*
2	EL69*
2½	EL79

90° Male and Female

Size	Cat. #
½	EL196*
¾	EL296*
1	EL396*
1¼	EL496

* Available in copper free aluminum – add suffix SA to catalog number.

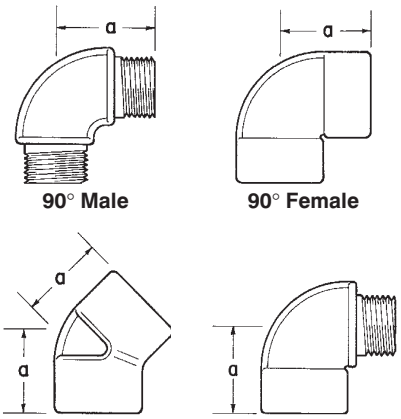
Dimensions

UNA

Male

Size	Length	Width
½	4 5/16	2 5/8
¾	4 13/16	2 7/8
1	5 11/16	3½

EL



90° Male
90° Female
45° Female
90° Male and female

EL

Size	45° Female a	90° Male a	90° Female a	90° Male & Female a
½	1 3/16	1 7/16	1 17/32	1 17/32
¾	1 3/8	1 5/8	1 3/4	1 5/8
1	1 21/32	1 7/8	2	1 7/8
1¼	1 3/4		2 1/4	2 1/8
1½	1 15/16		4	
2	2 1/4		5	
2½	2 3/4		6 7/16	
3	3 1/8			
3½	3 7/16			
4	3 5/8			

† See compliances for classification of each product.

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7F UNF/UNY Expansion Unions

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

UNF/UNY expansion unions are designed to be used in all threaded rigid metal† conduit systems indoors and outdoors, in hazardous locations to:

- connect conduit to conduit
- connect conduit to a junction box or device enclosure
- compensate for conduit cut too short
- allow for expansion and contraction of conduit
- connect stub-ups to threaded conduit
- replace sections of conduit runs

Features:

- Compact design
- Internal beryllium copper grounding spring to insure positive grounding continuity.
- Knurled surface on body and sleeve allows secure gripping with wrench.
- Steel construction for maximum strength.
- Available in two styles – short length where space is limited, long length when extra expansion is required.

Standard Materials:

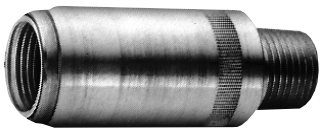
- Body and sleeve – steel
- Grounding spring – beryllium copper

Standard Finishes:

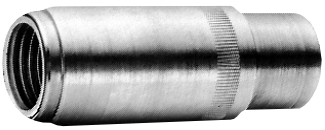
- Steel – electrogalvanized with chromate finish
- Beryllium copper – natural

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



UNYL



UNFL



UNYL with sleeve extended



UNFL with sleeve extended

UNY

Male – Short

Conduit Size	Cat. #
½	UNY17
¾	UNY27
1	UNY37

UNF

Female – Short

Conduit Size	Cat. #
½	UNF17
¾	UNF27
1	UNF37

UNYL

Male – Long

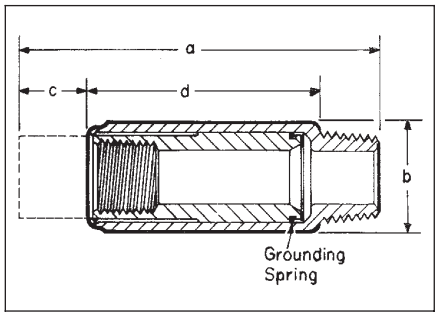
Conduit Size	Cat. #
½	UNYL17
¾	UNYL27
1	UNYL37

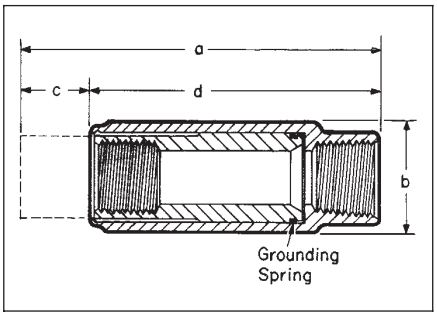
UNFL

Female – Long

Conduit Size	Cat. #
½	UNFL17
¾	UNFL27
1	UNFL37

Dimensions





Size	Dimension a*	b	c**	d
	UNY			
½	3 5/16	1 3/16	½	2 1/16
¾	3 3/8	1 7/16	½	2 1/8
1	3 13/16	1 11/16	5/8	2 1/4
	UNYL			
½	4 5/16	1 3/16	1	2 9/16
¾	4 1/2	1 7/16	1 1/16	2 11/16
1	5 3/16	1 11/16	1 5/16	2 15/16

Size	Dimension a*	b	c**	d
	UNF			
½	3 3/8	1 3/16	½	2 7/8
¾	3 7/16	1 7/16	½	2 15/16
1	3 13/16	1 11/16	5/8	3 3/16
	UNFL			
½	4 3/8	1 3/16	1	3 3/8
¾	4 9/16	1 7/16	1 1/16	3 1/2
1	5 1/8	1 11/16	1 5/16	3 13/16

† Suitable with intermediate Metal Conduit in non-hazardous locations

* Overall length at maximum expansion

** Maximum expansion

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Application:

RE and REC reducers are used in threaded heavy wall conduit systems.
RE reduces conduit hubs to a smaller size.
REA adapters enlarge drilled and tapped openings by 1 NPT size.
REC connects two different sizes of conduit together or is used to replace a coupling and reducer in an installation.
PLG plugs are used for closing threaded conduit hubs.

Features:

RE reducers have:
- integral bushing which prevents damage to wires
- full, clean cut tapered threads

REC reducers have:
- integral bushings in both ends which prevents damage to wires
- funnel shaped interior to guide the wires from large to small conduit, making it easy to pull wires

REA adapters have:
- Smooth integral bushing to protect wire insulation
- Knurled body for easy wrenching

PLG plugs:
- have clean tapered threads
- are available in two styles, flush (recessed), or square head type

Standard Materials:

- RE reducers – RE1108 through RE54 in steel; all others in *Feraloy*® iron alloy
- REA adapters – steel
- REC reducers – REC21 and REC32 in steel; all others in *Feraloy* iron alloy
- PLG plugs – *Feraloy* iron alloy and/or steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized with chromate treatment

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups A,B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
  (see listings for specific Cat. Nos. suitable for Groups A or B)
- UL Standard: 886
- CSA Standard: C22.2 No. 30

Options:

- Copper-free aluminum – add suffix SA to Cat. No.



RE

Size	Cat. #
½-⅛	RE1108*
½-¼	RE1208*
½-⅜	RE1308
¾-½	RE21†
1–½	RE31†
1–¾	RE32†
1¼-½	RE41†
1¼-¾	RE42†
1¼-1	RE43†
1½-½	RE51†
1½-¾	RE52†
1½-1	RE53†
1½-1¼	RE54†
2–½	RE61†
2–¾	RE62†
2-1	RE63†
2-1-¼	RE64†
2-1-½	RE65†
2½-1	RE73†
2½-1¼	RE74†
2½-1½	RE75†
2½-2	RE76†
3-1	RE83†
3-1-¼	RE84†
3-1-½	RE85†
3-2	RE86†
3-2-½	RE87†
3½-2	RE96†
3½-2½	RE97†
3½-3	RE98†
4-2	RE106†
4-2-½	RE107†
4-3	RE108†
4-3-½	RE109†
5-4	RE01210
6-5	RE01412



REC

Large Hub Size	Small Hub Size	Cat. #
¾	½	REC21†
1	½	REC31†
1	¾	REC32
1¼	¾	REC42
1¼	1	REC43
1½	¾	REC52
1½	1	REC53
1½	1¼	REC54
2	¾	REC602
2	1	REC603
2	1¼	REC604
2	1½	REC605
2½	1½	REC75
3	2	REC86
3½	2½	REC97*
4	3	REC108*
5	4	REC01210*



REA

Male Hub Size	Female Hub Size	Cat. #
½	¾	REA12†
¾	1	REA23†
1	1¼	REA34†



Recessed



Square Head

PLG

Recessed

Size	Cat. #
¼	PLG28†
½	PLG1†
¾	PLG2†
1	PLG3†
1¼	PLG4‡
1½	PLG5‡
2	PLG6‡
2½	PLG7‡
3	PLG8‡
3½	PLG9‡
4	PLG10‡

Square Head

½	PLG15†
¾	PLG25†
1	PLG35†
1¼	PLG45‡
1½	PLG55‡
2	PLG65‡
2½	PLG75
3	PLG85
3½	PLG95
4	PLG105

† Suitable for use in Class I, Groups A and B areas.
‡ Suitable for use in Class I, Group B areas.
* Not available in aluminum.

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7F Couplings

½″–2″ Brass Construction
All Stainless Steel with suffix – S516
2½–4″ Stainless Steel construction only

Cl. I†, Div. 1 & 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Wet Locations

Application:

EC couplings are used:
- in hazardous areas where a flexible member is required in a conduit system to accomplish difficult bends, or to allow for movement or vibration of connected equipment or units

Features:

- Rugged design to withstand explosive pressure (Class I)
- Mechanical abuse
- Liquid-tight for wet locations
- For use where lack of space makes use of rigid conduit difficult
- Wire duct liner in sizes ½″ to 2″ insulates against grounds and burn-through from short circuit
- No bonding jumpers required, metallic braid provides continuous electrical path
- ECGJH combination has two threaded male end fittings
- ECLK combination has one female union and one male threaded end fitting

Standard Materials:

- End fittings:
½″ to 2″ – forged brass
2½″ to 4″ – stainless steel
- Female unions:
½″ to 1″ – steel
1¼″ to 4″ – *Feraloy*® iron alloy
- ½″ to 2″ have bronze braid covering and flexible brass inner core; packing is woven cotton braid impregnated with asphalt.
- 2½″ to 4″ have a Type 304 stainless steel braid.

Standard Finishes:

- Brass and bronze – natural
- Steel – electrogalvanized with chromate treatment
- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Stainless steel – natural

Options:

Description	Suffix to be Added to Cat. #
All stainless steel	S516
For severely corrosive locations, a flexible PVC protective coating will be supplied	S758

Special coupling lengths available up to 144 inches. To order, change last two digits in any standard catalog number to the two or three digit length desired in whole inches i.e. To order a ¾″ trade size 110 inches long, use catalog number ECGJH2110

Certifications and Compliances:

- NEC:
½″ and ¾″ (Brass and S516) – Class I, Division 1 & 2, Groups A,B,C,D
1″ to 2″ (Brass and S516) – Class I, Division 1 & 2, Groups C,D
2½″ to 4″ (Stainless Steel) – Class I, Division 1 & 2, Groups C,D
All sizes also for use in Class II, Division 1, Groups E,F,G, Division 2, Groups F,G and Class III
- UL Standard: 886



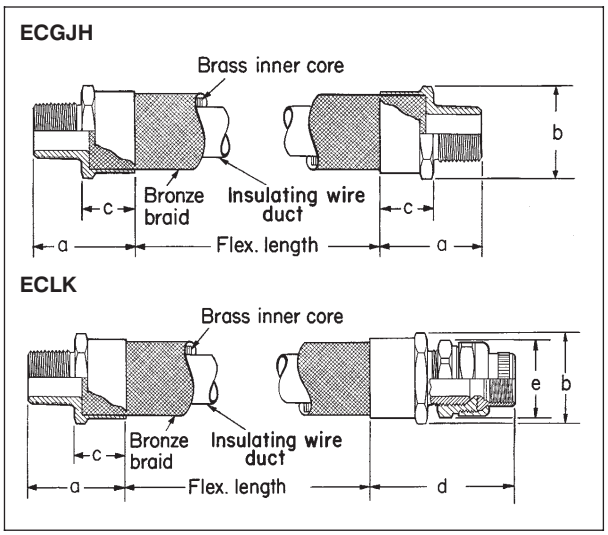
ECGJH (Male connections both ends)

Flexible Length	Size	Cat. #
4	½	ECGJH14
4	¾	ECGJH24
6	½	ECGJH16
6	¾	ECGJH26
6	1	ECGJH36
8	½	ECGJH18
8	¾	ECGJH28
8	1	ECGJH38
10	½	ECGJH110
10	¾	ECGJH210
10	1	ECGJH310
12	½	ECGJH112
12	¾	ECGJH212
12	1	ECGJH312
12	1¼	ECGJH412
12	1½	ECGJH512
12	2	ECGJH612
12	2½	ECGJH712
12	3	ECGJH812
12	4	ECGJH1012
15	½	ECGJH115
15	¾	ECGJH215
15	1	ECGJH315
15	1¼	ECGJH415
15	1½	ECGJH515
15	2	ECGJH615
15	2½	ECGJH715
15	3	ECGJH815
15	4	ECGJH1015
18	½	ECGJH118
18	¾	ECGJH218

Flexible Length	Size	Cat. #
18	1	ECGJH318
18	1¼	ECGJH418
18	1½	ECGJH518
18	2	ECGJH618
18	2½	ECGJH718
18	3	ECGJH818
18	4	ECGJH1018
21	½	ECGJH121
21	¾	ECGJH221
21	1	ECGJH321
21	1¼	ECGJH421
21	1½	ECGJH521
21	2	ECGJH621
21	2½	ECGJH721
21	3	ECGJH821
21	4	ECGJH1021
24	½	ECGJH124
24	¾	ECGJH224
24	1	ECGJH324
24	1¼	ECGJH424
24	1½	ECGJH524
24	2	ECGJH624
24	2½	ECGJH724
24	3	ECGJH824
24	4	ECGJH1024
27	½	ECGJH127
27	¾	ECGJH227
27	1	ECGJH327
27	1¼	ECGJH427
27	1½	ECGJH527
27	2	ECGJH627

Flexible Length	Size	Cat. #
27	2½	ECGJH727
27	3	ECGJH827
27	4	ECGJH1027
30	½	ECGJH130
30	¾	ECGJH230
30	1	ECGJH330
30	1¼	ECGJH430
30	1½	ECGJH530
30	2	ECGJH630
30	2½	ECGJH730
30	3	ECGJH830
30	4	ECGJH1030
33	½	ECGJH133
33	¾	ECGJH233
33	1	ECGJH333
33	1¼	ECGJH433
33	1½	ECGJH533
33	2	ECGJH633
33	2½	ECGJH733
33	3	ECGJH833
33	4	ECGJH1033
36	½	ECGJH136
36	¾	ECGJH236
36	1	ECGJH336
36	1¼	ECGJH436
36	1½	ECGJH536
36	2	ECGJH636
36	2½	ECGJH736
36	3	ECGJH836
36	4	ECGJH1036

Dimensions



†See certifications and compliances.

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Couplings

½″–2″ Brass Construction
All Stainless Steel with suffix – S516
2½–4″ Stainless Steel construction only

Cl. I, Div. 1 & 2, Groups A,B,C,D† Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-
Cl. II, Div. 2, Groups F,G Ignitionproof
Cl. III Wet Locations



ECLK (ECGJH provide with UNF Female union – male connection 1 end, female connection 1 end)

Flexible Length	Size	Cat. #
4″	½	ECLK14
4″	¾	ECLK24
6″	½	ECLK16
6″	¾	ECLK26
6″	1	ECLK36
8″	½	ECLK18
8″	¾	ECLK28
8″	1	ECLK38
10″	½	ECLK110
10″	¾	ECLK210
10″	1	ECLK310
12″	½	ECLK112
12″	¾	ECLK212
12″	1	ECLK312
12″	1¼	ECLK412
12″	1½	ECLK512
12″	2	ECLK612
12″	2½	ECLK712
12″	3	ECLK812
12″	4	ECLK1012
15″	½	ECLK115
15″	¾	ECLK215
15″	1	ECLK315
15″	1¼	ECLK415
15″	1½	ECLK515
15″	2	ECLK615
15″	2½	ECLK715
15″	3	ECLK815
15″	4	ECLK1015
18″	½	ECLK118
18″	¾	ECLK218
18″	1	ECLK318
18″	1¼	ECLK418
18″	1½	ECLK518
18″	2	ECLK618
18″	2½	ECLK718
18″	3	ECLK818
18″	4	ECLK1018
21″	½	ECLK121
21″	¾	ECLK221
21″	1	ECLK321
21″	1¼	ECLK421
21″	1½	ECLK521
21″	2	ECLK621
21″	2½	ECLK721
21″	3	ECLK821
21″	4	ECLK1021
24″	½	ECLK124
24″	¾	ECLK224
24″	1	ECLK324
24″	1¼	ECLK424
24″	1½	ECLK524
24″	2	ECLK624
24″	2½	ECLK724
24″	3	ECLK824
24″	4	ECLK1024
27″	½	ECLK127
27″	¾	ECLK227
27″	1	ECLK327
27″	1¼	ECLK427
27″	1½	ECLK527
27″	2	ECLK627
27″	2½	ECLK727
27″	3	ECLK827
27″	4	ECLK1027
30″	½	ECLK130
30″	¾	ECLK230
30″	1	ECLK330
30″	1¼	ECLK430
30″	1½	ECLK530
30″	2	ECLK630
30″	2½	ECLK730
30″	3	ECLK830
30″	4	ECLK1030
33″	½	ECLK133
33″	¾	ECLK233
33″	1	ECLK333
33″	1¼	ECLK433
33″	1½	ECLK533
33″	2	ECLK633
33″	2½	ECLK733
33″	3	ECLK833
33″	4	ECLK1033
36″	½	ECLK136
36″	¾	ECLK236
36″	1	ECLK336
36″	1¼	ECLK436
36″	1½	ECLK536
36″	2	ECLK636
36″	2½	ECLK736
36″	3	ECLK836
36″	4	ECLK1036

Dimensions

ECGJH and ECLK

Size	a	b	c	d	e
½	1 7/8	1½	1⅛	3	1 9/16
¾	2 1/16	1 7/8	1 3/16	3¼	1 13/16
1	2½	2⅛	1½	3⅝	1 7/8
1¼	2 7/8	2 15/16	1 7/8	4 3/16	2¾
1½	3 5/16	3½	1 7/8	5 3/16	3 1/16
2	3¼	4¼	2	5 1/16	3 13/16
2½	3	4 7/16	1 5/8	5 1/16	4 5/16
3	3⅛	4 9/16	1¾	5⅜	5 1/16
4	4⅝	4 15/16	3¼	7½	6 3/16

Minimum Recommended Radius of Bend

Size	Radius	Size	Radius
½	10	2	16
¾	12	2½	16
1	14	3	18
1¼	14	4	30
1½	16		

†See certifications and compliances.

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7F XD Expansion/Deflection Coupling

Watertight
Corrosion-Resistant

Application:

XD couplings can be installed indoors, outdoors, buried underground, or embedded in concrete in non-hazardous areas. XD's are used with standard rigid conduit or PVC rigid conduit. (PVC requires rigid metal conduit nipples and rigid metal-to-PVC conduit adapters.) XD's provide a flexible and watertight connection for protection of conduit wiring systems from damage due to movement.

Typical applications include:

- Underground conduit feeder runs
- Runs between sections of concrete subject to relative movement
- Runs between fixed structures
- Conduit entrances in high-rise buildings
- Bridges
- Marinas, docks, piers

Features:

- XD couplings accommodate the following movements without collapsing or fracturing the conduit, and damaging the wires it contains:
  1. Axial expansion or contraction up to ¾″
  2. Angular misalignment of the axes of the coupled conduit runs in any direction to 30°
  3. Parallel misalignment of the axes of coupled conduit runs in any direction to ¾″
- Inner sleeve maintains constant I.D. in any position and provides a smooth insulated wireway for protection of wire insulation
- Watertight flexible neoprene outer jacket is corrosion resistant and protects the grounding strap and the attachment points of the hubs
- Tinned copper flexible braid grounding straps assure grounding continuity
- Stainless steel jacket clamps for strength and corrosion resistance
- Standard tapered electrical threads fit standard rigid conduit
- Integral hub bushing protects insulation of conductors

Standard Materials:

- Hubs – *Feraloy*® iron alloy
- Outer jacket – molded neoprene
- Jacket clamps – stainless steel
- Inner sleeve – molded plastic
- Grounding straps – tinned copper flexible braid

Standard Finishes:

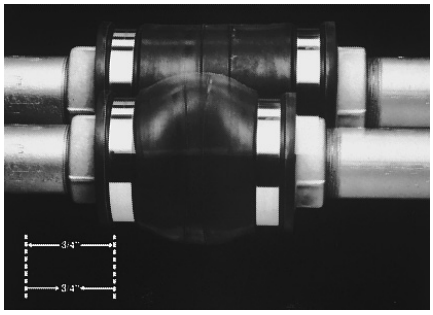
- *Feraloy* – electrogalvanized
- Neoprene – natural (black)
- Molded plastic – natural (brown)

Certifications and Compliances:

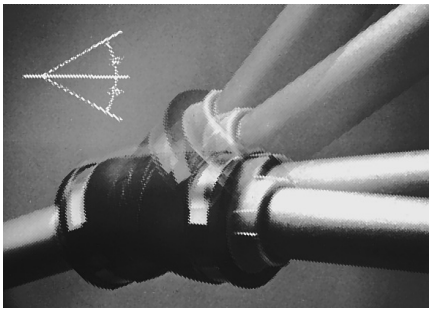
- UL standards: 514B

Size Ranges:

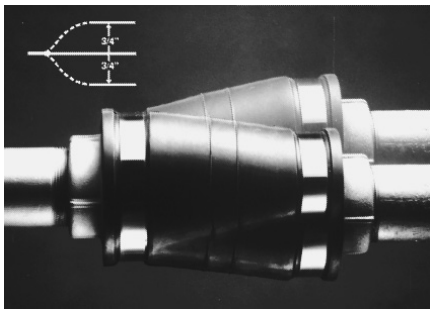
- 1″ to 6″ (Smaller sizes can be obtained by using reducing bushings)



1. Axial expansion/contraction.



2. Angular misalignment.



3. Parallel misalignment.

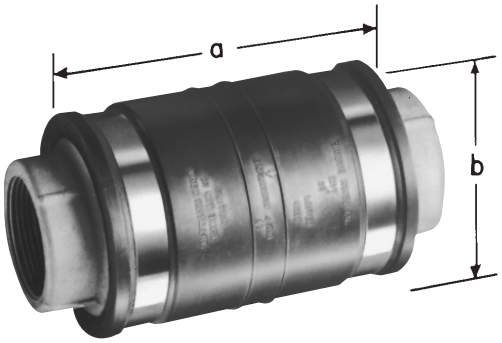
XD

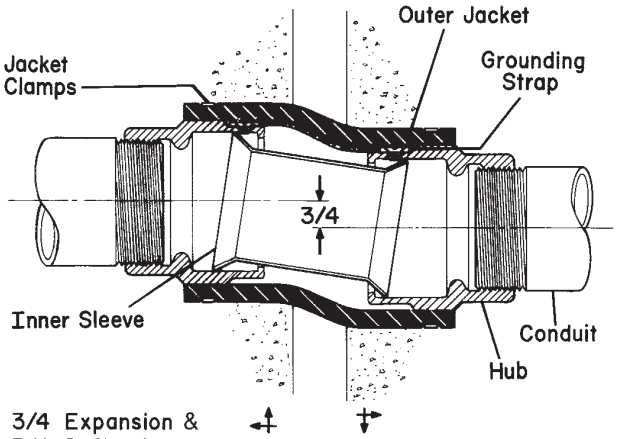
Ordering Information

Hub Size	Cat. #	Hub Size	Cat. #
1	XD3	3	XD8
1¼	XD4	3½	XD9
1½	XD5	4	XD010
2	XD6	5	XD012
2½	XD7	6	XD014

Dimensions

Hub Size	a	b
1	7	3 15/16
1¼	7 3/8	4¼
1½	7¼	4½
2	7¼	4 15/16
2½	7½	5 5/16
3	7 5/8	5 15/16
3½	7¾	6½
4	7⅞	6 15/16
5	7¾	8
6	8⅜	9





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XJG Conduit Expansion Joints With Internal Grounding For Rigid Metal Conduit and IMC

Application:

XJG expansion couplings are used with rigid metal conduit and IMC:
- **without** the need for an external bonding jumper and clamps (up to 4″)
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body
- Steel-electrogalvanized
- Copper-free aluminum - natural
- *Feraloy*® iron alloy - electrogalvanized (5″ + 6″ only)

Reducer
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 6″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Gland Nut
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 6″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Packing
- Teflon® (trademark of E.I. DuPont Co.)

Washer
- Steel - electrogalvanized
- Copper-free aluminum - natural

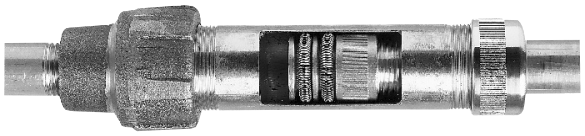
Gasket
- Vellum

Bushing
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 6″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Ground Springs
- Phosphor bronze - electrogalvanized

Ground Strap
- Braided tinned copper

U-Bolts
- Malleable iron – electrogalvanized



Patented Design

XJG – For use with rigid metal conduit and IMC

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper†	A Diameter	B Length	Bonding Jumper Length
½	4	XJG14	BJ14	1.75	6.75	20″
	8	XJG18	BJ18	1.75	10.75	30″
¾	4	XJG24	BJ24	2.12	6.75	20″
	8	XJG28	BJ28	2.12	10.75	30″
1	4	XJG34	BJ34	2.43	7.25	20″
	8	XJG38	BJ38	2.43	11.25	30″
1¼	4	XJG44	BJ44	3.19	7.56	24″
	8	XJG48	BJ48	3.19	11.56	30″
1½	4	XJG54	BJ54	3.68	7.87	24″
	8	XJG58	BJ58	3.68	11.87	30″
2	4	XJG64	BJ64	4.75	8.25	24″
	8	XJG68	BJ68	4.75	12.25	30″
2½	4	XJG74	BJ74	4.87	9.31	24″
	8	XJG78	BJ78	4.87	13.31	36″
3	4	XJG84	BJ84	5.37	10.00	30″
	8	XJG88	BJ88	5.37	14.00	36″
3½	4	XJG94	BJ94	6.62	9.81	30″
	8	XJG98	BJ98	6.62	13.81	36″
4	4	XJG104	BJ104	6.62	9.81	30″
	8	XJG108	BJ108	6.62	13.81	36″
5	8	XJ128‡	-	7.64	15.50	-
6	8	XJ148‡	-	9.56	16.00	-

Options:

Available in copper-free aluminum – add suffix SA to Cat. No. (not available on 5″ and 6″ sizes)
Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

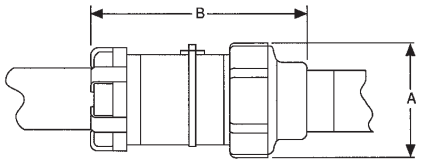
Size Ranges:

- ½″ through 6″ conduit size
- 4″ and 8″ maximum conduit movement

Certifications and Compliances:

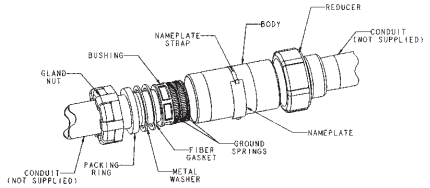
- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1
- Wet Locations

Dimensions





XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.

† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

‡ XJ128 and XJ148 are not internally grounded. A pair of 36″ bonding jumpers are provided with fitting.

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7F XJG-EMT Conduit Expansion Joints With Internal Grounding For EMT Conduit

Application:

XJG expansion couplings are used with EMT Conduit:

- **without** the need for an external bonding jumper and clamps
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body
- Steel-electrogalvanized
- Copper-free aluminum - natural

Reducer
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 4″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Gland Nut
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 4″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Packing
- Teflon® (trademark of E.I. DuPont Co.)

Washer
- Steel - electrogalvanized

Gasket
- Vellum

Bushing
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 4″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Ground Springs
- Phosphor bronze - electrogalvanized

Ground Strap
- Braided tinned copper

U-Bolts
- Malleable iron – electrogalvanized

Options:

Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

Size Ranges:

- ½″ through 4″ conduit size
- 4″ maximum conduit movement

Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1

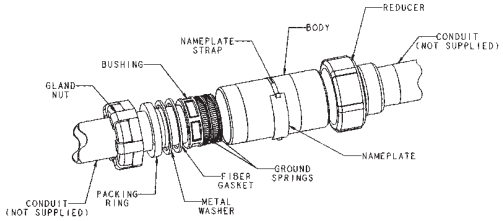


XJG-EMT – for use with EMT conduit

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper	A Diameter	B Length
½″	4″	XJG14-EMT	BJ14	1¾″	10¾″
¾″	4″	XJG24-EMT	BJ24	2⅛″	11″
1″	4″	XJG34-EMT	BJ34	2⁷⁄₁₆″	11½″
1¼″	4″	XJG44-EMT	BJ44	3⅛″	15¼″
1½″	4″	XJG54-EMT	BJ54	3⅝″	15½″
2″	4″	XJG64-EMT	BJ64	4¾″	15½″
2½″	4″	XJG74-EMT	BJ74	4⅞″	18¾″
3″	4″	XJG84-EMT	BJ84	5⅜″	19⅞″
3½″	4″	XJG94-EMT	BJ94	6⅝″	21¼″
4″	4″	XJG104-EMT	BJ104	6⅝″	21¼″



XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.
† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

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XJGD Combination Expansion/Deflection Coupling and Expansion Joint Internally Grounded

Application:

XJGD combination fittings are used with rigid metal conduit and IMC:

- to accommodate axial expansion, angular misalignment and parallel misalignment
- to couple together two (2) sections of conduit subject to longitudinal movement
- to maintain a ground connection *without the need for an external bonding jumper and clamps*
- in long conduit runs to prevent conduit from buckling and causing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature swings
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge

Standard Materials:

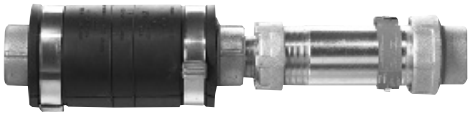
- Body, Hubs, Gland Nut, Washer, Bushing – *Feraloy*®
- Packing – Teflon®
- Gasket – vellum
- Ground Spring – phosphor bronze
- Outer Jacket – molded neoprene
- Jacket Clamps – stainless steel
- Inner Sleeve – molded plastic
- Ground Straps – tinned copper braid

Standard Finishes:

- *Feraloy*® – electrogalvanized

Certifications and Compliances:

- UL standard: 514B



XJGD Ordering Information

Hub Size	Maximum Conduit Movement	Catalog Number	A Diameter	B Length
1″	4″	XJGD34	3 15/16″	17 3/4″
1 1/4″	4″	XJGD44	4 1/4″	18 1/8″
1 1/2″	4″	XJGD54	4 1/2″	18 5/8″
2″	4″	XJGD64	4 15/16″	19 1/4″
2 1/2″	4″	XJGD74	5 5/16″	20 3/4″
3″	4″	XJGD84	5 15/16″	21 5/8″
3 1/2″	4″	XJGD94	6 1/2″	21 5/8″
4″	4″	XJGD104	8″	27 3/4″

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Application:

HUB Conduit Hubs:
- provide a convenient means for installing a threaded conduit hub on a junction box or device enclosure
- are used to connect conduit to a sheet metal or cast enclosure
- are used with threaded rigid conduit or IMC, steel or aluminum; indoors or outdoors

Features:

- Smooth insulated throat provides easier wire pulling and protection for conductors during installation.
- Neoprene sealing gasket provides a watertight seal.
- Compact design permits close spacing of conduit.
- Wide range of sizes from ½″ to 4″.

Standard Materials:

- ½″ to 4″ malleable iron

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

Size Ranges:

- ½″ to 4″

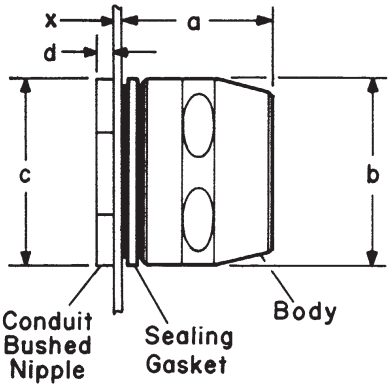
Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC/CEC:
  Class I, Division 2, Groups A,B,C,D
  Per NEC 501-4(b), 502-4(a) and 503-3(a)



Conduit Size	Cat. #
½	HUB1
¾	HUB2
1	HUB3
1¼	HUB4
1½	HUB5
2	HUB6
2½	HUB7
3	HUB8
3½	HUB9
4	HUB10

Dimensions



Cat. #	Conduit Size	a	b	c	d	x
HUB1	½	1	1¼	1	⅛	9/64
HUB2	¾	1⅛	1 9/16	1⅜	5/32	¼
HUB3	1	1⅜	1⅞	1⅝	3/16	9/32
HUB4	1¼	1½	2 5/16	2	¼	7/16
HUB5	1½	1⅝	2½	2⅜	¼	7/16
HUB6	2	1 11/16	3	2 13/16	¼	7/16
HUB7	2½	2 3/16	3⅝	3 7/16	¼	7/16
HUB8	3	2 7/16	4¼	4 1/16	¼	7/16
HUB9	3½	2 7/16	4¾	4 11/16	5/16	¾
HUB10	4	2 9/16	5¼	5 1/16	5/16	1⅛

NOTE: Dimension ''x'' is maximum wall thickness of box that will meet the requirement for three full threads engagement of nipple and fitting body when liquidtight box connector or rigid conduit hub is installed in a knockout or slip hole.

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Application:

GCR grounding receptacles are used to provide static electricity grounding connections; particularly suited for, but not limited to, use in aircraft hangar floors and airport aprons.

GCT ground connector and studs are used to provide ''quick-connect'' static electricity grounding connections with portable cable.

GC grounding strap and clamp are suitable for bonding and grounding equipment in wiring systems, such as meter circuits, service entrance equipment, and appliances per NEC requirements.

Features:

GCR grounding receptacles have:
- grounding stud integral with housing
- grounding stud designed to accept standard battery clip
- thread at bottom for attaching to ¾″ threaded grounding rod
- cover attached to receptacle by chain to prevent loss of cover
- corrosion resistant material

GCT grounding connector and studs have:
- substantial clip tension for grounding
- integral cable clamp to prevent cable from breaking free of connector or fraying at connector
- lock washer on stud to maintain good electrical contact

GC strap:
- is pliable, strong and corrosion resistant
- assures a lasting bond. Prongs on strap clamp engage strap perforations, preventing slippage.

Standard Materials:

- GCR – Bronze body, cap and chain Brass grounding stud
- GCT – Bronze connector body, aluminum cable clamp, brass stud
- Strap – flexible copper
- Clamp – brass

Standard Finishes:

- Bronze, brass, aluminum parts – natural
- Flexible copper strap – tinned

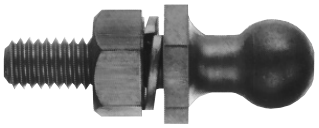
Certifications and Compliances:

- UL Standard: GC strap and clamps – 467
- CSA Standard: C22.2 No. 41



GCT Grounding Connector

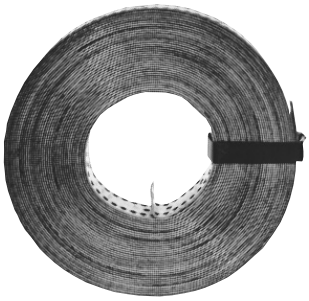
Cable Dia.	Cat. #
.312″ to .406″	GCT8



GCT Stud*

Description	Thread Size	Cat. #
Brass	⅜-16	GCT2

* Not a replacement for grounding stud in GCR receptacle.



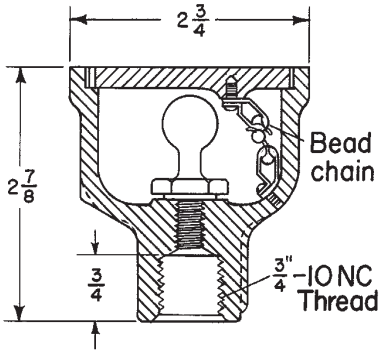
GC Grounding Strap

Used with GC102 Strap Clamp

Description	Cat. #
50′ coil, 1″ wide	GC100

Dimensions

GCR

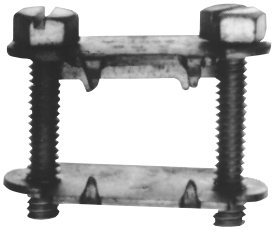




GCR Receptacles

For Static Electricity Grounding

Description	Thread Size	Cat. #
With cap and chain	5/16-18	GCR210



Strap Clamp

Description	Cat. #
Brass	GC102

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Application:

F type service entrance heads are used:
- for overhead service entrance to buildings
- with threaded rigid, threadless rigid or threadless thinwall (EMT) conduit and rigid conduit masts

Features:

Two types available:
- threaded rigid – threads to conduit.
- threadless rigid or EMT – clamps to conduit.
- Available knockouts in covers allow use with variety of sizes and numbers of wires.
- Simple construction and easy assembly.
- Consists of only two pieces plus the insulating knockout cover.
- Easy to install.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Certifications and Compliances:

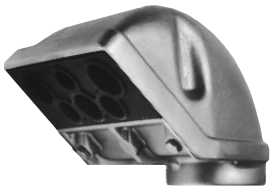
- UL Standard: 514B
- CSA Standard: C22.2 No. 18



½″ size



¾″ – 2″ size



½″ – 4″ size



Clamp type

F Service Heads

Threaded Rigid

Conduit Size	Number and Dia. of Cover Knockouts	Cat. #	Replacement Cover Cat. #
½	6 - 9/32	F186	CF690
¾	2 - 3/8 and 3 - 13/32	F285	5-H
1	2 - 7/16 and 3 - ½	F385	5-NS
1¼	2 - 27/64 and 3 - 5/8	F485	5-NL
1½	2 - 27/64 and 3 - 5/8	F585	5-NL
2	2 - 7/8, 1 - 13/16, 1 - 11/16, 1 - 9/16 and 1 - 21/32	F686	CF60
2½	2 - 17/16, 1 - 17/32, 1 - 1 1/64, 1 - 61/64 and 1 - 55/64	F766	CF707
3	2 - 1 7/16, 1 - 1 7/32, 1 - 1 1/64, 1 - 61/64 and 1 - 55/64	F866	CF707
3½	3 - 1¾, 1 - 1 7/16, 1 - 1 5/16 and 1 - 1 3/16	F966	CF708
4	3 - 1¾, 1 - 1 7/16, 1 - 1 5/16 and 1 - 1 3/16	F1066	CF708

Clamp Type – Threaded Rigid or EMT

Conduit Size	Number and Dia. of Cover Knockouts	Cat. #	Replacement Cover Cat. #
¾	2 - 3/8 and 3 - 13/32	F235	5-H
1	2 - 7/16 and 3 - ½	F335	5-NS
1¼	2 - 27/64 and 3 -5/8	F435	5-NL
1½	2 - 27/64 and 3 - 5/8	F535	5-NL
2	2 - 7/8, 1 - 13/16, 1 - 11/16, 1 - 9/16 and 1 - 21/32	F636	CF60

Overall Dimensions of Replacement Covers for F Series Service Heads

Cat. #	Dim.
CF690	1½ dia.
5-H	1 31/32 dia.
5-NS	2 15/64 dia.
5-NL	2 19/32 dia.
CF60	3 3/16 dia.
CF707	7 13/16 x 3 11/16
CF708	10¼ x 4¾

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Application:

LNR conduit liners are installed in rigid metal conduit or IMC:
- to provide a smooth wire entry from conduit into enclosures to protect wires from abrasion as they are pulled.
- with thin wall or thick wall enclosures.
- entering drilled and tapped openings or slip holes.
- entering an enclosure vertically or horizontally.
- regardless of where the conduit ends in relation to the enclosure wall.

Features:

- UL listed and CSA certified.
- No need for threaded bushings, reducers, or special machining.
- Corrosion and heat resistant polypropylene material.
- Smooth flange providing easy wire pulling and protects conductors being installed.
- Space saving.
- Molded ribs ensure a tight fit, preventing the liner from sliding out while conductors are being pulled.
- Quick and easy to install.

Standard Materials:

- Polypropylene

Standard Finishes:

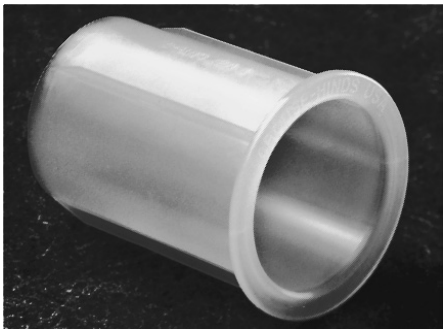
- Natural (clear)

Sizes:

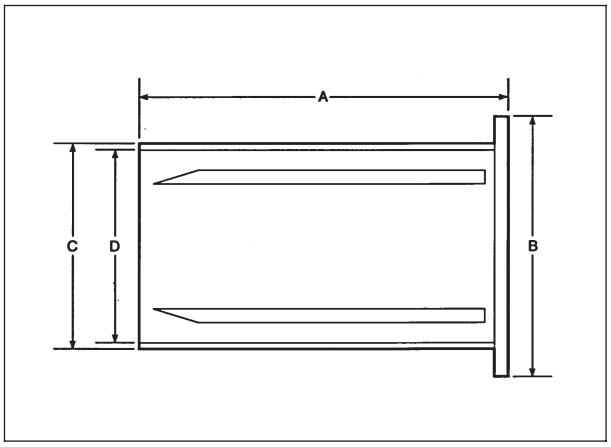
- ½″ through 4″

Certifications and Compliances:

- NEC Article 346-8.
- UL Standard 514B.
- CSA Standard C22.2 No. 18.
- U.S. Patent No. 5,383,688.



Dimensions:



Ordering Information:

Cat. #	Size	A	B	C	D
LNR1	½″	1 3/16″	7/8″	5/8″	9/16″
LNR2	¾″	1 9/16″	1 1/8″	13/16″	¾″
LNR3	1″	2 1/16″	1 3/8″	1 1/16″	7/8″
LNR4	1 1/4″	2 1/16″	1 3/4″	1 3/8″	1 1/4″
LNR5	1 1/2″	2 9/16″	2″	1 5/8″	1 7/16″
LNR6	2″	2 9/16″	2 7/16″	2 1/16″	1 7/8″
LNR7	2 1/2″	2 7/8″	2 7/16″	2 1/4″	
LNR8	3″	2 7/8″	3 9/16″	3 1/16″	2 7/8″
LNR9	3 1/2″	3 1/16″	4 1/16″	3 9/16″	3 3/8″
LNR10	4″	3 1/16″	4 9/16″	4″	3 7/8″

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Notes Page

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8F Condulet® Seals Breathers and Drains

Application and Selection

Application:

Seals:
Seals are installed in conduit runs to prevent the passage of gases, vapors or flames from one portion of the electrical installation to another through the conduit, limiting any explosion to the enclosure and preventing precompression or ''pressure piling.''
- While not a National Electrical Code requirement, many engineers consider it good practice to sectionalize long conduit runs by inserting seals not more than 50' to 100' apart, depending on the conduit size, to minimize the effects of ''pressure piling.''

Breathers:
- Breathers (vents), are installed in the top of enclosures to provide ventilation to minimize condensation in enclosures.

Drains:
- Drains are used in humid atmospheres or in wet locations where it is likely that water can gain entrance to the interiors of enclosures or raceways. The raceways should be inclined so that water will not collect in enclosures or on seals, but will be led to low points where it may pass out through ECD drains.
- Frequently the arrangement of raceway runs makes this method impractical if not impossible. In such instances, EZD or EYD drain seal fittings should be used. These fittings prevent harmful accumulatons of water above the seal.

Considerations for Selection:

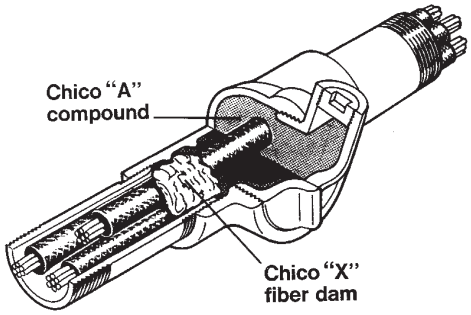
Seals:
- Select the proper sealing fitting for the hazardous vapor involved; i.e., Class I, Division 1 & 2, Groups A, B, C or D.
- Select the appropriate seal for new or retrofit installations.
- Select a sealing fitting for the proper use in respect to mounting position. This is particularly critical when the conduit runs between hazardous and non-hazardous areas. Improper positioning of a seal may permit hazardous gases or vapors to enter the system beyond the seal and permit them to escape into another portion of the hazardous area or to enter a non-hazardous area. Some seals are designed to be mounted in any position; others are restricted to vertical mounting.

NOTE: The amount of *Chico*® fiber and compound required for any seal is determined by volume, hub size and mounting position of the seal.

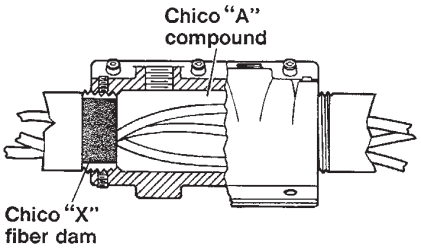
Drains:
- in locations which are usually considered dry, surprising amounts of water frequently collect in conduit systems. No conduit system is airtight, therefore, it may ''breathe''. Alternate increases and decreases in temperature and/or in barometric pressure, due to weather changes or due to the nature of the process carried on in the location where the conduit is installed, will cause ''breathing,'' resulting in condensation and water accumulation.
- In view of this likelihood, it is therefore good practice to insure against such water accumulations and probable subsequent insulation failures by installing breathers, drain seals, or inspection seals, even though conditions prevailing at the time of planning or installing do not indicate their need.

Options:

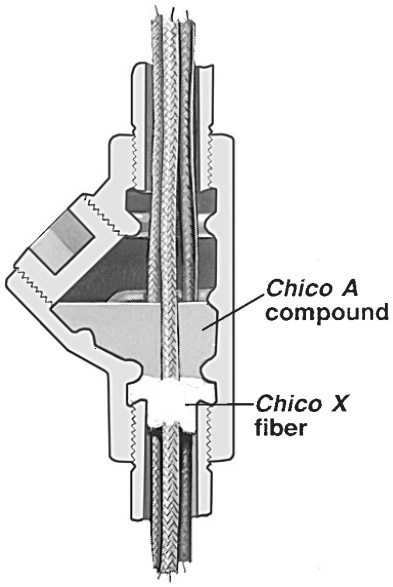
- *Corro-free*™ epoxy powder coat
  . . . . . add suffix - S752



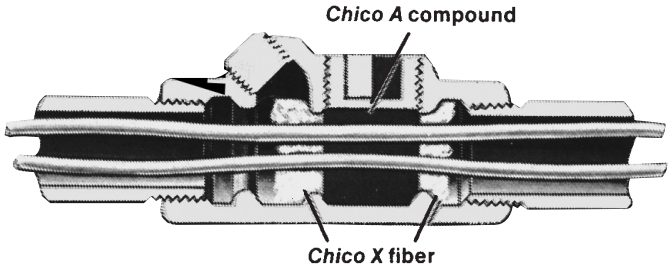
EZS Horizontal seal



EYSR Retrofit seal



EYS 1
Vertical sealing



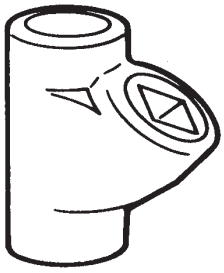
EYS Horizontal seal

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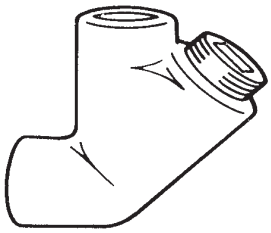
Condulet® Seals, Breathers and Drains

Shape Selector Chart
Quick Selector Chart

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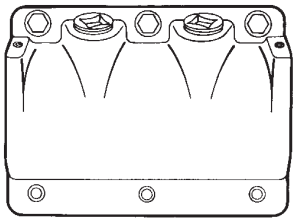
EYS 185
Elbow Seal



EZS 185



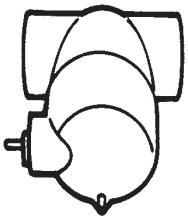
EYSR 190



EYD 186



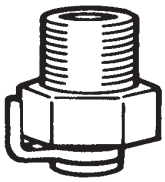
SERIES EZD **PAGE** 187

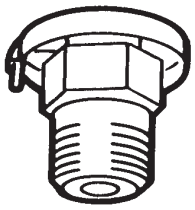


ES 191

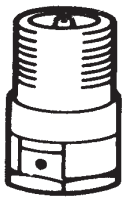


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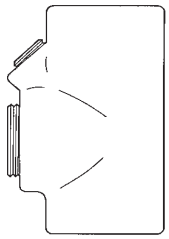




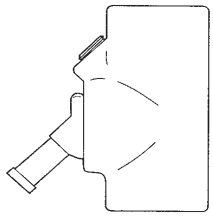
SERIES ECD Universal **PAGE** 195



SERIES EYSX **PAGE** 188



EYDX 189



Quick Selector Chart

Series	Description	NEC Hazardous Group	For Conduit Angle
EYS	Seal	Class I, Groups A,B,C,D Class II, Groups E,F,G	Vertical and Horizontal
EYS 29	Elbow Seal	Class I, Groups C,D Class II, Groups E,F,G	90° turn
EYSR	Retrofit Seal/Drain Seal*	Class I, Div. 2, Groups C,D Class II, Div. 2, Groups E,F,G Class III	Vertical and Horizontal
EYSX	Expanded Fill Sealing Fittings	Class I, Groups B,C,D Class II, Groups E,F,G	Vertical and Horizontal
EZS	Seal	Class I, Groups C,D Class II, Groups E,F,G	All
ES	Sealing Hub	Class I, Groups C,D	Vertical
EYD	Seal and Drain	Class I, Groups B,C,D Class II, Groups F,G	Vertical
EYDX	Expanded Fill Sealing Fittings and Drain	Class I, Groups B,C,D Class II, Groups F,G	Vertical
EZD	Inspection Seal and Drain – Inspection Seal only	Class I, Groups C,D Class II, Groups E,F,G	Vertical
ECD	Standard Breather only Drain only	Class I, Groups B,C,D Class II, Groups E,F,G Class III	
ECD	Universal Drain – Breather	Class I, Groups C,D Class II, Groups F,G	
CD	Non - Hazardous Drain	–	–

* Drain purchased separately.

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8F Condulet® Sealing Fittings

Chico Sealing Compound and Fiber Page 193

Cl. I, Div. 1 & 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

EYS and EZS sealing fittings:
- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- limit precompression or ''pressure piling'' in conduit systems

Sealing fittings are required:
- at each entrance to an enclosure housing an arcing or sparking device when used in Class I, Division 1 and 2 hazardous locations. To be located as close as practicable and, in no case, more than 18″ from such enclosures
- at each conduit entrance of 2″ size or larger to an enclosure or fitting housing terminals, splices or taps when used in Class I, Division 1 hazardous locations. To be located as close as practicable and, in no case, more than 18″ from such enclosures
- in conduit systems when leaving Class I, Division 1 or Division 2 hazardous locations
- in cable systems when the cables either do not have a gas/vaportight continuous sheath or are capable of transmitting gases or vapors through the cable core when those cables leave the Class I, Division 1 or Division 2 hazardous locations

Features:

EYS and EZS sealing fittings include:
- minimum turning radius
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings in conduit hubs to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity

EYS sealing fittings are available for installation in either vertical only or in both horizontal or vertical positions.

EZS sealing fittings for installation at any angle; the covers with opening for sealing compound can be properly positioned to accept the compound.

Standard Materials:

- Bodies – *Feraloy*® iron alloy and/or ductile iron
- Plugs – *Feraloy* iron alloy and/or steel
- Removable nipples – steel

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized

Options:

- Copper-free aluminum bodies, nipples and enclosures – add suffix - SA*

Size Ranges:

- ½″ – 6″

Certifications and Compliances:

NEC/CEC:
- **EYS1-3, 11-31, 16-36, 116-316**
  Class I, Division 1 & 2, Groups A,B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- **EYS41-101, 416-1016**
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- **EYS29, 4-014, 46-0146**
  EZS1-8, 16-86
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2

Vertical female | **Vertical male & female** | **Vertical or horizontal female** | **Vertical or horizontal male & female**



EYS

For Sealing in Vertical Positions Only

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches
½	EYS1*	EYS16*	1
¾	EYS2*	EYS26*	2
1	EYS3*	EYS36*	3¾

For Sealing in Vertical or Horizontal Positions

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches Vertical	Horizontal
½	EYS11*	EYS116*	1	1
¾	EYS21*	EYS216*	2	2
1	EYS31*	EYS316*	3	3¾
1¼	EYS41	EYS416	6	8
1½	EYS51	EYS516	10¾	12¼
2	EYS61	EYS616	19	22¾
2½	EYS71	EYS716	25½	30
3	EYS81	EYS816	56	64½
3½	EYS91	EYS916	72	82
4	EYS101	EYS1016	95	110

NOTE: Sealing fittings are approved for use in hazardous locations only when *Chico*® *X* fiber and *Chico A* sealing compound or Chico SpeedSeal are used to make the seal.

Dimensions

EYS 16 Series

Size	a	b	Turning Radius
½	3 9/32	1 1/4	1 5/8
¾	3 12/16	1 1/2	1 29/32
1	4 5/16	1 3/4	2 3/8

EYS 46 Series

1¼	5 1/16	2 3/16	1 23/32
1½	5 1/2	2 7/16	2 1/16
2	6 1/4	3	2 5/16
2½	7 1/2	3 1/2	2 11/16
3	8 1/2	4 1/4	3 5/16
3½	9 3/16	4 3/4	3 7/16‡
4	9 3/4	5 1/4	3 11/16‡
5	11 1/16	6 1/2	4 19/32‡
6	12 1/8	7 5/8	5 11/32‡

EYS 116 Series

a	b	Turning Radius
3 11/16	1 1/4	1 5/32
3 11/16	1 1/2	1 1/4
4 5/16	1 3/4	1 3/8
5 1/16	2 3/16	1 23/32
5 1/2	2 7/16	2 1/16
6 1/4	3	2 5/16
7 1/2	3 1/2	2 11/16
8 1/2	4 1/4	3 5/16
9 3/16	4 3/4	3 7/16‡
9 3/4	5 1/4	3 11/16‡

* Available in copper-free aluminum – to order, add suffix SA to Cat. No.
‡ With cover removed.

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Vertical or horizontal male & female



EYS

For Sealing in Vertical or Horizontal Positions

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches▲ Vertical	Horizontal
1¼	EYS4*	EYS46*	6	8
1½	EYS5*	EYS56*	10¾	12¼
2	EYS6*	EYS66*	19	22¾
2½	EYS7*	EYS76*	25½	30
3	EYS8*	EYS86*	56	64½
3½	EYS9*	EYS96*	72	82
4	EYS10*	EYS106*	95	110
5	EYS012	EYS0126	200	222
6	EYS014	EYS0146	290	315

Elbow seal



EYS

Elbow Seal - For Sealing in Vertical Positions

Hub Size	Cat. #	Approximate Internal Volume in Cubic Inches
¾	EYS29	1¾

Male & Female hub



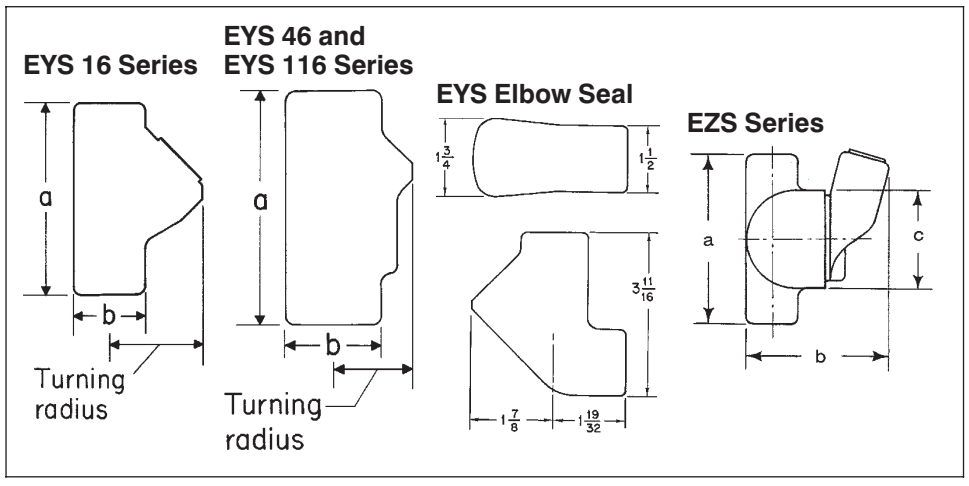
EZS

For Sealing at Any Angle

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches Vertical	Horizontal
½	EZS1	EZS16	6¼	6¼
¾	EZS2	EZS26	6½	6½
1	EZS3	EZS36	10¼	10¼
1¼	EZS4	EZS46	12½	12½
1½	EZS5	EZS56	14½	14½
2	EZS6	EZS66	46	46
2½	EZS7	EZS76	55	55
3	EZS8	EZS86	90	90

* Available in copper-free aluminum – to order, add suffix SA to Cat. No.

Dimensions



EYS Elbow Seal

Size	a	b	Turning Radius (Vertical)
¾	3 11/16	1¾	1⅞

EZS Series

Size	a	b	c	Turning Radius†
½	4 3/16	3⅝	2½	1⅞
¾	4 3/16	3⅝	2½	1⅞
1	4 15/16	3 31/32	3	2⅛
1¼	5 1/16	4 13/32	3	2 5/16
1½	5 3/16	4 9/16	3¼	2 11/32
2	7 1/16	5 13/32	5 3/16	3 9/32
2½	7 15/16	5 27/32	5 3/16	3⅜
3	8⅝	6½	5⅞	3⅞

† With cover removed.

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8F Condulet® Sealing Fittings With Drains

Chico Sealing Compound and Fiber Page 193

Cl. I, Div. 1 & 2, Groups B,C,D§ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G
Cl. III

Application:

EYD drain and EZD drain and inspection sealing fittings:
- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- prevent precompression or ''pressure piling'' in conduit systems

Drain sealing fittings are installed in vertical conduit runs and at low points in conduit systems to prevent accumulation of condensate above seal.

These sealing fittings are required as described on page 184.

Features:

EYD and EZD drain sealing fittings include:
- drain to provide continuous, automatic drainage of condensate
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity

EZD drain and inspection sealing fittings also include:
- removable covers for periodic inspection of seals
- barrier for sealing compound easily installed after dams are made and before compound is poured.

Standard Materials:

- Bodies, and inspection or drain covers – *Feraloy*® iron alloy and/or ductile iron
- Closure for drain – copper-free aluminum or ductile iron
- Small closure plug – *Feraloy* iron alloy and/or steel
- Drain – stainless steel
- Removable nipples – steel

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural
- Steel – electrogalvanized

Options:

- Copper-free aluminum bodies, nipples and enclosures – add suffix - SA*

Size Ranges:

- EYD – ½″ – 4″
- EZD – ½″ – 2″

Certifications and Compliances:

NEC/CEC:
- **EYD11-101, 116-1016**
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- **EYD1-10, 16-106**
  EZD10-60, 111-611
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2

NOTE: Sealing Fittings are approved for use in hazardous locations only when *Chico*® X fiber and *Chico A* sealing compound or Chico SpeedSeal are used to make the seal.

½″-1″ Female hub



½″-1″ Male & female hub



1¼″-4″ Female hub



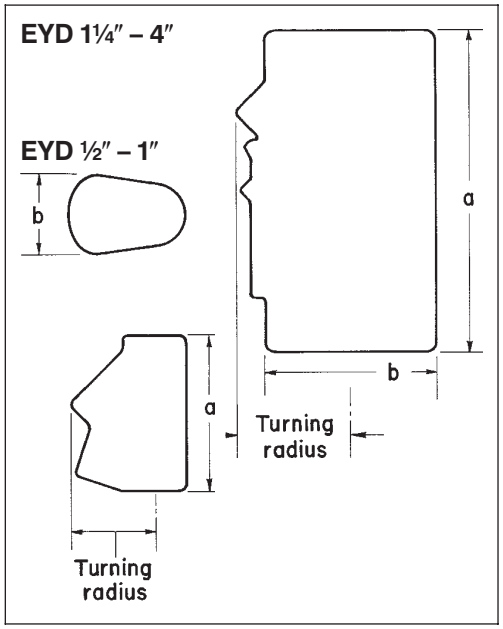
1¼″-4″ Male & female hub



EYD Drain Seal

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches
½	EYD1*	EYD16*	EYD11	EYD116	1
¾	EYD2*	EYD26*	EYD21	EYD216	2
1	EYD3*	EYD36*	EYD31	EYD316	3¾
1¼	EYD4*	EYD46*	EYD41	EYD416	8
1½	EYD5*	EYD56*	EYD51	EYD516	10¾
2	EYD6*	EYD66*	EYD61	EYD616	20
2½	EYD7*	EYD76*	EYD71	EYD716	35
3	EYD8*	EYD86*	EYD81	EYD816	57
3½	EYD9*	EYD96*	EYD91	EYD916	75
4	EYD10*	EYD106*	EYD101	EYD1016	105

Dimensions



EYD Drain Seal

Size	a	b	Turning Radius
½	3 9/32	1½	1⅝
¾	3 11/16	1¾	1 29/32
1	4 5/16	2 3/16	2⅜
1¼	5 1/16	2 3/16	1 27/32†
1½	5½	2 7/16	2 1/16†
2	6¼	3	2 5/16†
2½	7½	3½	2 11/16†
3	8½	4¼	3 5/16†
3½	9 3/16	4¾	3 7/16†
4	9¾	5¼	3½†

§ See Certifications and Compliances for classification of each product.

† With cover removed.

* Available in copper-free aluminum – to order, add suffix SA to Cat. No.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

Condulet® Sealing Fittings with Drain and Inspection Cover

Chico Sealing Compound and Fiber

Page 193

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

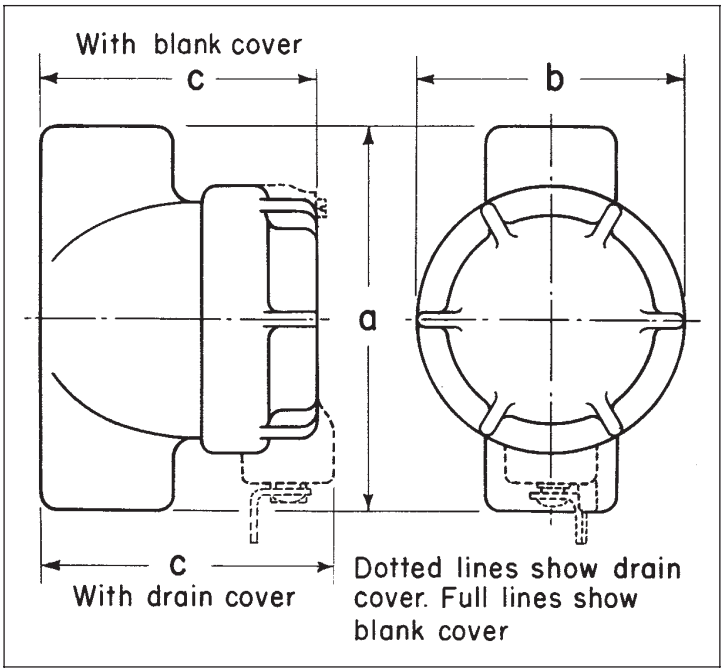
Explosionproof
Dust-Ignitionproof



EZD With Drain Cover

Hub Size	Cat. #	Approximate Internal Volume in Cubic Inches
½	EZD111	5
¾	EZD211	6
1	EZD311	10
1¼	EZD411	11
1½	EZD511	13
2	EZD611	40

Dimensions



EZD Drain and Inspection Seals

Size	a	b	Drain Cover c	Turning Radius†
½	4 3/16	3	3 3/8	2 1/16
¾	4 3/16	3	3 5/8	2 3/16
1	4 15/16	3 1/2	3 7/8	2 7/16
1½	4 15/16	3 1/2	4 5/16	2 5/8
1½	5 3/16	3 1/2	4 9/16	2 11/16
2	7 1/8	5 9/16	5 1/4	3 11/16

† With Cover removed.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

8F EYSX Expanded Fill Sealing Fittings

Chico Sealing Compound and Fiber Page 193

Cl. I, Div. 1 & 2, Groups B,C,D ◆ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G
Cl. III

Application:

EYSX Expanded Fill Sealing Fittings:
- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- limit precompression or ''pressure piling'' in conduit systems
- provide 40% wire fill capacity to allow uninterrupted runs in a conduit system

Sealing fittings are required:
- at each entrance to an enclosure housing an arcing or sparking device when used in Class I, Division 1 and 2 hazardous locations. To be located as close as practicable and, in no case, more than 18″ from such enclosures
- at each entrance of 2″ size or larger to an enclosure or fitting housing terminals, splices or taps when used in Class I, Division 1 hazardous locations. To be located as close as practicable and, in no case, more than 18″ from such enclosures
- in conduit systems when leaving Class I, Division 1 or 2 hazardous locations
- in cable systems when the cables either do not have a gas/vaportight continuous sheath or are capable of transmitting gases or vapors through the cable core when those cables leave the Class I, Division 1 or 2 hazardous locations

Features:

EYSX Expanded Fill Sealing Fittings provide:
- a 40% wire fill capacity for expanded fill sealing
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings in conduit hubs to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity
- minimum turning radius

EYSX Expanded Fill Sealing Fittings are available for installation in both horizontal or vertical positions.

Standard Materials:

- Bodies – *Feraloy*® iron alloy and/or ductile iron or copper-free aluminum (SA Suffix)
- Closures – *Feraloy* iron alloy and/or steel or copper-free aluminum (SA Suffix)

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Copper-free aluminum – natural

Options:

- Copper-free aluminum bodies and enclosures - . . . . . add suffix SA

Size Ranges:

- ½″ – 4″

Certifications and Compliances:

NEC/CEC:

EYSX11 – EYSX81
Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

EYSX9, EYSX10, EYSX1 SA – EYSX10 SA
Class I, Division 1 and 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard: C22.2 No. 30

EYSX Expanded Fill Sealing Fittings

For Sealing in Vertical or Horizontal Positions

Hub Size	Female Hub Cat. #	Internal Volume in Cubic Inches	
		Vertical	Horizontal
½	EYSX11*	2	2
½	EYSX1 SA	2	2
¾	EYSX21*	3	3¾
¾	EYSX2 SA	3	3¾
1	EYSX31	6	8
1	EYSX3 SA	6	8
1¼	EYSX41	19	22¾
1¼	EYSX4 SA	19	22¾
1½	EYSX51	19	22¾
1½	EYSX5 SA	19	22¾
2	EYSX61	56	64½
2	EYSX6 SA	56	64½
2½	EYSX71	72	82
2½	EYSX7 SA	72	82
3	EYSX81	95	110
3	EYSX8 SA	95	110
3½	EYSX9*	200	222
3½	EYSX9 SA	200	222
4	EYSX10*	200	222
4	EYSX10 SA	200	222

Vertical or horizontal female



NOTE: Sealing fittings are approved for use in hazardous locations only when *Chico*® *X* fiber and *Chico A* sealing compound or Chico SpeedSeal are used to make the seal.

NPT Size	A	B	Turning Radius
½	3 11/16	1½	1¼
¾	4 5/16	1¾	1⅜
1	5 1/16	2 3/16	1 23/32
1¼	6¼	3	2 5/16
1½	6¼	3	2 5/16
2	8½	4¼	3 5/16
2½	9 3/16	4¾	3 7/16‡
3	9¾	5¼	3 11/16‡
3½	11 1/16	6½	4 19/32‡
4	11 1/16	6½	4 19/32‡

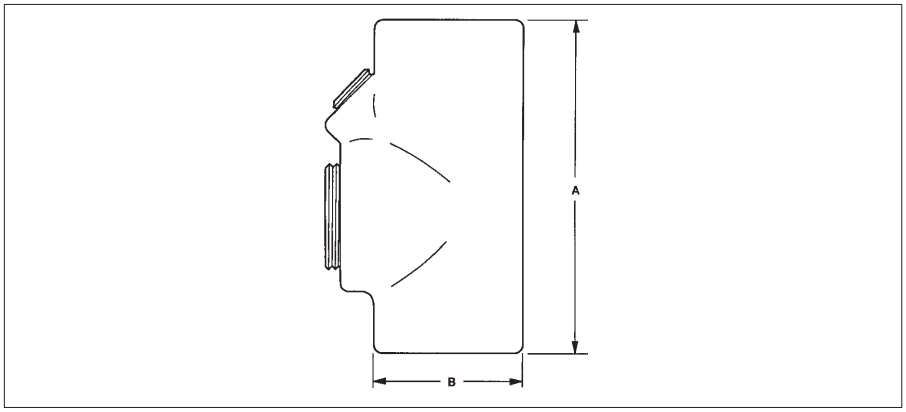
‡ With plug cover removed.

◆ See Certifications and Compliances for classsification of each product.

* Feraloy®

‡ With cover removed.

Dimensions



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EYDX Expanded Fill Sealing Fittings With Drains

Chico Sealing Compound and Fiber
Page 193

Cl. I, Div. 1 & 2, Groups B,C,D§
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

EYDX Expanded Fill Sealing Fittings with drains:
- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- prevent precompression or ''pressure piling'' in conduit systems
- provide 40% wire fill capacity to allow uninterrupted runs in a conduit system

Drain sealing fittings are installed in vertical conduit runs and at low points in conduit systems to prevent accumulation of condensate above seal.

These sealing fittings are required as described on page 184.

Features:

EYDX Expanded Fill drain sealing fittings provide:
- a 40% wire fill capacity for expanded fill sealing
- drain to provide continuous, automatic drainage of condensate
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity

Standard Materials:

- Bodies and drain covers – *Feraloy*® iron alloy, and ductile iron or copper-free aluminum (SA Suffix)
- Closure for drain – copper-free aluminum or malleable iron
- Small closure plug – *Feraloy* iron alloy and/or steel or copper-free aluminum (SA Suffix)
- Drain – stainless steel

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural
- Steel – electrogalvanized

Options:

- Copper-free aluminum bodies and closures - add suffix - SA

Size Ranges:

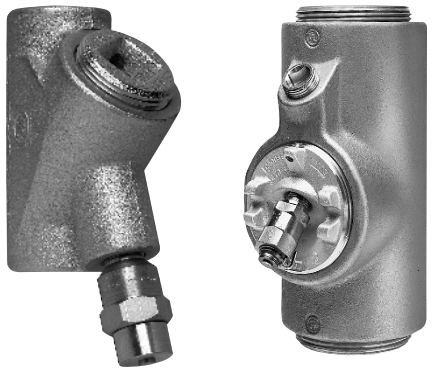
- EYDX – ½″ – 3″

Certifications and Compliances:

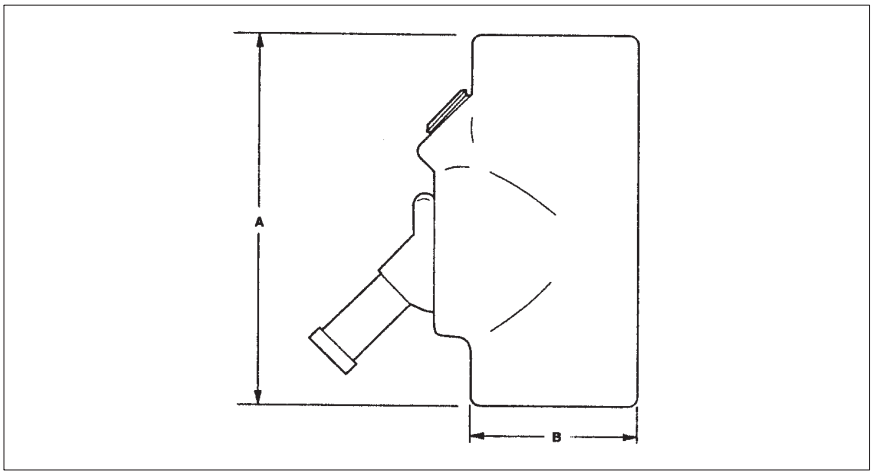
NEC/CEC:
EYDX11 – EYDX81
Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
EYDX1 SA – EYDX8 SA
Class I, Division 1 and 2, Groups C,D
Class II, Division 1, Groups F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

NOTE: Sealing Fittings are approved for use in hazardous locations only when *Chico*® X fiber and *Chico A* sealing compound or Chico SpeedSeal are used to make the seal.

½″–¾″ 1″–3″



Dimensions:



EYDX NPT Size	A	B	Turning Radius
½	3 11/16	1¾	1 29/32
¾	4 5/16	2 3/16	2⅜
1	5 1/16	2 3/16	1 27/32†
1¼	6¼	3	2 5/16†
1½	6¼	3	2 5/16†
2	8½	4¼	3 5/16†
2½	9 3/16	4¾	3 7/16†
3	9¾	5¼	3½†

EYDX Expanded Fill Sealing Fittings

Hub Size	Female Hub Cat. #	Internal Volume in Cubic Inches
½	EYDX11*	2
½	EYDX1 SA	2
¾	EYDX21*	3¾
¾	EYDX2 SA	3¾
1	EYDX31	8
1	EYDX3 SA	8
1¼	EYDX41	20
1¼	EYDX4 SA	20
1½	EYDX51	20
1½	EYDX5 SA	20
2	EYDX61	57
2	EYDX6 SA	57
2½	EYDX71	75
2½	EYDX7 SA	75
3	EYDX81	105
3	EYDX8 SA	105

§ See Certifications and Compliances for classification of each product.
† With drain cover removed.
* Feraloy®

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8F EYSR Retrofit Sealing Fitting

Chico Sealing Compound and Fiber Page 193

Cl. I, Div. 2, Groups C,D
Cl. II, Div. 2, Groups E,F,G
Explosionproof
Dust-Ignitionproof

Application:

Application:
EYSR retrofit sealing fittings are installed:
- in rigid metal conduit systems in Class I, Division 2 hazardous locations
- to replace installed Cooper Crouse-Hinds type EYS or EYD sealing fittings
- without disassembly of the conduit system
- in vertical or horizontal positions, indoors or outdoors
- to restrict the passage of gases, vapors, or flames from one portion of the electrical system to another at atmospheric pressures and normal ambient temperatures
- to limit explosions to the sealed-off enclosure
- to limit precompression or ''pressure piling'' in the conduit system
- to prevent accumulation of water in the conduit system when installed with an ECD15 drain

Features:

- Seal may be installed in the existing conduit run without disassembly of the conduit system saving time and labor
- Overall length and spacing requirements do not exceed those of standard EYS seals; permits close nesting of seals
- Pipe plugs permit the installation of a standard ECD 15 drain fitting (order separately) for use in vertical conduit runs to drain any water that might accumulate in the conduit system
- Steel set screws provide grounding continuity
- Suitable for vertical and horizontal installations for indoor and outdoor applications
- Available in ¾″ to 4″ NPT sizes.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Pipe plugs, bolts and set screws – steel
- Gasket – neoprene

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Gasket – natural

Options:

- Copper-free aluminum – add suffix -SA to Cat. No.

Size Ranges:

- ¾″ - 4″

Certifications and Compliances:

- NEC: Class I, Division 2, Groups C,D
  Class II, Division 2, Groups E,F,G
- UL Standard: 886, 1203
- CEC: Class I, Division 1, Groups C,D
  Class II, Division 1, Groups E,F,G
- CSA Standard: C22.2 No. 30

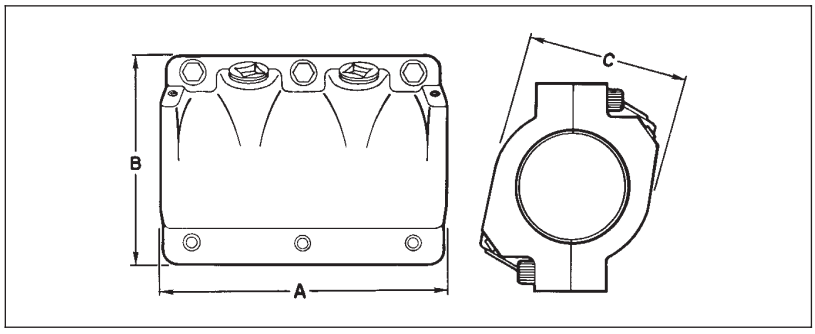
NOTE: EYSR sealing fittings are approved for use in hazardous locations only when Chico® A sealing compound and Chico X fiber are used to make the seal.



Hub Size	Cat. No.	Approximate Internal Volume in Cubic Inches* Vert.	Horiz.	Approximate Amount (oz.) of Fiber per Hub Vert.	Horiz.
¾	EYSR2	3½	5¾	1/16	⅛
1	EYSR3	4¾	9½	⅛	¼
1¼	EYSR4	7	13½	¼	½
1½	EYSR5	12¼	24¼	½	1
2	EYSR6	25¾	40½	1	2
2½	EYSR7	48	75½	1½	3
3	EYSR8	86½	126	2	4
3½	EYSR9	147	210	4½	9
4	EYSR10	186	252	4½	9

* Use the approximate internal volume in cubic inches to determine how much Chico A sealing compound is required.

Dimensions



Cat. No.	A	B	C	Cat. No.	A	B	C
EYSR2	3 11/16	2½	1½	EYSR7	7½	5	3⅞
EYSR3	4⅜	3⅛	3⅛	EYSR8	8½	5½	4¼
EYSR4	5	3⅜	3	EYSR9	9 13/64	6 1/16	4¾
EYSR5	5¼	3⅝	3	EYSR10	9¾	6⅝	5¼
EYSR6	6¼	4	3				

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Application:

ES sealing hubs are used to:
- seal vertical conduit risers at switchgear and motor control centers, sheet metal structures or cast boxes and enclosures
- Seal horizontal conduit runs at enclosures when used with TSC sealing compound.

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Options:

ES sealing hubs, when used with SG armored gaskets and locknuts, provide a water and oiltight connection
- Sealing gaskets and locknuts – add suffix SG to Cat. No.

Certifications and Compliances:

- Class I, Division 1 & 2, Groups C & D
- UL Standard: 886
- CSA Standard: C22.2 No. 30



Female Hub Size	Male Hub Size	Cat. #	Approximate Internal Volume in Cubic Inches
½	1	ES31	.65
¾	1	ES32	.65
1	1½	ES53	3.2
1¼	2	ES64	4.9
1½	2	ES65	4.7
2	2½	ES76	9.1
3	4	ES108	36.0
4	5	ES01210	95.0
5	6	ES014012	155.0

NOTE: Sealing hubs are approved for use in hazardous locations when *Chico*® *X* fiber and *Chico A* sealing compound are used to make the seal. Sealing hubs are approved for horizontal conduit runs for use in hazardous locations when used with TSC sealing compound, order 1 oz. tube as TSC1.



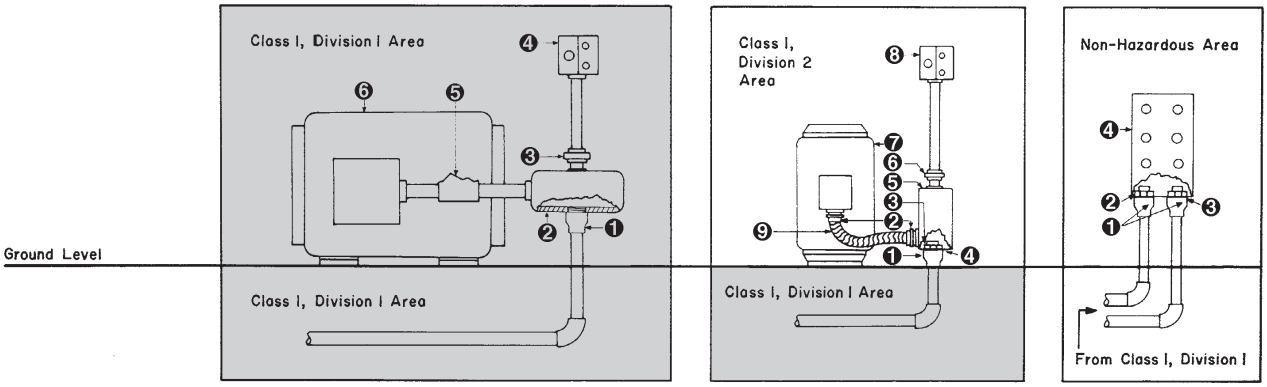
TSC Epoxy Sealing Compound

A two part epoxy sealing compound may be used to seal ES sealing hubs. It is quick and easy to measure, mix and install. The compound is kneaded until a uniform color is obtained. It is then packed around the conductors to effectively seal the cable.

Std. Ctn. Qty.	Tube Size	Cat. # **
10	0.5 oz	TSC05
10	1.0 oz	TSC1
5	4.0 oz	TSC4

** Order quantity of one (1) TSC05 or TSC1 equals 10 tubes; one (1) TSC4 equals 5 4.0 oz tubes.

Typical Installations

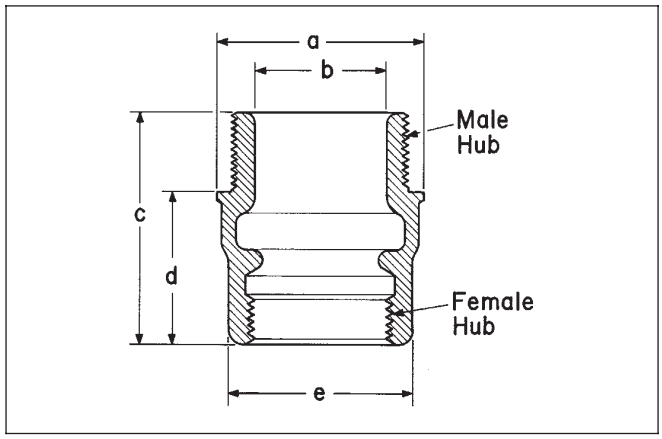


1. ES Sealing Hub 2. EJB Junction Box 3. UNY Union 4. EDS Factory Sealed Control Station 5. EYS Horizontal Seal 6. Explosion-Proof Motor

1. ES Sealing Hub 2. LT Connector 3. Locknut 4. Sealing Gasket 5. Junction Box 6. UNY Union 7. Synchronous Motor 8. EDS Factory Sealed Control Station 9. LT Conduit

1. ES Sealing Hub 2. Locknut 3. Sealing Gasket 4. Sheet Metal Structure, Motor Control Center, Panelboard, Unit Substation, Etc.

Dimensions



Cat. #	a	b	c	d	e
ES31	1 9/16	7/8	2	2 5/32	1¼
ES32	1 13/16	7/8	2	25/32	1½
ES53	2¼	1⅜	2¾	1 15/16	1¾
ES64	2¾	1¾	2¾	1 15/16	2 3/16
ES65	2¾	1⅝	3 1/16	2	2 7/16
ES76	3½	2 1/16	3 9/16	2	3
ES108	5¼	3⅝	4¾	2 31/32	4¼
ES01210	6⅝	4⅝	6¾	4 27/32	5¼
ES014012	7¼	5 25/32	7¼	5 11/32	6½

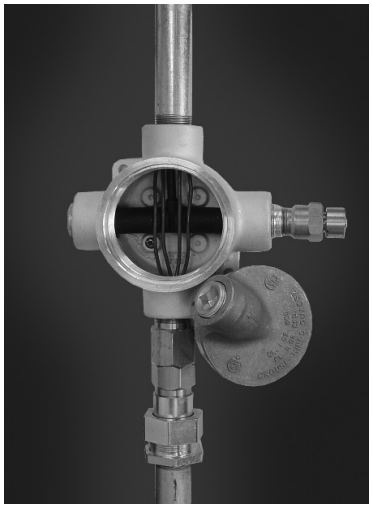
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8F Secondary Process Sealing Fittings

Cl. I, Div. 1 & 2, Groups C,D
CSA LTR Number HazLoc 031120

NEW!

Cooper Crouse-Hinds Secondary Process Sealing Fittings are designed to prevent the passage of gases under pressure through conduits, cables and conductors. They are ideal where volatile liquids or gases are stored, processed or transported under pressure. If the primary seal on an instrument should fail, the Cooper Crouse-Hinds Secondary Process Seal will prevent gases from migrating into the nonclassified location through the electrical system. This patent pending design is the first seal which is tested and certified for pressure applications.



Features & Benefits

- Exclusive, patent-pending design — the first third-party approved secondary process seal
  - Standard pressure applications up to 40 psi (2.8 bar)
  - High-pressure applications up to 500 psi (35 bar)
- Kit contains everything required for complete installation
  - EABX26-SA body with ¾″ tapered threaded hubs to provide ground continuity
  - GUA062-GB sealing cover
  - GUAC26-SA body and cover
  - Process seal vent
  - Pressure relief tube
  - ECD16 Breather
  - Chico SS2 SpeedSeal (2) 2 oz Cartridges
  - Chico X fiber packet
  - PLG2-SA ¾″ plug
  - RE21-SA ¾″ to ½″ reducer
  - Solder Sleeve connectors (4)
  - High-pressure fitting for PSHP (high-pressure) version only
  - UNF205 Explosionproof union for PSHP (high-pressure) version only

Standard Materials & Finishes

- EAB Body — copper-free aluminum
- GUA Body and Cover — copper free aluminum
- High-pressure sealing fitting — Stainless steel with viton seal
- ECD16 breather — Stainless steel
- UNF205 Union — copper-free aluminum
- Reducers and Plugs — copper-free aluminum
- Process seal vent — silicon rubber
- Pressure relief tube — polyethylene

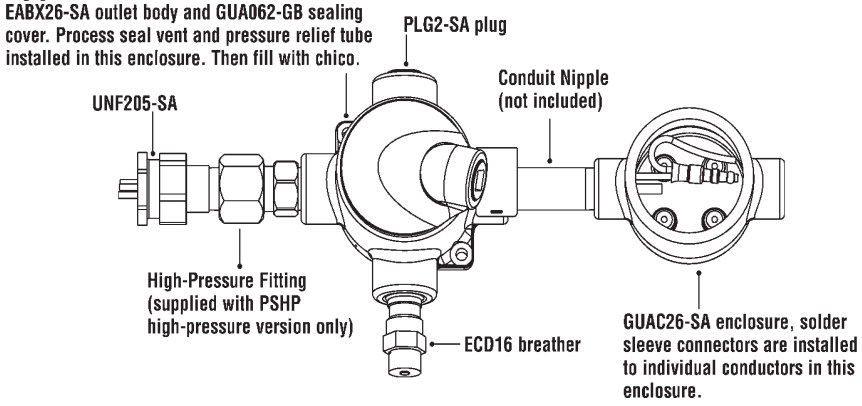
Ratings

- Pressure ratings
  - Standard version — pressure up to 40 psi (2.8 bar)
  - High-pressure version — pressure up to 500 PSI (35 bar)
- Temperature range -25°C to +55°C

Certifications & Compliances

- Class I, Division 1 & 2, Groups C,D
- CSA LTR Number HazLoc 031120

Typical Installation



Ordering Information

Secondary Process Sealing Fitting Kit for Standard pressure up to 40 psi (2.8 bar)

Trade Size	Conductor Size	Catalog Number
¾″	10-14 AWG	EABX26-SA-PS

High-Pressure Secondary Process Sealing Fitting Kit for pressure up to 500 psi (35 bar)

Trade Size	Conductor Size	Catalog Number
¾″	10 AWG	EABX26-SA-PSHP10
¾″	12 AWG	EABX26-SA-PSHP12
¾″	14 AWG	EABX26-SA-PSHP14

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Chico® A and Chico® A-P Sealing Compound
Chico® X Fiber
Chico® SpeedSeal™

For Sealing Fittings and Hubs

Application:

Chico X fiber:
- forms a dam between the integral bushing of the sealing fitting and the end of the conduit and around the electrical conductors entering the hub

Chico A sealing compound:
- forms a seal around each electrical conductor and between them and inside of the sealing fitting to restrict the passage of gases, vapors or flames through the sealing fitting at atmospheric pressure and at normal ambient temperatures

Chico® SpeedSeal™ Compound:
- designed to separate and form an explosionproof seal around each electrical conductor in Crouse-Hinds EYS and EYD sealing fittings.
- restricts the passage of gasses, vapors or flames through the sealing fitting.
- creates a seal for Class I, Division 1, Groups C & D and Class II, Division 1, Groups E, F & G hazardous areas.

Features:

- *Chico X* fiber is a mineral wool that packs easily, forming around each conductor
- *Chico A* sealing compound is a water soluble powder, that can be easily mixed and poured. The compound, unusually dense, expands slightly when hardening and bonds to inner walls of sealing fittings. Compound hardens in 60-70 minutes
- Chico A cure time is 8 hours for class I, Group C and D applications and 72 hours for class I, Group A and B applications.
- Chico A has a 1 year shelf life from date of manufacture.
- Chico A ambient temperature range (after curing) is –40°F to +165°F.
- *Chico A-P Intrapak®:*
  Packaged in two-compartment plastic pouch with precise amount of water for mixing. No mixing or measuring implements required.
  A hard squeeze of the water compartment forces the water into the compartment containing the Chico compound. Mixing is completed by kneading the pouch for one minute.
  The mixed sealing compound is poured directly into the sealing fitting – no funnel required. The package label indicates the size and quantity of sealing fittings each pouch will properly fill. Compound hardens in 60-70 minutes.

Chico® SpeedSeal™ Compound is a revolutionary material:
- installs a reliable seal in five minutes - *every time*
- hardens to a dense, strong mass that is suitable for Class I, Division 1, Groups C & D and Class II, Division 1, Groups E, F & G hazardous applications.
- UL and cUL Listed for use with ½″ to 2″ Copper Crouse-Hinds sealing fittings only.
- packaged in a 2 oz. or 6 oz. pre-measured cartridge, eliminating the need for measuring before mixing.
- packaged with a screw-on nozzle for accurate dispensing.
- expands four times its original size in the sealing fitting, eliminating the need to separate the individual conductors with Chico X fiber.
- Chico X fiber dams are not required in horizontal applications, reducing installation times.
- completely hardens in 20 minutes, simplifying use for OEMs.
- suitable for cold temperature environments without the costly need to build a temporary shelter around sealing fittings. All ice crystals must be removed from inside the conduit seal before dispensing Chico SpeedSeal compound. The Chico SpeedSeal compound should be kept above 10°C (50°F) prior to mixing. The sealing fitting must be kept at or above 4°C (40°F) during the 4 to 10 minute expansion/gel time of the compound.
- one year shelf-life.
- patent pending

Size Ranges:

- *Chico A* compound – 1 lb. to 5 lbs. (provides 23-115 cubic inches of compound)
- *Chico X* fiber – 2 oz. to 1 lb.
- *Chico A-P* (5 pouches per carton) – provides 25 and 55 cubic inches of compound.
- *Chico SpeedSeal* - 2 oz. or 6 oz. cartridge

NOTE: Cooper Crouse-Hinds sealing fitting are approved for use in hazardous locations only when *Chico X* fiber and *Chico A* Sealing Compound or *Chico SpeedSeal* are used to make the seal.

* A sixth pouch, containing an appropriate quantity of Chico X fiber, is included in these cartons.

† Number of cubic inches this amount will fill when set. See internal volume requirements for EYS, EZS, EYD, EZD and EYSR sealing fittings and ES sealing hubs (pages 184 to 191).

‡ Includes 1 oz. Chico X fiber.



Chico A
Sealing Compound

Net Weight	Vol. Cu. In.†	Cat. #
1 lb.	23	Chico A3
1 lb.‡	23	Chico A4
5 lb.	115	Chico A05



Chico A-P Intrapak®
(provided with Chico X fiber)
Sealing Compound and Water in Plastic Mixing Pouch

Cu. In. Fill per Pouch†	No. of Pouches per Carton	Carton Cat. #
5	5	Chico A19-PX*
11	5	Chico A39-PX*



Chico X
Fiber

Net Weight	Cat. #
2 oz.	Chico X4
8 oz.	Chico X6
1 lb.	Chico X7

Chart for Approximate Amount of Fiber Per Hub

Hub Size	Ozs. Required
1/2	1/32
3/4	1/16
1	1/8
1-1/4	1/4
1-1/2	1/2
2	1
2 1/2	1 1/2
3	2
3 1/2	3
4	4 1/2
5	7
6	10



Chico SpeedSeal Ordering Information:

Sealing Fitting Catalog Number	Amount of SpeedSeal Material needed per fitting (in ounces)	SpeedSeal Catalog Number
EYS1, EYS16; EYS11, EYS116 EYD1, EYD16, EYD11, EYD116 EYS2, EYS26, EYS21, EYS216 EYD2, EYD26, EYD21, EYD216 EYSX11, EYDX11	1	CHICO SS2 (2 oz. Cartridge)
EYS3, EYS36, EYS31, EYS316 EYD3, EYD36, EYD31, EYD316 EYSX21, EYDX21	2	CHICO SS2 (2 oz. Cartridge)
EYS41, EYS416, EYS4, EYS46 EYD4, EYD46, EYD41, EYD416 EYS51, EYS516, EYS5, EYS56 EYD5, EYD56, EYD51, EYD516 EYSX31, EYDX31 EYSX41, EYDX41	3	CHICO SS6 (6 oz. Cartridge)
EYS61, EYS616, EYS6, EYS66 EYD6, EYD66, EYD61, EYD616 EYSX51, EYDX51	6	CHICO SS6 (6 oz. Cartridge)

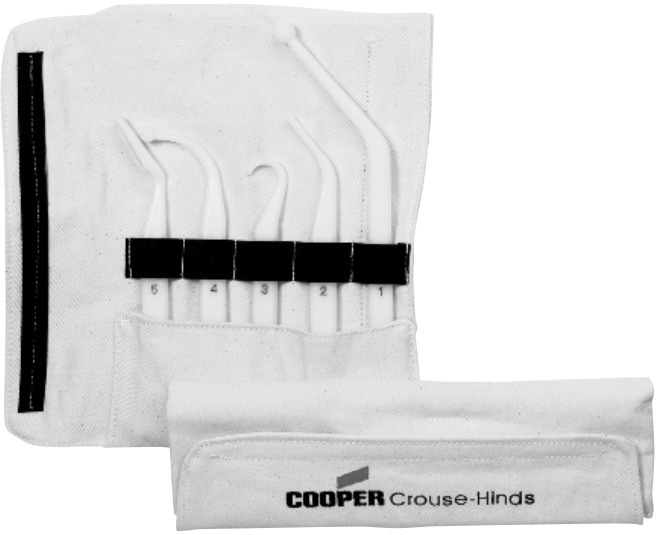
MSDS sheets are available at www.crouse-hinds.com

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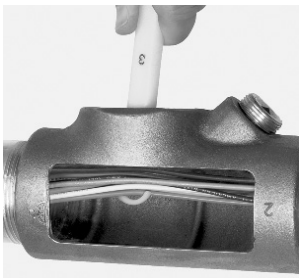
8F EYS TOOL KIT

For Use with Sealing Fittings and Hubs

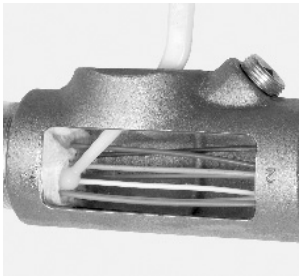
NEW!



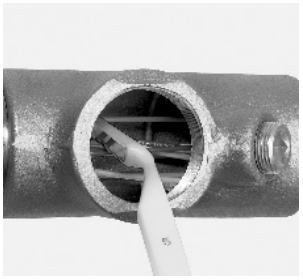
The Cooper Crouse-Hinds EYS Tool Kit lets you safely and reliably pack the fiber dam in explosionproof sealing fittings. Consisting of five patented, two-sided tools in a handy canvas bag, the EYS Tool Kit makes the critical steps of separating electrical conductors and packing fiber dams quick and easy.



The large hook on Tool #3 quickly lifts all the conductors.



With one of the packing tools, packing fiber in between and around electrical conductors is effortless.



The mirrored tool allows for proper inspection of the fiber dam in difficult to see areas.

Features and Benefits:

- The EYS Tool Kit consists of five tools and a canvas tool bag. Four tools have two unique ends for a total of 9 different tools.
- Each tool is numbered for easy identification.
- Tools are constructed of durable plastic with smooth and rounded surfaces that will not abrade the electrical insulation.
- The Hook tool (#3) with a large hook on one end and a small hook on the other end is designed to lift and separate individual wires.
- The Packing tools (#1, #2 & #4) have rounded ends designed for packing fiber in between and around electrical conductors.
- The Wedge tools (#2 & #5) are designed for hands-free separation of conductors while packing fiber.
- The Mirrored tool (#5) allows for easy inspection of the sealing fittings.
- All tools are sized and precisely angled to accomodate various sizes of fittings.
- The Canvas tool bag is designed to neatly store and protect tools while not in use.

Ordering Information:	
Catalog Number	**EYS-TOOL-KIT**

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Application:

- ECD drains and breathers are installed in enclosures or conduit systems to:
  - provide ventilation to minimize condensation
  - drain accumulated condensate
- At least one breather should be used with each drain
- A breather is installed in top of enclosure or upper section of conduit system
- A ''standard'' drain is installed in bottom of enclosure or in lower section of conduit system
- ''Universal'' breather or drain functions as a breather when mounted at the top of an enclosure, or as a drain when mounted in the bottom of an enclosure
- ''Combination'' breather and drain is used in those applications where the use of a top mounted breather is not practical due to limited space; or in offshore and marine installations where moisture may enter the enclosure through the breather located on top of enclosure
- Drains and breathers are installed in hubs or drilled and tapped openings

Features:

ECD284, ECD384, ECD385 and ECD15 ″Universal″ drains and breathers have:

- patented labyrinth design, suitable for use in Class I, Division 1 & 2, Groups C,D and Class II, Division 1 & 2, Groups F,G areas
- capability to pass 50 cc of water per minute and 0.2 cubic feet or air per minute at atmospheric pressure
- ECD15 and ECD385 each have a well inside the inner, threaded end to provide for accumulation of sediment without clogging when used as a drain.

''Standard'' ECD drains and breathers have:

- thread-in-thread design, suitable for use in Class I, Division 1 & 2, Groups C,D; Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G and Class III areas
- ECD 11, 13 have capability to pass 25 cc of water per minute and .05 cubic feet of air per minute at atmospheric pressure
- ECD387 and ECD16 are a unique thread-in-shaft design for use in Class I, Division 1 & 2, Groups B,C,D; Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G; Class III areas. The ECD387 and ECD16 can pass 15cc of water per minute. The ECD16 can pass .01 cubic feet of air per minute.

''Combination'' ECD breather and drain:

- provides ventilation to minimize condensation and drains accumulated condensate – two functions performed by a single device installed in the bottom of an enclosure or conduit system
- Have the capability to pass 25 cc of water per minute and .10 cubic feet of air per minute at atmospheric pressure
- Thread-in-thread and labyrinth design, suitable for use in Class I, Division 1 & 2, Groups C and D; Class II, Division 1 & 2, Groups F and G; and Class III areas

Size Ranges

- ¼″ to ½″

ECD ''Type 4X'' Drain and Breather

Size	Drain Cat. #	Breather Cat. #
⅜	ECD38-N4D	ECD38-N4B
½	ECD1-N4D	ECD1-N4B

ECD ''Standard'' Drain and Breather

Size	Drain Cat. #	Breather Cat. #
¼	ECD281	
⅜	ECD387	
½	ECD11	ECD13

ECD ''Universal'' Drain or Breather

Size	Cat. #
¼	ECD284†
⅜	ECD384†
⅜	ECD385
½	ECD15
½	ECD16

ECD ''Combination'' Drain and Breather

Size	Cat. #
½	ECD18

Standard Materials:

- ECD11, ECD15, ECD281, ECD284, ECD384, ECD385 – stainless steel
- ECD13 – stainless steel with aluminum cap
- ECD16, ECD-N4D, ECD-N4B – stainless steel
- ECD387 – stainless steel
- ECD18 – Stainless steel with neoprene tube

Certifications and Compliances:

- NEC/CEC:
  - **ECD 16, ECD387, ECD-N4D, ECD-N4B –**
    Class I, Division 1 & 2, Groups B,C,D
    Class II, Division 1, Groups E,F,G
    Class II, Division 2, Groups F,G
    Class III
  - **ECD11, ECD13, ECD281 –**
    Class I, Division 1 & 2, Groups C,D
    Class II, Division 1, Groups E,F,G
    Class II, Division 2, Groups F,G
    Class III
  - **ECD18, ECD384, ECD15, ECD385 –**
    Class I, Division 1 & 2, Groups C,D
    Class II, Division 1, Groups F,G
    Class II, Division 2, Groups F,G
    Class III
  - **ECD284 –**
    Class I, Division 1 & 2, Group C,D
    Class II, Division 1, Groups F,G
    Class II, Division 2, Groups F,G
- UL: Standard 886
- CSA Standard: C22.2 No. 30
- Type 4X: ECD-N4D and ECD-N4B

† Shorter overall length than ECD15 and ECD385. For use in confined spaces such as panelboard assemblies.



ECD11



ECD13



ECD15



ECD16



ECD18



Typical installation of drain and breather in a combination motor starter

NOTES: 1. At least 5 full threads of drain or breather must be engaged in matching female thread, taper-tapped in accordance with NEMA/EEMAC Standard FB-1, Type NTC or National Bureau of Standards Handbook H28, Part II, Table 7.6.
2. These breathers and drains can be factory installed on various explosion-proof equipment. See options on applicable equipment pages for suffixes to be used.

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8F CD Series Ordinary Location Drain

Straight Body ● Male Thread

Application:
CD Series drains are for use in conduit systems to:
- Drain accumulated condensate.
- Provide ventilation to minimize condensation.

Drains are installed in hubs or drilled and tapped openings.



Standard Materials:
- CD bodies and nuts – steel or aluminum
- CD screen – stainless steel

Standard Finishes:
- Steel – electrogalvanized with chromate treatment.

Certifications and Compliances:
- UL Standard 514B

Options:
- Copper-free aluminum construction – add suffix -SA

Ordering Information:

Size	Cat. #
½	CD1
¾	CD2

NEMA 4X BREATHER/DRAIN

ATEX and CENELEC Range

I M2 II 2GD, E Exe I & II (Stainless Steel & Brass only)
II 2GD, E Exe II (Nylon version)
CSA Class I, Division 2, Groups A, B, C & D, Exe II

Enclosure Type 4X
IP66



Certifications and Compliances
- SIRA 99 ATEX 3050U
- I M2 II 2GD, E Exe I & II (Stainless Steel & Brass only)
- II 2GD, E Exe II (Nylon only)
- CSA Class I, Division 2, Groups A, B, C & D, Exe II
- Enclosure Type 4X
- IP66

Operating Temperature
- –50°C to +85°C

Application
For use in enclosures to provide a method to effectively drain moisture while allowing the enclosure to breathe.

Features
All NEMA 4X breather/drains offer:
- Castellated locknuts that allow moisture to pass between the enclosure and the locknut to the drain holes in the fitting.
- Available in brass, stainless steel (Type 316) or 30% glass filled nylon.
- Captive ''O'' ring on recess of the face of the breather/drain to optimize ingress protection.
- ATEX and CSA Certified for worldwide market acceptance.
- Available with metric or NPT threads.

Ordering Information

NEMA 4X Breather/Drain

Entry Method	Material	Catalog Number
M20	Brass	ACDPEB/M20/15
M20	Stainless Steel	ACDPES/M20/15
M20	Nylon	ACDPEBN/M20/15
M25	Brass	ACDPEB/M25/15
M25	Stainless Steel	ACDPES/M25/15
M25	Nylon	ACDPEBN/M25/15
½″	Brass	ACDPEB/050NPT/15
½″	Stainless Steel	ACDPES/050NPT/15
¾″	Brass	ACDPEB/075NPT/15
¾″	Stainless Steel	ACDPES/075NPT/15

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Article 314 of the National Electrical Code® (NEC®) covers the installation and use of boxes. The article includes table references that guide the electrician in the selection of the proper size box necessary to safely accommodate electrical service requirements. The box capacity table is reproduced in part from NEC as a quick reference and guide. The NEC should be consulted for complete details.

Cooper Crouse-Hinds products are produced in accordance with the requirements of UL-514-A, UL-514-B, UL-514-C and are classified for fire resistance according to the standard, Fire Tests of Building Construction and Materials, ANSI/UL 263, ASTM E 119 and NFPA 251. This listing is based on products when used in a fire rated (2 HR) wall or ceiling. Cooper Crouse-Hinds steel boxes are listed with U.L. File #E23156 and Cooper Crouse-Hinds nonmetallic boxes are listed with U.L. File #E102328 and U.L. (2 HR. fire rated) File #R9933.

Cooper Crouse-Hinds switch and outlet boxes comply with the requirements of NEMA standard OS-1, NFPA 70-370 and Federal Spec. #W-J-800E.

Under File #E23156, Cooper Crouse-Hinds concentric and ''Moon'' KO style boxes, the following is stated ''Suitable for bonding without any additional bonding means around concentric (or Eccentric) knockouts where used in circuits above or below 250V.''

Cooper Crouse-Hinds NAED/DCI/UPC number is 786189-10 plus the 3-digit product number. On the outlet box 4-digit product number, the NAED/DCI/UPC number is 786189-0 plus the 4-digit product number and for the 5-digit product number, the NAED/DCI/UPC number is 786189 plus the 5-digit number.

Wall thickness on all Steel boxes is 0.0625″

Table 314.16 (A) Metal Boxes

Box Dimension, Inches Trade Size or Type	Min. Cu. In. Cap.	Maximum Number of Conductors No.18	No.16	No.14	No.12	No.10	No.8	No.6
4x1¼ Round or Octagonal	12.5	8	7	6	5	5	4	2
4x1½ Round or Octagonal	15.5	10	8	7	6	6	5	3
4x2⅛ Round or Octagonal	21.5	14	12	10	9	8	7	4
4x1¼ Square	18.0	12	10	9	8	7	6	3
4x1½ Square	21.0	14	12	10	9	8	7	4
4x2⅛ Square	30.3	20	17	15	13	12	10	6
4 11/16x1¼ Square	25.5	17	14	12	11	10	8	5
4 11/16x2½ Square	29.5	19	16	14	13	11	9	5
4 11/16x2⅛ Square	42.0	28	24	21	18	16	14	8
3x2x1½ Device	7.5	5	4	3	3	3	2	1
3x2x2 Device	10.0	6	5	5	4	4	3	2
3x2x2¼ Device	10.5	7	6	5	4	4	3	2
3x2x2½ Device	12.5	8	7	6	5	5	4	2
3x2x2¾ Device	14.0	9	8	7	6	5	4	2
3x2x3½ Device	18.0	12	10	9	8	7	6	3
4x2⅛x1½ Device	10.3	6	5	5	4	4	3	2
4x2⅛x1⅞ Device	13.0	8	7	6	5	5	4	2
4x2⅛x2⅛ Device	14.5	9	8	7	6	5	4	2
3¾x2x2½ Masonry Box/Gang	14.0	9	8	7	6	5	4	2
3¾x2x3½ Masonry Box/Gang	21.0	14	12	10	9	8	7	4
FS-Minimum Internal Depth 1¾ Single Cover Gang	13.5	9	7	6	6	5	4	2
FD-Minimum Internal Depth 2⅜ Single Cover Gang	18.0	12	10	9	8	7	6	3
FS-Minimum Internal Depth 1¾ Single Cover Gang	18.0	12	10	9	8	7	6	3
FD-Minimum Internal Depth 2⅜ Multiple Cover Gang	24.0	16	13	12	10	9	8	4

Table 314.16 (B) Volume Required per Conductor

Size of Conductor	Free Space Within Box for Each Conductor
No. 18	1.5 cubic inches
No. 16	1.75 cubic inches
No. 14	2 cubic inches
No. 12	2.25 cubic inches
No. 10	2.5 cubic inches
No. 8	3 cubic inches
No. 6	5 cubic inches

For SI units: one cubic inch = 16.4 cm^3.

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COOPER CROUSE-HINDS SWITCH BOX DETAILS

Knockouts and Pry-outs

Cooper Crouse-Hinds conduit KOs have standard trade size dimensions. KOs are uniform and true for attachment of cable or conduit connectors. Pry-outs for cable entrance are slotted – a twist with screwdriver removes them. KOs and Pry-outs are precision stamped to permit easy removal, but remain sufficiently strong and sturdy when not removed.

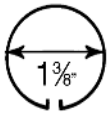
Cooper Crouse-Hinds 4″ sq. drawn boxes feature a ½″ and ¾″ ''inverted'' concentric KO – easily removed. Our 4″ sq. welded feature our ½″ eccentric KO which also features easy removability of both the ½″ and ¾″ KOs. NOTE: These KOs are suitable for bonding without bonding jumpers around concentric (or eccentric) knockouts where used in circuits above or below 250V.



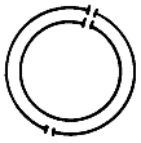
½″ Conduit KO



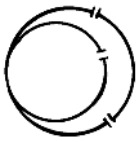
¾″ Conduit KO



1″ Conduit KO



Concentric ½″ and ¾″ KO



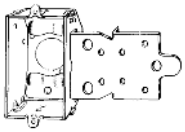
Eccentric ½″ and ¾″ KO



Cable Pry-outs always in pairs.

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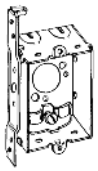
BRACKETS USED ON COOPER CROUSE-HINDS BOXES



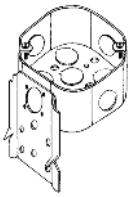
"F" BRACKET
Mounts on face of stud. See catalog number for set back. For wood studs.



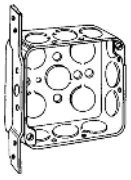
"D" BRACKET
Side mount bracket with set up hook & guide tabs for automatic positioning. Standard bracket set back is 5⁄8″. For wood and metal studs.



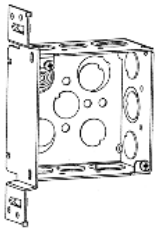
"S" BRACKET
Side mount brackets with set up hook for wood or metal studs. Standard bracket set back is 5⁄8″.



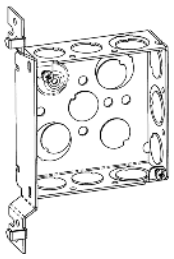
"C" BRACKET
Ceiling box bracket for wood studs.



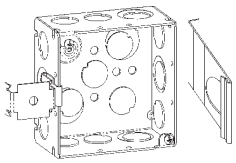
"VS" BRACKET
Plain flat mounted bracket for use on wood or metal studs. No set back.



"VMS" BRACKET
Side bracket for use with wood or metal studs. Provides set up tabs to position on face of stud.



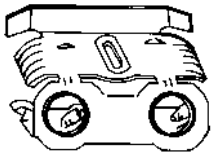
"VP" BRACKET
Side bracket with set up hooks for wood studs.



"SSB" BRACKET
Positions box on either side of a steel stud.

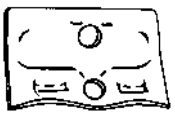
CLAMPS USED ON COOPER CROUSE-HINDS BOXES

Cat. No. TP900



MC-BX

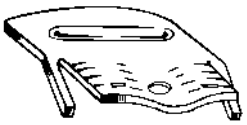
FOR ARMORED & METAL CLAD (MCI) CABLE



NM-1



NM-2

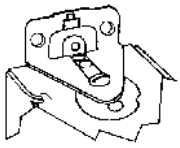


NM-4

FOR NONMETALLIC CABLE

MOUNTING EARS

Cat. No. TP901



ONE SCREW EAR

Cat. No. TP902



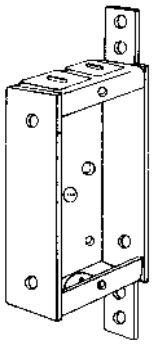
TWO SCREW EAR

Mounting ears are available on many of our switch boxes. They are set forward in 1⁄16″ the "old way" position. Two-screw ears are generally used on shallow boxes and one-screw ears on deep boxes.

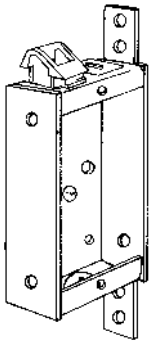
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1″ DEEP SWITCH BOXES – NON-GANGABLE – 6.5 CUBIC INCH CAPACITY

1 15/16″ WIDE × 3¾″ LONG



TP101

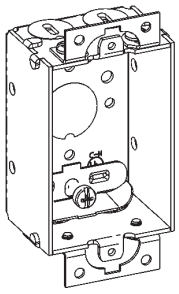


TP103

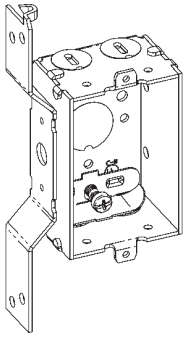
Product Number	Bracket	Plastic Clamp	KNOCKOUTS Conduit	KNOCKOUTS Cable	Std. Unit Pkg.	Wt. Lbs. Per 100
TP101	''S''	No	1-½″	2	25	38
TP103	''S''	Yes	1-½″	2	25	39

1½″ DEEP SWITCH BOXES – NON-GANGABLE – 7.5 CUBIC INCH CAPACITY

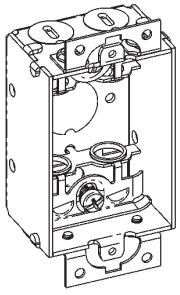
2″ WIDE × 3″ LONG



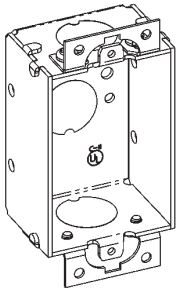
TP100



TP104



TP106



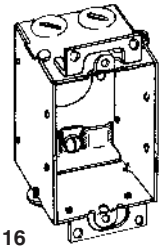
TP114

Product Number	Bracket	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR NONMETALLIC CABLE – CLAMPS IN EACH END							
TP100	—	Yes	2-Cable	—	1-½″	50	43
TP104	''S'', set ½″	—	2-Cable	—	1-½″	50	50
FOR ARMOURED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END							
TP106	—	Yes	2-Cable	—	1-½″	50	44
FOR CONDUIT – NO CLAMPS, FLUSH DEVICE							
TP114	—	Yes	1-½″	—	1-½″	50	39

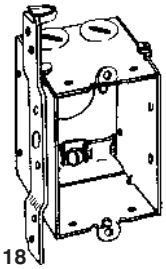
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2″ DEEP SWITCH BOXES – GANGABLE – 10.0 CUBIC INCH CAPACITY

2″ WIDE × 3″ LONG, FOR NONMETALLIC CABLE – CLAMPS IN EACH END



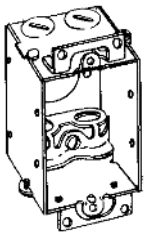
TP116



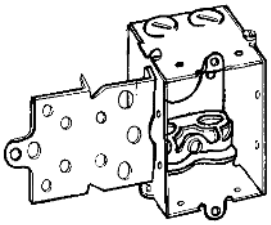
TP118

Product Number	Bracket	Ears	KNOCKOUTS Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP116	—	Yes	2-Cable	—	1-½″	50	53
TP118	''S'', Set ½″	—	2-Cable	—	1-½″	50	60

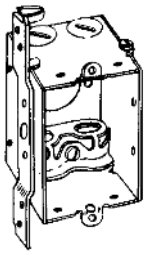
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP120



TP123



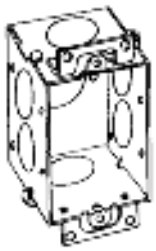
TP124

Product Number	Bracket	Ears	KNOCKOUTS Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP120	—	Yes	2-Cable	—	1-½″	50	54
TP123	''F'', Set ½″	—	2-Cable	—	1-½″	50	63
TP124	''S'', Set ½″	—	2-Cable	—	1-½″	50	61

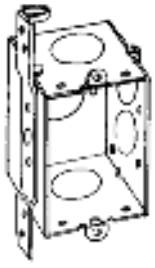
FOR CONDUIT – NO CLAMPS, FLUSH DEVICE



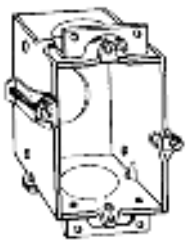
TP126



TP130



TP132

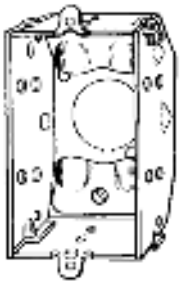


TP131
Hold Tite

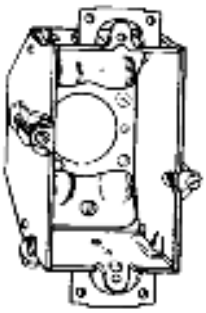
Product Number	Bracket	Ears	KNOCKOUTS Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP126	—	—	1-½″	2-½″	1-½″	50	47
TP130	—	Yes	1-½″	2-½″	1-½″	50	48
TP132	''S'', Set ½″	—	1-½″	2-½″, 1 Side	1-½″	50	58
TP131	Hold-Tite	Yes	1-½–T	—	1-½″	50	52

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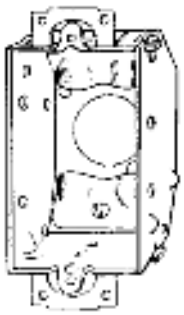
2¼″ DEEP SWITCH BOXES – GANGABLE – BEVELED CORNERS
10.5 CUBIC INCH CAPACITY
2″ WIDE × 3″ LONG,
CLAMP SCREWS THROUGH BEVELED CORNERS



TP134



TP137
Hold-Tite



TP138

Product Number	Ears	Bumps	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP134	—	Yes	2-Cable	—	1-½″	50	51
TP137	Yes	—	2-Cable	—	1-½″	50	57
TP138	Yes	—	2-Cable	—	1-½″	50	55

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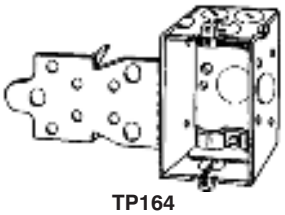
2½″ DEEP SWITCH BOXES – GANGABLE – 12.5 CUBIC INCH CAPACITY

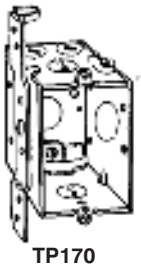
2″ WIDE × 3″ LONG
FOR NONMETALLIC CABLE – CLAMPS IN EACH END

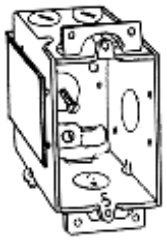

TP158

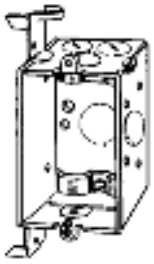

TP162

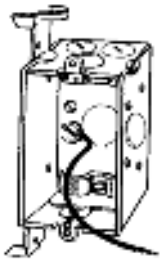

TP163

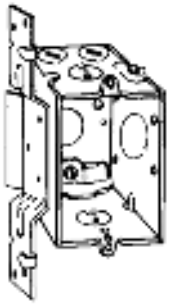

TP164
TP168


TP170


TP161


TP172

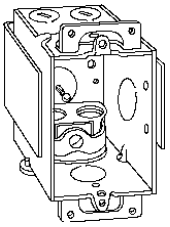

TP174

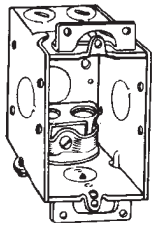

TP171

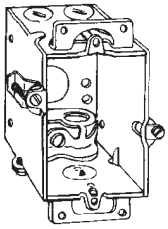
Product Number	Bracket	Ears	Ground Pigtail	Leveling Bumps	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP158	—	—	—	Yes	2-Cable, 1-½″	—	1-½″	50	59
TP115	—	Yes	Yes	—	2-Cable	1-½″	1-½″	50	63
TP161	Snap-In	Yes	—	—	2-Cable	1-½″	—	50	73
TP162	—	Yes	—	—	2-Cable	1-½″	1-½″	50	62
TP163	Hold-Tite	Yes	—	—	2-Cable	—	1-½″	50	65
TP164	''F'', Set ½″	—	—	—	2-Cable, 1-½″	1-½″	1-½″	50	71
TP168	''F'', Set ¼″	—	—	—	2-Cable, 1-½″	1-½″	1-½″	50	71
TP170	''S'', Set ⅝″	—	—	—	2-Cable, 1-½″	1-½″	1-½″	50	69
TP172	''D'', Set ⅝″	—	—	—	2-Cable, 1-½″	1-½″	1-½″	50	70
TP174	''D'', Set ⅝″	—	Yes	—	2-Cable, 1-½″	1-½″	1-½″	50	71
TP171	''VP'', Set ½″	—	—	—	2-Cable, 1-½″	1-½″	1-½″	50	73

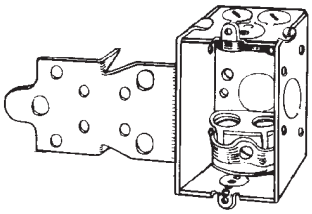
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

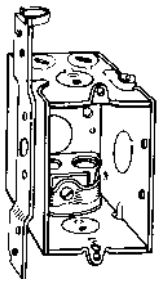
2½″ DEEP SWITCH BOXES – GANGABLE – 12.5 CUBIC INCH CAPACITY
2″ WIDE × 3″ LONG FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END

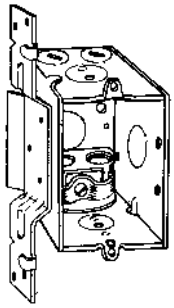

TP177


TP178


TP179
Hold-Tite

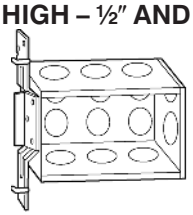

TP180

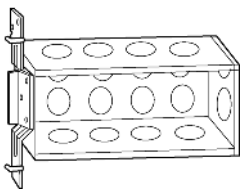

TP184


TP185

Product Number	Bracket	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP177	Snap-In	Yes	2-Cable	1-½″	—	50	74
TP178	—	Yes	2-Cable	1-½″	1-½″	50	63
TP179	Hold-Tite	Yes	2-Cable	—	1-½″	50	66
TP180	''F'', Set ½″	—	2-Cable, 1-½″	1-½″	1-½″	50	72
TP184	''S'', Set ⅝″	—	2-Cable, 1-½″	1-½″	1-½″	50	70
TP185	''VP'', Set ½″	—	2-Cable, 1-½″	1-½″	1-½″	50	74

GANG SWITCH BOXES WITH VP BRACKET, SET BACK ½″
2½″ DEEP – 3¾″ HIGH – ½″ AND ¾″ CONCENTRIC KOs


TP632

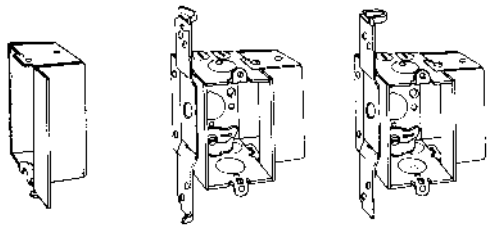

TP633

Product Number	Gang	Width	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP632	3	5 9/16″	2	3	6	5	143	46.5
TP633	4	7 3/8″	2	4	8	5	179	62.0

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2½″ DEEP ''EC'' BOXES – GANGABLE – CUBIC INCH CAPACITY (SEE BELOW)

2 ″ WIDE × 3″ LONG
CLAMPS IN EACH END



TP188 **TP190** **TP196**

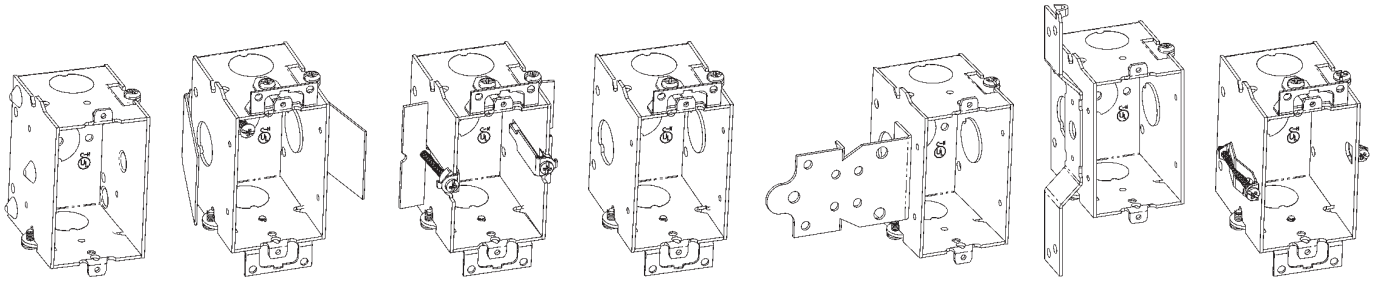
NOW... The Cubic Capacity of any of our new work 2½″ Deep Switch Boxes can be increased to 18 cubic inches simply by adding our **''EC'' Extender** to the sides of the box. This provides **5.5 extra** cubic inches of space necessary to conform to revisions in the National Electrical Code. **''EC''** boxes are stocked factory assembled in popular styles, however the **''EC'' Extender** can be ordered separately for ''Instant-On'' assembly on the job with Cooper Crouse-Hinds Switch Boxes.

Product Number	Bracket	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP188	—	—	—	—	50	32	5.5
FOR NONMETALLIC CABLE							
TP190	''D'', Set ⅝″	2-Cable, 1-½″	—	1-½″	25	89	18.0
TP196	''S'', Set ⅝″	2-Cable, 1-½″	—	1-½″	25	89	18.0

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2½″ DEEP SWITCH BOXES – GANGABLE – 12.5 CUBIC INCH CAPACITY

2″ WIDE × 3″ LONG
FOR CONDUIT – NO CLAMPS

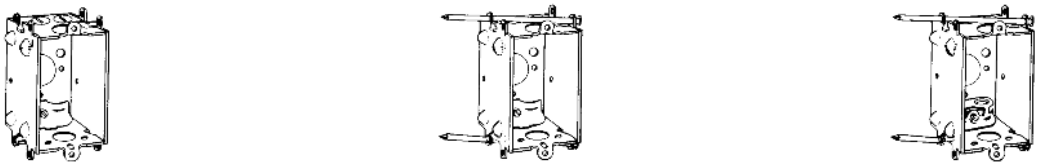


TP214 TP216 TP217 TP218 TP220 TP222 TP224

Product Number	Bracket	Ears	Leveling Bumps	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP214	—	—	Yes	1-½″	—	1-½″	50	55
TP216	Snap-In	Yes	—	1-½″	1-½″	—	50	69
TP217	—	Yes	—	1-½″	—	1-½″	50	64
TP218	—	Yes	—	1-½″	1-½″	1-½″	50	58
TP220	''F'', Set ½″	—	—	1-½″	1-½″, 1 Side	1-½″	50	66
TP222	''S'', Set ⅝″	—	—	1-½″	1-½″, 1 Side	1-½″	50	65
TP224	Hold-Tite	Yes	—	1-½″	—	1-½″	50	61

2½″ DEEP SWITCH BOXES – ''INSTANT ON'' – 12.5 CUBIC INCH CAPACITY

2″ WIDE × 3″ LONG
WITH BUMPS – CLAMPS IN EACH END (BUMPS LEVEL THE BOX AGAINST THE SIDE OF STUD, TOP TO BOTTOM, FRONT TO BACK)

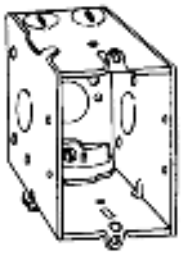


TP206 TP210 TP213

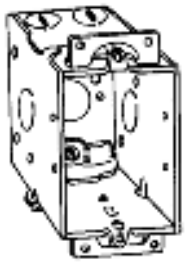
Product Number	Clamps	Nails	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP206	Nonmetallic	—	2-Cable, 1-½″	—	1-½″	50	61
TP210	Nonmetallic	Angle	2-Cable, 1-½″	—	1-½″	50	66
TP213	Armored Cable	Angle	2-Cable, 1-½″	—	1-½″	50	66

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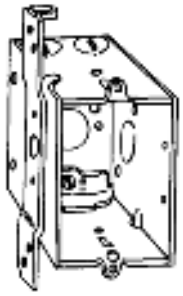
2¾″ DEEP SWITCH BOXES – GANGABLE – 14.0 CUBIC INCH CAPACITY
2″ WIDE × 3″ LONG
FOR NONMETALLIC CABLE – CLAMPS IN EACH END



TP660



TP662



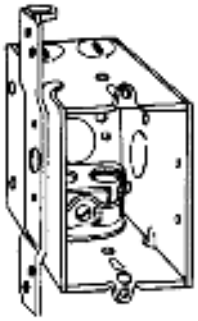
TP664

Product Number	Bracket	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP660	—	—	2-Cable	1-½″	1-½″	50	62
TP662	—	Yes	2-Cable	1-½″	1-½″	50	67
TP664	''S'', Set ⅝″	—	2-Cable	1-½″	1-½″	50	70

FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP668



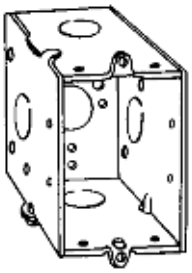
TP670

Product Number	Bracket	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP668	—	Yes	2-Cable	1-½″	1-½″	50	68
TP670	''S'', Set ⅝″	—	2-Cable	1-½″	1-½″	50	71

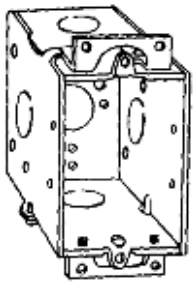
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2¾″ DEEP SWITCH BOXES – GANGABLE – 14.0 CUBIC INCH CAPACITY

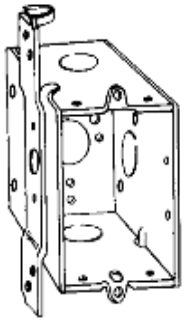
2″ WIDE × 3″ LONG
FOR CONDUIT – NO CLAMPS



TP672
TP674



TP676 (1 screw ear)
TP678 (2 screw ear)

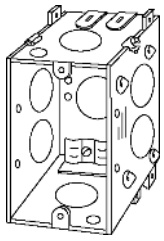


TP680
TP677

Product Number	Bracket	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP672	—	—	1-½″	1-½″	1-½″	50	59
TP674	—	—	1-¾″	1-¾″	1-½″	50	59
TP676	—	Yes	1-½″	1-½″	1-½″	50	61
TP678	—	Yes	1-¾″	1-¾″	1-½″	50	61
TP680	''S'', Set ⅝″	—	1-½″	1-½″, 1 Side	1-½″	50	70
TP677	''S'', Set ⅝″	—	1-¾″	1-¾″, 1 Side	1-½″	50	70

2½″ DEEP SWITCH BOX – GANGABLE – 16.0 CUBIC INCH CAPACITY

2″ WIDE × 3¾″ LONG
FOR NON-METALLIC CABLE – CLAMPS IN EACH END



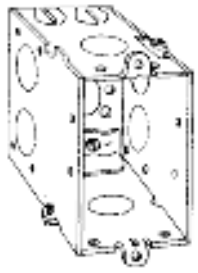
TP226

Product Number	Clamps	Bracket	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP226	Nonmetallic	External Nail	1-½″	2-½″	1-½″	50	35

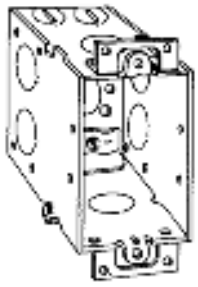
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3½″ DEEP SWITCH BOXES – GANGABLE – 18.0 CUBIC INCH CAPACITY

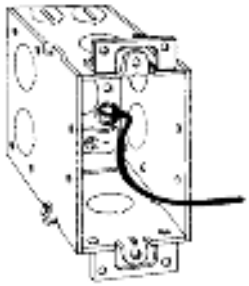
2″ WIDE × 3″ LONG
FOR NONMETALLIC CABLE – CLAMPS IN EACH END



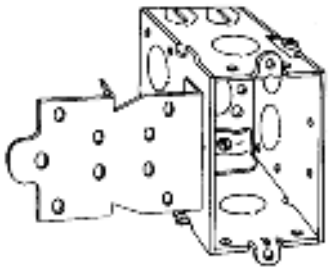
TP236



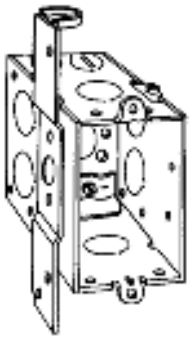
TP238



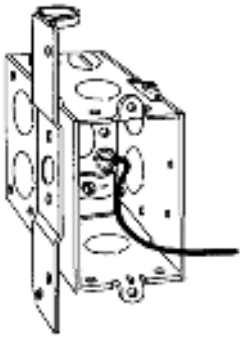
TP239



TP240



TP242



TP243

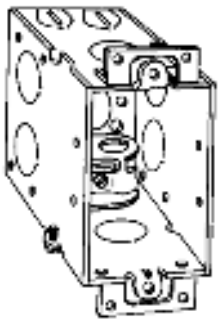
Product Number	Bracket	Ground Pigtail	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP236	—	—	—	2-Cable, 1-½″	2-½″	1-½″	25	78
TP238	—	—	Yes	2-Cable, 1-½″	2-½″	1-½″	25	80
TP239	—	Yes	Yes	2-Cable, 1-½″	2-½″	1-½″	25	81
TP240	‘‘F’’, Set ½″	—	—	2-Cable, 1-½″	2-½″	1-½″	25	88
TP242	‘‘S’’, Set ⅞″	—	—	2-Cable, 1-½″	2-½″	1-½″	25	87
TP243	‘‘S’’, Set ⅞″	Yes	—	2-Cable, 1-½″	2-½″	1-½″	25	88

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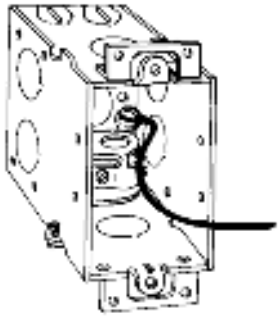
3½″ DEEP SWITCH BOXES – GANGABLE – 18.0 CUBIC INCH CAPACITY

2″ WIDE × 3″ LONG

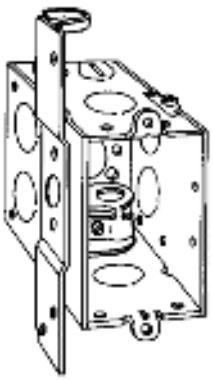
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP244



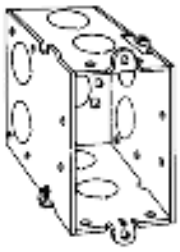
TP249



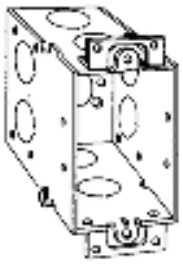
TP246

Product Number	Bracket	Ground Pigtail	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP244	—	—	Yes	2-Cable, 1-½″	2-½″	1-½″	25	81
TP249	—	Yes	Yes	2-Cable, 1-½″	2-½″	1-½″	25	82
TP246	‘‘S’’, Set ⅞″	—	—	2-Cable, 1-½″	2-½″	1-½″	25	88

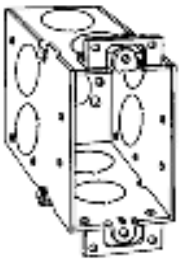
FOR CONDUIT – NO CLAMPS



TP248
TP250



TP252



TP254

Product Number	Bracket	Ears	KNOCKOUTS Each End	KNOCKOUTS Each Side	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP248	—	—	2-½″	2-½″	1-½″	25	74
TP250	—	—	2-¾″	2-¾″	1-½″	25	74
TP252	—	Yes	2-½″	2-½″	1-½″	25	76
TP254	—	Yes	2-¾″	2-¾″	1-½″	25	76

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GROUNDING DEVICES

GROUNDING SCREW AND PIGTAIL

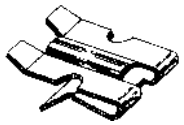


TP700 or TP702 TP703 or TP707 TP701 or TP705 TP704

Product Number	Description	Std. Pkg.	Unit Pkg.	Wt. Lbs. Per 100
TP700	Grounding Screw with 6″ Bare No. 14 Copper Wire	1000	50	1
TP701	Grounding Screw with Insulated No. 12 Stranded Wire – 8″ overall	1000	50	2
TP702*	Grounding Screw with 6″ Bare No. 12 Copper Wire	1000	50	2
TP703	Grounding Screw with 6″ Insulated No. 12 Copper Wire	1000	50	2
TP705	Grounding Screw with Insulated No. 14 Stranded Wire – 8″ overall	1000	50	1
TP707	Grounding Screw with 6″ Insulated No. 14 Copper Wire	1000	50	1
TP704	#10-32 × ⅜″ Grounding Screw	1000	100	.5

*** TP702 is standard wire installed in Cooper Crouse-Hinds boxes**

GROUNDING CLIP



TP706

Product Number	Description	Std. Pkg.	Unit Pkg.	Wt. Lbs. Per 100
TP706	For Grounding Switch & Outlet Boxes Using Nonmetallic Sheathed Cables No. 14 & No. 12, with Grounding Wire	1000	100	.5

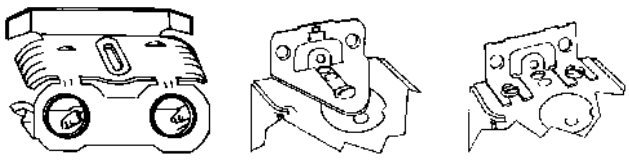
OLD WORK CLIP



TP651

Product Number	Description	Std. Pkg.	Unit Pkg.	Wt. Lbs. Per 100
TP651	Clips lock old-work steel switch boxes tightly to wall. Two required per box	250 sets	25 sets	4

REPLACEMENT PARTS



TP900 TP901 TP902

Product Number	Description	Unit Pkg.	Wt. Lbs. Per 100
TP900	MC-BX Clamp with Screws	200	17.3
TP901	One Screw Mounting Ear with Screws	200	3.2
TP902	Two-Screw Mounting Ear with Screws	200	2.7

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HOLD-IT SWITCH BOX SUPPORTS

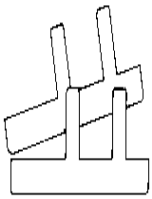


FIG. 1

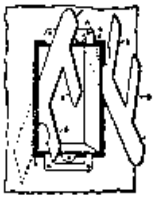


FIG. 2

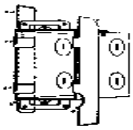
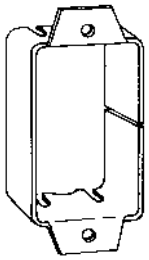


FIG. 3

Product Number	Description	Std. Pkg.	Carton Quantity	Wt. Lbs. Per 100
TP708	Two metal holders for mounting old-work switch boxes in all types of wall materials	500 Sets	50 Sets	5

SWITCH BOX EXTENSION

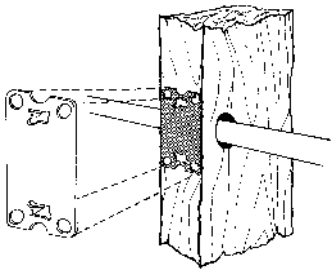


TP709

Product Number	Description	Std. Pkg.	Capacity Cu. In.	Wt. Lbs. Per 100
TP709	Fits snugly inside all 3″ × 2″ width boxes. Maximum adjustable depth ⅞″. Furnished with mounting screws.	50	3.5	13

P-300 STEEL STUD SAFETY PLATE

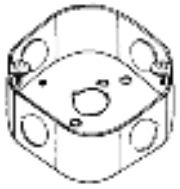
MEETS REQUIREMENT OF NATIONAL ELECTRIC CODE
SAME SIZE AS FACE OF STUD
NO NAILS REQUIRED
PROTECTS ELECTRICAL CABLE AND COPPER WATER PIPES

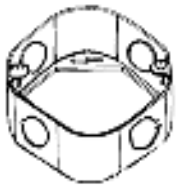


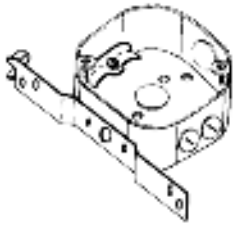
Product Number	Description	Std. Pkg.	Wt. Lbs. Per 100
TP659	2″ × 3½″ Steel Plate	100	11

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3¼″ OCTAGON OUTLET BOXES* – 11.5 CUBIC INCH CAPACITY
1½″ DEEP


TP256


TP258


TP259


TP260

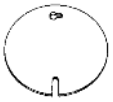

TP262

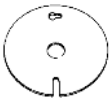

TP264

Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
FOR CONDUIT – NO CLAMPS					
TP256	—	4-½″	1-½″	50	41
TP258	Extension Ring	4-½″	—	50	31
FOR NONMETALLIC CABLE WITH CLAMPS					
TP259	''S'' Bracket, Set ½″	4-Cable, 1-½″	1-½″	50	53
TP260	—	4-Cable, 2-½″	1-½″	50	44
TP262	With Side Nail Holes	4-Cable, 2-½″	1-½″	50	43
TP264	Two Screw Ears	4-Cable, 2-½″	1-½″	50	47

3¼″ ROUND CEILING PAN* – 4.0 CUBIC INCH CAPACITY
½″ DEEP
CLAMPS IN BOTTOM

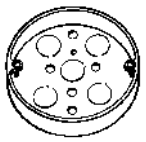

TP266


TP270


TP272

Product Number	KNOCKOUTS Cable	KNOCKOUTS Conduit	Std. Unit Pkg.	Wt. Lbs Per 100
TP266	4	1-½″	50	30
3¼″ ROUND COVERS				
TP270	Flat Blank		100	18
TP272	Flat, ½″ KO in Center		100	18

4″ ROUND CEILING PANS* – 6.0 CUBIC INCH CAPACITY
½″ DEEP


TP269


TP267

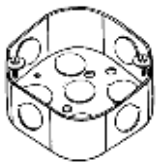
Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP269	KOs Only	—	5-½″	50	35
TP267	KOs and Clamps	—	4-Cable, 3-½″	50	39

*Weight limit for 3¼″ and 4″ octagon outlet boxes and ceiling pans is 50lbs for fixture. Not suitable for fans.

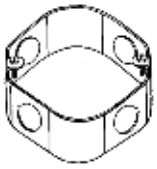
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4″ OCTAGON OUTLET BOXES† – 15.5 CUBIC INCH CAPACITY

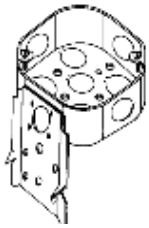
1½″ DEEP
FOR CONDUIT – NO CLAMPS



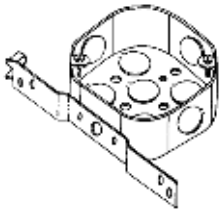
TP274, TP276, TP278, TP834*



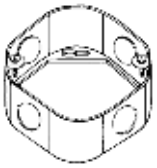
TP273



TP280



TP282



TP284, TP286

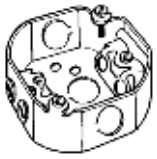
* For Air Plenum (No Mounting Holes)

Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP274	—	4-½″	5-½″	50	50
TP273	Blank Bottom	4-½″	—	50	51
TP276	—	4-¾″	3-½″, 2-¾″	50	50
TP278	—	2-½″, 2-¾″	3-½″, 2-¾″	50	50
TP280	‘‘C’’ Bracket	4-½″	5-½″	50	60
TP282	‘‘S’’ Bracket, Set ½″	3-½″	5-½″	50	58
Air Plenum					
TP834*	For Air Plenum	4-½″	5-½″	50	52

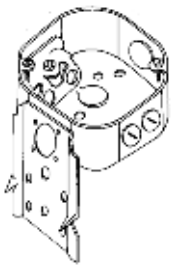
OCTAGON EXTENSION RINGS – (SLOT & KEY PERMIT MOUNTING WITHOUT REMOVING BOX SCREWS)

TP284‡	—	4-½″	—	50	36
TP286‡	—	2-½″, 2-¾″	—	50	36

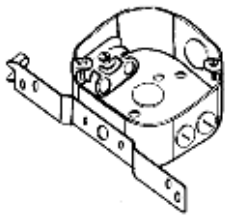
1½″ DEEP
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP310



TP312



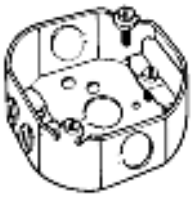
TP314

Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP310	—	4-Cable, 2-½″	1-½″	50	57
TP312	‘‘C’’ Bracket	4-Cable, 2-½″	1-½″	50	66
TP314	‘‘S’’ Bracket, Set ½″	4-Cable, 1-½″	1-½″	50	64

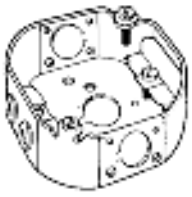
† Weight limit for 3¼″ and 4″ octagon outlet boxes and ceiling pans is 50lbs for fixture. Not suitable for fans.
‡ CSA Certified

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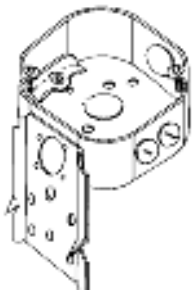
4″ OCTAGON OUTLET BOXES – 15.5 CUBIC INCH CAPACITY
1½″ DEEP
FOR NONMETALLIC CABLE – WITH CLAMPS



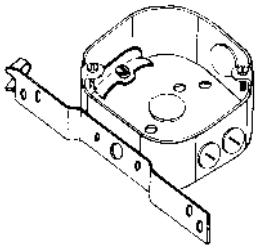
TP298



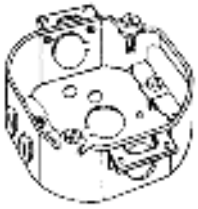
TP300



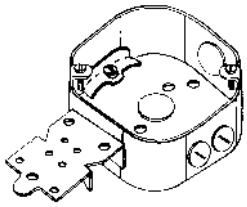
TP302



TP304



TP306

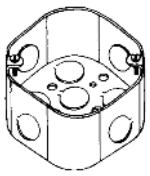


TP308

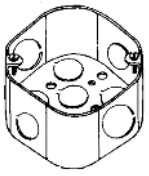
Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP298	—	4-Cable, 2-½″	1-½″	50	56
TP300	With Side Nail Holes	4-Cable, 2-½″	1-½″	50	55
TP302	''C'' Bracket	4-Cable, 2-½″	1-½″	50	65
TP304	''S'' Bracket, Set ½″	4-Cable, 1-½″	1-½″	50	64
TP306	Two Screw Ears	4-Cable, 2-½″	1-½″	50	58
TP308	''F'' Bracket, Set ½″	4-Cable, 1-½″	1-½″	50	64

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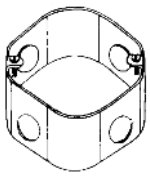
4″ OCTAGON OUTLET BOXES – 21.5 CUBIC INCH CAPACITY
2⅛″ DEEP
FOR CONDUIT – NO CLAMPS



TP288, TP290, TP294



TP292, TP838*



TP339

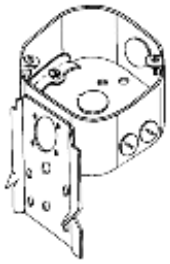
* For Air Plenum (No Mounting Holes)

Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP288	—	4-½″	3-½″, 2-¾″	25	64
TP290	—	4-¾″	3-½″, 2-¾″	25	64
TP292	—	2-½″, 2-¾″	3-½″, 2-¾″	25	64
TP294	—	4-1″	3-½″, 2-¾″	25	64
TP339	Blank Bottom	4-½″	—	25	65
Air Plenum					
TP838*	Plenum	2-½″, 2-¾″	3-½″, 2-¾″	25	62

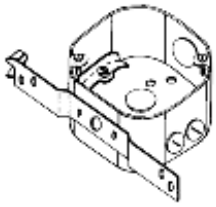
4″ OCTAGON OUTLET BOXES – 21.5 CUBIC INCH CAPACITY
2⅛″ DEEP – WITH CABLE CLAMPS



TP316



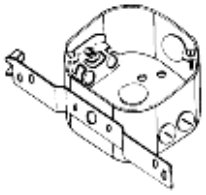
TP318



TP320



TP317



TP338

Product Number	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR NONMETALLIC CABLE					
TP316	—	4-Cable, 2-½″	1-½″	25	68
TP318	‘‘C’’ Bracket	4-Cable, 2-½″	1-½″	25	88
TP320	‘‘S’’ Bracket, Set ½″	4-Cable, 1-½″	1-½″	25	81
FOR ARMORED & METAL CLAD (MCI) – CABLE-CLAMPS IN EACH END					
TP317	—	4-Cable, 2-½″	1-½″	25	69
TP338	‘‘S’’ Bracket, Set ½″	4-Cable, 1-½″	1-½″	25	82

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4″ OCTAGON BOX COVERS – CUBIC CAPACITY (SEE BELOW)



TP322
TP853*



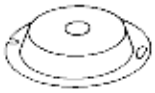
TP323



TP326, TP331,
TP332, TP333



TP328



TP330



TP329



TP335



TP334



TP336

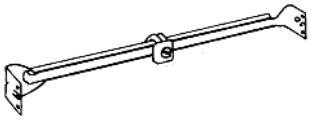
* For Air Plenum
† CSA Certified

Product Number	Description	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs. Per 100
TP322†	Flat Blank – Octagon Shape	—	50	22
TP323†	Flat Blank – Round Shape	—	50	24
TP333	Raised 1″, Open With Ears 2¾″	7.0	25	30
TP332	Raised ½″, Open With Ears 2¾″	3.3	50	22
TP326	Raised ⅝″, Open With Ears 2¾″	3.8	50	20
TP331	Raised ¾″, Open With Ears 2¾″	5.0	50	26
TP328†	Flat With ½″ KO – Octagon Shape	—	50	22
TP330	Raised ⅝″, With ½″ KO	3.8	50	31
TP329†	Flat With ½″ KO – Round Shape	—	50	24
TP335	Flat, For Toggle Switch	—	50	23
TP334	Flat, Single Receptacle 1 $^{13}/_{32}$″	—	50	21
TP336	Flat, For Duplex Receptacle	—	50	18
Air Plenum				
TP853*	Flat, Blank With PVC Gasket	—	50	24

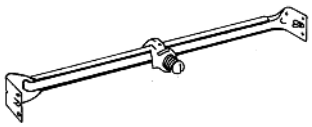
ADJUSTABLE BAR HANGERS

HOLDING PRONG... HOLDS BOX IN PLACE FOR NAILING – DESIGN RESISTS BENDING AND TWISTING – TP354 AND TP356 HAVE LOCKING TABS TO HOLD BAR IN POSITION

Weight Limits: 35 lbs. at 16″, 15 lbs. at 24″.



TP356



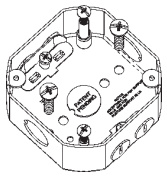
TP354

Product Number	Stud Spacing	Length	Stud	Std. Unit Pkg.	Wt. Lbs. Per 100
TP354	16″ & 24″	14″-22½″	Yes	50	43
TP356	16″ & 24″	14″-22½″	—	50	41

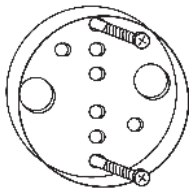
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CEILING FAN BOXES – CUBIC INCH CAPACITY (SEE BELOW)

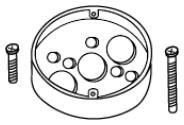
Weight Limits: TP261 – 35 lbs. max. for fans, 50 lbs. max. for fixture. TP301 – Fan is supported independent of outlet box, mounting screws go through box and into joist. Box will support fans up to 70 lbs. and fixtures up to 90 lbs. TP275 – 70 lbs, max. for fans, 90 lbs. max for fixtures.



TP275



TP261



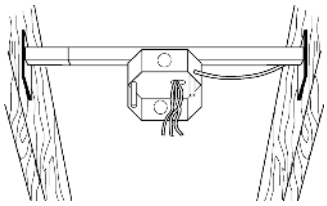
TP301

Product Number	Description	Cubic In. Capacity	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100	WEIGHT LIMITS Fans	WEIGHT LIMITS Fixtures
TP275	1½″ Deep, Clamps and Mounting Screws (polybagged)	15.5	4-Cable, 2-½″	1-½″	20	66.6	70 lbs.	90 lbs.
TP261	⅝″ Deep with External Clamp and Mounting Screws (polybagged)	8.0	—	2-½″	20	50	35 lbs.	50 lbs.
TP301*	½″ Deep, 4″ Round, with NM Snap-In Connector, mtg. screws, Protective Cover (no bag)	6.8	—	3-½″	20	51	70 lbs.*	90 lbs.*

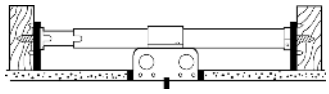
*** TP301 fan is supported independent of outlet box**

CEILING FAN BOXES AND SUPPORTS

Weight Limits: Up to 35 lbs. for fans.
Up to 50 lbs. for fixtures.



TP315



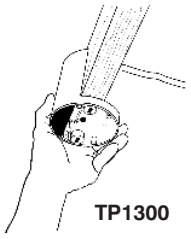
TP379

Product Number	Description	Stud Spacing	KNOCKOUTS Capacity. Cu. In.	KNOCKOUTS Bottom	KNOCKOUTS Side	Std. Unit Pkg.	Wt. Lbs. Per 100
TP315*	Fan Box with New Work Bar Hanger	16″–24″	15.5	2-½″	2-½″	12	192
TP379	1 ½″ Deep with Fan Brace Old Work Bar Hanger	16″–24″	15.5	2-½″	4-½″	12	207

* TP315 comes with Romex clamp installed on one side. The other 3 sides have a 1/2″ KO, a bagged MC clamp and screw and a bagged plastic NM connector

CEILING FAN BOXES – PVC

Weight Limits: Fans and fixtures are supported independent of outlet box. Mounting screws go through box and into joist. Box will support up to 70 lbs. for fans and 90 lbs. for fixtures. Provided with Romex connector



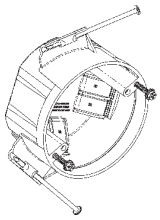
TP1300

Product Number	Description	Capacity Cu. In.	Knockouts	Integral Clamp	Std. Unit Pkg.	Wt. Lbs. Per 100
TP1300	4 1⁄16″ diam., ½″ deep pan section, 4″ deep overall – with mtg. hardware & external clamp, protective cover	14.0	3-½″	1	24	34
TP1300-1	Same as 1300, packed in counter display	14.0	3-½″	1	24	35

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NON-METALLIC CEILING FAN BOXES

- Made of heavy-duty, engineered thermoplastic material
- Offers the labor-saving feature of quick entry and integral clamping
- Eliminates the need to use a screwdriver to break open pry-outs
- The easy access entry-point serves as a wire clamp, eliminating time required to mechanically secure the wire to the box



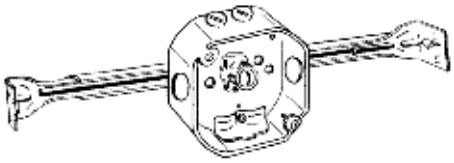
TP16511

Product Number	Diameter	Mounting Method	Capacity Cu. In.	No. of Clamp Openings	Std. Unit Pkg.	Wt. Lbs. Per 100
TP16511	4″	Nails only	22.5	6	25	21

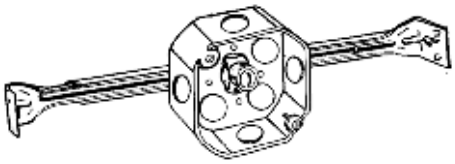
4″ OCTAGON BOX AND ADJUSTABLE BAR SETS – 15.5 CUBIC INCH CAPACITY

1½″ DEEP BOX SETS

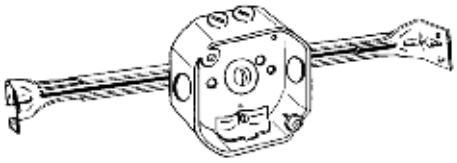
Weight Limits: 35 lbs. at 16″, 15 lbs. at 24″



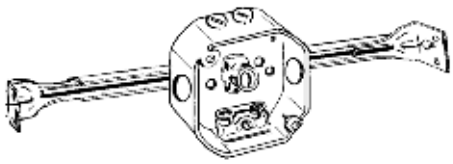
TP376



TP372*



TP377



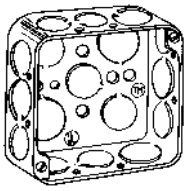
TP368

Product Number	Stud Spacing	Stud	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR CONDUIT – NO CLAMPS				
TP372*	16″–24″	Yes	25	85
FOR NONMETALLIC CABLE – WITH CLAMPS				
TP376	16″–24″	Yes	25	104
TP377	16″–24″	—	25	102
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END				
TP368	16″–24″	Yes	25	100

*** 4″ Octagon Box and Adjustable Bar Sets have ½″ KOs for conduit**

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4″ SQUARE OUTLET BOXES – 18.0 CUBIC INCH CAPACITY
1 ¼″ DEEP – FOR CONDUIT

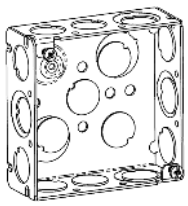


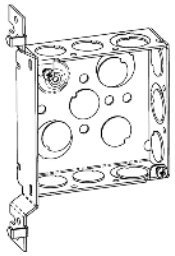
TP408

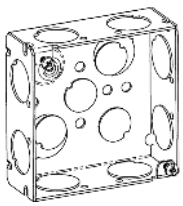
Product Number	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP408	—	Drawn	12-½″	5-½″	50	61

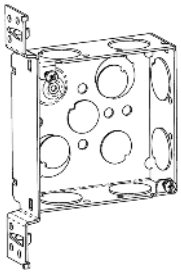
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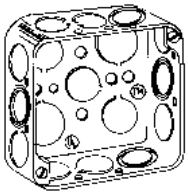
4″ SQUARE OUTLET BOXES – 22.0 CUBIC INCH CAPACITY (WELDED)†
1½″ DEEP – FOR CONDUIT 21.0 CUBIC INCH CAPACITY (DRAWN)

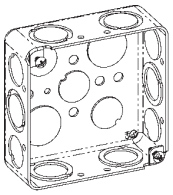

TP404/TP404PF

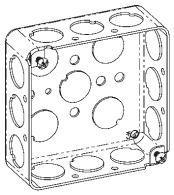

TP425

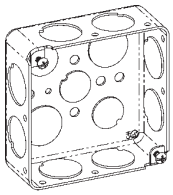

TP467

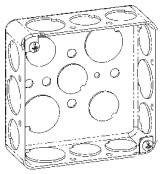

TP469

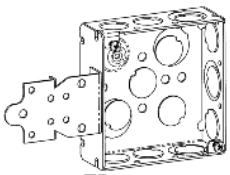

TP830*

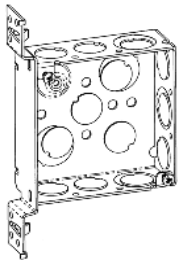

TP405


TP410


TP412
TP839*


TP414


TP418


TP423

* For Air Plenum (No Mounting Holes)

Product Number	Metal Stud Sizes	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP404	—	—	Welded	8-½″, 4-½″+¾″ E	2-½″, 2-½″+¾″ E	50	72
TP404PF*	—	—	Welded	8-½″, 4-½″+¾″ E	2-½″, 2-½″+¾″ E	50	72
TP425	—	‘‘VP’’	Welded	6-½″, 3-½″+¾″ E	2-½″, 2-½″+¾″ E	25	82
TP423	All	‘‘VMS’’	Welded	6-½″, 3-½″+¾″ E	2-½″, 2-½″+¾″ E	25	81
TP405	—	—	Drawn	4-½″, 6-½″ & ¾″-C	3-½″, 2-¾″	50	67
TP410	—	—	Drawn	12-½″	5-½″	50	67
TP412	—	—	Drawn	8-¾″	3-½″, 2-¾″	50	67
TP414	—	—	Drawn	8-½″, 4-¾″	3-½″, 2-¾″	50	67
TP418	—	‘‘F’’, Set Flush	Welded	6-½″, 3-½″+¾″ E	2-½″, 2-½″+¾″ E	25	84
TP467	—	—	Welded	8-¾″	2-½″, 2-½″+¾″ E	50	72
TP469	ALL	‘‘VMS’’	Welded	6-¾″	2-½″, 2-½″+¾″ E	25	81
Air Plenum							
TP830*	—	—	Drawn	8-½″, 4-¾″	3-½″, 2-¾″	50	72
TP839*	—	—	Drawn	8-¾″-C	3-½″, 2-¾″	50	72

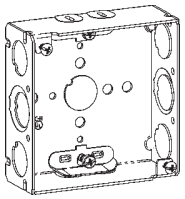
† All welded 4″ square outlet boxes have a raised dimple for ground screw
*** TP404PF includes ground screw with pigtail lead**

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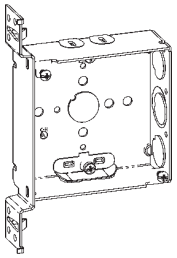
4″ SQUARE OUTLET BOXES – 22.0 CUBIC INCH CAPACITY

1½″ DEEP

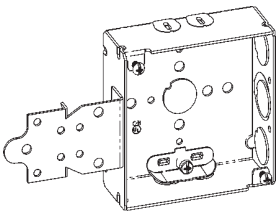
FOR NONMETALLIC CABLE – CLAMPS IN EACH END



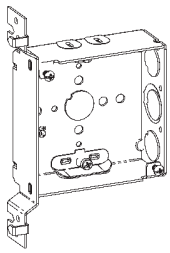
TP444



TP449



TP446



TP445

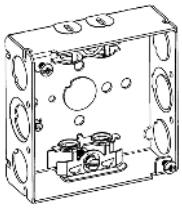
Product Number	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP449	''VMS''	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	85
TP444	—	Welded	4-Cable, 4-½″, 2-½″ & ¾″-E	1-½″	50	77
TP446	''F'', Set Flush	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	88
TP445	''VP''	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	85

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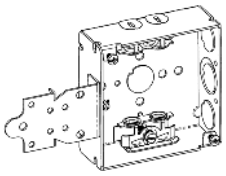
4″ SQUARE OUTLET BOXES – 22.0 CUBIC INCH CAPACITY

1½″ DEEP

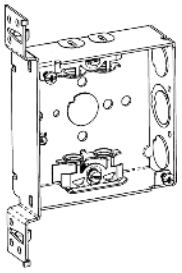
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



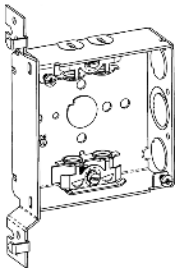
TP454



TP456



TP459

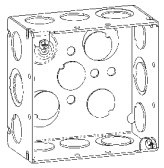


TP461

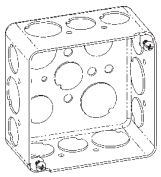
Product Number	Metal Stud Sizes	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP459	All	''VMS''	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	89
TP454	—	—	Welded	4-Cable, 4-½″, 2-½″ & ¾″-E	1-½″	50	81
TP456	—	''F'', Set Flush	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	92
TP461	—	''VP''	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	89

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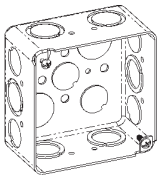
4″ SQUARE OUTLET BOXES – 30.3 CUBIC INCH CAPACITY 2⅛″ DEEP WITH CONDUIT KOs



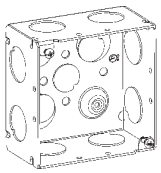
TP403/TP403PF



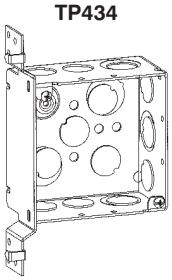
TP434



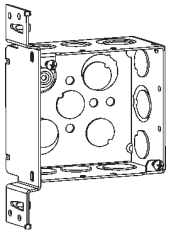
TP438
TP831*



TP432
TP436
TP840*



TP437



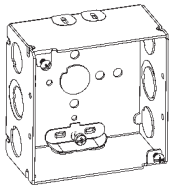
TP451

* For Air Plenum (No Mounting Holes)

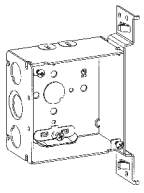
Product Number	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP403	—	Welded	8-½″, 4-½″ & ¾″-E	2-½″, 2-½″ & ¾″E	25	84
TP403PF†	—	Welded	8-½″, 4-½″ & ¾″-E	2-½″, 2-½″ & ¾″E	25	84
TP432	—	Welded	8-¾″	2-½″, 2-½″ & ¾″E	25	84
TP436	—	Welded	8-1″	2-½″, 2-½″ & ¾″E	25	84
TP434	—	Drawn	8-½″, 4-¾″	3-½″, 2-¾″	25	84
TP438	—	Drawn	4-½″, 6-½″ & ¾″-C	3-½″, 2-¾″	25	84
TP451	''VMS''	Welded	6-½″, 3-½″ & ¾″-E	2-½″, 2-½″ & ¾″E	25	96
TP437	''VP''	Welded	6-½″, 3-½″ & ¾″-E	2-½″, 2-½″ & ¾″E	25	98
Air Plenum						
TP831*	—	Drawn	8-½″, 4-¾″	3-½″, 2-¾″	25	90
TP840*	—	Drawn	8-¾″	3-½″, 2-¾″	25	90

† TP403PF includes ground screw with pigtail lead

2⅛″ DEEP – 30.3 CUBIC INCH CAPACITY FOR NONMETALLIC CABLE CLAMPS



TP450

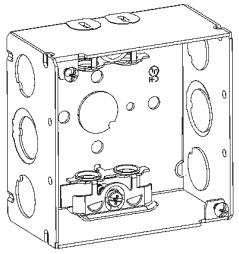


TP452

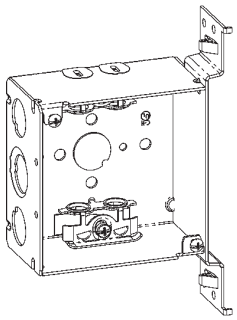
Product Number	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP450	—	Welded	4-Cable, 4-½″, 2-½″ & ¾″-E	1-½″	25	90
TP452	''VMS''	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	104

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4″ SQUARE OUTLET BOXES
30.3 CUBIC INCH CAPACITY
2⅛″ DEEP
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



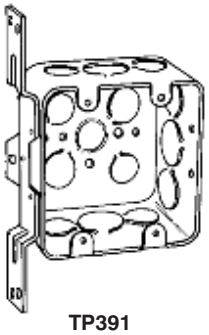
TP431



TP440

Product Number	Metal Stud Sizes	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP431	—	—	Welded	4-Cable, 4-½″, 2-½″ & ¾″-E	1-½″	25	91
TP440	All	''VMS''	Welded	4-Cable, 2-½″, 1-½″ & ¾″-E	1-½″	25	103

4″ SQUARE TWO-DEVICE BOXES –
30.3 CUBIC INCH CAPACITY
2⅛″ DEEP



TP391

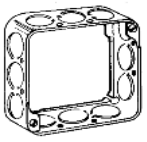


TP393, TP395

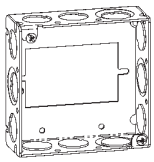
Product Number	Bracket	Description	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP391	''VS''	Drawn	6-½″, 3-¾″	3-½″, 2-¾″	25	95
TP393	—	Drawn	12-½″	3-½″, 2-¾″	25	84
TP395	—	Drawn	8-½″, 4-¾″	3-½″, 2-¾″	25	84

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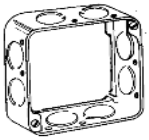
4″ SQUARE EXTENSION RINGS – 21.0 CUBIC INCH CAPACITY 1½″ DEEP WITH CONDUIT KNOCKOUTS



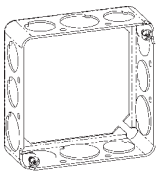
TP424



TP422



TP426



TP428, TP833*, TP841*

* For Air Plenum (No Mounting Holes)

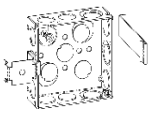
Product Number	KNOCKOUTS Sides	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP424	12-½″	—	50	46
TP422	8-½″, 4-½″+¾″E	—	50	50
TP426	8-¾″	—	50	46
TP428	8-½″, 4-¾″	—	50	46
Air Plenum				
TP833*	8-½″, 4-¾″	—	50	48
2⅛″ DEEP WITH CONDUIT KNOCKOUTS				
Air Plenum				
TP841*	8-½″, 4-¾″	—	25	66

Note: TP833 and TP841 require the use of TP854, purchased separately.

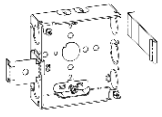
NEW!

4″ SQUARE BRACKETED OUTLET BOXES

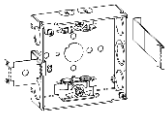
BRACKETED BOXES OFFER QUICK AND EASY INSTALLATION ONTO EITHER SIDE OF A STEEL STUD. FOR USE WITH CONDUIT, ARMORED/METAL CLAD CABLE OR NON-METALLIC SHEATHED CABLE.



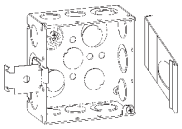
TP404SSB



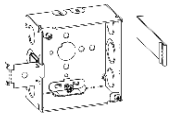
TP444SSB



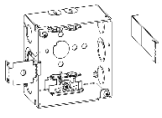
TP454SSB



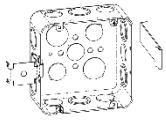
TP403SSB



TP450SSB



TP431SSB



TP563SSB

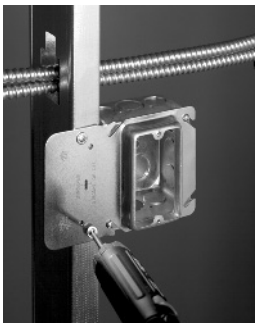
Catalog Number	Box Size	Box Depth	For Use With	Cubic Inch Capacity	Description Sides	Description Bottom
TP404SSB	4″	1-½″	Conduit	22.0	8-½″, 4-½″ & ¾″ E	2-½″, 2-½″ & ¾″ E
TP444SSB	4″	1-½″	Non-metallic Sheathed Cable	22.0	4 Cable, 4-½″, 2-½″ & ¾″ E	1-½″
TP454SSB	4″	1-½″	Armored/Metal Clad Cable	22.0	4 Cable, 4-½″, 2-½″ & ¾″ E	1-½″
TP403SSB	4″	2-⅛″	Conduit	30.3	8-½″, 4-½″ & ¾″ E	2-½″, 2-½″ & ¾″ E
TP450SSB	4″	2-⅛″	Non-metallic Sheathed Cable	30.3	4 Cable, 4-½″, 2-½″ & ¾″ E	1-½″
TP431SSB	4″	2-⅛″	Armored/Metal Clad Cable	30.3	4 Cable, 4-½″, 2-½″ & ¾″ E	1-½″
TP563SSB	4-11/16″	2-⅛″	Conduit	42.0	6-½″, 6-½″ & ¾″ -C	3-½″, 2-¾″

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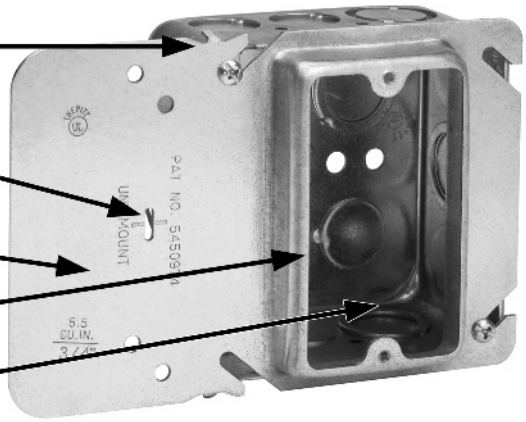
UNI-MOUNT™ COVERS

THE UNIMOUNT COMBINES THE FEATURES OF A MOUNTING DEVICE PLATE WITH THOSE OF A BOX SUPPORT; GIVING YOU ONE UNIVERSAL PLATE FOR ALL OF YOUR NEEDS. SPECIFICALLY DESIGNED FOR USE WITH METAL OR WOOD STUDS:

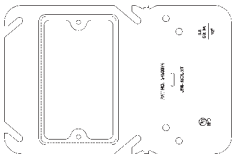
NO FAR SIDE SUPPORT REQUIRED
UL LISTED AND CSA CERTIFIED †



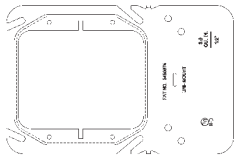
- Guide tabs ensure consistant alignment on stud
- Stud alignment hole ensures consistent mounting height
- Rigid bracket design eliminates the need for far side support
- Available as a single or two device cover
- Universal design fits all 4″ Square boxes



- Available in ½″, ⅝″ and ¾″ raised.
- Can be ordered preassembled to popular 4″ square boxes.
- Fast and easy installation
- Can be used in multiple applications, resulting in less items to stock.
- Less labor intensive.
- Less material handling.
- No multiple assemblies to handle.
- Can be used in Class 2 communications outlets for low voltage without a box.
- UL listed and CSA certified.



Single Gang



Two Gang

Product Number	Description	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs. Per 100
SINGLE GANG				
TP30000	½″ Raised	3.8	50	43
TP31000	⅝″ Raised	4.3	50	46
TP32000	¾″ Raised	5.5	50	50
TWO GANG				
TP35000	½″ Raised	6	50	38
TP36000	⅝″ Raised	8	50	52
TP37000	¾″ Raised	9	50	54
LOW PROFILE SCREWS				
TP710	L.P. Screws	—	1000	.5

† CSA requires a far side support.

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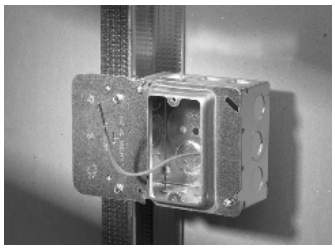
NEW!

PRE–FABRICATED BOXES

Cooper Crouse–Hinds new Pre–Fabricated Boxes take labor savings to a whole new level! Includes the Uni–Mount™ cover attached to a 4″ square box with ground screw and lead installed.

Step 1 – Receive Uni–Mount™ Pre–Fabricated Box
(Includes Uni–Mount cover attached to box with ground screw +lead installed)

Step 2 – Attach to wood or metal stud. You're done!



Description Pre–Fabricated Box, Cover, Ground Screw and Lead Assembly	Catalog Number	Capacity Cu. In.	Std. Unit Pkg.	Wt. lbs Per 100
1 ½″ Welded Box, ½″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP30404PF	25.8	25	115
1 ½″ Welded Box, ⅝″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP31404PF	26.3	25	118
1 ½″ Welded Box, ⅝″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP31436PF	26.3	25	130
1 ½″ Welded Box, ⅝″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP31467PF	26.3	25	113
1 ½″ Welded Box, ¾″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP32404PF	27.5	25	122
1 ½″ Welded Box, ¾″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP32454PF	27.5	25	121
1 ½″ Welded Box, ½″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP35404PF	28.0	25	110
1 ½″ Welded Box, ⅝″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP36404PF	30.0	25	124
1 ½″ Welded Box, ⅝″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP36467PF	30.0	25	119
1 ½″ Welded Box, ¾″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP37404PF	31.0	25	126
2 ⅛″ Welded Box, ½″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP30403PF	34.1	25	107
2 ⅛″ Welded Box, ⅝″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP31403PF	34.6	25	110
2 ⅛″ Welded Box, ¾″ Raised Single Gang Uni–Mount Cover, ground screw and lead	TP32403PF	35.8	25	114
2 ⅛″ Welded Box, ½″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP35403PF	36.3	25	102
2 ⅛″ Welded Box, ⅝″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP36403PF	38.3	25	116
2 ⅛″ Welded Box, ¾″ Raised Two Gang Uni–Mount Cover, ground screw and lead	TP37403PF	39.3	25	118



TP404
1 ½″ Deep – Welded
22.0″ Cubic Capacity



TP403
2 ⅛″ Deep – Welded
22.0″ Cubic Capacity



TP436
2 ⅛″ Deep – Welded
30.3″ Cubic Capacity



TP467
1 ½″ Deep – Welded
22.0″ Cubic Capacity

PREASSEMBLED BOXES

The Uni–Mount™ cover is available preassembled to four popular 4″ square boxes for even greater labor savings and reduced costs.

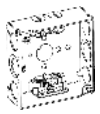
Description Preassembled Uni–Mount™ Cover to 4″ Square Box	Catalog Number	Capacity Cu. In.	Std. Unit Pkg.	Wt. lbs Per 100
For Conduit				
1 ½″ Drawn Box assembled to ½″ Raised Single Gang Uni–Mount Cover	TP30414	24.8	25	110
1 ½″ Drawn Box assembled to ⅝″ Raised Single Gang Uni–Mount Cover	TP31414	25.3	25	113
1 ½″ Drawn Box assembled to ¾″ Raised Single Gang Uni–Mount Cover	TP32414	26.5	25	117
1 ½″ Drawn Box assembled to ½″ Raised Two Gang Uni–Mount Cover	TP35414	27.0	25	105
1 ½″ Drawn Box assembled to ⅝″ Raised Two Gang Uni–Mount Cover	TP36414	29.0	25	119
1 ½″ Drawn Box assembled to ¾″ Raised Two Gang Uni–Mount Cover	TP37414	30.0	25	121
2 ⅛″ Drawn Box assembled to ½″ Raised Single Gang Uni–Mount Cover	TP30434	34.1	25	127
2 ⅛″ Drawn Box assembled to ⅝″ Raised Single Gang Uni–Mount Cover	TP31434	34.6	25	130
2 ⅛″ Drawn Box assembled to ¾″ Raised Single Gang Uni–Mount Cover	TP32434	35.8	25	134
2 ⅛″ Drawn Box assembled to ½″ Raised Two Gang Uni–Mount Cover	TP35434	36.3	25	122
2 ⅛″ Drawn Box assembled to ⅝″ Raised Two Gang Uni–Mount Cover	TP36434	38.3	25	136
2 ⅛″ Drawn Box assembled to ¾″ Raised Two Gang Uni–Mount Cover	TP37434	39.3	25	138
For AC/MC Cable				
1 ½″ Welded Box assembled to ½″ Raised Single Gang Uni–Mount Cover	TP30454	24.8	25	114
1 ½″ Welded Box assembled to ⅝″ Raised Single Gang Uni–Mount Cover	TP31454	25.3	25	117
1 ½″ Welded Box assembled to ¾″ Raised Single Gang Uni–Mount Cover	TP32454	26.5	25	121
1 ½″ Welded Box assembled to ½″ Raised Two Gang Uni–Mount Cover	TP35454	27.0	25	109
1 ½″ Welded Box assembled to ⅝″ Raised Two Gang Uni–Mount Cover	TP36454	29.0	25	123
1 ½″ Welded Box assembled to ¾″ Raised Two Gang Uni–Mount Cover	TP37454	30.0	25	125
2 ⅛″ Welded Box assembled to ½″ Raised Single Gang Uni–Mount Cover	TP30431	34.1	25	134
2 ⅛″ Welded Box assembled to ⅝″ Raised Single Gang Uni–Mount Cover	TP31431	34.6	25	137
2 ⅛″ Welded Box assembled to ¾″ Raised Single Gang Uni–Mount Cover	TP32431	35.8	25	141
2 ⅛″ Welded Box assembled to ½″ Raised Two Gang Uni–Mount Cover	TP35431	36.3	25	129
2 ⅛″ Welded Box assembled to ⅝″ Raised Two Gang Uni–Mount Cover	TP36431	38.3	25	143
2 ⅛″ Welded Box assembled to ¾″ Raised Two Gang Uni–Mount Cover	TP37431	39.3	25	145



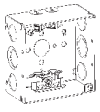
TP414
1 ½″ Deep – Welded
21.0″ Cubic Capacity



TP434
2 ⅛″ Deep – Welded
30.3″ Cubic Capacity



TP454
1 ½″ Deep – Welded
22.0″ Cubic Capacity



TP431
2 ⅛″ Deep – Welded
30.3″ Cubic Capacity

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COVERS FOR 4″ SQUARE BOXES – CUBIC INCH CAPACITY (SEE BELOW)

 # 8-32 screw used on covers



TP472



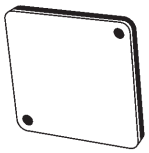
TP474



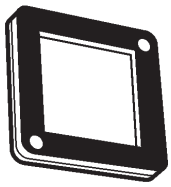
TP478



TP473, TP475, TP476, TP477, TP479, TP 483



TP850*



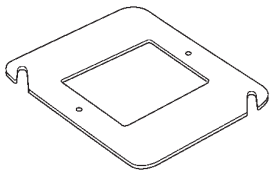
TP854*

*For Air Plenum

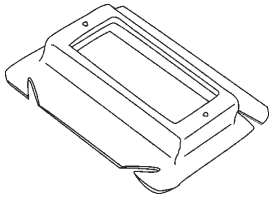
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capactiy Cu. In.
TP472†	Flat Blank	50	31	—
TP474	Flat Blank, Open With Ears 2¾″	50	21	—
TP478†	Flat with ½″, ko	50	31	—
TP473	Raised ¼″, Open With Ears 2¾″	50	23	1.3
TP476†	Raised ½″, Open With Ears 2¾″	50	26	4.0
TP477	Raised ⅝″, Open With Ears 2¾″	50	27	5.0
TP475	Raised ¾″, Open With Ears 2¾″	25	31	6.0
TP479	Raised 1″, Open With Ears 2¾″	25	34	7.0
TP483	Raised 1¼″, Open With Ears 2¾″	25	37	8.5
Air Plenum				
TP850*	Flat Blank Gasketed With Captive Screws	25	31	—
TP854*	Flat Ring Double Gasketed	25	12	—

† CSA Certified

ONE DEVICE



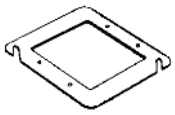
TP480



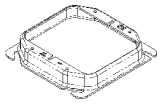
TP482, TP484, TP486, TP488, TP489, TP490

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In
TP480	Flat	50	20	—
TP482	¼″ Raised	50	21	1.8
TP484	½″ Raised	50	23	3.5
TP489	⅝″ Raised	50	26	4.3
TP486	¾″ Raised	50	30	5.5
TP488	1″ Raised	50	34	6.8
TP490	1¼″ Raised	25	39	8.8

TWO DEVICE



TP494



TP496, TP488, TP499, TP500, TP501, TP502

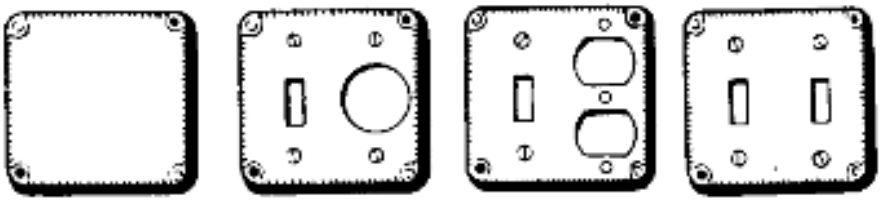
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In
TP494	Flat	50	12	—
TP496‡	¼″ Raised	50	13	3.0
TP498‡	½″ Raised	50	18	6.0
TP499‡	⅝″ Raised	50	22	8.0
TP500‡	¾″ Raised	50	24	9.0
TP501	1¼″ Raised	25	31	14.0
TP502	1″ Raised	25	30	11.7

‡ Slotted design for use with 4″ square box partitions

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SURFACE COVERS FOR 4″ SQUARE BOXES – 5.5 CUBIC INCH CAPACITY

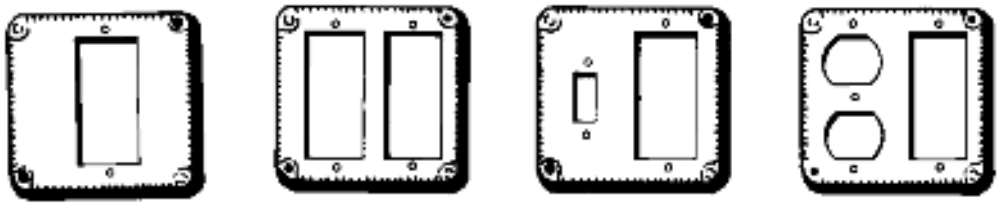
RAISED ½″



TP503 TP504 TP506 TP508



TP510 TP512 TP507 TP514 TP519 TP516 TP509 TP518



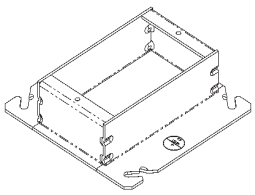
TP513 TP511 TP515 TP517

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP503†	Raised Blank	50	35
TP504†	For One Toggle Switch, One Single Receptacle 1 13/32″ Dia.	50	31
TP506†	For One Toggle Switch, One Duplex Receptacle	50	31
TP508	For Two Toggle Switches	50	35
TP510	For Two Duplex Receptacles	50	26
TP512	For One Toggle Switch	50	35
TP507	For One 20 Amp, Single Receptacle 1 19/32″ Dia.	50	37
TP514	For One Single Receptacle 1 13/32″ Dia.	50	34
TP519†	For One 30 Amp. Twist-Lock Single Receptacle 1 23/32″ Dia.	50	37
TP516	For One Duplex Receptacle	50	31
TP509	For One 30–60 Amp. Receptacle (4-wire) 2 7/16″ Dia.	50	23
TP518	For One 30–50 Amp. Receptacle 2 9/64″ Dia.	50	34
TP513	For One GFCI Receptacle	50	31
TP511	For Two GFCI Receptacles	50	26
TP515	For One Toggle Switch, One GFCI Receptacle	50	31
TP517	For One Duplex Receptacle, One GFCI Receptacle	50	26

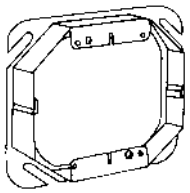
† CSA certified

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TILE WALL COVERS FOR 4″ SQUARE BOXES – CUBIC INCH CAPACITY (SEE BELOW) APPLICATIONS: TYPICALLY USED WITH TILE OR BRICK



TP524



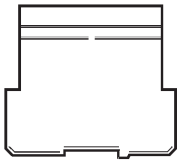
TP534

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
ONE DEVICE				
TP520	½″ Raised	50	30	3.7
TP522	¾″ Raised	50	36	5.5
TP524	1″ Raised	50	40	7.4
TP526	1¼″ Raised	25	46	9.2
TP528	1½″ Raised	25	50	11.0
TP530	2″ Raised	25	62	14.7
TWO DEVICE				
TP532	½″ Raised	10	24	5.0
TP534	¾″ Raised	10	30	7.8
TP536	1″ Raised	10	36	10.3
TP538	1¼″ Raised	10	44	13.0
TP540	1½″ Raised	10	50	15.5
TP542	2″ Raised	10	66	20.8

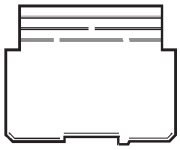
4″ SQUARE BOX PARTITIONS



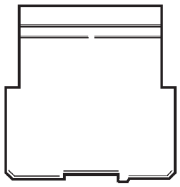
TP860



TP861



TP862



TP863

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR 1½″ DEEP BOX WITH SQUARE CUT TILE WALL TWO-GANG COVERS			
TP860	For ½″, ¾″, 1″ Raised Covers	25	13
TP861	For 1¼″, 1½″, 2″ Raised Covers	25	18
FOR 2⅛″ DEEP BOX WITH SQUARE CUT TILE WALL TWO-GANG COVERS			
TP862	For ½″, ¾″, 1″ Raised Covers	25	16
TP863	For 1¼″, 1½″, 2″ Raised Covers	25	21

4 11/16″ SQUARE OUTLET BOXES – 29.5 CUBIC INCH CAPACITY

1½″ DEEP WITH CONDUIT KOs



TP548

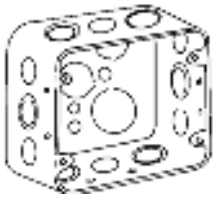


TP550

	KNOCKOUTS			
Product Number	Sides	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP548	8-½″, 4-¾″	3-½″, 2-¾″	25	84
4 11/16″ SQUARE EXTENSION RING				
TP550	8-½″, 4-¾″	—	25	66

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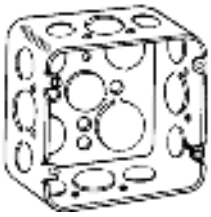
4 11/16″ SQUARE OUTLET BOXES – 42.0 CUBIC INCH CAPACITY
2⅛″ DEEP WITH CONDUIT KOs



TP563



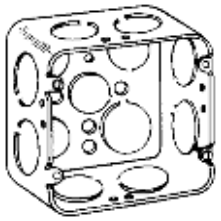
TP554
TP842*



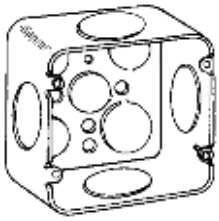
TP556
TP832*



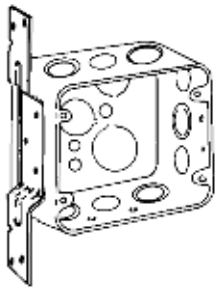
TP558
TP835*



TP560
TP836*



TP562



TP557



TP564
TP837*

* For Air Plenum (No Mounting Holes)

Product Number	Brackets	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP563	—	6-½″, 6-½″ & ¾″-C	3-½″, 2-¾″	25	104
TP554	—	8-¾″	3-½″, 2-¾″	25	104
TP556	—	8-½″, 4-¾″	3-½″, 2-¾″	25	104
TP558	—	4-¾″, 4-1″	3-½″, 2-¾″	25	104
TP560	—	8-1″	3-½″, 2-¾″	25	104
TP562	—	4-1-¼″	3-½″, 2-¾″	25	104
TP557	''VS''	4-½″, 5-½″ & ¾″C	3-½″, 2-¾″	25	120
Air Plenum					
TP835*	—	4-¾″, 4-1″	3-½″, 2-¾″	25	115
TP836*	—	8-1″	3-½″, 2-¾″	25	115
TP842*	—	12-¾″	3-½″, 2-¾″	25	115
TP832*	—	8-½″, 4-¾″	3-½″, 2-¾″	25	115
4 11/16″, SQUARE EXTENSION RING					
TP564	—	8-½″, 4-¾″	—	25	84
Air Plenum					
TP837*	—	8-½″, 4-¾″	—	25	115

Note: TP837 requires the use of TP852, purchased separately.

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4 11/16″ SQUARES COVERS – CUBIC INCH CAPACITY (SEE BELOW)



TP568



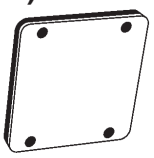
TP569, TP570, TP571, TP573, TP575



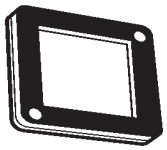
TP574, – TP582, TP529, TP531



TP584, TP586, TP589, TP593, TP541, TP543



TP851*



TP852*

* For Air Plenum

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP568†	Flat Blank	25	40	—
TP569	½″ Raised, With Ears 2¾″	25	36	3.3
TP570	Raised ⅝″, With Ears 2¾″	25	38	3.8
TP571	¾″ Raised, With Ears 2¾″	25	40	5.0
TP572†	Flat, With ½″ KO	25	40	—
TP573	1″ Raised, With Ears 2¾″	25	44	7.0
TP575	1¼″ Raised, With Ears 2¾″	25	48	9.0
Air Plenum				
TP851*	Flat Blank Gasketed Captive Screws	50	42	—
TP852	Flat Ring Double Gasketed	25	20	—
ONE DEVICE				
TP574	¼″ Raised	25	32	1.8
TP576	½″ Raised	25	36	3.3
TP578	¾″ Raised	25	42	5.0
TP579	⅝″ Raised	25	39	4.3
TP580	1″ Raised	25	46	6.8
TP582	1¼″ Raised	25	52	8.8
TP529	1½″ Raised	25	64	11.3
TP531	2″ Raised	25	76	15.0
TWO DEVICE				
TP590	Flat	25	21	—
TP583	¼″ Raised	25	26	3.0
TP584	½″ Raised	25	30	6.0
TP587	⅝″ Raised	25	32	8.0
TP586	¾″ Raised	25	34	8.8
TP589	1″ Raised	25	38	11.7
TP593	1¼″ Raised	25	42	14.0
TP541	1½″ Raised	25	63	18.8
TP543	2″ Raised	25	79	24.5

† CSA Certified

4 11/16″ SQUARE SURFACE COVERS – 9.0 CUBIC INCH CAPACITY

½″ DEEP



TP720



TP722



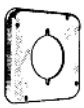
TP724
TP730
TP736



TP726



TP728



TP732



TP734



TP738

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP720	For One Toggle Switch	10	52
TP722	For One Duplex Receptacle	10	49
TP724	For One Single Receptacle 1 13/32″ Dia.	10	53
TP730	For One 20 Amp Single Receptacle 1.620″ Dia.	10	50
TP736	For One 1.730″ Dia. Power Outlet	10	51
TP726	For Two Toggle Switches	10	52
TP728	For Two Duplex Receptacles	10	44
TP732	For One 2.125″ Dia. Range/Dryer Receptacle	10	48
TP734	For One 2.480″ Dia. Power Outlet	10	45
TP738	For One Ground Fault Interrupter	10	45
TP741	For Two GFI Receptacles	10	43

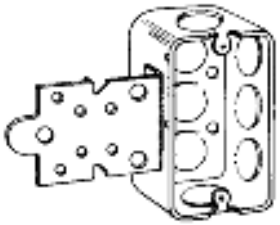
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UTILITY BOXES – CUBIC INCH CAPACITY (SEE BELOW)

4″ LONG X 2⅛″ WIDE



TP588
(TP647-1¼″ Deep)



TP591



TP592, TP600, TP602



TP598
(TP605-2⅛″ Deep)

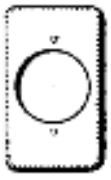


TP594, TP596, TP604, TP606, TP595 (4⅛″ x 2⅜″)

Product Number	Bracket	KNOCKOUTS Sides	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
1¼″ DEEP – 8.5 CUBIC INCH CAPACITY					
TP647	—	8-½″	3-½″	50	40
1½″ DEEP – 10.3 CUBIC INCH CAPACITY					
TP588	—	8-½″	3-½″	50	42
TP591	‘‘F’’, Set ¼″	5-½″	3-½″	50	51
1½″ DEEP EXTENSION RINGS – 10.3 CUBIC INCH CAPACITY					
TP592	—	8-½″	—	50	36
1⅞″ DEEP – 13.0 CUBIC INCH CAPACITY					
TP594	—	8-½″	3-½″	50	50
TP596	—	6-¾″	3-½″	50	50
TP598	‘‘S’’, SET ½″	5-½″	3-½″	50	60
EXTENSION RINGS					
TP600	—	8-½″	—	50	41
TP602	—	6-¾″	—	50	41
2⅛″ DEEP – 14.5 CUBIC INCH CAPACITY					
TP604	—	8-½″	3-½″	50	56
TP606	—	6-¾″	3-½″	50	56
TP605	‘‘S’’, Set ½″	5-½″	3-½″	50	66
2⅛″ DEEP – 18.5 CUBIC INCH CAPACITY					
TP595	—	8-½″	3-½″	50	60



TP608



TP610



TP612



TP613



TP614



TP616



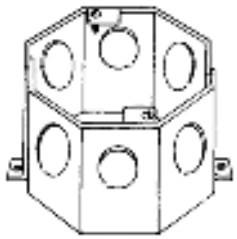
TP618

Product Number	Description	Std Unit Pkg.	Wt. Lbs Per 100
TP608*	Blank	100	10
TP610*	For 20 and 30 AMP, Twist Lock, 1 19⁄32″ Diameter	100	9
TP612*	Single Receptacle, 1 13⁄32″ Diameter	100	9
TP613*	For GFCI Device	100	7
TP614*	½″ KO	100	10
TP616*	Duplex Receptacle	100	8
TP618*	One Toggle Switch	100	10

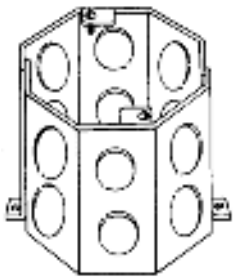
*CSA Certified

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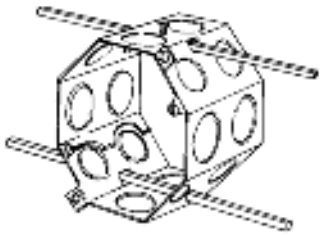
4″ OCTAGON CONCRETE BOXES AND HUNG CEILING BOXES*



TP620, TP622, TP628



TP635, TP636, TP644



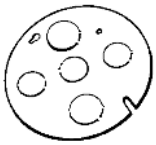
TP623, TP624
(bars not included)



TP348

Product Number	Depth	KNOCKOUTS	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu.In.
TP620	2″	½″ & ¾″ Single Row	25	60	23.0
TP622	2½″	½″ & ¾″ Single Row	25	72	29.0
TP628	3″	½″ & ¾″ Single Row	20	85	35.0
TP635	3½″	½″ Double Row	20	93	43.0
TP636	3½″	½″ & ¾″ Double Row	20	93	43.0
TP644	4″	½″ & ¾″ Double Row	20	113	47.0
HUNG CEILING BOXES (WITH TP650 COVER, ORDER BARS SEPARATELY)					
TP623	3½″	½″ Double Row	20	93	43.0
TP624	3½″	½″ & ¾″ Double Row	20	93	43.0
BARS FOR HUNG CEILING BOXES					
TP348	30″ bars (Bars Sold Separately)		40	60	–

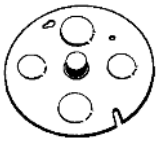
CONCRETE BOX PLATES



TP648



TP649



TP650



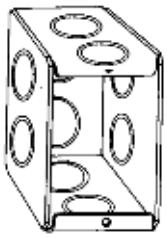
TP652

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP648	No Stud 3-½″ & 2-¾″ KOs	50	28
TP649	Flat, Blank	50	28
TP650	⅜″ Stud 2-½″ & 2-¾″ KOs	50	33
TP652	Single Receptacle	50	24

*Weight limit for 4″ octagon concrete boxes is 50lbs. Not suitable for fans.

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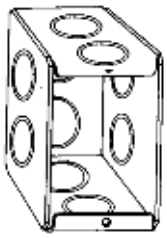
MASONRY BOXES
2½″ DEEP × 3¾″ HIGH
½″ AND ¾″ CONCENTRIC KOs



TP682

Product Number	Gang	Width	KNOCKOUTS Each Side	KNOCKOUTS Each End	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100	Capacity Cu. In.
TP682	1	1 15/16″	2	1	2	20	70	15.5
TP683	2	3¾″	2	2	4	10	103	31.0
TP684	3	5 9/16″	2	3	6	5	129	46.5
TP685	4	7⅜″	2	4	8	5	165	62.0
TP686	5	9 3/16″	2	5	10	5	189	77.5
TP687	6	11″	2	6	12	1	230	93.0

MASONRY BOXES
3½″ DEEP × 3¾″ HIGH
½″ AND ¾″ CONCENTRIC KOs



TP690

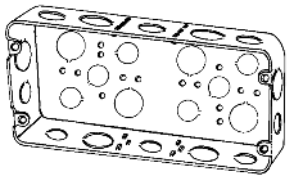
Product Number	Gang	Width	KNOCKOUTS Each Side	KNOCKOUTS Each End	KNOCKOUTS Bottom	Std. Unit Pkg.	Wt. Lbs Per 100	Capacity Cu. In.
TP690	1	1 15/16″	2	2	2	20	84	22.0
TP691	2	3¾″	2	4	4	10	120	44.0
TP692	3	5 9/16″	2	6	6	10	155	66.5
TP693	4	7⅜″	2	8	8	5	207	88.0
TP694	5	9 3/16″	2	10	10	5	235	110.0
TP695	6	11″	2	12	12	1	287	132.0

MASONRY BOX PARTITIONS

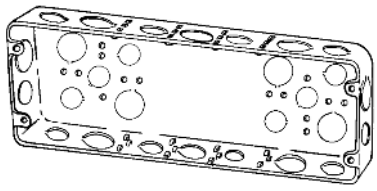
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP820	Nonmetallic Partition for 2½″ Deep Masonry Boxes	25	3
TP821	Nonmetallic Partition for 3½″ Deep Masonry Boxes	25	4

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GANG BOXES
1⅝″ DEEP × 4½″ HIGH
½″ & ¾″ KOs



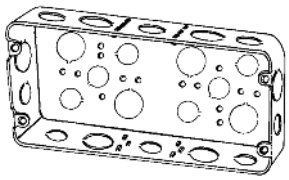
TP630



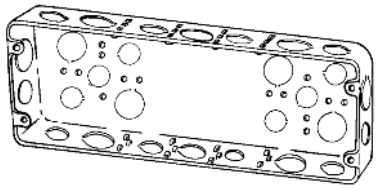
TP640

Product Number	Gang	Cubic Inches	KNOCKOUTS Width	Each Side	Each End	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP629	2	45	6 13/16″	2-½″, 2-¾″	1-½″, 1-¾″	3-½″, 2-¾″	5	45
TP630	3	58	8⅝″	3-½″, 2-¾″	1-½″, 1-¾″	6-½″, 4-¾″	5	58
TP631	4	70	10 7/16″	3-½″, 3-¾″	1-½″, 1-¾″	6-½″, 4-¾″	5	70
TP640	5	85	12¼″	4-½″, 3-¾″	1-½″, 1-¾″	6-½″, 4-¾″	1	85
TP641	6	95	14 1/16″	4-½″ 4-¾″	1-½″, 1-¾″	6-½″, 4-¾″	1	95

GANG BOXES
2½″ DEEP × 4½″ HIGH
¾″ & 1″ KOs



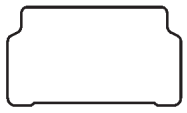
TP871



TP873

Product Number	Gang	Cubic Inches	KNOCKOUTS Width	Each Side	Each End	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP870	2	71	6 13/16″	2-¾″, 1-1″	1-¾″, 1-1″	3-½″, 2-¾″	10	147
TP871	3	90	8⅝″	4-¾″, 1-1″	1-¾″, 1-1″	6-½″, 4-¾″	10	183
TP872	4	110	10 7/16″	2-¾″, 2-1″	1-¾″, 1-1″	6-½″, 4-¾″	5	216
TP873	5	132	12¼″	3-¾″, 2-1″	1-¾″, 1-1″	6-½″, 4-¾″	5	263
TP874	6	150	14 1/16″	3-¾″ 3-1″	1-¾″, 1-1″	6-½″, 4-¾″	5	282

GANG BOX PARTITIONS



TP876

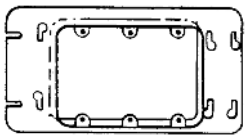


TP877

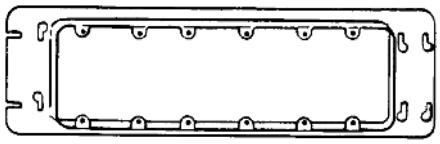
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP876	For 1⅝″ Deep Box	25	19
TP877	For 2½″ Deep Box	50	24

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GANG BOX COVERS
RAISED 13⁄16″ FOR PLASTER



TP653



TP667

Product Number	Gang	Length	Std. Unit Pkg.	Wt. Lbs Per 100	Capacity Cu. In.
TP657	2	7″	5	53	8.5
TP653	3	8 13⁄16″	5	60	13.5
TP655	4	10 5⁄8″	5	66	18.3
TP661	5	12 7⁄16″	5	75	23.0
TP667	6	14 1⁄4″	5	85	28.3

GANG BOX COVERS, FLAT, BLANK



TP803

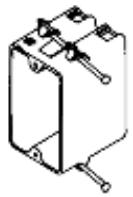


TP806

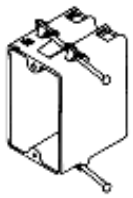
Product Number	Gang	Length	Std. Unit Pkg.	Wt. Lbs Per 100
TP802	2	7″	5	66
TP803	3	8 13⁄16″	5	85
TP804	4	10 5⁄8″	5	94
TP805	5	12 7⁄16″	1	122
TP806	6	14 1⁄4″	1	132

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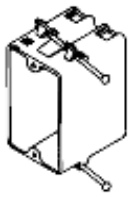
SWITCH BOXES – ANGLED NAILS



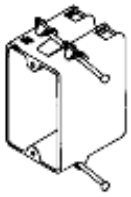
TP1600



TP1800



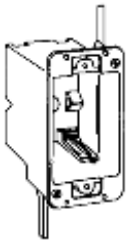
TP2000



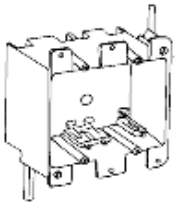
TP2300

Product Number	Bracket or Nails	Capacity Cu. in.	H	W	D	Std. Unit Pkg.	Wt. Lbs Per 100
TP1600	Nails	16.0	3¾″	2¼″	2½″	100	21
TP1800	Nails	18.0	3¾″	2¼″	2¾″	100	23
TP2000	Nails	20.3	3¾″	2¼″	3 3/16″	100	25
TP2300	Nails	22.5	3¾″	2¼″	3 7/16″	50	27

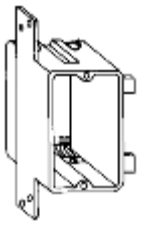
SWITCH BOXES – INTEGRAL CLAMPS



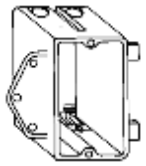
TP1690
(Old Work)



TP3490
(Old Work)



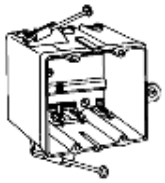
TP2020
(For Wood or Metal Studs)



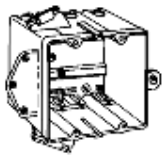
TP2030
(For Wood or Metal Studs)

Product Number	Bracket or Nails	Capacity Cu. in.	H	W	D	Std. Unit Pkg.	Wt. Lbs Per 100
TP1690	Swing Clips & Integral Clamps	16.0	3⅝″	2 5/16″	2¾″	50	20
TP3490	Swing Clips	34.0	3 9/16″	4″	3 1/16″	25	29
TP2020	Side Bracket (⅝″ offset)	20.3	3 11/16″	2¼″	3 3/16″	50	24
TP2030	Face Bracket (½″ offset)	20.3	3 11/16″	2¼″	3 3/16″	50	24

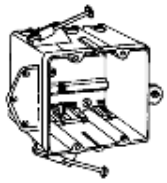
3″ DEEP SWITCH BOXES – TWO GANG



TP3600



TP3630



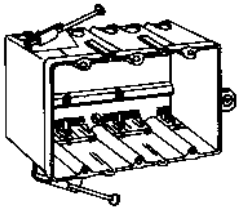
TP3635

Product Number	Bracket or Nails	Capacity Cu. in.	H	W	D	Std. Unit Pkg.	Wt. Lbs Per 100
TP3600	Nails	36.0	3¾″	4″	3″	25	37
TP3630*	Brackets	36.0	3¾″	4″	3″	25	37
TP3635*	Brackets & Nails	36.0	3¾″	4″	3″	25	39

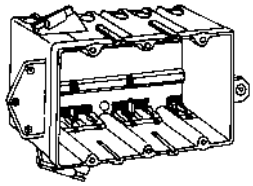
* NOTE: Face Bracket on PVC Boxes are offset ½″ unless stated otherwise

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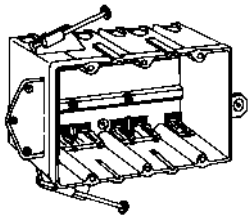
2 11/16″ DEEP SWITCH BOXES – THREE GANG



TP4600



TP4630



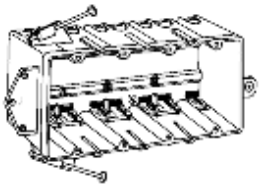
TP4635

Product Number	Bracket or Nails	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP4600	Nails	46.0	20	45
TP4630*	Brackets	46.0	20	43
TP4635*	Brackets & Nails	46.0	20	46

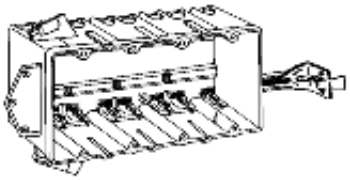
2 11/16″ DEEP SWITCH BOXES – FOUR GANG



TP6100**



TP6135**



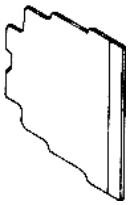
TP6180**

Product Number	Bracket or Nails	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP6100	Nails	61.0	4	65
TP6135*	Nails & Brackets	61.0	4	66
TP6180*	Brackets & Bar Support	61.0	4	87

* NOTE: Face Bracket on PVC Boxes are offset ½″ unless otherwise stated

** NOTE: Not 2-Hour Fire Rated.

LOW VOLTAGE PARTITION – TWO, THREE OR FOUR GANG PVC

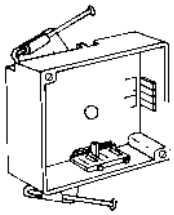


TP1000

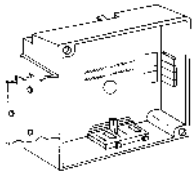
Product Number	Bracket or Nails	Capacity Cu. In.	Std. Unit Pkg.	Master Pkg.	Wt. Lbs Per 100
TP1000	—	—	20	120	3

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4″ SQUARE WITH INTEGRAL CLAMPS – 20.3 CUBIC INCH CAPACITY 1⅝″ DEEP



TP1900



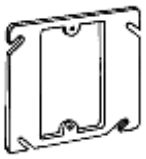
TP1930

Product Number	Bracket	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP1900	—	20.3	50	26
TP1930	''F'' Bracket	20.3	50	40

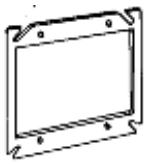
4″ SQUARE PVC DEVICE COVERS



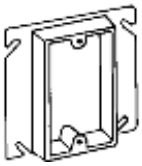
TP1009



TP1010



TP1020



TP1013, TP1014



TP1023, TP1024

Product Number	Raised	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP1009	—	—	50	9
TP1010	—	—	50	6
TP1020	—	—	50	4
TP1013	½″	3.8	50	8
TP1014	⅝″	4.8	50	8
TP1023	½″	5.8	50	8
TP1024	⅝″	7.0	50	8

ROUND BLANK COVER – PVC

4¾″ DIA.
(FOR 3½″ AND 4″ ROUND CEILING BOXES)



TP1040, TP1045

Product Number	Color	Screws	Std. Unit Pkg.	Wt. Lbs Per 100
TP1040	Gray	—	100	10
TP1045*	White	White	100	12

*NOTE: TP1045 includes two white-headed wood and two #8-32″ machine screws.

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CP Non–Metallic Switchboxes

NEW!

New! Speed–Mount™ Switchboxes

The labor saving Speed–Mount device installation feature is simple and easy to use. The device is attached by simply pressing the device mounting screw into the device hole in the box and turning the screw to lock it in place. The spring steel clip locks the screw securely in place. To remove the device, simply unscrew the screw in the traditional manner.





Our new Speed–Mount™ SWITCHBOXES provide significant labor savings through our quick cable entry feature and express device installation feature.

Applications:

Cooper Crouse–Hinds nonmetallic Speed–Mount Switchboxes are used:

- In branch circuit wiring as a splice point
- To mount wiring devices such as switches, receptacles, GFCI's, dimmers etc.
- To provide mechanical protection for wiring systems and electrical devices

Features:

- Available for use with wood or metal stud to meet any construction preference
- Quick entry feature on all nonmetallic boxes offers labor savings – no need to break out knockouts – simply push the nonmetallic cable into the box. No tools are required. No need to remove knockouts.
- Unique configuration of this quick entry feature on single gang boxes provides a self–feeding feature that eliminates the need to reach inside the box to pull the wire out.
- Integral labor saving clamping feature on two, three & four gang boxes. The multiple gang box unique quick entry also serves as a clamp, eliminating the need to mechanically secure the cable inside the box. There are no separate clamps or screws to install or tighten. Each entry into the multiple gang boxes has the quick entry feature allowing the installer to simply push the cable into the box without the need for tools or removal of knock–outs, so the cable can be inserted where it is required.
- Speed–Mount Switchboxes offer simple, labor saving press installation of devices. The device is attached by simply pressing the device mounting screw into the device hole and turning the screw to lock it in place. The spring steel clip locks the screw securely in place.

Material:

- PVC–Polyvinyl Chloride compound

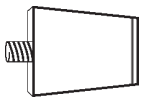
Compliances:

- UL Listed
- Classified for use in fire rated (2 HR) wall or ceilling

Speed–Mount Switchbox Ordering Information:

Catalog No.	Capacity (CU. IN.)	Description	Bracket or Nails	Standard Unit Qty
TP 1802	18.0	single gang box	nails	100
TP 1832	18.0	single gang box	bracket	100
TP 2002	20.0	single gang box	nails	100
TP 2302	22.5	single gang box	nails	50
TP 2332	22.5	single gang box	bracket	50
TP 3602	36.0	2 gang box	nails	25
TP 3632	36.0	2 gang box	bracket	25
TP 4602	54.0	3 gang box	nails	20
TP 4632	54.0	3 gang box	bracket	20
TP 6102	72.0	4 gang box	nails	4
TP 6132	72.0	4 gang box	bracket	4

Far Side Support–For use with Speed-Mount™ Switchboxes



Application:

Far Side Support is designed for use with Speed-Mount™ switchboxes used with either wood or metal studs to provide a quick, easy economical way for far side support.

How to use:

The multi-gang Speed-Mount™ boxes have a molded-in-hole in the back for attaching the TPFSS. The molded-in-hole has two flats as you look at the back of the box. There are also two flats on the TPFSS. To install, simply align the flats and push the TPFSS into the hole. Turn ¼ turn to lock into place.

The TPFSS is designed for use with steel studs with a depth of 3 ⅝". For use with 2×4 wood studs, simply break off the tip at the notch of the TPFSS using a pair of pliers.

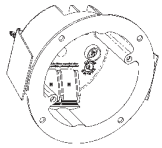
Catalog No.	Capacity (CU. IN.)	Description	Bracket or Nails	Standard Unit Qty
TPFSS	—	—	—	100

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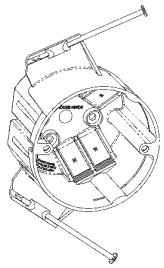
3½″ NON-METALLIC CEILING BOXES

2⅞″ DEEP

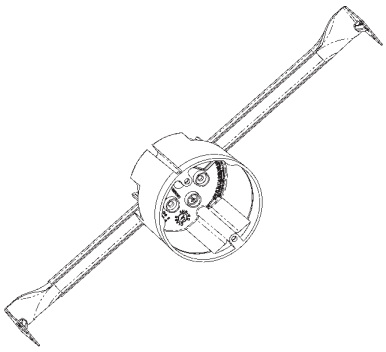
Weight limit is 50lbs for fixture except where indicated.



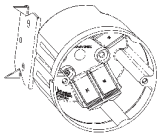
TP16200, TP16201 2⅛″ Deep Old Work



TP16310*, TP16311*



TP16307*
TP16308*



TP16317*
TP16318*

Product Number	Clamps	Ground Plate	Bracket Bar Hgr.	Capacity Cu. In.	No. of Clamp Openings	Std Unit Pkg.	Wt. Lbs Per 100
TP16200†	Yes	—	Snap	16.0	4	50	27
TP16201†	Yes	Yes	Snap	16.0	4	50	29
TP16310	Yes	—	Nails	19.3	4	50	18
TP16311	Yes	Yes	Nails	19.3	4	50	20
TP16307‡	Yes	—	14″-22½″	19.3	4	25	57
TP16308‡	Yes	Yes	14″-22½″	19.3	4	25	59
TP16317	Yes	—	″B″	19.3	4	50	26
TP16318	Yes	Yes	″B″	19.3	4	50	20

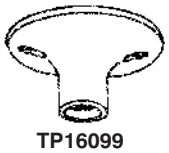
* Nail Bracket is set 1⁹⁄₁₆″ back from the face of the box.
† Weight limit 15lbs for ceiling mounted fixtures and 6lbs for wall mounted fixtures.
‡ Weight limit 15lbs at 24″ stud spacing, 35lbs at 16″ stud spacing.

LAMPHOLDER

Material: Plastic molded of heat and impact resistant material that prevents discoloring and reduces breakage



TP16098



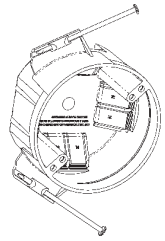
TP16099

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP16098	Lampholder, Pull Chain	50	29
TP16099	Lampholder, Keyless, feed thru	50	23

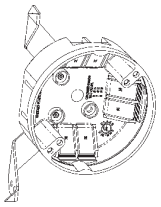
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4″ NON-METALLIC CEILING BOXES

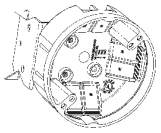
Weight limit is 50 lbs for fixture except where indicated



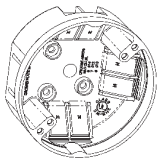
TP16111, TP16110



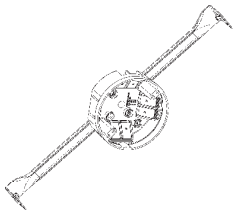
TP16012, TP16112



TP16007, TP16107



TP16002



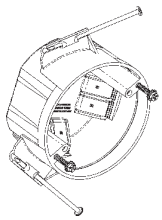
TP16022, TP16122

Product Number	Clamps	Ground Plate	Bracket or Bar Hgr.	Capacity Cu. In.	No. of Cable Pry-outs	Std Unit Pkg.	Wt. Lbs Per 100
1½″ DEEP							
TP16002	Yes	—	—	14.8	4	50	12
TP16003	Yes	Yes	—	14.8	4	50	14
TP16012	Yes	—	''V''	14.8	4	50	24
TP16013	Yes	Yes	''V''	14.8	4	50	26
TP16007	Yes	—	''B''	14.8	4	50	26
TP16008	Yes	Yes	''B''	14.8	4	50	28
TP16022*	Yes	—	14″-22½″	14.8	4	25	56
TP16023*	Yes	Yes	14″-22½″	14.8	4	25	58
2¼″ DEEP							
TP16111	Yes	—	Nails	22.5	4	50	19
TP16110	Yes	Yes	Nails	22.5	4	50	21
TP16112	Yes	—	''V''	20.8	4	50	27
TP16113	Yes	Yes	''V''	20.8	4	50	29
TP16107	Yes	—	''B''	20.8	4	50	28
TP16108	Yes	Yes	''B''	20.8	4	50	30
TP16122*	Yes	—	14″-22½″	20.8	4	20	59
TP16123*	Yes	Yes	14″-22½″	20.8	4	20	61

* Weight limit 15 lbs at 24″ stud spacing, 35 lbs at 16″ stud spacing.

4″ NON-METALLIC CEILING FAN BOXES

WITH CLAMPS FOR NONMETALLIC CABLE. ALL MOUNTING HARDWARE SUPPLIED, SUITABLE FOR SUPPORT OF FANS WEIGHING UP TO 35 LBS.



TP16511

Product Number	Diameter	Mounting Method	Capacity Cu. In.	No. of Clamp Openings	Std Unit Pkg.	Wt. Lbs Per 100
TP16511	4″	Nails only	20.8	6	25	21

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RESIDENTIAL FLOOR BOXES FOR WOOD FLOORS

Application:

Copper Cooper Crouse-Hinds® Residential Floor Boxes are ideal for anywhere a receptacle is required in a hardwood floor finished with carpeting. Applications include the middle of a large room or places where a cord from a wall receptacle would be in the way. Potential residential and commercial uses include computer stations, home entertainment centers, home offices, commercial offices and boardrooms.

Features:

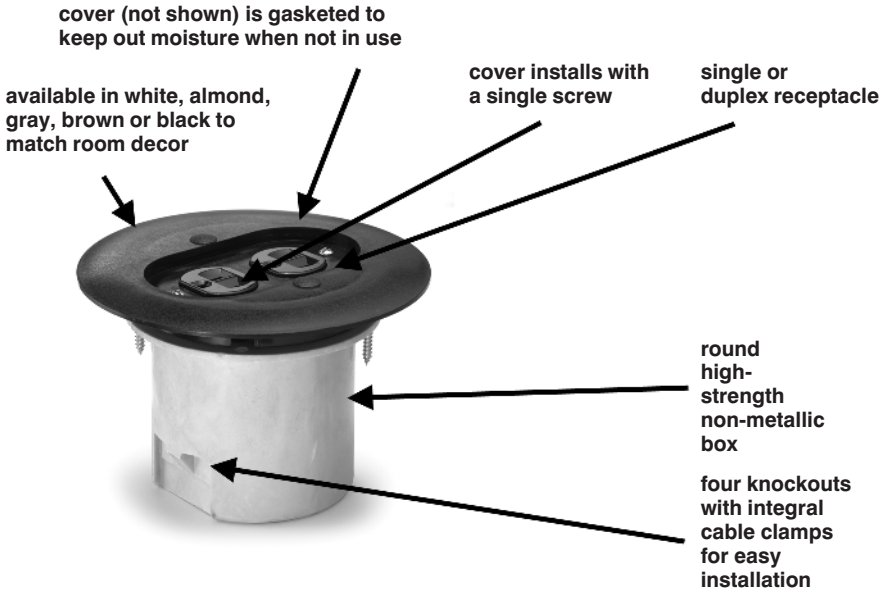
- easy to install – round fiberglass box fits in 3½″ diameter hole, which may be cut with standard hole saw.
- fiberglass box includes four knockouts with integral clamps for easy installation of non-metallic cable.
- may be ordered with a single or duplex receptacle – 15 amps, 125 volts.
- flush cover is available in five different colors to match the room decor.
- cover is gasketed to keep moisture out of the receptacle when not in use.
- UL listed

Electrical Ratings:

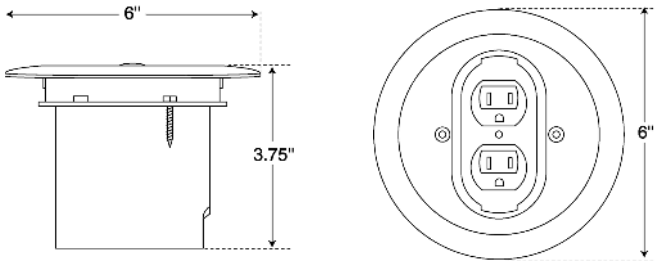
15A, 125V

Ordering Information:

Product Number	Description (Box with:)	Color of Cover	Knockouts	Std. Unit Pkg.	Wt. Lbs. Per 100
TP20010	Duplex receptacle	White	4 KOs With Clamps	4	121
TP20011	Duplex receptacle	Almond	4 KOs With Clamps	4	121
TP20012	Duplex receptacle	Gray	4 KOs With Clamps	4	121
TP20013	Duplex receptacle	Brown	4 KOs With Clamps	4	121
TP20014	Duplex receptacle	Black	4 KOs With Clamps	4	121
TP20015	Single receptacle	White	4 KOs With Clamps	4	121
TP20016	Single receptacle	Almond	4 KOs With Clamps	4	121
TP20017	Single receptacle	Gray	4 KOs With Clamps	4	121
TP20018	Single receptacle	Brown	4 KOs With Clamps	4	121
TP20019	Single receptacle	Black	4 KOs With Clamps	4	121



Dimensions:



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Cooper Crouse-Hinds weatherproof products are manufactured in compliance with U.L. requirements for weatherproof boxes and covers and meet U.L. Standard #514A. Cooper Crouse-Hinds lighting products comply with the U.L. requirements of standard UL 1598 and are suitable for wet locations.

Cooper Crouse-Hinds weatherproof products are rust and corrosion resistant made of rugged die-cast construction. Cooper Crouse-Hinds weatherproof products are provided with necessary gaskets, plugs and screws, making installation trouble free.

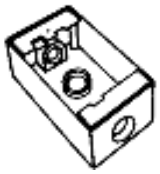
All products are powder coat painted and various colors are available.

Cooper Crouse-Hinds weatherproof boxes and covers are individually shrink-wrapped. Cooper Crouse-Hinds weatherproof cast aluminum boxes are lugged except where noted and are provided with plugs. The self-closing weatherproof covers are zinc die-cast. The weatherproof lampholders have porcelain sockets and are rated up to 150 watts and have 8½″ wire leads.

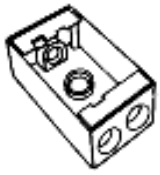
Vaporite fixtures are die-cast aluminum and the screw-on guards are die-cast zinc, with Allen-Head set screws for locking in place. The fixtures also have a neoprene gasket and porcelain clip-in socket.

SINGLE GANG WEATHERPROOF OUTLET BOXES – 18.0 CUBIC INCH CAPACITY – 2″ DEEP

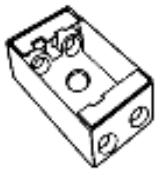
CAST ALUMINUM – UL LISTED FOR WET LOCATIONS



TP7010 – TP7018



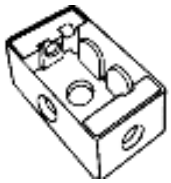
TP7026, TP7034



TP7042, TP7050



TP7058, TP7066

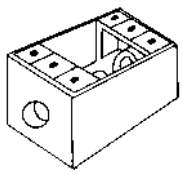


TP7071

Product Number	Description	Outlet Holes	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7010	With Lugs	3-½″	Gray	50	58.3
TP7011	With Lugs	3-½″	White	50	58.3
TP7012	With Lugs	3-½″	Bronze	50	58.3
TP7018	With Lugs	3-¾″	Gray	50	58.3
TP7026	With Lugs	4-½″	Gray	50	58.3
TP7034	With Lugs	4-¾″	Gray	50	58.3
TP7042	With Lugs	5-½″	Gray	50	58.3
TP7050	With Lugs	5-¾″	Gray	50	58.3
TP7058	Side Entry, With Lugs	5-½″	Gray	50	58.3
TP7066	Side Entry, With Lugs	5-¾″	Gray	50	58.3
TP7071	Horiz. Mounting, With Lugs	4-½″	Gray	50	58.3

SINGLE GANG DEEP WEATHERPROOF BOXES –

24.0 CUBIC INCH CAPACITY – 2 ⅝″ DEEP
CAST ALUMINUM-UL LISTED FOR WET LOCATIONS



TP7074, TP7078, TP7082

Product Number	Description	Outlet Holes	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7074	With Lugs	3-½″	Gray	25	80
TP7078	With Lugs	3-¾″	Gray	25	80
TP7082	With Lugs	3-1″	Gray	25	80

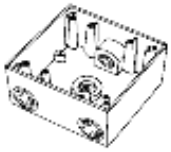
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TWO GANG WEATHERPROOF OUTLET BOXES – 30.5 CUBIC INCH CAPACITY

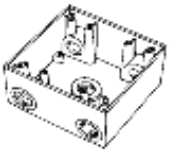
2″ DEEP, ALL TWO GANG BOXES HAVE 2 MOUNTING LUGS AS STANDARD
CAST ALUMINUM-UL LISTED FOR WET LOCATIONS



TP7086-TP7090



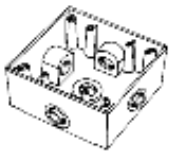
TP7094, TP7098



TP7102, TP7106



TP7110, TP7114

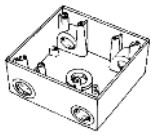


TP7118, TP7122

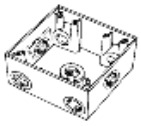
Product Number	Description	Std. Unit Carton	Color	Wt. Lbs Per 100
TP7086	3-½″ Holes	10	Gray	83.3
TP7087	3-½″ Holes	10	White	83.3
TP7088	3-½″ Holes	10	Bronze	83.3
TP7090	3-¾″ Holes	10	Gray	83.3
TP7094	4-½″ Holes	10	Gray	83.3
TP7098	4-¾″ Holes	10	Gray	83.3
TP7102	5-½″ Holes	10	Gray	83.3
TP7106	5-¾″ Holes	10	Gray	83.3
TP7110	7-½″ Holes	10	Gray	83.3
TP7114	7-¾″ Holes	10	Gray	83.3
TP7118	5-½″ Holes	10	Gray	83.3
TP7122	5-¾″ Holes	10	Gray	83.3

TWO AND THREE GANG DEEP WEATHERPROOF OUTLET BOXES –

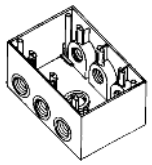
2⅝″ DEEP, ALL BOXES ARE STANDARD WITH MOUNTING LUGS
CAST ALUMINUM-UL LISTED FOR WET LOCATIONS



TP7126, TP7130, TP7134



TP7137, TP7138, TP7142



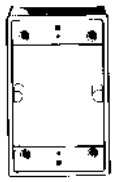
TP7143, TP7144

Product Number	Description	Color	Std. Unit Carton	Capacity Cu. In.	Wt. Lbs Per 100
TWO GANG DEEP WEATHERPROOF OUTLET BOXES					
TP7126	5-½″ Holes	Gray	6	37	140
TP7130	5-¾″ Holes	Gray	6	37	140
TP7134	5-1″ Holes	Gray	6	37	140
TP7137	7-½″ Holes	Gray	6	37	140
TP7138	7-¾″ Holes	Gray	6	37	140
TP7142	7-1″ Holes	Gray	6	37	140
THREE GANG DEEP WEATHERPROOF OUTLET BOXES					
TP7143	7-¾″ Holes	Gray	5	59	159
TP7144	7-1″ Holes	Gray	5	59	159

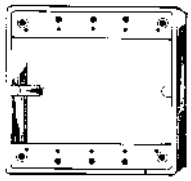
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ONE & TWO GANG WEATHERPROOF EXTENSIONS

1″ DEEP, DIE-CAST ALUMINUM EXTENSION RING
GASKET AND MOUNTING SCREWS INCLUDED WITH COVER
UL LISTED FOR WET LOCATIONS



TP7120

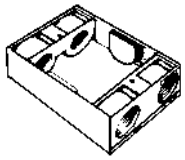


TP7123

Product Number	Description	Color	Std. Unit Carton	Capacity Cu. In.	Wt. Lbs Per 100
TP7120	Single Gang	Gray	25	9	27.2
TP7123	Two Gang	Gray	10	10	27.2

EXTENSION ADAPTER

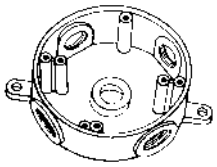
DIE-CAST ALUMINUM, UL LISTED FOR WET LOCATIONS
3 CLOSURE PLUGS, MOUNTING SCREW AND GASKET INCLUDED WITH COVER

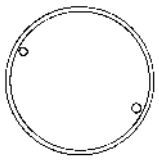


Product Number	Description	Color	Std. Unit Carton	Capacity Cu. In.	Wt. Lbs Per 100
TP7173	4-½″ Holes	Gray	25	13.0	23.6
TP7174	4-¾″ Holes	Gray	25	13.0	27.8

4″ ROUND WEATHERPROOF OUTLET BOXES – 15.5 CUBIC INCH CAPACITY

1½″ DEEP, DIE-CAST ALUMINUM, UL LISTED FOR WET LOCATIONS
4 CLOSURE PLUGS AND GROUND SCREW INCLUDED WITH BOX
GASKET AND 2 MOUNTING SCREWS INCLUDED WITH COVER



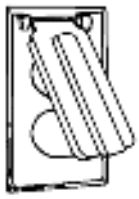


Product Number	Side Holes	Back Hole	Std. Unit Carton	Color	Wt. Lbs Per 100
TP7146	4-½″	½″	25	Gray	79.2
TP7148	4-½″	½″	25	White	79.2
TP7149	4-½″	½″	25	Bronze	79.2
TP7150	4-¾″	¾″	25	Gray	79.2
TP7158	Blank Cover Plate		50	Gray	20.8
WITH BLANK PLATE					
TP7147	4-½″	½″	24	Gray	100
TP7151	4-¾″	¾″	24	Gray	100
2″ DEEP ROUND WEATHERPROOF OUTLET BOX EXTENSION (18.3 CUBIC INCH CAPACITY)					
TP7152	4-½″	—	25	Gray	58.3

DIMENSIONAL DATA, PAGES 73-77

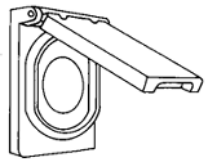
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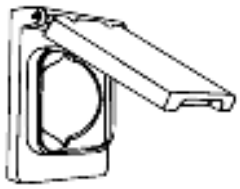
WEATHERPROOF COVERS
ONE & TWO GANG, SELF-CLOSING COVERS WITH GASKETS
UL LISTED, ZINC, DIE-CAST


TP7199


TP7202


TP7206 – TP7209


TP7214


TP7218


TP7220


TP7224


TP7228


TP7232

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7199	One Gang Vertical Duplex Cover	Gray	50	61.1
TP7202	One Gang – For Single Receptacle or Switch – 1.52″ Dia. Opening	Gray	25	42.0
TP7206	One Gang – For Duplex Receptacle or Combination Switch	Natural	50	38.0
TP7207	One Gang – For Duplex Receptacle or Combination Switch	Gray	50	38.0
TP7208	One Gang – For Duplex Receptacle or Combination Switch	White	50	38.0
TP7209	One Gang – For Duplex Receptacle or Combination Switch	Bronze	50	38.0
TP7214	One Gang Vertical – For Single Receptacle or Switch 1.62″ Dia. Opening	Gray	25	61.1
TP7218	One Gang – For 20, 30 and 50 A Receptacles (2.125″ Dia.)	Gray	25	55.6
TP7220	Two Gang – For Two Single Receptacles and/or Switches	Gray	10	66.7
TP7224	Two Gang – For One Single Receptacle or Switch and One Duplex Receptacle, Switch or Combination Device	Gray	10	62.0
TP7228	Two Gang – For Two Duplex Receptacles, Switches or Combination Device	Gray	10	61.1
TP7232	One Gang Stay Open – For Duplex Receptacles, Switches or Combination Devices, Non UL Listed	Natural	50	38.0
TP7233	One Gang Stay Open – For Duplex Receptacles, Switches or Combination Devices, Non UL Listed	Gray	50	38.0

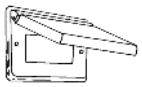
CLOSURE PLUGS – ZINC DIE-CAST†

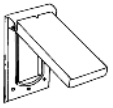
Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7940	½″	Gray	100	1.5
TP7942	½″	Bronze	100	1.5
TP7944	¾″	Gray	50	2.1

† CSA certified

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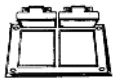
WEATHERPROOF COVERS
ONE & TWO GANG SELF-CLOSING GFI COVERS WITH GASKETS, UL LISTED, ZINC DIE-CAST


TP7236 – TP7238


TP7240 – TP7242


TP7244


TP7248


TP7252

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7236	One Gang – For Horizontal GFI Devices	Gray	25	42
TP7237	One Gang – For Horizontal GFI Devices	White	25	42
TP7238	One Gang – For Horizontal GFI Devices	Bronze	25	42
TP7240	One Gang – For Vertical GFI Devices	Gray	25	54
TP7241	One Gang – For Vertical GFI Devices	White	25	54
TP7242	One Gang – For Vertical GFI Devices	Bronze	25	54
TP7244	Two Gang – For Vertical GFI Devices and One Single Switch or Receptacle	Gray	10	61.1
TP7248	Two Gang – For One Vertical GFI Device and One Duplex Receptacle, Switch or Combination Device	Gray	10	61.1
TP7252	Two Gang – For Two GFI Devices	Gray	10	55.6

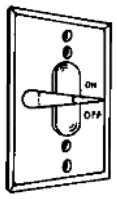
WEATHERPROOF COVERS
FOR ONE & TWO GANG BOXES "CONSTANT USE" DUPLEX/GFI COVER UL & CSA LISTED, POLYCARBONATE


TP7490
3⅛″ Deep

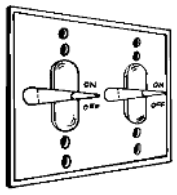

TP7495
2¼″ Deep

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7490	One Gang, Vertical Mtg. For Duplex or GFI Device (Inserts Included)	Clear	6	41.7
TP7495	One or Two Gang, Vertical or Horizontal Mtg. For One Duplex or GFI Device (Inserts Included)	Clear	6	75

WEATHERPROOF COVERS
ONE & TWO GANG TOGGLE SWITCH COVERS WITH GASKETS STAMPED ALUMINUM UL LISTED



TP7256



TP7268

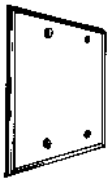
Product Number	Description	Std. Unit Carton	Wt. Lbs Per 100
TP7256	One Gang	50	12
TP7260	One Gang With 15A-125V Single Pole Switch	50	27.8
TP7268	Two Gang	10	16.7
TP7272	Two Gang With 2-15A 125V Single Pole Switch	10	33.3
TP7276	Two Gang With 2-15A 125V 3-Way Switch	10	33.3

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ALUMINUM BLANK BOX WEATHERPROOF COVERS
WITH GASKETS
UL LISTED FOR WET LOCATIONS



TP7292 – TP7294



TP7296 – TP7298

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7292	One Gang	Gray	100	8.3
TP7293	One Gang	White	100	8.3
TP7294	One Gang	Bronze	100	8.3
TP7296	Two Gang	Gray	50	12.5
TP7297	Two Gang	White	50	12.5
TP7298	Two Gang	Bronze	50	12.5

ROUND AND RECTANGULAR WEATHERPROOF COVERS
WITH GASKETS, ZINC DIE-CAST, UL LISTED FOR WET LOCATIONS



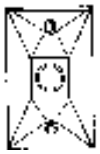
TP7300 – 7302



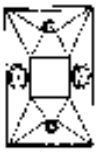
TP7304 – 7306



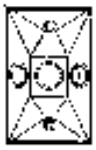
TP7308 – 7310



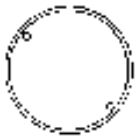
TP7312 – 7314



TP7316 – 7318



TP7320 – 7322

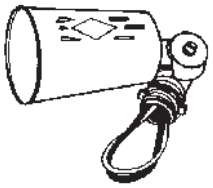


TP7158 – 7160

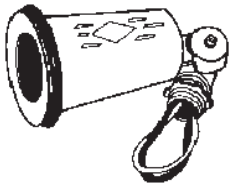
Product Number	Description	No. of Outlet Holes	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7300	4½″ Round	1-½″	Gray	25	20.8
TP7301	4½″ Round	1-½″	White	25	20.8
TP7302	4½″ Round	1-½″	Bronze	25	20.8
TP7304	4½″ Round	2-½″	Gray	25	33.3
TP7305	4½″ Round	2-½″	White	25	33.3
TP7306	4½″ Round	2-½″	Bronze	25	33.3
TP7308	4½″ Round	3-½″	Gray	25	33.3
TP7309	4½″ Round	3-½″	White	25	33.3
TP7310	4½″ Round	3-½″	Bronze	25	33.3
TP7312	Rectangular	1-½″	Gray	25	33.3
TP7313	Rectangular	1-½″	White	25	33.3
TP7314	Rectangular	1-½″	Bronze	25	33.3
TP7316	Rectangular	2-½″	Gray	25	33.3
TP7317	Rectangular	2-½″	White	25	33.3
TP7318	Rectangular	2-½″	Bronze	25	33.3
TP7320	Rectangular	3-½″	Gray	25	33.3
TP7321	Rectangular	3-½″	White	25	33.3
TP7322	Rectangular	3-½″	Bronze	25	33.3
TP7158	Blank Round	—	Gray	50	20.8
TP7159	Blank Round	—	White	50	20.8
TP7160	Blank Round	—	Bronze	50	20.8

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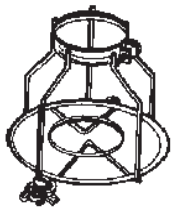
WEATHERPROOF LAMPHOLDERS AND ACCESSORIES
ZINC DIE-CAST CONSTRUCTION, UP TO 150 WATTS, WITH LAMP GASKET, UL LISTED



TP7162 – TP7165



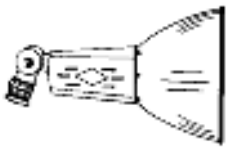
TP7166



TP7176

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7162	Universal Par Lampholder	Natural	36	47.2
TP7163	Universal Par Lampholder	Gray	36	47.2
TP7164	Universal Par Lampholder	White	36	47.2
TP7165	Universal Par Lampholder	Bronze	36	47.2
TP7166	Universal Par Lampholder With External Gasket	Gray	36	50
TP7170	External Gasket Only	—	100	3
TP7176	Clamp-On Guard	—	24	50

WEATHERPROOF LAMPHOLDERS AND ACCESSORIES
ZINC DIE-CAST CONSTRUCTION, UP TO 150 WATTS, WITH LAMP GASKET, UL LISTED



TP7178



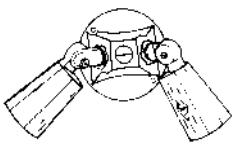
TP7186



TP7188
(Aluminum)

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7178	Par Lampholder With Reflector	Gray	6	166.7
TP7186	Portable Par Lampholder With 6′ Cord	Gray	12	100
TP7188	2½″ Outside Diameter Pole Fitter with ½″ Male Thread	Gray	24	50

WEATHERPROOF LAMPHOLDER COMBINATIONS
ZINC DIE-CAST CONSTRUCTION, WITH GASKETS, UL LISTED



TP7330 – TP7332

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7330	2 Par Lampholders and 3-Hole Round Cover	Gray	10	137.5
TP7331	2 Par Lampholders and 3-Hole Round Cover	White	10	137.5
TP7332	2 Par Lampholders and 3-Hole Round Cover	Bronze	10	137.5

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Weatherproof Outdoor HID Luminaires

Luminarea™ Series Area Luminaires



Cooper Crouse-Hinds Luminarea Luminaires are ideally suited for general and security lighting indoors or outdoors. Area luminaires are available in 2 sizes in 70 to 175 watt metal halide and 70 to 150 watt high pressure sodium. The bronze epoxy powder coated housing is designed for an extended, trouble-free life. The housing is gasketed for raintight (NEMA 3R) locations. The prismatic polycarbonate lens is vandal resistant for even light distribution. Typical applications include parking garages, storage areas, stairwells, corridors and lobbies.

Key Features and Benefits

- Durable die cast aluminum housing for long product life.
- Architectural bronze powder paint finish for corrosive enviroments.
- Stainless steel hardware.
- Internal white reflector for maximum light output.
- Vandal resistant polycarbonate lens.
- Side and top plugged threaded entries for easy field wiring.
- High power factor ballast in multi-tap (120, 208, 240, 277 volt) or tri-tap (120, 277, 347 volt) configurations.
- Two housing sizes insure maximum utilization of space.
- Available in 70 to 175 watt metal halide or high pressure sodium versions.

Certifications and Compliances

- UL1598
- UL and cUL listed
- NEMA 3R raintight

Materials & Finishes

- Housing - Die Cast Aluminum
- Lens - Polycarbonate
- Gasket - Silicone
- Hardware - Stainless Steel

Ratings

- 70 to 175 watt metal halide and high pressure sodium.
- Multi-tap (120, 208, 240, 277 volts) or Tri-tap (120, 277, 347 volts)
- 480V

Ordering Information (For accessories & dimensions, see pages 256 & 257)

High Pressure Sodium

Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
70	120/208/240/277	WLPG70HPS/MT	8″ × 8″ Housing	Medium	HPF
70	120/277/347	WLPG70HPS/TT	8″ × 8″ Housing	Medium	HPF
100	120/208/240/277	WLPG100HPS/MT	12″ × 12″ Housing	Medium	HPF
100	120/277/347	WLPG100HPS/TT	12″ × 12″ Housing	Medium	HPF
150	120/208/240/277	WLPG150HPS/MT	12″ × 12″ Housing	Medium	HPF
150	120/277/347	WLPG150HPS/TT	12″ × 12″ Housing	Medium	HPF

Metal Halide

Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
70	120/208/240/277	WLPG70MH/MT	8″ × 8″ Housing	Medium	HPF
70	120/277/347	WLPG70MH/TT	8″ × 8″ Housing	Medium	HPF
100	120/208/240/277	WLPG100MH/MT	12″ × 12″ Housing	Medium	HPF
100	120/277/347	WLPG100MH/TT	12″ × 12″ Housing	Medium	HPF
175	120/208/240/277	WLPG175MH/MT	12″ × 12″ Housing	Medium	HPF
175	120/277/347	WLPG175MH/TT	12″ × 12″ Housing	Medium	CWA

Lamp not included.

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CP Weatherproof Outdoor HID Luminaires

Luminarea™ Series Floodlight Luminaires



Cooper Crouse-Hinds Luminarea floodlights are ideally suited for area and outdoor parking lot lighting. The floodlights are available in 3 housing sizes in 150 to 1000 watt metal halide or high pressure sodium. The bronze epoxy powder coated housing is designed for an extended, trouble-free life. The housing is gasketed for raintight (NEMA 3R) locations. Floodlights are available with an optional slip fitter or swivel bracket for mounting flexibility. Typical applications include parking lots, area lighting, street lighting, recreational lighting and security lighting.

Key Features and Benefits

- Durable die cast aluminum housing for long product life.
- Bronze powder paint finish for corrosive enviroments.
- Stainless steel hardware.
- Hinged lens for easy access to wiring and lamp chamber.
- Polished aluminum reflector maximizes light output.
- Side, bottom & rear plugged threaded entries for easy wiring.
- 150W & 175W fixture includes adjustable mounting bracket.
- 250 to 1000 watt fixtures must be ordered with separate slipfitter or or swivel bracket (see page 256).
- Three housing sizes insure maximum utilization of space.
- Available in 150 to 1000 watt metal halide or high pressure sodium versions.

Certifications and Compliances

- UL1598
- UL and cUL listed
- NEMA 3R raintight

Materials & Finishes

- Housing - Die Cast Aluminum
- Lens - Tempered Glass
- Gasket - Silicone
- Hardware - Stainless Steel

Ratings

- 150 to 1000 watt metal halide and high pressure sodium.
- 250 and 400 watt metal halide available with pulse start.
- Multi-tap (120, 208, 240, 277 volts) or Tri-tap (120, 277, 347 volts)
- 480V

Ordering Information (For accessories & dimensions, see pages 256 & 257)

High Pressure Sodium

Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
150	120/208/240/277	WLFL150HPS/MT[1]	Medium Housing	Medium	HPF
150	120/277/347	WLFL150HPS/TT[1]	Medium Housing	Medium	HPF
250	120/208/240/277	WLFL250HPS/MT[2]	16″ × 16″ Housing	Mogul	CWA-HPF
250	120/277/347	WLFL250HPS/TT[2]	16″ × 16″ Housing	Mogul	CWA
400	120/208/240/277	WLFL400HPS/MT[2]	16″ × 16″ Housing	Mogul	CWA-HPF
400	120/277/347	WLFL400HPS/TT[2]	16″ × 16″ Housing	Mogul	CWA
1000	120/208/240/277	WLFL1000HPS/MT[3]	23″ × 23″ Housing	Mogul	CWA-HPF
1000	120/277/347	WLFL1000HPS/TT[3]	23″ × 23″ Housing	Mogul	CWA

Metal Halide

Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
175	120/208/240/277	WLFL175MH/MT[1]	Medium Housing	Medium	CWA
175	120/277/347	WLFL175MH/TT[1]	Medium Housing	Medium	CWA
250	120/208/240/277	WLFL250MH/MT[2]	16″ × 16″ Housing	Mogul	CWA-HPF
250	120/208/240/277	WLFL250MH/MT-S828[2]	16″ × 16″ Housing, Pulse Start	Mogul	Pulse
250	120/277/347	WLFL250MH/TT[2]	16″ × 16″ Housing	Mogul	CWA
400	120/208/240/277	WLFL400MH/MT[2]	16″ × 16″ Housing	Mogul	CWA-HPF
400	120/208/240/277	WLFL400MH/MT-S828[2]	16″ × 16″ Housing, Pulse Start	Mogul	Pulse
400	120/277/347	WLFL400MH/TT[2]	16″ × 16″ Housing	Mogul	CWA
1000	120/208/240/277	WLFL1000MH/MT[3]	23″ × 23″ Housing	Mogul	CWA-HPF
1000	120/277/347	WLFL1000MH/TT[3]	23″ × 23″ Housing	Mogul	CWA

Lamp not included.
1. 150W & 175W Floodlight - Comes with adjustable mounting bracket with 1/2″ thread.
2. 250W & 400W Floodlight - Must buy swivel bracket or slipfitter separately (see accessories, page 256).
3. 1000W Floodlight - Must buy slipfitter separately (see accessories, page 256).

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Weatherproof Outdoor HID Luminaires

Luminarea™ Series Wallpack Luminaires



Cooper Crouse-Hinds Luminarea wallpacks are ideally suited for security and perimeter lighting indoors and outdoors. Wallpacks are available in 3 housing sizes in 100 to 400 watt metal halide or high pressure sodium. The bronze epoxy powder coated housing is designed for an extended, trouble-free life. The housing is gasketed for raintight (NEMA 3R) locations. The prismatic glass lens is designed for optimal light distribution to minimize the total number of luminaires required. Typical applications include office buildings, stores, restaurants, warehouses, banks and parking garages.

Key Features and Benefits

- Durable die cast aluminum housing for long product life.
- Architectural bronze powder paint finish for corrosive environments.
- Stainless steel hardware.
- Hinged lens for easy access to wiring and lamp chamber.
- Glass prismatic lens provides superior light distribution.
- Top, side and rear plugged threaded entries for easy field wiring.
- High power factor ballast in multi-tap (120, 208, 240, 277 volt) or tri-tap (120, 277, 347 volt) configurations.
- Three housing sizes insure maximum utilization of space.
- Available in 100 to 400 watt metal halide or high pressure sodium versions.

Certifications and Compliances

- UL1598
- UL and cUL listed
- NEMA 3R raintight

Materials & Finishes

- Housing - Die Cast Aluminum
- Lens - Tempered Glass
- Gasket - Silicone
- Hardware - Stainless Steel

Ratings

- 100 to 400 watt metal halide and high pressure sodium.
- Multi-tap (120, 208, 240, 277 volts) or Tri-tap (120, 277, 347 volts)
- 480V

Ordering Information (For accessories & dimensions, see pages 256 & 257)

High Pressure Sodium

Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
100	120/208/240/277	WLWP100HPS/MT	Small Housing	Medium	HPF
100	120/277/347	WLWP100HPS/TT	Small Housing	Medium	HPF
150	120/208/240/277	WLWP150HPS/MT	Medium Housing	Medium	HPF
150	120/277/347	WLWP150HPS/TT	Medium Housing	Medium	HPF
250	120/208/240/277	WLWP250HPS/MT	Large Housing	Mogul	CWA-HPF
250	120/277/347	WLWP250HPS/TT	Large Housing	Mogul	CWA
400	120/208/240/277	WLWP400HPS/MT	Large Deep Housing	Mogul	CWA
400	120/277/347	WLWP400HPS/TT	Large Deep Housing	Mogul	CWA

Metal Halide

Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
100	120/208/240/277	WLWP100MH/MT	Small Housing	Medium	HPF
100	120/277/347	WLWP100MH/TT	Small Housing	Medium	HPF
175	120/208/240/277	WLWP175MH/MT	Medium Housing	Medium	CWA-HPF
175	120/277/347	WLWP175MH/TT	Medium Housing	Medium	CWA
250	120/208/240/277	WLWP250MH/MT	Large Housing	Mogul	CWA-HPF
250	120/208/240/277	WLWP250MH/MT-S828	Large Housing, Pulse Start	Mogul	Pulse
250	120/277/347	WLWP250MH/TT	Large Housing	Mogul	CWA
400	120/208/240/277	WLWP400MH/MT	Large Deep Housing	Mogul	CWA
400	120/208/240/277	WLWP400MH/MT-S828	Large Deep Housing, Pulse Start	Mogul	Pulse
400	120/277/347	WLWP400MH/TT	Large Deep Housing	Mogul	CWA

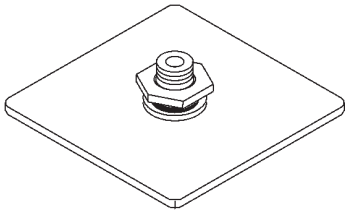
Lamp not included.

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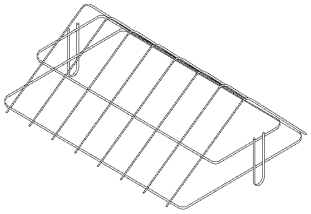
CP Weatherproof Outdoor HID Luminaires

Luminarea™ Series Accessories

WALLPACKS

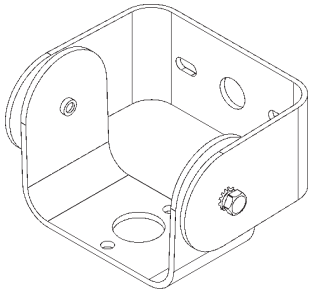


Mounting Plate

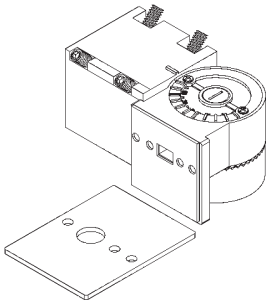


Wire Guards

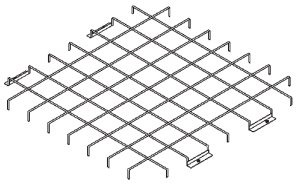
FLOODLIGHTS



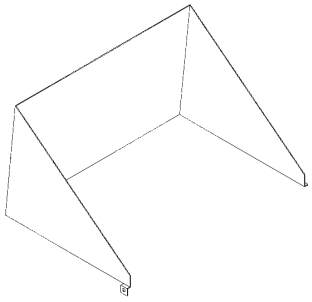
Swivel Bracket



Slipfitters



Wire Guards



Glare Shields

Ordering Information

Accessories for Wallpacks & Area Luminaires	
Catalog Number	**Description**
WLWPMP-1	Mounting Plate for 100W Wallpack & Area Luminaire
WLWPWG-1	Wire Guard for 100 W Wallpack
WLWPWG-2	Wire Guard for 150/175W Wallpack
WLWPWG-3	Wire Guard for 250 & 400W Wallpack

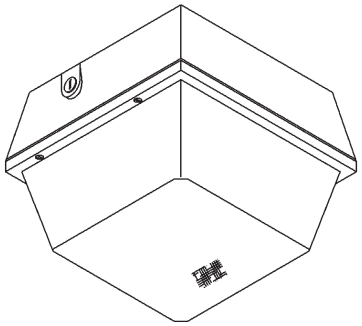
Accessories for Floodlights	
Catalog Number	**Description**
WLFLSB-3	Swivel Bracket for 250 & 400W Floodlight
WLFLSF-3	Slipfitter for 250 and 400W Floodlight
WLFLSF-4	Slipfitter for 1000W Floodlight
WLFLWG-3	Wire Guard for 250 & 400W Floodlight
WLFLWG-4	Wire Guard for 1000W Floodlight
WLFLGS-2	Glare Shield for 150/175W Medium Floodlight
WLFLGS-3	Glare Shield for 250 & 400W Floodlight
WLFLGS-4	Glare Shield for 1000W Floodlight

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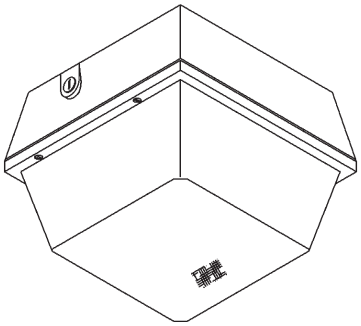
Weatherproof Outdoor HID Luminaires

Luminarea™ Series
Dimensions & Weights

Area Luminaires (Inches)
Weight: 15lbs.

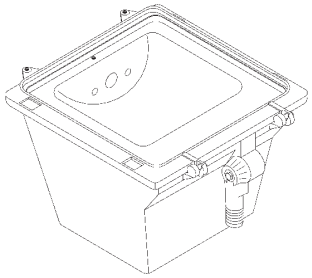


70W
8.75W x 7.5H x 8.75D

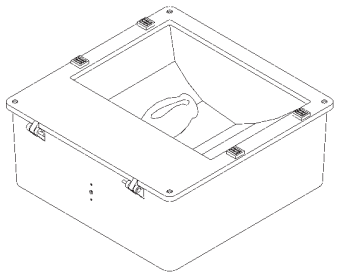


100W to 175W
12.25W x 8.5H x 12.25D

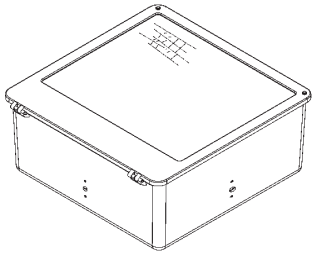
Floodlight Luminaires (Inches)
Weight: 15lbs.



150W & 175W
9.0W x 6.75H x 5.75D

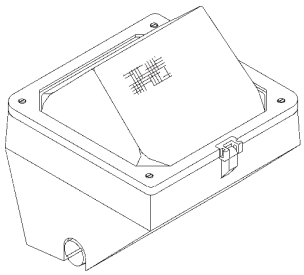


250W & 400W
16.0W x 16.0H x 7.25D

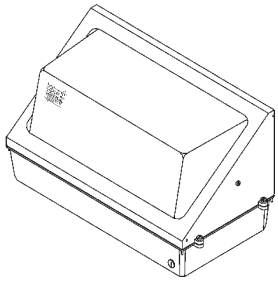


1000W
23.0W x 23.0H x 10.25D

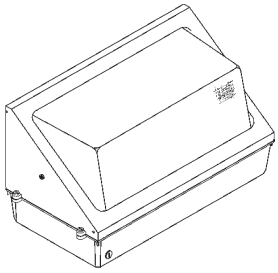
Wallpack Luminaires (Inches)
Weight: 15lbs.



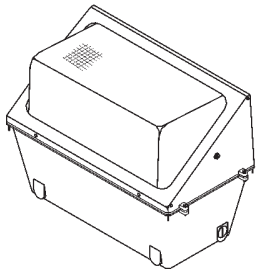
100W
8.5W x 9.375H x 7.0D



150W & 175W
13.0W x 9H x 7.25D



250W
18.0W x 9.0H x 9.75D



400W
18.0W x 9.0H x 12.75D

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VAPOR PROOF FIXTURES – GASKETED CORROSION RESISTANT
DIE-CAST CONSTRUCTION, GLASS GLOBES, DIE-CAST GUARDS, UL LISTED



TP7600, TP7601, TP7800, TP7801, TP7860



TP7610, TP7611, TP7805



TP7620, TP7810 TP7621, TP7811



TP7630, TP7815



TP7640, TP7820



TP7650, TP7825

Product Number	Description	Hole Size	Watts	Std. Unit Carton	Wt. Lbs Per 100
4″ BOX MOUNTED					
TP7600	Clear Globe, Cast Guard	½″	100	1	325
TP7601	Clear Globe, Cast Guard	¾″	100	1	324
TP7800	Clear Globe, Wire Guard	½″	200	1	516.7
TP7801	Clear Globe, Wire Guard	¾″	200	1	516
TP7860	Fluorescent Clear Globe, Wire Guard	½″	13	1	413
TP7610	Clear Globe	½″	100	1	258.3
TP7611	Clear Globe	¾″	100	1	258
TP7805	Clear Globe	½″	200	1	283.3
PENDANT MOUNT					
TP7620	Clear Globe, Cast Guard	½″	100	1	300
TP7621	Clear Globe, Cast Guard	¾″	100	1	299
TP7810	Clear Globe, Wire Guard	½″	200	1	350
TP7811	Clear Globe, Wire Guard	¾″	200	1	349
TP7630	Clear Globe	½″	100	1	208.4
TP7815	Clear Globe	½″	200	1	258.4
SURFACE MOUNT, FITS 3″ and 4″ ROUND BOXES					
TP7640	Clear Globe, Cast Guard		100	1	275
TP7820	Clear Globe, Wire Guard		200	1	333.3
TP7650	Clear Globe		100	1	216.7
TP7825	Clear Globe		200	1	180

DIMENSIONAL DATA, PAGES 73-77



TP7660, TP7830



TP7670, TP7835



TP7680, TP7840, TP7870



TP7690, TP7845

Product Number	Description	Watts	Std. Unit Carton	Wt. Lbs Per 100
RIGHT ANGLE BRACKET FIXTURES				
TP7660	Clear Globe, Cast Guard	100	1	300
TP7830	Clear Globe, Wire Guard	200	1	516.7
TP7670	Clear Globe	100	1	200
TP7835	Clear Globe	200	1	400
BOX MOUNTED				
TP7680	Clear Globe, Cast Guard	100	1	350
TP7840	Clear Globe, Wire Guard	200	1	560
TP7690	Clear Globe	100	1	250
TP7845	Clear Globe	200	1	450
FLUORESCENT				
TP7870	Clear Globe, Wire Guard	13	1	462

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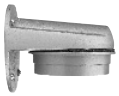
VAPOR PROOF COMPONENTS

Product Number	Description	Watts	Std. Unit Carton	Wt. Lbs. Per 100
PENDANT CAP, PORCELAIN SOCKET GASKET AND SCREWS				
TP7496	Grey, ½″	100	10	18
TP7497	Grey, ¾″	100	10	18
TP7498	Grey, ½″	200	10	10
TP7499	Grey, ¾″	200	10	10
CEILING BOX CAP, SOCKET GASKET AND SCREWS				
TP7447	Grey	100	10	12
TP7448	Grey	200	10	12
CEILING MOUNT BOX WITH GASKETS, PORCELAIN SOCKET AND SCREWS				
TP7450	Grey, ½″	100	10	19
TP7478	Grey, ¾″	100	10	19
TP7451	Grey, ½″	200	10	19
TP7479	Grey, ¾″	200	10	19
RIGHT ANGLE BRACKET GASKET, SOCKET, SCREWS				
TP7445	Grey	100	10	21
TP7446	Grey	200	6	12
RIGHT ANGLE BRACKET ATTACHED BOX, GASKET, SOCKET AND SCREWS				
TP7440	Grey, ½″	100	1	3
TP7441	Grey, ¾″	100	1	3
TP7442	Grey, ½″	200	1	1.5
TP7443	Grey, ¾″	200	1	1.5











VAPOR PROOF FIXTURE ACCESSORIES



TP7460 – TP7466



TP7468 – TP7472



TP7474, TP7475



TP7476



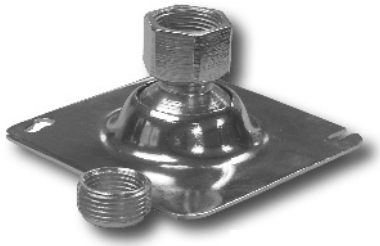
TP7477

Product Number	Description	Watts	Std. Unit Carton	Wt. Lbs Per 100
TP7460	Glass Amber Globe, 130°F Max	100	12	98
TP7462	Glass Amber Globe	100	12	120
TP7463	Glass Blue Globe	100	12	120
TP7464	Glass Green Globe	100	12	120
TP7466	Glass Clear Globe	200	6	200
TP7468	Lexan Clear Prismatic	75	12	58.4
TP7469	Lexan Blue Prismatic	60	12	58.4
TP7470	Lexan Red Prismatic	75	12	58.4
TP7471	Lexan Amber Prismatic	75	12	58.4
TP7472	Lexan White	75	12	58.4
TP7474	Bayonet Mount Die-Cast Guard	100	12	108.4
TP7475	Wire Guard	200	6	183.4
TP7476	Clamp-On Wire Guard	100	12	62.5
TP7477	Adapter Plate	—	12	62.5

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Flexible Fixture Hangers

Cooper Crouse-Hinds **TPSFH & TPRFH** flexible fixture hangers are used in commercial or light industrial applications where HID high bay and low bay lighting fixtures are used. Specific applications include storage facilities, shipping warehouses, retail and DIY facilities.





Features & Benefits:

- Suitable for use with ½″ or ¾″ fixture conduit stems these hangers allow the conduit stem of the fixture (luminaire) to swing in any direction. Maximum swing angle is 26° from vertical max slope angles 22½°
- Available in two styles; one for attachment to round or octagonal steel boxes, the other for attachment to 4″ square steel boxes.
- Both styles are quickly and easily attached by two screws.
- Hangers are drilled and tapped for use with ¾″ conduit stem as standard and come supplied with a ¾″-½″ reducer for ½″ conduit stem applications.

Certifications and Compliances:

- UL Listed - UL 1598
- CSA C22.2 No. 250
- Suitable for Damp Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Zinc Chromate for corrosion resistance

Ordering Information

Description	Support Wt. (lbs)	Catalog No.
For use with 4″ Round or Octagon Boxes	50	TPRFH12
For use with 4″ Square boxes	50	TPSFH12

Swiv-L-Drop™ Canopy Fixture Hangers

The Swiv-L-Drop Canopy hanger utilizes a patented spring design to provide vibration and shock protection for pendant mounted fixtures in both horizontal and vertical directions. Designed to fit 3″ or 4″ outlet boxes the Swiv-L-Drop is for use with ½″ fixture conduit stems. The smooth, white canopy provides an aesthetically pleasing appearance and installs quickly and easily without the use of tools.



Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Canopy - painted white

Ordering Information

Description	Support Wt. (lbs)	Catalog No.
Swiv-L-Drop Canopy Hanger for use with 3″ or 4″ Outlet boxes for use with ½″ Conduit Stems.	50*	S-1-1/2
For use with ⅜″ Conduit Stems.	50*	S-1-3/8

*65 lbs. rated with a minimum 12-inch stem if fully supported by other than an outlet box.

Sway Adapters

The Sway Adapter installs quickly and easily to pendant mounted fixtures and compensates for shocks and motion due to movements, vibration, earthquakes or other sources by allowing for lateral movement up to 45 degrees. The Sway Adapter can be used independently or in conjunction with the Swiv-L-Drop hanger. The Sway Adapter is also finished in an aesthetically pleasing white painted finish and is designed for use with ½″ conduit stems and has ⅜″ male threads.



Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

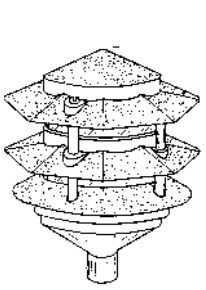
- Material: Sheet Steel
- Finish: sway adapter - painted white

Ordering Information

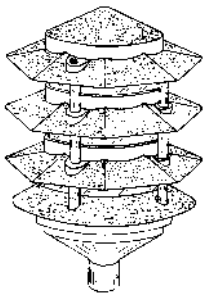
Description	Catalog No.
Sway adapter for use with ½″ Conduit Stem (male thread is ⅜″)	SA-1W

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ZINC DIE-CAST CONSTRUCTION, PORCELAIN SOCKET
GLASS GLOBES, 3-20″ WIRE LEADS, UL LISTED



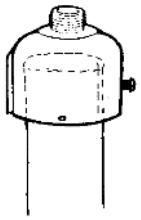
3-TIER



4-TIER

Product Number	Description	Color	Watts	Std. Unit Pkg.	Wt. Lbs Per 100
TP7700	3-Tier	Green	60	6	366.7
TP7701	3-Tier	Black	60	6	366.7
TP7702	3-Tier	Bronze	60	6	366.7
TP7703	3-Tier	White	60	6	366.7
TP7710	4-Tier	Green	100	6	416.7
TP7711	4-Tier	Black	100	6	416.7
TP7712	4-Tier	Bronze	100	6	416.7
TP7713	4-Tier	White	100	6	416.7
TP7720	4-Tier, Fluorescent	Green	7	6	433.3
TP7721	4-Tier, Fluorescent	Black	7	6	433.3
TP7722	4-Tier, Fluorescent	Bronze	7	6	433.3
TP7723	4-Tier, Fluorescent	White	7	6	433.3

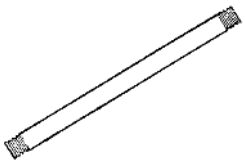
GARDEN LIGHT ACCESSORIES



TP7188



TP7770



TP7771 – TP7774

Product Number	Description	Color	Std. Unit Pkg.	Wt. Lbs Per 100
TP7188	2½″ Diameter Pole Top Filter with ½″ Male Thread (Aluminum)	Gray	24	50
TP7770	7″ Ground Spike with Male Thread (Zinc)	—	12	33.3
TP7771	12″ Heavy Duty Stem	Green	24	83.4
TP7773	12″ Heavy Duty Stem	Bronze	24	83.4
TP7774	18″ Heavy Duty Stem	Green	12	150

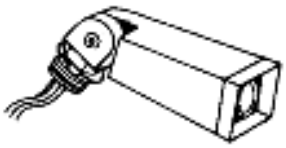
DIMENSIONAL DATA, PAGES 72-75

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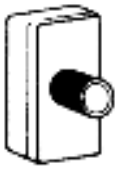
PHOTOELECTRIC LIGHTING CONTROLS



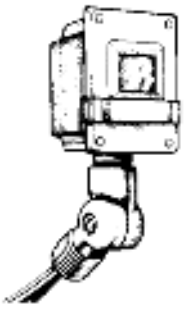
TP7920



TP7924 – TP7925



TP7927 – TP7928



TP7930

Product Number	Description	Std. Unit Pkg.	Wt. Lbs Per 100
TP7920	300W Photo Cell With Plate 120V	10	50
TP7924	300W Swivel Photo Cell 120V	10	8.3
TP7925	1200W Swivel Photo Cell 120V	10	8.3
TP7927	300W Photo Cell 120V	10	8.3
TP7928	1000W Photo Cell 208-277V	10	8.3
TP7930	1800W Swivel ½″ Stem Photo Cell 120V	10	33.3

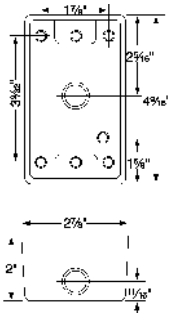
CLOSURE PLUGS – ZINC DIE-CAST†

Product Number	Description	Std. Unit Pkg.	Color	Wt. Lbs Per 100
TP7940	½″	100	Gray	1.5
TP7942	½″	100	Bronze	1.5
TP7944	¾″	50	Gray	2.1

† CSA Certified

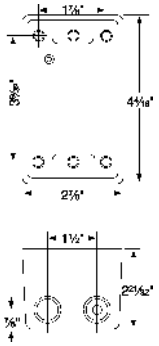
DIMENSIONAL DATA

Single Gang Boxes



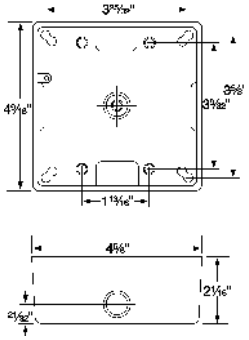
TP7010 – TP7071

Single Gang Deep Boxes



TP7074 – TP7082

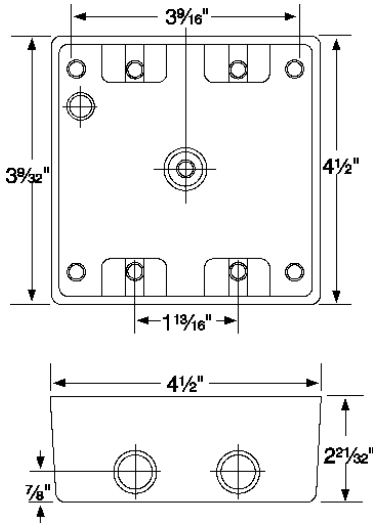
Two Gang Boxes



TP7086 – TP7122

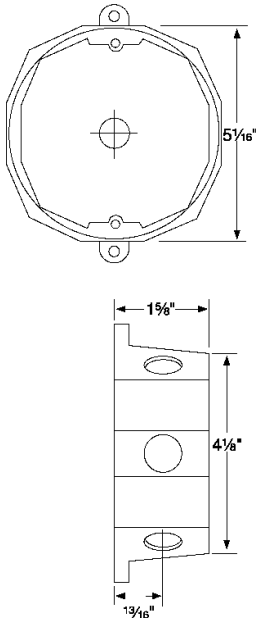
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Two Gang Deep Boxes



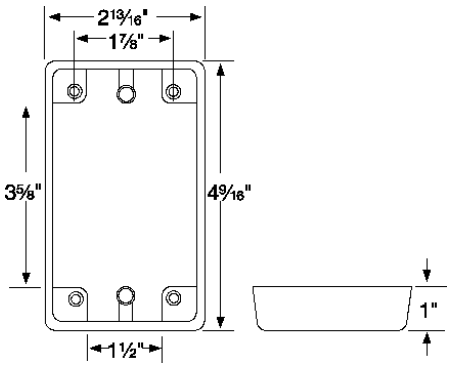
TP7126 – TP7142

Round Boxes



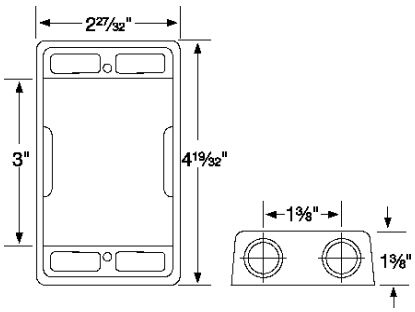
TP7146

Extension Rings and Flanged Boxes



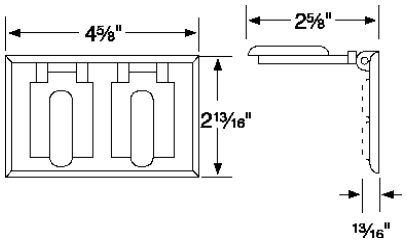
TP7120

Extension Rings and Flanged Boxes



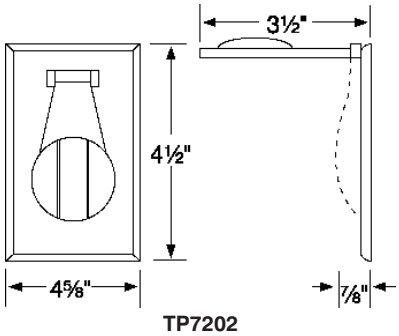
TP7173 – TP7174

Single Gang, Duplex Receptacle Covers



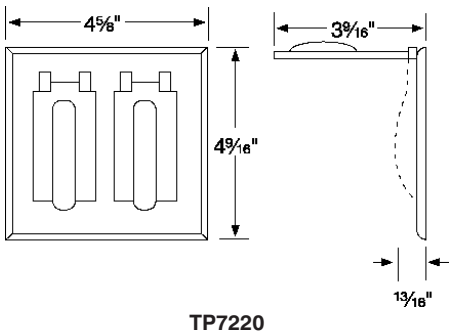
TP7206 – TP7209

Single Gang, Single Receptacle Covers – Vertical Mount



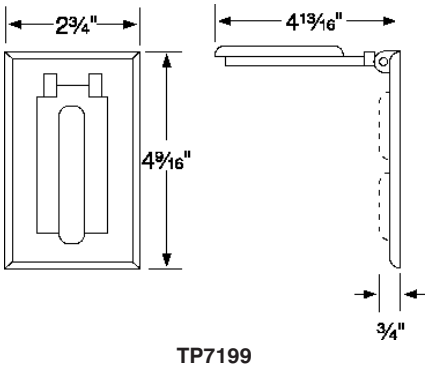
TP7202

Two Gang, Single Receptacle Covers



TP7220

Single Gang, Duplex Receptacle Covers – Vertical Mount

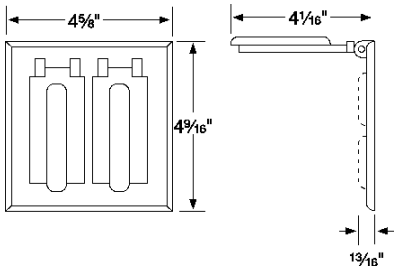


TP7199

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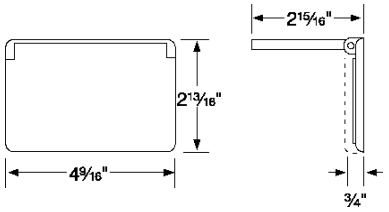
CP Dimensional Data

Two Gang, Duplex Receptacle Covers



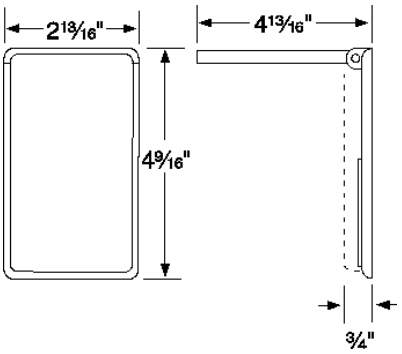
TP7228

Single Gang, GFCI Covers Horizontal Mount



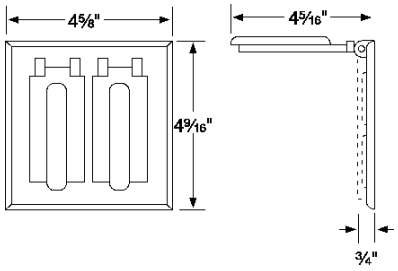
TP7236 – TP7238

Single Gang, GFCI Covers Vertical Mount



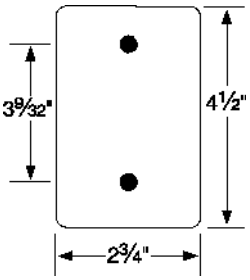
TP7240 – TP7242

Two Gang, GFCI Covers



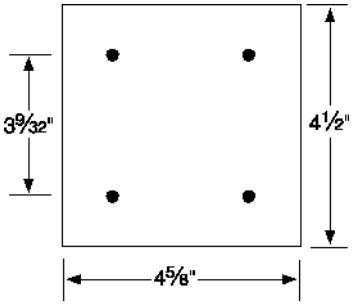
TP7248

Blank Covers



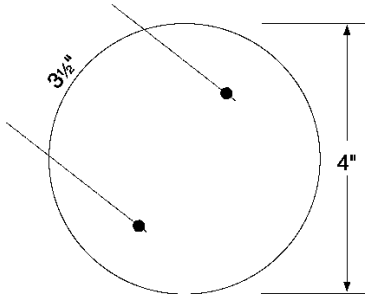
TP7292 – TP7294

Blank Covers



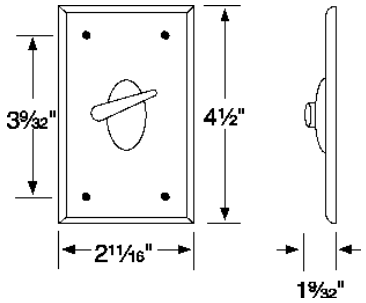
TP7296 – TP7298

Blank Covers



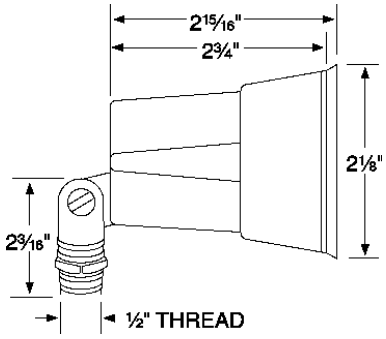
TP7158

Single Gang, Switch Covers Vertical Mount



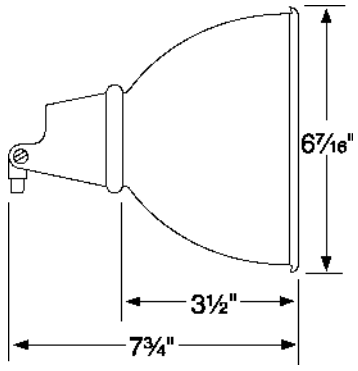
TP7256

Lampholders



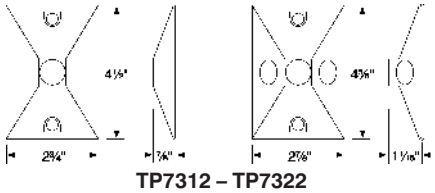
TP7162 – TP7165

Hooded Lampholder



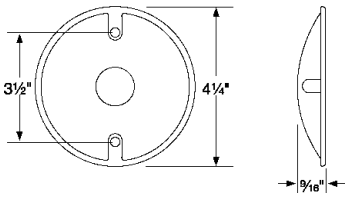
TP7178

Rectangular Lampholder Covers



TP7312 – TP7322

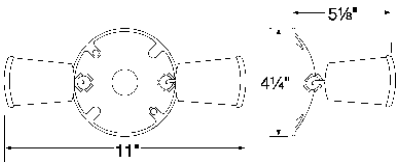
Round Lampholder Covers



TP7300 – TP7310

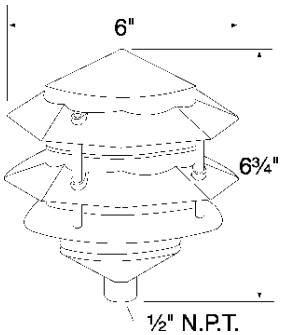
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Lampholder Assemblies



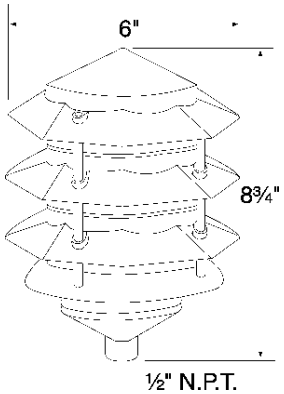
TP7330 – TP7332

Garden Lights



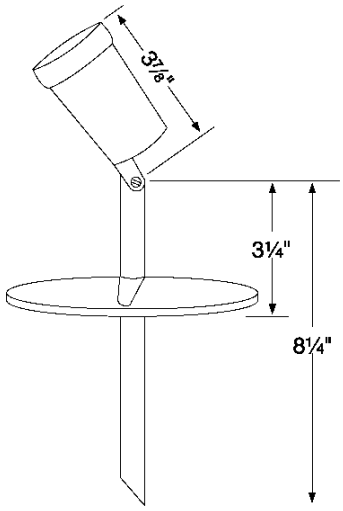
TP7700 – TP7703

Garden Lights



TP7710 – TP7723

Spike Lights



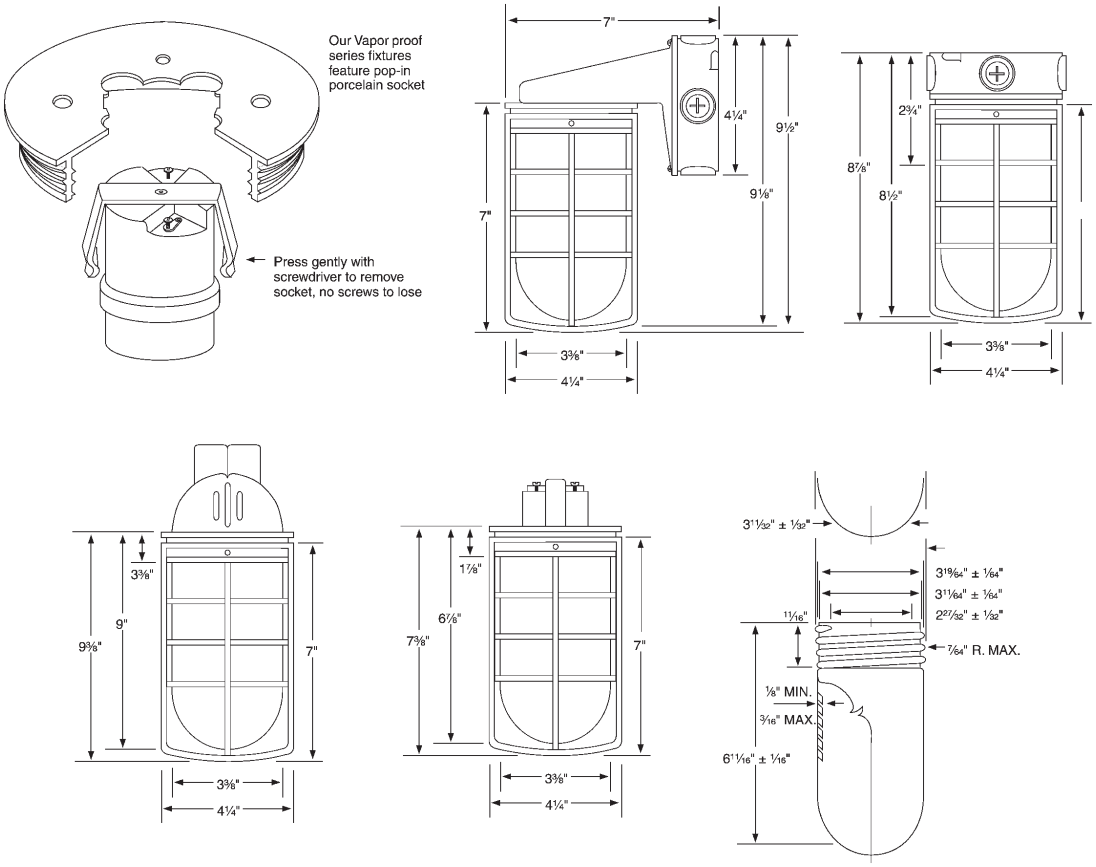
TP7186

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VAPOR PROOF DIMENSIONS
200 WATT

Product Number	Length	Overall Width	Depth
TP7830	12½″	5½″	6⅜″
TP7840	12½″	5½″	8″
TP7820	7½″	4½″	—
TP7810	11½″	5½″	—
TP7800	10¾″	5½″	—

100 WATT DIMENSIONS



Vapor Proof Lighting

Our Glass Globe Vapor proof fixtures comply with the latest U.L. requirements for standard 1598, for enclosed and gasketed incandescent fixtures.

Suitable For Wet Locations

Corrosion resistant, rugged die-cast construction castings. These lights are designed for indoor and outdoor industrial or commercial locations, gasketing allows their use in outdoor locations.

Designed by our engineers for fast, easy on the job site installation. Cooper Crouse-Hinds Vapor proof series fixtures are perfect for permanent or temporary lighting. Screw on cast guards are supplied with allen head set screws locking it in place to help prevent vandalism. Unit features snap-in, snap-out, copper screw shell porcelain sockets with screws backed out.

- Fixtures may be purchased complete or as components.
- Fixtures constructed of Die-Cast Aluminum, Guards are Zinc Die-Cast.
- Heat Resistant Clear Globe Available on 100 watt series.
- Wire Guard Available.

Clear glass is standard, colors are available, plastic (polycarbonate) globes which are virtually unbreakable are available in colors and are used as an alternative to glass globe-guard combinations (not recommended to exceed 60 watts).

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Myers Scru-tite™ and Ground hub are used in the termination of electrical circuits through wall of the enclosure

Features
- Vibration proof
- Grounding screw for added safety
- Captive o-ring gasket
- No welding
- Posi-Lok insulated throat (insuliner)
- Fit standard knockouts
- Easy installation
- Controlled thread lengths
- NPSL on male thread
- No sharp edges (along parting line)

Material
- Nut: Zamek-2, Zamek-3, Aluminium (Al 360), Stainless (316)
- Body: Zamek-2, Zamek-3, Aluminium (Al 360), Stainless (316)
- Insuliner: Lexan
- O-Ring: Gasket Vi Ton
- Ground Screw: steel

Standard Finishes
- Aluminum: Natural
- Zinc: Natural

Optional Material/Finishes
- Stainless: Natural
- Aluminium: PVC
- Zinc: Chrome-plate, PVC

Certifications
NEC/CEC: Class I, Division 2
Class II, Division 1 & 2
Class III, Division 1 & 2
UL Listed - UL Standard 514B
CSA Certified - Certified by UL to CSA standard C22.2 No. 18
NEMA Type 2, 3, 3R, 4, 4X, 12 (std hub)
NEMA Type 2, 3, 3R, 4, 12 (ground hub)

HUB BASIC SCRU-TITE® – NEMA 2, 3, 3R, 4, 4X and 12
ZINC – Optional nickel-chrome plate finish available.†
UL File No. E-27258



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
ST-03†	⅜″	25	250	12
ST-1†	½″	25	375	20
ST-2†	¾″	25	250	32
ST-3†	1″	25	250	40
ST-4†	1¼″	10	100	60
ST-5†	1½″	10	100	70
ST-6†	2″	10	60	90
ST-7	2½″	5	50	200
ST-8	3″	2	30	250
ST-9	3½″	2	12	300
ST-10	4″	2	12	350
ST-11*	5″	1	8	600
ST-12*	6″	1	8	800

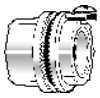
* not supplied with insulator.

HUB BASIC SCRU-TITE® – NEMA 2, 3, 3R, 4, 4X and 12
ALUMINUM
UL File No. E-27258



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STA-1	½″	25	375	8
STA-2	¾″	25	250	16
STA-3	1″	25	250	16
STA-4	1¼″	25	100	30
STA-5	1½″	10	100	30
STA-6	2″	10	60	50
STA-7	2½″	5	50	80
STA-8	3″	2	30	100
STA-9	3½″	2	12	150
STA-10	4″	2	12	150
STA-11	5″	1	8	300
STA-12	6″	1	8	300

STAINLESS STEEL GROUND HUB – NEMA 2, 3, 3R, 4, 4X and 12
STAINLESS STEEL – Type 316
UL File No. E-59509



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSTG-1	½″	10	10	20
SSTG-2	¾″	10	10	30
SSTG-3	1″	10	10	43
SSTG-4	1¼″	5	5	55
SSTG-5	1½″	5	5	73
SSTG-6	2″	5	5	95
SSTG-7	2½″	2	2	
SSTG-8	3″	2	2	
SSTG-9	3½″	2	2	
SSTG-10	4″	2	2	

Applications: Ideal for pharmaceutical, chemical and food processing, pulp/paper and nuclear industries. Resistant to a variety of chemicals, including acetic, citric and salt water. The O-ring is a special ''Viton (75)'' and has excellent chemical resistance. Hub is provided with a stainless steel ground nut.

† Optional Nickel-Chrome Plate Finish, add suffix ''-CP''. See price list.

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CP Myers® Hubs

Class I, Div. 2
Class II, Div. 1 and 2
Class III
Class I, ZONE 1, Ex e II

when installed in accordance with the NEC.

GROUND HUB – NEMA 2, 3, 3R, 4, 4X and 12
ZINC
UL File No. E-59509



Cat. #	Size	Unit Quantity	Std. Pkg.	Weight Lbs. Per 100	Max. Copper Grd. Wire Size CSA	UL
STG-1	½″	25	325	20	#8	#8
STG-2	¾″	25	225	30	#8	#8
STG-3	1″	25	150	43	#8	#8
STG-4	1¼″	10	100	55	#8	#8
STG-5	1½″	10	90	73	#6	#8
STG-6	2″	10	60	95	#4	#8
STG-7	2½″	5	35	190	#2	#6
STG-8	3″	2	26	263	1/0	#6
STG-9	3½″	2	12	300	2/0	#6
STG-10	4″	2	12	350	2/0	#4
STG-11*	5″	1	8	625	2/0	#2
STG-12*	6″	1	8	750	3/0	#1

* Not supplied with insulator

GROUND HUB – NEMA 2, 3, 3R, 4, 4X and 12
ALUMINUM - TYPE 360



STAG-1	½″	25	375	10	#8	#8
STAG-2	¾″	25	250	14	#8	#8
STAG-3	1″	25	250	18	#8	#8
STAG-4	1¼″	10	100	25	#8	#8
STAG-5	1½″	10	100	33	#6	#8
STAG-6	2″	10	60	45	#4	#8
STAG-7	2½″	5	50	90	#2	#6
STAG-8	3″	2	30	125	1/0	#6
STAG-9	3½″	2	12	138	2/0	#6
STAG-10	4″	2	12	150	2/0	#4
STAG-11	5″	1	8	325	3/0	#2
STAG-12	6″	1	8	350	3/0	#1

GROUND HUB BASIC SCRU-TITE® – ATEX/IEC APPROVED
ZINC
CENELEC Approval with DEMKO
D 98E. 124658U Class I, ZONE 1, AEx e II
UL File No. 187273 **Class I, ZONE 1, Ex e II**



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STGK-1	½″	10	10	20
STGK-2	¾″	10	10	30
STGK-3	1″	10	10	43
STGK-4	1¼″	5	5	55
STGK-5	1½″	5	5	73
STGK-6	2″	5	5	95

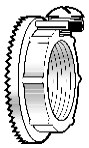
STAINLESS STEEL – TYPE 316
ATEX Approval with DEMKO
D 98E. 124658U Class I, ZONE 1, AEx e II
UL File No. E-187273 **Class I, ZONE 1, Ex e II**



SSTGK-1	½″	10	10	20
SSTGK-2	¾″	10	10	30
SSTGK-3	1	10	10	43
SSTGK-4	1¼″	5	5	55
SSTGK-5	1½″	5	5	73
SSTGK-6	2	5	5	95

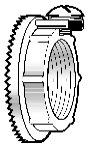
Applications: Ideal for pharmaceutical, chemical and food processing, pulp/paper and nuclear industries. Resistant to a variety of chemicals, including acetic, citric and salt water. The O-ring is a special ''Viton (75)'' and has excellent chemical resistance. Hub is provided with a stainless steel ground nut.

GROUND NUT
ZINC



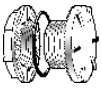
Catalog Number	Size	Unit Quantity	Std. Pkg.	Weight Lbs. Per 100	Max. Copper Grd. Wire Size CSA	UL
STGN-1	½″	25	375	6	#8	#8
STGN-2	¾″	25	375	10	#8	#8
STGN-3	1″	25	375	13	#8	#8
STGN-4	1¼″	10	150	15	#8	#8
STGN-5	1½″	10	150	23	#6	#8
STGN-6	2″	10	150	30	#4	#8

GROUND NUT
ALUMINUM



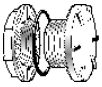
STAGN-1	½″	25	375	3	#8	#8
STAGN-2	¾″	25	375	5	#8	#8
STAGN-3	1″	25	375	6	#8	#8
STAGN-4	1¼″	10	150	8	#8	#8
STAGN-5	1½″	10	150	10	#6	#8
STAGN-6	2″	10	150	13	#4	#8

CAP-OFF
ZINC



STC-1	½″	25	375	13
STC-2	¾″	25	325	20
STC-3	1″	25	225	28
STC-4	1¼″	10	150	40
STC-5	1½″	10	120	53
STC-6	2″	10	90	70

CAP-OFF
ALUMINUM



STAC-1	½″	25	375	6
STAC-2	¾″	25	375	8
STAC-3	1″	25	375	12

THROUGH-BULKHEAD FITTING
ZINC



STTB-1	½″	5	75	30
STTB-2	¾″	5	75	50
STTB-3	1″	5	75	70
STTB-4	1¼″	5	50	85
STTB-5	1½″	5	50	110
STTB-6	2″	5	25	160
STTB-7	2½″	4	20	244
STTB-8	3″	2	20	312
STTB-9	3½″	2	12	350
STTB-10	4″	2	12	400

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THROUGH-BULKHEAD FITTING
ALUMINUM



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STTBA-1	½″	5	75	20
STTBA-2	¾″	5	75	35
STTBA-3	1″	5	75	30
STTBA-4	1¼″	5	50	40
STTBA-5	1½″	5	50	50
STTBA-6	2″	5	25	70
STTBA-7	2½″	4	20	106
STTBA-8	3″	2	20	138

THROUGH-BULKHEAD FITTING without nipples
ZINC



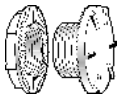
STTTB-1	½″	5	75	35
STTTB-2	¾″	5	75	60
STTTB-3	1″	5	75	75
STTTB-4	1¼″	5	50	85
STTTB-5	1½″	5	50	120
STTTB-6	2″	5	25	170

THROUGH-BULKHEAD FITTING without nipples
ALUMINUM



STTTBA-1	½″	5	75	15
STTTBA-2	¾″	5	75	25
STTTBA-3	1″	5	75	35
STTTBA-4	1¼″	5	50	40
STTTBA-5	1½″	5	50	50
STTTBA-6	2″	5	25	75

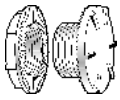
NON-HAZARDOUS DRAIN PLUG
STAINLESS STEEL
UL File No. E23223



SSTC-1	½″	25	25	13
SSTC-1CD	½″	25	25	13

Note: SSTC-1 is for knockouts and is supplied with a locknut and straight threads.
SSTC-1CD is for threaded openings and is supplied without locknut and NPT threads.
Not gasketed to allow for water drainage

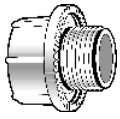
NON-HAZARDOUS DRAIN PLUG
ALUMINUM
UL File No. E23223



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STAC-1ST	½″	25	25	6
STAC-1CD	½″	25	25	6

Note: STAC-1ST is for knockouts and is supplied with a locknut and straight threads.
STAC-1CD is for threaded openings and is supplied without locknut and NPT threads.
Not gasketed to allow for water drainage

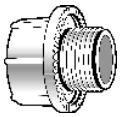
METRIC TO NPT ADAPTER
ZINC



Cat.†	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STM-1	M20 to ½″	25	25	12
STM-2	M25 to ¾″	25	25	32
STM-3	M32 to 1″	25	25	32
STM-4	M40 to 1¼″	25	25	40
STM-5	M50 to 1½″	10	10	50
STM-6	M63 to 2″	10	10	70

Note: The Myers Metric to NPT hub adapter is used to convert a threaded metric entry to a NPT entry. The female thread is NPT and the male thread is metric.

METRIC TO NPT ADAPTER
STAINLESS STEEL



Cat.†	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSTM-1	M20 to ½″	10	10	12
SSTM-2	M25 to ¾″	10	10	20
SSTM-3	M32 to 1″	10	10	32
SSTM-4	M40 to 1¼″	5	5	40
SSTM-5	M50 to 1½″	5	5	50
SSTM-6	M63 to 2″	5	5	70

CONDUIT HUBS – MALLEABLE IRON

(Insulated Throat)

Features:

NEW!

- Male thread type
- Tapered female thread for rigid conduit and IMC
- Recessed O-ring gasket assures raintight and dust tight connections
- Insulated throat provides smooth pulling surface
- Locking screw on the nut doubles as a grounding screw for added safety
- Complete size range from ½″ to 6″
- Hubs fit standard knockouts. No special tools required

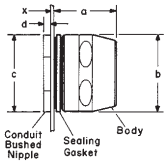
Certifications and Compliances:

- Class I, Division 2 – NEC 501.4(B)
- Class II, Divisions 1 & 2 – NEC 502.4(A)(B)
- Class III, Division 1 & 2 – NEC 503.3(A)(B)
- UL Listed – UL Standard 514B
- cUL Listed – Certified by UL to CSA Standard C22.2 No. 18
- NEMA: FB-1
- Suitable for wet locations



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
MHUB1	½″	25	100	18
MHUB2	¾″	25	100	25
MHUB3	1″	5	50	50
MHUB4	1¼″	5	25	25
MHUB5	1½″	2	20	20
MHUB6	2″	1	10	10
MHUB7	2½″	1	10	10
MHUB8	3″	1	5	5
MHUB9	3½″	1	5	5
MHUB10	4″	1	2	2
MHUB11	5″	1	1	1
MHUB12	6″	1	1	1

Conduit Hub Dimension



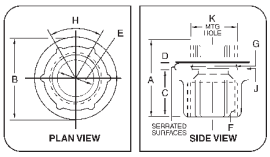
Cat. #	Conduit Size	a	b	c	d	x
HUB1	½	1	1¼	1	⅛	9/64
HUB2	¾	1⅛	1 9/16	1⅜	5/32	¼
HUB3	1	1⅜	1⅞	1⅝	3/16	9/32
HUB4	1¼	1½	2 5/16	2	¼	7/16
HUB5	1½	1⅝	2½	2⅜	¼	7/16
HUB6	2	1 11/16	3	2 13/16	¼	7/16
HUB7	2½	2 3/16	3⅝	3 7/16	¼	7/16
HUB8	3	2 7/16	4¼	4 1/16	¼	7/16
HUB9	3½	2 7/16	4¾	4 11/16	5/16	¾
HUB10	4	2 9/16	5¼	5 1/16	5/16	1⅛

NOTE: Dimension ''x'' is maximum wall thickness of box that will meet the requirement for three full threads engagement of nipple and fitting body when liquidtight box connector or rigid conduit hub is installed in a knockout or slip hole.

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SCHEDULE OF DIMENSIONS

PIPE SIZE	CAT. NO.	A	B	C	D	E		F	G	H	J "O" RING		K	
						MIN.	MAX.				C.S.	O.D.	MIN.	MAX.
¼	ST–02	1-3/32	15/16	21/32	⅛	.350	.364	¼ NPT	¼ NPS	60°	3/21	¾	35/64	9/16
⅜	ST–03	1-3/32	1-⅛	21/32	⅛	.468	.493	⅜ NPT	⅜ NPS	60°	3/32	15/16	43/64	11/16
½	ST–1	1-11/32	1-7/16	13/16	3/16	.591	.622	½ NPT	½ NPS	60°	⅛	1-½	55/64	⅞
¾	ST–2	1-15/32	1-23/32	29/32	3/16	.783	.824	¾ NPT	¾ NPS	60°	⅛	1-7/16	1-1/16	1-⅛
1	ST–3	1-21/32	2	1-1/32	¼	.997	1.049	1 NPT	1 NPS	60°	⅛	1-¾	1-21/64	1-⅜
1-¼	ST–4	1-11/16	2-⅜	1-1/32	¼	1.311	1.380	1-¼ NPT	1-¼ NPS	60°	⅛	2-⅛	1-43/64	1-¾
1-½	ST–5	1-11/16	2-¾	1-1/32	¼	1.529	1.610	1-½ NPT	1-½ NPS	60°	⅛	2-½	1-59/64	2
2	ST–6	1-¾	3-¼	1-3/32	¼	1.964	2.067	2 NPT	2 NPS	60°	⅛	3	2-25/64	2-½
2-½	ST–7	2-7/32	3-¾	1-9/32	¼	2.346	2.469	2-½ NPT	2-½ NPS	60°	⅛	3-½	2-57/64	3
3	ST–8	2-5/16	4-⅜	1-⅜	¼	2.915	3.068	3 NPT	3 NPS	45°	⅛	4-⅛	3-33/64	3-5/8
3-½	ST–9	2-⅜	5	1-7/16	¼	3.371	3.548	3-½ NPT	3-½ NPS	45°	⅛	4-⅝	4-1/64	4-⅛
4	ST–10	2-7/16	5-½	1-½	¼	3.825	4.026	4 NPT	4 NPS	45°	⅛	5-⅛	4-33/64	4-⅝
5	ST–11	2-15/16	6-⅞	2	¼	4.795	5.047	5 NPT	5 NPS	45°	⅛	6-½	5-37/64	5-11/16
6	ST–12	3	7-11/16	2	5/16	5.762	6.065	6 NPT	6 NPS	45°	⅛	7-¼	6-41/64	6-¾



PLAN VIEW **SIDE VIEW**

"D" dimension indicated maximum panel thickness which hub will accommodate.

TOLERANCE		CAT. NO.	MATERIAL
DECIMAL	+/-.010	ST	ZINC
FRACTIONAL	+/-1/16	STA	ALUMINUM
ANGULAR & DRAFT	+/-2°	SSTG	STAINLESS

Dimensions and materials specified are subject to change without prior notice.

SPACING CHART FOR MYERS HUBS
CONDUIT OR PIPE SIZE

HOLE SIZE.	COND. SIZE.	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
9/16	¼	**1 1/16**													
11/16	⅜	1 5/32	**1¼**												
⅞	½	1 5/16	1 13/32	**1 9/16**											
1⅛	¾	1 7/16	1 17/32	1 11/16	**1 13/16**										
1⅜	1	1 19/32	1 11/16	1 27/32	1 31/32	**2⅛**									
1¾	1¼	1 25/32	1⅞	2 1/32	2 5/32	2 5/16	**2½**								
2	1½	1 31/32	2 1/16	2 7/32	2 11/32	2½	2 11/16	**2⅞**							
2½	**2**	2 7/32	2 5/16	2 15/32	2 19/32	2¾	2 15/16	3⅛	**3⅜**						
3	**2½**	2 15/32	2 9/16	2 23/32	2 27/32	3	3 3/16	3⅜	3⅝	**3⅞**					
3⅝	**3**	2 25/32	2⅞	3 1/32	3 5/32	3 5/16	3½	3 11/16	3 5/16	4 3/16	**4½**				
4⅛	**3½**	3 3/32	3 3/16	3 11/32	3 15/32	3⅝	3 13/16	4	4¼	4½	4 13/16	**5⅛**			
4⅝	**4**	3 11/32	3 7/16	3 19/32	3 23/32	3⅞	4 1/16	4¼	4½	4¾	5 1/16	5⅜	**5¾**		
5 11/16	**5**	4 1/32	4⅛	4 9/32	4 13/32	4 9/16	4¾	4 15/16	5 3/16	5 7/16	5¾	6 1/16	6 5/16	**7⅛**	
6¾	**6**	4 13/32	4½	4 21/32	4 25/32	4 15/16	5⅛	5 5/16	5 9/16	5 13/16	6⅛	6 7/16	6 11/16	7⅜	**7¾**
		19/32	11/16	27/32	31/32	1⅛	1 5/16	1½	1¾	2	2 5/16	2⅝	2⅞	3 9/16	3 15/16

Minimum space from center of pipe or conduit to nearest obstruction.

1. **Dimensions in black squares are centers for conduits of same size. Example: How close may 3″ conduits be spaced?**
   Answer 4½″.
2. **Dimensions in grey squares are for centers of conduits NOT of the same size. Example: What is the minimum spacing for 2″ and ¾″ conduit?**
   Read down column marked ¾″ to figure opposite 2″ and find dimensions is 2 11/32″.
3. **Minimum spacing dimensions as shown will give approximately ⅛″ clearance between locking nuts.**

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Flexible Fixture Hangers

Cooper Crouse-Hinds **TPSFH & TPRFH** flexible fixture hangers are used in commercial or light industrial applications where HID high bay and low bay lighting fixtures are used. Specific applications include storage facilities, shipping warehouses, retail and DIY facilities.





Features & Benefits:

- Suitable for use with ½″ or ¾″ fixture conduit stems these hangers allow the conduit stem of the fixture (luminaire) to swing in any direction. Maximum swing angle is 26° from vertical max slope angles 22½°
- Available in two styles; one for attachment to round or octagonal steel boxes, the other for attachment to 4″ square steel boxes.
- Both styles are quickly and easily attached by two screws.
- Hangers are drilled and tapped for use with ¾″ conduit stem as standard and come supplied with a ¾″-½″ reducer for ½″ conduit stem applications.

Certifications and Compliances:

- UL Listed - UL 1598
- CSA C22.2 No. 250
- Suitable for Damp Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Zinc Chromate for corrosion resistance

Ordering Information

Description	Support Wt. (lbs)	Catalog No.
For use with 4″ Round or Octagon Boxes	50	TPRFH12
For use with 4″ Square boxes	50	TPSFH12

Swiv-L-Drop™ Canopy Fixture Hangers

The Swiv-L-Drop Canopy hanger utilizes a patented spring design to provide vibration and shock protection for pendant mounted fixtures in both horizontal and vertical directions. Designed to fit 3″ or 4″ outlet boxes the Swiv-L-Drop is for use with ½″ fixture conduit stems. The smooth, white canopy provides an aesthetically pleasing appearance and installs quickly and easily without the use of tools.



Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Canopy - painted white

Ordering Information

Description	Support Wt. (lbs)	Catalog No.
Swiv-L-Drop Canopy Hanger for use with 3″ or 4″ Outlet boxes for use with ½″ Conduit Stems.	50*	S-1-1/2
For use with ⅜″ Conduit Stems.	50*	S-1-3/8

*65 lbs. rated with a minimum 12-inch stem if fully supported by other than an outlet box.

Sway Adapters

The Sway Adapter installs quickly and easily to pendant mounted fixtures and compensates for shocks and motion due to movements, vibration, earthquakes or other sources by allowing for lateral movement up to 45 degrees. The Sway Adapter can be used independently or in conjunction with the Swiv-L-Drop hanger. The Sway Adapter is also finished in an aesthetically pleasing white painted finish and is designed for use with ½″ conduit stems and has ⅜″ male threads.



Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Sway Adapter - painted white

Ordering Information

Description	Catalog No.
Sway adapter for use with ½″ Conduit Stem (male thread is ⅜″)	SA-1W

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CP Thin Wall Conduit Fittings (For EMT Conduit)

- Compression Type Fittings
- Set Screw Type Fittings
- Combination Couplings
- Straight Connectors
- Couplings

COMPRESSION TYPE FITTINGS – RAINTIGHT CONNECTORS

The Cooper Crouse-Hinds Raintight EMT connectors are used to join EMT conduit to a box or enclosure in Raintight environments. The design prevents water seepage into conduit, box or enclosure.

Features and Benefits

- All steel construction with zinc electroplate finish provides for durable corrosion resistance
- Flat surface on Gland nut provides smooth, flat surface for easy wrenching
- Distinct black gland nut provides quick raintight identification
- Integral gasketed compression ring secures and seals for reliable installation
- Interior shoulder conduit stop provides positive seating of conduit inside the body
- Gasket on male threads of box connector seals installation for raintight connection between the box and the connector
- Available in insulated and non-insulated versions to meet any customer preference
- Angled teeth on locknut for secure bite into enclosure
- Extruded locknut with shoulder provides more threads for more secure installation
- Concrete tight
- Standard material: Steel
- Standard finish: Zinc plated

Certifications and Compliances

- UL Listed
- cUL Listed

NEW!

Concrete Tight

Straight Connectors – Insulated – Raintight

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1650RT	½″	50	250	11
1651RT	¾″	25	125	17
1652RT	1″	25	100	23
1653RT	1¼″	10	50	41
1654RT	1½″	10	50	50
1655RT	2″	5	25	67
1656RT	2½″	2	10	177
1657RT	3″	1	5	234

Straight Connectors – Non-Insulated – Raintight

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
650RT	½″	50	250	11
651RT	¾″	25	125	17
652RT	1″	25	100	23
653RT	1¼″	10	50	41
654RT	1½″	10	50	50
655RT	2″	5	25	67
656RT	2½″	2	10	177
657RT	3″	1	5	234

Couplings – Raintight

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
660RT	½″	50	250	14
661RT	¾″	25	125	21
662RT	1″	25	100	28
663RT	1¼″	10	50	49
664RT	1½″	10	50	60
665RT	2″	5	25	79
666RT	2½″	2	10	187
667RT	3″	1	5	245

COMPRESSION TYPE FITTINGS – STEEL

New Space-Saver EMT Connector - Compression

UL File No. E-22132

NEW!

Features:

- Used to join EMT conduit to a box or enclosure
- Designed with the male threads on the locknut, the Space-Saver takes up virtually no room inside the box and the smooth pulling surface eliminates the need for a bushing or insulated throat
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration
- Knurled wrenching surface for easy tightening
- Zinc electroplated for corrosion resistance
- Concrete tight when taped

Certifications and Compliances:

- UL Listed
- cUL Listed



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSC50	½″	50	250	8
SSC75	¾″	25	100	12
SSC100	1″	25	100	12

COMPRESSION TYPE FITTINGS – STEEL

Application:

Thinwall conduit fittings are used:

- to join EMT to a box or enclosure
- to couple two ends of EMT conduit

Features: Compression Type

- Unique raised bump design affords fast, positive locking of compression nuts
- Male Hub Threads - NPSM
- Steel Locknuts
- Heavy Steel Walls
- Standard Material: Steel
- Standard Finish: Zinc Plated

Concrete Tight

Straight Connectors – Insulated

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1650	½″	50	250	11
1651	¾″	25	125	16
1652	1″	25	100	25
1653	1¼″	10	50	43
1654	1½″	10	50	54
1655	2″	5	25	76
1656	2½″	2	10	190
1657	3″	1	5	300
1658	3½″	1	5	330
1659	4″	1	5	360

Straight Connectors – Non-Insulated

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
650S	½″	50	250	9
651S	¾″	25	125	16
652	1″	25	100	25
653	1¼″	10	50	43
654	1½″	10	50	54
655	2″	5	25	76
656	2½″	2	10	190
657	3″	1	5	300
658	3½″	1	5	280
659	4″	1	5	360

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COMPRESSION TYPE FITTINGS – STEEL

Couplings
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
660S	½″	50	250	12
661S	¾″	25	125	18
662	1″	25	100	27
663	1¼″	10	50	46
664	1½″	10	50	63
665	2″	5	25	92
666	2½″	2	10	250
667	3″	1	5	410
668	3½″	1	5	390
669	4″	1	5	485

SET SCREW TYPE FITTINGS

New Space-Saver EMT Connector - Set Screw
UL File No. E-22132

NEW!

Features:

- Used to join EMT conduit to a box or enclosure
- Designed with the male threads on the locknut, the Space-Saver takes up virtually no room inside the box, and the smooth pulling surface eliminates the need for a bushing or insulated throat
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration
- Knurled wrenching surface for easy tightening
- Tri-head set screw may be installed using a slotted, Philips or Robertson head screwdriver
- Zinc electroplated for corrosion resistance
- Concrete tight when taped

Certifications and Compliances:

- UL Listed
- cUL Listed



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSBC50	½″	50	250	8
SSBC75	¾″	25	100	12
SSBC100	1″	25	100	12

COMBINATION COUPLINGS – STEEL

Concrete Tight
EMT (Compression) to Rigid (Threaded) Compression Type NPT Female Hubs
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
690S	½″	25	250	9
691	¾″	20	200	13
692	1″	10	100	19

SET SCREW TYPE FITTINGS

Features: Set Screw Type

- Pre-set & Staked Robertson Head Screws
- Male Hub Threads - NPSM
- Steel Locknuts
- Heavy Steel Walls
- Standard Material: Steel
- Standard Finish: Zinc Plated

Concrete Tight
Straight Connectors – Insulated
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1450	½″	50	250	9
1451	¾″	25	100	14
1452	1″	20	100	23
1453*	1¼″	10	50	46
1454*	1½″	10	50	50
1455*	2″	5	25	78
1456*+	2½″	2	10	130
1457*+	3″	1	5	140
1458*+	3½″	1	5	180
1459*+	4″	1	5	225

* Two Tightening Screws

Straight Connectors – Non-Insulated
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
450S	½″	50	250	9
451	¾″	25	100	15
452	1″	20	100	23
453*	1¼″	10	50	46
454*	1½″	10	50	50
455*	2″	5	25	77
456*+	2½″	2	10	130
457*+	3″	1	5	140
458*+	3½″	1	5	180
459*+	4″	1	5	225

* Two Tightening Screws

Couplings
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
460	½″	50	250	9
461	¾″	25	125	16
462	1″	20	100	23
463*	1¼″	10	50	42
464*	1½″	10	50	50
465*	2″	5	25	77
466*+	2½″	2	10	130
467*+	3″	1	5	140
468*+	3½″	1	5	240
469*+	4″	1	1	250

†Four Tightening Screws
UL and cUL Listed for EMT, IMC and Rigid Conduit

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CP Thin Wall Conduit Fittings (For EMT Conduit)

- Set Screw Type Fittings
- Compression Type Fittings
- Combination Couplings

COMBINATION COUPLINGS – STEEL

EMT (Set Screw) to Rigid (Set Screw)
UL File No. E-19819

- Standard material: Steel
- Standard finish: Zinc plated



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
420	½″	25	100	17
421	¾″	20	100	25
422	1″	10	50	37

SET SCREW TYPE FITTINGS – DIE CAST ZINC

Straight Connectors – Insulated
UL File No. E-22132

- Standard material: Zinc
- Standard finish: Natural

NEW!



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1450DC	½″	50	500	5
1451DC	¾″	30	300	8
1452DC	1″	15	150	11
1453DC*	1¼″	8	80	20
1454DC*	1½″	6	60	25
1455DC*	2″	8	40	37
1456DC*	2½″	36	24	59
1457DC*	3″	24	20	78
1458DC*	3½″	16	12	101
1459DC*	4″	16	12	120

* Two Tightening Screws

Straight Connectors – Non-Insulated
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
450DC	½″	50	500	5
451DC	¾″	30	300	7
452DC	1″	15	150	11
453DC*	1¼″	8	80	21
454DC*	1½″	6	60	25
455DC*	2″	8	40	36
456DC*	2½″	36	24	58
457DC*	3″	24	20	77
458DC*	3½″	16	12	98
459DC*	4″	16	12	117

* Two Tightening Screws

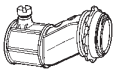
Couplings
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
460DC	½″	35	350	5
461DC	¾″	22	220	7
462DC	1″	12	120	13
463DC*	1¼″	9	90	18
464DC*	1½″	6	60	28
465DC*	2″	8	30	36
466DC*	2½″	18	12	64
467DC*	3″	14	10	81
468DC*	3½″	8	8	98
469DC*	4″	8	8	116

* Four Tightening Screws

Offset Connectors – Non-Insulated
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
2400	½″	10	100	11
2401	¾″	10	100	18
2402	1″	10	100	25

COMPRESSION TYPE FITTINGS – DIE CAST ZINC

Straight Connectors – Insulated
UL File No. E-22132

- Standard material: Zinc
- Standard finish: Natural

NEW!



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1650DC	½″	45	450	8
1651DC	¾″	30	300	11
1652DC	1″	18	180	17
1653DC	1¼″	12	120	31
1654DC	1½″	8	80	39
1655DC	2″	3	30	56
1656DC†	2½″	36	36	93
1657DC†	3″	20	20	120
1658DC†	3½″	16	16	149
1659DC†	4″	16	16	172

Straight Connectors – Non-Insulated
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
650DC	½″	45	450	8
651DC	¾″	30	300	11
652DC	1″	18	180	17
653DC	1¼″	12	120	31
654DC	1½″	8	80	39
655DC	2″	3	30	56
656DC†	2½″	36	36	93
657DC†	3″	20	20	120
658DC†	3½″	16	16	149
659DC†	4″	16	16	172

Couplings
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
660DC	½″	35	350	11
661DC	¾″	20	200	16
662DC	1″	15	150	22
663DC	1¼″	8	80	40
664DC	1½″	5	50	48
665DC	2″	2	20	64
666DC†	2½″	18	18	124
667DC†	3″	15	15	144
668DC†	3½″	12	12	190
669DC†	4″	8	8	228

† Concrete Tight when taped

COMBINATION COUPLINGS – DIE CAST ZINC

EMT (Set Screw) to Rigid (Set Screw) Concrete Tight
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
2420	½″–½″	50	500	8
2421	¾″–¾″	25	250	12

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Thin Wall Conduit Fittings (For EMT Conduit)

- Combination Couplings
- 90° Pulling Elbows
- Straps
- Clamps
- Clampbacks/Spacers
- Clamps ''Snap-On''
- Nailing Straps

COMBINATION COUPLINGS – DIE CAST ZINC

EMT (Set Screw) to Flexible Steel (Clamp)
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
780DC	½″–⅜″	50	500	8

90 DEGREE PULLING ELBOWS – DIE CAST ZINC

Features:

- Supplied threaded and with set screw for use with EMT or rigid conduit
- Removable cover facilitates wire pulling

EMT To Box (also threaded for rigid to box)
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
810DC	½″	10	100	31
811DC	¾″	5	50	31

EMT To EMT (also threaded for rigid conduit)
UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
820DC	½″	10	100	28
821DC	¾″	5	50	35
822DC	1″	5	25	64
823DC	1¼″	2	20	66

STRAPS – STEEL GALVANIZED

Two Hole
UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
497-1	½″	250	250	2
497-2	¾″	150	150	3
497-3	1″	100	100	5
497-4	1¼″	50	50	8
497-5	1½″	50	50	13
497-6	2″	25	25	14
496-9	2½″	25	25	19
496-10	3″	25	25	23
496-11	3½″	25	25	93
496-12	4″	10	10	108

CLAMPS – MALLEABLE IRON

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
516	2½″	5	25	104
517	3″	2	10	120
518	3½″	2	10	150
519	4″	2	10	220

CLAMPBACKS/SPACERS – IRON

Application:

- Provides space between conduit and mounting surface
- Standard material: Malleable Iron
- Standard finish: Zinc plated

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CB1	½″	25	250	8
CB2	¾″	25	250	10
CB3	1″	25	100	12
CB4	1¼″	25	100	21
CB5	1½″	25	100	42
CB6	2″	10	50	40
CB7	2½″	10	50	49
CB8	3″	10	50	62
CB9	3½″	10	10	91
CB10	4″	10	10	110
CB11	5″	5	5	135
CB12	6″	5	5	225

CLAMPS ''SNAP-ON'' – STEEL

Application:

- To support EMT conduit to mounting surface

Heavy Gauge
UL File No. E-184283



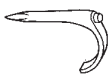
Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
200	½″	100	500	5
201	¾″	100	500	6
202	1″	100	500	6
203	1¼″	50	250	13
204	1½″	25	100	17
205	2″	25	25	20
206*	2½″	25	25	64
207*	3″	25	25	71
208*	3½″	10	10	120
209*	4″	10	10	130

*Not UL Llsted

NAILING STRAPS – CAST STEEL

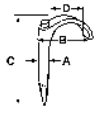
Support EMT, IMC and rigid conduit to mounting surface

- Standard material: Cast Steel
- Standard finish: Zinc Plated



Cat. #	Conduit Sizes EMT	Conduit Sizes Rigid	Unit Quantity	Standard Package	Weight Lbs. Per 100
NS-1	½″	⅜″	100	1000	2
NS-2	¾″	½″	100	1000	2
NS-3	1″	¾″	100	1000	3

Nailing Straps Dimensions – Inches



Cat. #	A	B	C	D
NS-1	3/16	1	1 7/8	¾
NS-2	¾	1 1/4	2	15/16
NS-3	3/16	1½	2½	1⅛

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CP Rigid/Intermediate Grade Conduit Fittings Concrete Tight

- Type CPR Compression Fittings
- Set Screw Type Fittings

TYPE CPR COMPRESSION FITTINGS

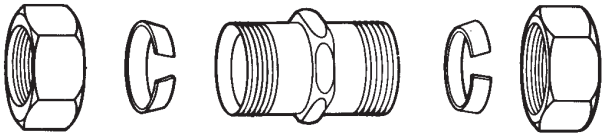
Features/Benefits:

- UL Listed for use with IMC as well as metallic rigid conduit.
- Unequalled versatility for the installer.
- Unique gland ring design tightens up in fewer turns; provides outstanding pull-out strength; saves time and adds confidence.
- Advanced, thoughtful design and premium materials team up for an installation you can be proud of.

Applications:

Use type CPR compression fittings for:

- both IMC and metallic rigid conduit.
- new work in poured concrete.
- maintenance, repairs and alterations.
- connections at panels and boxes.
- new, altered or damaged stubups.
- applicable locations where field threading is impractical or undesirable.



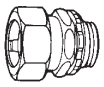
Compliance:

- UL 514B Fittings for Conduit and Outlet Boxes

Material Specifications:

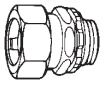
- Bodies – malleable iron
- Compression nuts – iron
- Compression rings – stainless steel
- Locknuts – zinc plated steel
- Insuliners – glass-reinforced polypropylene

Straight Connectors – Insulated
UL File No. E-19189



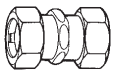
Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CPR11	½″	50	250	19
CPR12	¾″	25	125	23
CPR13	1″	10	50	42
CPR14	1¼″	10	50	64
CPR15	1½″	5	25	87
CPR16	2″	5	25	113
CPR17	2½″	2	10	130
CPR18	3″	1	5	220
CPR19	3½″	1	5	280
CPR20	4″	1	5	320

Straight Connectors – Non-Insulated
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CPR1	½″	50	250	19
CPR2	¾″	25	125	23
CPR3	1″	10	50	42
CPR4	1¼″	10	50	64
CPR5	1½″	5	25	87
CPR6	2″	5	25	113
CPR7	2½″	2	10	130
CPR8	3″	1	5	220
CPR9	3½″	1	5	280
CPR10	4″	1	5	320

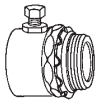
Couplings
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CPR21	½″	25	125	26
CPR22	¾″	20	100	38
CPR23	1″	10	50	59
CPR24	1¼″	5	25	85
CPR25	1½″	5	25	124
CPR26	2″	2	10	162
CPR27	2½″	2	10	220
CPR28	3″	1	5	320
CPR29	3½″	1	5	380
CPR30	4″	1	5	440

SET SCREW TYPE FITTINGS

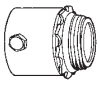
Straight Connectors – Insulated
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
150S	½″	50	200	16
151	¾″	25	100	27
152	1″	5	50	40
153	1¼″	10	50	50
154	1½″	5	25	76
155*	2″	2	10	110
1456*	2½″	2	10	210
1457*	3″	1	5	282
1458*	3½″	1	5	380
1459*	4″	1	1	400
●160I*†	5″	1	1	850
●161I*†	6″	1	1	1100

* Two Tightening Screws
● Not CSA Certified
† Malleable Iron

Straight Connectors – Non-Insulated
UL File No. E-19189



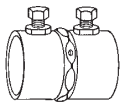
Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
150-P	½″	50	200	16
151-P	¾″	25	100	26
152-P	1″	5	50	40
153-P	1¼″	10	50	50
154-P	1½″	5	25	76
155-P*	2″	2	10	110
456‡	2½″	2	10	210
457‡	3″	1	5	281
458‡	3½″	1	5	380
459‡	4″	1	1	400
●160-P*†	5″	1	1	850
●161-P*†	6″	1	1	1100

* Two Tightening Screws
● Not CSA Certified
† Malleable Iron
‡Four Tightening Screws

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SET SCREW TYPE FITTINGS

Couplings
UL File No. E-19189



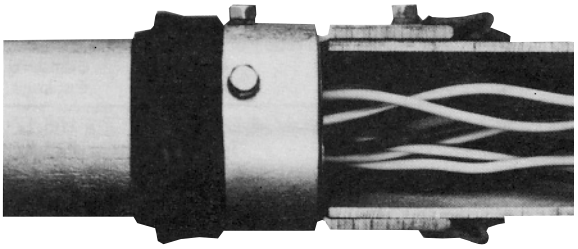
Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
160	½″	25	100	27
161	¾″	20	100	40
162	1″	5	50	52
163	1¼″	10	50	70
164	1½″	5	25	104
165*	2″	2	10	160
466*	2½″	2	10	300
467*	3″	1	5	400
468*	3½″	1	1	500
469*	4″	1	1	600
●170C*†	5″	1	1	1500
●171C*†	6″	1	1	1800

* Four Tightening Screws
● Not CSA Certified
†Malleable Iron

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CP Rigid/Intermediate Grade Conduit Fittings Concrete Tight Raintight (SSR Series)

- Set Screw Type Fittings
- Combination Couplings



U.S. Patent #3951436

Material Specifications:

- Bodies
  Connectors – ½″ - 2″ steel
  Couplings – ½″ - 2″ steel
- Boots – injection molded PVC attached with special epoxy.
- Setscrews hardened steel coated with special sealing resin compound.

Compliance:

- UL 514B – Fittings for cable and conduit

Applications:

Rainboot™ connectors and couplings are used with rigid conduit for IMC, steel or aluminum. Outdoors or indoors. Use Rainboot fittings for:

- conduit systems expansion and alterations.
- maintenance and repair operations.
- new, altered or damaged stubups.
- connections at panels and boxes.
- embedment in concrete.
- installations in tight quarters: near corners, walls, ceilings, overhangs, obstacles or adjacent raceways.
- situations where threading equipment or heavy pipe wrenches are impractical.
- conduit systems in NEC wet locations.

Features/Benefits:

- The only line of rigid/IMC threadless fittings suitable for raintight applications.
- The only alternative to field threading in NEC wet locations.
- May be installed in any position.
- Tough and durable, long lasting, trouble free installations.
- Requires only a ⅜″ wrench for installation.
- Full line – ½″ through 2″.
- Faster, easier method to install raintight rigid/IMC raceway systems.

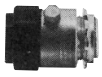
SET SCREW TYPE FITTINGS

Straight Connectors – Insulated



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSR11	½″	20	100	20
SSR12	¾″	20	100	30
SSR13	1″	20	100	40
SSR14	1¼″	5	25	64
SSR15	1½″	5	25	85
SSR16	2″	4	4	97

Straight Connectors – Non-Insulated



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSR 1	½″	20	100	21
SSR 2	¾″	20	100	23
SSR 3	1″	20	100	40
SSR 4	1¼″	5	25	64
SSR 5	1½″	5	25	85
SSR 6*	2″	4	4	96

* Two Tightening Screws
For sealing at enclosure, use Type SG sealing gaskets (see page 296).

Couplings

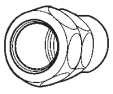


Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSR21	½″	20	100	31
SSR22	¾″	20	100	45
SSR23	1″	5	25	64
SSR24	1¼″	5	25	86
SSR25	1½″	4	25	116
SSR26**	2″	4	4	165

** Four Tightening Screws

COMBINATION COUPLINGS – STEEL

Concrete Tight
EMT (Compression) To Rigid (Threaded)
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
690S	½″–½″	25	250	9
691	¾″–¾″	20	200	13
692	1″–1″	10	100	19

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Rigid/Intermediate Grade Conduit Fittings

- Combination Couplings
- Fitting Locknuts
- Grounding Locknuts
- Conduit Locknuts
- Insulated Throat Bushings

COMBINATION COUPLINGS

(Concrete Tight)
EMT (Set Screw) To Rigid (Set Screw)

- Standard material: Steel
- Standard finish: Zinc Plated

UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
420	½″–½″	25	100	17
421	¾″–¾†	20	100	25
422	1″–1″	10	50	37

COMBINATION COUPLINGS – MALLEABLE IRON
Flexible Steel (Squeeze Type) To Rigid (Threaded)



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
65	½″–½″	10	100	17
66	¾″–¾″	10	100	22
67	1″–1″	5	25	31
68	1¼″–1¼″	5	25	31

COMBINATION COUPLINGS – DIE CAST ZINC
(Concrete Tight)
EMT (Set Screw) To Rigid (Set Screw)
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
2420	½″–½″	50	500	8
2421	¾″–¾″	25	250	12

FITTING LOCKNUTS

STEEL



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
11X	½″	500	2500	1
12X	¾″	100	1000	2
13X	1″	50	500	5
14X	1¼″	100	500	7
15X	1½″	50	250	8
16X	2″	50	250	13
17X	2½″	25	100	14
18X	3″	20	100	19
19X	3½″	10	50	24
20X	4″	10	50	29

GROUNDING LOCKNUTS

STEEL
For use with bushing to bond ½″ to 4″ rigid conduit to boxes, cabinets or other enclosures, only where a locknut is exposed.
UL File No. E-6225



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
GL-11	½″	100	1000	4
GL-12	¾″	50	500	4
GL-13	1″	50	500	6
GL-14	1¼″	50	250	8
GL-15	1½″	50	250	10
GL-16	2″	25	100	20
GL-17	2½″	20	100	25
GL-18	3″	10	50	42
GL-19	3½″	10	50	60
GL-20	4″	5	25	80

CONDUIT LOCKNUTS

⅜″ – 2 ″ STEEL, 2½″ – 6″ MALLEABLE IRON
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
10	⅜″	100	2500	1
11	½″	100	2500	1
12	¾″	100	1000	2
13	1″	50	500	5
14	1¼″	100	500	7
15	1½″	50	250	8
16	2″	50	250	13
17	2½″	20	100	26
18	3″	10	50	42
19	3½″	10	50	54
20	4″	5	25	68
22	5″	2	2	110
23	6″	1	1	154

INSULATED THROAT BUSHINGS

Malleable Iron Threaded 105°C Rated Plastic Throat Liner
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1031	½″	100	1000	3
1032	¾″	100	500	4
1033	1″	50	250	7
1034	1¼″	50	250	15
1035	1½″	10	100	19
1036	2″	20	100	22
1037	2½″	10	50	44
1038	3″	10	50	54
1039	3½″	5	25	72
1040	4″	5	25	95
●1041	5″	1	1	100
●1042	6″	1	1	127

Set Screw Type – Threadless 105°C Rated Plastic Throat Liner
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
S1031	½″	100	1000	3
S1032	¾″	100	500	4
S1033	1″	50	250	7
S1034	1¼″	50	250	15
S1035	1½″	10	100	19
S1036	2″	20	100	22
S1037	2½″	10	50	44
S1038	3″	10	50	54
S1039	3½″	5	25	72
S1040	4″	5	25	95
S1041	5″	1	1	100
S1042	6″	1	1	127

● Not UL Listed

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CP Rigid/Intermediate Grade Conduit Fittings

- Insulated Throat Grounding Bushings
- Threaded and Threadless
- Copper or Aluminum Ground Lug
- 105°C Rated

INSULATED THROAT GROUNDING BUSHINGS

IRON-105°C Rated Plastic Throat Liner
Copper Lug – For Copper Grounding Conductors – Threaded
UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
GLL-1C	½″	#4 – #14	50	500	8
GLL-2C	¾″	#4 – #14	50	250	12
GLL-3C	1″	#4 – #14	50	250	14
GLL-4C	1¼″	#4 – #14	25	125	19
GLL-4-10C	1¼″	#1/0 – #8	25	125	30
GLL-5C	1½″	#4 – #14	10	100	21
GLL-5-10C	1½″	#1/0 – #8	10	100	32
GLL-6C	2″	#4 – #14	10	50	29
GLL-6-10C	2″	#1/0 – #8	10	50	40
GLL-7C	2½″	#1/0 – #8	10	50	65
GLL-7-30C	2½″	#3/0 – #6	10	50	88
GLL-7-250C	2½″	250MCM – #6	10	50	97
GLL-8C	3″	#1/0 – #8	5	25	77
GLL-8-30C	3″	#3/0 – #6	5	25	100
GLL-8-250C	3″	250MCM – #6	5	25	109
GLL-9C	3½″	#3/0 – #6	1	1	125
GLL-9-250C	3½″	250MCM – #6	1	1	134
GLL-10C	4″	#3/0 – #6	1	1	145
GLL-10-250C	4″	250MCM – #6	1	1	154
GLL-11C	5″	#3/0 – #6	1	1	165
GLL-11-250C	5″	250MCM – #6	1	1	174
GLL-12C	6″	#3/0 – #6	1	1	195
GLL-12-250C	6″	250MCM – #6	1	1	204

Aluminum Lug – For Copper Or Aluminum Grounding Conductors – Threaded 105°C Rated Plastic Throat Liner
UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
GLL-1	½″	#4 – #14	50	500	5
GLL-2	¾″	#4 – #14	50	250	9
GLL-3	1″	#4 – #14	50	250	12
GLL-4	1¼″	#4 – #14	25	125	19
GLL-4-10	1¼″	#1/0 – #8	25	125	23
GLL-5	1½″	#4 – #14	10	100	24
GLL-5-10	1½″	#1/0 – #8	10	100	28
GLL-6	2″	#4 – #14	10	50	26
GLL-6-10	2″	#1/0 – #8	10	50	32
GLL-7	2½″	#1/0 – #8	10	50	53
GLL-7-30	2½″	#3/0 – #6	10	50	60
GLL-7-250	2½″	250MCM – #6	10	50	67
GLL-8	3″	#1/0 – #8	5	25	70
GLL-8-30	3″	#3/0 – #6	5	25	72
GLL-8-250	3″	250MCM – #6	5	25	76
GLL-9	3½″	#3/0 – #6	1	1	100
GLL-9-250	3½″	250MCM – #6	1	1	100
GLL-10	4″	#3/0 – #6	1	1	110
GLL-10-250	4″	250MCM – #6	1	1	120
GLL-11	5″	#3/0 – #6	1	1	140
GLL-11-250	5″	250MCM – #6	1	1	143
GLL-12	6″	#3/0 – #6	1	1	160
GLL-12-250	6″	250MCM – #6	1	1	163

Copper Lug – For Copper Grounding Conductors – Threadless – Set Screw Type 105°C Rated Plastic Throat Liner
UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
GLS-1C	½″	#4 – #14	50	500	8
GLS-2C	¾″	#4 – #14	50	250	12
GLS-3C	1″	#4 – #14	50	250	14
GLS-4C	1¼″	#4 – #14	25	125	19
GLS-4-10C	1¼″	#1/0 – #8	25	125	30
GLS-5C	1½″	#4 – #14	10	100	21
GLS-5-10C	1½″	#1/0 – #8	10	100	32
GLS-6C	2″	#4 – #14	10	50	29
GLS-6-10C	2″	#1/0 – #8	10	50	40
GLS-7C	2½″	#1/0 – #8	10	50	65
GLS-7-30C	2½″	#3/0 – #6	10	50	88
GLS-7-250C	2½″	250MCM – #6	10	50	97
GLS-8C	3″	#1/0 – #8	5	25	77
GLS-8-30C	3″	#3/0 – #6	5	25	100
GLS-8-250C	3″	250MCM – #6	5	25	109
GLS-9C	3½″	#3/0 – #6	1	1	125
GLS-9-250C	3½″	250MCM – #6	1	1	134
GLS-10C	4″	#3/0 – #6	1	1	145
GLS-10-250C	4″	250MCM – #6	1	1	154
GLS-11C	5″	#3/0 – #6	1	1	165
GLS-11-250C	5″	250MCM – #6	1	1	174
GLS-12C	6″	#3/0 – #6	1	1	195
GLS-12-250C	6″	250MCM – #6	1	1	204

Aluminum Lug – For Copper Or Aluminum Grounding Conductors – Threadless – Set Screw Type 105°C Rated Plastic Throat Liner
UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
GLS-1	½″	#4 – #14	50	500	5
GLS-2	¾″	#4 – #14	50	250	9
GLS-3	1″	#4 – #14	50	250	12
GLS-4	1¼″	#4 – #14	25	125	19
GLS-4-10	1¼″	#1/0 – #8	25	125	23
GLS-5	1½″	#4 – #14	10	100	24
GLS-5-10	1½″	#1/0 – #8	10	100	28
GLS-6	2″	#4 – #14	10	50	26
GLS-6-10	2″	#1/0 – #8	10	50	32
GLS-7	2½″	#1/0 – #8	10	50	53
GLS-7-30	2½″	#3/0 – #6	10	50	60
GLS-7-250	2½″	250MCM – #6	10	50	67
GLS-8	3″	#1/0 – #8	5	25	70
GLS-8-30	3″	#3/0 – #6	5	25	72
GLS-8-250	3″	250MCM – #6	5	25	76
GLS-9	3½″	#3/0 – #6	1	1	100
GLS-9-250	3½″	250MCM – #6	1	1	100
GLS-10	4″	#3/0 – #6	1	1	110
GLS-10-250	4″	250MCM – #6	1	1	120
GLS-11	5″	#3/0 – #6	1	1	140
GLS-11-250	5″	250MCM – #6	1	1	143
GLS-12	6″	#3/0 – #6	1	1	160
GLS-12-250	6″	250MCM – #6	1	1	163

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INSULATING BUSHINGS

UL File No. E-19189

- Materials: Plastic



Rated 105°C Cat. #	Rated 150°C Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
931	**H–931**	½″	50	500	1
932	**H–932**	¾″	50	500	1
933	**H–933**	1″	50	200	2
934	**H–934**	1¼″	50	200	3
935	**H–935**	1½″	25	100	3
936	**H–936**	2″	25	100	4
937	**H–937**	2½″	10	50	8
938	**H–938**	3″	10	50	10
939	**H–939**	3½″	5	25	11
940	**H–940**	4″	5	25	11
941		5″	5	5	40
942	**H–942**	6″	5	5	42

INSULATED THROAT BUSHINGS

Features:

- Plastic liner will not chip, crack, swell or shrink. It resists corrosion, chemicals and temperature extremes.

Standard Materials:

- Body - Malleable Iron
- Insuliner - ULTEM1000 rated at 150°C

Standard Finish:

- Body - Zinc Plated

IRON – 150°C RATED Threaded

UL File No. E-19189



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
H1031	½″	100	1000	6
H1032	¾″	100	500	8
H1033	1″	50	250	11
H1034	1¼″	50	250	14
H1035	1½″	10	100	17
H1036	2″	20	100	24
H1037	2½″	10	50	51
H1038	3″	10	50	62
H1039	3½″	5	25	85
H1040	4″	5	25	104
H1041	5″	1	1	130
H1042	6″	1	1	167

Set Screw Type – Threadless 150°C Rated Thermo Plastic Throat Liner

UL File No. E-19189



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
HS1031	½″	100	1000	6
HS1032	¾″	100	500	7
HS1033	1″	50	250	10
HS1034	1¼″	50	250	13
HS1035	1½″	10	100	15
HS1036	2″	20	100	21
HS1037	2½″	10	50	42
HS1038	3″	10	50	51
HS1039	3½″	5	25	65
HS1040	4″	5	25	80
HS1041	5″	1	1	100
HS1042	6″	1	1	128

INSULATED THROAT GROUNDING BUSHINGS

Features:

- Resilient plastic liner, resists corrosion, chemicals and temperature extremes.
- Insuliner - ULTEM1000 rated at 150°C
- 1 Set screw provided with each fitting locks bushing in any desired position
- External stainless steel hardware as standard

Standard Finish:

- Body - Zinc Plated

IRON – 150°C RATED

Copper Lug – For Copper Grounding Conductors – Threaded

UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
HGLL1C	½″	#4 – #14	50	500	12
HGLL2C	¾″	#4 – #14	50	250	14
HGLL3C	1″	#4 – #14	50	250	17
HGLL4C	1¼″	#4 – #14	25	125	20
HGLL4-10C	1¼″	#1/0 – #8	25	125	32
HGLL5C	1½″	#4 – #14	10	100	23
HGLL5-10C	1½″	#1/0 – #8	10	100	35
HGLL6C	2″	#4 – #14	10	50	30
HGLL6-10C	2″	#1/0 – #8	10	50	42
HGLL7C	2½″	#1/0 – #8	10	50	69
HGLL7-30C	2½″	#3/0 – #6	10	50	92
HGLL7-250C	2½″	250MCM – #6	10	50	101
HGLL8C	3″	#1/0 – #8	5	25	80
HGLL8-30C	3″	#3/0 – #6	5	25	103
HGLL8-250C	3″	250MCM – #6	5	25	112
HGLL9C	3½″	#3/0 – #6	1	1	126
HGLL9-250C	3½″	250MCM – #6	1	1	135
HGLL10C	4″	#3/0 – #6	1	1	145
HGLL10-250C	4″	250MCM – #6	1	1	155
HGLL-11C	5″	#3/0 – #6	1	1	171
HGLL11-250C	5″	250MCM – #6	1	1	180
HGLL-12C	6″	#3/0 – #6	1	1	210
HGLL12-250C	6″	250MCM – #6	1	1	317

Aluminum Lug – For Copper Or Aluminum Grounding Conductors – Threaded

UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
HGLL-1	½″	#4 – #14	50	500	9
HGLL-2	¾″	#4 – #14	50	250	11
HGLL-3	1″	#4 – #14	50	250	14
HGLL-4	1¼″	#4 – #14	25	125	17
HGLL4-10	1¼″	#1/0 – #8	25	125	24
HGLL-5	1½″	#4 – #14	10	100	20
HGLL5-10	1½″	#1/0 – #8	10	100	24
HGLL-6	2″	#4 – #14	10	50	27
HGLL6-10	2″	#1/0 – #8	10	50	31
HGLL-7	2½″	#1/0 – #8	10	50	58
HGLL7-30	2½″	#3/0 – #6	10	50	67
HGLL7-250	2½″	250MCM – #6	10	50	70
HGLL-8	3″	#1/0 – #8	5	25	69
HGLL8-30	3″	#3/0 – #6	5	25	78
HGLL8-250	3″	250MCM – #6	5	25	81
HGLL-9	3½″	#3/0 – #6	1	1	101
HGLL9-250	3½″	250MCM – #6	1	1	104
HGLL-10	4″	#3/0 – #6	1	1	120
HGLL-10-250	4″	250MCM – #6	1	1	123
HGLL-11	5″	#3/0 – #6	1	1	145
HGLL-11-250	5″	250MCM – #6	1	1	150
HGLL-12	6″	#3/0 – #6	1	1	185
HGLL-12-250	6″	250MCM – #6	1	1	186

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CP Rigid/Intermediate Grade Conduit Fittings

- Insulated Throat Grounding Bushings
- Three Piece Conduit Couplings
- Conduit Bushed Nipples

INSULATED THROAT GROUNDING BUSHINGS

Features:

- Resilient plastic liner resists corossion, chemicals and temperature extremes
- Insuliner - ULTEM1000 rated at 150°C
- 2 Set-screws provided with each fitting, locks bushings in any desired position
- Standard Finish: Zinc Plated

IRON – 150°C RATED

Set Screw Type – Copper Lug – For Copper Grounding Conductors – Threadless

UL File No. E-6225

Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
HGLS1C	½″	#4 – #14	50	500	12
HGLS2C	¾″	#4 – #14	50	250	13
HGLS3C	1″	#4 – #14	50	250	16
HGLS4C	1¼″	#4 – #14	25	125	19
HGLS4-10C	1¼″	#1/0 – #8	25	125	31
HGLS5C	1½″	#4 – #14	10	100	21
HGLS5-10C	1½″	#1/0 – #8	10	100	33
HGLS6C	2″	#4 – #14	10	50	27
HGLS6-10C	2″	#1/0 – #8	10	50	39
HGLS7C	2½″	#1/0 – #8	10	50	60
HGLS7-30C	2½″	#3/0 – #6	10	50	83
HGLS7-250C	2½″	250MCM – #6	10	50	92
HGLS8C	3″	#1/0 – #8	5	25	70
HGLS8-30C	3″	#3/0 – #6	5	25	92
HGLS8-250C	3″	250MCM – #6	5	25	100
HGLS9C	3½″	#3/0 – #6	1	1	105
HGLS9-250C	3½″	250MCM – #6	1	1	115
HGLS10C	4″	#3/0 – #6	1	1	100
HGLS10-250C	4″	250MCM – #6	1	1	130
HGLS-11C	5″	#3/0 – #6	1	1	140
HGLS11-250C	5″	250MCM – #6	1	1	150
HGLS-12C	6″	#3/0 – #6	1	1	170
HGLS12-250C	6″	250MCM – #6	1	1	180

Set Screw Type – Aluminum Lug – For Copper Or Aluminum Grounding Conductors – Threadless

UL File No. E-6225

Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
HGLS1	½″	#4 – #14	50	500	9
HGLS2	¾″	#4 – #14	50	250	10
HGLS3	1″	#4 – #14	50	250	13
HGLS4	1¼″	#4 – #14	25	125	16
HGLS4-10	1¼″	#1/0 – #8	25	125	20
HGLS5	1½″	#4 – #14	10	100	18
HGLS5-10	1½″	#1/0 – #8	10	100	22
HGLS6	2″	#4 – #14	10	50	24
HGLS6-10	2″	#1/0 – #8	10	50	28
HGLS7	2½″	#1/0 – #8	10	50	50
HGLS7-30	2½″	#3/0 – #6	10	50	58
HGLS7-250	2½″	250MCM – #6	10	50	60
HGLS8	3″	#1/0 – #8	5	25	58
HGLS8-30	3″	#3/0 – #6	5	25	67
HGLS8-250	3″	250MCM – #6	5	25	70
HGLS9	3½″	#3/0 – #6	1	1	80
HGLS9-250	3½″	250MCM – #6	1	1	85
HGLS10	4″	#3/0 – #6	1	1	90
HGLS10-250	4″	250MCM – #6	1	1	100
HGLS11	5″	#3/0 – #6	1	1	115
HGLS11-250	5″	250MCM – #6	1	1	120
HGLS12	6″	#3/0 – #6	1	1	145
HGLS12-250	6″	250MCM – #6	1	1	150

THREE PIECE CONDUIT COUPLINGS

Application:

Used to join two lengths of threaded conduit. Couples conduit when conduit can be turned.

MALLEABLE IRON (Concrete Tight)

- Heavy duty casting
- Standard Finish: Zinc Plated

UL File No. E-19189

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
190M	½″	25	125	23
191	¾″	25	100	35
192	1″	10	50	60
193	1¼″	5	25	91
194	1½″	5	25	167
195	2″	5	5	215
196	2½″	2	10	430
197	3″	1	5	463
198	3½″	1	5	655
199	4″	1	1	800
188†	5″	1	1	1200
189†	6″	1	1	2100

† Not UL Listed

CONDUIT BUSHED NIPPLES

Use:

- Use thru knockout to connect box to conduit coupling.
- Use with a locknut to connect two boxes side by side or back to back.
- Use with a locknut to connect fixture housing to continuous runs.

MALLEABLE IRON Non-Insulated Threaded NPSM for rigid conduit and IMC

UL File No. E-19189

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
50*	½″	50	500	3
51	¾″	25	250	8
52	1″	10	100	13
53	1¼″	10	100	19
54	1½″	10	50	30
55	2″	10	50	37
56	2½″	5	25	68
57	3″	5	25	92
58	3½″	1	5	130
59	4″	1	5	200
60†	5″	1	1	350
61†	6″	1	1	425

* Steel

† Not UL Listed

Insulated

UL File No. E-19189

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1050*	½″	50	500	3
1051	¾″	25	250	4
1052	1″	10	100	11
1053	1¼″	10	100	19
1054	1½″	10	50	30
1055	2″	10	50	37
1056	2½″	5	25	72
1057	3″	5	25	96
1058	3½″	1	5	113
1059	4″	1	5	187
1060	5″	1	1	350
1061	6″	1	1	450

* Steel

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Rigid/Intermediate Grade Conduit Fittings

- Conduit Bushed Nipples
- 90° Pull Elbows
- Offset Conduit Nipples
- Knockout Snap-In Blanks
- Push Plugs

CONDUIT BUSHED NIPPLES – DIE CAST ZINC

Non-Insulated
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
50D	½″	100	1000	4
51D	¾″	50	500	5
52D	1″	25	250	10
53D	1¼″	25	100	11
54D	1½″	25	100	20
55D	2″	10	40	30
56D	2½″	10	40	40
57D	3″	10	40	49
58D	3½″	10	40	68
59D	4″	5	20	70

90 DEGREE PULL ELBOWS – MALLEABLE IRON

Features:

- Raintight
- Furnished with Neoprene gasketed steel cover
- Furnished with Steel lock nut
- Furnished with Stamped Steel cover
- Threaded for rigid conduit and IMC
- For outdoor use
- Standard Finish: Zinc plated

(Gasketed – Liquidtight)
Male To Female
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
810	½″	20	100	34
811	¾″	10	50	56
812	1″	5	25	88
813	1¼″	2	10	92
814	1½″	2	10	200
815	2″	1	5	344

Female To Female
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
820	½″	20	100	36
821	¾″	10	50	49
822	1″	5	25	94
823	1¼″	2	10	140
824	1½″	2	10	200
825	2″	1	5	344

90 DEGREE PULL ELBOWS – DIE CAST ZINC

(Gasketed – Liquidtight)
Male To Female; Combination Rigid and EMT
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
810DC	½″	10	100	31
811DC	¾″	5	50	31

Female To Female; Combination Rigid and EMT
UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
820DC	½″	10	100	28
821DC	¾″	5	50	35
822DC	1″	5	25	64
823DC	1¼″	2	20	66

OFFSET CONDUIT NIPPLES – MALLEABLE IRON

Features:

- Threaded NPSM for rigid conduit and IMC
- Standard Finish: Zinc Plated
- USE: To offset the axis of raceways ¾ of an inch



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
300	½″	25	100	24
301	¾″	25	100	34
302	1″	10	50	49
303	1¼″	10	50	54

OFFSET CONDUIT NIPPLES – DIE CAST ZINC

UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
300DC	½″	10	100	9
301DC	¾″	10	100	15
302DC	1″	10	100	21
303DC	1¼″	5	50	33
304	1½″	5	50	40
305	2″	2	20	65

KNOCKOUT SNAP-IN BLANKS – STEEL



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
335	½″	100	1000	2
336	¾″	100	1000	2
337	1″	50	500	2
338	1¼″	50	250	3
339	1½″	25	250	5
340	2″	20	200	7

PUSH PLUGS – PLASTIC*



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
PPC-50	½″	100	1000	1
PPC-75	¾″	100	1000	1
PPC-100	1″	50	500	1
PPC-125	1¼″	50	200	1
PPC-150	1½″	25	100	1
PPC-200	2″	25	100	1
PPC-250	2½″	—	100	2
PPC-300	3″	—	100	3
PPC-350	3½″	—	50	6
PPC-400	4″	—	50	8

*Temperature Rating: 180° – 200°F
Tensile Strength: 600 – 2300 PSI

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CP Rigid/Intermediate Grade Conduit Fittings

- Bushing Pennies
- Knockout Reducing Washers
- Nailing Straps
- Clamps
- Clampbacks/Spacers
- Straps

BUSHING PENNIES – STEEL

A penny under a bushing will seal the end of conduit during construction.



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
90	½″	100	1000	1
91	¾″	100	1000	1
92	1″	100	1000	1
93	1¼″	50	500	1
94	1½″	50	500	2
95	2″	50	50	3
96	2½″	50	50	5
97	3″	50	50	7
98	3½″	50	50	10
99	4″	50	50	14

KNOCKOUT REDUCING WASHERS – STEEL



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
342	¾″–½″	100	2500	1
343	1″–½″	100	100	2
344	1″–¾″	100	100	2
345	1¼″–½″	100	100	3
346	1¼″–¾″	100	100	2
347	1¼″–1″	100	100	2
348	1½″–½″	50	50	5
349	1½″–¾″	50	50	4
350S	1½″–1″	50	50	4
351	1½″–1¼″	50	50	3
352	2″–½″	50	50	7
353	2″–¾″	50	50	7
354	2″–1″	50	50	6
355	2″–1¼″	50	50	5
356	2″–1½″	50	50	3
360	2½″–½″	25	250	7
361	2½″–¾″	25	250	7
362	2½″–1″	25	250	7
363	2½″–1¼″	25	250	7
364	2½″–1½″	25	250	7
365	2½″–2″	25	250	7
366	3″–1″	25	250	14
367	3″–1¼″	25	250	14
368	3″–1½″	25	250	14
369	3″–2″	25	250	14
370S	3″–2½″	25	250	14
371	3″–1½″	25	100	25
372	3½″–2″	25	100	25
373	3½″–2½″	25	100	25
374	3½″–3″	25	100	25
375	4″–2″	25	100	35
376	4″–2½″	25	100	35
377	4″–3″	25	100	35
378	4″–3½″	25	100	35

NAILING STRAPS – CAST STEEL

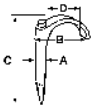
Support rigid conduit and IMC to mounting surface

- Standard material: Cast Steel
- Standard finish: Zinc plated



Cat. #	Conduit Sizes EMT	Conduit Sizes Rigid	Unit Quantity	Standard Package	Weight Lbs. Per 100
NS-1	½″	⅜″	100	1000	2
NS-2	¾″	½″	100	1000	2
NS-3	1″	¾″	100	1000	3

Nailing Straps Dimensions – Inches



Cat. #	A	B	C	D
NS-1	3⁄16	1	1⅞	¾
NS-2	¾	1¼	2	15⁄16
NS-3	3⁄16	1½	2½	1⅛

CLAMPS – MALLEABLE IRON

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
510	½″	50	500	6
511	¾″	50	250	8
512	1″	50	250	13
513	1¼″	25	100	20
514	1½″	20	100	30
515	2″	10	50	64
516*	2½″	5	25	104
517*	3″	2	10	120
518*	3½″	2	10	150
519*	4″	2	10	220
520+	5″	1	5	380
521+	6″	1	5	690

* Also for use with Thinwall (EMT) Conduit
\+ Not UL Listed

CLAMPBACKS/SPACERS – MALLEABLE IRON

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CB1	½″	25	250	8
CB2	¾″	25	250	10
CB3	1″	25	100	12
CB4	1¼″	25	100	21
CB5	1½″	25	100	42
CB6	2″	10	50	40
CB7	2½″	10	50	49
CB8	3″	10	50	62
CB9	3½″	10	10	91
CB10	4″	10	10	110
CB11+	5″	5	5	135
CB12+	6″	5	5	225

\+ Not UL Listed

STRAPS – STEEL GALVANIZED

(Two Hole)
UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
496-2	⅜″	250	250	2
496-3	½″	150	150	2
496-4	¾″	100	100	3
496-5	1″	50	50	7
496-6	1¼″	50	50	8
496-7	1½″	50	50	10
496-8	2″	25	25	15
496-9	2½″	25	25	19
496-10	3″	25	25	23
496-11	3½″	25	25	93
496-12	4″	10	10	108

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CLAMPS "SNAP-ON" – STEEL

UL File No. E-184283
(Heavy Gauge)

Application:

- To support rigid conduit and IMC to mounting service



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
410*	½″	100	500	5
411*	¾″	100	500	6
412*	1″	50	250	11
413*	1¼″	50	250	13
414	1½″	25	100	20
415	2″	25	25	22
206	2½″	25	25	64
207	3″	25	25	71
208	3½″	10	10	120
209	4″	10	10	130

* CSA Certified

CLAMPS – STEEL

(Light Gauge)



Cat. #	Conduit Sizes Rigid	Size of Strap Inside	Unit Quantity	Standard Package	Weight Lbs. Per 100
566	¼″	.540	500	500	2
567	⅜″	.675	200	1000	2

CABLE AND CONDUIT HANGERS – STEEL

With Bolts



Cat. #	Conduit Sizes Rigid	Conduit Size EMT	Unit Quantity	Standard Package	Weight Lbs. Per 100
0B	½″	⅜″ & ½″	100	100	6
1-B	¾″	¾″	100	100	6
2-B	1″	1″	100	100	8
2½-B	1¼″	—	100	100	10
3-B	1½″	1¼″	100	100	11
4-B	—	1½″	100	100	16
5-B	2″	2″	50	50	23
6-B	2½″	2½″	50	50	29
7-B	3″	3″	25	25	31
8-B	3½″	3½″	10	10	38
9-B	4″	4	10	10	38

BEAM CLAMPS/INSULATOR SUPPORTS – MALLEABLE IRON

UL File No. E-184283

- Standard finish: Zinc Plated



Cat. #	Base Size	Jaw Open	Max. Wt. Support	Tapped Holes	Unit Qty.	Std. Pkg.	Wt. Lbs./ 100
528*	¾″	⅝″	230	10 – 24	25	100	14
529*	¾″	⅝″	230	¼″ – 20	25	100	13
530	1″	¾″	230	10 – 24	25	100	23
531	1″	¾″	230	¼″ – 20	25	100	24
532	1½″	¾″	290	5⁄16″ – 18	50	50	47
533	2″	⅞″	330	⅜″ – 16	25	25	81
534	2½″	⅞″	800	½″ – 13	25	25	155

* Not UL listed

BEAM CLAMPS/INSULATOR SUPPORTS – STEEL



Cat. #	Base Size	Jaw Opening	Tapped Holes	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
529-S	¾″	⅝″	¼″ – 20	50	50	13

CONDUIT CLAMPS

Application:

Right Angle - to attach the conduit run at a 90° angle to a beam or structural member

Right Angle Type – Electrogalvanized – Iron



Cat. #	Trade Size	Load Rating Lbs	Standard Package	Weight Lbs. Per 100
RAC50HD	½″	30	50	37
RAC75HD	¾″	50	50	40
RAC100HD	1″	60	50	42
RAC125HD	1¼″	75	25	49
RAC150HD	1½″	80	25	54
RAC200HD	2″	100	25	71
RAC250HD	2½″	125	10	95
RAC300HD	3″	165	10	107
RAC350HD	3½″	200	10	120
RAC400HD	4″	330	10	131

Application:

Parallel Type - to attach the conduit run parallel to a beam or structural member

Parallel Type – Electrogalvanized – Iron



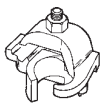
Cat. #	Trade Size	Load Rating Lbs	Standard Package	Weight Lbs. Per 100
PARC50HD	½″	30	50	50
PARC75HD	¾″	50	50	53
PARC100HD	1″	60	50	60
PARC125HD	1¼″	75	25	70
PARC150HD	1½″	80	25	82
PARC200HD	2″	100	25	132
PARC250HD	2½″	125	25	192
PARC300HD	3″	165	10	194
PARC350HD	3½″	200	10	216
PARC400HD	4″	330	10	232

CONDUIT CLAMPS

Applications:

Edge Type - to attach the conduit run at a 90° angle to a thin beam or structural member.

Edge Type – Electrogalvanized – Iron



Cat. #	Trade Size	Standard Package	Weight Lbs. Per 100
ETC50HD	½″	50	63
ETC75HD	¾″	50	69
ETC100HD	1″	50	82
ETC125HD	1¼″	25	95
ETC150HD	1½″	25	108
ETC200HD	2″	25	121
ETC250HD	2½″	25	153
ETC300HD	3″	10	214

Conduit Beam Clamp — J Type – Iron

UL File No. E-184283



Cat. #	Size	Max Weight Support	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
JCC1	½″	150	25	25	35
JCC2	¾″	150	25	25	43
JCC34	1″ & 1¼″	225	10	10	90
JCC56	1½″ & 2″	300	5	5	190
JCC78	2½″ & 3″	500	2	2	380
JCC910	3½″ & 4″	700	2	2	575

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CP Rigid/Intermediate Grade Conduit Fittings

- Conduit Reducers
- Plugs

CONDUIT REDUCERS – STEEL/FERALOY®



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
251	¾″–½″	50	50	4
252	1″–½″	25	25	13
253	1¼″–½″	10	10	30
254	1½″–½″	10	10	43
255	2″–½″	5	5	83
260	1″–¾″	25	25	7
261	1¼″–¾″	10	10	23
262	1½″–¾″	10	10	40
263	2″–¾″	5	5	79
268	1¼″–1″	10	10	18
269	1½″–1″	10	10	27
270S	2″–1″	5	5	66
275	1½″–1¼″	10	10	13
276	2″–1¼″	5	5	24
281	2″–1½″	5	5	27
282	2½″–1″	10	10	120
283	2½″–1¼″	10	10	130
285	2½″–2″	10	10	150
288	3″–1½″	5	5	210
289	3″–2″	2	2	160
290M	3″–2½″	5	5	120
291	3½″–2″	2	10	200
292	3½″–2½″	2	10	225
293	3½″–3″	2	10	150
294	4″–2″	2	10	270
295	4″–2½″	2	10	270
296	4″–3″	2	10	260
297	4″–3½″	2	10	160
298	5″–4″	1	1	385
299	6″–5″	1	1	475

PLUGS – CAST IRON

Recessed



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
PLG1M	½″	50	50	6
PLG2M	¾″	50	50	11
PLG3M	1″	25	25	22
PLG4M	1¼″	25	25	34
PLG5M	1½″	10	10	48
PLG6M	2″	10	10	82
PLG7M	2½″	2	2	150
PLG8M	3″	2	2	222
PLG9M	3½″	1	1	340
PLG10M	4″	1	1	380

Square Head



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
PLG15M	½″	50	50	12
PLG25M	¾″	50	50	16
PLG35M	1″	25	25	25
PLG45M	1¼″	25	25	34
PLG55M	1½″	10	10	48
PLG65M	2″	10	10	80
PLG75M	2½″	1	1	116
PLG85M	3″	1	1	185
PLG95M	3½″	1	1	232
PLG105M	4″	1	1	310

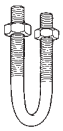
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Rigid/Intermediate Grade Conduit Fittings

- Heavy-Duty Conduit U-Bolts with Hex Nuts
- Plugs
- Conduit Hubs®
- Split Conduit Couplings

HEAVY-DUTY CONDUIT U-BOLTS WITH HEX NUTS

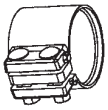
Electrogalvanized – Iron



Cat. #	Trade Size	Thread Size	Standard Package	Weight Lbs. Per 100
UBM50HD	½″	5/16″–18	200	12
UBM75HD	¾″	5/16″–18	200	14
UBM100HD	1″	5/16″–18	100	17
UBM125HD	1¼″	5/16″–18	50	19
UBM150HD	1½″	5/16″–18	50	21
UBM200HD	2″	3/8″–16	50	28
UBM250HD	2½″	3/8″–16	25	37
UBM300HD	3″	3/8″–16	25	42
UBM350HD	3½″	3/8″–16	20	46
UBM400HD	4″	3/8″–16	20	51

SPLIT CONDUIT COUPLINGS

Body-Ductile Iron
Clamping Hardware-Electrogalvanized Steel
Gasket-Neoprene



- Concrete Tight
- Suitable for use in Class 1, Division 2 Areas

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
TCC1	½″	10	20	39
TCC2	¾″	10	20	45
TCC3	1″	10	20	68
TCC4	1¼″	5	20	82
TCC5	1½″	5	20	116
TCC6	2″	5	20	111
TCC7	2½″	2	10	283
TCC8	3″	2	10	323
TCC9	3½″	1	5	395
TCC10	4″	1	5	506
TCC12	5″	1	1	944
TCC14	6″	1	1	1218

CONDUIT HUBS – CAST IRON

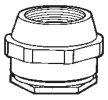
(Insulated Throat)
UL File No. E-19189

Applications:

Conduit hubs are ideal for terminating electrical conduit through the walls of enclosures. Designed for use indoors or outdoors with rigid conduit and IMC, specific applications include food processing plants, distilleries, breweries, sewage disposal plants, chemical plants, paper processing mills and refineries.

Features:

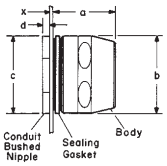
- Male thread is on the nut for space saving
- Quick and easy when installing rigid conduit nipple between two existing enclosures
- Insulated throat provides smooth pulling surface
- Furnished with SG sealing gasket
- Hub fits standard knockouts. No special tools required



Furnished with SG Sealing Gaskets

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
HUB1	½″	25	100	18
HUB2	¾″	10	100	36
HUB3	1″	5	50	51
HUB4	1¼″	5	20	75
HUB5	1½″	2	20	94
HUB6	2″	1	10	119
HUB7	2½″	1	5	238
HUB8	3″	1	5	300
HUB9	3½″	1	5	388
HUB10	4″	1	5	544

Conduit Hub Dimension



Cat. #	Conduit Size	a	b	c	d	x
HUB1	½	1	1¼	1	⅛	9/64
HUB2	¾	1⅛	1 9/16	1⅜	5/32	¼
HUB3	1	1⅜	1⅞	1⅝	3/16	9/32
HUB4	1¼	1½	2 5/16	2	¼	7/16
HUB5	1½	1⅝	2½	2⅜	¼	7/16
HUB6	2	1 11/16	3	2 13/16	¼	7/16
HUB7	2½	2 3/16	3⅝	3 7/16	¼	7/16
HUB8	3	2 7/16	4¼	4 1/16	¼	7/16
HUB9	3½	2 7/16	4¾	4 11/16	5/16	¾
HUB10	4	2 9/16	5¼	5 1/16	5/16	1⅛

NOTE: Dimension ''x'' is maximum wall thickness of box that will meet the requirement for three full threads engagement of nipple and fitting body when liquidtight box connector or rigid conduit hub is installed in a knockout or slip hole.

CONDUIT HUBS – MALLEABLE IRON

(Insulated Throat)

Features:

NEW!

- Male thread type
- Tapered female thread for rigid conduit and IMC
- Recessed O-ring gasket assures raintight and dust tight connections
- Insulated throat provides smooth pulling surface
- Locking screw on the nut doubles as a grounding screw for added safety
- Complete size range from ½″ to 6″
- Hubs fit standard knockouts. No special tools required

Certifications and Compliances:

- Class I, Division 2 – NEC 501.4(B)
- Class II, Divisions 1 & 2 – NEC 502.4(A)(B)
- Class III, Division 1 & 2 – NEC 503.3(A)(B)
- UL Listed – UL Standard 514B
- cUL Listed – Certified by UL to CSA Standard C22.2 No. 18
- NEMA: FB-1
- Suitable for wet locations



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
MHUB1	½″	25	100	18
MHUB2	¾″	25	100	25
MHUB3	1″	5	50	50
MHUB4	1¼″	5	25	25
MHUB5	1½″	2	20	20
MHUB6	2″	1	10	10
MHUB7	2½″	1	10	10
MHUB8	3″	1	5	5
MHUB9	3½″	1	5	5
MHUB10	4″	1	2	2
MHUB11	5″	1	1	1
MHUB12	6″	1	1	1

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CP Series 5 Combination Conduit Outlet Bodies For EMT and IMC or Rigid Conduit

- Combination Conduit Outlet Bodies
- Die Cast Aluminum
- Available in SnapPack™
- Stainless Steel Cover Screws

EMT CONDUIT OUTLET BODIES – CAST ALUMINUM†

UL File No. E-15022

Applications

Die cast aluminium Series 5 Conduit Bodies are used in conduit systems to:

- Act as pull outlets for conductors being installed
- Provide openings for making splices and taps in conductors
- Act as mounting outlets for lighting fixtures and wiring devices
- Connect conduit sections
- Provide taps for branch conduit runs
- Make 90 degree bends in conduit runs
- Provide for access to conductors for maintenance and future system changes
- Conduit bodies are supplied with threaded hubs for use with IMC or Rigid conduit and set screws for use with EMT conduit

Type C



Cat. #	Trade Size	Internal Vol. in Cu. In.	Unit Qty	Std. Pkg	Wt Lbs. Per 100
C15-MT	½″	4.25	10	100	27
C25-MT	¾″	7.0	10	50	40
C35-MT	1″	10.8	5	25	64
C45-MT	1¼″	32.3	2	10	165
C55-MT	1½″	32.3	2	10	150
C65-MT	2″	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body and cover assembled and shipped together, change ''-MT'' to ''-MTC'' in catalog number i.e.: LB25-MTC

Type LL



LL15-MT	½″	4.25	10	100	27
LL25-MT	¾″	7.0	10	50	40
LL35-MT	1″	10.8	5	25	64
LL45-MT	1¼″	32.3	2	10	165
LL55-MT	1½″	32.3	2	10	150
LL65-MT	2″	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body and cover assembled and shipped together, change ''-MT'' to ''-MTC'' in catalog number i.e.: LB25-MTC

Type LR



LR15-MT	½″	4.25	10	100	27
LR25-MT	¾″	7.0	10	50	40
LR35-MT	1″	10.8	5	25	64
LR45-MT	1¼″	32.3	2	10	165
LR55-MT	1½″	32.3	2	10	150
LR65-MT	2″	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body and cover assembled and shipped together, change ''-MT'' to ''-MTC'' in catalog number i.e.: LB25-MTC

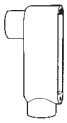
Type T



T15-MT	½″	4.25	10	100	27
T25-MT	¾″	7.0	10	50	40
T35-MT	1″	10.8	5	25	64
T45-MT	1¼″	32.3	2	10	165
T55-MT	1½″	32.3	2	10	150
T65-MT	2″	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body, cover and gasket assembled and shipped together, change ''-MT'' to ''-MTC'' in catalog number i.e.: LB25-MTC

Type LB



Cat. #	Trade Size	Internal Vol. in Cu. In.	Unit Qty	Std. Pkg	Wt Lbs. Per 100
LB15-MT	½″	4.25	10	100	27
LB25-MT	¾″	7.2	10	50	40
LB35-MT	1	10.8	5	25	56
LB45-MT	1¼″	28.8	2	10	132
LB55-MT	1½″	32.3	2	10	175
LB65-MT	2	66.5	1	5	240
LB75-MT*	2½″	Over 100	1	1	450
LB85-MT*	3	Over 100	1	1	460
LB95-MT*	3½″	Over 100	1	1	800
LB105-MT*	4	Over 100	1	1	900

† SnapPack™ EMT conduit bodies consisting of body, cover and gasket assembled and shipped together, change ''-MT'' to ''-MTC'' in catalog number i.e.: LB25-MTC

★ Fittings greater than 2″ are set-screw only (not combination threaded & set-screw)

Covers, Aluminum



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
150	½″	50	250	5
250	¾″	50	250	6
350	1″	50	250	20
450	1¼″–1½″	50	50	25
650	2″	25	25	25
850D	2½″–3″	10	10	78
950D	3½″–4″	5	5	140

Gaskets, Neoprene



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
GASK015N	½″	100	100	2
GASK025N	¾″	100	100	2
GASK035N	1″	50	50	3
GASK045N	1¼″–1½″	50	50	6
GASK065N	2″	25	25	10
GASK085N	2½″–3″	10	10	20
GASK095N	3½″–4″	10	10	30

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Series 5 Conduit Outlet Bodies For Rigid/IMC Conduit

- Rigid Conduit Outlet Bodies
- Die Cast Aluminum
- Available in SnapPack™†

RIGID CONDUIT OUTLET BODIES – CAST ALUMINUM

Type C †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
C15	½″	4.25	10	100	27
C25	¾″	7.0	10	50	40
C35	1″	10.8	5	25	64
C45	1¼″	32.3	2	10	165
C55	1½″	32.3	2	10	150
C65	2″	64.0	1	5	270
C75	2½″	Over 100	1	1	500
C85	3″	Over 100	1	1	600
C95*	3½″	Over 100	1	1	900
C105*	4″	Over 100	1	1	1000

★Not UL Listed

Type LL †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LL15	½″	4.25	10	100	30
LL25	¾″	7.0	10	50	48
LL35	1″	10.8	5	25	64
LL45	1¼″	32.3	2	10	140
LL55	1½″	32.3	2	10	160
LL65	2″	63.0	1	5	270
LL75	2½″	Over 100	1	1	500
LL85	3″	Over 100	1	1	600
LL95	3½″	Over 100	1	1	900
LL105	4″	Over 100	1	1	1000

Type LR †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LR15	½″	4.25	10	100	26
LR25	¾″	7.0	10	50	48
LR35	1″	10.8	5	25	64
LR45	1¼″	32.3	2	10	140
LR55	1½″	32.3	2	10	160
LR65	2″	63.0	1	5	260
LR75	2½″	Over 100	1	1	500
LR85	3″	Over 100	1	1	600
LR95	3½″	Over 100	1	1	900
LR105	4″	Over 100	1	1	1000

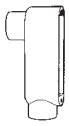
Type T †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
T15	½″	4.25	10	100	32
T25	¾″	7.0	10	50	46
T35	1″	10.8	5	25	70
T45	1¼″	32.3	2	10	175
T55	1½″	32.3	2	10	185
T65	2″	64.0	1	2	300
T75	2½″	Over 100	1	1	550
T85	3″	Over 100	1	1	650
T95*	3½″	Over 100	1	1	950
T105*	4″	Over 100	1	1	1050

★Not UL Listed

Type LB †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LB15	½″	4.25	10	100	27
LB25	¾″	7.2	10	50	40
LB35	1″	10.8	5	25	56
LB45	1¼″	28.8	2	10	132
LB55	1½″	32.3	2	10	175
LB65	2″	66.5	1	5	240
LB75	2½″	Over 100	1	1	450
LB85	3″	Over 100	1	1	460
LB95	3½″	Over 100	1	1	800
LB105	4″	Over 100	1	1	900

Covers, Aluminum



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
150	½″	50	250	5
250	¾″	50	250	6
350	1″	50	250	20
450	1¼″–1½″	50	50	25
650	2″	25	25	25
850D	2½″–3″	10	10	78
950D	3½″–4″	5	5	140

Gaskets, Neoprene



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
GASK015N	½″	100	100	2
GASK025N	¾″	100	100	2
GASK035N	1″	50	50	3
GASK045N	1¼″–1½″	50	50	6
GASK065N	2″	25	25	10
GASK085N	2½″–3″	10	10	20
GASK095N	3½″–4″	10	10	30

Options:

†SnapPack™ pre-packaged body, cover and neoprene gasket add suffix CGN ie. LB25-CGN

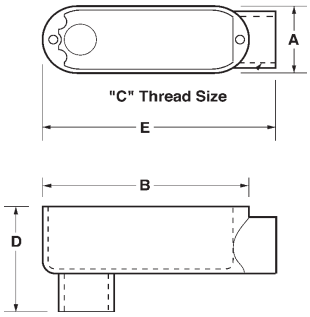
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CP Conduit Outlet Bodies Series 5 Dimensions

- Rigid and combination Rigid or IMC and EMT Conduit Outlet Bodies
- Die Cast Aluminum

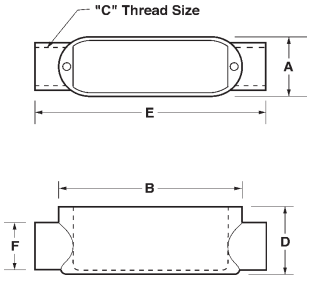
Type LB Dimensions – Threaded & Set Screw

Conduit Size	A	B	C	D	E	F
½″	1 11/32″	1 57/64″	½″	2 11/64″	4 13/32″	1 5/32″
¾″	1 35/64″	4 49/64″	¾″	2 7/16″	5 1/8″	1 3/8″
1″	1 3/4″	5 3/8″	1″	2 3/4″	5 15/16″	1 23/32″
1¼″	2 35/64″	7 15/64″	1¼″	3 35/64″	7 7/8″	2 15/64″
1½″	2 19/32″	7 17/64″	1½″	3 23/32″	7 7/8″	2 3/8″
2″	3 13/64″	9 33/64″	2″	4 1/4″	10 15/64″	2 29/32″
2½″	4 1/2″	12 3/16″	2½″	5 5/32″	12 3/4″	3 13/32″
3″	4 15/32″	12 17/64″	3″	5 21/32″	12 43/64″	4 1/64″
3½″	5 39/64″	5 1/32″	3½″	6 61/64″	15 35/64″	5 5/32″
4″	5 39/64″	15 1/32″	4″	6 61/64″	15 35/64″	5 5/32″



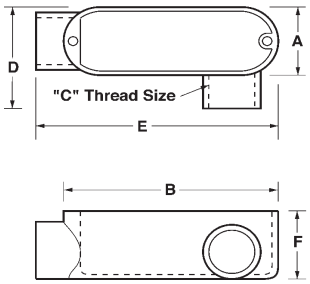
Type C Dimensions – Threaded & Set Screw

Conduit Size	A	B	C	D	E	F
½″	1 5/16″	3 27/32″	½″	1 1/2″	4 27/32″	1 1/8″
¾″	1 17/32″	4 19/32″	¾″	1 5/8″	5 41/64″	1 5/16″
1″	1 3/4″	5 11/32″	1″	1 29/32″	6 1/2″	1 1/2″
1¼″	2 17/32″	7 1/4″	1¼″	2 3/4″	8 1/2″	2 1/4″
1½″	2 17/32″	7 1/4″	1½″	2 3/4″	8 1/2″	2 1/4″
2″	2 7/32″	9 7/16″	2″	3 13/32″	10 3/4″	2 3/4″
2½″	4 1/2″	12 1/4″	2½″	4 1/2″	13″	4 1/2″
3″	4 1/2″	12 1/4″	3″	4 1/2″	13″	4 1/2″
3½″	5 1/2″	15″	3½″	5 9/16″	16 5/16″	5 1/2″
4″	5 1/2″	15″	4″	5 9/16″	16 5/16″	5 1/2″



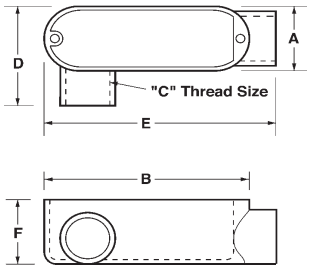
Type LL Dimensions – Threaded & Set Screw

Conduit Size	A	B	C	D	E	F
½″	1 3/32″	3 7/8″	½″	2″	4 9/32″	1 13/32″
¾″	1 1/4″	4 21/32″	¾″	2 11/32″	5 1/8″	1 13/32″
1″	1 1/2″	5 23/64″	1″	2 1/2″	5 99/64″	1 7/8″
1¼″	2 1/4″	7 17/64″	1¼″	3 13/32″	7 55/64″	2 7/8″
1½″	2 1/4″	7 17/64″	1½″	3 13/32″	7 55/64″	2 7/8″
2″	2 3/4″	9 15/32″	2″	3 27/32″	10 13/64″	3 27/64″
2½″	4 5/8″	12 1/4″	2½″	5 3/4″	13″	4 1/2″
3″	4 5/8″	12 1/4″	3″	5 3/4″	13″	4 1/2″
3½″	5 7/16″	15″	3½″	6 1/8″	16 5/16″	5 9/16″
4″	5 7/16″	15″	4″	6 1/8″	16 5/16″	5 9/16″



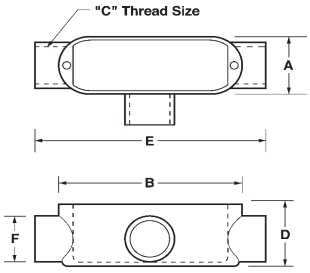
Type LR Dimensions – Threaded & Set Screw

Conduit Size	A	B	C	D	E	F
½″	1 7/64″	3 7/8″	½″	2″	4 9/32″	1 13/32″
¾″	1 1/4″	4 21/32″	¾″	2 11/32″	5 1/8″	1 41/64″
1″	1 1/2″	5 23/64″	1″	2 1/2″	5 59/64″	1 7/8″
1¼″	2 1/4″	7 17/64″	1¼″	3 13/32″	7 55/64″	2 7/8″
1½″	2 1/4″	7 17/64″	1½″	3 13/32″	7 55/64″	2 7/8″
2″	2 3/4″	9 15/32″	2″	3 27/32″	10 13/64″	3 27/64″
2½″	4 7/16″	12 1/4″	2½″	5 13/16″	12 1/4″	4 1/2″
3″	4 5/8″	12 1/4″	3″	5 13/16″	12 1/4″	4 1/2″
3½″	5 7/16″	15″	3½″	6 1/8″	15″	6 1/4″
4″	5 7/16″	15″	4″	6 1/8″	15″	6 1/4″



Type T Dimensions – Threaded & Set Screw

Conduit Size	A	B	C	D	E	F
½″	1 5/16″	3 27/32″	½″	1 3/8″	4 27/32″	2 1/16″
¾″	1 17/16″	4 39/64″	¾″	1 41/64″	5 19/32″	2 11/32″
1″	1 25/32″	5 3/8″	1″	1 29/32″	6 1/2″	2 19/32″	
1¼″	2 1/2″	7 1/4″	1¼″	2 3/4″	8 1/2″	3 35/64″
1½″	2 1/2″	7 1/4″	1½″	2 3/4″	8 1/2″	3 35/64″
2″	3 1/4″	9 7/16″	2″	3 27/64″	10 13/16″	4 3/64″
2½″	4 1/2″	12 1/4″	2½″	4 1/2″	13″	5 25/32″
3″	4 1/2″	12 1/4″	3″	4 1/2″	13″	5 25/32″
3½″	5 1/2″	15″	3½″	5 9/16″	16 5/16″	6 13/16″
4″	5 1/2″	15″	4″	5 9/16″	16 5/16″	6 13/16″



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Conduit Outlet Bodies
Form 5

- Rigid Conduit Outlet Bodies
- Malleable Iron
- Stainless Steel Cover Screws

Applications

Form 5 Malleable Iron Conduit Bodies are used in conduit systems to:

- Act as pull outlets for conductors being installed
- Provide openings for making splices and taps in conductors
- Act as mounting outlets for lighting fixtures and wiring devices
- Connect conduit sections
- Provide taps for branch conduit runs
- Make 90 degree bends in conduit runs
- Provide for access to conductors for maintenance and future system changes

Features

- Interchangeable with Appleton Form 35® Conduit Bodies
- Built–in rollers on 1¼″ to 4″ C and LB bodies to facilitate wire pulling
- Smooth and rounded integral bushings for protection of wire insulation
- Solid neoprene gaskets may be converted to open type by pulling out perforated center section
- Stainless steel cover screws
- Domed sheet steel covers provide additional cubic capacity

Standard Materials

- Bodies – Malleable iron
- Gaskets – Neoprene
- Covers – sheet steel or malleable
- Cover screws – stainless steel

Standard Finishes

- Malleable iron – electrogalvanized and aluminum acrylic paint
- Neoprene – natural
- Sheet steel – electrogalvanized
- Stainless steel – natural

Certifications and Compliances

- UL Standard 514B
- cUL to CSA Standard C22.2 No. 18



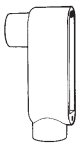
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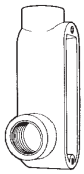
CP Conduit Outlet Bodies Form 5

- Rigid Conduit Outlet Bodies
- Malleable Iron

Ordering Information



Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type LB ‡					
LB50M	½″	4.5	10	10	N/A
LB75M	¾″	7.5	10	10	3 #6 AWG MAX.
LB100M	1″	12.5	10	10	3 #4 XHHW MAX.
LB125M†	1¼″	32.0	5	5	3 #2 XHHW MAX.
LB150M†	1½″	35.3	5	5	3 #1/0 XHHW MAX.
LB200M†	2″	73.0	1	1	3 #4/0 XHHW MAX.
LB250M†	2½″	142.0	1	1	3 #300 MCM XHHW MAX.
LB300M†	3″	173.0	1	1	3 #400 MCM XHHW MAX.
LB350M†	3½″	292.0	1	1	3 #500 MCM XHHW MAX.
LB400M†	4″	324.0	1	1	3 #500 MCM XHHW MAX.

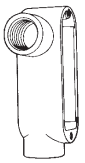


Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type LL ‡					
LL50M	½″	4.5	10	10	N/A
LL75M	¾″	7.5	10	10	3 #6 AWG MAX.
LL100M	1″	12.5	10	10	3 #4 XHHW MAX.
LL125M	1¼″	32.0	5	5	3 #2 XHHW MAX.
LL150M	1½″	33.0	5	5	3 #2 XHHW MAX.
LL200M	2″	68.0	1	1	3 #4/0 XHHW MAX.
LL250M	2½″	142.0	1	1	3 #300 MCM XHHW MAX.
LL300M	3″	173.0	1	1	3 #350 MCM XHHW MAX.
LL350M	3½″	292.0	1	1	3 #350 MCM XHHW MAX.
LL400M	4″	324.0	1	1	3 #350 MCM XHHW MAX.

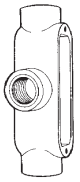


Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type C ‡					
C50M	½″	4.5	10	10	N/A
C75M	¾″	7.5	10	10	3 #6 AWG MAX.
C100M	1″	12.5	10	10	3 #4 XHHW MAX.
C125M†	1¼″	35.0	5	5	3 #2 XHHW MAX.
C150M†	1½″	35.3	5	5	3 #1/0 XHHW MAX.
C200M†	2″	75.0	1	1	3 #4/0 XHHW MAX.
C250M†	2½″	153.0	1	1	3 #300 MCM XHHW MAX.
C300M†	3″	181.0	1	1	3 #300 MCM XHHW MAX.
C350M†	3½″	290.0	1	1	3 #350 MCM XHHW MAX.
C400M†	4″	320.0	1	1	3 #350 MCM XHHW MAX.

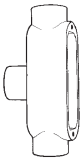
† 1 1/4″ - 4″ LB and C Bodies supplied with built in rollers to facilitate wire pulling.
‡ SnapPack™ pre-packaged body, cover and neoprene gasket - add suffix CG. Available on sizes 1/2″–2″



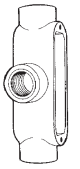
Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type LR ‡					
LR50M	½″	4.5	10	10	N/A
LR75M	¾″	7.5	10	10	3 #6 AWG MAX.
LR100M	1″	12.5	10	10	3 #4 XHHW MAX.
LR125M	1¼″	32.0	5	5	3 #2 XHHW MAX.
LR150M	1½″	35.3	5	5	3 #2 XHHW MAX.
LR200M	2″	68.0	1	1	3 #4/0 XHHW MAX.
LR250M	2½″	142.0	1	1	3 #300 MCM XHHW MAX.
LR300M	3″	173.0	1	1	3 #350 MCM XHHW MAX.
LR350M	3½″	292.0	1	1	3 #350 MCM XHHW MAX.
LR400M	4″	324.0	1	1	3 #350 MCM XHHW MAX.



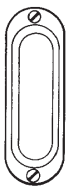
Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type T ‡					
T50M	½″	6.0	10	10	N/A
T75M	¾″	9.5	10	10	3 #6 AWG MAX.
T100M	1″	15.0	10	10	3 #4 XHHW MAX.
T125M	1¼″	33.0	5	5	3 #2 XHHW MAX.
T150M	1½″	36.0	5	5	3 #1 XHHW MAX.
T200M	2″	76.0	1	1	3 #2/0 XHHW MAX.
T250M	2½″	142.0	1	1	3 #300 MCM XHHW MAX.
T300M	3″	173.0	1	1	3 #300 MCM XHHW MAX.
T350M	3½″	292.0	1	1	3 #350 MCM XHHW MAX.
T400M	4″	324.0	1	1	3 #350 MCM XHHW MAX.



Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type TB					
TB50M	½″	6.0	10	10	N/A
TB75M	¾″	9.5	10	10	3 #6 AWG MAX.
TB100M	1″	15.0	10	10	3 #6 AWG MAX.
TB125M	1¼″	33.0	5	5	3 #6 AWG MAX.
TB150M	1½″	36.0	5	5	3 #4 XHHW MAX.
TB200M	2″	76.0	1	1	3 #1/0 XHHW MAX.



Cat.#	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type X					
X50M	½″	6.0	10	10	N/A
X75M	¾″	9.5	10	10	3 #6 AWG MAX.
X100M	1″	15.0	10	10	3 #4 XHHW MAX.
X125M	1¼″	33.0	5	5	3 #2 XHHW MAX.
X150M	1½″	36.0	5	5	3 #1/0 XHHW MAX.
X200M	2″	76.0	1	1	3 #2/0 XHHW MAX.



Sheet steel Covers			
K50S	½″	50	50
K75S	¾″	50	50
K100S	1″	25	25
K125S	1¼″ & 1½″	20	20
K200S	2″	5	5
K250S	2½″ & 3″	5	5
K350S	3½″ & 4″	5	5



Cast Iron Covers			
K50CM	½″	50	50
K75CM	¾″	50	50
K100CM	1″	25	25
K125CM	1¼″ & 1½″	20	20
K200CM	2″	5	5
K250CM	2½″ & 3″	5	5
K350CM	3½″ & 4″	5	5



Neoprene Gaskets with perforated Center			
GK50N	½″	100	100
GK75N	¾″	100	100
GK100N	1″	50	50
GK125N	1¼″ & 1½″	25	25
GK200N	2″	25	25
GK250N	2½″ & 3″	25	25
GK350N	3½″ & 4″	25	25



NEW!

Sheet Steel Cover with Integral Gasket			
K50SG	½″	50	14
K75SG	¾″	50	16
K100SG	1″	25	46
K125SG	1¼″ & 1½″	20	62
K200SG	2″	5	70
K250SG	2½″ & 3″	5	190
K350SG	3½″ & 4″	5	340

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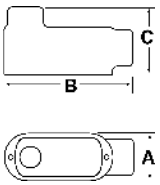
Conduit Outlet Bodies
Form 5
Dimensions

- Rigid Conduit Outlet Bodies
- Malleable Iron

(in inches)

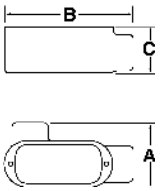
Form 5 Iron LB

Size	½	¾	1	1¼	1½	2	2½	3	3½	4
A	1.34	1.50	1.80	2.60	2.60	3.12	4.31	4.31	5.62	5.62
B	4.68	5.37	6.20	8.12	8.12	10.50	13.60	13.87	16.25	16.60
C	2.05	2.25	2.65	2.75	2.83	4.42	5.40	5.90	6.90	7.21



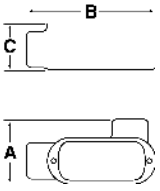
Form 5 Iron LL

Size	½	¾	1	1¼	1½	2	2½	3	3½	4
A	2.05	2.25	2.65	2.75	3.50	4.12	5.71	5.87	7.13	7.13
B	4.68	5.37	6.20	8.12	8.12	10.50	13.60	13.87	16.50	16.50
C	1.37	1.70	1.90	2.75	2.83	3.31	3.90	4.75	6.81	7.19



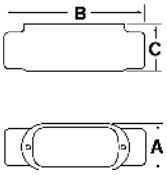
Form 5 Iron LR

Size	½	¾	1	1¼	1½	2	2½	3	3½	4
A	2.05	2.25	2.65	2.75	3.50	4.12	5.71	5.87	6.10	6.95
B	4.68	5.37	6.20	8.12	8.12	10.50	13.60	13.87	6.25	16.25
C	1.37	1.70	1.90	2.75	2.83	3.31	3.90	4.75	5.62	5.62



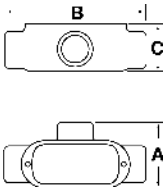
Form 5 Iron C

Size	½	¾	1	1¼	1½	2	2½	3	3½	4
A	1.34	1.50	1.80	2.60	2.60	3.12	4.31	4.31	4.88	4.88
B	5.38	6.00	7.05	9.00	9.00	11.50	15.00	15.12	18.13	18.13
C	1.37	1.70	1.90	2.75	2.83	3.31	3.90	4.75	5.19	5.56



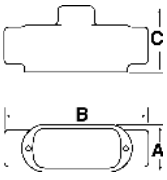
Form 5 Iron T

Size	½	¾	1	1¼	1½	2	2½	3	3½	4
A	2.05	2.25	2.65	2.75	3.50	4.12	5.71	5.87	6.81	7.15
B	5.38	6.00	7.05	9.00	9.00	11.50	15.00	15.12	18.13	18.13
C	1.34	1.50	1.80	2.60	2.60	3.12	4.31	4.31	5.19	5.56



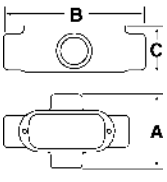
Form 5 Iron TB

Size	½	¾	1	1¼	1½	2
A	1.34	1.50	1.80	2.60	2.60	3.12
B	5.38	6.00	7.05	9.00	9.00	11.50
C	2.05	2.25	2.65	2.75	2.83	4.42



Form 5 Type X

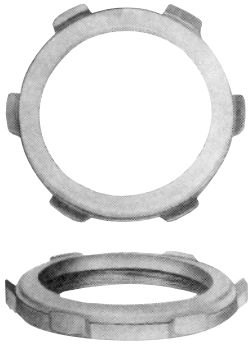
Size	½	¾	1	1¼	1½	2
A	2.79	2.93	3.56	4.43	4.43	5.4
B	5.41	6.08	7.1	9.1	9.1	11.75
C	1.75	1.97	2.25	2.55	2.75	3.45

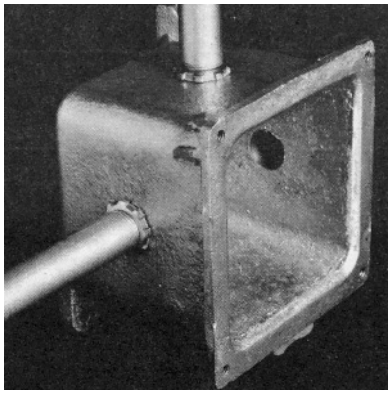


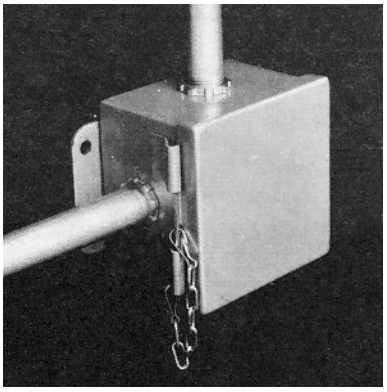
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CP Sealing Locknuts

UL File No. E-19189







U.S. Patent #4022262

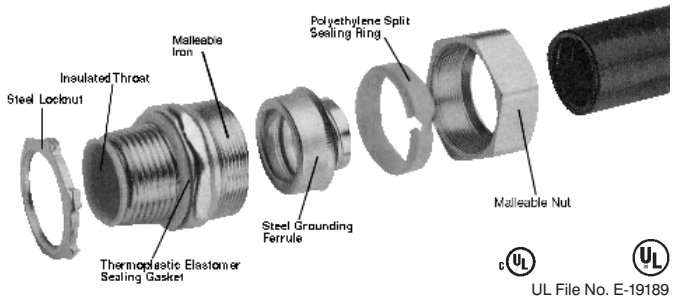
- Integrally fused PVC gasket provides positive seal against water, oils and other liquids.
- Designed for use with raintight, watertight and oiltight enclosures, NEMA 2, 3, 3R, 4 and 12.

Only one Sealing Locknut is required to:
- functionally replace rigid threaded enclosure connectors.
- provide raintight, watertight, or oiltight seal in any position.
- provide positive ground connection.
- provide economies in installation and fitting costs.

- UL Listed Raintight.
- UL Listed Liquidtight.
- Can be used with either sheet metal or standard cast metal boxes.
- CSA Certified watertight.
- ½″ – 2″ Heavy-duty steel.
- 2½″ – 6″ Malleable iron.

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SL1	½″	100	100	2
SL2	¾″	50	500	2
SL3	1″	25	250	3
SL4	1¼″	25	250	8
SL5	1½″	25	100	10
SL6	2″	25	100	14
SL7	2½″	10	50	36
SL8	3″	10	50	38
SL9	3½″	10	50	58
SL10	4″	5	25	72
SL11	5″	2	2	110
SL12	6″	1	1	190

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UL File No. E-19189

Applications:

Typical applications for liquidtight conduit and the Liquidator include the wiring of machine tools . . . motors . . . transformers . . . food processing equipment . . . robotics . . . air conditioning units . . . illuminated store front signs and billboards . . . etc. The flexible metallic conduit and fittings protect conductors from mechanical damage due to vibration and movement and seals out cutting oils, coolants, water, dust, etc.

Applications such as these can be found in, but are not limited to, industries such as:

- machine tool manufacturers.
- electric power generating plants.
- waste treatment facilities.
- paint manufacturing facilities.
- automobile manufacturing facilities.
- aerospace industries.
- breweries.
- food processing plants.
- dairies.
- pulp and paper mills.
- petroleum refineries.
- chemical and petrochemical plants.

Compliances:

- NEC: Class I, Division 2
  Class II, Divisions 1 and 2
  Class III, Divisions 1 and 2
- UL Standards: 514B, 467
- CSA Standard: C22.2 No. 18

FEATURES AND BENEFITS:

Product Features

- UL and cUL Listed
- Provided protection in wet locations
- Straight available in ⅜″ through 6″ sizes; 45° and 90° available in ⅜″ through 4″ sizes.
- Malleable iron bodies and gland nuts with zinc electroplate; steel ferrules and locknuts with zinc electroplate.
- Cupped grounding ferrule is distortion-free and reusable.
- Split polyethylene sealing ring is reversible.
- Grooves inside sealing ring. Jacket of liquidtight conduit will cold flow into grooves.
- Reusable design.
- Hex surfaces on gland nut and body.
- Thermoplastic elastomer sealing gasket effectively seals out water, oil, dust and dirt.
- Steel locknut bites into box.
- Available with or without insulated throats.
- Insulated throat versions, 105°C rated nylon.

Standard Materials:

- Body – Straight: ⅜″ through 6″ – malleable iron or aluminum
  45° and 90°; ⅜″ through 4″ – malleable iron or aluminum
- Gland nut – malleable iron or aluminum
- Ferrule – ⅜″ through 6″ – steel
- Gland nut sealing ring – polyethylene
- Sealing gasket – thermoplastic elastomer
- Locknut – steel

Standard Finishes:

- Steel and malleable iron – zinc electroplate
- Polyethylene, thermoplastic elastomer, aluminum and die cast – natural

User Benefits

- Assurance of safe and reliable performance. End user peace of mind.
- Meets NEC and UL requirements for use in wet locations. Reduces downtime and replacement costs.
- Complete selection of styles and sizes. Easy selection from one source, saves time and money.
- High strength and excellent corrosion resistance. Long service life, eliminates the need for replacement.
- Provides excellent pullout strength and grounding for safety of personnel and equipment.
- Easy to install. Cannot be installed incorrectly. Saves labor.
- Eliminates leakage, potential downtime and replacement costs. Protection against vibration.
- Can be disassembled and reused. Cost savings.
- Easy wrenching, Fast, easy installation results in labor savings.
- Eliminates leakage, potential downtime and replacement costs.
- Provides a reliable ground and safety of personnel and equipment. Won't vibrate loose.
- One-stop source to meet user needs. Saves time and money.

STRAIGHT CONNECTORS – NON-INSULATED – MALLEABLE IRON



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
LT-38	⅜″	25	100	18
LT-50	½″	25	100	20
LT-75	¾″	25	100	26
LT-100	1″	5	50	45
LT-125	1¼″	5	25	69
LT-150	1½″	2	20	85
LT-200	2″	1	10	120
LT-250	2½″	1	5	340
LT-300	3″	1	5	430
LT-350	3½″	1	5	510
LT-400	4″	1	5	600
LT-500†	5″	1	1	800
LT-600†	6″	1	1	1075

† Not UL Listed or CSA Certified

STRAIGHT CONNECTORS – INSULATED – MALLEABLE IRON



LTB-38	⅜″	25	100	18
LTB-50	½″	25	100	20
LTB-75	¾″	25	100	26
LTB-100	1″	5	50	45
LTB-125	1¼″	5	25	69
LTB-150	1½″	2	20	86
LTB-200	2″	1	10	120
LTB-250	2½″	1	5	340
LTB-300	3″	1	5	430
LTB-350	3½″	1	5	510
LTB-400	4″	1	5	600
LTB-500†	5″	1	1	800
LTB-600†	6″	1	1	1075

† Not UL Listed or CSA certified

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STRAIGHT CONNECTORS – NON-INSULATED – ALUMINUM



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
LT38-SA	⅜″	25	100	12
LT50-SA	½″	25	100	12
LT75-SA	¾″	25	100	14
LT100-SA	1″	10	50	28
LT125-SA	1¼″	5	25	34
LT150-SA	1½″	2	20	48
LT200-SA	2″	1	10	54
LT250-SA	2½″	1	5	121
LT300-SA	3″	1	5	174
LT350-SA	3½″	1	5	245
LT400-SA	4″	1	5	279

45° ANGLE CONNECTORS — NON-INSULATED – MALLEABLE IRON



LT-3845	⅜″	25	100	27
LT-5045	½″	25	100	29
LT-7545	¾″	10	50	41
LT-10045	1″	10	50	70
LT-12545	1¼″	5	25	93
LT-15045	1½″	2	10	137
LT-20045	2″	1	5	199
LT-25045	2½″	1	1	600
LT-30045	3″	1	1	925
LT-35045	3½″	1	1	1150
LT-40045	4″	1	1	1450

45° ANGLE CONNECTORS – INSULATED – MALLEABLE IRON



LTB-3845	⅜″	25	100	27
LTB-5045	½″	25	100	29
LTB-7545	¾″	10	50	41
LTB-10045	1″	10	50	70
LTB-12545	1¼″	5	25	93
LTB-15045	1½″	2	10	137
LTB-20045	2″	1	5	195
LTB-25045	2½″	1	1	600
LTB-30045	3″	1	1	925
LTB-35045	3½″	1	1	1150
LTB-40045	4″	1	1	1450

90° ANGLE CONNECTORS – NON-INSULATED – MALLEABLE IRON



LT-3890	⅜″	25	100	31
LT-5090	½″	25	100	33
LT-7590	¾″	10	50	48
LT-10090	1″	10	50	76
LT-12590	1¼″	5	25	112
LT-15090	1½″	2	10	155
LT-20090	2″	1	5	230
LT-25090	2½″	1	1	900
LT-30090	3″	1	1	1383
LT-35090	3½″	1	1	1875
LT-40090	4″	1	1	2325

90° ANGLE CONNECTOR – INSULATED – MALLEABLE IRON



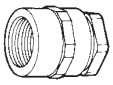
Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
LTB-3890	⅜″	25	100	30
LTB-5090	½″	25	100	33
LTB-7590	¾″	10	50	48
LTB-10090	1″	10	50	76
LTB-12590	1¼″	5	25	112
LTB-15090	1½″	2	10	155
LTB-20090	2″	1	5	230
LTB-25090	2½″	1	1	900
LTB-30090	3″	1	1	1380
LTB-35090	3½″	1	1	1825
LTB-40090	4″	1	1	2325

90° ANGLE CONNECTOR – NON-INSULATED – ALUMINUM



LT3890-SA	⅜″	25	100	19
LT5090-SA	½″	25	100	18
LT7590-SA	¾″	10	50	24
LT10090-SA	1″	10	50	40
LT12590-SA	1¼″	5	25	48
LT15090-SA	1½″	2	10	61
LT20090-SA	2″	1	5	86

COMBINATION COUPLINGS FOR COUPLING LIQUIDTIGHT TO THREADED RIGID/IMC CONDUIT

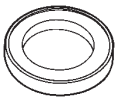


LTR-38*	⅜″	25	100	17
LTR-50	½″	25	100	29
LTR-75	¾″	25	100	33
LTR-100	1″	5	50	59
LTR-125	1¼″	2	20	105
LTR-150	1½″	2	20	105
LTR-200	2″	1	10	160

* For ⅜″ Liquidtight to ½″ Rigid/IMC

SELF RETAINING PVC GASKET WITH STEEL RING

UL File no. E-22133



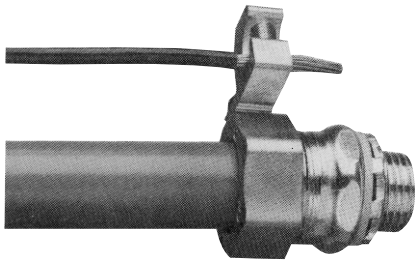
Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SG1	⅜″–½″	100	100	1
SG2	¾″	50	50	2
SG3	1″	50	50	2
SG4	1¼″	25	25	2
SG5	1½″	25	25	4
SG6	2″	25	25	3
SG7	2½″	10	10	5
SG8	3″	10	10	10
SG9	3½″	10	10	12
SG10	4″	10	10	10
SG11	5″	5	5	15
SG12	6″	5	5	22

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LIQUIDATOR™ LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FITTINGS WITH GROUND LUG

lazy-lug®

For Liquidtight Flexible Steel Conduit



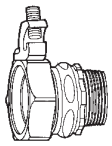
UL File No. E-6225

Application:
Lazy-Lug liquidtight conduit fittings provide an easy, versatile method to use an external grounding conductor with liquidtight flexible metallic conduit as permitted by the National Electrical Code. This section allows an external bonding jumper to be used with a 6-foot or shorter length of liquidtight conduit.

Features/Benefits:
- Open lug design allows installer to quickly lay in the grounding conductor.
- Aluminum lug – for copper or aluminum grounding conductors.
- Copper lug – for copper grounding conductors.

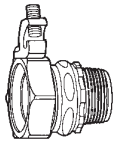
Compliance:
UL Standard 514B – Fittings for Conduit and Outlet Boxes
UL Standard 467 – Grounding and Bonding Equipment

STRAIGHT CONNECTORS – NON-INSULATED – MALLEABLE IRON – ALUMINUM LUG



Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LT38G	⅜″	#4-#14	25	100	18
LT50G	½″	#4-#14	25	100	20
LT75G	¾″	#4-#14	25	100	26
LT100G	1″	#4-#14	5	50	45
LT125G	1¼″	#4-#14	5	25	69
LT150G	1½″	#4-#14	2	20	85
LT200G	2″	#4-#14	1	10	120
LT250G	2½″	#1/0-#8	1	5	340
LT300G	3″	#1/0-#8	1	5	430
LT350G	3½″	#3/0-#6	1	5	510
LT400G	4″	#3/0-#6	1	5	600
LT500G†	5″	250MCM-#6	1	1	800
LT600G†	6″	250MCM-#6	1	1	1100

STRAIGHT CONNECTORS – INSULATED – MALLEABLE IRON – ALUMINUM LUG

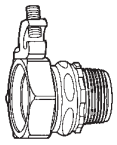


LTB38G	⅜″	#4-#14	25	100	18
LTB50G	½″	#4-#14	25	100	20
LTB75G	¾″	#4-#14	25	100	26
LTB100G	1″	#4-#14	5	50	45
LTB125G	1¼″	#4-#14	5	25	69
LTB150G	1½″	#4-#14	2	20	86
LTB200G	2″	#4-#14	1	10	120
LTB250G	2½″	#1/0-#8	1	5	340
LTB300G	3″	#1/0-#8	1	5	430
LTB350G	3½″	#3/0-#6	1	5	510
LTB400G	4″	#3/0-#6	1	5	600
LTB500G†	5″	250MCM-#6	1	1	720
LTB600G†	6″	250MCM-#6	1	1	750

† Not UL Listed

Note: For other connector and lug combinations, consult factory.

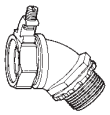
STRAIGHT CONNECTORS – NON-INSULATED – ALUMINUM – ALUMINUM LUG



LT38G SA	⅜″	#4-#14	25	25	12
LT50G SA	½″	#4-#14	25	25	12
LT75G SA	¾″	#4-#14	25	25	14
LT100G SA	1″	#4-#14	5	5	28
LT125G SA	1¼″	#4-#14	5	5	34
LT150G SA	1½″	#4-#14	2	2	48
LT200G SA	2″	#4-#14	1	1	54
LT250G SA	2½″	#1/0-#8	1	1	121
LT300G SA	3″	#1/0-#8	1	1	174
LT350G SA	3½″	#3/0-#6	1	1	245
LT400G SA	4″	#3/0-#6	1	1	279

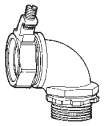
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45° ANGLE CONNECTORS – INSULATED – MALLEABLE IRON – ALUMINUM LUG



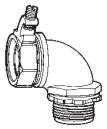
Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LTB3845G	3/8″	#4-#14	25	100	29
LTB5045G	1/2″	#4-#14	25	100	41
LTB7545G	3/4″	#4-#14	10	50	41
LTB10045G	1″	#4-#14	10	50	70
LTB12545G	1 1/4″	#4-#14	5	25	93
LTB15045G	1 1/2″	#4-#14	2	10	137
LTB20045G	2″	#4-#14	1	5	195
LTB25045G	2 1/2″	#1/0-#	1	1	600
LTB30045G	3″	#1/0-#8	1	1	925
LTB35045G	3 1/2″	#3/0-#6	1	1	1150
LTB40045G	4″	#3/0-#6		1	1450

90° ANGLE CONNECTORS – NON-INSULATED – MALLEABLE IRON – ALUMINUM LUG



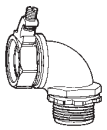
LT3890G	3/8″	#4-#14	25	100	32
LT5090G	1/2″	#4-#14	25	100	33
LT7590G	3/4″	#4-#14	10	50	48
LT10090G	1″	#4-#14	10	50	76
LT12590G	1 1/4″	#4-#14	5	25	112
LT15090G	1 1/2″	#4-#14	2	10	155
LT20090G	2″	#4-#14	1	5	230
LT25090G	2 1/2″	#1/0-#8	1	1	900
LT30090G	3″	#1/0-#8	1	1	1383
LT35090G	3 1/2″	#3/0-#6	1	1	1875
LT40090G	4″	#3/0-#6	1	1	2325

90° ANGLE CONNECTORS – INSULATED – MALLEABLE IRON — ALUMINUM LUG



LTB3890G	3/8″	#4-#14	25	100	30
LTB5090G	1/2″	#4-#14	25	100	33
LTB7590G	3/4″	#4-#14	10	50	48
LTB10090G	1″	#4-#14	10	50	76
LTB12590G	1 1/4″	#4-#14	5	25	112
LTB15090G	1 1/2″	#4-#14	2		155
LTB20090G	2″	#4-#14	1	5	230
LTB25090G	2 1/2″	#1/0-#83	1	1	900
LTB30090G	3″	#1/0-#8	1	1	1300
LTB35090G	3 1/2″	#3/0-#6	1	1	1800
LTB40090G	4″	#3/0-#6	1	1	2300

90° ANGLE CONNECTORS – NON-INSULATED – ALUMINUM ALUMINUM LUG

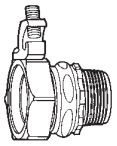


LT3890G-SA	3/8″	#4-#14	25	25	19
LT5090G-SA	1/2″	#4-#14	25	25	18
LT7590G-SA	3/4″	#4-#14	10	25	24
LT10090G-SA	1″	#4-#14	10	5	40
LT12590G-SA	1 1/4″	#4-#14	5	5	48
LT15090G-SA	1 1/2	#4-#14	2	2	61
LT20090G-SA	2″	#4-#14	1	1	86

Note: For other connector and lug combinations, consult factory.

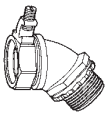
GROUNDING TYPE LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FITTINGS

STRAIGHT CONNECTORS – INSULATED – COPPER LUG



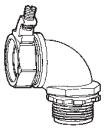
Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LTB38GC	3/8″	#4-#14	25	100	20
LTB50GC	1/2″	#4-#14	25	100	22
LTB75GC	3/4″	#4-#14	25	100	28
LTB100GC	1″	#4-#14	5	50	47
LTB125GC	1 1/4″	#4-#14	5	25	71
LTB150GC	1 1/2″	#4-#14	2	20	88
LTB200GC	2″	#4-#14	1	10	122
LTB250GC	2 1/2″	#1/0-#8	1	5	351
LTB300GC	3″	#1/0-#8	1	5	441
LTB350GC	3 1/2″	#3/0-#6	1	5	532
LTB400GC	4″	#3/0-#6	1	5	622

45° ANGLE CONNECTORS – INSULATED – COPPER LUG



LTB3845GC	3/8″	#4-#14	25	100	31
LTB5045GC	1/2″	#4-#14	25	100	43
LTB7545GC	3/4″	#4-#14	10	50	43
LTB10045GC	1″	#4-#14	10	50	72
LTB12545GC	1 1/4″	#4-#14	5	25	95
LTB15045GC	1 1/2″	#4-#14	2	10	139
LTB20045GC	2″	#4-#14	1	5	197
LTB25045GC	2 1/2″	#1/0-#8	1	1	611
LTB30045GC	3″	#1/0-#8	1	1	936
LTB35045GC	3 1/2″	#3/0-#6	1	1	1172
LTB40045GC	4″	#3/0-#6	1	1	1472

90° ANGLE CONNECTORS – INSULATED – COPPER LUG



LTB3890GC	3/8″	#4-#14	25	100	32
LTB5090GC	1/2″	#4-#14	25	100	35
LTB7590GC	3/4″	#4-#14	10	50	50
LTB10090GC	1″	#4-#14	10	50	78
LTB12590GC	1 1/4″	#4-#14	5	25	114
LTB15090GC	1 1/2″	#4-#14	2	10	157
LTB20090GC	2″	#4-#14	1	5	232
LTB25090GC	2 1/2″	#1/0-#8	1	1	911
LTB30090GC	3″	#1/0-#8	1	1	1311
LTB35090GC	3 1/2″	#3/0-#6	1	1	1822
LTB40090GC	4″	#3/0-#6	1	1	2322

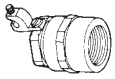
Note: For other connector and lug combinations, consult factory.

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Liquidtight Conduit Fittings

- Combination Couplings for Coupling Liquidtight to Threaded Rigid/IMC – Grounding Type – Aluminum Lug
- Wire Mesh Grips for Liquidtight Metallic Conduit Fittings
- LiQuik™ Liquidtight Fittings

COMBINATION COUPLINGS FOR COUPLING LIQUIDTIGHT TO THREADED RIGID/IMC – GROUNDING TYPE – ALUMINUM LUG



Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. per 100
LTR38G*	⅜″	#4-#14	25	100	24
LTR50G	½″	#4-#14	25	100	30
LTR75G	¾″	#4-#14	25	100	35
LTR100G	1″	#4-#14	5	50	59
LTR125G	1¼″	#4-#14	5	25	81
LTR150G	1½″	#4-#14	2	20	107
LTR200G	2″	#4-#14	1	10	162

* For ⅜″ Liquidtight to ½″ Rigid/IMC

Note: For other connector and lug combinations, consult factory.

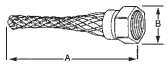
Copper lugs are available also. Consult factory for details.

WIRE MESH GRIPS FOR LIQUIDTIGHT METALLIC CONDUIT FITTINGS



Application:
Wire mesh grips are used with Liquidator liquidtight conduit fittings to prevent conduit pullout due to stress, tension, strain, vibration, or movement. Typical applications include the wiring of machine tools, motors, transformers, food processing, equipment, robotics, or any application that requires a flexible liquidtight conduit connection.

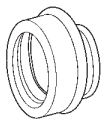
WIRE MESH GRIP – DIMENSIONS



Cat. #	Conduit Size	Dimensions A	B	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
WMG38	⅜″	6 7/16″	1¼″	10	50	10
WMG50	½″	6⅛″	1 7/16″	10	50	12
WMG75	¾″	6 15/16″	1⅝″	10	50	17
WMG100	1″	8 3/16″	1 15/16″	10	50	21
WMG125	1¼″	10¾″	2⅜″	2	10	37
WMG150	1½″	11 13/16″	2¾″	2	10	56
WMG200	2″	14 7/16″	3 5/16″	1	5	79

REPLACEMENT LIQUIDTIGHT FERRULES

FOR STEEL CONNECTORS ONLY.



Cat. #	Conduit Size	Unit Quantity	Standard Package
FEA38	⅜″	100	100
FEA50	½″	100	100
FEA75	¾″	100	100
FEA100	1″	100	100
FEA125	1¼″	50	50
FEA150	1½″	50	50
FEA200	2″	10	10
FEA250	2½″	10	10
FEA300	3″	10	10
FEA350	3½″	10	10
FEA400	4″	10	10

LiQuik™ LIQUIDTIGHT FITTINGS

No disassembly required! The LiQuik liquidlight fittings are quick and easy to install in 2 steps, offering huge labor saving potential. Available in trade sizes ⅜″–2″ straight insulated.

New LiQuik Assembly Installation

NEW!

1. Slide conduit inside the fully assembled connector.



2. Turn the connector assembly or the conduit until the ferrule threads engage the spirals in the conduit. The pins in the ferrule are locked inside the holes in the connector body, preventing the ferrule from turning. Tighten the nut against the connector.



LiQuik™ LIQUIDTIGHT FITTINGS – STRAIGHT, NON-INSULATED



Cat. #	Conduit Size	Dimensions A	B	C	D	Unit Qty	Weight Lbs. Per 100
LTQ38	⅜″	½″	1⅛″	½″	1⅛″	25	15
LTQ50	½″	½″	1¼″	½″	1¼″	25	18
LTQ75	¾″	¾″	1¼″	½″	1 9/16″	25	29
LTQ100	1″	1″	1 7/16″	⅝″	1 13/16″	5	40
LTQ125	1¼″	1¼″	1½″	1 1/16″	2¼″	5	55
LTQ150	1½″	1½″	1⅝″	¾″	2 7/16″	2	71
LTQ200	2″	2″	1¾″	¾″	3″	1	99

LiQuik™ LIQUIDTIGHT FITTINGS – STRAIGHT, INSULATED



Cat. #	Conduit Size	Dimensions A	B	C	D	Unit Qty	Weight Lbs. Per 100
LTQB38	⅜″	⅜″	1⅛″	9/16″	1⅛″	25	16
LTQB50	½″	½″	1¼″	9/16″	1¼″	25	18
LTQB75	¾″	¾″	1¼″	9/16″	1 9/16″	25	29
LTQB100	1″	1″	1 7/16″	1 1/16″	1 13/16″	5	40
LTQB125	1¼″	1¼″	1½″	¾″	2¼″	5	56
LTQB150	1½″	1½″	1⅝″	13/16″	2 7/16″	2	71
LTQB200	2″	2″	1¾″	13/16″	3″	1	100

REPLACEMENT LiQuik FERRULES

Cat. #	Conduit Size	Weight Lbs. Per 100
LTQF38	⅜″	100
LTQF50	½″	100
LTQF75	¾″	100
LTQF100	1″	100
LTQF125	1¼″	50
LTQF150	1½″	50
LTQF200	2″	10

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CP Liquidtight Conduit Fittings
LTK Low Profile Series

Applications

Flexible metalic (liquidtight) conduit used with Cooper Crouse-Hinds® Liquidtight fittings is designed to protect conductors from mechanical damage due to vibration and movement while sealing out cutting oils, coolants, water, dust, ect. Typical applications include the wiring of machine tools, motors, transformers, food processing equipment, robotics, air conditioning units, illuminated signs, etc.

The low profile liquidtight fittings are designed specifically for OEM applications that require close side-by-side mounting of multiple liquidtight fittings in tight spaces.

Standard Materials

- Body – steel(straight fittings), malleable iron (angle fittings)
- Gland nut – steel
- Ferrule – steel
- Gland nut sealing ring – nylon
- Sealing gasket – polypropylene

Standard Finishes

- Steel – zinc electroplate
- Malleable iron – zinc electroplate
- Nylon – natural
- Polypropylene – natural

Certifications and Compliances

- NEC: Class I, Division 2 (Zone 2) Class II, Division 1 and 2 Class III, Division 1 and 2
- UL Standards: 514B, 467
- CSA Standard: C22.2 No. 18

Ordering Information:

Straight Connectors

Conduit Size	Non-insulated Cat.No.	Insulated Cat.No.
3/8″	LTK38	LTBK38
1/2″	LTK50	LTBK50
3/4″	LTK75	LTBK75
1″	LTK100	LTBK100
1 1/4″	LTK125	LTBK125
1 1/2″	LTK150	LTBK150
2″	LTK200	LTBK200

45° Connectors

Conduit Size	Non-insulated Cat.No.	Insulated Cat.No.
3/8″	LTK3845	LTBK3845
1/2″	LTK5045	LTBK5045
3/4″	LTK7545	LTBK7545
1″	LTK10045	LTBK10045
1 1/4″	LTK12545	LTBK12545
1 1/2″	LTK15045	LTBK15045
2″	LTK20045	LTBK20045

90° Connectors

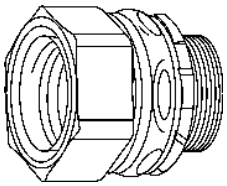
Conduit Size	Non-insulated Cat.No.	Insulated Cat.No.
3/8″	LTK3890	LTBK3890
1/2″	LTK5090	LTBK5090
3/4″	LTK7590	LTBK7590
1″	LTK10090	LTBK10090
1 1/4″	LTK12590	LTBK12590
1 1/2″	LTK15090	LTBK15090
2″	LTK20090	LTBK20090

Replacement Ferrules

Conduit Size	Cat. No.
3/8″	LTKF38
1/2″	LTKF50
3/4″	LTKF75
1″	LTKF100
1 1/4″	LTKF125
1 1/2″	LTKF150
2″	LTKF200

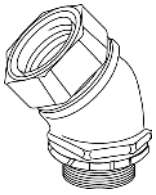
Dimensions

Straight Connectors



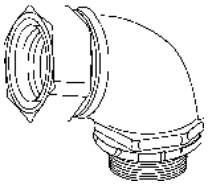
Over Round Corner Hex A (in.)	Hex A (in.)	B (in.)	N.P.T. Thread Length C (in.)
1 3/32	1 1/32	1 3/16	19/32
1 3/16	1 1/8	1 11/32	19/32
1 7/16	1 3/8	1 7/16	19/32
1 3/4	1 11/16	1 5/8	21/32
2 5/32	2 1/16	1 27/32	43/64
2 3/8	2 9/32	2	23/32
2 7/8	2 25/32	2 1/8	23/32

45° Connectors



Over Round Corner Hex A (in.)	Hex A (in.)	B (in.)	Over C (in.)	N.P.T. Thread Length D (in.)
1 3/32	1 1/32	1 7/32	1 1/32	19/32
1 3/16	1 1/32	1 5/16	1 1/32	19/32
1 7/16	1 3/8	1 3/8	1 1/8	1 13/32
1 3/4	1 11/16	1 21/32	1 1/4	21/32
2 5/32	2 1/16	1 23/32	1 11/32	11/16
2 3/8	2 9/32	2	1 15/32	23/32
2 7/8	2 25/32	2 9/32	1 5/8	23/32

90° Connectors



Over Round Corner Hex A (in.)	Hex A (in.)	B (in.)	Over C (in.)	N.P.T. Thread Length D (in.)
1 3/32	1 1/32	1 19/32	1 1/4	9/16
1 3/16	1 1/8	1 21/32	1 1/4	9/16
1 7/16	1 3/8	1 25/32	1 17/32	9/16
1 3/4	1 11/16	2 3/16	1 27/32	21/32
2 5/32	2 1/16	3 3/8	1 15/16	11/16
2 3/8	2 9/32	2 5/8	2 3/32	23/32
2 7/8	2 25/32	3 1/16	2 13/32	23/32

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

Cord And Cable Connectors
CG Series Color-Coded Cord Grips

Applications
CG Series color-coded grips with neoprene bushings are for use with portable cords, including S, SO, STO, ST, SJ, SJT, SJTO, and SVO.

CG cord grips are installed to:
- provide a means for passing a cord into an enclosure
- form a watertight seal for cord
- provide pullout protection for cord, ensuring a secure connection

Features
- Neoprene bushings are color coded by cable diameter for quick and easy identification of proper cord grip.
- Rugged construction protects cord from damage.
- Compact design permits close spacing of fittings on pannel applications.
- Tightening one nut creates watertight seal.
- Available in straight, 45° and 90° entrance configurations.

Standard Materials/Finishes
- Straight Body – electrogalvanized steel
- Angled Body – electrogalvanized malleable iron
- Nut – electrogalvanized steel
- Bushing – neoprene/natural

Certifications & Compliances
- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- Suitable for NEMA 4 enclosures and other wet locations
- Suitable for use in hazardous locations when installed in accordance with NEC 501.4(B), 502.4(A) and 503.3(A). For Class I, Div.2, Class II, Div. 1 and 2 and Class III, Div. 1 and 2.

STRAIGHT BODY



Cat. #	Trade Size	Color Code	Cable Range Min.	Cable Range Max.	Unit Quantity	Std. Pkg.	Wt. Lbs. Per 100
CG50-250	½″	Red	0.15	0.25	25	100	10
CG50-350	½″	White	0.25	0.35	25	100	10
CG50-450	½″	Blue	0.35	0.45	25	100	10
CG50-560	½″	Green	0.45	0.56	25	100	10
CG50-650	½″	Brown	0.55	0.65	25	100	10
CG75-250	¾″	Red	0.15	0.25	10	50	14
CG75-350	¾″	White	0.25	0.35	10	50	14
CG75-450	¾″	Blue	0.35	0.45	10	50	14
CG75-560	¾″	Green	0.45	0.56	10	50	14
CG75-650	¾″	Brown	0.55	0.65	10	50	14
CG75-750	¾″	Yellow	0.65	0.75	10	50	14
CG75-850	¾″	Purple	0.75	0.85	10	50	14
CG100-560	1″	Green	0.45	0.56	5	25	20
CG100-650	1″	Brown	0.55	0.65	5	25	20
CG100-750	1″	Yellow	0.65	0.75	5	25	20
CG100-850	1″	Purple	0.75	0.85	5	25	20
CG100-950	1″	Gray	0.85	0.95	5	25	20
CG100-1050	1″	Black	0.95	1.05	5	25	20
CG125-850	1-¼″	Purple	0.75	0.85	5	25	40
CG125-950	1-¼″	Gray	0.85	0.95	5	25	40
CG125-1050	1-¼″	Black	0.95	1.05	5	25	40
CG125-1150	1-¼″	Orange	1.05	1.15	5	25	40
CG125-1250	1-¼″	Red	1.15	1.25	5	25	40
CG125-1375	1-¼″	White	1.25	1.375	5	25	40
CG150-1050	1-½″	Black	0.95	1.05	2	10	70
CG150-1150	1-½″	Orange	1.05	1.15	2	10	70
CG150-1250	1-½″	Red	1.15	1.25	2	10	70
CG150-1375	1-½″	White	1.25	1.375	2	10	70

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CP Cord And Cable Connectors
CG Series Color-Coded Cord Grips

45° BODY



Cat. #	Trade Size	Color Code	Cable Range Min.	Cable Range Max.	Unit Quantity	Std. Pkg.	Wt. Lbs. Per 100
CG5045-250	½″	Red	0.15	0.25	10	50	24
CG5045-350	½″	White	0.25	0.35	10	50	24
CG5045-450	½″	Blue	0.35	0.45	10	50	24
CG5045-560	½″	Green	0.45	0.56	10	50	24
CG5045-650	½″	Brown	0.55	0.65	10	50	24
CG7545-250	¾″	Red	0.15	0.25	10	50	36
CG7545-350	¾″	White	0.25	0.35	10	50	36
CG7545-450	¾″	Blue	0.35	0.45	10	50	36
CG7545-560	¾″	Green	0.45	0.56	10	50	36
CG7545-650	¾″	Brown	0.55	0.65	10	50	36
CG7545-750	¾″	Yellow	0.65	0.75	10	50	36
CG7545-850	¾″	Purple	0.75	0.85	10	50	36
CG10045-560	1″	Green	0.45	0.56	5	25	68
CG10045-650	1″	Brown	0.55	0.65	5	25	68
CG10045-750	1″	Yellow	0.65	0.75	5	25	68
CG10045-850	1″	Purple	0.75	0.85	5	25	68
CG10045-950	1″	Gray	0.85	0.95	5	25	68
CG10045-1050	1″	Black	0.95	1.05	5	25	68

90° BODY



Cat. #	Trade Size	Color Code	Cable Range Min.	Cable Range Max.	Unit Quantity	Std. Pkg.	Wt. Lbs. Per 100
CG5090-250	½″	Red	0.15	0.25	10	50	26
CG5090-350	½″	White	0.25	0.35	10	50	26
CG5090-450	½″	Blue	0.35	0.45	10	50	26
CG5090-560	½″	Green	0.45	0.56	10	50	26
CG5090-650	½″	Brown	0.55	0.65	10	50	26
CG7590-250	¾″	Red	0.15	0.25	10	50	48
CG7590-350	¾″	White	0.25	0.35	10	50	48
CG7590-450	¾″	Blue	0.35	0.45	10	50	48
CG7590-560	¾″	Green	0.45	0.56	10	50	48
CG7590-650	¾″	Brown	0.55	0.65	10	50	48
CG7590-750	¾″	Yellow	0.65	0.75	10	50	48
CG7590-850	¾″	Purple	0.75	0.85	10	50	48
CG10090-560	1″	Green	0.45	0.56	5	25	68
CG10090-650	1″	Brown	0.55	0.65	5	25	68
CG10090-750	1″	Yellow	0.65	0.75	5	25	68
CG10090-850	1″	Purple	0.75	0.85	5	25	68
CG10090-950	1″	Gray	0.85	0.95	5	25	68
CG10090-1050	1″	Black	0.95	1.05	5	25	68

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Cord And Cable Connectors
NCG Series Nonmetallic Cord Grips

Applications
For use with portable cord, NCG Series watertight cord grips terminate and protect conductors from mechanical damage due to vibration and movement. A neoprene bushing seals out oils, coolants, water, dust and other abusive agents. NCG cord grips may be used with types S, SO, STO, SJ, SJT, SJTO and SVO portable cords.

Typical applications include the termination of wiring for:
- machine tools
- motors
- transformers
- food processing equipment
- robotics
- air conditioning units
- illuminated signs
- terminal boxes
- control cabinets

Standard Materials
- cable gland body and nut - polyamide 6
- bushing - neoprene
- locknut - polyamide 6

Features
- Available in ⅜″ to 1″ trade sizes.
- Neoprene bushings cover a large cable range, reducing the number of different fittings required.
- Polyamide nonmetallic construction stands up to most corrosive environments.
- Polyamide locknut available, order separately.
- UL listed and cUL third party certified.
- Rain-tight and watertight construction for outdoor use.
- Tightening one nut creates watertight seal.

Certifications & Compliances
- UL Standard 514B
- cUL to CSA Standard C22.2 No.18
- IP 68
- NEMA 4X Watertight
- Zone 2, Division 2 use per Code



Ordering Information

TRADE SIZE	CABLE RANGE INCHES (MM)	CATALOG NUMBER	CARTON QTY.
⅜″	0.1-0.35 (2.5-8)	NCG38-35	25
½″	0.20-0.50 (5-12)	NCG50-50	25
¾″	0.35-0.75 (9-18)	NCG75-75	25
1″	0.55-1.00 (14-25)	NCG100-100	20



Locknuts – must be ordered separately

TRADE SIZE	CATALOG NUMBER	CARTON QTY.
⅜″	10N	25
½″	11N	25
¾″	12N	25
1″	13N	20

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CP Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Non-Metallic Sheathed Cable and Portable Cord Connectors
- Non-Metallic Sheathed Cable Connectors
- Armored Cable and Flexible Metallic Conduit Connectors
- Armored Cable and Flexible Metallic Conduit Connectors
- Armored, Metal Clad, and Non-Metallic Cable, and Flexible Metallic Conduit
- Flexible Metallic Conduit Connectors

ARMORED, METAL CLAD AND FLEXIBLE METALLIC CONDUIT CONNECTORS – STEEL

ACB Series Connectors:

NEW!

Application:

ACB Series Connectors are used to connect armored cable, metal clad cable or flexible metallic conduit to a box or enclosure.

Features and Benefits:

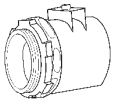
- Dual gripping saddle design on the connector safely secures cable or conduit in place and prevents loosening from vibration.
- Insulated throat provides a smooth pulling surface that won't strip cable.
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration.
- Tri–head set screw may be installed using a slotted, Phillips or Robertson head Screwdriver.
- Steel connector is zinc electroplated for corrosion resistance.

Certifications and Compliances

- UL Listed
- cUL Listed

Materials and Finishes:

- Body: Steel – Zinc electroplated
- Saddle: Steel – Zinc electroplated
- Screw: Steel – Zinc electroplated
- Insulated throat: Thermoplastic – Natural



Cat. #	Trade Size	Cable Opening Max.	Cable Opening Min.	Unit Qty	Std Pkg
ACB38	⅜″	0.656	0.437	50	200
ACB50	½″	0.937	0.750	25	100
ACB75	¾″	1.125	0.906	10	50
ACB100	1″	1.468	1.250	5	25
ACB125	1¼″	1.500	1.312	5	10
ACB150	1½″	1.750	1.562	5	10
ACB200	2″	2.031	1.812	1	5
ACB250	2½″	3.062	2.812	1	5
ACB300	3″	3.562	3.312	1	5
ACB350	3½″	4.060	3.620	1	1
ACB400	4″	4.560	4.120	1	1

ARMORED, METAL CLAD AND FLEXIBLE METALLIC CONDUIT COUPLINGS – STEEL

ACC Series Combination Couplings:

NEW!

Application:

ACC combination couplings are used to join EMT conduit to armored cable, metal clad cable or flexible metallic conduit.

Features and Benefits:

- Dual gripping saddle design on the coupling safely secures cable or conduit in place and prevents loosening from vibration
- Steel compression ring & nut provide a strong, secure termination point for EMT conduit.
- Tri–Head set screw may be installed using a slotted, Phillips or Robertson head screwdriver.
- Steel combination coupling is zinc electroplated for corrosion resistance.

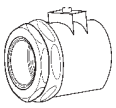
Materials and Finishes:

- Body: Steel – Zinc electroplated
- Saddle: Steel – Zinc electroplated
- Screw: Steel – Zinc electroplated

Certifications and Compliances

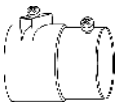
- UL Listed
- cUL Listed

Compression Coupling:



Cat. #	Trade Size	Cable Opening Max.	Cable Opening Min.	Unit Qty	Std Pkg
ACC38	⅜″	0.656	0.437	50	200
ACC50	½″	0.937	0.750	25	100
ACC75	¾″	1.125	0.906	10	50

Set–Screw Coupling:



Cat. #	Trade Size	Unit Qty.	Weight Lbs. Per 100
ACCSS38*	⅜″	**50**	**9**
ACCSS50	½″	**25**	**12**
ACCSS75	¾″	**10**	**14**

* not UL Listed

ARMORED, METAL CLAD AND FLEXIBLE METALLIC CONDUIT – STEEL

Space Saver ACB Series Connector

NEW!

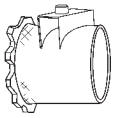
UL File No. E-22132

Features:

- Designed with the male threads on the locknut, the Space-Saver takes up virtually no room inside the box, and the smooth pulling surface eliminates the need for a bushing or insulated throat
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration
- Knurled wrenching surface for easy tightening
- Tri-head set screw may be installed using a slotted, Philips or Robertson head screwdriver
- Zinc electroplated for corrosion resistance
- Concrete tight when taped

Certifications and Compliances:

- UL Listed
- cUL Listed



Cat #	Trade Size	KO Size	Cable Opening max.	Cable Opening min.	Dim A	Dim B	Unit Qty	Wt Lbs./ 100
SSACB38	⅜″	½″	0.640	0.280	1⅜″	¾″	50	9
SSACB50	½″	½″	0.930	0.635	1⅜″	1 1⁄16″	25	12
SSACB75	¾″	¾″	1.125	0.810	1½″	1¼″	10	14

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Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Non-Metallic Sheathed Cable and Portable Cord Connectors
- Non-Metallic Sheathed Cable Connectors
- Armored Cable and Flexible Metallic Conduit Connectors
- Armored, Metal Clad, and Non-Metallic Cable, and Flexible Metallic Conduit
- Flexible Metallic Conduit Connectors

NON-METALLIC SHEATHED CABLE AND PORTABLE CORD CONNECTORS – STEEL

Clamp Type
UL File No. E-22132



Cat. #	K.O. Size	Clamp Opening Min.	Clamp Opening Max.	Width	Unit Qty	Std Pkg	Wt Lbs./ 100
631	¾″	33⁄64″	13⁄16″	13⁄16″	20	200	14
		For 2 conductor No.'s 8, 6					
		3 conductor No.'s 8, 6					
632	1″	⅜″	1 1⁄64″	1 1⁄64″	10	100	21
		For 2 conductor No.'s 8, 6					
		3 conductor No.'s 8, 6					

NON-METALLIC SHEATHED CABLE CONNECTORS – DIE CAST ZINC

UL File No. E-10438



Cat. #	Trade Size	K.O. Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
759DC	⅜″	½″	100	1000	4
		For 2 conductor No.'s 14, 12, 10			
		3 conductor No.'s 14, 12			
2631	¾″	¾″	50	500	9
		For 3 conductor No.'s 8, 6			
2632	1″	1″	25	250	12
		For 3 conductor No.'s 6, 4			
2633	1¼″	1¼″	10	100	22
		For 3 conductor No.'s 3, 2			
2670	1½″	1½″	5	50	25
		For 3 conductor No. 2/0			
2671	2″	2″	10	40	40
		For 3 conductor No. 4/0			

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Set Screw Type
UL File No. E-19188



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
702-V	⅜″	⅝″	7⁄16″	100	500	7
		For 2 conductor No.'s 14, 12				
		3 conductor No.'s 14, 12				
		4 conductor No. 14, 5⁄16″ flex				

QUICK-LOK® CONNECTORS FOR ARMORED AND METAL CLAD CABLE AND FMC – STEEL

UL File No. E-19188

Features:

- No Locknut required
- Single-unit or duplex construction with captive clamp
- Connects 50 MC, AC, and Flex RW cable sizes with just three fittings
- Easy to install: tilt, insert and snap down
- Single unit construction eliminates loose component parts, integral green plastic insulated throat bushing provides maximum protection for wire installation
- Concrete tight when taped

Standard Materials & Finishes:

Material: Tubular Steel
Finish: Zinc plated



Cat. #	Trade Size	Unit Qty.	Std. Pkg.	Wt. Lbs./100
QLK50S	½″ single	50	500	9
		For 14/4 to 10/3		
		For ⅜″ FMC		
QLK75	3/4″	25	250	11.5
		For 10/3 to 6/3		
		For ⅜″ and ½″ FMC		
QLK50D	1/2″ duplex	25	250	11
		For 14/4 to 10/3		

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Duplex Type
UL File No. E-19188



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
Straight						
699*	⅜″	⅝″	9⁄16″	25	100	20
90 Degree						
700*	⅜″	⅝″	9⁄16″	25	100	14

ARMORED, METAL CLAD, AND NON-METALLIC CABLE, AND FLEXIBLE METALLIC CONDUIT – DIE CAST ZINC

Duplex Type
UL File No. E-19188



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
2699*	⅜″	⅝″	9⁄16″	25	250	13

* UL Listed as grounding means.

FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Standard Materials & Finishes:

Material: Malleable Iron
Steel Locknut
Finishes: Zinc plated

Squeeze Type
UL File No. E-19189







Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
707	⅜″	⅝″	⅜″	100	500	7
708	½″	15⁄16″	⅝″	50	200	14
709	¾″	1⅛″	¾″	20	100	22
710	1″	1⅜″	1″	20	100	31
711	1¼″	1 21⁄32″	1 5⁄16″	10	50	46
712	1½″	1⅞″	1½″	5	25	79
713	2″	2½″	2″	2	10	101
714	2½″	2⅞″	2⅜″	2	10	161
715	3″	3 9⁄16″	3″	1	5	220
721	3½″	4″	2 13⁄32″	1	1	470
722	4″	4 19⁄32″	3 31⁄32″	1	1	610

Straight – Insulated
UL File No. E-19189





Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
1707	⅜″	⅝″	⅜″	100	500	8
1708	½″	15⁄16″	⅝″	50	200	14
1709	¾″	1⅛″	¾″	20	100	17
1710	1″	1⅜″	1″	20	100	26
1711	1¼″	1 21⁄32″	1 5⁄16″	10	50	42
1712	1½″	1⅞″	1½″	5	25	77
1713	2″	2½″	2″	2	10	100
1714	2½″	2⅞″	2⅜″	2	10	160
1715	3″	3 9⁄16″	3″	1	5	221
1721	3½″	4″	3 13⁄32″	1	1	470
1722	4″	4 19⁄32″	3 31⁄32″	1	1	610

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

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CP Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Armored Cable and Flexible Metallic Conduit Connectors
- Flexible Metallic Conduit Fittings

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – DIE CAST ZINC

Squeeze Type* - Straight - Insulated
UL File No. E-19188

NEW!



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
1707DC	3/8″	50	500	6
1708DC	1/2″	30	300	8
1709DC	3/4″	18	180	11
1710DC	1″	12	120	16
1711DC	1 1/4″	8	80	21
1712DC	1 1/2″	6	60	28
1713DC	2″	4	40	36
1714DC	2 1/2″	3	18	85
1715DC	3″	2	12	109
1721DC	3 1/2″	1	6	144
1722DC	4″	1	6	183

Squeeze Type* - Straight - Non-Insulated

Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
707DC	3/8″	50	500	6
708DC	1/2″	30	300	8
709DC	3/4″	18	180	11
710DC	1″	12	120	16
711DC	1 1/4″	8	80	21
712DC	1 1/2″	6	60	28
713DC	2″	4	40	36
714DC	2 1/2″	3	18	85
715DC	3″	2	12	109
721DC	3 1/2″	1	6	144
722DC	4″	1	6	183

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Features:

Male hub treads - NPSM

Standard Materials and Finishes

Mallable Iron
Steel locknut
Stamped steel covers
- Finish: Zinc Plated

Clamp Type* 45° Angle – Non–Insulated
UL File No. E-19188
or E-19189


723

Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
723	3/8″	21/32″	17/32″	50	200	14
	For 2 conductor No.'s 14, 12, 10 3 conductor No.'s 14, 12, 10 4 conductor No.'s 14, 12 Flexible metallic conduit 5/16″ and 3/8″					
735	1/2″	15/16″	9/16″	25	100	18
	For 2 conductor No. 8 Flexible metallic conduit 1/2″					
737	3/4″	1 1/8″	25/32″	25	100	24
	For 2 conductor No.'s 6, 4 3 conductor No.'s 6, 4 Flexible metallic conduit 3/4″					

45° Angle – Insulated
UL File No. E-19188
or E-19189


1735

Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
1723	3/8″	21/32″	17/32″	50	200	14
1735	1/2″	15/16″	9/16″	25	100	17
1737	3/4″	1 1/8″	25/32″	25	100	24

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Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Armored Cable and Flexible Metallic Conduit Connectors
- Flexible Metallic Conduit Fittings

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – DIE CAST ZINC

Squeeze Type* 90° Angle – Non–Insulated

UL File No. 19189

NEW!



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
724DC	3/8″	25	250	8
736DC	1/2″	15	150	11
738DC	3/4″	12	120	15
739DC†	1″	5	50	25
740DC†	1 1/4″	4	40	41
741DC†	1 1/2″	2	12	117
742DC†	2″	2	12	119
744DC	2 1/2″	1	10	286
745DC	3″	1	4	405
746DC	3 1/2″	1	4	560
747DC	4″	1	3	642

Squeeze Type* 90° Angle – Insulated

UL File No. 19189



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
1724DC	3/8″	25	250	8
1736DC	1/2″	15	150	11
1738DC	3/4″	12	120	15
1739DC†	1″	5	50	25
1740DC†	1 1/4″	4	40	41
1741DC†	1 1/2″	2	12	117
1742DC†	2″	2	12	119
1744DC	2 1/2″	1	10	286
1745DC	3″	1	4	405
1746DC	3 1/2″	1	4	560
1747DC	4″	1	3	642

† For flexible metallic conduit only

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Clamp Type* 90° Angle – Non–Insulated

UL File No. E-19188 or E-19189



724



740



746

Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
724	3/8″	21/32″	17/32″	50	200	15
	For 2 conductor No.'s 14, 12, 10 3 conductor No.'s 14, 12, 10 4 conductor No.'s 14, 12 Flexible metallic conduit 5/16″ and 3/8″					
736	1/2″	15/16″	9/16″	25	100	19
738	3/4″	1 1/8″	13/16″	20	100	31
739	1″	1 13/32″	1″	5	25	50
740	1 1/4″	1 21/32″	1 1/4″	2	10	113
741	1 1/2″	1 7/8″	1 1/2″	1	10	188
742	2″	2 1/2″	1 15/16″	1	5	236
744	2 1/2″	3″	2-192″	1	1	400
745	3″	3 1/2″	3″	1	1	600
746	3 1/2″	4″	3 13/32″	1	1	1150
747	4″	4 19/32″	3 31/32″	1	1	1460

90° Angle – Insulated

UL File No. E-19188 or E-19189



1740



1746

Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
1736	1/2″	15/16″	9/16″	25	100	19
1738	3/4″	1 1/8″	13/16″	20	100	31
1739	1″	1 13/32″	1″	5	25	50
1740	1 1/4″	1 21/32″	1 1/4″	2	10	113
1741	1 1/2″	1 7/8″	1 1/2″	1	10	188
1742	2″	2 1/2″	1 15/16″	1	5	236
1744	2 1/2″	3″	2 1/2″	1	1	400
1745	3″	3 1/2″	3″	1	1	600
1746	3 1/2″	4″	3 13/32″	1	1	1150
1747	4″	4 19/32″	3 31/32″	1	1	1460

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

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CP Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Flexible Metallic Conduit Fittings
- Combination Couplings
- ''Back to Back'' Box Connector

FLEXIBLE METALLIC CONDUIT FITTINGS – DIE CAST ZINC

Straight Connectors – Non-Insulated Screw-in Type
UL File No. E-19189

NEW!



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
770DC	⅜″	80	800	5
771DC	½″	60	600	5
772DC	¾″	35	350	9
773DC	1″	15	150	13
774DC	1¼″	10	100	24
775DC	1½″	6	60	35
776DC	2″	3	30	52

Couplings Screw-in Type
UL File No. 19189

Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
791DC	½″	40	400	4
792DC	¾″	25	250	8
793DC	1″	15	150	12
794DC	1¼″	10	100	21
795DC	1½″	6	60	31
796DC	2″	3	30	44

COMBINATION COUPLINGS – DIE CAST ZINC

EMT (Set Screw) to Flexible Steel (Clamp)*
UL File No. E-19189



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
780DC	½″ to ⅜″	50	500	8

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

''BACK TO BACK'' BOX CONNECTOR – DIE CAST ZINC



Cat. #	Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
5050	½″	25	250	8

ANTI-SHORT BUSHINGS



Cat. #	FMC Trade Size	Armoured Cable Size	Unit Qty	Std Pkg
ASB 0	5⁄16″	14-2, 14-3, 12-2	100	22,500
ASB 1	⅜″	14-4, 12-3, 6-1, 4-1	100	18,000
ASB 2	7⁄16″	12-4, 10-2, 10-3, 2-1	50	10,000
ASB 3	½″	10-4, 8-2, 8-3, 1-1	50	5,250
ASB 4	¾″	8-4, 6-4, 6-3, 6-2, 4-3, 4-2	50	3,000
ASB 5	1″	3-1, 2-1, 2-1/0, 1-300 MCM 1-350 MCM, 1-400 MCM, 1-450 MCM, 1-500 MCM	25	3,125
ASB 6	1¼″	4-1, 4-1/0, 4-2/0, 3-1/0, 3-2/0, 3-3/0, 2-2/0, 2-3/0, 2-4/0, 1-600 MCM, 1-650 MCM, 1-700 MCM, 1-750 MCM, 1-800 MCM, 1-900 MCM	10	1,500
ASB 7	1½″	4-3/0, 4-4/0, 3-4/0, 3-250 MCM, 3-300 MCM, 2-250 MCM, 2-300 MCM, 2-350 MCM, 1-1000 MCM	10	1,000
ASB 8	2″ to 2½″	4-250 MCM, 4-300 MCM, 4-350 MCM, 4-400 MCM, 4-450 MCM, 4-500 MCM, 3-350 MCM, 3-400 MCM, 3-450 MCM, 3-500 MCM, 2-400 MCM, 2-450 MCM, 2-500 MCM	10	1,000

Bushings are packed in clear poly bags.
Anti-short bushings have a temperature rating of 90°C

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Service Entrance and Grounding Fittings

- Service Entrance Elbows – Aluminum
- Entrance Caps
- Service Entrance Cable Connectors
- Perforated Strap
- Ground Straps
- Ground Clamp

SERVICE ENTRANCE FITTINGS

SERVICE ENTRANCE ELBOWS – ALUMINUM

Gasketed

UL File No. E-19189

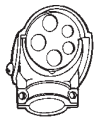


Cat. #	Size	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
SLB1	½″	10	50	25
SLB2	¾″	10	50	30
SLB3	1″	5	25	51
SLB4	1¼″	2	10	83
SLB5	1½″	1	5	117
SLB6	2″	1	5	192

SERVICE ENTRANCE CAPS FOR EMT AND RIGID CONDUIT – ALUMINUM

Clamp Type

UL File No. E-22133



Cat. #	Size	Holes in Insulator	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
EH1**	½″	4-19/64″	10	50	52
EH2**	¾″	2-3/8 3-13/32″	10	50	60
EH3	1″	2-7/16″ 3-½″	5	25	48
EH4	1¼″	2-7/16″ 3-5/8″	5	25	50
EH5	1½″	2-19/32″ 1-7/16″ 3-¾″	3	15	110
EH6	2″	2-¾″ 3-1″ 1-17/32″	5	5	140
EH7	2½″	3-⅞″ 1-1″ 3-1-5/16″	1	1	400
EH8	3″	4-1-⅛″ 3-1-¾″	1	1	650
EH9	3½″	4-1-⅛″ 3-1-¾″	1	1	650
EH10	4″	4-1-⅛″ 3-1-¾″	1	1	600

** Zinc

SERVICE ENTRANCE CABLE CONNECTORS – MALLEABLE IRON

Non-watertight for Oval Cable

UL File No. E-22134

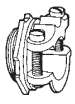


Cat. #	K.O. Size	Clamp Opening Min.	Clamp Opening Width Max.	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
631	¾″	33/64″	13/16″	20	200	14
			For 2 conductor No.'s 8, 6 3 conductor No.'s 8, 6			
632	1″	⅜″	1 1/64″ 1 1/64″	10	100	21
			For 2 conductor No.'s 8, 6 3 conductor No.'s 8, 6			

SERVICE ENTRANCE CABLE CONNECTORS – DIE CAST ZINC

Non-watertight for Oval Cable

UL File No. E-10438



Cat. #	K.O. Size	Clamp Opening Min.	Clamp Opening Max.	Clamp Opening Width	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
2631	¾″	.300″	.075″	.075″	50	500	9
2632	1″	.350″	.920″	.920″	25	250	12
2633	1¼″	.335″	.960″	.960″	10	100	22
2670	1½″	.350″	1.00″	1.00″	5	50	25
2671	2″	.700″	1.30″	1.30″	10	40	40

PERFORATED STRAP – STEEL

10 Foot Coils



Cat. #	Description	Standard Package	Weight Lbs. Per 100
3000	¾ × .035 Galvanized ¼″ holes – ½″ to 1″ Centers	100	10

GROUND CLAMP – DIE CAST ZINC

For Bare or Insulated Wire or Armored Grounding Cable



Cat. #	Grounding Conductor Electrode Clamping Range	Lug Conductor Range	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
141DC	½″, ¾″, 1″	#8-#2	25	250	16

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CP Junction Boxes

Application and Selection

Application:

Junction boxes, designed for hazardous and non-hazardous locations, are used in a variety of industries to perform the following functions:

- as a pull box
- to provide enclosures for splices and taps
- as a mounting box for multi-device control stations
- for housing apparatus, instruments, and other devices

Considerations for Selection:

- Environmental location – the physical location of the junction box will call for proper construction of the box to meet National Electrical Code requirements and will affect the material and finish needed to meet weather and corrosive conditions, if present.
- Number and size of conductors – combined with the function to be performed (i.e., splicing, pull box), determines the amount of space needed, and therefore, the required physical dimensions of the box.
- Conduit layout – determines the number, size, and location of the conduit openings in the box. It will also determine the type of mounting required (i.e., flush or surface positioning of the box).
- Flexibility required – if changes in the electrical system are anticipated, the box chosen should be easily adaptable, either by construction (i.e., detachable hub plates) or size to the future system.

Options and Accessories:

A wide variety of options and accessories for special application are available for the various junction box families. These can be selected once the type of junction box has been determined. These options are shown on the individual pages. Some of the options available include:

- Special covers
- Hinged covers
- Materials and finishes
- Equipment mounting plates
- Openings for control station and other device mounting
- *Corro-free*™ epoxy powder coat – information available on request

Quick Selector Chart

Junction Boxes	Environmental Capability/Type Designation	Size Range† L, W, D Inside	Max. Conduit Opening Size	Mtg.	Type of Conduit Opening	Cover Type	Page No.
WAB	Raintight/Type 3, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Unflanged	111
WCB	Raintight/Type 3, Watertight/Type 4, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Overlapping	112
WJB	Raintight/Type 3, Watertight/Type 4	4 x 4 x 3 to 36 x 24 x 24	6	Surface	Drilled and tapped, slip holes	Flanged	113
WJBF	Raintight/Type 3, Watertight/Type 4	4 x 4 x 4 to 36 x 24 x 24	6	Flush	Drilled and tapped, slip holes	External flanged recessed sidewalk	114
WEB	Raintight/Type 3	4 x 4 x 3 to 36 x 36 x 12	6	Flush	Drilled and tapped, slip holes	Internal Flanged	115

† Length and width are inside dimensions. Depth is inside dimension without cover.

Lightning Service™ Delivery Identification – Looking for junction boxes to meet tight deadlines? Then specify Lightning Service. All products available with Lightning Service delivery will be marked with a checkmark. Look for pages with the Lightning Service Logo located at the top of the page.



Lightning Service is available for over 90 of the most popular size boxes in five different styles.

Shipped within 24 hours: All enclosures marked with a check mark are available in 24 hours without drilled and tapped openings or a mounting plate.

Shipped within 72 hours: All enclosures marked with a check mark are available in 72 hours with standard drilled and tapped openings and/or a mounting plate.

In Canada: Enclosures without openings or mountings plate shipped within 1 week. Enclosures with standard openings or mounting plate shipped within 2 weeks

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WAB Junction Boxes

Heavy Duty
Unflanged for Surface Mounting
See ordering info. on following pages
See dimensions on following pages

Dust-proof
Weatherproof

CP



Application:

Where a heavy duty dustproof or weatherproof enclosure is desired, WAB boxes are installed in conduit system to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Flat neoprene gasket cemented to the cover.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for ¼″ – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- *Feraloy*® iron alloy body
- Heavy-gauge steel cover
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- *Feraloy* iron alloy and heavy gauge steel – hot dip galvanized

Options:

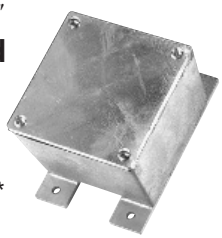
- Factory installed mounting plate... add suffix –MP.
- See Ordering Information, beginning pg. 316 for:
  - Drilled and tapped conduit holes
  - Slip holes

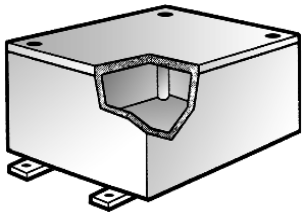
Size Ranges:

- 4″ x 4″ x 2″ to 24″ x 24″ x 8″

Certifications and Compliances:

- UL Standard: 50
- Dust-proof
- Weatherproof
- H20 Vehicle Load Rating *





Flat Covers

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WAB040402	5/32	4	4	2	✓
WAB040403	3/16	4	4	3	✓
WAB040404	1/4	4	4	4	✓
WAB050503	1/4	5	5	3	✓
WAB050504	1/4	5	5	4	✓
WAB060403	1/4	6	4	3	✓
WAB060404	7/32	6	4	4	✓
WAB060603	1/4	6	6	3	✓
WAB060604	3/16	6	6	4	✓
WAB060606	9/32	6	6	6	✓
WAB080403	5/16	8	4	3	
WAB080604	7/32	8	6	4	✓
WAB080606	5/16	8	6	6	✓
WAB080804	5/16	8	8	4	✓
WAB080806	5/16	8	8	6	✓
WAB080808	5/16	8	8	8	✓
WAB090604	5/16	9	6	4	
WAB100604	1/4	10	6	4	
WAB100804	1/4	10	8	4	✓
WAB100806	9/32	10	8	6	✓
WAB101006	1/4	10	10	6	✓
WAB120604	9/32	12	6	4	✓
WAB120606	9/32	12	6	6	✓
WAB120806	9/32	12	8	6	✓
WAB120808	3/8	12	8	8	
WAB121204	9/32	12	12	4	✓
WAB121206	9/32	12	12	6	✓
WAB121208	9/32	12	12	8	✓
WAB160606	1/4	16	6	6	
WAB161208	5/16	16	12	8	✓
WAB181206	5/16	18	12	6	✓
WAB181208	5/16	18	12	8	
WAB181210	3/8	18	12	10	
WAB181806	3/8	18	18	6	✓
WAB181812	7/16	18	18	12	✓
WAB241212	7/16	24	12	12	
WAB242408	11/32	24	24	8	

* Self certify to H20 vehicle load rating equivalent to 16,000 lbs. on cover center.
✓ – available with Lightning Service™

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CP WCB Junction Boxes

Heavy Duty
Overlapping Cover for Surface Mounting
See ordering info. on following pages
See dimensions on following pages

Dust-tight
Weatherproof
Watertight
Raintight



Application:

Where a heavy duty dust-tight, weatherproof, raintight, or watertight enclosure is desired, WCB boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Flat neoprene gasket cemented to cover.
- Overlapping cover sheds environment.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits maximum flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for ¼″ – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- *Feraloy*® iron alloy cover and body
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- *Feraloy* iron alloy – hot dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 316, for:
  Drilled and tapped conduit holes
  Slip holes

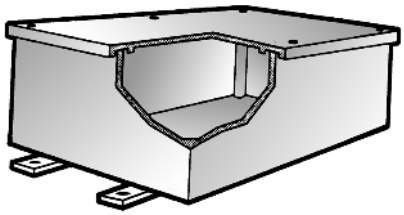
Size Ranges:

- 4″ x 4″ x 2″ to 24″ x 24″ x 8″

Certifications and Compliances:

- UL Standard: 50
- Dust-tight
- Weatherproof
- Raintight
- Watertight





Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WCB040402	5/32	4	4	2	
WCB040403	3/16	4	4	3	✓
WCB040404	1/4	4	4	4	✓
WCB050503	1/4	5	5	3	✓
WCB050504	1/4	5	5	4	✓
WCB060403	1/4	6	4	3	✓
WCB060404	7/32	6	4	4	✓
WCB060603	1/4	6	6	3	✓
WCB060604	3/16	6	6	4	✓
WCB060606	9/32	6	6	6	✓
WCB080403	5/16	8	4	3	
WCB080604	7/32	8	6	4	✓
WCB080606	5/16	8	6	6	✓
WCB080804	5/16	8	8	4	✓
WCB080806	5/16	8	8	6	✓
WCB080808	5/16	8	8	8	✓
WCB090604	5/16	9	6	4	✓
WCB100604	1/4	10	6	4	
WCB100804	1/4	10	8	4	✓
WCB100806	9/32	10	8	6	✓
WCB101006	1/4	10	10	6	✓
WCB120604	9/32	12	6	4	✓
WCB120606	9/32	12	6	6	✓
WCB120806	9/32	12	8	6	✓
WCB120808	3/8	12	8	8	
WCB121204	9/32	12	12	4	✓
WCB121206	9/32	12	12	6	✓
WCB121208	9/32	12	12	8	✓
WCB160606	1/4	16	6	6	
WCB161208	5/16	16	12	8	✓
WCB181206	5/16	18	12	6	✓
WCB181208	5/16	18	12	8	
WCB181210	3/8	18	12	10	
WCB181806	3/8	18	18	6	✓
WCB181812	7/16	18	18	12	✓
WCB241212	7/16	24	12	12	
WCB242408	11/32	24	24	8	✓

✓ – available with Lightning Service™

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WJB Junction Boxes

Heavy Duty
Flanged for Surface Mounting
See ordering info. on following pages
See dimensions on following pages

Weatherproof
Watertight
Raintight



Application:

WJB boxes are standard with mounting straps and are primarily designed for surface mounting. WJB heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Neoprene gasket cemented to cover.
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads may be drilled and tapped for ¼″ – 20 mounting screws.
- Blind tapped into internal mounting pads.

Standard Materials:

- *Feraloy*® iron alloy body
- Heavy-gauge steel – cover and mounting straps
- Neoprene gaskets

Standard Finishes:

- *Feraloy* iron alloy and heavy-gauge steel – hot-dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 316 for:
  - Drilled and tapped conduit holes
  - Slip holes

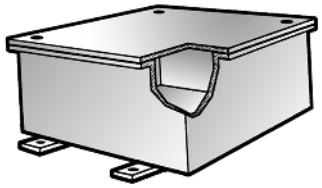
Size Ranges:

- 4″ x 4″ x 3″ to 36″ x 24″ x 24″

Certifications and Compliances:

- UL Standard: 50
- CSA Standard C22.2
- Weatherproof
- Watertight
- CEC: Class II, E,F,G
  Class III
  Encl. 3-4
- H20 Vehicle Load Rating *





Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJB040403	¼	4	4	3	
WJB040404	¼	4	4	4	✓
WJB060404	¼	6	4	4	
WJB060604	¼	6	6	4	✓
WJB060606	¼	6	6	6	✓
WJB080604	¼	8	6	4	
WJB080606	¼	8	6	6	✓
WJB080804	¼	8	8	4	✓
WJB080806	¼	8	8	6	
WJB080808	¼	8	8	8	
WJB100806	¼	10	8	6	
WJB100808	¼	10	8	8	
WJB101006	¼	10	10	6	✓
WJB101008	¼	10	10	8	
WJB120606	¼	12	6	6	
WJB120806	¼	12	8	6	
WJB120808	¼	12	8	8	
WJB120810	¼	12	8	10	
WJB121206	5⁄16	12	12	6	✓
WJB121208	5⁄16	12	12	8	✓
WJB121212	5⁄16	12	12	12	
WJB121218	5⁄16	12	12	18	
WJB140806	5⁄16	14	8	6	
WJB141410	5⁄16	14	14	10	
WJB161206	5⁄16	16	12	6	
WJB161208	5⁄16	16	12	8	
WJB161606	5⁄16	16	16	6	
WJB180806	5⁄16	18	8	6	
WJB180808	5⁄16	18	8	8	
WJB181006	5⁄16	18	10	6	
WJB181206	5⁄16	18	12	6	
WJB181208	5⁄16	18	12	8	✓
WJB181210	5⁄16	18	12	10	
WJB181212	5⁄16	18	12	12	
WJB181218	⅜	18	12	18	
WJB181806	⅜	18	18	6	
WJB181808	⅜	18	18	8	
WJB181812	⅜	18	18	12	
WJB181818	⅜	18	18	18	
WJB241208	⅜	24	12	8	
WJB241212	⅜	24	12	12	
WJB241808	⅜	24	18	8	
WJB241810	⅜	24	18	10	
WJB241812	⅜	24	18	12	
WJB241818	9⁄16	24	18	18	
WJB242412	9⁄16	24	24	12	
WJB242418	9⁄16	24	24	18	
WJB242424	9⁄16	24	24	24	
WJB302412	9⁄16	30	24	12	
WJB302418	9⁄16	30	24	18	
WJB362418	9⁄16	36	24	18	
WJB362424	9⁄16	36	24	24	

* Self certify to H20 vehicle load rating equivalent to 16,000 lbs. on cover center.
✓ – available with Lightning Service™

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CP WJBF Checkered Cover Sidewalk Junction Boxes

Heavy Duty
External Flanged for Flush Mounting



See ordering info. on following pages
See dimensions on following pages
Weatherproof
Watertight
Raintight
NEMA 3,4

Application:

WJBF boxes are standard with mounting feet and have a recessed flat checkered sidewalk cover for mounting in walls or floors. They may be ordered less mounting feet. WJBF heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductor for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Covers are suitable for vehicular traffic (H20 loading)
- Neoprene gasket cemented to cover
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system
- Internal equipment mounting pads may be drilled and tapped for ¼″ – 20 mounting screws
- Blind tapped into internal mounting pads

Standard Materials:

- *Feraloy*® iron alloy – body
- Heavy-gauge steel (checkered) – cover, mounting straps
- Neoprene gaskets

Standard Finishes:

- Feraloy iron alloy and heavy-gauge steel – hot dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 316, for:
  - Drilled and tapped conduit holes
  - Slip holes

Size Ranges:

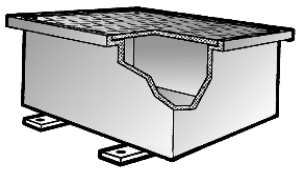
- 4″ x 4″ x 4″ to 36″ x 24″ x 24″

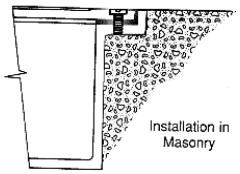
Certifications and Compliances:

- UL Standard: 50
- CSA Standard C22.2 No. 40
- Weatherproof
- Watertight
- CEC: Class II, Division 1, Groups E,F,G Class III Encl. 3, 4
- H20 Vehicle Load Rating *

✓ – available with Lightning Service™
* Self certify to H20 vehicle load rating equivalent to 16,000 lbs. on cover center.







Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJBF040404	¼	4	4	4	✓
WJBF060404	¼	6	4	4	✓
WJBF060604	¼	6	6	4	✓
WJBF060606	¼	6	6	6	✓
WJBF080604	¼	8	6	4	✓
WJBF080606	¼	8	6	6	✓
WJBF080804	¼	8	8	4	✓
WJBF080806	¼	8	8	6	✓
WJBF080808	¼	8	8	8	✓
WJBF100806	¼	10	8	6	
WJBF100808	¼	10	8	8	
WJBF101006	¼	10	10	6	✓
WJBF101008	¼	10	10	8	✓
WJBF120606	¼	12	6	6	
WJBF120806	¼	12	8	6	
WJBF120808	¼	12	8	8	✓
WJBF120810	5⁄16	12	8	10	
WJBF121206	¼	12	12	6	✓
WJBF121208	¼	12	12	8	✓
WJBF121212	5⁄16	12	12	12	✓
WJBF121218	5⁄16	12	12	18	
WJBF140806	¼	14	8	6	
WJBF141410	5⁄16	14	14	10	
WJBF161206	¼	16	12	6	
WJBF161208	¼	16	12	8	✓
WJBF161606	¼	16	16	6	
WJBF180806	¼	18	8	6	
WJBF180808	¼	18	8	8	
WJBF181006	5⁄16	18	10	6	
WJBF181206	5⁄16	18	12	6	
WJBF181208	5⁄16	18	12	8	✓
WJBF181210	⅜	18	12	10	
WJBF181212	5⁄16	18	12	12	
WJBF181218	⅜	18	12	18	
WJBF181806	⅜	18	18	6	
WJBF181808	⅜	18	18	8	
WJBF181812	⅜	18	18	12	✓
WJBF181818	⅜	18	18	18	
WJBF241208	⅜	24	12	8	
WJBF241212	⅜	24	12	12	
WJBF241808	⅜	24	18	8	
WJBF241810	⅜	24	18	10	✓
WJBF241812	⅜	24	18	12	
WJBF241818	⅜	24	18	18	
WJBF242412	⅜	24	24	12	
WJBF242418	⅜	24	24	18	
WJBF242424	⅜	24	24	24	
WJBF302412	⅜	30	24	12	
WJBF302418	⅜	30	24	18	
WJBF362418	⅜	36	24	18	
WJBF362424	⅜	36	24	24	

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WEB Junction Box

Heavy Duty
Internal Recess Flange
for Flush Mounting

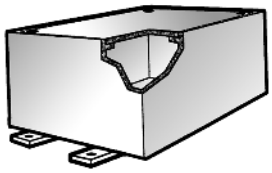
Dust-tight
Raintight
NEMA 3

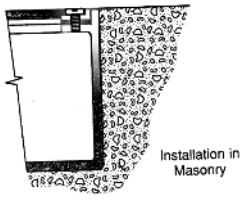
CP

Application:

WEB Junction Boxes are installed:
- Where a heavy duty, dust-tight or raintight enclosure is desired
- To act as pull box for conductors
- To provide openings and space for making splices and taps in conductors
- To provide for branch conduit runs
- To provide access to conductors for maintenance and future system changes
- To enclose and protect electrical devices







Features:

- Flat neoprene gasket cemented to cover
- Internal equipment mounting pads
- Standard attachable heavy-gauge steel straps for mounting box
- Stainless-steel cover screws
- Internal ground screw
- Optional drilled and tapped conduit entries or slip holes
- Optional mounting plate

Standard Materials:

- Body-*Feraloy*® iron alloy, hot dip galvanized
- Cover – heavy-gauge steel, hotdip galvanized
- Cover screws – stainless steel
- Mounting Strap – heavy-gauge steel, electrogalvanized
- Gasket – neoprene

Certifications and Compliances:

- UL Standard 50
- CSA certified C22.2

Options:

All boxes are available with optional mounting plate, add suffix -MP.
See ordering information beginning on pg. 316 for:
- Drilled and tapped conduit holes
- Slip holes

Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)
WEB040403	7/32	4	4	3
WEB040404	1/4	4	4	4
WEB060604	9/32	6	6	
WEB060606	1/4	6	6	6
WEB080804	9/32	8	8	4
WEB080806	1/4	8	8	6
WEB121206	9/32	12	12	6
WEB160606	9/32	16	6	6
WEB160806	1/4	16	8	6
WEB180808	5/16	18	8	8
WEB240606	9/32	24	6	6
WEB240808	5/16	24	8	8
WEB241010	3/8	24	10	10
WEB241210	5/16	24	12	10
WEB241212	5/16	24	12	12
WEB241812	3/8	24	18	12
WEB361212	3/8	36	12	12
WEB361812	3/8	36	18	12
WEB362412	7/16	36	24	12
WEB363612	7/16	36	36	12

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DRILLED AND TAPPED CONDUIT OPENINGS OR SLIP HOLES

All W-Series cast-iron junction boxes may be ordered with drilled and tapped conduit openings or slip holes – subject to minimum spacing limitations listed in Table 1.

To order a box from the factory with conduit openings:

Options 1:

Send in a sketch of the box with openings specified (subject to spacing limitations specified in Table 1). **OR**

Option 2:

Step 1: Select one of the four standard arrangements in Table 2, based on number and location of conduit entries.
Step 2: Pick a symbol from Table 3 for each opening in the arrangement (see example).
Step 3: Table 4 lists the maximum size and number of conduit openings by box size and the spacing dimensions. Use Table 4 to verify the openings selected are permitted.

Example – Catalog number logic:

1. Select box required: WAB121208.
2. User wants one ½″ drilled and tapped hole in the top of the box, two 1″ drilled and tapped holes on both sides and three ½″ slip holes in the bottom of the box.
3. Select arrangement 3 because it allows up to three openings per side.
4. Next the symbols for the openings are substituted and written in clockwise order starting with location ''a''. The catalog number is written in three parts; part 1 – box number, part 2 – arrangement number, part 3 – symbols for the conduit openings.
5. For this example the box would be ordered as:

WAB121208-3-0AO C0C 1A1A1A C0C

Box Cat. # | Arrangement # | Symbols for openings

Table 1
Minimum spacing between centers of conduits

Size of Conduit	6″	5″	4″	3½″	3″	2½″	2″	1½″	1¼″	1″	¾″	½″
½″	5	4⅜	3⅝	3⅜	3	2⅝	2⅜	2	1⅞	1¾	1⅝	1½
¾″	5⅛	4½	3¾	3½	3⅛	2¾	2½	2⅛	2	1⅞	1¾	
1″	5¼	4⅝	4	3⅝	3¼	3	2⅝	2⅜	2¼	2		
1¼″	5½	4⅞	4⅛	3⅞	3½	3⅛	2⅞	2½	2⅜			
1½″	5⅝	5	4¼	4	3⅝	3¼	3	2⅝				
2″	6	5⅜	4⅝	4¼	3⅞	3⅝	3¼					
2½″	6¼	5⅝	4⅞	4⅝	4¼	3⅞						
3″	6⅝	6	5⅜	5	4⅝							
3½″	7	6¼	5⅝	5¼								
4″	7¼	6⅝	5⅞									
5″	8	7¼										
6″	8⅝											

Table 2
Standard conduit arrangements

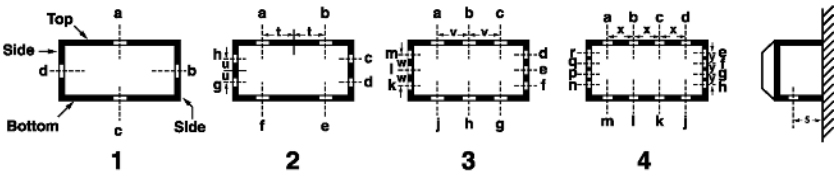
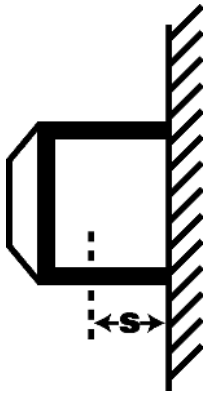


Table 3
Symbols for openings

Conduit Size	Drilled and Tapped Hole	Slip Hole
½″	A	1A
¾″	B	1B
1″	C	1C
1¼″	E	1E
1½″	F	1F
2″	G	1G
2½″	H	1H
3″	J	1J
3½″	K	1K
4″	L	1L
5″	M	1M
6″	N	1N
None	0 (Zero)	0 (Zero)



S = Dimension from wall to hole center line

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Ordering Information

Table 4

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom‡ 1	2	3	4	Sides 1	2	3	4	Spacing Dimensions† s	t	u	v	w	x	y
040402	¾	¾	—	—	¾	¾	—	—	1¼	⅞	⅞	—	—	—	—
040403	1¼	¾	—	—	1¼	¾	—	—	1⅝	⅞	⅞	—	—	—	—
040404	2	¾	—	—	2	¾	—	—	2¼	⅞	⅞	—	—	—	—
050503	1¼	¾	—	—	1¼	¾	—	—	1⅝	1¼	1¼	—	—	—	—
050504	2	1	—	—	2	1	—	—	2¼	1¼	1¼	—	—	—	—
060403	1¼	¾	¾	—	1¼	¾	—	—	1⅝	1⅜	⅞	1¾	—	—	—
060404	2	1½	¾	—	2	¾	—	—	2¼	1⅜	⅞	1¾	—	—	—
060603	1¼	1¼	¾	—	1¼	1¼	¾	—	1¼	1⅜	1⅜	1¾	1¾	—	—
060604	2	1½	¾	—	2	1½	¾	—	2¼	1⅜	1⅜	1¾	1¾	—	—
060606	4	1½	¾	—	4	1½	¾	—	3⅜	1⅜	1⅜	1¾	1¾	—	—
080403	1¼	1¼	1	¾	1¼	¾	—	—	1⅝	1⅝	⅞	2½	—	—	—
080604	2	2	1	¾	2	1½	¾	—	2¼	1⅝	1⅜	2½	1¾	1¾	—
080606	4	2	1	¾	4	1½	¾	—	3⅜	1⅝	1⅜	2½	1¾	1¾	—
080804	2	2	1	¾	3	2	1	¾	2¼	1⅝	1⅝	2½	2½	1¾	1¾
080806	4	2	1	¾	4	2	1	¾	3⅜	1⅝	1⅝	2½	2½	1¾	1¾
080808	4	2	1	¾	4	2	1	¾	4¼	1⅝	1⅝	2½	2½	1¾	1¾
090604	2	1¼	1½	1	2	1½	¾	—	2¼	2¼	1⅜	3	1¾	2	—
100604	2	2	1½	1	2	1½	¾	—	2¼	2½	1⅜	2¾	1¾	2½	—
100804	2	2	1½	1	2	2	1	¾	2¼	2½	1⅝	2¾	2½	2½	1¾
100806	4	3	1½	1	4	2	1	¾	3⅜	2½	1⅝	2¾	1¾	2½	1¾
100808	5	3	1½	1	5	2	1	¾	4½	2½	1⅝	2¾	2½	2½	1¾
101006	4	3	1½	1	3	3	1½	1	2⅜	2½	2½	2¾	2¾	2½	2½
101008	5	3	1½	1	5	3	1½	1	4¼	2½	2½	2¾	2¾	2½	2½
120604	2	2	2	1½	2	1½	¾	—	2¼	3	1⅜	4	1¾	2¾	—
120606	4	4	2½	1½	4	1½	¾	—	3⅜	3	1⅜	4	1¾	2¾	—
120806	4	4	2½	2½	4	2	1	¾	3⅜	3	1⅝	4	2½	2¾	1¾
120808	5	4	2½	2½	5	2	1	¾	4¼	3	1⅝	4	2½	2¾	1¼
121204	2	2	2	1½	2	2	2	1½	2¼	3	3	4	4	2¾	2¾
121206	4	4	2½	1½	4	4	2½	1½	3⅜	3	3	4	4	2¾	2¾
121208	5	4	2½	1½	5	4	2½	1½	4¼	3	3	4	4	2¾	2¾
121212	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
121218	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
140806	4	4	3	2	4	2	1	¾	3⅜	3½	1⅝	4½	2½	3½	1¾
141206	4	4	3	2	4	4	2½	1½	3⅜	3½	3	4½	4	3½	2¾
141410	6	4	3	2	6	4	3	2	5	3½	3½	4½	4½	3½	3½
160606	4	4	3½	2½	4	1½	¾	—	3⅜	4	1½	5⅜	2	4	—
160806	4	4	3½	2½	4	2½	1½	¾	3⅜	4	2	5⅜	2⅝	4	2
161206	4	4	3½	2½	4	4	2½	1½	3⅜	4	3	5⅜	4	4	3
161208	5	5	3½	2½	5	4	2½	1½	4¼	4	3	5⅜	4	4	3
161606	4	4	3½	2½	4	4	3½	2½	3⅜	4	4	5⅜	5⅜	4	4
180806	4	4	4	2½	4	2½	1¼	¾	3⅜	4½	2	6	2⅝	4½	2
180808	5	5	4	2½	5	2½	1¼	¾	4¼	4½	2	6	2⅝	4½	2
181206	4	4	4	2½	4	4	2½	1½	3⅜	6½	2⅞	5½	3⅞	4	2¾
181208	5	5	4	2½	5	4	2½	1½	4¼	4½	3	5½	4	4	2¾
181210	6	5	4	2½	6	4	2½	1½	5	4¼	3	5½	4	4	2¾

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.
‡Top and bottom are the longer dimensions on enclosures which are not square.

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Table 4 (continued)

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom‡ 1	2	3	4	Sides 1	2	3	4	Spacing Dimensions† s	t	u	v	w	x	y
181212	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¼
181218	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¾
181806	4	4	4	2½	5	5	4	2½	3⅜	4½	4	6	5⅜	4½	4
181808	5	5	4	2½	5	5	3½	2½	4¼	4½	4	6	5⅜	4½	4
181812	6	6	4	2½	6	6	4	2½	5	4½	4½	6	6	4½	4½
240606	4	4	4	4	4	1½	¾	—	3⅜	6¾	1⅜	8	1¾	6	—
240808	5	5	5	4	5	2½	1¼	¾	4¼	6¾	4½	8	2⅝	6	2
241010	6	6	5	4	6	3	1½	1	5	6½	2½	7	2¾	5¾	2½
241208	5	5	5	4	5	4	2½	1½	4¼	6½	2⅞	7	3⅞	5¾	2¾
241210	6	6	5	4	6	4	2½	1½	5	6½	3	7	4	5¾	2¾
241212	6	6	5	4	6	4	2½	1½	5	6½	2⅞	7	3⅞	5¾	2¾
241808	5	5	5	4	5	5	4	2½	4¼	6½	4½	7	5¾	5¾	4
241810	6	6	5	4	6	6	4	2½	5	6½	4½	7	5¾	5¾	4
241812	6	6	5	4	6	5	4	2½	5	6½	4½	7	5¾	5¾	4
242408	5	5	5	4	5	5	5	4	4¼	6½	6½	7	7½	5¾	5¾
242412	6	6	5	4	6	6	5	4	5	6½	6½	7	7½	5¾	5¾
242424	6	6	5	4	6	6	5	4	6½	6¾	6½	7	7½	5¾	5¾
302412	6	6	6	5	6	6	5	4	5	7½	6¾	10	8	7½	6
361212	6	6	6	6	6	4	2½	1½	5	8¾	3	12	4	9	2¾
361812	6	6	6	6	6	5	4	2½	5	8¾	4½	12	4½	9	4
362412	6	6	6	6	6	6	5	4	5	8¾	6¾	12	8	9	6
363612	6	6	6	6	6	6	6	6	5	8¾	8¾	12	12	9	9

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.
‡Top and bottom are the longer dimensions on enclosures which are not square.

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XD Expansion/Deflection Coupling

Application:

XD couplings can be installed indoors, outdoors, buried underground, or embedded in concrete in non-hazardous areas. XD's are used with standard rigid conduit or PVC rigid conduit. (PVC requires rigid metal conduit nipples and rigid metal-to-PVC conduit adapters.) XD's provide a flexible and watertight connection for protection of conduit wiring systems from damage due to movement.

Typical applications include:

- Underground conduit feeder runs
- Runs between sections of concrete subject to relative movement
- Runs between fixed structures
- Conduit entrances in high-rise buildings
- Bridges
- Marinas, docks, piers

Features:

- XD couplings accommodate the following movements without collapsing or fracturing the conduit, and damaging the wires it contains:

1. Axial expansion or contraction up to ¾″
2. Angular misalignment of the axes of the coupled conduit runs in any direction to 30°
3. Parallel misalignment of the axes of coupled conduit runs in any direction to ¾″

- Inner sleeve maintains constant I.D. in any position and provides a smooth insulated wireway for protection of wire insulation
- Watertight flexible neoprene outer jacket is corrosion resistant and protects the grounding strap and the attachment points of the hubs
- Tinned copper flexible braid grounding straps assure grounding continuity
- Stainless steel jacket clamps for strength and corrosion resistance
- Standard tapered electrical threads fit standard rigid conduit
- Integral hub bushing protects insulation of conductors

Standard Materials:

- Hubs – *Feraloy*® iron alloy
- Outer jacket – molded neoprene
- Jacket clamps – stainless steel
- Inner sleeve – molded plastic
- Grounding straps – tinned copper flexible braid

Standard Finishes:

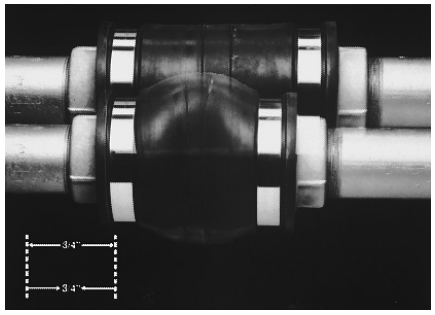
- *Feraloy* – electrogalvanized
- Neoprene – natural (black)
- Molded plastic – natural (brown)

Certifications and Compliances:

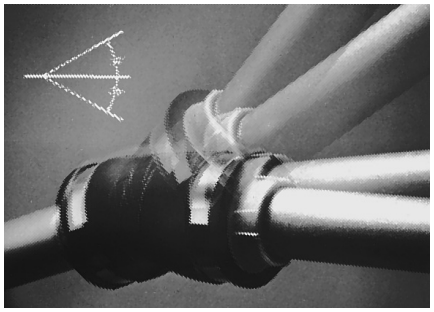
- UL standards: 514B

Size Ranges:

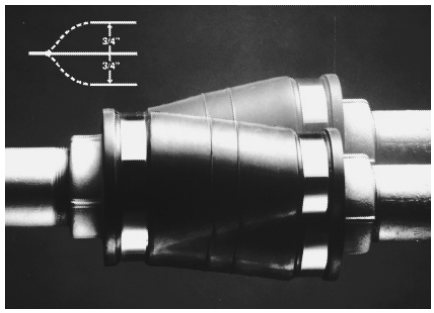
- 1″ to 6″ (Smaller sizes can be obtained by using reducing bushings)



1. Axial expansion/contraction.



2. Angular misalignment.



3. Parallel misalignment.

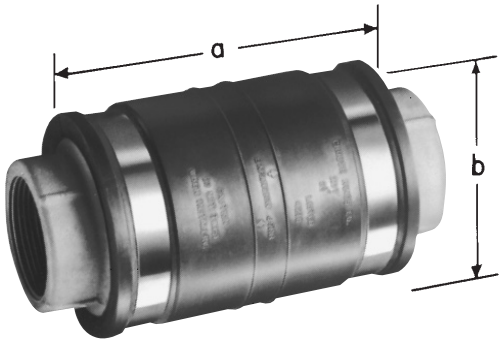
XD

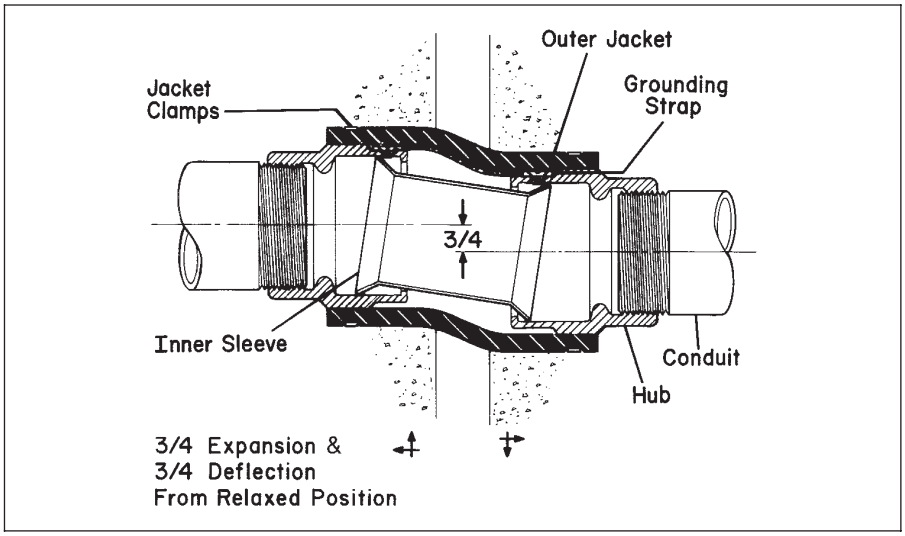
Ordering Information

Hub Size	Cat. #	Hub Size	Cat. #
1	XD3	3	XD8
1¼	XD4	3½	XD9
1½	XD5	4	XD010
2	XD6	5	XD012
2½	XD7	6	XD014

Dimensions

Hub Size	a	b
1	7	3 15/16
1¼	7 3/8	4¼
1½	7¼	4½
2	7¼	4 15/16
2½	7½	5 5/16
3	7 5/8	5 15/16
3½	7¾	6½
4	7⅞	6 15/16
5	7¾	8
6	8⅜	9





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CP XJG Conduit Expansion Joints With Internal Grounding For Rigid Metal Conduit and IMC

Application:

XJG expansion couplings are used with rigid metal conduit and IMC:
- **without** the need for an external bonding jumper and clamps (up to 4″)
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body
- Steel-electrogalvanized
- Copper-free aluminum - natural
- Feraloy® iron alloy - electrogalvanized (5″ + 6″ only)

Reducer
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 6″ - *Feraloy®* iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Gland Nut
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 6″ - *Feraloy®* iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Packing
- Teflon® (trademark of E.I. DuPont Co.)

Washer
- Steel - electrogalvanized
- Copper-free aluminum - natural

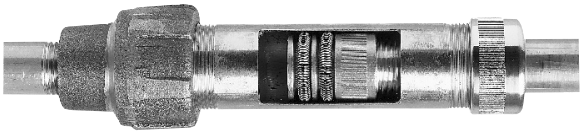
Gasket
- Vellum

Bushing
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 6″ - *Feraloy®* iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Ground Springs
- Phosphor bronze - electrogalvanized

Ground Strap
- Braided tinned copper

U-Bolts
- Malleable iron – electrogalvanized



Patent Pending*

XJG – For use with rigid metal conduit and IMC

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper	A Diameter	B Length	Bonding Jumper Length
½	4	XJG14	BJ14	1.75	6.75	20″
	8	XJG18	BJ18	1.75	10.75	30″
¾	4	XJG24	BJ24	2.12	6.75	20″
	8	XJG28	BJ28	2.12	10.75	30″
1	4	XJG34	BJ34	2.43	7.25	20″
	8	XJG38	BJ38	2.43	11.25	30″
1¼	4	XJG44	BJ44	3.19	7.56	24″
	8	XJG48	BJ48	3.19	11.56	30″
1½	4	XJG54	BJ54	3.68	7.87	24″
	8	XJG58	BJ58	3.68	11.87	30″
2	4	XJG64	BJ64	4.75	8.25	24″
	8	XJG68	BJ68	4.75	12.25	30″
2½	4	XJG74	BJ74	4.87	9.31	24″
	8	XJG78	BJ78	4.87	13.31	36″
3	4	XJG84	BJ84	5.37	10.00	30″
	8	XJG88	BJ88	5.37	14.00	36″
3½	4	XJG94	BJ94	6.62	9.81	30″
	8	XJG98	BJ98	6.62	13.81	36″
4	4	XJG104	BJ104	6.62	9.81	30″
	8	XJG108	BJ108	6.62	13.81	36″
5	8	XJ128‡	—	7.64	15.50	—
6	8	XJ148‡	—	9.56	16.00	—

Options:

Available in copper-free aluminum – add suffix SA to Cat. No.
Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

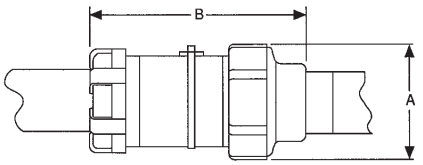
Size Ranges:

- ½″ through 6″ conduit size
- 4″ and 8″ maximum conduit movement

Certifications and Compliances:

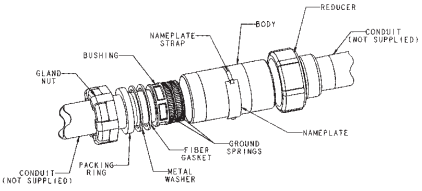
- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1
- Wet Locations

Dimensions





XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.
† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

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XJG-EMT Conduit Expansion Joints With Internal Grounding For EMT Conduit

Application:

XJG expansion couplings are used with EMT Conduit:

- **without** the need for an external bonding jumper and clamps
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body
- Steel-electrogalvanized
- Copper-free aluminum - natural

Reducer
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 4″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Gland Nut
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 4″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Packing
- Teflon® (trademark of E.I. DuPont Co.)

Washer
- Steel - electrogalvanized

Gasket
- Vellum

Bushing
- ½″ through 1″ - Steel - electrogalvanized
- 1¼″ through 4″ - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Ground Springs
- Phosphor bronze - electrogalvanized

Ground Strap
- Braided tinned copper

U-Bolts
- Malleable iron – electrogalvanized

Options:

Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

Size Ranges:

- ½″ through 4″ conduit size
- 4″ maximum conduit movement

Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1

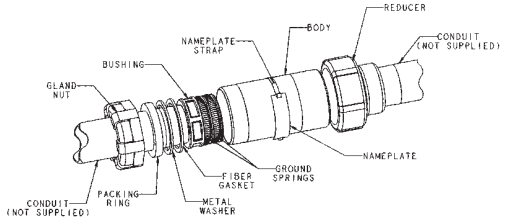


XJG-EMT – for use with EMT conduit

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper	A Diameter	B Length
½″	4″	XJG14-EMT	BJ14	1¾″	10¾″
¾″	4″	XJG24-EMT	BJ24	2⅛″	11″
1″	4″	XJG34-EMT	BJ34	2⁷⁄₁₆″	11½″
1¼″	4″	XJG44-EMT	BJ44	3⅛″	15¼″
1½″	4″	XJG54-EMT	BJ54	3⅝″	15½″
2″	4″	XJG64-EMT	BJ64	4¾″	15½″
2½″	4″	XJG74-EMT	BJ74	4⅞″	18¾″
3″	4″	XJG84-EMT	BJ84	5⅜″	19⅞″
3½″	4″	XJG94-EMT	BJ94	6⅝″	21¼″
4″	4″	XJG104-EMT	BJ104	6⅝″	21¼″



XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.
† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

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CP XJGD Combination Expansion/Deflection Coupling and Expansion Joint Internally Grounded

Application:

XJGD combination fittings are used with rigid metal conduit and IMC:

- to accommodate axial expansion, angular misalignment and parallel misalignment
- to couple together two (2) sections of conduit subject to longitudinal movement
- to maintain a ground connection *without the need for an external bonding jumper and clamps*
- in long conduit runs to prevent conduit from buckling and causing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature swings
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge

Standard Materials:

- Body, Hubs, Gland Nut, Washer, Bushing – *Feraloy*®
- Packing – Teflon®
- Gasket – vellum
- Ground Spring – phosphor bronze
- Outer Jacket – molded neoprene
- Jacket Clamps – stainless steel
- Inner Sleeve – molded plastic
- Ground Straps – tinned copper braid

Standard Finishes:

- *Feraloy*® – electrogalvanized

Certifications and Compliances:

- UL standard: 514B



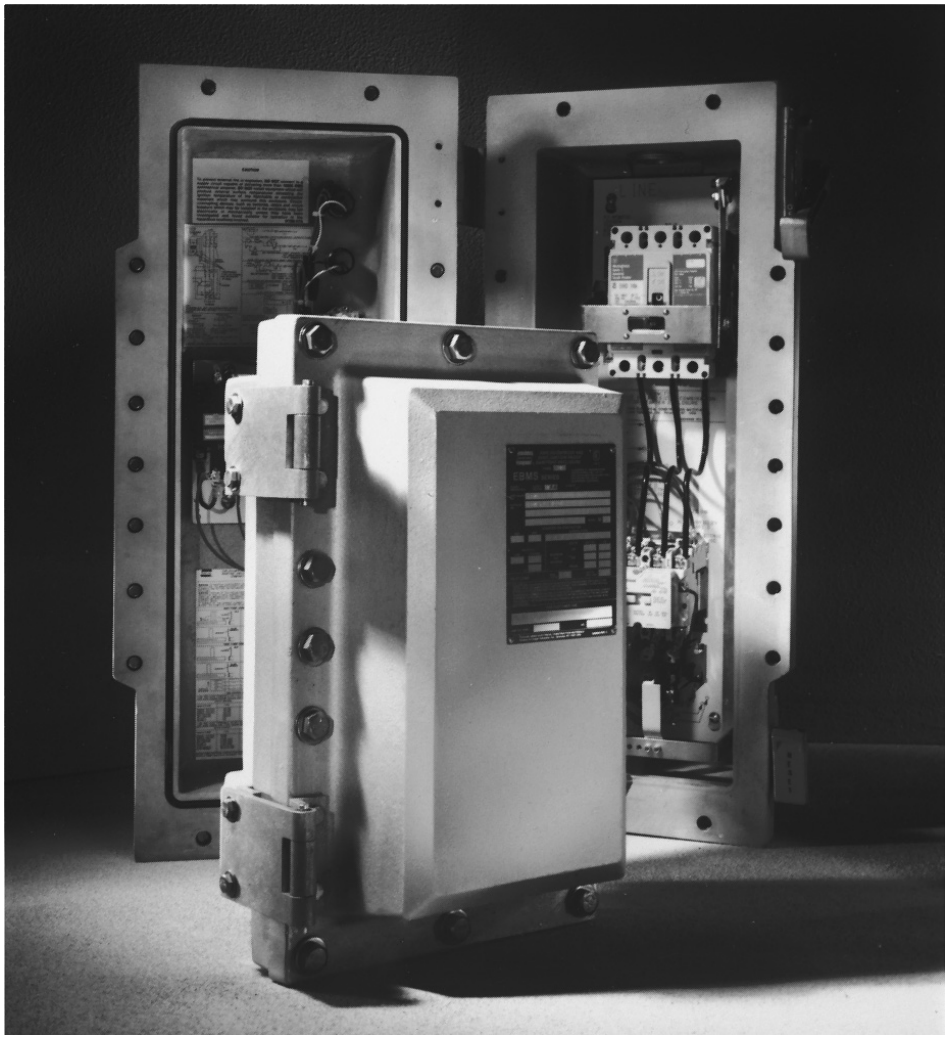
XJGD Ordering Information

Hub Size	Maximum Conduit Movement	Catalog Number	A Diameter	B Length
1″	4″	XJGD34	3 15/16″	17 3/4″
1 1/4″	4″	XJGD44	4 1/4″	18 1/8″
1 1/2″	4″	XJGD54	4 1/2″	18 5/8″
2″	4″	XJGD64	4 15/16″	19 1/4″
2 1/2″	4″	XJGD74	5 5/16″	20 3/4″
3″	4″	XJGD84	5 15/16″	21 5/8″
3 1/2″	4″	XJGD94	6 1/2″	21 5/8″
4″	4″	XJGD104	8″	27 3/4″

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Industrial Control & Circuit Breakers

Section C



COOPER Crouse-Hinds

C Industrial Control and Circuit Breakers

Table of Contents

Section C of the Cooper Crouse-Hinds Product Catalog lists motor control, circuit breakers, control stations and enclosures. Information on application, features, standard materials, standard finishes, size ranges, compliances, options, and accessories are presented for ease of product selection.

A technical section (6C), contains additional data relating to motor controls and circuit breakers that can be incorporated in Cooper Crouse-Hinds enclosures.

Information relating to product families in Section C is grouped as follows†:

Section 1C
Combination Motor Starters
(for hazardous areas)

Combination magnetic line starters and enclosures for across-the-line motor starting, motor disconnect, motor and line protection, and start-stop operations.

For hazardous areas
EBMC
EPC

Section 2C
Motor Starters
(for hazardous and non-hazardous areas)

Line starters and enclosures for manual and magnetic across-the-line starting of motors, motor protection, and remote and manual starting and stopping.

Magnetic starters	Manual starters
EBMS	EFD
EPC	EDS
	EMN
	MC
	GHG

Section 3C
Circuit Breakers
(for hazardous areas)

For use in conjunction with variety of heating, lighting, and power circuits to provide disconnect means and short circuit protection.

For hazardous areas
EBMB FLB
EFD
EPC
EIB

Section 4C
Control Stations
(for hazardous and non-hazardous areas)

For means of remote and local motor control, visual indicators and circuit control and selection. Offers a selection of push buttons, pilot lights, selector switches.

For hazardous areas		For non-hazardous areas
AFAX, AFA	DSD	AFU
AFS	EMP	MC
AFUX, AFU	Flex	
EDSCM	Station	
EFS	OAC	
EGL	EGF	
D2X		
EDS		

For hazardous and non-hazardous areas EJB control panels.

Section 5C
Factory Sealed Control Devices
(for hazardous and non-hazardous areas)

For means of remote and local motor control, visual indicators and circuit control and selection. Offers a selection of push buttons, pilot lights, selector switches.

Factory sealed devices:
- reduce installation problems
- eliminate external seals
- lower installation costs
- improve reliability

EDS	EFD/EFS
EDSC	D2X

Section 6C
Technical Information
Complete data and listings for circuit breaker selection, motor starter and heater tables and listings, wiring diagrams, etc.

Section 7C
Rack Assemblies
(for hazardous and non-hazardous areas)

For motor control centers in outdoor and/or hazardous areas.

For hazardous areas	For non-hazardous areas
ERK	WRK
DRK	

Section 8C
Intrinsically Safe Products
For protection of instrumentation in hazardous locations.

SB	GRD Bar
SA	SF
	IS Labels

† A detailed index for the entire catalog is located in the General Section of the catalog; a detailed index for each product section appears on the tab divider for each section.

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Description	Page No.
Application/Selection	326
Combination Line Starters and Enclosures	
Single speed, non-reversing, with circuit breakers & disconnect switches	
EBMC Series	327-332
EPC Series	336-338
EBMC Series with Advantage* Starter	334, 345
Single speed, non-reversing, with motor circuit protectors	
EBMC Series	333
EPC Series	339

*Advantage is a trademark of Cutler-Hammer Inc.

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1C Combination Motor Starters

Application, Selection Quick Selector Chart

Application:

Combination line starters are housed in enclosures suitable for specific environments, and are used for:
- across-the-line starting of polyphase ac induction motors
- providing disconnect means
- branch circuit protection
- motor running protection
- remote starting and stopping

Considerations for Selection:

Considerations for selection of proper enclosure:
- The environment of the enclosure location in accordance with NEC/CEC and NEMA/EEMAC requirements
- The characteristics of the starter and breaker to be enclosed
- See ''Quick-Selector'', below for guidance

Options and Accessories:

Some of the options and accessories available for particular applications are:
- push buttons
- selector switches
- control transformers
- extra overload relays
- extra interlock contacts
- neutral connectors (both insulated and grounded)
- breathers and drains

See individual listings for specific options. Many are available in kit form for field addition to existing units

Materials and Finishes:

- Standard material is copper-free aluminum with natural finish
- Optional finish is *Corro-free*™ epoxy for use in exceptionally corrosive atmospheres

Quick Selector Chart

Enclosures for Combination Motor Starters

Enclosures	NEC/ CEC – Hazardous Area Certifications and Compliance	NEMA/ EEMAC Enclosure Type	NEMA/EEMAC Starters	Manufacturers Equipment Enclosed		
			Single Speed Non-Reversing	Starter	Breaker/ Switch	Cover Type
EBMC	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4*, 7BCD, 9EFG, 12	0 – 5	Allen-Bradley G.E. Square D Cutler-Hammer	G.E. Square D Cutler-Hammer	Bolted/Ground Joint/Gasketed
EPC	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4, 7CD, 9EFG, 12	0 – 3	Allen-Bradley Cutler-Hammer G.E. Square D	G.E. Square D Cutler-Hammer	Threaded

* Without EMP control devices

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EBMC Combination Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

Spectrum EBM™ hinged cover motor control enclosures are used:
- for general motor control and circuit protection – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter
- in areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent
- for across-the-line starting, stopping, speed changing and reversing of polyphase ac induction motors
- to provide line disconnect means and short circuit protection
- to provide motor overload and undervoltage protection
- for service entrance, feeder or branch circuit protection for lighting, heating, appliance and motor circuits
- on switchracks or other assemblies where it's desired that motor control be centrally located

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction (less than 0.4 of 1%)
- Component operating handles located through the right side wall of the body permits visual confirmation of correct component assembly and operation
- Total compliance to the wiring end room requirements of the National Electrical Code*/Canadian Electrical Code
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure
- Copper-free aluminum hinges allow the cover to swing well out of the way
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' starters and breakers
- Simple, straightforward installation of breaker and starter on pre-drilled mounting plate within enclosure. Mounting plate also field removable
- Circuit breaker motor circuit protector external operating handle can be padlocked in either ''ON'' or ''OFF'' positions
- Neoprene cover gasket permanently attached to the cover seals out moisture
- Bodies have top and bottom drilled and tapped entrances for power conduits plus one at the bottom for control conduit. Removable reducers are supplied, as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap-on mounting feet



Interior components are readily accessible with ample end room for wiring

- Optional EMPS control devices may be added to enclosure cover
- Steel bracket for lifting larger enclosures during installation supplied as standard

Certifications & Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2; Groups B,C,D
  - Class II, Division 1; Groups E,F,G
  - Class II, Division 2; Groups F,G
  - Class III
- UL Standards UL1203 – Hazardous (classified) locations
- UL Subject 2062 - High AIC rating (Interrupting Capacity) For Groups C & D only

Volt	RMS Symm-Amperes
240	65,000
480	50,000
600	25,000

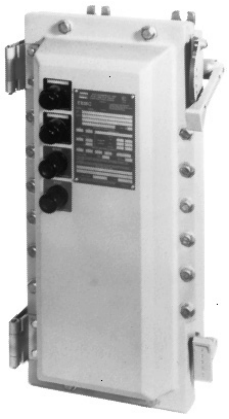
- CSA Standard: C22.2 No. 30
- NEMA/EEMAC: 3, 3R, 4‡, 7BCD, 9EFG, 12

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Cover bolts, washer and retractile springs – stainless steel
- Interior parts – sheet steel, electrogalvanized

Electrical Rating Range:

- Motor starters – NEMA/EEMAC sizes 0-5
- Circuit breakers – 100, 150, 225, 250, 400, 600, 800, 1000† ampere frame sizes
- Motor circuit protectors – 150, 250, 400 ampere frame sizes



Side operators leave cover free for control options

* National Electrical Code is a Registered Trademark of the National Fire Protection Association.

† 1000 Ampere Frame (max. 800 ampere trip)

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMC Combination Line Starters and Enclosures

Single Speed Non-Reversing 3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight

Options:

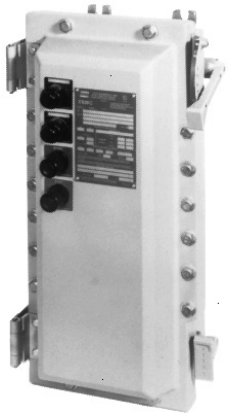
The following options are available from the factory by adding suffix to catalog number – suffixes are added alphanumerically.

Catalog Number System Example

EBMC1FB-(A)-DT30FAL36-W643-(B)

(A) Options in this position are additions to the enclosure itself and should be listed alphanumerically.

(B) Options in this position are modifications to the starter and/or circuit breaker and should be listed alphanumerically.



EBMC Series motor control enclosures with combination line starters.

When specifying any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order **DSL** Legend Plates for identification and marking of the device(s) being used.

Description	Suffix to be added to Cat. No.	Position in Cat. No.
● Ambient compensated circuit breaker trip setting	AC	B
● Less overload relays (lighting contactor)	CL	A
● Less overload relays (motor contactor)	CM	A
● Control Circuit Transformer, 100VA for NEMA/EEMAC sizes 0-2, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not provided)	FTPS100	A
● Control Circuit Transformer, 200VA for NEMA/EEMAC size 3, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not provided)	FTPS200	A
● Control Circuit Transformer, 300VA for NEMA/EEMAC size 4, 5 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not provided)	FTPS300	A
● Pilot light, 120VAC, red jewel, w/blank indicating plate	J1	A
● Pilot light, 120VAC, green jewel, w/blank indicating plate	J3	A
● LED pilot lights (in place of standard incandescent lamps)	LED	A
● Less heaters in starter overload relay	0	B
● Start-Stop pushbuttons (requires 2 spaces)	PB23‡	A
● On-Off selector switch	RR2‡	A
● Hand-Off-Auto selector switch	RR3‡	A
● Space heater, 120 Volt, 25 Watts	R11	A
● Space heater, 240 Volt, 25 Watts	R22	A
● Space heater, 480 Volt, 25 Watts	R44	A
● Automatic reset overload relay	S1	A
● Insulated neutral w/2 connectors	S146	A
● Std. drain, Class I, B,C & D; Class II, E, F & G; Class III	S756‡	A
● Std. breather & drain, Class I, B,C & D; Class II, E, F & G; Class III	S756V‡	A
● Side conduit entrances (check factory for application)	S366	A
● Back conduit entrances (check factory for application)	S367	A
● External epoxy finish	S752	A
● Internal and external epoxy finish	S753	A
● Additional control contacts, N.O. or N.C. – for single speed, non-reversing starters only (number limited by design of starter. Details on specific makes and sizes on request.)		
Auxiliary contacts on starter 1 N.O. & 1 N.C.	S781	B
Auxiliary contacts on starter 2 N.O. & 2 N.C.	S782	B
Auxiliary contacts on starter 3 N.O. & 3 N.C.	S783	B
● Auxiliary switch on Circuit Breaker 1A and 1B contacts	S784	B
● Auxiliary switch on Circuit Breaker 2A and 2B contacts	S785	B
● 12 Point term. block – 30 Amp, 300V	S786	A
● General purpose control relay, 4 pole N.O., contacts rated 10A @600V, coil 120VAC, 50-60 hertz	S787*	A

* Use of this option with NEMA/EEMAC Size 0, or 1 starters necessitates using the larger ''D'' size enclosure.
‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMC Combination Line Starters and Enclosures

Single-Speed Non-Reversing 3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12 Watertight

Options:

- When specifying non-standard markings on any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order **DSL** Legend Plates for identification and marking of the device(s) being used.
- Insert Legend Plate(s) Catalog Number (i.e. DSL16) immediately after optional device in the EBM Catalog Number.
  Example:
  EBMC1FB-J1-DSL14-J3-DSL09-DT30FAL36-W643
- If EMP devices are to be added in the field, DSL Legend Plates must be ordered separately as they are not furnished with the EMP/EMPS devices.

Use the charts below to select the appropriate legend plate(s) for your application. Markings shown in **bold print** are etched; all others are stamped.

Single Function Legend Plates

Marking	Cat. #
Automatic	DSL16
Blank	DSL01
Blank with single field	DSL02
Close	DSL21
Down	DSL23
Emerg. Stop	DSL17
Fast	DSL46
Forward	DSL18
Hand	DSL15
In	DSL24
Jog	DSL10
Lower	DSL27
On	DSL07
Off	DSL08
Open	DSL20
Out	DSL25
Power On	DSL14
Raise	DSL26
Reset	DSL12
Reverse	DSL19
Run	DSL09
Safe	DSL85
Slow	DSL47
Start	DSL05
Stop	DSL06
Test	DSL13
Trip	DSL11
Up	DSL22

Two Function Legend Plates

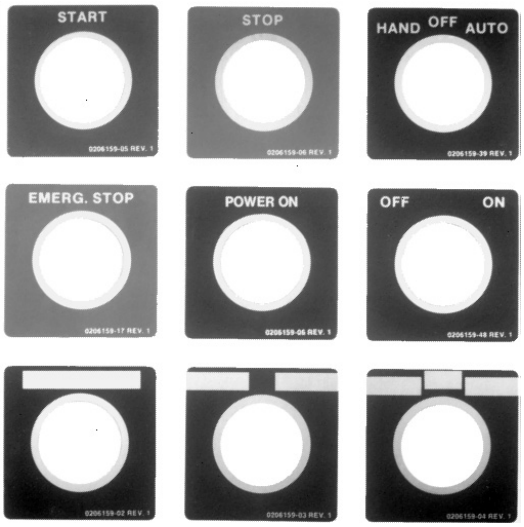
Marking	Cat. #
Blank with 2 fields	DSL03
For-Rev	DSL30
Hand-Auto	DSL29
In-Out	DSL35
Off-On	DSL48
Open-Close	DSL32
Raise-Lower	DSL36
Run-Jog	DSL28
Safe-Run	DSL86
Start-Stop	DSL37
Slow-Fast	DSL65
Up-Down	DSL33

Three Function Legend Plates

Marking	Cat. #
Auto-Off-Hand	DSL49
Blank with 3 fields	DSL04
Fast-Off-Slow	DSL41
For-Off-Rev	DSL40
Hand-Off-Auto	DSL39
Run-Off-Jog	DSL38
Open-Off-Close	DSL43
Raise-Off-Lower	DSL87
Slow-Off-Fast	DSL88
Up-Off-Down	DSL44
1-Off-2	DSL42

Note: Background color for all legend plates is black with the following exceptions:

Marking	Plate Color
Start	Green
Stop	Red
Emerg. Stop	Red



‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

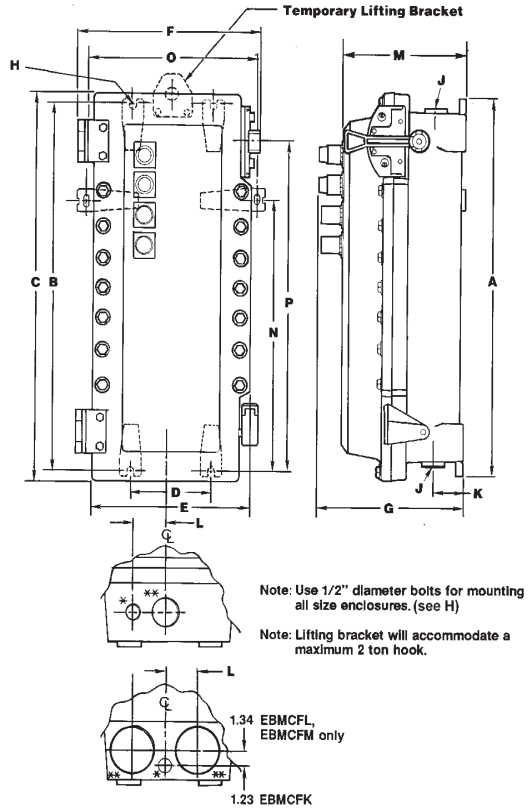
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EBMC Combination Line Starters and Enclosures

Dimensions (inches)†

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight



* 1″ Conduit entrance for control conductors (top & bottom).

** Conduit entrance for power conductors (top & bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

	Enclosure Only Cat. No.	Enclosure Size Symbol	A	B	C	D	E	F	G	J** Conduit Entry Trade size D&T♦	J** Conduit Entry Trade size w/RE	K	L	M	N	O	P
Size 0, 1 FVNR combination line starter§	EBMCFB✓	B	25.75	24.75	26.90	6.00	13.03	14.78	12.13	2″	1.5″	3.25	3.13	10.25	—	—	22.00
Size 2 FVNR combination line starter	EBMCFD✓	D	28.25	27.25	29.40	6.00	13.03	14.67	12.13	3″	2.5″	3.25	3.13	10.25	—	—	24.50
Size 3 FVNR combination	EBMCFG***	G	38.13	36.50	39.28	6.00	13.03	14.78	12.13	3″	2.5″	3.25	3.13	10.25	—	—	34.06
line starter	EBMCFH✓	H	37.50	36.50	38.65	6.00	14.65	16.65	13.54	3″	2.5″	3.25	3.94	11.66	—	—	33.75
Size 4 FVNR combination	EBMCFK***	K	43.12	41.50	42.65	12.00	17.65	20.46	12.80	(2) 3″	(2) 2.5″	3.25	3.00	10.78	—	—	19.97
line starter	EBMCFL✓	L	53.47	51.50	53.28	12.00	17.90	20.58	15.00	(2) 4″	(2) 3.5″	4.00	3.50	13.03	41.50	18.40	29.88
Size 5 FVNR combination line starter	EBMCFM✓	M	64.22	62.50	64.03	12.00	17.90	21.08	15.00	(2) 4″	(2) 3.5″	4.00	3.50	13.03	41.50	18.40	34.46

§ Use EBMCFD enclosure when LVR1 or S787 options are ordered with Size 0 or 1 combination starters.

† Dimensions are approximate, not for construction purposes.

*** For Cutler-Hammer W200 Advantage® starters.

♦ Drilled & Tapped.

✓ – available with Lightning Service™ delivery.
See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMC Combination Line Starters and Enclosures

Single-Speed Non-Reversing with Circuit Breakers
3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



Ordering Information:

To order an enclosure complete with starter and breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes on page 332.

Select the complete Cat. No. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters. ♦ ♦ Starters are furnished with three heaters when heater ratings are fully specified.

Enclosures only can be ordered. Select from listings below. For starters that can be accommodated see Table 1 in Section 6C. Circuit breakers are also listed in Section 6C.

Instantaneous magnetic trip circuit breakers (magnetic circuit interrupters) can be supplied. See listings in Section 6C.

Combination starters with motor circuit protectors for single speed, non-reversing motors are listed on page 333. Listings of circuit protectors are shown in Table 14 in Section 6C.

Motor Starter			Circuit Breaker			Enclosure	
Max. HP Poly-phase	Line Volts	NEMA Size	Amp Rating	Frame Volts	Frame Types	Without Breaker & Starter Cat. No.	With Breaker & Starter Cat. No. ♦ ♦
2	120	0	30	240	FAL, TEB	EBMCFB✓	EBMC0FB-†30♦32-‡613
2	120	0	30	480	FAL, TED, EHD	EBMCFB✓	EBMC0FB-†30♦34-‡613
2	120	0	30	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†30♦36-‡613
3	240	0	20	240	FAL, TEB	EBMCFB✓	EBMC0FB-†20♦32-‡623
3	240	0	20	480	FAL, TED, EHD	EBMCFB✓	EBMC0FB-†20♦34-‡623
3	240	0	20	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†20♦36-‡623
5	480	0	15	480	FAL, TED, EHD	EBMCFB✓	EBMC0FB-†15♦34-‡643
5	480	0	15	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†15♦36-‡643
5	600	0	15	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†15♦36-‡663
5	240	1	30	240	FAL, TEB	EBMCFB✓	EBMC1FB-†30♦32-‡623
5	240	1	30	480	FAL, TED, EHD	EBMCFB✓	EBMC1FB-†30♦34-‡623
5	240	1	30	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†30♦36-‡623
7½	240	1	50	240	FAL, TEB	EBMCFB✓	EBMC1FB-†50♦32-‡623
7½	240	1	50	480	FAL, TED, EHD	EBMCFB✓	EBMC1FB-†50♦34-‡623
7½	240	1	50	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†50♦36-‡623
10	480	1	30	480	FAL, TED, EHD	EBMCFB✓	EBMC1FB-†30♦34-‡643
10	480	1	30	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†30♦36-‡643
10	600	1	30	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†30♦36-‡663
10	240	2	50	240	FAL, TEB	EBMCFD✓	EBMC2FD-†50♦32-‡623
10	240	2	50	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†50♦34-‡623
10	240	2	50	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†50♦36-‡623
15	240	2	70	240	FAL, TEB	EBMCFD✓	EBMC2FD-†70♦32-‡623
15	240	2	70	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†70♦34-‡623
15	240	2	70	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†70♦36-‡623
15	480	2	40	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†40♦34-‡643
15	480	2	40	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†40♦36-‡643
15	600	2	40	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†40♦36-‡663
20	480	2	50	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†50♦34-‡643
20	480	2	50	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†50♦36-‡643
20	600	2	50	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†50♦36-‡663
25	480	2	70	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†70♦34-‡643
25	480	2	70	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†70♦36-‡643
25	600	2	70	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†70♦36-‡663
20	240	3	90	240	FAL, TEB	EBMCFH✓	EBMC3FH-†90♦32-‡623
25	240	3	100	240	FAL, TEB	EBMCFH✓	EBMC3FH-†100♦32-‡623
30	240	3	125	480	TED	EBMCFH✓	EBMC3FH-†125♦34-‡623
30	480	3	70	480	FAL, TED, EHD	EBMCFH✓	EBMC3FH-†70♦34-‡643
30	480	3	70	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†70♦36-‡643
30	600	3	70	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†70♦36-‡663

♦ †‡ See page 332 for footnotes.

✓ – available with Lightning Service™ delivery.
See Section G for complete details.

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EBMC Combination Line Starters and Enclosures

Single-Speed Non-Reversing with Circuit Breakers and Fusible Disconnect Switches 3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight

Motor Starter			Circuit Breaker			Enclosure	
Max. HP Poly-phase	Line Volts	NEMA Size	Amp Rating	Frame Volts	Frame Types	Without Breaker & Starter Cat. No.	With Breaker & Starter Cat. No. ♦ ♦
40	480	3	90	480	FAL, TED, EHD	EBMCFH✓	EBMC3FH-†90♦34-*643
40	480	3	90	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†90♦36-*643
40	600	3	90	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†90♦36-*663
50	480	3	100	480	FAL, TED, EHD	EBMCFH✓	EBMC3FH-†100♦34-*643
50	480	3	100	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†100♦36-*643
50	600	3	100	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†100♦36-*663
40	240	4	175	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†175♦36-*623
50	240	4	200	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†200♦36-*623
60	480	4	125	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†125♦36-*643
60	600	4	100	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†100♦36-*663
75	480	4	150	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†150♦36-*643
75	600	4	125	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†125♦36-*663
100	480	4	200	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†200♦36-*643
100	600	4	150	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†150♦36-*663
125	480	5	300	600	TJK/ KD/ LAL, TJJ, KDB	EBMCFM✓	EBMC5FM-†300♦36-*643
150	480	5	400	600	TJK/ KD/ LAL, TJJ, KDB	EBMCFM✓	EBMC5FM-†400♦36-*643

Motor Starter			Fusible Disconnect Switch			With Disconnect Switch & Starter Cat. No.
Max. HP Poly-phase	Max. Line Volts	NEMA Size	Amp Rating	Max. Volts	Switch Type	
5	600	0	30	600	DS161R	EBMC0FD-WFD30J36-W643
10	600	1	30	600	DS161R	EBMC1FD-WFD30J36-W643
25	600	2	60	600	DS262R	EBMC2FD-WFD60J36-W643
30	600	3	100	600	DS363R	EBMC3FH-WFD100J36-W643

NEMA Size	Without Switch & Starter Cat. No.
0	EBMCFD-FD
1	EBMCFD-FD
2	EBMCFD-FD
3	EBMCFH-FD

† Circuit Breakers:

Manufacturer	Symbol
Cutler-Hammer	WT
General Electric	TT
Square D	DT

♦ Select Circuit Breaker **Frame Type** based on Frame Size, Voltage, and Manufacturer desired:

♦ ♦ Starters are furnished with 3 heaters, when heater ratings are fully specified.

	100 Amp. Frame and 150 Amp. Frame			225 Amp. Frame and 250 Amp. Frame	400 Amp. Frame
Manufacturer	240VAC	480VAC	600VAC	600VAC	600VAC
Cutler-Hammer	—	EHD	FDB	JD – Interchangeable Trip Unit JDB – Non-Interchangeable Trip Unit	KD – Interchangeable Trip Unit KDB – Non-Interchangeable Trip Unit
General Electric	TEB	TED	TED	TFK – Interchangeable Trip Unit TFJ – Non-Interchangeable Trip Unit	TJK – Interchangeable Trip Unit TJJ – Non-Interchangeable Trip Unit
Square D	FAL	FAL	FAL	KAL	LAL

* Motor Starters:

Manufacturer	Symbol
Allen Bradley	AB
Square D	D
General Electric	G
Cutler-Hammer	W

✓ – available with Lightning Service™ delivery.
See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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COOPER Crouse-Hinds

EBMC Combination Line Starters

Single-Speed Non-Reversing with Motor Circuit Protectors 3-Pole 60 hertz, 600VAC Maximum

CI. I, Div. 1 & 2, Groups B,C,D
CI. II, Div. 1, Groups E,F,G
CI. II, Div. 2, Groups F,G
CI. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



Ordering Information:

Select the complete catalog no. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motors or specify ampere rating of heaters.

♦ ♦ Starters are furnished with three heaters when heater ratings are fully specified. For starter catalog numbers refer to Table 1 in Section 6C. For motor circuit protector, refer to Table 14 in Section 6C.

Motor Starter Max. HP Polyphase	Volts	NEMA Size	MCP Amp Rating	Enclosure W/O Starter & MCP Catalog No.	Enclosure W/Starter & MCP Catalog No. ♦ ♦
3	240	0	15	EBMCFB✓	EBMC0FB-†15A♦36-**623
3	480	0	7	EBMCFB✓	EBMC0FB-†7A♦36-**643
3	600	0	7	EBMCFB✓	EBMC0FB-†7A♦36-**663
5	480	0	15	EBMCFB✓	EBMC0FB-†15A♦36-**643
5	600	0	15	EBMCFB✓	EBMC0FB-†15A♦36-**663
7½	240	1	30	EBMCFB✓	EBMC1FB-†30A♦36-**623
7½	480	1	15	EBMCFB✓	EBMC1FB-†15A♦36-**643
10	480	1	30	EBMCFB✓	EBMC1FB-†30A♦36-**643
10	600	1	15	EBMCFB✓	EBMC1FB-†15A♦36-**663
10	240	2	50	EBMCFD✓	EBMC2FD-†50A♦36-**623
15	240	2	100	EBMCFD✓	EBMC2FD-†100A♦36-**623
15	480	2	30	EBMCFD✓	EBMC2FD-†30A♦36-**643
20	600	2	30	EBMCFD✓	EBMC2FD-†30A♦36-**663
25	480	2	50	EBMCFD✓	EBMC2FD-†50A♦36-**643
25	600	2	50	EBMCFD✓	EBMC2FD-†50A♦36-**663
30	240	3	100	EBMCFH✓	EBMC3FH-†100A♦36-**623
30	600	3	50	EBMCFH✓	EBMC3FH-†50A♦36-**663
50	480	3	100	EBMCFH✓	EBMC3FH-†100A♦36-**643
50	600	3	100	EBMCFH✓	EBMC3FH-†100A♦36-**663
50	240	4	250①	EBMCFL✓	EBMC4FL-†250*♦36-**623
100	480	4	250①	EBMCFL✓	EBMC4FL-†250*♦36-**643
100	600	4	250①	EBMCFL✓	EBMC4FL-†250*♦36-**663
60	240	5	250①	EBMCFM✓	EBMC5FM-†250*♦36-**623
100	240	5	400	EBMCFM✓	EBMC5FM-†400*♦36-**623
125	480	5	250①	EBMCFM✓	EBMC5FM-†250*♦36-**643
150	600	5	250①	EBMCFM✓	EBMC5FM-†250*♦36-**663
200	480	5	400	EBMCFM✓	EBMC5FM-†400*♦36-**643
200	600	5	400	EBMCFM✓	EBMC5FM-†400*♦36-**663

① General Electric motor circuit protectors are 225 Amp. Rated.

† Motor Circuit Protectors:

Manufacturer	Symbol
Cutler-Hammer	WP
General Electric	TP
Square D	DP

♦ Select Motor Circuit Protector **Frame Type** based on Frame Size and Manufacturer desired:

	150 Amp. Frame	250 Amp. Frame	400 Amp. Frame
Cutler-Hammer	HMCP (F-Frame)	HMCP (J-Frame)	HMCP (K-Frame)
General Electric	TEC	TFC	TJC
Square D	FAL	KAL	LAL

** Motor Starters:

Manufacturer	Symbol
Allen Bradley	AB
Square D	D
General Electric	G
Cutler-Hammer	W

✓ – available with Lightning Service™ delivery. See Section G for complete details.
‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

* After the MCP amp rating the following character symbol must be entered to designate the trip range. Consult factory for other trip ranges available.

Cutler-Hammer (WP)

MCP Amp Rating	Symbol	Trip Range
7	A	21 to 70
15	A	45 to 150
30	A	90 to 300
50	A	150 to 500
100	A	300 to 1000
250	J	1250 to 2500
400	G	1250 to 2500

General Electric (TP)

MCP Amp Rating	Symbol	Trip Range
7	A	18 to 90
15	A	42 to 198
30	A	90 to 390
50	A	180 to 660
100	A	300 to 1308
225	B	1000 to 2250
400	C	1000 to 3300

Square D (DP)

MCP Amp Rating	Symbol	Trip Range
7	A	18 to 70
15	A	50 to 180
30	A	100 to 350
50	A	150 to 580
100	A	300 to 1100
250	H	1250 to 2500
400	E	1250 to 2500

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1C Spectrum™ EBM Enclosures

Supplied with Cutler-Hammer Advantage™* Starters

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Type 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

Spectrum EBM-E series of hinged cover motor control enclosures are used:
- for general motor control and circuit protection – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter.
- in areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- for across-the-line starting and stopping of polyphase ac induction motors.
- to provide line disconnect means and short circuit protection (EBMC).
- to provide motor overload and undervoltage protection.
- for feeder or branch circuit protection for lighting, heating, appliance, and motor circuits (EBMC).
- on switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Total compliance to the wiring end room requirements of the National Electrical Code®.
- Solid state electronic Cutler-Hammer Advantage™ starter.
- Smaller enclosures required than for conventional starter applications.
- Elimination of heater elements, contact chatter, and welding due to low voltage supply.
- Precise overcurrent protection and constant coil power.
- Same performance and labor-saving benefits from the versatile Spectrum EBM Enclosure product line.
- Universal mounting plates and hardware for all major manufacturers' components.
- Mercury switch electronic overload reset.
- Optional EMPS control devices may be added to enclosure cover.

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers, and retractile springs – stainless steel

Electrical Rating Ranges:

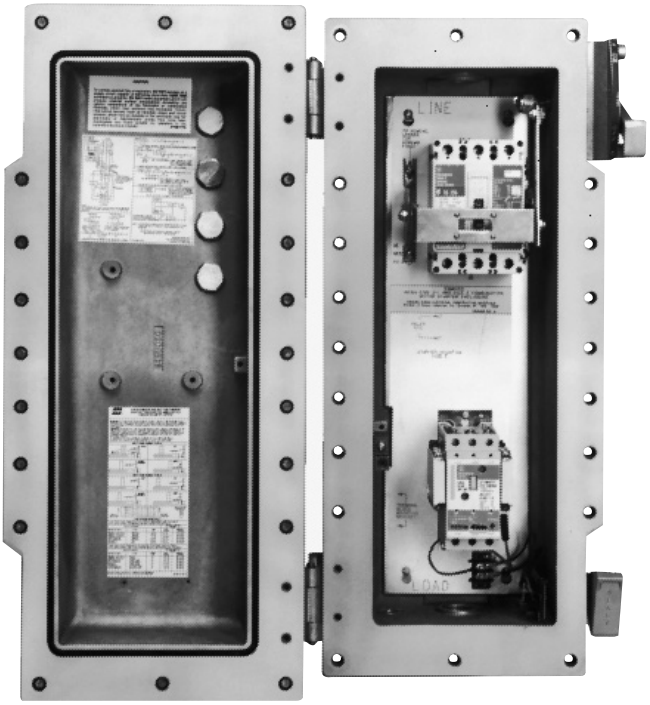
- Motor starters – NEMA sizes 1-5

Certifications and Compliances:

- NEC /CEC: Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G,
  Class II, Division 2, Groups F,G
  Class III
- UL Standards: UL1203 – Hazardous (classified) locations
- CSA Standard: C22.2 No. 30
- UL Subject 2062 - High AIC Ratings (Interrupting Capacity)

Volt	RMS Symm-Amperes
240	65,000
480	50,000
600	25,000

- NEMA: 3, 3R, 4‡, 7BCD, 9EFG, 12

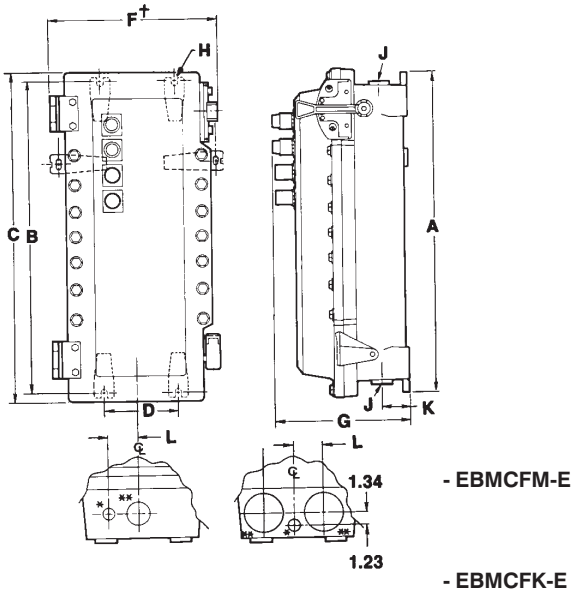


Spectrum EBM-E Series Combination Line Starter with Advantage Starter.

Options:

See page 310 for options for the EBM enclosures supplied with Cutler-Hammer Advantage starters. The following suffixes cannot be ordered with this style equipment: C, LVR1, O, S.

Dimensions (inches) - see page 335 for dimensions of different enclosure sizes



*Advantage is a trademark of Cutler-Hammer Products.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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Spectrum EBM Enclosures

Supplied with Cutler-Hammer Advantage™ Starters

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III,
Type 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

DIMENSIONS (inches)

Enclosure Only Cat. No.	Dimensions A	B	C	D	F	**J Conduit Entry Trade Size D&T	w/RE	K	L
EBMCFB-E	25.75	24.75	26.90	6.00	13.53	2″	1.5″	3.25	3.13
EBMCFG-E	38.13	36.50	39.28	6.00	12.53	3″	2.5″	3.25	3.13
EBMCFK-E	43.12	41.50	42.65	12.00	11.40	(2) 3″	(2) 2.5″	3.25	3.25
EBMCFM-E	64.22	62.50	64.03	12.00	15.40	(2) 4″	(2) 3.5″	4.00	4.00

''H'' – Use ½″ diameter bolts for all enclosures listed above.
* 1'' D&T conduit entry for control conductors supplied with PLG plug (top and bottom).
** Conduit entrance for power conductors (top & bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

Ordering Information – Combination Line Starters

● To order an enclosure complete with motor starter and circuit breaker (or motor circuit protector), insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes.

EBM ''E'' Series Combination Line Starters and Enclosures for Cutler-Hammer Advantage Starters, Single Speed Non-Reversing

Motor Starter			Circuit Breaker			Enclosure	
Max. HP Poly-phase	Line Volt	NEMA Size	Amp Trip	Frame Volts	Frame Type	Without Breaker & Starter Cat. # ♦	With Breaker (or Motor Circuit Protector) & Cutler-Hammer Advantage Starter Cat. #
7½	240	1	50	240	FAL, TEB	EBMCFB-E	EBMC1FB-†50*32-W6213-E
7½	240	1	50	480	FAL, TED, EHD	EBMCFB-E	EBMC1FB-†50*34-W6213-E
7½	240	1	50	600	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†50*36-W6213-E
10	480	1	30	480	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†30*34-W6413-E
10	480	1	30	600	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†30*36-W6413-E
10	600	1	30	600	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†30*36-W6613-E
15	240	2	70	240	FAL, TEB	EBMCFB-E	EBMC2FB-†70*32-W6213-E
15	240	2	70	480	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†70*34-W6213-E
15	240	2	70	600	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†70*36-W6213-E
25	480	2	70	480	FAL, TED, EHD	EBMCFB-E	EBMC2FB-†70*34-W6413-E
25	480	2	70	600	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†70*36-W6413-E
25	600	2	50	600	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†50*36-W6413-E
30	240	3	125	240	FAL, TEB	EBMCFG-E	EBMC3FG-†125*32-W6213-E
30	240	3	125	480	FAL, TED, EHD	EBMCFG-E	EBMC3FG-†125*34-W6213-E
30	240	3	125	600	FAL, TED, FDB	EBMCFG-E	EBMC3FG-†125*36-W6213-E
50	480	3	100	480	FAL, TED, EHD	EBMCFG-E	EBMC3FG-†100*34-W6413-E
50	480	3	100	600	FAL, TED, FDB	EBMCFG-E	EBMC3FG-†100*36-W6413-E
50	600	3	90	600	FAL, TED, FDB	EBMCFG-E	EBMC3FG-†90*36-W6613-E
50	240	4	200	600	TFK, JD, KAL, TFJ, JDB	EBMCFK-E	EBMC4FK-†200*W36-W6213-E
100	480	4	200	600	TFK, JD, KAL, TFJ, JDB	EBMCFK-E	EBMC4FK-†200*36-W6413-E
100	600	4	150	600	TFK, JD, KAL, TFJ, JDB	EBMCFK-E	EBMC4FK-†150*36-W6613-E
75	240	5	400	600	TJK, KD, LAL, TJJ, KDB	EBMCFM-E	EBMC5FM-†400*36-W6213-E
150	480	5	400	600	TJK, KD, LAL, TJJ, KDB	EBMCFM-E	EBMC5FM-†400*36-W6413-E
200	600	5	400	600	TJK, KD, LAL, TJJ, KDB	EBMCFM-E	EBMC5FM-†400*36-W6613-E

†With **Circuit Breakers:**

Manufacturer	Symbol
Cutler-Hammer	WT
General Electric	TT
Square D	DT

†With Motor Circuit Protectors: (Note: Only units with a **frame volts** of 600 are available with Motor Circuit Protectors):

Manufacturer	Symbol
Cutler-Hammer	WP
General Electric	TP
Square D	DP

* Select **Circuit Breaker Frame Type** based on Frame Size, Voltage, and Manufacturer desired.

	100 Amp Frame and 150 Amp Frame			225 Amp Frame and 250 Amp Frame	400 Amp Frame
Mfg.	240VAC	480VAC	600VAC	600VAC	600VAC
Cutler-Hammer	—	EHD	FDB	JD – Interchangeable Trip Unit JDB – Non-Interchangeable Trip Unit	KD – Interchangeable Trip Unit KDB – Non-Interchangeable Trip Unit
General Electric	TEB	TED	TED	TFK – Interchangeable Trip Unit TFJ – Non-Interchangeable Trip Unit	TJK – Interchangeable Trip Unit TJJ – Non-Interchangeable Trip Unit
Square D	FAL	FAL	FAL	KAL	LAL

* Select **Motor Circuit Protector Frame Type** based on Frame Size and Manufacturer desired. Before the frame type a character symbol must be entered to designate the trip range. See page 333 for appropriate symbol.

	150 Amp Frame (600 V)	250 Amp Frame (600 V)	400 Amp Frame (600 V)
Cutler-Hammer	HMCP (F-Frame)	HMCP (J-Frame)	HMCP (K-Frame)
General Electric	TEC	TFC	TJC
Square D	FAL	KAL	LAL

♦ Note: ''Enclosures only'' are supplied with necessary operators, linkages, and mercury switch electronic overload resets.
‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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1C EPC Combination Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

EPC combination line starters and enclosures are used:

- for across-the-line starting of polyphase ac induction motors
- in locations which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in damp, wet or corrosive locations
- for installation indoors or outdoors at petroleum refineries, chemical and petro-chemical plants and other process industry facilities where similar hazards exist
- to provide disconnecting means, motor branch circuit protection, motor running protection, undervoltage protection and remote starting and stopping due to the combination of thermal-magnetic circuit breaker and magnetic motor starter

Features:

- Quick-opening covers – less than two turns to remove or install
- Three section design for ease of installation
- Water-shedding construction with female threads on top cover, male threads on bottom cover, and top cover skirted
- Specially located stops and locks insure adequate thread engagement and prevent overtightening
- Separate replaceable mounting bracket attached to the rear of the body provides three-point suspension for quick installation and leveling – one keyhole slot at top and two open slots at bottom
- Bodies have two taper-tapped conduit hubs with integral bushings on the top, and two more directly below
- Universal mounting plate and reset mechanism will accommodate any of the motor starters and circuit breakers in catalog listing
- When interior mounting plate is removed, feeder and branch circuit conductors are easily pulled into the wiring chamber. The interior assembly, with breaker and starter attached, is then replaced, final connections made, and covers assembled
- External handle, which operates breaker can be padlocked in either ''ON'' or ''OFF'' positions
- Breaker is trip-free of the handle, therefore it will open under short circuit or overload, even if the external handle is locked in the ''ON'' position
- Furnished with third overload relay as standard

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

* Application is limited by starter, contactor, circuit breaker or motor circuit protector design – Consult Factory

Electrical Rating Range:

- Starters – Sizes 0 to 3 inclusive
- Breakers – 100 and 150 ampere frame sizes
- Motor Circuit Protectors – 100 ampere frame size

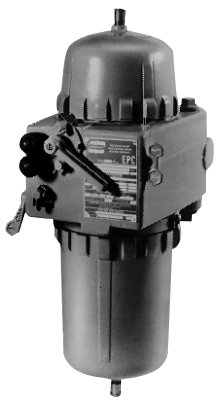
Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups C, D
  - Class II, Division 1, Groups E, F, G
  - Class II, Division 2, Groups F, G
  - Class III
- NEMA/EEMAC: 3, 4, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standards: C22.2 No. 30

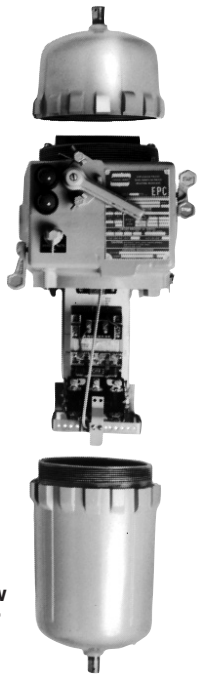
Options:

- The following special options are available from factory by adding suffix to Cat. No. and many are available in kit form or for field addition to existing units:

See page 352 for listing of kits



Assembled unit



Separated view showing major components

Description	Suffix to add to Encl. Cat. #
Control circuit transformer 600/480/240-120 volts, 50 or 60 hertz (Sizes 0 and 1 – 100-50 VA, Size 2 – 100-200 VA, Size 3 – 200-350 VA	
Fusible – Secondary	FT
Primary and secondary	FTPS
Auxiliary Contacts on Starter or Contactor*	
1 N.O./1 N.C.	S781
2 N.O./2 N.C.	S782
3 N.O./3 N.C.	S783
Auxiliary Switch on Circuit Breaker or Motor Circuit Protector*	
1A/1B (1P2T)	S784
2A/2B (2P2T)	S785
Side bosses drilled and tapped same size as standard hubs (except 15″ dia. – 1″ size)	S366
Back boss drilled and tapped same size as standard hubs (except 15″ dia. – 1″ size)	S367
Pushbuttons (heavy duty):	
START-STOP	PB3
Selector switches (standard duty):	
ON-OFF	RR2
HAND-OFF-AUTO	RR3
Pilot lights:	
Red, 120 volt	J1
Green, 120 volt	J3
LED pilot lights, in place of standard incandescent lamps	LED
Pilot light transformers:	
240 volt†	T2
480 volt†	T4
600 volt†	T5
Space heaters:	
120 volt	R11
240 volt	R22
480 volt	R44
Automatic reset overload relay	S1
Less overload relays (lighting contactor)	CL
Less overload relays (motor contactor)	CM
Separate ac control circuit	Specify
Insulated neutral with 2 connectors (50, 100 & 225 amp)	S146
Grounded neutral stud with 3 connectors (50, 100 & 225 amp)	S178
Pilot light holes drilled, tapped and plugged for future addition of pilot lights – one hole	S541
– two holes	S542
Standard Breather (Class I, Groups C,D, Class II, Groups E,F,G, Class III)	S219
Standard Drain (Class I, Groups C,D, Class II, Groups E,F,G, Class III)	S198
Standard Breather and Drain (Class I, Groups C,D, Class II, Groups E,F,G, Class III)	S198V
Universal Breather – Drain (Class I, Groups C,D, Class II, Groups F,G)	S454‡
(2) Universal Breather – Drains (Class I, Groups C,D, Class II, Groups F,G)	S454V‡
Less heaters	0

† Required for pilot lights on other than 120 volt control circuits. One required for each lamp.

‡ Not suitable for NEMA 4.

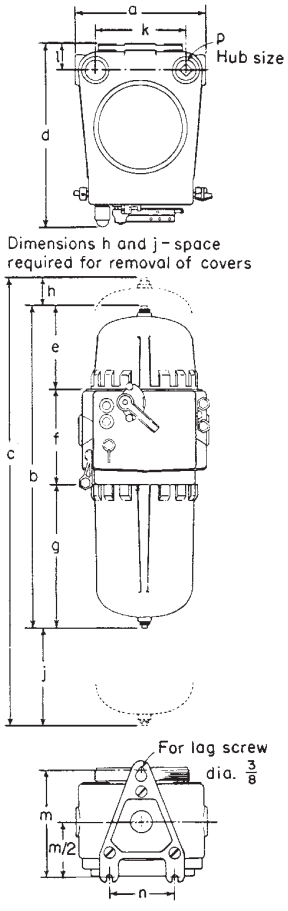
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Single-Speed Non-Reversing Sizes 0, 1, 2, and 3 starters

Cat. # EPC Int. Dia.	87 7″ Dimensions	813 11″	87-FTPS or 87-FT 7″ Dimensions ♦	813-FTPS or 813-FT 11″
a	10 5/8	16 1/8	10 5/8	16 1/8
b	26 1/16	38 1/2	31 1/16	41 1/2
c	35 11/16	61	47 11/16	67 1/2
d	14 11/16	20 1/4	14 11/16	20 1/4
e	6 3/4	9 1/8	11 3/4	12 1/8
f	7 11/16	8 5/8	7 11/16	8 5/8
g	11 5/8	20 3/4	11 5/8	20 3/4
h	2	4 1/2	9	8
j	7 5/8	18	7 5/8	18
k	7 3/8	12	7 3/8	12
l	2 1/16	2 5/8	2 1/16	2 5/8
m	9 3/8	11	9 3/8	11
n	5 1/4	5 1/2	5 1/4	5 1/2
p	1 1/4	2 1/2	1 1/4	2 1/2

♦ For units with Control Circuit Transformer (suffix FT or FTPS)

7″ 9″ 11″ Internal diameter



* Dimensions are approximate, not for construction purposes.

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1C EPC Combination Line Starters and Enclosures

Single Speed, Non-Reversing 3-Pole 60 hertz, 600 VAC Maximum

CI. I, Div. 1 & 2, Groups C,D
CI. II, Div. 1, Groups E,F,G
CI. II, Div. 2, Groups F,G
CI. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

With Circuit Breakers

Ordering Information:

To order an enclosure complete with starter and breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes below.

Select the complete Cat. No. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters. ♦ ♦ Starters are furnished with three heaters when heater ratings are fully specified.

Enclosures only can be ordered. Select from listings below. For starters that can be accommodated see Table 1 in Section 6C. Circuit breakers are also listed in Section 6C. Specific reference table is shown in the listings below.

Instantaneous magnetic trip circuit breakers (magnetic circuit interrupters) can be supplied. See listings in Section 6C.

Combination starters with motor circuit protectors or single speed, non-reversing motors are listed on page 339. Listings of circuit protectors are shown in Table 16 in Section 6C.

Motor Starter			Circuit Breaker			Enclosure			
Max. HP Poly-phase	Volts	NEMA Size	Amp Rating	Frame	Sec-tion 6C Table	Hub Size	Int. Dia.	Without Starter & Circuit Breaker Cat. #	With Starter & Circuit Breaker Cat. # ♦ ♦
2	120	0	30	EB	7	1¼	7	EPC87	EPC870-†30ED-‡613
3	240	0	20	EHD	7	1¼	7	EPC87	EPC870-†20EHD-‡623
3	480	0	15	EHD	8	1¼	7	EPC87	EPC870-†15EHD-‡643
3	480	0	15	FDB	9	1¼	7	EPC87	EPC870-†15FD-‡643
3	600	0	15	FD	6	1¼	7	EPC87	EPC870-†15FD-‡653
5	240	1	30	EHD	7	1¼	7	EPC87	EPC871-†30EHD-‡623
5	480	0	15	EHD	8	1¼	7	EPC87	EPC870-†15EHD-‡643
5	480	0	15	FDB	9	1¼	7	EPC87	EPC870-†15FD-‡643
5	600	0	15	FDB	9	1¼	7	EPC87	EPC870-†15FD-‡653
7½	240	1	50	EHD	7	1¼	7	EPC87	EPC871-†50EHD-‡623
7½	480	1	30	EHD	8	1¼	7	EPC87	EPC871-†30EHD-‡643
7½	480	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-‡643
7½	600	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-‡653
10	480	1	30	EHD	8	1¼	7	EPC87	EPC871-†30EHD-‡643
10	480	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-‡643
10	600	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-‡653
40	480	3	90	EHD	8	2½	11	EPC813	EPC813-†90EHB-‡643
40	480	3	90	FDB	9	2½	11	EPC813	EPC813-†90FB-‡643
40	600	3	90	FDB	9	2½	11	EPC813	EPC813-†90FB-‡653
50	480	3	100	EHD	8	2½	11	EPC813	EPC813-†100EHB-‡643
50	480	3	100	FDB	9	2½	11	EPC813	EPC813-†100FB-‡643
50	600	3	100	FDB	9	2½	11	EPC813	EPC813-†100FB-‡653

† Circuit Breakers:

Manufacturer	Symbol	Frames 100/150AMP		
		240V	480V	600V
General Electric	TT	TEB	TED*	TED*
Square D	DT	FAL*	FAL*	FAL*
Cutler-Hammer	WT	EHD	EHB	FB, FDB

‡ Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D***	D
Cutler-Hammer	W

* Specify voltage

*** When Square D starter is used in EPC813, EPC-KIT 32 must be ordered

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EPC Combination Line Starters

Single-Speed Non-Reversing with Motor Circuit Protectors 3-Pole 60 hertz, 600 VAC Maximum

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

Select the complete catalog no. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motors or specify ampere rating of heaters.

♦♦ Starters are furnished with three heaters when heater ratings are fully specified. For starter catalog numbers refer to Table 1 in Section 6C. For motor circuit protector, refer to Table 14 in Section 6C.

Current limiters may be ordered by specification ♦.

Motor Starter			Enclosure with Motor Circuit Protector and Starter ♦♦	
Max. HP Polyphase	Volts	NEMA Size	Amp Rating	Cat. #
3	240	0	15	EPC870-†15HMCP-‡623
3	480	0	7	EPC870-†7HMCP-‡643
3	600	0	7	EPC870-†7HMCP-‡653
5	480	0	15	EPC870-†15HMCP-‡643
5	600	0	15	EPC870-†15HMCP-‡653
7½	240	1	30	EPC871-†30HMCP-‡623
7½	480	1	15	EPC871-†15HMCP-‡643
10	600	1	15	EPC871-†15HMCP-‡653
10	480	1	30	EPC871-†30HMCP-‡643

♦ General Electric or Cutler-Hammer MCPs only.

† Motor Circuit Protectors

Manufacturer	Symbol
General Electric	TP
Square D	DP
Cutler-Hammer	WP

‡ Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D	D
Cutler-Hammer	W

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Notes Page

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Description	Page No.
Application/Selection	342
Magnetic Line Starters & Enclosures	
Single speed, non-reversing	
EBMS Series	343-346
EPC Series	349-351
EBMS Series with Advantage* Starter	347, 348
Manual Line Starters & Enclosures	
EMN Series	353
Manual Motor Starting Switches & Enclosures	
EFD Series	354
MC Series	360, 361
EDS Series	355-357
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For EPC Series	352

*Advantage is a trademark of Cutler-Hammer Inc.

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2C Motor Starters

Application and Selection Quick Selector Chart

Application:

Line starters are housed in enclosures suitable for specific environments, and are used for:

- across-the-line starting of motors
- motor running protection
- undervoltage protection
- remote or manual starting and stopping

Selection:

Considerations for selection of proper enclosure:

- The environment of the enclosure location in accordance with NEC/CEC and NEMA/EEMAC requirements
- The characteristics of the starter to be enclosed
- See ''Quick-Selector'' below for guidance

Options:

Many options are available on:

- material and finishes where special atmospheric conditions prevail
- special features for specific applications.

See individual listings for available options, many of which are available in kit form for field addition to existing units.

Quick Selector Chart

Enclosures for Starters

Enclosures	NEC/CEC – Hazardous Area Compliance	NEMA/ EEMAC Enclosure Type	Starter Type	NEMA/EEMAC Size Starters Single Speed Non-reversing	Motor Phase and Type	Manufacturers Equipment Enclosed – Starter	Cover Type
MC	None	3,4,12	Manual		Single-AC	Cutler-Hammer	Gasketed
EPC	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,4,7CD, 9EFG,12	Magnetic	0-2	Poly-AC	Allen-Bradley Cutler-Hammer G.E. Square D	Threaded
EBMS	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,4,7BCD, 9EFG,12	Magnetic	0-5	Poly-AC	Allen-Bradley G.E. Square D Cutler-Hammer	Bolted/ Ground Joint/ Gasketed
EMN	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7CD, 9EFG,12	Manual	0-1P	Single and Poly-AC	Allen-Bradley Cutler-Hammer G.E. Square D	Bolted/ Ground Joint
EDS, EDSC‡	Cl. I, Div. 1 & 2, Groups B*,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7CD, 9EFG,12	Manual		DC and Single AC	Allen-Bradley G.E. Cutler-Hammer	Bolted/ Ground Joint
EFD	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7BCD, 9EFG,12	Manual		DC and Single and Poly-AC	G.E. Square D	Bolted/ Ground Joint

‡ Factory sealed units listed on pages 440 and 441.

* Check listings for Group B suitability.

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EBMS Magnetic Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12 Watertight

Application:

Spectrum EBM™ hinged cover motor control enclosures are used:
- For general motor control – indoors or outdoors – in damp, wet, dirty, dusty hazardous locations, without the need for a protective shelter.
- In areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- For across-the-line starting, stopping, speed changing and reversing of polyphase AC induction motors.
- To provide motor overload and undervoltage protection.
- On switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction (less than 0.4 of 1%).
- Motor starter operating handle located through the right side wall of the body permits visual confirmation of correct component assembly and operation.
- Total compliance to the wiring end room requirements of the National Electrical Code® and Canadian Electrical Code.
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body.
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' starters.
- Simple, straightforward installation of starter on pre-drilled mounting plate within enclosure. Mounting plate also field removable.
- Neoprene cover gasket permanently attached to the cover seals out moisture.
- Bodies have top and bottom drilled and tapped entrances for power conduits plus one at the bottom for control conduit. Removable reducers are supplied as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap-on mounting feet.
- Optional EMPS control devices may be added to enclosure cover.
- Steel bracket for lifting larger enclosures during installation supplied as standard.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

Certifications & Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups B,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- UL Standards: UL1203 – Hazardous (classified) Locations
- NEMA: 3,3R,4‡,7BCD,9EFG,12
- CSA Standard: C22.2 No. 30

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shaft and bushing – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers and retractile springs – stainless steel

Electrical Rating Range:

- Motor starters – NEMA/EEMAC sizes 0-5

National Electrical Code is a Registered Trademark of the National Fire Protection Association.



Spectrum EBM motor control enclosures accommodate popular makes of starters.

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2C EBMS Magnetic Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight

Options

The following options are available from the factory by adding suffix to catalog number. Suffixes are added alphanumerically.

Catalog Number System Example

EBMS1FB-(A)-W6413-(B)

(A) Options in this position are additions to the enclosures and should be listed alphanumerically.

(B) Options in this position are modifications to the motor starter and should be listed alphanumerically.

Description	Suffix to be added to Cat. No.	Position in Cat. No.
● Less Overload Relays (lighting contactor)	CL	A
● Less overload relays (motor contactor)	CM	A
● Control Circuit Transformer, 100VA for NEMA/EEMAC sizes 0-2, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not included)	FTPS100	A
● Control Circuit Transformer, 200VA for NEMA/EEMAC size 3, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not included)	FTPS200	A
● Control Circuit Transformer, 300VA for NEMA/EEMAC size 4, 5 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not included)	FTPS300	A
● Pilot Light, 120VAC, Red Jewel, w/blank indicating plate	J1 ①	A
● Pilot Light, 120VAC, Green Jewel, w/blank indicating plate	J3 ①	A
● Less Heaters in Starter Overload Relay	0	B
● Start-Stop Pushbuttons (requires 2 spaces)	PB23 ①‡	A
● On-Off Selector Switch	RR2 ①‡	A
● Hand-Off-Auto Selector Switch	RR3 ①‡	A
● Space Heater, 120 Volt, 25 Watts	R11	A
● Space Heater, 240 Volt, 25 Watts	R22	A
● Space Heater, 480 Volt, 25 Watts	R44	A
● Automatic Reset Overload Relay	S1	A
● Std. Drain, Class I, B,C&D; Class II, EF&G; Class III	S756‡	A
● Std. Breather & Drain, Class I, B,C&D; Class II, EF&G; Class III	S756V‡	A
● Side Conduit Entrances (check factory for application)	S366	A
● Back Conduit Entrances (check factory for application)	S367	A
● External Epoxy Finish	S752	A
● Internal and External Epoxy Finish	S753	A
● Additional control contacts, N.O. or N.C. – for single speed, non-reversing starters only (number limited by design of starter. Details on specific makes and sizes on request.)		
Aux. Contacts on starter 1 N.O. & 1 N.C.	S781	B
Aux. Contacts on starter 2 N.O. & 2 N.C.	S782	B
Aux. Contacts on starter 3 N.O. & 3 N.C.	S783	B
12 Point Term. Block – 30 Amp, 300V	S786	A
● General Purpose Control Relay, 4 Pole N.O., contacts rated 10A @ 600V, coil 120VAC, 50-60 Hz	S787*	A

① When specifying non-standard markings on any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order DSL Legend Plates for identification and marking of the device(s) being used. See page 329 for DSL Legend Plate listings.

* Use this option with NEMA/EEMAC Size 0 or 1 starters necessitates a larger enclosure. Use ''B'' size enclosure.

Example:

	Enclosure Cat. No.	Enclosure for S787
W/O Starter	EBMSF<u>A</u>	EBMSF<u>B</u>

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMS Magnetic Line Starters and Enclosures

Single-Speed Non-Reversing 3-Pole 60 hertz, 600 VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,3R,4 ‡,7BCD,9EFG,12 Watertight

Ordering Information:

● To order an enclosure complete with motor starter, insert the manufacturer's symbol in the designated position (see ‡) of the catalog number. Symbols are shown in the footnotes.
● Also specify HP, voltage, frequency, RPM, type and full load ampere rating of motor – or specify ampere rating of heaters.

♦ ♦ Motor starters are furnished with three heaters when heater ratings are fully specified.
● Enclosures without starters may be ordered. Select from the listings below. For catalog numbers of manufacturers motor starters that can be accommodated see Section 6C of this catalog.



EBMS Series starter enclosures are available with magnetic line starters. NEMA sizes 0-5.

EBMS Series Enclosures for Magnetic Line Starters Single Speed Non-Reversing

Motor Starter			Enclosure	
Max. HP Poly-phase	Volts	NEMA Size	Without Starter Cat. No.	With Starter Cat. No. ♦ ♦
2	120	0	EBMSFA	EBMS0FA-*613
3	120	1	EBMSFA	EBMS1FA-*613
3	240	0	EBMSFA	EBMS0FA-*623
5	480	0	EBMSFA	EBMS0FA-*643
5	600	0	EBMSFA	EBMS0FA-*663
7½	120	2	EBMSFB	EBMS2FB-*613
7½	240	1	EBMSFA	EBMS1FA-*623
10	480	1	EBMSFA	EBMS1FA-*643
10	600	1	EBMSFA	EBMS1FA-*663
15	120	3	EBMSFH	EBMS3FH-*613
15	240	2	EBMSFB	EBMS2FB-*623
25	480	2	EBMSFB	EBMS2FB-*643
25	600	2	EBMSFB	EBMS2FB-*663
30	240	3	EBMSFH	EBMS3FH-*623
50	480	3	EBMSFH	EBMS3FH-*643
50	600	3	EBMSFH	EBMS3FH-*663
50	240	4	EBMSFH	EBMS4FH-*623
100	480	4	EBMSFH	EBMS4FH-*643
100	600	4	EBMSFH	EBMS4FH-*663
100	240	5	EBMSFL	EBMS5FL-*623
200	480	5	EBMSFL	EBMS5FL-*643
200	600	5	EBMSFL	EBMS5FL-*663

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

* Motor starters:

Manufacturer	Symbol
Allen Bradley	AB
Square D	D
General Electric	G
Cutler-Hammer	W

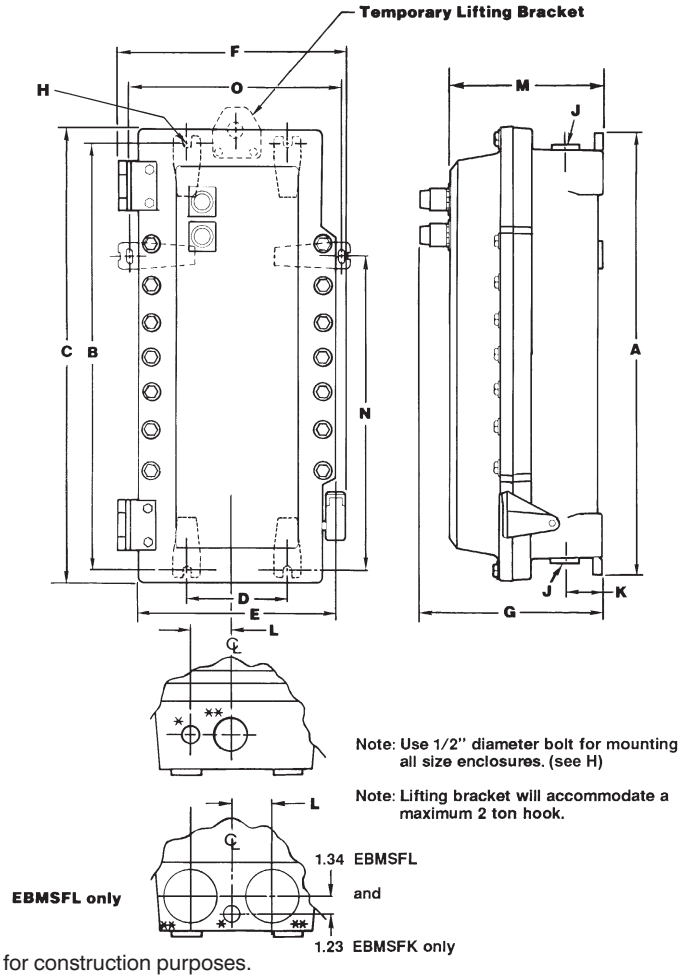
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EBMS Magnetic Line Starters and Enclosures

Dimensions

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight

Single-Speed Non-Reversing Sizes 0, 1, 2, 3, 4 and 5 Starters



Dimensions are approximate, not for construction purposes.

	Enclosure Only Cat. No.	Enclosure Size Symbol	A	B	C	D	E	F	G	**J Conduit Entry Trade Size D&T♦	**J Conduit Entry Trade Size w/RE	K	L	M	N	O
Size 0,1 FVNR Starter§	EBMSFA	A	18.25	17.25	19.00	6.00	12.63	14.38	12.13	2″	1.5″	3.25	3.13	10.25	—	—
Size 2 FVNR Starter	EBMSFB	B	25.75	24.75	26.50	6.00	12.63	14.38	12.13	2″	1.5″	3.25	3.13	10.25	—	—
Size 3,4 FVNR	EBMSFD***	D	28.25	27.25	29.00	6.00	12.63	14.06	12.13	3″	2.5″	3.25	3.13	10.25	—	—
Starter	EBMSFH	H	37.50	36.50	38.25	6.00	14.25	16.00	13.54	3″	2.5″	3.25	3.94	11.66	—	—
Size 5 FVNR	EBMSFK***	K	43.12	41.50	42.25	12.00	17.25	19.88	11.00	(2) 3″	(2) 2.5″	3.25	3.00	10.78	—	—
Starter	EBMSFL	L	53.25	51.50	52.88	12.00	17.50	20.18	15.00	(2) 4″	(2) 3.5″	4.00	3.50	13.03	41.50	18.00

§ Use EBMSFB enclosure when S787 option is ordered with size 0 or 1 starter.

* 1″ Drilled & Tapped conduit entry for control conductors supplied with PLG plug (top & bottom)

** Conduit entrance for power conductors (top and bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

*** For Cutler-Hammer W200 Advantage® starters.

♦ Drilled & Tapped.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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Spectrum™ EBM Enclosures

Supplied with Cutler-Hammer Advantage™ Starters

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

Spectrum EBM-E series of hinged cover motor control enclosures are used:
- for general motor control – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter.
- in areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- for across-the-line starting and stopping of polyphase ac induction motors.
- to provide motor overload and undervoltage protection.
- on switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Total compliance to the wiring end room requirements of the National Electrical Code® 1993.
- Solid state electronic Cutler-Hammer Advantage™ starter.
- Smaller enclosures required than for conventional starter applications.
- Elimination of heater elements, contact chatter, and welding due to low voltage supply.
- Precise overcurrent protection and constant coil power.
- Same performance and labor-saving benefits from the versatile Spectrum EBM Enclosure product line.
- Universal mounting plates and hardware for all major manufacturers' components.
- Mercury switch electronic overload reset.
- Optional EMPS control devices may be added to enclosure cover.

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers, and rectractile springs – stainless steel

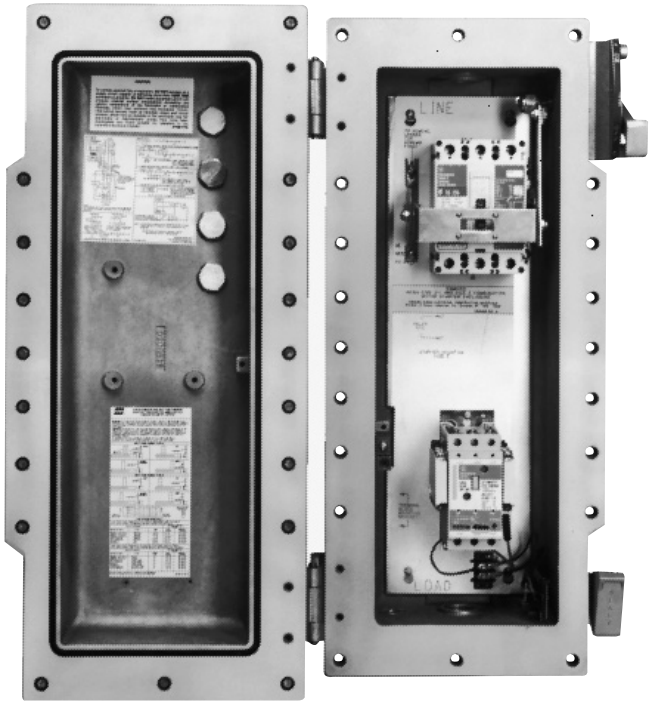
Electrical Rating Ranges:

- Motor starters – NEMA sizes 1-5

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G,
  Class II, Division 2, Groups F,G
  Class III
- UL Standards: UL1203 – Hazardous (classified) locations
- CSA Standard: C22.2 No. 30
- NEMA: 3, 3R, 4 ‡, 7BCD, 9EFG, 12

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.



Spectrum EBM-E Series Combination Line Starter with Advantage Starter shown. Circuit breakers not provided in EBMS series.

Options: (Starter only)

See page 344 for options for the EBM enclosures supplied with Cutler-Hammer Advantage starters. The following suffixes cannot be ordered with this style equipment: 0, S1.

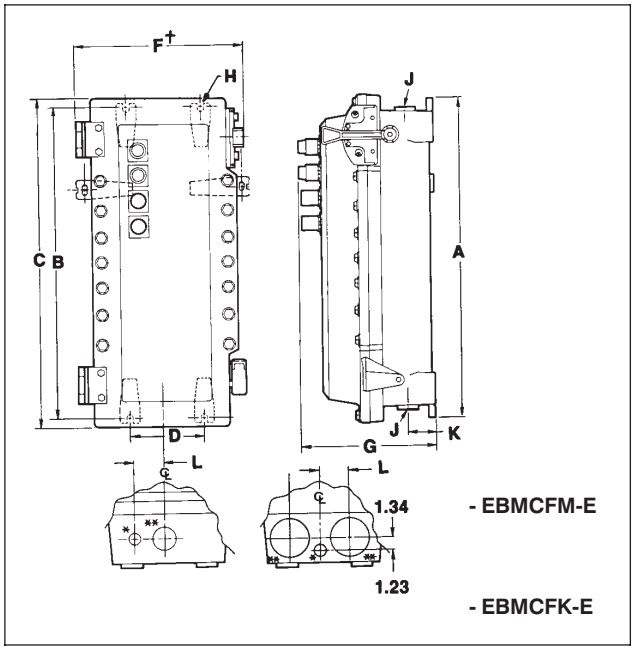
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2C Spectrum™ EBM Enclosures

Supplied with Cutler-Hammer Advantage™ Starters

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Dimensions (inches):



Dimensions are approximate, not for construction purposes.

Ordering Information – Starters

- To order an enclosure, determine the electrical requirements of the system and locate the corresponding catalog number from the chart below.
- Enclosures can be ordered without starters, universal mounting plates with templates will still be provided.

EBM ''E'' Series Enclosures for Cutler-Hammer Advantage Starters Single Speed, Non-Reversing

Motor Starter			Enclosure	
Max. HP Poly-phase	Volts	NEMA Size	Without Starter Cat. #‡	With Starter Cat. #
7½	240	1	EBMSFA-E	EBMS1FA-W6213-E
10	480	1	EBMSFA-E	EBMS1FA-W6413-E
10	600	1	EBMSFA-E	EBMS1FA-W6613-E
15	240	2	EBMSFA-E	EBMS2FA-W6213-E
25	480	2	EBMSFA-E	EBMS2FA-W6413-E
25	600	2	EBMSFA-E	EBMS2FA-W6613-E
30	240	3	EBMSFD-E	EBMS3FD-W6213-E
50	240	4	EBMSFD-E	EBMS4FD-W6213-E
50	480	3	EBMSFD-E	EBMS3FD-W6413-E
50	600	3	EBMSFD-E	EBMS3FD-W6613-E
100	240	5	EBMSFK-E	EBMS5FK-W6213-E
100	480	4	EBMSFD-E	EBMS4FD-W6413-E
100	600	4	EBMSFD-E	EBMS4FD-W6613-E
200	480	5	EBMSFK-E	EBMS5FK-W6413-E
200	600	5	EBMSFK-E	EBMS5FK-W6613-E

‡ Note: ''Enclosures only'' are supplied with necessary operators, linkages, and mercury switch electronic overload resets.

DIMENSIONS (inches)

Enclosure Only Cat. No.	Dimensions A	B	C	D	F	G	**J Conduit Entry Trade Size D&T♦	w/RE	K	L
EBMSFA-E	18.25	17.25	19.40	6.00	14.78	12.13	2″	1.5″	3.25	3.13
EBMSFD-E	28.25	27.25	29.40	6.00	14.46	12.13	3″	2.5″	3.25	3.13
EBMSFK-E	43.12	41.50	42.65	12.00	20.58	15.00	(2) 3″	(2) 2.5″	2.50	3.00

''H'' – Use ½″ diameter bolts for all enclosures listed above.

* 1'' Drilled & Tapped conduit entry for control conductors supplied with PLG plug (top & bottom).

** Conduit entrance for power conductors (top & bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

♦ Drilled & Tapped.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EPC Magnetic Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

EPC magnetic line starters and enclosures are used:
- for across-the-line starting of polyphase ac induction motors
- in locations, made hazardous, due to the presence of flammable vapors, gases or highly combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide motor running protection, undervoltage protection, and remote starting and stopping

Features:

- Quick-opening covers – less than two turns to remove or install
- Three section design for ease of installation
- Water-shedding construction with female threads on top cover, male threads on bottom cover, and top cover skirted
- Specially located stops and locks ensure adequate thread engagement and prevent overtightening
- Separate replaceable mounting bracket attached to the rear of the body provides three-point suspension for quick installation and leveling – one keyhole slot at top and two open slots at bottom
- Bodies have two taper tapped conduit hubs with integral bushings on the top, and two more directly below
- Universal mounting plate and reset mechanism will accommodate any of the motor starters in catalog listing
- When interior mounting plate is removed, line and load conductors are easily pulled into the wiring chamber. The interior assembly with starter attached is then replaced, final connections made, and covers assembled
- Furnished with third overload relay as standard

Standard Materials:

- Bodies and covers – copper-free aluminum
- Reset handle – copper-free aluminum
- Reset shaft – stainless steel
- Interior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

Electrical Rating Ranges:

- Starter Sizes 0 to 2 inclusive

* Application limited by starter or contactor design – consult factory

† Required for pilot lights on other than 120 volt control circuits. One required for each lamp

‡ Not suitable for NEMA 4

Certifications & Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Cl. III
- NEMA/EEMAC: 3, 4, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No. and many are available in kit form for field addition to existing units:

See page 352 for listing of kits



Description	Suffix to be Added to Encl. Cat. #
Control circuit transformer 600/480/240-120 volts, 50 or 60 hertz (Sizes 0 and 1 – 50VA, 100VA, Size 2 – 100VA-200VA)	
Fusible – Secondary	FT
Primary and secondary	FTPS
Automatic reset overload relay	S1
Less overload relays (lighting contactor)	CL
Less overload relays (motor contactor)	CM
Auxiliary Contacts:*	
1NO/1NC	S781
2NO/2NC	S782
3NO/3NC	S783
Pilot light holes drilled, tapped and plugged for future addition of pilot lights – one hole	S541
two holes	S542
Side bosses drilled and tapped same size as standard hubs	S366
Back boss drilled and tapped same size as standard hubs	S367
Standard Breather (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S219
Standard Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198
Standard Breather and Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198V
Universal Breather-Drain (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454‡
(2) Universal-Breather Drains (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454V‡

Pushbuttons (heavy duty):	
START-STOP	PB3‡
Selector switches (standard duty):	
ON-OFF	RR2‡
HAND-OFF-AUTO	RR3‡
Pilot lights:	
Red, 120 volt	J1
Green, 120 volt	J3

Pilot light transformers:	
240 volt†	T2
480 volt†	T4
600 volt†	T5
Space heaters:	
120 volt	R11
240 volt	R22
480 volt	R44

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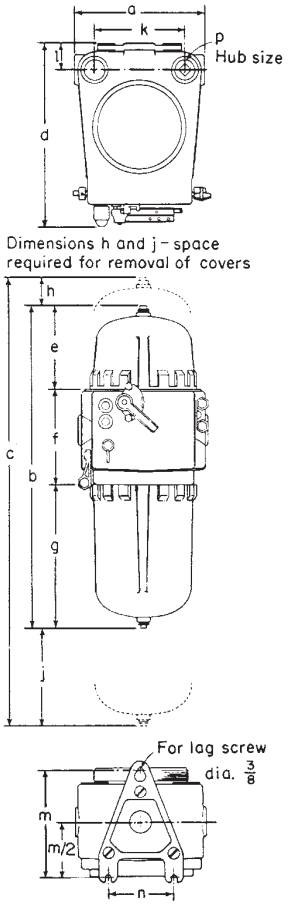
Dimensions (inches)*

Single-Speed Non-Reversing Sizes 0, 1, and 2 Starters

Cat. #		97-FT
EPC	97	97-FTPS
Int. Dia.	7″	7″
	Dimensions	Dimensions ♦
a	10 5/8	10 5/8
b	19 13/16	24 13/16
c	25 13/16	37 13/16
d	14 11/16	14 11/16
e	6 3/4	11 3/4
f	7 11/16	7 11/16
g	5 3/8	5 3/8
h	2	9
j	4	4
k	7 3/8	7 3/8
l	2 1/16	2 1/16
m	9 3/8	9 3/8
n	5 1/4	5 1/4
p	1 1/4	1 1/4

♦ For units with Control Circuit Transformer (suffix FT or FTPS)

7″ 9″ Internal diameter



* Dimensions are approximate, not for construction

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

EPC Magnetic Line Starters and Enclosures

Single-Speed Non-Reversing 3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

To order an enclosure complete with starter, insert the manufacturer's symbol in the designated position of the catalog number. Symbols are shown in the footnote at the bottom of this page. Specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters. ♦ ♦ Starters are furnished with three heaters when heater ratings are fully specified.

Enclosures only can be ordered. Select from listings. For starters that can be accommodated see Table 1 in Section 6C.

Detailed information on starter and heater selection is given in Section 6C.

Motor Starter			Enclosure			
Max. HP Polyphase	Volts	NEMA/EEMAC Size	Hub Size	Int. Dia.	Without Starter Cat. #	With Starter Cat. # ♦ ♦
2	120	0	1¼	7	EPC97	EPC970-†613
3	120	1	1¼	7	EPC97	EPC971-†613
3	240	0	1¼	7	EPC97	EPC970-†623
5	480	0	1¼	7	EPC97	EPC970-†643
5	600	0	1¼	7	EPC97	EPC970-†653
7½	240	1	1¼	7	EPC97	EPC971-†623
10	480	1	1¼	7	EPC97	EPC971-†643
10	600	1	1¼	7	EPC97	EPC971-†653

† Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D	D
Cutler-Hammer	W

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Pushbutton Station and Selector Switch Kits

EPC magnetic line starter and EPC combination line starter enclosures are provided as standard with switch operating shaft holes drilled, tapped and plugged. Pushbutton stations and selector switches can be assembled in these enclosures in the field, using kits listed below.

Applies to 7″, 9″, 11″ EPC

Description	Cat. #
START-STOP pushbutton station assembly	EPC-PB3-KIT
Replacement pushbutton station only for EPC-PB3-KIT	16320-N
ON-OFF selector switch assembly (2 position)	EPC-RR2-KIT
Replacement switch only for EPC-RR2-KIT	ESWP126
HAND-OFF-AUTO selector switch assembly (3 position)	EPC-RR3-KIT
Replacement switch only for EPC-RR3-KIT	ESWP126

Pilot Light Kits

When EPC magnetic line starter and EPC combination line starter enclosures have been ordered with pilot light holes drilled, tapped and plugged (Cat. No. suffix S541 and S542), pilot lights can be assembled in the field, using kits listed below.

Description	Applies to	Cat. #
Pilot light assembly less transformer	7″, 9″, 11″ EPC	EMP015-J†-KIT
Pilot light assemblies with transformer and transformer mounting strap (for single pilot light) suffix S541	7″ EPC only 9″ EPC only 11″ EPC only	EPC87-J†-T†-KIT EPC892-J†-T†-KIT EPC813-J†-T†-KIT
2 pilot light assemblies with 2 transformers and transformer mounting strap (for double pilot light) suffix S542	7″ EPC only 9″ EPC only 11″ EPC only	EPC87-J†-J†-T†-KIT EPC892-J†-J†-T†-KIT EPC813-J†-J†-T†-KIT
Replacement pilot light transformer only (240V primary)	All units	15129-A
Replacement pilot light transformer only (480V primary)	All units	15130-A
Replacement pilot light transformer only (600V primary)	All units	15131-A

† Insert color symbol from table below and add primary voltage symbol (T2 for 240, T4 for 480 or T5 for 600 volts). Example: EPC87-J†-J†-T†-KIT with red and green pilot lights for 480 volts is EPC-J1-J3-T4-KIT.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

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EMN Manual Line Starters and Enclosures

600VAC Maximum

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EMN manual line starters and enclosures are used:

- for manual across-the-line starting of single and polyphase ac motors
- to provide motor running protection and manual starting and stopping
- in locations made hazardous due to the presence of flammable vapors, gases, or high combustible dusts
- for installation in petroleum refineries, chemical and petrochemical plants, and other process industry facilities
- in damp, wet, or corrosive locations

Features:

- Compact, rectangular enclosure makes optimum use of internal space
- Operating handle may be padlocked in either ''ON'' or ''OFF'' position
- Compact design allows installation in area where space is limited
- Furnished with drilled and tapped conduit openings
- Polyphase manual starters are furnished with third overload relay as standard

Standard Materials:

- Bodies, covers and toggle operator – copper-free aluminum
- Operating shaft – stainless steel
- Internal operating bail – sheet steel or aluminum

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

Electrical Rating Ranges:

- Starter sizes 0, 1, 1P

Certifications & Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 3, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 14

Options:

- The following special options are available from factory by adding suffix to Cat. #:

Description	Suffix to be Added to Encl. Cat. #
Standard Breather (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S219
Standard Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198
Standard Breather and Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198V
Universal Breather-Drain (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454
(2) Universal Breather-Drains (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454V



Ordering Information:

Specify hp, voltage, frequency, number of phases, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters.

Two pole starters require one heater; three pole starters have three heaters. See page 446 for starter and heater selection. For starter Cat. No. refer to Table 3 in Section 6C.

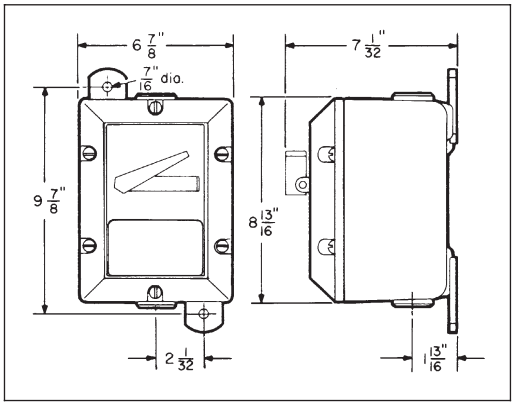
Motor Starter

NEMA Size	Poles (Phase)	Max. AC HP Ratings 115V	208/240V	480/600V	Enclosure With Starter Cat. #
M-0	2 (1PH)	1	2		EMN24-W20
M-1	2 (1PH)	2	3		EMN24-W21
M-1P	2 (1PH)	3	5		EMN24-W21P
M-0	3 (3PH)	2	3	5	EMN24-W30
M-1	3 (1PH)	2	3		EMN24-W31
	3 (3PH)	3	7½	10	

Enclosure Without Starter

Starter Manufacturer	Enclosure Cat. #§
Cutler-Hammer	EMN24

Dimensions* (inches)



§ Enclosures are furnished with two 1¼" drilled and tapped openings with 1¼" to 1" reducers.

* Dimensions are approximate, not for construction purposes.

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2C EFD Manual Motor Starting Switches and Enclosures

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EFD manual motor starting and stopping switch enclosures are used:
- for manual starting of small ac or dc motors
- in locations, made hazardous, due to the presence of flammable vapors, gases or highly combustible dusts
- for installation at petroleum refineries, chemical and petrochemical plants and in other process industry facilities where similar hazards exist

Features:

- Enclosure is small and compact
- Accurately ground flange on both body and cover for flame-tight joint
- Switch can be padlocked in either ''ON'' or ''OFF'' positions
- Dead end (EFD) or through feed (EFDC) hubs in ¾″ to 1″ size

Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Operating handle – type 6/6 nylon
- Operating shaft – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Type 6/6 nylon – natural (black)
- Stainless steel – natural

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B*,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA: 3, 7B*CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

Options:

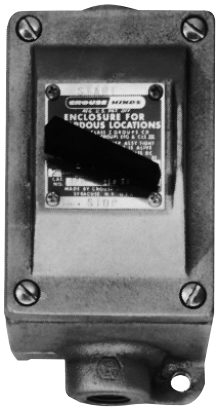
- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
For use in Group B Hazardous areas. . . .	GB*

* Add GB suffix. Seals must be installed within 1-1/2″ of each conduit opening for Group B usage.



EFD dead end



EFDC through feed

Without Overload Protection With Switches

Poles	Cat. #	Switch Ratings Amps		HP		
2	Square D Class 2510 Type KO-1	250VAC 30	600VAC 20	115VAC 1	230VAC 2	460-575VAC 3
3	GE-TC2368S	30A., 240VAC, 7-1/2 hp 20A., 600VAC, 15 hp				

Dead end

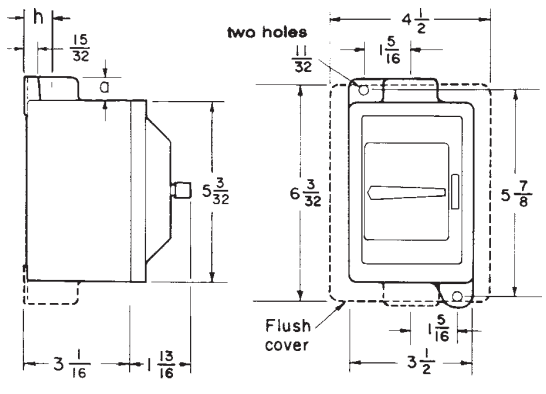
Poles	Hub Size	With Switch Cat. #
2	¾	EFD218-T8
	1	EFD318-T8
3	¾	EFD2419
	1	EFD3419

Through feed

Poles	Hub Size	With Switch Cat. #
2	¾	EFDC218-T8
	1	EFDC318-T8
3	¾	EFDC2419
	1	EFDC3419

Dimensions (inches)

Dimensions are approximate, not for construction purposes



Hub Size	Dim. "h"	Dim. "a"
3/4	7/8	13/16
1	1	15/16

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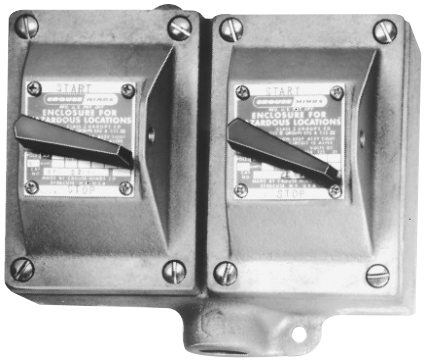
EDS Factory Sealed Manual Motor Starting Switches and Enclosures

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDSC2199



EDS2299

Application:

Factory sealed enclosures are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:
- to prevent arcing of enclosed device from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required
- in conjunction with magnetic starters or contactors for remote control of motors

Manual motor starting switch enclosures are used:
- for manual starting of small ac or dc motors
- to provide manual starting and stopping and, in the case of units with heaters, motor running protection

Features:

Factory sealed devices have many distinct advantages:
- reduce installation problems
- eliminate external seals
- lower installation costs
- improve safety
- mounting lugs and taper tapped hubs with integral bushings
- large machine screws for fastening covers to bodies
- lockout hole for padlock having ¼″ hasp is provided
- close tolerances in machining of wide, mating flanges and journalled shafts and bearings produce flametightness of enclosure joints
- dead end (EDS) or through feed (EDSC) hubs – ¾″ or 1″ sizes

Standard Finishes:

Feraloy iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Type 6/6 nylon – black
- Stainless steel – natural

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B*,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA/EEMAC: 3,7B*CD,9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30

Options:

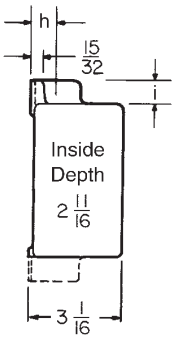
Description	Suffix to be Added to Cat. #
For use in Group B hazardous areas.	GB*
Bodies and covers (single and two gang units) – copper-free aluminum.	SA

Standard Materials:

- Bodies – *Feraloy*® iron alloy (U.S.); copper-free aluminum (Canada).
- Shafts & bushings – stainless steel
- Sealing enclosures – copper-free aluminum

Dimensions (inches)

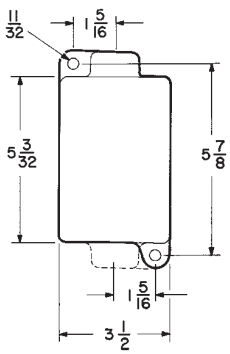
Dimensions are approximate, not for construction purposes.



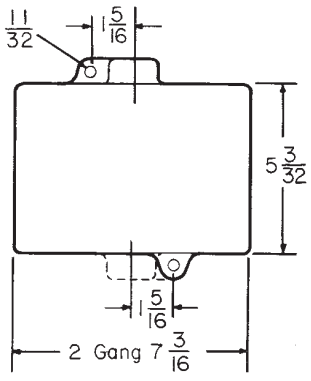
Side View	Hub Size	Dim. "h"	Dim. "i"
¾	⅞	13/16	
1	1	15/16	

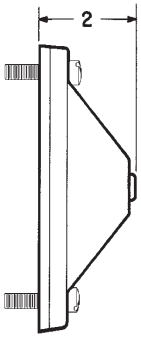
Front View

Single gang



Two gang





Surface covers have same length and width as single & 2 gang bodies.

* Seals must be installed within 1½″ of each conduit opening in Division 1

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2C EDS Factory Sealed Manual Motor Starting Switches and Enclosures

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

With Allen-Bradley Bulletin 600 Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC	Cat. #
1	1 hp		A-B BUL 600 TOX4
2	1 hp	¾ hp	A-B BUL 600 TOX5

Single Gang

Poles	Hub Size	Dead end Cat. #	Through feed Cat. #
1	¾	EDS2199†	EDSC2199†
	1	EDS3199†	EDSC3199†
2	¾	EDS21100†	EDSC21100†
	1	EDS31100†	EDSC31100†

Two Gang

1	¾	EDS2299†	EDSC2299†
	1	EDS3299†	EDSC3299†
2	¾	EDS22100†	EDSC22100†
	1	EDS32100†	EDSC32100†

With General Electric Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115 Volts DC	230 Volts DC	Cat. #
1	1 hp	1 hp	¼ hp	GE-CR101-Y
2	1 hp	1 hp	1 hp	GE-CR101-H

Single Gang

Poles	Hub Size	Dead end Cat. #	Through feed Cat. #
1	¾	EDS21093†	EDSC21093†
	1	EDS31093†	EDSC31093†
2	¾	EDS21094†	EDSC21094†
	1	EDS31094†	EDSC31094†

Two Gang

1	¾	EDS22093†	EDSC22093†
	1	EDS32093†	EDSC32093†
2	¾	EDS22094†	EDSC22094†
	1	EDS32094†	EDSC32094†

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

Heater Table (Allen-Bradley)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
0.17	P1	2.92	P22
0.21	P2	3.09	P23
0.25	P3	3.32	P24
0.32	P4	3.77	P25
0.39	P5	4.16	P26
0.46	P6	4.51	P27
0.57	P7	4.93	P28
0.71	P8	5.43	P29
0.79	P9	6.03	P30
0.87	P10	6.83	P31
0.98	P11	7.72	P32
1.08	P12	8.24	P33
1.19	P13	8.9	P34
1.30	P14	9.6	P35
1.43	P15	10.8	P36
1.58	P16	12.0	P37
1.75	P17	13.5	P38
1.88	P18	15.2	P39
2.13	P19		
2.40	P20		
2.58	P21		

Heater Table (General Electric)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
.48	G2	3.01	G22
.53	G3	3.27	G23
.58	G4	3.56	G24
.65	G5	3.88	G25
.71	G6	4.22	G26
.78	G7	4.60	G27
.86	G8	5.00	G28
.95	G9	5.43	G29
1.04	G10	5.90	G30
1.14	G11	6.41	G31
1.25	G12	6.98	G32
1.37	G13	7.60	G33
1.49	G14	8.25	G34
1.63	G15	8.95	G35
1.78	G16	9.75	G36
1.95	G17	10.6	G37
2.13	G18	11.4	G38
2.32	G19	12.5	G39
2.53	G20	13.6	G40
2.76	G21	14.8	G41
		16.0	G42

† Includes one interchangeable heater. Select heater from the table below individual listings and use symbol number as second section of the Cat. No. Example: EDS2199-P5. Insert symbol 0 (zero) to omit heater.

* Add GB suffix. Seals must be installed within 1½" of each conduit opening for Group B usage.

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With Cutler-Hammer Switches

Maximum HP Ratings

Poles	120-240 Volts AC	32 Volts DC	120 Volts DC	240 Volts DC	Cat. #
1	1 hp	¼ hp	¼ hp	¼ hp	WEST-MST01
2	1 hp	¼ hp	1 hp	1 hp	WEST-MST02

Single Gang

Poles	Hub Size	Dead end Cat. #	Through feed Cat. #
1	¾	EDS21101†	EDSC21101†
	1	EDS31101†	EDSC31101†
2	¾	EDS21102†	EDSC21102†
	1	EDS31102†	EDSC31102†

Two Gang

1	¾	EDS22101†	EDSC22101†
	1	EDS32101†	EDSC32101†
2	¾	EDS22102†	EDSC22102†
	1	EDS32102†	EDSC32102†

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

Heater Table (Cutler-Hammer)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
.43	W 1	2.95	W21
.48	W 2	3.27	W22
.53	W 3	3.59	W23
.58	W 4	3.99	W24
.64	W 5	4.39	W25
.71	W 6	4.79	W26
.78	W 7	5.26	W27
.87	W 8	5.83	W28
.95	W 9	6.39	W29
1.03	W10	7.03	W30
1.15	W11	7.74	W31
1.27	W12	8.46	W32
1.35	W13	9.35	W33
1.51	W14	10.30	W34
1.67	W15	11.35	W35
1.83	W16	12.47	W36
1.99	W17	13.67	W37
2.23	W18	15.12	W38
2.47	W19	16.00	W39
2.71	W20		

† Includes one interchangeable heater. Select heater from the table below individual listings and use symbol number as second section of the Cat. No. Example: EDS21101-W5. Insert symbol 0 (zero) to omit heater.

* Add GB suffix. Seals must be installed within 1½″ of each conduit opening for Group B usage.

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2C Explosion Protected Manual Motor Starters

25 Amp, 690 VAC Non-Metallic Enclosure

UL/cUL Listed Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de HB + H_2, T5, T6
Class II, Division 1, Groups E, F, G (cUL)

CENELEC - PTB 99, ATEX 1162 CERTIFIED
EEx de IIC, T6, Zones 1 and 2 EEx de IIC, T6 Zones 21 and 22
IP66, NEMA 4X

Application

Explosion protected manual motor starters are used in a metallic conduit or cable system for surface mounting to protect motors against overload and phase failure.



Features

- Explosion protected factory sealed circuit breaker and manual motor starter
- Innovative break-line in cover allows full wiring access, making installation quick and easy.
- Switch handle provides clear indication of switch position
- Lockable handle meets OSHA lockout/ tagout requirements, provision for 3 padlocks
- Large rotary handle provides easy gripping with gloved hands
- Captive cover screws

Certifications & Compliances

- UL/cUL Listed
- Class I, Division 2, Groups A, B, C, D
- Class I, Zones 1 and 2, Ex de IIB+H_2, T6
- Class II, Division 1, Groups E, F, G (cUL)
- CENELEC - PTB 99-ATEX 1162
- EEx de IIC, T6, Zones 1 and 2.
- IP 66, NEMA 4X

Standard Materials

Enclosure - Fiberglass-reinforced polyester
- Nonmetallic, corrosion resistant
- Increased safety Ex-e protection
- Impact Resistant
- NEMA 4X, IP 66 Protection
- Enclorure meets UL 94-VO
- UV rated

Enclosure Gasket - Silicon
Handle - Impact-resistant thermoplastic
Cover Screws - Stainless steel
Conduit Entries: Zinc Myers Hubs
Brass Mounting plate - Ground continuity

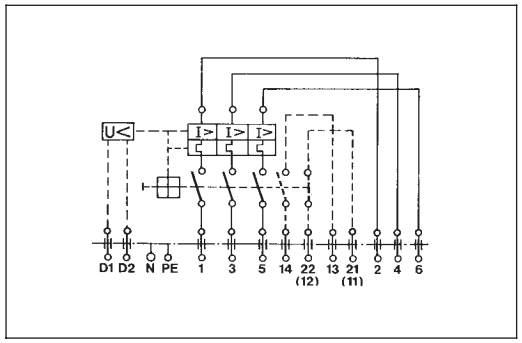
Technical Data	
Type of Protection	**(A)Ex ed IIC T5, T6**
Rated Voltage	**Up to 690 VAC**
Rated Current	**Up to 25 A**
Rated Current, aux. contact	**2 A**
Short Circuit	**See table on next page**
Under voltage trip	**Tripping at 15% - 75% V-rated Switching - on when V> 80% V-rated**
Connection Terminals	**Up to 10mm²**
Connection terminals, aux. contact	**2 × 2.5 mm²**
Conduit or Cable entries	**2 × ¾″ Myers hubs**
Weight	**5.5 lbs./ 2.5 Kg.**

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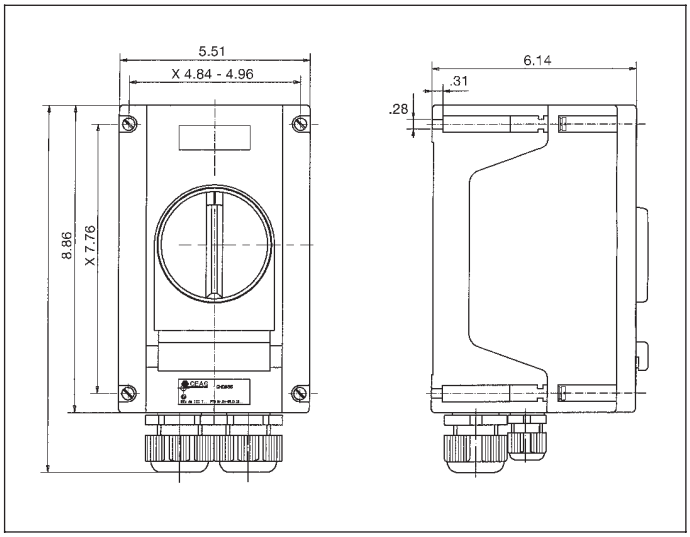
Short Circuit Protection

Setting Range	230 VAC AIC	400 VAC AIC	500 VAC AIC	690 VAC AIC
0.1 A - 1.6 A	Short-circuit proof. No back-up fuse required			
1.6 A - 2.5 A				40
2.5 A - 4.0 A			40	10
4.0 A - 6.3 A			30	3
6.3 A - 9.0 A			30	3
9.0 A - 12.5 A		50	20	3
12.5 A - 16.0 A		50	20	3
16.0 A - 20.0 A		50	20	2
20.0 A - 25.0 A	50	50	20	2

Wiring Diagram



Dimensions (Inches)



Ordering Information:

Setting Range or rated current	Catalog Number
0.1 - 0.16 A	GHG 635 1101 L0101
0.16 - 0.25 A	GHG 635 1101 L0102
0.25 - 0.40 A	GHG 635 1101 L0103
0.40 - 0.63 A	GHG 635 1101 L0104
0.63 - 1.0 A	GHG 635 1101 L0105
1.0 - 1.6 A	GHG 635 1101 L0106
1.6 - 2.5 A	GHG 635 1101 L0107
2.5 - 4.0 A	GHG 635 1101 L0108
4.0 - 6.3 A	GHG 635 1101 L0109
6.3 - 9.0 A	GHG 635 1101 L0110
9.0 - 12.5 A	GHG 635 1101 L0111
12.5 - 16 A	GHG 635 1101 L0112
16 - 20 A	GHG 635 1101 L0113
20 - 25 A	GHG 635 1101 L0114

Accessory Options

1 = without aux. contact
2 = with aux contact 1 NO + 1 NC

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MC Manual Motor Starting Switches and Enclosures

NEMA 3,4,12
Raintight
Wet Locations

Application:

MC manual motor starting switches and enclosures are used:
- for manual starting of small ac and dc motors of one horsepower or less (see page 361 for ratings)
- in damp, wet or corrosive locations such as dairies, meat packing plants, chemical plants and outdoor locations
- to provide motor running protection and manual starting and stopping

Features:

- Enclosure is compact and gasketed to meet NEMA/EEMAC 4 requirements for watertightness
- Switch can be padlocked in either the ''ON'' or ''OFF'' positions
- Provided with dead end (MC) or through-feed (MCC) hubs – ½″ and ¾″ sizes – with mounting feet

Standard Materials:

- Body and cover – *Feraloy*® iron alloy
- Operating handle – copper-free aluminum
- Operating shaft – stainless steel

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Certifications and Compliances:

- NEMA/EEMAC: 3, 4, 12
- UL Standard: 508
- CSA Standard: C22.2 No. 14

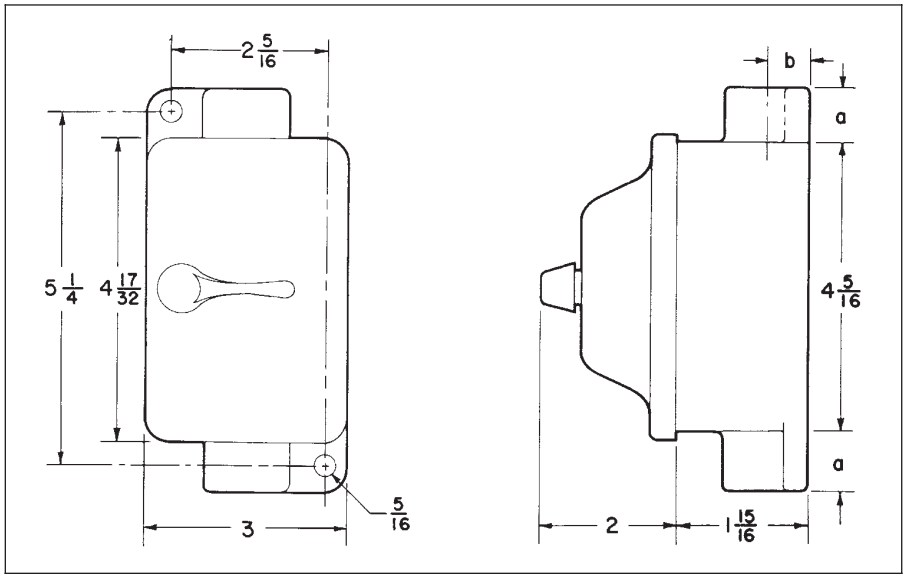


MC dead end



MCC through feed

Dimensions (inches)*



Hub Size	½	¾
a	⅞	⅞
b	⅝	¾

* Dimensions are approximate, not for construction purposes.

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MC Manual Motor Starting Switches

Manufacturer	Poles	Cat. #
Cutler-Hammer	1	MST01
Cutler-Hammer	2	MST02

Maximum Horsepower Ratings

Volts	1-Pole	2-Pole
120/240 AC	1	1
32 DC	¼	¼
120/240 DC		1
240 DC	¼	

MC
Single Gang (Dead End)

		Enclosure	
Poles	Hub Size	With Switch Cat. #	Without Switch Cat. #
1	½	MC1211†	MC1212B
1	¾	MC2211†	MC2212B
2	½	MC1212†	MC1212B
2	¾	MC2212†	MC2212B

MCC
Single Gang (through feed)

		Enclosure	
Poles	Hub Size	With Switch Cat. #	Without Switch Cat. #
1	½	MCC1211†	MCC1212B
1	¾	MCC2211†	MCC2212B
2	½	MCC1212†	MCC1212B
2	¾	MCC2212†	MCC2212B

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) may be used to indicate heater omitted.

Heater Table

Full Load Motor Current	Heater Rating	Cooper Crouse-Hinds Symbol Number
.40— .43	.50	W1
.44— .48	.55	W2
.49— .53	.61	W3
.54— .58	.67	W4
.59— .64	.74	W5
.65— .71	.81	W6
.72— .78	.89	W7
.79— .87	.98	W8
.88— .95	1.10	W9
.96— 1.03	1.20	W10
1.04— 1.15	1.30	W11
1.16— 1.27	1.45	W12
1.28— 1.35	1.60	W13
1.36— 1.51	1.70	W14
1.52— 1.67	1.90	W15
1.68— 1.83	2.10	W16
1.84— 1.99	2.30	W17
2.00— 2.23	2.50	W18
2.24— 2.47	2.80	W19
2.48— 2.71	3.10	W20
2.72— 2.95	3.40	W21
2.96— 3.27	3.70	W22
3.28— 3.59	4.10	W23
3.60— 3.99	4.50	W24
4.00— 4.39	5.00	W25
4.40— 4.79	5.50	W26
4.80— 5.26	6.00	W27
5.27— 5.83	6.60	W28
5.84— 6.39	7.30	W29
6.40— 7.03	8.00	W30
7.04— 7.74	8.80	W31
7.75— 8.46	9.70	W32
8.47— 9.35	10.60	W33
9.36—10.30	11.70	W34
10.31—11.35	12.90	W35
11.36—12.47	14.20	W36
12.48—1.367	15.60	W37
13.68—15.12	17.10	W38
15.13—16.00	18.60	W39

† Includes one interchangeable heater. Select heater from table above and use symbol number as second section of the Cat. No.
Example: MC1211-W5

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Notes Page

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Description	Page No.
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Non-Interchangeable Trip	
100/150 ampere frame	
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EBMB Series	368
EIB Series	365
225/250 ampere frame	
EPC Series	374
FLB Series	381
EBMB Series	368
400 ampere frame	
EBMB Series	368
Interchangeable Trip	
225/250 ampere frame	
FLB Series	381
EBMB Series	368
400 ampere frame	
EBMB Series	368
600/800 ampere frame	
EBMB Series	368
1000 Ampere Frame	
EBMB Series	368

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3C Circuit Breakers

Application and Selection
Quick Selector Chart

Application:
Circuit breakers and their appropriate enclosures are used:
- in conjunction with service entrance, lighting, heating, appliance and motor protection circuits
- to provide disconnect means
- for short circuit protection and thermal time delay overload protection
- in various types of damp, wet, corrosive and hazardous areas

Considerations for Selection:
Considerations for selection of proper enclosure:
- The environment of the enclosure location in terms of NEC/CEC compliance and NEMA/EEMAC type required
- The size and type of circuit breaker required for the particular application
- See ''Quick Selector'' below for guidance

Options:
Many options are available on:
- material and finishes where special atmospheric conditions prevail
- special features for specific applications.

See individual listings for available options

Quick Selector Chart

Enclosures for Circuit Breakers

			Circuit Breaker						
Encl.	**NEC/CEC – Hazardous Area Certifications and Compliances**	**NEMA/ EEMAC Encl. Type**	**Type**	**Am-pere Rating Range**	**Voltage Range**	**Manufacturer and Frame Size**	**No. of Poles**	**Inter-change-able Trip**	**Enclosure Cover Construction**
EFD, EFDC	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7BCD, 9EFG	Thermal-Magnetic	15-30	120AC	Sq. D – QOU	1	No	Bolted/ Ground Joint
EBMB	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3R,4,7BCD, 9EFG,12	Thermal-Magnetic	15-800	120AC/125DC to 600AC/250DC	G.E. – TEB, TED, TFJ, TFK, TJJ, TJK, TKMA Sq. D – FAL, KAL, LAL, MAL Cut.-Ham. – EHD, FD, FDB, JD, JDB, KD, KDB,	1,2,3	Yes	Bolted/ Ground Joint/ Gasketed
EPC	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div, 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,4,7CD, 9EFG	Thermal-Magnetic	15-250	120AC/125DC to 600AC/250DC	G.E. – TEB, TED, TFJ Sq. D – FAL, KAL Cut.-Ham. – EHD, FD, FDB, JD, JDB	1,2,3	Yes	Threaded
FLB	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7CD, 9EFG	Thermal-Magnetic	15-225	120AC/125DC to 600AC/250DC	G.E. – TEB, TED, TFJ, TFK Sq. D – FAL, KAL Cut.-Ham. – EHD, FD, FDB, JD, JDB	1,2,3	Yes	Threaded
GUSC*	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7BCD, 9EFG	Electro-Magnetic {	1/4-35 1/4-3	115-230 AC 120DC	Heinemann #0131	1	No	Threaded
EIB	Cl. I, Div. 1 & 2, Groups B,C,D Cl. I, Zones 1 & 2 Cl. II, Div. 1, Groups E,F,G Cl. III	3,3R,4, 7BCD, 9EFG	Magnetic	15-100	480 AC	Cut. Ham. – EG	3	No	Bolted/ Ground Joint

* Enclosure only.

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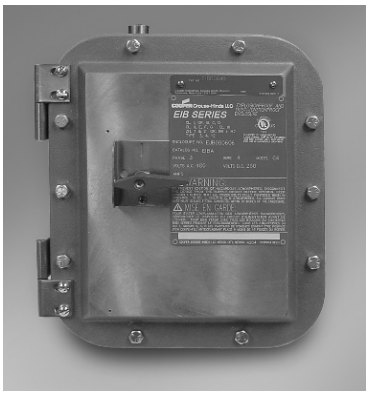
EIB Series

Compact Circuit Breaker Assemblies With Covers

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. I, Zones 1 & 2
Cl. II, Div. 1, Groups E,F,G
Class III
NEMA 3, 3R, 4, 7BCD, 9EFG
UL Standard: 886 cUL to CSA C22.2 No. 30

NEW!

The EIB Series of compact circuit breaker assemblies is an innovative line of explosion-proof motor control now being offered by Cooper Crouse-Hinds. The EIB series utilizes the EJB style D enclosure with its bolted construction, NEMA 4 environmental protection and Class I, Division 1, Group B, C and D hazardous area ratings. The EIB series is a cost-effective solution for circuit breaker protection and utilizes the Cutler-Hammer Type EG circuit breakers. Circuit breaker protection is available from 15 to 100 amps.



Features:

- Small compact footprint
- Rotary handle operator mounted on cover assembly
- No internal fork operator
- Trip position easily identified
- Neoprene cover gasket
- Detachable mounting feet
- Stainless steel hinges
- (2) 1½″ NPT conduit entries, one on top and one on bottom

Standard Materials:

- Body and Cover — Copper-free aluminum
- Gasket — Neoprene
- Cover Bolts — Steel
- Hinges — Stainless Steel
- Mounting Plate Sheet — Aluminum

Benefits:

- Less mounting space required and reduced enclosure cost
- Definite on, off and trip positions
- Will not damage breaker toggle
- Can identify from a distance
- Provides UL Type 4 (hosetight) environmental rating
- Provides flexible mounting alternatives, no need to replace the entire enclosure if a mounting foot is broken
- Easy access to inside enclosure for wiring and maintenance
- For easy top or bottom feed of conductors
- For field addition of breather and/or drain; holes come plugged

Finishes:

- Copper-free Aluminum — natural
- Steel — Electro-galvanized

Certifications:

- Class I, Divisions 1 & 2, Groups B, C & D
- Class I, Zones 1 & 2
- Class II, Division 1, Groups E, F and G
- Class III
- Enclosure type 3, 3R, and 4, 7BCD, 9EFG
- NEMA 3, 3R, 4, 7BCD, 9EFG
- UL Standard 886
- cUL to CSA C22.2 No. 30

* Not applicable when ordered with the S756V option

Electrical Ratings:

- 480 volts
- 3 poles
- 10,000 AIC max.

Weights:

EIBA 39 lbs
EIBB 58 lbs

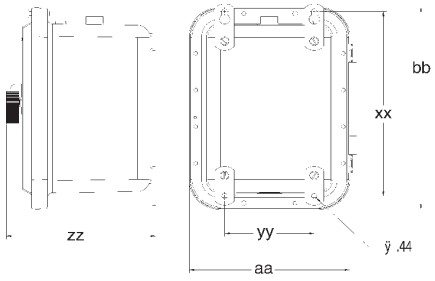
Ordering Information:

Circuit Breaker Rating (amps)	Enclosure Only	Enclosure with Circuit Breaker
15	EIBA	EIBA3015
20	EIBA	EIBA3020
25	EIBA	EIBA3025
30	EIBA	EIBA3030
35	EIBA	EIBA3035
40	EIBB	EIBB3040
45	EIBB	EIBB3045
50	EIBB	EIBB3050
60	EIBB	EIBB3060
70	EIBB	EIBB3070
80	EIBB	EIBB3080
90	EIBB	EIBB3090
100	EIBB	EIBB3100

Options:

	add suffix
Insulated Neutral Lug	S146
Grounded Neutral Lug kit w/connectors for 50, 100 & 225 amps	S178
External Ground Stud	S214
Breather and drain	S756V
Epoxy Powder Coat Finish (exterior only)	S752
Epoxy Powder Coat Finish (exterior and interior)	S753

Dimensions:



	Size A	Size B
aa	10.47″	12.53″
bb	12.47″	16.53″
xx	11.13″	15.13″
yy	5.0″	7.0″
zz	9.6″	11.66″
Mounting Holes	7⁄16″	7⁄16″

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3C EBMB Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight

Application:

Spectrum EBM™ hinged cover motor control enclosures are used:

- For general motor control and circuit protection – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter.
- In areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- To provide line disconnect means and short circuit protection.
- For service entrance, feeder or branch circuit protection for lighting, heating, appliance and motor circuits.
- On switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction (Less than 0.4 of 1%).
- Circuit breaker operating handle located through the right side wall of the body permits visual confirmation of correct component assembly and operation.
- Total compliance to the wiring end room requirements of the National Electrical Code®.
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body.
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' breakers.
- Simple, straightforward installation of breaker on pre-drilled mounting plate within enclosure. Mounting plate also field removable.
- Circuit breaker external operating handle can be padlocked in either ''ON'' or ''OFF'' positions.
- Neoprene cover gasket permanently attached to the cover seals out moisture.
- Bodies have top and bottom drilled and tapped entrances for power conduits and control conduits. Removable reducers are supplied, as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap-on mounting feet.
- Optional EMPS control devices may be added to enclosure cover.
- Steel bracket for lifting larger enclosures during installation supplied as standard.

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: UL1203 – Hazardous (classified) locations/CSA Standards: C22.2 No. 30
- UL subject 2062 –
  High A.I.C. Rating (Interrupting Capacity)
  For Groups C & D only.

Volt	RMS Symm. Amperes
240	65,000
480	50,000
600	25,000

- NEMA 3, 3R, 4 ‡, 7BCD, 9EFG, 12

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shaft and bushing – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers and retractile springs – stainless steel

Electrical Rating Ranges:

- Circuit breakers – 100, 150, 225, 250, 400, 600, 800, 1000** ampere frame sizes

National Electrical Code is a Registered Trademark of The National Fire Protection Association.

** 1000 Ampere Frame (max. 800 ampere trip)



Spectrum EBM motor control enclosures accommodate popular makes of circuit breakers.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMB Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12 Watertight

Options:

The following options are available from factory by adding suffix to catalog number. Suffixes are added alphanumerically.

Catalog Number System
EBMBB-(A)-WT30FDB36-(B)

(A) Options in this position are additions to the enclosure and should be listed alphanumerically.
(B) Options in this position are modifications to the circuit breaker and should be listed alphanumerically.



EBMB Series circuit breaker enclosures are available with breakers from 100 to 1000** amp frame sizes.
** 1000 Ampere Frame (max. 800 ampere trip.)

Description	Suffix to be added to Cat. No.	Position in Cat. No.
● Ambient compensated circuit breaker trip setting	**AC**	**B**
● Pilot light, 120VAC, red jewel, w/blank indicating plate	**J1**①	**A**
● Pilot light, 120VAC, green jewel, w/blank indicating plate	**J3**①	**A**
● LED pilot lights in place of standard incandescent pilot lamps	**LED**	**A**
● Start-stop pushbuttons (requires 2 spaces)	**PB23**①‡	**A**
● Space heater, 120 volt, 25 watts	**R11**	**A**
● Space heater, 240 volt, 25 watts	**R22**	**A**
● Space heater, 480 volt, 25 watts	**R44**	**A**
● Insulated neutral w/2 connectors	**S146**	**A**
● Grounded neutral stud w/3 connectors (50, 100, 225 amp)	**S178**	**A**
● Std. drain, Class I, B,C & D; Class II, E F & G, Class III	**S756 ‡**	**A**
● Std. breather & drain, Class I, B,C & D; Class II, E F & G; Class III	**S756V ‡**	**A**
● Side conduit entrances (check factory for application)	**S366**	**A**
● Back conduit entrances (check factory for application)	**S367**	**A**
● External epoxy finish	**S752**	**A**
● Internal and external epoxy finish	**S753**	**A**
● Aux. switch on circuit breaker, 1A & 1B contacts	**S784**	**B**
● Aux. switch on circuit breaker, 2A & 2B contacts	**S785**	**B**
● 12 point term. block – 30 amp, 300 V	**S786**	**A**
● General purpose control relay, 4 pole N.O., contacts rated 10A @ 600V, coil 120VAC, 50-60 Hertz	**S787**	**A**

① When specifying any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order **DSL** Legend Plates for non-standard markings of the device(s) being used. See page 329 for DSL Legend Plate listings

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMB Circuit Breakers and Enclosures



Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,3R,4‡,7BCD,9EFG,12	Watertight

Ordering Information:

● To order an enclosure complete with circuit breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown below.

● Enclosures can be ordered without circuit breakers. Select from listings below. For manufacturer's catalog numbers of circuit breakers that may be used with Spectrum EBM motor control enclosures see section 6C.

EBMB Series Enclosures for Circuit Breakers

Circuit Breaker			Enclosures		
Poles ①	**Voltage Rating**	**Circuit Breaker Frame Size**	**Without Circuit Breaker Cat. No.**	**Circuit Breaker Amp Rating**	**With Circuit Breaker Cat. No.**
3	240VAC or 125-250VDC	100 Amp. Frame	EBMBA②✓	15A thru 70A	EBMBA-DT□FAL32✓
3	240VAC or 125-250VDC	150 Amp. Frame	EBMBA③④✓	10A thru 70A	EBMBA-TT□TEB32✓
3	480VAC or 250VDC	100 Amp. Frame	EBMBA②✓	15A thru 70A	EBMBA-†□◆34✓
3	480VAC or 250VDC	150 Amp. Frame	EBMBA③④✓	10A thru 70A	EBMBA-TT□TED34✓
3	600VAC	100 Amp. Frame	EBMBA②✓	15A thru 70A	EBMBA-DT□FAL36✓
3	600VAC	150 Amp. Frame	EBMBA③④⑤✓	10A thru 70A	EBMBA-†□◆36✓
3	240VAC or 125-250VDC	100 Amp. Frame	EBMBB②✓	15A thru 100A	EBMBB-DT□FAL32✓
3	240VAC or 125-250VDC	150 Amp. Frame	EBMBB③④✓	10A thru 150A③	EBMBB-TT□TEB32✓
3	480VAC or 250VDC	100 Amp. Frame	EBMBB②✓	15A thru 100A	EBMBB-†□◆34✓
3	480VAC or 250VDC	150 Amp. Frame	EBMBB③④✓	10A thru 150A	EBMBB-TT□TED34✓
3	600VAC	100 Amp. Frame	EBMBB②✓	15A thru 100A	EBMBB-DT□FAL36✓
3	600VAC	150 Amp. Frame	EBMBB③④⑤✓	15A thru 150A	EBMBB-†□◆36✓
3	600VAC	250 Amp. Frame	EBMBG⑥⑦✓	70A thru 250A	EBMBG-†□◆36
3	600VAC or 250VDC	400 Amp. Frame	EBMBK⑧✓	100A thru 400A⑥	EBMBK-†□◆36
3	600VAC or 250VDC	600 Amp. Frame	EBMBL⑨✓	250A thru 600A	EBMBL-WT□◆36
3	600VAC or 250VDC	800 Amp. Frame	EBMBL⑩✓	300A thru 800A	EBMBL-WT□◆36
3	600VAC or 250VDC	1000 Amp. Frame	EBMBL✓	125A thru 800A (max.)	EBMBL-DT□◆36

† Circuit Breakers:

Manufacturer	Symbol
Cutler-Hammer	WT
General Electric	TT
Square D	DT

◆ Select Circuit Breaker Frame Type based on Frame size, voltage, and manufacturer desired:

	100 Amp. Frame			150 Amp. Frame			250 Amp. Frame⑥⑦	400 Amp. Frame	600 Amp. Frame	800 Amp. Frame	1000 Amp. Frame
Manufacturer	240VAC	480VAC	600VAC	240VAC	480VAC	600VAC	600VAC	600VAC	600VAC	600VAC	600VAC
Cutler-Hammer	—	EHD	—	—	—	FDB	JD–Interchangeable Trip Unit JDB–Non-Interchangeable Trip Unit	KD–Interchangeable Trip Unit KDB–Non-Interchangeable Trip Unit	LD	MD	—
General Electric	TEB	—	—	—	TED	TED	TFK–Interchangeable Trip Unit TFJ–Non-Interchangeable Trip Unit	TJK–Interchangeable Trip Unit TJJ–Non-Interchangeable Trip Unit	TJK	TKMA	—
Square D	FAL	FAL	FAL	—	—	—	KAL	LAL	—	—	MAL

□ Select Trip Setting from below:

100 Amp Frame (EHD, FAL)② – 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100

150 Amp. Frame (TDB, TEB, TED)③④⑤ – 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150

225/250 Amp Frame (JD, JDB, KAL, TFJ, TFK)⑥⑦ – 70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250

400 Amp. Frame (KD, KDB, LAL, TJJ, TJK)⑧ – 100, 125, 150, 175, 200, 225, 250, 300, 350, 400

600 Amp. Frame (LD, TJK)⑨ – 250, 300, 350, 400, 450, 500, 600

800 Amp Frame (MD, TKMA)⑩ – 300, 350, 400, 450, 500, 600, 700, 800

1000 Amp Frame (MAL) – 125, 150, 175, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 800

Footnotes:

① Depending on availability from the circuit breaker manufacturer 1 and 2 pole can be furnished. Information on request.
② EBMBA will accept 15 thru 70 amp. trip, EBMBB will accept 15 thru 100 amp. trip.
③ EBMBA will accept 10 thru 70 amp. trip, EBMBB will accept 10 thru 150 amp. trip.
④ General Electric TEB frame available 10 thru 100 amp. trip. TED frame available 10 thru 150 amp. trip.
⑤ Westinghouse FDB frame available 15 thru 150 amp. trip.
⑥ General Electric TFJ and TFK types are 225 amp. frame, available 70 thru 225 amp. trip.
⑦ Westinghouse JD and JDB types are 250 amp. frame, available 70, 90, 100 and 125 thru 250 amp. trip.
⑧ Westinghouse KD and KDB frames available 100 thru 400 amp. trip. Square D LAL and General Electric TJJ and TJK frames available 125 thru 400 amp. trip.
⑨ Westinghouse LD frame available 300 thru 400 and 500, 600 amp. trip.
⑩ Westinghouse MD frame available 400 and 500 thru 800 amp. trip.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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EBMB Circuit Breakers and Enclosures

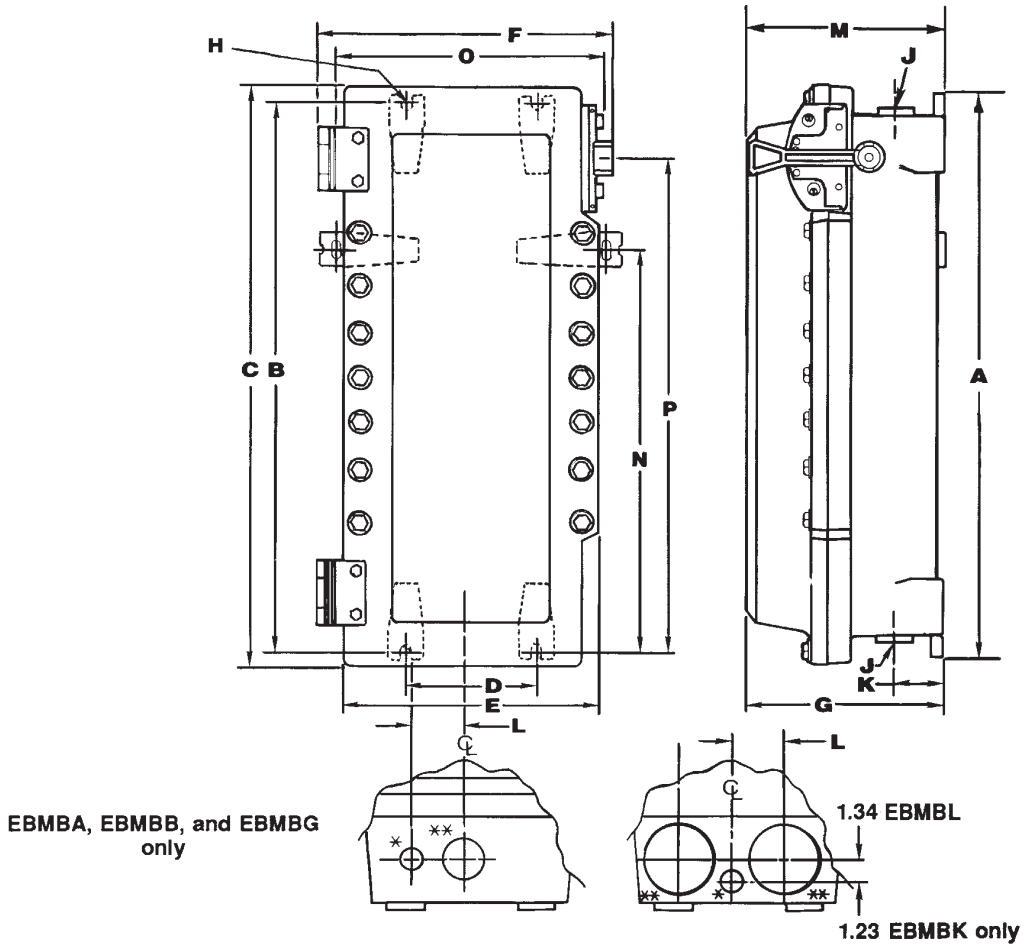
Dimensions (inches)

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



Dimensions are approximate, not for construction purposes.



* 1″ Drilled & Tapped (D & T) conduit entry for control conductors supplied with PLG plug top and bottom.

** Conduit entrance(s) for power conductors (top and bottom). (All conduit entrance(s) supplied with RE reducer and PLG plug.)

*** Use ½″ diameter bolts for mounting all enclosures. (see H) Note: Lifting bracket will accommodate a maximum 2 ton hook.

	Enclosure Only Cat. No.	Enclosure Size Symbol	Dimensions							** J Conduit Entry Trade Size		Dimensions					
			A	B	C	D	E	F	G	D&T♦	w/RE	K	L	M	N	O	P
100 Amp Frame	EBMBA✓	A	18.25	17.25	19.40	6.00	13.03	14.78	10.25	2″	1.5″	3.25	3.13	10.25	—	—	14.50
100 and 150 Amp Frame	EBMBB✓	B	25.75	24.75	26.90	6.00	13.03	14.78	10.25	2″	1.5″	3.25	3.13	10.25	—	—	22.00
225 and 250 Amp Frame	EBMBG✓	G	37.50	36.50	39.28	6.00	13.03	14.78	10.25	3.0″	2.5″	3.25	3.13	10.25	—	—	34.06
400 Amp Frame	EBMBK✓	K	43.12	41.50	42.65	12.00	17.65	20.28	10.92	(2)3″	(2)2.5″	3.25	3.00	10.92	—	—	29.23
600, 800 and 1000† Amp Frame	EBMBL✓	L	53.25	51.50	53.28	12.00	17.90	20.58	13.03	(2)4″	(2)3.5″	4.00	3.50	13.13	41.50	18.40	29.88

† 1000 Ampere Frame (max. 800 ampere trip)

✓ – available with Lightning Service™ delivery. See Section G for complete details.

♦ Drilled & Tapped.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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3C EPC Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

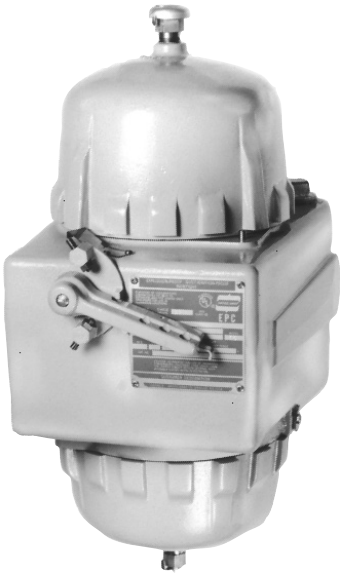
EPC Circuit breakers and enclosures are used:
- for service entrance*, feeder or branch circuit protection for lighting, heating, appliance and motor circuits
- in areas made hazardous due to the presence of flammable vapors, gases or combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical or petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

- Quick-opening covers – less than two turns to remove or install
- Three section design for ease of installation
- Water-shedding construction with female threads on top cover, male threads on bottom cover, and top cover skirted
- Specially located stops and locks insure adequate thread engagement and prevent overtightening
- Separate replaceable mounting bracket attached to the rear of the body provides three-point suspension for quick installation and leveling – one keyhole slot at top and two open slots at bottom
- Bodies have two taper-tapped conduit hubs with integral bushings on the top, and two more directly below
- Mounting plates are supplied with all necessary holes and hardware to attach any of the circuit breakers shown in the catalog listings. Breaker and interior mounting frames are easily removed as a unit, providing free access to the wiring chamber
- Breaker is operated by an external handle which can be padlocked in either ''ON'' or ''OFF'' positions by as many as three padlocks. Breaker is trip-free of the handle and will open under short circuit or overload, even if the handle is locked in the ''ON'' position

Standard Materials:

- Bodies and covers – copper-free aluminum
- Operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel



Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized

Electrical Rating Ranges:

- 100, 150, 225, 250 ampere frame sizes

Certifications & Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA: 3, 4, 7CD, 9EFG
- UL Standard: 698
- CSA: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
Auxiliary Switch‡	
1A/1B (1P2T)	S784
2A/2B (2P2T)	S785
Insulated neutral with 2 connectors (100, 150 and 225 amp.)	S146
Grounded neutral stud with 3 connectors (100, 150 and 225 amp.)	S178
Side bosses drilled and tapped same size as standard hubs	S366
Back boss drilled and tapped same size as standard hubs	S367
Standard Breather (Class I, Groups C, D; Class II, Groups E, F, G; Class III)	S219
Standard Drain (Class I, Groups C, D; Class II, Groups E, F, G; Class III)	S198
Standard Breather and Drain (Class I, Groups C, D; Class II, Groups E, F, G; Class III)	S198V
Universal Breather-Drain (Class I, Groups C, D; Class II, Groups F, G)	S454§
(2) Universal Breather-Drains (Class I, Groups C, D; Class II, Groups F, G)	S454V§

* Suffix S146 insulated material must be used to comply with NEC requirements for service entrance

‡ Application is limited by circuit breaker design – Consult Factory.

§ Not Suitable for NEMA 4

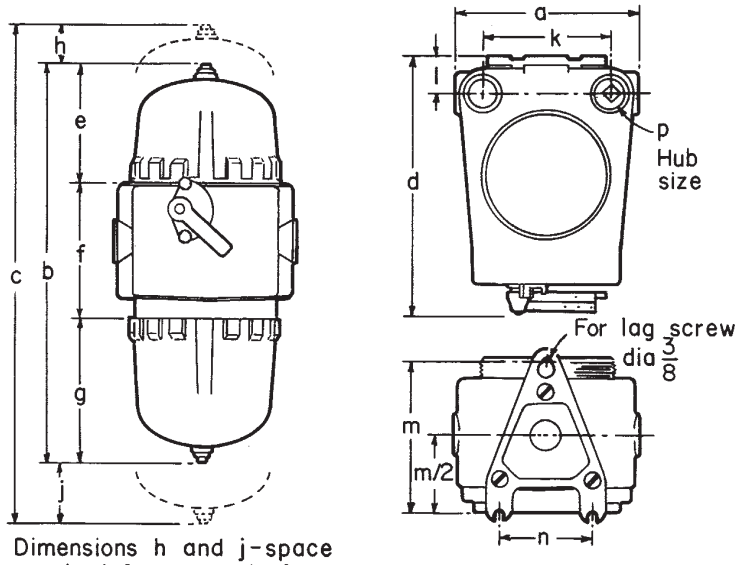
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EPC Circuit Breakers and Enclosures

Dimensions* (inches)

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



Dimensions h and j-space required for removal of covers

Cat. # EPC	377	387	317
Int. Dia.	7″	7″W	11″
a	10 5/8	12 13/16	16 1/8
b	19 13/16	19 13/16	25 1/2
c	23 13/16	23 13/16	35 1/2
d	14 3/8	14 3/8	20 1/4
e	6 3/4	6 3/4	9 1/8
f	7 11/16	7 11/16	8 5/8
g	5 3/8	5 3/8	7 3/4
h	2	2	4 1/2
j	2	2	5 1/2
k	7 3/8	9 1/4	12
l	2 1/16	2 1/16	2 5/8
m	9 3/8	9 3/8	11
n	5 1/4	5 1/4	5 1/2
p	1 1/4	2	2 1/2

* Dimensions are approximate, not for construction

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3C EPC Circuit Breakers and Enclosures

100/150A Frame, Thermal Magnetic, 120-240 VAC, 125-250 VDC

CI. I, Div. 1 & 2, Groups C,D
CI. II, Div. 1, Groups E,F,G
CI. II, Div. 2, Groups F,G
CI. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

To order an enclosure complete with circuit breaker where there is a choice of manufacturer, insert the manufacturer's symbol in the designated position of the catalog number.

Enclosures only can be ordered.

Select from listings. For circuit breakers that can be accommodated see Table indicated in Section 6C.

Detailed information on circuit breaker selection is given in Section 6C.

Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Int. Dia.	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. #
2	240VAC or 125-250VDC	7	7	1¼	15	EPC377	EPC377-◆◆15EB-2
					20		EPC377-◆◆20EB-2
					30		EPC377-◆◆30EB-2
					40		EPC377-◆◆40EB-2
					50		EPC377-◆◆50EB-2
					70		EPC377-◆◆70EB-2
					90		EPC377-◆◆90EB-2
					100		EPC377-◆◆100EB-2
			7W	2	70	EPC387	EPC387-◆◆70EB-2
					90		EPC387-◆◆90EB-2
					100		EPC387-◆◆100EB-2
3	240VAC*	7	7	1¼	15	EPC377	EPC377-◆◆15EB-3
					20		EPC377-◆◆20EB-3
					30		EPC377-◆◆30EB-3
					40		EPC377-◆◆40EB-3
					50		EPC377-◆◆50EB-3
					70		EPC377-◆◆70EB-3
					90		EPC377-◆◆90EB-3
					100		EPC377-◆◆100EB-3
			7W	2	70	EPC387	EPC387-◆◆70EB-3
					90		EPC387-◆◆90EB-3
					100		EPC387-◆◆100EB-3

* Square D 240VAC/125-250VDC

◆◆ **Circuit Breakers**

Manufacturer	Frame	Symbol
General Electric	TEB	TT
Square D	FAL	DT
Cutler-Hammer	ED	WT

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Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Int. Dia.	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. #
2	480VAC or 250VDC	8	7	1¼	15	EPC377	EPC377-‡15EHD-2
					20		EPC377-‡20EHD-2
					30		EPC377-‡30EHD-2
					40		EPC377-‡40EHD-2
					50		EPC377-‡50EHD-2
					70		EPC377-‡70EHD-2
					90		EPC377-‡90EHD-2
					100		EPC377-‡100EHD-2
			7W	2	70	EPC387	EPC387-‡70EHD-2
					90		EPC387-‡90EHD-2
					100		EPC387-‡100EHD-2
3	480VAC†	8	7	1¼	15	EPC377	EPC377-‡15EHD-3
					20		EPC377-‡20EHD-3
					30		EPC377-‡30EHD-3
					40		EPC377-‡40EHD-3
					50		EPC377-‡50EHD-3
					70		EPC377-‡70EHD-3
					90		EPC377-‡90EHD-3
					100		EPC377-‡100EHD-3
			7W	2	70	EPC387	EPC387-‡70EHD-3
					90		EPC387-‡90EHD-3
					100		EPC387-‡100EHD-3
2	600VAC or 250VDC	9	7	1¼	15	EPC377	EPC377-♦15FDB-2
					20		EPC377-♦20FDB-2
					30		EPC377-♦30FDB-2
					40		EPC377-♦40FDB-2
					50		EPC377-♦50FDB-2
					70		EPC377-♦70FDB-2
					90		EPC377-♦90FDB-2
					100		EPC377-♦100FDB-2
			7W	2	70	EPC387	EPC387-♦70FDB-2
					90		EPC387-♦90FDB-2
					100		EPC387-♦100FDB-2
					110*		EPC387-♦110FDB-2
					125*		EPC387-♦125FDB-2
					150*		EPC387-♦150FDB-2
3	600VAC§	9	7	1¼	15	EPC377	EPC377-♦15FDB-3
					20		EPC377-♦20FDB-3
					30		EPC377-♦30FDB-3
					40		EPC377-♦40FDB-3
					50		EPC377-♦50FDB-3
					70		EPC377-♦70FDB-3
					90		EPC377-♦90FDB-3
					100		EPC377-♦100FDB-3
			7W	2	70	EPC387	EPC387-♦70FDB-3
					90		EPC387-♦90FDB-3
					100		EPC387-♦100FDB-3
					100*		EPC387-♦110FDB-3
					125*		EPC387-♦125FDB-3
					150*		EPC387-♦150FDB-3

† Square D 480VAC/250VDC
§ Square D 600VAC/250VDC
* Square D FAL Frame, 100A Max.

‡ Circuit Breakers

Manufacturer	Frame	Symbol
General Electric	TED	TT
Square D	FAL	DT
Cutler-Hammer	EHD	WT

♦ Circuit Breakers

Manufacturer	Frame	Symbol
General Electric	TED	TT
Square D	FAL	DT
Cutler-Hammer	FD, FDB	WT

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EPC Circuit Breakers and Enclosures

225/250A Frame, Thermal Magnetic, 600VAC/250VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Int. Dia.	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. #
2	600VAC or 250VDC	10	11	2½	125	EPC317	EPC317-‡125JB-2
					150		EPC317-‡150JB-2
					175		EPC317-‡175JB-2
					200		EPC317-‡200JB-2
					225		EPC317-‡225JB-2
					250*		EPC317-‡250JB-2
3	600VAC	10	11	2½	125	EPC317	EPC317-‡125JB-3
					150		EPC317-‡150JB-3
					175		EPC317-‡175JB-3
					200		EPC317-‡200JB-3
					225		EPC317-‡225JB-3
					250*		EPC317-‡250JB-3

‡ Circuit Breakers

Manufacturer	Frame	Symbol
Cutler-Hammer	JDB	WT
General Electric	TFJ	TT
Square D	KAL	DT

* General Electric TFJ Frame, 225A Max.

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FLB Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

FLB circuit breakers and enclosures are used:

- for service entrance, feeder or branch circuit protection for lighting, heating, appliance and motor circuits
- in areas made hazardous due to the presence of flammable vapors, gases or combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

- Semi-cylindrical body shape for maximum strength at lowest practical weight
- Round threaded covers at each end, set at an angle to provide ready access to interior for ease of wiring
- Breaker is operated by an external handle which can be padlocked in either ''ON'' or ''OFF'' positions. Breaker is trip-free of the handle and will open under short circuit or overload even if the handle is locked in the ''ON'' position
- Bodies have vertical through feed conduit hubs of sizes given in the listings

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

Standard Finishes:

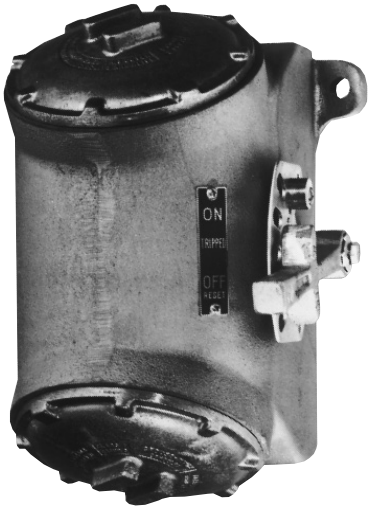
- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – zinc electroplate with chromate finish

Electrical Rating Ranges:

- 100 and 225 ampere frame sizes

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 3, 4, 7CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2 No. 30

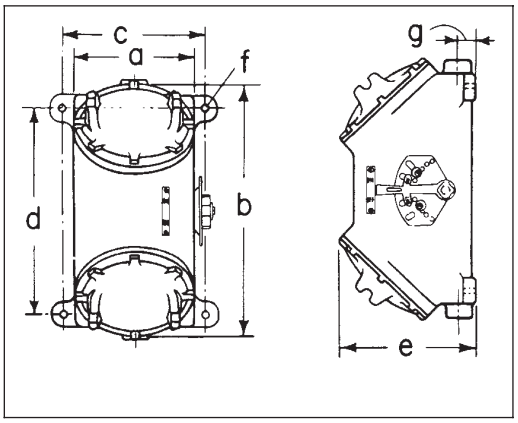


Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
2 lugs for neutral connections (50, 100 and 225 amp.)	S146
Ground neutral stud with 3 connectors (50, 100 and 225 amp.)	S168
Standard Breather (Class I, Groups C,D; Class II, Groups E,F,G; Class III)	S219
Standard Drain (Class I, Groups C,D; Class II, Groups E,F,G; Class III)	S198
Standard Breather and Drain (Class I, Groups C,D; Class II, Groups E,F,G; Class III)	S198V
Universal Breather – Drain (Class I, Groups C,D; Class II, Groups F,G)	S454*
(2) Universal Breather – Drains (Class I, Groups C,D; Class II, Groups F,G)	S454V*
Specify Auxiliary Switch**	
1A/1B (1P2T)	S784
2A/2B (2P2T)	S785

Dimensions (inches)§



	a	b	c	d	e	f	g
†FLB140, 220, 221	5¼	10¼	6¼	7¼	7	7/16	1⅛
FLB115, 141, 147, 148, 171, 172, 173, 175, 222, 361, 116, 142, 149, 174, 177, 223, 362	7½	13⅜	8½	9¾	9⅛	7/16	1¾
FLB224, 225, 264, 265, 267, 346	13¾	22½	16¼	9⅞	15½	21/32	2 7/16

† With two mounting feet, one at upper right and one at lower left

* Not suitable for NEMA 4/EEMAC

** Application is limited by circuit breaker design – Consult Factory

§ Dimensions are approximate, not for construction purposes.

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FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic, 120 VAC/125 VDC, 240 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

To order an enclosure complete with circuit breaker where there is a choice of manufacturer, insert the manufacturer's symbol in the designated position of the catalog number.

Enclosures only can be ordered.

Select from listings. For circuit breakers that can be accommodated see Table indicated in Section 6C.

Detailed information on circuit breaker selection is given in Section 6C.

Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker General Electric "TEB" Cat. #
1	120VAC or 125VDC	7	¾	15	FLB220	FLB220-TT15-1
				20		FLB220-TT20-1
				30		FLB220-TT30-1
				40		FLB220-TT40-1
				50		FLB220-TT50-1
2	240VAC or 125-250VDC	7	1	15	FLB221	FLB221-TT15-2
				20		FLB221-TT20-2
				30		FLB221-TT30-2
				40		FLB221-TT40-2
				50		FLB221-TT50-2
			1½	70	FLB223	FLB223-TT70-2
				90		FLB223-TT90-2
				100		FLB223-TT100-2
3	240VAC	7	1¼	15	FLB222	FLB222-TT15-3
				20		FLB222-TT20-3
				30		FLB222-TT30-3
				40		FLB222-TT40-3
				50		FLB222-TT50-3
			1½	70	FLB223	FLB223-TT70-3
				90		FLB223-TT90-3
				100		FLB223-TT100-3

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FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic, 120-480 VAC, 125-250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



100 Ampere Frame Size with Non-Interchangeable Trip 240VAC Max.

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Square D "FAL" Cat. #
1	120VAC or 125VDC	7	¾	15	FLB171	FLB171-DT15-1
				20		FLB171-DT20-1
				30		FLB171-DT30-1
				40		FLB171-DT40-1
				50		FLB171-DT50-1
2	240VAC or 125-250VDC	7	1	15	FLB172	FLB172-DT15-2
				20		FLB172-DT20-2
				30		FLB172-DT30-2
				40		FLB172-DT40-2
				50		FLB172-DT50-2
			1½	70	FLB174	FLB174-DT70-2
				90		FLB174-DT90-2
				100		FLB174-DT100-2
3		7	1¼	15	FLB173	FLB173-DT15-3
				20		FLB173-DT20-3
				30		FLB173-DT30-3
				40		FLB173-DT40-3
				50		FLB173-DT50-3
			1½	70	FLB174	FLB174-DT70-3
				90		FLB174-DT90-3
				100		FLB174-DT100-3

100 Ampere Frame Size with Non-Interchangeable Trip 480VAC Max.

						Cutler-Hammer "EHD" Cat. #	General Electric "TED" Cat. #
2	480VAC or 250VDC	8	1	15	FLB140	FLB140-WT15-2	FLB140-TT15-2
				20		FLB140-WT20-2	FLB140-TT20-2
				30		FLB140-WT30-2	FLB140-TT30-2
				40		FLB140-WT40-2	FLB140-TT40-2
				50		FLB140-WT50-2	FLB140-TT50-2
			1½	70	FLB142	FLB142-WT70-2	FLB142-TT70-2
				90		FLB142-WT90-2	FLB142-TT90-2
				100		FLB142-WT100-2	FLB142-TT100-2
3	480VAC	8	1¼	15	FLB141✓	FLB141-WT15-3	FLB141-TT15-3
				20		FLB141-WT20-3	FLB141-TT20-3
				30		FLB141-WT30-3	FLB141-TT30-3
				40		FLB141-WT40-3	FLB141-TT40-3
				50		FLB141-WT50-3	FLB141-TT50-3
			1½	70	FLB142✓	FLB142-WT70-3	FLB142-TT70-3
				90		FLB142-WT90-3	FLB142-TT90-3
				100		FLB142-WT100-3	FLB142-TT100-3

✓ – available with Lightning Service™ delivery. See Section G for complete details.

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FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic, 480 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Square D "FAL" Cat. #
2	480VAC or 250VDC	8	1¼	15	FLB147	FLB147-DT15-2
				20		FLB147-DT20-2
				30		FLB147-DT30-2
				40		FLB147-DT40-2
				50		FLB147-DT50-2
			1½	70	FLB149	FLB149-DT70-2
				90		FLB149-DT90-2
				100		FLB149-DT100-2
3			1¼	15	FLB148	FLB148-DT15-3
				20		FLB148-DT20-3
				30		FLB148-DT30-3
				40		FLB148-DT40-3
				50		FLB148-DT50-3
			1½	70	FLB149	FLB149-DT70-3
				90		FLB149-DT90-3
				100		FLB149-DT100-3

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Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker
						Cutler-Hammer "FDB" Cat. #
				15		FLB115-WT15-2
				20		FLB115-WT20-2
			1¼	30	FLB115	FLB115-WT30-2
	600VAC			40		FLB115-WT40-2
2	or	9		50		FLB115-WT50-2
	250VDC					
				70		FLB116-WT70-2
			1½	90	FLB116	FLB116-WT90-2
				100		FLB116-WT100-2
				15		FLB115-WT15-3
				20		FLB115-WT20-3
			1¼	30	FLB115	FLB115-WT30-3
				40		FLB115-WT40-3
3	600VAC	9		50		FLB115-WT50-3
				70		FLB116-WT70-3
			1½	90	FLB116	FLB116-WT90-3
				100		FLB116-WT100-3
						General Electric "TED" Cat. #
				15		FLB361-TT15-3
				20		FLB361-TT20-3
			1¼	30	FLB361	FLB361-TT30-3
				40		FLB361-TT40-3
3	600VAC	9		50		FLB361-TT50-3
				70		FLB362-TT70-3
			1½	90	FLB362	FLB362-TT90-3
				100		FLB362-TT100-3

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FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic, 600 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Square D "FAL" Cat. #
2	600VAC or 250VDC	9	1¼	15	FLB175	FLB175-DT15-2
				20		FLB175-DT20-2
				30		FLB175-DT30-2
				40		FLB175-DT40-2
				50		FLB175-DT50-2
			1½	70	FLB177	FLB177-DT70-2
				90		FLB177-DT90-2
				100		FLB177-DT100-2
3			1¼	15	FLB175	FLB175-DT15-3
				20		FLB175-DT20-3
				30		FLB175-DT30-3
				40		FLB175-DT40-3
				50		FLB175-DT50-3
			1½	70	FLB177	FLB177-DT70-3
				90		FLB177-DT90-3
				100		FLB177-DT100-3

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FLB Circuit Breakers and Enclosures

225A Frame, Thermal Magnetic, 600 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker	
						Cutler-Hammer "JDB"** Cat. #	
2	600VAC or 250VDC	10	2½	125 150 175 200 225	FLB264	FLB264-WT125-2 FLB264-WT150-2 FLB264-WT175-2 FLB264-WT200-2 FLB264-WT225-2	
3	600VAC	10	2½	125 150 175 200 225	FLB264	FLB264-WT125-3 FLB264-WT150-3 FLB264-WT175-3 FLB264-WT200-3 FLB264-WT225-3	
						General Electric "TFJ" Cat. #	Square D "KAL" Cat. #
2	600VAC or 250VDC	10	2½	125 150 175 200 225	FLB346		FLB346-DT125-2 FLB346-DT150-2 FLB346-DT175-2 FLB346-DT200-2 FLB346-DT225-2
3	600VAC	10	2½	125 150 175 200 225	FLB224 or FLB346	FLB224-TT125-3 FLB224-TT150-3 FLB224-TT175-3 FLB224-TT200-3 FLB224-TT225-3	FLB346-DT125-3 FLB346-DT150-3 FLB346-DT175-3 FLB346-DT200-3 FLB346-DT225-3

Interchangeable Trip

						Cutler-Hammer "JD"* Cat. #	General Electric "TFK" Cat. #
2	600VAC or 250VDC	11	3	125 150 175 200 225	FLB267	FLB267-WT125-2 FLB267-WT150-2 FLB267-WT175-2 FLB267-WT200-2 FLB267-WT225-2	
3	600VAC	11	3	125 150 175 200 225	FLB267 or FLB225	FLB267-WT125-3 FLB267-WT150-3 FLB267-WT175-3 FLB267-WT200-3 FLB267-WT225-3	FLB225-TT125-3 FLB225-TT150-3 FLB225-TT175-3 FLB225-TT200-3 FLB225-TT225-3

* Formerly "KB"
** Formerly "JB"

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3C EFD and EFDC Circuit Breakers and Enclosures

120VAC, Single Pole

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EFD circuit breakers and enclosures are used:
- for branch circuit protection for lighting, appliance, and motor circuits
- in areas made hazardous due to the presence of flammable vapors, gases or combustible dusts
- in corrosive locations
- for installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

- Small, compact enclosures with accurately ground, wide flange on both body and cover for flametight joint
- Dead-end (EFD) or through feed (EFDC) hubs ¾″ to 1″ sizes
- Breaker mounted on cover and back wired for ease of installation
- Breaker can be padlocked in ''ON'' or ''OFF'' positions with trip-free handle mechanism

Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Operating handles – type 6/6 nylon
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Type 6/6 nylon – black
- Stainless steel – natural

Electrical Ratings:

- Single pole – 120/240 vac max.
- Trip ratings – 15, 20 and 30 amp.

Certifications & Compliances:

- NEC:
  - Class I, Division 1 & 2, Groups B*,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA 3,7B*CD,9EFG,12

Options:

- For use in Group B hazardous areas – add suffix GB to catalog number.*



EFD dead end

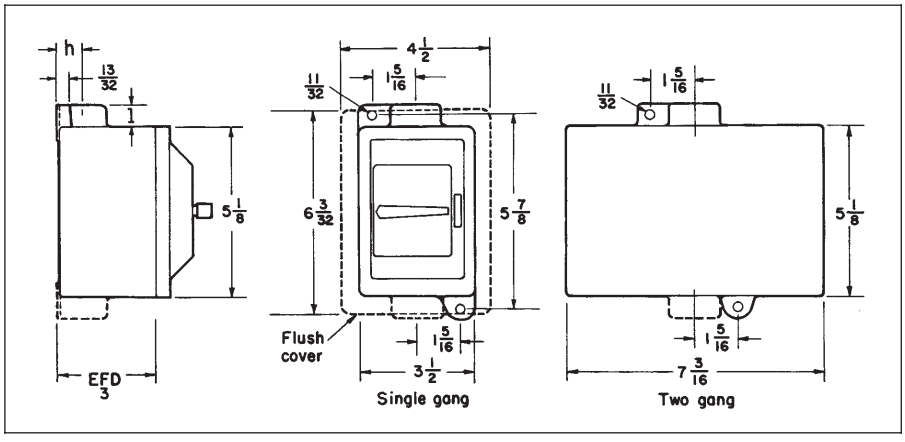


EFDC through feed

With Square D Type ''QOU'' Circuit Breakers

Hub Size	15 Amp Cat. #	20 Amp Cat. #	30 Amp Cat. #
EFD Single Gang (Dead end)			
¾	EFD21104	EFD21105	EFD21106
1	EFD31104	EFD31105	EFD31106
EFDC Single Gang (through feed)			
¾	EFDC21104	EFDC21105	EFDC21106
1	EFDC31104	EFDC31105	EFDC31106
EFD Two Gang (Dead end)			
¾	EFD22104	EFD22105	EFD22106
1	EFD32104	EFD32105	EFD32106
EFDC Two Gang (through feed)			
¾	EFDC22104	EFDC22105	EFDC22106
1	EFDC32104	EFDC32105	EFDC32106

Dimensions (inches)**



Hub Size	Dim. ''h''	Dim. ''l''
¾	7/8	13/16
1	1	15/16

** Dimensions are approximate, not for construction purposes.

* Seals must be installed within 1½″ of each conduit opening, for Group B use.

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Description	Page No.
Application/Selection	384, 385
Controls for Bulk Solids Handling	
AFA/AFAX Conveyor Alignment Switches	417
AFU/AFUX Conveyor Control Safety Switches	416
Custom Control Panels	
EJB Series	415
Grounding Indicator/Control	
EGL	419
Static Discharge Reel	420
Mine Signal Switches	
AFU Series	418
Pushbuttons, Pilot Lights and Selector Switches	
Panel Mounted	
EMP Series	409-414
Surface Mounted – Factory Sealed	
EDS Pushbutton, Selector Switches	431-441
Flexstation Control Station Components	388-391, 397, 400
EFS Fire Alarm Station	402
EFS Pilot Lights	386, 387
EMP Pilot Lights, Pushbuttons, Selector Switches	409-414
Surface Mounted – Non-Sealed	
EFS Pilot Lights	386, 387
MC Pushbutton, Pilot Lights, Selector Switches	403-405
DSD Pilot Light, Pushbutton, Receptacle, Selector Switch Covers	394-396
DSD-SR HP Rated Selector Switch	401
EDSCM Modular Series Bodies	392, 393
OAC Pushbuttons, Selector Switches	406-408
Attachable Pendant Pushbutton Stations	
FLEXITITE Series	422-425
Ground Fault Control Stations	
EGF Series	421
Control Station Covers	
NC-CH Series	398, 399

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4C Control Stations

Application and Selection, Quick Selector Chart

Application:
Control stations are used as a remote means of:
- motor control
- visual indication of equipment performance
- on-off control of circuits
- circuit selection

Considerations for Selection:
- The environment of the control station location and requirements for construction in terms of NEC/CEC compliances and NEMA/EEMAC type.
- Function to be performed
- Desirability of factory sealing as compared to field sealing
- Factory sealing has distinct advantages
  Less installation problems
  Less time consuming
  Less change of error
  Lower installed cost
  Accommodates future changes to circuitry
  Greater reliability
- The number of controls required, and the space available for installation. Where space is limited, panel or junction box mounting with many combinations are available
- See ''Quick Selector Chart'' for guidance

Options:
Many options are available on:
- material and finishes where special atmospheric conditions prevail
- special features for specific applications.

See individual control station listings for available options

Quick Selector Chart

Control Station	NEC/CEC – Hazardous Area Compliance	NEMA/ EEMAC Type	Function	Factory Sealed	No. of Devices or Units	Type of Mounting	Cover Style
MC, MCC		3, 4	Pushbutton Pilot light Selector switch		1-5*	Surface 1-5 gang	Gasketed
AFU, AFUX (conveyor control switch)	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4, 7CD, 9EFG	Emergency stop		1-2†	Surface 1 gang	Ground Joint and Gasketed
AFU (signal switch)		3	''ON-OFF'' ''START-STOP'' Pull cord		1†	Surface 1 gang	Not applicable
AFA, AFAX	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4, 7CD, 9EFG	Conveyor belt alignment switch		1-2*	Surface 1 gang	Ground Joint and Gasketed
EDS, EDSC§	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7B(Div. 2)CD, 9EFG	Pilot light Pushbutton Selector switch	Pilot light Pushbutton Selector switch §	1-2*	Surface 1-2 gang	Ground joint
DSD-SR	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 5, 7CD, 9EFG, 12	Selector Switch		1	Surface 1 gang	Ground joint
Flex Station	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7B(Div. 2)CD, 9EFG	Pilot light Pushbutton	Pilot light Pushbutton	1-2-3	Surface 1-2 gang	Ground joint

* Number of devices per unit

† Number of units in combination

§ **Factory sealed units; listed on pages 431 through 441**

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Quick Selector Chart (continued)

Control Station	NEC/CEC – Hazardous Area Compliance	NEMA/ EEMAC Type	Function	Factory Sealed	No. of Devices or Units	Type of Mounting	Cover Style
EDSCM	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7CD, 9EFG	Pilot light Pushbutton Selector switch		1-15*	Surface 1-15 gang	Ground joint
EFS §	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7BCD, 9EFG	Pilot light Pushbutton Selector switch	Pilot light § Pushbutton Selector switch	1-2*	Surface 1 gang	Ground joint
OAC	Cl. I, Div. 1, Groups A,B,C,D Cl. I, Div. 2, Groups A,B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7ABCD, 9EFG, 12	Pushbutton Selector switch	Pushbutton Selector switch	1-2*	Surface 1 gang	Threaded
EMP	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7CD, 9EFG	Pushbutton Pilot light Selector switch Combination	Pilot light Pushbutton Selector switch	1-78*	Surface junction box	Ground joint
EGL	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	7CD, 9EFG	Static ground indicator		1	Surface	Ground joint

* Number of devices per unit

† Number of units in combination

§ **Factory sealed units; listed on pages 431 through 441**

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4C EFS Pilot Lights

Factory Sealed Pushbutton, Selector Switch Stations – See Section 5C

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EFS pilot lights are used:
- in areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- for installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to visually indicate at a remote location that the desired function is being performed

Features:

- Small, compact enclosures with accurately ground flange on both body and cover for flame-tight joint
- Pilot lights are factory sealed. Conventional external seals are not required
- Dead end (EFS) or through feed (EFSC) hubs – ½″ to 1″ sizes

Standard Materials:

- Bodies – *Feraloy*® iron alloy (U.S.) and copper-free aluminum (Canada)
- Pilot light covers – *Feraloy* iron alloy
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Electrical Rating Range:

- Pilot lights – 110 to 600vac

Certifications & Compliances:

- NEC/CEC: Class I, Groups B*,C,D
  Class II, Groups E,F,G
  Class III
- NEMA/EEMAC: 3, 7B*CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2

Options:

- The following special options are available from factory by adding suffix to Cat. No.

Description	Suffix to be Added to Encl. Cat. #
Pilot lights for circuit voltages up to 600 volts maximum (standard voltage range 110-125)	See Listings
LED pilot lights in place of standard incandescent pilot lamps	LED
Bodies and covers — copper-free aluminum	SA
24 VDC operation on pilot lights	S300



EFS2190 Pushbutton



EFS11271 Selector Switch

For Factory Sealed Pushbutton Stations and Selector Switches, see Section 5C.

* External conduit seal required only on 1 inch hub size in Division 1, Group B within 5 feet (1.5 meters).

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Pilot lights listed below are factory sealed and do not require external seals*. Lamps are 6 watt, type S6, candelabra base for use on 110-125 volt circuits.

LED pilot lights can be provided in place of standard incandescent lamps by adding suffix LED after the color symbols. See Options on page 386

Enclosures with single pilot covers **only** can be equipped with a transformer for each lamp for high voltages as shown.

Transformer Voltages Above 125

Nominal Volts 50-60 hertz Transformer	Primary Voltage Range	Cat. No. Suffix
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5





EFS Single Gang

Enclosure with Single Pilot Light ♦

Hub Size	Dead End Cat. #	Through Feed Cat. #
½	EFS11524-†	EFSC11524-†
¾	EFS21524-†	EFSC21524-†
1	EFS31524-†	EFSC31524-†

Enclosure with Double Pilot Lights ♦

½	EFS11561-†	EFSC11561-†
¾	EFS21561-†	EFSC21561-†
1	EFS31561-†	EFSC31561-†

* External conduit seal required for 1 inch hub size in Division 1, Group B within 5 feet (1.5 meters) of enclosure.

† Add color symbol for each pilot light from table below. Example: EFS11561 with red and green lights is EFS11561-J1-J3

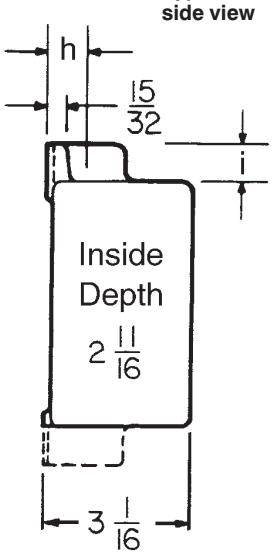
Color	Symbol	Color	Symbol	Color	Symbol
Red	J1	Amber	J6	Blue	J11
Green	J3	Clear	J10		

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after color symbol.

Dimensions (inches)

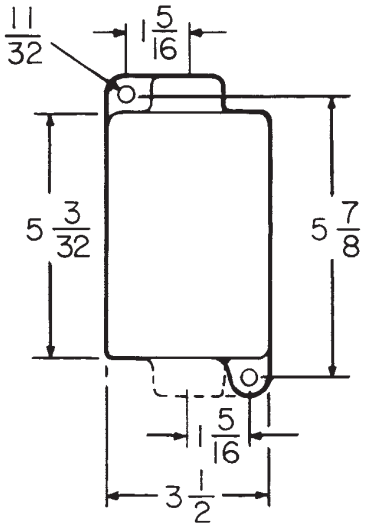
Dimensions are approximate, not for construction purposes.

Typical body side view

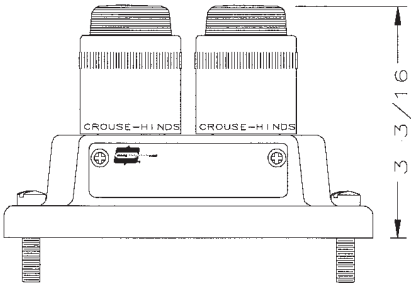


Hub Size	Dim. "h"	Dim. "i"
½	¾	13/16
¾	⅞	13/16
1	1	15/16

Front view



Cover †



Surface covers have same length and width dimensions as bodies.

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4C FlexStation™ Control Station Components

Class I, Div. 1 & 2, Groups B (Div. 2 only)* C, D
Class II, Div. 1 & 2, Groups E, F, G
Class III
Zone 1 & 2 Groups IIB*
NEMA 3R, 7B*(Div. 2)CD, 9 EFG, 12

Application:

Five modular components - operators, contact blocks, covers, legend plates, and bodies - are combined to provide a variety of control stations which are:

- For use indoors or outdoors, in areas which are hazardous due to the presence of flammable gases and vapors, or combustible dust.
- Used in conjunction with magnetic starters or contactors for remote control of motors and other electrical apparatus.
- For installation in petroleum refineries, chemical petrochemical, and other industrial process facilities; grain processing and storage facilities; and other heavy industrial applications where Class I, Class II, or Class III hazards are present.

Features:

- Momentary contact pushbuttons, maintained contact pushbuttons, and pilots lights offer a choice of functions.
- Selector switches in 2 or 3 position configurations including keyed and spring return options.
- Single-hole, two-hole, and three-hole covers for one, two, or three devices respectively per station.
- Rugged control devices for safe, reliable operation in industrial applications.
- Bodies, with extra room for wire pulling and termination, also include two integral mounting feet for fast, secure installation.
- Bodies have ½″, ¾″, or 1″ dead-end or through-feed conduit hubs with integral bushing for protection of wire insulation.
- Covers and bodies are available in Feraloy® or copper-free aluminum for light weight and corrosion resistance.
- DL legend plates have large lettering to give clear indication of device function. Space is available for field markings.

Standard Materials:

- Bodies, covers - Feraloy® or copper-free aluminum.
- Pushbuttons and guards - Type 6/6 nylon.
- Operating shafts, bearings - Stainless Steel.

Standard Finishes:

- Feraloy® iron-alloy - electrogalvanized and aluminum acrylic paint.
- Copper-free aluminum - natural.
- Stainless Steel - natural.

Electrical Ratings:

- Pushbuttons and selector switches - 600 VAC heavy duty (NEMA A600).
- Pilot lights - 120 VAC.



Certifications and Compliances:

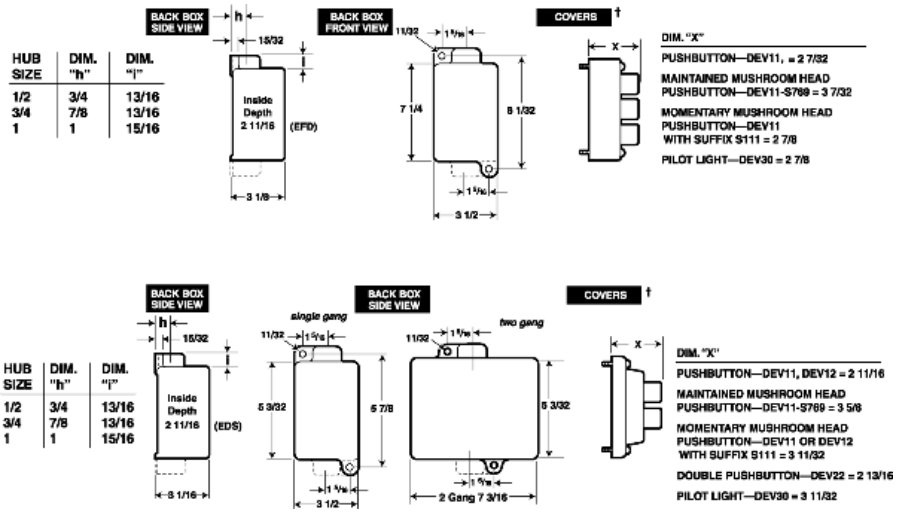
- NEC: Class I, Div. 1&2, Groups B* (Div. 2), C, D
  Class II, Div. 1&2, Groups E, F, G
  Class III
- Zone 1&2 Groups IIB*
- NEMA: 3R, 7B (Div. 2)CD, 9EFG, 12
- UL Standard: 698

* For Class I, Division 1, Group B or Zone 1 Hydrogen applications, use the EFS(C) complete control station catalog numbers found in Section 5C.

Options:

Description	Suffix
● Corro-free™ epoxy finish for use in severely corrosive environments. FlexStation covers and bodies.	S752

Dimensions** (Inches):



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FlexStation™ Control Station Components

Ordering Information

Class I, Div. 1 & 2, Groups B (Div. 2 only) C, D
Class II, Div. 1 & 2, Groups E, F, G
Class III
NEMA 3R, 7B(Div. 2)CD, 9EFG, 12
IEC Zone 1 & 2 Groups IIB

STEP 1 – Select operator

Pushbutton *front operated, standard black button*



Description	Cat. #
Single button for 1 contact block	DEV11
Single button for 2 contact blocks	DEV12
Double buttons for 2 contact blocks	DEV22

Options	Suffix to be added to Cat. #
Specify color for each pushbutton button (ex: *DEV11G, DEV22GR).* Color is black if unspecified.	
Green button (unmarked)	G
Red button (unmarked)	R
Momentary red mushroom head style (not available with lockout or with DEV22)	S111
Lockout with bar and chain (available on DEV11 and DEV12)	S153
Maintained red mushroom head style (lockout comes standard, do not specify S153; not available on DEV22)	S769

Pilot Light *factory sealed, incandescent lamp*



Description	Cat. #
Pilot light with red jewel	DEV30 J1
Pilot light with green jewel	DEV30 J3
Pilot light with amber jewel	DEV30 J6
Pilot light with clear jewel	DEV30 J10
Pilot light with blue LED and clear jewel	DEV30 J11–LED



Options	Suffix to be added to Cat. #
LED lamps (standard clear jewel with colored lamp)	LED
24 V lamp (not available with transformer feature)	S300
240/120 V pilot light transformer	T2
480/120 V pilot light transformer	T4
600/120 V pilot light transformer	T5

Selector Switch *with standard lockout*



Description	Cat. #
2-position (pos. 1 – N.O., pos. 2 – N.C.) for use with 1 or 2 contact blocks	DEV42
3-position (pos. 1 – N.O., pos. 2 – Open, pos. 3 – N.C.) for use with 1 or 2 contact blocks	DEV43
3-position (pos. 1 – N.C., pos. 2 – N.O., pos. 3 – N.O. for Switch A) (pos. 1 – N.O., pos. 2 – N.O., pos. 3 – N.C. for Switch B) for use with 2 contact blocks	DEV44



Options	Suffix to be added to Cat. #
Spring return to center from right *(For DEV43 or DEV44 only)*	S634
Spring return to center from left *(For DEV43 or DEV44 only)*	S635
Spring return to center from right and left *(For DEV43 or DEV44 only)*	S842
Key Operated – removable from all positions	S847 K1
Key Operated – removable from left position for DEV42 or from center for DEV43 and DEV44	S847 K2
Key Operated – removable from right position for DEV42 or from left for DEV43 and DEV44	S847 K3
Key Operated – removable from right position for DEV43 and DEV44	S847 K4

STEP 2 – Select contact block (if required)

Contact Block



Description	Cat. #
Contact block, 1 NO/1 NC, 10A, 600VAC, A600 rating	ESWP126

*Each control station will accept a maximum of three contact blocks. Select device operators accordingly. DEV12, DEV22 and DEV44 may not be used on a three-operator (DS443-SA) cover. DEV42 and DEV43 may not be used on a three-operator cover when using them with two contact blocks.

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Class I, Div. 1 & 2, Groups B (Div. 2 only) C, D
Class II, Div. 1 & 2, Groups E, F, G
Class III
NEMA 3R, 7B(Div. 2)CD, 9EFG, 12
IEC Zone 1 & 2 Groups IIB

STEP 3 – Select desired legend plates

Device Legend Plates – *for special markings order DL01 – "desired marking"*

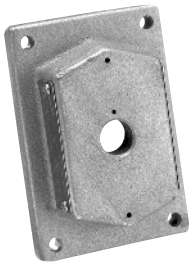




Cat. #	Inscription	Cat. #	Inscription
DL01	Blank w/no fields	DL97	Alarm-Silence
DL02	Blank w/single field	DL95	Auto-Manual
DL03	Blank w/2 fields	DL92	Fast-Slow
DL16	Automatic	DL30	Forward-Reverse
DL21	Close	DL29	Hand-Auto
DL23	Down	DL35	In-Out
DL17	Emergency Stop	DL93	Local-Remote
DL46	Fast	DL98	Maint-Manual
DL18	Forward	DL48	Off-On
DL15	Hand	DL91	On-Off
DL24	In	DL32	Open-Close
DL10	Jog	DL36	Raise-Lower
DL27	Lower	DL28	Run-Jog
DL08	Off	DL33	Up-Down
DL07	On	DL86	Safe-Run
DL20	Open	DL65	Slow-Fast
DL25	Out	DL96	Start-Emergency Stop
DL14	Power On	DL37	Start-Stop
DL26	Raise	DL90	Stop-Start
DL12	Reset	DL99	Test-Reset
DL19	Reverse	DL94	Trip-Reset
DL09	Run		
DL85	Safe		
DL47	Slow		
DL05	Start		
DL06	Stop		
DL13	Test		
DL11	Trip		
DL22	Up		

STEP 4 – Select Cover

Covers



Description	Cat. #
Blank cover with single hole (Single gang)	DS441
Blank cover with 2 holes (Single gang)	DS442
Blank cover with 3 holes (To be used with EFD(C)1491-SA, 2491-SA or 3491-SA series of back boxes)	DS443-SA
Replacement cover plug for unused device operator openings	0206765

Options	Suffix to be added to Cat. #
Aluminum body (mandatory suffix on DS443 must be included in catalog number	SA
Exterior epoxy powder coat finish	S752
Interior & exterior epoxy powder coat finish. Not available on three operator cover (DS443-SA)	S753



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STEP 5 – Select back box

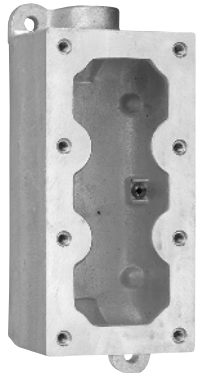
Back Boxes *(for use with DS441 and DS442 covers or with 1 gang and 2 gang DS/DSD Series covers)*



Dead End	Through Feed	Hub Size	Back Box Arrangement
EDS171	EDSC171	½″	Single gang back box
EDS271	EDSC271	¾″	Single gang back box
EDS371	EDSC371	1″	Single gang back box
EDS172	EDSC172	½″	Double gang back box
EDS272	EDSC272	¾″	Double gang back box
EDS372	EDSC372	1″	Double gang back box

Options	Suffix to be added to Cat. #
Aluminum Body	SA
Exterior epoxy powder coat finish	S752
Interior & exterior epoxy powder coat finish	S753

Back Boxes *(for use with DS443-SA cover or with 1½ gang DS511 (3-operator) Series covers)*



Dead End	Through Feed	Hub Size	Back Box Arrangement
EFD1491-SA	EFDC1491-SA	½″	1½ gang back box
EFD2491-SA	EFDC2491-SA	¾″	1½ gang back box
EFD3491-SA	EFDC3491-SA	1″	1½ gang back box

Options	Suffix to be added to Cat. #
Exterior epoxy powder coat finish	S752
Interior & exterior epoxy powder coat finish	S753

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4C EDSCM Modular Multi-Gang Control Device Bodies

Dimensions Pg. 393

Cl. I, Div. 1, Groups C,D ♦
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B(Div. 2)CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

For use with DSD device cover sub-assemblies listed on catalog pages 394 to 396.

Applications:

Modular control device bodies are for *surface mounting combinations of control device equipment for use in:*

- Industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas where atmospheres may contain hazardous gases or dusts, and arcing of enclosed devices must not ignite the surrounding atmosphere.
- Conjunction with magnetic starters or contactors for remote control and monitoring of motors.
- Manual starting and stopping of small AC or DC motors.
- Controlling and supplying energy to portable electrical devices such as motor generator sets, compressors, conveyors, portable tools, etc.

Features:

EDSCM Modular Control Stations have many distinct advantages over multiple individual units:

- Reduce installation costs. A multi-gang device assembly can be installed in less time than several single-gang units.
- Seals not required between gangs.
- Improved appearance. No exposed conduit runs between devices.
- Light weight. Fifteen-gang aluminum device body can be installed by one person.
- Mounting feet are provided on the top and bottom of every gang to facilitate installation.
- Two and three gang tandem bodies have 1¼″ thru-feed inward horizontal hubs and 1″ or 2″ vertical thru-feed hubs. Pipe plugs are installed in one horizontal hub and both vertical hubs.
- Single-gang device bodies have 1″ thru-feed inward horizontal hubs and ¾″ thru-feed vertical hubs. Pipe plugs are installed in one horizontal hub and both vertical hubs.
- All hubs are taper tapped and have integral bushings.
- Close nipples, which are used to join two or more device bodies together, are furnished with EDSCM 21, 32, 33, 62 and 63 units.
- Any combination of bodies can be joined together horizontally.

Standard Materials:

- Copper-free aluminum

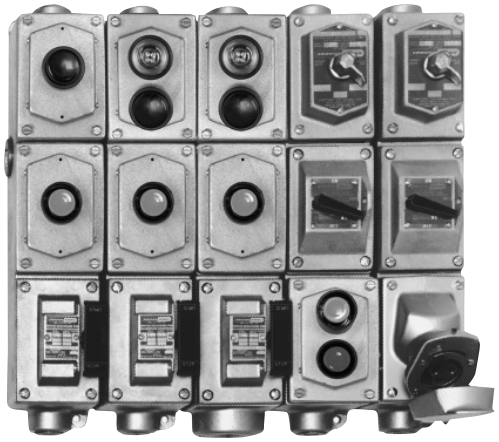
Finish:

- Natural

Certifications and Compliances:

(When used with DSD device sub-assemblies) ♦:
Class I, Division 1 & 2, Groups C,D
Class I, Division 2, Group B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
NEMA/EEMAC 3,7B(Div.2)CD,9EFG
U.L. Standard 894, 698
- CSA Standard: C22.2 No. 30

NOTE: In Class I areas all conduit runs entering bodies must be sealed. As many as five bodies can be joined horizontally without an intervening seal.



Series EDSCM

The EDSCM Series consists of five basic device bodies that can be joined together to make multi-gang control stations.



EDSCM21 **EDSCM32** **EDSCM62** **EDSCM33** **EDSCM63**

Description	Thru-Feed Hub Size	Cat. #
Single Gang	¾″	EDSCM21
Tandem Two Gang	1″	EDSCM32
Tandem Two Gang	2″	EDSCM62
Tandem Three Gang	1″	EDSCM33
Tandem Three Gang	2″	EDSCM63

♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only.

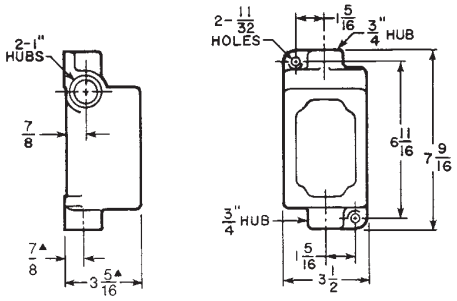
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

EDSCM Modular Multi-Gang Control Device Bodies

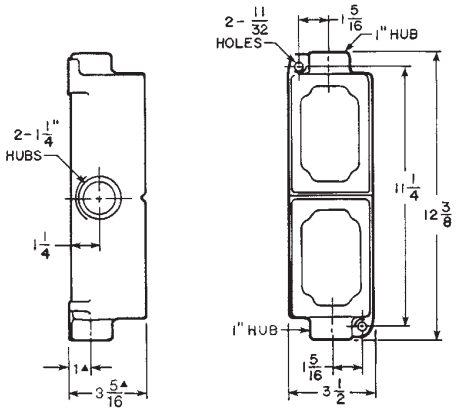
Cl. I, Div. 1, Groups C,D ♦
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B(Div. 2)CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

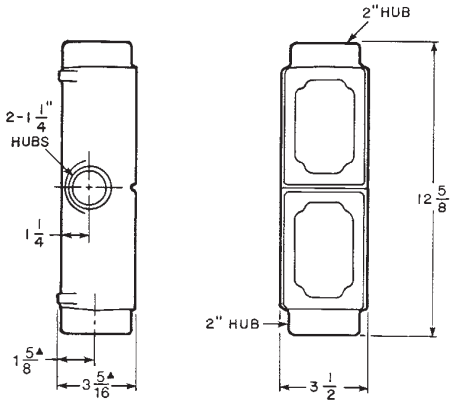
Dimensions (inches):



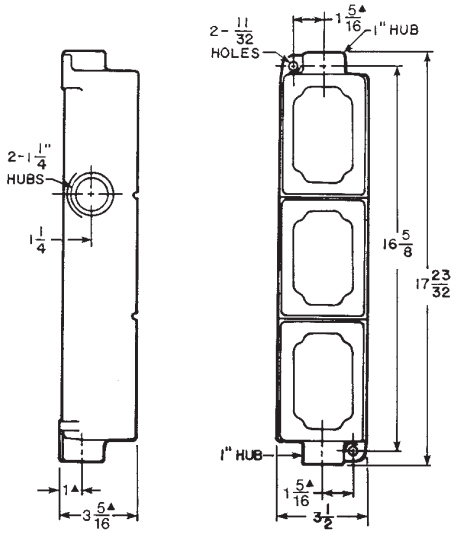
EDSCM21



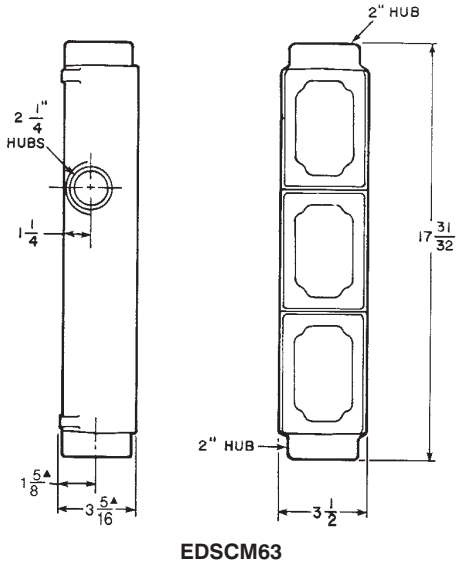
EDSCM32



EDSCM62



EDSCM33



EDSCM63

♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only. Receptacles comply with U.L. Standard 886 only.
* Dimensions are approximate, not for construction purposes.

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4C DSD Cover and Device Sub-Assemblies

Cl. I. Div. 1&2, Groups B*, C, D ♦Explosionproof
Cl. II, Div. 1, Groups E, F, G Dust-Ignitionproof
Cl. II, Div. 2, Groups F, G Raintight
Cl. III Wet Locations
NEMA 3, 7B*CD, 9EFG

For use with EDSCM modular control device bodies listed on catalog page 392 and EDS/EDSC back boxes on page 397.

Features:

- Large machine screws for fastening covers to bodies
- Lockout hole for padlock having ¼″ hasp is provided when used with covers for front lever and side rocker type operation
- Lockout provisions on front operated pushbutton (marked ''STOP'' and ''OFF'') and all selector switch covers
- For covers with front lever and side rocker type operating handles, threaded type shafts and bushings are used to ensure flametightness
- Accurately ground flange for flametight joint when mated with ground flange on back box

Standard Materials:

- Covers, front operated – *Feraloy* iron alloy and copper-free aluminum
- Covers, side operated – Copper-free aluminum
- Shafts and shaft bushings – stainless steel
- Rocker handles, pushbuttons and guards – type 6/6 nylon
- Sealing enclosures – copper-free aluminum

CPS delayed action receptacle cover:

- Receptacle housing – copper-free aluminum
- Insulation – diallyl phthalate (DAP)
- Contacts – brass

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Certifications and Compliances:

(When used with EDSCM & EDS bodies):

- NEC/CEC:
  - Class I, Division 1 & 2, Groups C, D ♦
  - Class I, Division 2, Groups B, C, D
  - Class II, Division 1, Groups E, F, G
  - Class II, Division 2, Groups F, G
  - Class III
- NEMA/EEMAC: 3, 7B(Div. 2)CD, 9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30

Pushbuttons, Pilot Lights & Selector Switches:

(When used with EFS bodies):

- NEC/CEC:
  - Class I, Division 1 & 2, Groups B, C, D
  - Class II, Division 1, Groups E, F, G
  - Class II, Division 2, Groups F, G
  - Class III
- NEMA/EEMAC: 3, 7BCD, 9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30



Options:

The following special options are available by adding suffix to Cat. No.:

Description	Suffix to be Added to Cover Cat. #
Lockout provision on front operated pushbutton cover (standard on buttons marked ''STOP'' and ''OFF'')	S153
Three-position selector switches with modified operation: Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation.	S635
Emergency ''STOP'' button momentary – front operated mushroom button breaks normally closed contacts	S111
Bodies and covers – copper-free aluminum	SA
For 24 VDC operation on pilot lights	S300
Maintained contact mushroom head with lockout and guard.	S769

* For pushbuttons, pilot lights, & selector switches, use EFS back box with required external conduit seal for 1 inch hub size, within 5 feet for Class I, Division 1, Group B applications.

Manual Motor Starters

Poles	Max. H.P.	Max. Volts A.C.	Cat. #
With Allen-Bradley Bulletin 600 Switches**			
1	1	115-230	DSD910
2	1	115-230	DSD911
With General Electric Switches**			
1	1	115-230	DSD912§
2	1	115-230	DSD913§
With Cutler-Hammer Switches**			
1	1	115-230	DSD914§
2	1	115-230	DSD915§
With Arrow-Hart Switches Without Overload Protection			
2	5	250 (30A)	DSD916
2	7.5	600 (30A)	DSD916
3	7.5	250 (30A)	DSD917
3	15	600 (20A)	DSD917



♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only. Receptacles comply with U.L. Standard 886 only.

§ A comparable factory sealed cover will fit on the EDSCM21 body, EDS and EDSC bodies (listed on page 397), and in bottom gang of EDSCM33 and EDSCM63 bodies. To order, add suffix S701 to catalog number.

** Includes one interchangeable heater. Select heater (from tables on pages 356 and 357). Symbol 0 (zero) may be used to indicate heater omitted.

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DSD Cover and Device Sub-Assemblies

Cl. I. Div. 1&2, Groups B*,C,D ♦ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG


DSD918


DSD921


DSD933


DSD962


DSD970


CPS152R


ENR5201

For use with EDSCM modular control device bodies listed on catalog page 392 & EFS/EDS back boxes listed on catalog page 397.

Front Operated Pushbutton Stations
600 VAC Heavy Duty, Factory Sealed

Number of Cover Buttons	Normal Position	Diagram	Cat. #§
1	1 Circuit Universal		DSD918
1	2 Circuits Universal		DSD919
	2 Circuits**	A B	DSD920**
2	2 Circuits Universal		DSD921
2	2 Circuits** Start-Stop unless otherwise specified	A B	DSD922**
2	2 Circuits Universal Mushroom Head		DSD970
3	3 Circuits Universal		DSD962

Front Operated General Use Snap Switch

Style	Amperes 120 VAC	277 VAC	Cat. #
1-Pole	20	20	DSD933‡
2-Pole	20	20	DSD934‡
3-Pole	♦ ♦	♦ ♦	DSD935***
3-Way	20	20	DSD936‡
4-Way	20	20	DSD937‡
1-Pole	30	30	DSD939***
2-Pole	30	30	DSD940***
3-Way	30	30	DSD941***

*** Cannot be factory sealed.

♦ ♦ 16 Amp., 125V.
10 Amp., 250V.

** Two universal contact blocks, must be wired as two circuits with one normally open and one normally closed.

‡ To order a comparable factory sealed cover for EDS, EDSC, EDSCM21 and the bottom gang of EDSCM33 and EDSCM63 bodies, add suffix S697.

* See note on catalog page 394 for Division 1, Group B applications.

Delayed Action Receptacles
Factory Sealed

Rating	Cat. #
20 A, 1 HP, 125-250 VAC 60 Hertz 20 A, 18 VDC	CPS152R (2 wire, 3 pole)
30 A, 1½ HP, 125-250 VAC 60 Hertz; 7 A, ½ HP, 480 VAC, 60 Hertz	CPS532R (2 wire, 3 pole)
30 A, 3 HP, 125-250 VAC 60 Hertz; 7A, 1 HP, 480 VAC, 60 Hertz	CPS732R (3 wire, 4 pole)

General Purpose, Dead Front, Factory Sealed

Rating	Cat. #	NEMA Config.
20 A, 125 VAC	ENR5201	5-20R
20 A, 250 VAC	ENR6202	6-20R

♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only.

§ Specify marking required for external pushbuttons or nylon rocker handles. Standard markings available, are as follows:

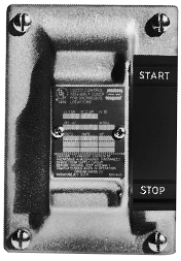
START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC
EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	

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4C DSD Cover and Device Sub-Assemblies

Cl. I, Div. 1&2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



DSD951



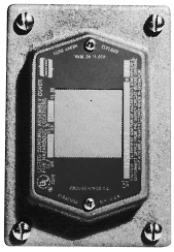
DSD925



DSD947-J1-J1



DSD958



DSD957



DSD961-J1

For use with EDSCM modular control device bodies listed on catalog page 392 & EFS/EDS back boxes listed on catalog page 397.

Side Operated Pushbutton Station
600 VAC Heavy Duty, Factory Sealed

Normal Position	Diagram	Cat. #§
1 Circuit Universal		DSD949
2 Circuits Universal		DSD950
2 Circuits 1 Open - A 1 Closed - B Start-Stop unless otherwise specified	A B	DSD951

Selector Switches
Maintained Contact 600 VAC Heavy Duty

	Style	Position 1	Position 2	Position 3	Cat. #††
Two Position	Two Circuit	A1 A2			DSD923
	Four Circuit	A1 A2 B1 B2			DSD924
Three Position	Two Circuit	A1 A2			DSD925
		A1 A2 B1 B2			DSD926
	Four Circuit	A1 A2 B1 B2			DSD927

Pilot Light Devices ♦
Factory Sealed

Description	Diagram	Cat. #
With one pilot light		DSD948-J†
With two pilot lights (Not available with a transformer)		DSD947-J†-J†
With one pilot light and transformer		DSD948-J†-T**
With one pilot light and pushbutton station		DSD958-J†
With one pilot light and 2 pushbutton station		DSD961-J†
With one pilot light & transformer and 2 pushbutton station		DSD961-J†-T**

Blank Cover

Cat. # DSD957

§ See table on page 395.

†† Specify indicating plate markings.
Standard indicating plate markings available are as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN, OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE, LOWER
FORWARD, REVERSE	UP, DOWN	START, STOP
	ON, OFF	

Three-Position

JOG, OFF, RUN	1, OFF, 2
AUTOMATIC, OFF, HAND	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

† Add color symbol for each pilot light from table below.

Color	Symbol	Color	Symbol	Color	Symbol
Red	J1	Amber	J6	Blue	J11
Green	J3	Clear	J10		

** Add suffix below for transformer primary voltage:
Transformers – Voltages above 125

Nom. Volts 50-60 hertz Transformer	Primary Voltage Range	Suffix Added to Cat. #
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to Cat. No. after last color symbol.

* See note on catalog page 394 for Division 1, Group B applications.

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EDS and EDSC Single and Multi-Gang Device Bodies and EFS and EFSC Single Gang Device Bodies

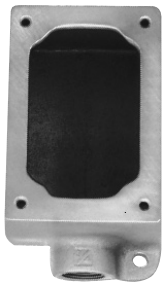
Cl. I, Div. 1 & 2, Groups B,C,D ◆ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B ◆ CD,9EFG,12

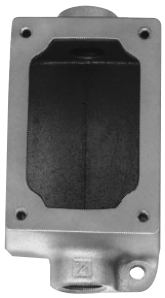
Both EFS and EFSC single gang body family and EDS and EDSC single and two-gang standard, two or three-gang tandem device bodies are designed for use with the DS covers listed below, and the DSD covers shown on pages 394 through 396.

Single and two-gang standard bodies have external dead end or thru-feed conduit hubs, with integral bushings, in sizes ½″, ¾″ and 1″. Tandem bodies have thru-feed 1″ hubs.

Each body contains 1 internal ground screw and boss per gang and external mounting feet.

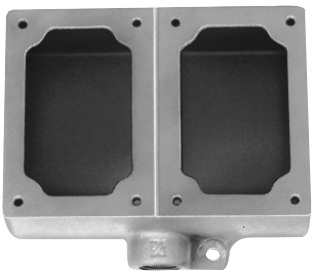
Order bodies and covers separately.

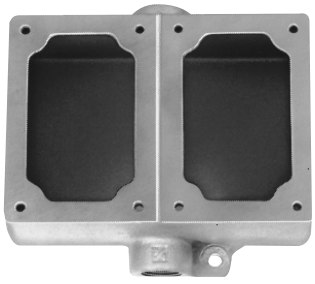




Single Gang
Feraloy

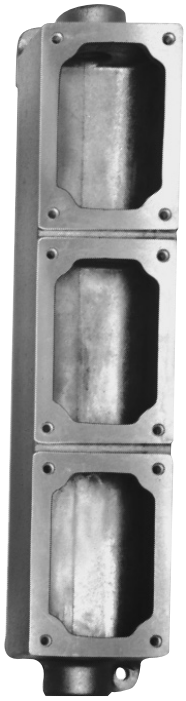
Hub Size	Deep – 2 11/16″ Deep		Shallow – 2″ Deep	
	Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
½″	EDS171	EDSC171	EFS171	EFSC171
¾″	EDS271	EDSC271	EFS271	EFSC271
1″	EDS371	EDSC371	EFS371	EFSC371





Two Gang
Feraloy

Hub Size	Dead End Cat. #	Through Feed Cat. #
½″	EDS172	EDSC172
¾″	EDS272	EDSC272
1″	EDS372	EDSC372



Three Gang Tandem
Copper-free Aluminum

Hub Size	Cat. #
1″	EDSC378

Common Cover Assemblies

These covers may be used with the above bodies or as replacements for the cover portions of the control device assemblies listed on pages 392, 431, 435 & 436.

Description	Diagram	Cat. #
With one pilot light		DS455-J†
With one pilot light and transformer		DS476-J†-T‡
With two pilot lights		DS456-J†-J†
With one push button		DS429§
With two push buttons		DS454§
With one push button and one pilot light		DS510-J†§

◆ Subject to compliance limitations of device covers selected. Only EFS & EFSC bodies with the appropriate covers are for use in Div. 1, Group B areas.

† Insert color symbol. See table on page 396.

‡ Insert symbol for transformer primary voltage.
See tables on page 396. Example: DS476 with red pilot light and 440 volt transformer is DS476-J1-T4.

§ See marking requirements on page 395.

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4C Control Station Covers

Hinged and Open Front



OPEN FRONT COVER



HINGED COVER

Added environmental protection for Cooper Crouse-Hinds® control stations is now available from a patented "slip on" series of covers. Easy to install, these enclosures are available in hinged and open front styles.

- Clear UV stabilized Lexan‡ polycarbonate plastic.
  - ♦ Allows the end-user to see enclosed controls.
  - ♦ Strong enough to withstand the rough treatment found in the industrial work place.
- Ideal for corrosive and adverse areas providing added product endurance.
- Short pay back period.
  - ♦ Downtime due to weather or accidental bumping is eliminated.
  - ♦ Plant shutdowns caused by inoperable or accidentally operated push button devices are non-existent.
- Lock out/tag out capabilities.
  - ♦ For conformance to OSHA requirements.
  - ♦ Provides increased personnel safety.
- Quick and easy slip on installation requires no tools.
- Colored covers are available (e.g. red for emergency, yellow for fire alarm, etc.).

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SECURED ACCESS HINGED COVER

APPLICATIONS:

- High moisture areas due to weather, steam, or wash down procedures.
- Areas where dirt, dust, mud, sand, etc. interferes with equipment operation.
- Prevention of accidental equipment operation.
- Instances requiring equipment lock out/tag out.

FEATURES & BENEFITS:

- Heavy duty, impact-resistant, polycarbonate cover with stainless steel or heavy duty Lexan hinge.
- Clear material allows visibility of all controls.
- Superior sealing provided by heavy-duty neoprene gaskets. Lock out/tag out ability provides personnel safety.
- Unique patented design allows installation in seconds without any interruption of service.
- Specific chemical resistant covers available (may not be clear) - consult factory for minimum order quantity.
- Capability to engineer cover to fit any size device - consult factory.

QUICK ACCESS OPEN FRONT COVER

APPLICATIONS:

- Areas requiring quick access to control device.
- Areas of high moisture from weather or dripping liquid.
- Prevention of accidental equipment operation.
- Areas with possible damage from bumping or banging.

FEATURES & BENEFITS:

- Heavy duty, impact-resistant, polycarbonate cover.
- Clear material allows visibility of all controls.
- Unique patented design allows installation in seconds without any interruption of service.
- Specific chemical resistant covers available (may not be clear) - consult factory for minimum order quantity.
- Capability to engineer cover to fit any size device - consult factory.

ORDERING INFORMATION:

HINGED COVERS

Single Gang Application	Catalog Number
EDS(C) and EFD(C) control stations	NC-CH1
EFS(C) control stations	NC-CH1-EFS
MC(C) control stations	NC-CH1-MC
FS(C) back box with cover assembly	NC-CH1-FS
FD(C) back box with cover assembly	NC-CH1-FD
EGF11 and EGF12 (Ground Fault)	NC-CH1-EGF 11
N2S(C) Krydon: 1 & 2 devices	NC-CH1-N2S
N2D(C) Krydon: 1 & 2 devices	NC-CH1-N2D
GHG432 control station	NC-CH1-GHG
Single Gang (Long) Application	**Catalog Number**
EFD(C) (3 device)	NC-CH1-3L
N2S(C) Krydon: 3 devices	NC-CH1-N2S-3L
N2S(C) Krydon: 4 devices	NC-CH1-N2S-4L
Double Gang Application	**Catalog Number**
EDS(C) control stations	NC-CH2
EDSCM32: 2 gang tandem	NC-CH2L
EDSCM33: 3 gang tandem	NC-CH3L
FS(C) back box with cover	NC-CH2-FS
FD(C) back box with cover	NC-CH2-FD
EDSC378 - 3 gang tandem assembly	NC-CH1-MC3

OPEN FRONT COVERS

Single Gang Application	Catalog Number
EDS(C) and EFD(C) control stations	NC-CH1-QA
EFS(C) control stations	NC-CH1-EFS-QA
MC(C) control stations	NC-CH1-MC-QA
FS(C) back box with cover assembly	NC-CH1-FS-QA
FD(C) back box with cover assembly	NC-CH1-FD-QA
EGF11 and EGF12 (Ground Fault)	NC-CH1-EGF-QA
N2S(C) Krydon: 2 device assembly	NC-CH1-N2S-QA
N2D(C) Krydon: 3 device assembly	NC-CH1-N2D-QA
Single Gang (Long) Application	**Catalog Number**
EFD(C): 3 device control stations	NC-CH1-3L-QA
N2S(C) Krydon: 3 device assembly	NC-CH1-N2S-3L-QA
N2S(C) Krydon: 4 device assembly	NC-CH1-N2S-4L-QA
Double Gang Application	**Catalog Number**
EDS(C) control stations	NC-CH2-QA
EDSCM32: 2 gang tandem	NC-CH2L-QA
EDSCM 33: 3 gang tandem	NC-CH3L-QA
FS(C) back box with cover assembly	NC-CH2-FS-QA
FD(C) back box with cover assembly	NC-CH2-FD-QA

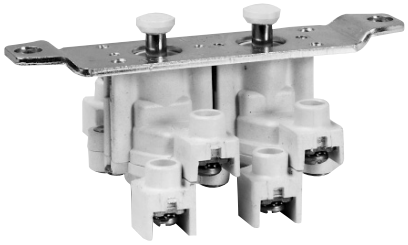
Custom covers can be supplied but must be accompanied by either a sample of the device to be covered or a copy of adrawing with all actual measurements of the device to be covered. Covers can also be color-coded. Consult factory.

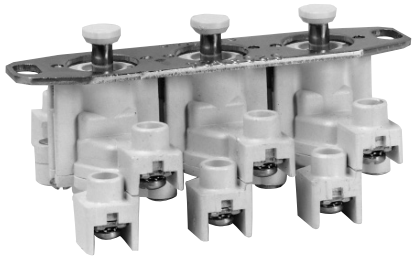
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4C Control Stations Replacements for Pushbuttons and Selector Switches

600 VAC Heavy Duty







ED Series Pushbuttons*

Complete with Mounting Strap and Hardware

Where Used	1 Circuit Universal	2 Circuits Universal	2 Circuits 1 Open - A 1 Closed - B	3 Circuits Universal
	Cat. #	Cat. #	Cat. #	
MC, EDS and EFS pushbutton stations and selector switches.	ED11	ED12	ED12**	
OAC pushbutton stations and selector switches	ED21	ED22	ED22**	
EWC pushbutton stations		ED32	ED32**	
EMP pushbutton stations	ED38	ED35		
EMP selector switches	ED38	ED35		
EFD Factory sealed pushbutton stations and selector switches (M90)	ED11	ED12	ED12**	
DSD962 pushbutton cover			ED13	

Contact Ratings

600 VAC Heavy Duty (NEMA A600)

Volts	Max. Current (Amperes) Make	Break	Voltamperes Make	Break	Continuous Current (Amperes)
120	60	6.0	7200	720	10
240	30	3.0	7200	720	10
480	15	1.5	7200	720	10
600	12	1.2	7200	720	10

Direct Current (NEMA P150)

125	1.1	1.1	138	138	5

Contact Block Only (less strap)

Catalog #
ESWP126



CF859



CF705

External Operating Buttons

Where Used	Colors Available	Cat. #
MC, EFS, and EFD – current design with nylon guards	Red, Green, Black	CF859-K1 ‡
EMPS019, EMP019, EMPS029 and EMP029 – single operator FS, EFS, and EFD – previous design with aluminum guards	Red, Green, Black	CF705-K1 ‡

Note: CF859-K1 and CF705-K1 come with 5 buttons

* ESWP126 is the contact block without the mounting strap.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

‡ Standard markings available are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC
EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	

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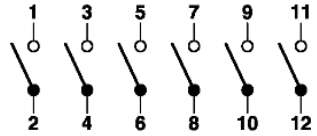
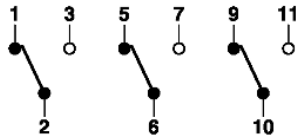
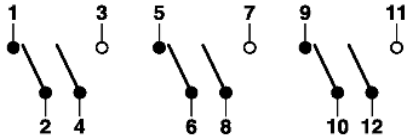
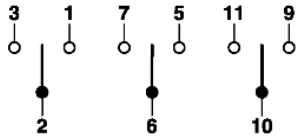
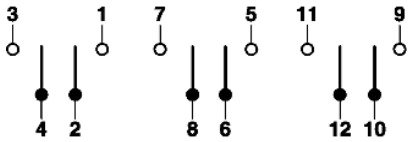
COOPER Crouse-Hinds

DSD-SR

Horsepower Rated 30 A, 600 V
Selector Switch Front Operated

Class I, Groups C & D
Class II, Groups E, F & G
Class III
Enclosure 3, 5 & 12

Ordering Information

Switch Function	Catalog Number	Number of Poles	Number of Positions	Connecting Diagram
ON/OFF	DSD-SR30120	1	2	 1-6 Pole
	DSD-SR30220	2	2	
	DSD-SR30320	3	2	
	DSD-SR30420	4	2	
	DSD-SR30520	5	2	
	DSD-SR30620	6	2	
DOUBLE-THROW without OFF	DSD-SR30121	1	2	 1-3 Pole
	DSD-SR30221	2	2	
	DSD-SR30321	3	2	
DOUBLE-THROW without OFF with electrically isolated contacts	DSD-SR30123	1	2	 1-3 Pole
	DSD-SR30223	2	2	
	DSD-SR30323	3	2	
DOUBLE-THROW with OFF	DSD-SR30132	1	3	 1-3 Pole
	DSD-SR30232	2	3	
	DSD-SR30332	3	3	
DOUBLE-THROW with OFF and electrically isolated contacts	DSD-SR30134	1	3	 1-3 Pole
	DSD-SR30234	2	3	
	DSD-SR30334	3	3	

Electrical Specification

Voltage	Horsepower Rating	
	3PH	1PH
120	3	1.5
240	7.5	3
480	10	5
600	10	5

Maximum Current: 30 A
Heavy-duty A600 rating

Options

Lockout for 2 position switch, handle in either position . . . SX178

Lockout for 3 position switch, handle in either position S349



DSD-SR cover assembly shown mounted to an EDS back box

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4C EFS Fire Alarm Station

Cl. I, Div. 1, Groups B*,C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EFS21095

Break Glass Fire Alarm Station

Hub Size	Dead End Cat. #	Through Feed Cat. #
¾	EFS21095	EFSC21095

* **Class I, Group B option:** Units listed above can be modified for Class I, Division 1, Group B usage. Add suffix GB to the Cat. No. Example: EFS21095-GB. Seals must be installed within 1½″ of each conduit opening.

Application:

EFS Fire Alarm Stations are used:
- in areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- for installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to indicate at a remote location that a fire exists in the area

Features:

- Small, compact enclosures with accurately ground flange on both body and cover for flame-tight joint

Standard Materials:

- Bodies – *Feraloy*® iron alloy (U.S.) and copper-free aluminum (Canada)

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Certifications & Compliances:

- NEC/CEC: Class I, Groups B*,C,D
  Class II, Groups E,F,G
  Class III
- NEMA/EEMAC: 3, 7B*CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2
- As indicated under catalog listings, certain units can be supplied for Class I, Division 1, Group B (NEMA/EEMAC 7B). Seals must be installed within 1½″ of each conduit opening.

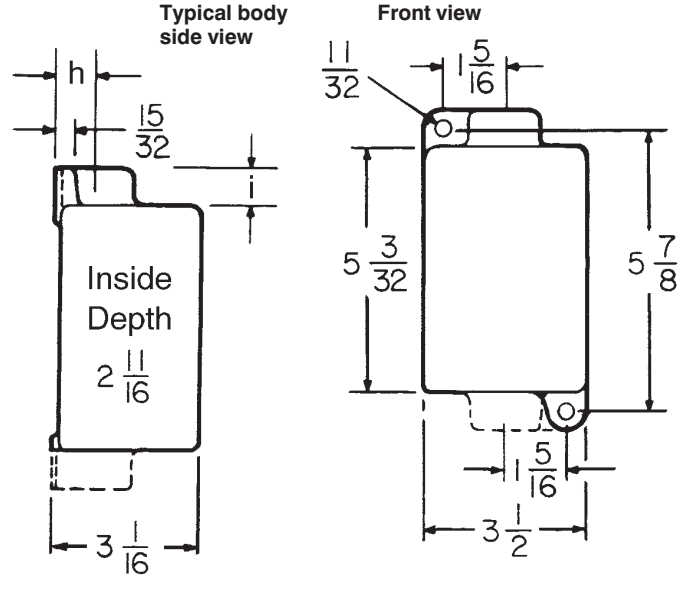
Option:

- The following special option is available from factory by adding suffix to Cat. No.

Description	Suffix to be Added to Encl. Cat. #
Where indicated in the catalog listings, units suitable for Class I, Division 1, Group B usage can be supplied	GB*

Dimensions (inches)

Dimensions are approximate, not for construction purposes.



Hub Size	Dim. "h"	Dim. "i"
½	¾	13/16
¾	7/8	13/16
1	1	15/16

† Surface covers have same length and width dimensions as bodies.

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MC and MCC Pushbutton Stations Selector Switches and Pilot Lights

Application:

MC pushbuttons or selector switches are used:
- in conjunction with magnetic starters or contactors for remote control of motors

MC pilot lights are used:
- to visually indicate at a remote point that the desired function is being performed (motor running, etc.)

MC pushbuttons, selector switches or pilot lights are used:
- in damp, wet or corrosive locations such as dairies, meat packing plants, chemical plants and outdoor locations

Features:

- Enclosures are compact in design, and gasketed to meet NEMA/EEMAC 3 or 4 requirements as noted in catalog listings
- Pushbutton stations with side rocker handle are furnished with a lockout arrangement on ''STOP'' position as standard
- Dead end (MC) or through feed (MCC) hubs – ½″ and ¾″ sizes – with mounting feet
- Standard lockout on ''STOP'' and ''OFF'' button on front operated pushbutton covers.
- Standard lockout on selector switch covers. Locks two or three position switch handle in any position.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Cover with side rocker handle – copper-free aluminum
- Front pushbutton, selector switch and pilot light covers – *Feraloy* iron alloy
- Rocker handle and pushbutton guards – type 6/6 nylon
- Selector switch handle – copper-free aluminum
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Type 6/6 nylon – black
- Stainless steel – natural

Certifications and Compliances:

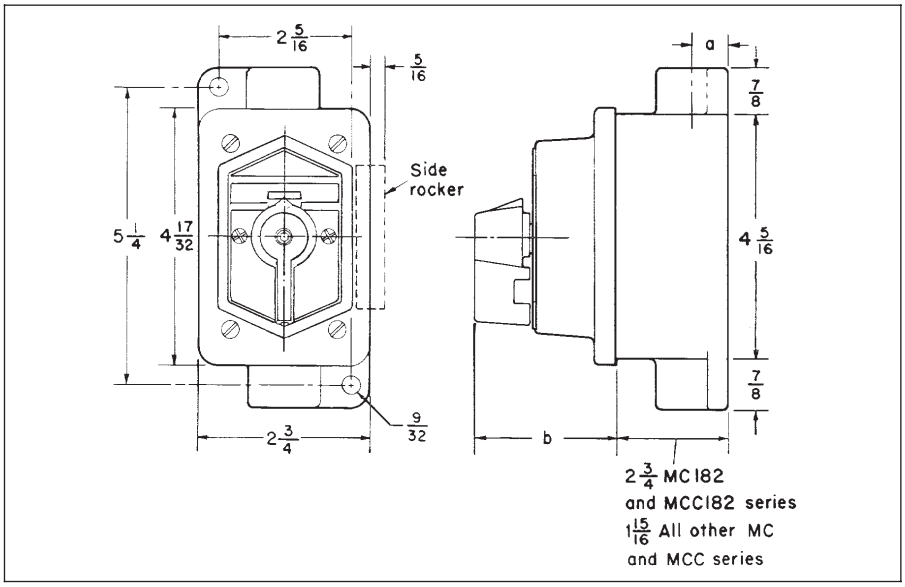
- NEMA/EEMAC 3, 4
- UL Standard: 508
- CSA Encl. 3,4,5

Options:

- The following special options are available by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
Lockout provision on front operated pushbutton (standard on buttons marked ''OFF'' and ''STOP'')	S153
Neoprene covers for front operated pushbuttons. Meets NEMA 4 requirements and prevents accumulation of dirt around operating shafts	S323
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635
Multiple gang bodies. Two gang, two gang tandem and three, four or five gang bodies can be supplied with combinations of single gang devices	Specify
LED pilot lights in place of standard incandescent pilot lamps	LED

Dimensions (inches)*



Hub Size	a
½	⅝
¾	¾

Type of Cover	b
Side Rocker Handle	1½
Front Pushbutton	2⅜
Selector Switch	2⅜
Pilot Light	1 1/16

* Dimensions are approximate, not for construction purposes.

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MC and MCC Side Rocker Handles and Front Push Buttons

600 VAC Heavy Duty

Watertight
Weather Resistant
NEMA 3,4



MC dead end side rocker handle



MCC through feed side rocker handle



MC dead end front push button



MCC through feed front push button

With Side Rocker Handles
Watertight, NEMA 3, 4

Normal Positions	Marking†	Diagram	Replacement Contact Blocks‡	Enclosure with Rocker Handles Hub Size	Dead End Cat. #	Through Feed Cat. #
1 Circuit Universal	Specify		ED11	½	MC1810U1	MCC1810U1
				¾	MC2810U1	MCC2810U1
2 Circuits Universal	Specify		ED12	½	MC1810U	MCC1810U
				¾	MC2810U	MCC2810U
2 Circuits 1 Open - A 1 Closed - B	START-STOP unless otherwise specified	A B	ED12*	½	MC1810	MCC1810
				¾	MC2810	MCC2810

With Front Push Buttons ♦ F
Weather Resistant, NEMA 3

Normal Positions	Marking†	Diagram	Replacement Contact Blocks‡	Enclosure with Push Buttons Hub Size	Dead End Cat. #	Through Feed Cat. #
1 Circuit Universal	Specify		ED11	½	MC1910U1	MCC1910U1
				¾	MC2910U1	MCC2910U1
2 Circuits Universal	Specify		ED12	½	MC1910U	MCC1910U
				¾	MC2910U	MCC2910U
2 Circuits 1 Open - A 1 Closed - B	START-STOP unless otherwise specified	A B	ED12*	½	MC1910	MCC1910
				¾	MC2910	MCC2910

* Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

† Standard markings available, heat stamped in nylon rocker handle are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC

EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	

‡ For replacement push buttons see page 395.

♦ Watertight NEMA 4 with Neoprene button covers, see suffix S323 under options.

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MC dead end selector switch

Selector Switches

Furnished with pushbutton contact blocks, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below.

Maintained Contact					Enclosure with Selector Switch†		
Style	Position 1	Position 2	Position 3	Replacement Contact blocks*	Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1 A2			ED11	½ ¾	MC11271 MC21271	MCC11271 MCC21271
Two-Position, Four-Circuit	A1 A2 B1 B2			ED12	½ ¾	MC11272 MC21272	MCC11272 MCC21272
Three-Position, Two-Circuit	A1 A2			ED11	½ ¾	MC11273 MC21273	MCC11273 MCC21273
Three-Position, Four-Circuit	A1 A2 B1 B2			ED12	½ ¾	MC11274 MC21274	MCC11274 MCC21274
	A1 A2 B1 B2			ED12	½ ¾	MC11275 MC21275	MCC11275 MCC21275



MC dead end pilot light

Pilot Lights ♦

Primary Voltage Range	Lamp Base	Lamp Watts	Enclosure with Jewel Cover and Lamp Hub Size	Dead End Cat. #	Through Feed Cat. #
110-125	Candelabra	6	½	MC180-J1	MCC180-J1
110-125	Candelabra	6	¾	MC280-J1	MCC280-J1
220-250	Intermediate	10	½	MC184-J1	MCC184-J1
220-250	Intermediate	10	¾	MC284-J1	MCC284-J1
440-480	Candelabra	6	½	MC182-J1	MCC182-J1
440-480	Candelabra	6	¾	MC282-J1	MCC282-J1

* For replacement contact blocks see page 400.

† Specify indicating plate markings. Standard markings available are shown on page 400.

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED after color symbol (J1).

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4C OAC Pushbutton Stations and Heavy Duty Selector Switches

600 VAC Standard Factory Sealed**

Cl. I, Div. 1 & 2, Groups A,B,C,D — Explosionproof
Cl. II, Div. 1, Groups E,F,G — Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G — Raintight
Cl. III — Wet Locations
NEMA 3,4,7ABCD,9EFG,12 — Watertight

Application:

OAC Units are used:
- in areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- in areas which are hazardous due to the presence of acetylene and hydrogen, or gases or vapors of equivalent hazard such as manufactured gas
- in conjunction with magnetic starters or contactors for remote control of motors

Features:

- Water-shedding construction with female threaded bottom opening and male threaded cover
- Threaded cover is deep dome type, which surrounds the enclosed device
- All enclosures are suitable for hazardous area use
- Pushbutton stations have a guarded rocker type operating handle at the front arranged for padlocking to prevent unauthorized operation
- Selector switches have a lever type operating handle at the top
- Provided with vertical through feed conduit hubs of sizes indicated in the listings.
- Units are factory sealed for Cl. I, Div. 1 and 2, Groups B,C,D.
- Standard lockout on selector switches. Locks two or three-position switch handle in any position.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers and operating handle – copper-free aluminum
- Operating shafts – stainless steel

Standard Finishes:

Feraloy iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Electrical Rating Ranges:

- Pushbutton stations, and selector switches-Air Break – heavy duty 600vac maximum

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups A, B, C, D
  Class II, Division 1, Groups E, F, G
  Class II, Division 2, Groups F, G
  Class III
- NEMA/EEMAC: 3, 4, 7ABCD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

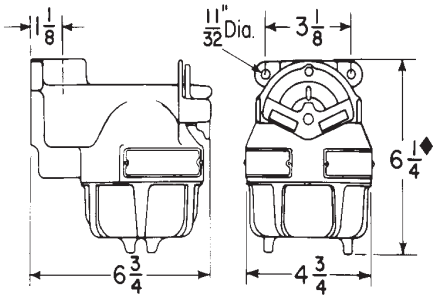
Options:

- The following special options are available from factory by adding suffix to Cat. No.

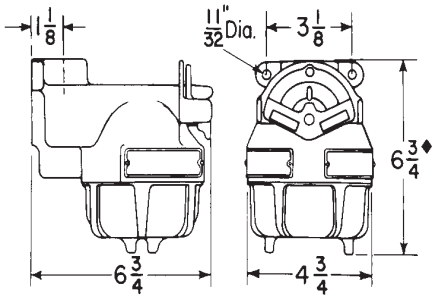
Description	Suffix to be Added to Encl. Cat. #
Back boss drilled and tapped for ¾″ and 1″ sizes	Specify
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635

Dimensions (inches)*

OAC



OAC (91 Series only)



♦ For cover removal, add 2½″ to dimension.
* Dimensions are approximate, not for construction purposes.

**Factory sealed for Class I, Div. 1 & 2, Groups B,C,D.

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OAC Pushbutton Stations

600 VAC
Heavy Duty Standard
Factory Sealed**

Cl. I, Div. 1 & 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7ABCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



Specify operating handle markings. See table below listing.

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits Universal	2 Circuits*
Oper. Handles	Single	Double	Single Operating Both Buttons	Double
Replacement Pushbuttons†	ED21	ED22	ED22	ED22*
Diagram				
Hub Size	**Cat. #**			
¾	OAC2101	OAC2133	OAC2139	OAC2103
1	OAC3101	OAC3133	OAC3139	OAC3103

** Factory sealed for Class I, Div. 1 & 2, Groups B,C,D

* Two universal contact blocks, must be wired as two circuits, one normally open and one normally closed.

Standard markings available are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC

EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	



With momentary left handle and maintained right handle. For momentary "START", maintained "STOP" and similar applications. Specify operating handle markings. See table below.

Normal Pos.	**2 Circuits Universal**
Diagram	

Enclosure with Pushbuttons

Hub Size.	**Cat. #**
¾	OAC2291
1	OAC3291

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4C OAC Selector Switches

600 VAC
Heavy Duty Standard
Factory Sealed**

Cl. I, Div. 1 & 2, Groups A,B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,4,7ABCD,9EFG,12	Watertight

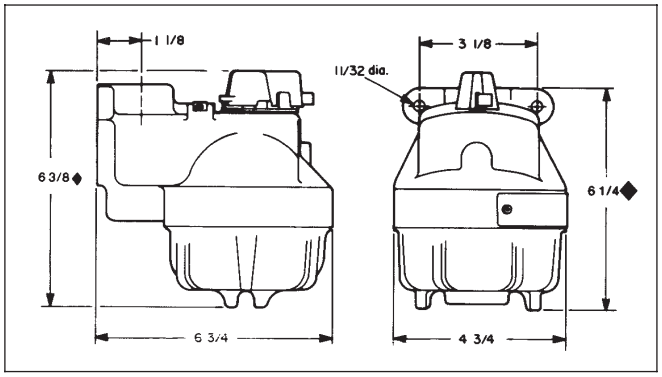
Furnished with pushbutton contact blocks, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below.

Specify indicating plate markings. See table below listings.



Style	Position 1	Position 2	Position 3	Replacement contact blocks‡	Enclosure with Selector Switch Hub Size	Cat. #
Two-Position, Two-Circuit	A1 A2			ED21	¾ 1	OAC2471 OAC3471
Two-Position, Four-Circuit	A1 A2 B1 B2			ED22	¾ 1	OAC2472 OAC3472
Three-Position, Two-Circuit	A1 A2			ED21	¾ 1	OAC2473 OAC3473
Three-Position, Four-Circuit	A1 A2 B1 B2			ED22	¾ 1	OAC2474 OAC3474
	A1 A2 B1 B2			ED22	¾ 1	OAC2475 OAC3475

Dimensions* (inches)



Standard markings are available as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN-OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE-LOWER
FORWARD, REVERSE	UP,DOWN	START-STOP
	ON, OFF	

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

◆ For cover removal, add 2½″ to dimension.

* Dimensions are approximate. Not for construction purposes.

** See page 406.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

EMP Panel Mounted Pushbutton Stations, Selector Switches, Pilot Lights and Combinations

Factory Sealed

Cl. I, Div. 1, Groups C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EMP panel mounted pushbutton stations, selector switches, pilot lights and combinations are used:
- together with instruments, gauges and meters all mounted on a panel of sheet steel or other suitable material in the fabrication of control boards
- in areas made hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in corrosive locations
- indoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist

Features:

- Compact enclosures which require a minimum of panel space, making them ideally suited for flow chart control boards
- Enclosures made in single, two and three gang sizes
- Accurately ground; wide flange on both body and cover for flame-tight joint
- Only the device operators and pilot lights protrude through the panel. Enclosures are behind the panel so that conduit and wiring is concealed
- Pilot lights are relamped from the front of the panel by unscrewing the knurled jewel assembly
- Mounting made easy – a 1⅛″ diameter hole is drilled for each threaded barrel and any panel up to ¾ thick can be used; locking nuts clamp the assemblies to the panel and permit alignment with conduit and other fittings behind the panel
- Furnished with vertical through feed hubs – 1″ size
- Units are factory sealed for Class I, Division 1 and 2, Groups C and D.

Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Threaded barrels – copper-free aluminum
- Operating shafts – stainless steel
- Single pushbutton and selector switch operators – phenolic
- Double pushbutton operators – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – barrels, black anodized; operators, natural
- Stainless steel – natural
- Phenolic – natural

Electrical Rating Ranges:

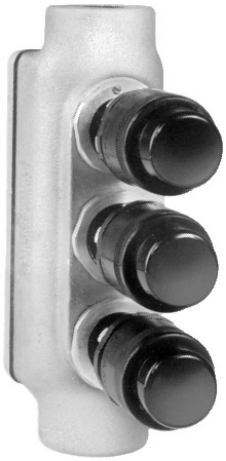
- Pushbutton stations and selector switches: heavy duty 600vac maximum
- Pilot lights: 110 to 600vac



EMP43



EMP501



EMP3000

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1, Groups C,D
  - Class I, Division 2, Groups B,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 3, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

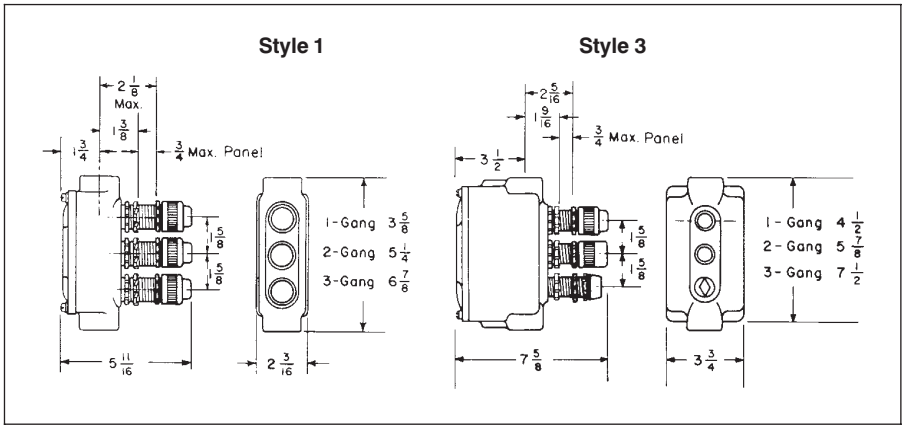
Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
Lockout on single pushbutton operator only. Locks normally closed contacts in open position	S153
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation.	S635
Pilot lights for circuit voltages up to 600 volts maximum (standard voltage range 110-125)	See Listings
Combination of devices other than those listed can be supplied	Specify
LED pilot lights in place of standard incandescent pilot lamps	LED

Dimensions (inches)

Dimensions are approximate, not for construction purposes.



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4C EMP Panel Mounted Pushbutton Stations, Selector Switches, Pilot Lights and Combinations

Factory Sealed, 600 VAC Heavy Duty

Cl. I, Div. 1, Groups C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Pilot lights include 6 watt bayonet base lamps for use on 110-125 volt circuits. For higher voltages, pilot lights can be equipped with a transformer as shown in the table

Style 3 bodies are used when transformers are supplied.

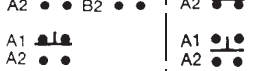
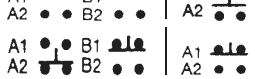
LED pilot lights can be provided in place of standard incandescent pilot lamps. Add suffix LED after color symbols in catalog number. See suffixes on page 411.

Selector switches use momentary contact pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequence shown in the diagrams below.

Pilot Lights* with Selector Switches

No. Pilot Lights and Nominal Voltage	No. of Selector Switches ♦	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (120V)	1 (ED38)	3	Two		1	EMP506-†‡
2 (120V)	1 (ED38)	3	Three		1	EMP9006-†‡

Selector Switches

No. of Selector Switches ♦	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	3	Single		1	EMP44‡
1 (ED35)	3	Single		1	EMP45‡
1 (ED38)	3	Single		1	EMP46‡
1 (ED35)	3	Single		1	EMP47‡
1 (ED35)	3	Single		1	EMP48‡

Pilot Lights*

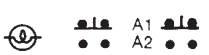
No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (120V)	1	Single		1	EMP10-†
1 (440V)	3	Single		1	EMP40-†-T4
2 (120V)	1	Two		1	EMP200-†
2 (440V)	3	Two		1	EMP500-†-T4
3 (120V)	1	Three		1	EMP3000-†
3 (440V)	3	Three		1	EMP9000-†-T4

Transformers for Voltages Above 125

Nom. Volts 50-60 Cycle Transformer	Primary Voltage Range	Suffix Added to Cat. #
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5

Pilot lights include 6 watt, type S6, candlelabra base lamps for use on 110-125 volt circuits.

Pushbuttons with Selector Switches and Pilot Lights*

No. and Type of Pushbuttons ♦	No. of Selector Switches ♦	No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	1 (ED38)	1 (120V)	3	Three		1	EMP9016-†‡

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COOPER Crouse-Hinds

EMP Panel Mounted Push Button Stations Selector Switches, Pilot Lights and Combinations

Factory Sealed, 600 VAC Heavy Duty

Cl. I, Div. 1, Groups C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Push Buttons

No. and Type of Push Buttons ♦	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	3	Single		1	EMP41‡
1 (ED35)	3	Single		1	EMP42‡
2 (ED35)	3	Single		1	EMP43‡
2 (ED38)	3	Two		1	EMP511‡
3 (ED38)	3	Three		1	EMP9111‡

Push Button with Pilot Lights*

No. and Type of Push Buttons ♦	No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	1 (120V)	3	Two		1	EMP501-†‡
1 (ED35)	1 (120V)	3	Two		1	EMP502-†‡
1 (ED35)	1 (120V)	3	Two		1	EMP503-†‡
1 (ED38)	2 (120V)	3	Three		1	EMP9001-†‡
1 (ED35)	2 (120V)	3	Three		1	EMP9002-†‡
2 (ED38)	1 (120V)	3	Three		1	EMP9011-†‡
1 (ED35)	2 (120V)	3	Three		1	EMP9030-†‡
2 (ED38)	1 (120V)	3	Three		1	EMP9101-†‡

Push Buttons with Selector Switches

No. and Type of Push Buttons ♦	No. of Selector Switches	Body Style	Gang	Diagram Pos. 1	Diagram Pos. 2	Diagram Pos. 3	Hub Size	Cat. #
1 (ED38)	1 (ED38)	3	Two				1	EMP516‡
2 (ED38)	1 (ED38)	3	Three				1	EMP9116‡

Selector Switch Marking

Two-Position

RUN, JOG	FAST, SLOW	IN-OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE-LOWER
FORWARD, REVERSE	UP, DOWN	START-STOP
ON, OFF		

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

† Add color symbol for each pilot light from table below.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

‡ Specify indicating plate marking for each push button and selector switch. Standard markings available as follows:

Push Button Station Marking

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

♦ See page 400 for listing of ED35 & ED38 replacement contact blocks.

* LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED after last color symbol. See Options on page 409.

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4C EMP and EMPS Barrel Assemblies

Dimensions Pg. 414

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7BCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

As indicated in the listings, certain of the barrel assemblies are the same as those used in complete EMP units and may be utilized as replacements.

The remainder are primarily for use with hazardous area boxes to assemble special control stations. For additional information, refer to page 415 describing custom-built control panels.

Ordering Information:

Select the Cat. No. from the listings. For pilot lights and illuminated pushbuttons specify color of jewel using symbols from the table on page page 411. For pushbuttons and selector switches specify markings from the tables on page 411.

Group 1:

Standard assemblies are for replacement in complete EMP units or for custom-built control panels. Short assemblies are for custom-built control panels only. Both assemblies may be used with System 4 Control Stations.



Pilot light**

Diagram	Standard Assembly Cat. #
(120V)*	EMP009†



Single pushbutton
Double pushbutton, single operator

Diagram	Short Cat. #	Standard Cat. #
	EMPS019	EMP019
	EMPS029	EMP029



Double pushbutton, double operator

Diagram	Short Assembly Cat. #	Standard Assembly Cat. #
	EMPS039	EMP039



Two-position selector switch

Diagram Position 1	Diagram Position 2	Short Assembly Cat. #	Standard Assembly Cat. #
A1 A2	A1 A2	EMPS049	EMP049
A1 A2 B1 B2	A1 A2 B1 B2	EMPS059	EMP059

Three-position selector switch

Diagram Position 1	Diagram Position 2	Diagram Position 3	Short Assembly Cat. #	Standard Assembly Cat. #
A1 A2	A1 A2	A1 A2	EMPS069	EMP069
A1 A2 B1 B2	A1 A2 B1 B2	A1 A2 B1 B2	EMPS079	EMP079
A1 A2 B1 B2	A1 A2 B1 B2	A1 A2 B1 B2	EMPS089	EMP089

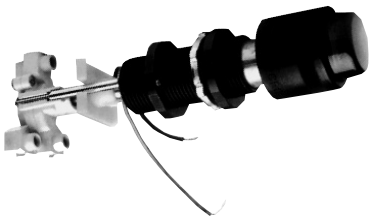
* Other voltages available. See transformer suffix table on page 410. For 24 VDC operation, add suffix S300.

† Colors available: red, green, amber, clear, blue. See table on page 411.

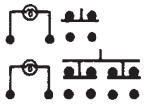
** LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after last color symbol. See Options page 409.

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Group 2: For custom-built control panels and System 4 Control Stations.

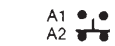
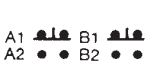
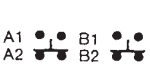


Illuminated pushbutton**

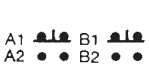
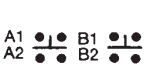
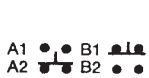
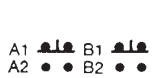
Diagram		Long Assembly Cat. #
	120V pilot light	EMP0090†
	120V pilot light	EMP0098†



Two-position selector switch, key operated

Diagram				
Position 1	Position 2	Key Removal	Short Assembly Cat. #	Standard Assembly Cat. #
		Both positions	EMPS0491	EMP0491
		Left only	EMPS0492	EMP0492
		Right only	EMPS0493	EMP0493
		Both positions	EMPS0591	EMP0591
		Left only	EMPS0592	EMP0592
		Right only	EMPS0593	EMP0593

Three-position selector switch, key operated

Diagram					
Position 1	Position 2	Position 3	Key Removal	Short Assembly Cat. #	Standard Assembly Cat. #
			All	EMPS0691	EMP0691
			Center only	EMPS0692	EMP0692
			Left only	EMPS0693	EMP0693
			Right only	EMPS0694	EMP0694
			All	EMPS0791	EMP0791
			Center only	EMPS0792	EMP0792
			Left only	EMPS0793	EMP0793
			Right only	EMPS0794	EMP0794
			All	EMPS0891	EMP0891
			Center only	EMPS0892	EMP0892
			Left only	EMPS0893	EMP0893
			Right only	EMPS0894	EMP0894

Maintained Contact Pushbutton



Diagram		Long Assembly Cat. #
Up	Down	
		EMP098

† Colors available: red, green, amber, clear, blue. See table on page 411.

* * LED pilot light can be furnished in place of standard incandescent pilot lamp. Add suffix LED after color symbol.

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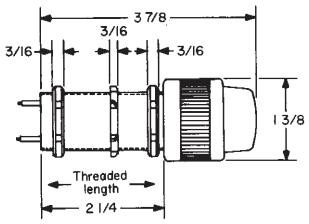
4C EMP and EMPS Barrel Assemblies

Dimensions (inches)*

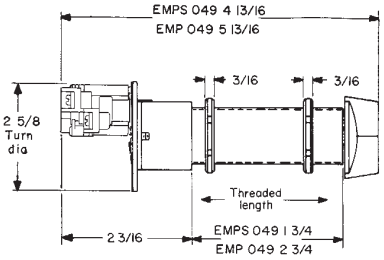
Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 2, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7BCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

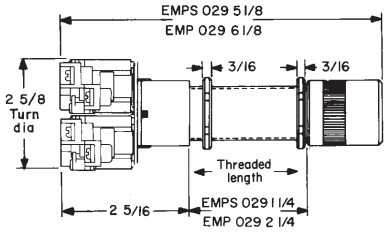
NOTE: All barrel assemblies are ¾"-14 NPSM thread size.



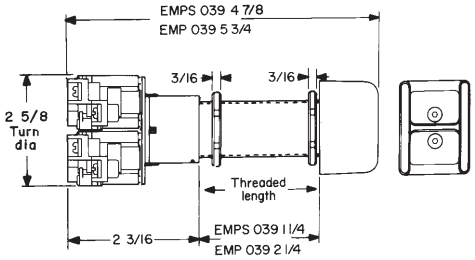
EMP009



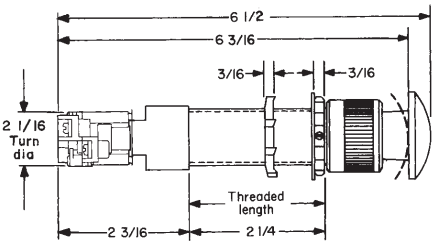
EMP-EMPS049, 059, 069, 079, 089



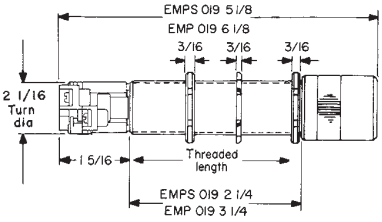
EMP-EMPS029



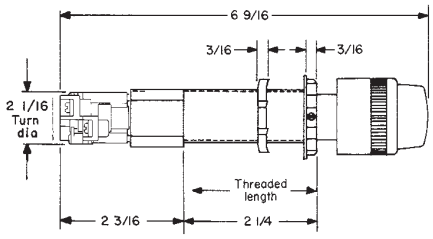
EMP-EMPS039



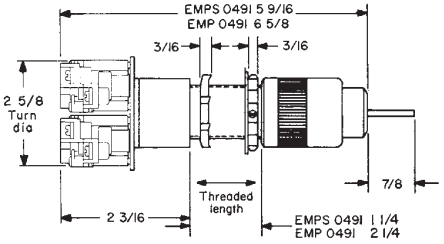
EMP098



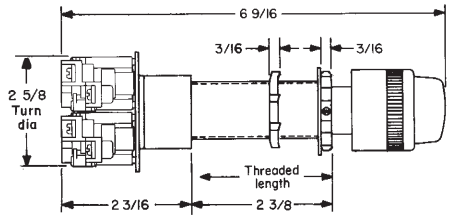
EMP-EMPS019



EMP0090



EMP-EMPS0491, 0591, 0691, 0791, 0891 Series



EMP0098

* Dimensions are approximate, not for construction purposes.

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EJB Custom-Built Control Panels

Using EMP and EMPS Barrel Assemblies

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG
EEx d IIB+H_2 T6, IP66†

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



Application:

EJB custom-built control panels are used with EMP and EMPS barrel assemblies:

- as a means of grouping control stations for centralized process control in hazardous areas in minimum space
- to provide the necessary pushbuttons, pilot lights, selector switches, tumbler switches and glass windows

Features:

- To reduce installation costs, panels can be supplied with control components factory wired to terminal blocks mounted in the box. Relays and other control devices can also be mounted in the boxes for special control functions
- Surface mounted control panels have the components assembled in the hinged cover, readily accessible for circuit checking and trouble shooting
- Panel mounted control assemblies have components installed in the back wall of the junction box. The protruding barrels are passed through holes drilled in the finished panel and locked to the panel in the same manner as individual EMP assemblies. Blank hinged covers are used, and are accessible from the rear of the panel to facilitate maintenance.
- Custom-built control panels to meet your exact requirements are a Cooper Crouse-Hinds specialty. Complete quotations will be supplied for any job, large or small.

Certifications and Compliances:

EJB panels –

- NEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA/EEMAC: 3, 7CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2 No. 30
- CEC:
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G



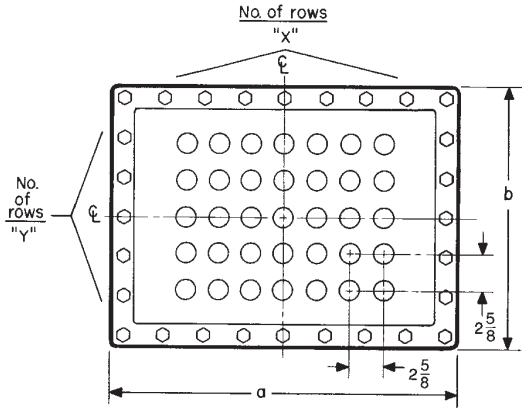
EJB surface mounted control panel – cover closed

Request Brochure # 3331 from your Cooper Crouse-Hinds sales representative or customer service to design your own custom control panel

Dimensions (in inches)*

Listed below are EJB boxes with standard spacing for most barrel assemblies. Depending on the number and type of barrel assemblies installed, closer spacing can be used and more devices assembled.

Standard spacing of barrel assemblies



Cat. #	a	b	x	y
EJB100806✓	15 1/32	13 1/32	3	3
EJB121204✓	17 1/16	17 1/16	4	4
EJB121206✓	17 1/16	17 1/16	4	4
EJB121208✓	17 1/16	17 1/16	4	4
EJB161606✓	21 3/16	21 3/16	6	6
EJB161608✓	21 3/16	21 3/16	6	6
EJB181206✓	23 5/16	23 5/16	6	4
EJB181208✓	23 5/16	17 5/16	6	4
EJB241208✓	29 9/16	17 9/16	9	4
EJB241210✓	29 9/16	17 9/16	9	4
EJB241808✓	29 5/8	23 9/16	9	6
EJB241810✓	29 5/8	23 9/16	9	6
EJB242408✓	29 9/16	29 9/16	9	9
EJB242410✓	29 9/16	29 9/16	9	9
EJB361208✓	40 5/16	16 5/16	13	4
EJB361808✓	41 15/16	23 15/16	13	6
EJB361810✓	41 15/16	23 15/16	13	6
EJB362408✓	42 3/16	30 3/16	13	9

Additional dimensional data for EJB is given on page 132.

✓ - Available with Lightning Service™. See Section G for complete details.

* Dimensions are approximate, not for construction purposes.
† Order with suffix ATEX.

NOTE: For conduit liner ordering information, see page 140.

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4C AFU and AFUX Conveyor Control Switch

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

AFU and AFUX conveyor control switches are used:

- as emergency or normal ''STOP'' switch for conveyor lines, cranes, unloaders, bulk handling systems and similar equipment
- in steel mills, mining and ore and coal handling operations, automotive and other assembly lines, warehouses, loading docks and various process industry facilities
- in the control circuit of magnetic motor starters to shut down motor-driven conveyors or other machinery when switch is actuated.

AFU series complies with requirements for use in Class II areas having combustible dusts that may or may not be electrically conductive.

AFU series are also gasketed for use in hosedown areas even when combustible dusts are present.

AFUX series complies with requirements for use in NEC Class I areas which are hazardous due to the presence of flammable vapors or gases. AFUX series also complies with requirements for use in NEC Class I areas which are hazardous due to the presence of flammable vapors or gases. AFUX series also complies with NEC requirements for use in Class II hazardous areas, or for use in NEC hazardous areas classified simultaneously as Class I and Class II.

Features:

- Furnished with one or two end units, each containing 2-NO and 2-NC contact arrangements.
- Precision switches provide maintained contact (switches have a snap action mechanism).
- Enclosure has three 1″ conduit hubs – two for horizontal through feed and one at the bottom. Cast mounting lugs on 1½″ centers permit attachment to the web of a standard 3″ angle iron.
- In installation, the actuating line or cable is connected from a fixed point to the loop on the end unit. A pull on the line of the required operating force and with a total movement of ½″ actuates the plunger, opens the switch and trips the red painted indicating arm forward, which locks the plunger in the actuated (switch open) position. Returning the indicating arm to its normal position resets the mechanism. A typical installation would include single end switch units at each end of the conveyor with double end switch units between.
- Depending on the size and length of line, supports at properly spaced intervals may be necessary to ensure that the line or cable weight alone will not actuate switch.

Standard Materials:

- Enclosure – *Feraloy*® iron alloy
- Plunger – stainless steel
- Loop – bronze
- Indicating arm – steel

Electrical Rating

- Control circuit switch – 15 AMP, 600 VAC max.

Options:

- Finish: *Corro-free*™ epoxy powder coat – add suffix S752 to the standard catalog number for coating outside only.

Certifications and Compliances:

AFU SERIES

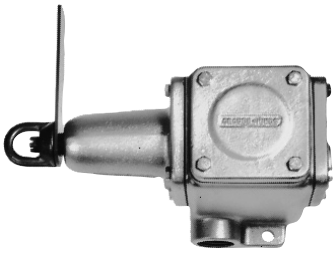
- NEC/CEC:
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- Encl. 3,5
- NEMA: 3, 4, 9EFG
- IP66
- UL Standard: 698
- CSA Standard: 22.2 No. 30

AFUX SERIES

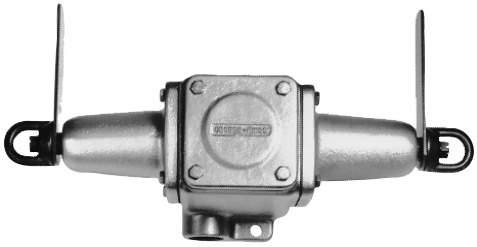
- NEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA: 3, 7CD, 9EFG
- IP65
- UL Standard: 698
- cUL

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized with chromate finish (red acrylic paint on indicating arm)
- Bronze – natural



AFU0333-50 Single end left

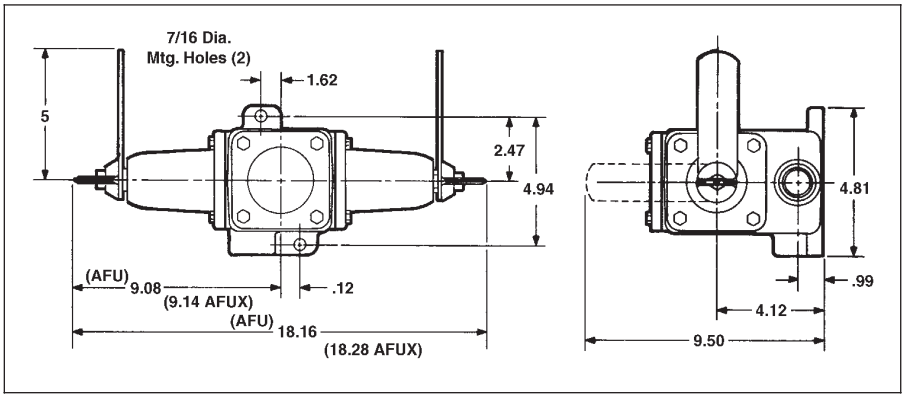


AFU0333-66 Double end

Description	Maximum Weight of Unsupported Line or Cable Without Actuating Switch† (lbs.)	Total Operating Force Required (lbs.)	Contact Arrangements With 2-NO, 2-NC in Each End Unit Cat. #	Cat. #
Single end left	15	25	AFU0333-50	AFUX0333-50
Single end left	25	50	AFU0333-60	AFUX0333-60
Single end right	15	25	AFU0333-05	AFUX0333-05
Single end right	25	50	AFU0333-06	AFUX0333-06
Double end	15	25	AFU0333-55	AFUX0333-55
Double end	25	50	AFU0333-66	AFUX0333-66

† A galvanized steel aircraft cable, supported every 10′ is recommended.

Dimensions (inches)*



* Dimensions are approximate, not for construction purposes.

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AFA and AFAX Conveyor Belt Alignment Switch

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

AFA, AFAX conveyor belt alignment switches are used:

- as emergency or normal ''STOP'' switch for conveyor belts whenever they become misaligned or run off their tracks due to excessive speed, uneven load, leveling, breakage and/or other problems.
- in steel mills, mining and ore and coal handling operations, automotive and other assembly lines, warehouses, loading docks, grain loading and handling facilities, and various other bulk handling operations.
- in the control circuit of magnetic motor starters to shut down motor-driven conveyors in case of abnormal belt misalignment or run-off.

AFA series complies with requirements for use in Class II areas having combustible dusts that may or may not be electrically conductive.

AFA series are also gasketed for use in hosedown areas even when combustible dusts are present.

AFAX series complies with requirements for use in NEC Class I areas which are hazardous due to the presence of flammable vapors or gases. AFAX series also complies with NEC requirements for use in Class II hazardous areas, or for use in NEC hazardous areas classified simultaneously as Class I and Class II.

Features:

- Furnished with precision switches that provide normally open and normally closed contacts (switches have a snap action mechanism).
- Housing consists of a center section which can be mounted either vertically or horizontally, and a switch housing with an attached switch operating arm.
- Enclosure has three 1″ conduit hubs. Cast mounting lugs on 1½″ center permit attachment to the web of a standard 3″ angle iron.
- Operating arm has 3½″ long stainless steel protective roller. Approximately ¾″ lateral movement of operating arm actuates switch.
- Spring loaded operating arm will automatically return switch to normal position when belt interference is removed.
- A severe conveyor belt run-off can rotate the operating arm counter-clockwise up to 85 degrees without damage to the switch mechanism.
- Installation of AFA or AFAX unit on either side of a conveyor belt allows approximately 1″ or a predetermined allowable belt misalignment before switch is actuated. A typical installation would include a pair of AFA or AFAX units at each end of the conveyor belt where belt returns.

Options:

- Finish: *Corro-free*™ epoxy powder coat – add suffix S752 to the standard catalog number for coating outside only.

Electrical Rating:

- Control circuit switches – 15 AMP, 600 VAC max.

Certifications and Compliances:

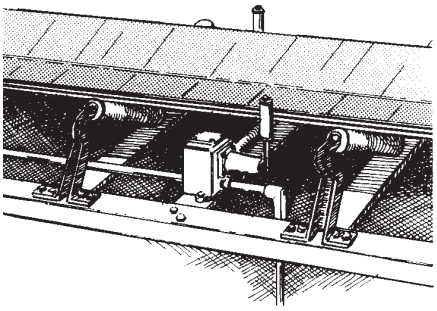
AFA SERIES

- NEC/CEC: Class II, Division 1, Groups E,F,G, Class II, Division 2, Groups F,G Class III
- NEMA: 3, 4, 9EFG
- IP66
- UL Standard: 698
- CSA C22.2 No. 25

AFAX SERIES

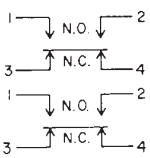
- NEC: Class I, Division 1 & 2, Groups C,D Class II, Division 1, Groups E,F,G Class II, Division 2, Groups F,G Class III
- NEMA: 3, 7CD, 9EFG
- IP65
- UL Standard: 698

Typical AFA Switch Application





Horizontal mounting

Contact Arrangement	Diagram	Cat. #
2 normally open 2 normally closed		AFA20 AFAX20

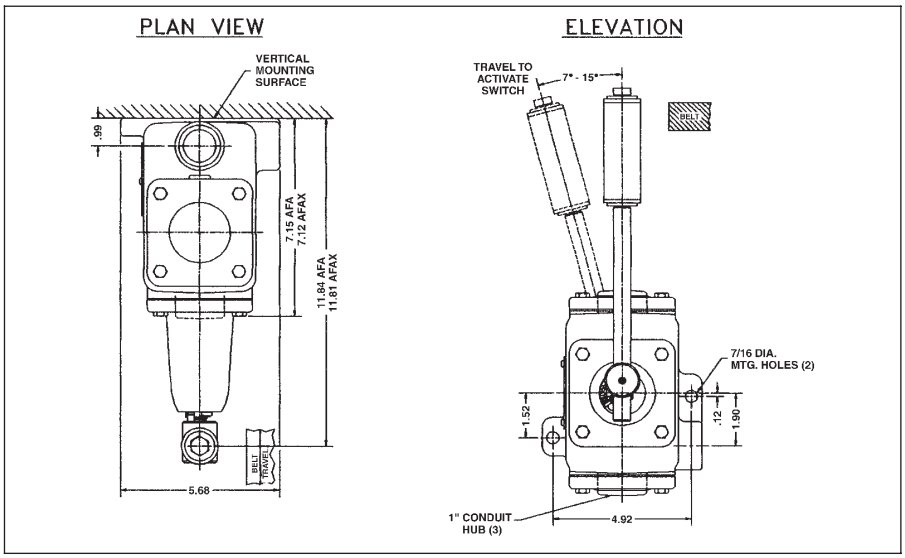
Standard Materials:

- Enclosure – *Feraloy*® iron alloy
- Bearing and operating arm – stainless steel with plastic end caps

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Stainless steel – natural

Dimensions (inches)*



* Dimensions are approximate, not for construction purposes.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

4C AFU Mine Signal Switches
600 VAC

NEMA 3
Raintight
Wet Locations

Application:
AFU mine signal switches are used:
- for signalling circuits or remote control of magnetic motor starters
- in non-hazardous areas of mines or process industry facilities where a rugged enclosure is needed for protection from falling ore and other material or dripping water
- mounted on walls or in shaft ways and actuated by pulling line or cable attached to the loop at the bottom

Features:
- Sturdy raintight enclosure with heavy mounting lugs
- Wires enter enclosure through clearance holes in the underside
- Switches are actuated by a spring-loaded plunger which returns to the normal position when the operating force is removed
- Units are furnished with heavy duty motor control push buttons. Several of these may be interconnected electrically for remote control of a magnetic motor starter from more than one location

Standard Materials:
- Enclosure – *Feraloy*® iron alloy
- Plunger – steel
- Loop – bronze

Standard Finishes:
- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Bronze – natural

Certifications and Compliances:
- NEMA: 3

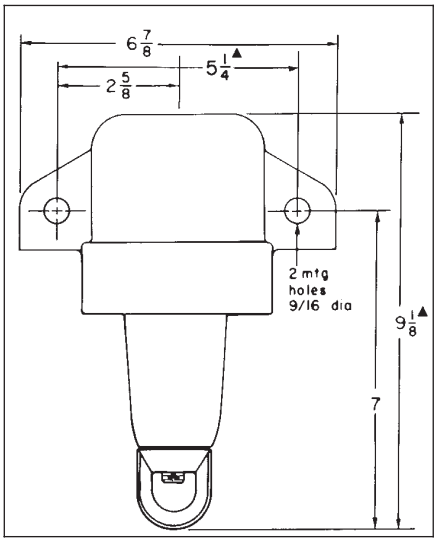
AFU Mine signal switch with push button switch (cover removed)





Maximum Wt. of Line or Cable Without Actuating Switch (lbs.)	Total Operating Force Required (lbs.)	With Push Button Heavy Duty 600 VAC Max. Cat. #
25	50	AFU254

Dimensions (inches)*



* Dimensions are approximate, not for construction purposes.

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EGL Static Grounding Indicator

with Automatic Pump Control

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Applications:

EGL Static Grounding Indicators are connected to tank vehicles, drums or other portable containers before beginning transfer of combustible materials to:

- safely ground static electricity preventing build up of a static charge during pumping
- indicate the presence of safe static grounding before and during loading or unloading operations
- actuate remote devices (lights, horns) to verify completion or interruption of the static ground
- shut down pumps automatically if the EGL static grounding circuit is broken

Features:

- 1″ conduit hub with ¾″ reducer on bottom right hand side of enclosure
- one or two pilot lights (LED)
- Standard LED pilot lights are available in either red (J1) or green (J3)
- Heavy duty clamp for static ground connection
- Breather and drain standard
- Intrinsically safe ground detecting circuit
- Control relay with two sets of contacts to control operation of electrically operated pumps, valves, or for energizing remote indicators
- Static ground verification system to ensure a continuous closed ground loop
- Neoprene gasket for cover opening to make enclosure watertight
- 25 ft. cord with clamp assembly
- External flange design — wide unobstructed cover opening provides a completely accessible interior for wiring and maintenance.
- Triple-lead, captive, stainless steel cover bolts provide quick access and superior corrosion protection. Provides clear indication that cover bolts are fully retracted from the body.
- Detachable mounting feet provide flexibility. No need to replace enclosure if mounting foot is broken.
- Copper-free aluminum hinges provide convenient and easy access for inspection, maintenance, and system changes.
- Waterguard™ desiccant packet provided to absorb and remove water/moisture and protect the enclosed equipment from damage.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

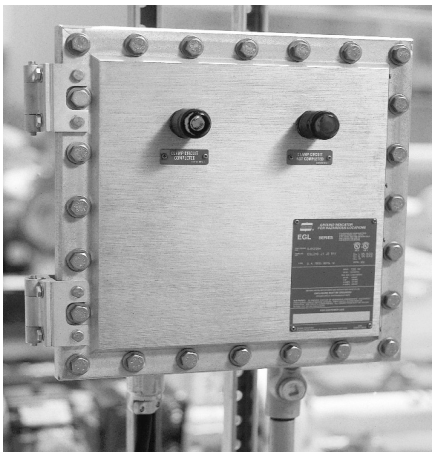
- Natural

Electrical Rating Ranges:

- 120 volt AC supply
- Control relay interlocking contact: 15A at 277 VAC; 10A at 600 VAC

Certifications and Compliances:

- Class I, Division 1 & 2, Groups B,C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div. 2, Groups F,G
  Class III



Catalog Numbers:

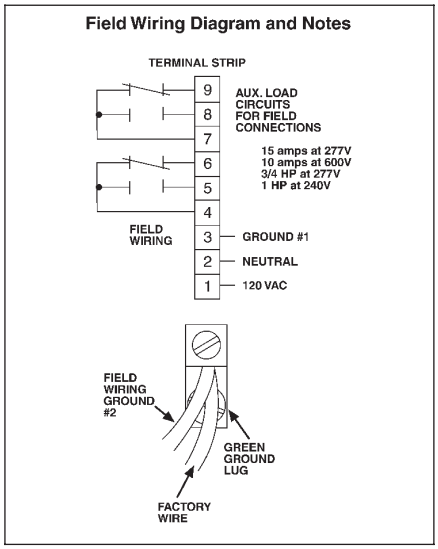
EGL Indicators:

Description	Cat. #
Indicator less pilot lights	EGL210
Indicator with one pilot light	EGL210-J‡
Indicator with two pilot lights*	EGL210-J1-J3

Options:

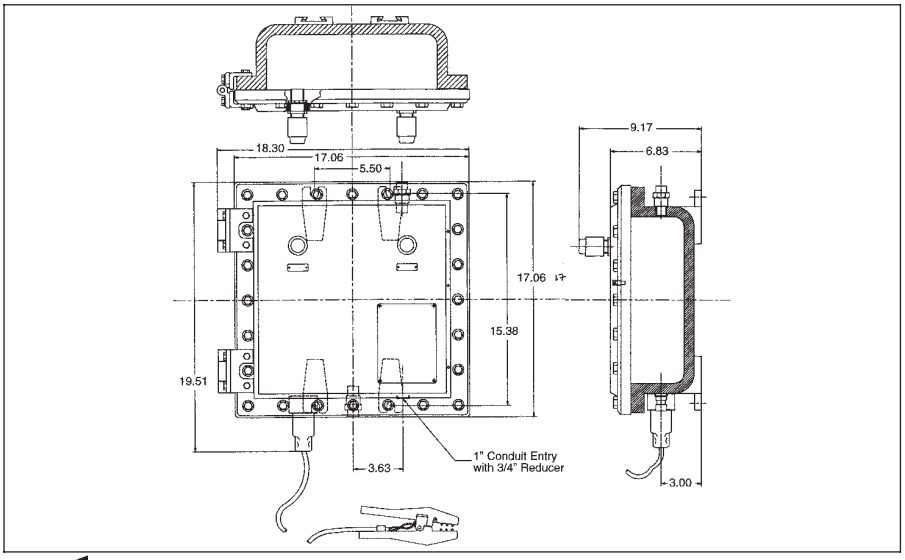
- Corro-free™ epoxy finish for use in severely corrosive environments . . . . . add suffix S752
- Epoxy finish, internal and external add suffix S753
- Internal space heaters . . . . . add suffix R11
- 50 VA power transformer for 240 VAC input FT502
- 50 VA power transformer for 480 VAC input FT504

Field Wiring Diagram and Notes



CAUTION:
To ensure proper operation of the EGL210, two separate ground leads from the electrical supply panel must be provided: one to terminal #3 on the terminal strip and the other to the green ground lug in the enclosure.

Dimensions: (inches)



Replacement Parts:

Description	Cat. #
Ground clamp	EGL-K1
Ground clamp assembly includes 25′ cord, connector and clamp	EGL:20109-B
EGL210 interior only	EGL210-R1 M4
Pilot Lights (Red)	EMP009-J1-LED
(Green)	EMP009-J3-LED
Relay	EGL-K4
Switch Amplifier	GHG122-3121-D-1003
Adaptor Plate (allows Model M4 to be mounted where Model M2 and M3 were located)	0208122
Mounting Feet (Model M4)	EJB-MF1

‡ Specify color: J1=red, J3=green.
* Includes one red and one green pilot light.

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4C Cable-Gard Static Discharge Reels

Application:

Static discharge reels are used for grounding portable machines and equipment in hazardous areas, such as fuel-transfer trucks, grain elevators, dockside-loading facilities, and barges. When properly clamped to ground the static discharge reel safely dissipates static electrical buildup and reduces the chance of sparking and the potential for explosion. For hazardous locations, the EGL Static Grounding Indicator (on page 419) can be used as an electrical interlock to control pumping operations.

Features:

- Compact enclosed design, positive ratchet lock, steel cable installed
- 100 amp universal jaw-type grounding clamp
- Mounts to a clean, unpainted conductive surface to assure electrical continuity through the reel frame

Standard Materials:

- Housing – steel construction

Standard Finishes:

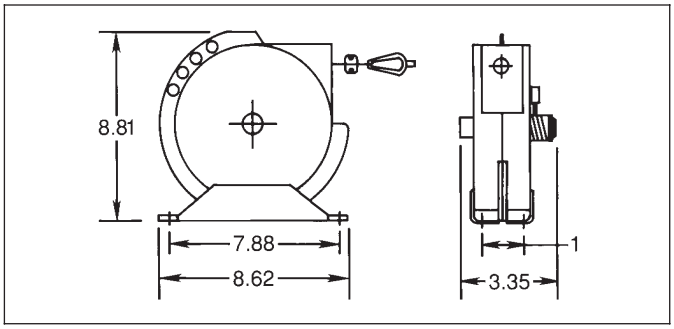
- Housing – Orange polyester; baked on finish



Cable Length (Ft.)	Description	Cat. #
50	Single 7 x 30 steel*	SDR-50
50	35′ plus 2 x 15′ for Y (steel*)	SDR-50Y
50	Nylon covered cable*	SDR-50N

* Static discharge reels are supplied complete with 3/32" steel aircraft cable. DC resistance is approximately one ohm per 50 ft. of steel cable.

Dimensions (inches)



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EGF Series
Ground Fault Control Station

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 7CD, 9EFG, 12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EGF Series of control stations are used:
- for the additional safety of personnel, and for equipment protection in remote areas.

Features:

- Copper-free aluminum construction offers lightweight, corrosion resistance and a long, maintenance-free service life.
- 1¼″ throughfeed conduit hubs with 1¼″-1″ reducers for ease of installation.
- Compact, internally flanged enclosure requires minimum installation area.
- Steel mounting feet with electroplate finish for fast, secure, and corrosion-resistant mounting.
- Accepts #14-#10 copper wire sizes for application flexibility.
- Push-to-test button and pilot light (with 10,000 hour incandescent lamp) for easy and constant operational monitoring of unit.
- Cast aluminum circuit breaker operating handle for durability during use.
- EPD breakers for protection of heat tracing circuits.

Standard Materials:

- Bodies, covers, threaded barrels, guards, collars, and toggle operator – copper-free aluminum
- Pushbuttons – type 6/6 nylon
- Operating shafts – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Sheet steel – zinc electroplate with chromate finish
- Stainless steel – natural

Electrical Rating:

- GFI, EPD breakers – 120 VAC (single pole), 120/240 VAC for two pole (10,000 AIC)

Certifications and Compliances:

- NEC: Class I, Div. 1 & 2, Groups C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div. 2, Groups F,G
  Class III
- NEMA 3, 7CD, 9EFG, 12

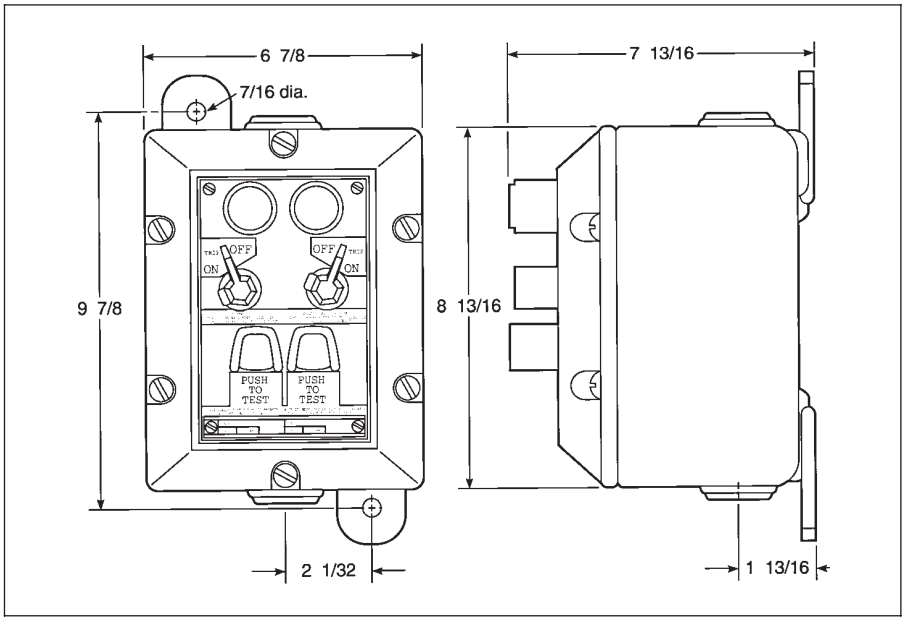


Ordering Information

Number of Breakers	Number of Poles	Milliamp Trip	Catalog Number
1	1	5	EGF11*
1	2	5	EGF12*
2	1	5	EGF21*
1	1	30	EGF11EPD*
1	2	30	EGF12EPD*
2	1	30	EGF21EPD*

* Add 15, 20, 25, or 30 amp breaker rating

Dimensions:



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FLEXITITE™ Attachable Pendant Pushbutton Stations

NEMA 3,4X,5,6,12

Raintight
Watertight
Dust-Tight
Wet Locations

Application:

FLEXITITE attachable pendant pushbutton stations are used:

- for safe, multi-function motor circuit control of: Hoists
  Cranes
  Machine Tools
  Electromagnets
- non-hazardous control environments requiring from 2 to 8 functions.
- where washdowns are necessary – in damp, wet, dirty, or corrosive locations.

Features:

- Safety insulated to meet OSHA requirements for enclosing live parts. The entire unit except the strain relief is insulated with neoprene.
- Safety cushioned – neoprene encapsulation protects internal switches and connectors from impact damage and provides extra protection for personnel.
- Stress relief for your cable is built-in. A separate cable grip is not needed unless the optional pilot light kit is used.
- Positive action long life momentary contact switches.
- Maintained Off-On toggle switch is optionally available on 4, 6, and 8 button units.
- Jam resistant operator buttons are raised flexible diaphragms – an integral part of the molded one-piece cover.
- Compact – 3″ x 3″ enclosure easily fits your hand.
- Indicator plates meet OSHA requirements for clear identification of functions. A full set of plates is provided with each station.

Standard Materials:

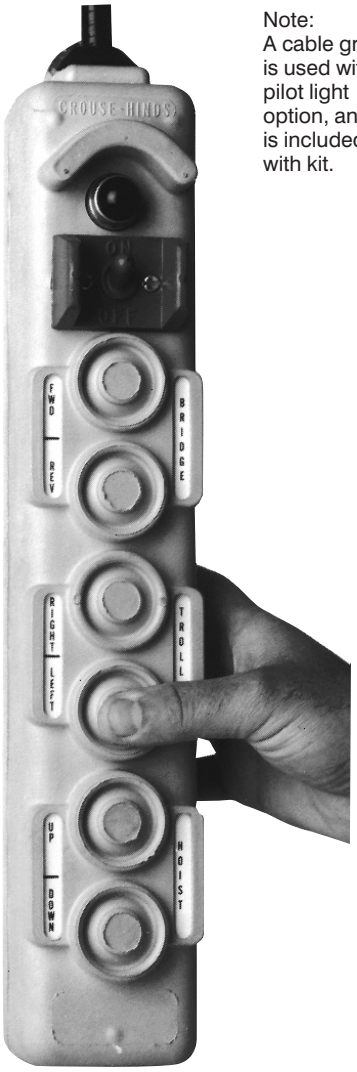
- Body and cover – steel reinforced neoprene
- Strain relief and reinforcement plates – stainless steel
- Exterior hardware – stainless steel

Standard Finishes:

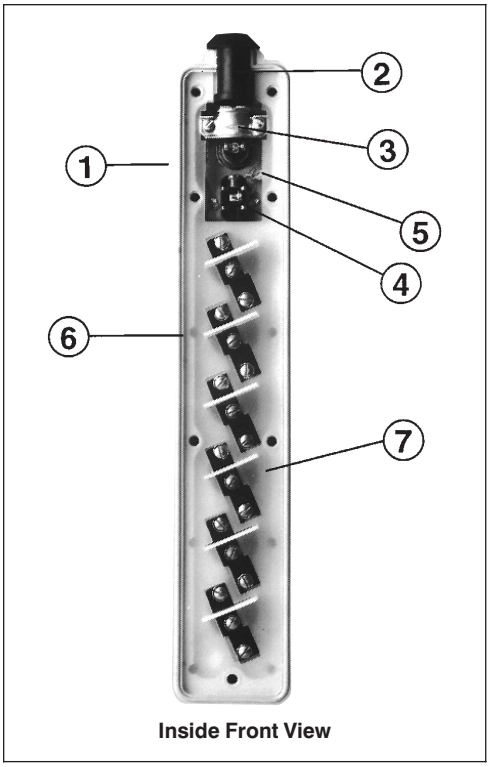
- Neoprene – safety yellow
- Steel – stainless steel

Certifications and Compliances:

- NEMA: 3, 4X,5, 6, 12
- UL Standard: 508
- CSA Approved



Note:
A cable grip is used with pilot light option, and is included with kit.



Inside Front View

1. BODY SEAL – Compresses against mating half to form a positive seal.
2. REDUCING GROMMETS – Permit use of five different cable sizes while sealing cable entrance.
3. CABLE CLAMP – Secures conductors inside switch. Transfers strain to inner steel core of switch. (Not used with pilot light.)
4. TOGGLE SWITCH (OPTIONAL) – Maintained off-on switch to control power to pendant stations.
5. GREEN GROUNDING SCREW – Makes positive contact between inner steel core and ground wire.
6. INSULATION BARRIERS – On 4- and 6-button models. Position switches and separate N.O. and N.C. switch contacts for added safety.
7. SEPARATOR – For 4- and 6-button models. Tough polypropylene sheet retains switches and forms an insulated wiring channel.
   STRAIN RELIEF – Integral part of the inner steel core – provides tie-off point for strain chain to relieve tension from electrical cable.
   ELECTRICAL INTERLOCK – Schematic furnished to wire switches against opposed operations.
   LOW COST, EASILY INSTALLED – Despite their many advantages, Cooper Crouse-Hinds pendant stations generally cost less than similar metal units.
   RAISED BUMPER – protects lens against damage caused by impact.

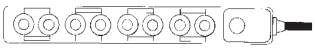
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FLEXITITE™ Attachable Pendant Pushbutton Stations

NEMA: 3,4X,5,6,12

Raintight
Watertight
Dust-Tight
Wet Locations

One and Two Speed 2, 4, 6 and 8 Buttons

Style	Toggle Switch*	1 Speed 20A 460V 2 hp. 230V	2 Speed 10A 230V ½ hp. 230V	DC 10A 125V ⅛ hp. 125V	Cable Diameter	Shipping Weight (lbs.)	Dimensions Length	Width	Depth
2-Button 	None	X8635-21	X8635-22	X8635-20	.555 thru .665	2½	8¾″	2¼″	3″
4-Button 	3316317	X8635-41B	X8635-42B	X8635-40B	.505 thru .730	3	13½″	3″	3⅝″
6-Button 	3316317	X8635-61B	X8635-62B	X8635-60B	.590 thru .840	6½	17″	3″	3⅝″
8-Button 	3316317	X8635-81	X8635-82**	X8635-80	.698 thru .968	9	21½″	3″	3 7⁄16″

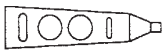
* Should be ordered separately.

Pilot Light Kit for 4, 6 and 8-Button Only

Lamp Voltage	4 and 6 Button Cable Diameter .50 thru .62	.63 thru .74	.75 thru .87	8 Button .69 thru .97
110-125V AC	3316533	3316533-1	3316533-2	3316624
210-250V AC	3316534	3316534-1	3316534-2	3316625

Pilot light kit includes: lamp assembly with lens and bulb, cable support grip, and ''S'' hook. Support grip and ''S'' hook not required on 8-button. NEMA 3,4,5,12 only.

FLEXITITE™ 2-Button Attachable Pendant Switch

Part Number	Contact Style	Voltage	Amps Make	Amps Break
X8995-1 yellow 	Momentary Switch	240 AC 120 AC 24 AC 250 VDC 125 VDC	7.5 15.0 15.0 0.27 .055	0.75 1.5 2.5 0.27 0.55

** 2 speed includes: 6, 2-speed switches and 2, single speed switches.

Indicator Plates (Replacement only - units come with plates standard)

2-Button

Part Number	Description	Part Number	Description
315116-1	Down/West	315116-7	Rev/Left
315116-2	Start/North	315116-8	Up/East
315116-3	Stop/South	315116-9	Raise/Lower
315116-4	Off/In	315116-10	Up/Down
315116-5	On/Out	315116-11	Right/Left
315116-6	Fwd/Right		

4, 6 and 8-Button

Part Number	Description	Part Number	Description
314850-1	Bridge	314850-6	Fwd/Rev.
314850-2	Trolley		North/South
314850-3	Hoist	314850-9	On/Off
314850-4	In/Out		Start/Stop
	Up/Down	314850-12	Raise/Lower
314850-5	Right/Left	314850-13	Inbd/Outbd
	East/West	314850-14	Off/On

Shoulder Bolts for Fastening Front to Back Cover – 2-Button (P/N 1316311-2); 4- & 6-Button (P/N 1316311-1); 8 button (P/N 1316311-3). NOTE: Refer to price list for identification of stock items.

Replacement Parts

Style	Part Numbers Front Cover	Back Cover	Toggle Switch Kit†	Switch Element Part Numbers 1 Speed 20a. 460V 2hp, 230V	2 speed 10a. 230V ½ hp. 230V	DC 10a. 125V ⅛ hp. 125V	Toggle Off/On Element	Barrier	Separator	Parts Kit††	Pilot Light Kit
2-Button	A335578	A335577-1	Not Avail.	3316480	314896	314903				RX8635-21	See Above Chart
4-Button	3335848-1	3335829-1	3316317	3316480	314896	314903	1316313	314849-1 (4 Req'd)	335616 (1 Req'd)	RX8635-41	
6-Button	3335845-1	3335830-1	3316317	3316480	314896	314903	1316313	314849-1 (6 Req'd)	335571 (1 Req'd)	RX8635-61	
8-Button	3344153	3344154	3316317	3316480	314896	314903	1316313	Not Req'd	Not Req'd	RX8635-80	

† Toggle switch kit – includes: toggle switch, guard, assembly and screws.

†† Parts kit – includes cable grommets, legend plates and assembly screws.

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4C D2X Series FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas

Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-tight
Wet Locations

Application:

FLEXITITE attachable pendant pushbutton stations are used:

- for safe multi-function motor circuit control of:
  - Hoists
  - Cranes
  - Machine Tools
  - Electromagnets
- in hazardous areas such as Class I, Division 2, Groups B, C and D (classified) areas or Class II, Division 2, Groups F and G, as defined by the National Electrical Code
- where wash downs are necessary – in damp, wet, dirty or corrosive locations
- for control applications requiring 2 to 8 functions

Features:

- Safety cushioned – neoprene encapsulations protects internal switches and connectors from impact damage and provides extra protection for personnel.
- Stress relief for your cable is built-in. A separate cable grip is not needed.
- Uses Cooper Crouse-Hinds ESWP factory sealed contacts suitable for use in Class I, Division 2, Groups B, C and D
- Switches are rated for 10 amps 600 VAC (NEMA A600).
- Indicator plates meet OSHA requirements for clear identification of functions. A full set of plates is included with each station.
- Jam resistant operator buttons are raised flexible diaphrams – an integral part of the molded one-piece cover.
- Compact design
- Safety yellow finish.

Standard Materials:

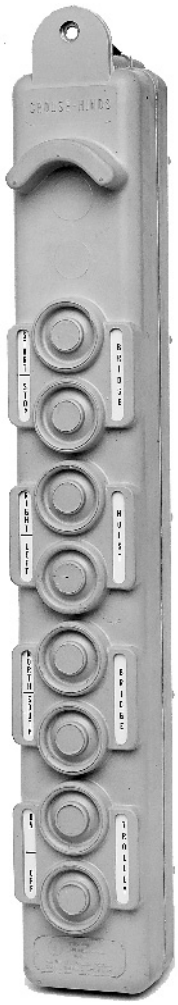
- Body and Cover – steel reinforced neoprene
- Strain relief and reinforcement plates – stainless steel
- Exterior hardware – stainless steel

Standard Finishes:

- Neoprene – safety yellow
- Stainless steel – natural

Certifications and Compliances:

- NEMA: 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
- UL Standard: 508
- CSA Standard C22.2 No. 14



8-Button Control Station

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

D2X FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas

Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-tight
Wet Locations

Ordering Information

Control Stations

Description	Cable Dia.	Catalog #
2-Button	.31 – .75	D2X8635-210
4-Button	.50 – .75	D2X8635-410
6-Button	.59 – .81	D2X8635-610
8-Button	.59 – .92	D2X8635-810

Replacement Indicator Plates (A full set is included with each control station)

2-Button

Part No.	Description	Part No.	Description
315116-1	Down/West	315116-7	Rev/Left
315116-2	Start/North	315116-8	Up/East
315116-3	Stop/South		
315116-4	Off/In		
315116-5	On/Out		
315116-6	Fwd/Right		

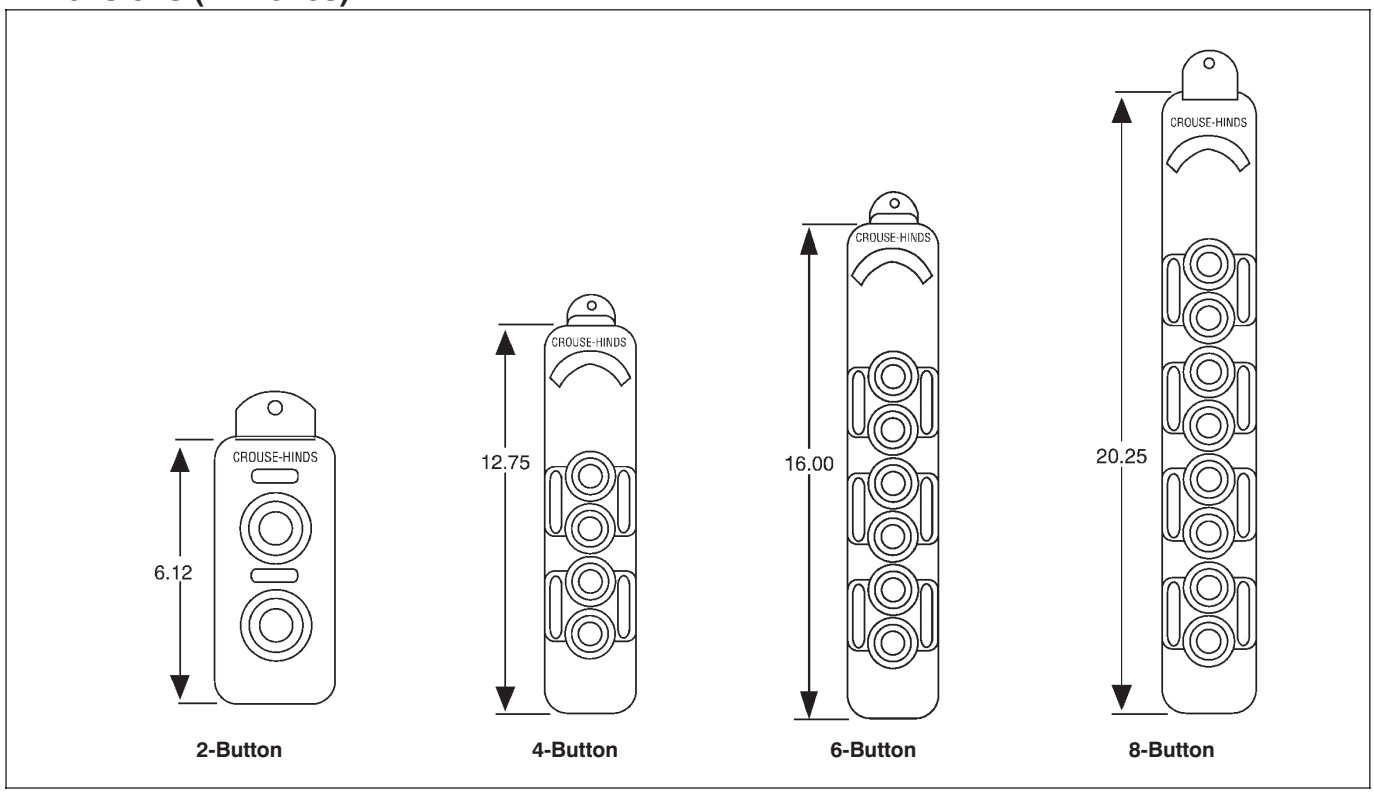
4, 6 and 8-Button

Part No.	Description	Part No.	Description
314850-1	Bridge	314850-6	Fwd/Rev North/South
314850-2	Trolley		
314850-3	Hoist In/Out	314850-9	On/Off Start/Stop
314850-4	Up/Down Right/Left		
314850-5	East/West		

Replacement Switch

Part No.
ESWP126

Dimensions (in inches)



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Notes Page

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5C EFS and EDS Factory Sealed Control Devices and Manual Motor Starting Switches

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

Application:

Factory sealed enclosures are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:
- to prevent arcing of enclosed device from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required
- in conjunction with magnetic starters or contactors for remote control of motors

Manual motor starting switch enclosures are used:
- for manual starting of small ac or dc motors
- to provide manual starting and stopping and, in the case of units with heaters, motor running protection

Features:

Factory sealed devices have many distinct advantages:
- reduce installation problems
- eliminate external seals
- lower installation costs
- improve safety
- are used with general purpose snap and pushbutton type switches
- standard neoprene covers for front operated pushbuttons. Prevents accumulation of dirt and entrance of water around operating shafts
- mounting lugs and taper tapped hubs with integral bushings
- large machine screws for fastening covers to bodies
- lockout provisions on front operated push button (marked ''STOP'' and ''OFF'') and selector switch covers
- lockout hole for padlock having ¼″ hasp is provided when used with covers for front lever and side rocker type operation
- close tolerances in machining of wide, mating flanges and journalled shafts and bearings for front button operation, produces flametightness of enclosure joints
- on enclosures with front lever and side rocker type operating handles, threaded type shafts and bushings are used to ensure flametightness
- dead end (EFS or EDS) or through feed (EFSC or EDSC) hubs – ½″ to 1″ sizes

Standard Materials:

- Bodies – *Feraloy*® iron alloy; copper-free aluminum.
- Front operated pushbutton and pilot light covers – *Feraloy* iron alloy
- Side operated type pushbutton covers – copper-free aluminum
- Shafts – stainless steel
- Shaft bushings – stainless steel
- Rocker handle and pushbutton guards – type 6/6 nylon
- Sealing enclosures – copper-free aluminum

Standard Finishes:

Feraloy iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Type 6/6 nylon – black
- Stainless steel – natural

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B*,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA/EEMAC: 3,7B*CD,9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30

Options:

The following special options are available from the factory by adding suffix to Cat. No.

Description	Suffix to be Added to Cat. #
Emergency ''Stop'' button (momentary) – front operated red mushroom button	S111
Lockout provision on front operated pushbutton cover (standard on buttons marked ''OFF'' and ''STOP'')	S153
For 24 VDC operation on pilot lights	S300
Three-position selector switches with modified operation: Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635
Bodies and covers (single and two gang units) – copper-free aluminum	SA
Where indicated in the catalog listings, EDS units suitable for Class I, Division 1, Group B usage can be supplied, add suffix - GB, EFS units are suitable for Class I, Division 1, Group B as standard	GB
Maintained contact mushroom head with lockout and guard. Maximum one per cover and cannot be used with a pilot light with a transformer or another standard pushbutton	S769

EDS bodies and factory sealed cover and device sub-assemblies are available for field assembly (see pages 394 to 396).



Suffix S769

* See Options: suffix GB

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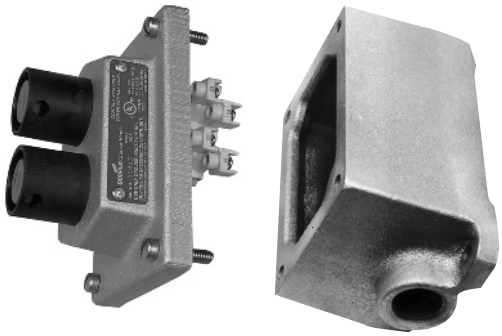
EFS and EDS Factory Sealed Control Devices and Manual Motor Starting Switches

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

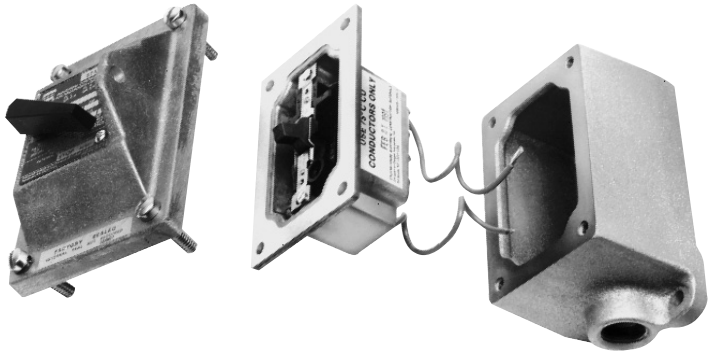
Methods of Factory Sealing

EFS/EDS Series



Factory sealed EDS and EFS pilot light, pushbutton and selector switch control stations do not need external sealing. Device contacts are factory sealed in explosionproof ESWP contact blocks. Small compact enclosures have accurately ground wide flanges on both the body and cover for a flame-tight joint.

EDS Series



EDS factory sealed snap switches or manual motor starting switches do not need external sealing. The switches are enclosed in a unique sealing well with double flanges which mate with the cover and the body. Small compact enclosures have accurately ground wide flanges on body, cover and sealing well for flame-tight joints. Wiring pigtails are factory sealed from under the sealing well. Reliable pouring of seals at the factory ensures safe sealing.

* Check listings for Group B suitability
See Options page 428.

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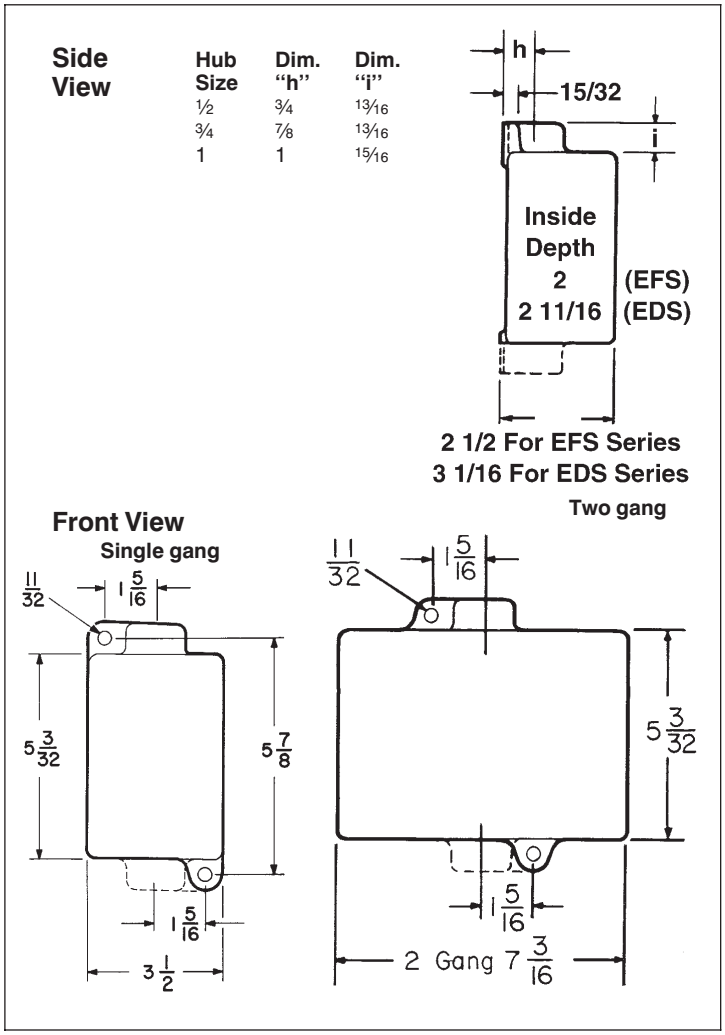
EFS and EDS Factory Sealed Control Devices and Manual Motor Starting Switches

Dimensions

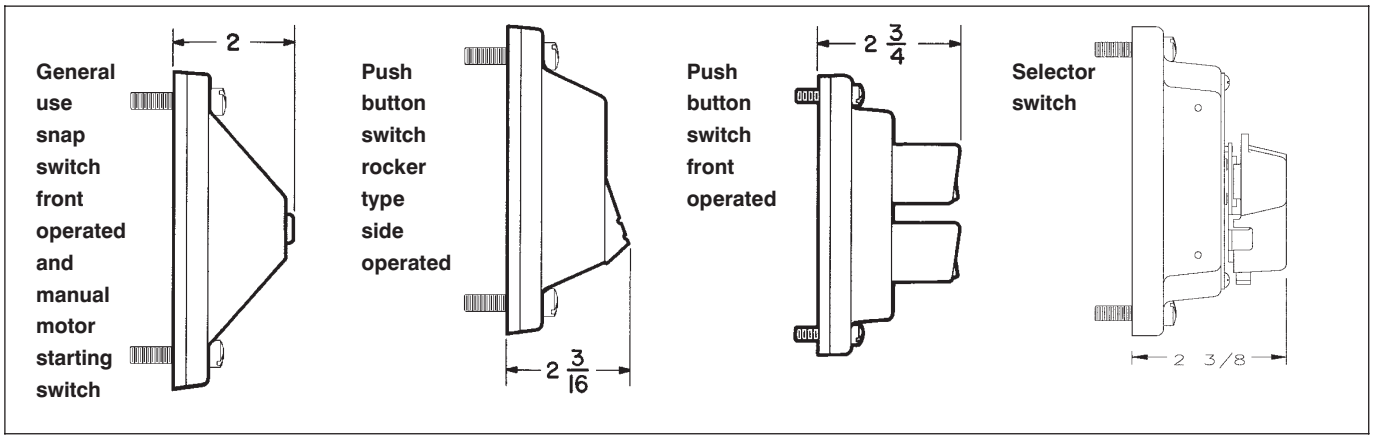
Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

Dimensions (inches)**

Bodies



Covers†



** Dimensions are approximate, not for construction purposes.

† Surface covers have same length and width as bodies.

* See listings.

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EDS Factory Sealed Pushbutton Stations

Front Operated, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDS2184



EDS2190

Single Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified
Diagram			
Replacement Pushbuttons‡	ED11	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	**Dead End Cat. #**	**Cat. #**	**Cat. #**
½	EDS1184		EDS115
¾	EDS2184	EDS2190	EDS215
1	EDS3184	EDS3190	EDS315
	Through Feed		
½	EDSC1184	EDSC1190	EDSC115
¾	EDSC2184	EDSC2190	EDSC215
1	EDSC3184	EDSC3190	EDSC315

Normal Pos.	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify
Diagram		
Replacement Pushbuttons‡	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	**Dead End Cat. #§**	**Cat. #§**
½		EDS1155
¾	EDS2192	EDS2155
1	EDS3192	EDS3155
	Through Feed	
½	EDSC1192	EDSC1155
¾	EDSC2192	EDSC2155
1	EDSC3192	EDSC3155

* **Class I, Group B:** Consider using EFS series pushbuttons, see page 433. All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1½″ of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals. In Canada, for Group B applications consult factory.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

§ Single external button operates both inner buttons simultaneously.

† Standard markings available are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

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EDS Factory Sealed Pushbutton Stations

Front Operated, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDSC225

Two Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified
Diagram			
Replacement Pushbuttons‡	ED11	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	**Dead End Cat. #**	**Cat. #**	**Cat. #**
¾	EDS2284	EDS2290	EDS225
1	EDS3284	EDS3290	EDS325
	Through Feed		
½	EDSC1284	EDSC1290	EDSC125
¾	EDSC2284	EDSC2290	EDSC225
1	EDSC3284	EDSC3290	EDSC325

* **Class I, Group B:** Consider using EFS series pushbuttons, see page 433. All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1½″ of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals. In Canada, for Group B applications consult factory.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

§ Single external button operates both inner buttons simultaneously.

† Standard markings available are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

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EFS Factory Sealed Pushbutton Stations

Front Operated, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EFS2184



EFSC2190

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified
Diagram			
Replacement Pushbuttons‡	ED11	ED12	ED12**
Enclosure with Pushbuttons			
Hub Size	**Dead End Cat. #**	**Cat. #**	**Cat. #**
½	EFS1184		EFS115
¾	EFS2184	EFS2190	EFS215
1	EFS3184	EFS3190	EFS315
	Through Feed		
½	EFSC1184	EFSC1190	EFSC115
¾	EFSC2184	EFSC2190	EFSC215
1	EFSC3184	EFSC3190	EFSC315

Normal Pos.	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify
Diagram		
Replacement Pushbuttons‡	ED12	ED12**
Enclosure with Pushbuttons		
Hub Size	**Dead End Cat. #§**	**Cat. #§**
½		EFS1155
¾	EFS2192	EFS2155
1	EFS3192	EFS3155
	Through Feed	
½	EFSC1192	EFSC1155
¾	EFSC2192	EFSC2155
1	EFSC3192	EFSC3155

* **Class I, Group B:** All enclosures listed above are suitable for Class I, Group B, Div. 1 usage. Seals only have to be installed on 1 inch conduit within 5 ft. in Division 1.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

§ Single external button operates both inner buttons simultaneously.

† Standard markings available are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

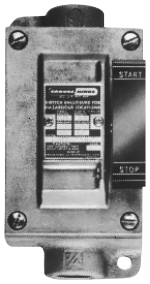
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5C EDS Factory Sealed Push Button Stations

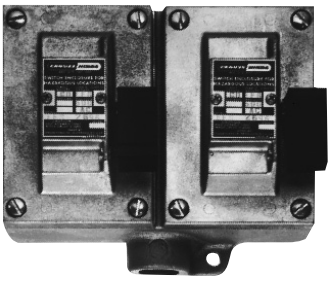
Side Rocker Handle, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDSC2162



EDS2696

Single Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified
Diagram			
Replacement Push Buttons‡	ED11	ED12	ED12**

Enclosure with Push Buttons

Hub Size	**Dead End Cat. #**	**Cat. #**	**Cat. #**
½	EDS1596		EDS1162
¾	EDS2596	EDS2194	EDS2162
1	EDS3596	EDS3194	EDS3162
	Through Feed		
½	EDSC1596	EDSC1194	EDSC1162
¾	EDSC2596	EDSC2194	EDSC2162
1	EDSC3596	EDSC3194	EDSC3162

Two Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits
Marking†	Specify	Specify	START-STOP unless otherwise specified
Diagram			
Replacement Push Buttons‡	ED11	ED12	ED12**

Enclosure with Push Buttons

Hub Size	**Dead End Cat. #**	**Cat. #**	**Cat. #**
¾	EDS2696	EDS2294	EDS2262
1	EDS3696	EDS3294	EDS3262
	Through Feed		
½	EDSC1696	EDSC1294	EDSC1262
¾	EDSC2696	EDSC2294	EDSC2262
1	EDSC3696	EDSC3294	EDSC3262

* **Class I, Group B:** All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1½″ of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

† Standard markings available, heat stamped in nylon rocker handle, are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

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EFS Factory Sealed Pilot Lights

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7BCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Pilot lights listed below are factory sealed and do not require external seals. Lamps ♦ are 6 watt, type S6, candelabra base for use on 110-125 volt circuits.

Enclosures with single pilot covers **only** can be equipped with a transformer for the lamp for higher voltages as shown.

Pilot light covers with 2 pilot lights cannot be provided with transformer, as the transformer occupies the space of one pilot light.

Transformer Voltages Above 125

Nominal Volts 50-60 hertz Transformer	Primary Voltage Range	Cat. No. Suffix
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5

Class I, Group B:

All enclosures listed above are suitable for Class I, Group B, Div. 1 usage. Seals only have to be installed on 1 inch conduit within 5 ft. in Division 1.

These products are suitable for Group B, Div. 2 as listed, without external seals.





EFS Single Gang

Enclosure with Single Pilot Light ♦

Hub Size	Dead End Cat. #	Through Feed Cat. #
½	EFS11524-†	EFSC11524-†
¾	EFS21524-†	EFSC21524-†
1	EFS31524-†	EFSC31524-†
Enclosure with Two Pilot Lights ♦		
½	EFS11561-†	EFSC11561-†
¾	EFS21561-†	EFSC21561-†
1	EFS31561-†	EFSC31561-†

† Add color symbol for each pilot light from table below.
Example: EFS1561 with red and green lights is EFS1561-J1-J3.

Color	Symbol	Color	Symbol	Color	Symbol
Red	J1	Amber	J6	Blue	J11
Green	J3	Clear	J10		

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after color symbol.
For 24 VDC operation, add suffix S300.

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5C EDS Factory Sealed Combination Pushbutton and Pilot Light Stations

600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

Pushbutton contacts and pilot light receptacles are sealed in separate chambers. External seals are not required. Lamps ♦ are 6 watt, type S6, candelabra base for use on 110-125 volt circuits.

Two gang units with single pilot light covers can be furnished with transformers. See page 435 for details and suffixes. Specify markings for each button. See table below listings.



Single Gang

No. Pushbuttons	1	1
No. Pilot Lights ♦	1	1
Diagram		
Hub Size	**Dead End Cat. #**	**Through Feed Cat. #**
½	EDS11473-‡	EDSC11473-‡
¾	EDS21473-‡	EDSC21473-‡
1	EDS31473-‡	EDSC31473-‡





Two Gang

No. Push-buttons	2	2	2	2
No. Pilot Lights ♦	1	1	2	2
Diagram				
Hub Size	**Dead End Cat. #**	**Through Feed Cat. #**	**Dead End Cat. #**	**Through Feed Cat. #**
½	EDS12471-‡	EDSC12471-‡		
¾	EDS22471-‡	EDSC22471-‡	EDS22868-‡	EDSC22868-‡
1	EDS32471-‡	EDSC32471-‡	EDS32868-‡	EDSC32868-‡

‡ Add color symbol for each pilot light from table on page 435. Example: EDS21473 with a red light is EDS21473-J1.

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after color symbol. For 24 VDC operation on pilot lights add suffix S300.

Standard markings available are as follows:

START	LIGHT ON	DOWN	RUN	FORWARD	ON	AUTOMATIC	OUT
OFF	EMERGENCY	RAISE	TRIP	CLOSE IN	JOG	REVERSE	
RESET	OPEN	STOP	HAND	LOWER	TEST	UP	

* All enclosures listed above can be modified for Class I, Group B, Division 1 usage. Add suffix GB to the Cat. No. Example: EDS11473-J1-GB. Conduit seal(s) must be installed within 1½″ of each conduit opening. These products are suitable for Group B, Div. 2 as listed, without external conduit seals.

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EDS Factory Sealed Selector Switches

Maintained Contact, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Furnished with pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below. Specify indicating plate markings. See table below listings.



EDS11271



EDS11273

Single Gang

Style	Position 1	Position 2	Position 3	Replacement contact blocks†	Enclosure With Switch: Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1 A2			ED11	½ ¾ 1	EDS11271 EDS21271 EDS31271	EDSC11271 EDSC21271 EDSC31271
Two-Position, Four-Circuit	A1 A2 B1 B2			ED12	½ ¾ 1	EDS11272 EDS21272 EDS31272	EDSC11272 EDSC21272 EDSC31272
Three-Position, Two-Circuit	A1 A2			ED11	½ ¾ 1	EDS11273 EDS21273 EDS31273	EDSC11273 EDSC21273 EDSC31273
Three-Position, Four-Circuit	A1 A2 B1 B2			ED12	½ ¾ 1	EDS11274 EDS21274 EDS31274	EDSC11274 EDSC21274 EDSC31274
	A1 A2 B1 B2			ED12	½ ¾ 1	EDS11275 EDS21275 EDS31275	EDSC11275 EDSC21275 EDSC31275

Standard indicating plate markings available are as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN, OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE, LOWER
FORWARD, REVERSE	UP, DOWN	START, STOP
	ON, OFF	

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

*** For Class I, Group B:** Consider using EFS series selector switches, see page 420. All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1½" of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals. In Canada, for Group B applications consult factory.

† For replacement contact blocks, see page 400.

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5C EFS Factory Sealed Selector Switches

Maintained Contact, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Furnished with pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below. Specify indicating plate markings. See table below listings.



EFS11271



EFS11273

Single Gang

Style	Position 1	Position 2	Position 3	Replacement Contact Blocks†	Enclosure With Switch: Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1 A2			ED11	½	EFS11271	EFSC11271
					¾	EFS21271	EFSC21271
					1	EFS31271	EFSC31271
Two-Position, Four-Circuit	A1 A2 B1 B2			ED12	½	EFS11272	EFSC11272
					¾	EFS21272	EFSC21272
					1	EFS31272	EFSC31272
Three-Position, Two-Circuit	A1 A2			ED11	½	EFS11273	EFSC11273
					¾	EFS21273	EFSC21273
					1	EFS31273	EFSC31273
Three-Position, Four-Circuit	A1 A2 B1 B2			ED12 ED12	½	EFS11274	EFSC11274
					¾	EFS21274	EFSC21274
					1	EFS31274	EFSC31274
	A1 A2 B1 B2				½	EFS11275	EFSC11275
					¾	EFS21275	EFSC21275
					1	EFS31275	EFSC31275

Standard indicating plate markings available are as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN, OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE, LOWER
FORWARD, REVERSE	UP, DOWN	START, STOP
	ON, OFF	

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

* **Class I, Group B:** All enclosures listed above are suitable for Class I, Group B, Div. 1 usage. Seals only have to be installed on 1 inch conduit within 5 ft. in Division 1.

† For replacement contact blocks see page 400.

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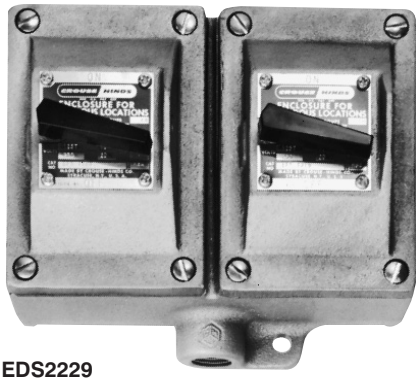
EDS Factory Sealed General Use Snap Switches

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG



EDSC2129



EDS2229

General Use Snap Switch – Front Operated

Hub Size	Style†	Amperes 120VAC§	Amperes 277VAC§	Single Gang Dead End Cat. #	Single Gang Through Feed Cat. #	Two Gang‡ Dead End Cat. #	Two Gang‡ Through Feed Cat. #
¾	1-pole	20	20	EDS2129	EDSC2129†	EDS2229	EDSC2229†
¾	2-pole	20	20	EDS218	EDSC218†		EDSC228†
¾	3-way	20	20	EDS2130	EDSC2130	EDS2230	EDSC2230
¾	4-way	20	20	EDS2140	EDSC2140		EDSC2240
1	1-pole	20	20	EDS3129	EDSC3129†	EDS3229	EDSC3229†
1	2-pole	20	20	EDS318	EDSC318†	EDS328	EDSC328†
1	3-way	20	20	EDS3130	EDSC3130	EDS3230	EDSC3230
1	4-way	20	20	EDS3140	EDSC3140	EDS3240	EDSC3240

† ON-OFF standard marking for 1-pole and 2-pole units.

‡ Combinations of switches can be furnished.

§ AC rated switches are tested for resistive, inductive and tungsten filament loads up to the full current rating and for motor loads up to 80% of the ampere rating.

* **Class I, Group B:** All units on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No. Seals must be installed within 1½″ of each conduit opening in Division 1. In Canada, for Group B applications consult factory.

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EDS Factory Sealed Manual Motor Starting Switches and Enclosures

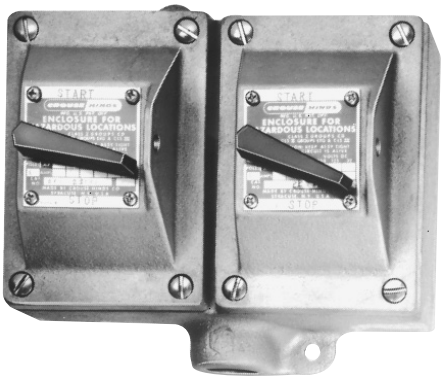
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDSC2199



EDS2299

With Allen-Bradley Bulletin 600 Switches§

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC	Allen-Bradley Switch Cat. #
1	1 hp		A–B BUL 600 T0X4
2	1 hp	¾ hp	A–B BUL 600 T0X5

Single Gang

Poles	Hub Size	Dead End Cat. #	Through Feed Cat. #
1	¾	EDS2199†	EDSC2199†
	1	EDS3199†	EDSC3199†
2	¾	EDS21100†	EDSC21100†
	1	EDS31100†	EDSC31100†

Two Gang

1	¾	EDS2299†	EDSC2299†
	1	EDS3299†	EDSC3299†
2	¾	EDS22100†	EDSC22100†
	1	EDS32100†	EDSC32100†

Heater Table (Allen Bradley)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
0.17	P1	2.40	P20
0.21	P2	2.58	P21
0.25	P3	2.92	P22
0.32	P4	3.09	P23
0.39	P5	3.32	P24
0.46	P6	3.77	P25
0.57	P7	4.16	P26
0.71	P8	4.51	P27
0.79	P9	4.93	P28
0.87	P10	5.43	P29
0.98	P11	6.03	P30
1.08	P12	6.83	P31
1.19	P13	7.72	P32
1.30	P14	8.24	P33
1.43	P15	8.90	P34
1.58	P16	9.60	P35
1.75	P17	10.80	P36
1.88	P18	12.00	P37
2.13	P19	13.50	P38
		15.20	P39

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

* **Class I, Group B:** All units on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No. Seals must be installed within 1½″ of each conduit opening in Division 1. In Canada, for Group B applications consult factory.

§ See page 441 for enclosures with General Electric and Cutler-Hammer switches.

† Includes one interchangeable heater. Select from the heater table and use symbol number as second section of the Cat. No. Example: EDS2199-P5. Insert symbol 0 (zero) to omit heater.

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EDS Factory Sealed Manual Motor Starting Switches and Enclosures

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

With General Electric Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115 Volts DC	230 Volts DC	G.E. Switch Cat. #
1	1 hp	1 hp	¼ hp	CR101-Y
2	1 hp	1 hp	1 hp	CR101-H

Single Gang

Poles	Hub Size	Dead End Cat. #	Through Feed Cat. #
1	¾	EDS21093†	EDSC21093†
	1	EDS31093†	EDSC31093†
2	¾	EDS21094†	EDSC21094†
	1	EDS31094†	EDSC31094†

Two Gang

1	¾	EDS22093†	EDSC22093†
	1	EDS32093†	EDSC32093†
2	¾	EDS22094†	EDSC22094†
	1	EDS32094†	EDSC32094†

With Cutler-Hammer Switches

Maximum HP Ratings

Poles	120-240 Volts AC	32 Volts DC	120 Volts DC	240 Volts DC	Cutler-Hammer Switch Cat. #
1	1 hp	¼ hp		¼ hp	MST01
2	1 hp	¼ hp	1 hp	1 hp	MST02

Single Gang

Poles	Hub Size	Dead End Cat. #	Through Feed Cat. #
1	¾	EDS21101†	EDSC21101†
	1	EDS31101†	EDSC31101†
2	¾	EDS21102†	EDSC21102†
	1	EDS31102†	EDSC31102†

Two Gang

1	¾	EDS22101†	EDSC22101†
	1	EDS32101†	EDSC32101†
2	¾	EDS22102†	EDSC22102†
	1	EDS32102†	EDSC32102†

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

Heater Table (General Electric)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
		3.01	G22
.48	G2	3.27	G23
.53	G3	3.56	G24
.58	G4	3.88	G25
.65	G5	4.22	G26
.71	G6	4.60	G27
.78	G7	5.00	G28
.86	G8	5.43	G29
.95	G9	5.90	G30
1.04	G10	6.41	G31
1.14	G11	6.98	G32
1.25	G12	7.60	G33
1.37	G13	8.25	G34
1.49	G14	8.95	G35
1.63	G15	9.75	G36
1.78	G16	10.60	G37
1.95	G17	11.40	G38
2.13	G18	12.50	G39
2.32	G19	13.60	G40
2.53	G20	14.80	G41
2.76	G21	16.00	G42

Heater Table (Cutler-Hammer)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
.43	W1	2.95	W21
.48	W2	3.27	W22
.53	W3	3.59	W23
.58	W4	3.99	W24
.64	W5	4.39	W25
.71	W6	4.79	W26
.78	W7	5.26	W27
.87	W8	5.83	W28
.95	W9	6.39	W29
1.03	W10	7.03	W30
1.15	W11	7.74	W31
1.27	W12	8.46	W32
1.35	W13	9.35	W33
1.51	W14	10.30	W34
1.67	W15	11.35	W35
1.83	W16	12.47	W36
1.99	W17	13.67	W37
2.23	W18	15.12	W38
2.47	W19	16.00	W39
2.71	W20		

† Includes one interchangeable heater. Select heater from the table below individual listings and use symbol number as second section of the Cat. No. Example: EDS21101-W5. Insert symbol 0 (zero) to omit heater.

* **Class I, Group B:** All units on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No. Seals must be installed within 1½″ of each conduit opening in Division 1. In Canada, for Group B applications consult factory.

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D2X Series FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas

Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-tight
Wet Locations

Application:

FLEXITITE attachable pendant pushbutton stations are used:

- for safe multi-function motor circuit control of:
  - Hoists
  - Cranes
  - Machine Tools
  - Electromagnets
- in hazardous areas such as Class I, Division 2, Groups B, C and D (classified) areas or Class II, Division 2, Groups F and G, as defined by the National Electrical Code
- where wash downs are necessary – in damp, wet, dirty or corrosive locations
- for control applications requiring 2 to 8 functions

Features:

- Safety cushioned – neoprene encapsulations protects internal switches and connectors from impact damage and provides extra protection for personnel.
- Stress relief for your cable is built-in. A separate cable grip is not needed.
- Uses Cooper Crouse-Hinds ESWP factory sealed contacts suitable for use in Class I, Division 2, Groups B, C and D
- Switches are rated for 10 amps 600 VAC (NEMA A600).
- Indicator plates meet OSHA requirements for clear identification of functions. A full set of plates is included with each station.
- Jam resistant operator buttons are raised flexible diaphragms – an integral part of the molded one-piece cover.
- Compact design
- Safety yellow finish.

Standard Materials:

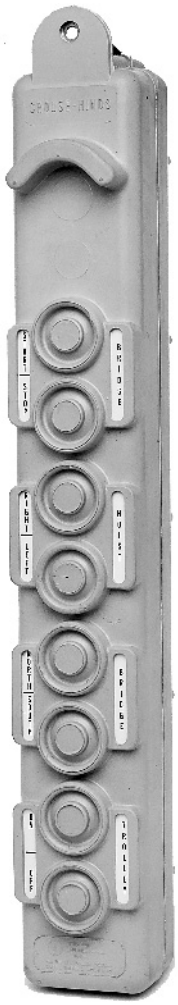
- Body and Cover – steel reinforced neoprene
- Strain relief and reinforcement plates – stainless steel
- Exterior hardware – stainless steel

Standard Finishes:

- Neoprene – safety yellow
- Stainless steel – natural

Certifications and Compliances:

- NEMA: 3,4X,5,6,7BCD(Div. 2),9FG (Div. 2),12
- UL Standard: 508
- CSA Standard C22.2 No.14



8-Button Control Station

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D2X FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas

Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-Tight
Wet Locations

Ordering Information

Control Stations

Description	Cable Dia.	Catalog #
2-Button	.31 – .75	D2X8635-210
4-Button	.50 – .75	D2X8635-410
6-Button	.59 – .81	D2X8635-610
8-Button	.59 – .92	D2X8635-810

Replacement Indicator Plates (A full set is included with each control station)

2-Button

Part No.	Description	Part No.	Description
315116-1	Down/West	315116-7	Rev/Left
315116-2	Start/North	315116-8	Up/East
315116-3	Stop/South		
315116-4	Off/In		
315116-5	On/Out		
315116-6	Fwd/Right		

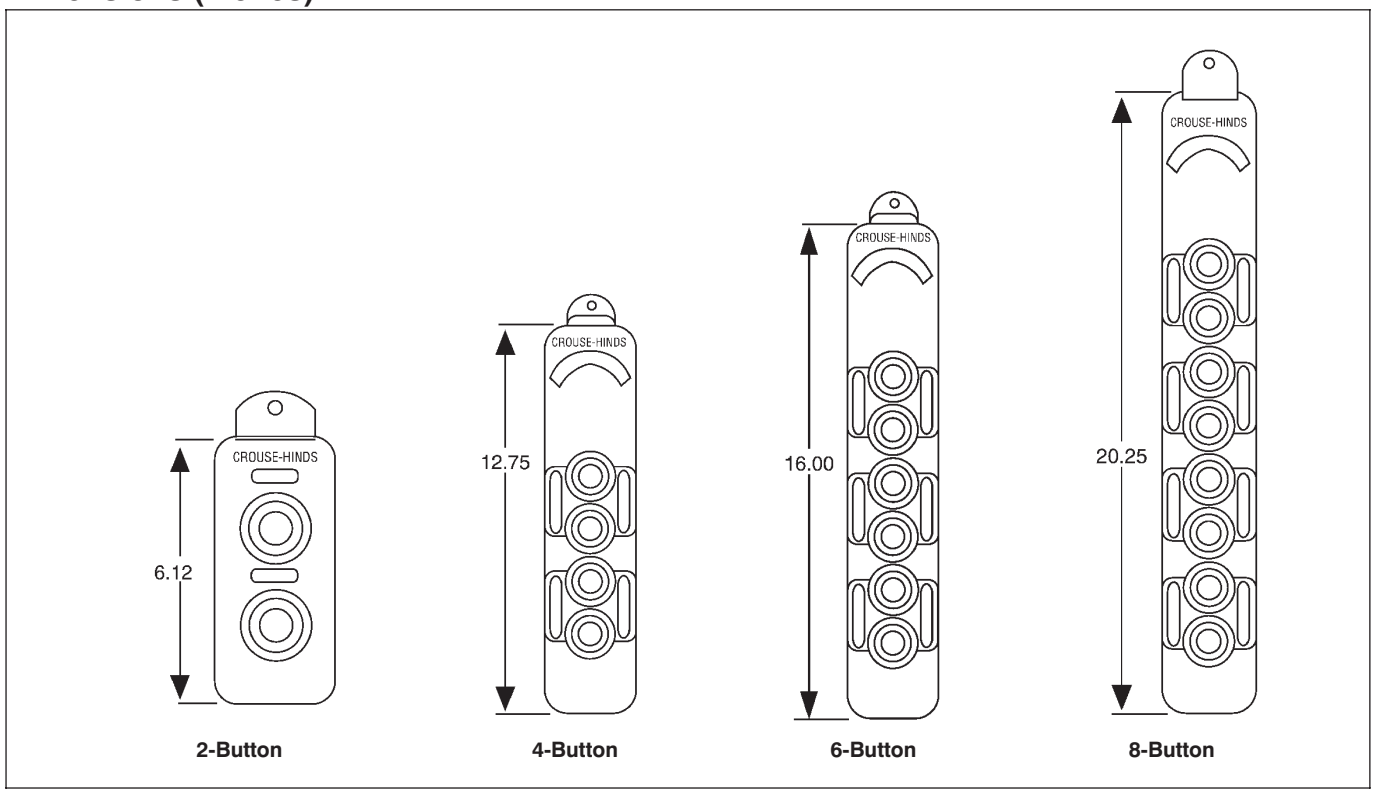
4, 6 and 8-Button

Part No.	Description	Part No.	Description
314850-1	Bridge	314850-6	Fwd/Rev North/South
314850-2	Trolley		
314850-3	Hoist In/Out	314850-9	On/Off Start/Stop
314850-4	Up/Down Right/Left		
314850-5	East/West		

Replacement Switch

Part No.
ESWP126

Dimensions (inches)



2-Button 4-Button 6-Button 8-Button

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Notes Page

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

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7	**453**	14	**460**
8	**454**	15	**461**

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6C Magnetic and Manual Motor Line Starters

General Information

Selection of Size (Horsepower Ratings)

Horsepower Ratings: Listings of EBM, EPC, and similar enclosures complete with motor starters indicate the maximum horsepower rating of the starter. In the case of EBM, EPC combination motor starter and circuit breaker enclosures, the maximum horsepower shown is also dependent on the ampere rating of the circuit breaker.

Selection of Heaters: All magnetic motor starter enclosures ordered complete with starter are furnished with heaters.

All manual motor starter enclosures ordered complete with starter are furnished with heaters. One heater is furnished with two-pole starters and three heaters with three-pole starters.

Based on motor nameplate data, (required with each order), Cooper Crouse-Hinds will select heaters or relay coils satisfactory for average conditions of 55°C motors with ambient temperature at 75°F. If complete motor data is not available at the time the starter is ordered, heaters will be supplied for any ampere rating specified, or, upon request, complete heater tables will be supplied for any manufacturers' starter listed for use in a Cooper Crouse-Hinds enclosure.

Unusual Conditions: For frequent starting, for high inertia (slow starting loads), for extremely high or low ambient temperature, or for prevailing ambient temperature at the motor differing greatly from that at the starter, the heater size required will differ from the standard. Consult Cooper Crouse-Hinds or the starter manufacturer for recommendations, giving full particulars.

Special Features Available – Magnetic Starters Only

All magnetic starters can be provided with separate ac control circuit and additional electrical interlocks, N.O. or N.C. The number of interlocks is limited by the design of the starter and information will be furnished on request. Most starters can be supplied with automatic reset overload relays.

Standard magnetic starters are equipped with three overload relays. Starters can be provided with control circuit transformers and time delay low voltage release. Availability of these features depends on the enclosure design, and details will be found in the listing pages.

Wiring Diagrams: Typical control circuit wiring diagrams for single-speed, reversing and two-speed magnetic starters are shown on pages 462 to 465.

Thermal Overload Relays For Motor Running Overload Protection

Application:

Excessive motor running currents, caused by overloading of the motor, will damage the motor if allowed to continue beyond the point where the maximum permissible motor operating temperature is reached. Thermal overload relays (supplied as part of the magnetic motor starter) will detect such excessive current, and act automatically to disconnect the motor from its supply lines when the danger point is reached. When properly chosen, the sensing device of the relay (heater element) will closely match the thermal characteristics of the motor, and will allow the maximum motor starting current to flow during the normal starting period and still afford protection against motor overheating. A series of heater elements, rated in Full Load Motor Current, are interchangeable on the overload relays, and selection is based on motor operating data as given on the motor nameplate.

Selection of Heater Elements

Overload relay heater elements are selected on the basis of (A) motor type, and (B) difference in ambient (surrounding air) temperature, if any, between motor and starter locations.

A. Motor Type

Motors may be divided into two basic types according to the allowable internal (winding) temperature rise under full load; 40°C rise motors, which are usually of open frame construction, and 50°C or 55°C motors of enclosed frame construction such as splash-proof, drip-proof, and totally enclosed (including explosion-proof). The temperature rise classification will be found on the motor nameplate, and is specified in the motor manufacturer's catalog data.

40°C rise motors are designed to permit their use continuously at an overload of 15 percent more than rated load. 50°C rise or 55°C rise motors do not have this extra capacity. Therefore, a heater selected for a 40°C rise motor should not be applied to 50°C or 55°C motors. Heaters should be selected from heater tables for 50°C or 55°C motors as supplied by Cooper Crouse-Hinds or as recommended by starter manufacturer.

B. Ambient Temperature Effect

The overload relay is basically a temperature-operated device, and a properly selected heater will provide the relay with a temperature rise curve the same as that of the motor so that the relay closely approaches its tripping point as the motor reaches its maximum allowable operating temperature. Any overload current which will overheat the motor will also cause the relay to reach its tripping point and disconnect the motor from the line. The temperature rise curves of both the overload relay and the motor are based on a standard ambient temperature of 40°C (104°F).

An increase or decrease in ambient temperature will affect both the overload relay and the motor equally, if both are in the same location, since the final temperature of each is the sum of the operating temperature rise and the ambient temperature. Under this condition, no compensation for ambient is necessary, since the tripping point of the relay will fall or rise as the thermal capacity of the motor falls or rises.

Any difference in ambient between the overload relay location and the motor location will cause a difference between the tripping point of the overload relay and the maximum permissible motor operating temperature. This can result in premature tripping of the relay if the relay ambient is higher than that of the motor, or overheating of the motor under overload if the relay ambient is lower than that of the motor so that the relay does not trip when required.

To compensate for any such difference, and when specific recommendations of the starter manufacturers cannot be obtained, the following rule may be used when making heater selections:

Ambient Temperature at Overload Relay Higher –
For each 14°C difference, use one size larger heater.

Ambient Temperature at Overload Relay Lower –
For each 14°C difference, use one size smaller heater.

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Table 1

Starters require three heaters, which should be selected in accordance with the manufacturer's recommendations. Most explosion-proof motors are rated at 55°C rise, and heaters should be selected accordingly. See page 446 for starter and heater selection data.

Allen-Bradley

Bulletin 509

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	509-AOD	509-AOA	509-AOB	509-AOC
1	509-BOD	509-BOA	509-BOB	509-BOC
2	509-COD	509-COA	509-COB	509-COC
3	509-DOD	509-DOA	509-DOB	509-DOC
4	509-EOD	509-EOA	509-EOB	509-EOC
5	509-FOD	509-FOA	509-FOB	509-FOC

Cutler-Hammer

Series A10

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	A10BNOA	A10BNOB	A10BNOC	A10BNOD
1	A10CNOA	A10CNOB	A10CNOC	A10CNOD
2	A10DNOAB	A10DNOBB	A10DNOCB	A10DNODB
3	A10ENOAB	A10ENOBB	A10ENOCB	A10ENODB
4	A10FNOAB	A10FNOBB	A10FNOCB	A10FNODB
5	A10GNOA	A10GNOB	A10GNOC	A10GNOD

Specify voltage in addition to horsepower, phase, frequency and full load current of motor.

General Electric

CR306

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	CR306B002AAA	CR306B003AAA	CR306B004AAA	CR306B005AAA
1	CR306C002AAA	CR306C003AAA	CR306C004AAA	CR306C005AAA
2	CR306D002AAA	CR306D003AAA	CR306D004AAA	CR306D005AAA
3	CR306E002AAA	CR306E003AAA	CR306E004AAA	CR306E005AAA
4	CR306F002AAA	CR306F003AAA	CR306F004AAA	CR306F005AAA
5	CR306G002AAA	CR306G003AAA	CR306G004AAA	CR306G005AAA

Square D

Specify class and type of starter. Give horsepower, voltage, phase, frequency and full load current of motor.

(EPC, Enclosures)

Class 8536

Size	With Melting Alloy Type Overload Relays Cat. #	With Bi-Metallic Type Overload Relays† Cat. #
0	8536-SBO-2	8536-SBO-2 Form†
1	8536-SCO-3	8536-SCO-3 Form†
2	8536-SDO-1	8536-SDO-1 Form†
3	8536-SEO-1	8536-SEO-1 Form B5
4	8536-SFO-1	8536-SFO-1 Form B5
5	8536-SGO-1	8536-SGO-1 Form B5

Cutler-Hammer

Class A200 – Sizes 0-5

Size	120V‡ Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	A200M0CAC	A200M0CW	A200M0CX	A200M0CE
1	A200M1CAC	A200M1CW	A200M1CX	A200M1CE
2	A200M2CAC	A200M2CW	A200M2CX	A200M2CE
3	A200M3CAC	A200M3CW	A200M3CX	A200M3CE
4	A200M4CAC	A200M4CW	A200M4CX	A200M4CE
5	A200M5CAC	A200M5CW	A200M5CX	A200M5CE

Cutler-Hammer Products – Advantage® Series

Class W200 – Sizes 1-5

Size	120V, 240V, 480V, 600V Cat. #
1	W200M1CFC
2	W200M2CFC
3	W200M3CFC
4	W200M4CFC
5	W200M5CFC

(coil voltage 120V)

† A Class 9065 Type TUP overload relay will be supplied as standard on all Type S starters (sizes 0-2) specifying bimetallic overload protection. The Type TUP contains three built-in bimetals. **No additional thermal units are required.** To order, select appropriate Form letter (Forms B20-B42) based on motor full load current.

‡ Sizes 0-5 inclusive 120V Cutler-Hammer starters are wired with a separate control circuit. Starters with control circuit wired to line terminals available.

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6C Magnetic Motor Line Starters

Reversing and Two-Speed 3-Phase 60 hertz

Table 2

Reversing starters require three heaters; two-speed starters require six heaters. These should be selected in accordance with the manufacturer's recommendations. Most explosion-proof motors are rated at 55°C rise and heaters should be selected accordingly. See page 446 for starter and heater selection data.

Reversing Starters

Specify class and type or bulletin number, and size of starter. Give horsepower, voltage, phase, frequency and full load current of motor.

Allen-Bradley

Bulletin 505V

With Melting Alloy Type Overload Relays

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	505V-AOD	505V-AOA	505V-AOB	505V-AOC
1	505V-BOD	505V-BOA	505V-BOB	505V-BOC
2	505V-COD	505V-COA	505V-COB	505V-COC
3	505V-DOD	505V-DOA	505V-DOB	505V-DOC

Square D

Class 8736

With Melting Alloy Type Overload Relays		With Bi-Metallic Type Overload Relays†	
Size	**Cat. #**	**Size**	**Cat. #**
0	8736-SBO-10	0	8736-SBO-10 Form†
1	8736-SCO-7	1	8736-SCO-7 Form†
2	8736-SDO-1	2	8736-SDO-1 Form†
3	8736-SEO-1	3	8736-SEO-1 Form B5

Cutler-Hammer

A250 Series

Size	120V Cat. # ♦	240V Cat. #	480V Cat. #	600V Cat. #
0	A250M0CAC	A250M0CW	A250M0CX	A250M0CE
1	A250M1CAC	A250M1CW	A250M1CX	A250M1CE
2	A250M2CAC	A250M2CW	A250M2CX	A250M2CE
3	A250M3CAC	A250M3CW	A250M3CX	A250M3CE
4	A250M4CAC	A250M4CW	A250M4CX	A250M4CE

♦ 120 volt starters are wired with separate control circuit.

♦ ♦ Starters for constant horsepower applications or open delta connections can be supplied. Information will be furnished on request accompanied by complete details.

† A Class 9065 Type TUP overload relay will be supplied as standard on all Type S starters (sizes 0-2) specifying bimetallic overload protection. The Type TUP contains three built-in bimetals. **No additional thermal units are required.** To order, select appropriate Form letter (Forms B20-B42) based on motor full-load current.

Two-Speed Starters

Specify class and type or bulletin number, and size of starter. Give horsepower, voltage, phase, frequency and full load current of motor at each motor speed.

The following are only for Two-Winding, Constant or Variable Torque, Star Connected Motors ♦ ♦

Allen-Bradley

Bulletin 520V

With Melting Alloy Type Overload Relays

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	520VE-AOD	520VE-AOA	520VE-AOB	520VE-AOC
1	520VE-BOD	520VE-BOA	520VE-BOB	520VE-BOC
2	520VE-COD	520VE-COA	520VE-COB	520VE-COC
3	520VE-DOD	520VE-DOA	520VE-DOB	520VE-DOC

Square D

Class 8810

With Melting Alloy Type Overload Relays		With Bi-Metallic Type Overload Relays†	
Size	**Cat. #**	**Size**	**Cat. #**
1	8810-SCO-14	1	8810-SCO-14 Form†
2	8810-SDO-14	2	8810-SDO-14 Form†
3	8810-SEO-14	3	8810-SEO-14 Form B5

The following are only for Single Winding, Consequent Pole, Constant or Variable Torque Motors ♦ ♦

Allen-Bradley

Bulletin 520V

With Melting Alloy Type Overload Relays

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	520VF-AOD	520VF-AOA	520VF-AOB	520VF-AOC
1	520VF-BOD	520VF-BOA	520VF-BOB	520VF-BOC
2	520VF-COD	520VF-COA	520VF-COB	520VF-COC
3	520VF-DOD	520VF-DOA	520VF-DOB	520VF-DOC

Square D

Class 8810

With Melting Alloy Type Overload Relays		With Bi-Metallic Type Overload Relays†	
Size	**Cat. #**	**Size**	**Cat. #**
1	8810-SCO-12	1	8810-SCO-12 Form†
2	8810-SDO-12	2	8810-SDO-12 Form†
3	8810-SEO-12	3	8810-SEO-12 Form B5

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Table 3

Two-pole starters require one heater; three-pole starters require three heaters. These should be selected in accordance with the manufacturer's recommendations. Most explosion-proof motors are rated at 55°C, and heaters should be selected accordingly. See page 446 for starter and heater selection data.

Allen-Bradley

Bulletin 609 (Toggle Lever)

Size	Poles	Cat. #
M-0	2 (1 Ph)	609T-AOX
	3 (3 Ph)	609T-AOW
M-1	2 (1 Ph)	609T-BOX
	3 (3 Ph)	609T-BOW
M-1P	2 (1 Ph)	609T-XOX

Allen-Bradley

Bulletin 609U (Toggle Lever)

With Undervoltage Protection

Size	Poles	Coil Volts @ 60 Hertz†	Cat. #
M-0	2 (1 Ph)	120	609TU-AOXD
	2 (1 Ph)	240	609TU-AOXA
	3 (3 Ph)	240	609TU-AOA
	3 (3 Ph)	480	609TU-AOB
	3 (3 Ph)	600	609TU-AOC
M-1	2 (1 Ph)	120	609TU-BOXD
	2 (1 Ph)	240	609TU-BOXA
	3 (3 Ph)	240	609TU-BOA
	3 (3 Ph)	480	609TU-BOB
	3 (3 Ph)	600	609TU-BOC
M-1P	2 (1 Ph)	120	609TU-XOXD
	2 (1 Ph)	240	609TU-XOXA

Cutler-Hammer

A300 (3 Ph) (Pushbutton)
B300 (1 Ph)

Size	Poles	Cat. #
M-0	2 (1 Ph)	9115-H166
	3 (3 Ph)	9115-H167
M-1	2 (1 Ph)	9115-H173
	3 (3 Ph)	9115-H174
M-1P	2 (1 Ph)	9115-H180

General Electric

CR1062 (Toggle Lever)

			With Undervoltage Protection	
Size	Poles	Cat. #	Coil Volts @ 60 Hertz†	Cat. #
M-0	2 (1 Ph)	CR1062-R13A	115	CR1062-RL13A02
	2 (1 Ph)		230	CR1062-RL13A03
	3 (3 Ph)	CR1062-R9B	200/208	CR1062-RL9B23
	3 (3 Ph)		230	CR1062-RL9B03
	3 (3 Ph)		460	CR1062-RL9B04
	3 (3 Ph)		575	CR1062-RL9B05
M-1	2 (1 Ph)	CR1062-S13A	115	CR1062-SL13A02
	2 (1 Ph)		230	CR1062-SL13A03
	3 (3 Ph)	CR1062-S9B	200/208	CR1062-SL9B23
	3 (3 Ph)		230	CR1062-SL9B03
	3 (3 Ph)		460	CR1062-SL9B04
	3 (3 Ph)		575	CR1062-SL9B05
M-1P	2 (1 Ph)	CR1062-S22A	115	CR1062-SL22A02
	2 (1 Ph)		230	CR1062-SL22A03

Square D

Class 2510 (Toggle Lever)

Size	Poles	Cat. #*	With Undervoltage Protection Cat. #*
M-0	2 (1 Ph)	TBO-1	TBO-21
	3 (3 Ph)	TBO-2	TBO-22
M-1	2 (1 Ph)	TCO-1	TCO-21
	3 (3 Ph)	TCO-3	TCO-23
M-1P	2 (1 Ph)	TCO-2	TCO-22

Cutler-Hammer

B100 Series (Toggle Lever)

Size	Poles	Cat. #
M-0	2 (1 Ph)	B100M0BX
	3 (3 Ph)	B100M0CX
M-1	2 (1 Ph)	B100M1BX
	3 (3 Ph)	B100M1CX
M-1P	2 (1 Ph)	B100MDBX

* Specify class and type, motor line voltage, coil voltage, and frequency.
† Coil is not dual rated for 50 Hertz. For 50 Hertz, consult Cooper Crouse-Hinds.

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Selection of Circuit Breakers

Lighting, Heating, Appliance and Similar Circuits: Circuit breakers should have ampere ratings not exceeding ampere capacities of conductors protected. See National Electrical Code®, Section 240-3.

Individual Motor: An individual motor branch circuit having a starter including overcurrent features is considered protected if the circuit breaker does not exceed the values shown in table 430-152 of the NEC. If these values are insufficient to permit starting, the ampere ratings of the circuit breakers may be increased up to a maximum of 400 percent of the full load amperes of the motors. See NEC Section 430-52.

Motor Feeder: A motor feeder is a circuit supplying a group of motors. Its conductors should be protected by a circuit breaker of ampere setting not greater than the setting of the largest breaker for any motor in the group, plus the sum of the full load currents of the other motors in the group. See NEC, Section 430-62.

Application Data: Page 451 contains information which will be helpful in selecting proper circuit breakers for usual applications.

Ambient Temperature: High or low ambient temperatures affect ratings of circuit breakers. For further information see note for Breaker Selection Table 4 on page 451.

Load Conditions: Ampere ratings of circuit breakers for motors shown in Table 4, page 451 are for average conditions. High inertia (slow starting) loads of frequent starting may require larger ampere rated breakers. For further information see note for Breaker Selection Table 4 on page 451.

Special Features Available:

Many circuit breakers can be provided with special features such as shunt trip, undervoltage release, auxiliary switches, bell-alarm switches, fungus-proofing, or ambient compensation. These features are not available on all sizes and makes of breakers, however. Complete information will be furnished on request.

Application of Molded Case Thermal Magnetic Circuit Breakers as Motor Branch Circuit Protection

Use:

When used in conjunction with motor starters (Cooper Crouse-Hinds EBMC and EPC combination motor controllers) as motor branch circuit protection, the circuit breaker is primarily intended for the protection of conductors, motor control components, and motors against short circuits and ground fault conditions.

On motor overloads, the motor starter overload relays will open the circuit before the circuit breaker will trip, provided that the breaker has been properly selected. Currents higher than motor locked rotor value will be interrupted by the breaker before the overload relays can act, and protect the circuit from these heavy fault currents. The breaker must not trip on normal starting.

Circuit breakers provided in combination motor controllers listed complete with starter and circuit breaker have been selected to meet these requirements for the maximum horsepower ratings shown.

Application

Circuit breakers are supplied in a variety of frame sizes (types), each of which has specific voltage and short circuit interrupting capacity limitations. Each frame size is available in a number of current carrying capacity ratings, generally known as ''trip ratings''.

Proper selection of the circuit breaker for any combination motor controller requires the following factors to be considered:
1. Circuit Voltage and Frequency: Rated breaker voltage must not be lower than the circuit voltage. Higher voltage rated breakers may be satisfactorily used.

For frequency ratings from dc up to 120 Hertz ac standard breaker ratings are applied. Above 120 Hertz ac derating factors must be applied. Consult Cooper Crouse-Hinds for recommendations.
2. Interrupting Capacity: Rated breaker interrupting capacity must not be less than the available short circuit current (including motor contributions) at the breaker location. Standard procedures for determining the available short circuit current should be used.

If calculated short circuit current exceeds the interrupting capacity of the breakers listed in cataloged motor control combinations, consult Cooper Crouse-Hinds, giving full data.
3. Trip Rating: The trip rating of the breaker must be at least 115 percent of the motor full load current, but not more than the maximum rating permitted (as a percentage of full load current) by National Electrical Code Table 430-152. Within these limits, the lowest rating should be selected which will permit motor acceleration through the normal starting period. Unusual ambient temperature at the circuit breaker location may require that the breaker trip rating be derated.

Breaker trip rating selection Tables 4 and 5, page 451, have been established on the basis of the above rating requirements under assumed conditions of:
(a) Full load motor currents (FLMC) for given horsepower
(b) 600 percent motor inrush (locked rotor current as a percentage of FLMC)
(c) Accelerating time not more than ten seconds
(d) Frequency of starts not more than three per hour
These tables will cover the selection requirements of the majority of installations using Cooper Crouse-Hinds motor control equipment. For conditions varying widely from the above, consult Cooper Crouse-Hinds for recommendations.

Use of Breaker Selector Tables (Page 6C-5)

A. Determine frame size breaker required by referring necessary voltage rating and interrupting capacity to breaker listings (pages 453 through 459)
B. Determine breaker trip rating required as follows:
1. If FLMC is not known:
(a) Refer to Table 5, Terminal Amperes of Motors at Full Load, (page 451), and opposite known horsepower rating find average FLMC under appropriate voltage and motor type columns
(b) Refer this FLMC to Table 4, Selection of Circuit Breakers for Motor Circuits (page 451), and find breaker rating under appropriate motor type column
2. If FLMC is known:
(a) Refer known FLMC to Table 4, Selection of Circuit Breakers for Motor Circuits (page 451), and find breaker rating under appropriate motor type column.
C. Refer breaker rating to breaker listings determined in ''A'' above, and obtain breaker Cat. No.
It should be noted that EBMC and EPC combination motor controllers are listed for use with particular frame size breakers as shown in columns headed ''Circuit Breakers.'' Reference should be made to combination listings to insure the breaker selected can be accommodated in conjunction with the desired motor starter size. The combinations shown will cover all normal motor control branch circuit requirements.

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Table 4/Selection of Circuit Breakers for Motor Circuits

Values Given Based on One Motor per Circuit and Wire Size in Accordance with Code‡

Important – Consult footnotes before making breaker selection.

Full Load Rating of Motor in Amperes (See Table 5)	Squirrel Cage† or Synchronous (Full Voltage, Reactor or Resistor Starting), Single-Phase of All Types	Squirrel Cage† or Synchronous (Auto Transformer Starting), High Reactance	AC Wound Rotor & DC
1 – 7	15	15	15
7.1 – 9	20	20	15
9.1 – 10	30	20	20
10.1 – 12	30	30	20
12.1 – 15	30	30	30
15.1 – 16	40	40	30
16.1 – 20	40	40	30
20.1 – 24	50	50	40
24.1 – 30	50	50	40
30.1 – 32	70	50	50
32.1 – 46	70	70	70
46.1 – 60	90	90	90
60.1 – 66	100	100	100
66.1 – 82	125	125	125
82.1 – 100	150	150	150
100.1 – 115	175	175	175
115.1 – 135	200	200	200
140 – 158	300	300	300
160 – 175	350	350	350
180 – 200	400	400	400
210 – 250	500	500	500

† High reactance squirrel cage motors are those designed to limit the starting current by means of deep-slotted secondaries or double-wound secondaries, and are generally started on full voltage.

‡ These values are for motors running at usual speeds with normal torques. Motors built for slow speeds, or where high inertia (slow starting) loads exist, may require more current; therefore, use larger ampere-rated circuit breakers. If the rating of the circuit breaker shown is insufficient to permit starting, it can be increased up to a maximum of 400 percent of full load current. See Section 430-52, NEC.

♦ High Ambient Temperatures: High ambients (surrounding temperatures) affect ratings of circuit breakers. For ambients above 75°F, derate breaker 1 percent for each 5°F. If rating obtained by this method is below requirement as shown, select next higher rated breaker. This rule applies over a range of 40°F.

It should be borne in mind that temperatures within metal housings, if exposed to direct rays from the sun, may rise considerably above the ambient temperature. Enclosures with thermal circuit breakers and/or starters, if so exposed, should not be painted with a dark colored heat-absorbing paint.

♦ ♦ For running protection of motors of 1 hp or less, see Sec. 430-32, NEC.

☆ For full load currents of 208 and 200 volt motors:

Three-phase – increase corresponding 220 volt FLMC by 10 and 15 percent respectively.

Single-phase – increase corresponding 230 volt FLMC by 10 and 15 percent respectively.

☆☆ For 90 and 80 percent power factor, the above figures should be multiplied by 1.1 and 1.25 respectively.

Table 5/Terminal Amperes of Motors at Full Load

(From National Electrical Code, Article 430)

To Obtain Breaker Select Current Ratings Below and see Table 4

Single-Phase AC Motors
Amperes

HP	115V	230V☆
⅛ ♦ ♦	4.4	2.2
¼ ♦ ♦	5.8	2.9
½ ♦ ♦	9.8	4.9
¾ ♦ ♦	13.8	6.9
1 ♦ ♦	16	8
1½	20	10
2	24	12
3	34	17
5	56	28
7½	80	40
10	100	50

Direct Current Motors
Amperes

HP	120V	240V
¼ ♦ ♦	3.1	1.6
½ ♦ ♦	5.4	2.7
¾ ♦ ♦	7.6	3.8
1 ♦ ♦	9.5	4.7
1½	13.2	6.6
2	17	8.5
3	25	12.2
5	40	20
7½	58	29
10	76	38
15		55
20		72
25		89

Three-Phase AC Motors

Induction Type Squirrel Cage and Wound Rotor
Amperes

Synchronous Type Unity Power Factor
Amperes☆☆

HP	115V	230V☆	460V	575V	230V☆	460V	575V
½ ♦ ♦	4	2	1	.8			
¾ ♦ ♦	5.6	2.8	1.4	1.1			
1 ♦ ♦	7.2	3.6	1.8	1.4			
1½	10.4	5.2	2.6	2.1			
2	13.6	6.8	3.4	2.7			
3		9.6	4.8	3.9			
5		15.2	7.6	6.1			
7½		22	11	9			
10		28	14	11			
15		42	21	17			
20		54	27	22			
25		68	34	27	53	26	21
30		80	40	32	63	32	26
40		104	52	41	83	41	33
50		130	65	52	104	52	42
60		154	77	62	123	61	49
75		192	96	77	155	78	62
100		248	124	99	202	101	81
125		312	156	125	253	126	101
150		360	180	144	302	151	121
200		480	240	192	400	201	161

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6C Pressure Connectors (Solderless)

For Front Connected Circuit Breakers

All front connected circuit breakers are furnished with suitable pressure connectors. The table below lists the wire sizes accommodated by each make and frame size of circuit breaker. EPC enclosures for, or assembled with, 800 ampere frame size circuit breakers are furnished with special double pressure connectors and bolts for attaching them to the breakers. Each half of the special connector takes conductors from 4/0 to 500 MCM, allowing the use of single or parallel conductors in these sizes.

Table 6/Wire Sizes Accommodated by Pressure Connectors Front Connected Circuit Breakers

Cutler-Hammer			Square D			General Electric		
Frame	Max. Amps	Wire‡ Sizes	Frame	Max. Amps	Wire‡ Sizes	Frame	Max. Amps	Wire‡ Sizes
100 Amp EB 240VAC	20 100	#14 – #10 #14 – #1/0	100 Amp FAL 240VAC	30 100	#14 – #4* #14 – #1/0**	100 Amp TEB 240VAC	60 100	#14 – #3 #6 – #2/0
100 Amp EHD 480VAC	20 100	#14 – #10 #14 – #1/0	100 Amp FAL 480VAC	30 100	#14 – #4* #14 – #1/0**	150 Amp TED 480VAC	60 110 150	#14 – #3 #6 – #2/0 #2 – #3/0
150 Amp FDB/FD 600VAC	100 150	#14 – #1/0 #4 – #4/0	100 Amp FAL 600VAC	30 100	#14 – #4 #14 – #1/0	150 Amp TED 600VAC	60 110 150	#14 – #3 #6 – #2/0 #2 – #3/0
250 Amp JDB	250	#4 – 350 MCM	250 Amp KAL	250	#4 – 350 MCM	225 Amp TFJ	225	#4 – 300 MCM
250 Amp JD	250	#4 – 350 MCM				225 Amp TFK	225	#4 – 300 MCM
400 Amp KDB	225 350 400	#6 – 350 MCM§ 250 – 500 MCM #3/0 – 250 MCM†	400 Amp LAL	400	One #1 – 600 MCM or Two #1 – 250 MCM	400 Amp TJK/TJJ	400	One #6 – 600 MCM or Two #2/0 – 250 MCM
600 Amp KD	600	250 – 500 MCM†				600 Amp TJK	400 600	One #6 – 600 MCM or Two #6 – 250 MCM Two 250 – 350 MCM
800 Amp ND	600 800	Two #1 – 500 MCM Three #3/0 – 400 MCM	1000 Amp MAL	400 800	One #1 – 600 MCM or Two #1 – 250 MCM Three #3/0 – 500 MCM	800 Amp TKMA	400 600 800	Two #1/0 – 250 MCM or One #4 – 600 MCM #2/0 – 500 MCM† Three #3/0 – 500 MCM

† Double connectors for parallel conductors.

‡ All wire sizes shown are for copper wire type. For aluminum wire type information, consult Cooper Crouse-Hinds.

§ KDB range is #3 – 350 MCM.

* 2 and 3-pole #14 – #10.

** 2 and 3-pole #14 – #3.

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Table 7 – Front connection terminals for all enclosures; 10,000 ampere interrupting rating,* ♦ 120/240 VAC-NEMA; non-interchangeable trip units

General Electric Type TEB

Amps	1-Pole Cat. #	2-Pole Cat. #	3-Pole Cat. #
15	TEB111015WL	TEB122015WL	TEB132015WL
20	TEB111020WL	TEB122020WL	TEB132020WL
25	TEB111025WL	TEB122025WL	TEB132025WL
30	TEB111030WL	TEB122030WL	TEB132030WL
35	TEB111035WL	TEB122035WL	TEB132035WL
40	TEB111040WL	TEB122040WL	TEB132040WL
45	TEB111045WL	TEB122045WL	TEB132045WL
50	TEB111050WL	TEB122050WL	TEB132050WL
60	TEB111060WL	TEB122060WL	TEB132060WL
70	TEB111070WL	TEB122070WL	TEB132070WL
80	TEB111080WL	TEB122080WL	TEB132080WL
90	TEB111090WL	TEB122090WL	TEB132090WL
100	TEB111100WL	TEB122100WL	TEB132100WL
100 MCS	TEB111Y100	TEB122Y100	TEB132Y100

Square D FAL Frame

Amps	1-Pole Cat. #	2-Pole Cat. #	3-Pole Cat. #
15	FAL12015	FAL22015	FAL32015
20	FAL12020	FAL22020	FAL32020
25	FAL12025	FAL22025	FAL32025
30	FAL12030	FAL22030	FAL32030
35	FAL12035	FAL22035	FAL32035
40	FAL12040	FAL22040	FAL32040
45	FAL12045	FAL22045	FAL32045
50	FAL12050	FAL22050	FAL32050
60	FAL12060	FAL22060	FAL32060
70	FAL12070	FAL22070	FAL32070
80	FAL12080	FAL22080	FAL32080
90	FAL12090	FAL22090	FAL32090
100	FAL12100	FAL22100	FAL32100

See pages 450 and 451 for explanation of breakers and their use.

* Ratings do not apply to molded case switches.
♦ For additional information on interrupting ratings, refer to specific circuit breaker manufacturers' data.
** GE has AC & DC rating; Square D is AC only.

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Table 8 – Front connection terminals for all enclosures; non-interchangeable trip units; see chart at right.

Circuit Breaker Frame Type	Interrupting Ratings – * ♦ RMS Symmetrical Amperes	
	240 VAC	480 VAC
TED	18,000	14,000
FAL	25,000	18,000
EHD	18,000	14,000

General Electric TED Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	TED124015WL	TED134015WL
20	TED124020WL	TED134020WL
25	TED124025WL	TED134025WL
30	TED124030WL	TED134030WL
35	TED124035WL	TED134035WL
40	TED124040WL	TED134040WL
45	TED124045WL	TED134045WL
50	TED124050WL	TED134050WL
60	TED124060WL	TED134060WL
70	TED124070WL	TED134070WL
80	TED124080WL	TED134080WL
90	TED124090WL	TED134090WL
100	TED124100WL	TED134100WL
110		TED134110WL
125		TED134125WL
150		TED134150WL
100 MCS	TED124Y100WL	TED134YT100
150 MCS	TED124Y150WL	TED134YT150

Square D FAL Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FAL24015	FAL34015
20	FAL24020	FAL34020
25	FAL24025	FAL34025
30	FAL24030	FAL34030
35	FAL24035	FAL34035
40	FAL24040	FAL34040
45	FAL24045	FAL34045
50	FAL24050	FAL34050
60	FAL24060	FAL34060
70	FAL24070	FAL34070
80	FAL24080	FAL34080
90	FAL24090	FAL34090
100	FAL24100	FAL34100

Cutler-Hammer EHD Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	EHD2015L	EHD3015L
20	EHD2020L	EHD3020L
25	EHD2025L	EHD3025L
30	EHD2030L	EHD3030L
35	EHD2035L	EHD3035L
40	EHD2040L	EHD3040L
45	EHD2045L	EHD3045L
50	EHD2050L	EHD3050L
60	EHD2060L	EHD3060L
70	EHD2070L	EHD3070L
80	EHD2080L	EHD3080L
90	EHD2090L	EHD3090L
100	EHD2100L	EHD3100L
100 MCS	EHD2100KL	EHD3100KL

See pages 450 and 451 for explanation of breakers and their use.

‡ Square D: 480 VAC/250 VDC.

♦ Ratings do not apply to molded case switches.

* For additional information on interrupting ratings, refer to specific circuit breaker manufacturers' data.

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Table 9 – Front connection terminals for all enclosures; non-interchangeable trip units; see chart at right.

Circuit Breaker Frame Type	Interrupting Rating RMS Symmetrical Amperes* ♦		
	240 VAC	480 VAC	600 VAC
TED	18,000	14,000	14,000
FAL	25,000	18,000	14,000
FDB	18,000	14,000	14,000
FD	65,000	25,000	18,000

General Electric TED Frame

Amps	3-Pole Cat. #
15	TED136015WL
20	TED136020WL
25	TED136025WL
30	TED136030WL
35	TED136035WL
40	TED136040WL
45	TED136045WL
50	TED136050WL
60	TED136060WL
70	TED136070WL
80	TED136080WL
90	TED136090WL
100	TED136100WL
100 MCS	TED136YT100
110	TED136110WL
125	TED136125WL
150	TED136150WL
150 MCS	TED136YT150

Square D Type FAL

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FAL26015	FAL36015
20	FAL26020	FAL36020
25	FAL26025	FAL36025
30	FAL26030	FAL36030
35	FAL26035	FAL36035
40	FAL26040	FAL36040
45	FAL26045	FAL36045
50	FAL26050	FAL36050
60	FAL26060	FAL36060
70	FAL26070	FAL36070
80	FAL26080	FAL36080
90	FAL26090	FAL36090
100	FAL26100	FAL36100
100 MCS	FHL26000M	FHL36000M

Cutler-Hammer FD Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FD2015L	FD3015L
20	FD2020L	FD3020L
25	FD2025L	FD3025L
30	FD2030L	FD3030L
35	FD2035L	FD3035L
40	FD2040L	FD3040L
45	FD2045L	FD3045L
50	FD2050L	FD3050L
60	FD2060L	FD3060L
70	FD2070L	FD3070L
80	FD2080L	FD3080L
90	FD2090L	FD3090L
100	FD2100L	FD3100L
100 MCS	FD2100KL	FD3100KL
110	FD2110L	FD3110L
125	FD2125L	FD3125L
150	FD2150L	FD3150L
150 MCS	FD2150KL	FD3150KL

Cutler-Hammer FDB Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FDB2015L	FDB3015L
20	FDB2020L	FDB3020L
25	FDB2025L	FDB3025L
30	FDB2030L	FDB3030L
35	FDB2035L	FDB3035L
40	FDB2040L	FDB3040L
45	FDB2045L	FDB3045L
50	FDB2050L	FDB3050L
60	FDB2060L	FDB3060L
70	FDB2070L	FDB3070L
80	FDB2080L	FDB3080L
90	FDB2090L	FDB3090L
100	FDB2100L	FDB3100L
110	FDB2110L	FDB3110L
125	FDB2125L	FDB3125L
150	FDB2150L	FDB3150L

See pages 450 and 451 for explanation of breakers and their use.

‡ Square D: 600 VAC/250 VDC

♦ Ratings do not apply to molded case switches.

* For additional information on interrupting ratings, refer to specific circuit breaker manufacturers' data.

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Table 10 – Front connection terminals for all enclosures; non-interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Rating RMS Symmetrical Amperes* ♦		
	240 VAC	480 VAC	600 VAC
TFJ	25,000	22,000	18,000
KAL	42,000	25,000	22,000
JB	25,000	22,000	18,000
JDB	65,000	25,000	18,000

General Electric Type TFJ

Amps	2-Pole Cat. #	3-Pole Cat. #
70	TFJ224070WL	TFJ236070WL
80	TFJ224080WL	TFJ236080WL
90	TFJ224090WL	TFJ236090WL
100	TFJ224100WL	TFJ236100WL
110	TFJ224110WL	TFJ236110WL
125	TFJ224125WL	TFJ236125WL
150	TFJ224150WL	TFJ236150WL
175	TFJ224175WL	TFJ236175WL
200	TFJ224200WL	TFJ236200WL
225	TFJ224225WL	TFJ236225WL
225 MCS	TFJ226Y225	TFJ236Y225
250		TFJ236250WL

Square D Type KAL

Amps	2-Pole Cat. #	3-Pole Cat. #
70	KAL26070	KAL36070
80	KAL26080	KAL36080
90	KAL26090	KAL36090
100	KAL26100	KAL36100
110	KAL26110	KAL36110
125	KAL26125	KAL36125
150	KAL26150	KAL36150
175	KAL26175	KAL36175
200	KAL26200	KAL36200
225	KAL26225	KAL36225
250	KAL26250	KAL36250
250 MCS	KHL26000M	KHL36000M

See pages 450 and 451 for explanation of breakers and their use.

Cutler-Hammer JDB Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
70	JDB2070	JDB3070
90	JDB2090	JDB3090
100	JDB2100	JDB3100
125	JDB2125	JDB3125
150	JDB2150	JDB3150
175	JDB2175	JDB3175
200	JDB2200	JDB3200
225	JDB2225	JDB3225
250	JDB2250	JDB3250

‡ Square D: 600 VAC/250 VDC
Cutler-Hammer: 600 VAC/250 VDC

* Ratings do not apply to molded case switches.

♦ For additional information on interrupting ratings, refer to specific circuit breaker manufacturers data.

** GE: 480 VAC 2 Pole TFJ

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Table 11 – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes**		
	240 VAC	480 VAC	600 VAC
TFK	25,000	22,000	18,000
KB	25,000	22,000	14,000
JD	65,000	25,000	18,000

General Electric Type TFK

Amps	2-Pole Cat. #	3-Pole Cat. #
70	TFK224070WL	TFK236070WL
80	TFK224080WL	TFK236080WL
90	TFK224090WL	TFK236090WL
100	TFK224100WL	TFK236100WL
110	TFK224110WL	TFK236110WL
125	TFK224125WL	TFK236125WL
150	TFK224150WL	TFK236150WL
175	TFK224175WL	TFK236175WL
200	TFK224200WL	TFK236200WL
225	TFK224225WL	TFK236225WL
225 MCS	TAC226Y225	TFK236Y225

Cutler-Hammer JD Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
70	JD2070	JD3070
90	JD2090	JD3090
100	JD2100	JD3100
125	JD2125	JD3125
150	JD2150	JD3150
175	JD2175	JD3175
200	JD2200	JD3200
225	JD2225	JD3225
250	JD2250	JD3250
250 MCS	JD2250K	JD3250K

See pages 450 and 451 for explanation of breakers and their use.

* GE: 480 VAC/250 VDC

** Ratings do not apply to molded case switches.

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400 A

Table 12 – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes† ♦		
	240 VAC	480 VAC	600 VAC
TJJ/TJK	42,000	30,000	22,000
LAL	42,000	30,000	22,000
LB	42,000	30,000	22,000
KD/KDB	65,000	35,000	25,000

General Electric Type TJK

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	TJK426225WL	TJK436225WL
250	TJK426250WL	TJK436250WL
300	TJK426300WL	TJK436300WL
350	TJK426350WL	TJK436350WL
400	TJK426400WL	TJK436400WL
400 MCS	TJK426Y400	TJK436Y400

Square D Type LAL

Amps*	2-Pole Cat. #	3-Pole Cat. #
250	LAL26250	LAL36250
300	LAL26300	LAL36300
350	LAL26350	LAL36350
400	LAL26400	LAL36400
400 MCS	LHL26000M	LHL36000M

Cutler-Hammer KD Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	KD2225	KD3225
250	KD2250	KD3250
300	KD2300	KD3300
350	KD2350	KD3350
400	KD2400	KD3400
400 MCS	KD2400K	KD3400K

Cutler-Hammer LD Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	LD2225	LD3225
250	LD2250	LD3250
300	LD2300	LD3300
350	LD2350	LD3350
400	LD2400	LD3400
400 MCS	LD2400N	LD3400N

Non-Interchangeable Trip Units

Cutler-Hammer KDB Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	KDB2225	KDB3225
250	KDB2250	KDB3250
300	KDB2300	KDB3300
350	KDB2350	KDB3350
400	KDB2400	KDB3400

General Electric Type TJJ

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	TJJ426225WL	TJJ436225WL
250	TJJ426250WL	TJJ436250WL
300	TJJ426300WL	TJJ436300WL
350	TJJ426350WL	TJJ436350WL
400	TJJ426400WL	TJJ436400WL
400 MCS	TJJ426Y400	TJJ436Y400

600 A

Table 12A – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes† ♦		
	240 VAC	480 VAC	600 VAC
TJK	42,000	30,000	22,000
LD	65,000	35,000	25,000

General Electric Type TJK

Amps*	2-Pole Cat. #	3-Pole Cat. #
450	TJK626450WL	TJK636450WL
500	TJK626500WL	TJK636500WL
600	TJK626600WL	TJK636600WL
600 MCS	TJK626Y600	TJK636Y600

Cutler-Hammer LD Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
500	LD2500	LD3500
600	LD2600	LD3600
600 MCS	LD2600N	LD3600N

See pages 450 and 451 for explanation of breakers and their use.

♦ For additional information on interrupting ratings, refer to circuit breaker manufacturer's data.

* Lower ampere ratings available, consult Cooper Crouse-Hinds.

† Ratings do not apply to molded case switches.

‡ Cutler-Hammer LD frames: 600 VAC; G.E. TJJ: 600 VAC.

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800/1000 A Frame, Thermal Magnetic
600 VAC/250 VDC 2-Pole, 3-Pole‡

Table 13 – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes† ♦		
	240 VAC	480 VAC	600 VAC
TKMA	42,000	30,000	22,000
MAL	42,000	30,000	22,000
ND	42,000	30,000	22,000

General Electric Type TKMA

Amps	2-Pole Cat. #	3-Pole Cat. #
300	TKMA826300WL	TKMA836300WL
350	TKMA826350WL	TKMA836350WL
400	TKMA826400WL	TKMA836400WL
500	TKMA826500WL	TKMA836500WL
600	TKMA826600WL	TKMA836600WL
700	TKMA826700WL	TKMA836700WL
800	TKMA826800WL	TKMA836800WL
800 MCS	TKMA826Y800	TKMA836Y800

Square D Type MAL (1,000 Amp Frame)

Amps*	2-Pole Cat. #	3-Pole Cat. #
450	MAL26450	MAL36450
500	MAL26500	MAL36500
600	MAL26600	MAL36600
600 MCS	MAL260006M	MAL360006M
700	MAL26700	MAL36700
800	MAL26800	MAL36800
800 MCS	MAL26008M	MAL36008M

Cutler-Hammer ND Frame, Rating Plugs and Terminals

Amps	Frame 2-Pole #	3-Pole #	Fixed Rating Plug Cat. #	Terminals♦ ♦ Cat. #
400	ND2800FM	ND3800FM	8MC400	TA700MA1
500	ND2800FM	ND3800FM	8MC500	TA700MA1
600	ND2800FM	ND3800FM	8MC600	TA700MA1
700	ND2800FM	ND3800FM	8MC700	TA800MA2
800	ND2800FM	ND3800FM	8MC800	TA800MA2

See pages 450 and 451 for explanation of breakers and their use.

† Ratings do not apply to molded case switches.
♦ For additional information on interrupting ratings, refer to circuit breaker manufacturer's data.
* Lower ampere ratings available. Consult Cooper Crouse-Hinds.
♦ ♦ Two required per pole.
‡ Cutler-Hammer: 600 VAC MC frame.

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6C Circuit Breakers Motor Circuit Protectors

3 to 250 Amp
600 VAC Max., 3 Pole

Application:

The MCP (motor circuit protector) is designed for application to individual motor circuits in combination with a magnetic motor starter. MCP's operate on an instantaneous magnetic trip principle. A current sensing coil reacts immediately to any overcurrent above a pre-selected level. The magnetic trip setting may be adjusted to the level required by a particular motor's operating characteristic. MCP's offer custom tailored protection for a particular motor.

As such, MCP's provide the fastest tripping possible in low-level faults while offering circuit breaker short circuit protection.

The three magnetic trip assemblies are closely calibrated sensing relays. Any excess current on any one of the three poles acts to trip the unit immediately. When the unit trips, all three poles immediately open, preventing single phasing.

The magnetic trip setting is adjusted by a single knob on the front of the device. This knob has position settings for different trip levels and is designed to comply with the National Electric Code® by providing a locking pin to limit the maximum trip setting to 1300% of the motor full load current. Refer to manufacturer's motor circuit protector data for proper MCP trip setting for intended application.

Table 14 – Motor Circuit Protectors

Cutler-Hammer F Frame

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #	Current Limiter Suffix†
3	9-30	0	HMCP003A0	ELC3003R
7	21-70	0	HMCP007C0	ELC3007R
15	45-150	0	HMCP015E0	ELC3015R
30	90-300	1	HMCP030H1	ELC3030R
50	150-500	2	HMCP050K2	ELC3050R
70	210-700	2	HMCP070M2	ELC3100R
100	300-1000	3	HMCP100R3	ELC3100R
150	450-1500	4	HMCP150T4	ELC3150R
150	750-2500	4	HMCP150U4	ELC3150R

Interrupting Ratings – MCP only

240VAC – 100,000 Amps RMS Symmetrical
480VAC – 65,000 Amps RMS Symmetrical
600VAC – 25,000 Amps RMS Symmetrical

MCP with Current Limiter

Up to 600VAC – 200,000 Amps RMS Symmetrical

Square D FAL/KAL

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #
3	8-28	0	FAL3600311M
7	18-70	0	FAL3600712M
15	50-180	0	FAL3601513M
30	50-180	1	FAL3603013M
30	100-350	1	FAL3603015M
50	75-260	2	FAL3605014M
50	150-580	2	FAL3605016M
100	150-580	3	FAL3610016M
100	300-1100	3	FAL3610018M
150	750-1500	4	FAL3615026M
250	400-800	4	KAL3625021M
250	500-1000	4	KAL3625022M
250	625-1250	4	KAL3625025M
250	750-1500	4	KAL3625026M
250	875-1750	5	KAL3625029M
250	1000-2000	5	KAL3625030M
250	1125-2250	5	KAL3625031M
250	1250-2500	5	KAL3625032M

Interrupting Ratings – MCP only

Type FAL – 240VAC – 25,000 Amps RMS Symmetrical
480VAC – 18,000 Amps RMS Symmetrical
600VAC – 14,000 Amps RMS Symmetrical

Type KAL – 240VAC – 42,000 Amps RMS Symmetrical
480VAC – 25,000 Amps RMS Symmetrical
600VAC – 22,000 Amps RMS Symmetrical

* G.E. Type TBC with Current Limiter

Cutler-Hammer J Frame

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #
250	350-700	5	HMCP250A5
250	450-900	5	HMCP250C5
250	500-1000	5	HMCP250D5
250	625-1250	5	HMCP250F5
250	750-1500	5	HMCP250G5
250	875-1750	5	HMCP250J5
250	1000-2000	5	HMCP250K5
250	1125-2250	5	HMCP250L5
250	1250-2500	5	HMCP250W5

Interrupting Ratings – MCP only

240VAC – 100,000 Amps RMS Symmetrical
480VAC – 65,000 Amps RMS Symmetrical
600VAC – 25,000 Amps RMS Symmetrical

General Electric Type TFC/TBC

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #*
225	600-1400	4	TFC36225
225	1000-2250	4	TFC36225A
225	550-1670	4	TBC43225F14F

Interrupting Ratings – MCP only

Type TFC – 240VAC – 25,000 Amps RMS Symmetrical
480VAC – 22,000 Amps RMS Symmetrical
600VAC – 18,000 Amps RMS Symmetrical

Type TBC – Up to 600VAC – 100,000 Amps RMS Symmetrical (with Current Limiter)

General Electric Type TEC

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #§	Current Limiter Suffix†
3	8-38	0	TEC36003	TECL36003
7	18-90	0	TEC36007	TECL36007
15	42-198	0	TEC36015	TECL36015
30	90-390	1	TEC36030	TECL36030
50	180-660	2	TEC36050	TECL36050
100	300-1300	3	TEC36100	TECL36100
150	600-2700	4	TEC36150	TECL36150

Interrupting Ratings – MCP only:

Up to 600 VAC – 10,000 Amps RMS Symmetrical

MCP with current limiter:

Up to 600 VAC – 100,000 Amps RMS Symmetrical

§ Type TEC magnetic break only.

† Add the suffix to the basic MCP Cat. No. when the additional current limiter is desired.

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Table 15

Cutler-Hammer File C361

Switch Rating Amps	Fusible Clip Rating	Volts	Cat. #	Non-Fusible Cat. #
30	30	250	C361-SC21	C361-NC
	30	600	C361-SC61	
60	30	600	C361-SD22	C361-ND
	60	250	C361-SD22	
	60	600	C361-SD62	
100	100	250/600	C361-SE263	C361-NE

Square D Class 9422

Switch Rating Amps	Fusible Clip Rating Amps	Volts	Cat. # (Type)	Non-Fusible Cat. # (Type)
30	30	250	TCF30	TCN30
	30	600	TCF33	
	60	250	TCF33	
60	30	600	TDF60	TDN60
	60	250	TDF60	
	60	600	TDF63	
100	100	250/600	TEF10	TEN10

NOTE: Specify Class 9422 and Type when ordering.

Cutler-Hammer Type DS

Switch Rating Amps	Fusible* Clip Rating Amps	Volts	Cat. #*	Style #	Non-Fusible Cat. #*	Style #
30	30	250	DS121R	1230C28G04	DS16U	1230C28G01
	30	600	DS161R	1230C28G06		
	60	250	DS122	1230C28G05		
	60	600	DS162	1230C28G07		
60	60	250	DS222R	1230C28G08	DS26U	1230C28G02
	60	600	DS262R	1230C28G09		
100	100	250/600	DS263	1230C28G10	DS36U	1230C28G03
	100	250/600	DS363R	1230C28G11		
	200	250/600	DS364	1230C28G12		
200	200	250/600	DS464R		DS46U	

NOTE: Specify Cat. No. and Style No. when ordering.

General Electric Type QMW†

Switch Rating Amps	Fusible Clip Rating Amps	Volts	Basic Switch Cat. #	NEC Fuse Kit Cat. #	No-Fuse Kit Cat. #
30	30	250	THMC31	THMC3121	THMC3100
	30	600	THMC31	THMC3161	
	60	250	THMC31	THMC3222	
	60	600	THMC31	THMC3262	
60	60	250	THMC32	THMC3222	THMC3200
	60	600	THMC32	THMC3262	
	100	250	THMC32	THMC3363	
	100	600	THMC32	THMC3363	
100	100	250	THMC33	THMC3363	THMC3300
	100	600	THMC33	THMC3363	
	200	250	THMC33	THMC3364	
	200	600	THMC33	THMC3364	
200	200	250	THMC34	THMC3464	THMC3400
	200	600	THMC34	THMC3464	

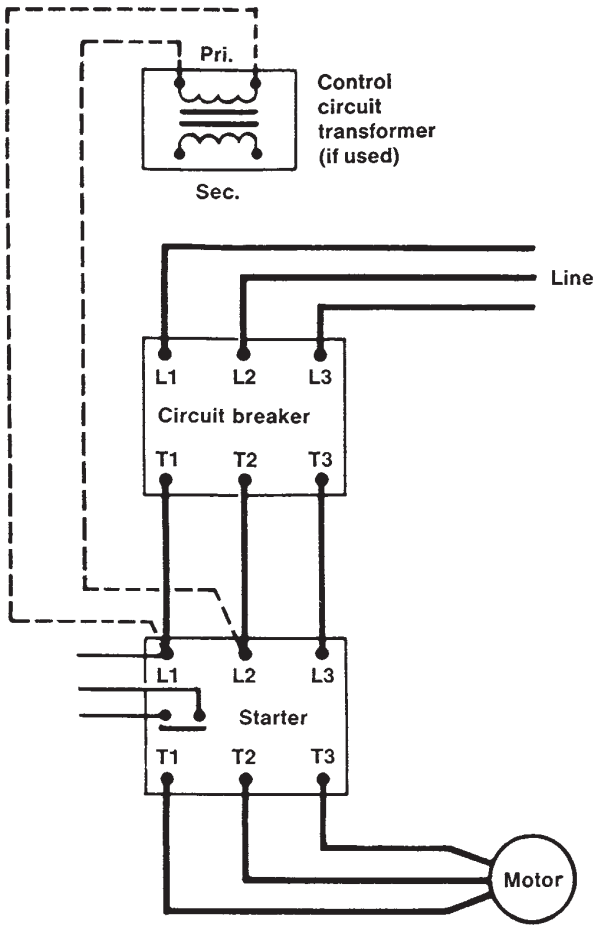
† Order basic switch plus fuse kit for fusible or basic switch plus no-fuse kit for non-fusible

‡ Accommodates Class J fuses only

* Base mounting hardware to be ordered with switch:
30, 60, 100 Amp. fusible or non-fusible – Style #624B375G17
200 Amp. fuxible – Style #624B375G08
200 Amp. non-fusible – Style #624B375G07

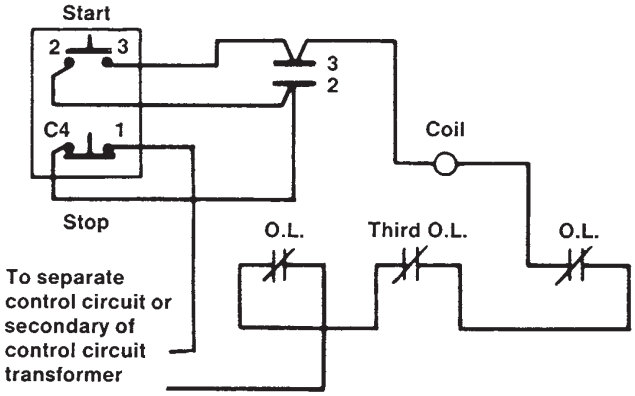
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Power wiring*



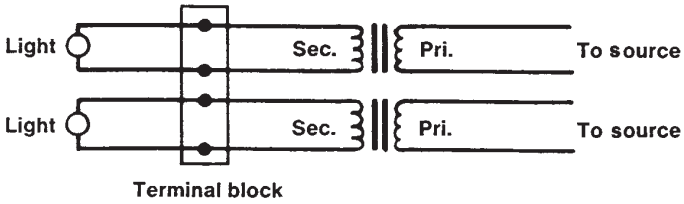
NOTE: For starter only, omit wiring from circuit breaker to starter and wire line direct to L1, L2, and L3 of starter

Connections for separate control circuit or control circuit transformer*



NOTE: If starter is wired with a jumper between L2 and overload relay contact, this jumper must be removed

Pilot lights with transformers

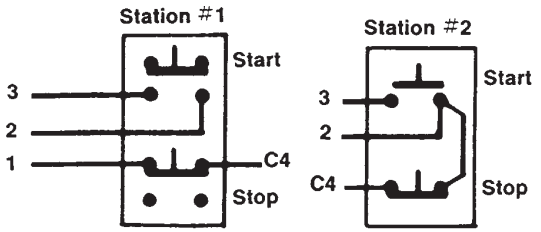


NOTE: Extra interlocks on starters for control of pilot lights are optional. Information on request

* Overcurrent protection of internal primary and secondary control circuit conductors and transformers must be provided in accordance with National Electrical Code® (ANSI/NFPA70-1993) and any other applicable standards.

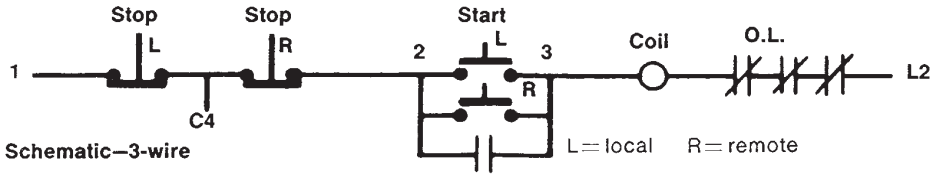
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Control station connections



Local or remote
If only station #1 is used, jumper 2-C4

Remote
If only station #2 is used, connect C-4 to "1" at starter



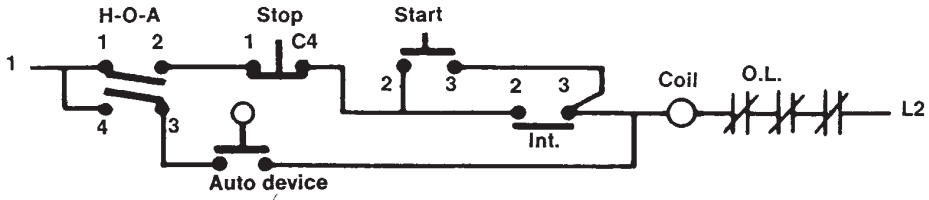
Schematic—3-wire

2-wire control – maintained contact



Schematic—2-wire

HAND-OFF-AUTO selector switch with START-STOP station



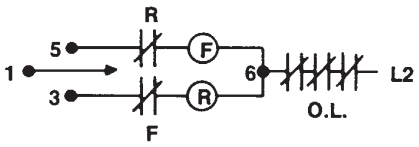
Selector switch positions
- "HAND" connects 1 and 2
- "OFF" opens both sides
- "AUTO" connects 3 and 4

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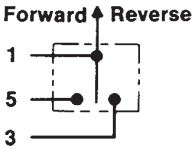
6C Control Circuit Diagrams

Reversing Starters

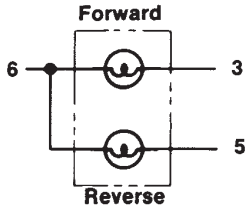
Schematic 2-wire



Connections for 2-wire control

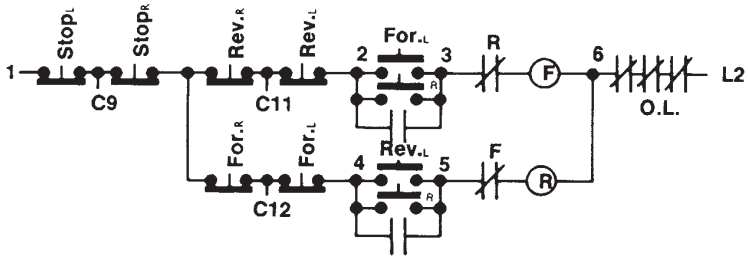


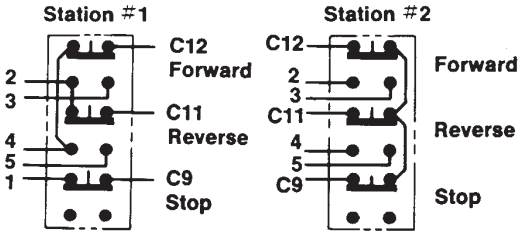
Pilot lamp connections



Schematic 3-wire/Case 1

Using two 3-button control stations, one local built-in & one remote or two remote. May change direction without using stop button.



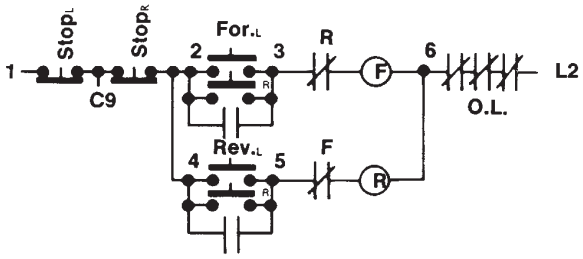


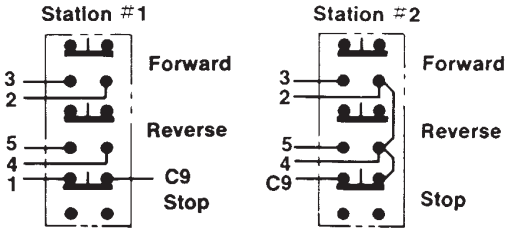
Local or remote
If only station #1 is used jumper C9-C11-C12

Remote
If only station #2 is used jumper C11-2, C12-4 & conn. C9-"1" at starter

Schematic 3-wire/Case 2

Using two 3-button control stations, one local built-in & one remote or two remote. Must use stop button to change direction.



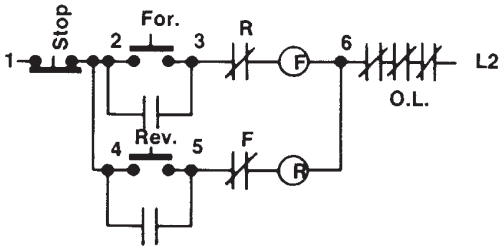


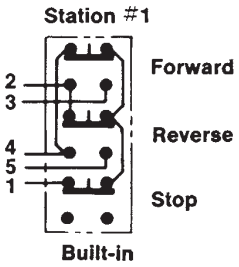
Local or remote
If only station #1 is used jumper C9-2-4

Remote
If only station #2 is used conn. C9-"1" at starter

Schematic 3-wire/Case 3

Using one built-in 3-button control station.
May change direction without using stop button.

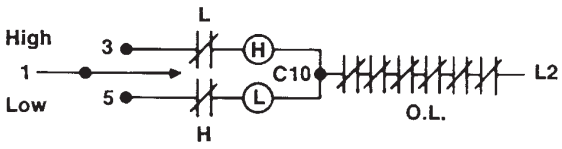




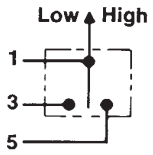
NOTE: Sub-letters on schematics indicate — "L" for local & "R" for remote stations

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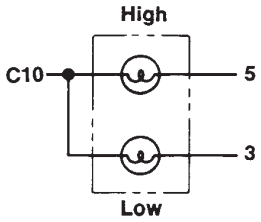
Schematic 2-wire



Connections for 2-wire control

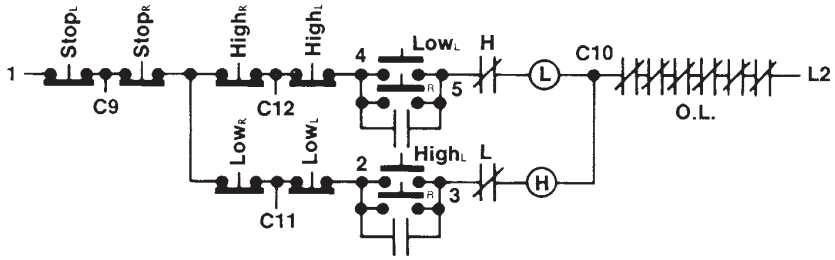


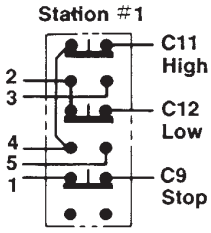
Pilot lamp connections



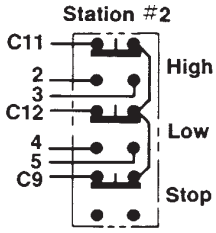
Schematic 3-wire/Case 1

Using two 3-button control stations, one local built-in & one remote or two remote. May change speeds without using stop button.





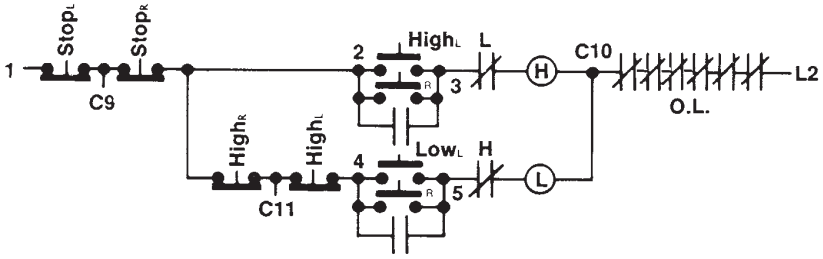
Local or remote
If only station #1 is used jumper C9-C11-C12

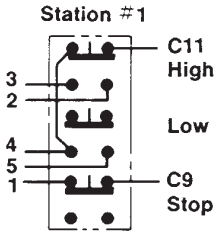


Remote
If only station #2 is used jumper C11-4, C12-2 & conn. C9-"1" at starter

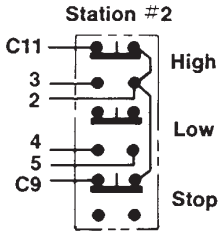
Schematic 3-wire/Case 2

Using two 3-button control stations, one local built-in & one remote or two remote. Must use stop button to change from high to low speed.





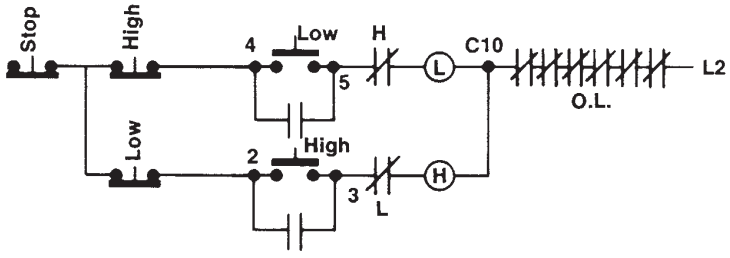
Local or remote
If only station #1 is used jumper C9-C11-2

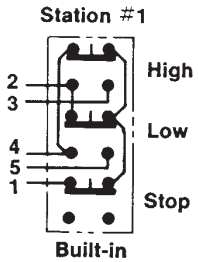


Remote
If only station #2 is used jumper C11-4 & conn. C9-"1" at starter

Schematic 3-wire/Case 3

Using one built-in 3-button control station.
May change speeds without using stop button.





NOTE: Sub-letters on schematics indicate — "L" for local & "R" for remote stations

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Notes Page

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Description	Page No.
Switch Racks	
General Information	468-471
Bus Duct Assemblies	472, 473
Selection Guide	474-476

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7C Switch Rack Assemblies

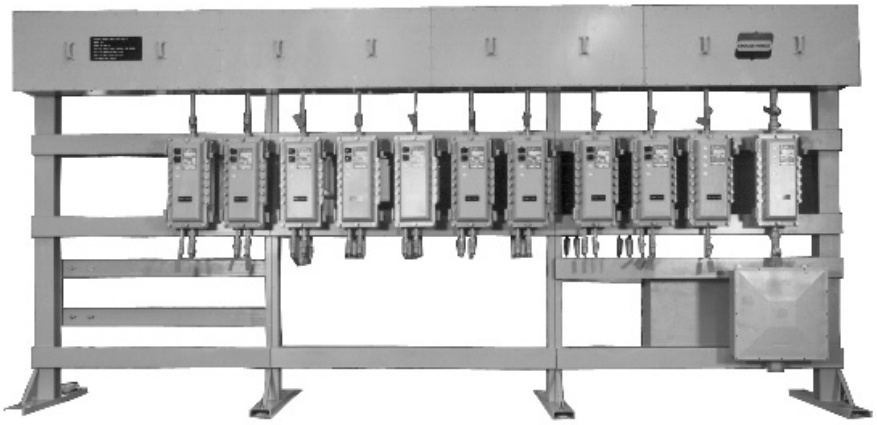
Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,4X,7BCD,9EFG,12	Watertight

Application:

Free-standing switch rack assemblies are used:
- to provide a complete motor control center in one integrated package
- outdoors and indoors
- in damp, wet or corrosive locations such as sewage treatment plants, lumber mills, marine installations, and food preparation areas
- in areas made hazardous due to the presence of flammable vapors or gases, such as petroleum refineries, chemical and petrochemical plants, gas gathering plants, pipeline compressor stations, and drilling rigs, both onshore and offshore
- in areas where hazardous dusts are present, such as coal handling facilities, grain processing and handling plants, and certain food process industries.

Features:

- Complete factory assembled and wired switch racks
- Pre-drilled bus boxes allow for quick and easy changing or adding of components
- Complete assembly covered under one order, eliminates engineering costs, additional costs of placing separate orders with several vendors for various components, and assembly and scheduling problems at job site
- Wiring is simple. After switch rack is in place, feeders are connected to the main bus and connections made from starters to motors. No other field wiring is necessary
- Maintenance time and costs are reduced by having controls grouped. Work is performed in one location instead of moving from one control to another in various locations
- Major components are standard EBM, EPC, NMC, NMG, NCB, FLB, D2PB, EXD, D2D, EPL, and D2L enclosures featuring ready access to starters and breakers for inspection and maintenance.
- Custom built racks to meet your exact requirements are a Cooper Crouse-Hinds specialty. Complete quotations will be supplied for any job, large or small (38′ length max)



Standard Materials:

- Rack frames – structural steel or aluminum channel members, bolted and welded
- Components – see sections A, C & N for material

Standard Finishes:

- Rack frame – hot dip galvanized steel or natural aluminum
- Components – see sections A, C & N for finishes

Options:

- Rack frame finish – corrosion resistant primer with air dry epoxy
- Options listed for individual components can be incorporated in complete switch racks

Certifications and Compliances:

- NEC:
  Class I, Divisions 1 & 2, Groups C,D
  (Group B optional)
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA: 3, 4X (optional), 7B (optional) CD, 9EFG, 12

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Construction:

General:

- All construction to be in accordance with current *National Electrical Code*® (NEC), National Electrical Manufacturers' Association (NEMA), state and local standards as designated by the purchaser.
- All hazardous area enclosures for motor starters, combination motor starters, circuit breakers, motor circuit protectors, instrument enclosures, panelboards, main bus, fittings, receptacles, and lighting fixtures shall be made and supplied by the manufacturer.
- All explosion-proof threaded enclosures for combination starters, circuit breakers, motor circuit protectors, and starters shall be UL classified.
- All other standard hazardous area enclosures shall be UL listed or UL classified.
- Motor control racks shall be constructed by an approved union shop.
- Manufacturer shall retain permanent records of all motor control racks and shall have the capability of duplicating, or replacing, any fully-assembled rack or rack component.
- Manufacturer to assume responsibility for construction, purchase/manufacturer of components, complete circuit continuity testing, and testing of mechanical functions of components.

Rack Frame Design:

Structure:

- Switch rack, either single or double face as required, shall be rigid, free-standing structures. Racks shall be factory-welded, assembled and fabricated from standard rolled structural steel or aluminum shapes.
- Vertical risers will be 6″ I-beam and horizontal members shall be 6-inch channel.
- Mounting feet shall be 6-inch channel. Width of such feet for single-sided racks shall be 41 inches.
- End mounting feet will be braced (welded) to the upright with 6″ T member.
- Mounting feet shall be anchored at the job site with 1-inch diameter bolts. Anchor bolts and mounting pads will be the responsibility of the user.
  Maximum horizontal spacing between mounting legs shall not exceed 6 feet. (Specific dimensions to be determined by the manufacturer.)
- Racks longer than 20 feet will be supplied as bolt-together sections. (Specific section dimensions to be determined by the manufacturer.)

Grounding:

- A pressure-type grounding lug with appropriate wire capacity will be provided at each end of frame.



Cooper Crouse-Hinds switch rack installed in a fuel storage area.

Finish:

- Rack frame shall be hot-dip galvanized after fabrication or natural aluminum.

Main Bus Equipment:

Class I, Division 1:

- Main bus material shall be copper only and capable of withstanding up to 65K amps fault current. Cable bus will be wired to terminal blocks enclosed in cast, copper-free aluminum, explosion-proof junction boxes, Cooper Crouse-Hinds type EJB. Such junction boxes for incoming power and distribution wiring shall be provided at either the top or bottom of the rack. Enclosures shall be connected by rigid conduit with conduit seals installed in accordance with the NEC. Load conduit or cable will leave rack either below or above. Manufacturer shall provide conduit layouts.

Class I, Division 2:

- Main bus material shall be copper only and capable of withstanding up to 65K amps fault current. Cable bus will be wired to terminal blocks enclosed in cast, copper-free aluminum weathertight junction boxes, Cooper Crouse-Hinds type WJB. Such junction boxes for incoming power and distribution wiring shall be provided at either the top or bottom of the rack. Enclosures shall be connected by rigid conduit with conduit seals installed as required by the NEC. Load conduit or cable will leave rack either below or above. Manufacturer shall provide conduit layouts.

Bus Duct in Lieu of Junction Boxes (Optional):

- Cable bus will be wired to a weathertight bus duct provided at the top or bottom of the rack.

Canopy (Optional):

- Single- or double-pitched canopy shall have minimum 15-degree pitch with a mininmum 7′6″ ground clearance, and 2-foot overhang. Roofing material shall be corrugated aluminum. Canopy roof trusses, cross channels, roof material, and mounting hardware shall be shipped unassembled for quick assembly at the job site. All holes in structure shall be provided except for roof mounting holes which will be drilled in the field. Manufacturer will supply drawings and material for complete field assembly of canopy.

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Motor Control Components:

Explosion Proof Quick Opening Enclosures:

● All circuit breakers, motor circuit protectors and combination or across-the-line motor starters shall be enclosed in quick-opening enclosures (Cooper Crouse-Hinds types EBM or EPC).

Types:

● Ground joint bolted cover enclosure shall be Cooper Crouse-Hinds type EBM, Underwriters Laboratories inc. classified for use in class I, Groups C, D, Divisions 1 and 2, Class II, Groups E, F, G, Divisions 1 and 2 and Class III hazardous locations and shall also be suitable for type 3, 3R and/or type 4 (NEMA 3, 3R and 4) areas.
● All enclosures shall be cast of a corrosion-resistant copper-free aluminum alloy (less than 0.4% copper) and shall be of a semi clampshell design with external flange to promote ease of apparatus installation, adjustment and maintenance. Most importantly, enclosure inside dimensions shall conform to the wire bending space requirements of the National Electrical code NFPA70 paragraph 373-6. Enclosures with flat covers, internal flanges or those not conforming to NFPA70 paragraph 373-6 are not permitted.
● Covers shall be hinged on the left side and, when closed, shall be affixed top the body by multiple lead thread bolts to promote quick opening and closing of the enclosure.
● Cover bolts shall be hex head stainless steel without screwdriver slots, to promote the use of a socket or wrench for proper tightening. They shall be captive to the cover and stainless steel spring loaded to indicate the fully unthreaded position. Spring loading shall give visual indication that the bolts are free of the body when the cover is being opened. The cover flange ground joint shall have an integeral gasket to prevent the entry of windblown dust, rain or sleet.

● All enclosures shall be fitted, as standard, with adjustable, extended, corrosion-resistant, copper-free aluminum hinges that shall allow the cover to swing away from the body when opened and shall permit unobstructed working space for maintenance, adjustment or replacement of the internal apparatus. Additionally these hinges shall allow minimum enclosure-to-enclosure spacing with little interference between an open cover and an adjacent enclosure. Enclosures with hinges fabricated from steel or aluminum stampings shall not be permitted.

● All enclosures shall be provided with drilled, tapped and plugged conduit entrances suitably sized for the electrical application. Power conduit entrances shall be located 1 (or 2) each on (or equally spaced from) the enclosure vertical centerline at top and bottom. A single, plugged 1″ entrance for a control conduit shall be provided at the bottom of the enclosure. (Some enclosures can also be provided with a plugged 1″ entrance for control conduit at the top.)
● All conduit entrances shall be furnished with removable copper-free aluminum reducers, each with integral wire pulling bushing. All conduit entrances shall be located the same distance from the enclosure mounting surface to facilitate conduit run layout and/or stub up construction.
● All enclosures shall have rugged, cast copper-free aluminum circuit breaker and motor starter overload reset operating handles located on the right side of the enclosure. These handles shall operate the internal mechanisms via stainless steel, gasketed shafts and bearings through the side wall of the body. Correct circuit breaker and overload reset operation shall be visually confirmed with the cover open.
● Circuit breaker handles shall be padlockable in either the ‘‘OFF’’ or ‘‘ON’’ position, and shall be trip-free of the circuit breaker itself. An attached indicating plate shall give clear, visual confirmation of the circuit breaker status.
● Adjustable circuit breaker handle stops shall be provided to ensure full operation of the circuit breaker and to prevent handle overthrow that could damage the circuit breaker toggle.
● Motor starter overload reset operating mechanisms shall be field adjustable.
● Threaded construction enclosures shall be Cooper Crouse-Hinds type EPC, Underwriters Laboratories, Inc. classified for use in Class I, Groups C,D, Divisions 1 and 2, Class II, Groups E,F,G Divisions 1 and 2 and Class III hazardous locations and shall also be suitable for Type 3, 3R and/or Type 4 (NEMA 3, 3R and 4) areas.
● All enclosures shall be cast of a corrosion-resistant copper-free aluminum alloy (less than 0.4% copper) and shall be of a three section design. Multiple-start straight buttress threads between the covers and the body shall ensure quick access to the interior in less than two full turns of the covers. A system of stops shall prevent overtightening and thread seizing. A system of locks shall prevent covers from loosening due to external vibration.
● Female threads on the top cover with male threads on the bottom cover shall ensure inherent water and rain shedding.
● All exposed screws, bolts and hardware shall be stainless steel.
● The external circuit breaker operating handle affixed to a stainless steel shaft, shall be padlockable in either the ‘‘ON’’ or ‘‘OFF’’ position with up to three padlocks. Circuit breaker mechanisms shall be trip-free of the circuit breaker itself to allow the circuit breaker to open under overload conditions even if it is locked in the ‘‘ON’’ position.
● The mounting bracket shall provide a three-point suspension system for quick installation and adjustment.
● Conduit entrances shall have integral wire pulling bushings and conduit stops. These openings shall be arranged two at the top and two at the bottom and shall be sized for power and control requirements.

General

● All enclosures shall be bolted to the horizontal frame members on either the front or back or both front and back. Enclosures shall be connected to the main bus via conduit seals. (To be field poured). All hardware used to mount the enclosures shall be stainless steel.

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Lighting Panelboards:

Class I, Division 1:

- Panelboards shall be Cooper Crouse-Hinds type, factory-sealed EXD or EPL as specified and shall meet the following electrical ratings:

  EPL – 1, 2 or 3 pole, 240 volt maximum, 100 amp maximum branch trip rating, 10,000 AIC.

  EXD – 1, 2 or 3 pole, 600 volt maximum, 100 amp maximum branch trip rating.

Class I, Division 2:

Lighting panelboard shall be Cooper Crouse-Hinds type D2L factory-sealed, 120/240 volt panelboards and be provided with single-pole, two-pole, or three-pole branch circuit breakers with up to 100 amp trip rating; main breaker ranging to 225 amp. Similarly, lighting panelboard shall be type D2PB factory-sealed, 120/240 volt panelboards and be provided with single-pole or two-pole factory sealed circuit breakers with 15, 20 or 30 amp trip ratings and maximum 10,000 AIC. Power panelboards type D2D factory-sealed, up to 600 volt are provided with single-pole, two-pole, or three-pole branch circuit breakers with up to 100 amp trip ratings; main breaker rating to 225 amp.

NEMA 4X Option:

- All bus boxes, control enclosures and lighting panelboards will be made of *KRYDON*® material to meet NEMA 4X requirements.

Fittings:

All fittings shall be made and provided by the manufacturer. Seals and unions will be provided for each incoming and outgoing conduit as required. All interconnections between components shall be done by the manufacturer with galvanized rigid conduit, and conduit fittings as required to meet the hazardous classification. Interconnecting conduits to be provided with conduit seals as required. All incoming and outgoing rack conduit entrances shall include conduit seals as required by the hazardous location specified. Such seals will be provided by the manufacturer and will not be filled where field wiring is to be introduced.

Conduit Boxes, Outlet Boxes, Device Boxes:

- Conduit boxes, outlet boxes, and device boxes shall be Cooper Crouse-Hinds *Condulet*® fittings.

Seals:

- Seals will be standard Cooper Crouse-Hinds type *Condulet* EYS. (Cooper Crouse-Hinds *Condulet* EYD drains to be specified as required.)

Unions:

- Unions will be Cooper Crouse-Hinds UNY.

Breathers and Drains:

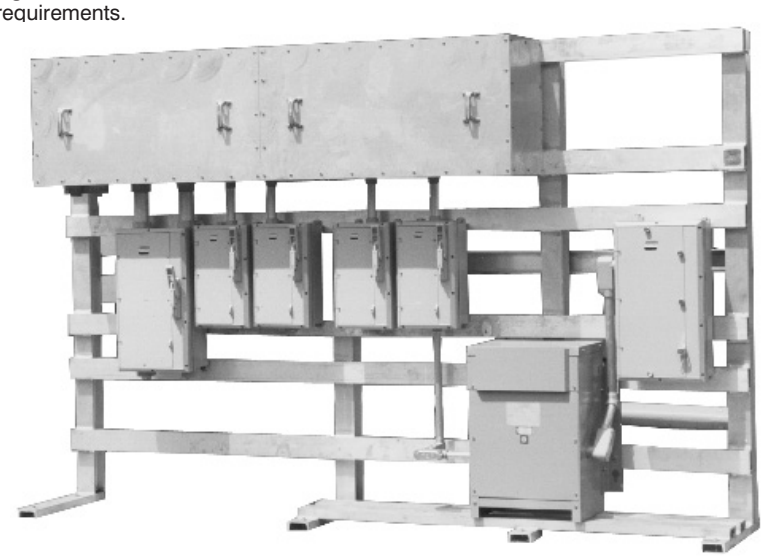
- Breathers and drains shall be Cooper Crouse-Hinds ECD.

Wiring:

- Standard wire shall be copper only, 600 volt, 75° C minimum rating, UL listed.
- No power wire less than 12AWG shall be used.
- Control wire shall be 14AWG minimum, 7 strands, THW minimum.
- Wiring shall be sized in accordance with the NEC requirements.

Drawings:

- Standard drawings supplied for customer approval shall include complete rack wiring diagram, component data, nominal weight of the rack, and overall rack dimensions.



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7C Bus Duct (Termination Box) Assemblies

NEMA 3R
UP TO 600 VOLTS

Application:

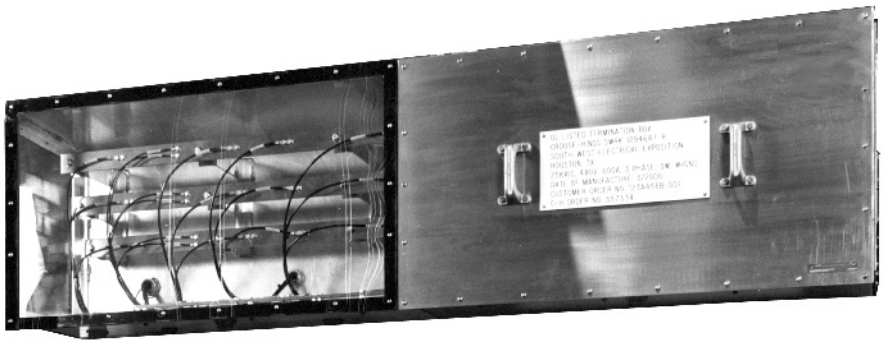
Cooper Crouse-Hinds is now offering NEMA 3R, UL Listed Bus Duct (Termination Box) Assemblies as standard product. Up to 600V, three-phase, 3 or 4 wire, 400Amp or 600Amp service with short circuit ratings of 25K or 50K.

Bus ducts or termination boxes provide a means of tapping feeder circuits for power distribution on outdoor switchrack assemblies or indoor wall-mounted applications.

Typical application is primarily for bus replacements on existing switchrack installations. New applications may include on-site construction of switchracks or indoor feeder distribution points due to space confinements making local installation more practical.

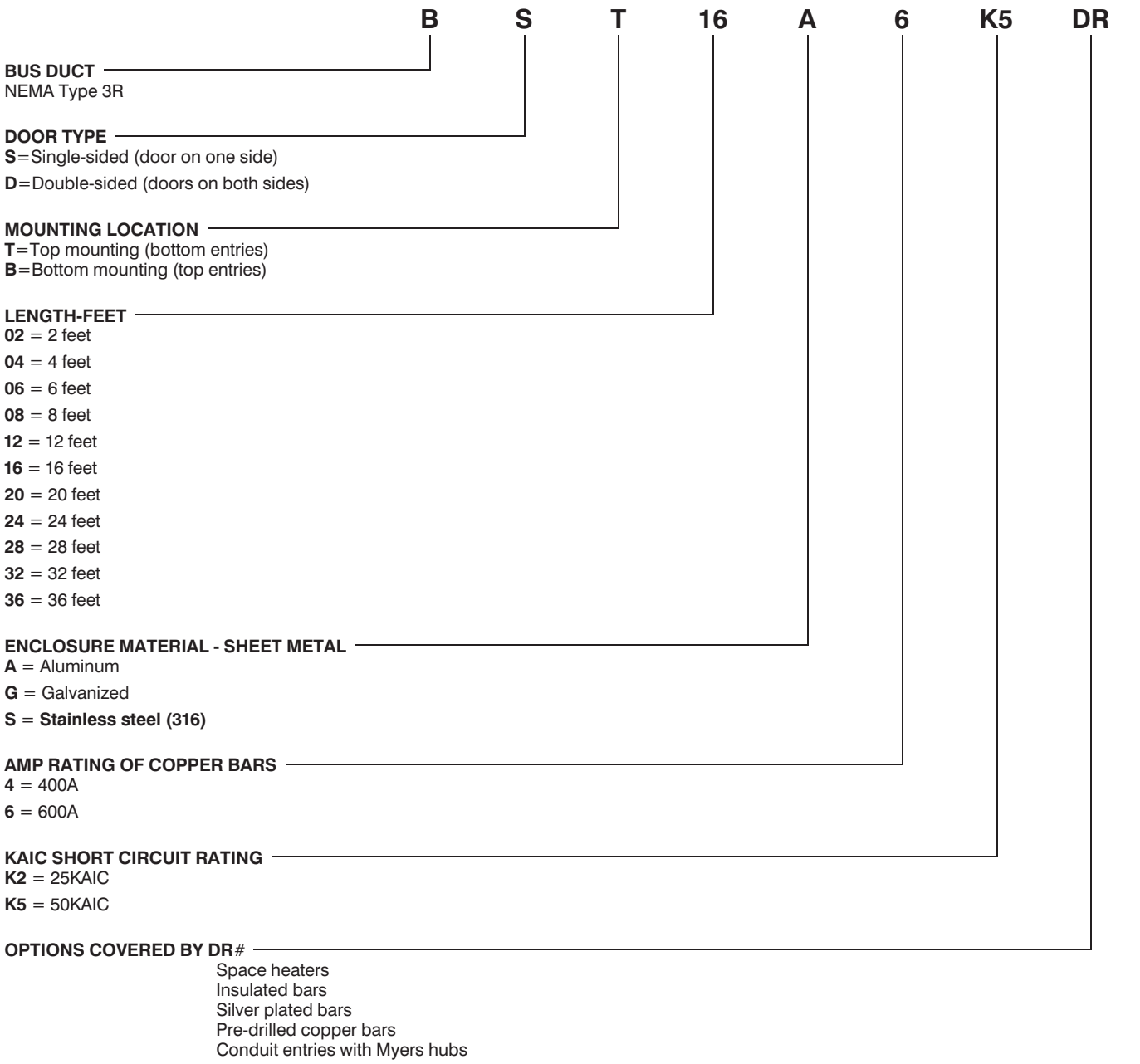
Features:

- U.L Listed.
- NEMA 3R.
- Maximum Voltage rating 600V.
- 400Amp or 600Amp @ 25KAIC or 50KAIC.
- External flange on bus duct enclosure and lip on covers prevents water leakage and allows covers to hang freely for ease of installation and maintenance.
- 3 degree pitch at top, for water run-off, on all flush mounted bottom entry designs.
- Chorosulfonated polyethlene (Hypalon®) gasket material at all bus box section joints, covers and end plates.
- Standoff (Glastic) insulators moulded of (UL) recognized flame-resistant fiberglass-reinforced thermoset polyester moulding compound.
- Bus bar sizing and bracing complies to UL857 requirements.
- All welded construction - sheet aluminum, sheet steel (galvanized), or stainless steel
- Stainless-steel hardware throughout.
- Two hole compression lugs at all power phase connectors attatched with stainless steel hardware.
- One (1) drain is standard per bus duct section (typical 4 foot sections).
- Solid copper bus bars (tin, silver plated and/or insulated - optional per customer request).
- Solid copper ground bar - standard.
- Incoming main lugs - supplied size and location specified with customer.
- Space heaters - optional per customer request.
- Pre-drilled copper bars (when specified by customer).
- Conduit entries for Myers hubs - optional per customer request.



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Bus Duct (Termination Box) Catalog Numbering System



BUS DUCT
NEMA Type 3R

DOOR TYPE
S=Single-sided (door on one side)
D=Double-sided (doors on both sides)

MOUNTING LOCATION
T=Top mounting (bottom entries)
B=Bottom mounting (top entries)

LENGTH-FEET
02 = 2 feet
04 = 4 feet
06 = 6 feet
08 = 8 feet
12 = 12 feet
16 = 16 feet
20 = 20 feet
24 = 24 feet
28 = 28 feet
32 = 32 feet
36 = 36 feet

ENCLOSURE MATERIAL - SHEET METAL
A = Aluminum
G = Galvanized
S = **Stainless steel (316)**

AMP RATING OF COPPER BARS
4 = 400A
6 = 600A

KAIC SHORT CIRCUIT RATING
K2 = 25KAIC
K5 = 50KAIC

OPTIONS COVERED BY DR#
Space heaters
Insulated bars
Silver plated bars
Pre-drilled copper bars
Conduit entries with Myers hubs

One (1) drain is standard per bus duct (termination box) section.

★For pricing and lead times, contact Cooper Crouse-Hinds at 315 477-5241 or fax to 315 477-5118.

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7C Switch Rack Assemblies

Selection Guide

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,4X,7BCD,9EFG,12	Watertight

Customer: _____ **Engineering Firm:** _____

Project: _____ **Location:** _____

Prepared By: _____ **Date:** _____

Quotation For: ☐ **Estimate/Budget** ☐ **Bid** ☐ **Immediate Buy**

Quotation Required By (Date) _____ **Material Required By (Date)** _____

Interested in a highly reliable, comprehensive communications that will improve the operating efficiency of your facility? See additional information at the end of this guide.

Is a current copy of plant STDS/SPECS available to Cooper Crouse-Hinds? _____

Area Classification:

HAZARDOUS **-** Circle All that apply:

☐ Class I
Div. 1 or 2, Grps B,C & D

☐ Class II
Div. 1 or 2, Grps E,F & G

☐ Class III

NON-HAZARDOUS

☐ Ordinary Locations

☐ NEMA 3R, 4, 4X (Circle One)

Structural Frame:

MATERIAL

☐ Steel

☐ Aluminum

☐ Single Face
(Components on ONE side only)

☐ Double Face
(Components on BOTH sides)

☐ Other _____

☐ Percent Spare Space _____ %

FINISH

☐ Hot Dip Galvanized

☐ Painted

Roof Canopy:

☐ Yes ☐ No

☐ Corrugated Aluminum

☐ Corrugated Fiberglass

Enclosure Type:

☐ Bolted ☐ Threaded

☐ Krydon ☐ Epoxy Coated

Dimension Restrictions:

☐ Length _____ ☐ Height _____

Service System: *(i.e. 480V, 3PH, 3W, 60HZ)*

_____ VOLT _____ PH _____ W _____ HZ

Incoming Feeder Requirements:

_____ # Conductors/Phase

_____ # AWG/MCM

_____ # Inch Conduit (Size)

☐ Top Entry ☐ Bottom Entry

Main Bus Enclosure:

MATERIALS

☐ Steel

☐ Aluminum

☐ Other (Specify)

☐ Bus Location - Top of Rack

☐ Bus Location Bottom of Rack

☐ Bus Bracing _____ (25 KAIC Standard)

☐ Bus Amps _____

☐ Other - Customer to Specify

FINISH

☐ Hot Dip Galv.

☐ Painted

MAIN BUS CHARACTERISTICS

Copper Bars

☐ Bare (Standard)

☐ Insulated

☐ Silver Plated

☐ Tin Plated

☐ Power Distr. Block

☐ Ground Bus in Enclosure

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Main Breaker/Disconnect: (3C,N)

☐ None ☐ Molded Case Breaker
AIC Rating _____
Amp Trip (AT)/ _____ Amp Frame (AF) _____
☐ Disconnect Switch
_____ Amps
☐ Fused ☐ Non-Fused

Equipment Requirements:

COMBINATION MOTOR STARTERS (1C, N)

FVNR, Reversing, 2-speed (circle one)
Qty.

_____ NEMA Size 0 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 1 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 2 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 3 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 4 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 5 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 6 with _____ AT/ _____ AF, _____ MCP

Refer to Cooper Crouse-Hinds catalog for suggested breaker or motor circuit protector sizing if not specified above, Cooper Crouse-Hinds will size accordingly.

OPTIONS REQUIRED

*Unless specified differently *options furnished standard

	Yes	No
*Fused Control Transformer Suffix FTPS		
Space Heaters Suffix R11, R22, R44		
Start/Stop Pushbuttons Suffix PB23		
Hand-Off Auto Selection Switch Suffix RR3		
Red Indicating Light Suffix J1		
Green Indicating Light Suffix J3		
*Auxiliary Contacts: (2 N.O./2NC) Suffix S782		
Control Relay Suffix S787		
*Breather/Drain Suffix S198V/S756V		
*12 Point Terminal Block		
Other - Specify Suffix S786		

Feeder Circuit Breaker: (3C, N)

AIC Rating _____

Qty	(AT)	(Specify)
		/100/150 AF
		/100/150 AF
		/225/250 AF
		/400 AF
		/800 AF
		Other

Component Preference:

☐ Cutler-Hammer ☐ SQD ☐ A-B ☐ GE
(Cutler-Hammer will be used if no preference is indicated.)

Distribution Transformers:

_____ KVA _____ PH _____ Volt-Pri ___ / ___ Volt-Sec
_____ KVA _____ PH _____ Volt-Pri ___ / ___ Volt-Sec
☐ Copper Windings ☐ Stainless Steel Enclosure

Panelboards: (1A, N)

Power (480V) (D2D EXD)
☐ Single Phase ☐ Three Phase
Main Breaker _____ Pole _____ AT
Branch Circuits

Qty	AT	No. Poles (i.e. '2P'-2 = Pole)

LIGHTING/HEAT TRACING

(240/120V) (D2L, EPL, D2PB)
☐ Single Phase ☐ Three Phase
Main Breaker _____ Pole _____ AT
Branch Circuits

Qty	(AT)	No. Poles (i.e. '2P'=2 Pole)

‡ GFI (5mA) (No. Req'd) _____ AMP Rating _____
‡ EPD (30mA) (No. Req'd) _____ AMP Rating _____

‡ Not available with D2PB panelboards

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7C Switch Rack Assemblies

Selection Guide

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Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations
NEMA 3,4X,7BCD,9EFG,12	Watertight

Lighting Contactor:

☐ Yes ☐ No

No. Poles _____ Amp Rating _____

☐ Control Power Transformer
Suffix FTPS

☐ Hand-Off-Auto Selector Switch
Suffix RR3

Photocell:

☐ Yes ☐ No

Lighting Fixtures: (1L, 2L, 3L)

Quantity _____ Type _____

Wattage _____ Voltage _____

Receptacles:

☐ Convenience Receptacle

Amps _____ Poles _____ Volts _____

☐ Welding Receptacle

Amps _____ Poles _____ Volts _____

Integral Circuit Breaker ☐ Yes ☐ No

Conduit Fittings, Seals, Unions:

Plant Standard _____ (i.e."Form 7")

☐ Iron ☐ Aluminum

Type Seals
(Note seals not poured at factory)

☐ EYD ☐ EYS ☐ EZD

☐ Other (specify) _____

Conduit:

☐ Rigid Galv. Steel ☐ Aluminum

☐ PVC Coated

Wiring:

☐ RHW/RHH ☐ THWN/THHN (C-H Std)

☐ THW ☐ XHHW

☐ Other Insulation - Specify _____

Shop Inspection & Tests:

☐ Mfr. Standard Tests

☐ Customer In Plant Final Inspection

☐ Yes ☐ No

★Utilizing Standard Cooper Crouse-Hinds NEMA 7 Enclosures with specified internal components (mounted on your switchrack) this state-of-the-art technology is available today. IMPACC (Intergrated Monitoring Protection and Control Communications), by Cutter-Hammer/Westinghouse is a unique high frequency-based communications system specially designed for electrical distribution and control applications. Providing real time information, with an ''open'' protocol, allows you to manage and operate your entire electrical system including remote hazardous areas without leaving your office or motor control centre. For more information, contact us.

Special Requirements: _____

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www.isbarriers.com

Description	Page No.
Safety Barriers	464-472
Din Rail Isolated Barriers	473-488

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8C Intrinsically Safe Barriers Product Overview

www.isbarriers.com

We have simplified intrinsic safety!

Cooper Crouse-Hinds CEAG has simplified the application of intrinsic safety. Only a maximum of 3 grounded Safety Barriers are required for over 90% of the applications. In addition, each application requires only one isolated barrier making your application simple and flexible. Of course, Cooper Crouse-Hinds CEAG has a full range of products for specialized applications and OEMs.

Device In Hazardous Area	Also Referred to As	Grounded Safety Barrier	DIN Rail Isolated Barriers
Switch or contact closure	Digital Input D/I	*GHG111 0000 W 2427*	*GHG 122 3121 D 1003 (120VAC)* *GHG 122 3121 C 1009 (24VDC)*
2 wire transmitters	Analog Input A/I	*GHG 111 0000 W 2427*	*GHG 124 3111 M 1109*
Solenoid valves LEDs	Digital Output D/O	*GHG 111 0000 W 0779*	*GHG 138 3311 E X 0009*
I/P Transducer	Analog Output A/O	*GHG 111 0000 W 0779*	*GHG 126 3321 D 1008*
Thermocouple RTD	Temperature Measurements	*GHG 111 0000 W 0201*	*GHG 131 3100 M 0006 (TC)* *GHG 131 3100 L 0006 (RTD)*
		3 Types	*one isolator for each*

www.isbarriers.com

- Solutions to all technical questions & applications.
- Downloadable wiring diagrams, drawings, instructions, approval certificates & configuration software.
- Technical white papers on hazardous locations.
- On-line ordering.

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www.isbarriers.com

Which product is best for your application?

We have provided you with the features and benefits of the grounded and isolated barriers. Which system is best for you? Reference the *Users Guide to Intrinsically Safe Barriers* to help guide your decision.

Users Guide to Intrinsically Safe Barriers

	Grounded	***Isolated***
Selection Process	**easy** 1 of 3 products for 90% of applications	**easy** one product per application
Versatility Of Products	most versatile, can be used for other products, i.e., load cells & encoders	usually products are application specific, all applications covered
Signal Response	very precise	good signal response
RFI immunity	yes, CE mark	yes, CE mark
Cabinet Size Required	smallest ½″ wide	larger barrier 1″ wide
Cost Per Product	lowest initial cost	slightly higher
Installation Cost	higher because of wiring & ground connection	lower ground connections required
Total Cost - small sytems 1-10 points	lowest	higher
Total Cost - small system >100 points	low	low
Notes	ideal for very small systems and for OEMs who use a small number of barriers	isolated barriers are perfect for switching applications and where a ground is not convenient or available
Overall Rating	***Great***	***Better***

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Safety Barriers

Safety barriers, also refered to as zener barriers, are passive devices which contain zener diodes, resistors and fuses to limit excess voltage and current. These are the basic building blocks which are contained in all other intrinsically safe barriers. There is a voltage drop across zener barriers because of the resistors so some selection is required as well as a ground connection.

This selection has been greatly simplified as demonstrated in the application section. (pages 485 to 489). Safety barriers are also very versatile and can be applied in many other applications. They are the smallest devices, have the lowest initial product cost, but require field wiring and ground connections.

Advantages

- lowest initial cost per unit
- very small < ½'' wide
- very precise signal response
- small power requirements
- ideal for ″other″ circuits

Other Considerations

- requires ground
- barrier resistance can influence circuit function



DIN Rail Isolated Barriers

DIN rail isolated barriers, also referred to as transformer isolated or galvanically isolated barriers, are safety barriers with additional electronics to isolate and condition the signals. The isolation has the main advantage of not requiring IS ground connections.

The signal conditioning of isolated barriers simplifies the selection process as each isolated barrier is manufactured for specific functions such as switching, temperature measurements of 4-20 mA readings.

Advantages

- does not require IS ground
- loop layout & barrier selection is easy
- integrated signal conditioning

Other Considerations

- may have higher cost than grounded barriers
- larger width -1'' wide
- larger power requirements



www.isbarriers.com

- Solutions to all technical questions & applications.
- Downloadable wiring diagrams, drawings, instructions, approval certificates & configuration software.
- Technical white papers on hazardous locations.
- On-line ordering.

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Safety Barriers Overview

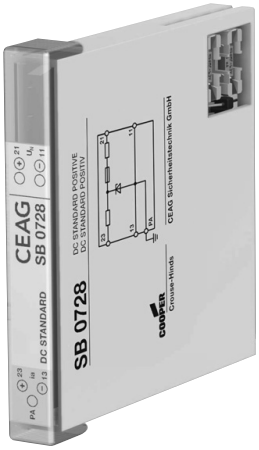
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Safety Barriers limit the energy from a possible fault on an intrinsically safe circuit so that neither sparks nor thermal effects (hot surfaces) can ignite volatile gases or dusts in hazardous locations.

Cooper Crouse-Hinds CEAG Safety Barriers are designed for simple and easy applications. A maximum of only 3 different barriers are used for the most commonly used instrument applications:

- Digital inputs
- Digital outputs
- Analog inputs
- Analog outputs
- Temperature sensors

Cooper Crouse-Hinds CEAG has designed the new Safety Barriers to insure total, trouble-free operation. Each Safety Barrier can be ordered with replaceable fuses to protect against nuisance tripping. In addition, each barrier has LEDs on the supply to monitor and show the status of the circuits.



Wiring Tool: For fast easy connections, see accessories page 482.

Features	Benefit to You
Barriers less than 10mm wide	Space saving design
Barriers plug into prewired backplane	Allow for prewiring and fast, easy connections
Backplane snaps onto standard 35mm DIN rail	No extra hardware required
LEDs on the supply	Display barrier status and monitoring
Replaceable fuses	Avoid nuisance tripping
Cage clamp connections	No screws required
Large tagging area	Easy circuit identification
Customized backplanes	Backplanes can be supplied in any length for custom applicaitions & OEMs
UL, cUL, & worldwide approvals	Global applications

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Product Features

- CENELEC UL and CUL approvals
- LEDs on supply
- Replaceable fuses
- Screwless cage clamp connections
- Large tagging areas
- DIN rail mounting
- Backplane mounting saves wiring
- Built-in ground connections on backplane
- CE certified



Terminology

Operating data

V_N	Rated maximum voltage
R_{max}	End-to-end resistance
S_i	Internal fuse

Safety parameters (in intrinsically safe circuits)

V_{oc}	Maximum open circuit voltage
I_{sc}	Maximum short circuit current
C_a	Maximum permissible external capacitance
L_a	Maximum permissible external inductance

Technical data:

Leakage current at V_N	< 2 μA
Temperature drift	< -250 x 10^{-6}/K
Operating temperature	-40°C ... +60°C
Storage temperature range	-40°C ... +80°C
Relative humidity	< 75% (annual average)
No condensation	< 95% (30 d/a)
Width	see dimensions (pg 467)
Weight	~ 70 g

Ordering Information

Description	Order No.
Standard backplane for 1 unit	**GHG 110 0000 W 9101**
Standard backplane for 10 units	**GHG 110 0000 W 9100**

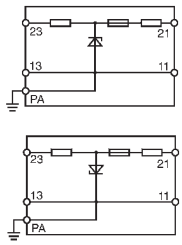
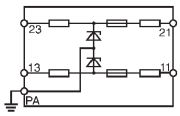
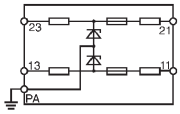
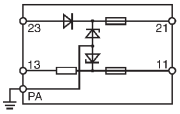
Accessories

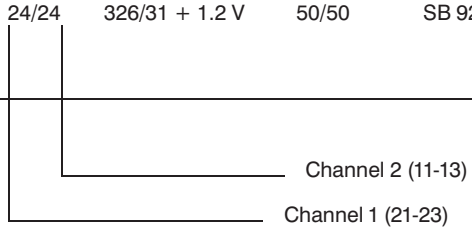
Safety Barrier Safeguard Fuse

Safeguard Fuse Value	Type No.	Catalog Number
0	SB 9210	GHG 110 0000 W9210
32	SB 9211	GHG 110 0000 W9211
50	SB 9212	GHG 110 0000 W9212
63	SB 9213	GHG 110 0000 W9213
80	SB 9214	GHG 110 0000 W9214
100	SB 9215	GHG 110 0000 W9215
125	SB 9216	GHG 110 0000 W9216
Safety Barrier ground bar		GHG 110 0000 W9220
Safety Barrier operating tool		SWAG-279-732

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Safety Barriers

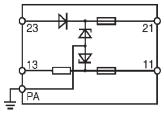
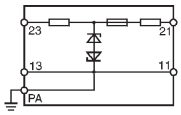
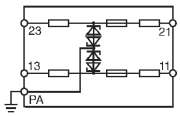
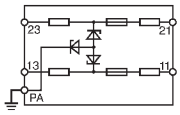
	Type No.	V_n (V)	Rmax (ohms)	Fuse (mA)	Replaceable Fuse	V_{oc} (V)	I_{sc} (mA)	Cat.# Number
DC Single								
	SB 0728	24	326	50	SB 9211	28	93	GHG111 0000 W0728
	SB 1728	-24	326	50	SB 9211	28	93	GHG111 0000 W1728
	SB 3729	24	187	50	SB 9211	28	171	GHG111 0000 W3729
	SB 2420	24	147	63	SB 9212	27.3	208	GHG111 0000 W2420
	SB 0722	18	187	50	SB 9211	22	150	GHG111 0000 W0722
	SB 0715	12	151	100	SB 9214	15	150	GHG111 0000 W0715
	SB 3715	12	61	100	SB 9212	15	291	GHG111 0000 W3715
	SB 3710	6	42	160	SB 9213	10	300	GHG111 0000 W3710
DC Double								
	SB 0779	24/24	340/340	50/50	SB 9211	28/28	93/93	GHG111 0000 W0779
	SB 4420	24/24	146/146	63/63	SB 9213	28/28	213/213	GHG111 0000 W4420
	SB 4410	24/24	202/202	63/63	SB 9213	28/28	150/150	GHG111 0000 W4410
	SB 0796	23/27	339/435	50/50	SB 9211	26/20	87/51	GHG111 0000 W0796
	SB 0768	19/19	187/187	50/50	SB 9211	22/22	147/147	GHG111 0000 W0768
	SB 0767	12/12	157/157	100/100	SB 9214	15/15	150/150	GHG111 0000 W0767
	SB 3250	12/12	48/48	100/100	SB 9214	15/15	387/387	GHG111 0000 W3250
	SB 1350	10/10	81/488	150/150	SB 9216	11.7/11.7	174/25	GHG111 0000 W1350
	SB 1351	10/10	488/488	150/150	SB 9216	11.7/11.7	25/25	GHG111 0000 W1351
	SB 0764	10/10	1026	50/50	SB 9211	12/12	12/12	GHG111 0000 W0764
DC Floating								
	SB 1301	+6/-6	63	100/100	SB 9214	17.2	414	GHG111 0000 W1301
	SB 1302	+9/-9	1167	100/100	SB 9214	25.2	25	GHG111 0000 W1302
	SB 1303	+12/-12	160	100/100	SB 9214	29.4	248	GHG111 0000 W1303
Signal + Return								
	SB 2427	24/24	278/31 + 1.2 V	50/50	SB 9211	26.3	102/0	GHG111 0000 W2427
	SB 2787	24/24	254/31 + 1.2 V	50/50	SB 9211	28	120/0	GHG111 0000 W2787
	SB 1787	24/24	326/31 + 1.2 V	50/50	SB 9211	28	93/0	GHG111 0000 W1787

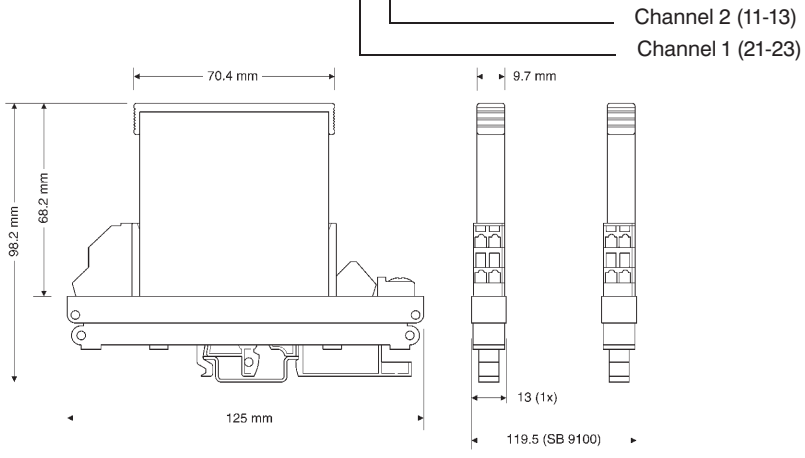


Note: Barriers will be supplied without sockets.
Please order backplane separately (see page 482).

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Safety Barriers

	Type No.	V_n (V)	Rmax (ohms)	Fuse (mA)	Replaceable Fuse	V_{oc} (V)	I_{sc} (mA)	Catalog Number
DC Double Return								
	SB 0786	24/24	31+1.2V/ 31+1.2V	50/50	SB 9211	28/28	0/0	GHG111 0000 W0786
AC Standard								
	SB 1602	12	54	100	SB 9214	16.8	390	GHG111 0000 W1602
	SB 2710	6	85	50	SB 9211	10	200	GHG111 0000 W2710
AC Double								
	SB 0766	10/10	183/183	50/50	SB 9211	12/12	80/80	GHG111 0000 W0766
	SB 2764	10/10	1077/1077	50/50	SB 9211	12/12	12/12	GHG111 0000 W2764
	SB 1766	9.8/9.8	90/90	50/50	SB 9211	12/12	160/160	GHG111 0000 W1766
	SB 1761	7/7	385/385	50/50	SB 9211	9/9	25/25	GHG111 0000 W1761
	SB 0761	6/6	142/142	100/100	SB 9214	9/9	100/100	GHG111 0000 W0761
	SB 0201	2/2	35/35	160/160	SB 9216	5.3/5.3	178/178	GHG111 0000 W0201
	SB 0751	0.35/0.35	10.8/10.8	160/160	SB 9216	1.2/1.2	238/238	GHG111 0000 W0751
Universal								
	SB 0778	24/24	656/656	50/50	SB 9211	28/28	47/47	GHG111 0000 W0778
	SB 0722	18/18	340/340	50/50	SB 9211	22/22	73/73	GHG111 0000 W0722
	SB 0765	12/12	135/135	50/50	SB 9211	15/15	150/150	GHG111 0000 W0765
	SB 0760	6/6	85/85	50/50	SB 9211	10/10	200/200	GHG111 0000 W0760



Dimensions



Terminal Connections

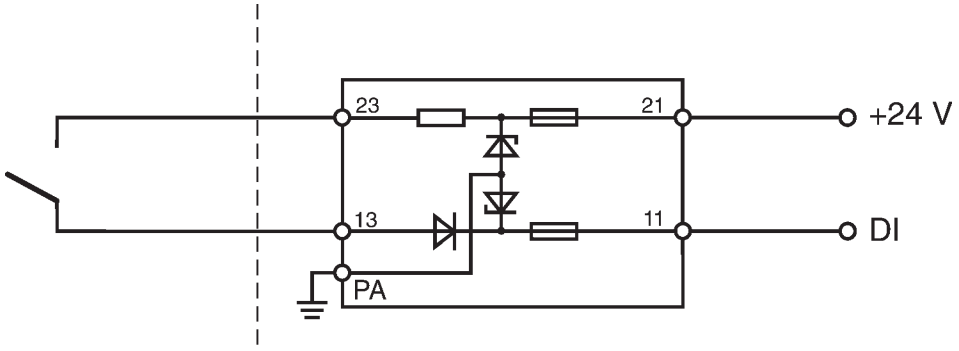
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Digital Input

Floating Circuit - 1 channel

- Power supply voltage: 24VDC
- End-to-end resistance 285 Ω +1.2V
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W2427 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W2787 & GHG 110 0000 W0901 (socket)

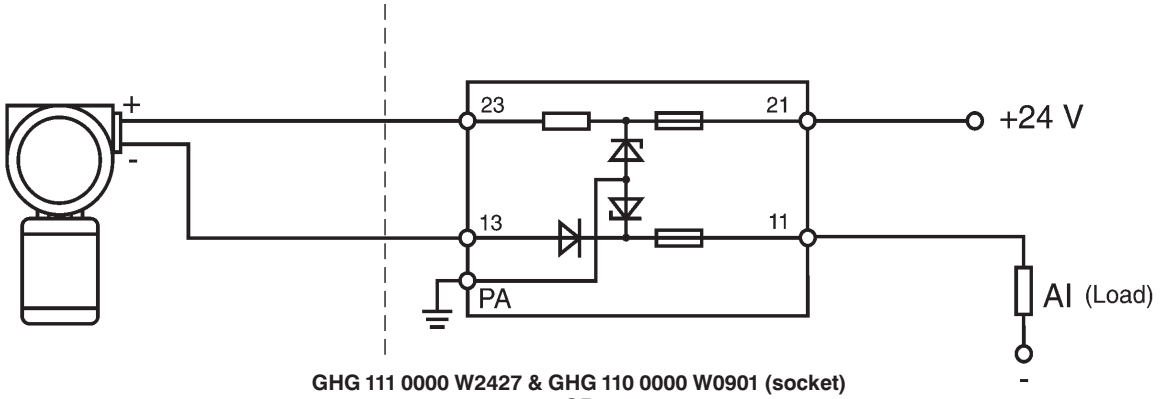
Grounded Circuit - 2 channel

- Lowest cost solution

Analog Input (4-20 mA Transmitters)

Floating Circuit - Safety barrier circuit

- Lowest possible barrier voltage drop:
  6.6V maximum (@ 20 mA)
- Power supply voltage: 24VDC
- No restrictions for programming SMART transmitters
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W2427 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W2787 & GHG 110 0000 W0901 (socket)

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

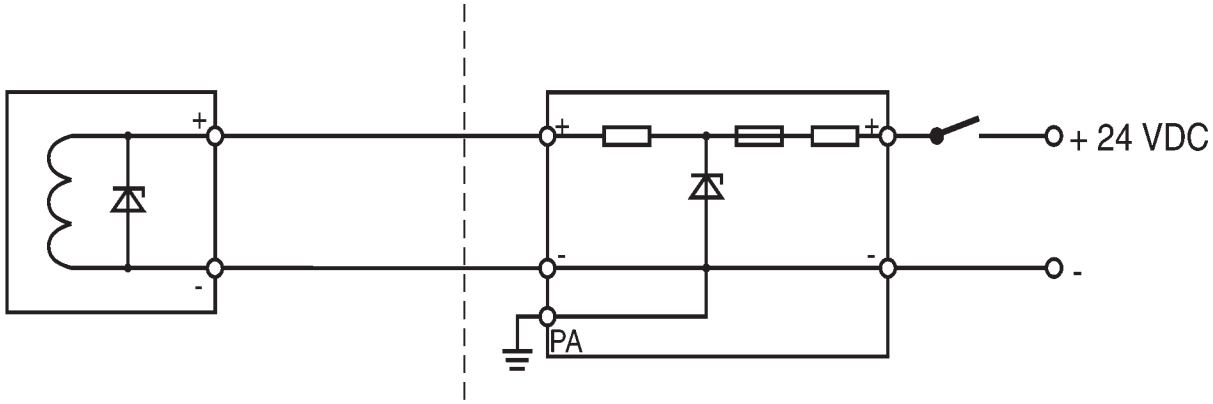
Digital Output (Solenoid valves, LEDs or Audible Alarms)

Grounded Circuit - 1 channel

- Power supply voltage: to 24VDC
- End-to-end resistance: 326 Ω
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G

Grounded Circuit - 1 channel - Groups C-G

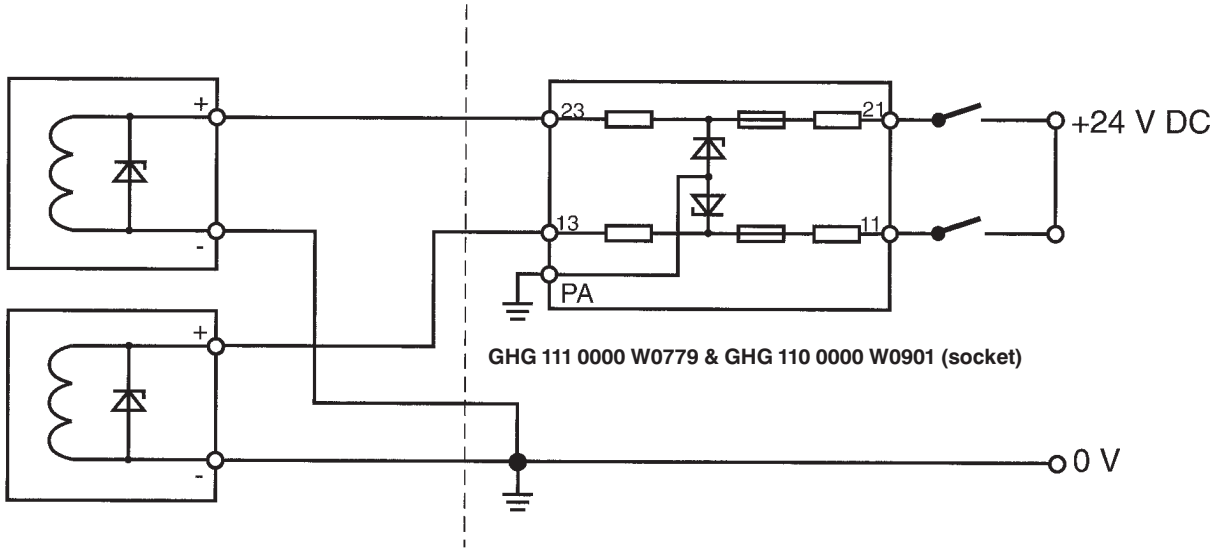
- Low resistance barrier
- Power supply voltage: to 24VDC
- End-to-end resistance: 187 Ω
- Smallest IS barrier available
- IS connection for: Zone 1, Group IIB
  Class I, II, III, Div. 1, Gr. C-G



GHG 111 0000 W0728 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W3729 & GHG 110 0000 W0901 (socket)

Grounded Circuit - 2 channel

- Power supply voltage: to 24VDC
  End-to-end resistance: 326 Ω/channel
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



GHG 111 0000 W0779 & GHG 110 0000 W0901 (socket)

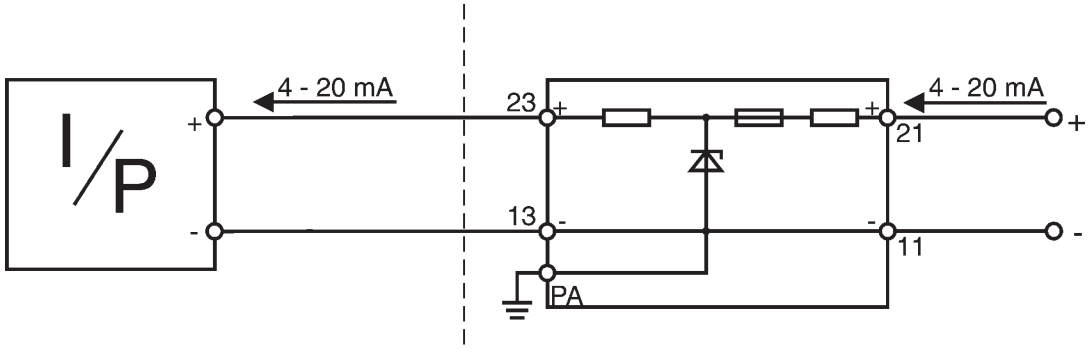
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

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Analog Output (4-20 mA Transducers)

Grounded Circuit - 1 channel

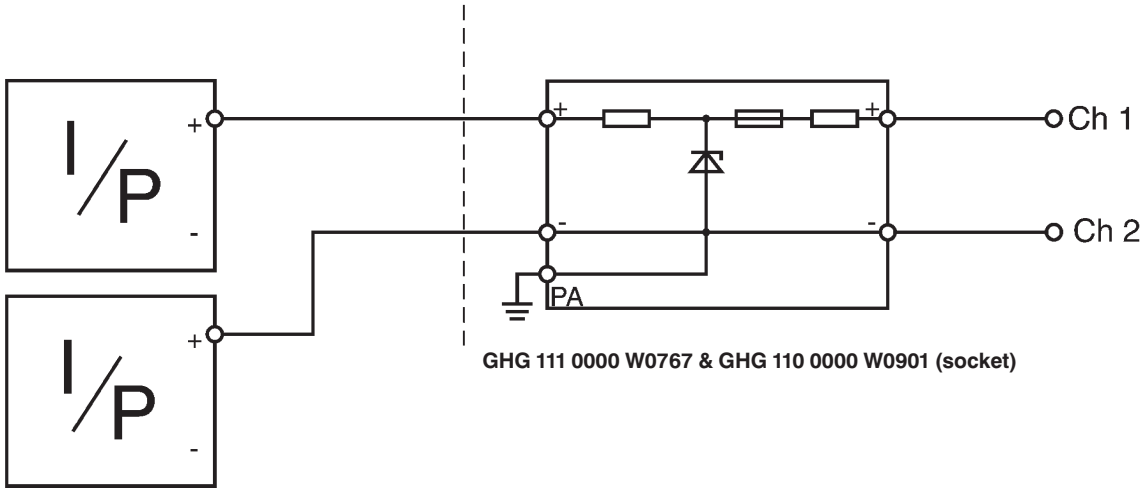
- Smallest IS barrier available
- Short circuit proof
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0728 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W0715 & GHG 110 0000 W0901 (socket)

Grounded Circuit - 2 channels

- Smallest IS barrier available
- Short circuit proof
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



GHG 111 0000 W0767 & GHG 110 0000 W0901 (socket)

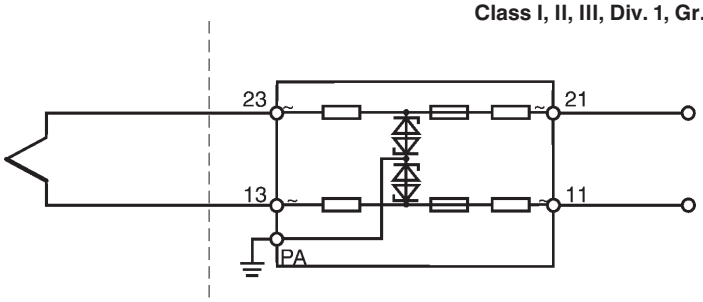
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Temperature Sensors (Thermocouples, RTDs)

One safety barrier for all applications

Thermocouple

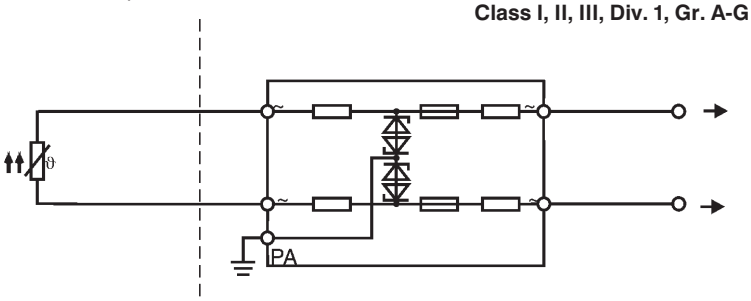
- Low resistance solution (70 Ω)
- Short circuit proof
- Lowest cost solution for thermocouple available
- **Smallest thermocouple IS barrier available**
- **Suited for all thermocouples**
- **IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G**



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

2-Wire RTD

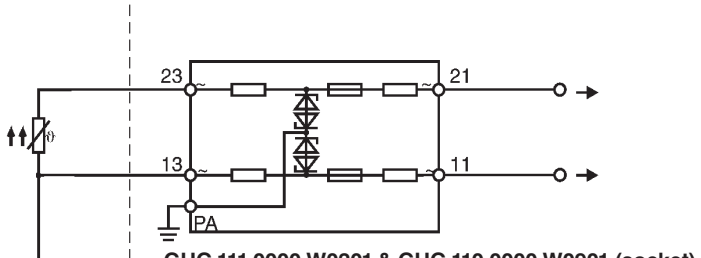
- Lowest resistance solution (70 Ω)
- Short circuit proof
- **Smallest RTD IS barrier available**
- **IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G**



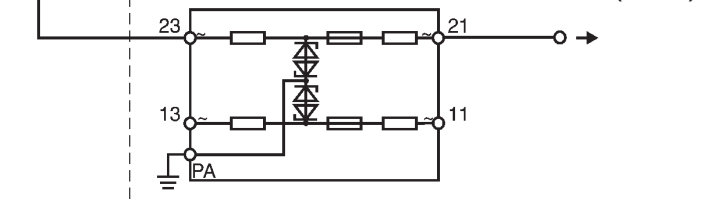
GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

3+4 Wire RTD

- Lowest resistance solution (70 Ω)
- Short circuit proof
- Lowest temperature coefficient
- **Smallest RTD IS barrier available**
- **IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G**



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

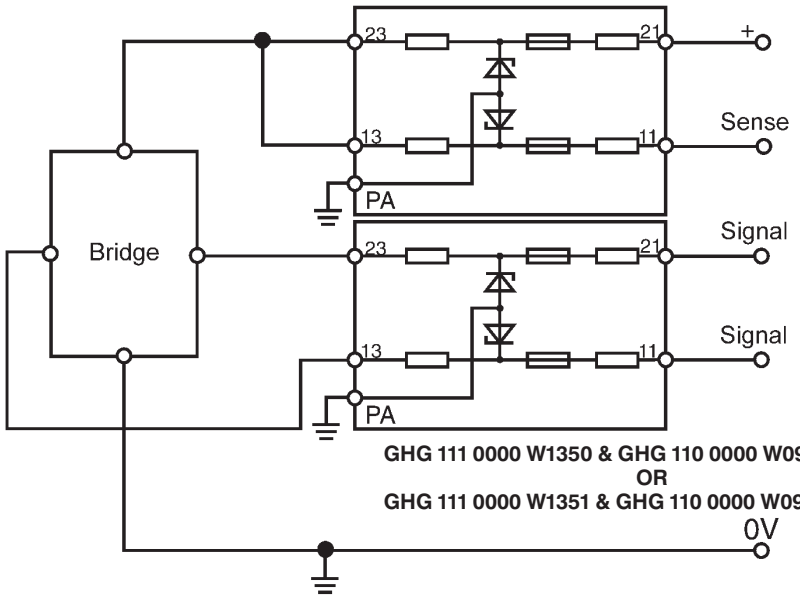
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Load Cells

10VDC Supply - Sense

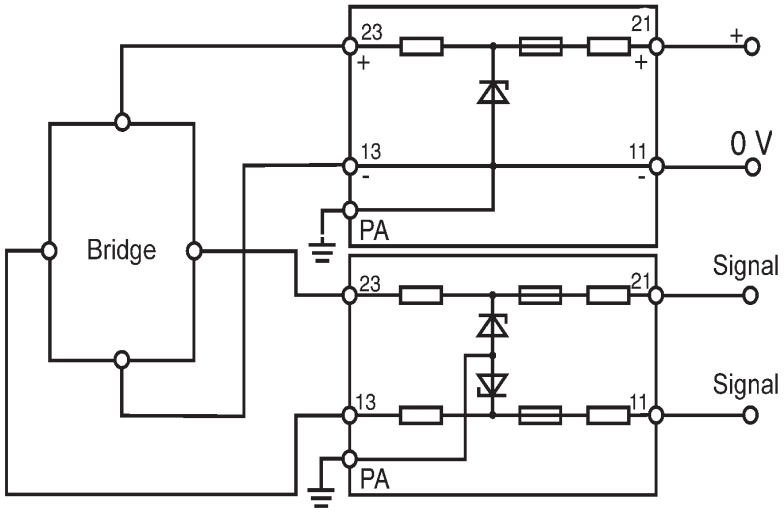
- Lowest resistance solution (80 Ω maximum)
- 8.1V excitation at 350 Ω bridge
- Only two barriers required for complete system
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



GHG 111 0000 W1350 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W1351 & GHG 110 0000 W0901 (socket)

12VDC Supply - Without Sense

- Lowest resistance solution (53 Ω maximum)
- 10.4V excitation at 350 Ω bridge
- Only two barriers required for complete system
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
  Class I, II, III, Div. 1, Gr. A-G



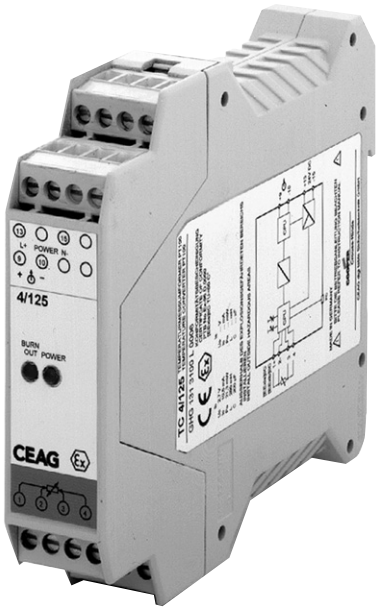
GHG 111 0000 W3715 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W1351 & GHG 110 0000 W0901 (socket)

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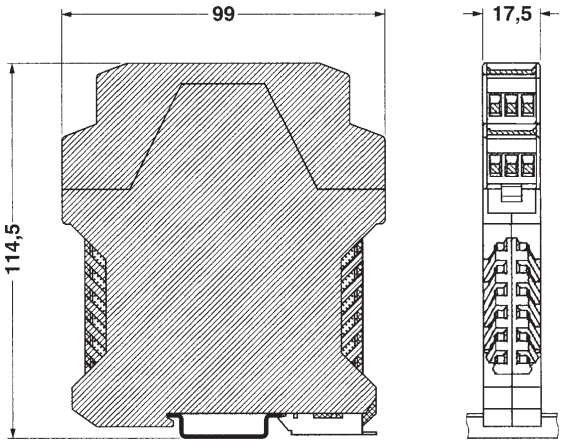
Isolators, also referred to as transformer isolated barriers, are intrinsically safe devices which do not require a ground. Isolators contain additional electronics to isolate and condition the signals between the hazardous area and control room.

Each Cooper Crouse-Hinds CEAG isolator is designed for specific applications making them easy to select. Each isolator has plug-in terminals so they can be prewired or quickly replaced. In addition, each isolator has LEDs to monitor and show the status of each circuit.



Features	Benefit to You
Plug-in terminals	Allows for prewiring and fast, easy connections
Snaps onto standard 35mm DIN rail	No extra hardware required
LEDs on each isolator	Monitor and display circuit status
No grounding required	No extra connection
Small enclosures, 22.5mm wide	Space savings in cabinet
Built application-specific	Easy selection on page 491
Single or double channels	Flexibility with maximum circuit density
Low energy consumption	Smaller power supplies required
UL, cUL & worldwide approvals	Global applications





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	Selection chart	Product	Catalog Number	Page
D/I	Relay output	2/942	GHG 122 3121 D 1003** (120 VAC)	492
			GHG 122 3121 D 1009 (24 VDC)	492
	Transistor output PLC or hi speed applications	2/941	GHG 122 3121 C 1009** (24 VDC)	493
A/I	SMART/ Fully isolated	6/420	GHG 124 3111 K 1206	495
	SMART/ Field device isolated	8/420	GHG 124 3111 M 1109**	494
	NON SMART/ Fully isolated	7/420	GHG 124 3111 L 1006	496
D/O	Fully insulated	7/915	GHG 138 3311 F X009	498
	Loop powered	6/915	GHG 138 3311 E X008**	497
A/O	SMART/ Standard	6/304	GHG 125 3310 K 0306	500
	NON SMART/ Standard	5/304	GHG 125 3310 H 0306	501
	NON SMART/ Loop powered	5/303	GHG 126 3321 D 1008**	499
RTD	Standard	4/125	GHG 131 3100 L 0006**	503
TC	Standard	4/127	GHG 131 3100 M 0006**	504

Switches
Proximity Switches
Electronic Switches
4-20 mA (SMART) Transmitter
4-20 mA current source
Solenoid
LED
4-20 mA (SMART) i/p converter
4-20 mA Display
RTD
Thermo-couple

**** Normally Stocked**

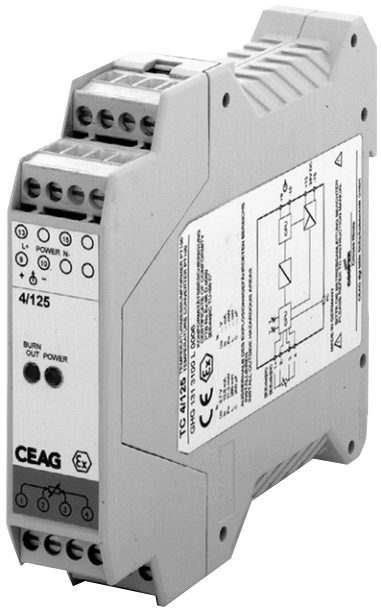
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8C Digital Input Switch Amplifier Relay Output Model 2/942

www.isbarriers.com

Product Features:

- NAMUR inputs, mechanical contacts
- DIN rail mounted
- 1 or 2 channels
- Line monitoring
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL and CUL approvals



Technical Data:

Input	NAMUR specification
Output relay	1 change over
Voltage rating	250VAC/100VDC
Current rating	5AAC/2ADC
Power rating	100VA/50W
Mech. life time	10^6 operations (20 Hz max.)
Phase reversal	via front switch
Power consumption at	230V/2.2W per channel 24V/0.55W per channel
Ambient temperature	-20°C ... +60°C
Relative humidity	<75% (average) <95% keep dry

Explosion Protection:

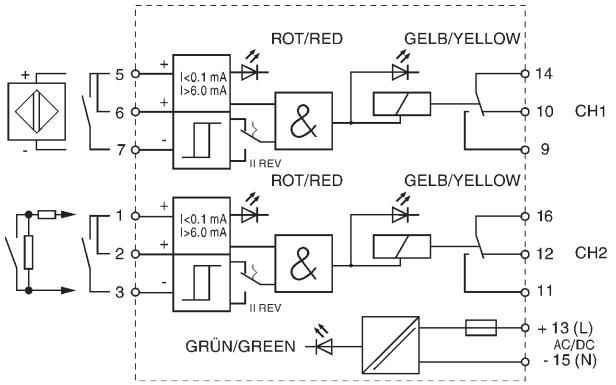
Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 11V$, $I_{sc} \leq 26$ mA



Ordering Information:

Type No.	Channels	Power supply	Ex-protection	Catalog No.
2/942	1 channel	230VAC	ia/ib	GHG 122 3111 D 1002
2/942	1 channel	120VAC	ia/ib	GHG 122 3111 D 1003
2/942	1 channel	24VDC	ia/ib	GHG 122 3111 D 1009
2/942	2 channels	230VAC	ia/ib	GHG 122 3121 D 1002
2/942	2 channels	120VAC	ia/ib	GHG 122 3121 D 1003*
2/942	2 channels	24VDC	ia/ib	GHG 122 3121 D 1009

*** Normally Stocked**



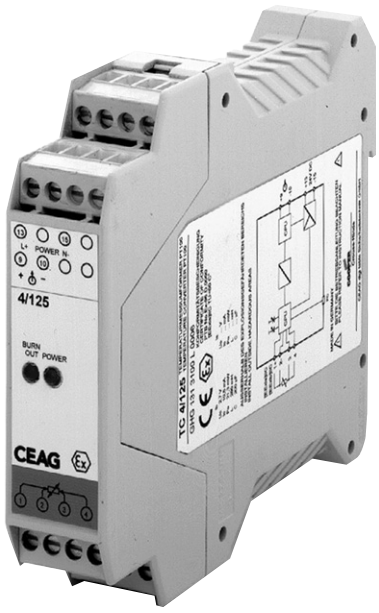
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Digital Input Switch Amplifier
Transistor Output Model 2/941

www.isbarriers.com

Product Features:

- NAMUR inputs, mechanical contacts, or optocouplers
- DIN rail mounted
- 1 or 2 channels
- Line monitoring
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL, CUL



Technical Data:

Input	NAMUR specifications
Transistor output	(npn open emitter) 1 or 2 outputs/channel
Switches per channel	passive external +24V (30V max.) active internal +24V
Current rating	100 mA max. (short circuit protected)
Phase reversal	via front switch
Power supply	20 - 30VDC
Power consumption	0.5W per channel
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

Explosion Protection:

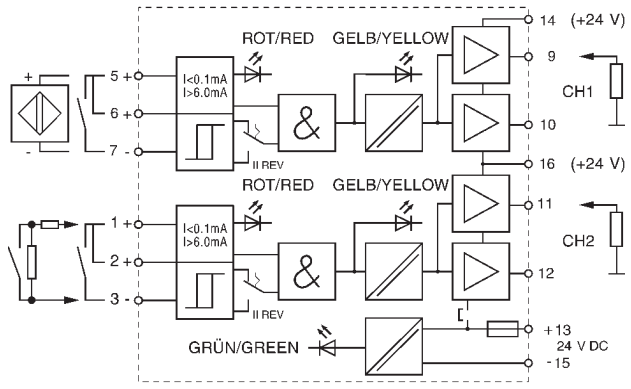
Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤11 V. I_{sc} ≤26 mA



Ordering Information:

Type No.	Output	Ex-protec.	Catalog No.
2/941	2 channels 700 Hz, 1 passive output each	ia/ib	GHG 122 3121 C 1009*
2/941	2 channels 700 Hz, 2 passive outputs each	ia/ib	GHG 122 3121 C 2009
2/941	2 channels 700 Hz, 1 active output	ia/ib	GHG 122 3121 C 3009
2/941	1 channel 1200 Hz, 1 passive output	ia/ib	GHG 122 3151 C 1009
2/941	1 channel 1200 Hz, 2 passive outputs	ia/ib	GHG 122 3151 C 2009

*** Normally Stocked**



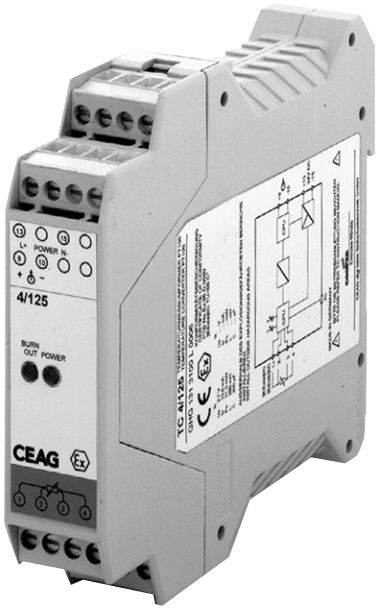
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

8C Analog Input SMART-Transmitter Power Supply Model 8/420

www.isbarriers.com

Product Features:

- Power supply for 2- and 3-wire 4-20 mA transmitters
- SMART communication for all major transmitter brands
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CE certified
- CENELEC, UL, CUL



Technical Data:

Field device power supply	17V at 20mA
Load	800 Ω (24V)
SMART communication	across load or via front socket
Response time	2.2 ms (10 - 90%)
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Band width	0 - 12KHz
Power supply	20 - 30VDC
Power consumption	2.1W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



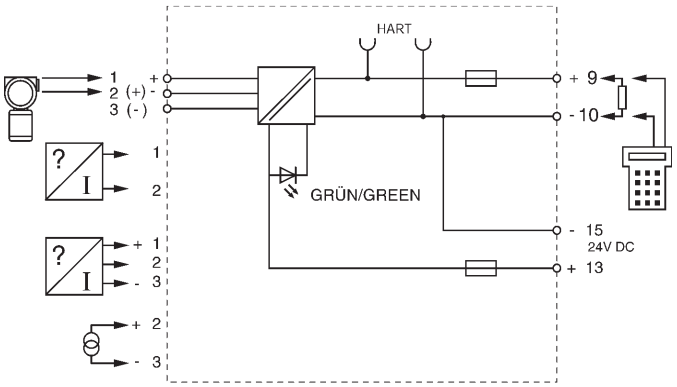
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤28V, I_{sc} ≤98mA

Ordering Information:

Type No.	Ex-protection	Catalog No.
8/420	ia/ib	GHG 124 3111 M 1109*

*** Normally Stocked**



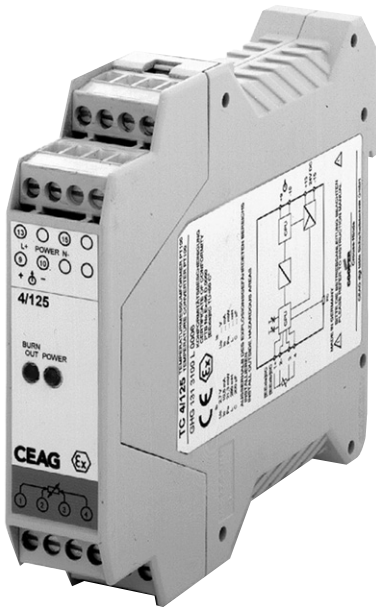
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds
COOPER Crouse-Hinds

Analog Input SMART-Transmitter Power Supply Model 6/420

www.isbarriers.com

Product Features:

- Power supply for 2- and 3-wire and 4-20 mA transmitters
- SMART communication for all major brands
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL



Technical Data:

Field device power supply	17V at 20 mA (V_2 = 28 V), 15V at 20 mA (V_2 = 24 V)
Load	800 Ω
SMART communication	across load or via front socket
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Response time	2.2 ms (10 - 90%)
Band width	0 - 12 KHz
Power supply	20 - 26VAC 20 - 30VDC
Power consumption	3.1VA/2.2W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

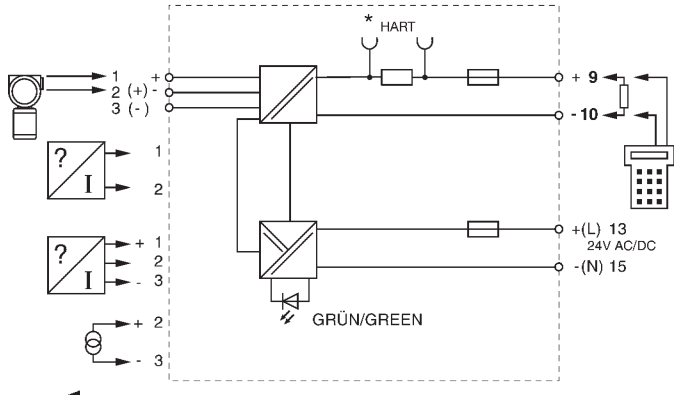


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Ex-protection	Catalog No.
6/420-1	ia/ib, V_{oc} ≤28V, I_{sc} ≤98mA	GHG 124 3111 K 1206
6/420-4	ia/ib, V_{oc} ≤24V, I_{sc} ≤76mA	GHG 124 3411 K 1206



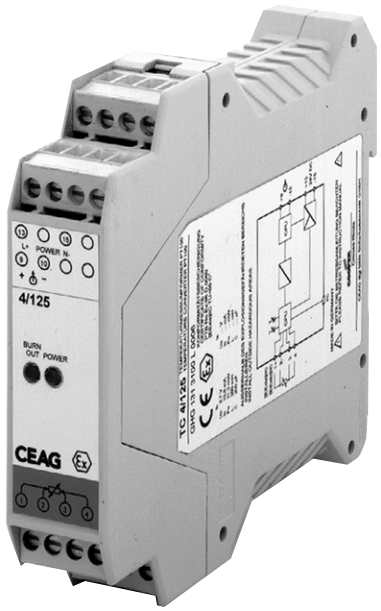
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

8C Analog Input Transmitter Power Supply Model 7/420

www.isbarriers.com

Product Features:

- Power supply for 2- and 3-wire 4-20 mA transmitters
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL



Technical Data:

Field device power supply	17V at 20mA (V_z = 28V), 15V at 20mA (V_z = 24V)
Load	1000 Ω
Response time	2.2 ms (10-90%)
Linearity	< 0.1%
Temperature drift	< 0.1%/10 K
Power supply	20 - 26VAC 18 - 30VDC
Power consumption	3.1VA/2.2W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

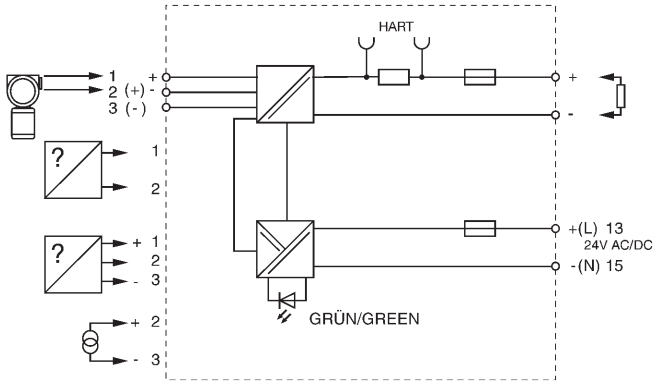


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Ex-protection	Catalog No.
7/420	ia/ib, V_{oc} ≤28V, I_{sc} ≤98mA	GHG 124 3111 L 1006
7/420	ia/ib, V_{oc} ≤24V, I_{sc} ≤76mA	GHG 124 3411 L 1006



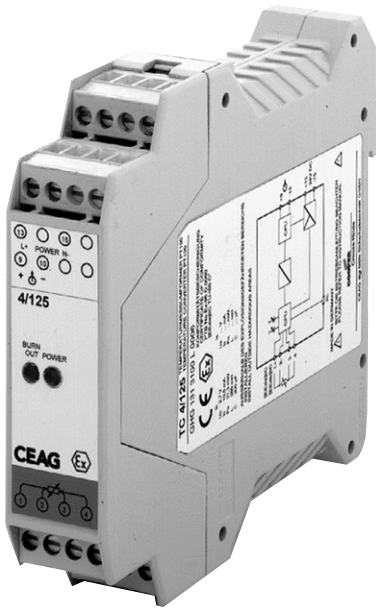
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Digital Output Loop Powered
Model 6/915

www.isbarriers.com

Product Features:

- Drives solenoid valves, acoustic alarms, LED's
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL, CUL



Technical Data:

Valve current	$I = V_o/(R_a+R_{valve})$
Power supply	18 - 30VDC loop powered
Input current	1.2 ... 2x output current
Response time	20 ms
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

Explosion Protection:

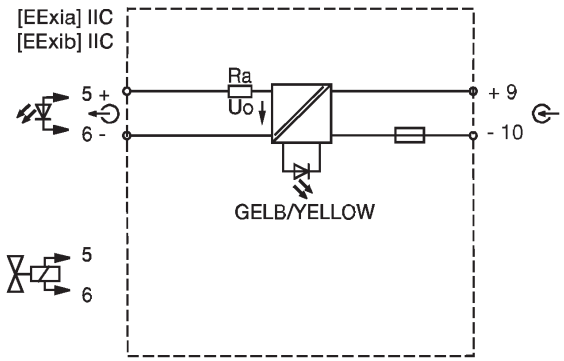
Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Safety Values		Drive Capability		Catalog No.
	V_{oc} [V]	I_{sc} [mA]	V_o [V]	R_a [Ω]	
6/915-0	4.9	200	4	31	GHG 138 3311 E 0008
6/915-1	7.9	148	6.5	64	GHG 138 3311 E 1008
6/915-2	12.6	150	12	115	GHG 138 3311 E 2008
6/915-3	15.8	175	14	122	GHG 138 3311 E 3008
6/915-4	18.7	144	17	175	GHG 138 3311 E 4008
6/915-5	18.7	282	17	115	GHG 138 3311 E 5008
6/915-6	23.1	85	21	340	GHG 138 3311 E 6008
6/915-7	27.3	96	24	370	GHG 138 3311 E 7008*
6/915-8	23.1	69	20.6	404	GHG 138 3311 E 8008
6/915-9	18.7	329	16.6	103	GHG 138 3311 E 9008

*** Normally Stocked**





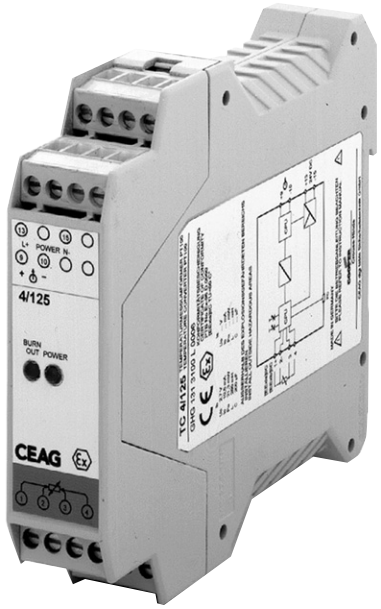
 Copyright© 2006 Cooper Crouse-Hinds

8C Digital Output Model 7/915

www.isbarriers.com

Product Features:

- Fully isolated
- Drives solenoid valves, acoustic alarms, LED's
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CENELEC, UL, CUL Approvals



Technical Data:

Input drive	on: 10 - 30V off: 0 - 1.5V
Input resistance	4 kΩ
Valve current	$I = V_0/(R_a + R_{valve})$
Power supply	20 - 30VDC
Power consumption	approx. 1W
Response time	20 ms
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

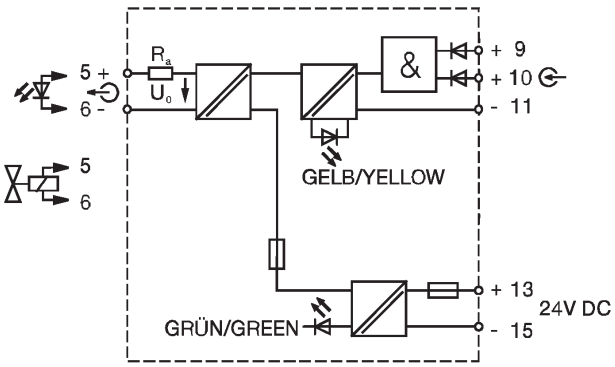
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Safety Values		Drive Capability		Catalog No.
	V_{oc} [V]	I_{sc} [mA]	V_o [V]	R_a [Ω]	
7/915-0	4.9	200	4	31	GHG 138 3311 F 0009
7/915-1	7.9	148	6.5	64	GHG 138 3311 F 1009
7/915-2	12.6	150	12	115	GHG 138 3311 F 2009
7/915-3	15.8	175	14	122	GHG 138 3311 F 3009
7/915-4	18.7	144	17	175	GHG 138 3311 F 4009
7/915-5	18.7	282	17	115	GHG 138 3311 F 5009
7/915-6	23.1	85	21	340	GHG 138 3311 F 6009
7/915-7	27.3	96	24	370	GHG 138 3311 F 7009
7/915-8	23.1	69	20.6	404	GHG 138 3311 F 8009
7/915-9	18.7	329	16.6	103	GHG 138 3311 F 9009





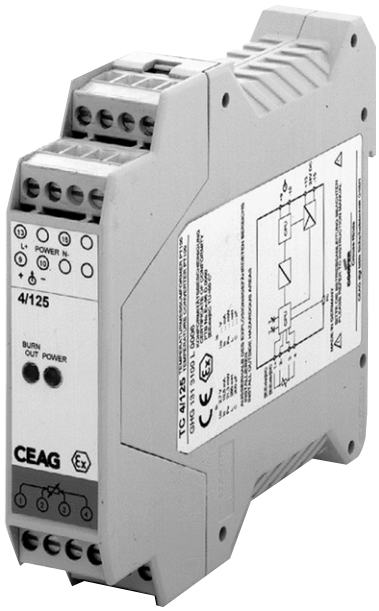
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Analog Output Loop Powered
Model 5/303

www.isbarriers.com

Product Features:

- 1 or 2 channels
- Galvanic isolation
- Analog output for 4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CE certified
- CENELEC, UL, CUL



Technical Data:

Input voltage	8.4V + 0.02 x load x (V/Ω)
Linearity	< 0.1%
Temperature drift	< 0.1% / 10 K
Power supply	8.4 - 30VDC loop powered
Dimensions	see drawing
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

Explosion Protection:

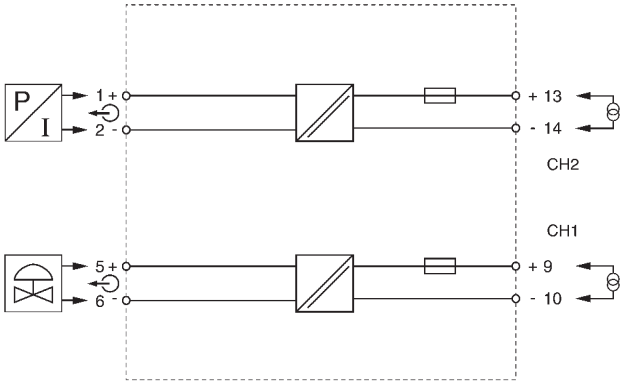
Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤12,6V I_{sc} ≤95 mA



Ordering Information:

Type No.	Channels	Ex-protection	Catalog No.
5/303	1 channel	ia	GHG 126 3311 D 1008
5/303	2 channels	ia	GHG 126 3321 D 1008*

*** Normally Stocked**



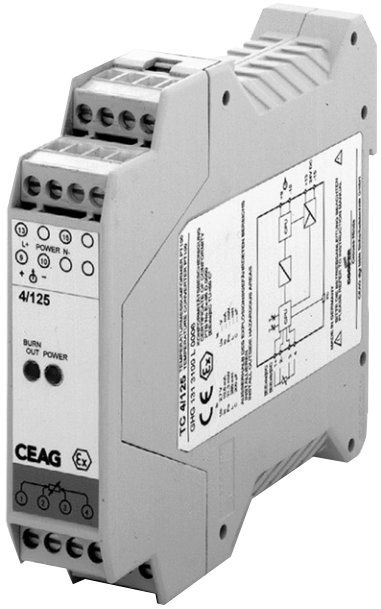
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

8C Analog Output SMART Output Isolator Model 6/304

www.isbarriers.com

Product Features:

- Fully isolated
- Output isolator for 0/4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- SMART Communication
- CE certified
- CENELEC, UL, CUL



Technical Data:

Input resistence	50Ω/250Ω (Smart)
Max. load 22.5V Power supply 20V Power supply	600 Ω 420 Ω
Linearity	< 0.1
Temperature drift	< 0.1%/10 K
Response time	100 ms (10 - 90%)
Power supply	20 - 26VAC 20 - 30VDC
Power consumption	2.3 VA/1.4 W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

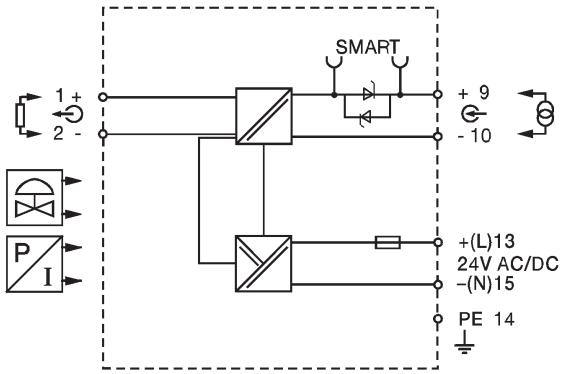
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤28V I_{sc} ≤93 mA



Ordering Information:

Type No.	Ex-protection	Catalog No.
6/304	ia/ib	GHG 125 3310 K 0306



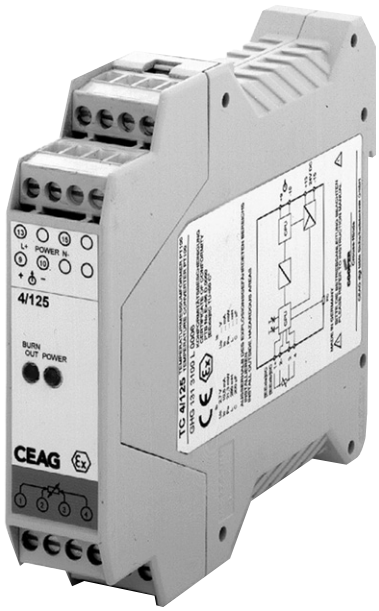
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Analog Output Isolator
Model 5/304

www.isbarriers.com

Product Features:

- Output isolator for 0/4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL



Technical Data:

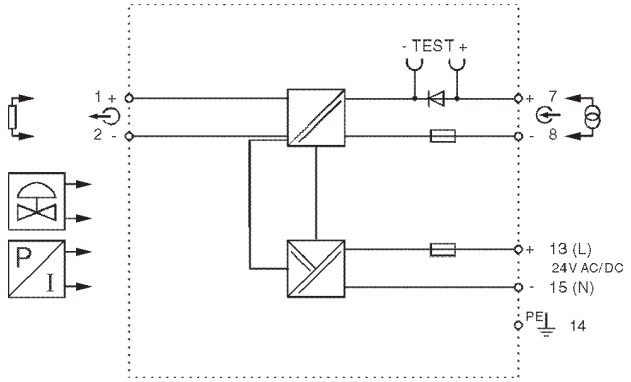
Input resistance	25 Ω
Max. load at 22.5V Power supply 20V Power supply	500 Ω 320 Ω
Linearity	< 0.1
Temperature drift	< 0.1 % / 10 K
Response time	100 ms (10 - 90%)
Power supply	18 - 26.4VAC 18 - 30VDC
Power consumption	2.3VA / 1.4W
Ambient temperature	-20°C ... +60°C
Relatice humidity	< 75% (average) < 95% keep dry

Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤12.6V I_{sc} ≤76 mA

Ordering Information:

Type No.	Ex-protection	Catalog No.
5/304	ia/ib	GHG 125 3310 H 0306



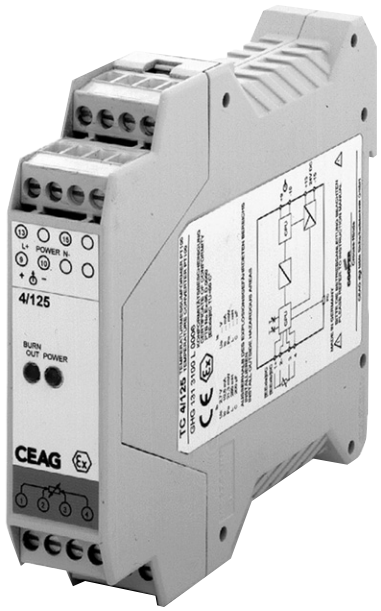
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

8C Analog Output with Level Shift Option Model 7/304

www.isbarriers.com

Product Features:

- Fully isolated
- Output isolator for 4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Level Shift Option
- Current/voltage converter



Technical Data:

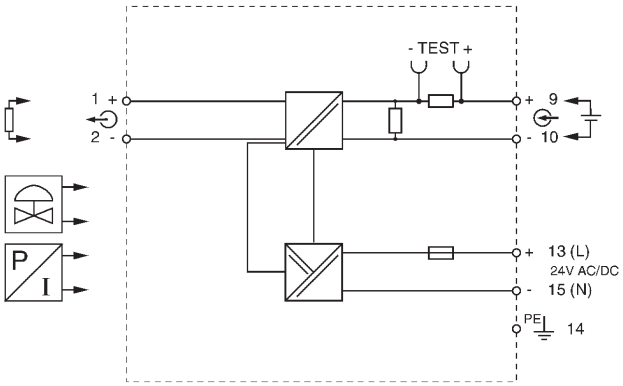
Input resistance		25 Ω
Max. load at	22.5V Power supply	500 Ω
	20V Power supply	320 Ω
Linearity		< 0.1
Temperature drift		< 0.1%/10 K
Response time		100 ms (10 - 90%)
Power supply		18 - 26.4VAC (2.3VA) 18 - 30VDC(1.4W)
Ambient temperature		-20°C ... +60°C
Relatice humidity		< 75% (average) < 95% keep dry

Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤12.6V, I_0 ≤94 mA
	V_{sc} ≤28V, I_0 ≤93 mA

Ordering Information:

Type No.	Input	Output	Ex-protection	Catalog No.
7/304	0/4-20 mA	0/4-20 mA	ia/ib	GHG 125 3310 L 0306
7/304	0-20 mA	4-20 mA	ia/ib	GHG 125 3310 L 0106
7/304	1-5V	4-20 mA	ia/ib	GHG 125 3313 L 0306
7/304	1-10V	4-20 mA	ia/ib	GHG 125 3315 L 0306



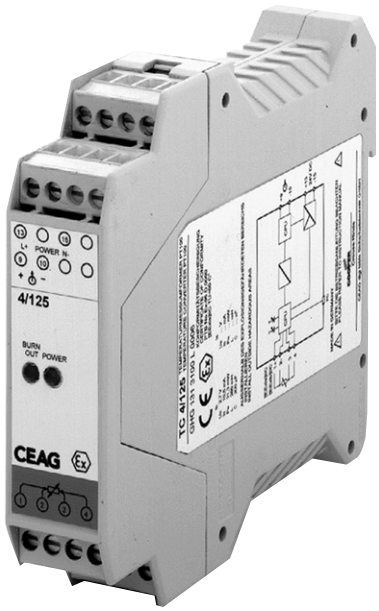
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RTD Temperature Converter
Model 4/125

www.isbarriers.com

Product Features

- Galvanic isolation
- 2, 3 or 4-wire-RTD converter
- DIN rail mounted
- Short circuit protected output
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- OFF - LINE programmable
- CE certified
- CENELEC, UL, CUL



Technical Data:

Range	-200°C +850°C, smallest span 20 Ω
Output	0/4-20 mA
Burn-out feature	Output selectable 0, > 100%, frozen
Load	< 750 Ω
Line resistance	< 50 Ω
Linearity	< 0.1%
Temperature drift	< 0.1% / 10K
Response time	< 150 ... 350 ms mode dependent
Power supply	20.4 - 30VDC (< 1.5 W)
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

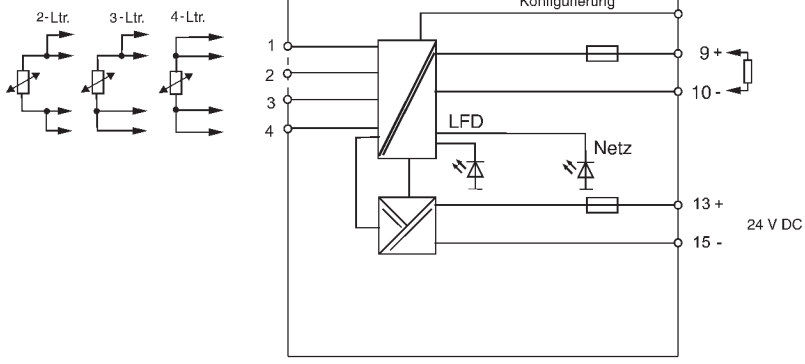
Explosion Protection:

Category	[EEx ia/ib] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤2.7V, I_{sc} ≤10.6 mA

Ordering Information:

Type No.	Ex-protection	Catalog No.
4/125	ia/ib	GHG 131 3100 L 0006*
Programming Cable		GHG 139 0028 C 0000

*** Normally Stocked**



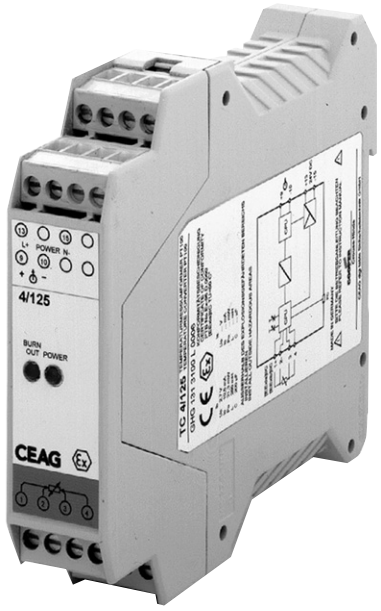
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

8C Thermocoupler Converter Model 4/127

www.isbarriers.com

Product Features:

- Galvanic isolation
- Converter for all thermocouplers
- mV Input
- DIN rail mounted
- Short circuit protected output
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- OFF - LINE programmable
- CE certification
- CENELEC, UL, CUL



Technical Data:

Range (mV)	-75mV ... + 75mV (smallest range 5mV for 0.1%)
Thermocouple	B, E, J, K, R, S, T
DIN/IEC 43710	L, U, and Platinum
Compensation	Internal or External
Output	0/4-20 mA
Load	< 750 Ω
Burn-out feature	Output selectable 0, > 100%, frozen
Line fault detection (LFD)	> 1 kΩ
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Response time	< 150...600 ms mode dependent
Power supply	20.4 - 30VDC (< 1.5W)
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

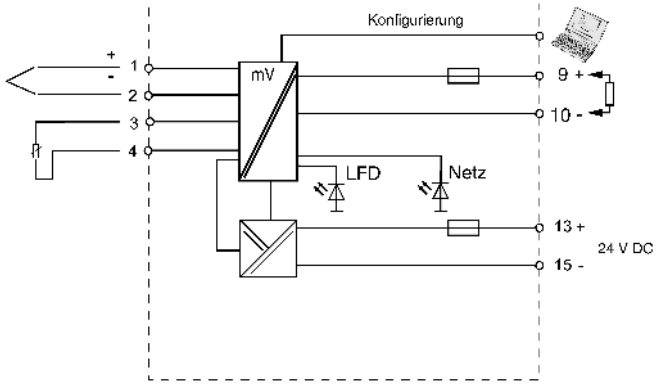
Explosion Protection:

Category	[EEx ia/ib] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V_{oc} ≤1.8V, I_{sc} ≤21.6 mA

Ordering Information:

Type No.	Ex-protection	Catalog No.
4/127	ia/ib	GHG 131 3100 M 0006*
Programming Cable		GHG 139 0028 C 0000

*** Normally Stocked**



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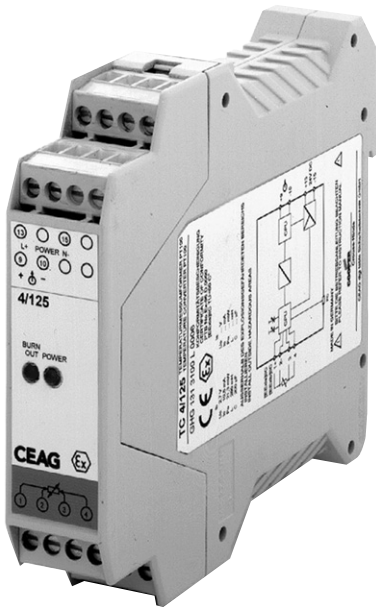
COOPER Crouse-Hinds

Trip Amplifier with 1-2 Trip Points
Model 3/209

www.isbarriers.com

Product Features:

- Programmable external set points, gradients, ratios, min./max.-selection
- Digital display in engineering units
- Self monitoring
- EMC to IEC 1000 and EN 50081-50082
- Galvanic separation between input, power supply and contacts
- Line monitor
- CE certified
- CENELEC, UL, CUL

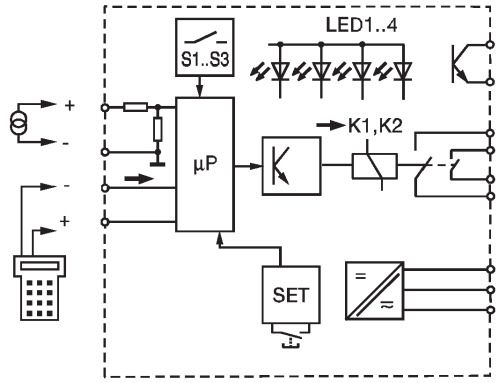


Technical Data:

Input	0/4-20 mA, 0/1-5V
Input impedance	25 Ω (mA) 10 kΩ (V)
Output Relay	
Voltage rating	250VAC/150VDC
Current rating	2 AAC/DC
Power rating	60VA/30W
Mechanical life	10^6 operations
Electrical life	0.5 10^6 operations
Response time	>20 ms (variable)
Transistor	24V max. 30VDC/100 mA
Voltage drop	2V
Response time	> 10 ms (variable)
Temperature drift	< 0.1%/10 K
Power supply	20 - 26.4VAC 20 - 30VDC
Power consumption	2VA/1.5W
Weight	300g
Ambient temperature	-10°C... +60°C
Relative humidity	< 75% (Average)

Ordering Information:

Input	Output	Trip relays	Catalog No.
0/4-20 mA	2 relays	1 min./1 max.	GHG 137 2011 E 1016
0/4-20 mA	1 relay, 1 transistor	1 min./1 max.	GHG 137 2011 E 9016



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Notes Page

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Apparatus
Section A



COOPER Crouse-Hinds

A Apparatus

Table of Contents

Section A of the Cooper Crouse-Hinds catalog contains the following product groupings:

Section 1A

Panelboards

(for use in hazardous and non-hazardous areas)

For central control and protection of a large number of feeder or branch circuits and for housing of circuit breakers.

D2L
D2PB
D2D
EPL
LP
EXD
GUSC
D2Z
Unibody

Section 2A

Switches

(for use in hazardous and non-hazardous areas)

Switches and enclosures for disconnecting motor, lighting and other circuits.

EDS, EDSC
EFD, EFDC
FLS
FSPC
GUSC
WST
GHG
EBM
NRS
6810 Series
7810 Series
N2RS

Section 3A

Signals and Alarms

(for use in hazardous and non-hazardous areas)

Visible and audible signals and alarms and telephones for inclusion in system to alert personnel to abnormal conditions, signaling and communication.

ESR . . . . . .Bells
ETW . . . . . .Telephones
D2TW. . . . . .Telephones
ETR . . . . . .Ringers
ETC . . . . . .Phone relay
ETH . . . . . .Flextone™ Audible Signaling Devices
ETH . . . . . .Horns
EX. . . . . .Strobe Lights, Steady-On Beacons, Rotating Beacons (See Section 11L)
WH . . . . . .Horns
W2H. . . . . .Audible Signaling Devices
VDAS . . . . . .Strobe Light (See Section 11L)

Section 4A

Instrument Housings

(for use in hazardous areas)

Housings for a variety of types and makes of meters and instruments, thermostats, heaters and clocks.

EMH
GUB
EIH
EIHT
HRC
TCH
EXH
XC

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Description	Page No.
Application/Selection	**510, 511**
General Information	**510**
Power Panels: EHB/EHD Frame (480VAC)	
D2D	**524-526**
EXD	**524-526**
Unibody (EDB-480VAC & QOB-240VAC)	**522, 523**
Lighting Panels: Quicklag®† (120/240VAC)	
Exactra LP	**514-517**
D2PB	**536, 537**
D2L	**518-521**
EPL	**518-521**
GUSC	**540, 541**
D2Z	**527-535**
Wiring Diagrams	**512, 513**
Panelboards with Transformers	
D2PB	**538, 539**
Panelboards located elsewhere (Nonmetallic)	
N2PB Series	**628, 629**
NLP Series	**630, 631**

† Quicklag is a registered trademark of Cutler-Hammer Inc.

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Application:

Circuit breaker panelboards are used in hazardous and non-hazardous areas (as shown in the individual listings):
- to provide, in one compact unit, a centrally controlled switching system for a large number of feeder or branch circuits
- for controlling lighting, heating, appliance, heat tracing, motor and similar circuits
- in locations where rough usage, moisture, dust, dirt and corrosion are a problem
- to house thermal-magnetic circuit breakers that provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

Panelboards:
- All main and branch circuit wire lugs are solderless and readily accessible for fast, easy installation
- Are factory wired from main terminal blocks or main bus to line side of branch circuit breakers
- With circuit breakers in factory sealed housings (LP1, EXD & EPL), are also factory wired from the load side of branch circuit breakers to readily accessible terminal blocks
- With circuit breakers grouped in one enclosure (LP2, D2D, D2L, D2Z and D2PB factory sealed), branch circuit wires are attached directly to circuit breaker load terminals

Circuit breakers (thermal magnetic):
- Are trip-free of the handles and cannot be held closed under short circuit or overload conditions
- Four breaker types are used in panelboards manufactured by Cooper Crouse-Hinds. They are as follows:

- **Quicklag**® – used in LP, D2PB, EPL and D2L panelboards; 10,000 ampere asymmetrical interrupting capacity

Ratings	Fed. Spec.
Single and two-pole, 120/240 vac	W-C-375a, Class 1a
Two and three-pole, 240 vac	W-C-375a, Class 1b

- **EHD/FDB frame** – used in EXD & D2D panelboards; 14,000 ampere asymmetrical interrupting capacity - 480 vac

Ratings	Fed. Spec.
Single-pole, 277 vac or 125 vdc	W-C-375a, Class 2a
Two and three-pole 480 vac or 250 vdc	N/A

Wiring Systems:
- The wiring diagrams shown on page 512 and 513 are the standard systems used for single and three-phase panelboards having single, two and three-pole circuit breakers
- Standard panelboards are listed with all circuit breakers having the same number of poles and wired for one of these systems
- To meet the requirements of a specific installation, panelboards can be assembled with a combination of single, two and three-pole breakers. To accomplish this, the three individual wiring systems must have the same main service as, for example, 3-phase, 4-wire, solid neutral.

Panelboard Type	Applicable Wiring Systems
D2PB	3,4,5,8,11,12

- Diagrams shown on page 512 show only four, six or eight circuits; are intended to show only the phase connections of each circuit breaker and do not necessarily show their physical location in a panelboard.

Panelboards are available with the number of circuits indicated in the listings.

Standard Materials, Finishes, Options and Compliances:

- See individual listing pages

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Quick Selector Chart

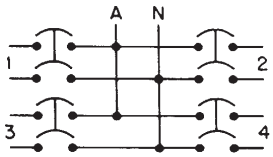
Panel-board	NEC & NEMA Certifications and Compliances	Factory Sealed	Number Circuits Max.	Breaker Frame Size	Applicable Wiring Systems	Multi-Pole Voltage Max.	Trip Rating Amps Max.	Circuit Interrupting Amps Max.	Step Down Trans-former Available
LP1	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III NEMA: 3, 4X, 7BCD, 9EFG, 12	Yes	36	Quicklag®	All	240VAC	100	10,000	No
LP2	Cl. I, Div. 2, Groups B, C, D; Cl. II, Div. 2, Groups F, G; Cl. III NEMA: 3, 4X, 7BCD, 9EFG, 12	Yes	36	Quicklag®	All	240VAC	100	10,000	Yes
D2PB	Cl. I, Div. 2, Groups C, D; NEMA: 3, 7CD (Div. 2), 12	Yes	24	Quicklag®	1, 3, 4, 5, 7, 8, 11, 12, 13, 15, 24, 25, 28, 29	240VAC	30	10,000	Yes
Unibody	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups, F, G Cl. III; NEMA: 3, 4, 7BCD, 9EFG, 12	Yes	24-Lighting 18-Power	EDB/QOB	All	480VAC	100	10,000	No
EXD	Cl. I, Div. 1 & 2, Groups B, C, D Cl. II, Div. 1, Groups E, F, G Cl. II, Div. 2, Groups F, G Cl. III NEMA: 3, 4, 7BCD, 9EFG, 12	Yes	30	EHD/FDB	All	600VAC 250VDC	100	10,000	No
D2D	Cl. I, Div. 2, Groups B, C,D NEMA: 3, 4, 7BCD, 12	Yes	30	EHD/FDB	All	600VAC 250VDC	100	10,000	Yes
EPL	Cl. I, Div. 1 & 2, Groups B, C, D Cl. II, Div. 1, Groups E, F, G Cl. II, Div. 2, Groups F, G Cl. III NEMA: 3, 4, 7BCD, 9EFG, 12	Yes	42	Quicklag®	All	240VAC 125VDC	100	10,000	No
D2L	Cl. I, Div. 2, Groups B, C, D NEMA: 3, 4, 7BCD, 12	Yes	42	Quicklag®	All	240VAC 125VDC	100	10,000	Yes
GUSC	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G Cl. III; NEMA: 3, 7CD, 9EFG, 12	No	2	Quicklag®	Not applicable	240VAC	30	10,000	No
N2PB	Cl. I, Div. 2, Groups C, D; Cl. II, Div. 2, Groups F, G; NEMA: 3, 7CD, (Div. 2), 12 Corrosion Resistant, Non-Metallic	Yes	24	Quicklag®	3, 4, 5, 8, 24, 25	240VAC	30	10,000	No
D2Z	Cl. I, Zone 1, Div. 2, Groups A, B, C, D; NEMA: 3, 4X, 7ABCD (Div. 2), 12 Corrosion Resistant, Non-Metallic	Yes	54	CEAG®	All	480VAC	180	10,000	No

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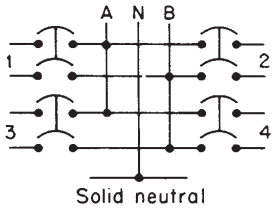
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Wiring Diagrams for D2PB Panelboards

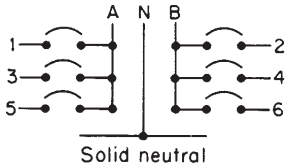
System 1
Mains—2-Wire
Branches—2-Wire
Breakers—2-Pole



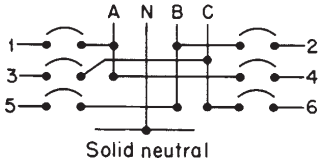
System 3
Mains—3-Wire
Branches—3-Wire
Breakers—2-Pole
Solid Neutral



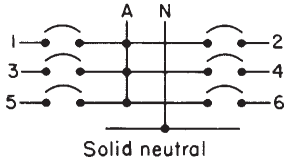
System 4
Mains—3-Wire
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



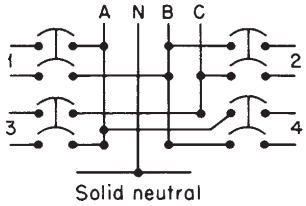
System 5
Mains—4-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—Single-Pole
Solid Neutral



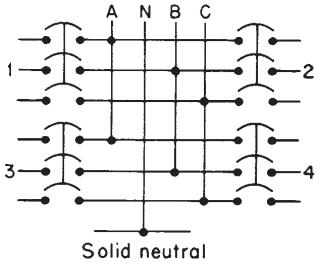
System 7
Mains—2-Wire
Branches—2-Wire
Breakers—Single Pole
Solid Neutral



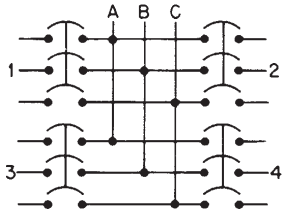
System 8
Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



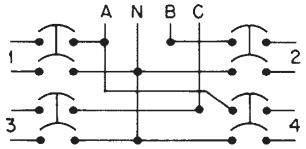
System 11
Mains—4-Wire, 3-Phase
Branches—4-Wire, 3-Phase
Breakers—3-Pole
Solid Neutral



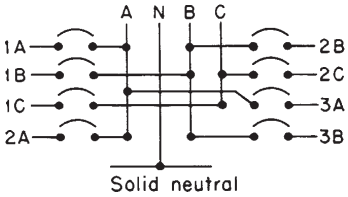
System 12
Mains—3-Wire, 3-Phase
Branches—3-Wire, 3-Phase
Breakers—3-Pole



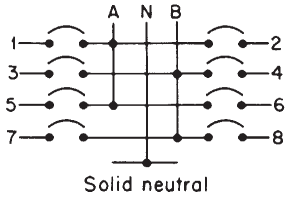
System 13
Mains—4-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—2-Pole



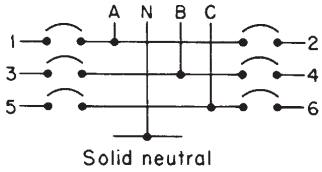
System 15
Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—Single-Pole
Solid Neutral



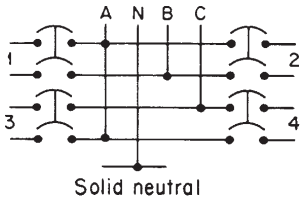
System 24
Mains—3-Wire
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



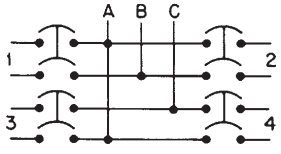
System 25
Mains—4-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—Single-Pole
Solid Neutral



System 28
Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral

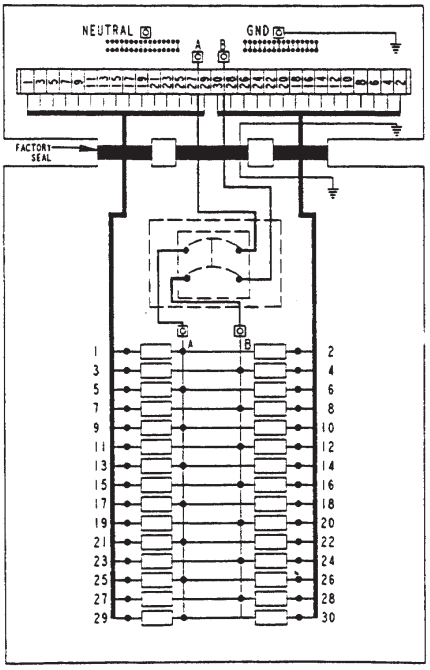


System 29
Mains—3-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—2-Pole

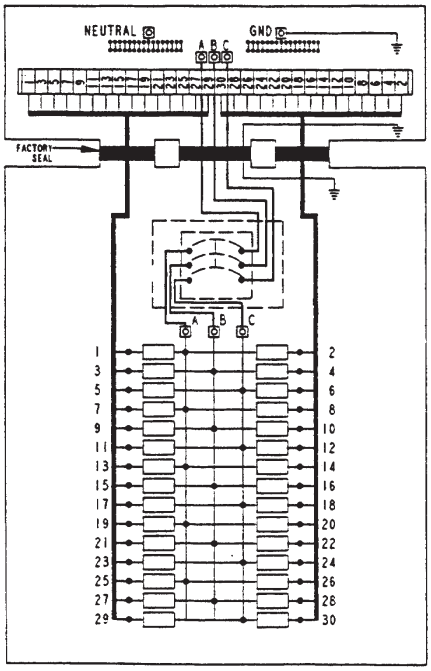


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Wiring Diagram for PowerPlus™ Power Panelboards

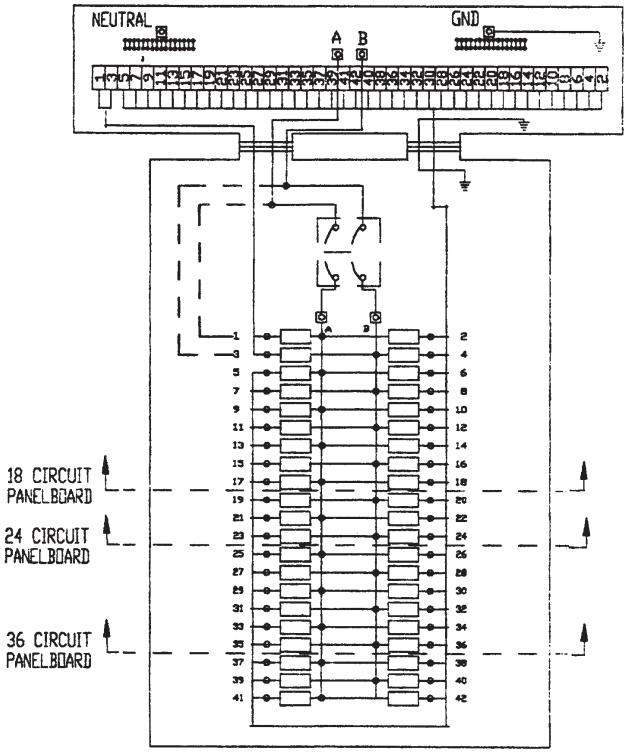


Single Phase Circuit

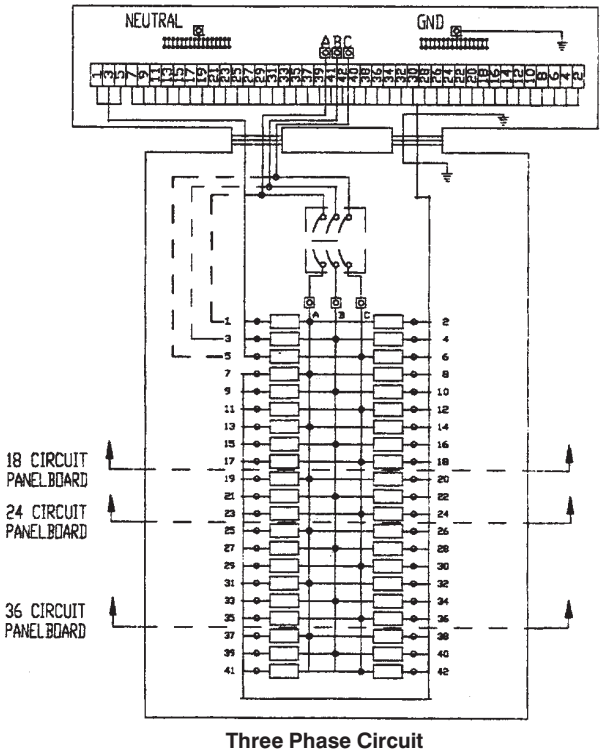


Three Phase Circuit

Wiring Diagram for PowerPlus™ Lighting Panelboards



Single Phase Circuit



Three Phase Circuit

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Exactra™ Panelboards

Lighting and Heat Tracing
LP1 Series
LP2 Series (Div. 2)



Cl. I, Div. 1 & 2, Groups B†, C, D
Cl. II, Div. 1, Groups E†, F, G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4*, 4X** 7B†CD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed‡
Wet Locations
Watertight

Exactra™ Factory-Sealed Lighting Panelboards provide flexibility and labor savings when installed, and for future changes in the field. Panels are prewired to maximum circuit capacity and ratings.

Applications:

Exactra™ Factory-Sealed Lighting Panelboards are ideal:

- in areas made hazardous by the presence of flammable gases and vapors, and combustable dusts
- in areas subject to weather, dampness, and corrosion
- for branch power distribution and circuit protection for motors, valves, pumps, lighting, heat tracing, receptacles, etc
- for indoor and outdoor applications in petroleum refineries, chemical and petrol chemical plants, and other process industry facilities where similar hazards exist
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions
- to accommodate up to 35 amp branch loads

Features and Benefits:

- Factory sealed, no external seals required for branch circuits. External seals are required for Class I, Div. 1 applications
- Fully wired for circuit breaker housing to pre-numbered terminals in wiring compartment
- External flange design allows wide unobstructed cover opening for easy wiring access
- External circuit breaker handles can be padlocked ''ON'' or ''OFF''
- Furnished with two 3″ and ten 1 ½″ conduit openings
- Breather and drains available for each enclosure
- Available with or without main circuit breaker up to 100 amps
- Isolated neutral and ground bar provided
- Available with up to 6 GFI and/or EPD branch breakers per pannel. GFI and EPD branch breakers available within the same panel
- Available with ambient compensated breakers throughout panelboard
- Stainless steel hinges allow the cover to swing wide open or be removed
- Stainless steel hex head bolts captive design prevents lost bolts
- Cast copper-free (less than 0.4%) aluminum construction for excellent corrosion resistance
- Actuators automatically align to breaker handles as door is closed
- Neoprene cover gasket meets NEMA Type 4 / CSA Enc. 4 / IP65 requirements, provides watertight seal for superior water and corrosion protection
- Copper bus bar system.

Standard Materials:

- Body and cover - cast copper-free aluminum
- Gasket - neoprene
- Operating handles - extruded aluminum (copper-free)
- Operating shafts, cover bolts, washers, GFI/EPD plungers and hinges - stainless steel
- Circuit breaker operators - die cast aluminum (copper-free)
- Lifting bracket - cold rolled steel
- Bus bar - copper

Standard Finishes:

- Aluminum - natural
- Stainless steel - natural
- Cold rolled steel - electrogalvanized

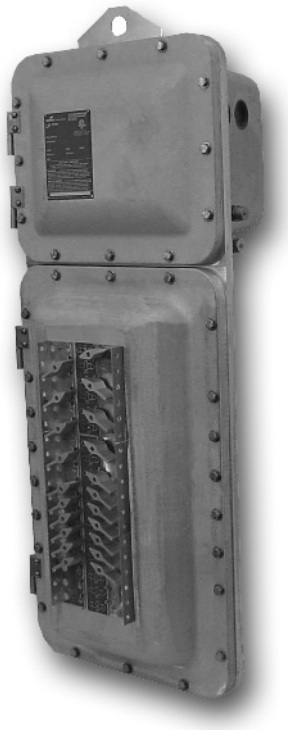
Certifications and Compliances:

LP1 panelboards

- Class I, Groups B, C, D
- Class I, Zone 1 & 2, Ex de IIB + H_2
- Class II, Groups E, F, G
- Class III
- NEMA Type 3, 3R, 4*, 4X**, 7B†CD; 9E†FG, 12
- CSA Enc. 3, 4*, 5
- IP65* Enclosure
- UL Listed (Standard: 67, 877, 2279)
- cUL Listed (Certified by UL to CSA C22.2 Nos. 29 & 30)

LP2 Panelboards

- Class I, Division 2, Groups B†, C, D
- Class I, Zone 1 & 2, Ex de IIB + H_2
- Class II, Division 2, Groups F, G
- Class III
- NEMA Type 3, 3R, 4*, 4X**, 7BCD (Div 2), 9EFG, 12
- CSA Enc. 3, 4*, 5
- IP65* Enclosure
- UL Listed (Standard: 67, 877 (DIV. 2))
- cUL Listed (Certified by UL to CSA C22.2 Nos. 29 & 30)



LP1 Lighting Panelboard

*NEMA Type 4/CSA Enc. 4/IP65 hosetight with breather and drain openings plugged.
**NEMA Type 4X when ordered with suffix S752 with breather and drain openings plugged.
‡External seals required for Class I, Div. 1.
† With suffix -GB.

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Exactra™ Panelboards

Lighting and Heat Tracing
LP1 Series
LP2 Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C, D
Cl. II, Div. 1, Groups E†, F, G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 4*, 4X** 7B†CD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed‡
Wet Locations
Watertight

1A



Electrical Ratings:

Branch Breaker (120/240 VAC Quicklag® Bolt On) Trip Ratings
- 1, 2, 3 pole
10, 15, 20, 25, 30, 35 amp
- GFI type 1, 2-pole (5 mA sensitivity)
15, 20, 25, 30 amp
- EPD type 1, 2-pole (30 mA sensitivity)
15, 20, 25, 30 amp

Main Breaker Trip Ratings:
- size B & C
10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100 amp
2, 3-pole

Main Lugs
- size B & C
100 amp

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Options:

	Suffix
• Alternate feed: incoming power into terminal enclosure from bottom	A
• Group B and E suitability (10A not avail.)	GB†
• Lamicoid nameplate with customer-specified panel identification	LID
• Stainless steel nameplate with customer-specified panel identification	SID
• 125W@120 VAC, 250W@240 VAC internal space heater in circuit breaker enclosure	R22
• External epoxy powder coat finish	S752
• Internal & External epoxy powder coat finish	S753
• One breather and two drains per enclosure	S756V
• All conduit entries plugged with PLG recessed head plugs	S822
• All conduit entries plugged with square headed plugs	S872

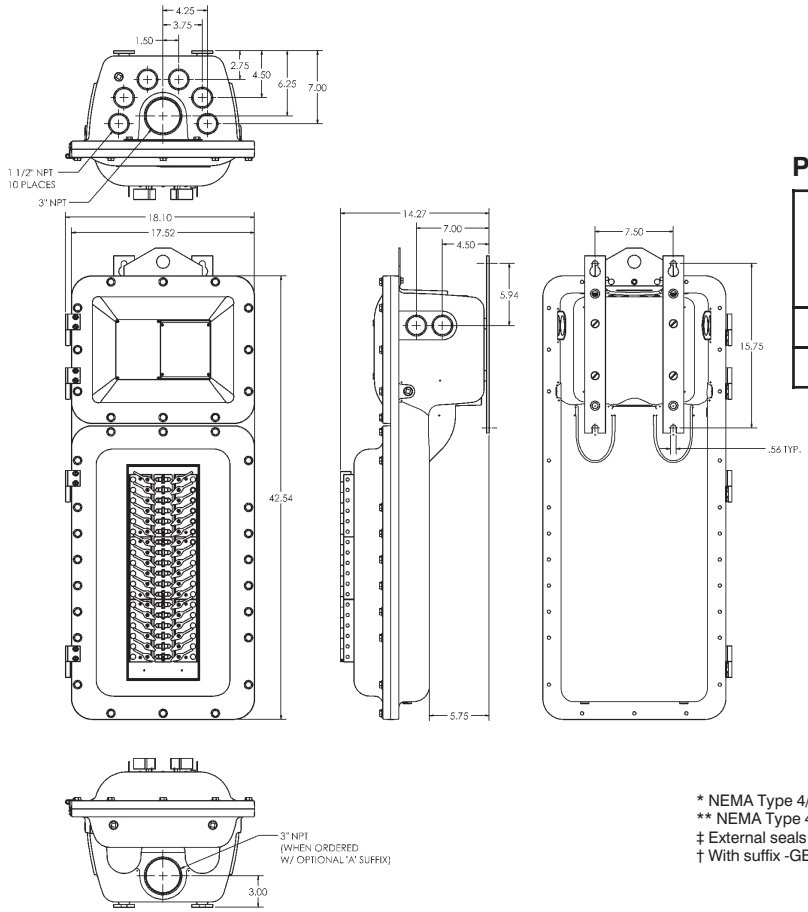
Breaker Options:

	Suffix to add to base Cat. #
• EPD branch breaker (up to 6 EPD and/or GFI per panel)	E
• GFI branch breaker (up to 6 EPD and/or GFI per panel)	G
• Ambient compensated (50°C) breakers throughout panelboard	V
• HID branch breaker for lighting loads	H

Lighting Panelboard Accessories:

• Extra circuit breaker operator assemblies 1-pole (qty. 3)	LP K1
• Replacement cover plugs for unused circuit breaker positions (qty. 6)	LP K2
• Extra circuit breaker operator assemblies for 1 pole GFI/EPD breakers (qty. 3)	LP K3
• GFI/EPD ''push to test'' plungers (qty. 6)	LP K4
• GFI/EPD entry plugs (qty. 6)	LP K5
• Replacement mounting feet (qty. 2)	LP K6
• Extra circuit breaker operator assembies for 2 pole standard and GFI/EPD breakers	LP K7
• Extra circuit breaker operator assembies for 3 pole breakers	LP K8

Dimensions (Inches):



Panel Capacity:

Panel Size	Max. No. of Branch Spaces			Main Breaker Max. Amp	Available w/GFI, EPD Branch Protection
	With Main Lug Only	With Main Breaker			
		2-pole	3-pole		
B	24	22	21	100	YES
C	36	34	33	100	YES

* NEMA Type 4/CSA Enc. 4/IP65 hosetight with breather and drain openings plugged.
** NEMA Type 4X when ordered with suffix S752 with breather and drain openings plugged.
‡ External seals required for Class I, Div. 1.
† With suffix -GB.

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Exactra™ Panelboards



Lighting and Heat Tracing
LP1 Series
LP2 Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 4*, 4X** 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed‡
Wet Locations
Watertight

Ordering Information:

LP1 & LP2 Factory Sealed 120/240 Volt Lighting Panelboards

Branch Spaces Needed	Division 1		Division 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
6	LP1B106✓	LP1B306✓	LP2B106✓	LP2B306✓
8	LP1B108✓	LP1B308✓	LP2B108✓	LP2B308✓
10	LP1B110✓	LP1B310✓	LP2B110✓	LP2B310✓
12	LP1B112✓	LP1B312✓	LP2B112✓	LP2B312✓
14	LP1B114✓	LP1B314✓	LP2B114✓	LP2B314✓
16	LP1B116✓	LP1B316✓	LP2B116✓	LP2B316✓
18	LP1B118✓	LP1B318✓	LP2B118✓	LP2B318✓
20	LP1B120✓	LP1B320✓	LP2B120✓	LP2B320✓
20	LP1C120✓	LP1C320✓	LP2C120✓	LP2C320✓
22	LP1B122✓	LP1B322✓	LP2B122✓	LP2B322✓
22	LP1C122✓	LP1C322✓	LP2C122✓	LP2C322✓
24†	LP1B124†✓	LP1B324†✓	LP2B124†✓	LP2B324†✓
24	LP1C124✓	LP1C324✓	LP2C124✓	LP2C324✓
26	LP1C126✓	LP1C326✓	LP2C126✓	LP2C326✓
28	LP1C128✓	LP1C328✓	LP2C128✓	LP2C328✓
30	LP1C130✓	LP1C330✓	LP2C130✓	LP2C330✓
32	LP1C132✓	LP1C332✓	LP2C132✓	LP2C332✓
34	LP1C134✓	LP1C334✓	LP2C134✓	LP2C334✓
36†	LP1C136†✓	LP1C336†✓	LP2C136†✓	LP2C336†✓
Breaker Ready†† (Empty)	LP1B100✓ LP1C100✓	LP1B300✓ LP1C300✓	LP2B100✓ LP2C100✓	LP2B300✓ LP2C300✓

† Items are not available with main circuit breaker.
†† Provided for main lug only; main breaker must be specified with amperage.

Catalog Number Example:

Lighting Panelboards can be furnished with an assortment of breaker ratings and pole configurations. Assortments may be ordered by adding the number of poles and amp rating designations to the catalog number.

Example:
A three-phase, Class I, Div. 2, Groups C, D lighting panelboard with:
- 5 three-pole breakers - with 15 amp rating
- 6 single-pole breakers - with 20 amp GFI personnel protection
- three-pole main breaker - with 100 amp rating
- alternate feed option
- breather and drain option

1. Select basic panelboard catalog number from listing:
   - Determine phase (available with single-phase or three-phase wiring).
   - Determine a total even number of breaker spaces needed to complete your desired lighting panelboard.

   NOTE:
   Three-pole breaker = 3 breaker spaces
   Two-pole breaker = 2 breaker spaces
   Two-pole GFI (or EPD) breaker = 2 breaker spaces
   Single-pole breaker = 1 breaker space
   Single-pole GFI (or EPD) breaker = 1 breaker space

   - Review Panel Capacity table on page 515
   - If GFI or EPD breakers are to be included insert ''G'', ''E'' or ''EG'' after base catalog number (e.g., LP2B316G).
   - Maximum number of GFI and/or EPD breaker spaces is 6 per panel. (e.g. 6 single-pole or 3 two-pole). For more, consult factory.
   - If ambient compensated breakers are required, insert ''V'' (e.g. LP2B318GV).
2. Using three-pole branch breakers first, select circuit breakers for lighting panel board application:
   - Place an asterisk (*) before each quantity of circuit breakers
   - First insert the quantity of breakers needed.
   - Second insert the quantity of poles (start with three-polebreakers).
   Note: Single-phase panelboards can have single- or two-pole breakers. Three-phase panelboards can have single, two- or three-pole breakers.
   - Third insert the ampere rating needed (start with highest ampere rating).
   - Insert ''G'' for GFI or ''E'' for EPD type breakers, if desired.
3. For additional circuit breakers repeat step 2. If there are more three-poles with different amp ratings, then continue with three-pole designations. Otherwise continue with two-pole circuit breakers, and then single-pole breakers.
4. To add a main breaker, insert a space, the number of poles (2 or 3), an ''M'' to indicate main breaker, then indicate the amp rating (See ''ratings'' for trip ratings available). If no main breaker is specified, the panelboard will have main lugs. No suffix needed in catalog number for main lug only.

   For future spaces, to provide for operating mechanism without breaker write 00 (e.g. one three-pole mechanism without breaker: 01300).

   Unused breaker positions without designations will be blanked and plugged. Complete panel will be provided for future breaker installations.

Example would be ordered as: LP2C 3 22 G * 05 3 15 *06120G 3M100 A S756V

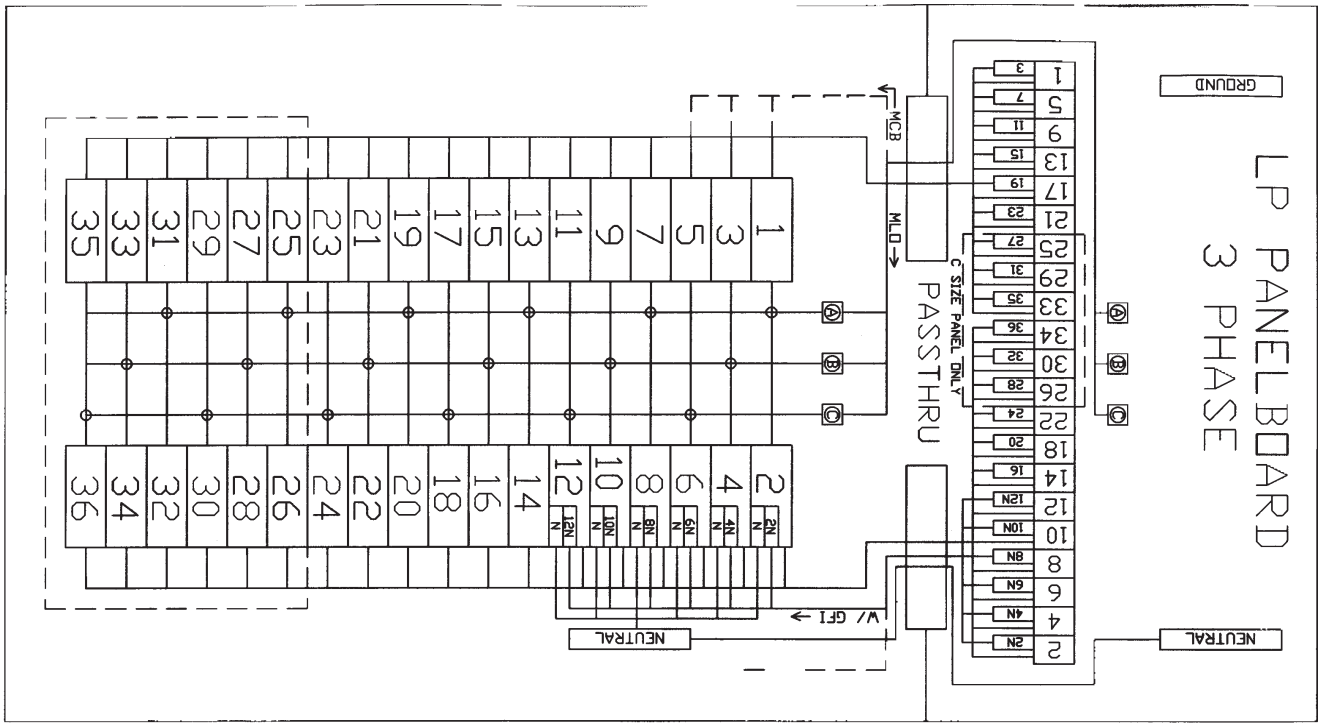
1. Select Div. 2 Lighting Panelboard - **LP2**
   a. **C** size enclosure to handle 21 breaker spaces with main circuit breaker and GFI/EPD protection
   b. **3** phase
   c. 5 three pole = 15 breaker spaces
      6 single pole (GFI) = 6 breaker spaces
      21 breaker spaces
      If odd **#** round up to even **#**:
      22 breaker spaces
   d. **G**FI breakers included
      (''G'' for GFI, ''E'' for EPD or ''EG'' for both)
      (''V'' for ambient compensated breakers)
      Maximum number of GFI and/or EPD breakers is 6
2. Choose branch circuit breakers (three-pole first)
   6 three-pole with 15 ampere rating:
   a. Insert asterisk (*)
   b. Quantity is 5: **05** (if less than 10 insert 0 before quantity)
   c. Three-pole: **3**
   d. Ampere rating is 15: **15**
3. Additional breakers (three-pole first)
   5 single-pole with 20 amp rating (GFI): ***06120G**
4. Main breaker **3M100**
   (**3**-pole, **M**ain breaker, **100** amp)
5. Alternate feed **A**
   Breathers and drains **S756V**

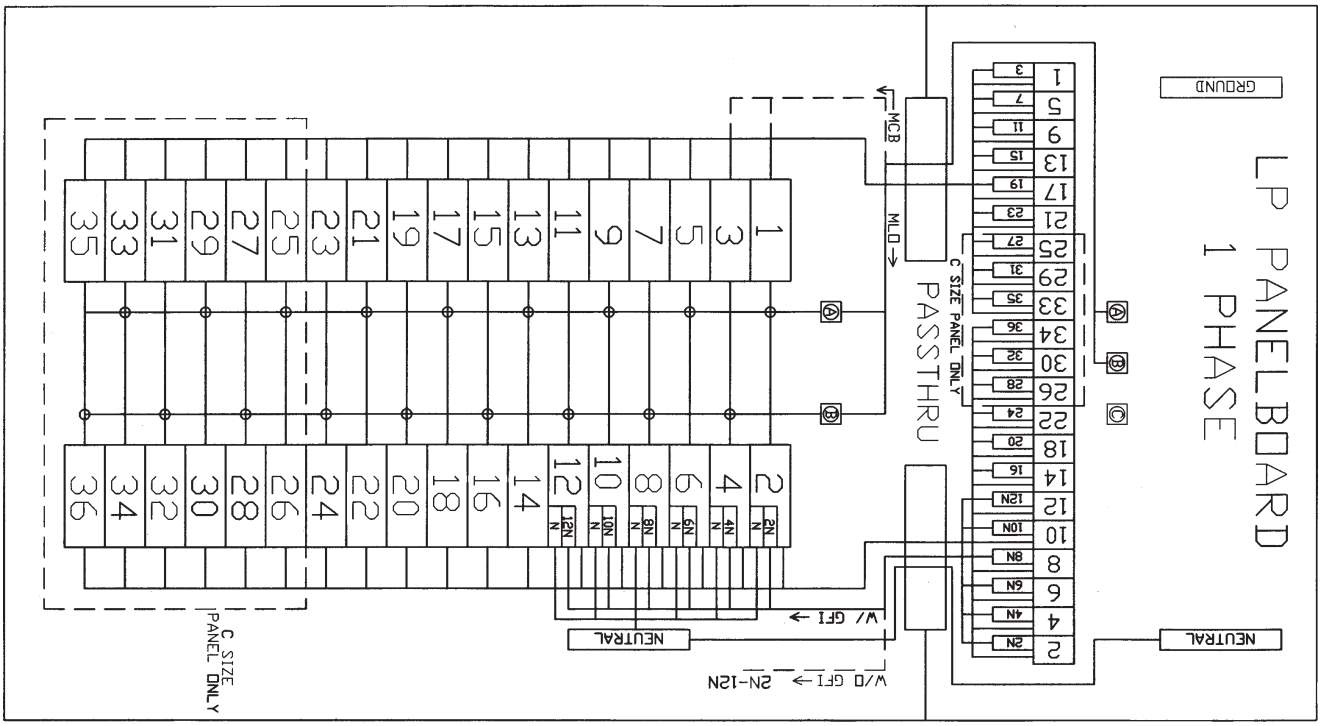
✓ Available with Lightning Service™ delivery. See Section G for complete details.

* NEMA Type 4/CSA Enc. 4/IP65 hosetight without suffix S756V.
** NEMA Type 4X when ordered with suffix S752 without suffix S756V.
‡ External seals required for Class I, Div. 1.

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Wiring Diagrams:





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PowerPlus™ Panelboards

Lighting and Heat Tracing
EPL Series
D2L Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C,D
Cl. II, Div. 1, Groups E†, F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4‡, 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed*
Wet Locations
Watertight

PowerPlus factory sealed Panelboards provide flexibility and labor savings when installed, and for future changes in the field. Panels are prewired to maximum circuit capacity and ratings with field replaceable factory sealed components.

Applications:

EPL and D2L PowerPLUS panelboards are used:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- in areas subject to weather, dampness and corrosion.
- for branch power distribution and circuit protection to motors, valves, pumps, lighting, heat tracing, receptacles, etc.
- for indoor and outdoor applications in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- to accommodate up to 100 amp branch loads (only 3 circuits). Balance is 50 amp.

Standard Materials:

- Body and cover–cast copper-free aluminum
- Gasket – neoprene
- Operating handles – extruded aluminum (copper-free)
- Operating shafts and bushings, cover bolts, washers, and retractile springs – stainless steel
- Circuit breaker operators – die cast aluminum (copper-free)
- Lifting bracket – cold rolled steel
- Hinges – Stainless Steel

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Cold rolled steel – electrogalvanized

Certifications and Compliances:

EPL Series:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B†, C,D
  Class II, Division 1, Groups E†,F,G,
  Class II, Division 2, Groups F,G
  Class III
- NEMA/EEMAC: 3, 4‡, 7B†CD, 9E†FG, 12
- CSA Enc. 3, 4, 5
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)
- IP65

D2L Series (Division 2):

- NEC/CEC:
  Class I, Division 2, Groups B†, C,D
- NEMA/EEMAC: 3, 4‡, 7B†CD, 12
- CSA ENC. 3, 4, 5
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)
- IP65

* External seals required for Class I, Group B, Div. 1.

† Group B and E suitability with suffix GB; see options listings.

‡ NEMA 4 hosetight with breather and drain openings plugged.

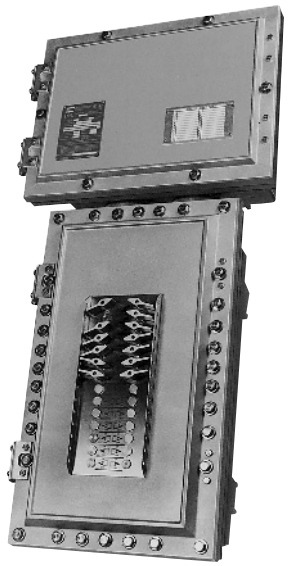
Features:

- Factory-sealed, no external seals required for most branch circuits.*
- Fully wired from circuit breaker housing to pre-numbered terminals in wiring compartment.
- Stainless Steel hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive hex-head bolts with spring loaded action provide a clear indication that cover bolts are fully retracted from body.
- Cast copper-free aluminum construction (less than 0.4 of 1%) provides excellent resistance to corrosion.
- External flange design–wide unobstructed cover opening provides a completely accessible interior for wiring.
- Neoprene cover gasket provides a watertight seal to meet NEMA 4/CSA ENC. 4/IP65 requirements, and provides superior protection for enclosed equipment against water and corrosion.
- External operating handles for circuit breakers can be padlocked in either ''ON'' or ''OFF'' positions.
- Furnished with (1) 3 ½″ and (12) 1 ½″ conduit openings, all with Cooper Crouse-Hinds LNR conduit liner bushings.
- Available with or without main circuit breaker.
- Breather and drain provided for each enclosure.
- Isolated neutral and ground bar provided.
- Aluminum bus is standard

Electrical Ratings:

Branch Breaker (120/240VAC Quicklag® Bolt-ON) Trip Ratings:
1, 2, 3-pole
10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100 amp

- GFI type, 1, 2-pole (5mA sensitivity) 15, 20, 25, 30, (40 amp - available 2 pole only)
- EPD type, 1 2-pole(30mA sensitivity) 15, 20, 25, 30, (40 amp - available 2 pole only)



D2LB Lighting Panelboard

Options:

To add the following special features to the panelboard, just add a dash and then the suffix to the Cat. No. When multiple suffixes are needed add them to the Cat. No. in alpha-numeric order.

Epoxy finish, external **S752**
Epoxy finish, internal and external **S753**
Square head plugs on all openings **S872**
Stainless steel terminal housing **S871**
Plexiglass breaker operator cover. **S877**
For EPL less terminal housing **S836**
Groups B and E suitability . . . . . **GB**

- **A standard panelboard (field wiring enclosure on top) has conduit openings for power and branch circuits on top.**
- **To order a panelboard with main power feed from the bottom, and branch circuits on top. (Alternate) add . . . . . -A**
- To order an inverted panelboard (field wiring enclosure on bottom) with conduit openings for power and branch circuits on the bottom, (Inverted) add. . . . . **-I**
- To order an inverted panelboard with main power feed on top, branch circuits on the bottom, (Alternate inverted) combine the above options . . . . . **-A-I**
- Ambient compensated breakers, add suffix **V** after base catalog number (i.e. **D2LC324V**)

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PowerPlus™ Panelboards

Lighting and Heat Tracing
EPL Series
D2L Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C,D
Cl. II, Div. 1, Groups E†, F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 4‡, 7B†CD, 9E†FG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations
Factory Sealed



Main Breaker Trip Ratings:
Size A/B up to 100 amp
- 2, 3-pole
  Size C: 100, 125, 150, 175, 200, 225 amp
- Less than 100A - consult factory

Main Lugs
B, C size: 225 amp

Lighting Panelboard Accessories:
Extra circuit breaker operator assemblies
(qty. 3) 1-Pole, GFI, EPD . . . . . **EPL K1**
2-Pole, 3-Pole . . . . . **EPL K3**
Replacement cover plugs for unused circuit breaker positions
(qty. 5) . . . . . **EPL K2**

Ordering Information:
1. Select basic panelboard catalog number from listing.
- Determine phase (available with single-phase or three-phase wiring).
- Determine a total even number of breaker spaces needed to complete your desired lighting panelboard.

NOTE:
Three-pole breaker = 3 breaker spaces
Two-pole breaker, Two-pole GFI (or EPD) breaker = 2 breaker spaces
Single-pole breaker, Single-pole GFI (or EPD) breaker = 1 breaker space

- Review Table A
- If GFI or EPD breakers are to be included insert ''G'' or ''E'' after base catalog number and review Table B. (eg. D2LB318G)
  NOTE: GFI breakers cannot be mixed with EPD breakers in the same panel.

2. Using three-pole breakers first, select circuit breakers for lighting panelboard application:
- Place an asterisk (*) before each quantity of circuit breakers.
- First # is number of breakers needed (less than 10 insert 0 before quantity. e.g., 09).
- Second # is number of poles (start with three-pole breakers).

NOTE: Single phase panelboards can have single or two-pole breakers. Three phase panelboards can have single, two or three-pole breakers.
- Third # is the ampere rating needed (start with highest ampere rating).
- Insert ''G'' for GFI or ''E'' for EPD type breakers, if desired.

3. For additional circuit breakers repeat step 2. If there are more three-poles with different amp ratings, then continue with three-pole designations. Otherwise continue with two-pole circuit breakers, and then single-pole breakers.

† ‡ – See page 518.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

4. To add a main breaker, insert a dash (-), the number of poles (2 or 3), an ''M'' to indicate main breaker, then indicate the amp rating. (See ''electrical ratings'' for trip ratings available.) Three phase panelboards can only have a three-pole main breaker. If no main breaker is specified, the panelboard will have main lugs. No suffix needed in Cat. No. for main lug only.

Lighting panelboards are available with three 100 amp branch spaces maximum with balance up to 50 amps. For future spaces, to provide for operating mechanism without breaker write 00. ***(Example: One 3-pole mechanims without breaker: 01300.)***

Unused breaker positions without designations will be blank and plugged, complete panel will be prewired for future breaker installations.

EPL and D2L Factory Sealed 120/240 Lighting Panelboards

Breaker Spaces Needed	DIVISION 1		DIVISION 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
14	EPLB114✓	EPLB314✓	D2LB114✓	D2LB314✓
16	EPLB116✓	EPLB316*✓	D2LB116✓	D2LB316*✓
18	EPLB118✓	EPLB318✓	D2LB118✓	D2LB318✓
20	EPLB120✓	EPLB320✓	D2LB120✓	D2LB320✓
20	EPLC120✓	EPLC320✓	D2LC120✓	D2LC320✓
22	EPLB122✓	EPLB322*✓	D2LB122✓	D2LB322✓
22	EPLC122✓	EPLC322✓	D2LC122✓	D2LC322✓
24*	EPLB124*✓	EPLB324*✓	D2LB124*✓	D2LB324*✓
24	EPLC124✓	EPLC324✓	D2LC124✓	D2LC324✓
26	EPLC126✓	EPLC326✓	D2LC126✓	D2LC326✓
28	EPLC128✓	EPLC328✓	D2LC128✓	D2LC328✓
30	EPLC130✓	EPLC330✓	D2LC130✓	D2LC330✓
32	EPLC132✓	EPLC332✓	D2LC132✓	D2LC332✓
34	EPLC134✓	EPLC334✓	D2LC134✓	D2LC334✓
36	EPLC136✓	EPLC336✓	D2LC136✓	D2LC336✓
38*	EPLC138*✓	EPLC338*✓	D2LC138*✓	D2LC338*✓
40*	EPLC140*✓	EPLC340*✓	D2LC140*✓	D2LC340*✓
42*	EPLC142*✓	EPLC342*✓	D2LC142*✓	D2LC342*✓
Breaker Ready (Empty) ♦ ▲	EPL(B OR C)100✓	EPL(B OR C)300	D2L(B OR C)100	D2L(B OR C)300

★ Items are not available wilth a Main Circuit Breaker, see Table A.
♦ Provided for Main Lug Only; Main breaker must be specified with amperage. Panels to accommodate GFI or EPD breakers must be ordered with at least one such breaker installed.
▲ Not available for GFI or EPD installations.

Table A – Panel Capacity
Maximum Number of Breaker Spaces:

Panel Size	Max. No. of Branch Spaces			Main Breaker Max. Amp.	Available w/GFI, EPD Branch Protection
	w/Main Lug Only	w/Main Breaker			
		2-pole	3-pole		
B	24	22	21	100	Yes
C	42	36	36	225	Yes

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Cl. I, Div. 1 & 2, Groups B†, C,D
Cl. II, Div. 1, Groups E†, F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 4‡, 7B†CD, 9E†FG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations
Factory Sealed

Table B – To size panels with GFI or EPD branch breakers

Panel Size with Main Lug or Main Breaker	Maximum number of GFI or EPD breakers Single-Pole	Two-Pole
B	21	12 (10 with 3 pole MCB, 11 with 2P MCB)
C	21	14

		Load Wires Required
Single-pole breaker	=	1
Single-pole GFI (or EPD) breaker	=	2
Two-pole breaker	=	2
Two-pole GFI (or EPD) breaker	=	3
Three-pole breaker	=	3
		Maximum total: 42 load wires

Each panel is equipped with 42 load wires to cover these accommodations and any combination with standard branch breakers. To determine the total number of load wires required to complete your panel:

Lighting Panelboard Catalog Number Example

Lighting panelboards can be furnished with an assortment of breaker ratings and pole configurations. Assortments may be ordered by adding the number of poles and amp rating designations to the catalog number.

Example:

A three phase, Class I, Div. 2, Groups B, C, D lighting panelboard with:
- (1) three-pole breaker with 100 amp rating.
- (2) two-pole breakers–both with 30 amp GFI personnel protection.
- (10) one-pole breakers–with 20 amp rating.
- Three-pole main breaker–with 100 amp rating.

Example would be ordered as:

D2L B 3 18 G * 01 3 100 *02230G *10120 –3M100 –GB

1. Select Div. 2 Lighting panelboard **– D2L**
   a. B size enclosure to handle 17 circuits with main circuit breaker and GFI/EPD protection
   b. 3 phase
   c. (1) three-pole = 3 breaker spaces
   + (2) two-pole (GFI) = 4 breaker spaces
   + (10) single-pole = 10 breaker spaces
   17 breaker spaces
   If odd # round up to even #:
   18 breaker spaces
   d. GFI breakers included (Use ''E'' for EPD)
   Verify load wires required w/panel size (Table B)
   (1) three pole = 3 load wires
   (2) two-pole = 6 load wires
   (10) single-pole = 10 load wires
   19 load wires
   (42 load wires available)

2. Choose branch circuit breakers (3-pole first)
   - (1) three-pole with ampere rating
     a. Insert Asterisk *****
     b. Quantity is 1: **01**
     (if less than 10 insert 0 before quantity)
     c. Three-pole: **3**
     d. Ampere Rating is 100:**100**

3. Additional breakers (three-pole first)
   - (2) two-pole w/30 ampere rating (GFI) ***02230G**
   - (10) single-pole w/20 ampere rating ***10120**

   (For operating mechanisms with no breaker supplied, add ''00'' for amperage)

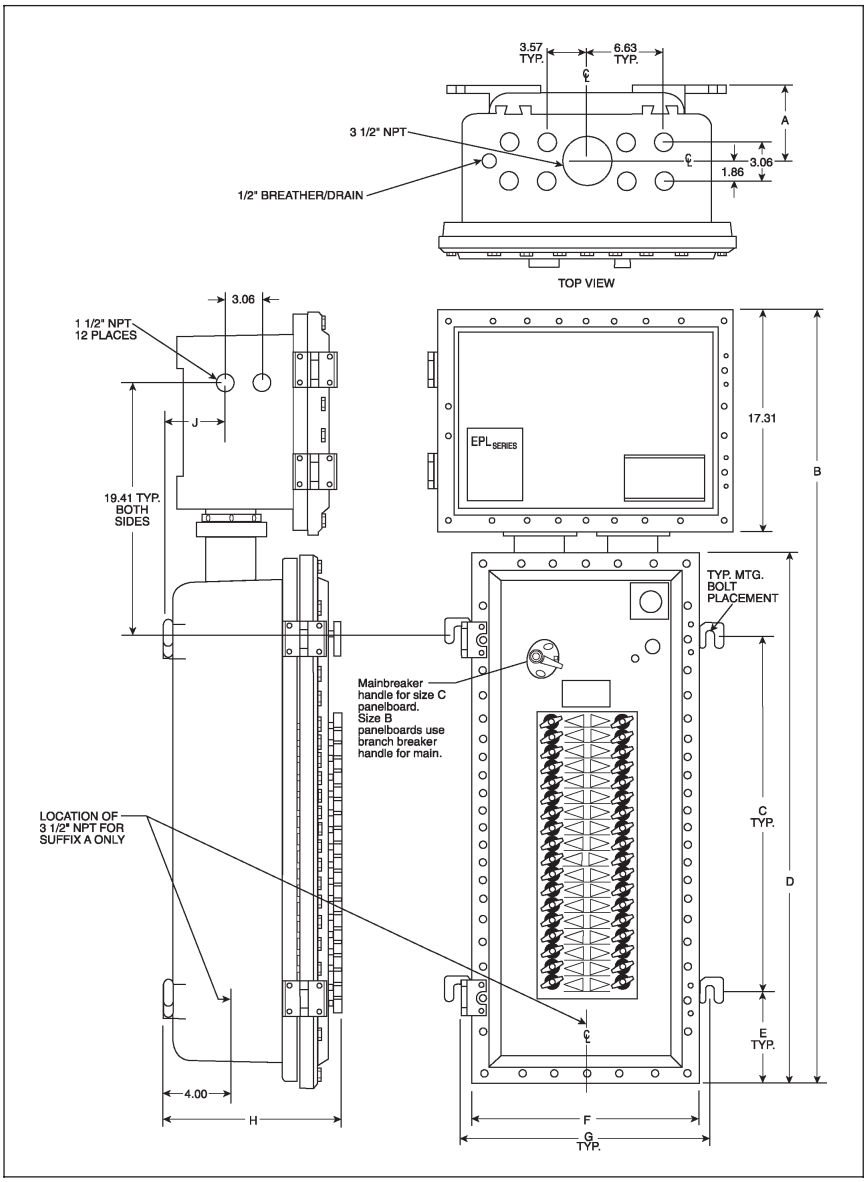
4. Main Breaker **–3M100**
   - (**3**-pole, **M**ain breaker, **100** Amp)
   - No main supplied **–3M00**

5. Group B construction **-GB**

† ‡ – See page 518.

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Dimensions



Lighting Panelboard Panel Size

Dimension (inches)	EPLB D2LB	EPLC D2LC
A	4.92	4.92
B	47.87	60.25
C	17.50	29.50
D	29.56	41.90
E	6.03	7.00
F	17.56	17.90
G	15.62	15.12
H	12.00	12.00
J	3.75	3.75

*Dimensions are approximate; not for construction purposes.

† ‡ – See page 518.

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Unibody™ Panelboards

Lighting and Heat Tracing
EPLU Series
D2LU Series (Div. 2)

Power
EXDU Series
D2DU Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4‡, 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed*
Wet Locations
Watertight

Unibody factory sealed Panelboards provide flexibility and labor savings when installed, and for future changes in the field. Panels are prewired to maximum circuit capacity and ratings with field replaceable factory sealed components in a single cast body with 2 covers.

Applications:

Unibody panelboards are used:
- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- in areas subject to weather, dampness and corrosion.
- for branch power distribution and circuit protection to motors, valves, pumps, lighting, heat tracing, receptacles, etc.
- for indoor and outdoor applications in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- to accommodate up to 100 amp branch loads.

Standard Materials:

- Body and cover–cast copper-free aluminum
- Gasket – neoprene
- Operating handles – extruded aluminum (copper-free)
- Operating shafts and bushings, cover bolts, washers, and retractile springs – stainless steel
- Circuit breaker operators – die cast aluminum (copper-free)
- Lifting bracket – cold rolled steel
- Hinges – stainless steel

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Cold rolled steel – electrogalvanized

Accessories:

Extra circuit breaker operator assemblies for EXDU and D2DU (qty. 3) . . . . . **EXDU K1**

Replacement cover plugs for unused circuit breaker positions for EXDU and D2DU (qty. 5) . . . . . **EXDU K2**

Extra circuit breaker operator assemblies (qty. 3) for EPLU and D2LU . . . . . **EPLU K1**

Replacement cover plugs for unused circuit breaker positions for EPLU and D2LU (qty. 5) . . . . . **EPLU K2**

* External seals required for Class I, Group B, Div. 1.

‡ NEMA 4 hosetight with breather and drain openings plugged.

Features:

- Factory-sealed, no external seals required for most branch circuits.*
- Fully wired from circuit breaker housing to pre-numbered terminals in wiring compartment.
- Stainless steel hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive hex-head bolts with spring loaded action provide a clear indication that cover bolts are fully retracted from body.
- Cast copper-free aluminum construction (less than 0.4 of 1%) provides excellent resistance to corrosion.
- External flange design–wide unobstructed cover opening provides a completely accessible interior for wiring.
- Neoprene cover gasket provides a watertight seal to meet NEMA 4/CSA ENC. 4/IP65 requirements, and provides superior protection for enclosed equipment against water and corrosion.
- External operating handles for circuit breakers can be padlocked in either ''ON'' or ''OFF'' positions.
- Furnished with (1) 3 ½″ and (12) 1 ½″ conduit openings, all with Cooper Crouse-Hinds LNR conduit liner bushings.
- Available with or without main circuit breaker.
- Breather and drain provided for each enclosure.
- Isolated neutral and ground bar provided.

Options:

To add the following special features to the panelboard, just add a dash and then the suffix to the Cat. No. When multiple suffixes are needed add them to the Cat. No. in alpha-numeric order.

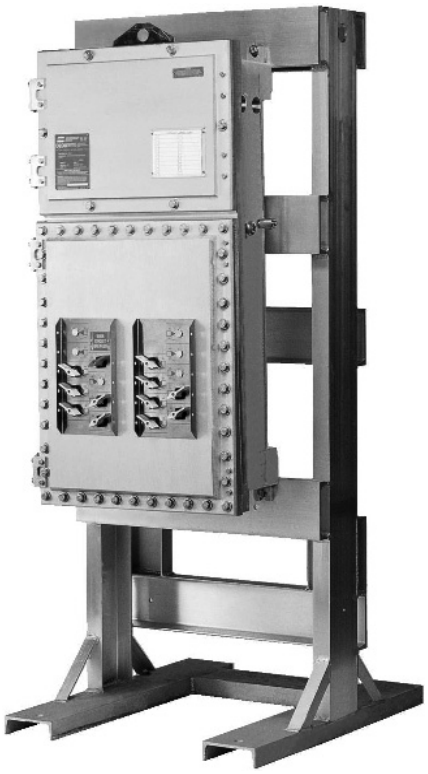
Epoxy finish, external **S752**
Epoxy finish, internal and external **S753**
All conduit entries plugged with PLG recessed head plugs. **S822**
All conduit entries plugged with square head plugs. **S872**

A standard panelboard (field wiring enclosure on top) has conduit openings for power and branch circuits on top.

To order a panelboard with main power feed from the bottom, and branch circuits on top. (Alternate) add. . . . . **-A**

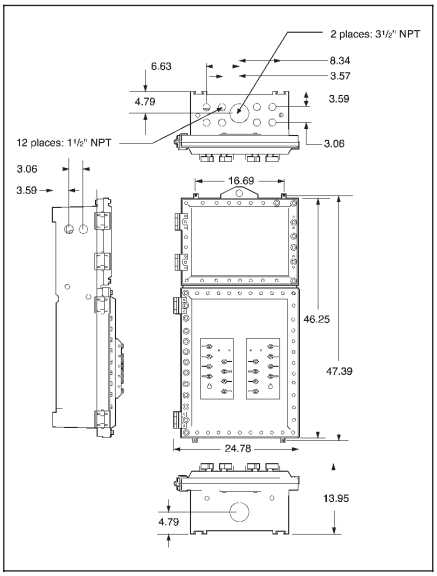
To order an inverted panelboard (field wiring enclosure on bottom) with conduit openings for power and branch circuits on the bottom, (Inverted) add . . . . . **-I**

To order an inverted panelboard with main power feed on top, branch circuits on the bottom, (Alternate inverted) combine the above options . . . . . **-A-I**



D2LU Lighting Panelboard

Dimensions** (inches)



** Dimensions are approximate, not for construction purposes.

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Unibody™ Panelboards

Lighting and Heat Tracing
EPLU Series
D2LU Series (Div. 2)

Power
EXDU Series
D2DU Series
(Div. 2)

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4‡, 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed*
Wet Locations
Watertight



Lighting and Heat Tracing

Electrical Ratings:

Branch Breaker (120/240 VAC Bolt-On QO® type) Trip Ratings:

- 1, 2, 3-pole: 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp
- GFI type (5 mA sensitivity)
  1 pole: 15, 20, 25, 30 amp
  2 pole: 15, 20, 25, 30, 40, 50 amp
- EPD type (30 mA sensitivity)
  1 & 2-pole: 15, 20, 25, 30 amp)
  (EPD = equipment protection device)

Main Breaker Trip Ratings:

- 2 or 3-pole: 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp

Main Lugs: 100 amp maximum

Ordering Information

See ordering information of the PowerPlus Lighting Panelboards. The Unibody catalog numbers follow the same system except the fourth character is a ''U''. Use the following tables to determine the maximum number of branch circuits and their catalog numbers.

Note:

Three-pole breaker	= 3 circuits
Two-pole breaker	= 2 circuits
Single-pole breaker	= 1 circuits
Two-pole breaker GFI or EPD	= 3 circuits
Single-pole breaker GFI or EPD	= 2 circuits

QO is a registered trademark of Square D Company

Maximum Number of Branch Circuits

Type of Circuits	Main Lug Only (MLO) Circuits	With Main Circuit Breaker Circuits	
		Single Phase	Three Phase
Total number	24	22	21
Branches up to 100 Amp	3	3	3
Branches up to 50 Amp	21	19	18
Single-pole GFI/EPD	21	21	21
Two-pole GFI/EPD	12	11	10

Note: For applications up to 42 circuits, use the PowerPlus™ EPLC or D2LC series.

EPLU and D2LU Factory-Sealed 120/240 Volt Lighting Panelboards

Branch Circuits Needed	DIVISION 1		DIVISION 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
0	EPLU100✓	EPLU300✓	D2LU100✓	D2LU300✓
6	EPLU106✓	EPLU306✓	D2LU106✓	D2LU306✓
8	EPLU108✓	EPLU308✓	D2LU108✓	D2LU308✓
10	EPLU110✓	EPLU310✓	D2LU110✓	D2LU310✓
12	EPLU112✓	EPLU312✓	D2LU112✓	D2LU312✓
14	EPLU114✓	EPLU314✓	D2LU114✓	D2LU314✓
16	EPLU116✓	EPLU316✓	D2LU116✓	D2LU316✓
18	EPLU118✓	EPLU318✓	D2LU118✓	D2LU318✓
20	EPLU120✓	EPLU320✓	D2LU120✓	D2LU320✓
22	EPLU122✓	EPLU322✓	D2LU122✓	D2LU322✓
24	EPLU124✓	EPLU324✓	D2LU124✓	D2LU324✓

Power Distribution

Electrical Ratings:

Branch Breaker Trip Ratings:

- 1-pole: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70 amp
- 2 & 3-pole: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp

Main Breaker Trip Ratings:
2 or 3-pole: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp

Main Lug Only Rating:
150 amp maximum

Circuit Capacity
Maximum number of breaker spaces:

Single-pole	18
Two-pole	8
Three-pole	6

Ordering Information

See ordering information of the PowerPlus Power Panelboards. The Unibody catalog numbers follow the same system except the fourth character is a ''U''. Use the following tables to determine the maximum number of branch circuits and their catalog numbers.

Note: The number of circuits is equal to the number of poles for a given power panelboard circuit breaker.

✓ – available with Lightning Service™ delivery.
See Section G for complete details.

Maximum Number of Branch Circuits

Type of Circuit	Main Lug Only (MLO) Circuits	With Main Circuit Breaker Circuits	
		Single Phase	Three Phase
Total number	18	16	15
Branches up to 100 Amp	3	3	3
Branches up to 70 Amp	15	13	12

Note: For applications up to 30 circuits, use the PowerPlus™ EXDC or D2DC series.

EXDU and D2DU Factory-Sealed 480 Volt Power Panelboards

Branch Circuits Needed	DIVISION 1		DIVISION 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
0	EXDU100✓	EXDU300✓	D2DU100✓	D2DU300✓
6	EXDU106✓	EXDU306✓	D2DU106✓	D2DU306✓
8	EXDU108✓	EXDU308✓	D2DU108✓	D2DU308✓
10	EXDU110✓	EXDU310✓	D2DU110✓	D2DU310✓
12	EXDU112✓	EXDU312✓	D2DU112✓	D2DU312✓
14	EXDU114✓	EXDU314✓	D2DU114✓	D2DU314✓
16	EXDU116✓	EXDU316✓	D2DU116✓	D2DU316✓
18	EXDU118✓	EXDU318✓	D2DU118✓	D2DU318✓

* External seals required for Class I, Group B, Div. 1.
‡ See page 522.

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1A PowerPlus™ Panelboards

Power
EXD Series
D2D Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†,C,D
Cl. II, Div. 1, Groups E†,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 4‡, 7B†CD, 9E†FG, 12

Explosionproof
Dust-Ignitionproof
Wet Locations
Watertight
Factory Sealed*

Applications:

EXD and D2D PowerPlus panelboards are used:
- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- in areas subject to weather, dampness and corrosion.
- for indoor and outdoor applications in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- to accommodate up to 100 amp branch loads.

Standard Materials:

- Body and cover – cast copper-free aluminum
- Gasket – neoprene
- Hinges – Stainless steel
- Operating handles – extruded aluminum (copper-free)
- Operating shafts and bushings, cover bolts, washers, and retractile springs – stainless steel
- Circuit breaker operators – die cast aluminum (copper-free)
- Lifting bracket – cold rolled steel

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Cold rolled steel – electrogalvanized

Certifications and Compliances:

EXD Series:
- NEC/CEC: Class I, Division 1 & 2, Groups B†,C,D
  Class II, Division 1, Groups E†,F,G, Class II, Division 2, Groups F,G,
  Class III
- NEMA/EEMAC: 3, 4‡, 7BCD, 9EFG, 12
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)

D2D Series: (Div. 2)
- NEC/CEC: Class I, Division 2, Groups B†,C,D
- NEMA/EEMAC: 3, 4‡, 7BCD, 12
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)

Features:

- Factory-sealed, no external seals required for branch circuits.*
- Fully wired from circuit breaker housing to pre-numbered terminals in wiring compartment.
- Stainless steel hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive hex-head bolts with spring loaded action provide a clear indication that cover bolts are fully retracted from body.
- Cast copper-free aluminum construction (less than 0.4 of 1%) provides excellent resistance to corrosion.
- Copper bus is standard

Features: (continued)

- External flange design – wide unobstructed cover opening provides a completely accessible interior for wiring.
- Neoprene cover gasket provides a watertight seal to meet NEMA 4 requirements, and provides superior protection for enclosed equipment against water and corrosion.
- External operating handles for circuit breakers can be padlocked in either ''ON'' or ''OFF'' positions.
- Furnished with (1) 3½″ and (12) 1½″ conduit openings, all with Cooper Crouse-Hinds LNR conduit liner bushings.
- Available with or without main circuit breaker.
- Breathers and drains provided as standard for each enclosure

Options:

To add the following special features to the panelboard, just add a dash and then the suffix to the Cat. No. When multiple suffixes are needed add them to the Cat. No. in alpha-numeric order.

Epoxy finish, external **S752**
Epxoy finish, internal and external **S753**
Stainless steel terminal housing **S871**
Square head plugs in all openings **S872**
EXD less terminal housing **S836**
Groups B and E suitability . . . . . **GB**
Supplied with 600 VAC FDB frame breakers **FB600**
- Supplied with 600 VAC FD Frame breakers **FD600**
- Supplied with 600 VAC HFD Frame breakers. **HFD600**

A standard EXD and D2D (field wiring enclosure on top) has conduit openings for power and branch circuits on top.

To order a panelboard with main power feed from the bottom, and branch circuits on top, (**A**lternate) add. . . . . **–A**
To order an inverted EXD or D2D (field wiring enclosure on bottom) with conduit openings for power and branch circuits on the bottom, (**I**nverted) add . . . . . **–I**
To order an inverted panelboard with main power feed on top, branch circuits on the bottom (**I**nverted **A**lternate) combine suffixes, eg.. . . . . **–A-I**

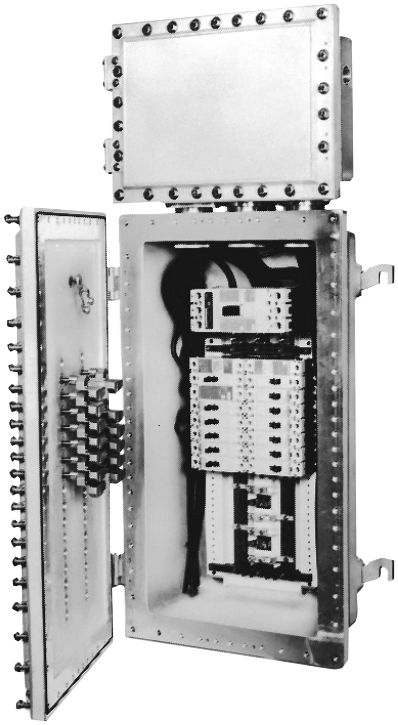
Accessories:

Extra circuit breaker operator assemblies (qty. 3) . . . . . **EXD K1**
Replacement cover plugs for unused circuit breaker positions (qty. 5) . . . . . **EXD K2**

Circuit Capacity:

Maximum Number of Breaker Spaces:

Single-pole	30
Two-pole	14
Three-pole	10



EXD Panelboard
Weight – 490lbs.

Circuit Breaker Ratings:

(Cutler-Hammer, Series C)

Circuit Breaker Trip Ratings:
15, 20, 30, 40, 50, 60, 70, 80, 90, 100 amp
- EHD frame circuir breakers
  Single-Pole – 277 VAC or 125 VDC
  Two and Three-Pole – 480 VAC or 250 VDC
- FDB frame (600 VAC) available, see options

Main Breaker Trip Ratings:
70, 100, 150, 200, 225 amp
- JDB frame circuit breakers
  Two and Three-Pole – 600 VAC or 250 VDC
  Main Lugs: 225 amp

† Group B and E suitability with suffix GB; see options.
‡ NEMA 4 hosetight with breather and drain openings plugged
* External seals required for Class I, Group B, Div. 1.

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Ordering Information:

1. Select basic panelboard catalog number from listing:
- Determine phase (power panelboards are available with single-phase or three-phase wiring).
- Determine a total even number of circuits needed to complete your desired power panelboard.

NOTE:
Three-pole breaker = 3 circuis
Two-pole breaker = 2 circuits
Single-pole breaker = 1 circuit

2. Select circuit breaker for power panelboard application:
- Place an asterisk (*) before each quantity of circuit breakers.
- First # is number of breakers needed (less than (10) insert 0 before quantity).
- Second # is number of poles (start with three-pole breakers).
- Third # is the ampere rating needed (start with highest ampere rating).

NOTE: Single phase panelboards can have single or two-pole breakers. Three phase panelboards can have single, two, or three-pole breakers.

3. For additional circuit breakers repeat step 2. If there are more three-poles with different amp ratings, then continue with three-pole designations. Otherwise continue with two-pole circuit breakers, and then single-pole breakers.

4. To add a main breaker, insert a dash (–), the number of poles (2 or 3), an ''M'' to indicate main breaker, then indicate the amp rating (Main breakers are available with 70, 100, 150, 200, or 225 amp ratings). Single phase panelboards can have a two-pole or three-pole main breaker. If no main breaker is specified, the panelboard will have main lugs. No suffix needed in Cat. No. for main lug only.

Power panelboards are available with three 80-100 amp branch circuits maximum, with balance up to 70A. For future spaces, to provide for operating mechanism without breaker, write 00. *(Ex. One 3 pole mechanism without breaker: 01300).*

Unused breaker positions without designations will be plugged; complete panel will be prewired for future breaker installations.

Catalog Number Example:

A three phase, Class I, Div. 1 power panelboard with:
- (2) three-pole breakers – both with 50 amp rating
- (3) two-pole breakers – each with 30 amp rating
- (10) single-pole breakers – each with 20 amp rating
- (8) single-pole breakers – each with 15 amp rating
- Three-pole main breaker – with 150 amp rating
- Inverted with alternate feed

Ordered as:

EXDC 3 30 * 02 3 50 *03230 *10120 *08115 –3M150 –A-I

1. Select power panelboard **–EXDC**
   a. 3 phase
   b. (10) single poles = 10 circuits
   + (8) single poles = 8 circuits
   + (3) two poles = 6 circuits
   + (2) three poles = 6 circuits
   30 circuits

2. Choose circuit breakers (3-pole first)
   - (2) three-poles with ampere rating
   a. Insert Asterisk *
   b. Quantity is 2: **2**
   (if less than (10) insert 0 before quantity)
   c. Three-pole: **3**
   d. Ampere Rating is 50:**50**

3. Additional breakers (three-pole first)
   - (3) two-pole w/30 ampere rating ***03230**
   - (10) single-pole w/20 ampere rating ***10120**
   - (8) single-pole w/15 ampere rating ***08115**
   - For operating mechanism with no breaker supplied, add ''00'' for amperage

4. Main Breaker **–3M150**
   - (**3**-pole, **M**ain breaker, **150** Amp)
   - No main supplied **–3M00**

5. Inverted and Alternate feed **–A-I**

† See page 524.
* See page 524.
‡ See page 524.

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PowerPlus™ Panelboards



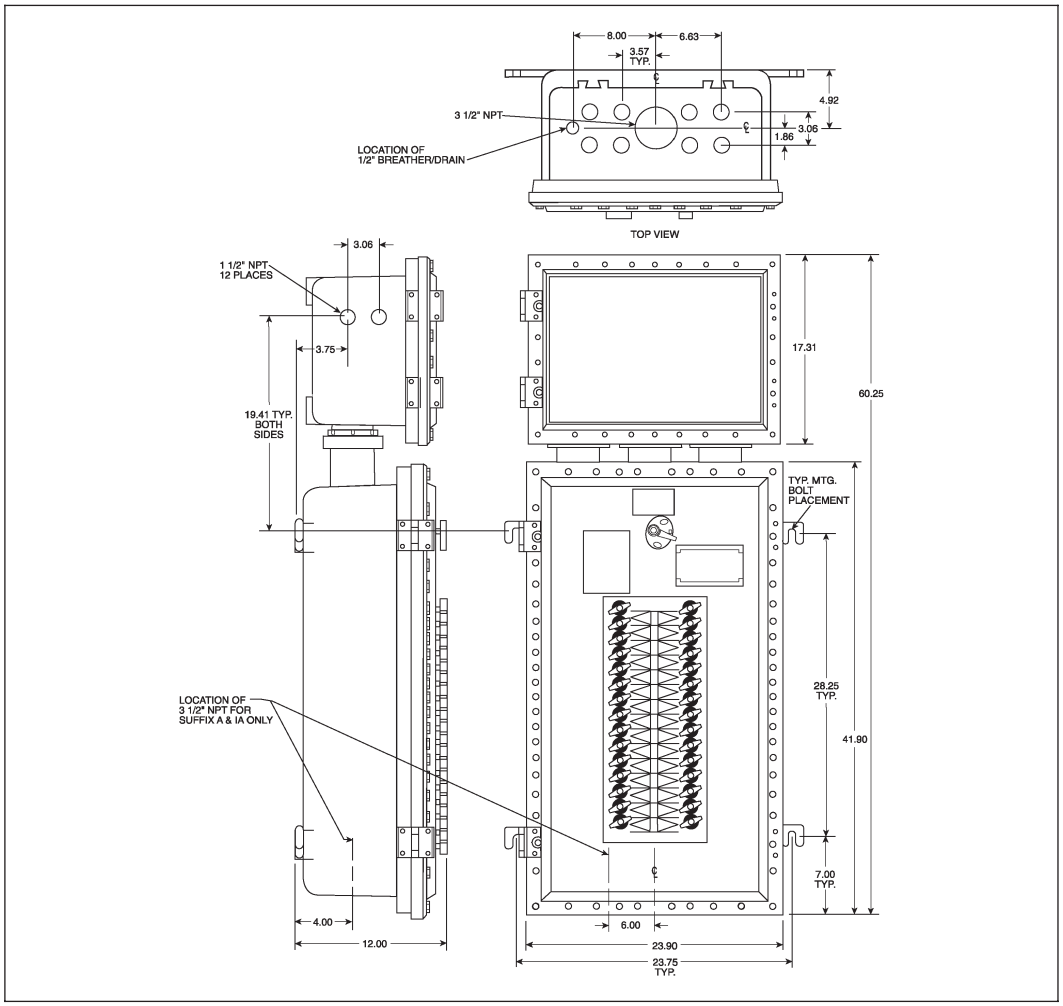
Power
EXD Series
D2D Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†,C,D
Cl. II, Div. 1, Groups E†,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 4‡, 7B†CD, 9E†FG, 12

EXD and D2D Factory-Sealed 480 Volt Power Panelboards

	DIVISION 1		DIVISION 2	
Circuits	**1 Phase, 3 Wire**	**3 Phase, 4 Wire**	**1 Phase, 3 Wire**	**3 Phase, 4 Wire**
6	EXDC106✓	EXDC306✓	D2DC106✓	D2DC306✓
8	EXDC108✓	EXDC308✓	D2DC108✓	D2DC308✓
10	EXDC110✓	EXDC310✓	D2DC110✓	D2DC310✓
12	EXDC112✓	EXDC312✓	D2DC112✓	D2DC312✓
14	EXDC114✓	EXDC314✓	D2DC114✓	D2DC314✓
16	EXDC116✓	EXDC316✓	D2DC116✓	D2DC316✓
18	EXDC118✓	EXDC318✓	D2DC118✓	D2DC318✓
20	EXDC120✓	EXDC320✓	D2DC120✓	D2DC320✓
22	EXDC122✓	EXDC322✓	D2DC122✓	D2DC322✓
24	EXDC124✓	EXDC324✓	D2DC124✓	D2DC324✓
26	EXDC126✓	EXDC326✓	D2DC126✓	D2DC326✓
28	EXDC128✓	EXDC328✓	D2DC128✓	D2DC328✓
30	EXDC130✓	EXDC330✓	D2DC130✓	D2DC330✓
Breaker ready (empty)	EXDC100✓	EXDC300✓	D2DC100✓	D2DC300✓

Dimensions (inches):



‡† See page 524.
✓ – available with Lightning Service™ delivery. See Section G for complete details.

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D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A, B, C, D
CL. I, Zone 1, Groups A, B, C, D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Applications:

D2Z panelboards are designed specifically for use in:
- Class 1, Zone 1, Division 2, Groups A, B, C, D hazardous areas where flammable vapors or gases may be present due to accident or abnormal locations.
- in damp, wet or corrosive locations.
- indoors or outdoors in Zone 1, Division 2 areas of petroleum refineries, chemical and petrochemical plants, and other process industry facilities.



Features:

- UL, cUL, PTB certified for Class 1, Zone 1, Division 2 hazardous areas.
- Fiberglass-reinforced polyester enclosures:
  - Nonmetallic, corrosion-free.
  - Increased safety Ex-e protection.
  - Impact resistant.
  - NEMA 4X, IP 66 protection.
  - Enclosure meets UL 94-VO.
  - UV rated.
- Unique design allows for panels with more than 42 circuits.
- Main disconnect switches 40, 80, 125, 180A
- Optional flameproof Ex-d fusing of main disconnect.
- Flameproof Ex-d encapsulated branch breakers:
  - Thermal-magnetic protection up to 40A.
  - Auxiliary contacts (mechanical or electrical).
  - Lockout on components.
  - Prewired to Increase Safety Ex-e terminal blocks.
  - GFI branch breakers (EPDs).
- Clear, NEMA 4X window, hinged for actuation or breakers.
- Double lockout on windows and breakers.
- Brass plates for hub or cable gland entries.
- Enclosures can be mounted on switchrack frames or walls.
- Completely wired ready for connection to terminal blocks.

Certificates and Compliances

Certifications	PTB – No. Ex-94C. 1037, UL, cUL
Degree of Protection	NEMA 4X IP 66 to IEC 529
UV Resistance	ISO 4892/EN 50 014
Enclosure Material	Glass-reinforced polyester.
Temperature Ratings	–55°C to 55°C
Rated Voltage	480 VAC
Rated Current	Max. 180A

- NEC: Class I, Division 2, Groups A, B, C, D
  Class I, Zone 1, Groups A, B, C, D
- CEC: Class I, Division 2, Groups A, B, C, D
  Class I, Zone 1, Groups A, B, C, D
  Class II, Division 1, Groups E, F, G
- UL Standards: 67, 877
- CSA Standards: C22.2 Nos. 29 & 30

Note:

D2Z Series panelboards are now available with 316L stainless steel enclosures. This material is ideal for wash down and corrosive areas requiring product endurance in adverse locations. To order, simply add suffix ''S860'' to catalog number.

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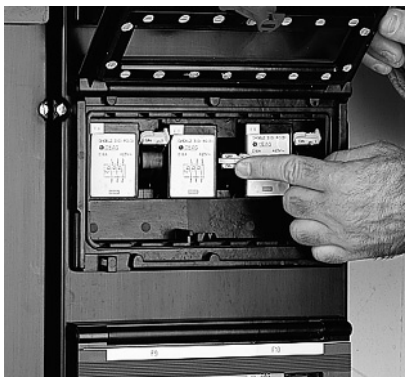
D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Technical Data



- **Large windows** permit easy viewing and quick access to breakers without opening the enclosures.
- **Lockouts** standard for both windows and breakers
- **Up to 6 single-pole breakers** can be installed under one window.
- **NEMA 4X, IP 66 protection.**
- **Window locks** with 5⁄16″ (8mm) Allen Key.



Main Switch

- 40A main switch, 4-pole, optional fusing in enclosure with window(s).
- 80, 125 and 180A main switch, 4-pole, optional fusing in enclosure.

Branch Circuit Breakers 1-pole, 2-pole, 3-pole, 4-pole; with EPD protection 1-pole + Neutral, 2-pole; 2, 6, 10, 16, 20, 25, 32 and 40 Amps	
Explosion Protection	EEx de IIC T6 AEx de IIC T6 Class I, Zone 1, Div. 2 Groups A, B, C, D Class II, Div. 1 Groups E, F, G, cUL
Certifications	UL, cUL PTB - No. Ex-94.C. 1035 U PTB 98 ATEX 1087 U
Rated Operating Voltage	Up to max. 480 VAC
Rated Current	Up to 40A, See page 1A-28
Rated Switching Capacity	10k AIC
Tripping Characteristics	‘‘B’’ or ‘‘K’’*
Tripping Current for EPDs	30mA (up to 300mA on request)
Enclosure Materials	Fiberglass-reinforced polyester

Optional Auxiliary/Signal Contacts**	
Rated Voltage	250 VAC
Rated Current	5A

* ‘‘B’’ Branch breakers are used for all general applications such as lighting and heat-tracing.
Type ‘‘K’’ breakers are used for MOVs and portable power. Contact factory for other application.

** Aux contacts indicate mechanical or electrical tripping
Signal contacts indicate only electrical tripping and are used primarily on heat-tracing circuits.
Branch breakers with signal contacts require next larger breaker enclosure.

Main Disconnect Switch 40, 80, 125, 180A, 4-pole					
Explosion Protection	EEx de IIC T6 AEx de IIC T6 Class I, Zone 1, Div. 2 Groups A, B, C, D Class II, Div. 1 Groups E, F, G, cUL				
Certifications	40-180A	UL, cUL PTB 98 ATEX 1031 U			
	40A	PTB – No, Ex-93C. 1028U			
	80A	PTB – No. Ex-85B. 1055U			
	125/180A	PTB – No. Ex-86B. 1048U			
Rated Operating Voltage	Up to 690 VAC				
Motor Switching Capacity AC3***	Type	230V	400V	500V	690V
	40A	40A	40A	40A	40A
	80A	80A	80A	80A	80A
	125A	125A	125A	125A	125A
	180A	180A	180A	150A	150A

*** See IEC 947-4-1: 1990.

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D2Z Zone 1 Division 2 Panelboards

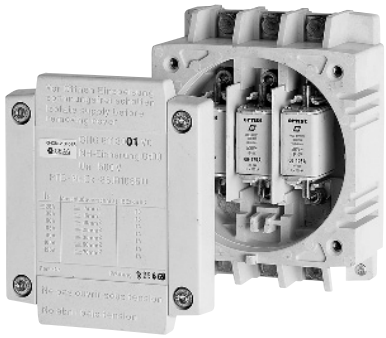
Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Main Fuse, 3-pole		
Explosion Protection	EEx de IIC T4, T6 AEx de IIC T4, T6 Class 1, Zone 1, Div. 2 Groups A, B, C, D	
Certifications	UL, cUL PTB – No. Ex-86.B.1065U	
Rated Operating Voltage	Up to max. 500 VAC	
Rated Current	Current	Temperature Class
	25A	T6
	35A	T5
	50A	T4
	63A	T4
	80A	T4
	100A	T4
	125A	T4

Recommended manufacturer: Cooper Bussman type NH00G fuses for general use or N00M for motor applications.
Specify Amperage (Fuses not provided)



● **Main Fuse, type NH**

Standard Entries		
	Brass gland plate with Zone 1 Myers adapter hubs: (STM series)	**Metric Entries (remove hubs)**
Main supply	(1) 2″ + (3) 1″	(1) M63 + (3) M32
Branches	(9) ¾″	(9) M25



● **Universal Wiring** – Zone 1 Myers® adapter hubs for conduit or Terminator™ cable glands.
● **Stainless Steel Hubs** – available upon request.

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D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

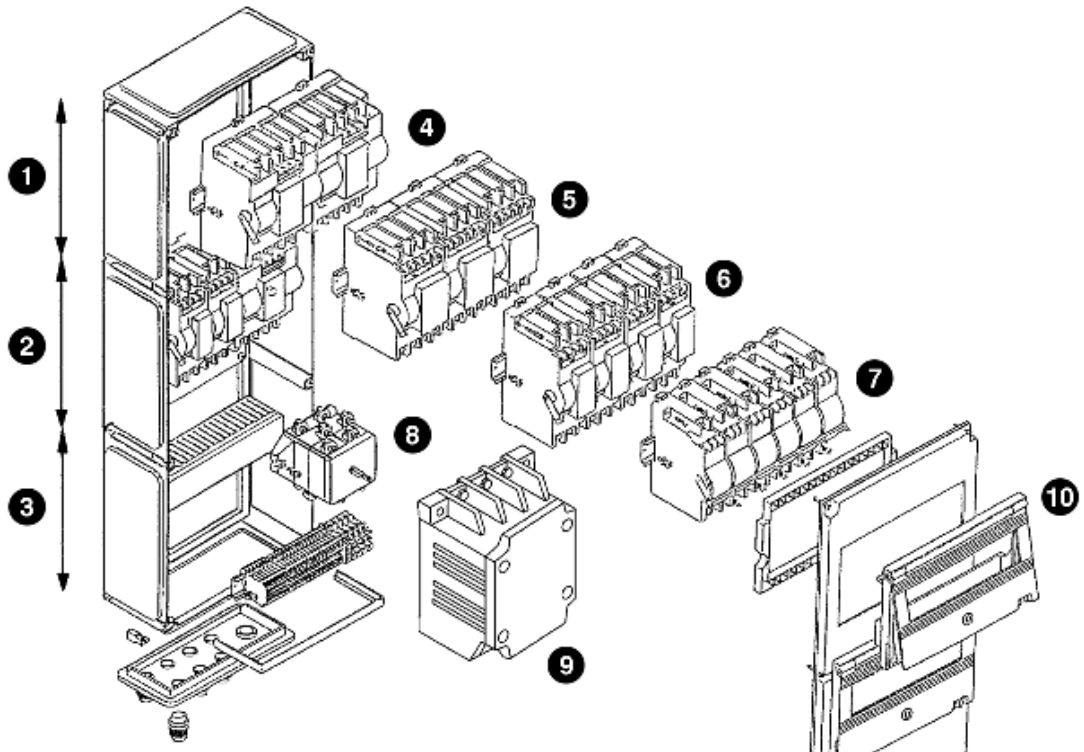
CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

How to Build D2Z Distribution Panels

Example of D2Z distribution panel with built-in components under the window.
(available mounting width = 213mm)

D2Z panel with 3 mounting spaces



1. Mounting Space – 190mm
2. Mounting Space – 190mm
3. Mounting Space – 190mm
4. (2) 4 pole breakers – width 106mm each
5. (3) 3 pole breakers – width 70mm each
6. (4) 2 pole breakers – width 53mm each
7. (6) 1 pole breakers – width 35mm each

available mounting width – 213mm

8. 40A main switch, 4-pole. 1 mounting space required
9. Main fuse. 1 mounting space required in place of 1 window
10. Window

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D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

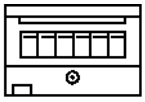
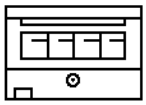
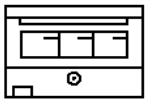
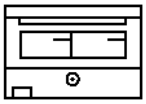
CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Ordering Procedure

Step 1: Window

Determine the number of windows required from the following chart based on the number of branch breakers. Multiply **breaker space** by **number of breakers**. Round the sum total to the next highest whole number to determine required windows. *i.e. For (8) 1-pole and (2) 2-pole breakers: (8 x 0.16) + (2 x 0.25) = 1.78 → 2 windows required.*

	Max. No. Per Window	Branch Circuit Breakers (max 40A)	Space Required For Each Breaker
	6	1-pole	.16
	4	2-pole 1-pole with EPD 1-pole with signal contact	.25
	3	3-pole 1-pole + Neutral with signal contact 2-pole with signal contact	.33
	2	4-pole 2-pole with EPD 3-pole with signal contact	.50

Step 2: Disconnect Switch

If a disconnect switch is required, select suffix from table.

Main Switch Disconnect		
40	–3S* 40	–2S* 40
80	–3S* 80	–2S* 80
125	–3S* 125	–2S* 1250
180	–3S 180	—

*Add F if fuses required. Fuses supplied by others. See page 529

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D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

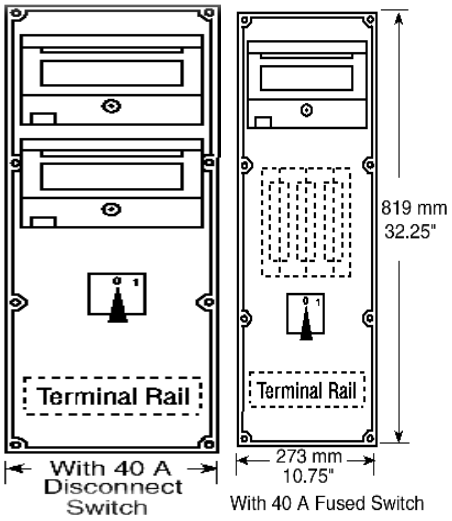
AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Step 3: Panel Size

Determine Panel Size Based on Windows Required

Number of Windows Required	Type Required	Disconnect
1, 2	A mini panel	40A disconnect – Integral
3	B panel	Optional – Adjacent
4 – 6	C panel	Optional – Adjacent
7 – 9	D panel	Optional – Adjacent

Mini Panels Type A



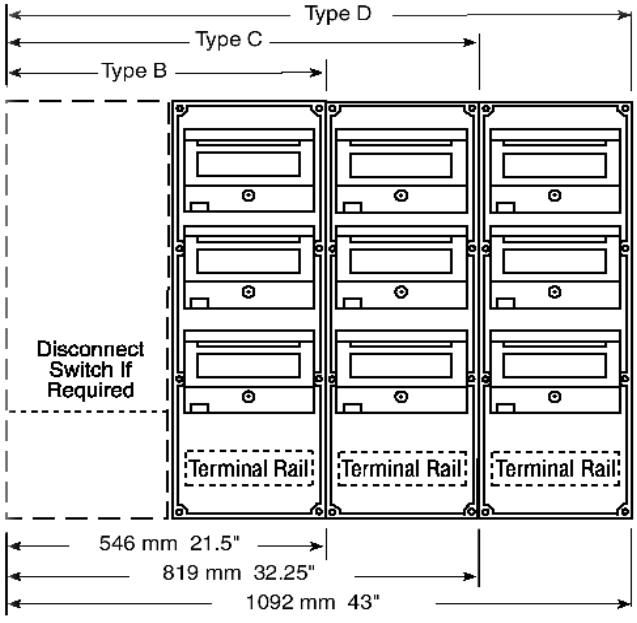
Ordering Information for Type A Mini Panels with Main Switch

40A 3-Phase	40A Fused 3-Phase	Quantity of Single Circuits
D2Z A306 * – 3S40	D2Z A306 * – 3SF40	6
D2Z A308 * – 3S40		8
D2Z A310 * – 3S40		10
D2Z A312 * – 3S40		12

Single Phase	Single Phase	Quantity of Single Circuits
D2Z A106 * – 2S40	D2Z A106 * – 2SF40	6
D2Z A108 * – 2S40		8
D2Z A110 * – 2S40		10
D2Z A112 * – 2S40		12

* See page 534 to complete catalog number

Panels Type B, Type C, Type D

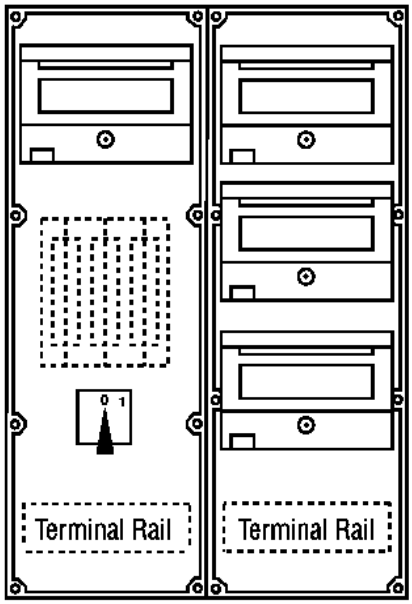


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Step 4: Conduit/Cable Entries

Determine if additional entries are required on sides B and C. All panels are supplied with bottom entries (Side A), 1 main supply and remainder as branches.

Example: Size D panels with disconnect switch, have 1 main supply and 3 branch plates as standard.



Main Entries

Type	Entries	Location
Main Supply	(1) 2″ + (3) 1″	A (Standard)
Branches	(9) ¾″ (B panel)	A (Standard)
	(18) ¾″ (C panel)	A (Standard)
	(27) ¾″ (D panel)	A (Standard)
Branches	(9) ¾″	B (Optional) left side
	(9) ¾″	C (Optional) left side

Terminal Wiring

Supply Circuits			Branch Circuits		
Amperage	mm^2	AWG	Amperage	mm^2	AWG
40	16	6-18	10	4	12-22
80	35	2-6	15	4	12-22
125	70	8-2/0	20	10	6-14
180	95	6-3/0	40	16	6-18

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D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

How to Build a Catalog Number ‡

Panel Family	Quality Branch Panels	Phase	Circuits	Quantity poles/amps*	Main		Branch Entries
D2Z	C	3	40EAX	*06340	-3SF125	-S848	-BC

Class I, Div. 2, Groups A, B, C, D; Zone 1, AEx & Ex de IIC panelboards

Panel Type – see step 3 (No. of enclosures) (A, B, C, or D)

1 – single-phase 3 – 3-phase

Circuit Breaker Total: (see page 531)

(12)	single-pole	= 12 circuits
+**(6)**	three-pole	= 18 circuits
+**(2)**	single-pole EPD	= 4 circuits
+**(5)**	single-pole w/ Aux contacts	= 5 circuits
		39 circuits → **40 circuits**

If an odd number, round up to an even number.

Add suffix if included: **E** for EPD, **AX** for auxiliary contacts, **SC** for signal contacts, **K** for MOVs and portable power

Choose Circuit Breakers (2, 6, 10, 16, 20, 25, 32 or 40 Amp)
(3-pole first – Options, then 2-pole then single-pole)
a. Insert Asterisk*
b. Quantity is 6: **06**
(if less than 10, insert 0 before quantity)
c. Three-pole: **3**
d. Ampere Rating (max 40): **40** (if less than 10, insert 0 before amperage)
Options **"E"** for EPD
"AX" for auxiliary contacts
"SC" for signal contacts
"K" for MOVs and portable power, 480 VAC only

Select disconnect switch (see step 2, page 531) if required
(**3**-phase, 4-pole Main **S**witch, **F**used, **125** A)

480 VAC, 10 kAIC Breakers – S848

Branch Entries
(Side A [bottom] standard)
B – Side B left side
C – Side C right side

Example Order Number: D2Z C 3 40EAX * 06340 * 12120 * 02120E * 05110AX-3SF125-BC

(6) 3-pole/40A	=	***06340**
(12) single-pole/20A	=	***12120**
(2) single-pole/20A EPD	=	***02120E**
(5) single-pole/10A w/Aux contacts	=	***05110AX**

For other panels or options, consult factory
‡ For a D2Z panelboard with 316 stainless steel enclosure, add suffix ''S860'' to catalog number

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D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Spare Component Information

Lighting Circuits Order Code
10k AIC, max. 480 VAC

1-pole
6/window
SIA 001



2-pole
4/window
SIA 002



3-pole
3/window
SIA 003



4-pole
2/window
SIA 004



Please state rated current on order:
2, 6, 10, 16, 20, 25, 32 or 40A.

Optional:
Auxiliary contact – SAH 001
Signal contact – SAS 001 (in the case of branch breakers with signal contacts, the next largest component size is used)

Example:
SIA 001-20 – SAH001
Single Pole, 20A with auxiliary contacts

Heat-Tracing Order Code
EPD with 10k AIC, 30mA leakage, max. 480 VAC

1-pole + N
4/window
FSS 002



2-pole
2/window
FSS 004



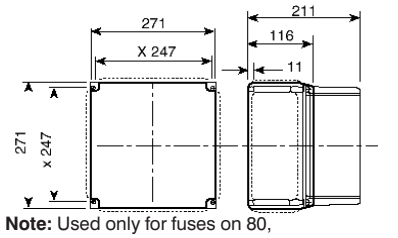
Please state rated current on order:
6, 10, 16, 20, 25, 32 or 40A.

Optional:
With auxiliary contact – FSH 001
With signal contact in Size 4 component – FSS001

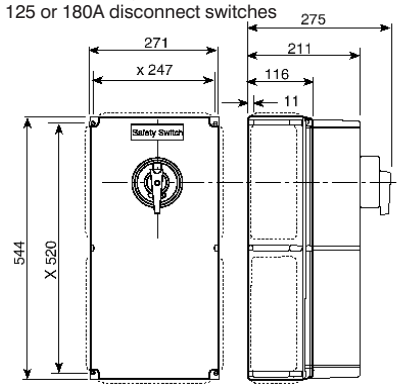
Example:
FSS 004 - 30 – FSS001
EPD, 30A, 30mA with signal contact

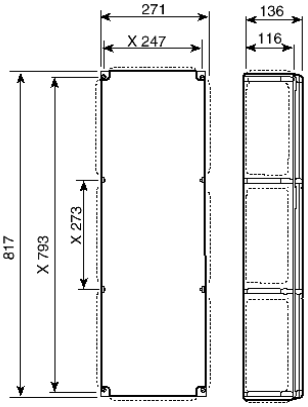
Dimensions

Dimensions in mm X = mounting dimensions

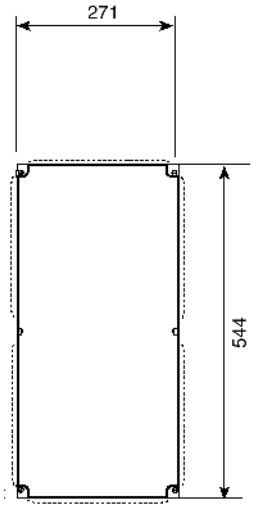


Note: Used only for fuses on 80, 125 or 180A disconnect switches





Note: Used only for fuses on 80, 125 or 180A disconnect switches without fuses.



Note: Used for
– 40A switch with fuses and 1 window or
– 40A switch and 2 windows, or
– 3 windows of branch breakers.

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D2PB Division 2 Circuit Breaker Panelboards

Factory Sealed, Single & Two-Pole Circuit Breakers

Cl. I, Div. 2, Groups C,D
NEMA 3,7CD (Div. 2),12
Dusttight
Raintight

Wet Locations

Application:

D2PB panelboards are designed specifically for use:

- in Class 1, Division 2, Groups C, D hazardous areas where flammable vapors or gases may be present due to accident or abnormal locations
- in damp, wet or corrosive locations
- indoors or outdoors in Division 2 areas of petroleum refineries, chemical and petrochemical plants, and other process industry facilities

For general application, circuit breaker and wiring system information, refer to pages 510 to 513.

Features:

- Enclosures are of external flange design, which makes the interior completely accessible when the cover is removed
- Provided with concealed mounting, which is made possible by having four clearance holes for lag screws or mounting bolts in the back of the enclosure, one in each corner.
- The interior sub-assembly, consisting of a mounting plate, main terminal blocks, and circuit breakers, is removable as a complete unit
- Ample gutter space is provided for ease of field wiring
- Circuit breakers are contained in compact, individual factory sealed enclosures suitable for Class 1, Division 2, Groups C, D hazardous areas. The individual enclosures are easily removed and replaced, therefore changing or adding individual circuit breakers will not present a problem
- The main cover, which is gasketed to exclude dirt and moisture, is attached to the body with hex head bolts and is removed only when installing the panelboard or making wiring changes. In the center of the main cover is a gasketed hinged door, which provides access only to the circuit breaker operating handles, and is held closed by two quick-release catches. The door can be locked by as many as 3 padlocks to prevent unauthorized operation
- Tapped conduit openings are provided for main conduit and branch circuits, as shown in the dimensional information. Standard openings can be reduced or plugged to meet most installation requirements
- Circuit breakers are arranged in two vertical rows and have the circuit numbers marked on the handles. The left row is numbered 1, 3, 5, 7, etc. and the right row 2, 4, 6, 8, etc. Identifying information may be typed on the circuit directory card attached to the inside of the hinged door

Standard Materials:

- Bodies, covers and hinged doors – copper-free aluminum
- Breaker operating handles – type 6/6 nylon
- Interior parts – sheet steel

Standard Finishes:

- Copper-free aluminum – natural
- Type 6/6 nylon – natural (black)
- Sheet steel – electrogalvanized with chromate finish

Size Ranges:

Panel Size	Max. No. of Breakers	
	Single-Pole	Two-Pole
1	12	6
2	24	12

Electrical Rating Ranges:

- Circuit breakers
- Single-pole – 120/240vac max
- Two-pole – 120/240vac max
- Trip ratings – 15, 20 and 30 amp

Certifications and Compliances:

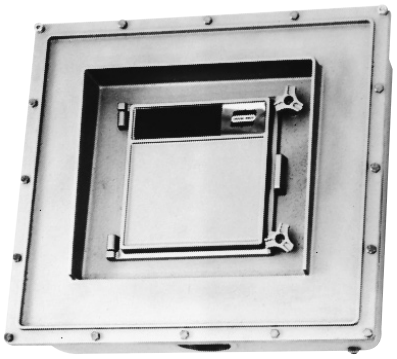
- NEC: Class I, Division 2, Groups C, D
- NEMA: 3, 7CD (Division 2), 12
- UL Standard: 67, 877

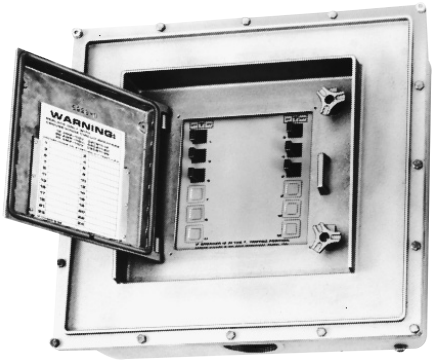
Options:

- Panelboard provided with operating handle lockouts for lockout in ON or OFF positions. Stainless steel lockout frame integral to panel faceplate.

D2PB Size	Use Suffix:
1	–L12
2	–L24

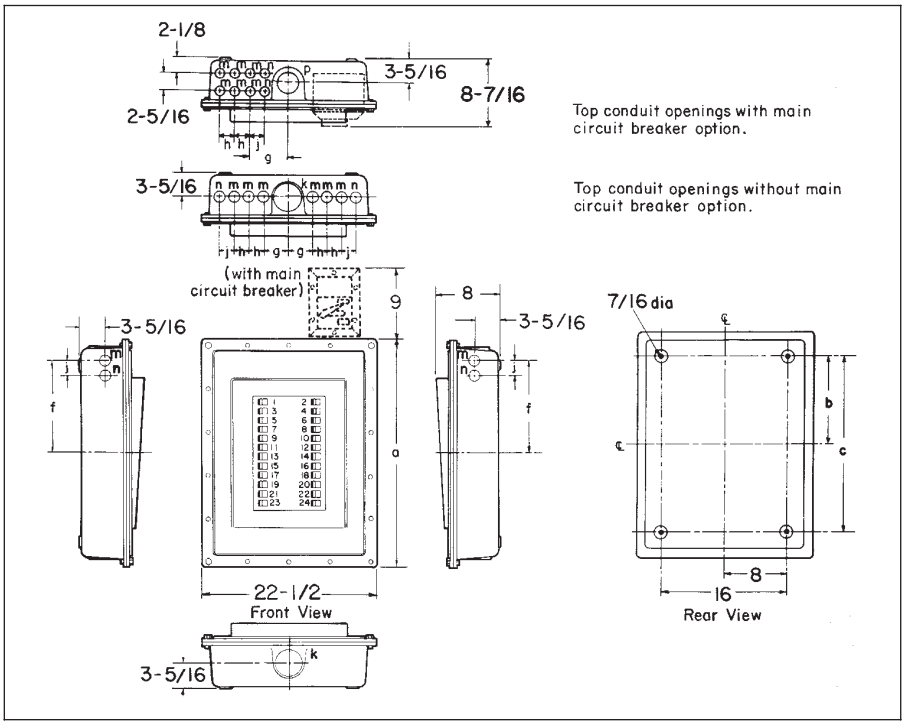
- Circuit breaker operating handle lockout – order D2PB02.
- Branch conduit entries furnished with Cooper Crouse-Hinds type PLG plugs . . . . S822.
- Square head plugs in all openings S872
- Assortment of single-pole and two-pole circuit breakers and trip ratings – see listings.
- Main breaker – see ordering information
- Branch circuit conduit openings located at bottom instead of at top – use suffix INV
- Drilled and tapped conduit openings other than standard – available on special order – specify
- Wiring system other than those listed – See pages 512 – specify
- Breather and drain – use suffix DV





Dimensions (in inches)

Dimensions are approximate, not for construction purposes.



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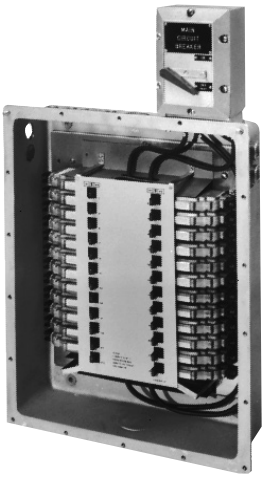
COOPER Crouse-Hinds

D2PB Division 2 Circuit Breaker Panelboards

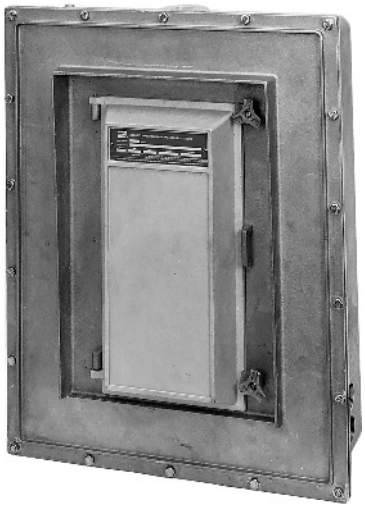
Factory Sealed, Single & Two-Pole Breakers

Cl. I, Div. 2, Groups C,D
NEMA 3,7CD (Div. 2),12
Dusttight
Raintight

Wet Locations



D2PB with Main Breaker Option





D2CB12-20

Ordering Information:

Panelboards are available with single-pole and two-pole, 15, 20, or 30 ampere circuit breakers. To order a panelboard with all breakers of the same rating, add the desired rating as a suffix to the Cat. No. For example, the 12 circuit D2PB1512 panelboard with all the circuit breakers rated at 20 amperes would be ordered as D2PB1512-20.

Panelboards shown below can also be furnished with an assortment of single-pole and two-pole breakers and breaker ampere ratings. To order, the quantities of breakers and ampere ratings are added as a suffix to the Cat. No. The total number of poles will determine the panel size (24 poles maximum), and the wiring systems must be compatible when combining single- and two-pole circuit breakers. For example, a typical D2PB panelboard with a combination of 3 single-pole 15 ampere, 3 single-pole 20 ampere, 2 single-pole 30 ampere, 4 two-pole 20 ampere, and 4 two-pole 30 ampere circuit breakers would be ordered as D2PB2508-315-320-230-808-420-430. The total number of poles is 24 and wiring systems 5 and 8 are compatible 4 wire, 3 phase.

The D2PB with a main breaker is available up to 100 amps. To order D2PB with main breaker, add the appropriate suffix. Example: D2PB1512-15 with three-pole, 100 amp main circuit breaker would be ordered as D2PB1512-15-3M100. If two-pole main is required, change the number 3 to 2. If a lower trip rating than 100 is required, the suffix will change accordingly.

Replacement Circuit Breaker Assemblies

Where D2PB (and N2PB) panelboards have been ordered with less than the maximum number of circuit breakers, breakers can easily be added in the field. Circuit breaker assemblies for field addition or replacement are listed below; they consist of the breaker itself in its factory sealed Class I, Division 2, Groups C, D enclosure, and necessary mounting hardware. These assemblies are not suitable for use as individually mounted units.

Circuit Breaker Assemblies

Ampere Rating	Single-Pole Cat. #	Two-Pole Cat. #
15	D2CB11-15	D2CB12-15
20	D2CB11-20	D2CB12-20
30	D2CB11-30	D2CB12-30

† Add ampere rating. See ordering information.

‡ 1/0 lug, rated 125 amps. takes wire sizes #6 to 1/0; 4/0 lug, rated 225 amps. takes wires sizes 1/0 to 4/0.

♦ For description of these standard wiring systems, see page 512.

Max. No. of Breakers				Single-Pole Circuit Breakers		Two-Pole Circuit Breakers	
Single-Pole	Two-Pole	Panel Size	Main Lug Size‡	Wiring System 4 ♦ Mains: 3-Wire Branches: 2-Wire Solid Neutral Cat. #	Wiring System 5 ♦ Mains: 4-Wire, 3-Phase Branches: 2-Wire Solid Neutral Cat. #	Wiring System 3 ♦ Mains: 3-Wire Branches: 3-Wire Solid Neutral Cat. #	Wiring System 8 ♦ Mains: 4-Wire, 3-Phase Branches: 3-Wire, 1-Phase Solid Neutral Cat. #
6		1	1/0	D2PB1406-†	D2PB1506-†		
8	4			D2PB1408-†	D2PB1508-†	D2PB1304-†	D2PB1804-†
10	5			D2PB1410-†	D2PB1510-†	D2PB1305-†	D2PB1805-†
12	6			D2PB1412-†	D2PB1512-†	D2PB1306-†	D2PB1806-†
12	6	2	4/0	D2PB2412-†	D2PB2512-†	D2PB2306-†	D2PB2806-†
14	7			D2PB2414-†	D2PB2514-†	D2PB2307-†	D2PB2807-†
16	8			D2PB2416-†	D2PB2516-†	D2PB2308-†	D2PB2808-†
18	9			D2PB2418-†	D2PB2518-†	D2PB2309-†	D2PB2809-†
20	10			D2PB2420-†	D2PB2520-†	D2PB2310-†	D2PB2810-†
22	11			D2PB2422-†	D2PB2522-†	D2PB2311-†	D2PB2811-†
24	12			D2PB2424-†	D2PB2524-†	D2PB2312-†	D2PB2812-†

Dimensions

Panel Size Without Main C.B.	Overall and Mounting Dimensions (In.)			Conduit Openings: Spacing (In.)				Size (In.)				Quantity	
	a	b	c	f	g	h	j†	k	m	n*	p	Main	Branches
1	20¾	8	16	7¾	3½	2		3	1¼			2	8
2	28¼	11¾	23½	11⅜	3 1/16	1 15/16	1 15/16	3	1¼	1¼		2	12
Panel Size With Main C.B.													
1	20¾	8	16	7¾	5	1 15/16			1¼		2½	2	8
2	28¼	11¾	23½	11⅜	5	1 15/16	1 15/16		1¼	1¼	2½	2	12

* Conduit opening "n" not supplied on panel size 1.

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1A D2PB, D2L, D2D Circuit Breaker Panelboard Assemblies

with Transformer

Cl. I, Div. 2, Groups B†,C,D
NEMA 3,4‡,7B†CD (Div. 2),12
Wet Locations
Watertight‡

Application:

D2PB, D2L, D2D circuit breaker panelboard assemblies with transformers are for use:
- in Class I, Division 2, Group C,D hazardous areas where, due to accident or abnormal operations, flammable vapors or gases may be present, and which are subject to weather, dampness and corrosion
- indoors or outdoors in Division 2 areas such as petroleum refineries, chemical and petrochemical plants, and other process industry facilities
- where high voltage supply must be stepped down to the lower voltage necessary to serve lighting, heating, appliance, heat tracing, motor and similar circuits

For general information on panelboard applications, circuit breakers and wiring systems, refer to pages 510 to 513.

Features:

- The factory assembled panelboard and transformer are on one compact frame, suitable for either wall or pole mounting. Wiring between the transformer secondary and main lugs of the panelboard is accomplished at the factory.
- Easy to install and wire. The main feed is connected to the transformer primary and the branch circuits are wired to the panelboard terminal blocks.
- The assembly can be installed in the load area to reduce the length of runs of low voltage branch circuits.
- Panelboards used are standard D2PB, D2L, or D2D units with circuit breakers listed in this section.
- Transformers are compound filled or epoxy filled to completely seal out moisture and dirt.

Standard Materials:

- Frames – structural aluminum
- Mounting hardware – stainless steel
- Transformer enclosure – sheet steel, welded
- For panelboard materials, see individual listing pages

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Sheet steel – primed and painted
- For panelboard finishes, see individual listing pages

Options:

- Material – structural steel frames
- Finish – primed and painted or hot dip galvanized
- For options available on the panelboards themselves, see individual listings pages

Size Ranges:

Transformers
- single or three-phase – 5kVA to 30kVA

Panelboards

	Max. No. of Breakers		
	Single-pole	Two-pole	Three-pole
D2PB	24	12	
D2L	42	20	14
D2D	30	14	10

Electrical Rating Ranges:

- Transformers – 480 volt primary
- Transformers – 120/240 volt secondary
- Panelboards – see individual listings

Certifications and Compliances:

- NEC/CEC: Class I, Division 2, Group B†,C,D
- NEMA/EEMAC: 3, 4‡, 7B†CD (Division 2), 12
- UL Standard: 67, 1604
- CSA Standard: C22.2 No. 213

† D2L, D2D with GB suffix and breather and drain holes plugged.
‡NEMA 4 hosetight with breather and drain openings plugged.

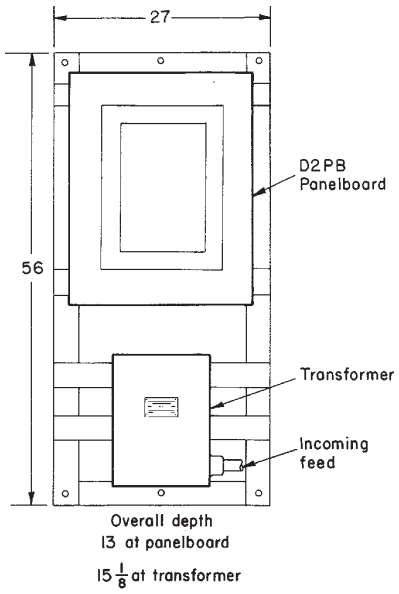
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D2PB, D2L, D2D Circuit Breaker Panelboard Assemblies

with Transformer

Cl. I, Div. 2, Groups B†,C,D
NEMA 3,4‡,7B†CD, (Div. 2),12
Wet Locations
Watertight‡

Typical Assembly*



24 Circuit D2PB panelboard with single-phase transformer

Ordering Check List

1. Select the D2PB, D2L, D2D panelboard required, together with any applicable options or special features. See individual listing pages.

Cat. No. _____

2. Provide the following information, necessary for selection of the correct transformer:

Primary voltage _____

Secondary voltage: _____

kVA rating _____

Taps – number and percent _____

Frequency (60 cycle unless otherwise specified) _____

Single or three-phase _____

Other requirements _____

* Dimensions are approximate, not for construction purposes.

† D2L, D2D with GB suffix and breather and drain holes plugged.
‡ NEMA 4 hosetight with breather and drain openings plugged.

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1A GUSC Circuit Breaker Load Centers

with Quicklag®* Circuit Breakers

Cl. I, Div. 1 & 2, Groups B**,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations

Application:

GUSC circuit breaker load centers are used in:

- areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts, and which are subject to weather, dampness and corrosion
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist

For general application and circuit breaker information, refer to pages 510 and 511.

Features:

- Compact rectangular enclosures with round threaded covers.
- External operating handles can be padlocked in either ''ON'' or ''OFF'' positions.
- Not furnished with internal wiring as field wiring connections are made directly to circuit breaker line and load terminals. To meet varying grounding requirements, an insulated neutral terminal block is provided and is equipped with a removable grounding jumper.
- Bodies have 1″ vertical throughfeed hubs.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

Size Ranges:

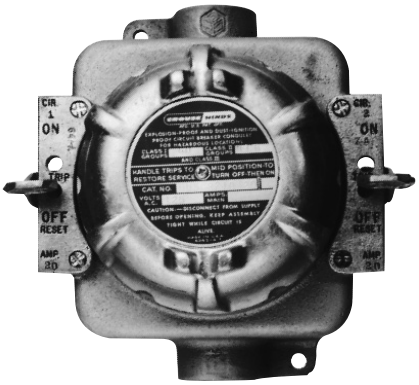
Max. No. of Breakers	
Single-pole	**Two-pole**
2	1

Electrical Rating Ranges:

- Quicklag circuit breakers: single-pole, 240vac max.; two-pole, 240vac max.
- Trip ratings: 10, 15, 20, 30 and 40 amp.

Certifications and Compliances:

- NEC: Class I, Div. 1 & 2, Groups B**,C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div. 2, Groups F,G
  Class III
- NEMA: 3,7BCD,9EFG,12
- UL Standard: 877



Single gang

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
Breather and drain (Class I and Class II)	S198V
Breather and drain (Class I and Class II, Groups F,G)	S454V
Assortment of single and two-pole circuit breakers and trip ratings	Specify

* Quicklag is a registered trademark of Cutler-Hammer Inc.

** See listings for catalog numbers which are suitable for use in Group B hazardous locations. Seals must be installed within 1½″ of all conduit openings.

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GUSC Circuit Breaker Load Centers

with Quicklag®* Circuit Breakers

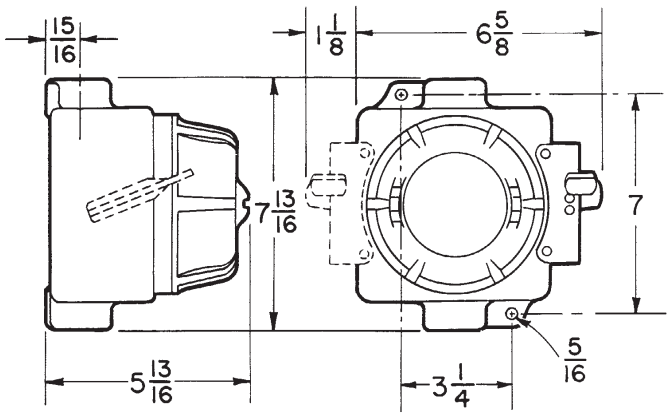
Cl. I, Div. 1 & 2, Groups B**,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Circuit Breaker Information			Load Center With Circuit Breaker		
No. of Breakers	Poles	Ampere Rating	Hub Size	Standard Units Cat. #	Group B Units Cat. #
1	1	10	1	GUSC3110-10	GUSC3110-10-GB
1	1	15	1	GUSC3110-15	GUSC3110-15-GB
1	1	20	1	GUSC3110-20	GUSC3110-20-GB
1	1	30	1	GUSC3110-30	GUSC3110-30-GB
1	1	40	1	GUSC3110-40	GUSC3110-40-GB
2	1	10	1	GUSC3210-10	GUSC3210-10-GB
2	1	15	1	GUSC3210-15	GUSC3210-15-GB
2	1	20	1	GUSC3210-20	GUSC3210-20-GB
2	1	30	1	GUSC3210-30	GUSC3210-30-GB
2	1	40	1	GUSC3210-40	GUSC3210-40-GB
1	2	10	1	GUSC3120-10	GUSC3120-10-GB
1	2	15	1	GUSC3120-15	GUSC3120-15-GB
1	2	20	1	GUSC3120-20	GUSC3120-20-GB
1	2	30	1	GUSC3120-30	GUSC3120-30-GB
1	2	40	1	GUSC3120-40	GUSC3120-40-GB

Dimensions (in inches)

GUSC single gang



Dimensions are approximate, not for construction purposes.

** Group B units must have seals installed within 1½" of all conduit openings.

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Notes Page

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Description	Page No.
Application/Selection	544
Enclosed Switches	
Heavy Duty	
FLS	547
WST/W2ST	558, 559
General Use Snap Switches	
EFD, EFDC, EDS, EDSC	556, 557
FSPC	554
GUSC	553
6810U/7810U	562
Disconnect Switches	
EBM	545, 546
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N2RS	552
GHG	548-551
Light Switch	
GHG273	555

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2A Switches

Application and Selection Quick Selector Chart

Application:

Switches and enclosures are used in hazardous and non-hazardous areas to disconnect motor, lighting and other circuits and prevent arcing of the enclosed switch from igniting hazardous atmospheres.

Considerations for Selection:

Enclosure Location:
- NEC/CEC: and NEMA/EEMAC compliances for hazardous areas and/or wet and dirty locations

Electrical:
- Consistency with the functions to be performed

Application:
- Selection of appropriate switch and operating mechanism

Options:

- Optional material and finishes available for highly corrosive atmospheres
- Various hub sizes are available to suit particular applications

Quick Selector Chart

Switch Enclosure	NEC/CEC & NEMA/EEMAC Compliances	Electrical Rating			Switch Type	Fused or Unfused
		Max. Amps	Max. Volts	Max. HP		
WST	NEMA/EEMAC: 3R, 4, 12	100	600VAC 250VDC	75	Visible blade Heavy Duty	Fused & unfused
EDS, EDSC, EFD, EFDC	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 7BCD, 9EFG, 12	30	277VAC	2	General use snap	Unfused
FSPC	Cl. I, Div. 1 & 2, Groups A, B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 7ABCD, 9EFG, 12	20	277VAC	2	General use snap	Unfused
GUSC	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 7CD, 9EFG, 12	30	600VAC	2	General use snap	Unfused
FLS	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 4, 7CD, 9EFG, 12	100	600VAC	50	Visible blade Disconnect	Unfused
EBM	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC 3, 4, 7BCD, 9EFG, 12	200	600VAC	75	Visible blade Disconnect	Fused & unfused
NRS	NEMA/EEMAC 3, 4X, 12	100	600VAC	75	Rotary-Disconnect	Fused & unfused
N2RS	Cl. I, Div. 2, Groups B, C, D NEMA 3, 4X, 12	100	600VAC	60	Rotary-Disconnect	Unfused
6810/7810	NEMA/EEMAC 3R	30	600VAC	15	Contacts, snap	Unfused
GHG	Cl. I, Div 2, Groups A, B, C, D Cl. II, Div 1, Groups E, F, G Cl. I, Zones 1 & 2, Ex de IIB+H[§], EEx de IIC	180	600VAC	150	Rotary	Unfused

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EBM Disconnect Switches and Enclosures

600 VAC Heavy Duty

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations

Application:

EBM series hinged cover disconnect switches are used:
- to disconnect motor, lighting and other circuits.
- in locations made hazardous by the presence of flammable gases or vapors or ignitable dusts.
- indoors or outdoors in damp, wet and dirty locations, or in areas where frequent washdowns, heavy rain or water spray is prevalent.
- to provide disconnect means and short circuit protection, (fusible version).
- on switchracks or other assemblies where it is desired that motor control be centrally located.

Features:

- Rugged corrosion resistant cast copper-free aluminum construction (less than 0.4 of 1%).
- Switch operating handle is located through the right side wall of the body, permits visual confirmation of correct alignment and operation.
- Total compliance to the wiring end room requirements of the National Electrical Code.
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel quick release captive hex-head cover bolts. Stainless steel springs provide clear indication that cover bolts are fully retracted from the body.
- Switch operating handle can be padlocked in either the ''ON'' or ''OFF'' position.
- Neoprene cover gasket permanently attached to the cover, seals out moisture.
- Bodies have top and bottom drilled and tapped conduit entrances for power and conduits. Removable reducers are supplied as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap on mounting feet.

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shaft and bushing – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers and retractile springs – stainless steel

Certifications and Compliances:

- NEC/CEC: Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standards: UL1203 – Hazardous (classified) locations
- UL subject 2062 –

High A.I.C. Rating (Interrupting Capacity)

Volt	RMS Symm. Amperes
240	65,000
480	50,000
600	25,000

- CSA Standard: C22.2 No. 30
- NEMA: 3, 3R, 4‡, 7BCD, 9EFG, 12

Electrical Rating Ranges:

- 600 VAC
- 30, 60, 100 and 200 Amp.



Ordering Information:

To order an enclosure complete with the disconnect switch, select the catalog number (based on the necessary rating of the switch), from the listing below.

Enclosures only, without the disconnect switch, can be ordered. Select the catalog number for the required enclosure from the listing below.

	Max. HP Rating				Enclosure	
	AC Polyphase			DC using 2 poles only		
Amp Rating	200/240V	440/480V	550/600V	250V Max.	With Switch 600VAC Cat. #	Without Switch Cat. #
Non-Fusible						
30	10	20	25	7½	EBMBB FD W30360	EBMBB FD
60	20	40	60	15	EBMBB FD W60360	EBMBB FD
100	30	75	75	25	EBMBD FD W10360	EBMBD FD
200					EBMBG WD 20036 DR0294928	N/A
Fusible						
30	—	5	7½	5	EBMBB FD W30361	EBMBB FD
60	—	15	15	10	EBMBB FD W60361	EBMBB FD
100	15	25	30	20	EBMBD FD W10361	EBMBD FD
200					EBMBH W20361DR0295687	N/A

Options:

- For available options, see listing on page 367.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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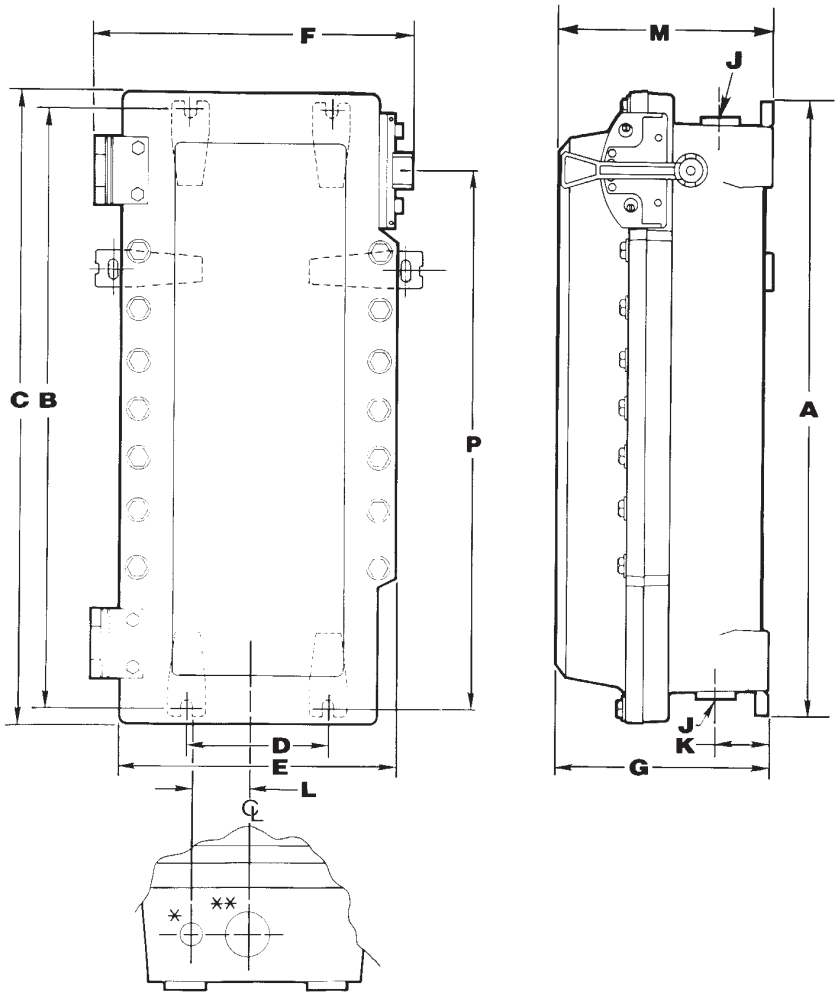
EBM Disconnect Switches and Enclosures

Dimensions (Inches)

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations

Dimensions are approximate, not for construction purposes.



* 1″ D & T conduit entry for control conductors supplied with PLG plug top and bottom.

** Conduit entrance(s) for power conductors (top and bottom). (All conduit entrance(s) supplied with RE reducer and PLG plug.)

	Enclosure Only Cat. No.	Enclosure Size Symbol	Dimensions							** J Conduit Entry Trade Size		Dimensions			
			A	B	C	D	E	F	G	D & T ♦	w/RE	K	L	M	P
30 and 60 Amp Frame	EBMBB✓	B	25.75	24.75	26.90	6.00	13.03	14.46	10.25	2″	1.5″	3.25	3.13	10.25	22.00
100 Amp Frame	EBMBD	D	28.25	27.25	29.40	6.00	13.03	14.46	10.25	3″	2.5″	3.25	3.13	10.25	24.50

✓ – available with Lightning Service™ delivery. ♦ Drilled & Tapped.
See Section G for complete details.
‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

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Application:

FLS heavy duty enclosed switches are used:
- in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled
- as disconnect switches for main feed or individual motor control
- to prevent arcing of the enclosed switch from causing ignition of a specific hazardous atmosphere, or atmospheres, external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas and metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous area where sturdy, durable enclosures are required

Features:

- Enclosed devices are unfused, visible blade motor circuit switches.
- Rugged cast metal enclosures with mounting lugs and taper tapped hubs with integral bushings, in through feed arrangement.
- Interior of the enclosures is readily accessible through threaded cover openings at each end, set at an angle to facilitate wiring.
- Threaded covers and a threaded type operating shaft and bushing provide quick assembly and easy maintenance.
- A padlock can be used to lock the operating handle in an ''ON'' or ''OFF'' position.
- Body and cover threads treated with lubricant at factory to provide raintightness.

Standard Materials:

- Body – copper-free aluminum
- Cover – copper-free aluminum
- Shaft – stainless steel
- Shaft bushings – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural

Options:

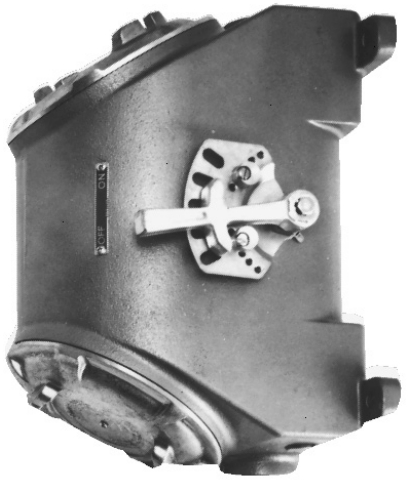
- Ground/neutral wire stud provided. . . . S168
- Breather and Drain S198V
- Auxiliary switch: 1A, 1B. S784
- Auxiliary switch: 2A, 2B S785

Size Ranges:

- Hub size – 1½″ through feed with top entry having a PLG5 plug.

Certifications and Compliances:

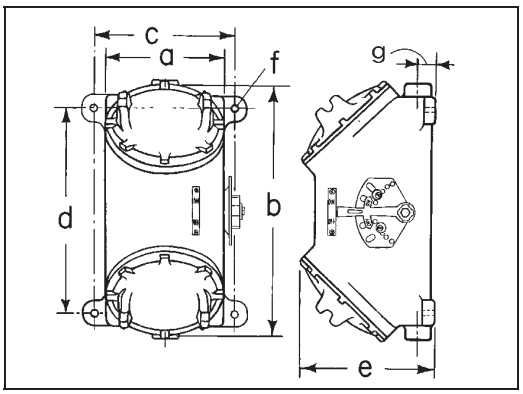
- NEC: Class I, Divisions 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA: 3,4,7CD,9EFG,12
- UL Standard: 894



Furnished with Non-Fusible, Visible Blade Motor Circuit Switch

Switch Ratings							
	Maximum HP – 3 Phase Volts AC					Through Feed Hub	Enclosure With 3-Pole Switch
Amperes	125	240	480	600	250 VDC	Size	Cat. #
30	5	10	20	25	7.5	1½	FLS30364-1-33
60	10	20	40	60	15	1½	FLS60364-1-44
100	15	30	75	75	25	1½	FLS10364-1-55

Dimensions*



a	b	c	d	e	f	g
7½	13⅛	8½	9¾	9⅛	7⁄16	1¾

* Dimensions are approximate, not for construction purposes.

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2A Explosion Protected Disconnect Switches

10, 20, 40, 80, 125 and 180 Amp 600VAC Non-Metallic Enclosure

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB+H_2, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB Certified
EEx de IIC, T6, Zones 1 and 2, IP66

Application:

Explosion Protected disconnect switches are used in a metallic conduit or cable system for surface mounting to control motor, lighting, and other circuits and:

- for individual motor control
- are used to prevent arcing internal to the enclosed switch from causing ignition of a specific hazardous atmosphere or atmospheres.
- are designed for industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, and finishing areas where sturdy, durable enclosures are required.



Features:

- Explosion protected factory sealed motor circuit switches.
- Innovative break-line in cover allows full wiring access, making installation quick and easy.
- High-impact enclosure is designed for excellent corrosion resistance and will not warp from hot or cold water.
- Tongue-in-groove seal guarantees IP66 rating and eliminates possibility of accidental opening or leakage.
- Lockable handle meets OSHA lockout/tagout requirements.
- Molded-in-place mounting feet provide a water channel between wall and enclosure.
- Large rotary handle provides easy gripping with gloved hands.
- Captive cover screws prevent water exposure and possible corrosion.

Certification & Compliances:

- UL/cUL Listed
- Class I, Division 2, Groups A, B, C, D
- Class I, Zones 1 and 2, AEx de IIB+H_2, T6
- Class II, Division 1, Groups E, F, G (cUL)
- CENELEC - PTB Certified
- EEx de IIC, T6, Zones 1 and 2A, IP66
- CSA Standard: C22.2 No.14
- NEMA 4X
- IP66

Standard Materials:

- Enclosure
  10A: Impact-resistance thermoplastic
  20A - 180A: Fiberglass-reinforced polyester
  - Nonmetallic, corrosion resistance
  - Increased safety Ex-e protection
  - Impact Resistance
  - NEMA 4X, IP66 Protection
  - Enclosure meets UL 94-V0
  - UV Rated
- Enclosure Gasket - Silicon
- Handle - Impact-resistant thermoplastic
- Cover Screws - Stainless steel
- Conduit Entries: Zinc Myers® Hubs

Electrical Rating Ranges:

Switches:		Horsepower Ratings:		
		400V	480V	600V
GHG 261	10A	8.4	8.4	–
GHG 262	20A	14.3	14.3	12.2
GHG 263	40A	30.6	37.0	42.6
GHG 264	80A	64.0	76.0	73.5
GHG 265	125A	114.2	126.5	133.3
GHG 266	180A	147.0	147.0	150.0

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Explosion Protected Disconnect Switches

10, 20, 40, 80, 125, and 180 Amp 600VAC Non-Metallic Enclosure

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H_2, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB Certified
EEx de IIC, T6, Zones 1 and 2, IP66

Ordering Information

	10 AMP	20 AMP		40 AMP	
Pole	3 Pole	3 Pole	6 Pole	3 Pole	6 Pole
Rated Voltage	500 V	690 V	690 V	690 V	690 V
Auxiliary Contact	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading	1 NC	1 NO, making – lagging breaking – leading	1 NC
Auxiliary Connection	14 AWG 2 x 2.5 mm²	12 AWG 2 x 4 mm²	12 AWG 2 x 4 mm²	12 AWG 2 x 16 mm²	12 AWG 2 x 16 mm²
Connection Terminals	14 AWG	12 AWG	12 AWG	6 AWG	6 AWG
Conduit Entries	¾″	2 x ¾″	2 x ¾″	2 x ¾″	2 x 1″
Catalog Number	**GHG 261 0005 L0002**	**GHG 262 2301 L0003**	**GHG 262 2601 L0002**	**GHG 263 2301 L0002**	**GHG 263 0050 L0002**
Weight	0.55 kg 1.2 lbs.	1.5 kg 3.3 lbs.	2.3 kg 5.1 lbs.	2.3 kg 5.1 lbs.	6.5 kg 14.3 lbs.
Dimensions	See Figure 1	See Figure 2	See Figure 3	See Figure 4	See Figure 5
Wall Mounting Plate	**GHG 610 1953 R0101**	**GHG 610 1953 R0104**	**GHG 610 1953 R0118**	**GHG 610 1953 R0118**	not required

	80 AMP		125 AMP	180 AMP
Pole	3 Pole	6 Pole	3 Pole	3 Pole
Rated Voltage	690 V	690 V	690 V	690 V
Auxiliary Contact	1 NO, making – lagging breaking – leading	1 NC	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading
Auxiliary Connection	12 AWG 2 x 50 mm²	12 AWG 2 x 50 mm²	12 AWG 1 x 70 mm²	12 AWG 1 x 120 mm²
Connection Terminals	2 AWG	2 AWG	2/0 AWG	4/0 AWG
Conduit Entries	1½″	2 x 1½″	2 x 1½″	2 x 2″
Catalog Number	**GHG 264 0020 L0002**	**GHG 264 0021 L0002**	**GHG 265 0010 L0003**	**GHG 266 0006 L0002**
Weight	6.5 kg 14.3 lbs.	9.0 kg 19.8 lbs.	16.0 kg 35.2 lbs.	16.5 kg 36.3 lbs.
Dimensions	See Figure 6	See Figure 7	See Figure 8	See Figure 9
Wall Mounting Plate	not required	not required	not required	not required

ORDERING INFORMATION
For Variable Speed, Three Phase Drives

	20 AMP	40 AMP	80 AMP
Pole	3 Pole	3 Pole	3 Pole
Rated Voltage	690 V	690 V	690 V
Auxiliary contact	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading
Auxiliary Connection	12 AWG 2 x 4 mm²	6 AWG 2 x 16 mm²	2 AWG 2 x 35 mm²
Connection Terminals	12 AWG	6 AWG	2 AWG
Conduit Entries	2 x ¾″	1 x 1″ + 1 x ½″	1 x 1½″ + 1 x ½″
Catalog Number	**GHG 262 0014 L0001**	**GHG 263 0053 L0001**	**GHG 264 0024 L0001**
Weight	1.6 kg 3.5 lbs.	2.3 kg 5.1 lbs.	3.5 kg 7.7 lbs.
Dimensions	See Figure 10	See Figure 11	See Figure 12
Wall Mounting Plate	**GHG 610 1953 R0118**	**GHG 610 1953 R0118**	**GHG 610 1953 R0110**

Switches can be mounted directly onto a wall. The optional wall mounting plate offers a more convenient method of mounting.

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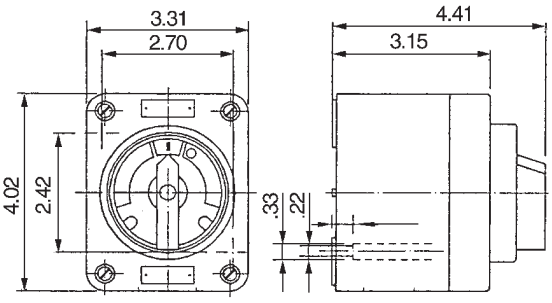


Figure 1 - 10 Amp, 3 Pole

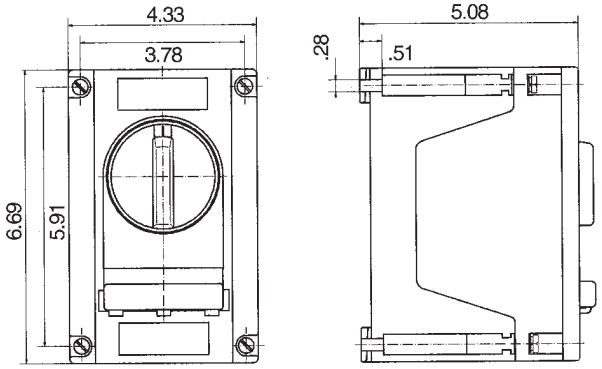


Figure 2 - 20 Amp, 3 Pole

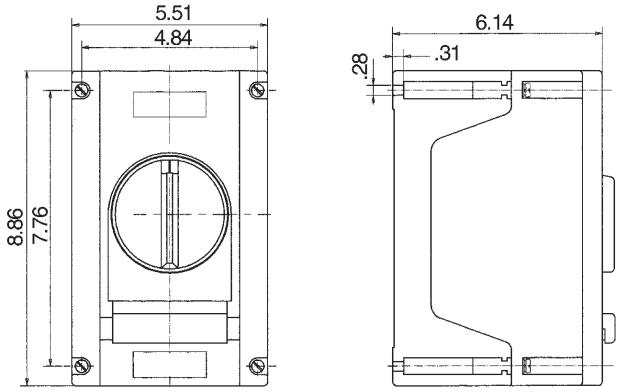


Figure 3 - 20 Amp, 6 Pole

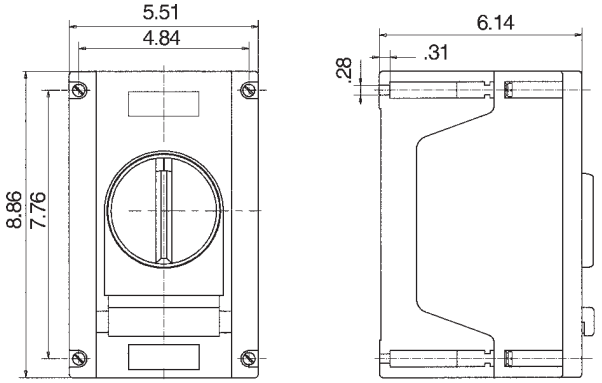


Figure 4 - 40 Amp, 3 Pole

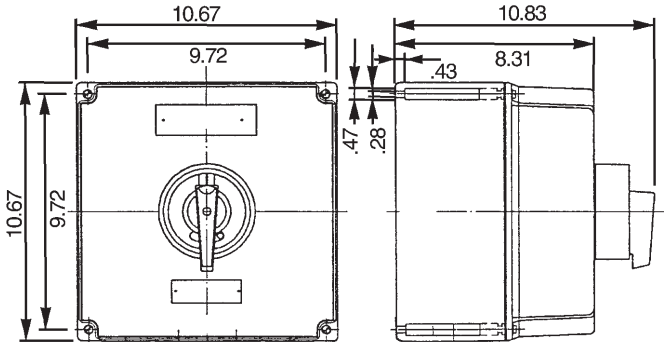


Figure 5 - 40 Amp, 6 Pole

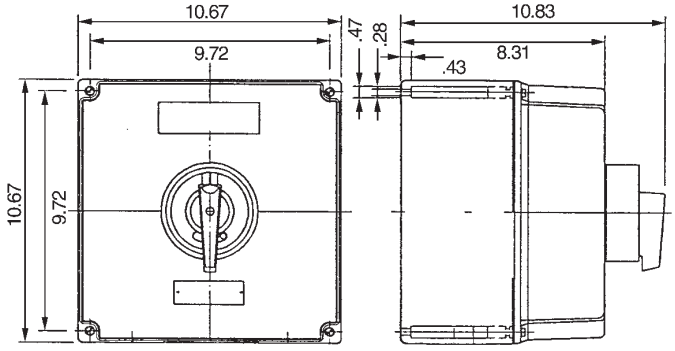


Figure 6 - 80 Amp, 3 Pole

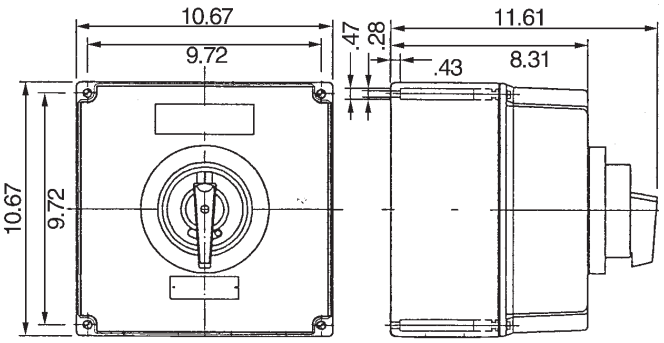


Figure 7 - 80 Amp, 6 Pole

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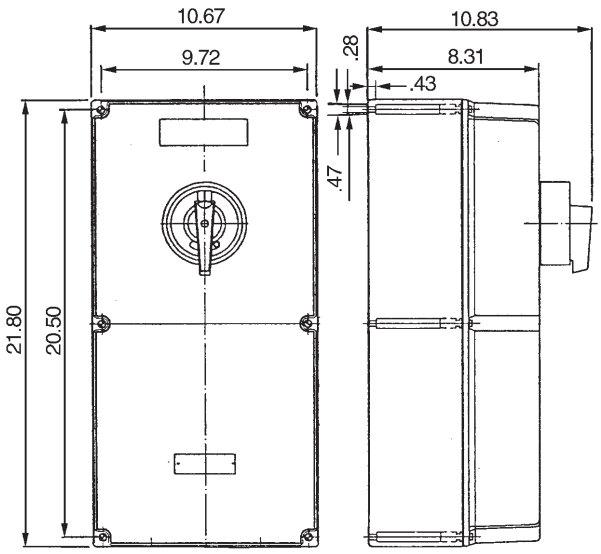


Figure 8 - 125 Amp, 3 Pole
180 Amp, 3 Pole

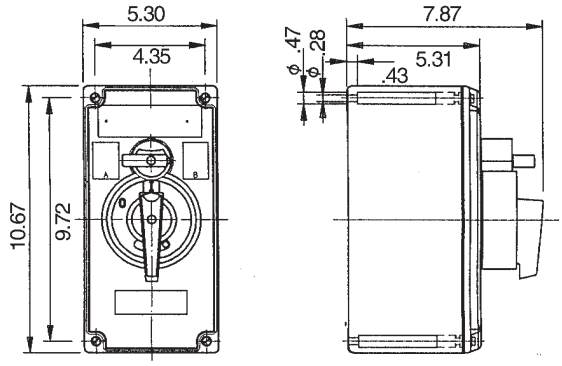


Figure 9 - 20 Amp, 3 Phase Variable Speed

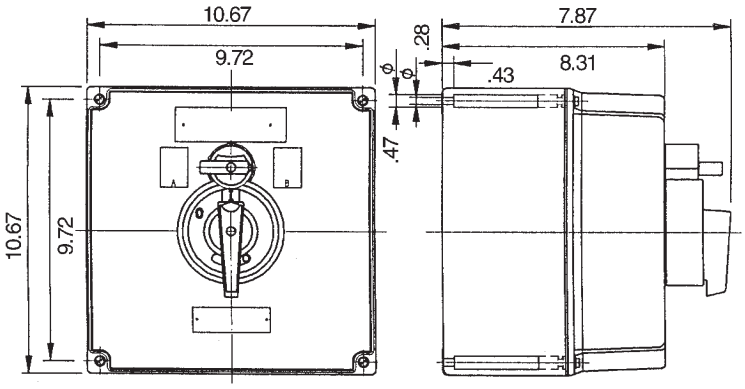


Figure 10 - 40 Amp, 6 Phase Variable Speed

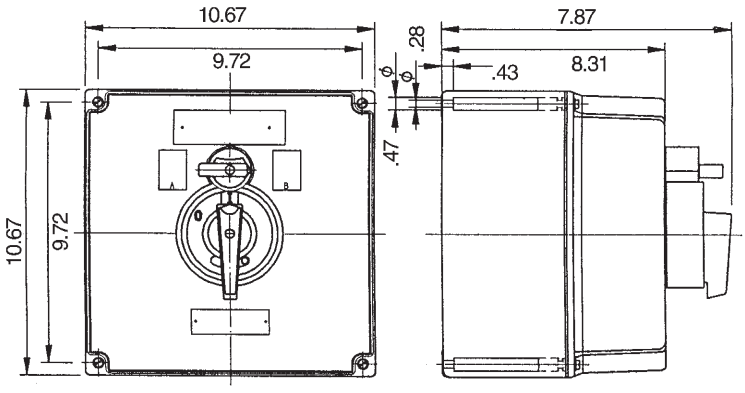


Figure 11 - 80 Amp, 3 Phase Variable Speed

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N2RS Enclosed Switches

Heavy-Duty

Cl. I, Div. 2, Groups B, C, D
NEMA 3, 4X, 7 (B, C, D Div. 2), 12
Watertight
Dusttight
Factory Sealed

Application:

N2RS heavy-duty enclosed switches are used:
- in a rigid metallic conduit or cable system for surface mounting adjacent to or remote from equipment being controlled.
- for individual motor control.
- to prevent arcing internal to the enclosed switch from causing ignition of a specific hazardous atmosphere, or atmospheres.
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, and finishing areas where atmospheres may contain hazardous gases.
- in non-hazardous areas where sturdy, durable enclosures are required.
- when controlling motor, lighting and other circuits.

Features:

- Enclosed devices are unfused, factory sealed motor circuit switches.
- Exceeds NEC® wiring end room requirements for ease of installation.
- RSWP factory sealed industrial control switch, no external seals are required.
- Enclosure is made of Krydon® high-impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Krydon material hubs with integral bushings, for dead-end or through-feed arrangements are supplied.
- Krydon material mounting feet supplied.
- Suitable for wash down and corrosive areas (Type 4X).
- A padlock can be used to lock the operating handle in the ''OFF'' position.
- Rotary actuator with snap action.
- Unitized, strong and durable construction provides longer service life for equipment.
- Factory sealed 10A, 600 VAC auxiliary contact switch provided.

Standard Materials:

- Enclosure - Krydon material
- External Hardware - Stainless Steel
- Operating Handle - Nylon

Size Ranges:

- Hub size – (2) 1½″ (30, 60 amps)
  (2) 2½″ (100 amps)

Krydon material hubs included (not mounted)

Certifications and Compliances:

- NEC: Class I, Div. 2, Groups B, C, D
- NEMA: 3, 4X, 7 (B, C, D Div. 2), 12
- UL Standard: 508, 1604
- cUL to CSA Standard C22.2 No.14
- IP65



Furnished with Non-Fusible, Factory Sealed Motor Circuit Switch

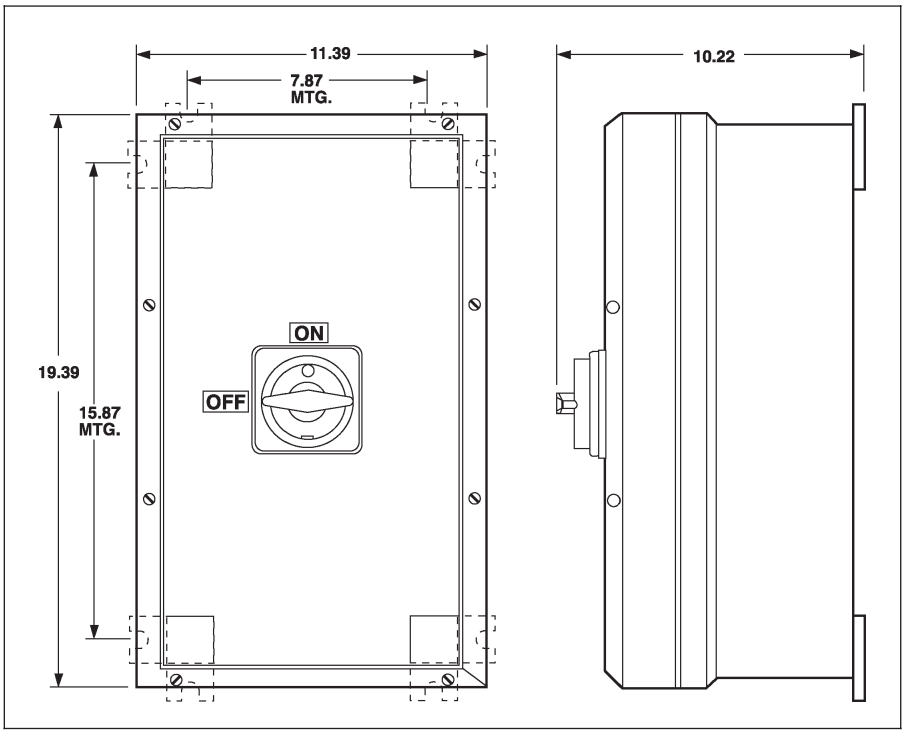
Switch Ratings

	Maximum HP – 3 Phase Volts AC		
Amperes	**240**	**480**	**600**
30	10	20	25
60	15	30	40
100	20	40	60

Ordering Information

Enclosure With 3-Pole Switch	
Hub Size	**Cat. #**
1½″	N2RS603
1½″	N2RS603
2½″	N2RS1003

Dimensions:



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GUSC Enclosures

with General Use Snap Switches

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

GUSC snap switches are used:
- in a rigid metallic conduit system for surface mounting adjacent to or remote from the equipment being controlled
- to prevent arcing of the enclosed switches from causing ignition of a specific hazardous atmosphere, or atmospheres, external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where the atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required



Features:

- Enclosures are of rugged metal construction with mounting lugs and taper tapped hubs with integral bushings, in a through feed or bottom feed arrangement, for connection to the rigid metallic conduit.
- Cover is threaded, which provides for fast and proper assembly.
- Provided with a threaded operating shaft and bushing.
- Provision is made to use a packlock with ¼″ hasp, to lock the operating lever in an ''ON'' or ''OFF'' position.
- Body and cover threads treated with lubricant at factory to provide raintightness.

Style	Rating	Hub Size	Through Feed Hubs Cat. #	Two Hubs at Bottom Cat. #
2-Pole	30 Ampere, 250 VAC; 20 Ampere, 600 VAC; 2 HP, 115-480 VAC	¾	GUSC2052-AH	GUSC2152-AH
3-Pole	30 Ampere, 250 VAC; 20 Ampere, 600 VAC; 2 HP, 115-575 VAC	¾	GUSC2013-AH	GUSC2113-AH

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum
- Shaft – stainless steel
- Shaft bushing – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Size Ranges:

- Hub size – ¾″ (through or bottom feed arrangements)

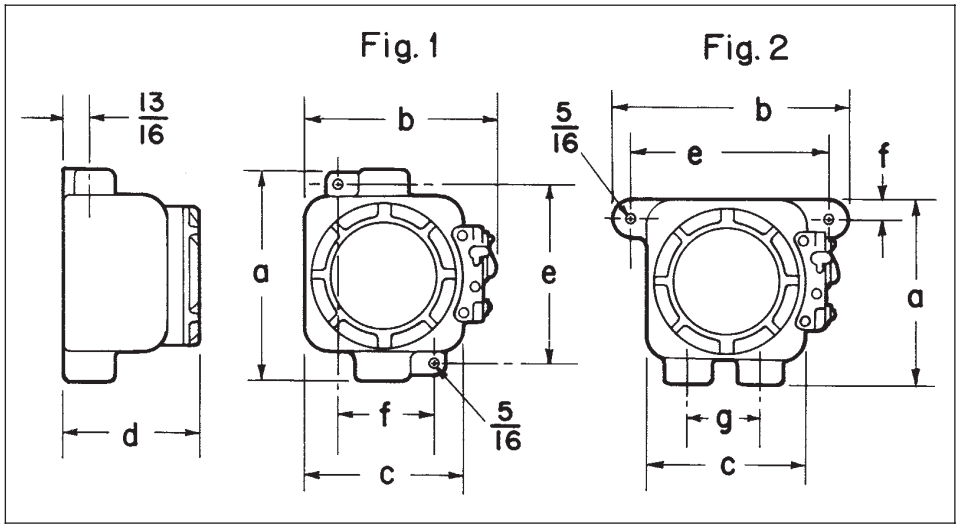
Electrical Rating Ranges:

- 2 and 3-pole – 30 amps, 250vac; 20 amps, 600vac
- 2-pole – 2 hp, 115-480vac
- 3-pole – 2 hp, 115-575vac

Certifications and Compliances:

- NEC/CEC: Class I, Div. 1 & 2, Groups C,D; Class II, Div. 1, Groups E,F,G; Class II, Div. 2, Groups F,G; Class III
- NEMA/EEMAC: 3,7CD,9EFG,12
- UL Standard: 894
- CSA Standard: C22.2

Dimensions* (in inches)



Type	Size	a	b	c	d	e	f	g
Through Feed Hubs – Fig. 1	2, 3-Pole	6 3/16	6 1/16	4 7/8	4 1/8	5 3/8	3	
Two Hubs at Bottom – Fig. 2	2, 3-Pole	5 7/16	6 3/8	4 7/8	4 1/8	5 5/8	3/8	2 1/4

* Dimensions are approximate, not for construction purposes.

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FSPC Enclosures

with General Use Snap Switches

Cl. I, Div. 1 & 2, Groups A†,B,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7A†BCD,9EFG,12

Application:

FSPC snap switches are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:

- to prevent arcing of enclosed switch from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required

Features:

- Rugged cast metal enclosure with mounting lugs and taper tapped hubs with integral bushings, in a through feed arrangement.
- Threaded cover to provide fast, proper assembly and easier maintenance.
- Journalled type operating shaft – close tolerance fit for flametightness.
- Body and cover threads treated with lubricant at factory to provide raintightness.

Standard Materials:

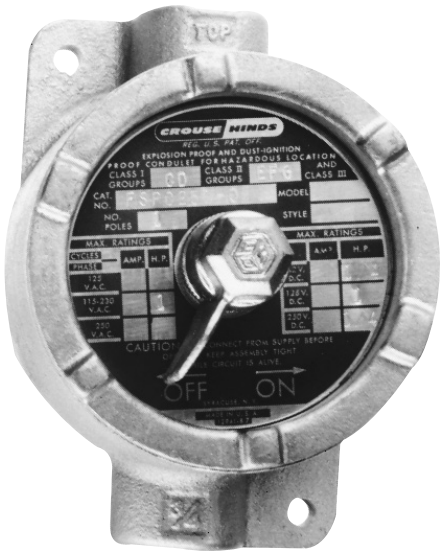
- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum
- Shaft – stainless steel
- Bushing – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

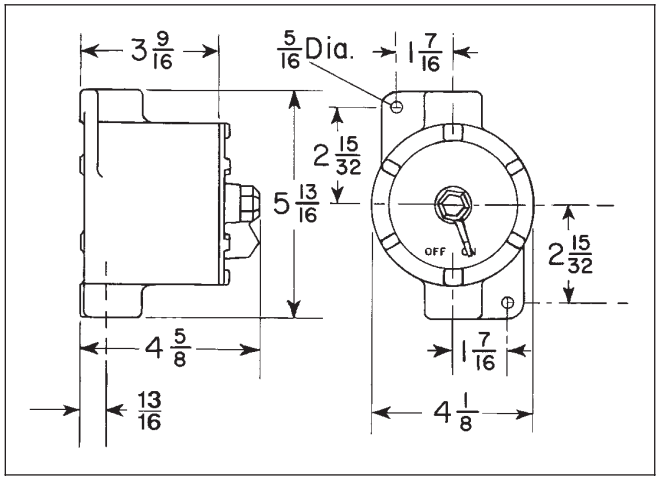
Certifications and Compliances:

- NEC: FSPC 21 series –
  Class I, Div. 1 & 2, Groups C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div 2, Groups F,G
  Class III
- NEMA: 3,7CD,9EFG,12
- NEC: FSPC 216 series –
  Class I, Div. 1 & 2, Groups A,B,C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div. 2, Groups F,G
  Class III
- NEMA: 3,7ABCD,9EFG,12
- UL Standard: 894
- CEC: FSPC 216 series –
  Class I, Div. 1 & 2, Groups C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div. 2, Groups F,G
  Class III
- ENCL. 3,5
- CSA Standard C22.2



Hub Size	Switch Information: Style	Amperes 120VAC§	Amperes 277VAC§	Enclosure with Switch: Cat. #	Cat. #†
¾	1-pole	20	20	FSPC21	FSPC216
¾	2-pole	20	20	FSPC22	FSPC226
¾	3-pole	‡	‡	FSPC230	FSPC2306
¾	3-way	20	20	FSPC23	FSPC236

Dimensions*



§ See table on page 556 for AC-rated switch information.
‡ 30A, 250 VAC; 20A, 600 VAC
† Suitable for Groups A & B usage.
* Dimensions are approximate, not for construction purposes.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Application:

GHG273 series of switches are used:
- to prevent arcing of enclosed switch from causing ignition of a specific hazardous atmosphere external to the enclosure
- in Division 2, Zone 1 and Zone 2 industrial areas such as: chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators and processing industries, coal processing or handling areas, or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required for both indoor and outdoor installations of light switches

Features:

- Small and compact in design.
- Large grounding plate.
- Captive cover screws.
- Protective collar for inadvertent operation.
- Large actuator surface allows for operation while wearing work gloves.
- Labyrinth seal to guarantee the degree of protection IP66.
- The toggle has a luminescent label to locate switch in dark areas.
- Cable entry from the top is made possible by turning the base.

Standard Materials:

Body and cover – low temperature, impact-resistant thermoplastic
Shaft and screws – stainless steel
Grounding plate – brass

Standard Finishes:

Thermoplastic – natural
Stainless steel – natural
Brass – nickel plate



Certifications and Compliances:

Cl. I, Div. 2, Groups A, B, C, D
IP66
PTB Certificate of Conformity Ex-91.C.1017
Cl. I, Zone 1&2, EEx de IIC T6
Cl. I, Zone 1&2, AEx de IIC T6
Cl. I, Zone 1&2, Ex de IIC T6

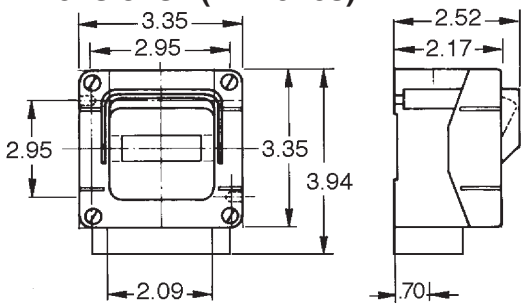
Electrical Ratings:

Voltage	250 VAC	50/60 Hz
Current	16 Amps	

Ordering Information:

Catalog Number	Contact Arrangement	Description	Entry Size
GHG273 2000 L0005		2 pole	½″ NPT
GHG273 2000 L0006		2 pole	¾″ NPT
GHG273 6000 L0001		3-way	½″ NPT
GHG273 6000 L0002		3-way	¾″ NPT

Dimensions* (in inches)



*Dimensions are approximate, not for construction purposes.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

2A EDS and EFD Enclosures

with General Use Snap Switches Front Operated

Cl. I, Div. 1 & 2, Groups B*C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG,12

Application:

EDS and EFD enclosures are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:
- to prevent arcing of enclosed switch from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required

Features:

- Small and compact in design.
- Used with snap switches.
- Mounting lugs and taper tapped hubs with integral bushings.
- Large machine screws for fastening covers to bodies.
- Lockout hole for padlock having ¼″ hasp is provided.
- Threaded type shafts and bushings are used to insure flametightness.

Standard Materials:

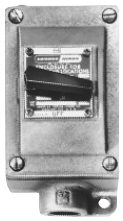
- Bodies and covers – *Feraloy*® iron alloy
- Shafts – stainless steel
- Shaft bushings – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Stainless steel – natural

Certifications and Compliances:

- NEC/CEC: Class I, Div. 1 & 2, Groups B*,C,D
  Class II, Div. 1, Groups E,F,G
  Class II, Div. 2, Groups F,G
  Class III
- NEMA/EEMAC: 3,7B*CD,9EFG,12
- UL Standard: 894
- CSA Standard: C22.2 No. 30



EDS Enclosed Snap Switch

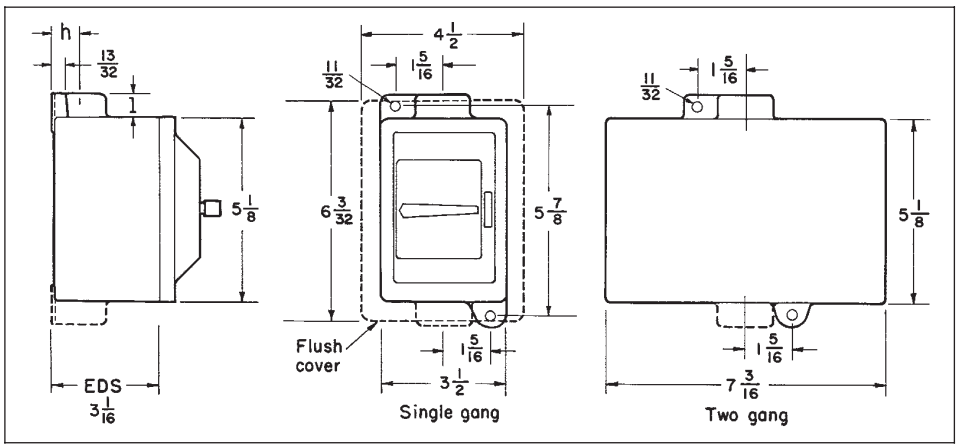
Options:

Description	Suffix to be Added to Encl. Cat. #
• Two or three gang bodies can be supplied with combinations of devices listed for one gang enclosures . . . . Refer to modular listing, section 4C	
• Class I Group B, NEMA 7B – see listing pages	GB
• Flush wall mounting cover with ½″ overhang – single gang only – dull black instrument finish	S173

Complies with U.L. snap switch test requirements as follows:

Type of Test	AC-Rated (only) Switch
Overload	Rated Amp. +380% Power Factor .40-.50 100 cycles, 6-10 cycles per minute
Non-Inductive Endurance	10,000 cycles, 18-24 cycles per minute at rated current – .98 min. P.F.
Inductive Endurance	10,000 cycles, 18-24 cycles per minute – .75-.80 P.F.
Tungsten Filament Lamp Endurance	10,000 cycles, 6-10 cycles per minute at rated current and 120 volts
Temperature Rise	Not to exceed 30°C
Dielectric Withstand	1500 volts

Dimensions† (in inches)



Hub Size	Dim. "h"	Dim. "l"
¾	⅞	13⁄16
1	1	15⁄16

† Dimensions are approximate, not for construction purposes.

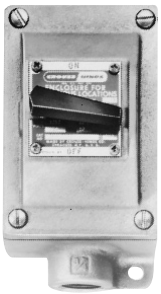
* See suffix GB.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

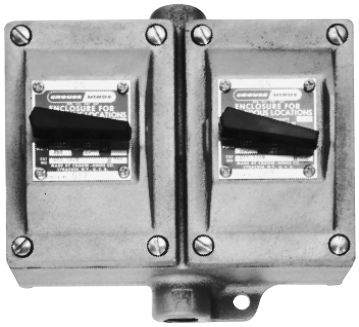
EDS and EFD Enclosures

with General Use Snap Switches Front Operated Single Gang and Two Gang

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG,12



Dead end



Through feed

Hub Size	Style	Amperes§ 120VAC	Amperes§ 277VAC	Single Gang Dead End Cat. #	Single Gang Through Feed Cat. #	Two Gang ♦ Dead End Cat. #	Two Gang ♦ Through Feed Cat. #
¾	1-pole	20	20	EDS2129	EDSC2129†	EDS2229	EDSC2229†
¾	2-pole	20	20	EDS218	EDSC218†		EDSC228†
¾	3-pole	‡	‡	EDS2123	EDSC2123		EDSC2223
¾	3-way	20	20	EDS2130	EDSC2130	EDS2230	EDSC2230
¾	4-way	20	20	EDS2140	EDSC2140		EDSC2240
1	1-pole	20	20	EDS3129	EDSC3129†	EDS3229	EDSC3229†
1	2-pole	20	20	EDS318	EDSC318†	EDS328	EDSC328†
1	3-pole	‡	‡	EDS3123	EDSC3123		EDSC3223
1	3-way	20	20	EDS3130	EDSC3130	EDS3230	EDSC3230
1	4-way	20	20	EDS3140	EDSC3140	EDS3240	EDSC3240
1	1-pole	30	30	EFD3591	EFDC3591†	EFD3691	EFDC3691†
1	2-pole	30	30	EFD3593	EFDC3593†		EFDC3693†
1	3-way	30	30	EFD3594	EFDC3594	EFD3694	EFDC3694

*Class I, Group B:

All units listed on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No.. Example: EDS2129-GB. Seals must be installed within 1½″ of each conduit opening for Group B usage.

§ See table on page 556 for AC-rated switch information.
† ON-OFF standard marking for 1-pole and 2-pole units
‡ 15A, 125 VAC; 10A, 250 VAC
♦ Combinations of switches can be furnished.

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WST Enclosed Switches

Heavy Duty
240 VAC/250 VDC
600 VAC/250 VDC

NEMA 3R,4,12
Wet Locations
Watertight

Application:

WST heavy duty enclosed switches are used in conduit systems:
- as a means of disconnecting motors, lighting and power circuits. A fusible type switch, when used, also provides for short circuit protection
- indoors or outdoors in industrial areas, subways, railroad facilities or any other area that is subjected to dust, dirt, chemical vapors or moisture (rain or hosing)
- either pole-mounted or on flat surfaces

Features:

- Enclosure, handle and other exterior parts are light weight and corrosion resistant.
- Insulated – groundable type terminal block for grounded or ungrounded neutral supplied.
- Mounting lugs may be rotated 90 degrees or moved to the vertical centerline position for pole-mounting.
- Side hinged cover is retained in a closed position by compression spring draw-pull catches, which permits the opening or closing of the cover without having to use any tools. Lower cover latch is equipped for padlocking.
- The cover is interlocked with the body and operating mechanism to prevent the opening of the enclosure, except when the switch is in the ''OFF'' position.
- The operating handle may be padlocked in the ''ON'' or ''OFF'' position, thereby preventing unauthorized operation of the switch and/or opening of the enclosure. Up to three padlocks may be used.
- Switches are NEMA type HD heavy duty with visible blades, a quick make-and-break mechanism with reinforced, positive pressure-type blade and jaw construction. Fusible types have fuse clips with steel reinforcing springs of positive pressure type. Pressure connectors are used for wire connection.

Standard Materials:

- Enclosure – copper-free aluminum
- Operating handle – copper-free aluminum
- Other exterior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural

Size Ranges:

- Conduit openings for 1″ – 1½″ inclusive are arranged for through feed. Removal of the threaded bushings permits use of the next larger conduit size.
- Other sizes and arrangements are available. Detailed information on request.

Electrical Rating Ranges:

- 2 and 3-pole; fusible or non-fusible; 240vac, 600vac and 250vdc
- 30, 60 and 100 amperes
- 3 to 75 hp

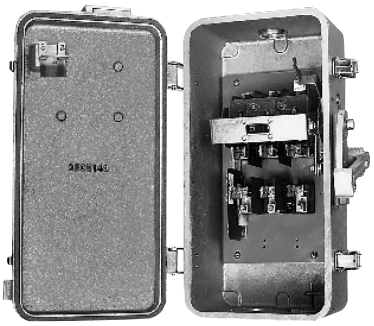
Certifications and Compliances:

- NEMA: 3R, 4, 12
- UL Standard: 98
- CSA Standard. C22.2 Nos. 4 & 14

Options

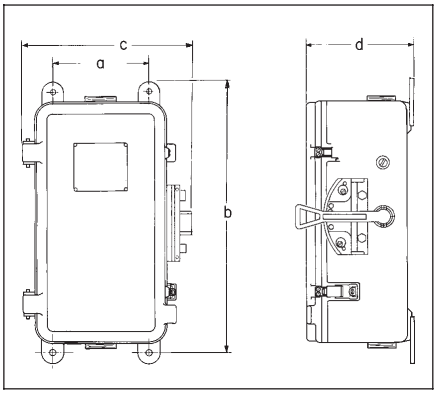
- The following special options are available by adding suffix Cat. No.

Description	Suffix to be Added to Cat. #
Auxiliary switch, 600vac-dc heavy duty pushbutton station rating, can be supplied, and its contacts will close after switch contacts close and open before switch opens	S483



WST shown open

Dimensions* (in inches)



Approximate Dimensions

Amps	a	b	c	d
30	6 9/16	20 1/16	11 3/4	7 1/4
60	6 9/16	20 1/16	12 3/4	7 1/4
100	9 9/16	26 5/16	14 7/8	8 1/4

* Dimensions are approximate, not for construction purposes.

	Amps	Conduit Opening	Standard HP Rating 240VAC	250VDC	600VAC	240 VAC 600VAC/250VDC Cat. #
2-Pole No Fuse	30	1	3	5	10	WST30254
	60	1¼	10	10	25	WST60254
	100	1½	15	20	40	WST10254
3-Pole No Fuse	30	1	7½	5	20	WST30354
	60	1¼	15	10	50	WST60354
	100	1½	30	20	75	WST10354
2-Pole Fusible†	30	1	3	5	10	WST3025**
	60	1¼	10	10	25	WST6025**
	100	1½	15	20	40	WST10025**
3-Pole Fusible†	30	1	7½	5	20	WST3035**
	60	1¼	15	10	50	WST6035**
	100	1½	30	20	75	WST10035**

** Arranged for NEC Class H fuses. May be field converted to NEC Class J fuses.
† Cartridge fuses are not included.

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W2ST Factory Sealed Industrial Control Switch

Applications

W2ST Factory Sealed Industrial Control Switches are used:

- in hazardous areas rated Class I, Division 2, Groups B, C and D
- in a rigid metallic conduit or cable system
- for surface or flush mounting adjacent to or remote from equipment being controlled
- in industrial applications such as chemical plants, wastewater treatment plants, oil and gas refineries, steel mills or any other areas where atmospheres may contain hazardous gases
- when controlling motors, pumps, valves, lighting and other circuits

Features

- Enclosed devices are unfused, factory sealed motor circuit switches
- Exceeds NEC® wiring end room requirements for ease of wiring
- RSWP factory sealed industrial control switch, no external seals are required
- The cover is interlocked with the body and operating mechanism to prevent the opening of the enclosure, except when the switch is in the ''OFF'' position
- Mounting lugs may be rotated 90° or moved to the vertical centerline portion for pole mounting
- Side hinged covers are retained in a closed position by compression spring draw-pull catches, which permit the opening or closing of the cover without tools
- The switch operating handle may be padlocked in the ''ON'' or 'OFF'' position with up to three padlocks

Standard Materials

- Enclosure and operating handle - copper-free aluminum
- Exterior hardware - stainless steel

Electrical Rating Ranges

- 3 Pole Switch, No Fuse
- 30, 60 and 100 amperes
- 3 to 60 HP
- 600 VAC

Certifications and Compliances

- NEC/CEC: Class I, Division 2, Groups B, C and D
- Type: 3 and 12
- UL Standard 698
- cUL to CSA Standard C22.2 No. 14.

Options

- Auxiliary switch, factory sealed 10A, 600 VAC add suffix S483

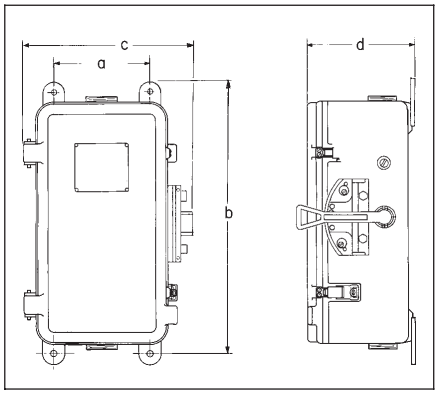
Ordering Information:

Amp	Switch	Catalog Number
30	3 pole, No Fuse	W2ST30354
60	3 pole, No Fuse	W2ST60354
100	3 pole, No Fuse	W2ST10354

Horsepower Ratings

	Single Phase				3 Phase			
W2ST	**120V**	**240V**	**480V**	**600V**	**120V**	**240V**	**480V**	**600V**
30A	3	7.5	20	25	7.5	15	30	40
60A	3	7.5	20	25	7.5	15	30	40
100A	5	10	25	30	10	20	40	60

Dimensions* (in inches)



W2ST Approximate Dimensions (inches):

Amps	a	b	c	d
30/60/100	6 9⁄16	20 1⁄16	11 3⁄4	7 1⁄4

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Industrial Disconnect Switches

30, 40, 60, and 100 Amp 600VAC Non-Metallic Enclosure

NEMA Type 3, 4X, 12
Corrosion Resistant
Watertight

Application:

- Used in manual ''ON'' and ''OFF'' control of single-phase or three-phase AC motors where overload protection is not required or is provided separately.
- Meet NEC Article 430 requirements for a separate disconnect means within sight of all motor loads.
- Offers the ability to lock directly wired motor loads in the ''OFF'' position to comply with OSHA Lockout/Tagout requirements.
- Meets stringent hosedown requirements.

Features:

- Enclosures are constructed from high-impact thermoplastic, providing superior durability and corrosion resistance.
- Enclosure designed with tapered edges to keep liquids away from cover opening.
- Large pistol-grip handle provides easy gripping even with gloved hands.
- Lockable handle meets OSHA lockout/tagout requirements. Handles can be locked in the ''OFF'' position.
- Hidden hinge cover opens to 145°, making installation and maintenance quick and easy.
- Formed-in-place continuous gasket ensures NEMA 4X full perimeter sealing.
- Captive cover mounting screws.
- Brass enclosure assembly cover screw inserts allow for higher torque and prevent stripping.

Certifications and Compliances:

All units
- cUL
- NEMA Type 3, 4X, 12

Non-fused Units
- UL 508 – 40 & 60 amp
- UL 98 – 100 amp

Fused Units
- UL 98 – Enclosed Switch

Standard Materials:

- Enclosure – VALOX® thermoplastic
- Enclosure Gasket – Neoprene
- Handle – Impact-resistant Thermoplastic
- Cover Screws – Stainless Steel
- Screw Assembly Inserts – Brass
- Conduit Entries – See Table 1†

Options:

- Auxiliary contacts for use with pilot light of PLC. 10A 600VAC 1 NO. & 1 N.C.

VALOX® is a registered trademark of General Electric Co.

† Hubs must be ordered separately. See catalog section N for ordering information.



Ordering Information:

Cat. #	Description
NRS30	40A, 600V, no auxiliary contacts
NRS30AX	40A, 600V, with auxiliary contacts
NRS30-FS	30A, 600V, with fusible switch for short circuit protection
NRS30AX-FS	30A, 600V, with auxiliary contacts and fusible switch for short circuit protection
NRS60	60A, 600V, no auxiliary contacts
NRS60AX	60A, 600V, with auxiliary contacts
NRS60-FS	60A, 600V, with fusible switch for short circuit protection
NRS60AX-FS	60A, 600V, with auxiliary contacts and fusible switch for short circuit protection.
NRS100	100A, 600V, no auxiliary contacts
NRS100AX	100A, 600V, with auxiliary contacts
NRS100-FS	100A, 600V, with fusible switch for short circuit protection
NRS100AX-FS	100A, 600V, with auxiliary contacts and fusible switch for short circuit protection
NRSK1	40A - 100A nonfused auxiliary contact kit
NRSK2	60A - 100A fused auxiliary contact kit
NRSK3	30A fused auxiliary contact kit

Hub Ordering Information (order hubs separately)

Trade Size	Catalog Number
Krydon	
½″	**NHUB1**
¾″	**NHUB2**
1″	**NHUB3**
1¼″	**NHUB4**
1½″	**NHUB5**
Stainless Steel	
½″	**SSTG-1**
¾″	**SSTG-2**
1″	**SSTG-3**
1¼″	**SSTG-4**
1½″	**SSTG-5**

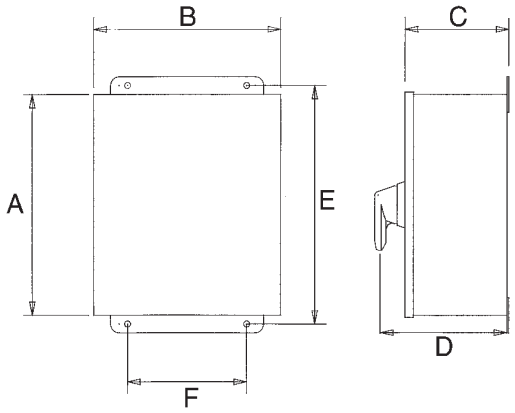
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Electrical Rating Ranges:

Switches	Horsepower Ratings:					
	Single Phase		Three Phase			
	120V	240V	208V	240V	480V	600V
40A Nonfused	1	5	10	10	20	25
60A Nonfused	2	7.5	15	15	30	30
100A Nonfused	5	15	25	30	50	50
30A Fused	2	3	7.5	7.5	15	20
60A Fused	–	–	15	15	30	50
100A Fused	–	–	25	30	60	75



Dimensions (Inches):



Enclosure Type	A	B	C	D	E	F
40 Amp Nonfused	6.0	6.0	5.9	8.1	6.75	4.0
60 Amp Nonfused	8.0	6.0	5.9	8.1	8.75	4.0
100 Amp Nonfused	10.0	8.0	7.9	10.1	10.75	6.0
30 Amp Fused	10.0	8.0	7.9	10.1	10.75	6.0
60 Amp Fused	14.0	12.0	7.9	10.1	14.75	8.0
100 Amp Fused	14.0	12.0	7.9	10.1	14.75	8.0

TABLE 1

Conduit Entries - Ordering Information:

KRYDON®		MYERS® ZINC		MYERS® STAINLESS STEEL	
Cat. No.	Size	Cat. No.	Size	Cat. No.	Size
NHUB1	½″	STG-1	½″	SSTG-1	½″
NHUB2	¾″	STG-2	¾″	SSTG-2	¾″
NHUB3	1″	STG-3	1″	SSTG-3	1″
NHUB4	1¼″	STG-4	1¼″	SSTG-4	1¼″
NHUB5	1½″	STG-5	1½″	SSTG-5	1½″

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2A Manual Contactors

AC Only, Full Voltage
30A/40A/60A 600VAC
Without Overload Protection

Application:

Manual Contactors are used:
- for manual starting of motors up to 30 HP
- in damp or wet locations

Features:

Compact enclosure meets NEMA 3R requirements
- Can be padlocked to help conform to OSHA lockout requirements
- Grounding terminal provides ground for box and cover
- Enclosed switch body does not expose contacts
- Double break butt-type silver alloy contacts provide long life
- Two ½″, ¾″, 1″ knockouts on bottom



Standard Materials:

- .060″ thick steel enclosure

Standard Finishes:

6810/7810 Series:
- Gray baked enamel finish

MC Series:
- Polyester urethane

Electrical Rating Ranges:

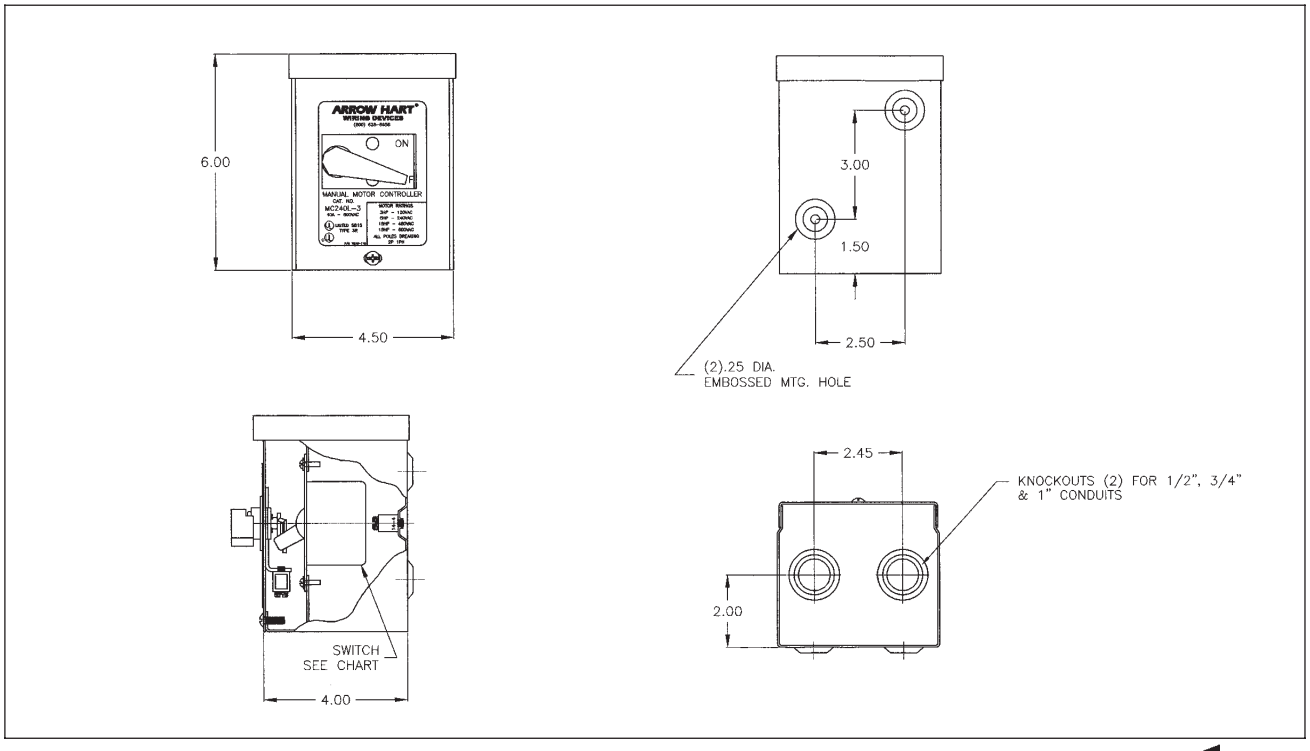
- 30A/40A/60A 600VAC, two pole, single phase
- 30A/40A/60A 600VAC, three pole, poly-phase

	Amps	Horsepower			Cat. #	Switch &
	600V	120V	240V	480/600V	Switch	Enclosure
2 pole with screw terminals	30	2	5	7.5	6810U	6810W
3 pole with screw terminals	30	3	7.5	15	7810UD	7810WD
2 pole with screw & clamp terminals	40	3	5	15	MC240C	MC240C-3
2 pole with box lug terminals	40	3	5	15	MC240L	MC240L-3
2 pole with box lug terminals	60	3	5	15	MC260L	MC260L-3
3 pole with screw & clamp terminals	40	3	7.5	15/20	MC340C	MC340C-3
3 pole with box lug terminals	40	3	7.5	15/20	MC340L	MC340L-3
3 pole with box lug terminals	60	3	7.5	25/30	MC360L	MC360L-3

Certifications and Compliances:

- UL 508
- CSA Standard: C22.2 No. 14
- NEMA 3R

Dimensions:



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Description	Page No.
Application/Selection	564, 565
Signals	
Bells	
ESR	573, 574
Fire Alarm Stations	
N2FA/N2FAC	616
EFS/EFSC	402
Horns	
ETH	566, 567
WH	575
Solid State Audible Devices	
ETH *Flextone*™	568–571
W2H	572
Strobe Lights, Steady-On Beacons, Rotating Beacons	
EX series	See Section 11L
VDAS	See Section 11L
Telephones	
ETW	576
D2TW	577
Accessories	578

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Application:

Material listed in this section provides the essential components for an integrated alarm and signaling system in areas made hazardous by flammable vapors, gases or dusts.

For audible signals in non-hazardous locations, WH horns (page 575) and W2H flexible signaling devices (page 572) are used. For signals in hazardous locations, ESR bells (page 573 and 574), W2H, and ETH horns, and flexible signaling devices (pages 566 through 572) are used. For visual signals in hazardous locations, such as when ambient noise levels make audible signals impractical, EV or VDAS series strobe lights are used. Corrective action may then be taken in the control area and personnel in other areas informed, using the D2TW or ETW hazardous locations telephones (pages 576 through 578).

Considerations for Selection:

Environmental:

- Compliance with NEC/CEC material and construction to withstand rough usage and atmospheric conditions, noise levels and other conditions requiring visual as well as audible signals or alarms.

Electrical:

- Compatibility with electrical system (new installation or existing system).

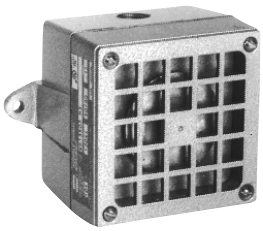
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Audible and Visible Signaling Devices

General Information

When selecting from the listings on the following pages, a signal for use in hazardous or non-hazardous atmospheres, several factors should be taken into consideration:

- The character of the noise found in the area where the signal will be used is of first importance. A signal producing a sound with the greatest contrast to the room noise should always be selected. For example, a horn signal would not be suitable in surroundings where a constant hum or whine is present, whereas a bell signal could readily be heard. Conversely, a bell signal would be inadequate in surroundings where noise is produced by hammering on metal, whereas a horn signal would give good contrast.
- Careful consideration should also be given to the number of signals used to cover an area. Past experience has shown that sound output should be handled in the same manner as light distribution. In other words, much better coverage is obtained by even distribution of several low output units than by one or two high output units. For example, two high powered horn signals, one mounted at each end of a large room, could produce excessively high volume at each end with low volume at the center. However, three standard volume horn signals spaced evenly throughout the area would provide proper volume at all points.
- The listings indicate the sound output of the various signals in decibels. An ETH horn signal rated at 106 decibels produces nearly 20% more sound output than a horn signal rated at 104 decibels.
- The tables on pages 566 and 574 lists the current in amperes at the rated voltages for bell, horn, and siren signals. This makes it possible to calculate the wire size for one or more signals.



WH Horn



ESR Bell



W2H Solid State
Audible Signaling Device



ETH Grill Type Horn Signal



ETH Flex•Tone™
Signaling Devices

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3A ETH Horn Signals

Factory Sealed

Cl. I, Div. 1 & 2, Groups B†,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 7B†CD,9EFG

Application:

ETH horn signals are used:
- for call signals, alarms, and various other signalling applications
- in specific hazardous atmospheres as found in chemical plants, oil and gas refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing industries and grain elevators, as well as in certain metal, coal, combustible fiber processing or handling areas
- in conduit systems and mounted on a flat surface with the projectors aimed in the desired direction

Features:

- No external conduit seal is required.
- The ac signals do not have arcing contacts.
- The dc horns have factory sealed wire leads in the interconnecting nipple and hub.
- The body cover joint of ac horn signals is of serrated construction, machined to close tolerance to ensure flametightness and secured by a clamping ring. The DC unit has a ground joint design.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Size Ranges:

- Hub – ½″ or ¾″ size

Sound Levels:

- See page 557 for individual ratings

Electrical Rating Ranges:

- Nominal voltage –
  24, 115, 230 VAC
  24 VDC

See Table 1 for more complete ratings

Certifications and Compliances:

- NEC: Class I, Division 1 & 2, Groups B† C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 464, 1203
- CSA Standard: C22.2 No. 30



ETH grill type horn signal

Table 1/Operating Current in Amperes at the Nominal Voltage for Horn and Siren Signals

Horn Signal

	Amperes		
	Single Projector	Grill Type	
Nom. Volts	50 to 60 hertz AC ETH2702, ETH2703	50 to 60 hertz AC ETH2313, ETH2316, ETH2312	DC ETH2416
24	—	0.625	0.16
115	.45	0.13	
230	.2	0.065	

†Grill type horns are certified for Group B.

Ordering Information

Single Projector Horn Signal

Supply	Nom. Volts ♦	Nom. Watts	Minimum audibility rating (dB) at 10′:	Hub Size	Cat. #
50 to 60 hertz AC	115	33	105 dB	½	ETH2703
	230	33	105 dB	½	ETH2702

Grill Type Horn Signals

Supply	Nom. Volts ♦	Nom. Watts	Minimum audibility rating (dB) at 10′:	Hub Size	Cat. #
50 to 60 hertz AC	24	49	100 dB	¾	ETH2316
	115		100 dB	¾	ETH2313
	230		100 dB	¾	ETH2312
DC	24	30	100 dB	¾	ETH2416

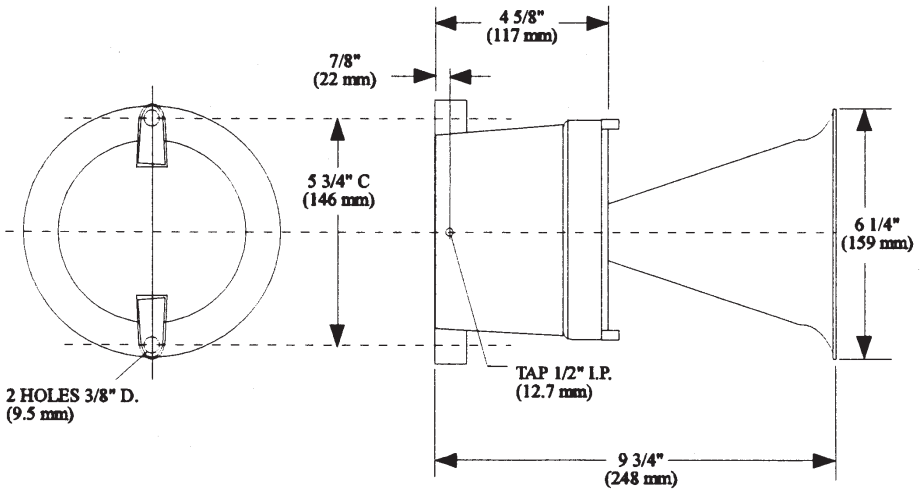
♦ See Table 1, page 566, for more complete ratings.

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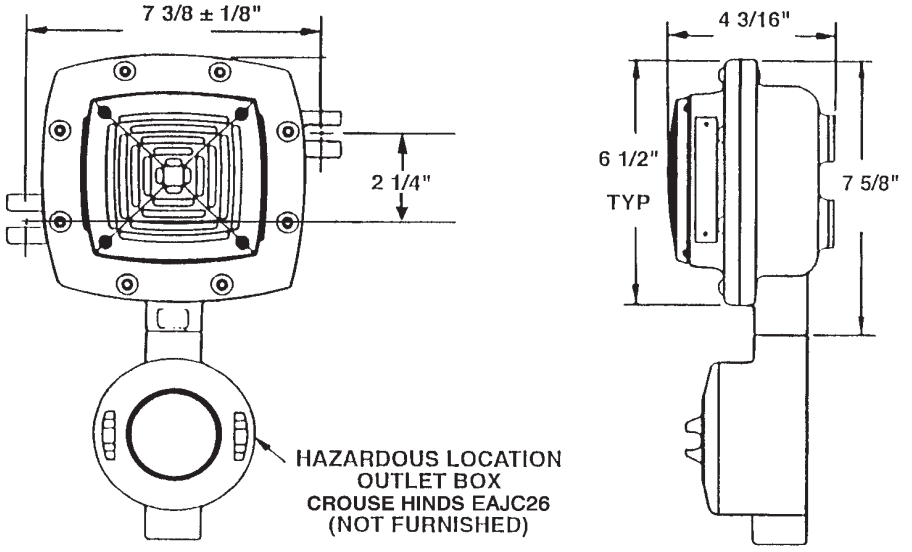
Dimensions* (inches)

* Dimensions are approximate, not for construction purposes.

Single Projector



Grill Type



† Grill type horns are certified for Group B.

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ETH Flex • Tone™ Series Signaling Devices

Factory Sealed

NEW!

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1 & 2, Groups E,F,G
Cl. III
UL and cUL 464 and 1203 listed

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EXPLOSIONPROOF ELECTRONIC SIGNAL STAND - ALONE UNIT

Cooper Crouse-Hinds **Flex-Tone Series Electronic Signals** are explosionproof, heavy-duty, tone-selectable signaling devices capable of producing volume-controlled, high-decibel tones. Certified for use in Class I, Division 1, Group B, C & D applications, the Flex-Tone Series is ideal for signaling warning or emergency conditions.

The **Flex-Tone ETH855** accepts up to two contact closures and delivers two audible output signals selected from 55 available tones. The two tones are selected by setting miniature switches within the unit. One of the tones can be assigned a priority status to override the other tone.

The **Flex-Tone ETHD855** is diode polarized for applications requiring electrical supervision of signaling circuit field wiring. The signal delivers one audible output signal selected from the 55 tones available.

PRIMARY APPLICATIONS:

• For use where a high-decibel sound is required for alert or evacuation in hazardous locations.

KEY FEATURES AND BENEFITS:

• Heavy duty zinc cast construction.
• 55 tone capacity — No additional tone modules needed.
• Internal volume control with internal potentiometer.
• Corrosion-resistant heat-flowed epoxy finish.
• Supplied with factory sealed ½-inch threaded fitting for quick installation.
• Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
• Mounts onto any surface using only three bolts.
• 30-inch numbered wire leads

CERTIFICATIONS AND COMPLIANCES:

• Class I, Division 1, Groups B, C & D
• Class II, Division 1, Groups E, F & G
• Class III
• UL and cUL 464 and 1203 Listed

MATERIALS & FINISHES:

• Body — Heavy-duty zinc cast construction
• External hardware — Stainless steel

RATINGS:

• 24VDC, 36VDC, 125VDC, 250VDC, 24VAC, 120VAC & 240VAC (ETH)
• 20–31VDC (ETHD)

OUTPUT SOUND PRESSURE:

• 109 decibel (dBA) output

ORDERING INFORMATION:

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
EXPLOSIONPROOF, TWO OUTPUT			
ETH855/24	24VDC	0.061	0.250
ETH855/36	36VDC	0.077	0.380
ETH655/24	24VAC, 50/60Hz	0.250	0.950
ETH655/120	120VAC	0.088	0.260
ETH655/240	240VAC	0.091	0.190
ETH855/125	125VDC	0.031	0.130
ETH855/250	250VDC	0.019	0.070
DIODE POLARIZED, EXPLOSIONPROOF, SINGLE OUTPUT FOR FIRE ALARM APPLICATIONS Meets min. 75 dBA for fire alarm indication			
ETHD855/24	20–31VDC	0.061	0.950

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ETH Flex ● Tone™ Series Signaling Devices

Factory Sealed

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1 & 2, Groups E,F,G
Cl. III
UL and cUL 464 and 1203 listed

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

NEW!



EXPLOSIONPROOF REMOTE SPEAKER/AMPLIFIER

Cooper Crouse-Hinds **Flex-Tone Series Explosionproof Remote Speaker/Amplifier** is designed for remote mounting in Division 1 areas where simultaneous high-decibel signaling is required.

Used in connection with the Panel Control Signal Generator, the **Flex-Tone ETH845** operates directly from local power sources, allowing remote speaker/amplifiers of different voltages to be connected within the same system. Available in both AC and DC voltages, the Flex-Tone 3 can be mixed and matched throughout an application using the available line power.

ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on page 570.

PRIMARY APPLICATIONS:

● For use where simultaneous signaling of a high-decibel sound is required for alert or evacuation in hazardous locations.

KEY FEATURES AND BENEFITS:

● Heavy duty zinc cast construction.
● Individual volume control.
● Corrosion-resistant heat-flowed epoxy finish.
● Supplied with factory sealed ½-inch threaded fitting for quick installation.
● Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
● Mounts onto any surface using only three bolts.
● 30-inch numbered wire leads.

CERTIFICATIONS AND COMPLIANCES:

● Class I, Division 1, Groups B, C & D
● Class II, Division 1, Groups E, F & G
● Class III
● UL and cUL 464 and 1203 Listed

MATERIALS & FINISHES:

● Body — Heavy-duty zinc cast construction
● External hardware — Stainless steel

RATINGS:

● 120VAC, 240VAC, 125VDC and 250VDC

OUTPUT SOUND PRESSURE:

● 109 decibel (dBA) output

ORDERING INFORMATION:

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
EXPLOSIONPROOF REMOTE SPEAKER/AMP			
ETH845/24	24VDC	0.061	0.250
ETH645/24	24VAC, 50/60Hz	0.250	0.950
ETH645/120	120VAC	0.088	0.260
ETH645/240	240VAC	0.091	0.190
ETH845/125	125VDC	0.031	0.130
ETH845/250	250VDC	0.091	0.070

***** ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on page 570.

ETH845 Series Remote Speaker/Amplifiers **accept a 10VAC audio signal** from Flex-Tone Panel Control Signal Generator.

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3A ETH Flex • Tone™ Series Signaling Devices

Factory Sealed

NEW!

Cl. I, Div. 2, Groups A,B,C,D
Cl. II, Div. 2, Groups F,G
Cl. III
UL 464 and 1604 listed
NEMA 3R, IP 44



Cooper Crouse-Hinds **Flex-Tone Series Panel Control Signal Generator** controls and initiates a synchronous signaling sound from all Flex-Tone 3 remote Speaker/Amps installed in a system. The Panel Control Signal Generator is mounted in a Division 2 area, while controlling the Flex-Tone 3 Speaker/Amps that are remotely mounted in Division 1 areas.

The Panel Control Signal Generator produces 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24VDC or 120VAC external voltage source such as an output from a PLC.

PRIMARY APPLICATIONS:

- Hazardous area applications calling for high-decibel output with simultaneous signal delivery over all speakers installed in a system
- Emergency warning systems, plant evacuation alarms, security intrusion alarms, process monitoring, shift start and dismissal horns, and paging signals

KEY FEATURES AND BENEFITS:

- 27 tone capability — No additional tone modules needed.
- Centralized programmable tone selection.
- PLC compatible.
- System-wide priority tone.
- 24 VDC battery backup terminals.
- Short circuit protected.

CERTIFICATIONS AND COMPLIANCES:

- Class I, Division 2, Groups A, B, C & D
- Class II, Division 2, Groups F & G
- Class III
- UL 464 and 1604 Listed
- cUL C22.2 No. 205
- CE Marked — Cenelec LV & EMC Directives
- NEMA 3R, IP 44

MATERIALS & FINISHES:

- Zinc-cast construction with an epoxy powder coat finish

RATINGS:

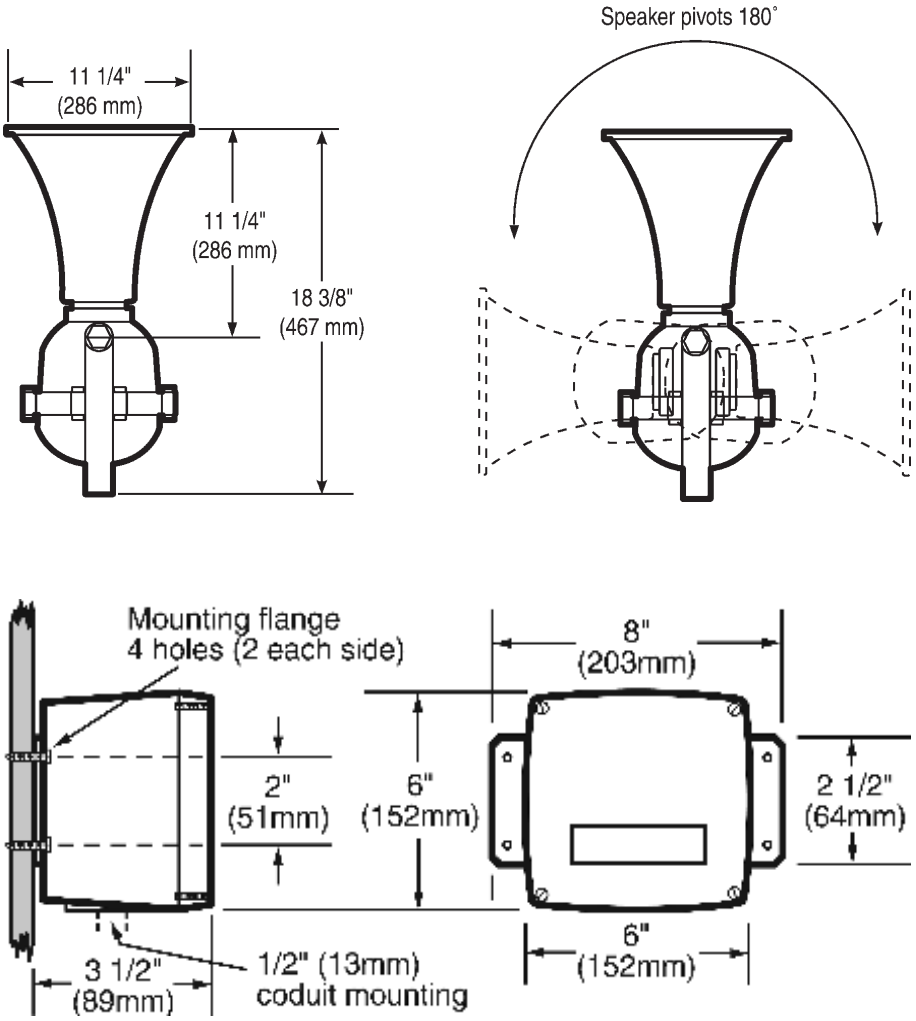
- See table below

ORDERING INFORMATION*:

Catalog Number	Voltage	Input Card Activation Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
PANEL CONTROL SIGNAL GENERATOR				
ETH840/24E74	24VDC	24VDC	0.10	0.74
ETH640/24E13	24VAC, 50/60Hz	24VDC	0.10	1.30
ETH640/120E36	120VAC, 50/60Hz	24VDC	0.10	0.36
ETH640/120M38	120VAC, 50/60Hz	120VAC	0.10	0.38
ETH640/120E32	120VAC, 50/60Hz	24VDC	0.10	0.32
ETH640/240E20	240VAC, 50/60Hz	24VDC	0.10	0.20
ETH840/125E21	125VDC	24VDC	0.10	0.21
ETH840/250E10	250VDC	24VDC	0.02	0.10
ETH640/120M31	120VAC, 50/60Hz	120VAC	0.10	0.31
ETH640/240M20	240VAC, 50/60Hz	120VAC	0.10	0.20
ETH840/125M20	125VDC	120VAC	0.10	0.20
ETH840/250M10	250VDC	120VAC	0.02	0.10
ETH640/120R31	120VAC, 50/60Hz	RS485	0.10	0.31
ETH640/240R20	240VAC, 50/60Hz	RS485	0.10	0.20
ETH840/125R20	125VDC	RS485	0.10	0.20
ETH840/250R10	250VDC	RS485	0.02	0.10

* Flex-Tone Panel Control Signal Generator must be used with Cooper Crouse-Hinds ETH845 Remote Speaker/Amps on page 569.

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W2H Signaling Devices

Cl. I, Div. 2, Groups A,B,C,D Wet Locations
Cl. II, Div. 2, Group G
NEMA 3,7ABCD (Div. 2),9G (Div. 2)
Raintight
Dust-tight

Application:

W2H series signaling devices are used:
- as independent audible signal or warning devices
- in Class I, Division 2, Groups A,B,C,D hazardous areas where flammable vapors or gases may be present due to accidental or abnormal operation
- in Class II, Division 2, Group G hazardous areas where combustible dusts may be present due to accidental or abnormal operation

Features:

- The W2H is solid-state, compact, rugged but lightweight. The system is programmable, which allows the convenience of tone selection, without the need for separate tone modules. Each unit can be programmed for any one of four different tones (whoop, wail, hi-lo and horn), by wiring to the corresponding terminal on the unit's terminal strip. Separate sound modules not required.
- Unit may be field wired for multiple signal selection by manual or automatic control.
- 180° speaker rotation allows flexibility in direction of sound
- Corrosion-resistant conformal coating protects the printed circuit and other interior components.

Standard Materials:

- Body – die-cast aluminum
- Projector – spun aluminum
- Hardware – stainless steel

Standard Finishes:

- Body and projector – gray hammertone enamel
- Stainless steel – natural

Sound Levels:

- Minimum audibility rating (dB) at 10′:
  W2H Series – 93dB

Electrical Rating Ranges:

- Nominal voltage –
  24, 120, 240 ac; 60 Hz
  24 dc

Certifications and Compliances:

- UL: Standard 886
- NEC: Class I, Division 2, Groups A,B,C,D, Class II, Division 2, Group G
- NEMA 3,7ABCD Division 2
  9G Division 2



W2H programmable signal

Signal Selection:

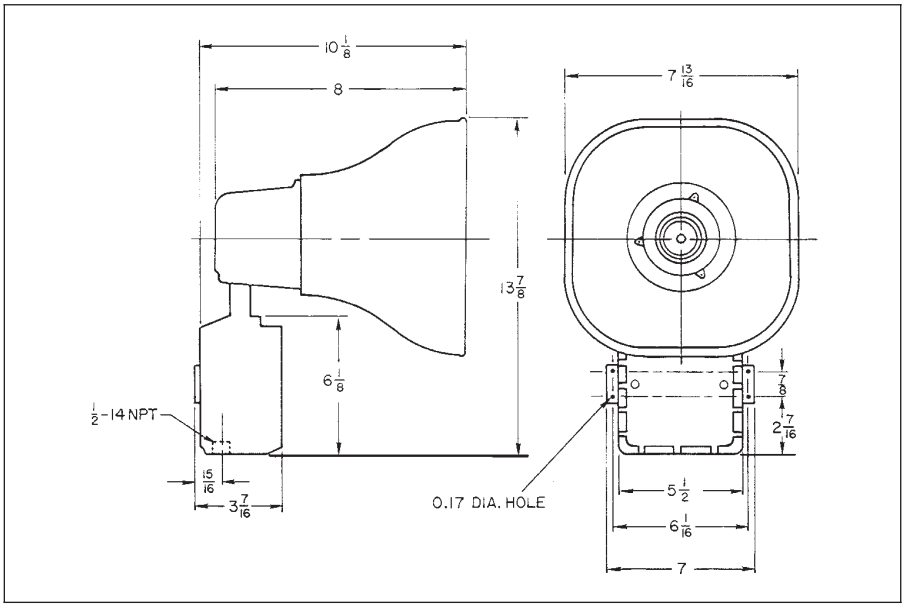
Signal Terminal	Sound Description	Audible Frequency	Repetition Rate
#4 Whoop	Ascending low to high, repeated	Low tone – 400 Hz High tone – 850 Hz	48 cy/min.
#5 Wail	Conventional Siren	400 –1100 Hz	24 cy/min.
#6 Hi-Lo	Alternating Hi-Lo	Low tone – 650 Hz; High tone – 850 Hz	24 cy/min.
#7 Horn	Steady	630 Hz	Continuous

Normal Power

Nominal Voltage	Operating Current	Standby Current	Cat. #
24VDC	0.55A	0.06A	W2H840
24VAC	1.25A	0.13A	W2H640
120VAC	0.27A	0.03A	W2H620
240VAC	0.15A	0.02A	W2H660

Dimensions (inches)

Dimensions are approximate, not for construction purposes.



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Application:

ESR bell signals are used:
- for call signals, alarms, or in various other signalling applications
- in specific hazardous atmospheres such as in chemical plants, oil and gas refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing industries and grain elevators, as well as in certain metal, coal, combustible fiber processing or handling areas
- in conduit systems, and mounted on a vertical flat surface with the striker at the bottom

Features:

- The conduit hub contains an integral bushing.
- The body cover assembly permits the location of a hub at the top, bottom or either side (the striker must be located at the bottom for proper operation).
- There are no external seals required except when used in Group B hazardous areas.
- The ac signal does not have arcing contacts.
- Binding screw terminals are provided in ac signals for supply conductors.
- A vibrating or single stroke striker mechanism is furnished with 6 or 10 inch diameter gongs.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum
- Junction box – body – *Feraloy* iron alloy
  – cover – copper-free aluminum
- Gong – steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural
- Steel – gray matte

Size Ranges:

- Hub – one ¾″ size

Sound Levels:

- See page 574 for individual ratings

Electrical Rating Ranges:

- Nominal voltage –
  12, 24, 48, 115, 230 ac

See Table 1 (page 574) for complete ratings.

Certifications and Compliances:

- Standard Units:
- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III

NEMA/EEMAC: 7CD,9EFG
- UL Standard: 464, 1203
- CSA Standard: C22.2 No. 30

- Group B Units:
- NEC/CEC:
  Class I, Division 1 & 2, Groups B,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III

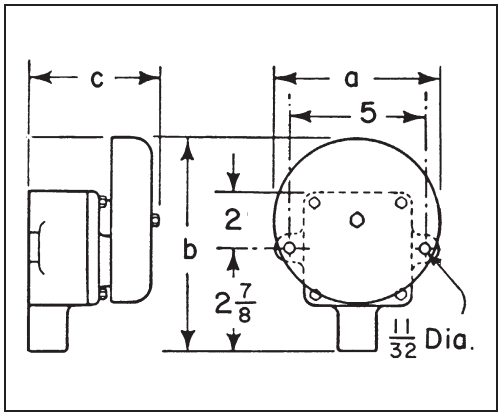
NEMA/EEMAC: 7BCD,9EFG
- UL Standard: 464, 1203
- CSA Standard: C22.2 No. 30



ESR bell signal for AC

Dimensions (in inches)

Dimensions are approximate, not for construction purposes.



Dia. Gong	a	b	c
6	6	6¾	5¼
10	10	10¾	6

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Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 7BCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Table 1/Operating Current in Amperes at the Nominal Voltage For Bell Signals

	Amperes	
Nom. Volts	All Vibrating 25 to 60 hertz AC	All Single Stroke 50 to 60 hertz AC
12	1.67	1.75
24	.53	.62
48	.44	.41
115	.189	.189
230	.092	.086

Bell Signals

Hub Size	Supply	Nom. Volts	Voltage Range	Dia. Bell	Vibrating Hammer (25 to 60 hertz) Standard Units Cat. #	Vibrating Hammer (25 to 60 hertz) Group B Units‡ Cat. #	Minimum audibility rating (dB) at 10′:	Single Stroke Hammer (50 to 60 hertz) Cat. #	Minimum audibility rating (dB) at 10′:
¾	AC	12	9.6 to 13.2	6	ESR2675	ESR2675-GB	67	ESR2665	64
		24	19.2 to 26.4		ESR2674	ESR2674-GB	82	ESR2664	64
		48	38.4 to 52.8		ESR2673	ESR2673-GB	88	ESR2663	67
		115	92 to 126.5		ESR2672	ESR2672-GB	88	ESR2662	67
		230	184 to 253		ESR2671	ESR2671-GB	85	ESR2661	67
		12	9.6 to 13.2	10	ESR2615	ESR2615-GB	82	ESR2625	64
		24	19.2 to 26.4		ESR2614	ESR2614-GB	85	ESR2624	64
		48	38.4 to 52.8		ESR2613	ESR2613-GB	85	ESR2623	67
		115	92 to 126.5		ESR2612	ESR2612-GB	91	ESR2622	67
		230	184 to 253		ESR2611	ESR2611-GB	85	ESR2621	67

‡ Install seal within 1½″ of conduit opening.

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Application:

WH vibrating horn signals are used:
- for code or call signals, or as a general alarm in a signal system that might involve hours of continuous operation
- in non-hazardous atmospheres of industrial areas such as warehouses, yards, exteriors of buildings, and in-plant areas
- mounted on walls or other flat surfaces with projectors aimed in a desired direction

Features:

- The joint between the body and horn assembly is gasketed for raintightness.

Standard Materials:

- Copper-free aluminum and die cast zinc

Standard Finishes:

- Gray hammertone enamel

Capacity Ranges:

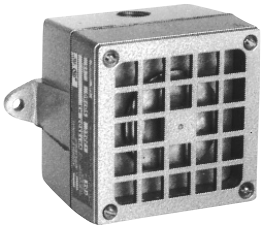
- Minimum audibility rating (dB) at 10′:
  - ac – 87 decibels
  - dc – 96 decibels

Electrical Rating Ranges:

- Nominal voltage – 120 ac, 50/60 hertz
  – 24 dc
- Operating characteristics
  – voltage range +10%, –20%
  – nominal watts – 4.8 on 24 VDC
  18 VA on 120 VAC

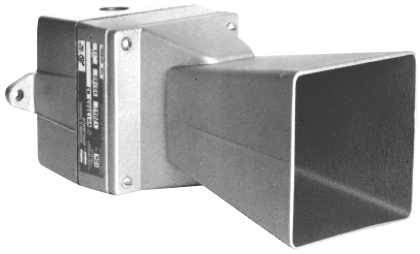
Certifications and Compliances:

- UL Standard: 464

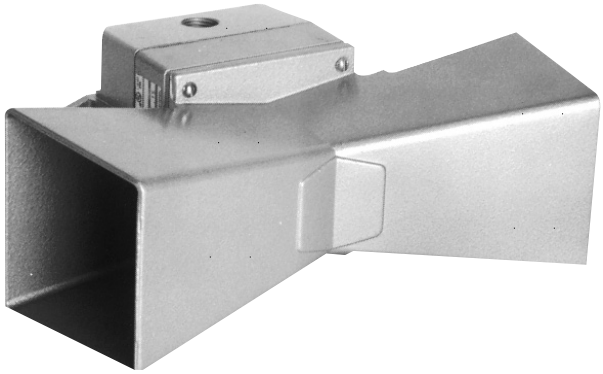


WH with grill

Nom. Amps	Nom. Volts	Grill Cat. #	Single Projector Cat. #	Double Projector Cat. #
.20	24 DC	WH14506	WH14516	WH14526
.15	120 AC 50 to 60 hertz	WH13503	WH13513	WH13523

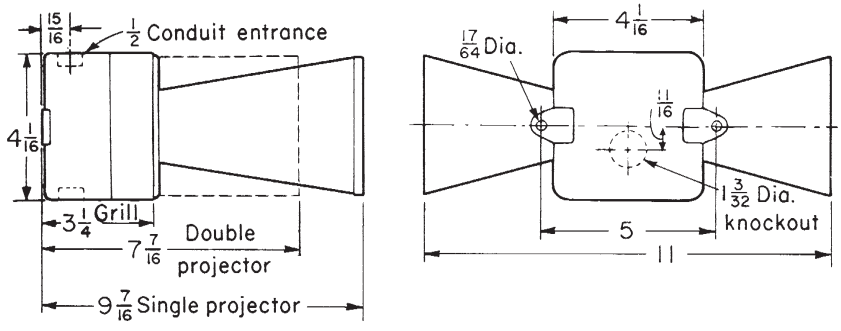


WH with single projector



WH with double projector

Dimensions: (in inches)



Dimensions are approximate, not for construction purposes.

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ETW Telephones

Cl. I, Div. 1 & 2, Groups B,C,D	Explosionproof
Cl. II, Div. 1, Groups E,F,G	Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G	Raintight
Cl. III	Wet Locations

Application:

ETW series telephones are used:
- For communication in areas which may be hazardous due to the presence of flammable gases or vapors, and/or combustible dusts.
- In chemical plants, oil refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing and similar industries.

Features:

- Modern styled, pushbutton wall-mount unit is very rugged in design, suitable for the harshest industrial applications.
- Large, easy to read keyboard allows gloves-on operation.
- Cast copper-free aluminum housing, with baked on powder coat finish, is highly resistant to corrosive atmospheres.
- Units are tone or pulse compatible and offer superior audio clarity.
- Handset cord features a pin-type connector for easy field replacement. Handset circuit is intrinsically safe.
- Up to ten units can be connected on one line.

Standard Materials:

- Enclosure – copper-free aluminum
- Handset – high impact plastic

Standard Finishes:

- Enclosure – baked powder paint (safety blue)

Ordering Information:

Phone w/handset ETW401
Replacement handset (10′ cord) ETW: 301SC
Replacement handset (20′ cord) . . . . . ETW: 301SC20
Phone w/headset . . . . . ETW401 HS
Phone push-to-talk handset . . . . . ETW401 PB
Replacement headset. . . . . ETW: P7200
Explosionproof ringer ETR1

Certifications and Compliances:

- NEC/CEC:
  - Class I, Divisions 1 & 2, Groups B,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
- UL Standard: 1203, 698
- CSA Standard: C22.2 No. 30
- FCC Approved

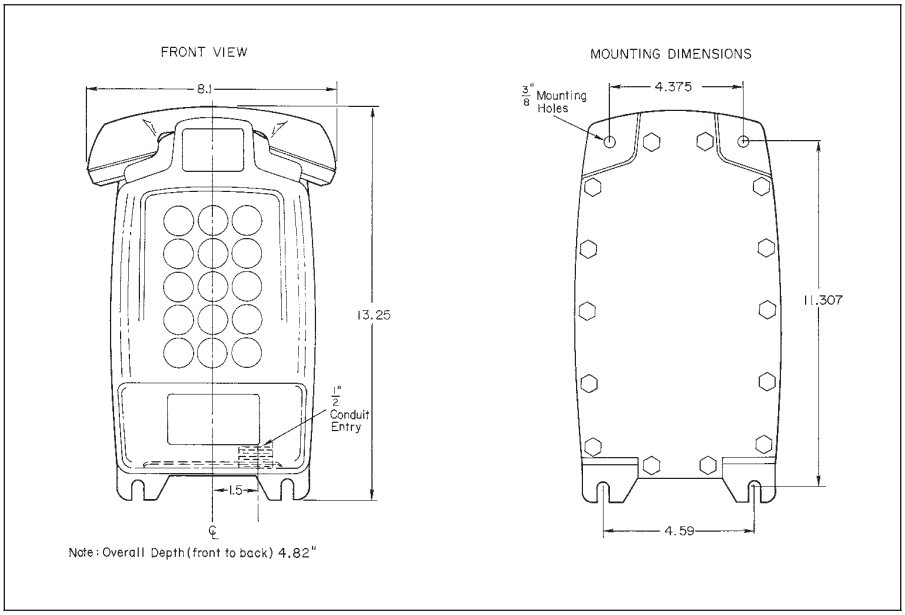
Accessories:

- A standard volume explosionproof ringer **(ETR1)** is available, see page 578 for listing.
- For locations with a high level of ambient noise, a louder ringer can be installed. An ESR bell or ETH horn may be used by installing an ETC relay between the telephone line switch and the bell or horn. The relay coil is energized by the ringing current and the relay contacts control a separate power source to the signal.



ETW401

Dimensions (in inches)



Dimensions are approximate, not for construction purposes.

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D2TW600

Telephone for Hazardous Areas

Cl. I, Div. 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
NEMA 3,4X*,7 Div. 2 ABCD, 9 EFG, 12

Dust-Ignitionproof
Watertight
Wet Locations

Application:

These single-line, fully functional electronic telephones are used:
- for communication in locations which may be hazardous due to the presence of flammable gases or vapors (Division 2), and/or combustible dusts or fibers.
- as a single line telephone in chemical plants, oil refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing and similar industries.

Features:

- Water-, dust- and corrosion-resistant enclosure for durability and long-life.
- Corrosion-resistant electronics with conformal coating for dependable performance in the harshest of environments.
- Spring loaded door with auto-latch to prevent unit from being exposed to elements.
- Factory set tone dialing (DTMF).
- Units are also pulse compatible and offer superior audio clarity.
- Magnetic reed hook-switch operation for ease of use.
- Highly visible Safety-Yellow color.
- Access plate for field wiring.
- Integral backplate mount for ease of installation.
- Conduit hub ½″ NPT.
- Operating environment from –30° to +50°C.
- Ringer output: 80dB
- Internal, adjustable bell ringer.
- Lightning arrester for added unit protection.

Standard Materials:

Enclosure – General Electric's Valox® 357 resin
- Faceplate – anodized aluminum
- Dial pad overlay – silicone rubber
- Handset cradle – ABS polyurethane

Ordering Information

Catalog number D2TW600

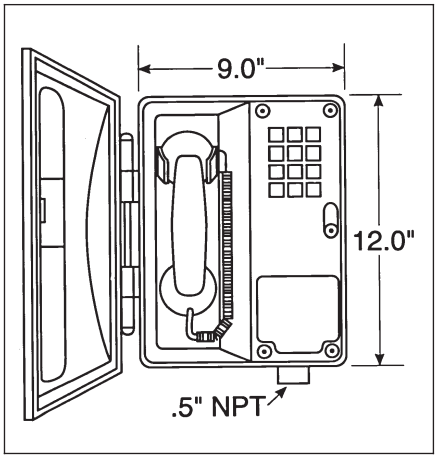
Option:

- Pulse Dial . . . . . D2TW600 PULSE

Certifications and Compliances:

- UL Standard: 1604
- CSA Standard: C22.2 No. 213, No. 25
- UL: Class I, Division 2, Groups A, B, C, D
- CSA: Class I, Division 2, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class II, Division 2, Groups F, G
- FCC: Parts 15 and 68 hearing aid compatible
- DOC: 2
- Line level: normal telephony voice quality per IEEE standard RS-470

Dimensions



Weight:

- 4.85 lbs.



* Watertight with spring door closed.

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Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations

Features:

- ETC232 power relays are used with ESR bells and ETH, W2H or WH horns. The relay coil is energized by the telephone ringing circuit, and the relay contacts control the separate 115vac, 60 hertz power source.
- ETR1 external ringer for ETW401 telephone. For low ambient noise areas, ring tone level is similar to a general use telephone. Includes a ring detect relay which is powered by the telephone line voltage, (maximum 90VAC).

Standard Materials:

- Bodies – copper-free aluminum
- Covers – copper-free aluminum

Standard Finishes:

- Aluminum – baked epoxy powder paint

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups B*,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- UL Standard: 886, 1203
- CSA Standard: C22.2 No. 30



Power Relay

Description	Rating	Hub Size	Cat. #
Relay for Horn Signal	10A 115VAC 60 hertz	¾	ETC232



Ringer

Description	Hub Size	Cat. #
Normal volume external ringer for ETW401 telephone	¾	ETR1

* For use in Group B hazardous areas, seals must be installed within 1½" of each conduit entrance.

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Description	Page No.
Application/Selection	**580**
Instrument Housings	
Clocks	
TCH	**593**
Meters	
EMH	**585**
GUB	**583, 584**
EIH	**581**
EIHT	**582**
Thermostats	
HRC	**591-592**
Heaters	
EXH	**586–588**
XC	**589, 590**

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Application:

Four series of instrument housings for use in areas made hazardous by flammable vapors, gases or dusts are listed on pages 581 through 585 as follows:

- Page 583 lists GUB instrument housings for typical 3½″, 4″, 4½″ and 6″ G.E., Westinghouse and Weston meters shown in the tables. Other makes of meters of the same physical size can be accommodated in these housings.
- Page 585 – lists EMH housings for typical 2½″ and 3½″ G.E., Simpson, Westinghouse and Weston meters shown in the tables. Other makes of meters of the same physical size can be accommodated in the housings.
- Page 581 and 582 – lists EIH and EIHT housings for instrumentation and control devices such as two wire transmitters, temperature controls and pressure switches. Limiting dimensions are shown.

Considerations for Selection:

Environmental:

- Compliance with NEC/CEC, NEMA/EEMAC material and construction to withstand adverse atmospheric conditions

Mechanical:

- Physical size required to accept instruments

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Application:

EIH instrument enclosures are used:
- to enclose instrumentation and control devices such as two-wire transmitters, flow measurement devices, temperature controls, level detectors, pressure switches, etc.
- as an outlet box for pulling and splicing conductors
- in hazardous, abusive and wet locations
- to provide access to conductors for maintenance and future system changes

Features:

- ¾″ offset through feed hubs offer maximum interior space and greater working area
- 2″ and 4″ deep covers, solid or with glass lens
- Internal mounting pads for instrument mounting
- Internal ground screw for safe, continuous grounding
- Neoprene gasket provides a watertight seal for NEMA/EEMAC 4 and UL/CSA Type 4 applications.
- Wrenching lugs permit easy cover removal and tightening.
- Internal cover threads provide additional space inside body.
- External boss is suitable for drilling and tapping an additional conduit entry.

Standard Materials:

- Body and cover – copper-free aluminum
- Glass lens – heat tempered glass
- Gasket – neoprene

Standard Finishes:

- *Corro-free*™ epoxy powder coat (gray)



EIH21



EIH22

Hub Size*	Description	Cat. #
¾	Body with 2″ standard cover	EIH20
¾	Body with 2″ glass lens cover	EIH21
¾	Body with 4″ dome cover	EIH22
¾	Body with 4″ glass lens dome cover	EIH23

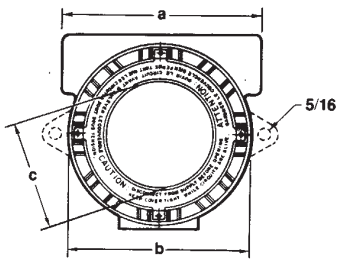
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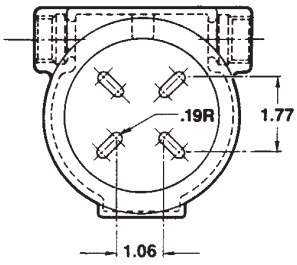
	Suffix to be Added to Cat. #
Cast mounting feet	MF
Natural finish. . Consult Cooper Crouse-Hinds	
Additional drilled and tapped opening in external boss:	
½″	-1
¾″	-2

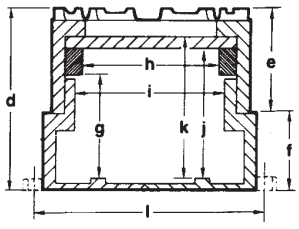
Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B†,C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- NEMA/EEMAC: 3,4,7BCD,9EFG
- UL Standard: 1203
- CSA Standard: C22.2 No. 30
- FM Classification No.: 3615
- ATEX Certificate EX-95.D, 3327 U

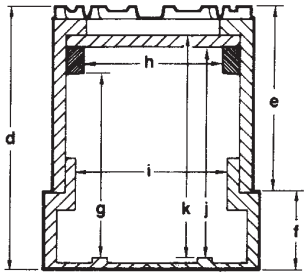
Dimensions







EIH 20 & 21



EIH 22 & 23

	a	b	c	d	e	f	g	h	i	j	k	l
EIH20	5.00	4.25	—	4.54	2.60	1.94	—	—	3.62	—	3.34	5.25
EIH21	5.00	4.25	2.60	4.54	2.60	1.94	2.75	2.73	3.62	3.10	—	5.25
EIH22	5.00	4.25	—	6.54	4.60	1.94	—	—	3.62	—	5.34	5.25
EIH23	5.00	4.25	2.60	6.54	4.60	1.94	4.68	2.73	3.62	5.03	—	5.25

* For ½″ hub size, use RE21-SA.
Dimensions are approximate, not for construction purposes.

† For Group B applications, seal within 1½″ of enclosure in accordance with Sections 501-5 of the National Electrical Code® as well as any other applicable codes.

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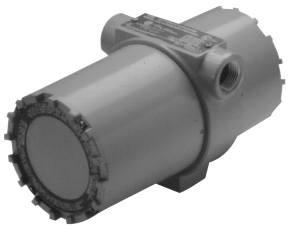
EIHT Instrument Enclosures

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4, 7BCD, 9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

EIHT instrument enclosures are used:
- to enclose instrumentation and control devices such as two-wire transmitters, flow measurement devices, temperature controls, level detectors, pressure switches, etc.
- as an outlet box for pulling and splicing conductors
- in hazardous, abusive and wet locations
- to provide access to conductors for maintenance and future system changes



Features:

- ¾″ offset through feed hubs offer maximum interior space and greater working area
- 2″ and 4″ deep covers, solid or with glass lens
- Internal mounting pads for instrument mounting
- Internal ground screw for safe, continuous grounding
- Neoprene gasket provides a watertight seal for NEMA/EEMAC 4 and UL/CSA Type 4 applications.
- Wrenching lugs permit easy cover removal and tightening.
- Internal cover threads provide additional space inside body.
- External boss is suitable for drilling and tapping an additional conduit entry.
- Two seperate chambers for isolation of power supply and instrument
- ¾″ hub on instrument side
- Third party certified for drilling enclosure wall between instrument and power side.

Hub Size*	Description	Cat. #
¾	2″ Blank Cover - Power side 2″ Blank Cover - Instrument side	EIHT200
¾	2″ Blank Cover - Power side 2″ Glass lens Cover - Instrument side	EIHT210
¾	2″ Blank Cover - Power side 4″ Blank Cover - Instrument side	EIHT220
¾	2″ Blank Cover - Power side 4″ Glass lens Cover - Instrument side	EIHT230

Options:

Description	Suffix
Additional drilled and tapped opening in external boss:	
½″	-1
¾″	-2
With CENELEC Certification	ATEX
Natural finish.	Consult Cooper Crouse-Hinds

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups B†, C, D
  Class II, Division 1, Groups E, F, G
  Class II, Division 2, Groups F, G
  Class III
- NEMA/EEMAC: 3, 4, 7BCD, 9EFG
- UL Standard: 1203
- CSA Standard: C22.2 No. 30
- FM Classification No.: 3615

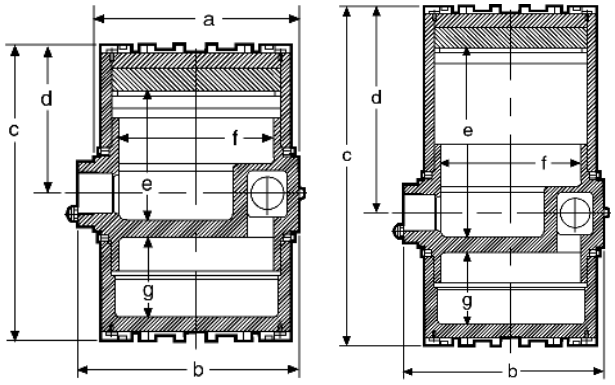
Standard Materials:

- Body and cover – copper-free aluminum
- Glass lens – heat tempered glass
- Gasket – neoprene

Standard Finishes:

- *Corro-free*™ epoxy powder coat (gray)

Dimensions (Inches):



	a	b	c	d	e	f	g
EIHT200	4.75	5.19	6.95	3.48	3.15	3.56	1.87
EIHT210	4.75	5.19	6.95	3.48	3.15	3.56	1.87
EIHT220	-	5.19	8.95	5.48	5.15	3.56	1.87
EIHT230	-	5.19	8.95	5.48	5.15	3.56	1.87

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Application:

GUB instrument housings are used:
- to enclose ammeters, voltmeters, watt-meters, varmeters, power-factor meters, tachometer indicators, pressure controls, temperature control etc., in a threaded rigid metallic conduit system
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, certain hazardous metal finishing areas, coal processing locations, granaries and grain processing plants

Features:

- Threaded covers have glass windows for viewing scale, dial or setting of enclosed instrument.
- Mounting plates, brackets or pillars for mounting a wide variety of instruments not shown on pages 583 and 584 are available on special order. Instrument to be used must be specified by make, complete identification data and dimensions.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum
- Window – heat strengthened plate glass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

- Other conduit opening sizes and arrangements can be furnished
- Add suffix ''-22'' to catalog number for ¾″ hub top and bottom

Certifications and Compliances:

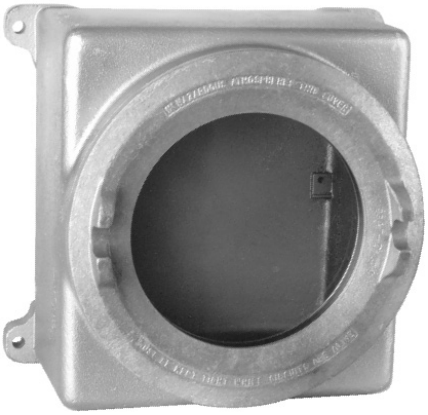
- NEC/CEC:
  - Class I, Division 1 & 2, Group D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 3,7D,9EFG,12
- UL Standard: 886
- CSA Standard: C22.2 No. 30



GUB01 shown with GUB0110 glass cover



GUB04 shown with GUB0109 glass cover

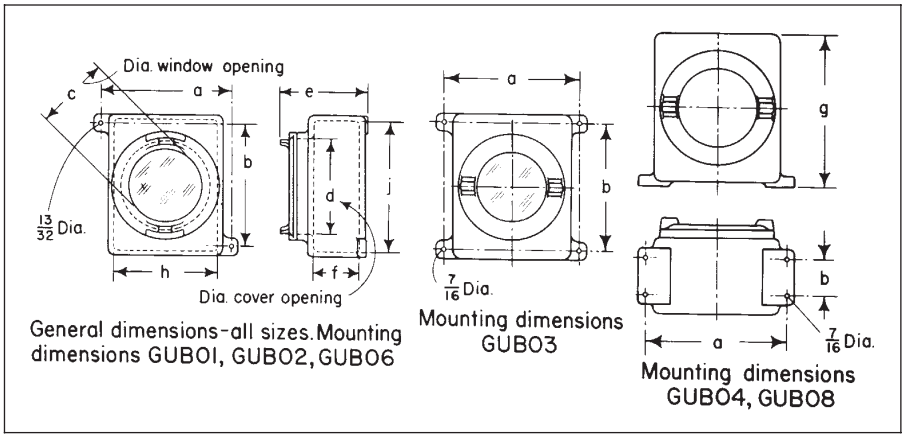


GUB03 shown with GUB0109 glass cover

Instrument Housings

Basic Housing	Conduit Opening Size	Conduit Opening Position	Cat. #
GUB01	3/4	Top	GUB110-1-20
	3/4	Bottom	GUB110-1-02
GUB02	3/4	Top	GUB218-1-20
	3/4	Bottom	GUB218-1-02
GUB06	3/4	Top	GUB619-1-20
	3/4	Bottom	GUB619-1-02
GUB03	3/4	Top	GUB319-1-20
	3/4	Bottom	GUB319-1-02
GUB08	3/4	Top	GUB819-1-20
	3/4	Back	GUB819-5-02
GUB04	3/4	Top	GUB419-1-20
	3/4	Back	GUB419-5-02

Dimensions (inches)



Dimensions are approximate, not for construction purposes.

GUB	a	b	c	d	e	f	g	h	j
01	7-1/2	5-3/4	3-5/8	5-1/2	5-3/4	3		5-7/8	6-1/2
02	9	8-3/4	4-3/4	7	6	3		7-1/8	9-1/8
03	12-1/8	10-3/4	6-13/16	9-5/8	8-5/16	5		9-3/4	10-3/4
04	12-1/8	3-1/2	6-13/16	9-5/8	8-13/16	5	12-1/4	9-3/4	10-3/4
06	9-1/2	8-3/4	4-3/4	7	7	4		7-5/8	9-1/8
08	9-5/8	2-1/2	4-3/4	7	6-15/16	4	10-1/4	7-5/8	9-1/8

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Cl. I, Div. 1 & 2, Group D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7D,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Instrument Housings

Inst. Size	Basic Housing	Cat. #
3½	GUB01	GUB1103-1-20†
3½		GUB11031-1-20
4	GUB06	GUB6191-1-20
4		GUB6192-1-20
4		GUB6193-1-20
4½	GUB02	GUB2184-1-20†
6	GUB03	GUB3190-1-20†
6		GUB3191-1-20

NOTE: These standard instrument housings are furnished with one top feed ¾″ drilled and tapped opening.

NOTE: Meters are not included

Standard Meters

Housed in GUB Enclosures‡

Manufacturer	Model	Inst. Size	Type Flange	Cat. #	Max. Inst. Depth§
G.E.	Type 250	3½	Rect. Flush	GUB1103-1-20	
Westinghouse	R-351 Series	3½	Rect. Flush		
	N-351 Series	3½	Round Flush		
Weston	301 Series	3½	Rect. Flush		
	301 Series	3½	Round Flush		
	723	3½	Rect. Flush		
G.E.	KT-11 Elapsed Time Meter Without Reset	3½	Round Flush or Rect.Flush	GUB11031-1-20	
	236 Elapsed Time Meter Without Reset	3½	Round Flush or Rect. Flush		
Westinghouse	BH351 Elapsed Time Meter Without Reset	3½	Rect. Flush		
G.E.	Type 250	4½	Rect. Flush	GUB2184-1-20	
Westinghouse	R-371 Series	4½	Rect. Flush		
	N-371 Series	4½	Round Flush		
Weston	1900 Series	4½	Rect. Flush		
Westinghouse	KX-251	6	Rect.	GUB3190-1-20	
	KA-251	6	Rect.		
	KY-25	6	Rect.		
Weston	271	7	Fan	GUB3191-1-20	
	273	9	Fan		
G.E.	AB-14 Series	4	Rect. Flush	GUB6191-1-20	4 9/16
	DB-14 Series	4	Rect. Flush	GUB6192-1-20	6 1/16
	AB-18 Series	4	Rect. Flush	GUB6193-1-20	7 11/16
	DB-18 Series	4	Rect. Flush		
	AB-30 Series	4	Rect. Flush		
	DB-30 Series	4	Rect. Flush		
	AB-40 Series	4	Rect. Flush		
	DB-40 Series	4	Rect. Flush		
Westinghouse	K-241 Series	4½	Rect. Flush		

† These boxes available for use in Class I, Division 1 and 2, Group B and C hazardous areas. Add suffix GB to Cat. No. Seals must be installed within 1½″ of each conduit opening for Group B & C usages.

‡ Standard meters are to be purchased separately from manufacturers listed.

§ Select housing based on depth of instrument to be enclosed.

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Application:

EMH instrument housings are used:
- to enclose 2½″ or 3½″ diameter round, flush rim-mounting meters, whose scale or dial would be visible in the 2⅝″ diameter glass window. Typical types of instruments or meters are ammeters, voltmeters, etc.
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, certain hazardous metal finishing areas, coal processing locations, granaries and grain processing plants

Features:

- Sight-glass in cover permits viewing of instrument dial or setting.
- Enclosures are non-magnetic, available in surface mounting and flush panel mounting. The cylindrical extension of the cover opening on the flush bodies will project through a hole in panel. Thickness of panel must not exceed ¼″ to insure flametight assembly of cover threads with body threads.
- Mounting plates and posts in bodies support the instrument close to the heavy glass window in cover. Maximum depth of instrument extending from outboard end of posts towards the back wall of enclosure body is 3″. There is ample wiring space in back of instruments.
- Bodies have bosses on all four sides and back for drilling and tapping of conduit entrances.
- Dead end and through feed arrangements for ¾″ rigid conduit are standard listings.

Standard Materials:

- Bodies – copper-free aluminum
- Covers – copper-free aluminum
- Windows – heat strengthened plate glass

Standard Finishes:

- Natural

Options:

- Other conduit hub sizes and arrangements can be furnished.

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Group D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 3,7D,9EFG,12
- UL Standard: 886
- CSA Standard: C22.2 No. 30

* Dimensions are approximate, not for construction purposes.

Instrument Housings

Style	Conduit Openings	Size	Cat. #
Surface	One in Side (Dead End)	¾	EMH521-20000
			EMH533-20000
	Two in Sides (Through Feed)	¾	EMH521-20200
			EMH533-20200
Flush	One in Side (Dead End)	¾	EMH511-20000
			EMH534-20000
	Two in Sides (Through Feed)	¾	EMH511-20200
			EMH534-20200



Flush



Surface

Standard Meters

Housed in EMH511, EMH521†

Manufacturer	Model	Size
Weston	201 Series	2½
	301 Series	3½
Westinghouse	N-351 Series	3½
Simpson	125 Series	2½
	135 Series	2½
	145 Series	2½
	155 Series	2½
	25 Series	3½
	35 Series	3½
	45 Series	3½
	55 Series	3½
	75 Series	3½
	3222 Series	2½
	3282 Series	2½
	3223 Series	3½
	3283 Series	3½

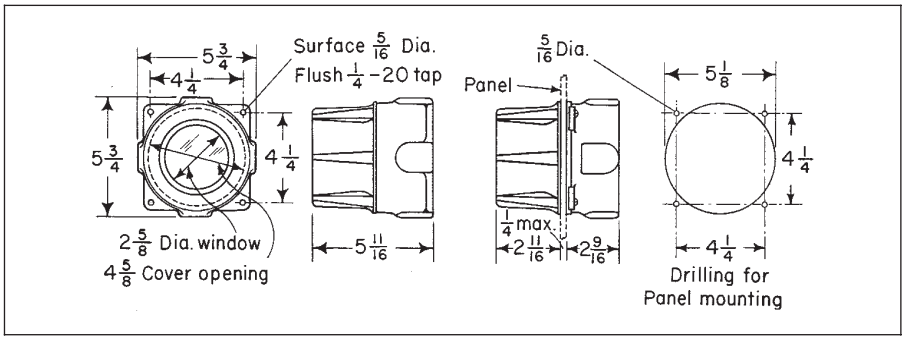
Standard Meters

Housed in EMH533, EMH534

Manufacturer	Model	Size	Type
G.E.	AW-91 Series	2½	Rect. Flush
	DW-91 Series	2½	Rect. Flush
Weston	201 Series	2½	Square Flush
	1721 Series	2½	Rect. Flush

† Type-Round Flush

Dimensions* (inches)



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EXH Series Explosionproof Electric Air Heaters

Cl. I, Div. 1 & 2, Group C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
NEMA 7CD, 9EFG

Explosionproof
Dust-Ignitionproof

Application:

EXH explosionproof electric heaters are used:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- for rugged locations including: oil refineries, petrochemical plants, rigs, pumping stations, turbine compressors, pulp and paper mills, coal mines, grain elevators, etc.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- for standby heat to prevent process heat loss, or for personnel comfort during maintenance/repair operations.

Features:

- Split fan guard for easy access to fan.
- Compact design makes handling during installation easy.
- Evacuated cores heat up quickly with even heat distribution.
- Larger models offer greater kilowatt range providing more economical means to heat large areas.
- Permanently sealed cores improve reliability and make field servicing easier.
- Control box provides easy access for installation and maintenance.

Standard Materials and Finishes:

Fan – Aluminum blade. Steel spider and hub with ⅝ in. (15.875 mm.) bore.

Core – Steel with integral aluminum fins, vacuum charged and hermetically sealed.

Heating Elements – Three long life, low watt-density, high grade metal sheathed elements.

Heat Transfer Fluid – Long life formulated ethylene glycol and water, freeze protected to –49°F (–45°C).

Cabinet Material – 14 gauge (0.075 in.) (1.90 mm) steel. Epoxy coated with 5 stage pre-treatment including iron phosphate.

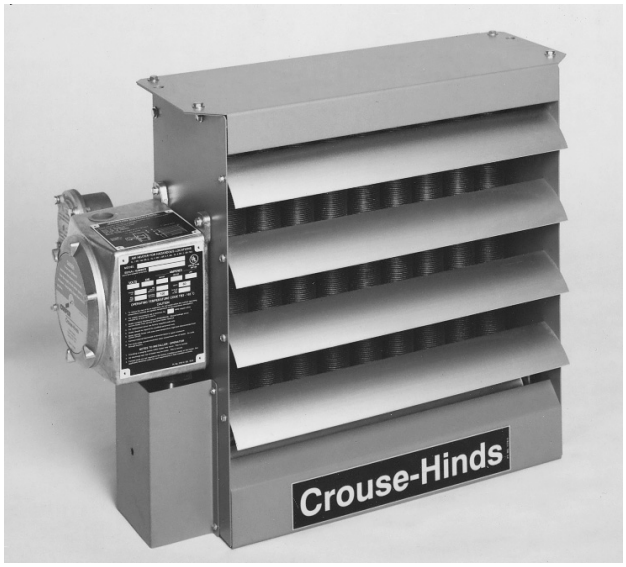
Conduit Material – Heavy walled, 0.122 in (3.1 mm.) steel cadmium plated.

Certifications and Compliances:

- Class I, Division 1 & 2, Groups C, D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
- NEMA: 7CD, 9EFG
- UL Standard: 823
- CSA Standard: C22.2 Nos. 25, 30, 46

Accessories & Options:

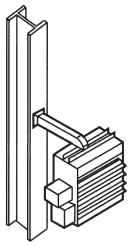
- Basic mounting kit – suitable for applications where the support arm can be bolted or welded directly to structural steel or concrete. (Cat. No. BMK-EXH__ (insert fan size: 12, 16 or 20))
- Wall mounting kit – suitable for mounting on Z sections. (Cat. No. WMK-EXH__ (insert fan size: 12, 16 or 20))



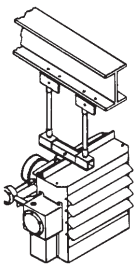
Heater shown has optional built-in thermostat.

- Hanging mounting kit – simple and economical if adequate overhead structure exists. Requires ½″ pipe, cut and threaded — not supplied. (Cat. No. HMK-EXH4)
- Swivel hanging mount kit — swivels 360°. Requires ½″ pipe, cut and threaded — not supplied. (Cat. No. SHMK-EXH__ insert for size 12, 16 or 20)
- Pipe mounting kit – useful in buildings with insufficient strength to use other types of mounts. requires 3″ pipe. (Cat. No. PMK-EXH__ (insert fan size: 12, 16 or 20))
- HRC1 explosionproof thermostat – using bi-metal control for 36°-82°F heating range. Order separately or add suffix ''HRC'' for factory installation on heater. See page 592.

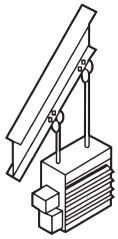
BMK Basic Mounting Kit

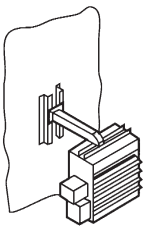


SHMK Swivel Hanging Mounting Kit

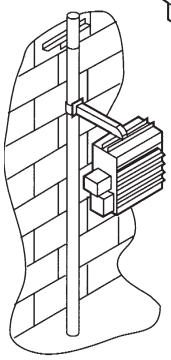


HMK Hanging Mounting Kit





WMK Wall Mounting Kit

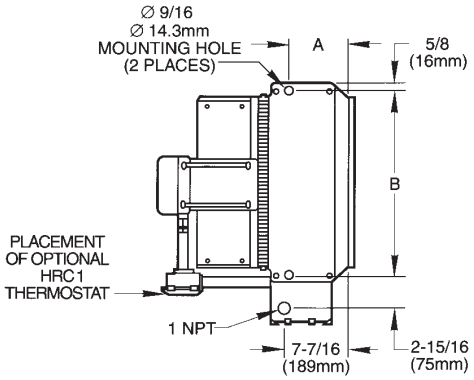


PMK Pipe Mounting Kit

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Dimensions

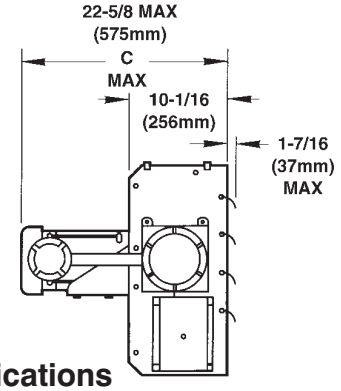
Top View



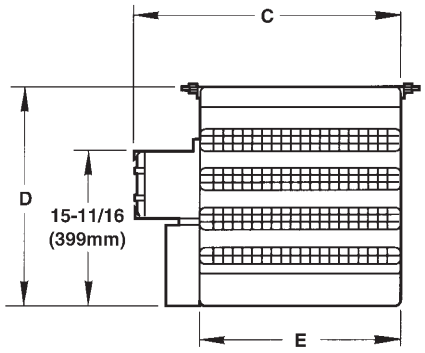
DIM		EXH412	EXH416	EXH420
A	in.	8 1/16	6 11/16	7 1/16
	mm	204	170	179
B	in.	18 3/16	22 3/16	26 3/16
	mm	462	564	665
C	in.	24 1/2	28 1/2	32 1/2
	mm	622	724	825
D	in.	18 1/2	22 1/2	26 1/2
	mm	470	572	674
E	in.	16 5/16	20 5/16	24 5/16
	mm	414	516	617

DIMENSIONAL TOLERANCES
±1/8"(3.2MM)

Side View



Front View



Specifications

	Nominal kW	EXH412 3	5	7.5	10	EXH416 15	20	EXH420 25	30	35
Maximum Altitude	(ft.)	12,000	8,000	10,000	7,000	10,000	7,000	10,000	7,000	6,000
	(m.)	3,658	2,438	3,048	2,134	3,048	2,134	3,048	2,134	1,829
Air Delivery @ 70°F	(CFM)	500	500	850	850	1750	1750	3600	3600	3,950
@ 21°C	(m^3/hr)	850	850	1444	1444	2973	2973	6116	6116	6,711
Horizontal Throw	(ft.)	15	15	30	30	40	40	70	70	70
	(m.)	4.6	4.6	9.1	9.1	12.2	12.2	21.3	21.3	21.3
Max. Mounting Height	(ft.)	7	7	10	10	10	10	20	20	20
	(m.)	2.1	2.1	3.0	3.0	3.0	3.0	6.1	6.1	6.1
Motor Power	(HP)	¼	¼	¼	¼	¼	¼	½	½	½
	(kW)	0.187	0.187	0.187	0.187	0.187	0.187	0.373	0.373	0.373
Fan Diameter	(in.)	12	12	12	12	16	16	20	20	20
	(mm.)	305	305	305	305	406	406	508	508	508
Net Weight	(lbs.)	111	111	111	111	133	133	154	154	154
	(kg.)	50	50	50	50	61	61	70	70	70
Shipping Weight	(lbs.)	151	151	151	151	173	173	204	204	204
	(kg.)	69	69	69	69	79	79	93	93	93

Motor Type	Explosionproof. Thermally protected. Permanently lubricated ball bearings. 1725 RPM.
Fan Guard	Split design with close wiring spacing. ¼ in. (6.3mm.) probe will not enter.
Heating Elements	Three long-life, low watt-density, high grade metal-sheathed elements.
Temperature High-Limit	Automatic reset type, snap-action bimetal, open on temperature rise. Rated 100,000 cycles at 10 amps, handles 0.128 amps.
Control Circuit	120 Volts, 0.128 ams, 15 VA.
Control Transformer	Multi-tap primary, 120V secondary, 25 VA.
Contactor	40 or 75 amp. rated 500,000 cycles at maximum capacity, operating at not more than 84% full load. 120V, 15 VA fuse protected coil.
Overpressure Protection	Fusible alloy plug 170 psi (1.17 MPa).
Temperature Code Rating	T3B 165°C (329°F) Class I & II.
Temperature Limitations	Operational; –49°F to 176°F (–45°C to 80°C), short term to 248°F (120°C).

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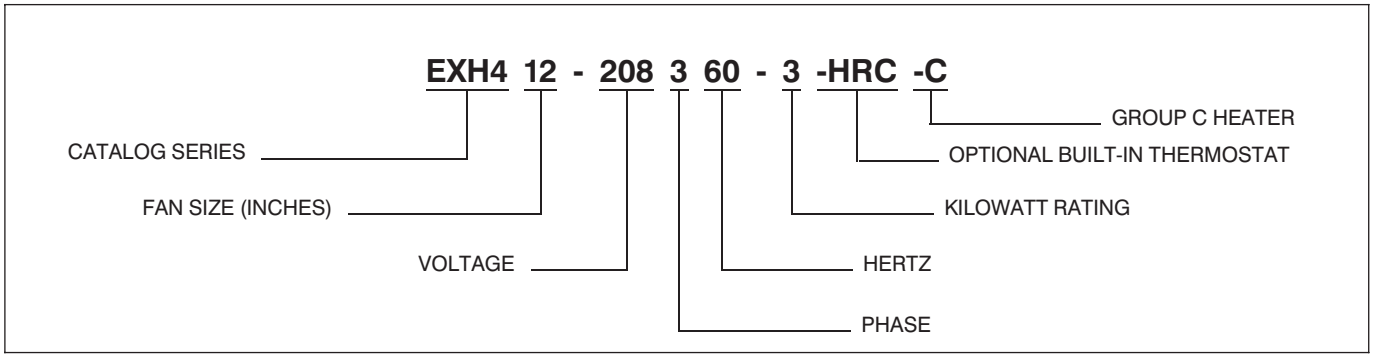
EXH Series Explosionproof Electric Air Heaters

Cl. I, Div. 1 & 2, Group C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
NEMA 7CD, 9EFG

Explosionproof
Dust-Ignitionproof

Nominal Wattage (kW)	Voltage	Phase	Catalog Number	Maximum Total Current (Amperes)	Temperature Rise °F	Temperature Rise °C	Heat Output BTU/Hr.
3	208	1	EXH412-208160-3	15.7	19.0	10.5	10,250
3	240	1	EXH412-240160-3	13.9	19.0	10.5	10,250
3	208	3	EXH412-208360-3	8.9	19.0	10.5	10,250
3	240	3	EXH412-240360-3	7.9	19.0	10.5	10,250
3	480	1	EXH412-480160-3*	6.3	19.0	10.5	10,250
3	480	3	EXH412-480360-3	3.9	19.0	10.5	10,250
3	600	3	EXH412-600360-3	2.9	19.0	10.5	10,250
5	208	1	EXH412-208160-5	25.3	31.6	17.6	17,100
5	240	1	EXH412-240160-5	22.3	31.6	17.6	17,100
5	208	3	EXH412-208360-5	14.4	31.6	17.6	17,100
5	240	3	EXH412-240360-5	12.7	31.6	17.6	17,100
5	480	1	EXH412-480160-5*	10.4	31.6	17.6	17,100
5	480	3	EXH412-480360-5	6.4	31.6	17.6	17,100
5	600	3	EXH412-600160-5	4.8	31.6	17.6	17,100
7.5	208	1	EXH412-208160-7.5	37.3	27.9	15.5	25,600
7.5	240	1	EXH412-240160-7.5	32.7	27.9	15.5	25,600
7.5	208	3	EXH412-208360-7.5	21.4	27.9	15.5	25,600
7.5	240	3	EXH412-240360-7.5	18.7	27.9	15.5	25,600
7.5	480	1	EXH412-480160-7.5*	15.6	27.9	15.5	25,600
7.5	480	3	EXH412-480360-7.5	9.4	27.9	15.5	25,600
7.5	600	3	EXH412-600360-7.5	7.2	27.9	15.5	25,600
10	240	1	EXH412-240160-10	43.1	37.2	20.7	34,150
10	208	3	EXH412-208360-10	28.3	37.2	20.7	34,150
10	240	3	EXH412-240360-10	24.7	37.2	20.7	34,150
10	480	1	EXH412-480160-10*	20.8	37.2	20.7	34,150
10	480	3	EXH412-480360-10	12.4	37.2	20.7	34,150
10	600	3	EXH412-600360-10	9.6	37.2	20.7	34,150
15	208	3	EXH416-208360-15	41.6	27.1	15.1	51,200
15	240	3	EXH416-240360-15	36.1	27.1	15.1	51,200
15	480	1	EXH416-480160-15*	31.3	27.1	15.1	51,200
15	480	3	EXH416-480360-15	18.0	27.1	15.1	51,200
15	600	3	EXH416-600360-15	14.4	27.1	15.1	51,200
20	480	1	EXH416-480160-20*	41.7	36.1	20.1	68,300
20	480	3	EXH416-480360-20	24.1	36.1	20.1	68,300
20	600	3	EXH416-600360-20	19.2	36.1	20.1	68,300
25	480	3	EXH420-480360-25	30.1	22.0	12.2	85,400
25	600	3	EXH420-600360-25	24.1	22.0	12.2	85,400
30	480	3	EXH420-480360-30	36.1	26.3	10.6	102,360
30	600	3	EXH420-600360-30	28.9	26.3	10.6	102,360
35	480	3	EXH420-480360-35	42.1	28.0	15.6	119,450
35	600	3	EXH420-600360-35	33.7	28.0	15.6	119,450

Catalog Number Example



* Not available with Group C rating (suffix C)

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Application:

Single phase XC explosionproof electric heaters are used:
- in areas where flammable liquids, gases or vapors are present
- for rugged locations including:
  - petroleum refineries, gasoline storage and dispensing areas
  - wastewater treatment plants
  - areas that use flammable liquids for cleaning parts in dip tanks
  - petrochemical plants
  - paint spraying areas
  - aircraft hangars and fuel servicing areas
  - hydrogen fuel cell and battery storage facilities
  - natural gas plants
- in areas where flammable vapors or gases may be present due to accidental or abnormal conditions
- for standby heat to prevent process heat loss or for personnel comfort during maintenance/repair operations



Standard Features:

- Sloped-top cabinet prevents objects that restrict airflow from being set on top
- Corrosion-resistant design with no exposed copper or brass – suitable for H_2S environments
- High-velocity airflow heats up area faster with better heat distribution
- 14-gauge steel cabinet for rugged reliability
- Short cabinet lengths take up less wall and floor space
- Optional built-in thermostat (Class I, Division 1, Groups C & D, and Zone 1, Group IIB models) reduces field installation costs
- *Incoloy*® 840 heating elements have longer life expectancy
- Radial-embossed aluminum plate fins warp less for better heat transfer
- Galvanized steel mounting brackets for quick installation

Standard Materials & Finishes

- Heating elements – resistance wire embedded in a magnesium oxide refractory and sheathed in an *Incoloy*® 840 tube
- Finned tube assembly – aluminum tube with radial-embossed aluminum plate fins
- Cabinet – 14-gauge (0.075″/1.90 mm) steel, green-gray epoxy powder-coated front and side panels, galvanized steel back panel

Accessories & Options

- Built-in thermostat for 120-, 208-, 240-, 277- or 480-volt applications (see Ordering Information on page 590)
- Remotely mounted HRC85 explosionproof thermostat using *Honeywell*® control for 45°F–85°F heating range (order separately)

Certifications and Compliances:

NEC: Class I, Divisions 1 & 2, Groups B*, C & D
IEC: Class I, Zones 1 & 2, Group IIB + H_2*
NEMA: 7B*CD
UL Standard: 823
CSA Standard: C22.2 Nos. 25, 30, 46
Temperature Code: T2A – 280°C (536°F)

* Hydrogen applications only apply to heaters without built-in thermostats.

Specifications:

Nominal kW	**1.2**	**1.8**	**3.6**	**4.8**	**7.6**
Shipping Weight (lbs.)	61.3	61.3	61.3	88.4	104.3
(kg)	27.8	27.8	27.8	40.1	47.3
Enclosures	NEMA Type 7. For dry indoor use only. Do not immerse in water. Do not store or use in areas exposed to rain or snow.				
Mounting Brackets	Two 14-gauge galvanized steel brackets.				
Heating Elements	Two *Incoloy*® 840-sheathed elements.				
Optional Built-In Thermostat	Explosionproof room thermostat with 10 settings.				
Cabinet Material	14-gauge (0.075″/1.90 mm) steel. Rear panel is galvanized. Front and side panels are baked green-gray epoxy powder-coated with five-stage pretreatment, including iron phosphate.				
Temperature Code Rating	T2A – 280°C (536°F)				
Temperature Limitations					
Operational	–45°C to 40°C (–49°F to 104°F)				
Storage	–45°C to 80°C (–49°F to 176°F)				

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Explosionproof Electric Heaters

XC Series

NEC: Class I, Divisions 1 & 2, Groups B*, C & D
IEC: Class I, Zones 1 & 2, Group IIB & H_2*
NEMA: 7B*CD

Ordering Information:

Without built-in room thermostat – Class I, Div. 1 & 2, Groups B, C & D; Zones 1 & 2, Group IIB + H_2

Cat. No.	Unit Wattage (kW)	Unit Output (BTU/Hr)	Unit Voltage (Volts)	Unit Current (Amps)	Maximum Circuit Fuse (Amps)*
XC-A1-N0	1.2	4097	120	10.0	15
XC-A2-N0	1.2	4097	208	5.8	15
XC-A3-N0	1.2	4097	240	5.0	15
XC-A4-N0	1.2	4097	480	2.5	15
XC-A5-N0	1.2	4097	600	2.0	15
XC-A6-N0	1.2	4097	277	4.3	15
XC-B1-N0	1.8	6146	120	15.0	20
XC-B2-N0	1.8	6146	208	8.7	15
XC-B3-N0	1.8	6146	240	7.5	15
XC-B4-N0	1.8	6146	480	3.8	15
XC-B5-N0	1.8	6146	600	3.0	15
XC-B6-N0	1.8	6146	277	6.5	15
XC-C2-N0	3.6	12292	208	17.3	20
XC-C3-N0	3.6	12292	240	15.0	20
XC-C4-N0	3.6	12292	480	7.5	15
XC-C5-N0	3.6	12292	600	6.0	15
XC-C6-N0	3.6	12292	277	13.0	15
XC-D2-N0	4.8	16389	208	23.1	25
XC-D3-N0	4.8	16389	240	20.0	25
XC-D4-N0	4.8	16389	480	10.0	15
XC-D5-N0	4.8	16389	600	8.0	15
XC-D6-N0	4.8	16389	277	17.3	20
XC-E2-N0	7.6	25950	208	36.5	40
XC-E3-N0	7.6	25950	240	31.7	35
XC-E4-N0	7.6	25950	480	15.8	20
XC-E5-N0	7.6	25950	600	12.7	15
XC-E6-N0	7.6	25950	277	27.4	30

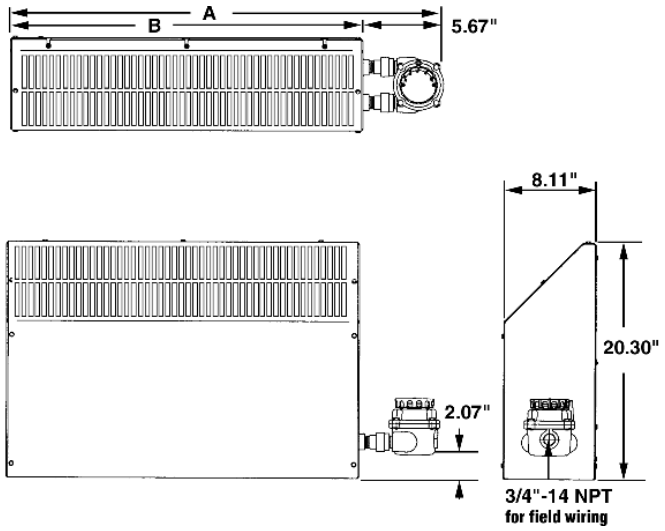
With built-in room thermostat – Class I, Div. 1 & 2, Groups C & D; Zones 1 & 2, Group IIB

Cat. No.	Unit Wattage (kW)	Unit Output (BTU/Hr)	Unit Voltage (Volts)	Unit Current (Amps)	Maximum Circuit Fuse (Amps)*
XC-A1-B1	1.2	4097	120	10.0	15
XC-A2-B2	1.2	4097	208	5.8	15
XC-A3-B3	1.2	4097	240	5.0	15
XC-A4-B4	1.2	4097	480	2.5	15
XC-A6-B6	1.2	4097	277	4.3	15
XC-B1-B1	1.8	6146	120	15.0	20
XC-B2-B2	1.8	6146	208	8.7	15
XC-B3-B3	1.8	6146	240	7.5	15
XC-B4-B4	1.8	6146	480	3.8	15
XC-B6-B6	1.8	6146	277	6.5	15
XC-C2-B2	3.6	12292	208	17.3	20
XC-C3-B3	3.6	12292	240	15.0	20
XC-C4-B4	3.6	12292	480	7.5	15
XC-C6-B6	3.6	12292	277	13.0	15
XC-D3-B3	4.8	16389	240	20.0	25
XC-D4-B4	4.8	16389	480	10.0	15
XC-D6-B6	4.8	16389	277	17.3	20
XC-E4-B4	7.6	25950	480	15.8	20

*Or equivalent breaker as per National Electrical Code and Canadian Electrical Code

Notes:
1. Remote-mounted explosionproof room thermostats are not suitable for Group B & IIC applications. Remote contactors are also required on all 600-volt heaters and heaters with a current draw greater than 22 amps (supplied and installed by others).
2. Remote mounted explosionproof room thermostats suitable for Group B, IIB + H_2 applications are a special-order item.
3. Operation at lower than rated voltages will result in reduced kW output and amp draw.
   Actual Output (kW) = [(Supply Voltage)^2 ÷ (Rated Voltage)^2] × Rated Unit Wattage (kW)

Dimensions (inches):



Heater kW Rating	A Dimensions	B Dimensions
1.2 - 3.6	37.0″ (940mm)	31.34″ (796mm)
4.8	55.125″ (1400mm)	49.45″ (1256mm)
7.6	65.125″ (1654mm)	59.49″ (1511mm)

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Application:

HRC thermostats with Honeywell control are used:

- for heavy duty line voltage thermostats to control fan coils, fans, motor starters, valves, contactors, and circulator motors in heating and/or cooling systems. If larger motors than listed are to be controlled, relays or magnetic motor starters must be interconnected between motors and thermostats
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, certain hazardous metal finishing areas, coal processing locations, granaries and grain processing plants

Features:

- A heavy duty snap switch is mounted in the enclosure. The temperature sensitive element is mounted on the external surface of the cover and actuates the switch through a shaft and bearing mechanism.
- An external knob permits temperature setting within calibrated range. The knob is removable to prevent unauthorized adjustment. Room ambient is indicated on thermometer at front.

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

- Electrogalvanzed and aluminum acrylic paint

Size Ranges:

- Hubs – ¾″ through feed

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 7CD,9EFG,12
- UL Standard: 886
- CSA Standard: C22.2 No. 30



Temperature Range	Non-Adjustable Operating Differential (approx.)	Cat. #†
45-85° F	1° F	HRC85

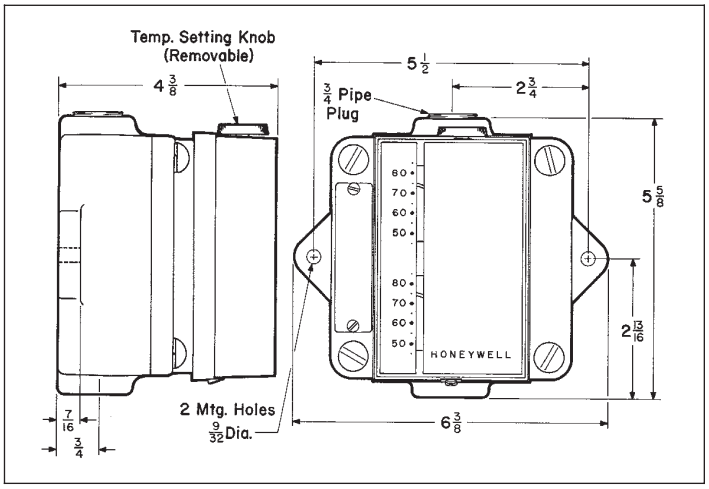
Electrical Rating Ranges:

- 120/240 VAC
- 50/60 hertz
- Full load current in amperes:

	120 VAC	240 VAC
Heating	10.2	6.5
Cooling	7.4	4.0

† Furnished with thermostat and thermometer.

Dimensions* (in inches)



* Dimensions are approximate, not for construction purposes.

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HRC Bimetal Thermostat

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

Applications:

HRC Bimetal thermostats are used:
- to control heating only, cooling only or ventilation systems in demanding industrial environments
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, coal processing locations, waste storage facilities, pulp and paper mills, granaries and grain processing plants or any other location where specific explosive gases or dusts are present.

Features:

- Bimetal sensing element that is fast acting, reliable and unaffected by altitude
- Compact, light weight design makes it easy to install
- No exposed copper or brass parts for excellent resistance to corrosion
- Feed-thru design for easy installation
- Durable all aluminum exterior
- Available for heating only or heating or cooling/ventilation applications

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Size Ranges:

Conduit opening – ¾″ hub

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

Electrical Ratings:

- 480 VAC max
- ½ HP @ 120 VAC
- 1 HP @ 250 VAC
- 22 amps Res.

Temperature Range:

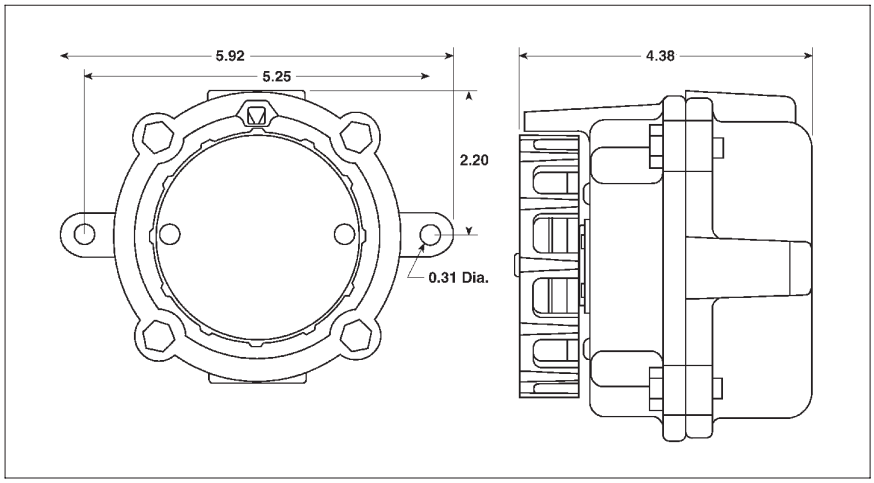
- 36°F to 82°F (2°C to 28°C)
- Temperature differential: 2.5°F (1.5°C)



Ordering Information:

Hub Size	Description	Catalog Number
¾″	Single Pole, Single Throw (heating only)	HRC1
¾″	Single Pole, Double Throw (heating or cooling/ ventilation applications)	HRC2

Dimensions:



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Application:

Type TCH electric clocks are used:
- in oil refinery control rooms, hospital operating rooms, chemical plants, grain handling and processing plants and other similar locations where specific hazardous atmospheres may exist

Features:

- Sheet steel case may be used where environmental conditions are not severe. Electric motor and connections are contained in corrosion-resistant enclosure. Dials are 13″ in diameter. Reset knob protrudes from bottom of case.
- Disassembly for installation and maintenance is easily performed. The motor housing is factory sealed, with no external seals required.

Standard Materials:

- Clock body and cover – sheet steel
- Motor housing – copper-free aluminum

Standard Finishes:

- Aluminum – aluminum acrylic paint
- Sheet steel – baked aluminum enamel

Options:

- The following special options are available:

Description
Sheet metal band notched for conduit, can be supplied for enclosing gap between wall surface and back of case. . . . . See listings

Size Ranges:

- Hubs – 1″ through feed

Electrical Rating Ranges:

- 110vac, 60 hertz
- Self-starting synchronous motor – 3 watts

Certifications and Compliances:

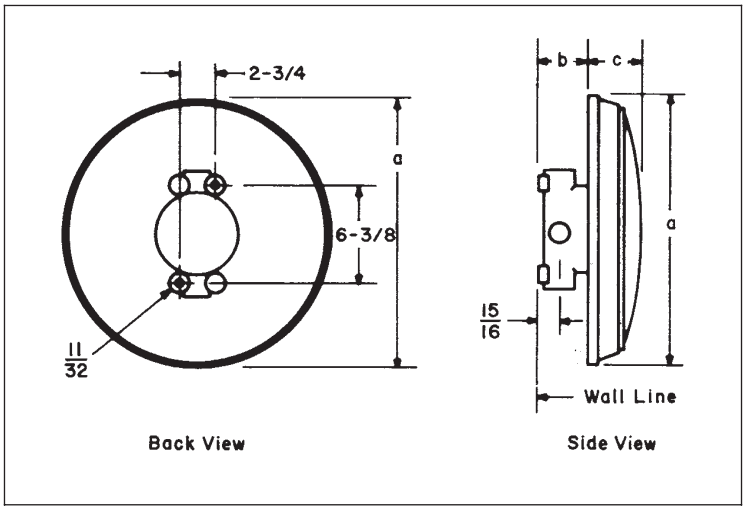
- NEC: Class I, Division 1 & 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- UL Standard: 886



Sheet Steel Case

Enclosure with Clock				Enclosing Sheet Metal Band
Motor	**Hub Size**	**Style**	**Cat. #**	**Cat. #**
110 VAC 60 hertz Self-Starting Synchronous (3 Watts)	1	**With Sheet Steel Case** Surface Mount	TCH2220	TCH202

Dimensions* (inches)



Cat. #	a	b	c
TCH2220	17	2⅞	3 7/16

* Dimensions are approximate, not for construction purposes.

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Notes Page

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Corrosion Resistant Products

Section N



COOPER Crouse-Hinds

Notes Page

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General Features

All enclosures are made of *Krydon*® high impact strength fiberglass-reinforced polyester material with excellent corrosion resistance and stability to high heat.

Unitized construction for strength, durability and more usable space

Solid, one-piece construction makes enclosures made of *Krydon* material tougher and stronger. The back is an integral part of the enclosure. It's not a separate part glued onto the enclosure. The unitized construction makes enclosures made of *Krydon* material strong and durable and provides greater impact resistance. There are no seams or joints to come apart if the enclosure is dropped or bumped.

Crisp design – smooth surface

Krydon material's remarkable smooth surface is easy to clean and keep looking clean. Enclosures made of *Krydon* material are good looking too, gray in color, with crisply designed lines.

Long, trouble-free life

Exposed to the equivalent of five full years of outdoor use in accelerated weatherometer tests, enclosures made of *Krydon* material proved to be unaffected by wind, rain, temperature changes or the ultraviolet rays of sunlight. Most enclosures are raintight, watertight, dusttight and weatherproof (NEMA ratings 3, 4X and 12).

Easily machinable

Enclosures made of *Krydon* material are easily machinable. Conduit holes can be drilled on all sides of enclosures with an ordinary hole saw.

Easy to wire

The covers are removable – hinged covers are optionally offered – to provide full interior access for ease of wiring. And, since *Krydon* material is non-conductive, the enclosures are shock resistant.

Safety doors

A hinged access door in cover is standard on the combination line-starter, circuit breaker, disconnect switch and panelboard enclosures. It is provided with a molded lockout for padlocking of both doors. Watertightness is achieved by separately gasketed door frame (heat and corrosion resistant gasket) and access door (Hypalon gasket). Screws (316 stainless steel) for the door frame are hidden behind the access door. Therefore, the door frame cannot be removed without first removing the access door. Self-cleaning hinge construction on access door prevents accumulation of foreign material around hinges.

More usable space – durable construction

Enclosure covers on large units are fastened by stainless steel screws terminated on a modest ''outside'' flange allowing more usable inside space. Their wall sections are backed up against gasket joints to ensure a strong and durable construction.

Large enclosures have slotted, replaceable mounting feet.

Strong, yet flexible

Krydon material has superior physical properties:

- Tensile strength – 10,000 psi.
- Flexural strength – 24,000 psi.
- Compression strength – 25,000 psi.
- Impact resistance – 16.0 ft.-lbs./in.
- Flammability rating – UL94V-5
- UL Mechanical Thermal Index rating – 190° C

Buttoned up against the elements

Even the pushbuttons are molded of a corrosion resistant polymer material. There is no external boot to wear or corrode, rendering the button inoperative. Result: longer service life, reduced maintenance and downtime.

A unique internal neoprene diaphragm encloses shaft, spring and other parts behind the button. Moving parts are isolated from the outside atmosphere, and are less likely to corrode or become jammed with foreign material.

Get a handle on it with Krydon material

The operating handle is also made of *Krydon* material for maximum corrosion resistance. The handle is reinforced for long life and heavy duty service.

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Dome and Angle Reflectors	1L thru 4L
Fluorescent Fixtures – NFW Series	6L
Emergency Lighting – N2LPS Series	10L
Interlocked Receptacles	
With Enclosed Disconnect Switches – NSR Series	3P
With Enclosed Circuit Breakers – NBR Series	3P
Heavy Duty Plugs and Receptacles	
NR Receptacle Assemblies	1P
NPJ Plugs, NPQ Motor Plugs and NPR Cord Connectors	1P

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N2SU/N2SCU Control Stations

600VAC Heavy Duty

Cl.I, Div. 2, Groups B, C, D
Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,7BCD (Div. 2), 12

Cl. II, Div. 2, Groups F, G
Cl. I, Zones 1 and 2, Ex de IIB + H_2
IP66

Application:

N2SU and N2SCU pushbutton stations, selector switches and pilot lights are suitable for use:

- in Class I, Groups B, C, D; Division 2 and Class I, Zones 1 and 2 hazardous areas where flammable vapors or gases may be present due to accidental or abnormal operation
- in damp, wet, or corrosive locations
- indoors or outdoors in Division 2 and Class I, Zones 1 and 2 areas of petroleum refineries, chemical plants and other process industry facilities where similar hazards exist

- N2SU and N2SCU pushbutton stations and selector switches are used:
- in conjunction with magnetic starters or contactors for remote control of motors

N2SU and N2SCU pilot lights are used:

- to visually indicate at a remote location that the desired function is being performed

Optional maintained stop pushbutton(s) are used: As emergency or normal stop button(s) in motor control circuits for positive shutdown.

Features:

- Compact, strong, durable enclosures are made of *Vestamid*™ – a black molded high impact strength, polyester material having excellent corrosion resistance and stability to heat.
- Exterior parts of pushbuttons, pilot lights, and selector switches are made of *Krydon* material.
- Pushbutton design uses a unique internal neoprene boot which completely encloses all internal parts. A wiping gasket around the pushbutton cleans the wall of the pushbutton guard of any foreign material accumulation as the button is operated.
- Formed-in-place gasket, and stainless steel screws for added corrosion resistance.
- Pushbutton and pilot light guards are fluted for no-slip installation.
- Factory installed dead end (N2SU) or through feed (N2SCU) hubs – ½″ and ¾″ sizes.
- Legend plates are available with 40 standard markings.
- Lockout is standard on selector switch devices.
- LED lamps are standard to provide longer life.

Size Ranges:

- 1, 2, 3 and 4-device units

Electrical Rating Ranges:

- Pushbutton stations and selector switches – heavy duty 600VAC maximum
- Pilot lights – 120 to 600 VAC

Certifications and Compliances:

- NEMA: 3, 4X, 7BCD and 12
- UL Standard: 508
- CSA C22.2 No. 14 & 30

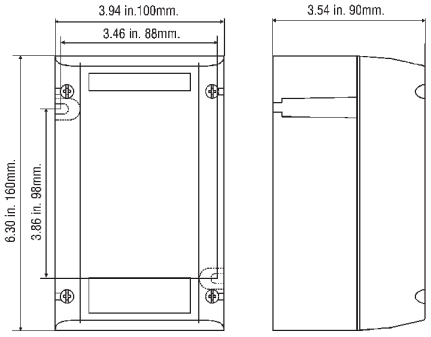
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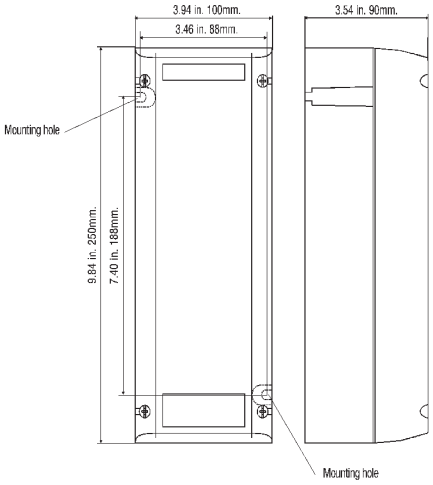
Description	Suffix to be Added to Cat. #
Padlock attachments for all pushbuttons. For ''START-STOP'' stations, only ''STOP'' button provided with lockout	S708
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counterclockwise operation	S634
Momentary contact counterclockwise operation, spring return to center, maintained contact clockwise operation	S635

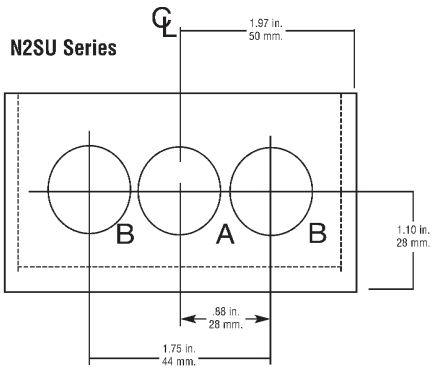
Note:
In addition to hub arrangements shown, the following can be obtained by inserting these codes for the 4th and 5th character in the catalog number:

D = Double ½″ hubs at bottom
CD = Single hub at top, double ½″ hubs at bottom
DD = Double ½″ hubs at each end

Dimensions:







Pushbutton Stations – Momentary Contact

No. Units	Contact Symbol	Marking Unless Otherwise Specified§	Enclosure with Pushbuttons Hub Size	Dead End Cat. #	Through Feed Cat. #
1		START (or Specify§)	½	N2S1110U	N2SC1110U
			¾	N2S2110U	N2SC2110U
2		START-STOP (or Specify§)	½	N2S1210U	N2SC1210U
			¾	N2S2210U	N2SC2210U
3		Specify§	½	N2S1310U	N2SC1310U
			¾	N2S2310U	N2SC2310U
4		Specify§	½	N2S1410U	N2SC1410U
			¾	N2S2410U	N2SC2410U

Entry	Note
A	.87 in. 22 mm. diameter for ½″ single entry 1.09 in. 28 mm. diameter for ¾″ single entry
B	.87 in. 22 mm. diameter for ½″ double entry

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N2SU/N2SCU Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B, C, D
Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3, 4X, 7BCD (Div. 2), 12

Cl. II, Div. 2,
Groups F, G
Cl. I, Zones 1 and 2
Ex de IIB + H_2
IP 66

Selector Switches*

Style	Position 1	Position 2	Position 3	Marking Unless Otherwise Specified§	Enclosure with One Selector Switch: Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1 ●● A2 ● ●	● ●		START-STOP (or Specify§)	½ ¾	N2S1121U N2S2121U	N2SC1121U N2SC2121U
Two-Position, Four-Circuit	A1 ●● A2 ● ● B1 ●● B2 ● ●	● ● ● ●		START-STOP (or Specify§)	½ ¾	N2S1122U N2S2122U	N2SC1122U N2SC2122U
Three-Position, Two-Circuit	A1 ●● A2 ● ●	● ●	● ●	Specify§	½ ¾	N2S1123U N2S2123U	N2SC1123U N2SC2123U
Three-Position, Four-Circuit	A1 ●● A2 ● ● B1 ●● B2 ● ●	● ● ● ●	● ● ● ●	Specify§	½ ¾	N2S1124U N2S2124U	N2SC1124U N2SC2124U
Three-Position, Four-Circuit	A1 ● A2 ●● B1 ●● B2 ● ●	●● ● ●● ●	●● ● ● ●	Specify§	½ ¾	N2S1125U N2S2125U	N2SC1125U N2SC2125U



Maintained pushbutton with pilot light control station.

Pilot Lights† – Transformer Type

No. Units	Diagram	Volts	Enclosure with Pilot Lights†: ½″ Hubs Dead End Cat. #	½″ Hubs Through Feed Cat. #	¾″ Hubs Dead End Cat. #	¾″ Hubs Through Feed Cat. #
1		120	N2S1131U-‡	N2SC1131U-‡	N2S2131U-‡	N2SC2131U-‡
		240	N2S1132U-‡	N2SC1132U-‡	N2S2132U-‡	N2SC2132U-‡
2		120	N2S1231U-‡	N2SC1231U-‡	N2S2231U-‡	N2SC2231U-‡
		240	N2S1232U-‡	N2SC1232U-‡	N2S2232U-‡	N2SC2232U-‡
3		120	N2S1331U-‡	N2SC1331U-‡	N2S2331U-‡	N2SC2331U-‡
		240	N2S1332U-‡	N2SC1332U-‡	N2S2332U-‡	N2SC2332U-‡
4		120	N2S1431U-‡	N2SC1431U-‡	N2S2431U-‡	N2SC2431U-‡
		240	N2S1432U-‡	N2SC1432U-‡	N2S2432U-‡	N2SC2432U-‡

* Replacement switch for selector switches is Cat. No. ESWP126.

† Pilot lights are transformer type except those rated 120 volts.

‡ Specify lens color for each pilot light. As an example, N2S1231U with one red and one green would be ordered as N2S1231U-J1-LED-J3-LED

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

§ Standard markings available on indicating plates:

Marking		
Push Buttons:	REVERSE	OPEN-CLOSE
START	OPEN	UP-DOWN
STOP	CLOSE	ON-OFF
ON	UP	IN-OUT
OFF	DOWN	RAISE-LOWER
RUN	IN	START-STOP
JOG	OUT	*Selector Switches – Three-Position*
TRIP	RAISE	
RESET	LOWER	RUN-OFF-JOG
TEST	*Selector Switches – Two-Position:*	HAND-OFF-AUTO
LIGHT ON		FOR-OFF-REV
HAND	RUN-JOG	FAST-OFF-SLOW
AUTOMATIC	HAND-AUTO	1-OFF-2
EMERGENCY	FOR-REV	OPEN-OFF-CLOSE
FORWARD	FAST-SLOW	UP-OFF-DOWN

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N2SU/N2SCU Control Stations

600VAC Heavy Duty

Cl, I, Div. 2, Groups B,C,D Corrosion-Resistant Dusttight Watertight Weatherproof NEMA 3,4X,7BCD (Div. 2),12	Cl, II, Div. 2, Groups F,G Cl, I, Zones 1 and 2, Ex de II B & H_2 IP66	

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GHG 43 Series

Applications

Control stations are used as a remote means of:
- Motor control
- Visual indication of equipment performance
- On-off control of circuits
- Circuit selection
- In areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- For installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist



Features:

- NEMA 4X, IP 66 enclosure with formed-in-place gasket.
- Available with all operators: indicator lights, potentiometers, control switches, terminal blocks and meters.
- Base-mounted contact blocks
- Easy change-out components snap in place on DIN rail
- Enclosure meets UL 94-VO. Also available in anti-static Ex e materials
- Inserts for mounting DIN rails
- 2 top and bottom entries for conduit or cable glands
- Suitable for universal mounting plates on pipes, conduit, wall or channels
- Mounting dimensions data molded on back
- Captive, corrosion-resistant cover screws
- Built-in mounting slots for wall installation
- Available in stainless steel



Certifications and Compliances:

UL/cUL Listed
Class I, Div. 2, Groups A,B,C,D
Class I, Zones 1 and 2, Ex de IIB + H2, T6
AEx de IIB + H2, T6
Type 3, 4, 4X; IP66

CENELEC-PTB Certified to ATEX 3117
EEx de IIC, T6, Zones 1 and 2, IP66

Note: Cooper Crouse-Hinds GHG43 Series control stations are now available with 316L stainless steel enclosures, making them ideal for corrosive and adverse locations - especially offshore platform applications.
To order, simply add suffix "S680" to catalog

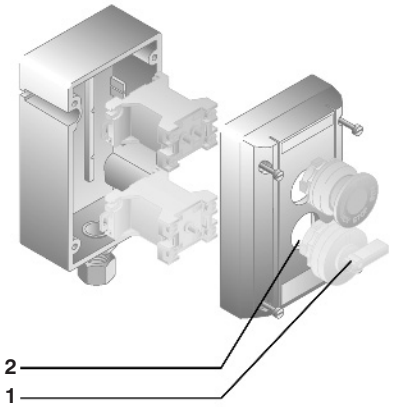
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How to Build a GHG 43 Series Catalog Number‡

Size 4 Enclosure
Size 2 Enclosure

Type	Size	1. Mounting Area	2. Mounting Area
GHG 43		Code A B C D E F	Code A B C D E F

Size 2/GHG 43



Mounting Area *

Push-Button DRT



Code A B C D
D R T O
Codes see page 604

Double Push-Button



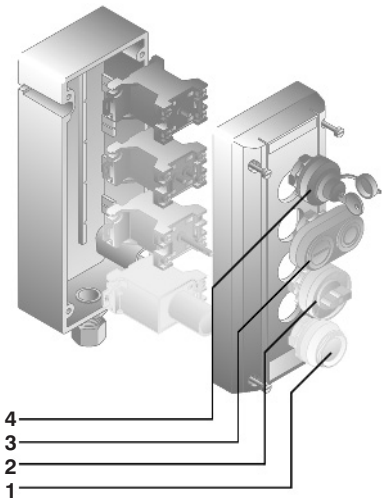
Code A B C D E
D D T O
Codes see page 604

Key Operated Push-Button



Code A B C
S L T O
Codes see page 604

Size 4/GHG 43



Mounting Area *

Mushroom-Head Push-Button



Code A B C D E F
S G T
Codes see page 605

Signal Lamp



Code A B C
S I L
Codes see page 605

* Unoccupied spaces must be filled in with KLM for correct positioning of devices.

‡ For a GHG43 control station with 316L stainless steel enclosure, add suffix ''S680'' to catalog number

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How to build a GHG 43 Series Catalog Number‡

3. Mounting Area

Code	A	B	C	D	E	F

4. Mounting Area

Code	A	B	C	D	E	F

Cable Entries

Top	Bottom

Potentiometer



Code A B

P O T ☐

Codes see page 606

Measuring Instrument



Code A B C

M 7 2 ☐ ☐☐

Codes see page 607
Requires 2 spaces

Switch

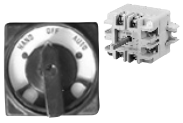


Code A B C D

S C T ☐ ☐☐ ☐

Codes see page 608

Control Switch Ex 23 10A



Code A B C D E F

E X 2 3 ☐☐ ☐☐ ☐ ☐ ☐☐

Codes see pages 608, 609
Requires 2 spaces

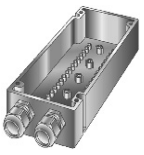
Terminals and cover blanking plug



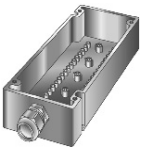
Code A B

K L M ☐☐

Codes see page 606



Two entries



One entry

Cable Entries

NPT	Metric
0 0 No entries	0 0 No entries
1 2 2 × ½″ Myers Hub, STM 1 Zinc Gland plate	0 1 2 × M25 Plastic Cable gland M25 Blanking plug
1 3 2 × ¾″ Myers Hub, STM 2 Zinc Gland plate	0 2 2 × M20 Threaded entries Gland plate
2 2 2 × ½″ Myers Hub, SSTM 1 Stainless steel Gland plate	0 3 2 × M25 Threaded entries Gland plate
2 3 2 × ¾″ Myers Hub, SSTM 2 Stainless steel Gland plate	0 4 1 × M32 Plastic Cable gland M32
2 6 1 × ¾″ Myers Hub, STM2, Zone 1 Gland plate	2 7 1 × M25 Threaded Entry, Blanking plug and Gland plate
3 0 1 × ½″ Myers Hub, STM1, Zone 1 Gland plate	2 9 2 × M25 Threaded Entry, 1 blanking plug and Gland plate
3 1 1 × ½″ Myers Hub, SSTM1 Stainless st. Gland plate	3 3 1 × M20 Threaded entry Blanking plug and Gland plate
3 2 1 × ¾″ Myers Hub, SSTM2 Stainless st. Gland plate	

‡ For a GHG43 series control station with 316L stainless steel enclosure, add suffix S680 to catalog number

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Contact Blocks

- Used for logic controls in hazardous areas
- Single or double units
- Used with all operators
- Base mounting

	Contact Block
Type of Protection	Ex de IIC T6
Certificate of Conformity	PTB No. Ex-87.B.1007U
Approvals	PTB, UL, cUL
Rated Voltage	Up to 400V
Rated Current	NEC/CEC 10A IEC 16 A
Terminal Wiring	2 × 2.5mm² / 14AWG
Mechanical and Electrical Life	>10⁵ Operations

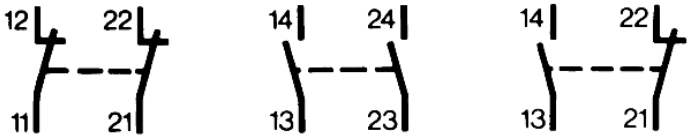
★*Note: See page 609 for explanation of contact symbols.*



Push-Button DRT

Code	D	R	T	O			A		B		C		D

Contact System



Code B	13	14	15

Inscription	0	I	II	STOP	START	SPECIAL-TEXT ON ORDER
Code C	02	03	04	06	07	99

Lockout page 611

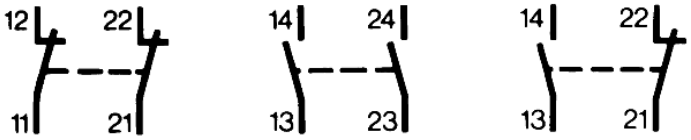
Code D (leave blank if no lockout required)



Double Push-Button DDTO

Code	D	D	T	O			A		B		Left C		Right D		E

Contact System



Code B	43	44	45

Inscription	0	I	II	STOP	START	SPECIAL-TEXT ON ORDER
Code C, D Left/Right	02	03	04	06	07	99

Lockout page 611

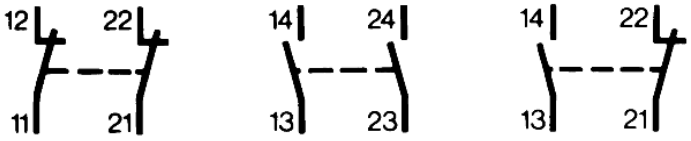
Code E (leave blank if no lockout required)



Key-Operated Push-Button SLT

Code	S	L	T	O			A		B		C

Contact System



Code B	23	24	25

Push-Button	Key						
Not Depressed	Lockable	Yes	Yes	Yes	No	No	Yes
	Key Removable	Yes	Yes	No	No	Yes	Yes
Depressed	Lockable	Yes	No	Yes	Yes	Auto	Yes
	Key Removable	No	No	Yes	Yes	Yes	Yes
Code C		1	2	3	4	5	6

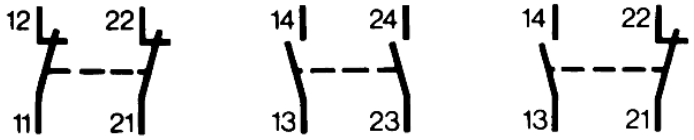
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Mushroom-Head Push-Button SGT

Code	S G T					
	A	B	C	D	E	F

Contact System



Code B	53	54	55

Color of Push-Button	Red	Yellow	Black Actuator
Code C	1	2	3

Function	Spring Return	Maintained	Key Release
Code D	1	2	3

Inscription	STOP	START	EMERGENCY STOP
Code E	06	07	11

Lockout page 611

Code F (leave blank if no lockout required)

Signal Lamp

Signal Lamp

- Used for positive feedback indication
- High intensity with special reflector and optical lens
- Accomodates most input voltages
- Base Mounting

	Lamp
Type of Protection	Ex de IIC T6
Certificate of Conformity	PTB No. Ex-88.B.2106U
Approvals	PTB, UL, cUL
Lamp Life	>100,000 Hours (11.5 Years)
Rated Voltages	Up to 240VAC, 50 / 60 Hz Up to 110VDC
Rated Current	Max. 15 mA
Power Consumption	<1.2W
Terminal Wiring	2 × 2.5mm² / 14AWG
Colors	Red, Green, Yellow, Clear & Blue



Signal Lamp SIL

Code	S I L		
	A	B	C

Colored Lens Cover	White	Yellow	Red	1 pkg white, yellow, red, green	Green
Code B	1	2	3	4	5

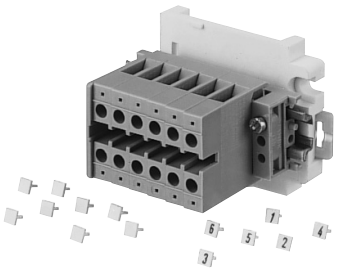
Voltage	20-250VAC/DC	10-33VAC/DC
Code C	01	31

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Terminal Blocks

Terminals
- Terminal block for easy field connections
- Base mounting

Type of Protection	Ex e II
Certificate of Conformity	PTB No. Ex-88.B.3112U
Rated Voltages	Up to 400V
Rated Current	23A
Conductor Size	4mm² / 12AWG



Terminals and Cover Plugs KLM

	K L M		
Code	**A**	**B**	
		6 Terminals 2 × 4 mm²	**Undrilled Cover (No Terminals)**
Code B		61	00

Potentiometers

Potentiometers
- Used to adjust resistance to vary motor speed or light levels
- Scale 0 to 100%
- Base Mounting

Type of Protection	Ex de IIC T6
Certificate of Conformity	PTB No. Ex-87.B.1007U
Approvals	PTB, UL, cUL
Rated Voltages	>250V
Power Consumption	1.0W
Resistance	100-10,000Ω
Angle of Rotation	270°
Scale	0-100%
Connection Terminals	2 × 2.5mm² / 14AWG



Potentiometer POT

	P O T	
Code	**A**	**B**

Power Consumption	**1W**			
Resistance Ω	1,000	2,200	4,700	10,000
Code B	4	7	5	6

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Ammeters

- Used to measure motor current draw for efficiencies and maintenance
- Slide in scales to accommodate any amperage range
- Red indicator for quick visual indication to compare set points and actual values



Type of Protection	Ex e II T6
Certificate of Conformity	PTB No. Ex-87.B.2016U
Approvals	PTB, UL, cUL
Movement	Moving iron (core)
Accuracy	2.5% of range (class 2.5)
Measuring Range	0-16A direct, C.T. n/1 A
Operating Position	Vertical
Scale	Interchangeable for C.T. n/1 A
Zero Adjustment	At instrument
Terminal Wiring	2 × 2.5 mm² / 14 AWG
Rated Current Marking	Red indicator

Measuring Instrument
AM 72★

	M 7 2	☐	☐☐
Code	**A**	**B**	**C**

Movement	**Direct**	**n/1 A**	**0 - 2- mA**	**4-20 mA**
Code B	1	2	5	6

Movements 0-20 mA and 4-20 mA are only available with 0 - 100/120% scale

Direct Measurement		**Interchangeable Scale for C.T. n/1A**					
Code C	**Scale**	**Code C**	**Scale**	**Code C**	**Scale**	**Code C**	**Scale**
02	0 - 1/1.5 A	02	0 -1/1.5 A	09	0 - 30/45 A	16	0 - 200/300 A
03	0 - 2.5/3.75 A	03	0 - 2.5/3.75 A	10	0 - 40/60 A	17	0 - 250/375 A
04	0 - 5/7.5 A	04	0 - 5/7.5 A	11	0 - 50/75 A	18	0 - 300/450 A
05	0 - 10/15 A	05	0 - 10/15 A	12	0 - 60/90 A	19	0 - 400/600 A
07	0 - 16/24 A	06	0 - 15/22.5 A	13	0 - 75/112.5 A	20	0 - 500/750 A
		08	0 - 20/30 A	14	0 - 100/150 A	21	0 - 600/900 A
				15	0 - 150/225 A	22	0 - 100/150 A

★Requires 2 spaces.

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Control Switches
- Used for selectable operations (i.e. Hand–Off–Auto)
- 2 Independent contacts
- Available in any contact configuration
- Spring return or maintained position
- Available with lockout positions

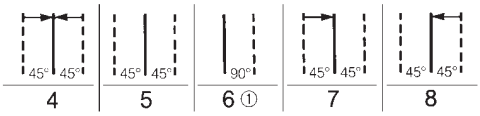


	SCT	Ex 23
Type of Protection	Ex de IIC T6	Ex de IIC T6
Certificate of Conformity	Ex.87.B.1007U	PTB no. Ex-88.B.1047U
Approvals	PTB, UL, cUL	PTB, UL, cUL
Rated Votage	400 V	Up to 500 V
Rated Current	NEC 10 A	NEC 10 A
	IEC 16 A	IEC 16 A
Terminal Wiring	2 × 2.5mm² / 14 AWG	2 × 2.5mm² / 14 AWG
Mechanical Life	>10⁵ Operations	>10⁵ Operations
Electrical Life	>10⁵ Operations	>10⁵ Operations
Switching Capacity	AC II: 20V/6A	AC I: 500G/10A
	400V/4A	AC II: 230V/6A
	DC II: 24V/6A	500V/6A
	60V/0.8A	DC II: 24V/6A
	110V/.5A	48V/4A
	220V/.2A	60V/0.8A
		110V/0.5A
		220V/0.4A

Switch SCT

Code	S	C	T		A		B		C		D

Switch Mechanism



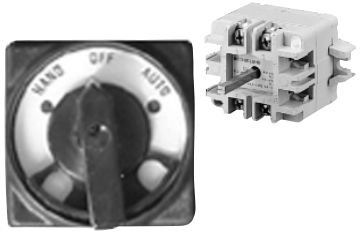
Code B / Code C	Inscription		Code C	Inscription		
01	0	I	07	I	0	II
03	STOP	START	13	LOCAL	REMOTE	AUTO
04	HAND	AUTO	14	STOP	0	START
06	REMOTE	LOCAL	15	HAND	0	AUTO
29	OFF	ON	99	Special – text to be given on order		

Same as SCT above except up to 4 independent contacts

Contact System



Code D	1	2	3	4	5	6



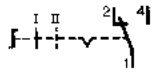
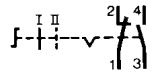
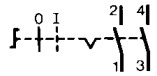
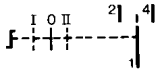
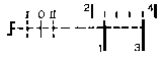
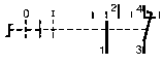
★ Requires 2 spaces.

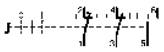
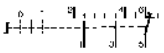
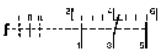
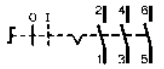
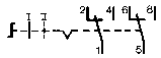
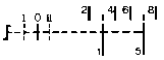
Control Switch Ex 23★ (Requires 2 spaces in cover)

Code	E	x	2	3	A		B		C		D		E		F	

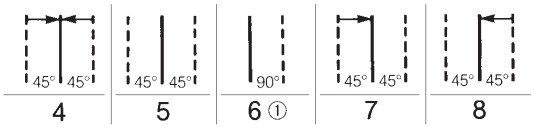
Code B	Inscription			
01	0	I		
03	STOP	START		
04	HAND	AUTO		
06	remote	local		
07	I	0		
13	LOCAL	REMOTE	AUTO	
14	STOP	0	START	
23	OFF	0	ON	
24	HAND	OFF	AUTO	
27	START	STOP		
29	OFF	ON		
32	ON	OFF		
99	Special – text to be given on order			

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Code C	Contact System
00	
01	
02	
03	
05	
07	

Code C	Contact System
09	
10	
12	
13	
14	
15	

Switched Mechanism Code D

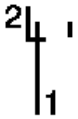


Padlocking Facility Code E



CONTACT CONFIGURATIONS

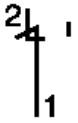
Normally Closed

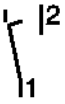




Normally Open

Normally Closed Extended Over 2 Positions





Normally Open Early Make/Late Break

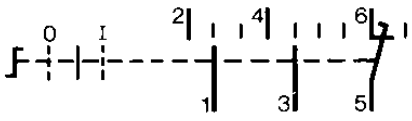
Change-Over Break Before Make





Change-Over Make Before Break

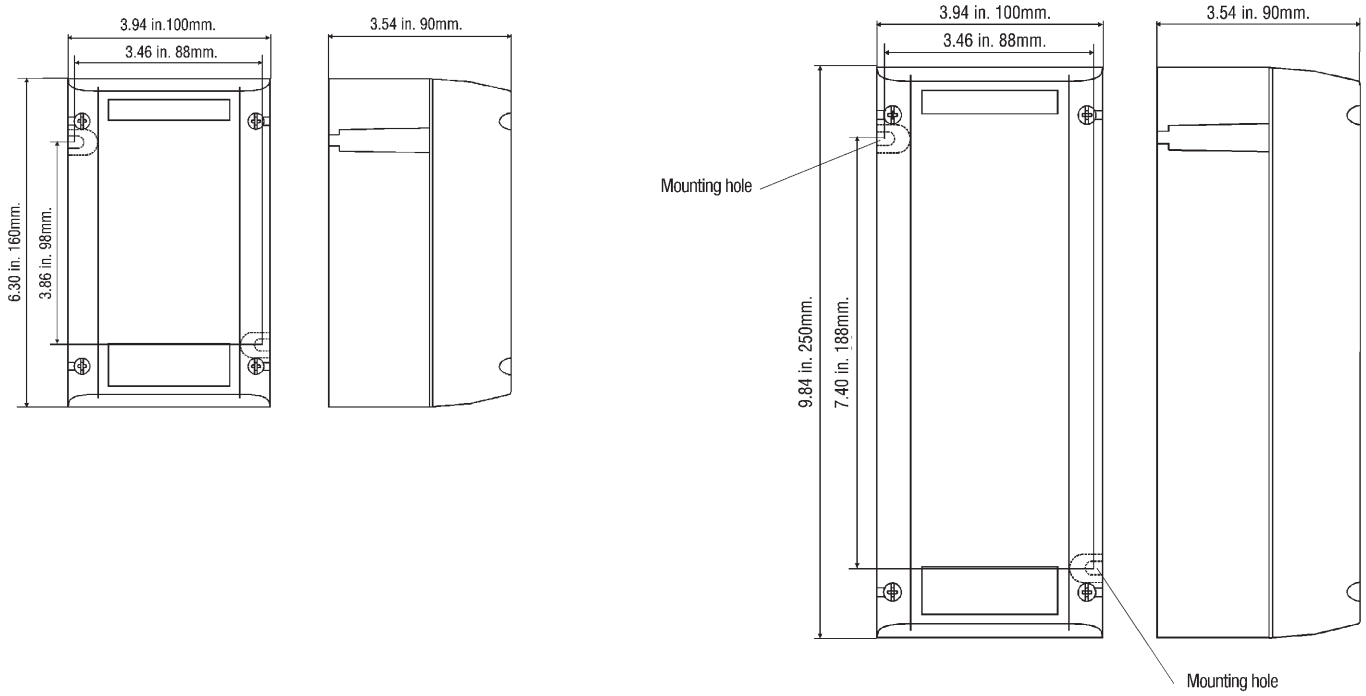
Example of Switch Type 10

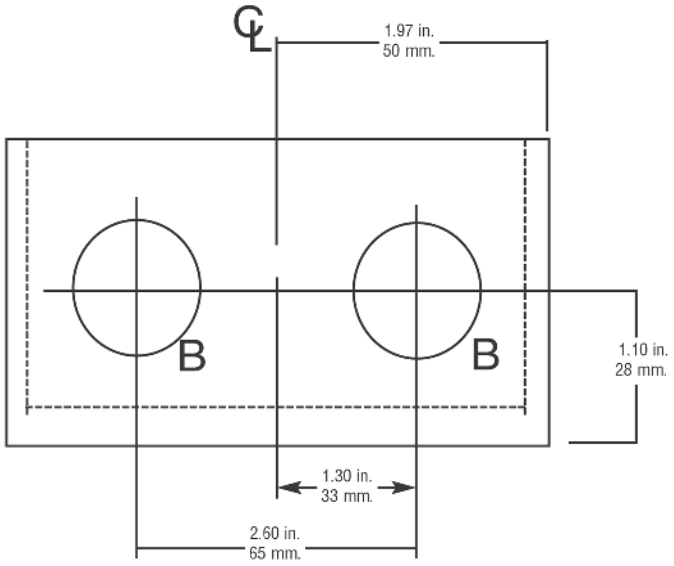


This example is the switch type 10 *Stop-Run-Stop*. The switch has 3 positions – the normal position is center and can be switched left or right. An arrow (→←) indicates spring return. (See codes for switch mechanism). Contacts 1-2 only close in the *Stop* position. Contacts 3-4 close only in the *Start* position. Contacts 5-6 are normally closed and remain closed when switched to the *Start* position and open when switched to the *Stop* position.

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Dimensions:





End View of Back Box

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PUSH-BUTTON – DRTO



X-Shroud Cover For
Push-Button
Y-Lockout



Z-Padlocking Fire Alarm
Cover For Push-Button

DOUBLE PUSH-BUTTON – DDTO



X-Padlocking Cover For
Double Push-Button
Without Hole



Z-Padlocking Cover
For Double Push-Button
With Hole

EMERGENCY STOPS – SGT



X-Padlocking Cover For
Emergency Stop Push-Button



Z-Padlocking Cover For
Emergency Stop Push-Button
With Bolt & Chain

Marking Guide For Push-Buttons

Special Text

Marking Required	Standard Abbreviation	Actual Marking on Disc
Acknowledge	AK	ACK
Alarm	AM	ALARM
Automatic	AU	AUTO
Close	CL	CLOSE
Down	DN	DOWN
Fast	FS	FAST
Forward	FW	FWD
Hand	HN	HAND
High	HI	HIGH
In	IN	IN
Jog	JG	JOG
Local	LC	LOCAL
Lower	LO	LOWER
Maintain	MT	MAINT
Manual	MN	MANUAL
Normal	NR	NORMAL
Off	OF	OFF
On	ON	ON
Open	OP	OPEN
Out	OT	OUT
Raise	RA	RAISE
Remote	RM	REMOTE
Reset	RS	RESET
Reverse	RV	REV
Run	RN	RUN
Slow	SL	SLOW
Test	TT	TEST
Trip	TP	TRIP
Up	UP	UP

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N2S and N2SC Factory Sealed Corrosion-Resistant Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

Application:

N2S and N2SC pushbutton stations, selector switches and pilot lights are suitable for use:
- in Class I, Groups B, C, D; Division 2 hazardous areas where flammable vapors or gases may be present due to accidental or abnormal operation
- in damp, wet, or corrosive locations
- indoors or outdoors in Division 2 areas of petroleum refineries, chemical plants and other process industry facilities where similar hazards exist

N2S and N2SC pushbutton stations and selector switches are used:
- in conjunction with magnetic starters or contactors for remote control of motors

N2S and N2SC pilot lights are used:
- to visually indicate at a remote location that the desired function is being performed

Optional maintained stop pushbutton(s) are used: As emergency or normal stop button(s) in motor control circuits for positive shutdown.

Features:

- Pushbutton stations, pilot lights, and selector switch devices are factory sealed. External seals are not required.
- Enclosures are made of *Krydon*® fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat and sunlight.
- Optional maintained stop feature operates by depressing the mushroom head pushbutton. Pushbutton must be manually pulled before start button can be actuated.
- Lockout is standard on selector switch devices.
- Factory installed dead end (N2S) or through feed (N2SC) hubs – ½", ¾", and 1" sizes.
- Indicating plates are available with a choice of 40 standard markings.
- Grounding plate included with each hub.

Electrical Rating Ranges:

- Pushbutton stations and selector switches – heavy duty 600 VAC maximum
- Pilot lights – 120 to 600 VAC

Certifications and Compliances:

- NEC: Class I, Division 2, Groups B, C & D
- NEMA: 3, 4X, 7BCD (Division 2) and 12
- UL Standard: 698 (Division 2)
- CSA Standard: C22.2 Nos. 14 & 30



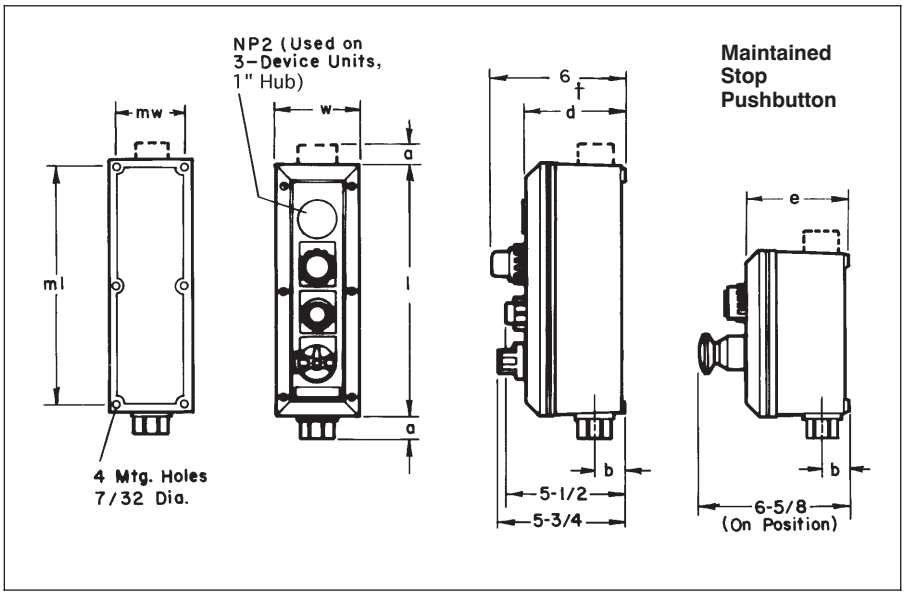


Options:

The following special options are available from factory by adding suffix to Cat. No.

Description	Suffix to be Added to Encl. Cat. #
Padlock attachments for all pushbuttons. For "START-STOP" stations, only "STOP" button provided with lockout	S708
Three position selector switches with modified operation: Momentary contact clockwise operation, spring return to center, maintained contact counterclockwise operation	S634
Momentary contact counterclockwise operation, spring return to center, maintained contact clockwise operation	S635
Control station with maintained stop pushbutton (requires NCD type enclosure): One maintained stop pushbutton.	MSR1
Two maintained stop pushbuttons	MSR2
Maintained stop pushbuttons are installed at bottom position(s) of control station unless otherwise specified.	
LED pilot lights in place of standard incandescent pilot lamps	LED

Dimensions (in inches)



Dimensions are approximate, not for construction purposes.

N2S(C) Body Style	Outside Dimensions l	w	(NCS)* d	(NCD)* e	Mounting Dimensions ml	mw	½" & ¾" Hubs a	b	1" Hubs a	b
1 or 2 devices	7¼	3 13/16	4⅜	5⅜	6⅜	2 15/16	1⅛	1 1/16	1¼	1 5/16
3 or 4 devices	11¾	3 13/16	4⅜	5⅜	10⅞	2 15/16	1⅛	1 1/16	1¼	1 5/16

† Use dimension "e" for control station with 1" hub or maintained stop pushbutton.
* NCS box is supplied with units using ½" and ¾" hubs. NCD box is supplied with units using 1" hubs or MSR option.
‡ NCD 4 device box used with 1" hubs or MSR option.

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N2S and N2SC Factory Sealed Corrosion-Resistant Control Stations

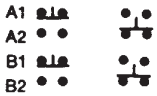
600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

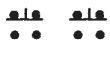
Pilot Lights‡*

No. Units	Diagram	Volts	Enclosure With Pilot Lights ½″ Hubs Dead End Cat. #	½″ Hubs Through Feed Cat. #	¾″ Hubs Dead End Cat. #	¾″ Hubs Through Feed Cat. #	1″ Hubs Dead End Cat. #	1″ Hubs Through Feed Cat. #
1		120	N2S1131-†	N2SC1131-†	N2S2131-†	N2SC2131-†	N2S3131-†	N2SC3131-†
		240	N2S1132-†	N2SC1132-†	N2S2132-†	N2SC2132-†	N2S3132-†	N2SC3132-†
		480	N2S1134-†	N2SC1134-†	N2S2134-†	N2SC2134-†	N2S3134-†	N2SC3134-†
		600	N2S1135-†	N2SC1135-†	N2S2135-†	N2SC2135-†	N2S3135-†	N2SC3135-†
2		120	N2S1231-†	N2SC1231-†	N2S2231-†	N2SC2231-†	N2S3231-†	N2SC3231-†
		240	N2S1232-†	N2SC1232-†	N2S2232-†	N2SC2232-†	N2S3232-†	N2SC3232-†
		480	N2S1234-†	N2SC1234-†	N2S2234-†	N2SC2234-†	N2S3234-†	N2SC3234-†
		600	N2S1235-†	N2SC1235-†	N2S2235-†	N2SC2235-†	N2S3235-†	N2SC3235-†
3		120	N2S1331-†	N2SC1331-†	N2S2331-†	N2SC2331-†	N2S3331-†	N2SC3331-†
		240	N2S1332-†	N2SC1332-†	N2S2332-†	N2SC2332-†	N2S3332-†	N2SC3332-†
		480	N2S1334-†	N2SC1334-†	N2S2334-†	N2SC2334-†	N2S3334-†	N2SC3334-†
		600	N2S1335-†	N2SC1335-†	N2S2335-†	N2SC2335-†	N2S3335-†	N2SC3335-†
4		120	N2S1431-†	N2SC1431-†	N2S2431-†	N2SC2431-†	N2S3431-†	N2SC3431-†
		240	N2S1432-†	N2SC1432-†	N2S2432-†	N2SC2432-†	N2S3432-†	N2SC3432-†
		480	N2S1434-†	N2SC1434-†	N2S2434-†	N2SC2434-†	N2S3434-†	N2SC3434-†
		600	N2S1435-†	N2SC1435-†	N2S2435-†	N2SC2435-†	N2S3435-†	N2SC3435-†

Selector Switches

Style	Switch Position No. 1	No. 2	No. 3	Marking§ Unless Otherwise Specified	Enclosure With Selector Switch Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit				START-STOP (or Specify)	½	N2S1121	N2SC1121
					¾	N2S2121	N2SC2121
					1	N2S3121	N2SC3121
Two-Position, Four-Circuit				START-STOP (or Specify§)	½	N2S1122	N2SC1122
					¾	N2S2122	N2SC2122
					1	N2S3122	N2SC3122
Three-Position, Two-Circuit				Specify	½	N2S1123	N2SC1123
					¾	N2S2123	N2SC2123
					1	N2S3123	N2SC3123
Three-Position, Four-Circuit				Specify§	½	N2S1124	N2SC1124
					¾	N2S2124	N2SC2124
					1	N2S3124	N2SC3124
Three-Position, Four-Circuit				Specify§	½	N2S1125	N2SC1125
					¾	N2S2125	N2SC2125
					1	N2S3125	N2SC3125

Pushbutton Stations – Momentary Contact

No. Units	Contact Symbol	Marking§ Unless Otherwise Specified	Enclosure With Pushbuttons Hub Size	Dead End Cat. #	Through Feed Cat. #
1		START (or Specify)	½	N2S1110	N2SC1110
			¾	N2S2110	N2SC2110
			1	N2S3110	N2SC3110
2		START-STOP (or Specify)	½	N2S1210	N2SC1210
			¾	N2S2210	N2SC2210
			1	N2S3210	N2SC3210
3		Specify	½	N2S1310	N2SC1310
			¾	N2S2310	N2SC2310
			1	N2S3310	N2SC3310
4		Specify	½	N2S1410	N2SC1410
			¾	N2S2410	N2SC2410
			1	N2S3410	N2SC3410

* §, † See page 614 for footnotes.

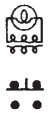
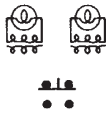
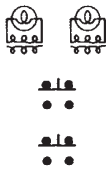
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N2S and N2SC Factory Sealed Corrosion-Resistant Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

Combination Control Stations

Pilot Lights*	Push-buttons	Diagram	Markings§	Enclosure With Pushbuttons and Pilot Lights						
				Hub Size	Volts	Dead End Cat. #	Through Feed Cat. #	Volts	Dead End Cat. #	Through Feed Cat. #
1	1		Specify	½		N2S12411-†	N2SC12411-†		N2S12414-†	N2SC12414-†
				¾	120	N2S22411-†	N2SC22411-†	480	N2S22414-†	N2SC22414-†
				1		N2S32411-†	N2SC32411-†		N2S32414-†	N2SC32414-†
				½		N2S12412-†	N2SC12412-†		N2S12415-†	N2SC12415-†
				¾	240	N2S22412-†	N2SC22412-†	600	N2S22415-†	N2SC22415-†
				1		N2S32412-†	N2SC32412-†		N2S32415-†	N2SC32415-†
1	2		Specify	½		N2S13421-†	N2SC13421-†		N2S13424-†	N2SC13424-†
				¾	120	N2S23421-†	N2SC23421-†	480	N2S23424-†	N2SC23424-†
				1		N2S33421-†	N2SC33421-†		N2S33424-†	N2SC33424-†
				½		N2S13422-†	N2SC13422-†		N2S13425-†	N2SC13425-†
				¾	240	N2S23422-†	N2SC23422-†	600	N2S23425-†	N2SC23425-†
				1		N2S33422-†	N2SC33422-†		N2S33425-†	N2SC33425-†
2	1		Specify	½		N2S13411-†	N2SC13411-†		N2S13414-†	N2SC13414-†
				¾	120	N2S23411-†	N2SC23411-†	480	N2S23414-†	N2SC23414-†
				1		N2S33411-†	N2SC33411-†		N2S33414-†	N2SC33414-†
				½		N2S13412-†	N2SC13412-†		N2S13415-†	N2SC13415-†
				¾	240	N2S23412-†	N2SC23412-†	600	N2S23415-†	N2SC23415-†
				1		N2S33412-†	N2SC33412-†		N2S33415-†	N2SC33415-†
2	2		Specify	½		N2S14421-†	N2SC14421-†		N2S14424-†	N2SC14424-†
				¾	120	N2S24421-†	N2SC24421-†	480	N2S24424-†	N2SC24424-†
				1		N2S34421-†	N2SC34421-†		N2S34424-†	N2SC34424-†
				½		N2S14422-†	N2SC14422-†		N2S14425-†	N2SC14425-†
				¾	240	N2S24422-†	N2SC24422-†	600	N2S24425-†	N2SC24425-†
				1		N2S34422-†	N2SC34422-†		N2S34425-†	N2SC34425-†

Pilot Lights*	Push-buttons	Selector Switches Position No. 1 2 3	Markings§	Enclosure With Pilot Light, Pushbuttons and Selector Switch						
				Hub Size	Volts	Dead End Cat. #	Through Feed Cat. #	Volts	Dead End Cat. #	Through Feed Cat. #
1	2	Two-Position, Two-Circuit A1 A2	Specify	½		N2S145211-†	N2SC145211-†		N2S145214-†	N2SC145214-†
				¾	120	N2S245211-†	N2SC245211-†	480	N2S245214-†	N2SC245214-†
				1		N2S345211-†	N2SC345211-†		N2S345214-†	N2SC345214-†
				½		N2S145212-†	N2SC145212-†		N2S145215-†	N2SC145215-†
				¾	240	N2S245212-†	N2SC245212-†	600	N2S245215-†	N2SC245215-†
				1		N2S345212-†	N2SC345212-†		N2S345215-†	N2SC345215-†
1	2	Three-Position, Two-Circuit A1 A2	Specify	½		N2S145231-†	N2SC145231-†		N2S145234-†	N2SC145234-†
				¾	120	N2S245231-†	N2SC245231-†	480	N2S245234-†	N2SC245234-†
				1		N2S345231-†	N2SC345231-†		N2S345234-†	N2SC345234-†
				½		N2S145232-†	N2SC145232-†		N2S145235-†	N2SC145235-†
				¾	240	N2S245232-†	N2SC245232-†	600	N2S245235-†	N2SC245235-†
				1		N2S345232-†	N2SC345232-†		N2S345235-†	N2SC345235-†

‡ Pilot lights are transformer type except those rated 120 volts. Lamp type is 120MB, 120 volts, 3 watts.

† Specify lens color for each pilot light. As an example, N2S1231 with one red and one green would be ordered as N2S1231-J1-J3.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

* LED pilot lights are available, add suffix LED after last color symbol. See Options on Page 612.

§ Standard markings available on indicating plates:

Marking		
Pushbuttons:	REVERSE	OPEN-CLOSE
START	OPEN	UP-DOWN
STOP	CLOSE	ON-OFF
ON	UP	IN-OUT
OFF	DOWN	RAISE-LOWER
RUN	IN	START-STOP
JOG	OUT	*Selector Switches –*
TRIP	RAISE	*Three-Position:*
RESET	LOWER	RUN-OFF-JOG
TEST	*Selector Switches –*	HAND-OFF-AUTO
LIGHT ON	*Two-Position:*	FOR-OFF-REV
HAND	RUN-JOG	FAST-OFF-SLOW
AUTOMATIC	HAND-AUTO	1-OFF-2
EMERGENCY	FOR-REV	OPEN-OFF-CLOSE
FORWARD	FAST-SLOW	UP-OFF-DOWN

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N2S/N2SC Factory Sealed Corrosion-Resistant Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

Custom-Built Factory Assembled Control Stations

To order your custom-built factory assembled control station, select the enclosure required and add the desired devices from listings below.

Enclosures (NCD or NCDC enclosures must be used with MSR1 or MSR2)

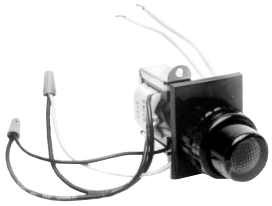
No. of Devices	Without Hubs Cat. #	With One Hub ½″ Cat. #	With Two Hubs ½″ Cat. #	With One Hub ¾″ Cat. #	With Two Hubs ¾″ Cat. #	With One Hub 1″ Cat. #	With Two Hubs 1″ Cat. #
1	NCD01	NCD11	NCDC11	NCD21	NCDC21	NCD31	NCDC31
2	NCD02	NCD12	NCDC12	NCD22	NCDC22	NCD32	NCDC32
3	NCD03	NCD13	NCDC13	NCD23	NCDC23	NCD33	NCDC33
4	NCD04	NCD14	NCDC14	NCD24	NCDC24	NCD34	NCDC34

No. of Devices	Without Hubs Cat. #	With One Hub (¾″) Cat. #	With Two Hubs (¾″) Cat. #	With One Hub (½″) Cat. #	With Two Hubs (½″) Cat. #
1	NCS01	NCS21	NCSC21	NCS11	NCSC11
2	NCS02	NCS22	NCSC22	NCS12	NCSC12
3	NCS03	NCS23	NCSC23	NCS13	NCSC13
4	NCS04	NCS24	NCSC24	NCS14	NCSC14

Pilot Lights†**

Transformer Type

Volts	Cat. #
120	N2PL10-‡
240	N2PL20-‡
480	N2PL40-‡
600	N2PL50-‡



Pilot lights to be used in N2SU Series:

Red	N2PLU10-J1-LED
Green	N2PLU10-J3-LED
Amber	N2PLU10-J6-LED
Clear	N2PLU10-J10-LED
Blue	N2PLU10-J11-LED

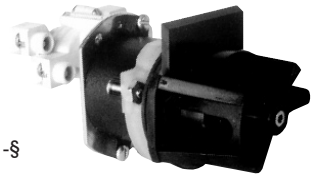
Pushbuttons – Momentary Contact

Color of Operator	1 Circuit Contact Symbol	1 Circuit Universal Cat. #	2 Circuit Contact Symbol	2 Circuit Universal Cat. #
Natural		N2PS1111-§		N2PS1211-§
Red		N2PS1111R-§		N2PS1211R-§
Green		N2PS1111G-§		N2PS1211G-§
Red Mushroom Head		N2PM1111-5111§		



Selector Switches

Style	Position 1	Position 2	Position 3	Cat. #
Two Position Two Circuit	A1, A2			N2SW11211-§
Two Position Four Circuit	A1, A2, B1, B2			N2SW12221-§
Three Position Two Circuit	A1, A2			N2SW11311-§
Three Position Four Circuit	A1, A2, B1, B2			N2SW12321-§
Three Position Four Circuit	A1, A2, B1, B2			N2SW12322-§



Custom-built factory assembled control stations may thus be ordered as follows:

Requirement:

3-device control station on *Krydon*® material enclosure with ¾″ through feed hubs, with 1 pilot light with green jewel, rated at 120V; 1 three position, two circuit selector switch marked HAND-OFF-AUTO; and 1 green single circuit pushbutton marked START.

ORDER:

NCDC23FA

N2PL10-J3

N2SW11311-HAND-OFF-AUTO

N2PS1111G-START

Pilot light jewel symbol, pushbutton and selector switch plate markings are selected from footnote tables. Suffix FA indicates factory assembled. Note that order of assembly of control stations should be listed in desired mounting order, reading from top to bottom of enclosure.

Closure Plug

Cat. #

NP2



** LED pilots are available. Add suffix LED after last color symbol. See Options on page 612

§ See page 614 for footnotes.

† Pilot lights are transformer type except those rated 120 volts. Lamp type is 120MB, 120V, 3W.

‡ Specify lens color for each pilot light using symbols below.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

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N2FA and N2FAC Fire Alarm Stations

Factory Sealed Corrosion-Resistant

Cl. I, Div. 2, Groups B,C,D
NEMA 3,7BCD (Div. 2),12
Raintight
Wet Locations

Application:

N2FA and N2FAC fire alarm stations are used:
- as break-glass fire alarm stations
- in conjunction with audible and/or visible signaling devices to alert personnel of a fire hazard
- in Class I, Division 2, Groups B, C, D hazardous areas where flammable vapors or gases may be present due to an accident or abnormal operation
- in damp, wet or corrosive locations
- indoors or outdoors in Division 2 areas of petroleum refineries, chemical plants and other process industry facilities where similar hazards exist

Features:

- Factory sealed. External seals are not required.
- Enclosures are made of *Krydon*® fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat and sunlight.
- Highly visible molded-in red color for quick identification.
- Break-glass rod is attached to station with a chain for ready access during an emergency.
- Factory installed dead end (N2FA) or through feed (N2FAC) hubs – ½″, ¾″ and 1″ sizes.

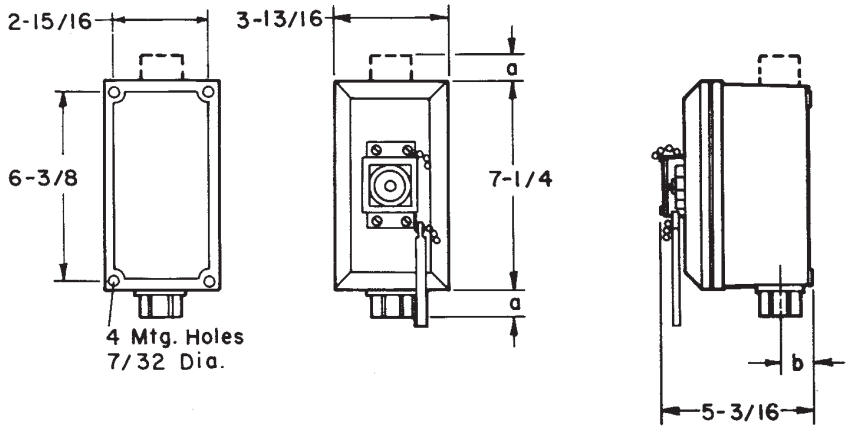
Certifications and Compliances:

- NEC: Class I, Division 2, Groups B, C, D
- NEMA 3, 7BCD (Division 2), 12
- UL Standard: 38
- NFPA Standard: 72B
- U.S. Coast Guard Regulation 46CFR, Part 161



Hub Size	Dead End Cat. #	Through Feed Cat. #	Replacement Glass Cat. #
½	N2FA11	N2FAC11	DS-K14
¾	N2FA21	N2FAC21	DS-K14
1	N2FA31	N2FAC31	DS-K14

Dimensions* (in inches)



½″ & ¾″ Hubs		1″ Hubs	
a	b	a	b
1⅛	1 1/16	1¼	1 5/16

* Dimensions are approximate, not for construction purposes.

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Application

NMC combination magnetic line starters are for use in across-the-line motor starting, motor disconnect, motor and line protection and start-stop operations.

Feature:

- Enclosures are made of *Krydon*™ high impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Unitized, strong and durable enclosure construction provides longer service life for equipment.
- Provided with top and bottom mounting feet.
- Enclosure has hinged access door which opens 160° for easy wiring and maintenance. Three screws for door frame are hidden behind access door.
- Access door may be padlocked to prevent unauthorized access.

Electrical Rating Ranges:

- 3-pole, 60 hertz, 600 VAC max.
- Starters – sizes 0, 1, 2, 3, 4
- Breakers – 100, 150, 225 and 250 amp frame
- Switches – 30, 60, 100 amp
- Motor circuit protectors – 15, 30, 50, 100, 150 amp

Certifications and Compliances:

- NEMA/EEMAC: 3, 4X and 12
- UL Standard: 508
- CSA Standard: C22.2 No. 14

Options:

Description	Suffix to be Added to Cat. #
Control circuit transformer 480/240-120 volts, 50 or 60 hertz, (Sizes 0 and 1 – 50VA, Size 2 – 100VA, Size 3 – 150VA, Size 4 – 300VA)	
Fusible – Secondary	FT
Primary and secondary	FTPS
Auxiliary Contact on Starter or Contactor*	
1 NO/1 NC	S781
2 NO/2 NC	S782
3 NO/3 NC	S783
Auxiliary Switch on Circuit Breaker or Motor Circuit Protector*	
1A/1B (1P2T)	S784
2A/2B (2P2T)	S785
Time delay low voltage release for 3-wire control with 2, 4 or 6-second adjustment. For single-speed, non-reversing starters only.	
Control circuit voltage:	
120 volt, 60 hertz	LVR1†
240 volt, 60 hertz	LVR2†
480 volt, 60 hertz	LVR4†
Pilot lights, 120 V primary – specify other primary voltages as required:	
Red pilot light	J1
Green pilot light	J3
LED pilot lights in place of standard incandescent pilot lamps	LED
Pushbutton (heavy duty, uses two device holes):	
START-STOP	PB13
Selector Switch (heavy duty)	
ON-OFF	RR17
HAND-OFF-AUTO	RR18
JOG-RUN-OFF	RR19
Padlock attachment for:	
Pushbutton	S708
Automatic reset overload relay	S1
Less overload relays (contactor)	C
Separate ac control circuit	Specify
Insulated, groundable type terminal block for grounded or ungrounded neutral can be supplied	S618
Hubs (see ''NOTE ON HUBS'')	see listing on page 658
Grounding plate or bushing	see listing on page 658

* Application limited by Size 5 starter, contactor or circuit breaker design – consult factory.



Combination line starter with optional START-STOP pushbuttons – closed view



Combination line starter with optional START-STOP pushbuttons – open view

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when combination starters are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see ''Options'').

Starter Size	Number Included	Hub Size
0	3	¾
1	1	¾
	2	1
2	1	¾
	2	1½
3	1	¾
	2	2
4	1	¾
	2	2½

† Option not available on NMC1024B.

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NMC Combination Line Starters and Enclosures

Single-Speed, Non-Reversing 600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

With Circuit Breakers

Ordering Information:

To order an enclosure complete with starter and breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes. Select the complete Cat. No. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters. Starters are furnished with three heaters.

Enclosures only can be ordered. Select from listings below. For starters that can be accommodated, see Table 1 in Section 6C. Circuit breakers are also listed in Section 6C. Specific reference table is shown in the listings below. Instantaneous magnetic trip circuit breakers (magnetic circuit interrupters) can be supplied. See listings in Section 6C.

Combination starters with motor circuit protectors for single speed, non-reversing motors are listed on page 619. Listings of circuit protectors are shown in Table 14 in Section 6C.

Motor Starter			Circuit Breaker			Enclosure	
Max. HP Polyphase	Volts (A-C)	NEMA Size	Trip Setting Amps	Frame	Sect. 6C Table	With Starter & Circuit Breaker Cat. #	Without Starter & Circuit Breaker Cat. #
2	120	0	30	EB	7	NMC1024B-†30EB-*6130	NMC1024B
2	240	0	15	EB	7	NMC1024B-†15EB-*6230	NMC1024B
3	240	0	20	EB	7	NMC1024B-†20EB-*6230	NMC1024B
5	240	1	30	EB	7	NMC1024B-†30EB-*6231	NMC1024B
5	480	0	15	EHD	8	NMC1024B-†15EHB-*6430	NMC1024B
5	600	0	15	FDB	9	NMC1024B-†15FB-*6530	NMC1024B
7½	240	1	50	EB	7	NMC1024B-†50EB-*6231	NMC1024B
7½	480	1	20	EHD	8	NMC1024B-†20EHB-*6431	NMC1024B
7½	600	1	20	FDB	9	NMC1024B-†20FB-*6531	NMC1024B
10	240	2	60	EB	7	NMC1024B2-†60EB-*6232	NMC1024B2
10	480	1	30	EHD	8	NMC1024B-†30EHB-*6431	NMC1024B
10	600	1	30	FDB	9	NMC1024B-†30FB-*6531	NMC1024B
15	240	2	80	EB	7	NMC1024B2-†-80EB-*6232	NMC1024B2
15	480	2	40	EHD	8	NMC1024B2-†40EHB-*6432	NMC1024B2
15	600	1	40	FDB	9	NMC1024B-†40FB-*6531	NMC1024B
20	240	3	80	EB	7	NMC1426B-†80EB-*6233	NMC1426B
20	480	2	60	EHD	8	NMC1024B2-†60EHB-*6432	NMC1024B2
20	600	2	50	FDB	9	NMC1024B2-†50FB-*6532	NMC1024B2
25	240	3	80	EB	7	NMC1426B-†80EB-*6233	NMC1426B
25	480	2	70	EHD	8	NMC1024B2-†70EHB-*6432	NMC1024B2
25	600	2	60	FDB	9	NMC1024B2-†60FB-*6532	NMC1024B2
30	240	4	125	JDB‡	10	NMC2426B-†125JB-*6234	NMC2426B
30	480	3	80	EHD	8	NMC1426B-†80EHB-*6433	NMC1426B
30	600	3	60	FDB	9	NMC1426B-†60FB-*6533	NMC1426B
40	240	4	150	JDB‡	10	NMC2426B-†150JB-*6234	NMC2426B
40	480	3	80	EHD	8	NMC1426B-†80EHB-*6433	NMC1426B
40	600	3	80	FDB	9	NMC1426B-†80FB-*6533	NMC1426B
50	240	4	200	JDB‡	10	NMC2426B-†200JB-*6234	NMC2426B
50	480	3	100	EHD	8	NMC1426B-†100EHB-*6433	NMC1426B
50	600	3	100	FDB	9	NMC1426B-†100FB-*6533	NMC1426B
60	480	4	125	JDB‡	10	NMC2426B-†125JB-*6434	NMC2426B
60	600	4	100	JDB‡	10	NMC2426B-†100JB-*6534	NMC2426B
75	480	4	150	JDB‡	10	NMC2426B-†150JB-*6434	NMC2426B
75	600	4	125	JDB‡	10	NMC2426B-†125JB-*6534	NMC2426B
100	480	4	175	JDB‡	10	NMC2426B-†175JB-*6434	NMC2426B
100	600	4	150	JDB‡	10	NMC2426B-†150JB-*6534	NMC2426B

† **Circuit Breakers:**

		Frames			
			100/150A		225/250A
Manufacturer	**Symbol**	**240V**	**480V**	**600V**	**600V**
General Electric	TT	TEB	TED**	TED**	TFJ
Square D	DT	FAL**	FAL**	FAL**	KAL
Cutler-Hammer	WT	EB	EHB, EHD	FB, FDB	JB, JDB

** Specify voltage.

‡ Formerly ''JB''

*** Motor Starters:**

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D	D
Cutler-Hammer	W

(Information on other starter manufacturers on request.)

NOTE ON HUBS: See page 617.

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With Motor Circuit Protector

Motor Starter				Enclosure	
Max. HP Polyphase	Volts AC	NEMA Size	MCP Trip Setting Amps	With Starter & MCP Cat. #§	Without Starter & MCP Cat. #
3	240	0	15	NMC1024B-‡15MCP-*6230	NMC1024B
5	480	0	15	NMC1024B-‡15MCP-*6430	NMC1024B
5	600	0	15	NMC1024B-‡15MCP-*6530	NMC1024B
7½	240	1	30	NMC1024B-‡30MCP-*6231	NMC1024B
10	480	1	30	NMC1024B-‡30MCP-*6431	NMC1024B
10	600	1	30	NMC1024B-‡30MCP-*6531	NMC1024B
15	240	2	50	NMC1024B2-‡50MCP-*6232	NMC1024B2
25	480	2	50	NMC1024B2-‡50MCP-*6432	NMC1024B2
25	600	2	50	NMC1024B2-‡50MCP-*6532	NMC1024B2
30	240	3	100	NMC1426B-‡100MCP-*6233	NMC1426B
50	480	3	100	NMC1426B-‡100MCP-*6433	NMC1426B
50	600	3	100	NMC1426B-‡100MCP-*6533	NMC1426B
50	240	4	150	NMC2426P-‡150MCP-*6234	NMC2426P
100	480	4	150	NMC2426P-‡150MCP-*6434	NMC2426P
100	600	4	150	NMC2426P-‡150MCP-*6534	NMC2426P

With Disconnect Switch

Ordering Information:

To order an enclosure complete with disconnect switch, insert the manufacturer's symbol in the designated positions of the catalog number. Symbols are shown in the footnotes.

Enclosures only can be ordered. Select from listings below.

For switches that can be accommodated, see Table 15 in Section 6C.

Motor Starter			Non-Fusible Disconnect Switch	Enclosure	
Max. HP Polyphase	Volts AC	NEMA Size	Switch Size-Amps	With Starter & Disconnect Switch Cat. #	Without Starter & Disconnect Switch Cat. #
3	240	0	30	NMC1024D-†30-*6230	NMC1024D-†
5	480	0	30	NMC1024D-†30-*6430	NMC1024D-†
5	600	0	30	NMC1024D-†30-*6530	NMC1024D-†
7½	240	1	30	NMC1024D-†30-*6231	NMC1024D-†
10	480	1	30	NMC1024D-†30-*6431	NMC1024D-†
10	600	1	30	NMC1024D-†30-*6531	NMC1024D-†
15	240	2	60	NMC1426D-†60-*6232	NMC1426D-†
25	480	2	60	NMC1426D-†60-*6432	NMC1426D-†
25	600	2	60	NMC1426D-†60-*6532	NMC1426D-†
30	240	3	100	NMC2426D-†100-*6233	NMC2426D-†
50	480	3	100	NMC2426D-†100-*6433	NMC2426D-†
50	600	3	100	NMC2426D-†100-*6533	NMC2426D-†

*, †, ‡, § – see page 620.

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NMC Combination Line Starters and Enclosures

Single-Speed, Non-Reversing 600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

Motor Starter			Fusible Disconnect Switch		Enclosure	
Max. HP Polyphase	Volts AC	NEMA Size	Switch Size-Amps	Fuse Clip Rating-Amps	With Starter & Disconnect Switch Cat. # ♦	Without Starter & Disconnect Switch Cat. #
3	240	0	30	30	NMC1024D-†3030-*6230	NMC1024D-†
5	480	0	30	30	NMC1024D-†3030-*6430	NMC1024D-†
5	600	0	30	30	NMC1024D-†3030-*6530	NMC1024D-†
7½	240	1	30	30	NMC1024D-†3030-*6231	NMC1024D-†
7½	240	1	30	60	NMC1024D-†3060-*6231	NMC1024D-†
10	480	1	30	30	NMC1024D-†3030-*6431	NMC1024D-†
10	480	1	30	60	NMC1024D-†3060-*6431	NMC1024D-†
10	600	1	30	30	NMC1024D-†3030-*6531	NMC1024D-†
10	600	1	30	60	NMC1024D-†3060-*6531	NMC1024D-†
15	240	2	60	60	NMC1426D-†6060-*6232	NMC1426D-†
15	240	2	60	100	NMC1426D-†6010-*6232	NMC1426D-†
25	480	2	60	60	NMC1426D-†6060-*6432	NMC1426D-†
25	480	2	60	100	NMC1426D-†6010-*6432	NMC1426D-†
25	600	2	60	60	NMC1426D-†6060-*6532	NMC1426D-†
25	600	2	60	100	NMC1426D-†6010-*6532	NMC1426D-†
30	240	3	100	100	NMC2426D-†1010-*6233	NMC2426D-†
50	480	3	100	100	NMC2426D-†1010-*6433	NMC2426D-†
50	480	3	100	200	NMC2426D-†1020-*6433**	NMC2426D-†**
50	600	3	100	100	NMC2426D-†1010-*6533	NMC2426D-†

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when combination starters are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see ''Options'').

Starter Size	Number Included	Hub Size
0	3	¾
1	1	¾
	2	1
2	1	¾
	2	1½
3	1	¾
	2	2
4	1	¾
	2	2½

† Disconnect Switches:

Manufacturer	Symbol	Switch Type
General Electric	G	Type QMW
Square D	D	Class 9422
Cutler-Hammer	W	Type DS

‡ Motor Circuit Protectors:

Manufacturer	Symbol
General Electric	G
Cutler-Hammer	W

§ With motor circuit protector only. For motor circuit protector with current limiter – information on request.

*** Motor Starters:**

Manufacturer	Symbol	Manufacturer	Symbol
Allen-Bradley	AB	Square D	D
General Electric	G	Cutler-Hammer	W

(Information on other starter manufacturers on request.)

♦ Fuse clips are arranged for Class H fuses and field modifiable for Class J fuses. For Class R fuses, consult headquarters.

● † Accommodates Class J fuses only.

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NSSC Manual Motor Starting Switches and NFS Fractional HP Starters and Enclosures

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Application:

- NSSC Motor Starting Switches are used in manual ''ON'' and ''OFF'' control of DC and single-phase or three-phase AC motors where overload protection is not required or is provided separately
- NFSC Fractional Horsepower Starters are used in manual ''ON'' and ''OFF'' control and overload protection of small single phase motors
- Both are suitable for use in wet and/or corrosive environments

Features:

- Enclosures are made of Cooper Crouse-Hinds high-impact strength *Krydon*® fiberglass-reinforced polyester material which has excellent corrosion resistance and stability to heat
- Provided with a toggle lever with a molded-in stainless steel shaft
- Factory installed through feed (NSSC, NFSC) hubs, ½″ or ¾″ size
- Indicating plate is made of stainless steel

Options:

- Grounding plate or bushing – see listing on page 658

Certifications and Compliances:

- NEMA 3, 4X, and 12
- UL Standard 508



Enclosure Type	Enclosures Only Hub Size	Through Feed Cat. #
Manual Motor Starting Switch	½	NSSC1
	¾	NSSC2
Fractional HP Starter	½	NFSC1
	¾	NFSC2

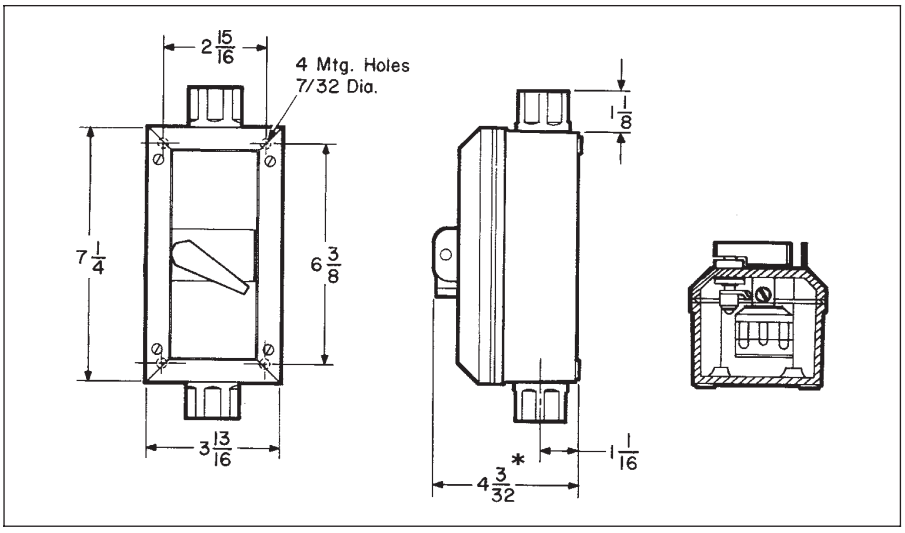
NSSC Series Manual Motor Starting Switch Without Overload Protection

With Square D Switches

Poles	Max. HP Rating 115 VAC	200-230 VAC	460-575 VAC	Max. Amp. Ratings 250 VDC	600 VDC
2	1	2	3	30	20
3	2	7½	10	30	20

Poles	Enclosure With Switch Hub Size	Through Feed Cat. #
2	½	NSSC-D12
	¾	NSSC-D22
3	½	NSSC-D13
	¾	NSSC-D23

Dimensions*



* Dimensions are approximate. Not to be used for construction purposes unless approved.

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NFSC Fractional HP Starters and Enclosures

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

NFSC Series Fractional HP Starters With Overload Protection

With Allen-Bradley Bulletin 600 Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC
1	1 hp	
2	1 hp	¾ hp

	Enclosure With Starter	
Poles	Hub Size	Through Feed Cat. #
1	½	NFSC-AB11†
	¾	NFSC-AB21†
2	½	NFSC-AB12†
	¾	NFSC-AB22†

Heater Table (see page 356)

With Cutler-Hammer Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC
1	1 hp	
2	1 hp	1 hp

	Enclosure With Starter	
Poles	Hub Size	Through Feed Cat. #
1	½	NFSC-C11†
	¾	NFSC-C21†
2	½	NFSC-C12†
	¾	NFSC-C22†

Heater Table (Cutler-Hammer)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
.43	W 1	2.95	W21
.48	W 2	3.27	W22
.53	W 3	3.59	W23
.58	W 4	3.99	W24
.64	W 5	4.39	W25
.71	W 6	4.79	W26
.78	W 7	5.26	W27
.87	W 8	5.83	W28
.95	W 9	6.39	W29
1.03	W10	7.03	W30
1.15	W11	7.74	W31
1.27	W12	8.46	W32
1.35	W13	9.35	W33
1.51	W14	10.30	W34
1.67	W15	11.35	W35
1.83	W16	12.47	W36
1.99	W17	13.67	W37
2.23	W18	15.12	W38
2.47	W19	16.00	W39
2.71	W20		

With General Electric Switches

Maximum HP Ratings

Poles	115-230 VAC	32 VDC	115 VDC	230 VDC
1	1 hp	¼ hp	1 hp	¼ hp
2	1 hp	¼ hp	1 hp	1 hp

	Enclosure With Starter	
Poles	Hub Size	Through Feed Cat. #
1	½	NFSC-G11†
	¾	NFSC-G21†
2	½	NFSC-G12†
	¾	NFSC-G22†

Heater Table (see page 356)

With Square D Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC
1	1 hp	
2	1 hp	¾ hp

	Enclosure With Starter	
Poles	Hub Size	Through Feed Cat. #
1	½	NFSC-D11†
	¾	NFSC-D21†
2	½	NFSC-D12†
	¾	NFSC-D22†

Heater Table (Square D)

Full-Load Motor Current	Cooper Crouse-Hinds Symbol Number	Full-Load Motor Current	Cooper Crouse-Hinds Symbol Number
0.41-0.44	A.49	2.85-3.06	A3.95
0.45-0.49	A.54	3.07-3.45	A4.32
0.50-0.53	A.59	3.46-3.70	A4.79
0.54-0.58	A.65	3.71-4.07	A5.30
0.59-0.65	A.71	4.08-4.32	A5.78
0.66-0.71	A.78	4.33-4.90	A6.20
0.72-0.78	A.86	4.91-5.35	A6.99
0.79-0.85	A.95	5.36-5.85	A7.65
0.86-0.96	A1.02	5.86-6.41	A8.38
0.97-1.04	A1.16	6.42-6.79	A9.25
1.05-1.16	A1.25	6.80-7.57	A9.85
1.17-1.29	A1.39	7.58-8.15	A11.0
1.30-1.37	A1.54	8.16-8.98	A11.9
1.38-1.47	A1.63	8.99-9.67	A13.2
1.48-1.56	A1.75	9.68-9.95	A14.1
1.57-1.65	A1.86	9.96-10.8	A14.8
1.66-1.79	A1.99	10.9-12.1	A16.2
1.80-1.95	A2.15	12.2-13.1	A17.9
1.96-2.15	A2.31	13.2-13.9	A19.8
2.16-2.38	A2.57	14.0-15.0	A21.3
2.39-2.75	A2.81	15.1-16.0	A25.2
2.76-2.84	A3.61		

† Includes one interchangeable heater. Select heater suffix from table and add to catalog number. Example: NFSC-D11A.49

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NMN Manual Line Starters and Enclosures

600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 656

Application:

NMN manual line starters are for use in across-the-line starting of motors, motor protection and manual starting and stopping.

Features:

- Enclosures are made of Cooper Crouse-Hinds high-impact strength *Krydon*® fiberglass-reinforced polyester material which has excellent corrosion resistance and stability to heat.
- Provided with toggle-operator or START-STOP pushbuttons made of *Krydon* material§.
- Factory installed dead end (NMN) or through feed (NMNC) hubs, ¾″ and 1″ sizes.

Electrical Rating Ranges:

- Starter sizes 0, 1, 1P

Certifications and Compliances:

- NEMA/EEMAC 3, 4X and 12
- UL Standard: 508
- CSA: C22.2 No. 14

Options:

- Undervoltage protection – add suffix ''U'' to Cat. No. Available with toggle operator only.
- Grounding plate – see listing on page 658.
- Insulated, groundable type terminal block for grounded or ungrounded neutral can be supplied S618



Toggle-operated manual starter with knockout



Pushbutton manual starter for Cutler-Hammer starters only.

Starter					Enclosure with Starter**			
					¾″ Hubs		1″ Hubs	
NEMA Size	Poles	Max. HP 115V	230V	460/575V	Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
M-0	2 (1 PH)	1	2		NMN-†220	NMNC-†220	NMN-†320	NMNC-†320
M-1	2 (1 PH)	2	3		NMN-†221	NMNC-†221	NMN-†321	NMNC-†321
M-1P	2 (1 PH)	3	5		NMN-†221P	NMNC-†221P	NMN-†321P	NMNC-†321P
M-0	3 (3 PH)	2	3	5	NMN-†230	NMNC-†230	NMN-†330	NMNC-†330
M-1	3 (1 PH) 3 (3 PH)	2 3	3 7½	10	NMN-†231	NMNC-†231	NMN-†331	NMNC-†331
					Enclosure Only*			
					NMN-†200	NMNC-†200	NMN-†300	NMNC-†300

† Motor Starters: Insert appropriate symbol in Cat. No.

Manufacturer	Symbol
Allen-Bradley	AB
Cutler-Hammer§	C
General Electric	G
Square D	D

§ Pushbutton operator available with Cutler-Hammer starter only, all others with toggle-operator.

* Furnished with mounting plate and operator installed.

** Detailed information on heater selection is given in section 6C.

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NMG Magnetic Line Starters and Enclosures

600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 656

Application:

NMG magnetic line starters are used:
- for magnetic across-the-line starting of motors and remote starting and stopping
- for across-the-line starting of polyphase ac induction motors
- to provide motor running protection, undervoltage protection and remote starting and stopping

Features:

- Enclosures are made of Cooper Crouse-Hinds high-impact strength *Krydon*® fiberglass-reinforced polyester material which has excellent corrosion resistance and stability to heat.
- Unitized, strong and durable enclosure construction provides longer service life for equipment.
- Exterior parts of RESET button made of *Krydon* material.

Electrical Rating Ranges:

- Starter sizes 0, 1, 2, 3, 4

Certifications and Compliances:

- NEMA/EEMAC: 3, 4X and 12
- UL Standard: 508
- CSA Standard: C22.2 No. 14

Options:

Description	Suffix to be Added to Enclosure Cat. #
Hinged cover	NH
Pilot lights, 120 V primary – specify other primary voltages as required:	
Red pilot light	J1*
Green pilot light	J3*
LED pilot lights in place of standard incandescent pilot lamps	LED
Pushbutton (heavy duty, uses two device holes):	
START-STOP	PB13*
Selector switches (heavy duty):	
ON-OFF	RR17*
HAND-OFF-AUTO	RR18*
JOG-RUN-OFF	RR19*
Padlock attachment for:	
Pushbutton	S708
Control circuit transformer 480/240-120 volts, 50 or 60 hertz, (sizes 0 and 1-50VA, size 2-100VA, size 3-150VA, size 4-300VA):	
Fusible – Secondary	FT
Primary and Secondary	FTPS
Automatic reset overload relay	S1
Less overload relays (contactor)	C
Auxiliary Contact on Starter or Contactor:	
1NO/1NC	S781
2NO/2NC	S782
3NO/3NC	S783

* For optional devices or control circuit transformer, use next larger enclosure size. For NMG0714, two device holes maximum.

** Application limited by starter or contactor design – consult factory.

† Type GP grounding plate only in NMG0710 enclosure.

Time delay low voltage release for 3-wire control with 2, 4 or 6-second adjustment. For single-speed, non-reversing starters only.
Control circuit voltage*:
120 volt, 60 hertz. LVR1
240 volt, 60 hertz LVR2
480 volt, 60 hertz LVR4
Hubs (see ''Note on Hubs'') . . . . . see listing on page 658
Grounding plate or bushing†. . . see listing on page 658
Insulated, groundable type terminal block for a grounded or ungrounded neutral can be supplied S618

Information on other options or combination of options for a specific enclosure size is available on request.



Magnetic line starter with optional hinged cover with START-STOP pushbuttons.

Magnetic line starter with optional hinged cover with START-STOP pushbuttons – open view



NEMA Size	Enclosure Cat. #	Enclosure w/Options
0, 1	NMG0710	NMG0714
2	NMG0714	NMG1018
3	NMG1018	NMG1024
4	NMG1024	NMG1426

Example: A NEMA size 4, 480 V Westinghouse starter with START-STOP pushbuttons would be Cat. No. NMG1426-W6434-PB13.

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NMG Magnetic Line Starters and Enclosures

600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 656

Ordering Information:

To order an enclosure complete with starter, insert the manufacturer's symbol in the designated position of the catalog number. Symbols are shown in the footnote at the bottom of this page. Specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters.

Starters are furnished with three heaters.

Enclosures only can be ordered. Select from listings. For starters that can be accommodated, see Table 1 in Section 6C.

Detailed information on starter and heater selection is given in Section 6C.



Magnetic line starter with built-in RESET button

Single-Speed, Non-Reversing Motor Starter			Enclosure	
Max HP Polyphase	**Volts (AC)**	**NEMA Size**	**With Starter Cat. #**	**Without Starter Cat. #**
2	120	0	NMG0710-‡6130	NMG0710
3	120	1	NMG0710-‡6131	NMG0710
3	240	0	NMG0710-‡6230	NMG0710
5	480	0	NMG0710-‡6430	NMG0710
5	600	0	NMG0710-‡6530	NMG0710
7½	120	2	NMG0714-‡6132	NMG0714
7½	240	1	NMG0710-‡6231	NMG0710
10	480	1	NMG0710-‡6431	NMG0710
10	600	1	NMG0710-‡6531	NMG0710
15	120	3	NMG1018-‡6133	NMG1018
15	240	2	NMG0714-‡6232	NMG0714
25	480	2	NMG0714-‡6432	NMG0714
25	600	2	NMG0714-‡6532	NMG0714
30	240	3	NMG1018-‡6233	NMG1018
50	240	4	NMG1024-‡6234*	NMG1024*
50	480	3	NMG1018-‡6433	NMG1018
50	600	3	NMG1018-‡6533	NMG1018
100	480	4	NMG1024-‡6434*	NMG1024*
100	600	4	NMG1024-‡6534*	NMG1024*

* NEMA Size 4 Allen-Bradley starter must be in NMG1426 enclosure.

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when magnetic starters are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see ''Options'').

Starter Size	Number Included	Hub Size
0	3	¾
1	1	¾
	2	1
2	1	¾
	2	1½
3	1	¾
	2	2
4	1	¾
	2	2½

‡ Motor Starters:

Manufacturer	Symbl	Manufacturer	Symbol
Allen-Bradley	AB	Square D	D
Cutler-Hammer	C	Westinghouse	W
General Electric	G		

(Information on other starter manufacturers on request.)

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NCB Circuit Breakers and Enclosures

600VAC/250VDC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

Application:

NCB circuit breakers are for use in conjunction with a variety of heating, lighting and power circuits to provide disconnect means and short circuit protection.

Features:

- Enclosures are made of *Krydon*®, Cooper Crouse-Hinds high impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat
- Unitized, strong and durable enclosure construction provides longer service life for equipment
- Enclosure has hinged access door which opens 160° for easy wiring and maintenance. Three screws for door frame are hidden behind access door.
- Access door may be padlocked to prevent unauthorized access

Electrical Rating Ranges:

- 100, 150, 225, 250 and 400 amp frames

Ordering Information:

To order an enclosure complete with circuit breaker, insert the manufacturer's symbol in the designated position of the catalog number.

Enclosures only can be ordered. Select from listings. For circuit breakers that can be accommodated see Table indicated in Section 6C.

Detailed information on circuit breaker selection is given in Section 6C.

Certifications and Compliances:

- NEMA: 3, 4X and 12
- CSA Standard C22.2 No. 94
- UL Standard: 489

Options:

Description	Suffix to be Added to Cat. #
Insulated, groundable type terminal block for grounded or ungrounded neutral can be supplied	S618
Hubs (see ''Note on Hubs'')	see listing on page 658
Grounding plate or bushing	see listing on page 658



Circuit breaker enclosure with built-in *Krydon* material handle

Circuit Breaker				Enclosure	
Poles	Voltage Rating	Amps	Section 6C Table	With Circuit Breaker Cat. #	Without Circuit Breaker Cat. #
100A Frame (Non-Interchangeable Trip)					
2	240 VAC/ 250 VDC	15	7	NCB1018F-†15EB-22	NCB1018F
		20		NCB1018F-†20EB-22	
		25		NCB1018F-†25EB-22	
		30		NCB1018F-†30EB-22	
		35		NCB1018F-†35EB-22	
		40		NCB1018F-†40EB-22	
		50		NCB1018F-†50EB-22	
		60		NCB1018F-†60EB-22	
		70		NCB1018F-†70EB-22	
		80		NCB1018F-†80EB-22	
		90		NCB1018F-†90EB-22	
		100		NCB1018F-†100EB-22	
2	480 VAC/ 250 VDC	15	8	NCB1018F-†15EHB-24	NCB1018F
		20		NCB1018F-†20EHB-24	
		25		NCB1018F-†25EHB-24	
		30		NCB1018F-†30EHB-24	
		35		NCB1018F-†35EHB-24	
		40		NCB1018F-†40EHB-24	
		50		NCB1018F-†50EHB-24	
		60		NCB1018F-†60EHB-24	
		70		NCB1018F-†70EHB-24	
		80		NCB1018F-†80EHB-24	
		90		NCB1018F-†90EHB-24	
		100		NCB1018F-†100EHB-24	

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when circuit breakers are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see ''Options'')

Circuit Breaker Frame	Ampere Rating	Number Included	Hub Size
EB, EHD*, FDB‡	15-50	2	1¼
EB, EHD*, FDB‡	60-100	2	2
JDB ♦	110-225	2	2½
KDB§	250-400	2	3

* Formerly EHB.
‡ Formerly FB.
♦ Formerly JB.
§ Formerly LB.

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Circuit Breaker				Enclosure	
Poles	Voltage Rating	Amps	Section 6C Tab.	With Circuit Breaker Cat. #	Without Circuit Breaker Cat. #
100/150A Frame (Non-Interchangeable Trip) – continued					
2‡	600 VAC/ 250 VDC	15	9	NCB1018F-†15FB-26	NCB1018F
		20		NCB1018F-†20FB-26	
		25		NCB1018F-†25FB-26	
		30		NCB1018F-†30FB-26	
		35		NCB1018F-†35FB-26	
		40		NCB1018F-†40FB-26	
		50		NCB1018F-†50FB-26	
		70		NCB1018F-†70FB-26	
		80		NCB1018F-†80FB-26	
		90		NCB1018F-†90FB-26	
		100		NCB1018F-†100FB-26	
3	240 VAC	15	7	NCB1018F-†15EB-32	NCB1018F
		20		NCB1018F-†20EB-32	
		25		NCB1018F-†25EB-32	
		30		NCB1018F-†30EB-32	
		35		NCB1018F-†35EB-32	
		40		NCB1018F-†40EB-32	
		50		NCB1018F-†50EB-32	
		70		NCB1018F-†70EB-32	
		80		NCB1018F-†80EB-32	
		90		NCB1018F-†90EB-32	
		100		NCB1018F-†100EB-32	
3	480 VAC	15	8	NCB1018F-†15EHB-34	NCB1018F
		20		NCB1018F-†20EHB-34	
		25		NCB1018F-†25EHB-34	
		30		NCB1018F-†30EHB-34	
		35		NCB1018F-†35EHB-34	
		40		NCB1018F-†40EHB-34	
		50		NCB1018F-†50EHB-34	
		70		NCB1018F-†70EHB-34	
		80		NCB1018F-†80EHB-34	
		90		NCB1018F-†90EHB-34	
		100		NCB1018F-†100EHB-34	
3	600 VAC	15	9	NCB1018F-†15FB-36	NCB1018F
		20		NCB1018F-†20FB-36	
		25		NCB1018F-†25FB-36	
		30		NCB1018F-†30FB-36	
		35		NCB1018F-†35FB-36	
		40		NCB1018F-†40FB-36	
		50		NCB1018F-†50FB-36	
		70		NCB1018F-†70FB-36	
		80		NCB1018F-†80FB-36	
		90		NCB1018F-†90FB-36	
		100		NCB1018F-†100FB-36	

Circuit Breaker				Enclosure	
Poles	Voltage Rating	Amps	Section 6C Tab.	With Circuit Breaker Cat. #	Without Circuit Breaker Cat. #
225/250A Frame (Non-Interchangeable Trip)§					
2	600 VAC/ 250 VDC	110	10	NCB1024F-†110JB-26	NCB1024F
		125		NCB1024F-†125JB-26	
		150		NCB1024F-†150JB-26	
		175		NCB1024F-†175JB-26	
		200		NCB1024F-†200JB-26	
		225		NCB1024F-†225JB-26	
3	600 VAC	110	10	NCB1024F-†110JB-36	NCB1024F
		125		NCB1024F-†125JB-36	
		150		NCB1024F-†150JB-36	
		175		NCB1024F-†175JB-36	
		200		NCB1024F-†200JB-36	
		225		NCB1024F-†225JB-36	
400A Frame (Interchangeable Trip)*					
2	600 VAC/ 250 VDC	250	12	NCB1426F-†250LB-26	NCB1426F
		300		NCB1426F-†300LB-26	
		350		NCB1426F-†350LB-26	
		400		NCB1426F-†400LB-26	
3	600 VAC	250	12	NCB1426F-†250LB-36	NCB1426F
		300		NCB1426F-†300LB-36	
		350		NCB1426F-†350LB-36	
		400		NCB1426F-†400LB-36	

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when circuit breakers are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see ''Options'').

Circuit Breaker Frame	Ampere Rating	Number Included	Hub Size
EB, EHD ◆ ◆, FDB ◆ ◆ ◆	15–50	2	1¼
EB, EHD ◆ ◆, FDB ◆ ◆ ◆	60–100	2	2
JDB ◆	110–225	2	2½

◆ ◆ Formerly EHB
◆ ◆ ◆ Formerly FB
◆ Formerly JB

‡ 2-pole, 600 VAC/250 VDC for Square D circuit breakers only.

* For Square D circuit breakers only.

§ Also available with interchangeable trip breakers. Specify on order.

† Circuit Breakers:

		Frames				
		100/150A			225/250A	400A
Manufacturer	Symbol	240V	480V	600V	600V	600V
General Electric	TT	TEB	TED**	TED**	TFJ	
Square D	DT	FAL**	FAL**	FAL**	KAL	LAL
Cutler-Hammer	WT	EB	EHB, EHD	FB, FDB	JB, JDB	

** Specify voltage.

N Corrosion Resistant Products

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N2PB Circuit Breaker Panelboards

Factory Sealed Single- & Two-Pole Breakers

Dimensions Pg. 657

Cl. I, Div. 2, Groups C,D Watertight†
Cl. II, Div. 2, Groups F,G Weatherproof
Corrosion-Resistant
Dusttight
NEMA 3,7CD (Div. 2), 9FG (Div. 2), 12

Application:

N2PB panelboards are for use in central control and protection of a large number of feeder or branch circuits and for housing circuit breakers in Class I, Division 2, Groups C&D, hazardous areas.

Features:

- Enclosures are made of *Krydon*®, Cooper Crouse-Hinds high impact strength fiberglass-reinforced polyester material with excellent corrosion resistance and stability to heat
- Enclosure access door provided with stainless steel thumb screws for easy access. Access door may be padlocked to prevent unauthorized access
- Circuit breakers are contained in compact, individual factory sealed enclosures suitable for Class I, Division 2, Groups C & D, hazardous areas

Size Ranges:

	Max. No. of Breakers	
Panel Designation	**Single-Pole**	**Two-Pole**
N2PB1426	12	6
N2PB2426	24	12

Electrical Rating Ranges:

- Circuit breakers
- Single-pole – 120/240 vac max.
- Two-pole – 120/240 vac max.
- Trip ratings – 15, 20 and 30 amp.

Certifications and Compliances:

- NEMA 3, 7CD (Div. 2), and 12
- NEC Class I, Division 2, Groups C & D
  Class II, Division 2, Groups F,G
- UL Standard: 1604

Options:

- Panelboard provided with (12) operating handle lockouts for lockout in ON or OFF positions (any circuit). Stainless steel lockout frame integral to panel faceplate.

N2PB Size	**Use Suffix:**
14 x 26	–L12
24 x 26	–L24

- Circuit breaker operating handle lockout – order D2PB02
- Assortment of single-pole and two-pole circuit breakers and trip ratings – see listings
- Grounding plate or bushing – see listing on page 658
- Replacement circuit breaker assemblies – see page 511
- Main breaker – see ''Ordering Information,'' page 629

† Watertight, weatherproof with door closed.



Circuit breaker panelboard – open view

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N2PB Circuit Breaker Panelboards

Factory Sealed Single & Two-Pole Breakers

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,7CD (Div. 2), 9FG (Div. 2), 12

CI. I, Div. 2, Groups C,D
CI. II, Div. 2, Groups, F,G
Dimensions Pg. 657

Ordering Information:

Panelboards are available with 15, 20 or 30 ampere circuit breakers. To order a panelboard with all breakers of the same rating, add the desired rating as a suffix to the Cat. No. For example, the 12 circuit N2PB2426-2512 panelboard with all the circuit breakers rated 20 amperes would be ordered as N2PB2426-2512-20. Panelboards listed below canalso be furnished with an assortment of single-pole and two-pole breakers and breaker ratings. To order, the quantities of breakers and ampere ratings are added as suffixes to the Cat. No. The total number of poles will determine the panel size (24 poles max.), and the wiring systems must be compatible when combining single- and two-pole circuit breakers. For example, a typical N2PB panelboard with a combination of 5 single-pole 20 ampere, 3 single-pole 30 ampere, and 4 two-pole 30 ampere breakers would be ordered as N2PB2426-2508-520-330-804-30. The total number of poles is 16 and wiring systems 25 and 8 are compatible 4 wire, 3 phase. The N2PB with a main breaker is available up to 100 amps. Toorder N2PB with main breaker, add appropriate suffix. Example: N2PB2426-2512-15 with three-pole, 100 amp main circuit breaker would be ordered as N2PB2426-2512-15-3M100. If two-pole main is required, change the number 3 to 2. If a lower trip rating is required, the number will change accordingly. Main breaker housing is positioned on top of panel similar to D2PB main. (See Section 1A.)

Max. No. of Breakers					Enclosures with Single-Pole Circuit Breakers		Enclosures with Two-Pole Circuit Breakers	
					Wiring System 24 Mains: 3-Wire Branches: 2-Wire	Wiring System 25 Mains: 4-Wire, 3-Phase Branches: 2-Wire, 1-Phase	Wiring System 3 Mains: 3-Wire Branches: 3-Wire	Wiring System 8 Mains: 4-Wire, 3-Phase Branches: 3-Wire, 1-Phase
Single-Pole	Two-Pole	Panel Size	Enclosure Only Cat. #*	Main Lug Size	Solid Neutral Cat. #‡	Solid Neutral Cat. #‡	Solid Neutral Cat. #‡	Solid Neutral Cat. #‡
6					N2PB1426-2406-†	N2PB1426-2506-†		
8	4				N2PB1426-2408-†	N2PB1426-2508-†	N2PB1426-304-†	N2PB1426-804-†
10	5	14 x 26 x 8½	N2PB1426	1/0	N2PB1426-2410-†	N2PB1426-2510-†	N2PB1426-305-†	N2PB1426-805-†
12	6				N2PB1426-2412-†	N2PB1426-2512-†	N2PB1426-306-†	N2PB1426-806-†
12	6				N2PB2426-2412-†	N2PB2426-2512-†	N2PB2426-306-†	N2PB2426-806-†
14	7				N2PB2426-2414-†	N2PB2426-2514-†	N2PB2426-307-†	N2PB2426-807-†
16	8				N2PB2426-2416-†	N2PB2426-2516-†	N2PB2426-308-†	N2PB2426-808-†
18	9	24 x 26 x 8½	N2PB2426	4/0	N2PB2426-2418-†	N2PB2426-2518-†	N2PB2426-309-†	N2PB2426-809-†
20	10				N2PB2426-2420-†	N2PB2426-2520-†	N2PB2426-310-†	N2PB2426-810-†
22	11				N2PB2426-2422-†	N2PB2426-2522-†	N2PB2426-311-†	N2PB2426-811-†
24	12				N2PB2426-2424-†	N2PB2426-2524-†	N2PB2426-312-†	N2PB2426-812-†

NOTE ON HUBS: Hubs must be ordered separately. See page 658 for listing.

‡ See page 658 for wiring diagrams.

* Accommodates D2CB breakers. Includes complete interiors, wiring system must be specified. Example: N2PB2426 with wiring system 25 would be ordered as N2PB2426-25.

† Add ampere rating. See ordering information above.

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NLP Circuit Breaker Panelboards With QO® Breakers

Corrosion-Resistant
Dusttight
Watertight*
Weatherproof
NEMA 3,12

Dimensions Pg. 657

Application:

NLP panelboards are for use in central control and protection of a large number of feeder or branch circuits and for housing circuit breakers.

Features:

- Enclosures are made of *Krydon*® high impact strength fiberglass-reinforced polyester material with excellent corrosion resistance and stability to heat
- Enclosure access door provided with stainless steel thumb screws for easy access
- Access door may be padlocked to prevent unauthorized access
- Standard with plug-on circuit breakers

Size Ranges:

Panel Type	Mains Rating	Max. No. of Branch Circuit Breakers 1-Pole 3w	1-Pole 4w	2-Pole 3w	2-Pole 4w	3-Pole 3w	3-Pole 4w
Main Lug Only							
NLP1426	100A	20	24	10	12	–	8
NLPQ1426	200A	24	30	12	14	–	10
Main Breaker							
NLP1426M	100A 2P	12	–	6	–	–	–
NLP1426M	100A 3P	–	12	–	6	–	4

Electrical Rating Ranges:

- QO® circuit breakers, single or two-pole 120/240 vac; three-pole 240 vac
- Trip ratings:
10 to 70 amps, single-pole
10 to 70 amps, two pole
10 to 60 amps, three-pole
- Qwik-Gard® GFI circuit breakers:
Single-pole – 120 vac. 15 to 30 amps;
two-pole – 120/240 vac
15 to 50 amps

Certifications and Compliances:

- NEMA 3 and 12
- UL Standard: 67

Options:

- Assortment of circuit breaker trip ratings – specify
- Assortment of single two and three-pole circuit breakers – specify
- Wiring system other than those listed – specify
- Ground Fault interrupter – circuit breakers with built-in ground fault circuit interrupters can be provided. These interrupters cause the breaker to open when a ground fault occurs. Suffix ''GFI'' should be added after each circuit breaker rating to be supplied with ground fault interrupters
- Bolt on circuit breakers available on NLP panels only – consult factory

QO and **Qwik-Gard** are registered trademarks of Square D Company.

† Insert branch circuit breaker rating desired 10, 15, 20, 25, 30, 35, 40, 45, 50, 60 or 70 amp.

‡See page 658 for wiring diagrams.

* Watertight, weatherproof with door closed.

For example: An NLP panelboard using wiring system 24 with four 15 ampere breakers, two 40 ampere and four 50 ampere breakers and two 15 ampere breakers, one 25 ampere breaker, and one 30 ampere breaker with GFI – Catalog No. NLP1426-2414-415-240-450-215GFI-125GFI-130GFI

Ordering Information:

Panelboards are available with 10, 15, 20, 25, 30, 35, 40, 45, 50, 60 or 70 ampere circuit breakers. To order a panelboard with all breakers of the same rating, add the desired rating as a suffix to the Cat. No. For example, the 12 circuit NLP1426-2512 with all circuit breakers rated 20 amperes would be ordered as NLP1426-2512-20

Panelboards can be furnished with an assortment of breaker ratings. Where all circuit breakers have the same number of poles, assortments may be ordered by adding the quantities and ampere ratings as suffixes to the Cat. No. For example, the 12 circuit NLP1426-2512 with six 15 ampere, four 40 ampere and two 50 ampere single-pole circuit breakers would be ordered as NLP1426-2512-615-440-250.



Circuit breaker panelboard with QO breakers

Main Circuit Breaker

Two Pole Main Circuit Breaker (3 Wire Branches)

No. of Circuits	Enclosure Only	Mains Rating	Enclosure with NQOD Interior, Main and Branch Breakers: 1-Pole Branch Circuit Breakers Wiring System 24‡	2-Pole Branch Circuit Breakers Wiring System 3‡
4	NLP1426M	100A	NLP1426M-2404-†	NLP1426M-0304-†
6	NLP1426M	100A	NLP1426M-2406-†	NLP1426M-0306-†
8	NLP1426M	100A	NLP1426M-2408-†	
10	NLP1426M	100A	NLP1426M-2410-†	
12	NLP1426M	100A	NLP1426M-2412-†	

Three Pole Main Circuit Breaker (4 Wire Branches)

No. of Circuits	Enclosure Only	Mains Rating	Enclosure with NQOD Interior, Main and Branch Breakers: 1-Pole Branch Circuit Breakers Wiring System 25‡	2-Pole Branch Circuit Breakers Wiring System 28‡	3-Pole Branch Circuit Breakers Wiring System 11‡
4	NLP1426M	100A	NLP1426M-2504-†	NLP1426M-2804-†	NLP1426M-1104-†
6	NLP1426M	100A	NLP1426M-2506-†	NLP1426M-2806-†	–
8	NLP1426M	100A	NLP1426M-2508-†	–	–
10	NLP1426M	100A	NLP1426M-2510-†	–	–
12	NLP1426M	100A	NLP1426M-2512-†	–	–

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Main Lug Only

3 Wire Branches (100A and 200A MLO)

No. of Circuits	Enclosure Only	Main Lug* Amps	Enclosures with NQOD Interiors and QO® Branch Circuit Breakers: 1-Pole Branch Circuit Breakers Wiring System 24‡	2-Pole Branch Circuit Breakers Wiring System 3‡
4	NLP1426	100	NLP1426-2404-†	NLP1426-0304-†
6	NLP1426	100	NLP1426-2406-†	NLP1426-0306-†
8	NLP1426	100	NLP1426-2408-†	NLP1426-0308-†
10	NLP1426	100	NLP1426-2410-†	NLP1426-0310-†
12	NLP1426	100	NLP1426-2412-†	—
14	NLP1426	100	NLP1426-2414-†	—
16	NLP1426	100	NLP1426-2416-†	—
18	NLP1426	100	NLP1426-2418-†	—
20	NLP1426	100	NLP1426-2420-†	—

No. of Circuits	Enclosure Only	Main Lug** Amps	Enclosures with QON Interiors and QO® Branch Circuit Breakers: 1-Pole Branch Circuit Breakers Wiring System 24‡	2-Pole Branch Circuit Breakers Wiring System 3‡
4	NLPQ1426-1	200	NLPQ1426-2404-†	NLPQ1426-0304-†
6	NLPQ1426-1	200	NLPQ1426-2406-†	NLPQ1426-0306-†
8	NLPQ1426-1	200	NLPQ1426-2408-†	NLPQ1426-0308-†
10	NLPQ1426-1	200	NLPQ1426-2410-†	NLPQ1426-0310-†
12	NLPQ1426-1	200	NLPQ1426-2412-†	NLPQ1426-0312-†
14	NLPQ1426-1	200	NLPQ1426-2414-†	—
16	NLPQ1426-1	200	NLPQ1426-2416-†	—
18	NLPQ1426-1	200	NLPQ1426-2418-†	—
20	NLPQ1426-1	200	NLPQ1426-2420-†	—
22	NLPQ1426-1	200	NLPQ1426-2422-†	—
24	NLPQ1426-1	200	NLPQ1426-2424-†	—

4 Wire Branches (100A and 200A MLO)

No. of Circuits	Enclosure Only	Main Lug* Amps	Enclosures with NQOD Interiors and QO® Branch Circuit Breakers: 1-Pole Branch Circuit Breakers Wiring System 25‡	2-Pole Branch Circuit Breakers Wiring System 28‡	3-Pole Branch Circuit Breakers Wiring System 11‡
4	NLP1426	100	NLP1426-2504-†	NLP1426-2804-†	NLP1426-1104-†
6	NLP1426	100	NLP1426-2506-†	NLP1426-2806-†	NLP1426-1106-†
8	NLP1426	100	NLP1426-2508-†	NLP1426-2808-†	NLP1426-1108-†
10	NLP1426	100	NLP1426-2510-†	NLP1426-2810-†	—
12	NLP1426	100	NLP1426-2512-†	NLP1426-2812-†	—
14	NLP1426	100	NLP1426-2514-†	—	—
16	NLP1426	100	NLP1426-2516-†	—	—
18	NLP1426	100	NLP1426-2518-†	—	—
20	NLP1426	100	NLP1426-2520-†	—	—
22	NLP1426	100	NLP1426-2522-†	—	—
24	NLP1426	100	NLP1426-2524-†	—	—

No. of Circuits	Enclosure Only	Main Lug** Amps	Enclosures with QON Interiors and QO® Branch Circuit Breakers: 1-Pole Branch Circuit Breakers Wiring System 25‡	2-Pole Branch Circuit Breakers Wiring System 28‡	3-Pole Branch Circuit Breakers Wiring System 11‡
4	NLPQ1426-3	200	NLPQ1426-2504-†	NLPQ1426-2804-†	NLPQ1426-1104-†
6	NLPQ1426-3	200	NLPQ1426-2506-†	NLPQ1426-2806-†	NLPQ1426-1106-†
8	NLPQ1426-3	200	NLPQ1426-2508-†	NLPQ1426-2808-†	NLPQ1426-1108-†
10	NLPQ1426-3	200	NLPQ1426-2510-†	NLPQ1426-2810-†	NLPQ1426-1110-†
12	NLPQ1426-3	200	NLPQ1426-2512-†	NLPQ1426-2812-†	—
14	NLPQ1426-3	200	NLPQ1426-2514-†	NLPQ1426-2814-†	—
16	NLPQ1426-3	200	NLPQ1426-2516-†	—	—
18	NLPQ1426-3	200	NLPQ1426-2518-†	—	—
20	NLPQ1426-3	200	NLPQ1426-2520-†	—	—
22	NLPQ1426-3	200	NLPQ1426-2522-†	—	—
24	NLPQ1426-3	200	NLPQ1426-2524-†	—	—
26	NLPQ1426-3	200	NLPQ1426-2526-†	—	—
28	NLPQ1426-3	200	NLPQ1426-2528-†	—	—
30	NLPQ1426-3	200	NLPQ1426-2530-†	—	—

† Insert branch circuit breaker rating desired, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60 or 70 amp.

* 100A NQOD main lugs are #1/0 Cu/Al.

** 200A QON main lugs are #4/0 Cu/Al.

‡ See page 658 for wiring diagrams.

NOTE: Hubs, grounding plates and bushings must be ordered separately. See page 658 for listing.

NOTE: The NLP and NLPQ panelboards accommodate Square D NQOD and QON interiors as follows.

Enclosure	3 Wire Branches	4 Wire Branches
NLP1426	NQOD20L100	NQOD424L100
NLP1426M	NQOD12M100 CU	NQOD412M100 CU
NLPQ1426	QON124L200I	QON330L200

When ordering enclosures only, interiors and circuit breakers are not included and must be ordered separately from Square D.

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NST Disconnect Switches and Enclosures

600VAC/250VDC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight*
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 657

Application:

NST disconnect switches are for use in disconnecting motor, lighting and other circuits.

Features:

- Enclosures are made of *Krydon*®, Cooper Crouse-Hinds high impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Unitized, strong and durable enclosure construction provides longer service life for equipment.
- Enclosure has hinged access door which opens 160° for easy wiring and maintenance. Three screws for door frame are hidden behind access door.
- Access door may be padlocked to prevent unauthorized access.

Electrical Rating Ranges:

- 240 VAC/250 VDC & 600 VAC
- 30, 60, 100 and 200 amp

Certifications and Compliances:

- NEMA: 3, 4X and 12
- UL Standard: 98
- CSA Standard: C22.2 No. 4

Options:

Description	Suffix to be Added to Cat. #
Auxiliary switch, 600 VAC-DC heavy duty pushbutton station rating, can be supplied. Its contacts will close after switch contacts close and open before switch opens	S483*
Hubs (see ''Note on Hubs'')	see listing on page 658
Grounding plate or bushing	see listing on page 658



Disconnect switch with built-in *Krydon* material handle

Ordering Information:

To order an enclosure complete with disconnect switch, insert the manufacturer's symbol in the designated positions of the catalog number. Symbols are shown in the footnotes. Enclosures only can be ordered. Select from the listings below. For switches that can be accommodated, see Table 15 in Section 6C.

Amp Rating	Max HP Rating: AC Polyphase 200/240V	440/480V	550/600V	DC using 2 poles only 250V Max.	Enclosure: With Switch 240VAC/250VDC Cat. #	With Switch 600VAC Cat. #	Without Switch Cat. #
Non-Fusible							
30	7-1/2	15	20	5	NST1018F-†30320	NST1018F-†30360	NST1018F-†
60	15	30	40	10	NST1018F-†60320	NST1018F-†60360	NST1018F-†
100	30	50	50	20	NST1426F-†10320	NST1426F-†10360	NST1426F-†
200	50	125	100	40	NST1426F2-**20320	NST1426F2-**20360	NST1426F2-**
Fusible ♦							
30	7-1/2	15	20	5	NST1018F-†30321	NST1018F-†30361	NST1018F-†
60	15	30	40	10	NST1018F-†60321	NST1018F-†60361	NST1018F-†
100	30	50	50	20	NST1426F-†10321	NST1426F-†10361	NST1426F-†
200	50	125	100	40	NST1426F2-**20321	NST1426F2-**20361	NST1426F2-**

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when disconnect switches are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see ''Options'').

Switch Size	Number Included	Hub Size
30	2	¾
60	2	1¼
100	2	2
200	2	2½

Disconnect Switches:

Manufacturer	Symbol	Switch Type
General Electric	G	Type QMW
Square D	D	Class 9422
Cutler-Hammer	W	Type DS

* For Square D switches only.
** For Cutler-Hammer and General Electric switches only. Accommodates Class J fuses only.
♦ Fuse clips are arranged for Class H fuses and field modifiable for Class J fuses. For Class R fuses, consult headquarters.

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N2RS Enclosed Switches

Heavy-Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3, 4X, 7 (B,C,D Div. 2), 12
Watertight
Dusttight
Factory Sealed

Application:

N2RS heavy-duty enclosed switches are used:
- in a rigid metallic conduit or cable system for surface mounting adjacent to or remote from equipment being controlled.
- for individual motor control.
- to prevent arcing internal to the enclosed switch from causing ignition of a specific hazardous atmosphere, or atmospheres.
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, and finishing areas where atmospheres may contain hazardous gases.
- in non-hazardous areas where sturdy, durable enclosures are required.
- when controlling motor, lighting and other circuits.

Features:

- Enclosed devices are unfused, factory sealed motor circuit switches.
- Exceeds NEC® wiring end room requirements for ease of installation.
- RSWP factory sealed industrial control switch, no external seals are required.
- Enclosure is made of Krydon® high-impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Krydon material hubs with integral bushings, for dead-end or through-feed arrangements are supplied.
- Krydon material mounting feet supplied.
- Suitable for wash down and corrosive areas (Type 4X).
- A padlock can be used to lock the operating handle in the ''OFF'' position.
- Rotary actuator with diddle-free snap action.
- Unitized, strong and durable construction provides longer service life for equipment.
- Factory sealed 10A, 600 VAC auxiliary contact switch provided.

Standard Materials:

- Enclosure - Krydon material
- External Hardware - Stainless Steel
- Operating Handle - Nylon

Size Ranges:

- Hub size – (2) 1½″ (30, 60 amps)
  (2) 2½″ (100 amps)

Krydon material hubs included (not mounted)

Certifications and Compliances:

- NEC: Class I, Div. 2, Groups B, C, D
- NEMA: 3, 4X, 7 (B, C, D Div. 2), 12
- UL Standard: 508, 1604
- cUL to CSA Standard C22.2 No.14
- IP65



Furnished with Non-Fusible, Factory Sealed Motor Circuit Switch

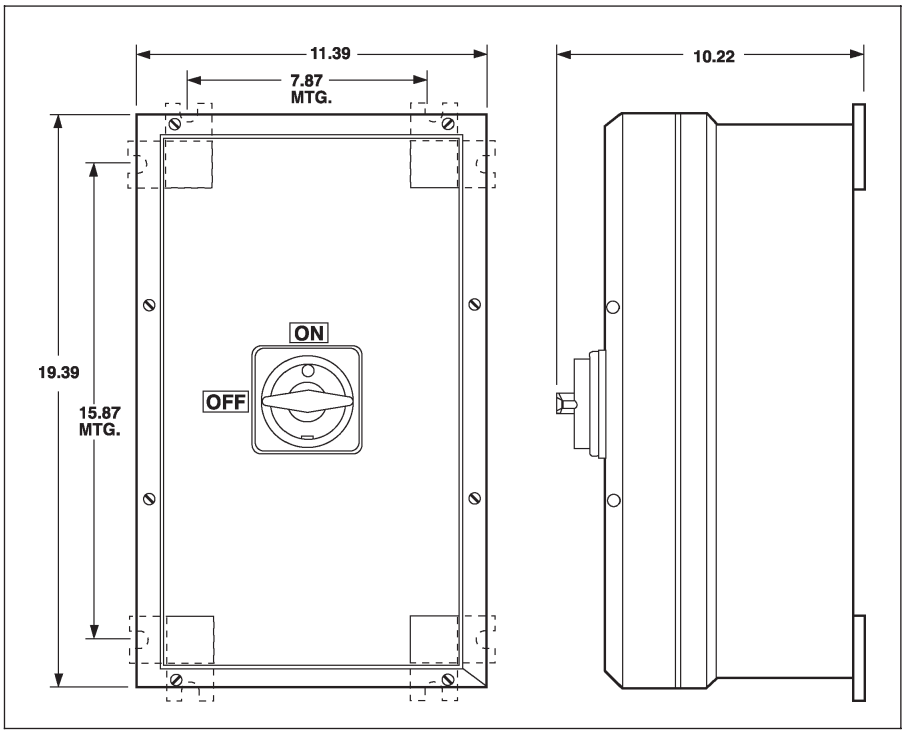
Switch Ratings

	Maximum HP – 3 Phase Volts AC		
Amperes	**240**	**480**	**600**
30	10	20	25
60	15	30	40
100	20	40	60

Ordering Information

Enclosure With 3-Pole Switch	
Hub Size	**Cat. #**
1½″	N2RS603
1½″	N2RS603
2½″	N2RS1003

Dimensions:



US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

NJB/NCE/NCS/NCD Junction Boxes and Enclosures

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 654

Application:

Where a corrosion-, heat-, and water-resistant enclosure is desired, *Krydon*® type NJB/NCE/NCS/NCD boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch circuit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

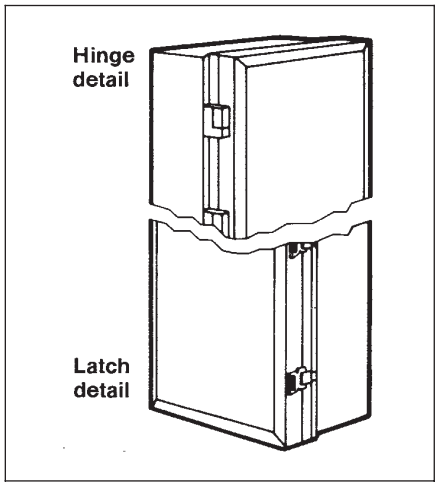
- Adjustable mounting feet permit side or top mounting (1018 and larger)
- Removable enclosure covers with Hypalon gaskets – hinged type optional – to provide full interior access for ease of wiring
- Hinged access door standard on NCE control enclosure covers
- Flat Neoprene access door gaskets

Certifications and Compliances:

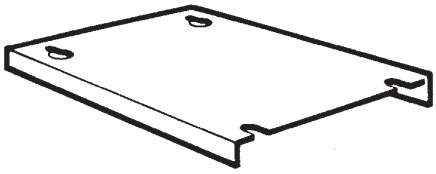
- NEMA 3, 4X and 12 (raintight only, when latches are used)
- UL Standard: 50

Options:

- Hubs for factory or field installation – see listing on page 658
- Grounding plate or bushing – see listing on page 658



- Hinge and latch kits. For field installation, order the required number of kits
  Hinge kit – NH1
  Latch and lockout kit – NTL01
- Mounting plates, made of steel with electrogalvanized finish, can be custom drilled to your specifications or supplied blank.
(Dimensions on page 654)



Fits Enclosure	Mounting Plate Cat. #	Dimensions Length	Width
3¼ x 6¾	MP0407	4½	2¾
3¼ x 9	MP0409	6¾	2¾
3¼ x 11	MP0411	8¾	2¾
5 x 9	MP0509	6¾	3¾
7 x 10	MP0710	7½	5¾
7 x 14	MP0714	9	5¾
10 x 18	MP1018	14½	8½
10 x 24	MP1024	20	8½
14 x 26	MP1426	22½	12¾
24 x 26	MP2426	22	20

Junction Boxes

Basic Box Cat. #	With Hinges (1 side) Cat. #	With Trunk Latches (all sides) Cat. #	With Hinges (1 side) and Trunk Latches (3 sides) Cat. #	Control Enclosures With Door in Cover Cat. #	Maximum Hub Size Long Sides	Short Sides
NJB040703					¾	¾
NJB040704					1	1
NJB040903					¾	¾
NJB041103					¾	¾
NJB041104					1	1
NJB050905					1½	1½
NJB071006	NJB071006-NH				2	2
NJB071406	NJB071406-NH				2	2
NJB101807	NJB101807-NH	NJB101807-NTL	NJB101807-NHTL	NCE101807	2*	2½
NJB102407	NJB102407-NH	NJB102407-NTL	NJB102407-NHTL	NCE102407	2*	2½
NJB142608	NJB142608-NH	NJB142608-NTL	NJB142608-NHTL	NCE142608	2½*	3
NJB242608	NJB242608-NH	NJB242608-NTL	NJB242608-NHTL	NCE242608	2½*	3

Control Station Enclosures

Without Hubs Cat. #	With One Hub (½″) Cat. #	With Two Hubs (½″) Cat. #	With One Hub (¾″) Cat. #	With Two Hubs (¾″) Cat. #	With One Hub (1″) Cat. #	With Two Hubs (1″) Cat. #
NCD01 NCS01 (1 device)	NCD11 NCS11	NCDC11 NCSC11	NCD21 NCS21	NCDC21 NCSC21	NCD31	NCDC31
NCD02 NCS02 (2 devices)	NCD12 NCS12	NCDC12 NCSC12	NCD22 NCS22	NCDC22 NCSC22	NCD32	NCDC32
NCD03 NCS03 (3 devices)	NCD13 NCS13	NCDC13 NCSC13	NCD23 NCS23	NCDC23 NCSC23	NCD33	NCDC33
NCD04 NCS04 (4 devices)	NCD14 NCS14	NCDC14 NCSC14	NCD24 NCS24	NCDC24 NCSC24	NCD34	NCDC34

* Can be increased one hub size when used without mounting plate.

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NJBW Instrument Enclosures

Corrosion-Resistant
Dusttight
Watertight
Weathertight
NEMA 3,4X,12

Application:

NJBW instrument enclosures are used to enclose various instruments which require visual display, including ammeters, voltmeters, watt-hour meters, VAR meters, power factor meters, tachometer indicators, and various pressure and temperature controls.

Features:

- Enclosure bodies are made of Cooper Crouse-Hinds high-impact strength Krydon® fiberglass-reinforced polyester which has excellent corrosion resistance and stability to heat.
- Clear cover is a single piece of ⅜″ acrylic plastic, gasketed and attached with stainless steel torque limiting screws.

Certifications and Compliances:

- NEMA 3, 4X, 12
- UL Standard 50

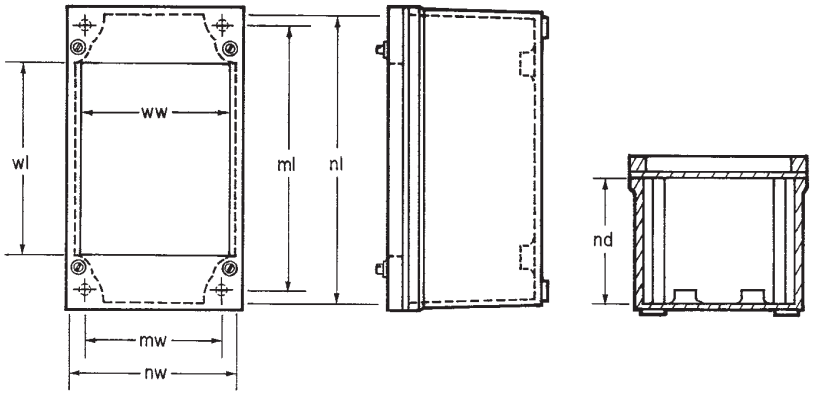
Options:

- Hubs – see listing on page 658
- Grounding plate or bushing – see listing on page 658
- Blank mounting plates – add suffix MP to Cat. No.



Enclosure Cat. #	Window Dimensions
NJBW050905TC	4¼ x 5¾
NJBW071006TC	5¾ x 8⅛
NJBW071406TC	5¾ x 12⅛

Dimensions*



* Not to be used for construction purposes unless approved.

Enclosure Cat. #	Nominal Inside Dimensions			Mounting Dimensions		Window Dimensions	
	nw	nl	nd	mw	ml	ww	wl
NJBW050905TC	5	9	3 15/16	4⅜	8⅜	4¼	5¾
NJBW071006TC	7	10	4 11/16	6⅜	9⅜	5¾	8⅛
NJBW071406TC	7	14	4 11/16	6⅜	13⅜	5¾	12⅛

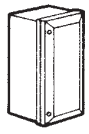
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NJB/NCE/NCS/NCD Junction Boxes and Enclosures

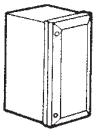
NEMA 3,4X,12

Quick Selector Guide

NJB Series Junction Boxes



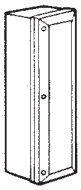
NJB040703
3¼ x 6¾ x 2¾



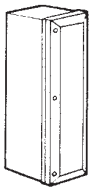
NJB040704
3¼ x 6¾ x 3¾



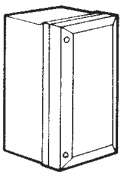
NJB040903
3¼ x 9 x 2¾



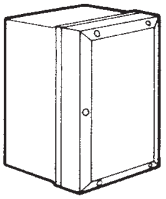
NJB041103
3¼ x 11 x 2¾



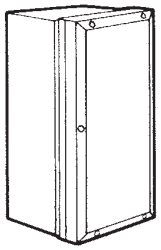
NJB041104
3¼ x 11 x 3¾



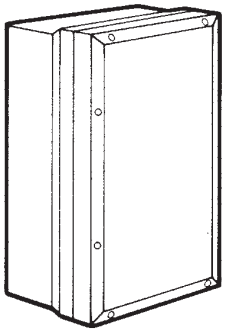
NJB050905
5 x 9 x 5



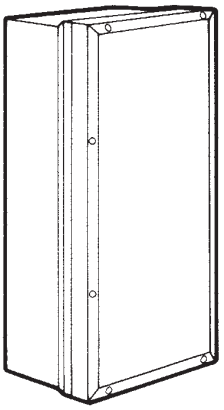
NJB071006
7 x 10 x 6½



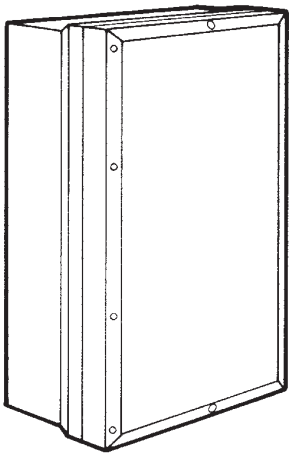
NJB071406
7 x 14 x 6½



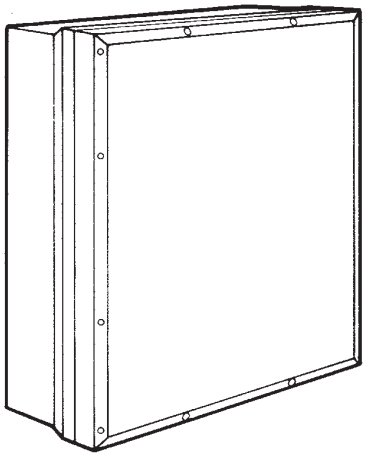
NJB101807
10 x 18 x 7½



NJB102407
10 x 24 x 7½

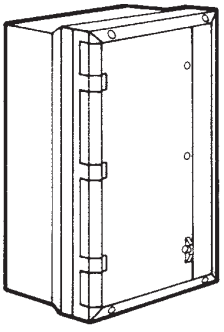


NJB142608
14 x 26 x 8½

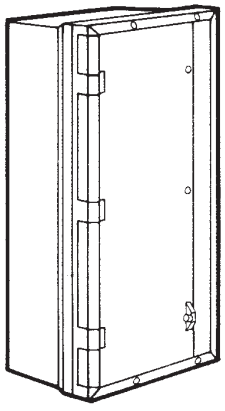


NJB242608
24 x 26 x 8½

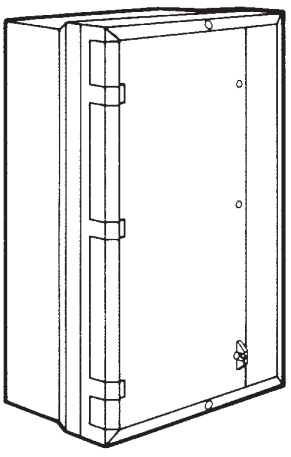
NCE Series Control Enclosures



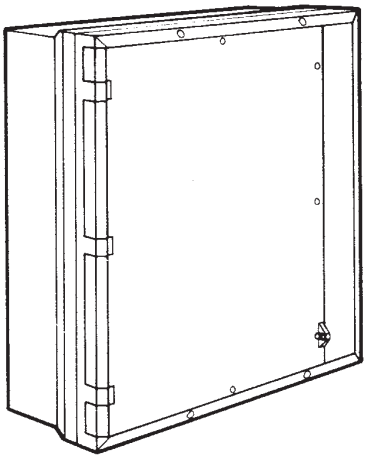
NCE101807
10 x 18 x 7½



NCE102407
10 x 24 x 7½

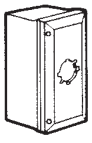


NCE142608
14 x 26 x 8½

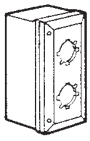


NCE242608
24 x 26 x 8½

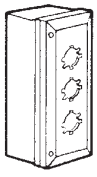
NCD/NCS Series Control Stations



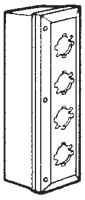
NCD01
3¼ x 6¾ x 3¾
NCS01
3¼ x 6¾ x 2¾
1 Device



NCD02
3¼ x 6¾ x 3¾
NCS02
3¼ x 6¾ x 2¾
2 Devices



NCS03
3¼ x 9 x 2¾
3 Devices



NCD03 and NCD04
3¼ x 11 x 3¾
NCS04
3¼ x 11 x 2¾
4 Devices

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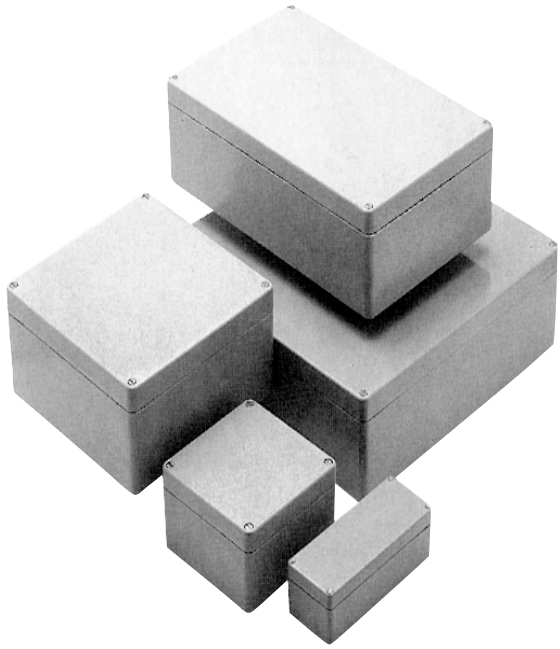
KESTREL SERIES
POLYESTER ENCLOSURES

Features/Applications

The Kestrel series of glass reinforced polyester enclosures available in seventeen sizes in black, gray and blue, provide a high quality maintenance free solution for intermediate electrical junctions.

Where corrosion resistance, impact strength or ingress protection are key factors the Kestrel series is highly recommended.

Black – Kestrel ''PKE'' series
Gray – Kestrel ''POK'' series
Blue – Kestrel ''PBE'' series (Intrinsic Safety only)



Specifications

Material		**Glassfiber reinforced polyester (GRP)**
Surface resistance	POK, PBE,	≥1G Ohm
	PKE	≤1G Ohm
Finish	Type PKE	Black, similar to RAL 9001
	Type POK	Grey, similar to RAL 7001
	Type PBE	Blue, similar to RAL 5012 (IS only)
Gasket		Silicone rubber
Cover mounting	Sizes 080806, 081106, 081606, 081906	4 × M4 captive stainless steel screws
	Sizes 082306	6 × M4 captive stainless steel screws
	Sizes 165610, 256013	6 × M6 captive stainless steel screws
	All other sizes	4 × M6 captive stainless steel screws
Box mounting	Sizes 080806, 081106, 081606, 081906, 082306	4 × mounting holes for M4 screws
	All other sizes	4 × mounting holes for M6 screws
Equipment mounting	Sizes 080806 + 081106	Brass mounting studs for M3 screws
	Sizes 081606, 081906, 082306	Brass mounting studs for M4 screws
	All other sizes	Brass mounting studs for M6 screws
Ingress protection	All sizes	IP68 to IEC 529 (EN 60529) (4.92ft/ 1 hour)
Temperature range		–4°F to 131°F (ambient)
Impact resistance		7J(Nm)
Toxicity		Halogens and cadmium free
Deluge test	All sizes	Spec. No. ATS01 (excluding size 165610 and 256013)

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Options

Assembly Terminals, Myers Hubs and cable glands fitted to specification.

Grounding One piece or single brass continuity plate M6/M10 internal/external ground stud.

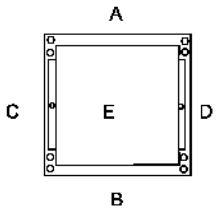
EMC The PKE series can be treated to provide sheilding against electromagnetic interference.

Approvals

REQUIRED

PKE (black) and POK (gray)
sizes: 080806, 081106, 081606, 081906, 121309, 122210, 161610, 162610, 163610, 252613, 254013, 256013, 414013.
Enclosure with terminals
EEx e II T5 or T6 to EN 50019
Certificate of Conformity
PKE: 94C. 102.961
POK: 94C. 102.962X
Empty enclosure EEx e II to EN 50019
Component Certificate
PKE: 93C. 102.959U
POK: 93C. 102.960U
Other enclosures: Industrial applications

A = Top
B = Bottom
C = Left hand side
D = Right hand side
E = Back



Black - Kestrel "PKE" Series
Gray - Kestrel " POK" Series
Blue - Kestrel "PBE" Series

Size 080806

Height 2.95″
Width 3.15″
Depth 2.36″
Weight 12 oz

Size 081106

Height 2.95″
Width 4.33″
Depth 2.36″
Weight 14 oz

Ordering Data	Cat. No.	Cat. No.
Black (GRP)	PKEPE080806	PKEPE081106
Gray (GRP)	POKPE080806	POKPE081106
Blue (GRP)	PBEPE080806	PBEPE081106

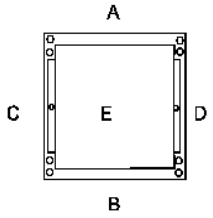
Guide to gland entries (Reference only)	Sides	Size	Sides	Size
Max. gland area dimensions through wall or enclosure.	A + B	1.97″ × 1.46″	A + B	3.15″ × 1.46″
	C + D	1.14″ × 1.26″	C + D	1.14″ × 1.26″

Gland sizes (mm) per side (Reference only)

Brass glands with locknuts	Side A + B	Side C + D	Side A + B	Side C + D
16	1	1	2	1
20	1	–	2	–
25	–	–	–	–
32	–	–	–	–
40	–	–	–	–
50	–	–	–	–

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A = Top
B = Bottom
C = Left hand side
D = Right hand side
E = Back



Black - Kestrel ''PKE'' Series
Gray - Kestrel ''POK'' Series
Blue - Kestrel ''PBE'' Series

Size 081606

Height 2.94″
Width 6.30″
Depth 2.36″
Weight 1 lb 1 oz

Size 081906

Height 2.94″
Width 7.48″
Depth 2.36″
Weight 1 lb 2 oz

Ordering Data

	Cat. No.	Cat. No.
Black (GRP)	PKEPE081606	PKEPE081906
Gray (GRP)	POKPE081606	POKPE081906
Blue (GRP)	PBEPE081606	PBEPE081906

Guide to gland entries (Reference only)

Max. gland area dimensions through wall of enclosure.

Sides	Size	Sides	Size
A + B	5.12″ × 1.46″	A + B	6.38″ × 1.38″
C + D	1.14″ × 1.26″	C + D	1.14″ × 1.14″

Gland sizes (mm) per side (Reference only)

		Side A + B	Side C + D	Side A + B	Side C + D
Brass glands with locknuts	16	4	1	5	1
	20	3	–	4	–
	25	–	–	–	–
	32	–	–	–	–
	40	–	–	–	–
	50	–	–	–	–

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Size 082306

Height 2.94″
Width 9.05″
Depth 2.63″
Weight 1 lb 4 oz

Cat. No.
PKEPE082306
POKPE082306
PBEPE082306

Sides	Size
A + B	2 × (3.58″ × 1.46″)
C + D	1.14″ × 1.26″

Side A + B	Side C + D
6	1
4	–
–	–
–	–
–	–
–	–

Size 121309

Height 4.72″
Width 4.92″
Depth 3.54″
Weight 1 lb 8 oz

Cat. No.
PKEPE121309
POKPE121309
PBEPE121309

Sides	Size
A + B	3.46″ × 2.32″
C + D	2.36″ × 2.01″

Side A + B	Side C + D
4	2
2	1
1	1
1	–
–	–
–	–

Size 122210

Height 4.72″
Width 8.66″
Depth 3.74″
Weight 2 lb 5 oz

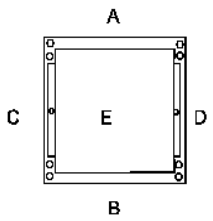
Cat. No.
PKEPE122210
POKPE122210
PBEPE122210

Sides	Size
A + B	7.16″ × 2.48″
C + D	2.36″ × 2.24″

Side A + B	Side C + D
12	3
5	1
4	1
3	1
–	–
–	–

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A = Top
B = Bottom
C = Left hand side
D = Right hand side
E = Back



Black - Kestrel ''PKE'' Series
Gray - Kestrel ''POK'' Series
Blue - Kestrel ''PBE'' Series
All dimensions in inches

Size 161610

Height 6.30″
Width 6.30″
Depth 3.74″
Weight 2 lb 14 oz

Size 162610

Height 6.30″
Width 10.24″
Depth 3.74″
Weight 3 lb 12 oz

Ordering Data		Cat. No.	Cat. No.
Supplied with	**Black (GRP)**	PKEPE161610	PKEPE162610
	Gray (GRP)	POKPE161610	POKPE162610
	Blue (GRP)	PBEPE161610	PBEPE162610

Guide to gland entries (Reference only)	Sides	Size	Sides	Size
Max. gland area dimensions through wall of enclosure.	A + B	4.49″ × 2.56″	A + B	8.42″ × 2.56″
	C + D	3.31″ × 2.32″	C + D	3.31″ × 2.32″

Gland sizes (mm) per side (Reference only)		Side A + B	Side C + D	Side A + B	Side C + D
Brass glands with locknuts	16	6	4	14	4
	20	3	2	6	2
	25	2	1	4	1
	32	2	1	3	1
	40	1	–	3	–
	50	–	–	–	–

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Size 163610

Height 6.30″
Width 14.17″
Depth 3.74″
Weight 4 lb 7 oz

Cat. No.
PKEPE163610
POKPE163610
PBEPE163610

Sides	Size
A + B	12.36″ × 2.56″
C + D	3.31″ × 2.32″

Side A + B	Side C + D
20	4
10	2
7	1
5	1
4	–
–	–

Size 165610

Height 6.30″
Width 22.05″
Depth 3.74″
Weight 8 lb 2 oz

Cat. No.
PKEPE165610
POKPE165610
PBEPE165610

Sides	Size
A + B	2 (9.41″ × 2.56″)
C + D	3.31″ × 2.32″

Side A + B	Side C + D
32	4
14	2
10	1
8	1
6	–
–	–

Size 252613

Height 9.84″
Width 10.03″
Depth 4.92″
Weight 5 lb 13oz

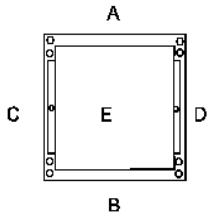
Cat. No.
PKEPE252613
POKPE252613
PBEPE252613

Sides	Size
A + B	8.23″ × 3.58″
C + D	6.85″ × 3.39″

Side A + B	Side C + D
21	15
10	8
8	6
4	3
3	2
2	2

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A = Top
B = Bottom
C = Left hand side
D = Right hand side
E = Back



Black - Kestrel ''PKE'' Series
Gray - Kestrel ''POK'' Series
Blue - Kestrel ''PBE'' Series

Size 254013

Height 9.84″
Width 15.75″
Depth 4.92″
Weight 10 lb

Size 256013

Height 9.84″
Width 23.62″
Depth 4.92″
Weight 12 lb 12 oz

Ordering Data

		Cat. No.	Cat. No.
Supplied with	**Black (GRP)**	PKEPE254013	PKEPE256013
	Gray (GRP)	POKPE254013	POKPE256013
	Blue (GRP)	PBEPE254013	PBEPE256013

Guide to gland entries (Reference only)

Max. gland area dimensions through wall of enclosure.

	Sides	Size	Sides	Size
	A + B	13.94″ × 3.58″	A + B	2 (10.31″ × 3.58″)
	C + D	6.85″ × 3.87″	C + D	6.77″ × 3.38″

Gland sizes (mm) per side (Reference only)

		Side A + B	Side C + D	Side A + B	Side C + D
Brass glands with locknuts	16	33	15	48	15
	20	18	8	24	8
	25	14	6	20	6
	32	7	3	10	3
	40	5	2	8	2
	50	4	2	6	2

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Size 414013

Height	15.95″
Width	15.75″
Depth	4.92″
Weight	12 lb 9 oz

Cat. No.
PKEPE414013
POKPE414013
PBEPE414013

Sides	Size
A + B	13.94″ × 3.58″
C + D	12.95″ × 3.39″

Side A + B	Side C + D
33	30
18	16
14	13
7	6
5	4
4	4

Size 252617

Height	9.84″
Width	10.04″
Depth	6.50″
Weight	8 lb 8 oz

Cat. No.
PKEPE252617
POKPE252617
PBEPE252617

Sides	Size
A + B	8.23″ × 3.58″
C + D	6.85″ × 3.39″

Side A + B	Side C + D
21	15
10	8
8	6
4	3
3	2
2	2

Size 254017

Height	9.84″
Width	15.75″
Depth	6.50″
Weight	11 lb 2oz

Cat. No.
PKEPE254017
POKPE254017
PBEPE254017

Sides	Size
A + B	13.94″ × 3.58″
C + D	6.85″ × 3.39″

Side A + B	Side C + D
33	15
18	8
14	6
7	3
5	2
4	2

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Mounting plates

Mounting plates for the PKE, POK, PBE series of enclosures manufactured from 2mm zinc coated sheet steel.

Type	Cat. No.	Type	Cat. No.
080806	POKZTMP0808	163610	POKZTMP1636
081106	POKZTMP0811	165610	POKZTMP1656
081606	POKZTMP0816	252613	POKZTMP2526
081906	POKZTMP0819	254013	POKZTMP2540
082306	POKZTMP0823	256013	POKZTMP2560
121309	POKZTMP1213	414013	POKZTMP4140
122210	POKZTMP1222	252617	POKZTMP2526
161610	POKZTMP1616	254017	POKZTMP2540
162610	POKZTMP1626		

Ground continuity plates

Internal continuity plates manufactured from 0.05″ brass, May be used for bonding cable glands in any of the four enclosure faces.

Type	Cat. No.	Type	Cat. No.
080806	POKBSECC1	163610	POKBSECC7
081106	POKBSECC2	165610	POKBSECC71
081606	POKBSECC3	252613	POKBSECC8
081906	POKBSECC31	254013	POKBSECC9
082306	POKBSECC32	256013	POKBSECC91
121309	POKBSECC4	414013	POKBSECC10
122210	POKBSECC5	252617	POKBSECC8
161610	POKBSECC51	254017	POKBSECC9
162610	POKBSECC6		

3 mm single brass ground plates

Manufactured from 0.19″ brass for fitting along sides of enclosure.

Type (long side)	Cat. No.	Type (short side)	Cat. No.
121309	POKBSECP4L	121309	POKBSECP4S
122210	POKBSECP5L	122210	POKBSECP5S
162610	POKBSECP6L	162610	POKBSECP6S
163610	POKBSECP7L	163610	POKBSECP7S
252613/252617	POKBSECP8L	252613/252617	POKBSECP8S
254013/254017	POKBSECP9L	254013/254017	POKBSECP9S
414013	POKBSECP9L	414013	POKBSECP10S
161610	POKBSECP51L	161610	POKBSECP51S
165610 (4 off per box)	POKBSECP71L	165610	POKBSECP71S
256013 (4 off per box)	POKBSECP91L	256013	POKBSECP91S

Ground bar

12 × 0.08″ zinc plated steel bar complete with cable clamps having locking tongue which locates in the bar. Bars are secured to base of enclosure either directly to the brass inserts or pillars fitted to brass inserts.

Type	(Horiz. bar)Cat. No.	No. of Poles	(Vert. bar) Cat. No.	No. of Poles
121309	KBXERHK41	4	KBXERVK41	2
122210	KBXERHK51	6	KBXERVK41	2
161610	KBXERHK52	6	KBXERVK52	4
162610	KBXERHK61	8	KBXERVK52	4
163610	POKERH7	8	KBXERVK52	4
165610	POKERH71	8	KBXERVK52	4
252613	KBXERVK81	8	KBXERVK8	6
254013	KBXERHK81	12	KBXERVK8	6
256013	POKERH91	12	KBXERVK8	6
414013	KBXERHK81	12	KBXERHK71	8
252617	KBXERVK81	8	KBXERVK8	6
254017	KBXERHK81	12	KBXERVK8	6

Stand off pillars

Plated mild steel, supplied in packs of 2. Not suitable for enclosure sizes 080806, 081106, 081606, 081906 or 082306.

Type	Cat. No.	Height
HR 15	ACCSOP15	0.59″
HR 30	ACCSOP30	1.18″

Ground pillar kit

Brass nickel plated grounding kits comprising of 1 ground bar and 2 pillars. Provide additional grounding facilities within enclosure. Suitable for enclosure sizes 080806, 081106, 081906 + 082306 only.

Cat. No.
POKBSEPTKIT

Ground studs

Type	Cat. No.
M6 Brass	ACCBSESM6KIT
M6 Stainless steel	ACCS1ESM6KIT
M10 Brass	ACCBSESM10KIT
M10 Stainless steel	ACCS1ESM10KIT

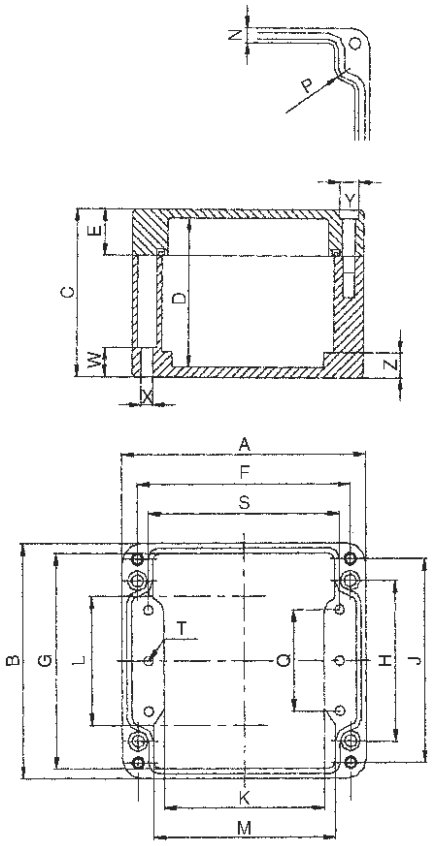
Mounting feet

Supplied in sets of 4. Complete with mounting screws.

Type	Cat. No.	Size
MF5	POKMFKIT5	Small size 080806, 081106, 081606, 081906, 082306
MF6	POKMFKIT6	Large & all other sizes

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Dimensional Details



Kestrel Enclosure Series Dimensions (inches)

Code	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	X	Y	Z
PKE080806	3.15	2.95	2.40	2.01	0.83	2.68	2.48	1.77	2.56	1.97	1.30	2.21	0.32	0.34	N/A	N/A	2.36	M4	0.32	0.18	0.32	0.35
PKE081106	4.33	2.95	2.40	2.01	0.83	3.86	2.48	1.77	2.56	3.15	1.30	3.39	0.32	0.34	N/A	N/A	3.54	M4	0.32	0.18	0.32	0.35
PKE081606	6.30	2.95	2.40	2.01	0.83	5.83	2.48	1.77	2.56	5.19	1.30	5.35	0.32	0.34	N/A	N/A	5.47	M4	0.32	0.18	0.32	0.35
PKE081906	7.48	2.95	2.40	2.01	0.83	7.01	2.48	1.77	2.56	6.30	1.26	6.54	0.32	0.34	N/A	N/A	6.65	M4	0.32	0.18	0.32	0.35
PKE082306	9.06	2.95	2.40	2.01	0.83	8.58	2.48	1.77	2.56	7.87	1.26	8.11	0.32	0.34	N/A	0.42	8.23	M4	0.32	0.18	0.32	0.35
PKE121309	4.92	4.72	3.54	3.15	0.98	4.29	4.09	3.23	4.33	3.23	2.60	3.66	0.32	0.41	2.05	N/A	3.86	M6	0.61	0.18	0.41	0.43
PKE122210	8.66	4.72	3.74	3.35	1.08	8.03	4.09	3.23	4.33	6.97	2.60	7.40	0.37	0.41	2.05	N/A	7.60	M6	0.61	0.26	0.41	0.43
PKE161610	6.30	1.72	3.74	3.35	0.98	5.51	5.51	4.33	5.79	4.72	3.54	4.72	0.37	0.51	2.99	N/A	5.20	M6	0.79	0.26	0.47	N/A
PKE162610	10.24	6.30	3.74	3.35	0.98	9.45	5.51	4.33	5.79	8.66	3.54	8.66	0.37	0.51	2.99	N/A	9.06	M6	0.79	0.26	0.47	N/A
PKE163610	14.17	6.30	3.74	3.35	0.98	13.39	5.51	4.33	5.79	12.60	3.54	12.60	0.39	0.51	2.99	N/A	13.07	M6	0.79	0.26	0.47	N/A
PKE165610	22.05	6.30	3.74	3.35	0.98	21.26	5.51	4.33	5.79	20.47	3.54	20.47	0.37	0.51	2.99	0.65	20.95	M6	0.79	0.26	0.47	N/A
PKE252613	10.04	6.30	4.92	4.53	1.10	9.25	9.06	7.87	9.33	8.47	7.09	8.47	0.37	0.47	3.94	N/A	8.98	M6	0.79	0.26	0.47	N/A
PKE254013	15.75	9.84	4.92	4.53	2.68	14.96	9.06	7.87	9.33	14.17	7.09	14.17	0.37	0.51	3.94	N/A	14.65	M6	0.79	0.26	0.47	N/A
PKE256013	23.62	9.84	4.92	4.53	1.10	22.84	9.06	7.87	9.33	21.99	7.03	21.99	0.37	0.35	3.94	0.51	22.62	M6	0.79	0.26	0.47	N/A
PKE414013	15.75	15.95	4.92	4.53	1.10	14.96	15.16	13.98	15.43	14.17	13.19	14.17	0.37	0.35	9.76	N/A	14.72	M6	0.79	0.26	0.47	N/A
PKE252617	10.04	9.84	6.50	6.10	2.68	9.26	9.06	7.87	9.33	8.47	7.09	8.47	0.37	0.51	3.94	N/A	8.98	M6	0.79	0.26	0.08	N/A
PKE254012	15.75	9.84	6.50	6.10	2.68	14.96	9.06	7.87	9.33	14.17	7.09	14.17	0.37	0.51	3.94	N/A	14.65	M6	0.79	0.26	0.47	N/A

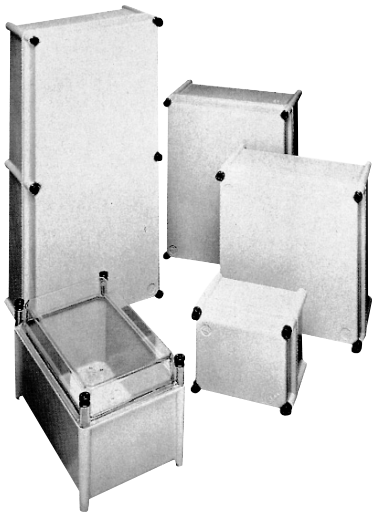
Dimension R: only appears on enclosures with 6 cover mounting screws, dimension is the radius of the center mounting screws.

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TBF/TBP Series
Glassfiber Reinforced
Polyester Enclosures

Features/Applications

The TBF and TBP series of enclosures are molded from a glassfiber polyester resin molding compound which is highly resistant to corrosion. Available in nine sizes with a minimum wall thickness of 3mm ensures they are suited to a wide range of applications such as control systems, meters, valves or instruments and are ideally suited for environments where weight is a prime consideration.



Specifications

Material	TBF 191514 – 606018	Glassfiber reinforced polyester body and cover.
	TBP 301918 – 603021	Glassfiber reinforced polyester body, polycarbonate cover.
Gasket		Expanded polyurethane foam.
Cover mounting		4 or 6 captive square threaded nylon screws.
Box mounting		Integral 0.217″ diameter hole. External mounting lugs – optional.
Equipment mounting		4 or 6 × M4 threaded inserts
Ingress protection	TBF 191514 – 606018	IP66/67 to IEC 529.
	TBP 301918 – 603021	IP66 to IEC 529
Temperature range	TBF/TBP	– 4°F to +203°F
Ambient temperature	T5	–4°F to +104°F
	T6	–4°F to +140°F
Impact reistance	TBF 191514 – 606018	4 J (Nm) to EN 50014
	TBP 301918 – 603021	7 J (Nm) to BS 4683: Part 4
Flammability	Glassfiber Reinforced Polyester	UL 94 HB
	Polycarbonate	UL 94 V2
Toxicity		No halogens
Oxygen index		28% (ASTM – D2863 – 77)
Surface resistivity		DIN 53482 – 12

Options (consult factory)

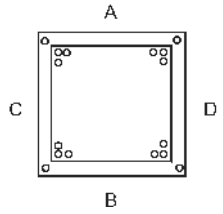
Assembly	Terminals, cable glands, Myers Hubs, locks fitted to specification.
Grounding	Single brass continuity plates, ground studs.

Approvals

Enclosure with terminals	TBF 191514-606018 EEx e II T6 to EN 50019, (BS 5501: part 6) Certificate of Conformity: Ex 92C 3393X TBP 301918, 303018, 373018 & 603021 Ex e II T6 to BS 4683 part 4 Certificate of Assurance Ex 79255X
Empty enclosure	TBF 191514-606018 EEx e II T6 to EN 50019, (BS 5501: part 6) Component Certificate: 88B.102.698U TBP 301918, 303018, 373018 & 603021 Ex e II to BS 4683: part 4 Component Approval: 3032U

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A = Top
B = Bottom
C = Left hand side
D = Right hand side



All dimensions in inches

	TBF 191514	TBF301918 TBP301918
Height	7.32″	11.89″
Width	5.95″	7.32″
Depth	5.47″	6.89″
Weight	2.33 lb	3.86 lb.(TBF) 3.12 lb (TBP)

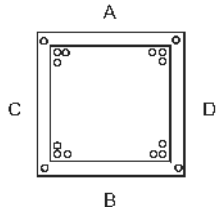
Ordering Data		**Cat. No.**	**Cat. No.**
Supplied with	Polyester cover	TBFPE191514	TBFPE301918
	Clear polycarbonate cover		TBPPE301918

Guide to gland entries	**Sides**	**Size**	**Sides**	**Size**
Max. gland area dimensions	A + B	3.94″ × 2.76″	A + B	5.12″ × 3.94″
	C + D	5.12″ × 2.76″	C + D	9.84″ × 3.94″

Gland sizes (mm) per side		**Side A + B**	**Side C + D**	**Side A + B**	**Side C + D**
Brass glands with locknuts	16	4	6	10	22
	20	2	4	6	13
	25	2	3	4	8
	32	–	1	3	5
	40	–	1	1	3
	50	–	–	1	2

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A = Top
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All dimensions in inches

	TBF303018 TBP303018	TBF373018 TBP373018
Height	11.89″	14.65″
Width	11.89″	11.89″
Depth	6.89″	6.89″
Weight	5 lb (TBF) 4.34 lb (TBP)	6.39 lb. (TBF) 5.22 lb (TBP)

Ordering Data		Cat. No.	Cat. No.
Supplied with	Polyester cover	TBFPE303018	TBFPE373018
	Clear polycarbonate cover	TBPPE303018	TBPPE373018

Guide to gland entries	Sides	Size	Sides	Size
Max. gland area dimensions	A + B	9.84″ × 3.94″	A + B	9.84″ × 3.94″
	C + D	9.84″ × 3.94″	C + D	12.60″ × 3.94″

Gland sizes (mm) per side		Side A + B	Side C + D	Side A + B	Side C + D
Brass glands with locknuts	16	22	22	22	28
	20	13	13	13	17
	25	8	8	8	11
	32	5	5	5	7
	40	3	3	3	4
	50	2	2	2	3

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TBF493018

Height	19.21″
Width	11.89″
Depth	6.89″
Weight	8.29 lb

Cat. No.
TBFPE493018

Sides	Size
A + B	9.84″ × 3.94″
C + D	17.17″ × 3.94″

Side A + B	Side C + D
22	40
13	24
8	16
5	11
3	7
2	5

TBF563018

Height	21.97″
Width	11.89″
Depth	6.89″
Weight	8.75 lb

Cat. No.
TBFPE563018

Sides	Size
A + B	9.84″ × 3.94″
C + D	2 (8.94″ × 3.94″)

Side A + B	Side C + D
22	38
13	24
8	16
5	10
3	6
2	4

TBF603018 TBP603021

Height	23.74″
Width	11.89″
Depth	6.89″ (TBF) 8.29″ (TBP)
Weight	9.66 lb (TBF) 8.60 lb (TBP)

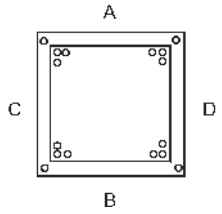
Cat. No.
TBFPE603018
TBPPE603021

Sides	Size
A + B	9.84″ × 3.94″
C + D	2 (9.84″ × 3.94″)

Side A + B	Side C + D
22	46
13	26
8	16
5	10
3	6
2	4

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A = Top
B = Bottom
C = Left hand side
D = Right hand side



All dimensions in inches

	TBF603718	TBF606018
Height	23.74″	23.74″
Width	14.65″	23.74″
Depth	6.89″	6.89″
Weight	11.79 lb	16.31 lb

Ordering Data		Cat. No.	Cat. No.
Supplied with	Polyester cover	TBFPE603718	TBFPE606018
	Clear polycarbonate cover		

Guide to gland entries		Sides	Size	Sides	Size
Max. gland area dimensions		A + B	12.60″ × 3.94″	A + B	2 (9.84″ × 3.94″)
		C + D	2 (9.84″ × 3.94″)	C + D	2 (9.84″ × 3.94″)

Gland sizes (mm) per side		Side A + B	Side C + D	Side A + B	Side C + D
Brass glands with locknuts	16	28	44	44	44
	20	17	26	26	26
	25	11	16	16	16
	32	7	10	16	16
	40	4	6	6	6
	50	3	4	4	4

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Accessories

Mounting plates

For equipment mounting,manufactured from galvanized steel.

Type	Cat. No.	Type	Cat. No.
TBF/TBP191514	TBFZTMP1915	TBF563018	TBFZTMP5630
TBF/TBP301918	TBFZTMP3019	TBF/TBP603018/21	TBFZTMP6030
TBF/TBP303018	TBFZTMP3030	TBF603718	TBFZTMP6037
TBF/TBP373018	TBFZTMP3730	TBF606018	TBFZTMP6060
TBF493018	TBFZTMP4930		

3mm single brass ground plates

Ground continuity plates manufactured from 0.12″ brass. Plates must be connected to the internal ground point of the enclosure.

Type	Side	Cat. No.	Side	Cat. No.
TPF/TBP191514	C+D	TBFBSECP1L	A+B	TBFBSECP1S
TPF/TBP301918	C+D	TBFBSECP2L	A+B	TBFBSECP2S
TPF/TBP303018	C+D	TBFBSECP2L	A+B	TBFBSECP2L
TBF/TBP373018	C+D	TBFBSECP4L	A+B	TBFBSECP2L
TBF493018	C+D	TBFBSECP4AL	A+B	TBFBSECP2L
TBF563018	C+D (2×)	TBFBSECP4BL	A+B	TBFBSECP2L
TBF/TBP603018/21	C+D (2×)	TBFBSECP2L	A+B	TBFBSECP2L
TBF603718	C+D (2×)	TBFBSECP2L	A+B	TBFBSECP4L
TBF606018	C+D (2×)	TBFBSECP2L	A+B (2×)	TBFBSECP2L

Ground studs

Tapped M6 for internal ground connection

Type	Cat. No.
M6 Brass	ACCBSESM6KIT
M6 Stainless steel	ACCS1ESM6KIT
M10 Brass	ACCBSESM10KIT
M10 Stainless steel	ACCS1ESM10KIT

External mounting lugs

For external mounting points, direct mounting through the four corner holes of enclosure.

Type	Cat. No.
Mounting lugs Set of 4 pieces, glassfiber reinforced polyamide	TBFEMF4SET

Cover mounting screws

Type	Cat. No.
Slotted screw	TBFLIDSCWST

Padlock set

Stainless steel, maximum diameter of padlock: 0.32″

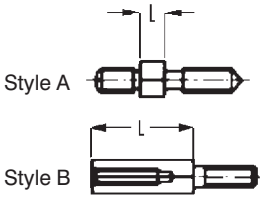
Type	Cat. No.
Padlock set	TBFPADLOCK

Hinge screw

Cover security device. Note: Box must be mounted prior to fitting the hinge screw.

Type	Cat. No.
Hinge screw Set of 2 pieces	TBFHGESRW

Stand off pilars



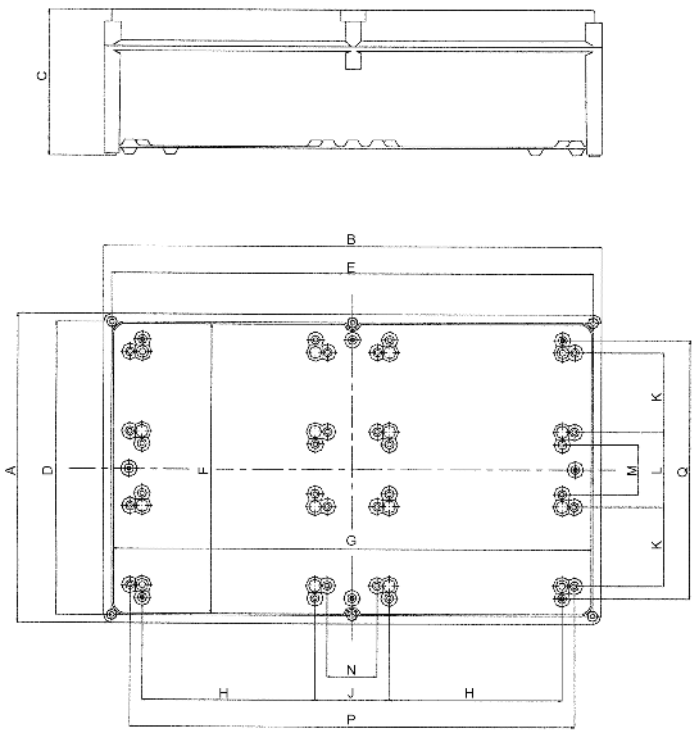
Type	Cat. No.	L (inches)	Thread Size	Style
Spacer M4	TBFSOPM4X6	0.24	M4	A
Spacer M4	TBFSOPM4X10	0.39	M4	B
Spacer M4	TBFSOPM4X15	0.59	M4	B
Spacer M4	TBFSOPM4X20	0.79	M4	B
Spacer M4	TBFSOPM4X25	0.98	M4	B
Spacer M4	TBFSOPM4X30	1.18	M4	B
Spacer M4	TBFSOPM4X60	2.36	M4	B
Spacer M4	TBFSOPM4X97	3.82	M4	B
Spacer M4	TBFSOPM4X102	4.02	M4	B

Plastic rain hoods

Type	Cat. No.
Small	TBFPRHSML
Large	TBFPRMLGE

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Dimensional Details



Dimensions (inches)

Code	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
TBF/TBP191514	5.95	7.32	5.51	5.16	6.54	5.16	6.54	3.74	N/A	2.36	N/A	N/A	N/A	4.96	3.54
TBF/TBP301918	7.32	11.89	6.85	6.54	11.10	6.54	10.93	2.36	2.36	3.74	N/A	N/A	2.36	9.45	4.92
TBF/TBP303018	11.89	11.89	6.85	11.10	11.10	11.10	10.91	8.27	N/A	8.27	N/A	N/A	N/A	9.45	9.45
TBF/TBP373018	14.65	11.89	6.85	13.86	11.10	13.86	10.91	8.27	N/A	3.74	3.54	2.36	N/A	9.45	12.21
TBF/TBP493018	19.21	11.89	6.87	18.35	11.02	18.39	10.91	8.27	N/A	3.74	N/A	N/A	N/A	9.45	16.77
TBF/TBP563018	21.97	11.89	6.87	21.10	11.02	21.14	10.91	8.27	N/A	3.74	3.54	2.36	N/A	9.45	19.53
TBF/TBP603018	11.89	23.74	6.87	11.02	22.87	11.06	21.91	9.47	2.36	8.27	N/A	N/A	2.36	21.30	9.45
TBF/TBP603718	14.65	23.74	6.93	13.78	22.87	13.82	31.91	9.47	2.36	3.74	3.54	2.36	2.39	21.30	12.21
TBF/TBP606018	23.74	23.74	8.25	22.87	22.87	21.91	21.91	8.27	2.36	8.27	3.54	2.36	3.54	20.10	21.26

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NJB/NCE/NCS/NCD Junction Boxes and Enclosures

Dimensions*

FIGURE 1

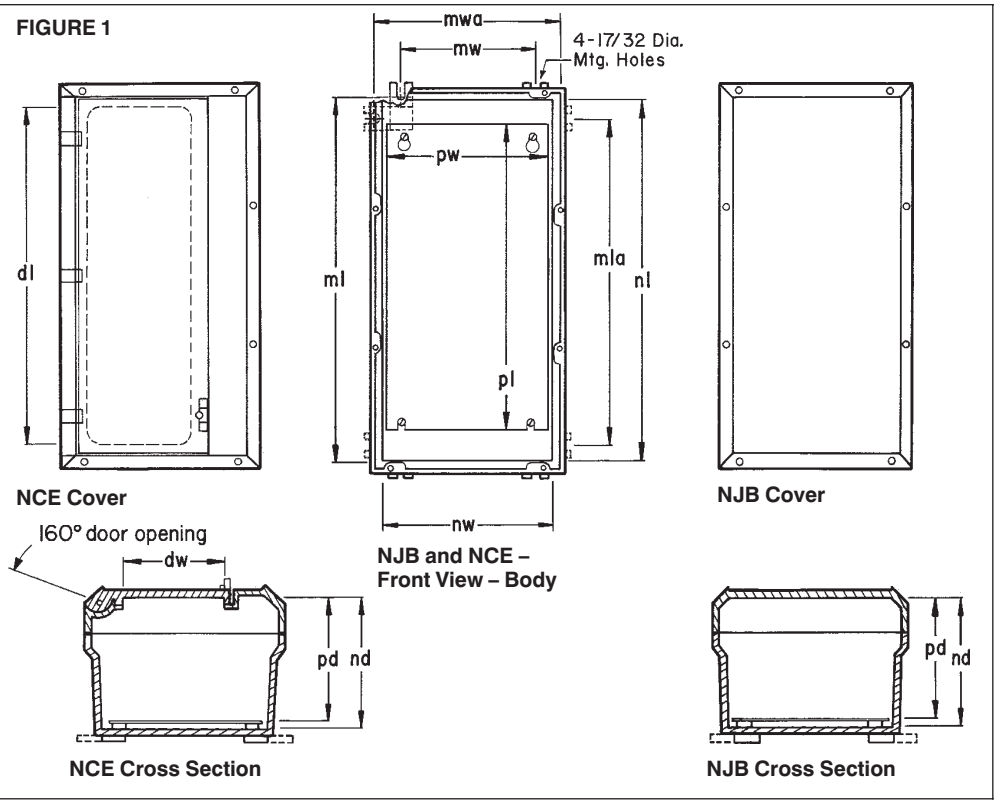
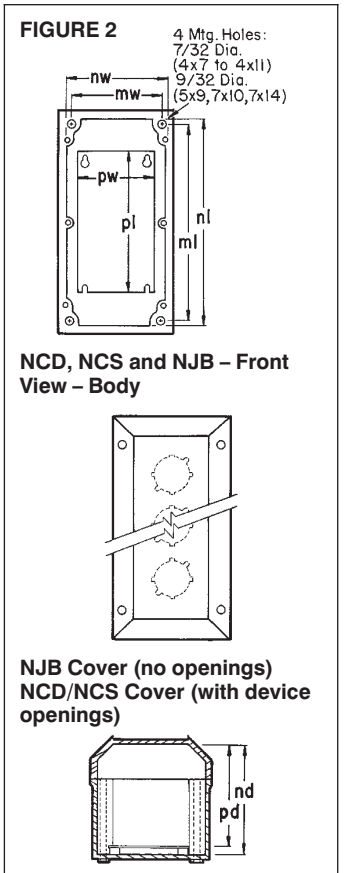


FIGURE 2



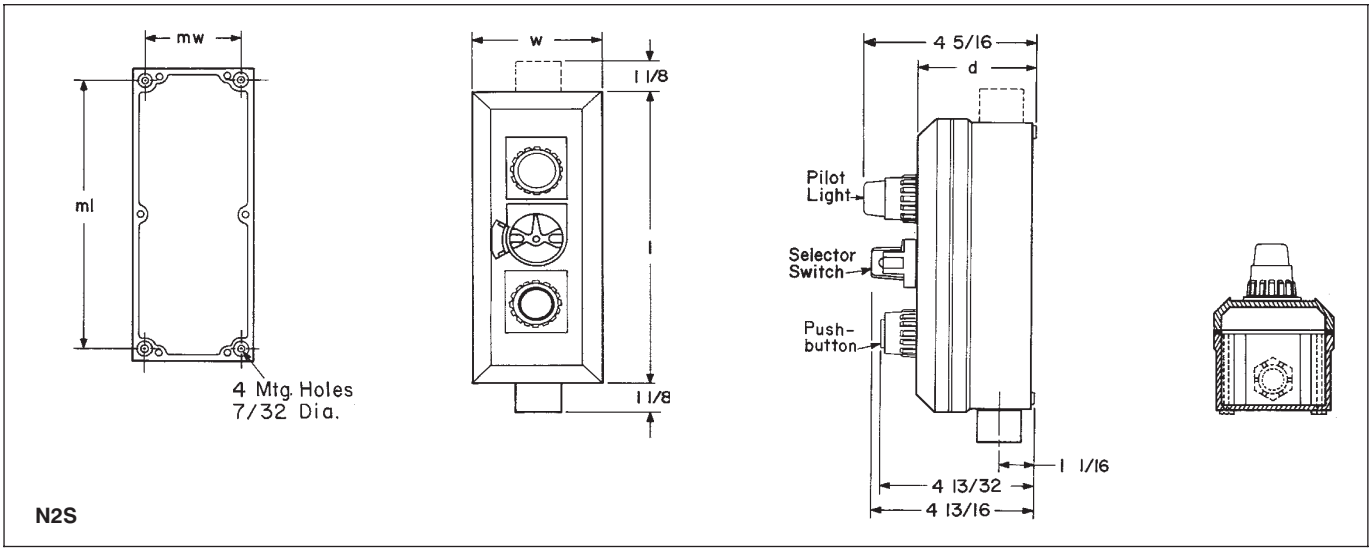
* Not to be used for construction purposes unless approved.

	Nominal Inside Dimensions			Plate Dimensions			Door Opening Dimensions		Mounting Dimensions		Alternate Mounting Dimensions	
Cat. #	**nw**	**nl**	**nd**	**pw**	**pl**	**pd**	**dw**	**dl**	**mw**	**ml**	**mwa**	**mla**
FIGURE NO. 1 (Approx. wall thickness – ¼″)												
NJB101807 NCE101807	10	18	7½	8½	14½	7 1/16	– 5 11/16	– 16 7/8	7 7/8	19 3/8	11 3/8	15 7/8
NJB102407 NCE102407	10	24	7½	8½	20	7 1/16	– 5 11/16	– 22 7/8	7 7/8	25 3/8	11 3/8	21 7/8
NJB142608 NCE142608	14	26	8½	12¾	22½	8 1/16	– 9 11/16	– 23 11/16	11 7/8	27¼	15 3/8	23¾
NJB242608 NCE242608	24	26	8½	20	22½	8 1/16	– 19 11/16	– 23 11/16	21¾	27¼	25¼	25¾
FIGURE NO. 2 (Approx. wall thickness – 3/16″)												
NJB040703 NCS01 & 2	3¼	6¾	2¾	2¾	4½	2⅜			2 15/16	6⅜		
NCD01 NJB040704 NCD02	3¼	6¾	3¾	2¾	4½	3⅜			2 15/16	6⅜		
NJB040903 NCS03	3¼	9	2¾	2¾	6¾	2⅜			2 15/16	8⅝		
NJB041103 NCS04	3¼	11	2¾	2¾	8¾	2⅜			2 15/16	10⅞		
NCD03 NJB041104 NCD04	3¼	11	3¾	2¾	8¾	3⅜			2 15/16	10⅞		
NJB050905	5	9	5 3/16	3¾	6¾	4 11/16			4⅜	8⅜		
NJB071006	7	10	6½	5¾	7½	6 1/16			6⅜	9⅜		
NJB071406	7	14	6½	5¾	9	6 1/16			6⅜	13⅜		

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N2S Control Stations, NMC Combination Line Starters, NCB Circuit Breakers, NST Disconnect Switches and Enclosures

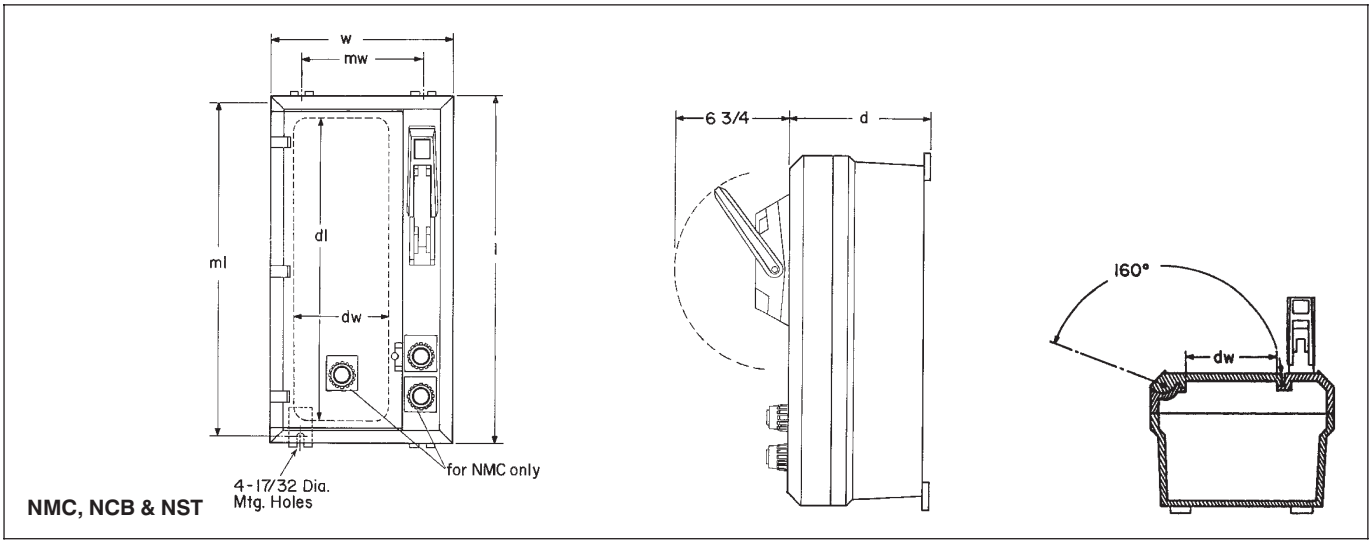
Dimensions*



N2S

For ½″ and ¾″ hub sizes (for 1″ hub and/or MSR option, consult page 612).

N2S(C) Body Style	Outside Dimensions			Mounting Dimensions	
	l	w	d	ml	mw
1 device	7 1/4	3 13/16	4 3/8	6 3/8	2 15/16
2 devices	7 1/4	3 13/16	4 3/8	6 3/8	2 15/16
3 devices	9 1/2	3 13/16	4 3/8	8 5/8	2 15/16
4 devices	11 3/4	3 13/16	4 3/8	10 7/8	2 15/16



NMC, NCB & NST

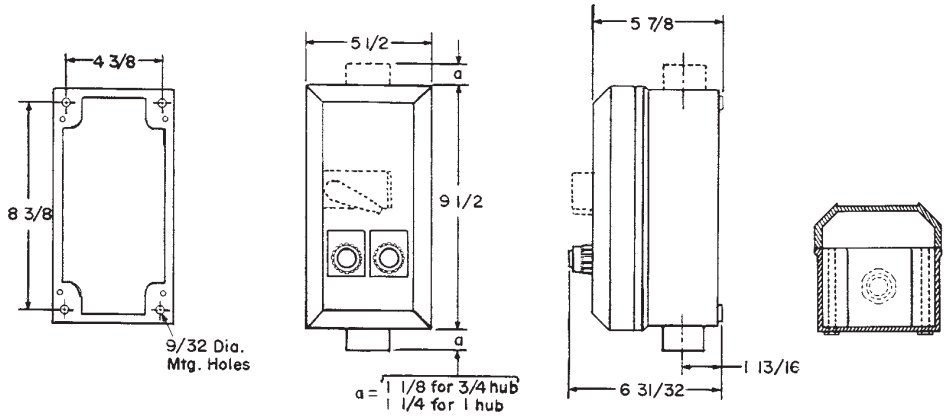
Cat. #	Outside Dimensions			Mounting Dimensions		Door Opening Dimensions	
	l	w	d	mw	ml	dl	dw
NCB1018 NST1018	19 13/32	11 13/32	8 23/32	7 7/8	19 3/8	16 7/8	5 11/16
NMC1024 NCB1024	25 13/32	11 13/32	8 23/32	7 7/8	25 3/8	22 7/8	5 11/16
NMC1426 NCB1426 NST1426	27 13/32	15 13/32	9 23/32	11 7/8	27 1/4	23 11/16	9 11/16
NMC2426	27 13/32	25 13/32	9 23/32	21 3/4	27 1/4	23 11/16	19 11/16

* Dimensions are approximate, not to be used for construction purposes.

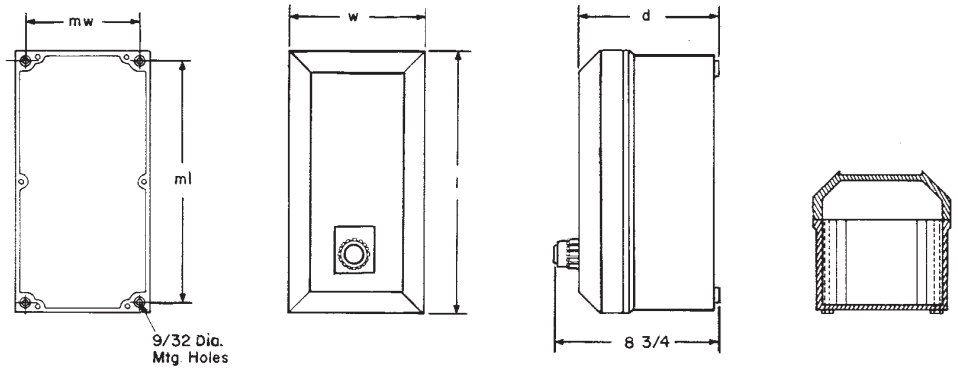
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NMN Manual Line Starters, NMG Magnetic Line Starters and Enclosures

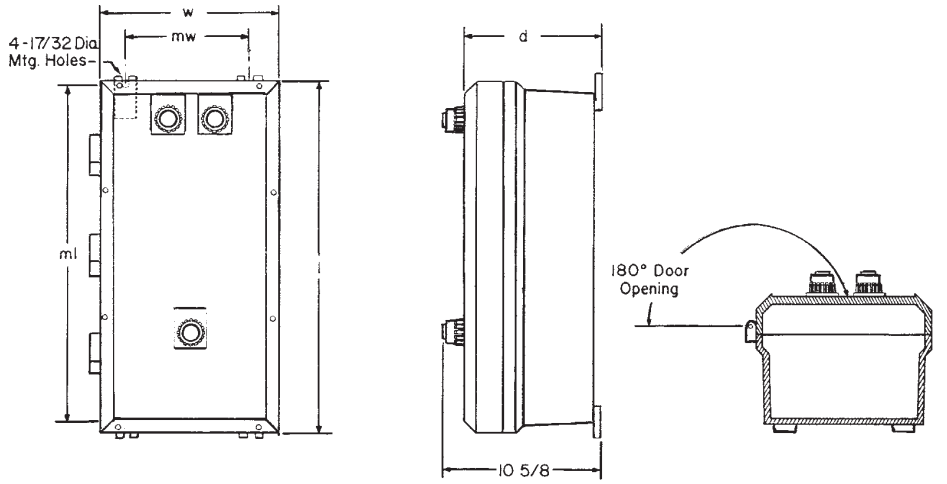
Dimensions*



NMN



NMG0710 & 0714



NMG1018 & 1024

Enclosure	Outside Dimensions			Mounting Dimensions	
Cat. #	l	w	d	ml	mw
NMG0710	10½	7½	7	9⅜	6⅜
NMG0714	14½	7½	7	13⅜	6⅜
NMG1018	19 13/32	11 13/32	8 23/32	19⅜	7⅞
NMG1024	25 13/32	11 13/32	8 23/32	25⅜	7⅞

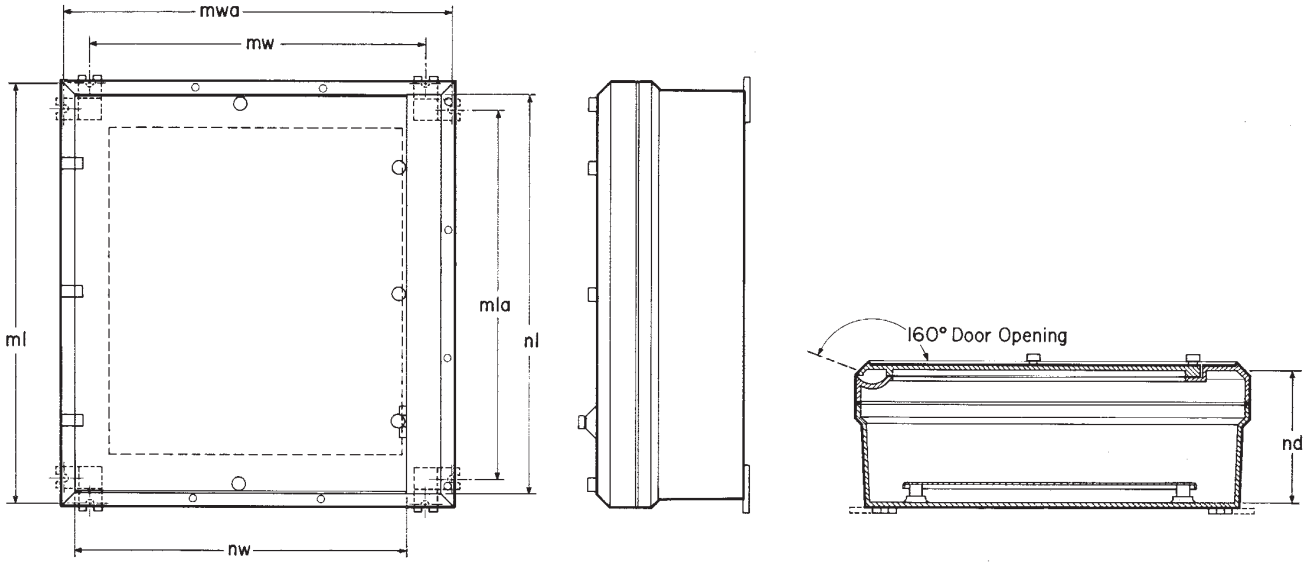
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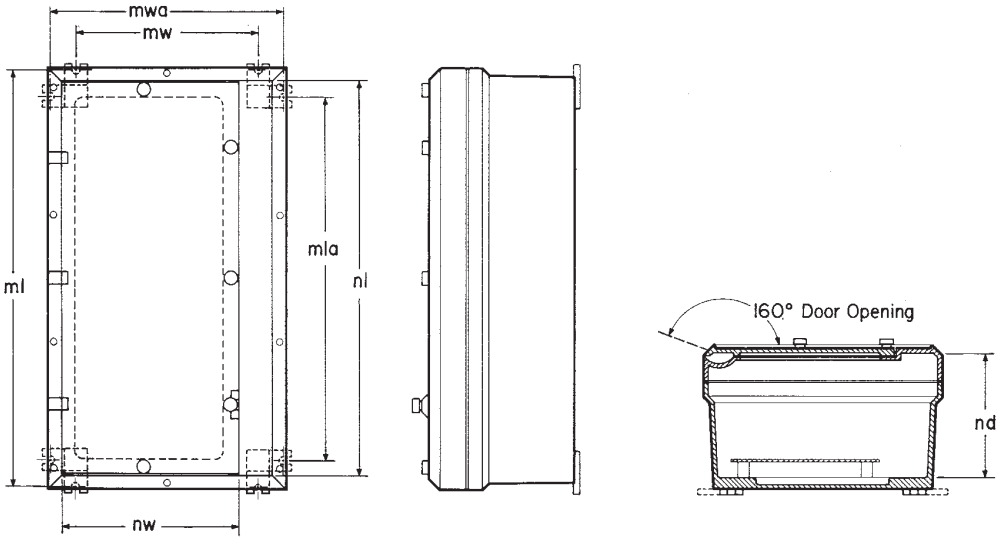
NLP and N2PB Circuit Breaker Panelboards

Dimensions*

N2PB



NLP



	Nominal Inside Dimensions			Door Opening Dimensions		Mounting Dimensions		Alternate Mounting Dimensions	
Cat. #	**nw**	**nl**	**nd**	**dw**	**dl**	**mw**	**ml**	**mwa**	**mla**
N2PB1426 NLP1426	14	26	8½	9 11/16	23 11/16	11 7/8	27¼	15 3/8	23¾
NLP1426M NLPQ1426	14	26	8½	9 11/16	23 11/16	11 7/8	27¼	15 3/8	23¾
N2PB2426	24	26	8½	19 11/16	23 11/16	21¾	27¼	25¼	23¾

* Not to be used for construction purposes unless approved.

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Hubs

Krydon® material hubs for conduit entrances, in sizes ½″ through 3″ are available for factory or field installation in all enclosures made of *Krydon* material. For factory installation, send drawing showing sizes and locations of hubs. Furnished with locknuts and gaskets to assure weathertightness.

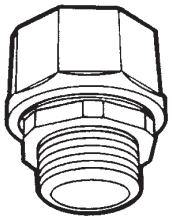
Standard Materials:

- Up to 1½″ – *Krydon* material with steel interiors
- 2″, 2½″ and 3″ – *Krydon* material with *Feraloy*® iron alloy interiors

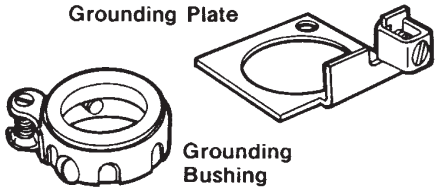
Standard Finishes:

- *Krydon* material – natural
- Steel – electrogalvanized and bleached chromate
- *Feraloy* iron alloy – electrogalvanized

Conduit Size	Hole Size	Hub Cat. #
½	⅞	NHUB1
¾	1⅛	NHUB2
1	1⅜	NHUB3
1¼	1¾	NHUB4
1½	2	NHUB5
2	2½	NHUB6
2½	3	NHUB7
3	3⅝	NHUB8



Grounding Plates and Grounding Bushings



Grounding Plates (1/2″ through 1″) and insulated bushings (1/2″ through 3″) permit use of the conduit as the grounding circuit. Both types have set screws and ground-wire terminals.

Standard Materials:

- Grounding plates – steel
- Grounding bushings – steel with thermoplastic insulating throat

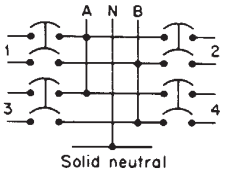
Standard Finishes:

- Steel – electrogalvanized

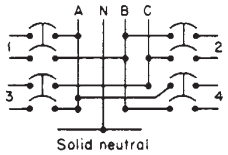
Conduit Size	Grounding Plate Cat. #	Grounding Bushing Cat. #
½	GP1	GLS1
¾	GP2	GLS2
1	GP3	GLS3
1¼		GLS4
1½		GLS5
2		GLS6
2½		GLS7
3		GLS8

Wiring Diagrams for Circuit Breaker Panelboards

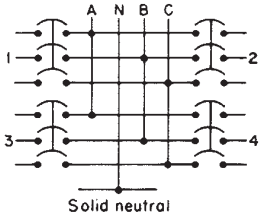
System 3
Mains—3-Wire
Branches—3-Wire
Breakers—2-Pole
Solid Neutral



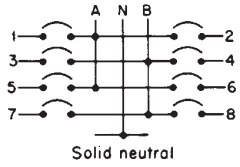
System 8
Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



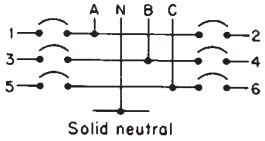
System 11
Mains—4-Wire, 3-Phase
Branches—4-Wire, 3-Phase
Breakers—3-Pole
Solid Neutral



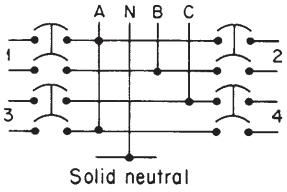
System 24
Mains—3-Wire
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



System 25
Mains—4-Wire, 3-Phase
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



System 28
Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



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CID 101 Vapor Phase Corrosion Inhibitor Device

Application:

CID 101 vapor phase corrosion inhibitor devices are utilized:

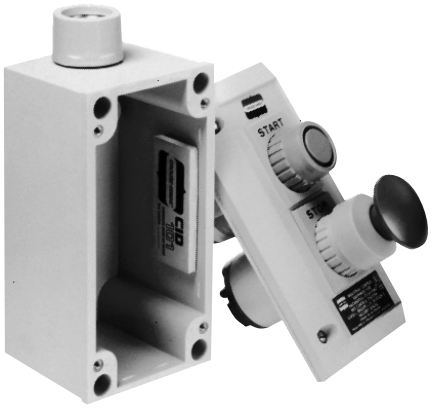
- during use, storage, and shipment of products to provide long-term protection for:
  - interiors of conduit outlet bodies and boxes, junction boxes, panelboards, and enclosures for motor control and circuit breakers, control stations, instrumentation, and switches
  - interiors of level sensors, speed responsive switches, and various monitoring/alarm systems
  - interiors of pipes, conduits, and wireways electrical and electronic controls and components
- within enclosures, indoors, or outdoors at petroleum refineries, chemical and petrochemical plants, food processing plants, and various other process industry facilities where airborne corrosion presents problems
- In onshore and offshore marine environments to protect against salt spray and excessive humidity condensation

Features:

Provide widespread protection for ferrous and nonferrous metals including steel, copper, aluminum, brass, solder, silver, etc.

- Particularly well-suited for protection of electrical and electronic equipment because the vapors emitted do not change the characteristics of metals they are protecting – not chemically, electrically, or metallurgically. Contact resistance, conductivity, or other properties of sensitive electrical/electronic equipment is unaffected
- Extend life of product and minimize downtime from product failures caused by corrosive attack. Early corrosion symptoms can be avoided before visible signs appear (i.e., electrical shorts, intermittent operation, apparent poor connections, evidences of increased friction, visible dulling of metallic finishes, higher noise levels of moving parts, increased heat generation, etc.)
- Under normal usage, provide continuous protection of one cubic foot of enclosed space against corrosion for up to two years. Actual operating life expectancy may vary depending on the corrosive atmosphere, temperature, or air movement. For severe exposures at high temperatures use double the normal amount of CID 101.
- Quickly and easily installed without need for tools, or requiring special surface preparation, oiling, spraying, or dipping. The device is simply removed from its plastic bag and affixed into position through use of a pressure-sensitive adhesive. A convenient to use label is provided as a reminder to note the date of installation and when its replacement should be scheduled.
- Safe to use. Vapors released are regarded as non-toxic under use conditions; and the polyurethane foam material is flame-retardant





Packaging/Storage:

- CID 101 Corrosion Inhibitor Devices are individually packaged in sealed plastic bags to ensure their maximum corrosion protection value at time of installation
- Recommended storage is in the sealed plastic bags as supplied. Ideal ambient storage temperatures should not exceed 30°C (86°F). Shelf life under normal conditions is 1 year. Continuous service temperatures in excess of 150°F (65°C) should be avoided.
- CID 101 Corrosion Inhibitor Devices are shipped in standard cartons of 50 units† each. Carton shipping weight is .7 lbs

Certifications and Compliances:

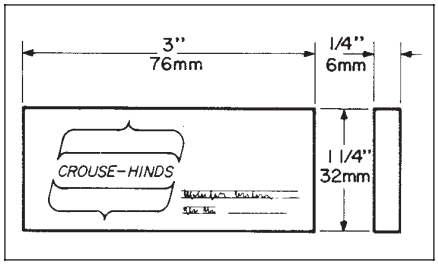
- Food and Drug Administration conformance. CFR Title 21 178.3300

Ordering Information:

Cat. #
CID101†

† Order quantity of one (1) equals one standard carton of 50 units.

Dimensions



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Notes Page

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Industrial Lighting

Section L



L Industrial Lighting

Table of Contents

Section L of the Cooper Crouse-Hinds Catalog contains information on industrial lighting.

Product details on individual luminaires are given in eleven separate sections, as noted below. In addition, a complete section (8L) is devoted to luminaire hangers and accessories.

Considerations for Selection

Preceding the eleven product sections is a Selector Guide. Included in this section is information on:

- a selection of the appropriate light source for a given application
- a Quick Selector Guide of the luminaires that are designed and approved to meet the various environmental requirements of the National Electric Code
- determining the proper size (i.e., wattage) and number of units to achieve the desired light levels in a given application
- methods to follow in making a luminaire layout. Cat. Nos. are shown, in many cases, for complete assemblies including mounting, reflector, globe, and guard, as well as individual components. In these cases, ordering can be done by component or by complete assembly. Photometric and other technical data is included in each section for the luminaires it contains.

Information relating to product families in the Lighting Section is shown as follows:

Section 1L
Incandescent Lighting—Enclosed and Gasketed
(for use in non-hazardous areas; some luminaires have specific hazardous [classified] locations suitability.)

Indoor and outdoor vaportight luminaires and accessories for use in industrial applications where dirt, moisture, and corrosion problems exist.

NDA Corro•Gard® Series
V160 V Series
Vaporgard™ Series

Section 2L
Incandescent Lighting
(for use in hazardous [classified] locations)

Indoor and outdoor luminaires and accessories

EV Series
EVI Series

Section 3L
High Intensity Discharge (H.I.D.) Lighting—Enclosed and Gasketed
(for use in hazardous [classified] locations, non-hazardous locations, and marine locations)

Indoor and outdoor vaportight luminaires for use in applications where dirt, moisture, and corrosion problems exist. Included are units with integral ballasts.

DMV *Champ*® Series
LMV *Champ*® Series
VMV *Champ*® Series
N2MV *Champ*® Series

Section 4L
High Intensity Discharge (H.I.D.) Lighting
(for use in hazardous [classified] locations)

Indoor and outdoor luminaires and accessories. Included are luminaires with integral ballasts.

Hazard•Gard® Series
Lo•Pro Hazard•Gard® Series

Section 5L
Luminaires with Induction Lighting System
(for use in hazardous [classified] locations, non-hazardous locations, and marine locations)

DMVIG, VMVIG

Section 6L
Fluorescent Lighting
(for use in hazardous [classified] locations and non-hazardous locations)

Indoor and outdoor fluorescent luminaires and accessories for application in all classes of hazardous and non-hazardous locations.

For hazardous locations	For non-hazardous locations
CPMVF	NFL
EVF, EVFDR	VF *Vaporgard* Series
FVN, FVS	
EVFT, DMVF	
N2MVF, EVLPF	
VF, ELLK, NLLK	
eLLB20	

Section 7L
Floodlights
(for use in hazardous [classified] locations and non-hazardous locations)

CPMV Champ-Pak™ Wall Pack
EVMA-S812 *HazardGard*® Series
FMV *Champ*® Series
F2MV, FMV1000
FZD
RCDE
SSFMV Voyager nR™

Section 8L
Luminaire Hangers and Accessories
(for use in hazardous [classified] locations and non-hazardous locations)

A variety of luminaire hangers for use with the luminaires listed. Information on mounting accessories required and typical luminaire weights also included.

For hazardous locations	For non-hazardous locations
EAHC, EFHC	AL
EC	AHG
EFH	ARB
GUA, GUF	FHM
UNR	UNE, UNH, UNHC
CPS	UNJ
	UNJC

Section 9L
Portable Lighting

A variety of portable luminaires for hazardous and non-hazardous applications.

VS
EVH
RCDER
EVP

Section 10L
Emergency Lighting
(for use in hazardous [classified] locations) ♦

Emergency lighting for use in power outage situations. Also, exit signs and strobe warning lights.

N2LPS Light-Pak™ Series	CPMVFB
EXL – exit sign	DMVFB
ELPS Light-Pak™ Series	N2MVFB
	EVLPFB

Section 11L
Beacons and Strobes

Indoor and outdoor luminaires for use in applications where visual signaling is a requirement.

For hazardous locations
EX Beacons and Strobes
VF Beacons
VDAS Strobes

Section 12L
Specialty Lighting

Luminaires for use in applications where conventional lighting is not acceptable due to size and/or location, such as tank, instrument, and gauge applications.

For hazardous locations	For non-hazardous locations
EV – tank lights	V Observation
EVTL	
ELG – gauge light	

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Quick Reference Chart

	LIGHT SOURCE			Emergency & Warning	WallPacks & Floodlights	Luminaire Hangers
Application Environment	**Incandescent**	**H.I.D.** ● Pulse Start Metal Halide ● Metal Halide ● High Pressure Sodium ● Mercury Vapor	**Fluorescent** ● Linear ● Long Twin Tube ● Compact	● Exit Signs ● Emergency Lighting ● ''Steady On'' Beacons ● Strobes	● Pulse Start Metal Halide ● Metal Halide ● High Pressure Sodium ● Mercury Vapor ● Incandescent	
General Industrial	**Section 1L** Vaporgard™, V Series, NDA **Section 12L** V160 Tank light	**Section 3L** LMV, DMV, VMV, N2MV Champ® **Section 5L** Champ Induction	**Section 6L** VF Series, NFL, FVN, FVS DMVF, N2MVF	**Section 10L** N2LPS Light-Pak™, DMVFB, N2MVFB **Section 11L** VF ''SO'' Beacon VDAS Strobe	**Section 7L** F2MV, FMV, FMV1000	**Section 8L** AL, UNJ, FHM, ARB, UNE, UNH, CHS
Wet Locations	**Section 1L** Vaporgard™ , V series, NDA	**Section 3L** LMV, DMV, VMV, N2MV Champ® **Section 5L** Champ Induction	**Section 6L** VF Series, NFL, FVN, FVS, DMVF, N2MVF	**Section 10L** DMVFB, N2MVFB, N2LPS Light-Pak™, **Section 11L** VF ''SO'' Beacon VDAS Strobe	**Section 7L** F2MV, FMV, FMV1000	**Section 8L** AHG, ARB_21 series
Marine Locations or 4X	**Section 1L** NDA	**Section 3L** LMV, DMV, VMV, N2MV Champ® **Section 4L** EVLP Lo-Pro EVM Hazard-Gard	**Section 6L** NFL, FVS, DMVF, N2MVF, CPMVF EVFDR, EVFT Illuminator™	**Section 10L** DMVFB, N2MVFB, **Section 11L** VDAS Strobe	**Section 7L** CPMV, F2MV, FMV, FMV1000	
Corrosive	**Section 1L** Vaporgard™, NDA	**Section 3L** LMV, DMV, VMV, N2MV Champ® **Section 5L** Champ Induction	**Section 6L** NFL, N2MVF, FVS, VF Series, DMVF, CPMVF	**Section 10L** DMVF-EXD exit, N2MV-EXD exit, N2LPS Light-Pak™, N2MVFB, DMVFB **Section 11L** VF ''SO'' Beacon VDAS Strobe	**Section 7L** CPMV, F2MV, FMV, FMV1000	**Section 8L** EFHC-S752 ECHF-S758 ECF-S516
Class I, Div. 1 or Zone 1	**Section 2L** EV **Section 12L** EVTL, EVA160, EVO, ELG	**Section 4L** EVLP Lo-Pro EVM Hazard-Gard	**Section 6L** EVF, EVFDR, EVFT Illuminator®, EVLPF, eLLK	**Section 10L** EXL exit, EVLPF-EXD exit, ELPS Light-Pak™ EVLPFB **Section 11L** EV ''SO'' Beacon EVAS Strobe	**Section 7L** FZD, EVM-S812, RCDE	**Section 8L** EAHC, EFHC, ECHF, GUA, GUFX, EFHX, CPS, UNR
Class I, Div. 2 and Zone 2	**Section 1L** Vaporgard™, NDA	**Section 3L** LMV, DMV, VMV, N2MV Champ® **Section 5L** Champ Induction	**Section 6L** VF Series, NFL, nLLK, eLLK, FVN, FVS, CPMVF, DMVF, N2MVF	**Section 10L** DMVF-EXD exit, N2LPS Light-Pak™, DMVFB, N2MVFB **Section 11L** VF ''SO'' Beacon VDAS Strobe	**Section 7L** CPMV, F2MV, FMV, FMV1000 FZD	**Section 8L** AL, AHG, UNJ, UNJC, ARB, UNE, UNH, COUP
Restricted Breathing **● Class I, Div 2 and Zone 2** **● Certified IEC Zone 2**		**Section 3L** LMV, DMV, VMV, N2MV Champ® **Section 5L** Champ Induction	**Section 6L** CPMVF, DMVF, N2MVF	**Section 10L** DMVFB, N2MVFB	**Section 7L** CPMV, F2MV, FMV	**Section 8L** AL, AHG, UNH, UNJC, ARB, UNE, UNH, COUP
Class II Class III Simultaneous Presence	**Section 2L** EV **Section 12L** EVTL, EVO	**Section 3L** LMV, DMV, VMV, N2NV Champ® **Section 4L** EVLP Lo-Pro EVM Hazard-Gard **Section 5L** Champ Induction	**Section 6L** FVN, nLLK, eLLK, FVS, DMVF, N2MVF EVF, EVFDR, EVFT, EVLP	**Section 10L** EXL, N2LPS Light-Pak™, DMVFB, N2MVFB **Section 11L** VF ''SO'' Beacon VDAS Strobe EVAS Strobe	**Section 7L** CPMV	**Section 8L** ECHF, GUA, GUF, GUJ. EAHC, EFHC, AHG (Class II, Div 2)
Paint Spray		**Section 4L** EVP	**Section 6L** EVF, EVFT			
Portables	**Section 9L** VS, EVH, RCDER	**Section 9L** EVP	**Section 9L** EVH			

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New ideas in industrial lighting, translated into modern equipment design, backed technically by a nationwide sales force, available worldwide through knowledgeable electrical distributors – these are some of the reasons you'll be light-years ahead when you look to Cooper Crouse-Hinds for industrial lighting products.

This Lighting Selector Guide will help you solve many of your lighting problems. For additional assistance on complex projects, call your Cooper Crouse-Hinds representative or distributor. They can provide detailed lighting layouts and recommendations using the **most advanced computer and application engineering facilities and techniques.**

Lighting Selector Guide

Below is a simple five-step procedure to help you select the right equipment for a specific job. Typical examples – with illustrations, easy-to-read charts, and layouts – are included to ensure correct results.

The five steps are:

1.)	**Determine Area Lighting Needs and Operational Factors Page 665**	When known, proceed to Step 2
2.)	**Select Type of Lamp Page 666**	When known, proceed to Step 3
3.)	**Select Type of Luminaire Page 668**	When known, proceed to Step 4
4.)	**Calculate Number of Luminaires Required Page 683**	When several light sources or systems seem suitable, determine most economical one
5.)	**Determine Placement of Luminaires and Make Layout Page 688**	

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1

Determine Area Lighting Needs and Operational Factors

The selection of the proper luminaire/lamp combination and the determination of the number of luminaires required is a function of the desired quantity and quality of light required, together with consideration of any special factors arising from the nature of the work operation.
Several aspects of this selection process are discussed below. The conditions will vary from job to job. It is important to consider these conditions if the lighting system is to yield optimum results.

A) Determine Illumination Quantity Required
The Illuminating Engineering Society in the current IES Lighting Handbook gives a comprehensive listing of footcandle levels recommended for all types of Industrial Lighting. A condensed version of this listing is given in Table I and is presented according to the types of visual tasks encountered.

B) Determine Illumination Quality Required
Quality of illumination pertains to the distribution of brightness in the visual environment. Care must be taken to avoid discomforting glare within the normal visual field.
Luminaires normally selected for lower mounting should be designed to limit brightness below the 45° zone.

C) National Electric Code Compliance
The National Electric Code delineates some areas as hazardous, depending on materials or atmosphere within an area. The choice of luminaire and lamp is therefore somewhat restricted if the area is classified as hazardous.
In hazardous areas, luminaire design and operating temperature of both luminaire and lamp must meet strict limitations. These limitations are detailed under Step 3 of this selection guide.

If the area is non-hazardous in nature, the selection of the proper luminaire and lamp is less restrictive and should be based on general operational and environmental conditions.

D) Maintenance Considerations
In order to insure optimum performance of the lighting system at a reasonable cost, some of the following related factors must be introduced into the selection process:

- Atmospheric Conditions: Luminaires for use in extremely wet locations should be enclosed and gasketed.
Luminaires for use in extremely dirty locations should provide a minimum of light depreciation under the anticipated maintenance schedule (i.e., reflector with open top and bottom should be used where maintenance is infrequent). Luminaires for use in extremely corrosive atmospheres should have protection for the optical system and have finishes to withstand the particular corrosive agent (i.e., epoxy power finish; enclosed Alzak reflector; Krydon™ fiberglass reinforced polyester reflector).
- Accessibility: Since it may be necessary to locate luminaires in inaccessible areas, the luminaire and lamp selected should minimize need for maintenance and maximize ease of maintenance when required (i.e., high bay open reflector with mercury lamp).
- Area Usage: The selection of the proper lamp/luminaire combination will depend greatly on the required burning hours per year. The anticipated usage should be a major factor in lamp selection.

Table 1 / Recommended Levels of Illuminance

Seeing Task	Typical Type of Work	Illuminance Category	Footcandles†
Difficult	Difficult assembly and inspection, color coding, paper manufacturing (Inspection and Rewinder) finishing operations.	F	100 to 200
Moderate	Moderately difficult assembly and inspection, checking and sorting, service garage repair areas, medium bench work, instrument panel (vertical illumination).	E	50 to 100
Casual	Simple assembly, rough bench work, grinding, simple inspection, wrapping, packing and labeling, control house general lighting.	D	20 to 50
Easy	Rough active storage, washrooms, dry lumber warehouse, compressor houses.	C	10 to 20
Limited	Inactive storage, stairway	B	5 to 10

NOTE: For other industrial footcandle levels such as petrochemical, refer to the Illuminating Engineering Society's Lighting Handbook (Application Volume) for more information.

† Values recommended are average maintained footcandles at 30″ above floor (work plane).

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2

Select Type of Lamp

After identification of the factors discussed in Step 1, the following guide can be used in selecting the proper lamp:

A) Illumination Level

High (30FC or more): high intensity discharge (H.I.D.) lamps are generally the most economic choice.

- Exception: where luminaires must be placed within an operator's normal visual span, a low brightness light source such as fluorescent should be used.

Low (less than 30FC): all light sources can be considered. Selection of best lamp is usually based on other factors.

- Exception: at medium to high mounting, high intensity discharge is generally best.

B) National Electrical Code®

Hazardous locations – all light sources can be considered.

- Exception: Article 500 of the National Electrical Code classifies the various categories of hazardous locations and provides general rules for the application of luminaires in these areas. (See Step 3 of Selection Guide.)
- Exception: where process must be shut down for relamping, high intensity discharge is best due to long lamp life. Non-hazardous locations – all light sources.

C) Accessibility

High intensity discharge lamps should be used where luminaires are relatively inaccessible because of long life and the need for infrequent relamping.

D) Area Usage (Burning Hours)

At more than 2,000 burning hours per year, high intensity discharge and fluorescent lamps generally yield the lowest system cost. At less than 2,000 hours per year, incandescent may be the best system depending on the size of the area, mounting height and illumination level required.

E) Other Considerations

- Energy cost: where energy cost is high, high intensity discharge lamps generally prove most economical. H.I.D. lamps produce more lumens per watt of electricity than other lamp types.
- Safety: due to warmup and restart characteristics of high intensity discharge lamps, auxiliary or emergency lighting should be used in critical areas.

L Industrial Lighting

Continued

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2 (continued)

Select Type of Lamp

The following table of lamp characteristics provides guidelines for choosing the best lamp. If the decision is not obvious, contact your Cooper Crouse-Hinds representative for a computer analysis of the option desired.

Table II/Lamp Characteristics

	Lamp	Advantages	Disadvantages
1.	**Induction**	Exceptionally long life – 100,000 hours. Instant illumination upon start-up or warm restart. Crisp, white light >80 color rending index. Low operating cost.	Initial cost is higher than HID type luminaires.
2.	**High Pressure Sodium**	Good beam control. Long lamp life (24,000 hrs). Highest lamp output (lumens per watt). Low operating cost. Shortest restart time of H.I.D. lamps (instant with optional instant restrike).	High initial cost. Requires warmup period.
3.	**Metal Halide Pulse Start**	Improved lamp life (15,000- 30,000 hrs). Increased lumen output over standard metal halide (25 to 50%). Better lumen maintenance (80%). Superior cold starting -40°C. Improved color stability. Color shift reduced by two-thirds. Improved lamp-to-lamp color consistency. Warm up time 2 minutes. Restrike time 3-4 minutes.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
4.	**Metal Halide**	Moderately long lamp life (7500 + hrs). High light output (lumens per watt). Makes colors look close to natural. Low operating cost.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
5.	**Mercury**	Long lamp life (24,000 hrs). High light output per watt. Low operating cost.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
6.	**Fluorescent**	Long lamp life (7500-24,000 hrs). High light output per watt. Low operating cost. Low brightness. Cool operation.	High initial cost. Poor light control. Output may vary with ambient temperature.
7.	**Incandescent**	Low initial cost. Good color rendition. Good light control. Instant restart.	Low light output (lumens per watt), short lamp life (500-2000 hrs). High operating cost.

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3

Select Type of Luminaire

Choice of Reflector

The following list gives broad guidelines for selection of the proper reflectors.

Mounting Height Above Floor	Reflector
Up to 19′	Dome
20′ or more	High bay

Where low footcandle levels will be provided, reflectors may be used at higher mounting heights than shown; where high footcandle levels will be provided, reflectors may be used at lower mounting heights than shown in the table.

Quick Selector (Environment—Product)

Opposite the industrial environments listed below are the luminaires designed and approved to meet the requirements unique to each environment. Where different types of light sources might be used, a choice is given.

Environment		Type	Description	Cat. Sect.	Pg. #
Corrosive	Non Metallic Enclosed & Gasketed	NDA	General—Incandescent	1L	691
		N2MV	General—H.I.D.	3L	721
		N2MVF	General—Fluorescent	6L	809
		N2MVFB	Emergency—Fluorescent	10L	923
		NFW	General—Fluorescent	6L	809
		N2LPS	Emergency—Halogen	10L	923
Explosive Vapors (Class I, Div. 1)	Explosion-proof	EV, EVI	General—Incandescent	2L	709
		EVLP, EVM Hazard•Gard®	General—H.I.D.	4L	779
		EVF, EVFDR	General—Fluorescent	6L	809
		EVFT	General—Fluorescent	6L	809
		EVLPF	General—Fluorescent	6L	809
		RCDE/RCDER	Flood—Incandescent	7L & 9L	865 & 913
		ELPS	Emergency—Halogen	10L	923
		EVLPFB	Emergency—Fluorescent	10L	923
		EV	Strobe—Incandescent	11L	939
Combustible Dusts (Class II, Div. 1)	Dust-ignition-proof	EV	General—Incandescent	2L	709
		DMV *Champ*®	General—H.I.D.	3L	721
		N2MV *Champ*®	General—H.I.D.	3L	721
		DMVIG, VMVIG	General—Induction	5L	801
		DMVF, N2MVF	General—Fluorescent	6L	809
		EVM Hazard•Gard®	General—H.I.D.	4L	779
		FVN	General—Fluorescent	6L	809
		FVS	General—Fluorescent	6L	809
		DMVFB, N2MVFB	Emergency—Fluorescent	10L	923
Moisture, Non-Combustible Dusts, or Potential for Hazardous Vapors Class I, Div. 2	Enclosed & Gasketed	*Vaporgard*™	General—Incandescent	1L	691
		CPMV *Champ*®	General—H.I.D/Fluorescent	3L & 6L	721 & 809
		NDA	General—Incandescent	1L	691
		LMV *Champ*®	General—H.I.D.	3L	721
		DMV *Champ*®	General—H.I.D.	3L	721
		VMV *Champ*®	General—H.I.D.	3L	721
		N2MV *Champ*®	General—H.I.D.	3L	721
		FVN	General—Fluorescent	6L	809
		DMVF, N2MVF	General—Fluorescent	6L	809
		VF	General—Fluorescent	6L	809
		FVS	General—Fluorescent	6L	809
		FMV *Champ*®	Flood—H.I.D.	7L	865
		SSFMV Voyager	Flood—H.I.D.	7L	865
		N2LPS	Emergency—Halogen	10L	923
		DMVFB, N2MVFB	Emergency—Fluorescent	10L	923
Non-Hazardous	Enclosed & Gasketed	NFL	General—Fluorescent	6L	809

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Lamps Used With Cooper Crouse-Hinds Luminaires

LAMP WATTS	ANSI Ballast	MANUFACTURER			
		GE	Osram/ Sylvania	Phillips	Venture
High Pressure Sodium					
35	S76	LU35/MED	LU35/MED	C35S76/M	
50	S68	LU50/MED	LU50/MED	C50S68/M	
70	S62	LU70/MED	LU70/MED	C70S62/M	
100	S54	LU100/MED	LU100/MED	C100S54/M	
150	S55	LU150/MED	LU150/MED	C150S55/M	
Metal Halide					
70	M98	MXR70/U/MED	MP70/U/MED	MHC70/U/M/3K	MH70W/U
100	M90	MXR100/U/MED	MP100/U/MED	MHC100/U/M/3K	MH100W/U
175	M57	MVR175/U/MED	M175/U/MED	MH175/U/M	
Pulse Start Metal Halide					
150	M102	MXR150/U/MED	MP150/U/MED		MH150W/U/PS
175	M137	MXR175/VBU/MED/PA			MS175W/BU/MED/PS

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Lamps Used With Cooper Crouse-Hinds Luminaires

LAMP WATTS	ANSI Ballast	MANUFACTURER				MANUFACTURER			
		Lumens/Life (hrs)				Bulb			
		GE	O/S	Ph	Venture	GE	O/S	PH	Venture
High Pressure Sodium									
35	S76	2250/16K	2250/16K	2250/24K		B17	E17	ED17	
50	S68	4000/24K	4000/24K	4000/24K		B17	E17	ED17	
70	S62	6400/24K	6300/24K	6300/24K		B17	E17	ED17	
100	S54	9500/24K	9500/24K	9500/24K		B17	E17	ED17	
150	S55	16000/24K	15800/24K	16000/24K		B17	E17	ED17	
Metal Halide									
70	M98	5500/12K	5200/15K	6200/10K	5600/15K	BD17	E17	ED17	ED17
100	M90	9000/15K	8500/15K	9300/12.5K	9000/15K	BD17	E17	ED17	ED17
175	M57	13600/10K	14400/10K	13500/10K		BD17	ED17	ED17	
Pulse Start Metal Halide									
150	M102	12500/15K	13300/15K		14000/15K	BD17	E17		ED17
175	M137	17700/15K			17500/15K	BD17	E17		ED17

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LAMP WATTS	ANSI Ballast	MANUFACTURER			
		GE	Osram/ Sylvania	Phillips	Venture
High Pressure Sodium					
50	S68	LU50	LU50	C50S68	
70	S62	LU70	LU70	C70S62	
100	S54	LU100	LU100	C100S54	
150	S55	LU150/55	LU150/55	C150S55	
150 (100V)	S56	LU150/100	LU150/100	C150S56	
200	S66	LU200	LU200	C200S66	
250	S50	LU250	LU250	C250S50	
310	S67	LU310	LU310	C310S67	
400	S51	LU400	LU400	C400S51	
1000	S52	LU1000	LU1000	C1000S52	
Metal Halide					
70	M98				MH70W/U/ED28
100	M90				MH100W/U/ED28
175	M57	MVR175/U	M175/U	MH175/U	
250	M58	MVR250/U	M250U	MH250/U	
400	M59	MVR400/U	M400/U	MH400/U	
400	M59	MVR400/U/ED28	M400/U/BT-28	MH400/U/ED28	
1000	M47	MVR1000/U	M1000/U	MH1000/U	
1500	M48	MVR1500/HBD	M1500/BD	MH1500/BD	
Pulse Start Metal Halide			(Base up+–15%)	(Base up+–15%)	
150	M102				MH150W/U/ED28/PS
175	M137	MXR175/VBU/PA		MS175/BU/PS	MS175W/BU/PS
200	M136				MH200W/U/PS
250	M138	MXR250/VBU/PA		MS250/BU/PS	MH250W/HBU/PS
	M138				MH250W/HBD/PS
320	M132	MXR320/VBU/PA	MS320/PS/BU-ONLY	MS320W/BU/PS	MH320W/U/ED28/PS
350	M131				MH350W/U/PS
	M131				MH350W/U/ED28/PS
400	M135	MXR400/VBU/PA	MS400/PS/BU-ONLY	MS400/BU/PS	MH400W/HBU/PS
	M135				MH400W/HBD/PS
	M135				MH400W/HBU/ED28/PS
	M135				MH400W/HBD/ED28/PS
1000	M141				
Mercury Vapor					
100	H38	HR100A38	H38HT-100	H38HT-100	
175	H39	HR175A39	H39KB-175	H39KB-175	
250	H37	HR250A37	H37KB-250	H37KB-250	
400	H33	HR400A33	H33CD-400	H33CD-400	
1000	H36	HR1000A36	H36GV-1000	H36GV-1000	
HID Double Contact Metal Halide for EVP Series					
70W		CMH70/TD/830/R7S	HQI-DE 70/WDX	CDM70/TD/830	

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Lamps Used With Cooper Crouse-Hinds Luminaires

H.I.D. Mogul Base
Series - DMV, VMV, CPMV,
FMV, F2MV, EVM, EVLP_0, FZD

LAMP WATTS	ANSI Ballast	MANUFACTURER				MANUFACTURER			
		Lumens/Life (hrs)				Bulb			
		GE	O/S	Ph	Venture	GE	O/S	PH	Venture
High Pressure Sodium									
50	S68	4000/24K	4000/24K	4000/24K		ED231/2	ET231/2	ED231/2	
70	S62	6400/24K	6300/24K	6300/24K		ED231/2	ET231/2	ED231/2	
100	S54	9500/24K	9500/24K	9500/24K		ED231/2	ET231/2	ED231/2	
150	S55	16000/24K	16000/24K	16000/24K		ED231/2	ET231/2	ED231/2	
150 (100V)	S56	15000/24K	15700/24K	16000/24K		ED28	BT28	ED28	
200	S66	22000/24K	22000/24K	22000/24K		ED18	ET18	ED18	
250	S50	28000/24K	29000/24K	285000/24K		ED18	ET18	ED18	
310	S67	37000/24K	37000/24K	37000/24K		ED18	ET18	ED18	
400	S51	51000/24K	50000/24K	50000/24K		ED18	ET18	ED18	
1000	S52	140000/24K	130000/24K	140000/24K		E25	E25	E25	
Metal Halide									
70	M98				5600/15K				ED28
100	M90				9000/15K				ED28
175	M57	13600/10K	14400/10K	13500/10K		ED28	BT28	ED28	
250	M58	20800/10K	22000/10K	20500/20K		ED28	BT28	ED28	
400	M59	36000/20K	36000/20K	36000/20K		ED37	BT37	ED37	
400	M59	36000/20K	36000/20K	36000/20K		ED28	BT28	ED28	
1000	M47	105000/12K	110000/15K	110000/12K		BT56	BT56	BT56	
1500	M48	155000/3K	155000/3K	165000/3K		BT56	BT56	BT56	
Pulse Start Metal Halide									
150	M102				14000/15K				ED28
175	M137	17200/15K		16000/15K	17500/15K	ED231/2		ED28	ED28
200	M136				21000/15K				ED28
250	M138	23000/15K		23800/15K	25000/15K	ED28		ED28	ED28
	M138				25000/15K				ED28
320	M132	31000/15K	32000/20K		33000/20K	ED28	BT28	ED28	ED28
350	M131				37000/20K				ED37
	M131				37000/20K				ED28
400	M135	44000/20K	41000/20K	44000/20K	44000/20K	ED37	BT37	ED37	ED37
	M135				44000/20K				ED37
	M135								ED28
	M135				44000/20K				ED28
1000	M141								
Mercury Vapor									
100	H38	3850/24K	4000/24K	4100/24K		ED231/2	ET231/2	ED231/2	
175	H39	7850/24K	7700/24K	7900/24K		ED28	BT28	ED28	
250	H37	11000/24K	11600/24K	12100/24K		ED28	BT28	ED28	
400	H33	21000/24K	20500/24K	21000/24K		ED37	BT37	ED37	
1000	H36	57000/24K	55200/24K	57500/24K		BT56	BT56	BT56	

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Lamps Used With Cooper Crouse-Hinds Luminaires

LAMP WATTS	BASE	LUMINAIRE SERIES	MANUFACTURER		
			GE	Osram/ Sylvania	Phillips
Compact					
5W-T4	G23	VF	F5BX/SPX41/840	CF5DS/841	PL-S5W/27
7W-T4	G23	VF	F7BX/SPX35/835	CF7DS/835	PL-S7W/35
9W-T4	G23	VF	F9BX/SPX35/835	CF9DS/835	PL-S9W/35
13W-T4	GX23-2	DMVF (Disc)	F13DBX23T4/SPX35	CF13DD/835	PL-C13W/35/USA
26W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPF	F26TBX/SPX35/A/4P	CF26DT/E/IN/835	PL-T26W/35/4P/ALTO
32W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPF	F32TBX/SPX35/A/4P	CF32DT/E/IN/835	PL-T32W/35/4P/ALTO
42W-T4	GX24q-4	DMVF, N2MVF, CPMVF, EVLPF	F42QBX/SPX35/A/4P	CF42DT/E/IN/835	PL-T42W/35/4P/ALTO
Long Twin Tube					
70	2G11	EVFT	F39/36/BX/SPX35	FT36DL/835	PL-L36W/35
40	2G11	NFL, FVS	F40/30BX/SPX35	FT40DL/835/RS	PL-L40W/35/RS
Linear					
32W-T8	Medium Bipin	NFL, FVN, EVF, EVFDR	F32T8/SP35	F032/735	F32T8/TL735/ALTO
40(34)W-T12	Medium Bipin	NFL, FVN, EVF, EVFDR	F40CW/RS/WM	F40CW/SS	F40CW/RS/EW/ALTO
60W (800ma)-T12 HIGH OUTPUT	Recessed Double Contact	FVN, EVF, EVFDR	F48T12/CW/HO	F48T12/CW/HO	F48T12/CW/HO
110W (1500ma)-T12 VERY HIGH OUTPUT	Recessed Double Contact	EVF, EVFDR	F48T12/CW/1500	F48T12/CW/VHO	F48T12/CW/VHO

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Lamps Used With Cooper Crouse-Hinds Luminaires

LAMP WATTS	BASE	LUMINAIRE SERIES	MANUFACTURER		
			Lumens/Life (Hrs)		
			GE	Osram/Sylvania	Phillips
Compact					
5W-T4	G23	VF	250/10K	230/10K	250/10K
7W-T4	G23	VF	400/10K	400/10K	400/10K
9W-T4	G23	VF	600/10K	580/10K	600/10K
13W-T4	GX23-2	DMVF (Disc)	810/10K	780/10K	860/10K
26W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPF	1800/10K	1800/10K	1800/10K
32W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPF	2200/10K	2400/10K	2400/10K
42W-T4	GX24q-4	DMVF, N2MVF, CPMVF, EVLPF	3200/10K	3200/10K	3200/10K
Long Twin Tube					
70	2G11	EVFT	2850/12K	2900/12K	2900/12K
40	2G11	NFL, FVS	3150/20K	3150/20K	3150/20K
Linear					
32W-T8	Medium Bipin	NFL, FVN, EVF, EVFDR	2850/20K	2800/20K	2850/20K
40(34)W-T12	Medium Bipin	NFL, FVN, EVF, EVFDR	2650/20K	2700/20K	2650/20K
60W (800ma)-T12 HIGH OUTPUT	Recessed Double Contact	FVN, EVF, EVFDR	4050/12K	4050/12K	4050/12K
110W (1500ma)-T12 VERY HIGH OUTPUT	Recessed Double Contact	EVF, EVFDR	6200/10K	6600/10K	7050/12K

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Lamps Used With Cooper Crouse-Hinds Luminaires

MAX WATTS AND BULB TYPE	LUMINAIRE SERIES		MANUFACTURER	
		GE	Osram/ Sylvania	Phillips
25W T10	EXLD	25T10	25T10	25T10
50W PAR20	EVTL	50PAR20/H/SP10 50PAR20/H/FL25	50PAR20/CAP/NSP 50PAR20/CAP/NFL	50PAR20/HAL/NSP9 50PAR20/HAL/NFL30
52W A19 58W A19	ELG ELG	60A52WMP/98	60A52/SS/XL 58A19/62	60A-52A/99/EW
60W T10	EXL	60T10	60T10	60T10
65W BR30	EVO2376	75R30/SP/65WM	65BR30/SP	65BR30/SP20
75W ER30	EVO2376	75ER30	75ER30	75ER30
100W A19	EV 40 Series	100A (IF)	100A (IF)	100A (IF)
100W A21	V160, EV160, EVH, EV 15 Series	100A21 (IF)	100A21 (IF)	100A21 (IF)
100W A23	VS	100A23 120V	100A23	100A23
100W D.C. Bay	Suffix QTZ	Q100CL/DC	100Q/CL/DC	100Q/CL/DC
150W A21	Vaporgard 150W EV 10 Series EV 20 Series	150A (IF)	150A (IF)	150A (IF)
150W A23	V Series		150A23 (IF)	150A23/CL
150W PAR38	RCDE6		150PAR/FL	150PAR38/2FL
200W A23	Vaporgard 200W EV 10 Series		200A23 (IF)	200A (IF)
200W A25	Vaporgard 200W EV 15 Series			200A25/35
200W PS25	EV 15 Series		200PS25/99XL	
200W PS30	EV 20 Series EV 30 Series	200 130V	200PS/CL 130V	200 130V
300W PS25	Vapourgard 300W NDA EV 15 Series	300M		300M
300W PS30	Vaporgard 300W EV 20 Series EV 15 Series	300M/99 (130v)	300M/CL	300M/PS30
300W R40	RCDE6	300R/FL	300R40/FL	300BR/FL
300W PS35	EV 30 Series	300	300/CL	300
500W PS40	EV 30 Series	500PS40		500PS40
500W PAR64	RCDE10	500PAR64/MFL	500PAR64/MFL	500PAR64/MFL

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Lamps Used With Cooper Crouse-Hinds Luminaires

MAX WATTS AND BULB TYPE	LUMINAIRE SERIES	MANUFACTURER			MANUFACTURER		
		Lumens			Life-Hours		
		GE	O/S	Ph	GE	O/S	PH
25W T10	EXLD	248	232	260	1000	1000	1000
50W PAR20	EVTL	570 570	530 530	550 550	2500 2500	2500 2500	2000 2000
52W A19	ELG	670	650	564	2500	2500	4250
58W A19	ELG	630	630	630	3000	3000	3000
60W T10	EXL	740	630	745	1000	1000	1000
65W BR30	EVO2376	775	640		2000	2000	2000
75W ER30	EVO2376	850	750		2000	2000	2000
100W A19	EV 40 Series	1710	1750	1650	750	750	750
100W A21	V160, EV160, EVH, EV 15 Series	1710	1690	1680	750	750	750
100W A23	VS	1600		1730	750	750	750
100W D.C. Bay	Suffix QTZ	1600	1600	1600	2000	2000	2000
150W A21	Vaporgard 150W EV 10 Series EV 20 Series	2850	2780	2850	750	750	750
150W A23	V Series		2810	2475		750	1275
150W PAR38	RCDE6	1660	1660	1660	2000	2000	2000
200W A23	Vaporgard 200W EV 10 Series		3930	3800		750	750
200W A25	Vaporgard 200W Ev 15 Series	2720	2720	2720	3500	3500	3500
200W PS25	EV 15 Series	3000	3000	3000	2500	2500	2500
200W PS30	EV 20 Series EV 30 Series	2725	2665	2825	1950	1875	2120
300W PS25	Vapourgard 300W NDA EV 15 Series	6200		6280	750	750	750
300W PS30	Vaporgard 300W EV 20 Series EV292 Series	3935	5870	6100	6800	7500	7500
300W R40	RCDE6	3700	3030	np	2000	2000	2000
300W PS35	EV 30 Series	5820	5700	5700	1000	1000	1000
500W PS40	EV 30 Series	9900	10100	10100	1000	1000	1000
500W PAR64	RCDE10	6500			2000	2000	2000

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Ballasts Used With Cooper Crouse-Hinds Luminaires

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
35	S76	120	R-HPF	0.8	0.4	46	CHRBS 035 /120
50	S68	120	R-HPF	1.0	0.6	62	CHRBS 050 /120
		120/277	HX-HPF	0.7/0.3	0.6/0.3	66	CHRBS 050 /DT
		220/240-50 Hz	HX-HPF	0.3/0.3	0.6/0.6	66	CHRBS 050 /220 50
70	S62	120	R-HPF	0.9	0.8	86	CHRBS 070 /120
		120/208/240/277	HX-HPF	0.8/0.5/0.4/0.4	0.8/0.5/0.4/0.4	91	CHRBS 070 /MT
		120/277/347	HX-HPF	.8/.4/.3	0.8/0.4/0.3	93	CHRBS 070 /TT
		220	HX-HPF	0.4	0.4	91	CHRBS 070 /220
		420	HX-HPF	0.2	0.2	93	CHRBS 070 /480
		220/240-50Hz	HX-HPF	.5/.4	.5/.4	94	CHRBS 070 /220 50
100	S54	120	R-HPF	1.5	1.1	115	CHRBS 100 /120
		120/208/240/277	HX-HPF	1.3/0.8/0.7/0.6	1.2/0.7/0.6/0.5	130	CHRBS 100 /MT
		120/277/347	HX-HPF	1.3/0.6/0.5	1.2/0.5/0.4	130	CHRBS 100 /TT
		220	HX-HPF	0.7	0.6	130	CHRBS 100 /220
		480	HX-HPF	0.4	0.3	130	CHRBS 100 /480
		220/240-50 Hz	HX-HPF	0.5/0.5	0.7/0.6	130	CHRBS 100 /220 50
150 (55v)	S55	120	R-HPF	2.3	1.5	170	CHRBS 150 /120
		120/208/240/277	HX-HPF	2.0/1.2/1.0/0.9	1.7/1.0/0.8/0.7	188	CHRBS 150 /MT
		120/277/347	HX-HPF	2.0/0.9/0.5	1.7/0.7/0.6	188	CHRBS 150 /TT
		220	HX-HPF	1.1	0.9	188	CHRBS 150 /220
		480	HX-HPF	0.5	0.4	188	CHRBS 150 /480
		220/240-50 Hz	HX-HPF	0.9/0.8	0.9/0.8	188	CHRBS 150 /220 50
150 (100v)	S56	120/208/240/277	CWA	1.2/0.7/0.6/.05	1.8/1.0/0.9/0.8	188	CHRBS 150 /MT CE
		480	CWA	0.3	0.4	188	CHRBS 150 /480 CE
		220/240-50 Hz	R-PFC	0.9/1.0	0.9/0.8	175	CHRBS 150 /220 50 CE
200	S66	12-/208/240/277	CWA	1.4/0.8/0.7/0.6	2.4/1.4/1.2/1.0	250	CHRBS 200 /MT
		480	CWA	0.4	0.6	250	CHRBS /200 /480
250	S50	120	CWA	1.7	2.5	295	CHRBS 250 /120
		120/208/240/277	CWA	1.7/1.0/0.8/0.7	2.5/1.5/1.3/1.1	295	CHRBS 250 /MT
		120/277/347	CWA	1.7/0.7/0.6	2.7/1.2/0.9	295	CHRBS 250 /TT
		220	CWA	0.9	1.5	295	CHRBS 250 /220
		480	CWA	0.4	0.7	310	CHRBS 250 /480
		230-50 Hz	CWA	1.0	1.4	300	CHRBS 250 /220 50
400	**S51**	120	CWA	3.3	3.8	457	CHRBS 400 /120
		120/208/240/277	CWA	3.3/1.8/1.5/1.4	3.8/2.2/1.9/1.7	464	CHRBS 400 /MT
		120/277/347	CWA	3.3/1.4/1.0	3.8/1.7/1.3	464	CHRBS 400 /TT
		220	CWA	1.6	2.1	457	CHRBS 400 /220
		480	CWA	0.8	1.0	464	CHRBS 400 /480
		230-50 Hz	CWA	1.9	2.0	465	CHRBS 400 /220 50
1000	S52	120/208/240/277	CWA	6.4/3.8/3.2/2.8	9.5/5.5/4.8/4.2	1100	CHRBS 1000 /MT
		120/277/347	CWA	6.4/2.8/2.2	9.5/4.2/3.3	1100	CHRBS 1000 /TT
		220	CWA	3.6	5.0	1100	CHRBS 1000 /220
		480	CWA	1.6	2.3	1100	CHRBS 1000 /480
		220/240-50 Hz	CWA	6.0/5.6	5.2/4.8	1100	CHRBS 1000 /220 50

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Ballasts Used With Cooper Crouse-Hinds Luminaires

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
150	M102	120/208/240/277	HX-HPF	1.8/1.3/0.9/0.8	1.6/1.0/0.8/0.7	185	CHRBM 150 /MT S828
		120/277/347	HX-HPF	1.8/0.8/0.7	1.6/0.7/0.6	185	CHRBM 150 /TT S828
175	M137	120/208/240/277	Super CWA	1.0/0.6/0.5/0.4	1.8/1.1/0.9/0.8	208	CHRBM 175 /MT S828
		120/277/347	Super CWA	0.8/0.4/0.3	1.9/0.8/0.7	208	CHRBM 175 /TT S828
200	M136	120/208/240/277	Super CWA	0.80.4/0.4/0.3	2.0/1.2/1.0/0.9	232	CHRBM 200 /MT S828
		120/277/347	Super CWA	0.7/0.3/0.3	2.1/0.9/0.7	232	CHRBM 200 /TT S828
		480	Super CWA	0.2	0.5	232	CHRBM 200 /480 S828
250	M138	120/208/240/277	Super CWA	2.3/1.3/1.2/1.0	2.5/1.5/1.3/1.1	288	CHRBM 250 /MT S828
		120/277/347	Super CWA	2.0/0.9/0.8	2.5/1.1/0.9	290	CHRBM 250 /TT S828
320	M132	120/208/240/277	Super CWA	1.8/1.1/0.9/0.8	3.3/1.9/1.7/1.4	368	CHRBM 250 /MT S828
		120/277347	Super CWA	2.2/1.0/0.7	3.3/1.4/1.1	368	CHRBM 250 /TT S828
		220	Super CWA	1.4	1.7	365	CHRBM 250 /220 S828
		480	Super CWA	0.5	0.8	368	CHRBM 250 /480 S828
		230/50	Super CWA	1.1	1.6	365	CHRBM 250 /220 50 S828
400	M135	120/208/240/277	Super CWA	2.9/1.7/1.5/1.3	3.8/2.2/1.9/1.7	452	CHRBM 400 /MT S828
		120/277/347	Super CWA	3.2/1.4/1.1	3.8/1.7/1.4	450	CHRBM 400 /TT S828
		480	Super CWA	0.8	1.0	452	CHRBM 400 /480 S828
		230/50	Super CWA	2.0	2.1	454	CHRBM 400 /220 50 S828
1000	M141	120/208/240/277	Super CWA	7.8/4.0/3.7/3.2	9.0/5.2/4.5/3.9	1080	CHRBM 1000 /MT S828
		347	Super CWA	2.3	3.2	1075	CHRBM 1000 /347 S828
		480	Super CWA	1.7	2.4	1075	CHRBM 1000 /480 S828
		220/240-50 Hz	CWA	4.5/4.1	5.0/4.5	1090	CHRBM 1000 /220 50 S828

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Ballasts Used With Cooper Crouse-Hinds Luminaires

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
70	M98	120/208/240/277	HX-HPF	0.6/0.3/0.3/0.3	0.8/0.5/0.4/0.4	88	CHRBM 070 /MT
		120/277/347	HX-HPE	0.6/0.2/0.2	0.8/0.4/0.3	88	CHRBM 070 /TT
		220	HX-HPF	0.4	0.5	94	CHRBM 070 /220
		220/240-50 Hz	HX-HPF	0.7/0.6	0.5/0.4	95	CHRBM 070 /220 50
100	M90	120/208/240/277	HX-HPF	1.2/0.8/0.7/0.6	1.2/0.7/0.6/0.5	129	CHRBM 100 /MT
		120/277/347	HX-HPF	1.2/0.5/0.4	1.2/0.5/0.4	129	CHRBM 100 /TT
		220	HX-HPF	0.9	0.6	129	CHRBM 100 /220
		480	HX-HPF	0.3	0.3	132	CHRBM 100 /480
		220/240-50 Hz	HX-HPF	0.7/0.7	0.7/0.6	129	CHRBM 100 /220 50
175	M57	120	CWA	1.3	1.8	210	CHRBM 175 /120
		120/208/240/277	CWA	1.3/0.8/0.7/0.6	1.8/1.1/0.9/0.8	210	CHRBM 175 /MT
		120/277/347	CWA	1.3/0.6/0.5	1.8/0.8/0.7	210	CHRBM 175 /TT
		220	CWA	0.6	1.0	210	CHRBM 175 /220
		480	CWA	0.4	0.5	210	CHRBM 175 /480
		230/50	CWA	0.8	1.1	210	CHRBM 175 /220 50
250	M58	120	CWA	1.0	2.6	294	CHRBM 250 /120
		120/208/240/277	CWA	1.0/0.6/0.5/0.5	2.6/1.5/1.3/1.1	294	CHRBM 250 /MT
		120/277/347	CWA	2.2/1.0/0.8	2.5/1.1/0.9	295	CHRBM 250 /TT
		220	CWA	1.4	1.5	295	CHRBM 250 /220
		480	CWA	0.6	0.6	295	CHRBM 250 /480
		230/50	CWA	1.0	1.3	290	CHRBM 250 /220 50
400	M59	120	CWA	3.0	4.0	456	CHRBM 400 /120
		120/208/240/277	CWA	3.5/2.0/1.8/1.5	4.0/2.2/2.0/1.8	458	CHRBM 400 /MT
		120/277/347	CWA	3.5/1.5/1.2	4.0/1.8/1.4	460	CHRBM 400 /TT
		220	CWA	1.9	2.2	458	CHRBM 400 /220
		480	CWA	0.9	1.0	462	CHRBM 400 /480
		230/50	CWA	1.4	2.1	462	CHRBM 400 /220 50
1000	M47	120/208/240/277	CWA	7.84.0/3.7/3.2	9.0/5.2/4.5/3.9	1080	CHRBM 1000 /MT
		120/277/347	CWA	7.8/3.2/2.5	9.0/3.9/3.2	1080	CHRBM 1000 /TT
		220	CWA	3.9	4.9	1080	CHRBM 1000 /220
		480	CWA	1.9	2.3	1080	CHRBM 1000 /480
		220/240-50 Hz	CWA	4.5/4.1	5.0/4.5	1090	CHRBM 1000 /220 50
1500	M48	120/208/240/277	CWA	13.4/7.7/6.7/5.7	13.5/7.8/6.8/5.9	1605	CHRBM 1500 /MT
		120/277347	CWA	13.4/5.7/4.6	13.5/5.9/4.8	1615	CHRBM 1500 /TT
		220	CWA	7.3	7.4	1605	CHRBM 1500 /220
		480	CWA	3.3	3.4	1625	CHRBM 1500 /480
		220/240-50 Hz	CWA	6.9/6.3	7.5/6.9	1605	CHRBM 1500 /220 50

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Ballasts Used With Cooper Crouse-Hinds Luminaires

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
		120	CWA	1.1	1.1	120	CHRBC 100 /120
		120/208/240/277	CWA	1.1/0.6/0.5/0.5	1.1/0.6/0.5/0.5	125	CHRBC 100 /MT
100	H38	120/277/347	CWA	1.1/0.5/0.4	1.1/0.5/0.3	125	CHRBC 100 /TT
		480	CWA	0.3	0.3	125	CHRBC 100 /480
		220/240-50 Hz	CWA	0.7/0.6	0.6/0.5	125	CHRBC 100 /220 50
		120	CWA	1.6	1.9	205	CHRBC 175 /120
		120/208/240/277	CWA	1.6/1.0/0.8/0.7	1.9/1.1/1.0/0.8	205	CHRBC 175 /MT
		120/277347	CWA	1.3/0.6/0.5	1.8/0.8/0.7	210	CHRBC 175 /TT
175	H39	220	CWA	0.6	1.0	210	CHRBC 175 /220
		480	CWA	0.4	0.4	200	CHRBC 175 /480
		230/50	CWA	0.8	1.1	210	CHRBC 175 /220 50
		120	CWA	2.5	2.5	280	CHRBC 250 /120
		120/208/240/277	CWA	2.5/1.5/1.3/1.1	2.5/1.5/1.3/1.1	285	CHRBC 250 /MT
		120/277/347	CWA	2.2/1.0/0.8	2.5/1.1/0.9	295	CHRBC 250 /TT
250	H37	220	CWA	1.4	1.5	295	CHRBC 250 /220
		480	CWA	0.6	0.6	285	CHRBC 250 /480
		230/50	CWA	1.0	1.3	290	CHRBC 250 /220 50
		120/208/240/277	CWA	3.2/2.0/1.7/1.7	3.9/2.2/2.0/1.7	454	CHRBC 400 /MT
		120/277/347	CWA	3.5/1.5/1.2	4.0/1.8/1.4	460	CHRBC 400 /TT
400	H33	220	CWA	1.9	2.1	454	CHRBC 400 /220
		480	CWA	1.0	1.0	454	CHRBC 400 /480
		230/50	CWA	1.4	2.1	462	CHRBC 400 /220 50
		120/208/240/277	CWA	8.0/4.6/4.0/3.5	9.8/5.6/4.9/4.3	1080	CHRBC 1000 /MT
		120/277/347	CWA	7.8/3.2/2.5	9.0/3.9/3.2	1080	CHRBC 1000 /TT
1000	H36	220	CWA	3.9	4.9	1080	CHRBC 1000 /220
		480	CWA	1.9	2.3	1080	CHRBC 1000 /480
		220/240-50 Hz	CWA	4.5/4.1	5.0/4.5	1090	CHRBC 1000 /220 50

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Ballasts Used With Cooper Crouse-Hinds Luminaires

Luminaire Series	Lamp Type & Watts	Lamp Base	Lamp No. Qty.	Ballast Voltage	Starting Operating Amp	Input Watts	Kit Cat. No.
	COMPACT						
VF	9W T4	G23	2	120	0.4	22	CHRBF2C18/120
DMVF, N2MVF, EVLPF	26W T4	GX24q-3	2	120	0.5	55	CHRBF4C64/UNV
	26W T4	GX24q-3	2	220/240	0.3	55	CHRBF4C64/UNV
	26W T4	GX24q-3	2	277	0.2	55	CHRBF4C64/UNV
	26W T4	GX24q-3	2	347	0.2	44	CHRBF4C64/347
	26W T4	GX24q-3	2	DC 12V	3.6	43	CHRBF4C64/12VDC
	26W T4	GX24q-3	2	DC 24V	1.8	43	CHRBF4C64/24VDC
DMVF, N2MVF, EVLPF	32W T4	GX24q-3	2	120	0.6	68	CHRBF4C64/UNV
	32W T4	GX24q-3	2	220/240	0.3	68	CHRBF4C64/UNV
	32W T4	GX24q-3	2	277	0.3	68	CHRBF4C64/UNV
	32W T4	GX24q-3	2	347	0.2	62	CHRBF4C64/347
	32W T4	GX24q-3	2	DC 12V	4.4	60	CHRBF4C64/12VDC
	32W T4	GX24q-3	2	DC 24V	2.2	60	CHRBF4C64/24VDC
CPMVF	42W T4	GX24q-4	2	120	0.8	93	CHRBF4C84/120
	42W T4	GX24q-4	2	277	0.3	68	CHRBF4C84/277
	42W T4	GX24q-4	2	347	0.3	80	CHRBF4C84/347
	LONG TWIN TUBE						
NFL	40W T5	2G11	1	120	0.4	42	CHRBFT40/120
	40W T5	2G11	1	277	0.2	42	CHRBFT40/277
	40W T5	2G11	1	347	0.1	44	CHRBFT80/347
	40W T5	2G11	1	220/240	0.2	41	CHRBFT80/UNV
FVS	40W T5	2G11	2	120	0.6	76	CHRBFT80/UNV
	40W T5	2G11	2	277	0.3	73	CHRBFT80/UNV
	40W T5	2G11	2	347	0.2	70	CHRBFT80/347
	40W T5	2G11	2	220/240	0.3	74	CHRBFT80/UNV
EVFT	36/39W	2G11	2	120	0.6	74	CHRBFT78/120
	36/39W	2G11	2	277	0.3	74	CHRBFT78/277
	36/39W	2G11	2	220/240	0.3	71	CHRBFT78/220

Note:
For 3 Lamp luminaires, order one 1 lamp ballast and one 2 lamp, lamp ballast. Add current and watts values
For 4 lamp luminaires, order two 2 lamp, lamp ballasts. Double currents and watts values

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Ballasts Used With Cooper Crouse-Hinds Luminaires

Luminaire Series	Lamp Type & Watts	Lamp Base	Lamp No. Qty.	Ballast Voltage	Starting Operating Amp	Input Watts	Kit Cat. No.
	LINEAR						
NFL, FVN, EVF & EVFDR	32W T8	Med Bipin	1	120	0.3	35	CHRBFL64/UNV
	32W T8	Med Bipin	1	277	0.2	35	CHRBFL64/UNV
	32W T8	Med Bipin	1	347	0.1	32	CHRBFL64/347
	32W T8	Med Bipin	1	220/240	0.3	38	CHRBFL64/UNV
	32W T8	Med Bipin	2	120	0.5	58	CHRBFL64/UNV
	32W T8	Med Bipin	2	277	0.2	58	CHRBFL64/UNV
	32W T8	Med Bipin	2	347	0.1	50	CHRBFL64/347
	32W T8	Med Bipin	2	220	0.4	58	CHRBFL64/UNV
NFL, FVN, EVF & EVFDR	40(34W)T12	Med Bipin	1	120	0.4	46	CHRBFL80/120
	40(34W)T12	Med Bipin	1	277	0.2	46	CHRBFL80/277
	40(34W)T12	Med Bipin	1	347	0.2	52	CHRBFL40/347
	40(34W)T12	Med Bipin	1	220 50	0.2	51	CHRBFL40/220 50
	40(34W)T12	Med Bipin	2	120	0.6	73	CHRBFL80/120
	40(34W)T12	Med Bipin	2	277	0.3	80	CHRBFL80/277
	40(34W)T12	Med Bipin	2	347	0.2	62	CHRBFL80/347
	40(34W)T12	Med Bipin	2	220/240	0.2	71	CHRBFL80/220
FVN, EVF & EVFDR	60W (800ma) T12 HO	Recessed Double Contact	1	120	0.9	79	CHFBFL120/120
	60W (800ma) T12 HO	Recessed Double Contact	1	277	0.5	82	CHFBFL120/277
	60W (800ma) T12 HO	Recessed Double Contact	1	220 50	0.7	140	CHFBFL120/220 50
	60W (800ma) T12 HO	Recessed Double Contact	2	120	1.2	133	CHFBFL120/120
	60W (800ma) T12 HO	Recessed Double Contact	2	277	0.5	131	CHFBFL120/277
	60W (800ma) T12 HO	Recessed Double Contact	2	220 50	1.0	224	CHFBFL120/220 50
EVF & EVFDR	110W (1500ma) T12 VHO	Recessed Double Contact	1	120	1.7	130	CHRBFL220/120
	110W (1500ma) T12 VHO	Recessed Double Contact	1	277	0.6	137	CHRBFL220/277
	110W (1500ma) T12 VHO	Recessed Double Contact	2	120	2.2	230	CHRBFL220/120
	110W (1500ma) T12 VHO	Recessed Double Contact	2	277	0.9	241	CHRBFL220/277

Note:
For 3 Lamp Luminaires, order one 1 lamp ballast and one 2 lamp, lamp ballast. Add current and watts values
For 4 lamp luminaires, order two 2 lamp, lamp ballasts. Double currents and watts values

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4

Calculate the Number of Luminaires Required

For uniform lighting of a specific area, the **lumen method** is used to calculate the number of luminaires required. This method takes into account not only the direct light from the luminaire, but also that which is reflected from the ceiling, walls and floor. As the calculations will show, the higher the reflectivity of the surfaces, the fewer number of luminaires required. Clean, light-colored surfaces also provide visual comfort.

The Coefficient of Utilization as used in these calculations makes allowances for light absorbed by walls and ceiling, and the light absorbed within the luminaire.

To obtain the Coefficient of Utilization, the reflection factors of the walls, floors, and ceiling must be estimated. These reflectances should be the minimum values expected just before cleaning or repainting of the surfaces. The reference below gives approximate factors for various surfaces.

Color	Reflectance Factor
White	80%
Light tints of blue-green, cream, blue, buff or gray	70%
Medium blue-green, yellow, medium buff, or gray	50%
Dark gray, medium blue	30%
Dark blue, brown, dark green, and many wood finishes, such as dark oak and mahogany	10%

When supplementary lighting (highlighting) or floodlighting is needed, use the **point-by-point** method to determine footcandles at a specific point or points on the work plane. This method can also be used with angle reflectors for lighting of irregular rooms or where ceiling use is restricted. Candlepower distribution curves for individual lighting units are shown on the appropriate catalog pages.

Basic Steps in the Lumen Method
(Zonal Cavity Method)

Step 4a Determine Cavity Ratios
Step 4b Determine Cavity Reflectances
Step 4c Determine Coefficient of Utilization
Step 4d Determine Light Loss Factor
Step 4e Calculate Lamp Lumens Required
Step 4f Calculate Number of Luminaires Required

4a
Determine Cavity Ratios

There are three Cavity Ratios that should be determined, as in Figure 1:

Ceiling Cavity Ratio
Room Cavity Ratio
Floor Cavity Ratio

Each of these ratios can be found through use of Table IV, page 684. Simply find the appropriate Cavity Depth, whether it is Ceiling Cavity Depth (h_{CC}), Room Cavity Depth (h_{RC}), or Floor Cavity Depth (h_{FC}), and match it with the room length and width to obtain the Cavity Ratio.

For example, to determine the Ceiling Cavity Ratio when the Ceiling Cavity Depth (distance from luminaire to ceiling) is 4′, the width of the room 20′ and the length 60′, cross-reference to Cavity Depth 4.0, width 20, length 60, and find Ceiling Cavity Ratio of 1.3.

If the Room Cavity Depth (distance from luminaire to work plane) is 12′, then the Room Cavity Ratio would be 4.0.

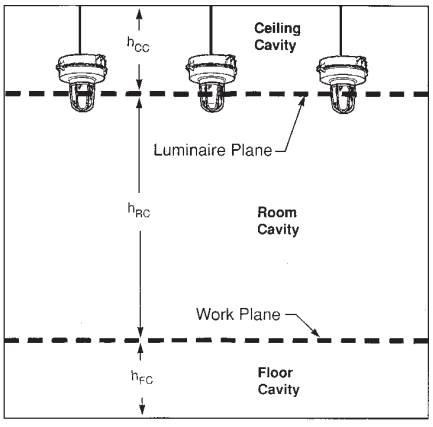


Figure 1/The three cavities used in the Lumen Method

4b
Determine Cavity Reflectances

Effective reflectances of the different room cavities are determined in Table V, page 685, by using the estimated ceiling, wall and floor reflectances together with the corresponding cavity ratios.

Using the example in Step 4a, we estimate the wall reflectance at 70% and the ceiling reflectance at 70%. Using the Ceiling Cavity Ratio of 1.3 (also from Step 4a) in Table V, we find the Effective Ceiling Cavity Reflectance is 61%.

4c
Determine Coefficient of Utilization

The Coefficient of Utilization is determined from the CU table found on the catalog page for the previously selected luminaire/lamp combination.

Using our example again, the three required factors for use with the CU table would be:

Room Cavity Ratio
(from Step 4a) 4.0
Wall Reflectance
(from Step 4b) 70%
Effective Ceiling Cavity Reflectance
(from Step 4b) 61%

In most instances some interpolations will be necessary to obtain the proper Coefficient of Utilization.

You will note that the table gives Coefficients of Utilization for a 20% Effective Floor Cavity Reflectance. Use of this factor for all applications will provide reasonable accuracy; however, if more accuracy is desired, refer to the current Illuminating Engineering Society Handbook for an additional detailed step.

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Table IV/Cavity Ratios

Room Dimensions		Ceiling or Room Cavity Depth																			
Width	Length	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8	9	10	11	12	14	16	20	25	30
8	8	1.2	1.9	2.5	3.1	3.7	4.4	5.0	6.2	7.5	8.8	10.0	11.2	12.5	—	—	—	—	—	—	—
	10	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.6	6.7	7.9	9.0	10.1	11.3	12.4	—	—	—	—	—	—
	14	1.0	1.5	2.0	2.5	3.0	3.4	3.9	4.9	5.9	6.9	7.8	8.8	9.7	10.7	11.7	—	—	—	—	—
	20	0.9	1.3	1.7	2.2	2.6	3.1	3.5	4.4	5.2	6.1	7.0	7.9	8.8	9.6	10.5	12.2	—	—	—	—
	30	0.8	1.2	1.6	2.0	2.4	2.8	3.2	4.0	4.7	5.5	6.3	7.1	7.9	8.7	9.5	11.0	—	—	—	—
	40	0.7	1.1	1.5	1.9	2.3	2.6	3.0	3.7	4.5	5.3	5.9	6.5	7.4	8.1	8.8	10.3	11.8	—	—	—
10	10	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	—	—	—	—	—
	14	0.9	1.3	1.7	2.1	2.6	3.0	3.4	4.3	5.1	6.0	6.9	7.8	8.6	9.5	10.4	12.0	—	—	—	—
	20	0.7	1.1	1.5	1.9	2.3	2.6	3.0	3.7	4.5	5.3	6.0	6.8	7.5	8.3	9.0	10.5	12.0	—	—	—
	30	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.3	4.0	4.7	5.3	6.0	6.6	7.3	8.0	9.4	10.6	—	—	—
	40	0.6	0.9	1.2	1.6	1.9	2.2	2.5	3.1	3.7	4.4	5.0	5.6	6.2	6.9	7.5	8.7	10.0	12.5	—	—
	60	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.9	3.5	4.1	4.7	5.3	5.9	6.5	7.1	8.2	9.4	11.7	—	—
12	12	0.8	1.2	1.7	2.1	2.5	2.9	3.3	4.2	5.0	5.8	6.7	7.5	8.4	9.2	10.0	11.7	—	—	—	—
	16	0.7	1.1	1.5	1.8	2.2	2.5	2.9	3.6	4.4	5.1	5.8	6.5	7.2	8.0	8.7	10.2	11.6	—	—	—
	24	0.6	0.9	1.2	1.6	1.9	2.2	2.5	3.1	3.7	4.4	5.0	5.6	6.2	6.9	7.5	8.7	10.0	12.5	—	—
	36	0.6	0.8	1.1	1.4	1.7	1.9	2.2	2.8	3.3	3.9	4.4	5.0	5.5	6.0	6.6	7.8	8.8	11.0	—	—
	50	0.5	0.8	1.0	1.3	1.5	1.8	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.2	7.2	8.2	10.2	—	—
	70	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.8	6.8	7.8	9.7	12.2	—
14	14	0.7	1.1	1.4	1.8	2.1	2.5	2.9	3.6	4.3	5.0	5.7	6.4	7.1	7.8	8.5	10.0	11.4	—	—	—
	20	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.9	5.5	6.1	6.7	7.3	8.6	9.8	12.3	—	—
	30	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.6	3.1	3.7	4.2	4.7	5.2	5.8	6.3	7.3	8.4	10.5	—	—
	42	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.4	2.9	3.3	3.8	4.3	4.7	5.2	5.7	6.7	7.6	9.5	11.9	—
	60	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.2	2.6	3.1	3.5	3.9	4.4	4.8	5.2	6.1	7.0	8.8	10.9	—
	90	0.4	0.6	0.8	1.0	1.2	1.4	1.6	2.0	2.5	2.9	3.3	3.7	4.1	4.5	5.0	5.8	6.6	8.3	10.3	12.4
17	17	0.6	0.9	1.2	1.5	1.8	2.1	2.3	2.9	3.5	4.1	4.7	5.3	5.9	6.5	7.0	8.2	9.4	11.7	—	—
	25	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	10.0	12.5	—
	35	0.4	0.7	0.9	1.1	1.3	1.5	1.7	2.2	2.6	3.1	3.5	3.9	4.4	4.8	5.2	6.1	7.0	8.7	10.9	—
	50	0.4	0.6	0.8	1.0	1.2	1.4	1.6	2.0	2.4	2.8	3.1	3.5	3.9	4.3	4.5	5.4	6.2	7.7	9.7	11.6
	80	0.4	0.5	0.7	0.9	1.1	1.2	1.4	1.8	2.1	2.5	2.9	3.3	3.6	4.0	4.3	5.1	5.8	7.2	9.0	10.9
	120	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.7	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.7	5.4	6.7	8.4	10.1
20	20	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	10.0	12.5	—
	30	0.4	0.6	0.8	1.0	1.2	1.5	1.7	2.1	2.5	2.9	3.3	3.7	4.1	4.5	4.9	5.8	6.6	8.2	10.3	12.4
	45	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.8	2.2	2.5	2.9	3.3	3.6	4.0	4.3	5.1	5.8	7.2	9.1	10.9
	60	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.7	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.7	5.4	6.7	8.4	10.1
	90	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	4.2	4.8	6.0	7.5	9.0
	150	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.4	4.0	4.6	5.7	7.2	8.6
24	24	0.4	0.6	0.8	1.0	1.2	1.5	1.7	2.1	2.5	2.9	3.3	3.7	4.1	4.5	5.0	5.8	6.7	8.2	10.3	12.4
	32	0.4	0.5	0.7	0.9	1.1	1.3	1.5	1.8	2.2	2.6	2.9	3.3	3.6	4.0	4.3	5.1	5.8	7.2	9.0	11.0
	50	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.5	1.8	2.2	2.5	2.8	3.1	3.4	3.7	4.4	5.0	6.2	7.8	9.4
	70	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.0	3.3	3.8	4.4	5.5	6.9	8.2
	100	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.9	3.1	3.7	4.2	5.2	6.5	7.9
	160	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.4	2.6	2.8	3.3	3.8	4.7	5.9	7.1
30	30	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.7	5.4	6.7	8.4	10.0
	45	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	1.9	2.2	2.5	2.7	3.0	3.3	3.8	4.4	5.5	6.9	8.2
	60	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.5	4.0	5.0	6.2	7.4
	90	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.1	1.3	1.6	1.8	2.0	2.2	2.5	2.7	3.1	3.6	4.5	5.6	6.7
	150	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.8	3.2	4.0	5.0	5.9
	200	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.7	1.9	2.0	2.2	2.6	3.0	3.7	4.7	5.6
36	36	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	1.9	2.2	2.5	2.8	3.0	3.3	3.9	4.4	5.5	6.9	8.3
	50	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.5	2.6	2.9	3.3	3.8	4.8	5.9	7.2
	75	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.3	2.5	2.9	3.3	4.1	5.1	6.1
	100	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	3.0	3.8	4.7	5.7
	150	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.4	2.8	3.5	4.3	5.2
	200	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.6	1.8	2.0	2.3	2.6	3.3	4.1	4.9
42	42	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.9	2.1	2.4	2.6	2.8	3.3	3.8	4.7	5.9	7.1
	60	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.8	3.2	4.0	5.0	6.0
	90	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.4	2.8	3.5	4.4	5.2
	140	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.5	1.7	1.9	2.2	2.5	3.1	3.9	4.6
	200	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.3	1.4	1.6	1.7	2.0	2.3	2.9	3.6	4.3
	300	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.1	1.3	1.4	1.5	1.7	1.9	2.2	2.8	3.5	4.2
50	50	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.8	3.2	4.0	5.0	6.0
	70	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	2.4	2.7	3.4	4.3	5.1
	100	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.6	1.8	2.1	2.4	3.0	3.7	4.5
	150	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.9	2.1	2.7	3.3	4.0
	300	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.4	1.6	1.9	2.3	2.9	3.5
60	60	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.3	2.7	3.3	4.2	5.0
	100	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.9	2.1	2.7	3.3	4.0
	150	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.6	1.9	2.3	2.9	3.5
	300	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.4	1.6	2.0	2.5	3.0
75	75	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.9	2.1	2.7	3.3	4.0
	120	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.3	1.5	1.7	2.2	2.7	3.3
	200	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.5	1.8	2.3	2.7
	300	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.3	1.7	2.1	2.5
100	100	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.4	1.6	2.0	2.5	3.0
	200	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.5	1.9	2.2
	300	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	1.1	1.3	1.7	2.0
150	150	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	1.1	1.3	1.7	2.0
	300	—	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.8	1.0	1.2	1.5
200	200	—	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.8	1.0	1.2	1.5
	300	—	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	1.0	1.2
300	300	—	—	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
500	500	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.6

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Table V/Effective Ceiling Reflectance

Ceiling or Floor Cavity Ratio	% Ceiling or Floor Reflectance	90				80				70			50			30				10		
	% Wall Reflectance	90	70	50	30	80	70	50	30	70	50	30	70	50	30	65	50	30	10	50	30	10
	0	90	90	90	90	80	80	80	80	70	70	70	50	50	50	30	30	30	30	10	10	10
	0.1	90	89	88	87	79	79	78	78	69	69	68	59	49	48	30	30	29	29	10	10	10
	0.2	89	88	86	85	79	78	77	76	68	67	66	49	48	47	30	29	29	28	10	10	9
	0.3	89	87	85	83	78	77	75	74	68	66	64	49	47	46	30	29	28	27	10	10	9
	0.4	88	86	83	81	78	76	74	72	67	65	63	48	46	45	30	29	27	26	11	10	9
	0.5	88	85	81	78	77	75	73	70	66	64	61	48	46	44	29	28	27	25	11	10	9
	0.6	88	84	80	76	77	75	71	68	65	62	59	47	45	43	29	28	26	25	11	10	9
	0.7	88	83	78	74	76	74	70	66	65	61	58	47	44	42	29	28	26	24	11	10	8
	0.8	87	82	77	73	75	73	69	65	64	60	56	47	43	41	29	27	25	23	11	10	8
	0.9	87	81	76	71	75	72	68	63	63	59	55	46	43	40	29	27	25	22	11	9	8
	1.0	86	80	74	69	74	71	66	61	63	58	53	46	42	39	29	27	24	22	11	9	8
	1.1	86	79	73	67	74	71	65	60	62	57	52	46	41	38	29	26	24	21	11	9	8
	1.2	86	78	72	65	73	70	64	58	61	56	50	45	41	37	29	26	23	20	12	9	7
	1.3	85	78	70	64	73	69	63	57	61	55	49	45	40	36	29	26	23	20	12	9	7
	1.4	85	77	69	62	72	68	62	55	60	54	48	45	40	35	28	26	22	19	12	9	7
	1.5	85	76	68	61	72	68	61	54	59	53	47	44	39	34	28	25	22	18	12	9	7
	1.6	85	75	66	59	71	67	60	53	59	52	45	44	39	33	28	25	21	18	12	9	7
	1.7	84	74	65	58	71	66	59	52	58	51	44	44	38	32	28	25	21	17	12	9	7
	1.8	84	73	64	56	70	65	58	50	57	50	43	43	37	32	28	25	21	17	12	9	6
	1.9	84	73	63	55	70	65	57	49	57	49	42	43	37	31	28	25	20	16	12	9	6
	2.0	83	72	62	53	69	64	56	48	56	48	41	43	37	30	28	24	20	16	12	9	6
	2.1	83	71	61	52	69	63	55	47	56	47	40	43	36	29	28	24	20	16	13	9	6
	2.2	83	70	60	51	68	63	54	45	55	46	39	42	36	29	28	24	19	15	13	9	6
	2.3	83	69	59	50	68	62	53	44	54	46	38	42	35	28	28	24	19	15	13	9	6
	2.4	82	68	58	48	67	61	52	43	54	45	37	42	35	27	28	24	19	14	13	9	6
	2.5	82	68	57	47	67	61	51	42	53	44	36	41	34	27	27	23	18	14	13	9	6
	2.6	82	67	56	46	66	60	50	41	53	43	35	41	34	26	27	23	18	13	13	9	5
	2.7	82	66	55	45	66	60	49	40	52	43	34	41	33	26	27	23	18	13	13	9	5
	2.8	81	66	54	44	66	59	48	39	52	42	33	41	33	25	27	23	18	13	13	9	5
	2.9	81	65	53	43	65	58	48	38	51	41	33	40	33	25	27	23	17	12	13	9	5
	3.0	81	64	52	42	65	58	47	38	51	40	32	40	32	24	27	22	17	12	13	8	5
	3.1	80	64	51	41	64	57	46	37	50	40	31	40	32	24	27	22	17	12	13	8	5
	3.2	80	63	50	40	64	57	45	36	50	39	30	40	31	23	27	22	16	11	13	8	5
	3.3	80	62	49	39	64	56	44	35	49	39	30	39	31	23	27	22	16	11	13	8	5
	3.4	80	62	48	38	63	56	44	34	49	38	29	39	31	22	27	22	16	11	13	8	5
	3.5	79	61	48	37	63	55	43	33	48	38	29	39	30	22	26	22	16	11	13	8	5
	3.6	79	60	47	36	62	54	42	33	48	37	28	39	30	21	26	21	15	10	13	8	5
	3.7	79	60	46	35	62	54	42	32	48	37	27	38	30	21	26	21	15	10	13	8	4
	3.8	79	59	45	35	62	53	41	31	47	36	27	38	29	21	26	21	15	10	13	8	4
	3.9	78	59	45	34	61	53	40	30	47	36	26	38	29	20	26	21	15	10	13	8	4
	4.0	78	58	44	33	61	52	40	30	46	35	26	38	29	20	26	21	15	9	13	8	4
	4.1	78	57	43	32	60	52	39	29	46	35	25	37	28	20	26	21	14	9	13	8	4
	4.2	78	57	43	32	60	51	39	29	46	34	25	37	28	19	26	20	14	9	13	8	4
	4.3	78	56	42	31	60	51	38	28	45	34	25	37	28	19	26	20	14	9	13	8	4
	4.4	77	56	41	30	59	51	38	28	45	34	24	37	27	19	26	20	14	8	13	8	4
	4.5	77	55	41	30	59	50	37	27	45	33	24	37	27	19	25	20	14	8	14	8	4
	4.6	77	55	40	29	59	50	37	26	44	33	24	36	27	18	25	20	14	8	14	8	4
	4.7	77	54	40	29	58	49	36	26	44	33	23	36	26	18	25	20	13	8	14	8	4
	4.8	76	54	39	28	58	49	36	25	44	32	23	36	26	18	25	19	13	8	14	8	4
	4.9	76	53	38	28	58	49	35	25	44	32	23	36	26	18	25	19	13	7	14	8	4
	5.0	76	53	38	27	57	48	35	25	43	32	22	36	26	17	25	19	13	7	14	8	4

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4d
Determine Light Loss Factor

The light loss factor takes into account two things: lamp light output dropoff (lamp lumen depreciation) and dirt accumulation on the luminaire, lamp and reflector. The table below lists suggested total light loss factors according to light source and operating conditions. (Other factors that may affect light loss, such as voltage to luminaire, luminaire ambient temperature (fluorescent) and ballast operating characteristics, should also be considered.)

Suggested Total Light Loss Factors
Operating Conditions

CLEAN	AVERAGE	DIRTY
Clean air, free of fumes and dust, luminaires scheduled to be cleaned frequently, and lamps replaced systematically.	Less favorable atmospheric conditions, luminaires cleaned at fairly frequent intervals, and lamps replaced only after burnout.	Quite dirty locations and work atmospheres, infrequent maintenance of lighting equipment.

Lamp and Luminaire	Clean	Average	Dirty
Incandescent	.74	.69	.64
Quartz	.82	.76	.70
Mercury	.70	.65	.60
Metal Halide	.64	.59	.55
High Pressure Sodium	.77	.71	.66
Fluorescent	.71	.66	.61

4e
Calculate Lamp Lumens Required

Formula: Total Lamp Lumens =

$$\frac{\text{Footcandles[†] X Area of Room (sq. ft.)}}{\text{Coefficient of Utilization[‡] X Light Loss Factor[♦]}}$$

4f
Calculate Number of Luminaires Required

Formula:

$$\text{Luminaires Required} = \frac{\text{Total Lamp Lumens}}{\text{Total Lamp Lumens per Luminaire}}$$

Typical Lamp Lumens from list below: ♦ ♦

Lamp	Watts	Lumens	Life (hours)
Induction	55	3500	100,000
	85	6000	100,000
	165	12000	100,000
Incandescent (inside frosted)	100	1750	750
	150	2880	750
	200 A-23;	4010	750
	PS-30, PS-25	3710	750
	300 PS-25;	6360	750
	PS-30;	6110	750
	PS-35;	5820	1000
	500	10850	1000
Mercury Vapor (deluxe white)	100	4200	24000
	175	8600	24000
	250	12100	24000
	400	22500	24000
	1000	63000	24000
Metal Halide (clear)	70	5600	10000
	100	7800	10000
	175	14000	10000
	250	20500	10000
	400	36000	20000
	1000	110000	12000
High Pressure Sodium (clear)	35	2250	16000
	50	4000	24000
	70	6400	24000
	100	9500	24000
	150	16000	24000
	200	22000	24000
	250	27500	24000
	400	50000	24000
	1000	140000	24000
Linear Fluorescent	32 (T8)	2900	20000
	40 (Slimline)	3000	9000
	40 (Rapid Start)	3150	20000
	60 (800 ma)	4300	12000
	110 (1500 ma)	6850	10000
	215 (1500 ma)	16000	12000
Compact Fluorescent	5	250	10000
	7	400	10000
	9	600	10000
	13	860	10000
	26	1800	10000
	32	2400	10000
Long Twin Tube Fluorescent	39	2850	12000
	40	3150	20000

In using the formula make sure you divide by the total lamp lumens per luminaire. For example, if an EVF24022, 4 lamp, 32 watt, T8 luminaire is being used, you would multiply the total lamp lumens by 4. (4 × 2900 or 11,600 lumens.)

[†] from Table 1, page 665 or IES Handbook
[‡] from catalog page on luminaire selected—and calculated from 4b
[♦] from above
♦ ♦ For lamp data check current lamp manufacturing catalog. **Variances exist between manufacturers.**

Continued

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4f (continued)

EXAMPLE: Lumen Method

Requirement:
Design a system for lighting a room classified Class I, Division 2, Group D
Assumptions:
a) Room dimensions – 40′ wide; 80′ long; 15′ high
b) Luminaires to be suspended 3′ from ceiling; work plane is 4′ above floor
c) Ceiling is off-white; walls are light gray; floor is concrete
d) Good maintenance conditions exist
e) Lighting system will be operated 16 hours daily; 5 days a week
f) Color rendition is not critical

Using the Coefficient of Utilization worksheet, follow procedure given below. Answers to our example are on the worksheet.

Step #1. Determine required illumination level in FOOTCANDLES (FC) – Table 1, page 665.
Step #2. Select type of lamp – pages 666 and 667. For the room size in example, considering long hours of operation and color rendition not being critical, high pressure sodium lighting is recommended.
Step #3. Select type of luminaire, page 668. VMV series *Champ*® luminaires are recommended. For our example VMVS3A150G pendant luminaire with RD70 dome reflector is selected.
Step #4. Calculation of number of luminaires necessary.
(A) Compute CAVITIES of ceiling, room and floor. H_{CC}; H_{RC} and H_{FC} (see sketch on worksheet).
(B) Obtain REFLECTANCE FACTORS (using values on page 685) RC; RW and RF (see sketch on worksheet).
(C) Compute CAVITY RATIOS for ceiling, room and floor using Formula or Table IV, page 684.

Formula

$$CCR = \frac{5 \times H_{CC} (L + W)}{L \times W}$$

$$RCR = \frac{5 \times H_{RC} (L + W)}{L \times W}$$

$$FCR = \frac{5 \times H_{FC} (L + W)}{L \times W}$$

(D) Determine Effective Ceiling Reflectance from Table V, page 685. See work sheet for values of RC, RW and CCR.
(E) Determine Coefficient of Utilization – from CU table. For a VMVS3A150G luminaire, applying an Effective Ceiling Cavity Reflectance of 70; a wall reflectance of 50 and a room Cavity Ratio of 1.5 (all figures applicable to our example), the CU (see CU Table, page 733) is at mid-point between .804 and .690, which is .747.
(F) Determine Light Loss Factor (LLF) – page 686.

(G) Compute Total Lamp Lumens required.
Formula

$$\frac{\text{(FC x Area) } 50 \times 80 \times 40}{\text{(CU x LLF) } .747 \times 0.77} = 278{,}169 \text{ Lumens}$$

Therefore, the number of VMVS3A150G luminaires required

$$= \frac{\text{Total Lamp Lumens } 278{,}169}{\text{Lamp Lumens per luminaire (page 686) } 16{,}000} = 17.4$$

= 17 VMVS3A150G luminaires with RD70 dome reflectors (use 18 luminaires, see page 685).

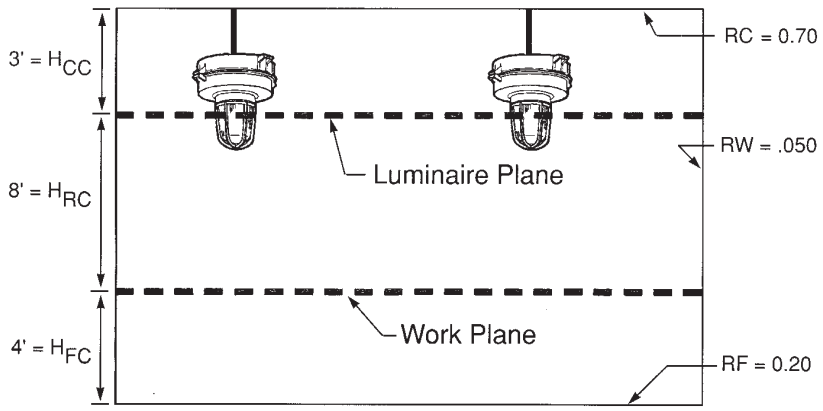
Coefficient of Utilization Worksheet

Job Requirement:
(See typical example at left)
Given Data:
(See typical assumptions at left)
Lamp Characteristics:
Type – High Pressure Sodium
Catalog # – VMVS3A150G with RD70 dome reflector
Lumens – 16,000
LLF – 0.77

No. of Footcandles Required: 50

Room: Length 80′ Width 40′ Height 15′

Cavities **Reflectance**



Cavity Ratios: CCR 0.56 RCR 1.5 FCR 0.75

Effective Ceiling Cavity Reflectance:	72 (use 70)
Wall Reflectance:	50
CU:	.747
Total Lumens Required:	278,170
No. of Luminaires:	18 luminaires (see page 686) Use 3 x 6 spacing

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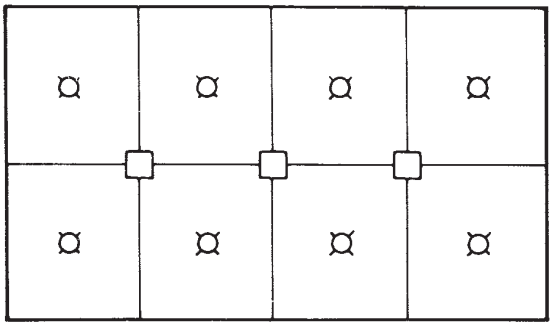
5 Determine Placement of Luminaires and Make Layout

Using the number of units as determined in Step 4 as a basic quantity to work with, determine the number of lights per row and number of rows required for the lighting system. Logic plays a part; for example: if a room is 4 times as long as it is wide, you should have 4 times as many luminaires in each row as there are number of rows. In any case, the distance between the lighting units should not be greater than the mounting height of the units above the floor. The distance between the wall and first luminaire should not be more than ½ the spacing between the units, and in situations where work is done immediately adjacent to the wall, the distance should be reduced to ⅓ or ¼ the distance between units.

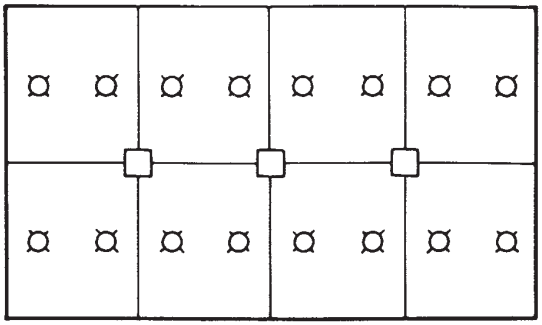
In rooms that are divided by columns or beams, it is desirable to locate the units symmetrically in the bays. The following layouts will serve as a guide in planning such installations.

Important: Remember to observe the permissible spacing to mounting height ratio or spacing criterion. If the number of luminaires is insufficient to fulfill this requirement, recalculate using lower wattage luminaires.

Figure 2 Typical Placement Incandescent/H.I.D., etc.

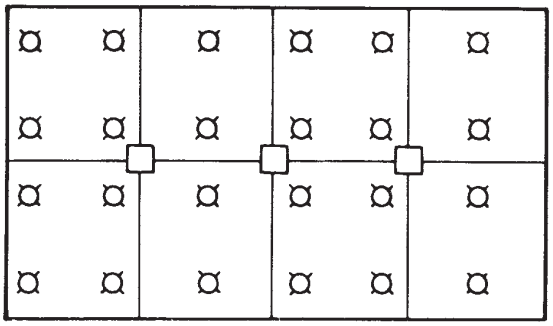


One unit per bay – satisfactory only where the bay size is no greater than the maximum allowable spacing – an unusual condition.

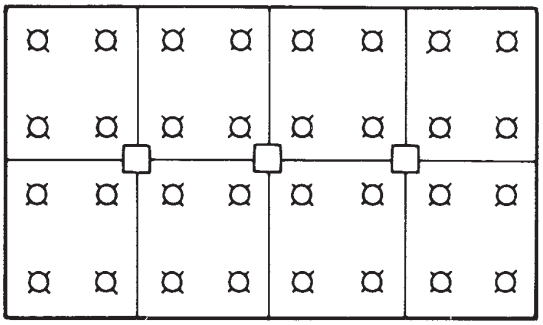


Two units per bay – usually applicable only in narrow bays, where the width is less than ⅔ the length.

Figure 2 (continued)

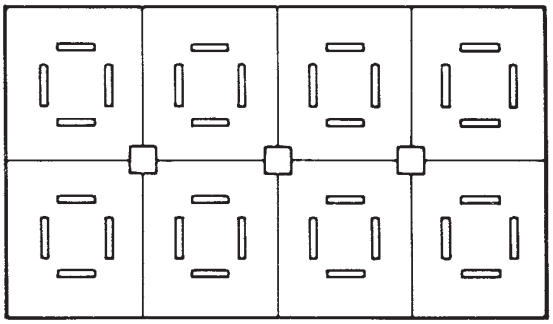


Four-Two system – equivalent to three units per bay or four per bay where spacing allows.

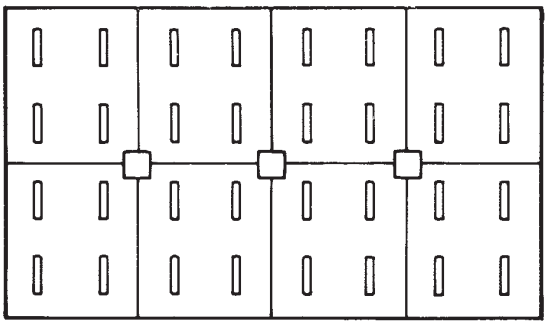


Four units per bay – if necessary could run in continuous rows across room, or turned and run lengthwise with room.

Fluorescent



Grid pattern – usual condition dependent on room size and type of work done there.



Four units per bay – this is the most common system for the square bay of usual dimensions.

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Point-by-Point Method

(for use in highlighting – see Step 4, page 683)

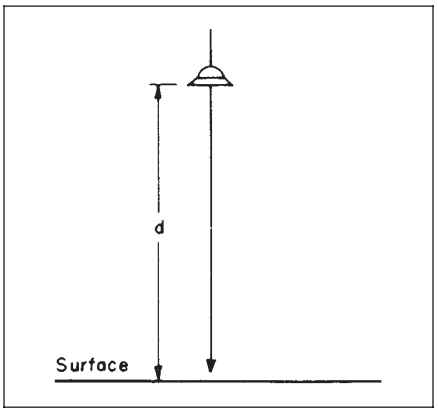
Use this method to determine the footcandle value at a point on a surface that is illuminated by direct light from a luminaire or luminaires.

When the light hits a point on the surface head on (such as directly under a luminaire), use formula ''A'', but when the light hits the surface at an angle (such as between luminaires) formula ''B'' must be used.

Figure 4/Methods of Measurement

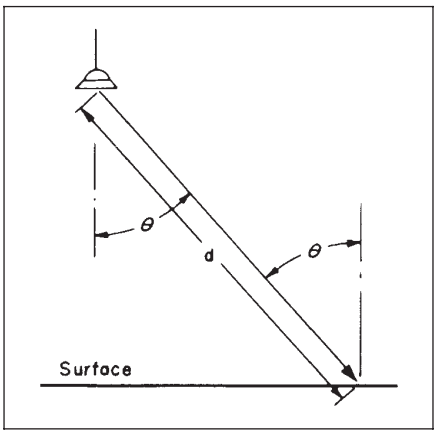
Formula ''A''

$$\text{Foot-candles} = \frac{\text{Candlepower}}{d^2\ (\text{Distance})} \times \text{Light Loss factor}$$



Formula ''B''

$$\text{Foot-candles} = \frac{\text{Candlepower x cosine of angle}\theta}{d^2\ (\text{Distance})} \times \text{Light Loss factor}$$



Candlepower (at the proper angle) is found from the Light Distribution Curve on the luminaire catalog page. Distance ''d'' and angle are found by measurement of a scaled sketch of the lighting situation or through trigonometric calculations.

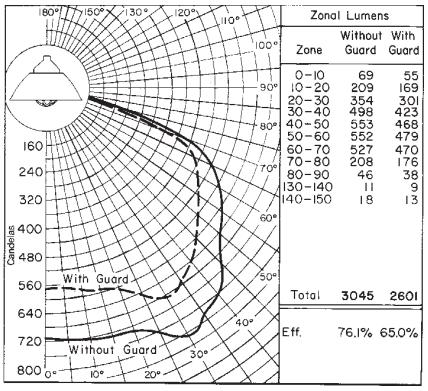
EXAMPLE: Point-by-Point Method

#1 Determine the footcandle value at floor level immediately below a VDA22GRD with 200 Watt lamp and Dome reflector. Mounting height of unit above floor is 12′.
#2 Using same unit as in #1, determine footcandle value at floor level at a point 7 feet away from luminaire.

Fig. 5/Candlepower Distribution Curve

Luminaire With Globe, Dome Reflector and With or Without Guard

200 Watt, A-23 Incandescent



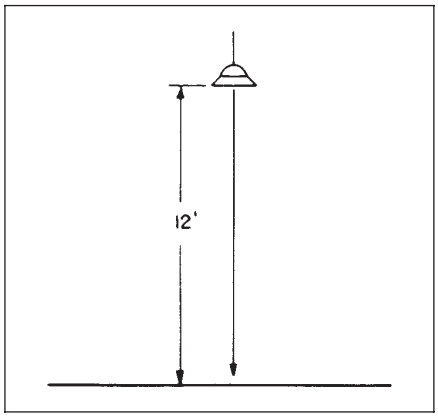
Candelas at 25 Feet

Mid-zone Angle	Without Guard	With Guard
0	715	575
5	722	575
15	736	595
25	764	650
35	793	674
45	715	605
55	615	534
65	531	473
75	197	166
85	42	35
90	14	14
135	13	12
145	28	21

Figure 6

Problem #1 – use Formula ''A''

$$fc = \frac{CP}{d^2} \times LLF$$



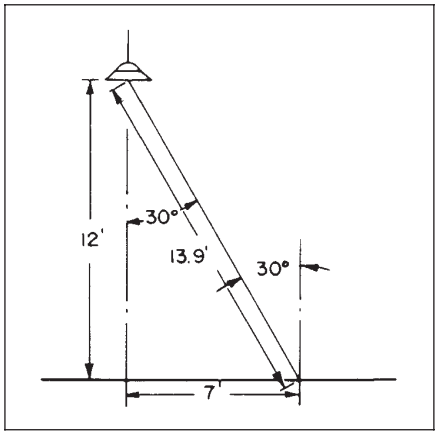
$$fc = \frac{715^{(a)}}{(12)^2} \times 0.69^{(b)} = 3.4\ fc$$

(a) Candlepower at 0° (from Light Distribution Curve at left)

(b) Light loss factor from page 686

Problem #2 – use Formula ''B''

$$fc = \frac{CP \times \cos\theta}{d^2} \times LLF$$



$$fc = \frac{779^{(c)} \times 0.866}{(13.9)^2} \times 0.69 = 2.4\ fc$$

(c) Candlepower at 30° (from light Distribution Table at left). Interpolate between 25° and 35°

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Notes Page

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Description	Page No.
Application	692
Industrial Luminaires	
Vaporgard™ Series	693-701
V Series	702-705
NDA Corro•Gard™ Series	706, 707

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Application:

Incandescent luminaires are used:
- indoors or outdoors in industrial locations
- in tunnels, building entrances or similar locations, where moisture, dirt, chemicals, vibration or rough usage are a problem
- either mounted directly in the conduit system or attached to cast outlet boxes, by means of pendant, ceiling, wall bracket or stanchion mountings

Features:

- Enclosed and gasketed luminaires that accept incandescent lamps
- Gaskets and glass globes help prevent dirt, water and corrosive atmosphere from entering the conduit system and corroding the interior parts

Standard Materials:

- Luminaires-bodies, boxes and guards – copper-free aluminum or *Feraloy*® iron alloy
- Globes – heat-resistant glass or polycarbonate
- Reflectors – Krydon® fiberglass-reinforced polyester

Standard Finishes:

- *Vaporgard*™ – copper-free aluminum-epoxy powder coat
- V SERIES, – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- *Krydon* material – luminaires: gray; reflectors: high reflectance white

Size Ranges:

- Include up to 300 watt, PS-30 lamp
- ½″ to 1¼″ hubs

Certifications and Compliances:

- Weather resistant, NEMA 3, 3R
- NEC/CEC: Class I, Division 2
- UL Standard: 1598
- CSA Standard: C22.2

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

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VAPORGARD™ Incandescent Luminaires

Cl. I, Div. 2, Groups A,B,C,D
(All mounting except stanchion)
Wet Locations
NEMA 3,3R

Application:

Vaporgard series incandescent luminaires are used:
- indoors or outdoors in industrial locations where enclosed and gasketed fixtures are required
- in tunnels, building entrances and similar locations, where moisture, dirt, chemicals, vibration or rough usage are a problem
- for flush or surface mounting on ceiling or wall; pendant or in conduit systems; with or without a cast outlet box

Features:

- Designed to exclude dirt, moisture and corrosive vapors from the interior of the luminaires and the conduit system
- There are no screws to remove as the shock-absorbing socket strap is keyhole slotted and removes quickly for ease of wiring
- The glass globe-guard assembly is installed and/or removed as a unit, making it necessary to handle only one piece in relamping
- There are no crevices to accumulate a dirt or dust buildup and fixture has an attractive finish with a smooth, dust and dirt shedding design
- Configurated glass globe has vertical fluting and stippled bottom which provides for more even light distribution and glare elimination
- For non-hazardous locations, shatterproof plastic polycarbonate globes are available for use with the 200 watt series.
- Reversible offset socket mounting strap permits use of various size lamps while holding light center in same position for maximum light output and efficiency
- Shock absorbing medium base lamp socket

Krydon® fiberglass-reinforced polyester reflectors
- Reflectance is equivalent to the finest porcelain enamel
- Cannot corrode – no enamel to chip and rust
- Ultraviolet inhibitors are incorporated in the material to prevent discoloration and brittleness

Standard Materials:

- Bodies and guards – copper-free aluminum
- Globes
  - heat and impact resistant tempered glass
  - colored glass nontempered (G55, G56, G57, G58)
  - plastic polycarbonate (G63, G65, G67)
- Reflectors – Krydon® fiberglass-reinforced polyester

Standard Finishes:

- Bodies and guards – epoxy powder coat
- *Krydon* material – high reflectance white

Options:

The following options are available from the factory by adding suffix to fixture Cat. No.:

Description	Suffix to be Added to Cat. No.:
Teflon coating on globe for increased shatter protection (G24 globe 200 watt series only)	S808
250V nameplate for export applications	/250
Plastic polycarbonate globe	See page 696

Ratings (Electrical/Size):

- Up to 300 watt, PS-30 medium base lamp
- 1/2″ to 1-1/4″ hubs
- 120V nameplate is standard – for NEC compliance
- 250V nameplate is optional. Supplied when ordered with suffix: /250

Certifications and Compliances:

- Wet locations
- NEC/CEC: Class I, Division 2
- UL Standard: 1598
- CSA Standard: C22.2 No. 9
- UL/CSA Fixture Fitting



Class I, Division 2 Temperature Performance Data: (Based on 40°C ambient)

Lamp Watts	T-Number	Supply Wire °C
150	T2A	150°C
200	T2B	200°C
300	T2B	150°C

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VAPORGARD™ Incandescent Luminaires

Enclosed and Gasketed



Cl. I, Div. 2, Groups A,B,C,D
Wet Locations
NEMA 3,3R

Pendant Mount - VDA Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Luminaire Components Catalog Nos. Pendant Body	Globe	Guard
½″	150	150 watt	VDA15GP✓	VDA15✓	G54✓	P50✓
¾″	150	A-21	VDA25GP✓	VDA25✓	G54✓	P50✓
1″	150		VDA35GP✓	VDA35✓	G54✓	P50✓
½″	200	200 watt	VDA12GP✓	VDA12✓	G24✓	P21✓
¾″	200	A-23	VDA22GP✓	VDA22✓	G24✓	P21✓
1″	200		VDA32GP✓	VDA32✓	G24✓	P21✓
½″	300	300 watt	VDA13GP✓	VDA13✓	G34/G251✓	P22✓
¾″	300	PS-25 & PS-30	VDA23GP✓	VDA23✓	G34/G251✓	P22✓
1″	300		VDA33GP✓	VDA33✓	G34/G251✓	P22✓

Thru-Feed - VDC Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Thru Feed Body	Globe	Guard
½″	150	150 watt	VDC15GP✓	VDC15✓	G54✓	P50✓
¾″	150	A-21	VDC25GP✓	VDC25✓	G54✓	P50✓
½″	200	200 watt	VDC12GP✓	VDC12✓	G24✓	P21✓
¾″	200	A-23	VDC22GP✓	VDC22✓	G24✓	P21✓
½″	300	300 watt	VDC13GP✓	VDC13✓	G34/G251✓	P22✓
¾″	300	PS-25 & PS-30	VDC23GP✓	VDC23✓	G34/G251✓	P22✓

Ceiling Mount for Recessed 4″ Round Box - VXH Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Lamp Socket Body	Globe	Guard
½″	150	150 watt A-21	VXH15GP✓	VXH15✓	G54✓	P50✓
½″	200	200 watt A-23	VXH12GP✓	VXH12✓	G24✓	P21✓
½″	300	300 watt PS-25 & PS-30	VXH13GP✓	VXH13✓	G34/G251✓	P22✓

Ceiling Mount with Junction Box - VXHF Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Lamp Socket Body	Globe	Guard	Junction Box
½″	150	150 watt	VXHF15GP✓	VXH15✓	G54✓	P50✓	VXF10✓
¾″	150	A-21	VXHF25GP✓	VXH15✓	G54✓	P50✓	VXF20✓
½″	200	200 watt	VXHF12GP✓	VXH12✓	G24✓	P21✓	VXF10✓
¾″	200	A-23	VXHF22GP✓	VXH12✓	G24✓	P21✓	VXF20✓
½″	300	300 watt	VXHF23GP✓	VXH13✓	G54/G251✓	P22✓	VXF20✓
¾″	300	PS-25 & PS-30	VXHF23GP✓	VXH13✓	G34/G251✓	P22✓	VXF20✓

✓ – available with Lightning Service™
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VAPORGARD™ Incandescent Luminaires

Enclosed and Gasketed

Cl. I, Div. 2, Groups A,B,C,D
Wet Locations
NEMA 3,3R



Wall Mount - VXHT Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Luminaire Components Catalog Nos. Wall Bracket Mounting Module	Body	Globe	Guard
½″	150	150 watt	VXHT15GP✓	VXT10✓	VXH15✓	G54✓	P50✓
¾″	150	A-21	VXHT25GP✓	VXT20✓	VXH15✓	G54✓	P50✓
½″	200	200 watt	VXHT12GP✓	VXT10✓	VXH12✓	G24✓	P21✓
¾″	200	A-23	VXHT22GP✓	VXT20✓	VXH12✓	G24✓	P21✓
½″	300	300 watt	VXHT13GP✓	VXT10✓	VXH13✓	G34/G251✓	P22✓
¾″	300	PS-25 & PS-30	VXHT23GP✓	VXT20✓	VXH13✓	G34/G251✓	P22✓

Wall Mount - Adapter Kit

Mounts wall mount VXHT Series to a 4″ Round Box.
Cat. No. VXT-K1

Wall Mount with Junction Box VXHBF Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Wall Bracket Mounting Module	Body	Globe	Guard	Junction Box
½″	150	150 watt	VXHBF15GP✓	VXT10✓	VXH15✓	G54✓	P50✓	VXF10✓
¾″	150	A-21	VXHBF25GP✓	VXT20✓	VXH15✓	G54✓	P50✓	VXF20✓
½″	200	200 watt	VXHBF12GP✓	VXT10✓	VXH12✓	G24✓	P21✓	VXF10✓
¾″	200	A-23	VXHBF22GP✓	VXT20✓	VXH12✓	G24✓	P21✓	VXF20✓
½″	300	300 watt	VXHBF13GP✓	VXT10✓	VXH13✓	G34/G251✓	P22✓	VXF10✓
¾″	300	PS-25 & PS-30	VXHBF23GP✓	VXT20✓	VXH13✓	G34/G251✓	P22✓	VXF20✓

Stanchion Mount - VXHA Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard	Stanchion Mounting Module	Body	Globe	Guard
1 ¼″		150 watt A-21	VXHA45GP✓	VXA4✓	VXH15✓	G54✓	P50✓
1 ¼″		200 watt A-23	VXHA42GP✓	VXA4✓	VXH12✓	G24✓	P21✓
1 ¼″		300 watt PS-25 & PS-30	VXHA43GP✓	VXA4✓	VXH13✓	G34/G251✓	P22✓

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VAPORGARD™ Incandescent Luminaires

Parts and Accessories

Medium Base Lamp Receptacle with Strap

Shock Absorbing

Cat. #
V84✓



Reflectors



Dome



30° Angle

Max. Lamp Size	Dome Cat. #	30° Angle Cat. #
150 watt, A-21	RD64✓	RA64✓
200 watt, A-23, A-25, PS-25 and 300 watt, PS-30	RD71✓	RA71✓



VXFT – 5 Hubs, 4 Plugs

Hub Size	Cat. #
½	VXFT10✓
¾	VXFT20✓

For use when rear wiring entry is required. Use in lieu of VXF10 or VXF20.

✓ – available with Lightning Service™
See Section G for complete details

Globes† and Guards



150 and 200W globe



300W globe

	Maximum Lamp Size		
	150 Watt, A-21	200 Watt, A-23, A-25, PS-25	300 Watt, PS-25 PS-30‡
Color	**Cat. #**	**Cat. #**	**Cat. #**
Clear (heat-resisting)	G54✓	G24 ♦ ✓	G34✓ G251✓
Green	G55*✓	G25	
Blue	G56*✓	G26	
Red	G57*✓	G27	
Amber	G58*✓	G28	



Guard P50 and P21



Guard P22

Guards for Glass Globes (Not for use with plastic globes)

Cat. #	Maximum Lamp Size
P50✓	150 watt, A-21
P21✓	200 watt, A-23, A-25, PS-25
P22✓	300 watt, PS-30 (with G251 only)

Mounting Adapter Kit

- Allows for the mounting of non-Crouse-Hinds outlet boxes to the VXT20 wall mount bracket and VXH ceiling mount bracket

Cat. #
VXT-K1

Plastic Globes ①



Shatterproof polycarbonate plastic globe**

Application:

For use in:
- food processing plants and canneries, dairies, breweries and bakeries
- emergency lighting

Features:

- Shatterproof, which precludes contamination of food products with broken particles of glass.
- Designed to comply with U.S. Dept. of Agriculture specification for food processing plants.
- Provides protection against vandalism, with resultant lower replacement and maintenance costs.
- Particularly adaptable for use on emergency police or fire alarm boxes.
- Same size as G24 series glass globes. Existing installations can be changed to plastic globes simply by replacing globe.
- For use with 200 watt series luminaires such as VDA22, etc.
- For use without guard.

Color	Max. Wattage, Lamp Size	Cat. #
Natural	200 watt, A-23	G63✓
Green	200 watt, A-23	G65
Red	200 watt, A-23	G67

Note: Polycarbonate globes for non-hazardous locations only.



VXT-K1

♦ G24 is available with a TEFLON® coating for increased shatter protection by adding suffix S808.

* With G55, G56, G57, G58 color globes, maximum lamp size is 60 watt for outdoor applications.

** Prior to wash-down, globes must be cool.

† All glass globes are configured type, having fluted side and stippled bottom.

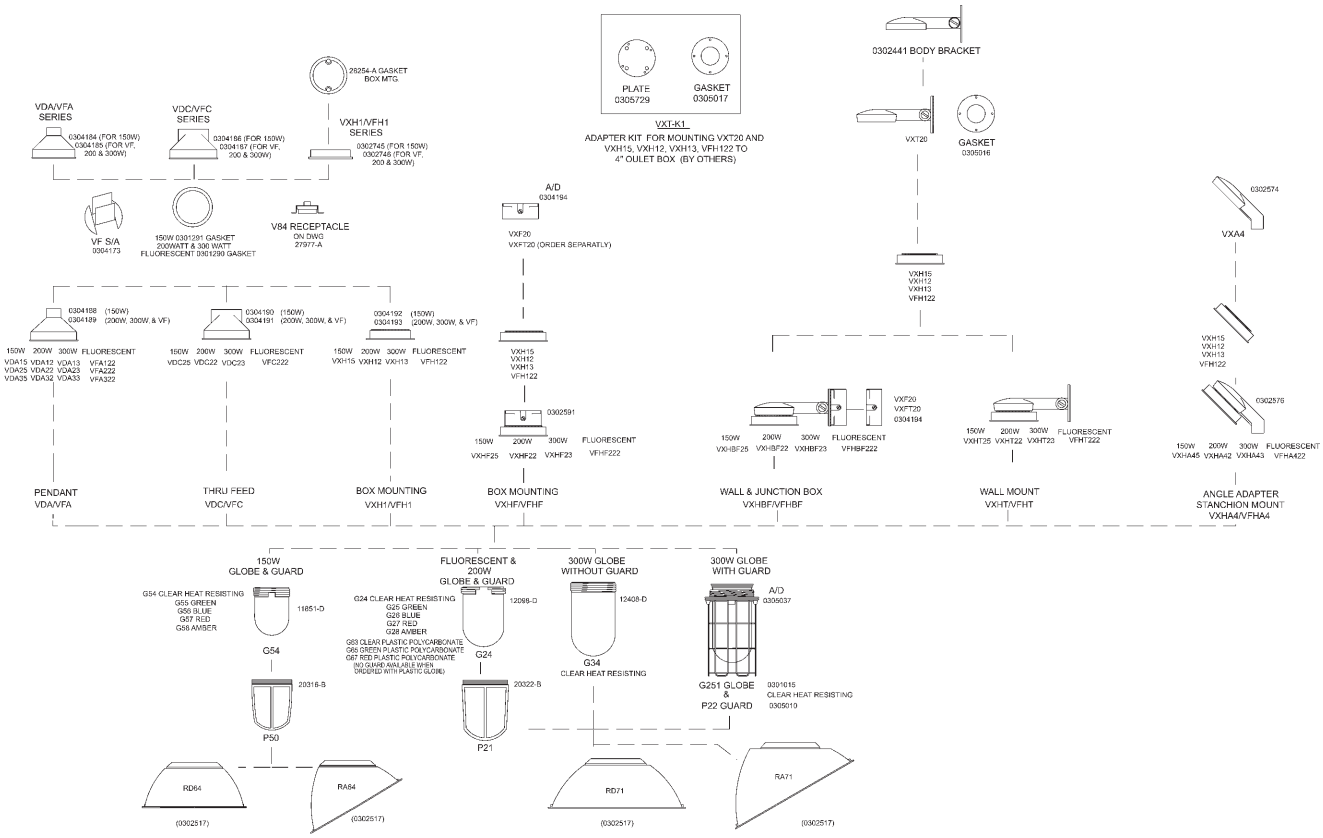
‡ Globe G251 required when guard P22 is used. Use globe G34 when guard is not used.

① Lamp must be mounted in vertical position base up to 45°C (stanchion) only.

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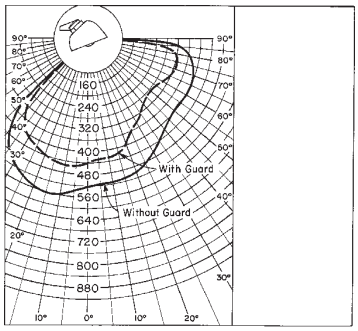


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Luminaire VXHA45GPRA

Lamp: 150W/A-21
Total Bare Lamp Lumens: 2850



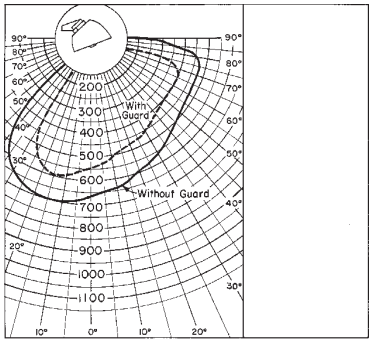
	Total Lumens	Eff. %
With Guard	1490	52.3
Without Guard	1881	66.0

Measurements taken from A-A′ plane.



Luminaire VXHA42GPRA

Lamp: 300W/PS-30
Total Bare Lamp Lumens: 6300



	Total Lumens	Eff. %
With Guard	3630	57.6
Without Guard	4271	67.8

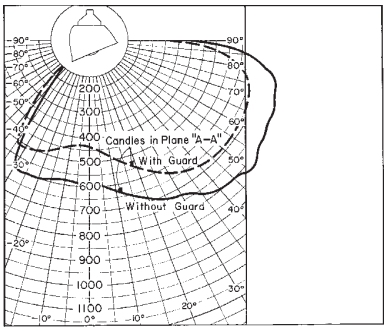
Measurements taken from A-A′ plane.



Luminaire With Globe, 30° Angle Reflector and With or Without Guard

Lamp: 100W/A-21 through 200W/A-23
Total Bare Lamp Lumens: 4000

NOTE: All data provided is for 200W/A-23 incandescent lamp. Use following candlepower/lumen multipliers for other lamp sizes:
100W 0.42; 150W 0.7



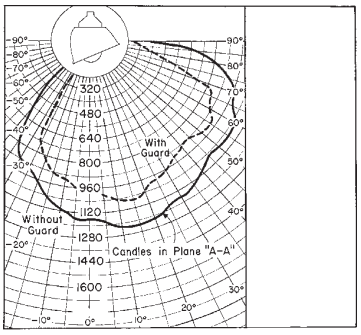
Measurements taken from A-A′ plane.



Lamp Size	Without Guard Total Lumens	Without Guard Eff. %	With Guard Total Lumens	With Guard Eff. %
100W	1141		949	
150W	1890		1582	
200W/A-23	2700	67.5	2260	56.5
200W/PS-25	2174		1819	

Luminaire With Globe, 30° Angle Reflector and With or Without Guard

Lamp: 300W/PS-30
Total Bare Lamp Lumens: 6000



	Total Lumens	Eff. %
With Guard	3360	56.0
Without Guard	3954	65.9

Measurements taken from A-A′ plane.

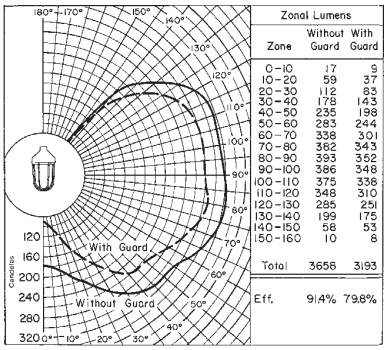


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Lamp: 100W/A-21 through 200W/PS-25
Total Bare Lamp Lumens: 4000
To determine number and placement of luminaires see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for 200W/A-23 incandescent lamp. Use following candela/lumen multipliers for other lamp sizes: 100W 0.42; 150W 0.7; 200W/PS-25 0.82

Luminaire With Globe and With or Without Guard



Example: Zonal Lumens for 200W/A-23 lamp with guard for 0-40° is 272 Lumens for 150W lamp with guard for 0-40° is 272 × 0.7 = 190.

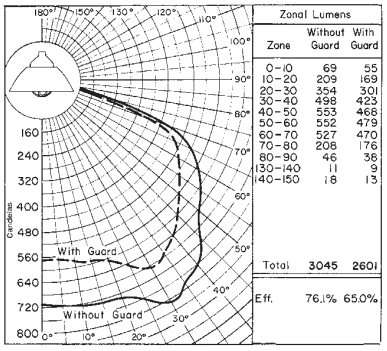
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.654	.549	.471	.407	.353
80	30	.608	.486	.400	.333	.282
	10	.567	.432	.345	.277	.228
	50	.603	.506	.434	.375	.326
70	30	.563	.449	.370	.309	.260
	10	.523	.401	.320	.257	.211
	50	.509	.424	.363	.312	.273
50	30	.477	.380	.313	.260	.220
	10	.449	.341	.271	.218	.179
	50	.422	.349	.297	.255	.223
30	30	.399	.315	.259	.214	.180
	10	.376	.285	.225	.180	.147
	50	.343	.280	.237	.202	.176
10	30	.324	.253	.206	.170	.142
	10	.307	.230	.180	.143	.115

% Reflectance Eff Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.315	.279	.249	.226	.201
80	30	.244	.210	.183	.162	.140
	10	.193	.164	.137	.118	.100
	50	.289	.257	.230	.208	.185
70	30	.225	.194	.170	.150	.130
	10	.177	.150	.127	.110	.093
	50	.242	.215	.192	.175	.156
50	30	.189	.163	.143	.126	.109
	10	.150	.126	.106	.092	.077
	50	.198	.175	.158	.143	.128
30	30	.155	.134	.116	.103	.088
	10	.123	.102	.086	.075	.061
	50	.157	.140	.124	.114	.101
10	30	.122	.106	.091	.080	.068
	10	.096	.080	.066	.057	.045

Luminaire With Globe, Dome Reflector and With or Without Guard



Example: Zonal Lumens for 200W/A-23 lamp with guard for 0-40° is 948 Lumens for 150W lamp with guard for 0-40° is 948 × 0.7 = 664.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

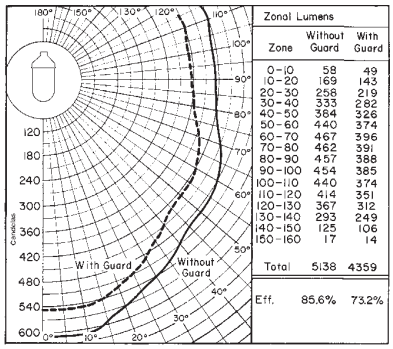
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.604	.522	.454	.395	.347
80	30	.576	.480	.404	.340	.290
	10	.552	.444	.364	.298	.248
	50	.591	.512	.445	.387	.339
70	30	.565	.472	.398	.336	.286
	10	.543	.440	.361	.296	.246
	50	.564	.490	.428	.372	.327
50	30	.544	.457	.387	.327	.280
	10	.526	.428	.354	.292	.245
	50	.541	.470	.411	.358	.315
30	30	.525	.444	.377	.319	.273
	10	.509	.419	.348	.288	.241
	50	.521	.452	.396	.345	.304
10	30	.507	.429	.367	.311	.268
	10	.494	.409	.342	.283	.238

Reflectance Eff Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.309	.274	.244	.222	.193
80	30	.253	.220	.192	.170	.142
	10	.214	.184	.155	.135	.110
	50	.303	.270	.241	.219	.189
70	30	.250	.217	.191	.168	.142
	10	.211	.181	.154	.135	.110
	50	.291	.260	.232	.211	.184
50	30	.245	.212	.186	.166	.139
	10	.209	.179	.153	.134	.109
	50	.281	.250	.225	.204	.178
30	30	.239	.209	.182	.162	.136
	10	.207	.177	.152	.133	.107
	50	.272	.243	.217	.198	.173
10	30	.234	.205	.179	.159	.134
	10	.205	.175	.150	.131	.106

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Lamp: 300W/PS-30
Total Bare Lamp Lumens: 6000
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe Only



Zonal Lumens		
Zone	Without Guard	With Guard
0-10	58	49
10-20	169	143
20-30	258	219
30-40	333	282
40-50	384	326
50-60	440	374
60-70	467	396
70-80	462	391
80-90	457	388
90-100	454	385
100-110	440	374
110-120	414	351
120-130	367	312
130-140	293	249
140-150	125	106
150-160	17	14
Total	5138	4359
Eff.	85.6%	73.2%

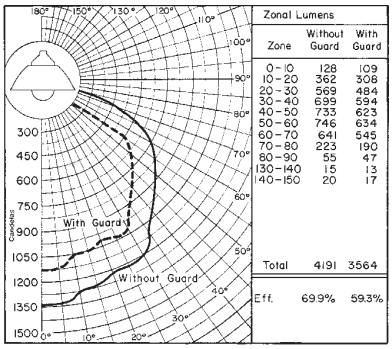
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.692	.582	.499	.431	.373
80	30	.644	.515	.425	.354	.300
	10	.602	.459	.367	.295	.243
	50	.636	.534	.458	.396	.345
70	30	.594	.475	.392	.327	.276
	10	.552	.425	.339	.273	.223
	50	.532	.444	.380	.327	.286
50	30	.500	.398	.328	.272	.230
	10	.470	.358	.285	.229	.188
	50	.437	.362	.308	.264	.230
30	30	.412	.326	.268	.222	.186
	10	.389	.295	.234	.186	.152
	50	.350	.285	.241	.205	.179
10	30	.331	.258	.210	.172	.144
	10	.313	.235	.183	.145	.116

% Reflectance Eff Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.333	.295	.263	.238	.212
80	30	.258	.223	.194	.170	.147
	10	.205	.173	.145	.125	.105
	50	.305	.271	.241	.219	.194
70	30	.238	.204	.178	.157	.136
	10	.188	.158	.133	.115	.097
	50	.253	.224	.200	.181	.162
50	30	.198	.170	.148	.131	.113
	10	.157	.132	.110	.095	.079
	50	.204	.180	.162	.146	.130
30	30	.160	.138	.119	.105	.090
	10	.127	.105	.088	.075	.061
	50	.158	.141	.124	.114	.101
10	30	.123	.106	.091	.080	.067
	10	.096	.079	.066	.055	.044

Luminaire With Globe and Dome Reflector



Zonal Lumens		
Zone	Without Guard	With Guard
0-10	128	109
10-20	362	306
20-30	569	484
30-40	699	594
40-50	733	623
50-60	746	634
60-70	641	545
70-80	223	190
80-90	55	47
130-140	15	13
140-150	20	17
Total	4191	3564
Eff.	69.9%	59.3%

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

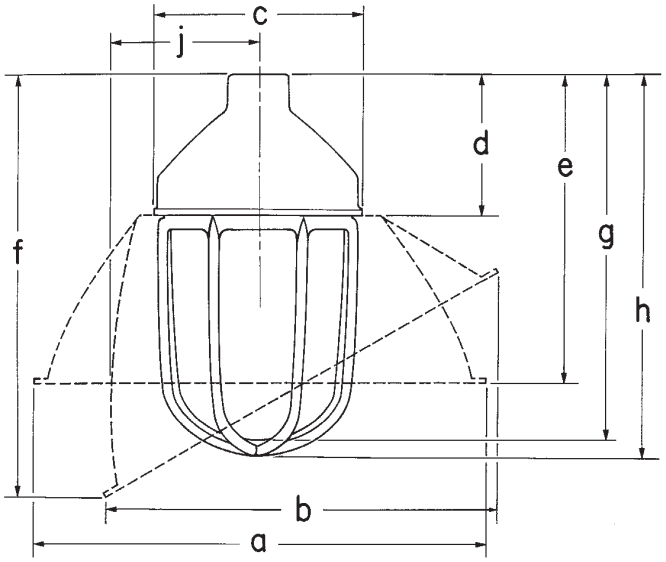
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.766	.671	.587	.514	.454
80	30	.734	.621	.528	.448	.385
	10	.706	.579	.482	.398	.334
	50	.750	.657	.577	.505	.443
70	30	.720	.610	.521	.444	.380
	10	.694	.573	.477	.395	.332
	50	.717	.630	.555	.485	.429
50	30	.693	.592	.507	.432	.372
	10	.672	.558	.468	.390	.329
	50	.688	.606	.535	.468	.414
30	30	.670	.575	.494	.422	.364
	10	.651	.546	.460	.385	.325
	50	.663	.584	.516	.452	.400
10	30	.647	.557	.482	.412	.357
	10	.632	.534	.452	.379	.321

% Reflectance Eff Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.404	.360	.322	.293	.254
80	30	.337	.294	.258	.229	.191
	10	.289	.250	.212	.185	.151
	50	.397	.354	.317	.288	.249
70	30	.333	.290	.256	.227	.191
	10	.285	.246	.211	.185	.151
	50	.383	.342	.306	.279	.243
50	30	.326	.284	.250	.223	.187
	10	.283	.244	.209	.184	.150
	50	.371	.330	.297	.270	.235
30	30	.320	.280	.245	.218	.184
	10	.281	.241	.208	.182	.148
	50	.359	.322	.288	.262	.229
10	30	.313	.275	.241	.215	.181
	10	.277	.239	.206	.180	.146

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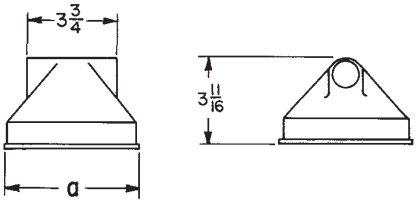
VAPORGARD™ Incandescent Luminaires

Dimensions

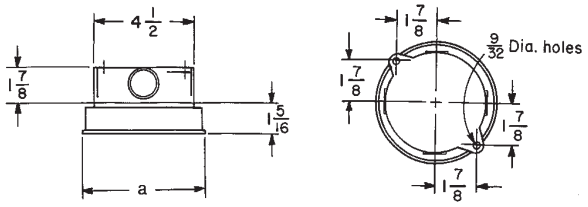


VDA Series

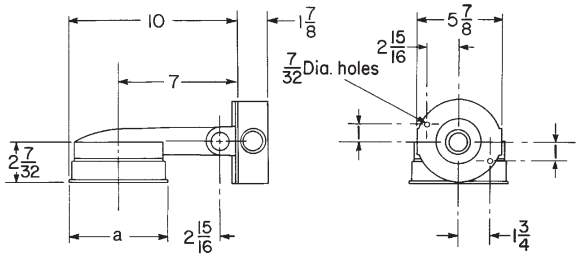
	150 watt, A-21	200 watt, PS-25	300 watt, PS-30
a	12⅞	16⅞	16⅞
b	11⅛	14⅝	14⅝
c	5⅜	6	6
d	3 13/16	4	4
e	8 7/16	9⅛	9⅛
f	12	14	14
g	8 13/16	10½	12
h	9	10 13/16	13⅛
j	4½	6 1/16	6 1/16



VDC Series



VXH and VXHF Series
(omit box for VXF Series)



VXHT and VXHBF Series
(NOTE: Omit box for VXHB series)

Max. Lamp Size	a
150 watt, A-21	5⅜
200 watt, A-23, A-25, PS-25 and 300 watt, PS-30	6

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V-Series Incandescent Luminaires

Enclosed and Gasketed

Wet Locations
NEMA 3,3R

Application:

V-Series incandescent luminaires are used:
- indoors or outdoors in industrial locations where enclosed and gasketed fixtures are required
- in tunnels, building entrances and similar locations, where moisture, dirt, chemicals, vibration or rough usage are a problem
- for flush or surface mounting on ceiling or wall, with or without a cast outlet box, pendant or in conduit systems

Features:

- Designed to exclude dirt, moisture and corrosive vapors from the interior of the fixtures and the conduit system.
- Several body styles provide a wide variety of mountings, while all use the same globes, guards and optional accessories.
- Rugged and corrosion resistant.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Guards – copper-free aluminum
- Globes – glass
- Reflectors – *Krydon*® fiberglass-reinforced polyester material reflectors

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- *Krydon*® material – high reflectance white

Size Ranges:

- ¾ hubs
- Maximum wattage lamp:
  - Glass globes 150W, A23
  - Polycarbonate 75W, A33

Options:

Description	Suffix
Corro-free™ epoxy powder coat	S752
plastic polycarbonate globe	Order separately. See below

Certifications and Compliances:

- Wet locations
- NEMA: 3, 3R
- UL Standard: 1598





	VDA	VC	VG	VJ	VD
Description	**Cat. #**	**Cat. #**	**Cat. #**	**Cat. #**	**Cat. #**
With plain globe and guard	VDA2759	VC2759	VG2759	VJ2759	VD2759
Without globe and guard	VDA275	VC275	VG275	VJ275	VD275

Glass Globes



V63

Color	Cat. #
Clear (heat resisting)	V63
Green	VN72
Blue	VN73
Red	VN75
Amber	VN76

Guard For Glass Globes



V911

Globe Size	Cat. #
6¾″	V911

Polycarbonate Globes

Application:

Polycarbonate globes are used:
- in food processing plants, canneries, dairies, breweries and bakeries
- in emergency lighting
- emergency police and fire alarm boxes

Features:

- Polycarbonate globes are shatterproof, preclude contamination of food products with broken particles of glass.
- Comply with U.S. Dept. of Agriculture specification for food processing plants.



V470

Color	Cat. #
Natural	V470
Red	V475

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Dome



Angle

Reflectors

Krydon® – fiberglass-reinforced polyester (Must be used with V 911 Guard)

Lamp Size	Dome Dia.	Dome Cat. #
50-150W	12″	RD60
Lamp Size	**30° Angle Dia.**	**30° Angle Cat. #**
50-150W	12″	RA60

NOTE: Angle reflector cannot always be used with bracket style fixtures. Check distance from mounting surface to center of body against reflector size to determine if reflector will fit.



Receptacles (medium base)

Cat. #
V46



Gasket

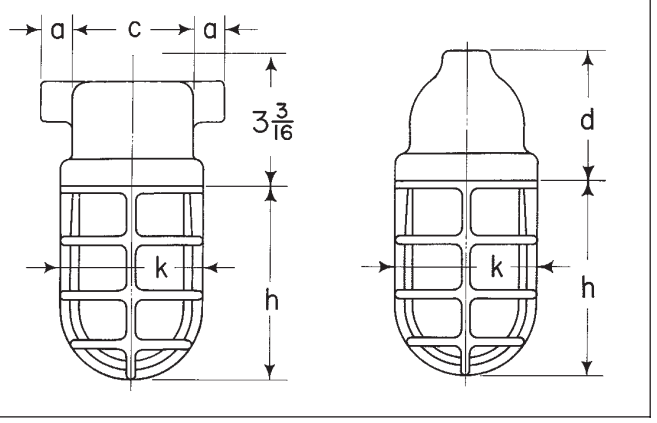
Cat. #
GASK213

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1L V-Series Incandescent Luminaires

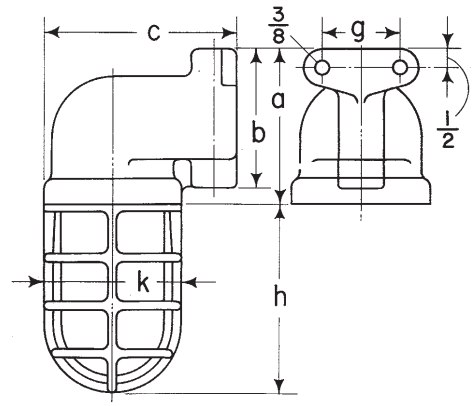
Enclosed and Gasketed Dimensions

VC **VDA**



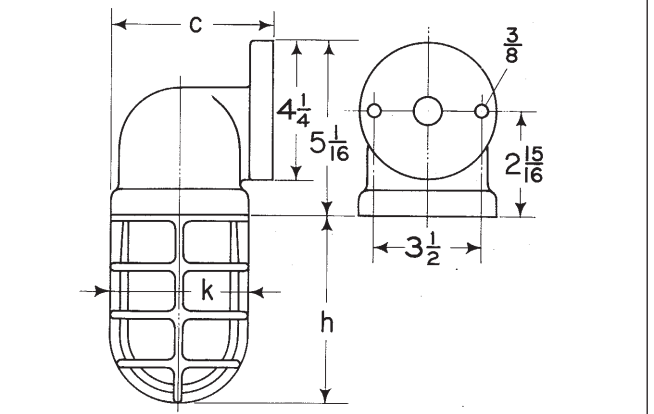
Hub Size	a	c	d	h	k
½	7/8	3 11/16	4	6 3/16	4 9/16
¾	7/8	3 11/16	4	6 3/16	4 9/16

VD



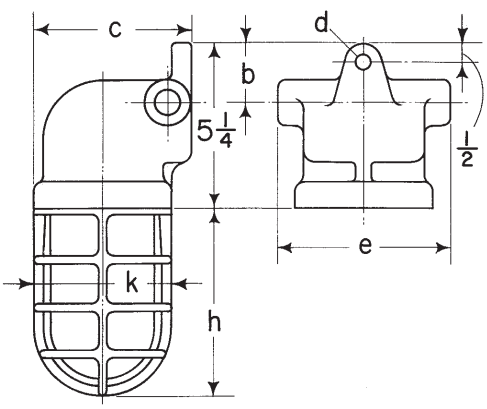
Hub Size	a	b	c	g	h	k
½	4 15/16	4 3/16	5 15/16	2 1/2	6 3/16	4 9/16
¾	4 15/16	4 3/16	6 3/16	2 3/4	6 3/16	4 9/16

VG



Hub Size	c	h	k
½	4 7/8	6 3/16	4 9/16
¾	4 7/8	6 3/16	4 9/16

VJ



Hub Size	b	c	d	e	h	k
½	1 13/16	4 7/8	3/8	5 3/8	6 3/16	4 9/16
¾	1 15/16	4 7/8	3/8	5 3/8	6 3/16	4 9/16

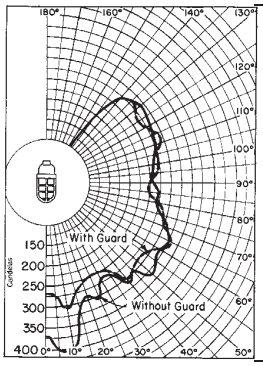
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V-Series Incandescent Luminaires

Enclosed and Gasketed

Luminaires V-Series

Lamp: 150W/A23 Clear
Total Bare Lamp Lumens: 2800
To determine number and placement of fixtures, see Lighting Selector Guide pages 665 to 689.



Zonal Lumens		
Zone	Without Guard	With Guard
0-10	29	19
10-20	67	60
20-30	109	60
30-40	127	113
40-50	175	168
50-60	218	117
60-70	246	250
70-80	228	232
80-90	223	65
90-100	209	218
100-110	210	218
110-120	210	216
120-130	194	72
130-140	164	165
140-150	87	58
150-160	3	8
Total	2499	2039

NOTE: All data provided is for 150W incandescent lamp. Use following candela/lumen multipliers for the other lamp sizes:
100W – 0.61

Example: Zonal lumens for 150W lamp for 0-40° with guard is 252.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.659	.558	.479	.416	.361
80	30	.623	.504	.417	.349	.298
	10	.591	.458	.367	.298	.248
	50	.609	.515	.442	.384	.336
70	30	.577	.466	.386	.324	.275
	10	.545	.426	.342	.278	.230
	50	.515	.434	.372	.321	.282
50	30	.491	.397	.328	.274	.234
	10	.469	.364	.293	.238	.197
	50	.429	.359	.307	.264	.232
30	30	.411	.332	.274	.228	.194
	10	.395	.307	.245	.198	.165
	50	.350	.290	.246	.211	.185
10	30	.337	.269	.221	.183	.156
	10	.325	.251	.199	.160	.132

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.325	.290	.261	.236	.211
80	30	.259	.227	.199	.176	.153
	10	.212	.183	.157	.136	.116
	50	.299	.268	.241	.219	.194
70	30	.240	.210	.186	.164	.143
	10	.197	.170	.146	.127	.108
	50	.252	.226	.203	.185	.165
50	30	.205	.178	.158	.140	.122
	10	.169	.145	.125	.109	.092
	50	.208	.186	.169	.153	.137
30	30	.170	.149	.131	.117	.101
	10	.141	.121	.105	.091	.076
	50	.167	.151	.135	.124	.110
10	30	.136	.121	.106	.094	.081
	10	.114	.098	.084	.073	.060

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1L NDA Corro•Gard™ Corrosion-Resistant Incandescent Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Corrosive
Wet Locations
NEMA 3,3R,4,4X

Application:

Corro•Gard™ NDA series Luminaires made of Krydon® fiberglass-reinforced polyester are used to provide incandescent lighting:
- indoors or outdoors in industrial wet or dirty locations and where corrosion is a problem
- in marine applications, above and below deck, where salt spray corrosion shortens fixture life
- in food and beverage industries where frequent wash-downs are necessary
- for walkways, bridges, tunnels, security lighting, cold storage facilities, garages, coal handling areas, shipboard, processing plants, and nuclear generating plant containment areas

Features:

- Luminaire is molded Krydon® for excellent corrosion, heat, and impact resistance.
- Accommodates all popular incandescent lamps up to 300W, PS-25.
- Attractive modern design and color complement other Corro•Gard products.
- Weighs only 8½ lbs. complete with lamp and globe.
- Medium screw base porcelain lamp socket has a vibration absorbing mounting bracket.
- All joints are gasketed to ensure watertightness.
- Configured glass globe reduces glare.
- Corro•Gard reflectors made of Krydon® reflect light better than porcelainized steel; do not yellow or discolor with age; cannot chip, peel, rust or dent.

Standard Materials:

- Bodies and reflectors – Krydon® fiberglass-reinforced polyester material
- Globes – configured heat-resistant glass

Standard Finishes:

- Bodies – natural
- Reflectors – natural, high reflectance white

Options:

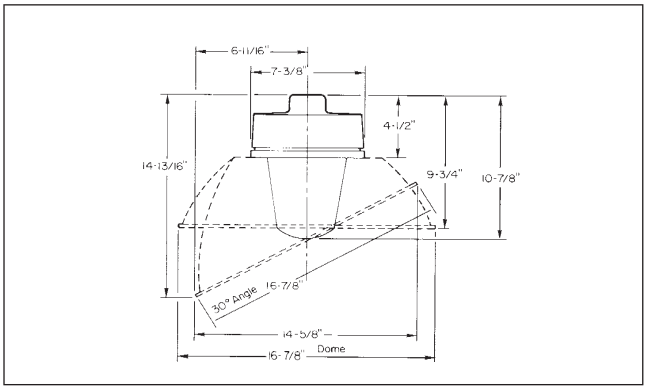
- TEFLON® coating on G24 globe for increased shatter protection. . . . . add suffix **S808.**



Certifications and Compliances:

- UL Standard: 1598
- Wet Locations
- Suitable for 40°C ambient temperature

Dimensions



NDA Series Ordering Information

For Pendant Mounting

Hub Size	Max. Lamp Size	Body Only Cat. #	Globe Only Cat. #	Body With Globe‡ Cat. #
¾"	300W PS-25 Med. Base 120V	NDA22	G24	NDA22G

Temperature Performance Data:

(based on 40°C ambient)

Max. Lamp Size	T-Number	Supply Wire (°C)
300W	T2A	150°C

(Note: Fixtures are not marked with T-Number.)

Accessories & Parts

Globe



Color	Cat. #
Clear (heat resisting)	G24
Green	G25
Blue	G26
Red	G27
Amber	G28

Guard



Cat. # P21

Replacement Lamp Receptacles with Strap

Shock Absorbing



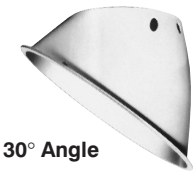
Cat No. NV84

Reflectors

(Order separately)



Dome



30° Angle

Type	Cat. #
Dome	RD725 (RD75)
30° Angle	RA725 (RA75)

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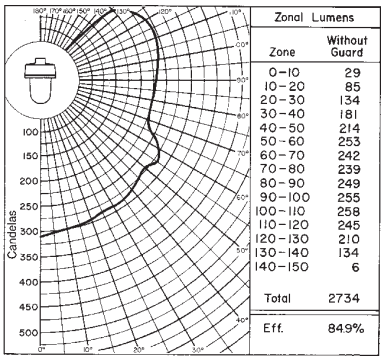
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NDA Corro•Gard™ Corrosion-Resistant Incandescent Luminaires

Lamp: 200W/PS-25
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for incandescent with 200W/PS-25 lamp. See Multipliers for other wattages and lamp types.

Luminaire With Globe



Zone	Zonal Lumens Without Guard
0–10	29
10–20	85
20–30	134
30–40	181
40–50	214
50–60	253
60–70	242
70–80	239
80–90	249
90–100	255
100–110	258
110–120	245
120–130	210
130–140	134
140–150	6
Total	2734
Eff.	84.9%

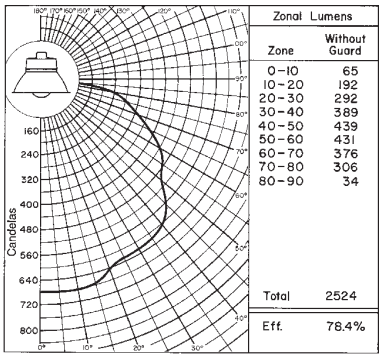
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.762	.651	.565	.494	.433
80	30	.715	.585	.491	.416	.358
	10	.673	.529	.433	.357	.300
	50	.708	.605	.526	.461	.406
70	30	.667	.546	.460	.390	.335
	10	.626	.496	.407	.336	.282
	50	.608	.519	.452	.395	.292
50	30	.576	.473	.399	.339	.250
	10	.547	.432	.356	.295	.248
	50	.516	.439	.382	.335	.297
30	30	.492	.404	.342	.290	.250
	10	.469	.372	.307	.254	.215
	50	.433	.366	.319	.279	.247
10	30	.413	.339	.287	.244	.211
	10	.396	.315	.259	.215	.181
0	0	.354	.277	.226	.184	.154

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.389	.348	.312	.284	.253
80	30	.312	.273	.240	.214	.185
	10	.258	.222	.190	.166	.141
	50	.363	.324	.291	.266	.236
70	30	.293	.256	.226	.201	.175
	10	.242	.208	.179	.157	.133
	50	.312	.280	.252	.230	.205
50	30	.256	.223	.198	.177	.153
	10	.213	.183	.158	.139	.117
	50	.266	.238	.216	.197	.175
30	30	.220	.193	.170	.152	.131
	10	.185	.158	.137	.121	.100
	50	.223	.201	.180	.166	.147
10	30	.185	.163	.144	.129	.110
	10	.156	.135	.116	.102	.084
0	0	.132	.112	.096	.084	.068

Luminaire With Globe and Dome Reflector



Zone	Zonal Lumens Without Guard
0–10	65
10–20	192
20–30	292
30–40	389
40–50	439
50–60	431
60–70	376
70–80	306
80–90	34
Total	2524
Eff.	78.4%

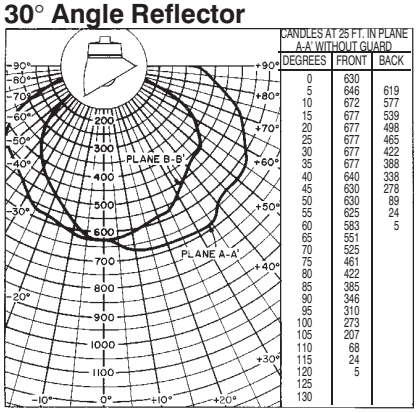
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.809	.703	.615	.541	.481
80	30	.773	.647	.550	.470	.408
	10	.742	.601	.499	.416	.354
	50	.791	.688	.604	.531	.470
70	30	.758	.636	.542	.465	.403
	10	.729	.595	.494	.413	.315
	50	.756	.659	.580	.510	.455
50	30	.729	.617	.528	.453	.395
	10	.706	.579	.485	.408	.349
	50	.726	.634	.558	.492	.439
30	30	.705	.599	.514	.442	.385
	10	.684	.566	.477	.402	.344
	50	.699	.610	.539	.475	.424
10	30	.663	.580	.501	.431	.378
	10	.580	.553	.468	.396	.340
0	0	.647	.536	.451	.378	.323

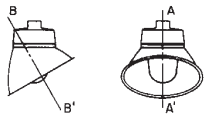
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.431	.386	.347	.317	.277
80	30	.360	.317	.280	.250	.211
	10	.309	.269	.231	.204	.169
	50	.423	.380	.342	.312	.272
70	30	.356	.312	.277	.247	.211
	10	.305	.265	.231	.204	.169
	50	.408	.368	.331	.302	.265
50	30	.348	.305	.272	.243	.207
	10	.303	.263	.229	.202	.167
	50	.396	.355	.321	.294	.257
30	30	.342	.301	.266	.238	.203
	10	.300	.260	.227	.201	.165
	50	.383	.346	.311	.285	.250
10	30	.334	.295	.262	.235	.200
	10	.297	.258	.225	.199	.163
0	0	.281	.243	.210	.184	.150

Luminaire With Globe and 30° Angle Reflector



CANDLES AT 25 FT. IN PLANE A-A' WITHOUT GUARD DEGREES	FRONT	BACK
0	630	
5	646	619
10	672	577
15	677	539
20	677	498
25	677	465
30	677	422
35	677	388
40	640	338
45	630	278
50	630	89
55	625	24
60	583	5
65	551	
70	525	
75	461	
80	422	
85	385	
90	346	
95	310	
100	273	
105	207	
110	68	
115	24	
120	5	
125		
130		

Total Lumens 2595 **Eff. %** 80.6



Multipliers for Other Lamps

Photometric data was developed using a 200 watt/PS-25 inside frosted incandescent lamp (3,220 lumens). For other incandescent watts/lamp size, use the following conversion factors (multipliers):

Watts	Lamp Size	Lamp Lumens	Conversion Factor
100	A-19	1750	.54
100	A-21	1690	.52
150	A-21	2880	.89
150	PS-25	2680	.83
200	A-23	4010	1.25
300	PS-25	6360	1.98

Example: Zonal lumens for 200W/PS-25 luminaire with globe and dome reflector for 30-40° is 389. Zonal lumens for 100W/A-21 luminaire with globe and dome reflector for 30-40° is 389 × .52 = 202.

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Notes Page

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Description	Page No.
Application/Selection	**Page 710**
Class I Hazardous Area Luminaires	
EVI Series	
Groups C, D	**711-719**
EV Series	
Groups A, B, C, D	**720**

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Application:

- For use in areas made hazardous by presence of flammable vapors, gases, or dusts
- For indoor or outdoor use. For general area or spot lighting

Considerations for Selection:

Environmental:
- What is the hazardous area classification (NEC)/(CEC) of the location in which the luminaires will be installed?

Lighting levels required:
- What wattage fixture(s) will provide the desired light level? (See Lighting Selector Guide, pages 665 through 689, to determine number and location of luminaires required.)

Physical arrangement:
- Type of luminaire mounting needed

Product Selection:

Two product families are included in Section 2L as follows:
- EVI models suitable for use in Class I, Groups C, D, and Class II, Groups E, F and G locations. These luminaires may be ordered with a wide variety of reflector styles and mounting arrangements to provide the required light distribution, depending on application, mounting height and lamp size. Check individual catalog pages for specific hazardous location suitabilities of each luminaire. Models are available for lamp sizes 100 watt, A-19 to 500 watt, PS-40.
- EV Models suitable for use in Class 1, Groups A, B, C, D locations. These luminaires may be ordered with a wide variety of reflector styles and arrangements to provide the required light distribution, depending on application, mounting height and lamp size. Check individual catalog pages for specific hazardous location suitabilities of each luminaire. Models are available for lamp size 300 watt PS35 mogul base.

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

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EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base

Cl. I, Div. 1, Groups C,D
Cl. I, Zone 1 & 2, Group IIB
Cl. II, Groups E,F,G (Max 150W-Med. base)
Cl. III & Simultaneous Presence (Max 150W-Med. base)
Marine and Wet Locations ● Type 4X; IP66

NEW!



Application:
EVI series incandescent luminaires are used:
- for **Type 4X, marine,** wet location and hose down environments.
- where a consistent light level relatively unaffected by extremes in ambient temperature **(-40°C to +65°C)** is required.
- in areas that require lamps to reach full illumination immediately.
- in areas that require lamps to be frequently turned on and off.
- indoor & outdoor in locations which are hazardous due to the presence of flammable vapors or gases, ignitible dusts or ignitible fibers & flyings.
- where a luminaire is required for tough environmental conditions involving corrosives, water, dust and extreme temperatures.
- manufacturing plants, heavy industrial facilities, industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical and platforms.
- for lighting of loading docks, tunnels, stairways, storage closets & task lighting.

Features:
- **Ambient suitability to 65°C.**
- **Standard 90°C rated building wire for 150W max 40°C ambient application - represents more than 75% of all applications.**
- **Type 4X, marine outdoor locations.**
- **Factory sealed - no external seals required.**
- Quick connect - fixture threads onto the mounting module for easy installation.
- One size luminaire for all medium base incandescent lamps through 300W.
- One size luminaire for all mogul base incandescent lamps through 500W.
- Small compact size - ceiling mount is 13¾″ long.
- Shock absorbing receptacle.
- Easy to assemble & relamp.
- Silicone gaskets seal out dirt and moisture.
- Epoxy powder coat for corrosion resistance.
- Same mounting modules as used with the EVM & EVLP series.

Standard Materials:
- Body, mounting modules and guard - copperfree aluminum
- Globe - heat & impact resistant glass
- Gaskets - silicone
- External hardware - stainless steel
- Reflectors - Krydon® fiberglass-reinforced polyester

Standard Finishes:
- Copper free aluminum - Corro-free™ epoxy powder coat
- Stainless steel - Natural
- Krydon® Reflectors - High reflectance white

Electrical Ratings:
Sources/Wattages
- Medium Base - Maximum 300W (PS25)
- Mogul Base - Maximum 500W (PS40)

Voltages
- Medium Base 120V (250V with suffix /250)
- Mogul Base 277V

Hub Size
- ¾″ or 1″ NPT pendant, ceiling, wall mount
- ¾″ NPT bulkhead mount

Certifications and Compliances:
NEC & CEC:
- Class I, Division 1, Groups C & D
- Class I, Zone 1, Group IIB
- Class II, Groups E, F & G
- Marine Locations, Wet Locations, Enclosure Type 4X, IP66
- UL Listed
- cUL Listed (Certified by UL to CSA Standards)

NEC:
- Class III; Simultaneous Presence

UL Standards:
- 844 Electric Fixture Hangers for Hazardous Locations
- 1598 Luminaires
- 1598A Luminaires for Installation on Marine Vessels

CSA Standards:
- C22.2 No. 137

Options:

Description	Suffix to be added to Cat. No.
● 250V luminaire for export applications (medium base only)	/250

Accessories:
- Reflectors - See Ordering by Components on page 713.

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EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base

Cl. I, Div. 1, Groups C,D
Cl. I, Zone 1 & 2, Group IIB
Cl. II, Groups E,F,G (Max 150W-Med. base)
Cl. III & Simultaneous Presence (Max 150W-Med. base)
Marine and Wet Locations ● Type 4X; IP66

Mounting Style	Hub Size	EVI301 SERIES Medium Base with EV505 Guard (Max. 300W PS25)	EVI501 SERIES Mogul Base with EV503 Guard (Max. 500W PS40)
 **Pendant Mount**	¾″ 1″	EVIA2301 EVIA3301	EVIA2501 EVIA3501
 **Ceiling Mount**	¾″ 1″	EVICX2301 EVICX3301	EVICX2501 EVICX3501
 **Wall Mount**	¾″ 1″	EVIBX2301 EVIBX3301	EVIBX2501 EVIBX3501
 **Bulkhead Mount**	¾″ 1″	EVIBH2301 —	— —
 **Stanchion Mount**	1¼″	EVIJ4301	EVIJ4501
 **Luminaire with Guard Less Mounting Module**		EVI301✓	EVI501✓

Note:
Medium base luminaires (EVI301 Series) - For A19 lamps up to 100W, use Leviton socket extension catalog number 2005.
Mogul base luminaires (EVI501 Series) - For PS30 medium base lamps, use Cooper Wiring Devices socket adapter catalog number 332.

✓ - Available with Lightning Service™ Delivery. See Section G for complete details.

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EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base



EVI Luminaires are available in components.
A complete luminaire consists of:

I. Mounting Module
II. EVI Luminaire Body and Globe Assembly
III. Guard, Reflector

I. Mounting Module:

Type	Conduit	Cat. No.
Pendant	¾″	EVMP2✓
	1″	EVMP3✓
Ceiling and Wall Box	¾″	EV22✓
	1″	EV33✓
Wall Bracket Arm	¾″	EV22✓ & EV87✓
	1″	EV33✓ & EV87✓
Stanchion	1¼″	EVMJ4✓
Bulk Head	¾″	EVIJ2✓

II. Luminaire Body and Globe Assembly with Guard

Type	Cat. No.
Medium Base	EVI301✓
Mogul Base	EVI501✓

III. Guards and Reflectors

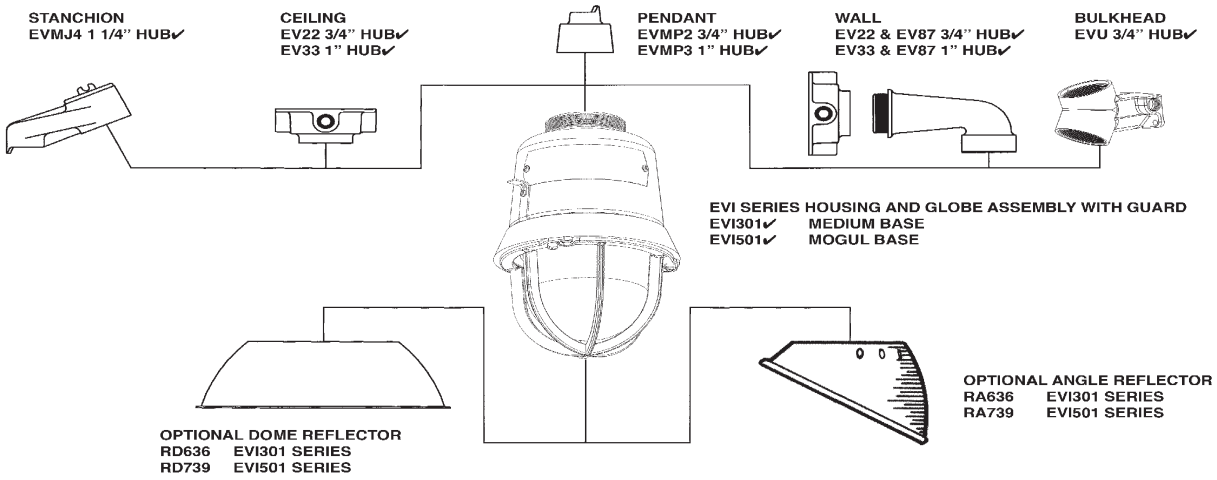
Type	Cat. No.
Guard - Fits EVI301 Series (medium base)	EV505
Guard - Fits EVI501 Series (mogul base)	EV503
Dome Reflector - Fits EVI301 Series (medium base)	RD636
Angle Reflector - Fits EVI301 Series (medium base)	RA636
Dome Reflector - Fits EVI501 Series (mogul base)	RD739
Angle Reflector - Fits EVI501 Series (mogul base)	RA739

✓ - Available with Lightning Service™ Delivery. See Section G for complete details.

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EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base



Temperature Performance Data:

Type	Watts/Lamp	Class I, Div 1 (Class I, Zone 1)			Class II	Simultaneous Presence	Supply Wire Temp (°C)		
		Ambient			Ambient	Ambient	Ambient		
		40°C	55°C	65°C	40°C	40°C	40°C	55°C	65°C
EV1301	100W/A21 or A19*	T4	T3C	T3C	T3C	T3C	90°C	105°C	125°C
Medium	150W/A21	T4	T3C	T3C	T3C	T3C	90°C	105°C	125°C
Base	200W/A23 or A25	T3	T2D	T2C	—	—	105°C	125°C	125°C
	300W/PS25	T3	T2D	T2C	—	—	105°C	125°C	125°C
EV1501	200W/PS30*	T4A	T4	T4	T3A	T3A	90°C	90°C	105°C
Mogul	300W/PS35	T4	T3C	T3C	—	—	90°C	90°C	105°C
Base	500W/PS40	T3A	T3	T3	—	—	105°C	125°C	125°C

*** Note:**
Medium base luminaires (EVI301 Series) - For A19 lamps up to 100W, use Leviton socket extension catalog number 2005.
Mogul base luminaires (EVI501 Series) - For PS30 medium base lamps, use Cooper Wiring Devices socket adapter catalog number 332.

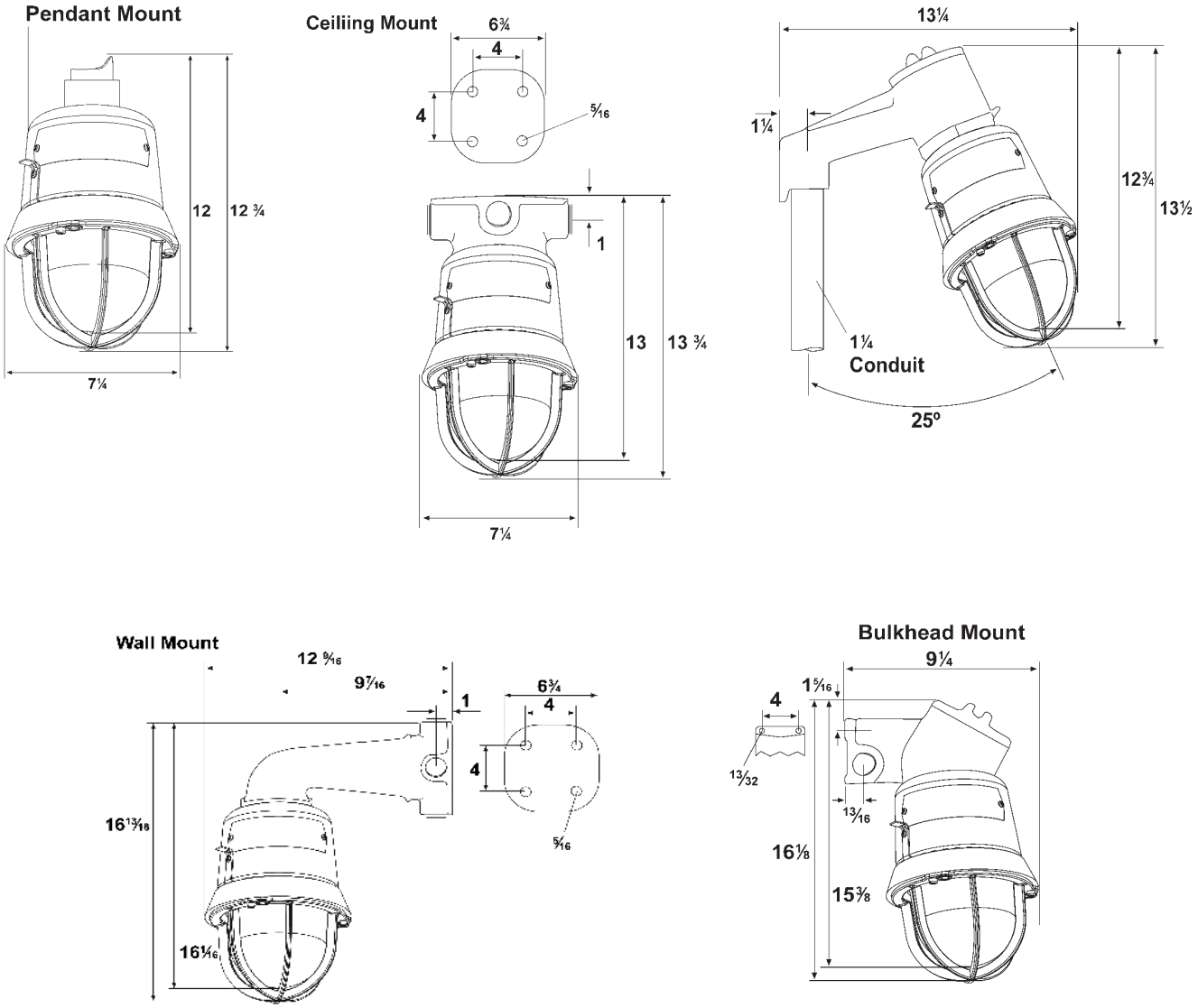
✓ - Available with Lightning Service™ Delivery. See Section G for complete details.

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EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base

Medium Base EVI Luminaire Dimensions (Inches):



Medium Base Net Luminaire Weights (lbs.):

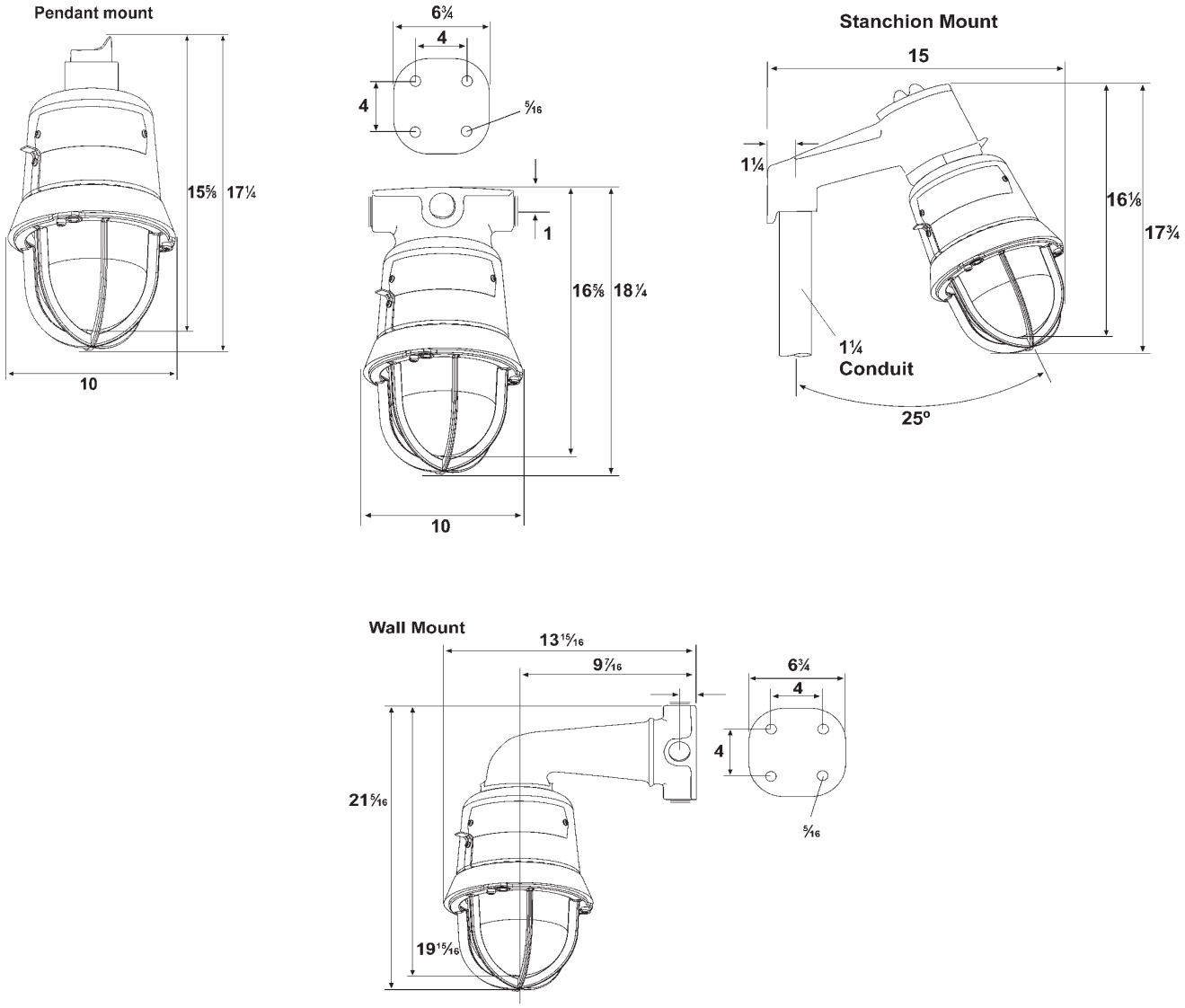
EVI301 with guard	11 lbs.

Add mounting modules:	
Pendant	1.0 lbs
Ceiling	2.0 lbs
Wall	4.5 lbs
Bulkhead	2.2 lbs
Stanchion	2.5 lbs

Add for Reflectors	
RD636 (Dome Reflector, Small)	1.5 lbs
RA636 (Angle Reflector, Small)	1.0 lbs
RD739 (Dome Reflector, Small)	2.0 lbs
RA739 (Angle Reflector, Small)	1.4 lbs

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Medium Base EVI Luminaire Dimensions (Inches):



Mogul Base Net Luminaire Weights (lbs.):

EVI501 with guard	24 lbs.

Add mounting modules:	
Pendant	1.0 lbs
Ceiling	2.0 lbs
Wall	4.5 lbs
Bulkhead	2.2 lbs
Stanchion	2.5 lbs

Add for Reflectors	
RD636 (Dome Reflector, Small)	1.5 lbs
RA636 (Angle Reflector, Small)	1.0 lbs
RD739 (Dome Reflector, Small)	2.0 lbs
RA739 (Angle Reflector, Small)	1.4 lbs

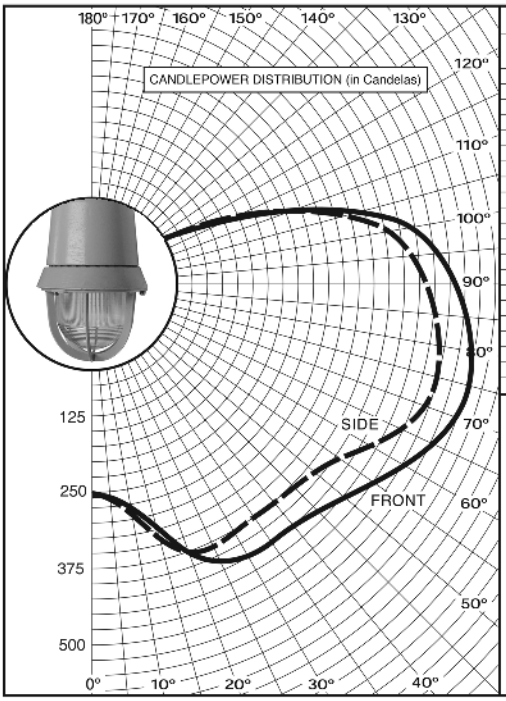
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EVI Series Explosionproof Incandescent Luminaires

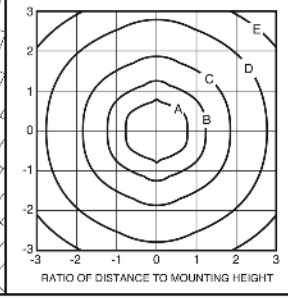
Factory Sealed
100-500W Medium and Mogul Base

Medium Base

Luminaire with Globe and Guard
EVICX2301 Lamp: 300W/PS25 Incandescent



CANDELAS			ZONAL LUMENS	
Vertical Angle	Front	Side	With Zone	Lumens
0	259	259	0-10	26
5	259	265	10-20	94
15	326	344	20-30	179
25	417	386	30-40	244
35	426	375	40-50	311
45	434	382	50-60	394
55	471	411	60-70	494
65	529	474	70-80	552
75	555	503	80-90	541
85	524	475	90-100	502
90	505	458	100-110	378
95	487	443	110-120	150
105	376	351	120-130	25
115	143	148	130-140	4
125	22	24	140-150	2
135	6	6	150-160	0
145	2	2	160-170	0
155	0	0	170-180	0
165	0	1		
175	0	1	Total	3897
180	1	1		



Note: Photometric data was developed using a 300W incandescent lamp (6,360 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. Multipliers do not apply to Coefficients of Utilization.

LAMP WATTS	CONVERSION FACTOR
100W	.275
150W	.45
200W	.63

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.561	.466	.395	.344	.301	.265	.235	.212	.191	.173
	30*	.520	.408	.331	.279	.236	.202	.174	.153	.135	.120
	10*	.483	.360	.281	.230	.188	.157	.132	.113	.098	.085
70*	50*	.529	.436	.372	.324	.283	.250	.222	.200	.180	.164
	30*	.492	.387	.314	.265	.224	.191	.165	.146	.128	.114
	10*	.459	.343	.267	.219	.179	.149	.125	.108	.093	.081
50*	50*	.470	.387	.327	.286	.250	.220	.196	.177	.160	.146
	30*	.440	.345	.279	.236	.200	.171	.148	.130	.115	.102
	10*	.413	.308	.240	.197	.161	.134	.112	.097	.083	.073
30*	50*	.415	.340	.288	.250	.218	.193	.172	.155	.141	.129
	30*	.391	.305	.247	.209	.177	.151	.131	.115	.102	.091
	10*	.370	.276	.214	.176	.144	.120	.100	.086	.074	.064
10*	50*	.365	.296	.248	.217	.189	.168	.149	.135	.123	.112
	30*	.346	.269	.216	.183	.155	.133	.114	.101	.089	.080
	10*	.328	.244	.189	.155	.127	.105	.088	.076	.065	.056
0*	0*	.302	.219	.166	.134	.107	.087	.071	.060	.051	.043

*Percent Reflectance

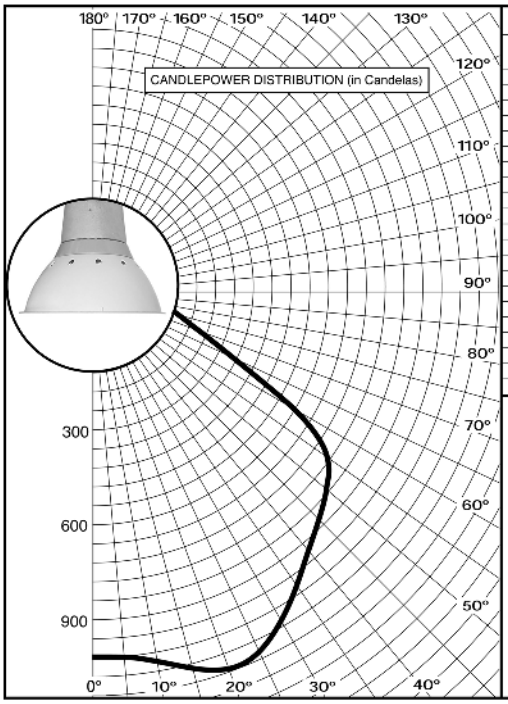
ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
10'	2.00	1.00	0.50	0.20	0.10
12'	1.39	0.69	0.35	0.14	0.07
16'	0.78	0.39	0.20	0.08	0.04
20'	0.50	0.25	0.13	0.05	0.03
25'	0.32	0.16	0.08	0.03	0.02

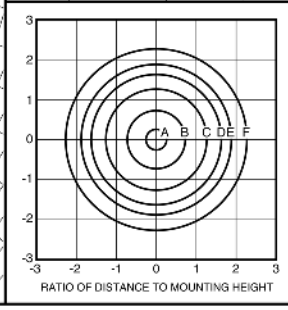
Isofootcandle chart shows illuminance in footcandles at ground level.

Medium Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVICX2300 Lamp: 300W/PS25 Incandescent



CANDELAS*		ZONAL LUMENS	
Vertical Angle	Candela	With Zone	Lumens
0	1022	0-10	98
5	1024	10-20	312
15	1097	20-30	517
25	1127	30-40	624
35	996	40-50	681
45	880	50-60	670
55	772	60-70	329
65	320	70-80	150
75	141	80-90	51
85	46	90-100	41
90	22	100-110	37
95	39	110-120	8
105	36	120-130	3
115	8	130-140	2
125	3	140-150	1
135	2	150-160	1
145	2	160-170	1
155	2	170-180	0
165	3		
175	2	Total	3528
180	3		



Note: Photometric data was developed using a 300W incandescent lamp (6,360 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. Multipliers do not apply to Coefficients of Utilization.

LAMP WATTS	CONVERSION FACTOR LESS GUARD	CONVERSION FACTOR WITH GUARD
100W	.275	.247
150W	.45	.405
200W	.63	.567

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.598	.533	.473	.424	.378	.337	.300	.271	.244	.221
	30*	.577	.498	.431	.378	.330	.289	.251	.223	.197	.176
	10*	.557	.470	.398	.343	.295	.254	.217	.190	.166	.146
70*	50*	.584	.521	.463	.415	.371	.331	.294	.266	.240	.218
	30*	.565	.490	.425	.373	.326	.286	.248	.221	.195	.174
	10*	.547	.463	.394	.340	.293	.252	.216	.189	.165	.145
50*	50*	.556	.499	.445	.400	.358	.320	.284	.257	.232	.211
	30*	.542	.473	.412	.363	.318	.279	.243	.216	.192	.171
	10*	.527	.450	.385	.334	.288	.249	.213	.187	.163	.144
30*	50*	.533	.478	.427	.385	.345	.309	.275	.249	.225	.205
	30*	.520	.457	.400	.353	.311	.273	.238	.212	.188	.168
	10*	.508	.438	.378	.326	.284	.246	.211	.185	.162	.142
10*	50*	.511	.459	.412	.371	.333	.299	.266	.241	.218	.198
	30*	.500	.442	.388	.344	.304	.267	.233	.208	.185	.165
	10*	.491	.426	.368	.322	.280	.242	.208	.183	.160	.141
0*	0*	.478	.414	.366	.310	.268	.231	.197	.172	.149	.131

*Percent Reflectance

ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

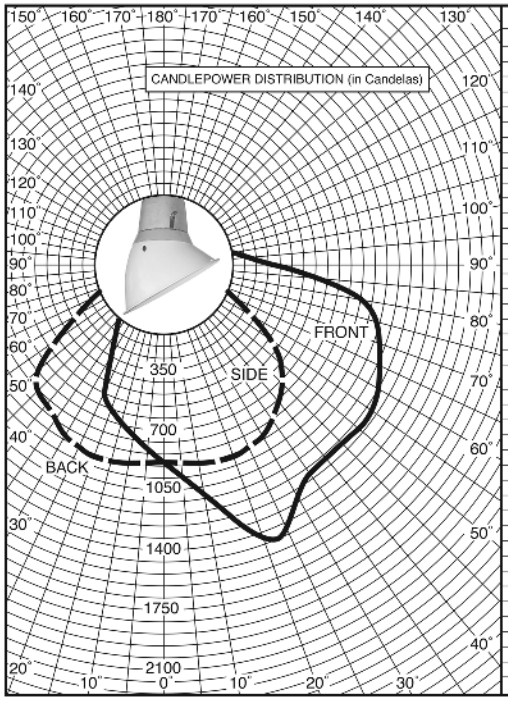
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EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base

Medium Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVICX2300 Lamp: 300W/PS25 Incandescent



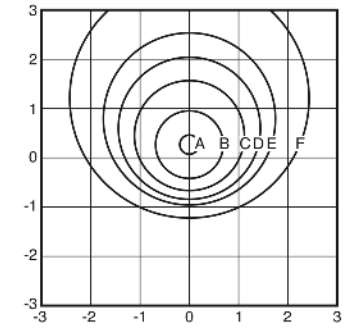
CANDELAS*			
Degrees	Front	Side	Back
0	891	891	891
5	977	895	812
15	1264	927	700
25	1434	907	573
35	1227	835	256
45	1207	758	124
55	1226	432	33
65	1128	197	4
75	1040	96	7
85	673	29	15
90	365	8	32
95	221	8	59
105	96	8	83
115	22	7	24
125	0	6	5
135	0	5	5
145	0	4	2
155	3	6	3
165	2	5	2
175	2	5	3
180	5	5	5

ZONAL LUMENS	
Zone	Lumens
0-10	86
10-20	268
20-30	435
30-40	501
40-50	520
50-60	499
60-70	432
70-80	331
80-90	175
90-100	86
100-110	46
110-120	12
120-130	4
130-140	3
140-150	2
150-160	2
160-170	1
170-180	0
Total	3403

Note: Photometric data was developed using a 300W incandescent lamp (6,360 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts.

CONVERSION FACTOR		
LAMP WATTS	LESS GUARD	WITH GUARD
100W	.275	.247
150W	.45	.405
200W	.63	.567

ISOFOOTCANDLE CHART:



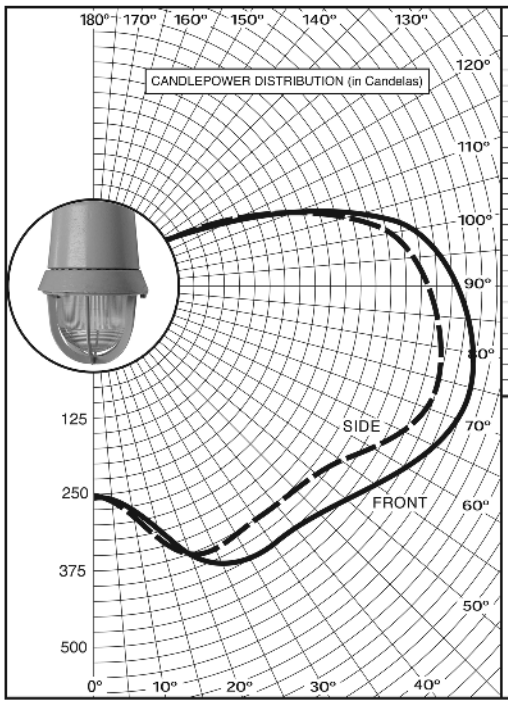
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

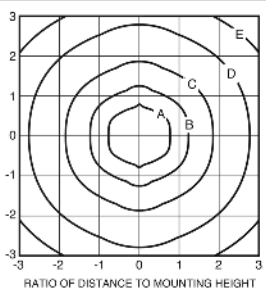
Isofootcandle chart shows illuminance in footcandles at ground level.

Mogul Base

Luminaire with Globe and Guard
EVIA2501 Lamp: 500W/PS40 Incandescent



CANDELAS			ZONAL LUMENS	
Vertical Angle	Front	Side	With Zone	Lumens
0	259	259	0-10	26
5	259	265	10-20	94
15	326	344	20-30	179
25	417	386	30-40	244
35	426	375	40-50	311
45	434	382	50-60	394
55	471	411	60-70	494
65	529	474	70-80	552
75	555	503	80-90	541
85	524	475	90-100	502
90	505	458	100-110	378
95	487	443	110-120	150
105	376	351	120-130	25
115	143	148	130-140	4
125	22	24	140-150	2
135	6	6	150-160	0
145	2	2	160-170	0
155	0	0	170-180	0
165	0	1	Total	3897
175	0	1		
180	1	1		



Note: Photometric data was developed using a 300W incandescent lamp (6,360 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. Multipliers do not apply to Coefficients of Utilization.

LAMP WATTS	CONVERSION FACTOR
100W	.275
150W	.45
200W	.63

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.561	.466	.395	.344	.301	.265	.235	.212	.191	.173
	30*	.520	.408	.331	.279	.236	.202	.174	.153	.135	.120
	10*	.483	.360	.281	.230	.186	.157	.132	.113	.098	.085
70*	50*	.529	.438	.372	.324	.283	.250	.222	.200	.180	.164
	30*	.492	.387	.314	.265	.224	.191	.165	.146	.128	.114
	10*	.459	.343	.267	.219	.179	.149	.125	.108	.093	.081
50*	50*	.470	.387	.327	.286	.250	.220	.196	.177	.160	.146
	30*	.440	.345	.279	.236	.200	.171	.148	.130	.115	.102
	10*	.413	.308	.240	.197	.161	.134	.112	.097	.083	.073
30*	50*	.415	.340	.286	.250	.218	.193	.172	.155	.141	.129
	30*	.391	.305	.247	.209	.177	.151	.131	.115	.102	.091
	10*	.370	.276	.214	.176	.144	.120	.100	.086	.074	.064
10*	50*	.365	.296	.248	.217	.189	.168	.149	.135	.123	.112
	30*	.346	.269	.216	.183	.155	.133	.114	.101	.089	.080
	10*	.329	.244	.189	.155	.127	.105	.088	.076	.065	.056
0*	0*	.302	.219	.166	.134	.107	.087	.071	.060	.051	.043

*Percent Reflectance

ISOFOOTCANDLE CHART:

Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
10'	2.00	1.00	0.50	0.20	0.10
12'	1.39	0.69	0.35	0.14	0.07
16'	0.78	0.39	0.20	0.08	0.04
20'	0.50	0.25	0.13	0.05	0.03
25'	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows illuminance in footcandles at ground level.

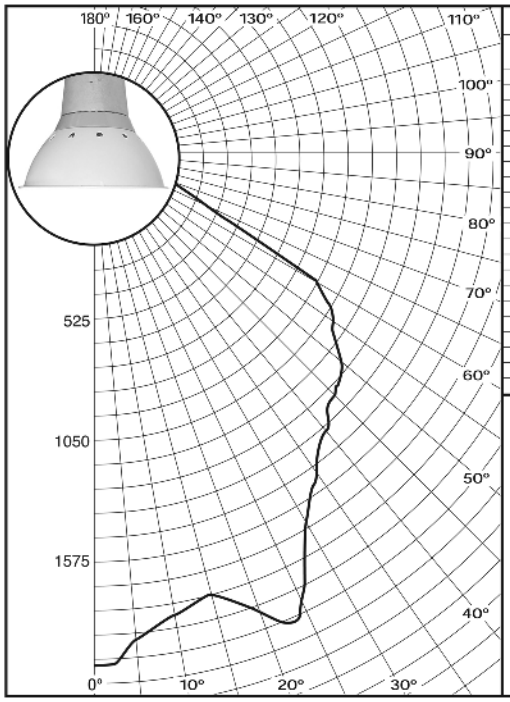
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EVI Series Explosionproof Incandescent Luminaires

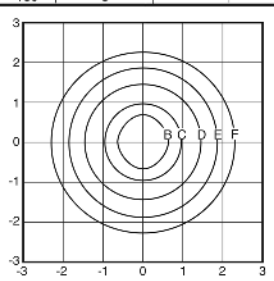
Factory Sealed
100-500W Medium and Mogul Base

Mogul Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVIA2500 Lamp: 500W/PS40 Incandescent



CANDELAS*		ZONAL LUMENS	
Vertical Angle	Candela	With Zone	Lumens
0	2017	0-10	182
5	1923	10-20	516
15	1786	20-30	876
25	1947	30-40	934
35	1497	40-50	998
45	1298	50-60	978
55	1092	60-70	762
65	841	70-80	195
75	177	80-90	57
85	52	90-100	8
90	7	100-110	52
95	6	110-120	7
105	73	120-130	5
115	6	130-140	3
125	5	140-150	2
135	4	150-160	1
145	3	160-170	1
155	3	170-180	0
165	3	Total	5578
175	2		
180	3		



Note: Photometric data was developed using a 500W incandescent lamp (9,900 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. Multipliers are not used with Coefficients of Utilization table.

	CONVERSION FACTOR	
LAMP WATTS	LESS GUARD	WITH GUARD
200W	.375	.338
300W	.588	.529

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.595	.530	.470	.420	.374	.335	.300	.272	.246	.225
	30*	.574	.496	.429	.375	.327	.287	.252	.225	.200	.180
	10*	.555	.468	.396	.340	.292	.253	.218	.193	.169	.151
70*	50*	.582	.519	.461	.413	.368	.329	.295	.268	.242	.221
	30*	.563	.486	.423	.370	.323	.284	.249	.223	.199	.179
	10*	.548	.461	.392	.338	.290	.251	.217	.192	.169	.150
50*	50*	.557	.496	.443	.398	.355	.319	.285	.260	.235	.215
	30*	.541	.472	.411	.361	.316	.278	.244	.219	.195	.176
	10*	.527	.450	.384	.332	.286	.248	.215	.190	.167	.149
30*	50*	.534	.479	.427	.384	.344	.309	.277	.252	.229	.209
	30*	.521	.457	.400	.353	.309	.273	.240	.215	.192	.174
	10*	.510	.439	.376	.327	.282	.246	.213	.188	.166	.148
10*	50*	.513	.461	.412	.371	.333	.299	.268	.245	.223	.204
	30*	.503	.443	.389	.344	.303	.268	.236	.212	.189	.171
	10*	.493	.426	.369	.322	.279	.243	.211	.187	.165	.147
0*	0*	.482	.416	.357	.310	.267	.232	.200	.176	.155	.137

*Percent Reflectance

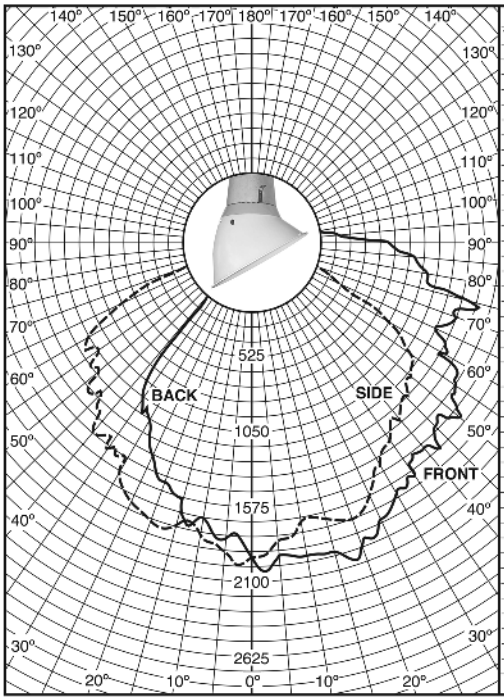
ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.89	6.94	3.47	1.39	0.69	0.35
16'	7.81	3.91	1.95	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

Isofootcandle chart shows illuminance in footcandles at ground level.

Mogul Base

Luminaire with Globe and Angle Reflector (Less Guard)
EVIA2500 Lamp: 500W/PS40 Incandescent



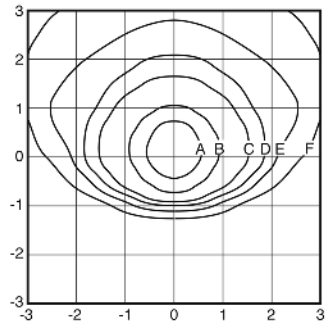
CANDELAS*			
Vertical Angle	Front	Side	Back
0	1938	1938	1938
5	1904	1829	1783
15	1967	1721	1601
25	1858	1754	1391
35	1671	1424	1030
45	1564	1270	229
55	1477	1027	44
65	1153	524	3
75	1285	138	3
85	870	34	7
90	750	5	7
95	328	6	7
105	139	7	114
115	35	7	8
125	0	7	7
135	0	7	4
145	1	7	4
155	0	6	3
165	2	6	3
175	2	5	2
180	5	5	5

ZONAL LUMENS

With Zone	Lumens
0-10	175
10-20	496
20-30	772
30-40	860
40-50	859
50-60	728
60-70	593
70-80	497
80-90	288
90-100	100
100-110	56
110-120	11
120-130	5
130-140	4
140-150	3
150-160	2
160-170	1
170-180	0
Total	5452

Note: Photometric data was developed using a 500W incandescent lamp (9,900 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts.

	CONVERSION FACTOR	
LAMP WATTS	LESS GUARD	WITH GUARD
200W	.375	.338
300W	.588	.529



ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

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2L EV Incandescent Luminaires

Factory Sealed

Cl. I, Div. 1 and 2, Groups **A**,B,C,D – Pendant Mount
Cl. I, Div. 1 and 2, Groups B,C,D – Ceiling and Bracket Mount
Wet Locations
NEMA 3,3R

Application:

EV292 Series luminaires are used:
- to provide incandescent lighting in locations made hazardous due to the presence of hydrogen, gases or vapors of an equivalent hazard, such as manufactured gas.
- hydrogen areas of process industries, missile bases where hydrogen fuel is used and gas manufacturing plants.
- in areas of lesser hazard than indicated above.
- EVA292 pendant mount luminaire is also suitable for use in locations made hazardous due to the presence of acetylene.

Features:

- Flametight threaded joints – no external seal needed
- Easy to assemble and relamp
- Shock absorbing receptacle
- Gasket seals out dirt and liquids
- Positive locking of globe holder
- Heat and impact resistant globe
- Inner reflector eliminates upward spill light
- Lightweight
- Corrosion Resistant
- Dome and 30° angle reflectors available

Standard Materials:

- Globes – heat and impact resistant glass
- Luminaire and bracket arm – copper-free aluminum
- Reflectors – *Krydon*® fiberglass-reinforced polyester
- Back box – *Feraloy*® iron alloy

Standard Finishes:

- Aluminum – epoxy powder coat
- *Krydon* – high reflectance white
- *Feraloy* – electrogalvanized and aluminum acrylic paint

Size Ranges:

- ¾″ conduit hub

Capacity Ranges:

- 300 watt, PS-30 medium base lamps

Certifications and Compliances:

- NEC/CEC: Class I, Divisions 1 and 2, Groups A,B,C,D – pendant mount
  Class I, Divisions 1 and 2, Groups B,C,D – ceiling and bracket mount
- UL Standard: 844
- CSA Standard: C22.2 No. 137

Temperature Performance Data:

Style	Class I UL	Ambient Temp.°C	Supply Wire °C
Pendant	T3A	25/40	150°C
Ceiling	T3A	25/40	150°C
Bracket	T3A	25/40	150°C

NOTE: Photometric curves and data are the same as shown for EV Groups C, D series.

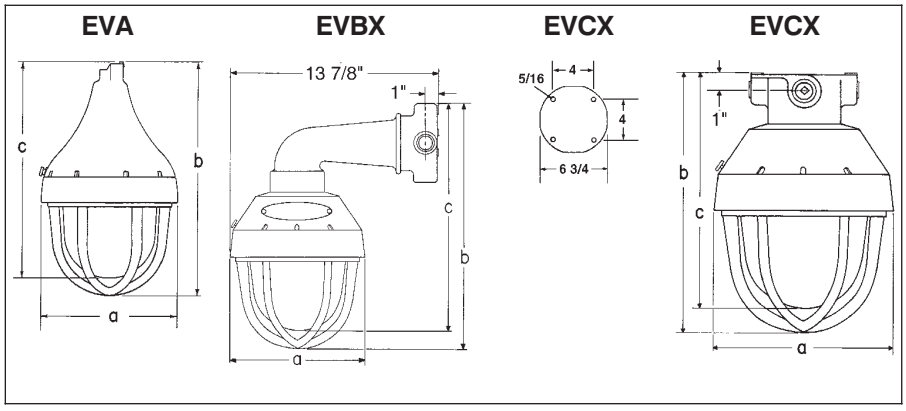






Style	Pendant style with RD725 dome reflector: Max. Lamp Size		Pendant style with RA725 30° angle reflector: Hub Size	Without Reflector Cat. #	Pendant style without reflector: Dome Reflector Cat. #	30° Angle Reflector Cat. #
Pendant	300 watt, PS-30 (medium base)	With Guard	¾	EVA292	RD725	RA725
Ceiling	300 watt, PS-30 (medium base)	With Guard	¾	EVCX292	RD725	RA725
Bracket	300 watt, PS-30 (medium base)	With Guard	¾	EVBX292	Not Applicable	

Dimensions



	EVA	EVBX	EVCX	Reflector Diameter Type	
a	8⅞	8⅞	8⅞		
b	16⅜	18⅛	14⅜	Dome	16″
c	14⅞	16⅝	12⅞	30° Angle	16″

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Description	Page No.
Application/Selection	722, 723
Champ® Series - Integrally Ballasted Luminaires	
Accessories	775, 776
Ballast Data (USA)	677-682
Ballast Data (Canada)	677-682
DMV Series 50 – 250W H.I.D.	743
Catalog Listings	744-749
Dimensions, Weights, Temperature Data	750, 751
Photometric Data	752, 753
LMV Series 35 – 150W H.I.D	735
Catalog Listings	736-739
Dimensions, Weights, Temperature Data	740, 741
Photometric Data	742
VMV Series 50 – 175W H.I.D	724
Catalog Listings	725-731
Dimensions, Weights, Temperature Data	731, 732
Photometric Data	733, 734
VMV High Wattage Series 200 – 400W H.I.D.	754
Catalog Listings	755-760
Dimensions, Weights, Temperature Data	761, 762
Photometric Data	763, 764
N2MV Non-Metallic H.I.D.	765
Catalog Listings	766-770
Dimensions, Weight, Temperature Data	771, 772
Photometric Data	773, 774
V2PC Photocell	777, 778

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3L H.I.D. (High Intensity Discharge) Luminaires

Enclosed & Gasketed Application and Selection

Application:

Luminaires included in this section are enclosed and gasketed, designed for use with H.I.D. lamps as follows:

- in locations where protection is required from wet, dirty and corrosive atmospheres
- where long life lamps provide desirable maintenance cost savings and return on investment through use of fewer luminaires, circuits and ancillary apparatus.
- where relamping and maintenance difficulties require long life lamps.

Considerations for Selection:

Environmental:

- What are the hazardous areas classifications (NEC/CEC) of the locations in which the luminaires will be installed?
- Must luminaires be suitable for use in marine, hosedown, corrosive applications?

Lighting levels required:

- What wattage luminaire(s) will provide the desired light level? (See Lighting Selector Guide, Section L to determine number and location of luminaires required)

Product Selection:

Quick Selector Chart -
(See specific sections for lamp type and wattage suitability)

- Series -	- Watts HPS, MH & MV Lamps	Hazardous Area & Other Enviromental Suitabilities NEC, CEC, IEC	- Ballast Voltages -
VMV Champ	50, 70, 100, 150, 175 Mogul Base	**NEC & CEC** Cl. I, Div. 2 Groups A, B, C, D Cl. II, Groups E, F, G Class III Simultaneous Presence ***Restricted Breathing (Suffix - S826)*** CL. I Div. 2 & Zone 2 AEx nR, Ex nR IIC Marine Outdoor & Wet Locations Type 3, 3R, 4, 4X IP56 to 1P66 **IEC** **Certified for IEC Zone 2 (Suffix - S826TB)** Ex nR IIC IP 56 to IP 66	**Standard Voltage Ballasts (60 Hz)** **NEC (UL)** Multi-tap: 120, 208, 240 & 277 Volt 60 Hz. Dual-tap: 120 & 277 Volt 60 Hz (50W HPS) 120 Volt 60 Hz 480 Volt 60 Hz **CEC/CSA (cUL)** Tri-tap: 120, 277 & 347 Volt 60 Hz Dual-tap: 120 & 277 Volt 60 Hz (50W HPS) 120 Volt 60 Hz
VMV High Wattage Champ	200, 250, 400 Mogul Base		
LMV Champ Low Profile	35, 50, 70, 100, 150 Medium Base		**Optional Voltage Ballasts (50 or 60 Hz)** **CEC/CSA (cUL)** 208 Volt 60 Hz CWI - Isolated 240 Volt 60 Hz CWI - Isolated 480 Volt 60 Hz CWI - Isolated 600 Volt 60 Hz CWI - Isolated **EXPORT** 220 Volt 50 Hz 230 Volt 50 Hz 240 Volt 50 Hz
DMV Champ Expanded Class II Suitability	50, 70, 100, 150, 175, 250 Mogul Base		
N2MV Champ Non Metallic	50, 70, 100, 150, 175 Mogul Base		

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Champ® H.I.D. Luminaires

VMV, LMV, DMV, VMV High Wattage & N2MV Series

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II, Groups E, F, G, Cl. III
- Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

The *Champ* family is an extremely versatile industrial lighting system. Five different series of *Champ* Luminaires embrace a broad range of wattages, lamp sources, compliances, optics, and accessories. Each series is covered in detail on the following pages. General information to help in the proper selection of series and luminaires is shown below.











Application:

Heavy duty *Champ* lighting luminaires are used:

- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- in areas where ignitible concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- where combustible dusts are present
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found.

Features:

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements in each series, to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount.
- Wide range of light sources and wattages to meet specifiers' needs: 35, 50, 70, 100, 150, 200, 250 and 400 watt high pressure sodium (HPS); 100, 175, 250, and 400 watt mercury vapor (MV); 70, 100 175, 250, and 400 watt metal halide (MH).
- Hinged ballast housings for ease of installation and maintenance; all mounting modules fit all ballast housings.
- Wide choice of photometric distributions. Globes available for lamps up through 400 watt HPS, and 250 watt MV and MH. Glass refractors available for all VMV and DMV units; reflector/lens for 200-400 watt VMV units
- All luminaires are designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to –40°C
- Dome and 30° angle reflectors made of bright white *Krydon*® fiberglass-reinforced polyester material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode
- Grounding wire for safety
- Ballasts are high power factor (min P.F. 90%) and available in a variety of voltages to meet local area requirements.

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3L 50-175W VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (HPS 50W, 70W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

VMV series *Champ* luminaires are used:
- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- in areas in which ignitible concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- where combustible dusts are present
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found

Features:

- Compact, lightweight design is ideal for medium and low mounting heights
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount
- Wide range of light sources and wattages to meet specifiers' needs: 50, 70, 100, and 150 watt high pressure sodium (HPS); 100, and 175 watt mercury vapor (MV); 70, 100, 175 watt metal halide (MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, refractors and compact refractors available for all wattage luminaires; plastic refractors (for non-hazardous applications only) for 50-100 watt luminaires
- All luminaires are designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (–40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode
- Grounding wire for safety
- High power factor ballasts (Min P.F. 90%) and available in a variety of voltages to meet local area requirements.
- Mogul base porcelain lamp socket



Standard Materials:

- Ballast housings and mountings – copper free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass (50-175 watts); plastic (50-100 watts), for non-hazardous applications.
- Guards: globe – copper-free aluminum
  refractor – stainless steel

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, 208, 240, 277, 347, 480, 600, Multi-tap⋆ (120, 208, 240 and 277)
- 50 to 150W HPS; 100 to 175W MV; 70 to 175W MH

Certifications and Compliances:

- NEC & CEC:
  - Class I, Division 2, Groups A,B,C,D
  - HPS 50W, 70W - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
  - Class I Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards:
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15

♦ VMV Series now available with Champ Induction Lighting System. See Section 5L.

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

Description	Suffix to be added to Cat. No.
Factory Sealed Champs	**S865†**
- Class I Division 2 & Zone 2	
- Provides T3 code without conduit or cable seals	
Restricted breathing/Non-sparking	
Restricted Breathing Construction	**S826†**
- Class I Division 2 & Zone 2 Suitabilty	
- Cooler Operating Temperatures (T-Numbers)	
Certified for IEC Zone 2	**S826TB**
- Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT or TT)	
Fused – to protect ballast and capacitors against abnormal line conditions (Not for use in Canada)	**S658***
Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150W LX HPS only	**BG**
Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only	**IR**
Quartz auxiliary lighting for use with R2 & R5 large glass refractors only! – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For *non-hazardous* locations only	**QTZ**
Stainless steel insert - top hat with stainless steel threaded insert to attach ballast housing	**S806**
TEFLON coating on globe for increased shatter protection. T-Numbers not affected	**S808**
Factory assembled with H.I.D. lamps installed for additional labor savings.	**FA**

(Note: BG and IR options cannot be used together. IR and QTZ options cannot be used together.)

Accessories:

- See pages 775 and 776 for complete listing.

TEFLON is a registered trademark of E.I. duPont Co.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

† For detailed information on Restricted Breathing and Non-Sparking, see page 32 of the Cooper Crouse-Hinds 2005 Code Digest.

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50-150W High Pressure Sodium VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing CL. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- CL. II Groups E, F, G, CL. III & Simultaneous Presence (50W, 70W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66



See Notes 1 (to specify voltage), 2 and 3. For guards and other optics see VMV Luminaires – Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G24 Globe and P21 Guard	With G241 Type I Compact Refractor	With G245 Type V Compact Refractor	With R5 Glass Refractor
	**Pendant Mount**	¾	50	VMVS2A050GP	VMVS2A050G241	VMVS2A050G245	VMVS2A050R5
		1		VMVS3A050GP	VMVS3A050G241	VMVS3A050G245	VMVS3A050R5
		¾	70	VMVS2A070GP✓	VMVS2A070G241✓	VMVS2A070G245✓	VMVS2A070R5✓
		1		VMVS3A070GP✓	VMVS3A070G241✓	VMVS3A070G245✓	VMVS3A070R5✓
		¾	100	VMVS2A100GP✓	VMVS2A100G241✓	VMVS2A100G245✓	VMVS2A100R5✓
		1		VMVS3A100GP✓	VMVS3A100G241✓	VMVS3A100G245✓	VMVS3A100R5✓
		¾	150	VMVS2A150GP✓	VMVS2A150G241✓	VMVS2A150G245✓	VMVS2A150R5✓
		1		VMVS3A150GP✓	VMVS3A150G241✓	VMVS3A150G245✓	VMVS3A150R5✓
	**Flexible Pendant Mount**	¾	50	VMVS2HA050GP	VMVS2HA050G241	VMVS2HA050G245	VMVS2HA050R5
		¾	70	VMVS2HA070GP✓	VMVS2HA070G241✓	VMVS2HA070G245✓	VMVS2HA070R5✓
		¾	100	VMVS2HA100GP✓	VMVS2HA100G241✓	VMVS2HA100G245✓	VMVS2HA100R5✓
		¾	150	VMVS2HA150GP✓	VMVS2HA150G241✓	VMVS2HA150G245✓	VMVS2HA150R5✓
	**Ceiling Mount Thru-Feed**	¾	50	VMVS2C050GP	VMVS2C050G241	VMVS2C050G245	VMVS2C050R5
		1		VMVS3C050GP	VMVS3C050G241	VMVS3C050G245	VMVS3C050R5
		¾	70	VMVS2C070GP✓	VMVS2C070G241✓	VMVS2C070G245✓	VMVS2C070R5✓
		1		VMVS3C070GP✓	VMVS3C070G241✓	VMVS3C070G245✓	VMVS3C070R5✓
		¾	100	VMVS2C100GP✓	VMVS2C100G241✓	VMVS2C100G245✓	VMVS2C100R5✓
		1		VMVS3C100GP✓	VMVS3C100G241✓	VMVS3C100G245✓	VMVS3C100R5✓
		¾	150	VMVS2C150GP✓	VMVS2C150G241✓	VMVS2C150G245✓	VMVS2C150R5✓
		1		VMVS3C150GP✓	VMVS3C150G241✓	VMVS3C150G245✓	VMVS3C150R5✓
	**Wall Mount Thru-Feed**	¾	50	VMVS2TW050GP	VMVS2TW050G241	VMVS2TW050G245	VMVS2TW050R5
		1		VMVS3TW050GP	VMVS3TW050G241	VMVS3TW050G245	VMVS3TW050R5
		¾	70	VMVS2TW070GP✓	VMVS2TW070G241✓	VMVS2TW070G245✓	VMVS2TW070R5✓
		1		VMVS3TW070GP✓	VMVS3TW070G241✓	VMVS3TW070G245✓	VMVS3TW070R5✓
		¾	100	VMVS2TW100GP✓	VMVS2TW100G241✓	VMVS2TW100G245✓	VMVS2TW100R5✓
		1		VMVS3TW100GP✓	VMVS3TW100G241✓	VMVS3TW100G245✓	VMVS3TW100R5✓
		¾	150	VMVS2TW150GP✓	VMVS2TW150G241✓	VMVS2TW150G245✓	VMVS2TW150R5✓
		1		VMVS3TW150GP✓	VMVS3TW150G241✓	VMVS3TW150G245✓	VMVS3TW150R5✓
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½ ° Angle	¾	50	VMVS25Q050GP	VMVS25Q050G241	VMVS25Q050G245	VMVS25Q050R5
		¾	70	VMVS25Q070GP	VMVS25Q070G241	VMVS25Q070G245	VMVS25Q070R5
		¾	100	VMVS25Q100GP	VMVS25Q100G241	VMVS25Q100G245	VMVS25Q100R5
		¾	150	VMVS25Q150GP	VMVS25Q150G241	VMVS25Q150G245	VMVS25Q150R5
	**Stanchion Mount** 25° Angle	1½	50	VMVSJ050GP	VMVSJ050G241	VMVSJ050G245	VMVSJ050R5
		1½	70	VMVSJ070GP✓	VMVSJ070G241✓	VMVSJ070G245✓	VMVSJ070R5✓
		1½	100	VMVSJ100GP✓	VMVSJ100G241✓	VMVSJ100G245✓	VMVSJ100R5✓
		1½	150	VMVSJ150GP✓	VMVSJ150G241✓	VMVSJ150G245✓	VMVSJ150R5✓
	**Stanchion Mount** Straight	1½	50	VMVSP050GP	VMVSP050G241	VMVSP050G245	VMVSP050R5
		1½	70	VMVSP070GP✓	VMVSP070G241✓	VMVSP070G245✓	VMVSP070R5✓
		1½	100	VMVSP100GP✓	VMVSP100G241✓	VMVSP100G245✓	VMVSP100R5✓
		1½	150	VMVSP150GP✓	VMVSP150G241✓	VMVSP150G245✓	VMVSP150R5✓

1. **Standard Voltage Ballasts - 60Hz**

Voltage	NEC/UL				CEC/CSA (cUL)		
	Multi Tap	Dual Tap	120V	480V	Tri Tap	Dual Tap	120V
Suffix	/MT	/DT	/120	/480	/TT	/DT	/120

(Multi Tap and Dual Tap ballasts are prewired for 277V)

Optional Voltage Ballasts - 50 or 60Hz

Voltage	CEC/CSA (cUL) - CWI Isolated Ballasts				EXPORT			
	208V CWI	240V CWI	480V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/480CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. 150W HPS Luminaires, 55V Lamps is standard; for 100V lamps - Add suffix ''CE''. 50W HPS Luminaire is dual tap only.
3. Options - Add the required options suffixes from page 724, In Alpha-numeric order.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

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150-175W Pulse Start Metal Halide VMV Series

Champ® H.I.D. Luminaires

- CI. I, Div 2, Groups A, B, C, D
- Restricted Breathing CI. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage). For guards and other optics see VMV Luminaires – Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G24 Globe and P21 Guard	With G245 Type V Compact Refractor	With R5 Glass Refractor
	**Pendant Mount**	¾	150	VMVM2A150GP-S828	VMVM2A150G245-S828	VMVM2A150R5-S828
		1		VMVM3A150GP-S828	VMVM3A150G245-S828	VMVM3A150R5-S828
		¾	175	VMVM2A175GP-S828	VMVM2A175G245-S828	VMVM2A175R5-S828
		1		VMVM3A175GP-S828	VMVM3A175G245-S828	VMVM3A175R5-S828
	**Flexible Pendant Mount**	¾	150	VMVM2HA150GP-S828	VMVM2HA150G245-S828	VMVM2HA150R5-S828
		¾	175	VMVM2HA175GP-S828	VMVM2HA175G245-S828	VMVM2HA175R5-S828
	**Ceiling Mount Thru-Feed**	¾	150	VMVM2C150GP-S828	VMVM2C150G245-S828	VMVM2C150R5-S828
		1		VMVM3C150GP-S828	VMVM3C150G245-S828	VMVM3C150R5-S828
		¾	175	VMVM2C175GP-S828	VMVM2C175G245-S828	VMVM2C175R5-S828
		1		VMVM3C175GP-S828	VMVM3C175G245-S828	VMVM3C175R5-S828
	**Wall Mount Thru-Feed**	¾	150	VMVM2TW150GP-S828	VMVM2TW150G245-S828	VMVM2TW150R5-S828
		1		VMVM3TW150GP-S828	VMVM3TW150G245-S828	VMVM3TW150R5-S828
		¾	175	VMVM2TW175GP-S828	VMVM2TW175G245-S828	VMVM2TW175R5-S828
		1		VMVM3TW175GP-S828	VMVM3TW175G245-S828	VMVM3TW175R5-S828
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	150	VMVM25Q150GP-S828	VMVM25Q150G245-S828	VMVM25Q150R5-S828
		¾	175	VMVM25Q175GP-S828	VMVM25Q175G245-S828	VMVM25Q175R5-S828
	**Stanchion Mount** 25° Angle	1½	150	VMVMJ150GP-S828	VMVMJ150G245-S828	VMVMJ150R5-S828
		1½	175	VMVMJ175GP-S828	VMVMJ175G245-S828	VMVMJ175R5-S828
	**Stanchion Mount** Straight	1½	150	VMVMP150GP-S828	VMVMP150G245-S828	VMVMP150R5-S828
		1½	175	VMVMP175GP-S828	VMVMP175G245-S828	VMVMP175R5-S828

1.

Standard Voltage Ballasts - 60Hz

	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

Optional Voltage Ballasts - 50 or 60Hz

	EXPORT			
Voltage	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/220	/220 50	/230 50	/240 50

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100-175W Metal Halide VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66



See Note 1 (to specify voltage), 2 and 3. For guards and other optics see VMV Luminaires – Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G24 Globe and P21 Guard	With G241 Type I Compact Refractor	With G245 Type V Compact Refractor	With R5 Glass Refractor
	**Pendant Mount**	¾	70	VMVM2A070GP	VMVM2A070G241	VMVM2A070G245	VMVM2A070R5
		1		VMVM3A070GP	VMVM3A070G241	VMVM3A070G245	VMVM3A070R5
			100	VMVM2A100GP✓	VMVM2A100G241✓	VMVM2A100G245✓	VMVM2A100R5✓
		1		VMVM3A100GP✓	VMVM3A100G241✓	VMVM3A100G245✓	VMVM3A100R5✓
		¾	175	VMVM2A175GP✓	VMVM2A175G241✓	VMVM2A175G245✓	VMVM2A175R5✓
		1		VMVM3A175GP✓	VMVM3A175G241✓	VMVM3A175G245✓	VMVM3A175R5✓
	**Flexible Pendant Mount**	¾	70	VMVM2HA070GP	VMVM2HA070G241	VMVM2HA070G245	VMVM2HA070R5
		¾	100	VMVM2HA100GP✓	VMVM2HA100G241✓	VMVM2HA100G245✓	VMVM2HA100R5✓
		¾	175	VMVM2HA175GP✓	VMVM2HA175G241✓	VMVM2HA175G245✓	VMVM2HA175R5✓
	**Ceiling Mount Thru-Feed**	¾	70	VMVM2C070GP	VMVM2C070G241	VMVM2C070G245	VMVM2C070R5
		1		VMVM3C070GP	VMVM3C070G241	VMVM3C070G245	VMVM3C070R5
		¾	100	VMVM2C100GP✓	VMVM2C100G241✓	VMVM2C100G245✓	VMVM2C100R5✓
		1		VMVM3C100GP✓	VMVM3C100G241✓	VMVM3C100G245✓	VMVM3C100R5✓
		¾	175	VMVM2C175GP✓	VMVM2C175G241✓	VMVM2C175G245✓	VMVM2C175R5✓
		1		VMVM3C175GP✓	VMVM3C175G241✓	VMVM3C175G245✓	VMVM3C175R5✓
	**Wall Mount Thru-Feed**	¾	70	VMVM2TW070GP	VMVM2TW070G241	VMVM2TW070G245	VMVM2TW070R5
		1		VMVM3TW070GP	VMVM3TW070G241	VMVM3TW070G245	VMVM3TW070R5
		¾	100	VMVM2TW100GP✓	VMVM2TW100G241✓	VMVM2TW100G245✓	VMVM2TW100R5✓
		1		VMVM3TW100GP✓	VMVM3TW100G241✓	VMVM3TW100G245✓	VMVM3TW100R5✓
		¾	175	VMVM2TW175GP✓	VMVM2TW175G241✓	VMVM2TW175G245✓	VMVM2TW175R5✓
		1		VMVM3TW175GP✓	VMVM3TW175G241✓	VMVM3TW175G245✓	VMVM3TW175R5✓
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	70	VMVM25Q070GP	VMVM25Q070G241	VMVM25Q070G245	VMVM25Q070R5
		¾	100	VMVM25Q100GP	VMVM25Q100G241	VMVM25Q100G245	VMVM25Q100R5
		¾	175	VMVM25Q175GP	VMVM25Q175G241	VMVM25Q175G245	VMVM25Q175R5
	**Stanchion Mount** 25° Angle	1½	70	VMVMJ070GP	VMVMJ070G241	VMVMJ070G245	VMVMJ070R5
		1½	100	VMVMJ100GP✓	VMVMJ100G241✓	VMVMJ100G245✓	VMVMJ100R5✓
		1½	175	VMVMJ175GP✓	VMVMJ175G241✓	VMVMJ175G245✓	VMVMJ175R5✓
	**Stanchion Mount** Straight	1½	70	VMVMP070GP	VMVMP070G241	VMVMP070G245	VMVMP070R5
		1½	100	VMVMP100GP✓	VMVMP100G241✓	VMVMP100G245✓	VMVMP100R5✓
		1½	175	VMVMP175GP✓	VMVMP175G241✓	VMVMP175G245✓	VMVMP175R5✓

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz						
	CEC/CSA (cUL) - CWI Isolated Ballasts			EXPORT			
Voltage	208V CWI	480V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. Options - Add the required options suffixes from page 718, In Alpha-numeric order.
3. 70W Ballast not available in 480V.
✓ – available with Lightning Service™ delivery. See Section G for complete details.

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100-175W Mercury Vapor VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Notes 1 (to specify voltage) and 2. For guards and other optics see VMV Luminaires – Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G24 Globe and P21 Guard	With G241 Type I Compact Refractor	With G245 Type V Compact Refractor	With R5 Glass Refractor
	**Pendant Mount**	¾	100	VMVC2A100GP✓	VMVC2A100G241✓	VMVC2A100G245✓	VMVC2A100R5✓
		1		VMVC3A100GP✓	VMVC3A100G241✓	VMVC3A100G245✓	VMVC3A100R5✓
		¾	175	VMVC2A175GP✓	VMVC2A175G241✓	VMVC2A175G245✓	VMVC2A175R5✓
		1		VMVC3A175GP✓	VMVC3A175G241✓	VMVC3A175G245✓	VMVC3A175R5✓
	**Flexible Pendant Mount**	¾	100	VMVC2HA100GP✓	VMVC2HA100G241✓	VMVC2HA100G245✓	VMVC2HA100R5✓
		¾	175	VMVC2HA175GP✓	VMVC2HA175G241✓	VMVC2HA175G245✓	VMVC2HA175R5✓
	**Ceiling Mount Thru-Feed**	¾	100	VMVC2C100GP✓	VMVC2C100G241✓	VMVC2C100G245✓	VMVC2C100R5✓
		1		VMVC3C100GP✓	VMVC3C100G241✓	VMVC3C100G245✓	VMVC3C100R5✓
		¾	175	VMVC2C175GP✓	VMVC2C175G241✓	VMVC2C175G245✓	VMVC2C175R5✓
		1		VMVC3C175GP✓	VMVC3C175G241✓	VMVC3C175G245✓	VMVC3C175R5✓
	**Wall Mount Thru-Feed**	¾	100	VMVC2TW100GP✓	VMVC2TW100G241✓	VMVC2TW100G245✓	VMVC2TW100R5✓
		1		VMVC3TW100GP✓	VMVC3TW100G241✓	VMVC3TW100G245✓	VMVC3TW100R5✓
		¾	175	VMVC2TW175GP✓	VMVC2TW175G241✓	VMVC2TW175G245✓	VMVC2TW175R5✓
		1		VMVC3TW175GP✓	VMVC3TW175G241✓	VMVC3TW175G245✓	VMVC3TW175R5✓
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	100	VMVC25Q100GP	VMVC25Q100G241	VMVC25Q100G245	VMVC25Q100R5
		¾	175	VMVC25Q175GP	VMVC25Q175G241	VMVC25Q175G245	VMVC25Q175R5
	**Stanchion Mount** 25° Angle	1½	100	VMVCJ100GP✓	VMVCJ100G241✓	VMVCJ100G245✓	VMVCJ100R5✓
		1½	175	VMVCJ175GP✓	VMVCJ175G241✓	VMVCJ175G245✓	VMVCJ175R5✓
	**Stanchion Mount** Straight	1½	100	VMVCP100GP✓	VMVCP100G241✓	VMVCP100G245✓	VMVCP100R5✓
		1½	175	VMVCP175GP✓	VMVCP175G241✓	VMVCP175G245✓	VMVCP175R5✓

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz			
	EXPORT			
Voltage	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/220	/220 50	/230 50	/240 50

2. Options - Add the required options suffixes from page 724, In Alpha-numeric order.
✓ – available with Lightning Service™ delivery. See Section G for complete details.

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VMV Luminaires - Ordering by Components

VMV luminaires are available in components.
A complete luminaire consists of:

I. Champ Cover (Mounting Module)
II. VMV Ballast Housing - Include voltage and required option(s)
III. Optical & Guard components - Globe, Reflector, Refractor, Guard

I. Champ Cover (Mounting Module)

Type	Conduit	Cat. No.
Pendant	¾	APM2
	1	APM3
Flexible Pendant	¾	HPM2
Ceiling	¾	CM2
	1	CM3
Wall	¾	TWM2
	1	TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes.**

Lamp Type	Lamp Watts	Cat No.	
		For Globe and Compact Refractor	For Large Refractor
High Pressure Sodium	50	VMVS050/MT	VMVS050/MT-RM
	70	VMVS070/MT	VMVS070/MT-RM
	100	VMVS100/MT	VMVS100/MT-RM
	150	VMVS150/MT LX	VMVS150/MT LX-RM
Metal Halide	70	VMVM070/MT	VMVM070/MT-RM
	100	VMVM100/MT	VMVM100/MT-RM
	175	VMVM175/MT	VMVM175/MT-RM
Mercury Vapor	100	VMVC100/MT	VMVC100/MT-RM
	175	VMVC175/MT	VMVC175/MT-RM

III. Globe, Reflectors, Refractors, Guards

Type	Cat. No.
Globe	G24
Globe - Teflon Coated	G24-S808
Globe Guard	P21
Reflector - Dome	RD70
Reflector - Angle	RA70
Compact Refractor Type 1	G241
Compact Refractor Type 5	G245
Compact Refractor Guard	P241
Large Refractor Type 2	R2
Large Refractor Type 5	R5
Large Refractor Guard	P23
Large Plastic Refractor Type 2	PR2
Large Plastic Refractor Type 3	PR3
Large Plastic Refractor Type 5	PR5

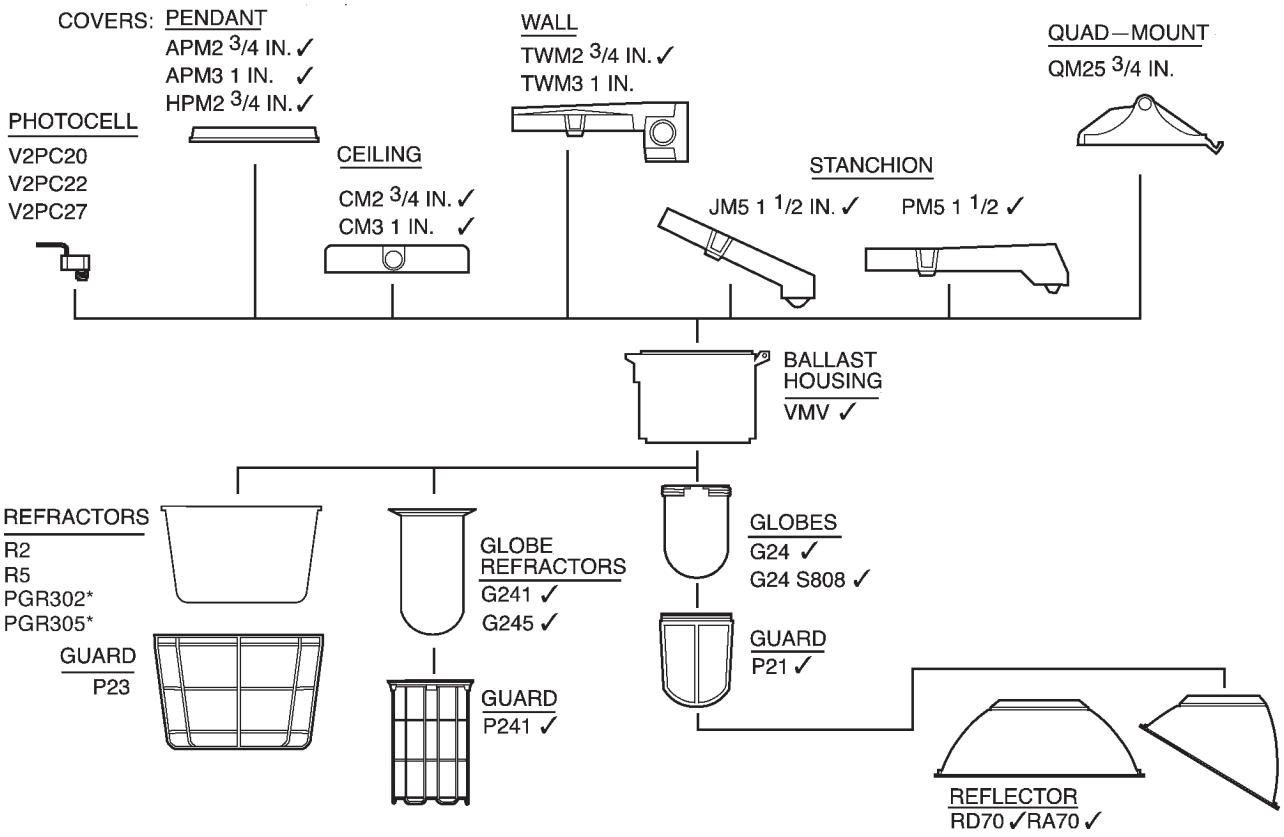
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50-175W VMV Series

Champ® H.I.D. Luminaires

Family Tree





✓ – available with Lightning Service™ delivery. See Section G for complete details.
* Plastic refractors are for non-hazardous areas only (50-100W Max.)

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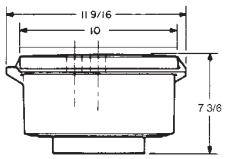
	LAMP		RATED AMBIENT °C	CLASS I, DIVISION 2				CLASS II, DIVISION 1		CLASS I, ZONE 2		SUPPLY WIRE SUITABLE FOR °C	
Cat. No.	Wattage	Type		Globe (G24)	Globe (G24) w/ Reflector (RA70 or RD70)	Refractor (G241 or G245)	Group	Globe (G24) w/ or w/o Reflector (RA70 or RD70)	Simultaneous Presence Class I, Div. 2 Class II, Div.2	Restricted Breathing Suffix S826 w/ Globe (G24)	Factory Sealed Suffix S865 AEx nA nR II	Globe (G24)	Refractor (G241 or G245)
VMVC100-S712	100	MV	40	T2B	T2B	—				T4	T3	75	—
VMVC100	100	MV	40	—	—	—				T4	T3	75	75
VMVC175	175	MV	40	T2	T2	T2B				T3	T3	90	85
VMVM70	70	MH	40	T3A	T3A	T3A				T5	T3	90	90
VMVM70	70	MH	55	T3	T3	T3				T4	T3	90	90
VMVM70	70	MH	65	T3	T3	T3				T4	T3	90	90
VMVM100	100	MH	40	T2D	T2D	T2D				T4	T3	90	90
VMVM100-S849	100	MH	40	T2	T2	T2				T4	T3	75	75
VMVM100	100	MH	55	T2D	T2D	T2D				T4	T3	90	90
VMVM150	150	MH	40	T2A	T2A	T2B				T3	T3	90	90
VMVM175	175	MH	40	T2A	T2A	T2B				T3	T3	90	90
VMVS50	50	HPS	40	T3A	T3A	T3B	EFG	T4A	T3A	T5	T3	75	65
VMVS50	50	HPS	55	T3A	T3A	T3A	EFG	T4	T3	T5	T3	75	75
VMVS50	50	HPS	65	T3	T3	T3	EFG	T4	T2D	T5	T3	75	75
VMVS70	70	HPS	40	T3	T3	T3B	EFG	T3C	T2C	T4	T3	75	65
VMVS70	70	HPS	55	T3	T3	T3	EFG	T3C	T2B	T4	T3	90	90
VMVS100	100	HPS	40	T2C	T2C	T2D	EFG	T3A	T2A	T4	T3	90	75
VMVS100	100	HPS	55	T2B	T2B	T2C	EFG			T3	T3	105	90
VMVS150	150	HPS	40	T2A	T2A	T2B				T3	T3	90	85
VMVS150	150	HPS	55	T2	T2	T2A				T3	T3	105	105
VMVIG055	55	Induction	40	T2C	T2C	—				T6	—	65	—
VMVIG055	55	Induction	55	T2C	T2C	—				T5	—	65	—

The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL 844 specifies how the temperatures are measured.

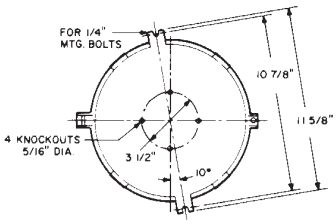
The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1 or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with lower temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

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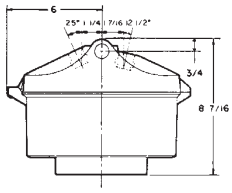
Pendant Mount



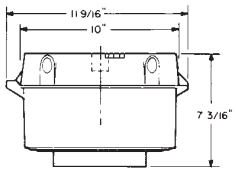
Ceiling Mount Top View



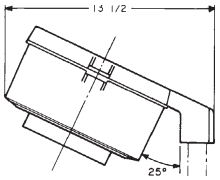
Quad-Mount



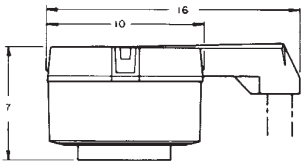
Ceiling Mount



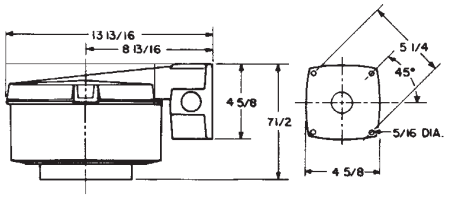
25° Angle Stanchion Mount



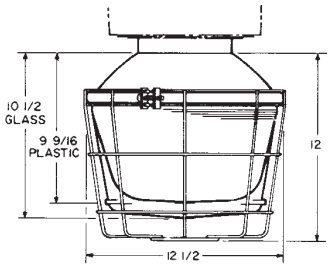
Straight Stanchion Mount



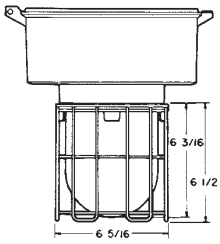
Wall Mount



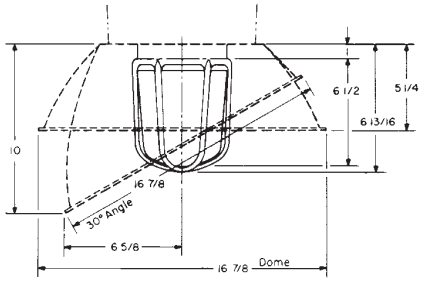
Luminairee With: Refractors, Guard



Compact Refractor



Globe, Guard, Reflectors



Net Luminaire Weights (lbs.):

Luminaire Series	50	Lamp Watts 70	100	150	175
Luminaire with Globe, Guards (lbs):					
VMVS	13½	14½	14½	14½	
VMVC			13¼		15½
VMVM		13	13¼		15½
Luminaire with Glass Refractor (lbs):					
VMVS	21¾	22¾	22¾	22¾	
VMVC			21½		23¾
VMVM		21	21½		23¾

Add for mounting modules (lbs):			
Pendant	1¼	Quad-Mount	3½
Flexible Pendant	1½	Angle Stanchion	3½
Ceiling	2¾	Straight Stanchion	4½
Wall	4½		

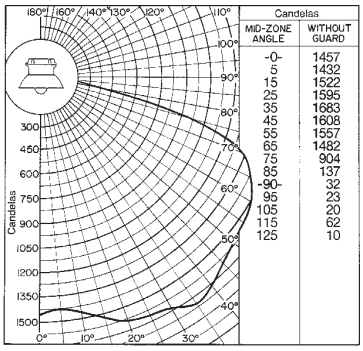
Add for reflectors (lbs):			
Dome	1½	30° Angle	1½

Deduct: ½ lb. for fixture without P21 Guard

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Lamp: 100W/E-23½ high pressure sodium (HPS)
Total bare lamp lumens: 9500
To determine number and placement of luminaires see Lighting Selector Guide, pages 665 to 689.
NOTE: All data provided is for high pressure sodium luminaires with 100W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* Series luminaire.

Luminaire with Globe and Dome Reflector



MID-ZONE ANGLE	Candelas WITHOUT GUARD
-0-	1457
5	1432
15	1522
25	1595
35	1683
45	1608
55	1557
65	1482
75	904
85	137
-90-	32
95	23
105	20
115	62
125	10

Multipliers (for use with candela curve only).

Luminaire Series	Lamp Watts	Conversion Factor
VMVS	50	0.42
	70	0.67
	150	1.68

Luminaire spacing ratio: 1.85

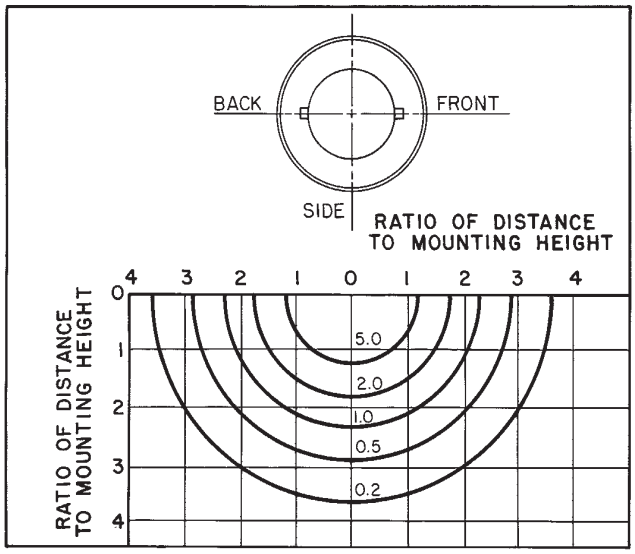
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

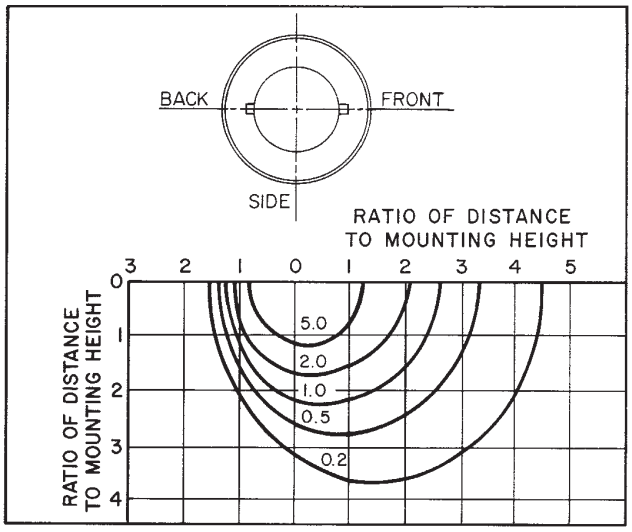
% Reflectance Eff. Cell	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.823	.707	.610	.529	.464
80	30	.784	.646	.538	.451	.384
	10	.749	.594	.482	.391	.324
	50	.804	.690	.597	.517	.452
70	30	.767	.633	.530	.445	.377
	10	.734	.587	.477	.388	.321
	50	.765	.658	.571	.494	.434
50	30	.735	.611	.513	.431	.368
	10	.709	.569	.466	.381	.318
	50	.731	.629	.546	.473	.416
30	30	.708	.591	.497	.419	.357
	10	.685	.555	.456	.375	.312
	50	.701	.603	.524	.454	.399
10	30	.681	.569	.482	.406	.348
	10	.662	.541	.446	.367	.307
0	0	.644	.521	.427	.348	.288

% Reflectance Eff. Cell	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.412	.366	.326	.296	.258
80	30	.334	.290	.253	.224	.187
	10	.278	.239	.201	.175	.142
	50	.403	.359	.320	.291	.252
70	30	.329	.285	.250	.221	.187
	10	.274	.235	.200	.174	.142
	50	.386	.344	.307	.279	.244
50	30	.320	.277	.244	.216	.182
	10	.271	.231	.197	.172	.140
	50	.371	.329	.296	.269	.235
30	30	.312	.272	.237	.210	.178
	10	.267	.227	.195	.170	.137
	50	.357	.319	.285	.260	.227
10	30	.304	.266	.232	.206	.173
	10	.263	.224	.192	.167	.135
0	0	.245	.207	.176	.152	.120

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



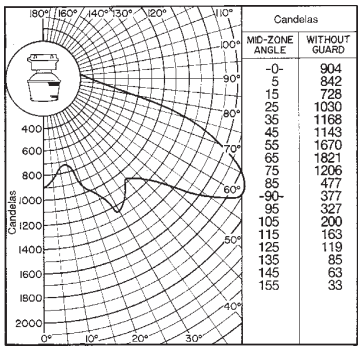
Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	14	0.51
8	1.56	16	0.39
12	0.70		

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Lamp: 100W/E-23½ high pressure sodium (HPS)
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire with I.E.S. Type V Glass Refractor



NOTE: Photometric data was developed using a 100 watt clear high pressure sodium lamp (9500 lumens). For other clear lamps, use the following conversion factors (multipliers):

Luminaire Series	Lamp Watts	Conversion Factor
VMVS	50	0.42
	70	0.67
	150	1.68

Luminaire spacing ratio: 2.0

Coefficient of Utilization

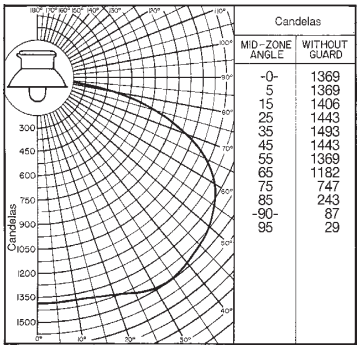
Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.848	.709	.597	.508	.437
80	30	.796	.631	.509	.414	.343
	10	.750	.566	.439	.341	.271
	50	.818	.682	.576	.489	.419
70	30	.770	.611	.493	.402	.331
	10	.726	.552	.428	.334	.264
	50	.759	.632	.533	.451	.389
50	30	.720	.574	.464	.377	.312
	10	.685	.521	.407	.318	.253
	50	.706	.586	.493	.417	.359
30	30	.675	.538	.435	.354	.291
	10	.645	.495	.386	.302	.240
	50	.658	.544	.457	.385	.331
10	30	.632	.504	.408	.331	.274
	10	.608	.469	.366	.286	.227
0	0	.581	.441	.340	.260	.203

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.384	.337	.299	.272	.238
80	30	.292	.249	.214	.189	.159
	10	.226	.189	.154	.132	.103
	50	.369	.325	.288	.262	.229
70	30	.283	.240	.203	.183	.156
	10	.218	.182	.150	.130	.105
	50	.341	.301	.266	.243	.214
50	30	.266	.225	.195	.173	.146
	10	.209	.173	.143	.124	.099
	50	.316	.277	.248	.225	.198
30	30	.249	.213	.182	.161	.136
	10	.199	.163	.136	.117	.093
	50	.292	.258	.223	.209	.134
10	30	.233	.200	.171	.151	.127
	10	.188	.154	.128	.110	.087
0	0	.165	.133	.108	.091	.070

Lamp: 175W/E-28 mercury vapor (MV)
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire with Globe and Dome Reflector



NOTE: Photometric data was developed using a 175 watt diffuse mercury vapor lamp (8600 lumens). For other diffuse lamps, use the following conversion factors (multipliers):

Luminaire Series	Lamp Watts	Conversion Factor
VMVC	100	0.49
VMVM	70	0.65
	100	0.91
	175	1.63

Luminaire spacing ratio: 1.60

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.793	.682	.591	.515	.453
80	30	.753	.623	.522	.440	.376
	10	.718	.572	.468	.382	.319
	50	.775	.667	.580	.505	.442
70	30	.738	.611	.514	.435	.370
	10	.705	.566	.463	.379	.316
	50	.739	.637	.555	.483	.426
50	30	.709	.591	.498	.422	.362
	10	.682	.550	.454	.374	.313
	50	.707	.611	.532	.484	.409
30	30	.683	.572	.485	.411	.352
	10	.660	.537	.445	.388	.309
	50	.679	.588	.512	.446	.394
10	30	.658	.553	.471	.400	.345
	10	.639	.525	.436	.362	.304
0	0	.622	.506	.418	.343	.287

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.403	.359	.320	.291	.253
80	30	.328	.285	.250	.221	.185
	10	.275	.236	.199	.174	.142
	50	.395	.352	.314	.286	.248
70	30	.324	.281	.247	.219	.185
	10	.271	.233	.198	.174	.142
	50	.379	.339	.303	.276	.241
50	30	.316	.274	.241	.215	.181
	10	.298	.230	.196	.172	.140
	50	.366	.325	.293	.266	.233
30	30	.309	.268	.235	.209	.177
	10	.265	.226	.195	.170	.138
	50	.353	.318	.282	.257	.225
10	30	.301	.264	.231	.208	.179
	10	.282	.224	.193	.168	.136
0	0	.245	.208	.177	.153	.122

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35-150W LMV Series

Champ® H.I.D. Luminaires Medium Base

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (HPS 35, 50W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

LMV series *Champ*® luminaires are used:
- in applications involving low luminaire mounting heights or restricted mounting space or where luminaire weight is a factor
- in areas in which ignitible concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- where combustible dusts are present
- where combustible dusts and flammable vapors are present simultaneously
- in elevated ambient temperatures often found in industrial applications
- in marine applications where water spray and corrosive atmospheres are considerations
- wherever the damaging effects of wind, snow, sleet, or hot sun are found
- in manufacturing plants, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore or dockside installations, cold storage facilities, parking garages or wherever dust, dirt, water, vibration and rough usage are a problem

Features:

- Compact, lightweight design is ideal for low mounting heights.
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall, straight stanchion, angle stanchion, and quad-mount.
- Wide range of lamp wattages to meet specifiers needs: 35, 50, 70, 100 and 150 watt (HPS); 70 and 100 watt (MH) medium base lamps.
- Hinged ballast housing for ease of installation and maintenance.
- All luminaires designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Low ambient capability to –40°C.
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode.
- Grounding wire for safety.
- Medium base lamp sockets.



Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant, internally fluted glass
- Guards – copper-free aluminum

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120 volts, dual-tap (120/277★), multi-tap★
- 35, 50, 70, 100, 150 watts HPS
- 70 and 100 watts MH

Certifications and Compliances:

- NEC and CEC:
  - Class I, Division 2, Groups A,B,C,D
  - HPS 35W, 50W - Class II, Class III & Simultaneous Presence (Class 1, Division 2 and Class II)
  - Class I Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards:
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

Description	Suffix to be Added to Cat. No.
● Restricted Breathing Construction - Class I Division 2 & Zone 2 Suitability - Cooler Operating Temperatures (T-Numbers)	**S826**
● Certified for IEC Zone 2 - Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT, or TT)	**S826TB**
● Fused – to protect ballast and capacitors against abnormal line conditions (Not for use in Canada)	**S658***
● Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-100W HPS only	**BG**
● Factory assembled with H.I.D. lamps installed for additional labor savings.	**FA**
● Stainless steel insert - top hat with stainless steel threaded insert to attach ballast housing	**S806**

Accessories:

● See pages 775 and 776 for complete listing

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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35-150W High Pressure Sodium

LMV Series Champ® H.I.D. Luminaires Medium Base

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G; Cl. III & Simultaneous Presence (35W, 50W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage), 2 and 3. For guards and other optics see LMV Luminaires - Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G54 Globe and P50 Guard
	**Pendant Mount**	¾	35	LMVS2A035GP
		1		LMVS3A035GP
		¾	50	LMVS2A050GP
		1		LMVS3A050GP
		¾	70	LMVS2A070GP✓
		1		LMVS3A070GP✓
		¾	100	LMVS2A100GP✓
		1		LMVS3A100GP✓
		¾	150	LMVS2A150GP
		1		LMVS3A150GP
	**Flexible Pendant Mount**	¾	35	LMVS2HA035GP
		¾	50	LMVS2HA050GP
		¾	70	LMVS2HA070GP✓
		¾	100	LMVS2HA100GP✓
		¾	150	LMVS2HA150GP
	**Ceiling Mount Thru-Feed**	¾	35	LMVS2C035GP
		1		LMVS3C035GP
		¾	50	LMVS2C050GP
		1		LMVS3C050GP
		¾	70	LMVS2C070GP✓
		1		LMVS3C070GP✓
		¾	100	LMVS2C100GP✓
		1		LMVS3C100GP✓
		¾	150	LMVS2C150GP
		1		LMVS3C150GP
	**Wall Mount Thru-Feed**	¾	35	LMVS2TW035GP
		1		LMVS3TW035GP
		¾	50	LMVS2TW050GP
		1		LMVS3TW050GP
		¾	70	LMVS2TW070GP✓
		1		LMVS3TW070GP✓
		¾	100	LMVS2TW100GP✓
		1		LMVS3TW100GP✓
		¾	150	LMVS2TW150GP
		1		LMVS3TW150GP
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	35	LMVS25Q035GP
		¾	50	LMVS25Q050GP
		¾	70	LMVS25Q070GP
		¾	100	LMVS25Q100GP
		¾	150	LMVS25Q150GP
	**Stanchion Mount** 25° Angle	1½	35	LMVSJ035GP
		1½	50	LMVSJ050GP
		1½	70	LMVSJ070GP✓
		1½	100	LMVSJ100GP✓
		1½	150	LMVSJ150GP
	**Stanchion Mount** Straight	1½	35	LMVSP035GP
		1½	50	LMVSP050GP
		1½	70	LMVSP070GP✓
		1½	100	LMVSP100GP✓
		1½	150	LMVSP150GP

1. **Standard Voltage Ballasts - 60Hz**

NEC/UL					CEC/CSA (cUL)		
Voltage Suffix	Multi Tap /MT	Dual Tap /DT	120V /120	480V /480	Tri Tap /TT	Dual Tap /DT	120V /120

2. 150W HPS Luminaires, 55V Lamps is Standard . 50W HPS luminaire is dual-tap only.
3. Options - Add the Required Options Suffixes from page 735, In Alpha-numeric Order

✓ – available with Lightning Service™delivery. See Section G for complete details

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70-100W Metal Halide

LMV Series Champ® H.I.D. Luminaires Medium Base

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage), 2 and 3. For guards and other optics see LMV Luminaires - Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G54 Globe and P50 Guard
	**Pendant Mount**	¾	70	LMVM2A070GP
		1		LMVM3A070GP
		¾	100	LMVM2A100GP
		1		LMVM3A100GP
	**Flexible Pendant Mount**	¾	70	LMVM2HA070GP
		¾	100	LMVM2HA100GP
	**Ceiling Mount Thru-Feed**	¾	70	LMVM2C070GP
		1		LMVM3C070GP
		¾	100	LMVM2C100GP
		1		LMVM3C100GP
	**Wall Mount Thru-Feed**	¾	70	LMVM2TW070GP
		1		LMVM3TW070GP
		¾	100	LMVM2TW100GP
		1		LMVM3TW100GP
	**Stanchion Mount** 25° Angle	1½	70	LMVMJ070GP
		1½	100	LMVMJ100GP
	**Stanchion Mount** Straight	1½	70	LMVMP070GP
		1½	100	LMVMP100GP

1. **Standard Voltage Ballasts - 60Hz**

	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

2. Options - Add the Required Options Suffixes from page 735 in Alpha-numeric Order
3. 70W Ballast not available in 480V.

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3L LMV Luminaires - Ordering by Components

LMV luminaires are available in components
A complete luminaire consists of:

I. Champ Cover (mounting module)
II. LMV Ballast Housing - Include voltage and required option(s)
III. Globe, Guard, Reflector

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	APM2
	1	APM3
Flexible Pendant	¾	HPM2
Ceiling	¾	CM2
	1	CM3
Wall	¾	TWM2
	1	TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings: Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes.**

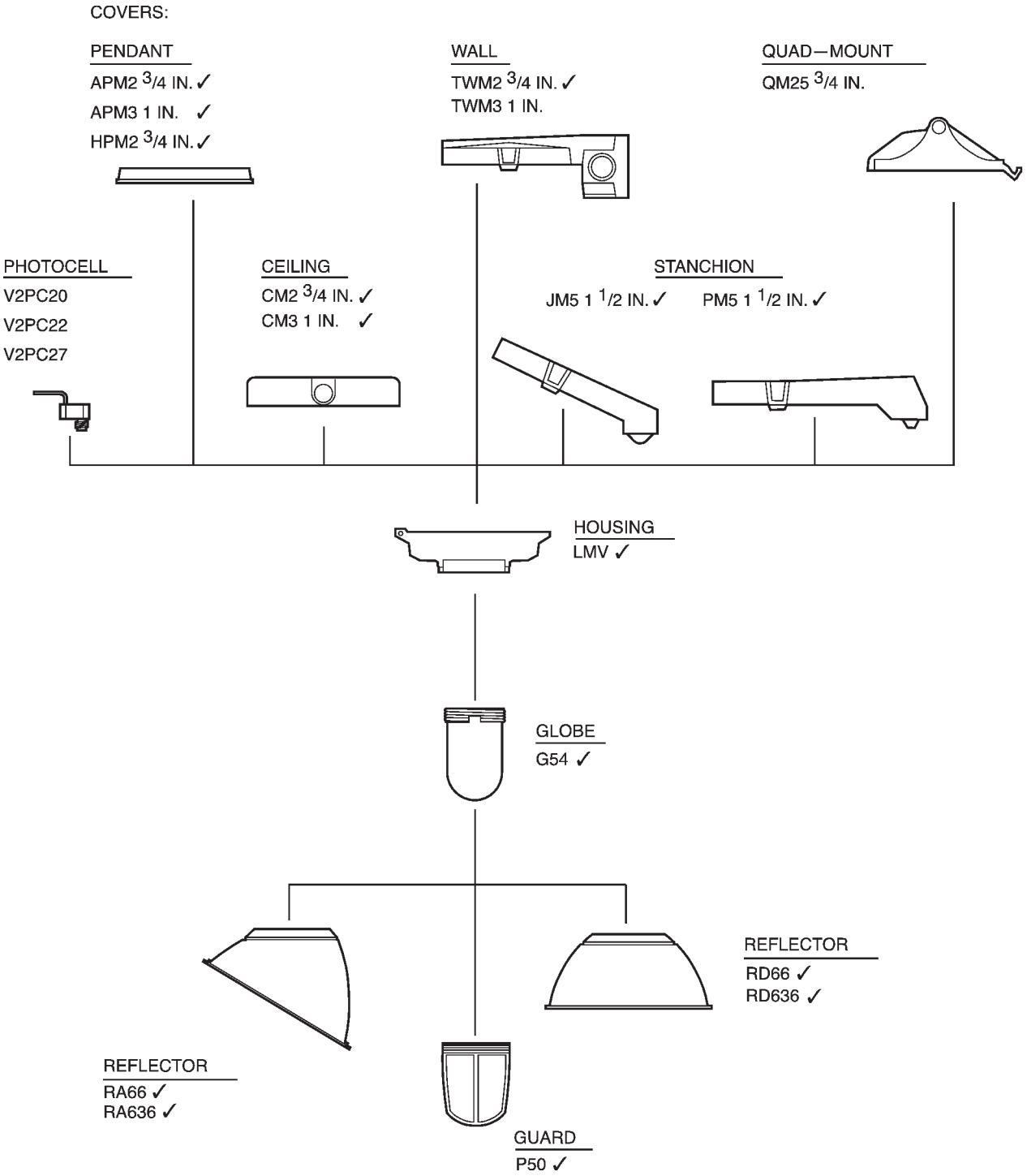
Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	35	LMVS035/MT
	50	LMVS050/MT
	70	LMVS070/MT
	100	LMVS100/MT
	150	LMVS150/MT LX
Metal Halide	70	LMVM070/MT
	100	LMVM100/MT

III. Globe, Guards and Reflectors:

Type	Catalog Number
Globe	G54
Globe Guard	P50
Globe Reflector-Dome	RD636
Globe Reflector-Angle	RA636

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	LAMP		RATED AMBIENT °C	CLASS I, DIVISION 2	CLASS II, DIVISION 1			CLASS I, ZONE 2		
Cat. No.	Wattage	Type		Globe (G54) w/ or w/o Reflector (RA636 or RD636)*	Group	Globe (G54) w/ or w/o Reflector (RA636 or RD636)	Simultaneous Presence Class I, Div. 2 Class II, Div. 1	Restricted Breathing Suffix S826 w/ Globe (G54)	Factory Sealed Suffix S865 AEx nA nR II	Supply Wire Suitable for °C
LMVS35	35	HPS	40	T3A	EFG	T4A	T2D	T6	T3	N/A
LMVS35	35	HPS	55	T3	EFG	T4	T2C	T5	T3	75
LMVS35	35	HPS	65	T3	EFG	T3C	T2C	T4	T3	85
LMVS50	50	HPS	40	T2D	EFG	T3C	T2B	T5	T3	N/A
LMVS50	50	HPS	55	T2C	—	—	—	T4	T3	75
LMVS50	50	HPS	65	T2C	—	—	—	T4	T3	85
LMVS70	70	HPS	40	T2B	—	—	—	T4	T3	75
LMVS70	70	HPS	55	T2B	—	—	—	T4	T3	85
LMVS100	100	HPS	40	T2	—	—	—	T4	T3	85
LMVS100	100	HPS	50	—	—	—	—	T3	T3	90
LMVM70	70	MH	40	T2B	—	—	—	T4	T3	75
LMVM70	70	MH	55	T2B	—	—	—	T4	T3	85
LMVM100	100	MH	40	—	—	—	—	T3	T3	85
LMVM150	150	HPS	40	T1 350°C	—	—	—	—	—	85

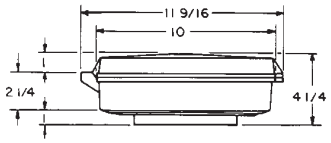
The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL 844 specifies how the temperatures are measured.

The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1 or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with lower temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

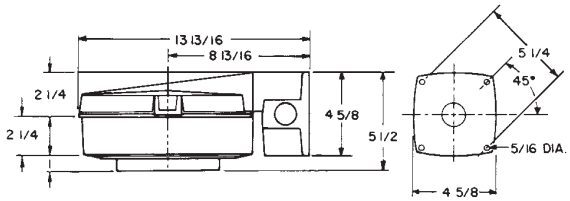
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Dimensions

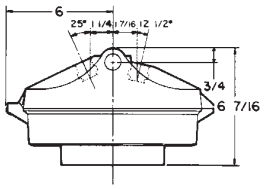
Pendant Mount



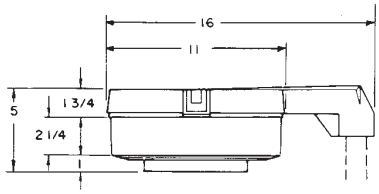
Wall Mount



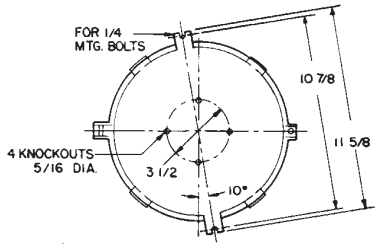
Quad-Mount



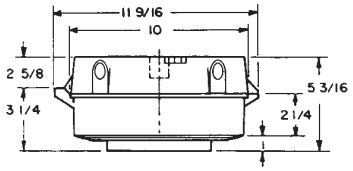
Straight Stanchion Mount



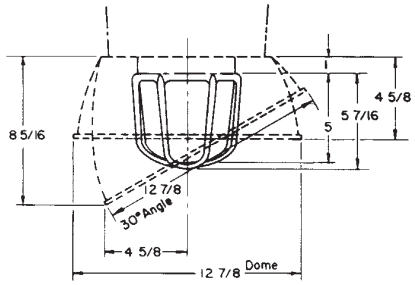
Top View



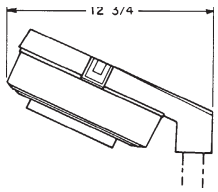
Ceiling Mount



Luminaire with Globe, Guard, Reflectors



25° Angle Stanchion Mount



Luminaire Net Weights:

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)
LMVS	35	7¼
	50	7¾
	70	8¼
	100	8¾
	150	9¼
LMVM	70	9
	100	9

Add for mounting modules (lbs.)

Pendant	1¼	Wall	4½
Flexible Pendant	1½	Angle Stanchion	3½
Ceiling	2¾	Straight Stanchion	4½
Quad-Mount	3½		

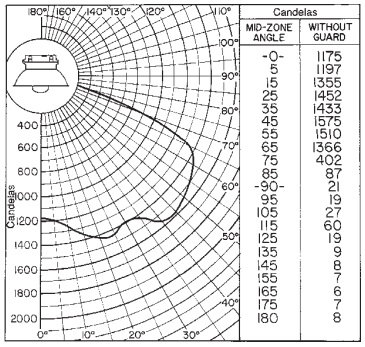
Add for reflectors (lbs.):
Dome 1.0 30° Angle 1.0

Deduct for luminaire without guard (lbs.):
P50 Guard ½

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Lamp: 100W/E-17 high pressure sodium (HPS)
Total bare lamp lumens: 9500
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.
NOTE: All data provided is for high pressure sodium luminaires with 100W/E-17 clear lamps. Use conversion factors (multipliers) shown below for other lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* Series luminaire.

Luminaire with Globe and Dome Reflector



Candelas	
MID-ZONE ANGLE	WITHOUT GUARD
-0-	1175
5	1197
15	1355
25	1452
35	1433
45	1575
55	1510
65	1366
75	402
85	87
-90-	21
95	19
105	27
115	60
125	19
135	9
145	8
155	7
165	6
175	7
180	8

Multipliers (for use with candlepower curves only).

Luminaire Series	Lamp Watts	Conversion Factors
LMVS	35	0.24
	50	0.42
	70	0.67
	150	1.68

Luminaire spacing ratio: 2.0

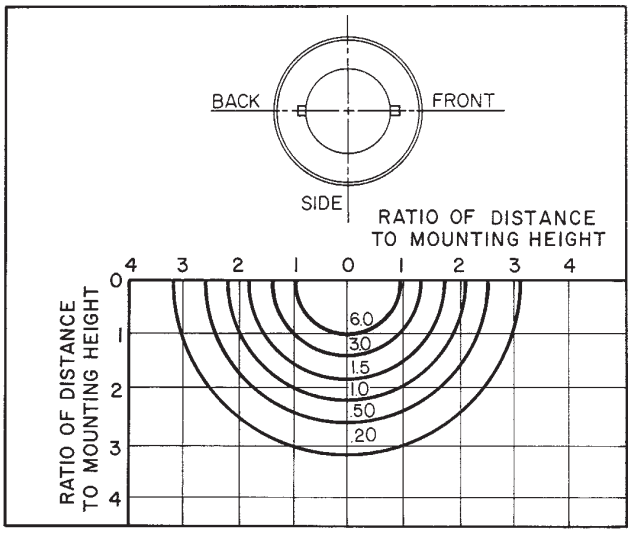
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

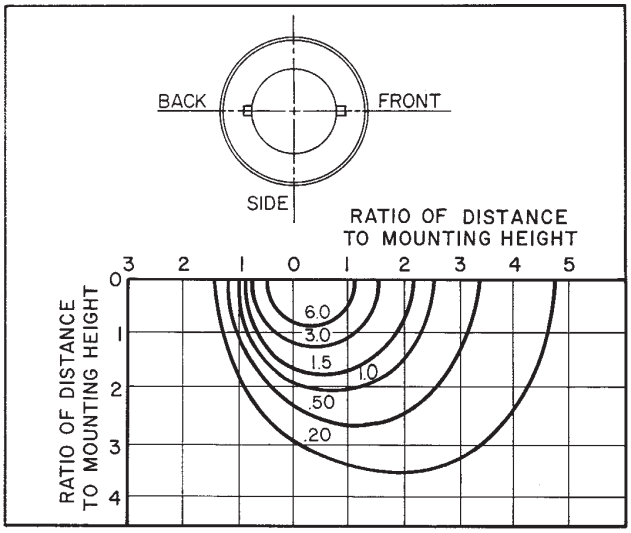
% Reflectance Eff. Cell	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.722	.628	.545	.473	.413
80	30	.691	.579	.487	.408	.346
	10	.663	.537	.441	.358	.296
	50	.705	.613	.534	.463	.403
70	30	.676	.568	.479	.403	.340
	10	.650	.531	.436	.355	.293
	50	.671	.585	.511	.442	.387
50	30	.647	.548	.464	.390	.332
	10	.627	.514	.426	.349	.289
	50	.641	.560	.489	.424	.371
30	30	.623	.529	.450	.379	.322
	10	.605	.501	.416	.342	.284
	50	.614	.537	.470	.407	.356
10	30	.598	.510	.436	.367	.341
	10	.584	.488	.407	.335	.279
0	0	.568	.471	.391	.319	.263

% Reflectance Eff. Cell	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.366	.324	.288	.261	.226
80	30	.300	.259	.225	.199	.165
	10	.253	.215	.180	.156	.127
	50	.358	.318	.282	.256	.221
70	30	.295	.255	.223	.196	.165
	10	.249	.212	.179	.156	.126
	50	.343	.305	.271	.246	.214
50	30	.288	.248	.217	.192	.161
	10	.246	.209	.177	.154	.124
	50	.330	.292	.261	.237	.206
30	30	.280	.243	.210	.186	.157
	10	.242	.205	.175	.152	.122
	50	.317	.282	.251	.228	.199
10	30	.272	.237	.206	.182	.152
	10	.238	.202	.172	.149	.120
0	0	.223	.187	.158	.136	.107

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	14	0.51
8	1.56	16	0.39
12	0.70		

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50-250W DMV Series

Champ®
H.I.D. Lighting Luminaires
Enclosed & Gasketed

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

DMV series *Champ* luminaires are used:
- in applications made hazardous by the presence of combustible dusts
- in areas in which ignitible concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- in marine applications where water spray and corrosive atmospheres are considerations
- in areas where combustible dusts and flammable vapors are present simultaneously
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion and rough usage are problems
- wherever the damaging effects of wind, snow, sleet, or hot sun are found
- in grain handling, storage and processing plants, coal preparation plants, coal conveying areas, food processing plants, manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications

Features:

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount.
- Wide range of light sources and wattages to meet specifiers needs: 50, 70, 100, 150 watt high pressure sodium (HPS); 100, 175, 250 watt mercury vapor (MV); 70, 100, 175, 250 watt metal halide.
- Hinged ballast housing for ease of installation and maintenance.
- All luminaires designed to perform in a 40° C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65° C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Low ambient capability to (–40° C.)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode.
- Mogul base porcelain lamp socket.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.

DMV Series
*** Now available with Champ Induction Lighting System. See Section 5L.**



- Grounding wire for safety.
- Ballasts available in voltages of 120, 208, 240, 277, 347, 480, 600 and multi-tap.★

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1% copper)
- Guard and exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant, internally fluted glass

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, multi-tap★ (120, 208, 240 and 277), tri-tap (120, 208, 347) 208, 240, 277, 347, 480, 600 volts
- 50-250W HPS; 100-250W† MV; 70-250W† MH

Certifications and Compliances:

- NEC & CEC:
  - Class I, Division 2, Groups A,B,C,D
  - 175W max - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
  - Class I Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards:
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

Description	Suffix to be Added to Cat. No.
● Restricted Breathing Construction - Class I Division 2 & Zone 2 Suitabilty - Cooler Operating Temperatures (T-Numbers)	**S826**
● Restricted Breathing/Non-Sparking - Class I Division 2 & Zone 2 - Provides T3 code without conduit or cable seals	**S865**
● Certified for IEC Zone 2 - Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT or TT)	**S826TB**
● Fused – to protect ballast and capacitors against abnormal line conditions (Not for use in Canada)	**S658***
● Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150W LX HPS only	**BG**
● Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only	**IR**
● Quartz auxiliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For *non-hazardous* locations only. (Note: QTZ lamp not included; use 100W single ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC) Consult factory for top-hat limitations.	**QTZ**
● Factory assembled with H.I.D. lamps installed for additional labor savings.	**FA**
● TEFLON® coated globe-for additional protection against breakage. For use with 50-150W HPS, 70-175W MH and 100-175W MV **NOTE:** Some T-numbers (operating temperatures) change. See ''Temperature Performance Data'' section.	**S808**
● Stainless steel insert - top hat with stainless steel threaded insert to attach ballast housing	**S806**

(**Note: BG** and **IR** options cannot be used together. **IR** and **QTZ** options cannot be used together.)

Accessories:

- See pages 775 and 776 for complete listing.
- See page 749 for family tree.

♦ TEFLON is a registered trademark of E.I. duPont Co.
* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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3L



50-150W High Pressure Sodium

DMV Series Champ® H.I.D. Luminaires

- CI. I, Div 2, Groups A, B, C, D
- Restricted Breathing CI. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- CI. II Groups E, F, G; CI. III & Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

See notes 1 (to specify voltage) 2 and 3. For guards and other optics see DMV Luminaires - Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard	BASIC CATALOG NUMBER With GR305 Glass Refractor
	**Pendant Mount**	¾	50	DMVS2A050GP	DMVS2A050GR305
		1		DMVS3A050GP	DMVS3A050GR305
		¾	70	DMVS2A070GP	DMVS2A070GR305
		1		DMVS3A070GP	DMVS3A070GR305
		¾	100	DMVS2A100GP✓	DMVS2A100GR305✓
		1		DMVS3A100GP✓	DMVS3A100GR305✓
		¾	150	DMVS2A150GP✓	DMVS2A150GR305✓
		1		DMVS3A150GP✓	DMVS3A150GR305✓
	**Flexible Pendant Mount**	¾	50	DMVS2HA050GP	DMVS2HA050GR305
		¾	70	DMVS2HA070GP	DMVS2HA070GR305
		¾	100	DMVS2HA100GP✓	DMVS2HA100GR305✓
		¾	150	DMVS2HA150GP✓	DMVS2HA150GR305✓
	**Ceiling Mount Thru-Feed**	¾	50	DMVS2C050GP	DMVS2C050GR305
		1		DMVS3C050GP	DMVS3C050GR305
		¾	70	DMVS2C070GP	DMVS2C070GR305
		1		DMVS3C070GP	DMVS3C070GR305
		¾	100	DMVS2C100GP✓	DMVS2C100GR305✓
		1		DMVS3C100GP✓	DMVS3C100GR305✓
		¾	150	DMVS2C150GP✓	DMVS2C150GR305✓
		1		DMVS3C150GP✓	DMVS3C150GR305✓
	**Wall Mount Thru-Feed**	¾	50	DMVS2TW050GP	DMVS2TW050GR305
		1		DMVS3TW050GP	DMVS3TW050GR305
		¾	70	DMVS2TW070GP	DMVS2TW070GR305
		1		DMVS3TW070GP	DMVS3TW070GR305
		¾	100	DMVS2TW100GP✓	DMVS2TW100GR305✓
		1		DMVS3TW100GP✓	DMVS3TW100GR305✓
		¾	150	DMVS2TW150GP✓	DMVS2TW150GR305✓
		1		DMVS3TW150GP✓	DMVS3TW150GR305✓
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	50	DMVS25Q050GP	DMVS25Q050GR305
		¾	70	DMVS25Q070GP	DMVS25Q070GR305
		¾	100	DMVS25Q100GP	DMVS25Q100GR305
		¾	150	DMVS25Q150GP	DMVS25Q150GR305
	**Stanchion Mount** 25° Angle	1½	50	DMVSJ050GP	DMVSJ050GR305
		1½	70	DMVSJ070GP	DMVSJ070GR305
		1½	100	DMVSJ100GP✓	DMVSJ100GR305✓
		1½	150	DMVSJ150GP✓	DMVSJ150GR305✓
	**Stanchion Mount** Straight	1½	50	DMVSP050GP	DMVSP050GR305
		1½	70	DMVSP070GP	DMVSP070GR305
		1½	100	DMVSP100GP✓	DMVSP100GR305✓
		1½	150	DMVSP150GP✓	DMVSP150GR305✓

1.

Standard Voltage Ballasts - 60Hz

	NEC/UL				CEC/CSA (cUL)		
Voltage	Multi Tap	Dual Tap	120V	480V	Tri Tap	Dual Tap	120V
Suffix	/MT	/DT	/120	/480	/TT	/DT	/120

Optional Voltage Ballasts - 50 or 60Hz

	CEC/CSA (cUL) - CWI Isolated Ballasts				EXPORT			
Voltage	208V CWI	240V CWI	480V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/480CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. 150W HPS Luminaires, 55V Lamps is Standard, for 100V lamps - Add suffix ''CE''. 50W HPS luminaire is dual-tap only.
3. Options - Add the Required Options Suffixes from page 743, In Alpha-numeric order.

✓ – available with Lightning Service™ delivery. See Section G for details.

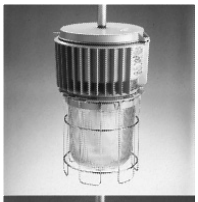
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150-250W Pulse Start Metal Halide

DMV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Notes 1 (to specify voltage) and 2. For Guards and other optics see DMV Luminaires - Ordering by Components Section

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
	**Pendant Mount**	¾	150	DMVM2A150GP-S828	DMVM2A150GR305-S828
		1		DMVM3A150GP-S828	DMVM3A150GR305-S828
		¾	175	DMVM2A175GP-S828	DMVM2A175GR305-S828
		1		DMVM3A175GP-S828	DMVM3A175GR305-S828
		¾	200	DMVM2A200GP-S828	DMVM2A200GR305-S828
		1		DMVM3A200GP-S828	DMVM3A200GR305-S828
		¾	250	(Use Ceiling Mount) - Ceiling Mount has pendant conduit hub	
		1		(Use Ceiling Mount)	
	**Flexible Pendant Mount**	¾	150	DMVM2HA150GP-S828	DMVM2HA150GR305-S828
		¾	175	DMVM2HA175GP-S828	DMVM2HA175GR305-S828
		¾	200	DMVM2HA200GP-S828	DMVM2HA200GR305-S828
		¾	250	(Use Ceiling Mount) - Ceiling Mount has pendant conduit hub	
	**Ceiling Mount Thru-Feed**	¾	150	DMVM2C150GP-S828	DMVM2C150GR305-S828
		1		DMVM3C150GP-S828	DMVM3C150GR305-S828
		¾	175	DMVM2C175GP-S828	DMVM2C175GR305-S828
		1		DMVM3C175GP-S828	DMVM3C175GR305-S828
		¾	200	DMVM2C200GP-S828	DMVM2C200GR305-S828
		1		DMVM3C200GP-S828	DMVM3C200GR305-S828
		¾	250	DMVM2C250GP-S828	DMVM2C250GR305-S828
		1		DMVM3C250GP-S828	DMVM3C250GR305-S828
	**Wall Mount Thru-Feed**	¾	150	DMVM2TW150GP-S828	DMVM2TW150GR305-S828
		1		DMVM3TW150GP-S828	DMVM3TW150GR305-S828
		¾	175	DMVM2TW175GP-S828	DMVM2TW175GR305-S828
		1		DMVM3TW175GP-S828	DMVM3TW175GR305-S828
		¾	200	DMVM2TW200GP-S828	DMVM2TW200GR305-S828
		1		DMVM3TW200GP-S828	DMVM3TW200GR305-S828
		¾	250	DMVM2TW250GP-S828	DMVM2TW250GR305-S828
		1		DMVM3TW250GP-S828	DMVM3TW250GR305-S828
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	150	DMVM25Q150GP-S828	DMVM25Q150GR305-S828
		¾	175	DMVM25Q175GP-S828	DMVM25Q175GR305-S828
		¾	200	DMVM25Q200GP-S828	DMVM25Q200GR305-S828
		¾	250	DMVM25Q250GP-S828	DMVM25Q250GR305-S828
	**Stanchion Mount** 25° Angle	1½	150	DMVMJ150GP-S828	DMVMJ150GR305-S828
		1½	175	DMVMJ175GP-S828	DMVMJ175GR305-S828
		1½	200	DMVMJ200GP-S828	DMVMJ200GR305-S828
		1½	250	DMVMJ250GP-S828	DMVMJ250GR305-S828
	**Stanchion Mount** Straight	1½	150	DMVMP150GP-S828	DMVMP150GR305-S828
		1½	175	DMVMP175GP-S828	DMVMP175GR305-S828
		1½	200	DMVMP200GP-S828	DMVMP200GR305-S828
		1½	250	DMVMP250GP-S828	DMVMP250GR305-S828

1.

	Standard Voltage Ballasts - 60Hz NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz EXPORT			
Voltage	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/220	/220 50	/230 50	/240 50

2. Options - Add the Required Options Suffixes for page 743 in Alpha-numeric Order

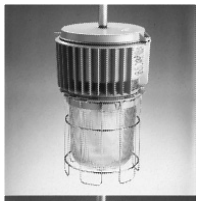
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3L 70-250W Metal Halide

DMV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage), 2 and 3. For Guards and other optics see DMV Luminaires - Ordering by Components Section

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
	**Pendant Mount**	¾	70	DMVM2A070GP	DMVM2A070GR305
		1		DMVM3A070GP	DMVM3A070GR305
		¾	100	DMVM2A100GP	DMVM2A100GR305
		1		DMVM3A100GP	DMVM3A100GR305
		¾	175	DMVM2A175GP	DMVM2A175GR305
		1		DMVM3A175GP	DMVM3A175GR305
		¾	250	(Use Ceiling Mount)	- Ceiling Mount has pendant conduit hub
		1		(Use Ceiling Mount)	
	**Flexible Pendant Mount**	¾	70	DMVM2HA070GP	DMVM2HA070GR305
		¾	100	DMVM2HA100GP	DMVM2HA100GR305
		¾	175	DMVM2HA175GP	DMVM2HA175GR305
		¾	250	(Use Ceiling Mount)	- Ceiling Mount has pendant conduit hub
	**Ceiling Mount Thru-Feed**	¾	70	DMVM2C070GP	DMVM2C070GR305
		1		DMVM3C070GP	DMVM3C070GR305
		¾	100	DMVM2C100GP	DMVM2C100GR305
		1		DMVM3C100GP	DMVM3C100GR305
		¾	175	DMVM2C175GP	DMVM2C175GR305
		1		DMVM3C175GP	DMVM3C175GR305
		¾	250	DMVM2C250GP	DMVM2C250GR305
		1		DMVM3C250GP	DMVM3C250GR305
	**Wall Mount Thru-Feed**	¾	70	DMVM2TW070GP	DMVM2TW070GR305
		1		DMVM3TW070GP	DMVM3TW070GR305
		¾	100	DMVM2TW100GP	DMVM2TW100GR305
		1		DMVM3TW100GP	DMVM3TW100GR305
		¾	175	DMVM2TW175GP	DMVM2TW175GR305
		1		DMVM3TW175GP	DMVM3TW175GR305
		¾	250	DMVM2TW250GP	DMVM2TW250GR305
		1		DMVM3TW250GP	DMVM3TW250GR305
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	70	DMVM25Q070GP	DMVM25Q070GR305
		¾	100	DMVM25Q100GP	DMVM25Q100GR305
		¾	175	DMVM25Q175GP	DMVM25Q175GR305
		¾	250	DMVM25Q250GP	DMVM25Q250GR305
	**Stanchion Mount** 25° Angle	1½	70	DMVMJ070GP	DMVMJ070GR305
		1½	100	DMVMJ100GP	DMVMJ100GR305
		1½	175	DMVMJ175GP	DMVMJ175GR305
		1½	250	DMVMJ250GP	DMVMJ250GR305
	**Stanchion Mount** Straight	1½	70	DMVMP070GP	DMVMP070GR305
		1½	100	DMVMP100GP	DMVMP100GR305
		1½	175	DMVMP175GP	DMVMP175GR305
		1½	250	DMVMP250GP	DMVMP250GR305

1.

Standard Voltage Ballasts - 60Hz

	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

Optional Voltage Ballasts - 50 or 60Hz

	CEC/CSA (cUL) - CWI Isolated Ballasts – 175W and 250W MH only			EXPORT			
Voltage	208V CWI	240V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. 70W Ballast not available in 480V
3. Options - Add the required options suffixes from page 743, in Alpha-numeric order.

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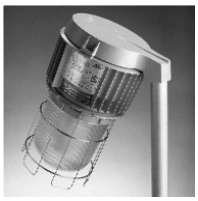
COOPER Crouse-Hinds

100-250W Mercury Vapor

DMV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage) and 2. For Guards and other optics see DMV Luminaires - Ordering by Components Section

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard Cat. No.	BASIC CATALOG NUMBER With GR305 Glass Refractor Cat. No.
	**Pendant Mount**	¾	100	DMVC2A100GP	DMVC2A100GR305
		1		DMVC3A100GP	DMVC3A100GR305
		¾	175	DMVC2A175GP	DMVC2A175GR305
		1		DMVC3A175GP	DMVC3A175GR305
		¾	250	DMVC2A250GP	DMVC2A250GR305
		1		DMVC3A250GP	DMVC3A250GR305
	**Flexible Pendant Mount**	¾	100	DMVC2HA100GP	DMVC2HA100GR305
		¾	175	DMVC2HA175GP	DMVC2HA175GR305
		¾	250	DMVC2HA250GP	DMVC2HA250GR305
	**Ceiling Mount Thru-Feed**	¾	100	DMVC2C100GP	DMVC2C100GR305
		1		DMVC3C100GP	DMVC3C100GR305
		¾	175	DMVC2C175GP	DMVC2C175GR305
		1		DMVC3C175GP	DMVC3C175GR305
		¾	250	DMVC2C250GP	DMVC2C250GR305
		1		DMVC3C250GP	DMVC3C250GR305
	**Wall Mount Thru-Feed**	¾	100	DMVC2TW100GP	DMVC2TW100GR305
		1		DMVC3TW100GP	DMVC3TW100GR305
		¾	175	DMVC2TW175GP	DMVC2TW175GR305
		1		DMVC3TW175GP	DMVC3TW175GR305
		¾	250	DMVC2TW250GP	DMVC2TW250GR305
		1		DMVC3TW250GP	DMVC3TW250GR305
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	100	DMVC25Q100GP	DMVC25Q100GR305
		¾	175	DMVC25Q175GP	DMVC25Q175GR305
		¾	250	DMVC25Q250GP	DMVC25Q250GR305
	**Stanchion Mount** 25° Angle	1½	100	DMVCJ100GP	DMVCJ100GR305
		1½	175	DMVCJ175GP	DMVCJ175GR305
		1½	250	DMVCJ250GP	DMVCJ250GR305
	**Stanchion Mount** Straight	1½	100	DMVCP100GP	DMVCP100GR305
		1½	175	DMVCP175GP	DMVCP175GR305
		1½	250	DMVCP250GP	DMVCP250GR305

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage Suffix	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT	120V /120

	Optional Voltage Ballasts - 50 or 60Hz			
	EXPORT			
Voltage Suffix	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. Options - Add the required options suffixes from page 743, in Alpha-numeric order.

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3L DMV Luminaires - Ordering by Components

DMV luminaires are available in components
A complete luminaire consists of:

I. Champ Cover (mounting module)
II. DMV Ballast Housing - Include voltage and required option(s)
III. Globe, Refractor, Guard, Reflector

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	APM2
	1	APM3
Flexible Pendant	¾	HPM2
Ceiling	¾	CM2
	1	CM3
Wall	¾	TWM2
	1	TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes.**

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	50	DMVS050/MT
	70	DMVS070/MT
	100	DMVS100/MT
	150	DMVS150/MT LX
	250	DMVS250/MT
Metal Halide	70	DMVM070/MT
	100	DMVM100/MT
	175	DMVM175/MT
	250	DMVM250/MT
Mercury Vapor	100	DMVC100/MT
	175	DMVC175/MT
	250	DMVC250/MT

III. Globe, Refractors, Reflectors, Guards

Type	Catalog Number
Globe	G303
Globe - Teflon Coated	G303-S808
Globe Guard	P33
Reflector-Dome	RD739
Reflector-Angle	RA739
Refractor - Type 2	GR302
Refractor - Type 5	GR305
Large Plastic Refractor Type 2	PGR302
Large Plastic Refractor Type 3	PGR303
Large Plastic Refractor Type 5	PGR305
Refractor Guard	P23
High Bay Reflector/Lens	GRD4

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COVERS:

PENDANT
APM2 3/4 IN. ✓
APM3 1 IN. ✓
HPM2 3/4 IN. ✓

WALL
TWM2 3/4 IN. ✓
TWM3 1 IN.

QUAD—MOUNT
QM25 3/4 IN.

CEILING
CM2 3/4 IN. ✓
CM3 1 IN. ✓

STANCHION
JM5 1 1/2 IN. ✓ PM5 1 1/2 IN. ✓

HOUSING
DMV F

GLOBE
G303 ✓
G303 S808 ✓

REFLECTOR/LENS
GRD4 ✓

REFRACTOR
GR302
GR305 ✓
PGR302*
PGR305*

GUARD
P33 ✓

REFLECTOR
RA79 ✓ RA739 ✓
RD79 ✓ RD739 ✓

✓ – available with Lightning Service™ delivery. See Section G for complete details.
* Plastic refractors are for non-hazardous areas only (50-100W Max.)

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	LAMP		RATED AMBIENT °C	CLASS I, DIVISION 2			CLASS II, DIVISION 1			CLASS I, ZONE 2			
Cat. No.	Wattage	Type		Globe (G303) w/ or w/o Reflector (RA739 or RD739)*	Refractor (GR302 or GR305)	Group	Refractor (G302 or G305) or Globe (G303)**	Globe (G303) with Reflector (RA739 or RD739)	Simultaneous Presence Class I, Div.2 Class II, Div.1 (with G303 Globe only)	Restricted Breathing Suffix S826 w/ Globe (G303)	Globe (G303) with Reflector (RA739 or RD739	Factory Sealed Suffix S865 AEx nA nR II	Supply Wire Suitable for °C
DMVS50	50	HPS	40	T3A	T3A	EFG	T6	T6	T3A	T6	T6	T3	75
DMVS50	50	HPS	55	T3	T3	EFG	T5	T5	T3	T5	T5	T3	85
DMVS50	50	HPS	65	T3	T3	EFG	T4A	T4A	T3	T5	T5	T3	90
DMVS70	70	HPS	40	T3A	T3A	EFG	T6	T6	T3A	T6	T6	T3	75
DMVS70	70	HPS	55	T3	T3	EFG	T5	T5	T3	T5	T5	T3	85
DMVS70	70	HPS	65	T3	T3	EFG	T4A	T4A	T3	T5	T5	T3	90
DMVS100	100	HPS	40	T2D	T2D	EFG	T5	T5	T3D	T6	T6	T3	75
DMVS100	100	HPS	55	T2C	T2C	EFG	T4A	T4A	T2C	T5	T5	T3	85
DMVS100	100	HPS	65	T2C	T2C	—	—	—	—	T4	T4	T3	90
DMVS150	150	HPS	40	T2B	T2B	EFG	T3C	T3C	T2A	T5	T5	T3	75
DMVS150	150	HPS	55	T2B	T2B	EFG	T4A	—	—	T4	T4	T3	85
DMVS150	150	HPS	65	T2A	T2B	EFG	—	—	—	—	—	T3	85
DMVC100	100	MV	40	T3	T3	EFG	T4A	T4A	T2B	T5	T5	T3	75
DMVC100	100	MV	55	T2D	T2D	EFG	T4	T4	T2B	T4	T4	T3	85
DMVC100	100	MV	65	T2C	T2C	EFG	T3C	T3C	T2B	T4	T4	T3	90
DMVC175	175	MV	40	T2A	T2	EFG	T3B	T3C	T2A	T4	T4	T3	75
DMVC175	175	MV	55	T2A	T2	EFG	T4	—	—	T4	T4	T3	85
DMVC175	175	MV	65	T2A	T2	—	—	—	—	T3	T3	T3	90
DMVC250	250	MV	40	T1	—	—	—	—	—	T3	T3	T3	85
DMVC250	250	MV	55	T1	—	—	—	—	—	T3	T3	T3	110
DMVM70	70	MH	40	T3C*	T3C	—	—	—	—	T6	T6	T3	60
DMVM70	70	MH	55	T3B*	T3C	—	—	—	—	T5	T5	T3	75
DMVM70	70	MH	65	T3A*	T3A	—	—	—	—	T5	T5	T3	85
DMVM100	100	MH	40	T3*	T3A	—	—	—	—	T5	T5	T3	60
DMVM100	100	MH	55	T3*	T3A	—	—	—	—	T5	T5	T3	75
DMVM100	100	MH	65	T2D*	T2D	—	—	—	—	T4	T4	T3	85
DMVM175	175	MH	40	T2B*	T2	EFG	T3C	T3C	T2A	T4	T4	T3	85
DMVM175	175	MH	55	T2A*	T2	EFG	T4	—	—	T4	T4	T3	85
DMVM175	175	MH	65	T2A*	T2	—	—	—	—	T3	T3	T3	90
DMVM200	200	MH	40	T2	—	—	—	—	—	T4	T4	T3	75
DMVM200	200	MH	55	T1 (325)	—	—	—	—	—	T3	T3	T3	90
DMVM250	250	MH	40	T2	—	—	—	—	—	T4	T4	T3	75
DMVM250	250	MH	55	T1 (325)	—	—	—	—	—	T3	T3	T3	90
DMVF26	2/13 (26)	CF	40	T3A	—	EFG	T6	T6	—	T6	T6	T3	60
DMVF39	3/13 (39)	CF	40	T3A	—	EFG	T6	T6	—	T6	T6	T3	60
DMVF52	2/26 (52)	CF	40	T3	—	EFG	T6	—	—	T6	T6	T3	60
DMVF64	2/32 (64)	CF	40	T3	—	EFG	T6	—	—	T6	T6	T3	60
DMVIG85	85	Induction	40	T3	—	—	—	—	—	T6	T6	—	60
DMVIG165	165	Induction	40	T3	—	—	T2D	—	T2D	T5	—	—	75

The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL 844 specifies how the temperatures are measured.

The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1 or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with lower temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

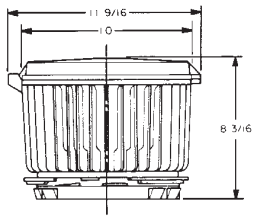
* All DMVM 175W and below MH luminaires provided with Catalog number G303-S808 have a T2A T-code.

** For use with refractor only when this table indicates by means of a T-code that the refractor is suitable for use with Class I, Division 2 luminaires.

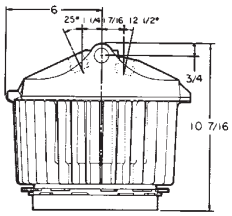
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DMV Dimensions

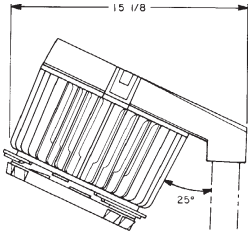
Pendant Mount



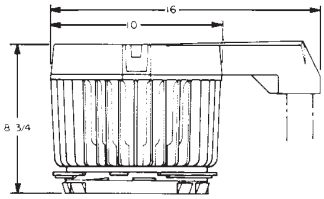
Quad-Mount



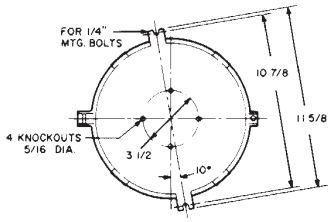
25° Angle Stanchion Mount



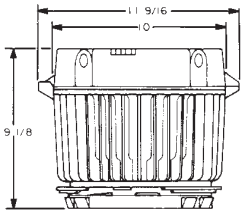
Straight Stanchion Mount



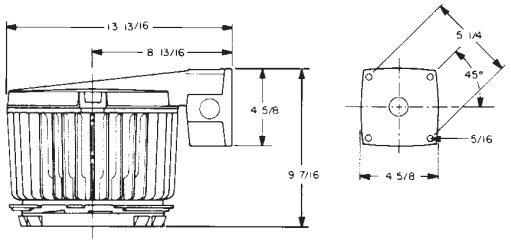
Top View



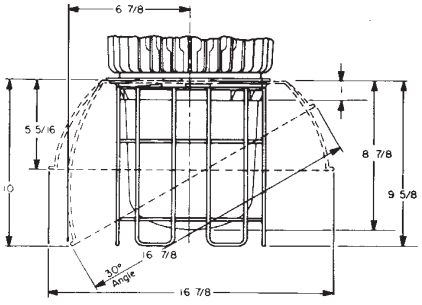
Ceiling Mount



Wall Mount



Luminaire with Globe, Guard, Reflectors



Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)	Lamp Watts	Luminaire with Globe, Guard (lbs.)
DMVS	50	23	70	23 1/16
	100	24 1/16	150	26 1/8
DMVC	100	21 1/16	175	22 1/4
	250	24		
DMVM	70	21	100	21 1/16
	175	22 1/4	250	24

Add for mounting modules (lbs.):

Pendant	1 1/4	Flexible Pendant	1 1/2
Ceiling	2 3/4	Wall	4 1/2
Quad Mount	3 1/2	Angle Stanchion	3 1/2
Straight Stanchion	4 1/2		

Add for reflectors (lbs.):

Dome	1 1/4	30° Angle	1 3/4

Deduct: 1 lb. for luminaire without P33 Guard.
Add: 5 1/2 lbs. for luminaire with GR305 refractor.

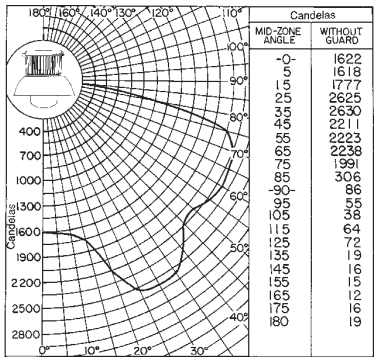
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Lamp: 150W/E-23-1/2 clear high pressure sodium (HPS)
Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for high pressure sodium luminaires with 150W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaires.

Luminaire with Globe and Dome Reflector



Candelas	
MID-ZONE ANGLE	WITHOUT GUARD
-0-	1622
5	1618
15	1777
25	2625
35	2630
45	2211
55	2223
65	2238
75	1991
85	306
-90-	86
95	55
105	38
115	64
125	72
135	19
145	16
155	15
165	12
175	16
180	19

Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
DMVS	50	0.25
	70	0.40
	100	0.59

Luminaire spacing ratio: 1.90

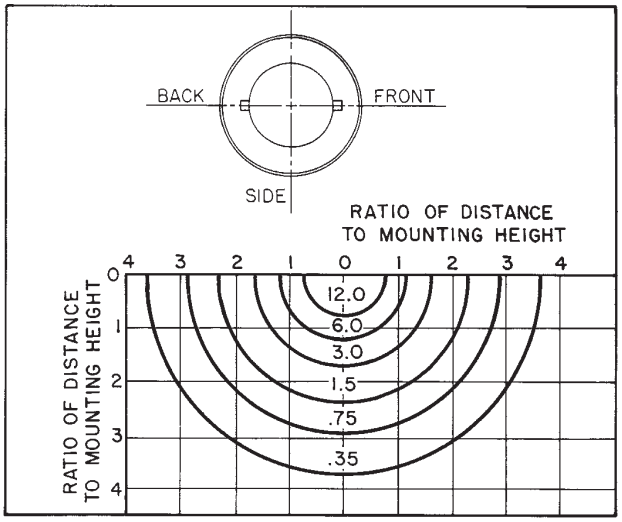
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

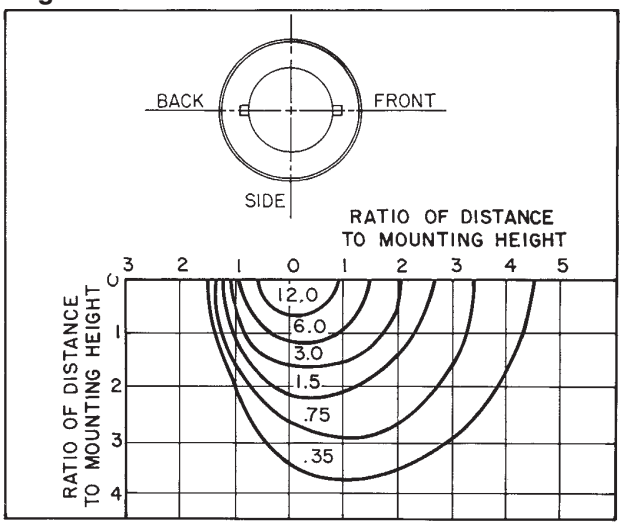
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.759	.643	.551	.476	.418
80	30	.719	.582	.480	.400	.340
	10	.683	.530	.424	.342	.283
	50	.740	.627	.538	.465	.406
70	30	.703	.570	.471	.394	.334
	10	.669	.523	.418	.338	.280
	50	.703	.595	.512	.442	.388
50	30	.672	.548	.455	.381	.324
	10	.645	.506	.408	.332	.276
	50	.669	.567	.488	.422	.370
30	30	.646	.528	.439	.368	.314
	10	.622	.492	.399	.325	.270
	50	.640	.541	.466	.403	.354
10	30	.619	.508	.424	.356	.305
	10	.600	.479	.389	.318	.265
0	0	.582	.459	.370	.299	.247

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.371	.330	.294	.267	.231
80	30	.296	.257	.224	.198	.164
	10	.243	.208	.174	.151	.121
	50	.362	.323	.288	.262	.226
70	30	.291	.252	.221	.195	.164
	10	.238	.204	.173	.151	.121
	50	.345	.309	.275	.250	.218
50	30	.283	.244	.215	.190	.159
	10	.235	.201	.170	.148	.119
	50	.331	.294	.265	.240	.209
30	30	.275	.239	.208	.184	.154
	10	.231	.196	.168	.146	.116
	50	.317	.284	.253	.231	.201
10	30	.266	.233	.203	.180	.150
	10	.227	.193	.165	.143	.114
0	0	.210	.177	.149	.128	.100

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

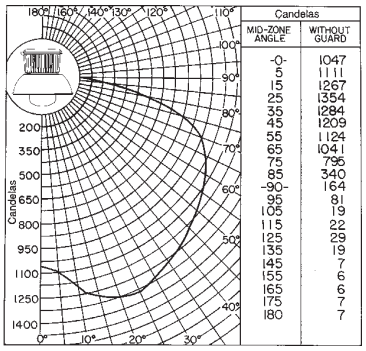
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Lamp: 175W/E-28 coated mercury vapor (MV)
Total bare lamp lumens: 8600

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for mercury vapor luminaires with 175W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with Globe and Dome Reflector



Candelas	
MID-ZONE ANGLE	WITHOUT GUARD
-0-	1047
5	1111
15	1267
25	1354
35	1284
45	1209
55	1124
65	1041
75	795
85	340
-90-	164
95	81
105	19
115	22
125	29
135	19
145	7
155	6
165	6
175	7
180	7

Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
DMVC	100	0.49
	250	1.41
DMVM	175	1.63
	250	2.38

Luminaire spacing ratio: 1.7

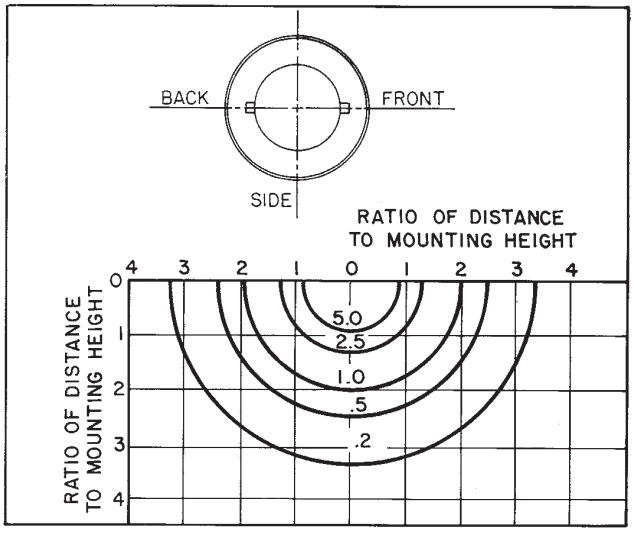
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

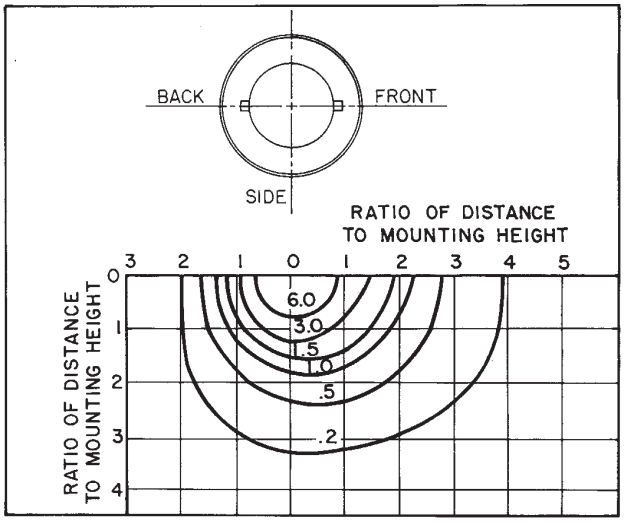
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.723	.619	.536	.467	.412
80	30	.684	.561	.470	.396	.340
	10	.649	.512	.417	.342	.286
	50	.705	.604	.524	.456	.401
70	30	.668	.549	.461	.390	.334
	10	.635	.505	.412	.338	.283
	50	.668	.572	.498	.434	.384
50	30	.638	.528	.445	.377	.324
	10	.611	.488	.401	.331	.279
	50	.635	.545	.474	.414	.366
30	30	.611	.508	.429	.365	.314
	10	.588	.474	.391	.324	.273
	50	.606	.519	.453	.395	.350
10	30	.585	.488	.414	.352	.305
	10	.566	.460	.381	.317	.268
0	0	.549	.442	.363	.299	.251

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.368	.329	.294	.269	.234
80	30	.298	.261	.229	.204	.172
	10	.248	.215	.182	.160	.131
	50	.359	.322	.289	.263	.229
70	30	.293	.256	.226	.201	.171
	10	.244	.211	.181	.159	.131
	50	.343	.308	.276	.252	.221
50	30	.284	.248	.220	.196	.166
	10	.240	.207	.178	.157	.128
	50	.329	.294	.266	.243	.212
30	30	.276	.243	.213	.190	.162
	10	.236	.203	.176	.154	.126
	50	.315	.284	.255	.233	.205
10	30	.268	.236	.208	.186	.157
	10	.231	.200	.173	.151	.123
0	0	.216	.184	.158	.138	.110

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

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3L 200-400W VMV High Wattage Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

VMV high wattage series *Champ* luminaires are used:

- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, and other heavy industrial applications
- in applications involving medium and high mounting heights
- in applications where energy efficient, high lumen output is required
- in areas in which ignitible concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements, are problems

Features:

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Six mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket, angle stanchion, straight stanchion and quad-mount.
- Wide range of light sources and wattages to meet specifiers needs: 200, 250, 400 watt high pressure sodium (HPS); 250 and 400 watt mercury vapor (MV); 250 and 400 watt metal halide (MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, glass refractors, and reflector/lens are available
- All luminaires designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (–40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material and etched Alzak® high bay reflectors provide superior reflectivity
- Grounding wire for safety
- High power factor ballasts (Min. P. F. 90%) are available in a variety of voltages to meet local area requirements.
- Mogul base lamp socket

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware and guards – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass
- Reflector lens – spun Alzak aluminum, tempered glass, stainless steel door frame

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- Alzak aluminum – natural
- Stainless steel – natural
- *Krydon* material – high reflectance white

Certifications and Compliances:

- NEC and CEC:
  - Class I, Division 2, Groups A, B, C, D
  - with Glass Refractor - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
  - Class 1 Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards:
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.

Description	Suffix to be Added to Cat. No.
• Restricted Breathting Construction . .	**S826‡**
- Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers)	
• Certified for IEC Zone 2	**S826TB‡**
- Furnished with terminal block crimp terminals and dedicated voltage ballasts (no MT, DT, or TT)	
• Fused – to protect ballast and capacitors against abnormal line conditions	**S658†***
• Quartz auxilliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For *non-hazardous* locations only	**QTZ**
(NOTE: Quartz lamp not included use 100W single ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC). Consult factory for top-hat limitations.	
• Ballast-gard™ starter cutout switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 200-400W HPS only	**BG**
• Factory assembled with H.I.D. lamps installed for additional labor savings.	**FA**
• Top hat with stainless steel threaded insert to attach ballast housing.	**S806**



Pendant mount with globe and guard



Ceiling mount with etched Alzak reflector and tempered glass lens



Ceiling mount with glass refractor

Electrical Ratings:

- 120 to 600 volts and multi-tap★
- 200, 250, 400W HPS; 250, 400W MV and MH

Accessories:

- See pages 775 to 776 for complete listing.

★Alzak is a registered trademark of ALCOA.
† Not for use in Canada.
‡Suffix S826 and S826TB cannot be used with GRD4 Reflector/Lens
* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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200-400W High Pressure Sodium

VMV High Wattage Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66



See notes 1 (to specify voltage) and 2. For guards and other optics see VMV Luminaires - Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens[2]
	**Pendant Mount (Rigid or Flexible)**	¾	200	VMVS2A200GP	VMVS2A200GR305	VMVS2A200GRD4
		1		VMVS3A200GP	VMVS3A200GR305	VMVS3A200GRD4
		¾	250	VMVS2A250GP✓	VMVS2A250GR305✓	VMVS2A250GRD4✓
		1		VMVS3A250GP✓	VMVS3A250GR305✓	VMVS3A250GRD4✓
		¾	400	VMVS2A400GP✓	VMVS2A400GR305✓	VMVS2A400GRD4✓
		1		VMVS3A400GP✓	VMVS3A400GR305✓	VMVS3A400GRD4✓
	**Ceiling Mount Thru-Feed**	¾	200	VMVS2C200GP	VMVS2C200GR305	VMVS2C200GRD4
		1		VMVS3C200GP	VMVS3C200GR305	VMVS3C200GRD4
		¾	250	VMVS2C250GP✓	VMVS2C250GR305✓	VMVS2C250GRD4✓
		1		VMVS3C250GP✓	VMVS3C250GR305✓	VMVS3C250GRD4✓
		¾	400	VMVS2C400GP✓	VMVS2C400GR305✓	VMVS2C400GRD4✓
		1		VMVS3C400GP✓	VMVS3C400GR305✓	VMVS3C400GRD4✓
	**Wall Mount Thru-Feed**	¾	200	VMVS2TW200GP	VMVS2TW200GR305	
		1		VMVS3TW200GP	VMVS3TW200GR305	
		¾	250	VMVS2TW250GP✓	VMVS2TW250GR305✓	
		1		VMVS3TW250GP✓	VMVS3TW250GR305✓	
		¾	400	VMVS2TW400GP✓	VMVS2TW400GR305✓	
		1		VMVS3TW400GP✓	VMVS3TW400GR305✓	
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	200	VMVS25Q200GP	VMVS25Q200GR305	VMVS25Q200GRD4
		¾	250	VMVS25Q250GP	VMVS25Q250GR305	VMVS25Q250GRD4
		¾	400	VMVS25Q400GP	VMVS25Q400GR305	VMVS25Q400GRD4
	**Stanchion Mount** 25° Angle	1½	200	VMVSJ200GP	VMVSJ200GR305	VMVSJ200GRD4
		1½	250	VMVSJ250GP✓	VMVSJ250GR305✓	VMVSJ250GRD4✓
		1½	400	VMVSJ400GP✓	VMVSJ400GR305✓	VMVSJ400GRD4✓
	**Stanchion Mount** Straight	1½	200	VMVSP200GP	VMVSP200GR305	
		1½	250	VMVSP250GP✓	VMVSP250GR305✓	
		1½	400	VMVSP400GP✓	VMVSP400GR305✓	

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz							
	CEC/CSA (cUL) - CWI Isolated Ballasts				EXPORT			
Voltage	208V CWI	240V CWI	480V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/480CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. Options - Add the Required Options Suffixes from page 754, In Alpha-numeric Order.

✓ – available with Lightning Service™ delivery. See Section G for details

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3L 250-400W Pulse Start Metal Halide

VMV High Wattage Series Champ® H.I.D. Luminaires

- CI. I, Div 2, Groups A, B, C, D
- Restricted Breathing CI. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- CI. II Groups E, F, G, CI. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

See Note 1 (to specify voltage) and 2. For guards and other optics, see VMV luminaires - ordering by components section

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens
	**Pendant Mount (Rigid or Flexible)**	¾	250	VMVM2A250GP-S828	VMVM2A250GR305-S828	VMVM2A250GRD4-S828
		1		VMVM3A250GP-S828	VMVM3A250GR305-S828	VMVM3A250GRD4-S828
		¾	320		VMVM2A320GR305-S828	VMVM2A320GRD4-S828
		1			VMVM3A320GR305-S828	VMVM3A320GRD4-S828
		¾	400		VMVM2A400GR305-S828	VMVM2A400GRD4-S828
		1			VMVM3A400GR305-S828	VMVM3A400GRD4-S828
	**Ceiling Mount Thru-Feed**	¾	250	VMVM2C250GP-S828	VMVM2C250GR305-S828	VMVM2C250GRD4-S828
		1		VMVM3C250GP-S828	VMVM3C250GR305-S828	VMVM3C250GRD4-S828
		¾	320		VMVM2C320GR305-S828	VMVM2C320GRD4-S828
		1			VMVM3C320GR305-S828	VMVM3C320GRD4-S828
		¾	400		VMVM2C400GR305-S828	VMVM2C400GRD4-S828
		1			VMVM3C400GR305-S828	VMVM3C400GRD4-S828
	**Wall Mount Thru-Feed**	¾	250	VMVM2C250GP-S828	VMVM2TW250GR305-S828	VMVM2TW250GRD4-S828
		1		VMVM3C250GP-S828	VMVM3TW250GR305-S828	VMVM3TW250GRD4-S828
		¾	320		VMVM2TW320GR305-S828	VMVM2TW320GRD4-S828
		1			VMVM3TW320GR305-S828	VMVM3TW320GRD4-S828
		¾	400		VMVM2TW400GR305-S828	VMVM2TW400GRD4-S828
		1			VMVM3TW400GR305-S828	VMVM3TW400GRD4-S828
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	250	VMVM25Q250GP-S828	VMVM25Q250GR305-S828	VMVM25Q250GRD4-S828
		¾	320		VMVM25Q320GR305-S828	VMVM25Q320GRD4-S828
		¾	400		VMVM25Q400GR305-S828	VMVM25Q400GRD4-S828
	**Stanchion Mount** 25° Angle	1½	250	VMVMJ250GP-S828	VMVMJ250GR305-S828	VMVMJ250GRD4-S828
		1½	320		VMVMJ320GR305-S828	VMVMJ320GRD4-S828
		1½	400		VMVMJ400GR305-S828	VMVMJ400GRD4-S828
	**Stanchion Mount** Straight	1½	250	VMVMP250GP-S828	VMVMP250GR305-S828	VMVMP250GRD4-S828
		1½	320		VMVMP320GR305-S828	VMVMP320GRD4-S828
		1½	400		VMVMP400GR305-S828	VMVMP400GRD4-S828

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz			
	EXPORT			
Voltage	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/220	/220 50	/230 50	/240 50

2. Options - Add the Required Options Suffixes from page 754, In Alpha-numeric Order.

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250-400W Metal Halide

VMV High Wattage Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

See Note 1 (to specify voltage) and 2. For guards and other optics, see VMV luminaires - ordering by components section

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens
	**Pendant Mount (Rigid or Flexible)**	¾	250	VMVM2A250GP	VMVM2A250GR305	VMVM2A250GRD4
		1		VMVM3A250GP	VMVM3A250GR305	VMVM3A250GRD4
		¾	400	N/A	VMVM2A400GR305	VMVM2A400GRD4
		1		N/A	VMVM3A400GR305	VMVM3A400GRD4
	**Ceiling Mount Thru-Feed**	¾	250	VMVM2C250GP	VMVM2C250GR305	VMVM2C250GRD4
		1		VMVM3C250GP	VMVM3C250GR305	VMVM3C250GRD4
		¾	400	N/A	VMVM2C400GR305	VMVM2C400GRD4
		1		N/A	VMVM3C400GR305	VMVM3C400GRD4
	**Wall Mount Thru-Feed**	¾	250	VMVM2TW250GP	VMVM2TW250GR305	
		1		VMVM3TW250GP	VMVM3TW250GR305	
		¾	400	N/A	VMVM2TW400GR305	
		1		N/A	VMVM3TW400GR305	
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	250	VMVM25Q250GP	VMVM25Q250GR305	VMVM25Q250GRD4
		¾	400	N/A	VMVM25Q400GR305	VMVM25Q400GRD4
	**Stanchion Mount** 25° Angle	1½	250	VMVMJ250GP	VMVMJ250GR305	VMVMJ250GRD4
		1½	400	N/A	VMVMJ400GR305	VMVMJ400GRD4
	**Stanchion Mount** Straight	1½	250	VMVMP250GP	VMVMP250GR305	
		1½	400	N/A	VMVMP400GR305	

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz						
	CEC/CSA (cUL) - CWI Isolated Ballasts			EXPORT			
Voltage	208V CWI	240V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. Options - Add the Required Options Suffixes from page 754, In Alpha-numeric Order.

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3L 250-400W Mercury Vapor

VMV High Wattage Series Champ® H.I.D. Luminaires

- CI. I, Div 2, Groups A, B, C, D
- Restricted Breathing CI. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- CI. II Groups E, F, G, CI. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage) and 2. For guards and other optics see VMV - Luminaires - Ordering by Components section.

	Mounting Style	Hub Size	Lamp Watts	BASIC CATALOG NUMBER With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens[2]
	**Pendant Mount (Rigid or Flexible)**	¾	250	VMVC2A250GP	VMVC2A250GR305	VMVC2A250GRD4
		1		VMVC3A250GP	VMVC3A250GR305	VMVC3A250GRD4
		¾	400	N/A	VMVC2A400GR305	VMVC2A400GRD4
		1		N/A	VMVC3A400GR305	VMVC3A400GRD4
	**Ceiling Mount Thru-Feed**	¾	250	VMVC2C250GP	VMVC2C250GR305	VMVC2C250GRD4
		1		VMVC3C250GP	VMVC3C250GR305	VMVC3C250GRD4
		¾	400	N/A	VMVC2C400GR305	VMVC2C400GRD4
		1		N/A	VMVC3C400GR305	VMVC3C400GRD4
	**Wall Mount Thru-Feed**	¾	250	VMVC2TW250GP	VMVC2TW250GR305	
		1		VMVC3TW250GP	VMVC3TW250GR305	
		¾	400	N/A	VMVC2TW400GR305	
		1		N/A	VMVC3TW400GR305	
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	250	VMVC25Q250GP	VMVC25Q250GR305	VMVC25Q250GRD4
		¾	400	N/A		
				N/A	VMVC25Q400GR305	VMVC25Q400GRD4
	**Stanchion Mount** 25° Angle	1½	250	VMVCJ250GP	VMVCJ250GR305	VMVCJ250GRD4
		1½	400	N/A	VMVCJ400GR305	VMVCJ400GRD4
	**Stanchion Mount** Straight	1½	250	VMVCP250GP	VMVCP250GR305	
		1½	400	N/A	VMVCP400GR305	

1.

	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

	Optional Voltage Ballasts - 50 or 60Hz			
	EXPORT			
Voltage	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/220	/220 50	/230 50	/240 50

2. Options - Add the required options suffixes from page 754, in Alpha-numeric order.

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VMV High Voltage Luminaires - Ordering by Components

VMV High Wattage Luminaires are available in components
A complete luminaire consists of:

I. Champ Cover (mounting module)
II. VMV Ballast Housing - Include voltage and required option(s)
III. Optical & Guard Components - Globe, Reflector, Refractor, Guard

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	APM2
	1	APM3
Ceiling	¾	CM2
	1	CM3
Wall	¾	TWM2
	1	TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes.**

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	200	VMVS200/MT
	250	VMVS250/MT
	400	VMVS400/MT
Metal Halide	70	LMVM070/MT
	250	VMVM250/MT
	400	VMVM400/MT
Mercury Vapor	250	VMVC250/MT
	400	VMVC400/MT

III. Globe, Refractors, Reflectors, Guards

Type	Catalog Number
Globe	G303
Globe Guard	P33
Reflector-Dome	RD739
Reflector-Angle	RA739
Refractor - Type 2	GR302
Refractor - Type 5	GR305
Refractor Guard	P23
High Bay Reflector/Lens	GRD4

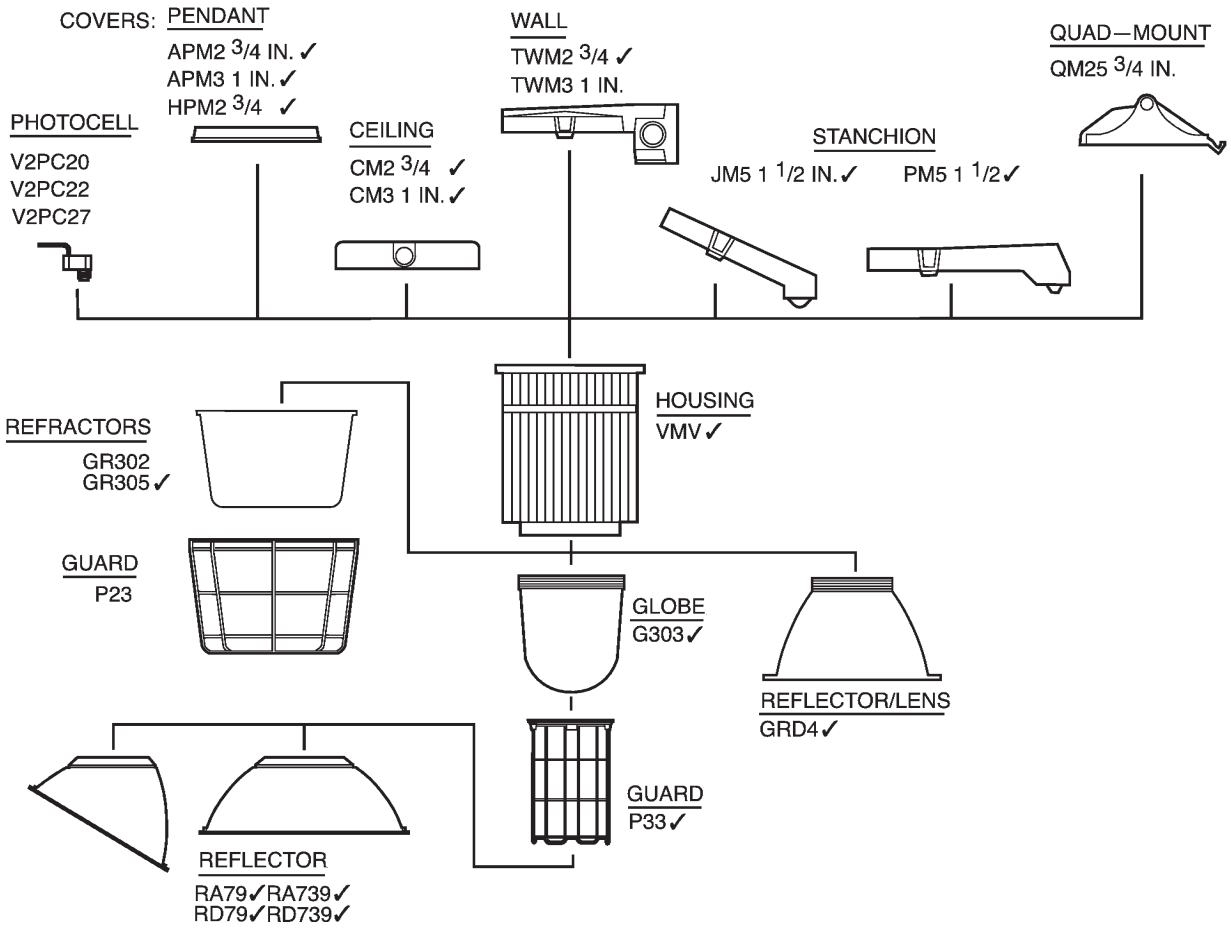
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200-400 VMV High Wattage Series

Family Tree

Champ® H.I.D. Luminaires





✓ – available with Lightning Service™ delivery. See Section G for complete details.

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Lamp Watts	Ambient Temp C	Optics	Class I (Gas/Vapors)				Class II (Dust) and Class III	Simultaneous Presence Gas and Dust Present in the Same Area		Supply Wire Temp C
			Non Restricted Breathing		Restricted Breathing			Non Restricted Breathing	Restricted Breathing	
					Ex nR				Ex nR	
			Standard Product		Option S826(TB)		Standard Product	Standard Product	Option S826	
			Division 2		Zone 2 or Division 2		Standard Product	Class I, Division 2 and Class II	Class I, Zone 2 or Division 2 and Class II	
		G303	X	–	X	–	–	–	–	
		GR305	–	X	–	X	X	X	X	
		GRD4	X	–	–	–	–	–	–	

High Pressure Sodium

200	40	325 C	325 C	T3	T4	T3C	T1/T3C	T3C	75
	55	325 C	325 C	T3	T4	–	–	–	75
	65	325 C	325 C	T3	–	–	–	–	85
250	40	350 C	350 C	T3	T4	T3C	T1/T3C	T3C	75
	55	350 C	350 C	T3	T4	–	–	–	85
	65	350 C	350 C	T3	–	–	–	–	–
400	40	350 C	350 C	T3	T4	T3C	T1/T3C	T3C	85
	55	T1	T1	T3	T4	–	–	–	90

Metal Halide

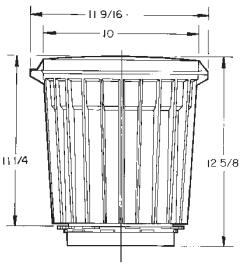
200 (S828)	40	350 C	325 C	T3	T4	T3B	350 C/T3B	T3B	85
	55	350 C	350 C	T4	T3	–	–	–	90
250 (Includes S828)	40	350 C	325 C	T3	T4	T3B	350 C/T3B	T3B	85
	55	350 C	350 C	T3	T3	–	–	–	90
320 (S828)	40	–	325 C	T1	T4	T3B	350 C/T3B	T3B	85
	55	–	–	–	–	–	–	–	–
400 (includes S828)	40	–	325 C	T1	T4	T3B	350 C/T3B	T3B	85
	55	–	–	–	–	–	–	–	–

Mercury Vapor

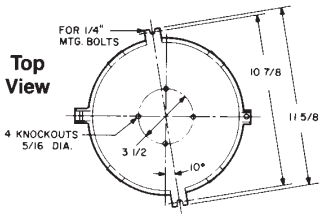
250	40	350 C	325 C	T3	T4	T3B	350 C/T3B	T3B	85
	55	T1	350 C	T3	T3	–	–	–	90
400	40	–	325 C	T1	T4	T3B	350 C/T3B	T3B	85
	55	–	–	–	–	–	–	–	–

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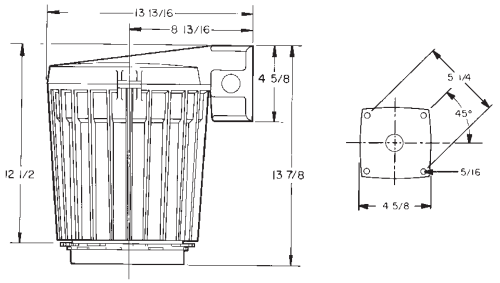
Pendant Mount



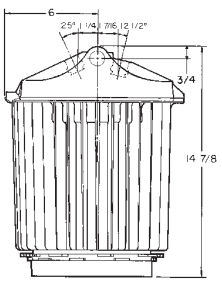
Ceiling Mount

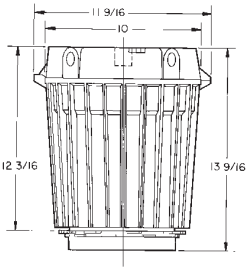


Wall Mount

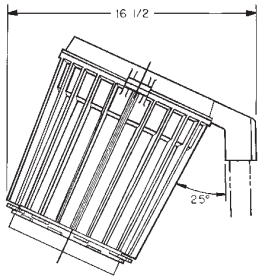


Quad-Mount

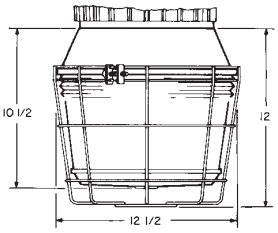




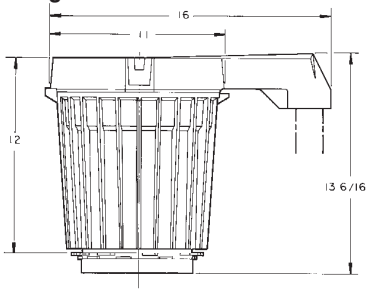
25° Angle Stanchion Mount



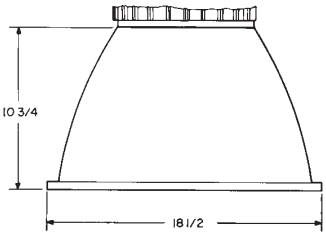
Luminaire with Glass Refractor, Guard



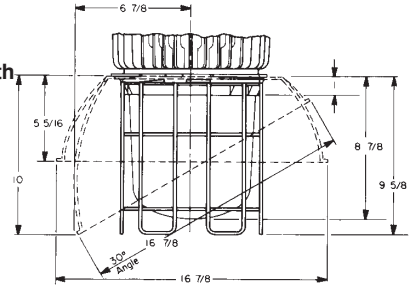
Straight Stanchion Mount



Luminaire with Etched Alzak Reflector/Lens



Luminaire with Globe, Guard, Reflectors



Net Luminaire Weights (lbs.):

Luminaire Series	Lamp Watts	Luminaire with: Globe, Guard	Reflector/ Lens	Glass Refractor
VMVS	200	29½	30	32½
	250	29½	30	32½
	400	38½	39	41½
VMVC	250	29½	30	35½
	400		33	35½
VMVM	250	32½	33	35¾
	400		34	35½

Add for mounting modules (lbs):

Pendant	1¼	Quad-Mount	3½
Ceiling	2¾	Angle Stanchion	3½
Wall	4½	Straight Stanchion	4½

Add for reflectors (lbs):

Dome	1½	30° Angle	1½
High Bay	1¾		

Deduct: 1½ lb. for Luminaire without P33 Guard

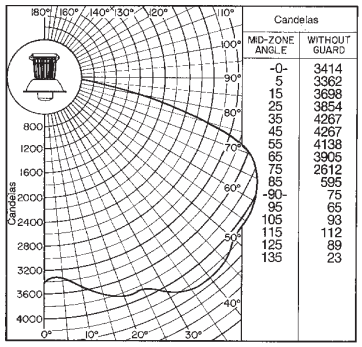
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200-400W VMV High Wattage Series

Champ® H.I.D. Luminaires

Lamp: 250W/E-18 high pressure sodium (HPS)
Total bare lamp lumens: 27500
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689. NOTE: All data provided is for high pressure sodium luminaires with 250W/E-18 clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers (for use with candela curves only)

Luminaire Series	Lamp Watts	Conv-version Factors
VMVS	200	0.80
	400	1.82

Luminaire spacing ratio: 2.0

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.750	.640	.550	.476	.416
80	30	.711	.582	.482	.402	.341
	10	.677	.532	.429	.346	.285
	50	.732	.625	.538	.465	.405
70	30	.696	.570	.474	.397	.335
	10	.664	.526	.424	.343	.282
	50	.695	.594	.513	.443	.388
50	30	.666	.549	.458	.384	.326
	10	.641	.509	.414	.336	.279
	50	.663	.567	.490	.423	.371
30	30	.640	.530	.443	.372	.316
	10	.618	.496	.405	.330	.273
	50	.635	.542	.469	.405	.355
10	30	.615	.510	.429	.360	.307
	10	.597	.483	.395	.323	.268
0	0	.580	.464	.377	.305	.251

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.369	.327	.290	.263	.229
80	30	.295	.255	.222	.196	.163
	10	.243	.208	.173	.150	.121
	50	.360	.320	.285	.258	.224
70	30	.291	.251	.219	.193	.163
	10	.239	.204	.172	.149	.121
	50	.344	.306	.272	.247	.216
50	30	.283	.243	.213	.189	.159
	10	.236	.200	.170	.147	.119
	50	.330	.292	.262	.238	.207
30	30	.275	.238	.207	.183	.154
	10	.233	.196	.167	.145	.116
	50	.317	.282	.251	.229	.200
10	30	.267	.233	.202	.179	.150
	10	.229	.194	.165	.142	.114
0	0	.212	.178	.149	.128	.101

Temperature Performance Data with Globe & Guard

Lamp Watts	Ambient Temp °C	Class I Division 2 Globe & Guard	Supply Wire °C
High Pressure Sodium:			
200	40	325°C	75
	55	325°C	75
	65	325°C	85
250	40	350°C	75
	55	350°C	85
	65	350°C	—
400	40	T1	85
	55	T1	90
	65	—	—
Mercury Vapor:			
250	40	350°C	85
	55	T1	85
	65	—	—
400	40	—	85
	55	—	—
	65	—	—
Metal Halide:			
250	40	350°C	75
	55	350°C	90
	65	—	90
400	40	—	75
	55	—	—
	65	—	—

(Data not applicable with QTZ suffix)

Temperature Data *With* GR305 or GR302 Refractor

Wattage	Ambient Temp °C	Class I Division 2	Class II Division 1	Simultaneous Presence Class I, Div. 2/ Class II, Div. 1	Supply Wire °C
High Pressure Sodium					
200	40	350°C	T3C	T1/T3C	75
	55	T1	–	–	75
250	40	350°C	T3C	T1/T3C	75
	55	T1	–	–	85
400	40	350°C	T3C	T1/T3C	85
	55	T1	–	–	90
Mercury Vapor					
250	40	325°C	T3B	350°C/T3B	85
	55	350°C	–	–	85
400	40	325°C	T3B	350°C/T3B	85
Metal Halide					
250	40	325°C	T3B	350°C/T3B	85
	55	350°C	–	–	90
400	40	325°C	T3B	350°C/T3B	85

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200-400W VMV High Wattage Series

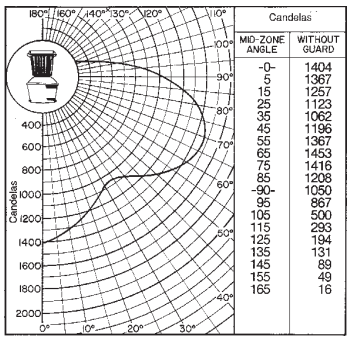
Champ® H.I.D. Luminaires

Lamp: 250W/E-28 coated (DX) mercury vapor (MV)
Total bare lamp lumens: 13000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for mercury vapor luminaires, with 250W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with I.E.S. Type V Glass Refractor



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
VMVC	400	1.73
VMVM	250	1.58
	400	2.77

Luminaire spacing ratio: 1.30

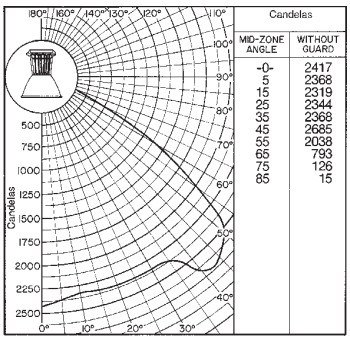
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.711	.585	.508	.440	.384
80	30	.659	.524	.430	.358	.304
	10	.614	.464	.368	.295	.244
	50	.677	.566	.484	.418	.365
70	30	.630	.500	.411	.343	.291
	10	.586	.446	.353	.285	.234
	50	.611	.509	.435	.376	.330
50	30	.573	.456	.375	.313	.266
	10	.538	.409	.326	.263	.217
	50	.551	.457	.390	.337	.296
30	30	.521	.414	.341	.285	.242
	10	.482	.375	.299	.242	.200
	50	.496	.409	.349	.301	.265
10	30	.471	.374	.308	.257	.219
	10	.449	.343	.273	.220	.182
0	0	.419	.314	.246	.195	.159

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.343	.306	.274	.251	.223
80	30	.285	.231	.203	.181	.156
	10	.209	.180	.152	.134	.113
	50	.326	.292	.262	.240	.213
70	30	.253	.220	.195	.174	.151
	10	.199	.171	.147	.129	.109
	50	.294	.264	.237	.218	.195
50	30	.232	.201	.179	.160	.139
	10	.185	.158	.136	.120	.101
	50	.265	.237	.215	.197	.177
30	30	.212	.185	.162	.146	.127
	10	.171	.145	.125	.110	.092
	50	.238	.215	.193	.178	.160
10	30	.191	.168	.148	.133	.115
	10	.155	.133	.114	.101	.083
0	0	.135	.113	.096	.084	.068

Luminaire with Etched Alzak® Reflector and Tempered Glass Lens



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
VMVC	400	1.73
VMVM	250	1.58
	400	2.77

Luminaire spacing ratio: 1.60

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.681	.609	.544	.483	.430
80	30	.658	.573	.500	.433	.376
	10	.638	.542	.465	.394	.337
	50	.667	.598	.536	.476	.422
70	30	.646	.564	.494	.429	.372
	10	.627	.537	.461	.391	.335
	50	.639	.576	.518	.459	.410
50	30	.622	.548	.482	.419	.366
	10	.607	.523	.453	.387	.332
	50	.615	.556	.501	.445	.397
30	30	.602	.533	.471	.410	.358
	10	.589	.512	.446	.382	.328
	50	.594	.537	.486	.432	.386
10	30	.582	.518	.460	.401	.352
	10	.571	.501	.438	.377	.324
0	0	.559	.489	.426	.364	.312

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.383	.340	.302	.273	.234
80	30	.329	.286	.249	.220	.182
	10	.291	.250	.212	.183	.148
	50	.377	.335	.298	.269	.230
70	30	.326	.283	.248	.218	.182
	10	.288	.247	.211	.183	.148
	50	.365	.325	.289	.261	.225
50	30	.320	.277	.243	.214	.178
	10	.286	.245	.209	.182	.147
	50	.356	.315	.282	.254	.218
30	30	.315	.274	.238	.210	.175
	10	.284	.242	.208	.180	.145
	50	.346	.308	.274	.247	.213
10	30	.309	.270	.235	.208	.173
	10	.281	.240	.206	.179	.144
0	0	.269	.228	.194	.168	.133

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50-175W N2MV Series

Champ® H.I.D. Luminaires Non-Metallic

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

Application:

N2MV series *Champ* luminaires are used:
- in areas in which ignitable concentrations of flammable gases or vapors will be present due to abnormal, unusual or accidental conditions.
- in installations where moisture, dirt, vibration, corrosion or rough usage are concerns.
- wherever the damaging effects of water, wind, snow, sleet, hot sun or any combination of these elements are found.
- ideal for marine use; resists the harmful effects of salt water.
- withstands the harshest of corrosive environments.
- to provide low wattage spot and floodlighting.
- for general area lighting.
- in areas where the ambient temperature will get as low as 40°C (–40°F).
- In manufacturing plants, refineries, chemical, petrochemical and other industrial process facilities, wastewater and sewage treatment facilities, offshore, dockside and harbor installations as well as other heavy industrial applications.

Features:

- Housing and mounting modules made of polyphenylene sulfide (PPS) for strength and maximum resistance to corrosion.
- Pendant mounting module equipped with integral hub set screws for vibration resistance.
- Hubs are provided with an integral bushing to help prevent damage to field wiring during installation and ground connection for positive bonding.
- Guard, hub inserts, stanchion elbow and hardware made of stainless steel for maximum resistance to corrosion.
- Grounding wire for safety.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Hinged assembly allows the luminaire to hang free during installation to permit the use of both hands when wiring.
- One, external captive screw for ease of installation.
- Handle – hinge assembly doubles as a handle for ease of installation, especially when carrying up a ladder.



Standard Materials:

- Housing, mounting modules, component pallets – polyphenylene sulfide PPS
- Guard, hub inserts, stanchion elbow, hardware – stainless steel
- Globe – heat tempered
- Gaskets – silicone rubber

Electrical Ratings:

- 120, multi-tap/MT★ (120, 208, 240 and 277), Dual-Tap/DT (120, 277 volts), Tri-Tap/TT (120, 277, 347 volts) 480 volt, 600 volt, 220/240 volt-50 Hz
- 50-150W HPS; 100-175W MV; 70-175W MH

Certifications and Compliances:

- NEC and CEC:
  - Class I, Division 2, Groups A, B, C, D
  - 100W Maximum - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
  - Class 1 Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards:
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

Description	Suffix to be Added to Cat. No.
Restricted Breathing Construction - Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers)	**S826**
Certified for IEC Zone 2 - Furnished with terminal block crimp terminals and dedicated voltage ballasts (no MT, DT, or TT)	**S826TB**
Wall Mount Arm. For converting a ceiling-mount luminaire to a wall-mount.	**N2MV-WM1**
Ballast Gard™ starter cut-out switch. Prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150 watt – HPS	**BG**
Factory Assembled. For a factory assembled luminaire with lamp installed	**FA**
Instant Restrike. Enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only	**IR**
Quartz Auxiliary Lighting. Comes to full brightness immediately and remains lit until the HID lamp attains 60–70% of full illumination. For *non-hazardous* locations only. (Note: QTZ lamp not included; use 100W single ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC) Consult factory for top-hat limitations	**QTZ**
Fused. To protect ballast and capacitor against abnormal line conditions (Not for use in Canada)	**S658**
Furnished with Lamps.	**S714**
Teflon® Coated Globe. For additional protection against breakage. For use with 50–100W HPS, 70–175W MH and 100–175W MV	**S808**

Accessories:

- See pages 775 and 776 for complete listing.

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3L 50-150W High Pressure Sodium

N2MV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

See notes 1 (to specify voltage) 2 and 3. For guards and other optics see N2MV Luminaires - Ordering by Components Section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor
Pendant Mount	¾	50	N2MVS2A050GP	N2MVS2A050GR305
	1		N2MVS3A050GP	N2MVS3A050GR305
	¾	70	N2MVS2A070GP	N2MVS2A070GR305
	1		N2MVS3A070GP	N2MVS3A070GR305
	¾	100	N2MVS2A100GP	N2MVS2A100GR305
	1		N2MVS3A100GP	N2MVS3A100GR305
	¾	150	N2MVS2A150GP	N2MVS2A150GR305
	1		N2MVS3A150GP	N2MVS3A150GR305
Ceiling Mount Thru-Feed	¾	50	N2MVS2C050GP	N2MVS2C050GR305
	1		N2MVS3C050GP	N2MVS3C050GR305
	¾	70	N2MVS2C070GP	N2MVS2C070GR305
	1		N2MVS3C070GP	N2MVS3C070GR305
	¾	100	N2MVS2C100GP	N2MVS2C100GR305
	1		N2MVS3C100GP	N2MVS3C100GR305
	¾	150	N2MVS2C150GP	N2MVS2C150GR305
	1		N2MVS3C150GP	N2MVS3C150GR305
Stanchion Mount 25° Angle	1½	50	N2MVSJ050GP	N2MVSJ050GR305
	1½	70	N2MVSJ070GP	N2MVSJ070GR305
	1½	100	N2MVSJ100GP	N2MVSJ100GR305
	1½	150	N2MVSJ150GP	N2MVSJ150GR305

1. **Standard Voltage Ballasts - 60Hz**

	NEC/UL				CEC/CSA (cUL)		
Voltage	Multi Tap	Dual Tap	120V	480V	Tri Tap	Dual Tap	120V
Suffix	/MT	/DT	/120	/480	/TT	/DT	/120

Optional Voltage Ballasts - 50 or 60Hz

	CEC/CSA (cUL) - CWI Isolated Ballasts				EXPORT			
Voltage	208V CWI	240V CWI	480V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/480CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. 150W HPS Luminaires, 55V Lamps is standard, for 100V lamps - Add suffix ''CE''. 50W HPS luminaire is dual-tap only.
3. Options - Add the required options suffixes from page 765, In Alpha-numeric order.

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150-175W Pulse Start Metal Halide

N2MV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

See notes 1 (to specify voltage) and 2. For guards and other optics see N2MV Luminaires - Ordering by Components Section.

			BASIC CATALOG NUMBER	
Mounting Style	**Hub Size**	**Lamp Watts**	**With G303 Globe and P33 Guard**	**With GR305-S828 Glass Refractor**
Pendant Mount	¾	150	N2MVM2A150GP-S828	N2MVM2A150GR305-S828
	1		N2MVM3A150GP-S828	N2MVM3A150GR305-S828
	¾	175	N2MVM2A175GP-S828	N2MVM2A175GR305-S828
	1		N2MVM3A175GP-S828	N2MVM3A175GR305-S828
Ceiling Mount Thru-Feed	¾	150	N2MVM2C150GP-S828	N2MVM2C150GR305-S828
	1		N2MVM3C150GP-S828	N2MVM3C150GR305-S828
	¾	175	N2MVM2C175GP-S828	N2MVM2C175GR305-S828
	1		N2MVM3C175GP-S828	N2MVM3C175GR305-S828
Stanchion Mount 25° Angle	1½	150	N2MVMJ150GP-S828	N2MVMJ150GR305-S828
	1½	175	N2MVMJ175GP-S828	N2MVMJ175GR305-S828

1. **Standard Voltage Ballasts - 60Hz**

	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

Optional Voltage Ballasts - 50 or 60Hz

	EXPORT			
Voltage	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/220	/220 50	/230 50	/240 50

2. Options - Add the required options suffixes from page 765, In Alpha-numeric order

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3L 70-175W Metal Halide

N2MV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

See notes 1 (to specify voltage), 2 and 3. For guards and other optics see N2MV Luminaires - Ordering by Components Section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
Pendant Mount	¾	70	N2MVM2A070GP	N2MVM2A070GR305
	1		N2MVM3A070GP	N2MVM3A070GR305
	¾	100	N2MVM2A100GP	N2MVM2A100GR305
	1		N2MVM3A100GP	N2MVM3A100GR305
	¾	175	N2MVM2A175GP	N2MVM2A175GR305
	1		N2MVM3A175GP	N2MVM3A175GR305
Ceiling Mount Thru-Feed	¾	70	N2MVM2C070GP	N2MVM2C070GR305
	1		N2MVM3C070GP	N2MVM3C070GR305
	¾	100	N2MVM2C100GP	N2MVM2C100GR305
	1		N2MVM3C100GP	N2MVM3C100GR305
	¾	175	N2MVM2C175GP	N2MVM2C175GR305
	1		N2MVM3C175GP	N2MVM3C175GR305
Stanchion Mount 25° Angle	1½	070	N2MVMJ070GP	N2MVMJ070GR305
	1½	100	N2MVMJ100GP	N2MVMJ100GR305
	1½	175	N2MVMJ175GP	N2MVMJ175GR305

100-175W Mercury Vapor

N2MV Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor
Pendant Mount	¾	100	N2MVC2A100GP	N2MVC2A100GR305
	1		N2MVC3A100GP	N2MVC3A100GR305
	¾	175	N2MVC2A175GP	N2MVC2A175GR305
	1		N2MVC3A175GP	N2MVC3A175GR305
Ceiling Mount Thru-Feed	¾	100	N2MVC2C100GP	N2MVC2C100GR305
	1		N2MVC3C100GP	N2MVC3C100GR305
	¾	175	N2MVC2C175GP	N2MVC2C175GR305
	1		N2MVC3C175GP	N2MVC3C175GR305
Stanchion Mount 25° Angle	1½	100	N2MVCJ100GP	N2MVCJ100GR305
	1½	175	N2MVCJ175GP	N2MVCJ175GR305

1.

Standard Voltage Ballasts - 60Hz

	NEC/UL			CEC/CSA (cUL)	
Voltage	Multi Tap	120V	480V	Tri Tap	120V
Suffix	/MT	/120	/480	/TT	/120

Optional Voltage Ballasts - 50 or 60Hz

	CEC/CSA (cUL) - CWI Isolated Ballasts			EXPORT			
Voltage	208V CWI	240V CWI	600V CWI	220V 60Hz	220V 50Hz	230V 50Hz	240V 50Hz
Suffix	/208CWI	/240CWI	/600CWI	/220	/220 50	/230 50	/240 50

2. 70W Ballast not available in 480V.
3. Options - Add the required options suffixes from page 765, in Alpha-numeric order.

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N2MV Luminaires - Ordering by Components

N2MV luminaires are available in components
A complete luminaire consists of:

I. N2MV Cover (mounting module)
II. N2MV Ballast Housing - Include voltage and required option(s)
III. Globe, Refractor, Guard, Reflector

I. N2MV Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	N2APM2
	1	N2APM3
Ceiling	¾	N2CM2
	1	N2CM3
Wall (Use wall bracket accessory with Ceiling Cover)	¾	N2MV - WM1 and N2CM2
	1	N2MV - WM1 and N2CM3
Stanchion - 25 Degree Angle	1½	N2JM5

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes.**

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	50	N2MVS050/MT
	70	N2MVS070/MT
	100	N2MVS100/MT
	150	N2MVS150/MT LX
Metal Halide	70	N2MVM070/MT
	100	N2MVM100/MT
	175	N2MVM175/MT
Mercury Vapor	100	N2MVC100/MT
	175	N2MVC175/MT

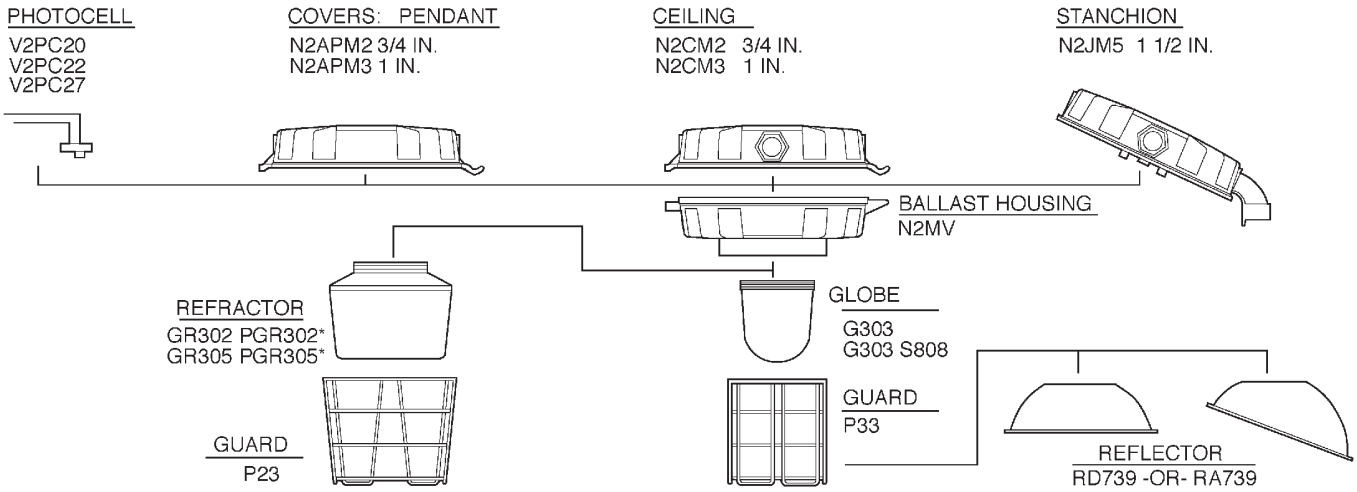
III. Globe, Refractors, Guards and Reflectors

Type	Catalog Number
Globe	G303
Globe Teflon Coated	G303-S808
Globe Guard	P33
Reflector-Dome	RD739
Reflector-Angle	RA739
Refractor - Type 2	GR302
Refractor - Type 5	GR305
Refractor Guard	P23
Large Plastic Refractor Type 2	PGR302
Large Plastic Refractor Type 3	PGR303
Large Plastic Refractor Type 5	PGR305

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N2MV Champ Series Luminaire

A complete luminaire consists of a cover mount, a ballast housing and a globe, with or without guard, refractor or reflector.



* These plastic refractors are for non-hazardous areas only (50–100W max.)

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Lamp Watts	Ambient Temp C	Optics	Class I (Gas/Vapors)		Class II (Dust) and Class III	Simultaneous Presence Gas and Dust Present in the Same Area		Supply Wire Temp C
			Non Restricted Breathing	**Restricted Breathing**		**Non** Restricted Breathing	**Restricted Breathing**	
				Ex nR			Ex nR	
			Standard Product	**Option S826(TB)**	Standard Product	Standard Product	**Option S826**	
			Division 2	Zone 2 or **Division 2**		Class I, Division 2 and Class II	Class I, Zone 2 or **Division 2** and Class II	
		G303	**X**	**X**	**X**	**X**	**X**	
		GR305	**X**	**X**	**X**	**X**	**X**	

High Pressure Sodium

50	40	T3A	T5	T4A	T2C/T4A	T4A	75
	55	T3A	T5	–	–	–	85
	65	–	–	–	–	–	–
70	40	T3A	T5	T4A	T2C/T4A	T4A	75
	55	T3A	T5	–	–	–	85
	65	–	–	–	–	–	–
100	40	T2D	T5	T4A	T2C/T4A	T4A	85
	55	T2C	T4	–	–	–	100
	65	–	–	–	–	–	–
150	40	T2C	T4	–	–	–	85
	55	–	–	–	–	–	–
	65	–	–	–	–	–	–

Metal Halide

70	40	T3C	T5	T4	T2B/T4	T4	75
	55	T3B	T5	–	–	–	85
	65	–	–	–	–	–	–
100	40	T2B	T4	T4	T2B/T4	T4	85
	55	T2B	T4	–	–	–	–
	65	–	–	–	–	–	–
150 (S828)	40	T2	T3	–	–	–	–
	55	–	–	–	–	–	–
	65	–	–	–	–	–	–
175 (Includes S828)	40	T2	T3	–	–	–	–
	55	–	–	–	–	–	–
	65	–	–	–	–	–	–

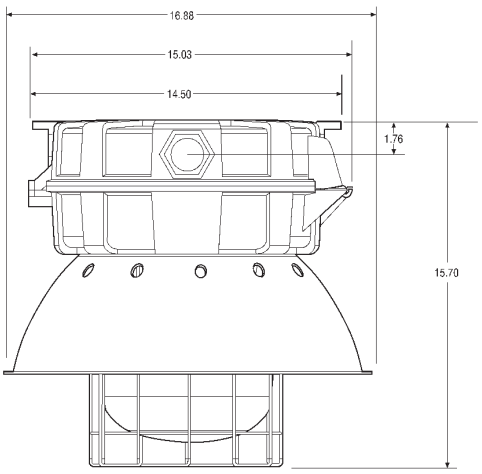
Mercury Vapor

100	40	T2B	T4	T4	T2B/T4	T4	75
	55	T2B	T4	–	–	–	85
	65	–	–	–	–	–	–
175	40	T2	T3	–	–	–	85
	55	–	–	–	–	–	–
	65	–	–	–	–	–	–

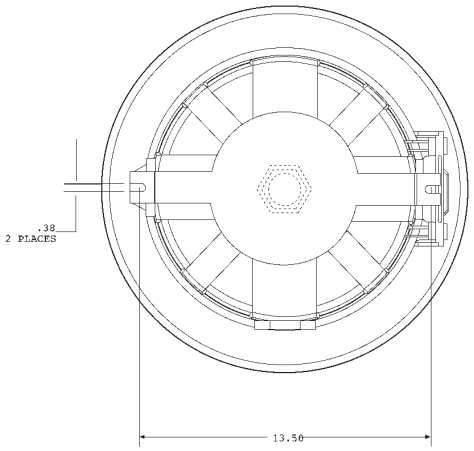
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N2MV Dimensions

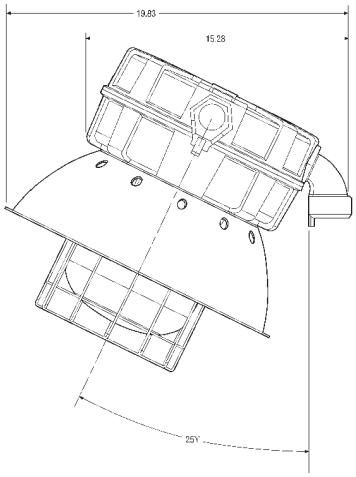
Ceiling Mount



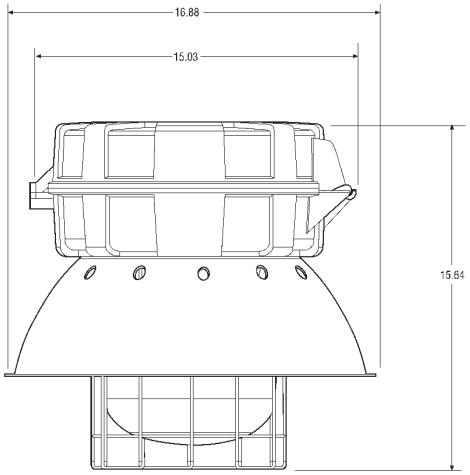
Ceiling Mount – Top View



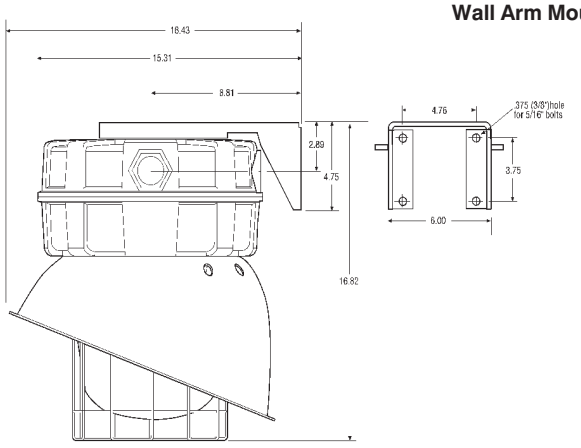
25° Angle Stanchion Mount



Pendant Mount



Wall Arm Mount



Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)	Lamp Watts	Luminaire with Globe, Guard (lbs.)
N2MVS	50	23	70	23 1/16
	100	24 1/16	150	26 1/8
N2MVC	100	21 1/16	175	22 1/4
	250	24		
N2MVM	70	21	100	21 1/16
	175	22 1/4	250	24

Add for mounting modules (lbs.):

Pendant	1 1/4	Flexible Pendant	1 1/2
Ceiling	2 3/4	Wall	4 1/2
Quad Mount	3 1/2	Angle Stanchion	3 1/2
Straight Stanchion	4 1/2		

Add for reflectors (lbs.):

Dome	1 1/4	30° Angle	1 3/4

Deduct: 1 lb. for luminaire without P33 Guard.

Add: 5 1/2 lbs. for luminaire with GR305 refractor.

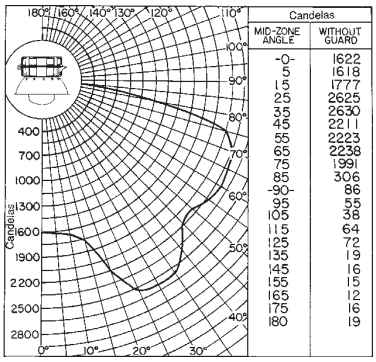
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Lamp: 150W/E-23-1/2 clear high pressure sodium (HPS)
Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for high pressure sodium luminaires with 150W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminiares.

Luminaire with Globe and Dome Reflector



MID-ZONE ANGLE	Candelas WITHOUT GUARD
-0-	1622
5	1618
15	1777
25	2625
35	2630
45	2211
55	2223
65	2238
75	1991
85	306
-90-	86
95	55
105	38
115	64
125	72
135	19
145	16
155	15
165	12
175	16
180	19

Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
N2MVS	50	0.25
	70	0.40
	100	0.59

Luminaire spacing ratio: 1.90

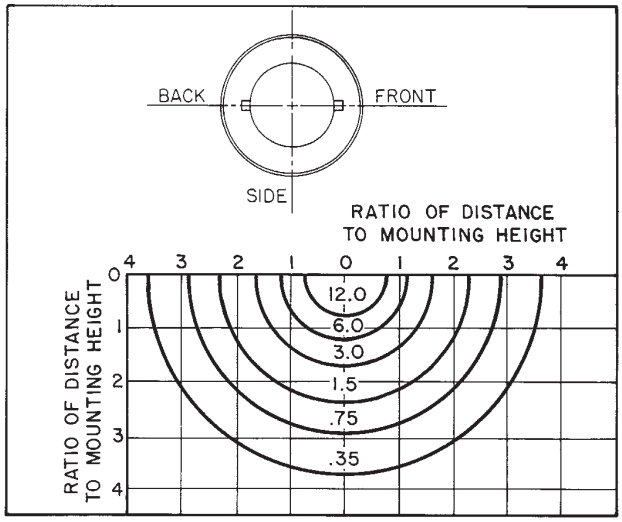
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

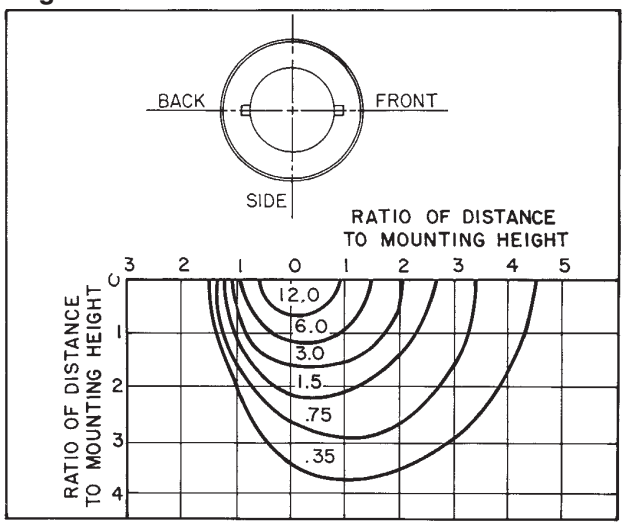
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.759	.643	.551	.476	.418
80	30	.719	.582	.480	.400	.340
	10	.683	.530	.424	.342	.283
	50	.740	.627	.538	.465	.406
70	30	.703	.570	.471	.394	.334
	10	.669	.523	.418	.338	.280
	50	.703	.595	.512	.442	.388
50	30	.672	.548	.455	.381	.324
	10	.645	.506	.408	.332	.276
	50	.669	.567	.488	.422	.370
30	30	.646	.528	.439	.368	.314
	10	.622	.492	.399	.325	.270
	50	.640	.541	.466	.403	.354
10	30	.619	.508	.424	.356	.305
	10	.600	.479	.389	.318	.265
0	0	.582	.459	.370	.299	.247

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.371	.330	.294	.267	.231
80	30	.296	.257	.224	.198	.164
	10	.243	.208	.174	.151	.121
	50	.362	.323	.288	.262	.226
70	30	.291	.252	.221	.195	.164
	10	.238	.204	.173	.151	.121
	50	.345	.309	.275	.250	.218
50	30	.283	.244	.215	.190	.159
	10	.235	.201	.170	.148	.119
	50	.331	.294	.265	.240	.209
30	30	.275	.239	.208	.184	.154
	10	.231	.196	.168	.146	.116
	50	.317	.284	.253	.231	.201
10	30	.266	.233	.203	.180	.150
	10	.227	.193	.165	.143	.114
0	0	.210	.177	.149	.128	.100

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

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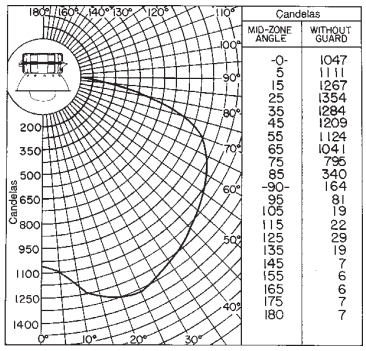
50-175W N2MV Series
Champ® H.I.D. Luminaires
Non-Metallic

Lamp: 175W/E-28 coated mercury vapor (MV)
Total bare lamp lumens: 8600

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for mercury vapor luminaires with 175W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
N2MVC	100	0.49
	250	1.41
N2MVM	175	1.63
	250	2.38

Luminaire spacing ratio: 1.7

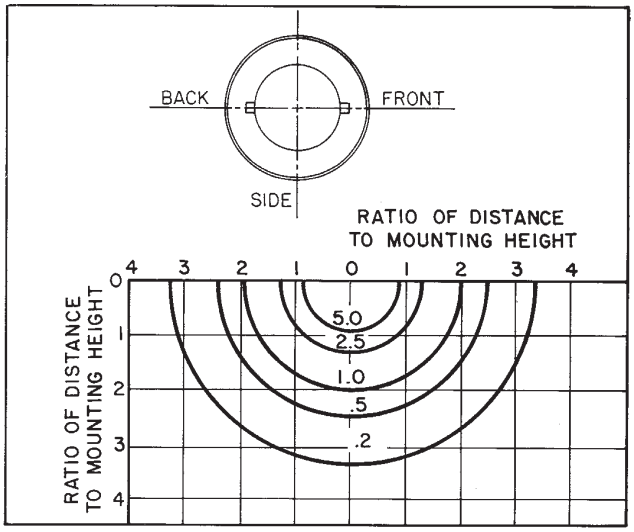
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

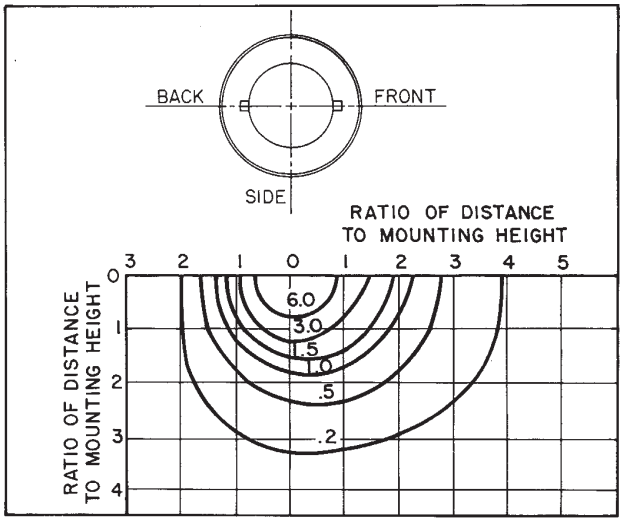
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.723	.619	.536	.467	.412
80	30	.684	.561	.470	.396	.340
	10	.649	.512	.417	.342	.286
	50	.705	.604	.524	.456	.401
70	30	.668	.549	.461	.390	.334
	10	.635	.505	.412	.338	.283
	50	.668	.572	.498	.434	.384
50	30	.638	.528	.445	.377	.324
	10	.611	.488	.401	.331	.279
	50	.635	.545	.474	.414	.366
30	30	.611	.508	.429	.365	.314
	10	.588	.474	.391	.324	.273
	50	.606	.519	.453	.395	.350
10	30	.585	.488	.414	.352	.305
	10	.566	.460	.381	.317	.268
0	0	.549	.442	.363	.299	.251

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.368	.329	.294	.269	.234
80	30	.298	.261	.229	.204	.172
	10	.248	.215	.182	.160	.131
	50	.359	.322	.289	.263	.229
70	30	.293	.256	.226	.201	.171
	10	.244	.211	.181	.159	.131
	50	.343	.308	.276	.252	.221
50	30	.284	.248	.220	.196	.166
	10	.240	.207	.178	.157	.128
	50	.329	.294	.266	.243	.212
30	30	.276	.243	.213	.190	.162
	10	.236	.203	.176	.154	.126
	50	.315	.284	.255	.233	.205
10	30	.268	.236	.208	.186	.157
	10	.231	.200	.173	.151	.123
0	0	.216	.184	.158	.138	.110

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

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Globes



G54



G24



G303

Lamp Watts	Luminaire Series	Type	Cat. #
35-150	LMVS, LMVM	Heat/impact resistant	G54✓
50-175	VMVC, VMVM, VMVS	Heat/impact resistant	G24✓
50-250	DMVC, DMVM, DMVS	Heat/impact resistant	G303✓
200-400	VMVS	Heat/impact resistant	G303✓
250	VMVC, VMVM	Heat/impact resistant	G303✓
50-175	N2MVC, N2MVM, N2MVS	Heat/impact resistant	G303✓

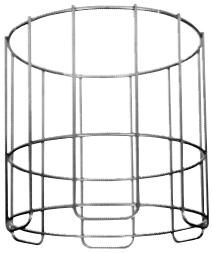
Guards



P50 – use with G54 globe



P21 – use with G24 globe



P33 – use with G303 globe



P23 – use with refractors

Lamp Watts	Luminaire Series	Type	Cat. #
35-150	LMVS, LMVM	Copper-free aluminum	P50✓
50-175	VMVC, VMVM, VMVS	Copper-free aluminum	P21✓
50-250	DMVC, DMVM, DMVS	Stainless steel	P33✓
200-400	VMVS	Stainless steel	P33✓
250	VMVC, VMVM	Stainless steel	P33✓
Refractors	All	Stainless steel	P23
50-175	N2MVC, N2MVM, N2MVS	Stainless steel	P33

✓ – available with Lightning Service™ delivery.
See Section G. for complete details.

Reflectors



Dome – Krydon® material



30° Angle – Krydon material

Lamp Watts	Luminaire Series	Dome Cat. #	Angle Cat. #
35-150	LMVS, LMVM	RD636 (RD66)✓	RA636 (RA66)✓
50-175	VMVC, VMVM, VMVS	RD70✓	RA70✓
50-250	DMVC, DMVM, DMVS	RD739 (RD79)✓	RA739 (RA79)✓
200-400	VMVS	RD739 (RD79)✓	RA739 (RA79)✓
250	VMVC, VMVM	RD739 (RD79)✓	RA739 (RA79)✓
50-175	N2MV, N2MVF(B)	RD739✓	RA740



Reflector/Lens – Etched Alzak aluminum reflector/tempered glass lens

Lamp Watts	Luminaire Series	Type	Cat. #
200-400	VMVC, VMVM, VMVS	Reflector/Lens	GRD4✓
70-250	DMVS, DMVC, DMVM	Reflector/Lens	GRD4✓

Globes – Teflon Coated

Teflon coated for increased shatter protection

Lamp Watts	Luminaire Series	Cat. #
50-175	VMVC, VMVM, VMVS	G24-S808
50-175	DMVC, DMVM, DMVS	G303-S808

Alzak is a registered trademark of Alcoa.
Teflon is a registered trademark of E.I. DuPont Co.

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Refractors



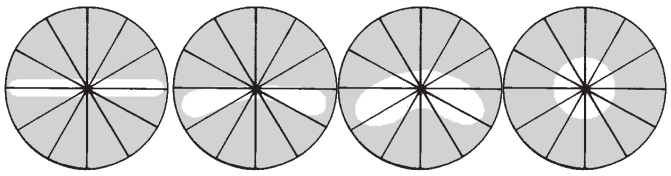
R2, R5, PR2, PR3, PR5



GR302, GR305

Lamp Watts	Luminaire Series	I.E.S. Type	Glass Cat. #	Plastic (100W max. non hazardous) Cat. #
50-175	VMVC, VMVM, VMVS	II	R2	PR2
		III		PR3
		V	R5	PR5
200-400	VMVC, VMVM, VMVS	II	GR302	
		V	GR305✓	
50-250	DMVC, DMVS, DMVM	II	GR302	PGR302
		III		PGR303
		V	GR305✓	PGR305
50-175	N2MV			

I.E.S. Distribution Curves



Type I Type II Type III Type V

Compact Refractors



G241, G245



With optional P241 wire guard.

Lamp Watts	Luminaire Series	IES Type	Glass Cat. #
50-175	VMVC, VMVM, VMVS	I	G241✓
		V	G245✓
Optional stainless steel wire guard			P241✓

Safety Lighting Options

Quartz Auxiliary Lamp



The quartz auxiliary lamp comes to full brightness instantly and remains lit until the H.I.D. lamp attains 60-70% of full illumination. Quartz auxiliary lamps can be used with all DMV, VMV and VMV high wattage series *Champ*® luminaires. Use for non-hazardous applications ONLY.
(**NOTE:** VMV luminaires (50-175W) ordered with this option must use large glass refractor optics, not compact refractors).

Quartz auxiliary lamp (100W single ended lamp – Q100CL/DC, Q100DC or 100Q/CL/DC NOT furnished)

Add suffix **QTZ** to Cat. No.

Instant Restrike

Factory installed instant restrike device will restart a hot high pressure sodium lamp (50-150W LX) after a momentary power interruption, without the typical delay for cooling.
Instant restrike for use in 50-150W ''LX'' HPS luminaires.
Add suffix **IR** to Cat. No.

Ballast-gard™

Ballast-gard starter cut-out switch prevents starter pulsing after a time delay of approximately two minutes if the lamp fails to start. For use in 50-400 watt HPS luminaires only. Add suffix **BG** to Cat. No.

✓ – available with Lightning Service™delivery.
See Section G for complete details

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V2PC Photocell

- Cl. I, Div. 2, Groups A,B,C,D
- Maintains Cl. I, Div 2 Suitability of Cooper Crouse-Hinds Champ® Series Luminaires

The only UL recognized photocell for Class I, Division 2 areas eliminates the need for an explosionproof box.

When mounting in EIH enclosures for Class I, Division 1 applications (EV21H Series) seals are not required for Groups C & D.

Cooper Crouse-Hinds V2PC factory-sealed, field installed photocell offers reliable, dusk-to-dawn lighting control in Class I, Division 2 locations. The V2PC is ideal for walkways, security lighting, and any other outdoor lighting application that utilizes Champ® H.I.D. lighting luminaires.

Applications:

The V2PC is designed:
- to provide control for automatic dusk-to-dawn lighting.
- for use with LMV, DMV, VMV, VMV High Wattage, N2MV and FMV Series Champ® lighting luminaires.
- for use on 35-400 watt H.I.D., incandescent, or fluorescent lighting luminaires.
- to save energy by operating luminaires only when necessary.
- for safety by turning on outdoor luminaires in critical passageways at night.
- for walkways, parking areas, outdoor process areas, security lighting, or any outdoor lighting application in Class I, Division 2 locations and corrosive environments.
- for remote mounting in FS boxes (D2S Series).
- for mounting in EIH enclosures for Class I, Division 1 applications (EV2IH Series).

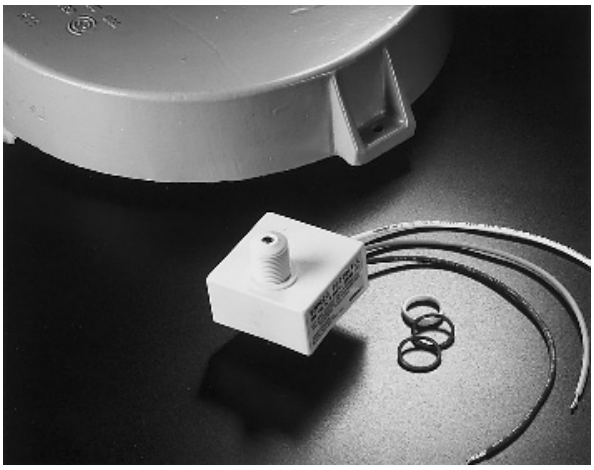
Features:

- Field-installable.
- Solid-state design for performance and dependability.
- Factory sealed components. Explosionproof enclosure not required for Class I, Division 2 locations.
- Luminaires turn on at 3 footcandles, off at 8 footcandles insuring that the luminaires are operating only when needed.
- Built-in 10 second time delay to eliminate nuisance tripping.
- Eight-year operating life.
- Furnished with 6″ stranded 600 volt color coded wire leads.
- Constructed from corrosion-resistant thermoplastic polyester.
- Available on a DS cover for use with any FS/FD box (D2S Series).
- Available in an EIH enclosure for use in Class I, Division 1, Groups B†, C, and D locations (EV2IH Series). No seals required.

Electrical Rating Ranges:

- 120, 208, 220, 240, 277 VAC
- 50/60 Hz
- 35-400 watt H.I.D., incandescent, or fluorescent
- V2PC20 – 3.3A max. current rating
- V2PC22 – 1.8A max. current rating
- V2PC27 – 1.4A max. current rating

† For Group B applications, seal within 1½″ of enclosure in accordance with Section 501-5 of the National Electric Code®.



Certifications and Compliances:

V2PC and D2S
- NEC/CEC: Class I, Division 2, Groups A, B, C, D
- UL Standard: 844 – Hazardous (Classified) Locations
- CSA: C22.2 No. 55

EV2IH
- NEC/CEC:
  Class I, Division 1 and 2, Groups B, C, D
  Class II, Division 1, Groups E, F, G
  Class II, Division 2, Groups F, G
  Class III
- NEMA: 3, 4, 7BCD, 9EFG
- UL Standard: 844 – Hazardous (Classified) Locations
- CSA: C22.2 No. 30, 55

Options:

To order luminaire with **photocell factory installed:**
1. Specify luminaire dedicated supply voltage (not MT, DT, or TT)
2. Add photocell Cat. No. to fixture Cat. No. as follows:
   V2PC20
   V2PC22
   V2PC27

Example: VMVSJ070GP/120-V2PC20 is a 120V 60Hz luminaire with a factory installed photocell.

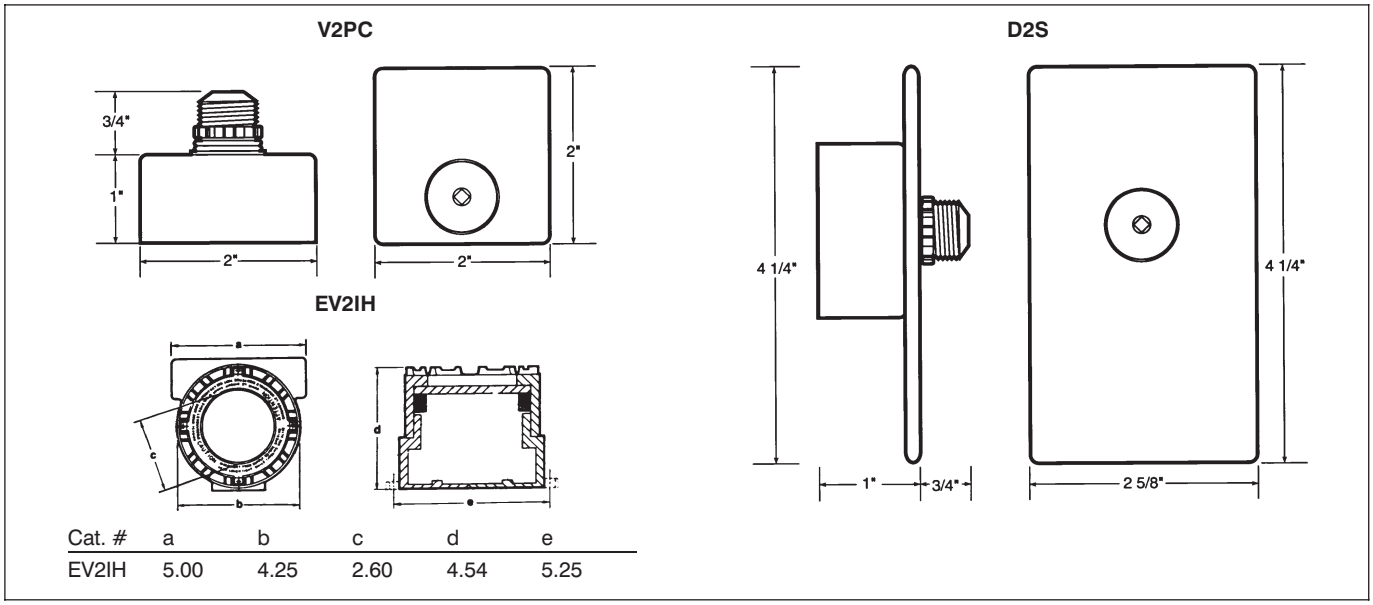
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V2PC Photocell

Dimensions
Ordering Information

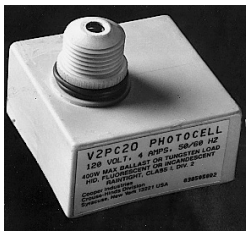
- Cl. I, Div. 2, Groups A,B,C,D
- Maintains Cl.I, Div. 2 Suitability of Cooper Crouse-Hinds Champ® Series Luminaires

Dimensions:



Cat. #	a	b	c	d	e
EV2IH	5.00	4.25	2.60	4.54	5.25

Ordering Information



Photocell for field installation*

Catalog #	Voltage Range
V2PC20	120V, 50/60 Hz
V2PC22	208-240V, 50/60 Hz
V2PC27	277V, 50/60 Hz

* Must be factory installed in Canada — see page 777.



Photocell in DS cover for use with FS/FD box

Catalog #	Voltage Range
D2S20	120V, 50/60 Hz
D2S22	208-240V, 50/60 Hz
D2S27	277V, 50/60 Hz



Photocell in EIH enclosure for use in Class I, Division 1, Groups B, C, and D; Class II, Division 1, Groups E, F, and G; and Class III locations

Catalog #	Voltage Range
EV2IH20	120V, 50/60 Hz
EV2IH22	208-240V, 50/60 Hz
EV2IH27	277V, 50/60 Hz

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Description	Page No.
Application/Selection	**780**
Class I Hazardous Area Lighting	
Integrally Ballasted Luminaires	
EVLP Lo-Pro™ Hazard•Gard® Series	**781-791**
EVM Hazard•Gard® Series	**792-800**
HPS, Pulse Start MH, MH, MV	
Class II Hazardous Area Lighting	
Integrally Ballasted Luminaires	
EVLP Lo-Pro™ Hazard•Gard® Series	**781-791**
EVM Hazard•Gard® Series	**792-800**
HPS, Pulse Start MH, MH, MV	

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4L High Intensity Discharge (H.I.D.) Luminaires

Hazardous Application and Selection Quick Selector Chart

Application:

Luminaires contained in this section are for use:

- in indoor or outdoor hazardous locations
- as general area or spot lighting applications
- where longer lamp life provides desirable maintenance cost savings and return on investment through use of fewer luminaires, circuits and ancillary apparatus
- where relamping and maintenance difficulties require longer lamp life

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Considerations for Selection:

Environmental:

- Make sure luminaire meets NEC/CEC requirements for area in which it will be used

Lighting levels required:

- Can luminaire accept lamp of sufficient size to yield desired light level (see Lighting Selector Guide to determine the number and location of luminaires required)

NOTE: For details on luminaire selection and methods for determining number and location luminaires, see Lighting Selector Guide, pages 665 to 689.

Quick Selector Chart

Series	NEC Compliance	Electrical Characteristics		Ballast
		Watts	Volts	
EVM ***Hazard•Gard™***	Cl. I, Groups B, C, D	50, 70, 100, 150, 175, 200, 250, 320, 400 (Mogul base)	120, 208, 240, 277, 347, 480, 600, MT	High power factor, constant wattage, reactor or autotransformer
	Cl. II, Groups E, F, G	50, 70, 100, 150, 175 (Mogul base)	120, 208, 240, 277, 347, 480, 600, MT	integral
***Champ*® Series (see Section 3L)**	Cl. II, Groups E, F, G	70, 100, 150, 175 (Mogul base)	120, 208, 240, 277, 347, 480, 600, MT	High power factor, constant wattage integral
EVLP ***Hazard•Gard™***	Cl. I, Groups B, C, D	70, 100, 150, 175 (Medium base) 70, 100, 150, 175, 200, 250 (Mogul base)	120, 208, 240, 277, 347, 480, MT, TT	High power factor, constant wattage, reactor or autotransformer, integral.
	Cl. II, Groups E, F, G Cl. III	70, 100 (Medium base) 70, 100, 150, 175 (Mogul base)	120, 208, 240, 277, 347, 480, MT, TT	

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EVLP Low Profile Hazard•Gard® (H.I.D.) Luminaires

Medium and Mogul Base

- Cl. I, Div. 1, Groups B (GB suffix), C, D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix – GB), IIB, IIA
- Cl. II, Div. 1 Groups E, F, G; Class III, Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

Application:

Cooper Crouse-Hinds Low Profile Hazard•Gard® luminaires are used in:
- areas where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and pharmaceutical plants, oil terminals, gas plants and other heavy process industry facilities
- waste treatment facilities
- drilling platforms and other coastal and offshore hazardous areas

Features - Benefits:

- Small compact size is perfect where low mounting restrictions are a concern.
- Two start Acme threaded construction allows for easier assembly, installation and maintenance.
- Light weight copper-free aluminum housing with powdered epoxy finish for superior corrosion resistance.
- All exterior hardware is corrosion-resistant stainless steel.
- Four mounting arrangements; pendant, ceiling, wall bracket and stanchion suit any lighting layout.
- Wide range of light sources and wattages to meet specific lighting needs.
- Marine and Nema 4X construction suitable for outdoor, hose down, marine and corrosive environments.
- Integral ballast for lowest installed cost.
- High power factor (90%+) ballasts allows more fixtures per circuit.
- Uses same mounting modules as the standard Hazard•Gard® for easy retrofitting when the Lo-Pro™ is the preffered choice.
- Internally fluted glass globe reduce glare and distributes light evenly – ideal for adverse enviroments typical of industrial facilities.
- Krydon® construction dome and angle reflectors – won't rust, corrode, dent, chip or peel
- Now available in components – luminaire body, mounting module, guard, reflectors – allowing for easy stocking for Quick Ship requirements.

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



Standard Finishes:

Copper-free aluminum – *Corro-free™ powdered epoxy*
- Krydon – *white*
- Stainless steel guard

Ratings (Electrical/Size):

Sources/wattage:
- Medium Base 70-150W HPS, 70-175W MH
- Mogul Base 70-150W HPS, 70-250W MH

Voltages:
- Medium & Mogul H.I.D.
  120V 60Hz
  Multi-tap (120, 208, 240, 277V 60Hz)
  Tri-tap (120, 277, 347V 60Hz)
  480V 60Hz
  Other voltages – consult Cooper Crouse-Hinds

Conduit entries:
- ¾″, 1″ NPT – pendant, wall bracket, ceiling
- 1¼″ NPT – stanchion

Certification & Compliances:

- NEC and CEC:
  - Class I, Division 1, Groups B (with suffix GB), C, D – All Wattages
  - Class I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA – All Wattages
  - Class II, Class III & Simultaneous Presence – (medium base 100 watt max., Mogul Base 175 watt max.)
- UL Standards:
  - 844, Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
BallastGard (HPS only)	BG
Instant restrike (Mogul Base only) 70-150W LX HPS Cannot use with BG Option	IR
Fused	S658*
Quartz auxiliary lighting (Mogul Base only) Cannot use with IR option Uses 100W single ended double contract lamp Quartz lamp not included	QTZ
Factory assembled with lamps	FA

Accessories:

Description	Cat. #
Dome reflector	RD739
Angle reflector	RA739

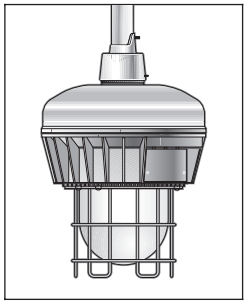
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4L EVLP Low Profile Hazard•Gard®

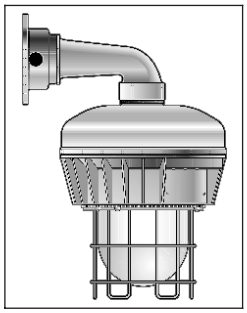
Medium Base

- Cl. I, Div. 1, Groups B(GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (With Suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

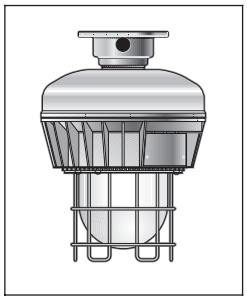
Medium Base Ordering Information



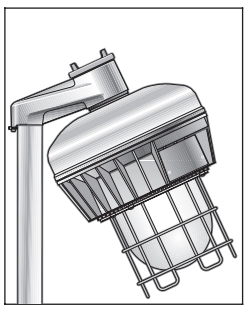
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and bracket mounts have 4 hubs: 3 are plugged.

Watt	Hub Size	Pendant With Guard *Catalog #*	Wall Brckt With Guard *Catalog #*	Ceiling With Guard *Catalog #*	Stanchion With Guard *Catalog #*	Luminaire Body Less Mounting Module & Guard *Catalog #*
High Pressure Sodium						
70W	¾	EVLPA142071	EVLPBX142071	EVLPCX142071		EVLP14070
	1	EVLPA143071	EVLPBX143071	EVLPCX143071		
	1¼				EVLPJ144071	
100W	¾	EVLPA142101	EVLPBX142101	EVLPCX142101		EVLP14100
	1	EVLPA143101	EVLPBX143101	EVLPCX143101		
	1¼				EVLPJ144101	
150W	¾	EVLPA142151	EVLPBX142151	EVLPCX142150		EVLP14151
	1	EVLPA143151	EVLPBX143151	EVLPCX143151		
	1¼				EVLPJ144151	
Pulse Start Metal Halide						
150W	¾	EVLPA192151-S828	EVLPBX192151-S828	EVLPCX192151-S828		EVLP19150-S828
	1	EVLPA193151-S828	EVLPBX193151-S828	EVLPCX193151-S828		
	1¼				EVLPJ194151-S828	
175W	¾	EVLPA192171-S828	EVLPBX192171-S828	EVLPCX192171-S828		EVLP19175-S828
	1	EVLPA193171-S828	EVLPBX193171-S828	EVLPCX193171-S828		
	1¼				EVLPJ194171-S828	
Metal Halide						
70W	¾	EVLPA192071	EVLPBX192071	EVLPCX192071		EVLP19070
	1	EVLPA193071	EVLPBX193071	EVLPCX193071		
	1¼				EVLPJ194071	
100W	¾	EVLPA192101	EVLPBX192101	EVLPCX192101		EVLP19100
	1	EVLPA193101	EVLPBX193101	EVLPCX193101		
	1¼				EVLPJ194101	
175W	¾	EVLPA192171	EVLPBX192171	EVLPCX192171		EVLP19175
	1	EVLPA193171	EVLPBX193171	EVLPCX193171		
	1¼				EVLPJ194171	

Complete Catalog Number as follows:

1.

	Standard Voltage Ballasts – 60HZ NEC/UL			CEC/CSA (cUL)	
Voltage Suffix	Multi-tap /MT	120V /120	480V /480	Tri-tap /TT	120V /120

Optional Voltage Ballasts– 50 Or 60HZ

*CEC/CSA (cUL)– CWI Isolated Ballasts				Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires Only
   - 55V lamps – add suffix ''LX''
   - 100V lamps – add suffix ''CE''

***** CWI Isolated Ballasts are only available for high pressure sodium and 175W metal halide (non pulse start) luminaires.

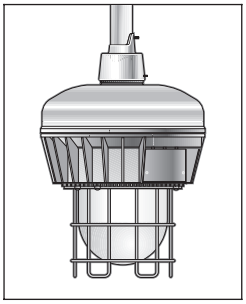
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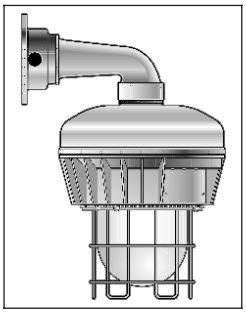
Mogul Base

- CI. I, Div 1, Groups B (GB suffix), C, D
- CI. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- CI. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

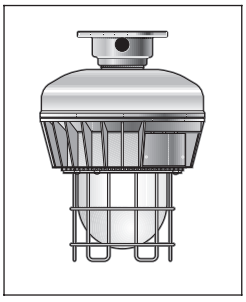
Mogul Base Ordering Information



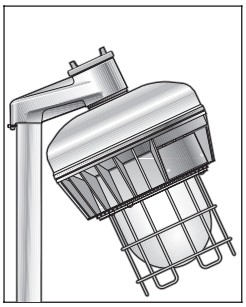
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and wall bracket mounts have 4 hubs:
3 are plugged.

Watt	Hub Size	Pendant With Guard *Catalog #*	Wall Bracket With Guard *Catalog #*	Ceiling With Guard *Catalog #*	Stanchion With Guard *Catalog #*	Luminaire Body Less Mounting Module & Guard *Catalog #*
High Pressure Sodium						
70W	¾	EVLPA042071	EVLPBX042071	EVLPCX042071		EVLP04070
	1	EVLPA043071	EVLPBX043071	EVLPCX043071		
	1¼				EVLPJ044071	
100W	¾	EVLPA042101	EVLPBX042101	EVLPCX042101		EVLP04100
	1	EVLPA043101	EVLPBX043101	EVLPCX043101		
	1¼				EVLPJ044101	
150W	¾	EVLPA042151	EVLPBX042151	EVLPCX042151		EVLP04150
	1	EVLPA043151	EVLPBX043151	EVLPCX043151		
	1¼				EVLPJ044151	
Pulse Start Metal Halide						
150W	¾	EVLPA092151S828	EVLPBX092151S828	EVLPCX092151S828		EVLP09150S828
	1	EVLPA093151S828	EVLPBX093151S828	EVLPCX093151S828		
	1¼				EVLPJ094151S828	
175W	¾	EVLPA092171S828	EVLPBX092171S828	EVLPCX092171S828		EVLP09170S828
	1	EVLPA093171S828	EVLPBX093171S828	EVLPCX093171S828		
	1¼				EVLPJ094171S828	
200W	¾	EVLPA092201S828	EVLPBX092201S828	EVLPCX092201S828		EVLP09201S828
	1	EVLPA093201S828	EVLPBX093201S828	EVLPCX093201S828		
	1¼				EVLPJ094201S828	
250W	¾	EVLPA092251S828	EVLPBX092251S828	EVLPCX092251S828		EVLP09250S828
	1	EVLPA093251S828	EVLPBX093251S828	EVLPCX093251S828		
	1¼				EVLPJ094251S828	
Metal Halide						
70W	¾	EVLPA092071	EVLPBX092071	EVLPCX092071		EVLP09070
	1	EVLPA093071	EVLPBX093071	EVLPCX093071		
	1¼				EVLPJ094071	
100W	¾	EVLPA092101	EVLPBX092101	EVLPCX092101		EVLP09100
	1	EVLPA093101	EVLPBX093101	EVLPCX093101		
	1¼				EVLPJ094101	
175W	¾	EVLPA092171	EVLPBX092171	EVLPCX092171		EVLP09170
	1	EVLPA093171	EVLPBX093171	EVLPCX093171		
	1¼				EVLPJ094171	
250W	¾	EVLPA092251	EVLPBX092251	EVLPCX092251		EVLP09250
	1	EVLPA093251	EVLPBX093251	EVLPCX093251		
	1¼				EVLPJ094251	

Complete Catalog Number as follows:

1.

	Standard Voltage Ballasts – 60HZ NEC/UL			CEC/CSA (cUL)	
Voltage Suffix	Multi-tap /MT	120V /120	480V /480	Tri-tap /TT	120V /120

Optional Voltage Ballasts– 50 Or 60HZ *CEC/CSA (cUL)– CWI Isolated Ballasts				Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires Only
   - 55V lamps – add suffix "LX"
   - 100V lamps – add suffix "CE"

   Example: **EVLPA043151/MT-LX**

* CWI Isolated Ballasts are only available for high pressure sodium and 175W–250W metal halide (non pulse start) luminaires.

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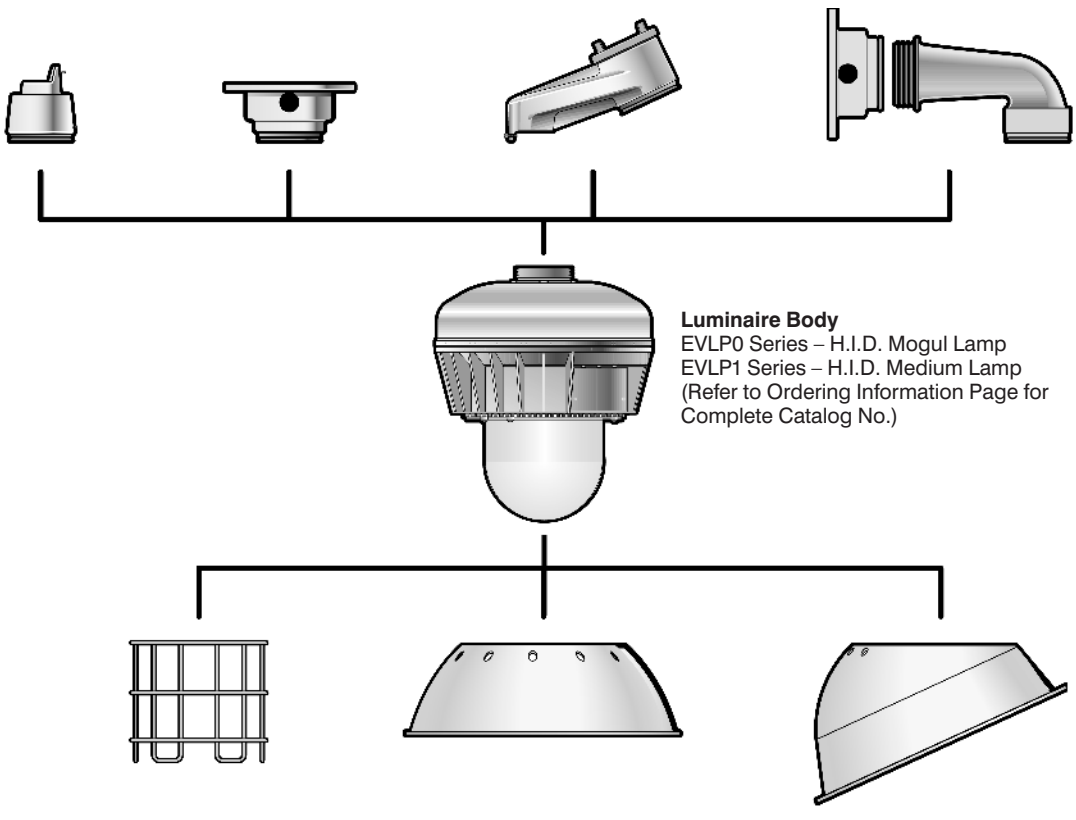
4L EVLP Low Profile Hazard•Gard®

Ordering by Components

EVLP Luminaires are available in components. A complete luminaire consists of:
- Mounting Module
- Luminaire Body
- Guard, Dome Reflector or Angle Reflector

Mounting Modules

Type	Conduit	Catalog Number
Pendant	¾	EVMP2
	1	EVMP3
Ceiling & Wall Box	¾	EV22
	1	EV33
Wall Bracket Arm	Use EV22 or EV33 box with EV87	EV87
Stanchion	1¼	EVMJ4
Guards		
Medium		EV511
Mogul		EV512
Reflectors		
Dome		RD739
Angle		RA739



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Medium Base Lamp Luminaires

Maximum Ambient	Watts	Class I, Group B (w/GB suffix) Groups C, D			Class II, Groups E, F, G Class III Simultaneous Presence	Supply Wire °C
		40°C	55°C	65°C	40°C	
High Pressure Sodium	70W	T5	T4A	T4A	T4A	90°C
	100W	T4A	T4A	T4	T4	90°C
	150W	T4	T3C	–	–	90°C
Metal Halide (including pulse start)	70W	T5	T4A	T4A	T4	85°C
	100W	T3C	T3C	–	–	90°C
	150W	T3C	T3B	–	–	90°C
	175W	T3C	T3B	–	–	90°C

Mogul Base Lamp Luminaires

Maximum Ambient	Watts	Class I, Group B (w/GB suffix) Groups C, D			Class II, Groups E, F, G Class III Simultaneous Presence	Supply Wire °C
		40°C	55°C	65°C	40°C	
High Pressure Sodium	70W	T6	T5	T5	T5	90°C
	100W	T5	T4A	–	T4A	90°C
	150W	T4A	T4	–	T4	90°C
Metal Halide (including pulse start)	70W	T6	T5	T5	T5	85°C
	100W	T5	T4A	T4A	T4A	90°C
	150W	T4	T3C	–	T3C	90°C
	175W	T4	T3C	–	T3C	90°C
	200W	T3C	–	–	–	90°C
	250W	T3C	–	–	–	90°C

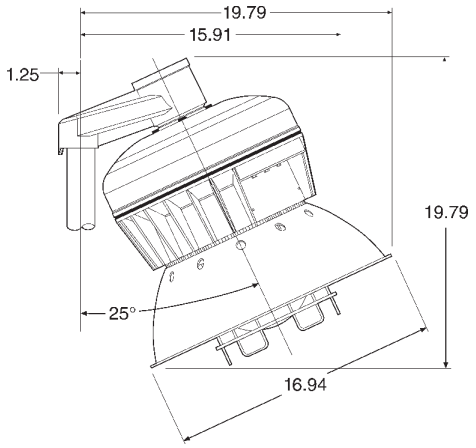
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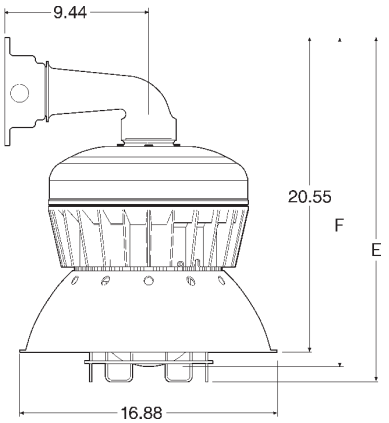
4L EVLP Low Profile Hazard•Gard®

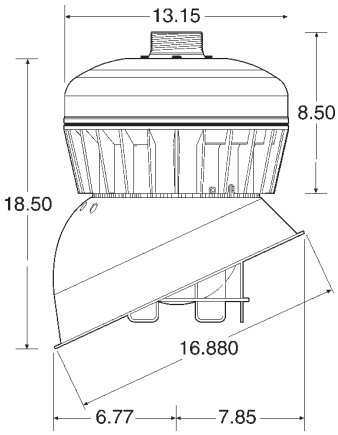
Dimensions and Weights

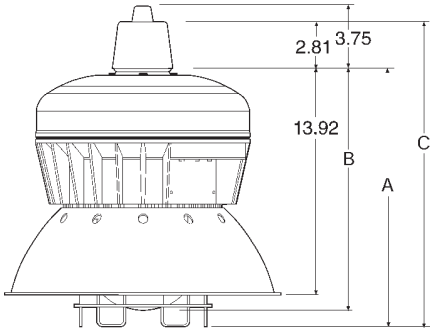
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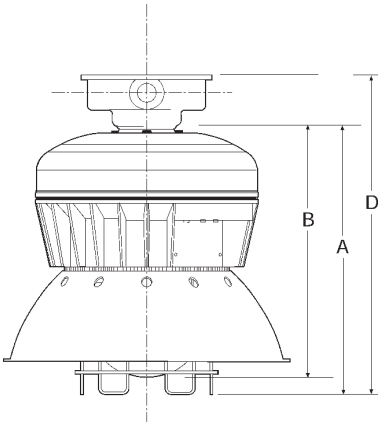
	A	B	C	D	E	F
Medium Base	13.92	12.73	16.50	16.71	20.59	19.36
Mogul Base	15.69	14.69	18.25	18.46	22.34	21.30

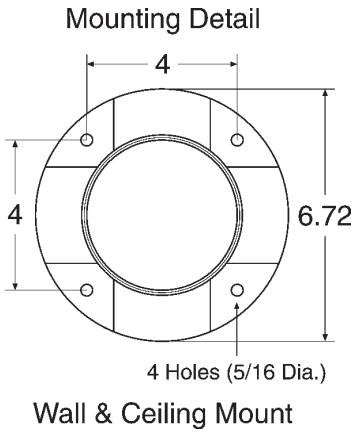












Weights (lbs)

		Luminaire w/guard	
Source	**Watts**	**Medium**	**Mogul**
High Pressure Sodium	70	34	36.5
	100	36	38.5
	150	36.5	39
Metal Halide	70	33.5	36
	100	34.5	37
	150	36	38.5
	175	36	38.5
	200	–	40.5
	250	–	40.5
Add Mounting Modules:			
Pendant		1	1
Ceiling		2	2
Bracket		4.5	4.5
Stanchion		2.5	2.5
Add For Reflectors			
RA739		1	1
RD739		1	1
Deduct for Wire Guard		0.5	0.5

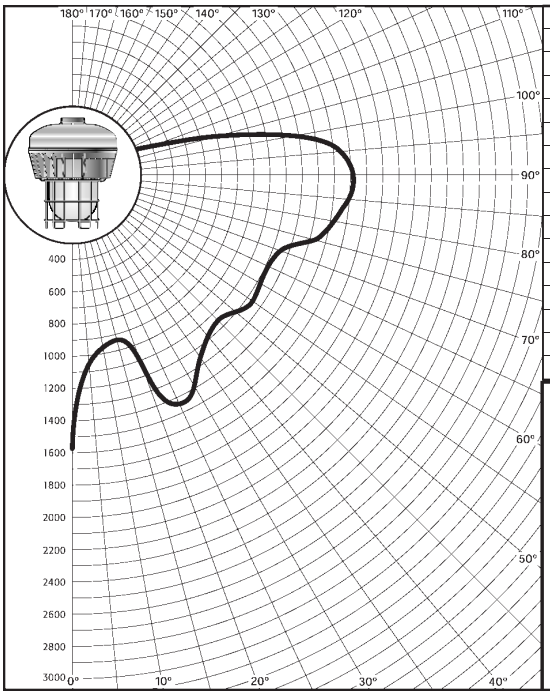
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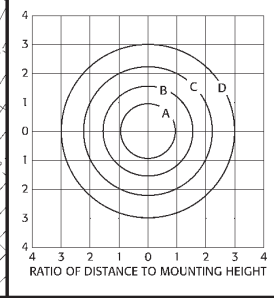
Medium Base

Medium Base

Luminaire with Globe and Guard
EVLPA143151 Lamp: 150W/B17 High Pressure Sodium (HPS)



CANDELAS	
Mid-Zone Angle	Candelas
0	1592
5	1005
15	952
25	1410
35	1194
45	1069
55	1252
65	1240
75	1442
85	1541
95	1571
105	789
115	33
125	6



***Note:** Photometric data was developed using a 150 W high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization

LAMP WATTS	CONVERSION FACTOR
70 W (HPS)	0.40
100 W (HPS)	0.59
70 W (MH)	0.35
100 W (MH)	0.49
175 W (MH)	0.88

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.593	.493	.420	.365	.321	.286	.256	.232	.211	.194
	30*	.546	.430	.351	.294	.251	.218	.191	.170	.152	.137
	10*	.505	.377	.296	.240	.200	.170	.146	.127	.112	.100
70*	50*	.561	.465	.397	.344	.303	.270	.243	.220	.201	.184
	30*	.519	.408	.333	.280	.239	.208	.183	.162	.146	.131
	10*	.481	.360	.282	.229	.191	.162	.140	.122	.108	.096
50*	50*	.501	.414	.352	.306	.270	.241	.217	.198	.181	.166
	30*	.467	.367	.300	.252	.216	.188	.165	.147	.132	.120
	10*	.435	.326	.256	.208	.174	.148	.128	.112	.099	.088
30*	50*	.446	.366	.311	.270	.239	.214	.194	.176	.162	.149
	30*	.418	.328	.268	.225	.193	.168	.149	.133	.120	.109
	10*	.393	.294	.231	.188	.157	.134	.116	.101	.090	.080
10*	50*	.395	.322	.273	.237	.210	.189	.171	.157	.144	.134
	30*	.373	.291	.237	.199	.172	.150	.133	.119	.108	.098
	10*	.353	.264	.207	.168	.141	.120	.104	.091	.081	.072
0*	0*	.325	.238	.183	.146	.120	.101	.087	.075	.066	.059

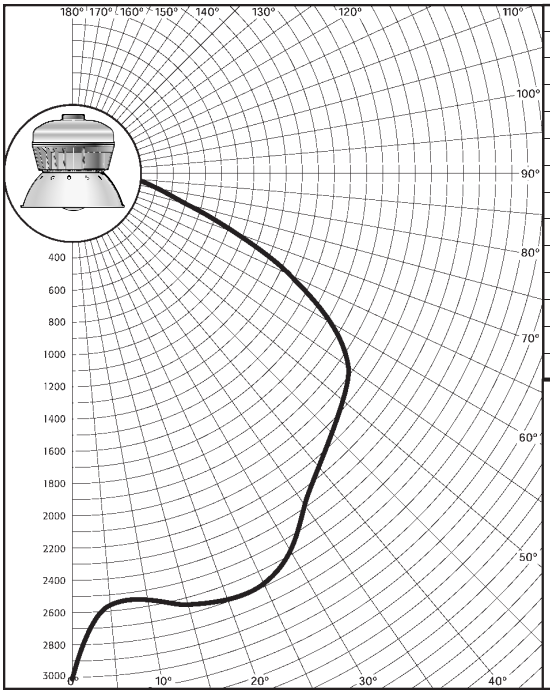
*Percent Reflectance

ISOFOOTCANDLE CHART:

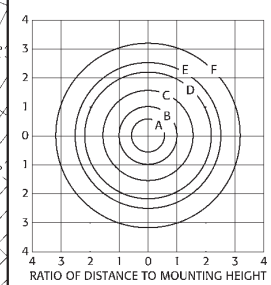
Footcandle Values for Isofootcandle Lines					
Mtg. Hgt.	A	B	C	D	
10'	5.00	2.00	1.00	0.50	Isofootcandle chart shows illuminance in footcandles at ground level.
12'	3.47	1.39	0.69	0.35	
16'	1.95	0.78	0.39	0.20	
20'	1.25	0.50	0.25	0.13	

Medium Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVLPA143150RD Lamp: 150W/B17 High Pressure Sodium (HPS)



CANDELAS	
Mid-Zone Angle	Candelas
0	3019
5	2525
15	2645
25	2718
35	2349
45	2023
55	1967
65	1350
75	628
85	200
95	53
105	1



***Note:** Photometric data was developed using a 150W high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (HPS)	0.40
100 W (HPS)	0.59
70 W (MH)	0.35
100 W (MH)	0.49
175 W (MH)	0.88

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.603	.521	.454	.399	.354	.317	.286	.260	.238	.219
	30*	.576	.479	.403	.345	.299	.263	.233	.208	.188	.171
	10*	.552	.443	.363	.304	.259	.223	.196	.173	.155	.139
70*	50*	.589	.509	.444	.391	.347	.311	.281	.256	.234	.216
	30*	.565	.470	.397	.340	.295	.260	.230	.207	.187	.170
	10*	.543	.437	.360	.301	.257	.222	.195	.172	.154	.139
50*	50*	.563	.487	.425	.375	.334	.300	.271	.247	.227	.209
	30*	.543	.455	.385	.331	.288	.254	.226	.203	.183	.167
	10*	.525	.426	.353	.297	.253	.220	.193	.171	.153	.138
30*	50*	.539	.467	.408	.361	.322	.289	.262	.240	.220	.203
	30*	.523	.440	.374	.323	.282	.248	.221	.199	.180	.165
	10*	.508	.416	.346	.292	.250	.217	.191	.169	.152	.137
10*	50*	.517	.449	.393	.347	.310	.279	.254	.232	.214	.198
	30*	.504	.426	.364	.314	.275	.243	.217	.196	.177	.162
	10*	.492	.406	.339	.287	.247	.215	.189	.168	.151	.136
0*	0*	.479	.393	.326	.274	.234	.202	.177	.156	.140	.126

*Percent Reflectance

ISOFOOTCANDLE CHART:

Footcandle Values for Isofootcandle Lines							
Mtg. Hgt.	A	B	C	D	E	F	
10'	15.0	7.00	3.00	1.00	0.50	0.20	Isofootcandle chart shows illuminance in footcandles at ground level.
12'	10.4	4.90	2.08	0.69	0.35	0.14	
16'	5.90	2.70	1.17	0.39	0.20	0.08	
20'	3.80	1.80	0.75	0.25	0.13	0.05	

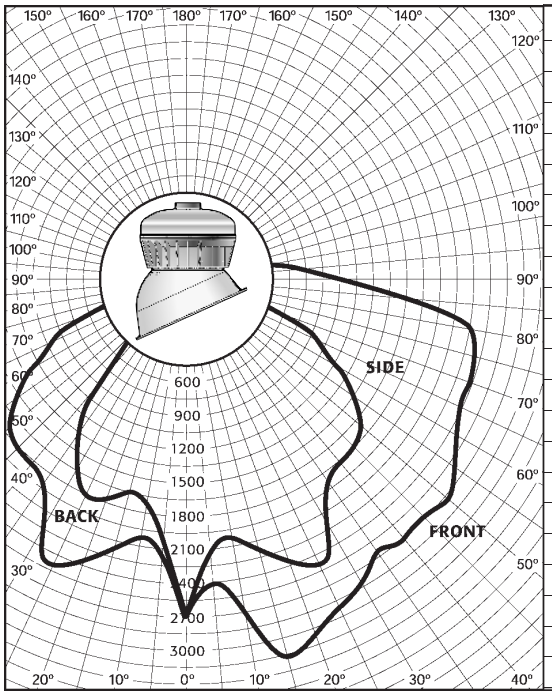
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EVLP Low Profile Hazard•Gard®

Medium and Mogul Base

Medium Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLPA143150RA Lamp: 150W/B17 High Pressure Sodium (HPS)

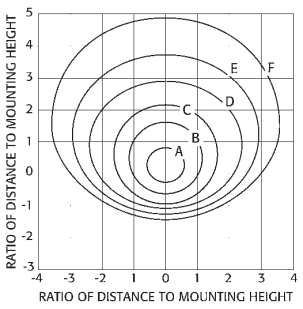


CANDELAS			
Degrees	Front	Side	Back
0	2722	2722	2722
5	2647	2026	1785
15	3047	2283	1754
25	2739	2457	1590
35	2709	1857	882
45	2739	1729	308
55	2483	1159	21
65	2421	790	0
75	2288	205	0
85	934	82	0
95	257	0	31
105	62	0	0
115	0	0	0
125	0	0	0
135	0	0	0
145	0	0	0
155	0	0	0
165	0	0	0
175	0	0	0
180	0	0	0

***Note:** Photometric data was developed using a 150 watt clear high pressure sodium lamp(16,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (HPS)	0.40
100 W (HPS)	0.59
70 W (MH)	0.35
100 W (MH)	0.49
175 W (MH)	0.88

ISOFOOTCANDLE CHART:



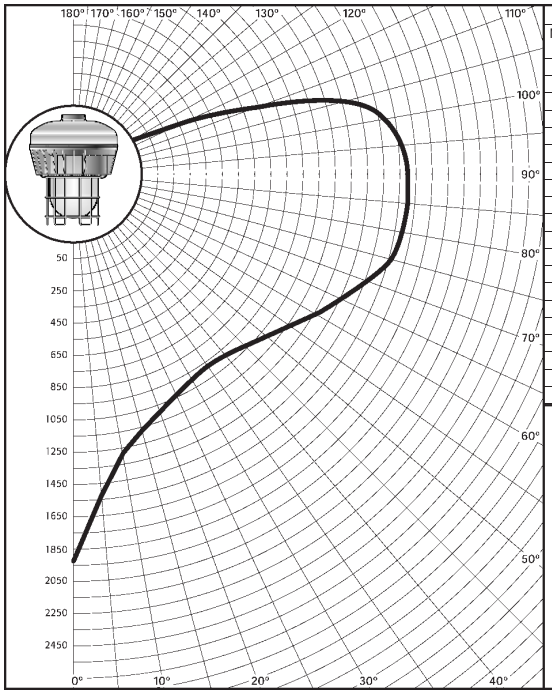
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	15.00	7.00	3.00	1.00	0.50	0.20
12'	10.40	4.90	2.08	0.69	0.35	0.14
16'	5.90	2.70	1.17	0.39	0.20	0.08
20'	3.80	1.80	0.75	0.25	0.13	0.05

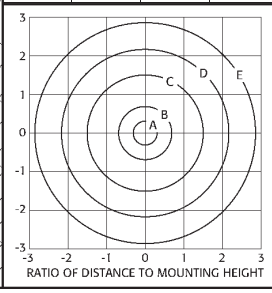
Isofootcandle chart shows illuminance in footcandles at ground level.

Mogul Base

Luminaire with Globe and Guard
EVLPA043151 Lamp: 150W/E23½ High Pressure Sodium (HPS)



CANDELAS		ZONAL LUMENS	
Mid-Zone Angle	Candelas	With Zone	Lumens
0	1944	0-10	140
5	1541	10-20	337
15	1167	20-30	524
25	1159	30-40	620
35	981	40-50	798
45	1035	50-60	1030
55	1090	60-70	1353
65	1348	70-80	1640
75	1566	80-90	1754
85	1619	90-100	1749
95	1612	100-110	1277
105	1226	110-120	306
115	265	120-130	19
125	19	130-140	8
135	10	140-150	5
145	7	150-160	3
155	6	160-170	0
165	0	170-180	0
175	0		
180	0		



***Note:** Photometric data was developed using a 150 watt high pressure sodium lamp (16,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (HPS)	0.40
100 W (HPS)	0.59

LUMINAIRE SPACING RATIO – 0.8 (Spacing to mounting height ratio)

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

Eff. Ceil.	Wall	ROOM CAVITY RATIO 0	1	2	3	4	5	6	7	8	9	10
80*	70*	81	69	61	55	50	45	41	38	35	33	31
	50*	81	64	53	45	39	35	31	27	25	22	21
	30*	81	59	46	38	32	27	24	20	18	16	15
	10*	81	55	41	32	26	22	18	16	14	12	11
70*	70*	77	65	57	51	46	42	39	35	33	31	29
	50*	77	60	50	42	37	33	29	26	23	21	19
	30*	77	56	44	36	30	26	22	19	17	15	14
	10*	77	52	39	30	25	21	17	15	13	11	10
50*	50*	69	53	44	37	32	29	25	23	21	19	17
	30*	69	49	39	32	27	23	20	17	15	14	12
	10*	69	46	35	27	22	19	16	13	12	10	9
30*	50*	61	46	38	32	28	25	22	20	18	16	15
	30*	61	44	34	28	24	20	17	15	14	12	11
	10*	61	41	31	24	20	16	14	12	10	9	8
10*	50*	54	40	33	28	24	21	19	17	16	14	13
	30*	54	38	30	24	20	17	15	13	12	11	10
	10*	54	36	27	21	17	14	12	10	9	8	7
0*	0*	51	33	24	18	15	12	10	8	7	6	6

*Percent Reflectance

ISOFOOTCANDLE CHART:

Footcandle Values for Isofootcandle Lines

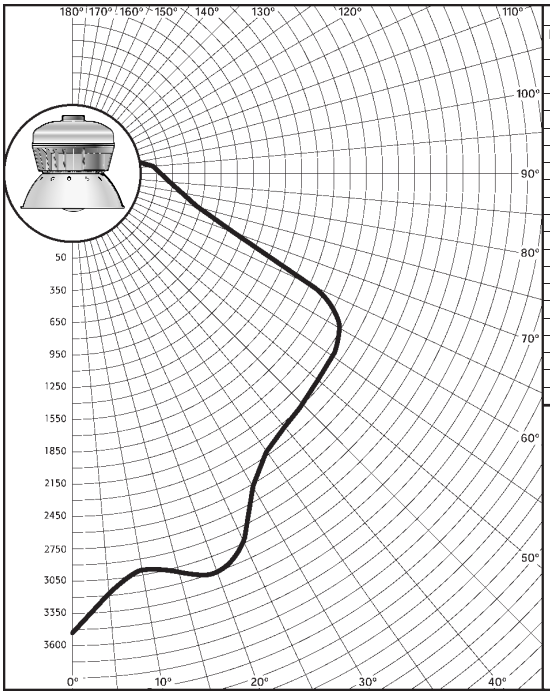
Mtg. Hgt.	A	B	C	D	E	
10'	10.00	5.00	2.00	1.00	0.50	Isofootcandle chart shows illuminance in footcandles at ground level.
12'	6.94	3.47	1.39	0.69	0.35	
16'	3.91	1.95	0.78	0.39	0.20	
20'	2.50	1.25	0.50	0.25	0.13	
25'	1.60	0.80	0.32	0.15	0.08	

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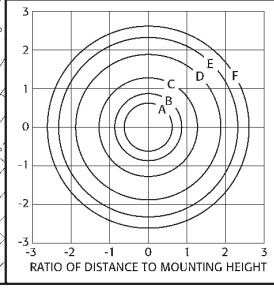
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Mogul Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVLPA043150RD Lamp: 150W/E23½ High Pressure Sodium (HPS)



CANDELAS		ZONAL LUMENS	
Mid-Zone Angle	Candelas	Zone	Lumens
0	3568	0-10	299
5	3194	10-20	882
15	3097	20-30	1379
25	3052	30-40	1527
35	2420	40-50	1767
45	2290	50-60	1880
55	2044	60-70	1662
65	1734	70-80	480
75	437	80-90	127
85	113	90-100	49
95	46	100-110	81
105	84	110-120	14
115	10	120-130	4
125	3	130-140	0
135	0	140-150	0
145	0	150-160	0
155	0	160-170	0
165	0	170-180	0
175	0		
180	0		



***Note:** Photometric data was developed using a 150 watt clear high pressure sodium mercury vapor lamp (16,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers):

LAMP WATTS	CONVERSION FACTOR
70 W (HPS)	0.40
100 W (HPS)	0.59

LUMINAIRE SPACING RATIO – 1.1 (Spacing to mounting height ratio)

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	0	1	2	3	4	5	6	7	8	9	10
80*	70*	75	69	63	58	53	49	44	41	38	35	33
	50*	75	67	59	52	46	41	36	32	29	26	24
	30*	75	64	55	47	40	35	30	26	24	21	19
	10*	75	62	51	43	36	31	26	23	20	17	15
70*	70*	73	68	62	56	52	47	43	40	37	34	32
	50*	73	65	57	51	45	40	35	32	29	26	24
	30*	73	63	54	46	40	34	30	26	23	21	19
	10*	73	61	51	42	36	31	26	22	20	17	15
50*	50*	70	62	55	49	43	38	34	30	28	25	23
	30*	70	60	52	45	39	34	29	26	23	20	18
	10*	70	59	49	41	35	30	26	22	20	17	15
30*	50*	67	60	53	47	42	37	33	29	27	24	22
	30*	67	58	50	43	38	33	29	25	23	20	18
	10*	67	57	48	41	35	30	26	22	19	17	15
10*	50*	64	57	51	45	40	36	32	29	26	24	22
	30*	64	56	49	42	37	32	28	25	22	20	18
	10*	64	55	47	40	34	29	25	22	19	17	15
0*	0*	63	53	45	38	33	28	24	20	18	16	14

*Percent Reflectance

ISOFOOTCANDLE CHART:

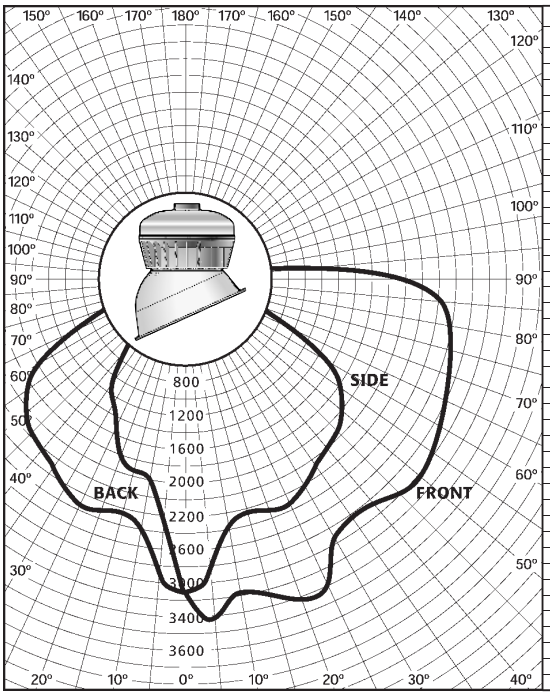
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.88	6.94	3.47	1.39	0.69	0.35
16'	7.82	3.91	1.96	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

Isofootcandle chart shows illuminance in footcandles at ground level.

Mogul Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLPA043150RA Lamp: 150W/E23½ High Pressure Sodium (HPS)



CANDELAS			
Degrees	Front	Side	Back
0	3300	3300	3300
5	3369	3054	2446
15	3468	2553	1856
25	3299	2508	1526
35	2874	2189	1128
45	3150	2111	402
55	2920	1846	85
65	2907	2292	4
75	2880	1309	12
85	2454	80	19
95	1776	9	77
105	894	11	142
115	266	12	14
125	73	0	0
135	0	0	0
145	0	0	0
155	0	0	0
165	0	0	0
175	0	0	0
180	0	0	0

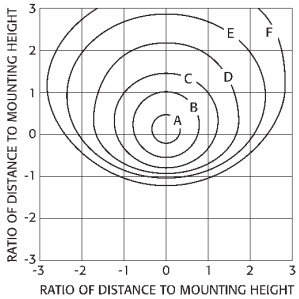
ZONAL LUMENS	
Zone	Lumens
0-10	278
10-20	760
20-30	1138
30-40	1348
40-50	1502
50-60	1388
60-70	1317
70-80	1134
80-90	683
90-100	242
100-110	105
110-120	22
120-130	0
130-140	0
140-150	0
150-160	0
160-170	0
170-180	0

***Note:** Photometric data was developed using a 150 watt clear high pressure sodium lamp(16,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (HPS)	0.40
100 W (HPS)	0.59

(For additional photometric data, contact Crouse-Hinds)

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.88	6.94	3.47	1.39	0.69	0.35
16'	7.82	3.91	1.95	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

Isofootcandle chart shows illuminance in footcandles at ground level.

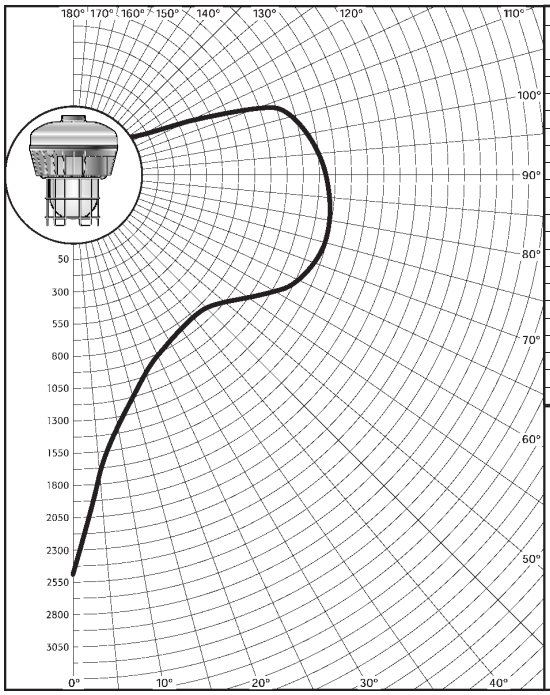
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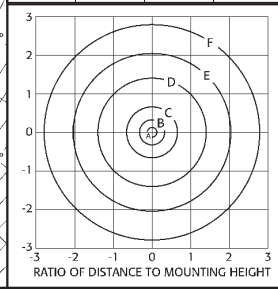
Mogul Base

Mogul Base

Luminaire with Globe and Guard
EVLPA093171 Lamp: 175W/ED28 Metal Halide (MH)



CANDELAS		ZONAL LUMENS	
Mid-Zone Angle	Candelas	Zone	Lumens
0	2439	0-10	158
5	1750	10-20	313
15	1089	20-30	464
25	1017	30-40	563
35	915	40-50	732
45	917	50-60	922
55	1035	60-70	1128
65	1229	70-80	1377
75	1337	80-90	1473
85	1359	90-100	1452
95	1335	100-110	1257
105	1196	110-120	427
115	390	120-130	23
125	24	130-140	9
135	12	140-150	3
145	9	150-160	0
155	0	160-170	0
165	0	170-180	0
175	0		
180	0		



***Note:** Photometric data was developed using a 175 watt clear metal halide lamp (14,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (MH)	0.40
100 W (MH)	0.56
250 W (MH)	1.46

LUMINAIRE SPACING RATIO – 0.4 (Spacing to mounting height ratio)
(For additional photometric data, contact Crouse-Hinds)

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

Eff. Ceil.	Wall	ROOM CAVITY RATIO 0	1	2	3	4	5	6	7	8	9	10
80*	70	82	70	62	56	51	46	43	39	36	34	31
	50	82	65	54	46	41	36	32	28	26	23	21
	30	82	60	48	39	33	28	25	21	19	17	15
	10	82	56	42	33	28	23	19	17	14	13	11
70*	70	78	66	58	52	47	43	40	36	34	31	29
	50	78	61	51	44	38	34	30	27	24	22	20
	30	78	57	45	37	31	27	23	20	18	16	14
	10	78	53	40	32	26	22	18	16	14	12	11
50*	50	69	54	45	38	33	29	26	23	21	19	18
	30	69	50	40	33	28	24	21	18	16	14	13
	10	69	47	36	28	23	19	16	14	12	11	10
30*	50	61	47	39	33	29	26	23	20	19	17	16
	30	61	44	35	28	24	21	18	16	14	13	11
	10	61	42	31	25	21	17	15	12	11	10	9
10*	50	54	41	33	28	25	22	20	18	16	15	14
	30	54	39	30	25	21	18	16	14	12	11	10
	10	54	37	27	22	18	15	13	11	10	8	7
0*	0	51	33	24	19	15	13	11	9	8	7	6

*Percent Reflectance

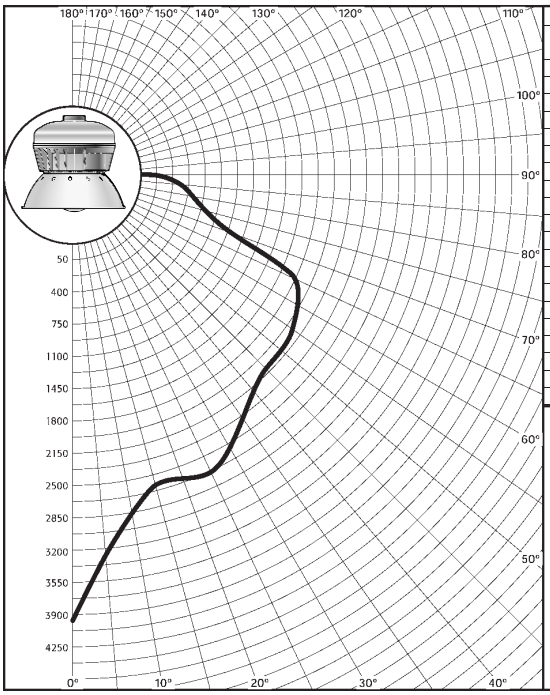
ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.88	6.94	3.47	1.39	0.69	0.35
16'	7.82	3.91	1.96	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

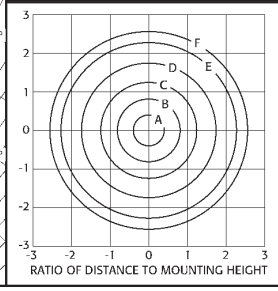
Isofootcandle chart shows illuminance in footcandles at ground level.

Mogul Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVLPA093170RD Lamp: 175W/ED28 Metal Halide (MH)



CANDELAS		ZONAL LUMENS	
Mid-Zone Angle	Candelas	Zone	Lumens
0	3941	0-10	300
5	3241	10-20	763
15	2651	20-30	1249
25	2777	30-40	1399
35	2219	40-50	1594
45	2047	50-60	1671
55	1880	60-70	1466
65	1693	70-80	466
75	432	80-90	121
85	102	90-100	20
95	14	100-110	88
105	99	110-120	16
115	13	120-130	2
125	3	130-140	0
135	0	140-150	0
145	0	150-160	0
155	0	160-170	0
165	0	170-180	0
175	0		
180	0		



***Note:** Photometric data was developed using a 175 watt clear metal halide lamp (14,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (MH)	0.40
100 W (MH)	0.56
250 W (MH)	1.46

LUMINAIRE SPACING RATIO – 1.0 (Spacing to mounting height ratio)

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

Eff. Ceil.	Wall	ROOM CAVITY RATIO 0	1	2	3	4	5	6	7	8	9	10
80*	70*	78	71	65	60	55	50	46	42	39	36	34
	50*	78	69	60	53	47	42	37	33	30	27	25
	30*	78	66	56	48	42	36	31	27	24	22	20
	10*	78	64	53	44	37	32	27	23	21	18	16
70*	70*	76	70	64	58	53	49	45	41	38	35	33
	50*	76	67	59	52	46	41	37	33	30	27	24
	30*	76	65	55	47	41	36	31	27	24	22	19
	10*	76	62	52	44	37	32	27	23	20	18	16
50*	50*	72	64	57	50	45	40	35	31	29	26	24
	30*	72	62	53	46	40	35	30	27	24	21	19
	10*	72	60	51	43	37	31	27	23	20	18	16
30*	50*	69	61	54	48	43	38	34	30	28	25	23
	30*	69	60	52	45	39	34	30	26	23	21	19
	10*	69	58	49	42	36	31	26	23	20	18	16
10*	50*	66	59	52	46	41	37	33	30	27	24	22
	30*	66	58	50	43	38	33	29	26	23	20	18
	10*	66	56	48	41	35	30	26	23	20	18	16
0*	0*	65	55	47	40	34	29	25	21	19	16	14

*Percent Reflectance

ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.88	6.94	3.47	1.39	0.69	0.35
16'	7.82	3.91	1.96	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

Isofootcandle chart shows illuminance in footcandles at ground level.

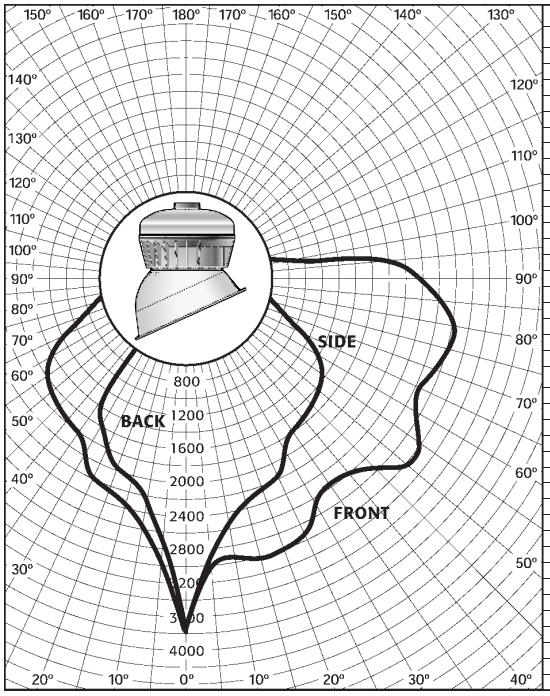
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Mogul Base

Mogul Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLPA093170RA Lamp: 175W/ED28 Metal Halide (MH)



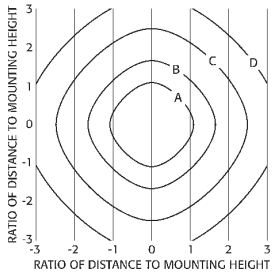
CANDELAS			
Degrees	Front	Side	Back
0	3765	3765	3765
5	2986	2903	3379
15	2958	2301	2235
25	2678	2119	1744
35	2493	1859	1343
45	2736	1747	378
55	2804	1582	81
65	2729	871	3
75	2828	277	8
85	2378	63	16
95	2048	15	25
105	1010	10	24
115	274	10	139
125	75	11	18
135	0	0	0
145	0	0	0
155	0	0	0
165	0	0	0
175	0	0	0
180	0	0	0

ZONAL LUMENS	
Zone	Lumens
0-10	285
10-20	689
20-30	1003
30-40	1229
40-50	1337
50-60	1232
60-70	1131
70-80	1035
80-90	659
90-100	228
100-110	109
110-120	26
120-130	0
130-140	0
140-150	0
150-160	0
160-170	0
170-180	0

***Note:** Photometric data was developed using a 175 watt clear metal halide lamp (14,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
70 W (MH)	0.40
100 W (MH)	0.56
250 W (MH)	1.46

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D
10'	1.00	0.50	0.20	0.10
12'	0.69	0.35	0.13	0.07
16'	0.39	0.20	0.08	0.04
20'	0.25	0.13	0.05	0.03
25'	0.16	0.08	0.03	0.02

Isofootcandle chart shows illuminance in footcandles at ground level.

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4L EVM Hazard•Gard® H.I.D. Luminaires

Mogul Base
Factory Sealed (Groups C.D)

- Cl. I, Div. 1 Groups B (GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix – GB), IIB IIA
- Cl. II, Div. 1, Groups E,F,G; Class III, Simultaneous Presence (175W max)
- Paint Spray (100W max)
- Marine & Wet Locations
- 3,3R,4,4X; IP66

Application:

Hazard•Gard® luminaires are used in:
- heavy process industries where flammable or explosive vapors, gases or combustible dusts are present
- hazardous areas, both indoors and outdoors where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and other heavy process industry facilities
- paint spray facilities
- hazardous locations requiring elevated ambient capability

Features:

- Luminaire is factory wired; power is fed through ''wireless'' connection block which serves as a mechanical seal between conduit and ballast compartments, eliminating the need for an external, field installed seal. The result is fast, easy installation.
- Dome and 30° angle reflectors made of *Krydon*® material – won't rust, corrode, dent, chip or peel (order separately – page 796).
- High bay reflectors of Alzak® aluminum for high wattage applications
- Internally fluted glass globes reduce glare and provide comfortable viewing light.
- Wide range of light sources and wattages to meet specific lighting needs – 50 – 400W high pressure sodium (HPS); 100 – 400W mercury vapor (MV); 70 – 400W metal halide (MH).
- High power factor (90% +) ballasts reduce power costs – allow more luminaires per circuit.
- Four mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket and stanchion.
- Paint spray booth suitability on 50 to 100 watt luminaires provides efficient, economical H.I.D. lighting for areas where paint residue may accumulate on luminaires.
- Elevated ambient capability permits reliable operation at high ambient temperature. Selected luminaires are suitable for ambient temperature up to 75°C.
- Integral ballasts – separate ballasts are not required. Lowest installed cost.
- Factory sealed, porcelain, mogul base socket.

Standard Materials:

- Mounting modules, cover, ballast housing, guard, globe ring – copper-free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Lamp socket – porcelain with stainless steel screw shell
- Reflectors – dome and angle: *Krydon* fiberglass-reinforced polyester material; high bay: Alzak aluminum

Alzak is a registered trademark of ALCOA.

* IR and BG options cannot be used together.

** Can be used with BG option.

★ CSA Certified luminaires are not available with multi-tap ballast or S658 fuse option.

† When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* – high reflectance white
- Alzak – natural (anodized)

Options:

- Fused – to protect ballast and capacitor against abnormal line conditions. Add suffix **S658** to Cat. No.★ †
- Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of a cold lamp (50-150W LX HPS only). Add suffix **IR** to Cat. No.*
- Quartz auxiliary lighting – quartz lamp comes to full brightness instantly upon restoration of power to provide emergency illumination during the normal restrike period of the H.I.D. lamp (for use with ED28 lamp). Add suffix **QTZ** to Cat. No.** (Note: Quartz lamp not included; use 100 W single-ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC.)
- Ballast•Gard – to eliminate the normally continuous high voltage pulsing in the event of a cycling lamp, inoperative lamp, or no lamp in the socket extending the life of the ballast.(For use with 50-400W HPS lamps.) Add suffix **BG** to Cat. No.*
- Group B suitability – luminaires suitable for use in Class I, Group B hazardous (classified) locations. Add suffix **GB** to Cat. No.
- Hazard•Gard® supplied with trunnion arm for floodlighting applications. For use on pendant mount luminaires only. Add suffix **S812** to Cat. No. – See Floodlight Section

Size Ranges:

- ¾″, 1″ and 1¼″ hubs (see ordering information – pages 793 to 795)

Electrical Rating Ranges:

- 120, 208, 240, 277, 347, 480, 600, multi-tap★.
- 50 to 400 watts

Certifications and Compliances:

- NEC and CEC:
  Class I, Division 1, Groups B (with suffix GB), C,D
  Class I, Zone 1, Groups IIB + H2 (with suffix GB), IIB, IIA
  100W max – Paint Spray Suitability
  175W max – Class II, Class III, + Simultaneous Presence
- UL Standards:
  844 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards:
  C22.2 No. 137

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50-400W EVM Hazard•Gard® H.I.D. Luminaires

Mogul Base
Factory Sealed (Groups C,D)

- Cl. I, Div. 1, Groups B(GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E,F,G; Class III, Simultaneous Presence (175W max)
- Paint Spray (100W max)
- Marine & Wet Locations
- 3,3R,4,4X; IP66









Watts	Hub Size	Pendant Luminaires Without Guard Cat. #	Pendant Luminaires With Guard Cat. #	Wall Bracket Luminaires Without Guard Cat. #	Wall Bracket Luminaires With Guard Cat. #	Ceiling Luminaires Without Guard Cat. #	Ceiling Luminaires With Guard Cat. #	Stanchion Luminaires (25°) Without Guard Cat. #	Stanchion Luminaires (25°) With Guard Cat. #
High Pressure Sodium									
50	¾	EVMA42050	EVMA42051	EVMBX42050	EVMBX42051	EVMCX42050	EVMCX42051		
	1	EVMA43050	EVMA43051	EVMBX43050	EVMBX43051	EVMCX43050	EVMCX43051		
	1¼							EVMJ44050	EVMJ44051
70	¾	EVMA42070	EVMA42071	EVMBX42070	EVMBX42071	EVMCX42070	EVMCX42071		
	1	EVMA43070	EVMA43071	EVMBX43070	EVMBX43071	EVMCX43070	EVMCX43071		
	1¼							EVMJ44070	EVMJ44071
100	¾	EVMA42100	EVMA42101	EVMBX42100	EVMBX42101	EVMCX42100	EVMCX42101		
	1	EVMA43100	EVMA43101	EVMBX43100	EVMBX43101	EVMCX43100	EVMCX43101		
	1¼							EVMJ44100	EVMJ44101
150	¾	EVMA42150	EVMA42151	EVMBX42150	EVMBX42151	EVMCX42150	EVMCX42151		
	1	EVMA43150	EVMA43151	EVMBX43150	EVMBX43151	EVMCX43150	EVMCX43151		
	1¼							EVMJ44150	EVMJ44151
200	¾	EVMA42200	EVMA42201	EVMBX42200	EVMBX42201	EVMCX42200	EVMCX42201		
	1	EVMA43200	EVMA43201	EVMBX43200	EVMBX43201	EVMCX43200	EVMCX43201		
	1¼							EVMJ44200	EVMJ44201
250	¾	EVMA42250	EVMA42251	EVMBX42250	EVMBX42251	EVMCX42250	EVMCX42251		
	1	EVMA43250	EVMA43251	EVMBX43250	EVMBX43251	EVMCX43250	EVMCX43251		
	1¼							EVMJ44250	EVMJ44251
400	¾	EVMA42400	EVMA42401	EVMBX42400	EVMBX42401	EVMCX42400	EVMCX42401		
	1	EVMA43400	EVMA43401	EVMBX43400	EVMBX43401	EVMCX43400	EVMCX43401		
	1¼							EVMJ44400	EVMJ44401

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

1. Standard Voltage Ballasts – 60HZ

	NEC/UL			CEC/CSA (cUL)	
Voltage Suffix	Multi-tap /MT	120V /120	480V /480	Tri-tap /TT	120V /120

Optional Voltage Ballasts – 50 or 60HZ

	CEC/CSA (cUL)– CWI Isolated Ballasts				Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires, 55V Lamps is Standard, for 100V lamps - Add suffix ''CE''

3. Options - Add the Required Options Suffixes from page 792, in Alpha-numeric Order

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4L 70-400W EVM Hazard•Gard® H.I.D Luminaires

Factory Sealed (Groups C,D)

- Cl. I, Div. 1, Groups B (GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E,F,G; Class III, Simultaneous Presence (175W max)
- Paint Spray (100W max)
- Marine & Wet Locations
- 3,3R,4,4X; IP66









Watts	Hub Size	Pendant Luminaires Without Guard Cat. #	Pendant Luminaires With Guard Cat. #	Wall Bracket Luminaires Without Guard Cat. #	Wall Bracket Luminaires With Guard Cat. #	Ceiling Luminaires Without Guard Cat. #	Ceiling Luminaires With Guard Cat. #	Stanchion Luminaires (25°) Without Guard Cat. #	Stanchion Luminaires (25°) With Guard Cat. #
Pulse Start Metal Halide									
150	¾	EVMA92150-S828	EVMA92151-S828	EVMBX92150-S828	EVMBX92151-S828	EVMCX92150-S828	EVMCX92151-S828		
	1	EVMA93150-S828	EVMA93151-S828	EVMBX93150-S828	EVMBX93151-S828	EVMCX93150-S828	EVMCX93151-S828		
	1¼							EVMJ94150-S828	EVMJ94151-S828
175	¾	EVMA92170-S828	EVMA921701-S828	EVMBX92170-S828	EVMBX921701-S828	EVMCX92170-S828	EVMCX921701-S828		
	1	EVMA93170-S828	EVMA931701-S828	EVMBX93170-S828	EVMBX931701-S828	EVMCX93170-S828	EVMCX931701-S828		
	1¼							EVMJ94170-S828	EVMJ94171-S828
200	¾	EVMA92200-S828	EVMA92201-S828	EVMBX92200-S828	EVMBX92201-S828	EVMCX92200-S828	EVMCX92201-S828		
	1	EVMA93200-S828	EVMA93201-S828	EVMBX93200-S828	EVMBX93201-S828	EVMCX93200-S828	EVMCX93201-S828		
	1¼							EVMJ94200-S828	EVMJ94201-S828
250	¾	EVMA92250-S828	EVMA92251-S828	EVMBX92250-S828	EVMBX92251-S828	EVMCX92250-S828	EVMCX92251-S828		
	1	EVMA93250-S828	EVMA93251-S828	EVMBX93250-S828	EVMBX93251-S828	EVMCX93250-S828	EVMCX93251-S828		
	1¼							EVMJ94250-S828	EVMJ94251-S828
320	¾	EVMA92320-S828	EVMA92321-S828	EVMBX92320-S828	EVMBX92321-S828	EVMCX92320-S828	EVMCX92321-S828		
	1	EVMA93320-S828	EVMA93321-S828	EVMBX93320-S828	EVMBX93321-S828	EVMCX93320-S828	EVMCX93321-S828		
	1¼							EVMJ94320-S828	EVMJ94321-S828
400	¾	EVMA92400-S828	EVMA92401-S828	EVMBX92400-S828	EVMBX92401-S828	EVMCX92400-S828	EVMCX92401-S828		
	1	EVMA93400-S828	EVMA93401-S828	EVMBX93400-S828	EVMBX93401-S828	EVMCX93400-S828	EVMCX93401-S828		
	1¼							EVMJ94400-S828	EVMJ94401-S828
Metal Halide									
70	¾	EVMA92070	EVMA92071	EVMBX92070	EVMBX92071	EVMCX92070	EVMCX92071		
	1	EVMA93070	EVMA93071	EVMBX93070	EVMBX93071	EVMCX93070	EVMCX93071		
	1¼							EVMJ94070	EVMJ94071
100	¾	EVMA92100	EVMA92101	EVMBX92100	EVMBX92101	EVMCX92100	EVMCX92101		
	1	EVMA93100	EVMA93101	EVMBX93100	EVMBX93101	EVMCX93100	EVMCX93101		
	1¼							EVMJ94100	EVMJ94101
175	¾	EVMA92170	EVMA92171	EVMBX92170	EVMBX92171	EVMCX92170	EVMCX92171		
	1	EVMA93170	EVMA93171	EVMBX93170	EVMBX93171	EVMBX93170	EVMCX93171		
	1¼							EVMJ94170	EVMJ94171
250	¾	EVMA92250	EVMA92251	EVMBX92250	EVMBX92251	EVMCX92250	EVMCX92251		
	1	EVMA93250	EVMA93251	EVMBX93250	EVMBX93251	EVMCX93250	EVMCX93251		
	1¼							EVMJ94250	EVMJ94251
400	¾	EVMA92400	EVMA92401	EVMBX92400	EVMBX92401	EVMCX92400	EVMCX92401		
	1	EVMA93400	EVMA93401	EVMBX93400	EVMBX93401	EVMCX93400	EVMCX93401		
	1¼							EVMJ94400	EVMJ94401

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

1. Standard Voltages Ballasts – 60HZ

	NEC/UL				CEC/CSA (cUL)		
Voltage Suffix	Multi-tap /MT	Dual-Tap /DT	120V /120	480V /480	Tri-tap /TT	Dual-Tap /DT	120V /120

Optional Voltage Ballasts – 50 or 60HZ

	CEC/CSA (cUL)– CWI Isolated Ballasts			Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires, 55V Lamps is Standard, for 100V lamps - Add suffix ''CE''

3. Options - Add the Required Options Suffixes from page 792, In Alpha-numeric Order

* CWI Isolated Ballasts are only available for 175W–400W metal halide (non pulse start) luminaires.

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70-400W EVM Hazard•Gard® H.I.D Luminaires

Factory Sealed (Groups C,D)

- Cl. I, Div. 1, Groups B (GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E,F,G; Class III, Simultaneous Presence (175W max)
- Paint Spray (100W max)
- Marine & Wet Locations
- 3,3R,4,4X; IP66









Watts	Hub Size	Pendant Luminaires Without Guard Cat. #	Pendant Luminaires With Guard Cat. #	Wall Bracket Luminaires Without Guard Cat. #	Wall Bracket Luminaires With Guard Cat. #	Ceiling Luminaires Without Guard Cat. #	Ceiling Luminaires With Guard Cat. #	Stanchion Luminaires (25°) Without Guard Cat. #	Stanchion Luminaires (25°) With Guard Cat. #
Mercury Vapor									
100	¾	EVMA82100	EVMA82101	EVMBX82100	EVMBX82101	EVMCX82100	EVMCX82101		
	1	EVMA83100	EVMA83101	EVMBX83100	EVMBX83101	EVMCX83100	EVMCX83101		
	1¼							EVMJ84100	EVMJ84101
175	¾	EVMA82170	EVMA82171	EVMBX82170	EVMBX82171	EVMCX82170	EVMCX82171		
	1	EVMA83170	EVMA83171	EVMBX83170	EVMBX83171	EVMCX83170	EVMCX83171		
	1¼							EVMJ84170	EVMJ84171
250	¾	EVMA82250	EVMA82251	EVMBX82250	EVMBX82251	EVMCX82250	EVMCX82251		
	1	EVMA83250	EVMA83251	EVMBX83250	EVMBX83251	EVMCX83250	EVMCX83251		
	1¼							EVMJ84250	EVMJ84251
400	¾	EVMA82400	EVMA82401	EVMBX82400	EVMBX82401	EVMCX82400	EVMCX82401		
	1	EVMA83400	EVMA83401	EVMBX83400	EVMBX83401	EVMCX83400	EVMCX83401		
	1¼							EVMJ84400	EVMJ84401

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

1. Standard Voltage Ballasts – 60HZ

	NEC/UL				CEC/CSA (cUL)		
Voltage Suffix	Multi-tap /MT	Dual-Tap /DT	120V /120	480V /480	Tri-tap /TT	Dual-Tap /DT	120V /120

Optional Voltage Ballasts – 50 or 60HZ

	CEC/CSA (cUL)– CWI Isolated Ballasts				Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. Options - Add the Required Options Suffixes from page 792, in Alpha-numeric Order

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Reflectors



Dome



30° Angle



High Bay

Type	Cat. #
Dome	RD739
30° Angle	RA739
High Bay	EV3912

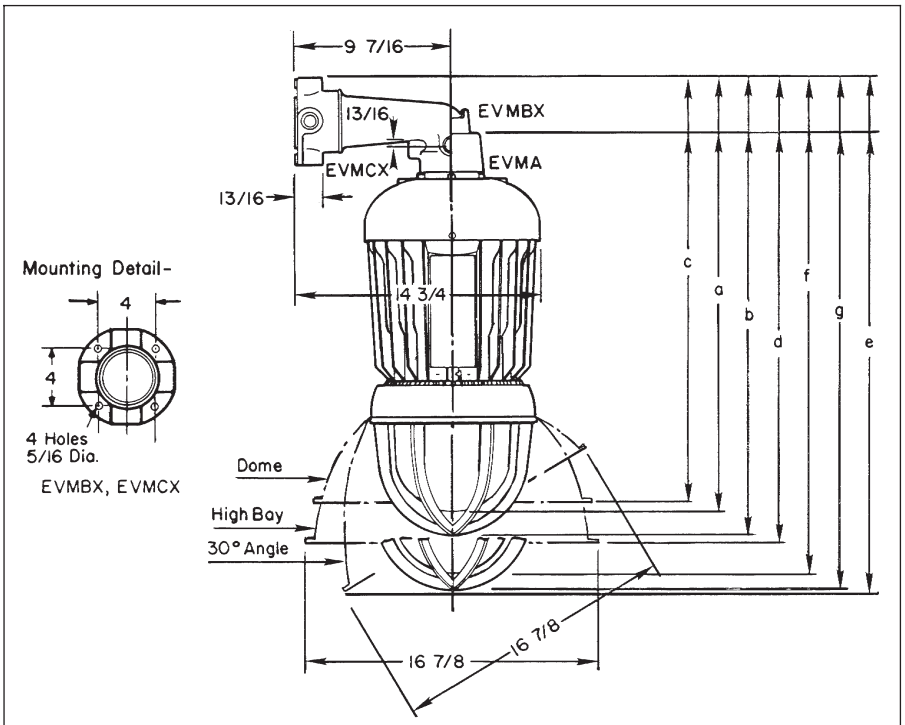
Temperature Performance Data

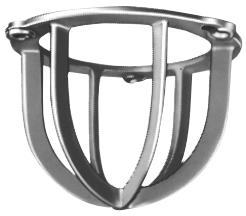
	Maximum Ambient							
		Class I			Class II (E,F,G)	Simultaneous Presence	Paint Spray Booth	Supply Wire
Watts	40°C	55°C	65°C	75°C	40°C	40°C	40°C	°C
High Pressure Sodium								
50	T6	T6	T6	T5	T4	T4	T4A	90
70	T6	T6	T5	T4A	T4	T4	T4A	90
100	T5	T5	T4A	T4A	T4	T4	T4A	90
150	T4A	T4A	T4	—	T3C	T3C	—	90
200	T4A	T4A	T4	—	—	—	—	90
250	T4	T3C	—	—	—	—	—	90
400	T3C	—	—	—	—	—	—	90
Mercury Vapor								
100	T5	T5	T4A	T4A	T3C	T3C	T4A	90
175	T4A	T4	T4	—	T3C	T3C	—	90
250	T3C	T3B	—	—	—	—	—	90
400	T3	—	—	—	—	—	—	90
Metal Halide (Including Pulse Start)								
70	T6	T6	T5	T3	T3C	T3C	T4A	90
100	T5	T5	T4A	T3	T3C	T3C	T4A	90
150	T4A	T4	T4	—	T3C	T3C	—	90
175	T4A	T4	T4	—	T3C	T3C	—	90
200	T4	T3C	—	—	—	—	—	90
250	T4	T3C	—	—	—	—	—	90
320	T3A	—	—	—	—	—	—	90
400	T3A	—	—	—	—	—	—	90

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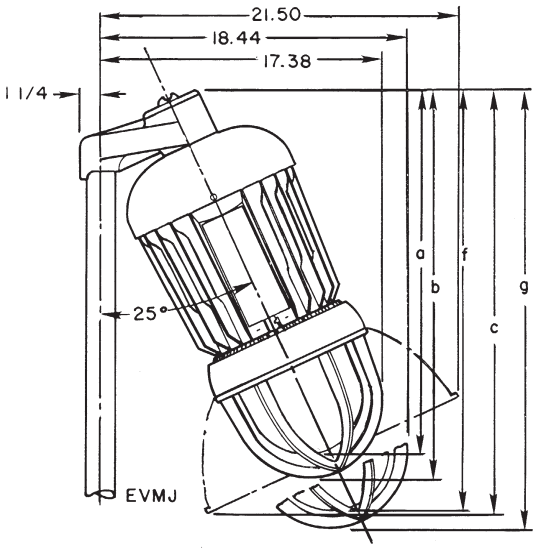
Dimensions and Weights

Dimensions





Guard
EV503
EV5140



Luminaire Net Weights:

H.I.D. Source	Lamp Watts	Luminaire Only with Globe and Guard (Lbs.)
High Pressure Sodium	50	40
	70	40
	100	44
	150 (55V)	45
	150 (100V)	44
	200	46
	250	46
	400	55
Mercury Vapor	100	38
	175	41
	250	43
	400	49
Metal Halide	70	39
	100	39
	175	42
	250	43
	400	51

Add for Mounting Modules:

Pendant	1 lb.	Bracket	4¼ lbs.
Ceiling	2 lbs.	Stanchion	2¼ lbs.

Deduct:
Guard 1½ lbs.

Add for Reflectors:

RD739	1¾ lbs.
RA739	2 lbs.
EV3912	2½ lbs.

	100, 175, 250W MV 50, 70, 100, 150W HPS 70, 100, 175, 250W MH		All luminaires with QTZ option and 200, 250, 400W HPS 400W MV & MH		All – Reflectors		
Type	a	b	f	g	Dome – c	High Bay – d	30° Angle – e
EVMA	25 1/16	26	27 5/16	28 1/4	23 7/8	26 7/16	28 9/16
EVMBX	27 7/8	28 13/16	30 1/8	31 1/16	26 11/16	29 3/4	31 3/8
EVMCX	24	24 15/16	26 1/4	27 3/16	22 13/16	25 3/8	27 1/2
EVMJ	22 11/16	24 1/8	25 1/4	26 1/8	25 3/8	27 11/16	28 3/4

‡ Suitable for Class III when listed for Class II, Group G.
◆ See Options listing.

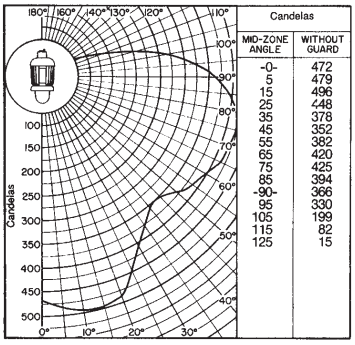
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EVM Hazard•Gard® H.I.D. Luminaires

Lamp: 100W/E-23½ mercury vapor – (MV)
Total bare lamp lumens: 4200

To determine number and placement of luminaires, see Lighting Selector guide, pages 665 to 689

Luminaire With Globe and Without Guard



NOTE: Photometric data was developed using a 100 watt diffuse mercury vapor lamp (4,200 lumens). For other diffuse lamps, use the following conversion factors (multipliers): 175W MV – 2.05; 70W MH – 1.33; 100W MH – 1.85; 175W MH (metal halide) – 3.33. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.30.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

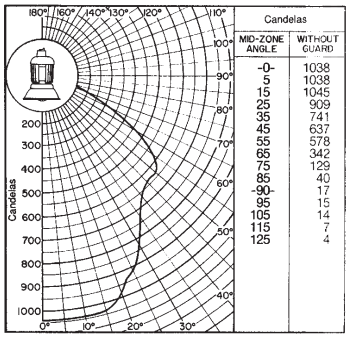
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.694	.584	.503	.439	.386
80	30	.644	.516	.428	.361	.311
	10	.600	.459	.369	.302	.253
	50	.660	.556	.479	.418	.368
70	30	.615	.493	.410	.347	.297
	10	.572	.441	.355	.291	.244
	50	.596	.501	.432	.377	.334
50	30	.559	.450	.375	.317	.274
	10	.526	.405	.328	.270	.227
	50	.538	.451	.389	.339	.302
30	30	.509	.410	.342	.290	.250
	10	.481	.373	.302	.249	.210
	50	.485	.405	.349	.305	.271
10	30	.461	.371	.310	.263	.223
	10	.439	.341	.277	.228	.193
0	0	.410	.313	.251	.204	.171

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.347	.312	.282	.259	.230
80	30	.273	.241	.214	.192	.166
	10	.220	.192	.165	.147	.125
	50	.331	.298	.270	.248	.220
70	30	.262	.231	.206	.185	.162
	10	.211	.184	.160	.143	.121
	50	.300	.272	.246	.227	.203
50	30	.241	.212	.190	.172	.150
	10	.197	.171	.149	.134	.113
	50	.272	.245	.225	.207	.185
30	30	.222	.196	.175	.158	.138
	10	.183	.158	.139	.124	.105
	50	.246	.224	.203	.188	.169
10	30	.202	.180	.160	.146	.127
	10	.168	.147	.129	.115	.096
0	0	.148	.128	.111	.099	.082

Lamp: 100W/E23½ mercury vapor – (MV)
Total bare lamp lumens: 4200

To determine number and placement of luminaires, see Lighting Selector guide, pages 665 to 689

Luminaire With Globe, Dome Reflector and Without Guard



NOTE: Photometric data was developed using a 100 watt diffuse mercury vapor lamp (4,200 lumens). For other diffuse lamps, use the following conversion factors (multipliers): 175W MV – 2.05; 70W MH – 1.33; 100W MH – 1.85; 175W MH (metal halide) – 3.33. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.25.

Coefficient of Utilization

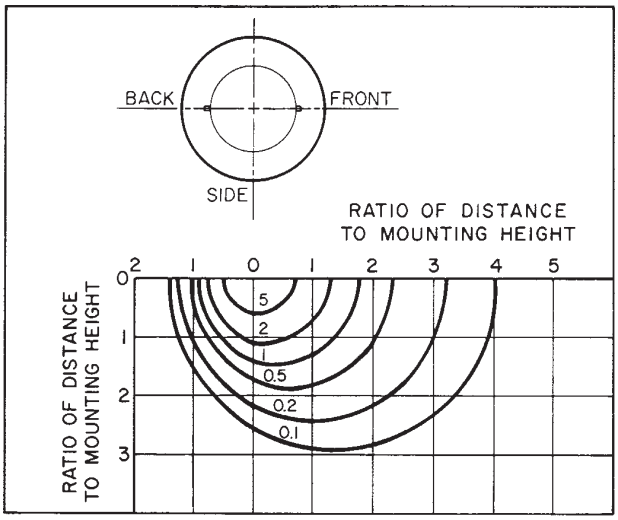
Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.715	.637	.570	.509	.458
80	30	.688	.596	.521	.455	.401
	10	.665	.562	.483	.413	.359
	50	.699	.624	.560	.500	.448
70	30	.675	.586	.514	.450	.396
	10	.652	.556	.478	.410	.356
	50	.668	.598	.539	.481	.434
50	30	.648	.568	.500	.438	.388
	10	.631	.540	.468	.404	.353
	50	.640	.576	.519	.465	.420
30	30	.624	.550	.487	.428	.379
	10	.609	.527	.459	.398	.348
	50	.615	.554	.502	.450	.407
10	30	.602	.533	.474	.418	.372
	10	.589	.514	.450	.391	.343
0	0	.575	.500	.436	.377	.329

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.414	.375	.340	.313	.275
80	30	.358	.319	.286	.259	.222
	10	.318	.282	.247	.222	.187
	50	.407	.369	.335	.308	.271
70	30	.354	.315	.283	.256	.222
	10	.315	.278	.246	.221	.187
	50	.394	.358	.325	.299	.264
50	30	.347	.309	.278	.252	.217
	10	.312	.275	.244	.219	.185
	50	.383	.346	.316	.292	.257
30	30	.340	.304	.273	.248	.214
	10	.308	.272	.242	.217	.183
	50	.371	.338	.307	.284	.251
10	30	.333	.299	.268	.244	.210
	10	.304	.269	.240	.215	.181
0	0	.292	.257	.227	.204	.170

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Isofootcandle Chart: Luminaire With Globe and 30° Angle Reflector, Without Guard



Lamp: 100W/E-23½ diffuse mercury vapor (MV)

Total bare lamp lumens: 4200

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

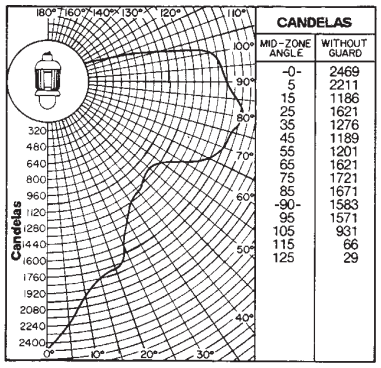
Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	9	1.23
7	2.04	11	0.83
8	1.56	12	0.70

Lamp: 150W/E-23½ high pressure sodium (HPS)

Total bare lamp lumens: 16,000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe and Without Guard



CANDELAS	
MID-ZONE ANGLE	WITHOUT GUARD
-0-	2469
5	2211
15	1186
25	1621
35	1276
45	1189
55	1201
65	1621
75	1721
85	1671
-90-	1583
95	1571
105	931
115	66
125	29

NOTE: Photometric data was developed using a 150 watt clear high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers): 50W HPS – .25; 70W HPS – .40; 100W HPS – .59. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 0.80.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.695	.579	.494	.410	.382
80	30	.644	.509	.417	.326	.305
	10	.599	.450	.356	.262	.246
	50	.659	.549	.469	.387	.363
70	30	.613	.484	.397	.311	.291
	10	.570	.431	.341	.251	.236
	50	.592	.491	.419	.344	.327
50	30	.555	.439	.360	.279	.265
	10	.522	.393	.312	.229	.218
	50	.531	.438	.373	.304	.292
30	30	.502	.396	.325	.250	.240
	10	.474	.358	.284	.207	.200
	50	.476	.390	.331	.267	.260
10	30	.451	.355	.291	.222	.217
	10	.429	.325	.257	.184	.181
0	0	.399	.295	.230	.159	.159

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.342	.306	.278	.265	.233
80	30	.266	.234	.209	.198	.168
	10	.212	.184	.160	.153	.127
	50	.324	.292	.265	.253	.222
70	30	.254	.223	.201	.191	.163
	10	.202	.176	.155	.149	.123
	50	.292	.263	.240	.231	.203
50	30	.232	.203	.184	.177	.150
	10	.187	.162	.143	.139	.114
	50	.262	.236	.218	.210	.185
30	30	.211	.186	.167	.162	.138
	10	.172	.148	.132	.129	.105
	50	.234	.213	.195	.191	.167
10	30	.190	.169	.152	.149	.125
	10	.156	.135	.121	.118	.096
0	0	.135	.116	.103	.103	.081

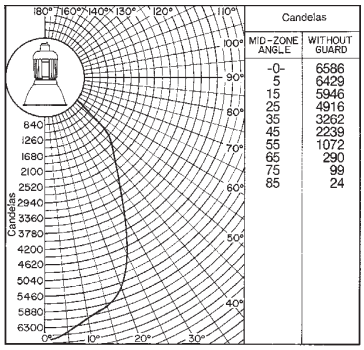
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Lamp: 150W/E-23½ high pressure sodium (HPS)

Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe, Hi-Bay Reflector and Without Guard



NOTE: Photometric data was developed using a 150 watt clear high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers): 50W HPS – .25; 70W HPS – .40; 100W HPS – .59. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.00.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.668	.618	.573	.531	.494
80	30	.651	.592	.542	.495	.455
	10	.636	.569	.517	.468	.427
	50	.655	.608	.566	.525	.487
70	30	.639	.583	.536	.491	.452
	10	.625	.564	.513	.464	.425
	50	.629	.587	.550	.511	.476
50	30	.616	.568	.525	.482	.446
	10	.606	.550	.505	.459	.422
	50	.606	.569	.535	.498	.466
30	30	.597	.554	.514	.474	.438
	10	.588	.539	.497	.454	.418
	50	.586	.553	.522	.487	.457
10	30	.578	.539	.504	.466	.433
	10	.570	.528	.489	.449	.413
0	0	.560	.517	.479	.439	.404

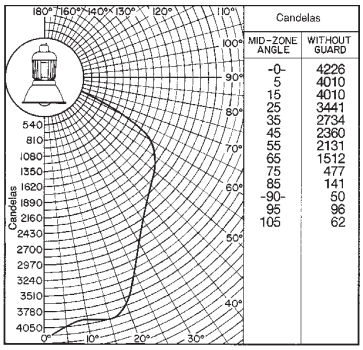
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.460	.427	.396	.369	.328
80	30	.420	.388	.358	.330	.288
	10	.394	.361	.330	.303	.262
	50	.455	.423	.392	.366	.325
70	30	.418	.385	.356	.328	.288
	10	.391	.359	.329	.303	.262
	50	.444	.414	.385	.360	.320
50	30	.412	.380	.352	.325	.285
	10	.388	.357	.328	.301	.261
	50	.436	.406	.379	.354	.315
30	30	.407	.377	.348	.322	.282
	10	.385	.354	.326	.300	.259
	50	.428	.400	.373	.348	.311
10	30	.402	.373	.345	.319	.280
	10	.382	.352	.324	.298	.258
0	0	.373	.343	.315	.290	.249

Lamp: 150W/E-23½ high pressure sodium (HPS)

Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe, Dome Reflector and Without Guard



NOTE: Photometric data was developed using a 150 watt clear high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers): 50W HPS – .25; 70W HPS – .40; 100W HPS – .59. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.20.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.716	.637	.568	.507	.455
80	30	.689	.596	.519	.452	.398
	10	.666	.561	.480	.410	.355
	50	.700	.624	.559	.498	.446
70	30	.675	.585	.512	.447	.393
	10	.653	.555	.476	.407	.353
	50	.668	.598	.538	.479	.432
50	30	.648	.567	.498	.435	.385
	10	.631	.539	.466	.400	.349
	50	.640	.575	.518	.463	.417
30	30	.625	.549	.485	.425	.376
	10	.610	.526	.457	.394	.344
	50	.615	.554	.500	.447	.404
10	30	.602	.532	.472	.415	.369
	10	.590	.513	.448	.388	.339
0	0	.575	.498	.434	.373	.326

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.413	.373	.339	.312	.275
80	30	.355	.318	.285	.258	.222
	10	.316	.280	.246	.221	.187
	50	.405	.368	.334	.308	.271
70	30	.352	.314	.283	.256	.222
	10	.312	.277	.245	.221	.187
	50	.392	.356	.324	.299	.264
50	30	.345	.307	.277	.252	.217
	10	.309	.274	.243	.219	.185
	50	.380	.345	.316	.291	.257
30	30	.338	.303	.272	.247	.214
	10	.306	.270	.241	.217	.183
	50	.369	.337	.307	.283	.251
10	30	.331	.298	.267	.244	.210
	10	.301	.267	.238	.215	.181
0	0	.289	.255	.226	.203	.170

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Description	Page No.
VMVIG Series	802–808
DMVIG Series	802–808

Note: Induction Lighting is also available with our Champ-Pak™ Wall Pack Luminares. Please see page 867 in Section 7L for more details.

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5L Luminaires with Induction Lighting System

VMVIG and DMVIG Series

NEW!

Class I, Division 2, Groups A,B,C,D
Class I, Zone 2, Group IIC
Resricted Breathing Suffix S826 for Cl.I, Div 2 & Zone 2
Enclosure Type 4X, IP66 ● Marine Locations
Wet Locations ● UL and cUL Listed

Get uninterrupted light for up to 11 years, without changing a lamp.

Cooper Crouse-Hinds® Champ Luminaire with Induction Light Source delivers up to 100,000 hours of white light in a hazardous location, corrosion-resistant watertight package. That's 5 to 8 times the typical life of conventional fluorescent or HID lamps. And, with no maintenance required for up to 11 years, you'll reduce your maintenance and lamp replacement costs.

Compelling reasons to choose the new Champ Induction luminaire as the light source for industrial and hazardous locations include:

● Crisp white light (80+ color rendering index) provides increased safety by clearly illuminating signs, instrument panels, equipment and more with vibrant natural colors.
● Up to 100,000 hours of lamp life minimizes routine maintenance costs. If you operate this luminaire for 24 hours, 7 days a week, you will not need to change the lamp for up to 11 years!
● Instant illumination — no waiting for lamp warm-up time. Increases productivity and safety.
● Delivers the best possible luminaire temperature rating — T6 (85°C) when used with the Champ restricted breathing option. Ideal for hazardous areas where a low ignition temperature is required.
● Starts in low temperatures — as low as -40°C.





165W Champ Induction provides as much light as a 175W Metal Halide but lasts 7 times longer!

ADDITIONAL FEATURES & BENEFITS:

The Champ Induction luminaire is suitable for Class I, Division 2 and Zone 2 areas with the assurance of Cooper Crouse-Hinds quality and reliability. They are ideal for use in hard-to-reach applications and where process requirements demand continuous luminaire operation.

Features:

● High lumens per watts (72 lpw for the 165W Champ) will save energy
● Retains strong light output (retains more than 70% output) throughout the life of the lamp
● Will not add electrical noise to the circuits — Total Harmonic Distortion is less than 10%
● Excellent power factor of .96 increases useable watts to an excellent level and reduces energy consumption
● Internal electronics are enclosed to ensure that there is no interference with external instrumentation

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Luminaires with Induction Lighting System

VMVIG and DMVIG Series

Class I, Division 2, Groups A,B,C,D
Class I, Zone 2, Group IIC
Resricted Breathing Suffix S826 for Cl.I, Div 2 & Zone 2
Enclosure Type 4X, IP66 ● Marine Locations
Wet Locations ● UL and cUL Listed

NEW!

APPLICATIONS:

Champ Induction luminaires are ideal:

- Where an extra long life lamp source (up to 100,000 hrs) is required.
- In areas that require lamps to reach full illumination immediately.
- Where cool temperature ratings on the luminaire globe are needed to ensure safe operation in hazardous areas.
- In hard-to-reach applications where relamping is costly.
- Where luminaire maintenance is difficult due to continuous process operation requirements that restrict or prohibit shut down except in emergency situations.
- To provide a cost-effective lighting system (low installed/life cost) by minimizing or even eliminating routine luminaire maintenance.
- In cold environment applications.

CERTIFICATIONS AND COMPLIANCES:

NEC & CEC:

- Class I, Division 2 and Zone 2
- Class I, Division 2 Groups A, B, C, D
  Class I, Zone 2 Group IIC
- Restricted Breathing Suffix S826 for Class I, Division 2 & Zone 2
- Marine Locations, Wet Locations, Enclosure Type 3, 3R, 4, 4X; IP66
- UL and cUL Listed

UL Standards: 844, 60079-15, 1598, 1598A

CSA Standards: C22.2 No.137, E79 Series

Compliances and aprovals for the lamp system

● RFI < 30 MHz	EN 55015
● RFI > 30 MHz	EN 55022
● Harmonics	EN 61000-3-2
● Immunity	EN 61547
● Safety	EN 61347-2-3 & UL935 EN 60928
● Performance	EN 60929
● Vibration & bump tests	IEC 68-2-6-Fc IEC 68-2-29-Eb
● Quality standards	ISO 9001
● Environmental standard	ISO 14001

STANDARD MATERIALS:

- Ballast housings and mountings — copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware — stainless steel
- Reflectors (dome and angle) — Krydon fiberglass-reinforced polyester material
- Globes — heat and impact-resistant internally fluted glass
- Guards — copper-free aluminum (55W), stainless steel (85W).

STANDARD FINISHES:

- Copper-free aluminum — epoxy powder coat
- Krydon® material — high reflectance white
- Stainless steel — natural

OPTIONS:

DESCRIPTION	SUFFIX TO ADD TO CATALOG NO.
Restricted Breathing Construction Class I, Division 2 & Zone 2 suitability Cooler operating temperatures (T-Codes)	**S826**

ACCESSORIES:

MOUNTING MODULES	CAT. NO.
¾ NPT Pendant	**APM2**
1 NPT Pendant	**APM3**
¾ NPT Flexible Pendant	**HPM2**
¾ NPT Ceiling Mount	**CM2**
1 NPT Ceiling Mount	**CM3**
¾ NPT Wall Mount	**TWM2**
1 NPT Wall Mount	**TWM3**
¾ NPT Quad Mount	**QM25**
1 ½ NPT Stanchion Mount — 25 Degree Angle	**JM5**
1 ½ NPT Stanchion Mount — Straight	**PM5**

WATTAGE	DOME REFLECTOR CATALOG NO.	ANGLE REFLECTORS CATALOG NO.
55W	**RD70**	**RA70**
85W	**RD739**	**RA739**
165W	**RD739**	**RA739**

DIMENSIONS:

See Catalog 6000 Section 3L for dimensional information on VMV and DMV Series

AMPERAGE:

Power consumption for specific voltages as follows:

55W LUMINAIRES

a. 120VAC x .460mA = 55.70 watts
b. 230VAC x .260mA = 59.80 watts

85W LUMINAIRES

c. 120VAC x .710mA = 85.20 watts
d. 230VAC x .400mA = 92.00 watts

165W LUMINAIRES

e. 230VAC x .700mA = 161.00 watts

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5L Luminaires with Induction Lighting System

VMVIG and DMVIG Series

NEW!

Class I, Division 2, Groups A,B,C,D
Class I, Zone 2, Group IIC
Restricted Breathing Suffix S826 for Cl.I, Div 2 & Zone 2
Enclosure Type 4X, IP66 ● Marine Locations
Wet Locations ● UL and cUL Listed

LAMP DATA:

	SYSTEM Power (W)	LUMEN (LM) INITIAL	LUMEN (LM) MEAN	EFFICACY (LM/W) INITIAL	EFFICACY (LM/W) MEAN	COLOR RENDERING INDEX*	LUMEN MAINTENANCE AFTER 60,000 HRS (%)
VMV	55	3500	2800	65	51	80	75
DMV	85	6000	4800	70	57	80	75
DMV	165	12000	9600	72	58	80	70

* Lamp sources with 80+ CRI provide excellent color rendering. CRI scale is 0-100 with 100 considered as ideal.

TEMPERATURE PERFORMANCE DATA:

CATALOG #	WATTS	AMBIENT TEMP °C	SUPPLY WIRE TEMP °C	CLASS I, DIV. 2 TEMP. RATING	CLASS II, DIV. 1, CLASS III TEMP. RATING	SIMULTANEOUS PRESENCE CLASS I, DIV. 2	RESTRICTED BREATHING (SUFFIX S826) Aex nR IIC, Ex nR IIC CLASS I, DIV. 2/Zone 2
VMVIG055	55	40	60	T2C	–	–	T6
VMVIG055	55	55	75	T2C	–	–	T5
DMVIG085	85	40	60	T2D	T2D	T2D	T6
DMVIG085	85	55	75	T2D	–	–	T6
DMVIG165	165	40	75	T3	–	–	T5

Champ Induction DMV 85-watt is now Class II Div.1 – suitable for dust environments

ORDERING INFORMATION:

To complete Catalog Number, add Voltage and Option suffix(es).

MOUNTING STYLE	HUB SIZE (INCHES)	55W INDUCTION CATALOG NUMBER (WITH G24 GLOBE & P21 GUARD)	85W INDUCTION CATALOG NUMBER (WITH G303 GLOBE & P33 GUARD)	165W INDUCTION CATALOG NUMBER (WITH G303 GLOBE & P33 GUARD)
Pendant	¾	VMVIG2A055GP	DMVIG2A085GP	*DMVIG2A165GP
	1	VMVIG3A055GP	DMVIG3A085GP	*DMVIG3A165GP
Flexible Pendant	¾	VMVIG2HA055GP	DMVIG2HA085GP	*DMVIG2HA165GP
Ceiling Mount	¾	VMVIG2C055GP	DMVIG2C085GP	*DMVIG2C165GP
	1	VMVIG3C055GP	DMVIG3C085GP	*DMVIG3C165GP
Wall Mount	¾	VMVIG2TW055GP	DMVIG2TW085GP	*DMVIG2TW165GP
	1	VMVIG3TW055GP	DMVIG3TW085GP	*DMVIG3TW165GP
Quad Mount	¾	VMVIG25Q055GP	DMVIG25Q085GP	*DMVIG25Q165GP
Stanchion Mount 25° Angle	1 ½	VMVIGJ055GP	DMVIGJ085GP	*DMVIGJ165GP
Stanchion Mount Straight	1 ½	VMVIG2P055GP	DMVIG2P085GP	*DMVIG2P165GP
Luminaire with Globe and Guard less Mounting Module	—	VMVIG055GP	DMVIG085GP	*DMVIG165GP

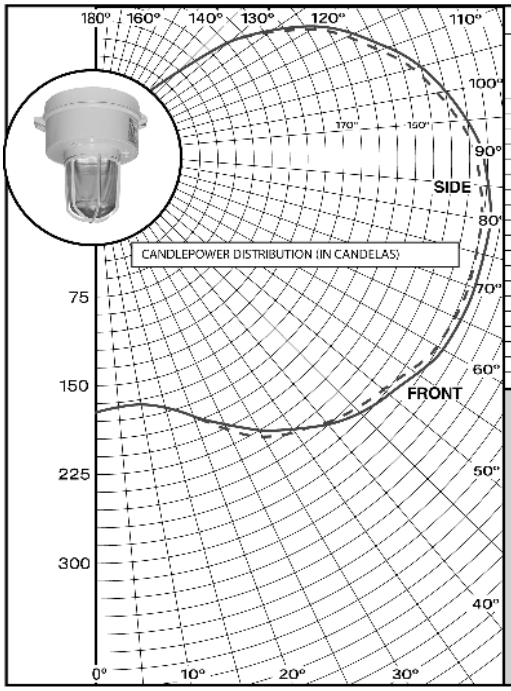
Standard Voltage	Suffix		Add the voltage suffix to the above catalog number.
120V, 50/60 Hz	/120	Operative range of 108-132 VAC	Ex. - DMVIG2A085GP/120
200V-277V, 50/60 Hz	/200 277	Operates on 208, 220, 230, 240, 277 VAC	

* 165W Champ Induction Luminaires are only available in 200-277VAC

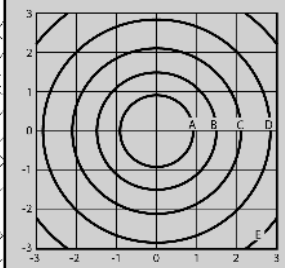
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55 WATT INDUCTION

LUMINAIRE WITH GLOBE AND GUARD
VMVIG055GP LAMP: 55W INDUCTION



CANDELAS			ZONAL LUMENS	
Vertical Angle	Front	Side	With Zone	Lumens
0	174	174	0 – 10	16
5	171	171	10 – 20	50
15	174	174	20 – 30	98
25	210	214	30 – 40	154
35	243	246	40 – 50	208
45	271	266	50 – 60	252
55	284	279	60 – 70	284
65	289	284	70 – 80	306
75	292	287	80 – 90	310
85	288	282	90 – 100	293
90	281	276	100 – 110	252
95	271	268	110 – 120	194
105	241	238	120 – 130	126
115	197	196	130 – 140	48
125	142	142	140 – 150	4
135	60	59	150 – 160	0
145	5	5	160 – 170	0
155	0	0	170 – 180	0
165	0	0	To tal	2596
175	0	0		
180	0	0		



Note: Photometric data was developed using a 55W induction lamp (3,500 lumens).

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
	50*	.666	.553	.473	.411	.357	.314	.280	.250	.224	.203
80*	30*	.617	.488	.402	.337	.283	.242	.210	.183	.158	.142
	10*	.577	.452	.346	.281	.228	.190	.161	.137	.116	.101
	50*	.618	.515	.441	.383	.332	.293	.261	.233	.209	.190
70*	30*	.579	.458	.377	.316	.265	.227	.197	.171	.149	.133
	10*	.543	.409	.326	.265	.215	.179	.151	.129	.109	.095
	50*	.538	.445	.381	.331	.286	.253	.225	.201	.181	.164
50*	30*	.505	.399	.329	.276	.231	.198	.171	.149	.130	.115
	10*	.478	.360	.286	.233	.188	.157	.132	.112	.095	.082
	50*	.464	.380	.325	.282	.244	.215	.192	.172	.154	.140
30*	30*	.439	.341	.280	.238	.198	.170	.147	.129	.111	.098
	10*	.416	.312	.249	.202	.163	.136	.114	.096	.081	.070
	50*	.395	.321	.273	.236	.204	.180	.161	.144	.129	.118
10*	30*	.376	.293	.240	.201	.167	.143	.124	.107	.093	.083
	10*	.359	.267	.212	.172	.137	.114	.096	.080	.067	.057
0*	0*	.334	.255	.183	.148	.113	.092	.075	.061	.050	.042

*Per cent Reflectance

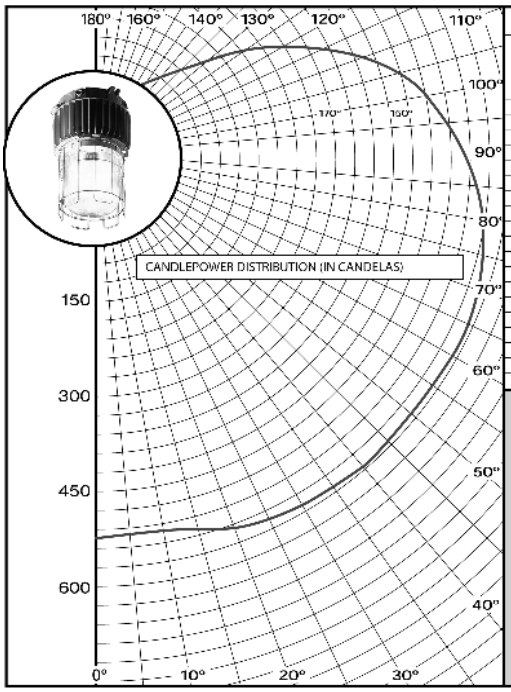
ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
10'	1.00	0.50	0.20	0.10	0.05
12'	0.69	0.35	0.14	0.07	0.03
16'	0.39	0.20	0.08	0.04	0.02
20'	0.25	0.13	0.05	0.03	0.01
25'	0.16	0.08	0.03	0.02	0.01

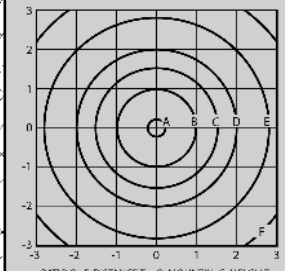
Isofootcandle chart shows illuminance in footcandles at ground level.

85 WATT INDUCTION

LUMINAIRE WITH GLOBE AND GUARD
DMVIG085GP LAMP: 85W INDUCTION



CANDELAS		ZONAL LUMENS	
Vertical Angle	Candela	With Zone	Lumens
0	524	0 – 10	49
5	516	10 – 20	150
15	529	20 – 30	255
25	551	30 – 40	353
35	561	40 – 50	439
45	567	50 – 60	504
55	561	60 – 70	559
65	564	70 – 80	585
75	555	80 – 90	571
85	524	90 – 100	524
90	503	100 – 110	439
95	482	110 – 120	322
105	415	120 – 130	196
115	324	130 – 140	85
125	218	140 – 150	20
135	107	150 – 160	6
145	28	160 – 170	2
155	12	170 – 180	0
165	8	To tal	5059
175	1		
180	1		



Note: Photometric data was developed using a 85W induction lamp (6,000 lumens).

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
	50*	.765	.642	.553	.482	.419	.371	.331	.295	.266	.241
80*	30*	.713	.571	.473	.399	.336	.290	.252	.223	.199	.179
	10*	.671	.531	.410	.336	.275	.232	.197	.168	.144	.126
	50*	.719	.602	.518	.452	.394	.349	.311	.279	.250	.228
70*	30*	.672	.538	.447	.377	.318	.274	.239	.209	.185	.165
	10*	.633	.494	.389	.319	.261	.220	.187	.160	.137	.119
	50*	.633	.528	.455	.397	.348	.308	.274	.245	.220	.201
50*	30*	.596	.477	.395	.335	.283	.244	.212	.185	.163	.145
	10*	.566	.432	.348	.286	.234	.197	.168	.143	.123	.107
	50*	.555	.460	.385	.325	.280	.267	.239	.214	.193	.176
30*	30*	.527	.419	.339	.295	.248	.211	.182	.159	.143	.128
	10*	.502	.388	.309	.254	.207	.175	.149	.127	.108	.094
	50*	.482	.397	.341	.297	.258	.229	.206	.185	.166	.152
10*	30*	.456	.365	.293	.257	.215	.185	.160	.142	.124	.111
	10*	.444	.336	.271	.223	.181	.152	.130	.113	.098	.087
0*	0*	.404	.301	.240	.194	.155	.128	.108	.090	.078	.069

*Per cent Reflectance

ISOFOOTCANDLE CHART:
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	5.00	2.00	1.00	0.50	0.20	0.10
12'	3.47	1.39	0.69	0.35	0.14	0.07
16'	1.95	0.78	0.39	0.20	0.08	0.04
20'	1.25	0.50	0.25	0.13	0.05	0.03
25'	0.80	0.32	0.16	0.08	0.03	0.02

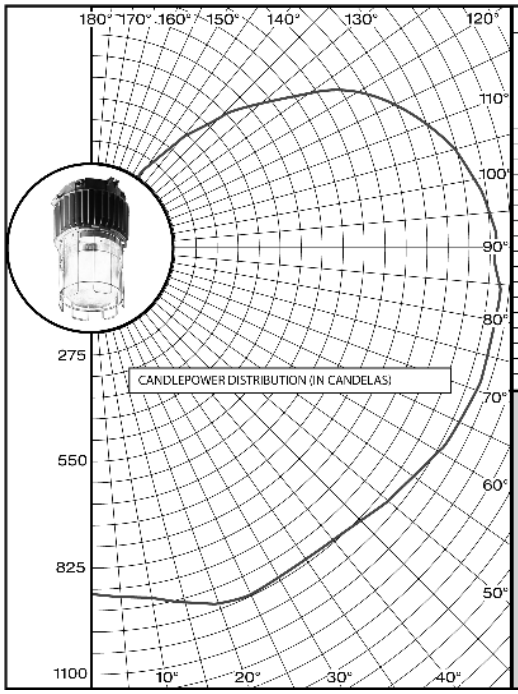
Isofootcandle chart shows illuminance in footcandles at ground level.

Photometric Data: For additional photometric information, see the Resources area of our website. Photometric .ies files for use with our Luxicon Lighting Layout Software are available to download

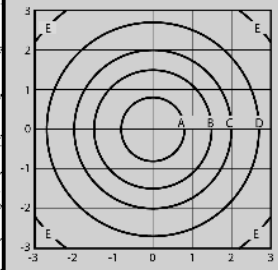
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165 WATT INDUCTION

LUMINAIRE WITH GLOBE
DMVIG165G LAMP: 165W INDUCTION



CANDELAS		ZONAL LUMENS	
Vertical Angle	Candela	Wi th Zone	Lumens
0	892	0 – 10	87
5	901	10 20	269
15	946	20 – 30	455
25	984	30 – 40	619
35	985	40 – 50	773
45	998	50 – 60	928
55	1034	60 – 70	1061
65	1068	70 – 80	1143
75	1083	80 – 90	1171
85	1075	90 – 100	1147
90	1062	100 – 1 10	1046
95	1055	110 – 120	868
105	991	120 – 130	626
115	877	130 140	367
125	698	140 – 150	151
135	472	150 – 160	28
145	236	160 – 170	4
155	51	170 – 180	0
165	15	TOT AL	10 743
175	2		
180	2		



Note: Photometric data was developed using a 165W induction lamp (12,000 lumens).

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CA VITY RA TIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
	90°	.798	.678	.578	.504	.439	.385	.347	.311	.275	.254
80*	30°	.717	.595	.495	.418	.353	.301	.265	.232	.204	.182
	10°	.701	.584	.489	.412	.349	.299	.264	.232	.204	.184
	90°	.748	.628	.537	.468	.408	.361	.323	.289	.260	.237
70*	30*	.697	.557	.462	.390	.330	.284	.248	.217	.191	.170
	10°	.656	.581	.402	.339	.287	.249	.219	.192	.169	.151
	90°	.699	.588	.499	.400	.340	.300	.277	.248	.224	.204
50*	30°	.633	.481	.399	.338	.285	.246	.215	.188	.165	.147
	10°	.571	.435	.350	.288	.236	.199	.169	.145	.124	.109
	90°	.644	.458	.387	.333	.293	.261	.234	.210	.189	.173
30*	30°	.516	.409	.340	.287	.247	.209	.188	.160	.140	.125
	10°	.491	.373	.300	.247	.201	.170	.144	.123	.105	.092
	90°	.456	.373	.320	.278	.242	.215	.195	.174	.156	.142
10*	30°	.435	.342	.283	.239	.201	.173	.152	.133	.116	.104
	10°	.416	.314	.252	.207	.168	.141	.120	.107	.087	.076
0*	0°	.372	.274	.216	.171	.138	.114	.096	.080	.066	.057

*Percent Reflectance

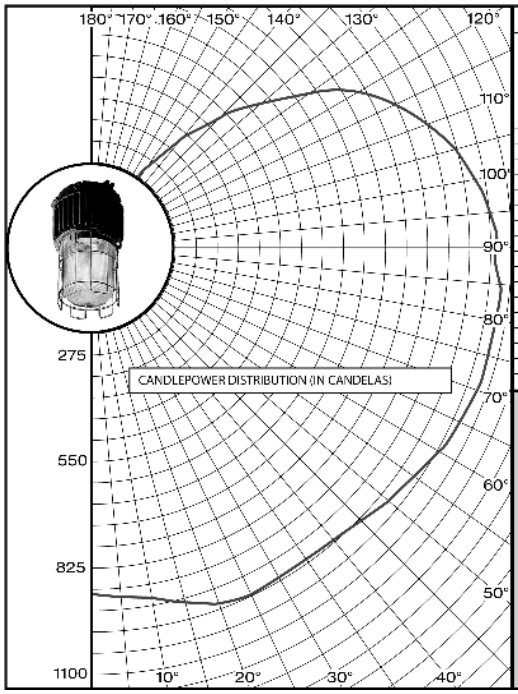
ISOFOOTCANDLE CHART :
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
10'	5.00	2.00	1.00	0.50	0.20
12'	3.47	1.39	0.69	0.35	0.14
16'	1.95	0.78	0.39	0.20	0.08
20'	1.25	0.50	0.25	0.13	0.05
25'	0.80	0.32	0.16	0.08	0.03

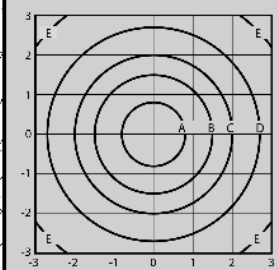
Isofootcandle chart shows illuminance in footcandles at ground level.

165 WATT INDUCTION

LUMINAIRE WITH GLOBE AND GUARD
DMVIG165GP LAMP: 165W INDUCTION



CANDELAS		ZONAL LUMENS	
Vertical Angle	Candela	Wi th Zone	Lumens
0	892	0 – 10	87
5	901	10 20	269
15	946	20 – 30	455
25	984	30 – 40	619
35	985	40 – 50	773
45	998	50 – 60	928
55	1034	60 – 70	1061
65	1068	70 – 80	1143
75	1083	80 – 90	1171
85	1075	90 – 100	1147
90	1062	100 – 1 10	1046
95	1055	110 – 120	868
105	991	120 – 130	626
115	877	130 140	367
125	698	140 – 150	151
135	472	150 – 160	28
145	236	160 – 170	4
155	51	170 – 180	0
165	15	TOT AL	10 743
175	2		
180	2		



Note: Photometric data was developed using a 165W induction lamp (12,000 lumens).

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CA VITY RA TIO

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
	90°	.798	.678	.578	.504	.439	.385	.347	.311	.275	.254
80*	30°	.717	.595	.495	.418	.353	.301	.265	.232	.204	.182
	10°	.701	.584	.489	.412	.349	.299	.264	.232	.204	.184
	90°	.748	.628	.537	.468	.408	.361	.323	.289	.260	.237
70*	30*	.697	.557	.462	.390	.330	.284	.248	.217	.191	.170
	10°	.656	.581	.402	.339	.287	.249	.219	.192	.169	.151
	90°	.699	.588	.499	.400	.340	.300	.277	.248	.224	.204
50*	30°	.633	.481	.399	.338	.285	.246	.215	.188	.165	.147
	10°	.571	.435	.350	.288	.236	.199	.169	.145	.124	.109
	90°	.644	.458	.387	.333	.293	.261	.234	.210	.189	.173
30*	30°	.516	.409	.340	.287	.247	.209	.188	.160	.140	.125
	10°	.491	.373	.300	.247	.201	.170	.144	.123	.105	.092
	90°	.456	.373	.320	.278	.242	.215	.195	.174	.156	.142
10*	30°	.435	.342	.283	.239	.201	.173	.152	.133	.116	.104
	10°	.416	.314	.252	.207	.168	.141	.120	.107	.087	.076
0*	0°	.372	.274	.216	.171	.138	.114	.096	.080	.066	.057

*Percent Reflectance

ISOFOOTCANDLE CHART :
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
10'	5.00	2.00	1.00	0.50	0.20
12'	3.47	1.39	0.69	0.35	0.14
16'	1.95	0.78	0.39	0.20	0.08
20'	1.25	0.50	0.25	0.13	0.05
25'	0.80	0.32	0.16	0.08	0.03

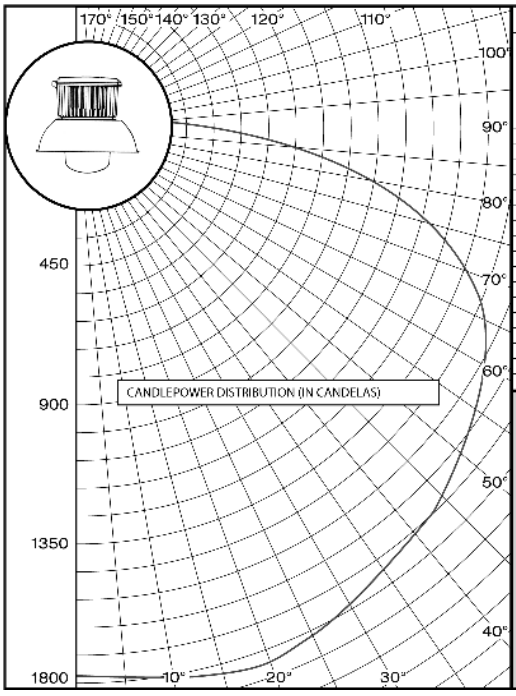
Isofootcandle chart shows illuminance in footcandles at ground level.

Photometric Data: For additional photometric information, see the Resources area of our website. Photometric .ies files for use with our Luxicon Lighting Layout Software are available to download

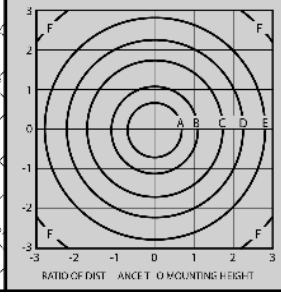
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165 WATT INDUCTION

LUMINAIRE WITH GLOBE AND RD739 DOME REFLECTOR
DMVIG165G LAMP: 165W INDUCTION



CANDELAS		ZONAL LUMENS	
Vertical Angle	Candela	With Zone	Lumens
0	1781	0 – 10	171
5	1790	10 – 20	520
15	1835	20 – 30	841
25	1820	30 – 40	1103
35	1756	40 – 50	1303
45	1685	50 – 60	1428
55	1594	60 – 70	1451
65	1460	70 – 80	1253
75	1193	80 – 90	782
85	717	90 – 100	292
90	459	100 – 110	39
95	260	110 – 120	18
105	26	120 – 130	22
115	18	130 – 140	21
125	25	140 – 150	11
135	27	150 – 160	2
145	16	160 – 170	1
155	4	170 – 180	0
165	4	TOTAL	92 58
175	3		
180	4		



Note: Photometric data was developed using a 165W induction lamp (12,000 lumens).

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff.	Wall	1	2	3	4	5	6	7	8	9	10
	50*	.759	.642	.555	.484	.426	.378	.338	.306	.279	.256
80*	30*	.715	.578	.481	.407	.349	.303	.265	.235	.210	.189
	10*	.678	.524	.423	.348	.294	.253	.220	.195	.174	.157
	50*	.737	.623	.535	.471	.419	.377	.343	.315	.291	.270
70*	30*	.699	.555	.457	.389	.336	.294	.260	.233	.211	.192
	10*	.663	.515	.417	.344	.291	.251	.219	.194	.174	.158
	50*	.697	.589	.510	.446	.394	.352	.318	.290	.266	.246
50*	30*	.665	.540	.452	.384	.332	.291	.258	.232	.211	.193
	10*	.626	.487	.405	.335	.284	.243	.212	.187	.167	.151
	50*	.660	.558	.483	.423	.373	.333	.301	.274	.252	.233
30*	30*	.634	.516	.434	.370	.319	.279	.246	.220	.200	.183
	10*	.610	.480	.353	.326	.278	.239	.208	.184	.165	.149
	50*	.626	.529	.458	.402	.353	.311	.279	.253	.232	.213
10*	30*	.605	.494	.417	.356	.307	.267	.235	.209	.189	.173
	10*	.586	.464	.389	.318	.267	.227	.196	.173	.154	.139
0*	0*	.555	.443	.361	.298	.247	.207	.175	.149	.128	.110

*Percent Reflectance

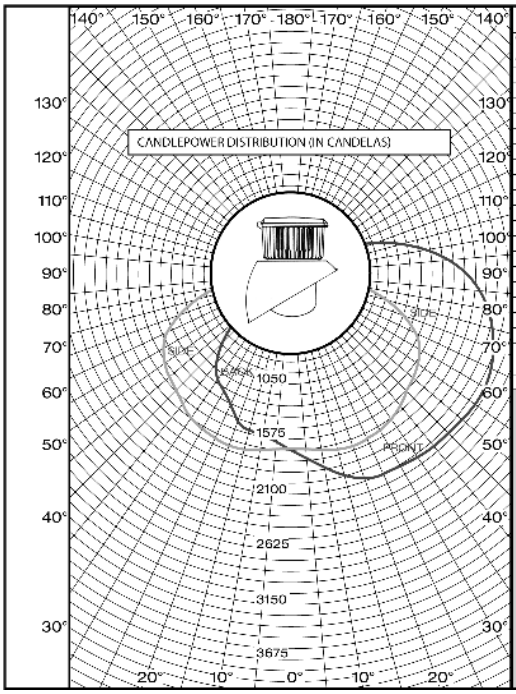
ISOFOOTCANDLE CHART :
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

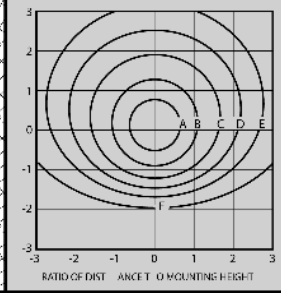
Isofootcandle chart shows illuminance in footcandles at ground level.

165 WATT INDUCTION

LUMINAIRE WITH GLOBE AND RA739 (30° ANGLE) REFLECTOR
DMVIG165G LAMP: 165W INDUCTION



CANDELAS				ZONAL LUMENS	
Vertical Angle	Front	Side	Back	With Zone	Lumens
0	1680	1680	1680	0 – 10	161
5	1771	1685	1616	10 – 20	496
15	1990	1738	1551	20 – 30	803
25	2110	1736	1385	30 – 40	1048
35	2133	1683	1235	40 – 50	1212
45	2147	1576	930	50 – 60	1250
55	2160	1488	476	60 – 70	1158
65	2125	1303	125	70 – 80	990
75	2003	921	9	80 – 90	785
85	1810	479	6	90 – 100	552
90	1682	282	10	100 – 110	321
95	1513	143	11	110 – 120	135
105	1097	15	11	120 – 130	35
115	593	11	14	130 – 140	10
125	164	13	24	140 – 150	6
135	7	12	24	150 – 160	2
145	0	10	16	160 – 170	1
155	3	5	6	170 – 180	0
165	2	5	3		
175	3	5	2	Total	8967
180	3	3	3		



Note: Photometric data was developed using a 165W induction lamp (12,000 lumens).

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff.	Wall	1	2	3	4	5	6	7	8	9	10
	50*	.725	.618	.538	.471	.412	.365	.326	.291	.261	.237
80*	30*	.685	.558	.469	.399	.339	.293	.256	.223	.195	.174
	10*	.649	.506	.413	.345	.289	.247	.207	.177	.151	.132
	50*	.699	.596	.510	.443	.388	.343	.319	.293	.272	.250
70*	30*	.663	.541	.456	.389	.330	.286	.250	.218	.190	.170
	10*	.630	.495	.406	.337	.279	.237	.203	.173	.148	.129
	50*	.674	.574	.493	.424	.371	.330	.295	.264	.237	.216
50*	30*	.641	.528	.430	.368	.315	.271	.237	.208	.181	.162
	10*	.594	.479	.387	.323	.268	.228	.195	.167	.143	.123
	50*	.606	.516	.430	.366	.317	.277	.248	.222	.203	
30*	30*	.580	.479	.406	.348	.298	.258	.226	.197	.173	.154
	10*	.550	.446	.365	.308	.256	.215	.188	.160	.137	.120
	50*	.564	.488	.419	.370	.325	.289	.259	.232	.209	.190
10*	30*	.545	.450	.383	.329	.280	.244	.214	.188	.164	.147
	10*	.527	.428	.351	.295	.248	.210	.180	.154	.133	.116
0*	0*	.505	.409	.330	.275	.226	.191	.163	.138	.115	.101

*Percent Reflectance

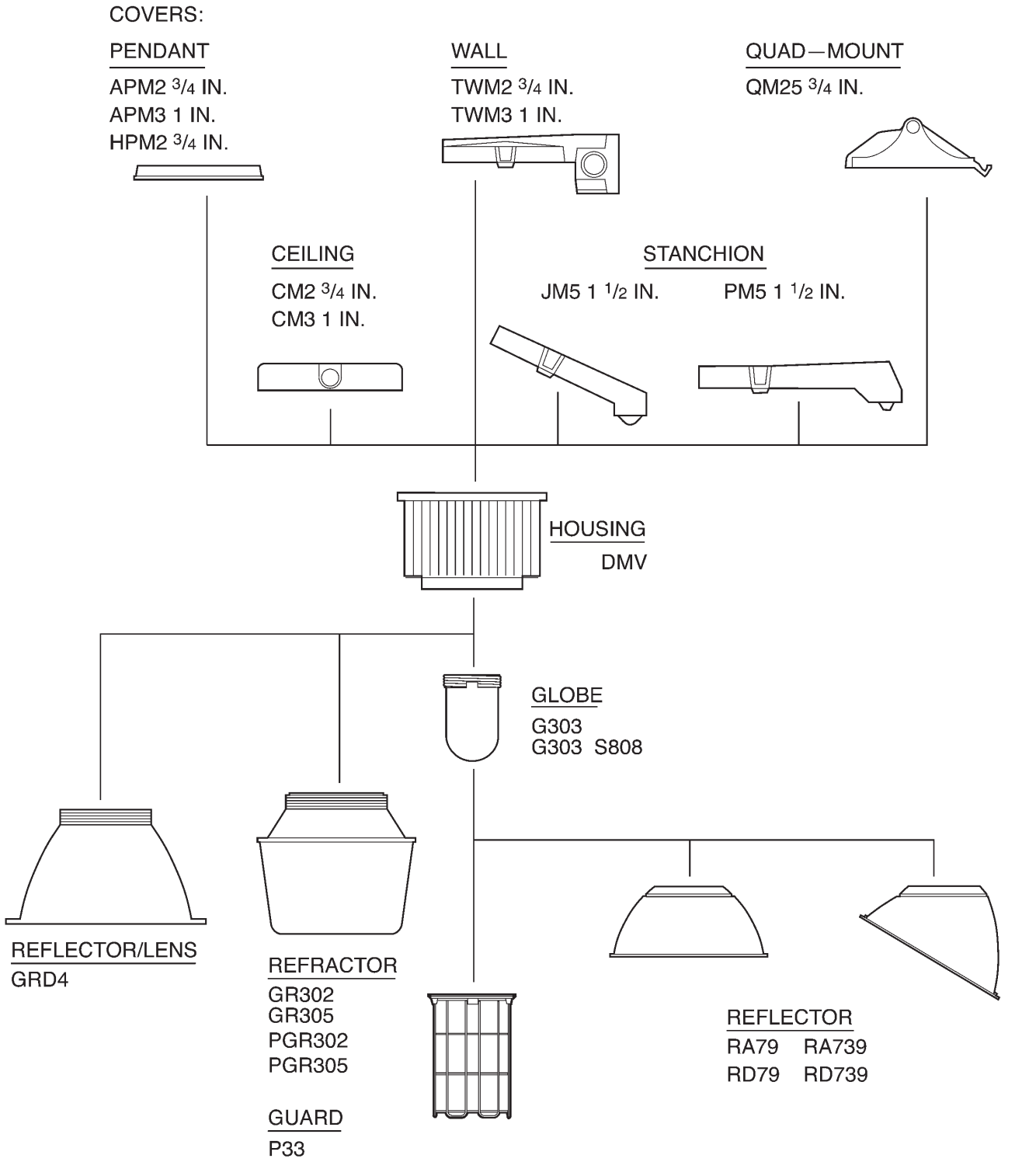
ISOFOOTCANDLE CHART :
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

Photometric Data: For additional photometric information, see the Resources area of our website. Photometric .ies files for use with our Luxicon Lighting Layout Software are available to download

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Description	Page No.
Application/Selection	810
General Purpose Luminaires	
VF Vaporgard™ Series	811-813
Non-Metallic Luminaires	
NFL Series	843-845
N2MVF	823-828
Hazardous Area Luminaires	
CPMVF	814, 815
DMVF	816-822
eLLB20 Series	855-857
eLLK Series	846-848
EVLPF	829-835
EVF Series	858-861
EVFDR Series	862, 863
EVFT Illuminator™ Series	839-842
FVN Series	852-854
FVS Series	836-838
nLLK Series	849-851

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6L Fluorescent Lighting Luminaires

Hazardous and Non-Hazardous Application and Selection Quick Selector Chart

Application:

- for use in hazardous or non-hazardous areas (as shown in the Quick Selector Chart below)
- low operating cost
- high light output per watt
- low brightness
- low glare
- uniform light
- instant illumination

Considerations for Selection:

Having made the determination that a fluorescent luminaire is required, the remaining selection is the type of luminaire (i.e., number and kind of lamps) and placement of luminaire. To determine the number of luminaires:

1. Determine Cavity Ratios for room, ceiling and floor.
2. Determine Coefficient of Utilization
3. Determine Light Loss
4. Determine Lamp Lumens required = $\frac{\text{Footcandles x Area}}{\text{Coefficient of Utilization x Light Loss Factor}}$
5. Determine number of luminaires required = $\frac{\text{Total Lamp Lumens Required}}{\text{Lamp Lumens per Luminaire}}$

A more complete explanation of the steps to be followed can be found in the Lighting Selector Guide, pages 665 through 689.

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Quick Selector Chart

Series	NEC – Hazardous Area Compliance	Lamp Watts	Volts	No. of Lamps
VF	Cl. I, Division 2, Groups A,B,C,D	5, 7, 9	120	2
NFL	Cl. I, Division 2, Groups A,B,C,D	32, 40	120-277V 50-60Hz	1, 2
FVN	Cl. I, Division 2, Groups A,B,C,D; Cl. II, Groups F,G; Cl. III	32, 40, 60	120, 277, 220/240 50 or 60 Hz	2, 3
EVF	Cl. I, Groups C,D; Cl. II, Groups E,F,G	32, 40, 60, 110	120, 277, 347, 220/240 50 or 60 Hz	1, 2, 3, 4
EVFDR	Cl. I, Groups C,D; Cl. II, Groups E,F,G	32, 40, 60, 110	120, 277, 220/240 50 or 60 Hz	2
EVFT	Cl. I, Groups B,C,D; Cl. II, Groups E,F,G; Cl. III	39	120, 277, 220/240 50 or 60 Hz	2, 4
FVS	Cl. I, Division 2, Groups B,C,D; Cl. II, Groups E,F,G; Cl. III	40	120-277V, 50-60Hz or 347V, 60Hz	2
DMVF	Cl. I, Division 2, Groups A,B,C,D; Cl. II, Groups E,F,G; Cl. III; Simultaneous Presence	26, 32	120-277V, 50-60Hz or 347V, 60Hz	2, 3
N2MVF	Cl. I, Div. 2, Groups A,B,C,D Class II, Groups F,G Class III; Simultaneous Presence	26, 32	120-277V, 50-60Hz or 347V, 60Hz	2
EVLP	Cl. I, Div.1, Groups (B), C, D Cl. II, Groups E, F, G Cl. III; Simultaneous Presence	26, 32	120-277V, 50-60Hz or 347V, 60Hz	2
CPMVF	Cl. I, Div. 2, Groups A, B, C, D	26, 32, 42	120-277V, 50-60Hz, 347V 60Hz	2
eLLB 20	Cl. I, Division 2, Groups A,B,C,D; Cl. I, Zone 1, Group IIC; Cl. II, Division 2, Groups F,G	17, 32	120-240V, 50-60Hz 110-230 VDC	2
ELLK	Cl. I, Zone I & Div 2 Cl. II, Div 2	32	120-254V	2
nLLK	Cl. I, Division 2, Groups A,B,C,D; Cl. I, Zone 2 AEx nA II; Cl. II, Division 2, Groups F,G	17, 32	120-277V, 60Hz	2

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VF Series Vaporgard™ Fluorescent Luminaires

- Cl. I, Div. 2, Groups A,B,C,D*
- Cl. I, Zone 2 IIC*
- Wet Locations
- NEMA 3,3R

Application:

VF series *Vaporgard* fluorescent lighting luminaires are used:
- indoors or outdoors in industrial locations where enclosed and gasketed luminaires are required
- where the energy efficiency and long life of single twin-tube compact fluorescent lamps are desired
- where luminaires may be subject to wet, damp, dirty locations
- where vibration and rough usage are a problem
- to retrofit existing *Vaporgard* incandescent luminaires
- in tunnels, building entrances, utility rooms, hallways and similar locations
- with clear or colored globes to illuminate or mark critical locations or processes

Features:

- Compact size and light weight allow adaptation and easy installation in many industrial applications
- Cast copper-free aluminum (less than 0.4 of 1% copper) construction and epoxy powder finish provide excellent resistance to corrosion
- Variety of mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket, angle stanchion, through feed, box mount
- VFH luminaire components can be installed on existing *Vaporgard* incandescent components and standard stamped metal boxes
- Fixtures available for use with two compact fluorescent lamps. Lamps rated at 5, 7 or 9 watts can be used with all luminaires
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity. Will not chip, peel, dent, rust or corrode. (Order separately – see page 812)
- Glass globes are internally fluted and stippled to reduce glare and provide even light distribution. Exteriors are smooth to shed dust
- All luminaires 120 VAC only!
- Grounding wire for safety

Standard Materials:

- Bodies and guards – copper-free aluminum (less than 0.4 of 1%)
- Globes – clear or colored, glass or plastic
- Reflectors – *Krydon* fiberglass-reinforced polyester material

Standard Finishes:

- Copper-free aluminum – powder epoxy finish
- *Krydon* material – high reflectance white

Electrical Ratings:

- Input voltage – 120 VAC, 60 hertz
- Wattages: two 5, 7 or 9 watt lamps



Certifications and Compliances:

- UL Standard: 1598, 844
- CSA Standard C22.2 No. 137

Accessories:

- See page 812 for complete listing

Luminaire Net Weights:

Fixture Type	1-Lamp Luminaire With Globe & Guard (lbs.)	2-Lamp Luminaire With Globe & Guard (lbs.)
VFA	4¾	5
VFHF	5	5¼
VFHBF	7¼	7½

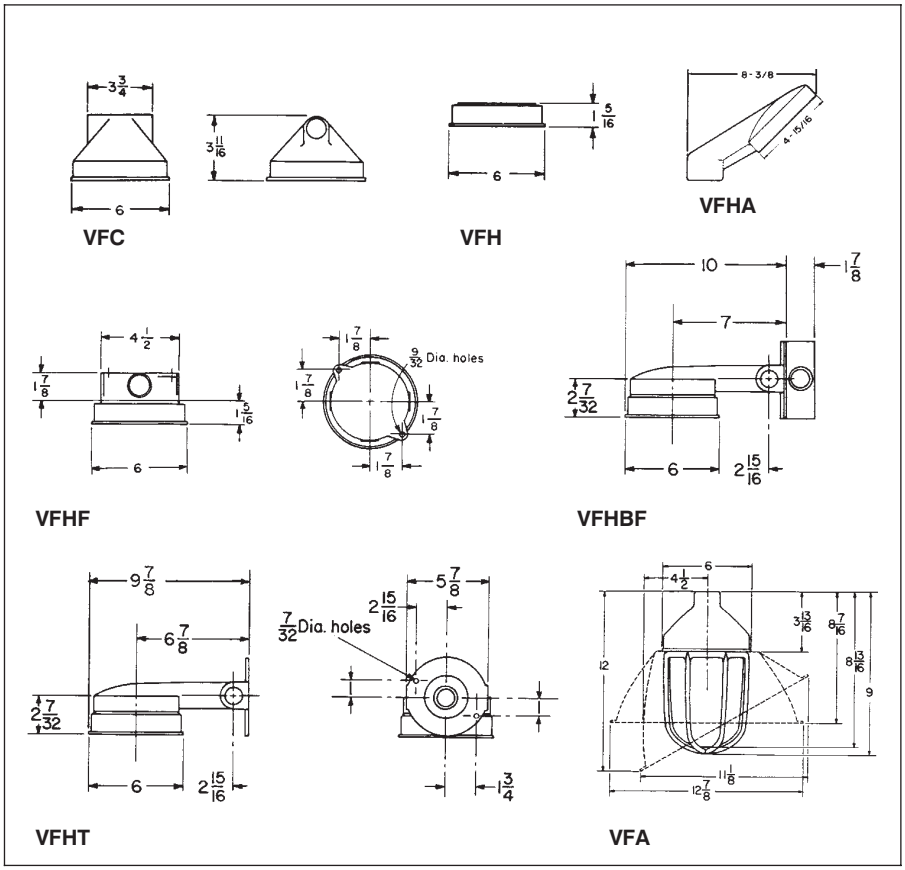
Add for Reflectors (lbs.):
Dome 1 30° Angle 1

Deduct (lbs.): P21 Guard ½

Temperature Performance Data:

Lamp	Class I Div. 2	Max. Ambient	Supply Wire °C	Minimum Operating
5, 7W	T3B	40°C	75°C	–18°C (0°F)
9W	T3B	40°C	75°C	–4°C (25°F)

Dimensions



* All mountings except stanchion.

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VF Series Vaporgard™ Fluorescent Luminaires

- CI. I, Div. 2, Groups A,B,C,D**
- CI. I, Zone 2 IIC**
- Wet Locations
- NEMA 3,3R

Twin-Tube Fluorescent with G24 Clear Glass Globe and P21 Guard (lamps not included)



Luminaire Watts	Hub Size	Pendant Mount Cat. #	Ceiling Mount Cat. #	Wall Mount (w/Box) Cat. #	Wall Mount (No Box) Cat. #	Angle Stanchion Mount* Cat. #	Through Feed Mount Cat. #	Box Mount & Retrofit Cat. #
2 Lamps, 18 watts max.	½	VFA122GP	VFHF122GP✓	VFHBF122GP✓	VFHT122GP✓		VFC122GP	VFH122GP✓
	¾	VFA222GP✓	VFHF222GP✓	VFHBF222GP✓	VFHT222GP✓		VFC222GP✓	
	1	VFA322GP						
	1¼					VFHA422GP✓*		

VF Series with Colored Glass Globes or Plastic Globes.

To obtain:

- Substitute appropriate globe designation for ''G'' in above Cat. Nos.
- Refer to section 1L for globe designations.

Accessories and Components

Reflectors



Dome
Cat. # RD71✓
(Cannot be used with wall mount luminaires)



30°Angle
Cat. # RA71✓

Globes



Color	Glass Cat. #	Plastic Cat. *
Clear	G24✓	G63
Green	G25	G65
Blue	G26	
Red	G27	G67
Amber	G28	

Guard

For use with glass globes only



Cat. #
P21✓

Junction Boxes and Bracket Bodies



VXF – 4 Hubs, 3 Plugs

Hub Size	Cat. #
½	VXF10✓
¾	VXF20✓



VXFT– 5 Hubs, 4 Plugs

Hub Size	Cat. #
½	VXFT10✓
¾	VXFT20✓



VXT – 3 Hubs, 2 Plugs

Hub Size	Cat. #
½	VXT10✓
¾	VXT20✓



VXB – 3 Hubs, 2 Plugs

Hub Size	Cat. #
½	VXB10 (Includes adapter plate and two gaskets for mounting to VXF, GRF or 4″ outlet boxes)✓
¾	VXB11 (Includes 1 gasket for mounting to VXF or GRF junction boxes.)✓



VXA – Stanchion Mount (Non Hazardous Locations)

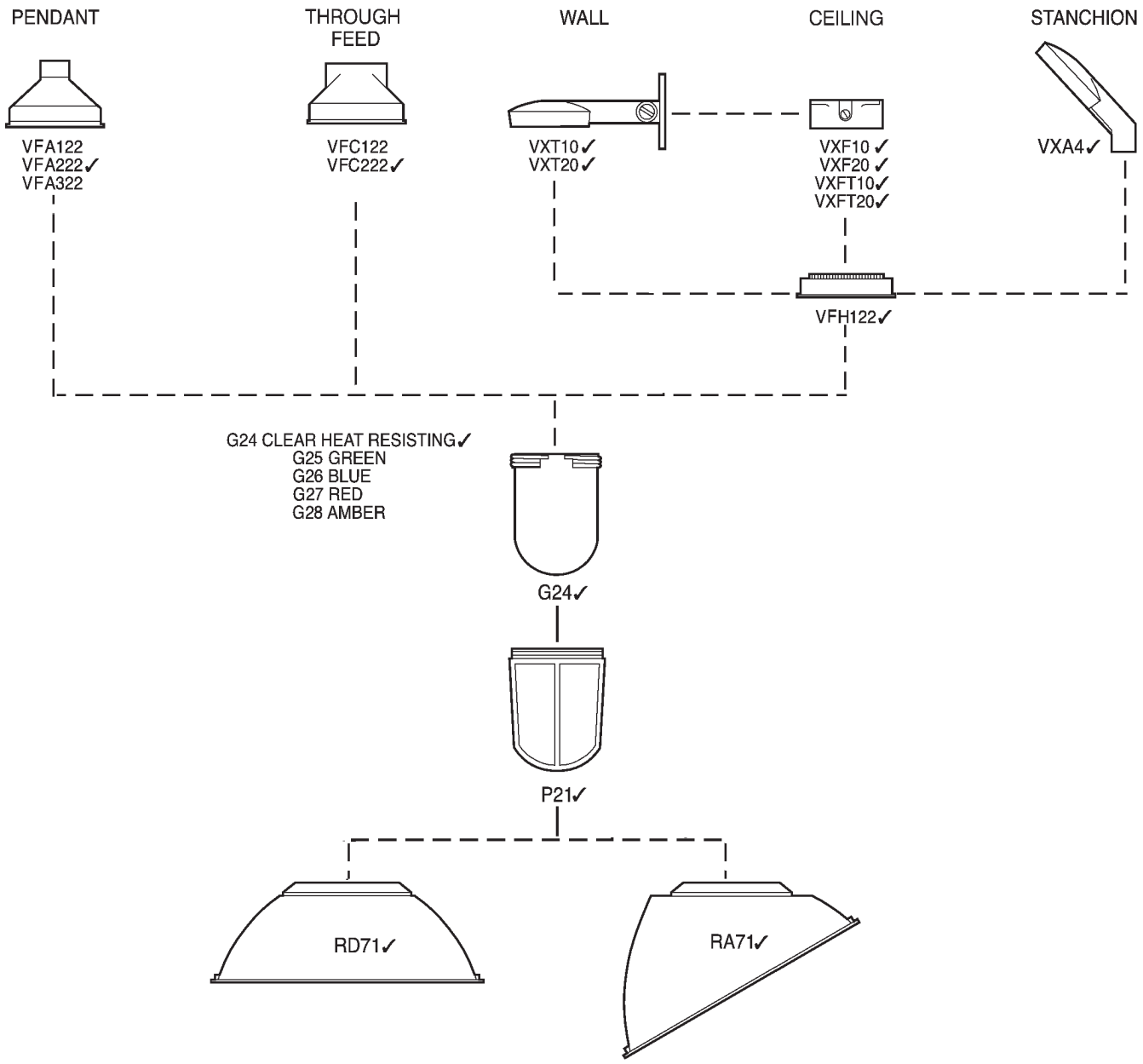
Hub Size	Cat. #
1¼	VXA4✓

* For non-hazardous locations.
✓ – available with Lightning Service™delivery
See Section G for complete details

** All mountings except stanchion.

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✓ – available with Lightning Service™ delivery. See Section G for complete details.

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6L CPMVF Champ-Pak™ Compact Fluorescent Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div. 2 & Zone 2* (Suffix S826)
- Certified for IEC Zone 2* (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence*
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

Application:

CPMVF Champ-Pak™ luminaires are used:
- Indoor and outdoor wall mounting or vertical surface mounting where minimal luminaire depth is required in:
  - Manufacturing plants and heavy industrial facilities
  - Industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical and platforms
  - Waste or sewage treatments plants
  - Offshore, dockside and harbor installations
- For security and safety lighting in industrial facilities for lighting of loading docks, tunnels and stairways
- For marine, wet location, hosedown and corrosive environments

Features & Benefits:

- Unique compact shallow-profile design mounts virtually anywhere
- Side hinged cover with two screw closing for easy installation and maintenance
- Gray Corro-free™ epoxy powder coat two-piece housing provides superior corrosion resistance
- Unique stainless steel wire guard accessory attaches without any additional hardware for easy installation and maintenance
- Glass refractor provides uniform light distribution to eliminate glare
- Silicon gaskets make luminaire suitable for NEMA 4X, Marine environments
- High power factor ballasts (+90%) are standard, which allow more luminaires per circuit

Standard Materials:

- Luminaire housing and door frame assembly – copper-free aluminum
- External hardware – stainless steel
- Lens – heat and impact-resistant refractor style glass
- Gaskets – silicon rubber
- Reflector – aluminum light sheet
- Wire guard – stainless steel

Standard Finishes:

- Aluminum – Corro-free™ epoxy powder coat
- Stainless steel – natural

Certificates and Compliances:

- NEC and CEC:
  - Class I, Division 2, Groups A, B, C, D
  - Class II, Class III & Simultaneous Presence (Class 1, Division 2 and Class II)*
  - Class I Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards:
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15

Energy Savings:

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.



Electrical Rating Ranges:

- Wattages: Two 26, 32, or 42 watt lamps.
- 120-277V, 50-60Hz
- 347V, 60Hz
- 12, 24 & 125VDC (Consult Cooper Crouse-Hinds)

Options:

	Suffix to add to Cat. No. #
Restricted Breathing Construction	
- Class I Division 2 & Zone 2 Suitability	**S826***
- Cooler Operating Temperatures (T-Numbers)	
Certified for IEC Zone 2 (Suffix S826TB) (Guard Required)	**S826TB***
- Furnished with	
- Terminal Block	
- Crimp Terminals	
Factory Assembled with Lamp	**FA**
Fused - protects ballast and capacitors against abnormal line conditions (Not for use in Canada) (Not for Marine use)	**S658†**

Accessories:

	Cat. #
Photocell for Field Installation	
120V, 50/60Hz	V2PC20
208-240V, 50/60Hz	V2PC22
277V, 50/60Hz	V2PC27
Stainless Steel Wire Guard	P55

† When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

* Contact Cooper Crouse-Hinds

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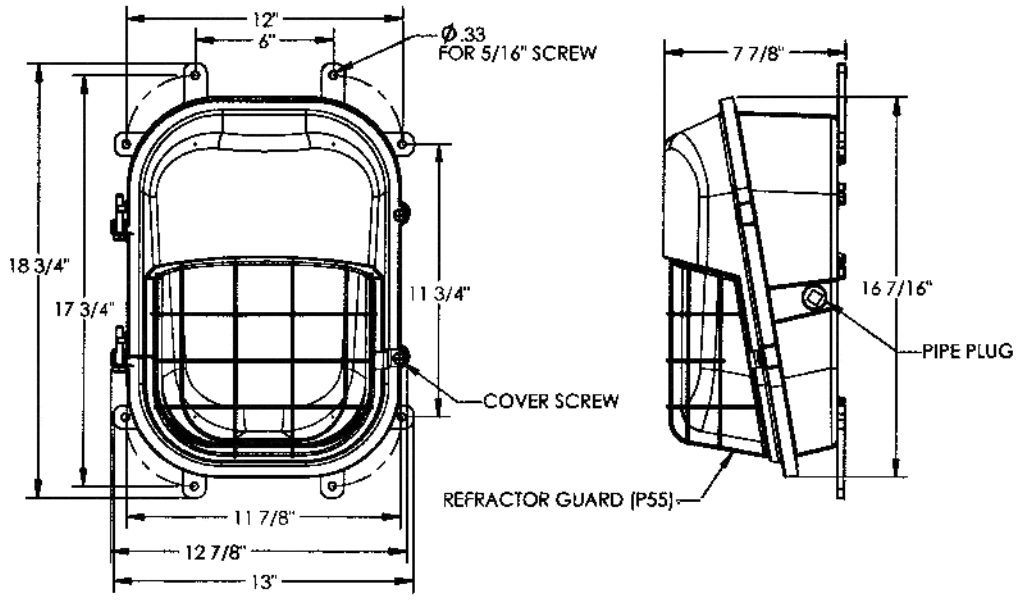
Ordering Information:

Hub Size	Luminaire Watts	Catalog Number
¾ NPT	52	CPMVF2W052
¾ NPT	64	CPMVF2W064
¾ NPT	84	CPMVF2W084

	STANDARD VOLTAGE BALLASTS		OPTIONAL BALLASTS		
	NEC/UL & CEC/CSA (cUL)	CEC/CSA (cUL)	(Consult Cooper Crouse-Hinds)		
Voltage Suffix	120-277V 50-60Hz /UNV	347V 60Hz /347	125V DC /125VDC	12V DC /012VDC	24V DC /024VDC

CPMVF Temperature Performance Data – Consult Cooper Crouse-Hinds

Dimensions (Inches)



Net Weight:

CPMVF Less Guard	17 Lbs
P55 Guard	0.5 Lbs

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6L DMVF Series Compact Fluorescent

Champ® Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

DMVF series Champ luminaires are used:
- in areas made hazardous by abnormal conditions resulting in the presence of flammable vapors or gases.
- in areas made hazardous by the presence of combustible dusts.
- where combustible dusts and flammable vapors are present simultaneously.
- in marine applications where water spray and corrosive atmospheres are considerations.
- on installations where vibration and rough usage are problems.
- where a cool, efficient light source is required.
- in areas that require lamps to reach full illumination immediately.
- in refineries, chemical and petrochemical facilities, grain processing, handling or storage facilities, manufacturing plants waste water treatment plants sewage treatment plants, oil terminals, food processing facilities, breweries, and any other manufacturing or processing facility where safe, reliable, hazardous area fluorescent or auxiliary lighting is needed.

Standard Features:

- Housings made of die-cast copper-free aluminum (less than 0.4 of 1% copper) for strength and resistance to corrosion.
- Mounting modules equipped with integral hub set screws for vibration resistance (ceiling, pendant, and quad mounts).
- Hubs are provided with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Epoxy powder finish and stainless steel external hardware for resistance to corrosion.
- Long-life gaskets which provide seals between mounting module, housing, and optical assembly.
- Grounding wire for safety.
- Cool operating design.
- Optional stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Optional battery pack ballast for auxiliary lighting.

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%).
- Exterior hardware and guards – stainless steel.
- Reflectors – Krydon® fiberglass-reinforced polyester material.
- Globe – heat and impact resistant internally fluted glass.

Standard Finishes:

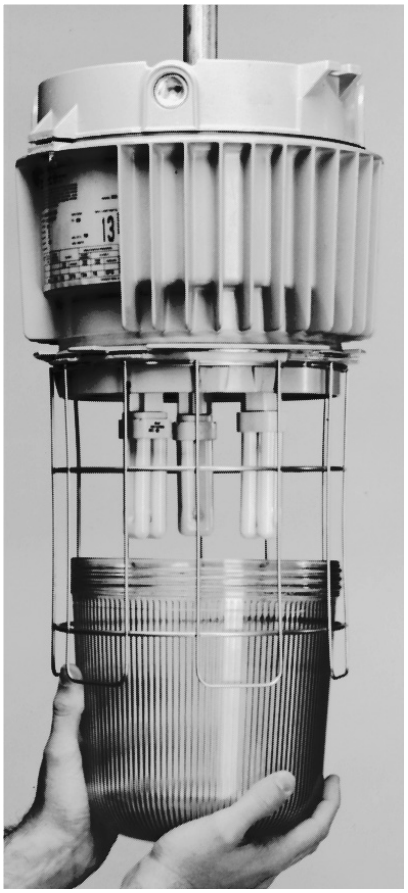
- Aluminum – gray epoxy powder coat.
- Krydon material – high reflectance white.
- Stainless steel – natural.

Electrical Rating Ranges:

- Wattage: Two 26 or 32 watt lamps
- 120-277V, 50-60 Hz
- 347V, 60Hz
- 12, 24, & 125VDC

Certificates and Compliances:

- NEC and CEC:
  Class I, Division 2, Groups A, B, C, D
  Class II, Class III &
  Simultaneous Presence (Class 1, Division 2 and Class II)
  Class I Zone 2
- IEC:
  Zone 2 Ex nR IIC
- UL Standards:
  844, 2279 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards
  C22.2 No. 137
- IEC Standards
  60079-15



Accessories:

(Order separately)
- Reflectors (to be used with globe)
  Dome Cat. # RD739
  30° Angle Cat. # RA739

Options:

Description	Suffix to add to Cat. No. #
Restricted Breathing Construction	
Class I Division 2 & Zone 2 Suitability	**S826**
Cooler Operating Temperatures (T-Numbers)	
Certified for IEC Zone 2 (Suffix S826TB)	**S826TB**
Furnished with	
Terminal Block	
Crimp Terminals	
Factory Assembled with lamps installed for additional labor savings	**FA.**
Fused – to protect ballast against abnormal line conditions (not available on CSA certified fixtures)	**S658*.**
Lamps supplied with fixture	**S714.**
Top hat with stainless steel threaded insert to attach ballast housing	**S806.**
TEFLON® coating on globe for increased shatter protection	**S808.**

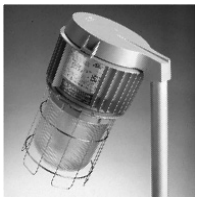
* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

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DMVF Series Compact Fluorescent

Champ® Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

	Mounting Style	Hub Size	Luminaire Watts	DMVF Series Fluorescent Cat. No. with G303 Globe and P33 Guard
	**Pendant Mount**	¾	52	DMVF2A052GP
		1		DMVF3A052GP
		¾	64	DMVF2A064GP
		1		DMVF3A064GP
	**Flexible Pendant Mount**	¾	52	DMVF2HA052GP
		¾	64	DMVF2HA064GP
	**Ceiling Mount Thru-Feed**	¾	52	DMVF2C052GP
		1		DMVF3C052GP
		¾	64	DMVF2C064GP
		1		DMVF3C064GP
	**Wall Mount Thru-Feed**	¾	52	DMVF2TW052GP
		1		DMVF3TW052GP
		¾	64	DMVF2TW064GP
		1		DMVF3TW064GP
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	52	DMVF25Q052GP
		¾	64	DMVF25Q064GP
	**Stanchion Mount** 25° Angle	1½	52	DMVFJ052GP
		1½	64	DMVFJ064GP
	**Stanchion Mount** Straight	1½	52	DMVFP052GP
		1½	64	DMVFP064GP

1. Catalog numbers are basic numbers. Voltages must be specified.

	STANDARD VOLTAGE BALLASTS		OPTIONAL BALLASTS		
	NEC/UL & CEC/CSA (cUL)	CEC/CSA (cUL)			
Voltage	120-277V 50-60Hz	347V 60Hz	125V DC	12V DC	24V DC
Suffix	/UNV	/347	/125VDC	/012VDC	/024VDC

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DMVF Series - Ordering by Components

DMVF luminaires are available in components
A complete luminaire consists of:

I. Champ Cover (Mounting Module)
II. DMVF Ballast Housing
III. Globe, Globe Guard, Globe Reflectors

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	APM2
	1	APM3
Flexible Pendant	¾	HPM2
Ceiling	¾	CM2
	1	CM3
Wall	¾	TWM2
	1	TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (UNV shown) and any **options suffixes.**

Lamp Type	Lamp Watts	Catalog Number
Compact Fluorescent	2 (26W)	DMVF052/UNV
	2 (32W)	DMVF064/UNV

III. Globe, Guards and Reflectors

Type	Catalog Number
Globe	G303
Teflon Coated	G303-S808
Globe Guard	P33
Globe Reflector-Dome	RD739
Globe Reflector-Angle	RA739

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DMVF Series
Compact Fluorescent
Champ® Luminaires



COVERS:

PENDANT
APM2 3/4 IN. ✓
APM3 1 IN. ✓
HPM2 3/4 IN. ✓

WALL
TWM2 3/4 IN. ✓
TWM3 1 IN.

QUAD—MOUNT
QM25 3/4 IN.

CEILING
CM2 3/4 IN. ✓
CM3 1 IN. ✓

STANCHION
JM5 1 1/2 IN. ✓ PM5 1 1/2 IN. ✓

HOUSING
DMV F

GLOBE
G303 ✓
G303 S808 ✓

REFLECTOR/LENS
GRD4 ✓

REFRACTOR
GR302
GR305 ✓
PGR302*
PGR305*

GUARD
P33 ✓

REFLECTOR
RA739 ✓
RD739 ✓

* These plastic reflectors are for non-hazardous areas only (50-100W max.)

✓ – available with Lightning Service™ delivery. See Section G for complete details.

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Temperature Performance Data:

Lamp Watts	Minimum Operating Temperature	Maximum Ambient Temp	Class I		Class II	Simultaneous Presence		Supply Wire °C
			Non-Restricted Breathing	Restricted Breathing		Non-Restricted Breathing	Restricted Breathing	
Fluorescent:	**DMVF**		**Div. 2**	**Zone 2 or Div. 2**	**Division 1**	**Cl.I, Div. 2/Cl.II**	**Cl.I, Zone 2 or Div. 2/Cl.II**	
52 & 64 Watt	-20°C (4°F)	40°C (104°F)	T3	T6	T6	T3/T6	T6	60

Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)
DMVF	52, 64	18¼

Add for mounting modules (lbs.):

Pendant	1¼
Flexible Pendant	1½
Ceiling	2¾
Wall	4½
Quad-Mount	3½
Angle Stanchion	3½
Straight Stanchion	4½

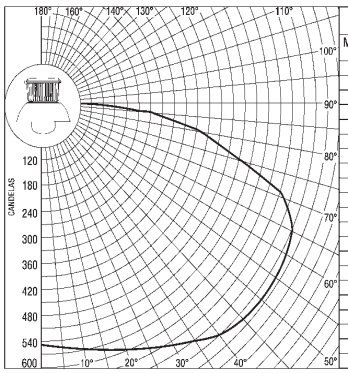
Add for reflectors (lbs.):

Dome	1¼	30° Angle	1¾

Deduct: 1 lb. for luminaire with P33 Guard

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DMVF Series
Compact Fluorescent
Champ® Luminaires



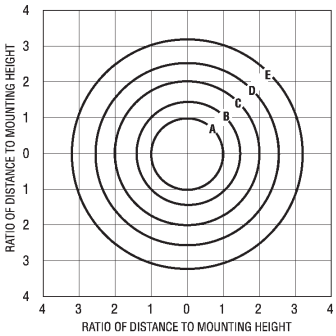
CANDELAS AT 25 FEET	
MID-ZONE ANGLE	64 WATTS
-0-	552
5	557
15	581
25	612
35	660
45	699
55	706
65	688
75	546
85	268
-90-	129
95	21
105	
115	
125	
135	
145	
155	
165	
175	
180	

ZONAL LUMENS	
ZONE	64 WATTS
0-10	53
10-20	165
20-30	283
30-40	415
40-50	541
50-60	633
60-70	683
70-80	578
80-90	292
90-100	23
100-110	
110-120	
120-130	
130-140	
140-150	
150-160	
160-170	
170-180	
TOTAL	3666

NOTE: For 52 watt DMVF applications, use a .75 multiplier.

DMVF Photometric Data

ISOFOOTCANDLE CHART:
Luminaire with globe and dome reflector
DMVF064GRD Dome Reflector



Footcandle Values for Isofootcandle Lines

MTG. HGT.	A	B	C	D	E
8′	4.00	2.00	1.00	0.50	0.25
10′	2.56	1.28	0.64	0.32	0.16
12′	1.78	0.89	0.44	0.22	0.11
16′	1.00	0.50	0.25	0.13	0.06

DMVF064GRD Dome Reflector
Coefficients of Utilization
Effective Floor Cavity Reflectance 20%

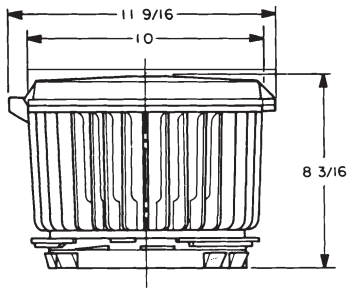
		Room Cavity Ratio									
Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
	50*	.741	.617	.524	.452	.396	.351	.314	.283	.258	.236
80*	30*	.694	.548	.445	.370	.314	.271	.237	.210	.188	.169
	10*	.652	.491	.382	.308	.254	.214	.183	.159	.140	.125
	50*	.722	.601	.510	.440	.386	.342	.307	.277	.252	.231
70*	30*	.679	.537	.437	.364	.309	.267	.234	.207	.185	.167
	10*	.640	.483	.378	.305	.252	.212	.182	.158	.139	.124
	50*	.686	.570	.484	.418	.367	.326	.293	.265	.242	.223
50*	30*	.650	.516	.421	.351	.299	.259	.227	.202	.181	.163
	10*	.617	.470	.369	.299	.247	.209	.180	.155	.138	.123
	50*	.653	.542	.460	.398	.350	.311	.280	.254	.233	.214
30*	30*	.623	.497	.406	.340	.290	.251	.221	.197	.176	.160
	10*	.596	.457	.361	.293	.243	.206	.177	.154	.136	.121
	.50*	.622	.516	.437	.379	.333	.297	.268	.244	.224	.206
10*	30*	.598	.478	.392	.329	.271	.244	.215	.192	.172	.156
	10*	.576	.444	.352	.287	.239	.203	.175	.152	.135	.120
0*	0*	.557	.424	.332	.267	.220	.184	.157	.136	.119	.105

*** Percent Reflectance**

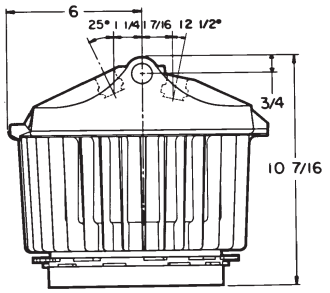
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DMVF Dimensions

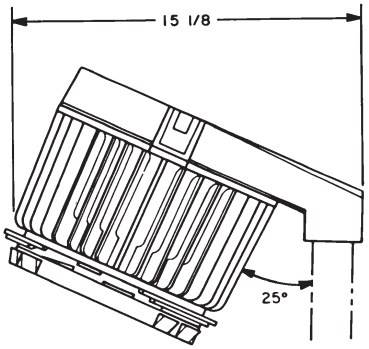
Pendant Mount



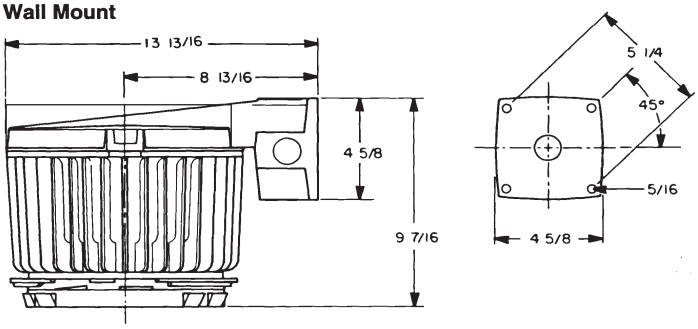
Quad-Mount



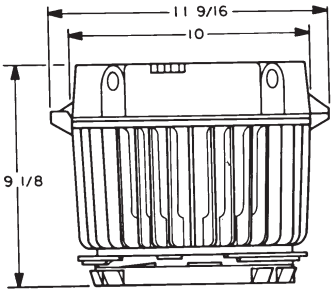
25° Angle Stanchion Mount



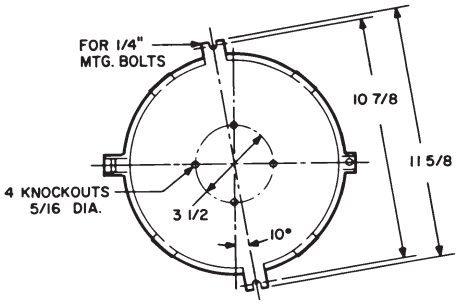
Wall Mount



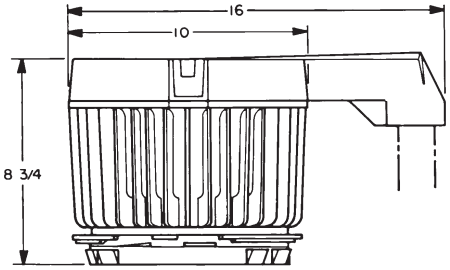
Ceiling Mount



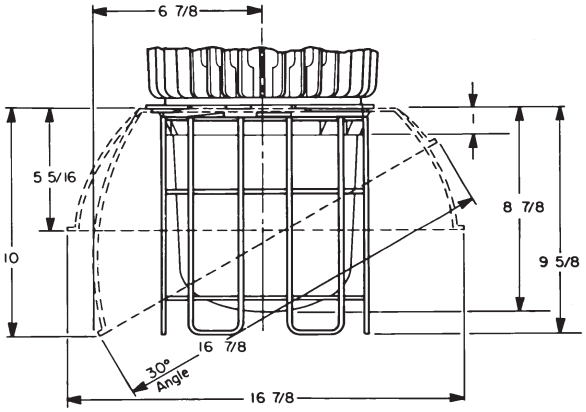
Ceiling Mount – Top View



Straight Stanchion Mount



Luminaire with Globe, Guard, Reflectors



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N2MVF Series Compact Fluorescent

Champ® Non-metallic Luminaires

- Cl. I, Div. 2, Groups A,B,C,D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F,G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP56

Application:

N2MVF series Champ luminaires are used:
- in areas in which ignitable concentrations of flammable gases or vapors will be present due to abnormal, unusual or accidental conditions.
- in installations where moisture, dirt, vibration, corrosion or rough usage are concerns.
- wherever the damaging effects of water, wind, snow, sleet, hot sun or any combination of these elements are found.
- ideal for marine use; resists the harmful effects of salt water.
- withstands the harshest of corrosive environments.
- to provide low wattage spot and floodlighting.
- for general area lighting.
- in manufacturing plants, refineries, chemical, petrochemical and other industrial process facilities, wastewater and sewage treatment facilities, offshore, dockside and harbor installations as well as other heavy industrial applications.

Features and Benefits:

- Housings and mounting modules made of polyphenylene sulfide (PPS) for strength and maximum resistance to corrosion.
- Pendant mounting module equipped with integral hub set screws for vibration resistance.
- Hubs are provided with an integral bushing to help prevent damage to field wiring during installation and ground connection for positive bonding.
- Guard, hub inserts, stanchion elbow and hardware made of stainless steel for maximum resistance to corrosion.
- Grounding wire for safety.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Hinged assembly allows the luminaire to hang free during installation to permit the use of both hands when wiring.
- One, external captive screw for ease of installation.
- Handle – hinge assembly doubles as a handle for ease of installation, especially when carrying up a ladder.

Additional Features:

FLUORESCENT ENERGY SAVINGS
- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

Certifications and Compliances:

- NEC and CEC:
  Class I, Division 2, Groups A,B,C,D
  Class II, Class III &
  Simultaneous Presence (Class I Division 2 and II)
  Class I Zone 2
- IEC:
  Zone 2 Ex nR IIC
- UL Standards:
  844. 2279 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards:
  C22.2 No. 137
- IEC Standards:
  60079-15

Standard Materials:

- Housing, mounting modules – polyphenylene sulfide (PPS)
- Guard, hub inserts, stanchion elbow, hardware – stainless steel
- Globe – heat & impact resistant, internally fluted glass
- Gaskets – silicone rubber

Electrical Ratings:

- Wattages: Two 26 or 32 watt lamps.
- 120 – 277V, 50-60 Hz
- 347V, 60 Hz
- 12, 24 & 125 VDC



Options:

Description	Suffix to be added to Cat. No.
• Restricted Breathing Construction Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers)	**S826**
• Certified for IEC Zone 2 Furnished with Terminal Block Crimp Terminals	**S826TB**
Wall-Mount Arm For converting a ceiling-mount luminaire to a wall mount	**N2MV-WM1**
Factory Assembled For a factory assembled luminaire with lamps installed	**FA**
Fusing To protect ballast against abnormal line conditions	**S658**
Furnished with Lamps	**S714**
Teflon Coated Globe Provides additional protection against shattered glass fragments when subject to thermal shock, etc.	**S808**

Average Luminaire Weight (lbs.)

Body, mounting module, globe, guard and reflector . . . . . 30 lbs.

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6L N2MVF Series Compact Fluorescent

Champ® Non-metallic Luminaires

- Cl. I, Div. 2, Groups A,B,C,D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F,G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP56

N2MVF ORDERING INFORMATION

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.†
Pendant Mount	¾	52	N2MVF2A052GP
	1		N2MVF3A052GP
	¾	64	N2MVF2A064GP
	1		N2MVF3A064GP
Ceiling Mount Thru-Feed	¾	52	N2MVF2C052GP
	1		N2MVF3C052GP
	¾	64	N2MVF2C064GP
	1		N2MVF3C064GP
Stanchion Mount 25° Angle	1½	52	N2MVFJ052GP
	1½	64	N2MVFJ064GP

	STANDARD VOLTAGE BALLASTS		OPTIONAL BALLASTS		
	NEC/UL & CEC/CSA (cUL)	CEC/CSA (cUL)			
Voltage	120-277V 50-60Hz	347V 60Hz	125V DC	12V DC	24V DC
Suffix	/UNV	/347	/125VDC	/012VDC	/024VDC

Temperature Performance Data:

Lamp Watts	Minimum Operating Temperature	Maximum Ambient Temp	Class I		Class II	F & G Simultaneous Presence		Supply Wire °C
			Non-Restricted Breathing	Restricted Breathing		Non-Restricted Breathing	Restricted Breathing	
Fluorescent:	**N2MVF**		**Division 2**	**Zone 2**	**Division 1**	**Cl.I, Div 2/Cl.II**	**Cl.I, Zone 2/Cl.II**	
52 & 64 Watt	-18°C (0°F)	40°C (104°F)	T2D	T6	T4	T2B/T4	T4	85

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N2MVF Series-
Ordering by Components

N2MVF luminaires are available in components
A complete luminaire consists of:

I. N2MV Cover (Mounting Module)
II. N2MV Ballast Housing
III. Globe, Refractors, Guards, Reflectors

I. N2MV Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	N2APM2
	1	N2APM3
Ceiling	¾	N2CM2
	1	N2CM3
Wall (Use wall bracket accessory with Ceiling Cover)	¾	N2MV-WM1 and N2CM2
	1	N2MV-WM1 and N2CM3
Stanchion - 25 Degree Angle	1½	N2JM5

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (UNV shown) and any **options suffixes.**

Lamp Type	Lamp Watts	Catalog Number
Compact Fluorescent	2 (26W)	N2MVF052/UNV
	2 (32W)	N2MVF064/UNV

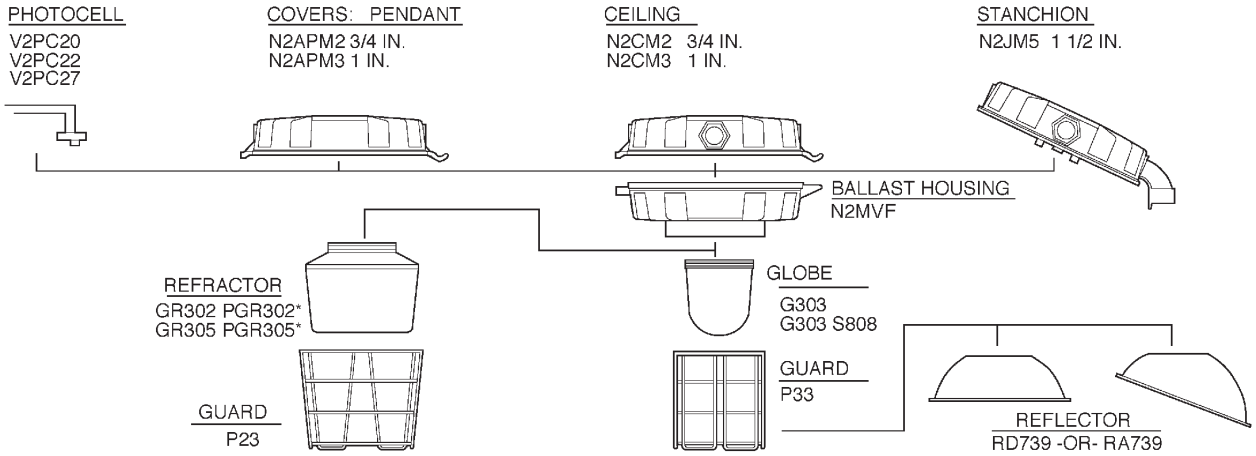
III. Globe, Guard and Reflectors

Type	Catalog Number
Globe	G303
Globe Teflon Coated	G303-S808
Globe Guard	P33
Reflector Dome	RD739
Reflector Angle	RA740

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N2MVF Series
Compact Fluorescent
Champ® Non-metallic Luminaires

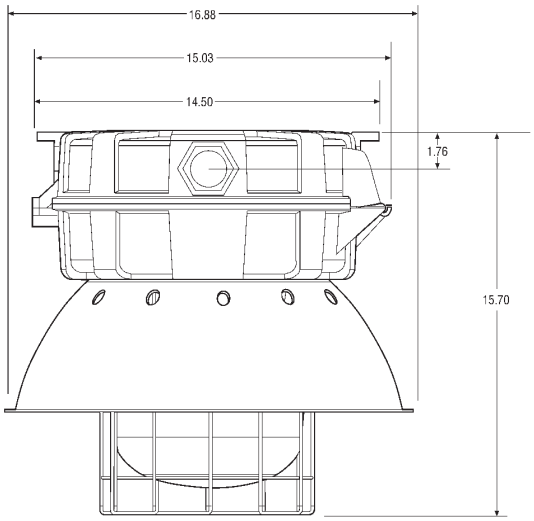
A complete luminaire consists of a cover mount, a ballast housing and a globe, with or without guard, refractor or reflector.



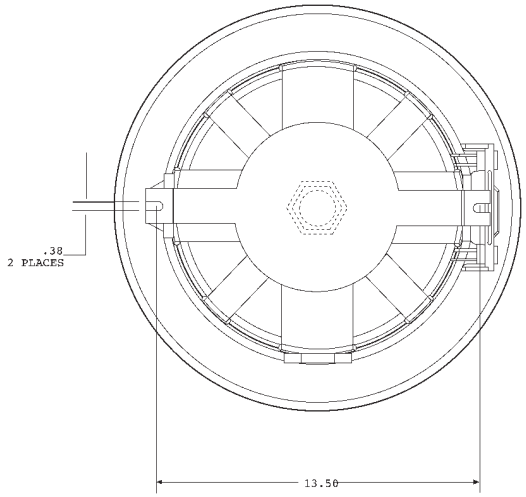
ALL COMPONENTS ARE SUITABLE FOR USE IN ORDINARY LOCATIONS, CLASS 1, DIV.2 AND WET LOCATIONS.

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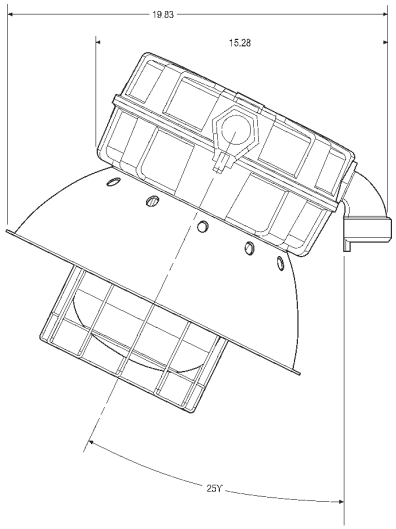
Pendant Mount



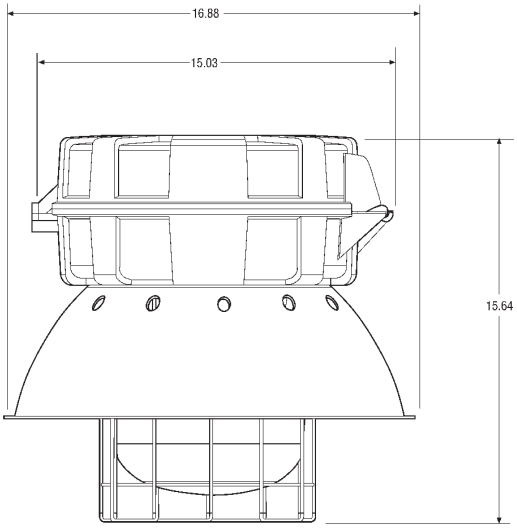
Ceiling Mount – Top View



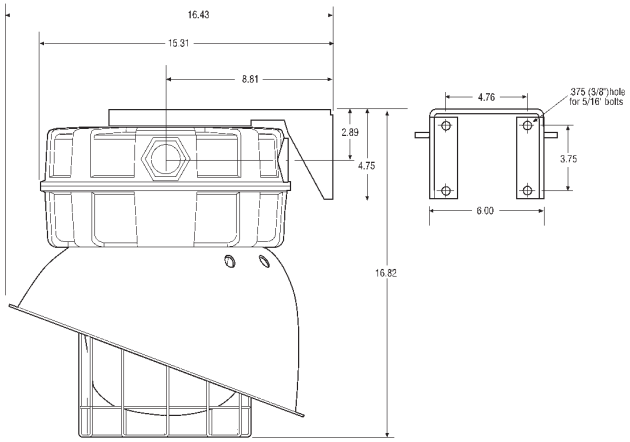
25° Angle Stanchion Mount



Ceiling Mount



Wall Arm Mount



Net Luminaire Weights (lbs.)

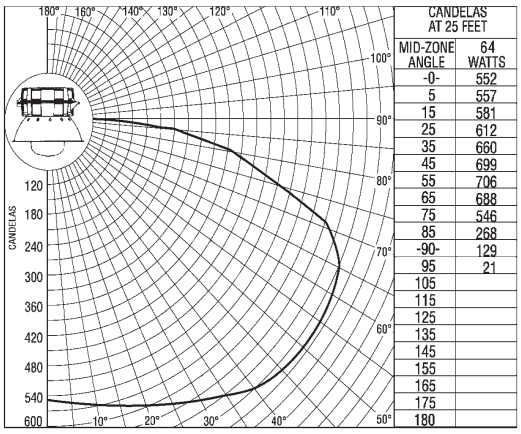
Luminaire Series	Lamp Watts	Luminaire with Mounting Module, Globe, Guard & Refractor (lbs.)
N2MVF052	52	30
N2MVF064	64	30

Accessories (Order Separately)

Reflectors (to be used with globe)

Dome Cat.	RD739 (RD79)
30° Angle Cat.	RA739 (RA79)

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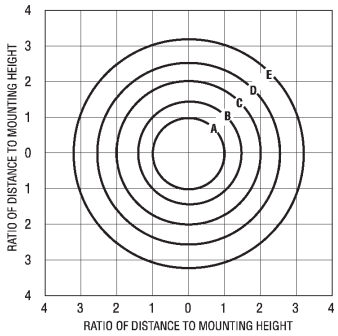
CANDELAS AT 25 FEET	
MID-ZONE ANGLE	64 WATTS
-0-	552
5	557
15	581
25	612
35	660
45	699
55	706
65	688
75	546
85	268
-90-	129
95	21
105	
115	
125	
135	
145	
155	
165	
175	
180	

ZONAL LUMENS	
ZONE	64 WATTS
0-10	53
10-20	165
20-30	283
30-40	415
40-50	541
50-60	633
60-70	683
70-80	578
80-90	292
90-100	23
100-110	
110-120	
120-130	
130-140	
140-150	
150-160	
160-170	
170-180	
TOTAL	3666

NOTE: For 52 watt N2MVF applications, use a .75 multiplier.

N2MVF Photometric Data

ISOFOOTCANDLE CHART:
Luminaire with globe and dome reflector
N2MVF064GRD Dome Reflector



Footcandle Values for Isofootcandle Lines

MTG. HGT.	A	B	C	D	E
8′	4.00	2.00	1.00	0.50	0.25
10′	2.56	1.28	0.64	0.32	0.16
12′	1.78	0.89	0.44	0.22	0.11
16′	1.00	0.50	0.25	0.13	0.06

N2MVF064GRD Dome Reflector
Coefficients of Utilization
Effective Floor Cavity Reflectance 20%

		Room Cavity Ratio									
Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
	50*	.741	.617	.524	.452	.396	.351	.314	.283	.258	.236
80*	30*	.694	.548	.445	.370	.314	.271	.237	.210	.188	.169
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	50*	.722	.601	.510	.440	.386	.342	.307	.277	.252	.231
70*	30*	.679	.537	.437	.364	.309	.267	.234	.207	.185	.167
	10*	.640	.483	.378	.305	.252	.212	.182	.158	.139	.124
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	10*	.576	.444	.352	.287	.239	.203	.175	.152	.135	.120
0*	0*	.557	.424	.332	.267	.220	.184	.157	.136	.119	.105

*** Percent Reflectance**

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COOPER Crouse-Hinds

EVLPF Series Compact Fluorescent

Low Profile Hazard•Gard® Luminaires

- Cl. I, Div. 1, Groups B (GB Suffix),C,D
- Cl. I, Zone 1, Groups IIB + H2 (GB Suffix), IIB, IIA
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R,4,4X; IP66

Application:

Cooper Crouse-Hinds Low Profile Hazard•Gard® luminaires are used in:
- areas where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and pharmaceutical plants, oil terminals, gas plants and other heavy process industry facilities
- waste treatment facilities
- drilling platforms and other coastal and offshore hazardous areas

Features - Benefits:

- Small compact size
- Two start Acme threaded construction
- Light weight copper-free aluminum housing with powdered epoxy finish
- All exterior hardware is corrosion-resistant stainless steel
- Four mounting arrangements pendant, ceiling, wall bracket and stanchion
- Wide range of light sources and wattages
- Marine and Nema 4X construction
- Integral ballast
- High power factor (90%+) ballasts
- Uses same mounting modules as the standard Hazard•Gard®
- Internally fluted glass globes
- Krydon® construction dome and angle reflectors – won't rust, corrode, dent, chip or peel
- Now available in components – luminaire body, mounting module, guard, reflectors
- Three wire construction is standard on Fluorescent Emergency Lighting
- Perfect where low mounting restrictions are a concern
- Easier assembly, installation and maintenance
- Superior corrosion resistance
- Suit any lighting layout
- Meet specific lighting needs
- Outdoor, hose down, marine and corrosive environments suitable
- Lowest installed cost
- Allows more luminaires per circuit
- Easy retrofitting when the Lo-Pro™ is the preferred choice
- Reduces glare and distributes light evenly – ideal for adverse environments typical of industrial facilities
- Ideal for adverse environments typical of industrial facilities
- Easily stocked for quick ship requirements
- For energy conservation, luminaires can be switched off without affecting the emergency operation feature

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester



Standard Finishes:

Copper-free aluminum – *Corro-free™ powdered epoxy*
- Krydon – *white*
- Stainless steel guard

Ratings (Electrical/Size):

Sources/wattage:
- 52W (2-26W lamps) & 64W (2-32W lamps)
- 120-277V, 50-60 Hz
- 347V, 60Hz
- 12, 24, 125 VDC

Conduit entries:
- ¾″, 1″ NPT – Pendant, Wall Bracket, Ceiling
- 1¼″ NPT – Stanchion

Certification & Compliances:

- NEC and CEC:
  Class I, Division 1, Groups B (GB suffix), C, D
  Class I, Zone 1 Groups IIB + H2 (GB Suffix),IIB, IIA
  Class II, Class III & Simultaneous Presence (Class I and Class II)
- UL Standards
  844 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards
  C22.2 No. 137

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
Fused	S658*
Factory assembled with lamps	FA

Accessories:

Description	Cat. #
Dome reflector	RD739
Angle reflector	RA739

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

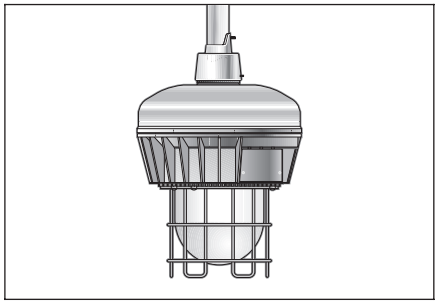
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EVLPF Series Compact Fluorescent

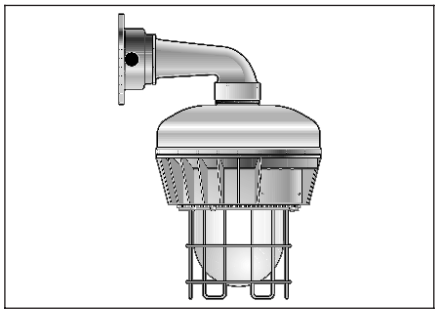
Low Profile Hazard•Gard® Luminaires

- Cl. I, Div. 1, Groups B (GB Suffix),C,D
- Cl. I, Zone 1, Groups IIB + H2 (GB Suffix), IIB, IIA
- Cl. II, Div 1, Groups E, F, G; Class III, Simualtaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

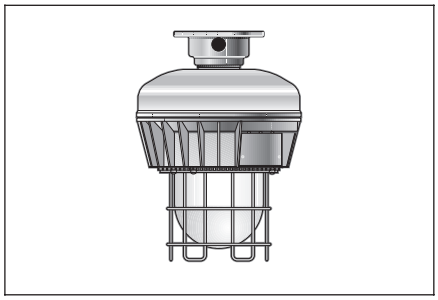
Ordering Information



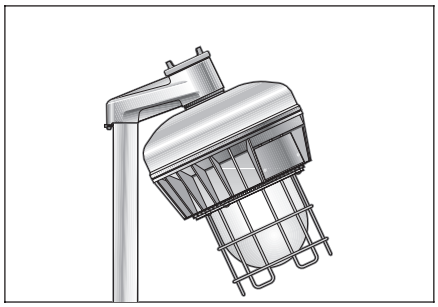
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and bracket mounts have 4 hubs: 3 are plugged.

Watt	Hub Size	Pendant With Guard *Catalog #*	Wall Brckt† With Guard *Catalog #*	Ceiling† With Guard *Catalog #*	Stanchion With Guard *Catalog #*	Luminaire Body Less Mounting Module & Guard *Catalog #*
Fluorescent—High Power Factor Ballast (Min. P.F. 90%)						
52W	¾	EVLPFA02521	EVLPFBX02521	EVLPFCX02521		EVLPF0520
	1	EVLPFA03521	EVLPFBX03521	EVLPFCX03521		
	1¼				EVLPFJ04521	
64W	¾	EVLPFA02641	EVLPFBX02641	EVLPFCX02641		EVLPF0640
	1	EVLPFA03641	EVLPFBX03641	EVLPFCX03641		
	1¼				EVLPFJ04641	

Complete Catalog Number as follows:
1. Voltages - Add Suffix as follows:

Standard Voltage Ballasts - 60Hz			Optional Ballasts		
	NEC/UL & CEC/CSA (cUL)	**CEC/CSA (cUL)**			
Voltage Suffix	120-277V 50-60Hz /UNV	347V 60 Hz /347	125V DC /125VDC	12V DC /012VDC	24V DC /024VDC

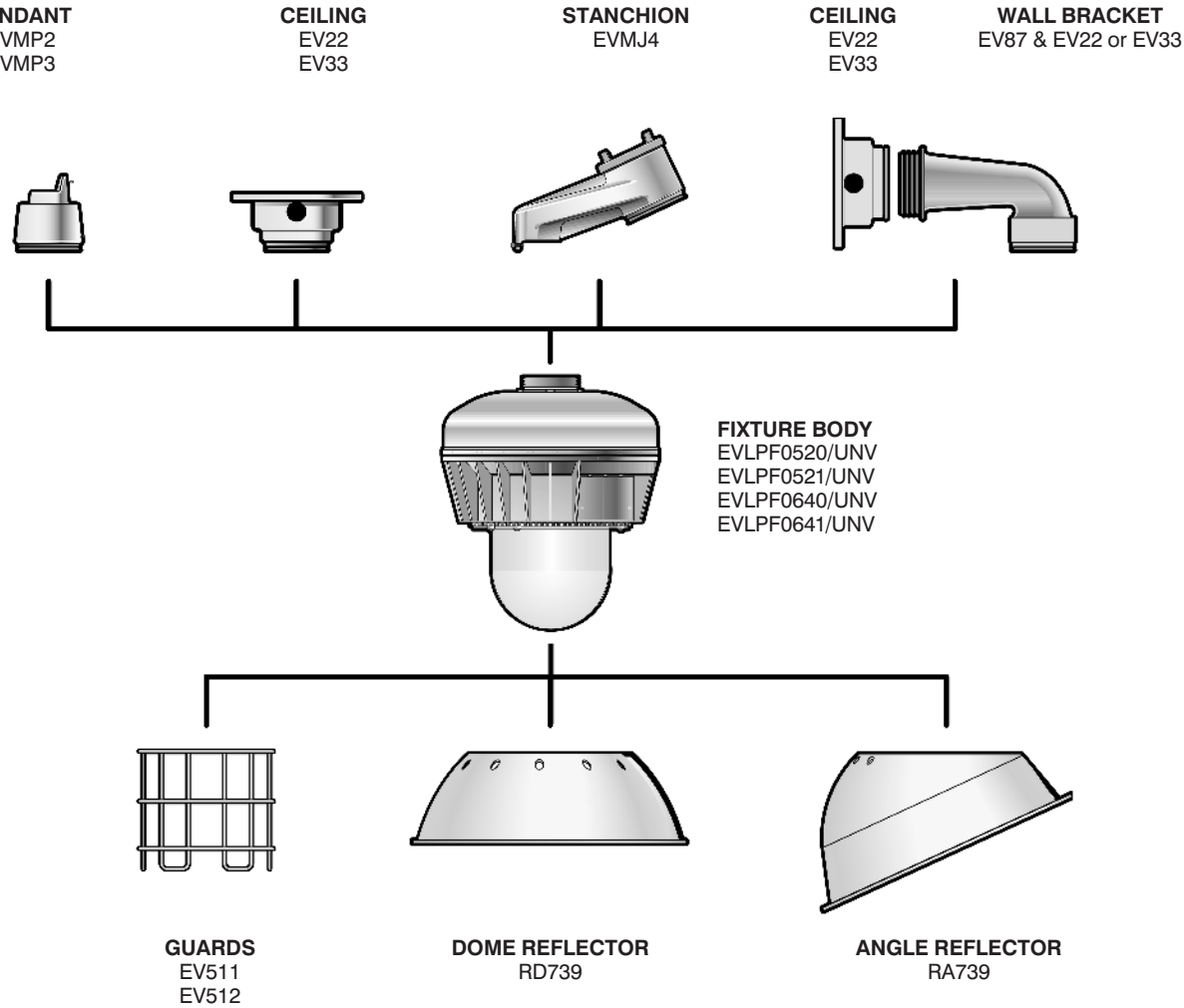
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EVLPF Series
Ordering By Components

EVLP Luminaires are available in components.
A complete light fixture consists of:
I. Mounting Module
II. Fixture Body
III. Guard, Dome Reflector, Angle Reflector or Exit Sign

Mounting Modules

Type	Conduit	Catalog Number
Pendant	¾	EVMP2
	1	EVMP3
Ceiling & Wall Box	¾	EV22
	1	EV33
Wall Bracket Arm	Use EV22 or EV33 box with EV87	EV87
Stanchion	1¼	EVMJ4
Guards		
Fluorescent		EV512
Reflectors		
Dome		RD739
Angle		RA739



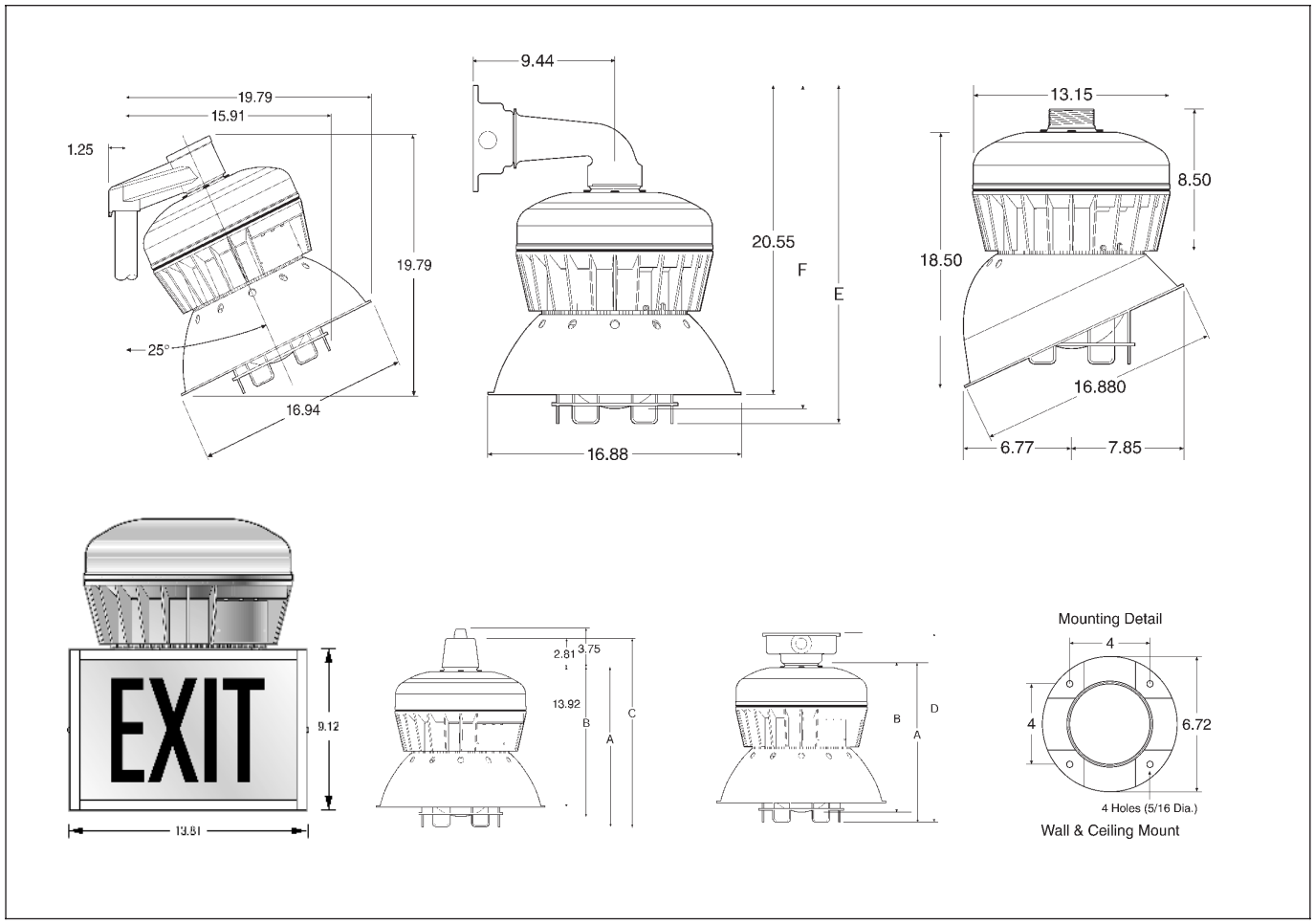
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EVLPF Series
Compact Fluorescent
Low Profile Hazard•Gard® Luminaires

Fluorescent Fixtures Maximum Ambient		Class I, Group B (w/GB suffix) Groups C, D Class I Zone I 40°C	Class II Groups E, F, G Class III Simultaneous Presence 40°C	Supply Wire °C	Minimum Operating Temperature
Fluorescent	52W & 64W	T6	T6	75°C	-18°C

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	A	B	C	D	E	F
Fluorescent	15.69	14.69	18.25	18.46	22.34	21.30



WEIGHTS (LBS.)

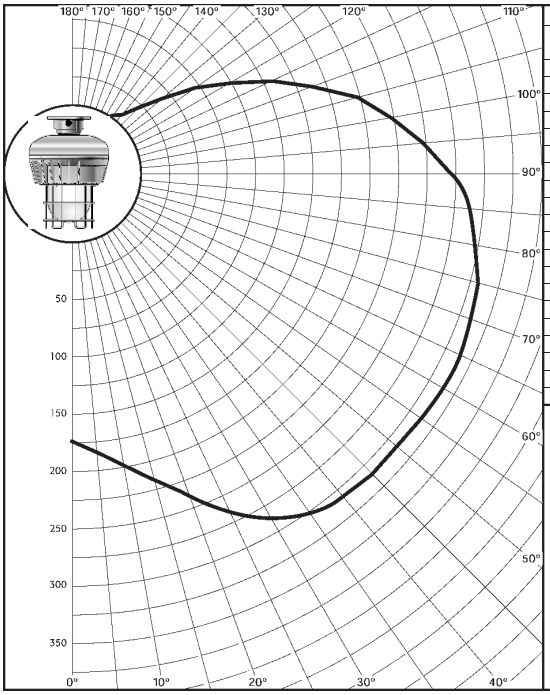
Item	Weights
Fluorescent (EVLPF)	31.5
Add Mounting Modules	
Pendant	1
Ceiling	2
Bracket	4.5
Stanchion	2.5
Add For Reflectors & Exit Sign	
RA739	1
RD739	1
DMVF–EXD	5
Deduct for Wire Guard	.5

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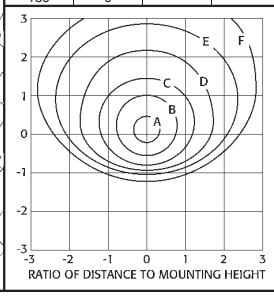
EVLPF Series Compact Fluorescent

Low Profile Hazard•Gard® Luminaires

Luminaire with Globe and Guard
EVLPFA03641 (2) 32 W Compact Fluorescent



CANDELAS		ZONAL LUMENS	
Mid-Zone Angle	Candelas	Zone	Lumens
0	174	0-10	18
5	187	10-20	61
15	219	20-30	115
25	263	30-40	174
35	299	40-50	233
45	313	50-60	294
55	315	60-70	345
65	317	70-80	368
75	309	80-90	365
85	284	90-100	321
95	248	100-110	234
105	198	110-120	134
115	135	120-130	51
125	71	130-140	11
135	23	140-150	1
145	3	150-160	0
155	0	160-170	0
165	0	170-180	0
175	0		
180	0		



***Note:** Photometric data was developed using (2) 32 watt compact fluorescent lamps (2,400 lumens each). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
(2) 26 W (Fluor)	0.75
(1) 32 W (Fluor) Emergency	0.16
(2) 26W (Fluor) Emergency	0.13

LUMINAIRE SPACING RATIO – 2.3 (Spacing to mounting height ratio)
(For additional photometric data, contact Crouse-Hinds)

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

ROOM CAVITY RATIO

Eff. Ceil.	Wall	0	1	2	3	4	5	6	7	8	9	10
80*	70*	64	55	48	43	39	35	32	30	27	25	23
	50*	64	51	42	36	31	27	24	21	19	17	15
	30*	64	47	37	31	25	21	18	16	14	12	11
	10*	64	44	33	26	21	17	14	12	10	9	7
70*	70*	61	52	45	41	37	33	30	28	25	24	22
	50*	61	48	40	34	29	25	22	20	18	16	15
	30*	61	45	35	29	24	20	17	15	13	11	10
	10*	61	42	31	25	20	16	13	11	10	8	7
50*	50*	54	43	35	30	26	22	20	18	16	14	13
	30*	54	40	31	26	22	18	15	13	12	10	9
	10*	54	38	28	22	18	14	12	10	9	7	6
30*	50*	49	38	31	26	23	20	17	15	14	12	11
	30*	49	36	28	23	19	16	14	12	10	9	8
	10*	49	34	25	20	16	13	11	9	8	6	5
10*	50*	44	33	27	23	20	17	15	13	12	11	10
	30*	44	32	24	20	17	14	12	10	9	8	7
	10*	44	30	22	18	14	11	9	8	7	5	5
0*	0*	41	28	20	16	12	10	8	6	5	4	4

*Percent Reflectance

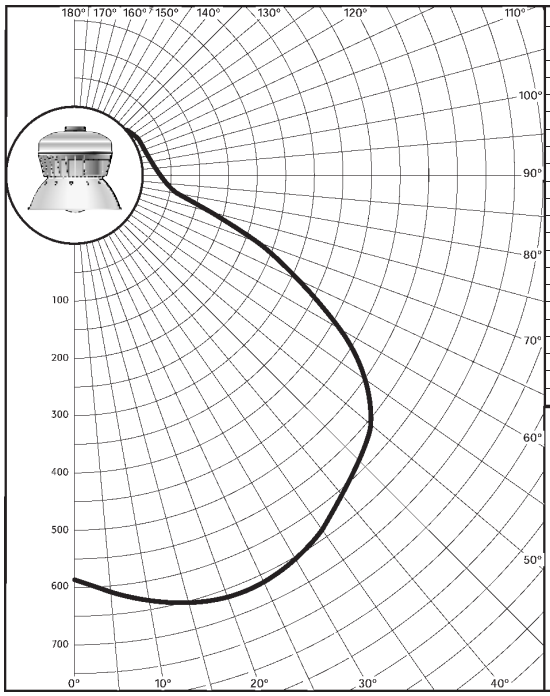
ISOFOOTCANDLE CHART:

	Footcandle Values for Isofootcandle Lines						
Mtg. Hgt.	A	B	C	D	E	F	
10'	20.00	10.00	5.00	2.00	1.00	0.50	
12'	13.88	6.94	3.47	1.39	0.69	0.35	
16'	7.82	3.91	1.95	0.78	0.39	0.20	Isofootcandle chart shows illuminance in footcandles at ground level.
20'	5.00	2.50	1.25	0.50	0.25	0.13	
25'	3.20	1.60	0.80	0.32	0.16	0.08	

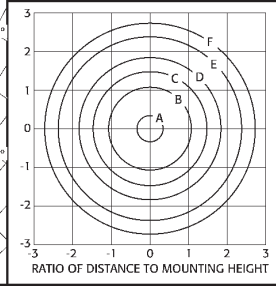
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EVLPF Series
Compact Fluorescent
Low Profile Hazard•Gard® Luminaires

Luminaire with Globe and Dome (Less Guard)
EVLPFA03640RD Lamp: (2) 32 W Compact Fluorescent



CANDELAS		ZONAL LUMENS	
Mid-Zone Angle	Candelas	Zone	Lumens
0	582	0-10	57
5	595	10-20	176
15	651	20-30	291
25	672	30-40	384
35	644	40-50	450
45	596	50-60	461
55	493	60-70	347
65	331	70-80	145
75	139	80-90	31
85	29	90-100	11
95	10	100-110	10
105	10	110-120	6
115	10	120-130	1
125	6	130-140	0
135	1	140-150	0
145	0	150-160	0
155	0	160-170	0
165	0	170-180	0
175	0		
180	0		



***Note:** Photometric data was developed using (2) 32 watt compact fluorescent lamps (2,400 lumens each). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
(2) 26 W (Fluor)	0.75
(1) 32 W (Fluor) Emergency	0.16
(2) 26 W (Fluor) Emergency	0.13

LUMINAIRE SPACING RATIO – 1.6 (Spacing to mounting height ratio)
(For additional photometric data, contact Crouse-Hinds)

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%

Eff. Ceil.	Wall	ROOM CAVITY RATIO 0	1	2	3	4	5	6	7	8	9	10
		0	1	2	3	4	5	6	7	8	9	10
80	70	59	54	49	45	41	37	34	31	28	26	24
	50	59	52	45	40	35	31	27	24	21	19	17
	30	59	50	42	36	31	26	23	20	17	15	13
	10	59	48	39	33	27	23	19	16	14	12	10
70	70	57	53	48	44	40	36	33	30	28	25	23
	50	57	51	44	39	34	30	27	24	21	19	17
	30	57	49	41	35	30	26	22	19	17	15	13
	10	57	47	39	32	27	23	19	16	14	12	10
50	50	55	48	42	37	33	29	26	23	20	18	16
	30	55	47	40	34	29	25	22	19	16	14	13
	10	55	45	38	32	27	22	19	16	14	12	10
30	50	52	46	41	36	32	28	25	22	20	17	16
	30	52	45	39	33	29	24	21	19	16	14	12
	10	52	44	37	31	26	22	19	16	14	12	10
10	50	50	44	39	35	31	27	24	21	19	17	15
	30	50	43	37	32	28	24	21	18	16	14	12
	10	50	43	36	30	26	22	18	16	13	11	10
0	0	49	41	35	29	25	21	17	15	12	11	9

*Percent Reflectance

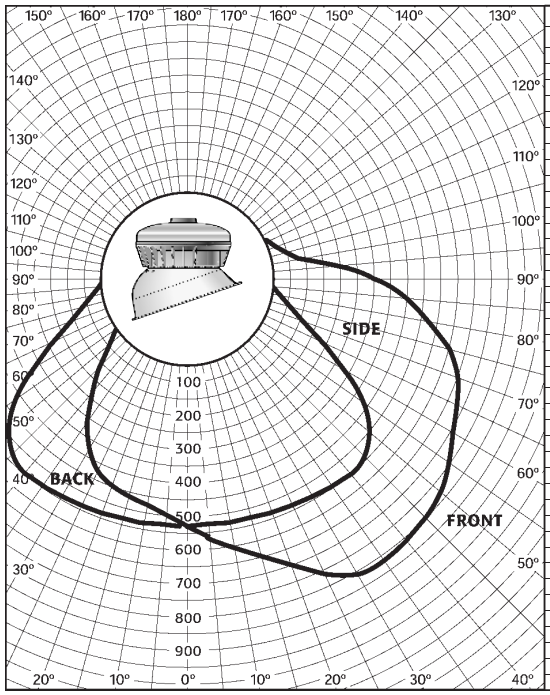
ISOFOOTCANDLE CHART:

Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	5.00	2.00	1.00	0.50	0.20	0.10
12'	3.47	1.39	0.69	0.35	0.13	0.07
16'	1.95	0.78	0.39	0.20	0.08	0.04
20'	1.25	0.50	0.25	0.13	0.05	0.03
25'	0.80	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows illuminance in footcandles at ground level.

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLPFA03640RA Lamp: (2) 32 W Compact Fluorescent



CANDELAS			
Degrees	Front	Side	Back
0	524	524	524
5	565	526	487
15	637	528	452
25	751	541	425
35	816	550	315
45	798	551	157
55	749	453	18
65	684	258	1
75	605	93	1
85	450	20	9
95	260	10	9
105	99	10	9
115	18	9	9
125	0	1	9
135	0	0	1
145	0	0	0
155	0	0	0
165	0	0	0
175	0	0	0
180	0	0	0

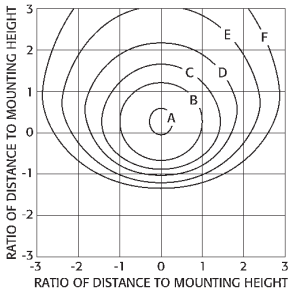
ZONAL LUMENS	
Zone	Lumens
0-10	51
10-20	152
20-30	255
30-40	337
40-50	371
50-60	353
60-70	301
70-80	230
80-90	144
90-100	71
100-110	15
110-120	7
120-130	2
130-140	0
140-150	0
150-160	0
160-170	0
170-180	0

***Note:** Photometric data was developed using (2) 32 watt compact fluorescent lamps (2,400 lumens each). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distibution and isofootcandle charts. Multipliers do not apply to coefficients of utilization.

LAMP WATTS	CONVERSION FACTOR
(2) 26 W (Fluor)	0.75
(1) 32 W (Fluor) Emergency	0.16
(2) 26 W (Fluor) Emergency	0.13

(For additional photometric data, contact Crouse-Hinds)

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
10'	5.00	2.00	1.00	0.50	0.20	0.10
12'	3.47	1.39	0.69	0.35	0.13	0.07
16'	1.95	0.78	0.39	0.20	0.08	0.04
20'	1.25	0.50	0.25	0.13	0.05	0.03
25'	0.80	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows illuminance in footcandles at ground level.

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6L FVS Series Long Twin Tube

Fluorescent Luminaires

- Cl. I, Div. 2, Groups B, C, D
- Cl. I, Zone 1, Groups IIC (Suffix S813)
- Cl. II, Div 1, Groups E, F, G (Suffix S813)
- Cl. II, Div 2, Groups F,G
- Cl. III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

Application:

FVS compact fluorescent luminaires are used:
- where low mounting heights or limited mounting room exists.
- for task oriented lighting.
- where a cool, efficient light source is required.
- in areas that require lamps to reach full illumination immediately.
- in industrial and chemical processing.
- in pulp and paper facilities.
- in waste or sewage treatment facilities.
- in non-hazardous commercial and industrial areas.
- in food and pharmaceutical plants where a non-glass lens is required.
- where fluorescent lighting has been preferred, but unavailable due to limited space and practicality.

Features:

- Compact, lightweight, low profile design is ideal for confined areas and tight corners.
- Reaches full illumination immediately and delivers light output equivalent to fixtures twice its size.
- Fast-Latch™ closure provides quick and easy access for relamping and maintenance – no tools necessary.
- Silicone sealing gasket provides exceptional watertight and dust-tight bond, providing excellent performance in wet and corrosive environments.
- Power disconnect switch (Cooper Crouse-Hinds ESWP) automatically cuts power to the lamps and ballast when the lens is opened.
- Shatter-resistant polymeric lens (.125 thick) provides environmental and corrosion protection.
- Available in 120, 277, 220/240 and 347 50/60hz voltages.
- 2 lamp fixture, uses single-ended 40 watt lamps.
- Multiple mounting capability.
- Energy saving electronic ballast is standard.

Standard Materials:

- Corrosion-resistant die cast copper-free aluminum housing.
- Shatter-resistant nylon lens.
- Polycarbonate lens (suffix-S813)
- Silicone rubber gasket.
- Extruded aluminum hinges and closure hardware with stainless steel pivots.

Standard Finishes:

- Epoxy powder coated housing.
- Anodized hinges and closure hardware.
- Highly specular aluminum reflector.

Size Ranges:

- All luminaires are 24″L x 12″W x 3.12″H.
- Conduit entrances are 3/4″.

Electrical Ratings:

- 120-277V, 50-60 Hz
- 347V, 60Hz
- Two 40 watt long twin tube lamps



Certifications and Compliances:

- NEC and CEC:
  Class I, Division 2, Groups B,C,D
  Class I, Zone 1 Group IIC (suffix S813)
  Class II, Division 1, Groups E, F, G (Suffix S813)
  Class II Division 2 Groups F, G
  Class III & Simultaneous Presence (Cl. I and Cl. II)

Note: Aiming Limitations
Cl. II, Cl. III & Simultaneous Presence
Aim down to Horizontal
Cannot aim up

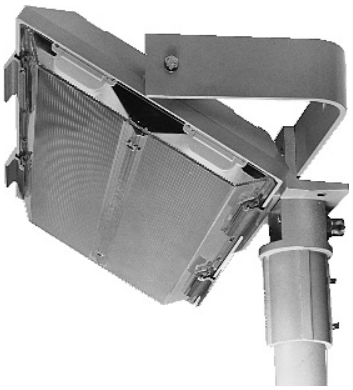
- UL Standards
  844 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards
  C22.2 No. 137

Options:

Description	Suffix to be added to Cat. No.
• Fused to protect ballast under abnormal line conditions. Not available on CSA certified fixtures	S658*
• Fixture supplied with two F40BX/SPX35 lamps	S714
• Corro-free™ epoxy finish inside and out	S753
• Class I, Zone 1, Group IIC and Class II, Div. 1, Groups E, F, G suitability	S813
• Tamperproof . . . consult Cooper Crouse-Hinds	

Accessories

FVS Trunnion Mount Kit (FVS-K5)
- Permits vertical mounting of luminaire on a beam when used with a standard beam clamp.
- Can be mounted directly to a wall or ceiling.
- Can be pole mounted when used in conjunction with a SFA6 slipfitter adapter (ordered separately).
- Constructed from copper-free aluminum.
- Supplied with a CGB cord connector.



FVS with Trunnion Arm and Slipfitter

Temperature Performance Data:

Style	Ambient Temp °C	Class I Div. 2	Class I Zone I	Class II See Aiming	Simualtaneous Presence Limitations	Supply Wire	Minimum Operating Temperature
All	40°C	T3C	T3	T6	T3C/T6	75°C	-18°C (0°F)
All	55°C	T3C	—	—	—	75°C	-18°C (0°F)

Luminaire Weight (lbs.)

without lamps
- Standard 2 lamp FVS 12.0

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

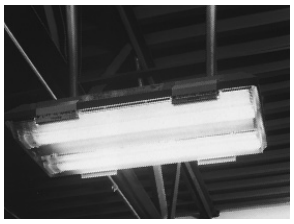
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

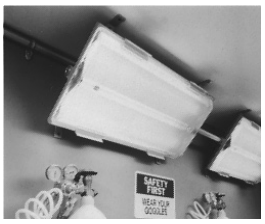
FVS Series
Long Twin Tube
Fluorescent Luminaires

- Cl. I, Div 2, Groups B,C,D
- Cl. I, Zone 1 Group IIC (suffix S813)
- Cl. II, Div 1,Groups E,F,G (suffix S813)
- Cl. II, Div 2, groups F,G
- Cl. III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

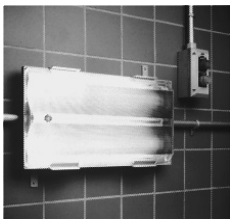
Luminaire includes all necessary provisions for these installations:


Ceiling Mount


Pendant Mount



Corner Mount


Horizontal Wall Mount



Vertical Wall Mount

FVS compact fluorescent (2 lamp luminaire):

Voltage	Wattage/ Lamp	Hub Size (4)	Cat. Number	Cat. # with Class I, Zone 1 and Class II, Div. 1 Suitability
120 (50 or 60 Hz)	40	¾″	FVS20	FVS20–S813
277 (50 or 60 Hz)	40	¾″	FVS27	FVS27–S813
120–277 (50 or 60 Hz)	40	¾″	FVS20UNV	FVS20UNV–S813
347 (50 or 60 Hz)	40	¾″	FVS23	FVS23–S813

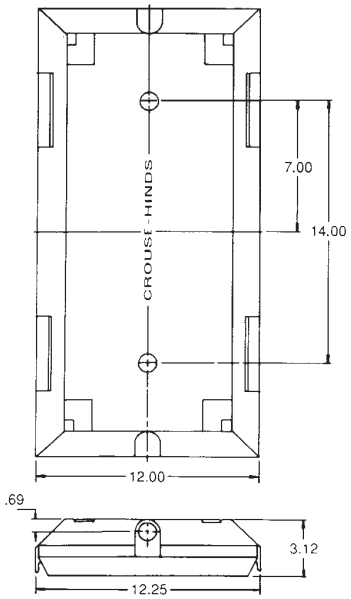
Accessories Ordered Separately

- Trunnion arm kit FVS-K5
- Slipfitter adapter to be used with trunnion arm SFA6

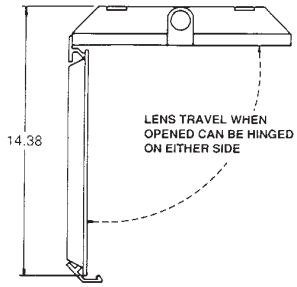
Dimensions:

FVS with Trunnion Arm: 26¼″ × 13.5″W × 3.12″H

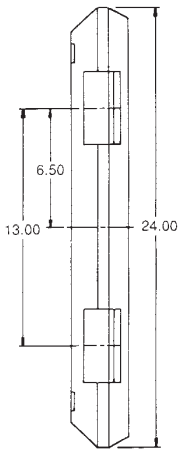
Top View

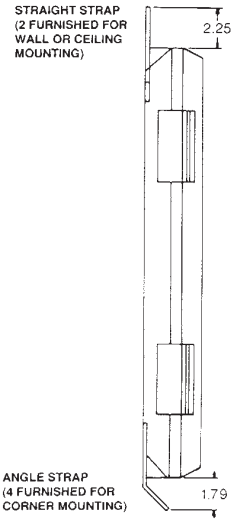


FVS With Lens Open

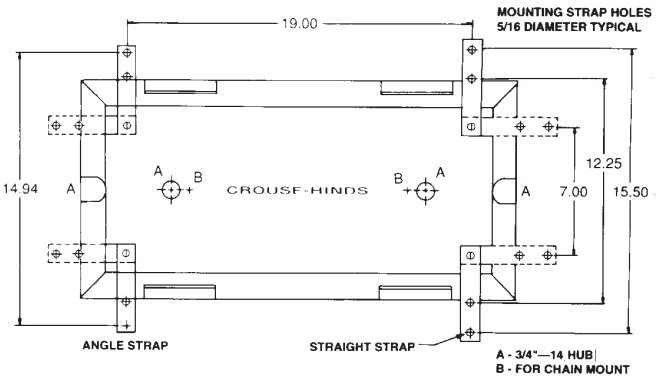


Side View





FVS Showing Mounting Strap Positioning

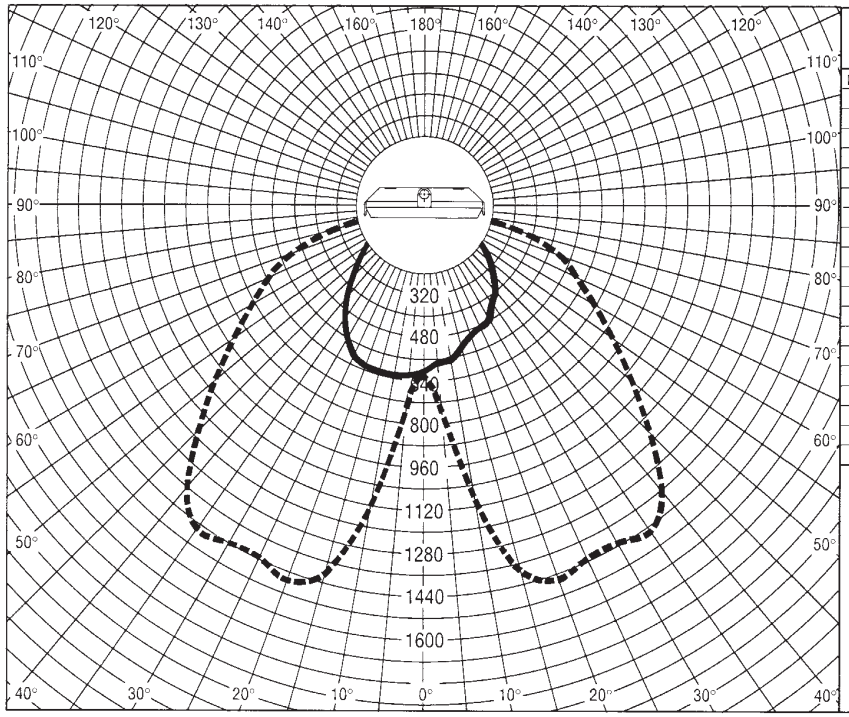


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FVS Series
Long Twin Tube
Fluorescent Luminaires

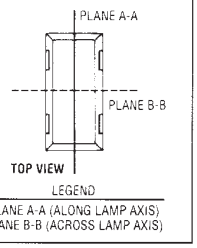
Photometric Data

Luminaire: **FVS**
Lamp: (2) F40BX/SPX35/RS single-ended fluorescent. Total initial lumens: 6300

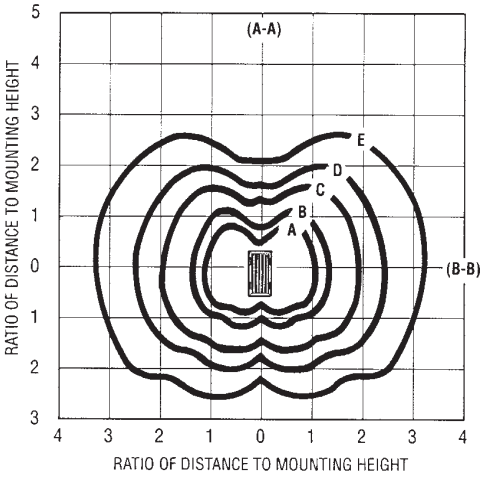


CANDELAS

	IN PLANE A-A		PLANE B-B
DEGREES	FRONT	BACK	SIDE
0	615	615	615
10	580	626	1131
20	510	626	1462
30	487	557	1432
40	417	441	1345
50	325	302	963
60	209	197	696
70	104	104	533
80	23	23	215
90			70
100			23
110			
120			
130			
140			
150			
160			
170			
180			



Isofootcandle Chart



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
8′	5.00	3.00	1.00	0.50	0.20
10′	3.20	1.92	0.64	0.32	0.13
12′	2.22	1.33	0.44	0.22	0.09
16′	1.25	0.75	0.25	0.13	0.05

Spacing to Mounting Height Ratio
Along lamp axis (A-A) 0.6
Across lamp axis (B-B) 1.1

Coefficients of Utilization

Effective Floor Cavity Reflectance 20%

Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5	6	7	8	9	10
	50*	.621	.538	.469	.414	.367	.329	.297	.269	.246	.225
80*	30*	.594	.495	.419	.359	.312	.273	.242	.216	.195	.176
	10*	.569	.459	.378	.317	.270	.234	.204	.180	.160	.144
	50*	.606	.526	.459	.405	.360	.323	.291	.265	.242	.222
70*	30*	.582	.487	.412	.354	.308	.270	.240	.214	.193	.175
	10*	.560	.453	.374	.314	.268	.232	.203	.179	.160	.143
	50*	.580	.503	.441	.389	.347	.311	.281	.256	.234	.216
50*	30*	.560	.470	.400	.345	.300	.265	.235	.210	.190	.172
	10*	.541	.442	.367	.310	.265	.230	.201	.178	.159	.143
	50*	.555	.483	.423	.374	.334	.301	.272	.248	.227	.210
30*	30*	.539	.455	.389	.336	.293	.259	.230	.207	.187	.170
	10*	.524	.431	.360	.305	.262	.227	.199	.176	.157	.142
	50*	.533	.464	.407	.361	.322	.290	.264	.241	.221	.204
10*	30*	.520	.441	.378	.327	.287	.254	.226	.203	.184	.167
	10*	.507	.421	.353	.300	.258	.225	.197	.175	.156	.141
0*	0*	.494	.407	.339	.286	.245	.212	.185	.163	.145	.130

* Percent Reflectance

* FVS suitable for Class II, Div. 1, Groups E, F, G when ordered with suffix S813.

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EVFT Illuminator™ Long Twin Tube

Fluorescent Luminaires

- Cl. I, Div, Groups B & C(suffix GB), D
- Cl. I, Zone 1 Group IIB + H2(suffix GB), IIA
- Cl. II, Div 1, Groups E,F,G
- Cl. III Simultaneous Presence
- Paint Spray
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

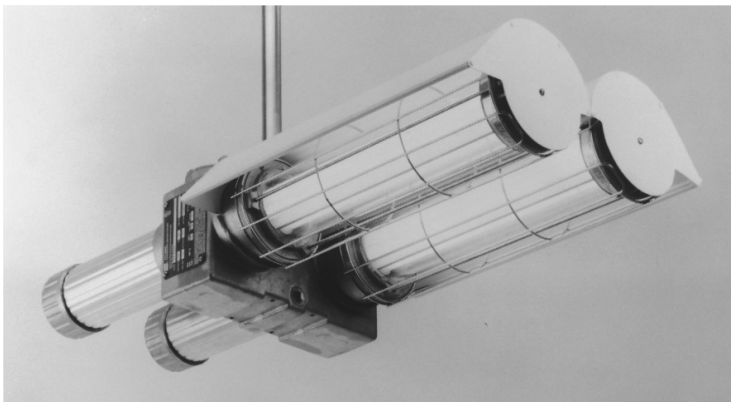
Application:

Illuminator™ compact fluorescent luminaires are used:

- In areas made hazardous by the presence of flammable gases and vapors, combustible dusts, or easily ignitable fibers and flyings.
- In areas where combustible dusts and flammable gases are present simultaneously.
- In applications involving low mounting heights, restricted mounting space, or where luminaire weight must be minimized.
- In areas where corrosion, vibration, moisture, dirt and rough usage are a problem.
- In refineries, chemical and petrochemical facilities, grain processing, handling and storage facilities, manufacturing plants, waste water treatment facilities, airline and mass transit maintenance areas, paint spray facilities, breweries, pharmaceutical plants and other areas where safe, reliable hazardous area lighting is required in a compact, cool operating and efficient light source.

Features:

- Efficient fluorescent light source in 78 and 156 watts.
- Adjustable right and left asymmetrical reflectors provide excellent light ''aimability'' – ideal for task oriented lighting.
- Compact, light weight and low profile design allows easy installation and broad industrial application.
- Cast copper-free aluminum with epoxy powder finish (less than 0.4 of 1% copper) provides excellent resistance to corrosion.
- Versatile luminaire housing provides choice of pendant, wall or ceiling mount.
- Suitable for paint spray areas. Linear light source provides excellent color rendition for paint spray tasks. Easy to install, disposable, clear tube wrap helps maintain maximum light output during painting operations.
- Threaded construction, factory wiring and sealing help minimize installation time. No external seals are required.
- Fixtures are used with two or four long twin tube single-ended fluorescent lamps.
- Optional stainless steel guard provides extra protection for lamps and lamp tube.
- Optional clear polycarbonate tube provides 360° protection for lamps and lamp tube; ideal for maintenance pit and pharmaceutical applications.
- Grounding connection for safety.
- Available for 120 or 277 VAC.
- Standard electronic ballast.



4 lamp with stainless steel wire guard and adjustable reflectors

Certifications and Compliances:

- NEC and CEC:
  Class I, Division 1 Group D
  Class I, Division 1 Group B,C,D (suffix GB)
  Class I, Zone 1 Group IIA
  Class I, Zone 1 Group IIB + H2 (suffix GB)
  Class II Groups E,F,G
  Class III
  Simultaneous Presence (Cl. I and Cl. II)
  Paint Spray

Note: Aiming Limitations
Cl. II, Cl III & Simultaneous Presence
– Aim Down to Horizontal
– Cannot aim up

- UL Standards
  844 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards
  C22.2 No. 137

Standard Materials:

- Center and ballast housings, end caps – copper-free aluminum
- Lamp tube – heat resistant glass.
- Guards – stainless steel or clear polycarbonate material.
- Reflectors – aluminum

Standard Finishes:

- Center and ballast housings, end caps, guards – natural
- Reflectors – white epoxy finish

Electrical Ratings:

- Input voltage – 120 or 277 VAC, 60Hz
- Wattages – 78 – 2-lamp luminaire
  156 – 4-lamp luminaire

Options:

Suffix to be added to Catalog Number

- Fused to protect circuit under abnormal conditions (not available on CSA certified luminaires). S658*
- Luminaire supplied with lamps S714
- Class I, Groups B and C suitability Pendant mount only! . . . . . GB

Fixture Weights (lbs.):

Illuminator – 2 lamp with guard 19.5
Illuminator – 4 lamp with guards 36.5
RAL1, RAR1 reflectors (each) 3.0
Deduct for luminaire without P51 Guard:
1 lb. for 2 lamp
2 lbs. for 4 lamp

Temperature Performance Data:

Luminaire Type	Minimum Operating Temp.	Maximum Ambient Temp.	Class I, Division 1 & Zone 1 Class II, Division 1 Simultaneous Presence	Supply Wire
2 and 4 Lamp	10°C (50°F)	40°C (104°F)	T4A	75°C

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

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6L EVFT Illuminator™ Long Twin Tube

Fluorescent Luminaires

- Cl. I, Div 1, Groups B & C (Suffix B),D
- Cl. I, Zone 1, Groups IIB + H2 (Suffix B), IIA
- Cl. II, Div 1, Groups E, F, G
- Cl. III, Simultaneous Presence
- Paint Spray
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

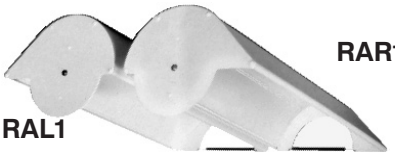
EVFT Illuminator

Style	Hub Size	Luminaire Voltage	Class I Cat. No. with Group D Suitability Without Guard	With P51 Guard†	Class I Cat. No. with Group B, C & D Suitability Without Guard	With P51 Guard†
2 Lamp	¾	120	EVFT22320	EVFT22321	EVFT22320–GB	EVFT22321–GB
	¾	277	EVFT22370	EVFT22371	EVFT22370–GB	EVFT22371–GB
4 Lamp	¾	120	EVFT24320	EVFT24321	EVFT24320–GB	EVFT24321–GB
	¾	277	EVFT24370	EVFT24371	EVFT24370–GB	EVFT24371–GB

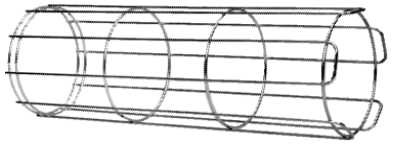
† P51 supplied in separate carton.

Accessories

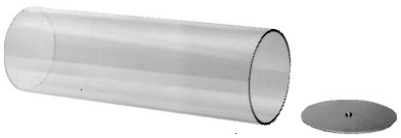
- Stainless steel wire guard P51
- Reflector right hand RAR1
- Reflector left hand RAL1
- Polycarbonate tube . . . . . PG1 (not used with optional stainless steel wire guard)
- Disposable clear wrap – 5 pack. . . . . PTW1 (for use with optional polycarbonate tube)



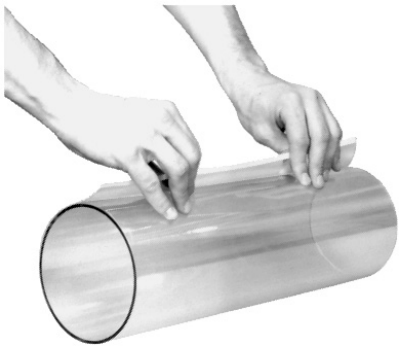
Reflectors (as viewed facing front of fixture).



Stainless steel guard



Polycarbonate tube and retaining plate

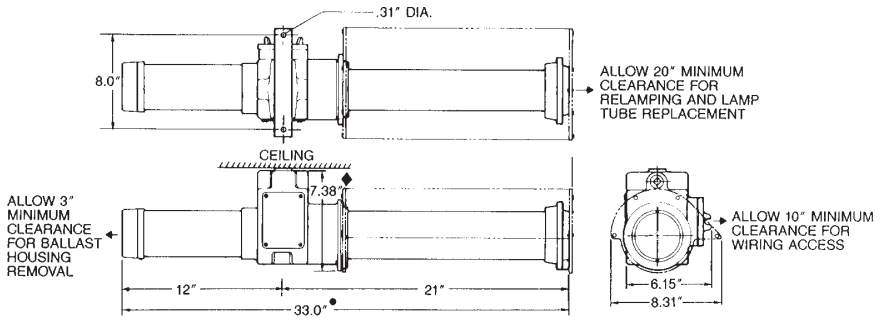


Disposable polyester tube wrap (used over optional polycarbonate tube)

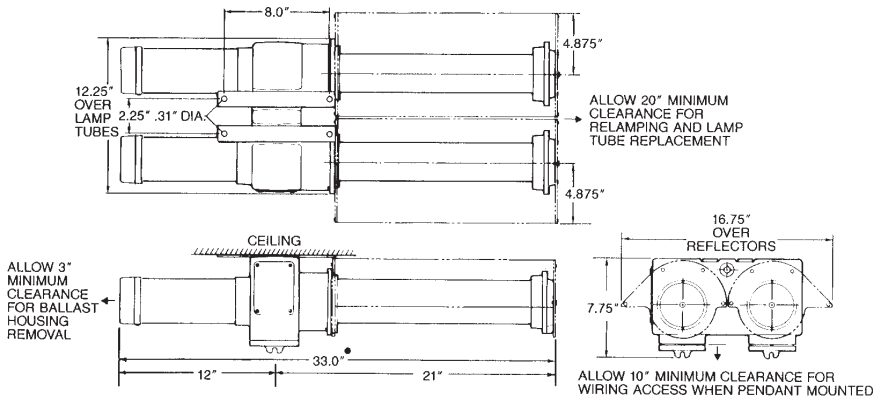
Note: Aiming Limitations: In Class II, Class III and Simultaneous Presence locations
- Aim down to Horizontal.
- To prevent dust from accumulating in reflector, do not aim up.

Dimensions

Illuminator two lamp luminaire with Reflector



Illuminator four lamp luminaire with Reflectors

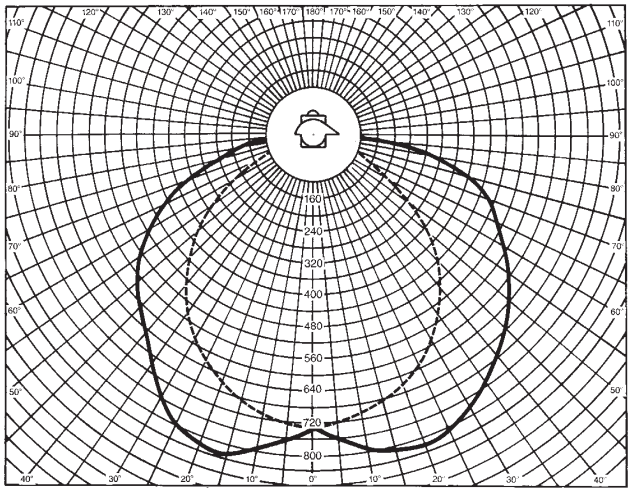


● For GB suffix (Groups B & C) this dimension is 34.0″. For CSA certified fixtures this dimension is 35 9/16″.
◆ For GB suffix (Groups B & C) this dimension is 8.38″.

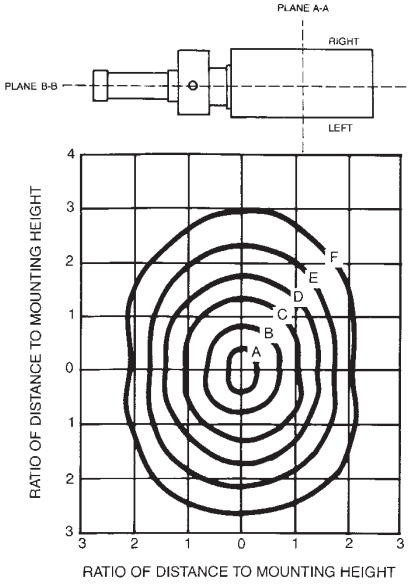
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Illuminator two lamp luminaire with Reflector (without Guard)
Lamps: (2) 39 watt BIAX* fluorescent

	CANDELAS in Plane A-A		Plane B-B
DEGREES	LEFT	RIGHT	SIDE
0	729	729	729
10	792	797	703
20	820	821	658
30	757	777	582
40	648	709	488
50	567	632	370
60	474	535	239
70	340	469	109
80	201	312	21
90	102	116	
100	9	7	
110			
120			
130			
140			
150			
160			
170			
180			



LEGEND
PLANE A-A ACROSS LAMP AXIS
PLANE B-B ALONG LAMP AXIS

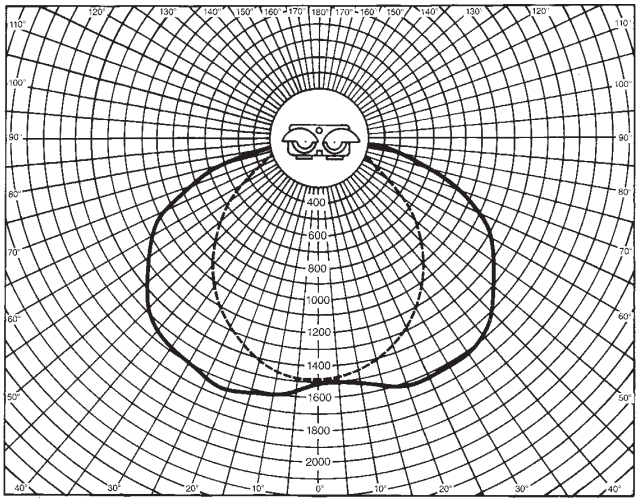


Footcandle Values for Isofootcandle Lines

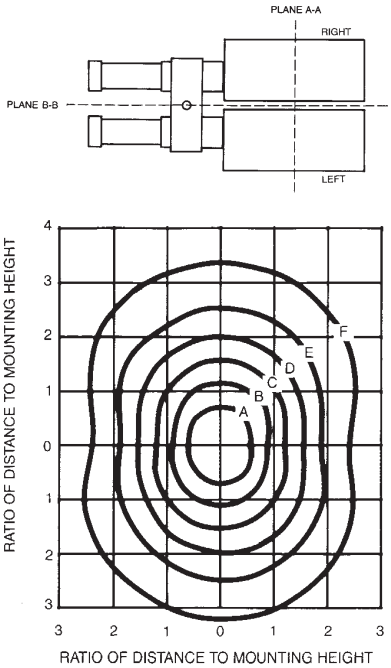
MTG. HT (FT)	A	B	C	D	E	F
8	10.0	5.00	2.00	1.00	0.50	0.25
10	6.4	3.20	1.28	0.64	0.32	0.16
12	4.4	2.22	0.89	0.44	0.22	0.11
16	2.5	1.25	0.50	0.25	0.13	0.06

Illuminator four lamp luminaire with Reflectors (without Guards)
Lamps: (4) 39 watt BIAX* fluorescent

	CANDELAS in Plane A-A		Plane B-B
DEGREES	LEFT	RIGHT	SIDE
0	1486	1486	1486
10	1601	1520	1448
20	1633	1615	1346
30	1570	1602	1199
40	1530	1558	1000
50	1343	1390	763
60	1162	1208	492
70	803	921	225
80	375	488	45
90	136	168	2
100	13	18	1
110	2	6	
120	1	4	
130			
140	2		1
150		1	1
160			1
170	2	1	1
180	2	2	2



LEGEND
PLANE A-A ACROSS LAMP AXIS
PLANE B-B ALONG LAMP AXIS



Footcandle Values for Isofootcandle Lines

MTG HT (FT)	A	B	C	D	E	F
10	8.0	4.00	2.00	1.00	0.50	0.20
12	5.6	2.78	1.39	0.69	0.35	0.14
16	3.1	1.56	0.78	0.39	0.20	0.08
20	2.0	1.00	0.50	0.25	0.13	0.05

* BIAX is a trademark of the General Electric Company.

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LUMINAIRE: EVFT 22320 with RAR1 Reflector
Lamps: Two (2) F39BX/SPX35/RS
Lumen Rating: 2900 Lumens/Lamp

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio										
Eff. Ceil.	**Wall**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
80	70	.51	.46	.41	.38	.34	.31	.29	.26	.24	.22	.21
	50	.51	.44	.38	.33	.29	.25	.23	.20	.18	.16	.15
	30	.51	.41	.35	.29	.25	.21	.19	.16	.14	.13	.11
	10	.51	.40	.32	.26	.22	.18	.16	.14	.12	.10	.09
70	70	.49	.45	.40	.37	.33	.30	.28	.26	.24	.22	.20
	50	.49	.43	.37	.32	.28	.25	.22	.20	.18	.16	.14
	30	.49	.41	.34	.29	.25	.21	.18	.16	.14	.12	.11
	10	.49	.39	.31	.26	.22	.18	.16	.14	.12	.10	.09
50	50	.47	.41	.35	.31	.27	.24	.21	.19	.17	.15	.14
	30	.47	.39	.33	.28	.24	.21	.18	.16	.14	.12	.11
	10	.47	.38	.31	.26	.22	.18	.16	.13	.12	.10	.09
30	50	.45	.39	.34	.30	.26	.23	.21	.19	.17	.15	.14
	30	.45	.38	.32	.27	.24	.20	.18	.16	.14	.12	.11
	10	.45	.37	.30	.25	.21	.18	.15	.13	.11	.10	.09
10	50	.43	.37	.33	.29	.25	.22	.20	.18	.16	.14	.13
	30	.43	.36	.31	.27	.23	.20	.17	.15	.13	.12	.10
	10	.43	.35	.29	.25	.21	.18	.15	.13	.11	.10	.08
0	0	.43	.35	.28	.24	.20	.17	.14	.12	.10	.09	.08

DETERMINED IN ACCORDANCE WITH CURRENT IES PUBLISHED PROCEDURES

LUMINAIRE: EVFT 24320 with RAR1 & RAL1 Reflectors
Lamps: Four (4) F39BX/SPX35/RS
Lumen Rating: 2900 Lumens/Lamp

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio										
Eff. Ceil.	**Wall**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
80	70	48	.44	.40	.37	.33	.30	.28	.26	.24	.22	.20
	50	.48	.42	.37	.32	.29	.25	.22	.20	.18	.16	.15
	30	.48	.40	.34	.29	.25	.21	.19	.16	.14	.13	.11
	10	.48	.39	.31	.26	.22	.19	.16	.14	.12	.10	.09
70	70	.47	.43	.39	.36	.33	.29	.27	.25	.23	.21	.20
	50	.47	.41	.36	.32	.28	.25	.22	.20	.18	.16	.14
	30	.47	.40	.33	.29	.25	.21	.18	.16	.14	.12	.11
	10	.47	.38	.31	.26	.22	.18	.16	.14	.12	.10	.09
50	50	.45	.39	.34	.30	.27	.24	.21	.19	.17	.15	.14
	30	.45	.38	.32	.28	.24	.21	.18	.16	.14	.12	.11
	10	.45	.37	.30	.26	.22	.18	.16	.14	.12	.10	.09
30	50	.43	.38	.33	.29	.26	.23	.20	.18	.17	.15	.14
	30	.43	.37	.31	.27	.23	.20	.18	.16	.14	.12	.11
	10	.43	.36	.30	.25	.21	.18	.16	.13	.12	.10	.09
10	50	.41	.36	.32	.28	.25	.22	.20	.18	.16	.14	.13
	30	.41	.35	.30	.26	.23	.20	.17	.15	.13	.12	.11
	10	.41	.35	.29	.25	.21	.18	.15	.13	.12	.10	.09
0	0	.41	.34	.28	.24	.20	.17	.15	.13	.11	.09	.08

DETERMINED IN ACCORDANCE WITH CURRENT IES PUBLISHED PROCEDURES

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NFL Series Fluorescent Luminaires

- Higher Ambient Suitability: 55°C
- Cold Weather Start (32W T8 Lamps)
- Cl. I, Div 2, Groups A, B, C, D
- Cl. I, Zone 2 Group IIC
- Wet Locations
- 3, 3R, 4, 4X



Application:

The NFL light luminaires are used:
- In non-hazardous locations where dust, dirt, combustible vapors, smoke, fumes, moisture, corrosive & wet conditions are present.
- Where lamps may be broken due to physical abuse or movable equipment, such as in manufacturing areas or warehouses.
- Where cleanliness and sanitation are prime factors such as in dairies, canneries, food processing plants, bottling plants & laboratories.
- In dock areas for protection against salt spray.
- In areas where low mounting height and the even light distribution associated with a line type light source are required.

Standard Materials:

- Housing – Non-metallic, one piece fiberglass reinforced polyester
- Latches – Celcon™ acetal plastic
- Crepe Pattern Lens – Acrylic plastic
- Gasket – Seamless thermoset polyurethane
- Mounting Bracket – Stainless steel

Standard Finishes:

- Fiberglass housing – White
- Acrylic Plastic lens – Clear

Certifications and Compliances:

- UL Listed 844
- cUL
- Wet locations
- 4X

Ratings (Electrical/Size):

Sources/Wattage: Luminaires are for use with the following lamps
- NFL2140
  – one 40 W long twin tube
- NFL4232
  – two 32W T8 lamps
- NFL4240
  – two 34W ''F40 Style'' T12 lamps

Voltages
- 120V 60Hz
- 120 - 277V, 50 - 60 Hz
- 347V 60Hz

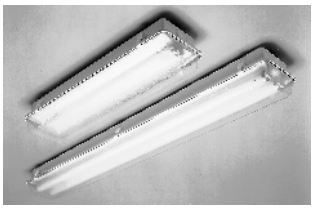
Conduit Entries
- Two ½″ inch Myers hubs, one on each end.

Options:

Description	Suffix to be added to Cat. No.
• Fused	**S658‡**
• Factory assembled with lamps installed	**FA**
• Battery Backup Emergency Ballast † (NFL 2140 and NFL 4232 only)	**S799***
• Increased Impact-Resistant Acrylic Lens	**DR1295046***
• Polycarbonate Lens	**DR1295306***
• Stainless Steel Latches	**S863***
• Tamperproof Latches	**S861***

✓ – available with Lightning Service™delivery See Section G for complete details
† For non-hazardous locations
‡ When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

* UNV voltages: 120, 208, 230, 240, 277, 50-60 Hz



Key Features	Benefits
• UL, cUL Listed for Class I, Division 2, Groups A, B, C, D areas with ambient suitability of 40°C (104°F) and 55°C (131°F) Ambient suitability	Suitable for higher ambients found in industrial environments. Exceeds the 25°C (77°F) ambient suitability of ordinary location lighting fixtures.
• NEMA 4X with Myers Hubs and threaded metal plug (furnished)	Outdoor locations, hose down and corrosive environments suitable.
• Non-metallic construction enclosure	Corrosion resistant.
• Continuous form in place gasket	Insure dust tight, moisture tight, & wet locations integrity.
• Molded in place mounting studs – eliminate the need of bracket gaskets	Wet locations, and dust tight integrity is not compromised by aging or deteriorated bracket gaskets.
• Standard construction includes: S.S. mounting brackets Electronic ballast Cold weather ballast (4′ F32 T8)	Eliminates the need to order options with associated long lead times.
• S.S. mounting bracket Combination ceiling & chain	Standard bracket not only surface mounts fixture, but also is for chain mounting using standard commercially available fixture chain.
• S.S. mounting brackets	Superior corrosion resistance.
• Electronic Ballast	Energy efficiency.
• Cold Weather Ballast (4′ F32 T8)	Cold weather start up requirements.
• Two ½″ conduit Myers hubs for end and feed through wiring	Simplify installation and wiring.
• Full metal fixture interior	Provides improved photometrics as well as access to & concealment of ballast and wiring.
• Provisions (drill mark) on 4 ft. unit to field drill for pendant mounting	Application and installation flexibility.

Temperature Performance Data:

Ambient temperature range suitability:

• Two lamp, 32W T8, 4 ft luminaire	–18°C to 55°C
• ALL others	0°C to 55°C
• Supply wire	75°C min.

Celecon™ is a trade name of Hoechst Celanese

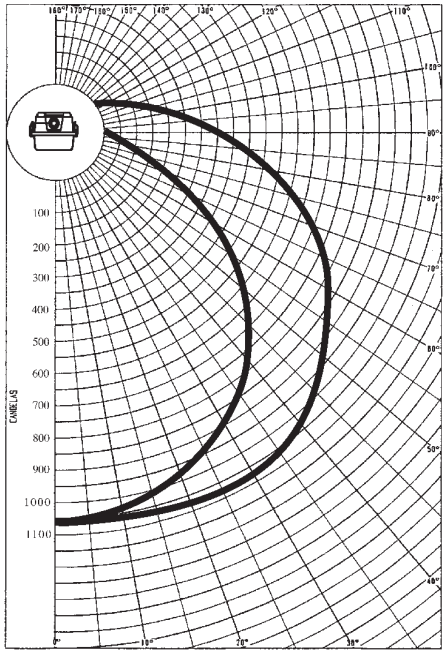
Ordering Information:

Luminaire Cat #	Size/# of lamp(s)	Wattage/Lamp type	Voltage/Hz
NFL2140/UNV	2 ft/ 1-lamp	40W T5 compact	120/60
NFL2140/347		single ended	120-277/50-60
			347/60
NFL4232/UNV✓	4 ft/2-lamp	32W T8	120/60
		rapid start	120-277/50-60
NFL4240/120	4ft/2-lamp	34W T12	120/60
NFL4240/277		''F40 Style''	277/60
NFL4240/347		rapid start	347/60
N2FL4232/UNV			
N2FL4232/347	4ft/2-lamp	32W T8	347/60
		rapid start	

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Luminaire: All NFL Luminaires
To determine number and placement of luminaires, see Lighting Selector Guide in Section L

Candlepower Distribution Curve (in Candelas)



CANDELAS		
Angle	**Along**	**Across**
0°	1049	1049
10°	1034	1056
20°	978	1071
30°	866	1075
40°	762	1027
50°	606	939
60°	416	838
70°	228	723
80°	92	549
90°	17	363
100°	19	243
110°	10	131
120°	5	46
130°	4	20
140°	4	9
150°	4	3
160°	4	0
170°	0	0
180°	0	0

ZONAL LUMENS	
Zone	**Lumens**
0–30	862
0–40	1462
0–60	2778
0–90	4130
0–180	4499

Photometric data, developed using two (2) F32T8/35K 2850 lumen lamps, represents the performance of all NFL series luminaires.

- Coefficient of Utilization – These values are for all NFL series luminaires (Do not use multipliers).
- Candlepower Distribution Cuarve (in candelas) and Zonal Lumens – These values are for all NFL series luminaires, adjusted by conversion factors (multipliers) below.

Luminaire Series	Lamp Qty	Lamp Watts	Type (Lumens ea.)	Conversion Factor (multipliers)
NFL4232	2	32	F32T8/35K (2850)	1.0
NFL4240	2	34	F40T12/RS (2650)	0.93
NFL2140	1	40	T5 Compact (3150)	0.55

Example:
- Candlepower at 20° across for NFL4232 using 2-F32T/35K lamps (5700 lumen total) is 1071 candelas.
- Candlepower at 20° across for NFL2140 using 1 T5 compact lamp (3100 lumen total) is 1071 x .55 = 589 candelas.

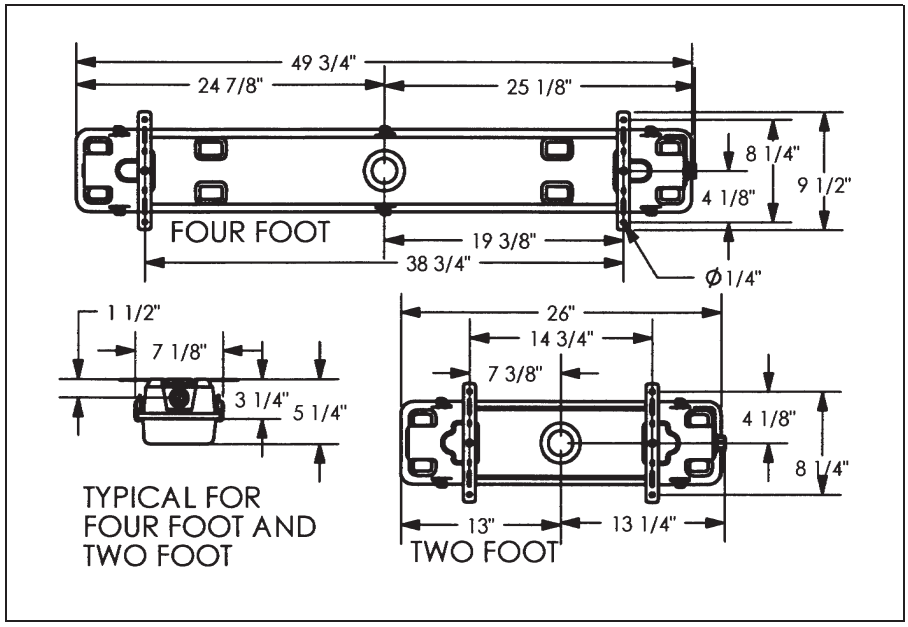
Coefficient of Utilization: For all NFL Series Light Luminaires

Effective Floor Cavity Reflectance 20%

% REFLECTANCE		ROOM CAVITY RATIO									
Eff. Ceiling	**Wall**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	70	.83	.75	.68	.62	.56	.51	.47	.44	.40	.37
80	50	.78	.67	.59	.52	.45	.40	.36	.32	.29	.26
	30	.74	.61	.52	.44	.38	.33	.29	.25	.22	.20
	10	.71	.56	.46	.39	.32	.28	.24	.20	.17	.15
	70	.80	.72	.65	.59	.54	.49	.46	.42	.39	.36
70	50	.76	.65	.57	.50	.44	.39	.35	.31	.28	.26
	30	.72	.60	.51	.43	.37	.32	.28	.25	.22	.19
	10	.69	.55	.46	.38	.32	.27	.23	.20	.17	.15
	50	.71	.61	.54	.47	.42	.37	.33	.30	.27	.24
50	30	.68	.57	.48	.42	.35	.31	.27	.24	.21	.19
	10	.66	.53	.44	.37	.31	.26	.23	.20	.17	.15
	50	.67	.58	.51	.45	.39	.35	.32	.28	.25	.23
30	30	.65	.54	.46	.40	.34	.30	.26	.23	.20	.18
	10	.62	.51	.42	.36	.30	.26	.22	.19	.16	.14
	50	.63	.54	.48	.42	.37	.33	.30	.27	.24	.22
10	30	.61	.51	.44	.38	.33	.29	.25	.22	.19	.17
	10	.59	.48	.41	.35	.29	.25	.22	.18	.16	.14
0	0	.57	.46	.39	.33	.27	.23	.20	.17	.14	.12

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Dimensions:



Net Luminaire Weights (lbs)

Luminaire Series	Weight (lbs.)
NFL2140	9.1
NFL4232	14.3
NFL4240	14.3

Temperature Performance Data

Basic Cat #	Watts	Ambient Temp °C	Lamp Type	Supply Wire Temp °C	Class I, Div. 2 Temp. Rating	Class II Temp. Rating	Simultaneous Presence Class 1, Div. 2
NFL4232	32	40	T8	60	T6	-	-
NFL4232	32	55	T8	75	T5	-	-
NFL4240	34	40	T12	60	T6	-	-
NFL4240	34	55	T12	75	T5	-	-
NFL2140	40	40	T12	60	T6	-	-
NFL2140	40	55	T12	75	T5	-	-

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6L eLLK Series Fluorescent Nonmetallic Luminaires

- Cl. I, Div 2, Groups B,C,D
- Cl. I, Zone 1 Group IIC
- Cl. II, Div Groups E,F,G(Canada)
- Cl. II, Div 2, Groups F,G (US)
- Cl. III, Simultaneous Presence
- Wet Locations
- 3,3R,4,4X; IP66
- ATEX Certified

Application:

- eLLK fixtures are used in hazardous area where moisture or corrosion may be a problem.
- Offshore oil platforms, Pharmaceuticals, plants, Oil refineries.
- Where battery backup is critical.
- In non-hazardous and industrial locations.

Features:

- IEC: Zone 1 and 2 areas.
- NEC/CEC: Zone 1, Division 2 areas.
- Electronic Ballast:
- Operates at Voltage range of 110-254 VAC ± 10%, 50-60Hz.
- Lower ambient temperature suitability to –25°C.
- Lamps operate indepenently - one lamp failure will not effect remaining lamp operation.
- Standard Bi-pin Lamps - Most common lamp used in office enviroments. Energy efficient and cost effective.
- Interlocked Switch - Automatically cuts power to both lamps and ballast when the lens is opened.
- Removable Lens - Hinged on both sides for easy installation and maintenance.
- Dual entries - Extra large wire well eliminates need for seperate junction boxes. (Own with cable gland and conduit hub).
- Corrosion-Resistant Construction - Non-metallic body, gasketed lenses, and lens locking system for an IP 66, NEMA 4X rating.
- Battery Backup Features:
- Operates one lamp for 1½ hours should power go out.
- Microprocessor monitors the charging functions of the battery.
- LEDs provide visual indication of battery life.



Certifications and Compliances:

- NEC and CEC:
  Class I, Division 2 Group B, C, D
  Class I, Zone 1 Group IIC
  Class II Division 1, Groups E,F,G (Canada)
  Class II Division 2, Groups F, G (US)
  Class III, Simultaneous Presence (Cl. I and Cl. II)
- UL Standards
  2279 Hazardous (Classified) Locations
  1598 Luminaires
- CSA Standards
  E79 Series
- ATEX Directive 94/9/EC — Ⓔx II 2 G, Ⓔx II 2 D T80°C
- Type of Protection — EEx edm ib IIC T4
- EC-Type Examination Certificate — PTB 96 ATEX 2144

Ordering Information:

Type - 2 Lamp	Length & Type	Conduit Hub Size*	Rated Current	Rated Voltage ±10%, 47-63Hz	Order Number	Description
18W	2-foot T8	M25 metric hub	0.18A	110-254	1 2265 875 103	eLLK92018/UNV
36W	4-foot T8	M25 metric hub	0.34A	110-254	1 2266 875 103	eLLK92036/UNV
18W	2-foot T8	3/4″ Myers hub	0.18A	110-254	1 2265 875 311	eLLK92018/UNV
18W (with battery)	2-foot T8	3/4″ Myers hub	0.23A	110-120	1 2260 879 333	eLLK92018/18/NIB
18W (with battery)	2-foot T8	3/4″ Myers hub	0.23A	220-254	1 2260 879 311	eLLK92018/18/NIB WH
36W	4-foot T8	3/4″ Myers hub	0.34A	110-254	1 2266 875 311	eLLK92032/UNV
36W (with battery)	4-foot T8	3/4″ Myers hub	0.40A	110-120	1 2261 879 333	eLLK92036/36/NIB
36W (with battery)	4-foot T8	3/4″ Myers hub	0.40A	220-254	1 2261 879 311	eLLK92036/36/NIB

* 2 hubs provided. May be connected throughfeed or tandam. Cable glands ordered separately for ¾″ (remove hubs) or M 25 openings (remove hubs).

Lamp Selection:

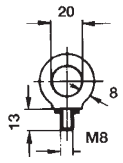
	17W	32W
Phillips	F17T8/Tl841	F32T8/TL841
GE	F17T8/SPX41	F32T8/SPX41
Osram/Sylvania	F017/841	FO32/841

Weight

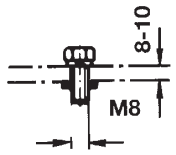
17 W	4.6 Kg (10 lb)
17 W (battery)	10 Kg (22 lb)
32 W	6.7 Kg (14 lb)
32 W	12 Kg (26 lb)

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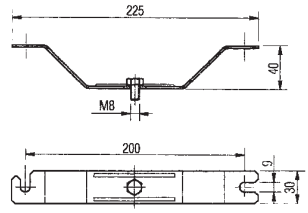
Accessories



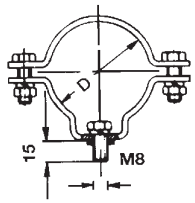
Eyebolt



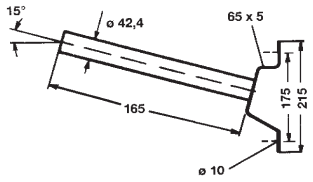
Hexagonal Screw



Ceiling Mounting Bracket



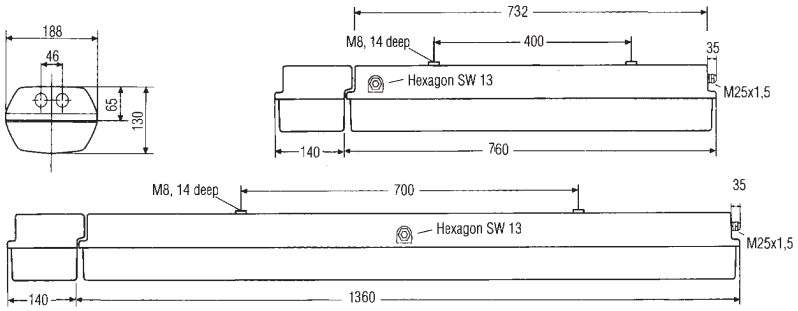
Pipe Clamp



Wall Bracket

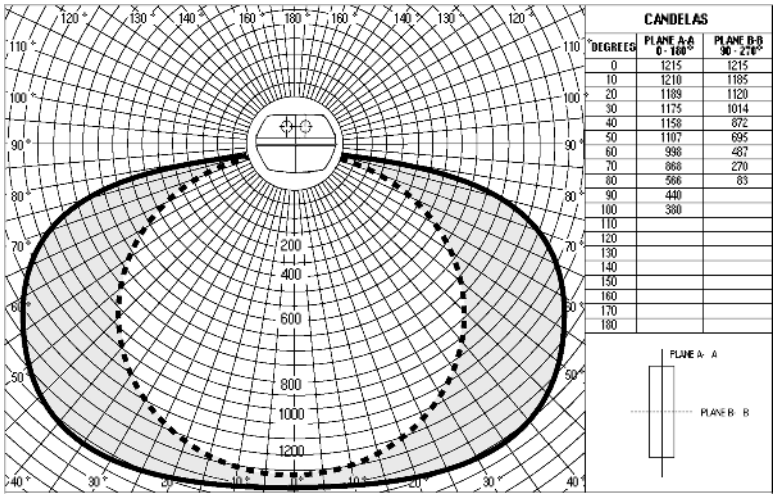
Dimensions: (mm)

Standard Luminaire with Backup



Type	Corrosion Protection	Pipe Din	Outer OD (mm)	Quantity per Luminaire	Order Number
Eyebolt	Galvanized	—	—	2	2 2480 002 000
Hexagon Screw S4	Cr Ni	—	—	2	2 2480 054 000
Ceiling Mounting D92 Bracket	Cr Ni	—	—	2	2 2480 092 000
Pipe Clamp	R12 Hot Galvanized	1¼″	38–42	2	2 2480 462 000
	R14 CrNi	1¼″	38–42	2	2 2480 464 000
	R22 Hot Galvanized	1½″	47–51	2	2 2480 472 000
	R32 Hot Galvanized	2″	56–60	2	2 2480 482 000
Hexagon Key SW13 eLLK 92	—	—	—	—	3 2485 000 005

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Photometric data developed using 2 – F32T8 3350 lumen lamps.
For the 17 W eLLK, use a 0.45 multiplier.

Coefficients of Utilization
Effective Floor Cavity Reflectance 20%

			Room Cavity Ratio								
Eff. Ceil.	**Wall**	**Work**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	70*	20*	41	49	55	61	65	70	74	77	80
80*	50*	20*	30	38	44	50	55	62	67	71	75
	30*	20*	23	30	36	43	48	55	61	65	70
	10*	20*	18	25	30	37	42	50	56	61	66
	70*	20*	40	47	53	58	62	68	71	74	77
70*	50*	20*	29	37	42	49	54	60	65	68	72
	30*	20*	22	30	35	42	47	54	59	64	68
	10*	20*	18	24	30	36	42	49	54	59	64
	50*	20*	27	35	40	46	50	56	61	64	68
50*	30*	20*	21	28	34	40	45	51	56	60	64
	10*	20*	17	24	29	35	40	47	52	57	61
	50*	20*	26	38	37	43	47	58	57	60	64
30*	30*	30*	20	27	32	38	43	49	53	57	61
	10*	20*	17	23	28	34	39	45	50	54	58
	50*	20*	24	31	35	41	45	50	54	57	60
10*	30*	20*	20	26	31	36	41	46	51	54	68
	10*	20*	16	22	27	33	37	43	48	52	55
0*	0*	20*	14	20	25	31	35	41	46	49	53

* Percent Reflectance

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nLLK Series Nonmetallic Flourescent Luminaires

Cl.I, Div. 2, Groups A,B,C,D
Cl.I, Zone 2 Aex nA II
Cl.II, Division 2, Groups F,G
Enclosure Type 4X

Wet Locations
UL and cUL Listed
ATEX Certified

NEW!

The Cooper Crouse-Hinds SpecOne™ nLLK Series Fluorescent Luminaire is an ideal source of general illumination indoors or out, in ordinary or hazardous environments. Its heavy-duty, nonmetallic construction stands up to tough physical and environmental demands, making it an excellent choice where dust, dirt, gas, vapor, smoke, fumes, moisture, corrosive and wet conditions are present. As with all SpecOne products, the nLLK luminaire meets the standards and codes of regulating agencies throughout the world, which simplifies product specifying for multinational users.



APPLICATIONS

nLLK series luminaires are used:

In indoor or outdoor, ordinary or hazardous areas

Where a heavy-duty, nonmetallic luminaire is required to hold up to tough physical and environmental demands including corrosives, water, dust and extreme temperatures

- manufacturing plants
- heavy industrial facilities
- industrial process facilities
- refineries
- chemical
- petrochemical
- pharmaceutical
- waste water and sewage treatment plants

In areas where low mounting height, immediate full illumination, and the even light distribution associated with a linetype light source are required

- loading docks
- tunnels
- stairways

Where wet location or Type 4X protection is required

- dock areas
- production platforms

In hosedown areas where cleanliness and sanitation are prime factors

- dairies
- canneries
- food processing plants
- bottling plants
- laboratories

CERTIFICATIONS & COMPLIANCES

NEC

- Class I, Division 2, Groups A, B, C, D
- Class I, Zone 2 AEx nA II
- Class II, Division 2, Groups F, G
- Wet Locations
- UL Listed

CEC

- Class I, Zone 2 Ex nA II
- Class I, Division 2, Groups A, B, C, D
- Class II, Division I, Groups E, F, G
- cUL Listed (certified by UL)

Enclosure

- Type 4X
- IP65

UL Standards

- 2279 Hazardous (Zones Classified) Locations
- 1598 Luminaires

CSA Standards

- C22.2 No. 9
- CAN/CSA–E79-15

ATEX

• ATEX Directive 94/9/EC	⟨Ex⟩ II 3 G ⟨Ex⟩ II 2 D/II 3 D T80°C
• Type of Protection	EEx nA II T4 nach EN 50021
• EC-Type Examination Certificate	PTB 96 ATEX 2208
• EC-Type Examination Certificate	DMT 02 ATEX E116

STANDARD MATERIALS

- one-piece housing—fiber-glass reinforced polyester
- lens—polycarbonate
- gasket—silicone

STANDARD FINISHES

- fiberglass housing—natural (white)
- lens—natural (clear)

RATINGS (ELECTRICAL/ SIZE)

Sources/Wattages

- two 17 W or two 32 W linear fluorescent

Voltages

- 120–277 V, 50–60 Hz.
- 347 V, 60 Hz.—consult factory

Hub Size

- four 25 mm entries, two on each end, three plugged
- two Myers® STM2 25 mm to ¾″ NPT adapter hubs provided standardfor through-feed or tandem wiring

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

6L nLLK Series Nonmetallic Flourescent Luminaires

Cl.I, Div. 2, Groups A,B,C,D
Cl.I, Zone 2 Aex nA II
Cl.II, Division 2, Groups F,G
Enclosure Type 4X

Wet Locations
UL and cUL Listed

NEW!

IP65, Type 4X heavy-duty construction

- nonmetallic body, gasketed lens and unique labyrinth lens locking system
- dust-tight, water-tight and moisture-tight
- corrosion and impact-resistant
- ideal for outdoor applications

Electronic ballast

- lower ambient temperatures suitability to -18°C
- high–power factor ballast (+90%) allows for more luminaires per circuit

Standard T8 bi-pin lamps—most common lamp used; energy-efficient and cost-effective

Removable lens—hinged on both sides for easy installation and maintenance

Easy wiring and installation—

- four 25 mm entries. Two Myers® ¾″ NPT adapter hubs supplied standard
- suitable for through-feed or tandem applications
- extra-large wire well eliminates need for separate junction boxes

Worldwide suitability

- NEC/CEC: Class I, Zone 2 and Division 2 areas
- IEC/CENELEC certified luminaires available. Consult factory.



ORDERING INFORMATION

HUB SIZE*	LAMP DESCRIPTION	VOLTAGE/HZ.	CATALOG NO.
¾″ NPT	17 W T8, Rapid Start—2 lamps	120–277 V, 60 Hz.	**nLLK98 2217/UNV**
¾″ NPT	32 W T8, Rapid Start—2 lamps	120–277 V, 60 Hz.	**nLLK98 4232/UNV**

* 25 mm entries—supplied with two Myers® STM2 25 mm to ¾″ NPT adapter hubs.

ACCESSORIES

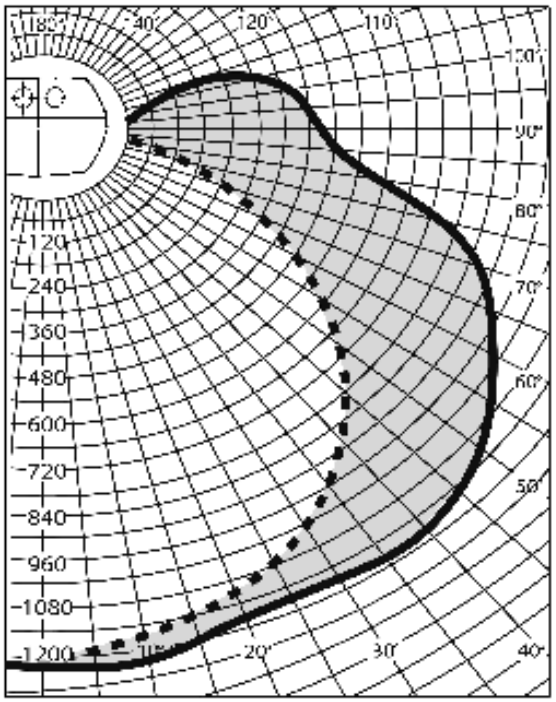
DESCRIPTION	CATALOG NO.
SW13 hexagon key (for maintenance and lamp replacement)	**3 2485 000 005**
Myers® 25 mm to ¾″ NPT adapter hub	**STM2**

MOUNTING ACCESSORIES

TYPE	CORROSION PROTECTION	PIPE DIN	OUTER DIA.	QTY. PER LUMINIARE	CATALOG NO.
Eyebolt A2	Galvanized			2	**2 2480 002 000**
Hexagon Screw S4 *(to attach ceiling mounting bracket or pipe clamp to luminaire)*	Nickel Chromium			2	**2 2480 054 000**
Ceiling Mounting Bracket D92	Nickel Chromium			2	**2 2480 092 000**
Pipe Clamp R12	Hot Galvanized	1¼″	38–42 mm	2	**2 2480 462 000**
Pipe Clamp R14	Nickel Chromium	1¼″	38–42 mm	2	**2 2480 464 000**
Pipe Clamp R22	Hot Galvanized	1½″	47–51 mm	2	**2 2480 472 000**
Pipe Clamp R32	Hot Galvanized	2″	56–60 mm	2	**2 2480 482 000**

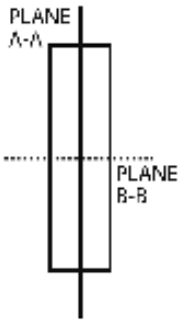
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PHOTOMETRIC DATA



CANDELAS

DEGREES	PLANE A-A (0°-180°)	PLANE B-B (90°-270°)
0	1215	1215
10	1210	1135
20	1189	1120
30	1175	1014
40	1156	877
50	1107	695
60	958	487
70	858	270
80	556	83
90	440	
100	390	
110		
120		
130		
140		
150		
160		
170		
180		



TEMPERATURE PERFORMANCE

Minimum Starting Temperature: -18°C

WATTS	AMBIENT	CLASS I, DIV. 2 (CLASS I, ZONE 2)	CLASS II, DIV. 1 (CEC) CLASS II, DIV. 2 (NEC)	SUPPLY WIRE TEMP °C
Two 17 W T8 lamps	40°C	T4	T6	60
Two 32 W T8 lamps	40°C	T4	T6	60

MAINTENANCE AND RELAMPING

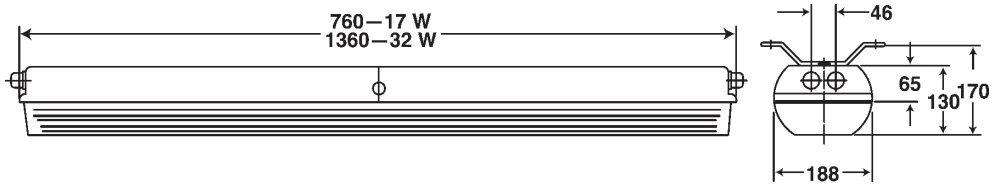
(eLLK Series Div. 1/Zone 1 luminaire is shown. Maintenance procedures are the same for the nLLK.)

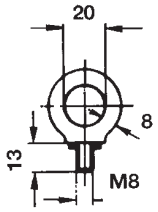
1. **One quarter turn** with the SW13 hexagon key or a 5⁄16″ (M8) Allen hex head wrench releases multiple locking points.
2. **Lamps can be stored** in open lens, freeing up hands for easy relamping.
3. **Replace the bi-pin lamp,** lock with one quarter turn of the wrench for an IP65, Type 4X seal.



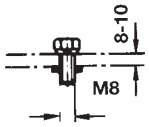
DIMENSIONS (mm) & WEIGHT

Weight: 8.8 lbs. (4.0 kg.)—17 W 13.2 lbs. (6.0 kg.)—32 W

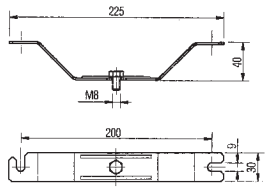




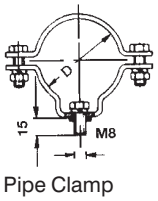
Eyebolt



Hexagon Screw



Ceiling Mounting Bracket



Pipe Clamp

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FVN Series
Flourescent Luminaires

Cl.I, Div. 2, Groups A,B,C,D
Cl.I, Zone 2 Group IIC
Cl.II, Div. 1, Groups F,G
Cl.III & Simultaneous Presence

Wet Locations
NEMA 3,3R



FVN Luminaires are ideal for use:

- In areas made hazardous by the abnormal conditions resulting in the presence of flammable vapors or gases and combustible dusts as defined by the National Electrical Code®.
- Where broken lamps would damage machinery or processes, or harm people working in the area.
- In areas where stringent sanitation requirements exist.

Features

- One-piece seamless sheet steel housing with welded end caps keeps dirt, dust and moisture away from ballast and lamps. Easy to clean.
- A silicone rubber gasket provides a dust-tight seal between the lens/frame assembly and housing.
- Lens/frame assembly is hinged and wireway cover is held by safety chain for ease of lamp replacement and maintenance.
- Polyester powder coat finish provides high reflectance and corrosion resistance for long life and dependable service.
- Two ½" NPT pendant hubs and two ½" NPT thru-feed end hubs are standard.
- Electronic ballast is standard on 32, 40(/UNV only) and 54 watt luminaires.

FVN Fluorescent Luminaires with T5 HO lamps offer...

- High lumen output per watt - provides energy savings versus other higher wattage fluorescent luminaires with similar lumen output.
- Longer lamp life and good lumen maintenance - reduced maintenance and lamp replacement costs.

Certifications and Compliances:

NEC and CEC:

- Class I, Division 2 Groups A, B, C & D
- Class I, Zone 2 Groups IIC
- Class II, Division 1 Groups F, G
- Class III
- Simultaneous Presence (Cl. I and Cl. II)

UL Standards:

- 844 Hazardous (Classified) Areas
- 1598 Luminaires

CSA Standards:

- C22.2 NO. 137

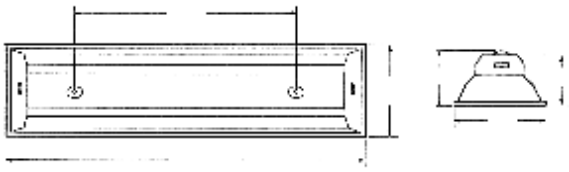
Standard Materials:

- Luminaire housing - 20-gauge seamless sheet steel
- Lens/Frame Assembly - stainless steel
- Glass - 3/16" tempered
- Suspension flanges - seamless sheet steel
- Gaskets - silicone
- Lamphoders - white thermoset plastic
- Clamps - stainless steel

Standard Finishes:

- Reflector housings - corrosion resistant white polyester powder coat
- Lens/Frame - natural

Dimensions:



Ordering Information (Lamps not supplied): Supercedes ordering information in Catalog 6000, Section 5L.

Lamp Watts	Line Voltage/Hertz	Lamp Type	Hub Size	2-Lamp Cat. No.	3-Lamp Cat. No.
32	120-277/50-60	T8	1/2 NPT	**FVN4232TG/UNV**	**FVN4332TG/UNV**
32	347/60	T8	1/2 NPT	**FVN4232TG/347**	**FVN4332TG/347**
40	120-277/50-60	T12	1/2 NPT	**FVN4240TG/UNV**	**FVN4340TG/UNV**
40	347/60	T12	1/2 NPT	**FVN4240TG/347**	**FVN4340TG/347**
60	120/60	T12HO	1/2 NPT	**FVN4260TG/120**	—
60	277/60	T12HO	1/2 NPT	**FVN4260TG/277**	—
60	347/60	T12HO	1/2 NPT	**FVN4260TG/347**	—
60	220/50	T12HO	1/2 NPT	**FVN4260TG/200-50**	—
FVN Fluorescent Luminaires with T5 HO Lamps (Lamps not supplied)					
54	120-277/50-60	T5HO	1/2 NPT	**FVN4254TG/UNV**	—
54	347/60	T5HO	1/2 NPT	**FVN4254TG/347**	—

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Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.

Description	Suffix
● Low temperature electromagnetic ballast, 40W rated 0°F (-18°C), 60W rated -20°F (-29°C)	BY
● 45° angle brackets (field installed)	AG
● Adjustable angle brackets (field installed)	KH
● Angle bars for chain suspension (field installed)	CX
● Individually fused balast (internal)	FB
● Emergency lighting battery unit (Class I, Division 2 only). Also available for use with T5 lamps Supplied with charging indicator light and instructions for use with a remote push-to-test station.	S799†

† If push-to-test operator installed in the luminaire is required, consult factory.

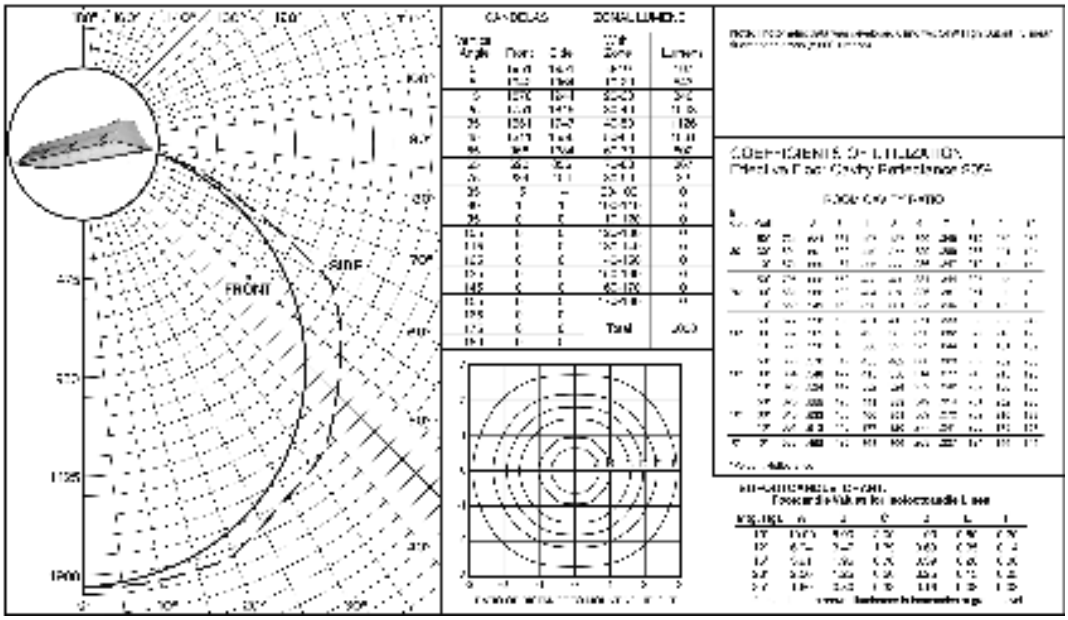
Temperature Performance Data:

(Based on 40°C ambient)

	Cl. I, Div. 2 & Zone 2		Class II		Simultaneous Presence		Supply
Lamp	Supply2-Lamp	3-Lamp	2-Lamp	3-Lamp	2-Lamp	3-Lamp	Wire
32W	T5	T5	T6	T6	T4	T4	60°C
40W	T5	T5	T6	T6	T4	T4	60°C
54W	T3C	—	T6	—	T3C/T6	—	75°C
60W	T4	—	T6	—	T4	—	90°C

Photometric Data:

Luminaire with two 54W High Output T5 Linear Fluorescent Lamps
FVN4254

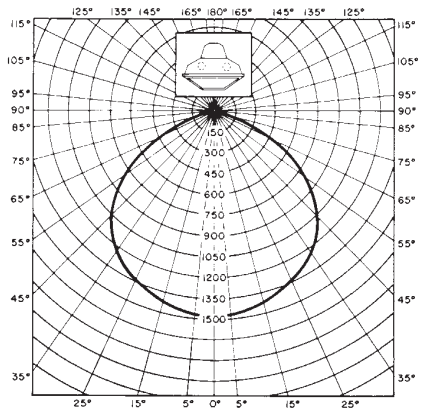


FVN .ies photometric files for use with our Luxicon® Lighting Layout Software are available from the Resources area of our website.

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Luminaire: FVN with 2-40W lamps (tempered lens)

Lamp: 2-40/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1182 1971 3555 4284
Total Bare Lamp Lumens: 6300
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 2-lamp 40W RS cool white luminaires with tempered glass. Use 1.37 multiplier for 2-lamp 60W luminaires with tempered glass. Use .92 multiplier for 2-lamp 32W luminaires with tempered glass.

Coefficient of Utilization

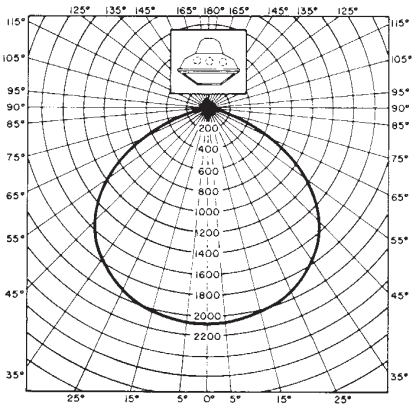
Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.721	.643	.575	.513	.461
80	30	.695	.603	.527	.459	.404
	10	.673	.569	.489	.418	.362
	50	.706	.631	.566	.505	.452
70	30	.683	.594	.520	.455	.399
	10	.661	.564	.485	.415	.359
	50	.677	.607	.547	.488	.439
50	30	.657	.577	.508	.444	.392
	10	.641	.549	.476	.410	.357
	50	.650	.586	.528	.473	.426
30	30	.636	.561	.496	.435	.384
	10	.621	.538	.468	.405	.353
	50	.627	.568	.512	.459	.414
10	30	.614	.544	.484	.426	.378
	10	.602	.526	.460	.399	.349
0	0	.589	.512	.447	.385	.336

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.416	.375	.338	.309	.269
80	30	.359	.319	.283	.254	.215
	10	.319	.281	.244	.217	.180
	50	.409	.370	.333	.305	.265
70	30	.356	.315	.281	.252	.215
	10	.316	.278	.244	.217	.180
	50	.397	.359	.324	.297	.259
50	30	.350	.309	.277	.249	.211
	10	.314	.276	.242	.215	.179
	50	.386	.348	.316	.289	.253
30	30	.344	.306	.272	.244	.208
	10	.311	.273	.240	.214	.177
	50	.376	.341	.308	.282	.247
10	30	.338	.301	.268	.242	.205
	10	.308	.271	.239	.212	.175
0	0	.295	.258	.226	.200	.164

Luminaire: FVN with 3-40W lamps (tempered lens)

Lamp: 3-40/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1695 2834 5099 6079
Total Bare Lamp Lumens: 9450
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 2-lamp 40W RS cool white luminaires with tempered glass. Use 1.37 multiplier for 2-lamp 60W luminaires with tempered glass. Use .92 multiplier for 2-lamp 32W luminaires with tempered glass.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.682	.610	.546	.488	.439
80	30	.658	.572	.501	.438	.385
	10	.637	.540	.466	.399	.346
	50	.668	.599	.538	.480	.430
70	30	.646	.563	.495	.433	.381
	10	.625	.535	.462	.396	.343
	50	.640	.576	.520	.464	.418
50	30	.622	.547	.454	.423	.374
	10	.606	.521	.433	.391	.341
	50	.615	.556	.502	.450	.406
30	30	.601	.532	.472	.415	.367
	10	.587	.511	.446	.386	.337
	50	.594	.537	.487	.437	.394
10	30	.581	.517	.461	.406	.361
	10	.570	.499	.439	.381	.333
0	0	.557	.487	.426	.368	.321

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.396	.357	.322	.294	.256
80	30	.343	.304	.270	.242	.205
	10	.305	.268	.234	.207	.172
	50	.390	.352	.317	.290	.252
70	30	.340	.301	.268	.240	.205
	10	.302	.266	.233	.207	.172
	50	.378	.342	.309	.282	.247
50	30	.334	.295	.264	.237	.201
	10	.300	.264	.231	.206	.171
	50	.368	.332	.301	.276	.241
30	30	.328	.292	.259	.233	.199
	10	.298	.261	.230	.204	.169
	50	.358	.325	.294	.269	.235
10	30	.322	.288	.256	.231	.196
	10	.294	.259	.228	.202	.168
0	0	.283	.247	.217	.192	.157

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eLLB20 Series

Recessed Mount Fluorescent Luminaires

Class I, Div.2, Groups A,B,C,D
Class I, Zone 1, Groups IIC
ATEX Certified

CI. II, Div 2, Groups F,G
CI. II, Div 1, Groups E,F,G (Canada)
Wet Locations
Enclosure Type 4X and IP66

NEW!

Features & Benefits:

- One piece welded housing with fitted cover frame. The cover frame is an integral part of the housing to seal out dust & moisture.
- Adjustable mounting clamps:
  - permanently attached and adjustable through the cover frame for easy installation.
  - allow recess mounting in ceilings from 25mm to 100mm (1″ to 4″ approx) thick for maximum mounting flexibility.
- Support lugs (M8 x .6) to secure the luminaire to ceiling structural support members for safety.
- Frameless tempered glass lens:
  - 6mm (¼″) thick for added safety.
  - interior hinge for maximum dust shedding.
  - fitted with captive screws for ease of lamp replacement and maintenance.
- Isolating switch turns off power to the ballast and lamps when the lens is opened for added safety.
- 4 entries (2 on each end) supplied with (2) ¾” NPT adapter hubs and extra large wire well for feedthrough and tandem applications without the need for separate junction boxes.
- Electronic ballast:
  - high power factor (95%) for energy efficiency, more luminaires per circuit and supply voltage flexibility.
  - features 2 channel circuitry for safety - if one lamp fails the 2nd lamp remains in operation.
- Uses T8 linear fluorescent lamps for high efficiency and reduced operating costs.
- 5 wire terminal block and through wiring are standard for quick and easy balancing of lighting loads on 3 phase systems.

Applications:

eLLB series luminaires are used:

- For flush or surface ceiling mounting.
- In cleanroom areas where it is important to have smooth, flush surfaces.
- Where extreme cleanliness is required as in pharmaceutical, chemical and electronics manufacturing facilities, as well as in paint shops and spray booths.
- For tough environmental conditions involving corrosives, water, dust and extreme temperatures.
- In areas that require lamps to reach full illumination immediately.
- Indoor & outdoor ordinary or hazardous areas.
- For Wet locations and areas with hose down / wash down requirements.

Adjustable Mounting Clamps



Hinged Glass Lens





Certifications & Compliances:

NEC :

- Class I, Division 2, Groups A,B,C,D
- Class I, Zone 1 AEx ed IIC
- Class II, Division 2, Groups F, G
- UL Listed

CEC:

- Class I, Division 2, Groups A,B,C,D
- Class I, Zone 1 Ex eds IIC
- Class II, Division 1 Groups E,F,G
- cUL Listed

Enclosure

- Type 4X
- IP66

UL Standards

- 2279 Hazardous (Classified) Locations
- 1598 Luminaires

CSA Standards

- C22.2 No. 9
- CAN/CSA-E60079-0:02
- CAN/CSA-E60079-1:02
- CAN/CSA-E60079-7
- CAN/CSA-E61241-1-1:02

ATEX

• ATEX Directive 94/9/EC	Ⓔx II 2 G
• Type of Protection	Ⓔx II 2 D T80°C EEx ed IIC T4 EEx ed ib IIC T4 (CG-variant)
• EC-Type Examination Certificate	DMT 02 ATEX E 069

Standard Materials:

- One piece welded housing and cover frame - sheet steel or stainless steel
- Lens - 6mm (1/4″) thick tempered glass
- Gaskets - Silicone
- External hardware - stainless steel

Standard Finishes:

- Sheet steel - White epoxy coat
- Lens - Clear
- Stainless steel - Natural

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6L eLLB20 Series

Recessed Mount Fluorescent Luminaires

NEW!

Class I, Div.2, Groups A,B,C,D
Class I, Zone 1, Groups IIC
ATEX Certified

Cl. II, Div 2, Groups F,G
Cl. II, Div 1, Groups E,F,G (Canada)
Wet Locations
Enclosure Type 4X and IP66

Ratings (Electrical / Size):

Sources/Wattages

- Two 32W or 17W T8 Linear Fluorescent

Voltages

- 120-240V, 50-60 Hz.
- 110-230VDC

Hub Size

- Four 25mm entries, 2 on each end, 3 plugged.
- Two ¾" NPT adapter hubs provided standard, for feed-through or tandem wiring.

Terminals

- 5 wire terminal block, one on each end (L1, L2, L3, N, Ground)
- Two 6mm2 (#10 AWG) maximum per terminal

Temperature Performance Data:

Minimum Starting Temperature: -20°C

Watts	Ambient Temp.	Cl. I, Div. 2 Cl. I, Zone 1 & 2	Class II	Supply Wire Temp
Two 17W T8 lamps	50°C	T4	T6	60°C
Two 32W T8 lamps	50°C	T4	T6	60°C

Accessories:

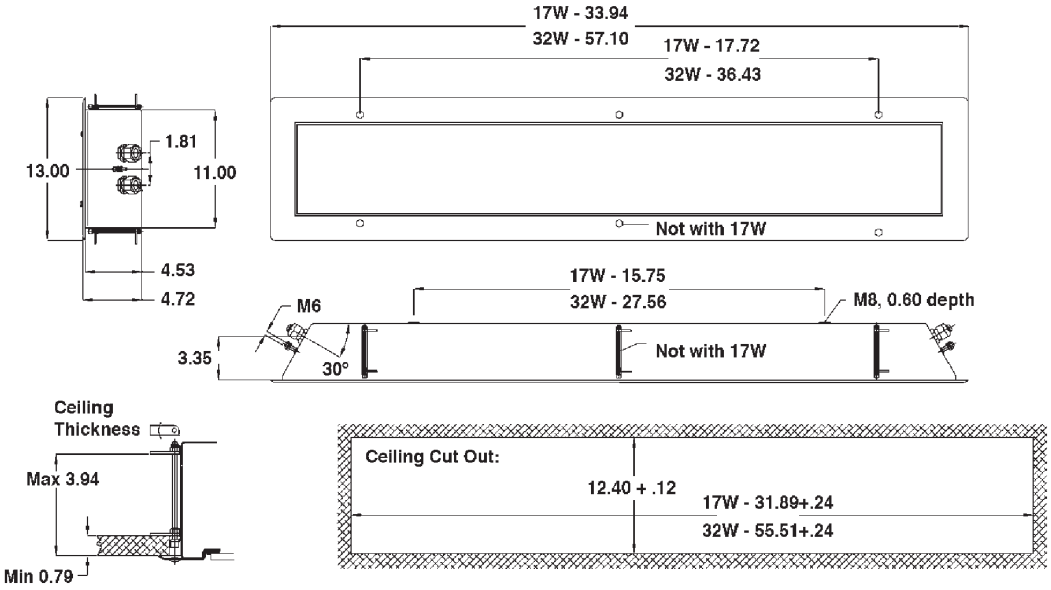
• ¾" NPT adapter hub	**STM2**
Mounting Accessories:	
• Eye Bolt for Support Lugs	**2 2480 002 000**
• Hexagon Screw for Support Lugs	**2 2480 054 000**

Ordering Information:

Hub Size	Wattage/Lamp	Voltage/Hz	Operating Current	Catalog Number Epoxy Coated Steel Enclosure	Catalog Number Stainless Steel Enclosure
¾" NPT	Two 17 Watt T8 Rapid Start	120-240V, 50-60 Hz 110-230 VDC	.18A	**eLLB20 2217/U240**	**eLLB20 2217SS/U240**
¾" NPT	Two 32 Watt T8 Rapid Start	120-240V, 50-60 Hz 110-230 VDC	.34A	**eLLB20 4232/U240**	**eLLB20 4232SS/U240**

IEC / CENELEC certified luminaires are available. Consult factory.

Dimensions (Inches) and Weights:



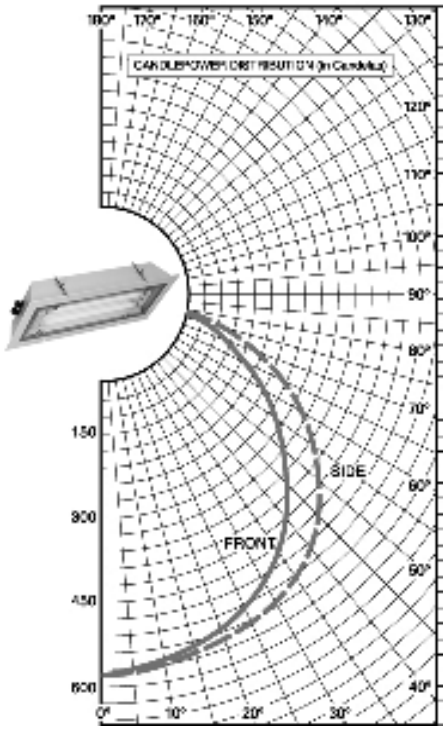
Item	Weight
eLLB20 2217	33 lbs.
eLLB20 4232	48 lbs.

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COOPER Crouse-Hinds

Photometric Data:

LUMINAIRE: eLLB20 2217 LAMP: TWO F17T8 LINEAR FLUORESCENT



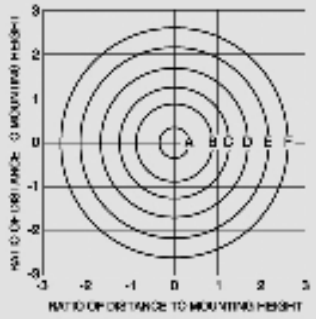
CANDELAS		
Vertical Angle	Front	Side
0	577	577
5	574	572
15	566	559
25	518	527
35	461	507
45	388	453
55	287	378
65	190	253
75	80	115
85	7	9
90	0	0
95	0	0
105	0	0
115	0	0
125	0	0
135	0	0
145	0	0
155	0	0
165	0	0
175	0	0
180	0	0

ZONAL LUMENS	
Zone	Lumens
0-10	35
10-20	157
20-30	242
30-40	309
40-50	324
50-60	304
60-70	227
70-80	112
80-90	14
90-100	0
100-110	0
110-120	0
120-130	0
130-140	0
140-150	0
150-160	0
160-170	0
170-180	0
TOTAL	1737

Note: Photometric data was developed using two (2) F17T8/835 lamps (1350 lumens each). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and luminance data charts. Multipliers are not used with Coefficient of Utilization table.

LUMINAIRE WATTS	CONVERSION FACTOR
TWO 32W T8 LAMPS (2350 LUMENS EACH)	2.11

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
8'	7.31	5.13	1.56	0.78	0.31	0.16
10'	5.00	3.00	1.00	0.50	0.20	0.10
12'	3.47	1.89	0.69	0.35	0.14	0.07
15'	1.95	0.78	0.39	0.20	0.08	0.04
20'	1.25	0.50	0.25	0.13	0.05	0.03
25'	0.80	0.32	0.16	0.08	0.03	0.02

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD
EFFECTIVE FLOOR CAVITY REFLECTANCE 20%

		ROOM CAVITY RATIO									
EFF. CEIL.	WALL	1	2	3	4	5	6	7	8	9	10
80°	50°	0.679	0.597	0.528	0.468	0.412	0.368	0.329	0.294	0.263	0.239
	30°	0.654	0.556	0.478	0.414	0.355	0.310	0.272	0.239	0.209	0.186
	10°	0.631	0.522	0.439	0.372	0.313	0.269	0.233	0.200	0.172	0.151
70°	50°	0.664	0.585	0.518	0.459	0.405	0.632	0.324	0.290	0.259	0.235
	30°	0.641	0.547	0.472	0.409	0.351	0.307	0.270	0.237	0.207	0.185
	10°	0.621	0.516	0.435	0.369	0.311	0.268	0.232	0.200	0.172	0.151
50°	50°	0.637	0.562	0.499	0.443	0.391	0.350	0.314	0.281	0.252	0.229
	30°	0.618	0.531	0.460	0.399	0.344	0.302	0.265	0.233	0.204	0.182
	10°	0.601	0.504	0.427	0.364	0.308	0.266	0.230	0.198	0.171	0.150
30°	50°	0.612	0.542	0.482	0.429	0.379	0.339	0.305	0.273	0.245	0.223
	30°	0.597	0.515	0.448	0.390	0.337	0.296	0.261	0.229	0.201	0.180
	10°	0.583	0.492	0.420	0.360	0.304	0.263	0.228	0.197	0.170	0.149
10°	50°	0.589	0.522	0.465	0.415	0.367	0.329	0.296	0.265	0.238	0.217
	30°	0.577	0.501	0.437	0.382	0.330	0.291	0.257	0.226	0.198	0.177
	10°	0.566	0.481	0.413	0.355	0.301	0.261	0.257	0.196	0.169	0.149
0°	0°	0.553	0.468	0.400	0.341	0.288	0.248	0.214	0.183	0.156	0.137

* PERCENT REFLECTANCE

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6L EVF Series Fluorescent Luminaires

- Cl. I, Div 1, Groups C,D
- Cl. I, Zone 1 Group IIB
- Cl. II, Div 1, Groups E,F,G
- Cl. III, Simultaneous Presence
- Paint Spray (Suffix S718)
- Wet Locations (Suffix S718)
- 3,3R, IP54 (Suffix S718)

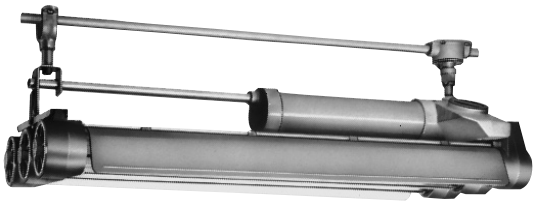
Application:

EVF luminaires are used in areas where hazardous fumes, gases, or dusts are present.
EVF luminaires with S718 option are designed specifically for use inside paint spray booths where hazardous fumes, gases, and paint residue are present. This includes powder paint process areas.
EVF luminaires with S718 option are also suitable for use in wet locations.

Features:

All EVF luminaires

- Provide cool, even light with natural color rendition
- Reduce relamping schedule (long lamp life)
- Continuous and uniform illumination made possible by mounting end to end (no space needed between luminaires for relamping)
- No special tools required for relamping. Threaded lamp tube cover provides quick and easy access for relamping
- Threaded joints on lamp tube and wiring chamber covers permit easy access for lower maintenance costs
- Reflectors can be removed or replaced with only a screwdriver
- Easy to install. Factory sealed and wired luminaire facilitates installation
- Standard electronic ballast for 32 watt and 40 watt rapid start luminaires.
- Standard energy efficient ballast for 40 watt slimline, 60 watt and 110 watt luminaires.
- Low temperature ballast is supplied as standard on 32 watt T8 (0°F), 40 watt slimline (0°F); 60 watt and 110 watt luminaires(–20°F).
- All exposed hardware is stainless steel for maximum protection against corrosion, and for longer luminaire life
- Copper-free aluminum construction throughout means lighter luminaire weight, easier installation, and excellent corrosion resistance
- All exterior materials are non-sparking
- Type P ballasts furnished in compliance with NEC
- Heavy-duty glass lamp tubes provide maximum strength and impact resistance to protect lamps



3-lamp



2-lamp with angle reflector

EVF

Furnished For Use With	Hub Size	Line Volts 60 Hz.*	1-Lamp Cat. #	2-Lamp Cat. #	3-Lamp Cat. #	4-Lamp Cat. #
32 watt, T-8 medium Bi-pin 265MA lamps	¾″	120-277	EVF21029/UNV	EVF22029/UNV	EVF23029/UNV	EVF24029/UNV
	¾″	347	EVF21029/347	EVF22029/347	EVF23029/347	EVF24029/347
40 watt, T-12 medium Bi-pin rapid start 430MA lamps†	3/4″	110-125	EVF21082	EVF22082	EVF23082	EVF24082
	3/4″	277	EVF21087	EVF22087	EVF23087	EVF24087
	3/4″	347	EVF21089/347	EVF22089/347	EVF23089/347	EVF24089/347
40 watt, T-12 single pin, slimline 425MA lamps	¾″	110-125	EVF21032	EVF22032	EVF23032	EVF24032
	¾″	277	EVF21037	EVF22037	EVF23037	EVF24037
	¾″	347	EVF21039/347	EVF22039/347	EVF23039/347	EVF24039/347
60 watt, T-12 recessed contact, 800MA lamps†	¾″	110-125	EVF21062	EVF22062	EVF23062	EVF24062
	¾″	277	EVF21067	EVF22067	EVF23067	EVF24067
	¾″	347	EVF21069/347	EVF22069/347	EVF23069/347	EVF24069/347
110 watt, T-12 recessed contact, 1500MA lamps†	¾″	110-125	EVF21072	EVF22072	EVF23072	EVF24072
	¾″	277	EVF21077	EVF22077	EVF23077	EVF24077
	¾″	347	EVF21079/347	EVF22079/347	EVF23079/347	EVF24079/347

* For 220 volt 50 hz, 240 volt 50 hz or 240 volt 60 hz operation change the last ''2'' in the 120 volt 60 hz catalog number to a ''9'' and add ''/220 50'', ''/240 50'' or ''/240 60'' respectively.
ie. For a 2 lamp, 40 watt rapid start luminaire for 220 volt 50 hz operation order an EVF22089/220 50.

† 50 Hz not available.

EVF luminaires with S718 option

- All joints sealed
- Inside paint booth mounting capabilities provide greater flexibility in luminaire placement, avoids necessity of complicated design and installation work, and improves task lighting control
- Smooth simple design makes it easy to remove any accumulated deposits of paint residue

Mounting Accessories:

Various hazardous area fittings are used to mount EVF luminaires. The fittings shown on page 859 support the unwired (relamping) end. For the wired (ballast) end any of the luminaire hangers for hazardous locations (listed in Section 7L) can be used. CPS conduit outlet bodies with hub covers (listed in Section 4F) are also suitable

Options:

- For suitability for wet locations and locations having deposits of readily combustible paint residue – add Cat. No. Suffix **S718**
- *Corro-free*™ epoxy powder coat – add Cat. No. Suffix **S752**
- With 45° angle reflectors in lieu of straight down reflectors – add Cat. No. Suffix **S369**
- Clear disposable polyester tube wrap – consult Cooper Crouse-Hinds
- Fused – add suffix **S658‡**
- Furnished with lamps - add suffix **S714.**
- Low temperature electromagnetic ballast for 40 watt T12 rapid start luminaires rated for 0°F - add suffix **BY.**

Size Ranges:

- 1, 2, 3, and 4-lamp

Electrical Rating Ranges:

- 32 to 110 watts

Standard Materials:

- Copper-free aluminum except sheet aluminum reflectors

Standard Finishes:

- Natural except reflectors
- Reflectors – white epoxy powder coat

Certifications and Compliances:

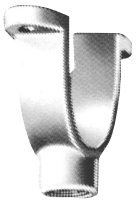
- NEC and CEC:
  Class I, Division 1 Group C, D
  Class I, Zone 1 Group IIB
  Class II Group E, F, G
  Class III
  Simultaneous Presence (Cl. I and Cl. II)
  Paint Spray (S718)
- UL Standards:
  844 Hazardous (Classified) Locations
  1598 Luminaires
- CSA Standards:
  C22.2 No. 137

Temperature Performance Data: (Based on 40°C Ambient)

Lamp Type	1 Lamp	Class I/Class II/Zone 1 2 Lamp	3 Lamp	4 Lamp	Supply Wire
32/40W	T5	T5	T5	T5	75°C
60W	T5	T5	T5	T5	75°C
110W	T4	T4	T4	T4	90°C

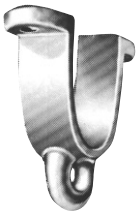
‡ When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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Ceiling Saddle for Conduit Support

Size	Cat. #
¾	EVF20



Ceiling Saddle for Support Hook

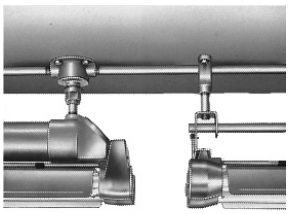
Cat. #
EVF021



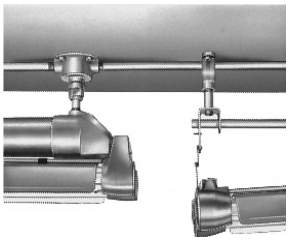
Support Hook for Conduit

Size	Cat. #
¾	EVF21

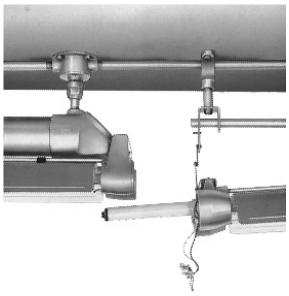
Relamping Information



Adjacent ends of two fixtures suspended in line close together



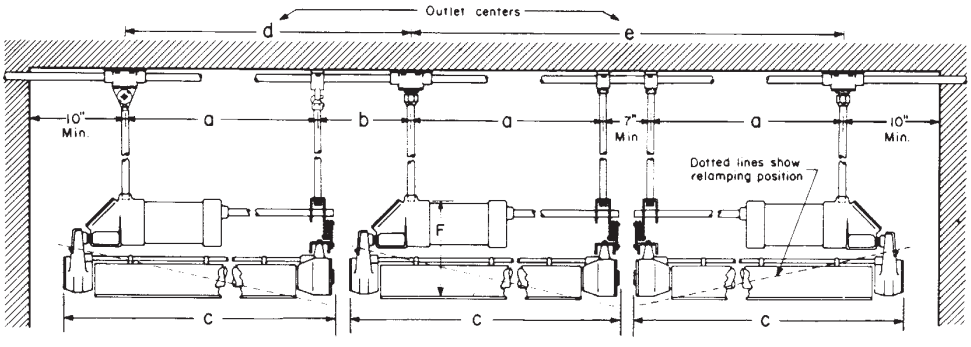
End of one fixture lowered for relamping



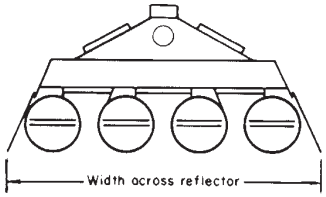
One cover removed and lamp partly withdrawn

Where fixtures abut, space for relamping is obtained by lowering one end of the tube assembly as shown. Without tools, the lamp receptacle and mounting plate assemblies can be removed and the lamp withdrawn. In inserting, the reverse procedure is followed.

Dimensions



End view



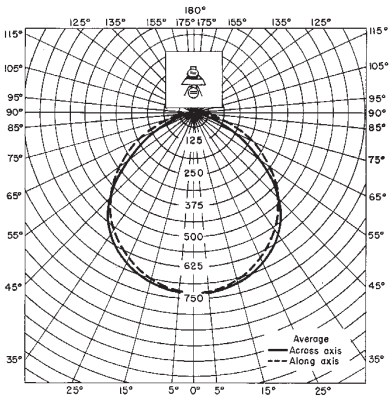
Fixture Type	No. Lamps	a	b	c	d	e	f
32 watt, T-8 Bi-pin 40 watt, T-12 Bi-pin 40 watt, T-12 Single pin slimline 60 watt, T-12 Recessed contact 110 watt, T-12 Recessed contact	1 or 2	44	11	53⅜	55	95	10¼
	3 or 4	46½	8½	53⅜	55	100	10¼

	Width
1-Lamp	6⅛
2-Lamp	11½
3-Lamp	18
4-Lamp	24½

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Luminaire: All 1-Lamp EVF Luminaires

Lamp: 1-40/T-12, 1-60/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 580 953 1633 1897
Total Bare Lamp Lumens: 3100
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes: 32W 0.90
40W Slimline 0.84
60W Cool white 1.29
110W Cool white 2.19

Example: Zonal lumens of 1-40W lamp for 0-60° is 1633. Zonal lumens of 1-60W lamp for 0-60° is 1633 × 1.29 = 2107

Coefficient of Utilization

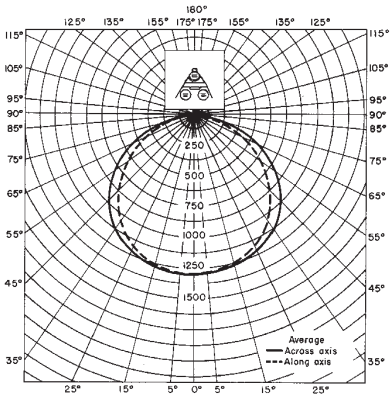
Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.697	.616	.546	.485	.434
80	30	.670	.574	.497	.430	.376
	10	.647	.539	.458	.388	.334
	50	.682	.604	.538	.477	.425
70	30	.658	.565	.490	.426	.372
	10	.635	.534	.454	.385	.331
	50	.653	.580	.518	.460	.412
50	30	.633	.549	.478	.416	.365
	10	.616	.520	.446	.380	.329
	50	.627	.559	.500	.445	.399
30	30	.612	.533	.467	.407	.357
	10	.597	.509	.438	.375	.325
	50	.605	.539	.484	.431	.388
10	30	.591	.517	.455	.397	.351
	10	.579	.498	.431	.370	.321

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.391	.351	.316	.289	.252
80	30	.334	.295	.262	.235	.198
	10	.294	.257	.223	.197	.164
	50	.384	.346	.312	.285	.248
70	30	.330	.292	.260	.233	.198
	10	.290	.255	.222	.197	.164
	50	.372	.336	.303	.277	.242
50	30	.324	.286	.255	.229	.195
	10	.288	.252	.221	.196	.162
	50	.361	.325	.295	.270	.236
30	30	.319	.283	.251	.225	.192
	10	.286	.249	.219	.194	.161
	50	.351	.318	.287	.263	.230
10	30	.312	.278	.247	.222	.189
	10	.283	.248	.218	.193	.159

Luminaire: All 2-Lamp EVF Luminaires

Lamp: 2-40/T-12, 2-38/T-12, 2-60/T-12, 2-110/T12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1055 1765 3262 4125
Total Bare Lamp Lumens: 6300
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes: 32W 0.90
40W Slimline 0.84
60W Cool white 1.29
110W Cool white 2.19

Example: Zonal lumens of 2-40W lamp for 0-60° is 3262. Zonal lumens of 2-60W lamps for 0-60° is 3262 × 1.29 = 4208

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

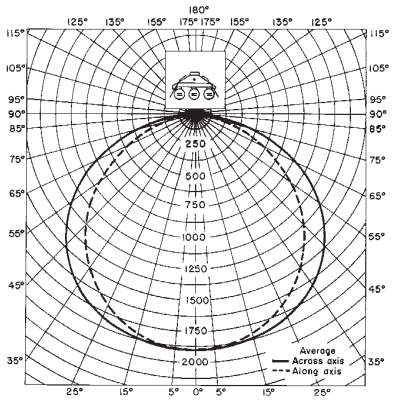
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.697	.616	.546	.485	.434
80	30	.670	.574	.497	.430	.376
	10	.647	.539	.458	.388	.334
	50	.682	.604	.538	.477	.425
70	30	.658	.565	.490	.426	.372
	10	.635	.534	.454	.385	.331
	50	.653	.580	.518	.460	.412
50	30	.633	.549	.478	.416	.365
	10	.616	.520	.446	.380	.329
	50	.627	.559	.500	.445	.399
30	30	.612	.533	.467	.407	.357
	10	.597	.509	.438	.375	.325
	50	.605	.539	.484	.431	.388
10	30	.591	.517	.455	.397	.351
	10	.579	.498	.431	.370	.321

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.391	.351	.316	.289	.252
80	30	.334	.295	.262	.235	.198
	10	.294	.257	.223	.197	.164
	50	.384	.346	.312	.285	.248
70	30	.330	.292	.260	.233	.198
	10	.290	.255	.222	.197	.164
	50	.372	.336	.303	.277	.242
50	30	.324	.286	.255	.229	.195
	10	.288	.252	.221	.196	.162
	50	.361	.325	.295	.270	.236
30	30	.319	.283	.251	.225	.192
	10	.286	.249	.219	.194	.161
	50	.351	.318	.287	.263	.230
10	30	.312	.278	.247	.222	.189
	10	.283	.248	.218	.193	.159

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Luminaire: All 3-Lamp EVF Luminaires

Lamp: 3-40/T-12, 3-38/T-12, 3-60/T-12, 3-110/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1917 3226 6066 7919
Total Bare Lamp Lumens: 9300
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes:
32W 0.90
40W Slimline 0.84
60W Cool white 1.29
110W Cool white 2.19

Example: Zonal lumens of 3-40W lamps for 0-40° is 3226. Zonal lumens of 3-40W Slimline lamps for 0-40° is 3226 × 0.84 = 2710

Coefficient of Utilization

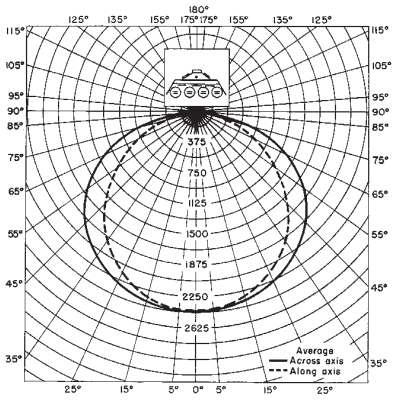
Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.712	.626	.553	.489	.436
80	30	.683	.581	.500	.431	.376
	10	.658	.544	.459	.386	.331
	50	.697	.614	.544	.481	.427
70	30	.670	.572	.494	.426	.371
	10	.646	.539	.455	.383	.328
	50	.667	.589	.524	.463	.414
50	30	.645	.555	.481	.416	.364
	10	.626	.524	.446	.378	.326
	50	.640	.567	.505	.447	.400
30	30	.623	.539	.469	.407	.356
	10	.607	.513	.439	.374	.322
	50	.617	.547	.488	.433	.388
10	30	.602	.523	.457	.397	.350
	10	.589	.502	.431	.368	.318

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.392	.352	.317	.289	.252
80	30	.332	.293	.260	.233	.196
	10	.290	.254	.219	.194	.160
	50	.385	.347	.312	.285	.248
70	30	.329	.290	.258	.230	.196
	10	.287	.251	.218	.194	.160
	50	.372	.336	.303	.277	.242
50	30	.322	.284	.253	.227	.193
	10	.285	.248	.217	.192	.159
	50	.362	.325	.295	.269	.236
30	30	.317	.280	.248	.223	.190
	10	.282	.245	.215	.191	.157
	50	.351	.317	.286	.262	.230
10	30	.310	.276	.244	.220	.187
	10	.279	.244	.214	.189	.156

Luminaire: All 4-Lamp EVF Luminaires

Lamp: 4-40/T-12, 4-38/T-12, 4-60/T-12, 4-110/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1961 3305 6250 8224
Total Bare Lamp Lumens: 12400
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes:
32W 0.90
40W Slimline 0.84
60W Cool white 1.29
110W Cool white 2.19

Example: Zonal lumens of 4-40W lamps for 0-30° is 1961. Zonal lumens of 4-110W lamps for 0-30° is 1961 × 2.19 = 4295

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.692	.607	.535	.473	.421
80	30	.664	.563	.484	.416	.362
	10	.639	.526	.442	.372	.318
	50	.678	.595	.526	.465	.412
70	30	.652	.554	.477	.411	.357
	10	.628	.521	.439	.369	.315
	50	.648	.571	.507	.447	.399
50	30	.627	.538	.465	.401	.351
	10	.609	.507	.431	.364	.313
	50	.622	.550	.488	.432	.386
30	30	.606	.522	.453	.392	.343
	10	.590	.497	.423	.360	.309
	50	.600	.530	.472	.418	.374
10	30	.585	.506	.442	.383	.337
	10	.572	.486	.416	.354	.305

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.379	.340	.306	.279	.243
80	30	.320	.282	.250	.224	.189
	10	.278	.243	.210	.185	.153
	50	.372	.335	.301	.275	.239
70	30	.316	.279	.248	.221	.189
	10	.275	.240	.209	.185	.153
	50	.359	.324	.292	.267	.233
50	30	.310	.273	.243	.218	.185
	10	.273	.238	.208	.184	.152
	50	.349	.313	.284	.260	.227
30	30	.305	.269	.238	.214	.182
	10	.271	.235	.206	.183	.150
	50	.339	.306	.276	.253	.221
10	30	.298	.265	.235	.211	.179
	10	.268	.234	.205	.181	.149

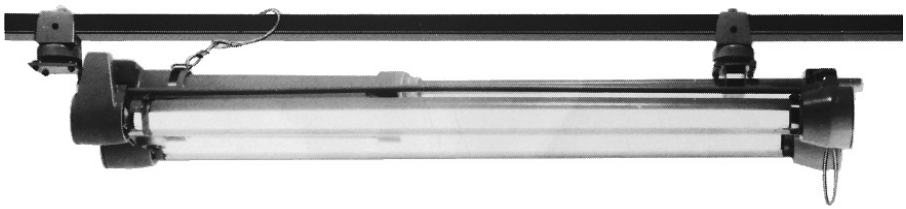
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6L EVFDR Series Fluorescent Luminaires

- Cl. I, Div. 1, Groups C,D
- Cl. I, Zone 1 Group IIB
- Cl. II, Div 1, Groups E,F,G
- Cl. III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R,4,4X: IP66

Applications:

- EVFDR luminaires are suitable for wet locations and marine environments, above and below deck, where hazardous vapors, gases or dusts are present
- Ideally suited for use on offshore drilling/ production platforms and on shipboard in hazardous areas
- For mounting where headroom is limited
- For hazardous areas where watertightness and corrosion resistance are required



Features:

- Exterior surfaces finished with gray epoxy enamel for corrosion resistance
- Exterior hardware stainless steel
- All joints sealed and gasketed for watertightness
- Vibration resistant
  -shock mounts
  -sockets are spring loaded for tight lamp contact connection
- Heavy duty glass lamp tubes for maximum strength and impact resistance
- All exterior materials are non-sparking
- C-type beam clamps provide quick and easy mounting
- Luminaire is adjustable 30° either side of fixture axis, allowing for control of light output
- Beam clamp support is adjustable allowing beam clamp to be located to suit structure
- Low profile – luminaire height is 7 13/16″ with standard mounting, 11 11/16″ with shock mounting option – for maximum clearance where headroom is critical
- Provides cool light with natural color rendition
- Continuous and uniform illumination made possible by mounting end to end (no space needed between luminaires for relamping) – see page 859 for relamping information
- Relamping is accomplished without tools. Quarter-turn fastener allows end of luminaire to be lowered quickly. Cable supports end of luminaire while relamping – both hands are free. Threaded lamp tube cover provides quick and easy access to lamp and receptacle
- Reflectors can be removed or replaced with only a screwdriver
- Ballast housing readily accessible
- Minimum weight – copper-free aluminum construction throughout
- Type P ballast furnished in compliance with NEC
- Standard electronic ballast for 32 watt and 40 watt rapid start.
- Standard energy efficient electromagnetic ballast (40W slimline, 60W and 110W) is standard.
- Low temperature ballasts are standard on 32WT8, 40W slimline, 60W and 110W. 32 watt and 40 watt low temperature ballasts are rated for 0°F. 60 and 100 watt low temperature ballasts are rated for –20°F.

Standard Materials:

- Housing – copper-free aluminum
- Exposed hardware – stainless steel

Options:

- Furnished with lamps – add suffix **S714** to Cat. No.
- Furnished with safety cable for high vibration areas - add suffix **S715** to Cat. No.
- Beam clamps with shock mounts are available for ease of installation and resistance to vibration – add suffix **KIT40** to Cat. No.
- Beam clamps only – add suffix **KIT41** to Cat. No.
- Low Temperature Electromagnetic Ballast: 40W rapid start rated 0°F - add suffix **BY** to Cat. No.
- Emergency lighting battery unit – add suffix **S799** to Cat. No.

Size Ranges:

- 2-lamp only

Electrical Rating Ranges:

- 32, 40, 60 and 110W

Certifications and Compliances:

- NEC and CEC:
  Class I, Division 1 Group C,D
  Class I, Zone 1 Group IIB
  Class II Groups E,F,G
  Class III
  Simultaneous Presence (Cl. and Cl. II)
- UL Standards
  844 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards
  C22.2 No. 137

Temperature Performance Data: (Based on 40°C Ambient)

2-Lamp	Class I Class II Zone 1	Supply Wire
32, 40W	T5	75°C
60W	T5	75°C
110W	T4	90°C

EVFDR

Furnished For Use With	Hub Size	Line Volts 60 Hz.*	2-Lamp Cat. #
32 watt, T-8 medium Bi-pin 265MA lamps	¾″	120-277	EVFDR22029/UNV
	¾″	347	EVFDR22029/347
40 watt, T-12 medium Bi-pin rapid start 430MA lamps†	3/4″	110-125	EVFDR22082
	3/4	277	EVFDR22087
60 watt, T-12 recessed contact, 800MA lamps	3/4″	110-125	EVFDR22062
	3/4″	277	EVFDR22067
110 watt, T-12 recessed contact, 1500MA lamps†	3/4″	110-125	EVFDR22072
	3/4″	277	EVFDR22077

* For 220 volt 50 hz, 240 volt 50 hz or 240 volt 60 hz operation change the last ''2'' in the 120 volt 60 hz catalog number to a ''9'' and add ''/220 50'', ''/240 50'' or ''/240 60'' respectively.
ie. For a 2 lamp, 40 watt rapid start fixture for 220 volt 50 hz operation order an EVFDR22089/220 50.
† 50 Hz. not available.

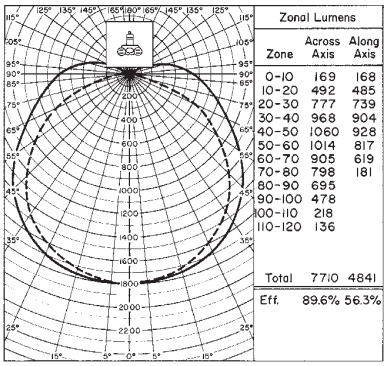
Standard Finishes:

- All exterior metal components – gray epoxy enamel
- Reflectors – white epoxy powder coat

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Luminaire: All EVFDR Luminaires

Lamp: 2-40/T-12, 2-60/T-12, 2-110/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1416 2352 4263 5863
Total Bare Lamp Lumens: 8600
To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for two 60 watt, T-12 recessed contact 800MA cool white lamps (EVFDR22062). For other wattages use the following conversion factors:

32W	.67
40W, Rapid Start	.73
40W, Slimline	.70
110W, Cool White	1.60

Example: Zonal lumens for EVFDR226 fixture, across the axis, for 40-50° is 1,060. Zonal lumens for EVFDR223 fixture, across the axis, is 40-50° is: 1,060 × .70 = 742

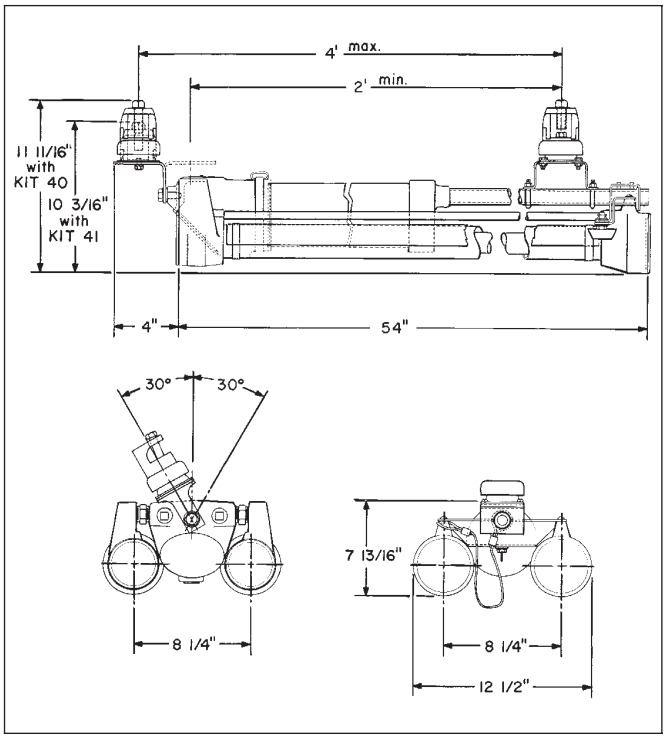
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
	50	.735	.645	.570	.506	.452
80	30	.700	.594	.512	.442	.387
	10	.670	.551	.466	.394	.339
	50	.714	.627	.557	.494	.440
70	30	.682	.580	.501	.435	.380
	10	.653	.542	.458	.388	.334
	50	.673	.593	.528	.468	.420
50	30	.647	.554	.482	.418	.368
	10	.624	.520	.444	.378	.327
	50	.636	.562	.501	.446	.401
30	30	.616	.530	.463	.403	.354
	10	.596	.502	.430	.368	.319
	50	.603	.533	.477	.425	.383
10	30	.585	.507	.444	.388	.343
	10	.570	.483	.416	.358	.311
0	0	.551	.465	.399	.340	.294

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
	50	.408	.368	.332	.304	.266
80	30	.344	.305	.271	.243	.207
	10	.298	.262	.228	.202	.169
	50	.398	.360	.325	.297	.260
70	30	.338	.299	.267	.240	.206
	10	.293	.258	.226	.201	.168
	50	.380	.344	.311	.285	.250
50	30	.327	.289	.259	.233	.199
	10	.287	.252	.221	.197	.164
	50	.364	.328	.299	.274	.240
30	30	.317	.282	.251	.226	.193
	10	.281	.246	.217	.193	.160
	50	.348	.316	.286	.263	.231
10	30	.306	.274	.244	.220	.188
	10	.274	.241	.213	.189	.157
0	0	.259	.226	.198	.175	.144

Dimensions



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Notes Page

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Description	Page No.
Application/Selection	**866**
Floodlights	
Luminaires	
Champ-Pak®	
CPMV	**867-873**
H.I.D.	
Voyager nR™ Stainless Steel Series	**874-876**
F2MV Champ® Series	**877-879**
FMV Champ® Series	**880-882**
FMV High Wattage Champ® Series	**883-885**
EVMA S812 Hazard•Gard with Trunnion Arm	**890**
FZD Series	**887-889**
Incandescent	
RCDE Series	**891, 892**

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Application:

- General illumination of hazardous and non-hazardous areas

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Considerations for Selection:

Environmental:

- What is the hazardous area classification (NEC®/CEC) of the location in which the luminaires will be installed?

Lighting levels required:

- What wattage luminaire(s) will provide the desired light levels? See Lighting Selector Guide, pages 665 to 689, to determine number and location of luminaires required.

Physical arrangement:

- Type of luminaire mounting required, threaded hub or mounting feet.

Quick Selector Chart

Luminaire	NEC Hazardous Area Compliance	Lamp Size (Watts)	Lamp Base
CPMV	Cl. I, Division 2	50-150 HID	Mogul
EVMA-S812	Cl. I, Groups C, D Cl. I, Groups B (suffix GB), C & D	50–400 HID	Mogul
VOYAGER nR (SSFMV)	Cl. I, Division 2 Cl. I, Zone 2	150-400 HID	Mogul
F2MV, FMV, FMV High Wattage	Cl. I, Division 2	70-1500 HID	Mogul
FZD	Cl. I, Division 1 Groups B, C, D	150-400 HID	Mogul
RCDE-6	Cl. I, Groups C, D Cl. I, Group D	150 Incandescent 300 Incandescent	Medium
RCDE-10	Cl. I, Group D	500 Incandescent	Extended Mogul End Prong

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Champ-Pak™ Wall Pack Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
Certified for IEC Zone 2 (Suffix S826TB)
Cl. II, Groups F & G
Cl. III & Simultaneous Presence
Marine & Wet Locations ● Enclosure Type 4X, IP66

NEW!



The first low-profile wall pack designed specifically for hazardous areas.

The Cooper Crouse-Hinds® Champ-Pak™ wall pack luminaire is ideal for low-profile mounting in hazardous and industrial environments. **In fact, it is suitable for any area with adverse conditions such as dust, dirt, moisture, vibration, high-pressure hosedowns and high thermal ambients.** Its precisely designed glass refractor minimizes fixture depth while providing uniform, glare-free illumination.

- Unique compact shallow-profile design mounts virtually anywhere.
- Side-hinged cover with two-screw closing for easy installation and maintenance.
- Gray Corro-free™ epoxy powder-coated two-piece housing provides superior corrosion resistance.
- Unique stainless steel wire guard accessory attaches without any additional hardware for easy installation and maintenance.
- Glass refractor provides uniform light distribution to eliminate glare.
- Vertical lamp design provides even lamp heat distribution for cooler operation, providing expanded hazardous area suitability.
- Silicone gaskets make luminaire suitable for enclosure Type 4X, Marine and IP66 environments.
- Available in two different conduit entry configurations to permit flexible installation and mounting.
  - four ¾″ NPT hubs, one on each side
  - two ½″ NPT hubs on bottom for feed-through applications

APPLICATIONS

- indoor and outdoor wall mounting or vertical surface mounting where minimal fixture depth is required in:
  - manufacturing plants and heavy industrial facilities
  - industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical, and production platforms
  - waste or sewage treatment plants
  - offshore, dockside and harbor installations
- for security and safety lighting in industrial facilities
- for lighting of loading docks, tunnels and stairways
- for marine, wet location, hosedown and corrosive environments

ADDITIONAL FEATURES & BENEFITS

- Variety of lamp types and wattages—HID, fluorescent and induction—to meet specific lighting needs.
- High-power-factor ballasts (+90%) are standard, which allow more luminaires per circuit.
- Up to 65°C ambient suitability on select lamp types and wattages. Ambient suitability of +40°C is standard. Allows for installation in higher ambient environments commonly found in industrial facilities.
- Low ambient starting capability (to -40°C)—perfect for colder climates.
- Shock-absorbing HID mogul base lamp socket cushions lamp, improves lamp life in harsh environments.
- Compact fluorescent emergency luminaire provides 90 minutes of lighting during power outages, meeting UL924 and life safety code.
- Cost-effective induction lamp system provides extra-long lamp life—up to 100,000 hours. Reaches full illumination immediately, providing crisp white light.
- NEC/CEC Restricted Breathing construction is available to provide cooler temperature classes (T codes) for expanded hazardous area suitability.
- Simplified method for compliance to NEC Restricted Breathing conduit sealing requirements makes installation easier.

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7L Champ-Pak™ Wall Pack Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
Certified for IEC Zone 2 (Suffix S826TB)
Cl. II, Groups F & G
Cl. III & Simultaneous Presence
Marine & Wet Locations ● Enclosure Type 4X, IP66

STANDARD MATERIALS

- fixture housing and door frame assembly—copper-free aluminum
- external hardware—stainless steel
- refractor lens—borosilicate glass
- gasket—silicone
- reflector—aluminum light sheet
- wire guard—stainless steel

STANDARD FINISHES

- aluminum—Corro-free™ epoxy powder coat
- stainless steel—natural

CERTIFICATIONS & COMPLIANCES

Luminaires For Use With ANSI Lamps (Mogul Base)

- UL/cUL Listed
- NEC and CEC Class I, Division 2 and Class I, Zone 2
- Restricted Breathing Class I, Division 2 and Zone 2 (suffix S826)
- Class II, Groups F and G
- Class III
- Simultaneous Presence
- Certified for IEC Zone 2 (suffix S826TB)
- Wet Locations; Marine Locations; Enclosure Type 4X; IP66

UL Standards

- 844—hazardous (divisions classified) locations
- 2279—hazardous (zones classified) locations
- 1598—luminaires
- 1598A—luminaires for marine vessels
- 924—emergency lighting (fluorescent emergency luminaire)

CSA Standards

- C22.2 No. 9 and 137
- CAN/CSA-E60079-15:02

IEC Standards

- 60079-15

RATINGS (ELECTRICAL/SIZE)

Sources/Wattages

● high-pressure sodium (HPS)—mogul base	50, 70, 100 & 150
● metal halide (MH)—mogul base	70, 100 & 150
● mercury vapor (MV)—mogul base	100
● compact fluorescent	26, 32, 42, 52, 64 & 84
● emergency fluorescent	26
● induction	55 & 85

Voltages

HID STANDARD-VOLTAGE BALLASTS

- Dual tap (120 & 277 V, 60 Hz—for 50 W HPS only)—prewired at 277 V
- Multitap (120, 208, 240 & 277 V, 60 Hz)—prewired at 277 V
- Tritap (120, 277 & 347 V, 60 Hz)—prewired at 347 V
- 120 V, 60 Hz
- 480 V, 60 Hz

FLUORESCENT STANDARD-VOLTAGE BALLASTS

- 120–277 V, 50–60 Hz
- 120 V, 50 Hz (for Canada only)
- 347 V, 60 Hz (for Canada only)

INDUCTION STANDARD-VOLTAGE BALLASTS

- 120 V, 50–60 Hz (also 120 V DC)
- 230 V, 50–60 Hz (also 240 V DC)

HID OPTIONAL VOLTAGE BALLASTS

- 220 V, 50 Hz
- 220 V, 60 Hz
- 240 V, 50 Hz

FLUORESCENT OPTIONAL VOLTAGE BALLASTS (Consult Factory)

- 125 V DC
- 12 V DC
- 24 V DC

ISOLATED BALLASTS AND SPECIALS (Consult Factory)

- 208 V, 60 Hz CWI Isolated Ballast
- 240 V, 60 Hz CWI Isolated Ballast
- 480 V, 60 Hz CWI Isolated Ballast

Conduit Entries

- four ¾″ NPT entries, one on each side, top and bottom (3 plugged)
- two ½″ NPT entries on bottom for feed-through (1 plugged)
- metric entries—consult factory

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Champ-Pak™ Wall Pack Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
Certified for IEC Zone 2 (Suffix S826TB)
Cl. II, Groups F & G
Cl. III & Simultaneous Presence
Marine & Wet Locations ● Enclosure Type 4X, IP66

NEW!

ORDERING INFORMATION

To complete Catalog Number, add Voltage and Option suffix(es).

HID Luminaires

HUB SIZE	LAMP WATTS	CATALOG NUMBER FOR USE WITH ANSI LAMPS
HIGH-PRESSURE SODIUM		
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	50	CPMVS2W050 CPMVS1W050
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	70	CPMVS2W070 CPMVS1W070
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	100	CPMVS2W100 CPMVS1W100
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	150 (for 55 V lamp)	CPMVS2W150 CPMVS1W150
METAL HALIDE		
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	70	CPMVM2W070 CPMVM1W070
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	100	CPMVM2W100 CPMVM1W100
METAL HALIDE—PULSE START		
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	150	CPMVM2W150-S828 CPMVM1W150-S828
MERCURY VAPOR		
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	100	CPMVC2W100 CPMVC1W100

VOLTAGE SUFFIXES

NEC (UL)				
Voltage (60 Hz)	**Dual Tap**	**Multitap**	**120**	**480**
Suffix	/DT	/MT	/120	/480
CEC (CSA/cUL)				
Voltage (60 Hz)	**Dual Tap**	**Tritap**	**120**	
Suffix	/DT	/TT	/120	

50 W HPS is available only with suffix /DT.

Induction Luminaires With Lamp (100,000 hours)

HUB SIZE	LAMP WATTS	CATALOG NUMBER
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	55	CPMVIG2W055 CPMVIG1W055
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	85	CPMVIG2W085 CPMVIG1W085

VOLTAGE SUFFIXES

Voltage	120 V (also 120 V DC) (50–60 Hz)	230 V (also 240 V DC) (50–60 Hz)
Suffix	/120	/230

Fluorescent Luminaires

HUB SIZE	LAMP WATTS	CATALOG NUMBER
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	26 (one 26 W lamp)	CPMVF2W026 CPMVF1W026
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	32 (one 32 W lamp)	CPMVF2W032 CPMVF1W032
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	42 (one 42 W lamp)	CPMVF2W042 CPMVF1W042
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	52 (two 26 W lamps)	CPMVF2W052 CPMVF1W052
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	64 (two 32 W lamps)	CPMVF2W064 CPMVF1W064
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	84 (two 42 W lamps)	CPMVF2W084 CPMVF1W084

VOLTAGE SUFFIXES

	NEC/CEC (UL, CSA, cUL)	CEC (CSA, cUL)
Voltage	**120–277 V (50–60 Hz)**	**347 V (60 Hz)**
Suffix	/UNV	/347

Fluorescent Emergency Luminaires —Continuous Operation

HUB SIZE	LAMP WATTS	CATALOG NUMBER
Four ¾″ NPT (one each side) Two ½″ NPT (on bottom)	26 (one 26 W lamp)	CPMVFB2W026 CPMVFB1W026

VOLTAGE SUFFIXES

	NEC (UL)	CEC (CSA, cUL)	
Voltage	**120–277 V (50–60 Hz)**	**120 V (60 Hz)**	**347 V (60 Hz)**
Suffix	/UNV	/120 CAN	/347

Compelling reasons to choose the new Champ Induction luminaire as the light source for industrial and hazardous locations include:

- Crisp white light (80+ color rendering index) provides increased safety by clearly illuminating signs, instrument panels, equipment and more with vibrant natural colors.
- Up to 100,000 hours of lamp life minimizes routine maintenance costs. If you operate this luminaire for 24 hours, 7 days a week, you will not need to change the lamp for up to 11 years!
- Instant illumination — no waiting for lamp warm-up time. Increases productivity and safety.
- Delivers the best possible luminaire temperature rating — T6 (85°C) when used with the Champ restricted breathing option. Ideal for hazardous areas where a low ignition temperature is required.
- Starts in low temperatures — as low as -40°C.

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7L Champ-Pak™ Wall Pack Luminaires

NEW!

Cl. I, Div. 2, Groups A,B,C,D
Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
Certified for IEC Zone 2 (Suffix S826TB)
Cl. II, Groups F & G
Cl. III & Simultaneous Presence
Marine & Wet Locations ● Enclosure Type 4X, IP66

OPTIONS

	SUFFIX TO ADD TO CATALOG NUMBER
BALLAST-GARD™ STARTER CUT-OUT SWITCH	**BG**
● prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life ● available for use with HPS only ● not available with IR or QTZ options	
FACTORY ASSEMBLED WITH LAMP INSTALLED	**FA**
INSTANT RESTRIKE	**IR**
● enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage; it has no effect on the warm-up period of cold lamps ● available for use with HPS only ● not available with BG or QTZ options	
GUARD—FACTORY INSTALLED ON LUMINAIRE	**P**
(Guard suffix follows wattage designation, e.g., CPMVS2W100P/MT)	
QUARTZ AUXILIARY	**QTZ**
● quartz auxiliary lighting comes to full brightness immediately and remains lit until the HID lamp attains 60–70% of full illumination ● available for use with HID only ● for nonhazardous locations only ● quartz lamp not furnished—use 100 W single-ended lamp Q100DC, Q100DL/DC or 100Q/CL/DC	
FUSED	**S658***
● protects ballast and capacitors against abnormal line conditions (not for use in Canada or marine locations) ● not available with CPMVIG and CPMVFB luminaires	
RESTRICTED BREATHING CONSTRUCTION (AEx nR, Ex nR)	**S826**
Suitable for NEC/CEC Class I, Division 2 and Zone 2 ● provides cooler temperature classes (T codes) ● furnished with P55 guard	

TEFLON is a registered trademark of E.I. duPont Co.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

OPTIONS

	SUFFIX TO ADD TO CATALOG NUMBER
CERTIFIED FOR IEC ZONE 2 (Ex nR) (UL CLASSIFIED TO THE IEC STANDARD)	**S826TB**
Furnished with: ● 4 mm², 3-point terminal block ● crimp internal wiring connections ● P55 guard	
V2PC PHOTOCELL—FACTORY INSTALLED	
● 120 V, 50–60 Hz	**/V2PC20**
● 208–240 V, 50–60 Hz	**/V2PC22**
● 277 V, 50–60 Hz	**/V2PC27**
OPTIONAL VOLTAGE BALLASTS FOR HID LUMINAIRES	
● 220 V, 50 Hz	**/220 50**
● 220 V, 60 Hz	**/220 60**
● 240 V, 50 Hz	**/240 50**
OPTIONAL VOLTAGE BALLASTS FOR FLUORESCENT LUMINAIRES (Consult Factory)	
● 125 V DC	**/125 VDC**
● 12 V DC	**/12 VDC**
● 24 V DC	**/24 VDC**
ISOLATED BALLAST FOR HID LUMINAIRES (Consult Factory)	
● 208 V, 60 Hz	**/208CWI**
● 240 V, 60 Hz	**/240CWI**
● 480 V, 60 Hz	**/480CWI**

ACCESSORIES (ORDER SEPARATELY)

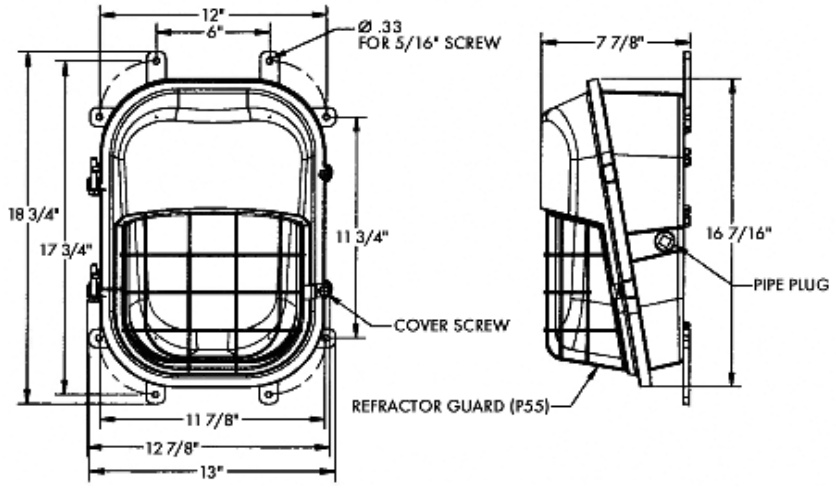
PHOTOCELL FOR FIELD INSTALLATION	CATALOG NUMBER
● 120 V, 50–60 Hz	**V2PC20**
● 208–240 V, 50–60 Hz	**V2PC22**
● 277 V, 50–60 Hz	**V2PC27**

In Canada, use factory-installed photocell only.

STAINLESS STEEL WIRE GUARD	**P55**

DIMENSIONS (INCHES)

NOTE: Approximate weight less guard 28 lbs. P55 guard 0.5 lbs.

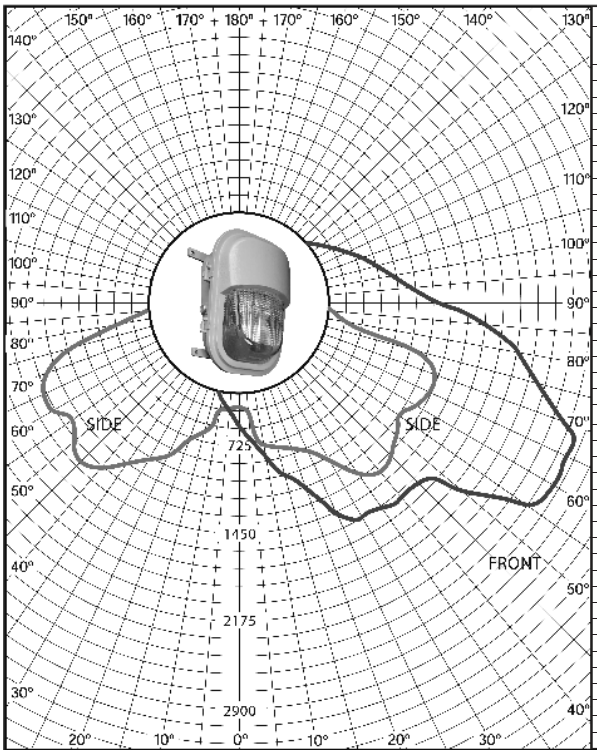


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CPMV PHOTOMETRIC DATA

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD

CPMVS2W150 Lamp: 150 W/E23-1/2 Clear High Pressure Sodium (HPS)



CANDELAS			
Vertical Angle	Front	Side	Back
0	413	413	413
5	470	418	367
15	877	654	265
25	1343	947	169
35	1629	1135	126
45	1614	1369	68
55	2434	1267	17
65	2505	1281	0
75	2084	916	4
85	1555	322	8
90	1148	265	11
95	956	228	8
105	723	156	9
115	527	86	9
125	355	56	8
135	224	40	4
145	150	20	1
155	64	11	1
165	19	9	3
175	0	8	1
180	3	3	3

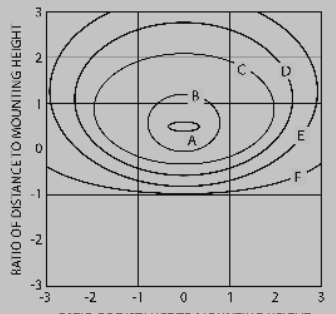
ZONAL LUMENS	
Zone	Lumens
0-10	42
10-20	178
20-30	371
30-40	587
40-50	760
50-60	1095
60-70	1277
70-80	1028
80-90	666
90-100	462
100-110	338
110-120	236
120-130	175
130-140	91
140-150	31
150-160	10
160-170	2
170-180	0
Total	7349

Note: Photometric data was developed using a 150 watt E23-1/2 clear high pressure sodium lamp (16,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
50 W (HPS)	0.25
70 W (HPS)	0.40
100 W (HPS)	0.59

(For additional photometric data, contact Cooper Crouse-Hinds)

ISOFOOTCANDLE CHART:



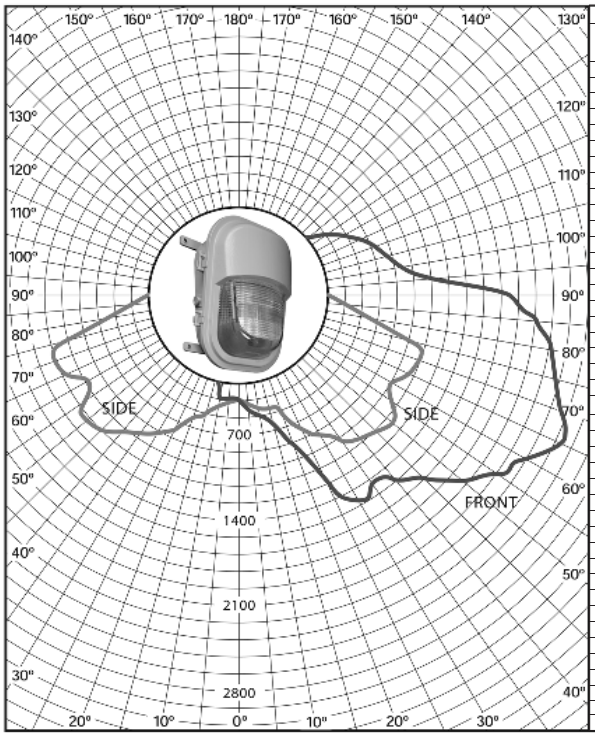
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E	F
8'	15.63	7.81	3.13	1.56	0.78	0.31
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD

CPMVM2W150-S828 Lamp: 150 W/ED28 Clear Pulse Start Metal Halide



CANDELAS			
Vertical Angle	Front	Side	Back
0	404	404	404
5	442	424	413
15	692	549	238
25	1345	748	136
35	1475	946	99
45	1683	1121	56
55	2105	1095	15
65	2421	1107	3
75	2230	924	0
85	1946	349	0
90	1612	280	0
95	1154	231	0
105	738	164	0
115	535	97	0
125	360	55	0
135	237	39	0
145	139	22	0
155	56	12	0
165	17	8	0
175	0	8	0
180	3	3	0

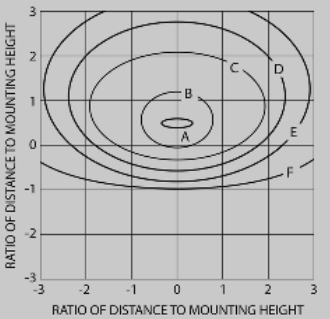
ZONAL LUMENS	
Zone	Lumens
0-10	42
10-20	150
20-30	320
30-40	537
40-50	709
50-60	921
60-70	1218
70-80	1153
80-90	829
90-100	492
100-110	347
110-120	242
120-130	167
130-140	113
140-150	35
150-160	10
160-170	2
170-180	0
Total	7287

Note: Photometric data was developed using a 150 watt ED28 clear metal halide pulse start lamp (14,000 lumens). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
70 W (MH)	.40
100 W (MH)	.56
100 W (MV)	.30

(For additional photometric data, contact Cooper Crouse-Hinds)

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

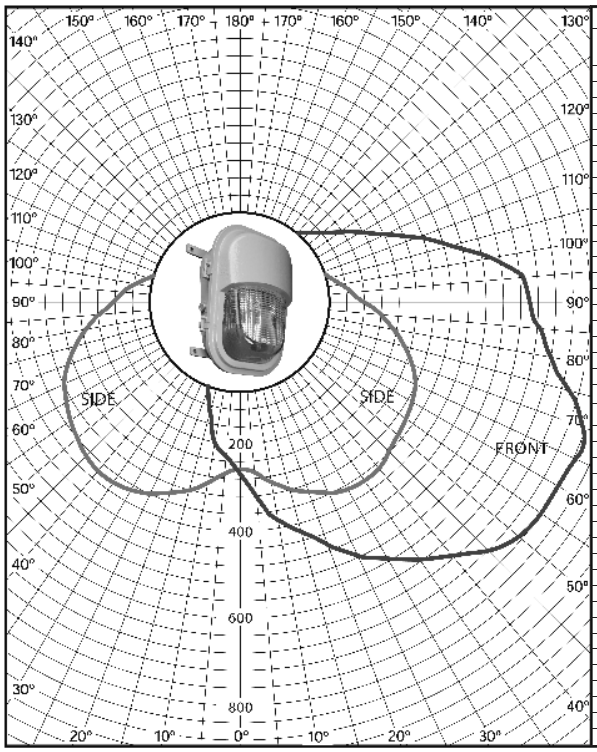
Mtg. Hgt.	A	B	C	D	E	F
8'	15.63	7.81	3.13	1.56	0.78	0.31
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

For additional photometric data, contact Cooper Crouse-Hinds.

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LUMINAIRE WITH REFRACTOR LESS WIRE GUARD
CPMVF2W084 Lamps: (2) PL-T 42W/30/4P Compact Fluorescent



CANDELAS			
Vertical Angle	Front	Side	Back
0	258	258	258
5	319	269	227
15	421	316	139
25	516	361	58
35	590	376	33
45	671	362	10
55	720	347	0
65	725	317	0
75	657	264	0
85	566	195	0
90	541	160	0
95	526	132	0
105	409	86	0
115	277	49	0
125	145	31	0
135	97	21	0
145	52	11	0
155	34	3	0
165	8	1	0
175	0	0	0
180	0	0	0

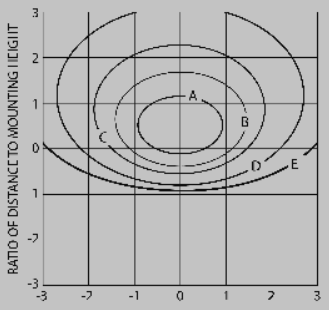
ZONAL LUMENS	
Zone	Lumens
0-10	26
10-20	87
20-30	155
30-40	223
40-50	286
50-60	334
60-70	357
70-80	349
80-90	309
90-100	262
100-110	188
110-120	113
120-130	64
130-140	36
140-150	16
150-160	5
160-170	0
170-180	0
Total	2810

Note: Photometric data was developed using two clear compact fluorescent lamps (3,200 lumens each). For other clear lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
32 W (FLUORESCENT)	.56
64 W (FLUORESCENT)	.75

For additional photometric data, contact Cooper Crouse-Hinds.

ISOFOOTCANDLE CHART:

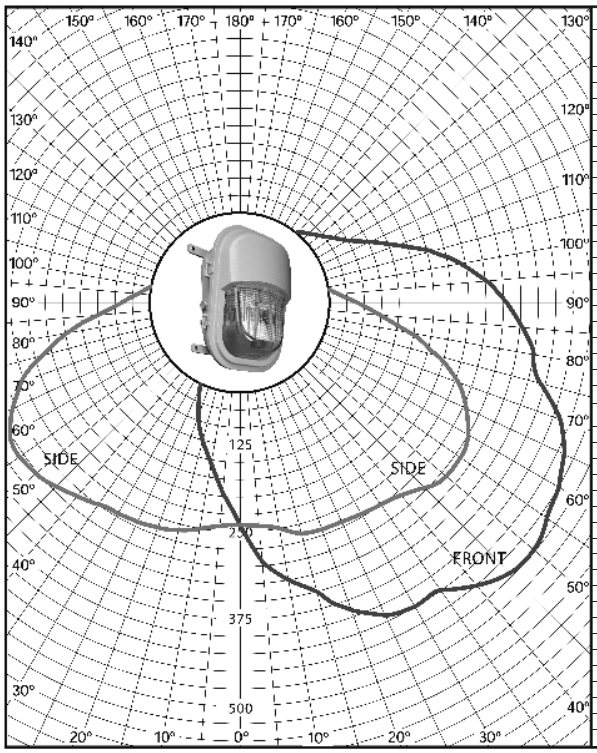


Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
8'	3.13	1.56	0.78	0.31	0.16
10'	2.00	1.00	0.50	0.20	0.10
12'	1.39	0.69	0.35	0.14	0.07
16'	0.78	0.39	0.20	0.08	0.04
20'	0.50	0.25	0.13	0.05	0.03
25'	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows luminance in footcandles at ground level.

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD
CPMVIG2W055 Lamp: 55 W Philips Induction Lamp System



CANDELAS			
Vertical Angle	Front	Side	Back
0	241	241	241
5	290	243	199
15	352	259	110
25	414	268	45
35	427	274	28
45	475	295	12
55	462	306	3
65	439	285	0
75	364	214	0
85	330	124	1
90	309	86	2
95	276	63	2
105	206	38	2
115	121	28	1
125	80	20	2
135	55	18	1
145	32	8	1
155	21	5	2
165	5	2	0
175	0	2	0
180	1	1	1

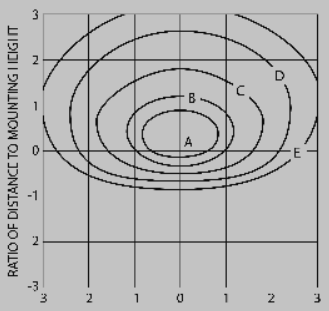
ZONAL LUMENS	
Zone	Lumens
0-10	23
10-20	70
20-30	114
30-40	154
40-50	194
50-60	224
60-70	228
70-80	205
80-90	169
90-100	130
100-110	86
110-120	52
120-130	34
130-140	21
140-150	9
150-160	3
160-170	1
170-180	0
Total	1717

Note: Photometric data was developed using a 55 W Philips QL Series induction lamp system (3,500 lumens). For other lamp wattages, use the following conversion factors (multipliers) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
85 W	1.72

For additional photometric data, contact Cooper Crouse-Hinds.

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
8'	3.13	1.56	0.78	0.31	0.16
10'	2.00	1.00	0.50	0.20	0.10
12'	1.39	0.69	0.35	0.14	0.07
16'	0.78	0.39	0.20	0.08	0.04
20'	0.50	0.25	0.13	0.05	0.03
25'	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows luminance in footcandles at ground level.

For additional photometric data, contact Cooper Crouse-Hinds.

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TEMPERATURE PERFORMANCE DATA

WATTS	AMBIENT Temp °C	CLASS I DIVISION 2 and ZONE 2		CLASS II and CLASS III	SIMULTANEOUS PRESENCE CLASS I/CLASS II (Gas and Dust Present in the Same Area)		SUPPLY WIRE TEMP °C
		STANDARD PRODUCT	RESTRICTED BREATHING AEx nR/Ex nR OPTION S826		STANDARD PRODUCT Suitable for Class I. Division 2/Class II	RESTRICTED BREATHING AEx nR/Ex nR OPTION S826 Suitable for Class I, Division 2 or Zone 2 and Class II	
HIGH-PRESSURE SODIUM							
50	40	T3A	T6	T5	T3A/T5	T5	90
	55	T3A	T6	T4A*	T3/T4A*	T4*	105
	65*	T3	T5	—	—	—	105
70	40	T3A	T6	T5	T3A/T5	T5	90
	55	T3A	T6	—	—	—	105
	65*	T3	T5	—	—	—	105
100	40	T2C	T5	Consult Factory for Class II Suitability with 105°C Supply Wire			90
	55*	T2C	T4				105
150	40*	T2B	T4	—	—	—	105
METAL HALIDE							
70	40	T3C	T6	T5	T3C/T5	T5	90
	55	T3C	T6	—	—	—	105
	65*	T3C	T5	—	—	—	105
100	40	T3	T6	—	—	—	90
150PS (S828)	40	T2D	T5	—	—	—	105
MERCURY VAPOR							
100	40	T2C	T5	—	—	—	90
	55*	T2B	T4	—	—	—	105
COMPACT FLUORESCENT							
26	40	T3B	T6	T6	T3B/T6	T6	75
26 (347 V)	55	T3A	T6	—	—	—	75
	40	T3	T6	—	—	—	75
32	40	T3B	T6	T6	T3B/T6	T6	75
	55	T3A	T6	—	—	—	75
32 (347 V)	40	T3	T6	—	—	—	75
42 (120–277 V)	40	T3B	T6	T6	T3B/T6	T6	75
42 (347 V)	55	T3A	T6	—	—	—	75
	40	T3	T6	—	—	—	75
52	40	T3	T6	T6	T3/T6	T6	75
	55	T3	T6	—	—	—	90
64	40	T3	T6	T6	T3/T6	T6	75
	55	T3	T6	—	—	—	90
84	40	T2C	T6	—	—	—	90
EMERGENCY FLUORESCENT							
26	40*	T3B	T6	—	—	—	75
INDUCTION							
55	40*	T2D	T6	T6	—	T6	75
	55*	T2D	T6	—	—	—	75
85	40*	T2B	T6	—	—	—	75

***Fuses (suffix S658) are not available for indicated light sources and ambient temperatures.**

NOTE: Luminaires requiring 105°C supply wire are furnished with 3 ft. of rated wire for external wiring connection

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7L Champ® Voyager nR™ Stainless Steel Floodlight

Cl. I, Div. 2, Groups A,B,C & D
Cl. I, Zone 2, Group IIC
Enclosure Type 4X
IP66
UL and cUL Listed

Wet Locations
Marine Locations

NEW!



At last, a hazardous-area luminaire with complete stainless steel exterior, low temperature ratings and standard with the restricted breathing rating (vapor-tight design).

Cooper Crouse-Hinds® Champ Voyager nR stainless steel floodlight offers the industry's coolest temperature. ratings—so it can operate below the ignition temperature of vapors and gases in your classified area.

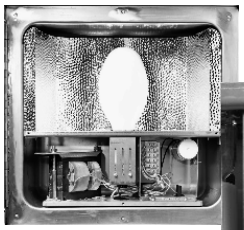
It's also the only mogul-base Class I, Division 2 and Zone 2 stainless steel floodlight with restricted breathing (vapor-tight design) as standard construction.

The Champ Voyager nR Floodlight boasts a wide, powerful beam to deliver more light to your process or pathway. Standard terminal blocks and a removable ballast-component tray bring you the best combination of easy wiring and simple maintenance in one rugged package.

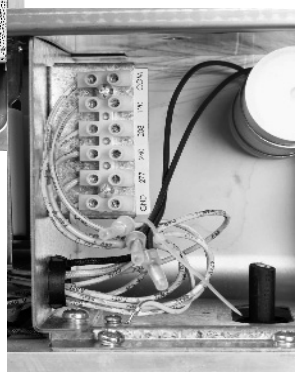
This unique combination of features makes the Champ Voyager nR Floodlight ideal for outdoor, marine, corrosive, and high temperature locations such as:

- offshore platforms and drilling rigs, ship channels and refineries
- chemical, petrochemical and pharmaceutical plants, waste water and sewage treatment plants, pulp and paper mills
- storage tanks and racks, vehicle and pedestrian passageways, outdoor process areas and parking areas

And because the Champ Voyager nR Floodlight meets international standards, you can install it anywhere in the world.



Removable ballast component tray



Easy wiring with standard terminal blocks

KEY FEATURES AND BENEFITS

- **AEx nR, Ex nR restricted breathing rating is standard—**a hazardous location luminaire with excellent T-3 and T-4 ratings without additional accessories or options.
- **NEMA 7x6 "butterfly beam" floodlight pattern—**wide, uniform and far reaching to reduce the number of luminaires you need providing excellent luminaire efficiency—more light where you need it.
- **easy wiring—**standard terminal block with marked terminals saves time and eliminates wiring errors.
- **removable ballast-component tray—**for capacitor, igniter and terminal block to simplify maintenance and save money.
- **316 stainless steel housing, hinges, door cover and mounting yoke for marine and wet locations—**robust construction suitable for saltwater and corrosive applications.

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Champ® Voyager nR™ Stainless Steel Floodlight

Cl. I, Div. 2, Groups A,B,C & D
Cl. I, Zone 2, Group IIC
Enclosure Type 4X
IP66
UL and cUL Listed

Wet Locations
Marine Locations

NEW!

CERTIFICATIONS AND COMPLIANCES

NEC/CEC
- Class I, Division 2
- Class I, Zone 2
- Wet Locations
- Marine Locations
- Enclosure Type 4X, IP66
- UL Listed
- cUL Listed (Certified by UL to CSA Standards)

IEC/NEC/CEC
- Class I, Zone 2, Group IIC
- Class I, Division 2, Group A,B,C,D

UL STANDARDS
- 844 — Hazardous (Divisions Classified) Locations
- 1598 — Luminaires
- 1598A — Supplemental requirements for luminaires for installation on marine vessels.

CSA STANDARDS
- C22.2 No. 137
- CAN/CSAD9 Series

IEC STANDARDS
- .60079-15

STANDARD MATERIALS

- Enclosure (housing & lens frame)—316 Stainless Steel
- Lens—heat and impact resistant tempered glass
- Gaskets—silicone rubber
- Yoke and yoke bracket—316 Stainless Steel
- Reflector—formed specular (dimpled glossy surface) aluminum
- Cable gland cord grip and locknut—polyamide 6, neoprene bushing

STANDARD FINISHES

- 316 Stainless Steel—natural

RATINGS

SOURCES/WATTAGES
(MOGUL BASE LAMPS)
- High Pressure Sodium (HPS) 150, 250 & 400 watts
- Metal Halide (MH) 175, 250 & 400 watts

VOLTAGES
Standard Voltage Ballasts
- Multi-tap (120, 208, 240 & 277 V, 60 Hz)
- 480 V, 60 Hz
- Tri-tap (120, 277, 347 V, 60 Hz)

Optional Voltage Ballasts
- 220 V or 240 V, 50 Hz (for export)
- 220 V, 60 Hz (for export)

Isolated Ballasts (consult Cooper Crouse-Hinds)
- 208, 240, or 480 V (for Canada)

HUB SIZE
- Standard: ¾″ NPT with a ¾″ sealing cord grip installed

ORDERING INFORMATION

To complete catalog number, add voltage and option suffix(es)
Example: SSFMVSY150/MT-76 BG-FA

LAMP TYPE	WATTS	CATALOG NUMBER
High-Pressure Sodium	150	SSFMVSY150
	250	SSFMVSY250
	400	SSFMVSY400
Metal Halide	175	SSFMVMY175
	250	SSFMVMY250
	400	SSFMVMY400

VOLTAGE SUFFIXES

VOLTAGE (60 Hz)	SUFFIX	OPTIONAL VOLTAGES	SUFFIX
Tri-tap (120, 277, 347, 60 Hz)	/TT	220 50 Hz	/220 50
Multi-tap (120, 208, 240, 277V, 60 Hz)	/MT	220 60 Hz	/220
480 V, 60 Hz	/480	240 50 Hz	/240 50

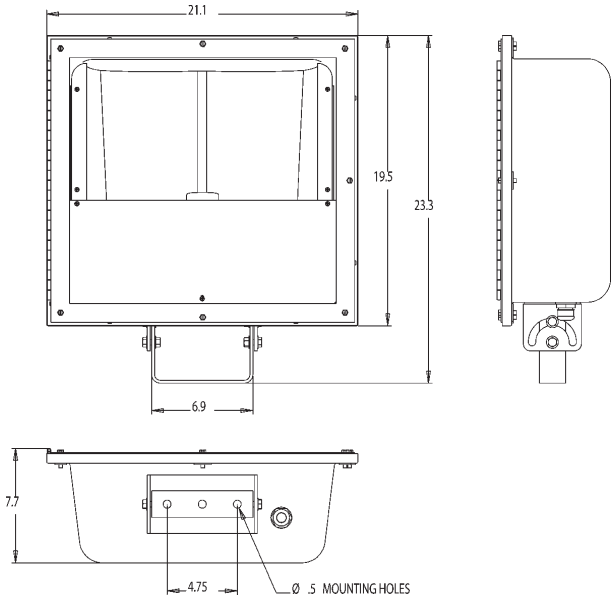
OPTIONS

	SUFFIX TO ADD TO CAT. NO.
Ballast-Gard™ starter cut-out switch prevents starter pulsing when lamp is cycling or inoperative. Prolongs ballast and igniter life 150 W HPS only. Not available with options IR or QTZ	BG
Factory assembled w/HID lamp installed	FA
Instant restrike—150W HPs only. Not available with options BG or QTZ	IR
Quartz auxiliary (lamp not supplied). For non-hazardous applications only. Not available with options BG or IR	QTZ
Fused (not for marine or cUL)	S658

ACCESSORIES (order separately)

	CATALOG NO.
Stainless Steel Slipfitter Adapter	SFA6 SS
Stainless Steel Wall Mount Bracket	SWB6 SS
Standard Slipfitter adapter (cast aluminum, epoxy coat)	SFA6
Standard Wall Mount bracket (cast aluminum, epoxy coat)	SWB6

DIMENSIONS (inches)



LUMINAIRE WEIGHTS (lbs.)

LUMINAIRE	HPS	MH
150W	39	—
175W	—	39
250W	43	41
400W	45	43

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Champ® Voyager nR™ Stainless Steel Floodlight

Cl. I, Div. 2
Cl. I, Zone 2
Enclosure Type 4X
IP66
UL and cUL Listed

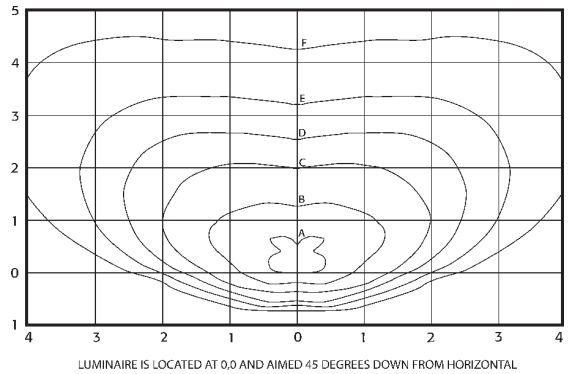
Wet Locations
Marine Locations

PHOTOMETRICS

HPS Wide Beam Reflector

ISO FOOTCANDLE CHART
Stainless Steel Floodlight 400 W High Pressure Sodium (HPS)
Catalog Number: SSMVSY400/MT
Lamp: 400 W Clear HPS
Lumen Rating: 50,000
Luminaire located at 0,0° Aiming Angle at 45° down from horizontal
For 150 W HPS, multiply footcandles by 0.32.
For 250 W HPS, multiply footcandles by 0.57.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10′	40.000	20.000	8.000	4.000	2.000	0.800
15′	17.778	8.889	3.555	1.778	0.889	0.356
20′	10.000	5.000	2.000	1.000	0.500	0.200
25′	6.400	3.200	1.280	0.640	0.320	0.128
30′	4.444	2.222	0.889	0.444	0.222	0.089
35′	3.265	1.633	0.653	0.327	0.163	0.065
40′	2.500	1.250	0.500	0.250	0.125	0.050

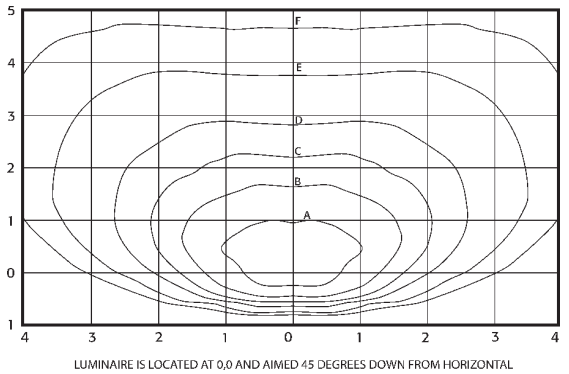


LUMINAIRE IS LOCATED AT 0,0 AND AIMED 45 DEGREES DOWN FROM HORIZONTAL

MH Wide Beam Relfector

ISO FOOTCANDLE CHART
Stainless Steel Floodlight 400 W Metal Halide (MH)
Catalog Number: SSFMVMY400/MT
Lamp: 400 W Clear MH
Lumen Rating: 34,000
Luminaire located at 0,0° Aiming Angle at 45° down from horizontal
For 175 W MH, multiply footcandles by 0.42
For 250 W HPS, multiply footcandles by 0.65

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10′	20.000	8.000	4.000	2.000	0.800	0.400
15′	8.889	3.555	1.778	0.889	0.356	0.178
20′	5.000	2.000	1.000	0.500	0.200	0.100
25′	3.200	1.280	0.640	0.320	0.128	0.064
30′	2.222	0.889	0.444	0.222	0.089	0.044
35′	1.633	0.653	0.327	0.163	0.065	0.033
40′	1.250	0.500	0.250	0.125	0.050	0.025



LUMINAIRE IS LOCATED AT 0,0 AND AIMED 45 DEGREES DOWN FROM HORIZONTAL

TEMPERATURE PERFORMANCE DATA

AMBIENT TEMP.	DIV. 2 40°C	DIV. 2 55°C	ZONE 2 40°C	ZONE 2 55°C	SUPPLY WIRE 0°C (40°C)	SUPPLY WIRE 0°C (55°C)
150 W HPS	T1(350°C)	T1(350°C)	T4	T3	90°C	105°C
250 W HPS	T1(350°C)	T1(350°C)	T4	T3	90°C	105°C
400 W HPS	T1(400°C)	—	T3	—	90°C	—
175 W MH	T1(325°C)	T1(325°C)	T3	T3	90°C	105°C
250 W HPS	T1(325°C)	T1(325°C)	T3	T3	90°C	105°C
400 W MH	T1(325°C)	—	T3	—	105°C	—

EFFECTIVE PROJECTED AREA (EPA)

• For windloading AIMING ANGLE	• For proper pole selection EPA
0 degrees	2.15 ft²
30 degrees	1.86 ft²
60 degrees	1.07 ft²

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50-175W F2MV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

Champ F2MV floodlights are used:
- on platforms and in refineries, chemical and petrochemical plants, pharmaceutical plants, waste water and sewage treatment plants, pulp and paper mills, and other outdoor as well as indoor industrial locations.
- to light outdoor industrial applications such as storage tanks and racks, vehicle and pedestrian passageways, outdoor process areas, and parking areas in industrial facilities.
- for security & safety lighting in industrial and process facilities.
- in high ambient temperatures.
- in marine and wet locations
- in outdoor locations where the damaging effects of rain, snow, wind, dirt & other contaminants are present
- in Class I, Division 2 hazardous (classified) locations as defined by the NEC & CEC
- in Class I, Zone 2 hazardous (classified) areas as defined by the NEC & CEC
- in Zone 2 hazardous (classified) areas as defined by the IEC

Ratings (Electrical/Size):

Sources/Wattage (Mogul Base Lamps)
- High Pressure Sodium (HPS) 50, 70, 100 & 150
- Metal Halide (MH) 70, 100, & 175
- Mercury Vapor (MV) 100 & 175

Voltages

Standard Voltage Ballasts
- Multi-tap (120, 208, 240 & 277 volts 60 Hz)
- Dual tap (120, 277 volts 60 Hz) — 50W HPS only
- 480 volts 60 Hz
- Tri-tap (120, 277. 347 volts 60 Hz).

Optional Voltage Ballasts (consult Cooper Crouse-Hinds)
- 220 volt or 240 volt 50 Hz (for export)
- 220 volt 60 Hz (for export)
- Isolated Ballasts 208, 240 or 480 volt (For Canada)

Hub Sizes
- Standard — (2) ¾″ NPT
- Optional — (2) 25mm (M25x1.5)

Key Features	Benefits
• Copper free aluminum enclosure with stainless steel hardware	Robust design, Industrial grade construction
• Continuous silicone gasketing	Insures wet & marine locations integrity
• Small compact size	Easy to install & maintain
• Available in a variety of lamp sources and wattages	Provides specifiers with the right product for the task at hand.
• NEMA 7x6 standard floodlight pattern with lamp orientation base down	Most common for industrial applications
• 40° and 55°C ambient suitability standard with some wattages (less fuses) to 65°C	Addresses high ambients common at industrial facilities
• Stainless steel chain secures cover to housing	Ease of maintenance
• Low ambient capability to –40°C	Perfect for colder climates
• Shock absorbing mogul base lamp socket	Cushions lamp, improves lamp life in harsh environments
• Variety of system voltages available	Meets global supply voltage requirements
• Trunnion (yoke) mount design	Standard construction provides the greatest mounting flexibility — can be mounted vertically (wall), horizontally (floor) or any angle in between
• For use with other accessories • SFA-6 Slip Fitter Adapter • SWMB-6 Wall Mount Bracket	Further enhances mounting flexibility
• Restricted Breathing sealing compliance	Complies with the NEC sealing requirements for Class I Zone 2 and Class I Division 2 locations using the standard wiring method of a Cooper Crouse-Hinds CGB 294SA connector with 16/3 SO extra hard usage cord
• Severe vibration testing compliance • UL 844 • 3-Axis Resonance Withstand	Exceeds vibration tests as required by UL

Standard Materials:

- Enclosure (housing & lens cover) — copper-free aluminum
- Cover chain and external hardware — stainless steel
- Lens — heat & impact resistant glass
- Gaskets — silicone rubber
- Yoke — galvanized steel
- Reflector — diffuse aluminum lighting sheet

Standard Finishes:

Enclosure & Yoke — Corro-free epoxy powder coat
- Stainless steel — natural

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



Certifications and Compliances:

- NEC/CEC:
  Class I Division 2, Groups A, B, C, D
  Class I Zone 2
- IEC:
  Zone 2 Ex nR IIC
- UL Standards:
  844, 2279 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
- CSA Standards:
  C22.2 No. 137:
- IEC Standards:
  60079-15

Options:

Description	Suffix to be Added to Cat. No.
• Ballast-Gard -50-150W HPS only -Cannot use with options IR or QTZ	**BG**
• Factory assembled w/HID lamp installed	**FA**
• Instant Restrike -50-150W HPS only -Cannot use with options BG or QTZ	**IR**
• Quartz auxiliary (lamp not supplied) -For nonhazardous applications only. -Cannot use with options BG or IR	**QTZ**
• Fused	**S658***
• Restricted Breathing, (AEx nR, Ex nR) -For NEC/CEC Class I Zone 2	**S826**
• Restricted Breathing (Ex nR) for IEC Zone 2. Includes: -3pt. 4mm squared terminal block -Crimp internal wiring connections -For use with dedicated voltages only -(not DT, MT, TT)	**S826TB**
• V2PC Photocell Available Factory Installed Only	Consult Crouse-Hinds

Accessories: (Order Separately)

- SFA-6 Slipfitter adapter
- SWB-6 Wall Mount bracket

Description	Suffix to be added to Cat. No.
• Restricted Breathing Construction Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers)	**S826**
• Certified for IEC Zone 2 (Suffix S826TB) Furnished with • Terminal Block • Crimp Terminals • Dedicated voltage ballasts (no MT, DT or TT).	**S826TB**

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7L 50-175W F2MV Series

Champ® H.I.D. Luminaires

- CI. I, Div 2, Groups A, B, C, D
- Restricted Breathing CI. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Ordering Information

*To complete Catalog Number, add Voltage and Option suffix(s)
Example: F2MVSY150/MT-BG-FA-S658-S826

Lamp Type	Lamp Watts	Base Catalog Number* with ¾″ NPT Hub	with 25MM Hub
High Pressure Sodium	50	F2MVSY050	F2MVS25Y050
	70	F2MVSY070	F2MVS25Y070
	100	F2MVSY100	F2MVS25Y100
	150	F2MVSY150	F2MVS25Y150
Metal Halide	70	F2MVMY070	F2MVM25Y070
	100	F2MVMY100	F2MVM25Y100
	175	F2MVMY175	F2MVM25Y175
Pulse Start Metal Halide	150	F2MVMY150-S828	
	175	F2MVMY175-S828	
Mercury Vapor	100	F2MVCY100	F2MVC25Y100
	175	F2MVCY175	F2MVC25Y175

Voltage Suffixes

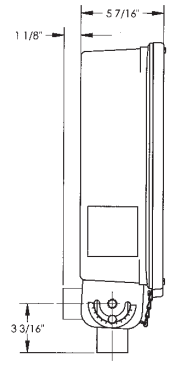
Voltage (60Hz)	Dual-Tap (50W HPS)	Tri-Tap	Multi-Tap	480
Suffix	/DT	/TT	/MT	/480

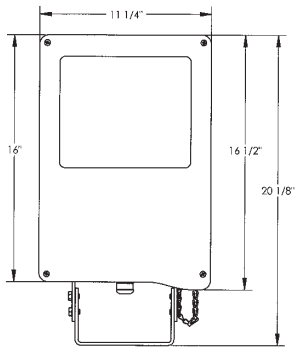
Temperature Performance Data

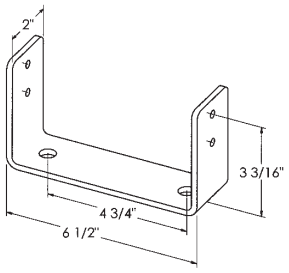
		Class 1		
		Non Restricted Breathing	Restricted Breathing (S826TB)	
Lamp Watts	Ambient Temp °C	Division 2	Zone 2	Supply Wire °C
High Pressure Sodium				
50 Watt	40	T3C	T6	75
	55	T3C	T5	75
	65	T3B	T5	75
70 Watt	40	T3A	T6	60
	55	T3A	T5	75
	65	T3	T4	85
100 Watt	40	T2D	T4	75
	55	T2C	T4	90
	65	n/a	n/a	n/a
150 Watt	40	T2A	T4	75
	55	T2A	T4	85
	65**	T2A	T3	110
Metal Halide				
70 Watt	40	T3C	T6	75
	55	T3A	T5	75
	65	T3A	T4	85
100 Watt	40	T2D	T4	75
	55	T2D	T4	75
	65	T2C	T4	85
175 Watt	40	T2A	T3	75
	55	T2A	T3	85
	65**	T2	T3	110
Mercury Vapor				
100 Watt	40	T2B	T4	75
	55	T2B	T4	85
	65	T2A	T4	90
175 Watt	40	T2B	T3	75
	55	T2A	T3	85
	65**	T2A	T3	110

*Restricted breathing explosion protection
**Suitable for use in 65°C ambient without optional fuses

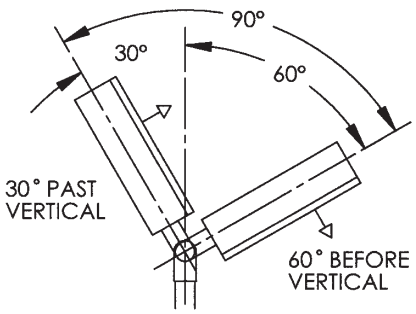
Dimensions and Weights:







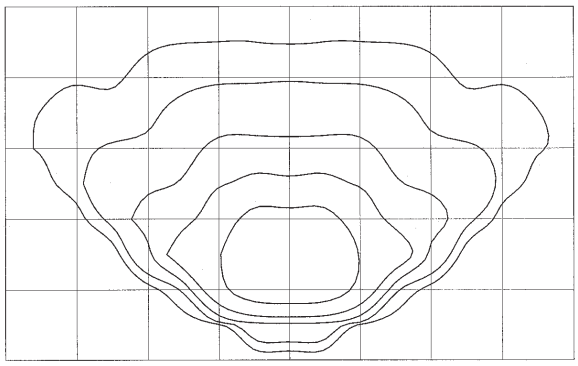
Aiming Range



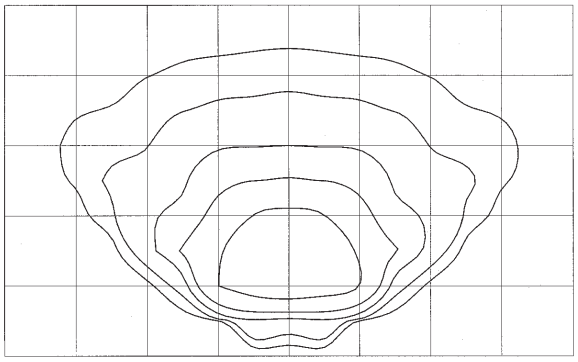
Luminaire Weight: 26 lbs.

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Isofootcandle Chart
F2MV 150W High Pressure Sodium
Catalog Number F2MVSY150
Lamp: 150 watt clear high pressure sodium
Lumen rating: 16,000
For 100W high pressure sodium, multiply footcandles by .55
For 70W high pressure sodium, multiply footcandles by .40
For 50W high pressure sodium, multiply footcandles by .24

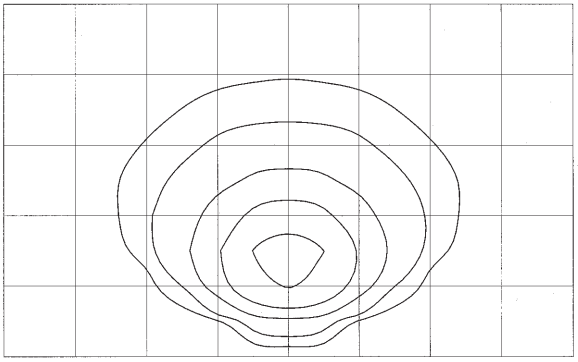


Isofootcandle Chart
F2MV 175W Mercury Vapor
Catalog Number F2MVCY175
Lamp: 175 watt clear mercury vapor
Lumen rating: 8,600
For 100W mercury vapor, multiply footcandles by .49



Luminaire located a 0°, 0°
Aiming angle 45°
Note: Luminaire aiming angle limited to 30° past vertical through 60° before vertical.

Isofootcandle Chart
F2MV 175W Metal Halide
Catalog Number F2MVMY175
Lamp: 175 watt clear metal halide
Lumen rating: 14,000
For 100W metal halide, multiply footcandles by .58
For 70W metal halide, multiply footcandles by .37



Footcandle Table

Mounting Height	Footcandle Values for Isofootcandle Lines				
	A	**B**	**C**	**D**	**E**
10′	8.00	4.00	2.00	0.80	0.40
15′	3.56	1.78	0.89	0.36	0.18
20′	2.00	1.00	0.50	0.20	0.10
25′	1.28	0.64	0.32	0.13	0.06
30′	0.89	0.44	0.22	0.09	0.04

Effective Projected Area (EPA)

- For windloading
- For proper pole selection

Aiming Angle	EPA
0°	1.6 ft²
30°	1.6 ft²
60°	1.1 ft²

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7L 150-400W FMV

Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

Application:

Champ FMV Floodlights are used:
- in refineries, chemical and petrochemical plants, waste and sewage treatment plants, pulp and paper mills, and other outdoor industrial locations.
- to light outdoor industrial applications such as storage tanks and racks, vehicle and pedestrian passageways, outdoor process areas, and parking areas in industrial facilities.
- for security and safety lighting in industrial and process facilities.
- in Class I, Division 2 hazardous (classified) locations, as defined by the National Electrical Code.
- in high ambient temperatures
- in wet locations/marine locations
- in outdoor locations where the damaging effects of rain, snow, wind, dirt, and other contaminants are present.

Features:

- Available in a wide variety of light sources and wattages: 70-400 watt high pressure sodium, 175-400 watt metal halide, and 175-400 watt mercury vapor.
- Multi-tap ballasts are standard, offering a choice of 120, 208, 240, and 277 volts. 220V 50 Hz, 240V 50 Hz, Tri-Tap (120, 277 and 347) and 480 volt ballasts are also available.
- All luminaires are high power factor for energy efficient operation and optimal circuit conductor sizing.
- Three mounting styles – yoke (trunnion), slipfitter adapter & wall mount bracket – are available to satisfy all mounting requirements.
- Door frame assembly is hinged and has captive cover screws for ease of relamping.
- Silicone rubber gaskets are standard, ensuring long life and reliable environmental sealing even under adverse conditions.
- All die-cast aluminum components are provided with powder epoxy finish for superior corrosion resistance.
- All external hardware is stainless steel for corrosion resistance and reliability.
- Yoke is aluminum for excellent combination of strength, corrosion resistance and durability.
- All FMV Champ floodlights can be easily adjusted to aim light where it is needed.
- NEMA 7x6 beam spread is ideal for most industrial floodlighting requirements.
- Includes ballast core handle for convenient ballast replacement.
- Wing-type ballast insulators protect personnel during maintenance and relamping and provide quick and easy accessibility to internal components.

Standard Materials:

- Luminaire housing and door frame assembly – die-cast aluminum.
- External hardware – stainless steel.
- Lens – heat and impact-resistant glass.
- Yoke – aluminum.

Standard Finishes:

- Die-cast aluminum – epoxy powder coat
- Stainless steel – natural.

Electrical Rating Ranges:

- 70-150 (HPS), 175, 250, 400 watt
- Multi-tap★ (120, 208, 240, 277 volts), 480 volts and 220V, 240V 50 Hz.
- Tri-tap (120, 277, 347 volts)

Certifications and Compliances:

- NEC/CEC:
Class I, Division 2, Groups A,B,C,D
Class I Zone 2
- IEC:
Zone 2 Ex nR IIC
- UL Standards:
844, 2279 Hazardous (classified) locations
1598 Luminaires
1598A Marine locations
- CSA Standards:
C22.2 No. 137
- IEC Standards:
60079-15



Yoke mounted FMV Champ floodlight with SFA6 slipfitter adapter.

Ordering Information:

(For Voltages, See Note 1)	Lamp Watts	Yoke Mount
High Pressure Sodium	150 (See Note 2)	FMVSY150/MT-76
	250	FMVSY250/MT-76
	400	FMVSY400/MT-76
Metal Halide	175	FMVMY175/MT-76
	250	FMVMY250/MT-76
	400	FMVMY400/MT-76
Pulse Start Metal Halide	250	FMVMY250/MT-76 S828
	320	FMVMY320/MT-76 S828
	400	FMVMY400/MT-76 S828
Mercury Vapor	175	FMVCY175/MT-76
	250	FMVCY250/MT-76
	400	FMVCY400/MT-76

Notes to Ordering Information
1. Catalog numbers shown are for multi-tap ballasts (120, 208, 240, or 277 volt; wired for 277 volt operation). 220 V 50 Hz, 240 V 50 Hz, and 480 volts ballasts also available. To order with other ballasts, change ''MT'' in catalog number to appropriate voltage. Example: FMVSY400/220-50-76. For Tri-tap ballast (120, 277, 347 volts) change MT to TT.
2. 150 watt HPS luminaires are furnished with ANSI spec./S55 ballasts for 55 volt lamps.
3. Luminaires are furnished with a ¾″ NPT drilled and tapped entrance.

Accessories

(Order Separately) **Cat. No.**

Slipfitter adapter (To be mounted to yoke mount luminaire) **SFA6**
(Note: SFA6 fits onto 2″ pipe/conduit)

Wall bracket (use with slipfitter adapter SFA6 for easy wall mounting & increased adjustability.) **SWB6**

Options

Description	Suffix to be Added to Cat. No.
Fused (not available with IR)	S658★
Quartz auxiliary	QTZ
● Non-hazardous locations only.	
● Lamp not furnished	
Instant restrike	IR
● Cannot be used with BG or QTZ.	
● 50-150W LX HPS only.	
Ballast Guard	BG
● Restricted Breathing Construction. Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers)	**S826**
● Certified for IEC Zone 2 Furnished with Terminal Block Crimp Terminals Dedicated voltage ballasts (no MT, DT or TT).	**S826TB**

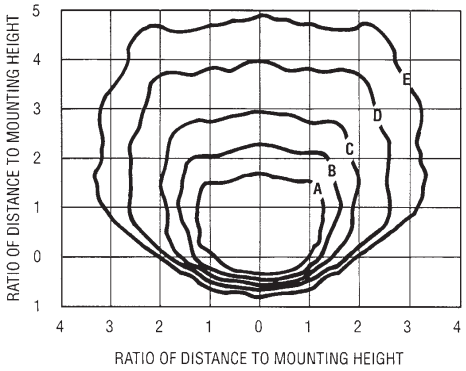
★ CSA certified luminaires are not available with multi-tap ballasts or fusing option.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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Isofootcandle Chart
FMV 400W high pressure sodium
Catalog number FMVSY400-76
Lamp: 400 watt clear high pressure sodium
Lumen rating: 50,000

For 150 watt high pressure sodium, multiply footcandles by 0.32. For 250 watt superior high pressure sodium, multiply footcandles by 0.6.

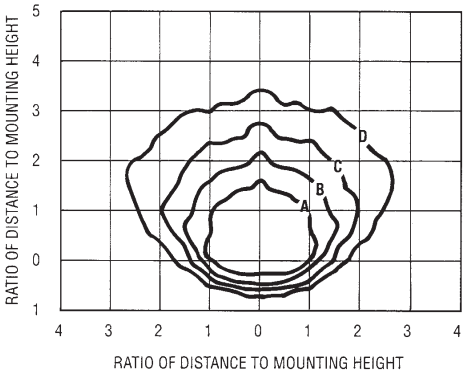


Luminaire located at 0°, 0° Aiming angle at 45°

(Note: Luminaire aiming angle limited to 30° past vertical through 60° before vertical.)

Isofootcandle Chart
FMV 400W metal halide
Catalog number FMVMY400-76
Lamp: 400 watt clear metal halide
Lumen rating: 34,000

For 250 watt clear metal halide, multiply footcandles by 0.6.



Luminaire located at 0°, 0° Aiming angle at 45°

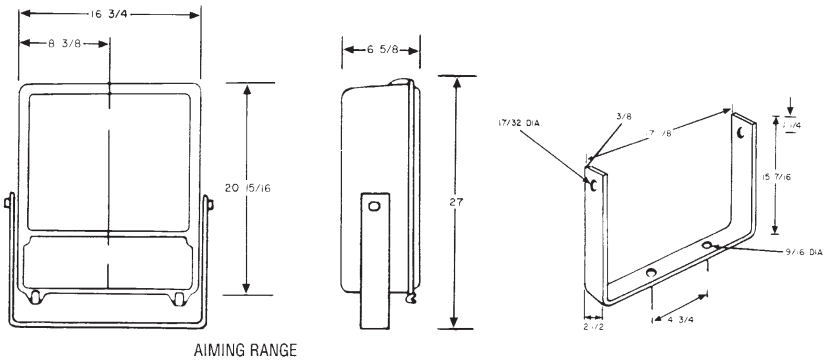
(Note: Luminaire aiming angle limited to 30° past vertical through 60° before vertical.)

EPA Data – Aiming Angle

0°=2.9 30°=2.5 45°=2.1

- 50 hertz ballast – luminaires can be ordered with either 220V 50 hertz or 240V 50 hertz ballasts.
- Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 70-400W HPS only. . . . . add suffix **BG.**

Dimensions



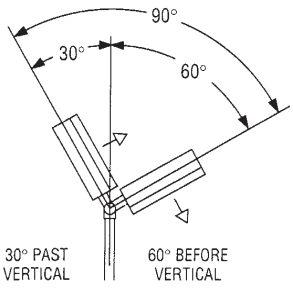


Table of Footcandle Values at Various Mounting Heights FMV 400W

Footcandle Values for both Isofootcandle Charts

Mounting Height	A	B	C	D	E
15′	8.0	4.0	2.0	0.8	0.4
20′	4.5	2.3	1.1	0.5	0.23
25′	2.9	1.4	0.7	0.3	0.14
30′	2.0	1.0	0.5	0.2	0.1
35′	1.5	0.7	0.4	0.15	0.07
40′	1.1	0.6	0.3	0.11	0.06

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Temperature Performance Data:

Lamp Watts	Ambient Temp °C	Class 1 Non-restricted Breathing Division 2	Class 1 Restricted Breathing (S826TB) Zone 2	Supply Wire °C
High Pressure Sodium				
150 Watt	40	T2C	T6	75
	55	T2C	T5	90
	65	T2B	T4	90
250 Watt	40	T2	T4	75
	55	T2	T4	90
	65	325 °C	T4	90
400 Watt	40	T1	T4	75
	55	T1	T3	90
	65	—	—	—
Metal Halide & Pulse Start				
175 Watt	40	T2	T4	75
	55	T2	T3	90
	65	325 °C	T3	90
250 Watt	40	T2	T4	75
	55	T2	T3	90
	65	325 °C	T3	90
320/400 Watt	40	325 °C	T3	75
	55	T1	T3	90
	65	—	—	—
Mercury Vapor				
175 Watt	40	325 °C	T4	75
	55	325 °C	T3	90
	65	325 °C	T3	90
250 Watt	40	325 °C	T3	75
	55	325 °C	T3	90
	65	325 °C	T3	90
400 Watt	40	325 °C	T3	75
	55	T1	T3	90
	65	—	—	—

Net Weights (lbs.)

Luminaires	FMVS	FMVM	FMVC
70-150W	37	—	—
175-250W	40	42	37
400W	44	44	41

SFA6 (Slipfitter Adapter) – Add 4 lbs.
SWB6 (Wall Bracket) – Add 6 lbs.

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COOPER Crouse-Hinds

1000-1500W FMV

High Wattage Series Champ® H.I.D. Luminaires

- Wet Locations
- 3, 3R

Application:

FMV1000 Series Very High Wattage Floodlights with wet locations suitability are used outdoors:

- at refineries, chemical, pharmaceutical and petrochemical plants, waste and sewage treatment plants, pulp and paper mills and other industrial facilities containing hazardous (classified) areas.
- to light process areas, storage tank and rack areas, loading docks, rail yards, building perimeters, parking areas, vehicle and pedestrian passageways and even sports applications.
- for security and safety lighting in industrial and process facilities.
- in industrial locations where the damaging effects of rain, snow, wind, moisture, dirt, corrosion, vibration and rough usage may be a problem.
- to produce superior light at low cost with great efficiency.

Standard Materials:

- Housing—Copper-free aluminum
- External hardware—stainless steel
- Yoke—Steel
- Lens—Heat and impact-resistant tempered glass
- Gasketing—neoprene

Standard Finishes:

- Aluminum—epoxy powder coat
- Steel (Yoke)—hot dipped galvanized
- Stainless Steel—natural

Ratings (Electrical/Size):

Sources/Wattages (Mogul Base Lamps)

- High Pressure Sodium (HPS) 1000W
- Metal Halide (MH) 1000W & 1500W
- Mercury Vapor (MV) 1000W

Voltages

Standard Voltage Ballasts

Hub Size

- ¾″ NPT
- Furnished prewired with cord connector And 3 ft. of 14/3 SO cord

Certifications and Compliances:

- NEC:
  Class I, Division 2, Groups A, B, C, D
- UL Standards
  844
  1598 Luminaires

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



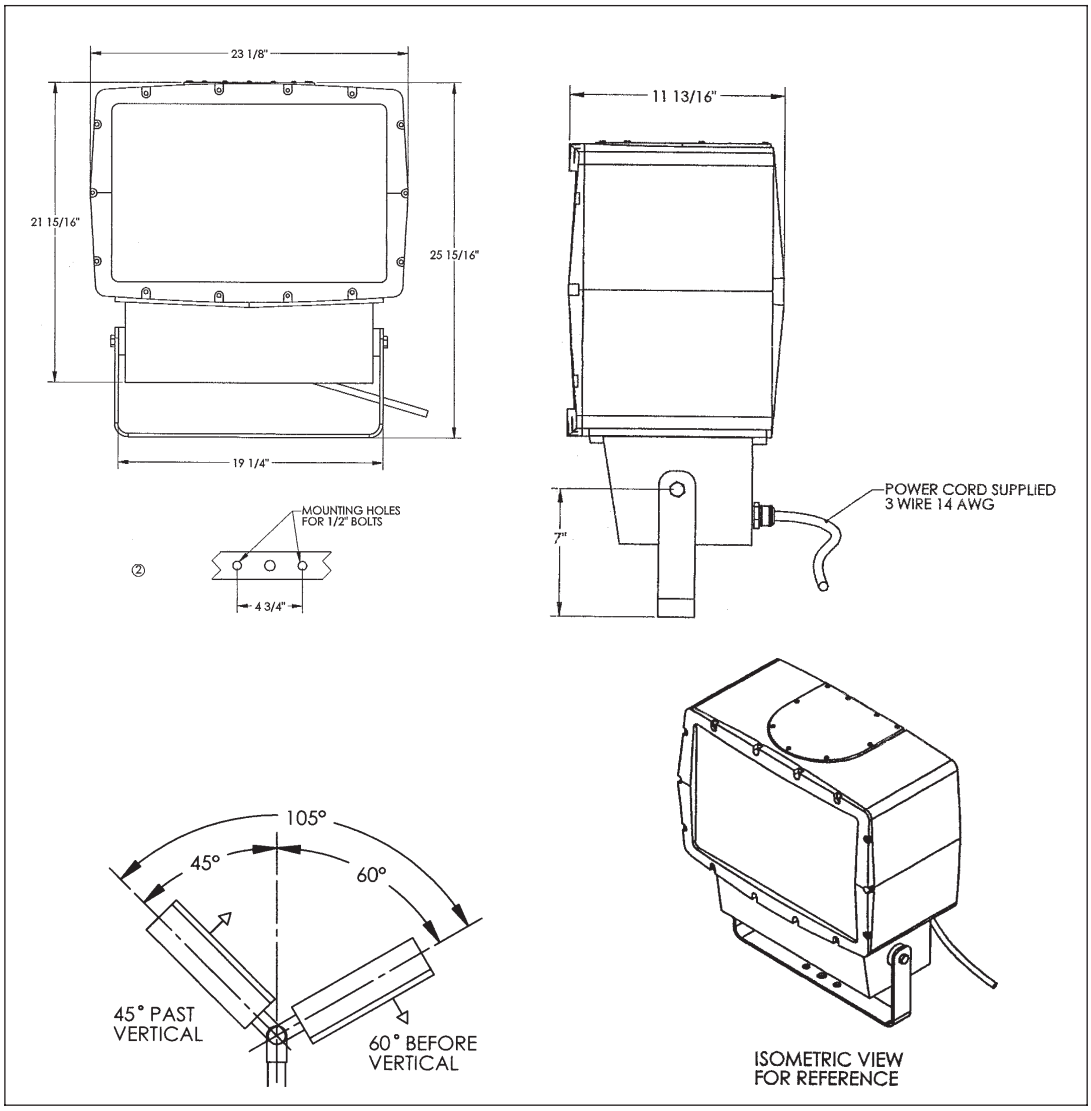
Key Features	Benefits
• Heavy duty copper-free aluminum housing with epoxy powder coat finish.	Superior performance, life and corrosion resistance
Unique 3 piece housing design.	Provides coolest operation for increased component life
• Prewired with 3 ft. of 14/3 SO cord. • Requires only two bolts to mount	Simplifies installation
• Easily adjustable to aim light where desired	Allows mounting location flexiblity, roof top, wall mount, etc.
• Heat and impact resistant tempered glass lens	Provides exceptional stability
• Heavy duty neoprene gasketing	Insures a reliable and long life environmental seal
• Anodized precision formed aluminum reflector	Superior beam control, distribution and efficiency.
• NEMA 7x6 beam spread for light pattern	The ideal light distribution for industrial applications
• Removable top plate provides easy access to lamp compartment	Minimizes maintenance. Lens removal is not required for lamp replacement.

Options:

Description	Suffix to be Added to Cat. No.
• Fusing	**S658***
• **Slipfitter adapter** (To be mounted to yoke mount luminaire) (Note: SFA6 fits onto 2″ pipe/conduit)	**SFA6**
• **Wall bracket** (use with slipfitter adapter SFA6 for easy wall mounting & increased adjustability.)	**SWB6**

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Dimensions:



Net Luminaire Weights (lbs)

Luminaire Series	Weight (lbs.)
FMVSY1000	95
FMVMY1000	88
FMVMY1500	98
FMVCY1000	92

Ordering Information:

*To complete Catalog Number, add Voltage and Options suffix(es)

Example: FMVSY1000/480-76-S658

Lamp Type	Watts	Base Catalog No.*
High Pressure Sodium	1000	FMVSY1000__-76
Metal Halide	1000	FMVMY1000__-76
	1500	FMVMY1500__-76
Pulse Start Metal Halide	1000	FMVMY1000__-76 S828
Mercury Vapor	1000	FMVCY1000__-76

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

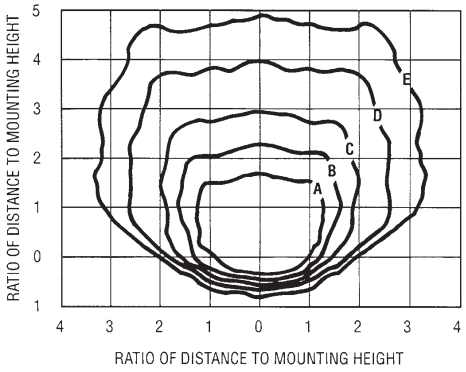
1. Standard Voltages - Add one of the following Suffixes (For other Voltages Consult Cooper Crouse-Hinds)

Voltage	120	480	MT	TT
Suffix	/120	/480	/MT	/TT

2. Options - Add the Required Options Suffixes from page 883, In Alpha-numeric Order

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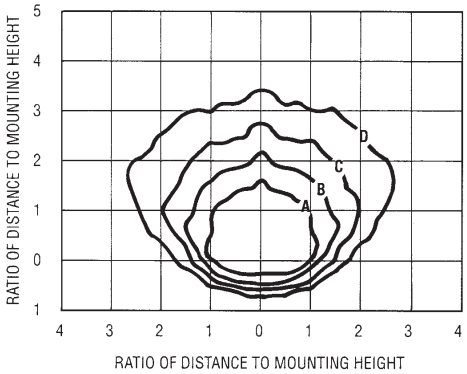
Isofootcandle Chart
FMV1000W High Pressure Sodium
Catalog Number FMVSY1000-76
Lamp: 1000 watt clear high pressure sodium
Lumen rating: 140,000



Luminaire located at 0°, 0°
Aiming Angle at 45°
(**Note:** Luminaire aiming angle limited to 45° past vertical through 60° before vertical.)

Isofootcandle Chart
FMV1000W Metal Halide
Catalog Number FMVMY1000-76
Lamp: 1000 watt clear metal halide
Lumen rating: 110,000

For 1500 watt clear metal halide, multiply footcandles by 1.4.



Luminaire located at 0°, 0°
Aiming Angle at 45°
(**Note:** Luminaire aiming angle limited to 45° past vertical through 60° before vertical.)

Footcandle Table for FMVS1000W

Mounting Height	Footcandle Values for Isofootcandle Lines				
	A	**B**	**C**	**D**	**E**
20′	12.6	6.4	3.1	1.4	.64
25′	8.1	3.9	2.0	0.8	0.4
30′	5.6	2.8	1.4	0.6	2.8
35′	4.2	2.1	1.0	.42	0.2
40′	3.1	1.6	0.8	.32	.17

Effective Projected Area (EPA)

- For windloading
- For proper pole selection

Aiming Angle	EPA
0°	3.5 ft²
45°	3.6 ft²
60°	2.9 ft²

Temperature Performance Data:

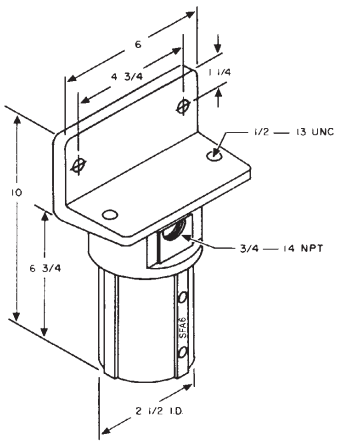
Class 1

Lamp	Watts	Non-restricted Breathing	Restricted Breathing	Ambient
		Division 2	**Zone 2**	
HPS	1000	T1	—	40 °C
Metal Halide	1000	T1	—	40 °C
Mercury Vapor	1000	T1	—	40 °C

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2.5″ O.D.
SWB6 Wall Bracket



SFA6 Slipfitter

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FZD Series Floodlight Luminaire

Cl. I, Div. 1 & 2, Groups C & D
Cl, I, Zone I
Marine Locations
Wet Locations, IP66

NEW!

Finally, a true floodlight luminaire for hazardous areas.

Cooper Crouse-Hinds® FZD-Series™ Luminaires are the first to deliver NEMA 7x6 floodlight distribution patterns for Class I, Division 1 and Zone 1 environments. That means you'll need fewer of them to illuminate a given area. With their labor-saving features and flexible mounting options, the FZD series is ideal for:

- heavy process industries where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, including those requiring elevated ambient capability, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and other heavy-process industrial facilities
- mounting to a wall, structure or pole (with pole mount adapter accessory)





FZD with separate ballest enclosure

KEY FEATURES AND BENEFITS

- **NEMA 7x6 floodlight distribution pattern is standard**—ideal light distribution for industrial applications; requires fewer luminaires in general lighting applications than required when using general-area luminaires with high-bay reflectors
- **Internal reflector**—available in wide and narrow-beam options; enclosed in glass tube, reducing maintenance and enhancing light output
- **Heavy-duty, cast copper-free aluminum construction with epoxy powder-coat finish and stainless steel hardware**— provides long life in industrial, abusive environments
- **Explosionproof threaded construction**—suitable for hazardous and industrial applications; easy to maintain with no bolted covers
- **O-ring gaskets on all threaded openings**— allow NEMA Type 4X and Marine Listing for the harshest outdoor environments
- **40°C, 55°C and 65°C ambient suitability**— ideal for use in high ambient temperature areas common in industrial facilities
- **Factory-sealed ballast housing**—keeps ballast isolated from wiring chamber
- **Trunnion (yoke) mount design**—standard construction provides the greatest mounting flexibility; can be vertically (wall) or horizontally (rooftop or floor) mounted
- **Simple installation**—requires only two bolts to mount
- **Mounting flexibility**—pole mount with SFA6-XP pole mount adapter (shown below) or wall or ceiling mount with FZD-KIT1 mounting accessory kit (shown above).



POLE MOUNT ADAPTER

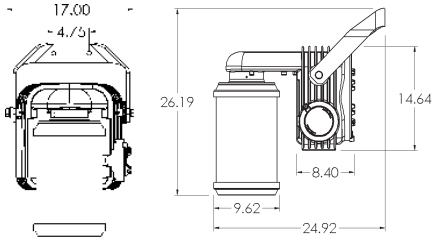
CERTIFICATIONS AND COMPLIANCES

NEC/CEC

- Class I, Division 1, Groups B (with suffix -GB*), C and D
- Class I, Zone 1, Groups IIB+H_2 (with suffix -GB*), IIB
- AEx d IIB+H_2 (with suffix -GB*), IIB
- Ex d IIB+H_2 (with suffix -GB*), IIB
- Marine Locations
- Wet Locations
- Enclosure Type 4X
- IP66
- UL Listed (UL Standards 844, 1598, 1598A, 2279)
- cUL Listed (certified by UL to CSA Standard C22.2 No. 137 and CAN/CSA-E60079-1)

*See options for Group B and IIB+H_2 ordering information

DIMENSIONS (inches)



STANDARD MATERIALS

- luminaire housing, covers, socket holder, lamptube end rings— copper-free aluminum
- external hardware—stainless steel
- glass lamp tube—heat and impact-resistant tempered glass
- O-ring gaskets—neoprene/silicone
- yoke—aluminum
- trunnion adapter—brass

STANDARD FINISHES

- aluminum—Corro-free™ epoxy powder coat
- stainless steel—natural
- brass—natural

LUMINAIRE WEIGHTS (lbs)

LUMINAIRE	FZDS (HPS)	FZDM (MH)
150-watt	72	75
175 to 250-watt	77	77
400-watt	80	80

RATINGS

SOURCES/WATTAGES (MOGUL BASE LAMPS)

- HPS—150, 250 & 400 watts
- MH—175, 250 & 400 watts

VOLTAGES

Standard Voltage Ballasts

- Multi-tap (120, 208, 240 & 277 V, 60 Hz)
- 120 V, 60 Hz
- 480 V, 60 Hz
- Tri-tap (120, 277 & 347 V, 60 Hz)

Optional Voltage Ballasts

- 220 V, 60 Hz
- 220 V, 50 Hz

HUB SIZE

- Standard: Two ¾″ NPT entries
- Optional: Two 25 mm (M25) entries (consult Cooper Crouse-Hinds)

EFFECTIVE PROJECTED AREA (EPA)

- For windloading
- For proper pole selection

AIMING ANGLE	EPA
0 degrees	1.8 ft²
45 degrees	2.3 ft²

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7L FZD Series Floodlight Luminaire

Cl. I, Div. 1 & 2, Groups C & D
Cl, I, Zone I
Marine Locations
Wet Locations, IP66

NEW!

ORDERING INFORMATION

To complete the catalog number, add option suffix(es) if desired.
Example: FZDS2NY400W/MT-S658

LAMP TYPE	WATTS	CATALOG NUMBER* YOKE MOUNT WITH ¾″ NPT HUBS
WIDE-BEAM REFLECTOR—NEMA 7x6 DISTRIBUTION		
High-Pressure Sodium	150**	FZDS2NY150W/MT
	250	FZDS2NY250W/MT
	400	FZDS2NY400W/MT
Metal Halide	175	FZDM2NY175W/MT
	250	FZDM2NY250W/MT
	400	FZDM2NY400W/MT
Pulse-Start Metal Halide	175	FZDM2NY175W/MT-S828
	250	FZDM2NY250W/MT-S828
	400	FZDM2NY400W/MT-S828
NARROW-BEAM REFLECTOR—SPOTLIGHT DISTRIBUTION		
High-Pressure Sodium	150**	FZDS2NY150N/MT
	250	FZDS2NY250N/MT
	400	FZDS2NY400N/MT
Metal Halide	175	FZDM2NY175N/MT
	250	FZDM2NY250N/MT
	400	FZDM2NY400N/MT
Pulse-Start Metal Halide	175	FZDM2NY175N/MT-S828
	250	FZDM2NY250N/MT-S828
	400	FZDM2NY400N/MT-S828

*All FZD catalog numbers shown above are with multi-tap ballasts (120, 208, 240 & 277 V, 60 Hz). The ''MT'' in the catalog number may be changed to any of the voltage suffixes listed below.
**150-watt HPS luminaires are furnished with ANSI spec/S55 ballasts for 55 V lamps.

FZD WITH SEPARATE BALLAST ENCLOSURE

GLASS FIBER REINFORCED POLYESTER BALLAST ENCLOSURE WITH CABLE ENTRY

LAMP TYPE	WATTS	T-CODE	CATALOG NUMBER
WIDE BEAM RELFECTOR – NEMA 7×6 DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 506
Metal Halide	400	T3	NOR 000 005 194 106
High Pressure Sodium	400	T3	NOR 000 005 194 006
NARROW BEAM RELFECTOR – SPOTLIGHT DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 505
Metal Halide	400	T3	NOR 000 005 194 105
High Pressure Sodium	400	T3	NOR 000 005 194 005

STAINLESS STEEL BALLAST ENCLOSURE WITH CABLE ENTRY

WIDE BEAM RELFECTOR – NEMA 7×6 DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 502
Metal Halide	400	T3	NOR 000 005 194 102
High Pressure Sodium	400	T3	NOR 000 005 194 002
NARROW BEAM RELFECTOR – SPOTLIGHT DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 501
Metal Halide	400	T3	NOR 000 005 194 101
High Pressure Sodium	400	T3	NOR 000 005 194 001

VOLTAGE SUFFIXES

STANDARD VOLTAGES	SUFFIX	OPTIONAL VOLTAGES	SUFFIX
Multi-tap (120, 208, 240, 277 V, 60 Hz)	/MT	220 V, 50 Hz	/220 50
Tri-tap (120, 277, 347 V, 60 Hz)	/TT	220 V, 60 Hz	/220
120 V, 60 Hz	/120		
480 V, 60 Hz	/480		

OPTIONS

	SUFFIX TO ADD TO CAT.NO.
Ballast-Gard™ starter cut-out switch prevents starter pulsing when lamp is cycling or inoperative. Prolongs ballast and igniter life. HPS only. Not available with IR option.	-BG
Factory Assembled with HID lamp installed for additional labor savings.	-FA
Factory Certified: Class I, Division 1, Group B and Class I, Zone 1, Group IIB+H2	-GB
Instant Restrike enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 150-watt HPS only.	-IR
Fusing protects ballast and capacitor against abnormal line conditions.	-S658*

ACCESSORIES (order separately)

	CATALOG NO.
FOR POLE MOUNTING	
Pole mount adapter ● Class I, Division 1, Groups B, C and D ● Attach to yoke; fits 2″ NPT conduit pole	SFA6-XP
Flexible explosionproof coupling	ECLK236
Elbow fitting	EL296-SA
FOR WALL OR CEILING MOUNTING	
Kit includes: EABC26-SA conduit outlet box, ECLK236 flexible explosionproof coupling, and EL296-SA elbow fitting.	FZD-KIT1

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

TEMPERATURE PERFORMANCE DATA

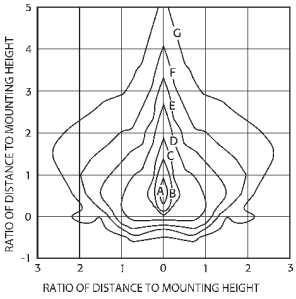
LAMP	AMBIENT TEMP °C	CLASS I, DIVISION 1, ZONE 1	SUPPLY WIRE °C
150-watt HPS	40	T3C	75
	55	T3C	75
	65	T3B	90
250-watt HPS	40	T3C	75
	55	T3C	75
	65	T3B	90
400-watt HPS	40	T3C	75
	55	T3C	75
	65	T3B	90
175-watt Metal Halide	40	T3A	75
	55	T3	75
	65	T3	90
250-watt Metal Halide	40	T3A	75
	55	T3	75
	65	T3	90
400-watt Metal Halide	40	T3A	75
	55	T3	75
	65	T3	90

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PHOTOMETRICS

Note: There are no aiming angle limitations for the FZD. The only limitations are those encountered by interference of the trunnion arm. The trunnion arm may be mounted on vertical or horizontal surfaces to overcome any limitations.

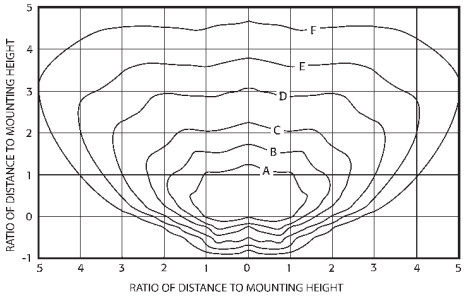
HPS Narrow Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W High Pressure Sodium (HPS)
Catalog Number
FZDS2NY400N
Lamp: 400 W Clear HPS
Lumen rating: 50,000
Luminaire located at
0°,0°Aiming Angle
at 45°down from horizontal
For 150 W HPS,
multiply footcandles by 0.32.
For 250 W HPS,
multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES						
	A	B	C	D	E	F	G
10′	200.00	100.00	50.00	20.00	10.00	5.00	2.00
12′	138.89	69.44	34.72	13.89	6.94	3.47	1.39
16′	78.13	39.06	19.53	7.81	3.91	1.95	0.78
20′	50.00	25.00	12.50	5.00	2.50	1.25	0.50
25′	32.00	16.00	8.00	3.20	1.60	0.8	0.32

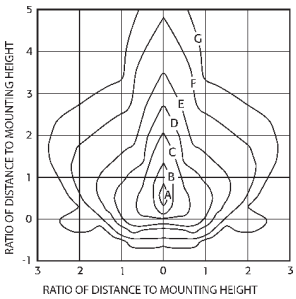
HPS Wide Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W High Pressure Sodium (HPS)
Catalog Number
FZDS2NY400W
Lamp: 400 W Clear HPS
Lumen rating: 50,000
Luminaire located at
0°,0°Aiming Angle
at 45°down from horizontal
For 150 W HPS,
multiply footcandles by 0.32.
For 250 W HPS,
multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10′	20.00	10.00	5.00	2.00	1.00	0.50
12′	13.89	6.94	3.47	1.39	0.69	0.35
16′	7.81	3.91	1.95	0.78	0.39	0.20
20′	5.00	2.50	1.25	0.50	0.25	0.13
25′	3.20	1.60	0.80	0.32	0.16	0.08

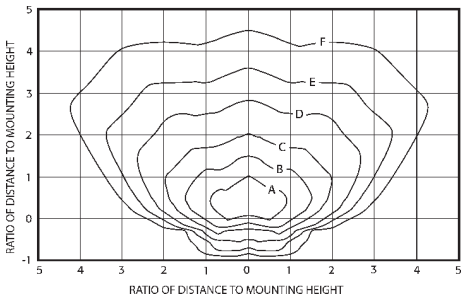
MH Narrow Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W Metal Halide (MH)
Catalog Number
FZDM2NY400N
Lamp: 400 W Clear MH
Lumen rating: 34,000
Luminaire located at
0°,0°Aiming Angle
at 45°down from horizontal
For 175 W MH,
multiply footcandles by 0.38.
For 250 W MH,
multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES						
	A	B	C	D	E	F	G
10′	100.00	50.00	20.00	10.00	5.00	2.00	1.00
12′	64.99	34.72	13.89	6.94	3.47	1.39	0.69
16′	39.06	19.53	7.81	3.91	1.95	0.78	0.39
20′	25.00	12.50	5.00	2.50	1.25	0.50	0.25
25′	16.00	8.00	3.20	1.60	0.80	0.32	0.16

MH Wide Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W Metal Halide (MH)
Catalog Number
FZDM2NY400W
Lamp: 400 W Clear MH
Lumen rating: 34,000
Luminaire located at
0°,0°Aiming Angle
at 45°down from horizontal
For 175 W MH,
multiply footcandles by 0.38.
For 250 W MH,
multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
A	B	C	D	E	F	
10′	20.00	10.00	5.00	2.00	1.00	0.50
12′	13.89	6.49	3.47	1.39	0.69	0.35
16′	7.81	3.91	1.95	0.78	0.39	0.20
20′	5.00	2.50	1.25	0.50	0.25	0.13
25′	3.20	1.60	0.80	0.32	0.16	0.08

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7L Hazard•Gard® H.I.D. Floodlights

Factory Sealed

Cl. I, Div. 1 & 2, Groups C & D
Cl. I, Div. 1 & 2, Groups B, C, D (Add suffix GB)
Cl. I, Zone 1
Marine Locations, IP66
Wet Locations

Application:

Hazard•Gard luminaires with Trunnion Arm (S812 suffix) and EV912 high bay reflector are used in:
- heavy process industries where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and other heavy process industry facilities
- hazardous locations requiring elevated ambient capability
- for mounting to a wall or structure
- mounted on a pole, when used with the SFA6 slipfitter adapter

Features:

- Luminaire is factory wired; power is fed through ''wireless'' connection block which serves as a mechanical seal between conduit and ballast compartments, eliminating the need for an external, field installed seal. The result is fast, easy installation.
- High bay reflectors of Alzak® aluminum
- Internally fluted glass globes reduce glare and provide comfortable viewing light.
- Wide range of light sources and wattages to meet specific lighting needs – 50, 70, 100, 150, 200, 250 and 400W high pressure sodium (HPS); 100, 175, 250 and 400W mercury vapor (MV); 70, 100, 175, 250 and 400W metal halide (MH).
- High power factor (90% +) ballasts reduce power costs – allow more luminaires per circuit.
- Elevated ambient capability permits reliable operation at high ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Integral ballasts – separate ballasts are not required. Lowest installed cost.
- Factory sealed, porcelain, mogul base socket.
- the trunion arm gives you the ability to offer a Hazard•Gard floodlight with varying degrees of adjustability between –90° and +90°.
- when mounting on a wall, there are numerous mounting arrangements – due to the pre-drilled openings in the wall bracket.

Standard Materials:

- Mounting module, cover, ballast housing, guard, globe ring – copper-free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Lamp socket – porcelain with stainless steel screw shell
- Reflector – high bay: Alzak aluminum

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- Alzak – natural (anodized)

Options:

Description	Suffix to be Added to Cat. No.
• Fused	S658
• Ballast•Gard	BG
• 50-400 HPS only	
• Instant Restrike	IR
• Cannot be used with BG or QTZ options	
• 50-150W LX HPS only	
• Quartz Auxiliary Lighting	QTZ
• Not available with 400W MH or MV	
• Uses 100 watt single ended lamp	
• Lamp not included	
• Group B Suitability	GB

Size Ranges:

¾″

Electrical Rating Ranges:

- 120, 208, 240, 277, 347, 480, 600, multi-tap★.
- 50 to 400 watts

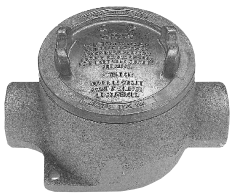
Certifications and Compliances:

- NEC/CEC
  Class I, Division 1 and 2, Groups B (with GB suffix), C, D
- UL Standard: 844, 595
- CSA Standard: C22.2 No. 137

Ordering Information

- Catalog number includes Guard, Trunnion Arm and High Bay Reflector

Luminaire Cat. No. NOTE: Replace ''volts'' with Suffix from Voltage Suffix Table below	Watts	Hub Size
HIGH PRESSURE SODIUM		
EVMA42051/volts S812 EV3912	50	¾
EVMA42071/volts S812 EV3912	70	¾
EVMA42101/volts S812 EV3912	100	¾
EVMA42151/volts S812 EV3912	150	¾
EVMA42201/volts S812 EV3912		¾
EVMA42251/volts S812 EV3912		¾
EVMA42401/volts S812 EV3912		¾
MERCURY VAPOR		
EVMA82101/volts S812 EV3912	100	¾
EVMA82171/volts S812 EV3912	175	¾
EVMA82251/volts S812 EV3912	250	¾
EVMA82401/volts S812 EV3912	400	¾
METAL HALIDE		
EVMA92071/volts S812 EV3912	70	¾
EVMA92101/volts S812 EV3912	100	¾
EVMA92171/volts S812 EV3912	175	¾
EVMA92251/volts S812 EV3912	250	¾
EVMA92401/volts S812 EV3912	400	¾



EABC

Hub Size	Cat. #
¾	EABC26



UNL

90° Angle

Size	Cat. #
¾ to ¾	UNL205



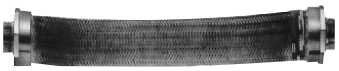
Temperature Performance Data
Hazard•Gard Luminaire with Trunnion Arm (S812 suffix)

Watts	Maximum Ambient Class I 40°C	55°C	65°C
High Pressure Sodium			
50	T4	T4	T3C
70	T4	T4	T3C
100	T4	T4	T3C
150	T4	T4	T3C
200	T3A	—	—
250	T3A	—	—
400	T3A	—	—
Mercury Vapor			
100	T3	T3	—
175	T3	T3	—
250	T3	T3	—
400	T2D	—	—
Metal Halide			
70	T3	T3	—
100	T3	T3	—
175	T3	T3	—
250	T3	T3	—
400	T2D	—	—

NOTE: See Section 4L for additional luminaire information.

Alzak is a registered trademark of ALCOA

★ CSA Certified luminaires are not available with multi-tap ballast or S658 fuse option.



ECGJH

Flexible

Length	Size	Cat. #
30	¾	ECGJH230

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Application:
RCDE incandescent lighting luminaires are permanently installed to provide general illumination in locations having hazardous atmospheres, such as:
- oil refineries
- oil and gasoline loading docks
- aircraft servicing docks and shelters
- distilleries
- paint manufacturing plants
- pumping stations
- other Class I, Groups C and D locations

Features:
RCDE incandescent lighting luminaires have fixed mountings as follows:
- RCDE-6 – junction box base with four mounting feet or 2″ threaded hub (fill sealing chamber with *Chico*® A after conductors are in place)
- RCDE-6 adjustment allows rotation of 360° horizontally and 75° vertically.
- Locking screws hold housing firmly in position
- RCDE-10 – junction box base with four mounting feet
- door which threads into housing includes heat and impact-resistant lens. Door has notches or holes provided for ease of removing or tightening
- factory wired leads through explosion-proof seal to junction box
- adjustment that allows rotation of 360° horizontally and 135° vertically. Locking bolts or clamps hold housing firmly in position

Standard Materials:
Body – copper-free aluminum; Lens – glass, heat and impact resistant

Standard Finishes:
- Natural

Size Ranges:
- RCDE – Fixed mounting – ¾″ hubs

Capacity Ranges:
- RCDE-6 – 150 watt, PAR38 or R40; 300 watt, R40 (medium base)
- RCDE-10 – 500 watt, PAR64 (Ext. Mog End Prong)

Certifications and Compliances:
- NEC/CEC:
  RCDE – Class I, Division 1 and 2, Groups C,D Class I, Zone 1 (see photometric data listing)
- UL Standard: 844
- CSA Standard: C22.2 No. 137 (RCDE6 only)

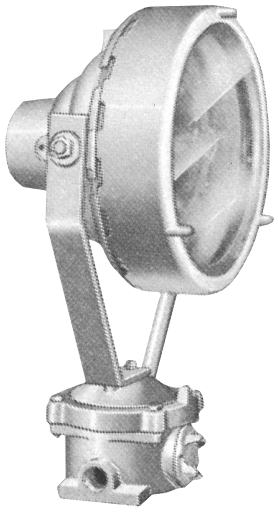
Note: CEC/CSA Certified RCDE6- Cooper Crouse-Hinds Canada luminaires only.

Ordering Information:
After identifying the hazardous area, select the model of lighting luminaire required for that area. Then from the photometric data, select appropriate Cat. No. based on type of mounting desired. Example: RCDE-10 No. 47282



RCDE-6

Description	Cat. #
Junction box base (2″ threaded hub)	44978A
Junction box base (4 mtg. feet)	44719B



RCDE-10

Description	Cat. #
Junction box base (4 mtg. feet)	47282A

Temperature Performance Data
(based on 40°C Ambient)

	150W	300W	500W
RCDE-6	T3B	T2B	
RCDE-10			T3C

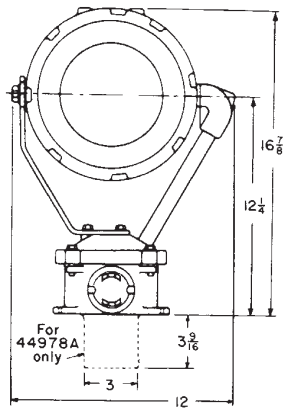
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RCDE Series
Incandescent Floodlights

Dimensions & Weights
Photometric Data
Cl. I, Div. 1 and 2, Group D
Explosionproof

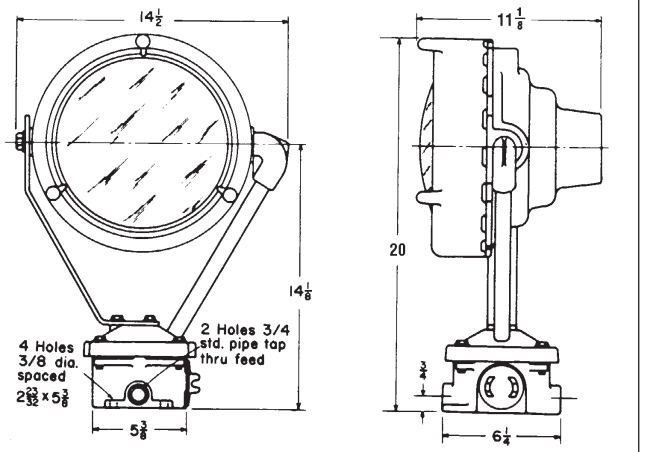
Dimensions (inches)

RCDE-6



Dimensions

RCDE-10



Fixture Weights

RCDE-6

Cat. #	Lbs. (Net)
44719B	21.0
44978A	21.0

RCDE-10

Cat. #	Lbs. (Net)
47282A	26.0

RCDE Photometric Data

Lamp Watts and Type	Location	Beam Spread Hor.	Beam Spread Vert.	Beam Lumens	Av. Max. Candle Power	Model
150 Watt PAR38 Flood	Class I Groups C,D	60°	60°	1690	4000	RCDE-6
150 Watt PAR38 Spot		28°	28°	1200	11500	
300 Watt* R40 Flood	Class I Group D	123°	123°	3200	1950	
300 Watt R40 Spot		60°	60°	3100	8900	
500 Watt, PAR64 (500 PAR64/NSP)	Class I, Group D	19°	14°	3000	110000	RCDE-10
500 Watt, PAR64 (500 PAR64/MFL)		35°	19°	3300	37000	
500 Watt, PAR64 (500 PAR64/WFL)		55°	32°	3400	13000	

* CSA certified fixtures are for 150 watt lamp maximum.

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Description	Page No.
Application/Selection	894-897
Hazardous Area Hangers	
Adjustable Type	
UNR	911
Flexible Type	
EC Series	905
Locking Coupling	
COUP Series	911
Outlet Box Type	
EAHC/EFHC Series	906
GUA/GUF Series	909, 910
CPS Series	908
Outlet Box Type with Flexible Cushion	
EFHX Series	907
Non-Hazardous Area Fittings	
Conduit Clamps	
CHS Series	903
Non-Hazardous Area Hangers – Flexible Type	
Ball and Cushion	
ARB Series	901
UNJ/UNJC Series	899, 900
Cushion – Vaportight	
AHG Series	899, 900
UNHC Series	903
Hooks and Loops	
UNE, UNH, UNHC Series	902, 903
Outlet Box – Ball and Cushion	
AL Series	898, 900
Quick Disconnect Type	
FHM Series	904

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Application:

Luminaire hangers listed in this section are used for pendant suspension of incandescent, high intensity discharge and fluorescent industrial luminaires. They are especially suitable for use in locations where moisture, dust, and corrosion are a problem.

Hangers for Non-Hazardous Locations:

- Hangers listed provide a wide variety of mounting means. Luminaires may be suspended from cast outlet boxes, stamped steel outlet boxes, or directly from the conduit system. Also offered are several styles of hook type hangers, used to suspend luminaires by means of conduit stems or support rods from span wires, horizontal conduit and luminaire loops.
- All hangers are flexible, permitting luminaire and supporting stem to swing freely. This feature permits luminaires to hang plumb and prevents damage to the luminaire, stem and outlet box in case of high wind or accidental impact.
- Hangers are constructed so that luminaires cannot be rotated, thereby eliminating wire twisting and possible damage to connections.
- Cushion hangers, listed for most styles, include a spring which carries the weight of the luminaire. This feature prolongs lamp life and protects the luminaire assembly from shock or vibration.
- All hangers are easily installed. With many, the luminaire, stem and support member can be assembled and wired at the work bench before making the final installation. With several, a quick disconnect plug and receptacle feature is either provided or can be easily arranged, to facilitate luminaire installation and removal for maintenance.

Hangers for Hazardous Locations:

- As required by NEC Article 501 and CEC Part I Section 18, rigid conduit luminaire stems longer than 12″ must be permanently and effectively braced or flexibility provided in the form of a fitting or flexible support.
- A variety of hangers is offered for both rigid conduit suspension and flexible suspension. Flexible luminaire hangers listed comply with NEC Article 501 and CEC Part I Section 18 and also permit luminaires to hang plumb.

Considerations for Selection:

Location:

- Will it be a hazardous or non-hazardous location?
- Will it require more stringent corrosion protection material?

Lighting luminaire to be used:

- Some hangers can be used with a multitude of luminaires; others are specialized.
- Weight of luminaire is a consideration in selecting cushion hangers.

Typical Luminaire Weights:

Luminaire Type	Weight (lbs.)
Incandescent:	
VAPORGARD™ Series	
VDA12	1½
VDA12G	4
VDA12GP	4¼
VDA15	1¼
VDA15G	3
VDA15GP	3¼
VDA23	1½
VDA23G	4
V Series	
V275	2¾
V2759	4¼
EV Series	
EVA240	7½
EVA210	7¾
EVA215	8
EVA220	10½
EVA230	19
EVA292	18
Corro•Gard® Series	
NDA32	5½
NDA32G	7½
NDA33	5½
NDA33G	8¼

Luminaire Type	Weight (lbs.)
H.I.D.:	
Champ® Series	
AMV	20¼
DMVC2A100GP	28¾
DMVC2A175GP	30
DMVC2A250GP	31¾
DMVM2A175GP	33
DMVM2A250GP	33¾
DMVS2A070GP	30¾
DMVS2A100GP	31¾
DMVS2A150GP	34
LMVS2A035GP	10¾
LMVS2A050GP	11¾
LMVS2A070GP	11¾
LMVS2A100GP	12¼
VMVC2A100GP	15
VMVC2A175GP	17¼
VMVC2A250GP	31
VMVC2A250GR305	34
VMVC2A250GRD4	31½
VMVC2A400GR305	37
VMVC2A400GRD4	34½
VMVM2A175GP	17¼
VMVM2A250GP	34
VMVM2A250GR305	37
VMVM2A250GRD4	34½
VMVM2A400GR305	38
VMVM2A400GRD4	35½
VMVS2A050GP	15¼
VMVS2A070GP	16¼
VMVS2A100GP	16¼
VMVS2A150GP	16½
VMVS2A200GP	31
VMVS2A200GR305	34
VMVS2A200GRD4	31½
VMVS2A250GP	31
VMVS2A250GR305	34
VMVS2A250GRD4	31½
VMVS2A400GP	40
VMVS2A400GR305	43
VMVS2A400GRD4	40½

Luminaire Type	Weight (lbs.)
Hazard-Gard® Series	
EVMA50W HPS	41
EVMA70W HPS	41
EVMA100W HPS	45
EVMA100W MV	39
EVMA150W HPS (55V)	46
EVMA150W HPS (100V)	45
EVMA175W MV	42
EVMA175W MH	43
EVMA200W HPS	47
EVMA250W HPS	47
EVMA250W MV	44
EVMA250W MH	44
EVMA400W HPS	56
EVMA400W MV	50
EVMA400W MH	52
Fluorescent:	
DMVF2A026GP	19¼
DMVF2A039GP	22¼
DMVFB2A026GP	19½
DMVFB2A039GP	22½
EVF22062	57
EVF24062	94
EVF22082	52
FVN4240	52
FVN4340	54
FVN4260	58
NFW4240	21
VFA222G	4
EVFT (2 Lamp)	19½
EVFT (4 Lamp)	36½
FVS	12
Reflector/Refractor Type	
EV3912	1
RA64, 636	1¼
RA70, 71, 739, 725	1
RD64, 636	1¼
RD70, 71, 739, 725	1
PR2, 3, 5	3
R2	13½
R5	13
GRD4	13¾
G241	2¼
G245	2¼
GR305, GR205	14

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Luminaire Hangers and Accessories – For Pendant Mount

Quick Selector Chart

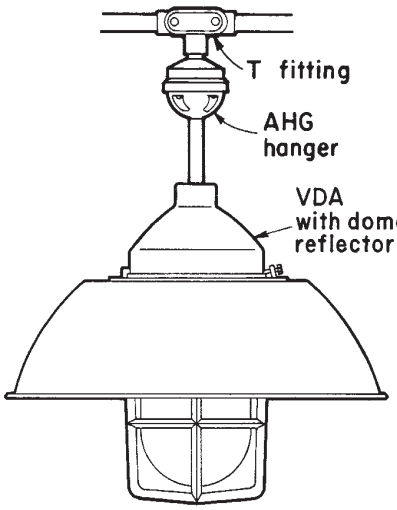
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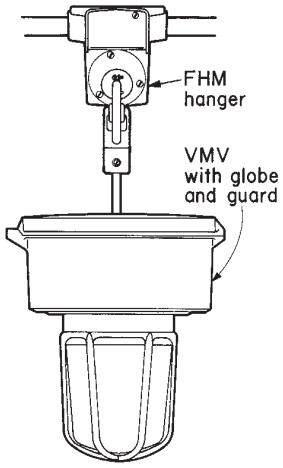
Hanger Type	Function	NEC/CEC Hazardous Area Compliances	Use with Luminaire Type	Use with Mtg. Box	Luminaire Weight Capacity (Cushion)	Luminaire Weight Capacity (Ball or Plain Type)	Standard Material
AL	Outlet box and hanger	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	None needed	3-48 lbs.	125 lbs.	Body – Feraloy® iron alloy Nipple – malleable iron Cover – sheet steel
FHM	Quick disconnect between luminaire and outlet box	Not applicable	Any non-hazardous	None needed		125 lbs.	Body – copper-free aluminum Cover – steel Loop and assembly – copper-free aluminum or steel
AHG	Gasketed hanger (vaportight)	Class I, Div. 2; Class II, Div. 2; Class III Wet locations NEMA 3, 3R	Any non-hazardous or Div. 2 luminaires	Any	4-30 lbs.	—	Housing – malleable iron and Feraloy iron alloy Stem support – Feraloy iron alloy
UNJ/UNJC	Ball and cushion hanger	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	Any	6-48 lbs.	125 lbs.	Body – malleable iron Clamp – copper-free aluminum
ARB	Ball or cushion hanger	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	GRF	4-30 lbs.	125 lbs.	Body – Feraloy iron alloy
UNE, UNH, UNHC	Quick disconnect hanger hook	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	Not applicable	12-64 lbs.	125 lbs.	Malleable iron, copper-free aluminum
EC	Explosion-proof flexible hanger	Cl. I, Groups A, B, C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	Any	—	—	Body – bronze hose Fittings – steel
GUA, GUJ, GUF	Explosion-proof boxes and hanger covers	Cl. I, Groups C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	None needed	—	125 lbs.	Boxes – Feraloy iron alloy Cover – copper-free aluminum
EAHC, EFHC	Explosion-proof hanger	Cl. I, Groups A, B, C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	None needed	—	125 lbs.	Body – Feraloy iron alloy Cover – copper-free aluminum
UNR	Explosion-proof adjustable hanger	Cl. I, Groups C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous or non-hazardous	Any	—	125 lbs.	Feraloy iron alloy
EFH	Explosion-proof boxes and hangers	Cl. I, Groups C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	None needed	65 lbs.	—	Feraloy iron alloy

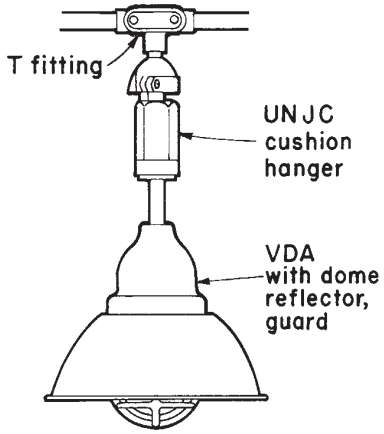
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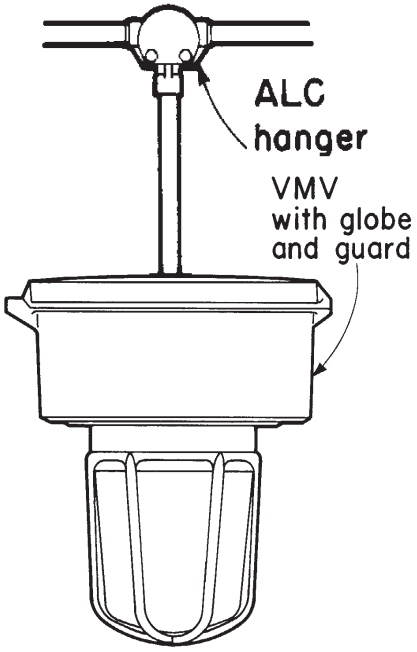
Luminaire Hangers and Accessories – For Pendant Mount

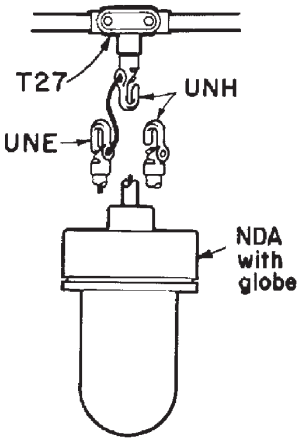
Typical Installations







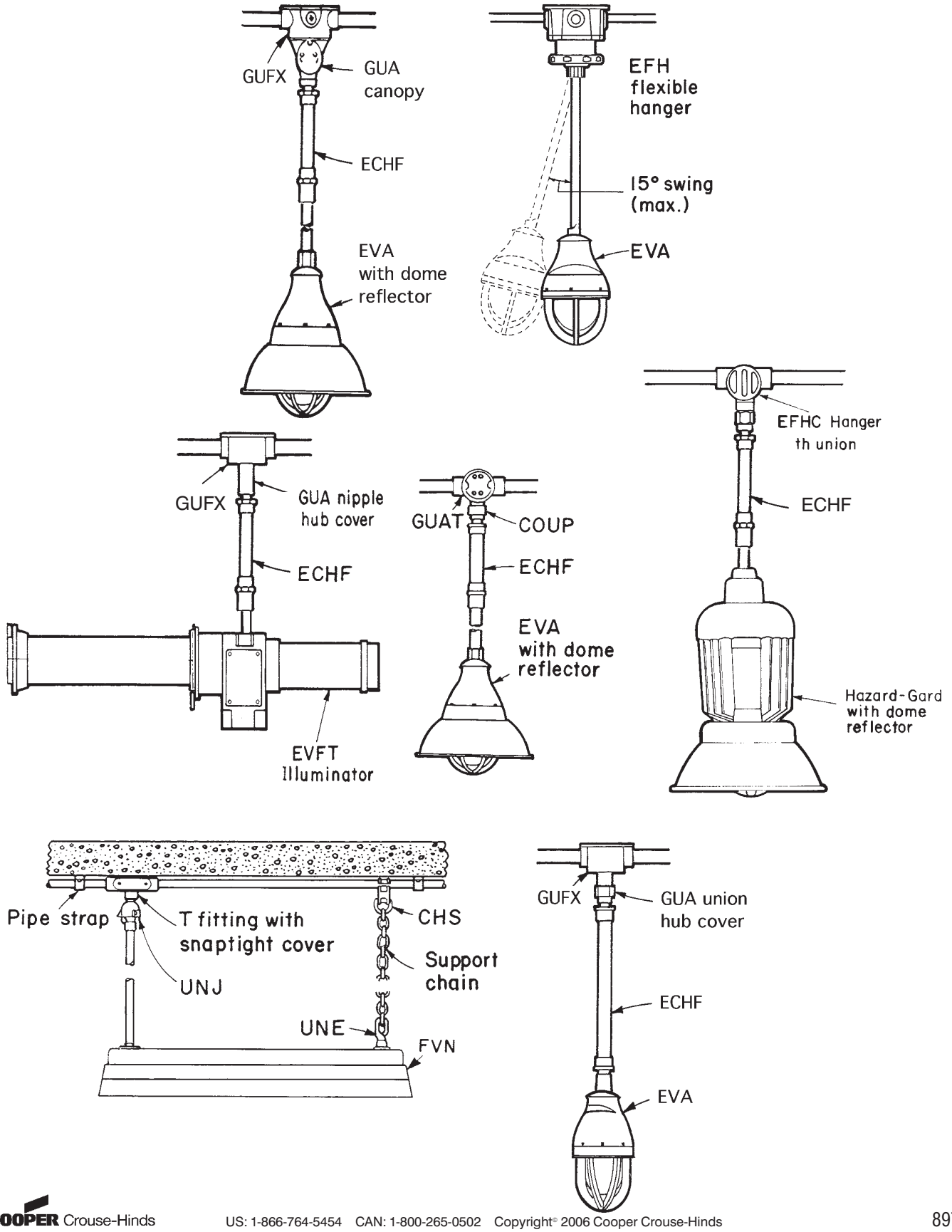




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Luminaire Hangers and Accessories – For Pendant Mount

Typical Installations



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AL Flexible Luminaire Hangers

For Pendant Mount

Class I, Div. 2, Groups A, B, C, D

Features:

Functions as both conduit outlet box and luminaire hanger. Hubs are provided for threading the conduit directly into the hanger body. For use with incandescent, H.I.D. and fluorescent luminaires.

- Supporting nipple, ball or cushion type, is a universal joint permitting luminaire to swing through an angle of 20 degrees in any direction from the perpendicular.
- Cover has one screw hole and one open slot – easily swung aside for wiring without removal and possible loss of cover.
- Luminaire, conduit stem and nipple can be assembled and wired at the work bench. The assembly is then placed in the hanger body and luminaire wires spliced to the circuit wires.
- Provided with a separate grounding wire for ground connections.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Nipple – malleable iron
- Cover – sheet steel

Standard Finishes:

- Feraloy and malleable iron – zinc electroplate and aluminum acrylic paint
- Sheet steel – electrogalvanized with chromate finish

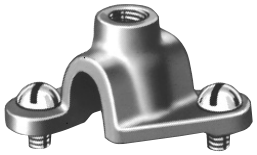
Size Ranges:

- Conduit hubs – ¾″ to 1″
- Luminaire stem – ½″ and ¾″
- Luminaire weight – cushion type, 3 to 48 lbs.; ball type, 125 lbs.

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to Cat. #
Suspension attachment for span wire or threaded rod. See listings	S1



Suspension Attachment

For horizontal cable or vertical support rod

AL hangers can be furnished with a loop fastened to the top of the body to provide a means for suspending luminaires from vertical support rods or horizontal span wires. The loop will take a wire or cable with a maximum diameter of ⅜″. The boss on top of the loop is tapped ⅜″-16 to accept a threaded rod.



Ball



Cushion

ALC

Ball

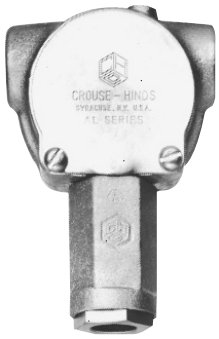
Luminaire Stem Size	Conduit Size	Cat. #
½	¾	ALC21
¾	¾	ALC22
¾	1	ALC32

Cushion

Luminaire Stem Size	Conduit Size	Luminaire Weight Lbs.	Cat. #
½	¾	3 to 6	ALC214
¾	¾		ALC224
¾	1		ALC324
½	¾	6 to 12	ALC218
¾	¾		ALC228
¾	1		ALC328
½	¾	12 to 24	ALC2116
¾	¾		ALC2216
¾	1		ALC3216
½	¾	24 to 48	ALC2132
¾	¾		ALC2232
¾	1		ALC3232



Ball



Cushion

ALT

Ball

Luminaire Stem Size	Conduit Size	Cat. #
½	¾	ALT21
¾	¾	ALT22
¾	1	ALT32

Cushion

Luminaire Stem Size	Conduit Size	Luminaire Weight Lbs.	Cat. #
½	¾	3 to 6	ALT214
¾	¾		ALT224
¾	1		ALT324
½	¾	6 to 12	ALT218
¾	¾		ALT228
¾	1		ALT328
½	¾	12 to 24	ALT2116
¾	¾		ALT2216
¾	1		ALT3216
½	¾	24 to 48	ALT2132
¾	¾		ALT2232
¾	1		ALT3232

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AHG, UNJ and UNJC Flexible Luminaire Hangers

For Pendant Mount

AHG – Class I, Div. 2, Groups A, B, C, D
Class II, Div. 2, F, G
Class III
Wet Locations NEMA 3, 3R
UNJ, UNJC – Class I, Div. 2, Groups A, B, C, D

Features:

- For connection to conduit hub or hub cover of supporting conduit fitting
- For incandescent, H.I.D., and fluorescent luminaires
- Cushion support for conduit stem is a universal joint permitting luminaire to swing through an angle of 8 degrees in any direction from the perpendicular
- Gasketed by means of a durable neoprene diaphragm which excludes moisture and dirt from both luminaire and conduit system

Standard Materials:

- Housing: top cap – malleable iron; bottom cap – *Feraloy*® iron alloy
- Luminaire stem support – *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* iron alloy and malleable iron – electrogalvanized and aluminum acrylic paint

Size Ranges:

- Male nipple – ¾″
- Luminaire stem – ¾″
- Luminaire weight – 4 to 30 lbs.



AHG

Cushion Vaportight for Class I, Div. 2; Class II, Div. 2; Class III

Luminaire Stem Size*	Male Nipple Size*	Luminaire Weight Lbs.	Cat. #
¾	¾	4 to 8	AHG22103
¾	¾	8 to 16	AHG22104
¾	¾	16 to 30	AHG22111

Certifications and Compliances:

Class I, Div. 2
Class II, Div. 2
Class III
Wet Locations
NEMA 3,3R

Features:

- For connection to conduit hub or hub cover of supporting conduit fitting
- For incandescent, H.I.D., and fluorescent luminaires
- Supporting nipple, ball or cushion type, is a universal joint permitting luminaires to swing through an angle of 20 degrees in any direction from the perpendicular

Standard Materials:

- Body and nipple – malleable iron
- Clamp – copper-free aluminum

Standard Finishes:

- Malleable iron – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural finish

Size Ranges:

- Male nipple – ½″ and ¾″
- Luminaire stem – ½″ and ¾″
- Luminaire weight: cushion type – 6 to 48 lbs.; ball type – 125 lbs.

Certifications and Compliances:

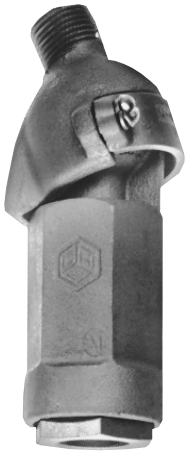
- NEC: Class I, Div. 2.



UNJ

Ball

Luminaire Stem Size	Male Nipple Size	Cat. #
½	½	UNJ1
¾	¾	UNJ2



UNJC

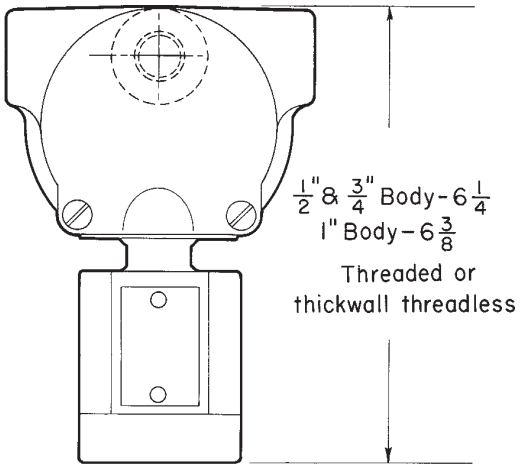
Cushion

Luminaire Stem Size*	Male Nipple Size*	Luminaire Weight Lbs.	Cat. #
¾	¾	6 to 12	UNJC28
¾	¾	12 to 24	UNJC216
½	½	24 to 48	UNJC132
¾	¾		UNJC232

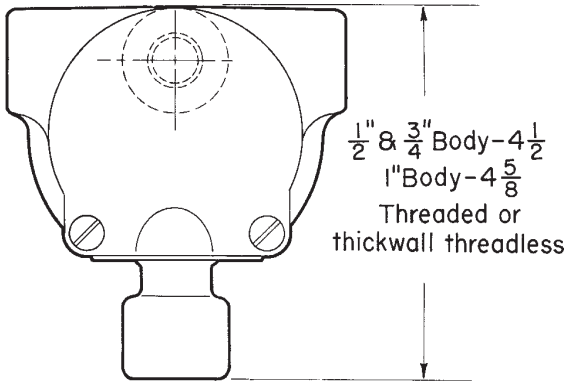
* ½″ connection can be made by using reducers.

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AL Series

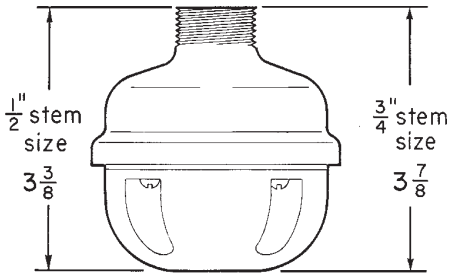


Cushion

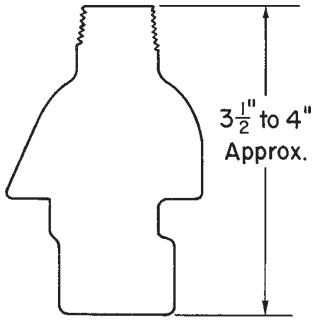


Ball

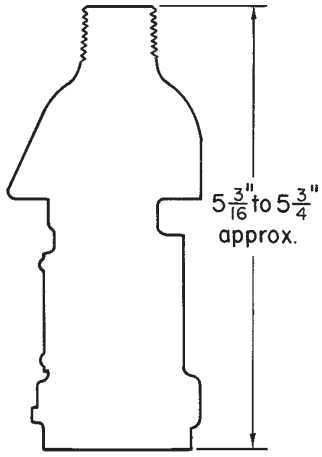
AHG



UNJ



UNJC



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COOPER Crouse-Hinds

ARB and GS Flexible Luminaire Hangers

For Pendant Mount

Features:

- Available in two styles – one for direct attachment to GRF cast outlet boxes by 4 screws, the other for direct attachment to 4″ octagonal stamped steel outlet boxes by 2 screws. For incandescent, H.I.D. and fluorescent luminaires
- Both styles available with ball or cushion support for conduit stem to permit luminaire swing in any direction. Ball type provides 11 degree swing, cushion type 8 degree swing from the perpendicular
- Gasketed cushion hangers for GRF are provided with a durable neoprene diaphragm which excludes moisture and dirt from both luminaire and conduit system

Standard Materials:

- Mounting plate: for GRF – *Feraloy*® iron alloy; for 4″ outlet boxes – sheet steel
- Hanger body and luminaire stem support – *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Sheet steel – electrogalvanized with chromate finish

Size Ranges:

- Luminaire stem – ½″ and ¾″
- Luminaire weight: cushion type – 4 to 30 lbs.; ball type – 125 lbs. (ARB6 and ARB2 maximum weight 60 lbs.)

For GRF and VXF outlet boxes only



Ball



Cushion

For GRF and VXF outlet boxes and 4″ octagonal outlet boxes



Ball



Cushion

ARB Fits GRF and VXF Outlet Boxes

Ball

Description	Luminaire Stem Size	Luminaire Weight (Max.)	Cat. #
Surface	½	125	ARB62
Flush	½	125	ARB67
Surface	125	¾	ARB662

Cushion Surface

Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
½	4 to 8	ARB82
½	8 to 16	ARB102
½	16 to 30	ARB122

Cushion Surface – Vaportight with Neoprene Diaphragm

Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
½	4 to 8	ARB821
½	8 to 16	ARB1021
½	16 to 30	ARB1221

ARB Fits GRF, VXF and 4″ Outlet Boxes

Ball

Luminaire Stem Size	Luminaire Weight (Max.)	Cat. #
½	60	ARB6
¾	60	ARB2

Cushion

Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
½	4 to 8	ARB8
½	8 to 16	ARB10
½	16 to 30	ARB12

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UNE, UNH and UNHC Flexible Luminaire Hangers

For Pendant Mount

The following applies to all items on this page:

Application:

- Provides a simple, inexpensive, quick disconnect method for hanging pendant luminaires. For incandescent, H.I.D. and fluorescent luminaires
- Permits free swing in any direction to prevent damage to luminaire stem. Cushion style provides additional protection from vibration to prolong lamp life

Features:

- Female hooks and loops are used with rigid conduit luminaire stems to suspend luminaires. They may also be used with male hooks and loops, threaded into a conduit outlet hub.
- All hooks and loops are provided with openings for passage of luminaire wires. Luminaire, conduit stem and hook or loop can be assembled and wired at the work bench. The assembly is then hung on the fixed hook and connection made.
- For ease of relamping and maintenance, the outlet fitting can be equipped with an attachment plug receptacle cover and a matching plug cap used with the luminaire assembly. For permanent wiring a wire hole cover may be used.

Applicable to UNE and UNH (upper listings) only:

Features:

- Shape of hooks is such that accidental disengagement is impossible
- Diameter of wire opening ½″

Standard Materials:

- Malleable iron

Standard Finishes:

- Cadmium electrogalvanized and aluminum acrylic paint

Size Ranges:

- Luminaire stem or hub – ½″ and ¾″
- Luminaire weight – 125 lbs.

Applicable to UNH and UNHC (lower listings) only:

Features:

- Hooks are shaped to permit easy installation of large heavy luminaires, such as H.I.D. and fluorescent units
- Diameter of wire opening ⅝″

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Size Ranges:

- Luminaire stem – ½″ and ¾″
- Luminaire weight: cushion type – 12 to 64 lbs.; plain type – 125 lbs.



Male



Female

UNH



Male



Female

UNE

UNE and UNH Flexible Luminaire Hangers

For Pendant Mount

Type	Style	Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
UNH	Male	½	125	UNH16
		¾	125	UNH26
	Female	½	125	UNH1
		¾	125	UNH2
UNE	Male	½	125	UNE16
		¾	125	UNE26
	Female	½	125	UNE1
		¾	125	UNE2



Female



Female Cushion

UNH and UNHC Flexible Luminaire Hangers

Type	Style	Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
UNH	Female	½	125	UNH182
UNHC	Female Cushion	¾	12 to 24	UNHC216
		¾	24 to 48	UNHC232
		¾	48 to 64	UNHC264

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UNHC Flexible Luminaire Hangers

For Support Only
CHS Conduit Clamp; UNH Conduit Hook;
For Pendant Mount Fluorescent Luminaires

Application:

- Used for support of pendant fluorescent luminaires
- UNHC provides cushion support for luminaires suspended by ¼″ or 5⁄16″ threaded rod, and is used with the ring of CHS conduit clamps
- UNH hook provides an extremely simple means of conduit suspension for the unwired end of a fluorescent luminaire, as it merely hooks over the horizontal supporting conduit

Features:

- The bushing in UNHC cushion hangers is tapped for both ¼″ and 5⁄16″ suspension rod, with the lower half tapped 5⁄16″. Either size rod can be used without reversing the bushing
- CHS conduit clamp firmly grips the conduit and the ring at bottom accepts either a hooked rod or the UNHC cushion hanger for threaded rod. Will also accept UNH and UNHC hangers for conduit stem listed on the preceding page.
- The UNH conduit hook fits over conduit up to and including 1″ and has a hub for attachment of a ½″ conduit stem

Standard Materials:

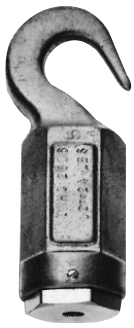
- UNHC – copper-free aluminum
- CHS-body – malleable iron; clamp – copper-free aluminum; ring – steel wire
- UNH – *Feraloy*® iron alloy

Standard Finishes:

- Copper-free aluminum – natural finish
- *Feraloy* and malleable iron – electrogalvanized and aluminum acrylic paint
- Steel wire – electrogalvanized with chromate finish

Size Ranges:

- Luminaire stem (UNH) – ½″
- Conduit (CHS): ½″ to 1″
- Luminaire weight: UNHC cushion – 12 to 64 lbs.; CHS, UNH – 125 lbs.



UNHC Cushion Luminaire Hangers

Luminaire Weight Lbs.	Support Rod Tap	Cat. #
12 to 24	¼″-20	UNHC2816
24 to 48	and	UNHC2832
48 to 64	5⁄16″-18	UNHC2864



Clamp



Hook

CHS Conduit Clamp and UNH Hook

Conduit Size	Clamp Cat. #	Hook Cat. #	Hook Hub Size
½	CHS1437		
¾	CHS2437	▶ UNH13	½
1	CHS3437		

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8L FHM Power Hook Luminaire Hangers

For Pendant Luminaires

Features:

- For mounting H.I.D. type luminaires in non-hazardous locations
- Power hook housing has two ¾″ through feed hubs and one ¾″ hub on the top for pendant mounting. Through feed hubs are furnished with flush plugs
- Cast mounting lugs are provided for direct ceiling mounting
- Housing contains a roomy 15 cu. in. splicing chamber and interlocking type receptacle with leads
- Plugs and receptacles are interlocking type to prevent accidental disengagement. When plug is inserted, hook is blocked and luminaire assembly cannot be removed. To service the luminaire, pull the plug, unhook the loop luminaire assembly and take it to a convenient servicing area
- Loop can move a maximum of 30°, allowing the power hook to be mounted on a canted ceiling. The luminaire assembly will hang true to the vertical
- Loop and hook are shaped for self alignment and resist twisting of luminaire by gusts of wind or light drafts
- Supporting loop is furnished with 16″ of #16-3/C type SO cord and an interlocking type plug

Standard Materials:

- Power hook body – copper-free aluminum
- Access cover – zinc plated cold rolled steel
- Loop – copper-free aluminum

Standard Finishes:

- Copper-free aluminum – natural finish
- Steel – electrogalvanized with chromate finish

Size Ranges:

- Hubs – ¾″
- Luminaire weights: loop – up to 125 lbs.;
- Loop luminaire stem size – ¾″

Electrical Rating Ranges:

- 480 volts, 14 amps, 2 wire, 3 pole

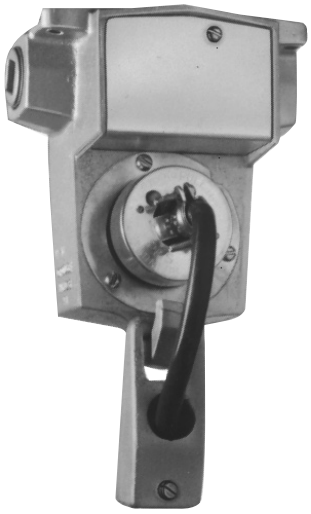
Certifications and Compliances:

- Meet UL and NEMA requirements for the listed electrical ratings

FHM

For H.I.D. Type Luminaires with voltages up to 480 volts

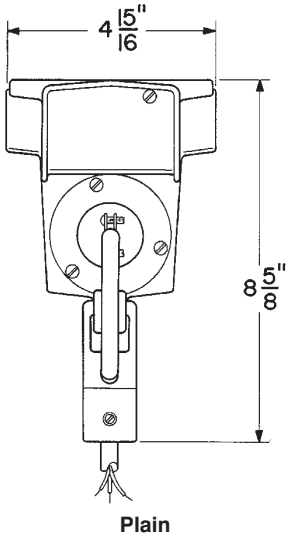
Loop	Hubs*	Luminaire Stem*	Luminaire Weight Lbs.	Cat. #
Plain	¾	¾	125	FHM201



Plain

* ½″ connection can be obtained by using reducers

Dimensions



Plain

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ECHF Flexible Luminaire Supports

For Pendant Mount

Cl. I, Div. 1 & 2, Groups A, B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

ECHF series flexible luminaire supports are used in hazardous locations:
- where a luminaire must hang more than 12″ from its supporting junction box (as specified by NEC Article 501 and CEC Part I Section 18)
- to assure that luminaires hang plumb and will swing freely if accidentally struck. Prevents damage to luminaire and supporting outlet fitting

Features:

- Complies with NEC Article 501/CEC Part I Section 18
- Free swinging in any direction through a large arc
- Good electrical continuity – no bonding jumpers needed
- Watertight construction
- Insulating liner of asphalt impregnated fiber to protect conductors
- Constructed to reinforced flexible metal hose
- Two female end fittings, each with a removable short nipple
- Nipples fit set screw type luminaire hubs
- Female end fittings are equipped with set screws to prevent turning during relamping and loosening of fitting with vibrations

Standard Materials:

- Inner core – brass
- Outer braid – bronze
- End fittings – bronze
- End fittings – brass (CSA certified units)

Standard Finishes:

- Brass and bronze – natural

Options:

Description	Suffix to be Added to Cat. #
Material – stainless steel hose and end fittings	S516
Finish – flexible neoprene protective coating	S758
Special lengths and sizes available	Detailed information on request

Size Ranges:

- Flexible length – 4″ to 18″
- Nipple size – ½″ and ¾″ (see ''Options'')
- Luminaire weight – up to 125 lbs.

Certifications and Compliances:

- NEC/CEC: Class I, Groups A, B, C, D
  Class II, Groups E, F, G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



ECHF

Description

Flexible Length	Nipple Size	Overall Length	Cat. #
4	½	10	ECHF14
	¾	10	ECHF24
6	½	12	ECHF16
	¾	12	ECHF26
8	½	14	ECHF18
	¾	14	ECHF28
10	½	16	ECHF110
	¾	16	ECHF210
12	½	18	ECHF112
	¾	18	ECHF212
15	½	21	ECHF115
	¾	21	ECHF215
18	½	24	ECHF118
	¾	24	ECHF218

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EAHC and EFHC Luminaire Hangers

For Pendant Mount

Cl. I, Div. 1 & 2, Groups A*, B*, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

EAHC and EFHC luminaire hangers are for use in hazardous areas to:
- suspend explosionproof pendant luminaires from the conduit system
- function as both conduit outlet box and luminaire hanger

Features:

- Through feed hubs are provided for threading the conduit directly into the hanger body
- Has large threaded cover for accessibility and ease of wiring
- Bottom hub, threaded or union style, is equipped with set screws to securely lock luminaire stem in place. Takes conduit stem or EC flexible luminaire hanger for stems longer than 12″ (in compliance with NEC Article 501 and CEC Part I Section 18)

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description	Suffix to be Added to Cat. #
Finish – *Corro-free*™ epoxy enamel	S752
Suspension attachment for span wire or threaded rod – see listings	S1
Mounting strap – see listings	S294

Size Ranges:

- Conduit hubs – ¾″ and 1″
- Luminaire stem – ½″ and ¾″
- Luminaire weight – 125 lbs.

Certifications and Compliances:

- NEC/CEC:
  - EAHC –
    - Class I, Groups A, B, C, D
    - Class II, Groups E, F, G
    - Class III
  - EFHC –
    - Class I, Groups C, D
    - Class II, Groups E, F, G
    - Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



With union hub



With threaded hub

EAHC*

Hub Size	Luminaire Stem Size	Threaded Hub for Luminaire Stem Cat. #	Union Hub for Luminaire Stem Cat. #
¾	½	EAHC2701	EAHC2601
	¾	EAHC2702	EAHC2602
1	½	EAHC3701	EAHC3601
	¾	EAHC3702	EAHC3602

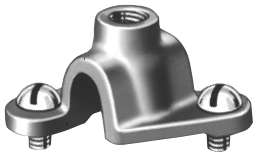
EFHC

¾	½	EFHC2701	EFHC2601
	¾	EFHC2702	EFHC2602
1	½	EFHC3701	EFHC3601
	¾	EFHC3702	EFHC3602



Mounting Strap

Mounting strap can be furnished to fasten luminaire hangers to mounting surface, independent of conduit straps. To order, add suffix S294 to EAHC or EFHC Cat. No.

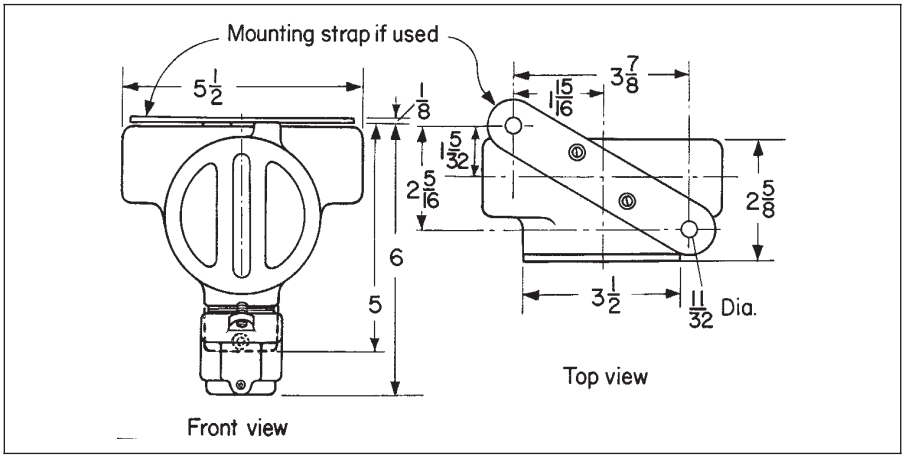


Suspension Attachment

EAHC and EFHC hangers can be furnished with a loop fastened to the top of the body to suspend luminaire and conduit from vertical support rods or horizontal span wires. The loop will take a wire or cable with a maximum diameter of ⅜″. The boss on top of the loop is tapped ⅜″-16 to accept a threaded rod. To order, add suffix S1 to Cat. No.

*EAHC only

Dimensions



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COOPER Crouse-Hinds

Application:

EFH flexible cushion luminaire hangers are used in hazardous locations:

- where a luminaire must hang more than 12″ from its supporting junction box (as required by NEC Article 501 and CEC Part I Section 18)
- to assure that luminaires hang plumb and will swing freely if accidentally struck. Prevents damage to luminaire, stem and supporting outlet box
- to provide a cushion support, prolonging lamp life and protecting the luminaire from shock and vibration. For luminaires weighing up to 65 lbs.

Features:

- Complies with NEC Article 501 and CEC Part I Section 18
- Free swinging in any direction through an angle of 15 degrees from perpendicular
- Weight of luminaire is supported by a high-strength brass bellows and a stainless steel cushioning spring
- Two part assembly consisting of luminaire hanger cover and CPS12 outlet box. Provides a wide variety of conduit arrangements. A set screw locks the conduit stem in place

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

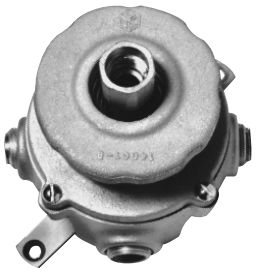
- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Conduit hubs – ¾″ with ¾″ to ½″ reducers
- Luminaire stem – ½″ and ¾″
- Luminaire weight – 65 lbs. max.

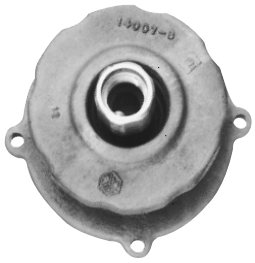
Certifications and Compliances:

- NEC/CEC: Class I, Groups C, D
  Class II, Groups E, F, G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



EFHX

Body Hub Size‡	Luminaire Stem Size	With Mtg. Feet Cat. #
½ and ¾	½	EFHX111
½ and ¾	¾	EFHX221

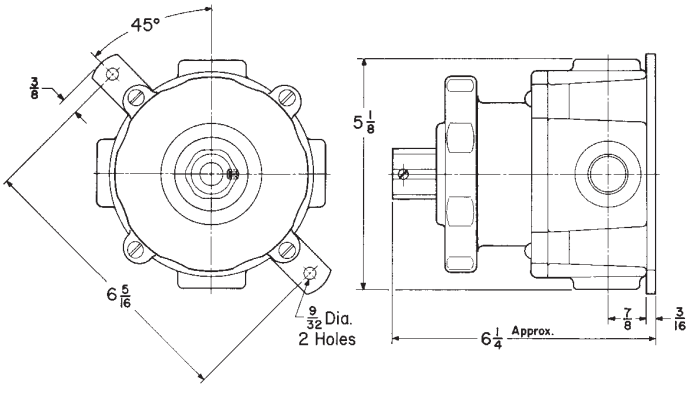


Cushion Luminaire Hanger Only

Stem Size	Cat. #
½	EFH01
¾	EFH02

‡ Furnished with four ¾″ standard taper tapped, integrally bushed hubs. Each hub as a ¾″ to ½″ reducer. Three hubs are plugged.

Dimensions



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Condulet® Conduit Outlet Boxes with Covers

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

CPS series conduit outlet boxes are installed in conduit systems in hazardous areas to:
- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- change conduit direction
- interconnect lengths of conduit
- act as luminaire hangers with hub covers
- provide access to conductors for maintenance and future system changes

Features:

CPS conduit outlet boxes have:
- two types of cover:
  – blank for splice or pull box use
  – threaded hub for mounting luminaires
- wide, accurately machined body and cover mating surfaces, to insure flametight joint
- blind tapped holes for cover screws to further insure flametightness
- removable mounting feet for flush or surface mounting to wall or ceiling

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

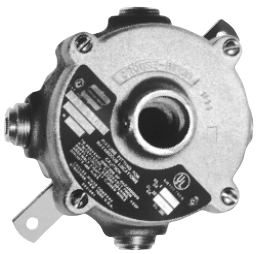
- Electrogalvanized and aluminum acrylic paint

Options:

- *Corro-free*™ epoxy powder coat . . . . . Information available on request

Certifications and Compliances:

- NEC/CEC: Class I, Groups C, D
  Class II,
  Groups E, F, G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



Box with Hub Cover

Hub Size

Body‡	Cover	Cat. #
½ and ¾	½	CPS12021
½ and ¾	¾	CPS12022



Body

Hub Size‡	Cat. #
½ and ¾	CPS12



Box with Blank Cover

Hub Size	Cat. #
½ and ¾	CPS12026

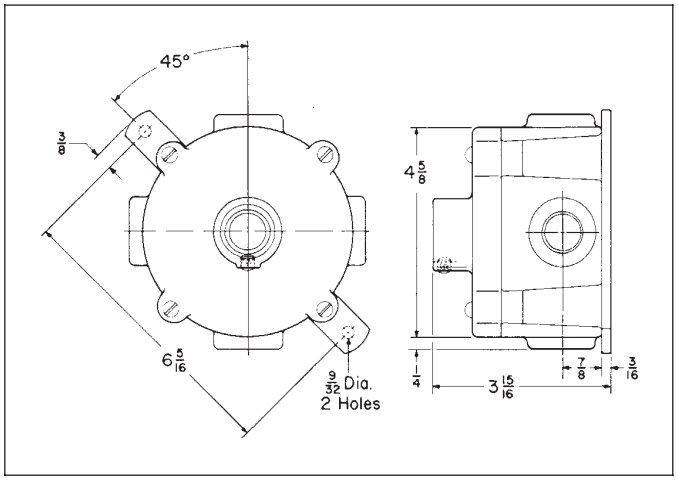


Hub Covers

Hub Size	Cat. #
½	CPS021
¾	CPS022

‡ Furnished with four ¾″ standard taper tapped, integrally bushed hubs. Each hub has a ¾″ to ½″ reducer. Three hubs are plugged.

Dimensions



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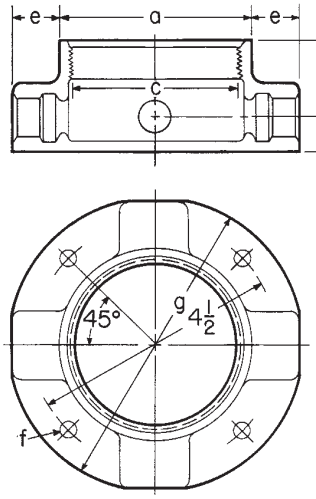


GUFX

Hub Size	Cat. #
½	GUFX160
¾	GUFX260

Dimensions

GUF Series



Hub Size	a	b	c	d	e	f	g
½	3½	2	3	⅝	⅞	5⁄16	5⅜
¾	3½	2	3	¾	⅞	5⁄16	5⅜
1	3½	2⅜	3	⅞	1	5⁄16	5⅜

Luminaire Hanger Covers

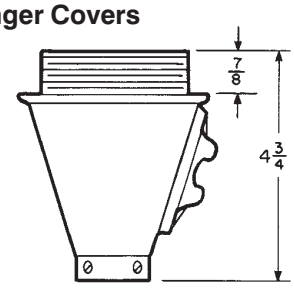
For GUA and GUF Series Junction Boxes



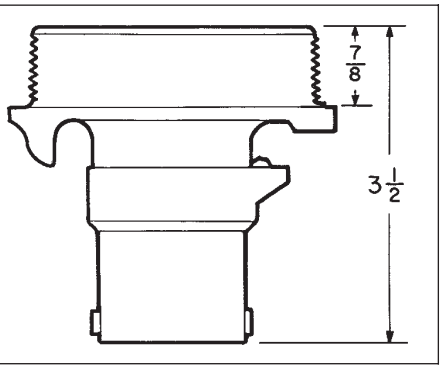
Nom. Dia. Cover Opening	Luminaire Stem Size	Luminaire canopies Cat. #	Luminaire covers union hub Cat. #	Nipple covers Cat. #
3	¾	GUA068	GUA0687	GUA0672

Dimensions

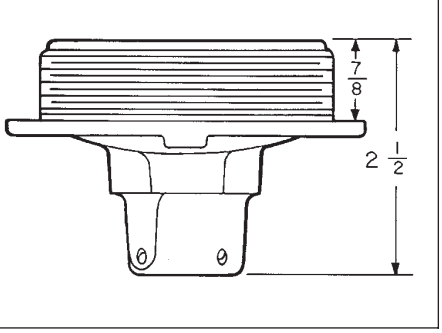
Hanger Covers



GUA 068



GUA 0687



GUA 0671

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GUA Series Outlet Bodies

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

GUA, GUF and GUJ outlet bodies are used:
- with luminaire canopies, union hub and nipple covers for mounting EVA, EVM, EVLP, and EVF luminaires

Features:

- A threaded cover opening in the side of the canopy permits access to the interior for making splices or taps
- The luminaire with its conduit stem and canopy is wired before installation, which eliminates wire twisting when the canopy is screwed into the outlet body
- Union hub covers permits the cover to be screwed into the body without twisting wire leads
- All covers have set screws to lock the conduit stem or EC series flexible luminaire support firmly to the cover

Standard Materials:

Outlet bodies:
- GUA Series – *Feraloy* iron alloy
- GUFX – Copper-free aluminum

Luminaire hanger covers:
- GUA068 – *Feraloy* iron alloy
- GUA0687, GUA0672 – Copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description	Suffix to be Added to Cat. #
Finish – *Corro-free*™ epoxy enamel	S752

Size Ranges:

- Bodies – ½″ to 1″ hubs
- Canopies – ½″, ¾″ and 1¼″ luminaire stem
- Union hub and nipple covers – ½″ and ¾″ luminaire stem

Certifications and Compliances:

- NEC/CEC: Class I, Groups C, D
  Class II, Groups E, F, G
  Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



GUA

Hub Size	Cat. #
½	GUA160
¾	GUA260
1	GUA360



GUAC

Hub Size	Cat. #
½	GUAC160
¾	GUAC260
1	GUAC360



GUAL

Hub Size	Cat. #
½	GUAL160
¾	GUAL260
1	GUAL360



GUAT

Hub Size	Cat. #
½	GUAT160
¾	GUAT260
1	GUAT360

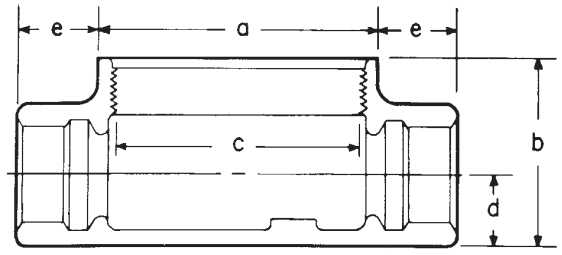


GUAX

Hub Size	Cat. #
½	GUAX160
¾	GUAX260
1	GUAX360

Dimensions

GUA Series



Hub Size	a	b	c	d	e
½	3½	2	3	⅝	⅞
¾	3½	2	3	¾	⅞
1	3½	2 5/16	3	⅞	1

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UNR Adjustable Luminaire Hangers; COUP Locking Couplings

For Pendant Mount

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

UNR adjustable luminaire hangers are used in hazardous areas to:
- mount between a luminaire and its outlet box so that the luminaire can be adjusted within the range of 0 degrees to 90 degrees
- permit pendant type luminaires to illuminate vertical surfaces such as a control board
- hang luminaires plumb when the supporting outlet box is not horizontal

Features:

The luminaire is nippled onto one end of the UNR, and the other end of the UNR is nippled into the support outlet box
- Set screws are located on each end to lock the nipples in place to prevent loosening in relamping or from vibration
- Adjustment of UNR to the angle setting needed provides for the desired angle of the luminaire
- Degree markings are cast into the UNR
- Two set screws and a large stud and nut are provided, which are tightened to clamp the unit rigid

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Hub – ¾″
- Luminaire weight – 125 lbs.

Certifications and Compliances:

- NEC: Class I, Groups C, D
  Class II, Groups E, F, G
  Class III
- UL Standard: 886

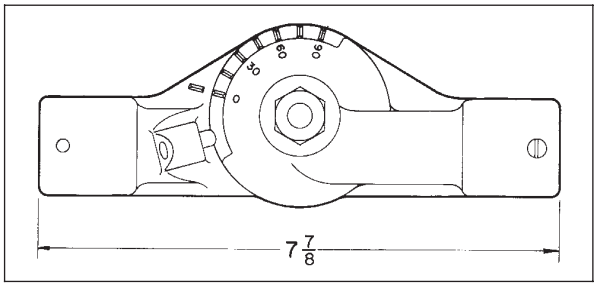


UNR

Adjustable Luminaire Hanger

Hub Size	Angle Adjustment	Cat. #
¾	0° to 90°	UNR29

Dimensions



Application:

COUP locking couplings are used in both hazardous and non-hazardous areas to:
- lock a luminaire conduit stem into a conduit hub to prevent the conduit stem from loosening when the luminaire is relamped and torque transferred to luminaire stem
- prevent loosening of luminaire stem due to vibration
- hang pendant type luminaires from standard cast outlet boxes which do not have set screws in the hub where the luminaire stem is attached

Features:

- The large end is slipped over the cast hub and the set screws tightened. The luminaire stem is slipped through the small end and threaded securely into the cast hub. The set screws in the small end are then tightened, thereby preventing the stem from turning
- Permits support of luminaire from conduit hub of a hazardous location outlet body

Standard Materials:

- *Feraloy*® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Hub size – ½″ to 1″
- Stem size – ½″ and ¾″

Certifications and Compliances:

- UL Standard: 886



COUP

Locking Couplings

Hub Size	Stem Size	Cat. #
½	½	COUP101
¾	½	COUP201
¾	¾	COUP202
1	¾	COUP302

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Notes Page

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Description	Page No.
Application/Selection	914
Handlamps	
VS Series Incandescent	915
EVH Series Incandescent	916
EVH Series Fluorescent	921, 922
Portable Floodlights	
RCDER Series Incandescent	917, 918
EVP Series H.I.D.	919, 920
Worklights	
EVH Series Fluorescent	921, 922

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9L Portable Lighting

Hazardous and Non-Hazardous Locations Application and Selection Quick Selector Chart

Applications:

Portable luminaires and accessories can be used:

- in areas made hazardous by the abnormal presence of flammable gases and vapors, combustible dusts or easily ignitable fibers and flyings.
- in areas where combustible dusts and flammable gases are present simultaneously.
- in aircraft manufacturing and maintenance facilities, shipyards, paint spray booths, refueling depots, storage tank cleanings, railcar manufacturing and maintenance facilities, refineries, chemical and petrochemical plants, textile mills, grain elevators, pharmaceutical plants, sewage treatment plants and wastewater treatment plants.
- during plant 'shut downs' for maintenance and installation requirements.
- in any adverse environment where portable lighting is preferred or required.
- in locations where fixed lighting is not practical.
- for task oriented lighting.
- for emergency lighting applications.
- when inspecting aircraft wing tanks, vats, process vessels, fuel tanks, etc. (handlamps).

Considerations for Selection:

Environmental:

- What is the hazardous area classification (NEC/CEC) of the location in which the luminaires will be installed?
- What wattages and light source (ie. fluorescent) will provide the desired light levels?
- Type of luminaire required: handlamp, portable flood or other special requirements.

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Quick Selector Chart

Luminaire	NEC Hazardous Area Compliances	Lamp Watts	Volts
EVH Handlamp (Incandescent)	Cl. I, Groups C and D Cl. II, Group G Cl. III	100 max.	250 vac
EVH Handlamp (Fluorescent)	Cl. I, Groups C and D Cl. II, Groups E, F, G Cl. III	13, 15	120, 220-50
EVP	Cl. I, Groups C and D Cl. II, Groups F and G Cl. III	35-150	120, 277, 347
RCDER	Cl. I, Groups C and D	150-500	
VS	Non-Hazardous areas	100 max.	

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Application:

The incandescent VS portable hand lamps are used:
- in wet or corrosive locations to exclude moisture, dirt, corrosive chemicals, etc.
- where an incandescent lamp of up to 100 watts is required in a portable hand lamp

Features:

- Enclosed and gasketed
- Flexible cord or cable is attached through a watertight gland in the handle
- Is of rugged construction
- Clamp type guard available
- Provision is made in the lamp receptacle for a third conductor to ground all non-current-carrying metal parts

Standard Materials:

- Handle – molded rubber
- Globe – clear, plain glass
- Guard – cast aluminum or steel wire

Standard Finishes:

- Handle – Natural
- Guard – Zinc plated

Options:

- Materials: heat resistant glass globe; polycarbonate globe

Size Ranges:

- Up to 100 watt, A-23 lamp
- .250 to .625 cord O.D.

Certifications and Compliances:

- Weather resistant
- UL Standard: 298

(Note: CEC/CSA Certified VS handlamps - Cooper Crouse-Hinds Canada fixtures only.)



(No Cable Included)

Globe Length	Max Lamp Size	Cord Dia.	Rubber Cat. #
6⅞	100 W A-23†	.125 to .625	VS30

Note: Furnished with clear globe, wire guard and 4 rubber bushings.

Glass Globes

Polycarbonate Globes





Description	Maximum Lamp Size	Cat. #
Clear Glass, (Heat Resisting)	100W, A-23 – 6⅞″†	V63
Clear, Polycarbonate, Plain	75W, A-21″†	V470



Guards

Description	Size	Cat. #
Steel Wire	6⅞ globe	VS97



Lamp Receptacle (medium base)

Description	Size	Cat. #
Composition keyless	660W, 600V	GS156



Cord Gland Bushings

Description	Size	Cat. #
Rubber	.125 to .250 Cord	BUSH92
	.250 to .375 Cord	BUSH93
	.375 to .500 Cord	BUSH 94
	.500 to .625 Cord	BUSH05

† Will take lamps with maximum dimensions of 6½″ long and 2⅞″ diameter.

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9L EVH Portable Handlamp

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1 & 2, Group G
Cl. III
Cl. I, Zone 1 IIB

Application:

EVH106 is used:
- as a portable handlamp in hazardous areas
- in inspecting aircraft wing tanks, vats, process vessels, fuel tanks, etc.

Features:

- Pressure connector terminals for portable cord
- Light weight – 4¼ lbs.
- Designed for rough service – swivel hook, ease in relamping

Standard Materials:

- Guard and globe holder – copper-free aluminum
- Handle – molded phenolic composition
- Globe – glass, heat and impact resistant

Standard Finishes:

- Natural

Size Ranges:

- #16 – 3 type SO cord/cable is to be used (not supplied)

Capacity Ranges:

- 50 to 100 watt, A-21
- Max. volts – 250 VAC

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 and 2, Groups C, D – 100 watts max.
  Class I, Zone 1 IIB
  Class II, Division 1 and 2, Group G – 75 watts max.
  Class III – 75 watts max.
- UL Standard: 781
- CSA Standard: C22.2 No. 137

Temperature Performance Data: (based on 40°C Ambient)

Class I, Groups C, D
Class II, Group G
Class III
— T3C



Cat. #	Cord Dia.
EVH106 (Model M10)	.375 to .625

Replacement Parts

Description	Cat. #
Guard & globe assembly	EVH606
Handle assembly (including lampholder)	EVH607
Cord connector assembly	EVH605
Lampholder only	20V19-001

Note: See Section 2P of this catalog for suitable male plug.

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Application:
RCDER portable incandescent luminaires provide general illumination in locations having hazardous atmospheres, such as:
- oil refineries
- oil and gasoline loading docks
- aircraft servicing docks and shelters
- distilleries
- paint manufacturing plants
- pumping stations
- other Class I, Groups C and D locations

Features:
- Wheel base
- Carrying handle
- Adjustment allows rotation of 75° vertically.
- Locking screws hold housing firmly in position
- Door which threads into housing includes heat and impact-resistant lens. Door has notches or projections for ease of removing or tightening
- Factory sealed

Standard Materials:
- Body – copper-free aluminum; Lens – glass, heat and impact resistant

Standard Finishes:
- Natural

Size Ranges:
- Take cable with O.D. of .375″ to .500″

Capacity Ranges:
- RCDER-6 – 150 watt, PAR38 or R40; 300 watt, R40 (medium base)
- RCDER-10 – 500 watt, PAR64 (Ext. Mog End Prong)

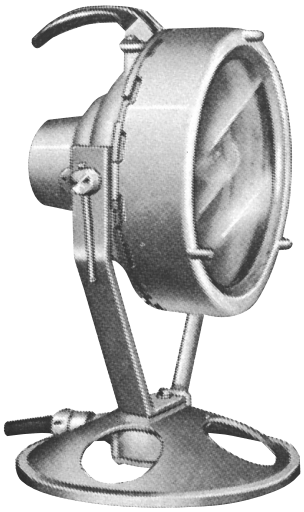
Certifications and Compliances:
- NEC/CEC: RCDER – Class I, Division 1 and 2, Groups (C), D Class I, Zone 1 II(B) A (see photometric data listing)
- UL Standard: 844
- CSA Standard: C22.2 No. 137 (RCDER-6 only)

Note: CEC/CSA Certified RCDER6 - Cooper Crouse-Hinds Canada luminaires only.

Ordering Information:
After identifying the hazardous area, select the model of luminaire required for that area. Then from the photometric data, select appropriate Cat. No. based on type of mounting desired. Example: RCDER-10 No. 47283A



RCDER-6
Cat. # 44655B



RCDER-10
Cat. # 47283A

Temperature Performance Data (based on 40°C Ambient)

	150W	300W	500W
RCDER-6	T3B	T2B	
RCDER-10			T3C

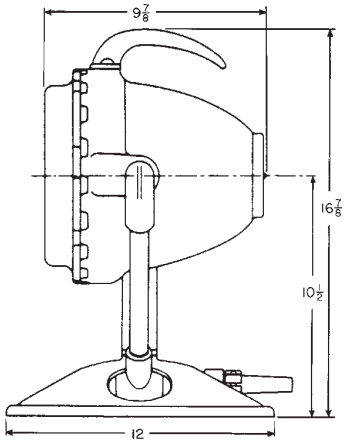
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RCDER
Photometric Data

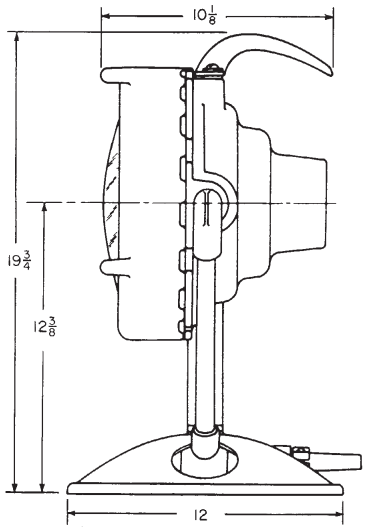
Lamp Watts and Type	Location	Beam Spread Hor.	Beam Spread Vert.	Beam Lumens	Av. Max. Candle Power	Model
150 Watt PAR38 Flood	Class I Groups C, D (Zone 1 IIB)	60°	60°	1690	4000	RCDER-6
150 Watt PAR38 Spot		28°	28°	1200	11500	
300 Watt R40 Flood	Class I Group D (Zone 1 IIA)	123°	123°	3200	1950	
300 Watt R40 Spot		60°	60°	3100	8900	
500 Watt, PAR64 (500 PAR64/NSP)	Class I, Group D (Zone 1 IIA)	19°	14°	3000	110000	RCDER-10
500 Watt, PAR64 (500 PAR64/MFL)		35°	19°	3300	37000	
500 Watt, PAR64 (500 PAR64/WFL)		55°	32°	3400	13000	

Dimensions

RCDER-6



RCDER-10



Fixture Weights

RCDER-6

Cat. #	Lbs. (Net)
44655	26.0

RCDER-10

Cat. #	Lbs. (Net)
47283	25.0

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EVP Portable H.I.D. Floodlight

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1 & 2, Groups F, G
Cl. III
Cl. I, Zone 1 IIB
Wet Locations
Marine Locations



Applications:

The EVP portable H.I.D. floodlight† is suitable for maintenance or emergency lighting:
- in areas made hazardous by the presence of flammable gases and vapors, combustible dusts, or easily ignitable fibers and flyings.
- in aircraft manufacturing and maintenance facilities, shipyards, refueling depots, storage tank cleaning, railcar manufacturing and maintenance facilities, refineries, chemical and petrochemical plants, textile mills, grain elevators and pharmaceutical plants, printing operations, wastewater and sewage treatment plants.
- in any adverse environment where portable lighting is preferred or required.
- in locations where lighting is not practical.
- for task oriented lighting.

Standard Materials:

- Housing – copper-free aluminum
- Wheel base – spun aluminum
- Handle – plastic rib covered aluminum
- Reflector – aluminum
- O-ring gasket – Nitrile rubber

Certifications and Compliances:

EVP and EVPG
- NEC/CEC:
  Class I, Division 1 & 2, Groups C, D
  Class I, Zone 1 IIB
  Class II, Division 1 and 2, Groups F, G
  Class III
  Wet Locations
  Marine Locations
- UL Standards: 781, 595, 1572
- CSA Standard: C22.2 No. 137, No. 12

Electrical Ratings

High pressure sodium – (medium base)
- 70, 100, & 150 watt
- 120 volt 60Hz

Metal Halide – (double end)
- 70 watt
- 120, 277 & 347 volt; 60Hz

† EVP fixtures are not supplied with plug.

Features and Benefits:

Product Features	User Benefits
Strong spun aluminum wheel base.	Provides stability, allows fixture to be hung on a wall or lowered in an inverted position.
Sturdy hand knob.	Tightens to hold position for steady illumination and easy aiming.
Plastic rib covered handle.	Firm, non-slip grip for transporting fixture.
Aluminum specular reflector.	Directs intense beam for better visibility.
Tempered, ¾″ thick cover glass.	Heavy duty service.
Nitrile rubber O-ring gasket.	Excellent sealing for use in wet locations.
Strain-relief clamps.	Provides extra protection against cord damage.
Pre-wired, factory-sealed 100′ of 16/3 type SOW cord supplied.	Saves on installation time and maintenance costs.
Light weight (25 lbs.).	Easy to handle when transporting.
Fixture housing has a safety yellow finish.	Highly visible for safety precautions.

Ordering Information:

Cl. I, Div. 1, Groups C, D Cl. II, Div. 1, Group F	Cat. #
70 watts HPS, 120 volts	EVP4070
100 watts HPS, 120 volts	EVP4100
150 watts HPS, 120 volts	EVP4150*
70 watt MH, 120 volts	EVP9070
70 watt MH, 277 volts	EVP9070/277
70 watt MH, 347 volts	EVP9070/347

* Class II not available.

Cl. I, Div. 1, Groups C, D Cl. II, Div. 1, Groups F, G Cl. III	Cat. #
100 watts HPS, 120 volts	EVPG4100
70 watt MH, 120 volts	EVPG9070
70 watt MH, 277 volts	EVPG9070/277
70 watt MH, 347 volts	EVPG9070/347

Fixtures for grain dust applications have a special limiting device to prevent the fixture head from being positioned in an upright position limiting dust buildup.

Temperature Performance Data:

Cat. #	Max. Ambient °C	Class I, Division 1 T-Rating	Class I, Division 1 Groups	Class II, Division 1 T-Rating	Class II, Division 1 Groups
EVP4070	40	T4A	C, D	T3	F
EVP4100	40	T4A	C, D	T3	F
EVP4150	25	T3C	C, D	—	—
EVP9070	40	T4	C, D	T3	F
EVPG4100	40	T4A	C, D	T3C	F, G
EVPG9070	40	T4	C, D	T4	F, G

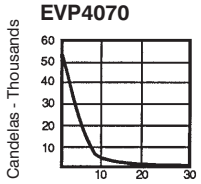
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Fixture Weight:

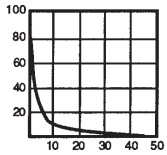
25.5 lbs.

Photometric Data:

EVP4070

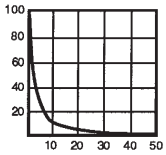


EVP4100



Degrees from beam axis

EVP4150



Dimensions: 12½″ D × 13⅛″ W × 15⅞″ H

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EVH Fluorescent Handlamps & Worklights

Cl. I, Div. 1 and 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
Cl. I, Zone 1, IIB

Application:

Portable handlamps and worklights can be used:
- in areas made hazardous by the presence of flammable gases and vapors, combustible dusts or easily ignitable fibers & flyings.
- in aircraft manufacturing and maintenance facilities, shipyards, refueling depots, storage tank cleaning, railcar manufacturing and maintenance facilities, refineries, chemical and petrochemical plants, textile mills, grain elevators, pharmaceutical plants, sewage treatment plants and wastewater treatment plants.
- during plant 'shut downs' for maintenance and installation requirments.
- in any adverse environment where portable lighting is preferred or required.
- in locations where fixed lighting is not practical.
- for task oriented lighting.
- for emergency lighting applications.
- when inspecting aircraft wing tanks, vats, process vessels, fuel tanks, etc.

Features:

- built in metal reflector which eliminates glare and blinding, focusing all light on subject.
- protected by patented shock absorbers to withstand rough usage.
- enclosed ballast, remote from light source for easier handling and maneuverability.
- special rubber compound bumper guards and end caps combined with cast guard and metal rods, protecting against damage from falling objects, bumping, or dropping.
- luminaires come complete with lamp(s) and cord.
- The New EVH2625E and EVH2650E incorporate an electronic ballast in the handle for efficiency, cool operation and easy handling.

Standard Materials:

- Body and In line Ballast Unit – aluminum
- Tubeshield – annealed glass
- Bumper guards – rubber

Standard Finishes:

- Aluminum Body – White epoxy (handlamps)
- Aluminum Body – Natural (worklights)
- In Line Ballast Unit – Natural
- Rubber bumper guards – safety yellow

Size Ranges:

- Supplied with 18/3 SOW cord (25 ft or 50 ft)

Electrical Ratings:

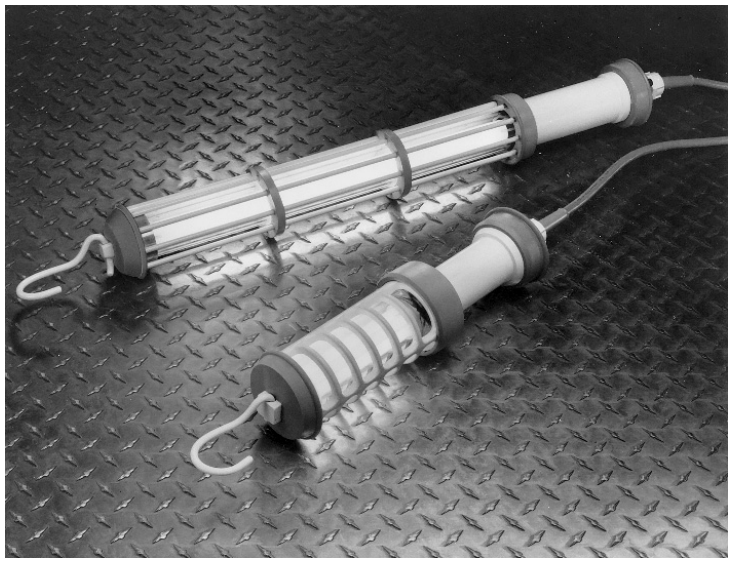
- 13 to 26 Watts
- Max. Volts 220VAC

Certifications and Compliances:

- NEC: Fluorescent Workights (15 watt units)
  Class I, Div. 1 and 2, Group D
  Class I, Zone 1 IIB
  Class II, Div. 1, Groups E, F, G
  Class II, Div. 2, Groups F, G
  Class III
- NEC: Fluorescent Handlamps (13 and 26 watt units)
  Class I, Div. 1 and 2, Groups C, D
  Class II, Div. 1, Groups E, F, G
  Class II, Div. 2, Groups F, G
  Class III
- FM: Classification 3615
- CSA: C22.2

Options:

- An isolated ballast is available on the EVH 13 Watt handlamps for additional protection, use suffix IB.



Temperature Performance Data: (Based on 40°C Ambient Temperature)

	Class I, Div. 1		Class II, Div. 1	
Cat. No.	**T-Rating**	**Groups**	**T-Rating**	**Groups**
EVH1525	T5	D	T5	E, F, G
EVH1550	T5	D	T5	E, F, G
EVH1325	T5	C, D	T5	E, F, G
EVH1350	T5	C, D	T5	E, F, G
EVH2625	T3	C, D	T3	E, F, G
EVH2650	T3	C, D	T3	E, F, G
EVH1325 IB	T5	C, D	T5	E, F, G
EVH1350 IB	T5	C, D	T5	E, F, G
EVH2625E	T6	C, D	T6	E, F, G
EVH2650E	T6	C, D	T6	E, F, G

Ordering Information:

EVH Fluorescent Worklights

Line Voltage (60 Hz)	Watts	Cord Length (ft)	Lamp Type	Cat. No.
120	15	25 ft.	F15T8	EVH1525
120	15	50 ft.	F15T8	EVH1550

EVH Fluorescent Handlamps (With Magnetic Ballast in Cord)

Line Voltage (60 Hz)	Watts	Cord Length (ft)	Lamp Type	Cat. No.
120	13	25 ft.	F13TT	EVH1325
120	13	50 ft.	F13TT	EVH1350
120	26	25 ft.	F26DTT	EVH2625
120	26	50 ft.	F26DTT	EVH2650
(50 Hz)				
220	13	25 ft.	F13TT	EVH1325/220 50
220	13	50 ft.	F13TT	EVH1350/220 50
220	26	25 ft.	F26DTT	EVH2625/220 50
220	26	50ft.	F26DTT	EVH2650/220 50

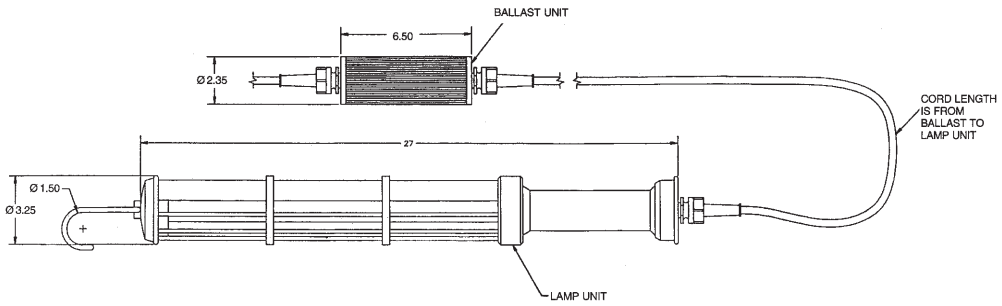
New – EVH Fluorescent Handlamps (With Electronic Ballast in Handle)

Line Voltage (60 Hz)	Watts	Cord Length (ft)	Lamp Type	Cat. No.
120	26	25 ft.	CF26DD/E/841	EVH2625E
120	26	50 ft.	CF26DD/E/841	EVH2650E

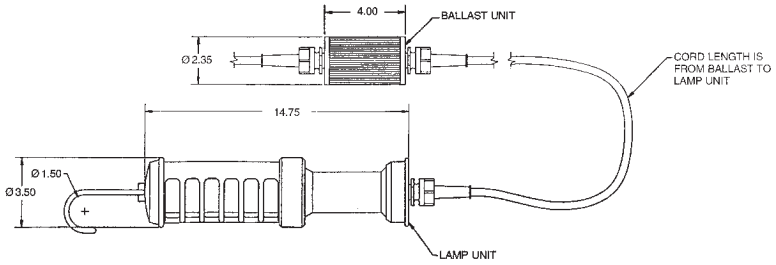
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Dimensions (inches)

Work Light



Hand Lamp
(Magnetic Ballast Handlamps Only)



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Description	Page No.
Exit Signs	
EXL Series	**924, 925**
EVLPF(B)-EXD	**926**
DMVF(B)-EXD	**927**
Light-Pak™ – Emergency Lighting Systems	
ELPS Series	**928, 929**
N2LPS Series	**930, 931**
Remote Luminaire Heads	
EVLA	**928, 930**
N2RF	**930**
Compact Fluorescent Emergency Luminaires	
CPMVFB	**932, 933**
DMVFB	**934, 935**
EVLPFB	**936, 937**

Table 500-3(d)
Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

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10L EXL Explosionproof Exit Sign

Factory Sealed

Cl. I, Div. 1 & 2, Groups C, D
Cl. I, Zone 1 IIB
Cl. II, Div. 1, Groups E, F, G

Application:

EXL exit signs are used:
- in locations deemed hazardous due to the presence of flammable vapors or gases, or combustible dusts
- in any building or enclosed area where people work – where illuminated exit signs are required
- to provide distinct, highly visible exit marking
- to indicate the direction of travel to exits

Features:

- Two incandescent lamps (not included) wired in parallel – to provide extra margin of light source reliability
- Solid state circuit for extended lamp life in AC units
- Six inch red letters on white acrylic sign panel make word ''exit'' stand out boldly and clearly
- Edge lighting characteristic of sign panel makes visibility excellent at all lighting levels
- Factory sealed explosion-proof housing
- Pendant, wall and end bracket mounts provide universal installation options
- Impact-resistant acrylic sign panel needs no guard – makes cleaning easy
- Internal rectifier extends lamp life beyond 1,000-hour rated life – reduces relamping cost
- Relamping tool provided

Standard Materials:

- Body – copper-free aluminum
- Sign panel – acrylic

Conduit Entrance:

- ¾″ hubs

Lamp Wattage:

- Two 60-watt, 60T10 clear lamps for AC units
- Two 25-watt, 25T10 clear lamps for DC units
- Lamps not included with luminaire

Electrical Ratings:

- 120VDC or 120VAC operation.

Certifications and Compliances:

- NEC: Class I, Groups C and D
  Class II, Groups E, F, and G
- UL Standard: 844
- NFPA Life Safety Code No. 101-1991

Temperature Performance Data (for both AC & DC operation):

Ambient Temp (°C)	Class I (C,D) Class II (E,F,G)	Supply Wire °C
25	T3C	150°C
40	T3C	

Ordering Information:

I. When ordering an EXL Series Exit Sign, you will need to specify:
(A) Voltage (120VAC or 120VDC)
(B) Mounting (Wall, End Bracket, or Pendant)
(C) Exit Sign Designation
All units come standard with ¾″ hubs and exit signs with red lettering and white background. Complete catalog numbering is as follows:

EXL (A) 2 (B) (C)

(A) Voltage: 120VAC . . . . . leave blank
120VDC . . . . . D

(B) Mounting: Wall 1
End Bracket 2
Pendant 3

(C) Exit Sign Designation:

A	Single Face (Wall Mount)
AA	Double Face (End Bracket & Pendant)
AB	Double Face, one side arrowhead right, the other no arrowhead (End Bracket & Pendant)
AC	Double Face, one side arrowhead left, the other no arrowheads (End Bracket & Pendant)
AD	Double Face, one side arrowhead both ends, the other no arrowheads (End Bracket & Pendant)
B	Single Face, arrowhead right (Wall Mount)
BC	Double Face, one side arrowhead right, the other arrowhead left (End Bracket & Pendant)
BD	Double Face, one side arrowhead both ends, the other arrowhead right (End Bracket & Pendant)
C	Single Face, arrowhead left (Wall Mount)
CD	Double Face, one side arrowhead both ends, the other arrowhead left (End Bracket & Pendant)
D	Single Face, arrowhead both ends (Wall Mount)
DD	Double Face, both sides arrowhead both ends (End Bracket & Pendant)



Pendant Style



End Bracket Style



Wall Style

Ordering Examples Table:

Mounting Type	Sign Panel Description	Hub Size	AC Cat. #	DC Cat. #
Wall	Single face	¾	EXL21A	EXLD21A
End bracket	Double face	¾	EXL22AA	EXLD22AA
Pendant	Double face	¾	EXL23AA	EXLD23AA

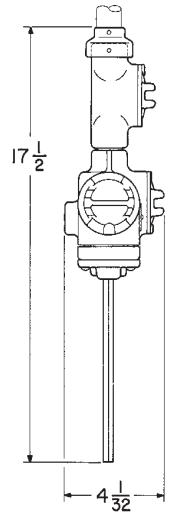
Suffix Options:

Exit Signs with green lettering on white background . . . . . GN
Unit Provided with Epoxy powder Coat S752
277VAC – *(Order ECT413 Transformer Separately)*

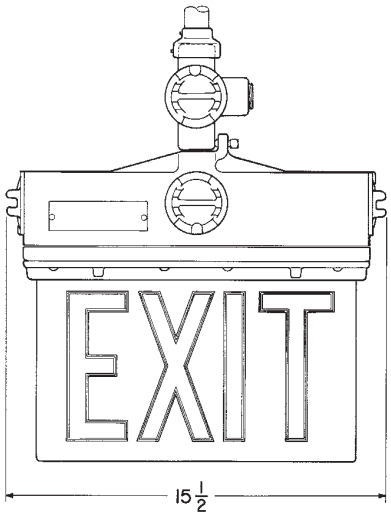
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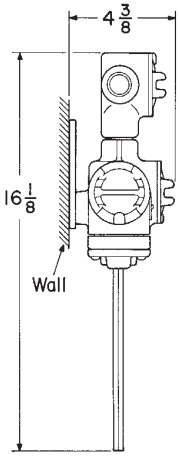
EXL Explosionproof Exit Sign

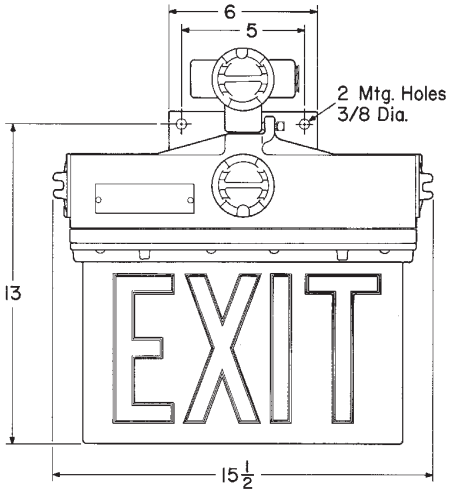
Factory Sealed
Dimensions



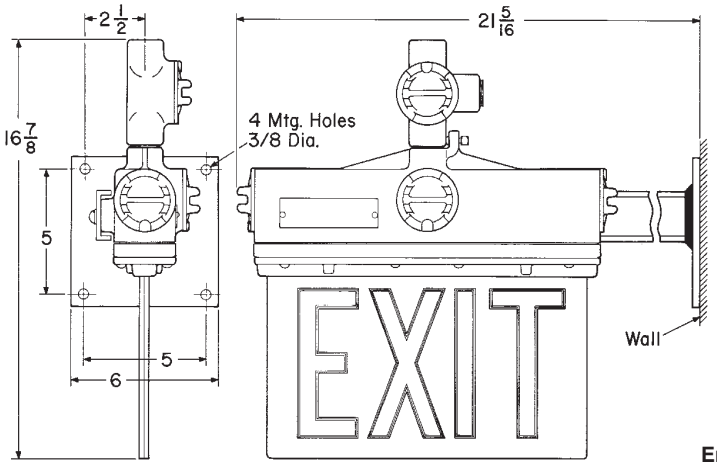
Pendant Style







Wall Style



End Bracket Style

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10L EVLPF(B) - Exit Sign Fluorescent Luminaire

- Cl. I, Div 1, Groups B (suffix GB), C, D
- Cl. I, Zone 1, Groups IIB + H2 (GB suffix), IIB
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

EVLPF(B)-EXD exit signs are used:
- in any building or enclosed area where people work - where illuminated exit signs are required
- to provide distinct, highly visible exit marking
- to indicate the direction of travel to exits
- in locations deemed hazardous due to the presence of flammable vapours or gases, or combustible dusts

Features - Benefits:

- Six inch red letters on white glass sign panel make the word '' EXIT'' stand out boldly and clearly
- Light weight copper-free aluminum housing with powdered epoxy finish
- All exterior hardware is corrosion-resistant stainless steel
- Three mounting arrangements pendant, ceiling and wall bracket
- Integral ballast
- High power factor (90%+) ballasts
- Easier assembly, installation and maintenance
- Outdoor, hose down, marine and corrosive environments suitable
- Ideal for adverse environments typical of industrial facilities
- Ground wire for safety
- Optional battery backup for operation during power outage

About the battery:

- Bodine fluorescent battery pack ballasts are UL Component Recognized
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case
- 90 minute illumination time
- 10-year life expectancy
- 2-year full warranty
- During emergency use 1 lamp has continuous operation
- A red indicator light indicates the battery is charging
- Wiring instructions for a ″Push-to-Test″ button is supplied with the luminaire

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel

Standard Finishes:

Copper-free aluminum – *Corro-free™ powdered epoxy*

Ratings (Electrical/Size):

Sources/wattage:
- 52W (2-26W lamps)
- 120-277V, 50-60Hz
- 120V, 60Hz
- 347V, 60Hz

Conduit entries:
- ¾″, 1″ NPT – Pendant, Wall Bracket, Ceiling

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output



Certification & Compliances:

- NEC and CEC:
  - Class I, Division 1, Groups B (GB suffix), C, D
  - Class I, Zone 1 Groups IIB + H2 (GB Suffix), IIB, IIA
  - Class II, Class III & Simultaneous Presence (Class I and Class II)
- UL Standards
  - 844 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
Factory assembled with lamps	FA

Ordering Information:

Mounting Type	Supply Voltage Volts/Hertz	Catalog Number Fluorescent	Catalog Number Fluorescent with Battery Back-up
Pendant	120-277V / 50-60Hz	EVLPFA02520/UNV-EXD	EVLPFBA02520/UNV-EXD
	120V / 60Hz (Canada)		EVLPFBA0520/120CAN-EXD
	347V / 60Hz	EVLPFA02520/347-EXD	EVLPFBA0520/347-EXD
Ceiling	120-277V / 50-60Hz	EVLPFCX02520/UNV-EXD	EVLPFBCX02520/UNV-EXD
	120V / 60Hz (Canada)		EVLPFBCX02520/120CAN-EXD
	347V / 60Hz	EVLPFCX02520/347-EXD	EVLPFBCX02520/347-EXD
Wall	120-277V / 50-60Hz	EVLPFBX02520/UNV-EXD	EVLPFBBX02520/UNV-EXD
	120V / 60Hz (Canada)		EVLPFBBX02520/120CAN-EXD
	347V / 60Hz	EVLPFBX02520/347-EXD	EVLPFBBX02520/347-EXD

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DMVF(B) - Exit Sign Fluorescent Luminaire

- Cl. I, Div. 2; Groups A, B, C, D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II, Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4X; IP66

Application:

DMVF(B) exit signs are used:
- in any building or enclosed area where people work.
- where illuminated exit signs are required.
- to provide distinct, highly visable exit markings.
- to indicate the direction of travel to exits.
- in locations deemed hazardous due to the presence of flammable vapors or gases, or combustible dusts.

Features:

- Six inch letters on white glass sign panel make the word ''exit'' stand out boldly and clearly.
- Housings made of die-cast copper-free aluminum (less than 0.4 of 1% copper) for strength and resistance to corrosion).
- Mounting module equipped with integral hub set screws for vibration resistance (ceiling and pendant mounts).
- Hubs are provided with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Epoxy powder finish and stainless steel external hardware for resistance to corrosion.
- Long life gaskets which provide seals between mounting module, housing, and globe assembly.
- Grounding wire for safety.
- Cool operating design.
- Optional emergency battery backup operation during power outage.

About the battery:

- Bodine fluorescent battery pack ballasts are UL Component Recognized.
- Sealed, maintenance-free, high-temperature nickle-cadmium
- Solid state chargers are sealed inside the ballast case.
- 90 minute illumination time.
- 10-year life expectancy.
- 2-year full warranty.
- During emergency use, 1 lamp has continuous operation.
- A red indicator light indicates the battery is charging.
- Wiring instructions for a ''Push-to-Test'' button is supplied with the fixture.

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

Standard Materials:

- Ballast housings and mountings - copper-free aluminum (less than 0.4 of 1%).
- Exterior hardware - stainless steel.
- Globe - heat and impact resistant internally fluted glass.

Standard Finishes:

- Aluminum - gray epoxy powder coat.
- Krydon material - high reflectance white.
- Stainless steel - natural.

Electrical Rating Ranges:

- 52 Watt.
- 120-277V, 50-60 Hz.
- 120V, 60 Hz.
- 347V, 60 Hz.



Options:

Description	Suffix added to Cat. No.
Lamps supplied with exit sign	S714
Top hat with stainless steel threaded insert.	S806
Restricted breathing construction.	S826
Class I Division 2 & Zone 2 suitability.	
Cooler operating temperatures (T -Numbers).	
Certified for IEC Zone 2 (Suffix S826TB).	S826TB
Furnished with	
Terminal Block.	
Crimp Terminals.	
Dedicated voltage ballasts (no MT, DT or TT).	

Certifications and Compliances:

- **NEC and CEC:**
  Class I, Division 2, Groups A, B, C, D
- Class II, Class III & Simultaneous Presence (Class I Division 2 and Class II)
  Class I Zone 2
- **IEC:**
  Zone 2 Ex nR IIC
- **UL Standards:**
  844, 2279 Hazardous (Classified) Locations.
  1598 Luminaires.
  1598A Marine Luminaires.
- **CSA Standards:**
  C22.2 No. 137
- **IEC Standards:**
  60079-15

Ordering Information:

Mounting Type	Supply Voltage Volts/Hertz	Catalog Number Fluorescent	Catalog Number Fluorescent with Battery Back-up
Pendant	120-277V / 50-60Hz	DMVF2A052G/UNV-EXD	DMVFB2A052G/UNV-EXD
	120V / 60Hz (Canada)		DMVFB2A052G/120CAN-EXD
	347V / 60Hz	DMVF2A052G/347-EXD	DMVFB2A052G/347-EXD
Ceiling	120-277V / 50-60Hz	DMVF2C052G/UNV-EXD	DMVFB2C052G/UNV-EXD
	120V / 60Hz (Canada)		DMVFB2C052G/120CAN-EXD
	347V / 60Hz	DMVF2C052G/347-EXD	DMVFB2C052G/347-EXD
Wall	120-277V / 50-60Hz	DMVF2TW052G/UNV-EXD	DMVFB2TW052G/UNV-EXD
	120V / 60Hz (Canada)		DMVFB2TW052G/120CAN-EXD
	347V / 60Hz	DMVF2TW052G/347-EXD	DMVFB2TW052G/347-EXD

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10L ELPS Light-Pak™ Emergency Lighting System

Cl. I, Div. 1 & 2; Groups C, D
Cl. I, Div. 1 & 2, Groups B, C, D (With suffix GB)
Cl. II, Div. 1; Groups E, F, G
Cl. III

Cl. I, Zone 1
Simultaneous Presence
Wet Locations
NEMA 3, 3R, 12

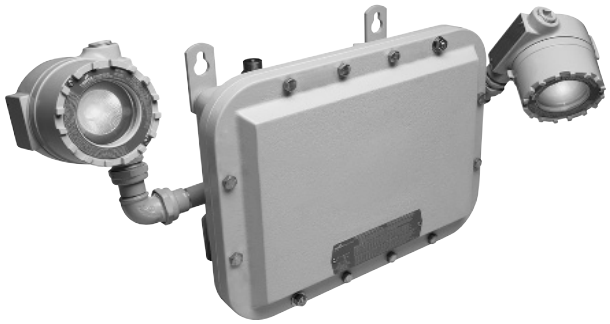
Application:

ELPS series emergency lighting systems are used:

- to provide safe, reliable illumination indoors or outdoors to designated areas during failure or interruption of power to the normal lighting system
- in areas made hazardous by the presence of flammable gases and vapors, combustible dusts or easily ignitible fibers and flyings
- in areas where corrosion, vibration, moisture, dirt and rough usage may be encountered
- where required by the National Electrical Code®, the Life Safety Code or other codes
- in refineries, chemical and petrochemical facilities, grain processing, handling or storage facilities, manufacturing plants, waste water treatment facilities and other areas where safe, reliable, hazardous area emergency lighting is needed

Features:

- Compact factory sealed luminaire assemblies are each furnished with a 12 watt tungsten-halogen lamp and inner reflector for appropriate photometrics in hazardous areas.
- Luminaire assemblies are fully adjustable and lockable on two axes to provide flexible and consistent light aiming capabilities.
- Luminaire lens ring is threaded for easy relamping and locks in place with hex head set screw; will not loosen due to vibration.
- Ground joint cover with external flange design permits large opening and easy access to internal components. Stud bolts in diagonally opposite corners of body ease cover removal and installation.
- Neoprene cover gasket seals out moisture for superior protection of internal components against wetness and corrosion.
- Light weight, compact size, and mounting feet ease installation and allow placement in confined areas.
- Two 1″ NPT drilled and tapped conduit openings, with plugs, are standard, for choice of top or bottom feed.
- Factory-installed PUSH-TO-TEST pushbutton enables easy testing of system.
- MAIN POWER ON pilot light indicates AC power is being supplied to the battery charger; pilot light jewel is threaded for easy lamp replacement.
- Stainless steel drain minimizes moisture collection. Stainless steel breather with aluminum cap provides ventilation, minimizes moisture collection.
- CID 101 corrosion inhibitor device is provided with each ELPS system to help protect electrical components and connections.
- Rugged, long-life, maintenance-free, nickel cadmium battery provides 30 watts of power for the required 1½ hours.
- Solid state battery charger for long life and reliable service prevents deep discharge by automatically disconnecting luminaires from battery.



- Terminal block facilitates field wiring connections.
- Instruction sheet and maintenance record card provided with unit in a protective plastic envelope.
- A time delay is standard; time delay is preset at factory for 5 minute delay but can be field set for 5 seconds or 15 minutes, thus allowing HID type lamps time to restrike and reach desired illumination levels.
- Solid state battery charger will accept 120, 220/240 or 277 VAC, 50/60 Hz.

Electrical Ratings:

- Power supply:
  Input: 120, 220/240, 277 VAC, 50 or 60 hertz
  0.5 Amps Maximum
  Output: 12 VDC
  UL listed for 28 watts for 1½ hours at 0° – 40°C
- Luminaires:
  Voltage: 12 VDC
  Lamp Type: #789, miniature Tungsten halogen, G4, 2-pin, 14 watt.

Certifications and Compliances:

- NEC: Class I, Groups B, C, D
  Class II, Groups E, F, G
  Class III
  Simultaneous Presence
- NEMA: 3R, 4X*, 12 (ELPS power supply)
- Suitable for wet locations (EVLA fixtures)
- Marine (EVLA fixtures)
- UL Standard:
  844 – Electric Luminaire – Hazardous Locations
  924 – Emergency Lighting and Power Equipment
  1203 – Explosionproof and Dust-Ignition-Proof Electrical Equipment
- Life Safety Code:
  Section 5-9 (Emergency Lighting)
- Suitable for Wet Locations
- NEMA 3, 3R, 12
- Marine

* NEMA 4X pending with new ECD 4X breather and drain

Standard Materials:

- Power supply enclosure and luminaire assembly – copper-free aluminum (less than 0.4 of 1% copper)

Standard Finishes:

- Power supply enlosure and fixture assemblies—powder coat epoxy paint finish

Ordering Information:

CATALOG NUMBER	DESCRIPTION
ELPS502*	Standard unit with adjustable heads
ELPS-K50	Replacement power interior, includes circuit board and battery pack
ELPS50*	Power Supply
EVLA12*	Lamphead and arm
ELPS502-EXD	Exit sign, double sided with EVI, red letters
ELPS502-EXD GN	Exit sign, double sided with EVI, green letters
ELPS502-EXD GB	Exit sign, **single or double** sided with Group B EVA, red letters
ELPS502-EXD GB GN	Exit sign, **single or double** sided with Group B EVA, green letters
ELPS502-EXS	Exit sign, single sided with EVI, red letters
ELPS502-EXS GN	Exit sign, single sided with EVI, green letters

* Base unit comes standard with Class I, Division 1, Group B.

Options:

- Remote mounted EVLA12 lamp head mounted to a Cooper Crouse-Hinds EABC36 or EABL36 1″ NPT outlet box
- S794 key operated disconnect switch as part of the ELPS502 emergency light system
- S854 keyless operated designated disconnect switdch as part of the ELPS502 emergency light system

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Temperature Performance Data:

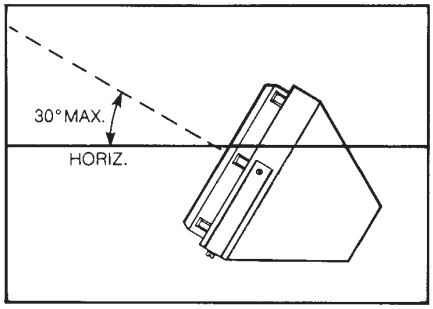
EVLA12—Maximum Ambient Temperature 55°C (131°C)
EVLA12 Temperature Codes (T-numbers):

- Class I—T4A
- Class II*—T3B
- Class III*—T3B

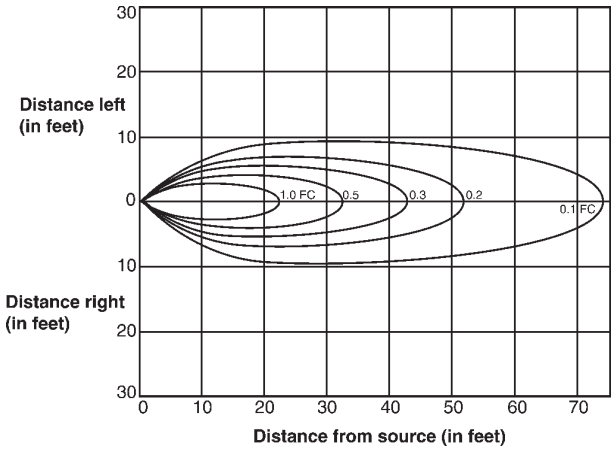
* For Class II and Class III applications, fixtures must not be aimed more than 30° above horizontal (see diagram below).

ELPS EVI & ELPS EVA—Maximum Ambient Temperature 40°C

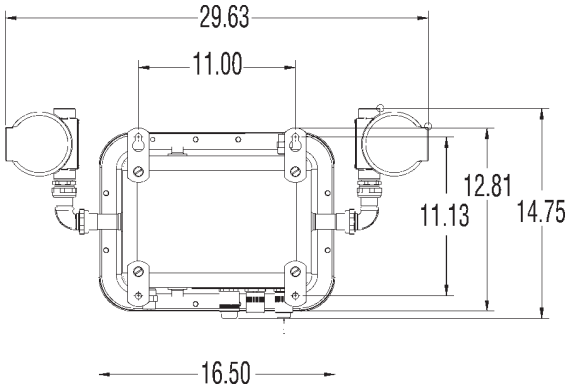
- Class I—T4
- Class II—T3C

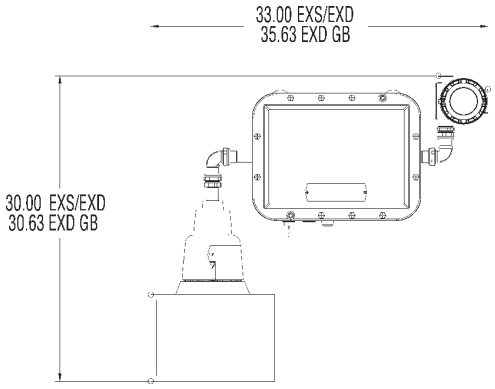


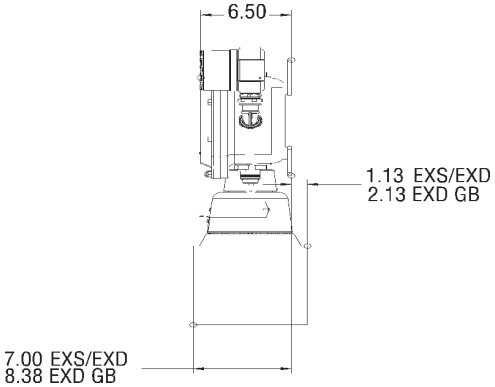
Photometric Data:



Dimensions







Unit Net Weights:

- ELPS502 complete emergency lighting system – 50 lbs.
- ELPS50 power supply – 40 lbs.
- EVLA12 luminaire assembly – 5 lbs.

Status Indication

LED Status	Condition	Meaning of the Indication
	No light	AC power is removed from the circuit
●	Steady light (no blinking)	Fully charged
●	Light blinks once	Charging
●●	Light blinks twice	Battery failure
●●●	Light blinks three times	Circuit failure
●●●●	Light blinks four times	Lamp failure

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10L LIGHT-PAK™ N2LPS Emergency Lighting System

Cl. I, Div. 2, Groups B, C, D
Class I, Zone 2
Wet Locations
NEMA 3, 3R

Application:

Light-Pak N2LPS emergency lighting systems are used:
- to provide reliable illumination for egress areas during failure or interruption of power to the normal lighting system
- in areas where flammable gases or vapors may become present due to abnormal, unusual, or accidental conditions
- in manufacturing plants, refineries, petrochemical and chemical plants, waste and sewage treatment facilities, oil terminals, food processing facilities, breweries, and other industrial manufacturing or process industry facilities subject to wet or corrosive conditions
- to illuminate machinery or panels during a loss of AC power
- where moisture, dirt, dust, or corrosion will limit the life and reliability of ordinary emergency lighting systems
- where required by the National Electrical Code®, the Life Safety Code® or other applicable codes
- Outdoor applications



Features:

- Compact factory assembled system with two 8 watt sealed beam halogen lamps.
- Nonmetallic, enclosed and gasketed construction; a CID101 corrosion inhibitor device is also included.
- Solid state battery charger will accept 120, 220, and 277 VAC, 50/60 Hz.
- A time delay is standard; time delay is preset at factory for 5 minute delay but can be field set for 5 seconds or 15 minutes, thus allowing HID type lamps time to restrike and reach desired illumination levels.
- ''Push-to-Test'' button and ''Main Power On'' pilot light are conveniently located on side of system.
- Sealed, lead calcium battery(ies); one battery supplies 28 watts of power (two batteries 56 watts) for 1½ hrs.
- Luminaire heads constructed of rugged Noryl® thermoplastic material with nylon and plastic coated hardware.
- Cover has six captive stainless steel screws; factory installed ¾″ conduit hub opening is standard, located on top of system.
- Remote luminaire head assemblies (one or two) are available for mounting of luminaire heads away from main power supply system.

Temperature Performance Data: (based on 40°C ambient)

Cat. #	Class I, Division 2
N2LPS (all)	T4A
N2RF (all)	T5

(NOTE: Ambient temperature at which the Light-Pak system is rated is 0°C (32°F) to 40°C (104°F). Lower ambient temperatures will reduce battery capacity.)

National Electrical Code and **Life Safety Code** are registered trademarks of the National Fire Protection Association, Inc.
Noryl is a registered trademark of General Electric Company.

Standard Materials:

- Power supply and remote luminaire enclosures – Krydon® fiberglass-reinforced polyester
- Luminaire heads – Noryl® thermoplastic
- Exterior hardware – Nylon, plastic coated, and stainless steel
- Cover gasket – Hypalon® synthetic rubber

Electrical Ratings:

- Power supply –
  Input: 120, 220, or 277 VAC, 50 or 60 Hz; 25 watts max.
  Output: 6 VDC;
  N2LPS6222, N2CPS6220 – 28 watts for 1½ Hrs.
  N2LPS6422, N2LPS6420 – 56 watts for 1½ Hrs.
- Luminaires – Voltage: 6 VDC; Lamp type: 8 watt, tungsten halogen PAR36 sealed beam (General Electric #H7551)

Certifications and Compliances:

- NEC – Class I, Division 2, Groups B,C,D
- UL Standards: 924 (Emergency Lighting and Power Equipment); 844 (Electric Luminaires Hazardous Locations)
- Life Safety Code NFPA101® – Section 5-9 (Emergency Lighting)
- Wet Locations Suitability

Unit Net Weights:

- N2LPS6222 – 16 lbs.
- N2LPS6422 – 21 lbs.
- N2LPS6220 – 12 lbs.
- N2LPS6420 – 17 lbs.
- N2RF621 – 6 lbs.
- N2RF622 – 8 lbs.

Ordering Information:

Description	Cat. #
28 watt, 6 volt output power supply with two 8 watt tungsten halogen luminaires	N2LPS6222
56 watt, 6 volt output power supply with two 8 watt tungsten halogen luminaires	N2LPS6422
28 watt, 6 volt output power supply only (less luminaire heads)	N2LPS6220
56 watt, 6 volt output power supply only (less luminaire heads)	N2LPS6420
Remote luminaire assembly with one 8 watt luminaire head	N2RF621
Remote luminaire assembly with two 8 watt luminaire heads	N2RF622
Remote luminaire assembly with one 12 watt 6 volt lamp for mounting in Class 1, Division 1, Group C and D areas	EVLA126
Power supply with two 8 watt tungsten halogen luminaires and single face exit sign. Exit sign operates in emergency mode only.	N2LPS6422-EXS
Power supply with two 8 watt tungsten halogen luminaires and double face exit sign. Exit sign operates in emergency mode only.	N2LRS6422-EXD

Option:

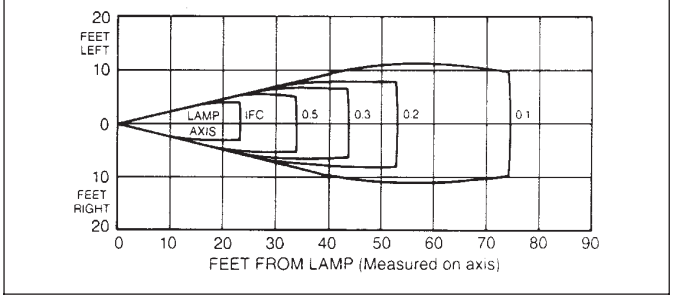
Description	Suffix to be Added to Cat. #
N2LPS6422 with exit sign EXS or EXD that operates in both normal and emergency mode.	S840

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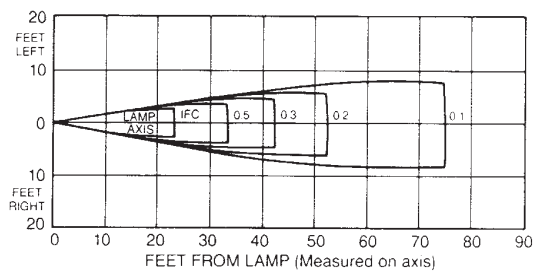
Photometric Data:

Isofootcandle Chart

Horizontal Distribution



Vertical Distribution



Wire Sizing for Remote Installation:

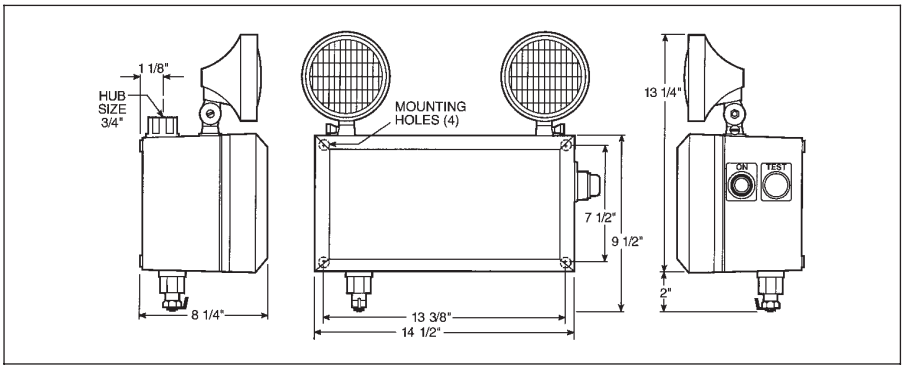
For Copper Wire –

Running Distance* (ft.) Between Power Supply and Remote Luminaire

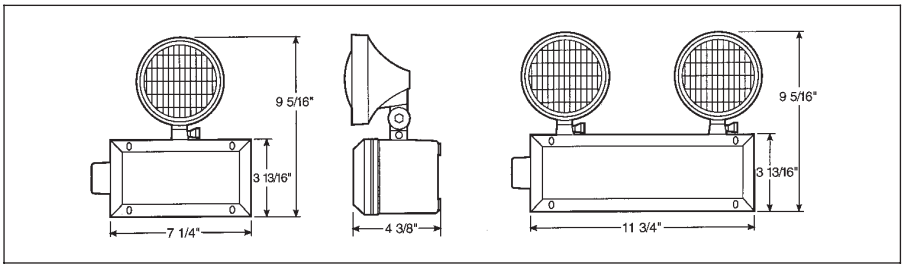
	Load In Watts						Load In Watts			
Wire Size	**8**	**16**	**24**	**32**	**Wire Size**	**8**	**16**	**24**	**32**
16 AWG	26	13	6	3	10 AWG	106	53	26	13
14 AWG	42	21	10	5	8 AWG	168	84	42	21
12 AWG	66	33	16	8	6 AWG	270	135	67	33

* Maximum distance to limit line voltage drop to 5%.

Dimensions (N2LPS):



Dimensions – Remote Luminaires (N2RF621 – N2RF622)



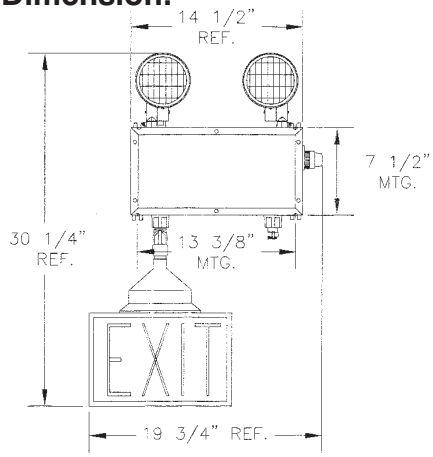
Weights:

Description	Weight
N2LPS6222 (28 watt system)	16 lbs.
N2LPS6422 (56 watt system)	21 lbs.

Weights:

Description	Weight
N2RF621 (8 watt)	6 lbs.
N2RF622 (16 watt)	8 lbs.

Dimension:



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10L CPMVFB Emergency Compact Fluorescent

Continuous Operation Champ-Pak™ Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence *
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

Application:

- where emergency lighting is required to permit workers in industrial areas to safely encounter their surroundings during power failures
- where emergency egress lighting is required, such as: catwalks, walkways, tunnels, doorways, stairs, stairwells, ramps and aisles
- indoor and outdoor wall mounting or vertical surface mounting where minimal luminaire depth is required in:
  - Manufacturing plants and heavy industrial facilities
  - Industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical and platforms
  - Waste or sewage treatments plants
  - Offshore, dockside and harbor installations
- For security and safety lighting in industrial facilites for lighting of loading docks, tunnels and stairways
- For marine, wet location, hosedown and corrosive environments

Features & Benefits:

- Unique compact shallow-profile design mounts virtually anywhere
- Side hinged cover with two screw closing for easy installation and maintenance
- Gray Corro-free™ epoxy powder coat two-piece housing provides superior corrosion resistance
- Unique stainless steel wire guard accessory attaches without any additional hardware for easy installation and maintenance
- Glass refractor provides uniform light distribution to eliminate glare
- Silicon gaskets make luminaire suitable for NEMA 4X, Marine enviroments
- High power factor ballasts (+90%) are standard, which allow more luminaires per circuit

Standard Materials:

- Luminaire housing and door frame assembly - copper-free aluminum
- External hardware - stainless steel
- Lens - heat and impact-resistant refractor style glass
- Gaskets - silicon rubber
- Reflector - aluminum light sheet
- Wire guard - stainless steel

Standard Finishes:

- Aluminum - Corro-free™ epoxy powder coat
- Stainless steel - natural

* Consult Cooper Crouse-Hinds

Certifications and Compliances:

- NEC and CEC:
  - Class I, Division 2, Groups A, B, C, D
  - Class II, Class III & Simultaneous Presence (Class I Division 2 and Class II)
  - Class I Zone 2
- IEC:
  - Zone 2 Ex nR IIC
- UL Standards
  - 844, 2279 Hazardous (Classified) Locations
  - 1598 Luminaires
  - 1598A Marine Locations
- CSA Standards
  - C22.2 No. 137
- IEC Standards
  - 60079-15



About the battery:

- Bodine fluorescent battery pack ballasts are UL Component Recognized
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case
- 90 minute illumination time
- 10-year life expectancy
- 2-year full warranty
- During auxiliary use 1 lamp has continuous operation
- A red indicator light indicates the battery is charging
- Wiring instructions for a ''Push-to-Test'' button is supplied with the fixture

Electrical Rating Ranges:

- 52 watts
- 120-277V, 50-60Hz
- 120V, 60Hz
- 347V, 60Hz

Options:

	Suffix to be added to Cat. #
Restricted Breathing Construction Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-numbers)	S826
Certified for IEC Zone 2 (Suffix S826TB) Furnished with Terminal Block Crimp Terminals Dedicated voltage ballasts (no MT, DT or TT)	S826TB
Factory Assembled with Lamp installed	FA
Fused - projects ballast and capacitors against abnormal line conditions (Not for use in Canada) (Not for Marine use)	S658†

Accessories:

	Cat. #
Stainless Steel Wire Guard	P55

† When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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CPMVFB Emergency Compact Fluorescent

Continuous Operation Champ-Pak™ Luminaires

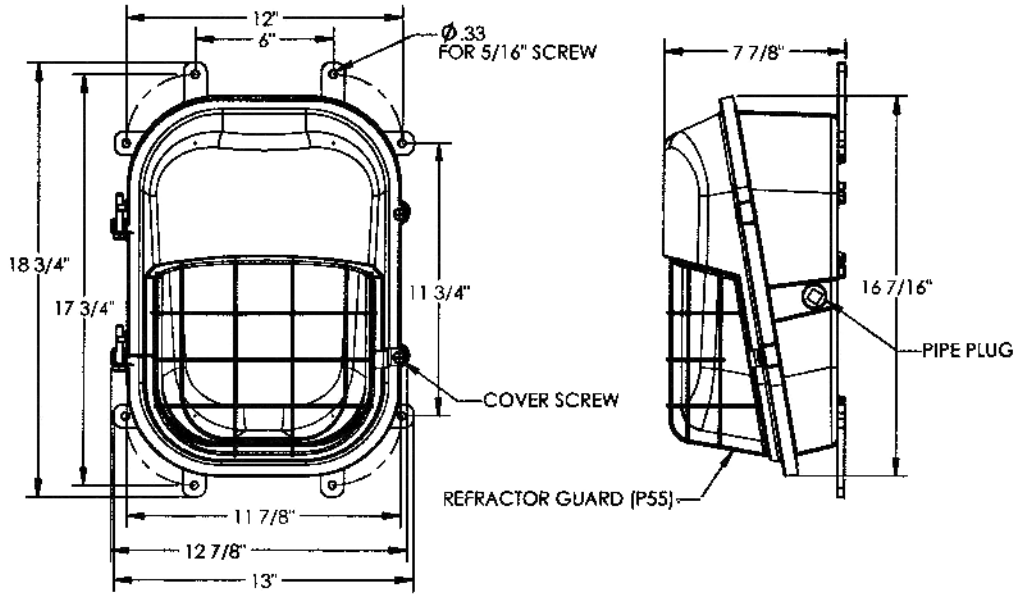
Ordering Information:

Hub Size	Lamp Watts	Catalog Number for use with ANSI Lamps
¾NPT	26	CPMVFB2W026

Standard Voltage Ballasts

	NEC/UL	CEC/CSA (cUL)	
Voltage	120-277V 50-60Hz	120V/60Hz	347V 60Hz
Suffix	/UNV	/120CAN	/347

Dimensions (Inches):



Net Weight:

Luminaire Less Guard	18.6 Lbs.
P55 Guard	0.5 Lbs.

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10L DMVFB Emergency Compact Fluorescent

Continuous Operation Champ® Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl.III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

Application:

DMVF series Champ lighting luminaires are used:

- where emergency lighting is required to permit workers in industrial areas to safely encounter their surroundings during power failures.
- Where emergency egress lighting is required, such as: catwalks, walkways, tunnels, doorways, stairs, stairwells, ramps, and aisles.
- in areas made hazardous by abnormal conditions resulting in the presence of flammable vapors or gases.
- in areas made hazardous by the presence of combustible dusts.
- where combustible dusts and flammable vapors are present simultaneously.
- in marine applications where water spray and corrosive atmospheres are considerations.
- on installations where vibration and rough usage are problems.
- where a cool, efficient light source is required.
- in areas that require lamps to reach full illumination immediately.
- in refineries, chemical and petrochemical facilities, grain processing, handling or storage facilities, manufacturing plants waste water treatment plants sewage treatment plants, oil terminals, food processing facilities, breweries, and any other manufacturing or processing facility where safe, reliable, hazardous area fluorescent or auxiliary lighting is needed.

Standard Features:

- Housings made of die-cast copper-free aluminum (less than 0.4 of 1% copper) for strength and resistance to corrosion.
- Mounting modules equipped with integral hub set screws for vibration resistance (ceiling, pendant, and quad mounts).
- Hubs are provided with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Epoxy powder finish and stainless steel external hardware for resistance to corrosion.
- Long-life gaskets which provide seals between mounting module, housing, and optical assembly.
- Grounding wire for safety.
- Cool operating design.
- Optional stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Battery pack ballast for emergency lighting.

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

About the battery: (DMVFB Units)

- Bodine fluorescent battery pack ballasts are UL Component Recognized.
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case.
- 90 minute illumination time
- 10-year life expectancy
- 2-year full warranty
- During auxiliary use 1 lamp has continuous operation
- A red indicator light indicates the battery is charging.
- Wiring instructions for a ''Push-to-Test'' button is supplied with the luminaire.

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%).
- Exterior hardware and guards – stainless steel.
- Reflectors – Krydon® fiberglass-reinforced polyester material.
- Globe – heat and impact resistant internally fluted glass.

Standard Finishes:

- Aluminum – gray epoxy powder coat.
- Krydon material – high reflectance white.
- Stainless steel – natural.

Electrical Rating Ranges:

- 52 and 64 watts
- 120-277V, 50-60 Hz
- 347V, 60 Hz

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 2, Groups A, B, C, D
  Class II, Class III &
  Simultaneous Presence (Class I Division 2 and Class II)
  Class I Zone 2
  Emergency Lighting
- IEC
  Zone 2 Ex nR IIC
- UL Standards
  844, 2279 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
  924 Emergency Lighting
- CSA Standards
  C22.2 No. 137
- IEC Standards
  60079-15



Options:

Description	Suffix to be added to Cat. No.
• Restricted Breathing Construction - Class I Division 2 & Zone 2 Suitability - Cooler Operating Temperatures (T-Numbers)	**S826**
• Certified for IEC Zone 2 (Suffix S826TB) - Furnished with Terminal Block Crimp Terminals	**S826TB**
• Emergency Operation only	**Consult Crouse- Hinds**

- Factory Assembled with lamps installed for additional labor savings . . . . . add suffix **FA.**
- Fused – to protect ballast against abnormal line conditions (not for use in Canada) (not for Marine use) . . . . . add suffix **S658.***
- Lamps supplied with luminaire . . . add suffix **S714.**
- Top hat with stainless steel threaded insert to attach ballast housing . . . . add suffix **S806.**
- TEFLON® coating on globe for increased shatter protection . . . . . add suffix **S808.**

Accessories:

(Order separately)

- Dome Cat. # RD739
- 30° Angle Cat. # RA739

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

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DMVFB Emergency Compact Fluorescent

Continuous Operation Champ® Series Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

	Mounting Style	Hub Size	Lamp Watts	DMVFB Series Fluorescent with Battery Back-Up with G303 Globe and P33 Guard Cat. No.
	**Pendant Mount**	¾	52	DMVFB2A052GP
		1		DMVFB3A052GP
		¾	64	DMVFB2A064GP
		1		DMVFB3A064GP
	**Flexible Pendant Mount**	¾	52	DMVFB2HA052GP
		¾	64	DMVFB2HA064GP
	**Ceiling Mount Thru-Feed**	¾	52	DMVFB2C052GP
		1		DMVFB3C052GP
		¾	64	DMVFB2C064GP
		1		DMVFB3C064GP
	**Wall Mount Thru-Feed**	¾	52	DMVFB2TW052GP
		1		DMVFB3TW052GP
		¾	64	DMVFB2TW064GP
		1		DMVFB3TW064GP
	**Quad-Mount** Pendant, Adjustable Thru-Feed, 25° Angle, 12-1/2° Angle	¾	52	DMVFB25Q052GP
		¾	64	DMVFB25Q064GP
	**Stanchion Mount** 25° Angle	1-½	52	DMVFBJ052GP
		1-½	64	DMVFBJ064GP
	**Stanchion Mount** Straight	1-½	52	DMVFBP052GP
		1-½	64	DMVFBP064GP

Note: For technical information on family trees, temperature performance data, dimensions, weights, and photometrics, refer to DMVF Series in Section 6L.

NOTES:
1. Catalog numbers are basic numbers. **Voltage must be specified.**

Standard Voltage Ballasts

	NEC/UL	CEC/CSA (cUL)	
Voltage Suffix	120-277V 50-60Hz /UNV	120V/60Hz /120CAN	347V 60Hz /347

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10L EVLPFB Emergency Compact Fluorescent

Continuous Operation Low Profile Luminaires

- Cl. I, Div. 1, Groups B (GB Suffix), C, D
- Cl. I, Zone 1, Groups IIB + H2 (GB suffix), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

Application:

Cooper Crouse-Hinds Low Profile Hazard•Gard® luminaires are used in:
- areas that require lamps to reach full lumination immediately.
- where emergency lighting is required to permit workers in industrial areas to safely encounter their surroundings during power failures.
- where emergency lighting is required such as: catwalks, walkways, tunnels, doorways, stairs, stairwells, ramps and aisles.
- areas where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and pharmaceutical plants, oil terminals, gas plants and other heavy process industry facilities
- waste treatment facilities
- drilling platforms and other coastal and offshore hazardous areas

Features - Benefits:

- Small compact size
- Two start Acme threaded construction
- Easier assembly, installation and maintenance
- Light weight copper-free aluminum housing with powdered epoxy finish
- All exterior hardware is corrosion-resistant stainless steel
- Four mounting arrangements pendant, ceiling, wall bracket and stanchion
- Integral ballast
- High power factor (90%+) ballasts
- Uses same mounting modules as the standard Hazard•Gard®
- Internally fluted glass globes
- Krydon® construction dome and angle reflectors – won't rust, corrode, dent, chip or peel
- Now available in components – luminaire body, mounting module, guard, reflectors
- Three wire construction
- For energy conservation, luminaires can be switched off without affecting the emergency operation feature

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester

Energy Saving:

- Less wattage used with compact fluorescent lamps compared to equivalet incandecent lamps providing the same light output.



Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester

Standard Finishes:

Copper-free aluminum – *Corro-free™ powdered epoxy*
- Krydon – *white*
- Stainless steel guard

Ratings (Electrical/Size):

Sources/wattage:
- Fluorescent continuous operation Emergency Lighting 52W (2-26W lamps) and 64W (2-32W lamps) Compact fluorescent

Voltages:
- Fluorescent Emergency Lighting
  - 120-277V, 50-60 Hz
  - 120V, 60 Hz
  - 347V 60Hz

Conduit entries:
- ¾″, 1″ NPT – pendant, wall bracket, ceiling
- 1¼″ NPT – stanchion

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
Fused (not for use in Canada) (not for Marine use)	S658*
Factory assembled with lamps	FA
Emergency Operation only	Consult Cooper Crouse-Hinds

Accessories:

Description	Cat. #
Dome reflector	RD739
Angle reflector	RA739

About the Battery

- Bodine fluorescent battery pack ballasts are UL Component Recognized.
- Sealed, maintenance-free, high-temperature nickle-cadmium.
- Solid state chargers are sealed inside the ballast case.

90 minute illumination time.
10-year life expectancy
- 2-year warranty.
- During emergency use, 1 lamp has continuous operation.
- A red indicator light indicates the battery is charging.
- Wiring instructions for a ''Push-to-Test'' button is supplied with the fixture.

Certification & Compliances:

- NEC and CEC:
  Class I, Division 1, Groups B (with GB suffix), C, D
  Class I, Zone 1 Groups IIB + H2 (GB Suffix), IIB, IIA
  Class II, Class III & Simultaneous Presence (Class I and ClassII)
  Emergency Lighting
- UL Standards
  844 Hazardous (Classified) Locations
  1598 Luminaires
  1598A Marine Locations
  924 Emergency Lighting
- CSA Standards
  C22.2 No. 137

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

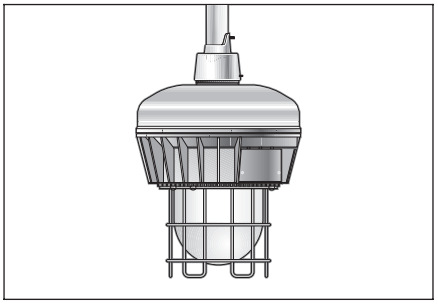
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EVLPFB Emergency Compact Fluorescent

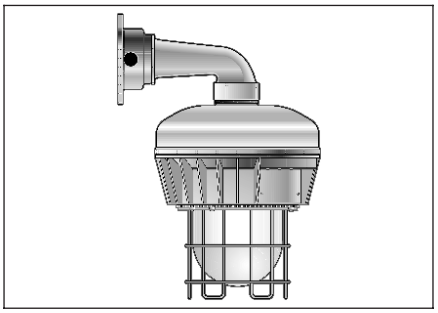
Continuous Operation Low Profile Luminaires

- Cl. I, Div. Groups B (GB suffix), C, D
- Cl. I, Zone 1, Groups IIB + H2 (with Suffix GB), IIB, IIA
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

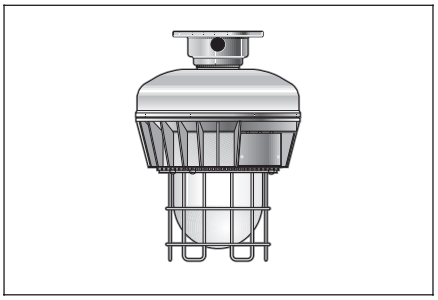
Ordering Information



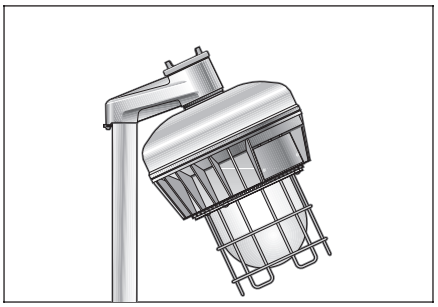
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and bracket mounts have 4 hubs: 3 are plugged.

Watt	Hub Size	Pendant With Guard *Catalog #*	Wall Bracket† With Guard *Catalog #*	Ceiling† With Guard *Catalog #*	Stanchion With Guard *Catalog #*	Luminaire Body Less Mounting Module & Guard *Catalog #*
Fluorescent with Emergency Ballast – High Power Factor Ballast (Min. P.F. 90%)						
52W	¾	EVLPFBA02521	EVLPFBBX02521	EVLPFBCX02521		EVLPFB0520
	1	EVLPFBA03521	EVLPFBBX03521	EVLPFBCX03521		
	1¼				EVLPFBJ04521	
64W	¾	EVLPFBA02641	EVLPFBBX02641	EVLPFBCX02641		EVLPFB0640
	1	EVLPFBA03641	EVLPFBBX03641	EVLPFBCX03641		
	1¼				EVLPFBJ04641	

Complete Catalog Numbers as follows:

1. **Standard Voltage Ballasts**

	NEC/UL	CEC/CSA (cUL)	
Voltage	120-277V 50-60Hz	120V/60Hz	347V 60Hz
Suffix	/UNV	/120CAN	/347

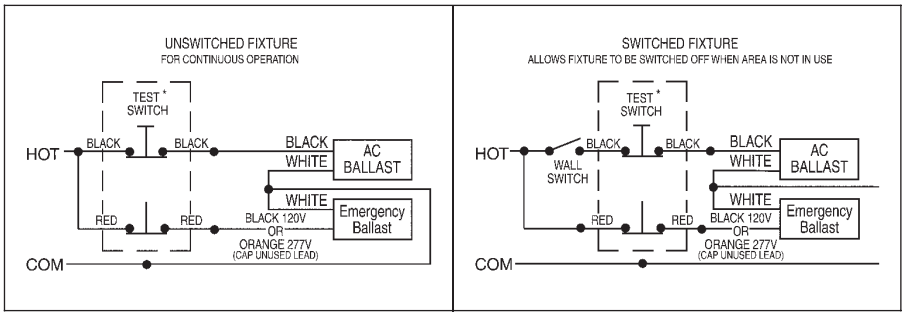
Example: **EVLPFB02521/UNV**

2. Other Voltages - Consult Cooper Crouse-Hinds

Note: For technical information on family trees, temperature performance data, dimensions, weights, and photometrics, refer to DMVF Series in Section 5L.

EVFPFB Fluorescent Emergency Lighting

- Three wire construction, for switching purposes, is standard on Fluorescent Emergency Lighting.
- For energy conservation, luminaires can be switched off without affecting the emergency operation feature.



* Test Switch is remote mounted.
Use Cooper Crouse-Hinds EDSC218 (Not furnished).

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Notes Page

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"Steady On" Beacons, "Rotating" Beacons and "Flashing" Strobe Lights

Luminaires for Hazardous and Non-Hazardous Locations

Description	Page No.
Application	940
VF Beacons Fluorescent "Steady On"	941
EX Fire Alarm Strobe Light	942, 944, 949
EX Strobe Light	943, 944, 949
EX Steady-on Beacon	945, 946, 949
EX Rotating Beacon	947, 948, 949
VDAS Strobe Lights	950

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11L Visual Signaling Devices
"Steady On" Beacons, "Rotating" Beacons and "Flashing" Strobe Lights
Luminaires for Hazardous and Non-Hazardous Locations

Application:

- for use in hazardous and non-hazardous areas (as shown in the quick selector chart shown below).
- to supplement audible signals, especially in high noise areas.
- as visual signals or warning lights.
- to identify the location of safety equipment such as emergency shower, eye wash stations, and emergency telephones, fire extinguishers and emergency stop switches.
- for status indication of machinery or processes.
- to indicate dangerous areas or areas requiring caution.
- to signal dangerous or hazardous conditions.

Considerations for Selection:

Environmental:
- What is the hazardous area classification (NEC/CEC) of the location in which the luminaire will be installed?

Signaling Requirements:
- What will the visual signal be used for (Communicating, alerting, warning)?

Physical Arrangements:
- Type of luminaire mounting needed.

Quick Selector Chart:

Series	Hazardous Area Suitability	Lamp Watts	Volts	No. of Lamps
VF - "Steady On" Beacons	CL. I, Div 2, Groups A, B, C, D CL. I, Zone 2, Group IIC Wet Locations - 3, 3R	(2) 9W	120V 60 Hz.	2
EX Strobes, Steady-On Beacons, & Rotating Beacons	Cl. I, Div. I, Groups C,D Cl. I, Zone 1 & 2, Group IIB Cl. II, Div. I, Groups E,F,G Wet Locations - 4X, Marine	Xenon Strobe Halogen Beacon	120 VAC 24 VDC 12-48 VDC 24-28 VDC	
VDAS Strobes	CL. I, Div 2, Groups A, B, C, D CL. I, Zone 2, Group IIC CL. II, Div 2, Groups F, G; Cl. III Wet Locations - 3, 3R, 4, 4X	Xenon Strobe	120V 60 Hz 240V 60 Hz 12-24VDC	1

Warning and Visual Indication Colors Available	Typical Uses
Green	Emergency Shower or Eye Wash Station
Blue	Emergency Telephones
Red	Danger, Equipment Operating
Yellow	Caution
Clear	Equipment end of cycle

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VF "Steady On" Beacon

Compact Fluorescent Warning and Visual Indication Light

- Cl. I, Div. 2, Groups A, B, C, D
- Cl. I, Zone 2, Groups IIC
- Wet Locations
- 3, 3R
- Green - Safety Shower
- Blue - Emergency Telephones
- Red - Danger
- Amber - Warning
- Visual Signal

Application:

VF series ''Steady On'' fluorescent beacons are used indoors or outdoors:
- where the energy efficiency and long life of compact fluorescent lamps are desired
- for continuous signaling requirements.
- where a continuous ''Steady-On'' fluorescent light signal is required
- where ambient noise makes audible signals difficult to hear.
- as visual signals or warning lights on loading docks; at obstructions, exits or entrances.
- for identifying the location of safety equipment such as safety showers or emergency telephones.
- for call signals.
- for status indication or area lighting on offshore rigs, mines, refineries etc.
- in locations which are hazardous due to the presence of flammable vapors or gases and where dampness or corrosion are present.
- to identify a potentially dangerous obstacle.
- as a continuous source to warn or communicate.

Typical Applications are:
- Green - Identify safety shower locations
- Blue - Identify emergency telephones
- Amber - Caution signal
- Red - Danger signal
- Red & Amber - Emergency situations
- Blue & Red - Security or malfunctioning equipment.
- Green & Clear - Equipment end of cycle.

Features:

- Extremely energy efficient, only 18 watt (2-9 watt compact fluorescent lamps)
- Packs considerable punch for ample visibility even in harsh enviroments.
- Compact size and light weight allow adaptation and easy installation in many industrial applications
- Cast copper-free aluminum (less than 0.4 of 1% copper) construction and epoxy powder finish provide excellent resistance to corrosion
- Variety of mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket, angle stanchion.
- Glass globes are internally fluted and stippled to enhance visibility. Exteriors are smooth to shed dust
- Grounding wire for safety

Standard Materials:

- Bodies and guards – copper-free aluminum (less than 0.4 of 1%)
- Globes – glass

Standard Finishes:

- Copper-free aluminum – powder epoxy finish

Electrical Ratings:

- Input voltage – 120 VAC, 60 hertz
- Wattages: 18W (Two 9W lamps)



Certifications and Compliances:

NEC and CEC:
Class I, Division 2, Groups A, B, C, D
Class I, Zone 2
- UL Standards
  844
  1598 Luminaires
- CSA standards
  c22.2 No. 137

Options:

Description	Suffix added to Cat. No.
• 250 volt Nameplate for export applications	/250

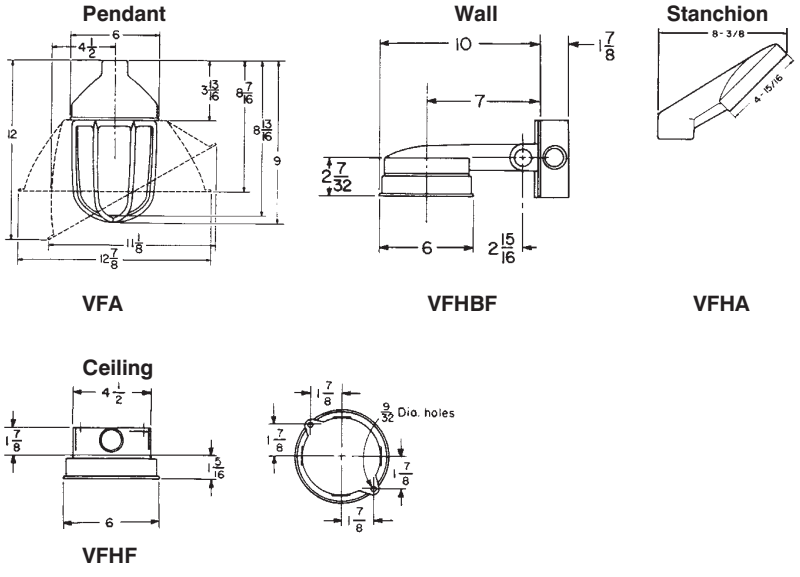
Weights:

Luminaire Type	2-Lamp Luminaire With Globe & Guard (lbs.)
VFA	5
VFHF	5¼
VFHBF	7½

Temperature Performance Data:

Style 1 & 2 Lamp	Class I Div. 2	Max. Ambient	Supply Wire °C	Minimum Operating
9W	T3B	40°C	75°C	–4°C (25°F)

Dimensions



Ordering Information:

Style	Catalog Number - by Globe Color				
	Red	Amber	Green	Blue	Clear
Pendant	VFA222GRP	VFA222GAP	VFA222GGP	VFA222GBP	VFA222GP
Wall	VFHBF222GRP	VFHBF222GAP	VFHBF222GGP	VFHBF222GBP	VFHBF222GP
Ceiling	VFHF222GRP	VFHF222GAP	VFHF222GGP	VFHF222GBP	VFHF222GP
Stanchion	VFHA422GRP	VFHA422GAP	VFHA422GGP	VFHA422GBP	VFHA422GP

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11L Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Fire Alarm Strobe Light

NEW!

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 1971 Listed
NEMA 4X watertight, IP 66



The **Hazard•Gard™ EXFASC Series** is a visual fire alarm signaling device for hazardous areas. The EXFASC Series strobes are UL 1971 Listed for indoor signaling applications for the hearing impaired in non-sleeping areas. They are also UL listed for Type 3R, 4X installations. The strobes are available for pendant, wall and ceiling mounts.

The **EXFASC Series Fire Alarm Explosionproof Strobe** contains a supervisory diode for use in fire alarm applications. Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe light and prevents it from lighting. When a fire-initiating device such as a smoke alarm is activated, the diode's polarity is reversed through a fire alarm panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Visual fire alarm signaling device for hazardous areas

Typical Industries

- Energy exploration
- Utilities
- Wastewater treatment plants
- Pulp & paper plants
- Petrochemical plants
- Petroleum refineries
- Oil rigs

Key Features and Benefits

- Meets NFPA requirements for fire safety warning devices.
- State of the art electronic design (full wave rectified design).
  - Low current draw is efficient.
  - 24VDC regulated full wave rectified
  - Limited in-rush current favorable to other fire alarm system components.
  - Proven, reliable circuitry designed specifically for use with fire alarm control panels.
- Available in pendant, wall and ceiling mount.
- Strobe light produces 65 flashes per minute.
- Factory sealed — no external seals required.
- Quick connect — Strobe fixture threads onto mounting module for easy installation.
- Small compact size — ceiling mount is 13¾-inch long.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL 1638 and 1203 Listed
- UL 1971 Listed for indoor visual signaling for the hearing impaired in non-sleeping areas
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moistureresistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 16-33VDC
- Operating Current: 1.08 - 0.83 amps
- Peak Candlepower: 800,000

Hub Size

- 3/4-inch NPT pendant, ceiling and wall mount

Ordering Information

STEP 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
FIRE ALARM RATED EXPLOSIONPROOF STROBES			
EXFASC301/16 33	24VDC regulated full wave rectified	Clear	3R, 4X

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾″	Pendant
EV22 & EV87	¾″	Wall
EV22	¾″	Ceiling
EVMJ4	1¼″	Stanchion

Temperature Performance Data

See page 944.

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COOPER Crouse-Hinds

Hazard●Gard EX Series Visual Signaling Devices

Explosionproof Strobe Light

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed (120VAC and 24VDC only)
NEMA 4X watertight, IP 66

11L

NEW!



Cooper Crouse-Hinds Hazard●Gard **EXS and EXDS Series Explosionproof Strobe Lights** are designed for installation indoors and outdoors in locations which are hazardous due to the presence of flammable vapors or gases, ignitible dusts or ignitible fibers and flyings. The units are UL listed for Type 3R and 4X installations. The 120V and 24VDC models are Marine Rated. The strobes are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDS Series** is diode polarized for use in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe and prevents it from lighting. When an initiating device such as a smoke detector is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Condition signaling
- Equipment obstruction warning
- Security alert
- Emergency evacuation signaling
- In areas where audible signals cannot be heard

Typical Industries

- Utility gas plants
- Petroleum refineries
- Wastewater treatment plants
- Chemical & petrochemical
- Mining
- Pulp & paper

Key Features and Benefits

- Strong strobe signal that produces 65 flashes per minute.
- Compact design will not obstruct in low ceiling or small areas. Ceiling mount is only 13¾-inch long.
- Quick connect — Strobe fixture threads onto mounting module for easy installation.
- Factory sealed — No external seals required.
- Available in pendant, wall, stanchion and ceiling mount.
- Available in six different globe colors — clear, red, blue, amber, green and magenta.
- Silicone gasket seals out dirt and moisture.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120VAC and 24VDC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moistureresistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120VAC (EXS), 12–48VDC (EXSNM) and 24VDC nominal, voltage operating range is 16–33VDC (EXDS)
- Operating Current: 0.10 amps at 120VAC
  1.2–3.8 amps at 12–48VDC
  0.8 amps at 24VDC
- Peak Candlepower: 800,000

Hub Size

- 3/4-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

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11L Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Strobe Light

NEW!

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed (120VAC and 24VDC only)
NEMA 4X watertight, IP 66

Ordering Information

STEP 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STROBES			
EXS301A/120	120VAC	Amber	3R, 4X, Marine
EXS301B/120	120VAC	Blue	3R, 4X, Marine
EXS301C/120	120VAC	Clear	3R, 4X, Marine
EXS301G/120	120VAC	Green	3R, 4X, Marine
EXS301M/120	120VAC	Magenta	3R, 4X, Marine
EXS301R/120	120VAC	Red	3R, 4X, Marine
EXSNM301A/12 48	12–48VDC	Amber	3R, 4X
EXSNM301B/12 48	12–48VDC	Blue	3R, 4X
EXSNM301C/12 48	12–48VDC	Clear	3R, 4X
EXSNM301G/12 48	12–48VDC	Green	3R, 4X
EXSNM301M/12 48	12–48VDC	Magenta	3R, 4X
EXSNM301R/12 48	12–48VDC	Red	3R, 4X
DIODE POLARIZED EXPLOSIONPROOF STROBES			
EXDS301A/24	24VDC	Amber	3R, 4X, Marine
EXDS301B/24	24VDC	Blue	3R, 4X, Marine
EXDS301C/24	24VDC	Clear	3R, 4X, Marine
EXDS301G/24	24VDC	Green	3R, 4X, Marine
EXDS301M/24	24VDC	Magenta	3R, 4X, Marine
EXDS301R/24	24VDC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾″	Pendant
EV22 & EV87	¾″	Wall
EV22	¾″	Ceiling
EVMJ4	1¼″	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXFASC Series Fire Alarm Voltage 24VDC Regulated Full Wave Rectified (Operating Range 16-33VDC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)
EXS Series Strobe Light Voltage 120VAC (Marine Listed)	40°C 55°C **65°C**	75°C 90°C **105°C**	T6(85°C) T6(85°C) **T6(85°C)**	T4A(120°C) T4(135°C) **T4(135°C)**	T4A(120°C) T4(135°C) **T4(135°C)**
EXSNM Series Strobe Light Voltage 12-48 VDC (Not Marine Listed)	40°C 55°C **65°C**	75°C 90°C **105°C**	T6(85°C) T6(85°C) **T6(85°C)**	T4A(120°C) T4(135°C) **T4(135°C)**	T4A(120°C) T4(135°C) **T4(135°C)**
EXDS Series Strobe Light-Diode Polarized Voltage 24 VDC (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)

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Hazard●Gard EX Series Visual Signaling Devices

Explosionproof Steady-On Beacons

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

NEW!



Cooper Crouse-Hinds Hazard●Gard **EXSO and EXDSO (Diode Polarized) Series Explosionproof Steady On Beacons** are designed for installation in hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

The units are UL listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Exit or entrance lights
- Obstacle warning
- For identifying the location of safety equipment such as showers or emergency telephones
- Continuous source to communicate

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Key Features and Benefits

- Powerful halogen light source for clear visual indication.
- Available in six different globe colors — amber, blue, clear, green, magenta and red.
- Factory sealed — no external seals required.
- Quick connect — Steady-on beacon fixture threads onto mounting module for easy installation.
- Small compact size — ceiling mount is 13¾-inch long.
- Available in pendant, wall, stanchion and ceiling mount.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moistureresistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120VAC and 24–28VDC
- Operating Current: 0.35 amps at 120VAC (EXSO) 0.8 amps at 24–28VDC (EXDSO, diode polarized)
- Peak Candlepower: 3328

Hub Size

- 3/4-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

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11L Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Steady-On Beacons

NEW!

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

Ordering Information

STEP 1 Order Steady-On Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STEADY-ON BEACONS			
EXSO301A/120	120VAC	Amber	3R, 4X, Marine
EXSO301B/120	120VAC	Blue	3R, 4X, Marine
EXSO301C/120	120VAC	Clear	3R, 4X, Marine
EXSO301G/120	120VAC	Green	3R, 4X, Marine
EXSO301M/120	120VAC	Magenta	3R, 4X, Marine
EXSO301R/120	120VAC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF STEADY-ON BEACONS			
EXDSO301A/24 28	24–28VDC	Amber	3R, 4X, Marine
EXDSO301B/24 28	24–28VDC	Blue	3R, 4X, Marine
EXDSO301C/24 28	24–28VDC	Clear	3R, 4X, Marine
EXDSO301G/24 28	24–28VDC	Green	3R, 4X, Marine
EXDSO301M/24 28	24–28VDC	Magenta	3R, 4X, Marine
EXDSO301R/24 28	24–28VDC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾″	Pendant
EV22 & EV87	¾″	Wall
EV22	¾″	Ceiling
EVMJ4	1¼″	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXSO Series Steady-On Beacon	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 120VAC	55°C	90°C	T5(100°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T5(100°C)	T4(135°C)	T4(135°C)
EXDSO Series Steady-On Beacon — Diode Polarized	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 24-28 VDC	55°C	90°C	T6(85°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T6(85°C)	T4(135°C)	T4(135°C)

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Hazard●Gard EX Series Visual Signaling Devices

Explosionproof Rotating Beacons

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

NEW!



Cooper Crouse-Hinds Hazard●Gard **EXR Series Explosionproof Rotating Beacons** are designed for installation in hazardous locations, such as manufacturing plants, heavy industrial facilities, refineries, chemical, petrochemical, pharmaceutical and off-shore drilling platforms.

The units are UL listed for Type 3R, 4X and marine installations. The rotating beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDR Series Explosionproof Rotating Beacon** is diode polarized for use in standard 24–28VDC electrical circuits or in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation in an electrically supervised circuit, the diode is reversed biased, meaning it blocks voltage from being applied to the rotating beacon and prevents it from lighting. When a warning detecting device is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allows voltage to the device and activates the rotating beacon.

Primary Applications

- Security alert
- Obstacle warning
- Areas under construction or off limits
- Equipment obstruction warning
- Status indication of a process
- Supplement audible signaling

Typical Industries

- Utility gas plants
- Wastewater treatment plants
- Chemical plants
- Pharmaceutical plants
- Refineries
- Mining

Key Features and Benefits

- Powerful halogen rotating beacon emits bright light to provide critical visual warning.
- Available in pendant, wall, stanchion and ceiling mount.
- Available in six different globe colors — amber, blue, clear, green, magenta and red.
- Beacon produces 75 rotations per minute.
- Factory sealed — No external seals required.
- Quick connect — Strobe fixture threads onto mounting module for easy installation.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class II, Division 1, Groups E, F & G
- Class I, Zone 1 & 2, Group IIB
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moistureresistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120VAC (EXR) and 24–28VDC (EXDR)
- Operating Current: 0.382 amps at 120VAC
  0.8 amps at 24–28VDC
- Peak Candlepower: 3328 (EXR)
  2838 (EXDR)

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

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11L Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Rotating Beacons

NEW!

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E,F,G ● Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

Ordering Information

STEP 1 Order Rotating Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF ROTATING BEACONS			
EXR301A/120	120VAC	Amber	3R, 4X, Marine
EXR301B/120	120VAC	Blue	3R, 4X, Marine
EXR301C/120	120VAC	Clear	3R, 4X, Marine
EXR301G/120	120VAC	Green	3R, 4X, Marine
EXR301M/120	120VAC	Magenta	3R, 4X, Marine
EXR301R/120	120VAC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF ROTATING BEACONS			
EXDR301A/24 28	24–28VDC	Amber	3R, 4X, Marine
EXDR301B/24 28	24–28VDC	Blue	3R, 4X, Marine
EXDR301C/24 28	24–28VDC	Clear	3R, 4X, Marine
EXDR301G/24 28	24–28VDC	Green	3R, 4X, Marine
EXDR301M/24 28	24–28VDC	Magenta	3R, 4X, Marine
EXDR301R/24 28	24–28VDC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾″	Pendant
EV22 & EV87	¾″	Wall
EV22	¾″	Ceiling
EVMJ4	1¼″	Stanchion

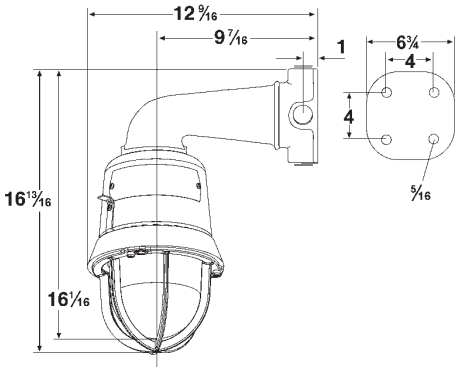
Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXR Series Rotating Beacon	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 120VAC	55°C	90°C	T5(100°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T5(100°C)	T4(135°C)	T4(135°C)
EXDR Series Rotating Beacon — Diode Polarized	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 24-28 VDC	55°C	90°C	T6(85°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T6(85°C)	T4(135°C)	T4(135°C)

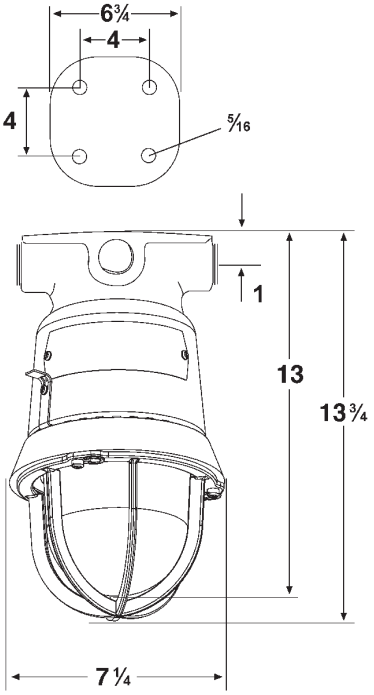
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Dimensions & Weights

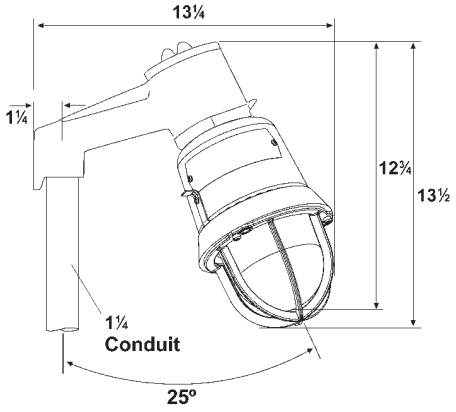
Wall Mount



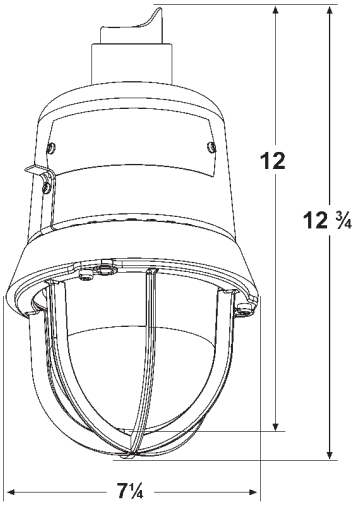
Ceiling Mount



Stanchion Mount



Pendant Mount



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard	11.0 lbs.
Add mounting modules	
Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.

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11L VDAS Strobe Lights

Warning and Visual Indication

- Cl. I, Div. 2, Groups A, B, C, D
- Cl. I, Zone 2, Group IIC
- Cl. II, Div 2, Groups F, G; Cl. III
- Wet Locations
- 3, 3R, 4, 4X

Application:

VDAS strobe lights are used:
- in areas with high noise levels
- to visually indicate warnings or hazards

Features:

- Reliable solid state components.
- Compact enclosure design provides 60 high intensity flashes per minute.
- Choice of globe colors to meet various requirements.
- Gasketed to seal out dirt and liquids.
- Designed for globe up or globe down applications.
- Easy to install.
- Lightweight corrosion-resistant copper-free aluminum construction.
- Conduit locking hub for increased safety and security.

Standard Materials:

- Body – copper-free aluminum
- Globe – LEXAN® fresnel lens

Standard Finishes:

- Body – gray epoxy

Size Range:

- ¾″ conduit

Certifications and Compliances:

- NEC and CEC:
  Class I, Division 2,
  Groups A, B, C, D
  Class I, Zone 2, IIC
- UL Standards
  844
  1598 Luminaires
- CSA Standards
  C22.2 No. 137

Electrical Ratings:

- 120, 240 VAC 50/60 Hz
- 12, 24 VDC

Photometric Data, Clear Globe

- Peak flash – 3.45 million candlepower
- Effective candlepower (light intensity if light is burning steadily) – 201 ECP

Photometric Data:

Globe Color	Output	Intensity
Clear	201	ECP
Red	46	ECP
Amber	152	ECP
Blue	38	ECP
Green	38	ECP

Operating Current:

Voltage	Operating Current
120 VAC	.3A
240 VAC	.15A
12 VDC	.9A
24 VDC	.45A



CSA Enclosure 3, 4, 5 Replacement Parts

Electronic Strobe Subassembly (includes flash tube):
120 VAC CHTFI-120H
240 VAC CHTFI-240H
12 VDC CHTFI-012
24 VDC CHTFI-024
Flash Tube . . . . . RSTC
Globe Assembly
Clear . . . . . VDAG/C
Red . . . . . VDAG/R
Green . . . . . VDAG/G
Amber . . . . . VDAG/A
Blue . . . . . VDAG/B

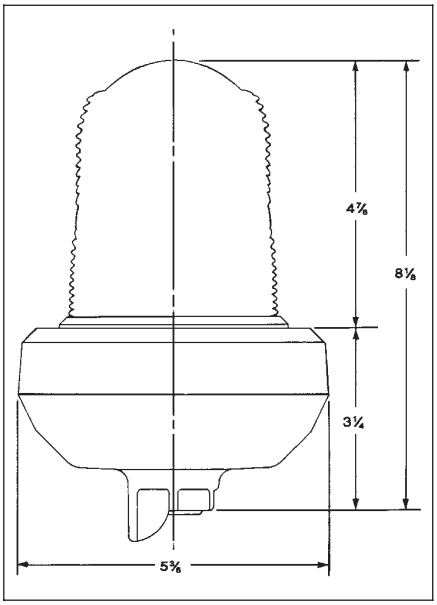
Ordering Information

Globe Color	Pendant Hub Size	Cat. # 120 VAC	Cat. # 240 VAC	Cat. # 12 VDC	Cat. # 24 VDC
Red	¾″	VDAS/R	VDAS/R/240	VDAS/R/012	VDAS/R/024
Blue	¾″	VDAS/B	VDAS/B/240	VDAS/B/012	VDAS/B/024
Amber	¾″	VDAS/A	VDAS/A/240	VDAS/A/012	VDAS/A/024
Green	¾″	VDAS/G	VDAS/G/240	VDAS/G/012	VDAS/G/024
Clear	¾″	VDAS/C	VDAS/C/240	VDAS/C/012	VDAS/C/024

Temperature Performance Data:

Ambient °C	Class I Div 2	Class II Div 2, Class III
40°	T3B	T3B
55°	T3A	---
65°	T3	---

Dimensions



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Description	Page No.
Application/Selection	952
Gauge Light	958
Tank Light V160 EVA160	953, 954
Task Light EVTL1B50 EVTL1L50	955-957

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12L Specialty Lighting

Tank, Task and Gauge Hazardous and Non-Hazardous Locations Application and Selection

Application:

Specialty lighting luminaires are used:
- for various task lighting requirements in locations that are hazardous (classified) due to the presence of combustible dusts or easliy ignitible fibers and flyings
- in areas where conventional lighting is not acceptable due to size and/or location
- in locations where an adequate light source is necessary for tank, instrument, and gauge applications
- in manufacturing plants, refineries, pharmaceutical, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, grain processing and handling facilities and other heavy industrial applications

Considerations for Selection:

Environmental:
- What is the hazardous area classification (NEC)/(CEC) of the location in which the luminaire will be installed?

Lighting levels required:
- What wattage luminaire(s) will provide the desired light level (See lighting Selector Guide, pages 665 through 689, to determine number and location of fixture required).

Physical Arrangement:
- Type of fixture mounting needed.

Product Selection:

- EV Tank Lights are suitable for use in Class I, Groups C, D hazardous (classified) locations. Tank lights are used to light the inside of tanks, vats, process vessels, etc.
- EVTL Explosionproof Task Lights are suitable for use in Class I, Group B, C, D and Class II, Groups E, F, G hazardous (classified) locations. EVTL Lights are ideal for applications in which water spray and corrosive atmospheres are considerations.
- ELG gauge lights are suitable for use in Class I, Groups C, D hazardous (classified) locations. The light is used to illuminate liquid level gauges and to direct the light over the length of the column.

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V Observation Incandescent Luminaire

Application:

The incandescent V observation luminaire is used:
- in tanks or kettles where food is processed
- to light the inside of tanks for observation of the contents through a window

Features:

- Watertight
- Supported by a mounting ring which contains holes for riveting when placed around a hole in the tank. It can also be welded or brazed to the tank.
- Heavy heat and impact-resistant glass globe eliminates breakage and resultant contamination of food from glass particles
- Relamping is easily accomplished by removal of the two thumb-screws which fasten the body to the mounting ring
- The flexible cord or cable should be connected by an EC flexible coupling or CG Series connector

Standard Materials:

- Mounting ring – silicon bronze
- Fixture body – *Feraloy*® iron alloy
- Globe – heat-resisting glass

Standard Finishes:

Feraloy – electrogalvanized and aluminum acrylic paint
- Bronze – natural

Size Ranges:

- Up to 100 watt, A-21 lamp

Certifications and Compliances:

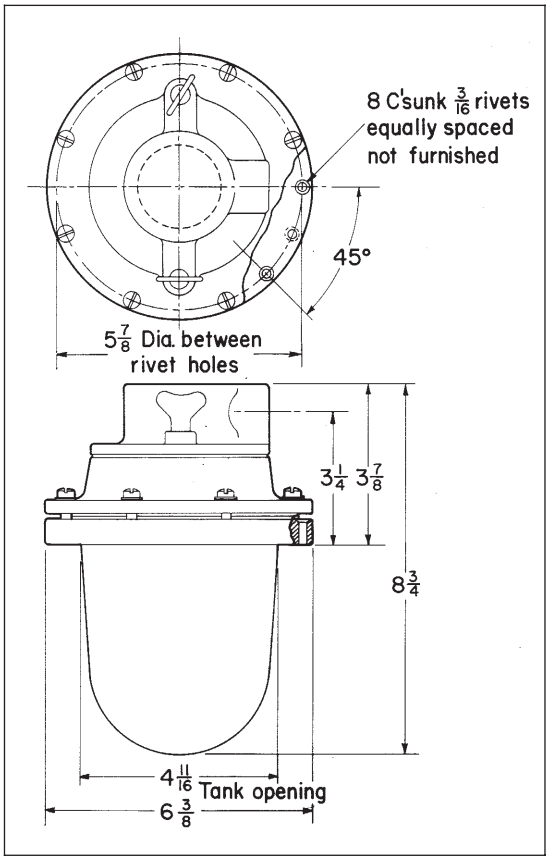
- UL Standard: 1571
- CSA Standard: C22.2



Furnished with EV10 Globe, and C166 Medium Base Lamp Receptacle

Hub Size	Lamp Size	Cat. #
½	50, 60, 75 or 100W, A-21	V160

Dimensions



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12L EV Tank Luminaires

Cl. I, Div. 1 & 2, Groups C, D
Cl. I, Zone I & 2 IIB
Cl. II, Div. 1, Groups E, F, G – EVO only

Application:

EV tank light luminaires are used:
- to light inside of tanks, vats, process vessels, etc.
- in chemical plants, petrochemical plants and petroleum process industries
- suspended over tank porthole by EC flexible hanger (EVO style)
- mounted directly in tank wall (EVA)

Features:

- High light output
- Compact design

EVA160:
- Furnished with tank ring having eight 3⁄16″ holes for riveting to tank
- Can be brazed if desired
- Luminaire ring is attached to the tank ring by eight 1/4-20 Allen Head cap screws
- Luminaire attached to luminaire ring by four wing screws
- EC flexible luminaire support should be used so relamping can be accomplished without disturbing the globe

Standard Materials:

- Bodies – EVA: Receptacle housing and intermediate ring – *Feraloy*® iron alloy. Tank ring – silicon bronze; EVO: copper-free aluminum
- Globes: EVA – glass, heat and impact resistant; EVO – glass, heat strengthened plate glass

Standard Finishes:

- *Feraloy* iron alloy – cadmium electrogalvanized and aluminum acrylic paint; copper-free aluminum – aluminum acrylic paint; silicon bronze – natural

Size Ranges:

- ½″ and ¾″ hubs

Capacity Ranges:

- EVO – 75 watt, reflector spot max.
- EVA – 100 watt, A-21 max.

Certifications and Compliances:

- NEC:
  Class I, Division 1 and 2, Groups C, D – EVO and EVA
  Class II, Division 1, Groups E, F, G – EVO only
- UL Standard: 844

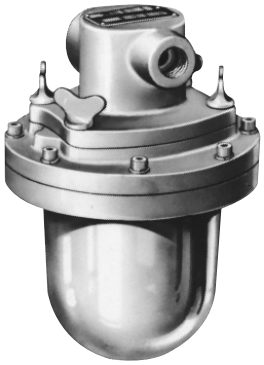
Temperature Performance Data: (based on 40°C Ambient)

	Class I Groups C, D	Class II Groups E, F, G	Supply Wire (°C)
EVO2376	T3C	T3C	75
EVA160	T3C*	—	75

*All mounting positions



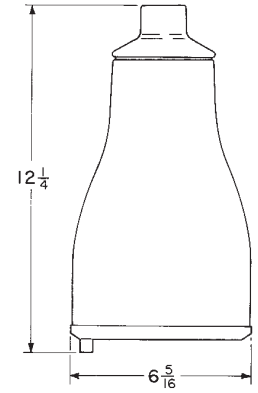
EVO2376



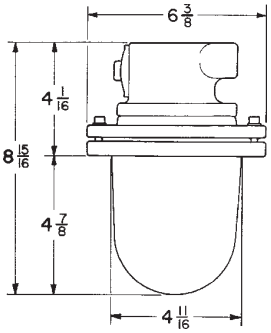
EVA160

Dimensions

EVO2376

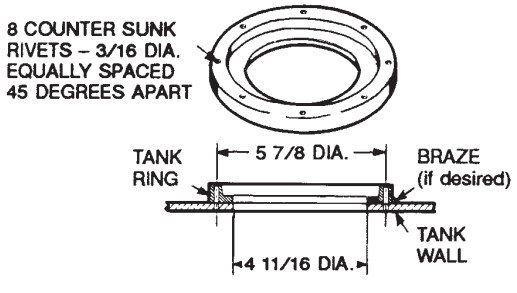


EVA160



Watts	Lamp (not furnished)	Hub Size	Cat. #
75	75R 30/SP reflector spot (medium base)	½ & ¾	EVO2376
100, A-21	Medium base	½	EVA160

Tank Ring Mounting (EVA160)



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EVTL
Explosionproof Task Light

Class I Groups B, C, D
Class I Zone I, IIB+H_2
Class II Groups E, F, G
Class III Simultaneous Service

Wet Locations
Marine Locations
NEMA 3, 3R, 4, 4X

Application

EVTL task light luminaires are used:
- For various task lighting requirements in locations that are hazardous (classified) due to the presence of flammable gases or vapors, combustible dusts or easily ignitible fibers & flyings.
- in marine applications where water spray and corrosive atmospheres are considerations.
- in areas where conventional lighting is not acceptable due to size and/or location.
- in locations where an adequate light source is necessary for tank, instrument, and gauge applications.
- in porthole or sightglass applications where a spotlight is required for visibility inside tanks, vats and process vessels.
- in manufacturing plants, refineries, pharmaceutical, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, grain processing and handling facilities and other heavy industrial applications.

Standard Materials:

- Housing—Copper-free aluminum
- ¾″ NPT hub and plug—Aluminum
- Mounting bracket(s) and External hardware—Stainless Steel
- Gasket—Silicone rubber
- Lens—Heat and impact resistant clear glass

Standard Finishes:

- Aluminum housing (exterior)—Corro-free epoxy powder coat
- Stainless Steel—Natural

Ratings (Electrical/Size)

Source/Wattage (Medium Base Lamps)

- 50PAR20 type—50W 120V halogen parabolic reflector. Lamp life 2000-2500 hrs.
- 130V lamps available to extend lamp life to 5000+ hrs.

Voltage

- 120V 60 Hz

Hub Size

- (1) ½″ NPT
- For through feed, use EVTL-TF1

Certifications and Compliances:

NEC/CEC

- Class I Division 1 & 2 Groups B, C, D
- Class II Group E, F, G
- Class III
- Class I Zone 1 & 2 Group IIB + H_2
- Wet locations
- Marine locations
- NEMA 4X

NEC

- Simultaneous Presence

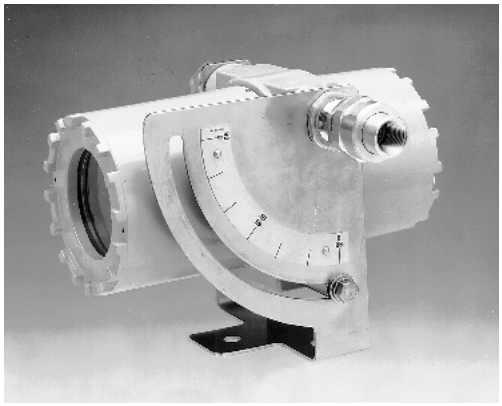
UL Standards

844—Hazardous (Divisions Classified) Locations
1571—Ordinary and Wet Locations, Marine Outside Type

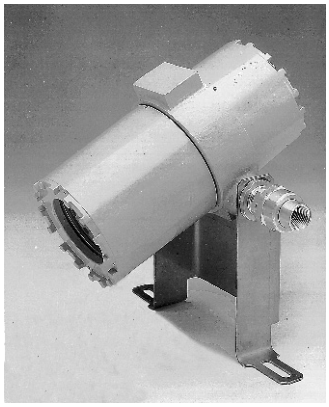
CSA Standards

C22.2 No. 137

Note: Install luminaire within aiming ranges shown on nameplate (See Dimensions)



EVTL1B50



EVTL1L50

Key Features	Benefits
Class I, II, III, Simultaneous Presence	Suitable for most hazardous (classified) areas
Class I Group B standard	Suitable for areas containing hydrogen
Wet and Marine (NEMA 4X) Suitability	Perfect for hose down applications
55° ambient suitability	Addresses higher ambients typical of industrial plants.
Cast copper-free aluminum housing with Corro-free™ epoxy powder coat finish.	Superior corrosion resistance
Stainless steel mounting brackets and hardware.	Superior corrosion resistance
Two mounting styles bracket and leg • Bracket (Universal) • Leg (Site Glass)	Maximize mounting flexibility Ceiling, Wall or Base mounting Site Glass mounting
Uses standard 50 watt PAR 20 medium base 120V lamps	Improved light output, economical, long life 2000-2500 hour light source
Uses 50PAR20 130V lamps for added lamp life	Increase lamp life to 5000+ hours while maintaining 76% lumen output
50PAR20 lamps available in both flood and spot light patterns	Vary the illumination characteristics by simply changing lamps
Easy access interior	Reduced maintenance and lamp replacement time
Seal within 5 ft. (not 18″) of luminaire	Provides greater flexibility in seal location

Ordering Information:

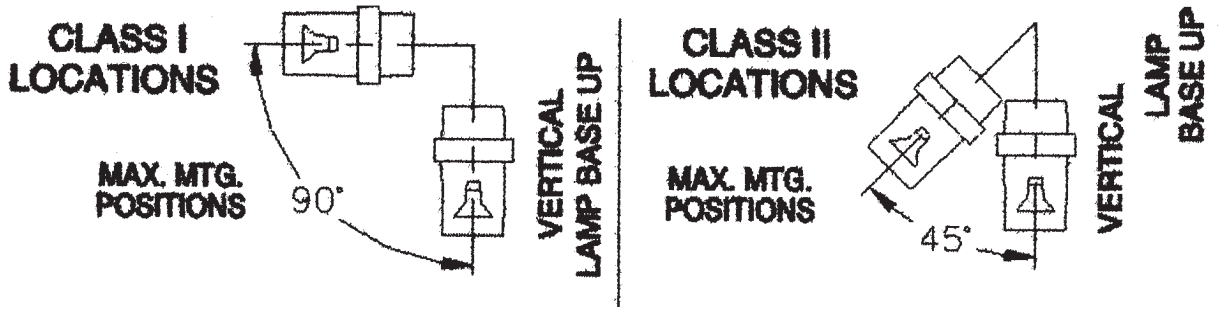
Luminaire Cat. #	Conduit Entry	Mounting Style	Wattage
EVTL1B50	½″	Bracket (Universal)	50
EVTL1L50	½″	Leg (Site Glass)	50

Temperature Performance Data:

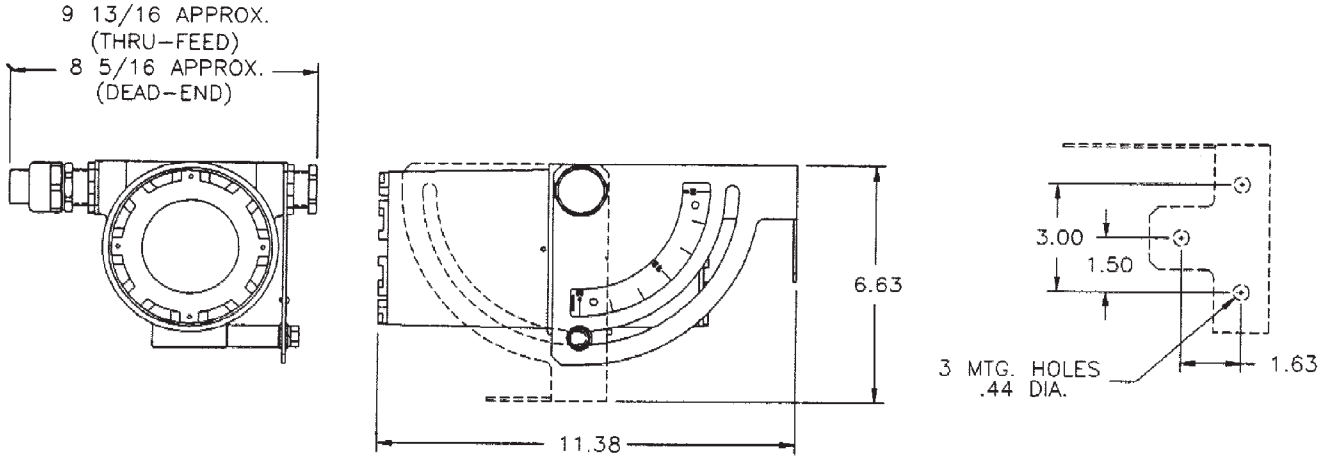
Catalog Number	Maximum Ambient °C	Class I, Div, 1, B, C, D Class II, Div. 1, E, F, G Class III Simultaneous Presence Class I, Zone 1, IIB + H_2	Supply Wire °C
EVTL1B50	40	T3B	85
EVTL1L50	40	T3B	85

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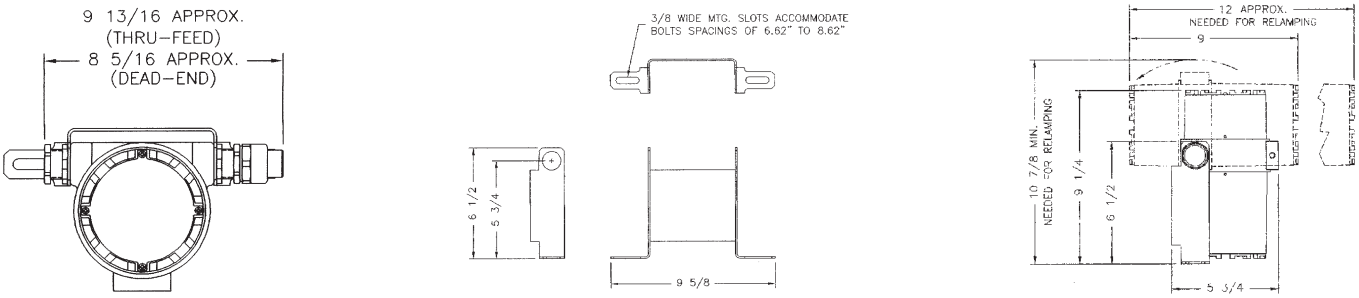
Aiming Range



Dimensions: Bracket Mount

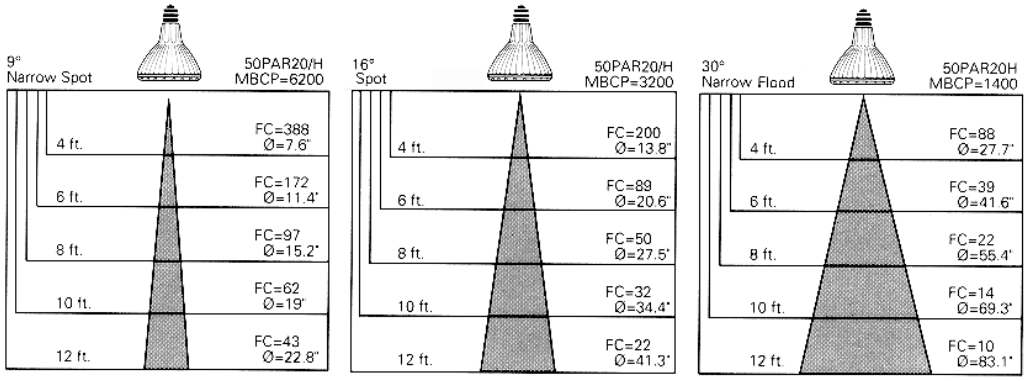


Dimensions: Leg Mount



Net Luminaire Weights (lbs)	
Luminaire Catalog	Weight (lbs.)
EVTL1B50	7
EVTL1L50	7
EVTL-TF1	½

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MBCP = Maximum Beam Candlepower Ø = Diameter of beam spread in inches FC = Footcandles measured at 0°

Lamp Light Distribution – (Philips lamp data shown. Similar for other manufacturers)
Data shown is for 120 volt lamps
For 130 volt lamps adjust data using a .76 multiplier

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Application:

ELG Gauge lights are used:
- in hazardous areas to illuminate liquid level gauges over entire length of gauge
- clamped to **rear** of liquid level gauge and conduit is attached to the ELG hubs. Light is reflected by Lucite reflector along the entire length of the gauge. Liquid level shows on front of gauge. All light is concentrated on liquid column – no spill light.

Features:

- Even illumination over entire length of gauge
- Variety of sizes to fit many gauges
- Several lights can be used in tandem to illuminate long gauge

Standard Materials:

- Body – copper-free aluminum
- Reflectors – plexiglass

Standard Finishes:

- Body – electrogalvanized and aluminum acrylic paint

Size Ranges:

- 1″ conduit through feed

Capacity Ranges:

- 120V medium screw base ''A19'' style incandescent lamp 58W maximum
- 25 watt – medium base – 1000 hour life
- 52 watt – medium base – 2500 hour life
- 58 watt – medium base – 3000 hour life

Certifications and Compliances:

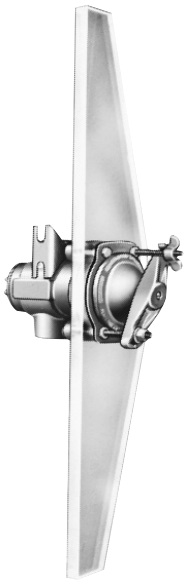
- NEC/CEC:
  Class I, Division 1 and 2, Groups C, D

Temperature Performance Data: (based on 40°C ambient)

58 Watt – T4A
Maximum

Options:

Description	Suffix to be Added to Cat. No.
● Group B suitability	GB



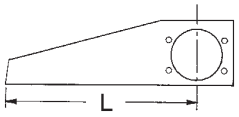
ELG329 with LE49 reflector

Ordering Information:

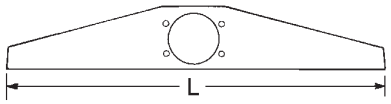
Description	Catalog No.	Length (L) (inches)
Gauge Light (less reflector)	ELG329	—
Reflector – Short style	LE34	4½
	LE35	5½
Reflector – Long style	LE46	13
	LE47	15
	LE48	17
	LE49	19¾
	LE410	22
	LE412	25¼
	LE413	26¾

Dimensions

Plexiglass reflectors
Short style



Long style



Suggested Lamps (Lamps not furnished)

Manufacturer	Catalog Number			Volts
	25 Watt	52 Watt	58 Watt	
General Electric	25A	60A/52WMP/98		120
Osram/Sylvania	25A	60A/52/SS/XL	58A19/62	120
Philips	25A	60A-52A/99/EW		120

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Plugs & Receptacles

Section P



COOPER Crouse-Hinds

The Plugs and Receptacles Section of the Cooper Crouse-Hinds Product Catalog contains complete technical information on the Cooper Crouse-Hinds line of these products.
In addition to product listings and features, the section contains information on interchangeability of plugs and receptacles, the different grounding methods incorporated in the construction of the units, and separate sections devoted to receptacles interlocked with switches and/or circuit breakers.
The product lines featured are *Arktite*,® and ARK-trol plugs and receptacles and Cable-Gard™ cord and cable reels.

Arktite Series

Metallic and non-metallic *Arktite* series units are available for use in hazardous and non-hazardous areas for general purpose, heavy-duty applications in power circuits. All units through 200 ampere rating offer circuit breaking capability under load; some units are offered with interlocking mechanism with switch and/or circuit breaker, where dead front receptacles are desired, 400 ampere units are for service disconnect use only and are not for current interrupting.
An interchangeability table on page 961 graphically shows interchangeability between products in the complete line of pin and sleeve type plugs and receptacles. Full electrical rating details are shown in the interchangeability charts at the beginning of each section in the Plugs and Receptacles Section of this catalog.

ARK-trol Series

Units are available for use in hazardous and non-hazardous areas for special purpose application in power and/or control circuits where environmental factors are important or a wide range of contacts, sizes and configurations is required.

Cable-Gard Series

Electric cord and cable reels are used extensively in modern factories for ''managing'' all loose extension cables to ensure safety, increase efficiency, and extend cable and portable equipment life.
Electric reels automatically transmit electric current (power or control) from a stationary position to a moving consumer of current.

Considerations for Selection

The considerations in the selection of plugs and receptacles are the electrical ratings desired and the physical location of the units. This information, together with the product features, construction details, and customer benefits, is shown on the individual pages in selecting the proper plugs and receptacles, other factors in addition to the electrical ratings and the physical aspects regarding location of the application (e.g., hazardous areas) should be considered. Principally, these factors are: interchangeability of plug and receptacle, interlocking and grounding.

Grounding

Cooper Crouse-Hinds utilizes two methods for completing the grounding circuit in plugs and receptacles.

Style 1:
A Style 1 plug is one in which the grounding conductor in the flexible cable is bonded to the plug sleeve by a pressure connector. A Style 1 receptacle is one which is grounded by virtue of the fact that it is an integral part of a grounded conduit system. On insertion, the plug sleeve makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.

Style 2:
A Style 2 plug is one in which the grounding conductor in the flexible cable is bonded to the extra (grounding) pole and sleeve by a pressure connector. A Style 2 receptacle is one in which the extra (grounding) pole is electrically connected to the equipment grounding conductor and the receptacle housing which itself is grounded by virtue of the fact that it is an integral part of a grounded conduit system. In a Style 2 receptacle, the grounding connection is made before line and load poles engage, and is broken after line and load poles disengage. Furthermore, upon insertion, the plug sleeve of metal shelled units makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.
This method is used on plugs and receptacles for hazardous areas, on configured Arktite and on all *Arktite* products made of *Krydon*® material.
It meets the National Electrical Code/ Canadian Electrical Code requirements for this equipment. The Arktite line offers a choice of both methods; other plugs and receptacles are offered in one of the two styles (details are given on the individual pages). Details on construction and diagrams of both methods are found in Section 1P, pages 966 and 967.

Interlocked Units

Where added safety is desired and for units of higher ratings, Sections 3P and 4P detail receptacles with interlocked switches and/or circuit breakers. The ability to break the load before removal of the plug, circuit protection and disconnect capability are the prime benefits to be derived from equipment shown in those sections.

Interchangebility Between Cooper Crouse-Hinds Product Families

A unique capability exists throughout much of the Cooper Crouse-Hinds plug and receptacle line that enables a variety of receptacles to be used with the same plug—*provided the electrical rating and style of plug and receptacle are the same* (see Interchangeability Table on next page).
Where a common wiring system is in use, it is possible to use the same standard plug with a number of different receptacle assemblies located in different areas where each receptacle is selected to meet the physical or environmental requirement of the specific area. For example, a process industry facility could include Class I, Groups C and D areas and Class II, Group G areas as well as nonhazardous areas. A portable device suitable for use in the hazardous areas could be equipped with an *APJ Arktite* plug or NPJ *Arktite* plug made of *Krydon*® material and be used in all areas of the plant. The receptacle installation could include AR or NR units in the nonhazardous areas; DR receptacles or DBR interlocked receptacles in the Class II, Groups F and G areas and FSQ or EPC interlocked receptacles in the Class I, Groups C and D areas—all of which will accept the same APJ or NPJ plug.
CPH Plugs can also be used with any receptacle which accepts a standard APJ or NPJ *Arktite* plug of the same ampere rating, style, and number of poles. This feature permits the use of a portable device, suitable for hazardous locations, in all areas of a plant, but prevents the use of an ''ordinary locations'' device in the hazardous areas.
The following table is a summary of possible combinations. Full details describing the possibilities for interchanging plugs and receptacles are given in this section of the Cooper Crouse-Hinds Product Catalog.

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Plugs and Receptacles

Interchangeability Table

Cooper Crouse-Hinds Heavy Duty Receptacles and Connectors†	Cat. Pg.	Cooper Crouse-Hinds Pin and Sleeve Design Plugs†								
										
		APJ	AP	BHP	BP	FP CPH	CPP	DP	NPJ	SP
Delayed Action for Hazardous Areas										
CPS	1002						●			
CES/CESD	1011					●				
Non-Interlocked For Non-Hazardous Areas										
APR	966	●	●			●	●		●	
AR	966	●	●			●	●		●	
CPR	1006						●			
NR	983	●				●	●		●	
NPR	983	●				●	●		●	
Interlocked for Hazardous Areas										
BHR	1049			●						●
DBR	1061	●				●			●	
EBBR	1053	●				●			●	
EPC	1056	●				●		●	●	
EPCB	1059	●				●			●	
FSQ230	1042				●					
FSQ232	1042					●				
FSQC	1042	●				●			●	
SRD	1051			●						●
W2SR	1048	●				●			●	
Interlocked for Non-Hazardous Areas										
CSR	1024	●				●			●	
DBR	1030	●				●			●	
NBR	1034	●				●			●	
NSR	1032	●				●			●	
SRG	1028			●						●
WSR	1018	●				●			●	
WSQC	1037	●				●			●	
WSRD	1018	●				●			●	
WSRD SS	1020	●				●			●	
WSRDW	1018	●				●			●	

● Plugs mate with indicated receptacles.

† Consult individual catalog pages for complete listing of Cooper Crouse-Hinds plugs, receptacles and connectors

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P Plugs and Receptacles

Table of Contents

Section 1P
Industrial Heavy Duty Plugs and Receptacles
(for use in non-hazardous areas)

Receptacles	Plugs
AR	AP, APJ, CPH, CPP, NPJ
APR	AP, APJ, APQ, CPH, CPP, NPJ, NPQ
NR	APJ, CPH, CPP, NPJ
NPR	APJ, CPH, CPP, NPJ, NPQ

Section 2P
Industrial Heavy Duty Plugs and Receptacles
(for use in hazardous areas)

Receptacles	Plugs
CES, CESD	CPH
CPR*	CPP
CPS	APJ, NPJ
DR	APJ, NPJ
ENR	ENP

Section 3P
Interlocked Heavy Duty Plugs and Receptacles
(for use in non-hazardous areas)

Receptacles	Plugs
CSR	APJ, NPJ
DBR	APJ, CPH, NPJ
SRG	SP, BHP
NBR	APJ, CPH, NPJ
WSR, WSRD	APJ, CPH, NPJ
NSR	APJ, CPH, NPJ
DSR	APJ, CPH, NPJ
WSQC	APJ, CPH, NPJ

Section 4P
Interlocked Heavy Duty Plugs and Receptacles
(for use in hazardous areas)

Receptacles	Plugs
BHR	BHP, SP
DBR	APJ, CPH, NPJ
EPC	APJ, DP, CPH, NPJ
EBBR	APJ, CPH, NPJ
EPCB	APJ, CPH, NPJ
FSQ	APJ, BP, CPH, NPJ
SRD	SP, BHP
DSR	APJ, CPH, NPJ
W2SR	APJ, CPH, NPJ

Section 5P

IEC309	Pin & Sleeve

Section 6P
Wiring Devices with Covers
(for use in non-hazardous areas)

WLRS/WLRD Covers
GFCI Covers

Section 7P
Industrial Cord and Cable Reels

Cable-Gard™ Series
W14
W16
W19
Static Discharge Reels

Section 8P
Special Purpose Plugs and Receptacles
(for use in non-hazardous areas)

Ark-trol® Series
RPC
RPE

Section 9P
Special Purpose Plugs and Receptacles
(for use in hazardous areas)

Ark-trol Series
RPX

***** Do not use in hazardous areas

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Description	Page No.
Application/Selection	**964, 965**
Arktite® Series	
Technical Data	**966-969**
Aluminum AR/APJ Style	
20A	**970**
30A	**972, 973**
60A	**974, 975**
100A	**976, 977**
200A	**978-980**
400A	**981, 982**
Configured Arktite® ARC/APJC Style	
Technical Data	**986, 987**
30, 60, 100A	**988, 989**
Back Boxes	**990, 993**
Krydon® NR/NPJ Style	
Technical Data	**983**
30, 60, 100A	**984, 985**
Flanged Panel Mount	**994, 995**
Motor Plugs	**996, 997**

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Industrial Heavy Duty Application and Selection

Application:

- Distribution of secondary electrical power
- Provide quick disconnect from power source

Considerations for Selection:

Electrical System:
- Amperage and voltage required for application

Wiring system and number of conductors required. See page 969 for contact sizes.
Compatibility with System:
- Need for interchangeability with plugs in existing system and within parts of new system. Grounding styles. Two styles utilized. See page 967 for complete description to determine which is suitable for needs.

Mounting Arrangement:
- Three types of mounting available – surface, flush and panel

Application:
- Fixed receptacle for power outlet; cable connectors for portable cable extensions

Other Considerations:
- Wire sizes and recess dimensions available. See page 969 for complete details.

National Electrical Code, UL, NEMA, Canadian Electrical Code, CSA compliances
- Environment – need for operation in harsh, dirty or corrosive conditions.

Options:

- Special polarity arrangements available as well as special back boxes and hub arrangements. See listing pages for details.

Quick Selector Chart

	Electrical Characteristics						
Receptacle Series	Receptacle Type	Amperage (Range)	Volts (Max.)	No. of Poles (Range)	Grounding Style†	Mounting	Mating Plug
APR	Portable cable	20, 30, 60, 100, 200, 400	600VAC 250VDC	2-5	1-2		APJ, NPJ, APQ, AP
APRC	Portable cable	30, 60, 100	600VAC 250VDC	3-5	2		APJC, APQC
AR	Fixed	20, 30, 60, 100, 200, 400	600VAC 250VDC	2-5	1-2	Back box (surface)	APJ, NPJ, AP
ARC	Fixed	30, 60, 100	600VAC 250VDC	3-5	2	Back box (surface)	APJC
AR	Fixed	30, 60, 100, 200	600VAC 250VDC	2-4	1-2	Panel mtg. (semi-flush)	APJ, NPJ, AP
NPR	Portable cable	30, 60, 100	600VAC 250VDC	3-4	2		NPQ, APJ, NPJ (fixed)
NR	Fixed	30, 60, 100	600VAC 250VDC	3-4	2	Back box (surface)	APJ, NPJ

† See page 967 for detailed explanation.

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Industrial Heavy Duty Interchangeability Chart

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same.** The following table is a summary of possible combinations.

Plugs Shown in Section 1P	Can be Used with These Receptacle Series	Listed in Section	Plugs & Receptacle Electrical Rating
APJ, NPJ*	DR	2P	30, 60 amp. 2-wire, 2-pole 3-wire, 3-pole 4-wire, 4-pole 2-wire, 3-pole 3-wire, 4-pole
	DBR	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
	FSQ	4P	30 amp. 2-wire, 3-pole 3-wire, 4-pole
	EPC, EPCB, EBBR	4P	30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole
	NBR, NSR	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
	WSR	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
	WSRD	3P	60 amp. 3-wire, 3-pole 3-wire, 4-pole
CPH	AR, NR*, NPR*	1P	30 and 60 amp. 2-wire, 3-pole
	DR, CES, CESD	2P	
	FSQ, EPC, EPCB, DBR	4P	
	DBR, NBR, NSR, WSR, WSRD	3P	30 and 60 amp. 3-wire, 4-pole

* NPJ, NR and NPR available in 2-wire, 3-pole and 3-wire, 4-pole electrical ratings only.

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Arktite® Heavy Duty Circuit Breaking Plugs and Receptacles

NEMA 4 Watertight

Industrial Heavy Duty Non-Hazardous Areas

Application:

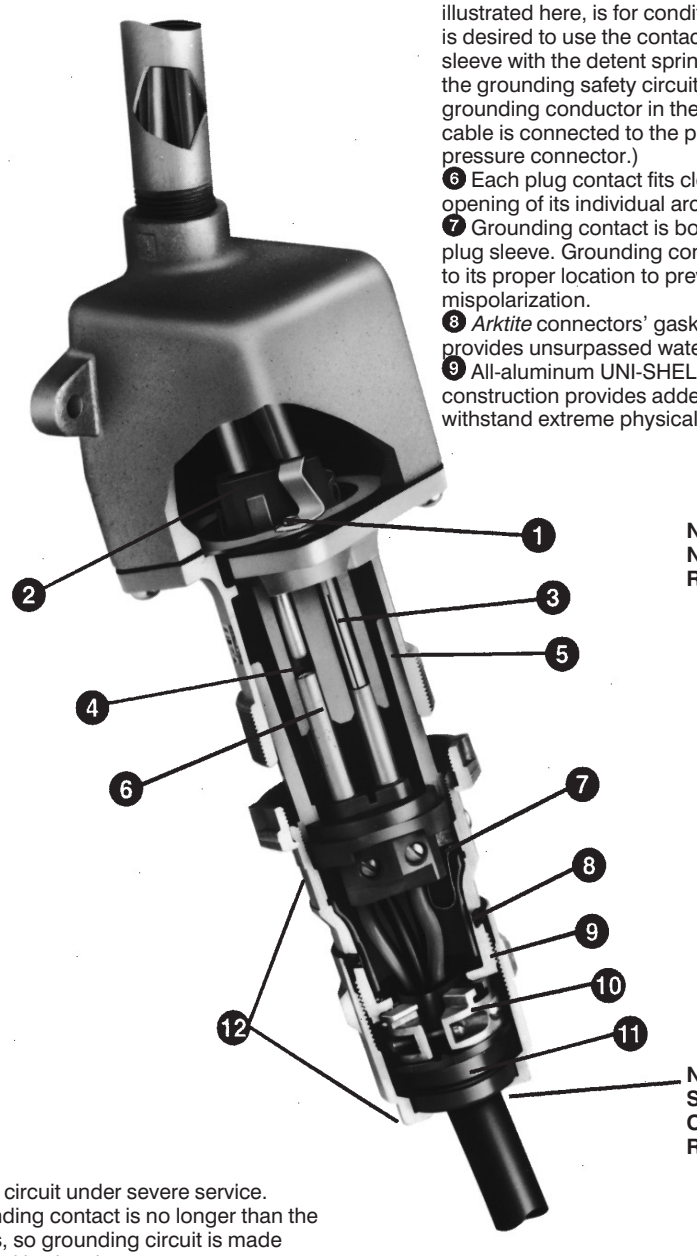
Arktite circuit breaking plugs and receptacles are used:

- to supply power to portable electrically operated devices such as motor-generator sets, compressors, heating and cooling units, welders, conveyors, lighting systems and similar equipment
- where temporary power is needed, such as at trailers, building units, heavy machinery and similar equipment
- wherever electrical loads must be quickly disconnected from power source
- in a typical installation, where a large machine utilizes a number of electrical motor drives and for ease of adjustment, removal, maintenance and replacement, each motor is connected by portable cord and *Arktite* receptacles rather than permanently wired
- in areas where dust, dirt, moisture and corrosion are a problem
- indoors and outdoors in non-hazardous areas of chemical plants, process industry facilities, meat packing plants, manufacturing plants and similar industrial locations

Features:

- Circuit breaking: Plugs through 200 ampere rating may be disconnected under load; 400 ampere units are for service disconnect use only.
- Receptacles accept only plugs of the same amperage rating, style and number of poles, making it impossible to mismate, and provides for positive polarization.
- Extra wide electrical spacing allows for maximum safety.
- Insulator materials are the result of intensive testing. Selection has been made based on highest dielectric strength, maximum mechanical and impact resistance, lowest moisture absorption and highest arc tracking resistance.
- A variety of installations is possible due to the availability of several types of back boxes.
- Designed to withstand rough usage and the effects of adverse environments.
- Reversible interiors, 30, 60 and 100 ampere (except 30 and 60 ampere, 5-pole) *Arktite* plug and receptacle interiors are interchangeable using a screwdriver. This makes it possible to feed a normally deenergized receptacle from an energized plug with usual *Arktite* safety; no energized contacts are exposed.
- Additional features are indicated in the view at right:

❶ Grounding contact in Style 2 is bonded to the receptacle housing.
❷ Easily wired interior assemblies in receptacles and plugs. See table on page 938 for type of contacts in units.
❸ *Arktite* Style 2, illustrated here, has an extra grounding contact which forms a parallel circuit with the circuit formed by the plug sleeve and receptacle detent spring, and assures continuity of the grounding safety circuit under severe service. Grounding contact is no longer than the others, so grounding circuit is made first and broken last.
❹ The arc formed by pulling the plug is instantly snuffed in the deep, confined insulated arcing chamber while the plug contact is still a considerable distance inside. The arc cannot travel over to the other side of the circuit or to the housing.
❺ Detent spring forms a grounding path from plug sleeve to receptacle housing. *Arktite* plugs and receptacles are made in two styles. With either style, the portable appliance is grounded before it is energized and remains grounded until after it is deenergized. (*Arktite* Style 1, not illustrated here, is for conditions where it is desired to use the contact of the plug sleeve with the detent spring to complete the grounding safety circuit. The extra grounding conductor in the portable cable is connected to the plug sleeve by a pressure connector.)
❻ Each plug contact fits closely the opening of its individual arcing chamber.
❼ Grounding contact is bonded to the plug sleeve. Grounding contact is keyed to its proper location to prevent mispolarization.
❽ *Arktite* connectors' gasketing system provides unsurpassed watertight integrity.
❾ All-aluminum UNI-SHELL™ threaded construction provides added strength to withstand extreme physical abuse.



❿ *Arktite's* TRI-LOCK™ cable grip has three clamps that tighten around the cable to securely lock it in place, even when subjected to extreme flexing and jerking.
⓫ The unique SURE-SEAL™ cable gland provides a complete environmental seal by distributing pressure equally around the circumference of the cable.
⓬ Wrenching surfaces make *Arktite* connector quick and easy to assemble.

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Arktite® Heavy Duty Circuit Breaking Plugs and Receptacles

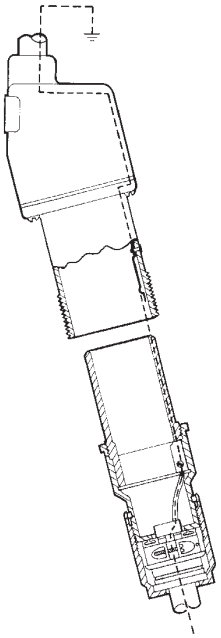
Industrial Heavy Duty Non-Hazardous Areas

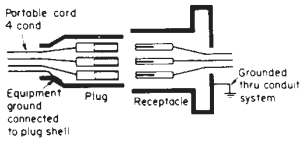
Grounding: Style 1 vs. Style 2

Cooper Crouse-Hinds Arktite devices utilize two methods, or styles, for completing the grounding circuit in plugs and receptacles. NEC reference 250.138 (A) & (B).

Style 1 – Metallic

A Style 1 plug is one in which the grounding conductor in the flexible cable is bonded to the plug sleeve by a pressure connector. A Style 1 receptacle is one which is grounded by virtue of the fact that it is an integral part of a grounded conduit system. On insertion, the plug sleeve makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.



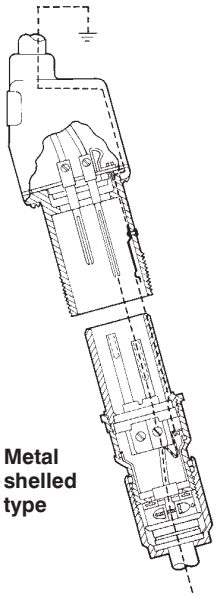




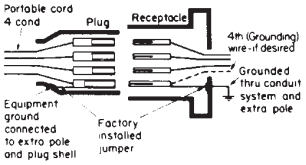
Style 1
Ground conductor attaches to shell.

STYLE 2 – Metallic

A Style 2 metallic housing plug is one in which the grounding conductor in the flexible cable is bonded to the extra (grounding) pole and metal plug sleeve by a pressure connector. A Style 2 metallic housing receptacle is one in which the extra (grounding) pole is electrically connected to the equipment grounding conductor and the metal receptacle housing which itself is grounded by virtue of the fact that it is an integral part of a grounded conduit system. In Style 2, non-metallic housing plugs and receptacles, the extra pole is used for grounding since the housings are non-conductive.



Metal shelled type



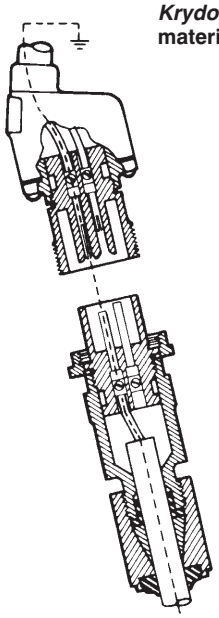


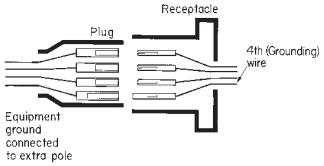
Style 2
Ground conductor attaches to contact, which is bonded to shell.

Style 2 – Non-Metallic

In a Style 2 receptacle, the grounding connection is made before line and load poles engage, and is broken after the line load poles disengage. Furthermore, upon insertion, the plug sleeve of metal shelled units, makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.

Made of non-metallic *Krydon* material





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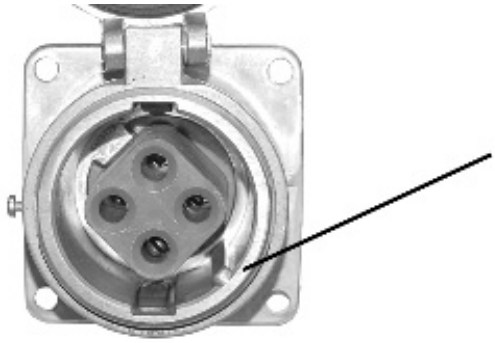
Arktite® Heavy Duty Circuit Breaking§ Plugs and Receptacles

Industrial Heavy Duty Non-Hazardous Areas

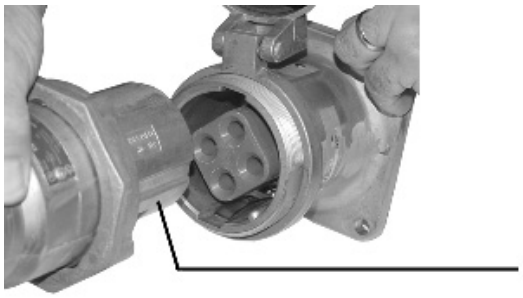
Options:

● The following special options are available from factory by adding suffix to Cat. No.:

Suffix to be Added to Cat. #	Description
S22.	Reversed contacts. Receptacle assembled with plug interior (exposed contacts), plug assembled with receptacle interior (recessed contacts). For applications where plug is energized to feed normally de-energized receptacle. Available on 30 through 400 ampere units NOTE: 30 (2, 3, 4-pole), 60 and 100 ampere interiors can be interchanged in the field using a screwdriver. Factory conversion is required for 200 and 400 ampere products.
S4.	Special polarity. For use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages and/or frequencies. Prevents insertion of a plug in a receptacle with different electrical rating. Available on 20 through 400 ampere units as follows: Receptacle interior rotated 22½ degrees to right and plug changed to match (See photo to right)



Arktite receptacles have a cast raised rib located inside the receptacle sleeve. The location of the rib is in a specific relationship to the receptacle insulator that houses the contacts.



The mating plug has a cast groove located on the outside of the plug sleeve. This groove lines up with the raised rib.

Standard Materials:

● Metallic receptacle housings, plug and cord connector bodies – high impact strength copper-free aluminum
● Nonmetallic receptacles, plugs and cord connectors – *Krydon*® fiberglass-reinforced polyester material
● Back boxes: 20, 30, 60, 100 and 200 ampere – cast aluminum; 400 ampere – *Feraloy*® iron alloy
● Insulation (metallic products): (2-, 3-, and 4-pole) 30, 60, 100, 200, 400 ampere – fiberglass-reinforced polyester; 20, 30 ampere (5-pole) – melamine
● Contacts: pressure, solder, binding screw – brass; crimp/solder – leaded red brass; 20, 30, 60, 100 ampere – telurium copper; 200, 400 ampere

Standard Finishes:

● *Feraloy*—electrogalvanized and aluminum acrylic paint
● Aluminum – natural
● *Krydon* fiberglass-reinforced polyester material – grey
● Fiberglass-reinforced polyester insulation – (red)
● Melamine – natural (brown)
● Brass – natural
● Leaded red brass – electro-tin-plate

§ 400A rated units are for service disconnect use only.

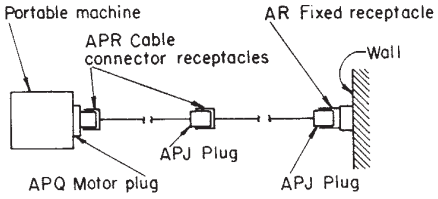
Accessories:

Accessories include a variety of angle adapters, panel adapters and back boxes for *Arktite* receptacles, listed on pages 990-993. Included throughout 1P are wire mesh cable grips and protective caps for *Arktite* plugs.

Certifications and Compliances:

● UL Standards: 1682, 514; 1010 (APJ and NPJ plugs only)
● CSA Standard: C22.2 No. 182.1

Typical installation



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Arktite® Heavy Duty Circuit Breaking§ Plugs and Receptacles

Industrial Heavy Duty Non-Hazardous Areas

Arktite Horsepower Ratings

● Locked-Rotor Interrupting

Electrical System	Ampere Rating Plug and Receptacle	Motor Horsepower† 120 Volts	240 Volts	480 Volts	600 Volts
Single-phase	30	2	3	7.5	10
	60	5	10	25	20
	100	10	20		
	200	15	40		
Three-phase	30	3	5	10	10
	60	10	20	40	50
	100	15	30	40	25
	200	30	60	25	15

● Emergency Interrupting

Electrical System	Ampere Rating Plug and Receptacle	H.P. Rating 120 Volts	240 Volts	480 Volts	600 Volts
Single-phase	30	2	3	10	10
	60	5	10	25	20
	100	7.5	20	30	30
	200	15	40	40	40
Three-phase	30	3	7.5	15	20
	60	10	20	40	50
	100	10	30	40	40
	200	20	60	50	50

Wire Sizes:

The table below lists the diameter of the wire recess in *Arktite* plug and receptacle contacts so that maximum size of bare conductor can be figured. Range of wire sizes shown in table is intended only as a guide. Depending on type of wire used (building wire, flexible or extra flexible cable) and its construction (number and size of strands), bare copper diameters vary widely.

Diameter of Wire Recess in Plug and Receptacle Contacts

Ampere Rating	Contact Type	Diameter of Recess	Wire Size‡ Building	Extra Flex
20	Binding Screw	N/A	#14-#12	#14-#12
30 (2, 3, & 4-pole)	Pressure	.281	#10-#6	#10-#8
30 (2, 3, & 4-pole)	Crimp/Solder	.180	#10-#8**	#10-#8
30 (5-pole)	Solder	.188	#12-#6	#12-#8
60 (2, 3, 4 & 5-pole)	Pressure	.312	#6-#4	#8-#4
60 (3 & 4-pole)	Crimp/Solder	.277	#6-#4**	#8-#4
100 (2, 3 & 4-pole)	Pressure	.390	#4-#1	#4-#2
100 (3 & 4-pole)	Crimp/Solder	.390	#2-#1**	#2-#2
200 (Std. 3 & 4-pole)	Crimp/Solder	.56	#1-4/0	#1-3/0
200 (Lg. 3 & 4-pole)	Crimp/Solder	.75	4/0-250MCM	3/0-250MCM
400 (Std. 3 & 4-pole)	Crimp/Solder	.84	250-500MCM	250-400MCM
400 (Lg. 3 & 4-pole)	Crimp/Solder	1.25	500-1000MCM	400-750MCM

** Smaller sizes may be used with well reducers – information on request.

† Horsepower ratings are based on Cooper Crouse-Hinds testing in which locked-rotor currents were interrupted by withdrawing the plug from the receptacle. It is highly recommended, however, that such use be limited to emergency conditions only; and that a horsepower rated switch be used for motor disconnect.

‡ Do not use wire size smaller than minimum size recommended.

§ 400A rated units are for service disconnect use only.

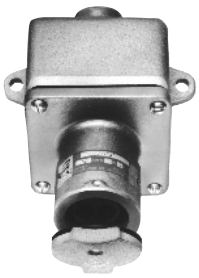
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Notes Page

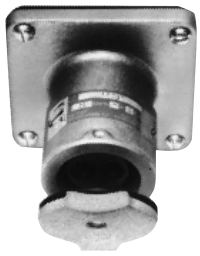
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Arktite® Heavy Duty Circuit Breaking Receptacles, Plugs and Connectors

20 A, 600 VAC/250 VDC, 50**-400 hertz















Receptacle with Back Box

Config.	Hub Size	Descrip.	Cat No. #
2W 2P	½	Spring Door	**ARE2211**
	½	Threaded Cap	**ARE2271**
2W 2P	¾	Spring Door	**ARE2212**
	¾	Threaded Cap	**ARE2272**

Receptacle

Config.	Descrip.	Cat No. #
2W 2P	Spring Door	**AR221**
	Threaded Cap	**AR227**

Plug

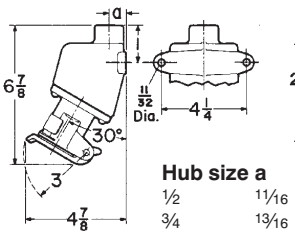
Config.	Cable Dia.	Descrip.	Cat No. #
2W 2P	.250–.500	Fastening Ring	**APJ2271**
	.250–.500	W/O Fastening Ring	**APJ2251**
2W 2P	.500–.875	Fastening Ring	**APJ2273**
	.500–.875	W/O Fastening Ring	**APJ2253**

Connector

Config.	Cable Dia.	Descrip.	Cat No. #
2W 2P	.250–.500	Connector	**APR2251**
	.500–.850	Connector	**APR2253**

Dimensions

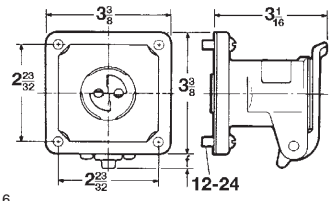
ARE Assembly



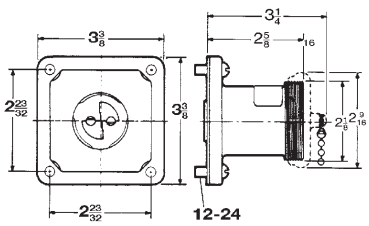
Hub size a

½	1 1/16
¾	1 3/16

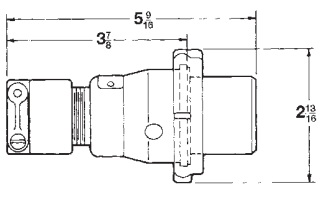
AR Receptacle - Spring Door



AR Receptacle - Open and with cap



APJ Plug



NOTE: For listing of additional back boxes, see pages 999 and 991.

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

NEMA 4 Watertight

30 A, 600 VAC/250 VDC, 50**-400 hertz

Receptacle Assembly



Receptacle



Mating Plug



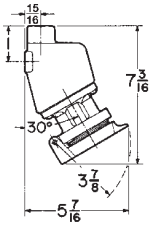
Mating Connector



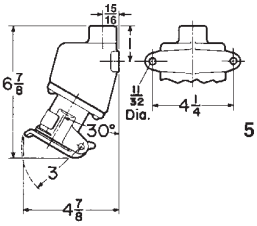
With ARE Back Boxes Style 1			Receptacle Housings Only Style 1		Mating APJ Plugs† Style 1		Mating APR Connectors Style 1	
Description	**Hub‡ Size**	**Spring Door Cat. #**	**Spring Door Cat. #**	**Threaded Cap Only Cat. #**	**Cat. #**	**Cable Dia.**	**Cat. #**	**Cable Dia.**
2-wire, 2-pole	½ ¾	ARE3211 ARE3212	AR321	AR327	APJ3275	0.39 to 1.20	APR3255	0.39 to 1.20
3-wire, 3-pole	¾ 1	ARE3312 ARE3313	AR331	AR337	APJ3375	0.39 to 1.20	APR3355	0.39 to 1.20
4-wire, 4-pole	¾ 1	ARE3412 ARE3413	AR341	AR347	APJ3475	0.39 to 1.20	APR3455	0.87 to 1.02
5-wire, 5-pole	1	ARE3513	AR351		APJ3573	.500 to .875	APR3553	.500 to .875
Style 2			**Style 2**		**Style 2**			**Style 2**
2-wire, 3-pole	¾ 1	ARE3322 ARE3323	AR332	AR338	APJ3575	.875 to 1.375	APR3555	.875 to 1.375
3-wire, 4-pole	¾ 1	ARE3422 ARE3423	AR342	AR348	APJ3485	0.39 to 1.20	APR3465	0.39 to 1.20
4-wire, 5-pole	1	ARE3523	AR352		APJ3583 APJ3585	.500 to .875 .875 to 1.375	APR3563 APR3565	.500 to .875 .875 to 1.375

Dimensions

ARE Assembly

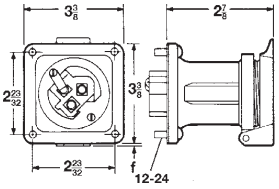


30A
2,3 and 4 POLE

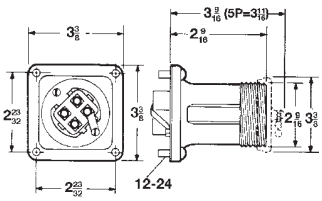


30 A
5 POLE

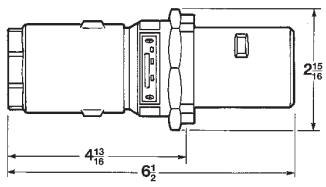
AR Receptacle - Spring Door



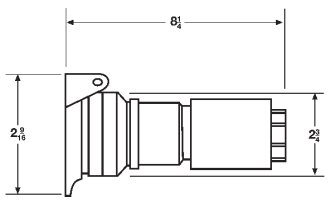
AR Receptacle - Open and with cap



Plug



Connector



** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

30 A, 600 VAC/250 VDC, 50**-400 hertz

Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:
- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Config.	Cat No. #
2P & 3P & 4P	**CPK13**
5P	**CPK32**

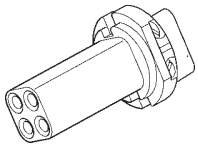
Standard Materials:

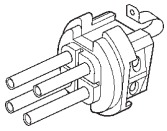
- Copper-free aluminum

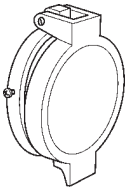
Standard Finishes:

- Natural

Replacement Parts:









Config.	Receptacle Interior	Plug Interior	Spring Door	Screw Cap
2W 2P	ATP275	ATP270	QE50	QE13
2W 3P	ATP278	ATP273		
3W 3P	ATP276	ATP271		
3W 4P	ATP279	ATP274		
4W 4P	ATP277	ATP272		
4W 5P	ATP125	ATP109	N/A	N/A
5W 5P	ATP94	ATP73		

Replacement Pin & Sleeve Contacts:

Description	Recep	Plug
Available as a kit only. 5 phase contacts & 1 ground contact included	AR30CONKIT	AP30CONKIT

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

NEMA 4 Watertight

60 A, 600 VAC/250 VDC, 50**-400 hertz



Receptacle Assembly





Receptacle



Mating Plug

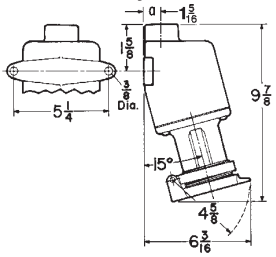


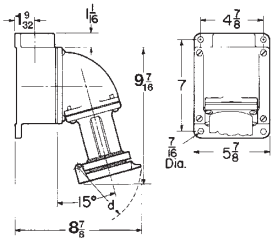
Mating Connector

Description	Hub Size	With AJ Back Boxes and Angle Adapters: Spring Door Cat. #	With AJ Back Boxes and Angle Adapters: Threaded Cap Only Cat. #	with ARE Back Boxes: Spring Door Cat. #	Receptacle Housing Only: Spring Door Cat. #	Receptacle Housing Only: Threaded Cap Only Cat. #	Cable Dia.	Mating Plug Cat. #	Mating Connector Cat. #
Style 1									
2-wire, 2-pole	1 1¼	AREA6213 AREA6214		ARE6213 ARE6214	AR621	AR627	0.50 to 1.45	APJ6275	APR6255
3-wire, 3-pole	1 1¼	AREA6313 AREA6314		ARE6313 ARE6314	AR631	AR637	0.50 to 1.45	APJ6375	APR6355
4-wire, 4-pole	1¼ 1½	AREA6414 AREA6415		ARE6414 ARE6415	AR641		0.50 to 1.45	APJ6475	APR6455
5-wire, 5-pole	1¼ 1½		AREA6574 AREA6575			AR657	0.50 to 1.45	APJ6575	
Style 2									
2-wire, 3-pole	1 1¼	AREA6323 AREA6324		ARE6323 ARE6324	AR632	AR638	0.50 to 1.45	APJ6385	APR6365
3-wire, 4-pole	1¼ 1½	AREA6424 AREA6425		ARE6424 ARE6425	AR642	AR648	0.50 to 1.45	APJ6485	APR6465
4-wire, 5-pole	1¼ 1½		AREA6584 AREA6585			AR658	0.75 to 1.45	APJ6585	APR6585 APR6567

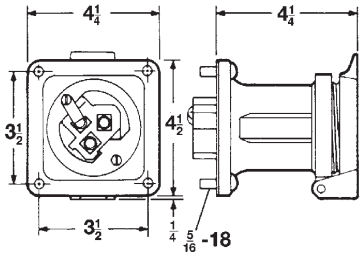
Dimensions

ARE Assembly

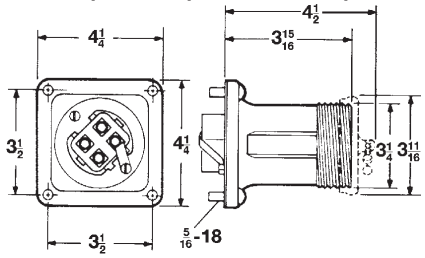




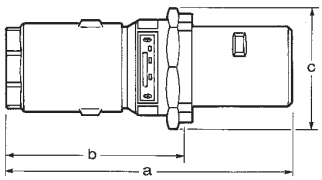
AR Receptacle - Spring Door



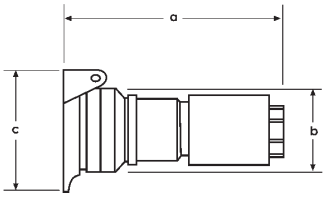
AR Receptacle - Open and with cap



APJ Plug



APR Connector



Config	Plug a	Plug b	Plug c	Connector a	Connector b	Connector c
2P or 3P	8½	5¾	3⅝	6½	3⅝	2 15/16
4P	8½	5 13/16	3¾	8¼	3⅝	2 15/16
5P	9	6 3/16	4 7/16	8¼	3⅝	3¼

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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COOPER Crouse-Hinds

Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

60 A, 600 VAC/250 VDC, 50**-400 hertz

Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:
- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing

Standard Materials:

- Copper-free aluminum

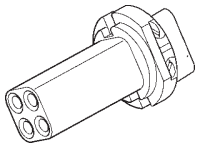
Standard Finishes:

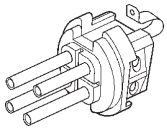
- Natural

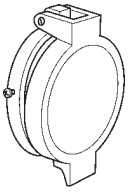


Config.	Cat No. #
2P & 3P	**CPK32**
4P	**CPK34**

Replacement Parts:









Config.	Receptacle Interior	Plug Interior	Spring Door	Screw Cap
2W 2P	ATP295	ATP290	QE51	QE32
2W 3P	ATP298	ATP293		
3W 3P	ATP296	ATP291		
3W 4P	ATP299	ATP294	QE52	QE34
4W 4P	ATP297	ATP292		
4W 5P	ATP385	ATP387	N/A	AR:11393B
5W 5P	ATP384	ATP386	N/A	

Replacement Pin & Sleeve Contacts:

Description	Recep	Plug
Available as a kit only. 5 phase contacts & 1 ground contact included	AR60CONKIT	AP60CONKIT

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

NEMA 4 Watertight

100 A, 600 VAC/250 VDC, 50**-400 hertz

Receptacle Assembly



Receptacle



Mating Plug



Mating Connector

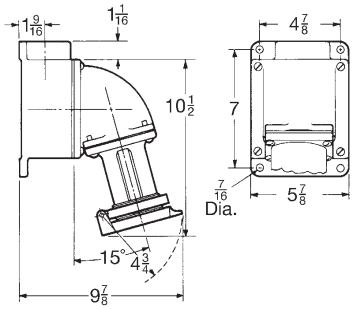


Style 1 — **Receptacle Housings Only**

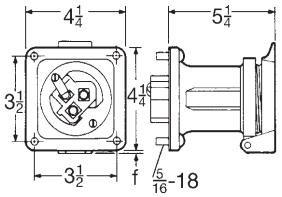
Description	Hub Size	Spring Door Cat. #	Spring Door Cat. #	Threaded Cap Only Cat. #	Cable Dia.	Cat. #	Cat. #
2-wire, 2-pole	1¼ 1½	AREA10214 AREA10215	AR1021	AR1027	0.875 to 1.70	APJ10277	APR10257
3-wire, 3-pole	1¼ 1½	AREA10314 AREA10315	AR1031	AR1037	0.875 to 1.70	APJ10377	APR10357
4-wire, 4-pole	1½ 2	AREA10415 AREA10416	AR1041	AR1047	0.875 to 1.70	APJ10477	APR10457
Style 2			**Style 2**		**Style 2**		
2-wire, 3-pole	1¼ 1½	AREA10324 AREA10325	AR1032	AR1038	0.875 to 1.70	APJ10387	APR10367
3-wire, 4-pole	1½ 2	AREA10425 AREA10426	AR1042	AR1048	0.875 to 1.70	APJ10487	APR10467

Dimensions

ARE Assembly

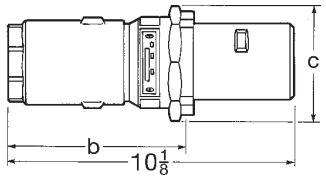


AR Receptacle - Spring Door



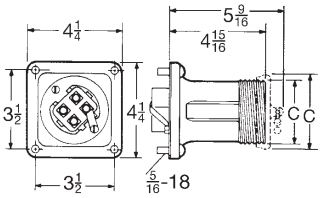
No. Poles	f
2 or 3	9/32
4	13/32

APJ Plug



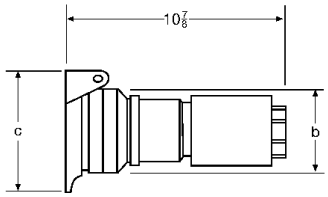
No. Poles	b	c
3	6 9/16	3 3/4
4	6 5/8	4 1/8

AR Receptacle - Open and with cap



No. Poles	Housing	c
2 or 3	open	3 3/16
4	open	3 7/16
2 or 3	with cap	3 11/16
4	with cap	3 7/8

APR Connector



No. Poles	b	c
3	3 3/8	3 3/16
4	3 1/2	3 7/16

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:
- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Config.	Cat No. #
2P & 3P	**CPK62**
4P	**CPK64**

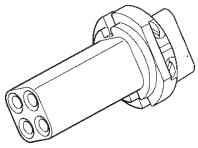
Standard Materials:

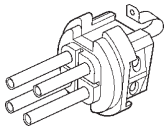
- Copper-free aluminum

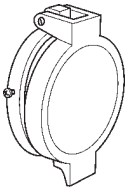
Standard Finishes:

- Natural

Replacement Parts:









Config.	Receptacle Interior	Plug Interior	Spring Door	Screw Cap
2W 2P	ATP315	ATP310	QE53	QE62
2W 3P	ATP318	ATP313		
3W 3P	ATP316	ATP311		
3W 4P	ATP319	ATP314	QE54	QE64
4W 4P	ATP317	ATP312		
4W 5P	N/A	N/A	N/A	N/A
5W 5P	N/A	N/A		

Replacement Pin & Sleeve Contacts:

Description	Recep	Plug
Available as a kit only. 5 phase contacts & 1 ground contact included	AR100CONKIT	AP100CONKIT

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies

Weatherproof

200 A, 600 VAC/250 VDC, 50**-400 hertz

See pages 966–969 for general Application, Features, Grounding, Standard Materials, Standard Finishes, Options, Accessories, Compliances, Electrical Rating Ranges, and Wire Sizes.

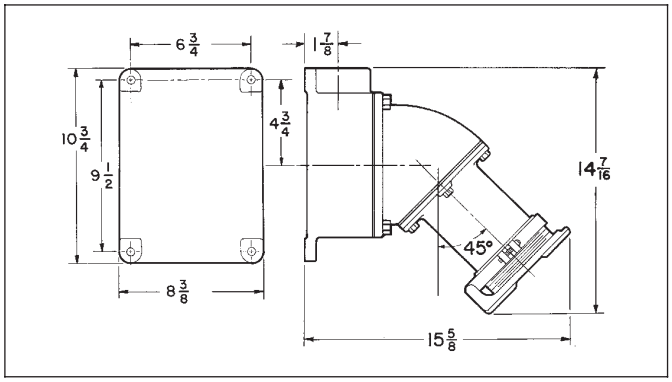
Features:

- Grounding contact wire terminators will accommodate ground wire of same size as phase wire.
- Spring band contact design provides multiple points of electrical contact. Improves electrical reliability and significantly reduces effort required for insertion and withdrawal
- Crimp/solder type contacts are standard
- Large wire wells are available for ''extra flexible'' wire
- Larger wire well size connectors will interchange with connectors of other wire well size of same amperage and contact configuration.
- Self-closing spring doors on receptacles and cord connectors provide environmental sealing
- Threaded nuts provide positive plug retention
- Two piece plug and cord connector design provide easy installation

NOTES:
1. For listing of additional back boxes, see page 991.
2. S22 suffix for reverse interiors is available from factory only. Field conversion cannot be done.
3. Replacement interiors for standard units vs. S22 units vary in length. Specify the unit type when ordering parts.

Dimensions

AREA Assembly



Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:
- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Config.	Cat No. #
3P	**CPK102**
4P	**CPK104**

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Wire Mesh Grips:



Application:

Wire mesh grips are used:
- to provide secure cable termination
- to extend cable life
- **with 20, 200 and 400 ampere plugs**

Features:

- Eliminate sharp radius of cable bend at the point where cable enters plug, thereby reducing cable failure
- Absorb longitudinal stresses placed on the point of termination caused by pulling the cable
- Gripping action increases in direct proportion to amount of tension applied to cable

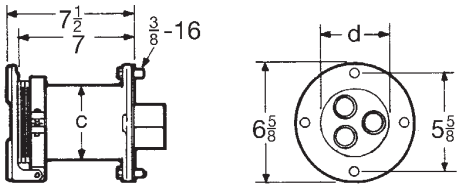
Standard Material & Finishes:

- Stainless steel wire braid – Natural

Ordering Information:

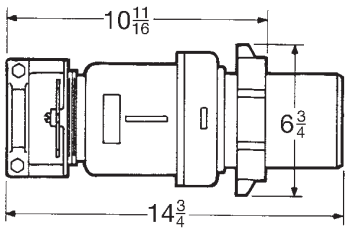
Plug Cable Range	Grip Range	Nominal Grip Length – Inches	Grip Cat. #
1.375 to 1.875	1.375 to 1.625	8	K163
	1.625 to 1.875	11	K188
1.875 to 2.500	1.875 to 2.000	10	K200
	2.000 to 2.250	11¾	K225

AR Receptacle

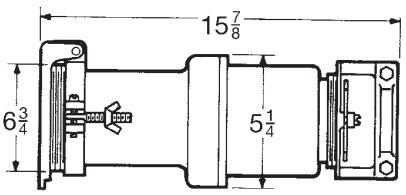


No. Poles	c	d
3	4 3/16	3 1/4
4	4 9/16	3 5/8

AP Plug



APR Connector



** For use on system less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

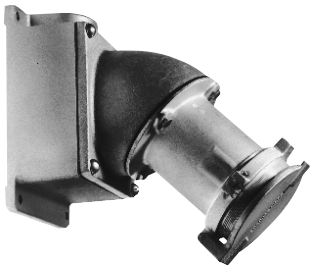
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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies

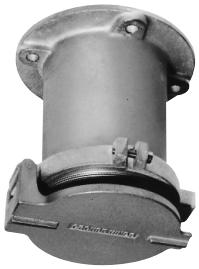
200 A, 600 VAC/250 VDC, 50**-400 hertz

Receptacle Assembly



With AJ Back Boxes and Angle Adapters

Receptacle



Receptacle Housings only

Mating Plug



Mating Connector



Style 1 – Wire Well Takes .56″ Maximum Conductor Size

Description	Hub Size	Spring Door Cover Cat. #	Spring Door Cat. #	Cable Dia.	Plug Cat. #	Connector Cat. #
3-wire, 3-pole	1½	AREA20315	AR2031	0.875 to 1.375	AP20355	APR20315
	2	AREA20316		1.375 to 1.875	AP20357	APR20317
	2½	AREA20317		1.875 to 2.500	AP20358	APR20318
4-wire, 4-pole	2	AREA20416	AR2041	0.875 to 1.375	AP20455	APR20415
	2½	AREA20417		1.375 to 1.875	AP20457	APR20417
				1.875 to 2.500	AP20458	APR20418

Style 1 – Wire Well Takes .75″ Maximum Conductor Size

3-wire, 3-pole	1½	AREA203125	AR20312			
	2	AREA203126		1.375 to 1.875	AP203511	APR203111
	2½	AREA203127		1.875 to 2.500	AP203512	APR203112
4-wire, 4-pole	2	AREA204126	AR20412	1.375 to 1.875	AP204511	APR204111
	2½	AREA204127		1.875 to 2.500	AP204512	APR204112
				2.500 to 3.000	AP204513	APR204113

Style 2 – Wire Well Takes .56″ Maximum Conductor Size

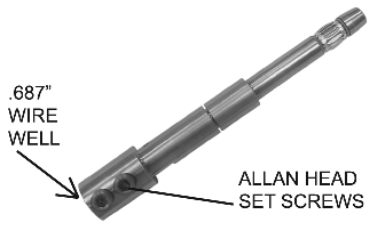
2-wire, 3-pole	1½	AREA20325	AR2032	0.875 to 1.375	AP20365	APR20325
	2	AREA20326		1.375 to 1.875	AP20367	APR20327
	2½	AREA20327		1.875 to 2.500	AP20368	APR20328
3-wire, 4-pole	1½	AREA20425	AR2042	0.875 to 1.375	AP20465	APR20425
	2	AREA20426		1.375 to 1.875	AP20467	APR20427
	2½	AREA20427		1.875 to 2.500	AP20468	APR20428

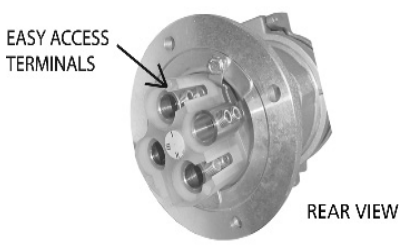
Style 2 – Wire Well Takes .75″ Maximum Conductor Size

2-wire, 3-pole	1½	AREA203225	AR20322	0.875 to 1.375	AP203610	APR203210
	2	AREA203226		1.375 to 1.875	AP203611	APR203211
	2½	AREA203227		1.875 to 2.500	AP203612	APR203212
3-wire, 4-pole	1½	AREA204225	AR20422	1.375 to 1.875	AP204611	APR204211
	2	AREA204226		1.875 to 2.500	AP204612	APR204212
	2½	AREA204227				

Option:

- Mechanical lug wire conductor terminations. Add ''L'' to catalog prefix i.e. : ARL2042





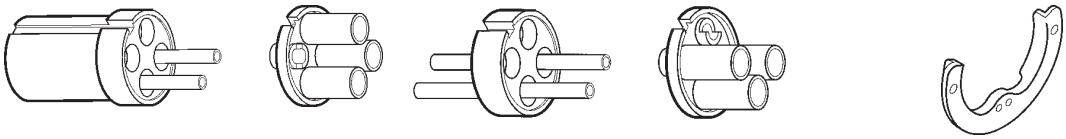
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Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies

Weatherproof

200 A, 600 VAC/250 VDC, 50**-400 hertz

200A Replacement Parts

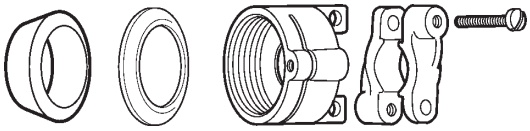


200A Standard and S4

	Receptacle Interior		Plug Interior		Brass Retaining Shoe	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well	.56 wire well	.75 wire well
2W 3P	ATP401	ATP402	ATP433	ATP434	0490335	0490335
3W 3P	ATP397	ATP398	ATP429	ATP430	0490327	0490328
3W 4P	ATP403	ATP404	ATP435	ATP436	0490337	0490337
4W 4P	ATP399	ATP400	ATP431	ATP432	0490331	0490332

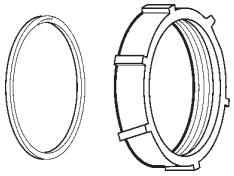
200A ST22 and S4 S22

	Receptacle Interior		Plug Interior		Brass Retaining Shoe	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well	.56 wire well	.75 wire well
2W 3P	ATP417	ATP418	ATP449	ATP450	0490335	0490335
3W 3P	ATP413	ATP414	ATP445	ATP446	0490327	0490328
3W 4P	ATP419	ATP420	ATP451	ATP452	0490337	0490337
4W 4P	ATP415	ATP416	ATP447	ATP448	0490331	0490332



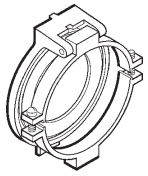
Cord Grip Assembly

Cord Diameter Range	
.875 - 1.375	AP2 KIT1 M80
1.375 - 1.875	AP2 KIT2 M80
1.875 - 2.500	AP2 KIT3 M80



Plug Clamp Nut

2W 3P 3W 3P	AP:0401965
2W 3P 3W 3P	AP:0401964



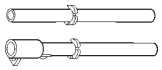
Rec Spring Door

AR:0401502-2
AR:0401502-1

Replacement Pin & Sleeve Contacts

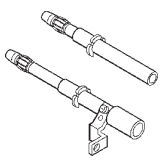
200A Standard & S4

	Receptacle		Plug	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well
Phase Contact	0490339	0490340	0490319	0490320
Ground Contact	0490343	0490344	0490323	0490324



200A S22 & S4 S22

	Receptacle		Plug	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well
Phase Contact	0490351	0490352	0490355T	0490356
Ground Contact	0490347	0490348	0490359	0490360



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Arktite® Heavy Duty Receptacle Assemblies

400 A, 600 VAC/250 VDC, 50-400 hertz

Features:

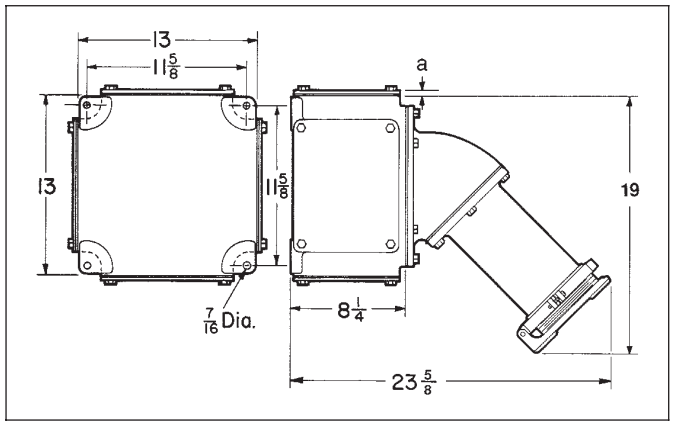
- Grounding contact wire terminators will accommodate ground wire of same size as phase wire
- Spring band contact design provides multiple points of electrical contact. Improves electrical reliability and significantly reduces effort required for insertion and withdrawal
- Crimp/solder type contacts are standard.
- Large wire wells are available for ''extra flexible'' wire
- Larger wire well connectors will interchange with connectors of other wire well size, of same amperage and contact configuration.
- Self-closing spring doors on receptacles and cord connectors provide environmental sealing
- Threaded nuts provide positive plug retention
- Two piece plug and cord connector design provide easy installation
- For disconnect use only – not for current interrupting

NOTES:
1. For listing of additional back boxes, see page 991. Illustration shows 3 blank plates and 1 hub plate.
2. S22 suffix for reverse interiors is available from factory only. Field conversion cannot be done.
3. Replacement interiors for standard units vs. S22 units vary in length. Specify the unit type when ordering parts.

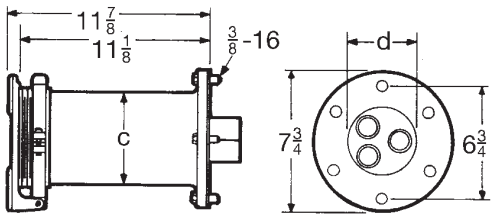
Dimensions

AREX Assemblies

Description	a
With blank hub plate	5/16
With hub plate max.	4 5/8



AR Receptacles



No. Poles	c	d
3	5 3/16	4 3/16
4	5 13/16	4 11/16

Wire Mesh Grips



Application:

Wire mesh grips are used:
- to provide secure cable termination
- to extend cable life
- **with 20, 200 and 400 ampere plugs**

Features:

- Eliminate sharp radius of cable bend at the point where cable enters plug, thereby reducing cable failure
- Absorb longitudinal stresses placed on the point of termination caused by pulling the cable
- Gripping action increases in direct proportion to amount of tension applied to cable

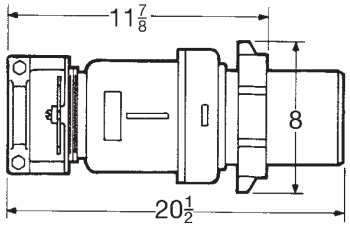
Standard Material & Finishes:

- Stainless steel wire braid – Natural

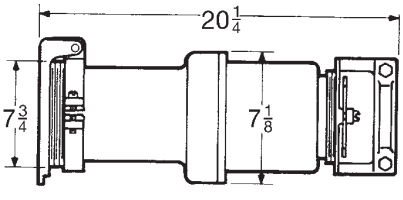
Ordering Information:

Plug Cable Range	Grip Range	Nominal Grip Length – Inches	Grip Cat. #
1.375 to 1.875	1.375 to 1.625	8	K163
	1.625 to 1.875	11	K188
1.875 to 2.500	1.875 to 2.000	10	K200
	2.000 to 2.250	11 3/4	K225

AP Plugs



APR Connectors



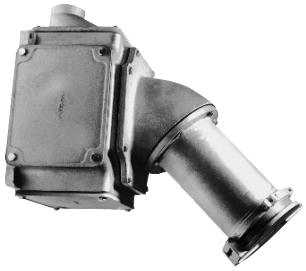
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Arktite® Heavy Duty Receptacle Assemblies

Weatherproof

400 A, 600 VAC/250 VDC, 50-400 hertz

Receptacle Assembly



With AJ Back Boxes‡ and Angle Adapters

Receptacle



Receptacle Housings only

Mating Plug



Mating Connector



Style 1 – Wire Well Takes .84″ Maximum Conductor Size

Description	Hub Size	Spring Door Cover Cat.#	Spring Door Cat. #	Cable Dia.	Plug Cat. #	Connector Cat. #
3-wire, 3-pole	2½ 3	AREX40317 AREX40318	AR4031	1.375 to 1.875 1.875 to 2.500	AP40357 AP40358	APR40317 APR40318
4-wire, 4-pole	2½ 3	AREX40417 AREX40418	AR4041	1.375 to 1.875 1.875 to 2.500	AP40457 AP40458	APR40417 APR40418
Style 1 – Wire Well Takes 1.25″ Maximum Conductor Size						
3-wire, 3-pole	3 3½ 4	AREX403128 AREX403129 AREX4031210	AR40312	2.500 to 3.000 3.000 to 3.800	AP403510 AP403512	APR403110 APR403112
4-wire, 4-pole	4 5	AREX4041210 AREX4041212	AR40412	2.500 to 3.000 3.000 to 3.800	AP404510 AP404512	APR404110 APR404112
Style 2 – Wire Well Takes .84″ Maximum Conductor Size						
2-wire, 3-pole	2 2½ 3	AREX40326 AREX40327 AREX40328	AR4032	1.375 to 1.875 1.875 to 2.500	AP40367 AP40368	APR40327 APR40328
3-wire, 4-pole	2½ 3	AREX40427 AREX40428	AR4042	1.375 to 1.875 1.875 to 2.500	AP40467 AP40468	APR40427 APR40428
Style 2 – Wire Well Takes 1.25″ Maximum Conductor Size						
2-wire, 3-pole	3 3½ 4	AREX403228 AREX403229 AREX4032210	AR40322	2.500 to 3.000 3.000 to 3.500	AP403610 AP403612	APR403210 APR403212
3-wire, 4-pole	4 5	AREX4042210 AREX4042212	AR40422	2.500 to 3.000 3.000 to 3.500	AP404610 AP404612	APR404210 APR404212

† Furnished with cable grip and neoprene bushing.

‡ Hub plates and blank plates may be interchanged to permit conduit feed from bottom or sides.

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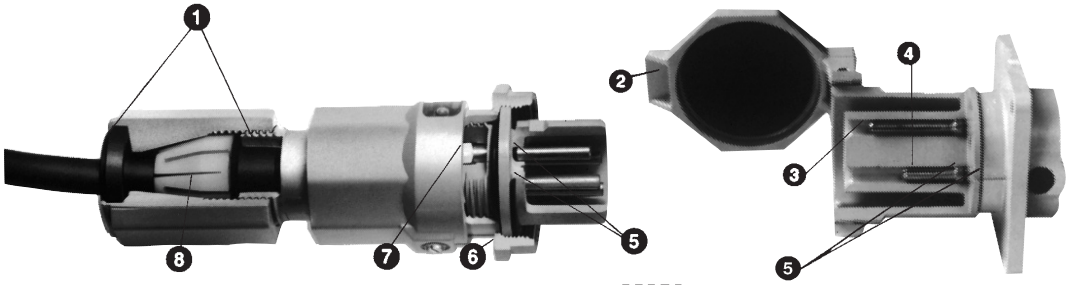
Non-Metallic Arktite® Heavy Duty Circuit Breaking Plugs and Receptacles

Made of Krydon® Material, 600 VAC/250 VDC, 50-400 hertz;

Watertight§
Corrosion-Resistant
NEMA 4X
Dimensions Pg. 984

Application:

Arktite circuit breaking plugs, receptacles, cord connectors and motor plugs are used:
- to supply power to portable electrical devices such as welders, motors, pumps, conveyors and other similar equipment
- where electrical loads must be quickly disconnected from power sources
- in areas where severe corrosion hose down, moisture, dirt and dust are problems
- indoors and outdoors in non-hazardous areas of chemical plants, sewage treatment facilities, cement plants, pulp and paper plants, food processing plants and other similar industries



Features:

- Plugs, receptacles, cord connectors, and motor plugs are molded of *Krydon* fiberglass-reinforced polyester material which is highly resistant to corrosion, heat, weathering and physical abuse

❶ 2-stage cord sealing system positively grips cord and protects against environmental contaminants

❷ Spring door provides environmental protection of receptacle

- Elastomeric snap-on caps provide environmental protection of receptacles and cord connectors
- Threaded construction allows quick assembly and disassembly for installation or maintenance

❸ Grounding contact circuit is made first and broken last

❹ Contact design provides multiple points of electrical contact for full-load circuit breaking capability

- Total interchangeability with all existing *Arktite* products for comparable ratings and configurations

❺ Unique environmental sealing system includes o-ring gaskets on all contacts and between housing parts for NEMA 4 integrity

❻ Threaded clamping ring provides plug retention

❼ Pressure contact wire terminals are standard. Crimp/solder terminals are optional

- NPQ motor plugs and NPR cable connectors offer reversed interior capability

❽ Unique cord and cable gripping system provides positive strain relief

Interchangeability of Plugs With Other Non-Hazardous and Hazardous Location Receptacles:

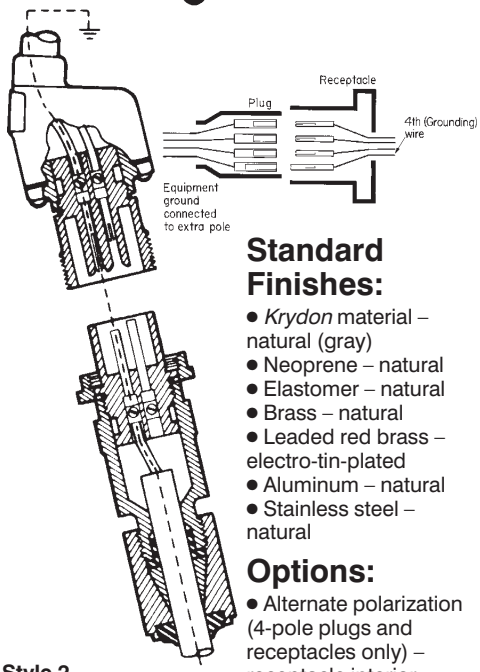
- Plugs listed for use with NRE/NREA assemblies are standard NPJ *Arktite* plugs. Other standard APJ and CPH plugs of the same rating, style and number of poles may be used with NR receptacles, as well as with AR and AREA, receptacles listed in Section 1P, with DR receptacles listed in section 2P, with DBR, NBR, NSR, WSR, CSR, WSQC, and WSRD receptacles listed in Section 3P and with FSQ, EPC, FSQC, W2SR, C2SR and EPCB receptacles listed in Section 4P.
- Portable equipment, suitable for locations and equipped with the proper NPJ plug, can be used with non-hazardous AR receptacles; with DBR and WSR interlocked receptacles located in non-hazardous locations; with EPC, EPCB and FSQC receptacles for Class I, Groups B, C, D hazardous locations; with DR and DBR receptacles for Class II, Groups F, G hazardous locations; and with NBR/NSR, CSR interlocked receptacles for hose down and corrosive locations.

Grounding:

- NPJ plugs are Style 2, which includes a grounding conductor in the flexible cord or cable that is electrically connected to the extra (grounding) pole
- NR receptacles are Style 2, in which the ground connection is made before line and load poles engage, and is broken after line and load poles disengage.
- The National Electrical Code® and Canadian Electrical Code requires that under conditions favorable to corrosion, the grounding conductor for enclosures and equipment be of copper or other corrosion-resistant material in alternating current systems. This necessitates running another conductor, usually of copper, back to the common grounding electrode. This may be run through the conduit containing the circuit conductors. At the receptacle, this grounding conductor should be connected to the extra (grounding) pole by the pressure connector provided for that purpose. Where such an extra ground conductor is required, Style 2 receptacles should be used.

Standard Materials:

- Housing, interiors, spring doors, clamping rings – *Krydon* fiberglass-reinforced polyester material
- Gaskets and o-rings – neoprene
- Cable clamping basket – nylon
- Contacts – pressure – brass; crimp/solder – leaded brass
- Snap-on cap – molded elastomer
- Back boxes – copper-free aluminum



Style 2 – Typical 3-wire, 4-pole plug and receptacle

Standard Finishes:

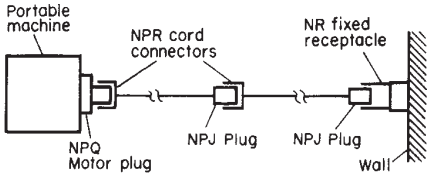
- *Krydon* material – natural (gray)
- Neoprene – natural
- Elastomer – natural
- Brass – natural
- Leaded red brass – electro-tin-plated
- Aluminum – natural
- Stainless steel – natural

Options:

- Alternate polarization (4-pole plugs and receptacles only) – receptacle interior rotated 22½ degrees to right and plug changed to match – add suffix S4 to Cat. No.
- Crimp/solder terminals – add suffix T to Cat. No.
- *Corro-free*™ epoxy powder coat on back boxes and angle adapters – information on request

Certifications and Compliances:

- UL Standard: 1682
- UL 1010 hazardous locations (NPJ plug only)
- Wet and damp locations, watertight
- CSA Standard C22.2 No. 182.1



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Non-Metallic Arktite® Heavy Duty Circuit Breaking Motor Plugs, Plugs & Cord Connectors

Made of Krydon® Material, 30 A, 60 A and 100 A 600 VAC/250 VDC, 50**–400 hertz

Watertight§
Corrosion-Resistant
NEMA 4X

Receptacle Assembly



NREA



NRE

Receptacle



Mating Plugs



Mating Connectors



Motor Plugs



Amps	Description	Hub Size	Snap-on Cap/ Spring Door Cat. # ①	Snap-on Cap/ Spring Door Cat. # ①	Cord Dia.	Plug Cat. #	Cord Connector Cat. #	Motor Plug Cat. #
30	2-wire, 3-pole	¾ 1	NRE3322 NRE3323	NR332	0.55–0.70 0.70–0.85	NPJ3383 NPJ3384	NPR3363 NPR3364	NPQ338
	3-wire, 4-pole	¾ 1	NRE3422 NRE3423	NR342	0.55–0.70 0.70–0.85	NPJ3483 NPJ3484	NPR3463 NPR3464	NPQ348
60	2-wire, 3-pole	1 1¼	NRE6323 NRE6324	NR632	0.75–1.07 1.07–1.35	NPJ6384 NPJ6385	NPR6364 NPR6365	NPQ638
	3-wire, 4-pole	1¼ 1½	NRE6424 NRE6425	NR642	0.75–1.07 1.07–1.35	NPJ6484 NPJ6485	NPR6464 NPR6465	NPQ648
100	2-wire, 3-pole	1¼ 1½	NREA10324‡ NREA10325‡	NR1032	0.93–1.21 1.21–1.50	NPJ10386 NPJ10387	NPR10366 NPR10367	NPQ1038
	3-wire, 4-pole	1½ 2	NREA10425‡ NREA10426‡	NR1042	0.93–1.21 1.21–1.50	NPJ10486 NPJ10487	NPR10466 NPR10467	NPQ1048

① Krydon Arktite Receptacles are supplied with both a spring door and snap-on cap.
§ Wet and damp locations when used with spring door or snap-on cap, watertight when used with QE threaded cap.
‡ AJ back boxes are square, making it possible to install with hub in several positions.
** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Non-Metallic Arktite® Heavy Duty Circuit Breaking Motor Plugs, Plugs & Cord Connectors

Made of Krydon® Material, 30 A, 60 A and 100 A 600 VAC/250 VDC, 50**–400 hertz

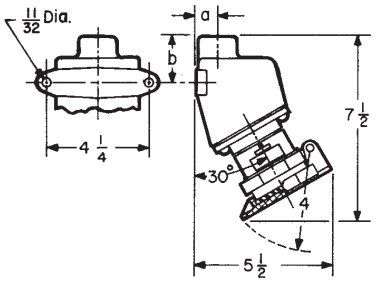


Fig. 1 – 30 A Receptacle Assemblies

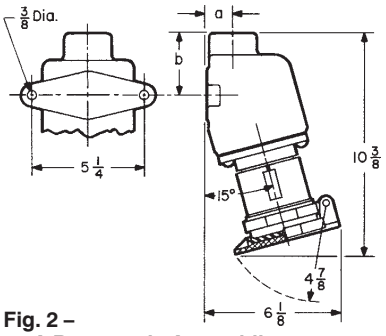


Fig. 2 – 60 A Receptacle Assemblies

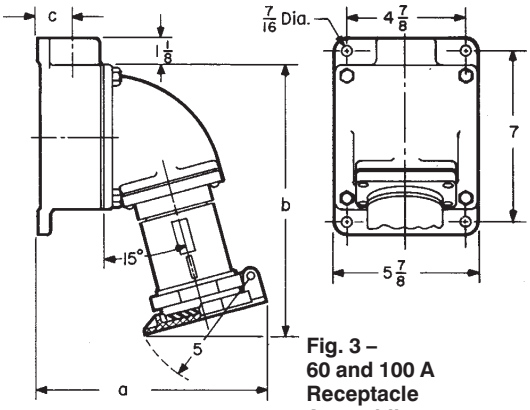


Fig. 3 – 60 and 100 A Receptacle Assemblies

NRE 30 and 60 A Assemblies – Fig. 1 and 2

Hub Size	Dimension a		Dimension b	
	30 A	60 A	30 A	60 A
¾	13⁄16		1⅞	
1	15⁄16	15⁄16	2	2 9⁄16
1¼		1 3⁄16		2 5⁄8
1½		1 5⁄16		2 11⁄16

NREA 60 and 100 A Assemblies – Fig. 3

Dim.	60 A Hub Size	100 A Hub Size	
	1, 1¼, 1½	1¼, 1½	2
a	9	9¼	9 13⁄16
b	11	12	12
c	1 15⁄16	1 9⁄16	1 9⁄16

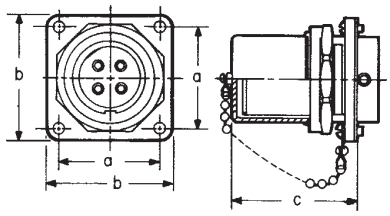


Fig. 6 – NPQ Motor Plugs

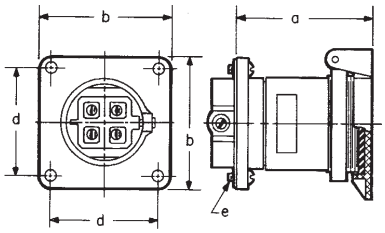


Fig. 4 – Spring Door Housings

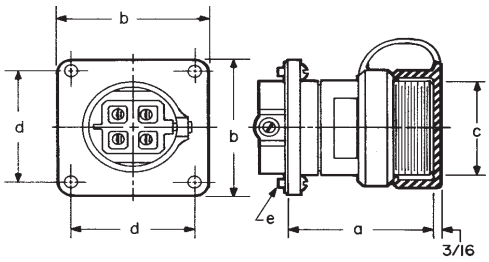


Fig. 5 – Housings with Cap

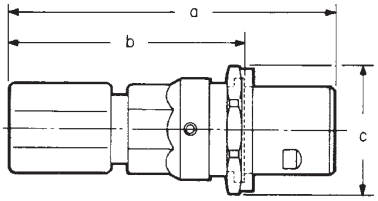


Fig. 7 – NPJ Plugs

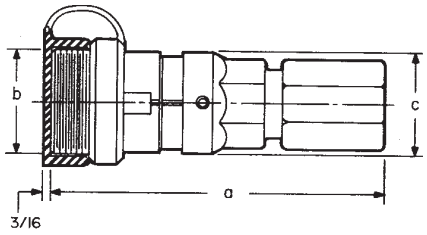


Fig. 8 – NPR Cord Connectors

Amps	No. Poles	Housing	a	b	c	d	e
	3 or 4	Spring Door	3¼	3⅜	—	2¾	12-24
30	3 or 4	Open	2 13⁄16	3⅜	2 9⁄16	2¾	12-24
	3	Spring Door	4½	4¼	—	3½	5⁄16-18
	4	Spring Door	4½	4¼	—	3½	5⁄16-18
	3	Open	4 1⁄16	4¼	2 15⁄16	3½	5⁄16-18
60	4	Open	4 1⁄16	4¼	3¼	3½	5⁄16-18
	3	Spring Door	5¾	4¼	—	3½	5⁄16-18
	4	Spring Door	5¾	4¼	—	3½	5⁄16-18
	3	Open	5 5⁄16	4¼	3 3⁄16	3½	5⁄16-18
100	4	Open	5 5⁄16	4¼	3 7⁄16	3½	5⁄16-18

Amps/Poles	a	b	c
NPQ Motor Plugs – Fig. 6			
30/3 or 4	2¾	3⅜	2 15⁄16
60/3 or 4	3½	4¼	4 5⁄16
100/3 or 4	3½	4¼	5 7⁄16
NPJ Plugs – Fig. 7			
30/3 or 4	8½	7	3 3⁄16
60/3	9½	6 13⁄16	3⅝
60/4	9½	6 13⁄16	4
100/3	11¼	7¾	4
100/4	11¼	7¾	4¼
NPR Cord Connectors – Fig. 8			
30/3 or 4	8⅞	2 9⁄16	2⅝
60/3	9¾	2 15⁄16	2 15⁄16
60/4	9¾	3¼	2 15⁄16
100/3	11½	3 3⁄16	3 5⁄16
100/4	11½	3 7⁄16	3 5⁄16

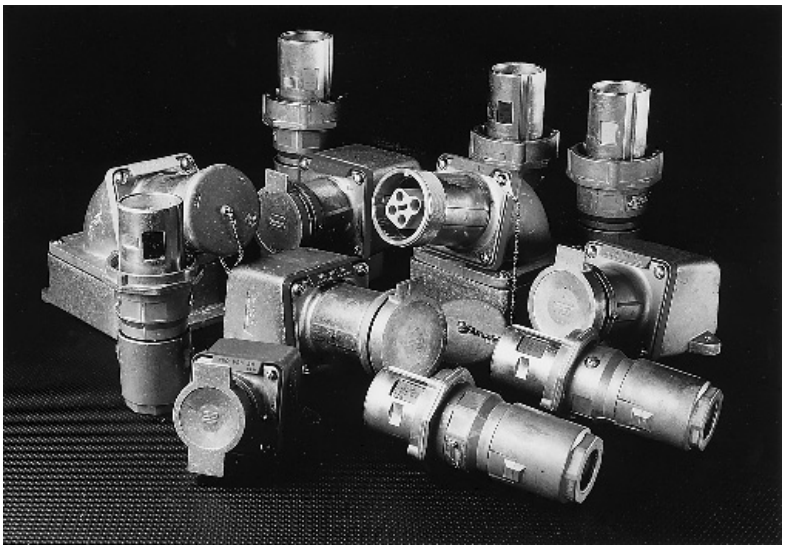
** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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1P Configured Arktite® Heavy Duty Power Connectors

Rainproof
30 to 100 A
600 VAC/250 VDC
60-400 hertz

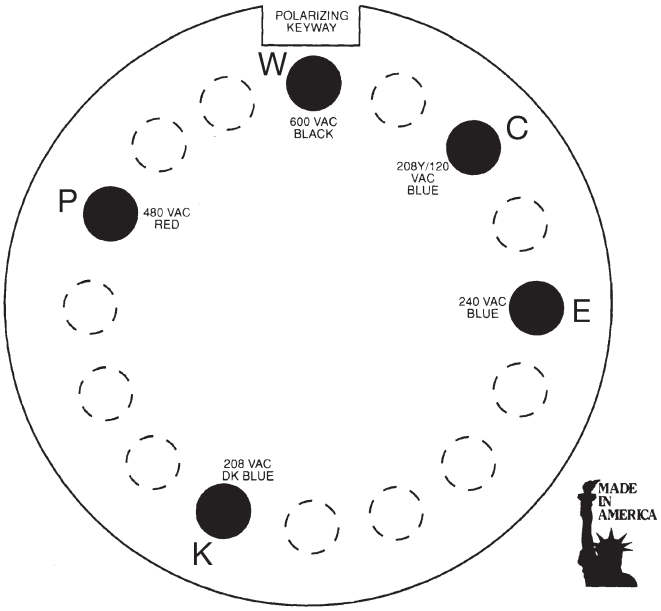
Heavy-Duty and Voltage Polarized



Configured Arktite® Power Connectors offer the heavy-duty metal construction of our standard Arktite line, *plus* voltage configuration. This combination is the ultimate in pin and sleeve connector reliability and safety. The new Configured Arktite Connector series incorporates a unique voltage polarization system that insures that only receptacles and plugs rated for the same voltage can be physically connected. This assures a safe and correct electrical connection every time. Compliance with the National Electrical Code® article 210-7 requirement for non-interchangeability of receptacles and plugs on the same premises with different voltages is now easier than ever. Equipment damage due to the misapplication of the wrong voltage using these connectors when properly installed can be virtually eliminated.

This new connector series is not intermateable with our standard line of Arktite power connectors, but it utilizes many of the same time-tested construction features that have been the proven standard of excellence in the electrical industry for years. Configured Arktite Power Connectors are available in 4 or 5 pole (includes ground contact) versions for 30, 60, or 100 amp requirements. Every plug and receptacle is marked numerically and color coded for the specific voltage making it simple and easy to determine the proper plug and receptacle combination. A larger ground contact and unique keying system insures that only the connectors of the same voltage will intermate. Five distinct configurations are available covering the most common voltages in industry.

Configured Arktite Power Connectors are designed for rugged use in the most abusive applications. The unique gasketing system provides a sure seal even in the most adverse environments. They also feature the Cooper Crouse-Hinds patented TRI-LOCK™ cable grip that securely locks the cable in place even when subjected to extreme flexing and jerking. The larger ground contact makes first, breaks last, and is bonded to the metal housing to insure all metal parts are properly grounded. The power contacts are specially designed and located in arc quenching chambers to allow these connectors to be safely disconnected under load. Cooper Crouse-Hinds Configured Arktite Power Connectors are designed in compliance with the latest UL, CSA and NEMA standard.



Face View of Receptacle

Footnote: ● indicates ground contact position.
◌ indicates position not used.

Applications:

Configured Arktite voltage polarized circuit breaking plugs and receptacles are used:

- to supply power to portable electrically operated devices such as motor-generator sets, compressors, heating and cooling units, welders, conveyors, lighting systems, and similar equipment.
- where temporary power is needed, such as at trailers, building units, heavy machinery, and similar equipment.
- wherever electrical loads must be quickly disconnected from a power source.
- in areas where dust, dirt, moisture, and corrosion are a problem.
- indoors and outdoors in non-hazardous areas of chemical plants, process industry facilities, meat packing plants, manufacturing plants, and similar industrial locations.

Accessories:

Accessories include a variety of angle adapters, panel adapters, and back boxes for Configured Arktite receptacles. They include protective caps for Configured Arktite plugs and receptacles.

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Configured Arktite® Heavy Duty Power Connectors

Rainproof
30 to 100 A
600 VAC/250 VDC
60-400 hertz

Voltage/Color Configurations

A 16 position 'face' is used to illustrate the grounding contact location for receptacles. To identify the system voltage, identify the housing color and position of the receptacle grounding contact or marking on the polarizer.

Standard Materials:

- Metallic receptacle housings, plug, and connector bodies – high impact strength copper-free aluminum
- Back boxes – cast aluminum
- Insulators:

3, 4, and 5 pole – fiberglass-reinforced polyester

- Contacts:

Pressure screw type – brass

- Polarizers – PBT polyester

Standard Finishes:

- Aluminum – natural
- Fiberglass-reinforced polyester insulator – gray
- Brass – natural

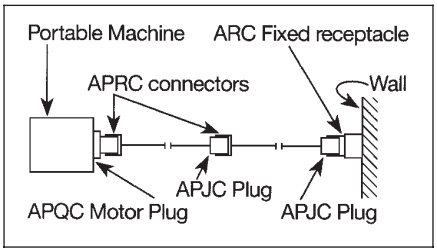
Certifications and Compliances:

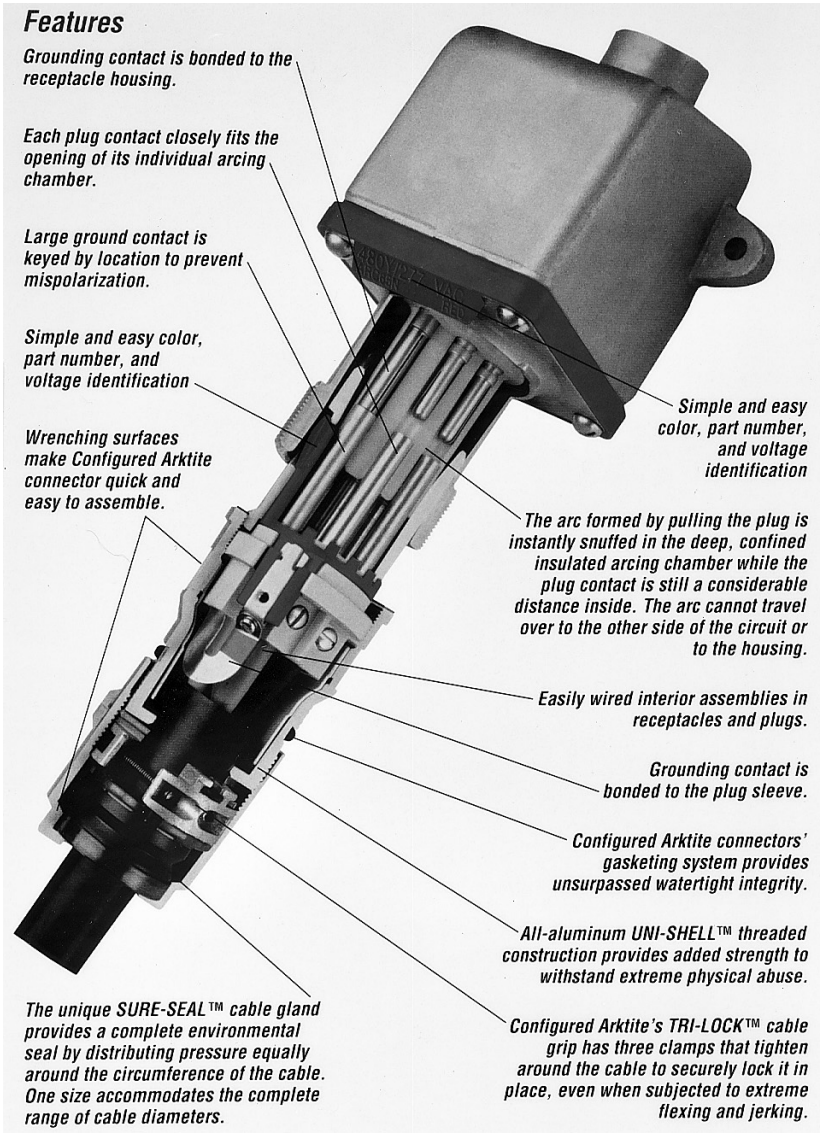
- UL Standards: 1682 and 1686
- CSA Standard: C22.2 No. 182.1

Electrical Rating Ranges:

- Voltage – 600 VAC; 60 to 400 hertz; 250 VDC
- Amperes – 30, 60, and 100
- Horsepower Rating – same as standard product. See page 969.

Typical Installation:





Catalog Numbering System:

Ordering Configured Arktite is easy.

AR C 3 4 C

AR	AR = Arktite Receptacle APJ = Arktite Plug APR = Arktite Connector APQ = Arktite Motor Plug
C	Configured
3	3 = 30 Amps 6 = 60 Amps 10 = 100 Amps
4	4 = 4 Poles 5 = 5 Poles
C	C = 208Y/120 VAC (Blue) E = 240 VAC 1Ø or 3Ø (Blue) K = 208 VAC 3Ø (Dark Blue) P = 480 VAC 1Ø or 3Ø (Red) W = 600 VAC 3Ø (Black)

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

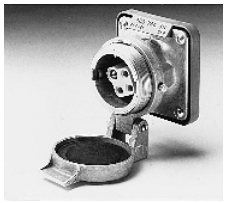
Configured Arktite® Heavy Duty Power Connectors ♦

Rainproof
30/60 A
600 VAC/250 VDC
60-400 hertz

30 Amp Plugs, Receptacles, Connectors, Motor Plugs

Heavy-Duty
Voltage Polarized
Circuit Breaking
NEMA 3R
Rainproof
UL/CSA



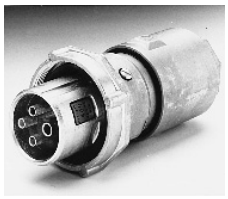


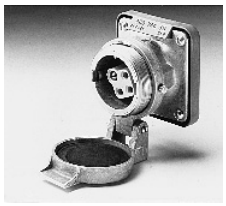
Amps	Poles	Volt Rating	Color	Plug Cat. No.	Receptacle w/Spring Door* Cat. No.
30	4	208 VAC 3Ø	Dark Blue	APJC34K	ARC34K
30	4	240 VAC 3Ø	Blue	APJC34E	ARC34E
30	4	480 VAC 3Ø	Red	APJC34P	ARC34P
30	4	600 VAC 3Ø	Black	APJC34W	ARC34W
30	5	208Y/120 VAC	Blue	APJC35C	ARC35C

Back Box Ordering Information – See pages 990 and 991.

60 Amp Plugs, Receptacles, Connectors, Motor Plugs

Heavy-Duty
Voltage Polarized
Circuit Breaking
NEMA 3R
Rainproof
UL/CSA

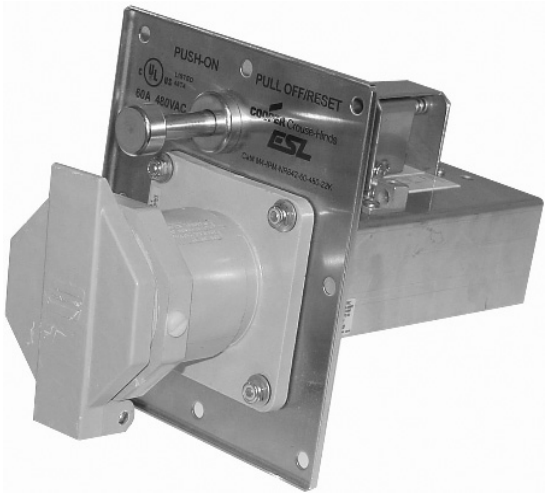




Amps	Poles	Volt Rating	Color	Plug Cat. No.	Receptacle w/Spring Door* Cat. No.
60	4	480 VAC 3Ø	Red	APJC64P	ARC64P
60	4	600 VAC 3Ø	Black	APJC64W	ARC64W
60	5	208Y/120 VAC	Blue	APJC65C	ARC65C

Back Box Ordering Information – See pages 990 and 991.

♦ **Configured Interlocks are available.** **– See page 1027.**



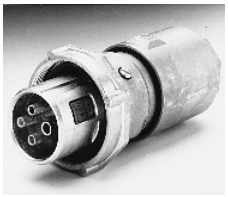
US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

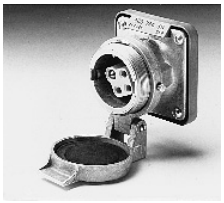
Configured Arktite® Heavy Duty Power Connectors ♦

Rainproof
100 A
600 VAC/250 VDC
60-400 hertz

100 Amp Plugs, Receptacles, Connectors, Motor Plugs

Heavy-Duty
Voltage Polarized
Circuit Breaking
NEMA 3R
Rainproof
UL/CSA

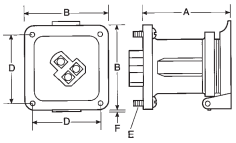




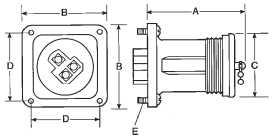
Amps	Poles	Volt Rating	Color	Plug Cat. No.	Receptacle w/Spring Door* Cat. No.
100	4	208 VAC 3Ø	Dark Blue	APJC104K	ARC104K
100	4	240 VAC 3Ø	Blue	APJC104E	ARC104E
100	4	480 VAC 3Ø	Red	APJC104P	ARC104P
100	4	600 VAC 3Ø	Black	APJC104W	ARC104W
100	5	208Y/120 VAC	Blue	APJC105C	ARC105C

Dimensions

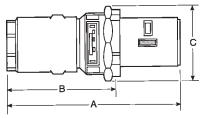
ARC RECEPTACLES 30, 60, 100A SPRING DOOR



ARC RECEPTACLES 30, 60, 100A WITH CAP



APJC PLUGS



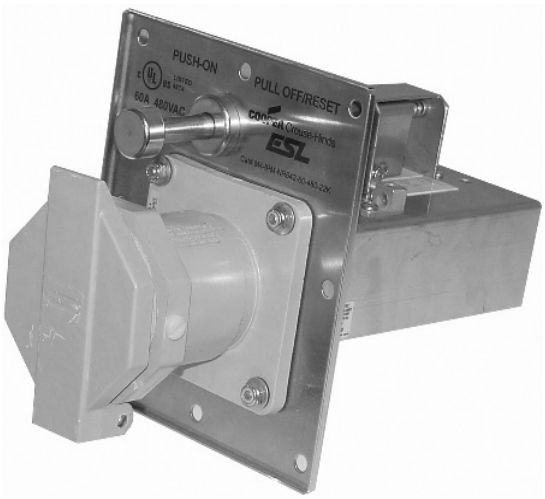
ARC Receptacles

Amps	Housing	A	B	C	D	E	F
30	Spring door	2 7/8	3 3/8		2 23/32	12-24	3/4
30	w/cap	3 3/16	3 3/8	3	2 23/32	12-24	
60	Spring door	4 1/4	4 1/4		3 1/2	5/16-18	9/32
60	w/cap	4 1/2	4 1/4	3 11/16	3 1/2	5/16-18	
100	Spring door	5 1/4	4 1/4		3 1/2	5/16-18	13/32
100	w/cap	5 9/16	4 1/4	3 7/8	3 1/2	5/16-18	

APJC Plugs

Amps	A	B	C
30	6 1/2	4 13/16	2 15/16
60	8 1/2	5 13/16	3 3/4
100	10 1/8	6 5/8	4 1/8

♦ **Configured Interlocks are available. – See page 1027.**



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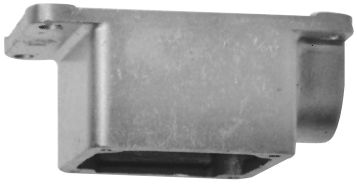
AR Back Boxes and Accessories for 20, 30, & 60 A Receptacle Housings

Dimensions Pages 992 and 993



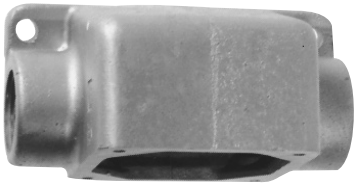
ARE

Hub Size	20/30 A Cat. #	60 A Cat. #
½	ARE13	
¾	ARE23	
1	ARE33	ARE36
1¼		ARE46
1½		ARE56



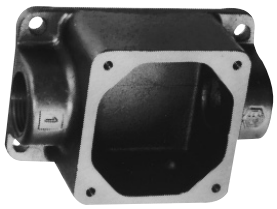
ARRH

Hub Size	20/30 A Cat. #	60 A Cat. #
½	ARRH13	
¾	ARRH23	
1	ARRH33	ARRH36
1¼		ARRH46
1½		ARRH56



ARJ

Hub Size	20/30 A Cat. #	60 A Cat. #
½	ARJ13	
¾	ARJ23	
1	ARJ33	ARJ36
1¼		ARJ46
1½		ARJ56



ARRC

Hub Size	20/30 A Cat. #	60 A Cat. #
½	ARRC13	
¾	ARRC23	
1	ARRC33	ARRC36
1¼		ARRC46
1½		ARRC56



ARD

Hub Size	20/30 A Cat. #	60 A Cat. #
½	ARD13	
¾	ARD23	
1	ARD33	ARD36
1¼		ARD46
1½		ARD56



ARJG

Hub Size	20/30 A Cat. #	60 A Cat. #
½	ARJG13	
¾	ARJG23	
1	ARJG33	ARJG36
1¼		ARJG46
1½		ARJG56



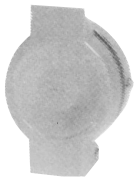
For ARRH and ARRC back boxes



For steel panel or cabinet

AR 15° Angle Adapter

Mounts On	Takes AR Receptacle Housings	Cat. #
ARRH and ARRC back boxes	20 and 30 amp.	AR30
ARRH and ARRC back boxes	60 amp.	AR60
Steel panel or cabinet	60 and 100 amp.	AR610



Spring Door Assembly

Used With	Cat. #
30 amp, 2, 3 & 4-pole	QE50
60 amp, 2 & 3-pole	QE51
60 amp, 4-pole	QE52
100 amp, 2 & 3-pole	QE53
100 amp, 4-pole	QE54



Cap and Chain

Used With	Cat. #
30 amp, 2, 3 & 4-pole	QE13
60 amp, 2 & 3-pole	QE32
60 amp, 4-pole	QE34
100 amp, 2 & 3-pole	QE62
100 amp, 4-pole	QE64

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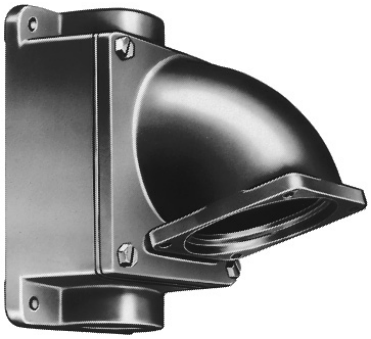
AJ and AJC Back Boxes with Angle Adapters for 60, 100, 200 & 400 A Receptacle Housings AJX Assemblies and Component Parts For 200 and 400 A Receptacle Housings



AJ Back Box with 60/100 A Angle Adapter



AJ Back Box with 200/400 A Angle Adapter



AJC Back Box with 60/100 A AJA Angle Adapter



AJC Back Box with 200 A Angle Adapter

AJ and AJC Back Boxes†

HUB SIZE	TYPE	60 & 100A BOX ONLY	60 & 100A BOX & ADAPTER ASSEMBLY	200A BOX ONLY	200A BOX & ADAPTER ASSEMBLY	400A BOX ONLY	400A BOX & ADAPTER ASSEMBLY
1″	ONE HUB	AJ56*	AJ37				
	FEED THRU	AJC56*	AJC37				
1¼″	ONE HUB	AJ56*	AJ47				
	FEED THRU	AJC56*	AJC47				
1½″	ONE HUB	AJ56	AJ57	AJ71*	AJ58		
	FEED THRU	AJC56	AJC57				
2″	ONE HUB	AJ66	AJ67	AJ71*	AJ68	AJ82*	AJ69
	FEED THRU	AJC66	AJC67				
2½″	ONE HUB			AJ71	AJ78	AJ82*	AJ79
	FEED THRU			AJC71	AJC78		
3″	ONE HUB					AJ82	AJ89
	FEED THRU						
ANGLE ADAPTER		AJA6		AJA1		AJA2	

*REDUCER SUPPLIED WITH ASSEMBLY

† AJ and AJC back boxes are square, making it possible to install with hub in several positions.

‡ Use AJ69, AJ79 or AJ89 for cables up to 2 – #350MCM, 3 – #300MCM or 4 – #250MCM. For larger cables, use AJX69, etc., listed under assemblies.



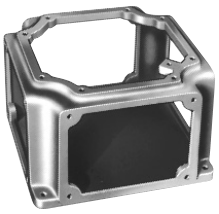
AJX Assemblies

Back Box with Angle Adapter, 3 Blank Plates and 1 Hub Plate

Hub Size	400 A Cat. #
2	AJX69
2½	AJX79
3	AJX89
3½	AJX929
4	AJX9210
5	AJX9212

AJX Component Parts

For use in making up assemblies with arrangements of hub plates (4 required) other than those listed.



Back Box

400 A Cat. #

AJX99



Angle Adapter

400 A Cat. #

AJ245



Hub Plate

Hub Size	400 A Cat. #
2	YYP96
2½	YYP97
3	YYP98
3½	YYP99
4	YYP910
5	YYP9012

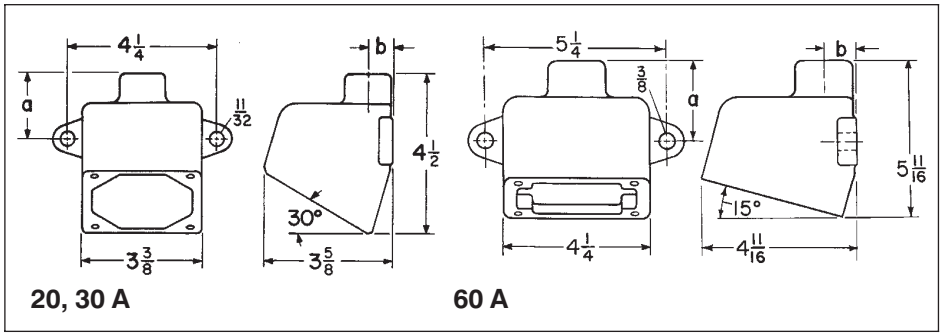


Blank Plate

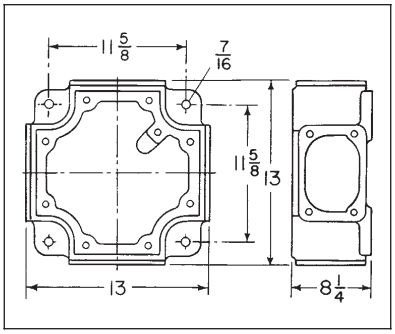
400 A Cat. #

YYP900

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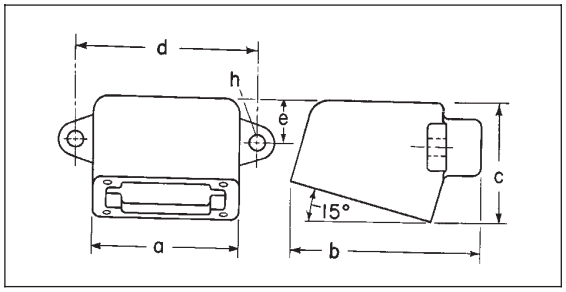


20, 30 A 60 A



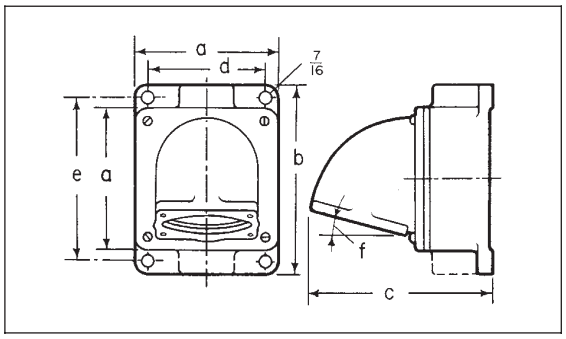
ARE

Cat. #	Rating	Size	a	b
13	20, 30A	½	1 27/32	11/16
23	20, 30A	¾	1 27/32	13/16
33	20, 30A	1	1 31/32	15/16
36	60 A	1	2 9/16	15/16
46	60 A	1¼	2 5/8	1 3/16
56	60 A	1½	2 11/16	1 5/16



ARJG

Cat. #	Rating	Size	a	b	c	d	e	h Dia.
13	20, 30A	½	3⅜	4 15/32	2¾	4¼	1⅜	1 1/32
23	20, 30A	¾	3⅜	4 15/32	2¾	4¼	1⅜	1 1/32
33	20, 30A	1	3⅜	4 19/32	2¾	4¼	1⅜	1 1/32
36	60 A	1	4¼	5⅝	4 11/16	5¼	1⅝	⅜
46	60 A	1¼	4¼	5 11/16	4 11/16	5¼	1⅝	⅜
56	60 A	1½	4¼	5¾	4 11/16	5¼	1⅝	⅜



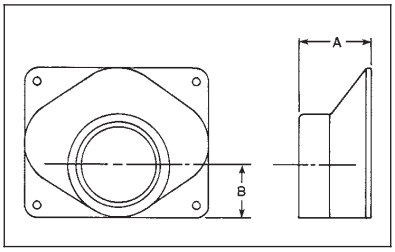
AJ and AJC

With 60, 100, 200 and 400 Ampere Angle Adapters

Cat. #	Rating	Size	a	b	c	d	e	f
37, 47, 57	60, 100 A	1, 1¼, 1½	5⅞	8	7 7/16	4⅞	7	15°
67	60, 100A	2	5⅞	8	8	4⅞	7	15°
58, 68, 78	200 A	1½, 2, 2½	8	10¾	9⅞	6¾	9½	45°
69, 79, 89	400 A	2, 2½, 3	9	11⅝	11 13/16	7¾	10⅜	45°

AJX Back Body

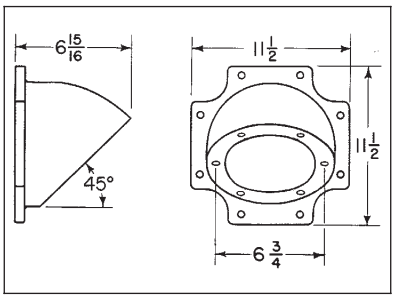
400 Amperes



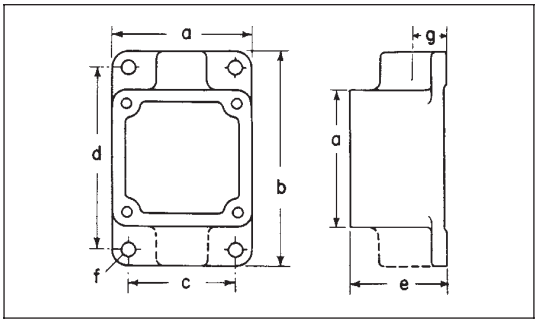
Hub Plate

	Hub Size	"A"	"B"
YYP96	2	3¾	1 11/16
YYP97	2½	3⅞	2 5/16
YYP98	3	3⅞	2 5/16
YYP99	3½	3⅞	2 9/16
YYP910	4	3⅞	2 13/16
YYP9012	5	4⅝	3 7/16

AJ Angle Adapter

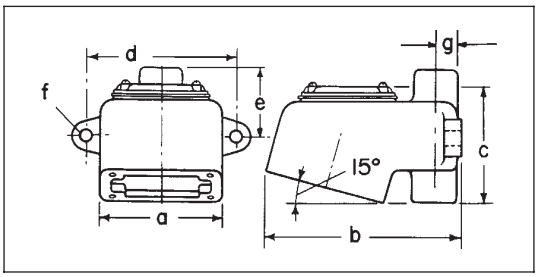


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COOPER Crouse-Hinds



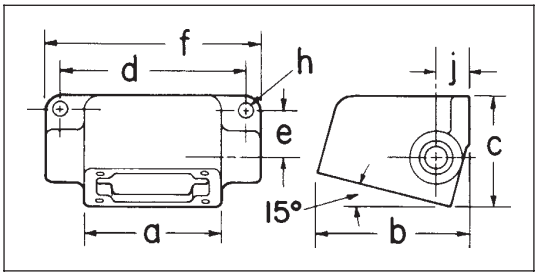
ARRC and ARRH

Cat. #	Rating	Size	a	b	c	d	e	f Dia.	g
13	20/30 A	½	3⅜	5⁵⁄₁₆	2⅝	4⁹⁄₁₆	2¼	1¹⁄₃₂	1¹⁄₁₆
23	20/30 A	¾	3⅜	5⁵⁄₁₆	2⅝	4⁹⁄₁₆	2¼	1¹⁄₃₂	1³⁄₁₆
33	20/30 A	1	3⅜	5⁵⁄₁₆	2⅝	4⁹⁄₁₆	2¼	1¹⁄₃₂	1⁵⁄₁₆
36	60 A	1	4¼	6½	3½	5¾	3⅛	7⁄₁₆	1⅜
46	60 A	1¼	4¼	6½	3½	5¾	3⅛	7⁄₁₆	1⅜
56	60 A	1½	4¼	6½	3½	5¾	3⅛	7⁄₁₆	1⅜



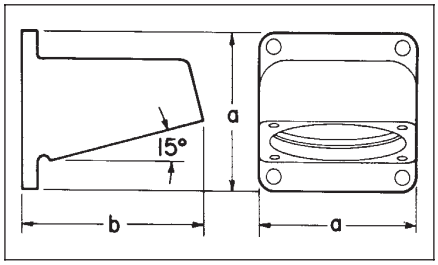
ARD

Cat. #	Rating	Size	a	b	c	d	e	f Dia.	g
13	20/30 A	½	3⅜	5⁵⁄₁₆	3²³⁄₃₂	4¼	1²⁷⁄₃₂	1¹⁄₃₂	1¹⁄₁₆
23	20/30 A	¾	3⅜	5⁵⁄₁₆	3²³⁄₃₂	4¼	1²⁷⁄₃₂	1¹⁄₃₂	1³⁄₁₆
33	20/30 A	1	3⅜	5⁵⁄₁₆	3²³⁄₃₂	4¼	1²⁷⁄₃₂	1¹⁄₃₂	1⁵⁄₁₆
36	60A	1	4¼	7¹⁄₁₆	5¾	5⅛	2¾	⅜	1⁵⁄₁₆
46	60 A	1¼	4¼	7¹⁄₁₆	5¾	5⅛	2¾	⅜	1⁵⁄₁₆
56	60 A	1½	4¼	7¹⁄₁₆	5¾	5⅛	2¾	⅜	1⁵⁄₁₆



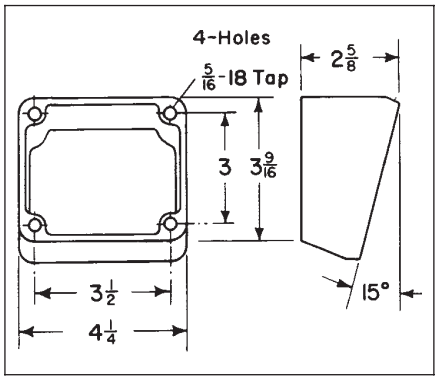
ARJ

Cat. #	Rating	Size	a	b	c	d	e	f	h Dia.	j
13	20/30 A	½	3⅜	3⅝	2¾	4⅝	1⁷⁄₃₂	5⁵⁄₁₆	1¹⁄₃₂	1⁵⁄₁₆
23	20/30 A	¾	3⅜	3⅝	2¾	4⅝	1⁷⁄₃₂	5⁵⁄₁₆	1¹⁄₃₂	1⁵⁄₁₆
33	20/30 A	1	3⅜	3⅝	2¾	4⅝	1⁷⁄₃₂	5⁵⁄₁₆	1¹⁄₃₂	1⁵⁄₁₆
36	60 A	1	4¼	4¹¹⁄₁₆	4¹¹⁄₁₆	5	1²³⁄₃₂	6⅜	⅜	1⁵⁄₁₆
46	60 A	1¼	4¼	4¹¹⁄₁₆	4¹¹⁄₁₆	5	1²³⁄₃₂	6⅜	⅜	1⁵⁄₁₆
56	60 A	1½	4¼	4¹¹⁄₁₆	4¹¹⁄₁₆	5	1²³⁄₃₂	6⅜	⅜	1⁵⁄₁₆



AR30 and AR60 Angle Adapters

Cat. #	Rating	a	b
AR30	20/30 A	3⅜	4⅛
AR60	60 A	4¼	4¹⁵⁄₁₆



AR610 Angle Adapter

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1P AR Arktite® Circuit Breaking Round Flange Receptacle Housings for Panel Mounting

Application:

AR round flange receptacle housings are designed specifically for semi-flush mounting in sheet metal panels or cabinets.

Features:

- Back boxes are not needed for these receptacle assemblies.
- Where wiring behind a panel is exposed and subject to either mechanical injury or contact by personnel, suitable shields or guards should be provided.

Standard Materials:

- Receptacle housings – copper-free aluminum
- Plug exteriors – copper-free aluminum
- Insulation: 30, 60, 100, 200 ampere – fiberglass-reinforced polyester
- Pressure and solder contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

Available with these assemblies are:

- Reversed interiors (add suffix S22 to Cat. No.)
- Special polarity (add suffix S4 to Cat. No.)

See page 968 for details.

Certifications and Compliances:

- UL Standard: 1682

NOTE: For general information on application, features and grounding, see pages 966 to 969.



AR Receptacle housings with round flange and threaded cap



APJ Plugs with cable grip, Neoprene bushing and fastening ring



AP Plugs with cable grip, Neoprene bushing and fastening ring

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AR Arktite® Circuit Breaking Round Flange Receptacle Housings for Panel Mounting With Threaded Cap

30/60/100/200 A, 600 VAC/250 VDC, AP and APJ Plugs

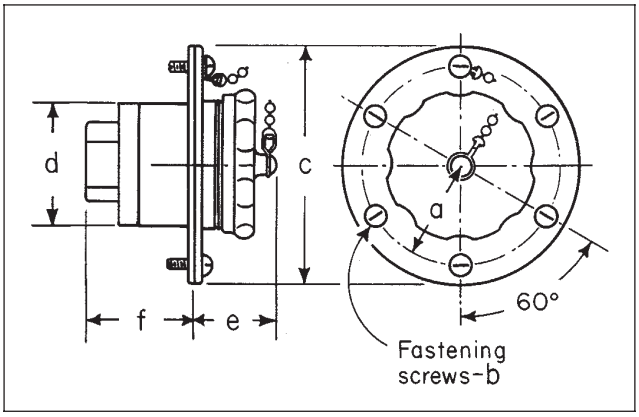
Amps	Style‡	Description	Recept. Cat. #	Cable Dia.	Plug Cat. #
30	1	3-wire, 3-pole *	AR6337	0.60 to 1.20	APJ3375
		4-wire, 4-pole *	AR6347	0.60 to 1.20	APJ3475
	2	3-wire, 4-pole *	AR6348	0.60 to 1.20	APJ3485
60	1	3-wire, 3-pole *	AR6637	0.75 to 1.45	APJ6375
		4-wire, 4-pole *	AR6647	0.75 to 1.45	APJ6475
	2	3-wire, 4-pole *	AR6648	0.75 to 1.45	APJ6485
100	1	3-wire, 3-pole *	AR61037	1.00 to 1.70	APJ10377
		4-wire, 4-pole *	AR61047	1.00 to 1.70	APJ10477
	2	3-wire, 4-pole *	AR61048	1.00 to 1.70	APJ10487
200	1	3-wire, 3-pole	AR62031 ♦	.875 to 1.375	AP20355
				1.875 to 2.500	AP20358
	2	2-wire, 3-pole	AR62032 ♦	.875 to 1.375	AP20365
				1.875 to 2.500	AP20368

‡ Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell.

♦ 200 ampere size is provided with clamp cover.

* Pressure connectors are standard. Crimp/solder type terminators are optionally available for 2, 3 and 4-pole 30 ampere, 3 and 4-pole 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example:
APJ3375-T (Plug) AR6337-T (Receptacle)

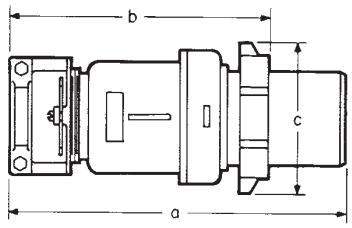
Dimensions



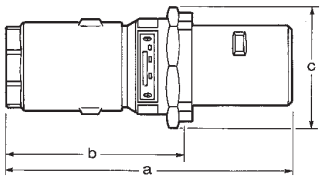
AR Round Flange Receptacles

Description	a	b	c	d	e	f
30 amp. 2, 3, 4-pole	2	12-24	4¾	2 7/16	1 5/8	2¼
60 amp. 2, 3-pole	2	12-24	4¾	2 13/16	1⅞	3⅜
60 amp. 4-pole	2	12-24	4¾	3⅛	1⅞	3⅜
100 amp. 2, 3-pole	2	12-24	4¾	3 1/16	1⅞	4 9/16
100 amp. 4-pole	2	12-24	4¾	3 5/16	1⅞	4 9/16
200 amp. 3-pole	3⅜	⅜-16	7¾	4 3/16	2⅞	5⅛

AP 200A Plugs



APJ 30, 60 and 100A Plugs



Amps	No. Poles	a	b	c
30	2, 3 or 4	6½	4 13/16	2 15/16
60	2 or 3	8½	5¾	3⅝
60	4	8½	5 13/16	3¾
100	2 or 3	10⅛	6 9/16	3¾
100	4	10⅛	6⅝	4⅛
200	3	14¾	10 11/16	6¾

† These dimensions are approximate and vary with cable size.

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APQ Arktite® Circuit Breaking Motor Plugs

NEMA 4 Watertight

APJ Plugs, APR Cable Connector Receptacles 30/60/100 A, 250 VDC/600 VAC, 50**-400 hertz

Application:

APQ motor plugs are used:
- on portable electric equipment

Features:

- Eliminates problem of storing and protecting a long length of portable cord and plug on portable device
- Connection to fixed receptacle used as power source is made with cord sets which may be hung on wall, out of the way
- Cord sets are made up using an APR receptacle at one end and an APJ plug at the other
- Cord sets may be used singly or connected together to provide longer lengths when needed
- With spare cord sets on hand, portable equipment may be kept in service while normal cord replacement is being made
- Where design of portable equipment permits, APQ motor plugs can be attached directly to a sheet metal panel or cabinet
- May be mounted on AR and AJ back boxes for conduit connection
- See typical installation diagram on page 997

Standard Materials:

- Motor plugs: mounting plate – *Feraloy*®, Iron Alloy; protective sleeve – copper-free aluminum
- Plug and receptacle exteriors – copper-free aluminum
- Back boxes – copper-free aluminum
- Insulation – fiberglass-reinforced polyester
- Pressure and solder contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

Available with these assemblies:
- Special polarity (add suffix S4 to Cat. No.) See page 968 for details.

Certifications and Compliances:

- UL Standards: 514, 1682
- CSA Standard C22.2 No. 182.1

NOTE: For general information on application, features and grounding, refer to pages 966 to 969.



APQ Motor plugs with square flange, gaskets, fastening ring, and exposed contacts.



APR Cable connector receptacles with cable grip, Neoprene bushing, and protected contacts.



APJ Plugs with cable grip, Neoprene bushing, exposed contacts, and fastening ring.

Amps	Style‡	Description		Plug Cat. #	Cable Dia.	Cable Connector Receptacle Cat. #	Motor Plug Cat. #
30	1	2-wire, 2-pole	*	APJ3275	0.60 to 0.88 0.87 to 1.02	APR3253 APR3255	APQ327
		3-wire, 3-pole	*	APJ3375	0.60 to 0.88 0.87 to 1.02	APR3353 APR3355	APQ337
		4-wire, 4-pole	*	APJ3475	0.60 to 0.88 0.87 to 1.02	APR3453 APR3455	APQ347
	2	2-wire, 3-pole	*	APJ3385	0.60 to 0.88 0.87 to 1.02	APR3363 APR3365	APQ338
		3-wire, 4-pole	*	APJ3485	0.60 to 0.88 0.87 to 1.02	APR3463 APR3465	APQ348
60	1	2-wire, 2-pole	*	APJ6275	0.75 to 0.88 0.87 to 1.37	APR6253 APR6255	APQ627
		3-wire, 3-pole	*	APJ6375	0.75 to 0.88 0.87 to 1.37	APR6353 APT6355	APQ637
		4-wire, 4-pole	*	APJ6475	0.75 to 0.88 0.87 to 1.37	APR6453 APR6455	APQ647
	2	2-wire, 3-pole	*	APJ6385	0.75 to 0.88 0.87 to 1.37	APR6363 APR6365	APQ638
		3-wire, 4-pole	*	APJ6485	0.75 to 0.88 0.87 to 1.37	APR6463 APR6465	APQ648
100	1	2-wire, 2-pole	*	APJ10277	1.00 to 1.38 1.37 to 1.50	APR10255 APR10257	APQ1027
		3-wire, 3-pole	*	APJ10377	1.00 to 1.38 1.37 to 1.50	APR10355 APR10357	APQ1037
		4-wire, 4-pole	*	APJ10477	1.00 to 1.38 1.37 to 1.50	APR10455 APR10457	APQ1047
	2	2-wire, 3-pole	*	APJ10387	1.00 to 1.38 1.37 to 1.50	APR10365 APR10367	APQ1038
		3-wire, 4-pole	*	APJ10487	1.00 to 1.38 1.37 to 1.50	APR10465 APR10467	APQ1048

‡ Style 1 – Grounded through shell.
Style 2 – Grounded through extra pole and shell.

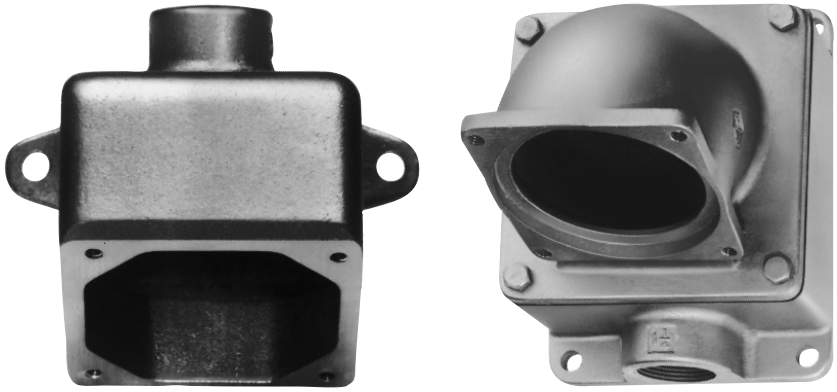
* Pressure connectors are standard. Crimp/solder terminators are optionally available for 2, 3 and 4 pole 30 ampere. 3 and 4-pole 60 and 100 ampere. For details, see page 969. To specify, add the suffix "T" to the catalog number. For example: APR3355-T (Connector) APJ3375-T (Plug)

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Typical Back Boxes

For APQ Arktite® Circuit Breaking Motor Plugs



Typical back boxes used with APQ motor plugs

ARE

For APQ 30 Amp.

Hub Size	Cat. #
½	ARE13
¾	ARE23
1	ARE33

For APQ 60 Amp.

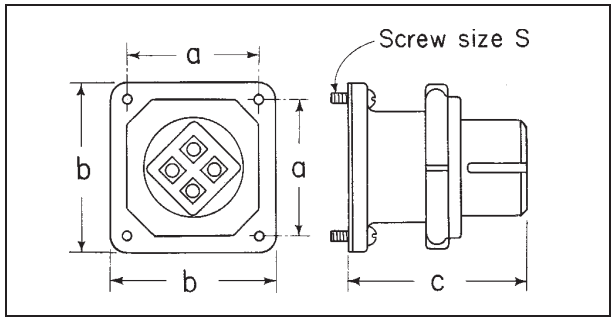
Hub Size	Cat. #
1	ARE36
1¼	ARE46
1½	ARE56

AJ

For APQ 60 and 100 Amp.

Hub Size	Cat. #
1	AJ37
1¼	AJ47
1½	AJ57
2	AJ67

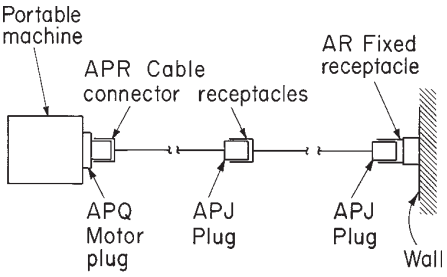
Dimensions



APQ Motor Plugs

Amps.	a	b	c	s
30	2¾	3⅜	3⅝	12-24
60	3½	4¼	4⅞	5/16-18
100 (2 & 3-pole)	3½	4¼	6⅛	5/16-18
100 (4-pole)	3½	4¼	6 7/16	5/16-18

Typical installation



For additional back box listings, see pages 990 and 991. For back box dimensions, see pages 992 and 993.

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Notes Page

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Description	Page No.
Application/Selection	1000, 1001
Arktite® Delayed Action Circuit Breaking	
Technical Data	1002, 1003
20 & 30A CPS Receptacle	1004, 1005
20 & 30A CPP Plug	1004, 1005
20A CPR Connector	1006
NEMA Interlocked/Circuit Breaking	
Technical Data	1007
15 & 20A Receptacles & Plugs	1008, 1009
GFCI	1010
Delayed Action/Circuit Breaking	
Technical Data	1011, 1012
7 thru 60A CES/CESD Receptacles	1013
CPH Plugs	1013

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2P Plugs and Receptacles For Industrial Heavy Duty Hazardous Area Use

Application and Selection

Application:

● To connect portable or movable electrical equipment, such as motors, motor-generator sets, tools, light systems.

Considerations for Selection:

Environmental:
● The environment of the enclosure location in terms of NEC/CEC compliance.
● Material and construction to withstand rough usage and atmospheric conditions.
Electrical:†
● Sufficient current carrying capacity to meet load requirements.
● Compatibility with electrical system (new or existing installation).
● Interchangeability of plugs with other hazardous and non-hazardous area receptacles.
See ''Quick Selector'' below and ''Interchangeability Chart'' on page 1001 for guidance.

Options:

Special polarity arrangements available as options, as well as special back boxes and hub arrangements for some series. See listing pages for details.

Quick Selector Chart

Receptacle Series	NEC Compliances	Electrical Rating†		Mating Plug
		Poles	Amps & Volts	
CES, CESD	Cl. I, Division 1 and 2, Groups C,D	2-wire, 3-pole 3-wire, 4-pole	30A, 120-240VAC 7A, 460VAC①	CPH
			60A, 115-230VAC 30A, 460VAC①	
CPR	Non-Hazardous	2-wire, 3-pole	20A, 125-250VAC 20A, 18VDC	CPP
CPS	Cl. I, Division 1 and 2, Groups C,D	2-wire, 3-pole	20A, 125-250VAC 20A, 18VDC 30A, 125-250VAC 7A, 480VAC①	CPP
		3-wire, 4-pole	30A, 125-250VAC 7A, 460VAC①	CPP
DR	Cl. II, Division 1 and 2, Groups F,G	2-wire, 2-pole 2-wire, 3-pole 3-wire, 3-pole 3-wire, 4-pole 4-wire, 4-pole	30A, 480VAC	APJ, NPJ*
	Cl. II, Division 1 and 2, Groups F,G	2-wire, 3-pole 3-wire, 3-pole 3-wire, 4-pole 4-wire, 4-pole	60A, 480VAC	APJ, NPJ*
	Cl. I, Division 1 and 2, Groups C,D	2-wire, 3-pole 3-wire, 4-pole	60A, 480VAC	APJ, NPJ*
ENR	Cl. I, Division 1 and 2, Groups B,C,D Cl. II, Division 1 and 2, Groups F,G Cl. III	NEMA 5 & 6 Config.	20A, 125VAC 20A, 250VAC	ENP

WARNING: CPR *Arktite*® cable connectors are for use in non-hazardous areas only.

† If higher ratings are needed, refer to receptacles interlocked with safety switches and circuit breakers in Section 4P.
* NPJ plug is available in 2-wire, 3-pole and 3-wire, 4-pole ratings.
① CSA certified units are rated at 600 VAC.

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Plugs and Receptacles For Industrial Heavy Duty Hazardous Area Use

Interchangeablility Chart

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same.** The following table is a summary of possible combinations.

Plugs Shown in Section 2P	Can be Used with these Receptacle Series	Listed in Section	Plug & Receptacle Electrical Rating
APJ	AR, NR, NPR	1P	30 and 60 amp.
	DR	2P	2-wire, 3-pole
	FSQ, EPC, EPCB, EBBR	4P	3-wire, 4-pole
	DBR, WSR, NSR, NBR	3P, 4P	30 and 60 amp. 3-wire, 4-pole
CPH	AR, NR, NPR	1P	30 and 60 amp.
	DR	2P	2-wire, 3-pole
	FSQ, EPC, EPCB, EBBR	4P	3-wire, 4-pole
	DBR, WSR, NBR, NSR	3P, 4P	30 and 60 amp. 3-wire, 4-pole
CPP	AR, NR, NPR	1P	30 amp. 2-wire, 3-pole 3-wire, 4-pole
	DBR, WSR, NBR, NSR	3P, 4P	30 amp. 3-wire, 4-pole

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Arktite® Circuit Breaking CPS Receptacles and CPP Plugs

Delayed Action
Factory Sealed

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations

Application:

CPS receptacles, angle and straight types, and CPP plugs are used:
- with portable electrically operated devices such as motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in locations which are hazardous due to the presence of flammable vapors or gases
- in damp or corrosive locations
- in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist

Features:

- The delayed action feature permits the plug to be used as an emergency push-pull switch
- CPS receptacles are equipped with a rotating mechanism which prevents complete withdrawal of the CPP plug in one continuous movement. Details of operation are illustrated and explained below



Fig. 1



Fig. 2



Fig. 3

Figure 1 shows a CPS angle type receptacle assembly with CPP plug fully engaged. **Figure 2** shows the plug withdrawn until it is stopped by the delayed action mechanism. In this position the circuit has been broken and the arc has been snuffed in the contact chambers. To completely withdraw the plug as shown in **Figure 3**, the delayed action release lever mush be rotated counterclockwise. The time required to actuate the mechanism permits dissipation of the arc-generated heat before contacts and arcing chambers are opened to the atmosphere. When inserting the plug, the reverse procedure is followed.
- CPS receptacles are factory sealed to simplify installation and wiring – external seals are not required
- Series 152 receptacles have top hinged cover design, with 45° downward angled receptacle housing, to provide superior environmental protection from accumulations of dust, snow, ice, and water
- Back boxes used for angle type receptacles are standard EDS bodies. Assemblies are listed with single and two gang bodies and dead end or through feed hubs – ½″ to 1″ sizes
- Back boxes used for straight type receptacles are available with a variety of hub arrangements in ½″ and ¾″ sizes
- **All receptacles and 30 ampere plugs are provided with pressure terminals for ease of field wiring. 20 ampere plugs have solder terminals.**

Grounding:

- NEC Article 501 and CEC Part 1 Section 18 requires that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord
- CPS receptacles and CPP plugs are provided with an extra grounding pole
- In plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the grounding pole. In the receptacle, grounding is accomplished through the conduit system

Interchangeability of Plugs with Non-Hazardous Location Receptacles:

- 30 ampere CPP plugs can also be used with standard 30 ampere AR Arktite receptacles of the same style and number of poles, thus permitting portable devices suitable for use in hazardous locations to be connected to receptacles in both hazardous and non-hazardous areas

NOTE: Equipment to be used in hazardous areas must be suitable for use in the specific hazardous location.

Standard Materials:

- Receptacle housings – die cast copper-free aluminum
- EDS Back boxes – *Feraloy*® iron alloy (U.S.)/Copper-free aluminum (Canada)
- Other back boxes – Feraloy iron alloy
- Plug exteriors – copper-free aluminum or Krydon® fiberglass-reinforced polyester material. See listings
- Insulation – all receptacles and plugs – Krydon fiberglass-reinforced polyester material
- Pressure or solder contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – aluminum acrylic paint.
- *Feraloy* – electrogalvanized and aluminum lacquer
- Fiberglass-reinforced polyester – natural (red, white)
- Brass – natural
- Leaded red brass – electro-tin-plate

Electrical Rating Ranges:

- Angle type – 20 and 30 amperes; 125 and 250 VAC
- Straight type – 20 amperes; 125 and 250 VAC

Certifications and Compliances:

- NEC/CEC: Class I, Division 1 and 2, Groups C,D
- UL Standard: 1010
- CSA Standard C22.2 No. 30

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Arktite® Circuit Breaking CPS Receptacles and CPP Plugs

Delayed Action
Factory Sealed

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations

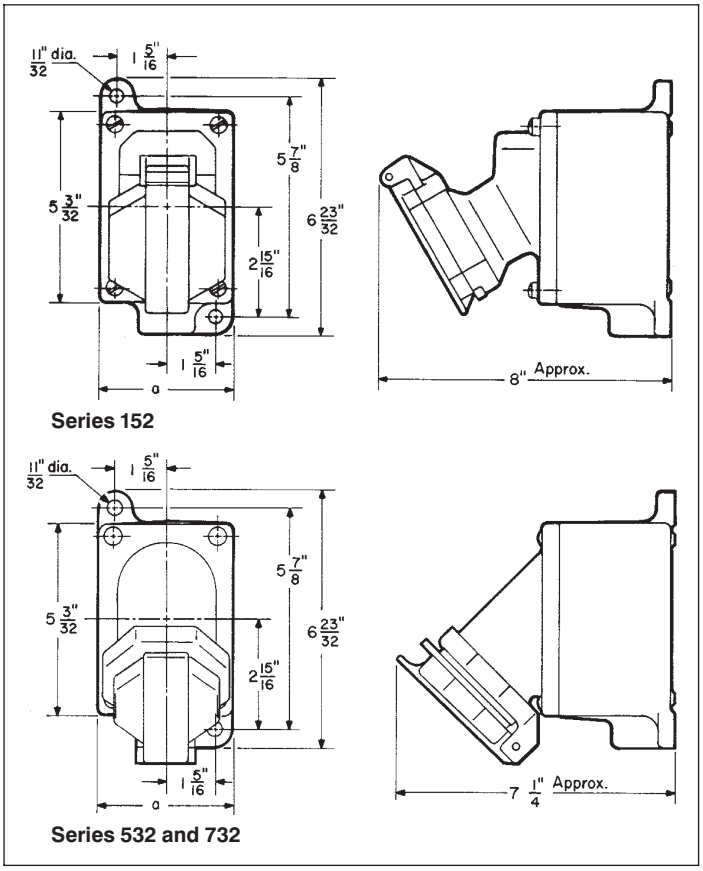
Options:

● Material: copper-free aluminum, natural finish, is available on certain back boxes. See listings. Add suffix SA to Cat. No.

* The following special options are available from factory by adding suffix to Cat. No.

Description	Suffix to be Added to Cat. #
Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match. 30 ampere units only	S4
Combination of receptacles and EFS/EFD or EDS series devices, such as pilot lights, switches, push button stations, etc., can be furnished using three, four and five gang bodies	Specify
Hub arrangements other than those listed can be supplied	Specify

Dimensions

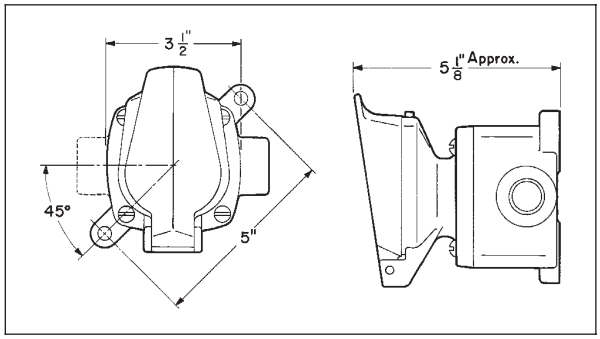


Series 152

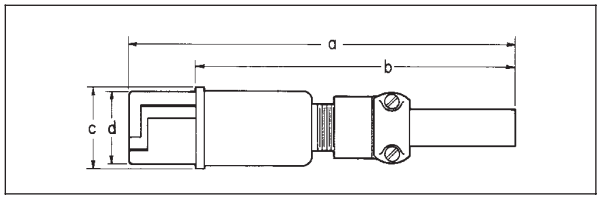
Series 532 and 732

Angle type receptacles

a = 3½ for single gang
7 3⁄16 for two gang



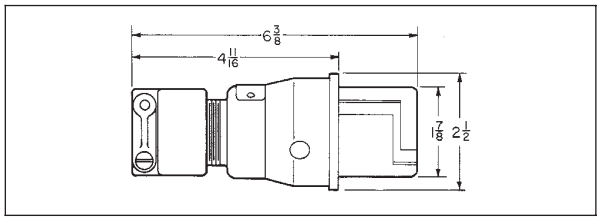
Straight type receptacles



20 Ampere plugs

Cat. #	a†	b†	C	d
CPP516	8⅜	6⅞	1¾	1 9⁄16
CPP512	7	5½	1¾	1 9⁄16

†These dimensions are approximate and vary with cable size.



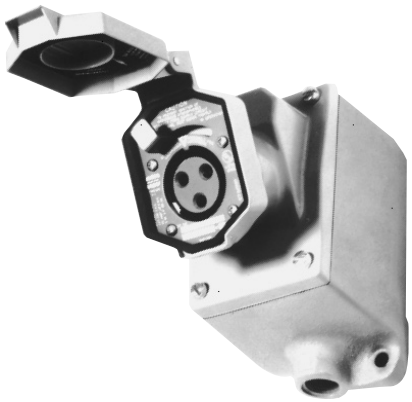
30 Ampere plugs

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

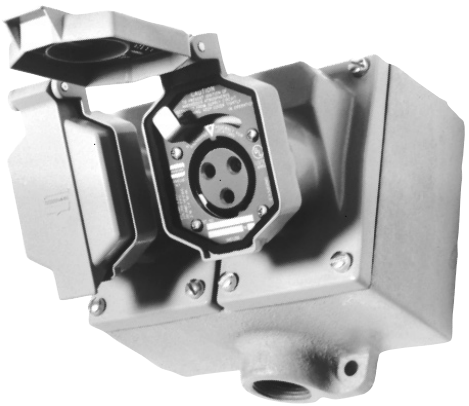
Arktite® Circuit Breaking CPS Receptacles and CPP Plugs

Delayed Action
Factory Sealed

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations



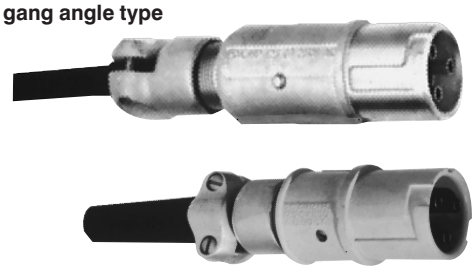
CPS152 – Single gang angle type



CPS152 – Two gang angle type



CPS152R – Receptacle unit only



CPP plugs with
mechanical cable grip and Neoprene bushing

Style 2 – Grounded through extra pole and shell

Rating	Description		Hub Size	Single Gang Receptacle Assembly Cat. #	Two Gang Receptacle Assembly Cat. #	Cable Dia.	Plug With Aluminum Handles Cat. #	Plug With High Impact Molded Composition Handle Cat. #	Receptacle Unit only Cat. #
20A, 1 HP, 125-250VAC, 60 hertz, 20A, 18VDC	2-wire, 3-pole	Dead End	½	CPS152-101*	CPS152-102*	† .312 to .625	CPP516 ♦	CPP512 ♦	CPS152R
			¾	CPS152-201*	CPS152-202*				
			1	CPS152-301*	CPS152-302*				
		Through Feed	½	CPS152-111*	CPS152-112*				
			¾	CPS152-211*	CPS152-212*				
			1	CPS152-311*	CPS152-312*				
30A, 1½ HP, 125-250VAC, 60 hertz, 7A, ½ HP, 480VAC①, 60 hertz	2-wire, 3-pole	Dead End	½	CPS532-101	CPS532-102	† .375 to .875	CPP4553		CPS532R
			¾	CPS532-201	CPS532-202				
			1	CPS532-301	CPS532-302				
		Through Feed	½	CPS532-111	CPS532-112				
			¾	CPS532-211	CPS532-212				
			1	CPS532-311	CPS532-312				
30A, 3 HP, 125-250VAC, 60 hertz, 7A, 1 HP, 480VAC①, 60 hertz	3-wire, 4-pole	Dead End	½	CPS732-101	CPS732-102	† .375 to .875	CPP4752		CPS732R
			¾	CPS732-201	CPS732-202				
			1	CPS732-301	CPS732-302				
		Through Feed	½	CPS732-111	CPS732-112				
			¾	CPS732-211	CPS732-212				
			1	CPS732-311	CPS732-312				

* Back boxes are available in copper-free aluminum. To order, add suffix SA to the Cat. No.
① CSA certified units are rated at 600 VAC at 7A.

† Receptacles will take any of the plugs grouped in the bracket opposite the receptacle listings.

♦ 20 amp plugs are furnished with solder terminations at standard, ground contacts have pressure terminations.

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CPS straight type shown with plug

Style 2 – Grounded through extra pole and shell
2-wire, 3-pole
20A, 1HP, 125-250VAC, 60-400 hertz, 20A, 18VDC



CPS Dead End

Hub Size	Assembly Cat. #	Body Cat. #
½	CPS14-120	CPS120
¾	CPS14-20	CPS20



CPS Through Feed

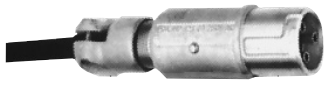
Hub Size	Assembly Cat. #	Body Cat. #
½	CPS14-121	CPS121
¾	CPS14-21	CPS21



CPS Receptacle Unit

With Spring Door

Cat. # CPS14R



With aluminum handle



With high impact molded composition handle

CPP Plugs

With Mechanical Cable Grip and Neoprene Bushing

Cable Dia.	Aluminum Cat. #	Composition Cat. #
.312 to .625	CPP516	CPP512

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2P Arktite® CPR Cable Connector Receptacles Delayed Action Circuit Breaking

Application:

CPR *Arktite* delayed action cable connector receptacles are used in **non-hazardous areas only*:**

- to make up adapter sets for connecting portable devices having CPP plugs to receptacles in non-hazardous areas. This is accomplished by equipping one end of the length of cable with the CPR receptacle and the other with a plug to mate with the receptacle in the non-hazardous area.
- to make up extension cords using the CPR receptacle at one end and a CPP plug at the other

Features:

- Spring door housing with the same delayed action rotating mechanism provided in CPS receptacles listed on pages 1002 through 1005
- Pressure terminals are furnished for ease of wiring
- Gland nut with mechanical cable grip and bushing for effective strain relief

Standard Materials:

- Housing – copper-free aluminum
- Insulation – fiberglass-reinforced polyester
- Contacts – brass

Standard Finishes:

- Copper-free aluminum – natural
- Fiberglass-reinforced polyester – natural (red)
- Brass – natural

* CSA certified unit suitable for Class I Groups C and D (not available in USA).



Style 2 – Grounded through extra pole and shell. For use with CPP516 and CPP512 series plugs listed on page 1005.

Description	Rating	Cable Dia.	Cat. #
2-wire, 3-pole	20A, 1HP, 125-250VAC, 60 hertz 20A, 18 VDC	.375 to .625	CPR154

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ENR Dead Front Interlocked Circuit Breaking Receptacles

ENP Plugs General Purpose Ark●Gard® 2; Factory Sealed

Cl. I, Div. 1 & 2, Groups B†,C,D
Cl. II, Div. 1 & 2, Groups F,G
Cl. III
NEMA 3,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

ENR receptacles and ENP plugs are used:
- with portable electrical equipment such as compressors, tools, lighting systems, and similar devices
- in areas made hazardous by the presence of flammable vapors and gases or combustible dusts
- wherever portable electrical equipment is likely to be transferred from hazardous to nonhazardous areas
- in damp and corrosive areas
- when power requirements do not exceed 20 amperes
- where general purpose application is required

Features:

- *Ark•Gard 2* receptacle incorporates three spring-loaded slide keys that prevent the receptacle face plate from being rotated until the ENP plug is fully inserted into the receptacle. To make the connection, the ENP plug is fully inserted; and the receptacle face moved inward by pushing the plug forward (**Fig. 1**). The plug is then rotated, (**Fig. 2**), closing the circuit. As rotation begins, the plug becomes locked in the receptacle and cannot be accidentally disengaged. In making or breaking the circuit, any resulting electrical arc is confined in the factory-sealed chamber.
- Factory-sealed chamber encloses the potential arcing components between two explosion-proof threaded joints. These threads are specially coated to guarantee freedom of movement, which ensures on-off action. No additional seals are required.
- One piece molded gasket seals cover plate and ENP plug when plug is inserted, providing full environmental protection at the receptacle face.
- Top-hinged cover design with 45° downward angle provides superior protection in damp, wet, and dirty locations.
- Molded-in contact design provides superior interior contact reliability.
- ENP plugs can be used in nonhazardous areas with standard U-ground NEMA/EEMAC configuration 5 and 6 receptacles, eliminating the need for two separately equipped portable units of the same type. The ENR receptacle will not accept standard NEMA/EEMAC configuration plugs.
- ENP plug handle body is designed with an internal cord strain relief mechanism and a cable sealing grommet which will accept various cable diameters.
- Field assembly is accomplished with standard tools.
- Use standard EDS back boxes.

† Single gang receptacles purchased as a complete assembly with EDS back box are suitable for Class I, Group B usage. Two gang receptacles can be modified for Class I, Group B usage. Add the letter B to Cat. No. Example: ENRB22201. Seals must be installed within 1½″ of each conduit opening. Receptacle units only (ie. ENR5201) are not suitable for Class I, Group B.



Figure 1

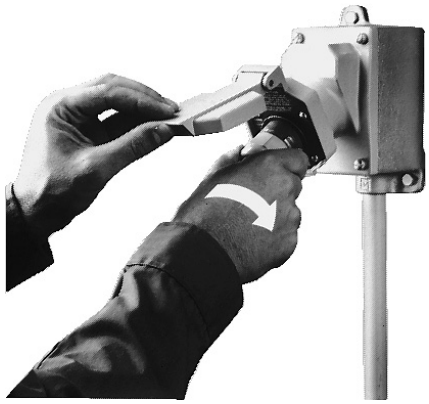


Figure 2

Grounding:

- NEC Article 501 and CEC Section 18 requires that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord. ENR receptacles and ENP plugs are provided with an extra grounding pole.

Standard Materials:

- Receptacle housing, spring door and plug body – die cast copper-free aluminum
- Interiors: receptacle – *Krydon*® fiberglass-reinforced polyester material; plugs – nylon 100
- Contacts: receptacle blade – brass; receptacle switch – silver; plug – brass
- Receptacle cover hinge pin and spring – stainless steel
- Receptacle gasket – neoprene
- Plug bushing – neoprene

Standard Finishes:

- Copper-free aluminum – aluminum acrylic paint
- Brass – natural

Electrical Rating Ranges:

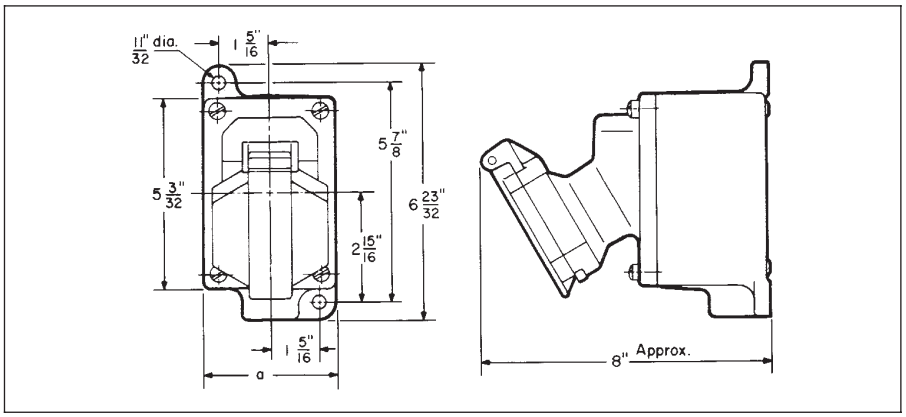
- Receptacles – 20 amperes; 125 vac and 250 vac, 50-400 hertz
- Plugs – 15 amperes; 125 vac and 250 vac, 50-400 hertz
  20 amperes; 125 vac and 250 vac, 50-400 hertz

Certifications and Compliances:

- NEC:
  Class I, Division 1 and 2, Groups B†,C,D
  Class II, Division 1 and 2, Groups F,G
  Class III
- ANSI/UL Standard 1010
- NEMA/EEMAC 3,7BCD,9FG
- CEC:
  Class I, Division 1 and 2, Groups B, C, D
  Class II, Division 1 and 2, Group G
  Class III

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

Dimensions



a=3½ for single gang; 7⁹⁄₁₆ for two gang.

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ENR Dead Front Interlocked Circuit Breaking Receptacles

ENP Plugs General Purpose (For US NEC Applications); Ark•Gard® 2; Factory Sealed

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1 & 2, Groups F,G
Cl. III
NEMA 3,7BCD,9FG,12

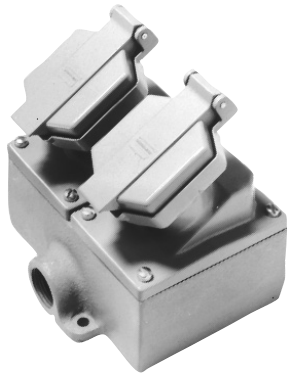
Explosionproof
Raintight
Wet Locations
Dust-Ignitionproof



ENR single gang dead end assembly



ENR single gang dead end assembly with spring door open



ENR two gang dead end assembly



ENR two gang dead end assembly with one spring door open



ENR receptacle only, with spring door open



ENP plug

Receptacle Rating	Description	Hub Size	Single Gang Receptacle Assembly Cat. # ‡	Two Gang Receptacle Assmebly Cat. # ‡	Receptacle Unit Only Cat. #	NEMA Config.	15 Amp Plug Cat. #	NEMA Config.	20 Amp Plug Cat. #	NEMA Config.
20 amp, 125 volt	Dead End	½	ENR11201	ENR12201	ENR5201	5-20R	ENP5151	5-15P	ENP5201	5-20P
		¾	ENR21201	ENR22201						
		1	ENR31201	ENR32201						
	Through Feed	½	ENRC11201	ENRC12201						
		¾	ENRC21201	ENRC22201						
		1	ENRC31201	ENRC32201						
20 amp, 250 volt	Dead End	½	ENR11202	ENR12202	ENR6202	6-20R	ENP6152	6-15P	ENP6202	6-20P
		¾	ENR21202	ENR22202						
		1	ENR31202	ENR32202						
	Through Feed	½	ENRC11202	ENRC12202						
		¾	ENRC21202	ENRC22202						
		1	ENRC31202	ENRC32202						

* Single gang receptacles purchased as a complete assembly with EDS back box are suitable for Class I, Group B usage. Two gang receptacles can be modified for Class I, Group B usage. Add the letter B to Cat. No. Example: ENRB22201. Seals must be installed within 1½" of each conduit opening. Receptacle units only (ie. ENR5201) are not suitable for Class I, Group B.

‡ With Feraloy® Iron Alloy EDS, EDSC back boxes.

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COOPER Crouse-Hinds

ENR Dead Front Interlocked Circuit Breaking Receptacles

ENP Plugs; General Purpose (For CEC Applications) Ark•Gard® 2; Factory Sealed

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1 & 2, Group G
Cl. III
EFC 3,7BCD,9G,12

Explosionproof
Raintight
Wet Locations
Dust-Ignitionproof



ENR single gang dead end assembly



ENR single gang dead end assembly with spring door open



ENR two gang dead end assembly



ENR two gang dead end assembly with one spring door open

Receptacle Rating	Description	Hub Size	Single Gang Receptacle Assembly Cat. # ‡	Two Gang Receptacle Assembly Cat. # ‡	Receptacle Unit Only Cat. #	EEMAC Config.	Plug Cat. #	EEMAC Config.
15 amp, 125 volt	Dead End	½	ENR11151	ENR12151	ENR5151	5-15R	ENP5151	5-15P
		¾	ENR21151	ENR22151				
		1	ENR31151	ENR32151				
	Through Feed	½	ENRC11151	ENRC12151				
		¾	ENRC21151	ENRC22151				
		1	ENRC31151	ENRC32151				
15 amp, 250 volt	Dead End	½	ENR11152	ENR12152	ENR6152	6-15A	ENP6152	6-15P
		¾	ENR21152	ENR22152				
		1	ENR31152	ENR32152				
	Through Feed	½	ENRC11152	ENRC12152				
		¾	ENRC21152	ENRC22152				
		1	ENRC31152	ENRC32152				
20 amp, 125 volt	Dead End	½	ENR11201	ENR12201	ENR5201	5-20R	ENP5201	5-20P
		¾	ENR21201	ENR22201				
		1	ENR31201	ENR32201				
	Through Feed	½	ENRC11201	ENRC12201				
		¾	ENRC21201	ENRC22201				
		1	ENRC31201	ENRC32201				
20 amp, 250 volt	Dead End	½	ENR11202	ENR12202	ENR6202	6-20R	ENP6202	6-20P
		¾	ENR21202	ENR22202				
		1	ENR31202	ENR32202				
	Through Feed	½	ENRC11202	ENRC12202				
		¾	ENRC21202	ENRC22202				
		1	ENRC31202	ENRC32202				

* Single gang receptacle units can be modified for Class 1, Group B usage. Add suffix B to the Cat. No. Example: ENRB11201. Seals must be installed immediately adjacent to each conduit opening.

‡ 15A With Copper-free aluminum EDS, EDSC back boxes. 20A with *Feraloy*® iron alloy EDS, EDSC back boxes

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2P GFS Ground Fault Circuit Interrupter

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA/EFC 7CD,9EFG,12

Explosionproof
Dust-Ignitionproof

Application:

GFS ground fault circuit interrupters are used:

- with portable electrical equipment such as tools, lighting systems, compressors and similar devices for personnel protection
- in areas made hazardous by the presence of flammable vapors, gases or combustible dusts
- in branch circuits of 15 to 20 amperes at 125 volts AC
- in conjunction with ENR or CPS152 receptacles

Features:

- Factory sealed chamber encloses the ground fault circuit interrupter (GFCI) and its potentially arcing components in an enclosure with explosion-proof ground joints. No additional sealing is required when proper body is used.
- GFCI protects personnel against possible injury due to unwanted ground faults; meets requirements for personnel protection as defined in the *National Electrical Code*®.
- GFCI is feed-through type to serve several receptacles.
- Decentralized GFCI protection on branch circuits permits immediate identification of circuit where a ground fault is occurring; does not interrupt power on total branch circuit if tripped or when periodically tested; significantly reduces incidence of nuisance tripping; provides for use of 125 VAC portable lighting even when working on metal floors or catwalks.
- Field installation is accomplished with standard tools.
- Can be installed on any Cooper Crouse-Hinds single or multiple gang EDS or EDSC device box.

Standard Materials:

- Cover – sand cast copper-free aluminum
- Sealing well – die cast copper-free aluminum
- Pushbuttons and guards – stainless steel
- Shaft seals – neoprene
- Interior – body – polycarbonate; contacts – brass

Standard Finishes:

- Copper-free aluminum – aluminum lacquer
- Stainless steel – natural
- Polycarbonate – natural (ivory)
- Brass – natural

Electrical Rating Ranges:

- 20 amperes
- 125 VAC
- 5 milliampere trip setting
- Class A per ANSI/UL943

Certifications and Compliances:

- NEC/CEC:
  Class I, Division 1 and 2, Groups C,D
  Class II, Division 1, Groups E,F,G
  Class II, Division 2, Groups F,G
  Class III
- ANSI/UL Standard: 943, 1203
- NEMA/EEMAC 7CD, 9EFG, 12
- CSA Standard C22.2 No. 30, 144



Ordering Information

Amps	Description	Cat. #
20	Factory-sealed ground fault circuit interrupter – 5 milliampere trip	GFS-1

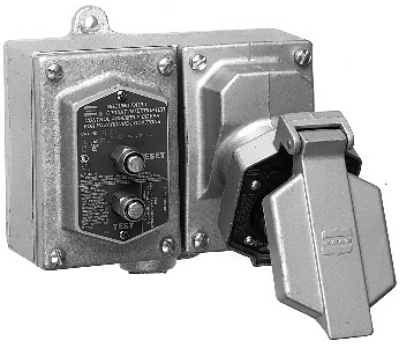
Application Recommendations:

GFS-1 can be installed in an EDS back box (pg. 397) for point-of-use protection or for protection of downstream receptacles.



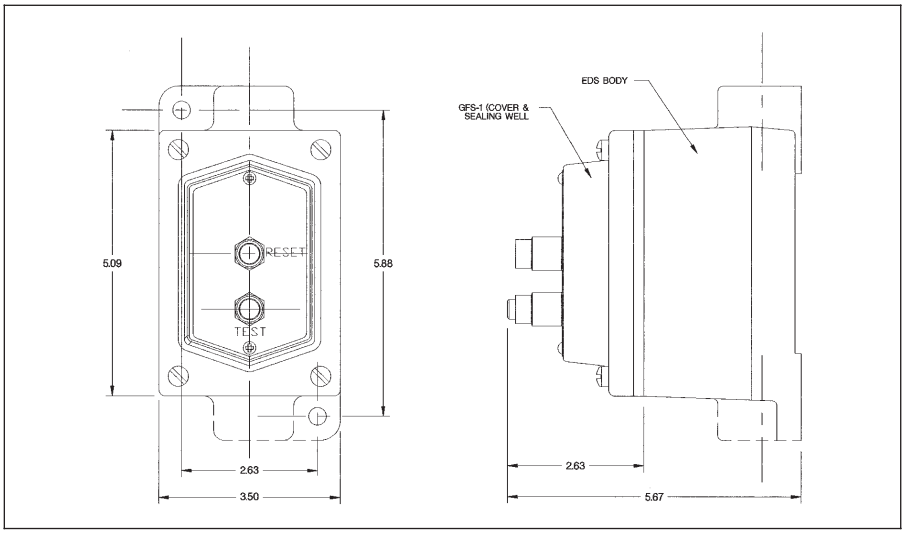
GFS-1 with EDS271 back box

GFS-1 can be used with ENR or CPS receptacles and EDS back box for circuit interrupter protection of portable equipment.



GFS-1 with EDS172 back box and ENR5201 receptacle

Dimensions



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CES and CESD Arktite Receptacles

Delayed Action Circuit Breaking CPH Plugs

CESD – Cl. I, Div. 1 & 2, Group D*
CES – Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed

Application:

CES and CESD receptacles with CPH plugs are used:
- with portable electrically operated devices such as motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in locations which are hazardous due to the presence of flammable vapors or gases
- in damp or corrosive locations
- at petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist

Features:

- CES and CESD receptacles are equipped with a delayed action rotating sleeve which prevents complete withdrawal of the CPH plug in one continuous movement
- The delayed action feature permits the plug to be used as an emergency push-pull switch
- Details of operation are illustrated and described below:



Fig. 1



Fig. 2

Figure 1 above shows a CES receptacle assembly with CPH plug fully engaged.
Figure 2 shows the plug withdrawn until it is stopped by the delayed action sleeve. In this position the circuit has been broken and the arc has been snuffed in the contact chambers.
Figure 3 shows the delayed action receptacle sleeve rotated approximately 45° to allow withdrawal of plug from receptacle.



Fig. 3



Fig. 4

Figure 4 shows the plug completely withdrawn. To accomplish this, the delayed action sleeve must be rotated counterclockwise. The time required to actuate the mechanism permits dissipation of the arc-generated heat before contacts and arcing chambers are opened to the atmosphere.
When inserting the plug, the reverse procedure is followed.
- Receptacles are factory sealed to simplify installation and wiring. External seals are not required
- The 30 ampere receptacles are provided with pressure terminals for field connection. The 60 ampere receptacles have flexible leads. Plugs are equipped with solder terminals.
- Two arrangements are provided for the ¾″ and 1¼″ conduit hubs, as shown in the listings and dimensions on page 1012.

Grounding:

- NEC article 501 and CEC Part 1 Section 18 require that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord.
- CES and CESD receptacles and CPH plugs are provided with an extra grounding pole for attachment of the grounding wire. In the plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the ground pole. In the receptacles, grounding is accomplished through the conduit system.

Interchangeability of Plugs with Non-Hazardous Location Receptacles:

- CPH plugs can also be used with standard AR and NR receptacles of the same ampere rating, style and number of poles, thus permitting portable devices which are suitable for use in hazardous locatioins to be connected to receptacles in both hazardous and non-hazardous areas
- Portable devices for non-hazardous areas equipped with APJ and NPJ *Arktite* plugs *cannot* be used with CES and CESD receptacles

Standard Materials:

- Back boxes – *Feraloy*® iron alloy
- Receptacle housings – 30 ampere – copper-free aluminum; 60 ampere – *Feraloy*® iron alloy
- Plug bodies – copper-free aluminum
- Insulation – *Krydon*® fiberglass – reinforced polyester
- Contacts – brass or hard-drawn copper

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- *Krydon* material – red
- Brass and copper – natural

Electrical Rating Ranges:

- 30 and 60 amperes

Certifications and Compliances:

- NEC/CEC:
  CES – Class I, Division 1 and 2, Groups C,D;
  CESD – Class I, Division 1 and 2, Group D*
- ANSI/UL Standard: 1010
- CSA Standard C22.2 No. 182.1

* For U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

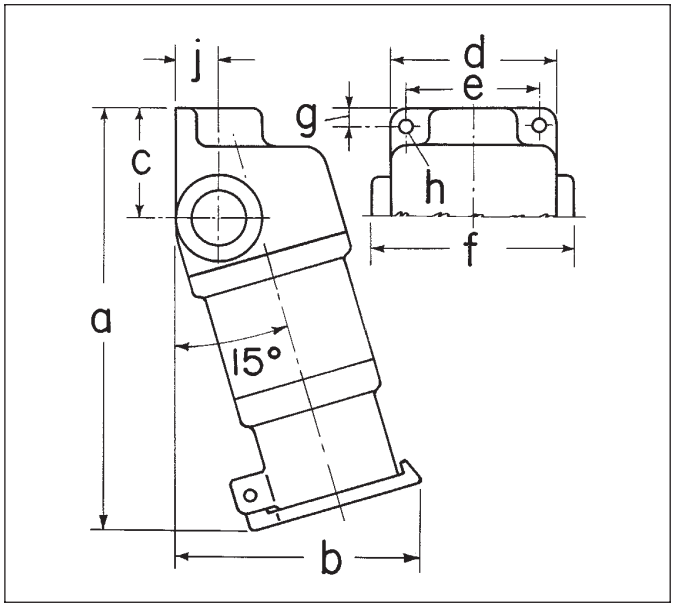
Description	Suffix to be Added to Cat. #
Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows: Receptacle interior rotated 22½ degrees clockwise when viewed from face and plug changed to match	S4

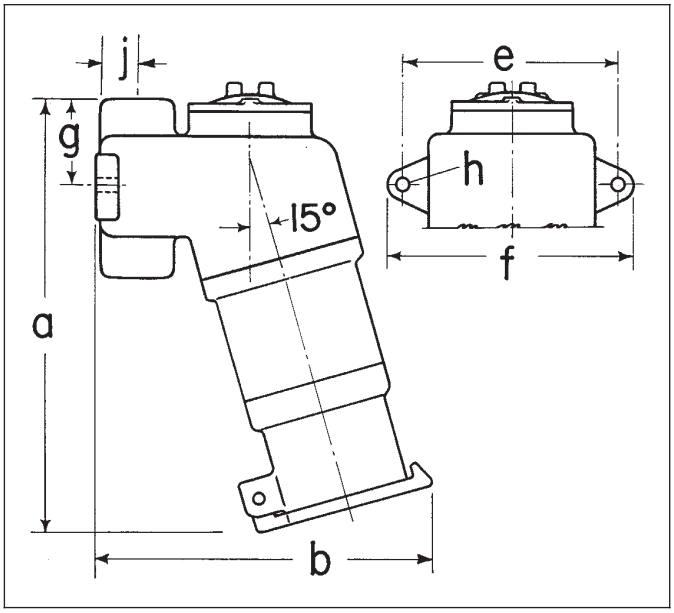
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CES and CESD Arktite Receptacles

Circuit Breaking
Delayed Action, CPH Plugs
Dimensions

CESD – Cl. I, Div. 1 and 2, Group D*
CES – Cl. I, Div. 1 and 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed



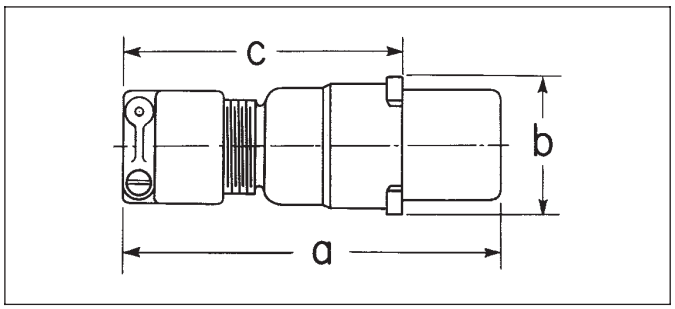


CES

Cat. #	a	b	c	d	e	f	g	h	j
CES2213									
CES2214	7 7/16	4 5/8	2 3/16	3 3/8	2 3/4	4 1/8	5/16	11/32	7/8
CES4233									
CES4234	12	7	2 7/8	5 1/4	4 3/8	6 1/8	7/16	13/32	1 1/8

CESD

Cat. #	a	b	e	f	g	h	j
CESD2213							
CESD2214	7 5/8	6 3/8	4 1/4	5	1 7/8	11/32	13/16
CESD4233							
CESD4234	13 1/2	9 5/8	6 1/4	7 1/4	3	13/32	1 3/16



CPH

Cat. #	a	b	c
CPH7713	6	2 3/8	4 5/16
CPH7913	6 7/16	2 3/8	4 3/4
CPH7714	6	2 3/8	4 5/16
CPH7914	6 7/16	2 3/8	4 3/4
CPH7733	7 3/4	2 3/4	5
CPH7933	8 1/8	2 3/4	5 3/8
CPH7734	7 3/4	3 1/16	5
CPH7934	8 1/8	3 1/16	5 3/8

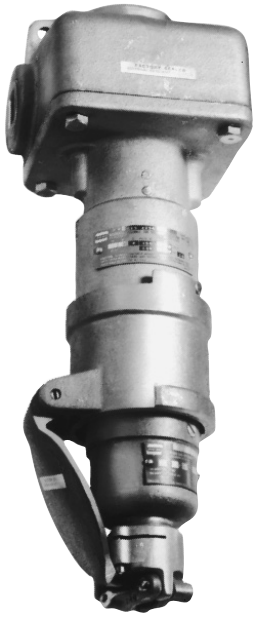
* In U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.

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CES and CESD Arktite® Receptacles

Delayed Action
Circuit Breaking
CPH Plugs

CESD – Cl. I, Div. 1 & 2, Group D*
CES – Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed



CES Receptacles with three hubs – one on each side and one at top – and two pipe plugs with CPH plug fully engaged



CESD Receptacles with vertical through feed hubs and one pipe plug. Removable threaded cover at top to facilitate pulling wires

CES/CESD Receptacles

Hub Size	Circuit	Phase	Max. HP	Max. Amps	Volts at 60 Cycles AC	CES Cat. #	CESD Cat. #
¾	2-wire, 3-pole	1	½	7	480①		
			1½	30	120 to 240	CES2213	CESD2213
¾	3-wire, 4-pole	3	1	7	480①		
			3	30	120 to 240	CES2214	CESD2214
1¼	2-wire, 3-pole	1	3	30	480①		
				60	120 to 240	CES4233	CESD4233
1¼	3-wire, 4-pole	3	5	30	480①		
				60	120 to 240	CES4234	CESD4234



CPH Plugs with mechanical cable grip and Neoprene bushing

CPH Plugs

Circuit	Phases	Max. HP	Max. Amps	Volts at 60 Cycles AC
2-wire, 3-pole	1	½	7	480①
		1½	30	120 to 240
3-wire, 4-pole	3	1	7	480①
		3	30	120 to 240
2-wire, 3-pole	1	3	30	480①
			60	120 to 240
3-wire, 4-pole	3	5	30	480①
			60	120 to 240

CABLE DIA.

.375 to .875	.500 to .875	.875 to 1.375
CPH7713		CPH7913
CPH7714		CPH7914
	CPH7733	CPH7933
	CPH7734	CPH7934

* In U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.
① CSA certified units are rated at 600 volts.

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Notes Page

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Description	Page No.
Application/Selection	1016, 1017
Interlocked Receptacle with –	
Disconnect Switch	
WSR 30, 60, 100A Aluminum	1018, 1019
WSRD 30, 60, 100A Sheet Metal	1018, 1019
WSRDW 30, 60, 100A Viewing Window	1018, 1019
WSRD SM S901 Stainless Steel	1020-1022
DSR 30, 60, 100A Aluminum	1036
Arktite Welder Series Interlocked Power Module	1027
Rotary Switch	
CSR 30 & 60A Non-metallic NEMA 4X	1024-1026
SRG/SP 30, 60 & 100A	1028, 1029
WSQC 30 & 60A Aluminum	1037
Circuit Breaker	
DBR 30, 60 & 100A Aluminum	1030, 1031
Watertight Krydon® NEMAX 4X	
NSR 30, 60 & 100A Switch	1032, 1033
NBR 30, 60 & 100A Breaker	1034, 1035

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Industrial Heavy Duty Interlocked Application and Selection

Application:

- Where extra protection is a requirement. Interlocked units provide dead front receptacles; connection cannot be made or broken when unit is under load
- In areas where dirt, moisture, and corrosion are a problem; to supply power for portable electrical equipment and provide safe disconnect means and short circuit protection

Considerations for Selection:

Environmental:
- The environment of the enclosure location in terms of NEMA/EEMAC type required
- Material and construction to withstand rough usage and corrosive atmospheric conditions

Electrical:
- Sufficient current carrying capacity to meet load requirements
- Compatibility with electrical system (new or existing installations)
- Interchangeability of plugs with hazardous and non-hazardous area receptacles

Function:
- Switch vs. circuit breaker

See ''Quick Selector Chart'' below and ''Interchangeability Chart'' on page 1017 for guidance.

Options:

Special polarity and conduit arrangements are available to meet specific needs. See individual listing pages for details.

Quick Selector Chart

Series	Receptacle Interlocked With	NEMA/EEMAC Rating	Mating Plug	Electrical Characteristics	
CSR	Disconnect switch	3,4X,12	APJ/NPJ	Circuit breaker: 30, 60 amp 600VAC Fusible or non-fusible	Receptacle: 30, 60 amp 600VAC 3-wire, 4-pole
DBR	Circuit breaker	3,9F,G,12 NEC: Cl. II, Division 1 and 2, Groups F,G Cl. III CEC: Cl. II, Division 1 and 2, Group G Cl. III	APJ/NPJ	Circuit breaker: 100 amp. frame size 250VDC/600VAC	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
DSR	Disconnect switch	3,12	APJ	Switch: 60 and 100 amp 250VDC/600VAC 3-pole Fusible or non-fusible	Receptacle: 60 and 100 amp. 250VDC/600VAC 3-wire, 4-pole
NBR	Circuit breaker	3,12	APJ/NPJ	Circuit breaker: 100 amp. frame size 250VDC/600VAC 3-pole	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
NSR	Disconnect switch	3,12	APJ/NPJ	Switch: 30, 60, 100 amp. 250VDC/240VAC 600VAC 3-pole Fusible or non-fusible	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
SRG	Rotary switch		SP	Switch: 30, 60, 100 amp. 480VAC	Receptacle: 30, 60, 100 amp. 480VAC 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole
WSR	Disconnect switch	3,4,12	APJ/NPJ	Switch: 30, 60, 100 amp. 250VDC/240VAC 600VAC 3-pole Fusible or non-fusible	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
WSRD	Disconnect switch	12	APJ/NPJ	Switch: 60 amp. 250VDC/240VAC 600VAC 3-pole Fusible or non-fusible	Receptacle: 60 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole

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Industrial Heavy Duty Interlocked Interchangeability Chart

Interchangeability Chart

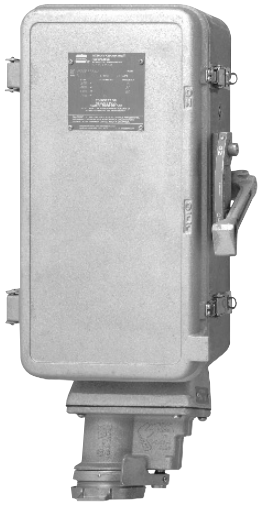
Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same.** The following table is a summary of possible combinations.

Plugs Shown in Section 3P	Can be Used with these Receptacle Series	Listed in Section	Plug & Receptacle Electrical Rating
AP	AR	1P	200 and 400 amp. 3-wire, 4-pole
APJ/NPJ	AR DR DBR, EBBR FSQ, EPC, EPCB	1P 2P 4P 4P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
SP	BHR	4P	30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole

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WSR, WSRD, WSRDW Interlocked Arktite® Receptacles with Enclosed Disconnect Switches

30,60,100A
NEMA 3,3R,4,4X,12
Raintight
Watertight
Corrosion-Resistant



WSR
Aluminum
NEMA 3R,12



WSRD
Sheet Metal
NEMA 3R,12



WSRDW
Sheet Metal
Viewing Window
NEMA 3R,12

Application:

- The WSR and WSRD disconnect switches are used as a service outlet for portable or fixed electrical equipment – generators, compressors, welders, etc.
- They are designed for use in non-hazardous areas where dust, moisture and corrosion may be a problem.
- Designed for flush or surface mounting.
- A fusible type switch, when used, also provides short circuit protection.

Features:

WSR and WSRD:
- Switches are NEMA type HD heavy duty **3-pole**, with visible blades; a quick make-and-break mechanism with reinforced, positive pressure type blade and jaw construction. Fusible types have fuse clips with steel reinforcing springs of positive pressure type. Pressure connectors are used for wire connectors.
- For maximum safety, the spring door receptacle at the bottom of the unit is mechanically interlocked with the switch operating mechanism. The switch *cannot be closed* until the plug is fully inserted and the plug *cannot be withdrawn or inserted* unless the switch is open. With the switch open, *accidental plug withdrawal is prevented* by the interlock mechanism. Withdrawal can only be accomplished by activation of the interlock release lever located on the receptacle.
- Enclosures are compact and rectangular in shape with a gasketed, hinged door.
- Enclosure, handle and other exterior parts are corrosion resistant.
- The switch enclosure covers are interlocked with the body and operating mechanism and cannot be opened when the plug is engaged and the switch is closed (''ON''). When the switch *is open*, the switch *cannot be* put in a closed (''ON'') position with the door open.

WSR:
- Mounting lugs may be rotated 90° or moved to the vertical centerline portion for pole mounting.
- Side hinged covers are retained in a closed position by compression spring draw-pull catches, which permit the opening or closing of the cover without tools.
- The switch operating handle may be padlocked in the ''ON'' or ''OFF'' position, thereby preventing unauthorized operation of the switch and/or opening of the enclosure. Up to three padlocks may be used. In addition, a unique hinge arrangement has been devised to allow the door of the unit to be padlocked. This feature allows operation while preventing unqualified or unauthorized entry.

Standard Materials:

WSR and WSRD:
- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation (plug and receptacle) – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

WSR:
- Enclosure – copper-free aluminum
- Operating handle – copper-free aluminum
- Other exterior parts – stainless steel

WSRD:
- Enclosure – sheet steel
- Operating handle – sheet steel
- Other exterior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – WSR enclosure, plug exteriors – natural
- Leaded red brass – electro-tin-plate
- Brass – natural
- Sheet steel – baked grey enamel
- Fiberglass-reinforced polyester – natural (red)

Electrical Rating Ranges:

- 3 and 4 pole; fusible or non-fusible; 240 vac, 250 vdc; 600 vac
- 30, 60, 100 amperes
- 7½ to 75 HP

Certifications and Compliances:

WSR:
- NEMA 3R, 4, 12 (enclosure)
- UL Standard 98

WSRD:
- NEMA 3R, 12
- UL Standard 98

Options:

- Interiors rotated 22½° to the right (viewed from face) – add suffix S4 to Cat. No.
- Auxiliary switch, 600 vac-dc heavy duty push button station rating, can be supplied, and its contacts will close after safety switch contacts open and close before safety switch opens S483

♦ ♦ Pressure connectors are supplied as standard. To specify crimp/solder type terminations, add the suffix ''T'' to the catalog number. For example: APJ3375-T (Plug)

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WSR, WSRD, WSRDW Interlocked Arktite® Receptacles with Enclosed Disconnect Switches

APJ/NPJ Plugs

30,60,100A
NEMA 3,3R,4,4X,12
Raintight
Watertight
Corrosion-Resistant

3P



System	Amps	Conduit Opening Sizes§	WSR 240VAC 600VAC 250VDC Cat. #	Max. HP Rating 240VAC	Max. HP Rating 480VAC	Max. HP Rating 600VAC	WSRD‡② For viewing window see note 2 600VAC 250VDC Cat. #	Max.① HP Rating 480VAC	Max.① HP Rating 600VAC
3-Wire, 3-Pole Style 1, Fusible	30	1	WSR3351*	7½	15	20	WSRD3351*	15	20
	60	1¼	WSR6351*	15	30	50	WSRD6351*	30	50
	100	1½	WSR10351*	30	60	75	WSRD10351*	60	75
3-Wire, 4-Pole Style 2, Fusible	30	1	WSR3352*	7½	15	20	WSRD3352*✓	15	20
	60	1¼	WSR6352*✓	15	30	50	WSRD6352*✓	30	50
	100	1½	WSR10352*	30	60	75	WSRD10352*✓	60	75
3-Wire, 3-Pole Style 1, Non-Fusible	30	1	WSR33541	7½	15	20	WSRD33541	15	20
	60	1¼	WSR63541	15	30	50	WSRD63541✓	30	50
	100	1½	WSR103541	30	60	75	WSRD103541	60	75
3-Wire, 4-Pole Style 2, Non-Fusible	30	1	WSR33542	7½	15	20	WSRD33542	15	20
	60	1¼	WSR63542✓	15	30	50	WSRD63542✓	30	50
	100	1½	WSR103542	30	60	75	WSRD103542	60	75

APJ/NPJ Plugs

Amps	Max. Volts	Outside Dia. of Cable, Flexible Conduit or Armored Cable	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
30	250 DC 600 AC	0.60 to 1.20 0.55 to .070 0.70 to 0.85	APJ3375	APJ3485✓ NPJ3483✓ NPJ3484✓
60	250 DC 600 AC	0.75 to 1.45 0.75 to 1.07 1.07 to 1.35	APJ6375✓	APJ6485✓ NPJ6484✓ NPJ6485✓
100	250 DC 600 AC	1.00 to 1.70 0.93 to 1.21 1.21 to 1.50	APJ10377	APJ10487✓ NPJ10486✓ NPJ10487✓

* Arranged for NEC Class H fuses. May be field converted to NEC Class J fuses.

§ Furnished with reducer which may be removed to obtain one size larger opeing. Locknut and bushing used must meet NEC requirements. (WSR only).

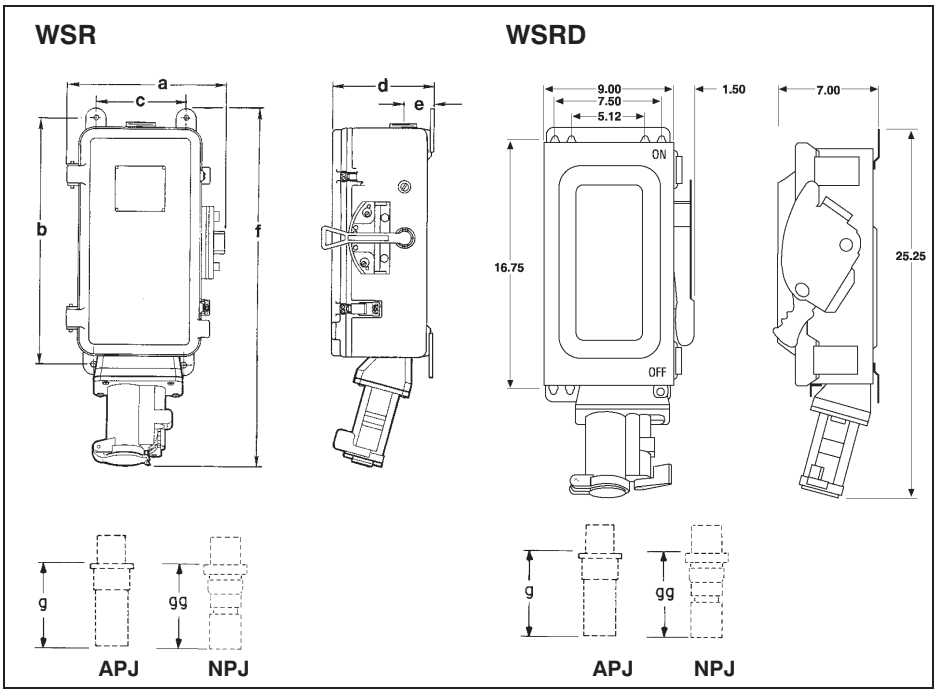
† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 966.

‡ Conduit entrances not furnished.

① Ratings of unfused and fusible switches with time delay fuses.

② Viewing window – add ''W'' to prefix, i.e.: WSRDW6352.

Dimensions



WSR Amps.	30	60	100
a	11¾	11¾	14⅞
b	20 1/16	20 1/16	26 5/16
c	6 9/16	6 9/16	9 9/16
d	7¼	7¼	8¼
e	2 15/32	2 15/32	2⅞
f	27 11/16	28 11/16	35⅜
g	4¾	5¼	7¼
gg	7	6 13/16	7¾
Mtg. Holes	⅜	⅜	7/16

WSRD 60 Amps.	
g	5 13/16
gg	6 13/16
Mtg. Holes	5/16

Dim. ''g'' and ''gg'' are exposed portion of plug when engaged with receptacle.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

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Arktite® WSRD SMS901 Stainless Steel Interlocked Receptacles

NEW!

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant

WSRD SMS901 SERIES STAINLESS STEEL ARKTITE® INTERLOCKED RECEPTACLES

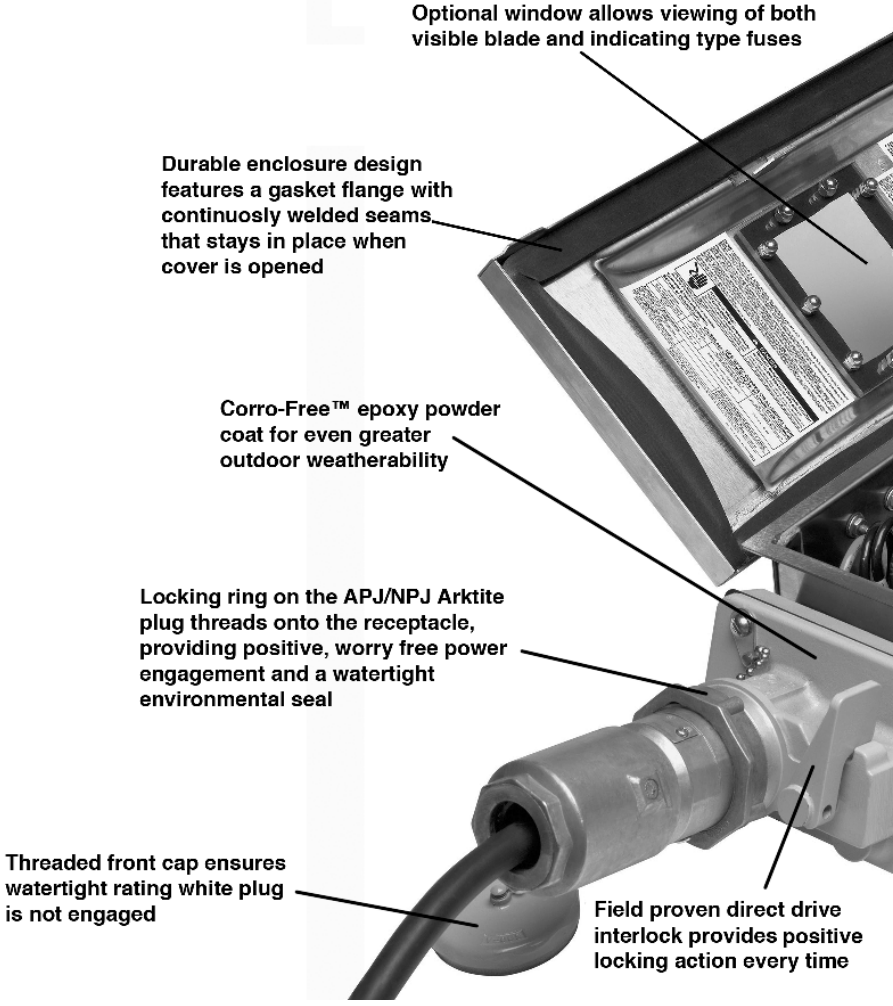
Cooper Crouse-Hinds Arktite Stainless Steel Interlocks prevent engagement and disengagement of the plug under load, providing safe portable connections and extended product life.

Available in 30-100 Amp in both fused and nonfused versions, the Stainless Steel Interlock is rated Enclosure Type 4X watertight and features an optional viewing window.

Arktite stainless steel interlocked receptacles:

- **supply power to portable or fixed electrical equipment such as welders, compressors, conveyors, portable tools, lighting systems and similar equipment.**
- **are used in damp or corrosive locations.**
- **are ideal for use in wet locations & hosedown areas.**





ADDITIONAL FEATURES AND BENEFITS

- Heavy duty Arktite receptacle is compatible with existing Cooper Crouse-Hinds Arktite plugs of same rating and configuration.
- Self-wiping, naval brass contacts in receptacle assure reliable performance and long dependable life
- Stainless steel interior hardware.
- Ground bar supplied as standard and connected to 4th wire in receptacle.
- UL and cUL Listed

ORDERING INFORMATION (3 Pole, 4 Wire - 600 VAC)

Amps	Catalog Number	Description	Weight lbs.	Cooper Crouse-Hinds Mating Arktite Plug Catalog Numbers
30	WSRDW3352SMS901	Fused w/Window	24	APJ3485 & NPJ3485
30	WSRD33542SMS901	Non-Fused	22	APJ3485 & NPJ3485
30	WSRDW33542SMS901	Non-Fused w/Window	22	APJ3485 & NPJ3485
60	WSRDW6352SMS901	Fused w/Window	30	APJ6485 & NPJ6485
60	WSRD63542SMS901	Non-Fused	29	APJ6485 & NPJ6485
60	WSRDW63542SMS901	Non-Fused w/Window	29	APJ6485 & NPJ6485
100	WSRDW10352SMS901	Fused w/Window	36	APJ10487 & NPJ10487
100	WSRD103542SMS901	Non-Fused	35	APJ10487 & NPJ10487
100	WSRDW103542SMS901	Non-Fused w/Window	35	APJ10487 & NPJ10487

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COOPER Crouse-Hinds

Arktite® WSRD SM S901 Stainless Steel Interlocked Receptacles

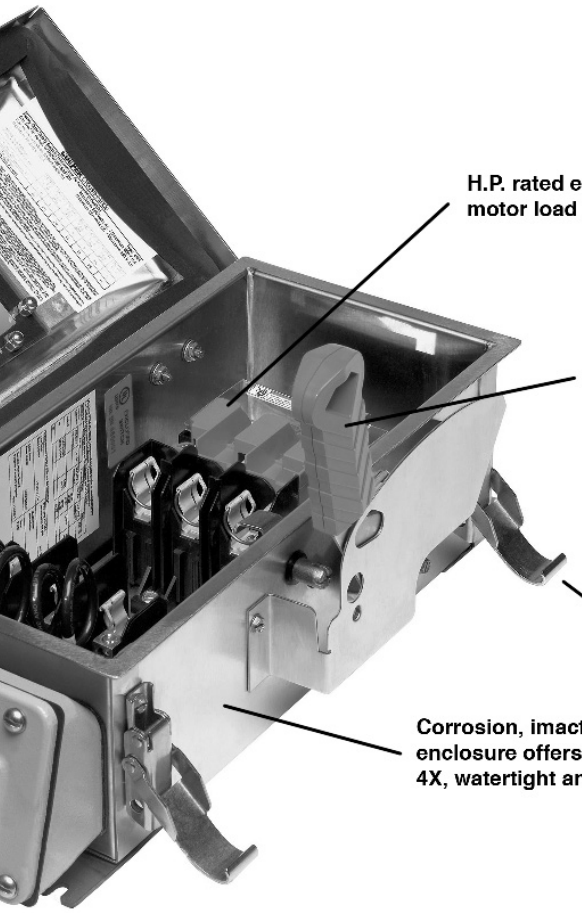
Fused and Non-Fused

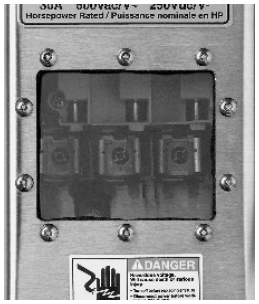
30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant

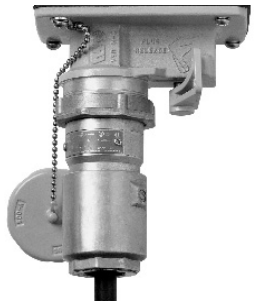
3P

NEW!





Optional window allows viewing of both visible blade and indicating type fuses.



Plug locks into receptacle, providing positive, worry-free power engagement as well as watertight protection



Complies with OSHA lockout/ tagout requirements



Heavy-duty, epoxy coated cast aluminum receptacle with stainless steel interlocking mechanism for superior durability and corrosion resistance.

CERTIFICATIONS AND COMPLIANCES

- UL Listed - (UL Standards 508, 1682)
- cUL Listed (Certified by UL to CSA Standards C22.2 Nos. 14, 182.1)
- Enclosure Type 3, 4, 4X, 12
- IP66 Enclosure

STANDARD MATERIALS

- Enclosure - Type 304 stainless steel
- Hardware - stainless steel
- Receptacle Housing - aluminum
- Power Contacts - naval brass
- Interlock Mechanism - stainless steel

STANDARD FINISHES

- Stainless Steel - natural
- Aluminum - Corro-free‡ epoxy powder
- Brass - natural

OPTIONS

Description	Suffix to be added to Cat. #
• Factory Installed Auxiliary Contacts	S483
• Rotated Interior (22 ½ degrees to right)	S4

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Arktite® WSRD SM S901 Stainless Steel Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

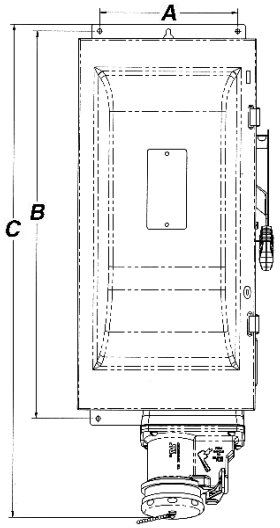
Watertight
Corrosion-Resistant

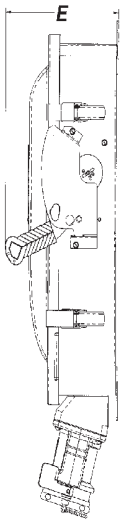
HORSEPOWER RATINGS

Cooper Crouse-Hinds Catalog Number	Amps	Fusing	240 VAC (1 PH)	240 VAC (3 PH)	480 VAC (1 PH)	480 VAC (3 PH)	600 VAC (1 PH)	600 VAC (3 PH)	250 VDC
WSRD33542SMS901	30	Non-Fused	5	10	7.5	20	10	30	5
WSRDW33542SMS901	30	Non-Fused	5	10	7.5	20	10	30	5
WSRDW3352SMS901	30	Fused	1.5 (3)	3 (7.5)	3 (7.5)	5 (15)	3 (10)	7.5 (20)	5
WSRD63542SMS901	60	Non-Fused	10	20	20	50	25	60	10
WSRDW63542SMS901	60	Non-Fused	10	20	20	50	25	60	10
WSRDW6352SMS901	60	Fused	3 (10)	7.5 (15)	5 (20)	15 (30)	10 (25)	15 (50)	10
WSRD103542SMS901	100	Non-Fused	15	40	30	75	40	100	20
WSRDW103542SMS901	100	Non-Fused	15	40	30	75	40	100	20
WSRDW10352SMS901	100	Fused	7.5 (15)	15 (30)	10 (30)	25 (60)	15 (40)	30 (75)	20

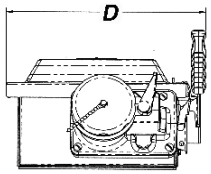
NOTE:
Values for Non-Fused units are maximum horsepower.
Values for Fused units are standard horsepower with standard fuse and (maximum horsepower with time delay).

DIMENSIONS (Inches)





Amps	A	B	C	D	E
30	5.47	16.49	23.49	9.00	8.61
60	7.99	18.49	25.49	11.52	8.61
100	8.47	24.18	31.18	12.00	8.61



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Notes Page

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Arktite® CSR Series Nonmetallic Interlocked Receptacles

NEW!

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

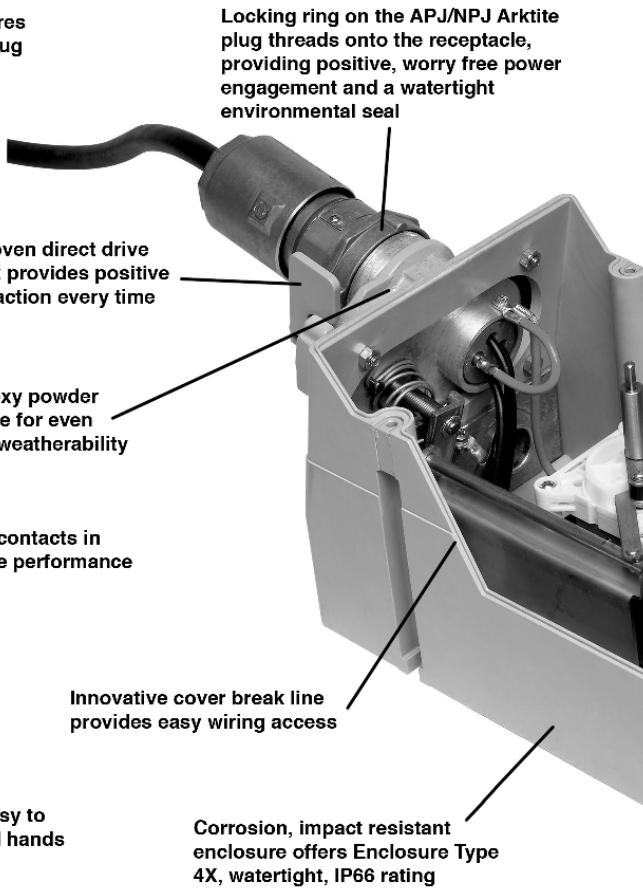
Watertight
Corrosion-Resistant

CSR SERIES COMPACT INTERLOCKED ARKTITE® RECEPTACLES

Cooper Crouse-Hinds interlocked receptacles prevent engagement and disengagement of the plug under load, providing safe portable connections and extended product life.

Arktite compact interlocked receptacles are used:

- **to supply power to portable or fixed electrical equipment such as welders, compressors, conveyors, portable tools, lighting systems and similar equipment.**
- **in damp or corrosive locations.**
- **in wet locations.**
- **in hosedown areas.**





ADDITIONAL FEATURES AND BENEFITS

- Enclosure Type 4X, Watertight, IP66.
- Compact enclosure is designed to fit into the web of an I-beam.
- Heavy duty Arktite® receptacle is compatible with existing Cooper Crouse-Hinds Arktite® plugs of same rating and configuration.
- Bussmann® CubeFuse™ with Indicator – the world's first ''finger-safe'' industrial power fuse.
- Front mounted handle permits the interlocked receptacles to be easily mounted side by side or in tight spots.
- Molded-in-place mounting feet require only four screws to mount the entire unit.
- UL and cUL Listed

ORDERING INFORMATION (600 VAC)

Amps	Configuration	Hub Size	Fusing	Catalog Number	Mating Catalog Number
30	3W, 4P	1″	Fused	CSR3352	APJ3485/NPJ3484
30	3W, 4P	1″	Non-Fused	CSR33542	APJ3485/NPJ3484
60	3W, 4P	1¼″	Fused	CSR6352	APJ6485/NPJ6484
60	3W, 4P	1¼″	Non-Fused	CSR63542	APJ6485/NPJ6484

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COOPER Crouse-Hinds

Arktite® CSR Series Nonmetallic Interlocked Receptacles

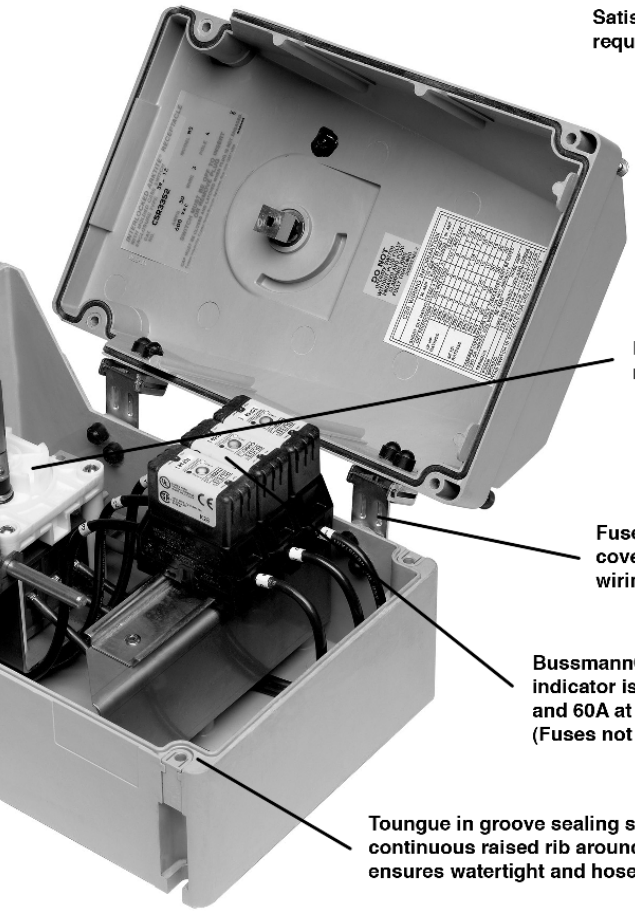
Fused and Non-Fused

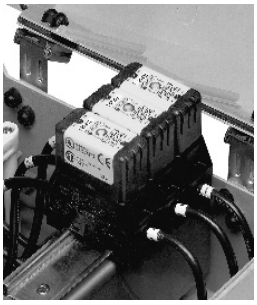
30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant

3P

NEW!





Fully rated for 30A and 60A at 600 VAC. For use with Bussmann CubeFuse. Fuses not included.



Plug locks into receptacle, providing positive, worry-free power engagement as well as watertight protection



Complies with OSHA lockout/ tagout requirements



Heavy-duty, epoxy coated cast aluminum receptacle with stainless steel interlocking mechanism for superior durability and corrosion resistance.

CERTIFICATIONS AND COMPLIANCES

- UL Listed – (UL Standards 508, 1682)
- cUL Listed (Certified by UL to CSA Standards C22.2 Nos. 14, 182.1)
- Enclosure Type 3, 4, 4X, 12
- IP66 Enclosure

STANDARD MATERIALS

- Enclosure - fiber reinforced polyester
- Hardware - stainless steel
- Receptacle Housing - aluminum
- Power Contacts - naval brass
- Interlock Mechanism - stainless steel

STANDARD FINISHES

- Aluminum - Corro-free™ epoxy powder
- Brass - natural
- Stainless Steel - natural

OPTIONS

Description	Suffix to be added to Cat. #
• Factory Installed Auxiliary Contacts	S483
• Rotated Interior (22 ½ degrees to right)	S4

HORSEPOWER RATINGS

	250 VAC	480 VAC	600 VAC
30 A	10 HP	20 HP	25 HP
60 A	20 HP	40 HP	40 HP

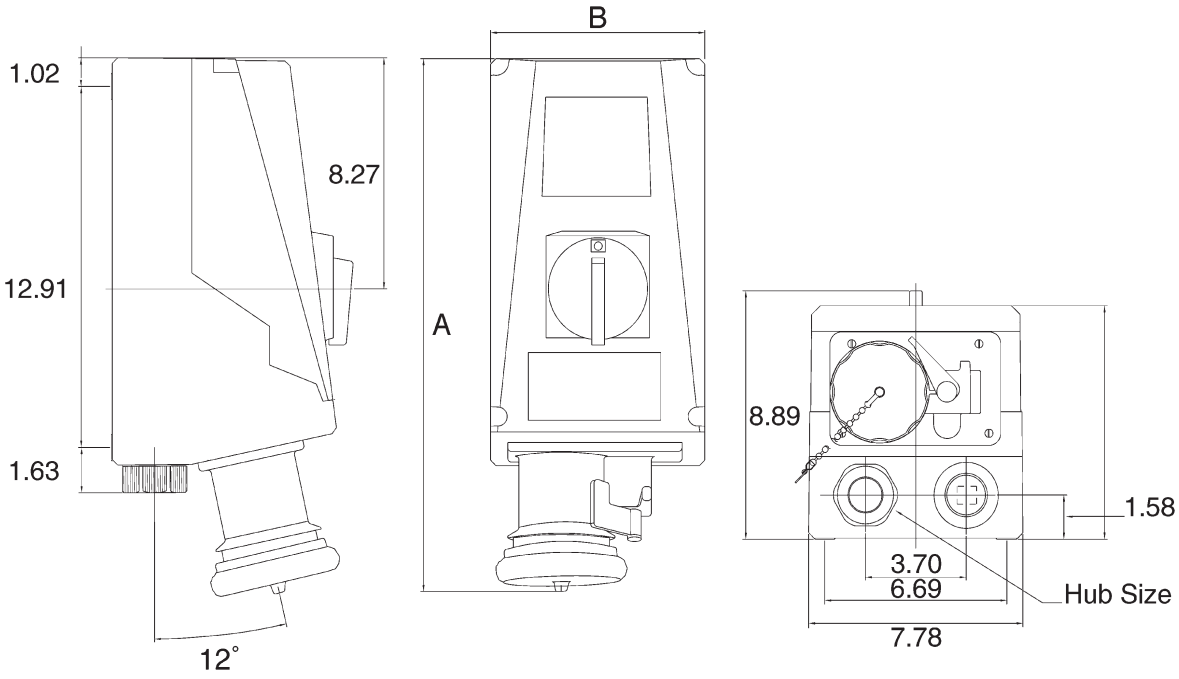
US: 1-866-764-5454 CAN: 1-800-265-0502
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Arktite® CSR Series Nonmetallic Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant



Amps	Style	Dimension A	Dimension B	Hub Size
30	Fused	18.26	8.00	1″
30	Non-Fused	18.26	7.87	1″
60	Fused	19.26	8.00	1¼″
60	Non-Fused	19.26	7.87	1¼″

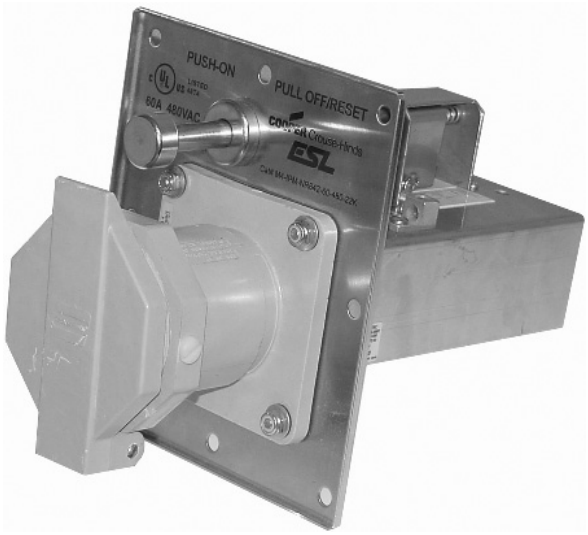
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Arktite Welder Series

Interlocked Power Modules

NEW!

Cooper Crouse-Hinds Interlocked Power Modules are ideal for the harsh, heavy duty environments of welding applications. The Welder Series Power Module is a unique patented design that employs a mechnical interlock linkage system that interfaces with the power receptacle and the built in circuit breaker. It is ideal for protecting the safety of your personnel and your valuable welding equipment.



APPLICATIONS

- Ship building yards
- Ports
- Offshore platform fabrication yards
- Test stations at remote sites
- Military heavy equipment manufacturing

FEATURES & BENEFITS

- Mechanically interlocked to prevent insertion or withdrawal of plug under load
- Circuit breaker protected
- Stainless steel and die cast construction provides durability and corrosion resistance
- Flanged design for easy panel mounting and flexibility of Power Stand design
- Arktite® receptacle accepts existing Cooper Crouse-Hinds Arktite die cast and Krydon® plugs of the same rating and configuration

CERTIFICATIONS & COMPLIANCES

- UL/cUL Listed Module
- UL 498 Listed
- CSA Certified Molded Case Circuit Breaker

STANDARD MATERIALS & FINISHES

- Frame, On/Off Rod, Interlock Mechanism, Fasteners - Stainless steel
- Receptacle Housing - Die cast aluminum or Krydon
- Power Contacts - Naval brass
- Receptacle Insulator - Krydon

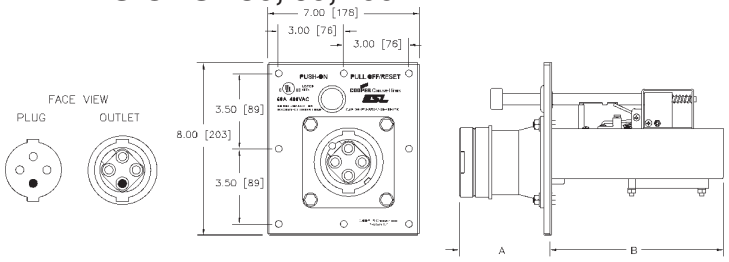
ORDERING INFORMATION

3 Wire 4 Pole 480 VAC 22K AIC Rating*

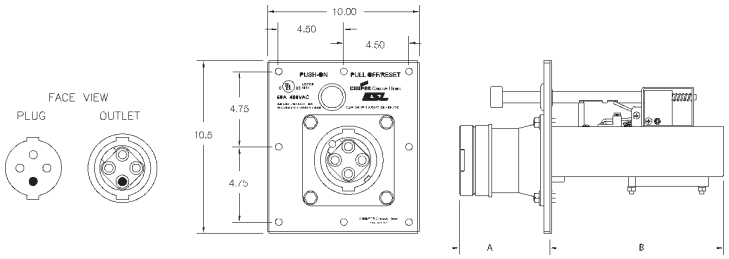
Amps	Receptacle	Catalog Number	Dimension A	Dimension B
30	Die cast	M4IPM AR342 3048022K	2.8	8.00
30 (configured)	Die cast	M4IPM ARC34P 3048022K	2.8	8.00
30	Krydon	M4IPM NR342 3048022K	3.1	8.00
60	Die cast	M4IPM AR642 6048022K	4.3	8.00
60 (configured)	Die cast	M4IPM ARC64P 6048022K	4.3	8.00
60	Krydon	M4IPM NR642 6048022K	4.5	8.00
100	Die cast	M4IPM AR1042 10048022K	5.3	8.00
100 (configured)	Die cast	M4IPM ARC104P 10048022K	5.3	8.00
100	Krydon	M4IPM NR1042 10048022K	5.6	8.00
200	Die cast	M4IPM AR2042 20048022K	7.3	10.0

65K AIC rating available, substitute 65K for 22K in catalog number

DIMENSIONS - 30, 60, 100 A



DIMENSIONS - 200 A



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SRG Dead Front Interlocked Receptacles and Switches SP Plugs

Weather Resistant

For Panel and Cabinet Mounting

Application:

SRG dead front interlocked receptacles and switches and SP plugs are used:
- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, conveyors, and similar equipment
- in areas where dust, dirt, moisture and corrosion are a problem
- mounted on sheet metal panels or cabinets and installed indoors or outdoors in non-hazardous areas of chemical plants, process industry facilities, manufacturing plants, and similar industrial locations

Features:

- The receptacle assembly contains a built-in rotary switch which is automatically operated when the plug is inserted and withdrawn. The switch, capable of making and breaking the circuit at full rated load, is operated by a helical blade in the center of the plug
- Plug and receptacle contacts cannot be made or broken under load. When the plug is inserted, the plug and receptacle contacts engage before the switch closes. When the plug is withdrawn, the switch opens before the plug and receptacle contacts disengage. This sequence of operation provides a dead front receptacle with the maximum of safety
- Operation is simple, safe and fast. In the event of difficulty with the portable device, it can be quickly and completely disconnected by a straight pull on the plug, since there are no separate interlock devices or operating handles to actuate
- There is a distinct phsyical polarization of plug and receptacle in every rating, thereby assuring positive engagement without mismating
- Receptacles are furnished with flexible leads for splicing to the circuit wires
- Although intended primarily for mounting on sheet metal panels or cabinets, a back box for conduit connection is listed for the 30 and 60 ampere units

Grounding:

- Both receptacles and plugs are provided with an extra grounding pole. In plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is also provided between plug and receptacle housings and the grounding pole.

Standard Materials:

- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation – high impact glass filled phenolic
- Contacts – brass

Standard Finishes:

- Copper-free aluminum – natural
- Phenolic – natural (black)
- Brass – silver plated

Options:

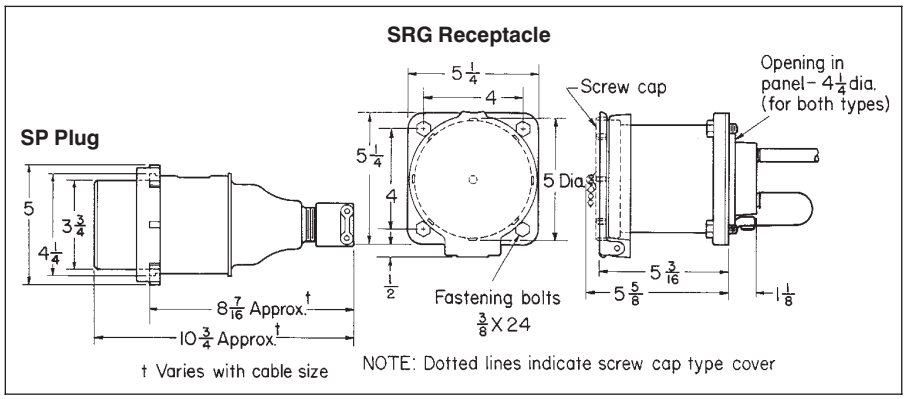
- Special polarity – where two or more receptacles of the same ampere rating and number of poles are to be installed in the same area for use on different voltages, alternate polarizations can be furnished. Detailed information on request.

Electrical Rating Ranges:

- 30, 60 and 100 amperes, 480 vac



Dimensions



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SRG Dead Front Interlocked Receptacles and Switches SP Plugs

For Panel and Cabinet Mounting

30/60/100A
480VAC
50**-400 hertz
Weather Resistant

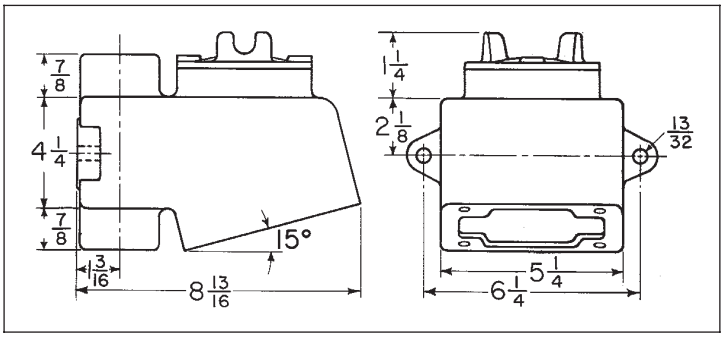





Rating	Description	Receptacle with Spring Door Cat. #	Plug with Cable Grip and Neoprene Bushing Cable Dia.	Cat. #	Receptacle with Threaded Cap Cat. #	Plug with Fastening Ring Cable Grip and Neoprene Bushing Cable Dia.	Cat. #
30 amp.	2-wire, 3-pole	SRG332N	.500 to .875	SP3363N	SRG338N	.500 to .875	SP3383N
			.875 to 1.375	SP3365N		.875 to 1.375	SP3385N
	3-wire, 4-pole	SRG342D	.500 to .875	SP3463D	SRG348D	.500 to .875	SP3483D
			.875 to 1.375	SP3465D		.875 to 1.375	SP3485D
	4-wire, 5-pole	SRG352-NW	.500 to .875	SP3563-NW	SRG358-NW	.500 to .875	SP3583-NW
			.875 to 1.375	SP3565-NW		.875 to 1.375	SP3585-NW
60 amp.	2-wire, 3-pole	SRG632N	.500 to .875	SP6363N	SRG638N	.500 to .875	SP6383N
			.875 to 1.375	SP6365N		.875 to 1.375	SP6385N
	3-wire, 4-pole	SRG642D	.500 to .875	SP6463D	SRG648D	.500 to .875	SP6483D
			.875 to 1.375	SP6465D		.875 to 1.375	SP6485D
	4-wire, 5-pole	SRG652-NW	.875 to 1.375	SP6565-NW	SRG658-NW	.875 to 1.375	SP6585-NW
			1.375 to 1.875	SP6567-NW		1.375 to 1.875	SP6587-NW
100 amp.	2-wire, 3-pole	SRG1032N	.875 to 1.375	SP10365N	SRG1038N	.875 to 1.375	SP10385N
			1.375 to 1.875	SP10367N		1.375 to 1.875	SP10387N
	3-wire, 4-pole	SRG1042D	.875 to 1.375	SP10465D	SRG1048D	.875 to 1.375	SP10485D
			1.375 to 1.875	SP10467D		1.375 to 1.875	SP10487D
	4-wire, 5-pole	SRG1052-NW	.875 to 1.375	SP10565-NW	SRG1058-NW	.875 to 1.375	SP10585-NW
			1.375 to 1.875	SP10567-NW		1.375 to 1.875	SP10587-NW

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Dimensions



Back Box

For 30 and 60 amp. SRG receptacles

Furnished with vertical through feed hubs, 1¼" size, and threaded cover at top for wiring access.

Cat. #
CESD42



Back box For 30 and 60 Amp SRG Receptacles.

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3P DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs◆◆

Cl. II, Div 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,9FG,12
Dust-Ignitionproof
Raintight

Application:

DBR interlocked *Arktite* receptacles with enclosed circuit breakers and APJ/NPJ *Arktite* plugs are used:

- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, conveyors, and similar equipment
- in locations where hazardous dusts are present, as in grain processing and handling plants, chemical plants and certain food processing industries
- indoors or outdoors in damp, wet or corrosive locations

Features:

- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection.
- Enclosures are compact and rectangular in shape permitting close spacing.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the circuit breaker operating mechanism. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open.
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the ''ON'' position.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a threaded-in bushing. The size furnished is 1½″, and removing the bushing permits the use of a 2″ conduit.

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with DBR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with DBR receptacles, as well as with DR receptacles listed in Section 2P and with EBBR, EPC and EPCB receptacles listed in Section 4P.
- As a result, portable equipment suitable for the locations and equipped with the proper plug can be used with AR receptacles for non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I hazardous locations, and with DR and DBR interlocked receptacles for Class II hazardous locations.

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation: plugs and receptacles – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – plug exterior, enclosure and receptacle housing – natural
- Stainless steel – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

The following special options are available by adding suffix to Cat. No.

Description	Suffix to be Added to Cat. #
Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:	
● Receptacle interior rotated 22½ degrees clockwise when viewed from receptacle face and plug changed to match	S4
Breather (drain furnished as standard)	S219
Conduit arrangements other than standard can be supplied . Details on request	

Certifications and Compliances:

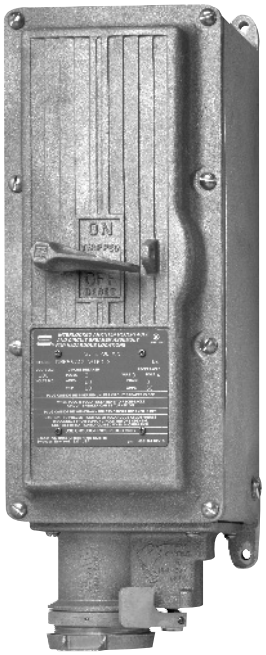
- NEC: Class II, Division 1 and 2, Groups F,G Class III
- NEMA/EFC: 3,9FG,12
- UL Standard: 698, 1010
- CEC: Class II, Division 1 and 2, Group G Class III
- Encl.: 3,5

Electrical Rating Ranges:

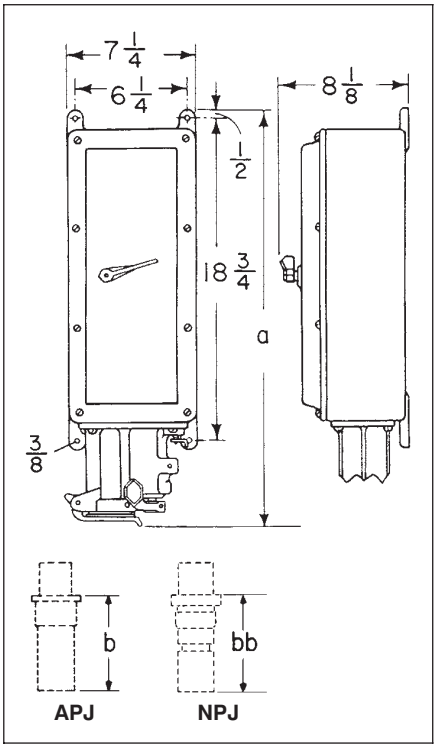
- Receptacle ratings: 30, 60 and 100 amperes
- Circuit breakers – 100 ampere frame size

Amps	a	b	bb
30	21¾	4 13/16	7
60	22¾	5 13/16	6 13/16
100	23½	6⅝	7¾

Dim. ''b'' and ''bb'' are exposed portion of plug when engaged with receptacle.



Dimensions



◆◆ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole, 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix ''T'' to the catalog number. For example: AP3375-T (Plug)

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DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

Cl. II, Div 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,9FG,12
Dust-Ignitionproof
Raintight

100 Ampere Frame Size with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Receptacle With Spring Door Housing†	Circuit Breaker Rating	Enclosure Hub Size	Enclosure Ckt. Bkr. Amps	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. # Westinghouse "FDB"
30 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	20	DBR53731	DBR53731-WT20-3
			30		DBR53731-WT30-3
			40		DBR53731-WT40-3*
			50		DBR53731-WT50-3*
30 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	20	DBR53732	DBR53732-WT20-2
			30		DBR53732-WT30-2
			40		DBR53732-WT40-2*
			50		DBR53732-WT50-2*
30 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	20	DBR53742	DBR53742-WT20-3
			30		DBR53742-WT30-3
			40		DBR53742-WT40-3*
			50		DBR53742-WT50-3*
60 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	50	DBR56731	DBR56731-WT50-3
			60		DBR56731-WT60-3
			70		DBR56731-WT70-3*
			90		DBR56731-WT90-3*
			100		DBR56731-WT100-3*
60 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	50	DBR56732	DBR56732-WT50-2
			60		DBR56732-WT60-2
			70		DBR56732-WT70-2*
			90		DBR56732-WT90-2*
			100		DBR56732-WT100-2*
60 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	50	DBR56742	DBR56742-WT50-3
			60		DBR56742-WT60-3
			70		DBR56742-WT70-3*
			90		DBR56742-WT90-3*
			100		DBR56742-WT100-3*
100 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	60	DBR51731	DBR51731-WT60-3
			70		DBR51731-WT70-3
			90		DBR51731-WT90-3
			100		DBR51731-WT100-3
100 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	60	DBR51732	DBR51732-WT60-2
			70		DBR51732-WT70-2
			90		DBR51732-WT90-2
			100		DBR51732-WT100-2
100 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	60	DBR51742	DBR51742-WT60-3
			70		DBR51742-WT70-3
			90		DBR51742-WT90-3
			100		DBR51742-WT100-3

* Circuit breaker trip rating may exceed receptacled rating for welding equipment applications only, as higher trip rating may not protect wiring.

♦ ♦ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example: APJ3375-T (Plug)

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

‡ For circuit breaker Cat. No. refer to Section 6C, Table 9, List FDB. For detailed information on circuit breaker selection, see Section 6C.

APJ/NPJ Arktite Plugs ♦ ♦

600VAC/250VDC with Cable Grip and Neoprene Bushing



APJ Plug



NPJ Plug

Amps	Cable O.D. Range	Style 1† 3-wire, 3-pole Cat. #	Style 2† 2-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
	0.60 to 1.20	APJ3375	APJ3385	APJ3485
30	0.55 to 0.70		NPJ3383	NPJ3483
	0.70 to 0.85		NPJ3384	NPJ3484
	0.75 to 1.45	APJ6375	APJ6385	APJ6485
60	0.75 to 1.07		NPJ6384	NPJ6484
	1.07 to 1.35		NPJ6385	NPJ6485
	1.00 to 1.70	APJ10377	APJ10387	APJ10487
100	0.93 to 1.21		NPJ10386	NPJ10486
	1.21 to 1.50		NPJ10387	NPJ10487

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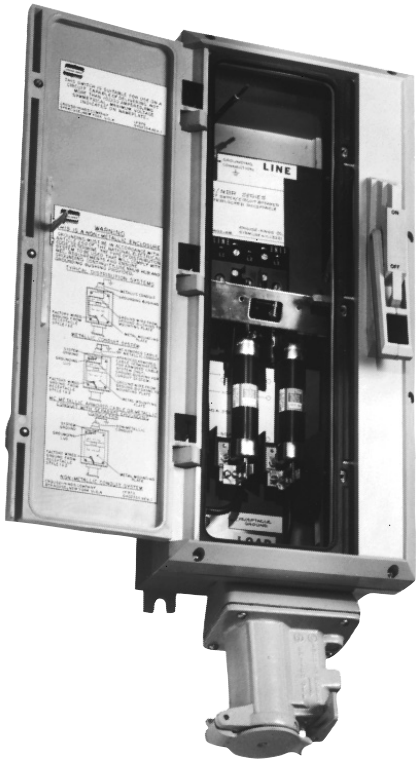
3P NSR Arktite® Interlocked Receptacles With Enclosed Disconnect Switches

NEMA 3,3R,4*,4X*,12
Watertight
Corrosion-Resistant

APJ/NPJ Arktite Plugs

Application:

NSR *Arktite* interlocked receptacles with enclosed disconnect switches are used:
- to provide a power disconnect for fixed or portable electrical equipment such as welders, generators and compressors where the switch will be subject to frequent operation
- to provide short circuit protection when a fusible switch is needed
- in non-hazardous indoor or outdoor areas where corrosion, dust, hosedown and moisture may be a problem such as in offshore and marine locations, pulp and paper mills, chemical plants, sewage treatment plants and food processing facilities





Features:

- Enclosures are made of *Krydon*® high-impact strength fiberglass-reinforced polyester material having excellent resistance to corrosion and heat
- Switches are NEMA type HD heavy duty 3-pole, enclosed blade; a quick make-and-break mechanism with reinforced, positive pressure type blade and jaw construction. Fusible switches have fuse clips with steel reinforcing springs
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the switch operating mechanism. The switch cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the switch is open
- Switch enclosure access door is mechanically interlocked with switch and cannot be opened unless switch operator is in ''OFF'' position
- Enclosure has hinged access door for easy wiring and maintenance. Three screws, located behind access door in door frame, prevent disassembly when door is locked
- A *Krydon* material hub (not mounted) is supplied with each enclosure as follows:

Rating	Hub Size	Cat. No.
30A	¾	NHUB2
60A	1¼	NHUB4
100A	2	NHUB6

For alternate hub sizes, refer to catalog page 658.
- Receptacle has self-closing spring door assembly to provide environmental protection
- Mounting feet may be rotated 90° to horizontal or vertical mounting positions
- Switch operating handle may be padlocked in the ''OFF'' position, preventing unauthorized operation of the switch

Interchangeability of Plugs With Other Non-Hazardous and Hazardous Location Receptacles:

- Plugs listed for use with NSR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with NSR receptacles, as well as with DR receptacles listed in Section 2P, and with EBBR, EPC and EPCB receptacles listed in Section 4P
- Portable equipment, suitable for the locations and equipped with the proper plug, can be used with non-hazardous rated AR receptacles, DBR and WSR interlocked receptacles located in non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I, Groups B, C, D hazardous locations, with DR and DBR interlocked receptacles for Class II, Groups F, G hazardous locations, and with NBR/NSR interlocked receptacles for wet and corrosive locations

Standard Materials:

- Receptacle housings – copper-free aluminum
- Insulators (plug and receptacle) – *Krydon* material
- Crimp/solder contacts – leaded red brass
- Enclosure and operating handle – *Krydon* fiberglass-reinforced polyester material
- Other exterior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – baked-on powder epoxy
- Stainless steel – natural
- Leaded red brass – electro-tin-plated
- Enclosure – natural (gray)
- Insulator (plug and receptacle) – natural (red)

Options:

- Special polarity – for use where two or more receptacles for the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Receptacle interior rotated 22½ degrees to right (viewed from face) and matching plug – add suffix S4 to Cat. No.
- Hubs for other conduit sizes can be supplied. See listing on page 655.

Certifications and Compliances:

- NEMA 3, 3R, 4*, 4X*, 12
- ANSI/UL standard 489
- UL standard 1682
- CSA

*30 & 60A style 2 only

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NSR Arktite® Interlocked Receptacles with Enclosed Disconnect Switches

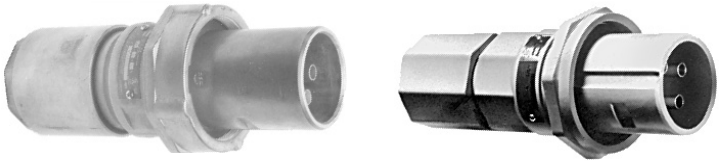
APJ/NPJ Arktite Plugs◆◆

240 and 600 VAC
250 VDC
NEMA 3,3R,4,4X,12
Watertight
Corrosion-Resistant

		240VAC/250VDC				600VAC/250VDC			
Amps	Conduit Opening Sizes§	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #	AC HP Rating	DC HP Rating	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #	AC HP Rating	DC HP Rating
FUSIBLE									
30	¾	NSR331**	NSR332**	3	5	NSR3351*	NSR3352*	7½	5
60	1¼	NSR631**	NSR632**	5	10	NSR6351*	NSR6352*	20	10
100	2	NSR1031**	NSR1032**	10	20	NSR10351*	NSR10352*	30	20
NON-FUSIBLE									
30	¾	NSR3341	NSR3342	7½	5	NSR33541	NSR33542	20	5
60	1¼	NSR6341	NSR6342	20	10	NSR63541	NSR63542	50	10
100	2	NSR10341	NSR10342	30	20	NSR103541	NSR103542	75	20

APJ/NPJ PLUGS

600VAC/250VDC, with Cable Grip and Neoprene Bushing



Amps	Cable O.D. Range	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
30	0.60 to 1.20	APJ3375	APJ3485
	0.55 to 0.70		NPJ3483
	0.70 to 0.85		NPJ3484
60	0.75 to 1.45	APJ6375	APJ6485
	0.75 to 1.07		NPJ6484
	1.07 to 1.35		NPJ6485
100	1.00 to 1.70	APJ10377	APJ10487
	0.93 to 1.21		NPJ10486
	1.21 to 1.50		NPJ10487

* Arranged for NEC Class H fuses. May be field converted to NEC Class J fuses.

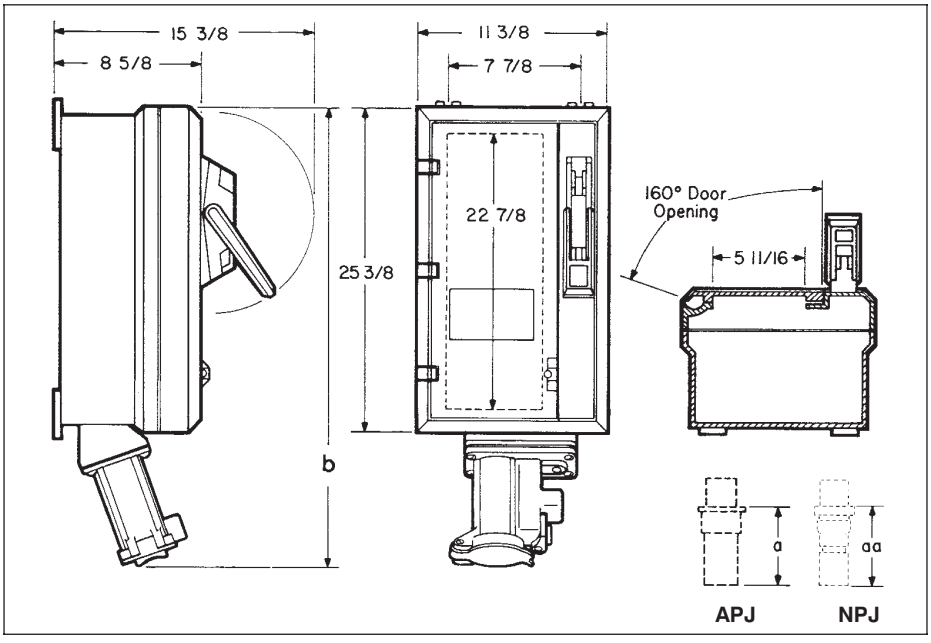
** Fuse clips accommodate NEC Class H fuses. For NEC Class J fuses, use 600V switches.

◆ ◆ Pressure connectors are supplied as standard. To specify crimp/solder type terminators add the suffix ''T'' to the catalog number. For example: APJ3375-T (Plug)

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

§ For alternate hub sizes, refer to catalog page 658.

Dimensions



Amps	b	a	aa
30	31⅜	4 13/16	7
60	33	5 13/16	6 13/16
100	33¾	6⅝	7¾

Dim. ''a'' and ''aa'' are exposed portion of plug when engaged with receptacle.

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NBR Arktite® Interlocked Receptacles with Enclosed Circuit Breakers

NEMA 3,3R,4*,4X*,12
Watertight
Corrosion-Resistant

APJ/NPJ Arktite Plugs

Application:

NBR *Arktite* interlocked receptacles with enclosed circuit breakers are used:
- to supply power and provide short circuit protection, thermal overload protection, and a disconnect means for portable electrical equipment such as motor generator sets, compressors, conveyors, and other similar equipment
- in locations where corrosion is present such as in offshore and marine locations, pulp and paper mills, chemical plants, food processing, and sewage treatment plants
- indoors and outdoors in damp, wet or hosedown locations

Features:

- Enclosures are made of *Krydon*® high-impact strength fiberglass-reinforced polyester material having excellent resistance to corrosion and heat
- Receptacles are mechanically interlocked with circuit breakers which provide a disconnect means, short circuit protection, and thermal time delay overload protection
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the circuit breaker operating mechanism. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open
- Enclosure has hinged access door for easy wiring and maintenance. Three screws, hidden behind access door in door frame, prevent disassembly when door is locked
- Enclosure access door is mechanically interlocked with operating handle and cannot be opened unless operating handle operator is in ''OFF'' position
- A *Krydon* material hub (not mounted) is supplied with each enclosure as follows:

Rating	Hub Size	Cat. #
30A	¾	NHUB2
60A	1¼	NHUB4
100A	2	NHUB6

For alternate hub sizes, refer to catalog page 658.
- Receptacle has self-closing spring door assembly to provide environmental protection
- Operating handle can be padlocked in ''OFF'' position. Breaker is trip-free of handle and will open under short circuit or overload when handle is in the ''ON'' position
- Provided with top and bottom mounting feet which may be rotated 90° to vertical or horizontal mounting positions

*30 & 60A style 2 only

Interchangeability of Plugs With Other Non-Hazardous And Hazardous Location Receptacles:

- Plugs listed for use with NBR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with NBR receptacles, as well as with DR receptacles listed in Section 2P, and with EBBR, EPC and EPCB receptacles listed in Section 4P
- Portable equipment, suitable for the locations and equipped with the proper plug, can be used with non-hazardous rated AR receptacles, DBR and WSR interlocked receptacles located in non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I, Groups B, C, D hazardous locations, with DR and DBR interlocked receptacles for Class II, Groups F, G hazardous locations, and with NBR/NSR interlocked receptacles for wet and corrosive locations

Standard Materials:

- Enclosure, covers and operating handles – *Krydon* fiberglass reinforced polyester material
- Operating shafts – stainless steel
- Receptacle housings – copper-free aluminum
- Receptacle insulators – *Krydon* material
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – baked on powder epoxy
- Stainless steel – natural
- Enclosure – natural
- Receptacle insulators – natural (red)
- Brass – natural
- Leaded red brass – electro-tin-plated

Certifications and Compliances:

- NEMA 3, 3R, 4*, 4X*, 12
- ANSI/UL Standard 489
- UL Standard 1682
- CSA

Electrical Rating Ranges:

- Receptacles – 30, 60 and 100 amperes
- Circuit Breakers – 100 ampere frame size

NOTE: For additional dimensional data, see page 655, enclosure catalog number NCB1024.



Options:

- Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed on the same premises for use of different voltages. Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match – add suffix S4 to Cat. No.
- Hubs for other conduit sizes can be supplied. See listing on page 658.

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NBR Arktite® Interlocked Receptacles with Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs◆◆

3-Pole, 600 VAC

NEMA 3,3R,4,4X,12
Watertight
Corrosion-Resistant

100 Ampere Frame Size with Non-Interchangeable Trip‡§

Receptacle With Spring Door Housing	Enclosure Hub Size	Ckt. Brkr. Amps	Without Circuit Breaker Cat. #	With Cutler-Hammer Circuit Breaker Cat. #
STYLE 1†				
30 amp., 3-wire, 3-pole	¾	20	NBR53731	NBR53731-WT20-3
		30		NBR53731-WT30-3
		40		NBR53731-WT40-3*
		50		NBR53731-WT50-3*
60 amp., 3-wire, 3-pole	1¼	50	NBR56731	NBR56731-WT50-3
		60		NBR56731-WT60-3
		70		NBR56731-WT70-3*
		90		NBR56731-WT90-3*
		100		NBR56731-WT100-3*
100 amp., 3-wire, 3-pole	2	60	NBR51731	NBR51731-WT60-3
		70		NBR51731-WT70-3
		90		NBR51731-WT90-3
		100		NBR51731-WT100-3
STYLE 2†				
30 amp., 3-wire, 4-pole	¾	20	NBR53742	NBR53742-WT20-3
		30		NBR53742-WT30-3
		40		NBR53742-WT40-3*
		50		NBR53742-WT50-3*
60-amp., 3-wire, 4-pole	1¼	50	NBR56742	NBR56742-WT50-3
		60		NBR56742-WT60-3
		70		NBR56742-WT70-3*
		90		NBR56742-WT90-3*
		100		NBR56742-WT100-3*
100 amp., 3-wire, 4-pole	2	60	NBR51742	NBR51742-WT60-3
		70		NBR51742-WT70-3
		90		NBR51742-WT90-3
		100		NBR51742-WT100-3

APJ/NPJ Plugs
600 VAC
With Cable Grip and Neoprene Bushing



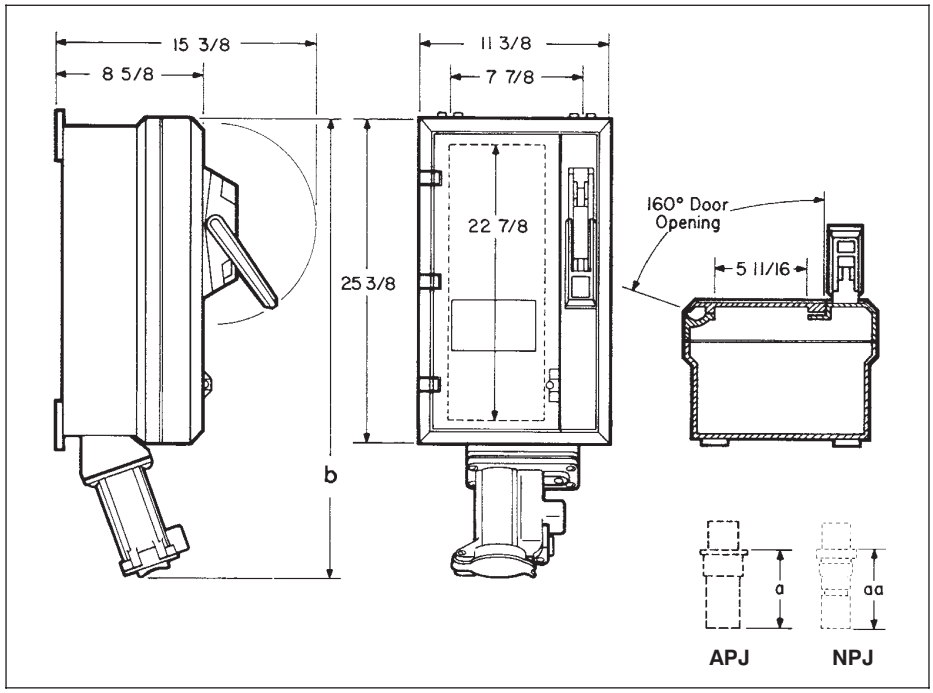
APJ



NPJ

Amps	Cable O.D. Range	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
30	0.60 to 1.20	APJ3375	APJ3485
	0.55 to 0.70		NPJ3483
	0.70 to 0.85		NPJ3484
60	0.75 to 1.45	APJ6375	APJ6485
	0.75 to 1.07		NPJ6484
	1.07 to 1.35		NPJ6485
100	1.00 to 1.70	APJ10377	APJ10487
	0.93 to 1.21		NPJ10486
	1.21 to 1.50		NPJ10487

Dimensions



Amps	b	a	aa
30	31⅜	4 13/16	7
60	33	5 13/16	6 13/16
100	33¾	6⅝	7¾

Dim. ''a'' and ''aa'' are exposed portion of plug when engaged with receptacle.

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

◆◆ Pressure connectors are standard. Crimp solder type terminators are optionally available for 3 and 4-pole 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix ''T'' to the catalog number. For example: APJ3375-T (Plug).

§ Also available with interchangeable trip breakers. Specify on order.

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

‡ For circuit breaker Cat. No. refer to Section 6C. Table 9, List FDB. For detailed information on circuit breaker selection, see Section 6C.

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3P DSR Interlocked Arktite® Receptacles with Enclosed Disconnect Switches

CI. II, Div 1 and 2, Group G
CI. III
CSA Encl. 3,5
NEMA 3,12

Raintight
Dust-Ignitionproof

Application:

- The DSR disconnect switches are used as a service outlet for portable or fixed electrical equipment – generators, compressors, welders, etc.
- They are designed for use in hazardous and non-hazardous areas where dust, moisture and corrosion may be a problem.
- Designed for surface mounting.
- A fusible type switch, when used, also provides short circuit protection.

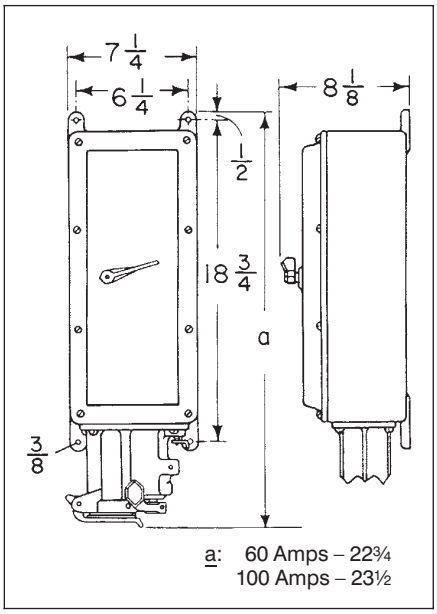
Features:

- Switches
- Type DS disconnect is a compact load break switch using the De-ion arc quenching principle and quick make-quick break over center toggle mechanism. It has visible contacts, is CSA listed up to 75 hp., and is available either as a fusible or non-fusible switch.
- Enclosures are compact and rectangular in shape permitting close spacing with a gasketing cover.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the switch operating mechanism. The switch cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the switch is open.
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a thread-in bushing. The size furnished is 1½″, and removing the bushing permits the use of a 2″ conduit.

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum.
- Operating shafts – stainless steel.
- Receptacle housings and plug exteriors – copper-free aluminum.
- Insulation: plugs and receptacles – fiberglass-reinforced polyester.
- Contacts – brass.

Dimensions



a: 60 Amps – 22¾
100 Amps – 23½



Standard Finishes:

- Copper-free aluminum – natural.
- Stainless steel – natural.
- Brass – Bright Dip.
- Fiberglass-reinforced polyester – natural (red).

Electrical Rating Ranges:

- 3-Wire, 4-Pole: Fusible or non-fusible:
  240 VAC 250 vdc: 600 vac
  60, 100 amperes
- 15 to 75 HP

Certifications and Compliances:

- NEC/CEC: Class II, Division 1 and 2, Group G
  Class III
- CSA Encl. 3,5
- NEMA: 3,12

Options:

The following special options are available by adding suffix to Cat. No.

Description

Special polarity for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:

- Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match S4
- Breather (drain furnished as standard) S219
- Conduit arrangements other than standard can be supplied . . . . . Details on request.

Ordering Information:

System	Amps	Conduit Opening Sizes	Max. HP Rating 240VAC	Max. HP Rating 600VAC	Interlocks DSR 240VAC 250VDC Cat. #	Interlocks 600VAC 250VDC Cat. #	Mating Arktite® Plugs Dia. Outside of Cable Flexible Conduit or Armored Cable	Mating Arktite® Plugs Style 2 3-wire 4-pole Cat. #
3-Wire, 4-Pole	60	1½	15	50	**DSR632****	**DSR6352***	.75 to 1.45	**APJ6485**
Style 2, Fusible	100	1½	30	75		**DSR10352***	1.00 to 1.70	**APJ10487**
3-Wire, 4-Pole	60	1½	15	50	**DSR6342**	**DSR63542**	.75 to 1.45	**APJ6485**
Style 2, Non-Fusible	100	1½	30	75	**DSR10342**	**DSR103542**	1.00 to 1.70	**APJ10487**

* Arranged for Class J fuses.
** Arranged for Class H fuses.

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WSQC Interlocked Arktite® Receptacles with Enclosed Switches

APJ Plugs

Application:

WSQC dead front interlocked receptacles with APJ, NPJ, BP or FP plugs are used:
- to supply power to portable electrical equipment such as hand lamps, lighting systems, power tools, conveyors, welders, compressors, etc.
- in damp, wet or corrosive locations
- indoors or outdoors in non-hazardous areas
- in locations where mounting area is confined and compact equipment is required

Features:

- NEMA 3R, 12
- Rainproof, dust tight
- Available in 30 & 60 amps
- Horsepower rated switch
- Smallest footprint for interlocked receptacles
- Padlockable in OFF position; meets OSHA lockout/tagout requirements
- Compatible with Arktite™ APJ aluminum and NPJ Krydon™ material non-metallic plugs

Standard Materials:

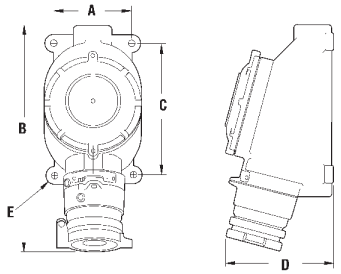
- Enclosure – copper-free aluminum
- Cover & spring door – copper-free aluminum
- Insulator – Krydon™ material
- Contacts – brass
- Cover Gasket – Neoprene

Certifications & Compliances:

- NEMA 3R, 12
- CSA Standard C22.2 No. 14, 182.1
- UL and cUL Listed



Dimensions (In Inches)



Amps	A	B	C	D	E
30A	3⅛	9¾	—	5¾	⅜
60A	5	14 7/16	8½	7	13/32

Horsepower Ratings

Amps	Single Phase 120V	240V	480V	600V	Three Phase 120V	240V	480V	600V
30A	2	5	7½	7½	3	7½	15	15
60A		10	25	30		10	25	30

Ordering Information

Amps	Hub	Config.	Catalog No.
30A	¾″	2W3P	**WSQC2330**
	1″	2W3P	**WSQC3330**
	¾″	3W4P	**WSQC2340**
	1″	3W4P	**WSQC3340**
60A	1½″	2W3P	**WSQC5630**
	1½″	3W4P	**WSQC5640**

OPTIONS:

- Interior rotated 22½° to the right (viewed from face) – add suffix to Cat. # – S4, ex: WSQC5640 S4

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Notes Page

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Description	Page No.
Application/Selection	1040, 1041
Interlocked Receptacle with –	
H.P. Rated Switch	
Technical Data	1042
FSQC 30A & 60A / APJ Plugs	1043
FSQC 100A / APJ Plugs	1044
FSQ 30A 230 Series / BP Plugs	1045
FSQ 30A 232 Series / FP Plugs	1046
DSR 60A & 100A	1047
W2SR 30A, 60A & 100A	1048
Factory Sealed Switch	
BHR 30A, 60A & 100A / BHP Plugs	1049, 1050
SRD 30A & 60A / SP Plugs	1051, 1052
Circuit Breaker	
EBBR 30A, 60A, 100A	1053-1055
EPC, 30A, 60A, 100A, 200A	1056-1058
EPCB 30A, 60A, 100A	1059, 1060
DBR 30A, 60A, 100A	1061, 1062

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4P Plugs and Receptacles

Industrial Heavy Duty Interlocked
Application and Selection
Hazardous

Application

- Where extra protection is a requirement. Interlocked units provide dead front receptacles; connection cannot be made or broken when unit is under load.
- In areas made hazardous by flammable vapors, gases or dusts; to supply power for portable electrical equipment and provide safe disconnect means and short circuit protection.

Considerations for Selection:

Environmental:
- The environment of the enclosure location in terms of NEC/CEC compliance and NEMA/EEMAC type required.
- Material and construction to withstand rough usage and atmospheric conditions.

Electrical:
- Sufficient current carrying capacity to meet load requirements.
- Compatibility with electrical system (new or existing installation).
- Interchangeability of plugs with other hazardous and non-hazardous area receptacles.

Function:
- Switch vs. circuit breaker

Options:

Special polarity arrangements, material options, accessories, and optional arrangements of enclosure interiors are available to meet specific application needs. See listing pages for details.

Quick Selector Chart

Series	NEC/CEC & NEMA/EEMAC Compliances	Receptacles Interlocked With	Page	Mating Plugs	Electrical Rating
BHR	Class I, Division 1 and 2, Groups B,C,D Class II, Division 1 and 2, Groups F,G Class III NEMA: 3,4,7BCD,9FG,12	Factory Sealed Switch	1049 1050	BHP	30, 60, 100 amp. 480VAC 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole
DBR	NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA/EFC: 3,9FG,12 CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,5	Circuit breaker	1061 1062	APJ/NPJ	Circuit breaker: 100 amp. frame size 250VDC/600VAC Receptacle: 30, 60, 100 amp. 2-wire, 3-pole 3-wire, 3-pole 3-wire, 4-pole
DSR	Class II, Division 1 and 2, Group G Class III, Encl. 3,5 NEMA: 3,9G,12	Switch	1047	APJ/NPJ	Switch: 60 and 100 amp. 600VAC/250VDC Fusible or non-fusible Receptacle: 60 and 100 amp. 3-wire, 4-pole
EBBR	Class I, Division 1 and 2, Groups B,C,D Class II, Division 1 and 2, Groups F,G Class III NEMA 3,3R,7BCD,9FG,12	Circuit breaker	1053 1054 1055	APJ/NPJ	Receptacle: 30, 60, 100 amp. 3-wire, 4-pole
EPC	NEC: Class I, Division 1 and 2, Groups C,D NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA: 3,7CD,9FG,12 CEC: Class I, Division 1 and 2, Groups C,D CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,4	Circuit breaker	1056 1057 1058	APJ/NPJ	Circuit breaker: 100 amp. frame size 480VAC/250VDC Receptacle: 30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole
EPC	Class I, Division 1 and 2, Group D Class II, Division 1 and 2, Groups F,G Class III NEMA: 3,7D,9FG,12	Circuit breaker	1057 1058	DP	Circuit breaker: 225 amp. frame size 600VAC/250VDC Receptacle: 200 amp. 3-wire, 4-pole
EPCB	NEC: Class I, Division 1 and 2, Groups B,C,D NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA: 3,7BCD,9FG,12 CEC: Class I, Division 1 and 2, Groups B,C,D CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,4	Circuit breaker	1059 1060	APJ/NPJ	Circuit breaker: 100 amp. frame size 600VAC/250VDC Receptacle: 30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole

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Industrial Heavy Duty Interlocked
Quick Selector and Interchangeability Chart
Hazardous

Quick Selector Chart

Series	NEC/CEC & NEMA/EEMAC Compliances	Receptacles Interlocked With	Page	Mating Plugs	Electrical Rating
FSQ	NEC: Class I, Division 1 and 2, Groups B,C,D NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA: 3,7BCD,9FG,12 CEC: Class I, Division 1 and 2, Groups B,C,D CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,5	Switch	1043 1044 1045 1046	APJ/NPJ BP FP	30A 250V/20A 600VAC 2-wire, 3-pole 3-wire, 4-pole 60A & 100A 2-wire, 3-pole 2-wire, 3-pole 3-wire, 4-pole
W2SR	NEC/CEC: Class I, Division 2, Groups B,C,&D NEC: Class I, Zone 2, Group IIB + Hydrogen NEMA 3R	Rotary Switch	1048	APJ/NPJ	30A,60A,100A 3-wire, 3-pole 3-wire, 4-pole
SRD	Class I, Division 1 and 2, Group D Class II, Division 1 and 2, Groups F,G Class III NEMA: 3,7D,9FG,12	Factory Sealed Switch	1051 1052	5P	30 & 60 amp. 480VAC 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same.** The following table is a summary of possible combinations.

Plugs Shown in Section 4P	Can be Used with These Receptacle Series	Listed in Section	Plug & Receptacle Electrical Rating
APJ/NPJ	AR, NR DR FSQ, EPC, EPCB, DBR, EBBR, C2SR, FSQC, C2SR, DSR, DBR, NBR, NSR, W2SR, WSR, CSR, WSRD, WSRDW, WSQC, DSR, WSRDCHS901	1P 2P 4P 3P	30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole 30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
BHP	SRG SRD BHR	3P 4P 4P	30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole
SP	SRG BHR SRD	3P 4P 4P	30, 60 amp. 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

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FSQ Dead Front Interlocked Receptacles and Switches

APJ/NPJ, BP and FP Plugs

Cl. I, Div. 1 and 2, Groups B*,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

FSQ dead front interlocked receptacles and switches with APJ/NPJ, BP and FP plugs are used:

- to supply power to portable electrical equipment such as hand lamps, lighting systems, power tools, conveyors and similar equipment.
- in areas which are hazardous due to the presence of flammable vapors or gases and combustible dusts.
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and facilities for processing and handling grain, flour and starch.

Features:

- FSQ dead front interlocked receptacles and switches, as shown in the listings, are available with four different types of receptacles, each of which is positively polarized to prevent mismating. With this choice of receptacle types, power outlets for several different voltages can be installed in the same area with assurance that portable equipment cannot be conected to a receptacle of improper voltage.
- All FSQ assemblies have the same outstanding safety features. The plug must be fully inserted in the receptacle and rotated clockwise to operate the enclosed switch, closing the circuit to the receptacle. The plug cannot be withdrawn until it is rotated counter-clockwise and the switch opened. Plug and receptacle contacts cannot be made or broken under load and when plug and receptacle are not engaged, receptacle is dead front.
- An added safety feature is provided by the cover screw. The cover cannot be removed when the switch is closed and with the cover removed and cover screw in place, the switch cannot be operated by the plug.

Grounding:

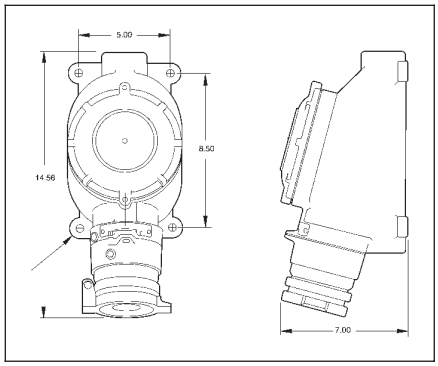
- NEC Article 501 and CEC Part 1 Section 18 requires that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous areas be grounded through an extra conductor in the portable cord.
- All FSQ receptacles and matching plugs are provided with an extra grounding pole. In the plugs, provision is made for attachment of the grounding wire. In addition, direct connection is provided between plug and receptacle housings and the grounding pole. If a separate grounding wire is not installed in the receptacle, grounding is accomplished through the conduit system.

Certifications and Compliances:

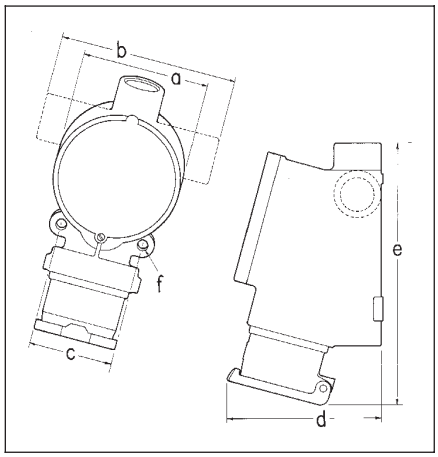
- NEC: Class I, Division 1 and 2, Groups B*,C,D
  Class II, Division 1 and 2, Groups F,G
  Class III
- NEMA: 3,7B*CD,9FG,12
- ANSI/UL Standard: 1010
- CEC: Class I, Division 1 and 2, Groups B,C,D
  Class II, Division 1 and 2, Group G
  Class III
- Encl. 3,5
- CSA Standard: C22.2 No. 30

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

Dimensions:



FSQC5630, 5640





Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for FSQC receptacles on 1043 are standard APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with FSQC receptacles as well as with DR, DBR, EBBR, EPC and EPCB receptacles listed in Section 2P and 4P.
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR series receptacles for non-hazardous areas, EBBR, EPC, EPCB, and FSQC receptacles for Class I hazardous locations; DR and DBR receptacles for Class II hazardous locations.

Cat. #	Page	Maximum Dimensions a	b	c	d	e	f
FSQC2320, 3320 FSQC2430, 3430 FSQC2390, 3390	4P-3	4¾		3⅛	5¾	9¾	⅜
FSQ230, 330 Series	4P-4	4¾	6⅝	3⅛	5¾	10¼	⅜
FSQ232, 332 Series FSQ233, 333 Series	4P-5	4¾	6⅝	3⅛	5½	9½	⅜

* FSQC units on page 1043 are listed for Class I, Group B, NEMA 7.
FSQ units on pages 1045 & 1046 require suffix ''GB''.

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FSQC Arktite® Dead Front Interlocked Receptacles and Switches

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

APJ/NPJ Arktite Plugs

Applications:

FSQC dead front switched interlock receptacles are used:
- to supply power to portable electrical equipment such as hand lamps, lighting systems, power tools, conveyors, welders and similar equipment.
- in areas which are hazardous due to the presence of flammable vapors or gases and combustible dusts.
- in damp, wet or corrosive locations.
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and facilities for processing and handling grain, flour and starch.

Product Features:

- Compatible with Arktite® APJ aluminum and NPJ Krydon® plugs
- Switch cannot be turned ''ON'' until plug is fully inserted and rotated.
- Plug cannot be withdrawn under load
- Cover cannot be removed when switch is ''ON''
- Satisfies OSHA lockout tagout requirement.
- Smallest mounting footprint for interlocks

Materials:

- Enclosure – Feraloy® iron alloy or copper-free aluminum
- Cover and spring door – copper-free aluminum
- Insulator – Krydon®
- Contacts – brass

Certifications and Compliances:

- NEMA 3, 7BCD, 9FG, 12
- NEC/CEC: Class I, Division 1 & 2, Groups B, C & D
  Class I, Zone 1, Group IIB+Hydrogen
  Class II, Division 1 & 2, Groups F, G
  Class III
- ANSI/UL Standards 1010 UL Listed
- CSA Standard C22.2 No. 30 cUL Listed & C22.2 No. 159

Options:

Description	Suffix
Special polarity, receptacle interior rotated 22½°	S4
Copper-free aluminum enclosure – 60A only	SA



FSQC Receptacles
With Spring Door (Through Feed Hubs)

Horsepower Rating:

	Single Phase			
Amps	120V	240V	480V	600V
30A	2	5	7½	7½
60A	—	10	25	30

	Three Phase			
Amps	120V	240V	480V	600V
30A	3	7½	15	15
60A	—	10	25	30

Ordering Information:

Amps	Hub	Config.	Description	Catalog Number	Matching Plug
30A	¾″	2W3P	2 Pole Switch	FSQC2320	APJ3385
		3W4P	3 Pole Switch	FSQC2430	APJ3485
	1″	2W3P	2 Pole Switch	FSQC3320	APJ3385
		3W4P	3 Pole Switch	FSQC3430	APJ3485
60A	1½″	2W3P	2 Pole Switch	FSQC5630	APJ6385
		3W4P	3 Pole Switch	FSQC5640	APJ6485

FSQC for Use with Magnetic Motor Starters or Contactors

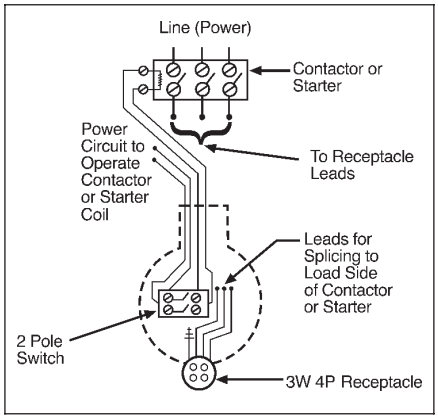
FSQC units listed below operate in the same way as standard units but are intended *only for use with magnetic motor starters or contactors. (Wiring diagram 1)*

Receptacles have leads for splicing to conductors from the load side of contactor. The switch actuated by the plug is wired into the starter or contactor coil circuit and controls only this circuit. The starter or contactor is energized only when the plug is fully inserted and rotated to close the switch. Since the plug is inserted or withdrawn only when the switch is open, the circuit cannot be made or broken under the load.

Plugs used are standard APJ units and special polarity units listed are recommended where interchange with devices for other wiring systems is possible.

FSQC Receptacles — APJ/NPJ Plugs
With Spring Door (Through Feed Hubs)
30 Amperes, 250 VAC or VDC; 20 Amperes, 600 VAC

No. of Poles	Hub Size	Receptacle Cat. #	Cable Dia.	Plug Cat. #
3-wire 4-pole	¾	FSQC2390	0.60 to 1.20	APJ3485
	¾	FSQC2390-S4		APJ3485-S4
			0.55 to 0.70	NPJ3483
				NPJ3483-S4
	1	FSQC3390	0.70 to 0.85	NPJ3484
	1	FSQC3390-S4		NPJ3484-S4



Wiring Diagram 1
(FSQC2390 and 3390 only)

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4P 100 Amp FSQ Dead Front Interlocked

Cl. I, Div. 1 and 2 Groups B,C,D NEMA 4
Cl. II, Div. 1 and Groups F,G Watertight
Cl. III
NEMA 3,3R,4,4X,7BCD,9FG,12
Explosionproof

Applications:

- to supply power to portable or fixed electrical equipment such as welders, pumps, motors, machine tools, conveyors, oil rigs, mixers grain elevators, petroleum refineries, chemical and petrochemical plants
- in hazardous areas containing flammable vapors or gases and combustible dusts
- in damp, wet or hosedown environments
- in highly corrosive locations

Features:

- NEMA Type 4 watertight
- suitable for Group B
- compact housing
- simple operation
- compatible with Arktite® APJ aluminium and NPJ Krydon® plugs
- H.P.-rated enclosed switch
- 4 mounting feet can be rotated for flexibility in positioning to surface
- wiring channel provided under switch for easy wire routing to terminals
- dual botton-feed hubs and one top hub for convenient feed-through installation
- bread-loose fork lugs case in place for easy removal of cover

Safety First:

- power cannot be turned ''on''O until plug is fully inserted and Uni-Loc collar is rotated
- when Uni-Loc collar is in ''on'' position, plug is locked in place to prevent disengagement under load
- cover cannot be removed while switch is ''on''
- Cover-Loc™ design prevents switch from being turned ''on'' while cover is removed
- Uni-Loc collar aligns with lug on housing to permit OSHA lockout/tagout in the ''off'' position

Materials:

- body—copper–free aluminum
- cover—copper–free aluminum
- locking collar—Feraloy®iron alloy
- insulator—Krydon® material
- contacts—brass

Certifications and Compliances:

- NEMA 3, 3R, 4, 4X*, 7BCD, 12
- Class I, Divisions 1 & 2, Groups B,C & D
- Class I, Zone 1, Group IIB + H_2
- Class II, Divisions 1 & 2, Groups F & G
- Class III
- ANSI/UL Standards 1010 & 98 UL Listed
- cUL Listed, CSA Standard C22.2 No. 30, C22.2 No. 159

★ NEMA 4X when ordered with suffix S752

Electrical Rating:

100A, 600VAC

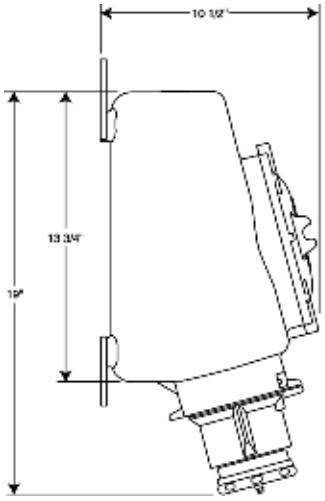
Ordering Information:

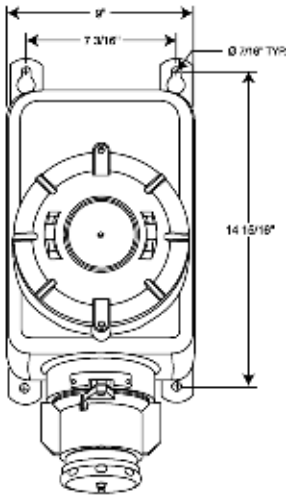
Rating	Config.	Hub Size	H.P. Rating	Cat. #
100A, 600VAC	3W4P	2″	50 H.P. @600V, 480V	FSQC61040

Options:

Special polarity—receptacle interior rotated 22½° to right. Add suffix S4
(example: FSQC61040 S4)
NEMA 4X—epoxy powder coated.
Add suffix S752
(example: FSQC61040 S752)
Auxiliary contact. Add suffix S483
Breather/Drain S756V







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FSQ Dead Front Interlocked Receptacles and Switches

BP Plugs

Cl. I, Div. 1 and 2, Groups B*,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

Note:

- For information on application, features, groundings and compliances, see page 1042.
- Available with ¾″ and 1″ hubs in various arrangements, as shown in the listings.

Standard Materials:

- Switch enclosure and receptacle housing – *Feraloy*® iron alloy
- Threaded cover and spring door – copper-free aluminum
- Plug exteriors; handle body – copper-free aluminum
- Protective sleeve – steel
- Insulation (plug and receptacle) – Krydon® fiberglass reinforced polyester
- Contacts – brass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Steel – zinc electroplate with chromate finish
- Brass – natural
- Krydon, fiberglass reinforced polyester – natural (red)

*Class I, Group B:

FSQ units listed below are also available modified for Class I, Group B (NEMA 7B) usage. Add suffix GB to the Cat. No. Example: FSQC230-GB. Seals must be installed within 1½″ of each conduit opening.

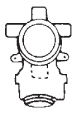




FSQ Receptacles

With Spring Door

30 Amperes, 250 VAC or VDC; 20 Amperes, 600 VAC; 2 HP, 120-600 VAC

No. of Poles	Hub Size	Hub Arrangement	Cat. #	Hub Arrangement	Cat. #
2-wire, 3 pole (2-pole switch)	¾		FSQC230		FSQD230
	1		FSQC330		FSQD330
	¾		FSQA230		FSQX230
	1		FSQA330		FSQX330

BP Plugs

With Cable Grip and Neoprene Bushing

Cable Dia.	Cat. #
.375 to .500	BP49
.500 to .625	BP59
.625 to .750	BP69
.750 to .875	BP79

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

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FSQ Dead Front Interlocked Receptacles and Switches

FP Plugs

Cl. I, Div. 1 and 2, Groups B*,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7B*CD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

Note:

- For information on application, features, groundings and compliances, see page 1042.
- Available with ¾″ and 1″ hubs in various arrangements, as shown in the listings.

Standard Materials:

- Switch enclosures and receptacle housings – *Feraloy*® iron alloy
- Threaded covers – copper-free aluminum
- Plug exteriors – FP323 and FP334 – copper-free aluminum
- Insulation: receptacles – Krydon® fiberglass reinforced polyester; FP323 and FP334 plugs – Krydon® fiberglass reinforced polyester
- Contacts – brass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Krydon-fiberglass reinforced polyester – natural (red)
- Brass – natural

Options:

- Addition of cap and chain (copper-free aluminum, natural finish) to FSQ assemblies with threaded housing protects interior when plug is not in use. Add suffix S1 to Cat. No.

*** Class I, Group B:**
FSQ units listed below are also available modified for Class I, Group B (NEMA 7B) usage. Add suffix GB to the Cat. No. Example: FSQC232-GB. Seals must be installed within 1½″ of each conduit opening.

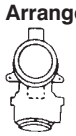




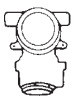
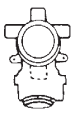
FSQ Receptacles

With Threaded Housing

30 Amperes, 250 VAC or VDC; 20 Amperes, 600 VAC; 2 HP, 120-600 VAC

No. of Poles	Hub Size	Switch	Hub Arrangement	Cat. #	Hub Arrangement	Cat. #
2-wire 3-pole	¾ 1	2-pole		FSQC232 FSQC332		FSQD232 FSQD332
2-wire 3-pole	¾ 1	2-pole		FSQA232 FSQA332		FSQX232 FSQX332

30 Amperes, 240 VAC; 20 Amperes, 600 VAC; 2 HP, 120-600 VAC

3-wire 4-pole	¾ 1	3-pole		FSQC233 FSQC333		FSQD233 FSQD333
3-wire 4-pole	¾ 1	3-pole		FSQA233 FSQA333		FSQX233 FSQX333

FP Plugs

With Cable Grip and Neoprene Bushing

No. of Poles	Cable Dia.	Cat. #
2-wire, 3-pole	.500 to .875	FP323
3-wire, 4-pole	.500 to .875	FP334

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DSR Interlocked Arktite® Receptacle with Enclosed Disconnect Switches

Cl. II, Div. 1 and 2, Group G
Cl. III
NEMA: 3,9G,12
Encl. 3,5
Dust-Ignitionproof

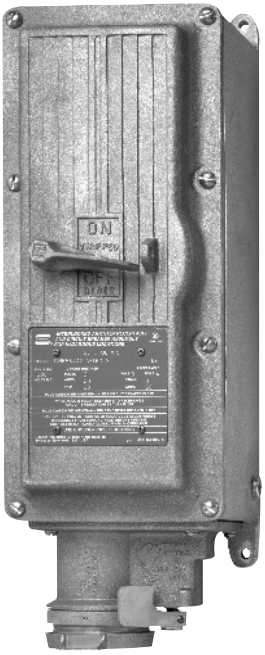
Raintight

Application:

- The DSR disconnect switches are used as a service outlet for portable or fixed electrical equipment – generators, compressors, welders, etc.
- They are designed for use in hazardous and non-hazardous areas where dust, moisture and corrosion may be a problem.
- Designed for surface mounting.
- A fusible type switch, when used, also provides short circuit protection.

Features:

- Switches
- Type DS disconnect is a compact load break switch using the De-ion arc quenching principle and quick make-break over center toggle mechanism. It has visible contacts, is CSA listed up to 30 hp., and is available either as a fusible or non-fusible switch.
- Enclosures are compact and rectangular in shape permitting close spacing with a gasketing cover.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the switch operating mechanism. The switch cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the switch is open.
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a thread-in bushing. The size furnished is 1½″, and removing the bushing permits the use of a 2″ conduit.



Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum.
- Operating shafts – stainless steel.
- Receptacle housings and plug exteriors – copper-free aluminum.
- Insulation: plugs and receptacles – fiberglass-reinforced polyester.
- Contacts – brass.

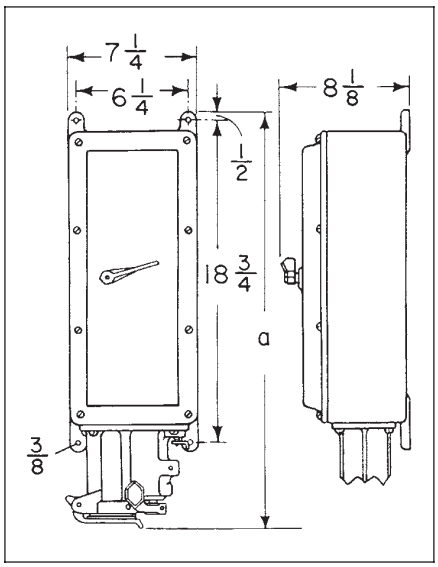
Standard Finishes:

- Copper-free aluminum – natural.
- Stainless steel – natural.
- Brass – Bright Dip.
- Fiberglass-reinforced polyester – natural (red).

Electrical Rating Ranges:

- 3-Wire, 4-Pole:
  Fusible or non-fusible:
  240VAC 250vdc: 600 vac
  60, 100 amperes
- 15 to 75 hp

Dimensions:



Options:

The following special options are available by adding suffix to Cat. No.

Description

Special polarity for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:

- Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match **S4**
- Breather (drain furnished as standard) **S219**
- Conduit arrangements other than standard can be supplied . . . . . **Details on request.**

Certifications and Compliances:

- NEC/CEC: Class II, Division 1 and 2, Group G
  Class III
- Encl. 3,5
- NEMA 3,9G,12

Ordering Information:

System	Amps	Conduit Opening Sizes	Max. HP Rating 240VAC	Max. HP Rating 600VAC	DSR 240VAC 250VDC Cat. #	600VAC 250VDC Cat. #
3-Wire, 4-Pole	60	1½	15	50	DSR632**	DSR6352*
Style 2, Fusible	100	1½	30	75		DSR10352*
3-Wire, 4-Pole	60	1½	15	50	DSR6342	DSR63542
Style 2, Non-Fusible	100	1½	30	75	DSR10342	DSR103542

* Arranged for Class J fuses.
** Arranged for Class H fuses.

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W2SR Metallic Interlocked Arktite® Receptacles

Division 2

W2SR Interlocked Arktite® Receptacles



Product Features:

- NEMA 3R
- Rainproof locations
- Available in 30, 60 & 100 amps
- RSWP factory-sealed explosionproof switch
- No external seals required
- Hinged door mechanically interlocked with operating handle
- Operating handle meets OSHA lockout/tagout requirements
- Compatible with Arktite® APJ aluminum and NPJ Krydon® material non-metallic plugs

Materials:

- Enclosure – copper-free aluminum
- Operating handle – copper-free aluminum
- Other exterior parts – stainless steel
- Receptacle housings – copper-free aluminum
- Insulator — Krydon® material
- Crimp/solder contacts – leaded red brass
- Pressure contacts – brass

Certifications and Compliances:

- NEMA 3R
- NEC/CEC: Class I, Division 2, Groups B, C & D
- NEC: Class I, Zone 2, Group IIB+Hydrogen
- UL Standards 508, 1604, 1682 UL Listed
- CSA Standard C22.2 No. 182.1 & No. 213 cUL Listed

Horsepower Ratings:

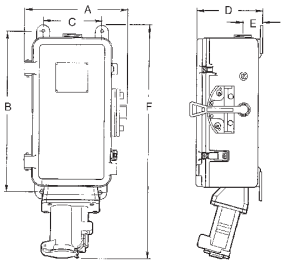
Amps	Single Phase 120V	Single Phase 240V	Three Phase 120V	Three Phase 240V	Three Phase 480V	Three Phase 600V
30A	2	3	3	7½	15	20
60A	3	7½	7½	15	30	40
100A	5	10	10	20	40	60

Ordering Information:

Amps	Hub	Config.	Catalog No.
30A	1″	3W3P	W2SR33541
		3W4P	W2SR33542
60A	1¼″	3W3P	W2SR63541
		3W4P	W2SR63542
100A	1½″	3W3P	W2SR103541
		3W4P	W2SR103542

OPTIONS – The following options are available from the factory by adding suffix to the catalog number:
1) Receptacle interior rotated 22½° S4

Dimensions: (In Inches)



	30 Amps	60 Amps	100 Amps
A	11¾	11¾	14⅞
B	20 1/16	20 1/16	26 5/16
C	6 9/16	6 9/16	9 9/16
D	7¼	7¼	8¼
E	2 15/32	2 15/32	2⅞
F	27 11/16	28 1/16	35⅜
Mtg. Holes	⅜	⅜	7/16

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BHR Dead Front Interlocked Receptacles with Factory Sealed Switch

BHP Plugs

Cl. I, Div. 1 and 2, Groups B,C,D Dust-Ignitionproof
Cl. II, Div. 1 and 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,4,7BCD,9FG,12
Explosionproof

Application:

BHR dead front interlocked receptacles and switches with BHP plugs are used:
- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, lighting systems, conveyors, and similar equipment
- primarily in areas which are hazardous due to the presence of hydrogen or gases, or vapors of equivalent hazard such as manufactured gas
- in damp, wet, or corrosive locations
- indoors or outdoors in hydrogen areas of process industries, missile bases where hydrogen fuel is used, and gas manufacturing plants

Features:

- BHR receptacles feature a built-in rotary switch which is operated automatically when the plug is inserted and withdrawn. The switch, capable of making and breaking the circuit at full rated load, is operated by a helical blade in the center of the plug
- The plug and receptacle contacts cannot be made or broken under load. When the plug is inserted, the plug and receptacle contacts engage before the switch closes. When the plug is withdrawn, the switch opens before the plug and receptacle contacts disengage. This sequence of operation provides maximum safety in a dead front receptacle. Arcing is isolated in a flame and dust-tight chamber
- Operation is simple, safe and positive. To disconnect the portable device, the plug fastening ring is unscrewed and the plug simply pulled straight out. No separate interlock device or operating handle need be actuated
- Positive engagement without mismatching is assured by a distinct physical polarization of the plug and receptacle in every rating
- Plugs are furnished with pressure terminations. Receptacles are furnished with flexible leads for splicing to the supply conductors. A large threaded cover provides access to the wiring compartment
- As shown in the listings, assemblies are available for top, bottom or through feed conduit arrangements in ¾″ to 2″ sizes

Grounding:

- BHR receptacles and BHP plugs are provided with an extra grounding pole. In plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between the plug and receptacle housings and the grounding pole. In the receptacle, grounding is accomplished through the conduit system

Standard Materials:

- Receptacle housings – copper-free aluminum
- Seals – malleable iron
- Plug exteriors – copper-free aluminum
- Insulation – high impact glass filled phenolic
- Contacts – brass

Standard Finishes:

- Copper-free aluminum – natural
- Malleable iron – electrogalvanized and aluminum lacquer
- Phenolic – natural (black)
- Brass – silver plated

Options:

- Special polarity – where two or more receptacles of the same ampere rating and number of poles are to be installed in the same areas for use on different voltages, alternate polarizations can be furnished. Details on request

Electrical Rating Ranges:

- 30, 60 and 100 amperes, 480vac

Certifications and Compliances:

- Class I, Division 1 and 2, Groups B,C,D
  Class II, Division 1 and 2, Groups F,G
  Class III
- NEMA: 3,4,7BCD,9FG,12
- ANSI/UL Standard: 1010

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts



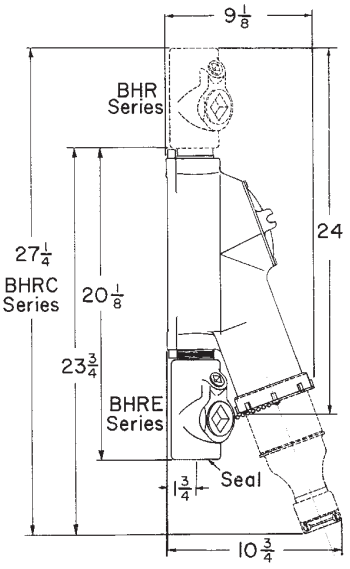
BHR/BHP in use



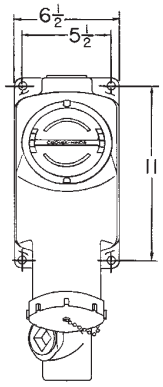
BHR/BHP Separated showing helical driver

Dimensions: (in inches)

BHR/BHP



BHR only



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BHR Dead Front Interlocked Receptacles with Factory Sealed Switch

BHP Plugs

480 VAC, 60-400 hertz

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA 3,4,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

RECEPTACLE

Receptacles are supplied ready to install with a threaded cap. Through feed hubs are standard. Sealing fittings, nipples and closure plugs ordered seperatley depending on application. Receptacles can be configured for Top Feed, Bottom feed or Through feed. Order required parts in catalog section 6C.

AMPS	CONFIG.	HUB SIZE	CATALOG #
	2 wire 3 pole	¾	**BHRC3382N**
	2 wire 3 pole	1	**BHRC3383N**
30	3 wire 4 pole	¾	**BHRC3482D**
	3 wire 4 pole	1	**BHRC3483D**
	4 wire 5 pole	1	**BHRC3583NW**
	4 wire 5 pole	1 ¼	**BHRC3584NW**
	2 wire 3 pole	1 ¼	**BHRC6384N**
	2 wire 3 pole	1 ½	**BHRC6385N**
60	3 wire 4 pole	1 ¼	**BHRC6484D**
	3 wire 4 pole	1 ½	**BHRC6485D**
	4 wire 5 pole	1 ¼	**BHRC6584NW**
	4 wire 5 pole	1 ½	**BHRC6585NW**
	2 wire 3 pole	1 ¼	**BHRC10384N**
	2 wire 3 pole	1 ½	**BHRC10385N**
100	3 wire 4 pole	1 ½	**BHRC10485D**
	3 wire 4 pole	2	**BHRC10486D**
	4 wire 5 pole	1 ½	**BHRC10585NW**
	4 wire 5 pole	2	**BHRC10586NW**



PLUGS

Plugs mate to BHR receptacles. Plugs are supplied with threaded locking ring that threads onto receptacle housing for secure connection and environmental seal. Mechanical external cord grip and neoprene bushing provided for secure cord retention and environmental seal.

AMPS	CONFIG.	CABLE DIA.	CATALOG #
	2 wire 3 pole	.500 - .875	**BHP3383N**
	2 wire 3 pole	.875 - 1.375	**BHP3385N**
30	3 wire 4 pole	.500 - .875	**BHP3483D**
	3 wire 4 pole	.875 - 1.375	**BHP3485D**
	4 wire 5 pole	.500 - .875	**BHP3583NW**
	4 wire 5 pole	.875 - 1.375	**BHP3585NW**
	2 wire 3 pole	.500 - .875	**BHP6383N**
	2 wire 3 pole	.875 - 1.375	**BHP6385N**
60	3 wire 4 pole	.500 - .875	**BHP6483D**
	3 wire 4 pole	.875 - 1.375	**BHP6485D**
	4 wire 5 pole	.875 - 1.375	**BHP6585NW**
	4 wire 5 pole	1.375 - 1.875	**BHP6587NW**
	2 wire 3 pole	.875 - 1.375	**BHP10385N**
	2 wire 3 pole	1.375 - 1.875	**BHP10387N**
100	3 wire 4 pole	.875 - 1.375	**BHP10485D**
	3 wire 4 pole	1.375 - 1.875	**BHP10487D**
	4 wire 5 pole	.875 - 1.375	**BHP10585NW**
	4 wire 5 pole	1.375 - 1.875	**BHP10587NW**



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Dead Front Interlocked Receptacles with Factory Sealed Switch

SP Plugs
480 VAC, 60-400 hertz

Cl. I, Div. 1 and 2, Group D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA 3,7D,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

Application:

SRD dead front interlocked receptacles, switches, and SP plugs are used:
- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, lighting systems, conveyors and similar equipment
- in areas which are hazardous due to the presence of flammable vapors or gases and combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants, as well as facilities for processing and handling grain, flour and starch

Features:

- SRD receptacles feature a built-in rotary switch that operates automatically when the plug is inserted and withdrawn. The switch, capable of making and breaking the circuit at full rated load, is operated by a helical blade in the center of the plug.
- The plug and receptacle contacts cannot be made or broken under load. When the plug is inserted, the plug and receptacle contacts engage before the switch closes. When the plug is withdrawn, the switch opens before the plug and receptacle contacts disengage. This sequence of operation provides the maximum safety of a dead front receptacle. Arcing is isolated in a flame and dust-tight chamber.
- Operation is simple, safe and positive. To disconnect the portable device, the plug is simply pulled straight out. No separate interlock device or operating handle need be actuated.
- Positive engagement without mismating is assured by a distinct physical polarization of plug and receptacle in every rating.
- Plugs are furnished with pressure terminations. Receptacles are furnished with flexible leads for splicing to the supply conductors. A threaded cover at the top provides access to the wiring compartment.
- Back box is provided with 1¼″ vertical through feed hubs.

Grounding:

- SRD receptacles and SP plugs are provided with an extra grounding pole. In plugs, provision is made for attachment of a grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the grounding pole. In the receptacle, grounding is accomplished through the conduit system.

Standard Materials:

- Back box – *Feraloy*® iron alloy
- Threaded cover – copper-free aluminum
- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation – high impact glass filled phenolic
- Contacts – brass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Phenolic – natural (black)
- Brass – silver plated

Options:

- Special polarity – where two or more receptacles of the same ampere rating and number of poles are to be installed in the same area for use on different voltages, alternate polarizations can be furnished. Details on request.

Electrical Rating Ranges:

- 30 and 60 amperes, 480vac

Certifications and Compliances:

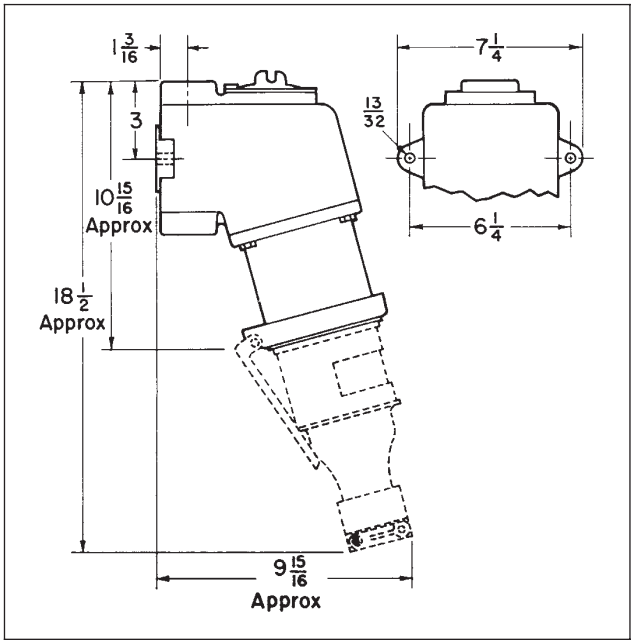
- NEC: Class I, Division 1 and 2, Group D
  Class II, Division 1 and 2, Groups F,G
  Class III
- NEMA 3,7D,9FG,12
- ANSI/UL Standard: 1010

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.





Dimensions: (in inches)



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SRD Dead Front Interlocked Receptacles with Factory Sealed Switch

SP Plugs
480 VAC, 60-400 hertz

Cl. I, Div. 1 and 2, Group D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA 3,7D,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations



SRD Receptacle with spring door



SP Plug



SRD Receptacle with threaded cap



SP Plug with fastening ring

Back Box – 1¼″ Vertical Through Feed Hubs

Rating	Description	With Spring Door Cat. #	With Cable Grip and Neoprene Bushing Cable Dia.	Cat. #	With Threaded Cap Cat. #	With Cable Grip and Neoprene Bushing Cable Dia.	Cat. #
30 amp.	2-wire, 3-pole	SRD3324N	.500 to .875	SP3363N	SRD3384N	.500 to .875	SP3383N
			.875 to 1.375	SP3365N		.875 to 1.375	SP3385N
	3-wire, 4-pole	SRD3424D	.500 to .875	SP3463D	SRD3484D	.500 to .875	SP3483D
			.875 to 1.375	SP3465D		.875 to 1.375	SP3485D
	4-wire, 5-pole	SRD3524-NW	.500 to .875	SP3563-NW	SRD3584-NW	.500 to .875	SP3583-NW
			.875 to 1.375	SP3565-NW		.875 to 1.375	SP3585-NW
60 amp.	2-wire, 3-pole	SRD6324N	.500 to .875	SP6363N	SRD6384N	.500 to .875	SP6383N
			.875 to 1.375	SP6365N		.875 to 1.375	SP6385N
	3-wire, 4-pole	SRD6424D	.500 to .875	SP6463D	SRD6484D	.500 to .875	SP6483D
			.875 to 1.375	SP6465D		.875 to 1.375	SP6485D
	4-wire, 5-pole	SRD6524-NW	.875 to 1.375	SP6565-NW	SRD6584-NW	.875 to 1.375	SP6585-NW
			1.375 to 1.875	SP6567-NW		1.375 to 1.875	SP6587-NW

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EBBR Series Interlocked Arktite® Receptacles with Circuit Breakers

30, 60, 100 Amp Interlocked Receptacles

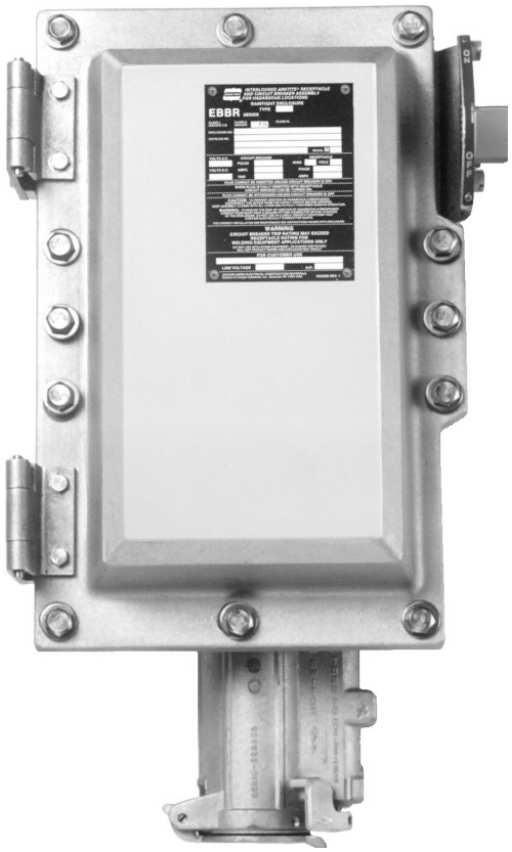
Cl. I, Div. 1 and 2, Groups B,C,D Dust-Ignitionproof
Cl. II, Div. 1 and 2, Groups F*,G Raintight
Cl. III Wet Locations
NEMA 3,3R,7BCD,9FG,12
Explosionproof

Application:

EBBR interlocked receptacles with circuit breakers are used:
- As a service outlet for portable equipment – indoors or outdoors – in damp, wet, corrosive locations, without the need for a protective shelter.
- In areas which are hazardous due to flammable vapors, gases or combustible dust, e.g., refineries, chemical plants, and other processing and handling facilities of a hazardous nature.
- In areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction.
- Accepts compatible Arktite plug of same rating and configuration.
- Mechanical interlock mechanism for dead front construction.
- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection.
- A spring door receptacle, located at the bottom of the unit, is mechanically interlocked with the circuit breaker operating mechanism for safe and dependable operation.
- Plug and receptacle contacts cannot be made or broken under load. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is de-energized.
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the ''ON'' position.
- Component operating handles located through the right side wall of the body permits visual confirmation of correct component assembly and operation.
- Total compliance to the wiring and room requirements of the National Electrical Code®.
- Semi-clamshell enclosure design, with an external machined flat joint flamepath between body and cover makes interior components easily accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body.
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' breakers.



- Simple, straightforward installation of breaker on pre-drilled mounting plate within enclosure.
- Neoprene cover gasket permanently attached to the cover seals out moisture.
- Bodies have top drilled and tapped entrance for power conduit (1½″) plus one at the top and one at the bottom for a breather and drain (½″). Breather and drain entrances are plugged.
- Tap-on mounting feet.

Certifications and Compliances:

- NEC:
  Class I, Division 1 and 2, Groups B,C,D
  Class II, Division 1 and 2, Groups F*,G
  Class III
- NEMA: 3, 3R, 7BCD, 9FG, 12
- UL Standard: 1203

Grounding:

EBBR interlocked receptacles and matching plugs are provided with an extra grounding pole for attaching a grounding wire. In addition, direct connection is provided between receptacle and metallic plug and the grounding pole. If a compatible non-metallic plug made of Krydon® fiberglass-reinforced polyester material is used, grounding is accomplished through the extra grounding pole only. If a separate grounding wire is not installed in the enclosure, grounding is accomplished through the conduit system.

Standard Materials:

- Body, cover, and receptacle – copper-free aluminum
- Contact insulator (receptacles and plugs) – fiberglass-reinforced polyester
- Receptacle contacts – leaded red brass
- Pressure contacts (plugs) – brass
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Interior parts – heavy gauge sheet steel, zinc plated
- Cover bolts, washer and retractile springs – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Fiberglass-reinforced polyester – natural (red)
- Brass – natural
- Leaded red brass – electro-tin-plated
- Stainless steel – natural

Electrical Rating Ranges:

- Circuit breakers – 20-100 amps
- Receptacles – 30, 60, 100 amp
- 3 wire, 4 pole configuration

Options:

The following options are available from the factory by adding suffix to the catalog number.

Receptacle interior rotated 22½° to right (viewed from face) and plug changed to match . . S4
Breather (ECD13) at top, Drain (ECD11) at bottom S198V
Group B Breather and Drain . . . S756V
External Powder Epoxy Finish . . S752

* Caution: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

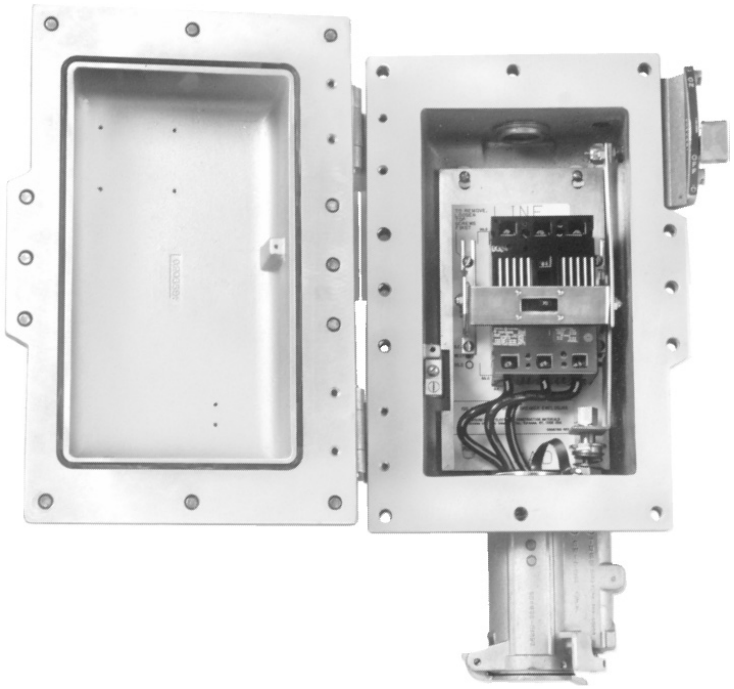
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EBBR Series Interlocked Arktite® Receptacles with Circuit Breakers

30, 60, 100 Amp Interlocked Receptacles

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F†,G
Cl. III
NEMA 3,3R,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations



Complete EBBR receptacle with circuit breaker installed.

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with EBBR receptacles are standard Arktite APJ/NPJ plugs. Standard APJ/NPJ and also CPH plugs of the same rating, style and number of poles may be used with EBBR receptacles, as well as with DR receptacles listed in Section 2P and DBR, EPC and EPCB receptacles listed in Section 4P of the catalog.
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR/NR series receptacles for non-hazardous locations; EBBR, EPC and EPCB receptacles for Class I and II hazardous locations; and DR and DBR receptacles for Class II hazardous locations.

Ordering Information

Receptacle With Spring Door Housing	Hub Size	Circuit Breaker Rating	Circuit Breaker Amps	Without Circuit Breaker Cat. #	w/Cutler-Hammer Breaker	w/G.E. Breaker	w/Square D Breaker
30 Amp		3-pole	20	EBBRA304	EBBRA304-WT20-3	EBBRA304-TT20-3	EBBRA304-DT20-3
3-wire	1½	480VAC+	30	EBBRA304	EBBRA304-WT30-3	EBBRA304-TT30-3	EBBRA304-DT30-3
4-pole		or	40	EBBRA304	EBBRA304-WT40-3*	EBBRA304-TT40-3*	EBBRA304-DT40-3*
Style 2		250VDC	50	EBBRA304	EBBRA304-WT50-3*	EBBRA304-TT50-3*	EBBRA304-DT50-3*
60 Amp		3-pole	50	EBBRA604	EBBRA604-WT50-3	EBBRA604-TT50-3	EBBRA604-DT50-3
3-wire		480VAC+	60	EBBRA604	EBBRA604-WT60-3	EBBRA604-TT60-3	EBBRA604-DT60-3
4-pole	1½	or	70	EBBRA604	EBBRA604-WT70-3*	EBBRA604-TT70-3*	EBBRA604-DT70-3*
Style 2		250VDC	90	EBBRB604	EBBRB604-WT90-3*	EBBRB604-TT90-3*	EBBRB604-DT90-3*
			100	EBBRB604	EBBRB604-WT100-3*	EBBRB604-TT100-3*	EBBRB604-DT100-3*
100 Amp		3-pole	50	EBBRA104	EBBRA104-WT50-3	EBBRA104-TT50-3	EBBRA104-DT50-3
3-wire		480VAC+	60	EBBRA104	EBBRA104-WT60-3	EBBRA104-TT60-3	EBBRA104-DT60-3
4-pole	1½	or	70	EBBRA104	EBBRA104-WT70-3	EBBRA104-TT70-3	EBBRA104-DT70-3
Style 2		250VDC	90	EBBRB104	EBBRB104-WT90-3	EBBRB104-TT90-3	EBBRB104-DT90-3
			100	EBBRB104	EBBRB104-WT100-3	EBBRB104-TT100-3	EBBRB104-DT100-3

+ Enclosures with 600 Volt circuit breakers are available. Add suffix ''FDB'' Ex: EBBRA304 – WT20FDB-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

† Caution: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II Group F locations that contain electrically conductive dusts.

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EBBR Series Interlocked Arktite® Receptacles with Circuit Breakers

30, 60, 100 Amp Interlocked Receptacles

Cl. I, Div. 1 and 2, Groups B,C,D Dust-Ignitionproof
Cl. II, Div. 1 and 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,3R,7BCD,9FG,12
Explosionproof

APJ and NPJ Arktite Plugs



Aluminum APJ series

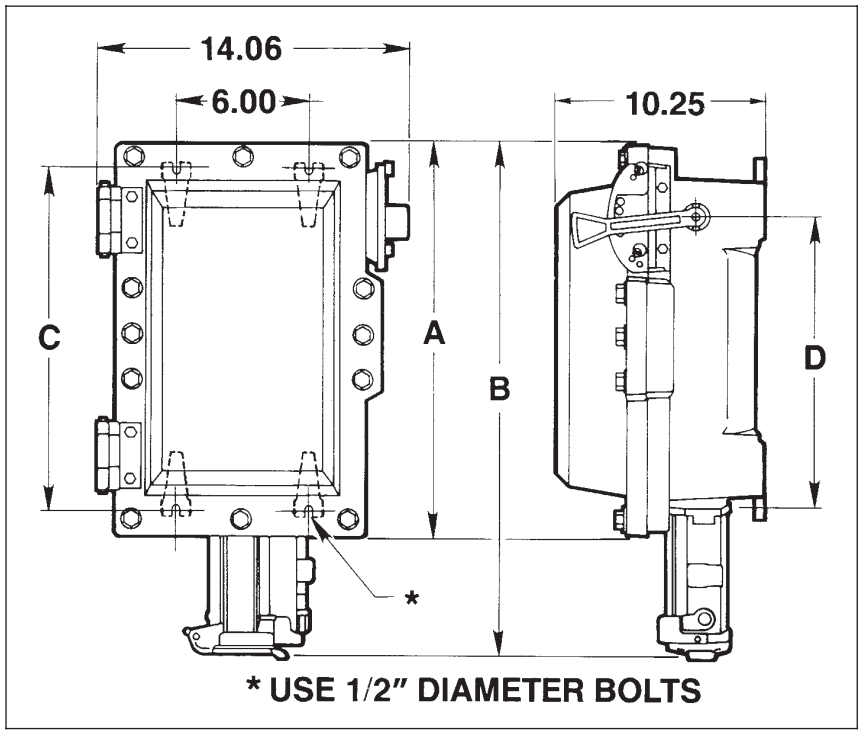


Krydon® material NPJ series (non-metallic)

Amps	Cable O.D. Range	3-wire, 4-pole Cat. No. Aluminum	Krydon material
	0.60 to 1.20	APJ3485	
30	0.55 to 0.70		NPJ3483
	0.70 to 0.85		NPJ3484
	0.75 to 1.45	APJ6485	
60	0.75 to 1.07		NPJ6484
	1.07 to 1.35		NPJ6485
	1.00 to 1.70	APJ10487	
100	0.93 to 1.21		NPJ10486
	1.21 to 1.50		NPJ10487

Both APJ and NPJ series plugs may be used with EBBR series interlocked receptacles.

Dimensions



	EBBRA				EBBRB			
Amps	A	B	C	D	A	B	C	D
30	19.40	22.85	17.25	14.50				
60	19.40	23.95	17.25	14.50	26.90	31.45	24.75	22.00
100	19.40	24.70	17.25	14.50	26.90	32.20	24.75	22.00

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EPC Circuit Breakers and Enclosures with Interlocked Arktite® Receptacles

APJ/NPJ◆◆ and DP Arktite Plugs

Cl. I, Div. 1 and 2, Groups C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7CD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

Application:

- The EPC interlock receptacle is designed for use as a service outlet for portable equipment
- It is designed for use in damp, wet and corrosive locations, indoors or outdoors, in areas which are hazardous due to flammable vapors, gases or combustible dust. For example; refineries, chemical plants, and other processing and handling facilities of a hazardous nature

Features:

- Mechanical interlock mechanism for dead front construction
- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection
- A spring door receptacle, located at bottom of 30, 60 and 100 ampere units and at front of 200 ampere units, is mechanically interlocked with the circuit breaker operating mechanism for maximum safety
- Plug and receptacle contacts cannot be made or broken under load. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the ''ON'' position
- Quick installation and leveling is provided by the three-point mounting arrangement which has one keyhole slot at top and two open slots at bottom
- Bodies have four taper-tapped conduit hubs with integral bushings. Two are located at top and two directly below. Sizes are as shown in the listings.

Grounding:

- EPC interlocked receptacles and matching plugs are provided with an extra grounding pole for attaching a grounding wire. In addition, direct connection is provided between plug and receptacle and the grounding pole. If a separate grounding wire is not installed in the enclosure, grounding is accomplished through the conduit system.

Standard Materials:

- Bodies, covers and receptacle housings – copper-free aluminum
- Operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel
- Insulation (receptacles and plugs) – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

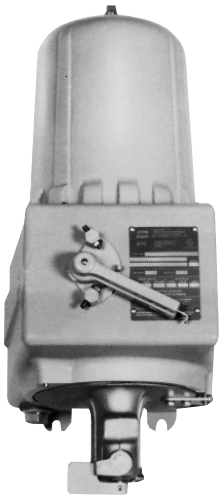
- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Electrical Rating Ranges:

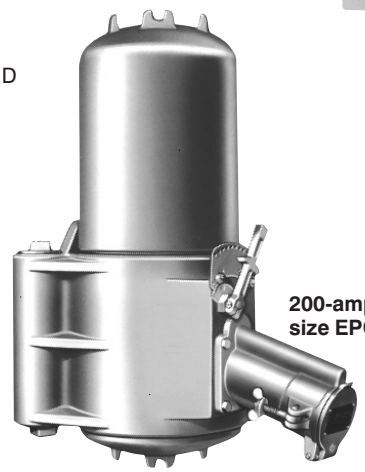
- Receptacle ratings: 30, 60, 100 and 200 amperes
- Circuit breakers: 100 and 225 ampere frame sizes

Certifications and Compliances:

- NEC: Class I, Division 1 and 2, Groups C,D
  Class II, Division 1 and 2, Groups F,G
  Class III
- NEMA: 3,7CD,9FG,12
- ANSI/UL Standard: 1010
- CEC: Class I, Division 1 and 2, Groups C,D
  Class II, Division 1 and 2, Group G
  Class III
  Encl., 3,4



30, 60 and 100-ampere size EPC



200-ampere size EPC

Options:

The following special options are available by adding suffix to Cat. No.

Description	Suffix to be Added to Encl. Cat. #
Special polarity – used where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available on 30, 60 and 100 ampere units as follows:	
• Receptacle interior rotated 22½ degrees clockwise when viewed from face of receptacle and plug changed to match	S4
Side bosses drilled and tapped same size as standard hubs, 30, 60 and 100 ampere units only	S366
Back boss drilled and tapped same size as standard hubs, 30, 60 and 100 ampere units only	S367
Breather and drain (Class I, Class II)	S198V
Breather and drain (Class I only)	S454V

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts

◆◆ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 2, 3 and 4-pole 30 ampere, 3 and 4-pole 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix ''T'' to the catalog number. For example: APJ3365-T (Plug)

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Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with 30, 60 and 100 ampere EPC assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ and CPH plugs of the same rating, style and number of poles may be used with EPC receptacles, as well as with DR receptacles listed in Section 2P and DBR, EBBR and EPCB receptacles listed elsewhere in this section.
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR/NR series receptacles for non-hazardous locations: EBBR, EPC and EPCB receptacles for Class I hazardous locations; DR and DBR receptacles for Class II hazardous locations.

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

100 Ampere Frame Size Thermal-Magnetic Circuit Breaker with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Circuit Breaker			Enclosure				
		Section 6C				With Circuit Breaker	
Receptacle with Spring Door Housing	Rating	Table	Hub Size	Ckt. Bkr. Amps	Without Circuit Breaker Cat. #	Cutler-Hammer "EHD" Cat. #	General Electric "TED" Cat. #
30 amp. 2-wire, 3-pole, Style 2	2-pole, 480VAC‡ **600VAC** or 250VDC	8	1¼	20 30 40* 50*	EPC43032	EPC43032-WT20-2 EPC43032-WT30-2 EPC43032-WT40-2 EPC43032-WT50-2	EPC43032-TT20-2 EPC43032-TT30-2 EPC43032-TT40-2 EPC43032-TT50-2
30 amp. 3-wire, 4-pole, Style 2	3-pole, 480VAC‡ **600VAC** or 250VDC	8	1¼	20 30 40* 50*	EPC43042	EPC43042-WT20-3 EPC43042-WT30-3 EPC43042-WT40-3 EPC43042-WT50-3	EPC43042-TT20-3 EPC43042-TT30-3 EPC43042-TT40-3 EPC43042-TT50-3
60 amp. 2-wire, 3-pole, Style 2	2-pole, 480VAC‡ **600VAC** or 250VDC	8	1¼ 2	50 60 70* 90* 100*	EPC46032 EPC66032	EPC46032-WT50-2 EPC66032-WT60-2 EPC66032-WT70-2 EPC66032-WT90-2 EPC66032-WT100-2	EPC46032-TT50-2 EPC66032-TT60-2 EPC66032-TT70-2 EPC66032-TT90-2 EPC66032-TT100-2
60 amp. 3-wire, 4-pole, Style 2	3-pole, 480VAC‡ **600VAC** or 250VDC	8	1¼ 2	50 60 70* 90* 100*	EPC46042 EPC66042	EPC46042-WT50-3 EPC66042-WT60-3 EPC66042-WT70-3 EPC66042-WT90-3 EPC66042-WT100-3	EPC46042-TT50-3 EPC66042-TT60-3 EPC66042-TT70-3 EPC66042-TT90-3 EPC66042-TT100-3
100 amp. 2-wire, 3-pole, Style 2	2-pole, 480VAC‡ **600VAC** or 250VDC	8	2	60 70 90 100	EPC61032	EPC61032-WT60-2 EPC61032-WT70-2 EPC61032-WT90-2 EPC61032-WT100-2	EPC61032-TT60-2 EPC61032-TT70-2 EPC61032-TT90-2 EPC61032-TT100-2
100 amp. 3-wire, 4-pole, Style 2	3-pole, 480VAC‡ **600VAC** or 250VDC	8	2	60 70 90 100	EPC61042	EPC61042-WT60-3 EPC61042-WT70-3 EPC61042-WT90-3 EPC61042-WT100-3	EPC61042-TT60-3 EPC61042-TT70-3 EPC61042-TT90-3 EPC61042-TT100-3

225 Ampere Frame Size Circuit Breaker with Interchangeable Thermal Magnetic Trip†

Circuit Breaker				Enclosure				
		Section 6C					With Circuit Breaker	
Receptacle with Spring Door Housing	Rating	Table	List	Hub Size	Ckt. Bkr. Amps	Without Circuit Breaker Cat. #	Cutler-Hammer "KB" Cat. #	General Electric "TFK" Cat. #
200 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	11	12W or 12T	3	125 150 175	EPC604-2042	EPC604-2042-WT125-3 EPC604-2042-WT150-3 EPC604-2042-WT175-3	EPC605-2042-TT125-3 EPC605-2042-TT150-3 EPC605-2042-TT175-3
				3	200 225*	EPC605-2042	EPC604-2042-WT200-3 EPC604-2042-WT225-3	EPC605-2042-TT200-3 EPC605-2042-TT225-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

† 200 ampere units are suitable for Class I, Group D (NEMA 7D).

‡ Enclosures with 600 volt circuit breakers from U.S.A. are available. Information on request.

CSA Certified units are supplied with 600VAC FDB frame circuit breakers.

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APJ/NPJ◆◆ and DP Arktite® Plugs with Cable Grip and Neoprene Bushing

CI. I, Div. 1 and 2, Groups C,D
CI. II, Div. 1 and 2, Groups F,G
CI. III
NEMA/EFC 3,7CD,9FG,12
Explosionproof

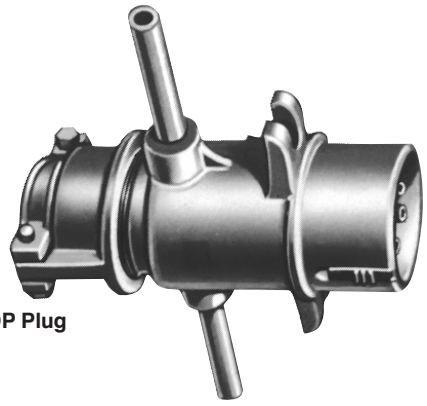
Dust-Ignitionproof
Raintight
Wet Locations



APJ Plug



NPJ Plug



DP Plug

APJ/NPJ and DP Arktite Plugs

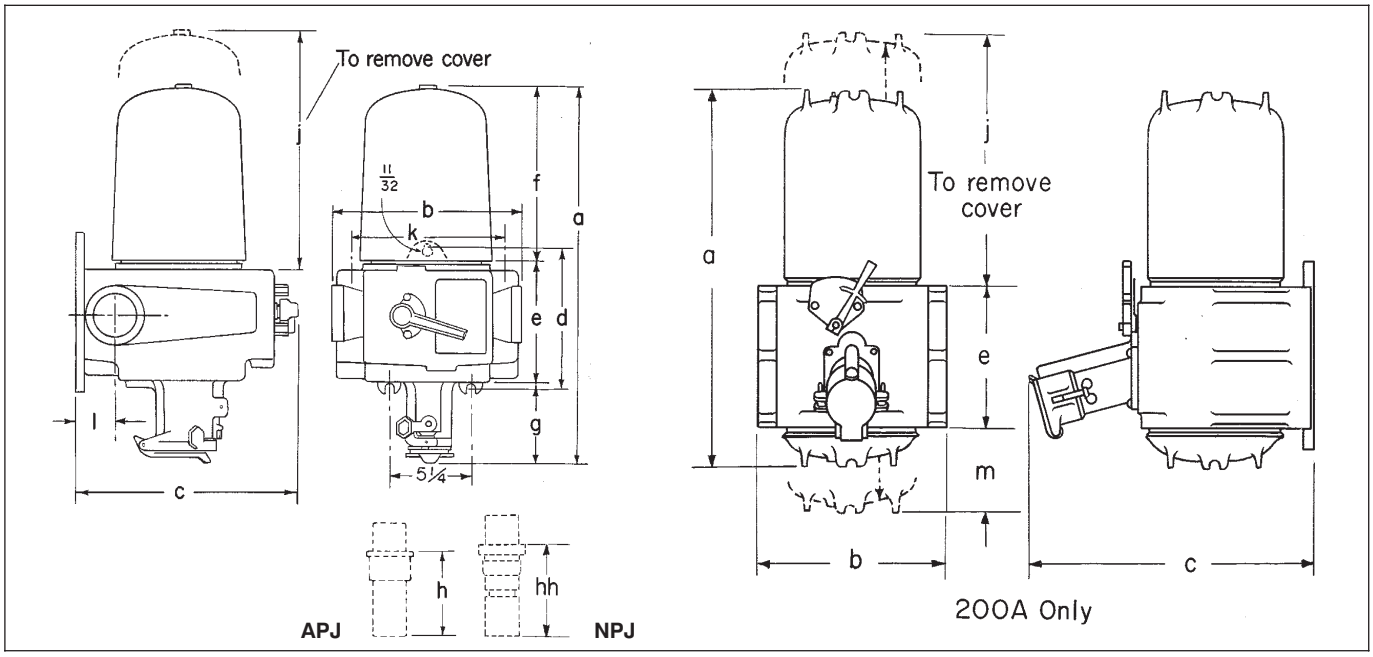
600VAC/250VDC with Cable Grip and Neoprene Bushing – Style 2

Amps	Cable O.D. Range	2-wire, 3-pole Cat. #	3-wire, 4-pole Cat. #
	0.60 to 1.20	APJ3385	APJ3485
30	0.55 to 0.70	NPJ3383	NPJ3483
	0.70 to 0.85	NPJ3384	NPJ3484
	0.75 to 1.45	APJ6385	APJ6485
60	0.75 to 1.07	NPJ6384	NPJ6484
	1.07 to 1.35	NPJ6385	NPJ6485
	1.00 to 1.70	APJ10387	APJ10487
100	0.93 to 1.21	NPJ10386	NPJ10486
	1.21 to 1.50	NPJ10387	NPJ10487
200	1.875 to 2.50		DP20468

◆◆ Pressure connectors are supplied as standard. To specify crimp/solder type terminations add the suffix ''T'' to the catalog number. For example: APJ3385-T (Plug).

Solder Only .56 Wire Well	DP Wire Size	
	Building #1 – 4/0	Extra Flex #1 – 3/0

Dimensions



Recept.	Breaker	a	b	c	d	e	f	g	h	hh	j	k	l	m
30 Amp.	20-50 Amp.	24	10⅝	14⅜	9⅜	7 11⁄16	11¾	4 9⁄16	4 13⁄16	7	20¾	7⅜	2 1⁄16	
60 Amp.	50 Amp.	24½	10⅝	14⅜	9⅜	7 11⁄16	11¾	5 1⁄16	5 13⁄16	6 13⁄16	20¾	7⅜	2 1⁄16	
60 Amp.	70-100 Amp.	24½	12 13⁄16	14⅜	9⅜	7 11⁄16	11¾	5 1⁄16	5 13⁄16	6 13⁄16	20¾	9¼	2⅝	
100 Amp.	70-100 Amp.	25¼	12 13⁄16	14⅜	9⅜	7 11⁄16	11¾	5 13⁄16	6⅝	7¾	20¾	9¼	2⅝	
200 Amp.	125-225 Amp.	36	18	27		13½					34¼			5½

Dim. ''h'' and ''hh'' are exposed portion of plug when engaged with receptacle.

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EPCB Circuit Breakers and Enclosures with Interlocked Arktite® Receptacles

APJ/NPJ Arktite Plugs♦♦

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

Application:

- The EPCB interlock receptacle is designed for use as a service outlet for portable equipment. The circuit breaker provides overcurrent and short circuit protection
- It has a mechanical interlock mechanism for dead front construction and no load make or break feature
- It is designed for use in damp, wet and corrosive locations, indoors or outdoor, in areas which are hazardous due to flammable vapors, gases or combustible dust. For example; refineries, chemical plants, and other processing and handling facilities of a hazardous nature

Features:

- Spring door receptacle located at the bottom is mechanically interlocked with the circuit breaker operating mechanism for maximum safety. Plug and receptacle contacts cannot be made or broken under load. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the ''ON'' position
- Quick installation and leveling is provided by the three-point mounting arrangement having one keyhole slot at top and two open slots at bottom
- Bodies have four 1¼″ taper tapped conduit hubs with integral bushings. Two are located at top and two directly below
- When installing, seals suitable for Class I, Group B hazardous areas must be located within 1½″ of each conduit opening

Grounding:

- EPCB interlocked receptacles and matching plugs are provided with an extra grounding pole for attaching a grounding wire. In addition, direct connection is provided between plug and receptacle and the grounding pole. If a separate grounding wire is not installed in the enclosure, grounding is accomplished through the conduit system

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with EPCB assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ and CPH plugs of the same rating, style and number of poles may be used with EPCB receptacles as well as DR receptacles listed in Section 2P and DBR and EPC receptacles listed elsewhere in this section
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR/NR series receptacles for non-hazardous locations; EBBR, EPC and EPCB receptacles for Class I hazardous locations; DR and DBR receptacles for Class II hazardous locations

Standard Materials:

- Bodies, covers and receptacle housings – copper-free aluminum
- Operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel
- Insulation – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – zinc electroplate with chromate finish
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Electrical Rating Ranges:

- Receptacle ratings: 30, 60 and 100 amperes
- Circuit breakers: 100 ampere frame size



Certifications and Compliances:

- NEC: Class I, Division 1 and 2, Groups B,C,D
  Class II; Division 1 and 2, Groups F,G
  Class III
- NEMA: 3,7BCD,9FG,12
- ANSI/UL Standard: 1010
- CEC: Class I, Division 1 and 2, Groups B,C,D
  Class II, Division 1 and 2, Group G
  Class III
- Encl.: 3,4

Options:

The following special options are available by adding suffix to Cat. No.:

Description	Suffix to be Added to Encl. Cat. #
Special polarity. For use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows: Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match	S4
Side bosses drilled and tapped same size as standard hubs	S366
Back boss drilled and tapped same size as standard hubs	S367

♦♦ Pressure connectors are supplied as standard.
To specify crimp/solder type terminations add the suffix ''T'' to the catalog number. For example: APJ3365-T (Plug)

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EPCB Circuit Breakers and Enclosures with Interlocked Arktite® Receptacles

APJ/NPJ Arktite Plugs◆◆

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

100 Ampere Frame Size Thermal-Magnetic Circuit Breaker with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Circuit Breaker		Enclosure with Circuit Breaker			
Receptacle with Spring Door Housing	Rating	Hub Size	Ckt. Bkr. Amps	Cutler-Hammer	General Electric
30 amp. 2-wire, 3-pole, Style 2	2-pole, 600VAC or 250VDC	1¼	20	EPCB43632-WT20HFD-2	EPCB43632-TT20TED-2
			30	EPCB43632-WT30HFD-2	EPCB43632-TT30TED-2
			40*	EPCB43632-WT40HFD-2	EPCB43632-TT40TED-2
			50*	EPCB43632-WT50HFD-2	EPCB43632-TT50TED-2
30 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	1¼	20	EPCB43642-WT20HFD-3	EPCB43642-TT20TED-3
			30	EPCB43642-WT30HFD3	EPCB43642-TT30TED-3
			40*	EPCB43642-WT40HFD-3	EPCB43642-TT40TED-3
			50*	EPCB43642-WT50HFD-3	EPCB43642-TT50TED-3
60 amp. 2-wire, 3-pole, Style 2	2-pole, 600VAC or 250VDC	1¼	50	EPCB46632-WT50HFD-2	EPCB46632-TT50TED-2
			60*	EPCB46632-WT60HFD-2	EPCB46632-TT60TED-2
			70*	EPCB46632-WT70HFD-2	EPCB46632-TT70TED-2
			90*	EPCB46632-WT90HFD-2	EPCB46632-TT90TED-2
			100*	EPCB46632-WT100HFD-2	EPCB46632-TT100TED-2
60 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	1¼	50	EPCB46642-WT50HFD-3	EPCB46642-TT50TED-3
			60*	EPCB46642-WT60HFD-3	EPCB46642-TT60TED-3
			70*	EPCB46642-WT70HFD-3	EPCB46642-TT70TED-3
			90*	EPCB46642-WT90HFD-3	EPCB46642-TT90TED-3
			100*	EPCB46642-WT100HFD-3	EPCB46642-TT100TED-3
100 amp. 2-wire, 3-pole, Style 2	2-pole, 600VAC or 250VDC	1¼	70	EPCB41632-WT70HFD-2	EPCB41632-TT70TED-2
			90	EPCB41632-WT90HFD-2	EPCB41632-TT90TED-2
			100	EPCB41632-WT100HFD-2	EPCB41632-TT100TED-2
100 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	1¼	70†	EPCB41642-WT70HFD-3	EPCB41642-TT70TED-3
			90†	EPCB41642-WT90HFD-3	EPCB41642-TT90TED-3
			100†	EPCB41642-WT100HFD-3	EPCB41642-TT100TED-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

† For detailed information on circuit breaker selection see Section 6C.

◆◆ Pressure connectors are supplied as standard.
To specify crimp/solder type terminators add the suffix "T" to the catalog number.
For example: APJ3385-T (Plug)

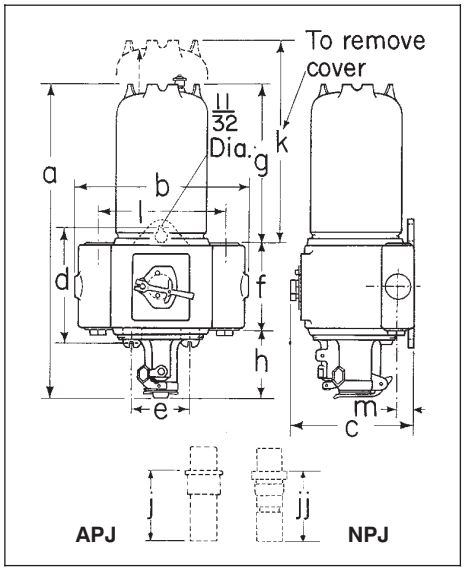


APJ Plug



NPJ Plug

Dimensions



APJ/NPJ Arktite Plugs

600VAC/250VDC with Cable Grip and Neoprene Bushing – Style 2

Amps	Cable O.D. Range	2-wire, 3-pole Cat. #	3-wire, 4-pole Cat. #
	0.60 to 1.20	APJ3385	APJ3485
30	0.55 to 0.70	NPJ3383	NPJ3483
	0.70 to 0.85	NPJ3384	NPJ3484
	0.75 to 1.45	APJ6385	APJ6485
60	0.75 to 1.07	NPJ6384	NPJ6484
	1.07 to 1.35	NPJ6385	NPJ6485
	1.00 to 1.70	APJ10387	APJ10487
100	0.93 to 1.21	NPJ10386	NPJ10486
	1.21 to 1.50	NPJ10387	NPJ10487

Receptacle	a	b	c	d	e	f	
30 Amp.	26¼	11 5/16	11¾	8⅝	5	7¾	
60 Amp.	26¾	11 5/16	11¾	8⅝	5	7¾	
100 Amp.	27½	11 5/16	11¾	8⅝	5	7¾	
Receptacle	**g**	**h**	**j**	**jj**	**k**	**l**	**m**
30 Amp.	13 9/16	4 15/16	4 13/16	7	24¾	8 3/16	1⅝
60 Amp.	13 9/16	5 7/16	5 13/16	6 13/16	24¾	8 3/16	1⅝
100 Amp.	13 9/16	6 3/16	6⅝	7¾	24¾	8 3/16	1⅝

Dim "j" and "jj" are exposed portion of plug when engaged with receptacle.

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DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs ♦ ♦

Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,9FG,12
Dust-Ignitionproof
Raintight

Application:

DBR interlocked *Arktite* receptacles with enclosed circuit breakers and APJ/NPJ *Arktite* plugs are used:
- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, conveyors, and similar equipment
- in locations where hazardous dusts are present, as in grain processing and handling plants, chemical plants and certain food processing industries
- indoors or outdoors in damp, wet or corrosive locations

Features:

- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection.
- Enclosures are compact and rectangular in shape permitting close spacing.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the circuit breaker operating mechanism. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open.
- Operating handles can be padlocked in either ''ON'' or ''OFF'' positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the ''ON'' position.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a threaded-in bushing. The size furnished is 1½″, and removing the bushing permits the use of a 2″ conduit.

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with DBR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with DBR receptacles, as well as with DR receptacles listed in Section 2P and with EBBR, EPC and EPCB receptacles listed in Section 4P.
- As a result, portable equipment suitable for the locations and equipped with the proper plug can be used with AR receptacles for non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I hazardous locations, and with DR and DBR interlocked receptacles for Class II hazardous locations.

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation: plugs and receptacles – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – plug exterior, enclosure and receptacle housing – natural
- Stainless steel – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

The following special options are available by adding suffix to Cat. No.

Description	Suffix to be Added to Cat. #
Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:	
• Receptacle interior rotated 22½ degrees clockwise when viewed from receptacle face and plug changed to match	S4
Breather (drain furnished as standard)	S219
Conduit arrangements other than standard can be supplied . Details on request	

Certifications and Compliances:

- NEC: Class II, Division 1 and 2, Groups F,G Class III
- NEMA/EEMAC: 3, 9FG, 12
- UL Standard: 698, 1010
- CEC: Class II, Division 1 and 2, Group G Class III
- Encl.: 3,5

Electrical Rating Ranges:

- Receptacle ratings: 30, 60 and 100 amperes
- Circuit breakers – 100 ampere frame size

Amps	a	b	bb
30	21¾	6½	7
60	22¾	8½	6 13/16
100	23½	10⅛	7¾

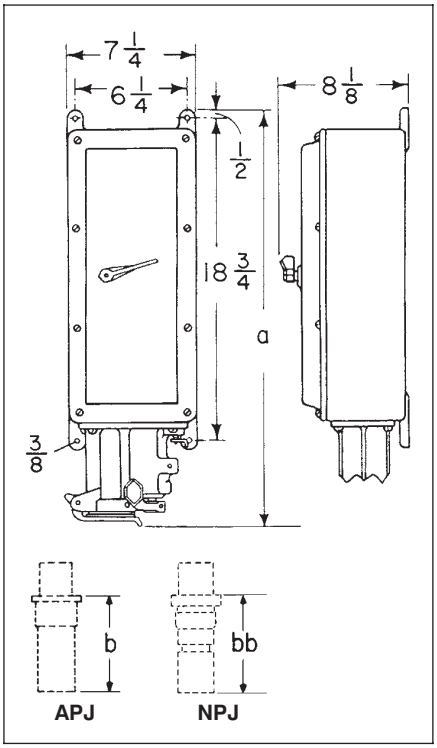
Dim. ''b'' and ''bb'' are exposed portion of plug when engaged with receptacle.



CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

♦ ♦ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole, 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix ''T'' to the catalog number. For example: AP3375-T (Plug)

Dimensions:



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4P DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,9FG,12
Dust-Ignitionproof
Raintight

100 Ampere Frame Size with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Receptacle With Spring Door Housing†	Circuit Breaker Rating	Enclosure Hub Size	Ckt. Bkr. Amps	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. # Cutler-Hammer "FDB"
30 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	20	DBR53731	DBR53731-WT20-3
			30		DBR53731-WT30-3
			40		DBR53731-WT40-3*
			50		DBR53731-WT50-3*
30 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	20	DBR53732	DBR53732-WT20-2
			30		DBR53732-WT30-2
			40		DBR53732-WT40-2*
			50		DBR53732-WT50-2*
30 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	20	DBR53742	DBR53742-WT20-3
			30		DBR53742-WT30-3
			40		DBR53742-WT40-3*
			50		DBR53742-WT50-3*
60 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	50	DBR56731	DBR56731-WT50-3
			60		DBR56731-WT60-3
			70		DBR56731-WT70-3*
			90		DBR56731-WT90-3*
			100		DBR56731-WT100-3*
60 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	50	DBR56732	DBR56732-WT50-2
			60		DBR56732-WT60-2
			70		DBR56732-WT70-2*
			90		DBR56732-WT90-2*
			100		DBR56732-WT100-2*
60 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	50	DBR56742	DBR56742-WT50-3
			60		DBR56742-WT60-3
			70		DBR56742-WT70-3*
			90		DBR56742-WT90-3*
			100		DBR56742-WT100-3*
100 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	60	DBR51731	DBR51731-WT60-3
			70		DBR51731-WT70-3
			90		DBR51731-WT90-3
			100		DBR51731-WT100-3
100 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	60	DBR51732	DBR51732-WT60-2
			70		DBR51732-WT70-2
			90		DBR51732-WT90-2
			100		DBR51732-WT100-2
100 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	60	DBR51742	DBR51742-WT60-3
			70		DBR51742-WT70-3
			90		DBR51742-WT90-3
			100		DBR51742-WT100-3

* Circuit breaker trip rating may exceed receptacled rating for welding equipment applications only, as higher trip rating may not protect wiring.

◆ ◆ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example: APJ3375-T (Plug)

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

‡ For circuit breaker Cat. No. refer to Section 6C, Table 9, List FDB. For detailed information on circuit breaker selection, see Section 6C.

APJ/NPJ Arktite Plugs

600VAC/250VDC with Cable Grip and Neoprene Bushing



APJ Plug



NPJ Plug

Amps	Cable O.D. Range	Style 1† 3-wire, 3-pole Cat. #	Style 2† 2-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
	0.60 to 1.20	APJ3375	APJ3385	APJ3485
30	0.55 to 0.70		NPJ3383	NPJ3483
	0.70 to 0.85		NPJ3384	NPJ3484
	0.75 to 1.45	APJ6375	APJ6385	APJ6485
60	0.75 to 1.07		NPJ6384	NPJ6484
	1.07 to 1.35		NPJ6385	NPJ6485
	1.00 to 1.70	APJ10377	APJ10387	APJ10487
100	0.93 to 1.21		NPJ10386	NPJ10486
	1.21 to 1.50		NPJ10387	NPJ10487

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IEC 309
Plugs, Receptacles, Interlocks
Non-Hazardous & Hazardous

Description	Page No.
Non-Hazardous Plugs, Receptacles, Interlocks	
Applications, Technical Data	1064-1067
Ordering Information	1068, 1069
Hazardous Plugs, Interlocks	
Applications, Technical Data	1070, 1071
Ordering Information	1072, 1073
Back Boxes, Accessories, Tech Data	1074, 1075
Angled Back Box Adapters	1076
Adapter Plates	1077



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5P IEC 309 Pin & Sleeve Plugs & Receptacles 20, 30, 60 & 100A - Series 2 16, 32, 63 & 125A - Series 1

NEMA 4X
IP 66
Watertight

Applications

- wet location & hosedown areas
- damp or corrosice locations
- food processing, wastewater, shipyard, marina, restaurant, construction site, HVAC and convention centers

Features

- voltage configured, color coded
- watertight
- impact and corrosion resistant
- receptacles mount to Cooper Crouse-Hinds back boxes
- innovative finger lock keeps cord grip secured
- positive grommet seal system at cord entry
- funneled wire pockets
- lockout/tagout
- high grade brass contacts
- VØ insulating material
- multi-lam sleeve bands

Standard Materials

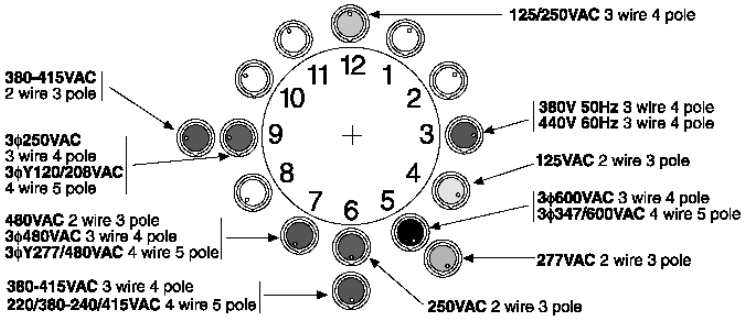
- receptacle housing: RIP, nylon, VØ
- contact carrier: fiber–reinforced thermoplastic, VØ
- pins & sleeves: brass
- multi–lam bands: copper beryllium
- assembly screws: stainless steel
- plug: type % nylon, VØ
- receptacle hinge pin: stainless steel
- gaskets: silicon

Certifications & Compliances

- listed UL 498, 1682 & 1686
- CSA C22.2 no. 182.1
- IEC 309-1 & 309-2
- NEMA 4X
- IEC IP66

Making a connection is easy

A clock face is used to represent the grounding contact position for all female connectors and receptacles. With the keyway at the bottom, the female grounding contact will appear to one of the twelve hour positions. To identify the system voltage, identify the housing color and hour location of the connector or receptacle grounding contact.



Ordering is easy

We've made our catalog number ordering system as easy to use as our products! Simply follow the six-part "code":

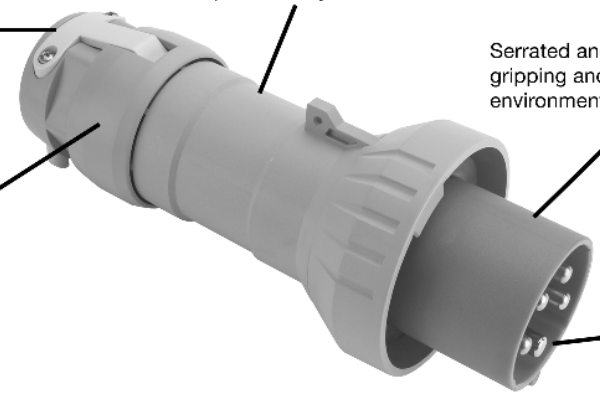
CH Prefix	4 1st digit	20 2nd-4th digit	R 1st letter	7 Last digit	W Last letter
CH = Cooper Crouse-Hinds	3 = 3 pole 4 = 4 pole 5 = 5 pole	16 = 16 Amp 20 = 20 Amp 30 = 30 Amp 32 = 32 Amp 60 = 60 Amp 63 = 63 Amp 100 = 100 Amp 125 = 125 Amp	P = Plug C = Connector R = Receptacle B = Inlet MI = Mechanical Interlock	Clock position of female grounding contact	W = Watertight

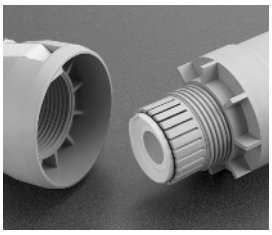
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IEC 309 Pin & Sleeve Plugs & Receptacles
20, 30, 60 & 100A - Series 2
16, 32, 63 & 125A - Series 1

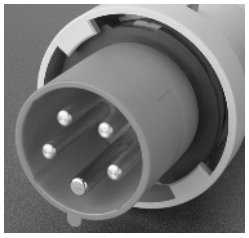
NEMA 4X
IP 66
Watertight

Plug





Locking finger seats into web pockets when cord grip is tightened down, securing back cap in place even under heavy usage and vibration.



Nickle–plated brass contacts offer long–life corrosion protection. Compression lugs provide reliable mechanical wire termination.



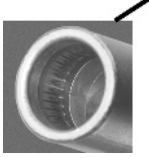
Funneled wiring pockets for ease of inserting stranded wire. Deep pocket marked X, Y, Z and Keep bare conductors safely confined and isolated from adjacent wires.

Receptacle





Impact–resistant thermoplastic contact carrier provides superior electrical insulation and V flammability rating.



Brass contacts with self cleaning, feild–proven multi–lam pressure bands for smooth pin insertion, low heat rise and quality electrical performance.



Funneled wire termination pockets have all screw heads on same side for easy conductor insertion and quick wiring.

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5P IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

NEMA 4X
IP 66
Watertight

20 & 30A - North American Ratings Series 2
16 & 32A - International Ratings Series 1

Applications

- to supply power to portable or fixed electrical equipment such as welders, motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in damp or corrosive locations
- in wet locations
- in hosedown areas
- for short-circuit protection when ordered with optional fusing

Features

- Mechanically interlocked, dead-front receptacle – plug cannot be engaged or disengaged under load
- Enclosure has continuous form-in-place gasket
- meets OSHA's lockout/tagout requirements – can be padlocked in ''OFF'' position
- industrial switch is horsepower-rated for motor load applications
- available with optional fusing for short-circuit protection

Certifications & Compliances

- UL Standards 508, 1682
- CSA Standard C22.2 Nos. 14, 182.1
- Enclosure type: 3, 4X, 12
- IP66

Standard Materials

- enclosure: fiber-reinforced polyester
- external hardware: stainless steel
- contacts: brass
- contact carrier: fiber-reinforced thermoplastic

Horsepower ratings

		Three Phase		
Amps	**Description**	**250VAC**	**480VAC**	**600VAC**
20A	Unfused	7.5	15	20
30A	Unfused	10	20	25
	Fused*	10	20	25
60A	Unfused	20	40	40
	Fused*	20	40	50
100A	Unfused	25	50	40

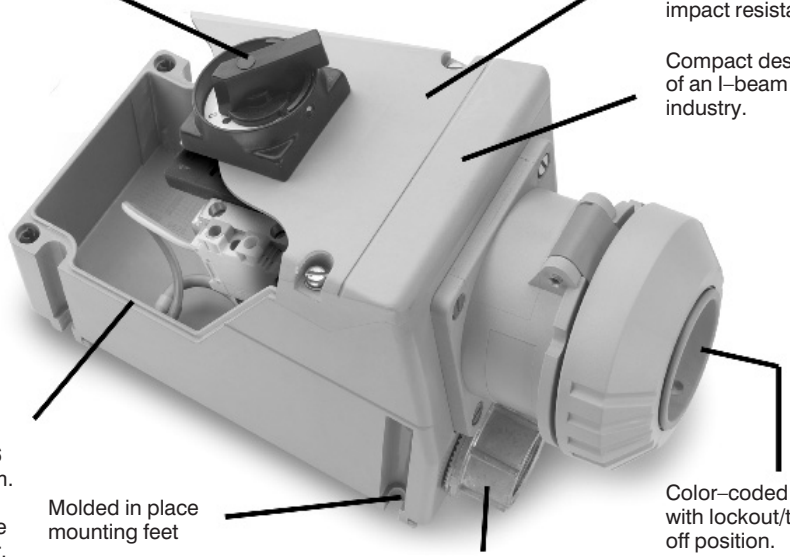
* See bulletin #4671

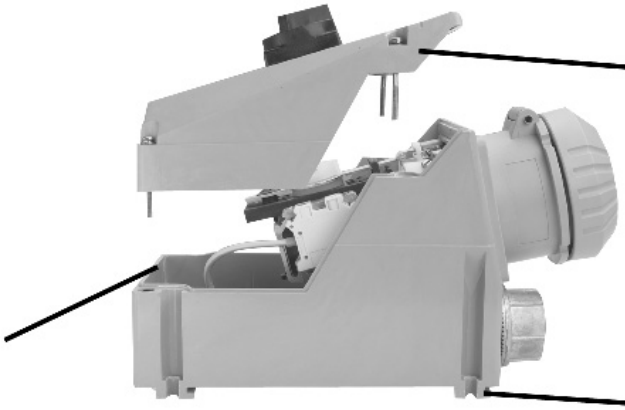
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IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

20 & 30A - North America Ratings Series 2
16 & 32A - International Ratings Series 1

NEMA 4X
IP 66
Watertight





Options

- Auxiliary contacts for PLC or pilot light applications–add suffix [S483]

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IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

20 & 30A - North America Ratings Series 2
16 & 32A - International Ratings Series 1

NEMA 4X
IP 66
Watertight

Ordering Information:

Amps	Wires and Poles	CONFIFURATION Recept./Conn.	CONFIFURATION Plug/Inlet	Voltage	Watertight Devices RECEPTACLE	PLUG	CONNECTOR	INLET	INTERLOCK UNFUSED
									
16A	2W3P			110-120	CH316R4W	CH316P4W	CH316C4W	CH316B4W	CH316MI4W*
	2W3P			220-240	CH316R6W	CH316P6W	CH316C6W	CH316B6W	CH316MI6W*
	3W4P			380-415	CH416R6W	CH416P6W	CH416C6W	CH416B6W	CH416MI6W
	4W5P			220\380 240\415	CH516R6W	CH516P6W	CH516C6W	N/A	CH516MI6W*
20A	2W3P			125	CH320R4W	CH320P4W	CH320C4W	CH320B4W	CH320MI4W*
	2W3P			250	CH320R6W	CH320P6W	CH320C6W	CH320B6W	CH320MI6W*
	2W3P			480	CH320R7W	CH320P7W	CH320C7W	CH320B7W	CH320MI7W*
	3W4P			125\250	CH420R12W	CH420P12W	CH420C12W	CH420B12W	CH420MI12W
	3W4P			3Ø250	CH420R9W	CH420P9W	CH420C9W	CH420B9W	CH420MI9W
	3W4P			3Ø480	CH420R7W	CH420P7W	CH420C7W	CH420B7W	CH420MI7W
	3W4P			3Ø600	CH420R5W	CH420P5W	CH420C5W	CH420B5W	CH420MI5W
	4W5P			3ØY120\208	CH520R9W	CH520P9W	CH520C9W	N/A	CH520MI9W*
	4W5P			3ØY277\480	CH520R7W	CH520P7W	CH520C7W	N/A	CH520MI7W*
	4W5P			3ØY347\600	CH520R5W	CH520P5W	CH520C5W	N/A	CH520MI5W*
30A	2W3P			125	CH330R4W	CH330P4W	CH330C4W	CH330B4W	CH330MI4W
	2W3P			250	CH330R6W	CH330P6W	CH330C6W	CH330B6W	CH330MI6W
	2W3P			480	CH330R7W	CH330P7W	CH330C7W	CH330B7W	CH330MI7W
	3W4P			3Ø250	CH430R9W	CH430P9W	CH430C9W	CH430B9W	CH430MI9W
	3W4P			3Ø480	CH430R7W	CH430P7W	CH430C7W	CH430B7W	CH430MI7W
	3W4P			3Ø600	CH430R5W	CH430P5W	CH430C5W	CH430B5W	CH430MI5W
	4W5P			3ØY120\208	CH530R9W	CH530P9W	CH530C9W	N/A	CH530MI9W
	4W5P			3ØY277\480	CH530R7W	CH530P7W	CH530C7W	N/A	CH530MI7W
	4W5P			3ØY347\600	CH530R5W	CH530P5W	CH530C5W	N/A	CH530MI6W
32A	2W3P			110-120	CH332R4W	CH332P4W	CH332C4W	CH332B4W	CH332MI4W
	2W3P			220-240	CH332R6W	CH332P6W	CH332C6W	CH332B6W	CH332MI6W
	3W4P			380-415	CH432R6W	CH432P6W	CH432C6W	CH432B6W	CH432MI6W
	4W5P			220\380	CH532R6W	CH532P6W	CH532C6W		CH532MI6W

*** Alternate Switch Design. Does not have a switch handle. Switch is activated by inserting plug: rotating plug to turn switch 'ON'.**

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IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

NEMA 4X
IP 66
Watertight

20 & 30A - North America Ratings Series 2
16 & 32A - International Ratings Series 1

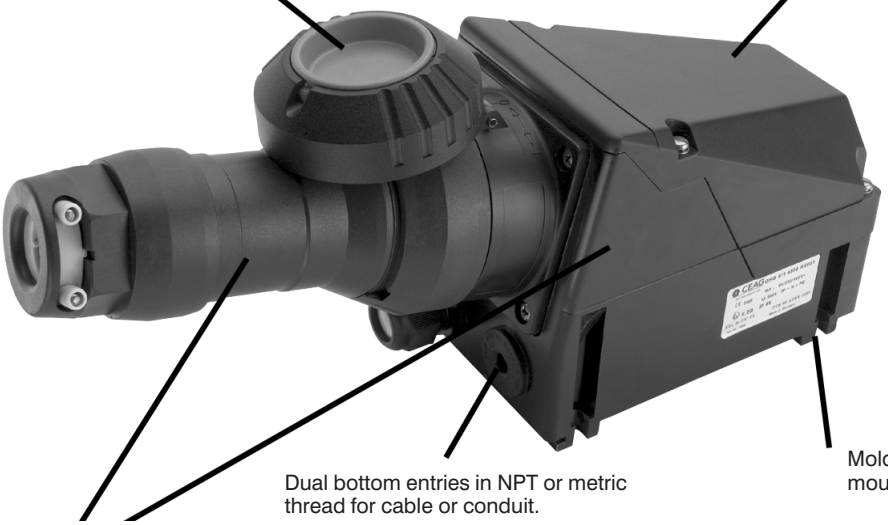
Ordering Information:

					Watertight Devices				
									
Amps	Wires and Poles	CONFIGURATION Recept./Conn.	Plug/Inlet	Voltage	RECEPTACLE	PLUG	CONNECTOR	INLET	INTERLOCK UNFUSED
60A	2W3P			125	CH360R4W	CH360P4W	CH360C4W	CH360B4W	CH360MI4W
	2W3P			250	CH360R6W	CH360P6W	CH360C6W	CH360B6W	CH360MI6W
	2W3P			480	CH360R7W	CH360P7W	CH360C7W	CH360B7W	CH360MI7W
	3W4P			125\250	CH460R12W	CH460P12W	CH460C12W	CH460B12W	CH460MI12W
	3W4P			3Ø250	CH460R9W	CH460P9W	CH460C9W	CH460B9W	CH460MI9W
	3W4P			3Ø480	CH460R7W	CH460P7W	CH460C7W	CH460B7W	CH460MI7W
	3W4P			3Ø600	CH460R5W	CH460P5W	CH460C5W	CH460B5W	CH460MI5W
	4W5P			3ØY120\208	CH560R9W	CH560P9W	CH560C9W	CH560B9W	CH560MI9W
	4W5P			3ØY277\480	CH560R7W	CH560P7W	CH560C7W	CH560B7W	CH560MI7W
	4W5P			3ØY347\600	CH560R5W	CH560P5W	CH560C5W	CH560B5W	CH560MI5W
63A	2W3P			220-240	CH363R6W	CH363P6W	CH363C6W	CH363B6W	CH363MI6W
	3W4P			380-415	CH463R6W	CH463P6W	CH463C6W	CH463B6W	CH463MI6W
	4W5P			220\380 240\415	CH563R6W	CH563P6W	CH563C6W	CH563B6W	CH563MI6W
100A	2W3P			125	CH3100R4W	CH3100P4W	CH3100C4W	CH3100B4W	CH3100MI4W
	2W3P			250	CH3100R6W	CH3100P6W	CH3100C6W	CH3100B6W	CH3100MI6W
	2W3P			480	CH3100R7W	CH3100P7W	CH3100C7W	CH3100B7W	CH3100MI7W
	3W4P			125\250	CH4100R12W	CH4100P12W	CH4100C12W	CH4100B12W	CH4100MI12W
	3W4P			3Ø250	CH4100R9W	CH4100P9W	CH4100C9W	CH4100B9W	CH4100MI9W
	3W4P			3Ø480	CH4100R7W	CH4100P7W	CH4100C7W	CH4100B7W	CH4100MI7W
	3W4P			3Ø600	CH4100R5W	CH4100P5W	CH4100C5W	CH4100B5W	CH4100MI5W
	4W5P			3ØY120\208	CH5100R9W	CH5100P9W	CH5100C9W	CH5100B9W	CH5100MI9W
	4W5P			3ØY277\480	CH5100R7W	CH5100P7W	CH5100C7W	CH5100B7W	CH5100MI7W
	4W5P			3ØY347\600	CH5100R5W	CH5100P5W	CH5100C5W	CH5100B5W	CH5100MI5W
125A	2W3P			220-240	CH3125R6W	CH3125P6W	CH3125C6W	CH3125B6W	CH3125MI6W
	3W4P			380-415	CH4125R6W	CH4125P6W	CH4125C6W	CH4125B6W	CH4125MI6W
	4W5P			220\380 240\415	CH5125R6W	CH5125P6W	CH5125C6W	CH5125B6W	CH5125MI6W

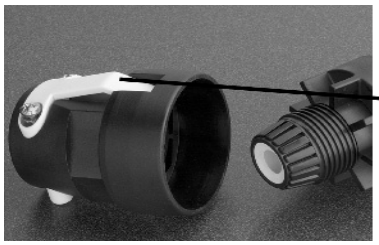
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Hazardous Area Interlocks & Plugs "GHG" Series

Class I, Zone 1 & 2, Div. 2,
NEMA 4X, IP66





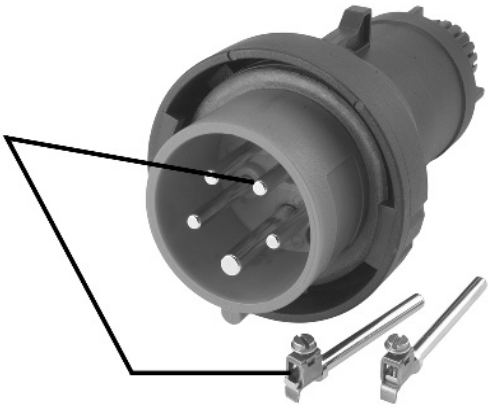


Locking finger seats into web pockets securing back cap in place even under heavy usage and vibration.

HEAVY DUTY STRAIN RELIEF

Offering superior pullout protection and significantly reducing the occurrance of seal failure, our external stain relief system absorbs all tensile and torsional forces. In addition, an extremely long and dependable inside seal provides added protection.

Nickel–plated brass contacts offer long life–corrosion protection. Compression lugs provide reliable mechanical wire termination.



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Easy to wire. Cover removes along an innovative break line that permits full access to internal switch terminations.



Brass contacts with field-proven, self-cleaning multi-lam pressure bands for smooth plug insertion, low heat rise and uniform electrical contact.



Factory sealed switch provides Zone 1 & 2, Div. 2 explosion protection. Receptacle is dead–front until plug is fully engaged and rotated to activate switch. Plug cannot be removed under load. Switch is horsepower, and AIC–rated.

Applications

IEC 309 explosion protected devices are used:
- to supply power to portable or fixed electrical equipment
- where hazardous gases may be present
- in damp or wet locations
- where impact and corrosion resistance are required
- where compact equipment is required in tight spaces

Features

- mechanicaly interlocked plug and receptacle–plug cannot be engaged or disengaged under load
- simple ‘‘insert plug and twist’’ design to activate internal switch
- self cleaning multi–lam contacts provide reliable power connection
- compact size, easy to handle and install
- OSHA lockout/tagout
- dual bottom entry zone 1 Myers® hubs
- full wiring access, saves time and money
- VØ rated materials

Standard Materials

- enclosure: type 12 nylon
- plug body: fiber–reinforced nylon
- hardware: stainless steel
- contacts: brass

Certifications

- AEx de IIc T6
- Class I, Zone I, Div. 2, Groups A, B, C & D
- EEx ed IIc T6
- (EX LOGO) II 2G/D
- UL, cUL*
- PTB 99 ATEX 1039
- IP66, NEMA 4X
- CE
- VDE

* 20A, 30A, 60A, 100A Pin Configuration to IEC 309-1/2 Series 2 - U.L. Listed
16A, 32A, 63A, 125A Pin Configuration to IEC 309-1/2 Series 1 - Not U.L. Listed

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IEC 309 Hazardous Area Plugs & Interlocks

Class I, Zone 1 & 2, Div. 2,
NEMA 4X, IP66

Ordering Information:

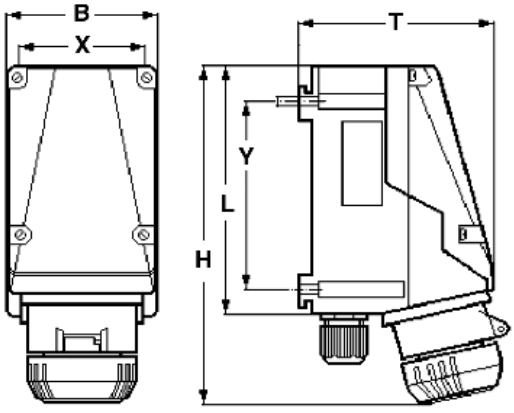
Amps	Cable Gland	Myers Hub	Wires and Poles	CONFIFURATION Recept./Conn.	CONFIFURATION Plug/Inlet	Voltage	 INTERLOCK RECEPTACLE	 PLUG
16A	M20		2W3P			110-120	GHG 511 4304 R3001	GHG 511 7304 R0001
	M20		2W3P			220-240	GHG 511 4306 R3001	GHG511 7306 R0001
	M25		3W4P			220-240	GHG 511 4409 R3001	GHG 511 7409 R0001
	M25		3W4P			380.415	GHG 511 4406 R3001	GHG 511 7406 R0001
	M25		3W4P			500	GHG 511 4407 R3001	GHG 511 7407 R0001
	M25		3W4P			690	GHG 511 4405 R3001	GHG 511 7405 R0001
	W25		4W5P			380-415	GHG 511 4506 R3001	GHG 511 7506 R0001
20A		½	2W3P			125	GHG 511 4304 L3001	GHG 511 7304 L0001
		½	2W3P			250	GHG 511 4306 L3001	GHG 511 7306 L0001
		¾	3W4P			3Ø250	GHG 511 4409 L3001	GHG 511 7409 L0001
		¾	3W4P			3Ø480	GHG 511 4407 L3001	GHG 511 7407 L0001
		¾	3W4P			3Ø600	GHG 511 4405 L3001	GHG 511 7405 L0001
30A		1	3W4P			3Ø250	GHG 512 4409 L3001	GHG 512 7409 L0001
		1	3W4P			3Ø480	GHG 512 4407 L3001	GHG 512 7407 L0001
		1	3W4P			3Ø600	GHG 512 4405 L3001	GHG 512 7405 L0001
32A	M32		3W4P			220-240	GHG 512 4409 R3001	GHG 512 7409 R0001
	M32		3W4P			380-415	GHG 512 4406 R3001	GHG 512 7406 R0001
	M32		3W4P			500	GHG 512 4407 R3001	GHG 512 7407 R0001
	M32		3W4P			690	GHG 512 4405 R3001	GHG 512 7405 R0001
	M32		4W5P			380-415	GHG 512 4506 R3001	GHG 512 7506 R0001
60A		1 ¼	3W4P			3Ø250	GHG 514 4409 L3001	GHG 514 7409 L0001
		1 ¼	3W4P			3Ø480	GHG 514 4407 L3001	GHG 514 7407 L0001
		1 ¼	3W4P			3Ø600	GHG 514 4405 L3001	GHG 514 7405 L0001

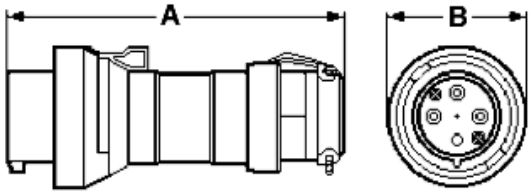
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Ordering Information:

Amps	Cable Gland	Myers Hub	Wires and Poles	CONFIFURATION Recept./Conn.	CONFIFURATION Plug/Inlet	Voltage		
63A	M40		3W4P			220-240	GHG 514 4409 R3001	GHG 514 7409 R0001
	M40		3W4P			380-415	GHG 514 4506 R3001	GHG 514 7406 R0001
	M40		3W4P			500	GHG 514 4407 R3001	GHG 514 7407 R0001
	M40		3W4P			690	GHG 514 4405 R3001	GHG 514 7405 R0001
	M40		4W5P			380-415	GHG 514 4506 R3001	GHG 514 7506 R0001
100A		1 ½	3W4P			125\250	GHG 515 4412 L3001	GHG 515 7412 L0001
		1 ½	3W4P			3Ø250	GHG 515 4409 L3001	GHG 515 7409 L0001
		1 ½	3W4P			3Ø480	GHG 515 4407 L3001	GHG 515 7407 L0001
		1 ½	3W4P			3Ø600	GHG 515 4405 L3001	GHG 515 7405 L0001
		1 ½	4W5P			690	GHG 515 4506 L3001	GHG 515 7506 L0001
125A	M63		3W4P			220-240	GHG 515 4409 R3001	GHG 515 7409 R0001
	M63		3W4P			380-415	GHG 515 4406 R3001	GHG 515 7406 R0001
	M63		3W4P			500	GHG 515 4407 R3001	GHG 515 7407 R0001
	M63		3W4P			690	GHG 515 4405 R3001	GHG 515 7405 R0001
	M63		4W5P			380-415	GHG 515 4506 R3001	GHG 515 7506 R0001

Dimensional Data (inches)





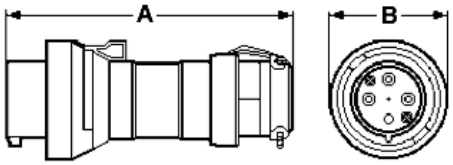
	20\16A 3P	20\16A 4\5P	30\32A 4\5P	60\63A 4\5P	100\125A
B	3.5	4.3	4.7	7.9	8.9
X	3.15	3.94	4.33	7.09	8.10
T	4.8	5.8	6.6	8.9	10.0
Y	4.53	5.31	6.70	10.87	11.90
L	6.1	6.9	8.1	14.6	13.3
H	8.8	9.3	11.5	18.7	21.1

	20\16A 3P	4P	5P	30\32A 4\5P	60\63A 4\5P	100\125A
A	6.7	7.4	7.4	9.8	10.7	12.32
B	2.8	3.0	3.3	3.9	4.3	5.16
CORD DIA. RANGE (in.)	.515-.827		.515-1.102	.630-1.378		.827-2.28

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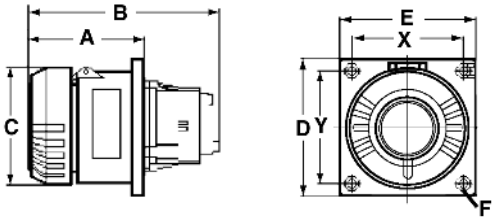
IEC 309 Pin & Sleeve Devices
Dimensional Data (inches)

Plug Dimensions



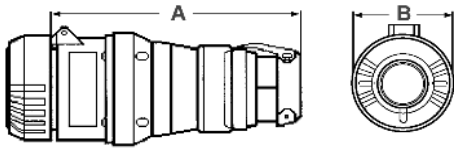
Amps	A	B	CORD RANGE 3 Pole	4 Pole	5 Pole
20\16A	7.37	3.00	.315-.748	.315-748	.472-827
30\32a	7.37	3.00	.314-.748	.315-.748	.472-.827
60\63a	10.71	4.33	.630-1.378	.630-1.378	.827-1.378
100\125A	12.32	5.16	.827-1.89	.827-2.28	1.22-2.28

Receptacle Dimensions



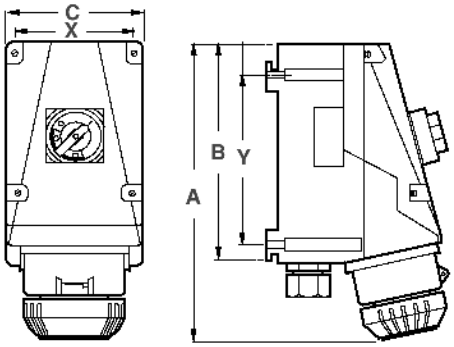
Amps	A	B	C	D	E	F DIA.	MTC. DIMS. X	Y
20\16A	2.95	4.37	3.31	3.38	3.38	.236	2.74	2.74
30\32A	3.35	4.92	3.74	3.38	3.38	.236	2.74	2.74
60\63A	4.57	6.18	4.61	4.13	4.13	.236	3.50	3.50
100\125A	4.81	6.56	4.80	5.12	5.32	.250	4.09	4.09

Connector Dimensions



Amps	A	B	CORD RANGE 3 Pole	4 Pole	5 Pole
20\16A	8.58	3.38	.315-.748	.315-827	.472-827
30\32A	10.40	3.82	.315-.748	.315-.827	.472-.827
60\63A	12.52	4.61	.630-1.378	.630-1.378	.827-1.378
100\125A	13.40	5.32	.827-1.89	.827-2.28	1.22-.2.28

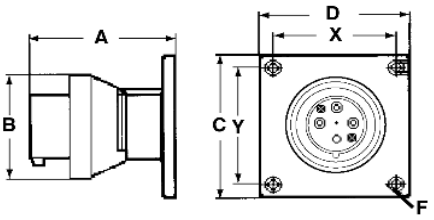
Interlock Dimensions



Amps	A	B	C	X	Y	20, 30 60, 100A HUB	16, 32, 63, 125A CABLE GLAND
*20\16A	8.8	6.7	3.5	3.7	4.5	1\2	M20
20\16A	9.3	6.9	4.3	3.9	5.3	3\4	M25
30\32A	11.2	8.07	4.7	4.3	6.7	1	M32
60\63A	18.7	12.3	7.9	7.1	10.9	11\4	M40
100\125A	21.1	13.3	8,9	8,1	11.9	11\2	M63

*3 Pole Only

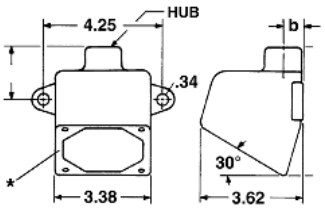
Inlet Dimensions



Amps	A	B	C	D	F DIA.	MTC. DIMS. X	Y
20\16A	3.27	3.02	3.38	3.38	.236	2.74	2.74
30\32A	4.26	3.75	3.38	3.38	.236	2.74	2.74
60$63A	5.44	4.34	4.13	4.13	.236	3.50	3.50
100\125A	5.48	5.20	5.12	5.32	0.25	4.09	4.09

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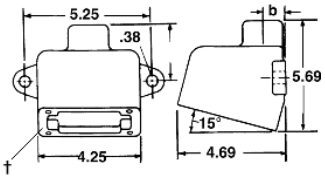
Back Box Dimensions



Cat. No.	HUB	A	B
ARE13	½	1.84	.69
ARE23	¾	1.84	.81
ARE33	1	1.97	.94

* Footprint: 2.74 x 2.74

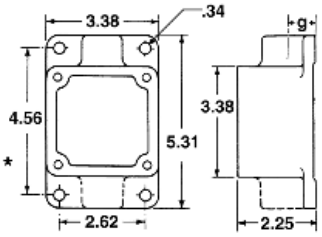
60A & 63A Cast Aluminum



Cat. No.	HUB	A	B
ARE36	1	2.56	.69
ARE46	1 ¼	2.62	1.19
ARE56	1 ½	2.69	1.31

† Footprint: 5.4 x 2.74

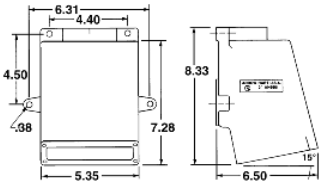
16, 20, 30, & 32A Cast ALUMINUM



Cat. No.	HUB	HUB CONFIG.	G
ARRH13	½	Dead End	.69
ARRH23	¾	Dead End	.81
ARRH33	1	Dead End	.94
ARRC13	½	Feed Thru	.69
ARRC23	¾	Feed Thru	.81
ARRD33	1	Feed Thru	.94

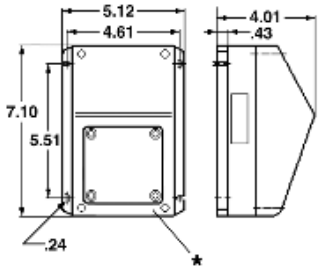
* Footprint: 2.74 x 2.74

100A & 125A Cast Aluminum



Cat. No.
CHBB1

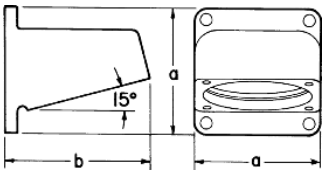
‡ Footprint: 4.09 x 4.09



Cat. No.
CHBB2

* Footprint: 2.74 x 2.74
(Not U.L. Listed)

Aluminum Fits ARRH and ARRC 30A Angle Adaptor Cast



Cat. No.	A	B
AR30	3.38	4.12

		Plug Closure Cap	Enclosure Myers Hub	Enclosure Cable Gland	Enclosure Closure Plug
20/16A	3 pole	CHCC320	STM1	CHCG20	CHCP20
	4 pole	CHCC420	STM2	CHCG25	CHCP25
	5 pole	CHCC520			
30/32A	3 pole	CHCC3430	STM3	CHCG40	CHCG40
	4 pole				
	5 pole	CHCC530			
60/63A	3 pole	CHCC60	STM4	CHCG50	CHCP50
	4 pole				
	5 pole				
100/125A	3 pole	CHCC100	STM5	CHCG63	CHCP63
	4 pole				
	5 pole				

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5P Angled Back Box Adapters

For 20, 30, 60 & 100 Amp IEC 309 Receptacles and Inlets

NEW!



New Angled Adapters install directly onto existing Cooper Crouse-Hinds Back Boxes!

Cooper Crouse-Hinds Angled Back Box Adapters install IEC 309 receptacles or inlets to existing back boxes at a 15° angle, eliminating plug cord stress and maximizing wiring capacity.
Designed with a square footprint, the angled back box adapter allows the conduit openings to be positioned vertically or horizontally.



20/30 Amp



60 Amp



100 Amp

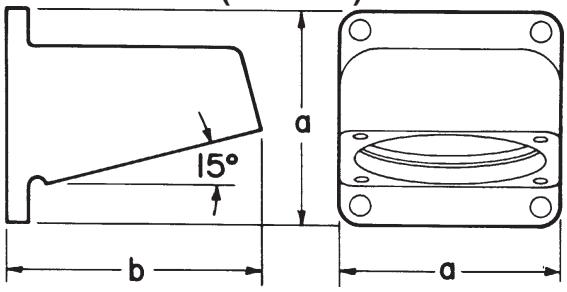
FEATURES:

- Square footprint on adapter allows back box conduit openings to be positioned vertically or horizontally.
- 15° angle eliminates cord stress on attached plug.
- Heavy-duty cast aluminum back boxes are ideal for abusive environments.
- Epoxy powder coat finish available for additional corrosion resistance.
- Stainless steel hardware.
- Quick and easy to install.
- Neoprene gasket provided between adapter and back box for additional weather resistance

ORDERING INFORMATION:

Rating of Receptacle or Inlet	Angled Adapter Catalog Number	Mating Square Back Box Catalog Numbers
20A	AR30	ARRH/ARRC 13, 23, 33
30A	AR30	ARRH/ARRC 13, 23, 33
60A	AR601	ARRH/ARRC 36, 46, 56
100A	AR100	AJ/AJC 46, 56

DIMENSIONS (INCHES):



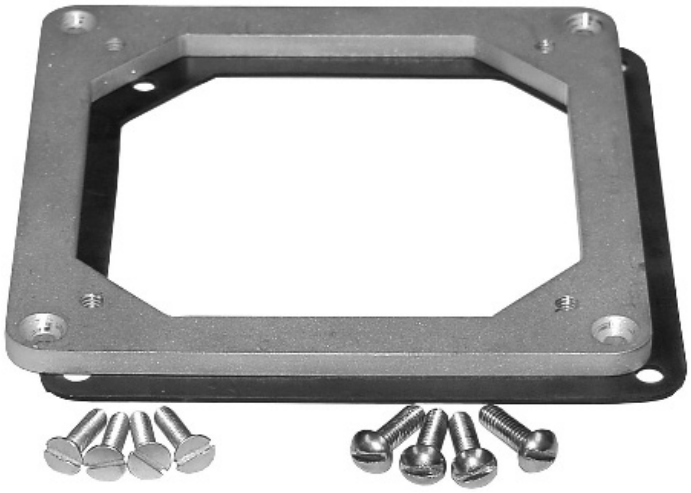
Catalog Number	A	B	Receptacle/Inlet Footprint
AR30	3.4	3.9	2.74 x 2.74
AR601	4.3	4.9	3.03 x 3.34
AR100	5.9	6.2	4.09 x 4.09

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Adapters Plates

For 20, 30, 60 & 100 Amp IEC 309 Receptacles and Inlets

NEW!



Cooper Crouse-Hinds H-Series Adapter Plates permit a Cooper Crouse-Hinds IEC 309 receptacle or inlet to be mounted to a Hubbell® back box.



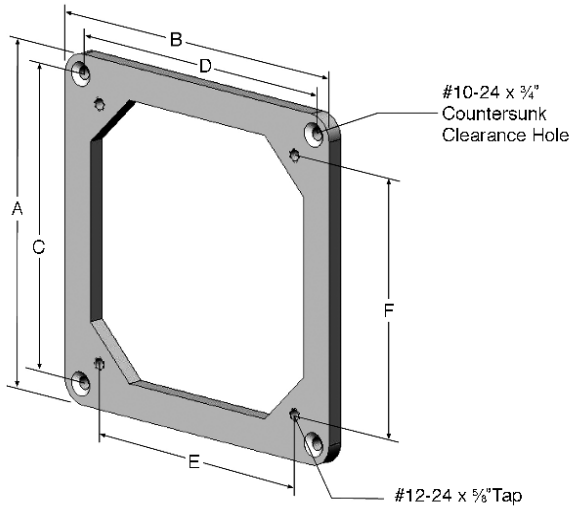
FEATURES:

- Heavy-duty aluminum plate fits directly to the Hubbell footprint.
- Adapter plate is engineered to be used with the gasket that is provided with the Cooper Crouse-Hinds receptacle or inlet.
- Provided gasket maintains watertight integrity between adapter plate and Hubbell box.
- Stainless steel hardware provided for attaching adapter plate to back box and receptacle or inlet to adapter plate.
- Corrosion resistant
- Quick and easy to install

ORDERING INFORMATION:

Rating of Cooper Crouse-Hinds Receptacle or Inlet	Catalog Number of Hubbell Back Box	Adapter Plate Catalog Number
20A/30A	BB201W/BB301W	**CHAP30H**
60A	BB601W/BB602W	**CHAP60H**
100A	BB1001W/BB1002W	**CHAP100H**

DIMENSIONS (INCHES):



	Overall Size		Hubbell Footprint		Cooper Crouse-Hinds Footprint	
	A	B	C	D	E	F
CHAP30H	4.03	3.78	3.13	3.13	2.74	2.74
CHAP60H	4.53	4.53	3.88	3.88	3.03	3.35
CHAP100H	5.53	5.53	4.88	4.88	4.09	4.09

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Notes Page

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Description	Page No.
Wet Location Covers	
Applications/Features	1080
Ordering Information	1081

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

6P WLRS, WLRD and WLGF Wet Location Covers

For NEMA Configuration Receptacle Interiors
For FS and FD Cast Device Boxes
Flush Device Boxes

Application:

WLRS, WLRD and WLGF series covers are suitable for use in wet and damp locations.

WLGF is suitable for damp and wet locations only when cover is closed.

WLRS and WLRD series wiring device covers are designed to meet the total NECode requirements for wet locations – Article 410-57:

> ''A receptacle installed outdoors where exposed to weather or in other wet locations shall be in a weatherproof enclosure, the integrity of which is not affected when the receptacle is in use (attachment plug cap inserted).''

Use WLRS, WLRD and WLGF:

- wherever portable equipment is required
- as general purpose utility receptacle covers
- for industrial, commercial or residential use
- in areas where electrical requirements do not exceed medium duty ratings
- to mount FS and FD single-gang or multi-gang boxes having individual cover openings (see Sect. 3F for listings)
- to mount on most flush device boxes (see Accessories)

Features:

WLRS, WLRD and WLGF covers:

- self closing spring door assures protection of wiring device at all times, in wet and damp locations
- one piece EPDM gasket provides environmental protection of wiring device at all times
- Specially formulated elastomeric gasketing material offers excellent resistance to ozone, weather and temperature extremes of –50°F to 260°F
- die cast, copper-free aluminum construction with aluminum lacquer finish provides maximum corrosion resistance
- positive ground path ensured for all exposed metal parts

NEMA configuration receptacle interiors:

- comply with NEMA Standards WD-1 and WD-5
- grounded through an extra contact in all types except 3-phase applications; self grounded in duplex variety
- back and side wired
- offered in single and duplex configurations for use with standard plugs
- specification grade

Standard Materials:

- WLRS, WLRD and WLGF face plate and cover – die cast copper-free aluminum
- Cover hinge spring – stainless steel
- Cover screws – corrosion resistant metal
- Gasket – WLRS and WLRD – ethylene propylene rubber (EPDM)
- Gasket – WLGF – neoprene

Standard Finishes:

- Copper-free aluminum

Electrical Rating Ranges:

- 15 amperes; 125, 250, or 277 volts
- 20 and 30 amperes; 125, 250, 277, 480, 600, 125/250, 208/120, 480/277 or 600/347 volts

Accessories:

Flush mounting adapter – WLRA-1 required for mounting on device boxes (not required with WLGF)

Certifications and Compliances:

- ANSI/UL Standard 514A
- NECode 410-57
- NEMA Standards WD-1, 1983 (Straight Blade) and WD-5, 1982 (Locking Type)



Typical installation

Spring Door Covers – with Gasket*

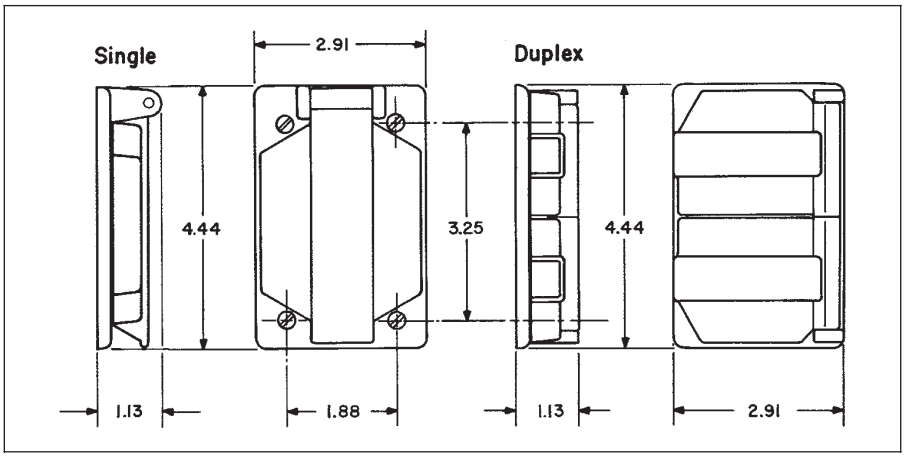




Description Cat. #	Single cover WLRS-1 and WLRS-2	Duplex cover WLRD-1

* Patent Number 4,058,358

Dimensions



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WLRS, WLRD and WLGF Wet Location Covers

Covers with and without NEMA Configuration Receptacles

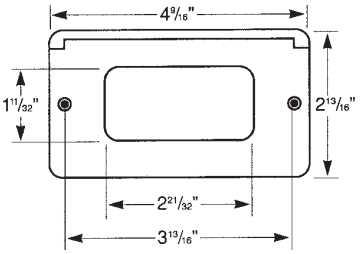
Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #‡
Single Device				
For Non-Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	5-15R	WLRS-5-15	WLRS-1
	250V	6-15R	WLRS-6-15	WLRS-1
2-Pole 3-Wire Grounding **20 Amp**	125V	5-20R	WLRS-5-20	WLRS-1
	250V	6-20R	WLRS-6-20	WLRS-1
For Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	L5-15R	WLRS-L5-15	WLRS-1
	250V	L6-15R	WLRS-L6-15	WLRS-1
2-Pole 3-Wire Grounding **20 Amp**	125V	L5-20R	WLRS-L5-20	WLRS-2
	250V	L6-20R	WLRS-L6-20	WLRS-2

Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #‡
Duplex Device				
For Non-Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	5-15R	WLRD-5-15	WLRD-1
	250V	6-15R	WLRD-6-15	WLRD-1
2-Pole 3-Wire Grounding **20 Amp**	125V	5-20R	WLRD-5-20	WLRD-1
	250V	6-20R	WLRD-6-20	WLRD-1
For Locking Blade Plugs				
2-Pole 3-Wire Grounding **15 Amp**	125V	L5-15R	WLRD-L5-15	WLRD-1

Wet Location Covers for GFCI Duplex Receptacles

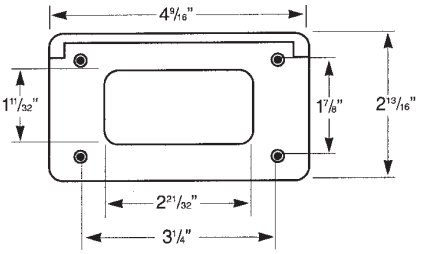


WLGF – For Flush Device Boxes





WLGF-FS – For FS and FD Cast Device Boxes



‡ Must be used with a wet locations rated wiring device.

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Description	Page No.
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Retrieve Reels	1089

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Cable-Gard™ Static Discharge Reels

Application:

Static discharge reels are used for grounding portable machines and equipment in hazardous areas, such as fuel-transfer trucks, grain elevators, dockside-loading facilities and barges. When properly clamped to ground the static discharge reel safely dissipates static electrical buildup and reduces the chance of sparking and the potential for explosion.

Features:

- Automatic rewinding
- Rugged steel construction
- Compact enclosed design
- Positive ratchet lock
- Lock on/lock off switch
- Steel cable installed
- 100 amp universal jaw-type grounding clamp
- Safety orange polyester baked-on finish



SDR-50

Standard Materials:

- Housing – steel construction

Standard Finishes:

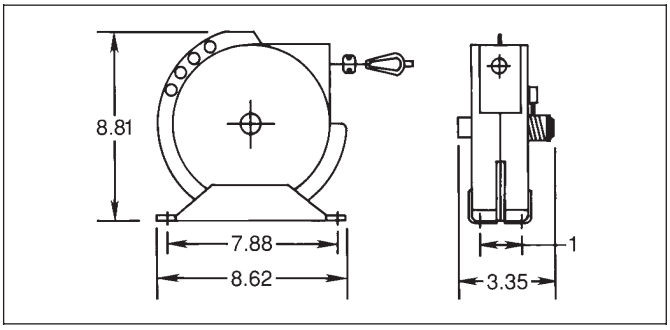
- Housing – Orange polyester; baked on finish

Ordering Information:

Cable Length (Feet)	Description	Weight Complete lbs.	(Kg)	Catalog Number
50	Single 7 x 30 steel*	12	(5.4)	SDR-50
50	35′ plus 2 x 15′ for Y (steel*)	13	(5.9)	SDR-50Y
50	Nylon covered cable*	12	(5.4)	SDR-50N

* Static discharge reels are supplied complete with 3⁄32″ steel aircraft cable. DC resistance is approximately one ohm per 50 ft. of steel cable.

Dimensions



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Application:

Cable-Gard cable reels are designed for the constant, predictable pull of a machine and are designed for reliable operation in many applications. Typical uses include travelling cars, mobile hoists and various objects being lifted under power such as lifting magnets on cranes.

Features:

- Unitized slip ring assembly transfers current from stationary to rotary. Brushes are an integral part of the slip ring assembly.
- Safe to change spring motor that is sized per application, clock type spring with window shade type action. Sealed in disposable housing, spring is never exposed to unravel and possibly harm.
- Watertight cable entrance terminates cord to reel spool with positive grip, watertight seal.
- Large junction box with ¾″ NPT conduit entrance may be positioned in choice of four directions.
- Multi-position roller guide is adjustable to 4 different positions. Allows easy adaptation of reel to positioning requirements of the application and controlled uniform retraction of cable onto spool. Roller guides are optional; consult factory.
- Baked-on powder epoxy finish provides tightly bonded, homogenous shield to abrasion and corrosion.
- Ratchet lock is provided for window shade type action. May be easily disengaged in field for constant tension applications.

Standard Materials:

- Frame, spool – steel

Standard Finishes:

- Baked on powder epoxy – orange

Options:

- Ball stop – keeps cable from rewinding out of reach in hand-pull applications.

Cable Range O.D. Min./Max.	Suffix to be added to Cat. No.
.38 – .50	– C1
.50 – .75	– C2
.75 – 1.00	– C3

Ball stop may be ordered separately; use suffix number as catalog number.

- Pivot base – Pivot base allows 340° rotation of reel. Required for applications demanding reel self-alignment to direction of the cable run.

Suffix to be added to Cat. No.
– S

To order separately:

Series	Pivot Base Cat. No.
W14	PB14
W16	PB16
W19	PB19

- Reel supplied less cable

Suffix to be added to Cat. No.
– NC



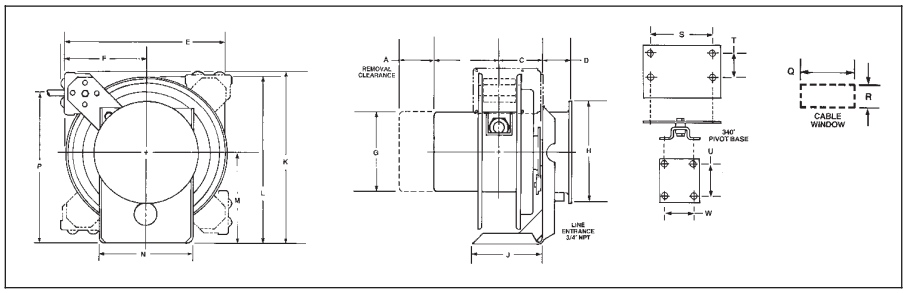
Certifications and Compliances:

- ANSI/UL 355
- CSA C22.2
- NEMA 3, 3R

Electrical Ranges:

- 600 VAC (cable reel)
- Cord: #16 - #10, Type ''SO'', #8, Type ''W'', or Type ''G'' (see listings).

Dimensional Data:



Dimensions in inches

Frame Size	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
W14	3.75	2.75	13.75	8.25	7.00	9.25	6.12	16.25	15.00	8.12	8.00	14.25	2.50	1.25
W16	5.50	2.75	15.75	9.31	7.00	9.25	7.94	18.25	17.00	9.12	8.50	16.25	3.00	1.25
W19	5.75	2.75	19.00	10.00	10.50	9.25	7.00	20.50	20.25	10.75	11.00	18.50	3.50	1.25

Slip Ring Housing Dimensions:

W14

Poles/Amps	A	B
1–4; 30 Amps	4.50	5.69
5–8; 30 Amps	6.00	7.19
9–12; 30 Amps	7.50	8.69
1–4; 55 Amps	6.00	7.19

W16

Poles/Amps	A	B
1–4; 30 Amps	4.50	5.94
5–8; 30 Amps	6.00	7.44
9–12; 30 Amps	7.50	8.94
1–4; 54 Amps	6.00	7.44

W19

Poles/Amps	A	B
1–4; 30 Amps	3.25	5.44
5–8; 30 Amps	4.50	6.69
9–12; 30 Amps	6.00	8.19
1–4; 55 Amps	4.50	6.69

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Catalog Numbering System

W 16 L – A 03 045

- **W** — REEL SERIES
  - **W = Weathertight**
- **16** — SPOOL O.D. (approx. in.)
- **L** — APPLICATION
  - **L = Lift**
  - **R = Retrieve**
- **–** — OPTIONAL ITEMS ORDERED AS SUFFIX
  - **REEL ORDERED *WITHOUT* CABLE ADD "–NC"**
- **A** — AWG
  - **A = #16**
  - **B = #14**
  - **C = #12**
  - **D = #10**
  - **E = #8**
  - **F = #8 Type "G"†**
- **03** — NO. CONDUCTORS
- **045** — CABLE LENGTH (ft)

† Type "G" cable is supplied with a ground conductor.

Reel Selection Process

Determine:

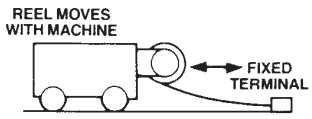
1. **CABLE SIZE AND NO. OF CONDUCTORS**
   Be sure to choose cable that will adequately handle the current load (include ground when stating number of conductors). If the desired cable is not listed, consult factory.
2. **CABLE LENGTH**
   Reels in this brochure will handle up to 150 feet of cable. Decide how far your equipment will travel from the reel and choose the appropriate column. The amount of cable needed to install the cable on the reel has been included. However, you must add:

1) the amount of cable needed for HOOK-UP to your equipment, and
2) Cable SAG ALLOWANCE if "STRETCH" applications (see footnote *). Round up to the nearest footage on the selection chart.

CABLE LENGTH NEEDED = EQUIPMENT TRAVEL DISTANCE PLUS HOOK-UP PLUS SAG ALLOWANCE. (Sag allowance needed for "stretch" applications only.)

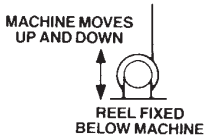
3. **TYPE OF CABLE**
   This is important as stranding and construction vary. Cable-Gard reels are provided with cable as listed in the electrical ranges listing on page 1086.
4. **APPLICATION**

Retrieving, Horizontal



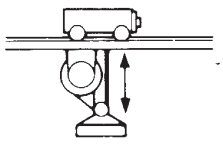
A horizontal retrieve application is identified when the reel is mounted on the moving equipment. The reel pays out and picks up the cable from a tray or other support.

Retrieving, Vertical



This application requires the reel to wind and unwind the cable but not lift or support the cable. A typical example is where the reel is mounted to the ground and the cable is attached to an elevating machine. In some cases the cable is anchored above and the reel rides up and down on an elevating machine.

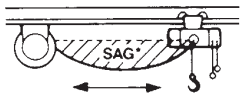
Lifting, Vertical



Any application where cable is simply hoisted vertically with the reel lifting only the weight of the cable. Special considerations must be given to any weight added to the end of the cable such as a push-button station. Listed spring tension is not designed to accommodate added weight. Consult the manufacturer for a specific recommendation.

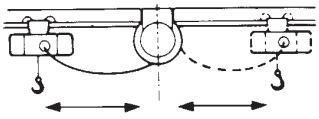
Stretching*, Horizontal

END MOUNTING



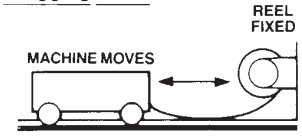
In addition to being capable of lifting cables vertically, all reels listed will stretch cables horizontally as shown. When stretching horizontally (unsupported, except at the reel and the moving current consumer) the sag or droop of the cable may be important. Spring tension on these reels is designed to provide for 8 - 10% sag at the midpoint of travel when fully extended. Stronger tension could be a problem for light, free moving loads which tend to be pulled toward the reel. The cable weight alone can pull a light load.

CENTER MOUNTING
(Remove Cable Guide)



CENTER MOUNTING (cable guide is removed) can save over the cost of end mounting. For example, a machine traveling 50 ft. can be serviced by a center-mounted reel equipped with 25 ft. of cable. A comparable end-mounted reel would require the full 50 ft. of cable.

Dragging Cable



Drag applications refer to a reel mounted in a fixed (non-moving) position and the cable terminated on a moving machine. As the *machine* moves, the cable is pulled off of the reel and "dragged" over the surface. This is **NOT** a recommended application because of abuse to the cable resulting in shortened life.

**** Sag allowance must be considered when figuring cable length for STRETCH applications. Add 1 ft. of cable for each 50 ft. of working cable calculated for your application. (Working cable excludes hook-up length.)***

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Reels for Lifting/Stretching

EXAMPLE: A hoist is to travel 52 feet along an I-beam – this is a STRETCH application. Required cable is 4 Conductor/No. 14. Hook-up is 2 feet.

The following EXAMPLES appear in bold type in the selection charts.

1. *If* the reel *must* be END MOUNTED, the required cable length would be 52 feet, plus 2 feet for the hook-up plus 2 feet for sag consideration*. Round up to 60 feet per the available footage in the chart below. The correct model to choose would be **W16L-B04060**.

2. *If* the reel may be CENTER MOUNTED, only half as much cable is required – it will be used in both directions. Half of the required length would be 26 feet, plus 2 feet for the hook-up plus 1 foot for sag consideration for a total of 29 feet. Round up to 30 feet and choose model **W14L-B04030**. A savings will be realized because less cable was used and, thus, a smaller reel was required.

Selection Chart

Wire Size	No. of Cond.	20 Feet	30 Feet	40 Feet	50 Feet	60 Feet	70 Feet
16	3	W14L-A03020	W14L-A03030	W14L-A03040	W16L-A03050	W16L-A03060	W19L-A03070
	4	W14L-A04020	W14L-A04030	W14L-A04040	W16L-A04050	W16L-A04060	W19L-A04070
	6	W14L-A06020	W14L-A06030	W14L-A06040	W14L-A06050	W16L-A06060	W19L-A06070
	8	W16L-A08020	W16L-A08030	W16L-A08040	W16L-A08050	W16L-A08060	W19L-A08070
	10	W16L-A10020	W16L-A10030	W16L-A10040	W16L-A10050	W19L-A10060	W19L-A10070
	12	W16L-A12020	W16L-A12030	W16L-A12040	W16L-A12050	W19L-A12060	W19L-A12070
14	3	W14L-B03020	W14L-B03030	W14L-B03040	W14L-B03050	W16L-B03060	W16L-B03070
	4	W14L-B04020	**W14L-B04030**	W14L-B04040	W14L-B04050	**W16L-B04060**	W16L-B04070
	6	W14L-B06020	W14L-B06030	W16L-B06040	W16L-B06050	W16L-B06060	W19L-B06070
	8	W14L-B08020	W16L-B08030	W16L-B08040	W16L-B08050	W19L-B08060	W19L-B08070
	10	W14L-B10020	W16L-B10030	W19L-B10040			
	12	W16L-B12020	W16L-B12030	W19L-B12040			
12	3	W14L-C03020	W14L-C03030	W14L-C03040	W14L-C03050	W16L-C03060	W19L-C03070
	4	W14L-C04020	W14L-C04030	W14L-C04040	W16L-C04050	W16L-C04060	W19L-C04070
	6	W14L-C06020	W16L-C06030	W16L-C06040	W19L-C06050	W19L-C06060	
	8	W14L-C08020	W16L-C08030	W19L-C08040			
10	3	W14L-D03020	W14L-D03030	W14L-D03040	W16L-D03050	W16L-D03060	W19L-D03070
	4	W14L-D04020	W14L-D04030	W16L-D04040	W16L-D04050	W19L-D04060	W19L-D04070
	6	W16L-D06020					
8	2	W14L-E02020	W16L-E02030	W16L-E02040	W19L-E02050		
	3	W16L-E03020	W16L-E03030	W19L-E03040			
	3†	W14L-F03020	W16L-F03030	W19L-F03040			
	4	W16L-E04020	W16L-E04030	W19L-E04040			

* Sag allowance *must* be considered when figuring cable length for STRETCH applications. Add 1 foot of cable for each 50 feet of working cable calculated for your application. (Working cable excludes hook-up length.)

† Type ''G'' cable.

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Reels for Retrieving

EXAMPLE: A moving car is to travel 55 feet. Required cable is 4 Conductor/No. 10. Extra cables needed to hook up to the car is 2 feet.

The following EXAMPLES appear in bold type in the selection charts.

1. *If* the reel *must* be END MOUNTED, the required cable length would be 55 feet, plus 2 feet for the hook-up. Round up to 60 feet per the available footage in the chart below. The correct model to choose would be **W19R-D04060.**

2. *If* the reel may be CENTER MOUNTED, only half as much cable is required – it will be used in both directions. Half of the required length would be 27.5 feet, plus 2 feet for the hook-up for a total of 29.5 feet. Round up to 30 feet and choose model **W14R-D04030**. A savings will be realized because less cable was used and, thus, a smaller reel was required.

Selection Chart

Wire Size	No. of Cond.	20 Feet	30 Feet	40 Feet	50 Feet	60 Feet	70 Feet
16	3	W14R-A03020	W14R-A03030	W14R-A03040	W16R-A03050	W16R-A03060	W19R-A03070
	4	W14R-A04020	W14R-A04030	W14R-A04040	W16R-A04050	W16R-A04060	W19R-A04070
	6	W14R-A06020	W14R-A06030	W14R-A06040	W14R-A06050	W16R-A06060	W19R-A06070
	8	W14R-A08020	W14R-A08030	W16R-A08040	W16R-A08050	W16R-A08060	W19R-A08070
	10	W14R-A10020	W14R-A10030	W16R-A10040	W16R-A10050	W19R-A10060	W19R-A10070
	12	W14R-A12020	W14R-A12030	W16R-A12040	W16R-A12050	W19R-A12060	W19R-A12070
14	3	W14R-B03020	W14R-B03030	W14R-B03040	W14R-B03050	W16R-B03060	W19R-B03070
	4	W14R-B04020	W14R-B04030	W14R-B04040	W14R-B04050	W16R-B04060	W19R-B04070
	6	W14R-B06020	W14R-B06030	W16R-B06040	W16R-B06050	W16R-B06060	W19R-B06070
	8	W14R-B08020	W16R-B08030	W16R-B08040	W19R-B08050	W19R-B08060	W19R-B08070
	10	W14R-B10020	W16R-B10030	W19R-B10040			
	12	W16R-B12020	W16R-B12030	W19R-B12040			
12	3	W14R-C03020	W14R-C03030	W14R-C03040	W14R-C03050	W16R-C03060	W16R-C03070
	4	W14R-C04020	W14R-C04030	W14R-C04040	W16R-C04050	W16R-C04060	W19R-C04070
	6	W14R-C06020	W16R-C06030	W16R-C06040	W19R-C06050	W19R-C06060	W19R-06070
	8	W14R-C08020	W16R-C08030	W19R-C08040			
	10						
	12						
10	3	W14R-D03020	W14R-D03030	W14R-D03040	W16R-D03050	W16R-D03060	W16R-D03070
	4	W14R-D04020	**W14R-D04030**	W16R-D04040	W16R-D04050	**W19R-D04060**	W19R-D04070
	6	W14R-D06020	W19R-D06030	W19R-D06040			
	8	W19R-D08020	W19R-D08030				
8	2	W14R-E02020	W16R-E02030	W16R-E02040	W19R-E02050	W20AR-E02060	
	3	W14R-E03020	W16R-E03030	W19R-E03040			
	3†	W14R-F03020	W16R-F03030	W19R-F03040			
	4	W16R-E04020	W16R-E04030	W19R-E04040			

† Type ''G'' cable.

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Notes Page

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Description	Page No.
Application/Selection	**1092**
Circuit Breaking Power Connectors – Arktrol®	
RPC Series	
Accessories	**1106**
Adapters and Back Boxes	**1107**
Dimensions	**1108, 1109**
General Information	**1093-1094**
Listings	**1096-1103**
Control Circuit and Power Connectors – Arktrol®	
RPE Series	
Accessories	**1106**
Adapters and Back Boxes	**1107**
Dimensions	**1108, 1109**
General Information	**1093-1095**
Listings	**1104, 1105**

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Application:

Special purpose plugs and receptacles listed in this section are for use in non-hazardous areas, where environmental or application considerations require non-standard plugs and receptacles. Included in this section are ARK-trol® plugs and receptacles (RPC and RPE).

ARK-trol Plugs and Receptacles (RPC and RPE)

- Are used with a wide range of equipment requiring a variety of contact configurations under conditions of hard usage and exposure to rigorous environments.
- Two basic types: RPC – circuit breaking power connectors; RPE – control circuit, power and welding connectors.

RPC – A variety of configurations (with a maximum of five-poles) are available for one and three-phase circuits. Electrical range is 30, 60, 100, 200 amperes at a maximum of 600 vac.

RPE – A wider range of configurations are available. Range of amperages available up to 500 amperes at a maximum of 600 vac. Both types are available (either as standard or as option) with solder well terminals for high reliability, or crimp or pressure terminals for ease of installation. Listings on pages 1096 to 1105, show complete assemblies with mating plugs and components. For information on features, options, components and complete assemblies, see pages 1093 to 1095.

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RPC Circuit Breaking Power Connectors
RPE Control Circuit and Power Connectors

Application:

ARK-trol RPC circuit breaking power connectors and RPE control circuit power connectors are used:

- with a wide variety of portable electrical equipment
- for connection of devices ranging from simple lighting units, power tools, and similar portables requiring only a power supply circuit, to sophisticated control and instrumentation assemblies requiring disconnect
- under conditions of hard usage and where exposed to dust, dirt, water, corrosion and chemical attack, providing high reliability and trouble-free service
- indoors or outdoors in non-hazardous areas of petroleum refineries, chemical and petrochemical plants, manufacturing plants, military installations and similar locations
- on machine tools and similar equipment

Features:

- All *ARK-trol* connectors have the same properties, characteristics and environmental capabilities outlined under ''Compliances.''

Construction:

- All *ARK-trol* plug, receptacle and cord connector shell parts are of high-strength impact extruded aluminum, hard coated with a high density anodize finish. The resultant assemblies are light weight, extremely strong, free from surface defects and flaws, and with superior resistance to abrasion, corrosion and chemical attack.
- ''Tri-Disc'' insert assemblies consist of two rigid insulators with a silicone rubber wafer between to provide a cushioning action against mechanical damage and to effect a positive seal against penetration by water, moisture, dust, gas and other undesirable matter. Assembly of the inserts compresses the silicone wafer to seal against the inner wall of the plug or receptacle shell, and around each individual contact.
- *ARK-trol* insulating material is of high dielectric and mechanical strength with low moisture absorption and excellent resistance to arc tracking. Socket contacts are each enclosed in a separate chamber in the silo insulator. Arcs formed while making or breaking a circuit are quickly snuffed out in the chambers.
- Contacts are removable and, for ease of installation, are snapped into the insert assemblies after wire termination. Termination methods employed are solder, crimp and pressure. Solder well contacts are standard and are furnished unless otherwise specified. Crimp contacts are available in all sizes and configurations. Pressure contacts, due to increased terminal area, are available only in certain assemblies as shown in the listings.
- For cable strain relief and watertight seal, plugs and cord connector recpetacles are provided with gland nut and tapered Neoprene bushing.

Positive Polarization:

- Polarization of *ARK-trol* connectors is such that plugs and receptacles cannot be mated incorrectly.
- Insert assemblies must be correctly aligned and will fit plug and receptacle shells in one position only, because of a raised key on the inner wall of the shells.
- Seven keys on the inner wall of the receptacle and seven mating keyways on the outer diameter of the plug shell are spaced so that the plug and receptacle can be mated in one position only. One key and one keyway are larger than the other six as a guide to rapid connection, easily performed under adverse field conditions – even in total darkness.

Interchangeability:

- Shell components and insert assemblies in each diameter are interchangeable. Both male and female basic shells will accept either pin or socket inserts. This feature permits the use of both plug and receptacle in either an energized or de-energized condition.

Grounding:

- Grounded connectors have pin and socket contacts with integral grounding straps which press against the inner wall of plug, receptacle and cord connector shells, effectively bonding the shells to the grounding contacts.
- Grounding socket contacts are longer than current carrying contacts to make first and break last, assuring a positive ground before circuits are energized and after circuits are de-energized.

Standard Materials:

- Back boxes and adapters – copper-free aluminum
- Plug, receptacle and cord connector shells – impact extruded aluminum
- Insulation – diallyl phthalate (DAP)
- Insulation – fiberglass-reinforced polyester material
- Sealing wafer – silicone rubber
- Contacts – hard drawn copper

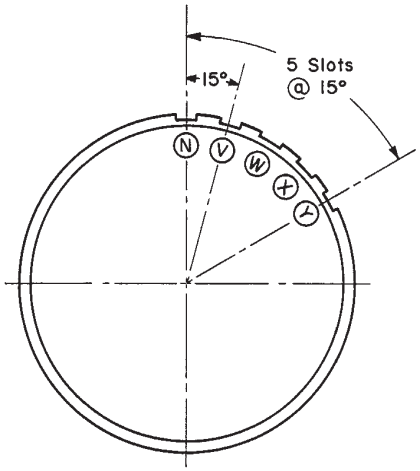
Standard Finishes:

- Copper-free aluminum – natural
- Impact extruded aluminum – hard coat anodized
- Diallyl phthalate – natural (blue)
- Fiberglass-reinforced polyester material – natural (red)
- Silicone – natural (grey)
- Copper – silver plated

Options:

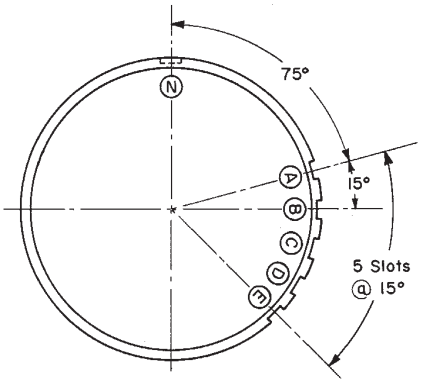
- Alternate polarities – ungrounded connectors. Standard polarity is position ''N'' shown below. Alternate positions ''V'', ''W'', ''X'' or ''Y'' can be furnished. To order, substitute for the letter ''N'' in the listed Cat. No., the letter for the desired polarization.

Example: RPC217-127–SO1N-ARE23 with polarity ''X'' becomes RCP217-127–SO1X-ARE23.



- Alternate polarities – grounded connectors. Standard polarity is position ''A'' shown below. Alternate positions ''B'', ''C'', ''D'' or ''E'' can be furnished. To order, substitute for the letter ''A'' in the listed Cat. No., the letter for the desired polarization.

Example: RPC217-127–SO2A-ARE23 with polarity ''D'' becomes RPC217-127–SO2D-ARE23.



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Options (continued):

- Crimp type contacts – available on all assemblies with solder well contacts. To order, add letter ''T'' to Cat. No., immediately following polarity letter.

Examples: RPC217-127–S01N-ARE23 and RPC217-127–S02A-ARE23 except with crimp contacts would be ordered as RPC217-127–S01NT-ARE23 and RPC217-127–S02AT-ARE23 respectively.

- Alternate cable strain relief methods for plugs and connectors:

Stainless steel wire mesh cord grip. To order, add letter ''K'' to first section of Cat. No.

Example: RPC117-150–P01N with wire mesh grip would be ordered as RPCK117-150–P01N.



Adapter for use with liquid tight/rigid conduit. To order, add letters ''LT'' to first section of catalog number.

Example: RPC117-150–P01N with liquid tight/conduit adapter would be ordered as RPCLT117-150–P01N.

Electrical Rating Ranges:

- Voltage – 250, 480 and 600vac
- Frequency – 50** to 400 hertz
- See listings for specific ratings.

Ampere Ratings:

- Ratings given in the table at right are applicable to RPC circuit breaking power connectors and RPE control connectors, as indicated.
- RPC connectors are capable of making or breaking circuits at the full rated load indicated in the table on the listing pages.
- Contact assemblies of RPE connectors have the current carrying capabilities shown in the table, as defined by applicable military specifications (MS) and NEC requirements, for circuits not made or broken under load. It should be noted that these non-interrupting ampere ratings exceed the NEC rating of the corresponding wire size.

	RPC Circuit Breaking Connectors	RPE Connectors	
Contact Size AWG	NEC Rating	Non-Interrupting Ampere Rating MS(AN)	NEC
#16		22	16
#12	20A	41	30
#10	30A	57	40
#4	60A	135	90
1/0	100A	250	160
4/0	200A	335	225

Certifications and Compliances:

• Properties	Characteristics
Industrial use	excludes dust, lint, fibers and flying, oil seepage and coolant seepage – meets J.I.C. Standard
Driptight	excludes falling moisture or dirt – materials unaffected by condensation
Weather resistant (weatherproof)	performs normally in outdoor areas
Watertight	excludes water by hose spray or stream
Dust tight	excludes dust, but performs normally if dust is accidentally enclosed during disconnect
Chemical resistance	high resistant to alkalis, strong caustics, acids, petroleum base and organic solvents
Pressure	300 psi external – 200 psi internal

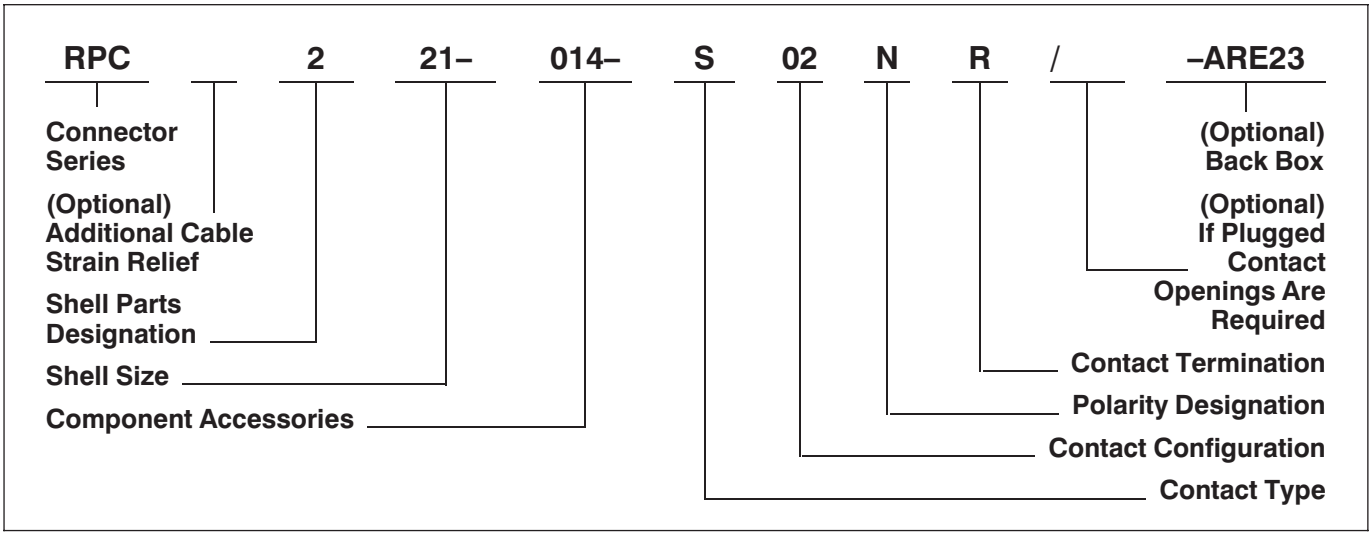
• Compliance with Military Specifications

Environment	Performance Data
Corrosion resistance	salt spray 300 days. MIL-STD-810E
Temperature	–80°F to 275°F, meeting requirements of MIL-STD-810E
Air leakage	exceeds Class E specification MIL-STD-810E
Dust resistance	exceeds requirements of MIL-STD-810E
Shock resistance	50G exceeds MIL-STD-810E
Vibration	exceeds 20G, method II, MIL-STD-810E
Humidity & moisture	exceeds Class E specification MIL-STD-810E
ANSI/UL Standard	498

** For use on system less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Catalog Numbering System



CONNECTOR SERIES
RPC – circuit breaking
RPE – for disconnect use only
RPX – hazardous (gasoline or equivalent hazards, see Section 9P)

ADDITIONAL CABLE STRAIN RELIEF (Optional)
K = Wire mesh cord grip
LT = Liquidtight/conduit connection

SHELL PARTS DESIGNATION
0 = No shell part required
1 = Plug shell
2 = Receptacle
3 = Cord connector
4 = Connector handle body only
5 = Plug shell (long)
6 = Receptacle (long)
7 = Cord connector (long)

SHELL SIZE
Inside Diameter measured in X/16″ (017, 021, 033, 041, i.e., 017 shell size = 17/16″)

COMPONENT ACCESSORIES
This code indicates the combination of shell parts to fit your application; e.g., 014 = square flanged receptacle with insert retaining nut and dust cap; 150 = plug handle body, bushing, and clamping nut for cable with a diameter of .250 to .625.

CONTACT TYPE
P = Pin (male)
S = Socket (female)

CONTACT CONFIGURATION
This assigned code indicates the actual configuration of the contacts (pin and socket) in the insert assembly for a particular shell size. This is based upon electrical ratings (amperage and voltage) and the number of contacts required. It does ***not*** indicate the number of contacts in the configuration.

POLARITY DESIGNATION
N = Standard position – ungrounded
V, W, X or Y = Alternate positions – (ungrounded)
A = Standard position – grounded
B, C, D or E = Alternate positions – (grounded)

CONTACT TERMINATION
Blank = Solder well (standard unless noted)
R = Pressure (See complete ordering information that follows for availability)
T = Crimp (available in all configurations)

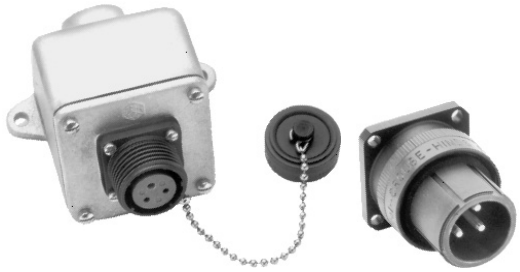
PLUGGED CONTACT OPENINGS (Optional)
This option allows greater flexibility, allowing for unique wiring requirements. The number following the slash indicates the total number of *contacts* that will be supplied (including ground contact, if applicable); all other openings in the insert assembly will be plugged.

BACK BOXES (Optional)
See page 1107 for back box information.

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ARK-trol Electrical Connectors

RPC Circuit Breaking Power Connectors With Solder Well Terminals ①



	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ②, ③	Motor Plug with Dust Cap Cat. #
20 AMPS							
Grounded	4w, 5p	480	#12	017	¾ 1	RPC217-014-S09A-ARE23 RPC217-014-S09A-ARE33	RPC117-157-P09A
Ungrounded	5w, 5p	480	#12	017	¾ 1	RPC217-014-S08N-ARE23 RPC217-014-S08N-ARE33	RPC117-157-P08N
30 AMPS							
Grounded	2w, 3p	480	#10	017	¾ 1	RPC217-014-S02A-ARE23 RPC217-014-S02A-ARE33	RPC117-157-P02A
	3w, 4p	480	#10	017	¾ 1	RPC217-014-S04A-ARE23 RPC217-014-S04A-ARE33	RPC117-157-P04A
	4w, 5p	480	#10	021	¾ 1	RPC221-014-S17A-ARE23 RPC221-014-S17A-ARE33	RPC121-157-P17A
Ungrounded	3w, 3p	480	#10	017	¾ 1	RPC217-014-S01N-ARE23 RPC217-014-S01N-ARE33	RPC117-157-P01N
	4w, 4p	480	#10	017	¾ 1	RPC217-014-S03N-ARE23 RPC217-014-S03N-ARE33	RPC117-157-P03N
	5w, 5p	480	#10	021	¾ 1	RPC221-014-S16N-ARE23 RPC221-014-S16N-ARE33	RPC121-157-P16N
60 AMPS							
Grounded	3w, 4p	600	#4	033	1¼ 1½	RPC233-014-S08A-ARE46 RPC233-014-S08A-ARE56	RPC133-157-P08A
	4w, 5p	480	#4	033	1¼ 1½	RPC233-014-S09A-ARE46 RPC233-014-S09A-ARE56	RPC133-157-P09A
Ungrounded	4w, 4p	600	#4	033	1¼ 1½	RPC233-014-S05N-ARE46 RPC233-014-S05N-ARE56	RPC133-157-P05N
	5w, 5p	480	#4	033	1¼ 1½	RPC233-014-S06N-ARE46 RPC233-014-S06N-ARE56	RPC133-157-P06N

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RPC Circuit Breaking Power Connectors With Solder Well Terminals ①



Cable Diameter Range	Cord Connector Cat. # ④	Plug Cat. # ④
.250 to .625	RPC317-160-S09A	RPC117-150-P09A
.625 to .875	RPC317-161-S09A	RPC117-151-P09A
.250 to .625	RPC317-160-S08N	RPC117-150-P08N
.625 to .875	RPC317-161-S08N	RPC117-151-P08N
.250 to .625	RPC317-160-S02A	RPC117-150-P02A
.625 to .875	RPC317-161-S02A	RPC117-151-P02A
.250 to .625	RPC317-160-S04A	RPC117-150-P04A
.625 to .875	RPC317-161-S04A	RPC117-151-P04A
.625 to 1.000	RPC321-161-S17A	RPC121-151-P17A
1.000 to 1.187	RPC321-395-S17A	RPC121-387-P17A
.250 to .625	RPC317-160-S01N	RPC117-150-P01N
.625 to .875	RPC317-161-S01N	RPC117-151-P01N
.250 to .625	RPC317-160-S03N	RPC117-150-P03N
.625 to .875	RPC317-161-S03N	RPC117-151-P03N
.625 to 1.000	RPC321-161-S16N	RPC121-151-P16N
1.000 to 1.187	RPC321-395-S16N	RPC121-387-P16N
.875 to 1.375	RPC333-163-S08A	RPC133-153-P08A
1.375 to 1.625	RPC333-396-S08A	RPC133-388-P08A
1.625 to 1.875	RPC333-397-S08A	RPC133-389-P08A
.875 to 1.375	RPC333-163-S09A	RPC133-153-P09A
1.375 to 1.625	RPC333-396-S09A	RPC133-388-P09A
1.625 to 1.875	RPC333-397-S09A	RPC133-389-P09A
.875 to 1.375	RPC333-163-S05N	RPC133-153-P05N
1.375 to 1.625	RPC333-396-S05N	RPC133-388-P05N
1.625 to 1.875	RPC333-397-S05N	RPC133-389-P05N
.875 to 1.375	RPC333-163-S06N	RPC133-153-P06N
1.375 to 1.625	RPC333-396-S06N	RPC133-388-P06N
1.625 to 1.875	RPC333-397-S06N	RPC133-389-P06N

NOTE: RPC with pressure terminals are shown on pages 1100 through 1103.

FOOTNOTES:

① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPC217-014-S09AT-ARE23.

② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC217-127-S09A-ARE23.

③ For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC217-014-S09A.

④ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters ''LT'' to first section of catalog number. Example: RPCLT317-160-S09A.

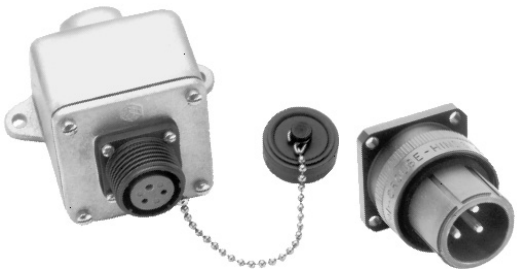
ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

● Stainless steel wire mesh grip – To order, add letter ''K'' to first section of catalog number. Example: RPCK317-160-S09A.

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ARK-trol Electrical Connectors

RPC Circuit Breaking Power Connectors With Solder Well Terminals ①



	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ②, ③	Motor Plug Cat. #
100 AMPS							
Grounded	4w, 5p	600	⅛	041	1½ 2	RPC641-014-S04A-AJ57 RPC641-014-S04A-AJ67	RPC541-157-P04A
Ungrounded	5w, 5p	600	⅛	041	1½ 2	RPC641-014-S02N-AJ57 RPC641-014-S02N-AJ67	RPC541-157-P02N
200 AMPS							
Grounded	3w, 4p	480	⅘	041	2 2½	RPC641-014-S10A-AJ68 RPC641-014-S10A-AJ78	RPC541-157-P10A

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RPC Circuit Breaking Power Connectors With Solder Well Terminals ①



Cable Diameter Range	Cord Connector Cat. # ④	Plug Cat. # ④
1.375 to 1.875	RPC741-164-S04A	RPC541-154-P04A
1.875 to 2.062	RPC741-398-S04A	RPC541-390-P04A
2.062 to 2.250	RPC741-399-S04A	RPC541-391-P04A
1.375 to 1.875	RPC741-164-S02N	RPC541-154-P02N
1.875 to 2.062	RPC741-398-S02N	RPC541-390-P02N
2.062 to 2.250	RPC741-399-S02N	RPC541-391-P02N
1.375 to 1.875	RPC741-164-S10A	RPC541-154-P10A
1.875 to 2.062	RPC741-398-S10A	RPC541-390-P10A
2.062 to 2.250	RPC741-399-S10A	RPC541-391-P10A

NOTE: RPC with pressure terminals are shown on pages 1100 through 1103.

FOOTNOTES:

① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPC217-014-S09AT-ARE23.

② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC217-127-S09A-ARE23.

③ For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC217-014-S09A.

④ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters ''LT'' to first section of catalog number. Example: RPCLT317-160-S09A.

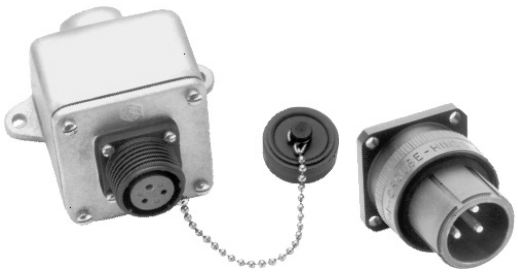
ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter ''K'' to first section of catalog number. Example: RPCK317-160-S09A.

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RPC Circuit Breaking Power Connectors With Pressure Terminals



	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ①, ②	Motor Plug Cat. #
30 AMPS							
Grounded	2w, 3p	600	#10	021	¾ 1	RPC221-014-S04AR-ARE23 RPC221-014-S04AR-ARE33	RPC121-157-P04AR
Ungrounded	3w, 3p	600	#10	021	¾ 1	RPC221-014-S02NR-ARE23 RPC221-014-S02NR-ARE33	RPC121-157-P02NR
60 AMPS							
Grounded	3w, 4p	600	#4	033	1¼ 1½	RPC233-014-S08AR-ARE46 RPC233-014-S08AR-ARE56	RPC133-157-P08AR
	4w, 5p	480	#4	033	1¼ 1½	RPC233-014-S09AR-ARE46 RPC233-014-S09AR-ARE56	RPC133-157-P09AR
Ungrounded	4w, 4p	600	#4	033	1¼ 1½	RPC233-014-S05NR-ARE46 RPC233-014-S05NR-ARE56	RPC133-157-P05NR
	5w, 5p	480	#4	033	1¼ 1½	RPC233-014-S06NR-ARE46 RPC233-014-S06NR-ARE56	RPC133-157-P06NR

† For alternate polarizations, see ''Options'' on page 1093.

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RPC Circuit Breaking Power Connectors With Pressure Terminals



Cable Diameter Range	Cord Connector Cat. # ③	Plug Cat. # ③
.250 to .625	RPC321-160-S04AR	RPC121-150-P04AR
.625 to 1.000	RPC321-161-S04AR	RPC121-151-P04AR
.250 to .625	RPC321-160-S02NR	RPC121-150-P02NR
.625 to 1.000	RPC321-161-S02NR	RPC121-151-P02NR
.875 to 1.375	RPC333-163-S08AR	RPC133-153-P08AR
1.375 to 1.625	RPC333-396-S08AR	RPC133-388-P08AR
1.625 to 1.875	RPC333-397-S08AR	RPC133-389-P08AR
.875 to 1.375	RPC333-163-S09AR	RPC133-153-P09AR
1.375 to 1.625	RPC333-396-S09AR	RPC133-388-P09AR
1.625 to 1.875	RPC333-397-S09AR	RPC133-389-P09AR
.875 to 1.375	RPC333-163-S05NR	RPC133-153-P05NR
1.375 to 1.625	RPC333-396-S05NR	RPC133-388-P05NR
1.625 to 1.875	RPC333-397-S05NR	RPC133-389-P05NR
.875 to 1.375	RPC333-163-S06NR	RPC133-153-P06NR
1.375 to 1.625	RPC333-396-S06NR	RPC133-388-P06NR
1.625 to 1.875	RPC333-397-S06NR	RPC133-389-P06NR

FOOTNOTES:

① For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC221-127-S04AR-ARE23.

② For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC221-014-S04AR.

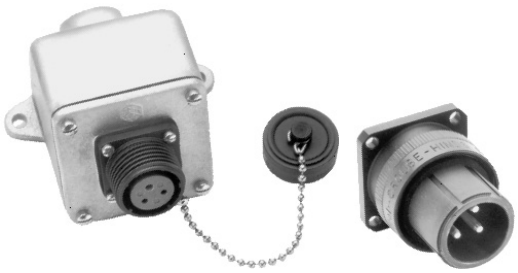
③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters ''LT'' to first section of catalog number. Example: RPCLT321-160-S04AR.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter ''K'' to first section of catalog number. Example: RPCK321-160-S04AR.

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	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ①, ②	Motor Plug Cat. #
100 AMPS							
Grounded	4w, 5p	600	⅛	041	1½ 2	RPC641-014-S04AR-AJ57 RPC641-014-S04AR-AJ67	RPC541-157-P04AR
Ungrounded	5w, 5p	600	⅛	041	1½ 2	RPC641-014-S02NR-AJ57 RPC641-014-S02NR-AJ67	RPC541-157-P02NR

† For alternate polarizations, see ''Options'' on page 1093.

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RPC Circuit Breaking Power Connectors With Pressure Terminals



Cable Diameter Range	Cord Connector Cat. # ③	Plug Cat. # ③
1.375 to 1.875	RPC741-164-S04AR	RPC541-154-P04AR
1.875 to 2.062	RPC741-398-S04AR	RPC541-390-P04AR
2.062 to 2.250	RPC741-399-S04AR	RPC541-391-P04AR
1.375 to 1.875	RPC741-164-S02NR	RPC541-154-P02NR
1.875 to 2.062	RPC741-398-S02NR	RPC541-390-P02NR
2.062 to 2.250	RPC741-399-S02NR	RPC541-391-P02NR

FOOTNOTES:

① For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC221-127-S04AR-ARE23.

② For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC221-014-S04AR.

③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters ''LT'' to first section of catalog number. Example: RPCLT321-160-S04AR.

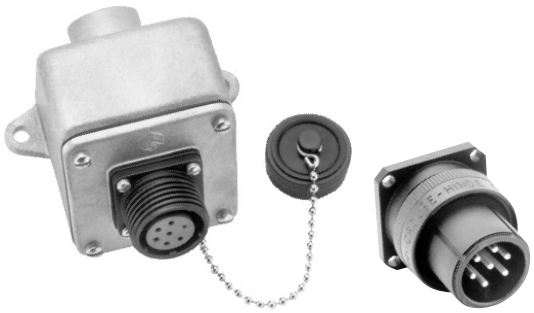
ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

● Stainless steel wire mesh grip – To order, add letter ''K'' to first section of catalog number. Example: RPCK321-160-S04AR.

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ARK-trol Electrical Connectors

RPE Control Circuit and Power Connectors With Solder Well Terminals ①



	Circuit Description	Contact Size	Amps	Volts (VAC)	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ②, ③	Motor Plug Cat. #
POWER	1w, 1p	500 MCM	500	600	033	1½ 2	RPE633-014-S24N-AJ57 RPE633-014-S24N-AJ67	RPE533-157-P24N
CONTROL	6w, 7p	#12	20	480	017	¾ 1	RPE217-014-S06A-ARE23 RPE217-014-S06A-ARE33	RPE117-157-P06A
	7w, 7p	#12	20	480	017	¾ 1	RPE217-014-S05N-ARE23 RPE217-014-S05N-ARE33	RPE117-157-P05N
	12w, 12p	#16	16	250	017	¾ 1	RPE217-014-S07N-ARE23 RPE217-014-S07N-ARE33	RPE117-157-P07N
	18w, 19p	#12	20	250	021	¾ 1	RPE221-014-S08A-ARE23 RPE221-014-S08A-ARE33	RPE121-157-P08A
	19w, 19p	#12	20	250	021	¾ 1	RPE221-014-S09N-ARE23 RPE221-014-S09N-ARE33	RPE121-157-P09N
	38w, 39p	#12	20	250	033	1¼ 1½	RPE233-014-S19A-ARE46 RPE233-014-S19A-ARE56	RPE133-157-P19A
	39w, 39p	#12	20	250	033	1¼ 1½	RPE233-014-S17N-ARE46 RPE233-014-S17N-ARE56	RPE133-157-P17N

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RPE Control Circuit and Power Connectors With Solder Well Terminals



Cable Diameter Range	Cord Connector Cat. # ④	Plug Cat. # ④
1.375 to 1.625	RPE733-396-S24N	RPE533-388-P24N
1.625 to 1.875	RPE733-397-S24N	RPE533-389-P24N
.250 to .625	RPE317-160-S06A	RPE117-150-P06A
.625 to .875	RPE317-161-S06A	RPE117-151-P06A
.250 to .625	RPE317-160-S05N	RPE117-150-P05N
.625 to .875	RPE317-161-S05N	RPE117-151-P05N
.250 to .625	RPE317-160-S07N	RPE117-150-P07N
.625 to .875	RPE317-161-S07N	RPE117-151-P07N
.625 to 1.000	RPE321-161-S08A	RPE121-151-P08A
1.000 to 1.187	RPE321-395-S08A	RPE121-387-P08A
.625 to 1.000	RPE321-161-S09N	RPE121-151-P09N
1.000 to 1.187	RPE321-395-S09N	RPE121-387-P09N
.875 to 1.375	RPE333-163-S19A	RPE133-153-P19A
1.375 to 1.625	RPE333-396-S19A	RPE133-388-P19A
.875 to 1.375	RPE333-163-S17N	RPE133-153-P17N
1.375 to 1.625	RPE333-396-S17N	RPE133-388-P17N

FOOTNOTES:

① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPE633-014-S24NT-AJ57.

② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPE633-127-S24N-AJ57.

③ For square flanged receptacle with dust cap for panel mounting, delete the last three digits of the catalog number specifying the backbox. Example: RPE633-014-S24N.

④ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters ''LT'' to the first section of the catalog number. Example: RPELT733-396-S24N.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

● Stainless steel wire mesh grip – To order, add letter ''K'' to first section of the catalog number. Example: RPEK733-396-S24N.

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FOR #16 THROUGH #10 CONTACTS:

The RPE017-440 crimping tool has been designed to crimp a wide range of solid and stranded type conductors. The crimping head is adjusted and sealed at the factory. The tool automatically crimps and gauges all size contacts without readjustment.



CONTACT REMOVAL TOOLS:

The contact removal tool extracts the contact from the insert assembly without complete disassembly of the connector.

RPE017-402T for use with #16 contacts.
RPE017-403T for use with #12 contacts.
RPE017-404T for use with #10 contacts.

DUST CAPS: For Receptacles

For RPC or RPE Series

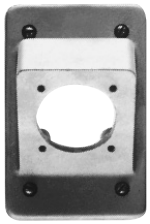


Dust Cap w/Eyelet for Receptacle Cat. #
RPE017-009
RPE021-009
RPE033-009
RPE041-009

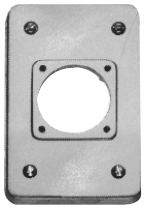
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Back Boxes and Adapters

For Mounting RPC and RPE Square Flanged Receptacles



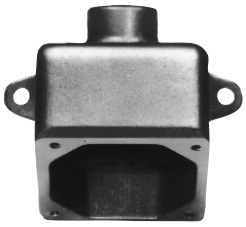
45° Angle adapter



Flat adapter



FS Back box



ARE Back box



AJ Back box

Back Boxes

FS and FSC

Hub Size	FS† Cat. #	FSC† Cat. #
½	FS1-SA	FSC1-SA
¾	FS2-SA	FSC2-SA
1	FS3-SA	FSC3-SA

ARE‡

Hub Size	Cat. #	Rating
½	ARE13	
¾	ARE23	30A
1	ARE33	
1	ARE36	
1¼	ARE46	60A
1½	ARE56	

AJ‡

Hub Size	Cat. #	Rating
1	AJ37	60A and 100A
1¼	AJ47	
1½	AJ57	
2	AJ67	
1½	AJ58	
2	AJ68	200A
2½	AJ78	

Adapters

Shell Sizes of Square Flanged Receptacles

45° Angle		Flat	
017 Cat. #	021 Cat. #	017 Cat. #	021 Cat. #
RPE017-156	RPE021-156	RPE017-141	RPE021-142

Shell Sizes of Square Flanged Receptacles

Flat			
017 Cat. #	021 Cat. #	033 Cat. #	041 Cat. #
RPE017-143	RPE021-144		
		RPE033-145	RPE041-146

Shell Sizes of Square Flanged Receptacles

Flat	
033 Cat. #	041 Cat. #
RPE033-145	RPE041-146
	RPE041-147

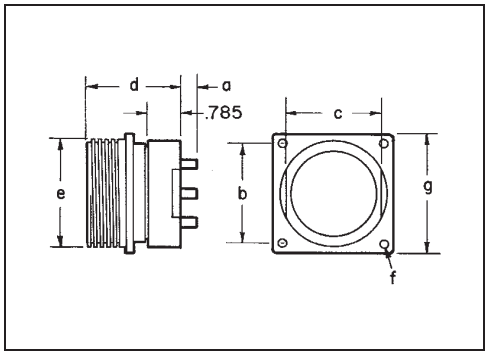
† Any of the FS or FD single gang, two gang tandem or multiple gang boxes with individual cover openings may be used with these adapters. For listings, dimensions and other details refer to Section 3F.

‡ Other AR and AJ back boxes may be used with these adapters. For listings, dimensions and other details refer to Section 1P.

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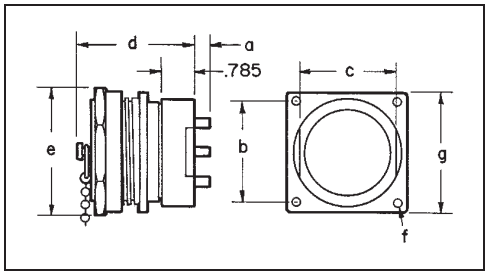
RPC Circuit Breaking Power Connectors
RPE Control Circuit and Power Connectors
Dimensions



Square Flanged Receptacle

Shell Type and Size	b	c	d	e	f	g
217	1.375	1.317	2.165	1.562	.190	1.750
221	1.750	1.692	2.165	2.000	.190	2.250
233	2.375	2.317	2.165	2.625	.214	2.875
241	2.813	2.817	2.165	3.187	.250	3.438
633	2.375	2.317	2.915	2.625	.214	2.875
641	2.813	2.817	2.915	3.187	.250	3.438

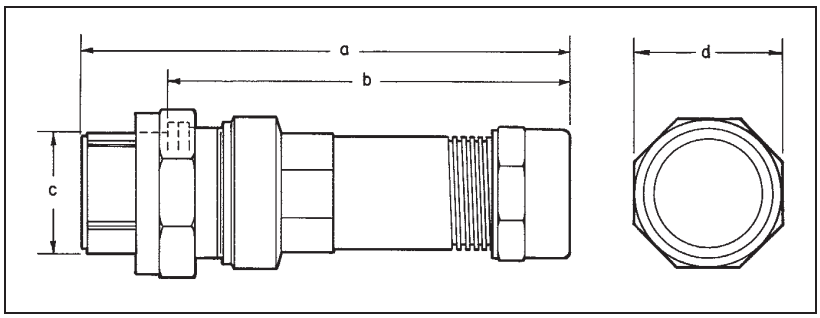
a	Contact for AWG Wire
.1875	#16, #12, #10
.250	#4
.375	⅛
.500	⅜



Square Flanged Receptacle with Dust Cap

Shell Type and Size	b	c	d	e	f	g
217	1.375	1.317	2.812	1.927	.190	1.750
221	1.750	1.692	2.812	2.468	.190	2.250
233	2.375	2.317	2.812	3.145	.214	2.875
241	2.813	2.817	2.812	3.754	.250	3.438
633	2.375	2.317	3.552	3.145	.214	2.875
641	2.813	2.817	3.552	3.754	.250	3.438

NOTE: Dimension **a** – same as above



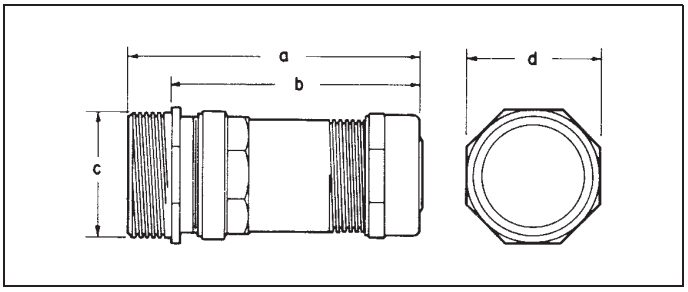
Plug

Shell Type and Size	a†	b†	c	d
117	5.033	4.133	1.270	1.921
121	5.090	4.190	1.675	2.468
133	6.093	5.193	2.295	3.140
141	6.653	5.753	2.800	3.750
533	6.843	5.193	2.295	3.140
541	7.403	5.753	2.800	3.750

† These dimensions are approximate and vary with cable size.

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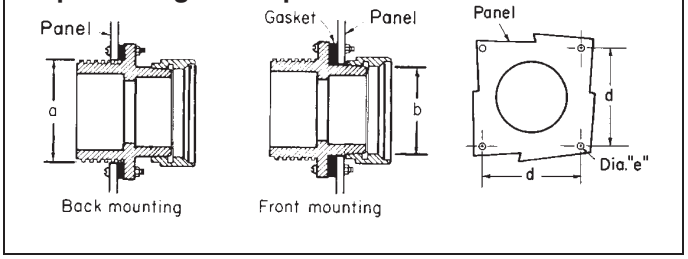
RPC Circuit Breaking Power Connectors
RPE Control Circuit and Power Connectors
Dimensions



Cord Connector Receptacle

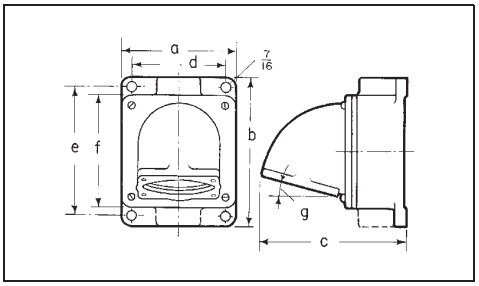
Shell Type and Size	a†	b†	c	d
317	5.033	4.116	1.562	1.812
321	5.090	4.173	1.885	2.300
333	6.093	5.176	2.625	3.140
341	6.653	5.736	3.187	3.730
733	6.843	5.176	2.625	3.140
741	7.403	5.736	3.187	3.730

Square flanged receptacle



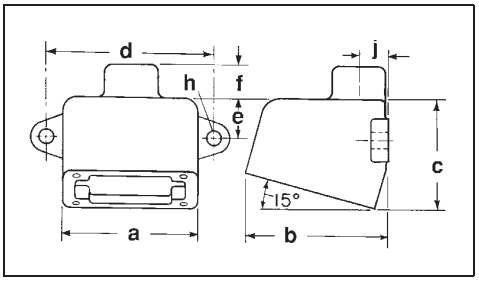
Panel Mounting Methods

Shell Size	Back Mounting a	Back Mounting d	Back Mounting e	Front Mounting b	Front Mounting d	Front Mounting e
017	$1\frac{19}{32}$	$1\frac{3}{8}$	$\frac{3}{16}$	$1\frac{17}{32}$	$1\frac{3}{8}$	$\frac{3}{16}$
021	$2\frac{1}{32}$	$1\frac{3}{4}$	$\frac{3}{16}$	$1\frac{31}{32}$	$1\frac{3}{4}$	$\frac{3}{16}$
033	$2\frac{21}{32}$	$2\frac{3}{8}$	$\frac{7}{32}$	$2\frac{21}{32}$	$2\frac{3}{8}$	$-\frac{7}{32}$
041	$3\frac{7}{32}$	$2\frac{13}{16}$	$\frac{1}{4}$	$3\frac{5}{32}$	$2\frac{13}{16}$	$\frac{1}{4}$



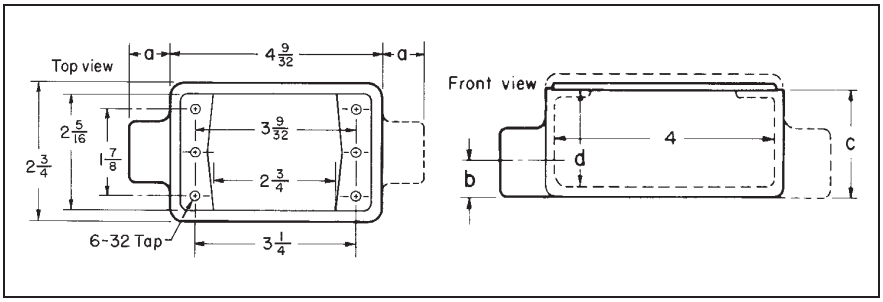
AJ Back Boxes

Form	Size	a	b	c	d	e	f	g
C & D	¾, 1, 1¼, 1½	$5\frac{7}{8}$	8	$7\frac{7}{16}$	$4\frac{7}{8}$	7	$5\frac{7}{8}$	15°
C & D	2	$5\frac{7}{8}$	8	8	$4\frac{7}{8}$	7	$5\frac{7}{8}$	15°
E	1½, 2, 2½	8	$10\frac{3}{4}$	$9\frac{7}{8}$	$6\frac{3}{4}$	$9\frac{1}{2}$	8	45°



ARE Back Boxes

Form	Size	a	b	c	d	e	f	h dia.
B	½	$3\frac{3}{8}$	$3\frac{5}{8}$	$2\frac{3}{4}$	$4\frac{1}{4}$	1	$\frac{27}{32}$	$1\frac{1}{32}$
B	¾	$3\frac{3}{8}$	$3\frac{5}{8}$	$2\frac{3}{4}$	$4\frac{1}{4}$	1	$\frac{27}{32}$	$1\frac{1}{32}$
B	1	$3\frac{3}{8}$	$3\frac{5}{8}$	$2\frac{3}{4}$	$4\frac{1}{4}$	1	$\frac{31}{32}$	$1\frac{1}{32}$
C	1	$4\frac{1}{4}$	$4\frac{11}{16}$	$4\frac{11}{16}$	$5\frac{1}{4}$	$1\frac{5}{8}$	$\frac{15}{16}$	$\frac{3}{8}$
C	$1\frac{1}{4}$	$4\frac{1}{4}$	$4\frac{11}{16}$	$4\frac{11}{16}$	$5\frac{1}{4}$	$1\frac{5}{8}$	1	$\frac{3}{8}$
C	$1\frac{1}{2}$	$4\frac{1}{4}$	$4\frac{11}{16}$	$4\frac{11}{16}$	$5\frac{1}{4}$	$1\frac{5}{8}$	$1\frac{1}{16}$	$\frac{3}{8}$



FS/FSC Boxes

Series	Hub Size	a	b	c	d
	½	$\frac{7}{8}$	$\frac{5}{8}$	$1\frac{7}{8}$	$1\frac{11}{16}$
FS	¾	$\frac{7}{8}$	¾	$1\frac{7}{8}$	$1\frac{11}{16}$
	1	1	$\frac{7}{8}$	$1\frac{7}{8}$	$1\frac{11}{16}$

† These dimensions are approximate and vary with cable size.

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Notes Page

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Description	Page No.
Application/Selection	1113
Delayed Action	
RPX "Time-Slot" Series	1114-1118

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Notes Page

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

Application:

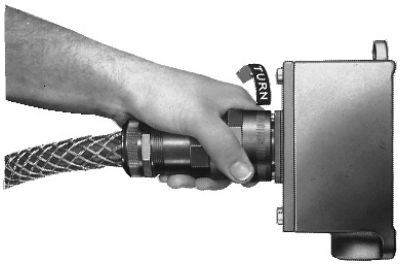
RPX "Time-Slot" delayed action connectors are used:

- in areas which are hazardous due to the presence of gasoline or gases or vapors of equivalent hazard (comparable to NEC Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-STD-810E
- for connection of devices ranging from simple lighting units, power tools and similar portables requiring only a power circuit to sophisticated control and instrumentation assemblies requiring disconnect

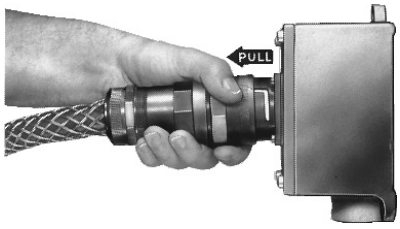
Features:

The same basic features, described in detail in Section 8P for RPC and RPE connectors, apply to RPX connectors as well and include the following:

- High-strength impact extruded aluminum shell parts
- "Tri-Disc" insert assemblies
- Contacts snap in after termination
- Positive polarization
- Interchangeability of inserts in each shell size
- Grounding contacts, where used, make first and break last
- The RPX "Time-Slot" delayed action feature prevents complete withdrawal of the plug in one continuous movement, eliminating the possibility of a circuit-breaking arc occurring in a hazardous area. Details of operation are shown in the illustrations below.



A. Turn plug clamping nut counterclockwise 45° to unlock plug.

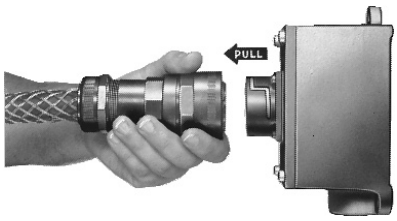


B. Pull to disengage pin and socket contacts, breaking circuit while contacts are still inside the receptacle. Any resulting electrical arc is quenched within the receptacle sockets.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-STD-810E.



C. Turn plug clamping nut an additional 45° counterclockwise to the release position, thereby effecting delayed action.



D. Disengage plug and receptacle.

Standard Materials:

- Back boxes and adapters – *Feraloy*® iron alloy
- Plug, receptacle and cord connector shells – impact extruded aluminum
- Insulation – diallyl phthalate (DAP)
- Sealing wafer – silicone rubber
- Contacts – hard drawn copper

Standard Finishes:

- *Feraloy* – zinc electroplate and aluminum acrylic paint
- Impact extruded aluminum – hard coat anodized
- Diallylphthalate – natural (blue)
- Silicone rubber – natural (grey)

Options:

The following options available for RPC and RPE connectors are also applicable to RPX connectors. For complete details see Section 8P pages 1093 to 1094.

- Alternate polarities – ungrounded and grounded connectors
- Crimp type contacts
- Wire mesh cord grip

Electrical Rating Ranges:

- 10, 20, 30 and 60 amperes
- 50** to 400 hertz
- 250, 480 and 600vac
- See listings for specific ratings





Certifications and Compliances:

- RPX delayed action connectors have the same physical properties, characteristics and environmental capabilities of RPC and RPE connectors listed in Section 8P. For detailed information on these properties, refer to page 1094 of Section 8P.
- In addition to these properties, the "Time-Slot" delayed action feature permits disconnect under full rated load with no possibility of an exposed arc, thus meeting the stringent requirements of Military Specifications MIL-STD-810E

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

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Special Purpose†; ARK-trol Electrical Connectors

RPX "Time-Slot" Delayed Action Connectors With Solder Well Terminals ①, Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
Explosionproof
Raintight
Dimensions Page 1118



	Circuit Description	Contact Size	Amps	Volts (VAC)	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. No. (For Surface Mounting) ②
POWER 20 AMPS							
Grounded	4w, 5p	#12	20	480	017	¾	RPX217-914-S09A-EDSC271
						1	RPX217-914-S09A-EDSC371
Ungrounded	5w, 5p	#12	20	480	017	¾	RPX217-914-S08N-EDSC271
						1	RPX217-914-S08N-EDSC371
30 AMPS							
Grounded	2w, 3p	#10	30	480	017	¾	RPX217-914-S02A-EDSC271
						1	RPX217-914-S02A-EDSC371
	3w, 4p	#10	30	480	017	¾	RPX217-914-S04A-EDSC271
						1	RPX217-914-S04A-EDSC371
	4w, 5p	#10	30	480	021	¾	RPX221-914-S17A-EDSC271
						1	RPX221-914-S17A-EDSC371
Ungrounded	3w, 3p	#10	30	480	017	¾	RPX217-914-S01N-EDSC271
						1	RPX217-914-S01N-EDSC371
	4w, 4p	#10	30	480	017	¾	RPX217-914-S03N-EDSC271
						1	RPX217-914-S03N-EDSC371
	5w, 5p	#10	30	480	021	¾	RPX221-914-S16N-EDSC271
						1	RPX221-914-S16N-EDSC371

† For alternate polarizations, see "Options" on page 1113.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

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Cable Diameter Range	Cord Connector Cat. No. ③	Plug Cat. No. ③
.250 to .625	RPX317-160-S09A	RPX117-150-P09A
.625 to .875	RPX317-161-S09A	RPX117-151-P09A
.250 to .625	RPX317-160-S08N	RPX117-150-P08N
.625 to .875	RPX317-161-S08N	RPX117-151-P08N
.250 to .625	RPX317-160-S02A	RPX117-150-P02A
.625 to .875	RPX317-161-S02A	RPX117-151-P02A
.250 to .625	RPX317-160-S04A	RPX117-150-P04A
.625 to .875	RPX317-161-S04A	RPX117-151-P04A
.625 to 1.000	RPX321-161-S17A	RPX121-151-P17A
1.000 to 1.187	RPX321-395-S17A	RPX121-387-P17A
.250 to .625	RPX317-160-S01N	RPX117-150-P01N
.625 to .875	RPX317-161-S01N	RPX117-151-P01N
.250 to .625	RPX317-160-S03N	RPX117-150-P03N
.625 to .875	RPX317-161-S03N	RPX117-151-P03N
.625 to 1.000	RPX321-161-S16N	RPX121-151-P16N
1.000 to 1.187	RPX321-395-S16N	RPX121-387-P16N

FOOTNOTES:

① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPX217-914-S09AT-EDSC271.

② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 914 to 913. Example: RPX217-913-S09A-EDSC271.

③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters "LT" to first section of catalog number. Example: RPXLT317-160-S09A.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

● Stainless steel wire mesh grip – To order, add letter "K" to first section of catalog number. Example: RPXK317-160-S09A.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

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Special Purpose†; ARK-trol Electrical Connectors

RPX "Time-Slot" Delayed Action Connectors With Solder Well Terminals ①
Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
Explosionproof
Raintight
Dimensions Page 1118



	Circuit Description	Contact Size	Amps	Volts (VAC)	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. No. (For Surface Mounting) ②
60 AMPS Grounded	3w, 4p	#4	60	600	033	1¼	RPX233-914-S08A-CES42
	4w, 5p	#4	60	480	033	1¼	RPX233-914-S09A-CES42
Ungrounded	4w, 4p	#4	60	600	033	1¼	RPX233-914-S05N-CES42
	5w, 5p	#4	60	480	033	1¼	RPX233-914-S06N-CES42
CONTROL	6w, 7p	#12	20	480	017	¾ 1	RPX217-914-S06A-EDSC271 RPX217-914-S06A-EDSC371
	7w, 7p	#12	20	480	017	¾ 1	RPX217-914-S05N-EDSC271 RPX217-914-S05N-EDSC371
	18w, 19p	#12	20	250	021	¾ 1	RPX221-914-S08A-EDSC271 RPX221-914-S08A-EDSC371
	19w, 19p	#12	20	250	021	¾ 1	RPX221-914-S09N-EDSC271 RPX221-914-S09N-EDSC371
	38w, 39p	#12	20	250	033	1¼	RPX233-914-S19A-CES42
	39w, 39p	#12	20	250	033	1¼	RPX233-914-S17N-CES42

† For alternate polarizations, see "Options" on page 1113.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

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Special Purpose†; ARK-trol Electrical Connectors

RPX ''Time-Slot'' Delayed Action Connectors With Solder Well Terminals Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
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Cable Diameter Range	Cord Connector Cat. No. ③	Plug Cat. No. ③
.875 to 1.375	RPX333-163-S08A	RPX133-153-P08A
1.375 to 1.625	RPX333-396-S08A	RPX133-388-P08A
1.625 to 1.875	RPX333-397-S08A	RPX133-389-P08A
.875 to 1.375	RPX333-163-S09A	RPX133-153-P09A
1.375 to 1.625	RPX333-396-S09A	RPX133-388-P09A
1.625 to 1.875	RPX333-397-S09A	RPX133-389-P09A
.875 to 1.375	RPX333-163-S05N	RPX133-153-P05N
1.375 to 1.625	RPX333-396-S05N	RPX133-388-P05N
1.625 to 1.875	RPX333-397-S05N	RPX133-389-P05N
.875 to 1.375	RPX333-163-S06N	RPX133-153-P06N
1.375 to 1.625	RPX333-396-S06N	RPX133-388-P06N
1.625 to 1.875	RPX333-397-S06N	RPX133-389-P06N
.250 to .625	RPX317-160-S06A	RPX117-150-P06A
.625 to .875	RPX317-161-S06A	RPX117-151-P06A
.250 to .625	RPX317-160-S05N	RPX117-150-P05N
.625 to .875	RPX317-161-S05N	RPX117-151-P05N
.625 to 1.000	RPX321-161-S08A	RPX121-151-P08A
1.000 to 1.187	RPX321-395-S08A	RPX121-387-P08A
.625 to 1.000	RPX321-161-S09N	RPX121-151-P09N
1.000 to 1.187	RPX321-395-S09N	RPX121-387-P09N
.875 to 1.375	RPX333-163-S19A	RPX133-153-P19A
1.375 to 1.625	RPX333-396-S19A	RPX133-388-P19A
.875 to 1.375	RPX333-163-S17N	RPX133-153-P17N
1.375 to 1.625	RPX333-396-S17N	RPX133-388-P17N

FOOTNOTES:

① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPX217-914-S09AT-EDSC271.

② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 914 to 913. Example: RPX217-913-S09A-EDSC271.

③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters ''LT'' to first section of catalog number. Example: RPXLT317-160-S09A.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

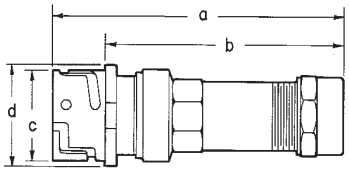
● Stainless steel wire mesh grip – To order, add letter ''K'' to first section of catalog number. Example: RPXK317-160-S09A.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

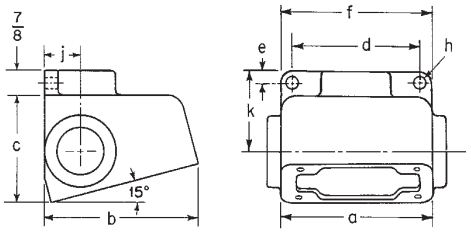
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Dimensions

RPX Cord Connector Receptacle



CES42 ♦



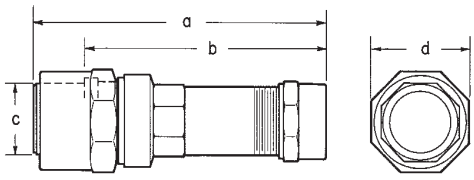
Cord Connector Receptacle

Shell Type and Size	a‡	b‡	c	d
317	5.033	4.116	1.560	1.812
321	5.090	4.173	2.000	2.300
333	6.093	5.176	2.625	3.140

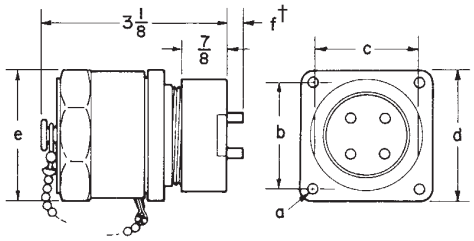
CES42 ♦

Size	a	b	c	d	e	f	h dia.	j	k
1¼	5¼	5¼	3 11/16	4⅜	7/16	5¼	7/16	1⅛	2⅞

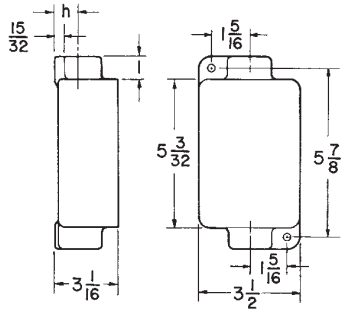
RPX Plug



RPX Connectors Square Flanged Receptacle with Dust Cap



Back Boxes



RPX Plug

Shell Type and Size	a‡	b‡	c	d
117	5.033	4.133	1.270	1.921
121	5.090	4.190	1.675	2.468
133	6.093	5.193	2.295	3.140

RPX Connectors Square Flanged Receptacle with Dust Cap

Shell Type and Size	a	b	c	d
217	.190	1.375	1.317	1.750
221	.190	1.750	1.692	2.250
233	.214	2.375	2.317	2.875

Back Boxes

Cat. No.	h	l
EDSC271	⅞	13/16
EDSC371	1	15/16

† Dimension "f"; 0.1875 for #16, #12 and #10 contacts
0.250 for #4 contacts

‡ These dimensions are approximate and vary with cable size.
♦ CES42 takes 60 ampere receptacle housings.

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Why Cooper Crouse-Hinds?

- The broadest line of harsh and hazardous signaling, alarm and communication products available in both IEC and NEC designs and certifications.
- A new line of hazardous area call points (fire alarm or emergency notification devices) provides you a unique product offering unequalled by any other manufacturer of hazardous location signaling products.
- Worldwide listings with UL, cUL, ATEX, GOST, CSA and CQST (Chinese) approvals provide customer solutions that the competition can't match.
- Superior enclosure materials providing unmatched ingress protection and corrosion resistance from the harshest conditions.
- A unique signaling product offering integral visual and audible signaling capability pre-wired for simultaneous output activation.
- A new line of heat detectors for early indication of potential processing problems.

Applications Include:


Petrochemical Facilities


Manufacturing Areas


Waste Water Treatment


Food Processing Facilities


Paper and Pulp Operations


Pharmaceutical Manufacturing

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A Guide To The Use Of Electrical Equipment In Potentially Explosive Atmospheres

Introduction

Potentially explosive atmospheres exist where there is a risk of explosion due to mixtures of gas/air, vapor/air, dust/air or other flammable combinations. In such areas there is a necessity to eliminate sources of ignition such as sparks, hot surfaces or static electricity which may ignite these mixtures. Where electrical equipment has to be used in these areas it must be so designed and constructed as to not create sources of ignition capable of igniting these mixtures. Before electrical equipment can be used in a potentially explosive atmosphere, a representative sample has to be fully tested and certified by an independent authority such as Baseefa 2001 in Europe or UL in the U.S.A.

This information is intended as a guide only and further expert guidance should be sought before placing into service, maintaining or repairing any item of equipment in a potentially explosive atmosphere.

Where comparisons are shown between, for example, European and North American practice this may be an approximation and individual standards/codes of practice should be consulted for precise details.

Area Classification

Plants are divided into Zones (European and IEC method) or Divisions (North American method) according to the likelihood of a potentially explosive atmosphere being present.
Note: North American legislation now allows Zones to be used to classify areas, where this practice is used it follows the IEC Zone method.

European & IEC Classification	Definition of zone or division	North American Classification
Zone 0 (gases) Zone 20 (dusts)	An area in which an explosive mixture is continuously present or present for long periods	Class I, Division 1 (gases) Class II, Division 1 (dusts)
Zone 1 (gases) Zone 21 (dusts)	An area in which an explosive mixture is likely to occur in normal operation	Class I, Division 1 (gases) Class II, Division 1 (dusts)
Zone 2 (gases) Zone 22 (dusts)	An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time	Class I, Division 2 (gases) Class II, Division 2 (dusts) Class III, Division 1 (fibers) Class III, Division 2 (fibers)

Gas Groups (plus dusts and fibers)

There are two main gas groups, Group I—Mining only and Group II—Surface Industries
These categories are used in European and I.E.C. groupings.

Group I is concerned only with underground mining where methane and coal dust are present.

Group II gases occurring in surface industries, are sub-grouped according to their volatility. This enables electrical equipment to be designed to less onerous tolerances if it is to be used with the least volatile gases.

Typical gas/material	European/I.E.C. Gas Group	North American Gas Group
Methane	I	-
Acetylene	IIC	A
Hydrogen	IIC	B
Ethylene	IIB	C
Propane	IIA	D
Metal dust	-	E
Coal dust	-	F
Grain dust	-	G

Temperature

Hot surfaces can ignite explosive atmospheres. To guard against this, all electrical equipment intended for use in a potentially explosive atmosphere is classified according to the maximum surface temperature it will reach in service. This temperature is normally based on a surrounding ambient temperature of 40 degrees Centigrade (102 degrees Fahrenheit). This temperature can then be compared to the ignition temperature of the gas(es) which may come into contact with the equipment and a judgement reached as to the suitability of the equipment to be used in that area.

Temperature Classification		**Maximum Surface Temperature**
European/I.E.C.	North American	
T1	T1	450° C
T2	T2 T2A T2B T2C T2D	300° C 280° C 260° C 230° C 215° C
T3	T3 T3A T3B T3C	200° C 180° C 165° C 160° C
T4	T4 T4A	135° C 120° C
T5	T5	100° C
T6	T6	85° C

e.g. Butane has an ignition temperature of 365 degrees Centigrade, equipment used in the vicinity of this gas would need a T rating of T2 or better.

Types of Electrical Equipment Suitable for use in Potentially Explosive Atmospheres

Different techniques are used to prevent electrical equipment from igniting explosive atmospheres. There are restrictions on where these different types of equipment can be used as follows:	**European** Area of use Designation Standard	**IEC** Area of use Designation Standard	**NEC** Area of use Designation Standard
Flameproof Enclosure—An enclosure used to house electrical equipment, which when subjected to an internal explosion will not ignite a surrounding explosive atmosphere.	**Zones 1 & 2** EExd EN60079-1	**Zones 1 & 2** Exd IEC60079-1	**Class I** **Divisions 1 & 2** – UL1203
Intrinsic Safety—A technique whereby electrical energy is limited such that any sparks or heat generated by electrical equipment is sufficiently low as to not ignite an explosive atmosphere.	**Zones 0, 1 & 2** EExi EN50020	**Zones 1 & 2** Exi IEC60079-11	**Class I** **Divisions 1 & 2** – UL913
Increased Safety—This equipment is so designed as to eliminate sparks and hot surfaces capable of igniting an explosive atmosphere.	**Zones 1 & 2** EExe EN60079-7	**Zones 1 & 2** Exi IEC60079-7	– – –
Purged and Pressurized—Electrical equipment is housed in an enclosure which is initially purged to remove any explosive mixture, then pressurised to prevent ingress of the surrounding atmosphere prior to energization.	**Zones 1 & 2** EExp EN50016	**Zones 1 & 2** Exp IEC60079-2	**Class I** **Divisions 1 & 2** – NFPA496
Encapsulation—A method of exclusion of the explosive atmosphere by fully encapsulating the electrical components in an approved material.	**Zones 1 & 2** EExm EN60079-18	**Zones 1 & 2** Exm IEC60079-18	– – –
Oil Immersion—The electrical components are immersed in oil, thus excluding the explosive atmosphere from any sparks or hot surfaces.	**Zones 1 & 2** EExo EN50015	**Zones 1 & 2** Exo IEC60079-6	**Class I Division 2** – UL698
Powder Filling—Equipment is surrounded with a fine powder, such as quartz, which does not allow the surrounding atmosphere to come into contact with any sparks or hot surfaces.	**Zones 1 & 2** EExq EN50017	**Zones 1 & 2** Exq IEC60079-5	**–** – –
Non-sparking—Sparking contacts are sealed against ingress of the surrounding atmosphere, hot surfaces are eliminated.	**Zone 2** EExn EN60079-15	**Zone 2** Exn IEC60079-15	**–** – –

Selection, installation and maintenance of electrical equipment intended for use in potentially explosive atmospheres.

International and national standard requirements for the safe use of electrical equipment in potentially explosive atmospheres as follows:

	International	Europe	U.S.A.
General Recommendations	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Classification of Hazardous Areas	IEC60079-10	EN60079-10	N.E.C. Chapter 5
Inspection and Maintenance of Electrical Equipment	IEC60079-17	EN60079-17	–
Requirements for Flameproof Enclosures	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Intrinsically Safe Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Increased Safety Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Purged and Pressurized Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Non-Sparking Equipment	IEC60079-14	EN60079-14	–

Cooper Crouse-Hinds advises that all Explosionproof electrical equipment is maintained, by suitably trained personnel, in accordance with the Manufacturers' recommendations.

Any spare parts used should be purchased from the original Manufacturer and repairs should be carried out by the Manufacturer or under his supervision, in order that the item remains in conformance with the certification documents.

The Certification Process

All electrical equipment, intended for use in a potentially explosive atmosphere, should be certified as suitable for such use.

The methods of obtaining certification differ in detail, see below, between each certifying body or group of bodies (e.g. CENELEC). Basically this process consists of supplying a representative sample of the equipment along with a set of drawings to a recognised test/certification body e.g. Baseefa 2001 who in turn test the equipment against a recognised Standard e.g. EN60079-14 and issues a Certificate. The user of the equipment can then refer to this Certificate to enable him to safely put the item into service in a zone appropriate to the Certification.

European Practice

ALL EQUIPMENT, BOTH ELECTRICAL AND MECHANICAL, INTENDED TO BE PUT INTO SERVICE WITHIN THE EEC HAS TO BE CERTIFIED IN ACCORDANCE WITH THE ATEX DIRECTIVE.

It should be noted also that **MECHANICAL** equipment is covered by the ATEX Directive so for the first time items such as gearboxes will have to carry ATEX certification.

The equipment coding signifying compliance with ATEX is as follows:

⟨Ex⟩ II2G i.e.

⟨Ex⟩ – Explosionproof in accordance with ATEX.

II – Group II surface industries.

2 – category 2 equipment (suitable for use in Zone 1) note: Category 1 is suitable for Zone 0.
Category 3 is suitable for Zone 2.

G – suitable for atmospheres containing gas (D is suitable for atmospheres containing dusts).

Equipment will be CE marked when certified to ATEX.

North American Practice

Sample equipment and supporting documentation are submitted to the appropriate authority e.g. U.L., F.M., C.S.A.

The equipment is tested in accordance with relevant standards for explosion protection and also for general electrical requirements e.g. light fittings.

After successful testing, a listing is issued allowing the manufacturer to place the product on the market.
The product is marked with the certification details such as the gas groups A,B,C,D and the area of use e.g. Class I, Division 1.

Applicable UL, cUL, ULC, CSA Certifications

UL1638 Visual Signaling Appliances—Private-mode emergency and general utility signaling.
ULC S526-02—Visual signal devices for fire alarm systems.

UL1971—Listed for signaling devices for the hearing impaired.
ULC S526-02—Visual signal devices for fire alarm systems

UL38—Manual signaling boxes for fire alarm systems.
Similar to CAN/ULC S58-M91—Standard for manual pull stations for fire alarm systems

UL464—Audible signal appliances.
ULC S525-99—Audible signal devices for fire alarm systems

UL11604—Electric equipment for use in Class II, Division 2, and Class III, hazardous locations.

UL844—Electric lighting fixtures for use in hazardous locations.
CSA C22.2 No. 137-M1981—Electric Luminaires for use in hazardous locations

UL1203—Explosionproof and dust ignitionproof electrical equipment for use in hazardous locations.
CSA C22.2 No. 30–M1986—Explosionproof enclosures for use in Class I Locations.
CSA C22.2 No. 25-1966—Explosionproof enclosures for use in Class II Groups E, F and G hazardous locations.

UL1598A—Supplemental requirements for luminaires for installation on marine vessels.
Refer to Transport Canada Technical Publication TP127E-Ships Electrical Standards.

Worldwide Certification

Most countries outside Europe or North America use the IEC Standards as a basis for their own national standards.

The Russian Federation certifies equipment to GOST 'R' standards, these closely follow CENELEC practice.

In Russia, certain products used in fire alarm systems may be required to carry the Russian fire approval (VNIIPO). Note that not all Cooper Crouse-Hinds products that have been certified to GOST 'R' are VNIIPO approved. Check specification on technical data sheets before ordering.

Kazakhstan has a certification process (GOST 'K') where approval is normally based on compliance with CENELEC standards.

Certification in China is based on compliance with international standards such as CENELEC or UL, or their own CQST standard.

There is a scheme in place which will, when fully adopted, allow for internationally recognized certification to become a reality, this is the IEC EX SCHEME. This uses the IEC standards and IEC recognised test and certification bodies to issue mutually recognised test reports and certificates. The scheme is in its infancy and its level of success cannot yet be measured.

Ingress Protection

2 digits are used to denote the level of ingress protection that a piece of apparatus enjoys:

IP □ □

	Solids		Liquids
0	No protection.	0	No protection.
1	Protected against solid objects up to 50mm, e.g. hands.	1	Protected against vertically falling drops of water.
2	Protected against solid objects up to 12mm, e.g. fingers.	2	Protected against water spray up to 15 degrees from vertical.
3	Protected against solid objects up to 2.5mm, e.g. tools.	3	Protected against water spray up to 60 degrees from vertical.
4	Protected against solid objects over 1mm, e.g. wires.	4	Protected against water sprays from all directions.
5	Protected against dusts. (No harmful deposits).	5	Protected against water jets from all directions.
6	Totally protected against dust.	6	Protected against strong water jets from all directions, e.g. Offshore.
		7	Protected against immersion between 15cm and 1m in depth.
		8	Protected against long immersion under pressure.

NEMA Standards

North American practice is to use NEMA standards to describe ingress protection, i.e.:

NEMA 3	is similar to	IP 54
NEMA 4	is similar to	IP 55
NEMA 4X	is similar to	IP 56
NEMA 6	is similar to	IP 67

Manual Call Points





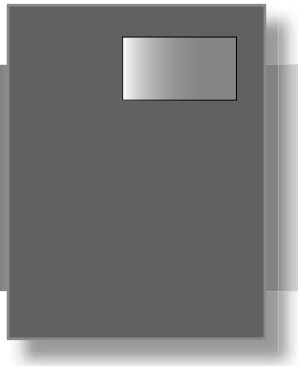
BG & SM87 BG
Call Points

Heat Detectors



HD1 Series
Heat Detectors

Hazardous Location Input Field Devices



Fire Alarm Panel



(For illustration purposes only,
not available from this catalog)

Smoke Detector

Strobe Warning Lights



XB15 & XB16 Strobe Lights

Rotating Beacons



EXSO301

Combination Units



Horn/Strobe Unit

Remote Speaker/ Amplifier



Explosionproof ETH Series

Hazardous Location Output Field Devices



DB3 Horn

Speakers



EXFASC Series

Fire Alarms



SM87 SL

Status Lights



XB12

Strobe Lights



Class I, Div. 2, Zone 2
Touch-safe coated glass for finger activation.

Class I, Div. 2, Zone 2
Push to activate.

Class I, Div. 1
Push to activate.
Key switch to reset.

These manual fire alarm call points have been designed for use in hazardous locations and harsh environmental conditions. They offer:

- The broadest range of hazardous location manual fire alarm activation devices in the industry.
- The compact design, activation choices such as pushbutton or breakglass, housing color choices and comprehensive worldwide certifications make this product family a project closer.
- Flexibility as all units accept metric cable or NPT conduit entries, and each unit can be custom designed for a specific fire alarm or emergency activation requirements.

Primary Applications

- Fire alarm activation
- Emergency evacuation
- Process shut-down

Industries

- Liquid natural gas terminals
- Energy exploration
- Chemical
- Refinery
- Power generation

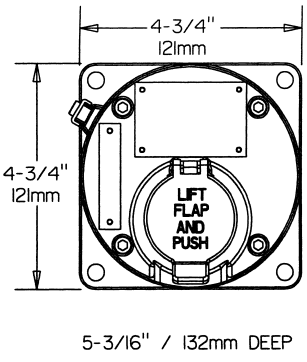
Key Features & Benefits

- In-line and end-of-line resistors fitted for use in fire activation circuits
- Optional LED to indicate operation
- Plastic break glass element available—easy activation yet safe to touch
- Corrosion resistant GRP—ideal for Marine applications
- Retained stainless steel cover screws—won't corrode and never lose screws
- Optional lift flap for protection

SM87PBL — Push Button Fire Alarm Call Point—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Marine Grade Alloy Stainless Steel (ATEX only)
Entries	Up to 4 x ½" or ¾" NPT
Weight	5.5lb/2.5kg
Options: Body color, certification	

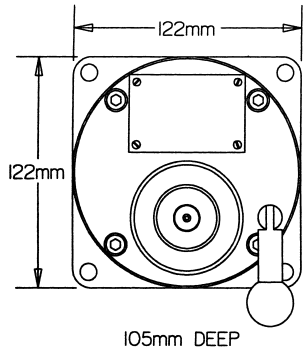


Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, CSA, Class I, Div 1, Groups C & D, Zone 1	36200102	SM87PBLAUL3T3B3NNR	Explosion protected, 2 x ½" NPT entries, duty label "Fire—Press Here," single push button switch—latching, marine grade alloy, red finish

SM87BG — Break Glass Call Point—Explosionproof



Certification Intrinsically Safe Flameproof	ATEX GOST 'R' & 'K', Chinese ATEX Ex II 1G, EExia IIC T4 ATEX Ex II 2G, EExd IIC T6
Certified Ambient Temperature	-55°C to +70°C -20°C to +55°C (LED)
Ingress Protection	IP66 & 67
Material	Stainless Steel or Alloy
Entries	Up to 4 x 20mm or 25mm
Weight	3.8kg (Steel) 2.5kg (Alloy)
Options: Body color, 3 & 4 pole changeover switch, certification	

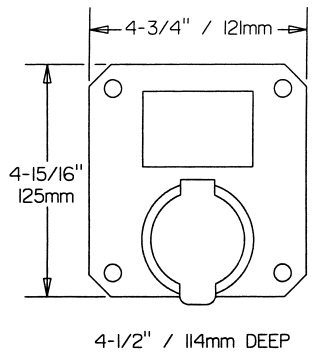


Certification	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 2GD	16200174	SM87BGLAD1B1NNR	Break glass call point, Ex II 2GD, EExd IIC T6, IP 66 & 67, 1 x M20 bottom entries, duty label, "Fire Breakglass," alloy material, red finish

PB — Push Button Fire Alarm Call Point—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2
Certified Ambient Temperature	-13°F to +158°F -25°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 4 x ½" NPT, M20
Weight	2.6lb/1.2kg
Options: Body color, certification	

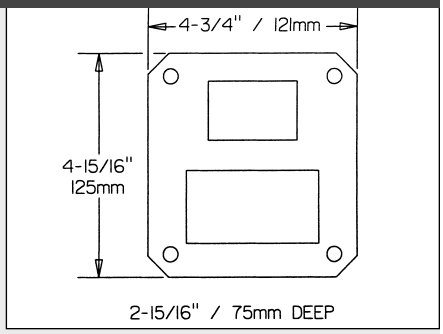


Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, Class I, Div 2, Groups A, B, C, D, Zone 1 & 2	869105	PBUL4C6C0DSN7R	Explosion protected, 2 x ½" NPT bottom entries, no duty label, DC, single push button switch latching, painted red GRP
ATEX Ex II 2GD	800010	PBEB4B6B0DSN6R	Explosion protected, Ex II 2GD, EExe, IIC, T6, Zone 1 & 2, 2 x M20 entries, DC, single switch, red finish

BG — Break Glass Fire Alarm Call Point—Hazardous Locations



Certification UL Listed for:	UL Ex ATEX Class I, Div 2, Groups A,B,C,D Class I, Zone 2
Certified Ambient Temperature	-13°F to +131°F -25°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 4 x ½" NPT, M20
Weight	2.6lb/1.2kg



Options: Body color, certification, lift flap, LED, tag & duty label, series and EOL resistor

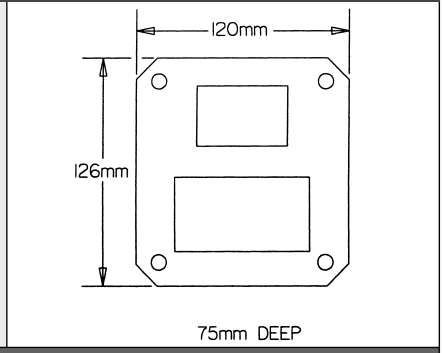
Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups A, B, C, D, Zone 2	Haz. Loc.	869101	BGUL4C6C1DSN7R	Explosion protected, 2 x ½" NPT bottom entries, single break glass switch latching, painted red GRP finish
ATEX Ex II 1GD	Intrinsically Safe	800002	BGIB4B6B1DSN6R	Explosion protected, Zone 0, 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, single switch, red finish
ATEX Ex II 2GD	Increased Safety	800003	BGEB4B6B1DSN6R	Explosion protected Ex II 2GD, EExed, IIC, T6, Zone 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish
IP66 & 67	Waterproof	800001	BGWN4B6B1ASN6R	Dust-tight and weatherproof, Uncertified AC, 2 x M20 bottom entries, single break glass switch latching, red finish

BG2 — Break Glass Call Point—Hazardous Locations



Certification Intrinsically Safe Increased Safety	Ex ATEX ATEX Ex II 1GD, EExia IIC T4 ATEX Ex II 2GD, EExed(m) IIC T4 (T6)
Certified Ambient Temperature	-40°C to +55°C (EExia) -20°C to +50°C (EExed)
Ingress Protection	IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	1.2kg

Options: Lift flap



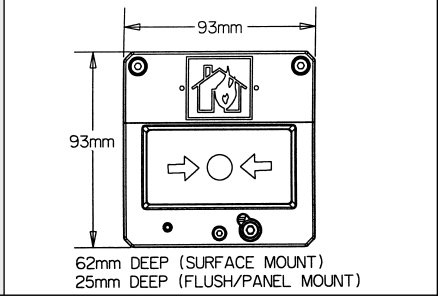
Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 1GD	Intrinsically Safe	800005	BG2INN1N	Explosion protected, Zone 0, 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish
Increased Safety	Increased Safety	800004	BG2EDC1N	Explosion protected, Zone 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish

BG3 — Break Glass Call Point—Explosionproof & Weatherproof

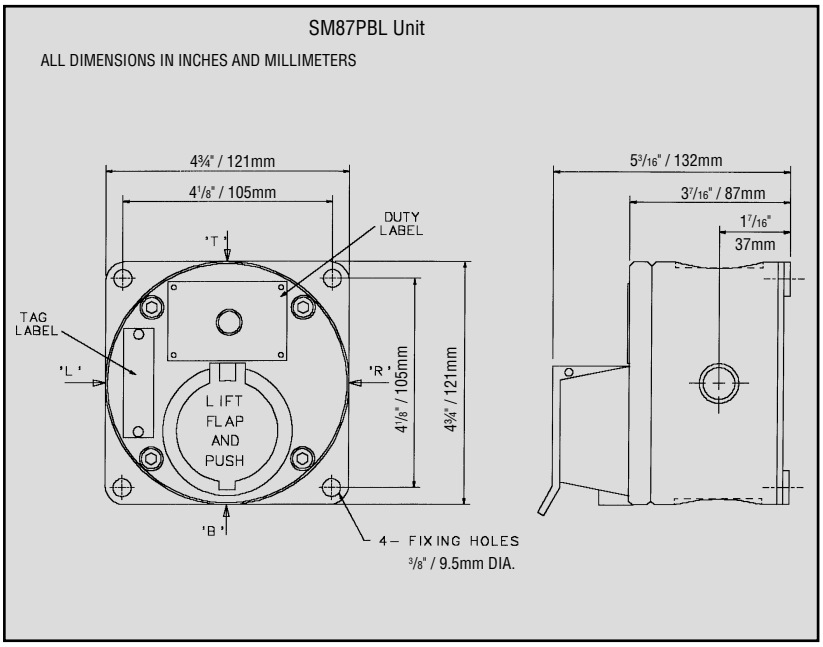


Certification Intrinsically Safe	Ex ATEX, Chinese ATEX Ex II 1G, EExia IIC T4
Certified Ambient Temperature	-55°C to +55°C (EExia)
Ingress Protection	IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	0.5kg

Options: Body color, lift flap



Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 1G	Intrinsically Safe	800007	BG3I1NBN	Explosion protected, Zone 0 / 1 & 2 DC, standard models are surface mount version, have 2 x M20 bottom entries, single break glass switch latching, duty label "Burning House," red GRP finish
IP66 & 67	Weatherproof	800006	BG3W1NBN	Uncertified, Dust-tight & weatherproof, 24V DC, Single break glass switch latching, duty label "Burning House," red GRP finish



Specification—SM87PBL Unit

Certification:	UL Listed: Class I, Div 1 Groups C & D and Class I, Zone 1. Listing No: E186629. **CSA Certification:** I.S. Version—Class I, Groups A, B, C, D. Exd Class I, Div 2 ½ Group D. Enclosure type 4, Cert. No. 79120. **ATEX approved:** EN50014, EN50018. Cert. No. Baseefa 03ATEX0075.
Voltage:	24V AC/DC
Rating:	2 amp.
Switches:	2 pole c/o, wired to terminals.
Terminals:	Will accept up to 14AWG cable.
Entries:	Up to 4 x ½" or ¾" NPT, 20mm, 25mm
Optional Indicator:	A red high intensity LED can be fitted for alarm indication.
Material:	LM 25 TF Marine Grade Alloy or Grade 316 ANCHB stainless steel
Weight:	5.5 lb/2.5kg (approx.).
Finish:	Epoxy paint finish as standard or to customer's specification.
Certified Temperature	EExd/Exi: –55°C to 70°C –20°C to +55°C (LED version only). UL: –67°F to +158°F (–55°C to +70°C). – 4°F to +131°F (–20°C to +55°C) LED version only. CSA: –58°F to +131°F (–50°C to +55°C) (Exd). –58°F to +104°F (–50°C to +40°C) (Exi).
Ingress Protection:	NEMA 4X and 6, IP66 & 67. SM87 PB IP68 (40m for 8 hours).
Addressable:	Consult MEDC for specification.
Resistor Values:	470R minimum (DC & I.S. units only).

Field Installed Duty Labels

Use with SM87 Call Points:	Duty Label	Ordering Code
SM87PBL/SM87BGL	Blank	869530
SM87PBL/SM87BGL	FIRE	869526
SM87PBL/SM87BGL	Emergency Shut Down	869532
SM87PBL/SM87BGL	Suppression Release	869534

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Model	Material	Certification	Entries	Duty Label	Tag Label	Features	Finish
SM87	**PBL**				**N**	**N**	**N**	

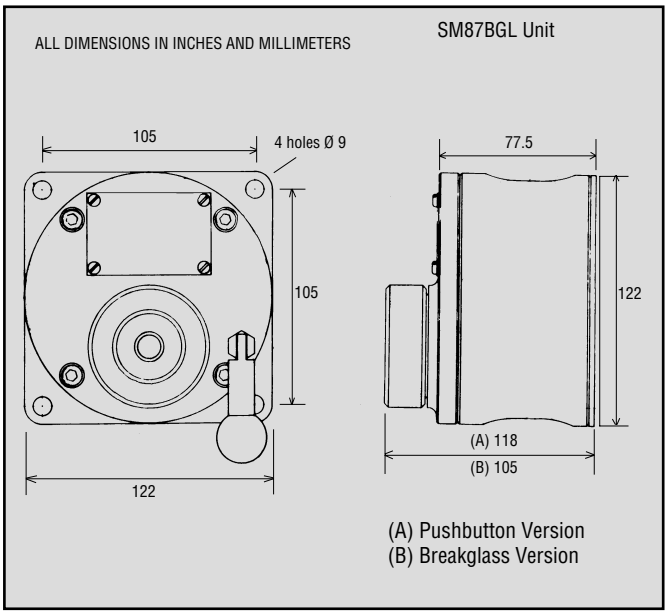
*Material	Code
Stainless Steel	S
Alloy	A

*UL version only available in Alloy.

Certification	Code
EExdIICT6	D
UL Listed	UL
CSA Certified	C

Entries	Code
20mm Left/Right	1L1R
20mm Top/Bottom	1T1B
20mm Bottom	1B
25mm Left/Right	2L2R
25mm Top/Bottom	2T2B
25mm Bottom	2B
½" NPT Left/Right	3L3R
½" NPT Top/Bottom	3T3B
½" NPT Bottom	3B
¾" NPT Left/Right	4L4R
¾" NPT Top/Bottom	4T4B
¾" NPT Bottom	4B

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/ Black Stripes	X



Both the EExiaIICT4 units and the EExdIICT6 units have the same external appearance. Also the internal components are identical throughout the range. Each unit can be wired for either NO, NC or CO contacts to customer specification.

Specification—SM87BGL Unit

Breakglass unit, latching	Type SM87BGL
Lift flap, Breakglass, latching	Type SM87LBGL
Voltage:	EExd 24V AC/DC EExia 28V.
Rating:	2 amp.
Switches:	2 pole c/o, wired to terminals. Optional up to 4 pole.
Terminals:	Will accept up to 2·5mm² cable.
Entries:	Up to 4 x 20mm or 25mm ISO EExd/EExia.
Optional Indicator:	A red high intensity LED can be fitted for alarm indication.
Material:	Grade 316 ANC4B Stainless Steel or LM 25 TF Marine Grade Alloy.
Weight:	3·8 kg. steel (approx.) or 2.5 kg. alloy (approx.).
Finish:	Epoxy paint finish as standard or to customer's specification.
Certification:	CENELEC EN 50014, EN50018 (for Exd) and EN50020 (for Exi). EExiaIIC T4 Cert No. Baseefa 02 ATEX 0152X. EExdIIC T5/T6 Cert No. Baseefa 03 ATEX 0075. **CSA Certification:** Class I Groups A-D I.S. version (SM87 PBI only). Class I, Div 1 & 2, Group D (Exd – SM87 PB & SM87 BG). **GOST 'R' Certification:** 1Exib IIC T4, 1Exd IIC T4* **GOST 'K' Certification:** Exib IIC T4.* **Chinese Certification:** CQST – Exia IIC T4, Exd IIC T5/T6.* *Available upon request
Certified Temperature:	EExd/Exi* –55°C to +70°C. –20°C to +55°C (LED version only). CSA –50°C to +55°C (Exd), –50°C to +40°C (Exi). *Note: includes ATEX, GOST & Chinese versions.
Ingress Protection:	IP66 and IP67. SM87 PB IP68 (40m for 8 hours).
Resistor Values:	470R minimum (DC & I.S. units only).

Field Installed Duty Labels

Use with SM87 Call Points:	Duty Label	Ordering Code
SM87PBL/SM87BGL	Blank	869530
SM87PBL/SM87BGL	FIRE	869526
SM87PBL/SM87BGL	Emergency Shut Down	869532
SM87PBL/SM87BGL	Suppression Release	869534

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Model	Material	Certification	Entries	Duty Label	Tag Label	Features	Finish
SM87	**BGL**				**N**	**N**	**N**	

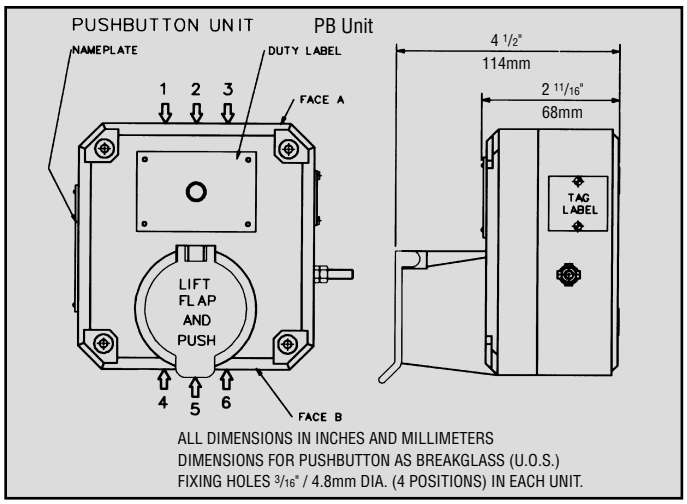
Material	Code
Stainless Steel	S
Alloy	A

Certification	Code
EExdIICT6	D
CSA	C

Entries	Code
20mm Left/Right	1L1R
20mm Top/Bottom	1T1B
20mm Bottom	1B
25mm Left/Right	2L2R
25mm Top/Bottom	2T2B
25mm Bottom	2B
½" NPT Left/Right	3L3R
½" NPT Top/Bottom	3T3B
½" NPT Bottom	3B
¾" NPT Left/Right	4L4R
¾" NPT Top/Bottom	4T4B
¾" NPT Bottom	4B

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/ Black Stripes	X

Note: the units can be internally wired to suit customers' specifications. Please discuss your requirements with us.

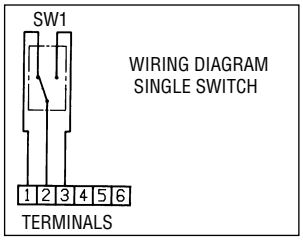


Field Installed Duty Labels

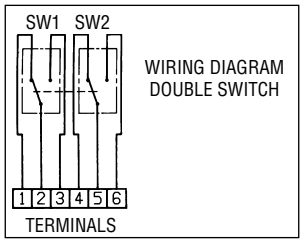
Use with PB Call Points:	Duty Label	Ordering Code
PB	Blank	869530
PB	FIRE	869526
PB	Emergency Shut Down	869532
PB	Suppression Release	869534

Specification—PB Unit

Certification:	UL Listed — Hazardous locations: Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2. UL Listing No. E186629. Ordinary locations: Fire Alarm Boxes. UL Listing No. S8117. **CSA Certified** to C22.2 (PB only), Nos. 0-M, 0.4M, 14-M, 25,30-M, 94, 142-M 1987, 157M 1987, 157–92, Enclosure Type 4, 4A, Class I, Groups A, B, C, D, Cert. No. 79120. **ATEX Approved:** EN50014, EN50018, EN50019, EN50028. Cert. No. BAS02ATEX2105X (BG & PB), EExed II C T6 (switch only), EExedm IIC T4 (other versions).
Voltage:	Up to 240V.
Certified Temperature:	BGUL: -13°F to +131°F (-25°C to + 55°C); PBUL: -13°F to +131°F (-25°C to +55°C). PB (CSA): -58°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	7 x 14 AWG standard.
Switch Rating (1 or 2 changeover switches fitted):	Max Rating 240VAC, 3A.
Cable Entries:	Up to 4 entries ½" NPT or 20mm.
Weight:	2.6 lb/1.2kg (Varies with model & entries).
Material:	Glass reinforced polyester.
Finish:	Red epoxy painted finish as standard or to Customer's specification.
Resistors:	Various configurations available on versions up to 24V, 470R minimum.
LED Indication:	A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V.
Labeling:	PB & BG Duty label —worded to Client's requirements. Riveted on. PB & BG Tag label —worded to Client's requirements. Screwed on.



Basic single changeover switch wiring diagram



Basic double changeover switch wiring diagram

For versions containing inline and end of line resistors, please specify your requirements.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Entries	Labels	Switches	Features	Terminals	Finish
PB			**N**	**DS**	**N**	**7**	

Certification	Code
ATEX/CENELEC – EExe	EB
ATEX/CENELEC – EExi	IB
CSA – Exi (PBI only)	IC
UL – Class I, Div. 2	UL

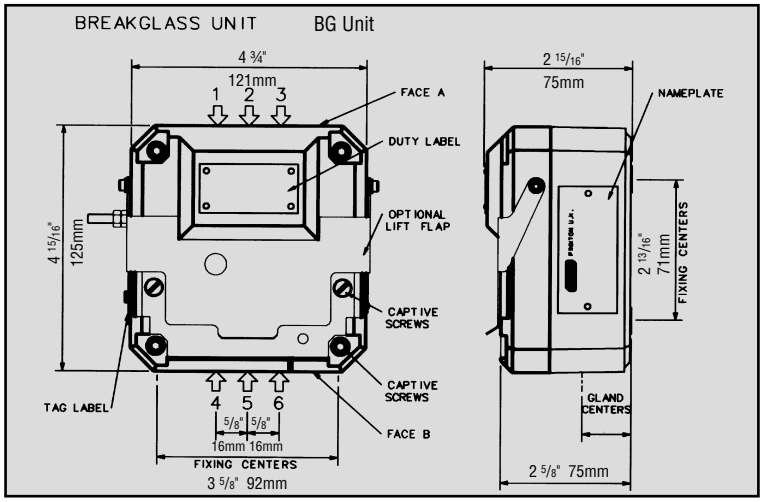
Entries	Code
1 Bottom M20	5B
2 Bottom M20	4B 6B
1 Top, 1 Bottom M20	2B 5B
1 Bottom ½" NPT	5C
2 Bottom ½" NPT	4C 6C
1 Top, 1 Bottom ½" NPT	2C 5C
16 mm	*A
20 mm	*B
½" NPT	*C

*Prefix entry size (see diagram above) with entry position code e.g. 1A, 2A.

UL & CSA Versions only available with ½" NPT entries

Switches	Code
DC double change over	DD
AC single change over	AS
AC double change over	AD

Finish	Code
Red (Standard)	R
Natural Black	N
Blue	B
Yellow	Y
Gray	G

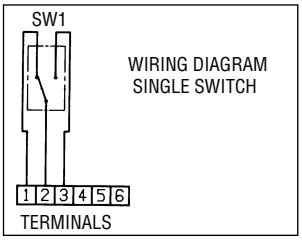


Field Installed Duty Labels

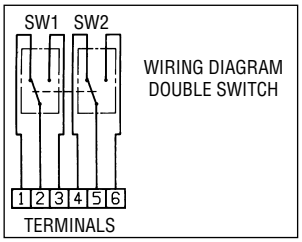
Use with BG Call Points:	Duty Label	Ordering Code
BG	Blank	869531
BG	FIRE	869525
BG	Emergency Shut Down	869533
BG	Suppression Release	869535

Specification—BG Unit

Certification:	UL Listed — Hazardous locations: Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2. UL Listing No. E186629. Ordinary locations: Fire Alarm Boxes. UL Listing No. S8117. **CSA Certified** to C22.2 (PB only), Nos. 0-M, 0.4M, 14-M, 25,30-M, 94, 142-M 1987, 157M 1987, 157–92, Enclosure Type 4, 4A, Class I, Groups A, B, C, D, Cert. No. 79120. **ATEX Approved:** EN50014, EN50018, EN50019, EN50028. Cert. No. BAS02ATEX2105X (BG & PB), EExed II C T6 (switch only), EExedm IIC T4 (other versions).
Voltage:	Up to 240V.
Certified Temperature:	BGUL: -13°F to +131°F (-25°C to + 55°C); PBUL: -13°F to +131°F (-25°C to +55°C). PB (CSA): -58°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	7 x 14 AWG standard.
Switch Rating (1 or 2 changeover switches fitted):	Max Rating 240VAC, 3A.
Cable Entries:	Up to 4 entries ½" NPT or 20mm.
Weight:	2.6 lb/1.2kg (Varies with model & entries).
Material:	Glass reinforced polyester.
Finish:	Red epoxy painted finish as standard or to Customer's specification.
Resistors:	Various configurations available on versions up to 24V, 470R minimum.
LED Indication:	A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V.
Labelling:	BG Glass label — reads either (1) Fire Break glass — press here. (2) Break glass — press here. (3) Worded to Client's requirements. PB & BG Duty label — worded to Client's requirements. Riveted on. PB & BG Tag label — worded to Client's requirements. Screwed on.



Basic single changeover switch wiring diagram



Basic double changeover switch wiring diagram

For versions containing inline and end of line resistors, please specify your requirements.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Entries	Labels	Switches	Features	Terminals	Finish
BG				**DS**	**N**	**7**	

Certification	Code
ATEX/CENELEC – EExe	EB
ATEX/CENELEC – EExi	IB
CSA – Exi (PBI only)	IC
UL – Class I, Div. 2	UL

Entries	Code
1 Bottom M20	5B
2 Bottom M20	4B 6B
1 Top, 1 Bottom M20	2B 5B
1 Bottom ½" NPT	5C
2 Bottom ½" NPT	4C 6C
1 Top, 1 Bottom ½" NPT	2C 5C
16 mm	*A
20 mm	*B
½" NPT	*C

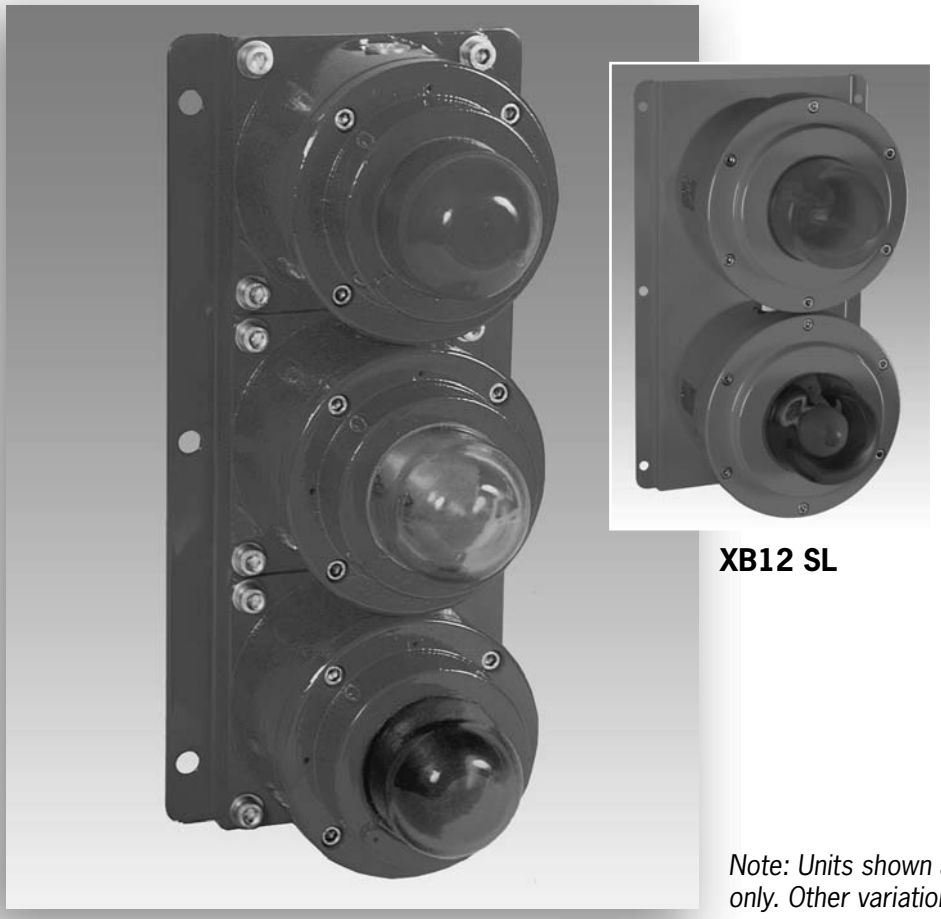
*Prefix entry size (see diagram above) with entry position code e.g. 1A, 2A.

UL & CSA Versions only available with ½" NPT entries

Labels	Code
Glass Label (1) "Fire Break Glass—Press Here"	1
Glass Label (2) "Break Glass—Press Here"	2

Switches	Code
DC double change over	DD
AC single change over	AS
AC double change over	AD

Finish	Code
Red (Standard)	R
Natural Black	N
Blue	B
Yellow	Y
Gray	G



XB12 SL

SM87 SL

Note: Units shown are for representation only. Other variations are available.

The most rugged and reliable status lights for harsh and hazardous applications.

Available as Xenon, incandescent and fluorescent beacons/strobes.

The SM87 SL range is manufactured in marine grade alloy and the XB12 SL in corrosion-free GRP to provide a wide range of status lights to suit your requirements.

All units can be supplied as 1, 2, 3, 4 or 5 stacks.

Primary Applications

- Process status
- Messaging
- Alert or emergency condition indication

Industries

- Offshore & onshore
- Energy exploration & transmission
- Refining
- Chemical & petrochemical
- Pharmaceutical

Certifications & Compliances

- UL Listed for USA and Canada*
  - Class I, Div. 1 & 2, Groups C & D
  - Class I, Zone 1, AExd IIB T6
- CSA certified*
- ATEX approved
- Xenon, fluorescent, incandescent*
- NEMA 4X & 6, IP66 & 67
- Certified temperature -67°F to +131°F*
  -55°C to +55°C

Key Features & Benefits

- 4-wire monitored connection for supervisory circuits*
- Marine grade alloy or GRP
- Pre-wired to customer's requirements

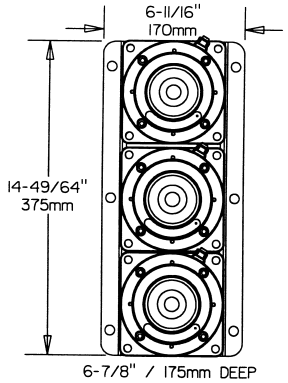
*Depending on model

SM87 SL — Xenon, Incandescent & Fluorescent Status Lights—Explosionproof



Certification UL Listed for:	c UL us SP Ex ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4
Certified Ambient Temperature	-67 °F to +158 °F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 1 x ½" NPT
Max. No. of Ways	4

Options: Body & lens color, certification, voltages 24–48V DC, 110–254V AC



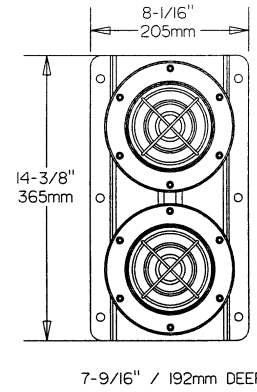
Certification	Voltage	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200043	SM87SL3	Explosion protected, **three stack,** one ½" NPT entry on bottom, no lens guards, xenon strobe with red, green, and clear lens
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200055	SM87SL2	Xenon status lamp, **two stack** 5 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200056	SM87SL2	Incandescent status lamp, **two stack** 40 watt beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200057	SM87SL2	Fluorescent status lamp, **two stack** 5 watt beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200058	SM87SL2	Xenon status lamp, **two stack** 5 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200059	SM87SL3	Xenon status lamp, **three stack** 5 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24VDC	26200060	SM87SL3	Incandescent status lamp, **three stack** 40 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200061	SM87SL3	Fluorescent status lamp, **three stack** 5 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200062	SM87SL3	Xenon status lamp, **three stack** 5 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200066	SM87SL3	Incandescent status lamp, **three stack** 40 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	220V AC	26200063	SM87SL3	Fluorescent status lamp, **three stack** 5 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection

XB11 SLUL — Xenon Strobe & Incandescent Status Lights—Hazardous Locations



Certification UL Listed for:	UL Ex ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	1 x ½" NPT
Max. No. of Ways	5

Options: Body & lens color, tag & duty labels



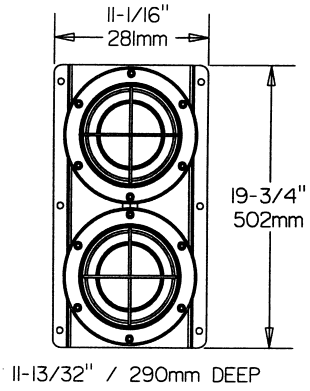
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	42500005	XB11ULSL3	Explosion protected, 3 stack, one ½" NPT entry on bottom, 24V DC, green incandescent on top, yellow xenon flashing in middle, red xenon flashing on bottom, no lens guards, red finish

XB12 SL/FB12 SL — Xenon Strobe & Incandescent Status Lights—Hazardous Locations

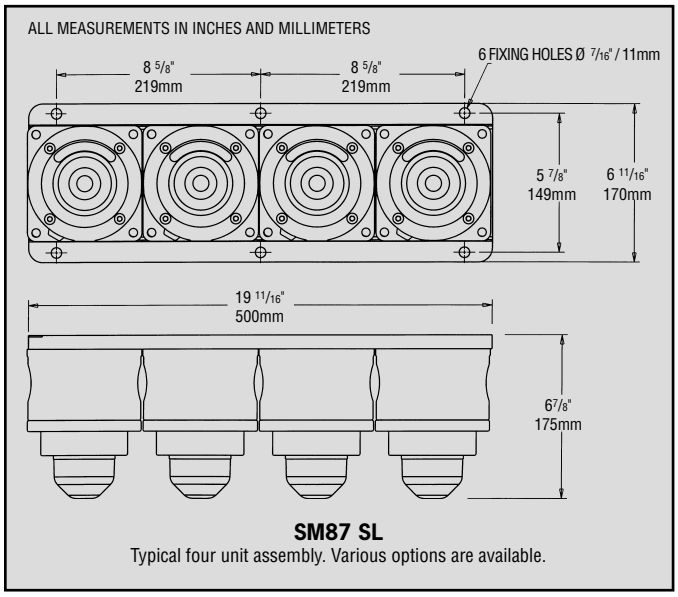


Certification UL Listed for:	UL Ex ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Ambient Temperature	-67°F to+158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	1 x ½" NPT
Max. No. of Ways	5

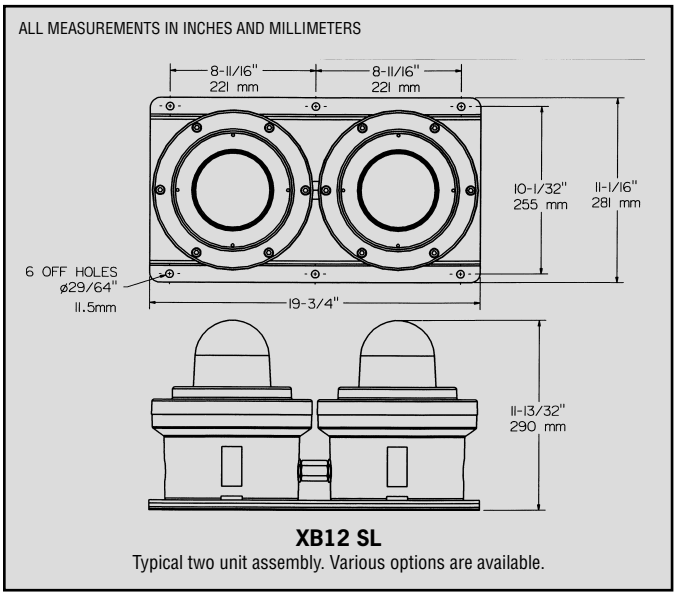
Options: Body & lens color, certification, voltages 24V DC, 110–254V AC



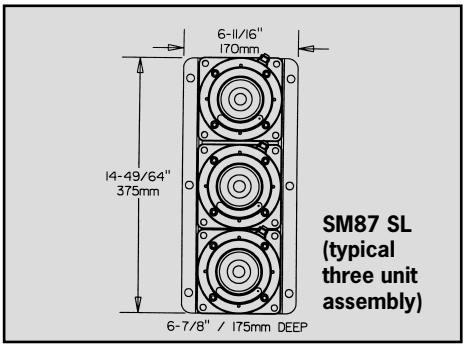
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	42600001	XB12ULSL3	110V AC, explosion protected, **three stack**, one ½" NPT entries, red xenon flashing on top, amber xenon flashing in middle, clear xenon flashing on bottom; no lens guards, red finish
UL Listed, Class I, Div 2, Groups C & D	42600007	XB12ULSL2	24V DC xenon status lamp, **two stack** 21 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600008	FB12ULSL2	24V DC incandescent status lamp, **two stack** 60W beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600009	XB12ULSL3	24V DC xenon status lamp, **three stack** 21 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600010	FB12ULSL3	24V DC incandescent status lamp, **three stack** 60W beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection



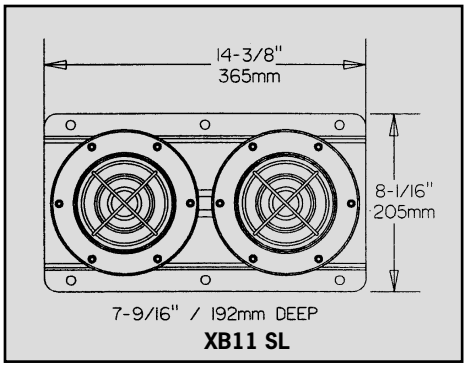
SM87 SL
Typical four unit assembly. Various options are available.



XB12 SL
Typical two unit assembly. Various options are available.



SM87 SL (typical three unit assembly)



XB11 SL

Specification—SM87SL Unit and XB12SL Unit

	SM87 SL	XB12 SL
Lamp Types	Xenon 5 joules maximum. Fluorescent 10W or 5W. Incandescent 40W maximum.	Xenon 21 joules. Incandescent 60W.
Voltage Frequency	50 Hz as standard. 60 Hz available if required.	
Xenon Voltages	24, 48V DC 110, 120, 240, 254V AC (see SM87 HXB data sheet for further information)	24V DC, 110V, 240V AC (see XB12 data sheet for further information)
Incandescent Voltages	12, 24, 48V DC, 110, 220, 240, 254V AC (see SM87 LU3 data sheet for further information)	120V AC (see FB12 data sheet for further information)
Fluorescent Voltages	12, 24, 48V, 220, 240, 254V AC (see SM87 LU1 data sheet for further information)	–
Lamp Colors	Red, Amber, Yellow, Green, Blue or Clear.	
Certification	UL Listed for USA and Canada Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T6. Listing No. E187894. CSA Certified: Class I, Div 1 & 2, Group D. Cert. No. 96406. ATEX Approved: EExd IIC T4 (incandesent), EExd IIC T6 (Fluorescent & Xenon). Cert. No. Baseefa 03ATEX0222X, CENELEC EN50014, EN50018.	UL Listed for USA and Canada Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4/T5. Listing No. E187894. ATEX Approved: EExd IIB T4/T5. Cert. No. 99 ATEX 2196 CENELEC EN50014 and EN50018.
Terminals	Will accept up to 14AWG cable.	Will accept up to 6 off 10AWG cable.
Wiring	Standard configuration of internal wiring is to common the negative/neutral connections. If individually wired lamps are required, please state requirements.	
Entries	Up to 3 x ½" or ¾" NPT.	1 x ½" NPT.
Enclosure	LM 25TF Marine Grade Alloy.	GRP.
Lens	Glass	
Finish	Epoxy paint as standard or to customer's specification.	Natural Black or Epoxy paint to customer's specification.
Ingress Protection	NEMA 4X and 6, IP66 & 67.	
Ambient Temp.	-13°F to 131°F (-25°C to +55°C) – Class I, Div 1. -67°F to +131°F (-55°C to +55°C) – Class I, Zone 1.	-67°F to +158°F (-55°C to +70°C).

Note: XB11 SLUL also available.

Hazard•Gard™ Series
MEDC® Series



XB12



XB11

EXS301
Strobe Light





EXS0301
Steady-on
Indicating Light

EXR301
Rotating Beacon



XB16



XB15

Cooper Crouse-Hinds and MEDC provides a complete line of Strobe Lights and rotating beacons for harsh and hazardous visual indications.

- Products that meet world-wide standards such as UL, cUL, CSA, ATEX and GOST, and all Class, Division & Zone area classifications
- Products designed for both conduit wiring and/or cable connection, NPT or metric
- Complete line of strobe light output intensities, strobe light colors and operating voltages
- Units designed for use in fire alarm circuits meeting National Fire Protection Agency requirements for visual signaling for the hearing impaired

What Types of Signals are Available?

1. *Strobe Lights* — Used for signaling or warning of various conditions. Emits a powerful blast of bright light.
2. *Rotating Beacons* — Used to signal over a large area when the light must be seen from a long distance.
3. *Steady-on Beacons* — Typically used as a continuous source to warn, commumicate or draw attention to an area, machine or process.
4. *Stack Lights* — Used for multiple indication in one signaling device. Compact and versatile, the three-color (red, amber and green) is most popular.

Lens Color and Their Applications

Most Cooper Crouse-Hinds strobes, steady and flashing beacons come in six lens coors: amber, blue, clear, green, magenta and red. Cooper Crouse-Hinds LED signals come in amber, blue, green, red and, in some cases, white. The following are examples of how various lens colors are used in industrial and commercial signaling environments:

Amber — Denotes caution.

Blue — Used for safety and security.

Clear (or White) & Green — Used to indicate normal run operation.

Clear for Fire Alarm Applications — Used to indicate a fire emergency.

Magenta — Used for radiaton alarms.

Red — Denotes emergency or warning.

MEDC Series
Strobe Warning Light

Hazardous Locations, Weatherproof

New!



XB16



XB15 Pipe Mount (with cast guard)



XB15 Direct Mount (with wire guard)

These listed strobes have been designed for use in potentially explosive atmospheres and harsh environmental conditions. The enclosures are suitable for use offshore or onshore, where a lightweight product combined with corrosion resistance is required.

The housing is manufactured from a U.V. stable, glass reinforced polyester, with the lens manufactured from a U.V. stable polycarbonate. Stainless steel screws are used ensuring a totally corrosion-free product.

The strobes contain supervisory diode and four wire leads for fire alarm applications. This strobe is also available UL 1971 (ADA) Listed for hearing impaired applications.

Units can be painted to customer specification and supplied with identification labels.

Primary Applications

- Condition signaling
- Security alert
- Equipment obstruction warning
- Emergency evacuation signaling

Typical Industries

- Utility gas plants
- Wastewater treatment plants
- Mining
- Petroleum refineries
- Chemical & petrochemical
- Pulp & paper

Certifications & Compliances

- UL Listed for USA and Canada
  - Hazardous locations for USA and Canada
    Class I, Div. 2, Groups A, B, C & D*
    UL 1971 compliant version available†
  - Ordinary locations: Visual Signal Device
- NEMA 4X and 6, IP66 & 67
- Certified temperature -67°F to +158°F
  -55°C to +70°C

Key Features & Benefits

- Pipe mount with ½" NPT entry
- Corrosion resistant GRP enclosure
- XB16 580,000 peak candlepower
  XB15 520,000 peak candlepower
- Polycarbonate lens, various colors available†
- 4 wire diode monitored board
- Optional relay initiate
- Optional lens guard

*Conforms to UL regulated voltage
†UL 1971 version available with clear lens only (XB16 only)

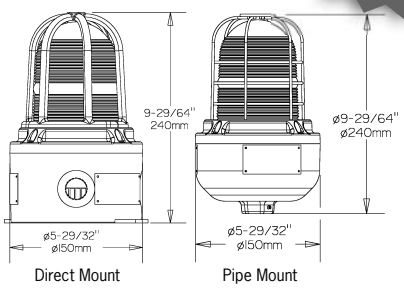
XB15 — 15 Joule Flashing Xenon—Hazardous & Ordinary Locations

New!



Certification UL Listed for:	cULus ⟨Ex⟩ ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2, AExd IIC T5/T6
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x ½" NPT or 3 x ¾" NPT
Weight	6–8lb/2.6-3.6kg

Options: Body & lens color, voltages 12–48V DC, 110–254V AC



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869400	XB15UL12006RWBNN	15 joules, direct mount **w/backstrap**, 2 x ¾" NPT side entries, wire guard, 60 flashes per minute, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869401	XB15UL12006AWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869402	XB15UL12006RWPNN	15 joules, **pipe mount**, 1 x ¾" NPT entry, wire guard, 60 flashes per minute, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869403	XB15UL12006AWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Clear	27600042	XB15UL02406CWBNN	15 joule beacon, 60 flashes per minute, wire guard, **backstrap**, 2 x ¾" NPT entries, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	27600043	XB15UL02406GWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	869393	XB15UL02406BWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869398	XB15UL02406RWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869399	XB15UL02406AWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Clear	27600047	XB15UL02406CWPNN	15 joule beacon, 60 flashes per minute, wire guard, **pipe mounting**, 1 x ¾" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	27600048	XB15UL02406GWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	869394	XB15UL02406BWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869396	XB15UL02406RWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869397	XB15UL02406AWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	27600052	XB15UL12006CWBNN	15 joule beacon, 60 flashes per minute, wire guard, **backstrap**, 2 x ¾" NPT entries, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	27600053	XB15UL12006GWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869405	XB15UL12006BWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	27600057	XB15UL12006CWPNN	15 joule beacon, 60 flashes per minute, wire guard, **pipe mounting**, 1 x ¾" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	27600058	XB15UL12006GWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869404	XB15UL12006BWPNN	

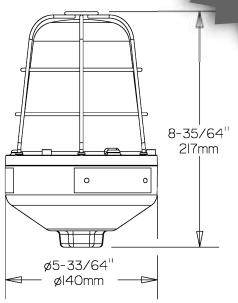
XB16 UL

10 Joule Flashing Xenon—Hazardous & Ordinary Locations

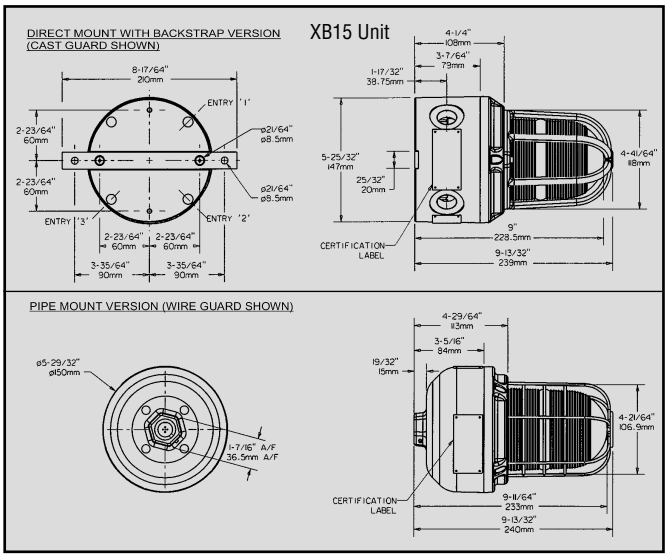


Certification UL Listed for:	c UL us UL 1971 compliant Class I, Div 2, Groups A, B, C, D
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Standard 1 x ¾" NPT
Weight	2.2lb/1kg
Options: Body & lens color, lens guard, voltages 12–48V DC,110–254V AC	

New!



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
UL 1971 compliant	24V DC	Clear	29600023	XB16US02460CYNN	**UL 1971 Listed for Signaling devices for the hearing impaired. Suitable for fire alarm indication.** 10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x ¾" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869406	XB16UL12060BYNN	10 joules, 60 flashes per minute, 1 x ¾" NPT entry, 240 Cd, lens guard, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869407	XB16UL12060RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869408	XB16UL12060AYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	29600013	XB16UL12060CYNN	10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x ¾" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	29600014	XB16UL12060GYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	29600011	XB16UL12060BYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	29600003	XB16UL12060RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	29600004	XB16UL12060AYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	29600016	XB16UL02460GYNN	10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x ¾" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	29600017	XB16UL02460BYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869410	XB16UL02460RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869411	XB16UL02460AYNN	



Specification—XB15 Unit

Certification:	UL Listed for USA and Canada: – Hazardous locations Class I, Div 2, groups A, B, C & D Class I, Zone 1, AExd IIC T5/T6 UL listing No. E187894. – Ordinary locations: Visual Signal Device UL listing No. S8128 CENELEC/ATEX approved. CENELEC EN50014 & EN50018 ATEX Cert. No. Baseefa 04ATEX0009X.
Material:	Body: Glass reinforced polyester. Lens: Glass. Backstrap: stainless steel 316. Wire Guard (optional): Stainless steel wire. Cast Guard (optional): Aluminium LM25M.
Finish:	Natural black or epoxy painted to customer specification.
Voltage:	24, 48V DC 110, 120, 230, 240, 254V AC
Tube Energy:	15 joules.
Tube Life:	>1 x 10^6 flashes.
Flash Rate:	60, 80, 120 fpm.
Certified Temperature:	-67°F to +131°F (-55°C to +55°C) T6. -67°F to +158°F (-55°C to +70°C) T5.
Weight:	Pipe mount: 5¾lb/2.6kg; Direct mount: 6½lb/3.0kg.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Entries:	Supplied as 2 x ¾" NPT (direct mount) or ¾" (pipe mount) as standard. Other options available: Up to 3 x ½" NPT or 3 x ¾" NPT (direct mount); ½" NPT (pipe mount) — contact sales office to order.
Terminals:	Direct mount: 12 x 14AWG. Pipe mount: 8 x 14AWG.
Relay Initiate:	Available on all units — suitable for 24V DC supplies only.
Labels:	Tag/Duty label option.

Electrical Ratings:

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	.78	.67	0.4	0.4	0.2	0.2	0.17
Current (A) at 80 fpm	.99	.73	0.4	0.4	0.2	0.2	0.17
Current (A) at 120 fpm	.99	.73	0.4	0.4	0.2	0.2	0.17
Effective Candlepower	330 (Effective candlepower is the intensity that would appear to an observer if the light was burning steadily)						
Peak Candlepower	520,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)						

Multiplying Factor for Colored Lenses:

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.86

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Voltage	Lens Flashrate	Lens Color	Unit Guard	Fixing	Unit Options	Finish
XB15			**06**				**N**	**N**

Certification	Code
ATEX	B
UL	UL

Voltage	Code
24V DC	024
110V AC	110
120V AC	120
240V AC	240

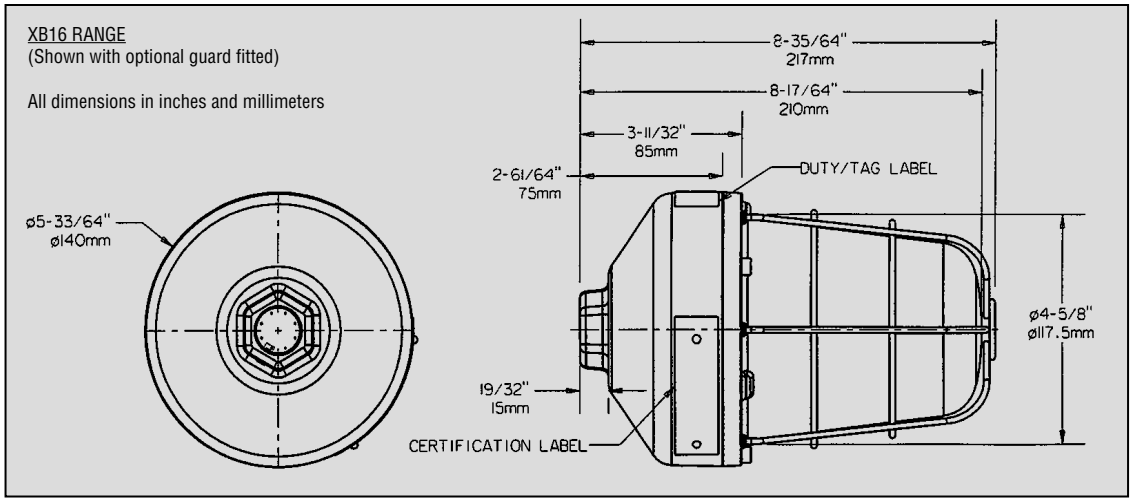
Guard	Code
None	N
Cast	C
Wire	W

Lens Flashrate	Code
08	80 fpm
12	120 fpm

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Unit Fixing	Code
Pipe mount	P*
Direct w/backstrap	B

*Not available on ATEX version.



Specification—XB16UL Unit

Certification:	UL Listed for USA and Canada: – Hazardous locations for USA and Canada Class I, Div 2, groups A, B, C & D. UL listing No. E251185. – Ordinary locations: Visual Signal Device: UL1638. UL listing No. E251185. – Hazardous locations for hearing impaired: UL1971. UL listing No. E251185.
Material:	Body: Glass reinforced polyester. Lens: U.V. stable polycarbonate. Lens screws: stainless steel 316.
Finish:	Natural black or painted to customer specification.
Voltage:	24, 48V DC 110, 120, 230, 240, 254V AC Conforms to UL regulated voltage output (12V DC, 24V DC, 120V AC, 240V AC).
Certified Temperature:	-67°F to +158°F (-55°C to +70°C)
Tube Energy:	10 joules.
Tube life:	>1 x 10^6 flashes.
Weight:	2.2lb/1.0kg.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Entries:	Standard 1 x ½" NPT pipe mount.
Terminals:	8 x 14AWG.
Labels:	Tag/Duty label option.

Electrical Ratings:

For Hazardous Locations and Ordinary Locations (UL1638) Units

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Current (A) at 80 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Current (A) at 120 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Effective intensity (Cd): 240 at 80 f.p.m.							
Peak candlepower: 580,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)							

For UL1971 Units Only

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Current (A) at 80 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Current (A) at 120 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Effective intensity (Cd): 240 at 80 f.p.m.							
Peak candlepower: 580,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)							
Note: on UL1971 units, max. current rating is based on in-rush current. This is why the current ratings are not propotional as with other beacons/strobes. UL 1971 On-axis output: 15 Cd.							

Note: 24V DC units are cerified for use in regulated 24V DC supplies (16–33V AC)
110/120V DC units are certified for use on regulated 120V AC supplies (96–132V AC)
230/240V DC units are certified for use on regulated 240V AC supplies (192–264V AC)

Multiplying factor for colored lenses:

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.86

Relay Initiate: 24V DC relay initiate only.Relay Initiate:24V DC relay initiate only.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Voltage	Flashrate	Lens Color	Guard	Options	Unit Finish
XB16	**UL**		**60**			**N**	**N**

Certification	Code
UL	UL

Voltage	Code
12V DC	012
24V DC	024
110V AC	110
120V AC	120
240V AC	240

Lens Flashrate	Code
80	80 fpm
120	120 fpm

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

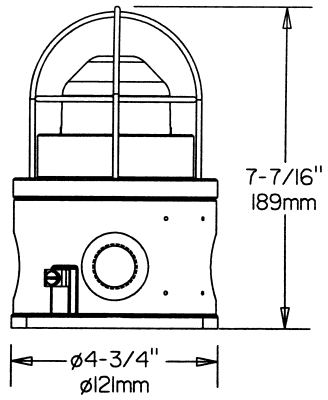
Guard	Code
Yes	Y
None	N

SM87 HXB — 5 Joule Xenon Strobe—Explosionproof



Certification UL Listed for:	c UL us SP Ex ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 2 x ½" or ¾" NPT, M20, M25
Weight	4.4lb/2.0kg approx

Options: Body & lens color, certification, lens guard, voltages 24–48V DC,110–254V AC



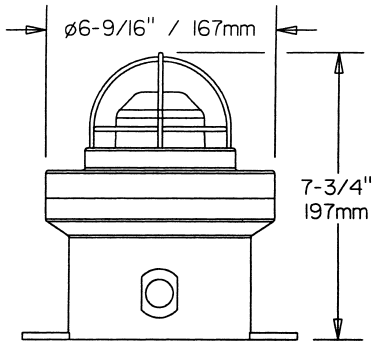
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX EX II 2GD	24V DC	Red	813005	SM87HXBAB024RN1R1LNNR	5 joules, 2 x M20 Entries, 29Cd, EExd IIc
ATEX EX II 2GD	24V DC	Amber	813006	SM87HXBAB024AN1R1LNNR	
ATEX EX II 2GD	240V AC	Red	813007	SM87HXBAB240RN1R1LNNR	7 joules, 2 x M20 Entries, 39Cd, EExd IIc
ATEX EX II 2GD	240V AC	Amber	813008	SM87HXBAB240AN1R1LNNR	
ATEX EX II 2GD	24V DC	Red LED	813009	SM87LEDAB024RN1R1LNNR	192Cd, 2 x M20 Entries, EExd IIc
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red	869161	SM87HXBAUL024RN3R3LNNR	Standard models are in alloy, red body color, no tag or duty labels, 2 x ½" NPT entries, 29Cd, 60 flashes per minute
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Amber	869162	SM87HXBAUL024AN3R3LNNR	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Red	869165	SM87HXBAUL110RN3R3LNNR	Standard models are in alloy, red body color, no tag or duty labels, 2 x ½" NPT entries, 32Cd, AExd IIB, 60 flashes per minute
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Amber	869166	SM87HXBAUL110AN3R3LNNR	

XB11 — 5 Joule Xenon Strobe—Hazardous Locations

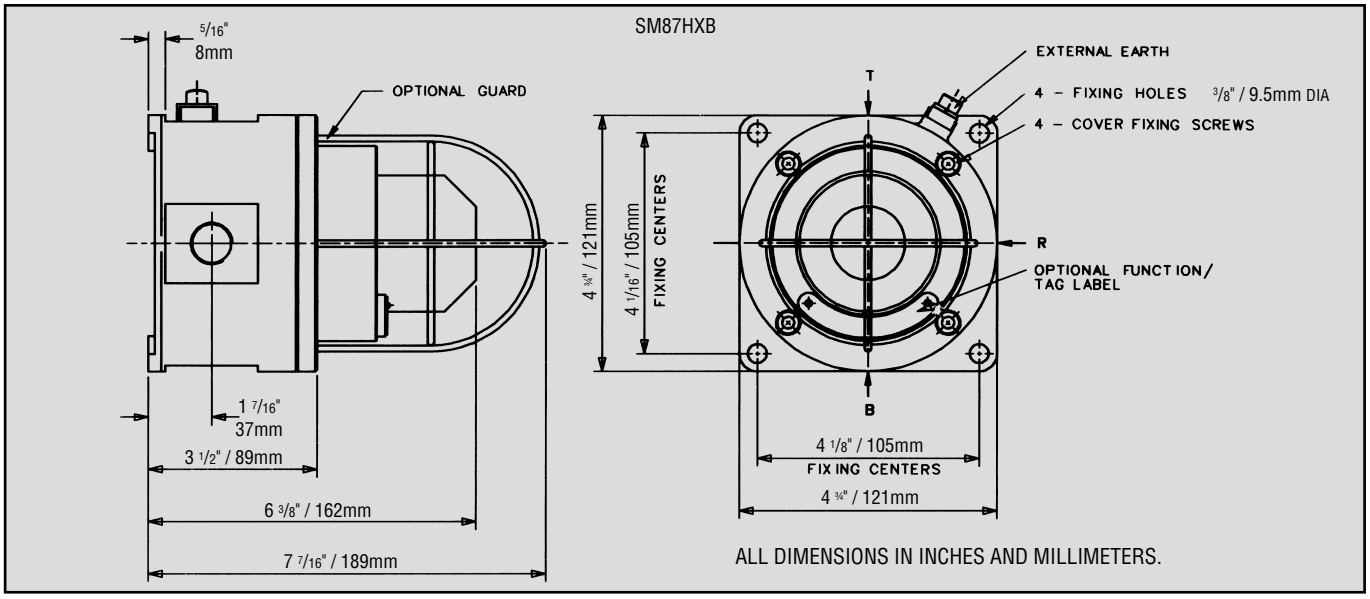


Certification UL Listed for:	c UL us Ex ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T5
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	2 x ½" NPT, 20mm
Weight	2.6lb/1.2kg

Options: Body & lens color, voltages 24V DC, 110–254V AC



Certification	Voltage	Body Color	Lens	Ordering Code	Catalog #	Standard Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Red	869171	XB11UL02406RNBNNNR	No tag or duty labels, 2 x ½" NPT entries, 60 flashes per minute
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Amber	869172	XB11UL02406ANBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Natural Black	Clear	869173	XB11UL02406CNBNNNN	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Clear	869174	XB11UL02406CNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red	Red	869175	XB11UL11006RNBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Red	811101	XB11B02406RNBNNNN	GRP, natural black body, no tag or duty labels, backstrap mounting, 2 x M20 entries, 60 flashes per minute
ATEX EX II 2GD	24V DC	Natural Black	Amber	811102	XB11B02406ANBNNNN	
ATEX EX II 2GD	24V DC	Natural Black	Red	811103	XB11B24006RNBNNNN	
ATEX EX II 2GD	24V DC	Natural Black	Amber	811104	XB11B24006ANBNNNN	



Specification—SM87HXB Unit

Certification:	UL Listed for USA and Canada for Class I, Div. 1. Groups C & D and Class I, Zone 1. Listing No. E187894. **CSA Certification** to C22.2, Nos. 0, 0.4, 0.5, 9, 30-M 1986, 94-M91, 137-M 1981, Class I, Div 1, Group 0, Enclosure ¾, Cert. No. 96406. **ATEX approved:** EN50014, EN50018, EN50019. Cert. No. Baseefa 03ATEX0222, EExd IIC T6.
Material:	LM25 TF Marine Grade Alloy. Lens: Toughened Glass.
Finish:	Epoxy paint finish as standard or to customer's specification.
Weight:	4.4lb/2.0kg. approx.
Certified Temperature:	Standard unit SM87 HXB: -67°F to +158°F, -55°C to +70°C. High temperature unit: -67°F to +185°F, -55°C to +85°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	4 off suitable for up to 14AWG conductor size.
Labels:	Duty & Tag Labels optional.
Entries:	Up to 4 off ½" or ¾" NPT.

	DC		AC 50/60 Hz			
Voltage	24	48	110	120	240	254
Tube Energy (joules)	5	5	6	7	7	8
Peak Current Consumption (mA)	320	170	250	275	135	150
Power Consumption (Watts)	7.2	7.6	25	27	27	35
Effective Intensity (Cd)	29	29	32	39	39	44
Peak Candle Power	22213	22213	25061	30187	30187	34174
Note: The above figures (Cd) are for a clear lens @ 1Hz flash rate.						

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been independently verified.
A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Material	Certification	Voltage	Lens/LED color	Lens Guard	Entries	Tag/Duty Label	Initiate Option	Finish
SM87HXB							**N**	**N**	**R**

Type	Code
Alloy	A
Stainless Steel	S*

*Not UL Listed

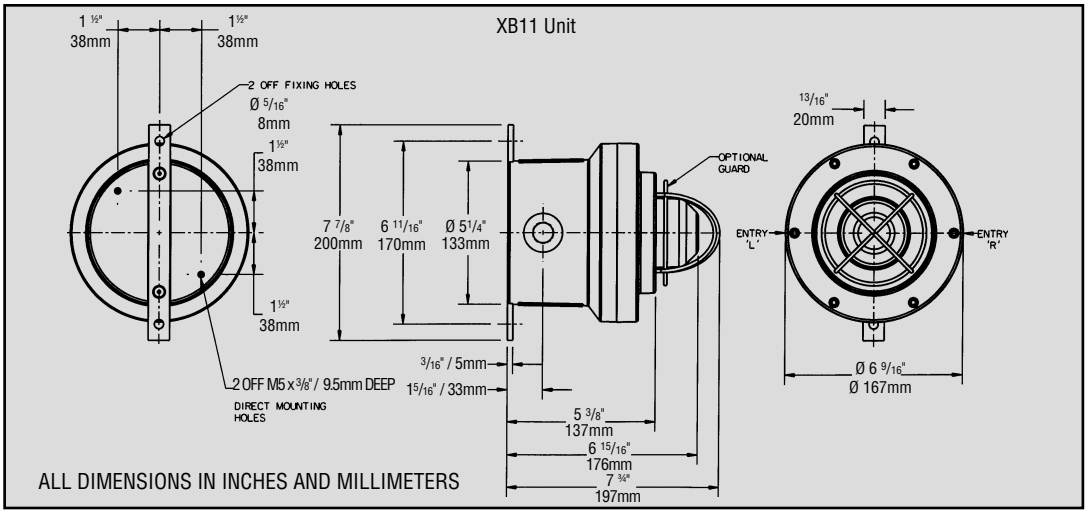
Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Guard	Code
Yes	Y
No	N

Entries	Code
20mm Left/Right	1L1R
20mm Top/Bottom	1T1B
20mm Bottom	1B
25mm Left/Right	2L2R
25mm Top/Bottom	2T2B
25mm Bottom	2B
½" NPT Left/Right	3L3R
½" NPT Top/Bottom	3T3B
½" NPT Bottom	3B
¾" NPT Left/Right	4L4R
¾" NPT Top/Bottom	4T4B
¾" NPT Bottom	4B

Certification	Code
ATEX	B
UL	UL
CSA	C
Only HXBS is available CSA certified.	

Voltage	Code
24V DC	024
110V AC	110
120V AC	120
220V AC	220
240V AC	240



Specification—XB11 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 2, Groups C & D Class I Zones 1 & 2, AExd IIB T5 UL Listing No. E187894. – Ordinary locations: Visual-Signal Device UL Listing No. S8128. **ATEX approved:** EExd IIB T5/T6. Cert. No. 99 ATEX 2195X. CENELEC EN50014 and EN50018.
Material:	Body: Glass reinforced polyester. Lens: Glass Cover Screws + Backstrap: Stainless steel 316.
Finish:	Natural black or painted to customer specification.
Weight:	5½ lb/2.5kg.
Certified Temperature:	-67°F to +158°F (-55°C to +70°C) hazardous locations. -67°F to +131°F (-55°C to +55°C) ordinary locations.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Terminals:	6 off suitable for up to 14 AWG conductor size.
Labels:	Duty/Tag Label optional.
Entries:	2 x ½" NPT, 20mm
Strobe/Sounder Unit:	The beacon may be combined with an MEDC sounder to create a visual/audible alarm. Contact MEDC for price and specification.

Voltage	DC	AC50/60 Hz	
	24	110	240
XB11 Tube Energy (joules)	5	5	5
Peak Current Consumption (mA)	320	100	60
Effective Intensity (Cd)	29	29	29
Peak Candle Power	22213	22213	22213
Power Consumption (Watts)	8	11	18
NOTE: The Cd figures are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been verified by BSI.
A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model Type	Certification	Voltage	Flash Rate	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Options	Unit Finish
XB11			**06**			**B**	**N**	**N**	**N**	

Certification	Code
ATEX	B
UL	UL

Voltage	Code
24V DC	024
110V AC	110
240V AC	240
Other voltages avaiable, please specify.	

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Guard	Code
Yes	Y
No	N

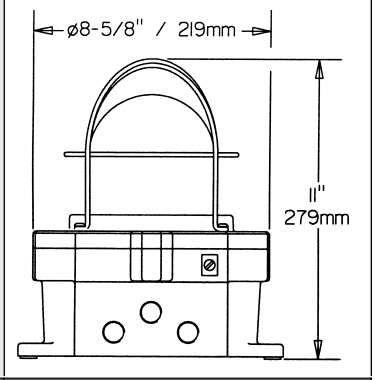
Finish	Code
Natural Black	N
Red	R

XB4 — 21 Joule Xenon Strobe—Explosionproof



Certification UL Listed for:	c UL us Ex ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4, T5
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x ½" or ¾" NPT, 20mm, 25mm
Weight	14.5lb/6.6kg

Options: Body & lens color, lens guard, certification, voltages 24V DC, 110V AC & 240V AC



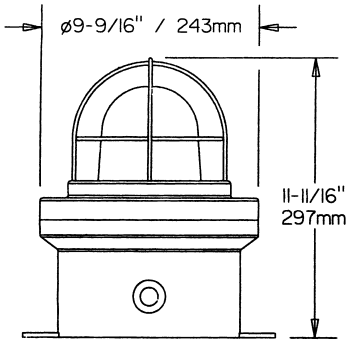
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved Ex II 2G	24V DC	Red	814001	XB4BB8D2B3B06AN0RN1R	21 joules, 2 x M20 entries, 355Cd, 60 flashes per minute, no labels, red finish
ATEX Approved Ex II 2G	240V AC	Red	814002	XB4BH8D2B3B06AN0RN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red	869121	XB4ULB8D2E3E06ANRN1R	Marine grade alloy, 2 x ¾" NPT entries, no lens guard, 60 flashes per minute, red finish
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Amber	869122	XB4ULB8D2E3E06ANAN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Red	869125	XB4ULE8D2E3E06ANRN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Amber	869126	XB4ULE8D2E3E06ANAN1R	

XB12 — 21 Joule Xenon Strobe—Hazardous Locations



Certification UL Listed for:	c UL us Ex ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, 20mm
Weight	15.5lb/7.0kg

Options: Body & lens color, lens guard, certification, voltages 24V DC, 110–254V AC



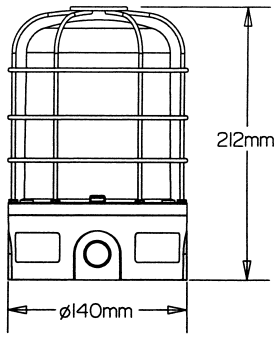
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved Ex II 2G	24V DC	Red	812101	XB12B02406RNBNNNN	21 joules, 2 x M20 entries, 355Cd, 60 flashes per minute, no labels, black body
ATEX Approved Ex II 2G	24V DC	Amber	812102	XB12B02406ANBNNNN	
ATEX Approved Ex II 2G	240V AC	Red	812103	XB12B24006RNBNNNN	
ATEX Approved Ex II 2G	240V AC	Amber	812104	XB12B24006ANBNNNN	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	869181	XB12UL02406RNBNNNR	Red painted GRP, no tag or duty labels, 2 x ½" NPT, 60 flashes per minute, 355 Cd
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Amber	869182	XB12UL02406ANBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red	869185	XB12UL11006RNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Amber	869186	XB12UL11006ANBNNNR	

XB13 — 10 Joule Flashing Xenon—Weatherproof and Heavy Duty

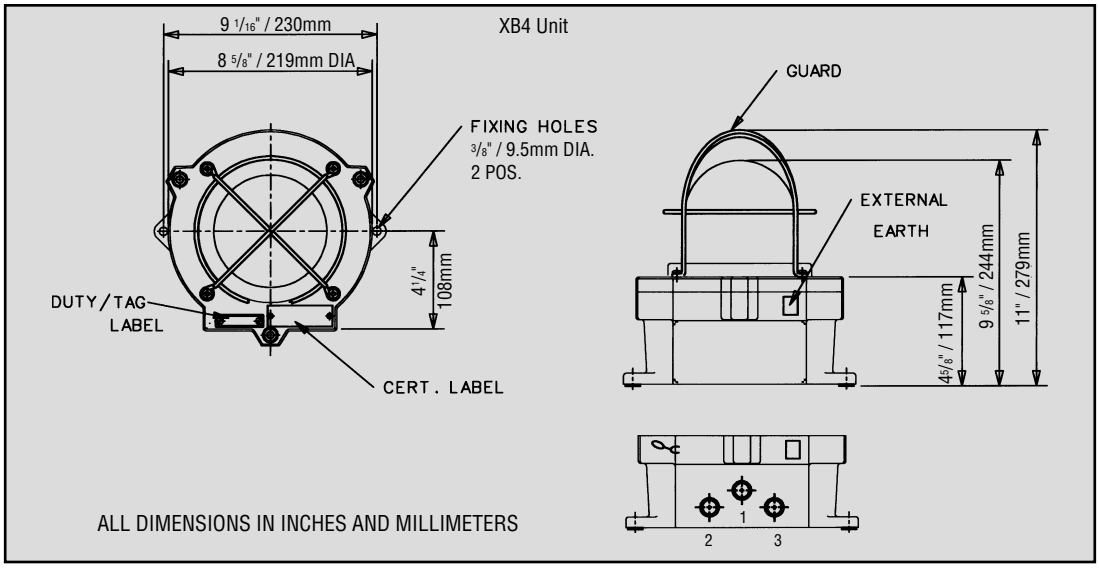


Certification UL Listed for:	Weatherproof IP66 & 67
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 20mm via knockouts
Weight	1.1kg

Options: Body & lens color, lens guard, voltages 12–24V DC, 115–230V AC



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
Weatherproof, IP66 & 67	24V DC	Red	813101	XB13024RNNN	Dust-tight and weatherproof, uncertified, no tag or duty labels, 3 x 20mm entries via knockouts, 60 flashes per minute, dual and single flash modes, natural red GRP
Weatherproof, IP66 & 67	24V DC	Amber	813102	XB13024ANNN	
Weatherproof, IP66 & 67	230V AC	Red	813103	XB13230RNNN	
Weatherproof, IP66 & 67	230V AC	Amber	813104	XB13230ANNN	



Specification—XB4 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 1, Groups C & D Class I, Zone 1, AExd IIB T4. UL Listing No. E187894. – Ordinary locations: Visual-Signal Device. UL Listing No. S8128. **ATEX approved:** EExd IIC T5. Cert. No. Baseefa 02ATEX0224X.
Materials:	LM25TF Marine Grade Alloy body. Grade 316 ANC4B Stainless Steel body. Toughened Wellglass.
Finish:	Red epoxy paint finish as standard or to customer's specification.
Weight:	LM25: 14.5lb/6.6kg. Stainless Steel: Add 18.5lb/8.5kg.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	8 off suitable for up to 8 AWG conductor size.
Entries:	Up to 3 x ½" or ¾" NPT, 20mm, 25mm

	DC	AC 50/60 Hz	
Voltage	24	110	240
Tube Energy (joules)	21	21	21
Peak Current Consumption (mA)	1400	350	185
Effective Intensity (Cd)	355	355	355
Peak Intensity (Cd)	123691	123691	123691
NOTE: The above figures (Cd) are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor (Approximate)	0.15	0.12	0.51	0.49	0.86

The photometric data has been independently verified. A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model Type	Certification	Voltage	Terminals	Cable Entries	Flash Rate	Initiate Options	Lens Guard	Lens Color	Tag/Duty Label	Material	Finish
XB4			**8D**		**06**	**A**			**N**		**R**

Certification	Code
ATEX	B
UL	UL

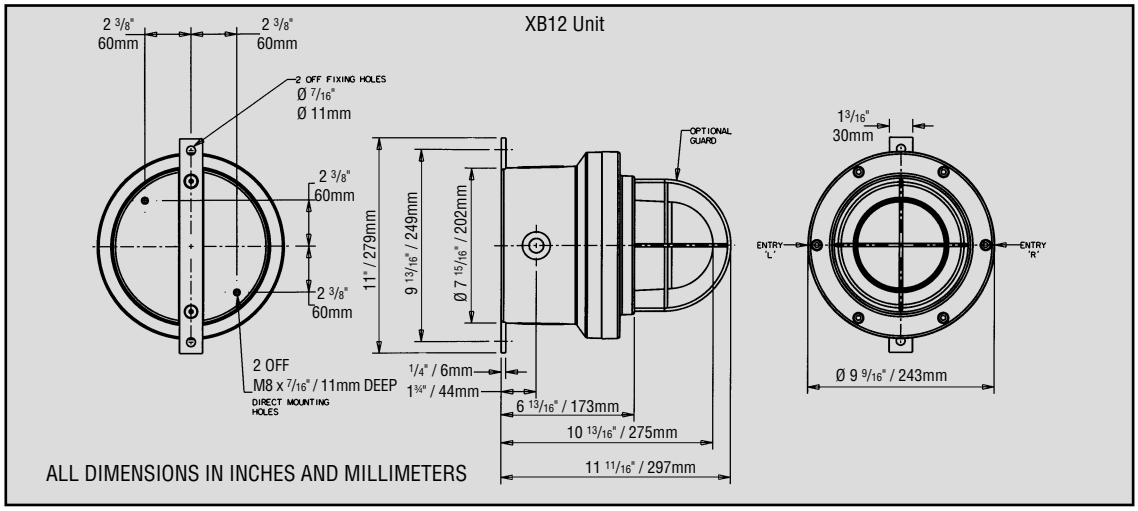
Voltage	Code
24V DC	B
110V AC	E
240V AC	H

Entries	Code
1-M25 Entry	1C
2-M25 Entries	2C3C
1-¾" NPT Entry	1E
2-¾" NPT Entry	2E3E
1-20mm Entry	1B
2-20mm Entries	2B3B
1-½" NPT	1D
2-½" NPT	2D3D

Guard	Code
Yes	Y
No	N

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Material	Code
Alloy	1
Stainless Steel	0



Specification—XB12

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 2, Groups C & D Class I, Zone 1 & 2, AExd IIB T4/T5 UL Listing No. E187894. – Ordinary locations: Visual-Signal Device UL Listing No. S8128. **ATEX approved:** EExd IIB T4/T5. Cert. No. 99 ATEX 2196.
Material:	Body: Glass reinforced polyester. Lens: Toughened Glass Cover Screws + Backstrap: Stainless steel 316.
Finish:	Natural black or painted to customer specification.
Weight:	15½ lb/7.0kg.
Certified Temperature:	-67°F to +158°F (-55°C to +70°C) hazardous locations. -67°F to +131°F (-55°C to +55°C) ordinary locations.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Terminals:	6 off suitable for up to 10 AWG conductor size.
Labels:	Duty/Tag Label optional.
Entries:	2 x ½" NPT, 20mm

Voltage	DC	AC50/60 Hz	
	24	110	240
XB12 Tube Energy (joules)	21	21	21
Peak Current Consumption (mA)	1400	350	185
Effective Intensity (Cd)	355	355	355
Peak Intensity (Cd)	123691	123691	123691
Power Consumption (Watts)	33.6	38.5	44.4
NOTE: The Cd figures are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been verified by BSI.
A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model Type	Certification	Voltage	Flash Rate	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Options	Unit Finish
XB12			**06**			**B**	**N**	**N**	**N**	

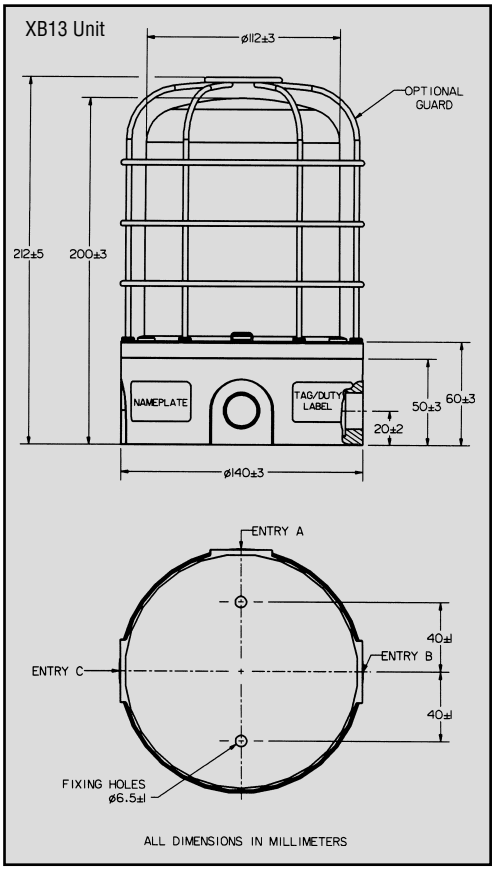
Certification	Code
ATEX	B
UL	UL

Voltage	Code
24V DC	024
110V AC	110
240V AC	240
Other voltages avaiable, please specify.	

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Guard	Code
Yes	Y
No	N

Finish	Code
Natural Black	N
Red	R



Specification—XB13 Unit

Material:	UV stable glass reinforced polyester body. UV stable polycarbonate cover/lens. Retained stainless steel cover screws.
Finish:	Self colored red as standard or epoxy coated to customer's specification.
Tube Energy:	10 joules (second flash 7.5 joules).
Weight:	1.1kg,
Operating Temperature:	–55°C to +70°C.
Ingress Protection:	IP66 & IP67.
Tube Life:	>1 x 10^6 flashes.
Voltage:	12V DC, 24V DC, 115V AC, 230V AC

Current Consumption:

Voltage	Current Consumption
12V DC	1.4A
24V DC	650mA
115V AC	180mA
230V AC	100mA

Tube Type:	Xenon discharge.
Lens Color:	Various colors available.
Terminals:	8 x 2.5mm^2.
Flash Rate:	1 flash per second.
Dual Flash Rate:	Time between dual flashes = 0.5 seconds. Charging time = 1 second. Cycle repeats every 1.5 seconds.
Labels:	Duty and tag labels available.
Cable Entries:	Up to 3 x M20 via knockouts.
Intensity:	Effective intensity 220 Cd. Peak intensity 75,000 Cd. (Figures are for clear lens at 1Hz flash rate).

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Voltage	Lens Color	Lens Guard	Options	Unit Finish is Red
XB13				**N**	**N**

Voltage	Code
24V DC	024
115V AC	115
230V AC	230

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Guard	Code
Yes	Y
No	N

The Hazard•Gard Series is our new line of visual and audible signaling and communication products for industrial use. The Hazard•Gard Series of visual signals is available in Division 1, Zone 1 and Division 2, Zone 2 applications. This new visual product offering provides three methods of light generation for visual indication: Xenon strobe, rotating beacon and steady-on indicators. All models come in red, amber, green, blue, clear and magenta, and AC and DC voltage.

The Hazard•Gard Division 1, Zone 1 EX Series is a compact, rugged cast aluminum visual signaling device for use in explosionproof and corrosive applications. The Hazard•Gard delivers six color choices and a complete range of operating voltages for AC and DC circuits. The Hazard•Gard UL approved fire alarm strobe delivers the industry required 16–33VDC voltage for light output for Fire Alarm circuits. With powerful light output, compact design and Crouse-Hinds explosionproof integrity, the Hazard•Gard is applicable for safety, indication, evacuation, and security uses. All are marine rated and offer four mounting methods—pendant, ceiling, wall and stanchion.



Types of visual signals that are available:

1. **Rotating lights**—our line uses halogen lights for brightness in areas that have high ambient light levels or when the light must be seen from a long distance.
2. **Steady-on or flashing lights** using a halogen incandescent lamp or LED. Used as a continuous source to warn, communicate or draw attention to an area, machine or process.
3. **Strobe lights** use a strobe light (for more on strobe technology, see section "Strobe, Principle of Operation" below) for signaling or warning of various conditions. A strobe emits a powerful blast of bright light.



PRODUCT OVERVIEW—HAZARD·GARD EXPLOSIONPROOF VISUAL INDICATION:

Description	Catalog Reference	Operating Voltage	Operating Circuit
Fire Alarm Strobe	EXFASC301	16–33V DC	Fire alarm circuits and other applications requiring electrical supervision of signaling.
Strobe Light	EXS301	120VAC or 12–48V DC	Standard electrical circuits 12–48V DC either AC or DC operation.
Strobe Light Diode Polarized	EXDS301	24V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Strobe Light Non-Marine, Fused	EXSNM301	12–48V DC	Fused for use on standard electrical DC circuits.
Rotating Beacon	EXR301	120V AC	Standard electrical circuits, AC operation.
Rotating Beacon Diode Polarized	EXDR301	24–28V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Steady-On Beacon	EXSO301	120VAC or 24–28V DC	Standard electrical circuits either AC or DC operation.

All Hazard•Gard Series explosionproof visual signals are marine rated (except the EXSNM), NEMA 4X and offer 6 color choices of lens: Amber, Blue, Clear, Green, Magenta & Red.

For Class I areas, consider the following:

- Utility gas plants
- Petroleum refining production and dispensing locations
- Cleaning facilities
- Dip tanks containing combustibles or flammable liquids
- Plant facilities extracting solvents
- Inhalation anesthetics areas

For Class II areas, consider the following:

- Flour mills
- Feed mills
- Grain elevators and grain handling facilities
- Aluminum manufacturing and storage areas
- Magnesium manufacturing and storage areas
- Coal preparation and handling facilities
- Starch manufacturing and storage areas
- Confectionery plants
- Pulverized sugar and cocoa manufacturing and storage plants

For Class III areas, consider the following:

- Textile mills
- Woodworking plants & furniture manufacturers
- Cotton gins
- Cotton seed milling plants
- Flax plants
- Carpet manufacturers



Standard materials and finishes:

Class I, Division 1, Zone 1 Visual Signaling Devices

- Bodies, mounting modules and guards are die cast copper free aluminum
- Globe is heat and impact resistant glass
- Gaskets—silicone
- Internal components are solid-state electronics in a moisture-resistant and heat-dissipating epoxy

Ratings (electrical/size):

Division 1, Zone 1 Signaling Devices

Description	Catalog Reference	Operating Voltage	Amperage	Peak Candlepower
Fire Alarm Strobe	EXFASC301	16–33V DC	0.95–0.55 amps	800,000
Strobe Light	EXS301	120V AC or 12–48V DC	0.1 amps	800,000
Strobe Light Diode Polarized	EXDS301	24V DC	0.8 amps	800,000
Rotating Beacon	EXR301	120V AC	0.35 amps	3328
Rotating Beacon Diode Polarized	EXDR301	24–28V DC	0.8 amps	2838
Steady-On Indication	EXSO301	120V AC or 24–28V DC amps	0.35 amps 0.8 amps	3328

Mounting module hub sizes:

Type	Conduit	Catalog Number
Pendant	¾ inch 1 inch	EVMP2 EVMP3 
Ceiling (and for use with wall)	¾ inch 1 inch	EV22 EV33 
Wall bracket arm	¾ inch 1 inch	EV87 and EV22 EV87 and EV33 
Stanchion	1¼ inch	EVMJ4 

Certifications and compliances:

IEC/NEC/CEC

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Groups E, F, & G
- Class III & Simultaneous Presence
- Wet locations
- Marine locations for the 151XST only
- NEMA/Type 4X, IP66
- UL listed: UL1638, UL 1203, UL844
- Fire Alarm Strobe (EXFASC) is UL 1971
- cUL Listed (Certified by UL to CSA Standards)

UL Standards

844 — Hazardous (Divisions Classified) Locations
1598 — Luminaires
1598A — Luminaires for Installation on Marine Vessels
1638 — Indicating Appliance Circuits
1971 — Indicating Appliance for Fire Alarm

CSA Standards

C22.2 No. 137
CAN/CSA-E79 Series

IEC Standards

6079-15



The **Hazard•Gard™ EXFASC Series** is a visual fire alarm signaling device for hazardous areas. The EXFASC Series strobes are UL 1971 Listed for indoor signaling applications for the hearing impaired in non-sleeping areas. They are also UL Listed for Type 3R, 4X installations. The strobes are available for pendant, wall and ceiling mounts.

The **EXFASC Series Fire Alarm Explosionproof Strobe** contains a supervisory diode for use in fire alarm applications. Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe light and prevents it from lighting. When a fire-initiating device such as a smoke alarm is activated, the diode's polarity is reversed through a fire alarm panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications
- Visual fire alarm signaling device for hazardous areas

Typical Industries
- Energy exploration
- Utilities
- Wastewater treatment plants
- Pulp & paper plants
- Petrochemical plants
- Petroleum refineries
- Oil rigs

Key Features & Benefits
- Meets NFPA requirements for fire safety warning devices
- State of the art electronic design (full wave rectified design)
  - Low current draw is efficient
  - 24V DC regulated full wave rectified
  - Limited in-rush current favorable to other fire alarm system components
  - Proven, reliable circuitry designed specifically for use with fire alarm control panels
- Available in pendant, wall and ceiling mount
- Strobe light produces 65 flashes per minute
- Factory sealed—no external seals required
- Quick connect—Strobe fixture threads onto mounting module for easy installation
- Small compact size—ceiling mount is 13 ¾-inch long

Certifications & Compliances
- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL 1638 and 1203 Listed
- UL 1971 Listed for indoor visual signaling for the hearing impaired in non-sleeping areas
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes
- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings
- 16–33V DC
- Operating Current: 1.08–0.83 amps
- Peak Candlepower: 800,000

Hub Size
- ¾-inch NPT pendant, ceiling and wall mount

Ordering Information

Step 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
FIRE ALARM RATED EXPLOSIONPROOF STROBES			
EXFASC301/16 33	24V DC regulated full wave rectified	Clear	3R, 4X

Step 2 Order Strobe Type

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXFASC Series Fire Alarm Voltage 24VDC Regulated Full Wave Rectified (Operating Range 16–33V DC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)



The **Hazard•Gard EXS and EXDS Series Explosionproof Strobe Lights** are designed for installation indoors and outdoors in locations which are hazardous due to the presence of flammable vapors or gases, ignitible dusts or ignitible fibers and flyings. The units are UL Listed for Type 3R and 4X installations. The 120V and 24V DC models are **Marine Rated**. The strobes are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDS Series** is diode polarized for use in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe and prevents it from lighting. When an initiating device such as a smoke detector is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications
- Condition signaling
- Equipment obstruction warning
- Security alert
- Emergency evacuation signaling
- In areas where audible signals cannot be heard

Typical Industries
- Utility gas plants
- Petroleum refineries
- Wastewater treatment plants
- Chemical & petrochemical
- Mining
- Pulp & paper

Key Features & Benefits
- Strong strobe signal that produces 65 flashes per minute.
- Compact design will not obstruct in low ceiling or small areas, ceiling mount is only 13¾-inch long
- Quick connect—Strobe fixture threads onto mounting module for easy installation
- Factory sealed—No external seals required
- Available in pendant, wall, stanchion and ceiling mount
- Available in six different globe colors—clear, red, blue, amber, green and magenta
- Silicone gasket seals out dirt and moisture

Certifications & Compliances
- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120V AC and 24V DC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes
- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings
- 120V AC (EXS), 12–48V DC (EXSNM) and 24V DC nominal, voltage operating range is 16–33V DC (EXDS)
- Operating Current: 0.10 amps at 120V AC
  1.2–3.8 amps at 12–48V DC
  0.8 amps at 24V DC
- Peak Candlepower: 800,000

Hub Size
- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

Ordering Information

Step 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STROBES			
EXS301A/120	120V AC	Amber	3R, 4X, Marine
EXS301B/120	120V AC	Blue	3R, 4X, Marine
EXS301C/120	120V AC	Clear	3R, 4X, Marine
EXS301G/120	120V AC	Green	3R, 4X, Marine
EXS301M/120	120V AC	Magenta	3R, 4X, Marine
EXS301R/120	120V AC	Red	3R, 4X, Marine
EXSNM301A/12 48	12–48V DC	Amber	3R, 4X
EXSNM301B/12 48	12–48V DC	Blue	3R, 4X
EXSNM301C/12 48	12–48V DC	Clear	3R, 4X
EXSNM301G/12 48	12–48V DC	Green	3R, 4X
EXSNM301M/12 48	12–48V DC	Magenta	3R, 4X
EXSNM301R/12 48	12–48V DC	Red	3R, 4X
DIODE POLARIZED EXPLOSIONPROOF STROBES			
EXDS301A/24	24V DC	Amber	3R, 4X, Marine
EXDS301B/24	24V DC	Blue	3R, 4X, Marine
EXDS301C/24	24V DC	Clear	3R, 4X, Marine
EXDS301G/24	24V DC	Green	3R, 4X, Marine
EXDS301M/24	24V DC	Magenta	3R, 4X, Marine
EXDS301R/24	24V DC	Red	3R, 4X, Marine

Step 2 Order Mounting Module

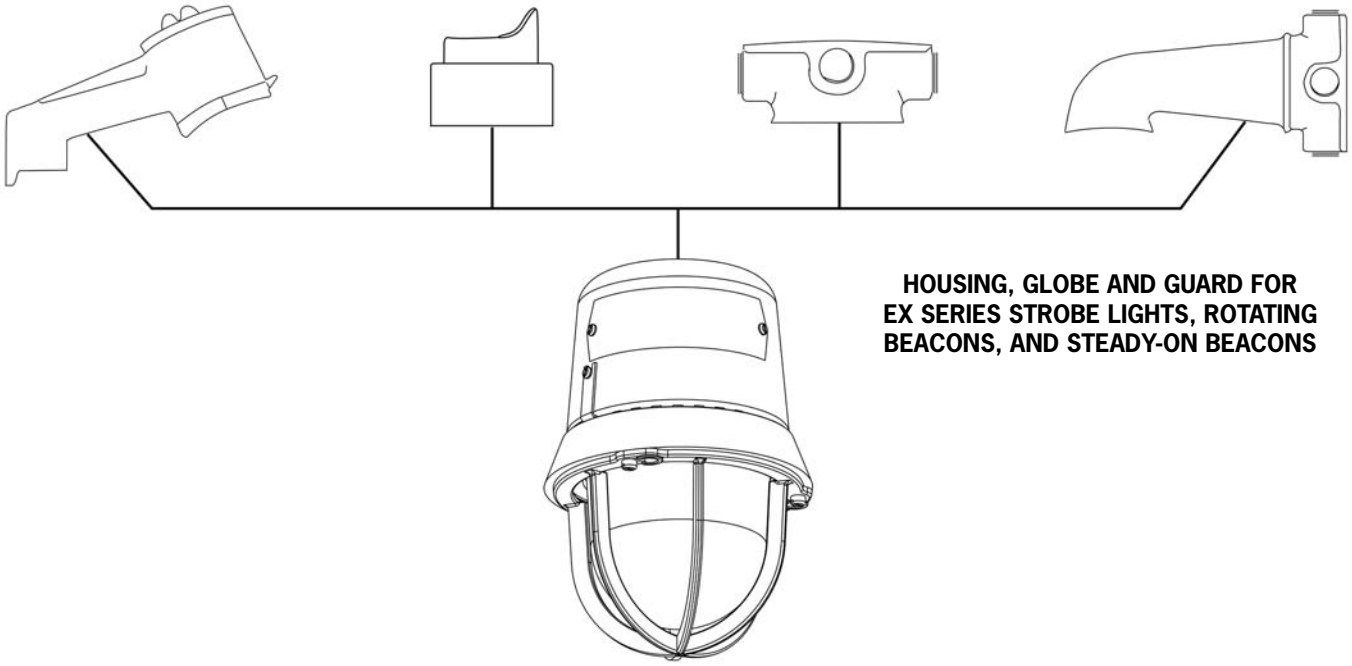
Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXFASC Series Fire Alarm Voltage 24V DC Regulated Full Wave Rectified (Operating Range 16–33V DC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)
EXS Series Strobe Light Voltage 120V AC (Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXSNM Series Strobe Light Voltage 12–48V DC (Not Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDS Series Strobe Light-Diode Polarized Voltage 24V DC (Marine Listed)	40°C 75°C 55°C	T6(85°C) 90°C	T4A(120°C) T5(100°C)	T4A(120°C) T4(135°C)	T4(135°C)

Family Tree—EX Strobes, Rotating and Steady-On Beacons

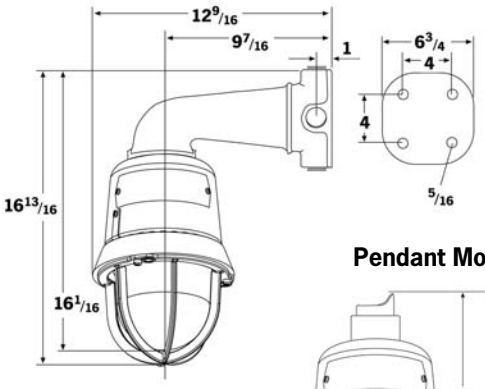
STANCHION	PENDANT	CEILING	WALL
EVMJ4 1¼" HUB	EVMP2 ¾" HUB	EV22 ¾" HUB	EV22 & EV87 ¾" HUB



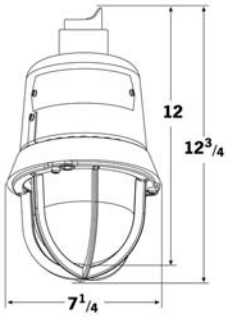
HOUSING, GLOBE AND GUARD FOR EX SERIES STROBE LIGHTS, ROTATING BEACONS, AND STEADY-ON BEACONS

Dimensions—EX Strobes, Rotating and Steady-On Beacons

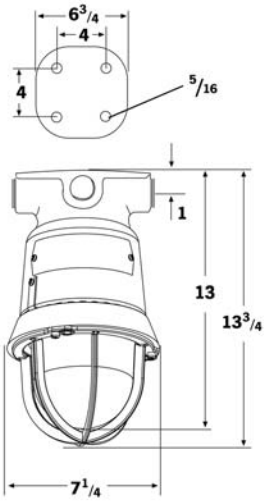
Wall Mount



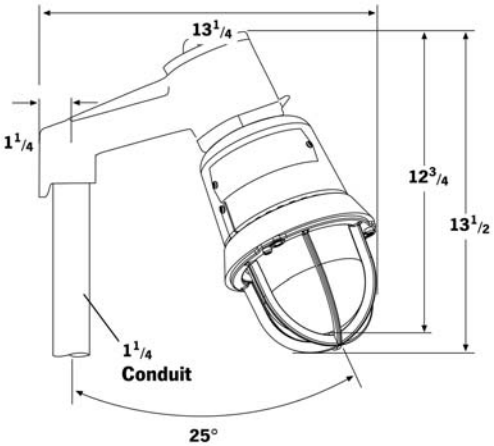
Pendant Mount



Ceiling Mount



Stanchion Mount



Net Luminaire Weights

Luminaire Housing with Guard	11.0 lbs.
Add mounting modules	
Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.



The **Hazard•Gard EXR Series Explosionproof Rotating Beacons** are designed for installation in hazardous locations, such as manufacturing plants, heavy industrial facilities, refineries, chemical, petrochemical, pharmaceutical and off-shore drilling platforms.

The units are UL Listed for Type 3R, 4X and marine installations. The rotating beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDR Series Explosionproof Rotating Beacon** is diode polarized for use in standard 24–28V DC electrical circuits or in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation in an electrically supervised circuit, the diode is reversed biased, meaning it blocks voltage from being applied to the rotating beacon and prevents it from lighting. When a warning detecting device is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allows voltage to the device and activates the rotating beacon.

Primary Applications
- Security alert
- Equipment obstruction warning
- Obstacle warning
- Status indication of a process
- Areas under construction
- Supplement audible signaling or off limits

Typical Industries
- Utility gas plants
- Pharmaceutical plants
- Wastewater treatment plants
- Refineries
- Chemical plants
- Mining

Key Features & Benefits
- Powerful halogen rotating beacon emits bright light to provide critical visual warning
- Available in pendant, wall, stanchion and ceiling mount
- Available in six different globe colors—amber, blue, clear, green, magenta and red
- Beacon produces 75 rotations per minute
- Factory sealed—No external seals required
- Quick connect—Strobe fixture threads onto mounting module for easy installation

Certifications & Compliances
- Class I, Division 1, Groups C & D
- Class II, Division 1, Groups E, F & G
- Class I, Zones 1 & 2, Group IIB
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes
- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings
- 120V AC (EXR) and 24–28V DC (EXDR)
- Operating Current: 0.382 amps at 120V AC
0.8 amps at 24–28V DC
- Peak Candlepower: 3328 (EXR)
2838 (EXDR)

Hub Size
- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

Ordering Information

Step 1 Order Rotating Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF ROTATING BEACONS			
EXR301A/120	120V AC	Amber	3R, 4X, Marine
EXR301B/120	120V AC	Blue	3R, 4X, Marine
EXR301C/120	120V AC	Clear	3R, 4X, Marine
EXR301G/120	120V AC	Green	3R, 4X, Marine
EXR301M/120	120V AC	Magenta	3R, 4X, Marine
EXR301R/120	120V AC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF ROTATING BEACONS			
EXDR301A/24 28	24–28V DC	Amber	3R, 4X, Marine
EXDR301B/24 28	24–28V DC	Blue	3R, 4X, Marine
EXDR301C/24 28	24–28V DC	Clear	3R, 4X, Marine
EXDR301G/24 28	24–28V DC	Green	3R, 4X, Marine
EXDR301M/24 28	24–28V DC	Magenta	3R, 4X, Marine
EXDR301R/24 28	24–28V DC	Red	3R, 4X, Marine

Step 2 Order Mounting Module

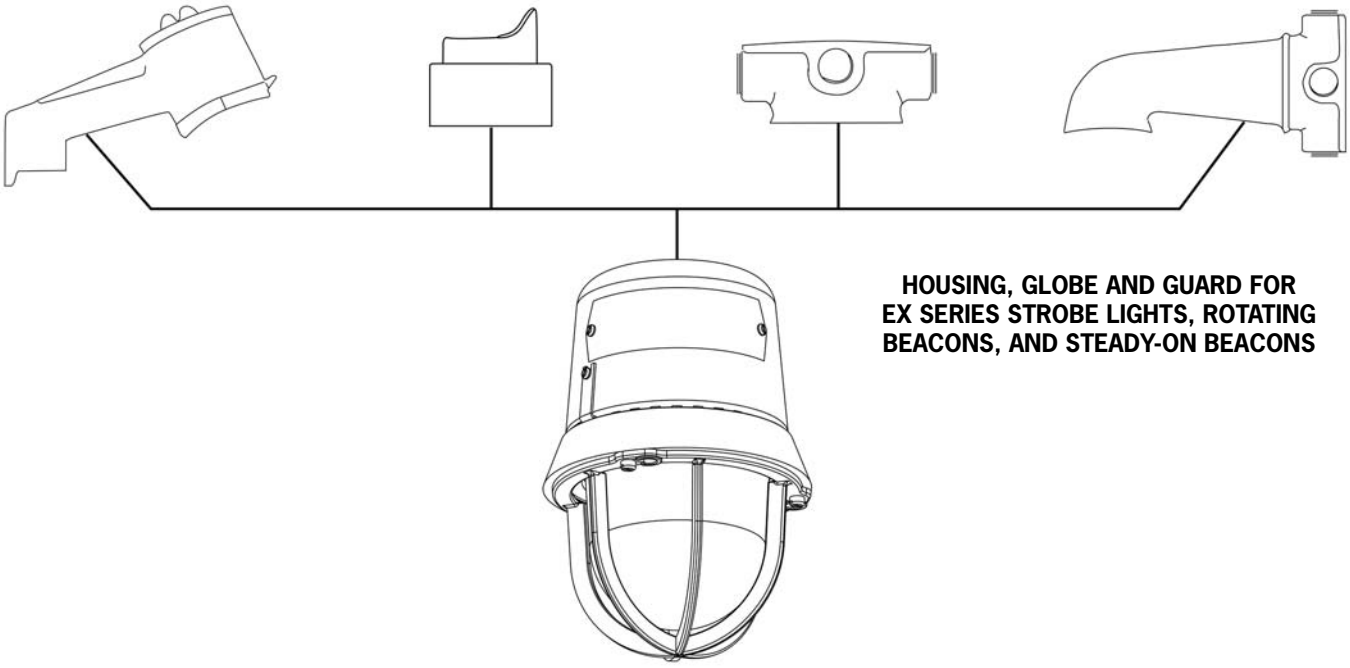
Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXR Series Rotating Beacon	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 120V AC	55°C	90°C	T5(100°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T5(100°C)	T4(135°C)	T4(135°C)
EXR Series Rotating Beacon—	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Diode Polarized	55°C	90°C	T6(85°C)	T4(135°C)	T4(135°C)
Voltage 24–28V DC	65°C	105°C	T6(85°C)	T4(135°C)	T4(135°C)

Family Tree—EX Strobes, Rotating and Steady-On Beacons

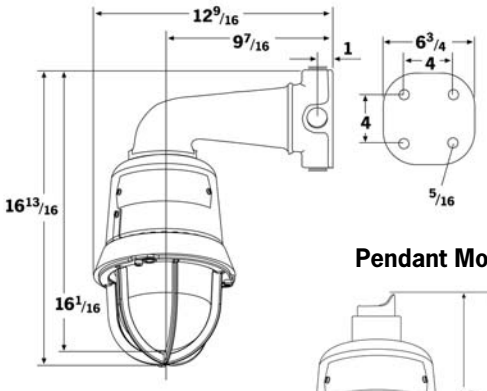
STANCHION	PENDANT	CEILING	WALL
EVMJ4 1¼" HUB	EVMP2 ¾" HUB	EV22 ¾" HUB	EV22 & EV87 ¾" HUB



HOUSING, GLOBE AND GUARD FOR EX SERIES STROBE LIGHTS, ROTATING BEACONS, AND STEADY-ON BEACONS

Dimensions—EX Strobes, Rotating and Steady-On Beacons

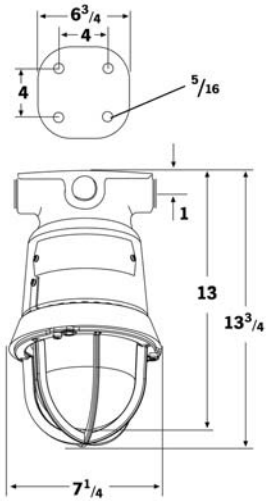
Wall Mount



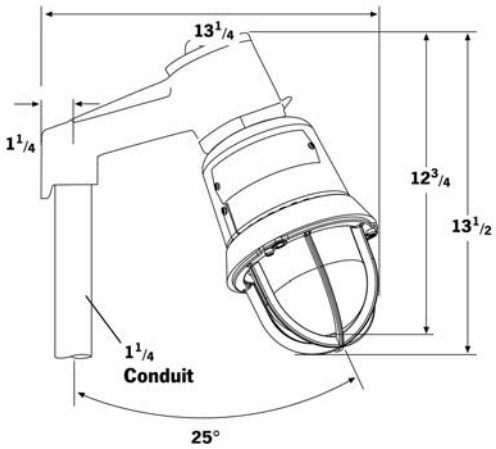
Pendant Mount



Ceiling Mount



Stanchion Mount



Net Luminaire Weights

Luminaire Housing with Guard	11.0 lbs.
Add mounting modules	
Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.



FB15 Pipe Mount (with cast guard)



EXSO Stanchion Mount



FB15 Direct Mount (with wire guard)

The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in a variety of globe colors. Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants. The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Continuous source to communicate
- Obstacle warning
- Exit or entrance lights
- For identifying the location of safety equipment such as showers or emergency telephones

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Steady-on Beacons are designed for harsh & hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

- Broad range of light source options such as halogen, incandescent, compact & fluorescent for both indication and illumination
- Products designed for both conduit wiring and/or cable connection. NPT or metric entries meeting all installation needs



FB15 Pipe Mount
(with cast guard)



FB15
Direct Mount
(with wire guard)

The units are UL Listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Continuous source to communicate
- Obstacle warning
- Exit or entrance lights
- For identifying the location of safety equipment such as showers or emergency telephones

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Certifications and Compliances

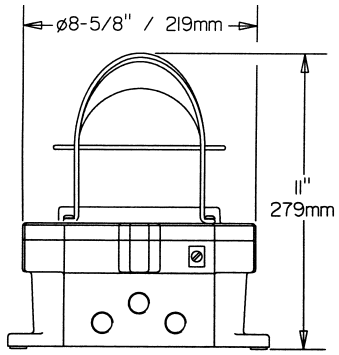
- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

FB4 — 100 Watt Steady Incandescent Light—Explosionproof



Certification UL Listed for:	c UL us ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x ½" or 2 x ¾" NPT
Weight	13lb/6.4kg

Options: Body & lens color, lens guard, certification, voltage 120V AC only



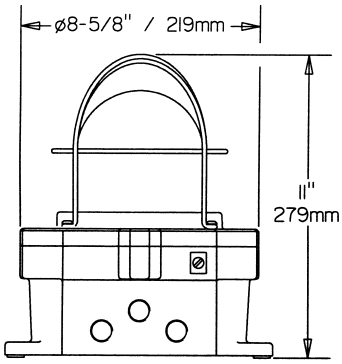
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	17800002	FB4EUL8U1N100B1N1G	Marine grade alloy, 120V AC, 100W bulb (not included), blue lens, lens guard, no labels, gray finish

FL4 — 13–39 Watt Steady Fluorescent Light—Explosionproof

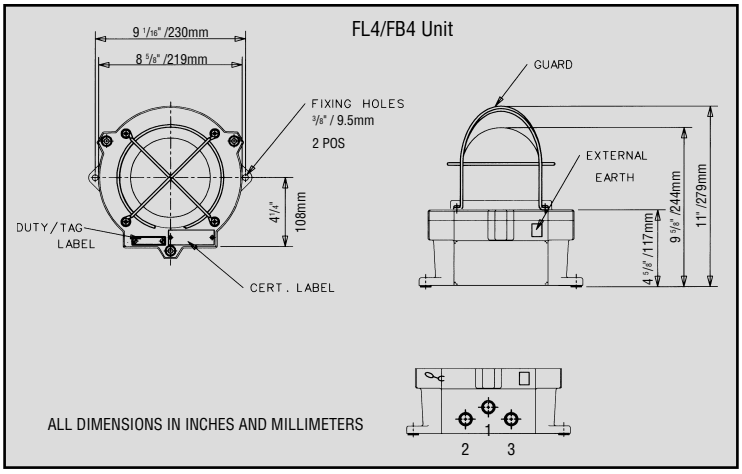


Certification UL Listed for:	UL ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIC T5
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x ½" NPT or 2 x ¾" NPT
Weight	14.5lb/6.6kg

Options: Body & lens color, lens guard, certification, voltages 24V DC, 120V, 240V AC



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	27800006	FL4BUL8U2M3M13R1N1RZ	Marine grade alloy, 24V DC, 2 x ½" NPT entries, 13W tube (not included), red lens, lens guard, **red finish**, one certified plug



FL4 LAMP DETAILS			
Unit Type	Lamp Type	Lamp Ref.	Holder Type
FL4 DC	Osram Dulux D/E 13W	DD/E 13/XX	G24q-1
	Philips PLC 13W	PLC 13 P4	G24q-1
FL4 AC	Osram Dulux D 13W	DD 13	G24d-1
	Philips PLC 13W	PLC 13	G24d-1
Osram Color XX = (21 = Cool white) (31 = Warm white) (41 = Interna)			

Temperature Ratings			
Type	Voltage/Wattage	T Class	Max. Amb.
FL4	DC units	T5	55°C
	AC units	T4	55°C
FB4	60W	T4	55°C
	100W	T3	55°C

Specification—FL4 and FB4 Units

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 1, Groups C & D. Class I, Zone 1, AExd IIB T4/T5. UL Listing No. E187894. – Ordinary locations: Visual-Signal Device (FL4 only). UL Listing No. S8128. **ATEX approved:** EExd IIC. Certificate No. Baseefa 02ATEX0224X.
Material:	LM25TF Marine Grade Alloy body. Grade 316 ANC48 Stainless Steel body. Toughened Wellglass.
Models:	FL4: Up to 3 x 13 Watt PL compact fluorescent lamps. FB4: 100 watt GLS incandescent lamps. E27 holder as standard.
Finish:	Gray epoxy paint finish as standard or to customer's specification.
Voltage:	FL4: 24V DC, 120V AC, 240V AC ± 10% 50/60hz. FB4: 120V AC ± 10% 50/60hz.
Weight:	FL4: 14–17lb/6.5–7.9kg (add 19lb/8.4kg for stainless steel). FB4: 13lb/6.4 kg.
Certified Temperature:	FL4: -4°F to +131°F (-20°C to + 55°C). FB4: -67°F to +131°F (-55°C to + 55°C).
Ingress Protection:	NEMA 4X & 6. IP66 and IP67.
Lamps:	Units are supplied without lamps.
Terminals:	8 off suitable for up to 8 AWG conductor size.
Entries:	Up to 3 x ½" NPT or 2 x ¾" NPT.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type: **FL4** / **FB4**

Voltage

Voltage	Code
24V DC	B
120V AC	E
240V AC	H

Certification

Certification	Code
ATEX	B8D
UL*	UL8U

*UL (FB4) – only available 24VDC, 110VAC., NPT entries.

Entries

Entries	Code
1 x 20mm	1B
2 x M20	2B3B
1 x M25	1C
2 x M25	2C3C
1 x ½" NPT	1M
2 x ½" NPT†	2M3M
1 x ¾" NPT†	1N
2 x ¾" NPT†	2N3N

†UL Listed version only.

Lamp Wattage

Lamp Wattage		Code
FL4	13W(1 x 13W tube)	13
	26W(2 x 13W tubes)	26*
FB4	60W	60
	100W	100

*Only available in the following voltages: 26W—AC only.

Lens Color

Color	Code
Clear	C
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A

Guard

Guard	Code
None	0
Guard	1

Options: **N**

Material

Material	Code
Stainless Steel	0
Alloy	1

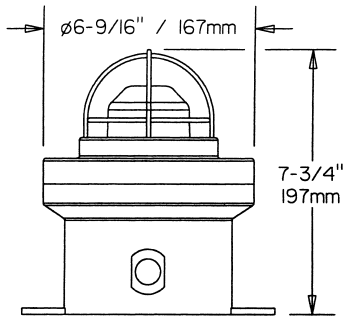
Finish: **R**

FB11 UL — 10 Watt Steady Incandescent Light—Hazardous Locations



Certification UL Listed for:	c UL us Ex ATEX Class I, Div 2, Groups C & D, Class I, Zone 1, AExd IIB T4/T5
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, M20
Weight	6.2lb/2.8kg

Options: Body & lens color, lens guard, certification, voltage 24, 48V DC, 110–120V AC



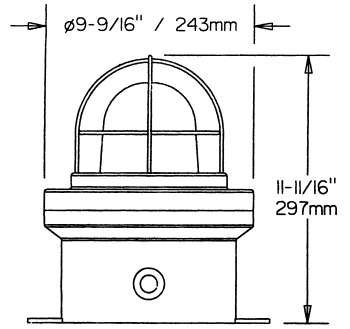
Certification	Ordering Code	Catalog #	Standard Product Configuration
ATEX	32500004	FB11B02410RNBNNN	24V DC, 10W bulb, red lens, mounting bracket, natural black finish
UL, cUL Listed, Class I, Div 2, Groups C & D	32500028	FB11UL02410GNBNNR	10W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32500029	FB11UL11010GNBNNR	10W incandescent beacon, 110V AC, green lens, no lens guard, 2 x ½ NPT, painted red enclosure

FB12 UL — 60W/100W Steady Incandescent Light—Hazardous Locations



Certification UL Listed for:	c UL us Ex ATEX Class I, Div 2, Groups C & D, Class I, Zone 1, AExd IIB T4/T5
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, M20
Weight	2.6lb/1.2kg

Options: Body & lens color, lens guard, certification, voltage 120V AC



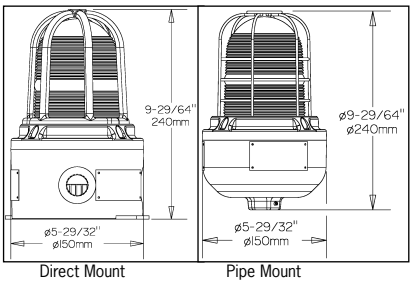
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	326023	FB12UL12060CNBNNN	120V AC, 60W bulb, clear lens, mounting bracket, no labels, natural black finish
UL, cUL Listed, Class I, Div 2, Groups C & D	32600035	FB12UL12060GNBNNR	60W incandescent beacon, 120V AC, green lens, no lens guard, 2 x ½ NPT entries in a painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32600036	FB12UL02460GNBNNR	60W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32600037	FB12UL120100GNBNNR	100W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure

FB15 100W Steady Incandescent Light—Hazardous & Ordinary Locations



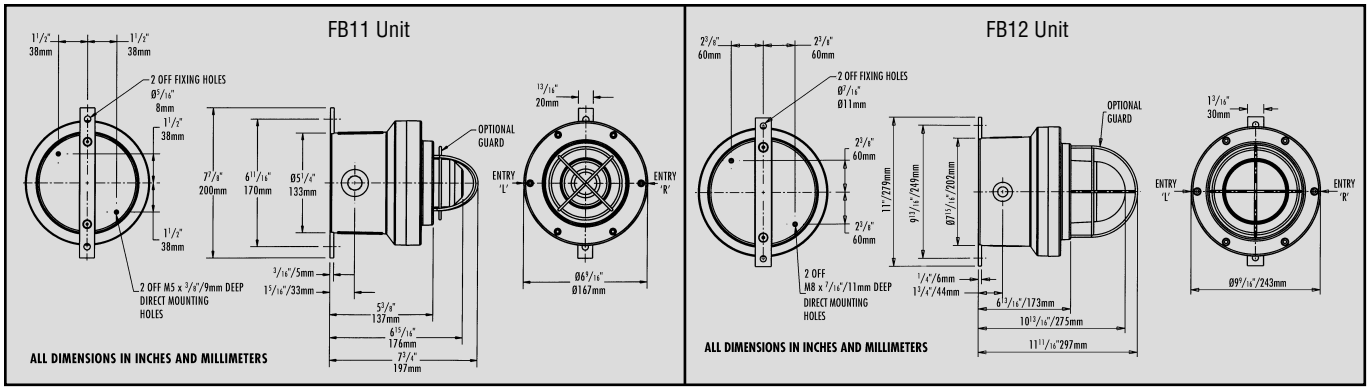
Certification UL Listed for:	cULus Ex ATEX Class I, Div 2, Groups A, B, C, D Class I, Zone 1, AExd IIC T3/T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x ½" NPT or 3 x ¾" NPT
Weight	6–8lb/2.6–3.6kg

Options: Body & lens color, lens guard, lamp wattage, unit fixing, mounting method, voltages 12–48V DC, 110–254V AC



Direct Mount Pipe Mount

Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600001	FB15UL120100GNANR	120V AC, 100W bulb, green lens, mounting bracket, no labels, red finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600020	FB15UL120100ANPNN	100W incandescent beacon, 120V AC, amber lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600021	FB15UL120100RNPNN	100W incandescent beacon, 120V AC, red lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600022	FB15UL120100GNPNN	100W incandescent beacon, 120V AC, green lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600023	FB15UL120100CNPNN	100W incandescent beacon, 120V AC, clear lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600024	FB15UL120100BNPNN	100W incandescent beacon, 120V AC, blue lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600025	FB15UL024100ANPNN	100W incandescent beacon, 24V DC, amber lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600026	FB15UL024100RNPNN	100W incandescent beacon, 24V DC, red lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600027	FB15UL024100GNPNN	100W incandescent beacon, 24V DC, green lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600028	FB15UL024100CNPNN	100W incandescent beacon, 24V DC, clear lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600029	FB15UL024100BNPNN	100W incandescent beacon, 24V DC, blue lens, no lens guard, pipe mounting, 1 x ¾ NPT entry, natural black enclosure



Specification—FB11 and FB12 Units

Models:	FB11 & FB12—Incandescent.
Certification:	UL Listed for USA and Canada. – Class I, Div 2, Groups C & D. – Class I, Zone 1, AExd IIB T4/T5. UL listing No. E187894. **ATEX approved:** CENELEC EN50014 and EN50018. FB11: Cert. No. 99 ATEX 2195X. FB12: Cert. No. 99 ATEX 2196.
Voltage:	FB11: 24, 48V DC 110, 220, 240, 250V AC FB12: 120V AC
Incandescent:	FB11: 10W incandescent fitted as standard. FB12: 60W or 100W incandescent fitted as standard.
Material:	Body: Glass reinforced polyester. Lens: Glass. Cover screws + backstrap: stainless steel 316.
Finish:	Natural black or painted to customer specification.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Terminals:	FB11: 6 x 14 AWG. FB12: 6 x 10 AWG.
Labels:	Duty/Tag Label optional.
Entries:	2 x ½" NPT.
Certified Temperature:	FB11: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +104°F (-55°C to +40°C) T5. FB12: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +104°F (-55°C to +40°C) T5.
Weight:	FB11: 6.2lb / 2.8kg. FB12: 16.7lb / 7.6kg.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Certification	Voltage	Lamp Wattage	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Finish
					N	**B**	**N**	**N**	

Unit Type
FB11
FB12

Cert.	Code
ATEX	B
UL Listed	UL

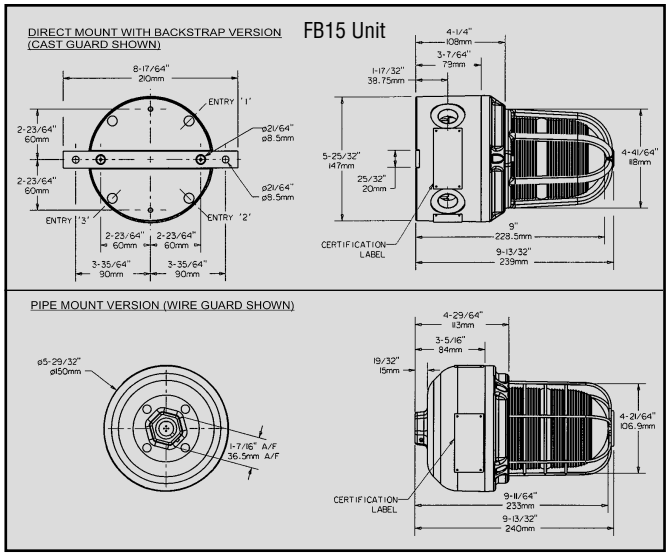
Voltage	Code
24V DC	024
110V AC	110
120V AC†	120
240V AC	240

Other voltages available, please specify.
†FB12 UL Listed only

Lamp Wattage	Code
FB11 10W AC & DC (1 x 10W bulb)	10
FB12 60W AC & DC (1 x 60W bulb)	60
100W AC & DC (1 x 100W bulb)	100

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Finish	Code
Natural Black	N
Red	R



Electrical Ratings:

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A)—60W lamp	2.5	1.25	0.55	0.50	0.26	0.25	0.24
Current (A) —100W lamp	4.2	2.1	0.91	0.83	0.43	0.42	0.39

Specification—FB15 Unit

Certification:	UL Listed for USA and Canada: – Hazardous locations Class I, Div 2, groups A, B, C & D. Class I, Zone 1, AExd IIC T3/T4. UL listing No. E187894. – Ordinary locations: Visual Signal Device. UL listing No. S8128 CENELEC/ATEX approved. CENELEC EN50014 & EN50018 ATEX Cert. No. Baseefa 04ATEX0009X.
Material:	Body: Glass reinforced polyester. Lens: Glass. Backstrap: stainless steel 316. Wire Guard (optional): Stainless steel wire. Cast Guard (optional): Aluminium LM25M.
Finish:	Natural black or epoxy painted to customer specification.
Voltage:	24, 48V DC 110, 120, 230, 240, 254V AC
Lamp Type:	60W or 100W GLS incandescent.
Lamp Holder:	E27 as standard..
Certified Temperature:	60W: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +158°F (-55°C to +70°C) T3. 100W: -67°F to +104°F (-55°C to +40°C) T4.
Weight:	Pipe mount: 5¾lb/2.6kg; Direct mount: 6½lb/3.0kg.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Entries:	Supplied as 2 x M20, up to 3 x M20 or 3 x M25. Supplied as 2 x ½" NPT (direct mount) or ¾" (pipe mount) as standard. Other options available: Up to 3 x ½" NPT or 3 x ¾" NPT (direct mount); ½" NPT (pipe mount)—contact sales office to order.
Terminals:	Direct mount: 12 x 14AWG. Pipe mount: 8 x 14AWG.
Labels:	Tag/Duty label option.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box. Standard products available for immediate shipping—contact sales office for details.

Model **FB15** | Certification [ ] | Voltage [ ] | Lamp Wattage [ ] | Lens Color [ ] | Unit Guard [ ] | Fixing [ ] | Unit Options **N** | Finish **N**

Certification	Code
ATEX	B
UL	UL

Voltage	Code
24V DC	024
110V AC	110
120V AC	120
240V AC	240

Lamp Wattage	Code
60	60
100	100

Guard	Code
None	N
Cast	C
Wire	W

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Unit Fixing	Code
Pipe mount	P*
Direct w/backstrap	B

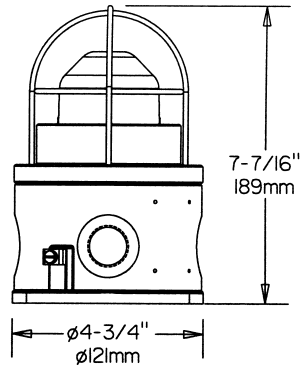
* Not Available on ATEX version.

SM87 LU3 — 10 Watt Steady Incandescent Light—Explosionproof



Certification UL Listed for:	c UL us SP Ex ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	2 x ½" or ¾" NPT, 20mm, 25mm
Weight	4.4lb/2.0kg

Options: Body & lens color, lens guard, certification, voltages 12–48V DC, 110V–254V AC



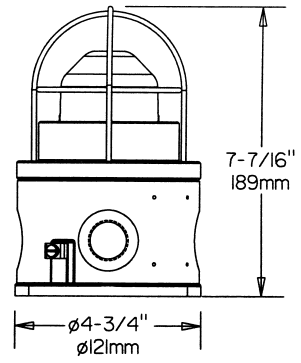
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	762311	SM87LU3AUL024RN3R3LNR	24V DC, red lens, 2 x ½" NPT entries, no labels, red finish
ATEX	46200122	SM87LU3AB024GN1T1BNR	EExd, IIC, T4/T6 incandescent beacon, 24V DC, green lens, no lens guard, 2 x M20 cable entries, painted red enclosure
UL, cUL Listed, Class I, Div 1, Groups C & D	46200096	SM87LU3AUL024GN3T3BNR	24V DC, green lens, 10W incandescent bulb, marine grade alloy, red finish

SM87 LU1 — 10 Watt Steady Fluorescent Light—Explosionproof

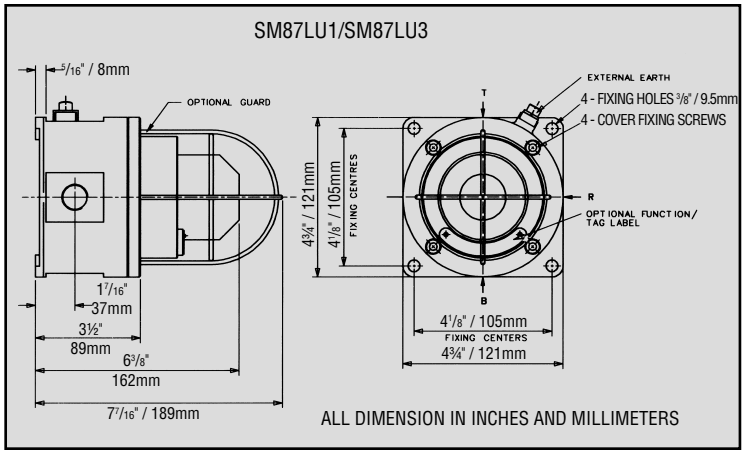


Certification UL Listed for:	c UL us Ex ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	2 x ½" or ¾" NPT, 20mm, 25mm
Weight	4.4lb/2.0kg

Options: Body & lens color, lens guard, certification, voltages 12–48V DC, 120V–254V AC



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	46200054	SM87LU1AUL024RN4T4BNR	24V DC, red lens, 2 x ¾" NPT entries, no labels, red finish
UL, cUL Listed, Class I, Div 1, Groups C & D	46200052	SM87LU1AUL024GN4T4BNR	24V DC, green lens, 10W fluorescent bulb, marine grade alloy, red finish
ATEX	46200121	SM87LU1AB024GN1T1BNR	EExd, IIC, T4/T6 flourescent beacon, 24V DC, green lens, no lens guard, 2 x M20 cable entries, painted red enclosure



Specification—SM87LU1/SM87LU3 Units

Models:	SM87 LU1: Fluorescent. SM87 LU3: Incandescent.
Certification:	UL Listed for USA and Canada: Class I, Div 1, Groups C & D and Class I, Zone 1. Listing No: E187894. CSA Certified for Class I, Div 1 & 2, Group D. Certificate No. 96406. **ATEX approved:** EExd IIC T3-T6 (model dependent). Certificate No. 03ATEX0222X
Ingress Protection:	NEMA 4X and 6 IP66 & 67.
Material:	Marine Grade Aluminium Alloy LM25TF with glass lens.
Finish:	Epoxy paint finish as standard or to customer's specification.
Fluorescent:	10 Watt tube light output 600 Lumens (240V & 254V AC versions). 5 Watt tube max. light output 250 Lumens (DC versions).
Incandescent:	Single incandescent fitted as standard 10 watts. Others may be available, please contact MEDC with your requirements.
Weight:	4.4lb/2.0kg approx.
Certified Temperature:	SM87LU1/3 -67°F to +131°F -55°C to +55°C.
Voltage:	12, 24, 48V DC, 110V (LU3 only), 220V, 240V, 254V AC 50Hz as standard. 60Hz available if required.
Terminals:	SM87: 4 off for up to 14 AWG cable.
Entries:	SM87LU1& 3: 2 x ½" or ¾" NPT, 20mm, 25mm
Power Consumption:	LU1- 7 Watts for 12V DC, 24V DC, 48V DC, 220V AC 14 Watts for 240V AC, 15 Watts for 254V AC LU3- Single incandescent fitted as standard 10W. Other options are available—please contact MEDC with your requirements.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Voltage	Lens Color	Lens Guard	Entries	Tag/Duty Label	Unit Finish
				N		**N**	**R**

Type	Code
Fluorescent (Alloy)†	SM87LU1A
Fluorescent (Stainless Steel)*	SM87LU1S
Incandescent (Alloy)†	SM87LU3A
Incandescent (Stainless Steel)*	SM87LU3S

*Not available UL Listed or GOST Certified.
† Not available CSA certified.

Voltage	Code
24V DC	024
110V AC	110
240V AC	240

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Entries	Code
M20 left, M20 bottom	1B1L
M20 bottom	1B
½" NPT left, ½" NPT bottom	3B3L
½" NPT Bottom	3B

Certification	Code
ATEX/CENELEC	B
UL Listed	UL
CSA Certified	C



Steady-on Beacons are designed for harsh & hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

- Broad range of light source options such as halogen, incandescent, compact & fluorescent for both indication and illumination
- Products designed for both conduit wiring and/or cable connection. NPT or metric entries meeting all installation needs
- Six light color options: Amber, Red, Green, Clear, Blue and Magenta for all signaling conditions

The units are UL Listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Key Features & Benefits

- Powerful halogen light source for clear visual indication
- Available in six different globe colors—amber, blue, clear, green, magenta and red
- Factory sealed—no external seals required
- Quick connect—Steady-on beacon fixture threads onto mounting module for easy installation
- Small compact size—ceiling mount is 13¾-inch long
- Available in pendant, wall, stanchion and ceiling mount

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120V AC and 24V DC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC and 24–28V DC
- Operating Current: 0.35 amps at 120V AC (EXSO) 0.8 amps at 24–28V DC (EXDSO, diode polarized)
- Peak Candlepower: 3328

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

Ordering Information

Step 1 Order Steady-On Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
Explosionproof STEADY-ON BEACONS			
EXSO301A/120	120V AC	Amber	3R, 4X, Marine
EXSO301B/120	120V AC	Blue	3R, 4X, Marine
EXSO301C/120	120V AC	Clear	3R, 4X, Marine
EXSO301G/120	120V AC	Green	3R, 4X, Marine
EXSO301M/120	120V AC	Magenta	3R, 4X, Marine
EXSO301R/120	120V AC	Red	3R, 4X, Marine
DIODE POLARIZED Explosionproof STEADY-ON BEACONS			
EXDSO301A/24 28	24–28V DC	Amber	3R, 4X, Marine
EXDSO301B/24 28	24–28V DC	Blue	3R, 4X, Marine
EXDSO301C/24 28	24–28V DC	Clear	3R, 4X, Marine
EXDSO301G/24 28	24–28V DC	Green	3R, 4X, Marine
EXDSO301M/24 28	24–28V DC	Magenta	3R, 4X, Marine
EXDSO301R/24 28	24–28V DC	Red	3R, 4X, Marine

Step 2 Order Mounting Module

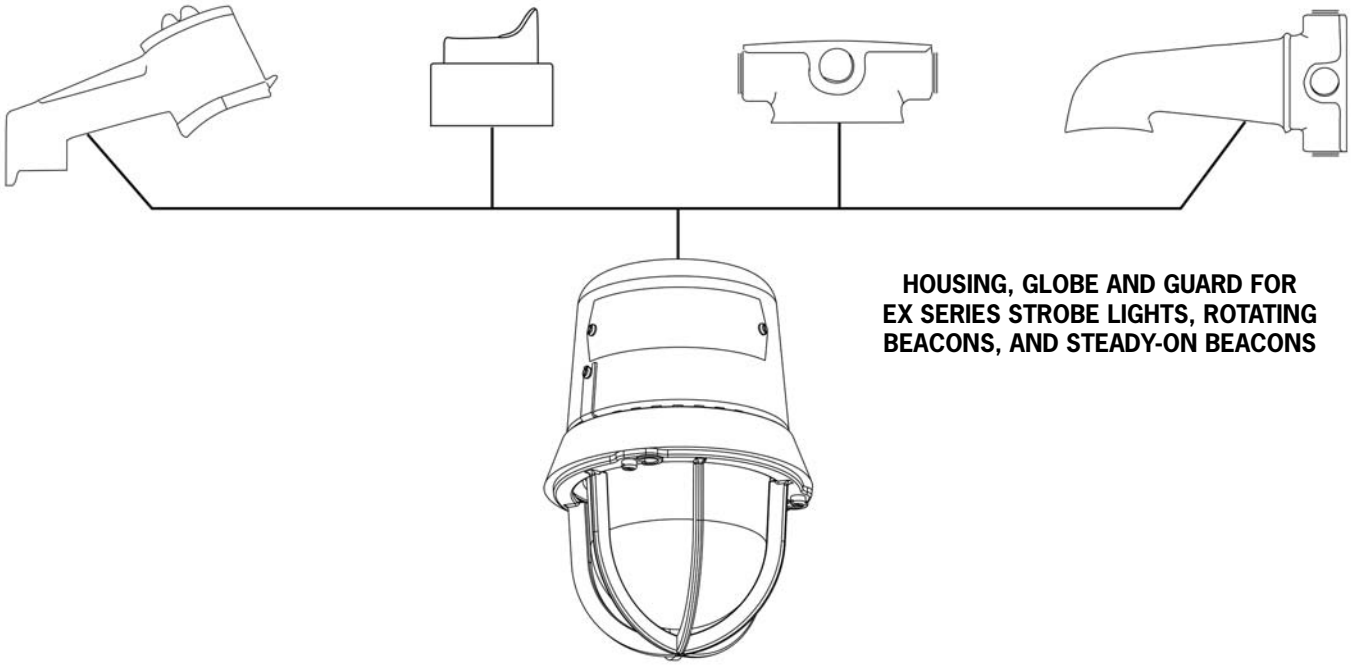
Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

Temperature Performance Data

Description	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class II Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXSO Series Steady-On Beacon Voltage 120V AC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T5(100°C) T5(100°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDSO Series Steady-On Beacon—Diode Polarized Voltage 24–28V DC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)

Family Tree—EX Strobes, Rotating and Steady-On Beacons

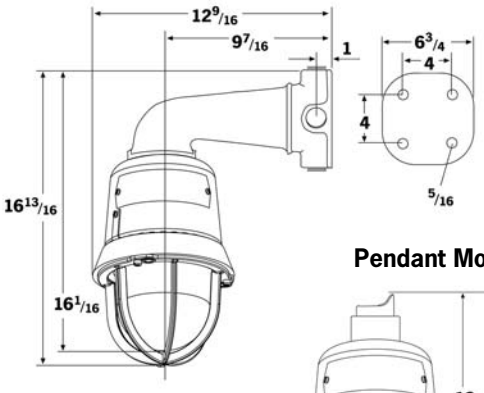
STANCHION	PENDANT	CEILING	WALL
EVMJ4 1¼" HUB	EVMP2 ¾" HUB	EV22 ¾" HUB	EV22 & EV87 ¾" HUB



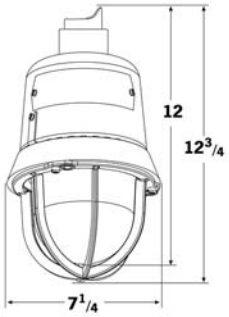
HOUSING, GLOBE AND GUARD FOR EX SERIES STROBE LIGHTS, ROTATING BEACONS, AND STEADY-ON BEACONS

Dimensions—EX Strobes, Rotating and Steady-On Beacons

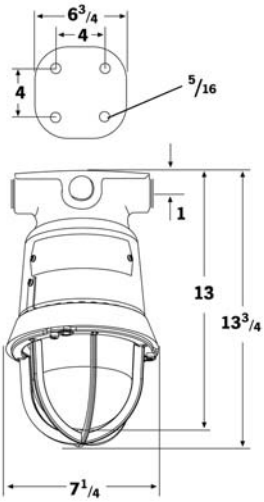
Wall Mount



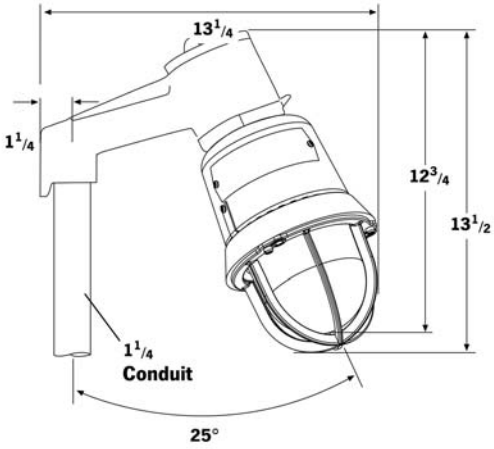
Pendant Mount



Ceiling Mount

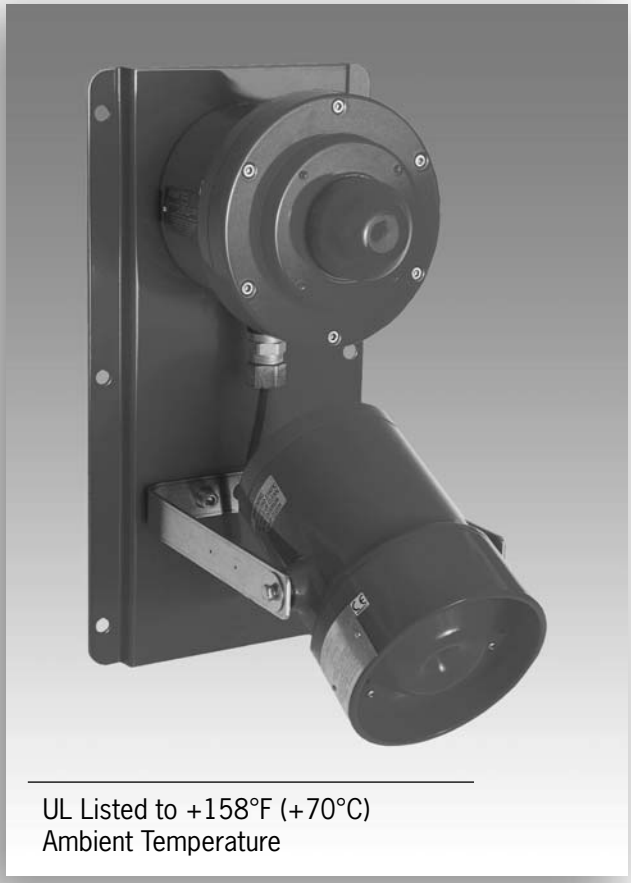


Stanchion Mount



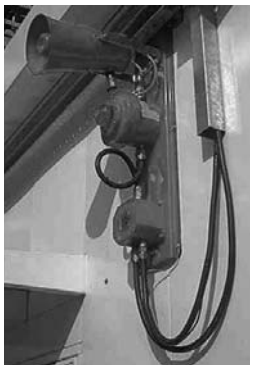
Net Luminaire Weights

Luminaire Housing with Guard	11.0 lbs.
Add mounting modules	
Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.



UL Listed to +158°F (+70°C)
Ambient Temperature

Horn/Strobe Combination Unit



Truly a unique product offering with integral visual and audible signaling devices pre-wired for simultaneous output activation.

- Suitable for Class I, Division 2 applications
- Strobe light and audible tone generator in one package
- Mounts with ease and facilitates quick field wiring
- UL, cUL, Ex and ATEX for worldwide acceptance

This range of light weight all GRP, explosionproof horns intended for use in potentially explosive atmospheres has been designed with high ingress protection to cope with the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries. The flamepaths, flare and the body, are manufactured completely from a UV stable glass reinforced polyester. Stainless steel screws and sinter are incorporated thus ensuring a corrosion free product. A tapered flamepath is used to overcome the problems of assembly of parallel spigot flamepaths.

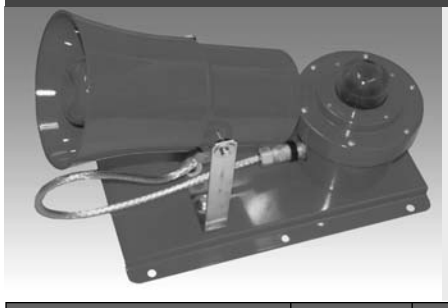
Certifications & Compliances

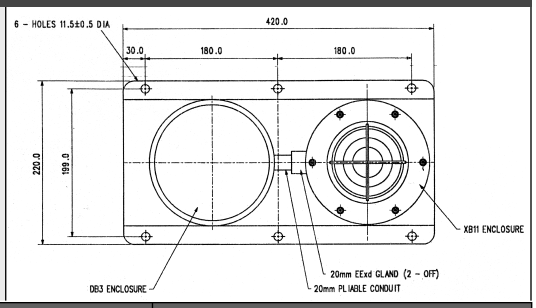
- UL Listed for USA and Canada
  - Hazardous locations:
    Class I, Div. 2, Groups A, B, C & D
    Class I, Zones 1 & 2, AExd IIC T4
  - Ordinary locations: Audible-Signal device
- ATEX approved
- NEMA 4X & 6, IP66 & 67
- Certified temperature -67°F to +158°F
  -55°C to +70°C

Key Features & Benefits

- All GRP corrosion free
- Up to 108dBA output at 10 feet
- Integral volume control
- 27 tones, user selectable
- Horn/Strobe Combination Unit available

Visual & Audible Combination Units—Hazardous Locations, Weatherproof

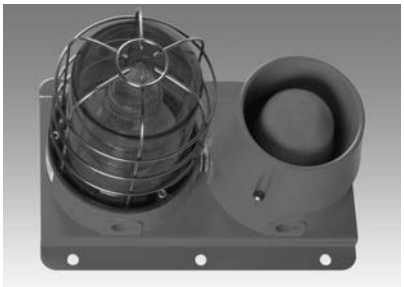




Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 2GD	24V DC	Red/Red	803130	DB3/XB11B24V RED/RED	DB3/XB11, EExd IIB T5, choice of 27 tones, 115dB(A) at 1m output, 29 Cd, no labels, 1 x M20 entry
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Natural Black	869200	DB3/XB11UL24V RED/NB	DB3/XB11, GRP material, NEMA 4X & 6, choice of 27 tones, 106dB(A) at 10 feet output, 29 Cd, no labels, 1 x ½" NPT entries
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Red	869205	DB3/XB11UL24V RED/RED	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red/Red	869210	DB3/XB11UL110V RED/RED	



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red/Red	62500182	DB1P/SM87HXBUL 24V RED/RED	24V DC, alloy sounder, interconnected to, painted red stainless steel baseplate, alloy 5 joule beacon
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Red	62500183	DB3/SM87HXBUL 24V RED/RED	GRP sounder interconnected to, painted red stainless steel baseplate, alloy 5 joule beacon



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
Ex II 2GD	24V DC	Red/Red	62500009	DB12/XB13 24V RED/RED	IP66 & 67 weatherproof only, 24V DC, GRP sounder interconnected to, on a painted red stainless steel baseplate, a IP66 & 67 weatherproof only, GRP 10 joule beacon



DB16

Loudspeakers and tone generators provide high decibel communication for messaging, alert and evacuation in harsh and hazardous locations.

- Metallic and non-metallic housings
- Explosionproof and Class I, Division 2 horns and speakers
- Mounting brackets that allow a full 180° swivel
- Products designed for both conduit wiring and/or cable connection (NPT or metric entries available)
- Selectable tones

This range of loudspeakers, intended for use in potentially explosive gas and dust atmospheres, has a power rating of up to 30 Watts and is suitable for use in the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries. The flamepaths, flare and body, are manufactured from a UV stable glass reinforced polyester. Stainless steel screws and mounting stirrup are incorporated to ensure a corrosion-free product.

Primary Applications

- Plant-wide alarm notificiaton
- Audible process alarms

Typical Industries

- Refineries
- Chemical plants
- Oil and gas exploration
- Marine terminals for transportation & storage

Certifications & Compliances

- UL Listed for USA and Canada
  - Hazardous locations:
    Class I, Div 2, Groups A, B, C, D*
    Class I, Zone 1, AExde IIB/IIC T3/T4*
  - Ordinary locations: Signalling Speaker
- ATEX approved
- NEMA 4X & 6, IP66 and IP67
- Certified temperature -67°F to +104°F
  -50°C to +40°C

Key Features & Benefits

- GRP corrosion-free flamepath
- Up to 112dBA at 30 Watts at 10 feet*
- Power tappings via integral transformer
- Ratcheted swivel mounting stirrup
- Stainless steel fixtures
- 100V line or 8 ohm versions available

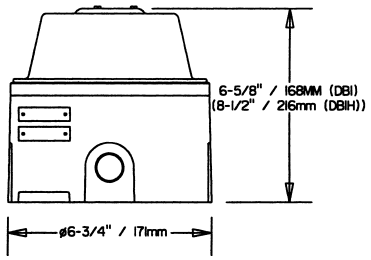
*Model dependent

DB1 — 103dB(A) @ 10ft Horn—Explosionproof



Certification UL Listed for:	UL Ex ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Temperature	-13°F to +158°F -25°C to +70°C
Ingress Protection	NEMA 4X IP66
Material	Alloy
Entries	Up to 3 x ½" or ¾" NPT, 20mm, 25mm
Weight	7.7lb/3.5kg (model dependent)
No. of Tones	Multiple tones available

Options: Body color, certification, voltages 12–48V DC, 110V AC



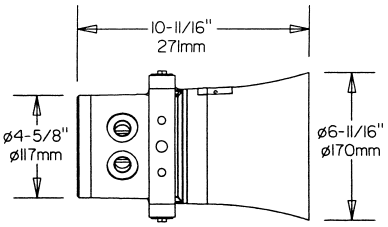
Certification	Output	Ordering Code	Catalog #	Standard Product Configuration
ATEX approved Ex II 2GD	103dB(A)	801001	DB1BA024A1A3NNNR	Choice of 6 tones, red finish
UL Listed, Class I, Div 2, Groups C & D	Up to 96dB(A) @ 10ft	869111	DB1PULA024D1D2NNNR	Two-stage alarms, with 26 tones, 24V DC, alloy, red body color, no tag or duty labels, 2 x ¾" NPT entries
UL Listed, Class I, Div 2, Groups C & D	Up to 103dB(A) @ 10ft	869115	DB1HPULA024D1D2NNNR	
UL Listed, Class I, Div 2, Groups C & D	Up to 96dB(A) @ 10ft	17300108	DB1PULA110C1C3NNNR	Sounder, 110V AC, 2 x ½" NPT entries, red painted enclosure

DB3 — 108dB(A) @ 10ft Horn—Hazardous Locations



Certification UL Listed for:	cULus Ex ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2, AExd IIC T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP65 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, 20mm
Weight	13.2lb/6.0kg
No. of Tones	27 + 5 Programmable

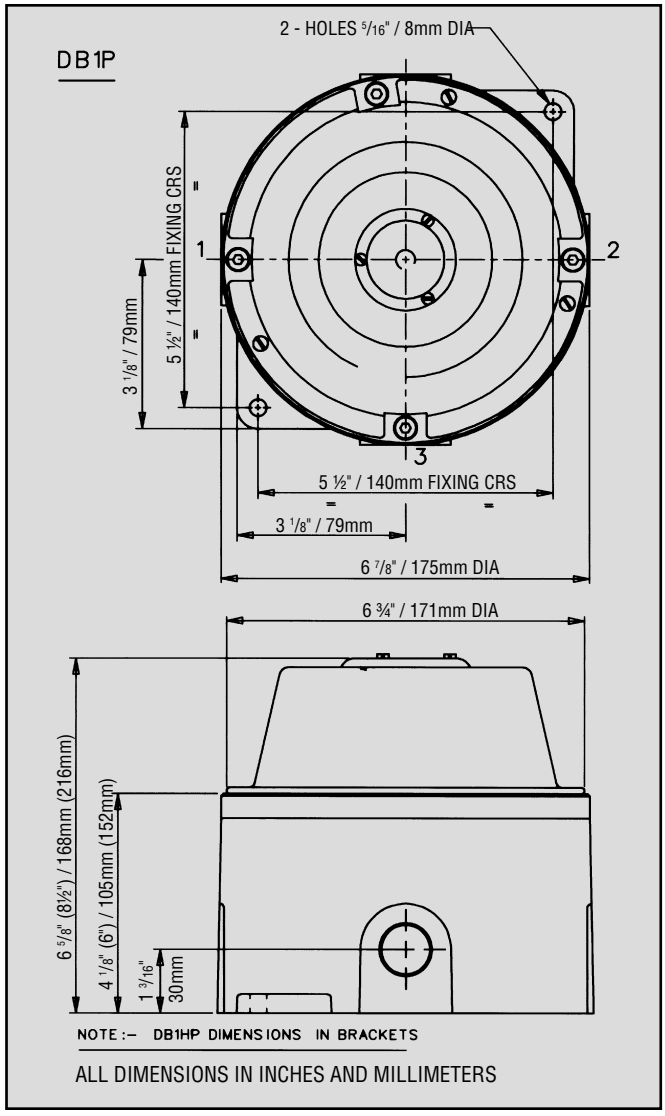
Options: Body color, certification, voltages 12–48V DC, 110V–254V AC



Certification	Body Color	Voltage	Type*	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	12–48V DC	Single Stage	869131	DB3UL048N2CNRZ	27 tones, no tag or duty labels, 108 dB(A) output, NEMA 4X & 6, 2 x ½" NPT entries with certified plug
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	12–48V DC	Two Stage	869132	DB3PUL048N2CNRZ	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	110V AC	Single Stage	869135	DB3UL110N2CNRZ	
ATEX Ex II 2GD	Natural Black	12–48V DC	Two Stage	803121	DB3PD048N2BNNZ	27 tones, no tag or duty labels, 2 x M20 entries with one certified plug fitted
ATEX Ex II 2GD	Natural Black	240V AC	Single Stage	803122	DB3D240N2BNNZ	
ATEX Ex II 2GD	Red	12–48V DC	Two Stage	803123	DB3PD048N2CNRZ	
ATEX Ex II 2GD	Red	240V AC	Single Stage	803124	DB3D240N2BNRZ	
ATEX Ex II 2GD	Red	12–48V DC	Single Stage	803125	DB3D048N2CNRZ	

***Single Stage**
4 wired diode monitored connection—on board diode allows unit to be operated in supervisory mode when monitoring line in reverse polarity.

***Two Stage**
Switchable unit available in DC versions only either by:
(i) Reversing the polarity of the supply, or,
(ii) By a 3 wire common +ve system, switching between the –ve lines.



Specification—DB1 Unit

Certification:	UL Listed for Class I, Div. 1. Groups C & D and Class I, Zone 1. UL Listing No. E187688. **ATEX Approved:** EExd, IIB T3. Cert. No. Baseefa 02ATEX0207 for DB1(P). Cert. No. Baseefa 02ATEX0209 for DB1H(P).
Material:	LM25 corrosion resistant alloy with stainless steel cover screws. ABS flare.
Finish:	Epoxy paint finish as standard or to customer's specification.
Max Sound Levels:	DB1P=93±3dB(A) (86±3dB(A) for 12V DB1). DB1HP=100 ± 3dB(A) @ 10 feet. Note: Sound level is dependent upon the tone selection.
Weight:	DB1P 7.7lb/3.5kg approx. DB1HP. 12.3lb/5.6kg approx.
Certified Temperature:	-13°F to +158°F. -25°C to +70°C.
Ingress Protection:	NEMA 4X, IP66.
Tone Selection:	27 user selectable tones.

Tone	Tone Frequency	Tone	Tone Frequency
1	Alt Tones 800/970 Hz at 1/4 sec.	15	554 Hz for 0.1S/440 Hz for 0.1S
2	Sweeping 800/970 Hz at 7 Hz	16	Int 660 Hz 150 mS on 150 mS off
3	Sweeping 800/970 Hz at 1 Hz	17	Int 660 Hz 1.8 sec. on 1.8 sec. off
4	Continuous at 2850 Hz	18	Int 660 Hz 6.5 sec. on 13 sec. off
5	Sweeping 2400–2850 Hz at 7 Hz	19	Continuous 660 Hz
6	Sweeping 2400–2850 Hz at 1 Hz	20	Alt 554/440 Hz at 1 Hz
7	Slow Whoop	21	Int 660 Hz at 7/8 Hz
8	Sweep 1200–500 Hz at 1 Hz	22	Int 2850 Hz 150 mS on 100 mS off
9	Alt Tones 2400/2850 Hz at 2 Hz	23	Sweep 800–970 Hz at 50 Hz
10	Int Tones of 970 Hz at 1 Hz	24	Sweep 2400–2850 Hz at 50 Hz
11	Alt Tones 800/970 Hz at 7/8 Hz	25	3x970 Hz pulses 0.5 off, 1.5 off
12	Int Tone at 2850 Hz at 1 Hz	26	3x2850z pulses 0.5 on/0.5 off, 1.5 off.
13	970 Hz at 1/4 sec. on 1 sec. off	27	Int 3100 Hz 0.3 sec. on 0.7 sec. off
14	Continuous at 970 Hz		

Single Stage
4 wired diode monitored connection—on board diode allows unit to be operated in supervisory mode when monitoring line in reverse polarity.

Two Stage
Switchable unit available in DC versions only either by:
(i) Reversing the polarity of the supply, or,
(ii) By a 3 wire common +ve system, switching between the –ve lines.

Current Consumption:

	DB1P	DB1HP
12V	125mA	900mA
24V	250mA	700mA
48V	250mA	–
110V	60mA	200mA

Labels:	Duty and tag labels optional.
Entries:	Up to 3 x ½" or ¾" NPT.
Terminals:	Suitable to accept up to 12 AWG conductor size.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Certification	Material	Voltage	Cable Entries	Duty Labels	Tag Label	Features	Finish
					N	N	N	R

Unit Type
DB1
DB1H
DB1P
DB1HP

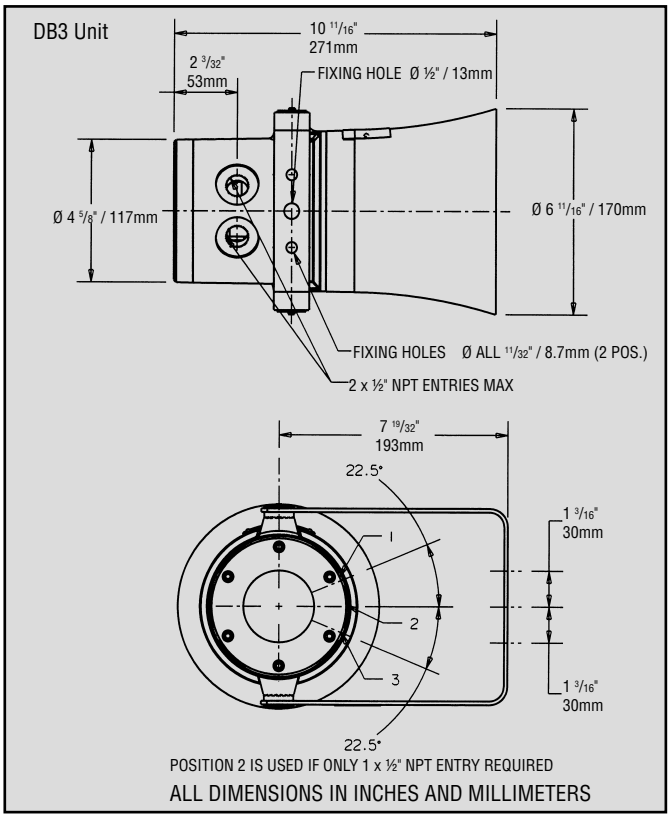
Cert.	Code
ATEX/CENELEC	B
UL(DBIP & DB & IHP only)	UL

UL – available Alloy only.
– 12V DC, 24V DC, 48V DC, 110V AC only

Material	Code
Stainless Steel	S
Alloy	A

Voltage	Code
12V DC	012
24V DC	024
110V AC	110
240V AC	240

Entries	Code
1 x 20mm	A3
1 x 25mm	B3
1 x ½" NPT (UL only)	C3
1 x ¾" NPT (UL only)	D3
2 x M20	A1A2
2 x M25	B1B2
2 x ½" NPT	C1C2
2 x ¾" NPT	D1D2



Terminals:	4 x 14 AWG (AC), 6 x 14 AWG (DC).
Mounting:	Stainless steel bracket with rachet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	UP TO 2 x ½" NPT.
Tone Selection:	27 user selectable tones available.
Horn/Strobe Unit:	The DB3 may be combined with an MEDC strobe to create a combined audio/visual alarm. Contact MEDC for price and specification.
Two Stage Unit: DB3P	Switchable between any two tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two –ve lines. Note: Two stage unit available in DC versions only.
3 & 4 Tone unit:	Remote 3 & 4 tone unit available—contact sales office for details.

Specification—DB3 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 2, Groups A, B, C, D. Class I, Zones 1 & 2, AExd IIC T4. UL Listing No. E203310. – Ordinary locations: Audible-Signal device. UL Listing No. S8116. **ATEX approved:** CENELEC EN50014, 18, 19. Cert. No. BAS00ATEX2097X, EExd IIC. Cert. No. BAS00ATEX2098X, EExde IIC. Zones 1 & 2.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Swivel bracket and captive cover screws in stainless steel.
Finish:	Body and horn, natural black or epoxy paint coated to client's color requirements.
Sound Output:	DB3 105 ±3dB(A) Typical at 10 feet (tone dependent).
Volume Control:	Integral volume control

*Nominal Output (dBa)	Input Current (mA)
83	50
95	100
98	150
101	200
102	250
104	300
105	350

*Output measured with 24V input voltage. Tone set to 970Hz continuous.

Weight:	13.2lb/6.0kg approx.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Voltage:	Up to 48V DC Up to 254V AC.

Current Consumption:

V	I
12V DC	760mA
24V DC	380mA
48V DC	190mA
110V AC	135mA
120V AC	124mA
220V AC	68mA
230V AC	65mA
240V AC	62mA
254V AC	59mA

Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type | Certification | Voltage | Labels | Entries | Options | Color

N **N**

Type	Details
DB3	Standard unit
DB3P	Two stage (DC only)

Type	Code
EExd	D
UL Listed	UL

Voltage	Code
12V–48V DC	048
*110V AC	110
*120V AC	120
*240V AC	240

*DB3P not available in AC version.

Entries	Code
1 x 20 mm (EExd)	1B
2 x 20mm (EExd/EExde)	2B
1 x ½" NPT (UL only)	1C
2 x ½" NPT (UL only)	2C

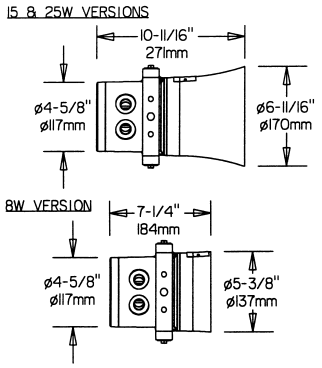
Finish	Code
Natural Black	N
Red	R

DB4 — 8-25 Watt Speaker—Hazardous Locations



Certification UL Listed for:	c UL us ATEX Class I, Div 2, Groups A,B,C,D Class I, Zone 1, AExd IIC T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Output	97 dB(A) at 1W at 10 feet 109 dB(A) at 25W at 10 feet
Entries	Up to 2 x ½" NPT, 20mm
Weight	11lb/5.0kg

Options: Body color, transformer, certification, power 25W, 15W, 8W



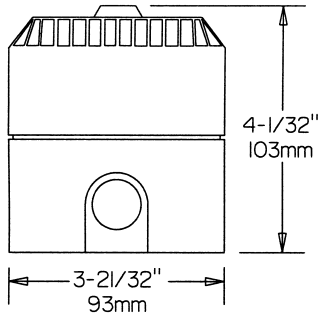
Certification	Power	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed Class I, Div 2, Groups A, B, C, D	25W	869142	DB425ULX(100)N2CNR	100V line transformer, no labels, 2 x ½" NPT entries, red finish
UL, cUL Listed Class I, Div 2, Groups A, B, C, D	25W	869144	DB425ULX(70)N2CNR	70V line transformer, no labels, 2 x ½" NPT entries, red finish
ATEX Approved ExII 1G	15W	804215	DB415DXN2BNZ	100V line transformer, no labels, 2 x M20, one certified plug, flameproof enclosure, natural black finish
ATEX Approved ExII 1G	25W	804225	DB425DXN2BNZ	

DB5 — Up to 93dB(A) @ 10ft Horn—Intrinsically Safe



Certification FM Approved for:	FM ATEX Class I, Div 1 & 2, Groups A, B, C, D
Certified Temperature	-4°F to +131°F -20°C to +55°C
Ingress Protection	NEMA 4 IP65
Material	Corrosion-free ABS
Entries	Up to 2 x 13/16" via knockouts
Weight	0.7lb/0.3kg
No. of Tones	26

Options: Body color, certification, voltages 12V–240V DC



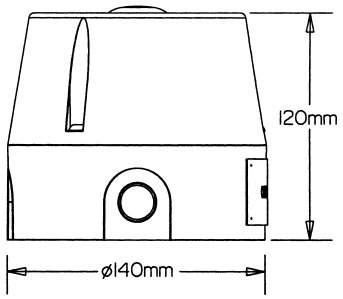
Certification	Voltage	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved ExII 1G	12V DC	805001	DB5B012NR	Intrinsically safe, up to 3 x M20 entries via knockouts, no labels, natural red finish
ATEX Approved ExII 1G	24V DC	805002	DB5B024NR	
FM Approved for Class I, Div 1 & 2, Groups A, B, C, D	24V DC	869150	DB5FM2NR	Intrinsically safe, 26 tones, 93 dB(A) output, natural red body color, no tag or duty labels, 2 x 13/16" entries via knockouts

DB12 — 110dB(A) Sounder—Weatherproof & Heavy Duty



Certification UL Listed for:	Weatherproof
Certified Temperature	-55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 20mm
Weight	1kg
No. of Tones	27 + 5 programmable

Options: Body color, voltages 12V & 24V DC



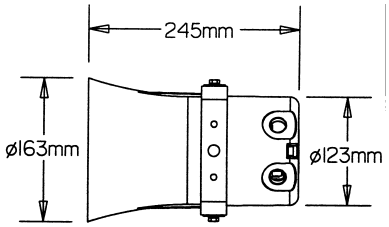
Certification	Voltage	Type	Ordering Code	Catalog #	Standard Product Configuration
CE Certification	115/230V AC	Single Stage	808003	DB12115NN	Weatherproof, dust-tight, no labels, choice of 27 tones, natural red finish, 3 x M20 knockouts
CE Certification	24V DC	Two Stage	869155	DB12P024NN	Weatherproof, choice of 27 tones, natural red finish, 3X M20 knockouts

DB15 — 110dB(A) Tone Generator—Weatherproof & Heavy Duty



Certification UL Listed for:	Weatherproof
Certified Temperature	-55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	2.6kg
No. of Tones	27 + 5 programmable

Options: Body color, two stage alarm (DB15P) version, earth continuity, EOL resistor, voltages 12–48V DC, 110–254V AC

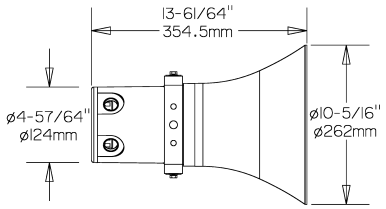


Certification	Voltage	Type	Ordering Code	Catalog #	Standard Product Configuration
CE Certification	12–48V DC	Two Stage	808110	DB15P048NN	Weatherproof, dust-tight, no labels, choice of 27 tones, painted gray finish
CE Certification	12–48V DC	Two Stage	808115	DB15P048NR	Weatherproof, dust-tight, no labels, choice of 27 tones, painted red finish
CE Certification	240V AC	Single Stage	808120	DB15240NN	Weatherproof, dust-tight, choice of 27 tones, natural gray finish
CE Certification	240V AC	Single Stage	808125	DB15240NR	Weatherproof, dust-tight, choice of 27 tones, painted red finish

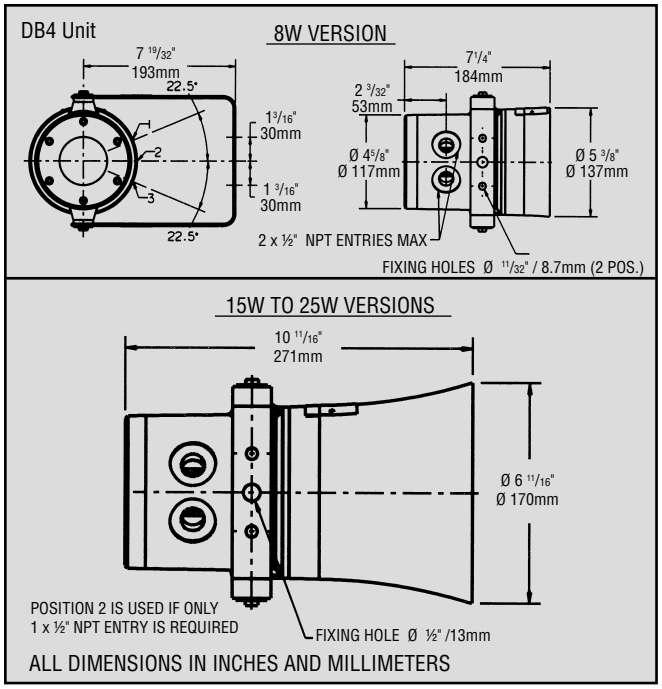
DB16 UL — 30 Watt Speaker — Hazardous & Ordinary Locations

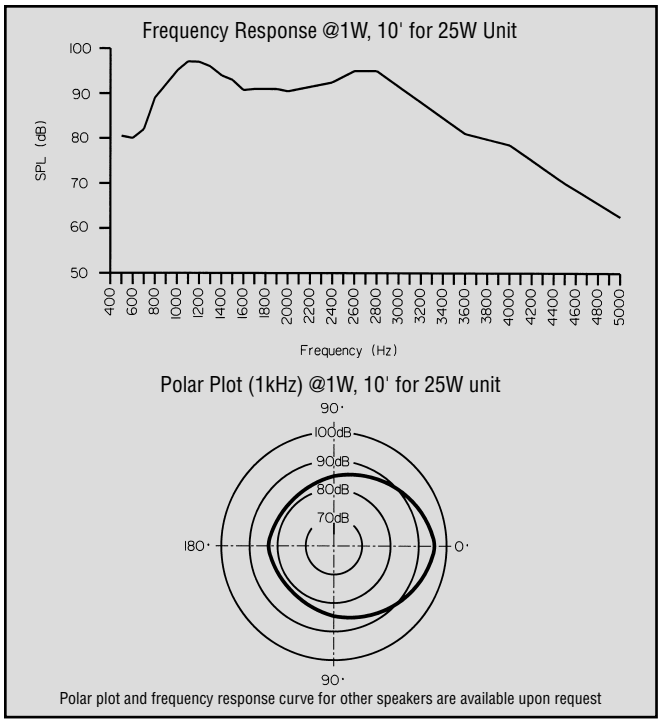


Certification UL Listed for:	c UL us Ex ATEX Class I, Div 2, Groups C & D/A,B,C,D Class I, Zone 1, AExde IIB T3/IIC T110°C
Certified Ambient Temperature	-61°F to +90°F -50°C to +40°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Output Groups A, B, C, D:	Groups C & D:100dB(A) at 1Watt at 10 ft. 112dB(A) at 30 Watts at 10 ft. 3dB(A) less than C & D versions
Entries	Up to 2 x ½" NPT or 2 x ¾" NPT, 20mm, 25mm
Weight	12.1lb/5.5kg
Tappings @ 30 Watts	30, 25, 12, 6, 4, 2
Options: Body color, transformer	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	28600006	DB16UCXN2MPN	Unit suitable for gas Groups A, B, C, D, 70V line transformer, 2 x ½" NPT, one certified plug, natural black finish





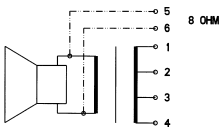
Polar plot and frequency response curve for other speakers are available upon request

Specification—DB4 Unit

Rated Power:	8, 15 or 25 watts RMS continuous (at 77°F).
Certification:	UL Listed for USA and Canada – Class I, Div 2, Groups A, B, C, D. – Class I, Zone 1, AExd IIC T4. UL Listing No. E203310. **ATEX approved:** EN50014, 18, 19. Cert. No.BAS00ATEX2097X, EExd IIC T4/T5. Cert. No. BAS00ATEX2098X, EExDC IIC T4/T5. Zones 1 and 2. Not for use in atmospheres containing carbon disulphide.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Swivel bracket in stainless steel. Captive cover screws in stainless steel.
Finish:	Body and horn, natural black or epoxy paint coated to client's color requirements.
Output:	97 dB(A) at 1 watt at 10 feet. 109 dB(A) at 25 watts at 10 feet. Measured in accordance with IEC 268.
Weight:	11lb/5.0kg approx. dependent on model.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Frequency Range:	400Hz to 8kHz.
Voice Coil Impedence:	8 ohms.

Transformer:

Used to vary the rated power by selecting different tappings (see table below).



Transformer Tappings

Transformer Tappings	Power 25W	15W	8W
1:2	25.0	15.0	8.0
2:3	12.5	7.5	4.0
3:4	6.0	5.0	2.0
1:3	4.0	4.0	1.5
2:4	2.0	2.0	0.7
1:4	1.0	0.8	0.4

Transformer Options:

i) Loop in/Loop out: (4 x 2) terminal tap change (8 terminals).

ii) Optional Tapping: 4 terminal tap change with 2 terminals (5 & 6) directly connected to driver (8 ohms).

Other tappings & driver impedances available on request.

Terminals:	8 x 14AWG Other terminal arrangements available on request.
Mounting:	Bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	Up to 2 x ½" NPT.

Ordering Requirements

DB4	Max. Rated Power	Certification	Transformer	Labels	Entries	Color
				N		

Power	Code
8 watt	8
15 watt	15
25 watt	25

Type	Code
EExd	D
UL lised	UL

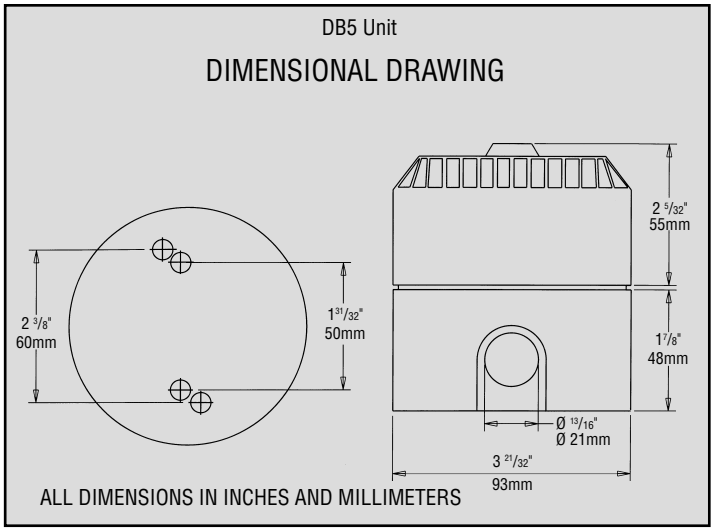
Transformer	Code
Yes	X*
None	N

*Std 100V Other values available, specify voltage.

Entries	Code
1 x M20 (EExd)	1B
2 x M20 (EExd/EExdel)	2B
1 x ½"NPT (UL lised only)	1C
2 x ½"NPT (UL lised only)	2C

To specify certified plug, suffix appropriate code with 'P'.
e.g. 2BP is 2 x M20 entries with one certified plug.

Color	Code
Natural Black	N
Red	R

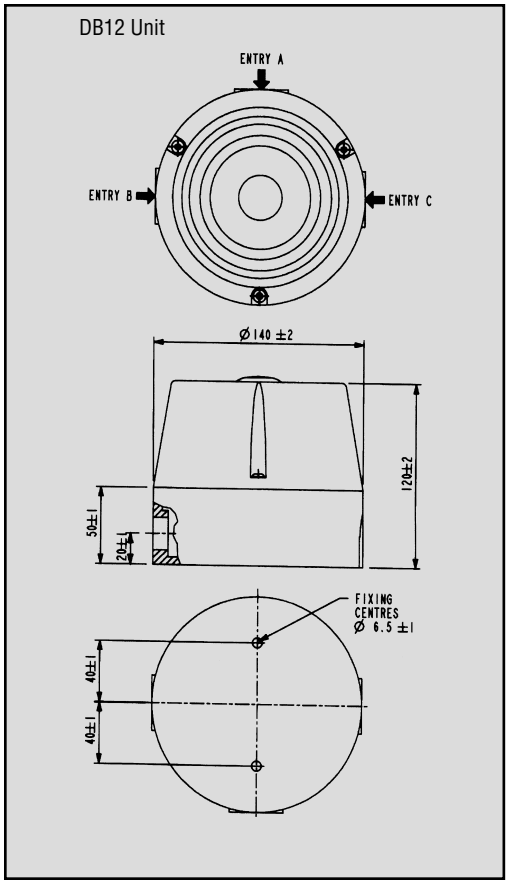


Specification—DB5 Unit

Certification:	1. FM approved for Class I, Div 1, Groups A, B, C, D. J.I. 3001835. 2. CSA certified to C22.2 Nos. 0, 0.4, 0.5, 25, 30, 205, Class I, Groups A, B & D, Cert. No. 79122. 3. ATEX approved, EN50014 and EN50020 & EN50284 EExia IICT4. 12/24V version Cert. No. BAS00ATEX 1259 (unit) and 01E2024 (system). 4. HSE(M) to EN50014, EN50020 and EN50303. EExia 1 Cert. No. MECS01ATEX4260 (unit) and 94Y7095 (system).
Material:	A.B.S. (Acrylonitrile Butadiene Styrene).
Finish:	Available in Red as standard.
Certified Temperature:	-4°F to +131°F. -20°C to +55°C.
Weight:	0.7lb/0.3kg.
Entries:	Up to 1 x 13/16" on each side via knockouts.
Terminals:	6 off suitable to accept up to 14 AWG.
Sound Output:	90± 3dB(A) at 10 feet for 12V and 24V versions. Typical max value only—variable with tone.

Current Consumption

24V model—14 mA max. nominal.
12V model—12 mA max. nominal.



Specification—DB12 Unit

Material:	UV stable glass reinforced polyester. Retained stainless steel cover screws.
Finish:	Self colored red as standard or epoxy coated to customer's specification.
Sound Output:	107± 3dB(A) at 1 meter. Typical value only—variable with tone.
Volume Control:	Integral volume control.

*Nominal Output (dBa)	Input Current (mA)
92	60
100	70
104	80
109	90

*Output measured with 24V input voltage. Tone set to 2850Hz continuous.

Tone Selection:	
Single Stage DB12:	27 user selectable tones.
Two stage Unit DB12P:	Switchable between any two tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two -ve lines. Note: Two stage unit available in DC versions only.
Weight:	1.0 kg. DC, 1.2kg AC
Operating Temperature:	–55°C to +70°C.
Ingress Protection:	IP66 & IP67.
Voltage:	DC: 12V, 24V AC: 115/230V.
Current Consumption:	24V operation 55mA–100mA. 115V operation 85mA–140mA. 12V operation 55mA–90mA. 230V operation 45mA–60mA.
Terminals:	6 x 2.5mm^2.
Labels:	Duty and tag labels available.
Cable Entries:	Up to 3 x M20 via knockouts.

AFNOR NF S 32 001 compliant version available—contact sales office for details.

Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type

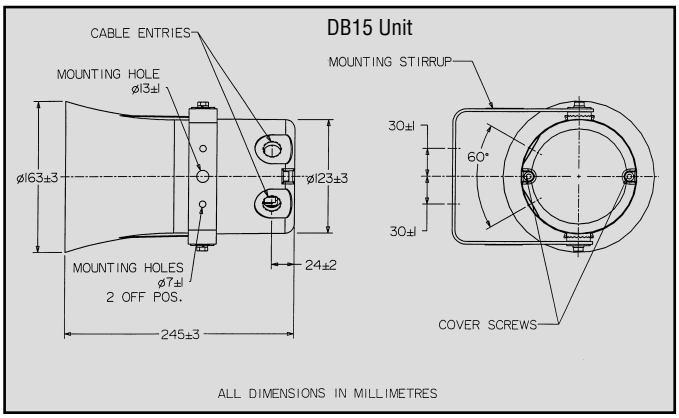
Type	Details
DB12	Standard Unit
DB12P	Two Stage (DC only)

Voltage

Voltage	Code
12V DC	012
24V DC	024
115/230V AC	115

Labels: **N**

Color: **N**



Tone Selection

DB15:	27 user selectable tones available. Additional 5 tones may be programmed.
DB15P (Two stage unit):	Switchable between any two of the 27 tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two –ve lines. Note: Two stage unit available in DC versions (DB15P) only.

AFNOR NF S 32 001 compliant version available—contact sales office.

Specification—DB15 Unit

Material:	Body & horn in UV stable, glass reinforced polyester. Swivel bracket in stainless steel. Cover screws in stainless steel.
Finish:	Body and horn, natural gray to RAL 7035 or epoxy paint coated to client's color requirements.
Sound Output:	DB15 117dB(A) Maximum.
Volume Control:	Integral volume control

*Nominal Output (dBa)	Input Current (mA)
100	150
105	250
108	350
110	450
112	550

*Output measured with 24V input voltage. Tone set to 970Hz continuous.

Weight:	2.6kg approx. dependent on model.
Temperature Range:	–55°C to +70°C.
Ingress Protection:	IP66 and IP67.
Voltage:	Up to 48V DC Up to 254V AC

Current Consumption:

V	I
12V DC	900mA
24V DC	600mA
48V DC	280mA
110V a.c	150mA
120V AC	175mA
220V AC	93mA
240V AC	86mA
254V AC	80mA

Terminals:	4 x 2.5mm² (AC), 6 x 2.5mm² (DC).
Earth Continuity:	Available.
Mounting:	Stainless steel bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	2 x M20 ISO.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component in the appropriate box.

Unit Type: **DB15** / **DB15P**

Voltage:

Voltage	Code
12V DC	012
24V–48V DC	048
*110V AC	110
*120V AC	120
*240V AC	240

*DB15P not available in AC version.

Options: **N**

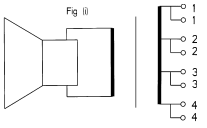
Color: **N**

Specification—DB16 Unit

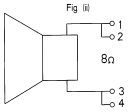
Rated Power:	30 Watts RMS continuous (at 77°F/25°C).
Certification:	**UL Listed for USA and Canada** – Hazardous locations: Class I, Div 2, Groups C & D, Class I, Zone 1, AExde IIB T3 Class I, Div 2, Groups A, B, C, D, Class I, Zone 1, AExde IIC T110°C UL Listing No. E203310 – Ordinary locations: Signalling Speaker. UL Listing No. 58847 CENELEC EN50014, 18, 19. IIB Version: Cert. No. Baseefa04ATEX0166X ATEX Ex II 2G EExde IIB T3 (Tamb. -50°C to +40°C) IIC Version: Cert. No. Baseefa04ATEX0167X ATEX Ex II 2GD EExde IIC T110°C (Tamb. -50°C to +40°C) Zones 1 and 2.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Mounting stirrup and fixtures in stainless steel.
Finish:	All natural or body and horn can be painted to client's requirements.
Output:	Groups C & D Version: Maximum output at 1W at 10 feet is 100dBA Maximum output at 30W at 10 feet is 112dBA Groups A, B, C, D Version: Maximum output at 1W at 10 feet is 97dBA Maximum output at 30W at 10 feet is 109dBA
Weight:	12lb/5.5kg approx.
Certified Temperature:	-67°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6,IP66 & IP67.
Frequency Range:	370Hz to 8kHz.
Voice Coil Impedence:	8 ohms.
Transformer:	Used by combining the rated power tappings below.

Transformer Tapping Options:

Transformer Tappings	Power (W)
1:2	30
2:3	25
3:4	12
1:3	6
2.4	4
1.4	2

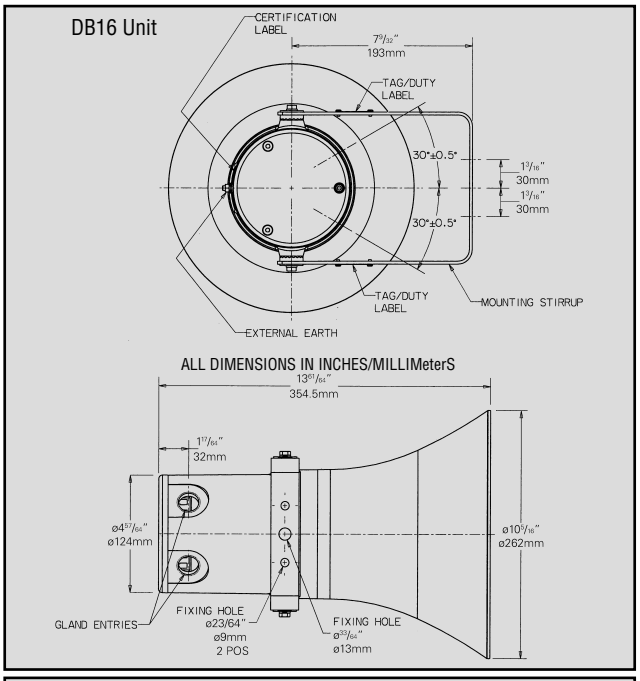


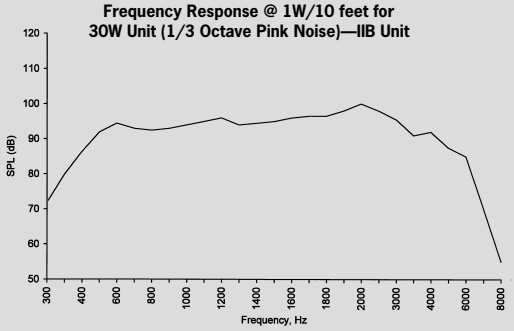
(i) Loop in/loop out (4 x 2) power tap change; 8 terminals



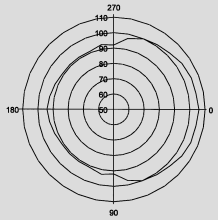
(ii) Loop in/loop out (2 x 2) 8 ohm; 4 terminals.

Terminals:	8 x 2.5mm².
Earth Continuity:	Available via optional earthing stud or by internal earth plate.
Mounting:	Via stirrup with ratchet facility.
Labels:	Optional stainless steel tag and duty labels.
Cable Entries:	Up to 2 x ½" NPT or 2 x ¾" NPT linto termination chamber, 20mm, 25mm





Polar Plot at 1Khz (IIB Unit)



Polar plot and frequency response curves for other speakers are available upon request.

Ordering Requirements

The following code is designed to help you in the selection of the correct unit. Build up the reference number by inserting the code for each feature into the appropriate box.

DB16 [ ] [ ] **N** [ ] [ ]

Certification

Certification	Code
UL (A, B, C, D)	UC
ATEX IIC	BC

Unit suitable for gas groups.

Transformer

Transformer	Code
Yes	X*
No	N

*Std 100V.
Other voltages available, specify voltage.

Options: **N**

Entries

Entries	Code
1 x M20	1B
2 x M20	2B
1 x M25	1C
2 x M25	2C
1 x ½" NPT	1M
2 x ½" NPT	2M
1 x ¾" NPT	1N
2 x ¾" NPT	2N

To specify certified plug, suffix appropriate code with 'P', e.g. 2BP is 2 x M20 entries with one certified plug.

Finish

Option	Code
Natural Black	N
Red	R



The Flex-Tone **ETH & ETHD** are heavy-duty, explosionproof tone-selectable signaling devices. Both are designed for Class I, Division 1, Groups B, C & D areas and are ideal for signaling warning or emergency conditions within process or manufacturing facilities.

The **Flex-Tone ETH tone-selectable signalers (ETH655 & ETH855)** are for use on standard electrical circuits and accept up to two contact closures providing two audible output signals selected from 55 tone choices. The ETHD855 tone-selectable signaler is used for applications (e.g., mining, tankers, laboratories) requiring electrical supervision of circuits.

The **Flex-Tone ETH remote speaker amplifier** (ETH645 & ETH845) is a speaker/amplifier for remote mounting and designed for use with the Flex-Tone (ETH640 & ETH840) Panel Control Signal Generator. The Control Panel Generator is mounted in a Division 2 area while the Flex-Tone ETH remote speaker amplifiers are remotely mounted in Division 1 areas. The ETH remote speaker amplifier (ETH645 & ETH845) operates from local available power sources. Because the Flex-Tone ETH remote speaker amplifier is available in multiple AC and DC voltages, your customer can mix and match speakers throughout their facility using available line power.

The **Flex-Tone Panel Control Signal Generator** (ETH640 & ETH840) controls a synchronous signaling sound to all ETH remote speaker amplifiers. It is ideal for applications where simultaneous signaling of a high decibel signal is needed. The Flex-Tone Panel Control Signal Generator generates 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24V DC or 120V AC external voltage source such as an output of a PLC.



Product Breakdown — New Audible Products, Class I Division 1

Description	Catalog Reference	Operating Voltage	Operating Circuit
Flex-Tone heavy-duty tone-selectable signaling device	ETH655 & ETH855	24V DC, 36V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation.
Heavy-duty tone-selectable signaling device, diode polarized	ETHD855	20–31V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Flex-Tone Panel Control Signal Generator *Suitable for Div. 2 areas only*	ETH640 & ETH840	24V DC, 24AC/DC 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation and communication to remote speaker amplifiers can be connected to a network by RS485 serial protocol.
Flex-Tone remotespeaker/ amplifier for use with Flex-Tone Panel Control Signal Generator	ETH645 & ETH845	24V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation.

Application — Flex-tone Explosionproof Audible Signals Are Used

Industries

- Offshore platforms and drilling rigs
- Refineries, chemical and petrochemical plants
- Pharmaceutical plants
- Food and Beverage plants
- Waste water and sewage treatment plants
- Pulp and paper mills

Uses

- Communication
- Security alert
- Safety signaling in industrial and process facilities
- Emergency evacuation signaling
- Messaging



Explosionproof Electronic Signal Stand-Alone Unit

Cooper Crouse-Hinds **Flex-Tone Series Electronic Signals** are explosionproof, heavy-duty, tone-selectable signaling devices capable of producing volume-controlled, high-decibel tones. Certified for use in Class I, Division 1, Group B, C & D applications, the Flex-Tone Series is ideal for signaling warning or emergency conditions.

The **Flex-Tone ETH855** accepts up to two contact closures and delivers two audible output signals selected from 55 available tones. The two tones are selected by setting miniature switches within the unit. One of the tones can be assigned a priority status to override the other tone.

The **Flex-Tone ETHD855** is diode polarized for applications requiring electrical supervision of signaling circuit field wiring. The signal delivers one audible output signal selected from the 55 tones available.

Primary Applications
- For use where a high-decibel sound is required for alert or evacuation in hazardous locations

Key Features & Benefits
- Heavy duty zinc cast construction.
- 55 tone capacity—No additional tone modules needed
- Internal volume control with internal potentiometer.
- Corrosion-resistant heat-flowed epoxy finish
- Supplied with factory sealed ½-inch threaded fitting for quick installation
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket
- Mounts onto any surface using only three bolts
- 30-inch numbered wire leads

Certifications & Compliances
- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

Materials & Finishes
- Body—Heavy-duty zinc cast construction
- External hardware—Stainless steel Ratings
- 24V DC, 36V DC, 125V DC, 250V DC, 24V AC, 120V AC & 240V AC (ETH)
- 20–31V DC (ETHD)

Output Sound Pressure
- 109 decibel (dBA) output

Ordering Information

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
Explosionproof, TWO OUTPUT			
ETH855/24	24V DC	0.061	0.470
ETH855/36	36V DC	0.077	0.600
ETH655/24	24V AC, 50/60Hz	0.250	1.320
ETH655/120	120V AC	0.088	0.260
ETH655/240	240V AC	0.091	0.190
ETH855/125	125V DC	0.031	0.130
ETH855/250	250V DC	0.019	0.070
DIODE POLARIZED, Explosionproof, SINGLE OUTPUT FOR FIRE ALARM APPLICATIONS			
Meets min. 75 dBA for fire alarm indication			
ETHD855/24	20–31V DC	0.061	0.400



Explosionproof Remote Speaker / Amplifier

Cooper Crouse-Hinds **Flex-Tone Series Explosionproof Remote Speaker/Amplifier** is designed for remote mounting in Division 1 areas where simultaneous high-decibel signaling is required.

Used in connection with the Panel Control Signal Generator, the **Flex-Tone ETH845** operates directly from local power sources, allowing remote speaker/amplifiers of different voltages to be connected within the same system. Available in both AC and DC voltages, the Flex-Tone 3 can be mixed and matched throughout an application using the available line power.

ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on the following page.

Primary Applications

- For use where simultaneous signaling of a high-decibel sound is required for alert or evacuation in hazardous locations.

Key Features & Benefits

- Heavy duty zinc cast construction.
- Individual volume control.
- Corrosion-resistant heat-flowed epoxy finish.
- Supplied with factory sealed 1/2-inch threaded fitting for quick installation.
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
- Mounts onto any surface using only three bolts.
- 30-inch numbered wire leads.

Certifications & Compliances

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

Materials & Finishes

- Body—Heavy-duty zinc cast construction
- External hardware—Stainless steel

Ratings

- 120V AC, 240V AC, 125V DC and 250V DC Output Sound Pressure
- 109 decibel (dBA) output

Ordering Information

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
Explosionproof REMOTE SPEAKER/AMP			
ETH845/24	24V DC	0.061	0.470
ETH645/24	24V AC, 50/60Hz	0.250	1.320
ETH645/120	120V AC	0.088	0.260
ETH645/240	240V AC	0.091	0.190
ETH845/125	125V DC	0.031	0.130
ETH845/250	250V DC	0.091	0.070

* ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on the following page.

ETH845 Series Remote Speaker/Amplifiers **accept a 10V AC audio signal** from Flex-Tone Panel Control Signal Generator.



Cooper Crouse-Hind/MEDC **Flex-Tone Series Panel Control Signal Generator** controls and initiates a synchronous signaling sound from all Flex-Tone 3 remote Speaker/Amps installed in a system. The Panel Control Signal Generator is mounted in a Division 2 area, while controlling the Flex-Tone 3 Speaker/Amps that are remotely mounted in Division 1 areas.

The Panel Control Signal Generator produces 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24V DC or 120V AC external voltage source such as an output from a PLC.

Primary Applications

- Hazardous area applications calling for high-decibel output with simultaneous signal delivery over all speakers installed in a system
- Emergency warning systems, plant evacuation alarms, security intrusion alarms, process monitoring, shift start and dismissal horns, and paging signals

Key Features & Benefits

- 27 tone capability—No additional tone modules needed
- Centralized programmable tone selection
- PLC compatible
- System-wide priority tone
- 24V DC battery backup terminals
- Short circuit protected

Certifications and Compliances

- Class I, Division 2, Groups A, B, C & D
- Class II, Division 2, Groups F & G
- Class III
- UL 464 and 1604 Listed
- cUL C22.2 No. 205
- CE Marked—Cenelec LV & EMC Directives
- NEMA 3R, IP 44

Materials & Finishes

- Zinc-cast construction with an epoxy powder coat finish

Ratings

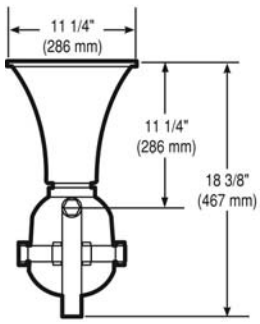
- See table below

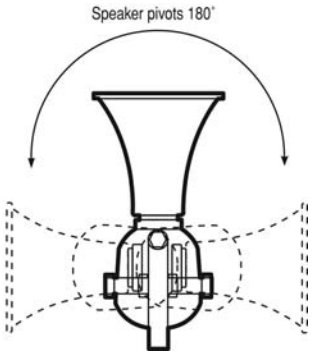
Ordering Information

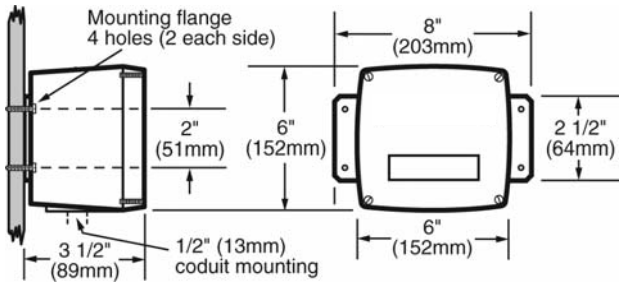
Catalog Number	Voltage	Input Card Activation Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
PANEL CONTROL SIGNAL GENERATOR				
ETH840/24E74	24V DC	24V DC	0.10	0.74
ETH640/24E13	24V AC, 50/60Hz	24V DC	0.10	1.30
ETH640/120E36	120V AC, 50/60Hz	24V DC	0.10	0.36
ETH640/120M38	120V AC, 50/60Hz	120V AC	0.10	0.38
ETH640/120E32	120V AC, 50/60Hz	24V DC	0.10	0.32
ETH640/240E20	240V AC, 50/60Hz	24V DC	0.10	0.20
ETH840/125E21	125V DC	24V DC	0.10	0.21
ETH840/250E10	250V DC	24V DC	0.02	0.10
ETH640/120M31	120V AC, 50/60Hz	120V AC	0.10	0.31
ETH640/240M20	240V AC, 50/60Hz	120V AC	0.10	0.20
ETH840/125M20	125V DC	120V AC	0.10	0.20
ETH840/250M10	250V DC	120V AC	0.02	0.10
ETH640/120R31	120V AC, 50/60Hz	RS485	0.10	0.31
ETH640/240R20	240V AC, 50/60Hz	RS485	0.10	0.20
ETH840/125R20	125V DC	RS485	0.10	0.20
ETH840/250R10	250V DC	RS485	0.02	0.10

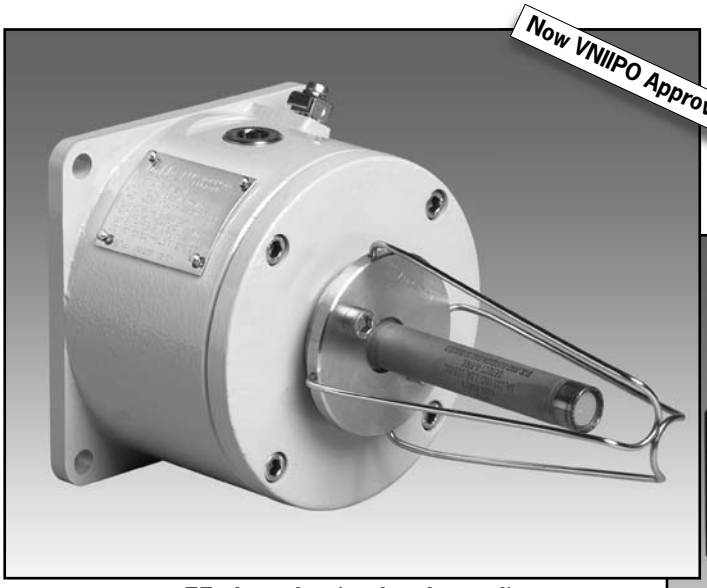
* Flex-Tone Panel Control Signal Generator must be used with Cooper Crouse-Hinds ETH845 Remote Speaker/Amps on page 77.

DIMENSIONS—FLEX-TONE SERIES AUDIBLE SIGNALING DEVICES

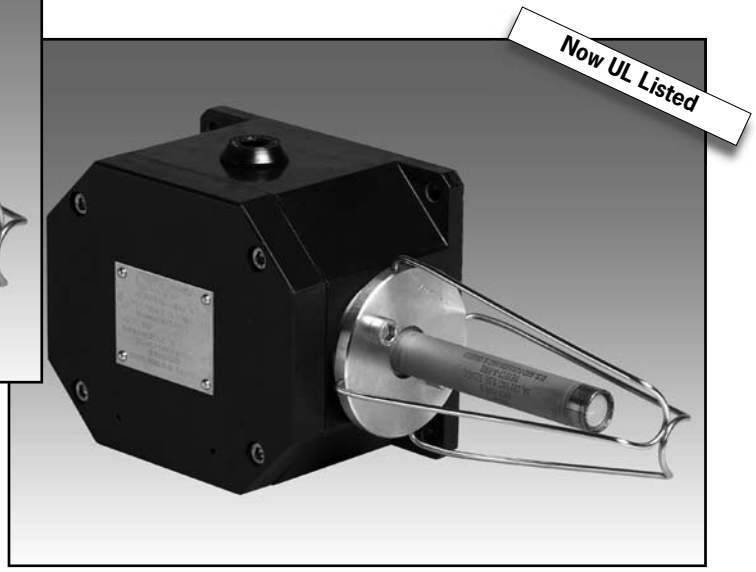








EExd version (optional guard)



EExia/EExem/UL versions (optional guard)

The MEDC heat detector has been designed for use in hazardous environments. These units are suitable for fire alarm and/or suppression systems in offshore and onshore applications including paint spray booths, flammable material stores, turbine rooms, extract ductwork and other hazardous areas throughout the oil & gas, petrochemical and process industries.

Comprising a Fenwal rate-compensated detector with all-stainless steel external construction, mounted to either a type SM87 marine grade alloy enclosure (EExd version) or JB10 corrosion-free GRP enclosure (EExia, EExem/UL versions). The contact in the detector CLOSES at alarm temperature.

To select appropriate temperature setting see specification on reverse.

Primary Applications

- Compressor turbine/generator skids
- Switchgear or motor control status rooms
- Process tank areas or transmission lines

Typical Industries

- Power generation
- Nuclear plants
- Chemical processing
- Upstream/downstream oil & gas

Certifications & Compliances

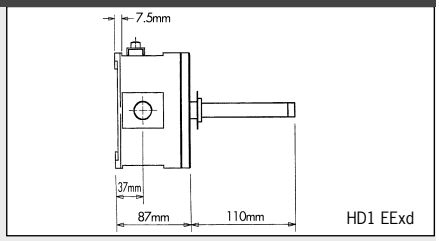
- Zone 0, Zone 1 and Zone 2
- EExia IIC T4/T6, EExd IIB T3/T6 or EExem II T6
- ATEX approved – Ex II 1G (EExia)
  – Ex II 2G (EExd/EExem)
- BASEEFA certified
- UL listed for USA and Canada
  – Class I, Div 2, Groups A, B, C, D
- GOST 'R' & 'K' certified
- Chinese (CQST) certified
- IP66 & IP67
- Certified temperature:
  -20°C to +125°C (EExd)*
  -20°C to +55°C (EExem/UL)
  -55°C to +55°C (EExia)
- Stainless steel probe
- Detector temperature settings:
  60°C to 385°C, (140°F to 725°F)
- Marine grade Alloy or GRP enclosure
- Optional guard

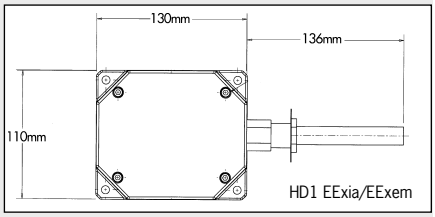
*Model dependent

HD1 — Heat Detector — Explosionproof & Intrinsically Safe



Certification 	ATEX, GOST 'R' & 'K', Chinese
Flameproof	ATEX Ex II 2G, EExd IIB T6
Increased Safety	ATEX Ex II 2G, EExem II T6
Intrinsically Safe	ATEX Ex II 1G, EExia IIC T6
Certified Ambient Temperature	-20°C to +125°C EExd (T3) ATEX/GOST 'R' -20°C to +55°C EExd (T6)/EExem -55°C to +55°C EExia
Ingress Protection	IP66 & 67
Material	Marine Grade Alloy (EExd) Corrosion-free GRP (EExia/EExem)
Temperature Settings	140°F to 725°F (60°C to 385°C)
Entries	2 x M20
Weight	1.1–2.0kg (model dependent)
Options: Enclosures, color, tag and duty labels, temperature setting	



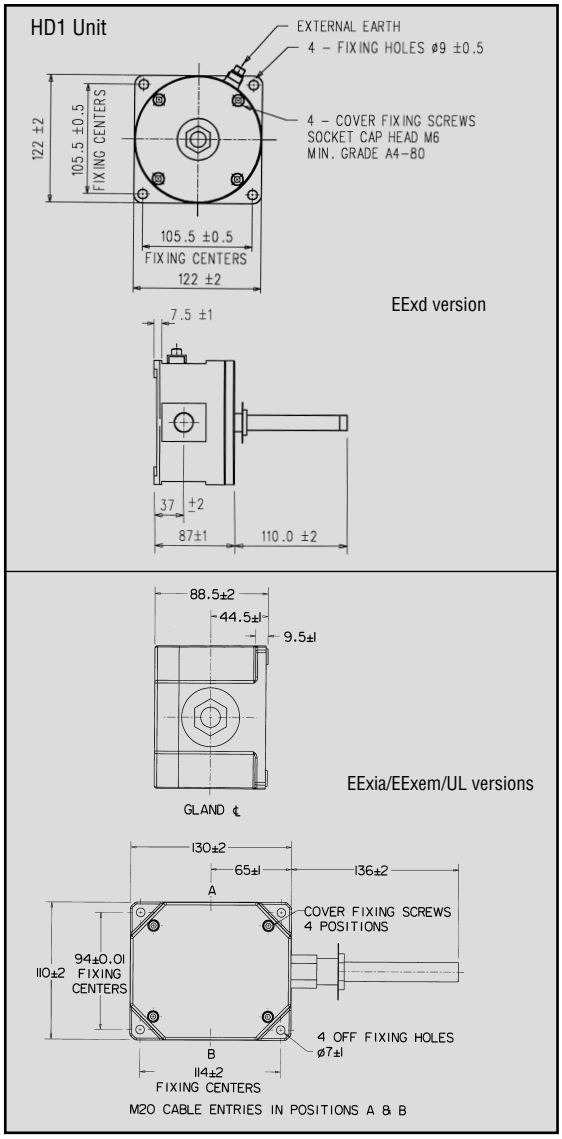


Compensated Heat Detector with Guard Fitted Natural Black Finish

To select appropriate temperature settings, choose detector at 56°C (100°F) above maximum ambient temperature.

Certification	Temperature Setting (°F)	Temperature Setting (°C)	Tolerance (°F)	Tolerance (°C)	Color Code Detector Tip	Ordering Code	Catalog #
UL, cUL, Class I, Div 2, Groups A, B, C, D Class I, Zone 2, IIC	140	60	+7/-8	±4	Black	46500152	HD1ULE140GN
	160	71	+7/-8	±4	Black	46500153	HD1ULE160GN
	190	88	+7/-8	±4	White	46500154	HD1ULE190GN
	225	107	+7/-8	±4	White	46500155	HD1ULE225GN
	275	135	±10	±6	Blue	46500156	HD1ULE275GN
	325	163	±10	±6	Red	46500157	HD1ULE325GN
	360	182	±10	±6	Red	46500158	HD1ULE360GN
	450	232	±15	±8	Green	46500159	HD1ULE450GN

Certification	Standard Product Configuration	Ordering Code	Catalog #
ATEX EExd	140°F detector, marine grade alloy enclosure, painted gray	465607	HD1BD140NG
ATEX EExd	160°F detector, marine grade alloy enclosure, painted gray	465602	HD1BD160NG
ATEX EExd	190°F detector, marine grade alloy enclosure, painted gray	465603	HD1BD190NG
ATEX EExd	225°F detector, marine grade alloy enclosure, painted gray	465614	HD1BD225NG
ATEX EExd	275°F detector, marine grade alloy enclosure, painted gray	465609	HD1BD275NG
ATEX EExd	325°F detector, marine grade alloy enclosure, painted gray	465605	HD1BD325NG
ATEX EExd	360°F detector, marine grade alloy enclosure, painted gray	46500043	HD1BD360NG
ATEX EExd	450°F detector, marine grade alloy enclosure, painted gray	465601	HD1BD450NG
ATEX EExd	600°F detector, marine grade alloy enclosure, painted gray	46500045	HD1BD600NG
ATEX EExd	725°F detector, marine grade alloy enclosure, painted gray	46500104	HD1BD725NG
ATEX EExem	140°F detector, GRP enclosure, natural black	46500026	HD1BE140NN
ATEX EExem	160°F detector, GRP enclosure, natural black	465301	HD1BE160NN
ATEX EExem	190°F detector, GRP enclosure, natural black	465305	HD1BE190NN
ATEX EExem	225°F detector, GRP enclosure, natural black	465304	HD1BE225NN
ATEX EExem	275°F detector, GRP enclosure, natural black	46500031	HD1BE275NN
ATEX EExem	325°F detector, GRP enclosure, natural black	465306	HD1BE325NN
ATEX EExem	360°F detector, GRP enclosure, natural black	46500072	HD1BE360NN
ATEX EExem	450°F detector, GRP enclosure, natural black	465303	HD1BE450NN



Specification—HD1 Unit

Certification:	CENELEC EN50014, 19 & 28. EExd IIB T6 (T3 at +125°C), Cert.No. Baseefa 03ATEX0447. EExia IIC T6 (T4 with diodes/resistors), Cert. No. Baseefa 03ATEX0427. EExem II T6, Cert. No. Baseefa 03ATEX0428. UL listed for USA and Canada – Class I, Div 2, Groups A, B, C & D. UL Listing No. E252920, GOST 'R' & 'K' Certification: Exd, Exi & Exem versions. Russian Fire Alarm (VNIIPO) approved. Chinese Certification: CQST – Exd, Exi & Exem versions.	
Material:	Detector:	316 stainless steel
	Enclosures:	EExd – LM25 marine grade alloy. EExia/EExem/UL – GRP (anti-static). Stainless steel cover screws.
	Optional Guard:	316 stainless steel.
Finish:	Detector:	Sand blasted.
	Enclosures:	EExd – Epoxy painted gray as standard or to customer's specification. EExia/EExem/UL – Self colored black or epoxy painted to customer's specification.
Weight:	EExd, 2kg. EExia/EExem/UL, 1.1kg.	
Certified: Temperature:	–20°C to +125°C EExd (T3) ATEX & GOST 'R' only. –20°C to +55°C EExd (T6)/EExem/UL, –55°C to +55°C EExia.	
Ingress Protection:	IP66 & IP67.	
Operation:	The detector contact is normally open and CLOSES at alarm temperature.	
Listed Temperature Settings:	To select appropriate temperature settings, choose detector at 56°C (100°F) above maximum ambient temperature.	

Temperature Setting (°F)	Temperature Setting (°C)	Tolerance (°F)	Tolerance (°C)	Color Code Detector Tip
140	60	+7/-8	±4	Black
160	71	+7/-8	±4	Black
190	88	+7/-8	±4	White
225	107	+7/-8	±4	White
275	135	±10	±6	Blue
325	163	±10	±6	Red
360	182	±10	±6	Red
450	232	±15	±8	Green
600	316	±20	±11	Orange
725	385	±25	±14	Orange

Contact Rating:	EExd/EExem/UL: 125V AC – 5A, 125V DC – 0.5A, 48V DC – 1A. EExia: 30V – 300mA.
Terminals:	6 x 4mm² (BK6).
Labels:	Optional stainless steel tag and duty labels.
Cable Entries:	2 x M20 ISO (ATEX/Exd/Exe/Exi versions) 2 x ½" NPT via adaptors (UL version).
Resistor:	Series & EOL ressistor (maximum total 2) minimum value (each) 470Ω – only available Exd & Exi versions.
Diodes:	Up to 2 off available in Exd, Exi & UL versions—contact sales office.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component in the appropriate box.

Model: **HD1**

Certification

Certification	Code
ATEX	B
UL listed	UL

Type

Type	Code
Exd	D
Exe	E
Exi	I
UL	U*

*Select this option for UL listed.

Temp. Settings

Temp °F	Code
140	140
160	160
190	190
225	225
275	275
325	325
360	360
450	450

Options

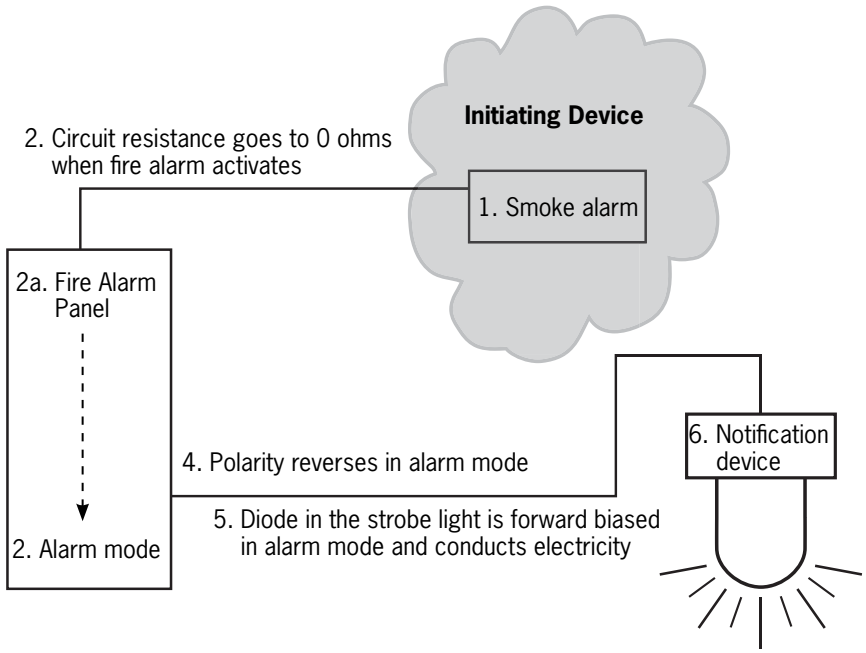
Guard	Code
No Guard	N
Guard	G

Enclosure Finish

Finish	Code
Natural Black (EExe/EExi/UL only)	N
Gray	G

Diode Polarized Technology: Also known as supervisory diode circuit for use in fire alarm applications or other critical warning requirements such as industrial hazards and process control emergency indication. Units with a supervisory diode typically have four wires.

In fire alarm technology, when a fire-initiating device such as a smoke alarm is activated, circuit resistance on the initiating circuit goes to zero. The fire alarm panel goes into alarm mode when it senses the resistance at zero. See diagram below.



With the fire alarm panel in alarm mode, voltage polarity is reversed (under normal operation the diode is reversed biased blocking voltage) on the circuit powering the notification device or strobe light. The strobe light is activated (diode is now forward biased allowing voltage through) when it senses a change in polarity. All NFPA approval visual indication for fire alarm must use a clear lens.

Terms used in fire alarm circuits
Initiating Device Circuits (IDC) connect the fire alarm panel to the system components that detect the fire. System components such as smoke detectors, manual pull stations, and water flow switches.

Appliance Circuits connect the fire alarm panel to the signaling devices such as strobe lights, bells, horns and speakers that alert building occupants of a fire.

Protective Signaling System Wiring Practices

INTRODUCTION

The installation of fire alarm system wiring is similar in many respects to any other low-voltage system wiring. Because the nature of the system affects life and property, additional measures are required during installation to ensure the system is operational at all times. The most sophisticated of control panels will not operate properly if the field wiring is installed incorrectly. It is the goal of this section to explain why correctly installed field wiring is vital in the operation of a fire alarm system, and how to recognize proper and improper installations. The process requires four basic steps: SELECT the proper cable for the application; INSTALL the cable properly; TEST the cable to make sure it is free of shorts, opens, and ground faults; and TERMINATE the cable properly.

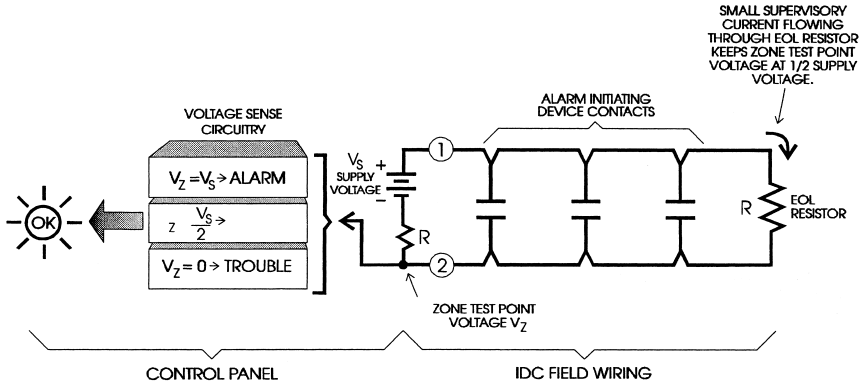
BASIC CIRCUIT SUPERVISION

There are two types of circuit supervision widely used in fire alarm systems today. Direct Current (DC) continuity supervision is used extensively on small systems. Large fire alarm systems use sophisticated electronic multiplex circuitry and "electronic questions and answers" to supervise field wiring and devices.

Figure 1 shows a simplified fire alarm panel supervising a single Initiating Device Circuit or zone using Direct Current (DC) continuity supervision. The supervisory current from the battery flows through terminal #1, the field wiring, the EOL resistor, terminal #2 of the control panel through a second resistor, and returns to the battery. The internal resistor and EOL resistor have equal resistance values. The voltage at the zone test point V_Z is measured by voltage sensing circuits. As long as the supervisory current flows through the EOL resistor, the voltage at V_Z is one half the supply voltage V_S and the voltage sense circuitry generates a normal panel response.

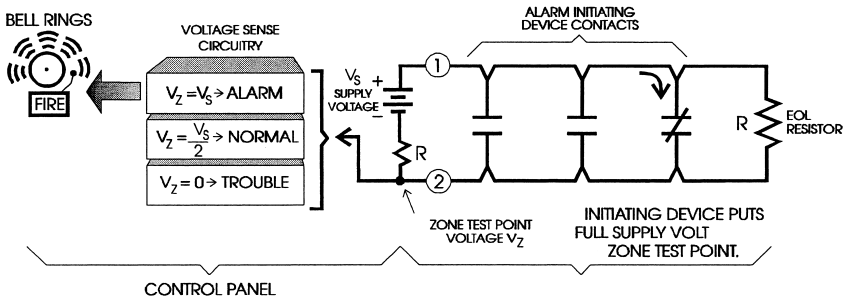
Figure 2 shows when a smoke detector or pull station operates, it effectively puts a **short** across terminals #1 and #2. This brings the zone test point voltage V_Z up to the supply voltage V_S. When the voltage sense circuitry sees $V_Z = V_S$, it generates an alarm response, such as ringing a bell.

Figure 1



NORMAL INITIATING DEVICE CIRCUIT (IDC)

Figure 2



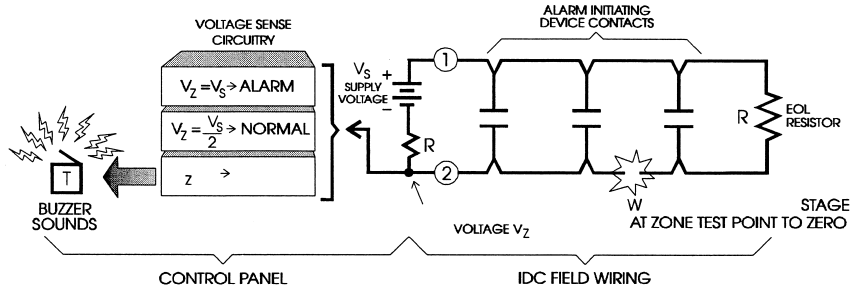
INITIATING DEVICE CIRCUIT (IDC) IN ALARM CONDITION

Figure 3 shows should the field wiring **open**, the supervisory current no longer flows through the field wiring and EOL resistor and V_Z goes to zero. When the voltage sense circuitry sees V_Z = 0, it generates a trouble response, such as sounding the trouble buzzer.

Figure 4 shows an improperly wired Initiating Device Circuit. Because the supervisory current is not forced to flow through the top and bottom branches, the break in the top branch doesn't interrupt the supervisory current, and there is no indication of the trouble. Should the top device detect a fire, the signal would never reach the control panel. Note that the lower device would send a fire alarm signal but would not send a trouble signal to the fire alarm panel, a classic symptom of miswiring.

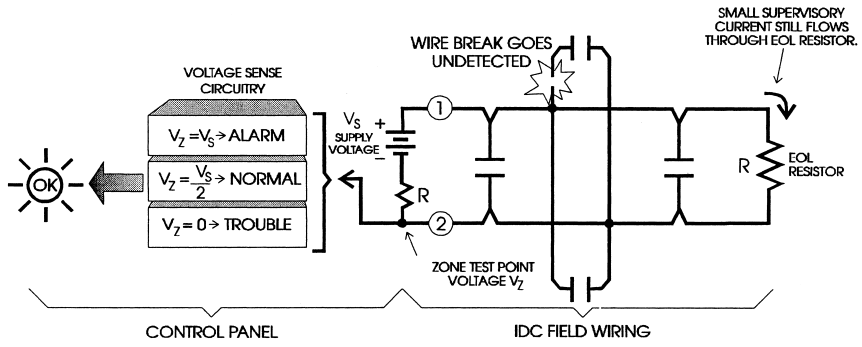
Large multiplex systems use sophisticated electronics that employ a system of "electronic questions and answers" to verify circuit viability. The control panel knows the "names" of all the devices that should be connected to it. After asking a "question" of each name or device on its list, the control panel must receive an answer from that device only. Failure to receive the proper answer causes the panel to generate a trouble signal. Because multiplex systems do not depend on the wiring path for supervision, some multiplex systems permit limited branch wiring or T-taps.

Figure 3



OPEN INITIATING DEVICE CIRCUIT (IDC)

Figure 4



INCORRECTLY WIRED INITIATING DEVICE CIRCUIT (IDC)

When using decibels, to double the loudness you only have to add 3 dB. For example, if a signal is rated at 85 dB at 10 feet, then a signal twice as powerful would be rated at 88 dB at 10 feet. The table below illustrates how the sound pressure level changes with distance under good conditions.

Source in dB	Feet from Source
100 dB	10
94 dB	20
90 dB	30
88 dB	40
82 dB	80

Things to consider when specifying audible signals.

1. Define the function of the signal: For example, general alarm, emergency, shift dismissal, paging, and process indication.
2. Uniform sound distribution: A larger number of smaller devices evenly distributed throughout the signaling area are better than a single large/loud device.
3. Ambient Sound: The signal should exceed the surrounding ambient noise by 6 decibels.
4. Size of the area: Common sense applies here, the larger the area, the louder the signal required and/or the greater the number of signaling devices required.
5. Mounting: As with all our products, consider mounting constraints and choose a suitable device and mount. Horns and speakers perform best when rigidly mounted to the structure.

Candela Seconds: Actual light energy contained in a pulse of light. Used to specify the minimum requirements for light output from a flashing light. Candela seconds is a relative measure of how bright a flash of light will appear to a human eye. (Candela: The intensity base unit for light.) Candela seconds and candela effective (below) are the primary metrics by which to compare flashing warning lights.

Candela Effective or Effective Candlepower: Equates the brightness of a flashing light source to the brightness of a steady burning source. If a flashing light has a candela effective rating of 100 then it will be visible at the same distance as a 100 candela steady burning source. Candela effective is used in specifying intensities of flashing light sources because it compares flashing warning lights with steady burning light sources.

Peak Candela or Peak Candlepower: The maximum light intensity generated by a flashing light during its light pulse.

Strobe, Principle of Operation: A strobe light consists of a xenon strobe lamp, power supply, energy storage capacitor and a trigger circuit.

The strobe bulb consists of a glass tube that has and electrode at either end called an anode (+) and cathode (-). The tube is filled with xenon gas and a trigger element is applied to the outside of the bulb. The trigger element could be a wire wrapped around the tube, a conductive paint stripe along one side of the glass bulb or clear conductive coating over the outside of the tube.

The power supply charges a large capacitor with the voltage needed to “strike” the bulb and is applied to the anode and cathode. The voltage is generally between 200 and 500 VDC depending on the design of the light.

The trigger circuit applies 7,000 to 10,000 volts (low current) to the trigger element of the bulb causing the xenon gas to ionize and discharge the capacitor.

The energy excites the xenon gas and produces a very short burst of high intensity white light.

Watts (Power): joules x flash rate

$$\text{Joules} = \frac{\text{Watts}}{\text{Flash Rate}}$$

$$\text{Joules} = (\text{Capacitance in Microfareds}) \frac{\left(\frac{\text{lamp voltage}^2}{1000}\right)}{2}$$

Things that impact light output:

- Physical shape of the strobe lamp and arrangement within lens
- Efficiency of the strobe lamp—its ability to turn electricity into a bright white light
- Color of the lens
- Size and efficiency of the lens