

CCW[®] Continuously Corrugated Welded Cable

*Armored Cable
for Hazardous
Locations*



NOVEMBER 2011

 **General Cable**

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*Armored Cable
for Hazardous
Locations*



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Servicing Industrial and Specialty Applications

This catalog contains in-depth information on the most comprehensive line of CCW® instrumentation, power and control Continuously Corrugated Welded cable available today. It features the latest information on products, along with detailed technical and specification data in indexed sections — with an easy-to-use “spec-on-a-page” format.

The “spec-on-a-page” format was developed to meet your needs. It features up-to-the-minute product information, from applications and constructions to detailed technical and specification data. There’s also a comprehensive technical section for additional assistance.

And, of course, if you need any further data, General Cable’s Customer Service staff provides the answers you need quickly and efficiently.



All information in this catalog is presented solely as a guide to product selection and is believed to be reliable. All printing errors are subject to correction in subsequent releases of this catalog. Although General Cable has taken precautions to ensure the accuracy of the product specifications at the time of publication, the specifications of all products contained herein are subject to change without notice.

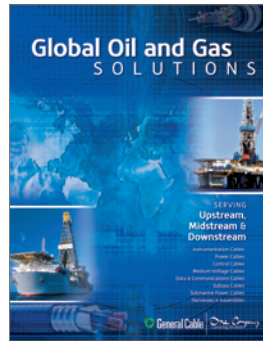
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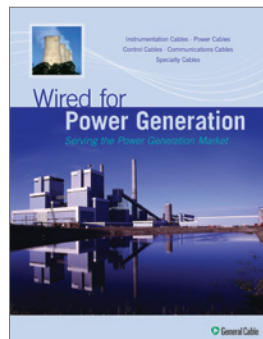
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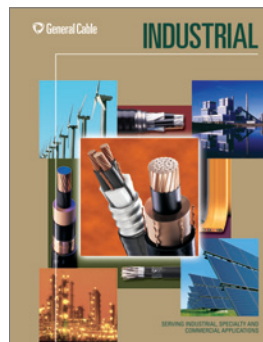
WIRED FOR POWER GENERATION



Serving the Power Generation Market

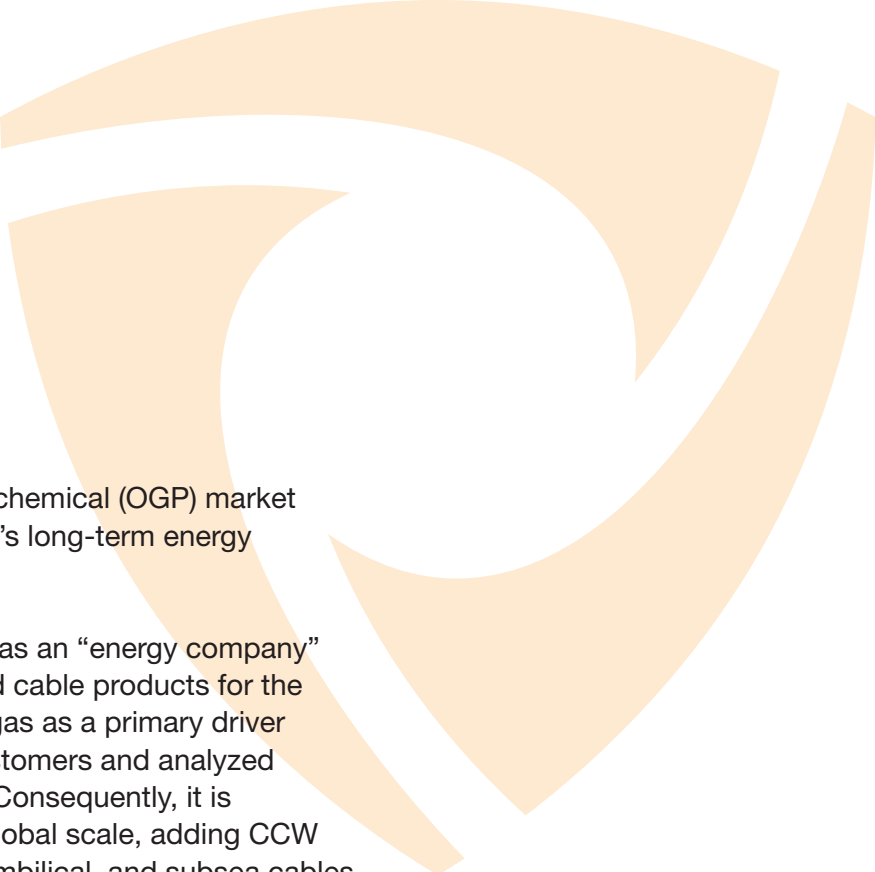
General Cable is a multi-billion-dollar leader in energy and industrial cables for power generation, transmission and distribution worldwide and the largest energy product supplier in North America.

FULL LINE CATALOG



Instrumentation, Power and Control Cables

This catalog contains in-depth information on the most comprehensive line of instrumentation, power and control cable available today. It features the latest information on products, along with detailed technical and specification data in indexed sections — with an easy-to-use “spec-on a page” format.



CCW®

Continuously Corrugated Welded Cable

Participation in the global oil, gas and petrochemical (OGP) market sector is an important part of General Cable's long-term energy strategy.

General Cable has positioned itself globally as an “energy company” and is making major investments in wire and cable products for the energy infrastructure markets. With oil and gas as a primary driver of energy, General Cable has listened to customers and analyzed its product offering based on market input. Consequently, it is rounding out its portfolio of products on a global scale, adding CCW (Continuously Corrugated Welded Cable), umbilical, and subsea cables to a suite of products used by the oil, gas and petrochemical industries for power, control, instrumentation, and communications.

The reintroduction of the CCW product line expands the current OGP product offering, providing existing and new customers with a single source for their wire and cable needs, while at the same time allowing General Cable to participate more broadly in the downstream portion of the OGP market, which includes refineries, petrochemical plants, and LNG (liquid natural gas) facilities.

CCW products are used in hazardous locations (in accordance with NEC® Articles 500-505) requiring cables that are impervious to gas, liquids and vapors and terminated with explosion-proof glands to electrical equipment. CCW is standardized by the refining industry as the only acceptable product construction (reference API RF14F and 14FZ) and is a staple in offshore production platforms, refineries, LNG facilities, and petrochemical processing mills. The CCW product line is ideal for use in the world's prominent “oil patches” in the U.S.A., Indonesia, Mexico, the Caribbean, South America, and the Middle East.

General Cable's stocking profile includes a complete line of products from 300 volt instrumentation through 35 kV power cable and will provide a complete product offering to service the industrial and OGP markets.

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CCW® Continuously Corrugated Welding Cable for Hazardous Locations

SPECIFICATION NO.	PRODUCT DESCRIPTION	REVISION DATE
9025	CCW® Armor Thermocouple Extension, Single Pair, Overall Shield (OS) UL Type ITC-HL/PLTC, PVC, 105°C, ABS CWCMC	Apr. 2011
9050	CCW® Armor Thermocouple Extension, Pairs, Overall Shield (OS) UL Type ITC-HL/PLTC, PVC, 105°C, ABS CWCMC	Apr. 2011
9075	CCW® Armor Thermocouple Extension, Pairs, Individual and Overall Shield (IS-OS) UL Type ITC-HL/PLTC, PVC, 105°C, ABS CWCMC	Apr. 2011
9125	CCW® Armor 300 V Instrumentation, Pairs/Triads, Overall Shield (OS) UL Type ITC-HL/PLTC, XLPE, 90°C, ABS CWCMC	Apr. 2011
9150	CCW® Armor 300 V Instrumentation, Pairs/Triads, Individual and Overall Shield (IS-OS) UL Type ITC-HL/PLTC, XLPE, 90°C, ABS CWCMC	Apr. 2011
9225	CCW® Armor 300 V Instrumentation, Pairs/Triads, Overall Shield (OS) UL Type ITC-HL/PLTC, PVC, 105°C, ABS CWCMC	Apr. 2011
9250	CCW® Armor 300 V Instrumentation, Pairs/Triads, Individual and Overall Shield (IS-OS) UL Type ITC-HL/PLTC, PVC, 105°C, ABS CWCMC	Apr. 2011
9325	CCW® Armor 600 V Instrumentation, Pairs/Triads, Overall Shield (OS) UL Type MC-HL, PVC/Nylon, 90°C, ABS CWCMC	Feb. 2011
9350	CCW® Armor 600 V Instrumentation, Pairs/Triads, Individual and Overall Shield (IS-OS) UL Type MC-HL, PVC/Nylon, 90°C, ABS CWCMC	Feb. 2011
9500	CCW® Armor 600 V Control With Grounding Conductor UL Type MC-HL, XLPE, 90°C, ABS CWCMC	Feb. 2011
9510	CCW® Armor 600 V Control With Bare Grounding Conductor UL Type MC-HL, XLPE, 90°C, ABS CWCMC	Feb. 2011
9525	CCW® Armor 600 V Control Without Grounding Conductor UL Type MC, XLPE, 90°C, ABS CWCMC	Feb. 2011
9600	CCW® Armor 600 V Power, 3/C VFD and 4/C UL Type MC-HL, XLPE, 90°C, ABS CWCMC	Feb. 2011
9615	CCW® Armor 2000 V Power, 3/C VFD UL Type MC-HL, XLPE, 90°C, ABS CWCMC	Feb. 2011
9625	CCW® Armor 600 V Composite Power and Control UL Type MC-HL, XLPE, 90°C, ABS CWCMC	Jan. 2011
9650	CCW® Armor 600 V Composite Power and Control Without Ground UL Type MC, XLPE, 90°C, ABS CWCMC	Feb. 2011
9675	CCW® Armor 1000 V Power, 3/C VFD CSA Type RA90, HL, XLPE, 90°C	Mar. 2012
9700	CCW® Armor 2.4 kV Power, Nonshielded, 3/C VFD UL Type MC-HL or MV-90, EPR, 90°C, ABS CWCMC	Feb. 2011
9800	CCW® Armor 5 kV 133%/8 kV 100% Power, Shielded, 3/C VFD UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	May 2012
9815	CCW® Armor 8 kV 133% Power, Shielded, 3/C VFD UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	May 2012
9825	CCW® Armor 15 kV 100% Power, Shielded, 3/C UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	May 2012
9835	CCW® Armor 15 kV 133% Power, Shielded, 3/C UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	May 2012
9845	CCW® Armor 25 kV 100% Power, Shielded, 3/C UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	May 2012
9855	CCW® Armor 25 kV 133%/35 kV 100% Power, Shielded, 3/C UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	Feb. 2011
9875	CCW® Armor 35 kV 133% Power, Shielded, 3/C UL Type MC-HL or MV-105, EPR, 105°C, ABS CWCMC	Feb. 2011
9900	CCW® Armor CCW® Armored Cable Tool Kit	Jan. 2010

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Technical Information

SPECIFICATION NO.	DESCRIPTION	REVISION DATE
Technical	Table of Contents	Feb. 2011
A001	Metal-Clad CCW® Type MC-HL Wiring System	Feb. 2011
A001	CCW® Installation Manual	Jul. 2011
A001	CCW® Sheath Removal Instructions	Feb. 2011
A010	CCW® Explosion-Proof Gland Cross-Reference	Apr. 2010
A015	CCW® Catalog Number Cross-Reference — Okonite C-L-X® to General Cable CCW®	Apr. 2010
A030	Reference Standards	Apr. 2010
A055	Checklist for CCW® Specifications	Apr. 2010
A100	Common Color Sequence	Apr. 2011
A150	Metric Conversion Factors	Sept. 2010
A185	AWG (American Wire Gauge) to mm ² (Millimeters Squared) Conversion	Sept. 2010
B025	Class B Conductors for General Wiring	Mar. 2012
D005	Recommended Reel Handling Practices	Mar. 2012
D025	Recommended Cable Handling Practices	Oct. 2011
D050	Recommended Cable Storage Practices	Nov. 2011
E005	Pre-Installation Instructions	Apr. 2010
E050	Installation — Feed-In Setups	Apr. 2010
E075	Installation — Conductor Maximum Pulling Tensions	Mar. 2012
E100	Installation — Training and Bending Limitations	Apr. 2010
E125	Installation — Maximum Sidewall Pressure	Jan. 2011
F005	DC “HI-POT” Pre-Test Guidelines for MV Cables	Apr. 2010
F025	DC “HI-POT” Testing Guidelines for MV Cables	Apr. 2010
F075	Field Electrical “HI-POT” Testing Guidelines	Apr. 2010
F130	CCW® Sheath as a Grounding Conductor	Dec. 2010
Index	Catalog Number Index	May 2011



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and responsibility in promoting sustainability.**

**The symbol also reflects our commitment to achieving
industry-leading standards and responding
proactively to environmental global issues.**



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One Company
Connecting the World

Making Contact with the World

General Cable is a leader in the development, design, manufacture, marketing and distribution of copper, aluminum and fiber optic wire and cable for the energy, industrial, specialty and communications markets.

Our products inspire progress worldwide ... customers use our value-added products to create global infrastructure that improves the standard of living for people everywhere.

Each day we're building business momentum — developing ideas into innovative solutions and industry-leading products, expanding geographic access and furthering our investment in highly capable associates, Lean Manufacturing, material science and technology resources.

Building Bridges in the Sky

Directing Traffic without Gridlock

General Cable is influencing the world ... with more than two-thirds of our sales generated outside North America and more than 11,000 associates in 47 manufacturing facilities throughout 25 countries. As one of the largest wire and cable manufacturers, we are the *One Company Connecting the World*.

Energy Cables

Our cables carry energy across the world — through the air, underground and under the sea. Increasing demand for energy is accelerating investment in exploration, extraction, power generation, transmission and distribution — whether based on coal, natural gas, oil, nuclear, wind, solar or water.

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Our cables channel the power and signals that make equipment hum and engines run. From oil rigs and broadcast studios to cars and trains, and in commercial buildings, public venues, factory floors and special applications such as military, nuclear, marine and mining — we serve an extensive range of markets.

Communications Cables

Our cables keep information flowing — facilitating a non-stop stream of words and images around the world. We meet the high-speed bandwidth needs of global communications networks from fiber optic submarine communications cables, copper and fiber aerial and underground cables to copper and fiber optic enterprise cables and system solutions.

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General Cable

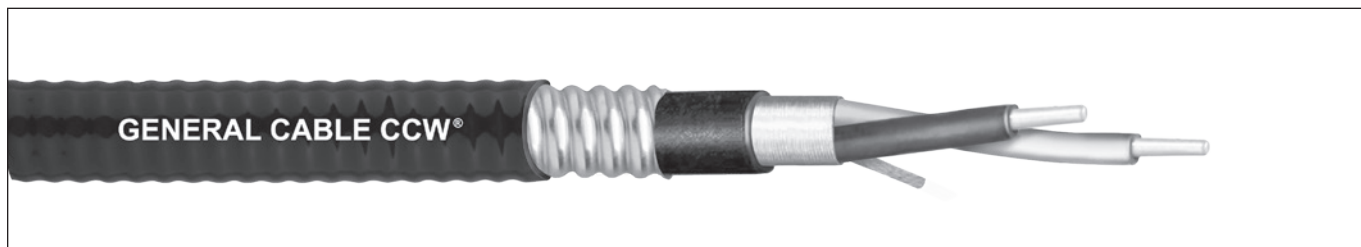
4 Tesseneer Drive
Highland Heights, KY
41076-9753 U.S.A.



CCW® Armored Thermocouple, Single Pair, Overall Shield

UL Type ITC-HL/PLTC, PVC, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- 16 AWG solid alloy wire per ANSI MC 96.1

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC), rated 105°C per UL Standards 13 and 2250
- Color-coded per ANSI

Pair Assembly:

- Insulated conductors are cabled together with a left-hand lay

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250
- ANSI color-coded
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Thermocouple Extension cables provide superior protection and reliability against physical damage for use in instrumentation and process control applications requiring ITC-HL or PLTC wiring methods
- For use as Power Limited Tray Cable on circuits rated 150 V or less and 5 amps or less in Class 2 or Class 3 circuits in accordance with NEC Article 725
- For use as Instrumentation Tray Cable on circuits rated 150 V or less and 5 amps or less in accordance with NEC Article 727
- Recognized for use in Class I, II, and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503, and 505
- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 13 Power-Limited Circuit Cables
- UL 2250 Instrumentation Tray Cable
- UL 1569 Metal Clad Cables
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type PLTC, SUN RES, DIR BUR, -40°C, UL File # E36118
- UL Type ITC-HL, UL File # E177408
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Thermocouple, Single Pair, Overall Shield

UL Type ITC-HL/PLTC, PVC, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	WIRE TYPE/ SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA ¹ (SQ. IN.)	APPROXIMATE NET WEIGHT	
			mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m
9025.16010001	EX / 16	1	15	0.38	35	0.89	0.25	6.4	0.45	11.4	50	1.27	0.56	14.2	0.25	132	196
9025.16010002	JX / 16	1	15	0.38	35	0.89	0.25	6.4	0.45	11.4	50	1.27	0.56	14.2	0.25	132	196
9025.16010003	KX / 16	1	15	0.38	35	0.89	0.25	6.4	0.45	11.4	50	1.27	0.56	14.2	0.25	132	196
9025.16010004	TX / 16	1	15	0.38	35	0.89	0.25	6.4	0.45	11.4	50	1.27	0.56	14.2	0.25	132	196

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.

ANSI MC 96.1 CONDUCTOR ALLOY AND COLOR CODE						TEMP RANGE	LIMITS OF ERROR	NOM. LOOP RESISTANCE PER 100 FT @ 20°C
COND. TYPE	POSITIVE WIRE		NEGATIVE WIRE		OUTER JACKET			
	ALLOY	COLOR	ALLOY	COLOR				
EX	Chromel	Purple	Constantan	Red	Purple	0°C To +200°C	+/- 1.7°C	27.8 Ohms
JX	Iron	White	Constantan	Red	Black	0°C To +200°C	+/- 2.2°C	13.9 Ohms
KX	Chromel	Yellow	Alumel	Red	Yellow	0°C To +200°C	+/- 2.2°C	23.6 Ohms
TX	Copper	Blue	Constantan	Red	Blue	-60°C To +100°C	+/- 1.0°C	12.0 Ohms



Phone: 888-593-3355
www.generalcable.com

CCW® Armored Thermocouple, Pairs, Overall Shield

UL Type ITC-HL/PLTC, PVC, 105°C, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- 20 AWG solid alloy wire per ANSI MC 96.1

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC), rated 105°C per UL Standards 13 and 2250
- Color-coded per ANSI with one conductor in each pair printed alphanumerically for easy identification

Cable Assembly:

- Individual pairs and communication wire are cabled together with a left-hand lay
- Communication wire: 22 AWG solid bare copper, flame-retardant Polyvinyl Chloride (PVC), rated 105°C, orange

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250
- ANSI color-coded
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

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UL Type ITC-HL/PLTC, PVC, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	WIRE TYPE/ SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS-SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT	
			mils	mm	SIZE	INS. THICKNESS		mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m

20 AWG TYPE EX MULTIPLE PAIRS OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9050.20041221	EX / 20	4	15	0.38	22	12	0.30	40	1.02	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	195	290
9050.20081221	EX / 20	8	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	277	413
9050.20101221	EX / 20	10	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	337	501
9050.20121221	EX / 20	12	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	354	527
9050.20161221	EX / 20	16	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	422	628
9050.20201221	EX / 20	20	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	485	721
9050.20241221	EX / 20	24	15	0.38	22	12	0.30	60	1.52	0.77	19.6	1.02	25.9	50	1.27	1.13	28.7	1.02	552	821
9050.20361221	EX / 20	36	15	0.38	22	12	0.30	70	1.78	0.94	23.9	1.19	30.2	50	1.27	1.30	33.0	1.34	738	1,099
9050.20501221	EX / 20	50	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	925	1,377

20 AWG TYPE JX MULTIPLE PAIRS OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9050.20041222	JX / 20	4	15	0.38	22	12	0.30	40	1.02	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	194	288
9050.20081222	JX / 20	8	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	276	411
9050.20101222	JX / 20	10	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	335	498
9050.20121222	JX / 20	12	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	352	524
9050.20161222	JX / 20	16	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	419	624
9050.20201222	JX / 20	20	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	480	715
9050.20241222	JX / 20	24	15	0.38	22	12	0.30	60	1.52	0.77	19.6	1.02	25.9	50	1.27	1.13	28.7	1.02	547	814
9050.20361222	JX / 20	36	15	0.38	22	12	0.30	70	1.78	0.94	23.9	1.19	30.2	50	1.27	1.30	33.0	1.34	731	1,088
9050.20501222	JX / 20	50	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	914	1,360

20 AWG TYPE KX MULTIPLE PAIRS OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9050.20041223	KX / 20	4	15	0.38	22	12	0.30	40	1.02	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	195	290
9050.20081223	KX / 20	8	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	277	413
9050.20101223	KX / 20	10	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	337	501
9050.20121223	KX / 20	12	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	354	527
9050.20161223	KX / 20	16	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	422	628
9050.20201223	KX / 20	20	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	485	721
9050.20241223	KX / 20	24	15	0.38	22	12	0.30	60	1.52	0.77	19.6	1.02	25.9	50	1.27	1.13	28.7	1.02	552	821
9050.20361223	KX / 20	36	15	0.38	22	12	0.30	70	1.78	0.94	23.9	1.19	30.2	50	1.27	1.30	33.0	1.34	738	1,099
9050.20501223	KX / 20	50	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	925	1,377

20 AWG TYPE TX MULTIPLE PAIRS OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9050.20041224	TX / 20	4	15	0.38	22	12	0.30	40	1.02	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	196	291
9050.20081224	TX / 20	8	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	279	416
9050.20101224	TX / 20	10	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	339	504
9050.20121224	TX / 20	12	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	354	527
9050.20161224	TX / 20	16	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	426	634
9050.20201224	TX / 20	20	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	489	727
9050.20241224	TX / 20	24	15	0.38	22	12	0.30	60	1.52	0.77	19.6	1.02	25.9	50	1.27	1.13	28.7	1.02	557	829
9050.20361224	TX / 20	36	15	0.38	22	12	0.30	70	1.78	0.94	23.9	1.19	30.2	50	1.27	1.30	33.0	1.34	747	1,111
9050.20501224	TX / 20	50	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	935	1,392

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.

ANSI MC 96.1 CONDUCTOR ALLOY AND COLOR CODE						TEMP RANGE	LIMITS OF ERROR	NOM. LOOP RESISTANCE PER 100 FT @ 20°C
COND. TYPE	POSITIVE WIRE		NEGATIVE WIRE		OVERALL JACKET COLOR			
EX	Chromel	Purple	Constantan	Red	Purple	0°C To +200°C	+/- 1.7°C	70.7 Ohms
JX	Iron	White	Constantan	Red	Black	0°C To +200°C	+/- 2.2°C	35.7 Ohms
KX	Chromel	Yellow	Alumel	Red	Yellow	0°C To +200°C	+/- 2.2°C	59.0 Ohms
TX	Copper	Blue	Constantan	Red	Blue	-60°C To +100°C	+/- 1.0°C	29.8 Ohms



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CCW® Armored Thermocouple, Pairs, Individual and Overall Shield

UL Type ITC-HL/PLTC, PVC, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- 20 AWG solid alloy wire per ANSI MC 96.1

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC), rated 105°C per UL Standards 13 and 2250
- ANSI color-coded insulation, with one conductor in each pair printed alpha numerically for easy identification

Shielded Pairs:

- Isolated and individually twisted pairs with a Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, two sizes smaller than insulated conductors

Cable Assembly:

- Individually shielded pairs and communication wire are cabled together with a left-hand lay
- Communication wire: 22 AWG solid bare copper, flame-retardant Polyvinyl Chloride (PVC), rated 105°C, orange

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250
- ANSI color-coded inner jacket
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250
- ANSI color-coded overall jacket
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Thermocouple Extension cables with individually shielded pairs and an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications requiring ITC-HL or PLTC wiring methods where shielding against both external EMI and EMI between pairs is required
- For use as Power Limited Tray Cable on circuits rated 150 V or less and 5 amps or less in Class 2 or Class 3 circuits in accordance with NEC Article 725
- For use as Instrumentation Tray Cable on circuits rated 150 V or less and 5 amps or less in accordance with NEC Article 727
- Recognized for use in Class I, II, and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503, and 505

Applications: (cont'd)

- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 13 Power-Limited Circuit Cables
- UL 2250 Instrumentation Tray Cable
- UL 1569 Metal Clad Cables
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type PLTC, SUN RES, DIR BUR, -40°C, UL File # E36118
- UL Type ITC-HL, UL File # E177408
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Thermocouple, Pairs, Individual and Overall Shield

UL Type ITC-HL/PLTC, PVC, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	WIRE TYPE/ SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
					SIZE	INS. THICKNESS														
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	INCHES	mm	(SQ. IN.)	LBS/1000 FT	kg/1000 m		

20 AWG TYPE EX MULTIPLE PAIRS INDIVIDUAL AND OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9075.20041221	EX / 20	4	15	0.38	22	12	0.30	50	1.27	0.40	10.2	0.62	15.7	50	1.27	0.73	18.5	0.42	235	349
9075.20081221	EX / 20	8	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	313	466
9075.20101221	EX / 20	10	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	388	577
9075.20121221	EX / 20	12	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	417	621
9075.20161221	EX / 20	16	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	494	735
9075.20201221	EX / 20	20	15	0.38	22	12	0.30	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	571	850
9075.20241221	EX / 20	24	15	0.38	22	12	0.30	60	1.52	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	681	1,014
9075.20361221	EX / 20	36	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	877	1,305
9075.20501221	EX / 20	50	15	0.38	22	12	0.30	70	1.78	1.22	31.0	1.47	37.3	50	1.27	1.58	40.1	1.99	1,201	1,787

20 AWG TYPE JX MULTIPLE PAIRS INDIVIDUAL AND OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9075.20041222	JX / 20	4	15	0.38	22	12	0.30	50	1.27	0.40	10.2	0.62	15.7	50	1.27	0.73	18.5	0.42	234	348
9075.20081222	JX / 20	8	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	311	463
9075.20101222	JX / 20	10	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	386	574
9075.20121222	JX / 20	12	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	413	615
9075.20161222	JX / 20	16	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	491	730
9075.20201222	JX / 20	20	15	0.38	22	12	0.30	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	567	844
9075.20241222	JX / 20	24	15	0.38	22	12	0.30	60	1.52	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	676	1,006
9075.20361222	JX / 20	36	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	870	1,295
9075.20501222	JX / 20	50	15	0.38	22	12	0.30	70	1.78	1.22	31.0	1.47	37.3	50	1.27	1.58	40.1	1.99	1,190	1,771

20 AWG TYPE KX MULTIPLE PAIRS INDIVIDUAL AND OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9075.20041223	KX / 20	4	15	0.38	22	12	0.30	50	1.27	0.40	10.2	0.62	15.7	50	1.27	0.73	18.5	0.42	235	349
9075.20081223	KX / 20	8	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	313	466
9075.20101223	KX / 20	10	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	388	577
9075.20121223	KX / 20	12	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	417	621
9075.20161223	KX / 20	16	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	494	735
9075.20201223	KX / 20	20	15	0.38	22	12	0.30	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	571	850
9075.20241223	KX / 20	24	15	0.38	22	12	0.30	60	1.52	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	681	1,014
9075.20361223	KX / 20	36	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	877	1,305
9075.20501223	KX / 20	50	15	0.38	22	12	0.30	70	1.78	1.22	31.0	1.47	37.3	50	1.27	1.58	40.1	1.99	1,201	1,787

20 AWG TYPE TX MULTIPLE PAIRS INDIVIDUAL AND OVERALL SHIELDED THERMOCOUPLE EXTENSION CABLE

9075.20041224	TX / 20	4	15	0.38	22	12	0.30	50	1.27	0.40	10.2	0.62	15.7	50	1.27	0.73	18.5	0.42	236	351
9075.20081224	TX / 20	8	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	315	469
9075.20101224	TX / 20	10	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	391	581
9075.20121224	TX / 20	12	15	0.38	22	12	0.30	50	1.27	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	418	622
9075.20161224	TX / 20	16	15	0.38	22	12	0.30	60	1.52	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	497	739
9075.20201224	TX / 20	20	15	0.38	22	12	0.30	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	575	856
9075.20241224	TX / 20	24	15	0.38	22	12	0.30	60	1.52	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	686	1,022
9075.20361224	TX / 20	36	15	0.38	22	12	0.30	70	1.78	1.09	27.7	1.34	34.0	50	1.27	1.45	36.8	1.67	884	1,316
9075.20501224	TX / 20	50	15	0.38	22	12	0.30	70	1.78	1.22	31.0	1.47	37.3	50	1.27	1.58	40.1	1.99	1,211	1,802

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.

ANSI MC 96.1 CONDUCTOR ALLOY AND COLOR CODE						TEMP. RANGE	LIMITS OF ERROR	NOM. LOOP RESISTANCE PER 100 FT @ 20°C
COND. TYPE	POSITIVE WIRE		NEGATIVE WIRE		OVERALL JACKET COLOR			
	ALLOY	COLOR	ALLOY	COLOR				
EX	Chromel	Purple	Constantan	Red	Purple	0°C To +200°C	+/- 1.7°C	70.7 Ohms
JX	Iron	White	Constantan	Red	Black	0°C To +200°C	+/- 2.2°C	35.7 Ohms
KX	Chromel	Yellow	Alumel	Red	Yellow	0°C To +200°C	+/- 2.2°C	59.0 Ohms
TX	Copper	Blue	Constantan	Red	Blue	-60°C To +100°C	+/- 1.0°C	29.8 Ohms



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CCW® Armored Instrumentation, Pairs/Triads, Overall Shield

UL Type ITC-HL/PLTC, XLPE, 300 V, 90°C, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Cross-Linked Polyethylene (XLPE), rated 90°C per UL Standards 13 and 2250
- Color-coded per ICEA Method 1: pairs – black and white; triads – black, white and red. Each conductor in each pair or triad is printed alphanumerically for easy identification

Cable Assembly:

- Individual pairs or triads and communication wire are cabled together with a left hand lay
- Communication wire: 20 AWG solid bare copper, Cross-Linked Polyethylene (XLPE), rated 90°C, orange
- Communication wire is not included on single pair or single triad cables

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Instrumentation cables with an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications requiring ITC-HL or PLTC wiring methods where shielding against external EMI is required
- For use as Power Limited Tray Cable on circuits rated 150 V or less and 5 amps or less in Class 2 or Class 3 circuits in accordance with NEC Article 725
- For use as Instrumentation Tray Cable on circuits rated 150 V or less and 5 amps or less in accordance with NEC Article 727
- Recognized for use in Class I, II, and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503, and 505
- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial

Applications: (cont'd)

- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 13 Power-Limited Circuit Cables
- UL 2250 Instrumentation Tray Cable
- UL 1569 Metal Clad Cables
- UL 1309 / CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type PLTC, SUN RES, DIR BUR, -40°C, UL File # E36118
- UL Type ITC-HL, UL File # E177408
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Instrumentation, Pairs/Triads, Overall Shield

UL Type ITC-HL/PLTC, XLPE, 300 V, 90°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
					SIZE	INS. THICKNESS														
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	(SQ. IN.)	LBS/1000 FT	kg/1000 m

16 AWG 7W (1.31 mm²) OVERALL SHIELDED PAIRS

9125.16010001	16	1	15	0.38	—	—	—	35	0.89	0.26	6.6	0.43	10.9	50	1.27	0.54	13.7	0.23	135	201
9125.16021201	16	2	15	0.38	20	15	0.38	40	1.02	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	235	350
9125.16041201	16	4	15	0.38	20	15	0.38	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	298	443
9125.16081201	16	8	15	0.38	20	15	0.38	60	1.52	0.65	16.5	0.89	22.6	50	1.27	1.00	25.4	0.80	412	613
9125.16121201	16	12	15	0.38	20	15	0.38	60	1.52	0.76	19.3	1.02	25.9	50	1.27	1.13	28.7	1.02	562	836
9125.16161201	16	16	15	0.38	20	15	0.38	60	1.52	0.87	22.1	1.11	28.2	50	1.27	1.22	31.0	1.18	665	990
9125.16241201	16	24	15	0.38	20	15	0.38	70	1.78	1.01	25.7	1.34	34.0	50	1.27	1.45	36.8	1.67	934	1,390
9125.16361201	16	36	15	0.38	20	15	0.38	70	1.78	1.24	31.5	1.56	39.6	60	1.52	1.69	42.9	2.27	1,236	1,840
9125.16501201	16	50	15	0.38	20	15	0.38	80	2.03	1.47	37.3	1.83	46.5	60	1.52	1.96	49.8	3.06	1,734	2,580

16 AWG 7W (1.31 mm²) OVERALL SHIELDED TRIADS

9125.16010002	16	1	15	0.38	—	—	—	35	0.89	0.27	6.9	0.49	12.4	50	1.27	0.60	15.2	0.29	158	235
9125.16021202	16	2	15	0.38	20	15	0.38	40	1.02	0.39	9.9	0.62	15.7	50	1.27	0.73	18.5	0.42	265	394
9125.16041202	16	4	15	0.38	20	15	0.38	50	1.27	0.52	13.2	0.75	19.1	50	1.27	0.86	21.8	0.59	358	533
9125.16081202	16	8	15	0.38	20	15	0.38	60	1.52	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	565	841
9125.16121202	16	12	15	0.38	20	15	0.38	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	793	1,179
9125.16161202	16	16	15	0.38	20	15	0.38	70	1.78	0.95	24.1	1.24	31.5	50	1.27	1.35	34.3	1.45	965	1,436
9125.16241202	16	24	15	0.38	20	15	0.38	70	1.78	1.14	29.0	1.42	36.1	50	1.27	1.53	38.9	1.86	1,446	2,152
9125.16361202	16	36	15	0.38	20	15	0.38	80	2.03	1.34	34.0	1.64	41.7	60	1.52	1.78	45.2	2.52	1,913	2,846
9125.16501202	16	50	15	0.38	20	15	0.38	80	2.03	1.57	39.9	1.92	48.8	60	1.52	2.05	52.1	3.34	2,585	3,846

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.



Phone: 888-593-3355
www.generalcable.com

CCW® Armored Instrumentation, Pairs/Triads, Individual and Overall Shield

UL Type ITC-HL/PLTC, XLPE, 300 V, 90°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Cross-Linked Polyethylene (XLPE), rated 90°C per UL Standards 13 and 2250
- Color-coded per ICEA Method 1: pairs – black and white; triads – black, white and red. Each conductor in each pair or triad is printed alphanumerically for easy identification

Shielded Pairs/Triads:

- Isolated and individually twisted pairs or triads with a Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, two sizes smaller than insulated conductors

Cable Assembly:

- Individually shielded pairs or triads and communication wire are cabled together with a left-hand lay
- Communication wire: 20 AWG solid bare copper, Cross-Linked Polyethylene (XLPE), rated 90°C, orange

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Instrumentation cables with individually shielded pairs or triads and an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications requiring ITC-HL or PLTC wiring methods where shielding against both external EMI and EMI between groups is required
- For use as Power Limited Tray Cable on circuits rated 150 V or less and 5 amps or less in Class 2 or Class 3 circuits in accordance with NEC Article 725
- For use as Instrumentation Tray Cable on circuits rated 150 V or less and 5 amps or less in accordance with NEC Article 727
- Recognized for use in Class I, II, and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503, and 505

Applications: (cont'd)

- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 13 Power-Limited Circuit Cables
- UL 2250 Instrumentation Tray Cable
- UL 1569 Metal Clad Cables
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type PLTC, SUN RES, DIR BUR, -40°C, UL File # E36118
- UL Type ITC-HL, UL File # E177408
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Instrumentation, Pairs/Triads, Individual and Overall Shield

UL Type ITC-HL/PLTC, XLPE, 300 V, 90°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
					SIZE	INS. THICKNESS														
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	(SQ. IN.)	LBS/1000 FT	kg/1000 m

16 AWG 7W (1.31 mm²) OVERALL SHIELDED PAIRS

9150.16010001	16	1	15	0.38	—	—	—	35	0.89	0.26	6.6	0.43	10.9	50	1.27	0.54	13.7	0.23	135	201
9150.16021201	16	2	15	0.38	20	15	0.38	40	1.02	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	235	350
9150.16041201	16	4	15	0.38	20	15	0.38	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	298	443
9150.16081201	16	8	15	0.38	20	15	0.38	60	1.52	0.65	16.5	0.89	22.6	50	1.27	1.00	25.4	0.80	412	613
9150.16121201	16	12	15	0.38	20	15	0.38	60	1.52	0.76	19.3	1.02	25.9	50	1.27	1.13	28.7	1.02	562	836
9150.16161201	16	16	15	0.38	20	15	0.38	60	1.52	0.87	22.1	1.11	28.2	50	1.27	1.22	31.0	1.18	665	990
9150.16241201	16	24	15	0.38	20	15	0.38	70	1.78	1.01	25.7	1.34	34.0	50	1.27	1.45	36.8	1.67	934	1,390
9150.16361201	16	36	15	0.38	20	15	0.38	70	1.78	1.24	31.5	1.56	39.6	60	1.52	1.69	42.9	2.27	1,236	1,840
9150.16501201	16	50	15	0.38	20	15	0.38	80	2.03	1.47	37.3	1.83	46.5	60	1.52	1.96	49.8	3.06	1,734	2,580

16 AWG 7W (1.31 mm²) OVERALL SHIELDED TRIADS

9150.16010002	16	1	15	0.38	—	—	—	35	0.89	0.27	6.9	0.49	12.4	50	1.27	0.60	15.2	0.29	158	235
9150.16021202	16	2	15	0.38	20	15	0.38	40	1.02	0.39	9.9	0.62	15.7	50	1.27	0.73	18.5	0.42	265	394
9150.16041202	16	4	15	0.38	20	15	0.38	50	1.27	0.52	13.2	0.75	19.1	50	1.27	0.86	21.8	0.59	358	533
9150.16081202	16	8	15	0.38	20	15	0.38	60	1.52	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	565	841
9150.16121202	16	12	15	0.38	20	15	0.38	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	793	1,179
9150.16161202	16	16	15	0.38	20	15	0.38	70	1.78	0.95	24.1	1.24	31.5	50	1.27	1.35	34.3	1.45	965	1,436
9150.16241202	16	24	15	0.38	20	15	0.38	70	1.78	1.14	29.0	1.42	36.1	50	1.27	1.53	38.9	1.86	1,446	2,152
9150.16361202	16	36	15	0.38	20	15	0.38	80	2.03	1.34	34.0	1.64	41.7	60	1.52	1.78	45.2	2.52	1,913	2,846
9150.16501202	16	50	15	0.38	20	15	0.38	80	2.03	1.57	39.9	1.92	48.8	60	1.52	2.05	52.1	3.34	2,585	3,846

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.



Phone: 888-593-3355
www.generalcable.com

CCW® Armored Instrumentation, Pairs/Triads, Overall Shield

UL Type ITC-HL/PLTC, PVC, 300 V, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC), rated 105°C per UL Standards 13 and 2250
- Color-coded per ICEA Method 1: pairs – black and white; triads – black, white and red. Each conductor in each pair or triad is printed alphanumerically for easy identification

Cable Assembly:

- Individual pairs or triads and communication wire are cabled together with a left-hand lay
- Communication wire: 22 AWG solid bare copper, flame-retardant Polyvinyl Chloride (PVC), rated 105°C, orange
- Communication wire is not included on single pair or single triad cables

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Instrumentation cables with an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications requiring ITC-HL or PLTC wiring methods where shielding against external EMI is required
- For use as Power Limited Tray Cable on circuits rated 150 V or less and 5 amps or less in Class 2 or Class 3 circuits in accordance with NEC Article 725
- For use as Instrumentation Tray Cable on circuits rated 150 V or less and 5 amps or less in accordance with NEC Article 727
- Recognized for use in Class I, II, and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503, and 505
- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°

Specifications:

Design Adherence:

- UL 13 Power-Limited Circuit Cables
- UL 2250 Instrumentation Tray Cable
- UL 1569 Metal Clad Cables
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type PLTC, SUN RES, DIR BUR, -40°C, UL File # E36118
- UL Type ITC-HL, UL File # E177408
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW[®] Armored Instrumentation, Pairs/Triads, Overall Shield

UL Type ITC-HL/PLTC, PVC, 300 V, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
					SIZE	INS. THICKNESS														
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		(SQ. IN.)	LBS/1000 FT
20 AWG 7W (0.52 mm²) OVERALL SHIELDED PAIRS																				
9225.20021221	20	2	15	0.38	22	12	0.30	40	1.02	0.35	8.9	0.58	14.7	50	1.27	0.69	17.5	0.38	174	260
9225.20041221	20	4	15	0.38	22	12	0.30	50	1.27	0.41	10.4	0.62	15.7	50	1.27	0.73	18.5	0.42	198	294
9225.20061221	20	6	15	0.38	22	12	0.30	50	1.27	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	250	372
9225.20081221	20	8	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	283	420
9225.20101221	20	10	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	330	492
9225.20121221	20	12	15	0.38	22	12	0.30	50	1.27	0.56	14.2	0.80	20.3	50	1.27	0.91	23.1	0.66	353	525
9225.20161221	20	16	15	0.38	22	12	0.30	60	1.52	0.66	16.8	0.89	22.6	50	1.27	1.00	25.4	0.80	432	644
9225.20201221	20	20	15	0.38	22	12	0.30	60	1.52	0.73	18.5	0.97	24.6	50	1.27	1.08	27.4	0.93	500	744
9225.20241221	20	24	15	0.38	22	12	0.30	60	1.52	0.79	20.1	1.06	26.9	50	1.27	1.17	29.7	1.09	556	827
9225.20361221	20	36	15	0.38	22	12	0.30	70	1.78	0.94	23.9	1.24	31.5	50	1.27	1.35	34.3	1.45	711	1058
9225.20501221	20	50	15	0.38	22	12	0.30	70	1.78	1.06	26.9	1.34	34.0	50	1.27	1.45	36.8	1.67	949	1,412

18 AWG 7W (0.82 mm²) OVERALL SHIELDED PAIRS																				
9225.18021221	18	2	15	0.38	22	12	0.30	40	1.02	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	206	307
9225.18041221	18	4	15	0.38	22	12	0.30	50	1.27	0.44	11.2	0.67	17.0	50	1.27	0.78	19.8	0.48	249	370
9225.18061221	18	6	15	0.38	22	12	0.30	50	1.27	0.50	12.7	0.71	18.0	50	1.27	0.82	20.8	0.54	294	437
9225.18081221	18	8	15	0.38	22	12	0.30	50	1.27	0.55	14.0	0.80	20.3	50	1.27	0.91	23.1	0.66	337	501
9225.18101221	18	10	15	0.38	22	12	0.30	60	1.52	0.65	16.5	0.89	22.6	50	1.27	1.00	25.4	0.80	417	621
9225.18121221	18	12	15	0.38	22	12	0.30	60	1.52	0.68	17.3	0.93	23.6	50	1.27	1.04	26.4	0.86	449	668
9225.18161221	18	16	15	0.38	22	12	0.30	60	1.52	0.77	19.6	1.02	25.9	50	1.27	1.13	28.7	1.02	536	797
9225.18201221	18	20	15	0.38	22	12	0.30	60	1.52	0.83	21.1	1.06	26.9	50	1.27	1.17	29.7	1.09	623	927
9225.18241221	18	24	15	0.38	22	12	0.30	60	1.52	0.86	21.8	1.11	28.2	50	1.27	1.22	31.0	1.18	698	1,038
9225.18361221	18	36	15	0.38	22	12	0.30	70	1.78	0.99	25.1	1.29	32.8	50	1.27	1.40	35.6	1.56	965	1,436
9225.18501221	18	50	15	0.38	22	12	0.30	70	1.78	1.15	29.2	1.47	37.3	50	1.27	1.58	40.1	1.99	1,280	1,905

16 AWG 7W (1.31 mm²) OVERALL SHIELDED PAIRS																				
9225.16010001	16	1	15	0.38	-	-	-	35	0.89	0.26	6.6	0.43	10.9	50	1.27	0.54	13.7	0.23	135	201
9225.16021221	16	2	15	0.38	22	12	0.30	40	1.02	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	239	355
9225.16041221	16	4	15	0.38	22	12	0.30	50	1.27	0.48	12.2	0.71	18.0	50	1.27	0.82	20.8	0.54	296	440
9225.16061221	16	6	15	0.38	22	12	0.30	50	1.27	0.57	14.5	0.80	20.3	50	1.27	0.91	23.1	0.66	366	545
9225.16081221	16	8	15	0.38	22	12	0.30	60	1.52	0.63	16.0	0.84	21.3	50	1.27	0.95	24.1	0.72	424	631
9225.16101221	16	10	15	0.38	22	12	0.30	60	1.52	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	522	777
9225.16121221	16	12	15	0.38	22	12	0.30	60	1.52	0.74	18.8	0.97	24.6	50	1.27	1.08	27.4	0.93	570	849
9225.16161221	16	16	15	0.38	22	12	0.30	60	1.52	0.85	21.6	1.11	28.2	50	1.27	1.22	31.0	1.18	687	1,023
9225.16201221	16	20	15	0.38	22	12	0.30	70	1.78	0.96	24.4	1.24	31.5	50	1.27	1.35	34.3	1.45	849	1,263
9225.16241221	16	24	15	0.38	22	12	0.30	70	1.78	1.04	26.4	1.34	34.0	50	1.27	1.45	36.8	1.67	956	1,422
9225.16361221	16	36	15	0.38	22	12	0.30	70	1.78	1.20	30.5	1.51	38.4	60	1.52	1.65	41.9	2.17	1,283	1,910
9225.16501221	16	50	15	0.38	22	12	0.30	80	2.03	1.33	33.8	1.64	41.7	60	1.52	1.78	45.2	2.52	1,786	2,658

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF TRIADS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT		
					SIZE	INS. THICKNESS	AWG														
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		(SQ. IN.)	LBS/1000 FT	kg/1000 m
20 AWG 7W (0.52 mm²) OVERALL SHIELDED TRIADS																					
9225.20041222	20	4	15	0.38	22	12	0.30	50	1.27	0.43	10.9	0.67	17.0	50	1.27	0.78	19.8	0.48	247	367	
9225.20081222	20	8	15	0.38	22	12	0.30	50	1.27	0.52	13.2	0.75	19.1	50	1.27	0.86	21.8	0.59	336	499	
9225.20121222	20	12	15	0.38	22	12	0.30	50	1.27	0.60	15.2	0.84	21.3	50	1.27	0.95	24.1	0.72	427	636	
9225.20161222	20	16	15	0.38	22	12	0.30	60	1.52	0.70	17.8	0.93	23.6	50	1.27	1.04	26.4	0.86	528	786	
9225.20241222	20	24	15	0.38	22	12	0.30	60	1.52	0.84	21.3	1.11	28.2	50	1.27	1.22	31.0	1.18	694	1,032	
9225.20361222	20	36	15	0.38	22	12	0.30	70	1.78	1.00	25.4	1.29	32.8	50	1.27	1.40	35.6	1.56	955	1,421	

18 AWG 7W (0.82 mm²) OVERALL SHIELDED TRIADS																				
9225.18041222	18	4	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	291	433
9225.18081222	18	8	15	0.38	22	12	0.30	50	1.27	0.59	15.0	0.80	20.3	50	1.27	0.91	23.1	0.66	409	609
9225.18121222	18	12	15	0.38	22	12	0.30	60	1.52	0.72	18.3	0.97	24.6	50	1.27	1.08	27.4	0.93	554	824
9225.18161222	18	16	15	0.38	22	12	0.30	60	1.52	0.82	20.8	1.06	26.9	50	1.27	1.17	29.7	1.09	671	999
9225.18241222	18	24	15	0.38	22	12	0.30	70	1.78	0.97	24.6	1.24	31.5	50	1.27	1.35	34.3	1.45	936	1,393
9225.18361222	18	36	15	0.38	22	12	0.30	70	1.78	1.06	26.9	1.34	34.0	50	1.27	1.45	36.8	1.67	1,256	1,869

16 AWG 7W (1.31 mm²) OVERALL SHIELDED TRIADS																				
9225.16010002	16	1	15	0.38	-	-	-	35	0.89	0.28	7.1	0.43	10.9	50	1.27	0.54	13.7	0.23	160	238
9225.16041222	16	4	15	0.38	22	12	0.30	50	1.27	0.51	13.0	0.75	19.1	50	1.27	0.86	21.8	0.58	353	525
9225.16081222	16	8	15	0.38	22	12	0.30	60	1.52	0.67	17.0	0.89	22.6	50	1.27	1.00	25.4	0.80	540	803
9225.16121222	16	12	15	0.38	22	12	0.30	60	1.52	0.79	20.1	1.06	26.9	50	1.27	1.17	29.7	1.09	727	1,082
9225.16161222	16	16	15	0.38	22	12	0.30	70	1.78	0.92	23.4	1.19	30.2	50	1.27	1.30	33.0	1.34	922	1,372
9225.16241222	16	24	15	0.38	22	12	0.30	70	1.78	1.11	28.2	1.42	36.1	50	1.27	1.53	38.9	1.86	1,254	1,866
9225.16361222	16	36	15	0.38	22	12	0.30	80	2.03	1.31	33.3	1.60	40.6	60	1.52	1.73	43.9	2.38	1,792	2,667

CCW® Armored Instrumentation, Pairs/Triads, Individual and Overall Shield

UL Type ITC-HL/PLTC, PVC, 300 V, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC



Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC), rated 105°C per UL Standards 13 and 2250
- Color-coded per ICEA Method 1: pairs – black and white; triads – black, white and red. Each conductor in each pair or triad is printed alphanumerically for easy identification

Shielded Pairs/Triads:

- Isolated and individually twisted pairs or triads with a Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, two sizes smaller than insulated conductors

Cable Assembly:

- Individually shielded pairs or triads and communication wire are cabled together with a left hand lay
- Communication wire: 22 AWG solid bare copper, flame-retardant Polyvinyl Chloride (PVC), rated 105°C, orange

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standards 13 and 2250, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Instrumentation cables with individually shielded pairs or triads and an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications requiring ITC-HL or PLTC wiring methods where shielding against both external EMI and EMI between groups is required
- For use as Power Limited Tray Cable on circuits rated 150 V or less and 5 amps or less in Class 2 or Class 3 circuits in accordance with NEC Article 725
- For use as Instrumentation Tray Cable on circuits rated 150 V or less and 5 amps or less in accordance with NEC Article 727
- Recognized for use in Class I, II, and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503, and 505

Applications: (cont'd)

- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 13 Power-Limited Circuit Cables
- UL 2250 Instrumentation Tray Cable
- UL 1569 Metal Clad Cables
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type PLTC, SUN RES, DIR BUR, -40°C, UL File # E36118
- UL Type ITC-HL, UL File # E177408
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Instrumentation, Pairs/Triads, Individual and Overall Shield

UL Type ITC-HL/PLTC, PVC, 300 V, 105°C, Sunlight-Resistant, Direct Burial

UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
					SIZE	INS. THICKNESS	SIZE													
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	(SQ. IN.)	LBS/1000 FT	kg/1000 m
20 AWG 7W (0.52 mm²) INDIVIDUAL AND OVERALL SHIELDED PAIRS																				
9250.20021221	20	2	15	0.38	22	12	0.30	40	1.02	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	202	301
9250.20041221	20	4	15	0.38	22	12	0.30	50	1.27	0.43	10.9	0.62	15.7	50	1.27	0.73	18.5	0.42	239	355
9250.20061221	20	6	15	0.38	22	12	0.30	50	1.27	0.48	12.2	0.71	18.0	50	1.27	0.82	20.8	0.54	292	434
9250.20081221	20	8	15	0.38	22	12	0.30	50	1.27	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	323	481
9250.20101221	20	10	15	0.38	22	12	0.30	50	1.27	0.57	14.5	0.80	20.3	50	1.27	0.91	23.1	0.66	401	597
9250.20121221	20	12	15	0.38	22	12	0.30	60	1.52	0.63	16.0	0.84	21.3	50	1.27	0.95	24.1	0.72	439	653
9250.20161221	20	16	15	0.38	22	12	0.30	60	1.52	0.72	18.3	0.97	24.6	50	1.27	1.08	27.4	0.93	511	760
9250.20201221	20	20	15	0.38	22	12	0.30	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	593	882
9250.20241221	20	24	15	0.38	22	12	0.30	70	1.78	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	718	1,069
9250.20361221	20	36	15	0.38	22	12	0.30	70	1.78	1.04	26.4	1.34	34.0	50	1.27	1.45	36.8	1.67	925	1,377
9250.20501221	20	50	15	0.38	22	12	0.30	70	1.78	1.19	30.2	1.51	38.4	60	1.52	1.65	41.9	2.17	1,255	1,867

18 AWG 7W (0.82 mm²) INDIVIDUAL AND OVERALL SHIELDED PAIRS																				
9250.18021221	18	2	15	0.38	22	12	0.30	40	1.02	0.38	9.7	0.58	14.7	50	1.27	0.69	17.5	0.38	216	322
9250.18041221	18	4	15	0.38	22	12	0.30	50	1.27	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	278	414
9250.18061221	18	6	15	0.38	22	12	0.30	50	1.27	0.55	14.0	0.75	19.1	50	1.27	0.86	21.8	0.59	345	513
9250.18081221	18	8	15	0.38	22	12	0.30	50	1.27	0.60	15.2	0.80	20.3	50	1.27	0.92	23.4	0.67	397	590
9250.18101221	18	10	15	0.38	22	12	0.30	60	1.52	0.67	17.0	0.89	22.6	50	1.27	1.00	25.4	0.80	489	727
9250.18121221	18	12	15	0.38	22	12	0.30	60	1.52	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	540	803
9250.18161221	18	16	15	0.38	22	12	0.30	60	1.52	0.79	20.1	1.06	26.9	50	1.27	1.17	29.7	1.09	645	959
9250.18201221	18	20	15	0.38	22	12	0.30	60	1.52	0.88	22.4	1.15	29.2	50	1.27	1.26	32.0	1.26	794	1,181
9250.18241221	18	24	15	0.38	22	12	0.30	70	1.78	0.98	24.9	1.24	31.5	50	1.27	1.35	34.3	1.45	907	1,349
9250.18361221	18	36	15	0.38	22	12	0.30	70	1.78	1.15	29.2	1.47	37.3	50	1.27	1.58	40.1	1.99	1,227	1,826
9250.18501221	18	50	15	0.38	22	12	0.30	80	2.03	1.36	34.5	1.69	42.9	60	1.52	1.82	46.2	2.64	1,662	2,473

16 AWG 7W (1.31 mm²) INDIVIDUAL AND OVERALL SHIELDED PAIRS																				
9250.16021221	16	2	15	0.38	22	12	0.30	50	1.27	0.44	11.2	0.67	17.0	50	1.27	0.78	19.8	0.48	260	387
9250.16041221	16	4	15	0.38	22	12	0.30	50	1.27	0.52	13.2	0.71	18.0	50	1.27	0.82	20.8	0.54	334	496
9250.16061221	16	6	15	0.38	22	12	0.30	50	1.27	0.59	15.0	0.84	21.3	50	1.27	0.95	24.1	0.72	443	659
9250.16081221	16	8	15	0.38	22	12	0.30	60	1.52	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	515	767
9250.16101221	16	10	15	0.38	22	12	0.30	60	1.52	0.75	19.1	1.02	25.9	50	1.27	1.13	28.7	1.02	616	917
9250.16121221	16	12	15	0.38	22	12	0.30	60	1.52	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	684	1,019
9250.16161221	16	16	15	0.38	22	12	0.30	70	1.78	0.95	24.1	1.24	31.5	50	1.27	1.35	34.3	1.45	872	1,298
9250.16201221	16	20	15	0.38	22	12	0.30	70	1.78	1.03	26.2	1.34	34.0	50	1.27	1.45	36.8	1.67	1,024	1,524
9250.16241221	16	24	15	0.38	22	12	0.30	70	1.78	1.10	27.9	1.37	34.8	50	1.27	1.48	37.6	1.74	1,270	1,890
9250.16361221	16	36	15	0.38	22	12	0.30	80	2.03	1.29	32.8	1.60	40.6	60	1.52	1.73	43.9	2.38	1,712	2,547
9250.16501221	16	50	15	0.38	22	12	0.30	80	2.03	1.53	38.9	1.87	47.5	60	1.52	2.00	50.8	3.18	2,215	3,297

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF TRIADS	INSULATION THICKNESS		COMMUNICATION WIRE			INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
					SIZE	INS. THICKNESS														
			mils	mm	AWG	mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		(SQ. IN.)	LBS/1000 FT
20 AWG 7W (0.52 mm²) INDIVIDUAL AND OVERALL SHIELDED TRIADS																				
9250.20041222	20	4	15	0.38	22	12	0.30	50	1.27	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	263	392
9250.20081222	20	8	15	0.38	22	12	0.30	50	1.27	0.56	14.2	0.80	20.3	50	1.27	0.91	23.1	0.66	376	560
9250.20121222	20	12	15	0.38	22	12	0.30	60	1.52	0.67	17.0	0.89	22.6	50	1.27	1.00	25.4	0.80	514	765
9250.20161222	20	16	15	0.38	22	12	0.30	60	1.52	0.77	19.6	1.02	25.9	50	1.27	1.13	28.7	1.02	616	917
9250.20241222	20	24	15	0.38	22	12	0.30	70	1.78	0.96	24.4	1.24	31.5	50	1.27	1.35	34.3	1.45	869	1,293
9250.20361222	20	36	15	0.38	22	12	0.30	70	1.78	1.11	28.2	1.42	36.1	50	1.27	1.53	38.9	1.86	1,139	1,696
18 AWG 7W (0.82 mm²) INDIVIDUAL AND OVERALL SHIELDED TRIADS																				
9250.18041222	18	4	15	0.38	22	12	0.30	50	1.27	0.54	13.7	0.75	19.1	50	1.27	0.86	21.8	0.59	320	477
9250.18081222	18	8	15	0.38	22	12	0.30	60	1.52	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	485	721
9250.18121222	18	12	15	0.38	22	12	0.30	60	1.52	0.79	20.1	1.06	26.9	50	1.27	1.17	29.7	1.09	645	959
9250.18161222	18	16	15	0.38	22	12	0.30	70	1.78	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	797	1,185
9250.18241222	18	24	15	0.38	22	12	0.30	70	1.78	1.06	26.9	1.34	34.0	50	1.27	1.45	36.8	1.67	1,119	1,665
9250.18361222	18	36	15	0.38	22	12	0.30	80	2.03	1.29	32.8	1.60	40.6	60	1.52	1.73	43.9	2.38	1,570	2,336
16 AWG 7W (1.31 mm²) INDIVIDUAL AND OVERALL SHIELDED TRIADS																				
9250.16041222	16	4	15	0.38	22	12	0.30	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.58	392	583
9250.16081222	16	8	15	0.38	22	12	0.30	60	1.52	0.79	20.1	1.02	25.9	50	1.27	1.13	28.7	1.02	621	924
9250.16121222	16	12	15	0.38	22	12	0.30	70	1.78	0.95	24.1	1.19	30.2	50	1.27	1.30	33.0	1.34	879	1,308
9250.16161222	16	16	15	0.38	22	12	0.30	70	1.78	1.04	26.4	1.34	34.0	50	1.27	1.45	36.8	1.67	1,074	1,598
9250.16241222	16	24	15	0.38	22	12	0.30	80	2.03	1.27	32.3	1.60	40.6	60	1.52	1.73	43.9	2.38	1,605	2,389
9250.16361222	16	36	15	0.38	22	12	0.30	80	2.03	1.49	37.8	1.83	46.5	60	1.52	1.96	49.8	3.06	2,161	3,216

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.



CCW® Armored Instrumentation, Pairs/Triads, Overall Shield

UL Type MC-HL, PVC/Nylon, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC) insulation and nylon covering, rated 90°C per UL Standard 83
- Color-coded per ICEA Method 1: pairs – black and white; triads – black, white and red. Each conductor in each pair or triad is printed alphanumerically for easy identification

Cable Assembly:

- Individual pairs or triads are cabled together with a left-hand lay

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standard 1569, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL Standards 1569 and 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standard 1569, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored 600 volt Instrumentation cables with an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications where shielding against external EMI is required
- For use in Class 1 remote-control and signal circuits in accordance with NEC Article 725
- Recognized for use in Class I, II and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 83 Thermoplastic Insulated Wire and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC-HL, CT USE, SUN RES, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Instrumentation, Pairs/Triads, Overall Shield

UL Type MC-HL, PVC/Nylon, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT	
			mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m

18 AWG 7W (0.82 mm²) OVERALL SHIELDED PAIRS

9325.18020001	18	2	19	0.48	40	1.02	0.41	10.4	0.59	15.0	50	1.27	0.70	17.8	0.39	222	330
9325.18040001	18	4	19	0.48	40	1.02	0.48	12.2	0.65	16.5	50	1.27	0.75	19.1	0.45	268	399
9325.18080001	18	8	19	0.48	50	1.27	0.60	15.2	0.82	20.8	50	1.27	0.92	23.4	0.67	420	625
9325.18120001	18	12	19	0.48	50	1.27	0.78	19.8	1.00	25.4	50	1.27	1.10	27.9	0.96	560	833
9325.18160001	18	16	19	0.48	50	1.27	0.81	20.6	1.12	28.4	50	1.27	1.23	31.2	1.20	706	1,051
9325.18240001	18	24	19	0.48	50	1.27	1.08	27.4	1.39	35.3	50	1.27	1.49	37.8	1.77	969	1,442

16 AWG 7W (1.31 mm²) OVERALL SHIELDED PAIRS

9325.16010001	16	1	19	0.48	60	1.52	0.35	8.9	0.53	13.5	50	1.27	0.64	16.3	0.33	185	275
9325.16020001	16	2	19	0.48	40	1.02	0.38	9.7	0.58	14.7	50	1.27	0.69	17.5	0.38	246	366
9325.16040001	16	4	19	0.48	40	1.02	0.47	11.9	0.71	18.0	50	1.27	0.82	20.8	0.54	333	495
9325.16060001	16	6	19	0.48	50	1.27	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	405	603
9325.16080001	16	8	19	0.48	50	1.27	0.66	16.8	0.89	22.6	50	1.27	1.00	25.4	0.80	466	694
9325.16100001	16	10	19	0.48	50	1.27	0.76	19.3	1.02	25.9	50	1.27	1.13	28.7	1.02	556	827
9325.16120001	16	12	19	0.48	50	1.27	0.80	20.3	1.06	26.9	50	1.27	1.17	29.7	1.09	604	899
9325.16160001	16	16	19	0.48	50	1.27	0.87	22.1	1.15	29.2	50	1.27	1.26	32.0	1.26	799	1,189
9325.16200001	16	20	19	0.48	50	1.27	0.98	24.9	1.29	32.8	50	1.27	1.40	35.6	1.56	929	1,383
9325.16240001	16	24	19	0.48	50	1.27	1.08	27.4	1.37	34.8	50	1.27	1.48	37.6	1.74	1,040	1,548
9325.16360001	16	36	19	0.48	50	1.27	1.32	33.5	1.64	41.7	60	1.52	1.78	45.2	2.52	1,445	2,151
9325.16500001	16	50	19	0.48	50	1.27	1.48	37.6	1.83	46.5	60	1.52	1.96	49.8	3.06	1,897	2,823

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF TRIADS	INSULATION THICKNESS		INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		OVERALL JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT	
			mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m

16 AWG 7W (1.31 mm²) OVERALL SHIELDED TRIADS

9325.16010002	16	1	19	0.48	50	1.27	0.35	8.9	0.53	13.5	50	1.27	0.64	16.3	0.33	195	290
9325.16040002	16	4	19	0.48	40	1.02	0.51	13.0	0.71	18.0	50	1.27	0.82	20.8	0.54	407	606
9325.16080002	16	8	19	0.48	50	1.27	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	617	918
9325.16120002	16	12	19	0.48	50	1.27	0.85	21.6	1.11	28.2	50	1.27	1.22	31.0	1.18	897	1,334
9325.16160002	16	16	19	0.48	50	1.27	0.93	23.6	1.19	30.2	50	1.27	1.30	33.0	1.34	1,161	1,727
9325.16240002	16	24	19	0.48	50	1.27	1.16	29.5	1.47	37.3	50	1.27	1.58	40.1	1.99	1,581	2,353
9325.16360002	16	36	19	0.48	50	1.27	1.42	36.1	1.74	44.2	60	1.52	1.87	47.5	2.78	2,142	3,188

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.



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CCW® Armored Instrumentation, Pairs/Triads, Individual and Overall Shield

UL Type MC-HL, PVC/Nylon, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Flame-retardant Polyvinyl Chloride (PVC) insulation and nylon covering, rated 90°C per UL Standard 83
- Color-coded per ICEA Method 1: pairs – black and white; triads – black, white and red. Each conductor in each pair or triad is printed alphanumerically for easy identification

Shielded Pairs/Triads:

- Isolated and individually twisted pairs or triads with a Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, two sizes smaller than insulated conductors

Cable Assembly:

- Individually shielded pairs or triads are cabled together with a left-hand lay

Overall Shield:

- Flexfoil® aluminum/polyester tape shield providing 100% coverage
- Stranded tinned copper drain wire, same size as insulated conductors

Inner Jacket:

- Flame-retardant Polyvinyl Chloride (PVC) per UL Standard 1569, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Nylon rip cord to facilitate jacket removal

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL Standards 1569 and 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Overall Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL Standard 1569, black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored 600 volt Instrumentation cables with individually shielded pairs or triads and an overall shield provide superior protection and reliability against physical damage for use in instrumentation and process control applications where shielding against both external EMI and EMI between groups is required
- For use in Class 1 remote-control and signal circuits in accordance with NEC Article 725
- Recognized for use in Class I, II and III, Divisions 1 and 2; or Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed indoors or outdoors, in wet or dry locations, in a raceway, as aerial cable on a messenger, in cable trays, or for direct burial
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides superior mechanical protection and an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Meets cold impact at -40°C

Specifications:

Design Adherence:

- UL 83 Thermoplastic Insulated Wire and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309/CSA C22.2 No. 245 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC-HL, CT USE, SUN RES, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Instrumentation, Pairs/Triads, Individual and Overall Shield

UL Type MC-HL, PVC/Nylon, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF PAIRS	INSULATION THICKNESS		INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		OVERALL JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
			mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m

18 AWG 7W (0.82 mm²) INDIVIDUAL AND OVERALL SHIELDED PAIRS

9350.18020001	18	2	19	0.48	40	1.02	0.41	10.4	0.59	15.0	50	1.27	0.70	17.8	0.39	225	335
9350.18040001	18	4	19	0.48	40	1.02	0.48	12.2	0.65	16.5	50	1.27	0.75	19.1	0.45	300	446
9350.18080001	18	8	19	0.48	50	1.27	0.60	15.2	0.82	20.8	50	1.27	0.92	23.4	0.67	450	670
9350.18120001	18	12	19	0.48	50	1.27	0.78	19.8	1.00	25.4	50	1.27	1.10	27.9	0.96	580	863
9350.18160001	18	16	19	0.48	50	1.27	0.81	20.6	1.12	28.4	50	1.27	1.23	31.2	1.20	760	1,131
9350.18240001	18	24	19	0.48	50	1.27	1.08	27.4	1.39	35.3	50	1.27	1.49	37.8	1.77	1,050	1,563

16 AWG 7W (1.31 mm²) INDIVIDUAL AND OVERALL SHIELDED PAIRS

9350.16020001	16	2	19	0.48	40	1.02	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	239	355
9350.16040001	16	4	19	0.48	50	1.27	0.56	14.2	0.80	20.3	50	1.27	0.91	23.1	0.66	342	509
9350.16060001	16	6	19	0.48	50	1.27	0.66	16.8	0.89	22.6	50	1.27	1.00	25.4	0.80	429	639
9350.16080001	16	8	19	0.48	50	1.27	0.70	17.8	0.93	23.6	50	1.27	1.04	26.4	0.86	502	747
9350.16100001	16	10	19	0.48	50	1.27	0.79	20.1	1.06	26.9	50	1.27	1.17	29.7	1.09	613	912
9350.16120001	16	12	19	0.48	50	1.27	0.85	21.6	1.11	28.2	50	1.27	1.22	31.0	1.18	687	1,023
9350.16160001	16	16	19	0.48	50	1.27	0.98	24.9	1.29	32.8	50	1.27	1.40	35.6	1.56	859	1,278
9350.16200001	16	20	19	0.48	50	1.27	1.06	26.9	1.34	34.0	50	1.27	1.45	36.8	1.67	997	1,483
9350.16240001	16	24	19	0.48	50	1.27	1.12	28.4	1.42	36.1	50	1.27	1.53	38.9	1.86	1,140	1,697
9350.16360001	16	36	19	0.48	50	1.27	1.37	34.8	1.69	42.9	60	1.52	1.82	46.2	2.64	1,618	2,407
9350.16500001	16	50	19	0.48	50	1.27	1.57	39.9	1.92	48.8	60	1.52	2.05	52.1	3.34	2,166	3,224

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF TRIADS	INSULATION THICKNESS		INNER JACKET THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		OVERALL JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹	APPROXIMATE NET WEIGHT	
			mils	mm	mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m

16 AWG 7W (1.31 mm²) INDIVIDUAL AND OVERALL SHIELDED TRIADS

9350.16040002	16	4	19	0.48	50	1.27	0.61	15.5	0.84	21.3	50	1.27	0.95	24.1	0.72	403	600
9350.16080002	16	8	19	0.48	50	1.27	0.82	20.8	1.06	26.9	50	1.27	1.17	29.7	1.09	650	967
9350.16120002	16	12	19	0.48	50	1.27	0.98	24.9	1.24	31.5	50	1.27	1.35	34.3	1.45	853	1,269
9350.16160002	16	16	19	0.48	50	1.27	1.10	27.9	1.37	34.8	50	1.27	1.48	37.6	1.74	1,079	1,606
9350.16240002	16	24	19	0.48	50	1.27	1.33	33.8	1.64	41.7	60	1.52	1.78	45.2	2.52	1,515	2,254
9350.16360002	16	36	19	0.48	50	1.27	1.58	40.1	1.96	49.8	60	1.52	2.09	53.1	3.48	2,184	3,250

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.



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CCW® Armored Control With Grounding Conductor

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compressed Class B stranding per ASTM B8

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation per ICEA S-73-532 and UL 44, Listed XHHW-2
- Color-coded per ICEA Method 1, Table E2, full-colored insulation with stripes
- Color-coded per CSA C22.2 No. 123 where applicable

Grounding Conductor:

- Class B stranded bare annealed copper per ASTM B3 and B8
- Cross-Linked Polyethylene (XLPE) insulation, green
- Sized in accordance with NEC Table 250.122

Cable Assembly:

- Insulated conductors and grounding wire are cabled together with non-hygroscopic fillers when required
- A binder tape, when required, is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569 and UL 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Meets CSA Low Acid Gas requirements

Applications:

- CCW armored Control cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems
- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-73-532/WC-57 Standard for Control, Thermocouple Extension and Instrumentation Cables
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable
- CSA C22.2 No. 123 Metal Sheathed Cables
- CSA C22.2 No. 174 Cables and Cable Glands for Use in Hazardous Locations

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC-HL, XHHW-2, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC
- CSA certified¹ Type RA90, XLPE, HL, SR, FT4, and -40°C, CSA File # 7319

¹ Standard cables are also marked CSA Type RA90, except four (4) conductor cables which require a different color code, which may be special-ordered.

CCW[®] Armored Control With Grounding Conductor

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF COND.	GREEN INSULATED GROUND (AWG)	INSULATION THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA ¹ (SQ. IN.)	APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT ²
				mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m	

14 AWG 7W (2.08 mm²) MULTI-CONDUCTOR CONTROL CABLE WITH GREEN INSULATED GROUNDING CONDUCTOR

9500.01402114	14	2	14	30	0.76	0.30	7.6	0.49	12.4	50	1.27	0.60	15.2	0.29	163	243	15
9500.01403114	14	3	14	30	0.76	0.33	8.4	0.53	13.5	50	1.27	0.64	16.3	0.33	192	286	15
9500.01404114	14	4	14	30	0.76	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	222	330	15
9500.01405114	14	5	14	30	0.76	0.39	9.9	0.60	15.2	50	1.27	0.71	18.0	0.40	245	365	15
9500.01406114	14	6	14	30	0.76	0.41	10.4	0.62	15.7	50	1.27	0.73	18.5	0.42	267	397	15
9500.01408114	14	8	14	30	0.76	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	321	478	15
9500.01411114	14	11	14	30	0.76	0.57	14.5	0.80	20.3	50	1.27	0.91	23.1	0.66	395	588	12
9500.01418114	14	18	14	30	0.76	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	554	824	12
9500.01436114	14	36	14	30	0.76	0.97	24.6	1.24	31.5	50	1.27	1.35	34.3	1.45	948	1,411	10

12 AWG 7W (3.31 mm²) MULTI-CONDUCTOR CONTROL CABLE WITH GREEN INSULATED GROUNDING CONDUCTOR

9500.01202112	12	2	12	30	0.76	0.34	8.6	0.53	13.5	50	1.27	0.64	16.3	0.33	200	298	20
9500.01203112	12	3	12	30	0.76	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	239	356	20
9500.01204112	12	4	12	30	0.76	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	310	461	20
9500.01205112	12	5	12	30	0.76	0.46	11.7	0.67	17.0	50	1.27	0.78	19.8	0.48	324	482	20
9500.01206112	12	6	12	30	0.76	0.47	11.9	0.67	17.0	50	1.27	0.78	19.8	0.48	338	503	20
9500.01208112	12	8	12	30	0.76	0.56	14.2	0.80	20.3	50	1.27	0.91	23.1	0.66	426	634	20
9500.01211112	12	11	12	30	0.76	0.65	16.5	0.89	22.6	50	1.27	1.00	25.4	0.80	519	772	15
9500.01218112	12	18	12	30	0.76	0.78	19.8	1.02	25.9	50	1.27	1.13	28.7	1.02	739	1,100	15
9500.01236112	12	36	12	30	0.76	1.10	27.9	1.37	34.8	50	1.27	1.48	37.6	1.74	1,302	1,938	12

10 AWG 7W (5.26 mm²) MULTI-CONDUCTOR CONTROL CABLE WITH GREEN INSULATED GROUNDING CONDUCTOR

9500.01002110	10	2	10	30	0.76	0.39	9.9	0.58	14.7	50	1.27	0.69	17.5	0.38	253	377	30
9500.01003110	10	3	10	30	0.76	0.41	10.4	0.62	15.7	50	1.27	0.73	18.5	0.42	303	451	30
9500.01004110	10	4	10	30	0.76	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	348	518	30
9500.01006110	10	6	10	30	0.76	0.54	13.7	0.75	19.1	50	1.27	0.86	21.8	0.59	451	671	28
9500.01008110	10	8	10	30	0.76	0.65	16.5	0.89	22.6	50	1.27	1.00	25.4	0.80	568	845	28
9500.01011110	10	11	10	30	0.76	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	704	1,048	20

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC Section 392.22.

² Ampacities in accordance with NEC Article 310 and Table 310.15(B)(16).

Note: Standard cables with up to and including six (6) conductors are also marked CSA Type RA90. All others are special order.



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CCW® Armored Control With Bare Grounding Conductor

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compressed Class B stranding per ASTM B8

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation per ICEA S-73-532 and UL 44, Listed XHHW-2
- Color-coded per ICEA Method 1, Table E2, full-colored insulation with stripes
- Color-coded per CSA C22.2 No. 123 where applicable

Grounding Conductor:

- Class B stranded bare annealed copper per ASTM B3 and B8
- Sized in accordance with NEC Table 250.122

Cable Assembly:

- Insulated conductors and grounding wire are cabled together with non-hygroscopic fillers when required
- A binder tape, when required, is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569 and UL 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Meets CSA Low Acid Gas requirements

Applications:

- CCW armored Control cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems
- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-73-532/WC-57 Standard for Control, Thermocouple Extension and Instrumentation Cables
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable
- CSA C22.2 No. 123 Metal Sheathed Cables

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC-HL, XHHW-2, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC
- CSA certified¹ Type RA90, XLPE, SR, FT4, and -40°C, CSA File # 7319

¹ Standard cables are also marked CSA Type RA90, except four (4) conductor cables which require a different color code, which may be special-ordered.

CCW® Armored Control With Bare Grounding Conductor

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF COND.	BARE INSULATED GROUND (AWG)	INSULATION THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA ¹ SQ. IN.	APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT ²
				mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m	

14 AWG 7W (2.08 mm²) MULTI-CONDUCTOR CONTROL CABLE WITH BARE GROUNDING CONDUCTOR

9510.01404114	14	4	14	30	0.76	0.35	8.8	0.52	13.3	50	1.27	0.63	16.0	0.62	203	302	20
9510.01405114	14	5	14	30	0.76	0.38	9.7	0.53	13.5	50	1.27	0.63	16.0	0.62	224	333	20
9510.01407114	14	7	14	30	0.76	0.43	10.9	0.60	15.2	50	1.27	0.71	18.0	0.79	287	427	17.5
9510.01409114	14	9	14	30	0.76	0.51	13.0	0.75	19.1	50	1.27	0.86	21.8	1.16	368	548	17.5
9510.01412114	14	12	14	30	0.76	0.56	14.2	0.79	20.1	50	1.27	0.89	22.6	1.24	425	632	12.5
9510.01419114	14	19	14	30	0.76	0.67	17.0	0.92	23.4	50	1.27	1.02	25.9	1.63	594	884	12.5
9510.01437114	14	37	14	30	0.76	0.94	23.9	1.22	31.0	50	1.27	1.32	33.5	2.74	1030	1533	10

12 AWG 7W (3.31 mm²) MULTI-CONDUCTOR CONTROL CABLE WITH BARE GROUNDING CONDUCTOR

9510.01204112	12	4	12	30	0.76	0.38	9.7	0.55	14.0	50	1.27	0.65	16.5	0.66	246	366	24
9510.01205112	12	5	12	30	0.76	0.43	10.9	0.61	15.5	50	1.27	0.71	18.0	0.79	302	449	24
9510.01207112	12	7	12	30	0.76	0.49	12.4	0.64	16.3	50	1.27	0.74	18.8	0.86	362	539	21
9510.01209112	12	9	12	30	0.76	0.58	14.7	0.79	20.1	50	1.27	0.90	22.9	1.21	458	682	21
9510.01212112	12	12	12	30	0.76	0.64	16.3	0.83	21.1	50	1.27	0.94	23.9	1.39	545	811	15

10 AWG 7W (5.26 mm²) MULTI-CONDUCTOR CONTROL CABLE WITH BARE GROUNDING CONDUCTOR

9510.01004110	10	4	10	30	0.76	0.46	11.7	0.63	16.0	50	1.27	0.73	18.5	0.84	343	510	32
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Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC Section 392.22.

² Ampacities in accordance with NEC Article 310 and Table 310.15(B)(16).



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CCW® Armored Control Without Grounding Conductor

UL Type MC, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Class B stranding per ASTM B8

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation per ICEA S-73-532 and UL 44, Listed XHHW-2
- Color-coded per ICEA Method 1, Table E2, full-colored insulation with stripes
- Color-coded per CSA C22.2 No. 123 where applicable

Cable Assembly:

- Insulated conductors are cabled together with non-hygroscopic fillers when required
- A binder tape, when required, is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Meets CSA Low Acid Gas requirements

Applications:

- CCW armored Control cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I and II, Division 2; Class III, Divisions 1 and 2; and Class I, Zone 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems
- Meets cold impact at -40°C

Features: (cont'd)

- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-73-532/WC-57 Standard for Control, Thermocouple Extension and Instrumentation Cables
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 1309 Marine Shipboard Cable
- CSA C22.2 No. 123 Metal Sheathed Cables

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC, XHHW-2, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC
- CSA certified¹ Type RA90, XLPE, SR, FT4, and -40°C, CSA File # 7319

¹ Standard cables are also marked CSA Type RA90, except four (4) conductor cables which require a different color code, which may be special-ordered.

CCW® Armored Control Without Grounding Conductor

UL Type MC, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG)	NO. OF COND.	INSULATION THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT²
			mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m	

14 AWG 7W (2.08 mm²) MULTI-CONDUCTOR CONTROL CABLE WITHOUT GROUNDING CONDUCTOR

9525.01402000	14	2	30	0.76	0.28	7.1	0.49	12.4	50	1.27	0.60	15.2	0.29	144	214	15
9525.01403000	14	3	30	0.76	0.30	7.6	0.49	12.4	50	1.27	0.60	15.2	0.29	155	231	15
9525.01404000	14	4	30	0.76	0.33	8.4	0.53	13.5	50	1.27	0.64	16.3	0.33	183	273	15
9525.01405000	14	5	30	0.76	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	213	317	15
9525.01407000	14	7	30	0.76	0.41	10.4	0.62	15.7	50	1.27	0.73	18.5	0.42	257	383	15
9525.01409000	14	9	30	0.76	0.50	12.7	0.71	18.0	50	1.27	0.82	20.8	0.54	312	465	15
9525.01412000	14	12	30	0.76	0.57	14.5	0.80	20.3	50	1.27	0.91	23.1	0.66	386	575	12
9525.01419000	14	19	30	0.76	0.69	17.5	0.93	23.6	50	1.27	1.04	26.4	0.86	544	810	12
9525.01437000	14	37	30	0.76	0.96	24.4	1.24	31.5	50	1.27	1.35	34.3	1.45	959	1,427	10

12 AWG 7W (3.31 mm²) MULTI-CONDUCTOR CONTROL CABLE WITHOUT GROUNDING CONDUCTOR

9525.01202000	12	2	30	0.76	0.31	7.9	0.53	13.5	50	1.27	0.64	16.3	0.33	166	247	20
9525.01203000	12	3	30	0.76	0.34	8.6	0.53	13.5	50	1.27	0.64	16.3	0.33	192	285	20
9525.01204000	12	4	30	0.76	0.38	9.7	0.58	14.7	50	1.27	0.69	17.5	0.38	229	341	20
9525.01205000	12	5	30	0.76	0.42	10.7	0.62	15.7	50	1.27	0.73	18.5	0.42	266	395	20
9525.01207000	12	7	30	0.76	0.47	11.9	0.67	17.0	50	1.27	0.78	19.8	0.48	328	489	20
9525.01209000	12	9	30	0.76	0.56	14.2	0.80	20.3	50	1.27	0.91	23.1	0.66	410	611	20
9525.01212000	12	12	30	0.76	0.65	16.5	0.89	22.6	50	1.27	0.99	25.1	0.78	510	759	15
9525.01219000	12	19	30	0.76	0.78	19.8	1.02	25.9	50	1.27	1.13	28.7	1.02	731	1,087	15
9525.01237000	12	37	30	0.76	1.08	27.4	1.37	34.8	50	1.27	1.48	37.6	1.74	1,318	1,962	12

10 AWG 7W (5.26 mm²) MULTI-CONDUCTOR CONTROL CABLE WITHOUT GROUNDING CONDUCTOR

9525.01002000	10	2	30	0.76	0.36	9.1	0.58	14.7	50	1.27	0.69	17.5	0.38	205	305	30
9525.01003000	10	3	30	0.76	0.39	9.9	0.58	14.7	50	1.27	0.69	17.5	0.38	241	359	30
9525.01004000	10	4	30	0.76	0.44	11.2	0.67	17.0	50	1.27	0.78	19.8	0.48	301	448	30
9525.01005000	10	5	30	0.76	0.48	12.2	0.71	18.0	50	1.27	0.82	20.8	0.54	353	525	30
9525.01007000	10	7	30	0.76	0.54	13.7	0.75	19.1	50	1.27	0.86	21.8	0.59	442	658	28
9525.01009000	10	9	30	0.76	0.65	16.5	0.89	22.6	50	1.27	1.00	25.4	0.80	551	820	28
9525.01012000	10	12	30	0.76	0.74	18.8	0.97	24.6	50	1.27	1.08	27.4	0.93	693	1,032	20

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC® Section 392.22.

² Ampacities in accordance with NEC® Article 310 and Table 310.15(B)(16).

Note: Standard cables with up to and including six (6) conductors are also marked CSA Type RA90. All others are special order.



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CCW® Armored Power, 3/C VFD and 4/C

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

- Bare annealed copper per ASTM B3
- 10 AWG and smaller are Class B compressed stranding per ASTM B8
- 8 AWG and larger are compact stranding per ASTM B496

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation per ICEA S-95-658 and UL 44, Listed XHHW-2
- 6 AWG and smaller are color-coded per ICEA Method 1, Table E2
- 4 AWG and larger are black with printed numbers per ICEA Method 4
- Color-coded per CSA C22.2 No. 123 where applicable

Grounding Conductor(s):

- Class B stranded bare annealed copper per ASTM B3 and B8
- Where specified, single or three split grounding wires are sized in accordance with NEC Table 250.122

Cable Assembly:

- Insulated conductors and grounding wire(s) are cabled together with non-hygroscopic fillers when required
- A binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569 and UL 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C
- Meets CSA Low Acid Gas requirements

Applications:

- Variable Frequency Drives: 3-conductor CCW armored cables with three (3) symmetrical grounding wires are the preferred wiring method for use with AC motors controlled by pulse-width modulated inverters in VFD applications
- CCW armored cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- 3-conductor CCW power cables with three grounding wires are recommended for use with pulse-width modulated AC drives
- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems

Features: (cont'd)

- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-95-658/WC-70 Standard for Non-Shielded Power Cable, 2 kV or Less
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable
- CSA C22.2 No. 123 Metal Sheathed Cables
- CSA C22.2 No. 174 Cables and Cable Glands for Use in Hazardous Locations

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC-HL, XHHW-2, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC
- CSA certified¹ Type RA90, XLPE, HL, SR, FT4, and -40°C, CSA File # 7319

¹ Standard cables are also marked CSA Type RA90, except four (4) conductor cables which require a different color code, which may be special-ordered.

CCW® Armored Power, 3/C VFD and 4/C

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG/kcmil)	NO. OF COND.	INSULATION THICKNESS		BARE GROUND (AWG)	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT²
			mils	mm		INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m	
9600.01403318	14 (7/W) (2.08 mm²)	3	30	0.76	3 x #18	0.33	8.4	0.53	13.5	50	1.27	0.64	16.3	0.33	163	242	15
9600.01404318		4	30	0.76	3 x #18	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	226	336	15
9600.01203316	12 (7/W) (3.31 mm²)	3	30	0.76	3 x #16	0.37	9.4	0.58	14.7	50	1.27	0.69	17.5	0.38	243	362	20
9600.01204316		4	30	0.76	3 x #16	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	291	433	20
9600.01003314	10 (7/W) (5.26 mm²)	3	30	0.76	3 x #14	0.41	10.4	0.62	15.7	50	1.27	0.73	18.5	0.42	305	454	30
9600.01004314		4	30	0.76	3 x #14	0.45	11.4	0.67	17.0	50	1.27	0.78	19.8	0.48	354	527	30
9600.00803314	8 (7/W) (8.36 mm²)	3	45	1.14	3 x #14	0.50	12.7	0.71	18.0	50	1.27	0.81	20.6	0.52	392	583	55
9600.00804110		4	45	1.14	1 x #10	0.58	14.7	0.80	20.3	50	1.27	0.90	22.9	0.64	473	704	44
9600.00603312	6 (7/W) (13.3 mm²)	3	45	1.14	3 x #12	0.58	14.7	0.80	20.3	50	1.27	0.90	22.9	0.64	534	795	75
9600.00604108		4	45	1.14	1 x #8	0.66	16.8	0.89	22.6	50	1.27	0.99	25.1	0.78	641	954	60
9600.00403312	4 (7/W) (21.2 mm²)	3	45	1.14	3 x #12	0.68	17.3	0.89	22.6	50	1.27	0.99	25.1	0.78	716	1,066	95
9600.00404108		4	45	1.14	1 x #8	0.77	19.6	0.97	24.6	50	1.27	1.08	27.4	0.93	860	1,280	76
9600.00203310	2 (7/W) (33.6 mm²)	3	45	1.14	3 x #10	0.80	20.3	1.02	25.9	50	1.27	1.13	28.7	1.02	1,013	1,507	130
9600.00204106		4	45	1.14	1 x #6	0.92	23.4	1.15	29.2	50	1.27	1.26	32.0	1.26	1,267	1,885	104
9600.00103310	1 (19/W) (42.4 mm²)	3	55	1.40	3 x #10	0.92	23.4	1.15	29.2	50	1.27	1.26	32.0	1.26	1,119	1,666	150
9600.00104106		4	55	1.40	1 x #6	1.04	26.4	1.29	32.8	50	1.27	1.40	35.6	1.56	1,526	2,272	120
9600.11003310	1/0 (19/W) (53.5 mm²)	3	55	1.40	3 x #10	1.00	25.4	1.24	31.5	50	1.27	1.34	34.0	1.43	1,496	2,226	170
9600.11004106		4	55	1.40	1 x #6	1.12	28.4	1.37	34.8	50	1.27	1.48	37.6	1.74	1,862	2,771	136
9600.21003310	2/0 (19/W) (67.4 mm²)	3	55	1.40	3 x #10	1.09	27.7	1.34	34.0	50	1.27	1.44	36.6	1.65	1,801	2,681	195
9600.21004106		4	55	1.40	1 x #6	1.23	31.2	1.51	38.4	60	1.52	1.64	41.7	2.14	2,351	3,498	156
9600.31003308	3/0 (19/W) (85.0 mm²)	3	55	1.40	3 x #8	1.21	30.7	1.47	37.3	60	1.52	1.58	40.1	1.99	2,262	3,367	225
9600.31004104		4	55	1.40	1 x #4	1.36	34.5	1.65	41.9	60	1.52	1.78	45.2	2.52	2,921	4,346	180
9600.41003308	4/0 (19/W) (107 mm²)	3	55	1.40	3 x #8	1.33	33.8	1.60	40.6	60	1.52	1.73	43.9	2.38	2,722	4,051	260
9600.41004104		4	55	1.40	1 x #4	1.49	37.8	1.78	45.2	60	1.52	1.91	48.5	2.90	3,491	5,194	208
9600.25003308	250 (37/W) (127 mm²)	3	65	1.65	3 x #8	1.48	37.6	1.74	44.2	60	1.52	1.87	47.5	—	3,195	4,755	290
9600.25004104		4	65	1.65	1 x #4	1.64	41.7	1.96	49.8	60	1.52	2.09	53.1	—	4,142	6,164	232
9600.35003307	350 (37/W) (177 mm²)	3	65	1.65	3 x #7	1.66	42.2	1.96	49.8	60	1.52	2.09	53.1	—	4,284	6,376	350
9600.35004103		4	65	1.65	1 x #3	1.89	48.0	2.19	55.6	75	1.91	2.35	59.7	—	5,536	8,238	280
9600.50003306	500 (37/W) (253 mm²)	3	65	1.65	3 x #6	1.94	49.3	2.28	57.9	75	1.91	2.44	62.0	—	6,035	8,981	430
9600.50004102		4	65	1.65	1 x #2	2.14	54.4	2.49	63.2	75	1.91	2.65	67.3	—	7,704	11,464	344
9600.75003305	750 (61/W) (380 mm²)	3	80	2.03	3 x #5	2.37	60.2	2.75	69.9	75	1.91	2.92	74.2	—	8,854	13,176	535
9600.75004101		4	80	2.03	1 x #1	2.61	66.3	3.03	77.0	85	2.16	3.21	81.5	—	11,449	17,037	428
9600.100031110	1000 (61/W) (507 mm²)	3	80	2.03	1 x #1/0	2.67	67.8	3.11	79.0	85	2.16	3.30	83.8	—	11,611	17,280	615
9600.100041110		4	80	2.03	1 x #1/0	3.07	78.0	3.63	92.2	85	2.16	3.81	96.8	—	15,377	22,883	492

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC Section 392.22.

² Ampacities in accordance with NEC Article 310 and Table 310.15(B)(16).

Note: Three (3) conductors, 6 AWG and smaller are also marked CSA Type RA90. One (1) AWG and larger are also marked CSA Type RA90.



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CCW® Armored Power, 3/C VFD

UL Type MC-HL, XLPE, 2000 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- 10 AWG and smaller are Class B compressed stranding per ASTM B8
- 8 AWG and larger are compact standing per ASTM B496

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation, 2000 V thicknesses per ICEA S-95-658
- Color-coded black with printed numbers per ICEA Method 4

Grounding Conductors:

- Class B stranded bare annealed copper per ASTM B3 and B8
- Three (3) split grounding wires per specification 9615 exceed the minimum required in NEC Table 250.122

Cable Assembly:

- Insulated conductors and grounding wires are cabled together with non-hygroscopic fillers when required
- A binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569 and UL 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) — Black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- Variable Frequency Drives: 3-conductor CCW armored cables with three (3) symmetrical grounding wires is the preferred wiring method for use with AC motors controlled by pulse-width modulated Inverters in VFD applications
- CCW armored cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502 and 503
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- 90°C, 2000V rated XLPE insulation with a dielectric constant less than 3.0 to withstand momentary voltage spikes common in certain VFD applications
- Three (3) oversized, symmetrical grounding wires recommended for use with pulse-width modulated AC drives
- CCW armor provides an impervious barrier to moisture, gas and liquids

Features: (cont'd)

- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems
- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-95-658/WC-70 Standard for Non-Shielded Power Cable, 2 kV or Less
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 332-3 Cat. A

Compliances:

- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 3/C VFD

UL Type MC-HL, XLPE, 2000 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	COND. SIZE (AWG/kcmil)	NO. OF COND.	INSULATION THICKNESS		BARE GROUND (AWG)	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT ¹
			mils	mm		INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/1000 FT	kg/1000 m	
9615.01403318	14 (7/W) (2.08 mm ²)	3	45	1.14	3 x #18	0.58	14.7	0.64	16.3	50	1.27	0.74	18.9	240	357	15
9615.01203316	12 (7/W) (3.31 mm ²)	3	45	1.14	3 x #16	0.60	15.2	0.68	17.3	50	1.27	0.78	19.9	270	402	20
9615.01003314	10 (7/W) (5.26 mm ²)	3	45	1.14	3 x #14	0.64	16.3	0.72	18.3	50	1.27	0.82	20.9	325	484	30
9615.00803314	8 (7/W) (8.36 mm ²)	3	55	1.40	3 x #14	0.67	17.0	0.75	19.1	50	1.27	0.85	21.7	420	625	55
9615.00603312	6 (7/W) (13.3 mm ²)	3	60	1.52	3 x #12	0.84	21.3	0.92	23.4	50	1.27	1.02	26.0	600	893	75
9615.00403312	4 (7/W) (21.2 mm ²)	3	60	1.52	3 x #12	0.95	24.1	1.03	26.2	50	1.27	1.13	28.8	800	1,191	95
9615.00203310	2 (7/W) (33.6 mm ²)	3	60	1.52	3 x #10	1.10	27.8	1.18	30.0	50	1.27	1.28	32.6	1,100	1,637	130
9615.00103310	1 (19/W) (42.4 mm ²)	3	80	2.03	3 x #10	1.26	32.0	1.35	34.3	50	1.27	1.45	36.9	1,300	1,935	150
9615.11003310	1/0 (19/W) (53.5 mm ²)	3	80	2.03	3 x #10	1.40	35.6	1.50	38.1	50	1.27	1.60	40.7	1,800	2,679	170
9615.21003306	2/0 (19/W) (67.4 mm ²)	3	80	2.03	3 x #6	1.50	38.1	1.60	40.6	50	1.27	1.70	43.3	2,200	3,274	195
9615.41003304	4/0 (19/W) (107 mm ²)	3	80	2.03	3 x #4	1.79	45.6	1.90	48.3	60	1.52	2.02	51.4	3,100	4,613	260
9615.25003304	250 (37/W) (127 mm ²)	3	90	2.29	3 x #4	1.98	50.4	2.10	53.3	60	1.52	2.22	56.5	3,600	5,357	290
9615.35003302	350 (37/W) (177 mm ²)	3	90	2.29	3 x #2	2.28	57.8	2.40	61.0	60	1.52	2.52	64.1	4,800	7,143	350
9615.50003301	500 (37/W) (253 mm ²)	3	90	2.29	3 x #1	2.58	65.4	2.70	68.6	75	1.91	2.86	72.5	6,800	10,119	430

Dimensions and weights are nominal; subject to industry tolerances.

¹ Ampacities in accordance with NEC Article 310 and Table 310.15(B)(16).



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CCW® Armored Composite Power and Control

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- 10 AWG and smaller are Class B compressed stranding per ASTM B8
- 8 AWG and larger are compact stranding per ASTM B496

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation per ICEA S-95-658 and UL 44, Listed XHHW-2
- Power conductors 6 AWG and smaller are color-coded per ICEA Method 1, Table E2
- Power conductors 4 AWG and larger are black with printed numbers per ICEA Method 4
- Control conductors are color-coded black, red, blue and yellow

Grounding Conductor:

- Class B stranded bare annealed copper per ASTM B3 and B8
- Sized in accordance with NEC Table 250.122

Cable Assembly:

- Insulated conductors and grounding wire are cabled together with non-hygroscopic fillers when required
- A binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569 and UL 2225
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Composite Power and Control cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems
- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-95-658/WC-70 Standard for Non-Shielded Power Cables, 2 kV or Less
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC-HL, XHHW-2, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Composite Power and Control

UL Type MC-HL, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	POWER COND. SIZE (AWG)	POWER INSULATION THICKNESS		CONTROL COND. SIZE (AWG)	CONTROL INSULATION THICKNESS		BARE GROUNDING (AWG)	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT²
		mils	mm		mils	mm		INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m	
9625.103124110	3x#10 (7/W) (5.26 mm²)	30	0.76	4 x #12 (7/W) (3.31 mm²)	30	0.76	10 (7/W) (5.2 mm²)	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	430	640	30
9625.083124110	3x#8 (7/W) (8.36 mm²)	45	1.14		30	0.76		0.65	16.5	0.89	22.6	50	1.27	0.99	25.1	0.78	535	796	55
9625.063124108	3x#6 (7/W) (13.3 mm²)	45	1.14		30	0.76	8 (7/W) (8.36 mm²)	0.69	17.5	0.93	23.6	50	1.27	1.03	26.2	0.84	660	982	75
9625.043124108	3x#4 (7/W) (21.2 mm²)	45	1.14		30	0.76		0.74	18.8	0.97	24.6	50	1.27	1.08	27.4	0.93	815	1,213	95

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC Section 392.22.

² Ampacities in accordance with NEC Article 310 and Table 310.15(B)(16).



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CCW® Armored Composite Power and Control Without Ground

UL Type MC, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Sizes 10 AWG and smaller are Class B compressed stranding per ASTM B8
- Sizes 8 AWG and larger are compact stranding per ASTM B496

Insulation:

- Cross-Linked Polyethylene (XLPE) insulation per ICEA S-95-658 and UL 44, Listed XHHW-2
- Power conductors sizes 6 AWG and smaller are color-coded per ICEA Method 1, Table E2
- Power conductors sizes 4 AWG and larger are black with printed numbers per ICEA Method 4
- Control conductors are color-coded black, red, blue and yellow

Cable Assembly:

- Insulated conductors are cabled together with non-hygroscopic fillers when required
- A binder tape, when required, is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Composite Power and Control cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in Class I and II, Division 2; Class III, Divisions 1 and 2; and Class I, Zone 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- For use as services, feeders and branch circuits for power, lighting, control, and signal circuits in accordance with NEC Articles 330 and 725
- Installed indoors or outdoors, wet or dry locations, directly buried, embedded in concrete, in a raceway, as aerial cable on a messenger, in cable trays, or as exposed runs secured to supports in accordance with NEC Article 330
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems

Features: (cont'd)

- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-95-658/WC 70 Standard for Non-Shielded Power Cable, 2 kV or Less
- UL 44 Rubber Insulated Wires and Cables
- UL 1569 Metal Clad Cables
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1581 (70,000 BTU/hr)
- IEC 60332-3 Cat. A

Compliances:

- UL Type MC, XHHW-2, SUN RES, CT USE, DIR BUR, -40°C, UL File # E69797
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Composite Power and Control Without Ground

UL Type MC, XLPE, 600 V, 90°C, Cable Tray Use, Sunlight-Resistant, Direct Burial
UL Marine Shipboard Cable, ABS CWCMC

CATALOG NUMBER	POWER COND. SIZE (AWG)	POWER INSULATION THICKNESS		CONTROL COND. SIZE (AWG)	CONTROL INSULATION THICKNESS		NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		CROSS- SECTIONAL AREA¹ (SQ. IN.)	APPROXIMATE NET WEIGHT		90°C AMPACITY @ 30°C AMBIENT²
		mils	mm		mils	mm	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm		LBS/1000 FT	kg/1000 m	
9650.123143000	3x#12 (7/WW) (3.31 mm²)	30	0.76	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	307	457	20
9650.123144000	3x#12 (7/WW) (3.31 mm²)	30	0.76	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	323	481	20
9650.124143000	4x#12 (7/WW) (3.31 mm²)	30	0.76	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.49	12.4	0.71	18.0	50	1.27	0.82	20.8	0.54	365	543	20
9650.124144000	4x#12 (7/WW) (3.31 mm²)	30	0.76	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	388	577	20
9650.103143000	3x#10 (7/WW) (5.26 mm²)	30	0.76	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	384	571	30
9650.103144000	3x#10 (7/WW) (5.26 mm²)	30	0.76	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	392	583	30
9650.103123000	3x#10 (7/WW) (5.26 mm²)	30	0.76	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.53	13.5	0.75	19.1	50	1.27	0.86	21.8	0.59	410	610	30
9650.104143000	4x#10 (7/WW) (5.26 mm²)	30	0.76	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	412	613	30
9650.104144000	4x#10 (7/WW) (5.26 mm²)	30	0.76	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	428	637	30
9650.104123000	4x#10 (7/WW) (5.26 mm²)	30	0.76	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	436	649	30
9650.104124000	4x#10 (7/WW) (5.26 mm²)	30	0.76	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	460	685	30
9650.083143000	3x#8 (7/WW) (8.36 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.91	23.1	0.66	424	631	55
9650.083144000	3x#8 (7/WW) (8.36 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.62	15.7	0.84	21.3	50	1.27	0.91	23.1	0.66	455	677	55
9650.083123000	3x#8 (7/WW) (8.36 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.58	14.7	0.80	20.3	50	1.27	0.95	24.1	0.72	455	677	55
9650.083124000	3x#8 (7/WW) (8.36 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.62	15.7	0.84	21.3	50	1.27	0.91	23.1	0.66	495	737	55
9650.084143000	4x#8 (7/WW) (8.36 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	505	752	44
9650.084144000	4x#8 (7/WW) (8.36 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.67	17.0	0.89	22.6	50	1.27	1.00	25.4	0.80	530	789	44
9650.084123000	4x#8 (7/WW) (8.36 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.67	17.0	0.89	22.6	50	1.27	1.00	25.4	0.80	535	796	44
9650.084124000	4x#8 (7/WW) (8.36 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	576	857	44
9650.063143000	3x#6 (7/WW) (13.3 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	525	781	75
9650.063144000	3x#6 (7/WW) (13.3 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	545	811	75
9650.063123000	3x#6 (7/WW) (13.3 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.62	15.7	0.84	21.3	50	1.27	0.95	24.1	0.72	556	827	75
9650.063124000	3x#6 (7/WW) (13.3 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.03	26.2	0.84	606	902	75
9650.064143000	4x#6 (7/WW) (13.3 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	657	978	60
9650.064144000	4x#6 (7/WW) (13.3 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	667	993	60
9650.064123000	4x#6 (7/WW) (13.3 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	687	1,022	60
9650.064124000	4x#6 (7/WW) (13.3 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	717	1,067	60
9650.043143000	3x#4 (7/WW) (21.2 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	707	1,052	95
9650.043144000	3x#4 (7/WW) (21.2 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	727	1,082	95
9650.043123000	3x#4 (7/WW) (21.2 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.71	18.0	0.93	23.6	50	1.27	1.04	26.4	0.86	727	1,082	95
9650.043124000	3x#4 (7/WW) (21.2 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.75	19.1	0.97	24.6	50	1.27	1.08	27.4	0.93	768	1,143	95
9650.044143000	4x#4 (7/WW) (21.2 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	899	1,338	76
9650.044144000	4x#4 (7/WW) (21.2 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	929	1,383	76
9650.044123000	4x#4 (7/WW) (21.2 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	929	1,383	76
9650.044124000	4x#4 (7/WW) (21.2 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	960	1,429	76
9650.023143000	3x#2 (7/WW) (33.6 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	995	1,481	130
9650.023144000	3x#2 (7/WW) (33.6 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	1,010	1,503	130
9650.023123000	3x#2 (7/WW) (33.6 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	1,020	1,518	130
9650.023124000	3x#2 (7/WW) (33.6 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.81	20.6	1.06	26.9	50	1.27	1.17	29.7	1.09	1,050	1,563	130
9650.024143000	4x#2 (7/WW) (33.6 mm²)	45	1.14	3x#14 (7/WW) (2.08 mm²)	30	0.76	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	1,242	1,848	104
9650.024144000	4x#2 (7/WW) (33.6 mm²)	45	1.14	4x#14 (7/WW) (2.08 mm²)	30	0.76	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	1,263	1,880	104
9650.024123000	4x#2 (7/WW) (33.6 mm²)	45	1.14	3x#12 (7/WW) (3.31 mm²)	30	0.76	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	1,273	1,894	104
9650.024124000	4x#2 (7/WW) (33.6 mm²)	45	1.14	4x#12 (7/WW) (3.31 mm²)	30	0.76	0.90	22.9	1.15	29.2	50	1.27	1.26	32.0	1.26	1,293	1,924	104

Dimensions and weights are nominal; subject to industry tolerances.

¹ Cross-sectional area for cable tray fill is in accordance with NEC Section 392.22.

² Ampacities in accordance with NEC Article 310 and Table 310.15(B)(16).



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CCW® Armored Power, 1000 V, 3/C VFD

CSA Type RA90, XLPE, 1000 V, 90°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, FT4, -40°C, AG14, HL

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Sizes 10 AWG and smaller are Class B compressed stranding per ASTM B8
- Sizes 8 AWG and larger are compact stranding per ASTM B496

Insulation:

- Cross-linked Polyethylene (XLPE) insulation rated 1000 Volts, RW90 per CSA C22.2 No. 38
- Sizes 2 AWG and smaller utilize a single color insulation: black, red and blue
- Sizes 1 AWG and larger utilize black insulation with printed number/color, 1-black, 2-red, 3-blue

Bonding/Grounding Conductors:

- Class B stranded bare annealed copper per ASTM B3 and B8
- Three (3) symmetrical grounding wires are sized in accordance with CEC Table 16

Cable Assembly:

- Three symmetrical grounding wires are cabled within the interstices of the phase conductors
- Non-hygroscopic fillers when required
- A binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per C22.2 No. 123

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), black
- Meets CSA Low Gas Emission requirements, AG14

Applications:

- Variable Frequency Drives: 3-conductor CCW armored cables with three (3) symmetrical grounding wires are the preferred wiring method for use with AC motors controlled by pulse-width modulated inverters in VFD applications
- CCW armored cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use in industrial and commercial installations including hazardous locations in accordance with the CEC
- Can be installed in wet or dry locations, indoors or outdoors, in cable trays, in a raceway, or direct buried in accordance with the CEC

Features:

- 90°C, 1000 V wet or dry XLPE insulation and three (3) symmetrical grounding wires, recommended for use with pulse-width modulated AC drives
- XLPE insulation has a dielectric constant less than 3.0 to withstand momentary voltage spikes common with VFD applications

Features: (cont'd)

- CCW armor provides an impervious barrier to moisture, gas and liquids
- CCW armor provides EMI shielding performance
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems
- Meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 130°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- CSA C22.2 No. 38 Thermoset-Insulated Wires and Cables
- CSA C22.2 No. 123 Metal Sheathed Cables
- CSA C22.2 No. 174 Cables and Cable Glands for Use in Hazardous Locations

Flame Tests:

- CSA FT4
- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- IEEE 1202 (70,000 BTU/hr)

Compliances:

- CSA Certified Type RA90, XLPE, HL, SR, FT4, AG14 and -40°C, CSA File # 7319

CCW® Armored Power, 1000 V, 3/C VFD

CSA Type RA90, XLPE, 1000 V, 90°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, FT4, -40°C, AG14, HL

CATALOG NUMBER	COND. SIZE (AWG/kcmil)	NO. OF COND.	INSULATION THICKNESS		BARE GROUND COND. (AWG)	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		MIN. BEND RADIUS ¹		90°C AMPACITY @ 30°C AMBIENT ²
			mils	mm		INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/1000 FT	kg/1000 m	INCHES	mm	
9675.01203318	12 (7/W) (3.31 mm²)	3	45	1.14	3 x #18	0.40	10.2	0.60	15.3	50	1.27	0.70	17.8	249	370	7.0	178	30
9675.01003316	10 (7/W) (5.26 mm²)	3	45	1.14	3 x #16	0.45	11.5	0.63	16.1	50	1.27	0.73	18.6	299	445	7.3	185	40
9675.00803314	8 (7/W) (8.36 mm²)	3	45	1.14	3 x #14	0.50	12.7	0.76	19.2	50	1.27	0.86	21.9	417	620	8.6	218	55
9675.00603312	6 (7/W) (13.3 mm²)	3	60	1.52	3 x #12	0.64	16.3	0.91	23.2	50	1.27	1.02	26.0	601	895	12.2	311	75
9675.00403312	4 (7/W) (21.2 mm²)	3	60	1.52	3 x #12	0.74	18.7	0.98	24.8	50	1.27	1.08	27.4	763	1,135	12.9	329	95
9675.00203310	2 (7/W) (33.6 mm²)	3	60	1.52	3 x #10	0.86	21.8	1.18	29.9	50	1.27	1.28	32.5	1,122	1,670	15.4	390	130
9675.00103310	1 (19/W) (42.4 mm²)	3	80	2.03	3 x #10	1.01	25.7	1.36	34.6	50	1.27	1.46	37.1	1,404	2,090	17.5	445	145
9675.11003310	1/0 (19/W) (53.5 mm²)	3	80	2.03	3 x #10	1.09	27.8	1.42	36.0	50	1.27	1.52	38.6	1,623	2,415	18.2	462	170
9675.21003310	2/0 (19/W) (67.4 mm²)	3	80	2.03	3 x #10	1.18	30.0	1.56	39.6	50	1.27	1.66	42.2	2,043	3,040	20.0	506	195
9675.41003308	4/0 (19/W) (107 mm²)	3	80	2.03	3 x #8	1.40	35.5	1.75	44.4	50	1.27	1.85	47.0	2,950	4,390	22.2	564	260
9675.25003308	250 (37/W) (127 mm²)	3	90	2.29	3 x #8	1.49	37.8	1.90	48.2	50	1.27	2.01	51.1	3,380	5,030	24.1	612	290
9675.35003308	350 (37/W) (177 mm²)	3	90	2.29	3 x #8	1.74	44.3	2.22	56.4	50	1.27	2.33	59.2	4,465	6,645	27.9	710	350
9675.50003306	500 (37/W) (253 mm²)	3	90	2.29	3 x #6	2.00	50.9	2.48	63.0	50	1.27	2.59	65.8	6,152	9,155	31.0	789	430

Dimensions and weights are nominal; subject to industry tolerances.

¹ Minimum bend radius per Canadian Electrical Code, Part I, Section 12-712.

² Ampacity per Table #2, Canadian Electrical Code.

CCW® Armored Power, 2.4 kV, Nonshielded, 3/C VFD

UL Type MC-HL or MV-90, EPR, 90°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over conductor per ICEA S-96-659 and UL 1072

Insulation:

- 90 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-96-659 and UL 1072
- Insulation is printed 1-black, 2-red and 3-blue for phase identification

Grounding Conductors:

- Three (3) split Class B stranded bare annealed copper grounding conductors
- Sized in accordance with UL 1072 and NEC Table 250.122

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), yellow
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- Variable Frequency Drives: 3-conductor CCW armored cables with three (3) symmetrical grounding wires are the preferred wiring method for use with AC motors controlled by pulse-width modulated inverters in VFD applications
- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC
- Factory assembled and tested cable for use as an alternative to cable in conduit wiring systems

Features: (cont'd)

- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 90°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-96-659/WC 71 Standard for Nonshielded Cables Rated 2001 – 5000 Volts
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-90, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 2.4 kV, Nonshielded, 3/C VFD

UL Type MC-HL or MV-90, EPR, 90°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWC MC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR ¹	DIRECT BURIAL ²
3/C WITH GROUND MC-HL OR MV-90, 90 MILS EPR, 2.4 kV, YELLOW JACKET																			
9700.00803312	8 (7/W) (8.36 mm²)	3	90	2.3	0.36	9.1	3 x #12	0.77	19.6	0.97	24.6	50	1.27	1.08	27.4	570	848	59	85
9700.00603310	6 (7/W) (13.3 mm²)	3	90	2.3	0.38	9.6	3 x #10	0.85	21.6	1.06	26.9	50	1.27	1.17	29.7	745	1,109	79	105
9700.00403310	4 (7/W) (21.2 mm²)	3	90	2.3	0.43	10.8	3 x #10	0.97	24.6	1.19	30.2	50	1.27	1.30	33.0	965	1,436	105	135
9700.00203310	2 (7/W) (33.6 mm²)	3	90	2.3	0.48	12.1	3 x #10	1.10	27.9	1.34	34.0	50	1.27	1.45	36.8	1,275	1,897	140	180
9700.00103308	1 (19/W) (42.4 mm²)	3	90	2.3	0.52	13.1	3 x #8	1.16	29.5	1.42	36.1	50	1.27	1.53	38.9	1,525	2,269	160	200
9700.11003308	1/0 (19/W) (53.5 mm²)	3	90	2.3	0.55	13.9	3 x #8	1.23	31.2	1.51	38.4	60	1.52	1.65	41.9	1,840	2,738	185	230
9700.21003308	2/0 (19/W) (67.4 mm²)	3	90	2.3	0.59	14.9	3 x #8	1.33	33.8	1.60	40.6	60	1.52	1.73	43.9	2,165	3,222	215	260
9700.41003307	4/0 (19/W) (107 mm²)	3	90	2.3	0.69	17.4	3 x #7	1.53	38.9	1.83	46.5	60	1.52	1.96	49.8	3,080	4,584	285	335
9700.25003307	250 (37/W) (127 mm²)	3	90	2.3	0.74	18.7	3 x #7	1.64	41.7	1.96	49.8	60	1.52	2.09	53.1	3,475	5,171	320	365
9700.35003306	350 (37/W) (177 mm²)	3	90	2.3	0.83	21.0	3 x #6	1.86	47.2	2.19	55.6	60	1.52	2.32	58.9	4,710	7,009	395	440
9700.50003305	500 (37/W) (253 mm²)	3	90	2.3	0.95	24.0	3 x #5	2.10	53.3	2.45	62.2	75	1.91	2.61	66.3	6,410	9,539	485	530
9700.75003304	750 (61/W) (380 mm²)	3	90	2.3	1.12	28.3	3 x #4	2.51	63.8	2.93	74.4	75	1.91	3.10	78.7	9,225	13,728	615	650
9700.10003304	1000 (61/W) (507 mm²)	3	90	2.3	1.27	32.2	3 x #4	2.90	73.7	3.41	86.6	80	2.03	3.59	91.2	12,080	17,977	705	730

Dimensions and weights are nominal, subject to industry tolerances.

¹ In-air ampacities are per NEC Table 310.60(C)(71) for three insulated copper conductors rated 90°C, cabled with an overall covering and isolated in air at 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors rated 90°C, cabled within an overall covering and directly buried in earth at 20°C ambient earth temperature.



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CCW® Armored Power, 5 kV 133%/8 kV 100%, Shielded, 3/C VFD

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 115 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield — black, red and blue

Grounding Conductors:

- Three (3) split Class B stranded bare annealed copper grounding conductors
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of NEC Article 250

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), yellow
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- Variable Frequency Drives: 3-conductor CCW armored cables with three (3) symmetrical grounding wires are the preferred wiring method for use with AC motors controlled by pulse-width modulated inverters in VFD applications
- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC

Features: (cont'd)

- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation
- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable
- CSA C68.3

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 5 kV 133%/8 kV 100%, Shielded, 3/C VFD

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		5 kV³ AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR¹	DIRECT BURIAL²
3/C WITH GROUND MC-HL OR MV-105, 115 MILS EPR, 5 kV 133% AND 8 kV 100% INSULATION LEVEL																			
9800.00603310	6 (7/W) (13.3 mm²)	3	115	2.9	0.43	10.9	3 x #10	1.15	29.2	1.37	34.8	50	1.27	1.48	37.6	1,121	1,668	88	115
9800.00403310	4 (7/W) (21.2 mm²)	3	115	2.9	0.48	12.2	3 x #10	1.24	31.5	1.51	38.4	60	1.52	1.65	41.9	1,418	2,110	115	150
9800.00203310	2 (7/W) (33.6 mm²)	3	115	2.9	0.53	13.5	3 x #10	1.37	34.8	1.64	41.7	60	1.52	1.78	45.2	1,731	2,576	154	190
9800.00103308	1 (19/W) (42.4 mm²)	3	115	2.9	0.57	14.5	3 x #8	1.47	37.3	1.69	42.9	60	1.52	1.82	46.2	1,978	2,944	180	215
9800.11003308	1/0 (19/W) (53.5 mm²)	3	115	2.9	0.60	15.2	3 x #8	1.56	39.6	1.78	45.2	60	1.52	1.91	48.5	2,259	3,362	205	245
9800.21003308	2/0 (19/W) (67.4 mm²)	3	115	2.9	0.64	16.3	3 x #8	1.61	40.9	1.92	48.8	60	1.52	2.05	52.1	2,626	3,908	240	280
9800.41003307	4/0 (19/W) (107 mm²)	3	115	2.9	0.74	18.8	3 x #7	1.82	46.2	2.15	54.6	60	1.52	2.28	57.9	3,650	5,432	320	360
9800.25003306	250 (37/W) (127 mm²)	3	115	2.9	0.80	20.3	3 x #6	2.01	51.1	2.23	56.6	60	1.52	2.36	59.9	4,060	6,042	355	395
9800.35003306	350 (37/W) (177 mm²)	3	115	2.9	0.89	22.6	3 x #6	2.10	53.3	2.45	62.2	75	1.91	2.61	66.3	5,045	7,508	440	475
9800.50003305	500 (37/W) (253 mm²)	3	115	2.9	1.01	25.7	3 x #5	2.39	60.7	2.75	69.9	75	1.91	2.92	74.2	7,137	10,621	545	570
9800.75003304	750 (61/W) (380 mm²)	3	115	2.9	1.19	30.2	3 x #4	3.07	78.0	3.32	84.3	85	2.16	3.50	88.9	10,268	15,280	685	700
9800.10003304	1000 (61/W) (507 mm²)	3	115	2.9	1.34	34.0	3 x #4	3.43	87.1	3.76	95.5	85	2.16	3.94	100.1	13,051	19,422	790	785

Dimensions and weights are nominal; subject to industry tolerances.

¹ In-air ampacities are per NEC Table 310.60(C)(71) for three insulated copper conductors rated 105°C, cabled with an overall covering and isolated in air at 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors rated 105°C, cabled within an overall covering and directly buried in earth at 20°C ambient earth temperature.

³ For 8 kV ampacities, refer to NEC Tables 310.60(C)(71) and 310.60(C)(83) for cables listed 5001-35,000 volts.



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CCW® Armored Power, 8 kV 133%, Shielded, 3/C VFD

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 140 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield - black, red and blue

Grounding Conductors:

- Three (3) split Class B stranded bare annealed copper grounding conductors
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of the NEC

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), yellow
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- Variable Frequency Drives: 3-conductor CCW armored cables with three (3) symmetrical grounding wires are the preferred wiring method for use with AC motors controlled by pulse-width modulated inverters in VFD applications
- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC

Features: (cont'd)

- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation
- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable
- CSA C68.3

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 8 kV 133%, Shielded, 3/C VFD

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR¹	DIRECT BURIAL²
3/C WITH GROUND MC-HL OR MV-105, 140 MILS EPR, 8 kV 133% INSULATION LEVEL																			
9815.00603310	6 (7/W) (13.3 mm²)	3	140	3.6	0.48	12.2	3 x #10	1.20	30.5	1.60	40.6	60	1.52	1.73	43.9	1,350	2,009	105	120
9815.00403310	4 (7/W) (21.2 mm²)	3	140	3.6	0.53	13.5	3 x #10	1.29	32.8	1.70	43.2	60	1.52	1.83	46.5	1,600	2,381	135	155
9815.00203310	2 (7/W) (33.6 mm²)	3	140	3.6	0.58	14.7	3 x #10	1.42	36.1	1.85	47.0	60	1.52	1.98	50.3	2,000	2,976	185	200
9815.00103308	1 (19/W) (42.4 mm²)	3	140	3.6	0.62	15.7	3 x #8	1.52	38.6	1.93	49.0	60	1.52	2.06	52.3	2,275	3,386	210	225
9815.11003308	1/0 (19/W) (53.5 mm²)	3	140	3.6	0.65	16.5	3 x #8	1.61	40.9	2.03	51.6	60	1.52	2.16	54.9	2,600	3,869	240	255
9815.21003308	2/0 (19/W) (67.4 mm²)	3	140	3.6	0.69	17.5	3 x #8	1.66	42.2	2.14	54.4	60	1.52	2.27	57.7	2,950	4,390	275	290
9815.41003307	4/0 (19/W) (107 mm²)	3	140	3.6	0.79	20.1	3 x #7	1.87	47.5	2.40	61.0	75	1.91	2.56	65.0	4,025	5,990	360	375
9815.25003306	250 (37/W) (127 mm²)	3	140	3.6	0.85	21.6	3 x #6	2.06	52.3	2.59	65.8	75	1.91	2.75	69.9	4,600	6,846	400	410
9815.35003306	350 (37/W) (177 mm²)	3	140	3.6	0.94	23.9	3 x #6	2.15	54.6	2.85	72.4	75	1.91	3.01	76.5	5,800	8,631	490	495
9815.50003305	500 (37/W) (253 mm²)	3	140	3.6	1.06	26.9	3 x #5	2.44	62.0	3.19	81.0	85	2.16	3.37	85.6	7,800	11,608	600	590
9815.75003304	750 (61/W) (380 mm²)	3	140	3.6	1.26	32.0	3 x #4	3.19	81.0	3.68	93.5	85	2.16	3.86	98.0	10,750	15,998	745	720
9815.10003304	1000 (61/W) (507 mm²)	3	140	3.6	1.42	36.1	3 x #4	3.48	88.4	3.98	101.1	85	2.16	4.16	105.7	13,550	20,165	860	810

Dimensions and weights are nominal; subject to industry tolerances.

¹ In-air ampacities are per NEC Table 310.60(C)(71) for three insulated copper conductors rated 105°C, cabled with an overall covering and isolated in air at 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors rated 105°C, cabled within an overall covering and directly buried in earth at 20°C ambient earth temperature.



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CCW® Armored Power, 15 kV 100%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 175 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield - black, red and blue

Grounding Conductor:

- Class B stranded bare annealed copper grounding conductor
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of the NEC

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), red
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC
- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation

Features: (cont'd)

- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 15 kV 100%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR¹	DIRECT BURIAL²
	3/C WITH GROUND MC-HL OR MV-105, 175 MILS EPR, 15 kV 100% INSULATION LEVEL																		
9825.00203106	2 (7/W) (33.6 mm²)	3	175	4.4	0.65	16.5	6	1.61	40.9	1.96	49.8	60	1.52	2.05	52.1	2,077	3,091	185	200
9825.00103104	1 (19/W) (42.4 mm²)	3	175	4.4	0.69	17.5	4	1.68	42.7	2.01	51.1	60	1.52	2.15	54.6	2,469	3,674	210	225
9825.11003104	1/0 (19/W) (53.5 mm²)	3	175	4.4	0.72	18.3	4	1.78	45.2	2.10	53.3	60	1.52	2.24	56.9	2,760	4,107	240	255
9825.21003104	2/0 (19/W) (67.4 mm²)	3	175	4.4	0.76	19.3	4	1.88	47.8	2.19	55.6	60	1.52	2.36	59.9	3,130	4,658	275	290
9825.41003103	4/0 (19/W) (107 mm²)	3	175	4.4	0.86	21.8	3	2.09	53.1	2.45	62.2	75	1.91	2.61	66.3	4,290	6,384	360	375
9825.25003102	250 (37/W) (127 mm²)	3	175	4.4	0.92	23.4	2	2.19	55.6	2.58	65.5	75	1.91	2.74	69.6	4,775	7,106	400	410
9825.35003102	350 (37/W) (177 mm²)	3	175	4.4	1.01	25.7	2	2.45	62.2	2.85	72.4	75	1.91	3.01	76.5	6,132	9,125	490	495
9825.50003101	500 (37/W) (253 mm²)	3	175	4.4	1.13	28.7	1	2.71	68.8	3.16	80.3	85	2.16	3.34	84.8	8,052	11,983	600	590
9825.750031110	750 (61/W) (380 mm²)	3	175	4.4	1.31	33.3	1/0	3.12	79.2	3.67	93.2	85	2.16	3.85	97.8	11,098	16,516	745	720

Dimensions and weights are nominal; subject to industry tolerances.

¹ Ampacities in air are per NEC Table 310.60(C)(71) for an insulated three-conductor copper cable isolated in air with 105°C rated conductors at a 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors cabled within an overall covering, directly buried in earth with 105°C rated conductors at 20°C ambient earth temperature.



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CCW® Armored Power, 15 kV 133%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 220 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield - black, red and blue

Grounding Conductor:

- Class B stranded bare annealed copper grounding conductor
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of the NEC

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC), red
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC
- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation

Features: (cont'd)

- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 15 kV 133%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR¹	DIRECT BURIAL²
	3/C WITH GROUND MC-HL OR MV-105, 220 MILS EPR, 15 kV 133% INSULATION LEVEL																		
9835.00203106	2 (7/W) (33.6 mm²)	3	220	5.6	0.76	19.3	6	1.82	46.2	2.15	54.6	60	1.52	2.28	57.9	2,473	3,680	185	200
9835.00103104	1 (19/W) (42.4 mm²)	3	220	5.6	0.79	20.1	4	1.88	47.8	2.23	56.6	60	1.52	2.36	59.9	2,811	4,183	210	225
9835.11003104	1/0 (19/W) (53.5 mm²)	3	220	5.6	0.83	21.1	4	1.96	49.8	2.32	58.9	75	1.91	2.48	63.0	3,190	4,747	240	255
9835.21003104	2/0 (19/W) (67.4 mm²)	3	220	5.6	0.87	22.1	4	2.06	52.3	2.40	61.0	75	1.91	2.56	65.0	3,630	5,402	275	290
9835.41003103	4/0 (19/W) (107 mm²)	3	220	5.6	0.97	24.6	3	2.26	57.4	2.62	66.5	75	1.91	2.79	70.9	4,435	6,600	360	345
9835.25003102	250 (37/W) (127 mm²)	3	220	5.6	1.03	26.2	2	2.36	59.9	2.75	69.9	75	1.91	2.92	74.2	5,086	7,569	400	410
9835.35003102	350 (37/W) (177 mm²)	3	220	5.6	1.12	28.4	2	2.61	66.3	3.03	77.0	85	2.16	3.21	81.5	6,445	9,591	490	495
9835.50003101	500 (37/W) (253 mm²)	3	220	5.6	1.24	31.5	1	2.86	72.6	3.32	84.3	85	2.16	3.50	88.9	8,376	12,465	600	590
9835.750031110	750 (61/W) (380 mm²)	3	220	5.6	1.41	35.8	1/0	3.25	82.6	3.80	96.5	85	2.16	3.98	101.1	11,431	17,011	745	720

Dimensions and weights are nominal; subject to industry tolerances.

¹ Ampacities in air are per NEC Table 310.60(C)(71) for an insulated three-conductor copper cable isolated in air with 105°C rated conductors at a 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors cabled within an overall covering, directly buried in earth with 105°C rated conductors at 20°C ambient earth temperature.



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CCW® Armored Power, 25 kV 100%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 260 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield - black, red and blue

Grounding Conductor:

- Class B stranded bare annealed copper grounding conductor
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of the NEC

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL 1072, orange
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC
- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation

Features: (cont'd)

- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 25 kV 100%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR ¹	DIRECT BURIAL ²
3/C WITH GROUND MC-HL OR MV-105, 260 MILS EPR, 25 kV 100% INSULATION LEVEL																			
9845.00103104	1 (19/W) (42.4 mm²)	3	260	6.6	0.87	22.1	4	2.07	52.6	2.45	62.2	75	1.91	2.61	66.3	3,189	4,746	210	225
9845.11003104	1/0 (19/W) (53.5 mm²)	3	260	6.6	0.90	22.9	4	2.15	54.6	2.53	64.3	75	1.91	2.69	68.3	3,536	5,262	240	255
9845.21003104	2/0 (19/W) (67.4 mm²)	3	260	6.6	0.94	23.9	4	2.24	56.9	2.62	66.5	75	1.91	2.79	70.9	3,939	5,862	275	290
9845.41003103	4/0 (19/W) (107 mm²)	3	260	6.6	1.04	26.4	3	2.51	63.8	2.93	74.4	75	1.91	3.10	78.7	5,122	7,622	360	345
9845.25003102	250 (37/W) (127 mm²)	3	260	6.6	1.10	27.9	2	2.61	66.3	3.07	78.0	85	2.16	3.25	82.6	5,819	8,660	400	410
9845.35003102	350 (37/W) (177 mm²)	3	260	6.6	1.19	30.2	2	2.82	71.6	3.32	84.3	85	2.16	3.50	88.9	7,115	10,588	490	495
9845.50003101	500 (37/W) (253 mm²)	3	260	6.6	1.31	33.3	1	3.08	78.2	3.62	91.9	85	2.16	3.81	96.8	9,125	13,579	600	590

Dimensions and weights are nominal; subject to industry tolerances.

¹ In-air ampacities are per NEC Table 310.60(C)(71) for three insulated copper conductors rated 105°C, cabled with an overall covering and isolated in air at 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors rated 105°C, cabled within an overall covering and directly buried in earth at 20°C ambient earth temperature.



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CCW® Armored Power, 25 kV 133%/35 kV 100%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 345 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield - black, red and blue

Grounding Conductor:

- Class B stranded bare annealed copper grounding conductor
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of the NEC

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL 1072, orange
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC
- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation

Features: (cont'd)

- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 25 kV 133%/35 kV 100%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR¹	DIRECT BURIAL²
	3/C WITH GROUND MC-HL OR MV-105, 345 MILS EPR, 25 kV 133% AND 35 kV 100% INSULATION LEVEL³																		
9855.00103104	1 (19/W) (42.4 mm²)	3	345	8.8	1.04	26.4	4	2.48	63.0	2.89	73.4	75	1.91	3.05	77.5	4,100	6,101	210	225
9855.11003104	1/0 (19/W) (53.5 mm²)	3	345	8.8	1.07	27.2	4	2.56	65.0	2.98	75.7	75	1.91	3.14	79.8	4,500	6,697	240	255
9855.21003104	2/0 (19/W) (67.4 mm²)	3	345	8.8	1.11	28.2	4	2.65	67.3	3.11	79.0	85	2.16	3.30	83.8	4,950	7,366	275	290
9855.41003103	4/0 (19/W) (107 mm²)	3	345	8.8	1.22	31.0	3	2.88	73.2	3.41	86.6	85	2.16	3.60	91.4	6,200	9,227	360	345
9855.25003103	250 (37/W) (127 mm²)	3	345	8.8	1.27	32.3	3	2.97	75.4	3.63	92.2	85	2.16	3.81	96.8	6,800	10,119	400	410
9855.35003102	350 (37/W) (177 mm²)	3	345	8.8	1.36	34.5	2	3.20	81.3	3.76	95.5	85	2.16	3.94	100.1	8,000	11,905	490	495
9855.50003101	500 (37/W) (253 mm²)	3	345	8.8	1.48	37.6	1	3.45	87.6	4.10	104.1	85	2.16	4.23	107.4	10,150	15,105	600	590

Dimensions and weights are nominal; subject to industry tolerances.

¹ In-air ampacities are per NEC Table 310.60(C)(71) for three insulated copper conductors rated 105°C, cabled with an overall covering and isolated in air at 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors rated 105°C, cabled within an overall covering and directly buried in earth at 20°C ambient earth temperature.

³ Catalog number 9855.00103104, 1 AWG, 3 conductor is only listed 25 kV 133% insulation level in accordance with UL 1072.



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CCW® Armored Power, 35 kV 133%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

GENERAL CABLE CCW®

Product Construction:

Conductor:

- Bare annealed copper per ASTM B3
- Compact stranding per ASTM B496

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conductor stress control layer over the conductor per ICEA S-93-639 and UL 1072

Insulation:

- 420 mils Ethylene Propylene Rubber (EPR) insulation per ICEA S-93-639 and UL 1072

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer, free stripping from the insulation per ICEA S-93-639 and UL 1072

Shield:

- 5 mil annealed bare copper tape with 25% overlap

Phase Identification:

- Color-coded polymeric identification tape laid under the shield - black, red and blue

Grounding Conductor:

- Class B stranded bare annealed copper grounding conductor
- Sized in accordance with UL 1072 and NEC Article 250

Cable Assembly:

- Insulated and grounding conductors are cabled together with non-hygroscopic fillers when required
- Binder tape is applied over the cabled core

CCW Armor:

- Impervious, continuously welded and corrugated aluminum alloy sheath per UL 1072 and UL 1569
- CCW armor conductivity meets the grounding requirements of the NEC

Jacket:

- Flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC) per UL 1072, orange
- Low temperature performance meets ASTM D746 brittleness temperature at or below -40°C

Applications:

- CCW armored Medium-Voltage power cables offer an economical, rugged and reliable alternative to labor-intensive cable in conduit wiring methods
- For use on feeders and branch circuits in industrial power distribution systems per NEC Articles 328 and 330
- For use in Class I, II and III, Divisions 1 and 2; and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, 503 and 505
- Installed on metal racks, troughs, in raceways, in cable trays or secured to supports spaced not more than six feet apart
- Installed in both exposed and concealed work, wet or dry locations, directly buried or embedded in concrete
- Recognized for use on fixed or floating offshore petroleum facilities as recommended by the American Petroleum Institute

Features:

- CCW armor provides an impervious barrier to moisture, gas and liquids and meets the grounding requirements of UL 1072 and the NEC
- Triple Extrusion: The strand shield, EPR insulation and insulation shield are all extruded in one operation

Features: (cont'd)

- General Cable's EPR insulation system has outstanding corona resistance and high dielectric strength, and it provides electrical stability under stress
- Cable meets cold impact at -40°C
- 105°C continuous operating temperature, wet or dry
- 140°C emergency rating
- 250°C short circuit rating

Specifications:

Design Adherence:

- ICEA S-93-639/WC-74, 5-46 kV Shielded Power Cable
- AEIC CS8 Specification for Shielded Power Cable, 5-46 kV
- UL 1072 Medium-Voltage Power Cables
- UL 1569 Metal Clad Cables
- UL 2225 Cables and Cable Fittings for Use in Hazardous Locations
- UL 1309 Marine Shipboard Cable

Flame Tests:

- ICEA T-29-520 (210,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- CSA FT4
- IEEE 1202 (70,000 BTU/hr)
- UL 1072
- IEC 60332-3 Category A

Compliances:

- UL Type MV-105, UL File # E90501
- UL Type MC-HL, SUN RES, CT USE, DIR BUR, -40°C, FT4, UL File # E90496
- UL Listed Marine Shipboard, UL File # E85994
- American Bureau of Shipping (ABS) Listed for CWCMC

CCW® Armored Power, 35 kV 133%, Shielded, 3/C

UL Type MC-HL or MV-105, EPR, 105°C, Cable Tray Use, Sunlight-Resistant
Direct Burial, ABS CWCMC

CATALOG NUMBER	COND. SIZE	NO. OF COND.	INSULATION THICKNESS		NOMINAL O.D. OVER INSULATION		BARE GROUND	NOMINAL CORE O.D.		NOMINAL ARMOR O.D.		JACKET THICKNESS		NOMINAL OVERALL O.D.		APPROXIMATE NET WEIGHT		AMPACITY	
	AWG (kcmil)		mils	mm	INCHES	mm	AWG	INCHES	mm	INCHES	mm	mils	mm	INCHES	mm	LBS/ 1000 FT	kg/ 1000 m	IN AIR¹	DIRECT BURIAL²
	3/C WITH GROUND MC-HL OR MV-105, 420 MILS EPR, 35 kV 133% INSULATION LEVEL																		
9875.11003104	1/0 (19/W) (53.5 mm²)	3	420	10.7	1.24	31.5	4	2.91	73.9	3.41	86.6	85	2.16	3.59	91.2	5,300	7,887	240	255
9875.21003104	2/0 (19/W) (67.4 mm²)	3	420	10.7	1.27	32.3	4	3.02	76.7	3.63	92.2	85	2.16	3.81	96.8	6,000	8,929	275	290
9875.41003103	4/0 (19/W) (107 mm²)	3	420	10.7	1.38	35.1	3	3.23	82.0	3.80	96.5	85	2.16	3.98	101.1	7,100	10,566	360	345
9875.25003103	250 (37/W) (127 mm²)	3	420	10.7	1.43	36.3	3	3.40	86.4	3.98	101.1	85	2.16	4.16	105.7	8,100	12,054	400	410
9875.35003102	350 (37/W) (177 mm²)	3	420	10.7	1.52	38.6	2	3.51	89.2	4.10	104.1	85	2.16	4.29	109.0	9,000	13,393	490	495
9875.50003101	500 (37/W) (253 mm²)	3	420	10.7	1.64	41.7	1	3.81	96.8	4.45	113.0	85	2.16	4.63	117.6	11,100	16,519	600	590

Dimensions and weights are nominal; subject to industry tolerances.

¹ In-air ampacities are per NEC Table 310.60(C)(71) for three insulated copper conductors rated 105°C, cabled with an overall covering and isolated in air at 40°C ambient temperature.

² Direct burial ampacities are per NEC Table 310.60(C)(83) for three insulated copper conductors rated 105°C, cabled within an overall covering and directly buried in earth at 20°C ambient earth temperature.



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CCW® Armored Cable Tool Kit

For Removal of CCW Armor Sheath
Including Accessories



Tool Kit Contents:

- 1 ea. Kett-Tool Metal Clad Cable Saw
- 12 pcs. 2" / 44 teeth Cutting Blades
- Cable Saw Spindle and Allen Wrenches
- 1 ea. MC Cable Guide
- 1 ea. Tubing and Pipe Cutter
- 1 ea. 12" V-Jaw Channel-Lock Pliers
- 1 ea. 10" Hacksaw Frame
- 3 ea. 10" / 24 teeth/in. Hacksaw Blades
- 1 ea. 10 ft. Tape Measure
- 1 ea. Utility Knife with Blades
- 1 ea. 5/16" Screwdriver
- 1 ea. Tool Box

CATALOG NUMBER	QUANTITY	DESCRIPTION	APPROXIMATE WEIGHT
9900.KS226	1	CCW TOOL KIT WITH 120 V AC, 60Hz ELECTRIC CUTTING SAW	22.0 LBS
9900.PS526	1	CCW TOOL KIT WITH 90PSI PNEUMATIC CUTTING SAW	20.0 LBS
9900.15744	1	2", 44T REPLACEMENT CUTTING BLADES (12 BLADES PER PACK)	1.0 LBS
9900.27901	1	MC CABLE GUIDE	0.5 LBS

Table of Contents

Technical Information

SPECIFICATION NO.	DESCRIPTION	REVISION DATE
A001	Metal-Clad CCW® Type MC-HL Wiring System	Feb. 2011
A001	CCW® Installation Manual	Jul. 2011
A001	CCW® Sheath Removal Instructions	Feb. 2011
A010	CCW® Explosion-Proof Gland Cross-Reference	Apr. 2010
A015	CCW® Catalog Number Cross-Reference — Okonite C-L-X® to General Cable CCW®	Apr. 2010
A030	Reference Standards	Apr. 2010
A055	Checklist for CCW® Specifications	Apr. 2010
A100	Common Color Sequence	Apr. 2011
A150	Metric Conversion Factors	Sept. 2010
A185	AWG (American Wire Gauge) to mm ² (Millimeters Squared) Conversion	Sept. 2010
B025	Class B Conductors for General Wiring	Mar. 2012
D005	Recommended Reel Handling Practices	Mar. 2012
D025	Recommended Cable Handling Practices	Oct. 2011
D050	Recommended Cable Storage Practices	Nov. 2011
E005	Pre-Installation Instructions	Apr. 2010
E050	Installation — Feed-In Setups	Apr. 2010
E075	Installation — Conductor Maximum Pulling Tensions	Mar. 2012
E100	Installation — Training and Bending Limitations	Apr. 2010
E125	Installation — Maximum Sidewall Pressure	Jan. 2011
F005	DC “HI-POT” Pre-Test Guidelines for MV Cables	Apr. 2010
F025	DC “HI-POT” Testing Guidelines for MV Cables	Apr. 2010
F075	Field Electrical “HI-POT” Testing Guidelines	Apr. 2010
F130	CCW® Sheath as a Grounding Conductor	Dec. 2010
Index	Catalog Number Index	May 2011

Metal-Clad CCW® Type MC-HL Wiring System



The Most Versatile Wiring Method Available
Ideal for Hazardous (Classified) Locations
Provides Best Performance for PWM Circuits

CCW® is General Cable's trade name for the continuously corrugated, welded, aluminum-sheathed wiring system. CCW provides a unique cable system within a sealed metallic sheath that provides complete protection to the conductors from all external environments. CCW is offered in a complete line of power, control, signal, and instrumentation cables.

CCW® Installation Manual

Introduction

CCW provides a unique wiring system that is unparalleled in versatility for practically every installation condition or requirement.

CCW Is A Self-Contained Wiring System



The CCW wiring system consists of conductors or a cable enclosed in a raceway consisting of a strong, pliable aluminum metallic sheath that is continuously welded to provide a completely enclosed gas/vapor-tight metallic sheath that is then corrugated. Corrugating the aluminum sheath provides greater crush and impact resistance for mechanical protection of the conductors and increases the pliability of the cable during installation. The standard corrugated aluminum sheath used on all CCW cables complies with the more severe crush and impact requirements of UL 2225 for HL cables permitted in hazardous locations. CCW Type MC Metal-Clad Cable has been installed in some of the most demanding applications for over 40 years and has become an industry standard for industrial and commercial applications.

CCW Has Almost-Universal Applications



CCW Type MC

CCW is available in low- and medium-voltage power, control, signal, and instrumentation cables. As CCW is rated MC-HL, it can be used in any Type MC application, as it complies with UL 1569, Metal-Clad Aluminum Cable.

CCW has been recognized by the National Electrical Code® (NEC®) for more than 40 years, and the permitted uses of CCW in the NEC have been significantly expanded over the years, as users have recognized the unique advantages of this factory-assembled wiring system and inspectors have observed and recognized the trouble-free performance of CCW in all the uses permitted.

NEC Article 330 is the primary article for CCW Metal-Clad Type MC Cable. In accordance with this Article, CCW rated from 600 V to 35 kV is permitted to be used in the applications shown below; the additional references included refer to the 2011 NEC.

- For services, feeders, and branch circuits
- For power, lighting, control, and signaling circuits
- As exposed runs "ER" (formerly open wiring) or concealed
- Indoors or outdoors

- In cable tray, where identified for such use – see 392.10, 392.20(A), (B) and (C)
- As aerial cable on Messenger-Supported Wiring or installed outside of buildings or structures – see 225.10, 396.10, and 396.12
- In any raceway
- In hazardous (classified) locations
 - Class I, Division 1
[511.7, 513.7, 515.7, and 516.7]
 - Class I, Division 2
[501.10(B)(1) and (5)]
 - Class I, Zone 2
[505.15(C)(1)(b)]
 - Class II, Division 2
[502.10(B)(3) and (6)]
 - Class III, Divisions 1 and 2
[503.10(A) and (B)]
 - Intrinsically Safe Circuits
[504.20]
 - Zone 22
[506.15(C)(3) and (6)]
[Not included in UL 2225]
- Special Occupancies – see Articles 517 through 552
- As Service-Entrance Cable – see 230.43
- In wet and dry locations – since the metallic covering is impervious to moisture, the insulated conductors under the metallic sheath are listed for use in wet locations, and a corrosion-resistant protective nonmetallic jacket is provided over the metallic sheath
- To be direct buried or encased in concrete, since CCW has a corrosion-resistant protective nonmetallic jacket over the metallic sheath – see 300.5 or 300.50, as appropriate
- As single-conductors when all the phase conductors and, where used, the neutral conductor are grouped together to minimize induced voltage on the sheath – see 300.20

Unless otherwise stated, all references refer to the 2011 NEC®.

CCW® Installation Manual

CCW Type MC-HL

CCW Type MC-HL contains separate equipment grounding conductor(s) sized in accordance with 250.122 in all constructions, in addition to the standard gas/vapor-tight continuously corrugated metallic sheath and overall jacket of suitable polymeric materials and complies with UL 2225, Standard for Cables and Cable Fittings For Use In Hazardous (Classified) Locations. UL 2225 also includes additional requirements that the cable comply with a -40°C low temperature impact test, more severe room temperature crush and impact tests, and a more severe vertical tray flame test.

When installed with termination fittings listed for the application, CCW MC-HL may be used in industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation. In addition to all the uses permitted for CCW Type MC, CCW Type MC-HL is also permitted to be installed in the following hazardous (classified) locations:

- Class I, Division 1
[501.10(A)(1)(c)]
- Class I, Zone 1
[505.15(B)(1)(b)]
- Class II, Division 1
[502.10(A)(1) and (3)]
- Zones 20 and 21
[506.15(A)(3) and (B)(1)]
[Not included in UL 2225]

CCW Type MV or MC

CCW Type MV or MC contains conductors rated 105°C and is available from 2400 V to 35 kV. The cable complies with both UL 1569, Metal-Clad Aluminum Cable, and UL 1072, Medium-Voltage Power Cables, and is listed and marked as Type MV or MC. The cable is permitted to be used in accordance with 328.10 and 330.10 and installed in the same applications as CCW Type MC.

CCW Remote-Control, Signaling, and Power-Limited Cables

CCW Type MC and CCW Type MC-HL are permitted to be used on 600 V Class 1 power-limited circuits, Class 1 remote-control and signaling circuits, and the supply side of Class 2 or Class 3 power sources in the applications and locations shown above for the applicable cable type, subject to any limitations specified in Part II of Article 725, also see 725.127.

Type MC cable is permitted to be installed in compliance with Parts II and III of Article 725 and 770.133 as applicable and in accordance with 330.10(B)(1) through (B)(4).

CCW Type ITC-HL

CCW Instrumentation Tray Cable Type ITC-HL is permitted to be installed in accordance with Article 501.10(A)(1)(d) in Class I, Zone 1 or Division 1 locations. All constructions are manufactured with the standard gas/vapor tight continuously corrugated metallic sheath and covered with a jacket of suitable polymeric material. CCW Type ITC-HL cable complies with UL 2225, Standard for Cables and Cable Fittings For Use In Hazardous (Classified) Locations. The CCW sheath provides equipment grounding through the sheath. UL 2225 also includes additional requirements that the cable comply with the -40°C low temperature impact test, more severe room temperature crush and impact tests, and a more severe vertical tray flame test.

In addition to all the applications permitted for CCW Type ITC, CCW Type ITC-HL is also permitted in the following additional hazardous (classified) locations:

- Class I, Division 1
[501.10(A)(1)(d)]
- Class I, Zone 1
[505.15(B)(1)(c)]

CCW Type ITC-HL/PLTC (Instrumentation Tray Cable/Power-Limited Tray Cable)

CCW Type ITC-HL/PLTC is permitted in 727.4 to be used as ITC cable on instrumentation and control circuits operating at 150 volts or less and 5 amperes or less in industrial establishments where the conditions of maintenance and supervision ensure that only qualified persons service the installation:

- In cable trays
- In raceways
- In the following hazardous (classified) locations:
 - Class I, Division 2
[501.10(B)(1), (3) and (4)]
 - Class I, Zone 2
[505.15(C)(1)(c) and (d)]
 - Class II, Division 2
[502.10(B)(1), (4) and (5)]
 - Intrinsically Safe Circuits
[504.20]
 - Zone 22
[506.15(C)(4) and (5)]
[Not included in UL 2225]
 - Commercial garages
[511.7]
- As aerial cable on a messenger
- Direct buried
- Under raised floors in rooms containing industrial process control equipment and rack rooms
- Under raised floors in information technology equipment rooms – see Table 645.5.

Refer to Article 727 for complete wiring methods, installation requirements, and listing requirements for CCW Type ITC-HL cables.

Unless otherwise stated, all references refer to the 2011 NEC®.

CCW® Installation Manual

CCW Type ITC-HL/PLTC is permitted in 725.133 to be used as PLTC cable on Class 2 and Class 3 remote-control, signaling, and power-limited circuits:

- As exposed runs “ER”
- In cable trays
- In raceways
- In the following hazardous (classified) locations:

Class I, Zone 2
[505.15(C)(1)(d)]

Class II, Division 2
[502.10(B)(1) and (4)]

Intrinsically Safe Circuits
[504.20]

Zone 22
[506.15(C)(4)]
[Not included in UL 2225]

Commercial garages
[511.7]

- As aerial cable on a messenger
- Direct buried
- Under raised floors in information technology equipment rooms – see Table 645.5

Refer to Parts III and IV of NEC 725 for complete wiring methods, installation requirements, and listing requirements for CCW Type PLTC cables.

CCW Is The Perfect Cable For PWM Variable Frequency Drive Cables

As a function of its construction, CCW has been recognized for its ability to reduce the amount of stray harmonic currents generated by Pulse Width Modulated (PWM) variable frequency drives. Through the use of split ground configurations and the overall shield with CCW's corrugated, continuously welded aluminum sheath, this cable design is one of the preferred choices of the world's manufacturers of drives and motors

to reduce EMI, RFI, and destructive harmonic currents. CCW cables provide high attenuation shielding for control, signal, and instrumentation circuits and a symmetrical low impedance path to ground. The CCW sheath effectively reduces crosstalk, common mode currents, motor frame voltage, and injected ground currents. These are all important considerations for PWM ac drive applications.

CCW Offshore And Shipboard Cables Certified By ABS

CCW cables are certified by the American Bureau of Shipping (ABS) as cables listed as CWC MC. This listing means that CCW cables may be used in MODUs (Mobile Offshore Drilling Units), Fixed Production Platforms, Floating Production Platforms, and FPSOs (Floating Production, Storage and Offloading) requiring MC or MC-HL (Hazardous Locations). These cable constructions meet UL 1309, Standards For Marine Shipboard Cable and UL 2225, Standard For Cables and Cable Fittings For Use In Hazardous (Classified) Locations.

CCW Is An Economical Factory Assembled Wiring System

CCW is a factory-assembled wiring system that eliminates the cost of installing raceways and the possibility of damaging the insulated conductors during installation in raceways or cable trays. Since CCW is manufactured in long, continuous lengths and supplied on reels, scrap is significantly reduced.

Since CCW Type MC cables are approved for exposed runs, they offer a very economical wiring system. A cable tray or other supports can be used when there are multiple cables in the same run, and then individual cables can branch off as exposed runs from the tray or support to the termination, as required, without any change or splices in the cable.

CCW Is Easy To Install

CCW can be installed using normal installation equipment and established installation techniques. It is pliable and can be easily installed in long lengths in cable trays, on ladders or other supports. As with any wiring method, care should be taken not to exceed the maximum pulling tension, minimum bending radius, or maximum sidewall pressure. A complete cable installation manual for all cables and conductors is available from General Cable.

The minimum bending radius for a multiconductor cable is seven times (7x) the external diameter of the metallic sheath.

CCW cable is easily terminated, and sheath removal instructions are included in this catalog. Termination kits and splicing kits are available from numerous manufacturers.

CCW Provides Environmental Protection

The welded and corrugated metallic sheath on CCW is impervious to vapors, gases or liquids and provides a clean, dry environment for the conductors. This permits the conductors to be rated at 90°C up to 2400 V and 105°C for medium-voltage cables in both wet and dry installations. The standard jacket over the CCW sheath is low-temperature, sunlight-resistant Polyvinyl Chloride (PVC). Other jacketed or unjacketed cables are available for specific installation or environmental conditions. Consult your General Cable representative for further details.

Unless otherwise stated, all references refer to the 2011 NEC®.

CCW® Installation Manual

CCW Cables Provide Excellent Flame Resistance

CCW cables, with or without a PVC jacket, comply with all current flame test standards, including UL 1569, IEEE 1202, IEEE 383, CSA FT4, ICEA T-29-520 (210,000 BTU/hr) and IEC 60332.3 Cat A.

CCW Sheath Permitted As An Equipment Grounding Conductor

The sheath on CCW is actually a hollow aluminum tube that provides a cross-sectional area that meets or exceeds the equipment grounding conductor requirements specified in 250.122 in all constructions. Spec F125 provides the equivalent conductor size for each CCW aluminum sheath diameter.

Even though the metallic sheath provides an equipment grounding conductor that equals or exceeds the NEC requirements, an additional copper equipment grounding conductor is provided in all constructions listed MC-HL to comply with the user's preference not to rely completely on the metallic sheath for grounding power cables. The additional equipment grounding conductor provides an added benefit of being able to parallel two standard power cables and still comply with the grounding requirements of 250.122(F). In many cases, three standard power cables can be run in parallel, but you should check with the manufacturer for this type of installation.

CCW Sheath Recognized As A Voltage Separation Barrier

The CCW aluminum sheath is recognized as a solid fixed barrier when used on Type MV or MC cables installed in cable tray with cables rated 600 volts or less in accordance with 392.20(B).

Installation

Some specific guidelines for installing CCW cables are listed below.

- When pulling CCW cables into position, the pulling tension must be on the conductors rather than the aluminum sheath. The pulling eyes/bolts or basket grip should be attached to the conductors and the metallic sheath fastened to the insulated conductors or the pulling rope to prevent movement of the conductors within the CCW sheath. If movement of the conductors within the CCW sheath is noted at the start of a pull, one method to stop the movement is to drive three or four nails about 2 in. apart through the CCW sheath into each copper power conductor.
- The minimum bending radius of seven times (7x) the external diameter of the metallic sheath for nonshielded multiconductor cables must be maintained during pulling. Roller assemblies must provide a smooth, regular bending radius for the cable. Using smaller rollers can damage the aluminum sheath and the cable.
- Sidewall pressure should not exceed 500 lbs/ft of radius to avoid flattening the CCW sheath or damaging the conductors.
- Anti-short bushings are not required on CCW Type MC cables. The listed termination fittings are designed such that the throat of the fitting is constructed to permit the conductors to pass through but not permit the cut end of the sheath to contact the insulated conductors.
- Termination kits and splicing kits are available from numerous manufacturers.

Refer to the General Cable Installation Manual for Power and Control Cables for more detailed installation instructions. For special installations, such as long vertical risers, contact General Cable for engineering assistance.

CCW Installation Tips

While it is rarely done, CCW can be installed in a raceway. One application is when a run of CCW Type MC is installed in a non-hazardous or Class I, Division 2 hazardous location and one end of the cable is to be terminated in a Class I, Division 1 hazardous location. The CCW cable may be pulled into a raceway approved for use in Class I, Division 1 hazardous locations, provided the sealing requirements at the Division 1 and 2 boundaries are met. This provides a lower cost total cable run and eliminates splicing of the CCW at the Division boundary. Another instance would be to install the CCW in a raceway to provide additional mechanical protection to prevent physical damage to the cable.

On very long runs, the higher ampacity permitted for 90°C conductors may be utilized for the CCW cable and 10-foot lengths of a larger conductor that complies with the ampacity limitations required for the 60°C or 75°C termination rating, to be spliced onto the cable conductors at the termination. The 10 feet of the larger conductor will act as a heat sink and ensure that the rated temperature of the termination is not exceeded while permitting smaller 90°C rated conductors to be used for the majority of the run. The same installation technique can also be used for 105°C conductors in CCW Type MV or MC cable.

CCW cable terminated directly on busbars is permitted to use the 90°C or 105°C ampacity, as applicable.

In long vertical runs as exposed run or in cable tray, CCW cables containing conductors 4 AWG and larger can comply with Table 300.19(A) by having horizontal offsets at the required distances. For installation assistance on cables smaller than 4 AWG installed in long vertical runs, contact General Cable Engineering.

Unless otherwise stated, all references refer to the 2011 NEC®.



Phone: 888-593-3355
www.generalcable.com

CCW[®] Sheath Removal Instructions

The following procedures provide a simple, safe means of removing the non-metallic jacket and the corrugated, continuously welded (CCW) aluminum sheath from Type MC cable for terminating or splicing without damaging the insulated conductors. These procedures are not recommended for use on TECK 90, HVTECK or interlocked armor MC.

Tool Kit:

- Kett-Tool Metal-Clad Cable Saw
- 2"/44 teeth Cutting Blades
- Cable Saw Spindle and Allen Wrenches
- MC Cable Guide
- Tubing and Pipe Cutter
- 12" V-Jaw Channel-Lock Pliers
- 10" Hacksaw Frame
- 10"/24 teeth/in. Hacksaw Blades
- 10 ft. Tape Measure
- Utility Knife with Blades
- 5/16" Screwdriver
- Tool Box

Safe working practices should be observed, including safety glasses and adequate work gloves. Cable installers should be properly trained in cable termination procedures.

Installation Note 1: Work Prior to Removing Sheath

Measure twice, cut once. Ensure that the pull of cable, in addition to the termination used, and the amount of cable required are adequate for the installation. Make sure that you have the correct size and style glands to properly marry the cable to the equipment.



Step 1:

Using the utility knife, remove the jacket to expose the required length of unarmored cable within the enclosure.



Step 2:

Refer to the instructions of the gland manufacturer for the length of aluminum sheath required to be exposed beyond the jacket for fitting the glands to the sheath. Mark the sheath at the nearest crown (high point). This is the **Cutting Point**.



CCW® Sheath Removal Instructions

Installation Note 2: Review Sheath Outside Diameters

For diameters less than or equal to 1.625", use Steps 3-9.

For diameters greater than 1.625", use Steps 10-15.

Installation Note 3: Using the Kett Model KS-226 Cable Saw

When using the cable saw, it is important to read and understand the manufacturer's instructions and to be familiar with the Kett Cable Saw cutting equipment prior to operating.

For Small-Diameter CCW® Cable (diameter of sheath less than or equal to 1.625")

Step 3:

Using a hacksaw blade or tubing cutter, score the CCW aluminum sheath around the entire sheath at the **Cutting Point**. Gripping the cable with a hand on either side of the **Cutting Point**, flex the cable until the metal opens. Carefully remove the freed armored sheath from the end of the cable, being careful not to score or damage the cabled core.



Step 4:

For CCW cables with an inner jacket or tight-fitting sheath, it may be necessary to use the Kett-Tool Metal-Clad Cable Saw with the optional red cable guide. Attach the cable guide to the Kett Cable Saw and secure the cable.

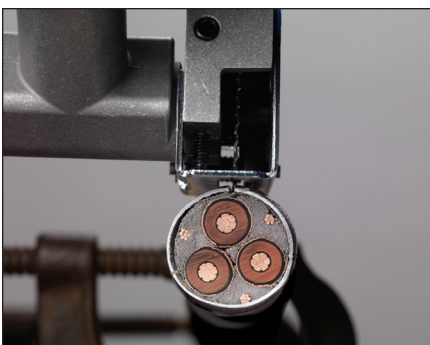
Step 5:

Now that your cross-cut is complete, sheath removal via the Kett-Tool Metal-Clad Cable Saw must be done longitudinally down the cable sheath.

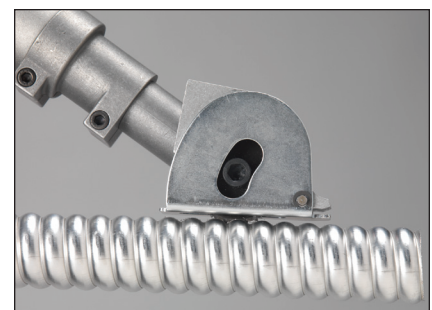
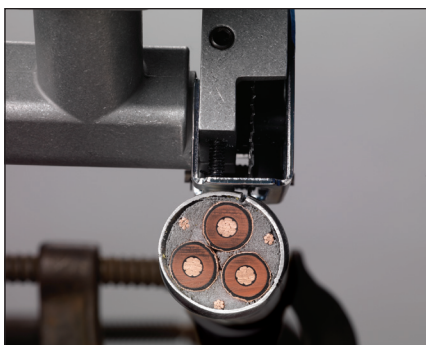
Step 6:

When setting up to cut CCW cable, the cable saw blade must be placed to cut perpendicular to the cable along the cable. See below:

CORRECT



NOT CORRECT



Depth of the saw blade and use of the guides are critical to the proper cutting operation. Do not cut through the entire sheath, as damage to the core is likely. It is suggested that the saw depth be adjusted so that 80-95% of the metal in the valley (low point) of the CCW® sheath is cut.

CCW® Sheath Removal Instructions



Step 7:

With downward pressure being applied to the Kett Cable Saw, make a longitudinal cut down the length of the sheath to be stripped (from the cut end) to the end you hacksawed earlier. Do not attempt to use the cable saw to plunge cut, as this could result in injury.



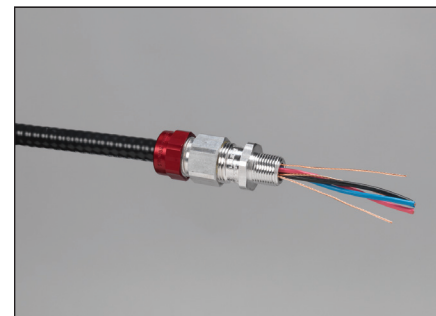
Step 8:

Insert the wide flat-head screwdriver into the cut at the free end and twist. This will cause the remaining metal in the valleys to break. Repeat until the sheath completely separates from the core.



Step 9:

Remove the cable fillers and marker tape from the cabled core, separating the conductors and the equipment grounding conductor(s) for ease in termination. Install the appropriate gland suited to the application per the manufacturer's instructions. The cable is now ready to be terminated into the enclosure.



CCW® Sheath Removal Instructions

For Large-Diameter CCW® Cable (diameter of sheath greater than 1.625")

Step 10:

Using a hacksaw with the appropriate blade for cutting metal, cut through the crown (high point) of the CCW sheath at your marked **Cutting Point** to connect the valley (low point) of the CCW sheath.

Once this cut is made, mark the sheath around the balance of the cable, making additional cuts for a completed circle. If you cannot complete the circle entirely through cutting, then flex the cable end until the metal separates as shown at the far right.



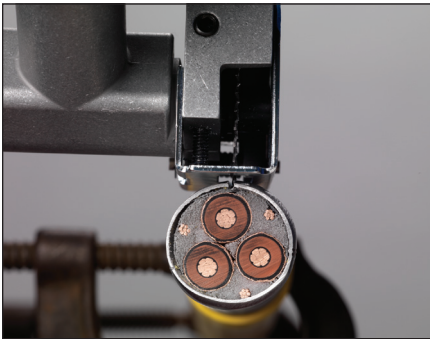
Step 11:

Now that your cross-cut is complete, sheath removal via the Kett-Tool Metal-Clad Cable Saw must be done longitudinally down the cable sheath.

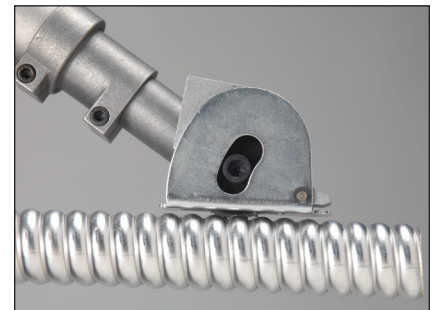
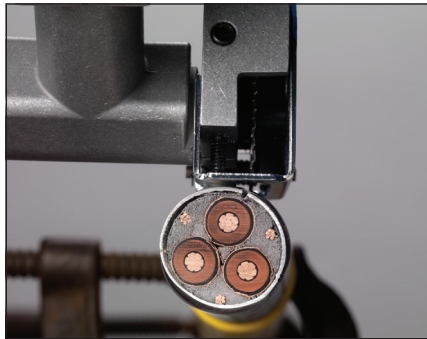
Step 12:

When setting up to cut CCW cable, the cable saw blade must be placed to cut perpendicular to the cable along the cable. See below:

CORRECT



NOT CORRECT



Depth of the saw blade and use of the guides are critical to the proper cutting operation. Do not cut through the entire sheath, as damage to the core is likely. It is suggested that the saw depth be adjusted so that 80-95% of the metal in the valley (low point) of the CCW® sheath is cut.



Step 13:

With downward pressure being applied to the Kett Cable Saw, make a longitudinal cut down the length of the sheath to be stripped (from the cut end) to the end you hacksawed earlier. Do not attempt to use the cable saw to plunge cut, as this could result in injury.

At this point, you should have a completed cut with noticeable connections in the valleys of the sheath.

CCW® Sheath Removal Instructions



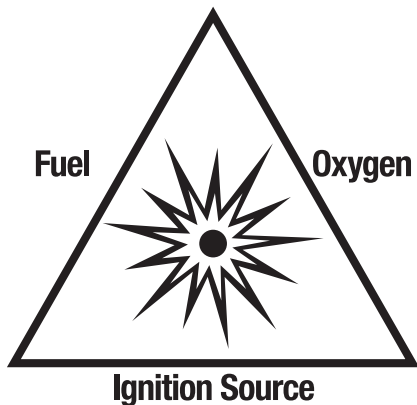
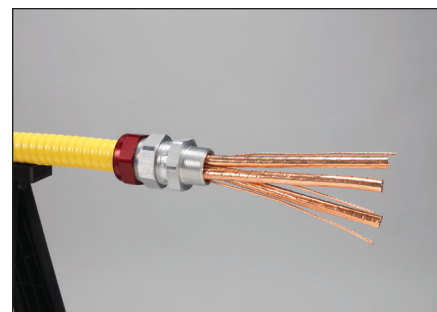
Step 14:

Insert the wide flat-head screwdriver into the cut at the free end and twist. This will cause the remaining metal in the valleys to break. Repeat until the sheath completely separates from the core.

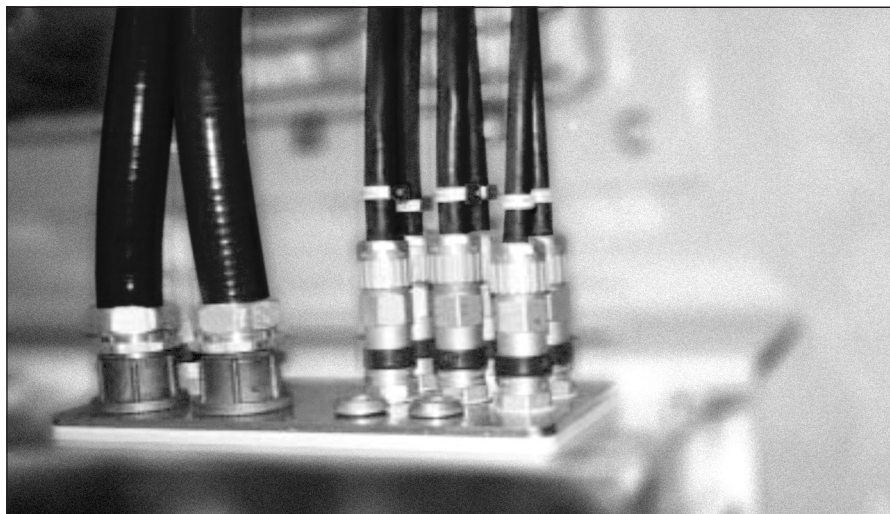


Step 15:

Remove the cable fillers and marker tape from the cabled core, separating the conductors and grounds/shields for ease in termination. Install the appropriate fitting/gland suited to the application per the manufacturer's instructions. The cable is now ready to be terminated into the enclosure.



Areas with a high propensity for ignitable environments, including presence of liquids, gases or dust.



CCW® Explosion-Proof Gland Cross-Reference

Thermocouple Extension

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS	HAWKE	APPLETON (TMCX) *end stop removed			Thomas & Betts	Hubbell/Killark
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

CCW® ARMORED THERMOCOUPLE EXTENSION, SINGLE PAIR, OVERALL SHIELD

9025.16010001	16 AWG TYPE EX	0.45	11.4	0.56	14.2	TMCX165	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-010	CMCXA050
9025.16010002	16 AWG TYPE JX	0.45	11.4	0.56	14.2	TMCX165	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-010	CMCXA050
9025.16010003	16 AWG TYPE KX	0.45	11.4	0.56	14.2	TMCX165	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-010	CMCXA050
9025.16010004	16 AWG TYPE TX	0.45	11.4	0.56	14.2	TMCX165	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-010	CMCXA050

CCW® ARMORED THERMOCOUPLE EXTENSION, PAIRS, OVERALL SHIELD

9050.20041221	20 AWG TYPE EX 4 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9050.20041222	20 AWG TYPE JX 4 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9050.20041223	20 AWG TYPE KX 4 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9050.20041224	20 AWG TYPE TX 4 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9050.20081221	20 AWG TYPE EX 8 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-075-040	CMCXA075
9050.20081222	20 AWG TYPE JX 8 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-075-040	CMCXA075
9050.20081223	20 AWG TYPE KX 8 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-075-040	CMCXA075
9050.20081224	20 AWG TYPE TX 8 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-075-040	CMCXA075
9050.20101221	20 AWG TYPE EX 10 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20101222	20 AWG TYPE JX 10 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20101223	20 AWG TYPE KX 10 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20101224	20 AWG TYPE TX 10 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20121221	20 AWG TYPE EX 12 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20121222	20 AWG TYPE JX 12 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20121223	20 AWG TYPE KX 12 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20121224	20 AWG TYPE TX 12 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9050.20161221	20 AWG TYPE EX 16 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-070	CMCXA075
9050.20161222	20 AWG TYPE JX 16 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-070	CMCXA075
9050.20161223	20 AWG TYPE KX 16 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-070	CMCXA075
9050.20161224	20 AWG TYPE TX 16 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-070	CMCXA075
9050.20201221	20 AWG TYPE EX 20 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20201222	20 AWG TYPE JX 20 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20201223	20 AWG TYPE KX 20 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20201224	20 AWG TYPE TX 20 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20241221	20 AWG TYPE EX 24 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20241222	20 AWG TYPE JX 24 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20241223	20 AWG TYPE KX 24 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20241224	20 AWG TYPE TX 24 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075 or CMCXAC100
9050.20361221	20 AWG TYPE EX 36 PAIRS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA075 or CMCXAC125
9050.20361222	20 AWG TYPE JX 36 PAIRS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA075 or CMCXAC125
9050.20361223	20 AWG TYPE KX 36 PAIRS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA075 or CMCXAC125
9050.20361224	20 AWG TYPE TX 36 PAIRS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA075 or CMCXAC125
9050.20501221	20 AWG TYPE EX 50 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-130	CMCXA075 or CMCXAC150
9050.20501222	20 AWG TYPE JX 50 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-130	CMCXA075 or CMCXAC150
9050.20501223	20 AWG TYPE KX 50 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-130	CMCXA075 or CMCXAC150
9050.20501224	20 AWG TYPE TX 50 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-130	CMCXA075 or CMCXAC150

All information in this cross-reference is presented solely as a guide to product selection and is believed to be reliable. All printing errors are subject to correction in subsequent releases of this catalog. Although General Cable has taken precautions to ensure the accuracy of the product cross-reference at the time of publication, the specifications of all products contained herein are subject to change by gland manufacturers without notice.



CCW® Explosion-Proof Gland Cross-Reference

Thermocouple Extension

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS	HAWKE	APPLETON (TMCX) *end stop removed			Thomas & Betts	Hubbell/Killark
		INCHES	mm	INCHES	mm			TMCX Series	711 Series	Aluminum	NP Brass	Stainless Steel
CCW® ARMORED THERMOCOUPLE EXTENSION, PAIRS, INDIVIDUAL AND OVERALL SHIELD												
9075.20041221	20 AWG TYPE EX 4 PAIRS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA0050 or CMCXAB075
9075.20041222	20 AWG TYPE JX 4 PAIRS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA0050 or CMCXAB075
9075.20041223	20 AWG TYPE KX 4 PAIRS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA0050 or CMCXAB075
9075.20041224	20 AWG TYPE TX 4 PAIRS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA0050 or CMCXAB075
9075.20081221	20 AWG TYPE EX 8 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA0075
9075.20081222	20 AWG TYPE JX 8 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA0075
9075.20081223	20 AWG TYPE KX 8 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA0075
9075.20081224	20 AWG TYPE TX 8 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA0075
9075.20101221	20 AWG TYPE EX 10 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA0075
9075.20101222	20 AWG TYPE JX 10 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA0075
9075.20101223	20 AWG TYPE KX 10 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA0075
9075.20121222	20 AWG TYPE JX 12 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA0075
9075.20121223	20 AWG TYPE KX 12 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA0075
9075.20121224	20 AWG TYPE TX 12 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA0075
9075.20161221	20 AWG TYPE EX 16 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXA0075 or CMCXAC100
9075.20161222	20 AWG TYPE JX 16 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXA0075 or CMCXAC100
9075.20161223	20 AWG TYPE KX 16 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXA0075 or CMCXAC100
9075.20161224	20 AWG TYPE TX 16 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXA0075 or CMCXAC100
9075.20201221	20 AWG TYPE EX 20 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9075.20201222	20 AWG TYPE JX 20 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9075.20201223	20 AWG TYPE KX 20 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9075.20201224	20 AWG TYPE TX 20 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9075.20241221	20 AWG TYPE EX 24 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9075.20241222	20 AWG TYPE JX 24 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9075.20241223	20 AWG TYPE KX 24 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9075.20241224	20 AWG TYPE TX 24 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9075.20361221	20 AWG TYPE EX 36 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9075.20361222	20 AWG TYPE JX 36 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9075.20361223	20 AWG TYPE KX 36 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9075.20361224	20 AWG TYPE TX 36 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9075.20501221	20 AWG TYPE EX 50 PAIRS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200
9075.20501222	20 AWG TYPE JX 50 PAIRS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200
9075.20501223	20 AWG TYPE KX 50 PAIRS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200
9075.20501224	20 AWG TYPE TX 50 PAIRS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200

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CCW® Explosion-Proof Gland Cross-Reference

Instrumentation - 300 V

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS	HAWKE	APPLETON (TMCX) *end stop removed			Thomas & Betts	Hubbell/Killark
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, OVERALL SHIELD

9125.16010001	16 AWG 7W (1.31 mm²) 1 PAIR	0.43	10.9	0.54	13.7	-	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-008	CMCXA050
9125.16010002	16 AWG 7W (1.31 mm²) 1 TRIAD	0.49	12.4	0.60	15.2	TMCX165	A or B	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-010	CMCXA050 or CMCXAB075
9125.16021201	16 AWG 7W (1.31 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9125.16021202	16 AWG 7W (1.31 mm²) 2 TRIADS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9125.16041201	16 AWG 7W (1.31 mm²) 4 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9125.16041202	16 AWG 7W (1.31 mm²) 4 TRIADS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA075
9125.16081201	16 AWG 7W (1.31 mm²) 8 PAIRS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9125.16081202	16 AWG 7W (1.31 mm²) 8 TRIADS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9125.16121201	16 AWG 7W (1.31 mm²) 12 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100
9125.16121202	16 AWG 7W (1.31 mm²) 12 TRIADS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9125.16161201	16 AWG 7W (1.31 mm²) 16 PAIRS	1.11	28.2	1.22	31.0	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9125.16161202	16 AWG 7W (1.31 mm²) 16 TRIADS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9125.16241201	16 AWG 7W (1.31 mm²) 24 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9125.16241202	16 AWG 7W (1.31 mm²) 24 TRIADS	1.42	36.1	1.53	38.9	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXAC2125 or CMCXAD200
9125.16361201	16 AWG 7W (1.31 mm²) 36 PAIRS	1.56	39.6	1.69	42.9	TMCX5161	C2 or D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-150-150	CMCXAC2125 or CMCXAD200
9125.16361202	16 AWG 7W (1.31 mm²) 36 TRIADS	1.64	41.7	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9125.16501201	16 AWG 7W (1.31 mm²) 50 PAIRS	1.83	46.5	1.96	49.8	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-180	CMCXAD200 or CMCXAE250
9125.16501202	16 AWG 7W (1.31 mm²) 50 TRIADS	1.92	48.8	2.05	52.1	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, INDIVIDUAL AND OVERALL SHIELD

9150.16021201	16 AWG 7W (1.31 mm²) 2 PAIRS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9150.16021202	16 AWG 7W (1.31 mm²) 2 TRIADS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9150.16041201	16 AWG 7W (1.31 mm²) 4 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9150.16041202	16 AWG 7W (1.31 mm²) 4 TRIADS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9150.16081201	16 AWG 7W (1.31 mm²) 8 PAIRS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9150.16081202	16 AWG 7W (1.31 mm²) 8 TRIADS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9150.16121201	16 AWG 7W (1.31 mm²) 12 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9150.16121202	16 AWG 7W (1.31 mm²) 12 TRIADS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9150.16241201	16 AWG 7W (1.31 mm²) 24 PAIRS	1.42	36.1	1.53	38.9	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXAC2125 or CMCXAD200
9150.16241202	16 AWG 7W (1.31 mm²) 24 TRIADS	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9150.16361201	16 AWG 7W (1.31 mm²) 36 PAIRS	1.64	41.7	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9150.16361202	16 AWG 7W (1.31 mm²) 36 TRIADS	1.87	47.5	2.00	50.8	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250
9150.16501201	16 AWG 7W (1.31 mm²) 50 PAIRS	1.96	49.8	2.09	53.1	TMCX6206 or TMCX7247	D or E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXAD200 or CMCXAE250
9150.16501202	16 AWG 7W (1.31 mm²) 50 TRIADS	2.19	55.6	2.32	58.9	TMCX7247	E	TMCX250SA*	TMCX250SNB*	TMCX250SSS*	4-250-220	CMCXAE250

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, OVERALL SHIELD

9225.16010001	16 AWG 7W (1.31 mm²) 1 PAIR	0.43	10.9	0.54	13.7	-	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-008	CMCXA050
9225.16010002	16 AWG 7W (1.31 mm²) 1 TRIAD	0.43	10.9	0.54	13.7	-	A	TMCX050SA*	TMCX050SNB*	TMCX050SSS*	4-075-008	CMCXA050
9225.16021221	16 AWG 7W (1.31 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9225.16041221	16 AWG 7W (1.31 mm²) 4 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.16041222	16 AWG 7W (1.31 mm²) 4 TRIADS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9225.16061221	16 AWG 7W (1.31 mm²) 6 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9225.16081221	16 AWG 7W (1.31 mm²) 8 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9225.16081222	16 AWG 7W (1.31 mm²) 8 TRIADS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9225.16101221	16 AWG 7W (1.31 mm²) 10 PAIRS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9225.16121221	16 AWG 7W (1.31 mm²) 12 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9225.16121222	16 AWG 7W (1.31 mm²) 12 TRIADS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9225.16161221	16 AWG 7W (1.31 mm²) 16 PAIRS	1.11	28.2	1.22	31.0	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9225.16161222	16 AWG 7W (1.31 mm²) 16 TRIADS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A	TMCX125NB	TMCX125SS	4-125-110	CMCXAC100 or CMCXAC2125

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CCW® Explosion-Proof Gland Cross-Reference

Instrumentation - 300 V

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS	HAWKE	APPLETON (TMCX) *end stop removed			Thomas & Betts	Hubbell/Killark CMCXA
		INCHES	mm	INCHES	mm	TMCX Series	711 Series	Aluminum	NP Brass	Stainless Steel	Spin-On X	

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, OVERALL SHIELD (cont'd)

9225.16201221	16 AWG 7W (1.31 mm²) 20 PAIRS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9225.16241221	16 AWG 7W (1.31 mm²) 24 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9225.16241222	16 AWG 7W (1.31 mm²) 24 TRIADS	1.42	36.1	1.53	38.9	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXAC2125 or CMCXAD200
9225.16361221	16 AWG 7W (1.31 mm²) 36 PAIRS	1.51	38.4	1.65	41.9	TMCX5161	C2 or D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-150-150	CMCXAC2125 or CMCXAD200
9225.16361222	16 AWG 7W (1.31 mm²) 36 TRIADS	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9225.16501221	16 AWG 7W (1.31 mm²) 50 PAIRS	1.64	41.7	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9225.18021221	18 AWG 7W (0.82 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9225.18041221	18 AWG 7W (0.82 mm²) 2 PAIRS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.18041222	18 AWG 7W (0.82 mm²) 2 TRIADS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.18061221	18 AWG 7W (0.82 mm²) 6 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.18081221	18 AWG 7W (0.82 mm²) 8 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9225.18081222	18 AWG 7W (0.82 mm²) 8 TRIADS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9225.18101221	18 AWG 7W (0.82 mm²) 10 PAIRS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9225.18121221	18 AWG 7W (0.82 mm²) 12 PAIRS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9225.18121222	18 AWG 7W (0.82 mm²) 12 TRIADS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9225.18161221	18 AWG 7W (0.82 mm²) 16 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100
9225.18161222	18 AWG 7W (0.82 mm²) 16 TRIADS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9225.18201221	18 AWG 7W (0.82 mm²) 20 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9225.18241221	18 AWG 7W (0.82 mm²) 24 PAIRS	1.11	28.2	1.22	31.0	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9225.18241222	18 AWG 7W (0.82 mm²) 24 TRIADS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9225.18361221	18 AWG 7W (0.82 mm²) 36 PAIRS	1.29	32.8	1.40	35.6	TMCX4140 or TMCX5161	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-120	CMCXAC2125
9225.18361222	18 AWG 7W (0.82 mm²) 36 TRIADS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9225.18501221	18 AWG 7W (0.82 mm²) 50 PAIRS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200
9225.20021221	20 AWG 7W (0.52 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9225.20041221	20 AWG 7W (0.52 mm²) 4 PAIRS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXAA050 or CMCXAB075
9225.20041222	20 AWG 7W (0.52 mm²) 4 TRIADS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.20061221	20 AWG 7W (0.52 mm²) 6 PAIRS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.20081221	20 AWG 7W (0.52 mm²) 8 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9225.20081222	20 AWG 7W (0.52 mm²) 8 TRIADS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9225.20101221	20 AWG 7W (0.52 mm²) 10 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9225.20121221	20 AWG 7W (0.52 mm²) 12 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9225.20121222	20 AWG 7W (0.52 mm²) 12 TRIADS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9225.20161221	20 AWG 7W (0.52 mm²) 16 PAIRS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9225.20161222	20 AWG 7W (0.52 mm²) 16 TRIADS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9225.20201221	20 AWG 7W (0.52 mm²) 20 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9225.20241221	20 AWG 7W (0.52 mm²) 24 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9225.20241222	20 AWG 7W (0.52 mm²) 24 TRIADS	1.11	28.2	1.22	31.0	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9225.20361221	20 AWG 7W (0.52 mm²) 36 PAIRS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9225.20361222	20 AWG 7W (0.52 mm²) 36 TRIADS	1.29	32.8	1.40	35.6	TMCX4140 or TMCX5161	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-120	CMCXAC2125
9225.20501221	20 AWG 7W (0.52 mm²) 50 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, INDIVIDUAL AND OVERALL SHIELD

9250.16021221	16 AWG 7W (1.31 mm²) 2 PAIRS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9250.16041221	16 AWG 7W (1.31 mm²) 4 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9250.16041222	16 AWG 7W (1.31 mm²) 4 TRIADS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9250.16061221	16 AWG 7W (1.31 mm²) 6 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9250.16081221	16 AWG 7W (1.31 mm²) 8 PAIRS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9250.16081222	16 AWG 7W (1.31 mm²) 8 TRIADS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100

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CCW® Explosion-Proof Gland Cross-Reference

Instrumentation - 300 V

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS	HAWKE	APPLETON (TMCX) *end stop removed			Thomas & Betts	Hubbell/Killark
		INCHES	mm	INCHES	mm			TMCX Series	711 Series	Aluminum	NP Brass	Stainless Steel
CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, INDIVIDUAL AND OVERALL SHIELD (cont'd)												
9250.16101221	16 AWG 7W (1.31 mm²) 10 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100
9250.16121221	16 AWG 7W (1.31 mm²) 12 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9250.16121222	16 AWG 7W (1.31 mm²) 12 TRIADS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A	TMCX125NB	TMCX125SS	4-125-110	CMCXAC100 or CMCXAC2125
9250.16161221	16 AWG 7W (1.31 mm²) 16 PAIRS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9250.16161222	16 AWG 7W (1.31 mm²) 16 TRIADS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9250.16201221	16 AWG 7W (1.31 mm²) 20 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9250.16241221	16 AWG 7W (1.31 mm²) 24 PAIRS	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125 or CMCXAD200
9250.16241222	16 AWG 7W (1.31 mm²) 24 TRIADS	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9250.16361221	16 AWG 7W (1.31 mm²) 36 PAIRS	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9250.16361222	16 AWG 7W (1.31 mm²) 36 TRIADS	1.83	46.5	1.96	49.8	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-180	CMCXAD200 or CMCXAE250
9250.16501221	16 AWG 7W (1.31 mm²) 50 PAIRS	1.87	47.5	2.00	50.8	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250
9250.18021221	18 AWG 7W (0.82 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9250.18041221	18 AWG 7W (0.82 mm²) 4 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9250.18041222	18 AWG 7W (0.82 mm²) 4 TRIADS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9250.18061221	18 AWG 7W (0.82 mm²) 6 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9250.18081221	18 AWG 7W (0.82 mm²) 8 PAIRS	0.80	20.3	0.92	23.4	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9250.18081222	18 AWG 7W (0.82 mm²) 8 TRIADS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9250.18101221	18 AWG 7W (0.82 mm²) 10 PAIRS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9250.18121221	18 AWG 7W (0.82 mm²) 12 PAIRS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9250.18121222	18 AWG 7W (0.82 mm²) 12 TRIADS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9250.18161221	18 AWG 7W (0.82 mm²) 16 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9250.18161222	18 AWG 7W (0.82 mm²) 16 TRIADS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9250.18201221	18 AWG 7W (0.82 mm²) 20 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9250.18241221	18 AWG 7W (0.82 mm²) 24 PAIRS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9250.18241222	18 AWG 7W (0.82 mm²) 24 TRIADS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9250.18361221	18 AWG 7W (0.82 mm²) 36 PAIRS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200
9250.18361222	18 AWG 7W (0.82 mm²) 36 TRIADS	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9250.18501221	18 AWG 7W (0.82 mm²) 50 PAIRS	1.69	42.9	1.82	46.2	TMCX6206	D	TMCX200SA*	TMCX200SNB*	TMCX200SSS*	4-200-170	CMCXAD200
9250.20021221	20 AWG 7W (0.52 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9250.20041221	20 AWG 7W (0.52 mm²) 4 PAIRS	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXAA050 or CMCXAB075
9250.20041222	20 AWG 7W (0.52 mm²) 4 TRIADS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9250.20061221	20 AWG 7W (0.52 mm²) 6 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9250.20081221	20 AWG 7W (0.52 mm²) 8 PAIRS	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9250.20081222	20 AWG 7W (0.52 mm²) 8 TRIADS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9250.20101221	20 AWG 7W (0.52 mm²) 10 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9250.20121221	20 AWG 7W (0.52 mm²) 12 PAIRS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9250.20121222	20 AWG 7W (0.52 mm²) 12 TRIADS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9250.20161221	20 AWG 7W (0.52 mm²) 16 PAIRS	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9250.20161222	20 AWG 7W (0.52 mm²) 16 TRIADS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100
9250.20201221	20 AWG 7W (0.52 mm²) 20 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9250.20241221	20 AWG 7W (0.52 mm²) 24 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9250.20241222	20 AWG 7W (0.52 mm²) 24 TRIADS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9250.20361221	20 AWG 7W (0.52 mm²) 36 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9250.20361222	20 AWG 7W (0.52 mm²) 36 TRIADS	1.42	36.1	1.53	38.9	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXAC2125 or CMCXAD200
9250.20501221	20 AWG 7W (0.52 mm²) 50 PAIRS	1.51	38.4	1.65	41.9	TMCX5161	C2 or D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-150-150	CMCXAC2125 or CMCXAD200

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CCW® Explosion-Proof Gland Cross-Reference

Instrumentation - 600 V

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS	HAWKE	APPLETON (TMCX) *end stop removed			Thomas & Betts	Hubbell/Killark
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, OVERALL SHIELD

9325.16010001	16 AWG 7W (1.31 mm²) 1 PAIR	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9325.16010002	16 AWG 7W (1.31 mm²) 1 TRIAD	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9325.16020001	16 AWG 7W (1.31 mm²) 2 PAIRS	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9325.16040001	16 AWG 7W (1.31 mm²) 4 PAIRS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9325.16040002	16 AWG 7W (1.31 mm²) 4 TRIADS	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9325.16060001	16 AWG 7W (1.31 mm²) 6 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9325.16080001	16 AWG 7W (1.31 mm²) 8 PAIRS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9325.16080002	16 AWG 7W (1.31 mm²) 8 TRIADS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9325.16100001	16 AWG 7W (1.31 mm²) 10 PAIRS	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA100
9325.16120001	16 AWG 7W (1.31 mm²) 12 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXA100
9325.16120002	16 AWG 7W (1.31 mm²) 12 TRIADS	1.11	28.2	1.22	31.0	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXA100
9325.16160001	16 AWG 7W (1.31 mm²) 16 PAIRS	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXA100
9325.16160002	16 AWG 7W (1.31 mm²) 16 TRIADS	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A	TMCX125NB	TMCX125SS	4-125-110	CMCXA100 or CMCXAC2125
9325.16200001	16 AWG 7W (1.31 mm²) 20 PAIRS	1.29	32.8	1.40	35.6	TMCX4140 or TMCX5161	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-120	CMCXA2125
9325.16240001	16 AWG 7W (1.31 mm²) 24 PAIRS	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA2125 or CMCXAD200
9325.16240002	16 AWG 7W (1.31 mm²) 24 TRIADS	1.47	37.3	1.58	40.1	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXA2125 or CMCXAD200
9325.16360001	16 AWG 7W (1.31 mm²) 36 PAIRS	1.64	41.7	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXA200
9325.16360002	16 AWG 7W (1.31 mm²) 36 TRIADS	1.74	44.2	1.87	47.5	TMCX6206	D	TMCX200SA*	TMCX200SNB*	TMCX200SSS*	4-200-170	CMCXA200
9325.16500001	16 AWG 7W (1.31 mm²) 50 PAIRS	1.83	46.5	1.96	49.8	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-180	CMCXA200 or CMCXAE250
9325.18020001	18 AWG 7W (0.82 mm²) 2 PAIRS	0.59	15.0	0.70	17.8	TMCX165	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9325.18040001	18 AWG 7W (0.82 mm²) 4 PAIRS	0.65	16.5	0.75	19.1	TMCX165 or TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA075
9325.18080001	18 AWG 7W (0.82 mm²) 8 PAIRS	0.82	20.8	0.92	23.4	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075
9325.18120001	18 AWG 7W (0.82 mm²) 12 PAIRS	1.00	25.4	1.10	27.9	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA100
9325.18160001	18 AWG 7W (0.82 mm²) 16 PAIRS	1.12	28.4	1.23	31.2	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXA100
9325.18240001	18 AWG 7W (0.82 mm²) 24 PAIRS	1.39	35.3	1.49	37.8	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA2125 or CMCXAD200

CCW® ARMORED INSTRUMENTATION, PAIRS/TRIADS, INDIVIDUAL AND OVERALL SHIELD

9350.16020001	16 AWG 7W (1.31 mm²) 2 PAIRS	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9350.16040001	16 AWG 7W (1.31 mm²) 4 PAIRS	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9350.16040002	16 AWG 7W (1.31 mm²) 4 TRIADS	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075
9350.16060001	16 AWG 7W (1.31 mm²) 6 PAIRS	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9350.16080001	16 AWG 7W (1.31 mm²) 8 PAIRS	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9350.16080002	16 AWG 7W (1.31 mm²) 8 TRIADS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXA100
9350.16100001	16 AWG 7W (1.31 mm²) 10 PAIRS	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXA100
9350.16120001	16 AWG 7W (1.31 mm²) 12 PAIRS	1.11	28.2	1.22	31.0	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXA100
9350.16120002	16 AWG 7W (1.31 mm²) 12 TRIADS	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA2125
9350.16160001	16 AWG 7W (1.31 mm²) 16 PAIRS	1.29	32.8	1.40	35.6	TMCX4140 or TMCX5161	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-120	CMCXA2125
9350.16160002	16 AWG 7W (1.31 mm²) 16 TRIADS	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA2125 or CMCXAD200
9350.16200001	16 AWG 7W (1.31 mm²) 20 PAIRS	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA2125
9350.16240001	16 AWG 7W (1.31 mm²) 24 PAIRS	1.42	36.1	1.53	38.9	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXA2125 or CMCXAD200
9350.16240002	16 AWG 7W (1.31 mm²) 24 TRIADS	1.64	41.7	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXA200
9350.16360001	16 AWG 7W (1.31 mm²) 36 PAIRS	1.69	42.9	1.82	46.2	TMCX6206	D	TMCX200SA*	TMCX200SNB*	TMCX200SSS*	4-200-170	CMCXA200
9350.16360002	16 AWG 7W (1.31 mm²) 36 TRIADS	1.96	49.8	2.09	53.1	TMCX6206 or TMCX7247	D or E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXA200 or CMCXAE250
9350.16500001	16 AWG 7W (1.31 mm²) 50 PAIRS	1.92	48.8	2.05	52.1	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXA200 or CMCXAE250
9350.18020001	18 AWG 7W (0.82 mm²) 2 PAIRS	0.59	15.0	0.70	17.8	TMCX165	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9350.18040001	18 AWG 7W (0.82 mm²) 4 PAIRS	0.65	16.5	0.75	19.1	TMCX165 or TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA075
9350.18080001	18 AWG 7W (0.82 mm²) 8 PAIRS	0.82	20.8	0.92	23.4	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075
9350.18120001	18 AWG 7W (0.82 mm²) 12 PAIRS	1.00	25.4	1.10	27.9	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA100
9350.18160001	18 AWG 7W (0.82 mm²) 16 PAIRS	1.12	28.4	1.23	31.2	TMCX3112 or TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXA100
9350.18240001	18 AWG 7W (0.82 mm²) 24 PAIRS	1.39	35.3	1.49	37.8	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA2125 or CMCXAD200

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CCW® Explosion-Proof Gland Cross-Reference

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS TMCX Series	HAWKE 711 Series	APPLETON (TMCX) *end stop removed			Thomas & Betts Spin-On X	Hubbell/Killark CMCXA
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

Control - 600 V

CCW® ARMORED CONTROL WITH GREEN INSULATED GROUNDING CONDUCTOR

9500.01002110	10 AWG 7W (5.26 mm²) 2/C W/10 AWG GROUND	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9500.01003110	10 AWG 7W (5.26 mm²) 3/C W/10 AWG GROUND	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9500.01004110	10 AWG 7W (5.26 mm²) 4/C W/10 AWG GROUND	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9500.01006110	10 AWG 7W (5.26 mm²) 6/C W/10 AWG GROUND	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA075
9500.01008110	10 AWG 7W (5.26 mm²) 8/C W/10 AWG GROUND	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9500.01011110	10 AWG 7W (5.26 mm²) 11/C W/10 AWG GROUND	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXA075 or CMCXAC100
9500.01202112	12 AWG 7W (3.31 mm²) 2/C W/12 AWG GROUND	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9500.01203112	12 AWG 7W (3.31 mm²) 3/C W/12 AWG GROUND	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9500.01204112	12 AWG 7W (3.31 mm²) 4/C W/12 AWG GROUND	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9500.01205112	12 AWG 7W (3.31 mm²) 5/C W/12 AWG GROUND	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9500.01206112	12 AWG 7W (3.31 mm²) 6/C W/12 AWG GROUND	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9500.01208112	12 AWG 7W (3.31 mm²) 8/C W/12 AWG GROUND	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9500.01211112	12 AWG 7W (3.31 mm²) 11/C W/12 AWG GROUND	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9500.01218112	12 AWG 7W (3.31 mm²) 18/C W/12 AWG GROUND	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075
9500.01236112	12 AWG 7W (3.31 mm²) 36/C W/12 AWG GROUND	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA075 or CMCXAC100
9500.01402114	14 AWG 7W (2.08 mm²) 2/C W/14 AWG GROUND	0.49	12.4	0.60	15.2	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-010	CMCXA050 or CMCXAB075
9500.01403114	14 AWG 7W (2.08 mm²) 3/C W/14 AWG GROUND	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9500.01404114	14 AWG 7W (2.08 mm²) 4/C W/14 AWG GROUND	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9500.01405114	14 AWG 7W (2.08 mm²) 5/C W/14 AWG GROUND	0.60	15.2	0.71	18.0	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9500.01406114	14 AWG 7W (2.08 mm²) 6/C W/14 AWG GROUND	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9500.01408114	14 AWG 7W (2.08 mm²) 8/C W/14 AWG GROUND	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9500.01411114	14 AWG 7W (2.08 mm²) 11/C W/14 AWG GROUND	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9500.01418114	14 AWG 7W (2.08 mm²) 18/C W/14 AWG GROUND	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9500.01436114	14 AWG 7W (2.08 mm²) 36/C W/14 AWG GROUND	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA075

Control (Non-HL) - 600 V

CCW® ARMORED CONTROL WITHOUT GROUNDING CONDUCTOR

9525.01002000	10 AWG 7W (5.26 mm²) 2/C	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01003000	10 AWG 7W (5.26 mm²) 3/C	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01004000	10 AWG 7W (5.26 mm²) 4/C	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9525.01005000	10 AWG 7W (5.26 mm²) 5/C	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9525.01007000	10 AWG 7W (5.26 mm²) 7/C	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXA075
9525.01009000	10 AWG 7W (5.26 mm²) 9/C	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9525.01012000	10 AWG 7W (5.26 mm²) 12/C	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXA075 or CMCXAC100
9525.01202000	12 AWG 7W (3.31 mm²) 2/C	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01203000	12 AWG 7W (3.31 mm²) 3/C	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01204000	12 AWG 7W (3.31 mm²) 4/C	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01205000	12 AWG 7W (3.31 mm²) 5/C	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9525.01207000	12 AWG 7W (3.31 mm²) 7/C	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9525.01209000	12 AWG 7W (3.31 mm²) 9/C	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9525.01212000	12 AWG 7W (3.31 mm²) 12/C	0.89	22.6	0.99	25.1	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9525.01219000	12 AWG 7W (3.31 mm²) 19/C	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXA075
9525.01237000	12 AWG 7W (3.31 mm²) 37/C	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXA075 or CMCXAC100
9525.01402000	14 AWG 7W (2.08 mm²) 2/C	0.49	12.4	0.60	15.2	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-010	CMCXA050 or CMCXAB075
9525.01403000	14 AWG 7W (2.08 mm²) 3/C	0.49	12.4	0.60	15.2	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-010	CMCXA050 or CMCXAB075
9525.01404000	14 AWG 7W (2.08 mm²) 4/C	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01405000	14 AWG 7W (2.08 mm²) 5/C	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXA050 or CMCXAB075
9525.01407000	14 AWG 7W (2.08 mm²) 7/C	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXA050 or CMCXAB075
9525.01409000	14 AWG 7W (2.08 mm²) 9/C	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXA075
9525.01412000	14 AWG 7W (2.08 mm²) 12/C	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXA075
9525.01419000	14 AWG 7W (2.08 mm²) 19/C	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXA075 or CMCXAC100
9525.01437000	14 AWG 7W (2.08 mm²) 37/C	1.24	31.5	1.35	34.3	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXA075



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CCW® Explosion-Proof Gland Cross-Reference

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS TMCX Series	HAWKE 711 Series	APPLETON (TMCX) *end stop removed			Thomas & Betts Spin-On X	Hubbell/Killark CMCXA
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

Composite Power & Control - 600 V

CCW® ARMORED COMPOSITE POWER AND CONTROL WITH BARE GROUND

9625.043124108	4 AWG 7W (21.2 mm²) 3/C W/12 AWG 4/C CONTROL & 8 AWG GROUND	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9625.063124108	6 AWG 7W (13.3 mm²) 3/C W/12 AWG 4/C CONTROL & 8 AWG GROUND	0.93	23.6	1.03	26.2	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9625.083124110	8 AWG 7W (8.36 mm²) 3/C W/12 AWG 4/C CONTROL & 10 AWG GROUND	0.89	22.6	0.99	25.1	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9625.103124110	10 AWG 7W (5.26 mm²) 3/C W/12 AWG 4/C CONTROL & 10 AWG GROUND	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075

Composite Power & Control (Non-HL) - 600 V

CCW® ARMORED COMPOSITE POWER AND CONTROL WITHOUT GROUND

9650.023123000	2 AWG 7W (33.6 mm²) 3/C W/12 AWG 3/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.023124000	2 AWG 7W (33.6 mm²) 3/C W/12 AWG 4/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.023143000	2 AWG 7W (33.6 mm²) 3/C W/14 AWG 3/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.023144000	2 AWG 7W (33.6 mm²) 3/C W/14 AWG 4/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.024123000	2 AWG 7W (33.6 mm²) 4/C W/12 AWG 3/C CONTROL	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9650.024124000	2 AWG 7W (33.6 mm²) 4/C W/12 AWG 4/C CONTROL	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9650.024143000	2 AWG 7W (33.6 mm²) 4/C W/14 AWG 3/C CONTROL	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9650.024144000	2 AWG 7W (33.6 mm²) 4/C W/14 AWG 4/C CONTROL	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9650.043123000	4 AWG 7W (21.2 mm²) 3/C W/12 AWG 3/C CONTROL	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.043124000	4 AWG 7W (21.2 mm²) 3/C W/12 AWG 4/C CONTROL	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9650.043143000	4 AWG 7W (21.2 mm²) 3/C W/14 AWG 3/C CONTROL	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.043144000	4 AWG 7W (21.2 mm²) 3/C W/14 AWG 4/C CONTROL	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.044123000	4 AWG 7W (21.2 mm²) 4/C W/12 AWG 3/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.044124000	4 AWG 7W (21.2 mm²) 4/C W/12 AWG 4/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.044143000	4 AWG 7W (21.2 mm²) 4/C W/14 AWG 3/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.044144000	4 AWG 7W (21.2 mm²) 4/C W/14 AWG 4/C CONTROL	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9650.063123000	6 AWG 7W (13.3 mm²) 3/C W/12 AWG 3/C CONTROL	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9650.063124000	6 AWG 7W (13.3 mm²) 3/C W/12 AWG 4/C CONTROL	0.93	23.6	1.03	26.2	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.063143000	6 AWG 7W (13.3 mm²) 3/C W/14 AWG 3/C CONTROL	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9650.063144000	6 AWG 7W (13.3 mm²) 3/C W/14 AWG 4/C CONTROL	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9650.064123000	6 AWG 7W (13.3 mm²) 4/C W/12 AWG 3/C CONTROL	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9650.064124000	6 AWG 7W (13.3 mm²) 4/C W/12 AWG 4/C CONTROL	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9650.064143000	6 AWG 7W (13.3 mm²) 4/C W/14 AWG 3/C CONTROL	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.064144000	6 AWG 7W (13.3 mm²) 4/C W/14 AWG 4/C CONTROL	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.083123000	8 AWG 7W (8.36 mm²) 3/C W/12 AWG 3/C CONTROL	0.80	20.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.083124000	8 AWG 7W (8.36 mm²) 3/C W/12 AWG 4/C CONTROL	0.84	21.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9650.083143000	8 AWG 7W (8.36 mm²) 3/C W/14 AWG 3/C CONTROL	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.083144000	8 AWG 7W (8.36 mm²) 3/C W/14 AWG 4/C CONTROL	0.84	21.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9650.084123000	8 AWG 7W (8.36 mm²) 4/C W/12 AWG 3/C CONTROL	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.084124000	8 AWG 7W (8.36 mm²) 4/C W/12 AWG 4/C CONTROL	0.93	23.6	1.04	26.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.084143000	8 AWG 7W (8.36 mm²) 4/C W/14 AWG 3/C CONTROL	0.84	21.3	0.95	24.1	TMCX285 or TMCX3112	B	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075
9650.084144000	8 AWG 7W (8.36 mm²) 4/C W/14 AWG 4/C CONTROL	0.89	22.6	1.00	25.4	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9650.103123000	10 AWG 7W (5.26 mm²) 3/C W/12 AWG 3/C CONTROL	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9650.103143000	10 AWG 7W (5.26 mm²) 3/C W/14 AWG 3/C CONTROL	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075
9650.103144000	10 AWG 7W (5.26 mm²) 3/C W/14 AWG 4/C CONTROL	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.104123000	10 AWG 7W (5.26 mm²) 4/C W/12 AWG 3/C CONTROL	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.104124000	10 AWG 7W (5.26 mm²) 4/C W/12 AWG 4/C CONTROL	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.104143000	10 AWG 7W (5.26 mm²) 4/C W/14 AWG 3/C CONTROL	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.104144000	10 AWG 7W (5.26 mm²) 4/C W/14 AWG 4/C CONTROL	0.80	20.3	0.91	23.1	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9650.123143000	12 AWG 7W (3.31 mm²) 3/C W/14 AWG 3/C CONTROL	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9650.123144000	12 AWG 7W (3.31 mm²) 3/C W/14 AWG 4/C CONTROL	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9650.124143000	12 AWG 7W (3.31 mm²) 4/C W/14 AWG 3/C CONTROL	0.71	18.0	0.82	20.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9650.124144000	12 AWG 7W (3.31 mm²) 4/C W/14 AWG 4/C CONTROL	0.75	19.1	0.86	21.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-100-050	CMCXAB075

All information in this cross-reference is presented solely as a guide to product selection and is believed to be reliable. All printing errors are subject to correction in subsequent releases of this catalog. Although General Cable has taken precautions to ensure the accuracy of the product cross-reference at the time of publication, the specifications of all products contained herein are subject to change by gland manufacturers without notice.

CCW® Explosion-Proof Gland Cross-Reference

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS TMCX Series	HAWKE 711 Series	APPLETON (TMCX) *end stop removed			Thomas & Betts Spin-On X	Hubbell/Killark CMCXA
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

Power - 600 V

CCW® ARMORED POWER, 3/C VFD AND 4/C WITH BARE GROUND

9600.00103310	1 AWG 19W (42.4 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9600.00104106	1 AWG 19W (42.4 mm²) 4/C W/6 AWG 1/C GROUND	1.29	32.8	1.40	35.6	TMCX4140 or TMCX5161	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-120	CMCXAC2125
9600.00203310	2 AWG 7W (33.6 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.02	25.9	1.13	28.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100
9600.00204106	2 AWG 7W (33.6 mm²) 4/C W/6 AWG 1/C GROUND	1.15	29.2	1.26	32.0	TMCX4140	C	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100
9600.00403312	4 AWG 7W (21.2 mm²) 3/C VFD W/12 AWG 3/C GROUND	0.89	22.6	0.99	25.1	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9600.00404108	4 AWG 7W (21.2 mm²) 4/C W/8 AWG 1/C GROUND	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9600.00603312	6 AWG 7W (13.3 mm²) 3/C VFD W/12 AWG 3/C GROUND	0.80	20.3	0.90	22.9	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9600.00604108	6 AWG 7W (13.3 mm²) 4/C W/8 AWG 1/C GROUND	0.89	22.6	0.99	25.1	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9600.00803314	8 AWG 7W (8.36 mm²) 3/C VFD W/14 AWG 3/C GROUND	0.71	18.0	0.81	20.6	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9600.00804110	8 AWG 7W (8.36 mm²) 4/C W/10 AWG 1/C GROUND	0.80	20.3	0.90	22.9	TMCX285 or TMCX3112	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9600.01003314	10 AWG 7W (5.26 mm²) 3/C VFD W/14 AWG 3/C GROUND	0.62	15.7	0.73	18.5	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXAA050 or CMCXAB075
9600.01004314	10 AWG 7W (5.26 mm²) 4/C W/14 AWG 3/C GROUND	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9600.01203316	12 AWG 7W (3.31 mm²) 3/C VFD W/16 AWG 3/C GROUND	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9600.01204316	12 AWG 7W (3.31 mm²) 4/C W/16 AWG 3/C GROUND	0.67	17.0	0.78	19.8	TMCX285	B	TMCX075A	TMCX075NB	TMCX075SS	4-075-040	CMCXAB075
9600.01403318	14 AWG 7W (2.08 mm²) 3/C VFD W/18 AWG 3/C GROUND	0.53	13.5	0.64	16.3	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9600.01404318	14 AWG 7W (2.08 mm²) 4/C W/18 AWG 3/C GROUND	0.58	14.7	0.69	17.5	TMCX165	A or B	TMCX050A*	TMCX050NB*	TMCX050SS*	4-075-020	CMCXAA050 or CMCXAB075
9600.10003110	1000 KCMIL 61W (507 mm²) 3/C VFD W/10 AWG 1/C GROUND	1.24	31.5	1.34	34.0	TMCX4140	C2	TMCX125A*	TMCX125NB*	TMCX125SS*	4-125-110	CMCXAC2125
9600.10004110	1000 KCMIL 61W (507 mm²) 4/C W/10 AWG 1/C GROUND	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125 or CMCXAD200
9600.11003310	1/0 AWG 19W (53.5 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.34	34.0	1.44	36.6	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9600.11004106	1/0 AWG 19W (53.5 mm²) 4/C W/6 AWG 1/C GROUND	1.51	38.4	1.64	41.7	TMCX5161	C2 or D	TMCX200SA	TMCX200NB	TMCX200SS	4-150-150	CMCXAC2125 or CMCXAD200
9600.21003310	2/0 AWG 19W (67.4 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.74	44.2	1.87	47.5	TMCX6206	D	TMCX200SA*	TMCX200NB*	TMCX200SS*	4-200-170	CMCXAD200
9600.21004106	2/0 AWG 19W (67.4 mm²) 4/C W/6 AWG 1/C GROUND	1.96	49.8	2.09	53.1	TMCX6206 or TMCX7247	D or E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXAD200 or CMCXAE250
9600.25003308	250 KCMIL 37W (127 mm²) 3/C VFD W/8 AWG 3/C GROUND	1.47	37.3	1.59	40.4	TMCX5161	C2 or D	TMCX150A*	TMCX150NB*	TMCX150SS*	4-150-140	CMCXAC2125 or CMCXAD200
9600.25004104	250 KCMIL 37W (127 mm²) 4/C W/4 AWG 1/C GROUND	1.65	41.9	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200NB	TMCX200SS	4-200-160	CMCXAD200
9600.31003308	3/0 AWG 19W (85 mm²) 3/C VFD W/8 AWG 3/C GROUND	1.96	49.8	2.09	53.1	TMCX6206 or TMCX7247	D or E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXAD200 or CMCXAE250
9600.31004104	3/0 AWG 19W (85 mm²) 4/C W/4 AWG 1/C GROUND	2.19	55.6	2.35	59.7	TMCX7247	E	TMCX250SA*	TMCX250NB*	TMCX250SS*	4-250-220	CMCXAE250
9600.35003307	350 KCMIL 37W (177 mm²) 3/C VFD W/7 AWG 3/C GROUND	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200NB	TMCX200SS	4-200-160	CMCXAD200
9600.35004103	350 KCMIL 37W (177 mm²) 4/C W/3 AWG 1/C GROUND	1.78	45.2	1.91	48.5	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-180	CMCXAD200 or CMCXAE250
9600.41003308	4/0 AWG 19W (107 mm²) 3/C VFD W/8 AWG 3/C GROUND	2.28	57.9	2.44	62.0	TMCX7247	E	TMCX250A	TMCX250NB	TMCX250SS	4-250-230	CMCXAE250
9600.41004104	4/0 AWG 19W (107 mm²) 4/C W/4 AWG 1/C GROUND	2.49	63.2	2.65	67.3	TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-240	CMCXAE250 or CMCXAF300
9600.50003306	500 KCMIL 37W (253 mm²) 3/C VFD W/6 AWG 3/C GROUND	2.75	69.9	2.92	74.2	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-260	CMCXAF300
9600.50004102	500 KCMIL 37W (253 mm²) 4/C W/2 AWG 1/C GROUND	3.03	77.0	3.21	81.5	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	—	CMCXAH350
9600.75003305	750 KCMIL 61W (380 mm²) 3/C VFD W/5 AWG 3/C GROUND	3.11	79.0	3.30	83.8	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	4-350-290	CMCXAH350
9600.75004101	750 KCMIL 61W (380 mm²) 4/C W/1 AWG 1/C GROUND	3.63	92.2	3.81	96.8	TMCX10402	—	TMCX402400*	—	—	4-400-330	—

Power - 1000 V

CCW® ARMORED POWER, 1000 V, 3/C VFD WITH BARE GROUND

9675.00103310	1 AWG 19W (42.4 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.36	34.6	1.46	37.1	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9675.00203310	2 AWG 7W (33.6 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.18	29.9	1.28	32.5	TMCX4140	C or C2	TMCX125A	TMCX125NB	TMCX125SS	4-125-100	CMCXAC100 or CMCXAC2125
9675.00403312	4 AWG 7W (21.2 mm²) 3/C VFD W/12 AWG 3/C GROUND	0.98	24.8	1.08	27.4	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-100-080	CMCXAC100
9675.00603312	6 AWG 7W (13.3 mm²) 3/C VFD W/12 AWG 3/C GROUND	0.91	23.2	1.02	26.0	TMCX3112	B or C	TMCX100A	TMCX100NB	TMCX100SS	4-100-070	CMCXAB075 or CMCXAC100
9675.00803314	8 AWG 7W (8.36 mm²) 3/C VFD W/14 AWG 3/C GROUND	0.76	19.2	0.86	21.9	TMCX285	B	TMCX075A*	TMCX075NB*	TMCX075SS*	4-100-050	CMCXAB075
9675.01003316	10 AWG 7W (5.26 mm²) 3/C VFD W/16 AWG 3/C GROUND	0.63	16.1	0.73	18.6	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXAA050 or CMCXAB075
9675.01203318	12 AWG 7W (3.31 mm²) 3/C VFD W/18 AWG 3/C GROUND	0.60	15.3	0.70	17.8	TMCX165 or TMCX285	A or B	TMCX075A	TMCX075NB	TMCX075SS	4-075-030	CMCXAA050 or CMCXAB075
9675.11003310	1/0 AWG 19W (53.5 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.42	36.0	1.52	38.6	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXAC2125 or CMCXAD200
9675.21003310	2/0 AWG 19W (67.4 mm²) 3/C VFD W/10 AWG 3/C GROUND	1.56	39.6	1.66	42.2	TMCX5161	C2 or D	TMCX200SA	TMCX200NB	TMCX200SS	4-150-150	CMCXAC2125 or CMCXAD200
9675.25003308	250 KCMIL 37W (127 mm²) 3/C VFD W/8 AWG 3/C GROUND	1.90	48.2	2.01	51.1	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250
9675.41003308	4/0 AWG 19W (107 mm²) 3/C VFD W/8 AWG 3/C GROUND	1.75	44.4	1.85	47.0	TMCX6206	D	TMCX200SA*	TMCX200NB*	TMCX200SS*	4-200-170	CMCXAD200
9675.50003306	500 KCMIL 37W (253 mm²) 3/C VFD W/6 AWG 3/C GROUND	2.48	63.0	2.59	65.8	TMCX7247 or TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-240	CMCXAE250 or CMCXAF300



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CCW® Explosion-Proof Gland Cross-Reference

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS TMCX Series	HAWKE 711 Series	APPLETON (TMCX) *end stop removed			Thomas & Betts Spin-On X	Hubbell/Killark CMCXA
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

Power - 2.4 kV

CCW® ARMORED POWER, 2.4 kV, NONSHIELDED, 3/C VFD WITH BARE GROUND OR MV-90 W/90 MILS INSULATION

9700.00103308	1 AWG 19W (42.4 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.42	36.1	1.53	38.9	TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-140	CMCXAC2125 or CMCXAD200
9700.00203310	2 AWG 7W (33.6 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9700.00403310	4 AWG 7W (21.2 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.19	30.2	1.30	33.0	TMCX4140	C or C2	TMCX125A	TMCX125NB	TMCX125SS	4-125-110	CMCXAC100 or CMCXAC2125
9700.00603310	6 AWG 7W (13.3 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.06	26.9	1.17	29.7	TMCX3112	C	TMCX100A*	TMCX100NB*	TMCX100SS*	4-125-090	CMCXAC100
9700.00803312	8 AWG 7W (8.36 mm²) 3/C MC-HL W/12 AWG 3/C GROUND	0.97	24.6	1.08	27.4	TMCX3112	C	TMCX100A	TMCX100NB	TMCX100SS	4-100-080	CMCXAB075 or CMCXAC100
9700.10003304	1000 KCMIL 61W (507 mm²) 3/C MC-HL W/4 AWG 3/C GROUND	3.41	86.6	3.59	91.2	TMCX9352	H	TMCX350A*	TMCX350NB*	TMCX350SS*	4-350-310	CMCXAH350
9700.11003308	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.51	38.4	1.65	41.9	TMCX5161	C2 or D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-150-150	CMCXAC2125 or CMCXAD200
9700.21003308	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9700.25003307	250 KCMIL 37W (127 mm²) 3/C MC-HL W/7 AWG 3/C GROUND	1.96	49.8	2.09	53.1	TMCX6206 or TMCX7247	D or E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXAD200 or CMCXAE250
9700.35003306	350 KCMIL 37W (177 mm²) 3/C MC-HL W/6 AWG 3/C GROUND	2.19	55.6	2.32	58.9	TMCX7247	E	TMCX250SA*	TMCX250SNB*	TMCX250SSS*	4-250-220	CMCXAE250
9700.41003307	4/0 AWG 19W (107 mm²) 3/C MC-HL W/7 AWG 3/C GROUND	1.83	46.5	1.96	49.8	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-180	CMCXAD200 or CMCXAE250
9700.50003305	500 KCMIL 37W (253 mm²) 3/C MC-HL W/5 AWG 3/C GROUND	2.45	62.2	2.61	66.3	TMCX7247 or TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-240	CMCXAE250 or CMCXAF300
9700.75003304	750 KCMIL 37W (380 mm²) 3/C MC-HL W/4 AWG 3/C GROUND	2.93	74.4	3.10	78.7	TMCX8302	F or H	TMCX350A	TMCX350NB	TMCX350SS	—	CMCXAF300 or CMCXAH350

Power 5 kV (133%) / 8 kV (100%)

CCW® ARMORED POWER, 5 kV 133%/8 kV 100%, SHIELDED, 3/C VFD WITH BARE GROUND OR MV-105 W/115 MILS INSULATION

9800.00103308	1 AWG 19W (42.4 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.69	42.9	1.82	46.2	TMCX6206	D	TMCX200SA*	TMCX200SNB*	TMCX200SSS*	4-200-170	CMCXAD200
9800.00203310	2 AWG 7W (33.6 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.64	41.7	1.78	45.2	TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9800.00403310	4 AWG 7W (21.2 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.51	38.4	1.65	41.9	TMCX5161	C2 or D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-150-150	CMCXAC2125 or CMCXAD200
9800.00603310	6 AWG 7W (13.3 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.37	34.8	1.48	37.6	TMCX4140 or TMCX5161	C2 or D	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125 or CMCXAD200
9800.00803312	8 AWG 7W (8.36 mm²) 3/C MC-HL W/12 AWG 3/C GROUND	1.34	34.0	1.45	36.8	TMCX4140 or TMCX5161	C2	TMCX150A	TMCX150NB	TMCX150SS	4-150-130	CMCXAC2125
9800.10003304	1000 KCMIL 61W (507 mm²) 3/C MC-HL W/4 AWG 3/C GROUND	3.76	95.5	3.94	100.1	TMCX10402	—	TMCX402400*	—	—	4-400-330	—
9800.11003308	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.78	45.2	1.91	48.5	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-180	CMCXAD200 or CMCXAE250
9800.21003308	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.92	48.8	2.05	52.1	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250
9800.25003307	250 KCMIL 37W (127 mm²) 3/C MC-HL W/7 AWG 3/C GROUND	2.23	56.6	2.36	59.9	TMCX7247	E	TMCX250SA*	TMCX250SNB*	TMCX250SSS*	4-250-220	CMCXAE250
9800.35003306	350 KCMIL 37W (177 mm²) 3/C MC-HL W/6 AWG 3/C GROUND	2.45	62.2	2.61	66.3	TMCX7247 or TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-240	CMCXAE250 or CMCXAF300
9800.41003307	4/0 AWG 19W (107 mm²) 3/C MC-HL W/7 AWG 3/C GROUND	2.15	54.6	2.28	57.9	TMCX7247	E	TMCX250SA	TMCX250SNB	TMCX250SSS	4-250-210	CMCXAE250
9800.50003305	500 KCMIL 37W (253 mm²) 3/C MC-HL W/5 AWG 3/C GROUND	2.75	69.9	2.92	74.2	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-260	CMCXAF300
9800.75003304	750 KCMIL 61W (380 mm²) 3/C MC-HL W/4 AWG 3/C GROUND	3.32	84.3	3.50	88.9	TMCX9352	H	TMCX350A*	TMCX350NB*	TMCX350SS*	—	CMCXAH350

Power - 8 kV (133%)

CCW® ARMORED POWER, 8 kV 133%, SHIELDED, 3/C VFD WITH BARE GROUND OR MV-105 W/140 MILS INSULATION

9815.00103308	1 AWG 19W (42.4 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	1.93	49.0	2.06	52.3	TMCX6206 or TMCX7247	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250
9815.00203310	2 AWG 7W (33.6 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.85	47.0	1.98	50.3	TMCX6206	D or E	TMCX200A	TMCX200NB	TMCX200SS	4-200-190	CMCXAD200 or CMCXAE250
9815.00403310	4 AWG 7W (21.2 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.70	43.2	1.83	46.5	TMCX6206	D	TMCX200SA*	TMCX200SNB*	TMCX200SSS*	4-200-170	CMCXAD200
9815.00603310	6 AWG 7W (13.3 mm²) 3/C MC-HL W/10 AWG 3/C GROUND	1.60	40.6	1.73	43.9	TMCX5161 or TMCX6206	D	TMCX200SA	TMCX200SNB	TMCX200SSS	4-200-160	CMCXAD200
9815.10003304	1000 KCMIL 61W (507 mm²) 3/C MC-HL W/4 AWG 3/C GROUND	3.98	101.1	4.16	105.7	TMCX10402	—	TMCX402400*	—	—	4-400-350	—
9815.11003308	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	2.03	51.6	2.16	54.9	TMCX6206 or TMCX7247	E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXAE250
9815.21003308	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/8 AWG 3/C GROUND	2.14	54.4	2.27	57.7	TMCX7247	E	TMCX250SA	TMCX250SNB	TMCX250SSS	4-250-210	CMCXAE250
9815.25003307	250 KCMIL 37W (127 mm²) 3/C MC-HL W/7 AWG 3/C GROUND	2.59	65.8	2.75	69.9	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-250	CMCXAF300
9815.35003306	350 KCMIL 37W (177 mm²) 3/C MC-HL W/6 AWG 3/C GROUND	2.85	72.4	3.01	76.5	TMCX8302	F	TMCX300A*	TMCX300NB*	TMCX300SS*	—	CMCXAF300
9815.41003307	4/0 AWG 19W (107 mm²) 3/C MC-HL W/7 AWG 3/C GROUND	2.40	61.0	2.56	65.0	TMCX7247	E or F	TMCX250A	TMCX250NB	TMCX250SS	4-300-240	CMCXAE250 or CMCXAF300
9815.50003305	500 KCMIL 37W (253 mm²) 3/C MC-HL W/5 AWG 3/C GROUND	3.19	81.0	3.37	85.6	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	4-350-300	CMCXAH350
9815.75003304	750 KCMIL 61W (380 mm²) 3/C MC-HL W/4 AWG 3/C GROUND	3.68	93.5	3.86	98.0	TMCX10402	—	TMCX402400*	—	—	4-400-330	—

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CCW® Explosion-Proof Gland Cross-Reference

CCW CATALOG NUMBER	PRODUCT DETAIL	NOMINAL ARMOR O.D.		NOMINAL OVERALL O.D.		CROUSE-HINDS TMCX Series	HAWKE 711 Series	APPLETON (TMCX) *end stop removed			Thomas & Betts Spin-On X	Hubbell/Killark CMCXA
		INCHES	mm	INCHES	mm			Aluminum	NP Brass	Stainless Steel		

Power - 15 kV (100%)

CCW® ARMORED POWER, 15 kV 100%, SHIELDED, 3/C WITH BARE GROUND OR MV-105 175 MILS INSULATION

9825.00103104	1 AWG 19W (42.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.01	51.1	2.15	54.6	TMCX6206 or TMCX7247	E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXA250
9825.00203106	2 AWG 7W (33.6 mm²) 3/C MC-HL W/6 AWG GROUND	1.96	49.8	2.05	52.1	TMCX6206 or TMCX7247	D or E	TMCX200A*	TMCX200NB*	TMCX200SS*	4-250-200	CMCXAD200 or CMCXAE250
9825.11003104	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/4 AWG GROUND	2.10	53.3	2.24	56.9	TMCX7247	E	TMCX250SA	TMCX250NB	TMCX250SS	4-250-210	CMCXA250
9825.21003104	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.19	55.6	2.36	59.9	TMCX7247	E	TMCX250SA*	TMCX250NB*	TMCX250SS*	4-250-220	CMCXA250
9825.25003103	250 KCMIL 37W (127 mm²) 3/C MC-HL W/3 AWG GROUND	2.58	65.5	2.74	69.6	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-250	CMCXAF300
9825.35003102	350 KCMIL 37W (177 mm²) 3/C MC-HL W/2 AWG GROUND	2.85	72.4	3.01	76.5	TMCX8302	F	TMCX300A*	TMCX300NB*	TMCX300SS*	—	CMCXAF300
9825.41003103	4/0 AWG 19W (107 mm²) 3/C MC-HL W/3 AWG GROUND	2.45	62.2	2.61	66.3	TMCX7247 or TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-240	CMCXA250 or CMCXAF300
9825.50003101	500 KCMIL 37W (253 mm²) 3/C MC-HL W/1 AWG GROUND	3.16	80.3	3.34	84.8	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	4-350-290	CMCXA350

Power - 15 kV (133%)

CCW® ARMORED POWER, 15 kV 133%, SHIELDED, 3/C WITH BARE GROUND OR MV-105 220 MILS INSULATION

9835.00103104	1 AWG 19W (42.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.23	56.6	2.36	59.9	TMCX7247	E	TMCX250SA*	TMCX250NB*	TMCX250SS*	4-250-220	CMCXA250
9835.00203106	2 AWG 7W (33.6 mm²) 3/C MC-HL W/6 AWG GROUND	2.15	54.6	2.28	57.9	TMCX7247	E	TMCX250SA	TMCX250NB	TMCX250SS	4-250-210	CMCXA250
9835.11003104	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/4 AWG GROUND	2.32	58.9	2.48	63.0	TMCX7247	E or F	TMCX250A	TMCX250NB	TMCX250SS	4-250-230	CMCXA250 or CMCXAF300
9835.21003104	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.40	61.0	2.56	65.0	TMCX7247	E or F	TMCX250A	TMCX250NB	TMCX250SS	4-300-240	CMCXA250 or CMCXAF300
9835.25003103	250 KCMIL 37W (127 mm²) 3/C MC-HL W/3 AWG GROUND	2.75	69.9	2.92	74.2	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-260	CMCXAF300
9835.35003102	350 KCMIL 37W (177 mm²) 3/C MC-HL W/2 AWG GROUND	3.03	77.0	3.21	81.5	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	—	CMCXA350
9835.41003103	4/0 AWG 19W (107 mm²) 3/C MC-HL W/3 AWG GROUND	2.62	66.5	2.79	70.9	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-250	CMCXAF300
9835.50003101	500 KCMIL 37W (253 mm²) 3/C MC-HL W/1 AWG GROUND	3.32	84.3	3.50	88.9	TMCX9352	H	TMCX350A*	TMCX350NB*	TMCX350SS*	—	CMCXA350
9835.750031110	750 KCMIL 61W (380 mm²) 3/C MC-HL W/1/0 AWG GROUND	3.80	96.5	3.98	101.1	TMCX10402	—	TMCX402400*	—	—	—	—

Power - 25 kV (100%)

CCW® ARMORED POWER, 25 kV 100%, SHIELDED, 3/C WITH BARE GROUND OR MV-105 260 MILS INSULATION

9845.00103104	1 AWG 19W (42.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.45	62.2	2.61	66.3	TMCX7247 or TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-240	CMCXA250 or CMCXAF300
9845.11003104	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/4 AWG GROUND	2.53	64.3	2.69	68.3	TMCX8302	E or F	TMCX250A*	TMCX250NB*	TMCX250SS*	4-300-250	CMCXA250 or CMCXAF300
9845.21003104	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.62	66.5	2.79	70.9	TMCX8302	F	TMCX300A	TMCX300NB	TMCX300SS	4-300-250	CMCXAF300
9845.25003103	250 KCMIL 37W (127 mm²) 3/C MC-HL W/3 AWG GROUND	3.07	78.0	3.25	82.6	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	4-350-290	CMCXA350
9845.35003102	350 KCMIL 37W (177 mm²) 3/C MC-HL W/2 AWG GROUND	3.32	84.3	3.50	88.9	TMCX9352	H	TMCX350A*	TMCX350NB*	TMCX350SS*	—	CMCXA350
9845.41003103	4/0 AWG 19W (107 mm²) 3/C MC-HL W/3 AWG GROUND	2.93	74.4	3.10	78.7	TMCX8302	F or H	TMCX350A	TMCX350NB	TMCX350SS	—	CMCXAF300 or CMCXA350
9845.50003101	500 KCMIL 37W (253 mm²) 3/C MC-HL W/1 AWG GROUND	3.62	91.9	3.81	96.8	TMCX10402	—	TMCX402400*	—	—	4-400-330	—

Power 25 kV (133%)/35 kV (100%)

CCW® ARMORED POWER, 25 kV 133%/35 kV 100%, SHIELDED, 3/C WITH BARE GROUND OR MV-105 345 MILS INSULATION

9855.00103104	1 AWG 19W (42.4 mm²) 3/C MC-HL W/4 AWG GROUND	2.89	73.4	3.05	77.5	TMCX8302	F	TMCX300A*	TMCX300NB*	TMCX300SS*	—	CMCXAF300
9855.11003104	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/4 AWG GROUND	2.98	75.7	3.14	79.8	TMCX8302 or TMCX9352	F or H	TMCX350A	TMCX350NB	TMCX350SS	—	CMCXAF300 or CMCXA350
9855.21003104	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/4 AWG GROUND	3.11	79.0	3.30	83.8	TMCX9352	H	TMCX350A	TMCX350NB	TMCX350SS	4-350-290	CMCXA350
9855.25003103	250 KCMIL 37W (127 mm²) 3/C MC-HL W/3 AWG GROUND	3.63	92.2	3.81	96.8	TMCX10402	—	TMCX402400*	—	—	4-400-330	—
9855.35003102	350 KCMIL 37W (177 mm²) 3/C MC-HL W/2 AWG GROUND	3.76	95.5	3.94	100.1	TMCX10402	—	TMCX402400*	—	—	4-400-330	—
9855.41003103	4/0 AWG 19W (107 mm²) 3/C MC-HL W/3 AWG GROUND	3.41	86.6	3.60	91.4	TMCX9352	H	TMCX350A*	TMCX350NB*	TMCX350SS*	4-350-310	CMCXA350
9855.50003101	500 KCMIL 37W (253 mm²) 3/C MC-HL W/1 AWG GROUND	4.10	104.1	4.23	107.4	—	—	—	—	—	—	—

Power 35 kV (133%)

CCW® ARMORED POWER, 35 kV 133%, SHIELDED, 3/C WITH BARE GROUND OR MV-105 420 MILS INSULATION

9875.11003104	1/0 AWG 19W (53.5 mm²) 3/C MC-HL W/4 AWG GROUND	3.41	86.6	3.59	91.2	TMCX9352	H	TMCX350A*	TMCX350NB*	TMCX350SS*	4-350-310	CMCXA350
9875.21003104	2/0 AWG 19W (67.4 mm²) 3/C MC-HL W/4 AWG GROUND	3.63	92.2	3.81	96.8	TMCX10402	—	TMCX402400*	—	—	4-400-330	—
9875.25003103	250 KCMIL 37W (127 mm²) 3/C MC-HL W/3 AWG GROUND	3.98	101.1	4.16	105.7	TMCX10402	—	TMCX402400*	—	—	4-400-350	—
9875.35003102	350 KCMIL 37W (177 mm²) 3/C MC-HL W/2 AWG GROUND	4.10	104.1	4.29	109.0	—	—	—	—	—	—	—
9875.41003103	4/0 AWG 19W (107 mm²) 3/C MC-HL W/3 AWG GROUND	3.80	96.5	3.98	101.1	TMCX10402	—	TMCX402400*	—	—	—	—
9875.50003101	500 KCMIL 37W (253 mm²) 3/C MC-HL W/1 AWG GROUND	4.45	113.0	4.63	117.6	—	—	—	—	—	—	—

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CCW® Catalog Number Cross-Reference – Okonite C-L-X® to General Cable CCW®

Okonite C-L-X® Catalog Number	General Cable CCW® Catalog Number	Okonite C-L-X® Catalog Number	General Cable CCW® Catalog Number	Okonite C-L-X® Catalog Number	General Cable CCW® Catalog Number
546-31-3002	9525.01402000	546-31-3927	9650.123144000	561-15-3304	9250.18041222
546-31-3003	9525.01403000	546-31-3950	9650.124143000	561-15-3308	9250.18081222
546-31-3004	9525.01404000	546-31-3956	9650.104143000	561-15-3312	9250.18121222
546-31-3005	9525.01405000	546-31-3958	9650.104124000	561-15-3316	9250.18161222
546-31-3007	9525.01407000	546-31-3983	9650.123143000	561-15-3324	9250.18241222
546-31-3009	9525.01409000	546-31-3984	9625.103124110	561-15-3336	9250.18361222
546-31-3012	9525.01412000	546-31-3987	9650.104144000	561-15-3404	9250.16041222
546-31-3019	9525.01419000	546-31-3988	9650.104123000	561-15-3408	9250.16081222
546-31-3037	9525.01437000	546-31-3990	9650.103123000	561-15-3412	9250.16121222
546-31-3082	9525.01202000	546-31-3992	9650.103144000	561-15-3416	9250.16161222
546-31-3083	9525.01203000	561-10-3202	9250.20021221	561-15-3424	9250.16241222
546-31-3084	9525.01204000	561-10-3204	9250.20041221	561-15-3436	9250.16361222
546-31-3085	9525.01205000	561-10-3206	9250.20061221	561-60-3402	9350.16020001
546-31-3087	9525.01207000	561-10-3208	9250.20081221	561-60-3404	9350.16040001
546-31-3089	9525.01209000	561-10-3210	9250.20101221	561-60-3406	9350.16060001
546-31-3092	9525.01212000	561-10-3212	9250.20121221	561-60-3408	9350.16080001
546-31-3099	9525.01219000	561-10-3216	9250.20161221	561-60-3410	9350.16100001
546-31-3117	9525.01237000	561-10-3220	9250.20201221	561-60-3412	9350.16120001
546-31-3162	9525.01002000	561-10-3224	9250.20241221	561-60-3416	9350.16160001
546-31-3163	9525.01003000	561-10-3236	9250.20361221	561-60-3420	9350.16200001
546-31-3164	9525.01004000	561-10-3250	9250.20501221	561-60-3424	9350.16240001
546-31-3165	9525.01005000	561-10-3302	9250.18021221	561-60-3436	9350.16360001
546-31-3167	9525.01007000	561-10-3304	9250.18041221	561-60-3450	9350.16500001
546-31-3169	9525.01009000	561-10-3306	9250.18061221	561-65-3404	9350.16040002
546-31-3172	9525.01012000	561-10-3308	9250.18081221	561-65-3408	9350.16080002
546-31-3402	9500.01402114	561-10-3310	9250.18101221	561-65-3412	9350.16120002
546-31-3403	9600.01403318	561-10-3312	9250.18121221	561-65-3416	9350.16160002
546-31-3404	9600.01404318	561-10-3316	9250.18161221	561-65-3424	9350.16240002
546-31-3406	9500.01406114	561-10-3320	9250.18201221	561-65-3436	9350.16360002
546-31-3408	9500.01408114	561-10-3324	9250.18241221	564-10-3202	9225.20021221
546-31-3411	9500.01411114	561-10-3336	9250.18361221	564-10-3204	9225.20041221
546-31-3418	9500.01418114	561-10-3350	9250.18501221	564-10-3206	9225.20061221
546-31-3436	9500.01436114	561-10-3402	9250.16021221	564-10-3208	9225.20081221
546-31-3452	9500.01202112	561-10-3404	9250.16041221	564-10-3210	9225.20101221
546-31-3453	9600.01203316	561-10-3406	9250.16061221	564-10-3212	9225.20121221
546-31-3454	9600.01204316	561-10-3408	9250.16081221	564-10-3216	9225.20161221
546-31-3456	9500.01206112	561-10-3410	9250.16101221	564-10-3220	9225.20201221
546-31-3458	9500.01208112	561-10-3412	9250.16121221	564-10-3224	9225.20241221
546-31-3461	9500.01211112	561-10-3416	9250.16161221	564-10-3236	9225.20361221
546-31-3468	9500.01218112	561-10-3420	9250.16201221	564-10-3250	9225.20501221
546-31-3486	9500.01236112	561-10-3424	9250.16241221	564-10-3302	9225.18021221
546-31-3502	9500.01002110	561-10-3436	9250.16361221	564-10-3304	9225.18041221
546-31-3503	9600.01003314	561-10-3450	9250.16501221	564-10-3306	9225.18061221
546-31-3504	9600.01004314	561-15-3204	9250.20041222	564-10-3308	9225.18081221
546-31-3506	9500.01006110	561-15-3208	9250.20081222	564-10-3310	9225.18101221
546-31-3508	9500.01008110	561-15-3212	9250.20121222	564-10-3312	9225.18121221
546-31-3511	9500.01011110	561-15-3216	9250.20161222	564-10-3316	9225.18161221
546-31-3758	9650.103143000	561-15-3224	9250.20241222	564-10-3320	9225.18201221
546-31-3925	9650.124144000	561-15-3236	9250.20361222	564-10-3324	9225.18241221

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CCW® Catalog Number Cross-Reference – Okonite C-L-X® to General Cable CCW®

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564-10-3336	9225.18361221	564-65-3408	9325.16080002	571-21-3244	9700.50003305
564-10-3350	9225.18501221	564-65-3412	9325.16120002	571-21-3248	9700.75003304
564-10-3401	9225.16010001	564-65-3416	9325.16160002	571-21-3252	9700.10003304
564-10-3402	9225.16021221	564-65-3424	9325.16240002	571-22-3696	9800.00603310
564-10-3404	9225.16041221	564-65-3436	9325.16360002	571-22-3698	9800.00403310
564-10-3406	9225.16061221	567-86-3402	9150.16021201	571-22-3706	9800.00203310
564-10-3408	9225.16081221	567-86-3404	9150.16041201	571-22-3708	9800.00103308
564-10-3410	9225.16101221	567-86-3408	9150.16081201	571-22-3710	9800.11003308
564-10-3412	9225.16121221	567-86-3412	9150.16121201	571-22-3717	9800.21003308
564-10-3416	9225.16161221	567-86-3424	9150.16241201	571-22-3725	9800.41003307
564-10-3420	9225.16201221	567-86-3436	9150.16361201	571-22-3727	9800.25003307
564-10-3424	9225.16241221	567-86-3450	9150.16501201	571-22-3748	9800.75003304
564-10-3436	9225.16361221	567-87-3402	9150.16021202	571-22-3751	9800.10003304
564-10-3450	9225.16501221	567-87-3404	9150.16041202	571-22-3838	9800.35003306
564-15-3204	9225.20041222	567-87-3408	9150.16081202	571-22-3846	9800.50003305
564-15-3208	9225.20081222	567-87-3412	9150.16121202	571-23-3204	9825.00203106
564-15-3212	9225.20121222	567-87-3424	9150.16241202	571-23-3208	9825.00103104
564-15-3216	9225.20161222	567-87-3436	9150.16361202	571-23-3212	9825.11003104
564-15-3224	9225.20241222	567-87-3450	9150.16501202	571-23-3216	9825.21003104
564-15-3236	9225.20361222	567-93-3801	9125.16010001	571-23-3224	9825.41003103
564-15-3304	9225.18041222	567-93-3802	9125.16021201	571-23-3228	9825.25003103
564-15-3308	9225.18081222	567-93-3804	9125.16041201	571-23-3236	9825.35003102
564-15-3312	9225.18121222	567-93-3808	9125.16081201	571-23-3244	9825.50003101
564-15-3316	9225.18161222	567-93-3812	9125.16121201	571-23-3504	9835.00203106
564-15-3324	9225.18241222	567-93-3816	9125.16161201	571-23-3508	9835.00103104
564-15-3336	9225.18361222	567-93-3824	9125.16241201	571-23-3512	9835.11003104
564-15-3401	9225.16010002	567-93-3836	9125.16361201	571-23-3516	9835.21003104
564-15-3404	9225.16041222	567-93-3850	9125.16501201	571-23-3524	9835.41003103
564-15-3408	9225.16081222	567-94-3801	9125.16010002	571-23-3528	9835.25003103
564-15-3412	9225.16121222	567-94-3802	9125.16021202	571-23-3536	9835.35003102
564-15-3416	9225.16161222	567-94-3804	9125.16041202	571-23-3544	9835.50003101
564-15-3424	9225.16241222	567-94-3808	9125.16081202	571-23-3548	9835.75003110
564-15-3436	9225.16361222	567-94-3812	9125.16121202	571-23-3758	9845.00103104
564-60-3401	9325.16010001	567-94-3816	9125.16161202	571-23-3762	9845.11003104
564-60-3402	9325.16020001	567-94-3824	9125.16241202	571-23-3766	9845.21003104
564-60-3404	9325.16040001	567-94-3836	9125.16361202	571-23-3774	9845.41003103
564-60-3406	9325.16060001	567-94-3850	9125.16501202	571-23-3778	9845.25003103
564-60-3408	9325.16080001	571-21-3193	9700.00803312	571-23-3786	9845.35003102
564-60-3410	9325.16100001	571-21-3196	9700.00603310	571-23-3794	9845.50003101
564-60-3412	9325.16120001	571-21-3200	9700.00403310	571-23-3808	9855.00103104
564-60-3416	9325.16160001	571-21-3204	9700.00203310	571-23-3812	9855.11003104
564-60-3420	9325.16200001	571-21-3208	9700.00103308	571-23-3816	9855.21003104
564-60-3424	9325.16240001	571-21-3212	9700.11003308	571-23-3824	9855.41003103
564-60-3436	9325.16360001	571-21-3217	9700.21003308	571-23-3826	9855.25003103
564-60-3450	9325.16500001	571-21-3224	9700.41003307	571-23-3836	9855.35003102
564-65-3401	9325.16010002	571-21-3228	9700.25003307	571-23-3844	9855.50003101
564-65-3404	9325.16040002	571-21-3236	9700.35003306	571-23-3852	9875.11003104

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571-23-3856	9875.21003104	571-31-3670	9650.044123000	584-10-4216	9075.20161224
571-23-3864	9875.41003103	571-31-3671	9650.043123000	584-10-4220	9075.20201224
571-23-3876	9875.35003102	571-31-3672	9650.044124000	584-10-4224	9075.20241224
571-23-3884	9875.50003101	571-31-3673	9650.063123000	584-10-4236	9075.20361224
571-31-3190	9600.00803314	571-31-3674	9650.023144000	584-10-4250	9075.20501224
571-31-3191	9600.00603312	571-31-3675	9650.023123000	584-20-1204	9050.20041221
571-31-3192	9650.083143000	571-31-3677	9625.043124108	584-20-1208	9050.20081221
571-31-3195	9650.063143000	571-31-3680	9650.084124000	584-20-1210	9050.20101221
571-31-3200	9600.00403312	571-31-3682	9650.084143000	584-20-1212	9050.20121221
571-31-3203	9650.023143000	571-31-3683	9650.084123000	584-20-1216	9050.20161221
571-31-3204	9600.00203310	571-31-3684	9650.064144000	584-20-1220	9050.20201221
571-31-3208	9600.00103310	571-31-3685	9650.064123000	584-20-1224	9050.20241221
571-31-3213	9600.11003310	571-31-3688	9650.044143000	584-20-1236	9050.20361221
571-31-3216	9600.21003310	571-31-3960	9650.084144000	584-20-1250	9050.20501221
571-31-3224	9600.41003308	571-31-3965	9650.064124000	584-20-1401	9025.16010001
571-31-3228	9600.25003308	571-31-3968	9650.064143000	584-20-2204	9050.20041222
571-31-3236	9600.35003307	571-31-3970	9650.043144000	584-20-2208	9050.20081222
571-31-3244	9600.50003306	571-31-3974	9650.043124000	584-20-2210	9050.20101222
571-31-3248	9600.75003305	584-10-1204	9075.20041221	584-20-2212	9050.20121222
571-31-3252	9600.100031110	584-10-1208	9075.20081221	584-20-2216	9050.20161222
571-31-3263	9600.00804110	584-10-1210	9075.20101221	584-20-2220	9050.20201222
571-31-3270	9600.00604108	584-10-1216	9075.20161221	584-20-2224	9050.20241222
571-31-3272	9600.00404108	584-10-1220	9075.20201221	584-20-2236	9050.20361222
571-31-3276	9600.00204106	584-10-1224	9075.20241221	584-20-2250	9050.20501222
571-31-3280	9600.00104106	584-10-1236	9075.20361221	584-20-2401	9025.16010002
571-31-3285	9600.11004106	584-10-1250	9075.20501221	584-20-3204	9050.20041223
571-31-3289	9600.21004106	584-10-2204	9075.20041222	584-20-3208	9050.20081223
571-31-3296	9600.41004104	584-10-2208	9075.20081222	584-20-3210	9050.20101223
571-31-3300	9600.25004104	584-10-2210	9075.20101222	584-20-3212	9050.20121223
571-31-3308	9600.35004103	584-10-2212	9075.20121222	584-20-3216	9050.20161223
571-31-3316	9600.50004102	584-10-2216	9075.20161222	584-20-3220	9050.20201223
571-31-3320	9600.75004101	584-10-2220	9075.20201222	584-20-3224	9050.20241223
571-31-3324	9600.100041110	584-10-2224	9075.20241222	584-20-3236	9050.20361223
571-31-3505	9650.023124000	584-10-2236	9075.20361222	584-20-3250	9050.20501223
571-31-3506	9650.024143000	584-10-2250	9075.20501222	584-20-3401	9025.16010003
571-31-3507	9650.024144000	584-10-3204	9075.20041223	584-20-4204	9050.20041224
571-31-3508	9650.024123000	584-10-3208	9075.20081223	584-20-4208	9050.20081224
571-31-3509	9650.024124000	584-10-3210	9075.20101223	584-20-4210	9050.20101224
571-31-3655	9650.043143000	584-10-3212	9075.20121223	584-20-4212	9050.20121224
571-31-3657	9625.083124110	584-10-3216	9075.20161223	584-20-4216	9050.20161224
571-31-3661	9650.083144000	584-10-3220	9075.20201223	584-20-4220	9050.20201224
571-31-3664	9650.083123000	584-10-3224	9075.20241223	584-20-4224	9050.20241224
571-31-3665	9650.083124000	584-10-3236	9075.20361223	584-20-4236	9050.20361224
571-31-3666	9650.063144000	584-10-3250	9075.20501223	584-20-4250	9050.20501224
571-31-3667	9625.063124108	584-10-4204	9075.20041224	584-20-4401	9025.16010004
571-31-3668	9650.063124000	584-10-4208	9075.20081224		
571-31-3669	9650.044144000	584-10-4212	9075.20121224		

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Reference Standards

AEIC CS5: Specifications for Thermoplastic and Crosslinked Polyethylene Insulated Shielded Power Cables Rated 5 Through 69 kV

AEIC CS6: Specifications for Ethylene Propylene Rubber Insulated Shielded Power Cables Rated 5 Through 69 kV

AEIC CS8: Specification for Extended Dielectric, Shielded Power Cables Rated 5 through 46 kV

ANSI C2: National Electrical Safety Code

ANSI MC96.1: Thermocouple Extension Wire Calibration

ASTM B 3: Standard Specification for Soft or Annealed Copper Wire

ASTM B 8: Standard Specification for Concentric-Lay Stranded Copper Conductors, Hard, Medium-Hard or Soft

ASTM B 33: Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

ASTM B 105: Standard Specification for Hard-Drawn Copper Alloy Wires for Electrical Conductors

ASTM B 172: Standard Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members, for Electrical Conductors

ASTM B 173: Standard Specification for Rope-Lay-Stranded Copper Conductors Having Concentric-Stranded Members, for Electrical Conductors

ASTM B 174: Standard Specification for Bunch-Stranded Copper Conductors for Electrical Conductors

ASTM B 189: Standard Specification for Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes

ASTM B 193: Standard Test Method for Resistivity of Electrical Conductor Materials

ASTM B 226: Standard Specification for Cored, Annular, Concentric-Lay-Stranded Copper Conductors

ASTM B 246: Standard Specification for Tinned Hard-Drawn and Medium-Hard-Drawn Copper Wire for Electrical Purposes

ASTM B 258: Standard Specification for Standard Nominal Diameters and Cross-Sectional Areas of AWG Sizes of Solid Round Wires Used as Electrical Conductors

ASTM B 263: Standard Test Method for Determination of Cross-Sectional Area of Stranded Conductors

ASTM B 298: Standard Specification for Silver-Coated Soft or Annealed Copper Wire

ASTM B 324: Standard Specification for Nickel-Coated Soft or Annealed Copper Wire

ASTM B 355: Standard Specification for Nickel-Coated Soft or Annealed Copper Wire

ASTM B 496: Standard Specification for Compact Round Concentric-Lay-Stranded Copper Conductors

ASTM B 738: Standard Specification for Fine-Wire Bunch-Stranded and Rope-Lay Bunch Stranded Copper Conductors for Use as Electrical Conductors

ASTM B 784: Standard Specification for Modified Concentric-Lay-Stranded Copper Conductors for Use in Insulated Electrical Cables

ASTM B 785: Standard Specification for Compact Round Modified Concentric-Lay-Stranded Copper Conductors for Use in Insulated Electrical Cables

ASTM D 149: Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

ASTM D 470: Method of Testing Crosslinked Insulations and Jackets for Wire and Cable

ASTM D 866: Specification for Styrene-Butadiene (SBR) Synthetic Rubber Jacket for Wire and Cable

ASTM D 1047: Specification for Polyvinyl Chloride (PVC) Jacket for Wire and Cable

ASTM D 1351: Specification for Polyethylene Insulation for Wire and Cable

ASTM D 1352: Specification for Ozone-Resisting Butyl Rubber Insulation for Wire and Cable

ASTM D 1523: Method for Synthetic Rubber Insulation for Wire and Cable, 90° Operation

ASTM D 1679: Specification for Synthetic Rubber Heat and Moisture-Resisting Insulation for Wire and Cable, 75°C Operation

ASTM D 2219: Specification for Polyvinyl Chloride (PVC) Insulation for Wire and Cable, 60° Operation

ASTM D 2220: Specification for Polyvinyl Chloride (PVC) Insulation for Wire and Cable, 75° Operation

ASTM D 2308: Specification for Polyethylene Jacket for Electrical Insulated Wire and Cable

ASTM D 2526: Specification for Ozone-Resisting Silicone Rubber Insulation for Wire and Cable

ASTM D 2655: Specification for Crosslinked Polyethylene Insulation for Wire and Cable Rated 0 to 2000V

ASTM D 2656: Specification for Crosslinked Polyethylene Insulation for Wire and Cable Rated 2001 to 35000V

ASTM D 2768: Specification for General-Purpose Ethylene-Propylene Rubber Jacket for Wire and Cable

ASTM D 2770: Specification for Ozone-Resisting Ethylene-Propylene Rubber Integral Insulation and Jacket for Wire and Cable

ASTM D 2802: Specification for Ozone-Resistant Ethylene-Propylene Rubber Insulation for Wire and Cable

ASTM D 3004: Specification for Extruded Thermosetting and Thermoplastic Semi-Conducting Conductor and Insulation Shields

ASTM D 3554: Specification for Track-Resistant Black Thermoplastic High Density Polyethylene Insulation for Wire and Cable

ASTM D 3555: Specification for Track-Resistant Black Crosslinked Thermosetting Polyethylene Insulation for Wire and Cable

ASTM D 4244: Specification for General-Purpose, Heavy-Duty and Extra-Heavy Duty Acrylonitrile-Butadiene/ Polyvinyl Chloride (NBR/PVC) Jackets for Wire and Cable

Reference Standards

ASTM D 4245: Specification for Ozone-Resistant Thermoplastic Elastomer Insulation for Wire and Cable, 90°C Dry - 75°C Wet Operation

ASTM D 4246: Specification for Ozone-Resistant Thermoplastic Elastomer Insulation for Wire and Cable, 90°C Operation

ASTM D 4313: Specification for General Purpose Heavy-Duty and Extra-Heavy-Duty Crosslinked Chlorinated Polyethylene Jackets for Wire and Cable

ASTM D 4363: Specification for Thermoplastic Chlorinated Polyethylene Jacket for Wire and Cable

ASTM D 4496: Test Method of DC Resistance or Conductance of Moderately Conductive Materials

CAN/CSA C22.2 No. 211: Standard for Cord Sets and Power-Supply Cords

CAN/CSA C22.2 No. 48: Standard for Nonmetallic Sheathed Cable

CAN/CSA C22.2 No. 49: Standard for Flexible Cords and Cables

CAN/CSA C22.2 No. 51: Standard for Armored Cable

CAN/CSA C22.2 No. 96: Standard for Portable Power Cables

CAN/CSA C22.2 No. 131: Standard for Type TECK 90 Cable

CAN/CSA C22.2 No. 239: Standard for Control and Instrumentation Cables

CAN/CSA C22.2 No. 241: IEEE Standard for Cable Joints for Use with Extruded Dielectric Cable Rated 5,000V Through 46,000V, and Cable Joints for Use with Laminated Dielectric Cable Rated 2,500V Through 500,000V (Adopted IEEE 404-1986)

CAN/CSA C49.1: Standard for Round Wire, Concentric Lay, Overhead Electrical Conductors

CAN/CSA C68.3: Standard for Shielded and Concentric Neutral Power Cables Rated 5-46 kV

CSA C22.1: Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations

CSA C22.2 No. 0.3: Standard for Test Methods for Electrical Wires and Cables

CSA C22.2 No. 16: Standard for Insulated Conductors for Power-Operated Electronic Devices

CSA C22.2 No. 35: Standard for Extra-Low-Voltage Control Circuit Cables, Low-Energy Control Cable, and Extra-Low-Voltage Control Cable

CSA C22.2 No. 38: Standard for Thermoset Insulated Wires and Cables

CSA C22.2 No. 75: Standard for Thermoplastic-Insulated Wires and Cables

CSA C22.2 No. 123: Standard for Aluminum Sheathed Cables

CSA C22.2 No. 127: Standard for Equipment Wires

CSA C22.2 No. 138: Standard for Heat Tracing Cable and Cable Sets for Use in Hazardous Locations

CSA C22.2 No. 174: Standard for Cables and Cable Glands for Use in Hazardous Locations

CSA C22.2 No. 188: Standard for Splicing Wire and Cable Connectors

CSA C22.2 No. 198.2: Standard for Underground Cable Splicing Kits

CSA C22.2 No. 230: Standard for Tray Cable

CSA/CAN3 C22.3 No. 7: Standard for Underground Systems

CSA M421: Standard for Use of Electricity in Mines

ICEA P-32-382: ICEA Standards Publication for Short Circuit Characteristics of Insulated Cable

ICEA P-45-482: ICEA Standards Publication for Short-Circuit Performance of Metallic Shields and Sheaths of Insulated Cable

ICEA P-53-426: ICEA/NEMA Standards Publication for Ampacities, Including Effect of Shield Losses for Single-Conductor Solid-Dielectric Power Cable 15 kV through 69 kV (NEMA WC 50)

ICEA P-54-440: ICEA/NEMA Standards Publication for Ampacities of Cables in Open-Top Cable Trays (NEMA WC 51)

ANSI/ICEA S-70-547: ICEA/ANSI Standards Publication for Weather-Resistant Polyolefin-Covered Wire and Cable

ICEA S-73-532: ICEA/NEMA/ANSI Standards Publication for Control Cables (NEMA WC 57)

ICEA S-75-381: ICEA/NEMA/ANSI Standards Publication for Portable and Power Feeder Cables for Use in Mines and Similar Applications (NEMA WC 58)

ICEA S-82-552: ICEA/NEMA Standards Publication for Instrumentation Cables and Thermocouple Wire (NEMA WC 55)

ICEA S-93-639: ICEA/NEMA Standard for Shielded Power Cables Rated 5-46 kV for the Distribution of Electrical Energy (NEMA WC 74)

ICEA S-95-658: ICEA/NEMA Standard for Non-shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy (NEMA WC 70)

ICEA S-96-659: ICEA/NEMA Standard for Non-shielded Cables Rated 2001-5000 Volts for use in the Distribution of Electrical Energy (NEMA WC 71)

ICEA T-22-294: ICEA Standard Test Procedures for Extended Time-Testing of Wire and Cable Insulations for Service in Wet Locations

ICEA T-25-425: ICEA Guide for Establishing Stability of Volume Resistivity for Conducting Polymeric Components of Power Cables

ICEA T-26-465: ICEA/NEMA Guide for Frequency of Sampling Extruded Dielectric Power, Control, Instrumentation and Portable Cables for Test (NEMA WC 54)

ICEA T-27-581: ICEA/NEMA Standard Test Methods for Extruded Dielectric Power, Control, Instrumentation and Portable Cables (NEMA WC 53)

ANSI/ICEA T-28-562: ICEA Standard Test Method for Measurement of Hot Creep of Polymeric Insulations

ICEA T-29-520: ICEA Standard for Vertical Tray Flame Tests at 210,000 BTU

ICEA T-30-520: ICEA Standard for Vertical Tray Flame Tests at 70,000 BTU

Reference Standards

ICEA T-31-610: ICEA Standard for Water Penetration Resistance Test, Sealed Conductor

IEC 92-3: International Electrotechnical Commission Electrical Installation in Ships – Part 3 Cables (Constructions, Testing and Installations)

IEEE 45: IEEE Recommended Practice for Electric Installations on Shipboard

IEEE 48: IEEE Standard Test Procedures and Requirements for High-Voltage Alternating Current Cable Terminations

IEEE 100: IEEE Standard Dictionary of Electrical and Electronics Terms

IEEE 141: IEEE Recommended Practice for Electric Power Distribution for Industrial Plants (“IEEE Red Book”)

IEEE 142: IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems (“IEEE Green Book”)

IEEE 241: IEEE Recommended Practice for Electric Power Systems in Commercial Buildings (“IEEE Gray Book”)

IEEE 242: IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems (“IEEE Buff Book”)

IEEE 323: IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations

IEEE 383: IEEE Standard for Type Test of Class 1E Electric Cables, Field Splices and Connections for Nuclear Power Generating Stations

IEEE 400: IEEE Guide for Making High-Direct-Voltage Tests on Power Cable Systems in the Field

IEEE 404: IEEE Standard for Cable Joints for Use with Extruded Dielectric Cable Rated 5,000V Through 46,000V, and Cable Joints for Use with Laminated Dielectric Cable Rated 2,500V Through 500,000V (Adopted as a National Standard of Canada, CAN/CSA-C22.2 No. 241)

IEEE 446: IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications (“IEEE Orange Book”)

IEEE 493: IEEE Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems (“IEEE Gold Book”)

IEEE 525: IEEE Guide for the Design and Installation of Cable Systems in Substations

IEEE 575: IEEE Guide for the Application of Sheath-Bonding Methods for Single-Conductor Cables and the Calculation of Induced Voltages and Currents in Cable Sheaths

IEEE 576: IEEE Recommended Practice for Installation, Termination, and Testing of Insulated Power Cable as Used in the Petroleum and Chemical Industry

IEEE 602: IEEE Recommended Practice for Electric Systems in Health Care Facilities (“IEEE White Book”)

IEEE 635: IEEE Guide for Selection and Design of Aluminum Sheaths for Power Cables

IEEE 789: IEEE Standard Performance Requirements for Communications and Control Cables for Application in High Voltage Environments

IEEE 816: IEEE Guide for Determining the Smoke Generation of Solid Materials Used for Insulations and Coverings of Electric Wire and Cable

IEEE 1017: IEEE Recommended Practice for Field Testing Electric Submersible Pump Cable

IEEE 1018: IEEE Recommended Practice for Specifying Electric Submersible Pump Cable – Ethylene-Propylene Rubber Insulation

IEEE 1019: IEEE Recommended Practice for Specifying Electric Submersible Pump Cable – Polypropylene Insulation

IEEE 1202: IEEE Standard for Flame Testing of Cables for Use in Cable Tray in Industrial and Commercial Occupancies

IEEE/ICEA S-135: Power Cable Ampacities

NEMA WC 3: Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-19-81)

NEMA WC 5: Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-61-402)

NEMA WC 7: Cross-Linked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-66-524)

NEMA WC 8: Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-68-516)

NEMA WC 26: Wire and Cable Packaging

NEMA WC 50: Ampacities, Including Effect of Shield Losses for Single-Conductor Solid Dielectric Power Cable 15 kV through 69 kV (ICEA P-53-426)

NEMA WC 51: Ampacities of Cables in Open-Top Cable Trays (ICEA P-54-440)

NEMA WC 52: High Temperature and Electronic Insulated Wire-Impulse Dielectric Testing

NEMA WC 53: Standard Test Methods for Extruded Dielectric Power, Control, Instrumentation, and Portable Cables (ICEA T-27-581)

NEMA WC 54: Guide for Frequency of Sampling Extruded Dielectric Power, Control, Instrumentation, and Portable Cables for Test (ICEA T-26-465)

NEMA WC 55: Instrumentation Cables and Thermocouple Wire (ICEA S-82-552)

NEMA WC 57: Standard for Control Cables (ICEA S-73-532)

NEMA WC 58: Standard for Portable and Power Feeder Cables for Use in Mines and Similar Applications (ICEA-S-75-381)

Reference Standards

NEMA WC 61: Transfer Impedance Testing

NEMA WC 62: Repeated Spark/Impulse Dielectric Testing

NEMA WC 70: Standard for Non-shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy (ICEA S-95-658)

NEMA WC 71: Standard for Non-shielded Cables Rated 2001-5000 Volts for Use in the Distribution of Electrical Energy (ICEA S-96-659)

NEMA WC 74: Standard for Shielded Power Cables Rated 5-46 kV for the Distribution of Electrical Energy (ICEA S-93-639)

NFPA 70: National Electrical Code

NFPA 70HB: National Electrical Code Handbook

NFPA 262: Test for Fire and Smoke Characteristics of Wires and Cables

UL 4: Standard for Armored Cable

UL 13: Standard for Power-Limited Circuit Cables

UL 44: Standard for Rubber-Insulated Wires and Cables

UL 62: Standard for Flexible Cord and Fixture Wire

UL 83: Standard for Thermoplastic-Insulated Wires and Cables

UL 486A: Standard for Wire Connectors and Soldering Lugs for Use With Copper Conductors

UL 486B: Standard for Wire Connectors and Soldering Lugs for Use With Aluminum Conductors

UL 486C: Standard for Splicing Wire Connectors

UL 486D: Standard for Insulated Wire Connectors for Use With Underground Conductors

UL 486E: Standard for Equipment Wiring Terminals for Use With Aluminum and/or Copper Conductors

UL 493: Standard for Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables

UL 1072: Standard for Medium-Voltage Power Cables

UL 1084: Standard for Hoistway Cables

UL 1277: Standard for Electrical Power and Control Tray Cables With Optional Optical Fiber Members

UL 1309: Standard for Marine Shipboard Cable

UL 1424: Standard for Cables for Power-Limited Fire-Protective-Signaling Circuits

UL 1569: Standard for Metal-Clad Cables

UL 1581: Reference Standard for Electrical Wires, Cables and Flexible Cords

UL 1685: Standard for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables

UL 1807: Standard for Fire Resistant Cable Coating Materials

UL 2029: Standard for Gas/Vapor-Blocked Cable Classified for Use in Class 1 Hazardous (Classified) Locations

UL 2225: Cable and Cable Fittings for Use in Hazardous Locations

UL 2250: Instrumentation Tray Cable

UL 2556: Wire and Cable Test Methods

UL Type ITC-HL: Listing for Instrumentation Cable Used in Hazardous Locations

UL Type PLTC: Listing for Power-Limited Tray Cables

WC: See NEMA listing

Checklist for CCW® Specifications

Guideline for Specifying MC-HL Constructions for Class I –
Divisions 1, 2 for Zones 1, 2 Installations

Instrumentation & Control Cable

Voltage Rating

- ☐ 300 V
☐ 600 V

Number of Conductor

Conductor Type-Copper

- ☐ AWG
☐ Bare
☐ Tinned
☐ Thermocouple
☐ EX
☐ JX
☐ KX
☐ TX
☐ Solid
☐ Stranded
☐ Class B, concentric
☐ Flexible

Insulation

- ☐ PVC
☐ XLPE

Identification Method

- ☐ Color code
☐ Numbering

Grounding Conductor

- ☐ Size
☐ Bare
☐ Tinned
☐ Insulated

Aluminum Mylar Shields

- ☐ Individual (IS)
☐ Overall (OS)
☐ Individual/Overall (IOS)

CCW® Armor

- ☐ PLTC-HL
☐ ITC-HL
☐ MC
☐ MC-HL

Jacket

- ☐ PVC
☐ Other

Power Cable

Voltage rating

- ☐ 600 V
☐ 2400 V (2.4 kV)
☐ 5 kV
☐ 8 kV
☐ 15 kV
☐ 25 kV
☐ 35 kV

Cable Assembly

- ☐ Cabled VFD (split grounds)
☐ Multi-conductor (one ground)
☐ Other (special)

Conductor Size

- ☐ AWG
☐ kcmil

Conductor Type

- ☐ Copper
☐ Bare
☐ Tinned
☐ Aluminum

Stranding

- ☐ Class B, compact
☐ Class B, concentric
☐ Other

Extruded Conductor Shielding (Medium Voltage only)

Insulation

- ☐ EPR
☐ XLPE

Insulation Level

(Medium Voltage only)

- ☐ 100%
☐ 133%

Extruded Insulation Shielding (Medium Voltage only)

Metallic Shield

- ☐ Helically applied copper tape
☐ Other

Grounding Conductors

- ☐ Bare
☐ Insulated

Quantity

Size

Sheath

- ☐ Continuously Corrugated Welded armor (MC-HL)
☐ Interlocked armor
☐ MC
☐ TECK
☐ Lead
☐ Non-metallic
☐ Other

Jacket

- ☐ CPE
☐ LSZH/XLPO
☐ PVC
☐ Other

Jacket Color

- ☐ Other than standard

Temperature rating

- ☐ 90°C
☐ 105°C

General Checklist

Standards

- ☐ AEIC
☐ ABS
☐ CSA
☐ ICEA
☐ IEEE
☐ UL
☐ Other

Testing Procedures

- ☐ AEIC
☐ ABS
☐ CSA
☐ ICEA
☐ IEEE
☐ UL
☐ Other

Special Requirements

- ☐ Cold bend/Cold impact
☐ Direct burial
☐ Flame-retardant
☐ Oil-resistant
☐ Sunlight-resistant
☐ Other

Documentation

- ☐ Certificates of Compliance (CofC)
☐ Certified Test Reports (CTR)
☐ Drawings
☐ Warranties
☐ Other

Shipping Details

- ☐ Cut lengths
☐ Lagging
☐ Returnable reels
☐ Other

Identification Requirements

- ☐ Cable
☐ Circuit
☐ Reel



Common Color Sequence

Table E1 Color Sequence

COND. NO.	BACKGROUND OR BASE COLOR	FIRST TRACER COLOR	SECOND TRACER COLOR	COND. NO.	BACKGROUND OR BASE COLOR	FIRST TRACER COLOR	SECOND TRACER COLOR
1	Black	-	-	20	Red	Green	-
2	White	-	-	21	Orange	Green	-
3	Red	-	-	22	Black	White	Red
4	Green	-	-	23	White	Black	Red
5	Orange	-	-	24	Red	Black	White
6	Blue	-	-	25	Green	Black	White
7	White	Black	-	26	Orange	Black	White
8	Red	Black	-	27	Blue	Black	White
9	Green	Black	-	28	Black	Red	Green
10	Orange	Black	-	29	White	Red	Green
11	Blue	Black	-	30	Red	Black	Green
12	Black	White	-	31	Green	Black	Orange
13	Red	White	-	32	Orange	Black	Green
14	Green	White	-	33	Blue	White	Orange
15	Blue	White	-	34	Black	White	Orange
16	Black	Red	-	35	White	Red	Orange
17	White	Red	-	36	Orange	White	Blue
18	Orange	Red	-	37	White	Red	Blue
19	Blue	Red	-				

Pair cables are Black, White and numbered. Triad cables are Black, White, Red and numbered.

**Method 4 -
All Conductors Black**

COND.	CONDUCTOR PRINTING
1st	"1-One"
2nd	"2-Two"
3rd	"3-Three"
4th	"4-Four"
5th	"5-Five"

Table E2 Color Sequence

COND. NO.	BACKGROUND OR BASE COLOR	TRACER COLOR	COND. NO.	BACKGROUND OR BASE COLOR	TRACER COLOR
1	Black	-	19	Orange	Blue
2	Red	-	20	Yellow	Blue
3	Blue	-	21	Brown	Blue
4	Orange	-	22	Black	Orange
5	Yellow	-	23	Red	Orange
6	Brown	-	24	Blue	Orange
7	Red	Black	25	Yellow	Orange
8	Blue	Black	26	Brown	Orange
9	Orange	Black	27	Black	Yellow
10	Yellow	Black	28	Red	Yellow
11	Brown	Black	29	Blue	Yellow
12	Black	Red	30	Orange	Yellow
13	Blue	Red	31	Brown	Yellow
14	Orange	Red	32	Black	Brown
15	Yellow	Red	33	Red	Brown
16	Brown	Red	34	Blue	Brown
17	Black	Blue	35	Orange	Brown
18	Red	Blue	36	Yellow	Brown

Pair cables are Black, Red and numbered. Triad cables are Black, Red, Blue and numbered. Colors repeat after 36 conductors. There are no Green or White conductors or stripes.

ANSI MC 96.1 Conductor Alloy and Color Code

COND. TYPE	POSITIVE WIRE		NEGATIVE WIRE		OUTER JACKET
	ALLOY	COLOR	ALLOY	COLOR	
EX	Chromel	Purple	Constantan	Red	Purple
JX	Iron	White	Constantan	Red	Black
KX	Chromel	Yellow	Alumel	Red	Yellow
TX	Copper	Blue	Constantan	Red	Blue

Metric Conversion Factors

	To Convert From	To	Multiply By
Length	Inches	Millimeters	25.4
	Millimeters	Inches	0.03937
	Inches	Centimeters	2.54
	Centimeters	Inches	0.3937
	Feet	Meters	0.3048
	Meters	Feet	3.2808
	Kilofeet (1000 feet)	Kilometers	0.3048
	Kilometers	Kilofeet (1000 feet)	3.2808
Area	Square Inches	Square Millimeters	645.16
	Square Millimeters	Square Inches	0.00155
	Square Inches	Square Centimeters	6.4516
	Square Centimeters	Square Inches	0.155
	Square Inches	Circular Mils	1,273,240
	Circular Mils	Square Inches	7.854×10^{-7}
	Circular Mils	Square Millimeters	5.066×10^4
	Square Millimeters	Circular Mils	1973.51
Weight	Square Feet	Square Meters	0.0929
	Square Meters	Square Feet	10.764
	Pounds	Kilograms	0.4536
	Kilograms	Pounds	2.2046
	Pound/Kilofeet	Kilograms/Kilometer	1.4882
	Kilograms/Kilometer	Pounds/Kilofeet	0.6720
	Ohms/Kilofeet	Ohms/Kilometer	3.2808
	Ohms/Kilometer	Ohms/Kilofeet	0.3048
Electrical	Microfarads/Kilofeet	Microfarads/Kilometer	3.2808
	Microfarads/Kilometer	Microfarads/Kilofeet	0.3048
	Insulation Resistance: Megohms—Kilofeet	Megohms—Kilometer	0.3048
	Megohms—Kilometer	Megohms—Kilofeet	3.2808
Mechanical	Pounds/Square Inch	Kilo Pascal*	6.895
	Kilo Pascal*	Pounds/Square Inch	0.1432
	Pounds (force)	Newtons	4.448

* 1 Pascal = 1 Newton/square meters

AWG (American Wire Gauge) to mm² (Millimeters Squared) Conversion

AWG to mm ² CONVERSION TABLE	
AWG/kcmil	[mm ²]*
20	0.52
18	0.82
16	1.31
14	2.08
12	3.31
10	5.26
8	8.36
6	13.3
4	21.2
2	33.6
1	42.4
1/0	53.5
2/0	67.4
3/0	85.0
4/0	107
250	127
300	152
350	177
400	203
450	228
500	253
600	304
750	380
800	405
1000	507

* Equivalent mm² cross-sectional area

mm ² to AWG CONVERSION TABLE		
mm ²	[mm ²] *	AWG/kcmil
0.5	0.52	20
0.75	0.82	18
1.5	1.31	16
2.5	2.08	14
2.5	3.31	12
4	3.31	12
6	5.26	10
10	8.36	8
16	13.3	6
25	21.2	4
35	33.6	2
35	42.4	1
50	53.5	1/0
70	67.4	2/0
95	85.0	3/0
95	107	4/0
120	107	4/0
120	127	250
150	152	300
185	177	350
185	203	400
240	228	450
240	253	500
300	304	600
400	380	750
400	405	800
500	507	1000

Multiple AWG choices — consult responsible engineer for required ampacity

Class B Conductors for General Wiring

Copper Conductor

ASTM CLASS B

COND. SIZE AWG/kcmil	STRANDING INCHES	NOMINAL AREA		NOMINAL WEIGHT		CONCENTRIC NOMINAL O.D.		COMPRESSED NOMINAL O.D.		COMPACT NOMINAL O.D.	
		CIRCULAR MILS	mm ²	LBS/1000 FT ¹	kg/km	INCHES	mm	INCHES	mm	INCHES	mm
22	7/.0096	640	0.32	1.99	2.96	0.029	0.74	—	—	—	—
20	7/.0121	1,020	0.52	3.15	4.69	0.036	0.91	—	—	—	—
18	7/.0152	1,620	0.82	5.10	7.59	0.046	1.17	—	—	—	—
16	7/.0192	2,580	1.31	7.74	11.52	0.058	1.47	—	—	—	—
14	7/.0242	4,110	2.08	12.70	18.90	0.073	1.84	0.071	1.80	—	—
12	7/.0305	6,530	3.31	20.20	30.10	0.092	2.32	0.089	2.26	—	—
10	7/.0385	10,380	5.26	32.10	47.80	0.116	2.95	0.113	2.87	—	—
8	7/.0486	16,510	8.36	51	75.90	0.146	3.71	0.142	3.60	0.134	3.40
6	7/.0612	26,240	13.30	81.10	120.70	0.184	4.67	0.178	4.53	0.169	4.29
4	7/.0772	41,740	21.20	129	192	0.232	5.89	0.225	5.72	0.213	5.41
2	7/.0974	66,360	33.60	205	305.10	0.292	7.42	0.283	7.19	0.268	6.81
1	19/.0664	83,690	42.40	258	383.90	0.332	8.43	0.322	8.18	0.299	7.59
1/0	19/.0745	105,600	53.50	326	485.10	0.373	9.47	0.362	9.19	0.336	8.53
2/0	19/.0837	133,100	67.40	411	611.60	0.419	10.64	0.406	10.32	0.376	9.55
3/0	19/.0940	167,800	85	518	770.90	0.470	11.94	0.456	11.58	0.423	10.74
4/0	19/.1055	211,600	107	653	971.80	0.528	13.41	0.512	13.01	0.475	12.07
250	37/.0822	250,000	127	772	1148.90	0.575	14.61	0.558	14.17	0.520	13.21
300	37/.0900	300,000	152	926	1378	0.630	16.00	0.611	15.52	0.570	14.48
350	37/.0973	350,000	177	1,081	1609	0.681	17.30	0.661	16.78	0.616	15.65
400	37/.1040	400,000	203	1,235	1838	0.728	18.49	0.706	17.94	0.659	16.74
500	37/.1162	500,000	253	1,544	2298	0.813	20.65	0.789	20.03	0.736	18.69
600	61/.0992	600,000	304	1,883	2802	0.893	22.68	0.866	22.00	0.813	20.65
750	61/.1109	750,000	380	2,316	3447	0.998	25.35	0.968	24.59	0.908	23.06
1000	61/.1280	1,000,000	507	3,088	4595	1.152	29.26	1.117	28.38	1.060	26.92

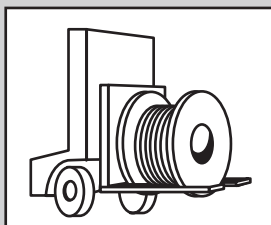
Dimensions and weights are nominal; subject to industry tolerances.

¹ Nominal conductor weights are applicable for Concentric Class B and Compressed Stranding per ASTM B8.

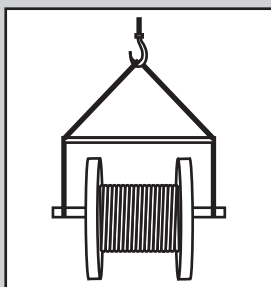
Recommended Reel Handling Practices

How to Handle Cable Reels

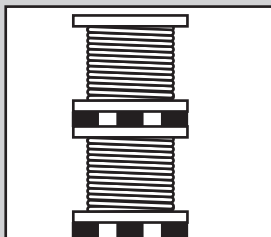
YES



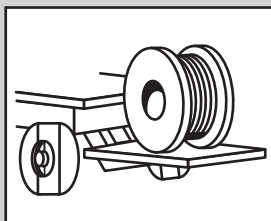
Cradle both reel flanges between forks.



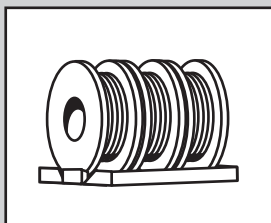
Reels can be hoisted with a shaft extended through both flanges.



Place spacers under the bottom flange and between reels to create a space to insert the forks. (36" reels max.)

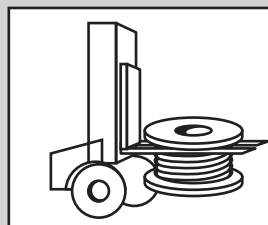


Lower reels from truck using hydraulic gate, hoist or fork lift. LOWER CAREFULLY.

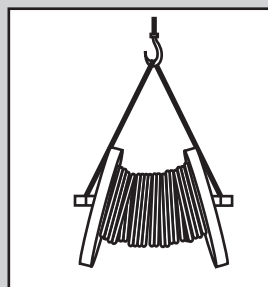


Always load with flanges on edge and chock and block securely.

NO



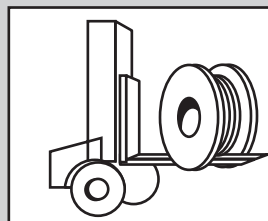
Do not lift by top flange. Cable or reel will be damaged.



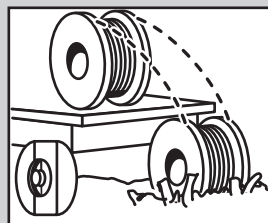
Use a spreader bar to prevent bending the reel flanges and mashing the cable.



Upended heavy reels will often arrive damaged. Refuse or receive subject to inspection for hidden damage.



Never allow forks to touch cable surface or reel wrap.



Never drop reels.

Recommended Cable Handling Practices

Unloading and Moving of Reels:

Cable reels are never shipped upended (flat side down). Cable reels that arrive in this manner should be rejected or received only after a thorough inspection for damage.

See "Recommended Reel Handling Practices" page.

Upon receipt, a cable's protective covering and/or lagging should be inspected for evidence of damage during shipment. If evidence of damage is found, a report should immediately be made to the carrier.

Under no circumstances should reels be dropped from the delivering vehicle to the ground.

Unloading and reel handling should be accomplished so that the equipment used does not contact the cable surface, and in the case of protective wrap, that the equipment does not contact the protective wrap.

If unloading and reel handling is accomplished by crane, either a cradle supporting the reel flanges or a shaft through the arbor hole should be used. If a fork lift is utilized, the forks must lift the reel at 90° to the flanges and the forks must be long enough to make complete lifting contact with both flanges. Under no circumstances should the forks come into contact with the cable surface or the protective wraps.

When a reel of cable is rolled from one point to another, care must be taken to see that there are no objects on the surface area which could contact or damage the cable surface or protective wrap.

If an inclined ramp is used for unloading, the ramp must be wide enough to contact both flanges completely. The stopping of the reels at the bottom shall be accomplished by using the reel flanges and not the surface of the cable.

Minimum Drum Diameters for Packaging Cables	
Type of Cable	Minimum Drum Diameter as a Multiple of Outside Diameter of Cable
1. Single and multiple conductor cable - unshielded 0-2000 V	10
2. Single and multiple conductor cable - unshielded 2400 V	12
3. Single and multiple conductor cable - wire shield (UniShield®) 5-35 kV	12
4. Single and multiple conductor cable - helically applied tape shield (Uniblend®) 5-35 kV	14
5. Single and multiple conductor cable - longitudinally applied flat tape shield (Type TC)	20
6. Single and multiple conductor cable - Interlocked Armor (Duralox®) 600 V-35 kV	14
7. Triplexed single conductors cabled together. The circumscribing overall diameter* shall be multiplied by the factor in 1 - 6 and then by the reduction factor.	.75

*Single conductor times 2.155 times

NEMA WC26 EEMAC201-2007 Binational Wire and Cable Packaging Standard



Recommended Cable Storage Practices

Storage and Storage Maintenance:

Finished cables have no established shelf-life. Moisture and atmospheric conditions can cause exposed conductors to oxidize and discolor. Uncovered/unsheltered cable will degrade due to exposure to direct sunlight and/or the elements. If the cables are protected, there should be no degradation of the insulation.

In general, any cable for use indoors should be stored indoors. Any cable suitable for installation outdoors is suitable for storage outdoors. Cables stored outdoors should have the ends sealed to prevent moisture ingress into the cable.

Cables should be stored in a sheltered area.

Cables with a cold temperature marking, e.g. -10°C , -25°C , or -40°C , may be stored outdoors. Cables without a cold temperature marking must be stored indoors.

Cable reels must remain in the upright position. Cable reels must not be stored on their sides. Reels must not be stacked.

Cable reels should be stored with the protective covering or lagging in place. If a length of cable has been cut from the reel, the cable end should be immediately resealed to prevent the entrance of moisture. If a part length is returned to storage, the reel's protective covering should be restored.

Wooden reels should be stored off the ground to prevent rotting. Reels should be stored on a flat, hard surface so that flanges do not sink into the earth. The weight of the reel and cable must be carried at all times by the reel flanges.

Cable reels and lagging must not be stored for an extended time period sitting in direct contact with water or dampness. Timbers or metal supports must be placed under the reel flanges to provide elevated storage of the reels away from the direct contact with water or damp soil.

Reels should be stored in an area where construction equipment, falling or flying objects or other materials will not contact the cable.

Cable should be stored in an area where chemicals or petroleum products will not be spilled or sprayed on the cable.

Cable should be stored in an area away from open fires or sources of high heat.

If the reels are relocated, they should be handled as suggested in the "Recommended Reel Handling Practices" section, and inspection made on each reel during the relocation.

If the cables are stored in a secure area and not exposed to the effects of the weather, an annual inspection should be satisfactory.

Where the reels are exposed to the weather, a bimonthly inspection should be performed to observe any sign of deterioration.

If the reels are exposed in a non-secure area, policing of the area at frequent intervals may be required depending on circumstances.

Records of delivery date, manufacturer, installation date, any extenuating circumstances, along with all test reports, should be kept on file.

Pre-Installation Instructions

Pre-Installation

Overview

To ensure safety during cable installation and reliability once the cable is installed, you should confirm the following prior to installation:

- The cable selected is proper for your application
- The cable has not been damaged in transit or storage

Review all applicable state and national codes to verify that the cable chosen is appropriate for the job. Also, consult your local building authority.

Next, you must identify any existing cable damage and prevent any further damage from occurring. This is done through proper cable inspection, handling and storage.

Cable Inspection

Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:

- A reel is laying flat on its side
- Several reels are stacked
- Other freight is stacked on a reel
- Nails have been driven into reel flanges to secure shipping blocks
- A reel flange is damaged
- A cable covering is removed, stained or damaged
- A cable end seal is removed or damaged
- A reel has been dropped (hidden damage likely)

Cabling Handling

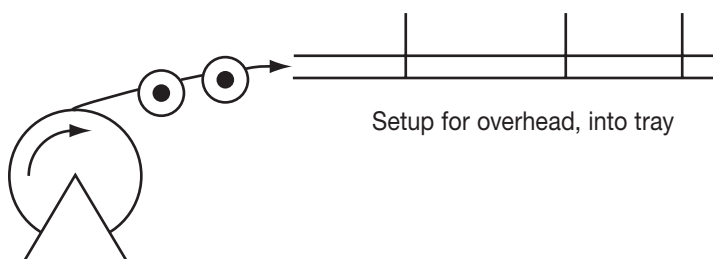
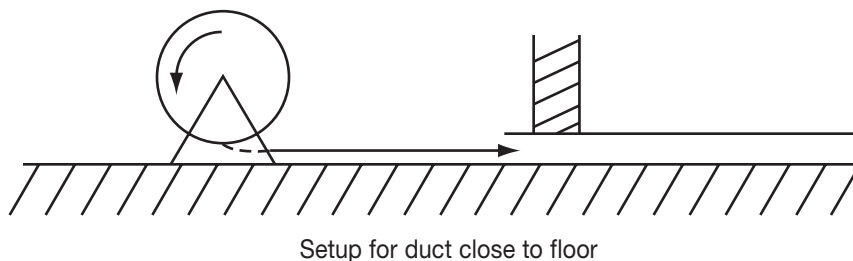
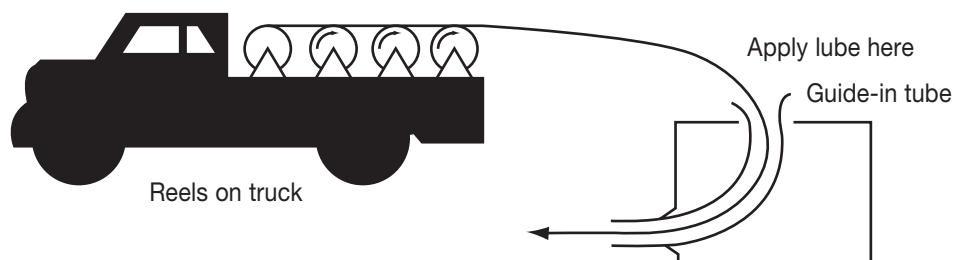
Remove all nails and staples from the reel flanges before moving a reel, and avoid all objects that could crush, gouge or impact the cable when moving. NEVER use the cable as a means to move a reel.

When unreeling, observe recommended bending radii, use swivels to prevent twisting and avoid overruns.

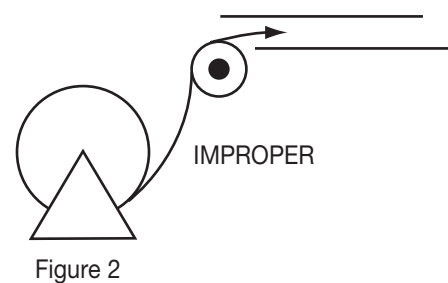
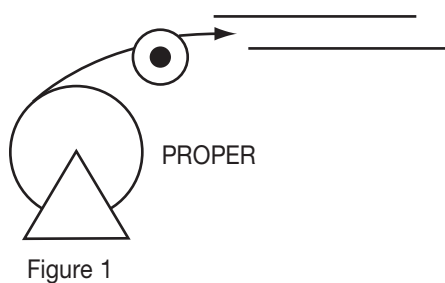
Installation—Feed-In Setups

Cable Feed-In Setups

The following diagrams illustrate various cable feed-in setups:



The feed-in setup should unreeel the cable with a natural curvature (Figure 1) as opposed to a reverse "S" curvature (Figure 2).

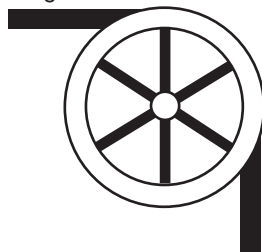


Installation—Feed-In Setups

Cable Feed-In Setups (continued)

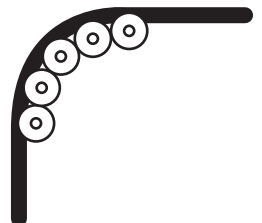
Single sheaves should only be used for GUIDING cables. Arrange multiple blocks to maintain bending radii whenever cable changes direction or elevation.

Single Sheave



For pulling around bends, use conveyor sheave assemblies of the appropriate radius series.

Sheave Assembly



The pulleys must be positioned to ensure that the effective curvature is smooth and changes direction or elevation evenly at each pulley. Never allow a polygon curvature to occur (Figure 3).

The fit of a pulley around the cable is also important when pulling heavy weights (i.e. pulleys at the top of a vertical drop).

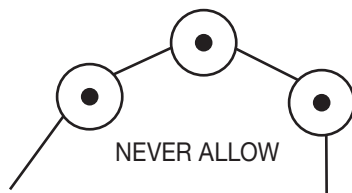
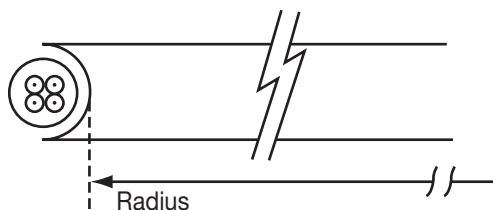


Figure 3

Remember to use the radius of the surface over which the cable is bent, not the outside flange diameter of the pulley. A "10 inch" cable sheave typically has a 10 inch outside flange diameter with a 6 inch inside diameter that provides an inside (bending) radius of 3 inches.



Installation—Conductor Maximum Pulling Tensions

Multiconductor Cables Having Equal-Sized Conductors;
In Parallel or as Multiplexed Assemblies

AWG/kcmil	MAXIMUM ALLOWABLE PULLING TENSION (LBS)					
	NUMBER OF CONDUCTORS					
	1	2	3	4	5	6
18	13	26	39	41	52	62
16	20	40	60	65	81	97
14	33	66	99	105	132	158
12	52	104	157	167	209	251
10	83	166	249	266	332	399
8	132	264	396	423	528	634
6	210	420	630	672	840	1008
4	334	668	1002	1069	1336	1603
2	531	1062	1593	1699	2124	2548
1	670	1339	2009	2142	2678	3214
1/0	845	1690	2534	2703	3379	4055
2/0	1065	2130	3194	3407	4259	5111
3/0	1342	2685	4027	4296	5370	6444
4/0	1693	3386	5078	5417	6771	8125
250	2000	4000	6000	6400	8000	9600
350	2800	5600	8400	8960	10000	10000
500	4000	8000	10000	10000	10000	10000
750	6000	10000	10000	10000	10000	10000
1000	8000	10000	10000	10000	10000	10000

The maximum allowable pulling tensions are for direct attachment to the conductor.

$T = 0.008 \times \text{cmil} \times n$, if $n \leq 3$

$T = 0.008 \times \text{cmil} \times n \times 0.8$, if $n > 3$

When more than two conductors are pulled in parallel in an installation containing bends, the maximum allowable pulling tension is limited to the two conductor column, regardless of the number of conductors that are being pulled.

Installation—Conductor Maximum Pulling Tensions

Multiconductor Cables Having Equal-Sized Conductors, Without Subassemblies

NUMBER OF CONDUCTORS	MAXIMUM ALLOWABLE PULLING TENSION (LBS)				
	CONDUCTOR SIZE (AWG/kcmil)				
	18	16	14	12	10
2	26	40	66	104	166
3	39	60	99	157	249
4	41	65	105	167	266
5	52	81	132	209	332
6	62	97	158	251	399
7	73	113	184	293	465
8	83	129	210	334	531
9	93	145	237	376	598
10	104	161	263	418	664
12	124	194	316	502	797
14	145	226	368	585	930
15	156	242	395	627	996
16	166	258	421	669	1000
18	187	290	473	752	1000
19	197	306	500	794	1000
20	207	323	526	836	1000
22	228	355	549	919	1000
24	249	387	631	1000	1000
25	259	403	658	1000	1000
30	311	484	789	1000	1000
37	383	596	974	1000	1000

The maximum allowable pulling tensions are for multi conductor cables pulled into a raceway or cable tray using a basket grip or similar device secured directly to the cable jacket. It is recommended that a combination of basket grips and pulling eyes be used whenever possible.

$T = 0.008 \times \text{cmil} \times n$, if $n \leq 3$

$T = 0.008 \times \text{cmil} \times n \times 0.8$, if $n > 3$

Installation—Training and Bending Limitations

Physical Limitations Training and Bending

Overview

Training is the positioning of cable when it is not under tension. Bending is the positioning of cable when it is under tension. When installing cable, the object is to limit the mechanical forces so that the cable's physical and electrical characteristics are maintained for the expected service life. Bends in conductors, multiconductor cables or assemblies of conductors shall be made so that the cable will not be damaged.

A nonshielded cable can tolerate a sharper bend than a shielded cable. This is especially true for cables having helically applied metallic shielding tapes which, when bent too sharply, can separate or buckle and cut into the insulation. Remember that offsets are bends.

The problem is compounded by the fact that most tapes are under jackets that conceal such damage. The extruded polymers used for insulation shields have sufficient conductivity and coverage initially to pass acceptance testing, then fail prematurely due to corona at the shield/insulation interface.

Minimum Bending Radius in Accordance with National Electric Code

Voltage	Conductors	Shielding	Cable Types	Minimum Bending Radius as a Multiple of Conductor/Assembly Diameter		
600 V	Single	Nonshielded	All	5X		
601-2000 V			All	8X		
600 V or 2000 V	Multiconductor or Multiplexed	Nonshielded	TC or TC-ER	1 in. (25 mm) or less	Over 1 in. to 2 in. (>25 mm to 50 mm)	Over 2 in. (>50 mm)
				4X	5X	6X
		Shielded	MC ³	7X		
			All	12X		
			TC or TC-ER	12X		
			MC	12X/7X ¹		
Over 2000 V	Single	Nonshielded	MV	8X		
			MC ³	7X		
		Shielded	MC and MV	12X ²		
	Multiconductor Multiplexed	Nonshielded	MC and MV	8X		
		Shielded	MC and MV	12X/7X ^{1,2}		

¹ 12 times the diameter of an individual shielded conductor or 7 times the overall cable diameter, whichever is greater.

² Since UniShield® is a unique construction, there are no applicable values for the bending radius in the NEC. However, General Cable recommends 8 times for single conductors, and for multiplexed or multi-conductor cables, it is 8 times the diameter of the individual conductors or 5 times the overall diameter, whichever is greater, in accordance with ANSI/ICEA S-93-639 5-46 kV *Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy*.

³ Per 330.24B Interlocked-Type Armor or Continuously Corrugated Metallic Sheath.

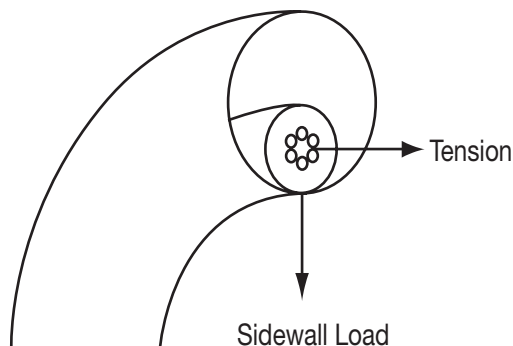
Installation—Maximum Sidewall Pressure

Overview

Sidewall bearing pressure (SWBP), or sidewall loading, is the radial force exerted on a cable being pulled around a conduit bend or sheave. Excessive SWBP can crush a cable and is, therefore, one of the most restrictive factors in installations having bends and requiring high pulling tensions. SWBP is reduced by increasing the radius of bends.

The maximum tension that can safely be applied to the cable during installation can be calculated using the maximum SWBP for the cable and the radius of the bend it is traversing.

For example, a cable having a maximum SWBP of 300 lb/ft that is being pulled around a bend having a radius of 2 feet should have no more than $300 \text{ lbs/ft} \times 2 \text{ ft}$ or 600 lbs tension applied to it as the cable exits the bend.



CABLE TYPE	SWBP (LBS/FT)
300 V Nonshielded, 300 V and 600 V Shielded Control & Instrumentation	500
600 V Nonshielded Control & Instrumentation	500
600 V and 2400 V Nonshielded Power	1000
5 kV-35 kV Shielded Power	1000
Interlocked Armored Cable (all voltage)	300
CCW® MC-HL Armored Cable	500

General Cable's Approval List of Cable Pulling Lubricants

The following manufacturers, who are listed in the 2006 UL Electrical Construction Equipment Directory, provide wire pulling compounds intended for use as lubricants in installing electrical conductors in raceways. These manufacturers have had some of their products evaluated by Underwriters Laboratories (UL) to determine their compatibility with conductor insulation and coverings.

Since it is not feasible to test every possible combination of cable material with every wire pulling compound, the installer should check with the pulling compound manufacturer or the cable manufacturer to determine compatibility between specific cable materials and the pulling compound.

The Listing Mark for these products includes the UL symbol, together with the word "LISTED," a control number and the product name "Wire Pulling Compound." Refer to the latest edition of the UL Electrical Construction Equipment Directory for the current listing of manufacturers of wire pulling compounds and their control numbers.

3 M Company	J. C. Whitlam Mfg. Co.
American Bentonite International Inc.	Klein Tools Inc.
American Polywater Corp.	Madison Electric Products Inc.
Arnco Corp.	Rainbow Technology Corp.
Dura-Line Corp.	Rectorseal
Formulated Solutions LLC	Robinette Inc., DBA Electro Compounds Co.
Compound Co.	Thomas & Betts Corp.
Greenlee Textron	
Ideal Industries Inc.*	

*Yellow 77 not recommended for use with UniShield® cables.

For LSZH jacketed cable, consult with pulling compound manufacturers.

Other wire pulling compounds may be suitable for use with General Cable constructions. Contact the wire pulling compound manufacturer regarding the suitability of their products with specific General Cable products.



Phone: 888-593-3355
www.generalcable.com

DC “HI-POT” Pre-Test Guidelines for MV Cables

The test voltage should be increased in steps of 10 kV, or minimum of 5 steps. The duration at each step should be long enough for the current to reach a steady value (1 minute suggested). The test current will momentarily increase for each voltage increment due to charging of the capacitance and the dielectric absorption characteristics of the insulation. Stabilized current should be recorded at each step.

The maximum test voltage should be maintained for 15 minutes (new cable, shielded) / 5 minutes (non-shielded). Leakage current should be recorded each minute after the maximum test voltage has been reached.

Increase of leakage current at any step point may be an indication of a cable insulation problem. Failure of the cable or cable accessories may result unless the voltage is rapidly reduced.

Otherwise, the leakage current should stabilize after about 5 minutes. Leakage current is essentially a function of the construction and length of cable but it can be influenced by the test conditions (wind and humidity) as well as the test apparatus (leads).

Typical leakage currents in the order of 100 – 150 microamperes or higher are not unusual. A defective installation is identified by increasing leakage current with time, at a fixed DC voltage.

All testing should be performed by qualified personnel taking all appropriate safety precautions.

DC “HI-POT” Testing Guidelines for MV Cables

DC High Potential (HI-POT) Testing of Medium-Voltage Power Cable

Overview

This procedure is intended to provide general guidelines for high potential DC testing of power cables.

All tests made after cable installation and during the guarantee period shall be made in accordance with applicable specifications.

All safety precautions must be observed during testing at high voltage.

Read and understand and follow the Operator’s Manual for the particular test set being used!

Test Equipment

Direct current test equipment is available commercially with a wide range of voltages. Accessory equipment necessary to safely conduct high voltage tests—such as safety barriers, rubber gloves and nonconducting hard hats—must be used; consult appropriate safety officer.

Test Procedures

See IEEE Standard 400 Article 5 Direct Voltage Testing. Acceptable procedures, although varying slightly in technique, have more or less been standardized as either a “withstand test” or a “time-leaking current test.”

Before performing any DC overpotential tests:

- All equipment must be disconnected from the cable circuit, i.e., taps, motors, circuit breakers, surge arrestors, etc. This will preclude damage to such equipment and will prevent test interruptions due to flashovers and/or trip-outs resulting from excessive leakage current.
- Establish adequate clearance between the circuit test ends and any grounded object, and to other equipment not under test (about 2.5 feet).
- Ground all circuit conductors not under test with all cable shields including nearby equipment.
- Consult termination manufacturers for maximum test voltage recommendations and time limitations.

The direct current test voltage may be applied either continuously or in predetermined steps to the maximum value in accordance with applicable specifications.

- **Continuous Method** – Apply test voltage at an approximate rise rate of 1 kV per second or 75% of the rated current output of the equipment, whichever is less. Some equipment will take longer to reach the maximum test voltage because of the amount of charging current.
- **Step Method** – Apply test voltage slowly in 5 to 7 increments of equal value to the maximum specified. Allow sufficient time at each stop for the leakage current to stabilize.

HI-POT TESTING PROCEDURES

Normally this requires only a few seconds unless cable circuits of high capacitance are involved.

Record leakage current at each step.

Maintain the test voltage at the prescribed value for the time designated in applicable specifications. The following times are usually considered adequate: at the end of the test period, set the test set voltage control to zero, allow the residual voltage on the circuit to decay, then ground the conductor just tested.

CAUTION

It should be recognized that DC charges on cable can build up to potentially dangerous levels if grounds are removed too quickly. Maintain solid grounds after the test on the cable for at least 4 times the duration of the test. On exceptionally long cable lengths, it may be necessary to increase the grounding time. It is advantageous to maintain these grounds longer and while reconnecting circuit components.

- **Acceptance Testing** – After installation and before the cable is placed in regular service, the specified test voltage shall be applied for **15 consecutive minutes**.
- **Proof Testing** – At any time during the period of guarantee, the cable circuit may be removed from service and tested at a reduced voltage (normally 65 percent of the original acceptance value) for **5 consecutive minutes**.
- Record the leakage current at one minute intervals for the duration of the test time involved.

DC “HI-POT” Testing Guidelines for MV Cables

DC High Potential (HI-POT) Testing of Medium-Voltage Power Cable

Comments

The significance of conducting DC high-voltage tests on nonshielded, nonmetallic-sheathed cable is dependent upon the environment in which it is installed because the characteristics of the return circuits are unknown. The environment must be carefully considered or test results may not be significant. In fact, these tests can result in damage to the cable insulation.

Humidity, condensation and actual precipitation on the surface of a cable termination can increase the leakage current by several orders of magnitude. Humidity also increases the corona current, which indication is included in the total leakage current. Wind prevents the accumulation of space charges at all bare energized terminals.

This results in an increase of corona. It is most desirable to reduce or eliminate corona current at the bare metal extremities of cable or terminations. This may be accomplished by covering these areas with plastic envelopes, plastic or glass containers, plastic wrap or suitable electrical putty.

Routine periodic DC maintenance testing of cable for the evaluation of the insulation strength is not a common practice. Some power cable users have adopted a program of testing circuits during planned outages, preferring possible breakdowns during testing rather than experiencing a service outage. It is nearly impossible to recommend test voltage values for those maintenance tests with the history of the cable circuit. An arbitrary test voltage level could break down a cable circuit that would otherwise render long trouble-free service at normal operating AC voltage.

The main usefulness of DC high-voltage testing is to detect conducting particles left on the creepage surface during splicing or termination.

Test equipment should be supplied from a stable, constant voltage source. Do not use the same source that is supplying arc welders or other equipment causing line voltage fluctuations. The output voltage of the test set must be filtered and regulated. Consider using a portable, motor-driven alternator to energize the test set.

The gradual decrease or non-increase of leakage current with respect to time at maximum test voltage is the acceptance criteria for DC HI-POT testing.

Testing Problems

Extra Leakage Current:

- Failure to guard against corona
- Failure to clean insulation surface
- Failure to keep cable ends dry
- Failure to provide adequate clearance to ground
- Improper shield termination

Erratic Readings:

- Fluctuating voltage to test set
- Improper test leads

Environmental Influences:

- High relative humidity
- Dampness, dew, fog
- Wind, snow

Results vs. Cable Life

To date there is no basis for correlation between DC test results and cable life expectancy.

Field Electrical “HI-POT” Testing Guidelines

Acceptance Testing

Acceptance testing is performed to detect any defects in cable insulation and terminations which may have resulted from poor workmanship or mechanical damage. This proof test confirms the integrity of the insulation and accessories before the cable is placed into service.

After installation and before the cable is placed in regular service, the test voltages specified in the ICEA S-97-682 Table should be applied for 15 consecutive minutes. Record the leakage current at one minute intervals for the duration of the test.

ICEA DC Field Test Voltages
ICEA S-97-682 Utility Shielded Power Cables Rated 5,000-46,000 Volts

Rated Voltage Phase- to-Phase (kV)	Conductor Size		Nominal Insulation Thickness (Insulation Level)				Maximum DC Field Test Voltages (kV)			
							During or After Installation		First 5 Years	
	AWG/kcmil	mm ²	100%		133%		100%	133%	100%	133%
			mils	mm	mils	mm				
5	8 - 1000	8.4 - 507	90	2.29	115	2.92	28	36	9	11
	> 1000	> 507	140	3.56	140	3.56				
8	6 - 1000	13.3 - 507	115	2.92	140	3.56	36	44	11	14
	> 1000	> 507	175	4.45	175	4.45				
15	2 - 1000	33.6 - 507	175	4.45	220	5.59	56	64	18	20
	> 1000	> 507	220	5.59						
25	1 - 2000	42.4 - 1013	260	6.60	320	8.13	80	96	25	30
28	1 - 2000	42.4 - 1013	280	7.11	345	8.76	84	100	26	31
35	1/0 - 2000	53.5 - 1013	345	8.76	420	10.7	100	124	31	39
46	4/0 - 2000	107.2 - 1013	445	11.3	580	14.7	132	172	41	54

DC test voltages are applied to discover gross problems such as improperly installed accessories or mechanical damage. DC testing is not expected to reveal deterioration due to aging in service. There is some evidence that DC testing of aged cross-linked polyethylene cables can lead to early cable failures. Information on this subject is available in EPRI project report TR-101245, “Effect of DC Testing in Extruding Cross-Linked Polyethylene Insulated Cables.”

Dimensions and weights are nominal; subject to industry tolerances.

CCW® Sheath as a Grounding Conductor

CCW® DIAMETER INCHES	ALUMINUM CROSS- SECTIONAL AREA kcmil	EQUIVALENT ALUMINUM CONDUCTOR	CCW® 10 CYCLE FAULT CAPABILITY* (kA)
0.49	26.39	6	2.84
0.53	30.79	6	3.32
0.58	33.46	5	3.60
0.62	35.19	5	3.79
0.67	39.58	5	4.27
0.71	43.98	4	4.74
0.75	47.50	4	5.11
0.80	51.89	4	5.59
0.84	55.42	3	5.97
0.89	58.94	3	6.35
0.93	61.58	3	6.64
0.97	65.97	3	7.11
1.02	66.85	2	7.21
1.06	69.49	3	7.49
1.11	94.56	1	10.19
1.15	98.96	1	10.67
1.19	101.16	1	10.90
1.24	104.46	1	11.26
1.29	108.86	1/0	11.73
1.34	123.75	1/0	13.33
1.37	132.32	1/0	14.26
1.42	136.00	2/0	14.66
1.47	142.13	2/0	15.32
1.51	145.80	2/0	15.71
1.60	174.26	3/0	18.75
1.64	179.67	3/0	19.36
1.69	185.07	3/0	19.95

CCW® DIAMETER INCHES	ALUMINUM CROSS- SECTIONAL AREA kcmil	EQUIVALENT ALUMINUM CONDUCTOR	CCW® 10 CYCLE FAULT CAPABILITY* (kA)
1.75	206.72	3/0	22.28
1.85	209.67	3/0	22.60
1.90	220.01	4/0	23.71
1.96	233.29	4/0	25.14
2.03	257.96	250	27.80
2.15	291.60	250	31.43
2.28	310.83	300	33.50
2.32	314.03	300	33.85
2.40	355.94	350	38.36
2.45	362.85	350	39.11
2.53	371.49	350	40.04
2.58	378.40	350	40.78
2.62	387.04	350	41.72
2.75	407.78	400	43.94
2.85	454.12	400	48.94
2.98	474.51	400	51.15
3.03	483.77	400	52.14
3.11	491.19	400	52.94
3.16	502.31	500	54.14
3.32	530.11	500	57.13
3.41	537.53	500	57.93
3.63	559.77	550	60.33
3.67	578.30	550	62.32
3.80	598.69	550	64.53
3.98	630.20	600	67.92
4.10	650.59	650	70.12

*Short Circuit Capacity based on ICEA P-45-482

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