

Pneumatic Valves and Cylinders





**Where Process
and Product
Converge
to Achieve
Optimum
Results.**

Welcome to the ARO® Zone.

The place where your production processes and our engineered products “converge to achieve optimum results”. But beyond process and product there is a third essential element that makes the “zone” a very real place: the ARO Fluid Power Distributor. To make the leap from acceptable to optimum results it takes in-depth, working knowledge of both process and product. Your ARO Fluid Power Distributor knows both, and it's this knowledge and expertise, not hype, that will usher you and your operation into this new dimension of productivity. The ARO-Zone. . . get into it!



Module/Air 2000 Regulator and Stacking ALPHA Valves control Provenair Cylinders in a metal fab shop



Provenair and Microair Cylinders used to join plastic components.





Secondary
Operation

Device inserts metal bolts into plastic components



Wood
working

Alpha Valves control cylinders on a banding mechanism



Operator
Safety

Two-hand Anti-Tie Down keeps operators hands clear of clamp and press assembly operation



Commercial
Laundry

Valves on a laundry sorter operate under high ambient heat/humidity conditions



Commercial
Laundry



Packaging

Economair Cylinder (enclosed) removes underweight product from line.



Tube
Bending

Provenair Cylinders used on a tube bending fixture



Wood
Working

Provenair Cylinders advance routers on this automated machine



Flow
Control

Model FO2 flow control is adjusted to control cylinder retract speed

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Descriptions

Sierra Series

Compact 2-position, 4-way valves that are lightweight, yet durable. 15mm or 18mm wide. Body ported or sub-base mounted. Single and double solenoids available. M5 (10-32) and 1/8" ports.

MaxAir Series

4-way air solenoid, pilot and hand lever valves feature excellent flow in a compact, lightweight package.



Alpha Series

High flow, 2-and-3-position, 4-way valves that are compact in size with many features. The family includes: Body Threaded, Stacking, Bar Manifold and Assembled Manifold. Single and double solenoids, or pilot actuators are available. 1/8", 1/4" and 3/8" ports.

Genesis Series

Manifold mounted, 4-way valves that meet ISO 5599-1 & -2, Size 1 specifications for both domestic and international applications. Available in 2-and-3-position, solenoid and pilot actuators. Plug-In design means easy, uncluttered, unexposed wiring. 1/4" and 3/8" ports.

Cat Series

Small, 3-way solenoid valves. Perfect for small bore, single acting cylinders and electric to air interfacing applications. Body ported for stand alone applications, stacking or base manifold. Available as normally open or normally closed. 1/8" and 1/4" ports.

50 Series

3-way and 4-way body ported valves. Six manual, mechanical and pilot actuator styles available. 1/8" ports.

E-Series

3-way and 4-way body ported valves. Nine manual, mechanical, pilot and solenoid actuator styles available. 1/4" ports.

K-Series

Manual, Pilot and Solenoid, heavy duty 4-way valves. Available as body threaded or bottom ported for stand alone sub-base. Seven actuator styles available. Manual: 3/8" and 1/2" ports. Solenoid and Pilots: 3/8", 1/2", 3/4" and 1" ports.

H-Series

High flow 3-and-4-way function Poppet valves. Available in solenoid, pilot and bleed actuators. 1/4", 3/8" and 1/2" ports.

SIERRA™

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SERIES MAXAir

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Accessories

Accessory Valves

- 100 Series - 3-way N.C., miniature limit valves.
- 200 Series - 3-way limit valve-ideal for sensing devices such as cylinders, slides and gates.
- 400 Series - Heavy duty 3-way limit valves, 4 actuator arms available.
- 460 Series - 3-way palm button valves.
- The 200, 400 and 460 are multipurpose valves, plumb N.O., N.C., diverter, and selector.
- In line and right angle flow controls, in line needle and check valves.



200 Series Valve



460 Series Valve

Valve Accessories and Special Valves

- Bleed valves: manual button and pilot operated.
- Quick exhaust valves for enhancing cylinder speed.
- One shot pulse valve to convert continuous air supply to a momentary output.
- Shuttle valves operate as a check when two inlets are required.
- Micro switch converts pneumatic signal into an electric signal.
- Exhaust mufflers, exhaust speed controls, breather vents.



Quick Exhaust Valve



Exhaust Muffler

Pneumatic Logic Controls

- Two-hand anti-tie-down unit for monitoring operators hands during work cycle.
- Pneumatic pulse and delay timers for use in simple valve circuitry.
- Pneumatic counters.



2-Hand Anti-Tie Down

Descriptions

Series 01 Micro-Air™ Cylinders (1/2" thru 1-1/8" bore)

Micro-Air Cylinders, small bore, repairable, double-acting cylinders, are designed for light duty applications. Available in 1/2, 3/4, and 1-1/8 inch bore sizes. Operate on air pressure to 200 PSI, generating thrusts from 4.9 to 199 pounds. They are available in stroke lengths up to 6 inches and in several mounting styles. For more information, see pages 84 through 87.



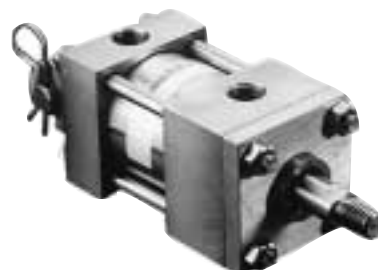
Series S Silverair™ Cylinders (1/2" thru 2-1/2" bore)

Silverair Cylinders, small and medium bore, disposable, single- and double-acting cylinders are designed for light duty applications. Available in bore sizes from 1/2 inch to 2-1/2 inches. Operate on air pressures to 200 PSI, generating thrusts up to 982 pounds. For more information, see pages 88 through 100.



Series 23, 24 & 28 Economair® Cylinders (1-1/8" thru 4" bore)

Economair Cylinders, round line repairable cylinders, are designed for medium to heavy-duty use in a wide range of applications. Available in 1-1/8 to 4-inch bore sizes. Operate on air pressure to 200 PSI, generating thrusts from 25 to 2,513 pounds. Available as double-acting, with optional cushions, magnetic pistons or double rod ends. O-ring seals are standard. U-cup or low friction seals are optional. A variety of mounts are available to meet a wide range of application requirements. For more information, see pages 101 through 106.



Series AN & SN Provenair® Cylinders (1-1/2" thru 10" bore)

Provenair Cylinders are NFPA interchangeable square head cylinders designed for rugged use. Available in 1-1/2 to 10-inch bore sizes. They operate on air pressure up to 250 PSI, generating thrusts up to 3,141 pounds. They are available as double-acting, with optional cushions, magnetic pistons and/or with double rod ends. A broad selection of NFPA standard mounts makes them dimensionally interchangeable with other NFPA cylinders. For more information, see pages 107 through 118.

Accessories

Mounts

Micro-Air™

Silverair™

Economair®

Provenair® (1-1/2 thru 10-inch bore)

Provenair® Stainless Steel (1-1/2 thru 8-inch bore)



Mounts

Rod End Accessories

Micro-Air™

Silverair™

Economair®

Provenair® (1-1/2 thru 10-inch bore)



Rod End Accessories

Alignment Couplers

Switches, Cylinder Mounted

Flow Control Valves

Volume Chambers

Repair Kits



Alignment Couplers



Electrical Switches



Right Angle Flow Controls

Features At Last. A Miniature Valve with Maximum Range.

The Maximum Range of Valve Body Styles and Options

Choose from body-ported or base-mounted models.

Body-Ported:

- 2-position single and double solenoid models.
- Two wiring options: Lead Wire and Plug-In.
- Available in 120V AC or 24V DC.

Base-Mounted:

- 2-position single and double solenoid models.
- Standard (2-, 4-, 6-, 8-, 10-, 12-, and 16 stations) and Raceway (4-, 6-, 8-stations) models. 1/8" NPT (F).
- Stand-alone subbase (for 1-station) with M5 (10-32) or 1/8" NPT (F) ports.
- Two wiring (Lead-Wire, Plug-In) and three voltage (120V AC, 24V DC or 12V DC) options.

One-Touch Manual Valve Override (Standard)

Mechanical valve override can be operated in either of two ways: 1.) Nonlocking spring return push with tool. 2.) Push-and-twist to lock with tool.



SIERRA

Superior flow capacity, an unrivaled array of “real-world” design features and options, a valve body that is both ultra-compact and lightweight—yet exceptionally durable—this is **Sierra 15**, the miniature valve with the maximum range.

Ultra-Compact Valve Design

At only 15 mm wide, **Sierra 15** is the one compact valve that's going to fit your valve location requirements – with room to spare.

Durable Body Construction

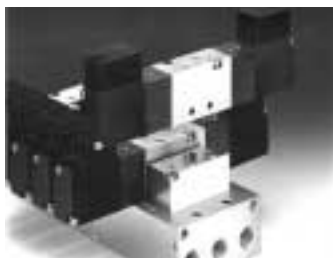
Sierra's body features bar stock aluminum construction, producing a light weight, yet durable valve.

Wiring and Voltage Options

Lead-Wire Style: Valve lead wires come stripped and preattached to the coil (NEMA 4). **Plug-In Style:** Valves come with molded plastic plugs for quick, clean wire connect and disconnect. Plug-in lead wires come stripped standard. Plug-in housings contain an integrated circuit with LED to provide visual indication when the solenoid is activated. The integrated circuit provides surge and reverse wiring protection (NEMA 2). All models are available in either 120V AC, 24V DC or 12V DC.

“Sandwich” Shut-Off Block Option

This unique shut-off mechanism installs in seconds and allows a valve to be removed without depressurizing the manifold...an important feature during set-up. See option description and ordering information on page 13.



“Sandwich” Shut-Off Block

Manifold Options

Manifolds are available in 2, 4, 6, 8, 10, 12 and 16-station configurations. Raceway circuit board and ribbon-type cable connectors (ribbon cable sold separately) provide a clean, quick and convenient alternative to conventional connection methods. See pages 9 & 12. Sierra manifolds are available with 1/8" NPT(F) ports. Sierra Valves and Manifolds are sold separately.



Raceway Manifold Wiring Option

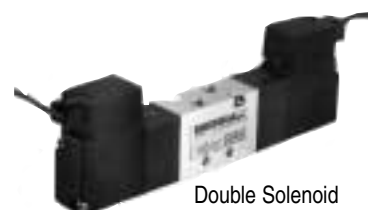
Performance Specifications

Pressure Range:	22 to 115 PSI (0.8 M pa)
Shift Pressures:	22 PSI Single or Double-Solenoid
Flow:	9 SCFM, .25 Cv
Operating Medium:	Compressed Air
Lubrication:	None Required
Cycle Rate:	120 Cycles Per Minute
Temperature Rating:	0° to 122°F (-17° to 50°C)
Signal Response Time:	14 ms
Rated Voltage:	120V AC, 24V DC and 12V DC
Current Ratings:	120V AC = 16 mA in-rush; 11 mA holding 12V DC & 24V DC = 67 mA
Power Consumption:	2.1/1.8 VA 1.6 W

SIERRA



Single Solenoid
(Lead Wire Model)



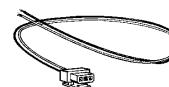
Double Solenoid
(Plug-In Model)

Ordering

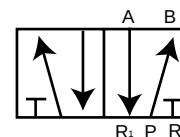
Sierra Valve Size	S5	X	S	M	X
Code Description	5 15 mm				
Number of Coils					
Code Description	S Single Solenoid, Spring Return				
	D Double Solenoid				
Valve Style					
Code Description	S Standard Solenoid Operator				
Body Style					
Code Description	M M5 (10-32)				

Coil Style/ Voltage

Code	Description
A	Lead Wire, 120V AC
B	Lead Wire, 24V DC
*C	Plug-In Wire, 120V AC
*D	Plug-In Wire, 24V DC
E	Lead Wire, 12V DC
F	Plug-In Wire, 12V DC
A, B & E	NEMA 4 Rating
C, D & F	NEMA 2 Rating



* 119356 Harness for use on plug-in wire valves. Needs to be ordered separately.



Low Profile Manifold

SML51N - XX

Sierra Manifold:

15mm valve low profile manifold with 1/8" Supply and Exhaust Ports

Number of Stations

Code	Description	Code	Description
02	2 Stations	10	10 Stations
04	4 Stations	12	12 Stations
06	6 Stations	16	16 Stations
08	8 Stations		



Sierra Valves on SML51N-02 Low Profile Manifold

NOTE: Low Profile Manifolds are for use with Body Ported Valves only. One gasket and two screws are provided per station.

Replacement Coils

Part Number	Description	Part Number	Description
119714-33	120 VAC Plug-In Wire	119715-33	120 VAC Lead Wire
119714-38	12 VDC Plug-In Wire	119715-38	12 VDC Lead Wire
119714-39	24 VDC Plug-In Wire	119715-39	24 VDC Lead Wire



119714-XX



119715-XX

Features

Base Mounted Valves

- Lead wire and plug-in style models, available in either 120 VAC or 24 VDC.
- Plug-in models feature integrated circuit with LED to indicate valve is energized and to protect against miswire and resultant valve damage. Integrated circuit also provides surge protection.
- Ultra-compact size (15 mm wide) with excellent flow (.25 Cv).
- Single and double solenoid models.
- “Sandwich” shut-off block option permits shutdown of an individual valve during set-up. See option description and ordering data on page 13.
- Aluminum bar stock valve bodies give an extra measure of valve durability.
- Standard one-touch override for nonlocking action, or push-and-twist to lock with a screwdriver.

Manifold

- Stand-alone Subbases available in M5 (10-32) or 1/8” NPT.
- Manifolds are available in 2, 4, 6, 8, 10, 12 and 16-stations, with 1/8” NPT ports.
- Manifolds can be retrofit for 4, 6 and 8-station raceway capability with a conversion kit. See “Valve Accessories” on page 12.

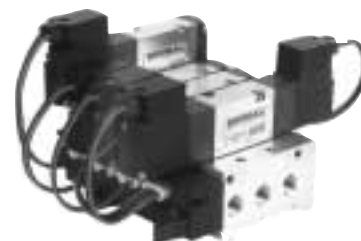
SIERRA



Plug-In Valve on
Stand-Alone Subbase



4-Valve, Plug-In Stack



4-Valve, Plug-In Stack
with Raceway Manifold

Performance Specifications

Pressure Range:	Vacuum to 115 PSI (0.8 M pa)
Shift Pressures:	22 PSI Single or Double-Solenoid
Flow:	9 SCFM, .25 Cv
Operating Medium:	Compressed Air
Lubrication:	None Required
Cycle Rate:	120 Cycles Per Minute
Temperature Rating:	0° to 122°F (-17° to 50°C)
Signal Response Time:	14 ms
Rated Voltage:	120V AC, 24V DC & 12V DC
Current Ratings:	120V AC=16 mA in-rush; 11 mA holding 12V DC & 24V DC = 67 mA
Power Consumption:	2.1/1.8 VA 1.6 W

Ordering



Base-Mounted Valves

Sierra Valve Size
Code **Description**
 5 15 mm

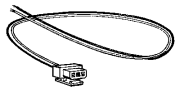
Number of Coils
Code **Description**
 S Single Solenoid, Spring Return
 D Double Solenoid

Valve Style
Code **Description**
 S Standard Solenoid Operator

Body Style
Code **Description**
 9 Base Mounted

Coil Style/ Voltage
Code **Description**
 A Lead Wire, 120V AC
 B Lead Wire, 24V DC
 *C Plug-In Wire, 120V AC
 *D Plug-In Wire, 24V DC
 E Lead Wire, 12V DC
 *F Plug-In Wire, 12V DC
 A, B & E NEMA 4 Rating
 C, D & F NEMA 2 Rating

When raceway option is used, requires a 119354 Single Solenoid or 119355 Double Solenoid Raceway Wiring Harness. See page 12.



* 119356 Harness for use on plug-in wire valves. Needs to be ordered separately.



Subbase

11936 X

Port Size
Code **Description**
 7 M5 Subbase (10/32" threads)
 8 1/8" Subbase



Sierra Valve on M5 Stand-alone Subbase

Manifold

SMH51 X - XX

Sierra Manifold:
 15mm valve with 1/8" Ports

Wiring Configuration
Code **Description**
 N Normal Manifold
 (Order Raceway separately , page 12.)

Number of Stations
Code **Description** **Code** **Description**
 02 2 Stations 10 10 Stations
 04 4 Stations 12 12 Stations
 06 6 Stations 16 16 Stations
 08 8 Stations



Manifold Close-Up

Replacement Coils

Part Number	Description	Part Number	Description
119714-33	120 VAC Plug-In Wire	119715-33	120 VAC Lead Wire
119714-38	12 VDC Plug-In Wire	119715-38	12 VDC Lead Wire
119714-39	24 VDC Plug-In Wire	119715-39	24 VDC Lead Wire



119714-XX



119715-XX



Accessories



Base-Mounted Valves

Raceway Manifold Conversion Kit

Converts Sierra manifolds with the simple installation of a raceway terminal circuit board.

119352-X

-4 = 4 station

-6 = 6 station

-8 = 8 station

Raceway Ribbon

Flat ribbon has wires running through it instead of an unsightly tangle of wires cluttering up the valve site. For 4, 6 or 8-station raceways. Mil Spec: C-83503, rated for 90 volts.

119353-X

-1 = 39" length (1 meter)

-3 = 117" length (3 meters)

Plug-In Valve Raceway Wire Harnesses

Harnesses have pin-type locking plug connector at one end and raceway plug at the other.

119354 Single Solenoid

119355 Double Solenoid



119353-X

119352-X



119355

119354



119395

Raceway Ribbon Connector Break-Out Box

119395 26-station junction box allows raceway manifold valves (through the 119353-X raceway ribbon) to be interfaced with a P.C. or other electronic command device. Current rating: 3A, U.L. Voltage Rating: 30V DC.

Additional Valve Accessories

119351 Blanking Plate

Gasketed metallic plate installs in minutes and caps off unused manifold ports. Order one plate per valve station.

119356 Plug-In Valve Wire Harness

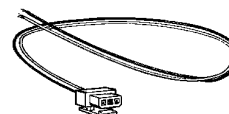
Two-wire (18") harness is prestripped at one end and has a pin-type, locking plug connector at the other. One harness per coil required when used on plug-in wire valve.

119375 Replacement Gasket/Fastener

Kit contains Valve Gasket, Block Gasket, Valve-to-Manifold Screw, Replacement Shut-Off Block to Manifold Screw, Replacement Raceway Screw and Replacement Manifold Blanking Plate.

119376 Pipe Plug Kit

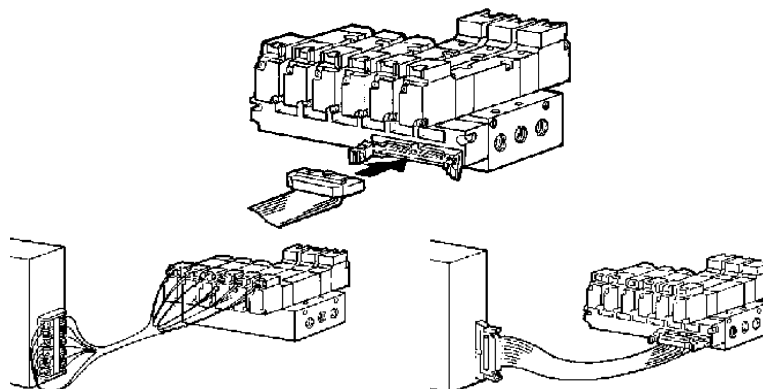
Contains 3 (ea.) 1/8" pipe plugs.



119356

Wiring Options

Sierra Manifolds with optional raceway are available with 4, 6 and 8-station capability. A special printed circuit board provides wiring to each valve. By using a flat ribbon-type cable, connection to external components such as sequence controllers becomes cleaner and easier. Sierra manifolds can be quickly converted to raceway manifolds with installation of the raceway conversion kit listed above.



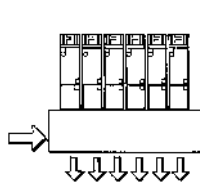
Conventional Wiring

Raceway with Ribbon Wiring

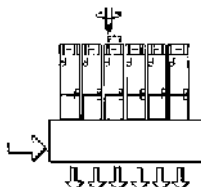
Ordering

119350 "Sandwich" Shut Off Block

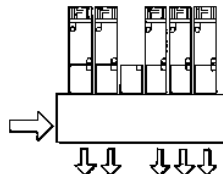
Allows a specific manifold valve to be removed without shutting down pressure to rest of the manifold.



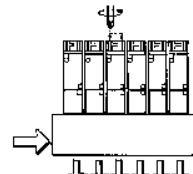
One Solenoid Valve needs to be replaced during set-up.



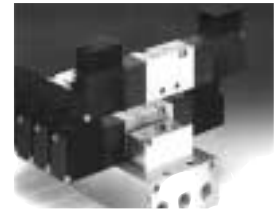
Loosen the valve's retaining screws and lift off valve.



Removing the valve automatically causes the Shut-Off Block to close the valve ports leading to the manifold.



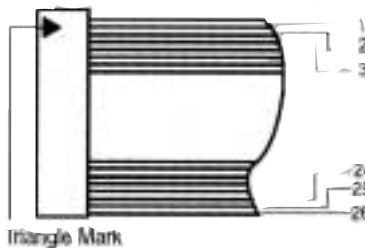
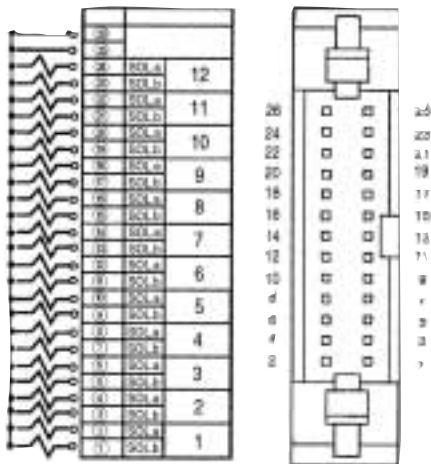
Replacing the valve automatically reopens the ports and reenergizes the new valve.



119350 "Sandwich" Shut-off Block for Manifold Valves

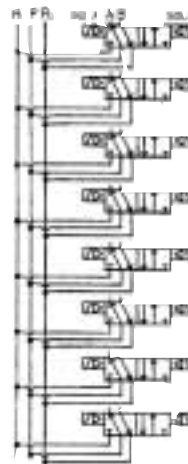
IMPORTANT: The Shut-off Block option is intended for machine setup convenience only. When performing routine maintenance on machinery, always observe proper lock-out/ tag-out procedures.

Wiring Methods

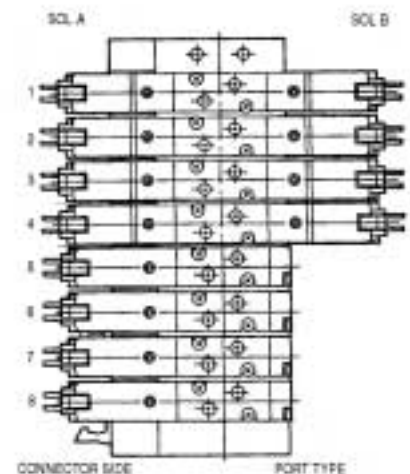


Cable Number Indication: Since there are no numbers on the connector indicating cable locations, proceed with hookup by following the triangle (▲) mark on the connector. Assuming the cable is marked 1, 2, 3, 4 up to 26, you can use the sample diagram provided below.

▲ Example • If over six stations, combine "common" stations.



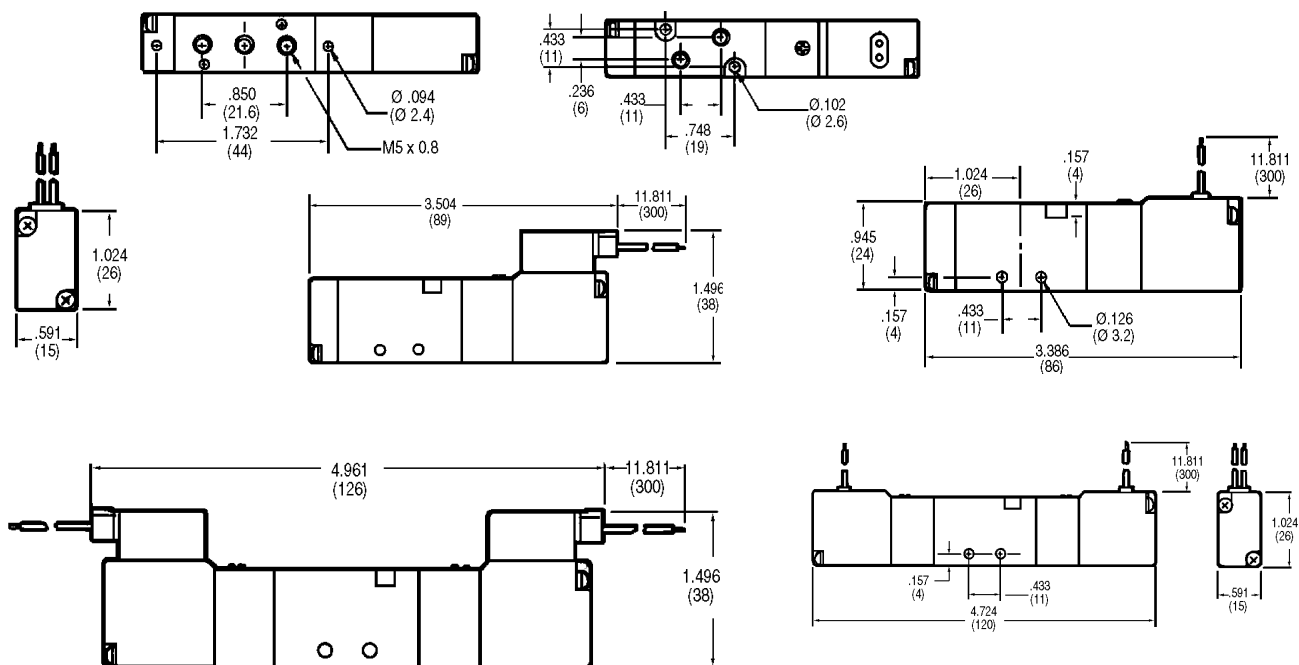
Concentrated Connector Method: To avoid unnecessary extra connections, use MIL-C-8350-3, 26-station flat-cable connector on the concentrated connector. This method allows for a single-cable connection, as well as a cleaner appearance.



Dimensional Data

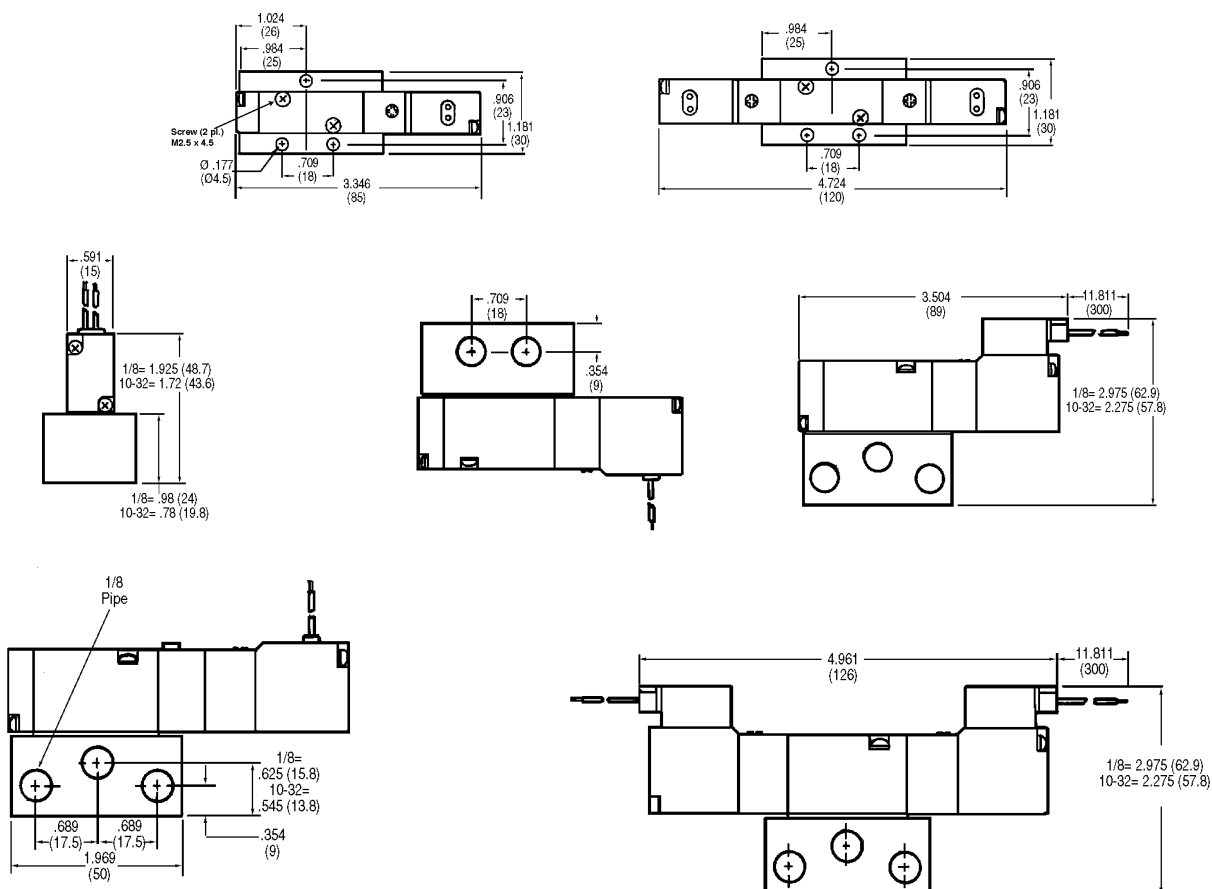


Single and Double-Solenoid Body Ported Valves



Single and Double-Solenoid Subbase Mounted Valves

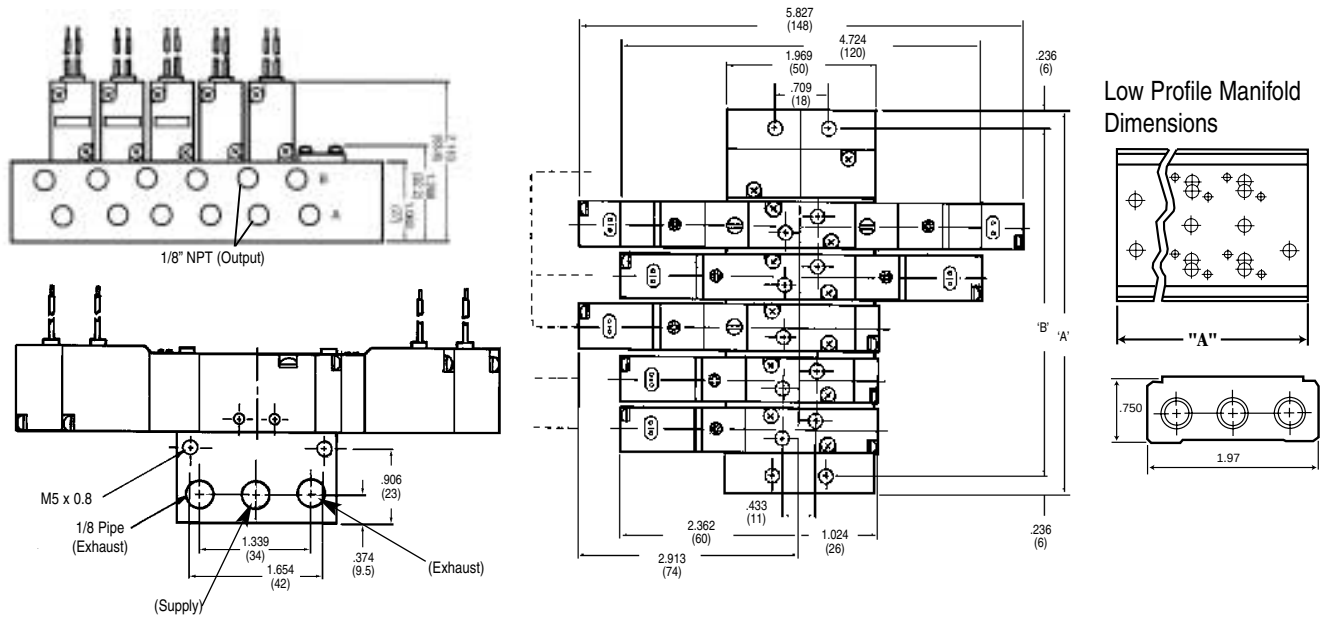
Dimensions apply to M-5 (10-32) and 1/8-inch port valves, except where noted. 1/8-inch port size shown.



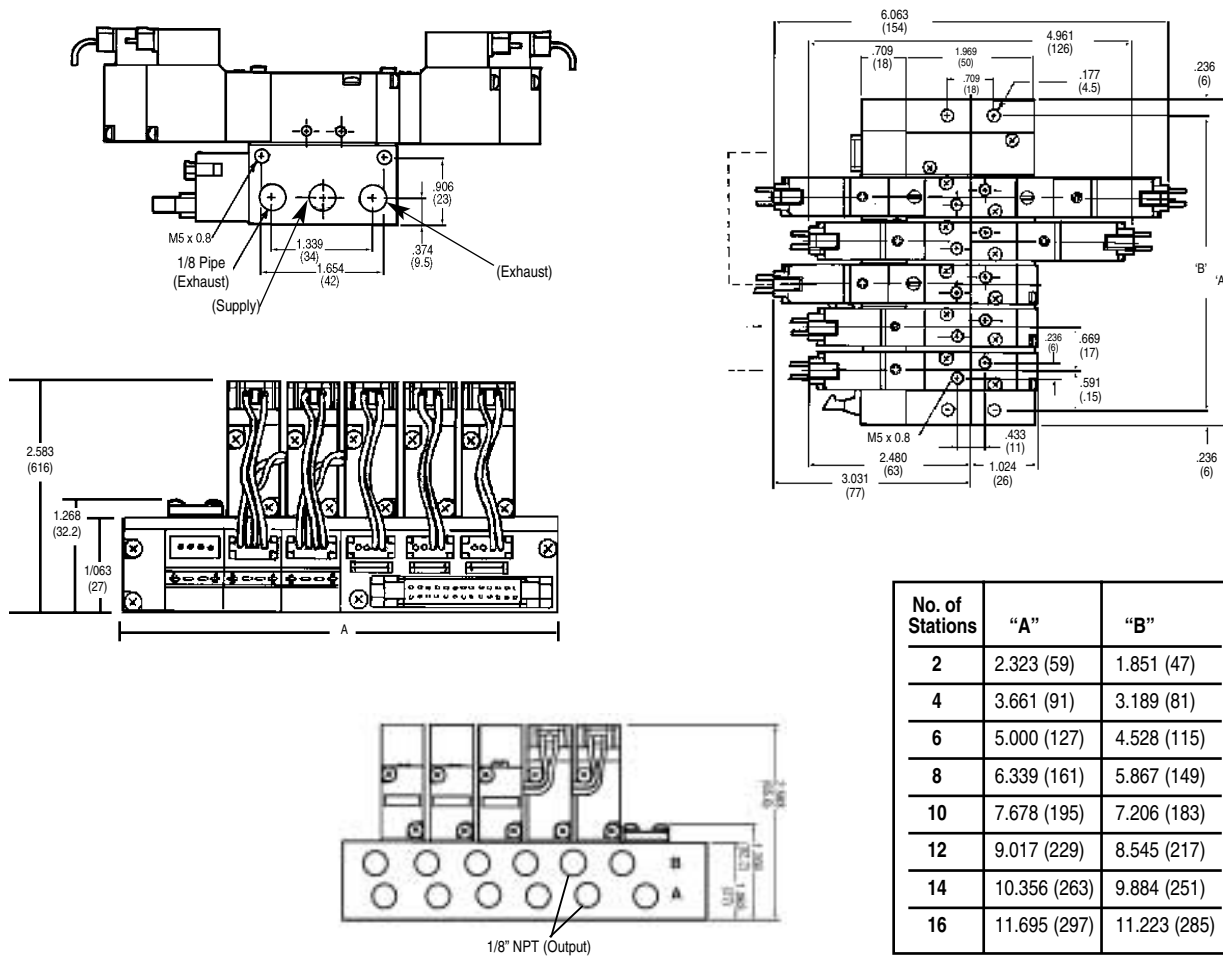
Dimensional Data

SIERRA™
VALVES

Lead-Wire Style Valves, 6-Station Manifold w/Blanking Plate



Plug-In Style Valves, 6-Station Manifold w/Blanking Plate



Features



Sierra® 18 (1/8" Ports) 4-Way, Compact Air Valves

18mm Wide Body and 1/8" Ports Fill The Bill Between Mini and Medium Flow Valves

Larger than its 15mm Sierra® counterpart yet smaller than the Alpha® valve, the Sierra 18 is the perfect fit for valve applications that require a compact, 4-way valve with plenty of options and features. The new Sierra 18 valves are equally ideal where fast signal response (18ms avg.) with moderate flow (.5 Cv, 3-position, .7 Cv 2-position) is required.

3-Position Spool Function Provides Wider Application Flexibility:

Sierra 18 offers three distinct, 3-position spool configurations for a wide variety of applications:

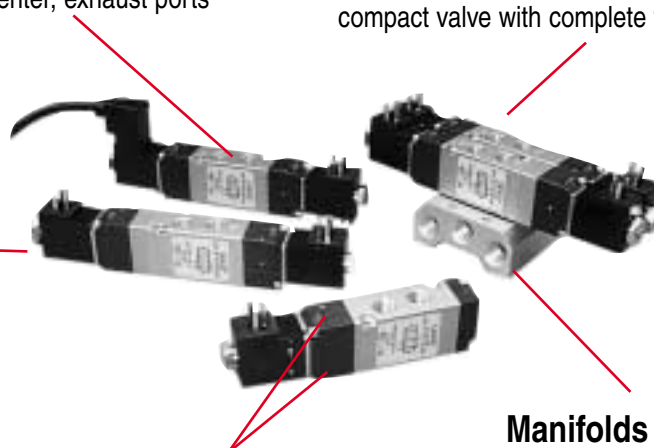
- All ports blocked in center
- Cylinder ports open to exhaust in center, supply blocked
- Cylinder ports pressurized in center, exhaust ports blocked

Choose Between Body-Threaded or Manifold - Mounted:

The Sierra 18 is a body - threaded valve that can be directly plumbed or manifold - mounted. Where there's a need for multiple valves in tight spots, especially in machine design operations, the Sierra 18 is the compact valve with complete flexibility and delivery.

Solenoid Coils and Connectors Provide Quick, Clean Connections:

Coils are Class F rated for 100% duty cycle applications at 122° F (50° C) . AC or DC coils can be interchanged on the same solenoid stem. Each Solenoid connector acts as its own junction box, with molded connectors and gaskets to protect electrical connections. Design meets NEMA-4 classifications.



One - Touch Manual Override (Standard):

Sierra 18 contains a mechanical valve override that can be tool-adjusted to a locking (push 'n twist) position or non-locking function.

Manifolds Available in 2, 4, 6, 8, 10, 12, and 16-Station Configurations.

Performance Specifications

Pressure Range:	115 PSI (7.8 bar)
Shift Pressure:	22 PSI
Flow:	30 SCFM .7 Cv (2-Position Valves) 21 SCFM .5 Cv (3-Position Valves)
Operating Medium:	Compressed Air
Cycle Rate:	120 Cycles Per Minute
Temp. Rating:	0° to 122° F (-17° to 50° C)
Lubrication:	None Required
Signal Response Time:	17ms (AC), 22s (DC)

Rated Voltage	Power Consumption		Current Draw	
	In-rush	Holding	In-rush	Holding
120 VAC	3.1 VA	2.2 VA	26 mA	18 mA
12 VDC	1.9 W	1.9 W	154 mA	154 mA
24 VDC	2.0 W	2.0 W	854 mA	85 mA

Ordering



Body Style

8 - 18mm Valve

Series

1 - 1/8" NPTF

Valve Type

- 2 - Two Position
- 3 - Three Position Spring Centered
(All Ports Blocked)
- 7 - Three Position Spring Centered
(Cylinder Ports Open to exhaust)
- A - Three Position Spring Centered
(Cylinder Ports Pressurized)

Coil Options

- A - Standard Coil AC
- D - Standard Coil DC
- N - No Coil

Coil Voltage

- 000 - No Coil
- 012 - 12 Volt DC
- 024 - 24 Volt DC
- 120 - 120 Volt AC

Operator

- SD - Double Solenoid
- SS - Solenoid/Spring

Manifold & Blanking Plate

Model

SML81N-02
SML81N-04
SML81N-06
SML81N-08
SML81N-10
SML81N-12
SML81N-16
114155

Description

2-Station Manifold
4-Station Manifold
6-Station Manifold
8-Station Manifold
10-Station Manifold
12-Station Manifold
16-Station Manifold
Blanking Plate



Connector & Coil

Model

CHL6-012
CHL6-024
CHL6-120
CHW6
CSL6-012
CSL6-024
CSL6-120
CSN6
114153-33
114153-38
114153-39
114138-33
114138-38
114138-39

Description

12 VDC molded cable
connector w/indicator light, 39" leads
24 VDC molded cable connector w/
indicator light, 39" leads
120 VAC molded cable connector w/
indicator light, 39" leads
16 mm molded cable connector, 39"
leads
12 VDC strain relief connector w/
indicator light, 39" leads
24 VDC strain relief connector, w/
indicator light, 39" leads
120 VAC strain relief connector, w/
indicator light, 39" leads
16 mm, strain relief connector
120 VAC, lead wire coil
12 VDC, lead wire coil
24 VDC, lead wire coil
120 VAC, standard coil
12 VDC, standard coil
24 VDC, standard coil



CHL6-120

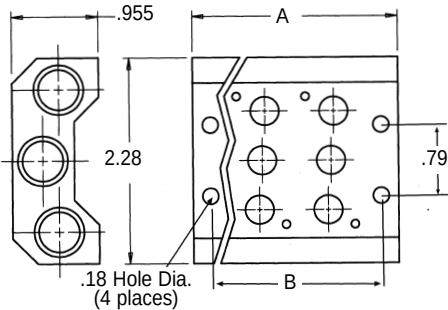
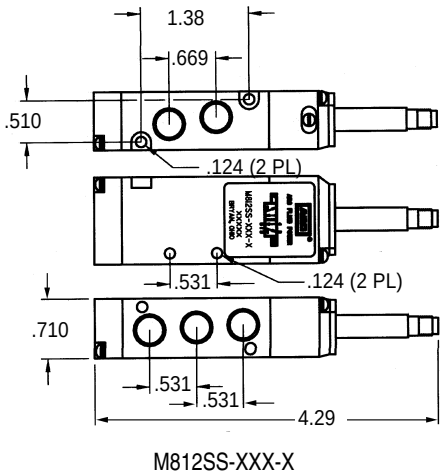


CHW6

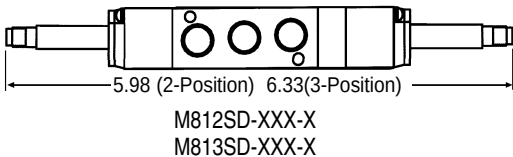


CSN6

Dimensional Data



	A	B
2-Station	2.24	1.85
4-Station	3.74	3.35
6-Station	5.24	4.84
8-Station	6.73	6.34
10-Station	8.23	7.84
12-Station	9.72	9.33
16-Station	11.22	10.83



Features

SERIES MAXAir

4-Way Air Solenoid & Pilot Valves 1/4", 3/8" & 1/2" NPT Ports

- Ideal for packaging, material handling and air motor applications
- Ideal for double acting pneumatic cylinders
- Compact size with excellent flow capacity
- Single and double solenoid or pilot models
- Three voltages available 120 VAC, 12 and 24 VDC
- Lightweight aluminum bodies and Buna-N seals are standard
- Manifold mounting available, blanking plates provided for future expansion
- Max/Air valves use Alpha style 22mm coil
- 1/4" = 26 mm Body Size
- 3/8" = 30 mm Body Size
- 1/2" = 34 mm Body Size

3-Position Spool Function Provides Wider Application Flexibility:

MaxAir offers 3-position spool configuration with all ports blocked in center.

Solenoid Coils and Connectors Provide Quick, Clean Connections:

Coils are Class F rated for 100% duty cycle applications at 122° F (50° C) . AC or DC coils can be interchanged on the same solenoid stem. Each Solenoid connector acts as its own junction box, with molded connectors and gaskets to protect electrical connections. Design meets NEMA-4 classifications.



One - Touch Manual Override (Standard):

MaxAir contains a mechanical valve override that can be adjusted to a locking (push 'n twist) position or non-locking function.



Choose Between Body-Threaded or Manifold - Mounted:

MaxAir is a body - threaded valve that can be directly plumbed or manifold - mounted. Where there's a need for multiple valves in tight spots, especially in machine design operations. Manifolds Available in 2, 4, 6, 8, 10, and 12 Station Configurations.

Ordering

Valve Type*	Body Style	Port Size	Actuator/Return	Coil Voltage	Coil Options
2=2 Position 3=3 Position All Ports Blocked Spring Centered (Sol. & Pilot Only)	1=4 Way Side Ported	2=1/4" NPT 3=3/8" NPT 4=1/2" NPT	SS=Single Solenoid/Spring SD=Double Solenoid PS=Pilot / Spring* PD=Pilot / Double*	000=No Coil 012=12 VDC 024=24VDC 120=120VAC	N=No Coil A=AC D=DC

* Model number ends here on pilot activated valves.

Performance Specifications

C_v (Solenoid) (Pilot)	1/4 = .70, 3/8 = 1.65, 1/2 = 4.32
Port Size NPT	1/4", 3/8", 1/2"
Operating Medium	Non-Lubricated or Lubricated Air
Pres. Range (Solenoid)	45 - 115 PSI
Pres. Range (Pilot)	45 - 140 PSI
Duty Cycle	100%
Temp. Range	15° to 122° F (-10° to 50° C)

Minimum Shift Pres.

2 position single pilot, single solenoid, spring return - 45 PSI
2 position double pilot - 45 PSI
2 position double solenoid-20 PSI
3 position double solenoid, double pilot, spring centered - 45 PSI

Ordering

SERIES MAXAir

Manifold

No. of Stations	1/4" NPT Ports	3/8" NPT Ports	1/2" NPT Ports
2	M26M02-02	M30M03-02	M34M04-02
4	M26M02-04	M30M03-04	M34M04-04
6	M26M02-06	M30M03-06	M34M04-06
8	M26M02-08	M30M03-08	M34M04-08
10	M26M02-10	M30M03-10	M34M04-10
12	M26M02-12	M30M03-12	M34M04-12



Manifold Kits

Kits include: manifold, seals and valve attaching hardware

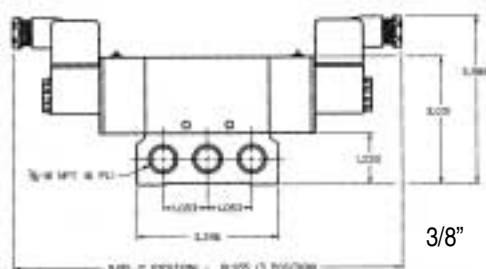
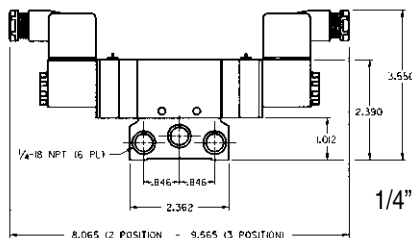
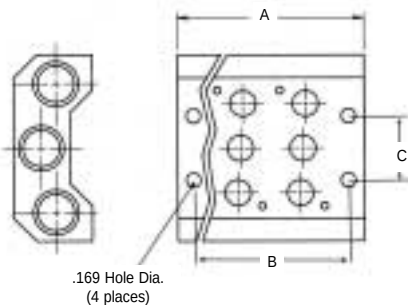
Blanking Plate Kit

M26MB Fits 1/4" (26 mm) manifolds

M30MB Fits 3/8" (30 mm) manifolds

M34MB Fits 1/2" (34 mm) manifolds

Dimensional Data



22mm Connector

Model	Description
CHW	Straight connector with cable (36") located on top
CBW	Straight connector with cable (36") located on back
CHL-XXX	Straight connector (36") with indicator light located on back.
CSN	Strain relief, without indicator light or cable.
CSL-XXX	Strain relief, with indicator light located on the back.
CDN	1/2" conduit without light or lead wire
CDW	1/2" conduit without light, 18" lead wire
CDL-XXX	1/2" conduit with light, 18" lead wire



CHW



CBW



CHL-XXX



CSN, CSL-XXX

CDN, CDW
CDL-XXXX

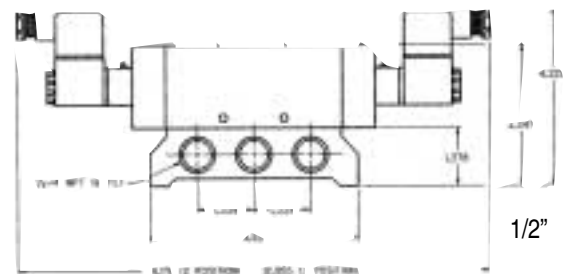
Voltage (-XXX)

012 = 12 VDC/VAC

024 = 24 VDC/VAC

120 = 120 VDC/VAC

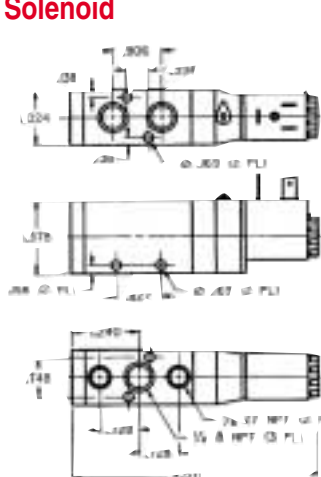
Stations	1/4"			3/8"			1/2"		
	A	B	C	A	B	C	A	B	C
2	3.189	2.638	0.866	3.661	3.031	1.063	4.134	3.346	1.181
4	5.315	4.764	0.866	6.101	5.471	1.063	6.890	6.102	1.181
6	7.441	6.890	0.866	8.541	7.911	1.063	9.646	8.858	1.181
8	9.567	9.016	0.866	10.981	10.351	1.063	12.402	11.614	1.181
10	11.693	11.142	0.866	13.421	12.791	1.063	15.158	14.370	1.181
12	13.819	13.268	0.866	15.861	15.231	1.063	17.914	17.126	1.181



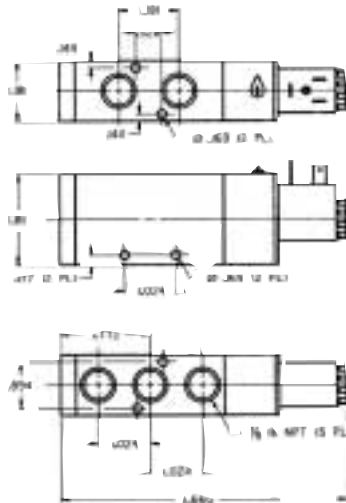
Dimensional Data

Solenoid

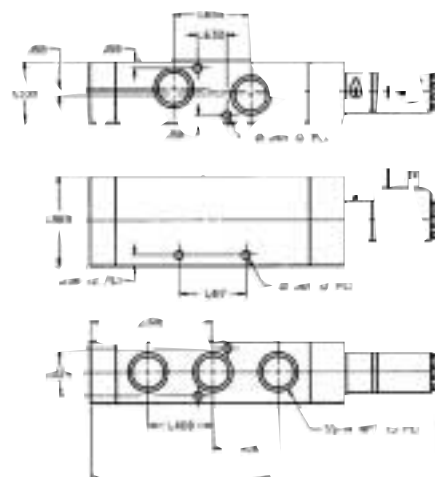
SERIES **MAX** **Air**



M212SS

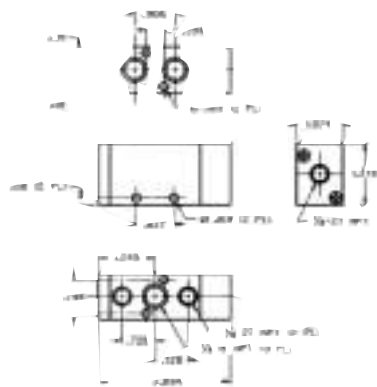


M213SS

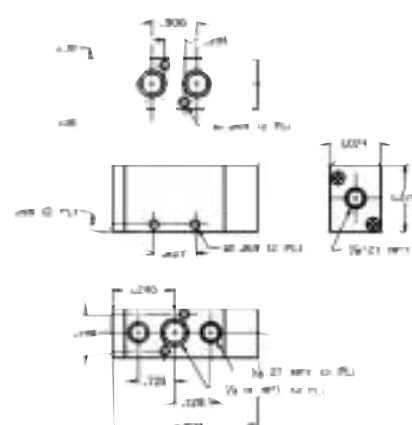


M214SS

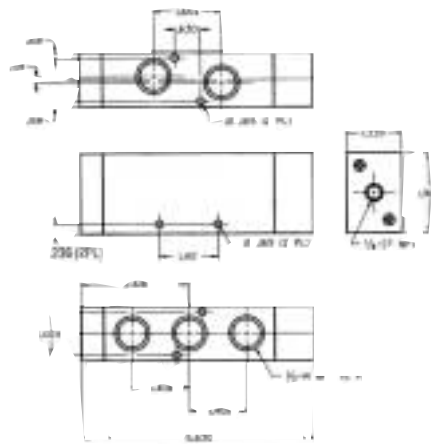
Pilot



M212PS

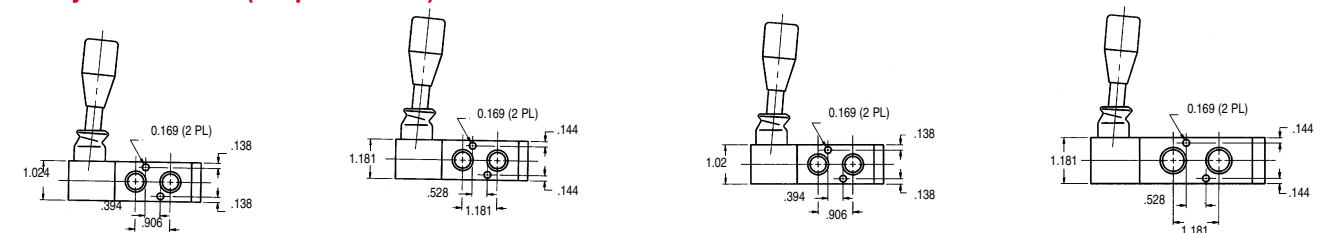


M213PS

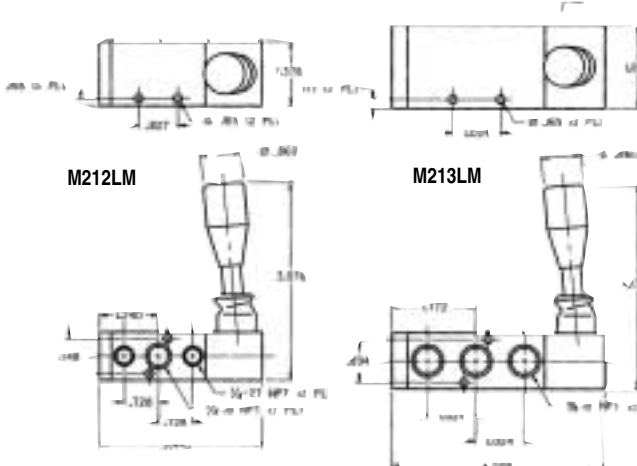


M214PS

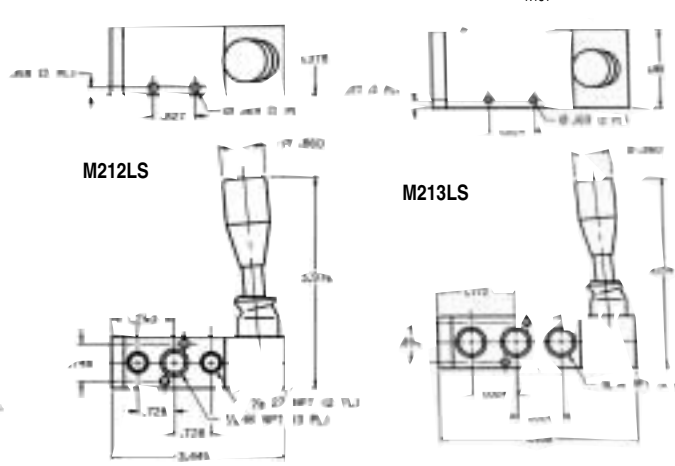
4-Way Hand Lever (Perpendicular)



M212LM



M213LM



M212LS

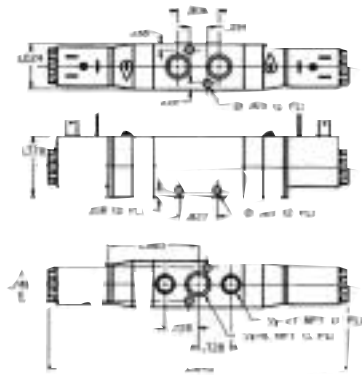
M213LS

Dimensional Data

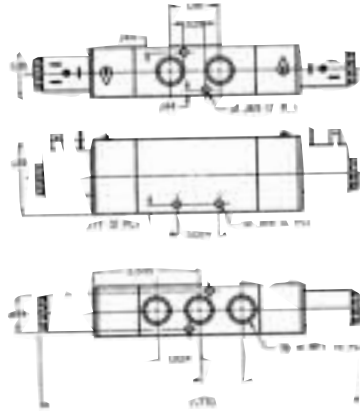
Solenoid

SERIES **MAX**Air

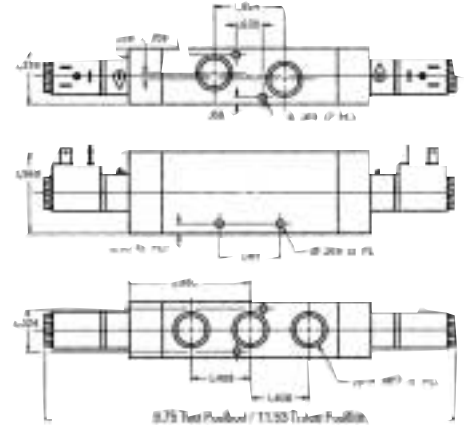
VALVES



M212SD
M312SD

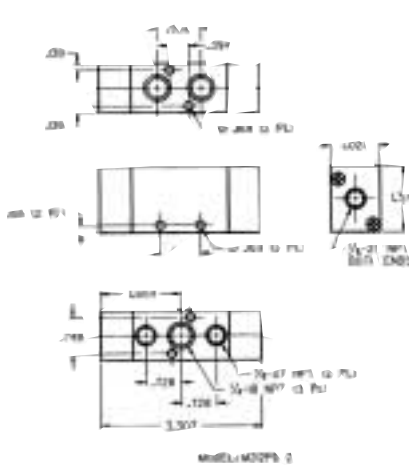


M213SD
M313SD

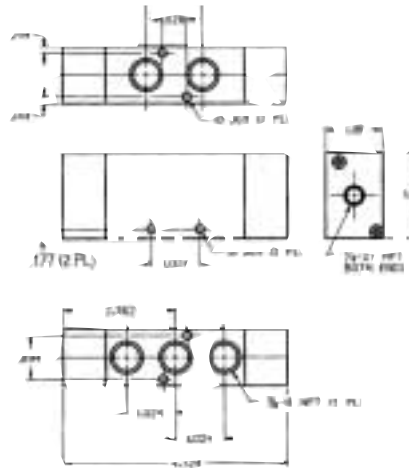


M214SD
M314SD

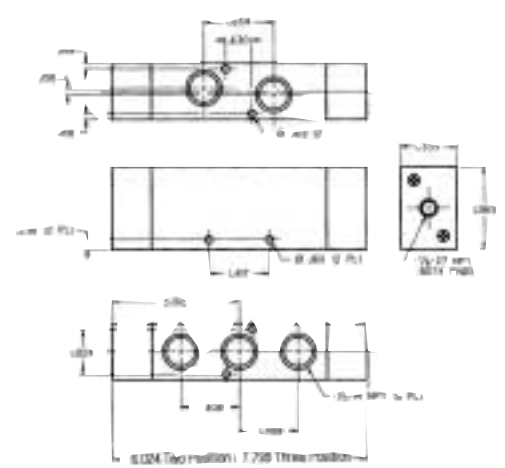
Pilot



M212PD
M312PD

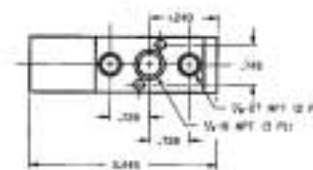
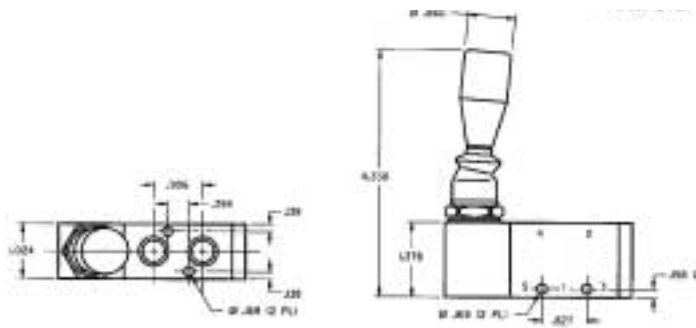


M213PD
M313PD



M214PD
M314PD

4-Way Hand Lever (Parallel)



Features

SERIES **MAX**Air

3-Way & 4-Way Hand Lever Valves 1/4" & 3/8" NPT Ports

- Light weight aluminum bodies and Buna-N seals are standard
- Ideal for packaging, material handling and air motor applications.
- Hand levers available with lever parallel or perpendicular to valve body.
- Parallel lever can be manifold mounted. See pg. 19 for manifold ordering information.
- 1/4" perpendicular hand lever valves can be panel mounted.



Perpendicular Levers



Parallel Levers

Performance Specifications

CV (Lever)	1/4" = .70, 3/8" = 1.14
Operating Medium	Non-lubricated or lubricated air
Pressure Range	20 -140 PSI
Temperature Range	15° to 122°F (-10° to 50°C)
Port Size NPT	1/4", 3/8", 1/2"
Filtration	40 micron recommended

Ordering

MODEL	DESCRIPTION
Levers Perpendicular to Body	
M212LM	1/4", 4-Way, 2-Position, Lever/Manual
M212LS	1/4", 4-Way, 2-Position, Lever/Spring
M213LS	3/8", 4-Way, 2-Position, Lever/Spring
M213LM	3/8", 4-Way, 2-Position, Lever/Manual
Levers Parallel to Body	
M212LM-R	1/4", 4-Way, 2-Position, Lever/Manual
M212LS-R	1/4", 4-Way, 2-Position, Lever/Spring
M252LM	1/4", 3-Way, 2-Position, Lever/Manual
M252LS	1/4", 3-Way, 2-Position, Lever/Spring



Panel Mounting is standard on 1/4" NPT Perpendicular Valves

Dimensional Data

See page 21.

Features

4-Way, 3-Position Rotary Lever Valves 1/4" & 3/8" 1/2" NPT Ports

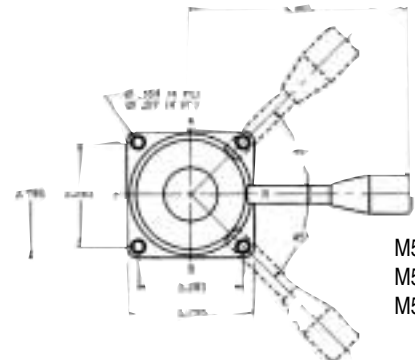
- Light weight aluminum bodies and Buna-N seals are standard
- Ideal for packaging, material handling and air motor applications.
- Rotary lever valve is a 3-position, all ports blocked, manual return.



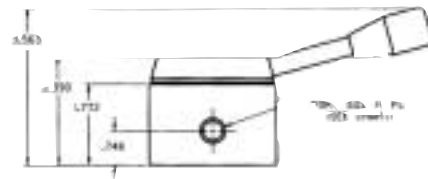
Performance Specifications

C _v (Rotary Lever)	1/4" = 1.25, 3/8" = 2.0, 1/2" = 2.4
Operating Medium	Non-lubricated or lubricated air
Pressure Range	20 -140 PSI
Temperature Range	15° to 122°F (-10° to 50°C)
Port Size NPT	1/4", 3/8", 1/2"
Filtration	40 micron recommended

Dimensional Data



M512LR
M513LR
M514LR



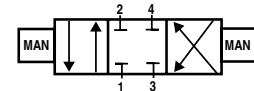
Ordering

MODEL	DESCRIPTION
ROTARY HAND LEVER	
M512LR	1/4", 4-Way, 3-Position, Manual
M513LR	3/8", 4-Way, 3-Position, Manual
M514LR	1/2", 4-Way, 3-Position, Manual

Features

3-Way & 4-Way Foot Pedal Valves

- Rugged aluminum alloy housing and pedal provide excellent durability and are light weight.
- Valves are available with a mechanical detent or as spring return.
- Mechanical detent 3-way and 4-way valves have a guard for applications where accidental actuation may result in injury or damage.
- Guard is safety yellow composite construction.



4-Way 3-Position
(Rotary Hand)

Performance Specifications

Port Size:	1/4" NPT
Pressure Range:	30-150 PSI
Temperature Range	32° to 160°F (0° to 71°C)
Media	Compressed Air



Foot Pedal Valve
Show with Guard

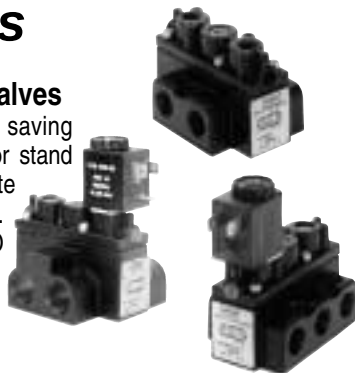
Ordering

MODEL	DESCRIPTION
M252FS	3-Way, Spring Return, No Guard
M212FS	4-Way, Spring Return, No Guard
M252TM	3-Way, Mechanical Detent, With Guard
M212TM	4-Way, Mechanical Detent, With Guard
114417	Guard only

Features

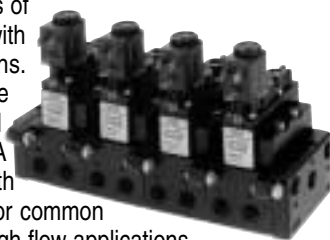
Body Ported Valves

Compact, space saving design. Perfect for stand alone and remote valve applications. Ports have ISO identification. Sizes include 1/8", 1/4" and 3/8" NPT.



Subbase Valves

Replace valves easily! Simply remove three screws, lift off valve and replace. Math made simple! Add or subtract manifolds by removing an end plate and changing the valve stack as needed. No tie rods to make changing manifold lengths difficult. Port sizes of 1/8", 1/4", 3/8" and 1/2" with ISO port identifications. Subbase Valves use the same electrical coils and connectors as the ALPHA Body Ported Valve. Both End Plates can be used for common supplies and exhaust in high flow applications.



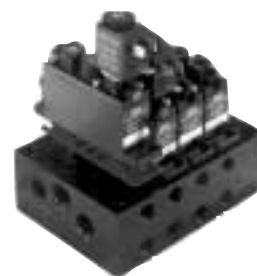
Stacking Valves

The lowest cost method of ganging valves, because it eliminates the manifold. Flip out design. Loosen the end plate cap screws to swing the valve up and out. No need to disassemble entire stack to replace one valve. Bodies stack on 1" centers. Circuits can be designed and mounted in a compact area. When stacked, ALPHA becomes a 4-way, 4-ported valve. 3/8" common end plate ports with 1/8" or 1/4" working ports in the valve body. Junction Box Raceways are available.



"Thin" Manifold Valves

Thin, 1" width means more valves in less space. Faster assembly than stacking style valves. 2, 4, 6, 8, and 10 station manifolds are available. Use optional blanking plates for odd-numbered stations. Junction box raceways are available. 1/8" and 1/4" (NPT) models, with 3/8" supply or exhaust ports. Speed controls install directly into manifold, cutting set-up time.



Versatile Design

- Available in Body Ported, Subbase, Stacking and "Thin" configurations.
- Alpha can be ordered as a two-position or three-position valve.
- 5-Year Warranty.
- Valve Body, End Plate & Manifold material is zinc.

Superb Performance

- ALPHA's bonded, precision ground spool resists wear & provides excellent shift response.
- Large air passages result in high flow characteristics. Listings detail Cv factor and maximum flow rates.

Numerous Control Options

- Control the valve one of five ways: Solenoid/Spring, Solenoid/Solenoid, Solenoid/Pilot, Pilot/Spring or Pilot/Pilot.
- Standard external solenoid supply allows operation for vacuum service and low pressure applications.
- Coils are UL and CSA Listed (Files: UL #MH13513; CSA #LR51090).

Performance Specifications

Pressure Range:	Vacuum to 150 psi (10.2 bar)
Operating Medium:	Compressed Air or inert gas
Lubrication:	None Required
Filtration:	40 Micron recommended
Cycle Rate:	600 Cycles Per Minute
Temperature Rating:	0° to 180°F (-17° to 82°C)
Shift Pressures:	50 psi (3.4 bar) 2-Position Single Solenoid or Single Pilot, Spring Return. 20 psi (1.4 bar) 2-position double pilot or double solenoid. 60 psi (4.0 bar) 3-Position Double Solenoid or Double Pilot, Spring Centered.

Signal Response Time:

Double Pilot Actuator:	14 ms
Double Solenoid:	20 ms
Single Pilot (Pilot On)	19 ms
Single Pilot (Pilot Off)	26 ms
Single Solenoid (Energized)	22 ms
Single Solenoid (De-energized)	27 ms

Flow:

Body Ported

2-position 1/8" Ports =	.9 Cv, 30 SCFM
2-position 1/4" Ports =	1.5 Cv, 50 SCFM
2-position 3/8" Ports =	1.7 Cv, 61 SCFM
3-position 1/8" Ports =	.8 Cv, 27 SCFM
3-position 1/4" Ports =	1.4 Cv, 45 SCFM
3-position 3/8" Ports =	1.7 Cv, 61 SCFM
1/8" Ports =	1.3Cv, 43 SCFM
1/4" Ports =	1.6 Cv, 54 SCFM
3/8" Ports =	1.6 Cv, 54 SCFM
1/2" Ports =	1.75 Cv, 57 SCFM

Subbase Valves:

Stacking Valves:

2-position 1/8" Ports =	1.32 Cv, 43 SCFM
2-position 1/4" Ports =	1.9 Cv, 63 SCFM
2-position 3/8" Ports =	1.2 Cv, 39 SCFM
3-position 1/8" Ports =	1.7 Cv, 57 SCFM
1/8" Ports =	.6 Cv, 25 SCFM
1/4" Ports =	1.2 Cv, 39 SCFM

"Thin" Valves:



ALPHA™

Alpha Series

Valve, Spool Type

Code	Description
2	2-Position, Urethane
3	3-Position, Urethane
8	3-Position, Viton (3 & 8 are Spring Centered, all ports blocked in neutral. Available only with PD or SD Actuators)
4	2-Position, Viton
7	3-Position, Urethane
9	3-Position, Viton (7 & 9 are Spring Centered, inlet ports blocked (cylinder ports open) in neutral. Available only with PD or SD Actuators)

Valve Body Styles

Code	Description
1	4-Way, Body Ported Valves
2	4-Way, Stacking Valves Order <i>End Plates</i> from menu on Page 26. Order <i>Mounting Brackets</i> from Page 26. Order <i>Raceway Junction Box</i> from Page 26.
3	4-Way, Subbase Mounted Valves Order <i>Subbase Manifolds</i> from menu on Page 27.
4	4-Way, Alpha Thin Valves Order <i>Alpha Thin Manifolds & Speed Control Kits</i> from menus on Page 27. Order <i>Raceway Junction Box</i> from Page 26.

A X X X XX - XXX - X

Current Type

Code	Description
A	AC
D	DC
N	No Coil
*L	Low Watt *(DC Only, 115 PSI Max.)

If coil option A, D or L is selected, a coil connector must be ordered. See Pg. 71 for coil & connector information. (Low Watt coils work only on valves with low watt option)

Coil Voltage

Leave Blank if ordering Pilot Valves

Code	Description	Code	Description
000	No coil	024	24V AC/DC
005	5V DC	120	120V AC
012	12V AC/DC	240	240V AC

Actuator/Return*

Code	Description
*PS	Pilot/Spring
*PD	Pilot/Pilot
SS	Solenoid/Spring
SD	Solenoid/Solenoid
SP	Solenoid/Pilot

*Numbering ends here if a non-solenoid (PS or PD) valve is being selected.

Port Size

Code	Description
1	1/8" NPTF (#1 & #2 used on <i>Body Ported</i>
2	1/4" NPTF or on <i>Stacking Valves</i>)
3	3/8" NPTF (#3 used on <i>Body Ported Valves</i>)
9	NONE (#9 used on <i>Subbase</i> or <i>Alpha Thin Valves</i>)

Ordering Examples

Body Ported Valve: A212SS-120-A

"2" 2-Position Valve, Urethane Spool

"1" 4-Way Body Ported Valve

"2" 1/4" NPTF Ports

"SS" Actuator-Solenoid, Return-Spring

"120-A" 120 Volt Coil, AC Current

"Thin" Valve & Manifold: A449PS

"4" 2-Position Valve, Viton Spool

"4" 4-Way Alpha "Thin" Valve

"9" 9 No NPTF Ports

"PS" Actuator-Pilot, Return-Spring

"Thin" Manifold: 118605-4

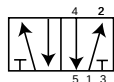
"11860X-X" Basic Manifold

"5" 1/4" NPT Ports

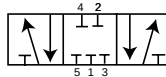
"-4" 4-Stations

Manifold information on Page 27.

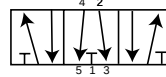
119306 External Supply Conversion Kit, Page 27. Use when supply pressure is under 50 PSI or vacuum is used.



4-Way, 2-Position



4-Way, 3-Position, all ports blocked in neutral



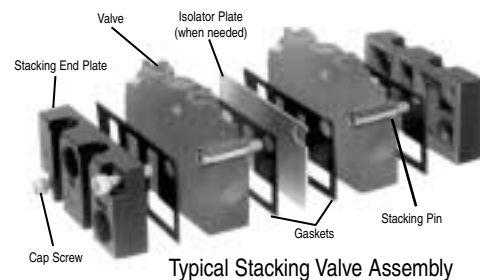
4-Way, 3-Position, cylinder ports open, inlet port blocked

Accessories

End Plates and Isolator Plates

- MKN** One MKN Kit is required to stack 1-to-6 Valves without Isolator Plates. Each contains 2 End Plates, 2 Cap Screws and 1 Gasket.
- MKP** One MKP Kit is required to stack 7-to-12 Valves without Isolator Plates, or 1-to-12 Valves *with* an Isolator Plate. Each contains 2 End Plates, 2 Cap Screws and 1 Gasket.
- PTN** Isolator Plate. Blocks Supply *and* Exhaust Ports. Gasket Included.
- PEN** Isolator Plate. Blocks Exhaust Ports. Gasket Included.
- PPN** Isolator Plate. Blocks Supply Ports. Gasket Included.

ALPHA™



Mounting Brackets

Kits include both Brackets and hardware to mount valve stacks to the brackets.

- 116807** Long L - 7" long
- 116808** Short L - 3.75" long
- 116809** Tall Z - 6" high
- 117987** Short Z - 3" high



Junction Boxes ("Raceway")

One 117541 Junction Box required per coil.
One 117607 Stand-off Box per raceway stack.

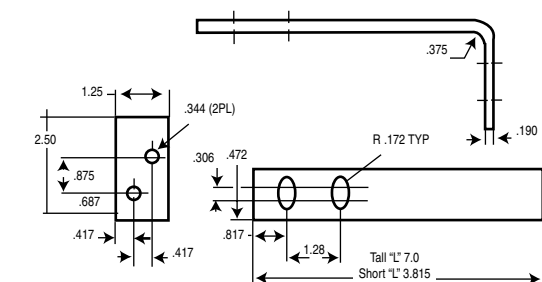
- 117541** Includes: junction box, jumper wires, gasket, screw and roll pin.
- 117607** Includes: junction box, dust plug and roll pin.



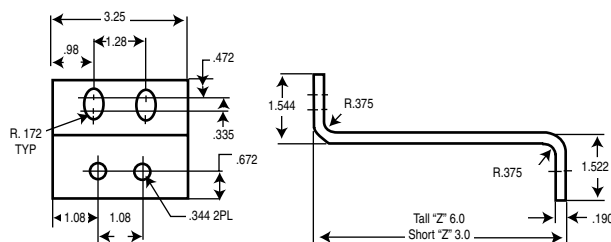
Raceway Junction Box

Dimensional Data

Mounting Brackets

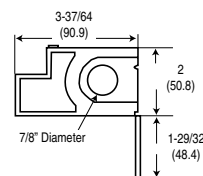


"L" Brackets #116807 & 116808



"Z" Brackets #116809 & 117987

Junction Boxes



Accessories

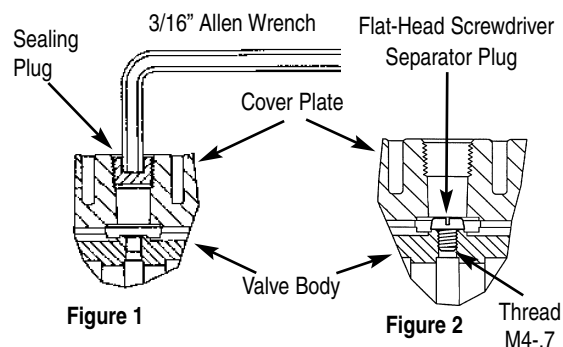
Breather Vent, External Supply Plug Kit

116464 Solenoid Breather Vent 10-32 Thread Size.

119306 External Solenoid Supply Plug Kit

Changes ALPHA valves from internal to external solenoid air source.

- Step #1: Remove all air supply sources, remove sealing plug. Figure 1.
- Step #2: Install separator plug by threading plug into valve body with a flat-head screwdriver. See Figure 2.
- Step #3: Connect the external pilot air supply to the valve with an 1/8" NPT connector.



Alpha "Thin" Valves

Alpha Thin Manifolds

11860X - X

Port Size

Code	Description
4	1/8" NPT
5	1/4" NPT

Number of Stations

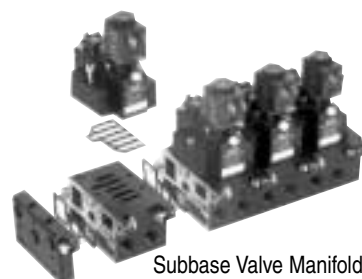
Code	Description
2	2 Station
4	4 Station
6	6 Station
8	8 Station
10	10 Station



11860X-X ALPHA Thin Manifold Stack



118618 Speed Control Kit



Subbase Valve Manifolds & End Plates

Alpha Thin Speed Controls

Control speed directly from the manifold. Kits allow you to control only the cylinder direction needed.

119230 Kit controls Port 2 exhausting to Port 3.

119231 Kit controls Port 4 exhausting to Port 5.

118618 Includes both 119230 and 119231 control kits.

118612 Station blanking kit.

Subbase Valves

Manifold & End Plate Kits

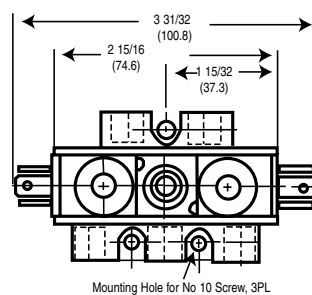
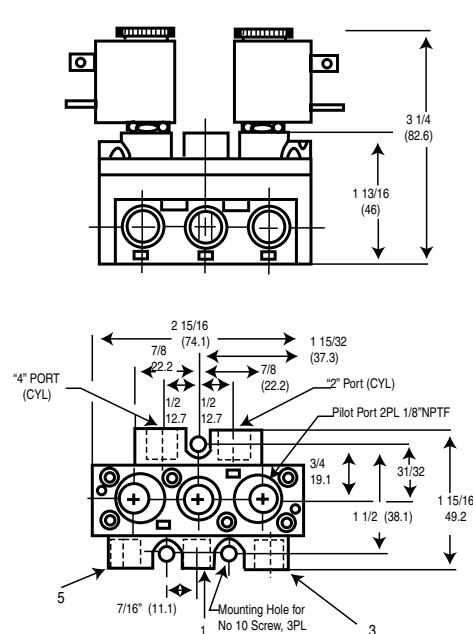
- Manifold Kits are required when ordering Sub-base valves.
- One End Plate Kit is needed for each valve stack.
- Manifold Kits include the Manifold, one Gasket and two Screws.
- End Plate Kits include two End Plates, one Gasket and two Screws.

Port Size Manifold Kit End Plate Kit

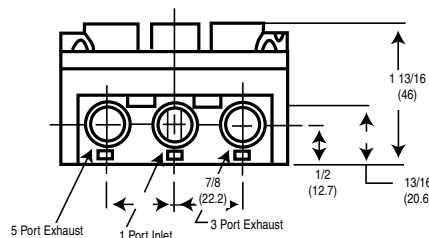
1/8"	115422-1	116904-1
1/4"	115455-1	116916-1
3/8"	116862-1	116917-1
1/2"	116899-1	116926-1

Dimensional Data

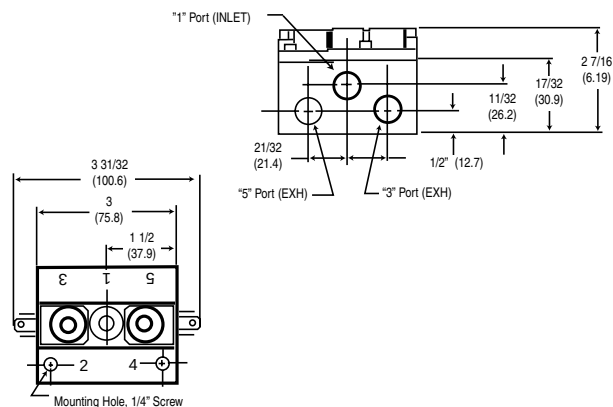
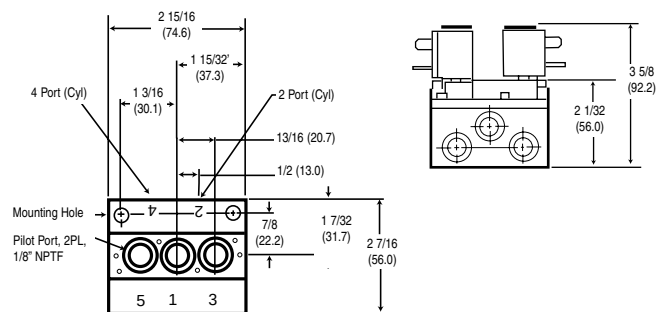
1/8" & 1/4" Body Ported Valves



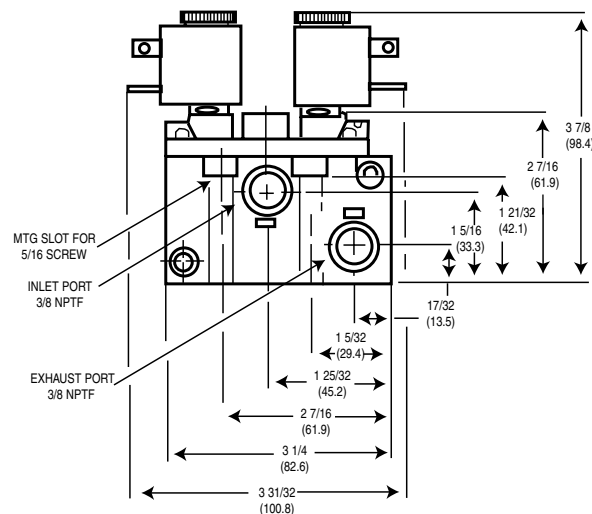
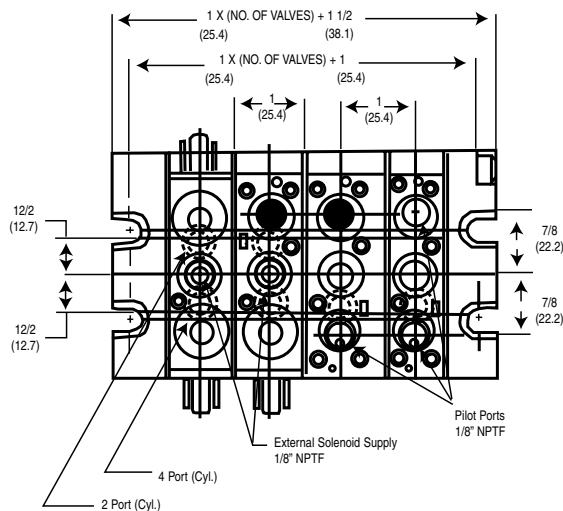
Dimensions given in Inches and (Millimeters)



3/8" Body Ported Valves



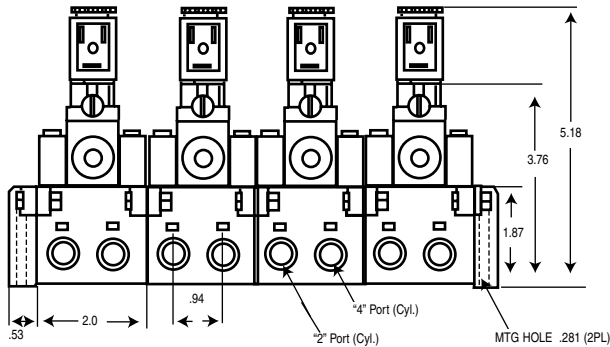
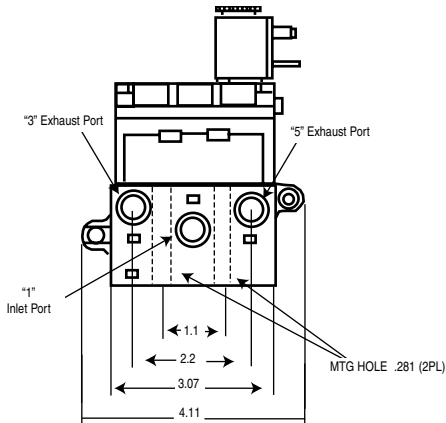
Stacking Valves



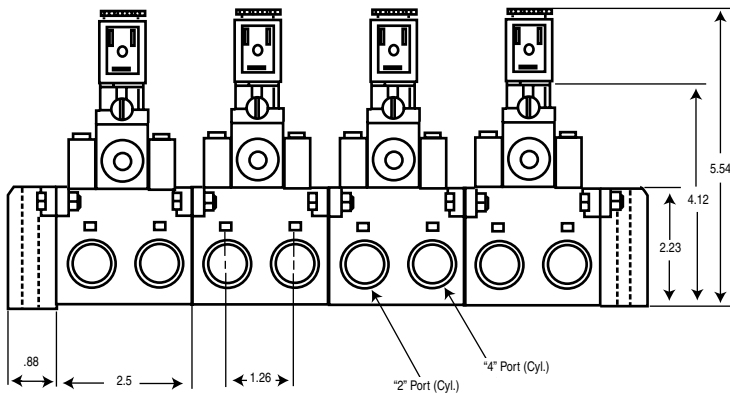
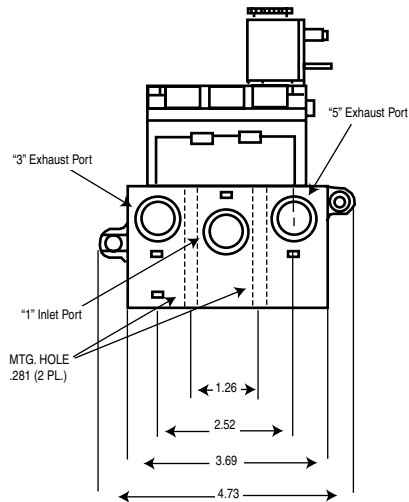
Dimensional Data

ALPHA™

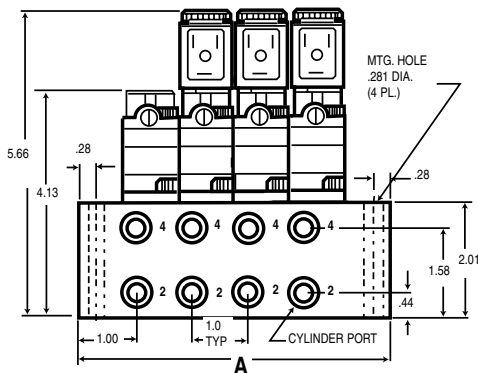
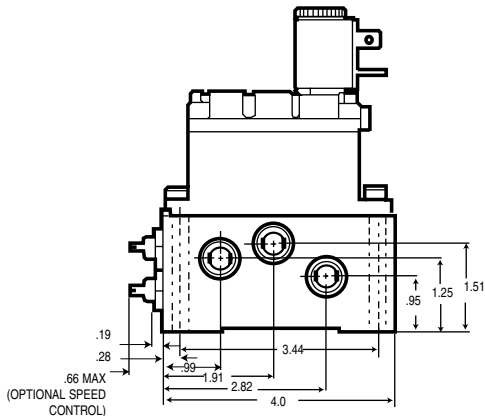
Subbase Valves with 1/8" or 1/4" Cylinder Ports Dimensions given in Inches and (Millimeters)



Subbase Valves with 3/8" or 1/2" Cylinder Ports



Thin Manifolds with 3/8" or 1/4" Cylinder Ports



NO. OF STATIONS	A
2	3.57
4	5.57
6	7.57
8	9.57
10	11.57

Features

Genesis

Comprehensive Valve Design...

1. High Visibility Indicators

Indicator lights are on top of the valve or in the manifold door. Available for single and double solenoids models.

2. Proven Bonded Spool Design

Aro's one-piece bonded spool contains a special power piston design that enables positive shifting, even when using low system pressures and nonlubricated air sources. This one-piece bonded spool also means quicker, easier maintenance.

3. Electrical System Designed to Industry Standards

Genesis' coils are UL-listed and comply with NEMA 4 and CSA standards. DC voltages are available with standard (4.8) or low (.91) wattage. Low wattage means more valves can be operated economically from one power source.

4. 3 - in - 1 Valve Override

Mechanical valve overrides are operated in any of the following ways: 1) Standard push in twist-to-lock with tool; 2) optional nonlocking digital spring return; 3) optional lever push in twist-to-lock.

5. Self-Retained Gaskets

Track-style, self-retained, Buna N gaskets "stay put" and provide a superior seal against leakage.

6. Optional "Sandwich" Speed Control

Lightweight control features quick installation, durable composite body construction and precise speed control. A flush nonrising adjustment screw prevents residual material contamination and accidental damage. The thin sandwich design helps maintain a sleek, low profile. Stacking pins eliminate need for special bolt kits.

7. Optional "Sandwich" Pressure Regulator

Available in 3 pressure ranges (0-30, 0-60, 0-120 psi). Features include front and rear pressure gauge ports; optional straight or 45° gauge riser tubes and a locking adjustment knob with factory installed pressure identification. Stacking pins eliminate need for special bolt kits.

8. Powder Coated Finish

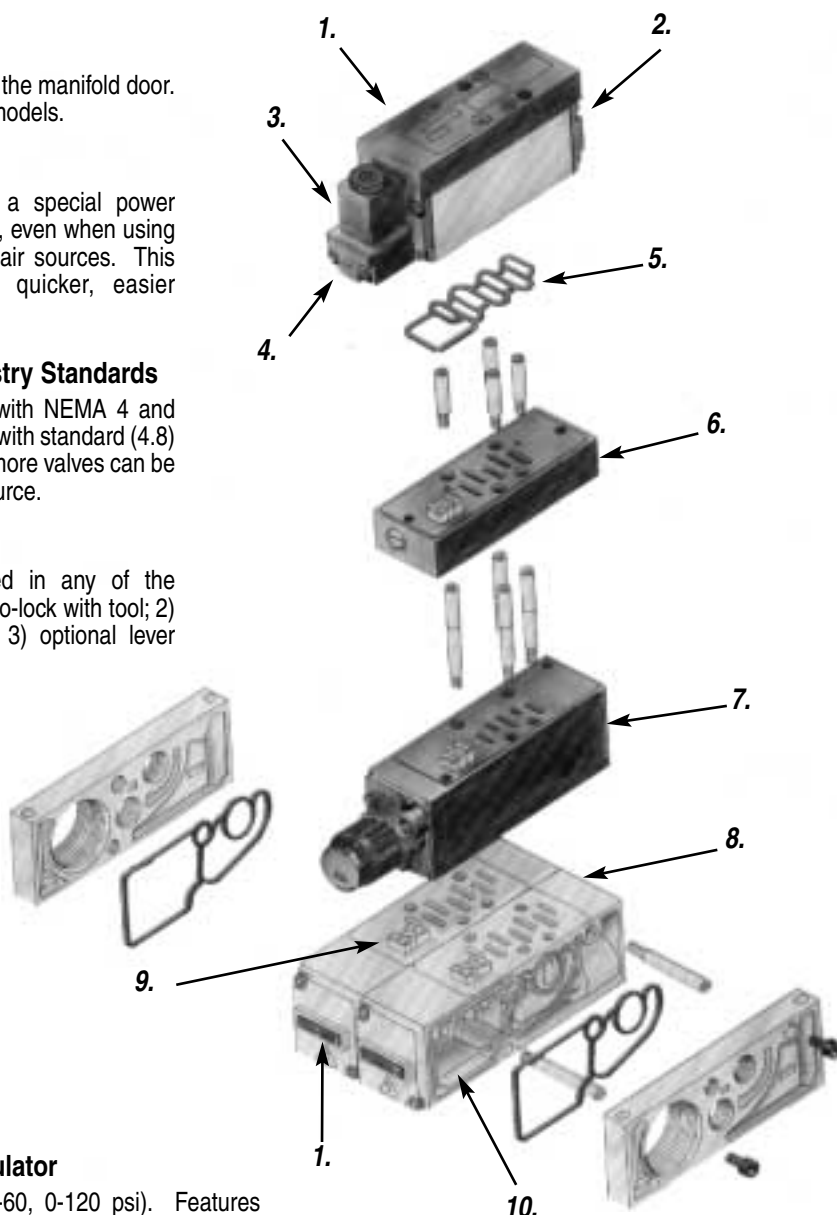
All Genesis valves and manifolds incorporate powder coated parts for optimum chip and scratch resistance, and use in wash-down environments.

9. Plug Design Meets ISO 5599-2 Plug-In Specifications

A 5-pin plug (male/female) eliminates external wiring and is a "snap" to attach. Available on Genesis Plug-In Style Valves only. All plug-in "sandwich" accessories contain this same easy-access 5-pin plug.

10. Large Raceway Wiring Channel

Genesis' raceway channel is one of the biggest in the business; big enough to perform multiple connections with ease.



Features

Plug-In Valve

- Plug-in design keeps all electrical wiring inside of unit and has a "make first – break last" grounding contact pin.
- Optional low power consumption (DC .91 watts) solenoid operators available.
- Terminal strip option speeds traditional electrical wire installation. Can be used with valves with cover plate lights. Manifold used with soft wire option. See "Manifold Ordering", page 32.
- Feathered Override model for precise cylinder control for machine set-up.
- Manifold End Ports available in 1/4" or 3/8" NPT(F) or BSP(P). Bottom ports are 1/4" NPT(F) or BSP(P). See "Manifold Ordering", page 32.
- Coils are UL and CSA Listed (Files: UL #MH13513; CSA #LR51090).

Plug-On Valve (Solenoid and Remote Air Pilot Actuated Models)

- External wiring (Plug-On) design permits conventional electrical connection, without special adapters or fittings. Coils are UL and CSA Listed (Files: UL #MH13513; CSA #LR51090). NEMA 4 option available.
- Optional "sandwich" pilot adapter block allows plug-on valve to be actuated from plug-in style manifold. See page 35 for details.
- Completely interchangeable with any ISO size 1, 5599-1 subbase.
- Optional low-power-consumption (DC .91 watts) solenoid operators available.
- Remote air pilot-actuation available.
- Available in 1/4" NPT(F) or BSP(P) manifold ports and on a stand-alone subbase.
- Available with intrinsically safe operator.

Genesis



Terminal Strip option



Stack w/Speed Control



Manifold Subbase Valve Stack



Stand Alone Subbase Valve

Performance Specifications

Pressure Ratings:	150 psi Max. (10.4 Bar) 115 psi Max. (Low Watt Coils)
Shift Pressures:	35 psi Single Solenoid 20 psi Double Solenoid 35 psi Double Solenoid, 3-Position
Plug-In Valve Flow:	1.2 Cv Avg. (Cv = 1.0 Avg with Regulator) 1/4" ports: 36 SCFM 3/8" ports: 38 SCFM (80 psi supply with 15 psi pressure drop)
Plug-On Valve Flow:	1.4 Cv (Avg.; Cv = 1.0 Avg with Regulator) 45 SCFM (80 psi supply with 15 psi pressure drop)
Vacuum Applications:	Yes, with externally piloted Plug-On, Plug-In valves. Order valve models with external solenoid supply. Vacuum source into 3 & 5 ports.
Operating Medium:	Compressed Air. Contact Aro for others.
Lubrication:	None Required
Filtration:	40 Micron recommended
Temperature Rating:	0° to 122°F (-17° to 50°C)
Signal Response Time:	19 m sec. (0 cu. in. per NFPA specs T3.212.2 1990)



Plug-In Valve



Genesis Series Valves **G P 1 X XX - XXX - X**

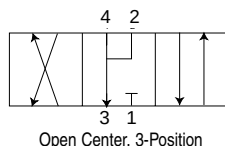
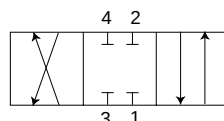
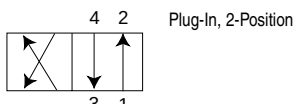
4-way subbase Plug-In
(internally wired)

ISO Size 1

Valve, Spool Type

Code	Description
2	2-Position, Urethane
3	3-Position, Urethane
8	3-Position, Viton (3 & 8 are Spring Centered, all ports blocked in neutral. Available only with PD or SD Actuators)
4	2-Position, Viton
7	3-Position, Urethane
9	3-Position, Viton (7 & 9 are Spring Centered, inlet ports blocked (cylinder ports open) in neutral. Available only with PD or SD Actuators)

3-position models available only in **SD, AD, ND**, and **MD** actuators.



Coil Options

Code	Description	Code	Description
A	AC Std Coil	H	AC Std. coil/Cover Plate Light
D	DC Std. Coil	J	DC St. coil/Cover Plate Light
L	DC Low Watt (.91 watts)	P	DC Low Watt/Cover Plate Light

Coil Voltage

Code	Description	Coil Options
005	5V DC	Low Watt Only
012	12V DC	D, L, J, P
024	24V AC or DC	A, D, L, H, J, P
120	120V AC	A, D, H, J
240	240V AC	A, H

See coil option (-X) codes listed above.

Actuator / Return

Code	Description
SD	Double Solenoid
SF	Feathered Override, Single Solenoid
SS	Solenoid/Spring
ND	Double Solenoid-NEMA 4
NS	Solenoid/Spring-NEMA 4
AD	External Solenoid Pilot, Double Solenoid
AS	External Solenoid Pilot, Solenoid/Spring
MD	External Solenoid Pilot, Double Solenoid-NEMA 4
MS	External Solenoid Pilot, Solenoid/Spring-NEMA 4

Plug-In Valve Manifold

Genesis Manifold, Plug-In
(internally wired) Subbase **GMP 1 X X - XXX - X**

ISO Size 1

Port Size

Code	Description
2	1/4" NPT
3	3/8" NPT
B	1/4" BSP (P)
C	3/8" BSP (P)

Bottom ports are always 1/4".

Wiring Options

Code	Description
1	No Door Light
2	Single Door Light
3	Double Door Light
4	Terminal Strip (Door Light N/A)

Current Type

Code	Description
A	AC
D	DC

Not needed if Manifold Door light **is not** being ordered.

Door Indicator Light Voltage

Code	Voltage
005	5V DC
012	12V DC
024	24V AC or DC
120	120V AC
240	240V AC

Required only if wiring options #2 & #3 are being used.

See page 33 for information on ordering
End Plate Kits, Isolator Plates and Blanking Plates Kits

Ordering

Plug-In Valve End Plate

One End Plate Kit is required for each Plug-In manifold stack.

11880 X - X

Code	Description	Code	Description
3	3/8" NPT (F)	B	Both Ends Open
4	3/8" BSP (F)	L	Left End Open
		R	Right End Open

Note: For stacks of more than seven (7) valves order a **119743** Long Plug-In Manifold Stack Kit, located under **Manifold Accessories** on this page.

Genesis



VALVES

Accessories

Plug-In Valve Manifold

Isolator Plates

- 118785** Inlet Blocked
- 118786** Exhaust Blocked
- 118787** Both Inlet & Exhaust Blocked

Blanking Plate Ordering

- 118778** Blanking Plates

- 119743** Screw Kit for Long Plug-In Manifold Stacks. Kit includes two M6 x 25mm screws, to replace the shorter screws in the end plate kits.

Ordering

Plug-On Valves

Genesis

G X 1 X XX - XXX - X

Genesis Series Valves

4-way subbase Plug-On

Code Description

N	Plug-On (ext wiring)
* C	4-Pin Plug
F	5-Pin Plug

C & F have non-locking overrides

ISO Size 1

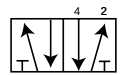
* Meets Chrysler Automotive Specifications

Valve, Spool Type

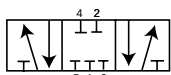
Code Description

2	2-Position, Urethane
4	2-Position, Viton
3	3-Position, Urethane
8	3-Position, Viton
	(3 & 8 are Spring Centered, all ports blocked in Neutral.)
7	3-Position, Urethane
9	3-Position, Viton
	(7 & 9 are Spring Centered, inlet ports blocked, (cylinder ports open) in Neutral)

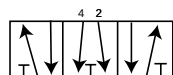
3-position models available only in **PD, SD, ND, AD** and **MD** actuators.



2-Position



3-Position, all ports blocked in Neutral



3-Position, spring centered, cylinder ports open

Plug-On Valve Manifold

GMN 1 X 5

Genesis Manifold, Plug-On
(externally wired) Subbase

ISO Size 1

Pipe Port

Code	Description
2	1/4" NPT
B	1/4" BSP (P)

Manifold Accessories

End Plate Kit Ordering One Kit needed for each manifold stack.

118843-3 3/8" NPT(F)

118843-C 3/8" BSP (P)

Isolator Disk

119397 Kit includes disk and O-Ring

Stand Alone Subbase

GSN125 1/4" NPT

GSN135 3/8" NPT

Coil Voltage

Leave Blank if ordering Pilot Valves

Code	Description	Coil Options
000	No coil	M, N
005	5V DC	L
012	12V AC or DC	A, D, L
024	24V AC or DC	A, D, L, S
120	120V AC	A, D
240	240V AC	A

See coil option (-X) codes listed at right.

Coil Option

Code Description

A	AC DIN Coil
D	DC DIN Coil
L	DC Low Watt DIN Coil
M	No Coil, Low Watt Stem
N	No Coil
S	Intrinsically Safe Coil; 24V, DC only. (30 mm coil, Low .91 watt) Connector provided

If coil option A, D or L is selected, a coil connector must be ordered. See pg 71 for coil & connector information.

(Low Watt coils work only on valves with low watt option)

Actuator / Return

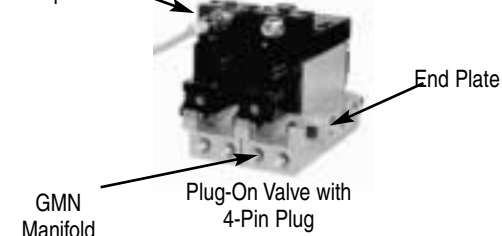
Code Description

PD	Pilot/Pilot
PS	Pilot/Spring
SD	Double Solenoid
SS	Solenoid/Spring
ND	Double Solenoid – NEMA 4
NS	Solenoid/Spring – NEMA 4
AD	External Solenoid Pilot, Double Solenoid
AS	External Solenoid Pilot, Solenoid/Spring
MD	External Solenoid Pilot, Double Solenoid–NEMA 4
MS	External Solenoid Pilot, Solenoid/Spring–NEMA 4

Numbering ends for non-solenoid (**PS** or **PD**) valves.

Vacuum/Low-Pressure applications require an external solenoid supply (**AD, AS, MD** or **MS**) option.

C and F Pin Option



Stand Alone Subbase

Accessories

“Sandwich” Speed Controls

- 118565-P** “Plug-In” Lightweight, durable polymer construction is impact resistant and stands up to all types of environments. Non-rising screw avoids foreign material contamination and provides precise 11-turn speed control. Plug-In models feature a 5-pin plug for quick plug-to-plug connection of electrical circuits.
- 118565-N** “Plug-On”



“Sandwich” Pressure Regulator

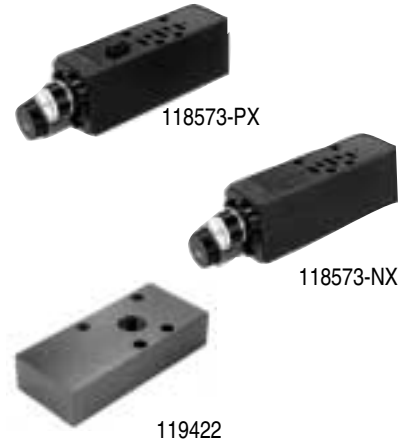
Regulators feature locking adjustment knob with factory-installed pressure identification. Pressure sight gauges can be installed on front or rear of regulator and mounted at a 45° angle with optional riser tube. Order with the desired pressure ranges.

Plug-In Models

- 118573-P2** 0-30 psi w/sight gauge
118573-P5 0-30 psi w/o sight gauge
118573-P3 0-60 psi w/sight gauge
118573-P6 0-60 psi w/o sight gauge
118573-P4 0-120 psi w/sight gauge
118573-P7 0-120 psi w/o sight gauge

Plug-On Models

- 118573-N2** 0-30 psi w/sight gauge
118573-N5 0-30 psi w/o sight gauge
118573-N3 0-60 psi w/sight gauge
118573-N6 0-60 psi w/o sight gauge
118573-N4 0-120 psi w/sight gauge
118573-N7 0-120 psi w/o sight gauge

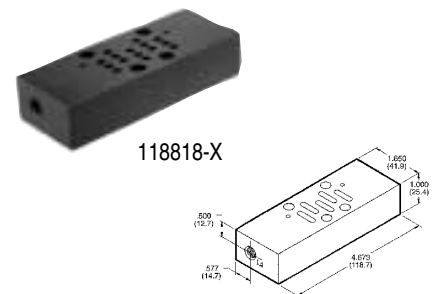


- 119422** Center Supply Block allows air supply to be brought into the center of a plug-in or plug-on valve stack.

“Sandwich” Pilot Adapter Block

Use of the Pilot Adapter block allows remote pilot operated Plug-On valves to be mounted directly onto a **plug-in** manifold stack. Order each block according to the needed thread type. Includes Tie Rod Kit 118735.

- 118818-1** 1/8" NPT
118818-A 1/8" BSP



Pressure Regulator Sight Gauges & Riser Tubes

Gauges:

- 119219-60** Gauge reads 0-60 PSI
119219-100 Gauge reads 0-100 PSI
119219-160 Gauge reads 0-160 PSI

Tubes:

- 118563-1** Straight riser tube, 3-inch length
118563-2 45° riser tube, 3-inch length



Solenoid Accessories

- 118790** Easy to install kit includes snap-on lever for push-in, twist-to-lock override.
- 118791** Easy to install snap-on button for quick, nonlocking valve override.
- 119416** Side exhaust coil nut.

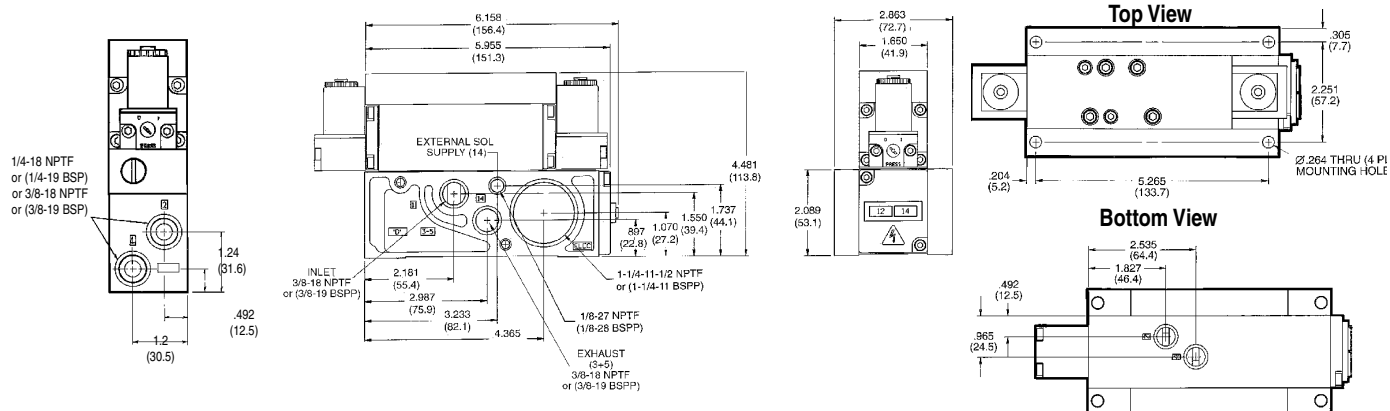


Plug-On Valve Field Conversion Kits

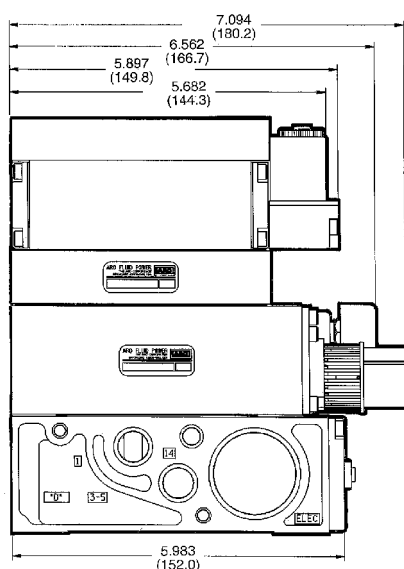
- 119209** **NEMA 4 Conversion Kit** - Kit includes NEMA 4 solenoid operator and all necessary hardware. Coil not included.
- 119398** **Intrinsically Safe Field Conversion Kit** - Kit includes intrinsically safe operator and coil assembly. For Plug-On valves only.

Dimensional Data

Manifold Valves With 1/4" & 3/8" Cylinder Ports

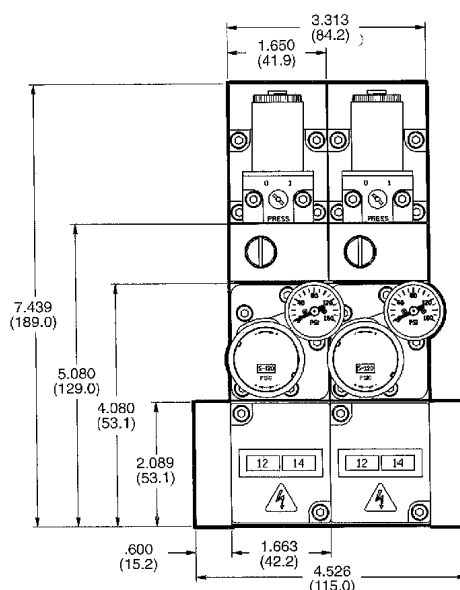


Plug-In Valves Accessories



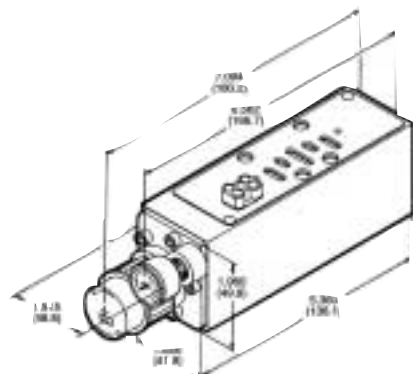
Side View

Two Valve Stacks with Speed Controls and Pressure Regulators

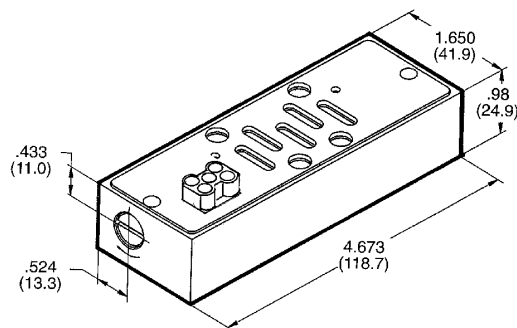


End View

Plug-In Valves Accessory Dimensions



Pressure Regulator Dimensional Data

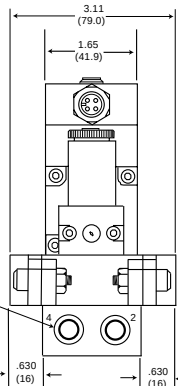
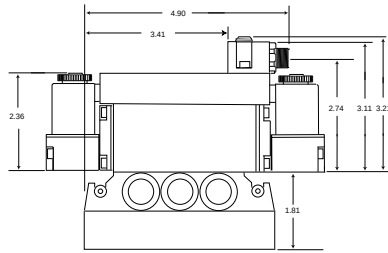


Speed Control Dimensional Data

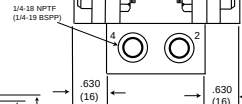
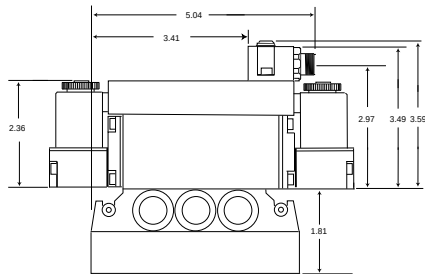
Dimensional Data

Plug-On Valves

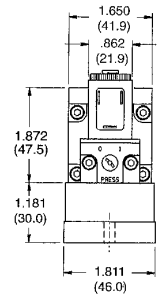
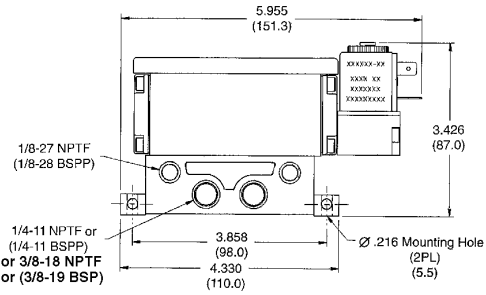
4-Pin Electrical Connections



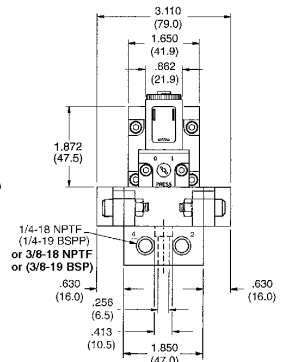
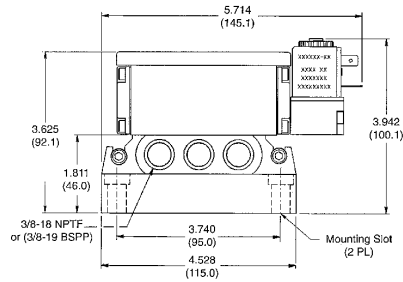
5-Pin Electrical Connections



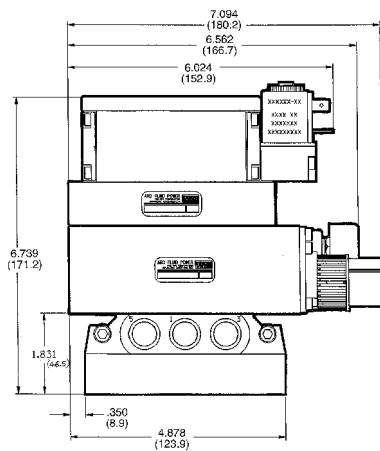
Stand Alone Valves



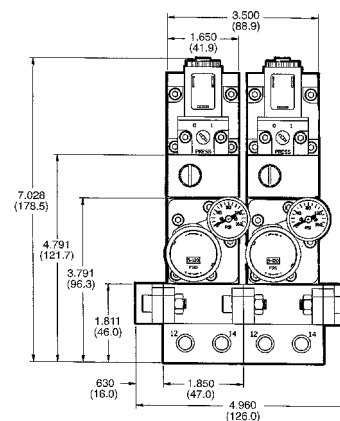
Manifold Valves



Plug-On Valve with Accessories



Two Valve Stack with Speed Controls and Pressure Regulators. Side View.



Two Valve Stack with Speed Controls and Pressure Regulators. End View.

Features

Valve Performance Features

- CAT Series Valves are available as single station units, bar manifold or assembled as a stack.
- CAT Series valves are suitable for air or inert gas.
- Plugging the exhaust port allows single station valves to be plumbed as 2-way valves. See page 39 to order the optional exhaust port plug.
- CAT Series valves are available with a variety of coil options. See Pg. 71.
- Class F coils are rated for 100% duty cycle.

CAT Series Valve Features and Benefits

- Quick change coil can be easily interchanged or replaced. Simply remove the top nut, slide off the coil and replace it with a new coil.
- The coil accepts DIN-style connectors, or automotive spade type connections. This helps reduce installation time and provides a secure electrical hook-up. See page 71.
- When mounted individually, the coil can be rotated to face one of four ways. As a stack, the coils can be mounted in two directions.
- Coils are UL-listed and comply with CSA standards. UL file #MH13513, CSA File #LR51090. NEMA 4 option available.

Cat
Series Valves



Single CAT
Series Valve



Two Valve CAT
Series Stack



High Flow
Cat Valve

Performance Specifications

Pressure Range: 0 to 150 PSI (10.4 bar)

Temperature Rating: 0° to 122°F (-17° to 50°C)

Flow:

1/8" Individual, Bar Manifold and Stacking Valves:

CAT33P: Cv = .062 (2.2 SCFM), Seat Orifice .051, Stem .070

CAT33S: Cv = .048 (1.8 SCFM), Seat Orifice .051, Stem .070

CAT44P: Cv = .056 (2.0 SCFM), Seat Orifice .039, Stem .051

CATXXB: Cv = .062 (2.2 SCFM), Seat Orifice .051, Stem .070

Operating Medium: Compressed Air

Response Time: 5 - 9 ms



Six-Station Cat Valve
Bar Manifold

Performance Data, Ordering Menus and Dimensional Data for High-Flow CAT Valves are found on page 39.

Ordering

1/8" Individual & Stacking Valves

Model Number:	Port Size	Valve Function	Body Style
CAT33P-XXX-X	1/8"	Non-Passing	Ported
CAT33S-XXX-X	1/8"	Non-Passing	Stackable
CAT44P-XXX-X	1/8"	Passing	Ported

Coil Options

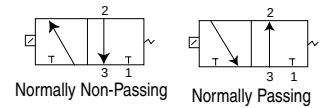
Code	Voltage	Current	Code	Voltage	Current
000-N	Valve with No Coil		024-D	24 Volt	DC
005-D	5 Volt	DC	120-A	120 Volt	AC
012-A	12 Volt	AC	240-A	240 Volt	AC
012-D	12 Volt	DC	*005-L	5 Volt Low Watt	DC
024-A	24 Volt	AC	*012-L	12 Volt Low Watt	DC
			*024-L	24 Volt Low Watt	DC

If coil option A or D is selected, a coil connector must be ordered. See Pg. 71 for coil & connector information.

* Available on CAT33P-XXX-L & CAT33S-XXX-L only.

Cat

Series Valves



To stack CAT Series valves, tie-rod mounting kits are required. Order kits separately from the menu below.

Accessories

Exhaust Plug

59632-1 (10-32 Thread)

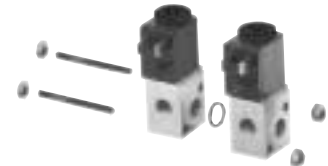
Plugs exhaust port to convert normally non-passing 3-way valve to 2-way.

NOTE: To make a normally passing 3-way valve to a 2-way valve requires a DC plug.

Stacking Tie-Rod Kits

116345-2	2 Valve Stack
116345-3	3 Valve Stack
116345-4	4 Valve Stack
116345-5	5 Valve Stack
116345-6	6 Valve Stack

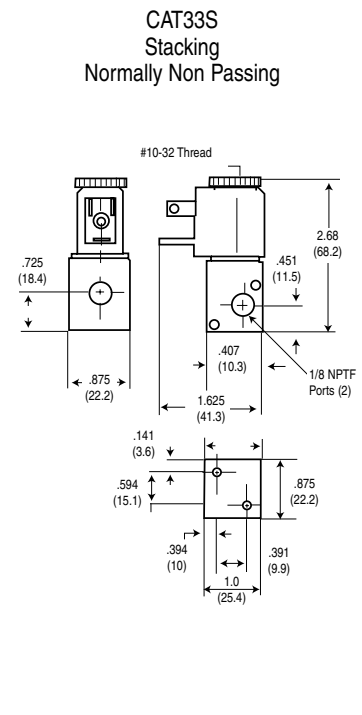
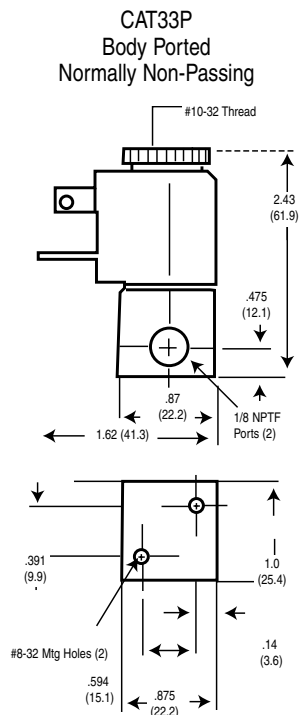
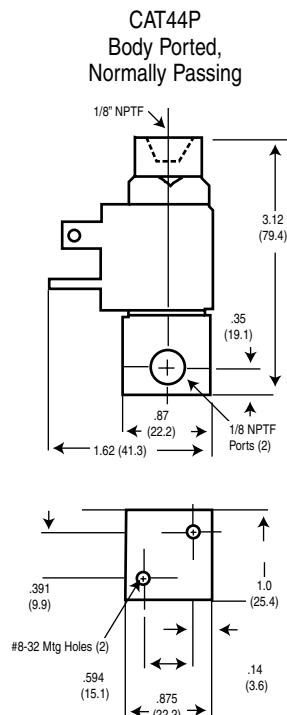
Tie-Rod Kits include tie rods, nuts, o-rings and a plug.



CAT Series Valve Stack and 116345-X Stacking Kit

Dimensional Data

Dimensions given in Inches and (Millimeters)



Features

Cat Valve Bar Manifold

Aro's Cat Valve Bar is the fast, preassembled path to compact valve manifold installation. Factory built and tested, the Cat Valve Bar arrives ready to "plumb, plug'n play".

- Factory assembled complete, saves time and money.
- 1" porting centers allows for Alpha raceway boxes. See Page 26.
- Valve overrides are standard.
- Coils are UL and CSA listed (Files: UL #MH13513; CSA #LR51090).
- Suitable for air or inert gas.

1/4" High Flow Cat Valves

High-flow Cats have the performance perks that made the CAT valve famous, plus increased flow capacity that enhances your actuator application options.

- Increased flow.
- Slightly enlarged base and 30 mm coil allows high-flow 1/4" porting without compromising compact size.
- One of the highest air flows available in a direct-acting, compact Valve.
- Powerful enough to drive cylinders, pumps, other components.
- Includes all of the Cat series features/benefits: quick-change coils, rotatable coils, compact size and good shift response.
- Using the 119698-X tie-rod kit, up to seven high-flow Cat valves can be stacked together. See page 41.

Cat
Series Valves



Six-Station Bar Manifold Cat Series Valves.
Maximum ten (10) stations available.



High-Flow Cat Valve has all the perks of other CAT valves, with flow of .2 Cv (6.9 SCFM)

Performance Specifications

Pressure Range:	0 to 150 PSI
Temperature Rating:	0° to 122° F
Operating Medium:	Compressed Air
High-Flow Valves:	CAT66P: Cv = .2 (6.9 SCFM)
	CAT77S: Cv = .2 (6.9 SCFM)
	CAT88P: Cv = .2 (6.9 SCFM)

Ordering

Cat Valve Bar Manifold

C A T X X B - X X X - X

No. of Stations

02	10
03	11
04	12
05	13
06	14
07	15
08	16
09	

Coil Options

Code	Voltage	Current	Code	Voltage	Current
000-N	Valve with No Coil		240-A	240 Volt	AC
005-D	5 Volt	DC	005-L	5 Volt Low Watt	DC
012-A	12 Volt	AC	012-L	12 Volt Low Watt	DC
012-D	12 Volt	DC	024-L	24 Volt Low Watt	DC
024-A	24 Volt	AC			
024-D	24 Volt	DC			
120-A	120 Volt	AC			
120-D	120 Volt	DC			

See Page 71 for Connectors
and other Coil options.

High Flow Cat Valve

Model Number:

CAT66P-XXX-X*

CAT77S-XXX-X*

CAT88P-XXX-X*

Port Size

1/4"

1/4"

1/4"

Valve Function

Normally Closed

Normally Closed

Normally Open

Body Style

Ported

Stacking

Ported

* Coil Voltage

012-D 12 Volt

120-A 120 Volt

024-D 24 Volt

000-N No Coil

Connector

CDW-30

30-mm connector with wire.

CSN-30

30-mm connector, strain relief.

CHW-30

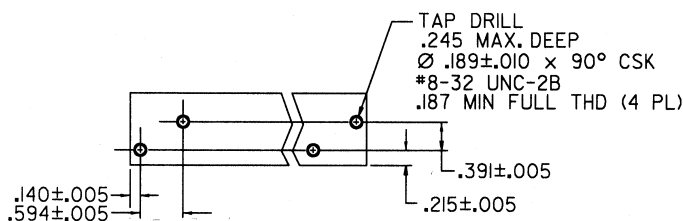
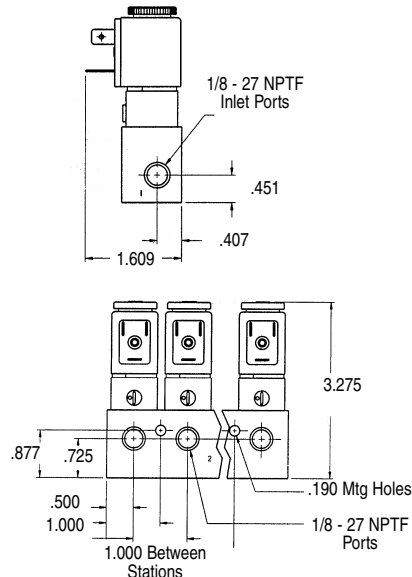
30-mm connector, molded cable.

119690-XX

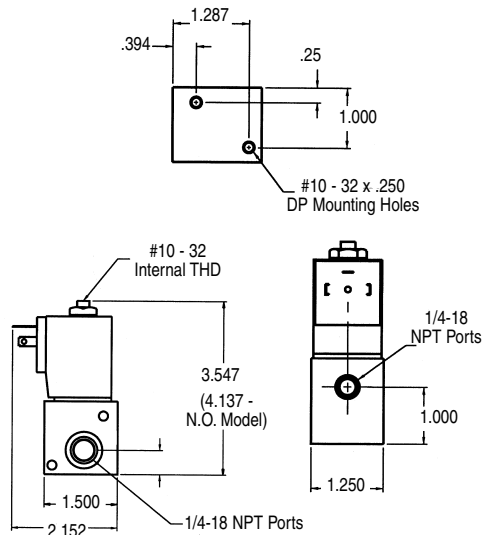
See Page 71 for Coil information.

Dimensional Data

Cat Valve Bar Manifold



High Flow Cat Valve



Accessories

High-Flow Tie-Rod Kits

Stacking Tie-Rod Kits

119698-2 (2 Stations)

119698-3 (3 Stations)

119698-4 (4 Stations)

119698-5 (5 Stations)

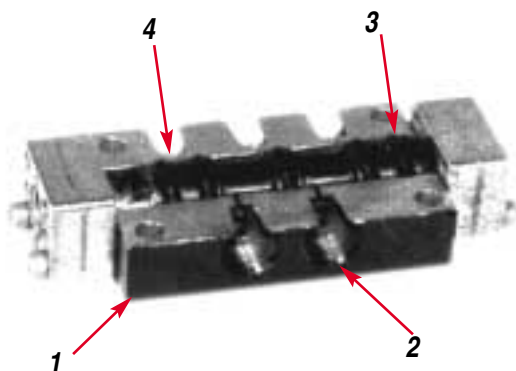
119698-6 (6 Stations)

119698-7 (7 Stations)

Features

50 Series 3-Way & 4-Way Valves

- Numerous Styles and Options.
3-Way or 4-Way Configurations.
- Six Actuator Styles.
Hand Lever Cam Stem
Palm Button Pilot
Roller Cam Manual Bleed
- Compact Size provides greater design flexibility.
- Perfect for low to moderate flow applications requiring manual or mechanical valve operation.



Comprehensive Valve Design

- 1. Aluminum Body**
50 Series Valves feature an extruded aluminum body for less porosity, greater durability and lighter weight.
- 2. Body Threaded Ports**
Port threads are 1/8" NPTF
- 3. Buna N Seals**
The standard spool seals are Buna N. For high temperature applications, Viton seals are available. Consult the factory for ordering information.
- 4. Sturdy Valve Spools**
Spools are steel on mechanical and manually actuated valves. Pilot and bleed actuator valves feature aluminum spools.

50 Series Valves



Hand Lever



Palm Button



Roller Cam



Cam Stem



Pilot



Manual Bleed

Ordering

3-Way & 4-Way Valves

50 Series Valves

50 X X - XX

Valve Function

Code	Description
3	3-Way
4	4-Way

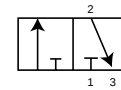
Body Style

Code	Description
0	1/8" Side Ports
1*	1/8" Side Ports with panel mounting

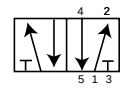
*Available only with Palm Button Actuators (02, 12, 21, 22, 32, 41)

Actuator / Return

Code	Actuator/Return
01	Hand Lever/Spring
10	Hand Lever/Manual
20	Hand Lever/Pilot
02	Palm Button/Spring
12	Palm Button/Manual
21	Palm Button/Pilot
22	Palm w/o Button/Spring
32	Palm w/o Button/Manual
41	Palm w/o Button/Pilot
05	Roller Cam/Spring
06	Cam Stem/Spring
07	Pilot/Spring
35	Pilot/Pilot
33	Manual Bleed/Manual Bleed



3-Way



4-Way

Optional Palm Buttons

Code	Description
13111	Plastic, Black
119243	Metal, Plain
119244	Metal, Red
119245	Metal, Green
MP3651-7	Plastic, Red

For 22, 32 or 41 Actuators

Performance Specifications

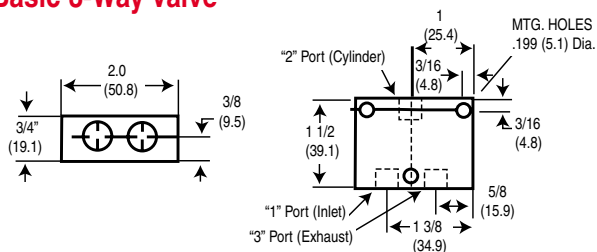
Pressure Range:	20-150 PSI Max. 50-150 PSI Max. (Manual Bleed Actuator)
Flow:	16 SCFM
Cv Factor:	.43 Cv
Temperature Rating:	-10° to 180°F (-23° to 82°C)
Minimum Pilot Pressure:	30 PSI (2.1 Bar) Pilot Return 60 PSI (4.2 Bar) Pilot Actuator/Spring Return Valves
Lubrication:	Valves use O-ring seals. For maximum performance and life expectancy, standard air line lubrication should be used.

Dimensional Data

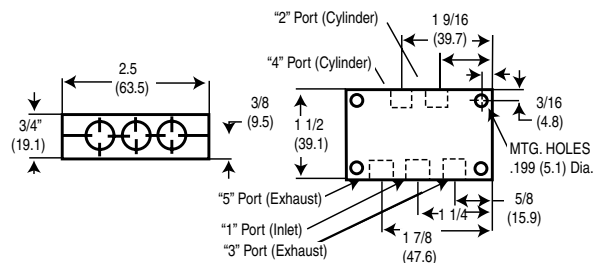
Dimensions given in Inches
and (Millimeters)

50 Series Valves

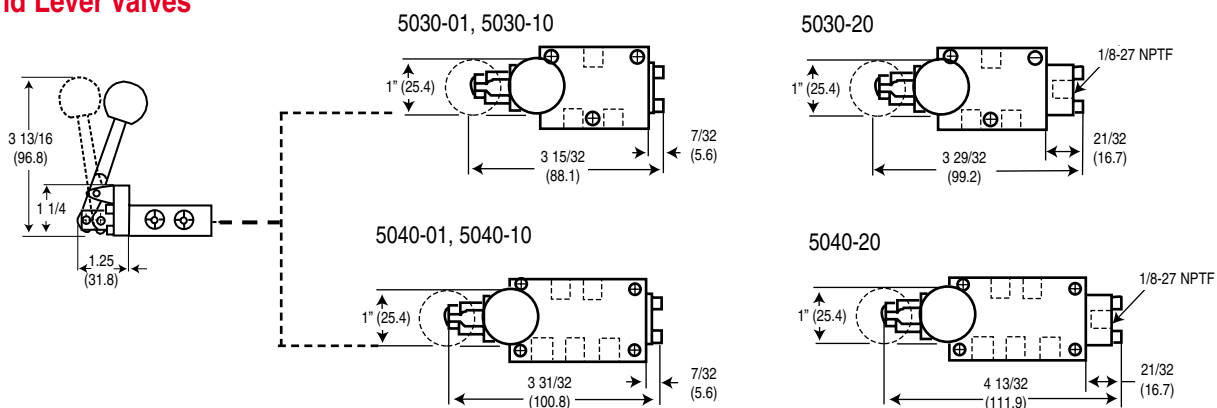
Basic 3-Way Valve



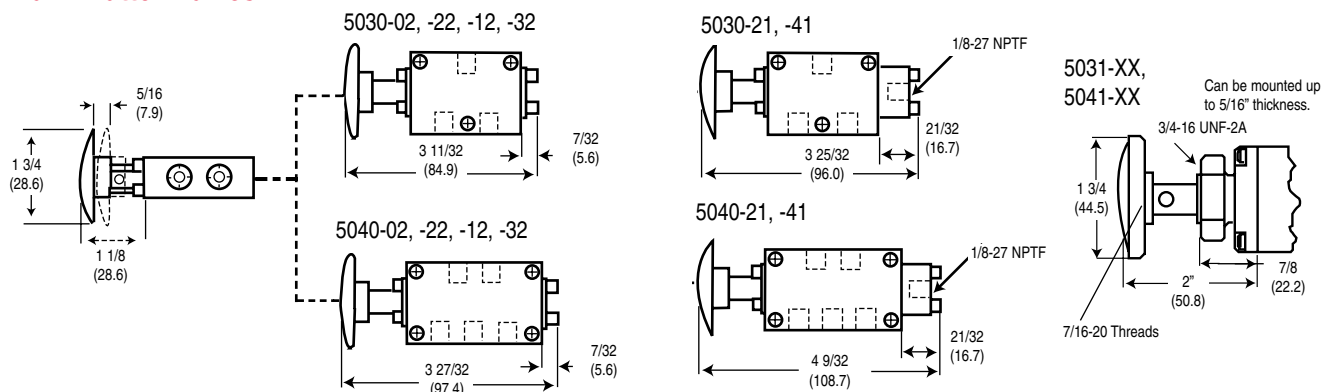
Basic 4-Way Valve



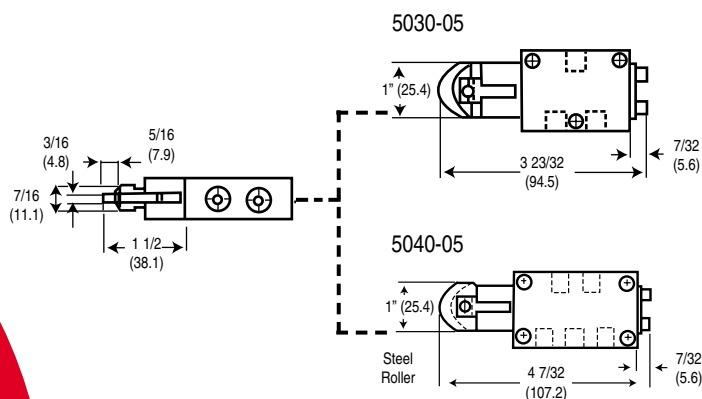
Hand Lever Valves



Palm Button Valves



Roller Cam Valves

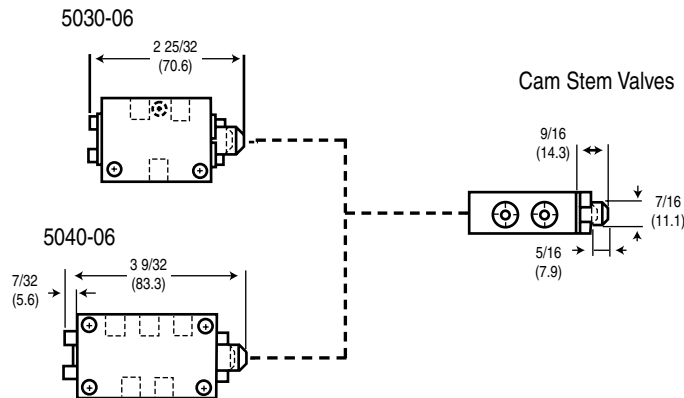


Dimensional Data

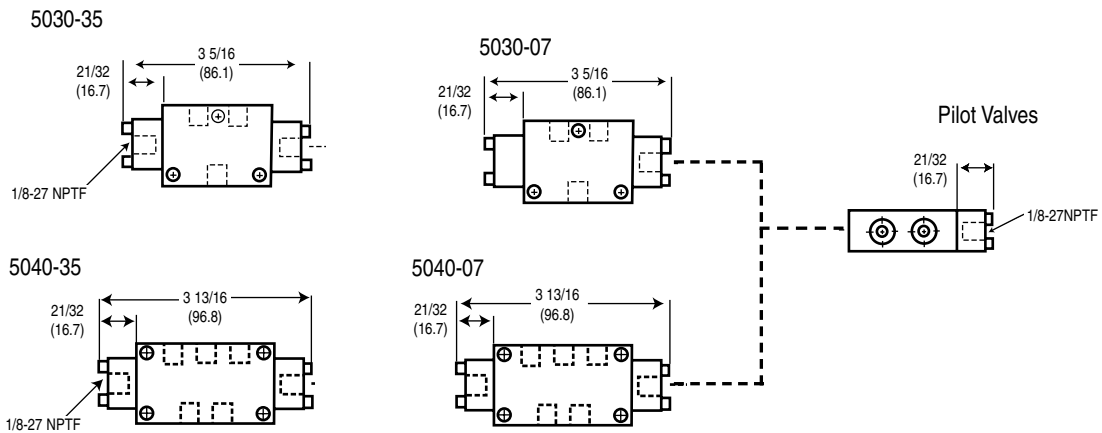
Cam Stem Valves

Dimensions given in Inches and (Millimeters)

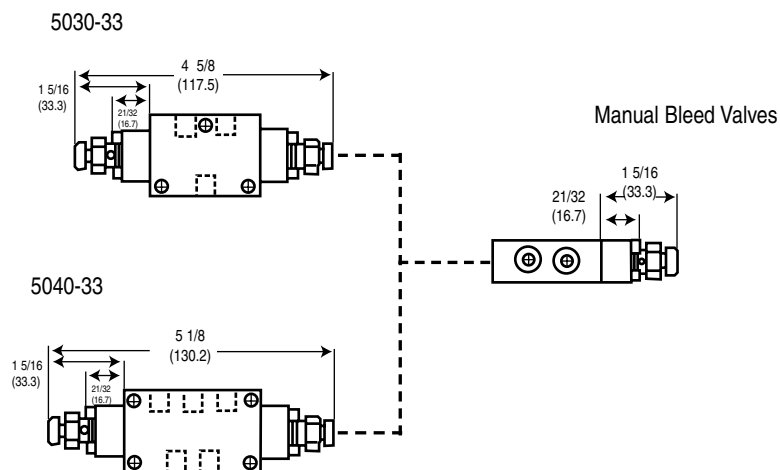
50 Series Valves



Pilot Valves



Manual Bleed Valves



Features

3-Way & 4-Way Valves

Several Styles and Options

3-Way or 4-Way Configurations. 2-and 3-position configurations.

Numerous Actuator Styles

<u>Manual</u>	<u>Mechanical</u>	<u>Electric</u>	<u>Pneumatic</u>
Hand Lever	Cam Stem	Single Solenoid	Pilot
Palm Button	Roller Cam	Double Solenoid	Bleed
Pedal			
Treadle			

Many Performance Features

Buna-N spool seals are standard. Viton seals are available for high temperature applications. Consult the factory for ordering information.

The E Series Valve has a low profile. An extruded aluminum body provides excellent durability and lighter weight.

An External Solenoid Supply Port allows service in low pressure applications. This requires a #116153 plug Kit. See Page 48 for operation and ordering information.

Solenoid Override

Manual locking override is standard on solenoid models. Turn override to operate.

Solenoid override is a convenient means to set-up and trouble shoot circuits. Air pressure at the solenoid exhaust will also override the solenoid.

Coils

Coils are UL and CSA Listed (Files: UL #MH13513; CSA #LR51090).

E Series Valves



Hand Lever



Palm Button



Pedal



Treadle



Cam Stem



Roller Cam



Solenoids



Pilot



Bleed

Performance Specifications

Pressure Ranges:

<u>Manual Actuators</u>	Min. Pilot Press	
	PSI (Bar)	PSI (Bar)
Manual, Spring, and Spring Centered Returns:	20-150 (1.4-10.2)	30 (2)
<u>Mechanical Actuators</u>		
Manual, Spring, and Spring Centered Returns:	20-150 (1.4-10.2)	30 (2)
<u>Electric Actuators</u>		
Spring Return	30-150 (2-10.2)	
Spring Centered Return	35-150 (2.4-10.2)	
Solenoid Return	20-150 (1.4-10.2)	
<u>Pneumatic Actuators</u>		
Pilot/Spring Return	20-150 (1.4-10.2)	30 (2)
Pilot/Spring Centered	20-150 (1.4-10.2)	35 (2.4)
Pilot/Pilot Return	20-150 (1.4-10.2)	15 (1)
Bleed/Spring Return	20-150 (1.4-10.2)	
Bleed/Bleed	20-150 (1.4-10.2)	

Flow: 26 SCFM

Cv Factor: .70 Cv

Temperature Ratings: -10° to 180° F (-23° to 82° C)

Weight: Solenoid Valves 1.8 to 3.4 oz. (.82 to 1.5 g)
Non-Solenoid Valves .7 to 1.3 oz. (.32 to .6 g)

Lubrication: Valves use O-ring seals. For maximum performance and life expectancy, standard air line lubrication should be used.

Ordering

E Series Valves

E Series Valves

Valve Type

Code	Description
1	2 Position Detent
2	2 Position
3	3 Position Spring Centered
5	3 Position Detent (3 & 5, all ports blocked)
6	3 Position Detent (inlet ports blocked, cylinder ports open)
7	3 Position Spring Centered (6 & 7, inlet ports blocked, cylinder ports open)

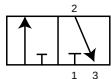
Body Style

Code	Description
1	4 Way Side Ported
4*	4 Way Bottom Ported
5	3 Way Side Ported

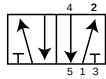
*Solenoid and Pilot Models only.

Port Size

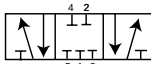
Code	Description
2	1/4" NPT



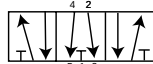
3-Way



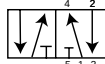
4-Way, 2-Position



4-Way, 3-Position all
ports blocked



4-Way, 3-Position inlet ports
blocked, cylinder ports open



4-Way, 2-Position Bleed
Valve

E X X 2 XX - XXX - X

Current Type

Code	Description
A	AC
D	DC
N	No Coil

Required only on Solenoid Valves.

If coil option A or D is selected, a coil connector must be ordered. See Pg. 71 for coil & connector information.

Coil Voltage

Code	Description	Code	Description
000	No Coil	024	24V (AC or DC)
005	5V (AC or DC)	120	120V (AC or DC)
012	12V (AC or DC)	240	240V AC

Required only when ordering Solenoid Valves.

Actuator / Return

Code	Actuator/Return
BD	Bleed Double
BS	Bleed/Spring
CS	Cam Stem/Spring
US	Cam Stem/Spring, 1/4" Spool travel, 3-way valve only.
RS	Roller Cam/Spring
HM	Palm/Manual
HP	Palm/Pilot
HS	Palm/Spring
WM	Palm w/o Button/Manual
WP	Palm w/o Button/Pilot
WS	Palm w/o Button/Spring

Actuator / Return

Code	Actuator/Return
LM	Hand Lever/Manual
LP	Hand Lever/Pilot
LS	Hand Lever/Spring
PD	Pilot/Double
PS	Pilot/Spring
SD	Double Solenoid
SN	Solenoid/Spring-N.O.
SS	Solenoid/Spring
FS	Pedal/Spring
TM	Treadle/Manual
TS	Treadle/Spring

Numbering ends here if a Non-Solenoid Valve is being selected.

VALVES

Accessories

Palm Buttons

For use with **WM**, **WP** or **WS** Actuators.

13111	Plastic, Black
119243	Metal, Plain
119244	Metal, Red
119245	Metal, Green
MP3651-7	Plastic, Red

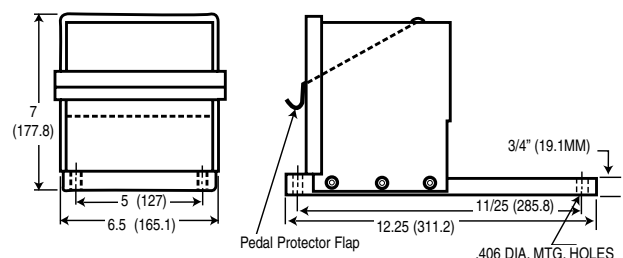


20965-1

Foot Pedal Guards

Recommended for applications where accidental actuation may result in damage or injury. Model 20965-1 is designed to comply with ANSI No. B11.1-1971 specifications and OSHA regulations.

20965-1	Pedal Guard with Flapper
20965-2	Pedal Guard without Flapper

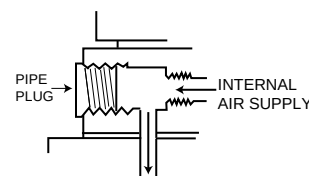


Accessories

116153 Plug Kit

Kit needed for low pressure applications requiring an external Solenoid Supply Pressure. To use, remove and discard the standard pipe plug in the solenoid base. Thread the Plug/O-ring assembly into the threaded port. This blocks the internal supply connection. Finish by connecting an external air supply to the 1/8 NPTF port.

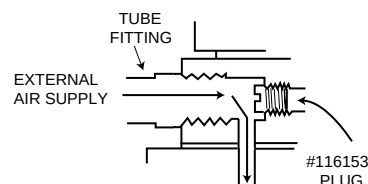
E Series Valves



SOLENOID VALVE
W/INTERNAL SOLENOID SUPPLY
FROM VALVE BODY AS SHIPPED

20167 Manifold

Used with 4-Way, Bottom Ported Valves; Solenoid & Pilot models only. One manifold is required for each valve. Each 20167 kit includes one (1) manifold and one (1) gasket.



CONVERTED SOLENOID VALVE
W/EXTERNAL SOLENOID SUPPLY
CONNECTION

Use of 116153 Plug Kit

20172 Subplate

Used with 4-Way, Bottom Ported Valves; Solenoid & Pilot models only. One manifold is required for each valve. Each 20172 kit includes one (1) subbase, one (1) gasket and four (4) pipe plugs.

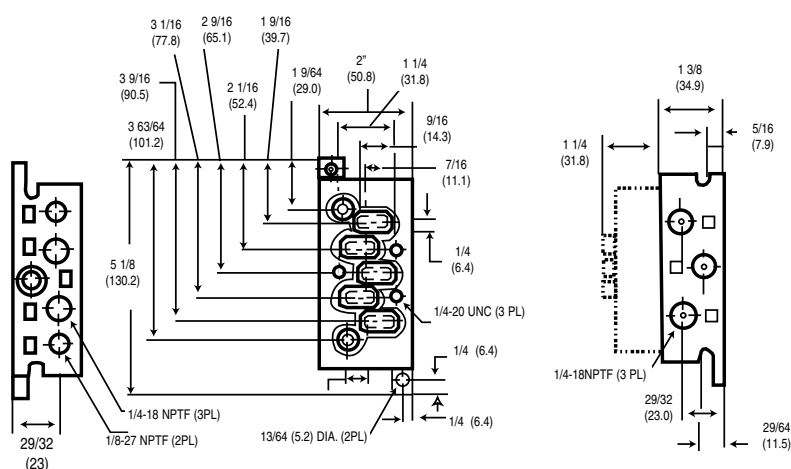
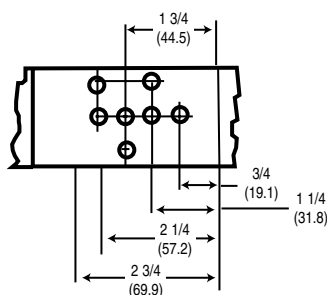


Two E242PS Valve on a
20167 Manifold

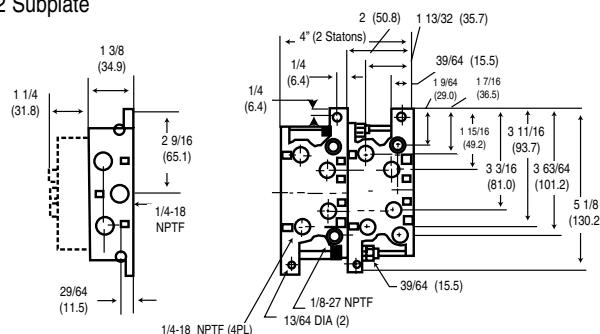
One E242PS Valve on
a 20172 Subplate

Dimensional Data

20167 Manifold



20172 Subplate

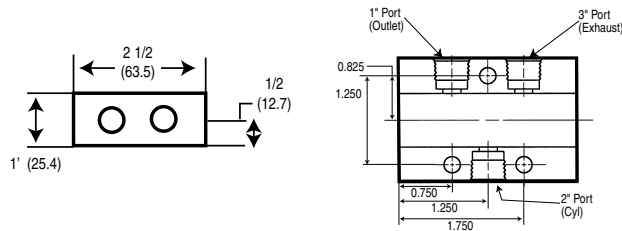


Dimensional Data

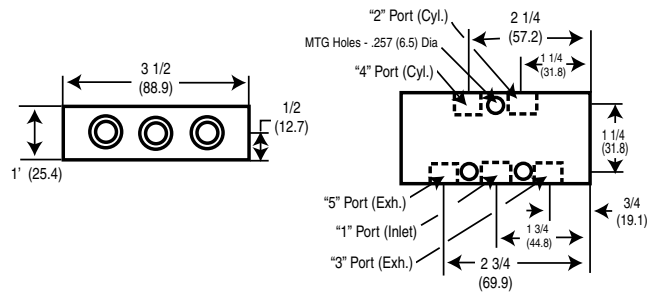
Dimensions given in
Inches and (Millimeters)

E Series Valves

Basic 3-Way Valve

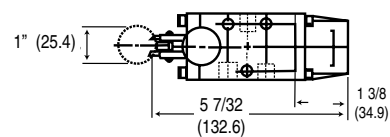
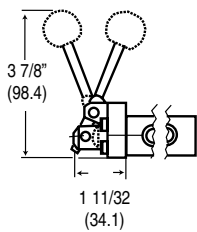


Basic 4-Way Valve

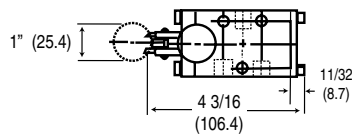


Hand Lever Valves

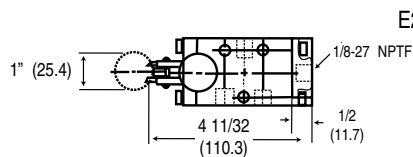
3 Way Valves



E252LS

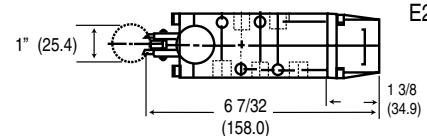


E252LM
E152LM

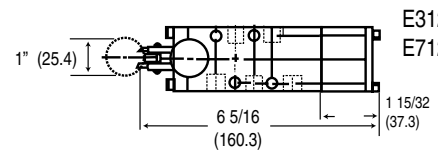


E252LP

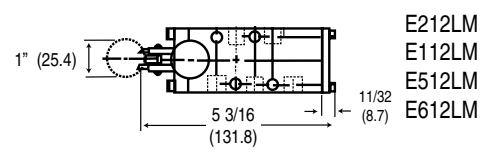
4 Way Valves



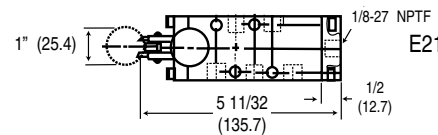
E212LS



E312LM
E712LM



E212LM
E112LM
E512LM
E612LM

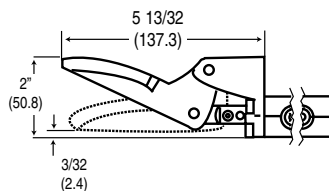
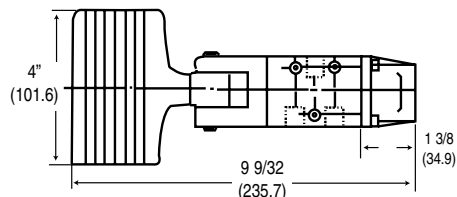


E212LP

Pedal

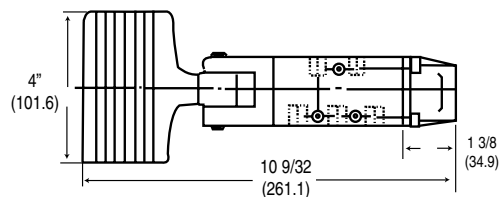
3 Way Valves

E252FS



4 Way Valves

E212FS

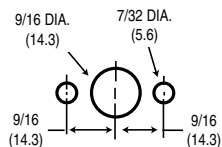
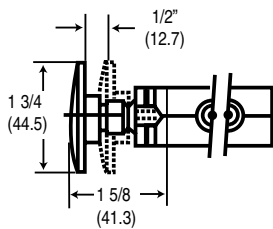


Dimensional Data

Dimensions given in
Inches and (Millimeters)

E Series Valves

Palm Button Valves

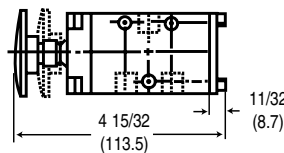


Palm Button Valves may be panel mounted. 1/8" Max. panel thickness utilizing two 10-24 UNC tapped holes in end cap

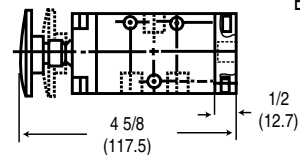
Not Available on detent models:

E152HM or -WM
E112HM or -WM

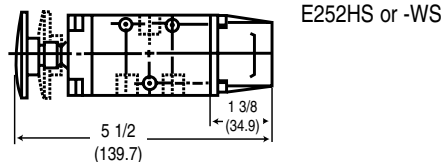
3 Way Valves



E252HM or -WM
E152HM or -WM

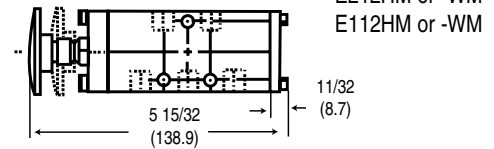


E252HP or -WP

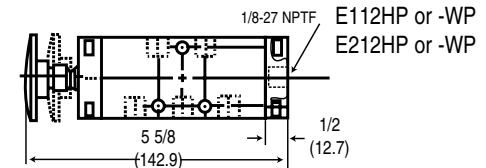


E252HS or -WS

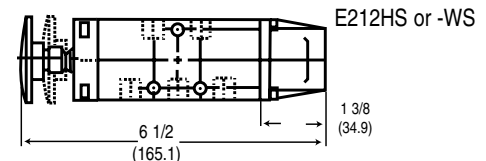
4 Way Valves



E212HM or -WM
E112HM or -WM

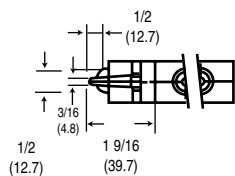


E112HP or -WP
E212HP or -WP

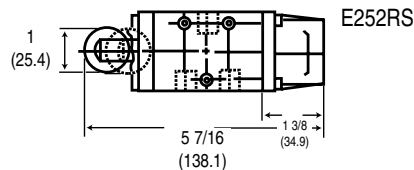


E212HS or -WS

Roller Cam Valves

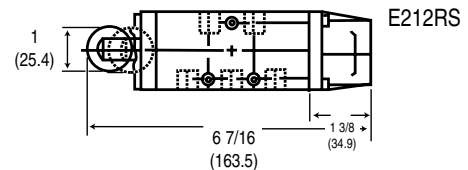


3 Way Valves



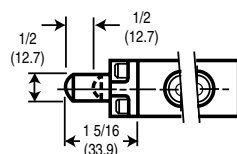
E252RS

4 Way Valves

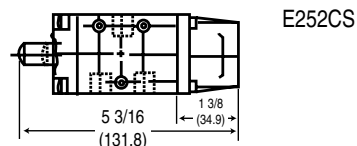


E212RS

Cam Stem Valves

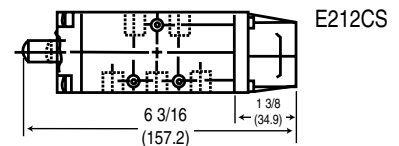


3 Way Valves



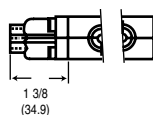
E252CS

4 Way Valves

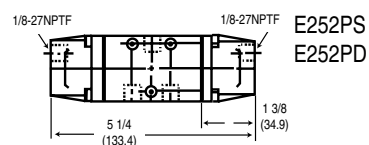


E212CS

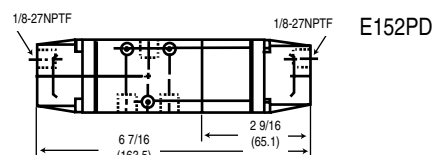
Pilot Valves



3 Way Valves

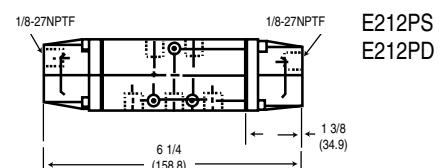


E252PS
E252PD

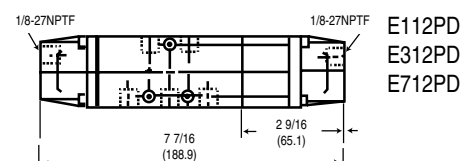


E152PD

4 Way Valves



E212PS
E212PD



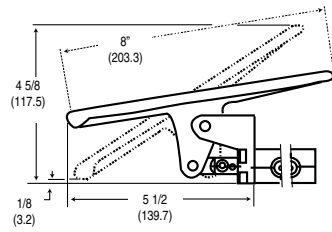
E112PD
E312PD
E712PD

Dimensional Data

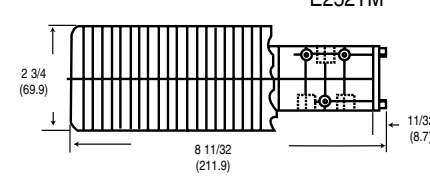
Dimensions given in
Inches and (Millimeters)

E Series Valves

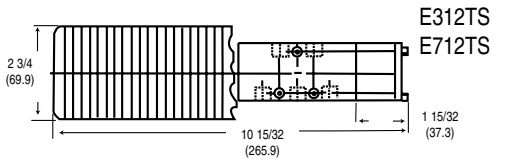
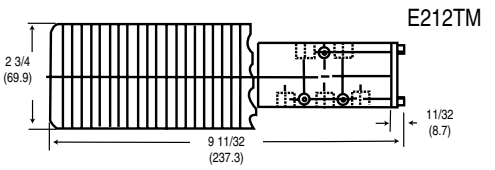
Treadle Valves



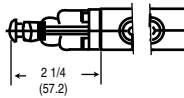
3 Way Valves



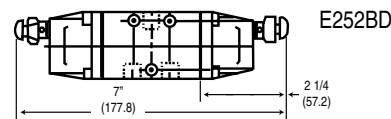
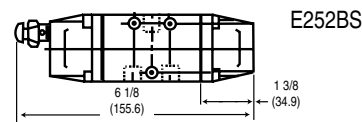
4 Way Valves



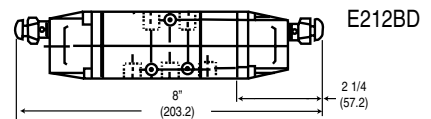
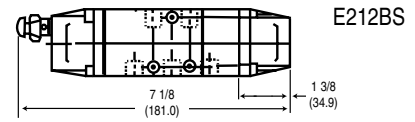
Bleed Valves



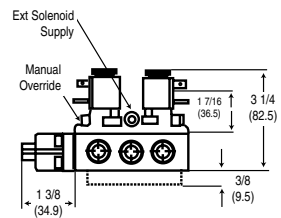
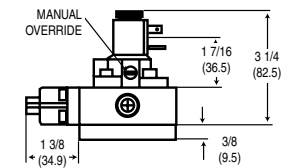
3 Way Valves



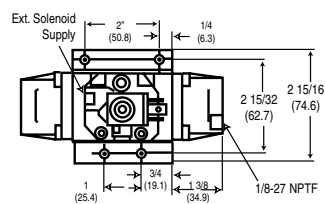
4 Way Valves



Solenoid Valves

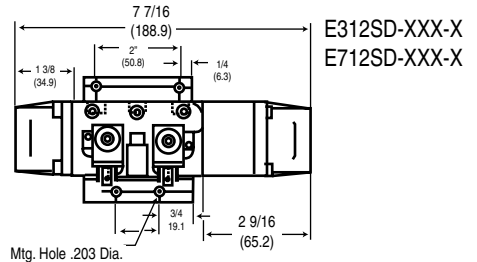
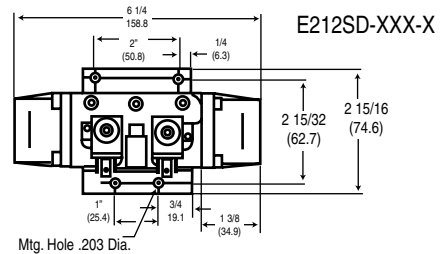
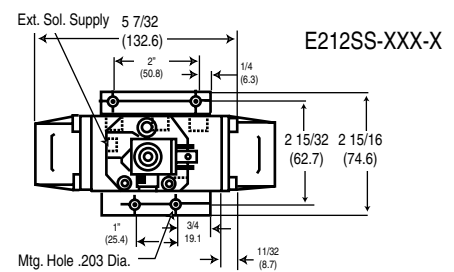


3 Way Valves



E252SN-XXX-X
E252SS-XXX-X

4 Way Valves



Features

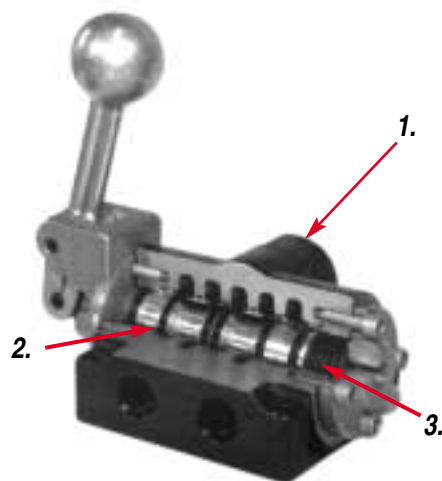
Styles and Options.

5-Port, 4-Way, 2 and 3-position directional control valves.

Seven Actuator Styles.

<u>Manual</u>	<u>Electric</u>	<u>Pneumatic</u>
Hand Lever	Single Solenoid	Pilot
Pedal	Double Solenoid	Bleed
Treadle		
Palm Button		

K-Series valves are available with either threaded side ports, on a subplate containing all ports, or on a subplate with the exhaust in the valve body.



Comprehensive Valve Design

1. Aluminum Body

Sand cast aluminum body provides a rugged, reliable valve.

2. Buna N Seals

Standard seals are Buna N, for extended valve life. Viton seals are available for high temperature applications. Consult factory for ordering information.

3. Sturdy Spools

K-Series valves have an aluminum spool. This slides in a hard anodized Teflon non-stick aluminum sleeve (3/8" or 1/2" models) The sleeves are brass on 3/4" or 1" models.

4. Standard Solenoid Override Feature

3/8" and 1/2" models only.

5. External Solenoid

External Solenoid supply port enables valve operation for vacuum service or low pressure operations. For proper supply connection, consult factory. (Remove end cap and rotate gasket 90° for remote solenoid supply.)

K Series Valves



Hand Lever



Pedal



Treadle



Solenoids



Pilot



Bleed

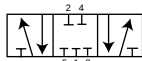
Ordering

K Series Valves

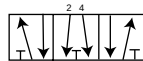
K Series Valves		Current Type	
Valve Type		Code	Description
Code Description		A	AC
2 2 Position		D	DC
3 3 Position Spring Centered		N	No Coil
5 3 Position Detent (3 & 5 all ports blocked in neutral)		Only on Solenoid Valves.	
6 3 Position Detent (inlet ports blocked, cylinder ports open in neutral)		If coil option A or D is selected, a coil connector must be ordered. See Pg. 71 for coil & connector information.	
7 3 Position Spring Centered (6 & 7 inlet ports blocked, cylinder ports open in neutral)			
Body Style		Coil Voltage	
Code	Description	Code	Description
1 4 Way Side Ported		000	No Coil
* 3 4 Way Bottom Ported for subplate mounting. Common exhaust in subplate.		005	5V (DC only)
* 4 4 Way Bottom Ported for subplate mounting. Exhaust in valve body.		012	12V (AC or DC)
To order Subplates, see menu on Page 54.		024	24V (AC or DC)
		120	120V (AC or DC)
		240	240V (AC only)
		Required only with Solenoid Valves	
Port Size		Actuator / Return	
Code	Description	Code	Actuator/Return
3	3/8" NPT	BD	Bleed/Bleed
4	1/2" NPT	BS	Bleed/Spring
6	3/4" NPT	*FP	Pedal/Pilot
8	1" NPT	*FS	Pedal/Spring
		**HS	Palm/Spring
		*LM	Hand Lever/Manual
		*LS	Hand Lever/Spring
		PD	Pilot/Pilot
		PS	Pilot/Spring
		SD	Solenoid/Solenoid
		SS	Solenoid/Spring
		*TM	Treadle/Manual
		*FP, FS, LM, LS & TS available in 3/8" and 1/2" port sizes only. Numbering ends here if a Non-Solenoid valve is being selected.	
		**HS available in 3/8" port size only.	



2-Position



3-Position, inlet ports blocked



3-Position, inlet blocked, cylinder ports open



20965-X Foot Pedal Guards, for use with Pedal Style valves. See Pg. 47 (bottom) for details.

Dimensional Data

Pressure Ranges:

Manual Actuators

	PSI (Bar)	Min. Pilot Press PSI (Bar)
Manual, Spring, and Pilot	0-150 (0-10.4)	20 (1.4)
Manual, Spring, and Pilot	0-150 (0-10.4)	20 (1.4)

Mechanical Actuators

Electric Actuators

Spring Return	50-150 (3.5-10.4)	
Spring Centered Return	60-150 (4.1-10.4)	
Solenoid Return	20-150 (1.4-10.4)	
Pilot/Spring Return	0-150 (0-10.4)	50 (3.5)
Pilot/Spring Centered	0-150 (0-10.4)	60 (4.1)
Pilot/Pilot Return	50-150 (3.5-10.4)	20 (1.4)
Bleed/Spring Return	50-150 (3.5-10.4)	
Bleed/Bleed	20-150 (1.4-10.4)	

Pneumatic Actuators

Flow & Cv Factor:

Port Size	Flow	Cv Factor
3/8"	83 SCFM	2.30
1/2"	90 SCFM	2.57
3/4"	270 SCFM	7.54
1"	280 SCFM	7.80

Temperature Ratings:

-10° to 180° F (-23° to 82° C)

Lubrication:

Valves use O-ring seals. For maximum performance and life expectancy, standard air line lubrication should be used.

Ordering

Sub Plate

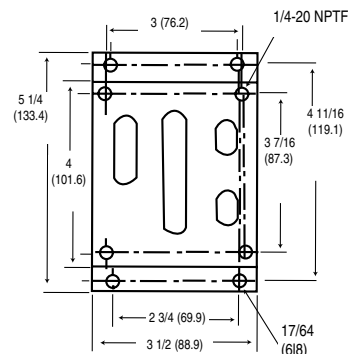
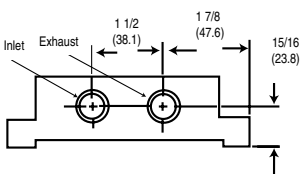
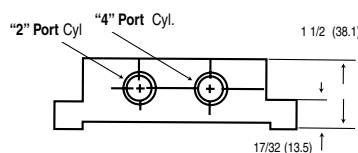
Port Size	Valve Body Style	
	"3" Bottom Ported, Exhaust in Subplate	"4" Bottom Ported, Exhaust in Valve
3/8"	116737	37013
1/2"	37112	116738

K Series Valves

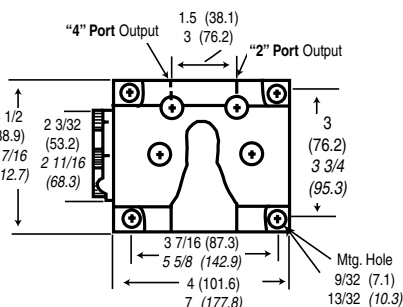
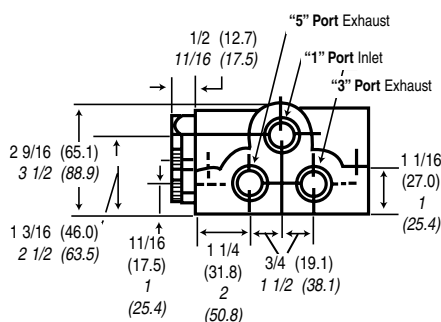
Dimensional Data

Dimensions given in Inches and (Millimeters)

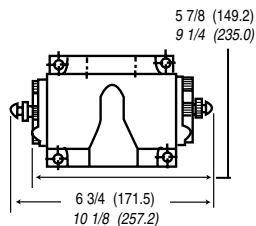
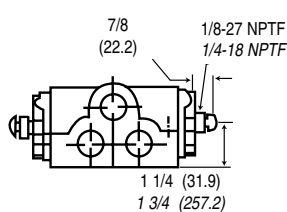
Sub Plates (3/8" & 1/2" Ports)



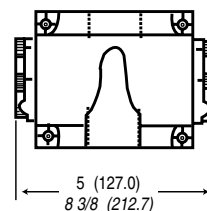
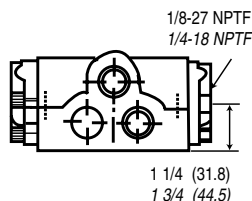
Basic Valves



Pilot & Bleed Valves



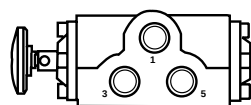
K2XXPS
K2XXPD
K3XXPD
K7XXPD



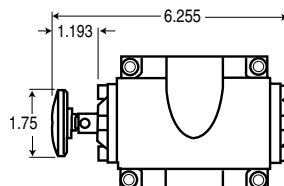
K21XBS
K21XBD

Top Dimension = 3/8" & 1/2" Ports
Bottom Dimensions = 3/4" & 1" Ports

Palm Valves



H213HS

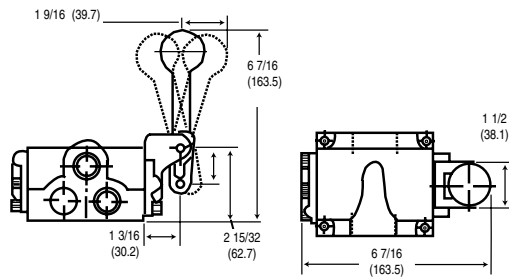


Dimensional Data

Dimensions given in Inches
and (Millimeters)

K Series Valves

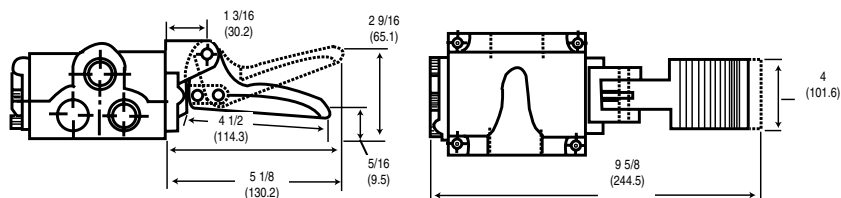
Hand Lever



K2XXLM
K3XXLM
K5XXLM
K6XXLM
K7XXLM
K2XXLS

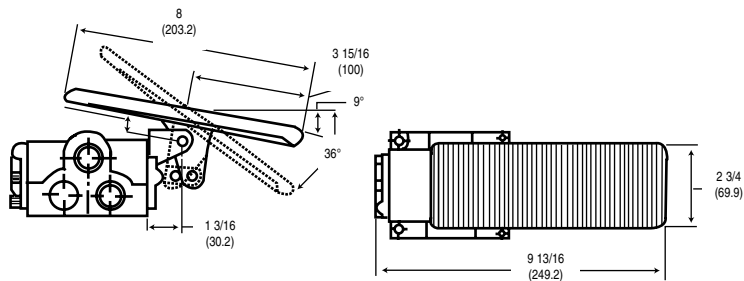
Top Dimension = 3/8" & 1/2" Ports Bottom
Dimensions = 3/4 & 1" Ports

Pedal



K2XXFS
K2XXFP

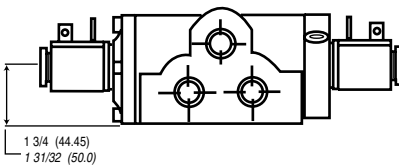
Treadle



K2XXTM
K5XXTM
K6XXTM
K3XXTS
K7XXTS

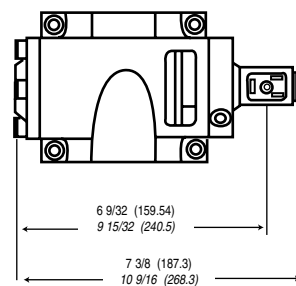
Solenoid

Double Solenoid

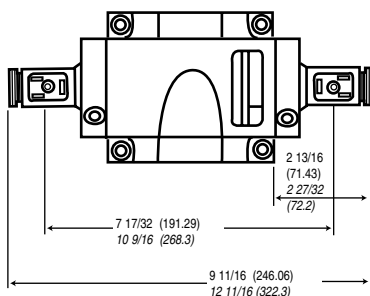


K2XXSD-XXX-X
K3XXSD-XXX-X
K7XXSD-XXX-X

Single Solenoid



K2XXSS-XXX-X



Top Dimension = 3/8" & 1/2" Ports Bottom
Dimensions = 3/4 & 1" Ports

Features

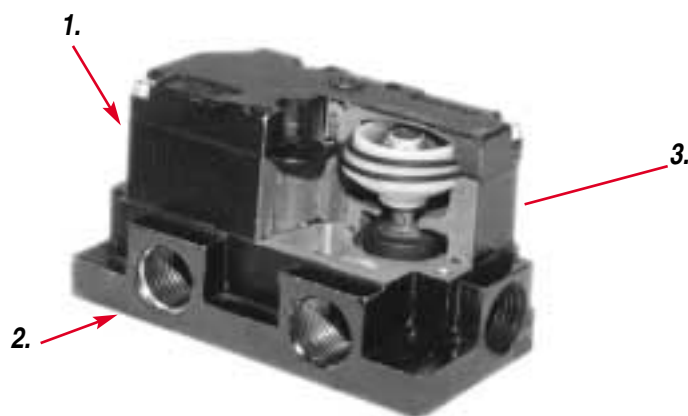
- H-Series Valves feature high-flow and fast response.
- Numerous Styles and Options.
- 3-Way and 4-Way 2-position Poppet Valves
- Several Actuator Styles.
- Override is not available with "H" Series Valves

Electric

3-Way Single Solenoid
4-Way Single Solenoid
4-Way Double Solenoid

Pneumatic

3-Way Pilot
4-Way Pilot
4-Way Pilot Bleed
4-Way Manual Bleed



Comprehensive Valve Design

1. Durable Valve Body

Valve body is die-cast Zinc, with a zinc chromate coating for added corrosion resistance in harsh environments.

2. Superior Performance

Large, unrestricted air passages produce high flow and fast response times.

3. Superior Design

3-Way valves feature a single poppet. 4-Way valves (as shown) have two simultaneously driven poppets to provide the 4-way function.

H Series Valves



3-Way
Pilot



3-Way
Solenoid



4-Way Solenoid



Manual Bleed

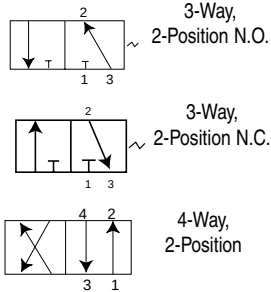


Pilot Bleed



4-Way Pilot

H Series Valves



Performance Specifications

Valve Performance Data

3-Way Valves

<u>Actuator</u>	<u>Return</u>	<u>PSI (bar)</u>	<u>Press PSI (bar)</u>
Pilot	Spring	30-150 (2.1-10.4)	30 (2.1)
Solenoid	Spring	30-150 (2.1-10.4)	

3-Way Valve Flow SCFM

Port	Side	Cv	Bottom	Cv
<u>Size</u>	<u>Ported</u>	<u>Factor</u>	<u>Ported</u>	<u>Factor</u>
1/4"	55	1.51	27	0.71
3/8"	81	2.27	58	1.62
1/2"	85	2.40	-----	----

4-Way Valves

Actuator	Return	PSI (bar)	Press PSI (bar)
Pilot	Internal Pilot	20-150 (1.4-10.4)	20 (1.4)
Manual Bleed	Manual Bleed	20-150 (1.4-10.4)	
Pilot Bleed	Pilot Bleed	20-150 (1.4-10.4)	20 (1.4)
Solenoid	Internal Bleed or Solenoid	25-135 (1.7-9.3)	

4-Way Valve Flow SCFM

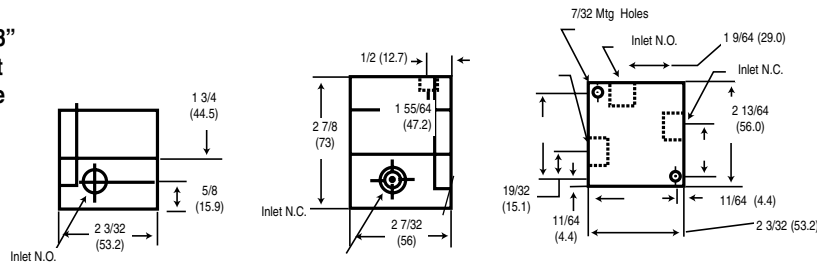
Port Size	Side Ported	Cv Factor
1/4"	50	1.40
3/8"	88	2.38
1/2"	100	2.80

Dimensional Data

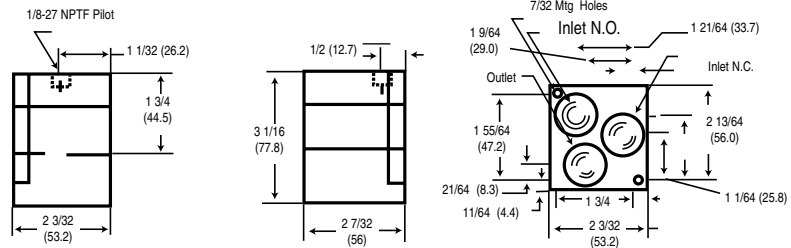
H Series Valves

3-Way Basic Valves

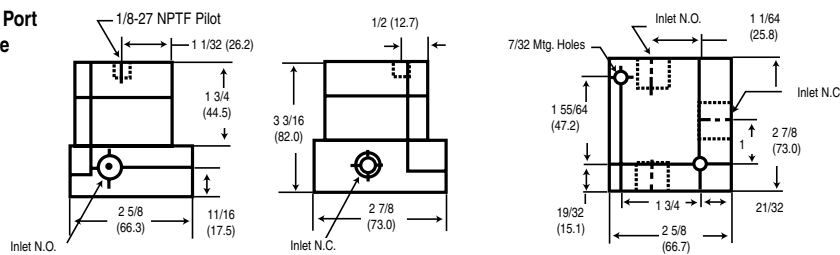
1/4" & 3/8" Side Port Sub-base



1/4" & 3/8" Bottom Port Sub-base

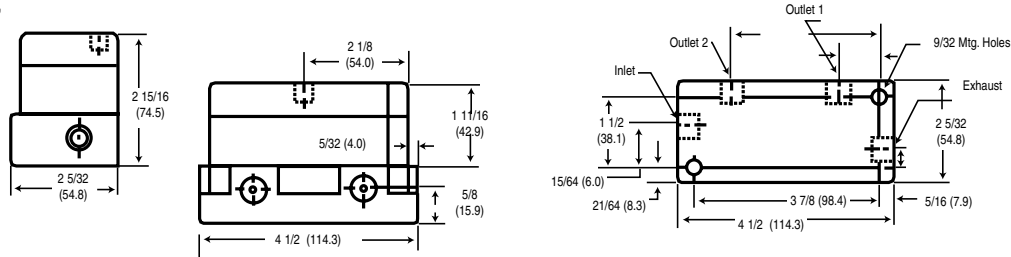


1/2 Side Port Sub-base

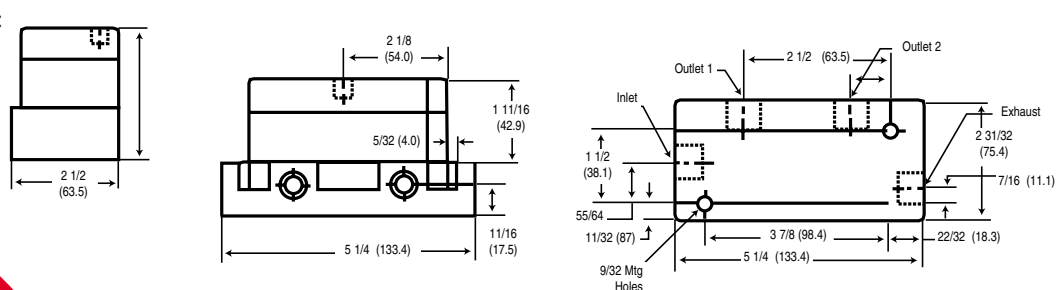


4-Way Basic Valves

1/4" & 3/8" Side Port Sub-base



1/2 Side Port Sub-base



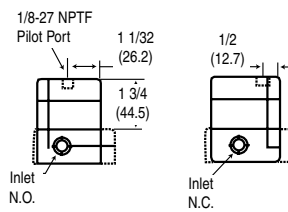
Dimensional Data

Dimensions given in Inches
and (Millimeters)

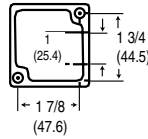
H Series Valves

Pilot Valves

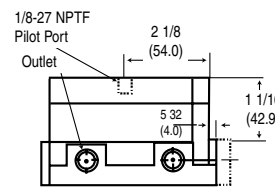
3-Way Pilot



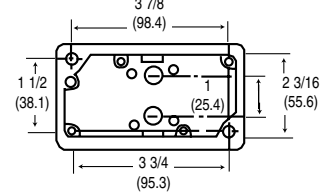
H25XPS



4-Way Pilot

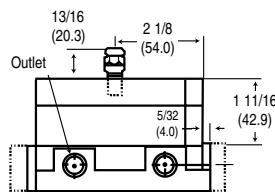


H21XPA

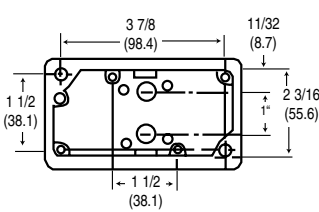


Bleed Valves

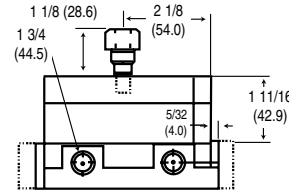
4-Way Manual Bleed



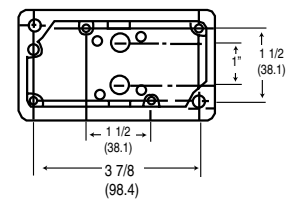
H21XBD



4-Way Pilot Bleed

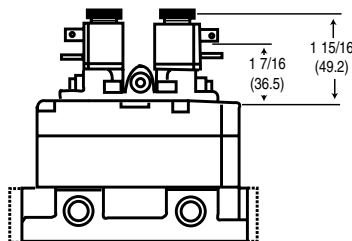


H21XPD

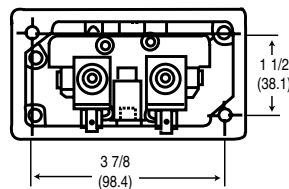


Solenoid Valves

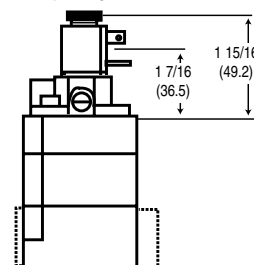
4-Way Double Solenoid



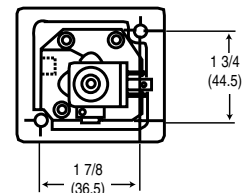
H21XSD-XXX-X H24XSD-XXX-X



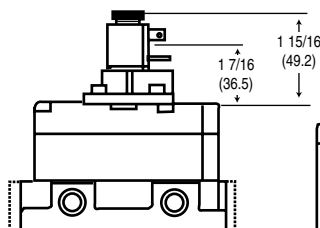
3-Way Single Solenoid



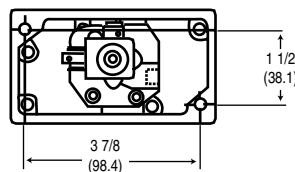
H25XSS-XXX-X H28XSS-XXX-X



4-Way Single Solenoid



H21XSA-XXX-X H24XSA-XXX-X



Features

- 200-Series valves can be plumbed to perform as normally passing, normally non passing, selector or any 2-way function.
- Ideal for sensing the position of moving devices such as cylinders, slides or gates.
- Mounting holes are standard 1" electrical centers
- Numerous Actuator Styles:

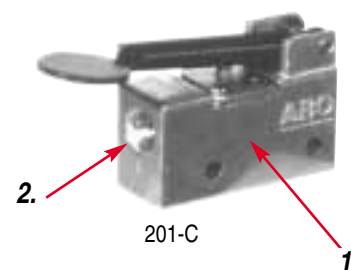
Mechanical

Short Roller Lever
Long Roller Lever
One-Way, Short Lever
One Way, Long Lever
Pin Plunger

Short Ball Roller
Long Ball Roller
Straight Plunger
Roller Plunger
Cross-Roller Plunger

Manual

Plain Lever
Fingertip Lever
Centering Toggle
Retained Toggle
Panel Button



Comprehensive Valve Design

1. Durable Valve Body.

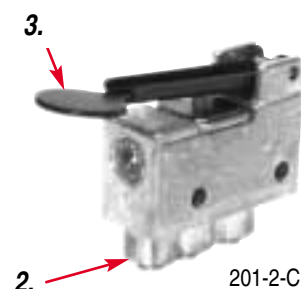
Body is die cast zinc for high wear resistance. Valve also features a stainless steel, Teflon coated spool, with Viton O-ring seals and Buna-N static seals.

2. Two Plumbing Options.

Available with 1/8" NPTF ports, or instant tube fittings for use with 5/32" (4mm) nylon tubing.

3. Numerous Actuator Styles.

Five manual, ten mechanical and one pilot actuators to choose from. Eight can be panel mounted.



Performance Specifications

Pressure Range:

30 to 150 PSIG (2.1 to 10.4 bar)

Temperature Range:

32 to 160 F (0 to 71 C)

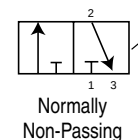
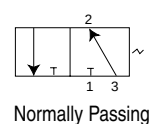
Actuating Force:

Actuator	Force Oz.(N)	Stroke In (mm)	Travel In (mm)
200	20 (5.56)	.195 (4.95)	.055 (1.40)
201	20 (5.56)	.289 (7.34)	.086 (2.18)
202	36 (10.0)	.086 (2.18)	.024 (0.61)
203	21 (5.84)	.160 (4.06)	.040 (1.02)
204	34 (9.45)	.089 (2.26)	.027 (.69)
205	23 (6.39)	.164 (4.17)	.043 (1.09)
209	57 (15.9)	.069 (1.57)	.015 (.38)
212	57 (15.9)	.069 (1.57)	.015 (.38)
213	57 (15.9)	.069 (1.57)	.015 (.38)
214	57 (15.9)	.062 (1.57)	.089 (2.26)
215	57 (15.9)	.062 (1.57)	.089 (2.26)
216	57 (15.9)	.062 (1.57)	.089 (2.26)
222	24 (6.67)	70°	----
223	24 (6.67)	70°	----
224	57 (15.9)	.062 (1.57)	.025 (3.18)

Flow & Cv Factor:

1/8" Ports: 7.5 SCFM Cv = .195

5/32" (4mm) Tube Fittings: 4.0 SCFM Cv = .104



206-C Minimum Pilot Pressure PSIG (bar)

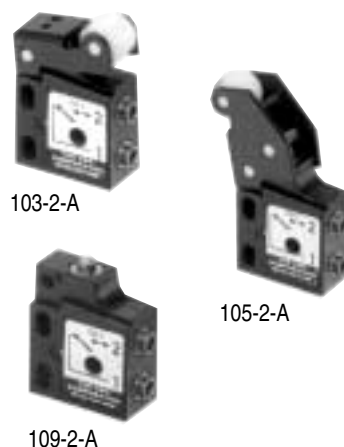
Supply Pressure	25 (1.7)	50 (3.4)	75 (5.1)	100 (6.9)	125 (8.6)	150 (10.4)
Piped IN - N.N.P.	11.5 (.8)	12.0 (.8)	12.5 (.9)	13.0 (.9)	13.5 (.9)	14.0 (1.0)
Piped IN - N.P.	14.5 (1.0)	17.0 (1.2)	19.5 (1.3)	22.0 (1.5)	24.5 (1.7)	27.0 (1.9)

Features

Miniature Control Valves

- Ball Poppet valve provides response.
- Slotted Mounting holes for easy placement and adjustment.
- 100 Series Mini Valves are non-passing, non-lube limit valves.
- 33% glass reinforced polyester body is strong, lightweight and corrosion resistant.
- Available with #10-32 threaded ports or 5/32" tube fittings. Both ports are on one side for ease of plumbing and maintenance.
- Seals are Buna-N, Stainless Steel Spring, Brass Plunger and Delrin Roller.

100 Series Valves



Performance Specifications

Pressure Range: 0 to 150 PSIG (0 to 10.4 bar)

Temperature Range: -10° to 180° F (-23° to 82° C)

Flow & Cv Factor: 3.4 SCFM at 100 PSIG (7 bar)
input 85 PSI (5.8 bar) output.
Cv = .09

Actuating Force:

Straight Plunger:

52 oz. at 100 PSIG
(14.46 N at 7 bar)

Levers:

25 oz. at 100 PSIG
(6.95 N at 7 bar)

Travel Operation:

Straight Plunger:

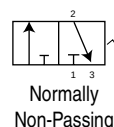
.03125" (.8mm) to actuate
.109375" (2.8mm) total

Levers:

.0625" (1.6mm) to actuate
.21875" (5.5mm) total

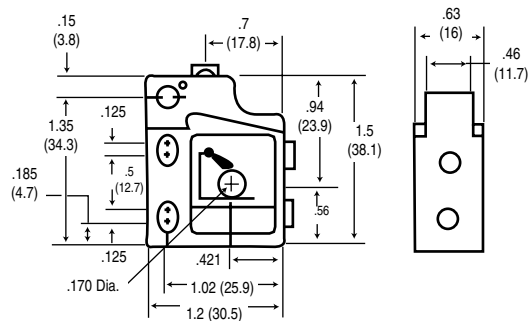
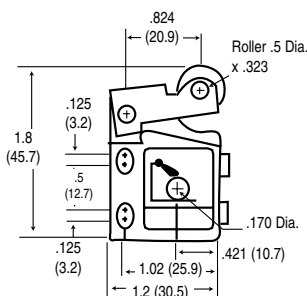
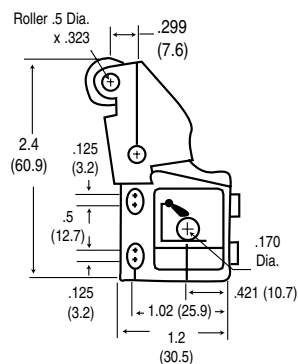
Ordering

Model #:	Port Size:	Actuator Type:
103-A	#10-32 Thread	Roller Lever
103-2-A	5/32" Tube	Roller Lever
105-A	#10-32 Thread	90° Roller Lever
105-2-A	5/32" Tube	90° Roller Lever
109-A	#10-32 Thread	Straight Plunger
109-2-A	5/32" Tube	Straight Plunger



Dimensional Data

100 Series

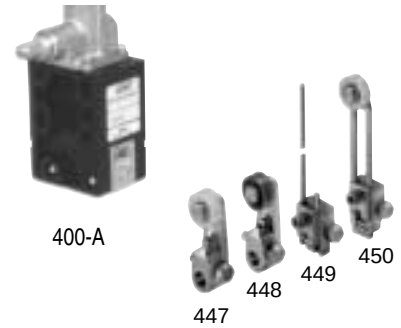


Dimensions given in Inches and (Millimeters)

Features

3-Way Limit Valves

- Plumb 400 Series valves as normally passing, normally non-passing, selector or any 2-way valve function.
- Ports available with either 1/8" NPTF threads or 5/32" tube fittings.
- Four actuator options: Nylon Roller, Steel Roller, Rod Lever or Adjustable Roller Lever. Actuators must be ordered separately. See menu below.
- Operating head may be adjusted to any of four positions.
- Outer case protects working parts from dirt.



Performance Specifications

Pressure Range:

30 to 150 PSIG (2.1 to 10.4 bar)

Flow & Cv Factor:

1/8" Ports

7.5 SCFMa

Temperature Range:

32 to 160 F (0 to 71 C)

Cv = .195

5/32" (4mm) Tube Fittings

4.0 SCFM

Actuating Force:

Actuator Force (lbs.)

447 1.6

448 1.6

449 0.5

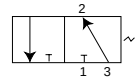
450 0.8

Actuating Torque

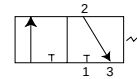
2.4 in. lbs.

Cv = .104

Normally
Passing



Normally
Non-Passing



119605 Side Plate Cover. Used to cover body cavities.

Ordering

Valves:

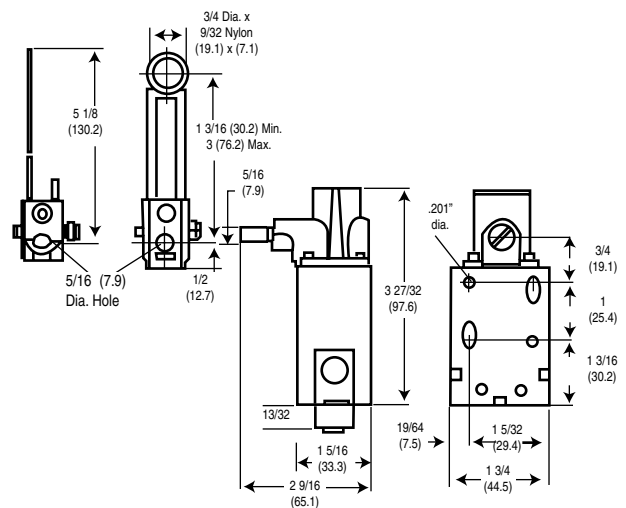
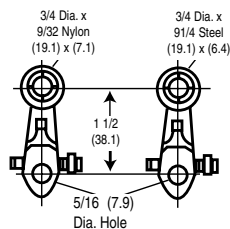
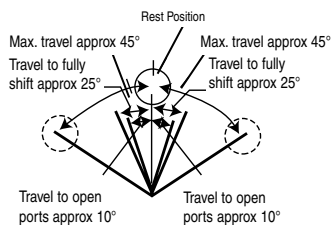
<u>1/8" Ports</u>	<u>Tube Fittings</u>	<u>Valve Action</u>
400-A	400-1-A	One Way, Clockwise
401-A	401-1-A	One Way, Counterclockwise
402-A	402-1-A	Clockwise & Counterclockwise

Actuators:

<u>Code</u>	<u>Description</u>
447	Nylon Roller
448	Steel Roller
449	Rod Lever
450	Adjustable Roller

Dimensional Data

400 Series



Dimensions given in Inches and (Millimeters)

Features

Palm Button Control Valves

- Plumb each to perform as normally passing, normally non-passing, selector or any 2-way valve function.
- Ports available with either 1/8" NPT threads or 5/32" tube fittings.
- 2 1/2" Buttons (63.5mm) are available in four colors. If needed, order 20975 guard separately.

460 Series



Performance Specifications

Pressure Range:

30 to 150 PSIG (2.1 to 10.4 bar)

Temperature Range:

32 to 160 F (0 to 71 C)

Flow & Cv Factor:

1/8" Ports

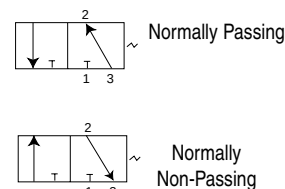
7.5 SCFM

Cv = .195

5/32" (4mm) Tube Fittings

4.0 SCFM

Cv = .104



Actuating Force:

3 lbs.

Ordering

4 6 X - X			
Port Size		Button Color	
Code	Description	Code	Description
0	1/8" NPT	-1	Black
1	5/32" Tubing	-2	Red
		-3	Green
		-4	Yellow

Accessories

20975 Button Guard

***20973-1** Black Button

***20973-2** Red Button

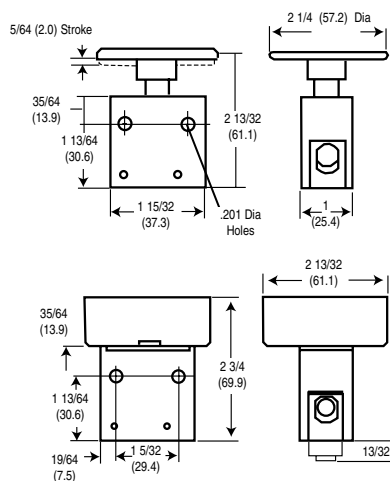
***20973-3** Green Button

***20973-4** Yellow Button

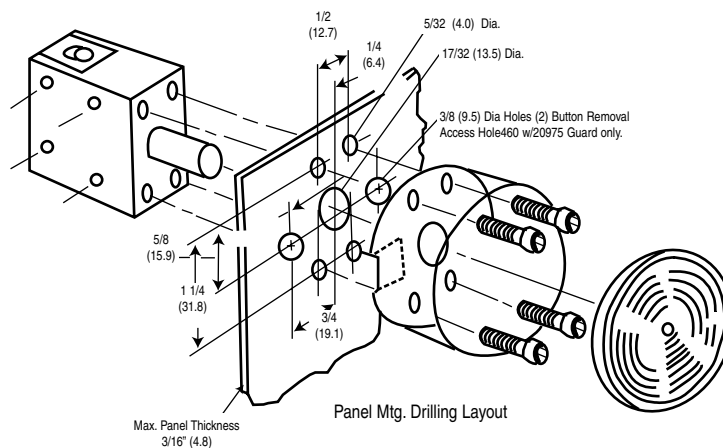
* Tolerance ring 20972 must be ordered with accessory buttons.

Dimensional Data

460 Series



Dimensions given in Inches and (Millimeters)



Features

Button Bleeders

- Provides remote control of bleeder pilot-operated valves.
- Reduces air pressure on valve, so valve can shift.
- Mounting blocks provide remote location of bleeder valve.
- 1/8" NPT thread. Maximum operating pressure of 150 PSIG (10.4 bar)

Pilot Bleeder Valve

- Similar to button bleeder valves, but operated by a pressure signal.
- 1/8" NPT threads. Operating Pressures 20-150 PSIG (1.4 - 10.4 bar)

Quick Exhaust Valves

- Provides quick dump of exhaust at cylinder.
- Eliminates need for large diameter piping or selector valves.
- Die cast aluminum body.

Single Pulse Relay Valve

- Converts continuous inlet supply to a momentary pressure pulse.
- Ideal where input signal remains pressurized, but output must go "off" after performing its task.
- Locate PR10 as close to pilot port of valve as possible.



9600



EV30-A

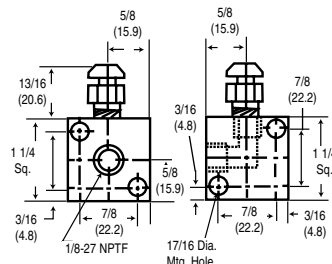


PR10

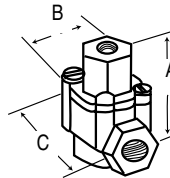
Dimensional Data

Dimensions given in Inches and (Millimeters)

Button Bleeders

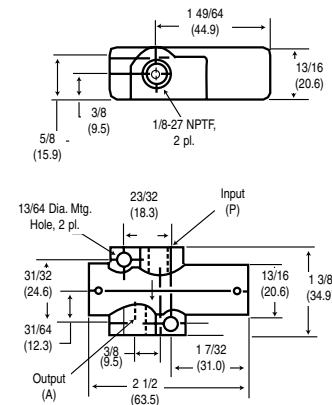


Quick Exhaust Valves



A	B	C
1 7/16 (36.5)	1 23/32 (43.7)	1 1/2 (38.1)
2 1/8 (54.0)	2 7/32 (56.4)	2 1/1 (52.4)
2 1/8 (54.0)	2 7/32 (56.4)	2 1/1 (52.4)
3 1/8 (79.4)	3 1/2 (88.9)	4 1/32 (102.4)
3 1/8 (79.4)	3 1/2 (88.9)	4 1/32 (102.4)

Single Pulse Relay Valve



Performance Specifications/Ordering

Button Bleeders

Model Number	Description
24130	1/2" (12.7) Dia. Head
24135	1 1/8" (28.6) Dia. Head
24125	Mounting Block

Quick Exhaust Valves

Model Number	Inlet Port	Cyl. Port	Exh Port	Pres Range PSI (bar)
EV 125	1/8"	1/8"	1/4"	1-125 (.07-8.6)
EV 250	1/4	1/4	3/8	1-125 (.07-8.6)
EV 375	3/8	3/8	3/8	1-125 (.07-8.6)
EV 30-A	1/2	1/2	3/4	5-125 (.35-8.6)
EV 35-A	3/4	3/4	3/4	5-125 (.35-8.6)

Single Pulse Relay Valve

Supply PSIG Press. (bar)	Pulse Duration	Reset Time
50 (3.5)	125ms	300 ms
75 (5.2)	110ms	300 ms
100 (6.9)	105ms	300 ms
125 (8.6)	100ms	300 ms

Features

Shuttle Valves

- Allows one of two input sources to get the output. Prevents either input from exhausting at other input source.
- Check ball moves from inlet with the greatest pressure and against the port having the least pressure. Minimum pressure difference of 10 PSIG(.7 bar) is necessary to effect shuttle change. 200 PSIG (13.8 bar) maximum.



SV10-B



SV20-B

Microswitch

20370 Microswitch Actuator

Pressure Range 25-125 PSIG (1.7-8.6 bar)

Temperature Range 0-180 F (-18-82 C)

20467 Microswitch

Can be wired normally open or normally closed.

Single pole, double throw:

15 Amps, 125, 250 or 480 V-AC

1/2 Amp, 125 V-DC; 1/4 Amp, 250 V-DC

1/8 H.P., 125 V-AC; 1/4 H.P., 250 V-DC

20370



20467



20192

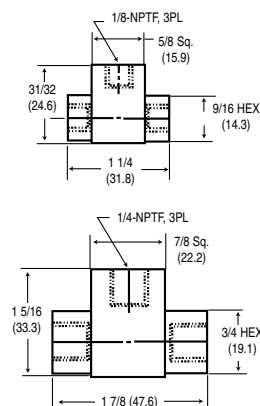
3-Way Poppet Valves

- Pilot actuated with internal pilot (spring assist) return. Can be piped non-passing or passing.
- Poppet piston glides on low friction glass reinforced nylon body. 1/4" NPTF ports. Ideal for air motors, large bore single acting cylinders, etc.

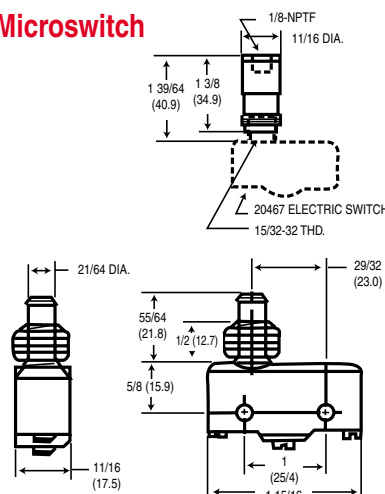
Dimensional Data

Dimensions given in Inches and (Millimeters)

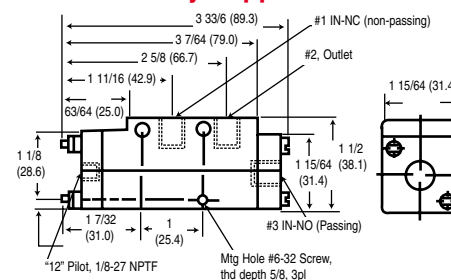
Shuttle Valves



Microswitch



3-Way Poppet Valves



Performance Specifications / Ordering

Shuttle Valves

Model Number	Inlet Ports	Outlet
SV10-B	1/8"	1/8"
SV20-B	1/4"	1/4"

3-Way Poppet Valves

Press. Range PSIG (bar)	Temperature Range °F(°C)	SCFM	Flow Cv Factor
20 to 150 (1.4-10.4)	-35 to 180 (-37 to 82)	46.6	1.30

Features

Breather Vents

- Use on valves and single acting cylinders to prevent dirt from entering ports open to atmosphere. Other uses are for vacuum relief or pressure equalization on gear boxes, reservoirs & air tanks.
- 40 micron filtration. Selection based on thread size.



20311-X

Muffler

- Use on valve exhaust ports.
- Sintered bronze construction. Air muffler and exhaust diffuser.
- 40 micron nominal filtration; sound deadening qualities with low pressure drop.
- Brass Body



20312-X

Speed Controls

- Controls air flow on exhaust ports of air valves.
- Change cylinder operating speed by adjusting screw. Secure with lock nut.



20313-X

Silencer

- Reduces noise of air powered motors and valves.
- For high SCFM applications. High flow, low back pressure with no build up.
- 300 PSI Max.



20308-X

Ordering

Breather Vents

Model Number	Port Size	Length In. (mm)	Hex
20311-1	1/8"	7/16 (11.1)	7/16
20311-2	1/4"	5/8 (15.9)	9/16
20311-3	3/8"	3/4 (19.1)	11/16
20311-4	1/2"	7/8 (22.2)	7/8
20311-6	3/4"	1 (25.4)	1-1/16
20311-8	1"	1-5/16 (33.3)	1-5/16

Speed Controls

Model Number	Port Size	Length Closed	Length Open In. (mm)
20313-1	1/8"	1 3/8 (34.9)	2 (50.8)
20313-2	1/4"	1 9/16 (39.7)	2 3/16 (55.6)
20313-3	3/8"	1 7/8 (47.6)	2 13/16 (71.4)
20313-4	1/2"	2 1/4 (57.2)	3 5/16 (84.1)
20313-6	3/4"	2 3/4 (69.9)	3 13/16 (96.8)
20313-8	1"	3 1/4 (82.6)	4 5/8 (117.5)

Muffler

Model Number	Port Size	Length In. (mm)	Hex
116464	10-32	23/32 (18.2)	5/16
20312-1	1/8"	1 1/8 (28.6)	7/16
20312-2	1/4"	1 3/8 (34.9)	9/16
20312-3	3/8"	1 1/2 (38.1)	11/16
20312-4	1/2"	1 7/8 (47.6)	7/8
20312-6	3/4"	2 1/4 (57.2)	11/16
20312-8	1"	1 7/8 (73.0)	1 5/16

Silencer

Model	Ports	Diameter	Length
20308-1	1/8"	13/16	2-1/8
20308-2	1/4"	13/16	2-1/4
20308-3	3/8"	1-1/4	3-7/16
20308-4	1/2"	1-1/4	3-9/16
20308-6	3/4"	2	5-3/8
20308-8	1"	2	5-1/2

Features

- 360° swivel eases tube alignment. Preapplied thread sealant eliminates Teflon taping.
- Choose threaded or instant tube fitting inlets; slotted or knob flow adjustment.
- Sturdy components include nickel-plated brass body, black anodized aluminum swivel, Buna-N seals and a stainless steel spring.
- Ready for installation on all ARO and competitive cylinders.
- Consult factory for BSP size models.



Ordering

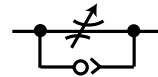
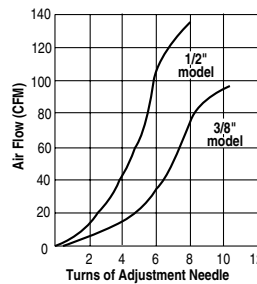
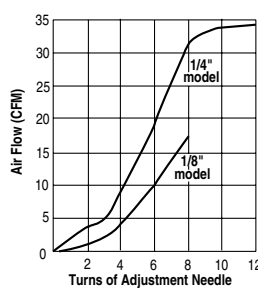
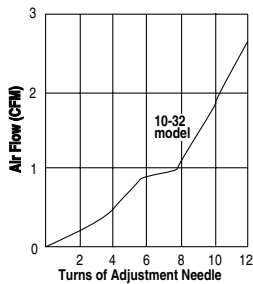
SLOTTED ADJUST

119307-XXX	119309-XXX
Male x Female thd	Male thd x fitting
Description	Description
XXX Male x Female	xxx Male x Tubing
103 10-32x10-32	103 10-32 x 5/32"
125 1/8" x 1/8" NPT	120 1/8" x 5/32"
250 1/4" x 1/4" NPT	125 1/8" x 1/4"
375 3/8" x 3/8" NPT	250 1/4" x 1/4"
500 1/2" x 1/2" NPT	255 1/4" x 3/8"
	375 3/8" x 3/8"

KNOB ADJUST

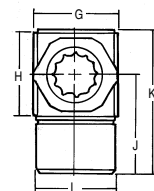
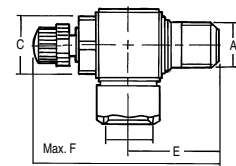
119308-XXX	119310-XXX
Male x Female thd	Male thd x fitting
Description	Description
xxx Male x Female	XXX Male x Tubing
125 1/8" x 1/8" NPT	120 1/8" x 5/32"
250 1/4" x 1/4" NPT	125 1/8" x 1/4"
375 3/8" x 3/8" NPT	250 1/4" x 1/4"
500 1/2" x 1/2" NPT	255 1/4" x 3/8"
	375 3/8" x 3/8"

Performance Specifications

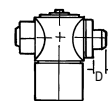
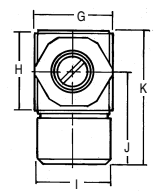
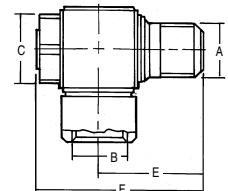


Dimensional Data

KNOB ADJUST



SLOTTED ADJUST

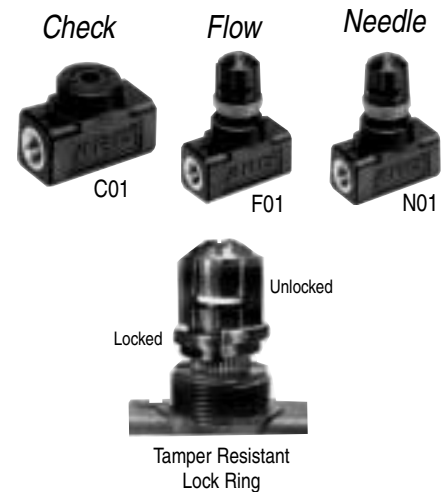


	PORT SIZE "A" & "B"	"C" inches (mm)	"D" inches (mm)	"E" inches (mm)	"F" inches (mm)	"G" inches (mm)	"H" inches (mm)	"I" inches (mm)	"J" inches (mm)	"K" inches (mm)
SLOTTED ADJUST	10/32	5/16 (8)	1/8 (3.2)	27/64 (11)	53/64 (21)	27/64 (11)	11/32 (9)	7/16 (11)	37/64 (14.7)	53/64 (21.1)
	1/8	1/2 (13)	0	25/32 (19.8)	1-17/64 (32)	19/32 (15)	19/32 (15)	33/64 (13)	47/64 (18.5)	1-3/64 (26.7)
	1/4	43/64 (17)	0	1-1/64 (25.8)	1-39/64 (41)	3/4 (19)	3/4 (19)	23/32 (18)	7/8 (22.5)	1-19/64 (32.9)
	3/8	7/8 (22)	0	1-9/64 (29)	1-27/32 (47)	29/32 (23)	29/32 (23)	29/32 (23)	1-1/8 (28.5)	1-39/64 (41)
	1/2	1-1/16 (27)	0	1-27/64 (36)	2-9/32 (58)	1-7/64 (28)	1-7/64 (28)	63/64 (25)	1-7/32 (31)	1-53/64 (46.3)
KNOB ADJUST	1/8	33/64 (13)	0	25/32 (19.8)	1-7/8 (47.5)	19/32 (15)	19/32 (15)	33/64 (13)	47/64 (18.5)	1-3/64 (26.7)
	1/4	43/64 (17)	0	1-1/64 (25.8)	2-9/32 (58)	3/4 (19)	3/4 (19)	45/64 (18)	57/64 (22.5)	1-19/64 (32.9)
	3/8	7/8 (22)	0	1-9/64 (29)	2-37/64 (65.5)	29/32 (23)	29/32 (23)	29/32 (23)	1-1/8 (28.5)	1-39/64 (41)
	1/2	1-1/16 (27)	0	1-27/64 (36)	3-5/32 (80)	1-7/64 (28)	1-7/64 (28)	63/64 (25)	1-7/32 (31)	1-53/64 (46.3)

Features

In-Line, Composite

- Four Stage, tapered needle design provides infinite control settings.
- Composite body is tough and corrosion resistant.
- Color-coded micrometer & calibrated adjustment knob provide instant reference points for repeat settings. Press red locking ring down prevents adjustment. Tamper resistant wire supplied in package.
- Units are threaded for easy remote panel mounting. Order panel nuts below.
- Needle Valve is available with stainless steel needle & inserts. Order 104104-NS2.



Ordering

104104 - X XX

Code	Description
C	Check Valve
F	Flow Control
N	Needle Valve

Port Size

Code	Description	Code	Description
01	1/8-27 NPTF	04	1/2-14 NPTF
02	1/4-18 NPTF	06	3/4-14 NPTF
03	3/8-18 NPTF	* S2	1/4-18 NPTF Stainless Steel inserts & stem

* Available on needle valve only.

Panel Mounting Nuts

104096
104094

Port Size

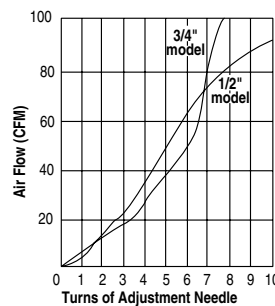
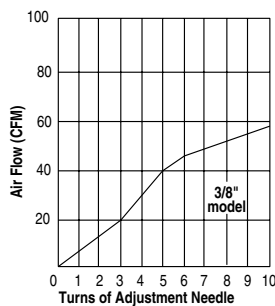
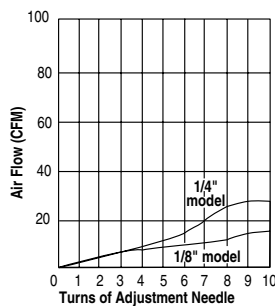
1/8" & 1/4"
3/8", 1/2" & 3/4"

Performance Specifications

Operating Pressure:
200 PSI (13.8 bar)

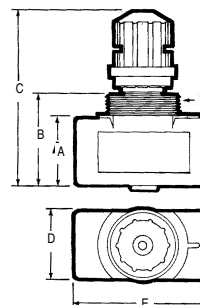
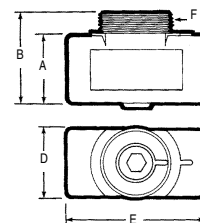
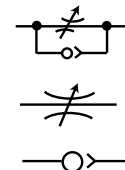
Operating Temperature:
0° - 200°F (-18° - 93°C)

Flow:
100 PSI Inlet



MODEL	PORT* NPT(F)	A inches (mm)	B inches (mm)	C inches Min. Max.	D inches (mm)	E inches (mm)	F inches (mm)
01	1/8-27	15/16 (23.8)	1-11/32 (34.1)	2-33/64 2-53/64 (63.9) (71.6)	15/16 (23.8)	1-29/32 (48.4)	1-20 UNEF-2A
02	1/4-18	15/16 (23.8)	1-11/32 (34.1)	2-33/64 2-53/64 (63.9) (71.6)	15/16 (23.8)	1-29/32 (48.4)	1-20 UNEF-2A
03	3/8-18	1-5/16 (33.3)	1-11/16 (42.9)	3-23/64 3-55/64 (85.3) (97.8)	1-5/16 (33.3)	2-27/32 (72.2)	1-3/16-18 UNEF-2A
04	1/2-14	1-5/16 (33.3)	1-11/16 (42.9)	3-23/64 3-55/64 (85.3) (97.8)	1-5/16 (33.3)	2-27/32 (72.2)	1-3/16-18 UNEF-2A
06	3/4-14	1-9/16 (39.7)	2 (50.8)	3-43/64 4-11/64 (93.3) (105.7)	1-9/16 (39.7)	3 (76.2)	1-3/16-18 UNEF-2A

Dimensional Data



Features

In-Line, Brass

CPXX-B Check Valve **FXX-BK** Flow Control **NXX-BK** Needle Valve

- High Pressure (up to 2000 PSI) flow control for either pneumatic or hydraulic applications.
- Heavy-duty brass construction provides good corrosion resistance.
- Valve bodies, needle housings, locknuts & plugs are machined from brass stock.

• Cracking Pressure

CP10 - 1-1/2 PSI	CP20 - 1-1/2 PSI	CP25 - 2 PSI
CP30 - 3 PSI	CP35 - 4 PSI	



Ordering

In-Line, Brass

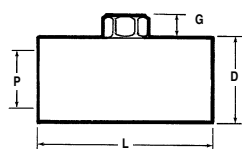
Replace the "XX" with valve number corresponding to port size desired.

Example: F10-BK
Flow Control Valve
1/8" Ports

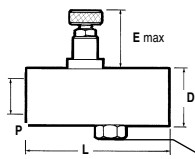
MODEL	VALVE NO. (XX)	NPTF PORT	P D HEX	E	L	G
	10	1/8	11/16	1-1/4	1-1/2	9/32
FXX-BK	20	1/4	7/8	1-1/4	2	5/16
NXX-BK	25	3/8	1-1/16	1-3/8	2-1/4	11/32
CPXX-B	30	1/2	1-5/16	1-3/8	2-21/32	3/8
	35	3/4	1-5/8	1-7/8	3	15/32
CP35-B Not available.						

Dimensional Data

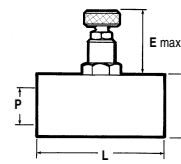
In-Line, Brass



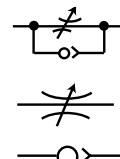
CPXX-B



FXX-BK



NXX-BK



Features

3-Way Sleeve Valve

- Provides low-cost on-off control of single-acting spring return cylinders.
- Use in both ports of double-acting cylinders to isolate from circuit.



600-X

Ordering

3-Way Sleeve Valve

Max. Press: 200 PSI (13.8 bar)
Temp Range: -25° - 200°F (-32° - 93°C)
10 PSI

Model Number	Port Size	Pressure Drop (SCFM)	
		100 PSI	80 PSI
600-1	1/8"	16	14.5
600-2	1/4"	40	36
600-3	3/8"	65	59
600-4	1/2"	140	127

Features

Coils

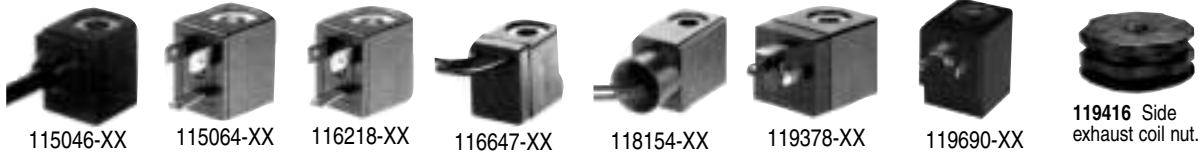
- Coils are Class F rated for 100% duty cycle (311°F/155°C) applications.
- AC and DC coils are interchangeable on the same solenoid stem.
- Low “inrush” and “holding” current keeps heat rise to a minimum. This maximizes coil life and reduces power consumption.

Code / Voltage

-31 = 12V AC
-33 = 120V AC
-35 = 240V AC
-37 = 5V DC

Code / Voltage

-38 = 24V AC or 12V DC
(22mm Coils only)
-39 = 24V DC



Connectors

- Protect electrical connections from humidity and moisture. Meet NEMA 4 classifications
- Each is it's own junction box, eliminating need to wire solenoid to another box.



Ordering

Coils

(Replace XX on model number with coil voltage required.)

115046-XX Cable Coil (NEMA 4, 22mm)

10' AWG UL-listed elastomer cable. No solenoid connector needed.

115064-XX Low Watt Coil (DC only) (NEMA 4, 22mm)

Low DIN coil. DC only, for use with 3-prong connectors. 5, 12 & 24V DC only. Used only on valves ordered as low wattage.

116218-XX Standard Coil CSA & UL-listed (NEMA 4, 22mm)

AC or DC DIN coil for use with 3-prong connectors.

116647-XX Coil with Molded Leads CSA & UL-listed (NEMA 4, 22mm)

AC or DC lead wire coil with 18" molded leads. No solenoid connector needed.

118154-XX 1/2" Conduit (NEMA 4, 22mm)

1/2" Conduit coil connects directly to metal housing on the coil. Coil has 18" long 18-gauge heavy-duty wire. Available in -33 & -39 voltage only.

*119378-XX Oversize (NEMA 4, 30mm)

AC or DC DIN coil for use with solenoid connector. Available in -33, -38 & -39 voltage only. For Alpha, E, K, H, Genesis, & 1/8" Cat Valves. (not for HF Cat)

*119690-XX Oversize (NEMA 4, 30 mm)

High Flow Cat Valve and 2-way Valve coil. Available in -33, -35, -37, -38 & -39 voltages

* **NOTE:** -38 option is 12 VDC only on 30mm coils. 24 VAC is not available
See Page 72 for Voltage Operating Ranges and Voltage Ratings.

Connectors

22-mm Connectors:

(Replace XXX with voltage & type from chart below)

CHW	Straight connector with cable (36") located on top.
CBW	Straight connector with cable (36") located on back.
CHL-XXX	Straight connector (36") with indicator light located on back.
CSN	Strain Relief, without indicator light or cable.
CSL-XXX	Strain Relief with indicator light located on back.
CDN	1/2" Conduit without lights or lead wires.
CDW	1/2" Conduit without lights, 18" lead wires.
CDL-XXX	1/2" Conduit with light and 18" lead wires.

30-mm Connectors:

Use with High Flow Cat and intrinsically safe Genesis Valves

CDW-30	Connector with wire.
CSN-30	Connector, strain relief.
CHW-30	Connector, molded cable.

Voltage (-XXX)

005 = 5V DC	120 = 120V AC
012 = 12V AC/DC	240 = 240V AC/DC
024 = 24V AC/DC	

Performance Specifications

Coils

Voltage Operating Ranges		
Coil Voltage Ratings	Operating Range $\pm 10\%$	
	AC	DC

5	--	4.5-5.5
2	11-13	11-13
24	22-26	22-26
120	108-132	108-132
240	216-264	--
380	342-418	--

22 mm Coil Current (Amps) Watts

5 DC	0.97	4.9
12 DC	0.38	4.8
24 DC	0.20	4.8
120 DC	0.04	4.8
5, 12, 24 DC	Low Watt	0.91

30 mm Coil Current (Amps) Watts

12 DC	--	15
24 DC	--	15

22 mm Coil Voltage Ratings

Coil Voltage Rating	50/60 Hz Current (Amps)		50/60 Hz Volt-Amps,	
	Inrush	Holding	Inrush	Holding
12AC	.70/.63	.50/.42	8.4/7.5	6.0/5.0
24AC	.46/.40	.36/.27	11.0/9.4	8.4/6.5
120AC	.09/.08	.07/.05	11.0/9.4	8.4/6.5
240AC	.05/.04	.04/.03	11.0/9.4	8.4/6.5
380AC	.03/.026	.024/.019	11.4/9.9	9.1/6.9

30 mm Coil Voltage Ratings

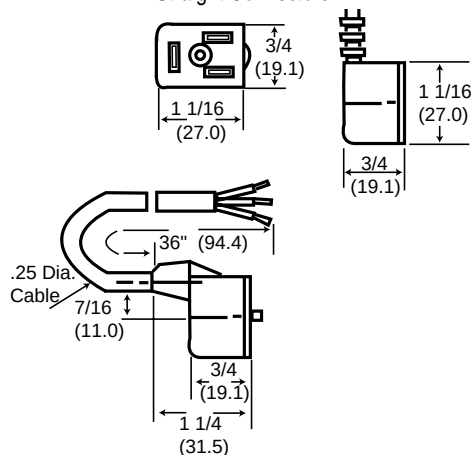
Coil Voltage Rating	50/60 Hz Current (Amps)		50/60 Hz Volt-Amps,	
	Inrush	Holding	Inrush	Holding
24AC	--	--	23	20
120AC	--	--	23	20

Dimensions given in Inches and (Millimeters)

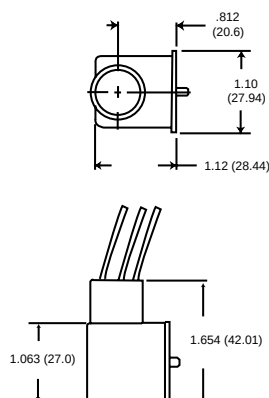
Dimensional Data

Connectors

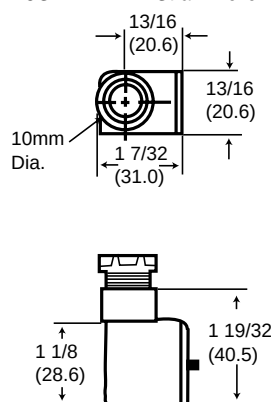
Straight Connectors



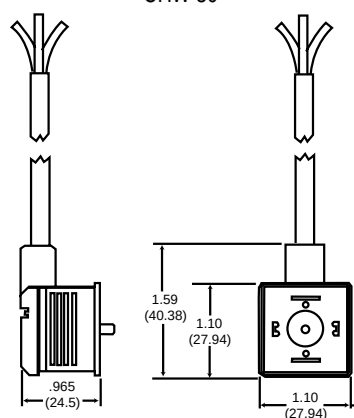
CDW-30



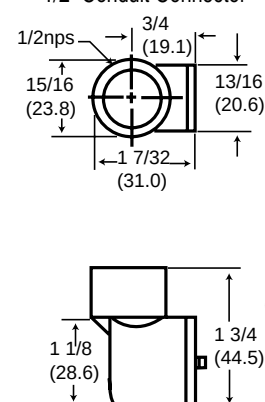
CSN 22 mm Strain Relief



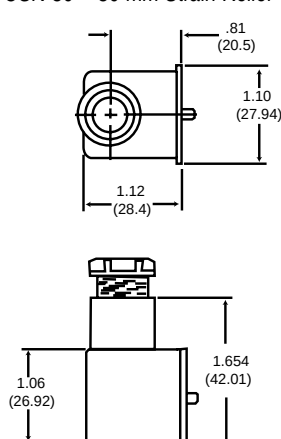
CHW-30



1/2" Conduit Connector



CSN-30 30 mm Strain Relief



Features

59860 Signal Standardizer

- Converts an input signal of any duration into a timed output signal.
- Built in 4-way function in which two output signals are provided; one normally on, the other normally off.
- Can be used for 3-way and 4-way valves of all types including single and double pilot-operated models.
- Units can be private labeled for OEM customers.
- Timing Range is 0.1 to 3 seconds. Longer with use of an accumulator. Each additional cu. in. of space added will give an extra 8-10 seconds of timing.
- Use filtered, dry, non-lubricated air. 40-125 psi (2-10.4 bar)



59860

59861 Oscillator Circuit

- Use in applications involving cycling and oscillating valves and cylinders for manufacturing and testing; as well as, pumping, sorting & painting.
- Has two dial timers so both phases can be adjusted independently.
- Can be used for all types of 3-way and 4-way valves.
- Recommended Timing Range of .1 to 3 seconds. Longer when using an accumulator. Each additional cu. in. of space added will give an extra 8-10 seconds of timing.

NOTE: For set-up or trouble-shooting, time delay functions can be adjusted far beyond their recommended range; however, if their normal operating time is longer than 3 seconds, additional volume should be connected to the port marked "Acu" (to the right of the adjustment dial). Each cubic inch additional volume connected to this port will increase the maximum range of the time delay by 8 seconds. A pressure gauge tee'd into the accumulator port can be very valuable as a visual aid when adjusting timers with extended ranges.



59861

59917 Binary Flip-Flop

- With supply on, output one or output two will be on and the other off.
- Pressurizing the trigger port switches the outputs between on and off.

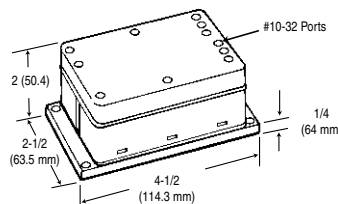
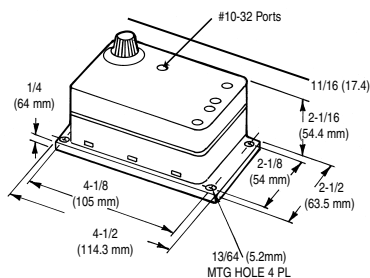
NOTE: All Flex-6 units have 10/32" ports.



59917

Dimensional Data

Base Mounted Units (Ports are 10/32 Threads)



Features

- Ideal for machines where position of operator's hands must be monitored.
- Actuate and hold both air valve buttons concurrently to maintain an output air signal. If either push button is released, the output air signal is exhausted, indicating the operator's hands are no longer in position.
- Operating Pressures: 50-125 PSI (3.5-8.6 bar). Designed to comply with OSHA regulations.

Warning: These provide only the anti-tie down logic function and are not stroke limiting devices. On machines with full revolution clutches and/or where repeat cycles can occur, approved safety and/or single stroke devices must be used in conjunction with the anti-tie down units.

Elements

59191 Base Mounted

- Element has three 1/8" NPTF ports on top. 2 inputs, 1 output.
- Element is base mounted.

Packages

59808

- Includes two enclosures with green push button valves separated by a length of flexible conduit. External supply and output to machine is made by 5/32" (4mm) instant tube fittings.
- Comes assembled with all internal connections ready to install on machine.
- Palm Buttons are 30" center to center.

59809

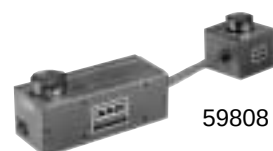
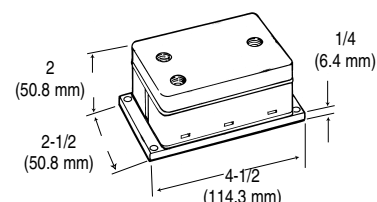
- Green push buttons located on opposite ends of a single enclosure. External supply and output to machine is made by 5/32" (4mm) instant tube fittings.
- Comes assembled with all internal connections ready to install on machine.

59003-842

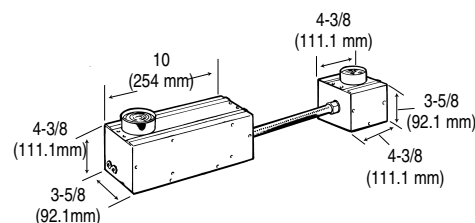
- Unassembled package.
- Includes 59191 anti-tie-down block, two 461-3 palm buttons with 20975 guards, 10 feet of 5/32" tubing and fittings for 59191.
- Customer can custom fit components to machine.



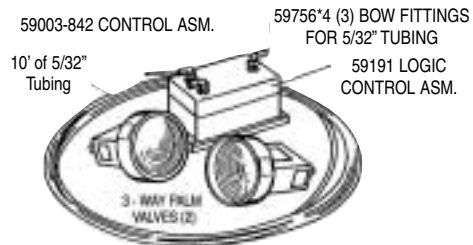
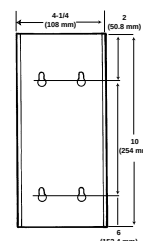
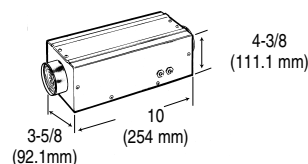
59191



59808



59809



Performance Specifications

Total Counters/Manual Reset

59095-1 Knob Reset/Base Mount

- Counter advances one digit each time a pneumatic pulse is received.
- 600 counts/minute maximum.

59095-2 Dial Reset/Panel Mount

- Counter advances one digit each time a pneumatic pulse is received.
- 600 counts/minute maximum. Can also be base mounted.

59095-3 Key Reset/Panel Mount

- Counter advances one digit each time a pneumatic pulse is received.
- 600 counts/minute maximum. Can also be base mounted.

Operating Pressure:

30 to 150 PSIG (2 to 10 bar)

Operating Temperature:

32° to 160°F (0° to 71°C)

Minimum Signal Duration:

Pressure Signal 0.05 sec.

Ports:

1/8" NPTF

Totalizing Counter/Manual or Pressure Reset

59801 Panel Mount

59836 Surface Mount

- 6-digit readout. Records up to 1500 counts/minute
- Can be reset using reset button or pneumatic signal.

Operating Pressure:

30 to 115 PSIG (2 to 8 bar)

Operating Temperature:

32° to 140°F (0° to 60°C)

Minimum Signal Duration:

Pressure Signal .008 sec.

Exhaust Signal .010 sec.

Reset Signal .150 sec.

Ports:

5/32" (4mm) Tube Fittings

Predetermined Counter / Manual or Pressure Reset

59802 Panel Mount

- 5-digit readout.
- Each pneumatic pulse decreases predetermined number by one until zero is reached. An output signal is then provided.
- Counter is reset to predetermined number by the reset button or a pneumatic signal.

Operating Pressure:

30 to 115 PSIG (2 to 8 bar)

Operating Temperature

32° to 140°F (0° to 60°C)

Minimum Signal Duration:

Pressure Signal .008 sec.

Exhaust Signal .012 sec.

Reset Signal .180 sec.

Ports:

5/32" (4mm) Tube Fittings

Flow:

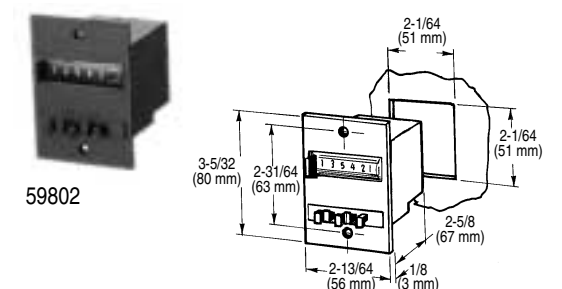
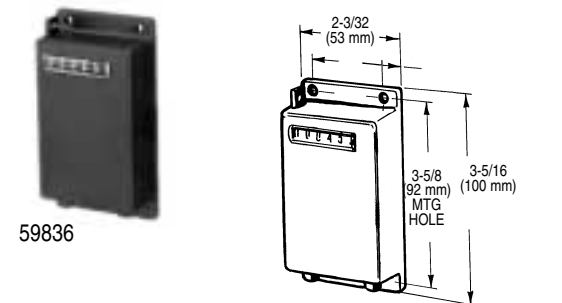
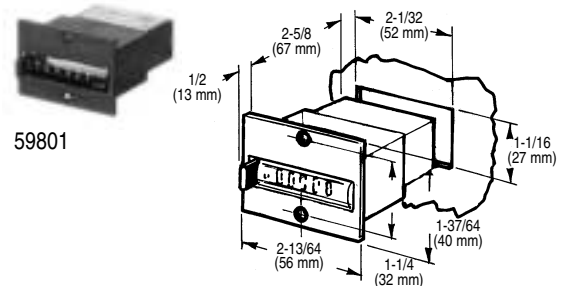
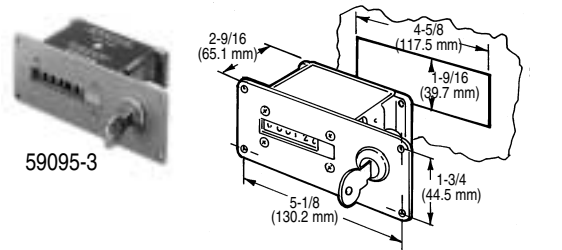
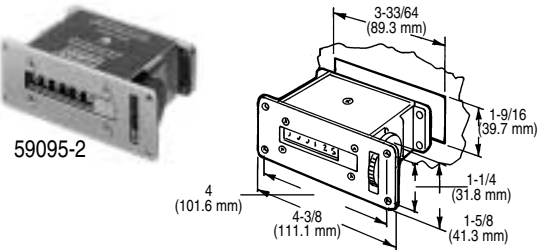
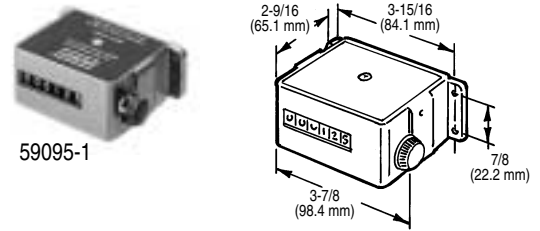
4.5 SCFM (2.1 dm³/s)

Port Designation:

P (3) Supply, A (4) Output,

Z (1) Count, Y (2) Reset.

Dimensional Data



Features

Valve/Cylinder Manifold

- Mount any Alpha subbase valve to any NFPA cylinder
- Obtain maximum cylinder response and speeds
- Provides “clean” valve mounting method
- Mounts at cap or head end of cylinder
- Operates any NFPA Cylinder up to 2-1/2" bore
- Any stroke length (Minimum 3")

Accessories

Tubing, Fittings & Connectors

Y-Connector	Tube Size
59482	5/32

Male Connector	Tube Size	NPT
59474-4	5/32	1/8
59474-56	1/4	1/8
59474-156	1/4	1/4
59474-256	1/4	3/8

Tubing (100' rolls)	Tube Size
59690-4	5/32

Male Elbow	Tube Size	NPT
59756-4	5/32	1/8
59756-56	1/4	1/8
59756-156	1/4	1/4

Male Branch Tee	Tube Size	NPT
59757-4	5/32	1/8
59757-56	1/4	1/8
59757-156	1/4	1/4

Maximum Working Pressure Vacuum to 250 PSI (17 bar)
 Temperature Range - +5°F to 160°F (-15°F to 71°C)
 Tubing Material: Nylon II

Plug	Tube Size
59463-4	5/32
59463-56	1/4

Union	Tube Size
59759-4	5/32
59759-56	1/4

Union Elbow	Tube Size
59760-4	5/32
59760-56	1/4

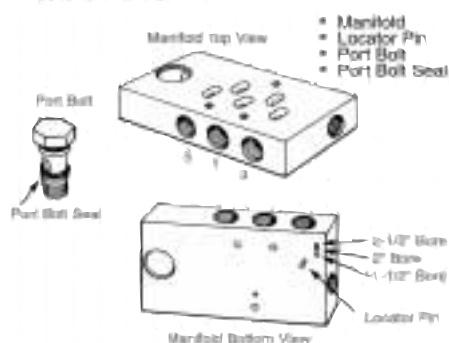
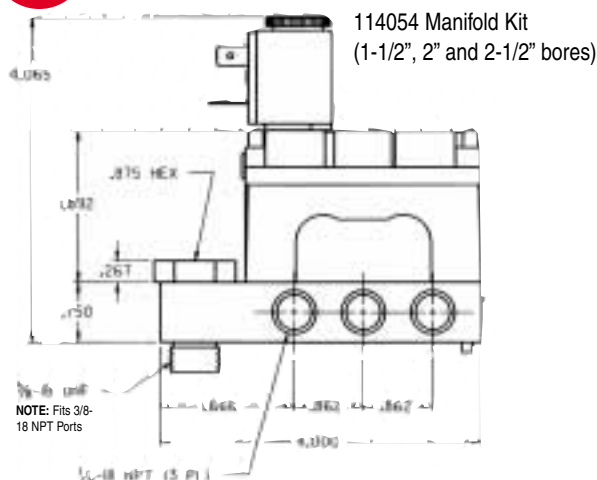
Union Tee	Tube Size
59761-4	5/32
59761-56	1/4

Union Bulkhead	Tube Size
59762-4	5/32
59762-56	1/4

Expander Tube Male	Tube Size	NPT
59765-4	5/32	1/4

Reducer Tube Male	Tube Size	NPT
59765-56	1/4	5/32

Dimensional Data



Flex-6 Accessories

59629 Adapter
 1/8" to 10-32 Thread

5963X-100 Flexible Tubing
 59630-100: 1/16" ID.
 59631-100: 1/8" ID.

59632-1 Plug
 10-32 Thread

59634 Cross Junction
 10-32 Thread

59636 Bulkhead Fitting
 10-32 x 10-32 Thread

59764-4 Male Connector
 10-32 Thread x 5/32" Tube

59903 Swivel Connector

5990X Push On Connector
 59905: 10-32 NPT x 1/16" Tube
 59906: 10-32 NPT x 1/8" Tube

59908 Nipple
 10-32 x 10-32 Thread

Ordering

Alpha Valves

Valve Model	Kit Number
All 2-Position, Spring Return, Urethane	118597-2
All 2-Position, Pilot or Solenoid Return, Urethane	118597-12
All 2-Position, Spring Return, Viton	118598-4
All 2-Position, Pilot or Solenoid Return, Viton	118598-14
3-Position, Closed, Urethane	118597-3
3-Position, Open, Urethane	118597-7
3-Position, Closed, Viton	118598-8
3-Position, Open, Viton	118598-9

Genesis Valves

GXXX XX - XXX - X

Plug-On Valves			Plug-In Valves		
Code	Rebuild Kit	Gasket Kit	Code	Rebuild Kit	Gasket Kit
GN12	118820-3	118824	GP12	118820-1	118823
GN13	118822-3	118824	GP13	118822-1	118823
GN14	118820-4	118824	GP14	118820-2	118823
GN17	118821-3	118824	GP17	118821-1	118823
GN18	118822-4	118824	GP18	118822-2	118823
GN19	118821-4	118824	GP19	118821-2	118823

Rebuild Kit selection is determined by the first four model numbers.

[GX1X] XX-XXX-X (The positions within the brackets)

Sierra Valves

Model Number	Repair Kit
All Sierra Model 15	MQ3620

50-Series Valves

Model Number	Repair Kit
All Models	7000

E-Series Valves

MODEL	REPAIR KIT	MODEL	REPAIR KIT	MODEL	REPAIR KIT
E112HM	116772	E212LP	116772	E252GS	116772
E112LM	116772	E212LS	116772	E252HA	116772
E112PD	116773	E212PA	116772	E252HM	116772
E152HM	116772	E212PD	116773	E252HP	116772
E152LM	116772	E212PE	116772	E252HS	116772
E152PD	116773	E212PS	116772	E252JS	116702
E212BS	116772	E212RA	116772	E252JD	116702
E212CA	116772	E212RP	116772	E252KS-XXX-X	116702
E212CS	116772	E212RS	116772	E252LA	116772
E212CP	116772	E212SA-XXX-X	116772	E252LM	116772
E212FA	116772	E212SD-XXX-X	116773	E252LP	116772
E212FP	116772	E212SP-XXX-X	116773	E252LS	116772
E212FS	116772	E212SS-XXX-X	116772	E252PA	116772
E212HA	116772	E212TM	116772	E252PD	116773
E212HM	116772	E252BD	116773	E252PE	116772
E212HP	116772	E252BS	116772	E252PS	116772
E212HS	116772	E252CA	116772	E252RA	116772
E212JS	116702	E252CS	116772	E252RP	116772
E212JD	116702	E252CP	116772	E252RS	116772
E212KD-XXX-X	116702	E252FA	116772	E252SA-XXX-X	116772
E212KS-XXX-X	116702	E252FP	116772	E252SN-XXX-X	116772
E212LA	116772	E252FS	116772	E252SP-XXX-X	116773
E212LM	116772	E252GA	116772	E252SS-XXX-X	116772

MaxAir Valves

MODEL	REPAIR KIT
M212LM	RKM212-LM
M212LS	RKM212-LS
M212PD	RKM212-PD
M212PS	RKM212-PS
M212SD-XXX-X	RKM212-SD
M212SS-XXX-X	RKM212-SS
M213LM	RKM213-LM
M213LS	RKM213-LS
M213PD	RKM213-PD
M213PS	RKM213-PS
M213SD-XXX-X	RKM213-SD
M213SS-XXX-X	RKM213-SS
M214-PD	RKM214-PD
M214PS	RKM214-PS
M214SD-XXX-X	RKM214-SD
M214SS-XXX-X	RKM214-SS
M312PD	RKM312-PD
M312SD-XXX-X	RKM312-SD
M313PD	RKM313-PD
M313SD-XXX-X	RKM313-SD
M314PD	RKM314-PD
M314SD-XXX-X	RKM314-SD

Genesis Pressure Regulators

Model	Rebuild Kit	Press Adj. Kit
118573-X2	119213	119212-30
118573-X3	119213	119212-60
118573-X4	119213	119212-120

E252TM	116772
E252UA	116772
E252US	116772
E312LS	116773
E312PD	116773
E312TS	116773
E512LM	116772
E612LM	116772
E712SD-XXX-X	116773
SOLENOID OPERATOR	
MODEL	REPAIR KIT
E212KD-XXX-X	116575
E212KS-XXX-X	116573
E212SA-XXX-X	116573
E212SP-XXX-X	116573
E212SD-XXX-X	116575
E212SS-XXX-X	116573
E252KS-XXX-X	116573
E252SA-XXX-X	116573
E252SN-XXX-X	116573
E252SP-XXX-X	116573
E252SS-XXX-X	116573
E312SD-XXX-X	116575
E712SD-XXX-X	116575



H-Series

MODEL		REPAIR KIT	
H212BD	.7103	H214PD	.7103
H212PA	.7103	H214SA-XXX-X	.7103
H212PD	.7103	H214SD-XXX-X	.7103
H212SA-XXX-X	.7103	H242BD	.7103
H212SD-XXX-X	.7103	H242PA	.7103
H213BD	.7103	H242PD	.7103
H213PA	.7103	H242SA-XXX-X	.7103
H213PD	.7103	H242SD-XXX-X	.7103
H213SA-XXX-X	.7103	H243BD	.7103
H213SD-XXX-X	.7103	H243PA	.7103
H214BD	.7103	H243PD	.7103
H214PA	.7103	H243SA-XXX-X	.7103

MODEL		REPAIR KIT	
H243SD-XXX-X	.7103	H252PS	.7102
H252PS	.7102	H252SS-XXX-X	.7102
H253PS	.7102	H253SS-XXX-X	.7102
H253SS-XXX-X	.7102	H254PS	.7102
H254PS	.7102	H254SS-XXX-X	.7102
H282PS	.7102	H282SS-XXX-X	.7102
H282SS-XXX-X	.7102	H283PS	.7102
H283PS	.7102	H283SS-XXX-X	.7102

SOLENOID OPERATOR	
MODEL	REPAIR KIT
H212SA-XXX-X	.116572
H212SD-XXX-X	.116574
H213SA-XXX-X	.116572
H213SD-XXX-X	.116574
H214SA-XXX-X	.116572
H214SD-XXX-X	.116574
H242SA-XXX-X	.116572
H242SD-XXX-X	.116574
H243SA-XXX-X	.116572
H243SD-XXX-X	.116574
H252SS-XXX-X	.116572
H253SS-XXX-X	.116572
H254SS-XXX-X	.116572
H282SS-XXX-X	.116572

K-Series

MODEL	REPAIR KIT	MODEL	REPAIR KIT	MODEL	REPAIR KIT	MODEL	REPAIR KIT	MODEL	REPAIR KIT
K213BS	.7006	K233PD	.7006	K243TM	.7006	K334PD	.7006	K713LS	.7006
K213FP	.7006	K233PS	.7006	K244BD	.7006	K334SD-XXX-X	.7006	K713PD	.7006
K213FS	.7006	K233RS	.7008	K244BS	.7006	K334TS	.7006	K713SD-XXX-X	.7006
K213HS	.7006	K233SD-XXX-X	.7006	K244FP	.7006	K336PD	.7010	K713TS	.7006
K213LM	.7006	K233SS-XXX-X	.7006	K244FS	.7006	K336SD-XXX-X	.7010	K714LS	.7006
K213LS	.7006	K233TM	.7006	K244LM	.7006	K338PD	.7010	K714PD	.7006
K213PS	.7006	K234BD	.7006	K244LS	.7006	K338SD-XXX-X	.7010	K714SD-XXX-X	.7006
K213RS	.7008	K234BS	.7006	K244PD	.7006	K343LS	.7006	K714TS	.7006
K213SD-XXX-X	.7006	K234FP	.7006	K244PS	.7006	K343PD	.7006	K716PD	.7010
K213SS-XXX-X	.7006	K234FS	.7006	K244RS	.7008	K343SD-XXX-X	.7006	K716SD-XXX-X	.7010
K213TM	.7006	K234LM	.7006	K244SD-XXX-X	.7006	K343TS	.7006	K718PD	.7010
K214BS	.7006	K234LS	.7006	K244SS-XXX-X	.7006	K344LS	.7006	K718SD-XXX-X	.7010
K214BD	.7006	K234PD	.7006	K244TM	.7006	K344PD	.7006	K733PD	.7006
K214FP	.7006	K234PS	.7006	K246BD	.7010	K344SD-XXX-X	.7006	K733LS	.7006
K214FS	.7006	K234RS	.7008	K246BS	.7010	K344TS	.7006	K733SD-XXX-X	.7006
K214LM	.7006	K234SD-XXX-X	.7006	K246PD	.7010	K346PD	.7010	K733TS	.7006
K214LS	.7006	K234SS-XXX-X	.7006	K246PS	.7010	K346SD-XXX-X	.7010	K734PD	.7006
K214PS	.7006	K234TM	.7006	K246RS	.7012	K348PD	.7010	K734LS	.7006
K214PD	.7006	K236BD	.7010	K246SD-XXX-X	.7010	K348SD-XXX-X	.7010	K734SD-XXX-X	.7006
K214RS	.7008	K236BS	.7010	K246SS-XXX-X	.7010	K513LM	.7007	K734TS	.7006
K214SD-XXX-X	.7006	K236PD	.7010	K248BD	.7010	K513TM	.7007	K736PD	.7010
K214SS-XXX-X	.7006	K236PS	.7010	K248BS	.7010	K514LM	.7007	K736SD-XXX-X	.7010
K214TM	.7006	K236RS	.7012	K248PD	.7010	K514TM	.7007	K738PD	.7010
K216BD	.7010	K236SD-XXX-X	.7010	K248PS	.7010	K533LM	.7007	K738SD-XXX-X	.7010
K216BS	.7010	K236SS-XXX-X	.7010	K248RS	.7012	K533TM	.7007	K743LS	.7006
K216PD	.7010	K238BS	.7010	K248SD-XXX-X	.7010	K534LM	.7007	K743SD-XXX-X	.7006
K216PS	.7010	K238BD	.7010	K248SS-XXX-X	.7010	K534TM	.7007	K743TS	.7006
K216RS	.7012	K238PD	.7010	K313LS	.7006	K543LM	.7007	K744LS	.7006
K216SD-XXX-X	.7010	K238PS	.7010	K313PD	.7006	K543TM	.7007	K744PD	.7006
K216SS-XXX-X	.7010	K238RS	.7012	K313TS	.7006	K544LM	.7007	K744SD-XXX-X	.7006
K218BD	.7010	K238SD-XXX-X	.7010	K314LS	.7006	K544TM	.7007	K744TS	.7006
K218BS	.7010	K238SS-XXX-X	.7010	K314PD	.7006	K613LM	.7007	K746PD	.7010
K218PD	.7010	K243BD	.7006	K314SD-XXX-X	.7006	K613TM	.7007	K746SD-XXX-X	.7010
K218PS	.7010	K243BS	.7006	K314TS	.7006	K614LM	.7007	K748PD	.7010
K218RS	.7012	K243FP	.7006	K316PD	.7010	K614TM	.7007	K748SD-XXX-X	.7010
K218SD-XXX-X	.7010	K243FS	.7006	K316SD-XXX-X	.7010	K633LM	.7007		
K218SS-XXX-X	.7010	K243LM	.7006	K318PD	.7010	K633TM	.7007		
K233BD	.7006	K243LS	.7006	K318SD-XXX-X	.7010	K634LM	.7007		
K233BS	.7006	K243PD	.7006	K333LS	.7006	K634TM	.7007		
K233FP	.7006	K243PS	.7006	K333PD	.7006	K643LM	.7007		
K233FS	.7006	K243RS	.7008	K333SD-XXX-X	.7006	K643TM	.7007		
K233LM	.7006	K243SD-XXX-X	.7006	K333TS	.7006	K644LM	.7007		
K233LS	.7006	K243SS-XXX-X	.7006	K334LS	.7006	K644TM	.7007		

SOLENOID OPERATOR

MODEL REPAIR KIT

K213SD-XXX-X 116578

K213SS-XXX-X 116578

K214SD-XXX-X 116578

K214SS-XXX-X 116578

K216SD-XXX-X 116579

K216SS-XXX-X 116579

K218SD-XXX-X 116579

K218SS-XXX-X 116579

K220SD-XXX-X 116579

K220SS-XXX-X 116579

K222SD-XXX-X 116579

K222SS-XXX-X 116579

K224SD-XXX-X 116579

K224SS-XXX-X 116579

K226SD-XXX-X 116579

K226SS-XXX-X 116579

K228SD-XXX-X 116579

K228SS-XXX-X 116579

K230SD-XXX-X 116579

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