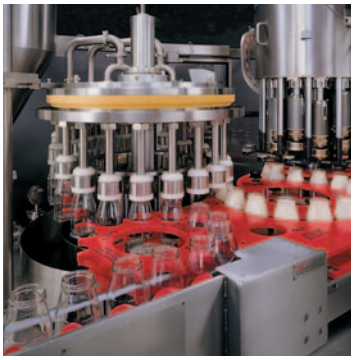
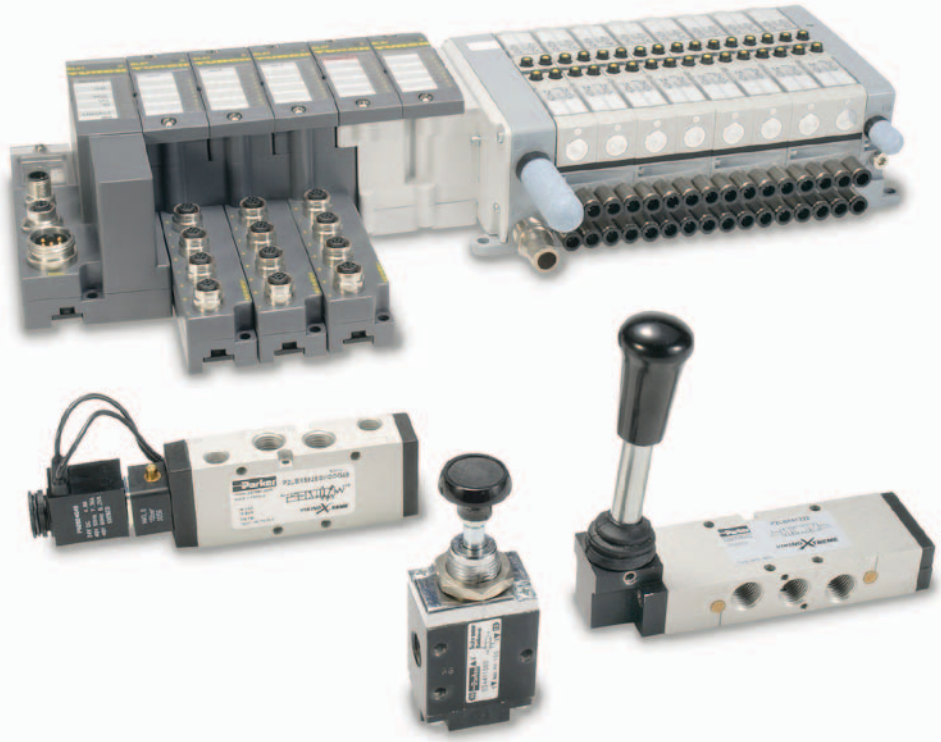




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Catalog 0600P-12



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Index

Introduction

Direct Acting

“XM” Series

15mm Solenoid Valve

Stacking

Moduflex Series

“PVL” Series

Inline

“EZ” Series

“B” Series

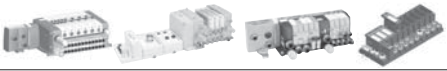
Viking Xtreme

“ADEX” Series

“N” Series

Subbase & Manifold

Isys Micro Series

Isys ISO Series

Fieldbus Systems

“DX” ISOMAX Series

Valvair II

Manual / Mechanical

Directair 2 & 4 Series, Manual / Mechanical

“42” Lever / Pedal Series

Viking Xtreme Lever Series

“M0” Series

“LV” / “EZ” Lockout Valves

Brass Poppet / Sliding Seal / “PL”/“VL” / “HV”

Accessories

Control Panel Products

Sensing

Flow Controls & Accessories

Model Number to Page Number Index, Safety Guide, Offer of Sale

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Index

• Valve Selector Chart (By Flow) • Fieldbus Solutions Guide • Fluid Power Graphic Symbols • Technical Information • 5-Year Warranty		A
• Direct Acting Solenoid • 3-Way & 4-Way • Inline • IEM Bar Manifold • Subbase Valve Manifolds • .15 Cv	www.parker.com/pneu/xm	B Direct Acting
• Compact & Simplified Design • Subbase or Manifold Option • 3-Way • NO & NC on Same Manifold • Wide Range of Voltage • .033 to .05 Cv	www.parker.com/pneu/15mm	
• Stand Alone Valves • Valve Island • Collective Wiring or Fieldbus Configuration • 3-Way & 4-Way • Modular & Flexible Design • Multiple Pressure Option • Compact & Low Weight • .18 to .80 Cv	www.parker.com/pneu/moduflex	C Stacking
• Compact Composite Design • Modular with a Wide Range of Voltages • 3-Way & 4-Way • Fieldbus Available • .6 to 1.2 Cv	www.parker.com/pneu/pvl	
• Wear Compensating Dynamic Sealing System • Economical Solution • Optimized Design for Industrial Markets • Simplified Design • .8 to 2.4 Cv	www.parker.com/pneu/EZInline	D Inline
• Wide Range of Sizes & Flows • Multiple Options • IEM Bar Manifold • 3-Way & 4-Way • Wear Compensating Dynamic Sealing System • .75 to 7.0 Cv	www.parker.com/pneu/b	
• Extreme Temperature & Pressure Ranges • ATEX Options • 4-Way • Wide Range of Voltages for Mobile Industries • Unique Overmoulded Spool Technology • .7 to 2.7 Cv	www.parker.com/pneu/vikingx	
• 10mm 3-Way • 15mm & 20mm 4-Way • Low Power Consumption • Subbase & Inline Body • Individual & Collective Wiring Solutions • .01 to.47 Cv	www.parker.com/pneu/adex	
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• Compact Valves with High Flow • Innovative Back to Back Mounting Style with 4 Valves in a 42mm Width • Plug-in Design with Collective Wiring on Fieldbus or 25 Pin Cable • .35 Cv	www.parker.com/pneu/isysmicro	E Subbase & Manifold
• ISO Valve Platform, 18mm, 26mm, Size 1, Size 2, & Size 3 Plug-in • Collective Wiring on Fieldbus or 25-Pin or M23 Cable • Non Plug-in Valves with 3-Pin Din or Mini Connectors • .55 to 6.0 Cv	www.parker.com/pneu/isys	
• Isys Micro Fieldbus • Moduflex Fieldbus • Isysnet Fieldbus • Turck Fieldbus	www.parker.com/pneu/isysnet	
• ISO Valve Platform, 18mm, 26mm, Size 1, Size 2, & Size 3 • Non Plug-in Valves with 3-Pin Din or Mini Connectors • .55 to 4.15 Cv	www.parker.com/pneu/isomax	
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• Heavy Duty Design • 4-Way • Lever, Pedal Operated • 1/4" & 3/8" NPT • 1.3 to 2.8 Cv	www.parker.com/pneu/42ser	
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• Flow Controls • Check Valves • Needle Valves • Muffler & Silencers • Relief Valves • Quick Exhaust Valves • Ball Valves • Fittings • Tubing & Hose • Quick Couplings	www.parker.com/pneu/accessories	
• Model Number to Page Number Index • Safety Guide • Offer of Sale		H

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VALVE SERIES	PORT SIZE											NO. of PORTS	FLOW (Cv)	OPERATORS						
														Solenoid				Manual/ Mechanical	Air	
														Direct		Pilot Operated				
	4mm (5/32) Tube	M3 M5 10-32	1/8	1/4	1/4 Tube	3/8	3/8 Tube	1/2	3/4	1	1-1/4 to 1-1/2			Single	Double	Single	Double		Single	Double
A00		X										3	.01	X						
15mm		X										3	.033	X						
XM			X									3/4	.15	X						
A05	X	X										5	.18			X	X			
Moduflex	X				X		X					3/4	0.18-0.80			X	X		X	X
DA2			X									3/5	.20					X		
HM	X				X							5	.35			X	X			
A12			X		X							5	.47			X	X			
Sliding Seal			X	X								3/4	.5 - 1.25					X		
DX02			X									5	.55			X	X		X	X
HB			X									5	.55			X	X		X	X
PVLB			X		X							5	.6			X	X		X	X
PVLB10			X		X							5	.6			X	X			
P2LAX			X									5	.7			X	X	X	X	X
DX01			X									5	.75			X	X		X	X
B3			X	X								3/5	.75			X	X		X	X
EZ1			X									3/5	.80			X	X		X	X
DA4				X								3/5	.84					X		
Brass Poppet				X								2/3	.94					X		
HA				X								5	1.1			X	X		X	X
DX1				X		X						5	1.15			X	X		X	X
PVLC				X			X					5	1.2			X	X		X	X
PVLC10				X			X					5	1.2			X	X			
P2LBX				X								5	1.3			X	X		X	X
42 Manual				X		X						5	1.3 - 2.8					X		
B5				X		X						3/5	1.4			X	X		X	X
EZ2				X								3/5	1.3			X	X		X	X
H1				X		X						5	1.5			X	X		X	X
Valvair II						X		X		X	X	5	1.9 - 12.0			X	X		X	X
PL / VL				X		X		X				4	2.2 - 5.3					X		
EZ3						X						3/5	2.4			X	X		X	X
DX2						X		X				5	2.5			X	X		X	X
P2LCX						X						5	2.5			X	X		X	X
P2LDX								X				5	2.7			X	X		X	X
B6						X						3/5	2.7			X	X		X	X
H2						X		X				5	3.0			X	X		X	X
LV / EZ				X		X		X	X	X		3	3.0 - 13.7					X		
N				X		X		X	X	X	X	3	3.6 - 29.9			X			X	
DX3								X	X			5	4.15			X	X		X	X
B7								X				3/5	5.8			X	X		X	X
H3								X	X			5	6.0			X	X		X	X
B8									X			3/5	7.0			X	X		X	X

Notes:
1) Some Valve Series can operate below 35 PSIG with the use of an external pilot supply. Consult the individual Technical Data page for any valve in question.
2) ***WCS*** – Wear Compensation System – Unique seals installed on the spool expand radially under pressure and compensate for wear during extended operation.

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TYPE			POSITIONS				MOUNTING					PRESSURE RANGE PSIG (Note 1)	TEMPERATURE RANGE	CONSTRUCTION	VALVE SERIES	SECTION
2 Way	3 Way	4 Way	2	3			Single Subbase	Manifold		Inline	Stacking					
				APB	CE	PC		Individual	Bar							
	X			X			X		X			VAC-100	32 – 122°F	Poppet	A00	D
	X			X			X		X			VAC-145	5 – 140°F	Poppet	15mm	B
	X	X					X		X	X	X	VAC-125	32 – 125°F	Poppet	XM	B
		X	X	X	X	X	X		X	X		VAC-100	32 – 122°F	***WCS (Note 2)***	A05	D
	X		X	X	X	X				X	X	VAC-120	5 – 140°F	***WCS (Note 2)***	Moduflex	C
	X	X	X							X		VAC-150	32 – 175°F	Poppet/Spool	DA2	F
		X	X	X	X	X		X				VAC -145	5 – 140°F	***WCS (Note 2)***	HM	E
		X	X	X	X	X	X		X			VAC-100	32 – 122°F	***WCS (Note 2)***	A12	D
	X	X	X	X						X		VAC-200	-40 – 212°F	Lapped Disc	Sliding Seal	F
		X	X	X	X		X	X				VAC-145	14-140°F	Ceramic Spool	DX02	E
		X	X	X	X	X	X	X				VAC-145	5 – 120°F	***WCS (Note 2)***	HB	E
		X	X	X	X					X	X	30-150	5 – 140°F	Lip Seal	PVLB	C
		X	X	X	X						X	30-150	5 – 140°F	Lip Seal	PVLB10	C
		X	X	X	X	X			X	X		VAC-232	-40 – 158°F	Overmold Seal	P2LAX	D
		X	X	X	X		X	X				VAC-145	14-140°F	Ceramic Spool	DX01	E
	X	X	X	X	X	X	X	X	X	X		VAC-145	5 – 120°F	***WCS (Note 2)***	B3	D
	X	X	X	X	X	X			X	X		VAC-145	5 – 120°F	***WCS (Note 2)***	EZ1	D
	X	X	X	X	X	X				X		VAC-150	32 – 175°F	Packed Bore	DA4	F
X	X		X							X		0-150	-20 – 180°F	Poppet	Brass Poppet	F
		X	X	X	X	X	X	X				VAC-145	5 – 120°F	***WCS (Note 2)***	HA	E
		X	X	X	X	X	X	X				VAC-145	14-140°F	Ceramic Spool	DX1	E
		X	X	X	X					X	X	30-150	5 – 140°F	Lip Seal	PVLC	C
		X	X	X	X						X	30-150	5 – 140°F	Lip Seal	PVLC10	C
		X	X	X	X	X			X	X		VAC-232	-40 – 158°F	Overmold Seal	P2LBX	D
		X	X	X	X					X		VAC-150	0 – 160°F	Overmold Seal	42 Manual	F
	X	X	X	X	X	X		X	X	X		VAC-145	5 – 120°F	***WCS (Note 2)***	B5	D
	X	X	X	X	X	X			X	X		VAC-145	5 – 120°F	***WCS (Note 2)***	EZ2	D
		X	X	X	X	X	X	X				VAC-145	5 – 120°F	***WCS (Note 2)***	H1	E
			X	X	X	X				X		VAC-225	0 – 200°F	Packed Bore	Valvair II	E
		X		X	X		X			X		0-150	0 – 160°F	Lapped Disc	PL / VL	F
	X	X	X	X	X	X			X	X		VAC-145	5 – 120°F	***WCS (Note 2)***	EZ3	D
		X	X	X	X		X	X				VAC-145	14-140°F	Ceramic Spool	DX2	E
		X	X	X	X	X			X	X		VAC-232	-40 – 158°F	Overmold Seal	P2LCX	D
		X	X	X	X	X			X	X		VAC-232	-40 – 158°F	Overmold Seal	P2LDX	D
	X	X	X	X	X	X			X	X		VAC-145	5 – 120°F	***WCS (Note 2)***	B6	D
		X	X	X	X	X	X	X				VAC-145	5 – 120°F	***WCS (Note 2)***	H2	E
	X		X							X		0-250	32 – 175°F	Poppet	LV / EZ	F
X	X		X							X		VAC-250	0 – 150°F	Poppet	N	D
		X	X	X	X	X	X	X				VAC-145	14-140°F	Ceramic Spool	DX3	E
		X	X	X	X	X						VAC-145	5 – 120°F	***WCS (Note 2)***	B7	D
		X	X	X	X	X	X	X				VAC-145	5 – 120°F	***WCS (Note 2)***	H3	E
	X	X	X	X	X	X						VAC-145	5 – 120°F	***WCS (Note 2)***	B8	D

Notes:
1) Some Valve Series can operate below 35 PSIG with the use of an external pilot supply. Consult the individual Technical Data page for any valve in question.
2) ***WCS*** – Wear Compensation System – Unique seals installed on the spool expand radially under pressure and compensate for wear during extended operation.

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Protocol	Fieldbus Solution	Valve Platform	Max. Sol.	Add. I/O	Flow Range	Subnet Feature	Page Number
DeviceNet™	Turck	Isys Micro Isys ISO	256 256	Any combination up to 256	0.30-0.35 Cv 0.45-6.0 Cv	CANopen expansion	E1-E30 E31-E102
	Isysnet	Isys Micro Isys ISO	128* 32	256 In & 256 Out	0.30-0.35 Cv 0.45-6.0 Cv	Bus expansoion on Isys Micro	E1-E30 E31-E102
	Moduflex	Isys Micro Isys ISO Moduflex	16 16 16	—	0.30-0.35 Cv 0.45-6.0 Cv 0.18-0.80 Cv	—	E1-E30 E31-E102 C1-C57
EtherNet/IP™	Turck	Isys Micro Isys ISO	256 256	Any combination up to 256	0.30-0.35 Cv 0.45-6.0 Cv	CANopen expansion & DeviceNet subnet	E1-E30 E31-E102
	Isysnet	Isys Micro Isys ISO	128* 32	256 In & 256 Out	0.30-0.35 Cv 0.45-6.0 Cv	Bus expansoion on Isys Micro	E1-E30 E31-E102
ControlNet™	Isysnet	Isys Micro Isys ISO	128* 32	256 In & 256 Out	0.30-0.35 Cv 0.45-6.0 Cv	Bus expansoion on Isys Micro	E1-E30 E31-E102
PROFIBUS PROCESS FIELD BUS	Turck	Isys Micro Isys ISO	256 256	Any combination up to 256	0.30-0.35 Cv 0.45-6.0 Cv	CANopen expansion	E1-E30 E31-E102
	Isysnet	Isys Micro Isys ISO	128* 32	256 In & 256 Out	0.30-0.35 Cv 0.45-6.0 Cv	Bus expansoion on Isys Micro	E1-E30 E53-E164
	Moduflex	Isys Micro Isys ISO Moduflex	16 16 16	—	0.30-0.35 Cv 0.45-6.0 Cv 0.18-0.80 Cv	—	E1-E30 E31-E102 C1-C57
PROFINET INDUSTRIAL ETHERNET	Turck	Isys Micro Isys ISO	256 256	Any combination up to 256	0.30-0.35 Cv 0.45-6.0 Cv	CANopen expansion	E1-E30 E31-E102
Modbus/TCP	Turck	Isys Micro Isys ISO	256 256	Any combination up to 256	0.30-0.35 Cv 0.45-6.0 Cv	CANopen expansion & DeviceNet subnet	E1-E30 E31-E102
AS-i INTERFACE	Moduflex	Isys Micro Isys ISO Moduflex	8 8 8	8 In	0.30-0.35 Cv 0.45-6.0 Cv 0.18-0.80 Cv	—	E1-E30 E31-E102 C1-C57
CANopen	Turck	Isys Micro Isys ISO	256 256	Any combination up to 256	0.30-0.35 Cv 0.45-6.0 Cv	CANopen expansion	E1-E30 E31-E102
	Moduflex	Isys Micro Isys ISO Moduflex	16 16 16	—	0.30-0.35 Cv 0.45-6.0 Cv 0.18-0.80 Cv	—	E1-E30 E31-E102 C1-C57
INTERBUS-S	Moduflex	Isys Micro Isys ISO Moduflex	16 16 16	—	0.30-0.35 Cv 0.45-6.0 Cv 0.18-0.80 Cv	—	E1-E30 E31-E102 C1-C57

*128 Solenoids possible with Bus Extension functionality. Up to 4 manifolds with 32 solenoids each can be control with a single communication module.

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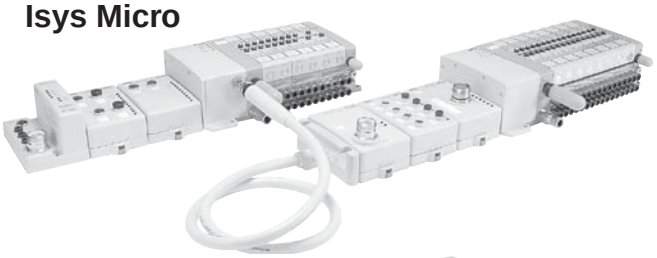
Isysnet Fieldbus Solution

Isysnet fieldbus offers full functionality for large, complex machines using many valves, inputs, and outputs.

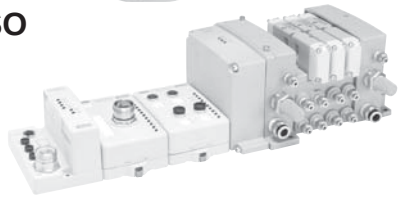
- Digital inputs and outputs, analog inputs and outputs, and high watt relay outputs available.
- Up to 256 inputs and 256 outputs can be configured on a single node.

Valve Platforms

Isys Micro



Isys ISO



The Isys Micro is designed with an innovative back-to-back valve mounting style where 4 valves are assembled on a 42mm wide manifold, producing an equivalent 10.5mm valve width.

By incorporating bus expansion capability, the Isys Micro with Isysnet is able to take full advantage of fieldbus systems. Up to 4 Valve Driver Modules, controlling 32 solenoids each, can be coupled to a single fieldbus node. With additional input and output modules at each expansion point, a full 256 inputs and 256 outputs can be connected, offering a simple wiring solution for the machine.

The Isys ISO valve line offers a complete ISO valve package, conforming to ISO specification 15407 for 18mm and 26mm wide valves, and ISO specification 5599 for the larger ISO size 1, 2, and 3 valves.

Additional Features – Preferred Connectivity

By partnering with Rockwell Automation, Isysnet provides a fieldbus solution with Preferred Connectivity to the Rockwell Automation Logix™ Architecture. Because all the information needed for the device profile is already loaded into the Allen Bradley RSLogix5000™ software, configuration time is reduced by up to 70%.

The configuration process is reduced from 4 clicks and 7 data fields to merely 3 clicks, with no additional values for the user to find and enter. This means there are no installation manuals to search through, no chance of entering incorrect information, and you can work with confidence knowing the device is configured properly.

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Moduflex Fieldbus Solution

Moduflex fieldbus offers a low cost fieldbus connection for manifolds with fewer solenoids and no additional inputs and outputs, except for AS-i which has 8 inputs.

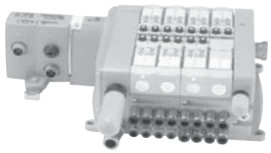
- Fieldbus connection for up to 16 solenoids.
- AS-i protocol provides a connection for up to 8 solenoids and 8 inputs.

Valve Platforms

Moduflex



Isys Micro



Isys ISO



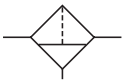
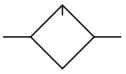
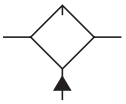
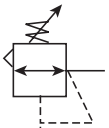
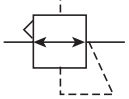
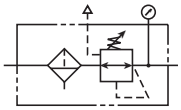
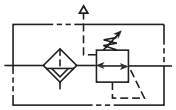
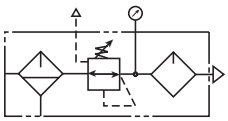
Moduflex offers the complete choice of stand-alone and manifold systems. The ability to mount size 1 (0.3 Cv) valves and size 2 (0.8 Cv) valves on the same manifold give the machine builder the opportunity to maximize the valve system for the application. With functions such as dual 4/2 and dual 3/2 there will be opportunities for space and cost savings. Moduflex gives maximum flexibility to assemble each automation system step by step using modules to expand islands, control flow, and have multiple pressures or functions.

The Isys Micro is designed with an innovative back-to-back valve mounting style where 4 valves are assembled on a 42mm wide manifold, producing an equivalent 10.5mm valve width.

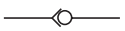
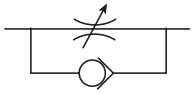
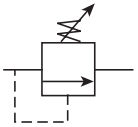
The Isys ISO valve line offers a complete ISO valve package, conforming to ISO specification 15407 for 18mm and 26mm wide valves, and ISO specification 5599 for the larger ISO size 1, 2, and 3 valves.

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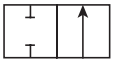
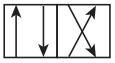
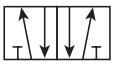
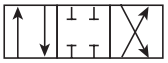
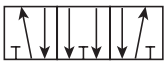
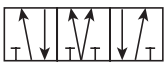
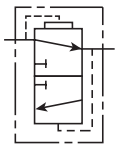
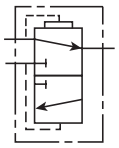
AIR PREPARATION UNITS

Symbol	Description
	FILTER / SEPARATOR with manual drain
	FILTER / SEPARATOR with automatic drain
	OIL REMOVAL FILTER
	AUTOMATIC DRAIN
	LUBRICATOR less drain
	LUBRICATOR with manual drain
	LUBRICATOR with automatic filling
	AIR LINE PRESSURE REGULATOR adjustable, relieving
	AIR LINE PRESSURE REGULATOR pilot controlled, relieving
	FILTER / REGULATOR (piggyback) Manual Drain Relieving (With Gauge)
	FILTER / REGULATOR (piggyback) Auto Drain Relieving
	AIR LINE COMBO F-R-L simplified

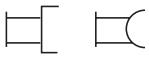
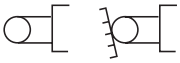
PNEUMATIC VALVES

Symbol	Description
	CHECK
	FLOW CONTROL
	RELIEF VALVE

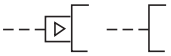
PNEUMATIC VALVES (Cont'd)

Symbol	Description
	2-POSITION 2-WAY
	2-POSITION 3-WAY
	2-POSITION 4-WAY
	2-POSITION, 4-WAY 5-PORTED
	3-POSITION, 4-WAY, APB ports closed, center pos.
	3-POSITION, 4-WAY, CE 5-PORTED cylinder ports open to exhaust in center position
	3-POSITION, 4-WAY, PC 5-PORTED pressure ports open to exhaust in center position
	QUICK EXHAUST
	SHUTTLE

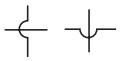
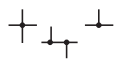
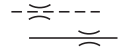
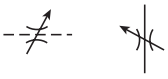
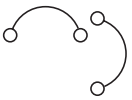
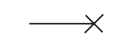
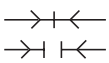
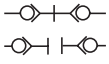
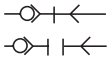
VALVE ACTUATORS

Symbol	Description
	MANUAL general symbol
	PUSH BUTTON
	LEVER
	PEDAL OR TREADLE
	MECHANICAL cam, toggle, etc.
	SPRING
	DETENT line indicates which detent is in use

VALVE ACTUATORS (Cont'd)

Symbol	Description
	SOLENOID
	INTERNAL PILOT SUPPLY
 complete simplified	REMOTE PILOT SUPPLY
	AND / OR COMPOSITE solenoid and pilot or manual override
	AND / OR COMPOSITE solenoid and pilot or manual override and pilot

LINES AND FUNCTIONS

Symbol	Description
	solid line – MAIN LINE
	dashed line – PILOT LINE
	dotted line – EXHAUST OR DRAIN LINE
	center line – ENCLOSURE OUTLINE
	LINES CROSSING (90° intersection not necessary)
	LINES JOINING (90° intersection not necessary)
	LINES JOINING
	FLOW DIRECTION hydraulic medium
	FLOW DIRECTION gaseous medium
	ENERGY SOURCE
	LINE WITH FIXED RESTRICTION
	LINE WITH ADJUSTABLE RESTRICTION
	FLEXIBLE LINE
	PLUGGED PORT, TEST STATION, POWER TAKE-OFF
 connected disconnected	QUICK DISCONNECT WITHOUT CHECKS
 connected disconnected	QUICK DISCONNECT WITH CHECKS
 connected disconnected	QUICK DISCONNECT WITH ONE CHECK

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Pneumatic Division
Richland, Michigan
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Saving Money and Space by Sizing Your Valves Properly
This catalog gives you a flow rating (Cv) for each valve in the Parker Hannifin line. You can "plug" *your* requirements into the following simple formula, and determine the Cv needed to do the job. By not oversizing, you'll save space and money, and you'll ensure the valve you select will do the job.

Converting the Job Requirements Into Cv (Capacity Co-efficient).

$$Cv = \frac{\text{Cylinder Area (Sq. In.) (See Table 1)} \times \text{Cylinder Stroke (In.)} \times \text{Compression Factor (Table 2)} \times \text{"A" (Table 2)}}{\text{Stroke Time (sec.)} \times 28.8}$$

Let's work through an example:

We want to extend a $3^1/_4$" bore cylinder which has a 12" stroke in one second, and we have a supply pressure of 80 PSI to do the work. Here's what we know:

Cylinder Area for a 3-1/4" Bore, from Table 1 ..... 8.30 sq. in.
Cylinder Stroke ..... 12 in.
Stroke Time Required in Seconds ..... 1 sec.
Compression Factor at 80 PSI, from Table 2 ..... 6.4
"A" Constant for 80 PSI, from Table 2 ..... .048

Substituting in the formula, we have:

$$C_V = \frac{8.30 \times 12 \times 6.4 \times .048}{1 \times 28.8} = 1.06$$

Any valve, therefore, which has a Cv of *at least* 1.06, will extend our cylinder the specified distance in the required time.

Choosing the Valve "Series"
Your next step is to choose a basic valve design to do the job. For a quick guide to valve designs, see Table 3.

Having selected the basic valve design, consult the Capacity Co-efficient (Cv) tables which describe the individual valve capacities.

Selecting the Valve Model, Options and Accessories
Having determined Cv, series, port size, flow-path configuration (pre-determined by circuit design), and actuation method, you're ready to choose the *exact* valve model number.

Read the pertinent catalog pages; note the exact model numbers, options and accessories you want. Then phone or write your Parker Hannifin air valve distributor. They will give you prompt, accurate service.

Note: Need circuit design help? Contact your local Parker Hannifin distributor. They are backed up by our regional Sales Engineers and offices. Between them, you'll find answers to all of your questions.

Table 1

Effective Square-Inch Areas for Standard-Bore-Size Cylinders

Bore Size	Cylinder Area (Sq. In.)	Bore Size	Cylinder Area (Sq. In.)
3/4"	.44	4"	12.57
1"	.79	4-1/2"	15.90
1-1/8"	.99	5"	19.64
1-1/4"	1.23	6"	28.27
1-1/2"	1.77	7"	38.48
1-3/4"	2.41	8"	50.27
2"	3.14	10"	78.54
2-1/2"	4.91	12"	113.10
3-1/4"	8.30	14"	153.94
3-5/8"	10.32		

Table 2

Compression Factors and "A" Constants

Inlet Pressure (PSIG)	Compression Factor	"A" Constants for Various Pressure Drop*		
		2 PSI △P	5 PSI △P	10 PSI △P
10	1.6	.152	.103	
20	2.3	.126	.084	.065
30	3.0	.111	.073	.055
40	3.7	.100	.065	.048
50	4.4	.091	.059	.044
60	5.1	.085	.055	.040
70	5.7	.079	.051	.037
80	6.4	.075	.048	.035
90	7.1	.071	.046	.033
100	7.8	.068	.044	.032
110	8.5	.065	.042	.030
120	9.2	.063	.040	.029
130	9.9	.061	.039	.028
140	10.6	.058	.037	.027
150	11.2	.057	.036	.026
160	11.9	.055	.035	.025
170	12.6	.053	.034	.024
180	13.3	.052	.033	.024
190	14.0	.051	.032	.023
200	14.7	.050	.032	.023

Note: Use "A" constant at 5 PSI △P for most applications. On very critical applications, use "A" at 2 PSI △P. You will find in many cases, a 10 PSI △P is not detrimental, and can save money and mounting space.

* Tabulated values are the solution of $\frac{1}{22.48}\sqrt{\frac{GT}{(P_1 - P_2)\,P_2}}$ where T is for 68°F and G =1 for Air.

Table 3

Characteristics of the Major Valve Designs

A. Poppet 3-Way and 4-Way	1. High flow capacities 2. Minimum lubrication requirements 3. Fast response 4. Self-cleaning poppet seats 5. Pressures of 15 to 150 PSIG (modifications for vacuum to 250 PSIG)
B. Spool Valves (WCS) 3-Way and 4-Way	1. Low friction 2. Lower operating pressures 3. Fast response 4. Less wear 5. Long Cycle Life - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore 6. Non-Lube Service - No lubrication required for continuous valve shifting 7. Bi-Directional Spool Seals - Common spool used for any pressure, including vacuum
C. Packed Bore 4-Way	1. Wide range of flow capacities 2. Wide range of flow-path configurations 3. Pilot-operated models available 4. Pressures of vacuum to 150 PSIG
D. Rotary Or Reciprocating Disc 4-Way, manually operated	1. Inexpensive 2. Versatility in manual actuation

Cv – Capacity Co-efficients (sometimes called Flow Factors). Each flow path through the valve has its own Cv value. All Cv ratings for each valve cataloged on this page are listed on the front side of this sheet.

$$Cv = \frac{Q}{22.48}\sqrt{\frac{GT}{(P_1 - P_2)\,P_2}}$$

Q = Flow in Standard Cubic Feet per minute (14.7 PSIA at 60°F)
P_1 = Inlet Absolute Pressure (gauge pressure + 14.7)
P_2 = Outlet Absolute Pressure (gauge pressure + 14.7)
Note: P_2 must be greater than .53 x P_1
G = Specific Gravity of flowing medium (Air, G =1)
T = Absolute Temperature of Air (460 + °F.)

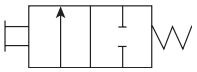
Cv = Q x "A" (Table 2)

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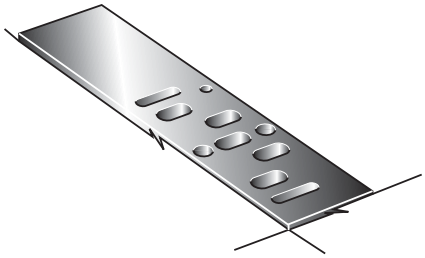
Electrical Enclosure IP Ratings

1st Numeral: Degree of Protection with respect to persons and solid objects		2nd Numeral: Degree of protection with respect to harmful ingress of water								
		0	1	2	3	4	5	6	7	8
		Non Protected	Protected against dripping water	Protected against dripping water of ±15° angle	Protected against spraying water of ±60° angle	Protected against splashing water	Protected against water jets	Protected against heavy seas	Protected against immersion	Protected against submersion
Non-Protected	**0**	**IP00**	**IP01**	**IP02**						
Protected against solid objects greater than Ø50mm	**1**	**IP10**	**IP11**	**IP12**	**IP13**					
Protected against solid objects greater than Ø12mm	**2**	**IP20**	**IP21**	**IP22**	**IP23**					
Protected against solid objects greater than Ø2.5mm	**3**	**IP30**	**IP31**	**IP32**	**IP33**	**IP34**				
Protected against solid objects greater than Ø1.0mm	**4**	**IP40**	**IP41**	**IP42**	**IP43**	**IP44**	**IP45**	**IP46**		
Dust protected Depression 200mm water column, air flow 80 x volume of enclosure	**5**					**IP54**	**IP55**	**IP56**		
Dust-tight Same test procedure	**6**						**IP65**	**IP66**	**IP67**	**IP68**

Functionality Explanation

Fluid Power			Universal Description	Electrical	
Function	Symbol			Function	Symbol
Normally Closed (N.C.)	**2-Way** 	**3-Way** 	**Normally Non-Passing (NNP)**	**Normally Open (N.O.)**	
Normally Open (N.O.)	**2-Way** 	**3-Way** 	**Normally Passing (NP)**	**Normally Closed (N.C.)**	

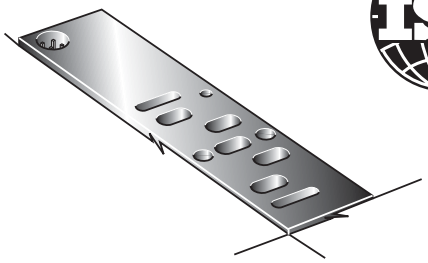
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15407-1

External Electrical Connection Subbase Valves

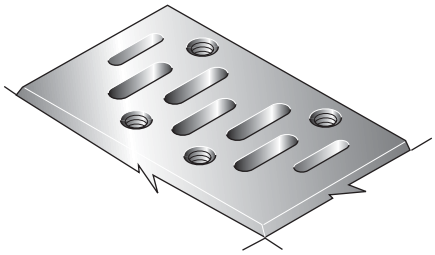
The ISO Standard 15407-1 specifies an interface pattern for a common subbase valve consisting of pressure passages 1, 3, 5, 2, & 4, pilot passages 12 & 14. The width of the pattern and location of the 2-bolt holes are also specified. This ISO standard specifies 2 different sizes – 18mm as the smallest and 26mm as the largest.



15407-2

Body-to-Base Plug-In Subbase Valves

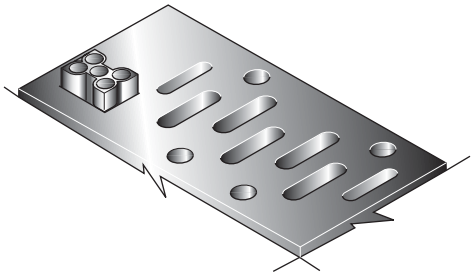
The ISO Standard 15407-2 specifies an interface pattern for a common subbase valve consisting of pressure passages 1, 3, 5, 2, & 4, pilot passages 12 & 14, and a plug-in electrical connector. The width of the pattern and location of the 2-bolt holes are also specified. This ISO standard specifies 2 different sizes – 18mm as the smallest and 26mm as the largest.



5599-1

External Electrical Connection Subbase Valves

The ISO Standard 5599-1 specifies an interface pattern for a common subbase valve consisting of pressure passages 1, 3, 5, 2, & 4, and pilot passages 12 & 14. The width of the pattern and location of the 4 bolt holes are also specified. There are no specifications for the type of external electrical connection used to control the valve.



5599-2

Body-to-Base Plug-In Subbase Valves

The ISO Standard 5599-2 specifies an interface pattern for a common subbase valve consisting of pressure passages 1, 3, 5, 2, & 4, pilot passages 12 & 14, and a plug-in electrical connector. The width of the pattern and location of the 4-bolt holes are also specified. This ISO standard specifies 6 different sizes – 1 as the smallest up to 6 as the largest. Manufacturers who produce ISO 5599-2 valves typically offer sizes 1, 2 & 3.

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The Parker 5-Year Extended Warranty

Parker Hannifin Corporation will extend its warranty on all pneumatic components to sixty (60) months providing they are correctly installed and protected by Parker pneumatic filters which are properly maintained. Components covered by this warranty include all cylinders, valves and pneumatic automation components manufactured by Parker in any of our global facilities. This warranty covers our components anywhere in the world you may ship your equipment.

Parker's obligation under this warranty is limited to the replacement or repair of any failed components. The buyer understands that the seller will not be liable for any other costs or damages.

The buyers of quality Parker components and filters benefit by having ONE source for all pneumatic needs - **Parker.**



R. Sherrard

Roger Sherrard
President
Automation Group

Parker

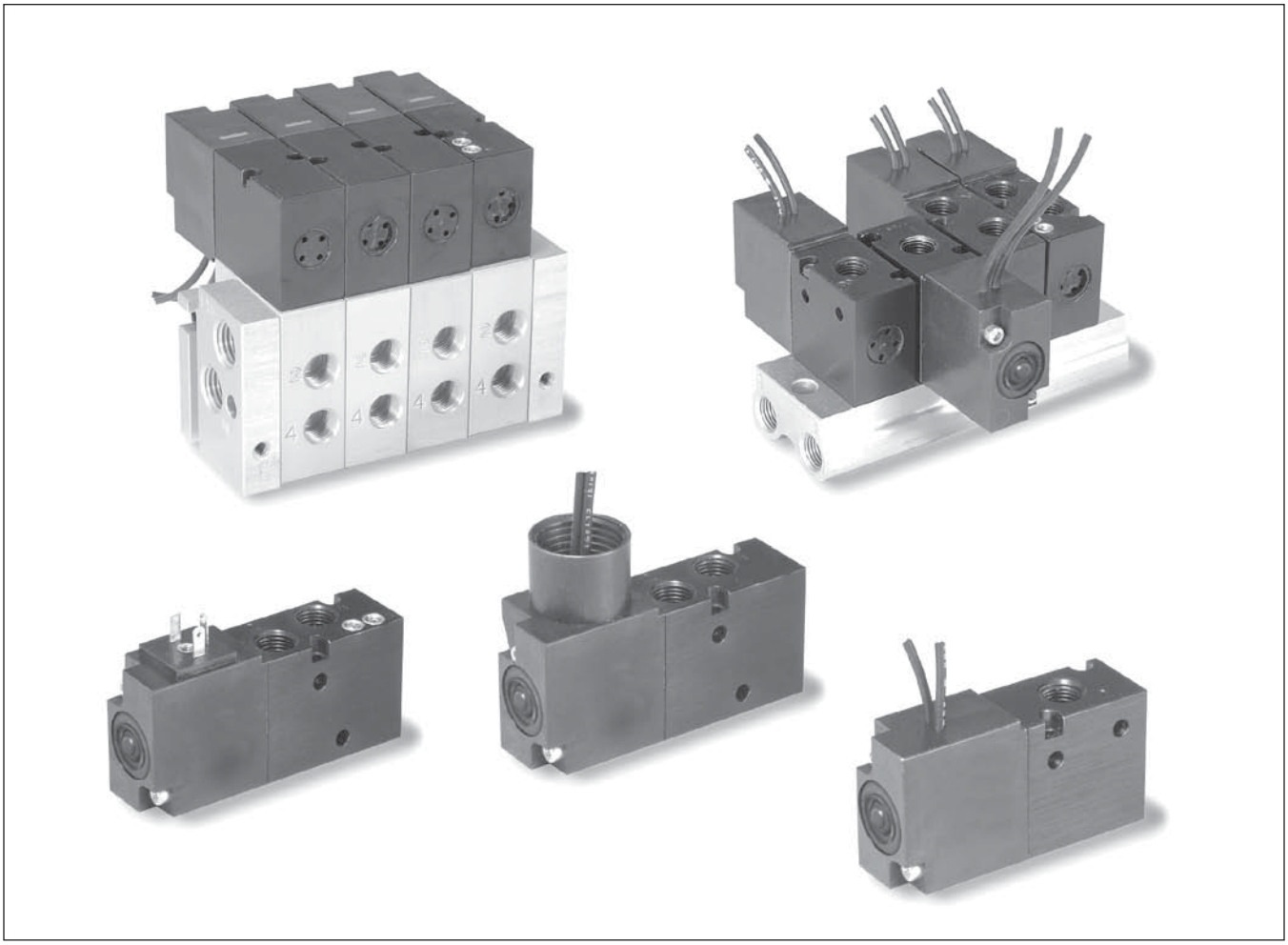
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"XM" Series

Air Control Valves
Direct Acting, 1/8" Port
3-Way & 4-Way: .15 Cv

Section B

www.parker.com/pneu/xm

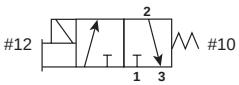


Basic Valve Functions B2
XM Series Basic Features B3
Common Part Numbers B4
Model Number Index B5
IEM Bar Manifolds & Subbase Manifolds B6
Manifold Ordering Information B7
Technical Information B8
Kits & Accessories B9
Dimensions B10-B13

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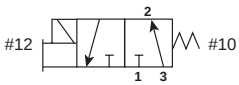
3-Way, 2-Position, Normally Closed



De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 is connected to outlet port 2, exhaust port 3 is blocked.

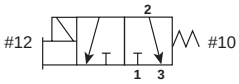
3-Way, 2-Position, Normally Open



De-energized position – Solenoid #12 de-energized. Pressure at inlet port 3 connected to outlet port 2, exhaust port 1 is blocked.

Energized position – Solenoid #12 energized. Pressure at inlet port 3 blocked, outlet port 2 connected to exhaust port 1.

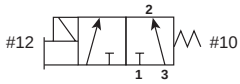
3-Way, 2-Position, Diverter



De-energized position – Solenoid #12 de-energized. Pressure at inlet port 2 connected to outlet port 3. Port 1 is blocked.

Energized position – Solenoid #12 energized. Pressure at inlet port 2 is connected to outlet port 1. Port 3 is blocked.

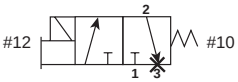
3-Way, 2-Position, Selector



De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 is blocked. Pressure at inlet port 3 is connected to outlet port 2.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 is connected to outlet port 2. Pressure at port 3 is blocked.

2-Way, 2-Position, Normally Closed

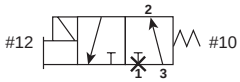


De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked, port 2 is connected to port 3, which is plugged.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 is connected to outlet port 2. Port 3 is blocked.

* Plug port 3.

2-Way, 2-Position, Normally Open

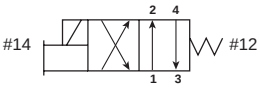


De-energized position – Solenoid #12 de-energized. Pressure at inlet port 3 is connected to outlet port 2. Port 1 is blocked.

Energized position – Solenoid #12 energized. Pressure at inlet port 3 is blocked. Port 2 is connected to port 1, which is plugged.

* Plug port 1.

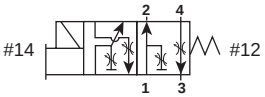
4-Way, 2-Position



De-energized position – Solenoid #14 de-energized. Pressure at inlet port 1 connected outlet port 2. Outlet port 4 connected to exhaust port 3.

Energized position – Solenoid #14 energized. Pressure at inlet port 1 is connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

4-Way, 2-Position with Flow Controls



De-energized position – Solenoid #14 de-energized. Pressure at inlet port 1 connected outlet port 2. Outlet port 4 connected to exhaust port 3.

Energized position – Solenoid #14 energized. Pressure at inlet port 1 is connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Flow Controls meter exhaust from ports 2 and 4 separately into port 3.

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Flow Characteristics

- 3-Way: .15 Cv
- 4-Way: .15 Cv

3-Way Operating Pressure

- 0 to 125 PSIG
- 0.28" Hg Vacuum

4-Way Operating Pressure

- -14.7 to 125 PSIG

Ports

- 1/8" NPT

Mounting

- Inline
- IEM Bar Manifold
- Subbase Valve Manifold

Solenoids

- Continuous Duty Rated
- 24" Grommet
- 15mm 3-Pin (9.4mm Pin Spacing)
- 1/2" Conduit
- 12VDC to 240VAC

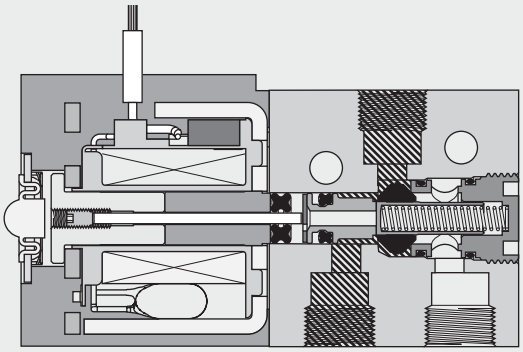
Balanced Poppet

- 3-Way N.O. & N.C.
- Diverter
- Selector
- Vacuum Option (V-Option)

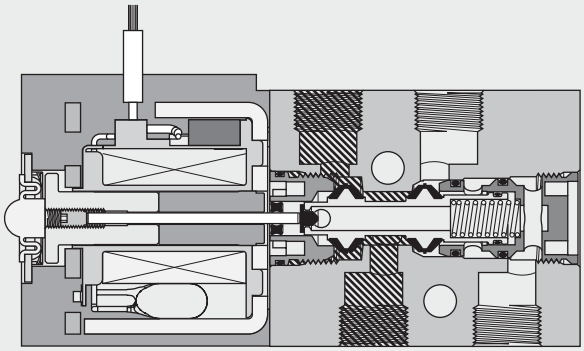
ROHS Compliant

Materials

- Body.....Aluminum
- Center Post & Armature.....Stainless Steel
- Stem.....Brass
- Spring.....Stainless Steel
- Seals.....Buna N



3-Way Inline Valve
Shown Energized

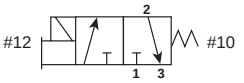


4-Way Inline Valve
Shown De-Energized

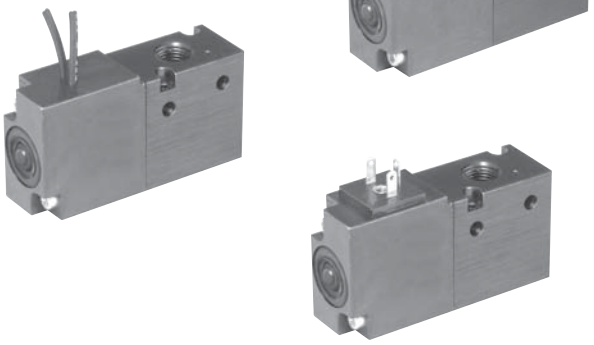
Pressure **Exhaust**

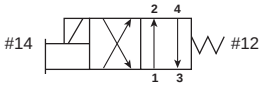
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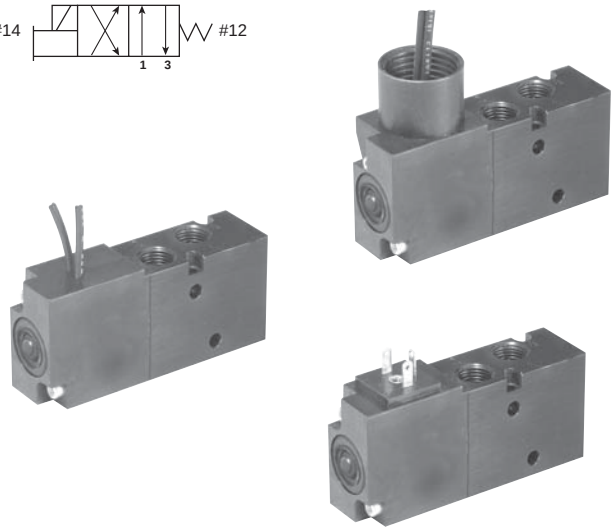
Inline Valves



N.C. Function Shown







3-Way

24" Grommet	3-Pin 15mm DIN 9.4mm	1/2" Conduit / 24" Leads	Voltage
XM30NBG49A	**XM30NB549A**	**XM30NBH49A**	24VDC
XM30NBG53A	**XM30NB553A**	**XM30NBH53A**	120VAC

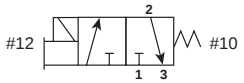
Note: All units with non-locking flush override.
Can be used as N.O / N.C. / Diverter / Selector function.

4-Way

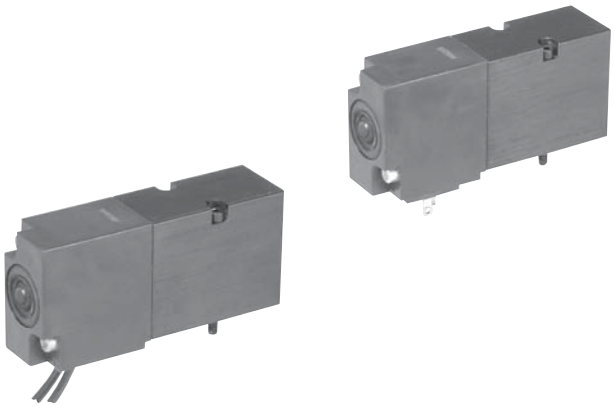
24" Grommet	3-Pin 15mm DIN 9.4mm	1/2" Conduit / 24" Leads	Voltage
XM40NBG49A	**XM40NB549A**	**XM40NBH49A**	24VDC
XM40NBG53A	**XM40NB553A**	**XM40NBH53A**	120VAC

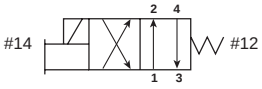
Note: All units with non-locking flush override.

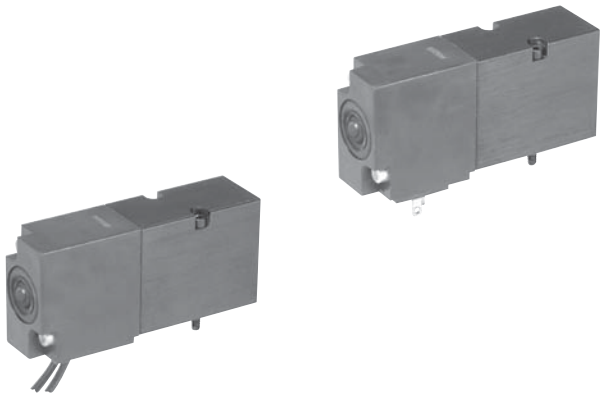
Subbase Mount



N.C. Function Shown







3-Way

24" Grommet	3-Pin 15mm DIN 9.4mm	Voltage
XM3VNBG49A	**XM3VNB549A**	24VDC
XM3VNBG53A	**XM3VNB553A**	120VAC

Note: All units with non-locking flush override.
Can be used as N.O / N.C. / Diverter / Selector function.

4-Way

24" Grommet	3-Pin 15mm DIN 9.4mm	Voltage
XM4VNBG49A	**XM4VNB549A**	24VDC
XM4VNBG53A	**XM4VNB553A**	120VAC

Note: All units with non-locking flush override.

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XM 4 0 N B G49 — A

Operator / Function	
3-Way, Direct Operated, Single Solenoid, Spring Return	**3**
4-Way, Direct Operated, Single Solenoid, Spring Return	**4**

Port Size / Thread Type	
1/8" NPT Inline	**0***
Subbase Valve Less Base	V

* Available on IEM manifolds.

Pilot Source / Exhaust	
Direct Operated / Standard Pressure	**N***
Direct Operated / Vacuum Service	V**

* 3-Way Valve Positive Pressure, 4-Way Valve Vacuum or Positive Pressure
** 3-Way Valve Vacuum Pressure.

Overrides	
Flush - Non-Locking	**B**

Options	
Blank	**None**
F0*	Flow Control

* 4-Way Valves Only.

Engineering Level	
A	**Current**

Enclosures / Lead Length

		Voltage		
		AC		DC
		60Hz	50Hz	
542	15mm 3-Pin DIN 9.4mm	24	22	
545*	15mm 3-Pin DIN 9.4mm			12
549*	**15mm 3-Pin DIN 9.4mm**			**24**
553	**15mm 3-Pin DIN 9.4mm**	**120**	**110**	
G42	Grommet / Flying Leads 24"	24	22	
G45*	**Grommet / Flying Leads 24"**			**12**
G49*	**Grommet / Flying Leads 24"**			**24**
G53	**Grommet / Flying Leads 24"**	**120**	**110**	
G57	Grommet / Flying Leads 24"	240	220	
H42†	1/2" Conduit / Flying Leads 24"	24	22	
H45*†	1/2" Conduit / Flying Leads 24"			12
H49*†	**1/2" Conduit / Flying Leads 24"**			**24**
H53†	**1/2" Conduit / Flying Leads 24"**	**120**	**110**	

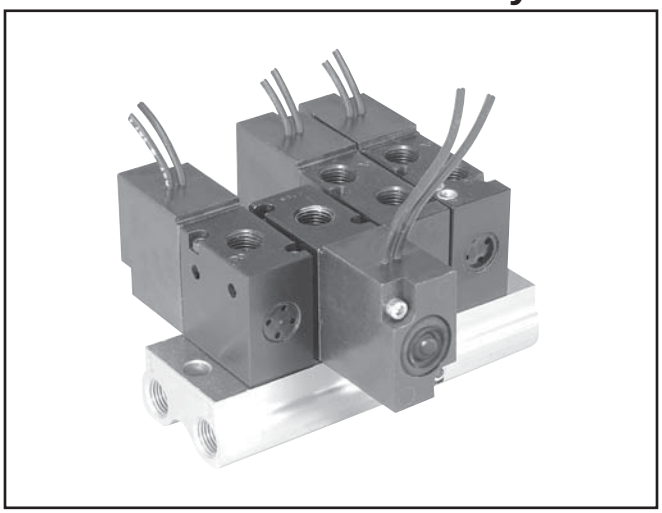
* Mobile Voltage Rated.
† Inline Version Only.

Notes:

Inline Valves
Conduit Inline valves cannot be mounted to IEM or Subbase Manifolds.

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IEM Bar Manifold Assembly

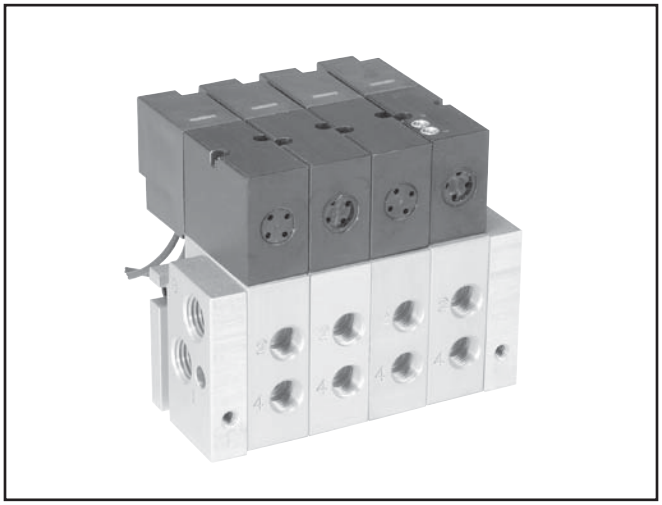


IEM Bar Manifold

Allows for mounting of 3-Way and 4-Way Inline valves on the same manifold. 3-Way Valves can be mounted on the same manifold to provide a Normally Closed or Normally Open function by rotating the valves 180°. 4-Way valves can be mounted with or without Flow Controls.

IEM Bar Manifold Assemblies consist of valves and an IEM Manifold. Valves and IEM Manifold can be ordered separately.

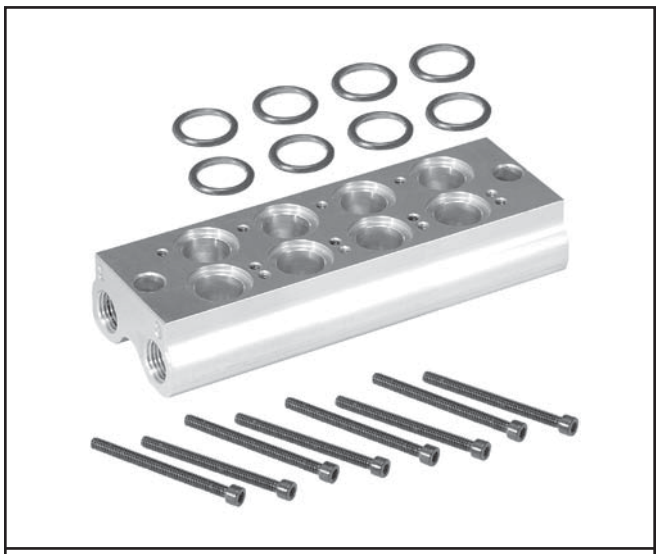
Subbase Manifold Assembly



Subbase Manifold

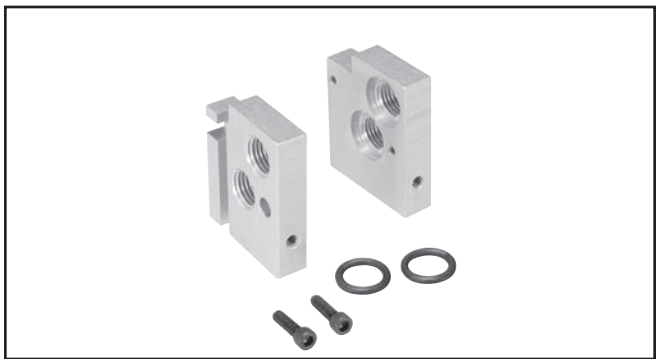
Allows for mounting of 3-Way and 4-Way Subbase Valves can be mounted on the same manifold. 3-Way Valves can be mounted on the same manifold to provide a Normally Closed or Normally Open function through the use of port isolation kits. 4-Way valves can be mounted with or without Flow Controls.

Subbase Manifold Assemblies consist of Valves, End Plate Kit and Manifold Subbase Kits. Valves, End Plate Kit and Manifold Subbase Kits can be ordered separately.

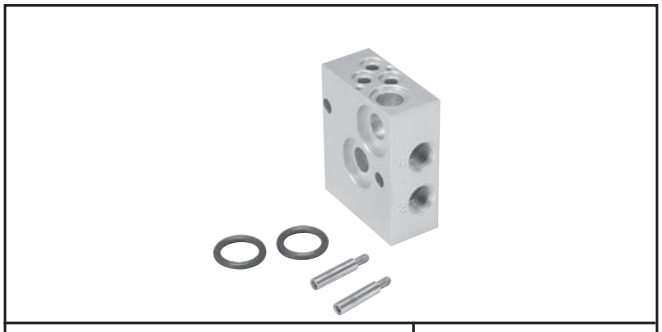


IEM Bar Manifold (NPT)	**PSMXNXN##NP**

– stations 02 to 12



End Plate Kit (NPT)	**PSXM31010P**

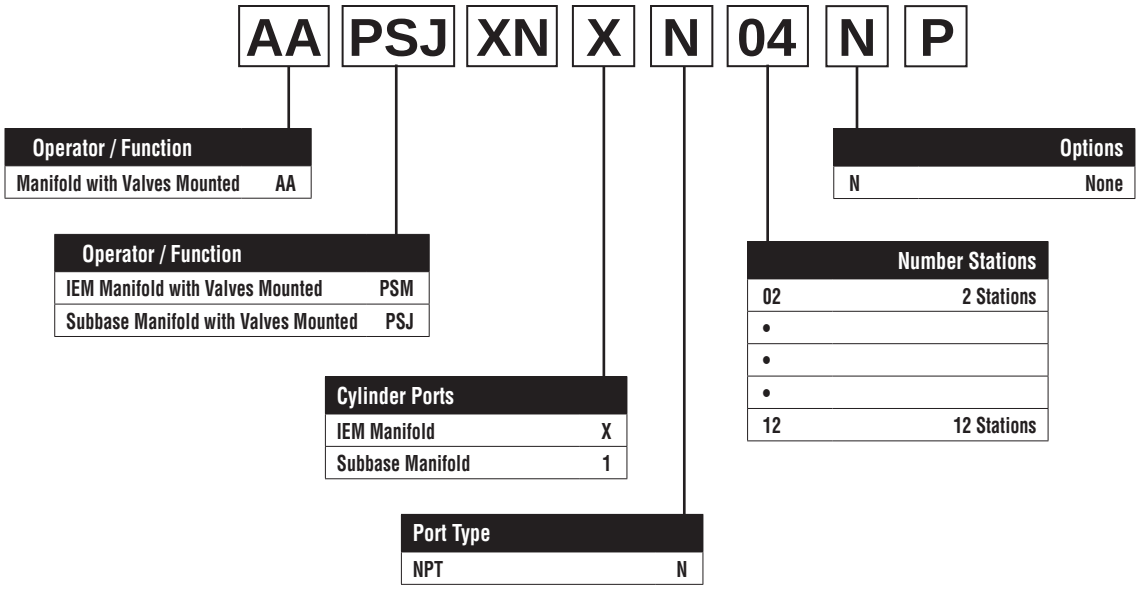


Manifold Subbase Kit (NPT)	**PSXM530CP**

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How to Order Manifold Assemblies

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IEM Bar Manifold Assembly

First line item describes IEM Assembly. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.

Manifold Assembly Ordering Example

Item	Qty	Part Number
001	1	AAPSMXNXN04NP
002	2	XM30NBG49A - **Station 1, 2 - Normally Closed**
003	1	XM40NBG49A - **Station 3**
004	1	XM40NBG49F0A - **Station 4**

Notes: When ordering Add-A-Folds, list valves left to right when looking at the Port 1/3 side of the manifold. All 3-Way valves will be assembled as 3-Way N.C. valves.

Component Ordering Example

Item	Qty	Part Number
001	1	PSMXNXN04NP (IEM Kit)
002	2	XM30NBG49A (Valve)
003	1	XM40NBG49A (Valve)
004	1	XM40NBG49F0A (Valve)

Subbase Manifold Assembly

First line item describes Subbase Assembly. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.

Subbase Manifold Ordering Example

Item	Qty	Part Number
001	1	AAPSJXN1N04NP
002	2	XM3VNBG49A - **Station 1, 2 - Normally Closed**
003	1	XM4VNBG49A - **Station 3**
004	1	XM4VNBG49F0A - **Station 4**

Notes: When ordering Add-A-Folds, list valves left to right when looking at the Port 2/4 side of the manifold. All 3-Way valves will be assembled as 3-Way N.C. valves. Isolator Discs are required for N.O. functions

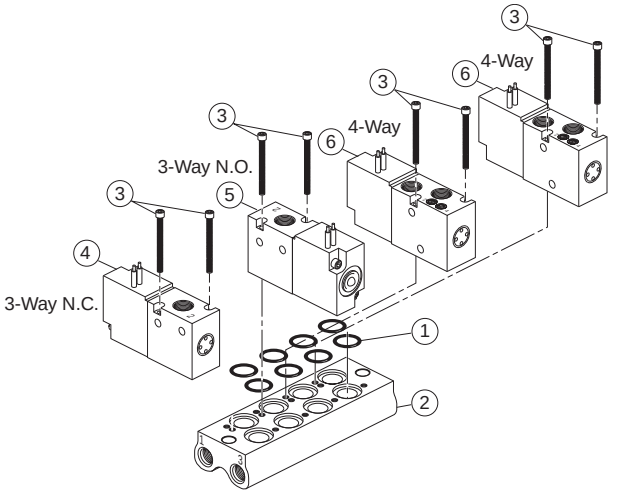
Component Ordering Example

Item	Qty	Part Number
001	1	PSXM31010P (End Plate Kit)
002	4	PSXM530CP (Subbase Kit)
003	2	XM3VNBG49A (Valve)
004	1	XM4VNBG49A (Valve)
005	1	XM4VNBG49F0A (Valve)

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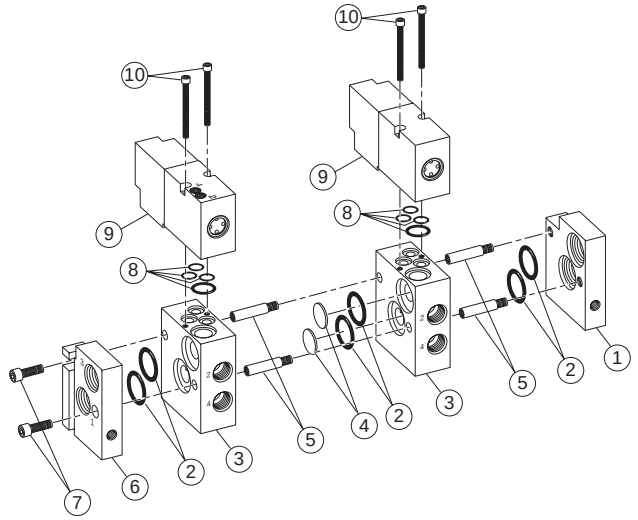
Inline Valve on IEM Bar Manifold Assembly

IEM Bar Manifold Assembly's are assembled by adding Inline Valves to an IEM Bar Manifold. O-rings are installed at each valve station in the counterbore on the top of the manifold. Valves are installed with 2 mounting screws. For 3-Way N.C. valve operation, line up the solenoid end of the Valve with Port 1 on the Manifold. For 3-Way N.O. operation, line up the solenoid end of the valve with Port 3 on the manifold. For 4-Way valve operation, line up the Solenoid end of the valve with Port 1 on the manifold. If manifolds are factory assembled, all 3-Way valves are N.C. To convert from N.C. to N.O. operation, remove valve from the base and place valve 180° from the original position with the solenoid end lined up with the 3-Port on the manifold.



Subbase Valve and Manifold Assembly

Subbase Manifold Assembly's are assembled by adding tie rods and manifold bases to the end plate kit of the subbase end plate kit as shown below. Valves are added to each subbase per manifold design. 4-Way and 3-Way valves are mounted with Solenoids Coils facing away from subbase delivery ports 2 and 4. For 3-Way N.O. Functions, valves must be isolated from the other 3-Way N.C. and 4-Way valves on the manifold. This is achieved by placing port isolator discs in between the subbase of the first 3-Way N.O. Valve and the subbase of the last 3-Way N.C. or 4-Way valve in the Subbase Manifold. Inlet pressure is connected to Port 3 of the manifold for the 3-Way N.O. valves. Inlet pressure is connected to the Port 1 of the manifold for the 3-Way N.C. and 4-Way valves. Separate Inlet Pressure Ports and Exhaust Ports are required for N.O. and N.C. 3-way function valves.



Performance Information

Electrical						Flow		Seals
Code	Voltage			Power Consumption	Holding Current	Cv Chart		
	AC		DC			3-Way	4-Way	
	60Hz	50Hz		(W / VA)	(Amps)			
42	24	22	—	4.8VA	.200	.15	.15	Buna N
45*	—	—	12	4.5W	.375	.15	.15	
49*	—	—	24	4.5W	.188	.15	.15	
53	120	110	—	4.32VA	.036	.15	.15	
57	240	220	—	4.32VA	.018	.15	.15	
Note: Voltage Tolerance: +10 / -15%						Cv tested per ANSI / (NFPA) T3.21.3		

* Mobile Voltage, +25/-30%

Response Time

Code	Voltage	0 Cu. In. Test Chamber		12 Cu. In. Test Chamber	
		Fill	Exhaust	Fill	Exhaust
49	24VDC	.011	.007	.240	.384
53	120VAC	.011	.020	.240	.384

Average Fill Time (Seconds): With 100 PSIG supply, time required to fill from 0-90 PSIG and exhaust from 100 PSIG to 10 PSIG is measured from instant of energizing, or de-energizing solenoid. Times shown are average.
Tested per ANSI / (NFPA) T3.21.8.

Operating Pressure

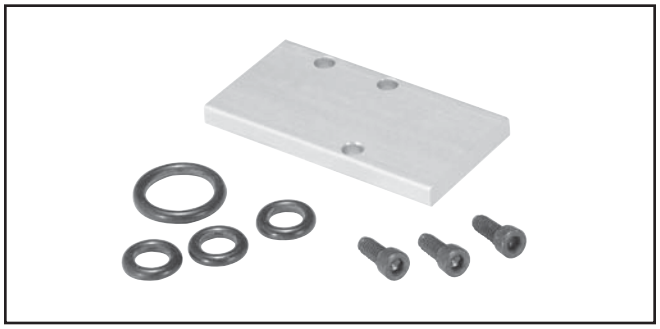
Function / Pilot Source	Minimum	Maximum
3-Way, N	0 PSIG	125 PSIG
3-Way, V	0.28" Hg	125 PSIG
4-Way, N	0.28" Hg	125 PSIG

Temperature Rating

32°F to 125°F (0°C to 50°C)

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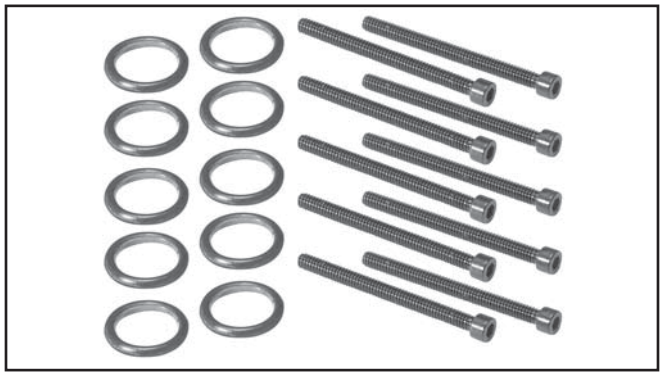
Blanking Plate



Kit Number	
Part Number	**Description**
PSXM8310P	**Subbase Blank Kit**

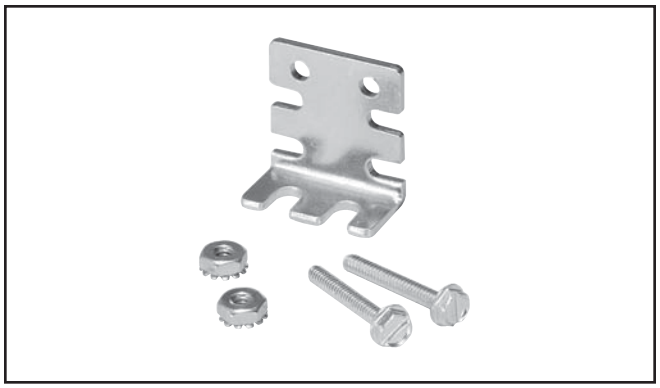
Subbase Kit includes: (1) Plate, (3) Screws, (4) Gaskets
Fits Subbase or IEM type Manifold.

IEM Valve / Manifold O-ring Kit



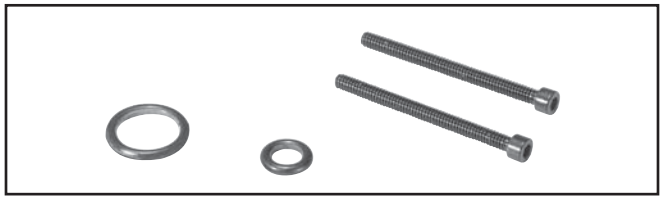
Part Number	
PSXM2186P	IEM Valve / Manifold O-ring Kit

Mounting Bracket - Inline Valve



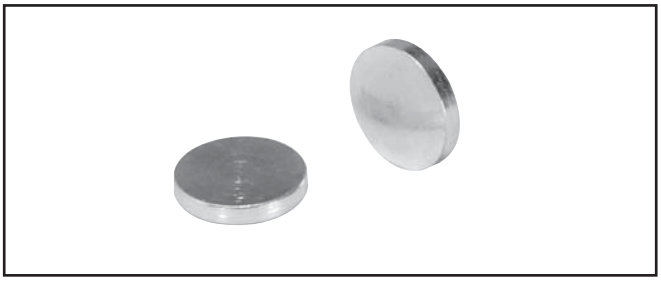
Part Number	Description
PSXM8288P	Mounting Bracket

Subbase Valve / Manifold Bolt Kit



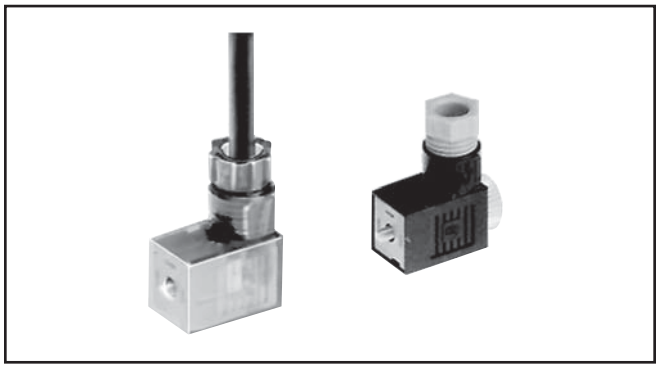
Part Number	Description
PSXM8100P	Subbase Valve / Manifold Bolt Kit

Isolator Plugs - Subbase Manifold



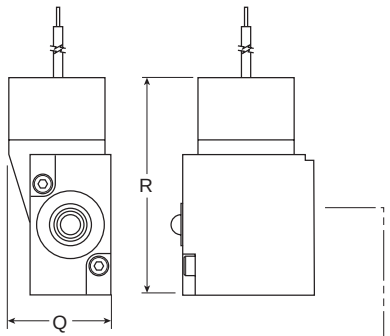
Part Number	Description
PSXM40900P	Isolation Plugs

Plug-in Electrical Connectors - 9.4mm

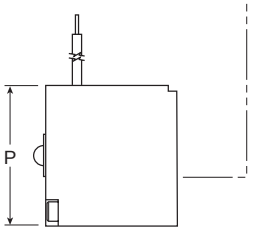


Indication	Voltage	Unwired Plug	Plug with 6' Lead
None	N/A	**PESC10**	**PESC12**
LED & Suppression	12/24V	**PESC2020B**	**PESC2220B**
	120VAC	**PESC2001F**	**PESC2201F**

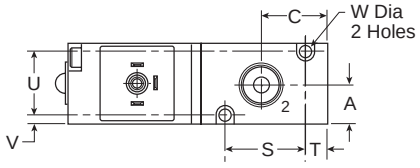
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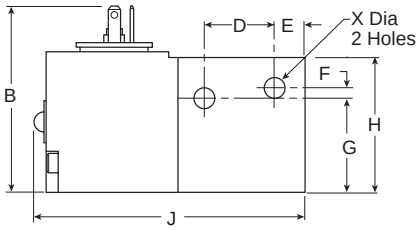
1/2" CONDUIT

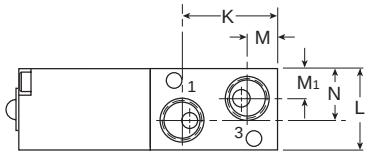


GROMMET / FLYING LEADS



15MM 3-PIN DIN





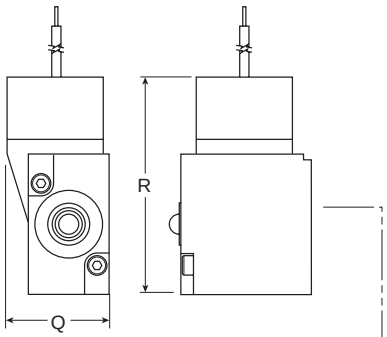
XM 3-Way Inline

A	B	C	D	E
.38 (10)	1.69 (43)	.62 (16)	.66 (17)	.28 (7.0)
F	**G**	**H**	**J**	**K**
.10 (2.5)	.87 (22)	1.25 (32)	2.50 (64)	.87 (22)
L	**M**	**M1**	**N**	**P**
.75 (19)	.28 (7.0)	.28 (7.0)	.48 (12)	1.32 (34)
Q	**R**	**S**	**T**	**U**
.98 (24.9)	2.10 (53)	.75 (19)	.21 (5.4)	.59 (15)
V	**W**	**X**		
.08 (2.0)	.11 (2.9)	.16 (4.0)		

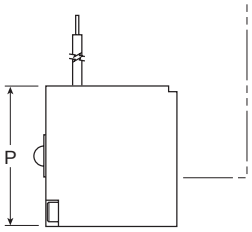
Inches (mm)

Valve Weight
Grommet..... 4 oz (.11 Kg)
DIN ..... 4 oz (.11 Kg)
Conduit ..... 5 oz (.14 Kg)

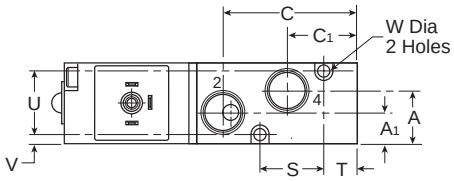
Note: 22 AWG black cross linked polyethylene insulated lead wire.



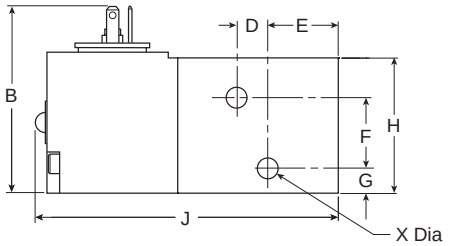
1/2" CONDUIT

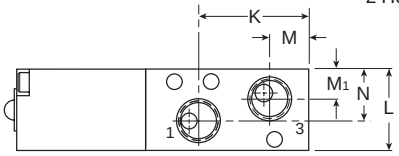


GROMMET / FLYING LEADS



15MM 3-PIN DIN





XM 4-Way Inline

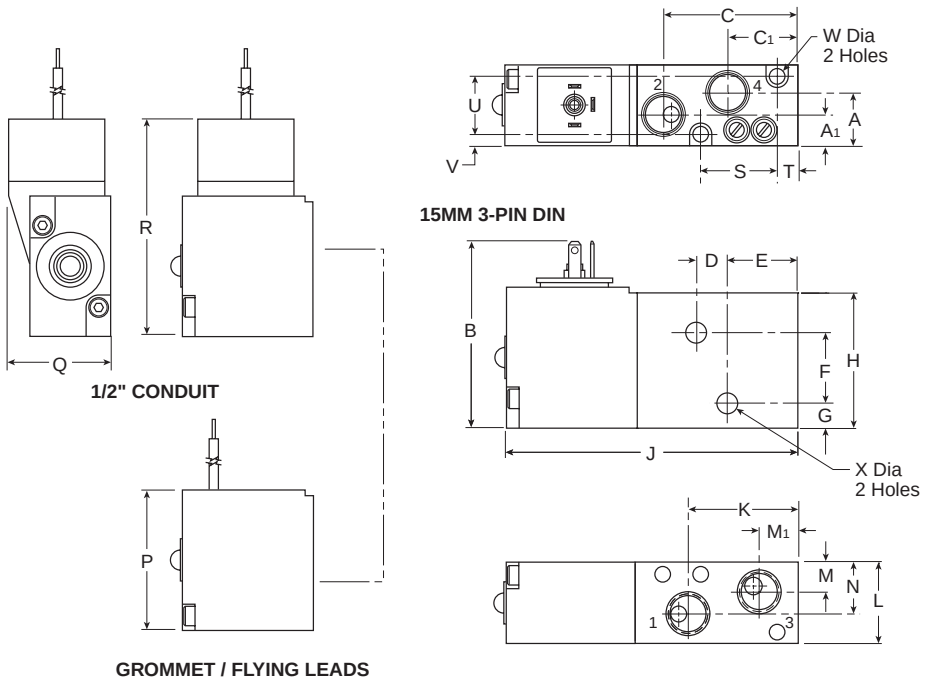
A	A1	B	C	C1
.48 (12)	.28 (6.9)	1.69 (43)	1.23 (31)	.64 (16)
D	**E**	**F**	**G**	**H**
.24 (6.5)	.68 (17)	.65 (16.5)	.22 (5.6)	1.25 (32)
J	**K**	**L**	**M**	**M1**
2.80 (71)	1.01 (26)	.75 (19)	.36 (9.1)	.28 (7.1)
N	**P**	**Q**	**R**	**S**
.48 (12)	1.32 (34)	.98 (25)	2.10 (53)	.59 (15)
T	**U**	**V**	**W**	**X**
.32 (8.0)	.59 (15)	.08 (2.0)	.11 (2.9)	.16 (4.0)

Inches (mm)

Valve Weight
Grommet..... 4.3 oz (.12 Kg)
DIN ..... 4.3 oz (.12 Kg)
Conduit ..... 5.3 oz (.15 Kg)

Note: 22 AWG black cross linked polyethylene insulated lead wire.

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XM 4-Way Inline with Flow Controls

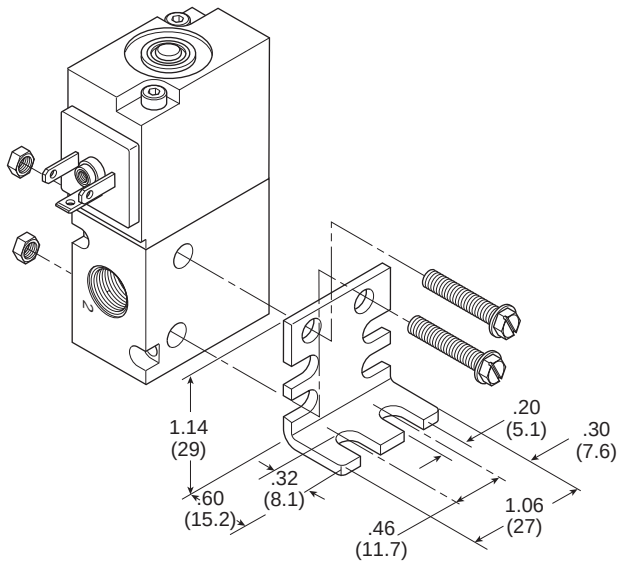
A	A1	B	C	C1
.48 (12)	.28 (6.9)	1.69 (43)	1.23 (31)	.64 (16)
D	**E**	**F**	**G**	**H**
.24 (6.5)	.68 (17)	.65 (16.5)	.22 (5.6)	1.25 (32)
J	**K**	**L**	**M**	**M1**
2.80 (71)	1.01 (26)	.75 (19)	.36 (9.1)	.28 (7.1)
N	**P**	**Q**	**R**	**S**
.48 (12)	1.32 (34)	.98 (25)	2.10 (53)	.59 (15)
T	**U**	**V**	**W**	**X**
.32 (8.0)	.59 (15)	.08 (2.0)	.11 (2.9)	.16 (4.0)

Inches (mm)

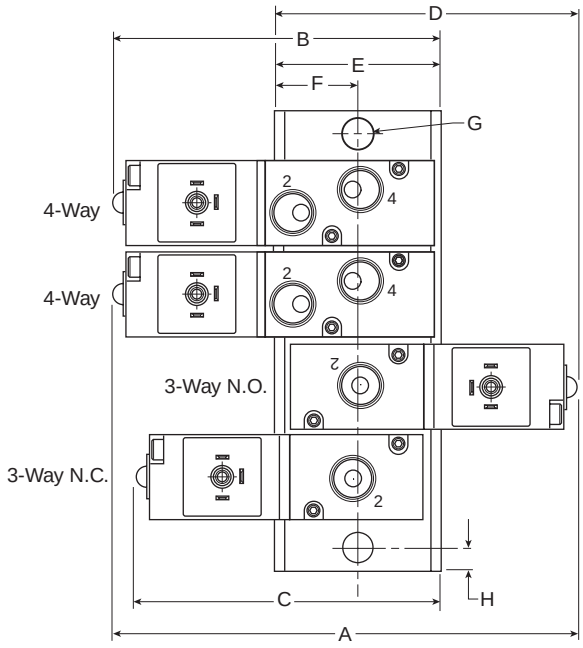
Valve Weight
Grommet..... 4.3 oz (.12 Kg)
DIN ..... 4.3 oz (.12 Kg)
Conduit ..... 5.3 oz (.15 Kg)

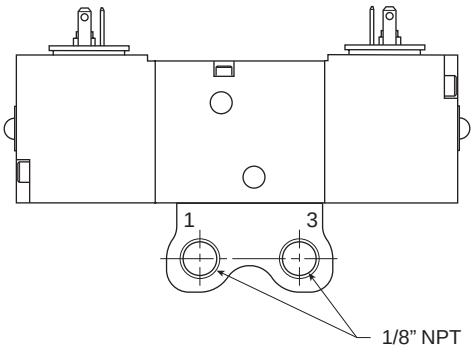
Note: 22 AWG black cross linked polyethylene insulated lead wire.

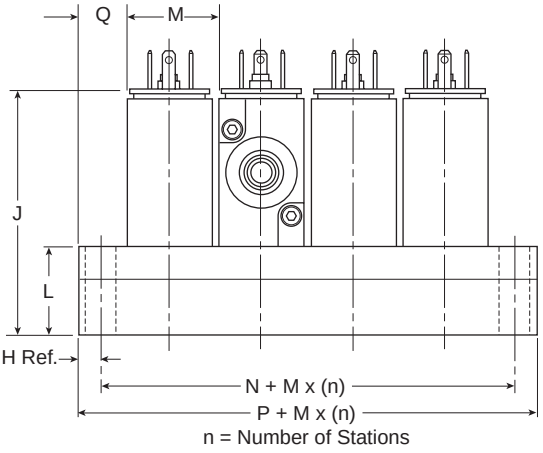
Mounting Bracket Dimensions



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n = Number of Stations

XM IEM Manifold

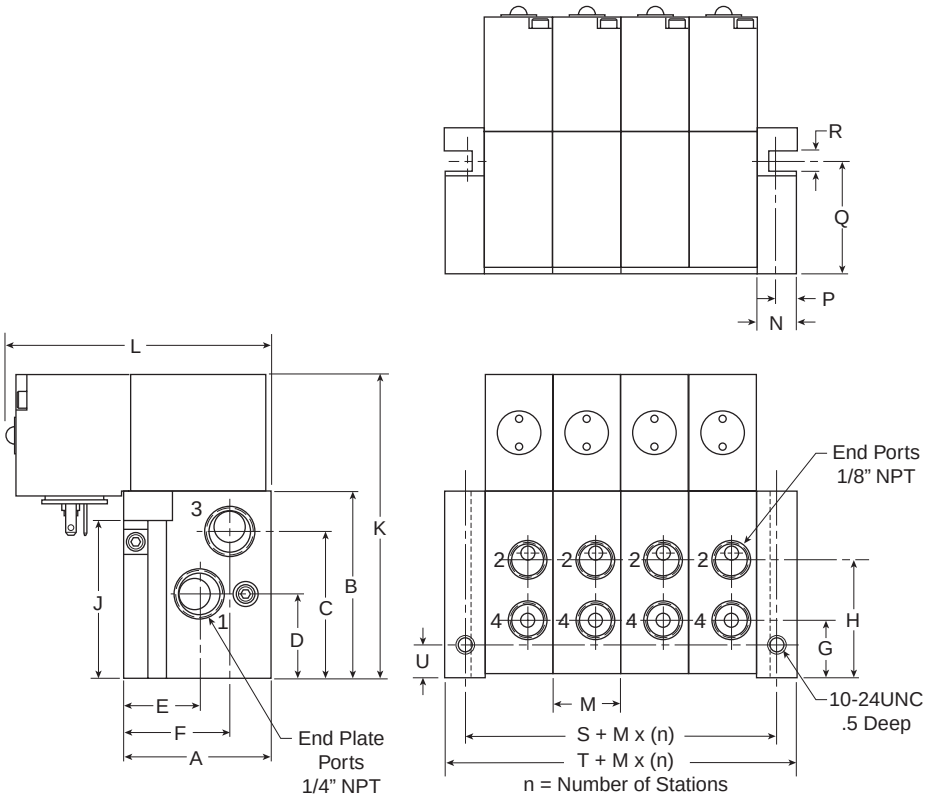
A	B	C	D	E
4.04 (103)	2.86 (73)	2.67 (68)	2.67 (68)	1.47 (37)
F	**G**	**H**	**J**	**L**
.74 (19)	Ø .28 Ø (7.0)	.20 (5.0)	2.11 (54)	.79 (20)
M	**N**	**P**	**Q**	
.80 (20.5)	.48 (12)	.88 (22)	.44 (11)	

Inches (mm)

Manifold Weight
2 Station ..... 2.5 oz (.07 Kg)
Each Additional ..... 1 oz (.03 Kg)

Valve Weight
3-Way ..... 4 oz (.11 Kg)
4-Way ..... 4.3 oz (.12 Kg)

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XM Subbase

A	B	C	D	E
1.62 (41)	2.00 (51)	1.58 (40)	.92 (23)	.85 (22)
F	**G**	**H**	**J**	**K**
1.19 (30)	.61 (16)	1.26 (32)	1.70 (43)	3.25 (83)
L	**M**	**N**	**P**	**Q**
2.85 (72)	.75 (19)	.44 (11)	.28 (7.0)	1.25 (32)
R	**S**	**T**	**U**	
.22 (5.6)	.44 (11)	.88 (22)	.51 (13)	

Inches (mm)

Subbase Weight
Single Subbase .... 3.2 oz (.09 Kg)
End Plates ..... 3.2 oz (.09 Kg)

Valve Weight
3-Way ..... 3.7 oz (.10 Kg)
4-Way ..... 4.6 oz (.13 Kg)

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Notes

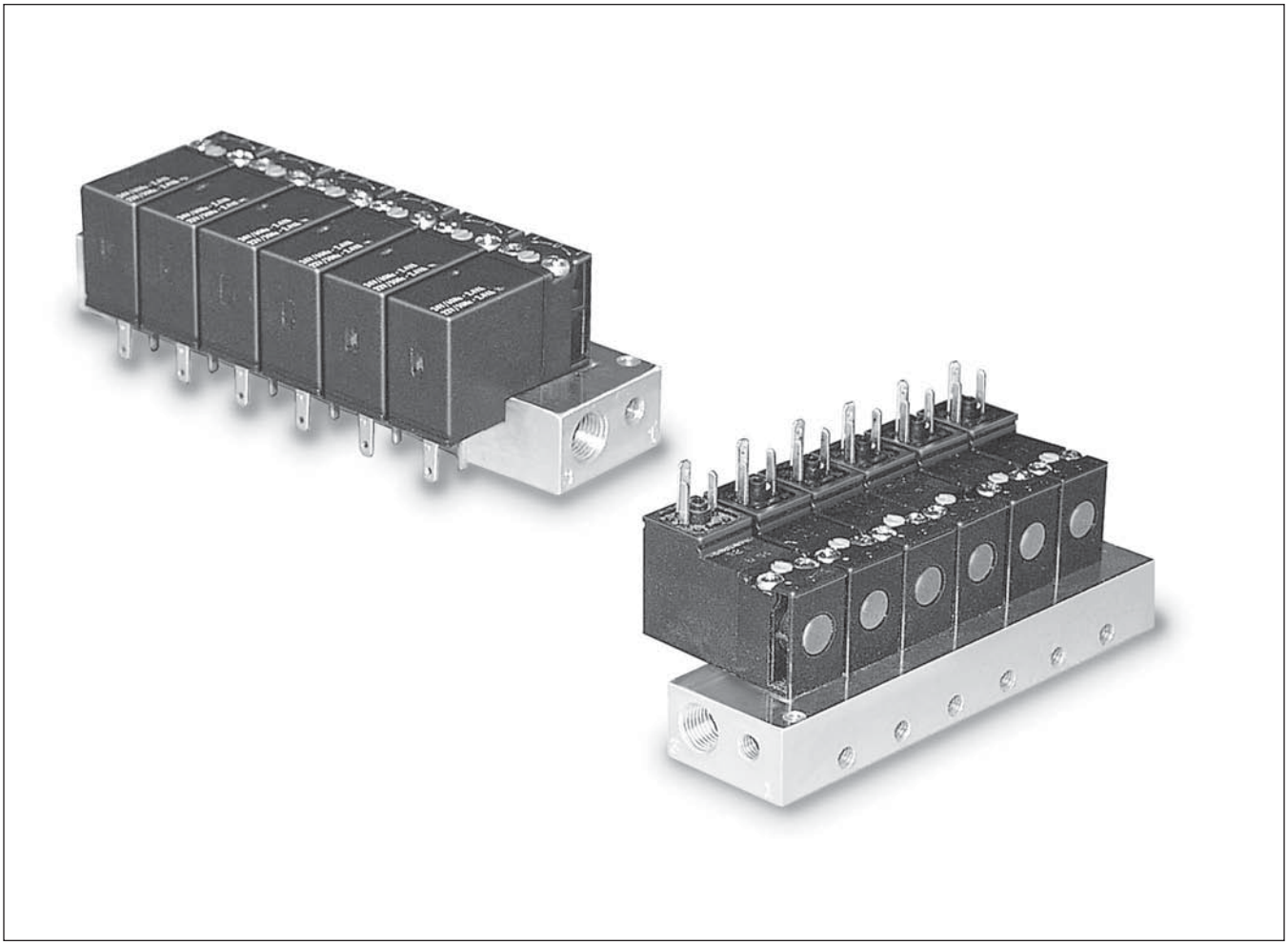
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15mm Solenoid Valve

Manifold and Subbase

Section B

www.parker.com/pneu/15mm



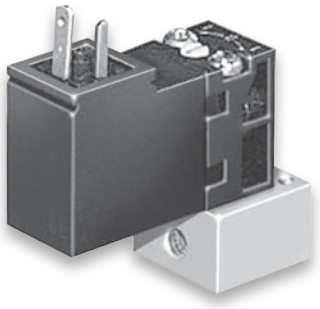
Features B16
Model Selection
Manifolds B17
Subbase B18
Solenoid Kits B19
Electrical Connectors B20

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Features

- Compact and Simple Design
- Utilizes 15mm Solenoid Operators
- Manifold Allows Mounting of Normally Open and Normally Closed Operators Simultaneously
- Up to 20 Stations Available



Specifications

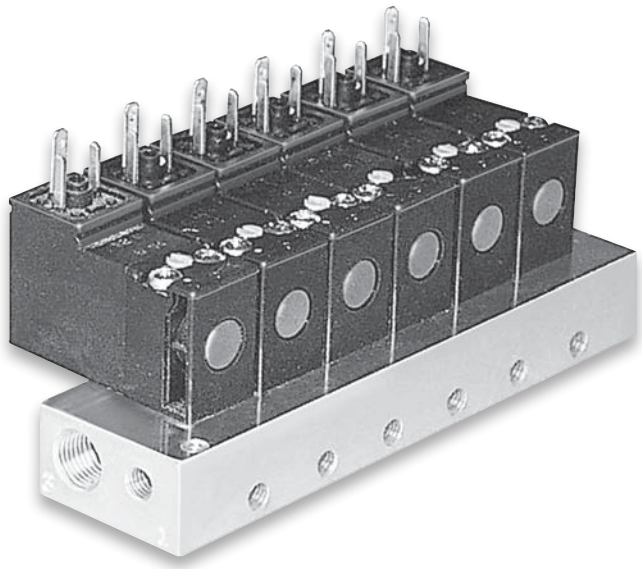
Operating Pressure:
Vacuum to 145 PSIG
(Vacuum to 10 bar)

Operating Temperature:
5° to 140°F
(-15° to 60°C)

Materials:
Manifold: Aluminum
Solenoid: Glass Filled Polyamide

Solenoids:

- 15mm Low Watt Solenoids are UL Certified and Approved to be CE Marked
- Wide Range of Voltages Available

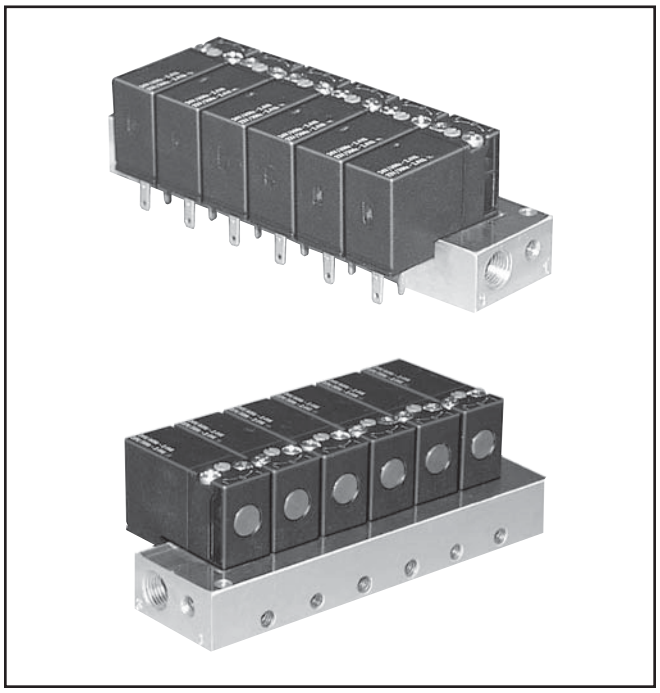


Applications

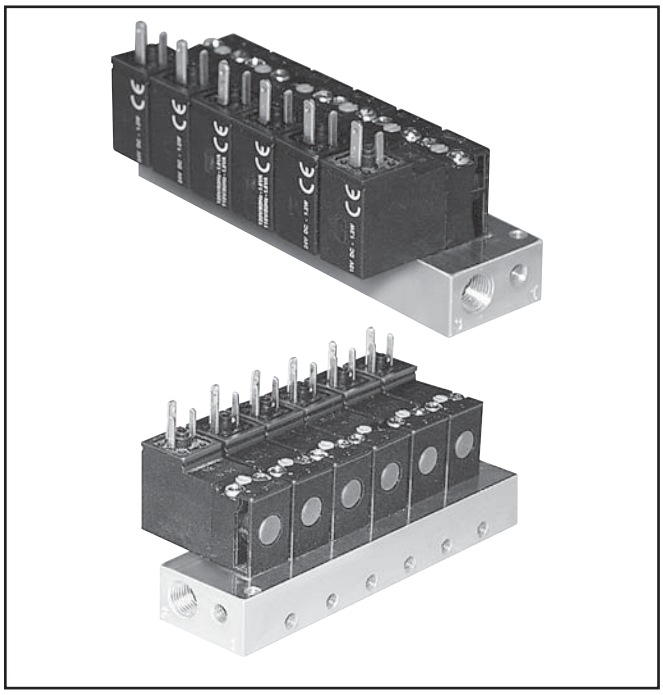
- Piloting for Process Control Valves
  - Pharmaceutical Equipment
  - Waste Water Treatment Systems
  - Food Processing
  - Chemical Batching
- Industrial Laundry Equipment
- Paint Spray & Dyeing Equipment
- Textile Winding Applications
- Vacuum and Conveyor Applications

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Manifold - Pins Down

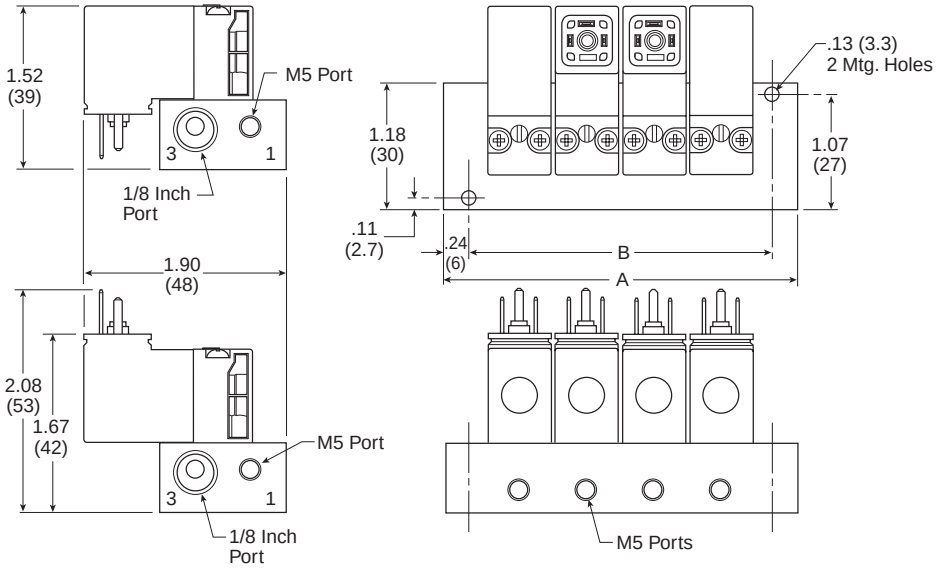


Manifold - Pins Up



Manifold Dimensions

Special mounting considerations must be made for connector assembly clearance when mounting solenoid valves with pins down.



Number of Stations	Dim. A	Dim.B
2	2.04 (52)	1.57 (40)
3	2.68 (68)	2.20 (56)
4	3.31 (84)	2.83 (72)
5	3.94 (100)	3.46 (88)
6	4.57 (116)	4.09 (104)
7	5.20 (132)	4.72 (120)
8	5.83 (148)	5.35 (136)
9	6.46 (164)	5.98 (152)
10	7.09 (180)	6.61 (168)
11	7.72 (196)	7.24 (184)
12	8.35 (212)	7.87 (200)
13	8.98 (228)	8.50 (216)
14	9.61 (244)	9.13 (232)
15	10.23 (260)	9.76 (248)
16	10.87 (276)	10.39 (264)
17	11.50 (292)	11.02 (280)
18	12.13 (308)	11.65 (296)
19	12.76 (324)	12.28 (312)
20	13.39 (340)	12.91 (328)

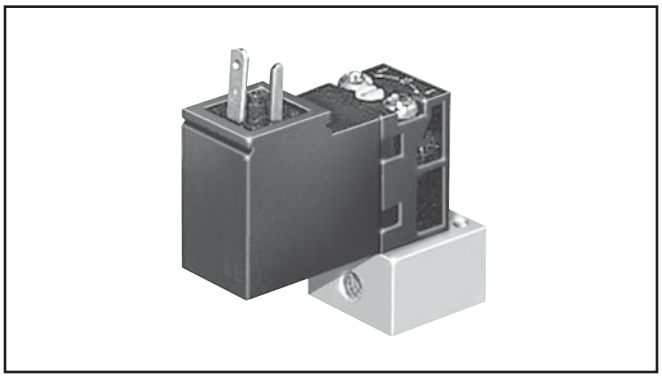
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B

XM

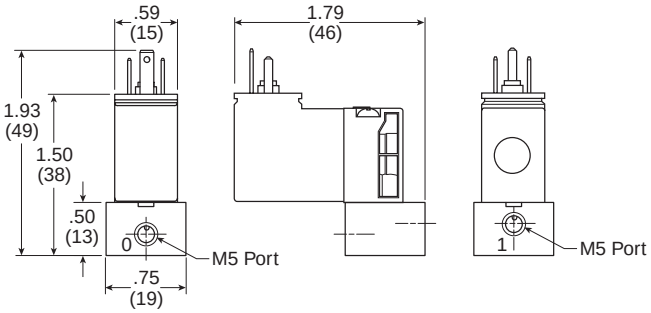
15mm Solenoid

Subbase



Subbase Dimensions

Pins up only.



Model Number Index

PSF	T	N	0	N	02	N	P

Basic Series

Subbase 3/2 Bottom Port	PSE
Subbase 3/2 End Port	**PSF**

Manifold Type

15mm Solenoid Valve Manifold (Machined to accept NC / NO on Same Bar)	S
15mm Solenoid Valve Manifold (Machined to accept All NC or All NO)	**T**
15mm Solenoid Valve Subbase	R

* Pins Up Only.
** End Ported Only.

Pilot Source

Direct	**N**

Cylinder Port Size

M5	**0**

Port Type

0*	M5
N**	**NPT**

* Use for Valve Manifold R Only - Single Subbase
** Use for Valve Manifold S & T Only - Manifold

Number of Stations

02	**2 Stations**
03	**3 Stations**
20	**20 Stations**
XX	**Single***

* Use for "R" Manifold Type Only

Options

N**	**Standard - Cylinder Port on Non-Electrical Side (Port 1 Side)**
E*	Cylinder Port on Electrical Side (Port 3 Side)

* N/A with Valve Series "S"
* N/A with Manifold "PSE"
** Use for Bottom Ported Manifold Type

Brand Label

P	**Parker**

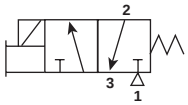
BOLD ITEMS ARE MOST POPULAR.

Examples:
PSFTN0N16EP - End Port Manifold - Cyl Ports and Electrical on Same Side
PSESN0N10NP - Bottom Port Manifold - N/C and N/O can be Interchanged
PSFTN0N10NP - End Port Manifold - Cyl Ports and Electrical are Opposite

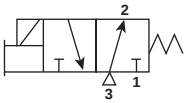
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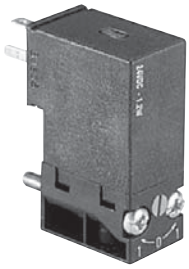
15mm Solenoid Kit Information

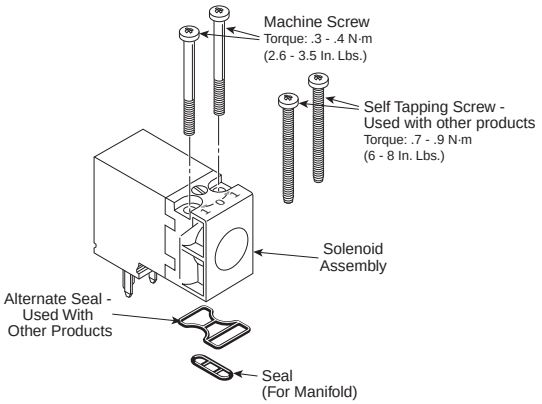
3/2 Normally Non-passing (NNP) / Normally Closed (NC) Valves



3/2 Normally Passing (NP) / Normally Open (NO) Valves







NC (NNP) Solenoids / Kits

Kit No.	* Override	## Voltage (S = Standard, O = Optional, — = N/A)				
		42 (24VAC)	45 (12VDC)	49 (24VDC)	53 (120VAC)	57 (230VAC)
PS2982*##P Pins: UP NC / NNP 1.2W / 1.6VA	**B (Non-lock, Flush)**	O	O	**S**	**S**	O
	C (Lock, Flush)	O	O	**S**	**S**	O
	D (Non-lock, Ext)	—	—	O	O	—
PS3541*##P Pins: DOWN NC / NNP 1.8W / 2.4VA	**B (Non-lock, Flush)**	O	O	**S**	**S**	—
	C (Lock, Flush)	O	O	**S**	**S**	—
	D (Non-lock, Ext)	—	—	O	O	—
	E (Lock, Ext)	—	—	O	O	—
PS3441*##P Pins: DOWN NC / NNP 1.2W / 1.6VA	**B (Non-lock, Flush)**	O	O	O	O	O
	C (Lock, Flush)	O	O	O	O	O
PS3202*##P Pins: UP NO / NP 1.2W / 1.6VA	**B (Non-lock, Flush)**	O	O	**S**	**S**	—

* Override
Voltage
BOLD ITEMS ARE MOST POPULAR.

Technical Data

Electrical Interface Per:
Din 43650 Form C (EN175301-803C)

Pneumatic Interface Per:
Afnor E 0652 110 N

Protection:
IP65 (Washdown)

Air Flow:
Standard Flow 0.033 Cv (33 Lpm) (1.2W) (1.6VA)
High Flow 0.05 Cv (50 Lpm) (1.8W) (2.4VA)

Operating Temperature:
Standard Flow: 5°F to 140°F (-15°C to 60°C)
High Flow: 5°F to 122°F (-15°C to 50°C)
Mobile Applications (47 & 48 Voltage Options):
-40°F to 158°F (-40°C to 70°C)

Operating Pressure:
Vacuum to 145 PSIG (Vacuum to 10 bar)

Storage Temperature:
All Applications: -40°F to 158°F (-40°C to 70°C)

Voltage Tolerance:
All Voltages Except 47 & 48: Rated Voltage +10% / -15%
Options 47 & 48: Rated Voltage +25% / -30%

Materials

Valve:
Body: Glass Filled Polyamide
Internal Metal Parts: Steel
Screws: Steel
Bottom Plug: Thermoplastic
Poppet Seals: Nitrile for Standard, Fluorocarbon for Mobile

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Female Electrical Connectors

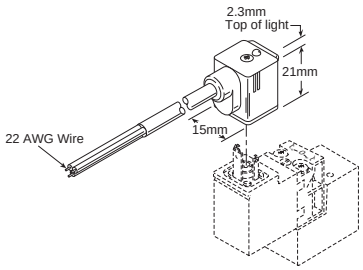
15mm 3-Pin DIN 43650C (Use with Enclosure "5")

Connector	Connector with Cord	Description
PS2932BP	PS2932HBP 18 Inches	Unlighted
PS2932BP	PS2932JBP 6 Feet	Unlighted
PS294675BP	PS2946J75BP* 6 Feet	Light – 12VAC or DC
PS294679BP	PS2946J79BP* 6 Feet	Light – 24VAC or DC
PS294683BP	PS2946J83BP* 6 Feet	Light – 110/120VAC
PS294687BP	N/A	Light – 240/230VAC

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:
Conductors: 2 Poles Plus Ground
Cable Range (Connector Only): 4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm



**Molded 6'
Cord Shown**

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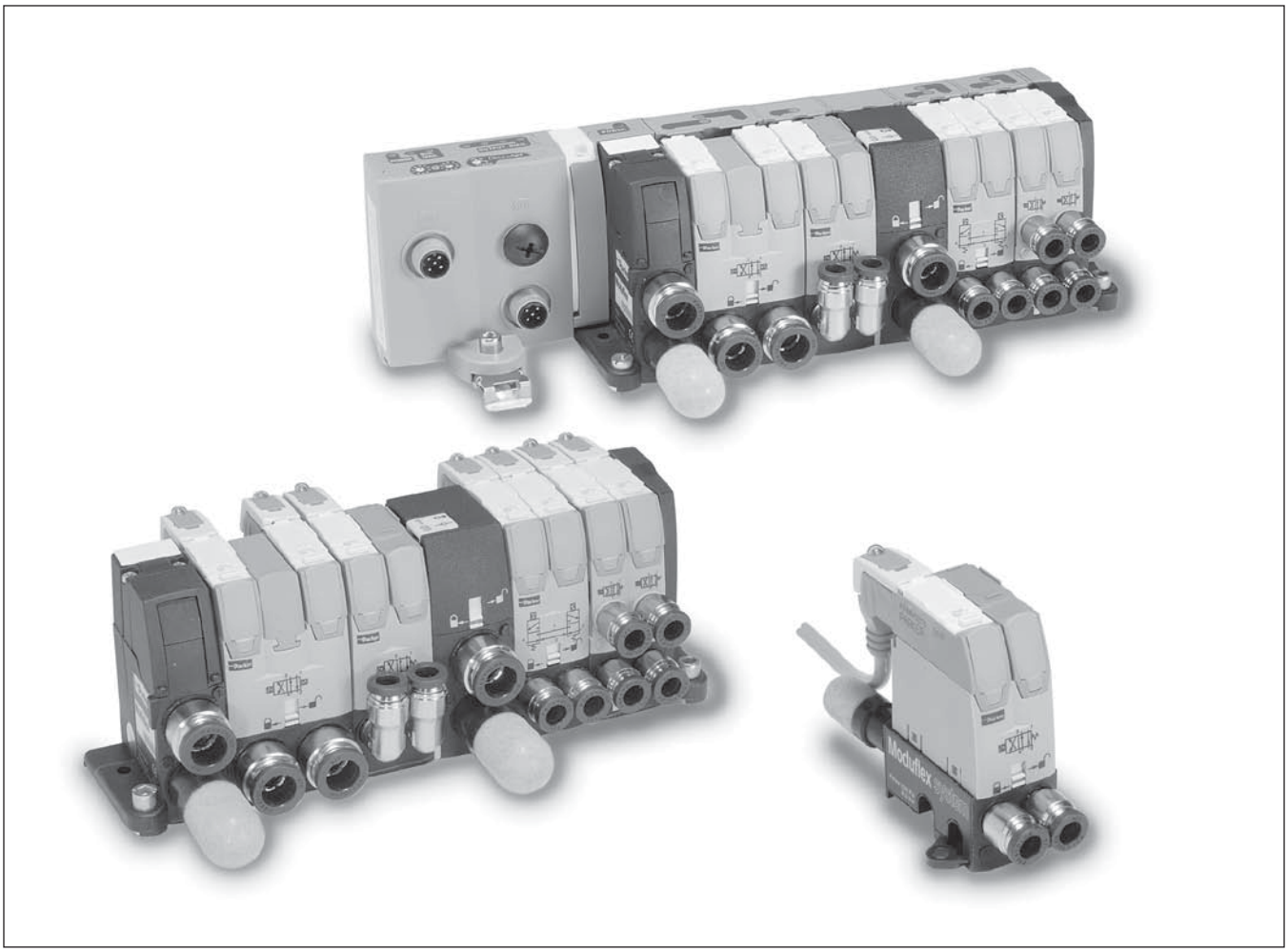
Moduflex Valve System

Instant Control For All Pneumatic Actuators

Modular Valve Islands or Stand-Alone Valves

Section C

www.parker.com/pneu/moduflex



Model Selection & Assembly C2-C3
Basic Valve Functions C4-C5
S Series C6-C11
T Series C12-C17
V Series C18-C25
Technical Information, Device Bus Modules C26-C33
Accessories C34-C37
P Series C38-C41
Intermediate Supply Module Model Number Index . C42
Internal / External Pilot Technical Information C43
Moduflex Island Assembly Model Number Index C44
V Series Assemblies & Components C45
Maintenance Procedure C46
Maintenance Components C47
Specifications C48
Dimensions C49-C55
Valve Island Configurator CD-ROM C56-C57

BOLD ITEMS ARE MOST POPULAR.

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C

Moduflex

PVL

Module Series Selection and Assembly Procedures

Moduflex system provides a complete choice of either stand-alone valves, short-build valve islands, or large valve island configurations. Electrical control connections may be individual or island integrated. Peripheral modules add complementary functions — flow control, pressure regulation, P.O. check valves and vacuum generators can be added directly to the valve or used as a stand alone product.

Moduflex gives machine builders maximum flexibility to assemble each automation system step by step using basic modules.

Valve islands can be easily assembled using the following procedure.

1. Assemble the required valve island with the basic modules.
2. Mount the valve island on the machine together with any stand-alone valves and peripheral modules.
3. Select and install the required clip-on pneumatic and electrical connectors.

“S” Series Stand Alone Valves

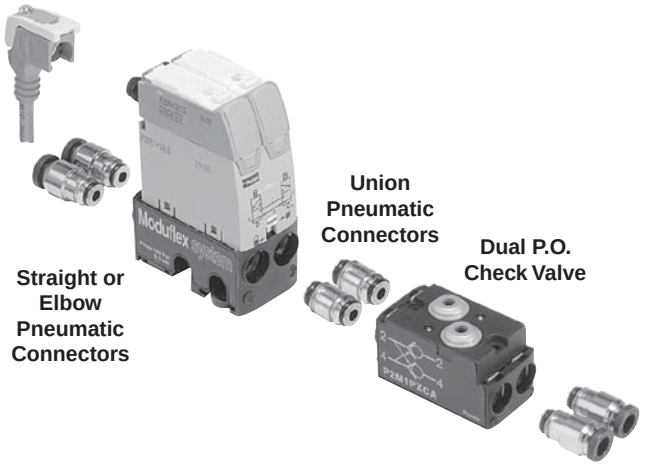
For isolated cylinders on a machine, it is preferable to locate the valve close by. Therefore a stand-alone module is ideal. Response time and air consumption are then reduced to a minimum. Peripheral modules can be installed directly into the valve.



“S” Series Size 1 Single Solenoid

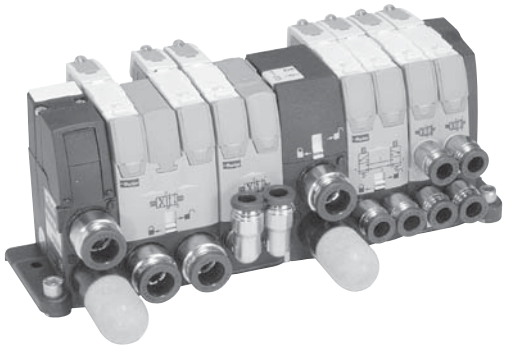


“S” Series Size 1 Single Air Pilot



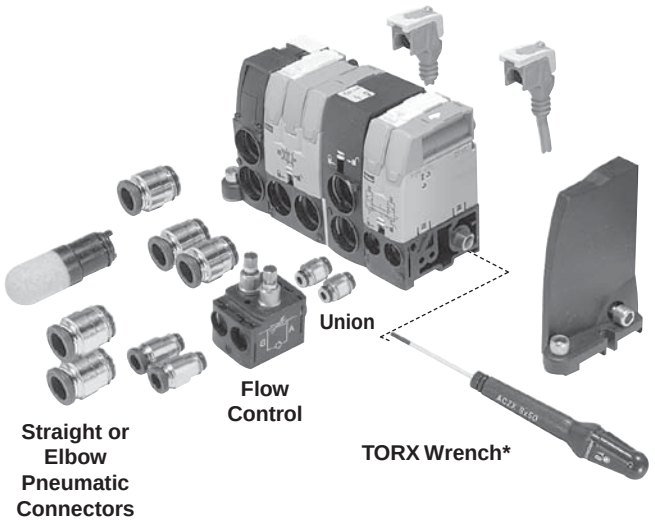
“T” Series Valve Island Modules with Individual Connectors

For small groups of cylinders requiring short localized valve islands, it is convenient to use individual electrical connector islands.



“T” Series Island Modules

“T” Series modules are easily assembled to form a complete manifold. All electrical connectors are individual and pneumatic connectors are of the push-in tube type. Modules with different functions and flow passages may be combined in the same island manifold, giving total flexibility to adapt to all machine requirements.

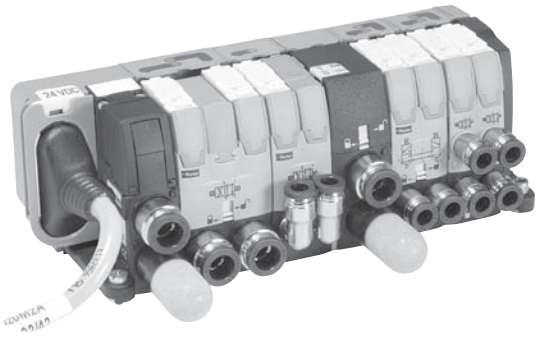


*** Maximum torque rating 10.6 in. lbs. (1.2 Nm).**

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"V" Series Valve Island Modules with Integrated Connections

When the number of valves is larger, modular islands are easily assembled using the integrated electrical connection series. These islands are then connected to the control PLC, with a multi-connector cable or with a field bus connection.

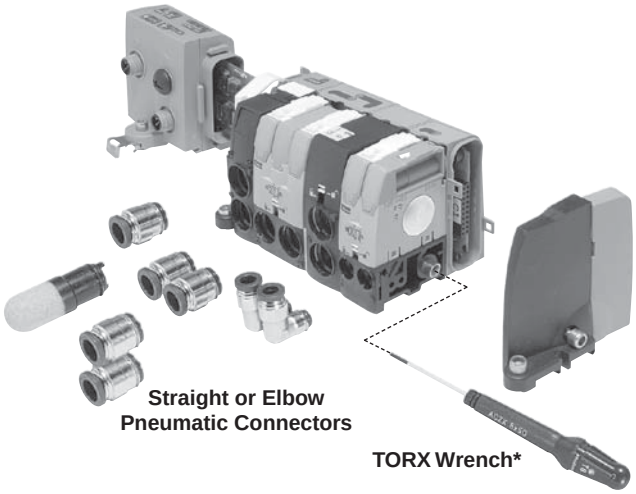


"V" Series with 20-Pin Connector



"V" Series with Field Bus Connection

"V" Series modules are easily assembled to form a complete manifold. All pneumatic connectors are of the push-in tube type. When the valve island has been installed, it is a simple operation to separate the field bus module from the valve island using the quick release lever. Modules with different functions and flow passages may be combined in the same island manifold, giving total flexibility to adapt to all machine requirements.



Straight or Elbow Pneumatic Connectors

TORX Wrench*

*** Maximum torque rating 10.6 in. lbs. (1.2 Nm).**

"P" Series Peripheral Modules

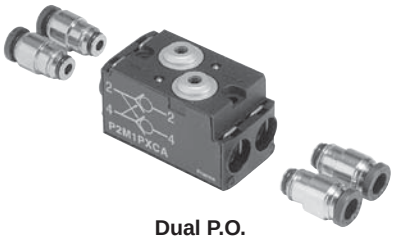
Peripheral Modules are available and can be mounted directly to valves or used as a stand alone product. These modules answer the complementary needs of the cylinders, flow controls, pressure regulation or positioning.



Flow Control



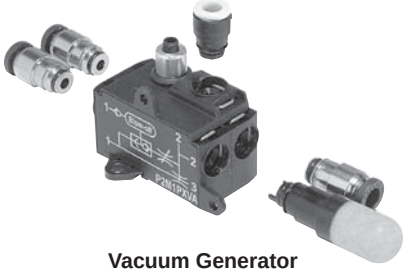
Pressure Regulator



Dual P.O. Check Valve



Pressure Sensor



Vacuum Generator

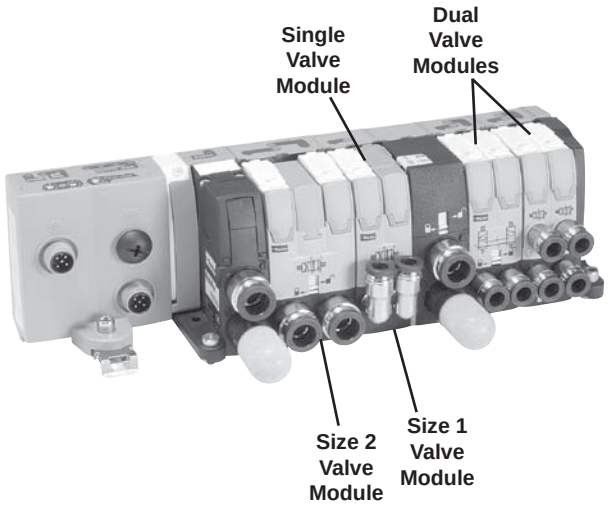
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Valve Function



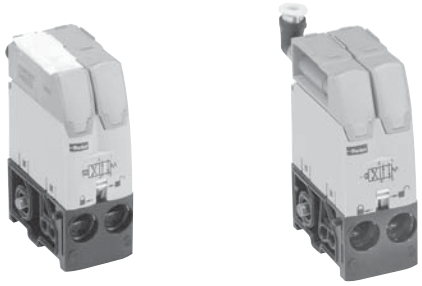
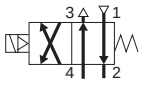
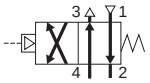
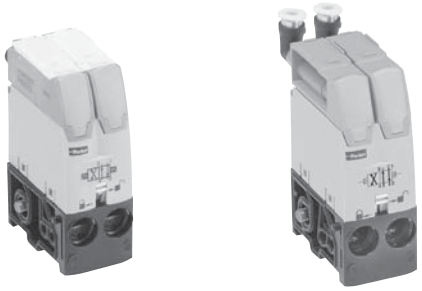
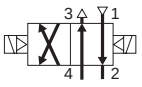
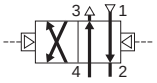
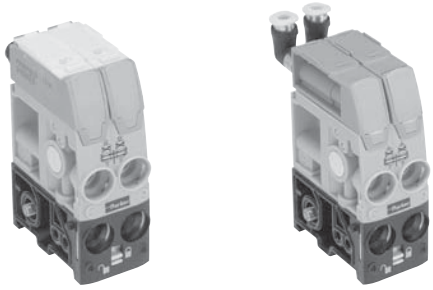
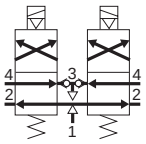
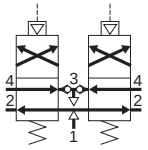
Moduflex Valve Islands offer the greatest flexibility for your design requirements.

Valve Modules are available as 4-Way or 3-Way valves and can be ordered as single or dual valves. A Single Valve Module has one valve in one valve body. A Dual Valve Module will have 2 valves in one valve body. Each Valve in the Dual Valve Body is controlled by a solenoid or air pilot and can be operated independently from the other valve in the same body. There are no dimensional difference between a single and a dual valve. Flow Rates are reduced on the dual valves.

Single valve modules offer Ceramic Slide Valve Technology while dual valve modules offer WCS – Wear Compensation System Technology. Both offer low friction shift forces, fast response and less spool wear.

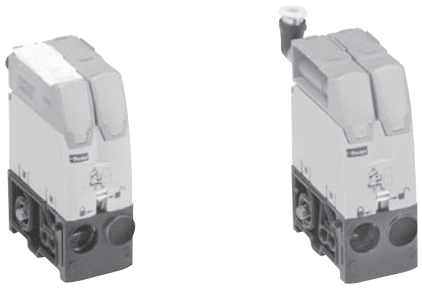
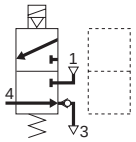
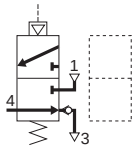
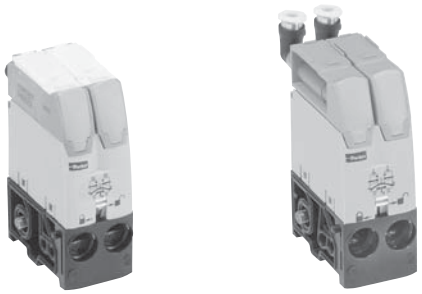
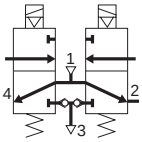
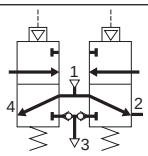
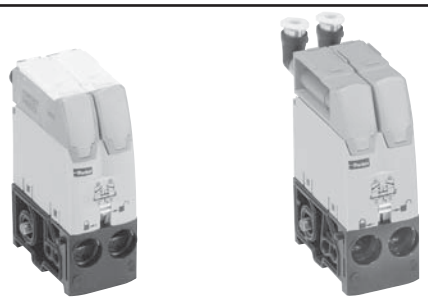
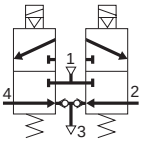
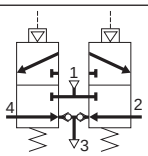
Valve Modules are available in two different valve body sizes. Size 1 and Size 2 Valve Modules can be combined in both “T” and “V” Series Valve Islands without transition kits.

4/2, 4-Way, 2-Position Valves

Single Valves	ANSI Symbol	Description	Size 1 Body	Size 2 Body
		Single Solenoid, Spring Return Valve	Cv = .32	Cv = .80
		Single Air Pilot, Spring Return Valve		
		Double Solenoid Valve	Cv = .32	Cv = .80
		Double Air Pilot Valve		
Dual Valves	**ANSI Symbol**	**Description**	**Size 1 Body**	**Size 2 Body**
		(2) Single Solenoid, Spring Return Valve with Exhaust Check. Double Solenoid Valve Body	Cv = .18	N/A
		(2) Single Air Pilot, Spring Return Valve with Exhaust Check. Double Air Pilot Valve Body		

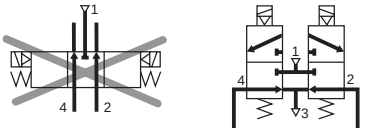
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www.parker.com/pneumatics

3/2, 3-Way, 2-Position Valves

Single Valves	ANSI Symbol	Description	Size 1 Body	Size 2 Body
		Single Solenoid, NC, Spring Return Valve with Exhaust Check.	Cv = .22	Cv = .44
		Single Air Pilot, NC, Spring Return Valve with Exhaust Check.		
Dual Valves	**ANSI Symbol**	**Description**	**Size 1 Body**	**Size 2 Body**
		(2) Single Solenoid, NO, Spring Return Valve with Exhaust Check. Double Solenoid Valve Body	Cv = .22	Cv = .44
		(2) Single Air Pilot, NO, Spring Return Valve with Exhaust Check. Double Air Pilot Valve Body		
		(2) Single Solenoid, NC, Spring Return Valve with Exhaust Check. Double Solenoid Valve Body	Cv = .22	Cv = .44
		(2) Single Air Pilot, NC, Spring Return Valve with Exhaust Check. Double Air Pilot Valve Body		

Dual 3/2 Valves Replace All 3-Position Valves for a Better Performance

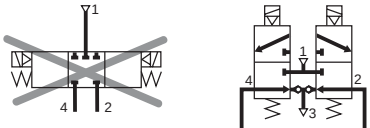
3-Position Center Exhaust



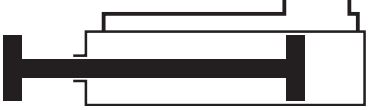
A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module (version with no exhaust check valves). Both cylinder chambers are exhausted and rod and piston are free to move.



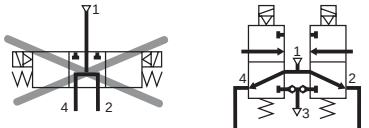
3-Position All Ports Blocked



A traditional 5/3 all ports blocked valve is now replaced by a double 3/2 NC+NC valve module and a dual P.O. check module that will block the flow to and from the cylinder. Cylinder positioning is more precise.



3-Position Pressure Center



A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.



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C

Moduflex

PVL

"S" Series Basic Modules Size 1
(Without Pneumatic Connectors)



Single Solenoid



Double Solenoid



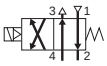
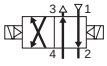
Single Air Pilot



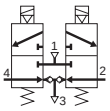
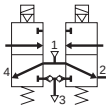
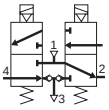
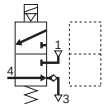
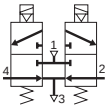
Double Air Pilot

Size 1 Electro-Pneumatic Stand Alone Valve Modules, 24VDC

4-Way / 2-Position / Single Valve

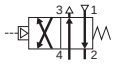
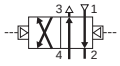
	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	2.54 oz	**P2M1S4ES2C**
	Double Solenoid (Bistable)	3.07 oz	**P2M1S4EE2C**

3-Way / 2-Position / Dual Valve

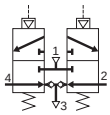
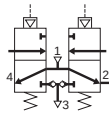
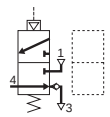
	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	3.00 oz	**P2M1SDEE2C**
	Double Solenoid NO + NO with Exhaust Check	3.00 oz	P2M1SCEE2C
	Double Solenoid NC + NO with Exhaust Check	3.00 oz	P2M1SEEE2C
	Single Solenoid NC with Exhaust Check	2.82 oz	P2M1S3ES2C
	Center Exhaust = dual 3/2 NC + NC without Exhaust Check	3.00 oz	P2M1SGEE2C

Size 1 Air Pilot Stand Alone Valve Modules

4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Air Pilot (Monostable)	2.54 oz	P2M1S4PS
	Double Air Pilot (Bistable)	3.07 oz	P2M1S4PP

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Air Pilot NC + NC with Exhaust Check	2.82 oz	P2M1SDPP
	Double Air Pilot NO + NO with Exhaust Check	2.82 oz	P2M1SCPP
	Single Air Pilot NC	2.68 oz	P2M1S3PS

Note: Includes 5/32" (4mm) Air Pilot Connectors.

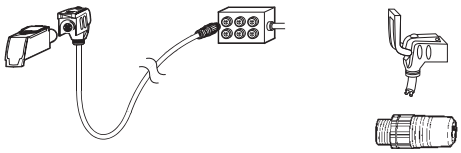
Note: Bold Options Standard

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Pneumatic Division
Richland, Michigan
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M8 Female Individual Connectors with Flying Lead Cable
(For Solenoid Pilots)



		Weight (oz)	Order Code
With LED Voltage Surge Protection and Flying Lead Cable IP67 Protected	2 m Cable	2.19	**P8LS08L226C**
	5 m Cable	5.47	P8LS08L526C
	9 m Cable	9.88	P8LS08L926C
Thread Connector, IP67 Protected	M8 Cable Quick Connect		P8CS0803J
	M12 Cable Quick Connect		P8CS1204J



Pneumatic Connectors for Size 1 Modules



PMDYY1 **HMDXX1** **MMDVA1**



FMD04-1 **CMD04-1** **FMD07-1B** **CMD07-1B**

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA1**
Plug	—	—	—	0.18	**PMDYY1**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.

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C

Moduflex

PVL

"S" Series Basic Modules Size 2
(Without Pneumatic Connectors)



Single Solenoid



Double Solenoid



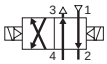
Single Air Pilot



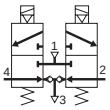
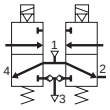
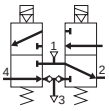
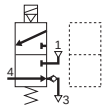
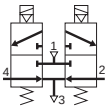
Double Air Pilot

Size 2 Electro-Pneumatic Stand Alone Valve Modules, 24VDC

4-Way / 2-Position / Single Valve

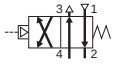
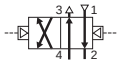
	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	2.75 oz	**P2M2S4ES2C**
	Double Solenoid (Bistable)	3.28 oz	**P2M2S4EE2C**

3-Way / 2-Position / Dual Valve

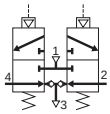
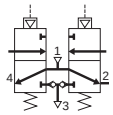
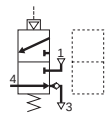
	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	3.53 oz	**P2M2SDEE2C**
	Double Solenoid NO + NO with Exhaust Check	3.53 oz	P2M2SCEE2C
	Double Solenoid NC + NO with Exhaust Check	3.53 oz	P2M2SEEE2C
	Single Solenoid NC with Exhaust Check	3.35 oz	P2M2S3ES2C
	Center Exhaust = dual 3/2 NC + NC without Exhaust Check	3.53 oz	P2M2SGEE2C

Size 2 Air Pilot Stand Alone Valve Modules

4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Air Pilot (Monostable)	2.75 oz	P2M2S4PS
	Double Air Pilot (Bistable)	3.28 oz	P2M2S4PP

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Air Pilot NC + NC with Exhaust Check	3.53 oz	P2M2SDPP
	Double Air Pilot NO + NO with Exhaust Check	3.53 oz	P2M2SCPP
	Single Air Pilot NC with Exhaust Check	3.35 oz	P2M2S3PS

Note: Includes 5/32" (4mm) Air Pilot Connectors.

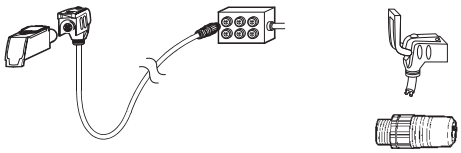
Note: Bold Options Standard

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

M8 Female Individual Connectors with Flying Lead Cable
(For Solenoid Pilots)



		Weight (oz)	Order Code
With LED Voltage Surge Protection and Flying Lead Cable IP67 Protected	2 m Cable	2.19	**P8LS08L226C**
	5 m Cable	5.47	P8LS08L526C
	9 m Cable	9.88	P8LS08L926C
Thread Connector, IP67 Protected	M8 Cable Quick Connect		P8CS0803J
	M12 Cable Quick Connect		P8CS1204J



Pneumatic Connectors for Size 2 Modules



PMDYY2



MMDVA2



HMDXX2



FMD09-2B



CMD09-2B

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	6mm OD	0.18	CMD06-2	0.11	FMD06-2
	1/4" OD	0.18	**CMD07-2B**	0.11	**FMD07-2B**
	8mm OD	0.21	CMD08-2	0.14	FMD08-2
	3/8" OD	0.21	**CMD09-2B**	0.14	**FMD09-2B**
	10mm OD	0.25	CMD10-2	0.18	FMD10-2
	12mm OD	0.28	CMD12-2	0.21	FMD12-2
	1/2" OD	—	**—**	0.21	**FMD13-2B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA2**
Plug	—	—	—	0.18	**PMDYY2**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.28	**HMDXX2**

Note: 85 Durometer minimum for pneumatic connectors.

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"S" Series Stand-Alone Valve Modules Model Number Index

Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

BOLD OPTIONS ARE MOST POPULAR.

P2M	1	S	4ES	2C	00	A	F4

Basic Series	
Moduflex	**P2M**

Size	
Size 1	**1**
Size 2	**2**

Valve Series	
Stand Alone	**S**

Valve Type / Function	
3-Way / 2-Position	
Single Solenoid, NC Spring Return	**3ES**
Single Air Pilot, NC Spring Return	3PS
4-Way / 2-Position	
Single Solenoid, Spring Return	**4ES**
Single Air Pilot, Spring Return	4PS
Double Solenoid	4EE
Double Air Pilot	4PP
Dual 3-Way, 2-Position, Spring Return	
Solenoid, NC / NC + PO Check (4/3 APB)	BEE*
Air Pilot, NC / NC + PO Check (4/3 APB)	BPP*
Solenoid, NO / NO (4/3 Pressure Ctr.)	CEE
Air Pilot NO / NO (4/3 Pressure Ctr.)	CPP
Solenoid, NC / NC with Exhaust Check	**DEE**
Air Pilot, NC / NC with Exhaust Check	DPP
Solenoid, NO / NC with Exhaust Check	EEE
Solenoid, NC / NC without Check (4/3 Exh. Ctr.)	GEE

* Valve includes peripheral P. O. Check Valve and union fittings.

Operator Voltage	
24VDC	**2C**
Remote Pilot - 5/32" (4mm) Tube	00

Ports (All Ports)	
C0*	10mm Elbow Fitting
C2*	12mm Elbow Fitting
C4	**5/32" (4mm) Elbow Fitting**
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8*	8mm Elbow Fitting
C9*	**3/8" Elbow Fitting**
F0*	10mm Elbow Fitting
F2*	12mm Elbow Fitting
F3*	**1/2" Straight Fitting**
F4	**5/32" (4mm) Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8*	8mm Straight Fitting
F9*	**3/8" Straight Fitting**

* Only Available with Size 2 Valves.

Fitting Configuration	
A*	**Straight Fittings**
B*	**Elbow Fittings**
C*†	**Straight Fitting & Muffler**
D*†	**Elbow Fitting & Muffler**

* Ports 1 & 3 fittings sizes are same as Ports 2 & 4 (See example at left.)
† Fitting in Port 1, Muffler in Port 3.

LED / Cable	
00	**No Cable, No LED, No Surge Suppression**
V2	**2 Meter Cable with LED and Surge Suppression**
V5	5 Meter Cable with LED and Surge Suppression
V9	9 Meter Cable with LED and Surge Suppression

EXAMPLE for Fitting Configuration:

Size 1

CF7 Ports 1 & 3
1/4" Straight Fitting
& Muffler
Ports 2 & 4
1/4" Straight Fittings

Size 2

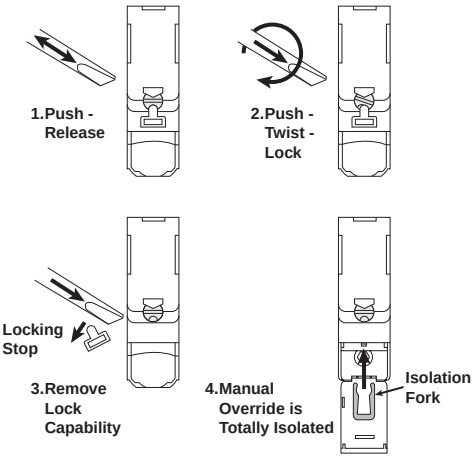
AC0 Ports 1 & 3
10mm Elbow Fittings
Ports 2 & 4
10mm Elbow Fittings

With Only One Universal Solenoid Pilot for all Configurations

24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

Multi-Function Adaptable Manual Override



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Richland, Michigan
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“S” Series Single Solenoid

Example:

Size 1, 4-Way Single Solenoid valve with 1/4" Straight Connectors in Ports 1, 2 and 4. Exhaust Muffler in Port 3. Valve to include 2m cable with LED and surge suppression.

How to Order Complete Valve Assembly

Line Item	Quantity	Part Number	Description
1	1	P2M1S4ES2CV2CF7	Size 1, Stand Alone Valve Module, 4 Way, Single Solenoid, 2m Cable with LED / Surge Suppression, Exhaust Muffler with 1/4” OD Straight Port Fittings

Notes:
1. Cables supplied loose with valve.
2. For LED and Surge Suppressor, cable must be supplied with valve.

How to Order Components

Line Item	Quantity	Part Number	Description
1	1	P2M1S4ES2C	Size 1, Stand Alone Valve Module, Single Solenoid, 4 Way
2	1	P8LS08L226C	2m Cable with LED / Surge Suppression
3	3	FMD07-1B	Size 1, 1/4” OD Tube Push In Connector
4	1	MMDVA1	Size 1, Muffler for Exhaust Port

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C

Moduflex

PVL

"T" Series Basic Modules Size 1
(Without Pneumatic Connectors)



Single Solenoid



Double Solenoid



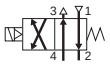
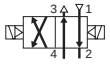
Single Air Pilot



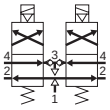
Double Air Pilot

Size 1 Electro-Pneumatic Island Valve Modules, 24VDC

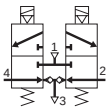
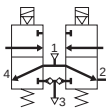
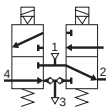
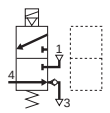
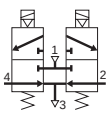
4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	2.40 oz	**P2M1T4ES2C**
	Double Solenoid (Bistable)	2.72 oz	**P2M1T4EE2C**

4-Way / 2-Position / Dual Valve

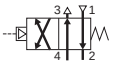
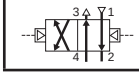
	Solenoid	Weight	Part Number
	Solenoid Spring with Exhaust Check	2.72 oz	**P2M1TJEE2C**

3-Way / 2-Position / Dual Valve

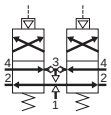
	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	2.82 oz	**P2M1TDEE2C**
	Double Solenoid NO + NO with Exhaust Check	2.82 oz	P2M1TCEE2C
	Double Solenoid NC + NO with Exhaust Check	2.82 oz	P2M1TEEE2C
	Single Solenoid NC with Exhaust Check	2.68 oz	**P2M1T3ES2C**
	Center Exhaust = dual 3/2 NC + NC without Exhaust Check	2.84 oz	**P2M1TGEE2C**

Size 1 Air Pilot Island Valve Modules

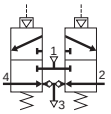
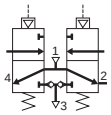
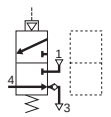
4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Air Pilot (Monostable)	2.40 oz	**P2M1T4PS**
	Double Air Pilot (Bistable)	2.72 oz	**P2M1T4PP**

4-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Air Pilot Spring with Exhaust Check	2.72 oz	**P2M1TJPP**

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Air Pilot NC + NC with Exhaust Check	2.82 oz	P2M1TDPP
	Double Air Pilot NO + NO with Exhaust Check	2.82 oz	P2M1TCPP
	Single Air Pilot NC with Exhaust Check	2.68 oz	P2M1T3PS

Note: Includes 5/32" (4mm) Air Pilot Connectors.

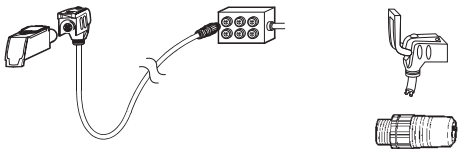
Note: Bold Options Standard

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

M8 Female Individual Connectors with Flying Lead Cable
(For Solenoid Pilots)



		Weight (oz)	Order Code
With LED Voltage Surge Protection and Flying Lead Cable IP67 Protected	2 m Cable	2.19	**P8LS08L226C**
	5 m Cable	5.47	P8LS08L526C
	9 m Cable	9.88	P8LS08L926C
Thread Connector, IP67 Protected	M8 Cable Quick Connect		P8CS0803J
	M12 Cable Quick Connect		P8CS1204J

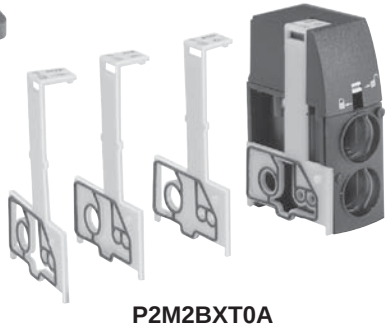




P2M1K0TASD



P2M2HXT01



P2M2BXT0A

Island Modules

Module	Weight (oz)	Order Code
Pneumatic Head and Tail Set	2.26	**P2M2HXT01***
Pneumatic Head and Tail Set with TORX Screwdriver	2.50	**P2M2HXT0T***
TORX Screwdriver Only	.24	**P2M1K0TASD**
Intermediate Supply Module (With a set of 4 Configuration Plates)	1.48	**P2M2BXT0A***

* Use Fittings for Size 2 Modules Only.

Pneumatic Connectors for Size 1 Modules



PMDYY1 **HMDXX1** **MMDVA1**



CMD04-1 **FMD07-1B** **CMD07-1B**

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA1**
Plug	—	—	—	0.18	**PMDYY1**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.

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Richland, Michigan
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"T" Series Basic Modules Size 2
(Without Pneumatic Connectors)



Single Solenoid



Double Solenoid



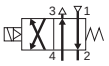
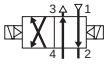
Single Air Pilot



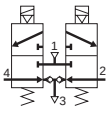
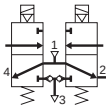
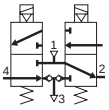
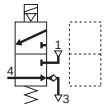
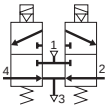
Double Air Pilot

Size 2 Electro-Pneumatic Island Valve Modules, 24VDC

4-Way / 2-Position / Single Valve

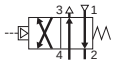
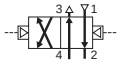
	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	2.61 oz	**P2M2T4ES2C**
	Double Solenoid (Bistable)	2.93 oz	**P2M2T4EE2C**

3-Way / 2-Position / Dual Valve

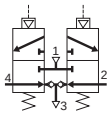
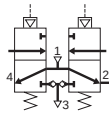
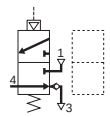
	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	3.32 oz	**P2M2TDEE2C**
	Double Solenoid NO + NO with Exhaust Check	3.32 oz	P2M2TCEE2C
	Double Solenoid NC + NO with Exhaust Check	3.32 oz	P2M2TEEE2C
	Single Solenoid NC with Exhaust Check	3.17 oz	**P2M2T3ES2C**
	Center Exhaust = dual 3/2 NC + NC without Exhaust Check	3.32 oz	**P2M2TGEE2C**

Size 2 Air Pilot Island Valve Modules

4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Air Pilot (Monostable)	2.61 oz	**P2M2T4PS**
	Double Air Pilot (Bistable)	2.93 oz	**P2M2T4PP**

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Air Pilot NC + NC with Exhaust Check	3.32 oz	P2M2TDPP
	Double Air Pilot NO + NO with Exhaust Check	3.32 oz	P2M2TCPP
	Single Air Pilot NC with Exhaust Check	2.61 oz	P2M2T3PS

Note: Includes 5/32" (4mm) Air Pilot Connectors.

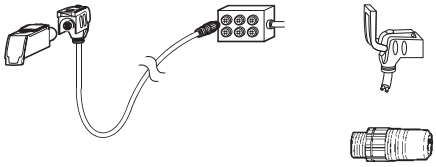
Note: Bold Options Standard

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

M8 Female Individual Connectors with Flying Lead Cable
(For Solenoid Pilots)



		Weight (oz)	Order Code
With LED Voltage Surge Protection and Flying Lead Cable IP67 Protected	2 m Cable	2.19	**P8LS08L226C**
	5 m Cable	5.47	P8LS08L526C
	9 m Cable	9.88	P8LS08L926C
Thread Connector, IP67 Protected	M8 Cable Quick Connect		P8CS0803J
	M12 Cable Quick Connect		P8CS1204J

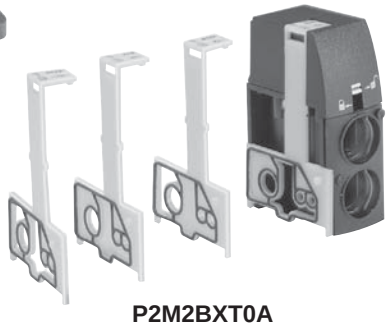




P2M1K0TASD



P2M2HXT01



P2M2BXT0A

Island Modules

Module	Weight (oz)	Order Code
Pneumatic Head and Tail Set	2.26	**P2M2HXT01***
Pneumatic Head and Tail Set with TORX Screwdriver	2.50	**P2M2HXT0T***
TORX Screwdriver Only	.24	**P2M1K0TASD**
Intermediate Supply Module (With a set of 4 Configuration Plates)	1.48	**P2M2BXT0A***

* Use Fittings for Size 2 Modules Only.

Pneumatic Connectors for Size 2 Modules



PMDYY2



MMDVA2



HMDXX2



FMD09-2B



CMD09-2B

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	6mm OD	0.18	CMD06-2	0.11	FMD06-2
	1/4" OD	0.18	**CMD07-2B**	0.11	**FMD07-2B**
	8mm OD	0.21	CMD08-2	0.14	FMD08-2
	3/8" OD	0.21	**CMD09-2B**	0.14	**FMD09-2B**
	10mm OD	0.25	CMD10-2	0.18	FMD10-2
	12mm OD	0.28	CMD12-2	0.21	FMD12-2
	1/2" OD	—	**—**	0.21	**FMD13-2B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA2**
Plug	—	—	—	0.18	**PMDYY2**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.28	**HMDXX2**

Note: 85 Durometer minimum for pneumatic connectors.

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"T" Series Island Valve Modules Model Number Index

Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

BOLD OPTIONS ARE MOST POPULAR.

P2M	1	T	4ES	2C	00	0	F4

Basic Series

Valvetronic Modules	**P2M**

Size

Size 1	**1**
Size 2	**2**

Valve Series

Individual Wire	**T**

Valve Type / Function

3-Way / 2-Position	
Single Solenoid, NC Spring Return	**3ES**
Single Air Pilot, NC Spring Return	**3PS**
4-Way / 2-Position	
Single Solenoid, Spring Return	**4ES**
Single Air Pilot, Spring Return	**4PS**
Double Solenoid	**4EE**
Double Air Pilot	**4PP**
Dual 3-Way, 2-Position, Spring Return	
Solenoid, NC / NC + PO Check (4/3 APB)	**BEE***
Air Pilot, NC / NC + PO Check (4/3 APB)	BPP*
Solenoid, NO / NO (4/3 Pressure Ctr.)	CEE
Air Pilot NO / NO (4/3 Pressure Ctr.)	CPP
Solenoid, NC / NC with Exhaust Check	DEE
Air Pilot, NC / NC with Exhaust Check	DPP
Solenoid, NO / NC with Exhaust Check	**EEE**
Solenoid, NC / NC without Check (4/3 Exh. Ctr.)	**GEE**
Dual 4-Way, 2-Position, Spring Return	
Solenoid	**JEE****
Air Pilot	**JPP****

* Valve includes peripheral P. O. Check Valve and union fittings.
** Size 1 Only.

Operator Voltage

2C	**24VDC**
00	Remote Pilot - 5/32" (4mm) Tube

LED / Cable

00	**No Cable, No LED, No Surge Suppression**
V2	**2 Meter Cable with LED and Surge Suppression**
V5	5 Meter Cable with LED and Surge Suppression
V9	9 Meter Cable with LED and Surge Suppression

Ports 1 & 3

0	**None**

Ports 2 & 4

C0*	10mm Elbow Fitting
C2*	12mm Elbow Fitting
C4	**5/32" (4mm) Elbow Fitting**
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8*	8mm Elbow Fitting
C9*	**3/8" Elbow Fitting**
F0*	10mm Elbow Fitting
F2*	12mm Elbow Fitting
F3*	**1/2" Straight Fitting**
F4	**5/32" (4mm) Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8*	8mm Straight Fitting
F9*	**3/8" Straight Fitting**

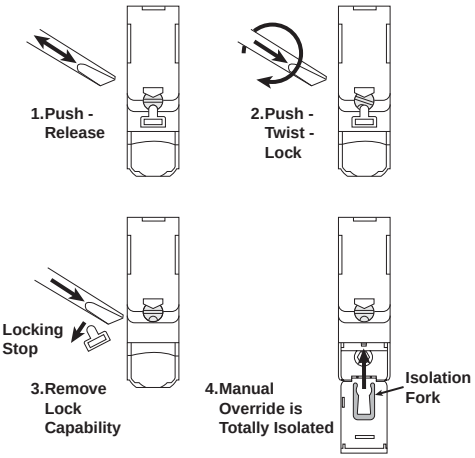
* Only Available with Size 2 Valves.

With Only One Universal Solenoid Pilot for all Configurations

24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

Multi-Function Adaptable Manual Override



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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics



“T” Series Single Solenoid

Example:

Size 1, 4-Way Single Solenoid valve with 1/4" Straight Connectors in Ports 2 and 4. Valve to include 2m cable with LED and surge suppression.

How to Order Complete Valve Assembly

Line Item	Quantity	Part Number	Description
1	1	P2M1T4ES2CV20F7	Size 1, T Series Island Valve Module, 4 Way, Single Solenoid, 2m Cable with LED / Surge Suppression, 1/4” OD Straight Port Fittings

Notes:
1. Cables supplied loose with valve.
2. For LED and Surge Suppressor, cable must be supplied with valve.
3. To assemble into a manifold, Pneumatic Head and Tail Set must be ordered separately.

How to Order Components

Line Item	Quantity	Part Number	Description
1	1	P2M1T4ES2C	Size 1, T Series Island Valve Module, Single Solenoid, 4 Way
2	1	P8LS08L226C	2m Cable with LED / Surge Suppression
3	2	FMD07-1B	Size 1, 1/4” OD Tube Push In Connector

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Richland, Michigan
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C

Moduflex

PVL

"V" Series Basic Modules Size 1
(Without Pneumatic Connectors)



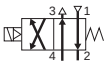
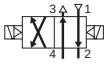
Single Solenoid



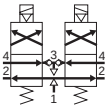
Double Solenoid

Size 1 Electro-Pneumatic Island Valve Modules, 24VDC

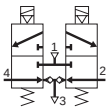
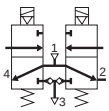
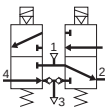
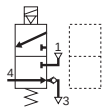
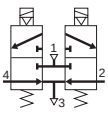
4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	3.32 oz	**P2M1V4ES2CV**
	Double Solenoid (Bistable)	3.63 oz	**P2M1V4EE2CV**

4-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Solenoid Spring with Exhaust Check	3.63 oz	**P2M1VJEE2CV**

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	3.74 oz	**P2M1VDEE2CV**
	Double Solenoid NO + NO with Exhaust Check	3.74 oz	**P2M1VCEE2CV**
	Double Solenoid NC + NO with Exhaust Check	3.74 oz	P2M1VEEE2CV
	Single Solenoid NC with Exhaust Check	3.60 oz	**P2M1V3ES2CV**
	Center Exhaust = dual 3/2 NC + NC without Exhaust Check	3.74 oz	**P2M1VGEE2CV**

Pneumatic Connectors for Size 1 Modules



PMDYY1



HMDXX1



MMDVA1



FMD04-1



CMD04-1



FMD07-1B



CMD07-1B

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA1**
Plug	—	—	—	0.18	**PMDYY1**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.

Note: Bold Options Standard

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P2M2HEV0A



P2M2HEV0D

Electrical Connector

Module	Weight (oz)	Order Code
20-Pin, Multi-Connector Electrical Head Module	1.34	**P2M2HEV0A**
25-Pin, D-Sub, Electrical Head Module	1.34	**P2M2HEV0D**



Electrical 20-Pin Multi-Connector with Flying Lead Cable

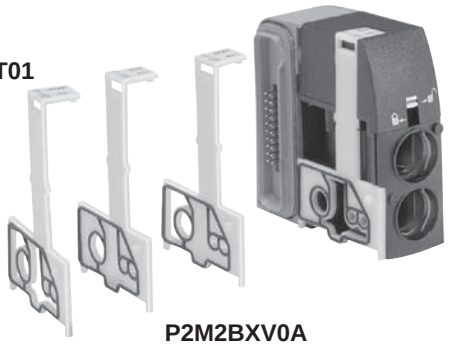
Cable Length	Weight (oz)	IP	Order Code
2 m	10.97	65	**P8LMH20M2A**
5 m	27.41	65	P8LMH20M5A
9 m	49.38	65	P8LMH20M9A



P2M1K0TASD



P2M2HXT01



P2M2BXV0A



Electrical 25-Pin D-Sub Cable

Length (meters)	Weight (oz)	IP	Order Code
3	14.3	20	**P8LMH25M3A**
3	14.3	65	**SCD253W**
9	55.8	20	SCD259D
9	55.8	65	SCD259WE

Island Modules

Module	Weight (oz)	Order Code
Pneumatic Head and Tail Set	2.26	**P2M2HXT01***
Pneumatic Head and Tail Set with TORX Screwdriver	2.50	**P2M2HXT0T***
TORX Screwdriver Only	.24	**P2M1K0TASD**
Intermediate Supply Module (With a set of 4 Configuration Plates)	1.48	**P2M2BXV0A***

* Use Fittings for Size 2 Modules Only.

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C

Moduflex

PVL

"V" Series Basic Modules Size 2
(Without Pneumatic Connectors)



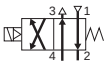
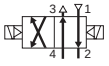
Single Solenoid



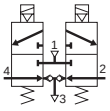
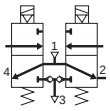
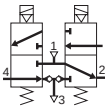
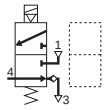
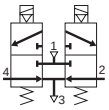
Double Solenoid

Size 2 Electro-Pneumatic Island Valve Modules, 24VDC

4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	3.53 oz	**P2M2V4ES2CV**
	Double Solenoid (Bistable)	3.88 oz	**P2M2V4EE2CV**

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	4.06 oz	**P2M2VDEE2CV**
	Double Solenoid NO + NO with Exhaust Check	4.06 oz	**P2M2VCEE2CV**
	Double Solenoid NC + NO with Exhaust Check	4.06 oz	P2M2VEEE2CV
	Single Solenoid NC with Exhaust Check	3.88 oz	**P2M2V3ES2CV**
	Center Exhaust = dual 3/2 NC + NC without Exhaust Check	4.06 oz	**P2M2VGEE2CV**

Pneumatic Connectors for Size 2 Modules



PMDYY2



MMDVA2



HMDXX2



FMD09-2B



CMD09-2B

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	6mm OD	0.18	CMD06-2	0.11	FMD06-2
	1/4" OD	0.18	**CMD07-2B**	0.11	**FMD07-2B**
	8mm OD	0.21	CMD08-2	0.14	FMD08-2
	3/8" OD	0.21	**CMD09-2B**	0.14	**FMD09-2B**
	10mm OD	0.25	CMD10-2	0.18	FMD10-2
	12mm OD	0.28	CMD12-2	0.21	FMD12-2
	1/2" OD	—	**—**	0.21	**FMD13-2B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA2**
Plug	—	—	—	0.18	**PMDYY2**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.28	**HMDXX2**

Note: 85 Durometer minimum for pneumatic connectors.

Note: Bold Options Standard

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P2M2HEV0A



P2M2HEV0D

Electrical Connector

Module	Weight (oz)	Order Code
20-Pin, Multi-Connector Electrical Head Module	1.34	**P2M2HEV0A**
25-Pin, D-Sub, Electrical Head Module	1.34	**P2M2HEV0D**



Electrical 20-Pin Multi-Connector with Flying Lead Cable

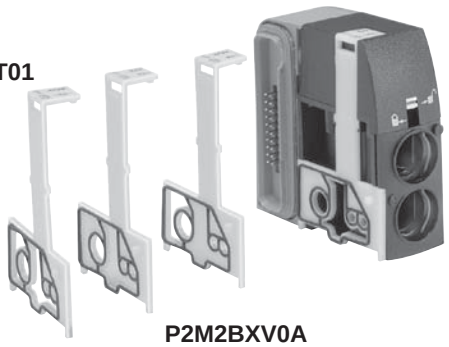
Cable Length	Weight (oz)	IP	Order Code
2 m	10.97	65	**P8LMH20M2A**
5 m	27.41	65	P8LMH20M5A
9 m	49.38	65	P8LMH20M9A



P2M1K0TASD



P2M2HXT01



P2M2BXV0A



Electrical 25-Pin D-Sub Cable

Length (meters)	Weight (oz)	IP	Order Code
3	14.3	20	**P8LMH25M3A**
3	14.3	65	**SCD253W**
9	55.8	20	SCD259D
9	55.8	65	SCD259WE

Island Modules

Module	Weight (oz)	Order Code
Pneumatic Head and Tail Set	2.26	**P2M2HXT01***
Pneumatic Head and Tail Set with TORX Screwdriver	2.50	**P2M2HXT0T***
TORX Screwdriver Only	.24	**P2M1K0TASD**
Intermediate Supply Module (With a set of 4 Configuration Plates)	1.48	**P2M2BXV0A***

* Use Fittings for Size 2 Modules Only.

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"V" Series Island Valve Modules Model Number Index

Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

BOLD OPTIONS ARE MOST POPULAR.

P2M	1	V	4ES	2C	V0	0	F4

Basic Series

Valvetronic Modules	P2M

Size

Size 1	1
Size 2	2

Valve Series

Valvetronic	V

Valve Type / Function

3-Way / 2-Position	
Single Solenoid, NC Spring Return	**3ES**
4-Way / 2-Position	
Single Solenoid, Spring Return	**4ES**
Double Solenoid	**4EE**
Dual 3-Way, 2-Position, Spring Return	
Solenoid, NC / NC + PO Check (4/3 APB)	**BEE***
Solenoid, NO / NO (4/3 Pressure Ctr.)	**CEE**
Solenoid, NC / NC with Exhaust Check	**DEE**
Solenoid, NO / NC with Exhaust Check	EEE
Solenoid, NC / NC without Check (4/3 Exh. Ctr.)	**GEE**
Dual 4-Way, 2-Position, Spring Return	
Solenoid	**JEE****

* Valve includes peripheral P. O. Check Valve and union fittings.
** Size 1 Only.

Operator Voltage

2C	**24VDC**

LED / Cable

V0	**No Cable with LED and Surge Suppression**

Ports 1 & 3

0	**None**

Ports 2 & 4

C0*	10mm Elbow Fitting
C2*	12mm Elbow Fitting
C4	**5/32" (4mm) Elbow Fitting**
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8*	8mm Elbow Fitting
C9*	**3/8" Elbow Fitting**
F0*	10mm Elbow Fitting
F2*	12mm Elbow Fitting
F3*	**1/2" Straight Fitting**
F4	**5/32" (4mm) Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8*	8mm Straight Fitting
F9*	**3/8" Straight Fitting**

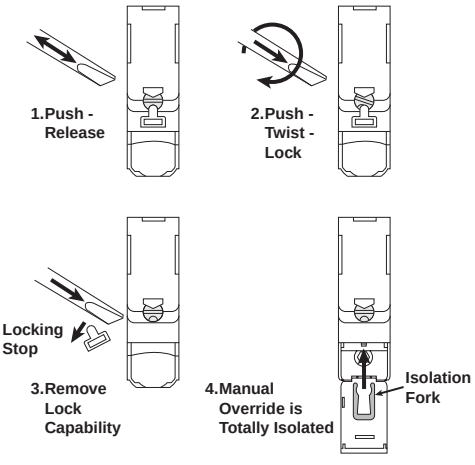
* Only Available with Size 2 Valves.

With Only One Universal Solenoid Pilot for all Configurations

24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

Multi-Function Adaptable Manual Override



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“V” Series Single Solenoid

Example:

Size 1, 4-Way Single Solenoid valve with 1/4" Straight Connectors in Ports 2 and 4. Valve to include LED and surge suppression.

How to Order Complete Valve Assembly

Line Item	Quantity	Part Number	Description
1	1	P2M2V4ES2CV00F7	Size 1, V Series Island Valve Module, 4 Way, Single Solenoid, LED / Surge Suppression, 1/4” OD Straight Port Fittings

Notes:
1. LED and Surge Suppressor included with valve.
2. To assemble into a manifold, Pneumatic Head and Tail Set and Electrical Connector must be ordered separately.

How to Order Components

Line Item	Quantity	Part Number	Description
1	1	P2M1V4ES2CV	Size 1, V Series Island Valve Module, Single Solenoid, 4 Way
2	2	FMD07-1B	Size 1, 1/4” OD Tube Push In Connector

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C

Moduflex

PVL

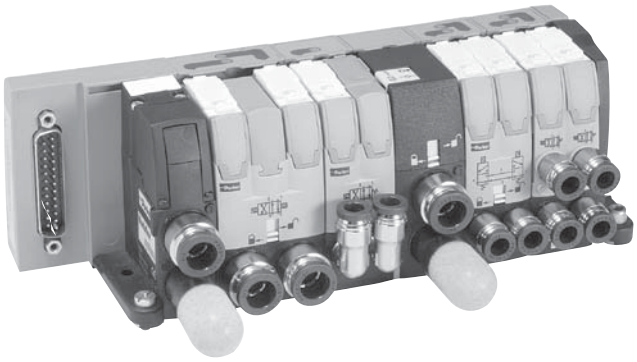
"V" Series 25-Pin, D-Sub Addressing

Valve Island Head 25-Pin, Multi-Connector

On the island head module, the multi-connector integrates the HE10 connector standard in its 25-Pin version.

Its plug-in function is secured in position with a guillotine lock with easy access from the front of the island.

The 25-Pin, D-Sub multi-connector is rated for IP40.



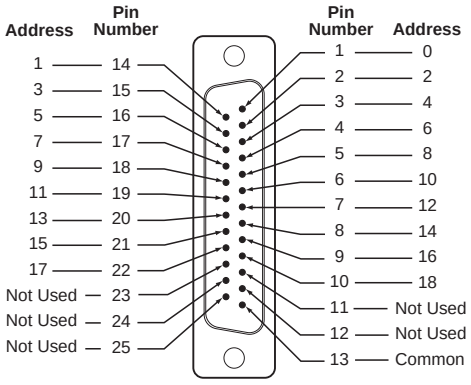


P8LMH253A - Cable

25-Pin, Multi-Connector Addressing

When assembling a **V Series** island, modules are automatically connected to the head module through the modular principle of the integrated electrical connections.

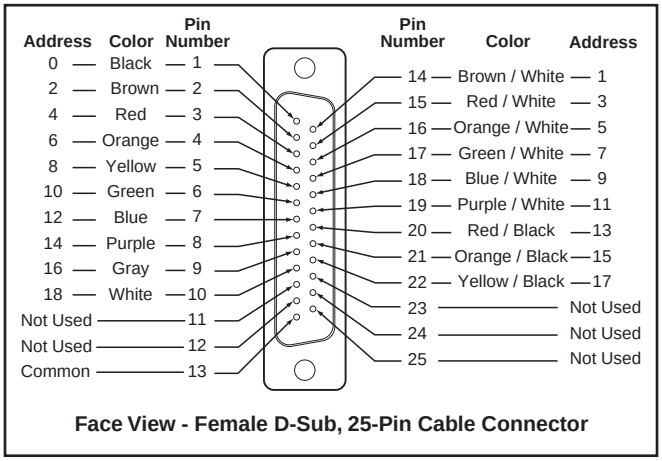
Each wire color code corresponds a solenoid pilot position in the island.



Face View - Male D-Sub, 25-Pin Head Module Connector

Electrical 25-Pin D-Sub Cable

Length (meters)	Weight (oz)	IP	Order Code
3	14.3	20	**P8LMH25M3A**
3	14.3	65	**SCD253W**
9	55.8	20	**SCD259D**
9	55.8	65	**SCD259WE**



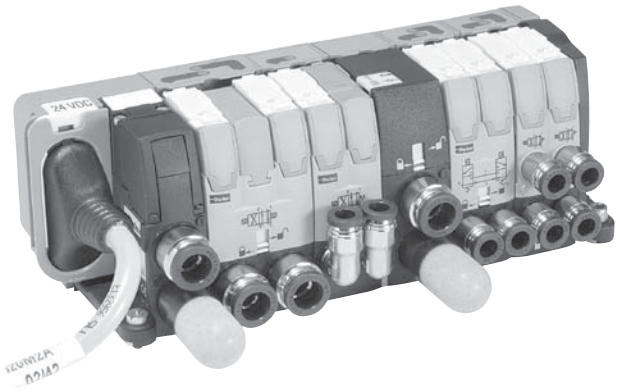
Face View - Female D-Sub, 25-Pin Cable Connector

Electrical Specifications

Rated Voltage	24VDC
Maximum Addresses	19
Maximum Energized Simultaneously	19
Electrical Connection	25-Pin, D-Sub DIN41652, MIL-C-24308, NFC93425 Type HE5
Polarity	Insensitive: PNP and NPN compatible
Dust and Water Protection	IP40 / IP65

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"V" Series 20-Pin, Multi-Connector and Addressing



Valve Island Head 20-Pin, Multi-Connector

On the island head module, the multi-connector integrates the HE10 connector standard in its 20-Pin version.

Its plug-in function is secured in position with a guillotine lock with easy access from the front of the island.

Just like the whole island, the multi-connector follows the IP65 protection standard.

Cable Specification:

8.6 mm dia., UL, 20 wires, 0.22mm^2 , AWG 24

Minimum Static Radius: 6.5 mm (.255")

Available with 6.56 ft. (2 m), 16.4 ft. (5 m) and 29.5 ft. (9 m) lengths.

20-Pin, Multi-Connector Addressing

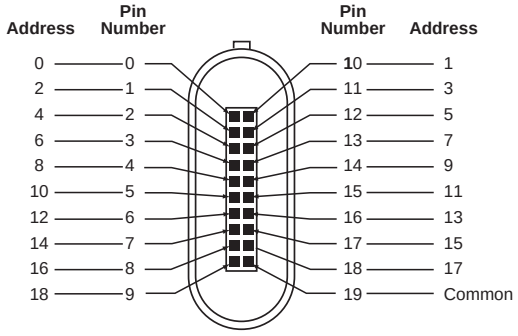
When assembling a **V Series** island, modules are automatically connected to the head module through the modular principle of the integrated electrical connections.

The color code addressing given below conforms to the DIN 47100 standard.

Each wire color code corresponds a solenoid pilot position in the island.



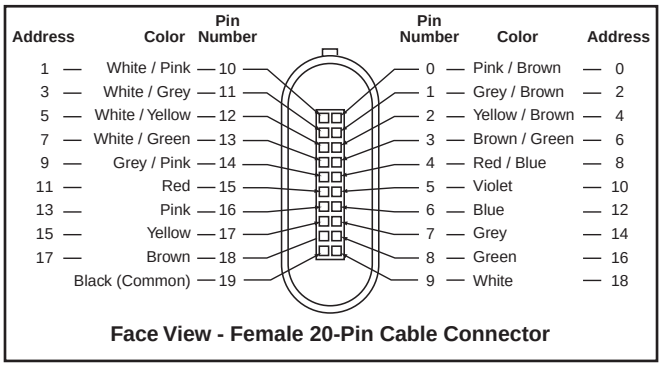
P8LMH20M2A - Cable



Face View - Male 20-Pin Head Module Connector

Electrical 20-Pin Multi-Connector with Flying Lead Cable

Cable Length	Weight (oz)	IP	Order Code
2 m	10.97	65	**P8LMH20M2A**
5 m	27.41	65	**P8LMH20M5A**
9 m	49.38	65	**P8LMH20M9A**



Face View - Female 20-Pin Cable Connector

Electrical Specifications

Rated Voltage	24VDC
Maximum Addresses	19
Maximum Energized Simultaneously	19
Electrical Connection	Type HE10
Polarity	Insensitive: PNP and NPN compatable
Dust and Water Protection	IP65

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The Moduflex Fieldbus System

Moduflex communication modules directly attach to the Moduflex head set. It offers a compact and low cost fieldbus solution.

Moduflex Features

- Small, compact product design
- Broad protocol offering, including DeviceNet, Profibus, AS-i, CANopen, and Interbus
- Channel-level diagnostics (LED and Electronic)
- Inputs available with AS-i modules
- Horizontal and vertical mounting without derating
- 5g vibration
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- CE certification



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"V" Series Fieldbus Connections

Valve Island Electrical Head Modules for Bus Connections and Control

DeviceNet™ CANopen PROFIBUS PROCESS FIELD BUS INTERBUS-S

Device Bus Electrical Head Modules

Electrical Module for 16 Outputs Max.
(V Series islands may have up to 16 solenoids)



P2M2HBVP11600

Bus Protocol	Weight (oz)	Order Code
Profibus DP	8.82	**P2M2HBVP21600**
DeviceNet	8.82	**P2M2HBVD21600**
CANopen	8.82	**P2M2HBVC21600**
InterBus-S	10.58	P2M2HBVS11600

Fieldbus Accessories

	Bus Protocol	Connector Type	Weight (oz)	Order Code
Power Supply Female Straight Field Wireable Connector	Profibus DP / InterBus-S / DeviceNet / CANopen	M12 type A	0.88	**P8CS1205AA**
Line Termination Resistor	Profibus DP	M12 type B	0.88	**P8BPA00MB**
	DeviceNet / CANopen	M12 type A	0.88	**P8BPA00MA**

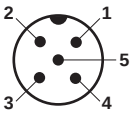
Note: Use standard cables and connectors for bus communications from your electrical supplier.

M12 (Male) Power Supply Connector

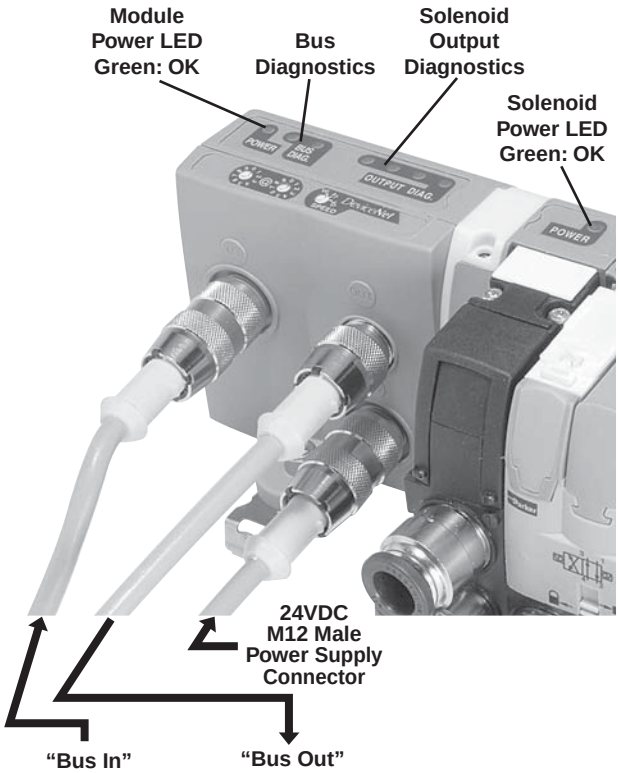
1 - 24VDC Module (Not Connected for DeviceNet and CANopen)
2 - Not Connected
3 - 0VDC Module and Solenoid
4 - 24VDC Solenoid
5 - Protected Earth (PE)

Profibus DP / DeviceNet / CANopen / InterBus-S

24VDC
(As Seen On Module)



M12 Male Type A



Connection

All bus modules have an M12 male connector for power supply.

Connector on Moduflex Modules are labeled. Bus Connectors are labeled "Bus In" and "Bus Out" while, Power Supply Connections are labeled "24VDC". Connect Fieldbus to "Bus In" and "Bus Out" and Power Supply to "24VDC".

Diagnostic

The two "power" indicators shown on the illustrations provide visual indication of the module and solenoid supply status.

Note: Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing communications to remain on. This can be done by placing the user's Emergency Stop switch or other hard-wired control contact between Pin 1 and Pin 4. If this feature is not required, Pin 1 and Pin 4 should be wired together.

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"V" Series Valvetronic™
Device Bus Module: Connections, Addressing, Diagnostic

Bus Cable Connections

Profibus DP standard male and female type B M12 connectors.

Use of prefabricated cables available from your local electrical supplier is recommended.

Line termination P8BPA00MB, is necessary on the "bus out" connector of the last station.

This module incorporates an Autobaud detect feature, eliminating the need to set switches.

Addressing

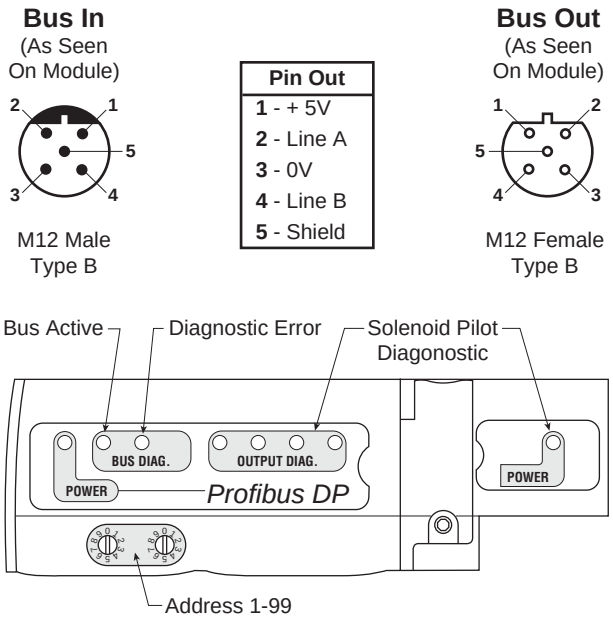
Use the GSD file on web site.

The rotary switches enable configuration of the decimal address.

• www.parker.com/pneu/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



Bus Cable Connections

DeviceNet standard male and female type A M12 connectors.

Use of prefabricated cables available from your local electrical supplier is recommended.

Line termination P8BPA00MA, is necessary on the "bus out" connector of the last station.

Addressing

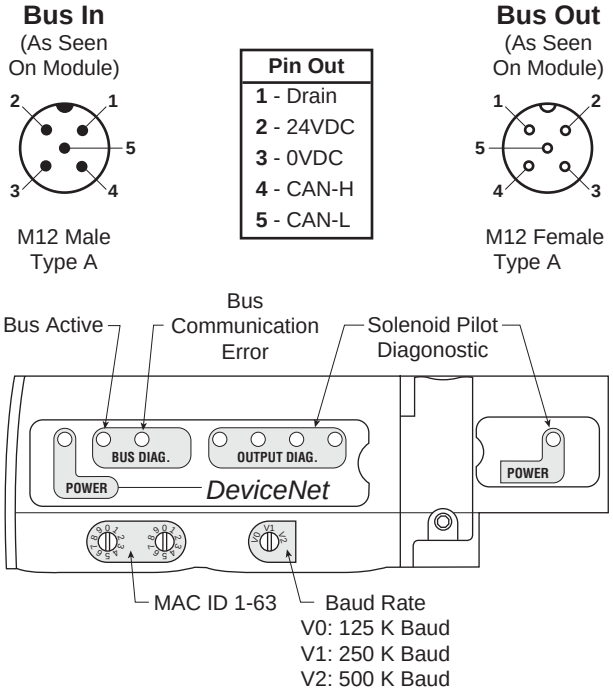
Use the EDS file on web site.

The rotary switches enable configuration of the node address (MAC ID) and the baud rate.

• www.parker.com/pneu/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



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CANopen

Bus Cable Connections

CANopen standard male and female type A M12 connectors.

Use of prefabricated cables available from your local electrical supplier is recommended.

Line termination P8BPA00MA, is necessary on the “bus out” connector of the last station.

Addressing

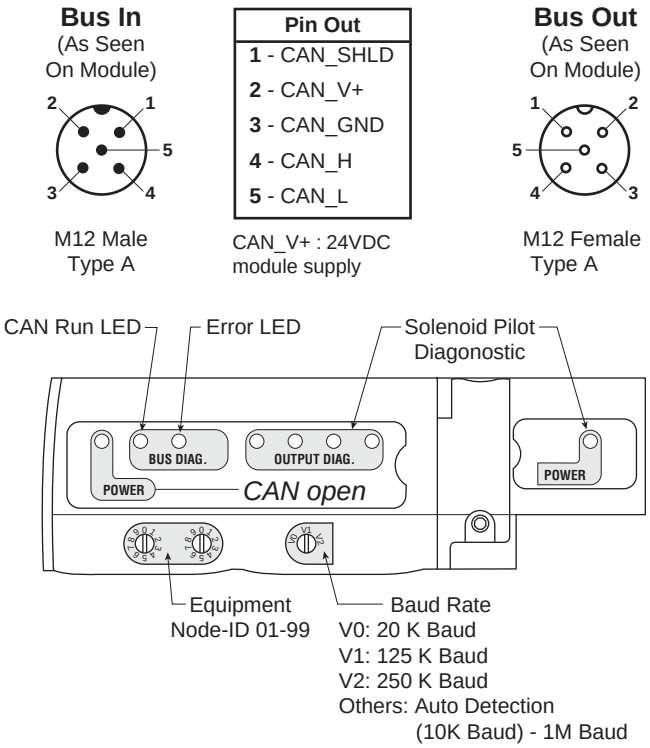
Use the EDS file on web site.

The rotary switches enable configuration of the decimal address.

- www.parker.com/pneu/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



INTERBUS-S

Bus Cable Connections

The M23 connectors conform to “Interbus remote bus”.

Use of prefabricated cables available from your usual electrical supplier is recommended.

This module operates at 500 kbps.

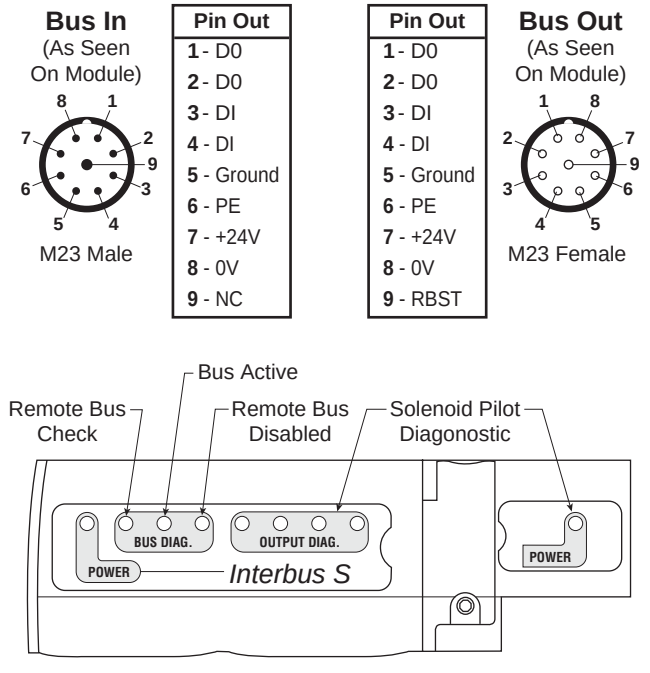
Addressing

InterBus-S is self addressing; therefore, it does not need any software or hardware configuration.

Diagnostic

Diagnostic according to the module dialog shown on the illustration.

This diagnostic conforms to the InterBus-S standard.



Note: For more details, please consult “Interbus remote bus” documentation.

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C

Moduflex

PVL

"V" Series Bus Connections

Valve Island Electrical Head Modules for Bus Connections and Control



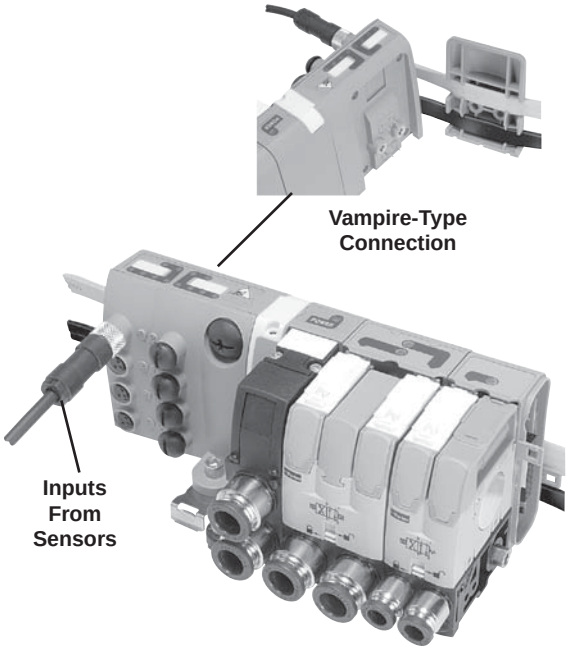
P2M2HBVA10808A



P2M2HBVA10808B



P2M2HBVA10800



Standard AS-i Protocol (up to 31 nodes) Electrical Head Modules

Electrical Module for 8 Solenoids Max.
(V Series islands may have up to 8 solenoids)
(2 nodes per module, 4 inputs, 4 solenoids per node)

Input / Output Capability	Weight (oz)	Order Code
0 inputs and 8 solenoid outputs	5.29	**P2M2HBVA10800**
8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	7.05	**P2M2HBVA10808A**
8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	7.05	P2M2HBVA10808B

AS-i Version 2.1 Protocol (up to 62 nodes) Electrical Head Modules

Electrical Module for 6 Solenoids Max.
(V Series islands may have up to 6 solenoids)
(2 nodes per module, 4 inputs, 3 solenoids per node)

Input / Output Capability	Weight (oz)	Order Code
0 inputs and 6 solenoid outputs	5.29	**P2M2HBVA20600**
8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	7.05	**P2M2HBVA20608A**
8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	7.05	P2M2HBVA20608B

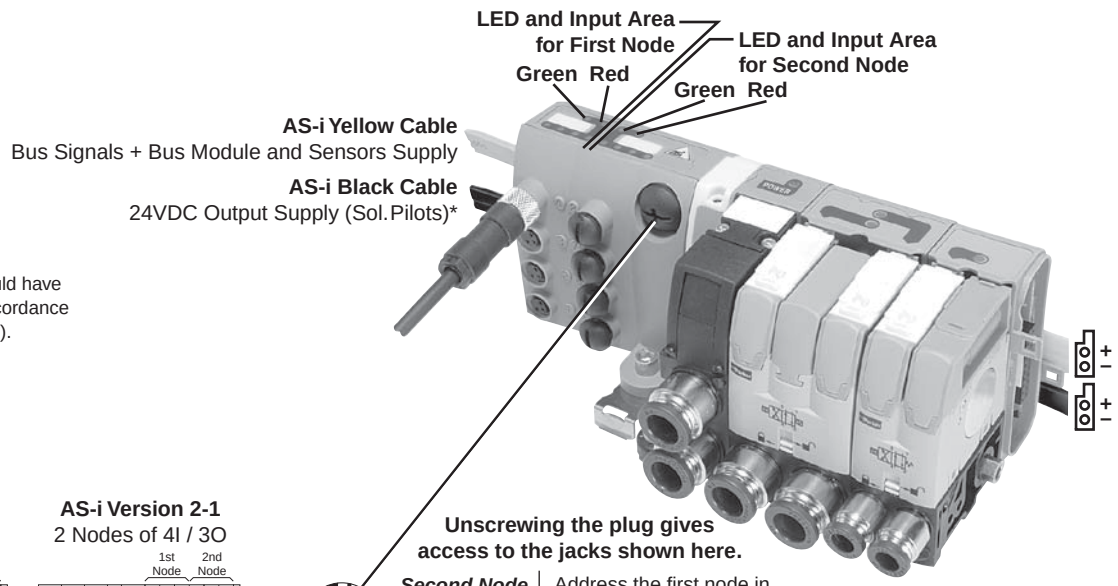
AS-i Bus Accessories

M12 Cable with Jack for Addressing

Length	Weight (oz)	Order Code
1 m	3.53	**P8LS12JACK**

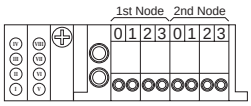
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"V" Series AS-i Bus Module

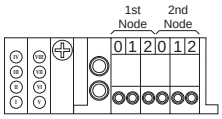


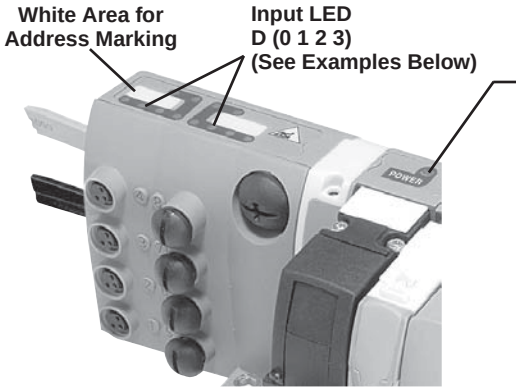
* The external supply should have protective isolation in accordance with IEC 364-4-41 (PELV).

AS-i Standard
2 Nodes of 4I / 4O



AS-i Version 2-1
2 Nodes of 4I / 3O





Bus Diagnostic

"Power" LED State	Off	Green	Red
Power Supply	Sol. Pilot Supply	Normal Operation	Solenoid Overload

First Node LEDs State		Second Node LEDs State		System Condition
Green LED	Red LED	Green LED	Red LED	
✷	❍	✷	❍	Normal Operation
❍	❍	❍	❍	No Module + Sensor Supply
❍	✳	❍	✳	Input Overload
❍	✷	❍	✳	No AS-i Communication
✳	✷	❍	✳	Address First Node = 0
✷	❍	✳	✷	Address Second Node = 0

✷ ON ❍ OFF ✳ BLINK

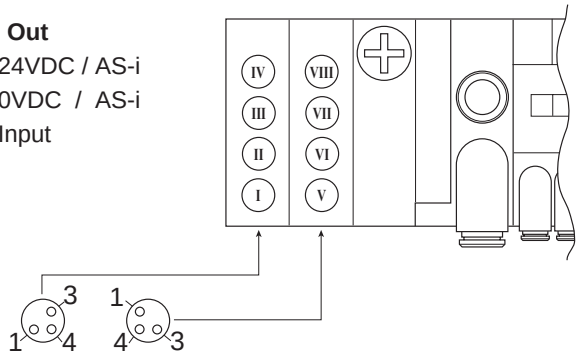
Input Wiring

Physical Input (I, II, III, IV) = D (0 1 2 3) First Node,
Physical Input (V, VI, VII, VIII) = D (0 1 2 3) Second Node.

Examples: Physical Input III = Logical Input 6.2,
Physical Input V = Logical Input 7.0.

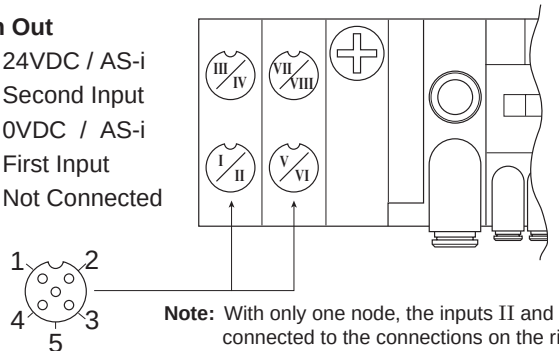
M8 Female Connectors

Pin Out
1 - 24VDC / AS-i
3 - 0VDC / AS-i
4 - Input



M12 Female Connectors

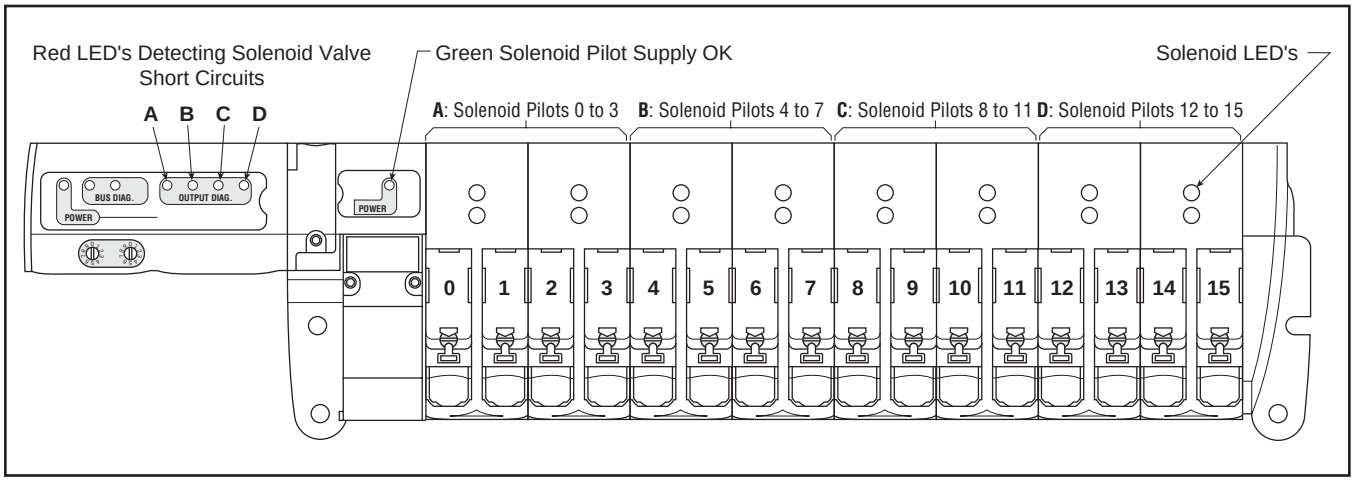
Pin Out
1 - 24VDC / AS-i
2 - Second Input
3 - 0VDC / AS-i
4 - First Input
5 - Not Connected



Note: With only one node, the inputs II and IV are connected to the connections on the right.

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Solenoid Pilot Diagnostic Common to All Device Bus Modules



Inside the bus module, solenoid valve control is protected against short-circuits with the following visual indication provided:

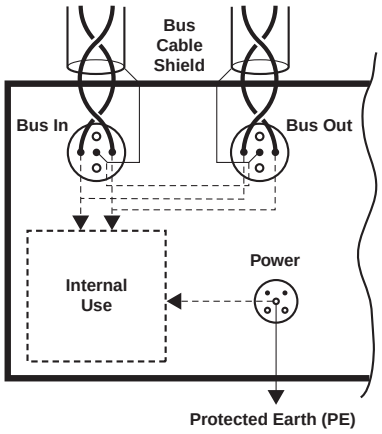
- The red LEDs with code, shown above, detect solenoid valve short-circuits.
- Supply is OK when the solenoid pilot power supply indicator is green.

Bus Cable Protection

Shield Connections for Profibus DP, DeviceNet and CANopen

To provide protection against electro-magnetic interferences, the bus cables are shielded. The module “bus in” and “bus out” connectors each includes a pin for connecting the cable shield (see next pages). It is safer to connect the shield to the protected earth (PE) at both ends of the bus. Within the bus module, provision is made to enable shield continuity by connection between the two shield pins.

The protected earth have to be connected locally on each module for CE accordance.



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Serial Bus Specifications

All Buses	EMC / CE Mark	According to EN 61 000-6-2	EN 50081-2

AS-i Bus	AS-i Line	According to EN 50295
	Solenoid Pilot Voltage	24VDC
	Module Consumption	max. 70 mA (2 nodes)
	Max. Supply for All Inputs	240 mA (including internal input consumption)
	Internal Input Consump.	9 mA for each active input
	Inputs	According to IEC 1131-2 class 2
	Certification	These products have been developed according to the association complete specification (v.2.11) and to the slave profiles S-7.F.E or S-B.F.E

Device Bus	Bus Line	According to each bus specification		
	Module Voltage	20 to 30VDC		
	Solenoid Pilot Voltage	24VDC		
	Module Consumption	Profibus DP max. 1.5W	DeviceNet / CANopen max. 1.5W	InterBus-S max. 2W
	Outputs	Overload protection		
	Certification	DeviceNet: Compliant to Composite Test Revision 17, Test Suite: M002		
		Profibus-DP: Compliant to Test Specifications for Profibus DP Slaves, Version 2.0, February 2000, based on EN 50170-2 at Siemens AG in Furth.		
		InterBus-S: This product has passed the relevant tests in accordance with the Interbus conformance requirements Certified No. 385.		

I/O Tables Common to All Device Bus Modules

Input Data Table								
Byte	**Bit 0**	**Bit 1**	**Bit 2**	**Bit 3**	**Bit 4**	**Bit 5**	**Bit 6**	**Bit 7**
0	Discrete Input 0 (Diagnostic LED 0-3)	Discrete Input 1 (Diagnostic LED 4-7)	Discrete Input 2 (Diagnostic LED 8-11)	Discrete Input 3 (Diagnostic LED 12-15)	—	—	—	—
Output Data Table								
Byte	**Bit 0**	**Bit 1**	**Bit 2**	**Bit 3**	**Bit 4**	**Bit 5**	**Bit 6**	**Bit 7**
0	Discrete Output 0	Discrete Output 1	Discrete Output 2	Discrete Output 3	Discrete Output 4	Discrete Output 5	Discrete Output 6	Discrete Output 7
1	Discrete Output 8	Discrete Output 9	Discrete Output 10	Discrete Output 11	Discrete Output 12	Discrete Output 13	Discrete Output 14	Discrete Output 15

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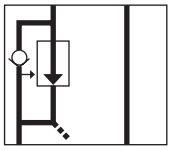
C

Moduflex

PVL

Size 1
Pressure Regulation Modules

The thrust developed by a cylinder often requires adjustment by controlling pressure to the front or back of the piston. The pressure regulation module enables manual adjustment of pressure with visual indication provided by the pressure gauge.





P2M1PXSN



PMDYY1



HMDXX1



FMD04-1



CMD04-1



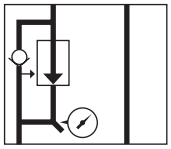
FMD07-1B



CMD07-1B

Pressure Regulation Module Without Gauge Size 1

Pressure Range	Size 1
0 to 30 PSI	**P2M1PXST** Weight 4.06 oz
0 to 60 PSI	**P2M1PXSL** Weight 4.06 oz
0 to 120 PSI	**P2M1PXSN** Weight 4.06 oz





P2M1PXSG



P2M1K0GN

Pressure Regulation Module With Gauge Size 1

Pressure Range	Size 1	Replacement Gauge
0 to 30 PSI	**P2M1PXSR** Weight 5.12 oz	**P2M1K0GT** Weight 1.06 oz
0 to 60 PSI	**P2M1PXSM** Weight 5.12 oz	**P2M1K0GL** Weight 1.06 oz
0 to 120 PSI	**P2M1PXSG** Weight 5.12 oz	**P2M1K0GN** Weight 1.06 oz

Pneumatic Connectors for Size 1 Regulators

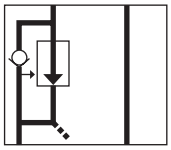
		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Plug	—	—	—	0.18	**PMDYY1**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.

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Size 2
Regulation Modules

The thrust developed by a cylinder often requires adjustment by controlling pressure to the front or back of the piston. The pressure regulation module enables manual adjustment of pressure with visual indication provided by the pressure gauge.





P2M2PXSN



PMDYY2



HMDXX2



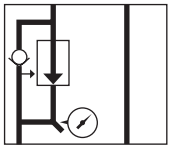
FMD09-2B



CMD09-2B

Pressure Regulation Module Without Gauge Size 2

Pressure Range	Size 2
0 to 30 PSI	**P2M2PXST** Weight 6.00 oz
0 to 60 PSI	**P2M2PXSL** Weight 6.00 oz
0 to 120 PSI	**P2M2PXSN** Weight 6.00 oz





P2M2PXSR



P2M1K0GN

Pressure Regulation Module With Gauge Size 2

Pressure Range	Size 2	Replacement Gauge
0 to 30 PSI	**P2M2PXSR** Weight 4.94 oz	**P2M1K0GT** Weight 1.06 oz
0 to 60 PSI	**P2M2PXSM** Weight 4.94 oz	**P2M1K0GL** Weight 1.06 oz
0 to 120 PSI	**P2M2PXSG** Weight 4.94 oz	**P2M1K0GN** Weight 1.06 oz

Pneumatic Connectors for Size 2 Regulators

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	6mm OD	0.18	CMD06-2	0.11	FMD06-2
	1/4" OD	0.18	**CMD07-2B**	0.11	**FMD07-2B**
	8mm OD	0.21	CMD08-2	0.14	FMD08-2
	3/8" OD	0.21	**CMD09-2B**	0.14	**FMD09-2B**
	10mm OD	0.25	CMD10-2	0.18	FMD10-2
	12mm OD	0.28	CMD12-2	0.21	FMD12-2
	1/2" OD	—	—	0.21	**FMD13-2B**
Plug	—	—	—	0.18	**PMDYY2**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.28	**HMDXX2**

Note: 85 Durometer minimum for pneumatic connectors.

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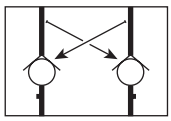
C

Moduflex

PVL

Dual P.O. Check Valve

Combined with a double 3/2 NC + NC valve, this module will block both flows and stop cylinder movement as soon as the valve's outputs are both exhausted. Better than a 3-Position valve, it provides more precise positioning when fitted close to the cylinder. Standard with manual release buttons.



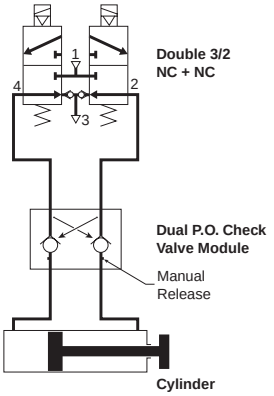


P2M1PXCA

Application

At the outputs of a double 3/2 NC + NC valve, the dual P.O. check valve module achieves efficient and stable cylinder positioning. As soon as both lines are exhausted by the main control valve, the two internally piloted check valves close tight. The cylinder is then stabilized.

The manual pressure releases may then eventually be used for an adequate machine positioning.



Dual P.O. Check Valve Size 1

Description	Size 1
Dual Pilot Operated	**P2M1PXCA** Weight .88 oz

Dual P.O. Check Valve Size 2

Description	Size 2
Dual Pilot Operated	**P2M2PXCA** Weight .88 oz



HMDXX1



FMD04-1



CMD04-1



FMD07-1B



CMD07-1B

Pneumatic Connectors for Size 1 Dual P.O. Check Valves

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.



HMDXX2



FMD09-2B



CMD09-2B

Pneumatic Connectors for Size 2 Dual P.O. Check Valves

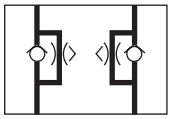
		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	6mm OD	0.18	CMD06-2	0.11	FMD06-2
	1/4" OD	0.18	**CMD07-2B**	0.11	**FMD07-2B**
	8mm OD	0.21	CMD08-2	0.14	FMD08-2
	3/8" OD	0.21	**CMD09-2B**	0.14	**FMD09-2B**
	10mm OD	0.25	CMD10-2	0.18	FMD10-2
	12mm OD	0.28	CMD12-2	0.21	FMD12-2
	1/2" OD	—	—	0.21	**FMD13-2B**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.28	**HMDXX2**

Note: 85 Durometer minimum for pneumatic connectors.

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Dual Flow Control

By controlling the exhaust flows of a double-acting cylinder, this module can adjust both speeds — extend and retract. It may be plugged into the valve module output ports or mounted close to the cylinder in its in-line version.

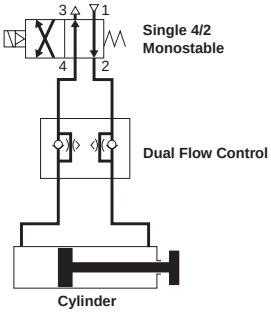




P2M1PXFA

Application

On a double-acting cylinder, extend and retract speeds are adjusted separately by control of air flow exhaust. The control becomes more precise when the flow adjustment is close to the cylinder. The examples show different solutions which are dependent upon the valve-to-cylinder distance and accessibility to the cylinder



Dual Flow Control Size 1

Description	Size 1
Dual Flow Control Module	**P2M1PXFA** Weight 1.06 oz

Dual Flow Control Size 2

Description	Size 2
Dual Flow Control Module	**P2M2PXFA** Weight 1.59 oz



HMDXX1



FMD04-1



CMD04-1



FMD07-1B



CMD07-1B

Pneumatic Connectors for Size 1 Dual P.O. Check Valves

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.



HMDXX2



FMD09-2B



CMD09-2B

Pneumatic Connectors for Size 2 Dual P.O. Check Valves

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	6mm OD	0.18	CMD06-2	0.11	FMD06-2
	1/4" OD	0.18	**CMD07-2B**	0.11	**FMD07-2B**
	8mm OD	0.21	CMD08-2	0.14	FMD08-2
	3/8" OD	0.21	**CMD09-2B**	0.14	**FMD09-2B**
	10mm OD	0.25	CMD10-2	0.18	FMD10-2
	12mm OD	0.28	CMD12-2	0.21	FMD12-2
	1/2" OD	—	—	0.21	**FMD13-2B**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.28	**HMDXX2**

Note: 85 Durometer minimum for pneumatic connectors.

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"P" Series Peripheral Modules Model Number Index

Complete Modules *(Complete with Pneumatic Connectors)*

BOLD OPTIONS ARE MOST POPULAR.

P2M	1	PX	S	L	F4	F4

Basic Series	
Electro-Pneumatic Valve Modules	P2M

Size	
Size 1	1
Size 2	2

Style / Function	
Peripheral	PX

Accessory Type	
Dual Pilot Operated Check	C
Dual Flow Control	F
Single Pressure Regulator	S

Accessory Option	
Flow Control or Pilot Operated Check	A*
0 - 120 PSI - Gauge	G
0 - 60 PSI - No Gauge	L
0 - 60 PSI - Gauge	M
0 - 120 PSI - No Gauge	N
0 - 30 PSI - Gauge	R
0 - 30 PSI - No Gauge	T

* Must be used with Accessory Type "C" or "F".

Ports 1 & 3 (Supply / Exhaust)	
C0*	10mm Elbow Fitting
C2*	12mm Elbow Fitting
C4	**5/32" (4mm) Elbow Fitting**
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8*	8mm Elbow Fitting
C9*	**3/8" Elbow Fitting**
F0*	10mm Elbow Fitting
F2*	12mm Elbow Fitting
F3*	**1/2" Straight Fitting**
F4	**5/32" (4mm) Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8*	8mm Straight Fitting
F9*	**3/8" Straight Fitting**
JJ	**Double Male Union**

* Only Available with Size 2 Valves.

Ports 2 & 4 (S, T & V Series)	
C0*	10mm Elbow Fitting
C2*	12mm Elbow Fitting
C4	**5/32" (4mm) Elbow Fitting**
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8*	8mm Elbow Fitting
C9*	**3/8" Elbow Fitting**
F0*	10mm Elbow Fitting
F2*	12mm Elbow Fitting
F3*	**1/2" Straight Fitting**
F4	**5/32" (4mm) Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8*	8mm Straight Fitting
F9*	**3/8" Straight Fitting**
JJ	**Double Male Union**
PP	**Clip-In Plug**

* Only Available with Size 2 Valves.

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Regulator with Gauge

Example:

Size 1, Regulator with gauge, 1/4” OD straight fittings.

How to Order Complete Peripheral Module

Line Item	Quantity	Part Number	Description
1	1	P2M1PXSGF7F7	Size 1, Regulator with 0-160 PSI Gauge, 1/4" OD Straight Port Fittings in port 1, 2, 3, 4

How to Order Components

Line Item	Quantity	Part Number	Description
1	1	P2M1PXSG	Size 1, Regulator with 0-160 PSI Gauge
2	4	FMD07-1B	Size 1-1/4" OD Tube Push-In Connector



Flow Control with Fittings

Example:

Size 1, Dual Flow Control, 1/4” OD Straight Fittings.

How to Order Complete Peripheral Module

Line Item	Quantity	Part Number	Description
1	1	P2M1PXFAF7F7	Size 1, Dual Flow Control, 1/4" OD Straight Port Fittings in Port 1, 2, 3, 4

How to Order Components

Line Item	Quantity	Part Number	Description
1	1	P2M1PXFA	Size 1, Dual Flow Control
2	4	FMD07-1B	Size 1-1/4" OD Tube Push-In Connector

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Vacuum Generator Module



Depending on the application requirements, this vacuum generator module may be controlled by single or by a dual 3/2 Moduflex valve module. The Vacuum Module has an integrated blow-off chamber that helps destroy the degree of vacuum. Blow-off can be increased with the addition of a control air input to the blow-off port on the vacuum module. A Ø6 mm port is available for an optional plug-in vacuum sensor for delivering a vacuum feedback signal.

Vacuum Generator Module Size 1

Description	Size 1
Vacuum Generator	**P2M1PXVA** Weight .88 oz



HMDXX1



FMD04-1 **CMD04-1** **FMD07-1B** **CMD07-1B**

Pneumatic Connectors for Size 1 Vacuum Generator Modules

		Elbow Version		Straight Version	
		Weight (oz)	Order Code	Weight (oz)	Order Code
Tube Push-in Connector	5/32" = 4mm OD	0.18	**CMD04-1**	0.07	**FMD04-1**
	6mm OD	0.18	CMD06-1	0.11	**FMD06-1**
	1/4" OD	0.18	**CMD07-1B**	0.11	**FMD07-1B**
Muffler for Exhaust Port	—	—	—	0.11	**MMDVA1**
Double Male Union (For Peripheral Valve Modules)	—	—	—	0.21	**HMDXX1**

Note: 85 Durometer minimum for pneumatic connectors.

Vacuum Generator Module Model Number Index

P2M1PXVA **F7** **A** **F7** **C** **MA**

Basic Configuration	
Basic Unit	**P2M1PXVA**

#1 Pressure Port	
5/32" (4mm) Elbow	**C4**
6mm Elbow	C6
1/4" Elbow	**C7**
Joint Fitting	**JJ**
5/32" (4mm) Straight	**F4**
6mm Straight	F6
1/4" Straight	**F7**

Port #1 Configuration	
Fitting in Pressure Port and Blow-off Port	**A**
Fitting in Pressure Port and Blow-off Port Plugged*	B

* Can Not be directly mounting to valve.

#3 Exhaust Port	
C4	**5/32" (4mm) Elbow**
C6	6mm Elbow
C7	**1/4" Elbow**
F4	**5/32" (4mm) Straight**
F6	6mm Straight
F7	**1/4" Straight**
MA	**Muffler**

#2 Sensor Port	
A	6mm Plug
B	**Plug**
C	Sensor, PNP, M8
D	Sensor, NPN, M8
K	1/4" Straight
L	1/4" Elbow
M	6mm Elbow

#2 Vacuum Port	
C4	**5/32" (4mm) Elbow**
C6	6mm Elbow
C7	**1/4" Elbow**
F4	**5/32" (4mm) Straight**
F6	6mm Straight
F7	**1/4" Straight**

BOLD OPTIONS ARE MOST POPULAR.

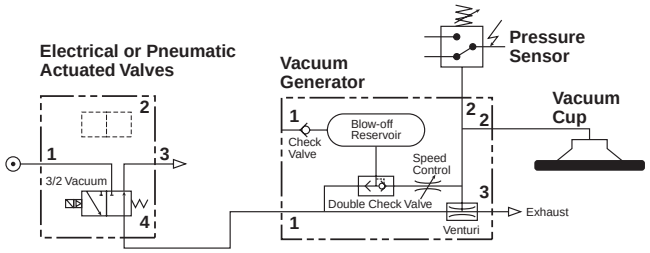
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Vacuum Generator Applications



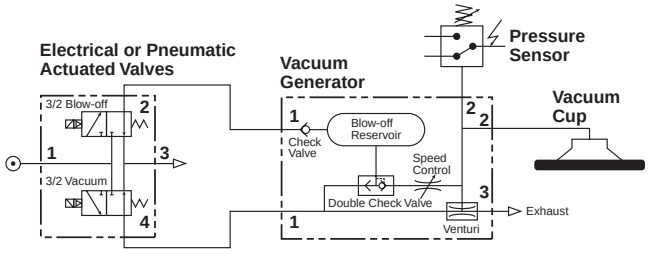
Single 3/2 NC Air Control Valve

The 3/2 valve delivers the air supply to generate vacuum through the venturi. It also pressurizes the integrated blow-off chamber. When the 3/2 valve cuts-off the air supply, this chamber is automatically exhausted into the vacuum channel in order to speed-up the part release. In this type of application, it is preferred to have the vacuum generator mounted away from the control valve.



Dual 3/2 3/2 Valve Control

One 3/2 valve controls air supply for vacuum. The other 3/2 valve will generate an additional blow-off that may prove necessary to obtain quick part release from large vacuum pads. The effect of the blow-off can be controlled with an adjustable screw. In this type of circuit, the Vacuum Generator can be mounted directly to the valve by using Double Male Unions or as a stand alone item away from the control valve.



MPS-6 Sensor Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	6mm Tube Stud	PNP Sourcing	4 Pin, M8	**MPS-V6T-PC***
		NPN Sinking		**MPS-V6T-NC***

* If ordering the sensor separate from the vacuum module, install a 6mm straight fitting in #2 sensor port for direct mounting.

Sensor Cable Part Numbers

Item	Connector	Contacts	Length	Cover
CB-M8-4P-2M	M8 Female	4	2m	PVC
CB-M8-4P-5M	M8 Female	4	5m	PUR

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**30**
P2M1PXVA	0.84	0.76	0.67	0.55	0.42	0.30	0.18	0.06	—	—	—

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure	Air Consumption	Evacuation Time in sec / ft³ * to reach different Vacuum Levels (inHg)								
	PSI	**SCFM**	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**27**
P2M1PXVA	70	1.60	5.6	14.2	22.0	42.4	62.3	85.0	116	198	—

* 1 ft³ = 28.31 liters

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Intermediate Supply Module Model Number Index

BOLD OPTIONS ARE MOST POPULAR.

P2M2BX V 0 4 F9 MM

Intermediate Supply Module	
Basic Unit	P2M2BX

Valve Type	
Individually Wired	T
Valvetronic Interconnect	V

Wiring Style	
No Cable	0

Plate Configuration	
#1 & #3 Blocked	1
#1 Open & #3 Blocked	2
#1 Blocked & #3 Open	3
#1 & #3 Open	4

Exhaust Port Type (#3 Exhaust)*	
C0	10mm Elbow Fitting
C2	12mm Elbow Fitting
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8	8mm Elbow Fitting
C9	**3/8" Elbow Fitting**
F0	10mm Elbow Fitting
F2	12mm Elbow Fitting
F3	**1/2" Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8	8mm Straight Fitting
F9	**3/8" Straight Fitting**
MM	**Clip-In Muffler**
PP	**Clip-In Plug**

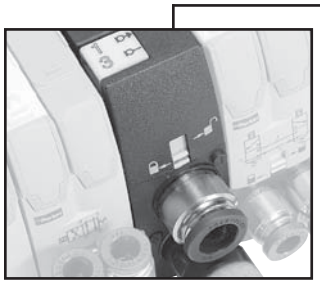
* Elbow Fittings Face Up.

Inlet Port Type (#1 Pressure)*	
C0	10mm Elbow Fitting
C2	12mm Elbow Fitting
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8	8mm Elbow Fitting
C9	**3/8" Elbow Fitting**
F0	10mm Elbow Fitting
F2	12mm Elbow Fitting
F3	**1/2" Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8	8mm Straight Fitting
F9	**3/8" Straight Fitting**
MM	**Clip-In Muffler**
PP	**Clip-In Plug**

* Elbow Fittings Face Up.

Plate Configuration





#1 & #3 Blocked

#1 Port connected to valves on the right only. Left is blocked.

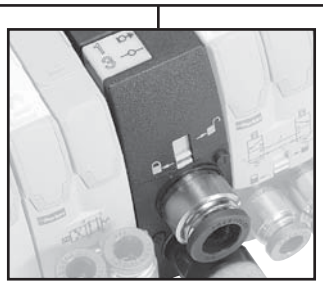
#3 Port connected to valves on the right only. Left is blocked.



#1 Open, #3 Blocked

#1 Port connected to valves on the right and the left.

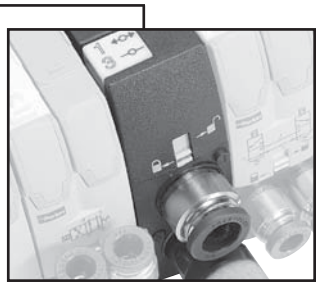
#3 Port connected to valves on the right only. Left is blocked.



#1 Blocked, #3 Open

#1 Port connected to valves on the right only. Left is blocked.

#3 Port connected to valves on the right and the left.



#1 & #3 Open

#1 Port connected to valves on the right and the left.

3 Port connected to valves on the right and the left.

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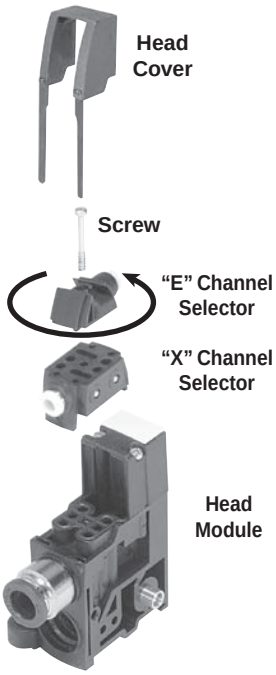
Internal and External Pilot Supply Options

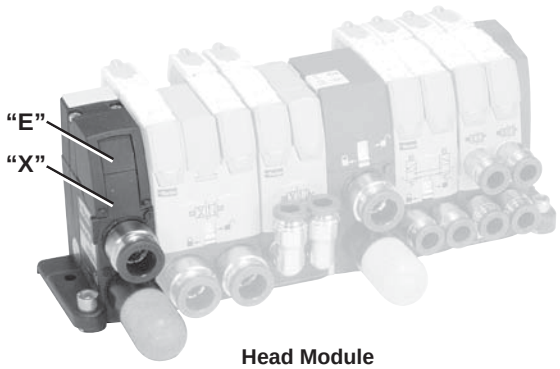
All T and V Series Valves subbases incorporate an auxiliary channel **"X"** to supply pressure to the solenoid pilots. The **"X"** galley is pressurized from the head module. Depending on the configuration of the head module, this pressure is either supplied from the #1 port in the head module or supplied externally through a 4mm OD tube fitting in the head module. This fitting is supplied in all head modules and can be converted in the field.

Internal and External Solenoid Pilot Exhaust Options

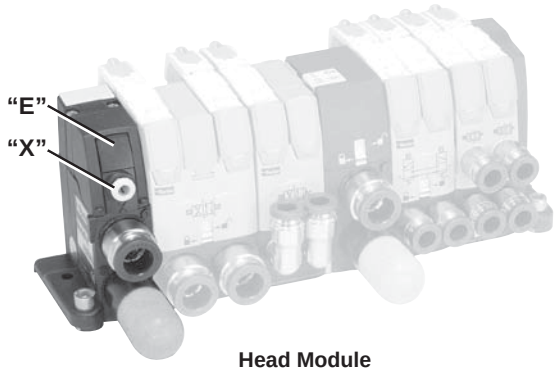
All T and V Series Valves subbases incorporate an auxiliary channel **"E"** which is used to exhaust the solenoid pilot pressure from each solenoid valve. The **"E"** galley is connected to the head module. Depending on the configuration of the head module, this exhaust is either connected to the #3 exhaust port or is connected to a 4mm OD Tube fitting in the head module. This fitting is supplied in all head modules and can be converted in the field.

To configure the head module, with pressure off, remove head cover to expose the selector section. Loosen selector section and rotate **"X"** or **"E"** channel selector to desired position. Tighten selector section and assemble head cover.

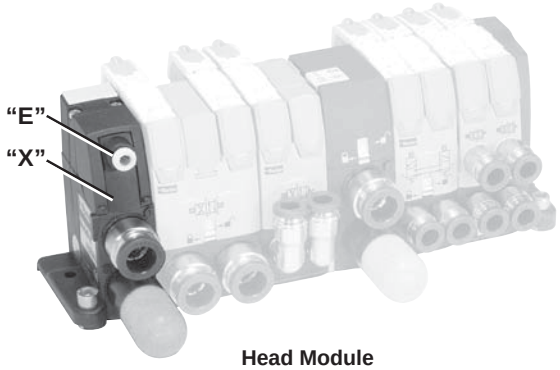




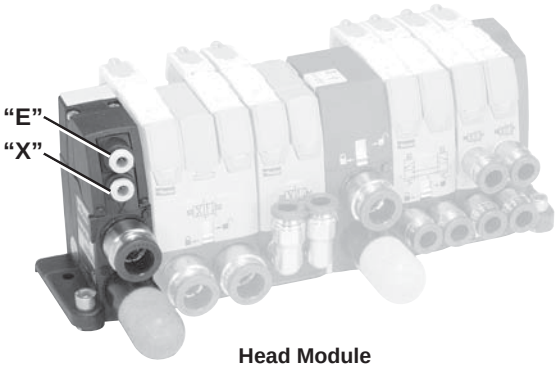
Head Module
"E" Channel Internal Exhaust
"X" Channel Internal Pilot



Head Module
"E" Channel Internal Exhaust
"X" Channel External Pilot



Head Module
"E" Channel External Exhaust
"X" Channel Internal Pilot



Head Module
"E" Channel External Exhaust
"X" Channel External Pilot

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Moduflex Island Assembly Model Number Index

Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

BOLD OPTIONS ARE MOST POPULAR.

P2MA	V	0	1	C9	C9	##

Moduflex Island Assembly	
Island Assembly	**P2MA***

* Includes pneumatic H & T module set.

Style	
Individually Wired	**T**
Valvetronic Interconnect	**V***

* Includes 20-Pin multi-connector or 25-Pin, D-Sub electrical head module.

Wiring / Bus Protocol	
No Cable (20-Pin Multi-Connector T Series)	**0**
2 Meter Cable (20-Pin)	**2**
5 Meter Cable (20-Pin)	5
9 Meter Cable (20-Pin)	9
Bus	**B***
No Cable (25-Pin, D-Sub)	**D**
3 Meter Cable (25-Pin, D-Sub)	**F**

* Order Bus module as a separate line item.
† Default to option "0" for T Series.

Pilot Source	
Internal Supply / Internal Exhaust	**1**
Internal Supply / External Exhaust	2
External Supply / Internal Exhaust	3
External Supply / External Exhaust	4

Number of Stations†	
01 - 19*	**V-Type**
01 - 30	**T-Type**

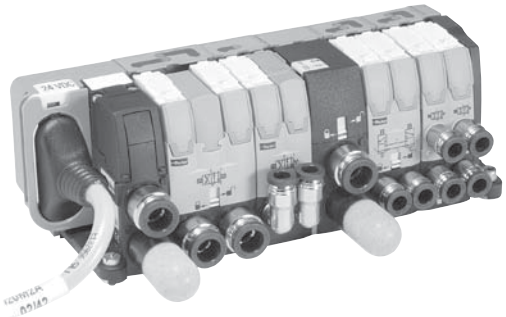
* Max. Number of Addresses for V type is 19. Single Solenoid Valves equal one address. Double Solenoid Valves equal two addresses. Maximum address may depend upon choice of bus protocol.
† Intermediate Modules are considered Stations, but do not count against maximum number of addresses for manifold.

Exhaust Port Type (#3 Exhaust)*	
C0	10mm Elbow Fitting
C2	12mm Elbow Fitting
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8	8mm Elbow Fitting
C9	**3/8" Elbow Fitting**
F0	10mm Elbow Fitting
F2	12mm Elbow Fitting
F3	**1/2" Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8	8mm Straight Fitting
F9	**3/8" Straight Fitting**
MM	**Clip-In Muffler**
PP	**Clip-In Plug**

* Elbow Fittings Face Up.

Inlet Port Type (#1 Pressure)*	
C0	10mm Elbow Fitting
C2	12mm Elbow Fitting
C6	6mm Elbow Fitting
C7	**1/4" Elbow Fitting**
C8	8mm Elbow Fitting
C9	**3/8" Elbow Fitting**
F0	10mm Elbow Fitting
F2	12mm Elbow Fitting
F3	**1/2" Straight Fitting**
F6	6mm Straight Fitting
F7	**1/4" Straight Fitting**
F8	8mm Straight Fitting
F9	**3/8" Straight Fitting**
MM	**Clip-In Muffler**
PP	**Clip-In Plug**

* Elbow Fittings Face Up.



"V" Series with 20-Pin Connector



"V" Series with Field Bus Connection

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Example:

Application requires V Series valves with 20-Pin, D-Sub and 2 Meter cable. Manifold to include (1) Size 2, 4/2 Double Solenoid Valve - 3/8" OD fitting, (1) Size 1, 4/2 Single Solenoid Valve - 1/4" OD Elbow Fitting, Intermediate Module - 3/8" OD Fitting with Exhaust Muffler, Port 1 and 3 Blocked, (1) Size 1, Dual 3/2 NC Valve and (1) Size 1, 4-Way Double Solenoid Valve both with 1/4" OD Straight Fittings. Includes 3/8 OD Inlet Fitting and Exhaust Muffler.

How to Order Complete Manifold Assembly

Line Item	Quantity	Part Number	Description
1	1	P2MAV21F9MM05	Moduflex Island Assembly, Pneumatic Head and Tail Module Set, Internal Pilot Supply, Internal Pilot Exhaust, 3/8" Straight Fitting Port 1, Port 3 Muffler.
2	1	P2M2V4EE2CV00F9	Size 2, Double Solenoid, 4/2, 3/8" Straight Pneumatic Connectors.
3	1	P2M1V4ES2CV00C7	Size 1, Single Solenoid, 1/4" Elbow Pneumatic Connectors.
4	1	P2M2BXV0A1F9MM	Intermediate Module 3/8" Straight Fitting with Exhaust Muffler
5	1	P2M1VDEE2CV00C7	Size 1, Dual 3/2 NC + NC, 1/4" Elbow Pneumatic Connectors.
6	2	P2M1VJEE2CV00F7	Size 1, Dual 4/2, 1/4" Straight Pneumatic Connectors.

How to Order Components

Line Item	Quantity	Part Number	Description
1	1	P2M2HXT01	Pneumatic Head and Tail Module Set
2	1	P2M2HEV0A	20-Pin, Multi-Connector Electrical Head Module
3	1	P8LMH20M2A	2 Meter, 20-Pin Cable
4	1	P2M2V4EE2CV	Size 2, V Series Island Valve Module, Double Solenoid, 4-Way
5	1	P2M1V4ES2CV	Size 1, V Series Island Valve Module, Single Solenoid, 4-Way
6	1	P2M2BXV0A	Intermediate Module
7	1	P2M1VGEE2CV	Size 1, V Series Island Valve Module, Dual 3/2 NC + NC
8	2	P2M1VJEE2CV	Size 1, V Series Island Valve Module, Dual 4/2
9	2	CMD07-1B	Size 1, 1/4" OD Tube Elbow Push-in Connector
10	6	FMD07-1B	Size 1, 1/4" OD Tube Straight Push-in Connector
11	4	FMD09-2B	Size 2, 3/8" OD Tube Straight Push-in Connector
12	2	MMDVA2	Clip-on Muffler

Example:

Application requires V Series valves with DeviceNet Communications Module. Manifold to include (1) Size 2, 4/2 Double Solenoid Valve - 3/8" OD fitting, (1) Size 1, 4/2 Single Solenoid Valve - 1/4" OD Elbow Fitting, Intermediate Module - 3/8" OD fitting with Exhaust Muffler, Port 1 and 3 Blocked, (1) Size 1, Dual 3/2 NC Valve and (1) Size 1, 4-Way Double Solenoid Valve both with 1/4" OD Straight Fittings. Include 3/8 OD Inlet Fitting and Exhaust Muffler.

How to Order Complete Manifold Assembly

Line Item	Quantity	Part Number	Description
1	1	P2MAVB1F9MM05	Moduflex Island Assembly, Pneumatic Head and Tail Module Set, Internal Pilot Supply, Internal Pilot Exhaust, 3/8" Straight Fitting Port 1, Port 3 Muffler.
2	1	P2M2HBVD11600	DeviceNet Module
3	1	P2M2V4EE2CV00F9	Size 2, Double Solenoid, 4/2, 3/8" Straight Pneumatic Connectors.
4	1	P2M1V4ES2CV00C7	Size 1, Single Solenoid, 1/4" Elbow Pneumatic Connectors.
5	1	P2M2BXV0A1F9MM	Intermediate Module 3/8" Straight Fitting with Exhaust Muffler
6	1	P2M1VDEE2CV00C7	Size 1, Dual 3/2 NC + NC, 1/4" Elbow Pneumatic Connectors.
7	2	P2M1VJEE2CV00F7	Size 1, Dual 4/2, 1/4" Straight Pneumatic Connectors.

How to Order Components

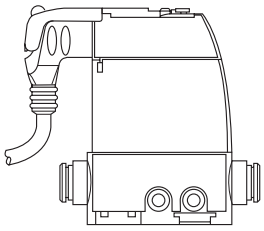
Line Item	Quantity	Part Number	Description
1	1	P2M2HXT01	Pneumatic Head and Tail Module Set
2	1	P2M2HBVD11600	DeviceNet Module
3	1	P2M2V4EE2CV	Size 2, V Series Island Valve Module, Double Solenoid, 4-Way
4	1	P2M1V4ES2CV	Size 1, V Series Island Valve Module, Single Solenoid, 4-Way
5	1	P2M2BXV0A	Intermediate Module
6	1	P2M1VGEE2CV	Size 1, V Series Island Valve Module, Dual 3/2 NC + NC
7	2	P2M1VJEE2CV	Size 1, V Series Island Valve Module, Dual 4/2
8	2	CMD07-1B	Size 1, 1/4" OD Tube Elbow Push-in Connector
9	6	FMD07-1B	Size 1, 1/4" OD Tube Straight Push-in Connector
10	4	FMD09-2B	Size 2, 3/8" OD Tube Straight Push-in Connector
11	2	MMDVA2	Clip-on Muffler

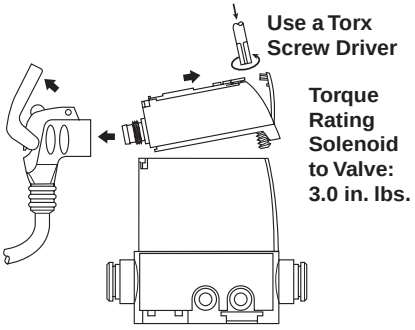
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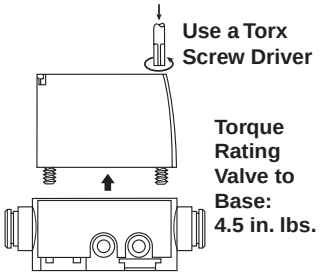
"V", "T" and "S" Series Maintenance

The latest generations of compact pneumatic valves have a life expectancy which generally exceeds the equipment they control. Therefore, maintenance is seldom required. When it is necessary to change the solenoid pilot, valve or connector, they can be easily replaced without removing the island base, as shown below.

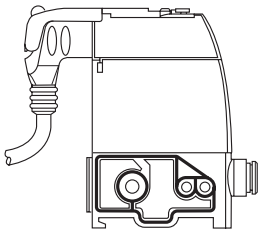
"S" Series

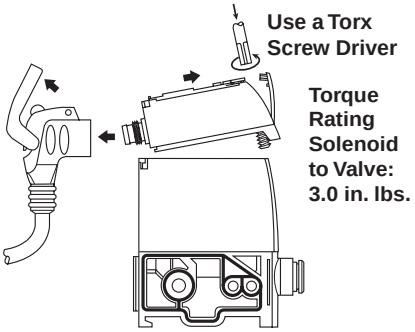


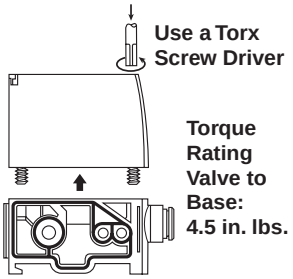




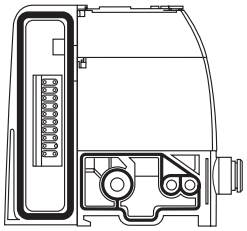
"T" Series

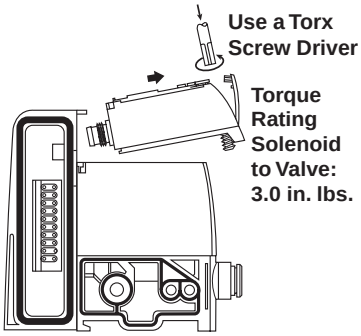


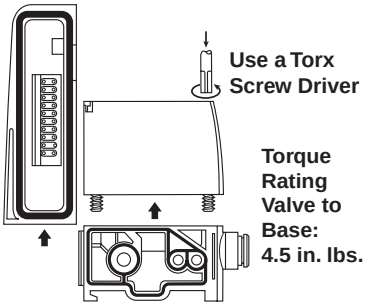




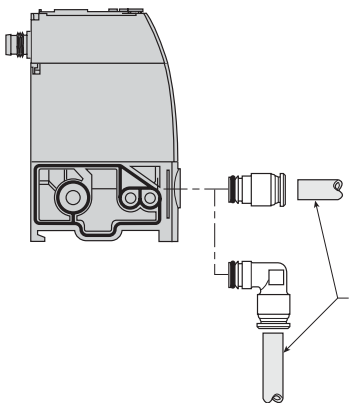
"V" Series







Fitting and Tubing Installation



Fitting Assembly: Pneumatic Connectors are retained by a clip in each module. Assembly is achieved by pushing the fitting into the module and sliding the clip down over the groove in the fitting. Pull fitting to check that it is secure.

Tubing Assembly: Cut tubing squarely & cleanly. Inspect the tubing to insure there are no sharp edges that may nick or cut the o-ring seal. Insert tubing into fitting until it bottoms out. A slight pull on the tube afterwards can help verify it is properly retained / inserted.

Tubing Disassembly: When it is required to remove the tubing from the fitting push the release button in towards the fitting & remove the tubing.

Tubing Reassembly: Inspect the tubing before re-inserting it for any scoring or other damage that would affect the o-ring sealing. It is recommended that for every insertion, the tubing end be trimmed, especially if it has any scoring or damage.

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Valve Module Solenoid Pilot 24VDC

Description	Weight	Part Number
Solenoid Pilot (Without Plug-in Electrical Connector)	0.53 oz	P2D8V32C5
Air Pilot with 5/32" (4mm) Tube Fitting	0.30 oz	P2M2K0PA



P2D8V32C5



P2M2K0PA

Size 1 Valve Modules Without Solenoid Pilot and Without Subbase



P2M1X4EE

4-Way / 2-Position / Single Valve

	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	0.92 oz	P2M1X4ES
	Double Solenoid (Bistable)	0.88 oz	P2M1X4EE

4-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Solenoid Spring with Exhaust Check	0.99 oz	P2M1XJEE

3-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	0.99 oz	P2M1XDEE
	Double Solenoid NO + NO with Exhaust Check	0.99 oz	P2M1XCEE
	Double Solenoid NC + NO with Exhaust Check	0.99 oz	P2M1XEEE
	Single Solenoid NC with Exhaust Check	0.88 oz	P2M1X3ES

Size 2 Valve Modules Without Solenoid Pilot and Without Subbase



P2M2X4EE

4-Way / 2-Position / Dual Valve

	Solenoid	Weight	Part Number
	Single Solenoid (Monostable)	0.99 oz	P2M2X4ES
	Double Solenoid (Bistable)	1.06 oz	P2M2X4EE

3-Way / 2-Position / Dual Valve

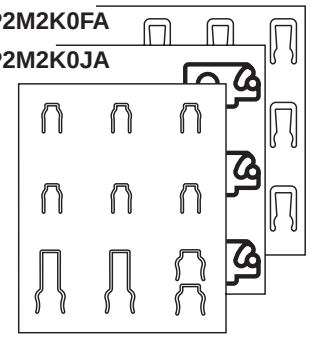
	Solenoid	Weight	Part Number
	Double Solenoid NC + NC with Exhaust Check	1.13 oz	P2M2XDEE
	Double Solenoid NO + NO with Exhaust Check	1.13 oz	P2M2XCEE
	Double Solenoid NC + NO with Exhaust Check	1.13 oz	P2M2XEEE
	Single Solenoid NC with Exhaust Check	0.99 oz	P2M2X3ES

Set of Maintenance Parts

Description		Part Number
Clips	Set of 10 Clips: 6 for Size 1 Modules, 2 for Size 2 Modules, 2 for Island Head and Intermediate Modules	**P2M2K0CA**
Seals	Set of 10 Seals: 3 for Inter Island Base Seals, 3 Under Solenoid Pilot Seals, 4 Under Valve Seals (Two Size 1 Seals, Two Size 2 Seals)	**P2M2K0JA**
Forks	Set of 10 Isolation Forks for Solenoid Pilot Manual Override	**P2M2K0FA**

P2M2K0FA

P2M2K0JA



P2M2K0CA

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Pneumatic Valve Specifications

Fluid	Air, inert gas, filtered 40µ [1], dry [2] or lubricated [3]		
Operating Pressures	Vacuum to 120 PSI		
Piloting Pressure	43 to 120 PSI for operating pressures below, use external pilot supply available on all head modules [5]		
Pilot Supply	Internal with “S” Series, mixed internal / external with “T” and “V” Series		
Exhaust Collection	All exhausts are collectable, including solenoid pilot exhaust		
Life Cycle	100 million operations [4] (with dry air, 3 Hz, 20°C, 6 bar)		
Operating Temperatures	5°F to 140°F (32°F to 130°F for field bus systems)		
Stocking Temperatures	-40°F to 155°F		
Vibration Resistance	According to IEC 68 - 2 - 6	2G	2 to 150 Hz
Impact Resistance	According to IEC 68 - 2 - 27	15G	11 ms

1. Class 5 according to ISO 8573-1
2. Class 4 according to ISO 8573-1
3. 3. With main air supply lubricated, monitor lubrication rate so that valve bank is not flooded with lubricant.
4. 4/2 valve
5. Double 3/2 minimum 50 PSI

Electrical Specifications

Rated Coil Voltage	24VDC		
Allowable Voltage Fluctuation	-15% to +10 % of nominal voltage		
Electrical Connection	Polarity insensitive: PNP and NPN compatible		
Coil insulation Type	Class B		
Power Consumption	1W (42 mA)		
Manual Override	Locking or non-locking, isolated if required		
Response Time of the Complete Valve	9.6 ms ± 1.2 on 4/2 Double Solenoid Valve Size 1 12.0 ms ± 1.2 on 4/2 Single Solenoid Valve Size 1 14.8 ms ± 2 on 4/2 Double Solenoid Valve Size 2 17.0 ms ± 2 on 4/2 Single Solenoid Valve Size 2	According to ISO 12238	
Type of Use	Continuous-duty Solenoid		
Dust and Water Protection	According to EN 60 529	“S” and “T” Series:	IP67
		“V” Series:	IP65

Specifications for 1/4", 3/8" and 1/2" Fittings

Construction

Nickel Plated Brass Body; O-ring: Nitrile (Buna N) lubricated with Silicone lubricant; Grab Ring: 301 Stainless Steel; One Piece Button Collet: Acetal – black

Recommended Parker Tubing Series:

E (Linear Low Density Polyethylene), PP (Polypropylene), N (Plasticized Polyamide,Nylon), NR (Unplasticized Polyamide, Rigid Nylon), U (Polyurethane 90 Durometer Shore A), HU (Polyurethane 95 Durometer Shore A)

Other materials: Polyurethane 85 Durometer Shore A – Applications and service conditions vary and therefore the use of a tube support may be required for any 85A PU tubing. The following commercially available O.D. – I.D. 85A tubing sizes require the use of a tube support regardless of application. (5/32" – 3/32", 3/16" – 1/8", 1/4" - .170", 1/4" – 3/16", 5/16" – 1/4", 3/8" – 5/16", 1/2" – 3/8")

Prestolok fittings should not be used for live swivel applications. Vacuum applications dependent upon temperature and type of tubing used.

Specifications for 6mm, 8mm, 10mm, 12mm Fittings

Construction

Polyamide HR Body; O-ring: Nitrile (Buna N) lubricated with Silicone lubricant; Sleeve: Nickel Plate Brass; Grab Ring: 301 Stainless Steel; One Piece Button Collet: Polyacetal – yellow

Recommended Parker Tubing Series for 6mm, 8mm, 10mm, 12mm Fittings:

E (Linear Low Density Polyethylene), N (Plasticized Polyamide, Nylon), U (Polyurethane 90 Durometer Shore A), HU (Polyurethane 95 Durometer Shore A)

Prestolok fittings should not be used for live swivel applications. Vacuum applications dependent upon temperature and type of tubing used.

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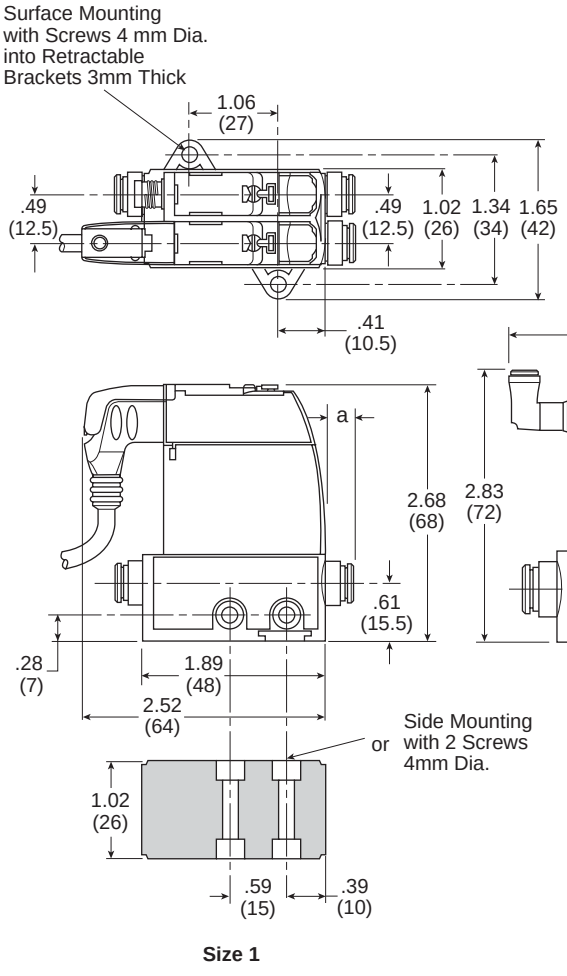
"S" Series Valve Island Dimensions and Mounting

Stand-Alone Valve Size 1

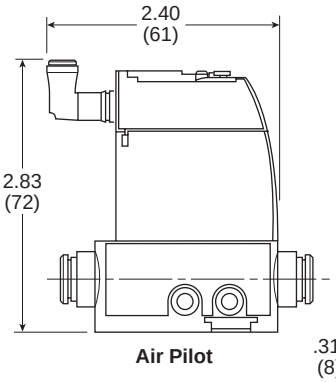


Stand-Alone Valve Size 2

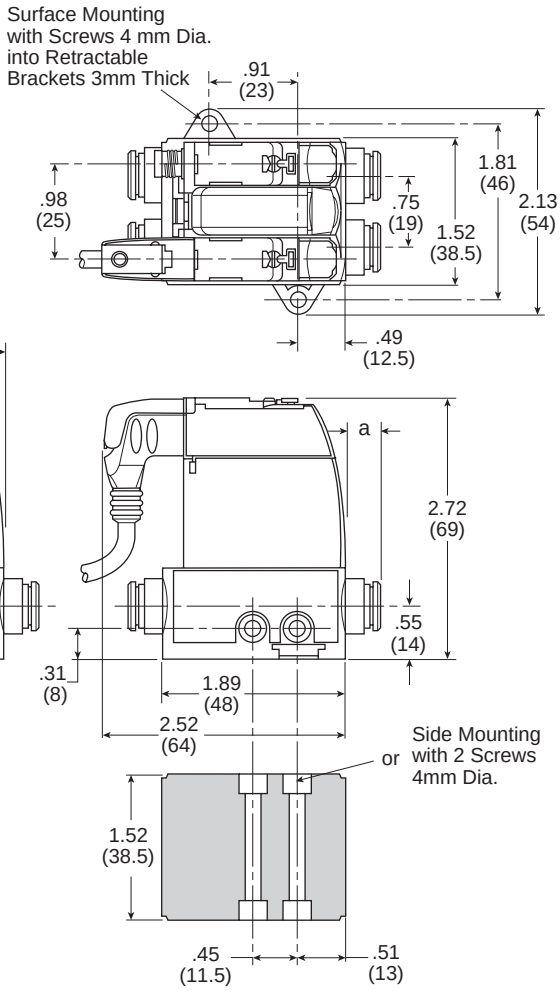




Size 1

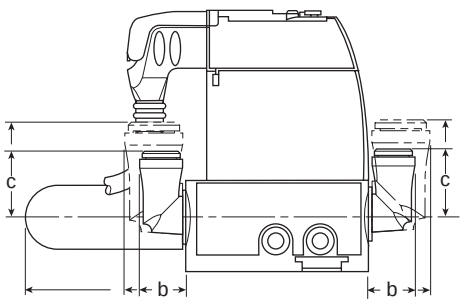


Air Pilot



Size 2

OD Tube Ext.		a	b	c
Size 1 Modules	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	15	18	22
	Muffler		31	
Size 2 Modules	1/4"	12	18	22
	8 mm	9	16	19
	3/8"	16	23	26
	10 mm	13	18	22
	Muffler		40	



Special Case: 4/3 all ports blocked. Add the dual P.O. check valve module that has been plugged in the basic valve.

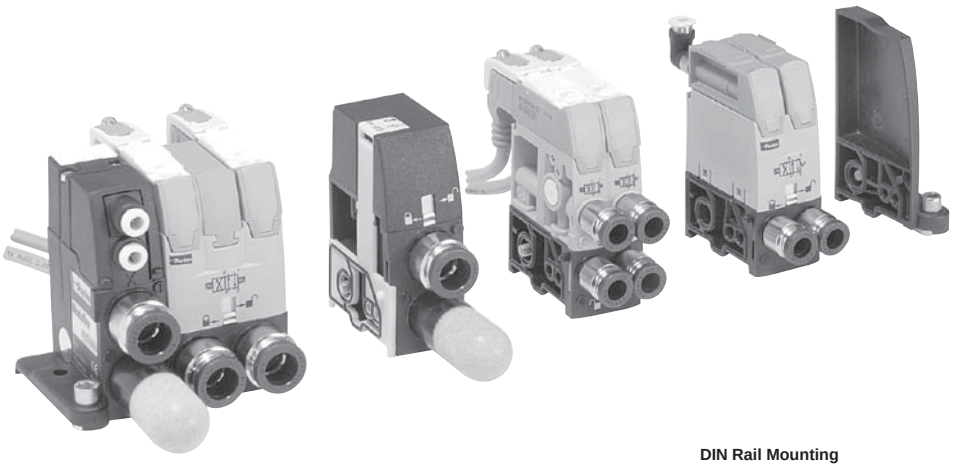
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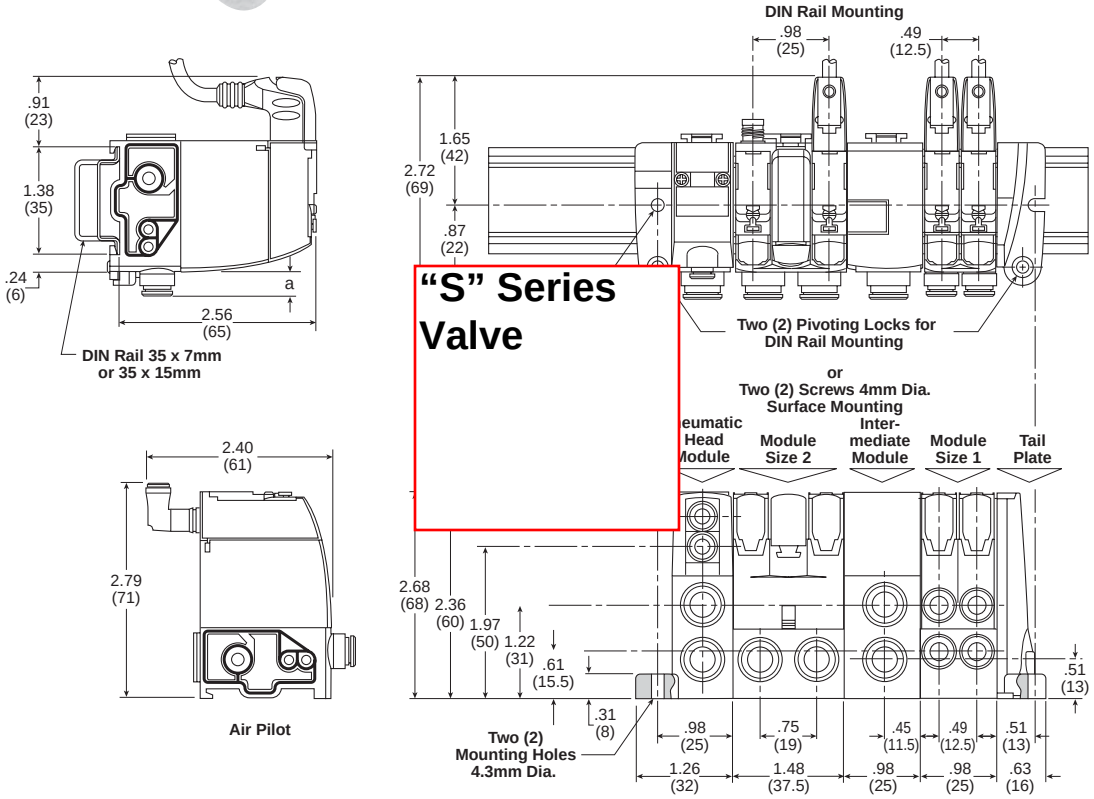
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"T" Series Valve Island Dimensions and Mounting



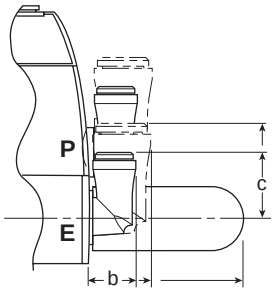
Island Total Width Depends on Valve Composition



Special Case: 4/3 all ports blocked function within island version, add the dimensions of the dual P.O. check valve module plugged into the island.

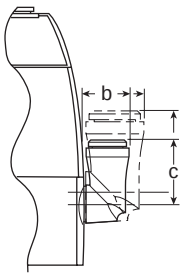
Island Head and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
1/4" Tube OD	12	18	22
8 mm Tube OD	9	16	19
3/8" Tube OD	16	23	26
10 mm Tube OD	13	18	25
12 mm Tube OD	13	19	25
1/2" Tube OD	13		
Muffler		40	



Island Valve Modules

OD Tube	Ext.	a	b	c
Size 1 Modules	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	15	18	22
Size 2 Modules	1/4"	12	18	22
	8 mm	9	16	19
	3/8"	16	23	26
	10 mm	13	18	22



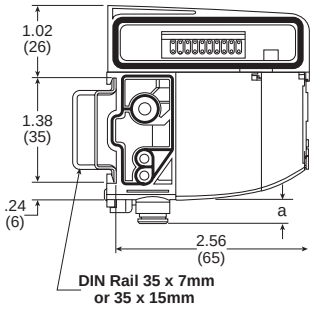
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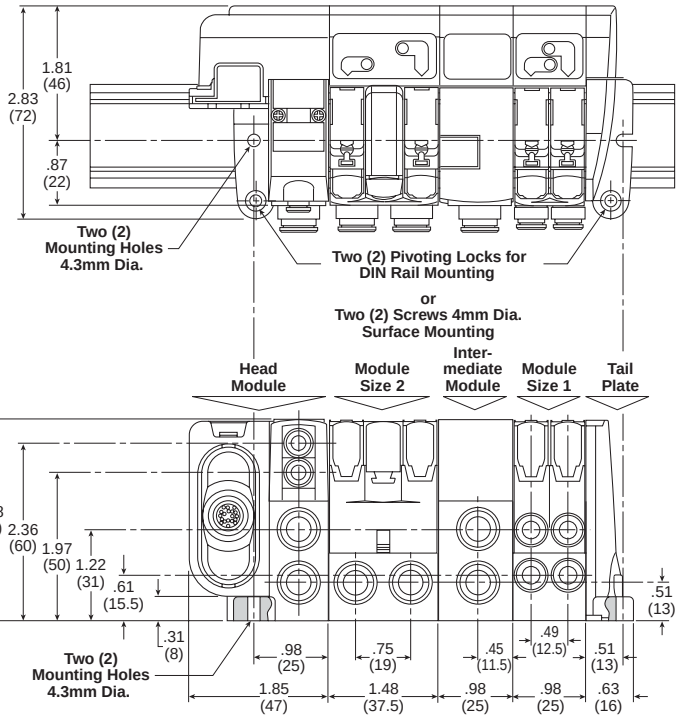
"V" Series Valve Island Dimensions and Mounting

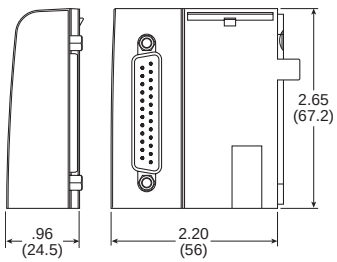
20-Pin, Multi-Connector Valve Island



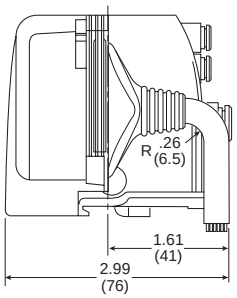
Island Total Width Depends on Valve Composition







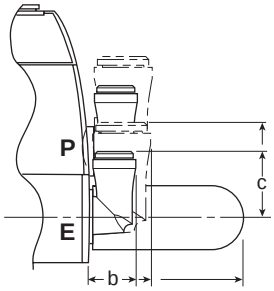
**25-Pin,
D-Sub Module**



**20-Pin,
Multi-Connector**

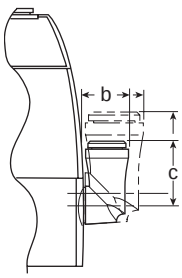
Island Head and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
1/4" Tube OD	12	18	22
8 mm Tube OD	9	16	19
3/8" Tube OD	16	23	26
10 mm Tube OD	13	18	25
12 mm Tube OD	13	19	25
1/2" Tube OD	13		
Muffler		40	



Island Valve Modules

OD Tube	Ext.	a	b	c
Size 1 Modules	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	15	18	22
Size 2 Modules	1/4"	12	18	22
	8 mm	9	16	19
	3/8"	16	23	26
	10 mm	13	18	22



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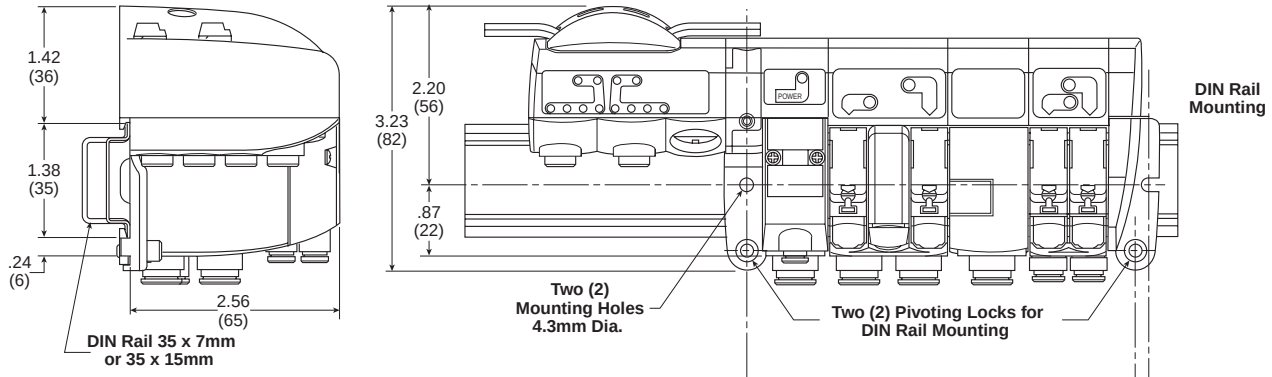
“V” Series Valve Island Dimensions and Mounting

Field Bus Connected Islands

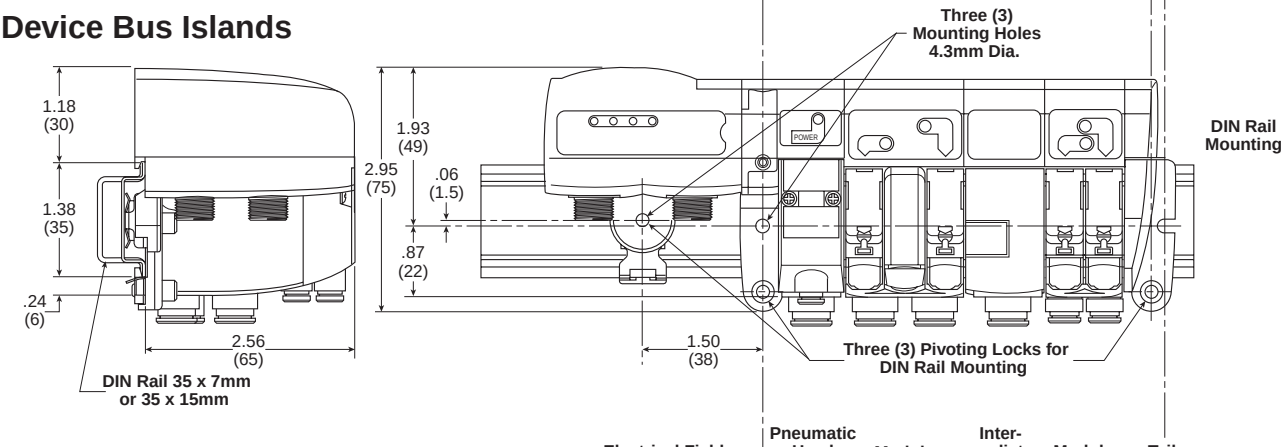


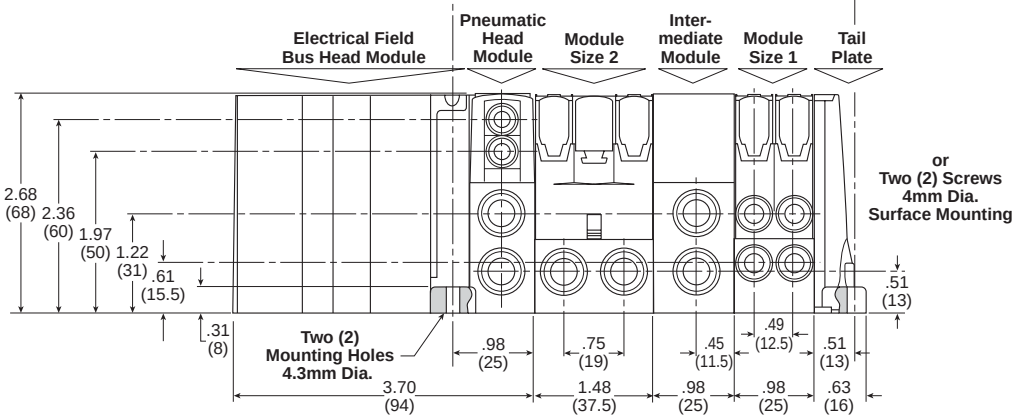
Island Total Width Depends on Valve Composition

AS-i Bus Islands



Device Bus Islands

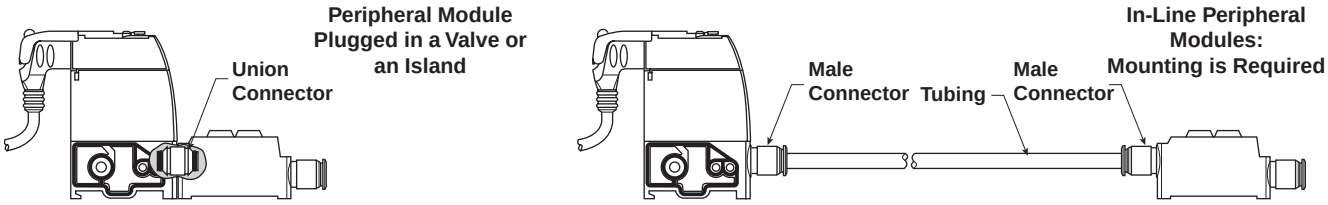




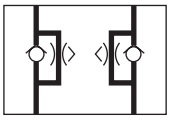
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“P” Series Peripheral Modules Dimensions and Mounting

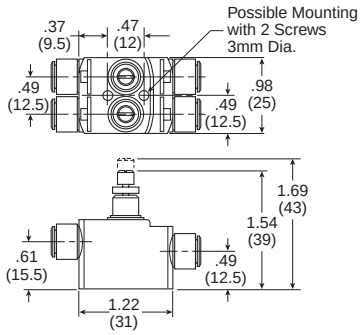
Reminder: Peripheral modules may either be plugged in the valve output ports or mounted in-line separate from the valve.



Dual Flow Control Module Size 1

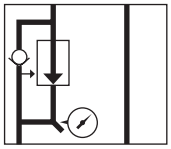






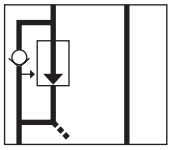
Pressure Regulation Module Size 1

With Gauge

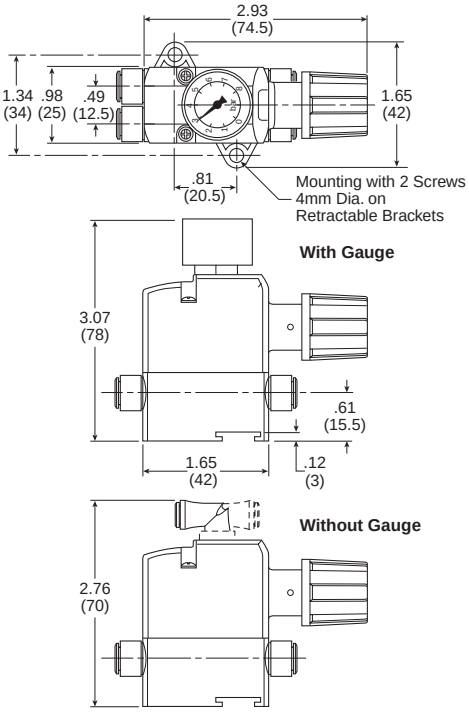




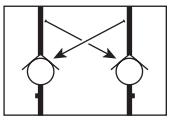
Without Gauge

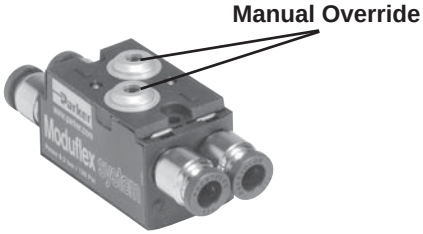


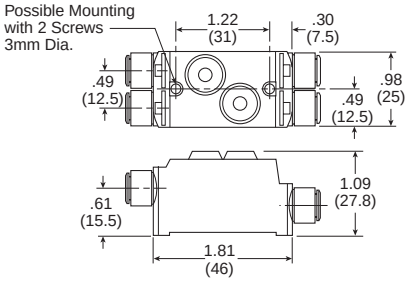




Dual P.O. Check Valve Module Size 1







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C

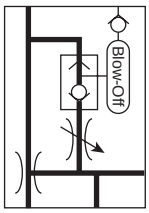
Moduflex

PVL

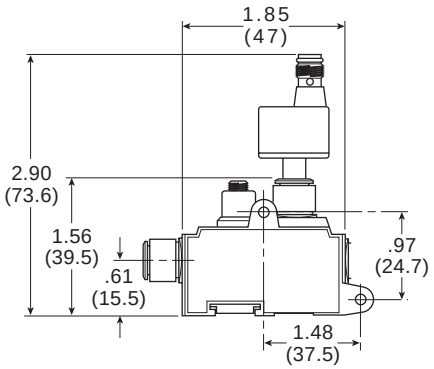
“P” Series Peripheral Modules Dimensions and Mounting

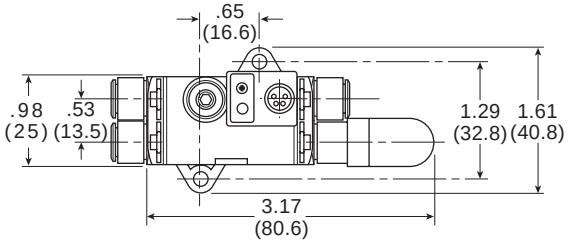
Reminder: Peripheral modules may either be plugged in the valve output ports or mounted in-line separate from the valve.

Vacuum Generator Size 1





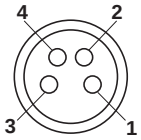




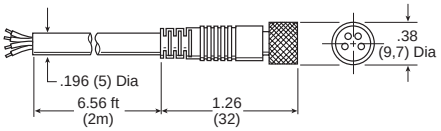
Sensor Pin Out

Pin #

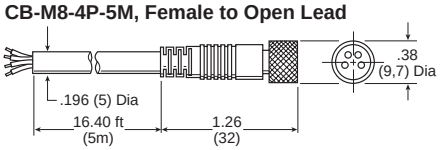
1 Brown: 24VDC
2 White: NPN / PNP Open Collector Output
3 Blue: 0VDC
4 Black: NPN / PNP Open Collector Output



CB-M8-4P-2M, Female to Open Lead



CB-M8-4P-5M, Female to Open Lead



Sensor Specifications

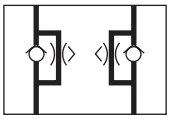
Media	Air and Non-Corrosives Gases
Proof Pressure	**(V)** 72.5 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical Connection	**(C)** 4-Pin, M8 Connector
Power Supply	10.8 to 30 VDC, Ripple Vp-p 10% max., Reverse Voltage Protection
Switch Output	1 Output Signal Open and Closed, NPN or PNP, 30VDC, 125mA
Linear Output	Analog Output 1 to 5 VDC
Switch Point Setting	2/3 Turn Trimmer
Hysteresis Setting	≤ 2% of F.S.
Output Response Time	<1ms
Repeatability	≤0.2% F.S.
Shock Resistance	100 G, XYZ
Material	**Housing:** Polycarbonate, **Pressure Port:** Zinc Die-cast
Mass	**T Port:** 0.25 oz. (7g)

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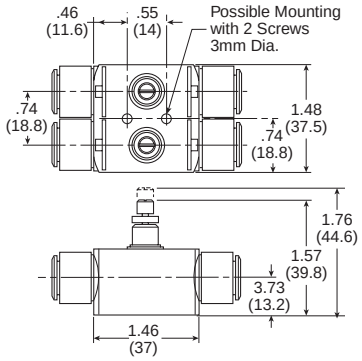
“P” Series Peripheral Modules Dimensions and Mounting

Reminder: Peripheral modules may either be plugged in the valve output ports or mounted in-line separate from the valve.

Dual Flow Control Module Size 2

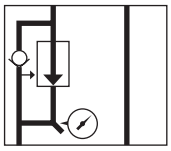




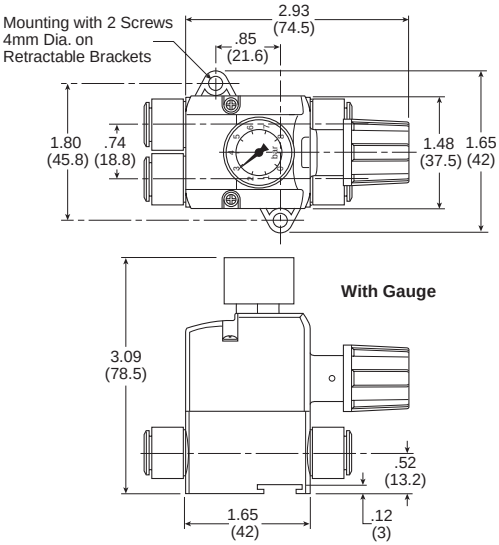


Pressure Regulation Module Size 2

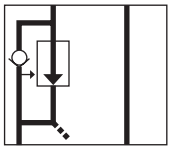
With Gauge



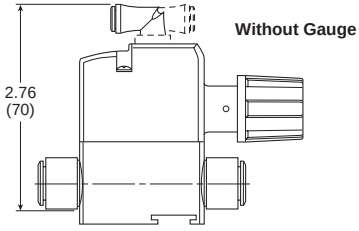




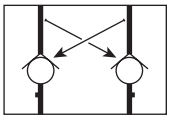
Without Gauge

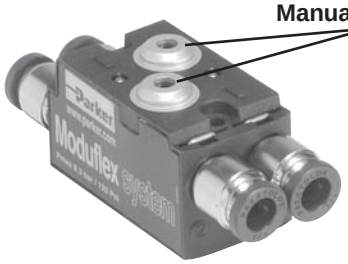


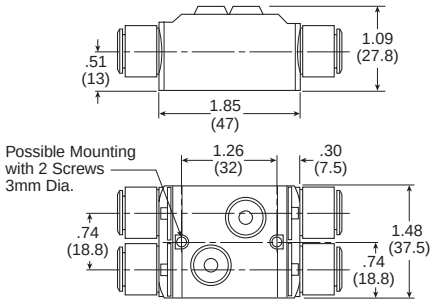




Dual P.O. Check Valve Module Size 2



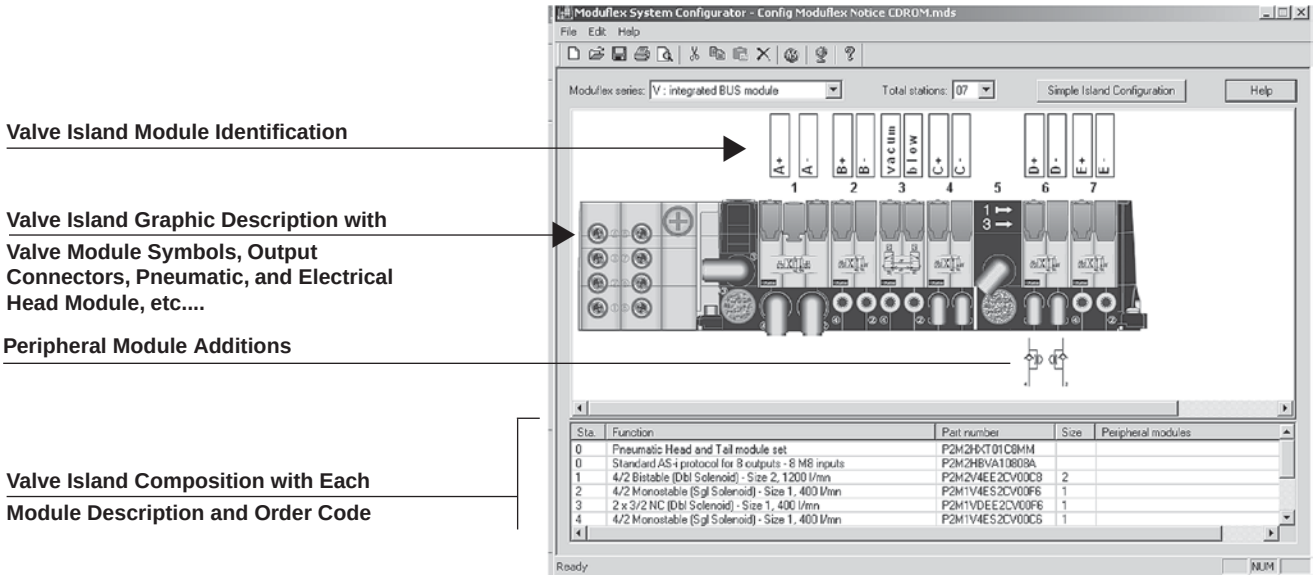




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"V" or "T" Series Valve Island Configurator CD-ROM

Use CD-ROM "Standard Valve Island" Configuration



With the Moduflex Valve Island Configurator CD-ROM, you may configure the Moduflex V or T series valve islands that a given application requires.

With the CD-ROM, once the valve island is configurated, the following items may be edited for the application:

1. Valve Island Print with Symbols and Marking

This graphic gathers all information required:

- For assembling, marking and connecting the valve island;
- For commissioning and maintaining the machine.

No additional valve circuit is necessary.

2. Report (4 pages) (1)

- Page 1 - Valve island complete modules part numbers
- Page 2 - Valve island basic modules and connectors listing
- Page 3 - Bill of material
- Page 4 - Warnings

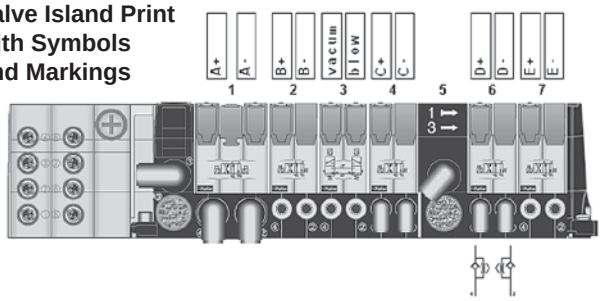
3. 2D Drawings Exported DX File

This transfer on the machine drawings enables defining the valve island mounting onto the machine.

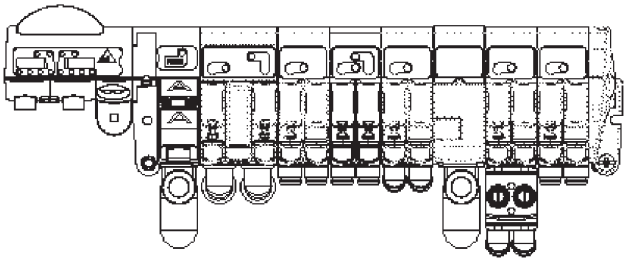
Note: 3D files (IGES, STEP and PRO-ENG) are available in the CD-ROM, for import in your CAD software of separate basic modules and connectors.

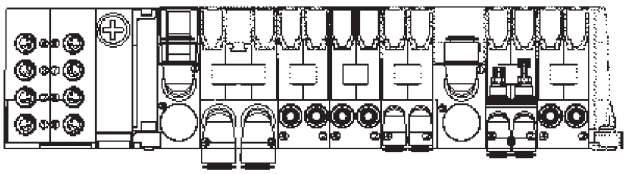
(1) If an assembled valve island is ordered, please combine this 4-page report in order.

Valve Island Print with Symbols and Markings



Valve Island 2D Drawing Exported DX File





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Ask for Your Moduflex Valve Island Configurator CD-ROM

Order Code: PDE2536CDV3.1-ev

This multi-language CD-ROM allows installation in English, French, German, Swedish, Italian and Spanish.



"S", "V", & "T" Valve CAD Configurator go to: www.parker.com/moduflex

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Notes

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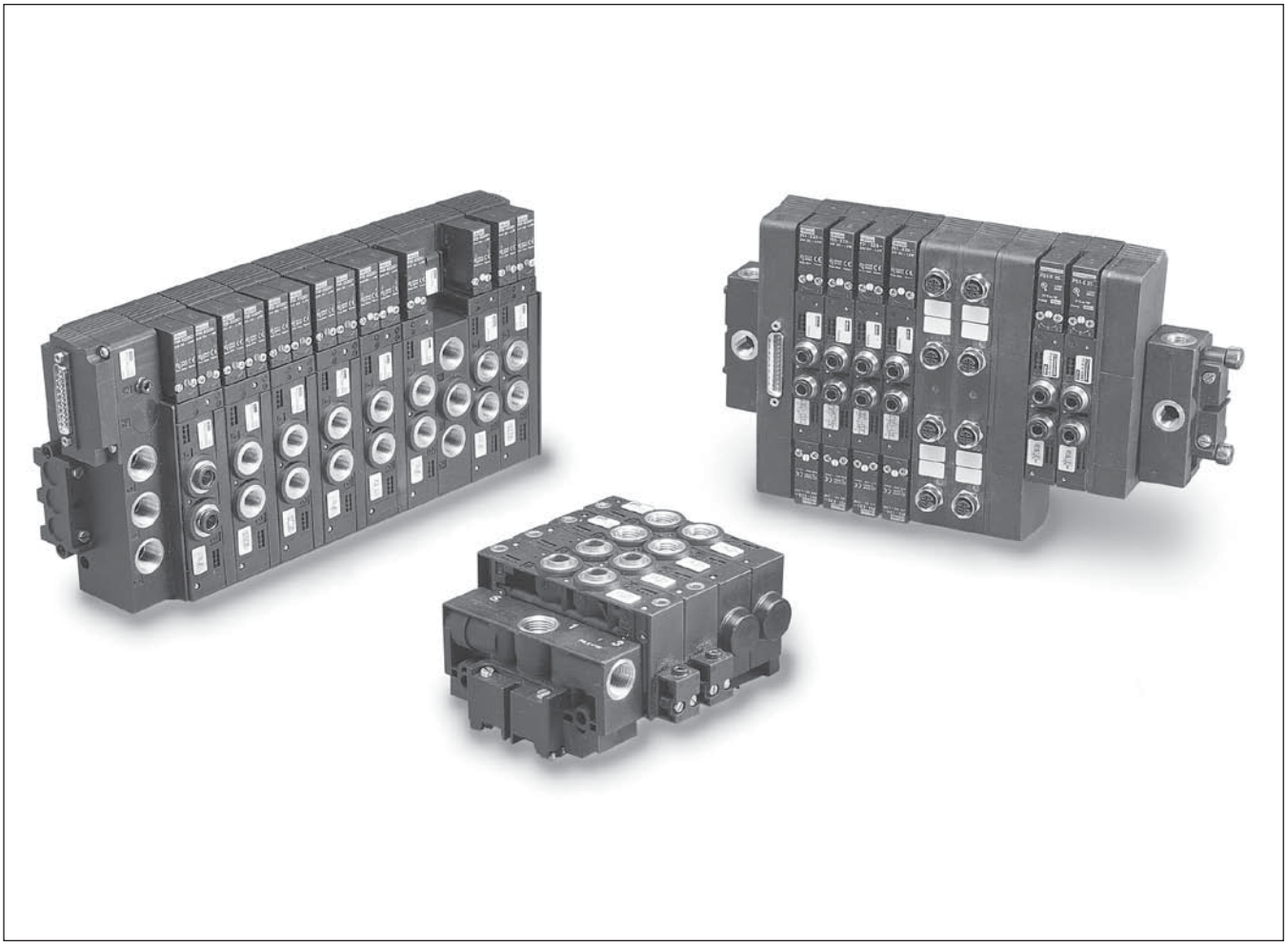
(Revised 11-29-10)

"PVL" Series

Solenoid & Remote Pilot Operated 1/8" & 1/4" Valves

Section C

www.parker.com/pneu/pvl



Basic Valve Functions C60
Stacking Applications C61-C62
Features (PVLB & PVLC) C63
Common Part Numbers-Stacking (PVLB & PVLC) C64
Accessories (PVLB & PVLC) C65
Common Part Numbers-Inline (PVLB & PVLC) C66
Solenoids, Electrical Connectors C67-C68
Features (PVLB10 & PVLC10) C69
Stacking System Overview (PVLB10 & PVLC10) C70
Electrical Connection (PVLB10 & PVLC10) C71
Common Part Numbers (PVLB10 & PVLC10) C72-C73
Ordering Information Solenoids (PVLB10 & PVLC10) C74
PVLB10 ..... C75-C76
PVLC10 ..... C77-C78
Pin Assignments (PVLB10 & PVLC10) C79
Technical Data C80-C81
Cables C82-C83
Accessories / Spare Parts C84-C85
Dimensions C86-C92

BOLD ITEMS ARE MOST POPULAR.

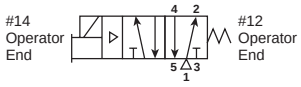
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C

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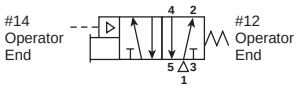
Single Solenoid
4-Way, 2-Position



De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

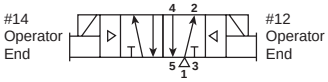
Single Remote Pilot
4-Way, 2-Position



Normal position – Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Operated position – Maintained air signal at port 14. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

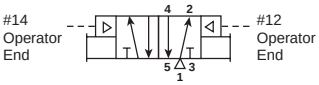
Double Solenoid
4-Way, 2-Position



Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Double Remote Pilot
4-Way, 2-Position



Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Double Solenoid
3-Position



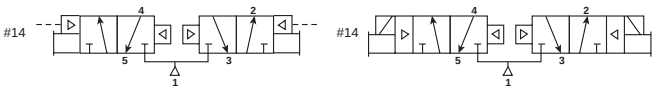
With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

All Ports Blocked
All ports blocked in the center position.

Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Double Solenoid / Remote Pilot
Dual 3-Way, 2-Position NC (NNP)



With #14 & #12 operators both de-energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

With #14 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #14 & #12 operators both energized –
pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

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Application

The PVL Series stacking system permits assembly of several valves into one manifold. Supply is connected at either a single or dual head / tail set.* Two common exhaust galleries are provided. Connections to outlet ports #2 and #4 on each valve can be accomplished by threaded pipe or instant tube fittings.

Electrical connection is made to each solenoid utilizing a 15mm, 3-Pin connector plug (PVLB & PVLC).

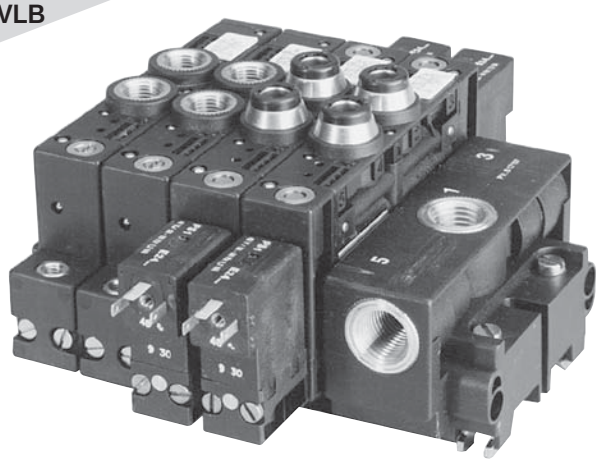
Each manifold assembly can handle any combination of the following valve types:

- Single Solenoid
- Double Solenoid
- Single Remote Pilot
- Double Remote Pilot

Two valve sizes can be combined in one manifold using a transition kit.

* For simultaneous operation of more than 5 valves, a dual head / tail set is recommended.

PVLB



Manifold shows solenoid and remote pilot valves, threaded pipe ports, instant tube fittings, and a single supply head / tail set.

Features

- Greatly reduces installation costs.
- Reduces piping and the risk of leaks.
- Consolidates controls, saves space.
- Provides custom valving arrangements with standard components.
- Improves appearance of pneumatic equipment.
- Common main supply port.
- Allows for two common exhausts which can easily be plumbed away for cleanliness.
- Indicator lights and surge suppression available.
- Designed for 35mm DIN rail mounting. May be surface mounted by removing DIN rail clips.
- Servicing valves can be accomplished quickly without disassembling the entire manifold or removing plumbing.

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Moduflex

PVL

Mounting on 35mm DIN Rail

Valve manifolds mount quickly and easily to 35mm DIN rail with the use of a pneumatic head / tail set. The dual head / tail set provides input and exhaust ports at both ends and is recommended if more than 5 valves are to be operated simultaneously.

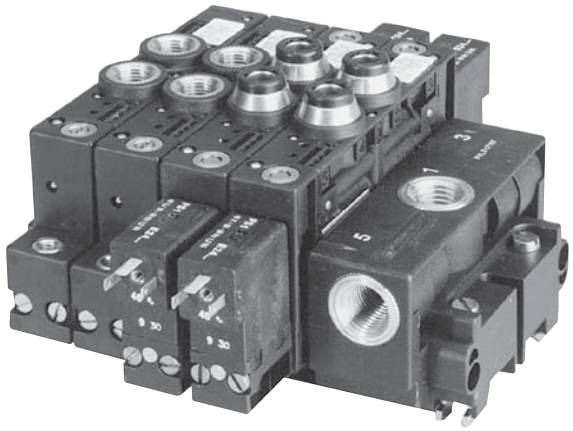
Surface Mounting

Manifolds may be surface mounted by removing the 35mm DIN mounting hardware on the pneumatic head / tail set.

Removal or Replacement

Modules are removed in reverse of the order shown at right. Before removing a module for service or replacement, loosen the *pneumatic* tail piece.

PVLB



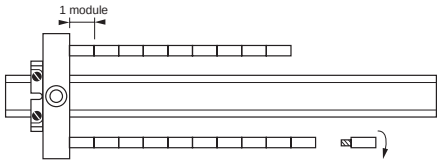
Manifold shows solenoid and remote pilot valves, threaded pipe ports, instant tube fittings, and a single supply head / tail set.

Mounting Procedure

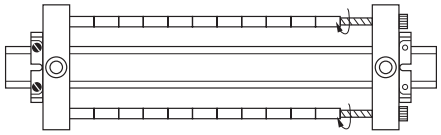
1. Clip on and tighten the pneumatic head piece.



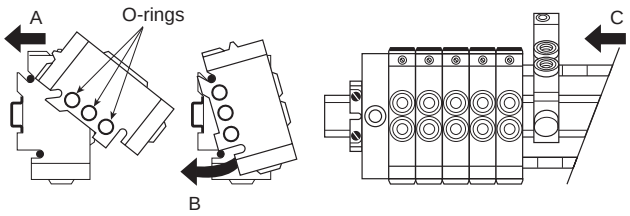
2. Assemble the two parallel mounting rods using cross rods provided with modules.



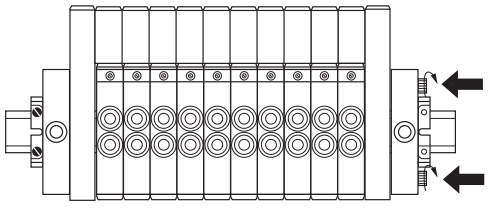
3. Clip on the pneumatic tail piece. Start screws into mounting rod but leave loose for module insertion.



4. To mount valves, position upper slot then push-lock lower slot. Mount modules (valves, modules, transition pieces, etc.) and press together.



5. Tighten the assembly.



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www.parker.com/pneumatics

"PVLB" Series
"PVLC" Series

Specifications

- 4-Way, 5-Port, 2 or 3-Position Valves
- Single & Double Solenoid
- Single & Double Remote Pilot
- Dual 3/2

PVLB - .6 Cv

- 1/8" NPT & BSPP
- 1/4" & 6mm Tube Porting

PVLC - 1.2 Cv

- 1/4" NPT & BSPP
- 3/8" & 6mm Tube Porting

Mounting Style

- Stacking Manifold Valve
- DIN Rail Mounting (35mm)

Solenoid Pilot Actuation

- Continuous Duty Rated

PVLB, PVLC

- 1.2W - 12VDC & 24VDC
- 1.6VA - 24VAC, 120VAC, 240VAC
- 3-Pin, 15mm

Manual Overrides

- Brass Locking & Non-Locking

Operating Pressure

- 30 to 150 PSI (310 to 1035 kPa)

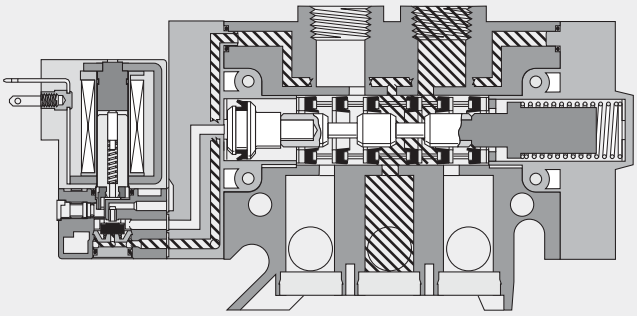
Operating Temperature

- 5°F to 140°F (-15°C to 60°C)

Certification / Approval

- Approved to be CE Marked
- UL (PVLB10 only)
- NFC 79 300

Note: DC units are polarity sensitive.



PVLB (1/8"), PVLC (1/4")
Shown De-Energized

Pressure **Exhaust**

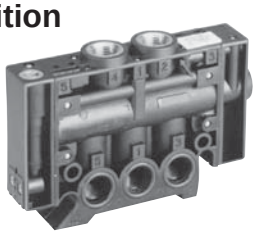
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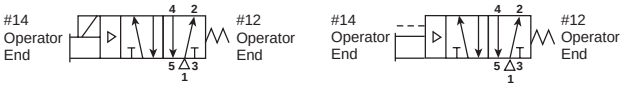
C

Moduflex

PVL

Single Solenoid / Remote Pilot
4-Way, 2-Position

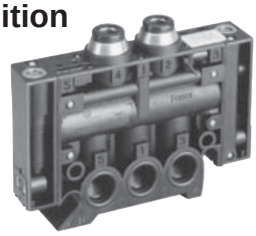


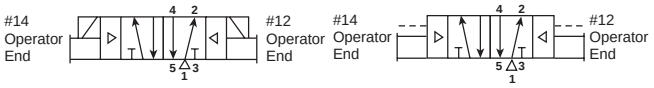


Valve Only			
PVLB	PVLB121618	1/8" BSP	0.6 Cv
	PVLB1216187	1/8" NPT	
	PVLB121606	6mm Tube	
	PVLB1216067	1/4" Tube	
PVLC	**PVLC1216197**	1/4" NPT	1.2 Cv
	PVLC1216097	3/8" Tube	

Locking Manual Override, Valve Less Solenoid.

Double Solenoid / Remote Pilot
4-Way, 2-Position

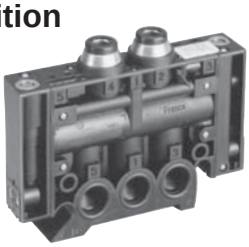




Valve Only			
PVLB	PVLB122618	1/8" BSP	0.6 Cv
	PVLB1226187	1/8" NPT	
	PVLB122606	6mm Tube	
	PVLB1226067	1/4" Tube	
PVLC	**PVLC1226197**	1/4" NPT	1.2 Cv
	PVLC1226097	3/8" Tube	

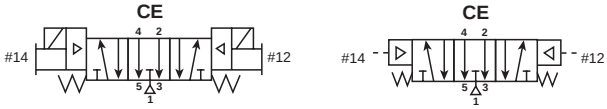
Non-Locking Manual Override, Valve Less Solenoid.

Double Solenoid / Remote Pilot
4-Way, 3-Position





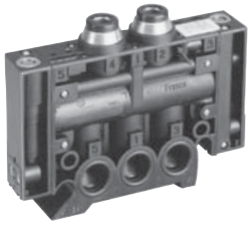
Valve Only			
PVLB	**PVLB1276187**	1/8" NPT	0.6 Cv
PVLC	**PVLC1276197**	1/4" NPT	1.2 Cv

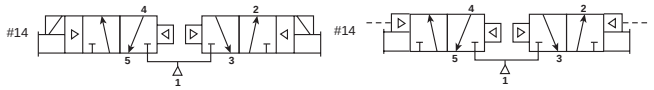


Valve Only			
PVLB	**PVLB1286187**	1/8" NPT	0.6 Cv
PVLC	**PVLC1286197**	1/4" NPT	1.2 Cv

Non-Locking Manual Override, Valve Less Solenoid.

Double Solenoid / Remote Pilot
Dual 3/2 Normally Closed





Valve Only			
PVLB	**PVLB1256187**	1/8" NPT	0.6 Cv
	PVLB1256067	1/4" Tube	
PVLC	**PVLC1256197**	1/4" NPT	1.2 Cv

Non-Locking Manual Override, Valve Less Solenoid.

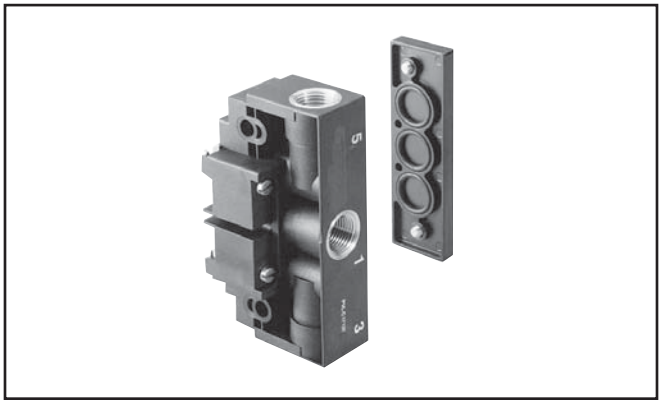
NOTES:
Solenoids or Remote Pilot Adapter must be ordered separately from page C67.

Each valve is shipped with 2 tie rods for stacking assembly.

BOLD OPTIONS ARE MOST POPULAR.

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Single Supply Head / Tail Sets



Series	Model Number	Port Size
PVL	**PVLB17197**	1/4" NPT
	PVLB1719	1/4" BSP
PVLC**	**PVLC17137**	3/8" NPT
	PVLC1713	3/8" BSP

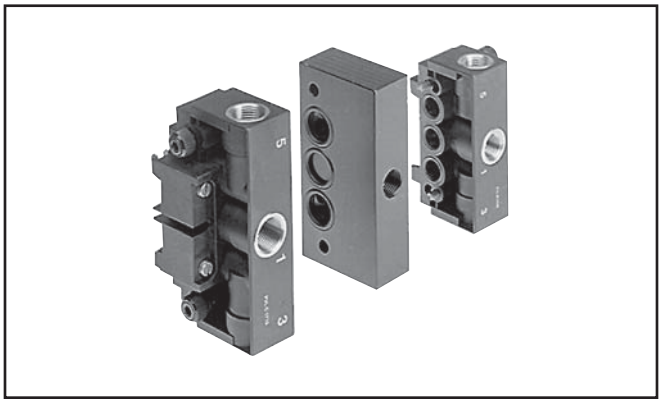
Kit includes: 1 Ported End (head) and 1 Blank End (tail) plus all necessary hardware.

* DIN rail mounting clips on both head and tail. Maximum stack length of 16 valves.

** ⚠ ***Caution:*** DIN rail mounting clips *on head piece only. Maximum stack length of 8 valves.*

Note: DIN rail mounting clips may be removed for surface mounting.

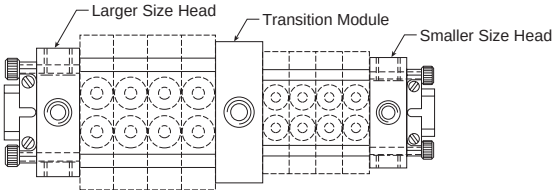
Transition Kits



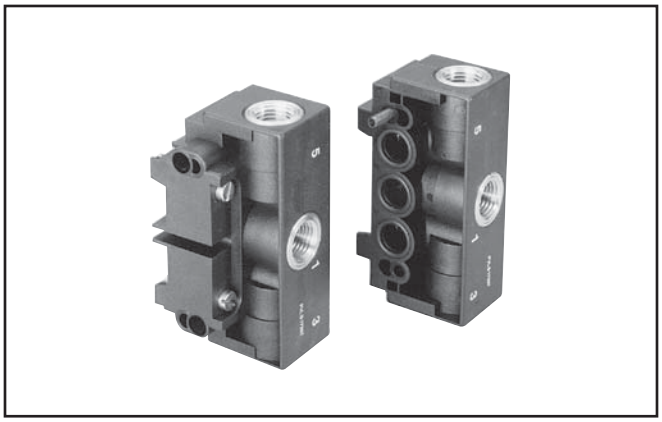
Combination	Model Number	Port Size
PVLB & PVLC	**PVULCB1197**	NPT
	PVULCB119	BSP

Kit enables valves of two different sizes to be combined in the same stack.

Kit includes: 2 Ported Heads (one for each valve size) and a Transition Module with an Auxiliary Supply Port. Maximum number of valves for each size is 16.



Dual Supply Head / Tail Sets

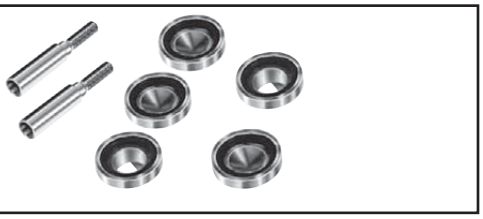


Series	Model Number	Port Size
PVLB	**PVLB17297**	1/4" NPT
	PVLB1729	1/4" BSP
PVLC	**PVLC17237**	3/8" NPT
	PVLC1723	3/8" BSP

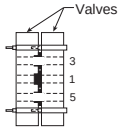
Kit includes: 2 Ported Ends (head and tail) plus all hardware.
Mounts to 35mm DIN rail at both ends.
Maximum stack length of 16 valves.

Note: DIN rail mounting clips may be removed for surface mounting.

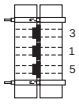
Pressure Isolation Kit



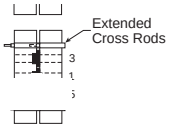
Assembly Instructions



Example 1: Two different pressures P1 and P2 can supply the same bank of power valves, the exhausts remaining common.



Example 2: Complete isolation of the commons in the same bank of power valves: main pressure and exhaust commons.



Example 3: The exhaust commons can be isolated within the same bank of power valves, while the main pressure supply remains common.

Series	Model Number	Kit includes:
PVLB	**PVLB1901**	3 isolation plugs, 2 open port plugs and 2 extended cross rods.
PVLC	**PVLC1901**	
PVLB	**PVLB1902**	10 isolation discs and 10 O-rings.
PVLC	**PVLC1902**	

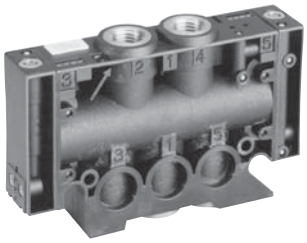
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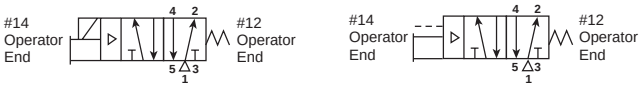
C

Moduflex

PVL

Single Solenoid / Remote Pilot
4-Way, 2-Position

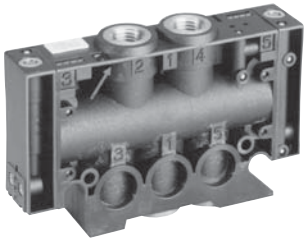


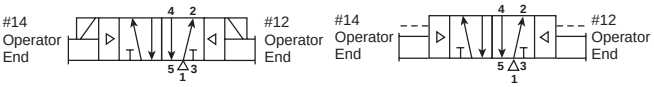


Valve Only			
PVLB	PVLB111618	1/8" BSP	0.6 Cv
	PVLB1116187	1/8" NPT	
	PVLB1116067	1/4" Tube	
PVLC	**PVLC1116197**	1/4" NPT	1.2 Cv
	PVLC1116097	3/8" Tube	

Solenoids or Remote Pilot Adapter must be ordered separately from page C67.

Double Solenoid / Remote Pilot
4-Way, 2-Position





Valve Only			
PVLB	PVLB112618	1/8" BSP	0.6 Cv
	PVLB1126187	1/8" NPT	
	PVLB1126067	1/4" Tube	
PVLC	**PVLC1126197**	1/4" NPT	1.2 Cv
	PVLC1126097	3/8" Tube	

Solenoids or Remote Pilot Adapter must be ordered separately from page C67.

NOTE: BOLD OPTIONS ARE MOST POPULAR.

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PVLB & PVLC 3-Pin,
15mm Solenoids, Non-Locking, Flush Override (w/o electrical connectors)

Voltage	8mm Pin Spacing Kit Number	8mm Pin Spacing Solenoid	Power Consumption
12VDC	**PS2982B45P**	**P2E-KV32B1**	1.2W
24VDC	**PS2982B49P**	**P2E-KV32C1**	1.2W
24V-50/60Hz	**PS2982B42P**	**P2E-KV31C1**	1.6VA
120V/60Hz	**PS2982B53P**	**P2E-KV31F1**	1.6VA
240V/60Hz	**PS2982B57P**	**P2E-KV31J1**	1.6VA

Notes:
Kit includes: solenoid, (2) machine screws, (2) self threading screws, (1) gasket,
(1) 3-cell gasket.

Electrical connectors must be ordered separately from the chart shown on page C68.



Remote Pilot Connectors
PVLB (1/8") & PVLC (1/4") Valves

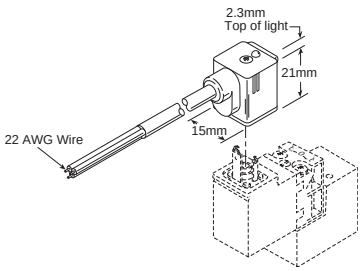
Model Number	Port Fitting
PVAP111	**5/32" Tube**
PVAP115	**10-32 UNF (M5)**

Supplied with two screws to quickly mate with the valve body.



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Female Electrical Connectors
15mm 3-Pin DIN 43650C - 8mm



**Molded 6'
Cord Shown**

Connector	Connector with Cord	Description
PS2932BP	PS2932HBP 18 Inches	Unlighted
PS2932BP	PS2932JBP 6 Feet	Unlighted
PS294675BP	PS2946J75BP* 6 Feet	Light – 12VAC or DC
PS294679BP	PS2946J79BP* 6 Feet	Light – 24VAC or DC
PS294683BP	PS2946J83BP* 6 Feet	Light – 110/120VAC
PS294687BP	N/A	Light – 240/230VAC

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:

Conductors: 2 Poles Plus Ground
Cable Range (Connector Only): 4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm

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"PVLB10" Series
"PVLC10" Series

Specifications

- 4-Way, 5-Port, 2 or 3-Position Valves
- Single & Double Solenoid
- Dual 3/2 Valves

PVLB10 - 0.6 Cv

- 1/8" NPT & BSPP
- 1/4" & 6mm Tube Porting

PVLC10 - 1.2 Cv

- 1/4" NPT & BSPP
- 3/8" & 8mm Tube Porting

Mounting Style

- DIN Rail Mounting (35mm)
- Stacking Manifold Valve

Solenoid Pilot Actuation

- Low watt solenoid pilots: 1.2W/1.6VA
- Lights & Surge Suppression Standard
- 12VDC to 120VAC

Operating Pressure

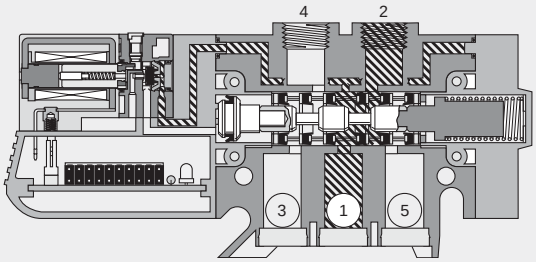
- 30 to 150 PSI (310 to 1035 kPa)

Operating Temperature

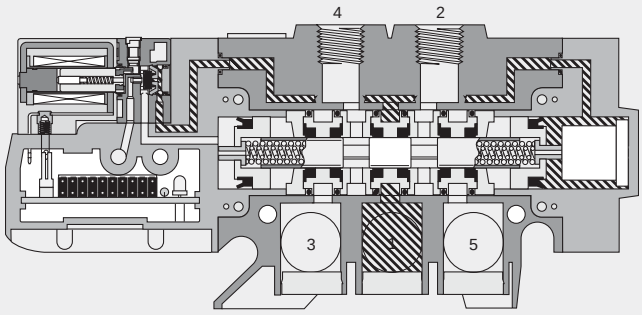
- 5°F to 140°F (-15°C to 60°C)

Certification / Approval

- Approved to be CE Marked
- IP65



PVLB10 Single Solenoid
Shown De-Energized



PVLC10 3-Position APB

Pressure **Exhaust**

Note: DC units are polarity sensitive.

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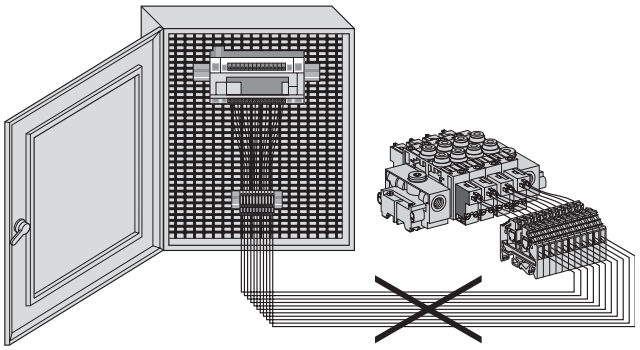
C

Moduflex

PVL

Simplified Electrical Wiring

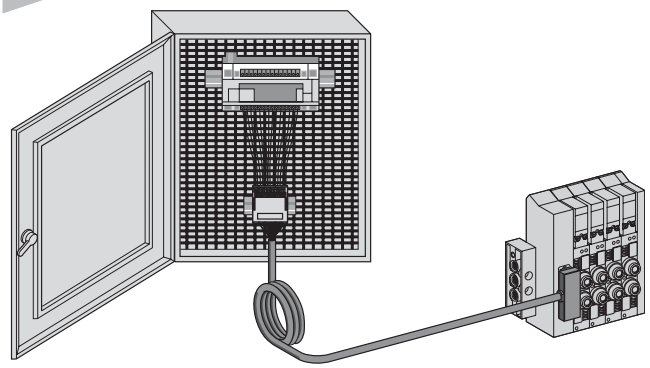
Eliminate costly wiring of individual solenoids with compact PVLB10 or PVLC10 stacks of up to 16 modules with built-in electrical connectors.



Simplified Setup

A single cable provides electrical connection to PLC or special terminal block.

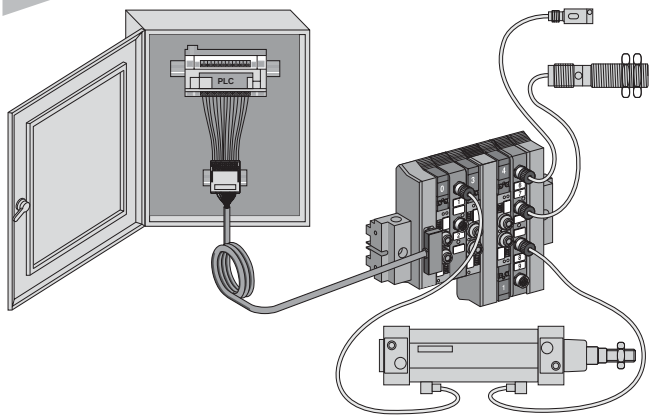
PVLB10



External Connections

External connection modules with PVLB10 valves allow sensor feedback or output connections to be integrated into the valve stack.

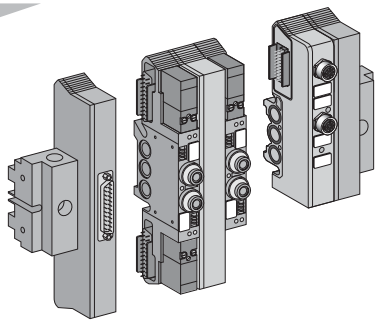
PVLB10



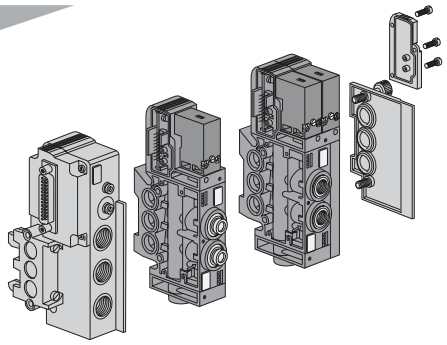
Modular Stacking

- The modular stacking system permits easy assembly of valves and external connection modules into a single stack.
- Integral supply and exhaust ports are manifolded as the stack is assembled.
- Intermodular electrical connection is accomplished through integral 20-Pin electrical connectors, eliminating the need for harnessing or wiring within the stack.
- PVLB10 single and double solenoid valves can be combined into one stack with the use of transition modules.
- PVLC10 single and double solenoid valves can be combined into one stack without any transition modules.
- The electrical head / tail set provides a single electrical connection from the stack to a PLC or terminal block.
- Each stack mounts easily to 35mm DIN rail by means of a pneumatic head / tail set, which also provides common air supply and exhaust.

PVLB10



PVLC10



Stacking System Benefits

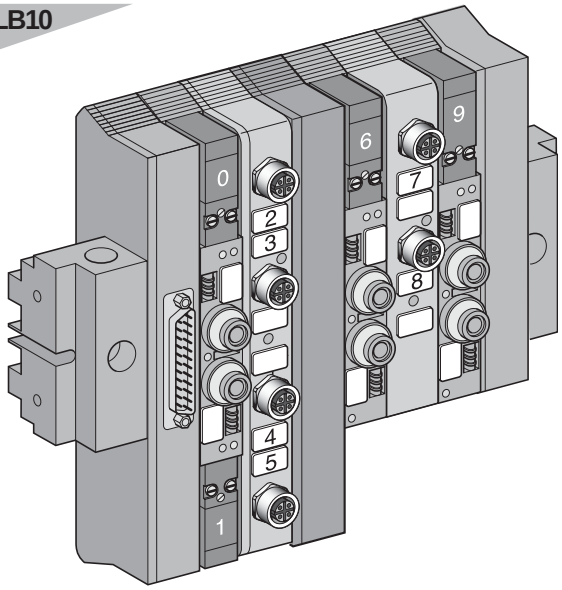
- Reduces wiring, saves space.
- Allows custom arrangements with standard components.
- Further reduces wiring by integrating feedback and output connections into the PVLB10 valve stack.
- Greatly reduces installation time and costs.
- Servicing valves can be accomplished quickly without disassembling the entire stack.

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Autoconfiguration

The construction of the stack determines the relationship of each connector pin and the device it is to control. The address of each solenoid valve and each feedback or output connection is based on its physical position in the stack. For PVLB10, addresses are assigned consecutively from top to bottom and left to right beginning at top left with 0. For PVLC10, addresses are assigned consecutively from left to right and beginning at top left with 0.

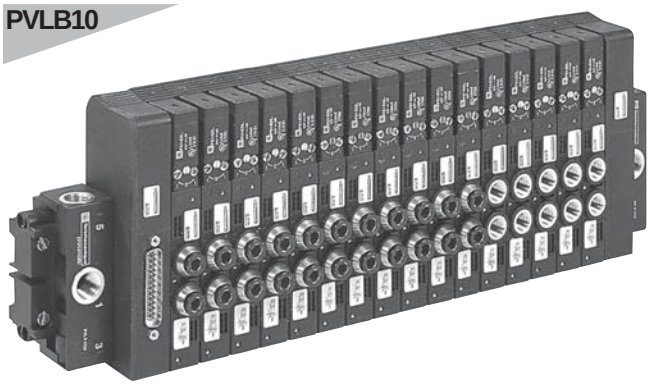
PVLB10



It is easy to add or remove one or more modules to adapt to machine modifications. Once the controller is programmed, however, it is recommended that, where possible, the addition or permanent removal of any module be done at the tail (right-hand) end of the stack to prevent affecting the addresses of other modules in the stack. A change in address requires reprogramming of the controller.

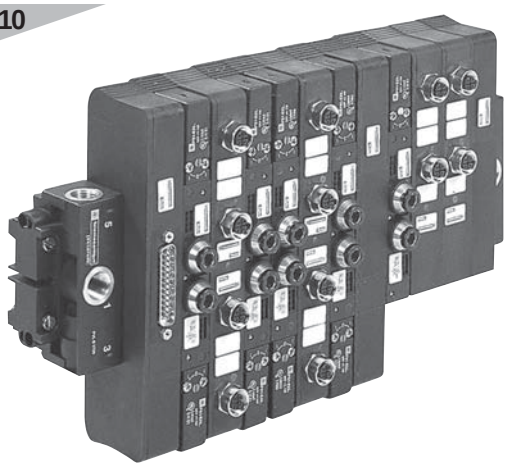
Connector Options

PVLB10



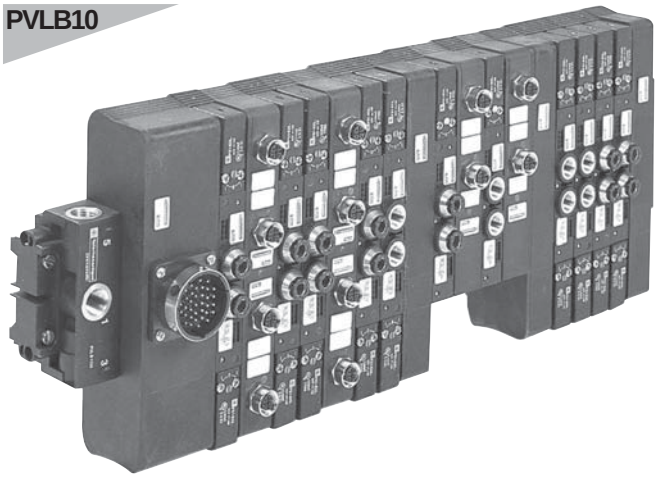
25-Pin Connector, Single Size Stack
Maximum 16 Addresses

PVLB10



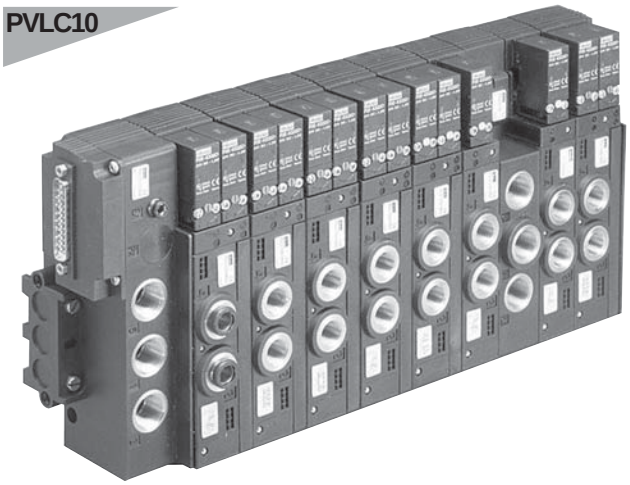
25-Pin Connector, Dual Size Stack
Maximum 21 Addresses

PVLB10



35-Pin Connector, Dual Size Stack
Maximum 32 Addresses

PVLC10



25-Pin Connector,
Maximum 16 Addresses

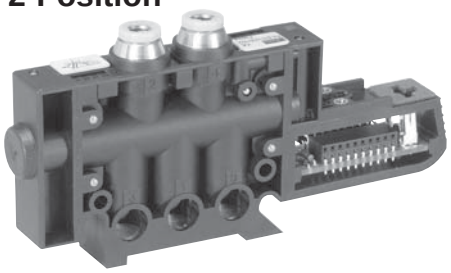
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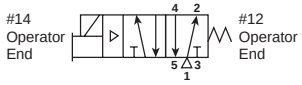
C

Moduflex

PVL

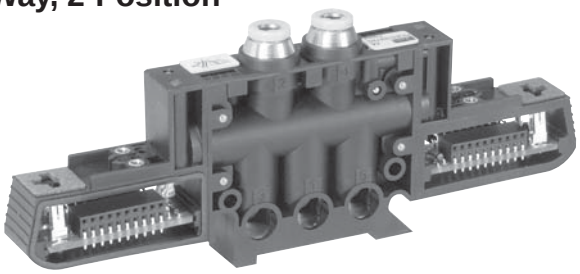
Single Solenoid
4-Way, 2-Position

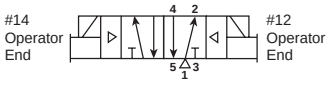




Valve Only				
PVLB10	**PVLB1016187W2**	1/8" NPT	12-24 VDC	0.6 Cv
	PVLB1016187W1		24-120 VAC	
	PVLB1016067W2	1/4" Tube	12-24 VDC	
	PVLB1016067W1		24-120 VAC	

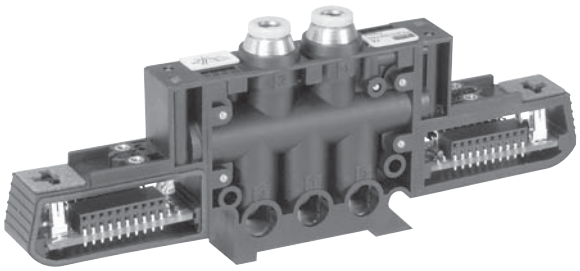
Double Solenoid
4-Way, 2-Position



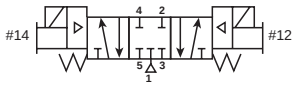


Valve Only				
PVLB10	**PVLB1026187W2**	1/8" NPT	12-24 VDC	0.6 Cv
	PVLB1026187W1		24-120 VAC	
	PVLB1026067W2	1/4" Tube	12-24 VDC	
	PVLB1026067W1		24-120 VAC	

Double Solenoid
4-Way, 3-Position APB

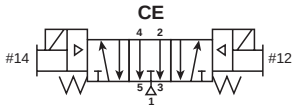


APB



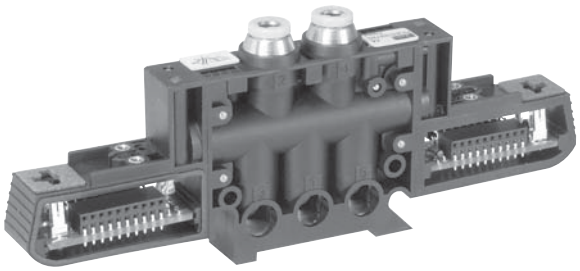
Valve Only				
PVLB10	**PVLB1076187W2**	1/8" NPT	12-24 VDC	0.6 Cv
	PVLB1076187W1		24-120 VAC	
	PVLB1076067W2	1/4" Tube	12-24 VDC	
	PVLB1076067W1		24-120 VAC	

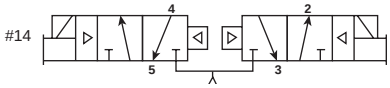
CE



Valve Only				
PVLB10	**PVLB1086187W2**	1/8" NPT	12-24 VDC	0.6 Cv
	PVLB1086187W1		24-120 VAC	
	PVLB1086067W2	1/4" Tube	12-24 VDC	
	PVLB1086067W1		24-120 VAC	

Double Solenoid
Dual 3/2 Normally Closed





Valve Only				
PVLB10	**PVLB1056187W2**	1/8" NPT	12-24 VDC	0.6 Cv
	PVLB1056187W1		24-120 VAC	

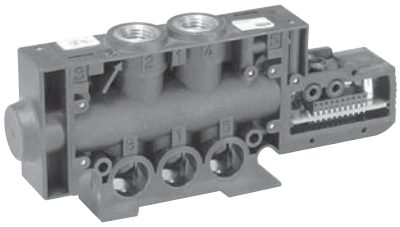
NOTES:
Solenoids sold separately on page C74.

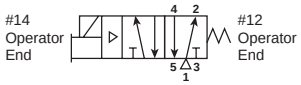
Part Numbers Do Not include Solenoids.

BOLD OPTIONS ARE MOST POPULAR.

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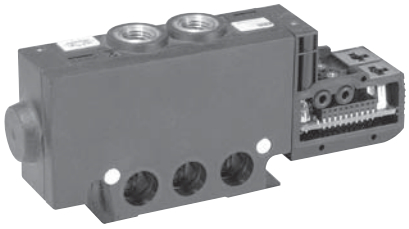
Single Solenoid
4-Way, 2-Position

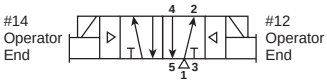




Valve Only				
PVLC10	**PVLC1016197W2**	1/4" NPT	12-24 VDC	1.2 Cv
	PVLC1016197W1		24-120 VAC	
	PVLC1016097W2	3/8" Tube	12-24 VDC	
	PVLC1016097W1		24-120 VAC	

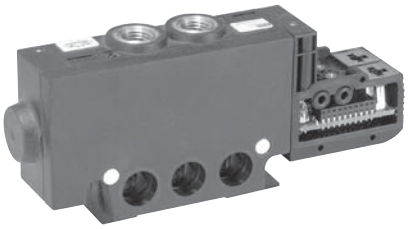
Double Solenoid
4-Way, 2-Position

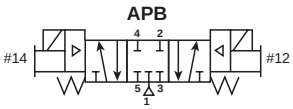




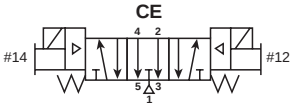
Valve Only				
PVLC10	**PVLC1026197W2**	1/4" NPT	12-24 VDC	1.2 Cv
	PVLC1026197W1		24-120 VAC	
	PVLC1026097W2	3/8" Tube	12-24 VDC	
	PVLC1026097W1		24-120 VAC	

Double Solenoid
4-Way, 3-Position APB



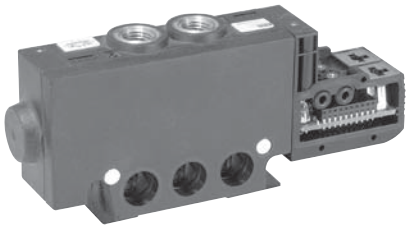


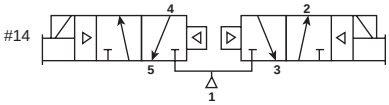
Valve Only				
PVLC10	**PVLC1076197W2**	1/4" NPT	12-24 VDC	1.2 Cv
	PVLC1076197W1		24-120 VAC	



Valve Only				
PVLC10	**PVLC1086197W2**	1/4" NPT	12-24 VDC	1.2 Cv
	PVLC1086197W1		24-120 VAC	

Double Solenoid
Dual 3/2 Normally Closed





Valve Only				
PVLC10	**PVLC1056197W2**	1/4" NPT	12-24 VDC	1.2 Cv
	PVLC1056197W1		24-120 VAC	

NOTES:

Solenoids sold separately on page C74.

Part Numbers Do Not include Solenoids.

BOLD OPTIONS ARE MOST POPULAR.

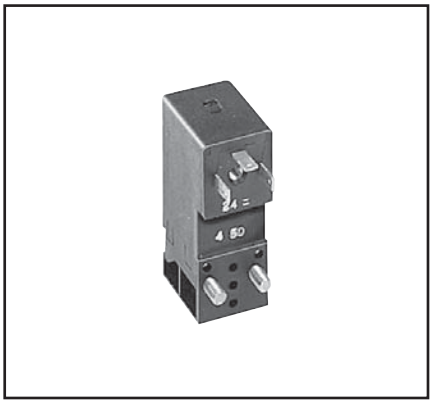
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C

Moduflex

PVL

PVLB10 & PVLC10 3-Pin,
15mm Solenoids / Kits
(8mm Pin Spacing) DIN43650C



Voltages	Power Consumption	Holding Current	Id (Drop-Out Current)*	Kit Numbers With Non-Locking Flush Manual Override	Solenoid Only	Kit Numbers With Locking Flush Manual Override	Solenoid Only
12VDC	1.2W	100 mA	10 mA	**PS3441B45P**	**P2E-KS32B1**	**PS3441C45P**	**P2E-KS32B2**
24VDC	1.2W	50 mA	5 mA	**PS3441B49P**	**P2E-KS32C1**	**PS3441C49P**	**P2E-KS32C2**
24VAC	1.6VA	65 mA	22 mA	**PS3441B42P**	**P2E-KS31C1**	**PS3441C42P**	**P2E-KS31C2**
110VAC, 50Hz 120VAC, 60Hz	1.6VA	13.3 mA	5 mA	**PS3441B53P**	**P2E-KS31F1**	**PS3441C53P**	**P2E-KS31F2**

* When using a programmable controller, be sure that the leakage current of the controller outputs is lower than the drop-out current value.

Notes:
Kit includes: Solenoid, (2) machine screws, (2) self threading screws, (1) gasket, (1) 3-cell gasket, (1) L-shaped 3-cell gasket.

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Constructing a PVLB10 Stack

When constructing a stack, the following rules apply:

1. A stack must have a pneumatic and an electrical head / tail set.
2. A stack has a physical limit of 16 active modules (valves, feedback modules and output modules), regardless of whether they are double or single.
3. Single feedback and output modules must be stacked with single solenoid valves, and double feedback and output modules must be stacked with double solenoid valves.
4. Double and single modules can be combined in a stack with the use of a transition module. A stack order of double to single is recommended to maximize the number of possible addresses.

⚠ ***CAUTION:*** *If the application requires simultaneous operation of valves and/or external connection modules, see Technical Data page for operating limits.*

Addressing

Addresses are automatically assigned to each solenoid and each external connection based on its position in the stack. Addresses are numbered consecutively from top to bottom and left to right beginning at the top left of the stack with 0.

To find the total number of addresses that will be required for a stack, calculate the following for each type of module based on table below and total:

Addresses x Quantity of Units = Addresses Required

Type of Module	Addresses Assigned		Quantity In stack		Addresses Required
Double solenoid valve	2	x		=	
Double ck module	4	x		=	
Double output module	4	x		=	
Single solenoid valve	1	x		=	
Single feedback module	2	x		=	
Single output module	2	x		=	
TOTAL ADDRESSES				=	

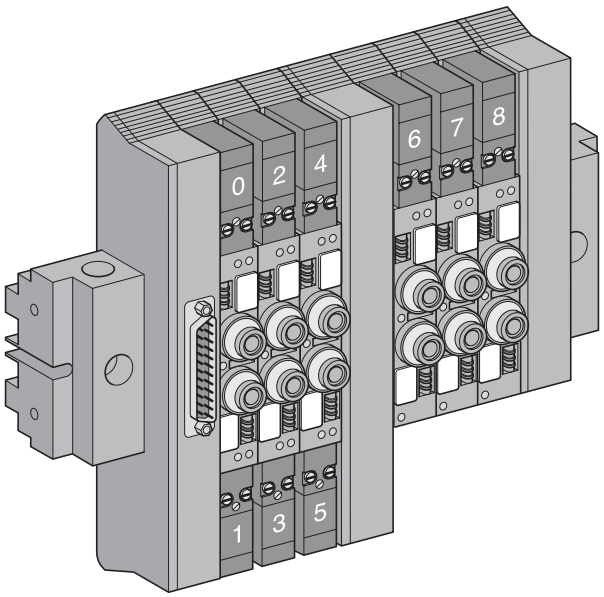
Electrical Connection

When selecting the electrical head / tail set, the following must be considered:

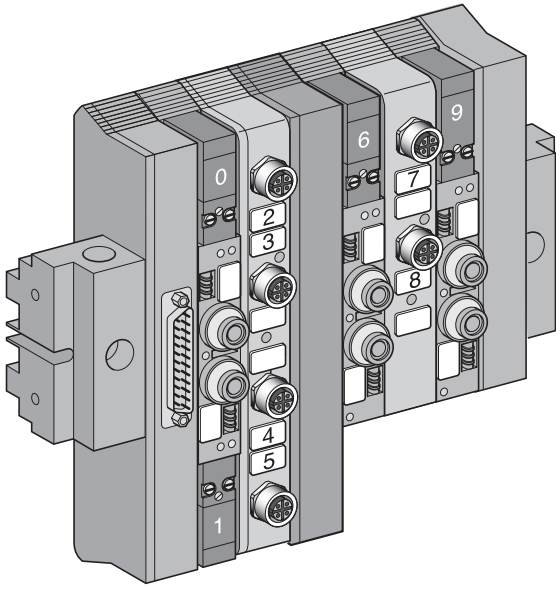
1. The size (double or single) of the electrical head piece must match that of the first module to its right.
2. The electrical connector must provide sufficient addresses for the stack.

The number of addresses possible with each type of head / tail set is shown in the following table. Based on the head type needed, select the connector that provides sufficient addresses for the stack.

PVLB10



Double Solenoid to Single Solenoid Valve Manifold with 25-Pin Connector:
6 valves
9 addresses



Double Solenoid to Single Solenoid Mixed Manifold with 25-Pin Connector:
5 active modules
10 addresses

Head Type	Connector	Possible Addresses
Single Solenoid	25-Pin	16
Double Solenoid	25-Pin	21
	35-Pin	32

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C

Moduflex

PVL

External Connection Modules

With 20-Pin intermodular system and 12mm (mini) connectors, these modules can be combined with valves and/or other modules. Feedback modules supply voltage to sensors and accept signals for communication back to the PLC. Feedback modules can be used for PNP or NPN sensors, indicator lights will only work on PNP sensors. Output modules allow connection and control of valves mounted externally from the stack.

Type	Size	Connections	Model Number
Feedback	Single	2 Inputs	**PVLB1E1302**
	Double	4 Inputs	**PVLB1E2304**
Output	Single	2 Outputs	**PVLB1S1302**
	Double	4 Outputs	**PVLB1S2304**



Double **Single**

Head / Tail Sets

Pneumatic

Single air supply head / tail are used for shorter manifolds and dual air supply head / tail are used for longer manifolds.

Dual air supply head / tail sets contains 2 ported ends plus all hardware. Clamps to 35mm DIN rail. Removing 35mm hardware provides mounting holes for surface mounting. Single air supply head / tail sets clamp on one side only, Dual air supply head / tail sets clamp on both sides.

Type	Port Size	Model Number
Single Supply	1/4" NPT	**PVLB17197**
	1/4" BSP	PVLB1719
Double Supply	1/4" NPT	**PVLB17297**
	1/4" BSP	PVLB1729



Single Air Supply Head / Tail Set



Dual Air Supply Head / Tail Set

Pressure Isolating Disc

Description	Model Number
Sold in lots of 10.	PVLB1902

Electrical

For use with manifolds of all single solenoid valves or all double solenoid valves. Provides electrical link between all functions in the stack and the PLC.

Size	Connector	Model Number
Single Solenoid	25-Pin (Male), D-Sub	**PVLB191125**
Double Solenoid	25-Pin (Male), D-Sub	**PVLB192125**
	35-Pin (Male)	**PVLB192235**



Single Size Stacks

For use with manifolds using both single and double solenoid valves. Provides electrical connection to PLC and transition between single and double solenoid valves.

Valve Order	Connector	Model Number
Double Solenoid then Single Solenoid	25-Pin (Male), D-Sub	**PVLB194125**
	35-Pin (Male)	**PVLB194235**
Single Solenoid then Double Solenoid	25-Pin (Male), D-Sub	**PVLB193125**



Dual Size Stacks

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Constructing a PVLC10 Stack

When constructing a stack, the following rules apply:

1. A stack must have a pneumatic and an electrical head / tail set.
2. A stack has a physical limit of 16 solenoids.
3. Single and double solenoid valves can be combined into one stack without any transition module.

⚠ ***CAUTION:*** *If the application requires simultaneous operation of valves and/or external connection modules, see Technical Data page for operating limits.*

Addressing

Addresses are automatically assigned to each solenoid and each external connection based on its position in the stack. Addresses are numbered consecutively from left to right beginning at the top left of the stack with 0.

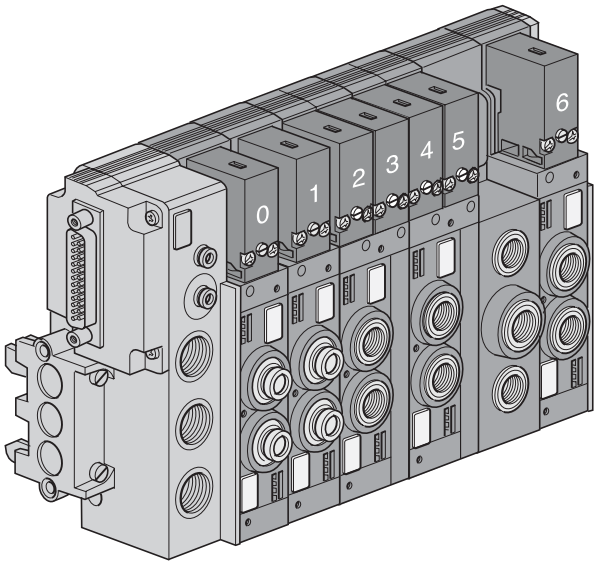
To find the total number of addresses that will be required for a stack, calculate the following for each type of module based on table below and total:

Addresses x Quantity of units = Addresses Required

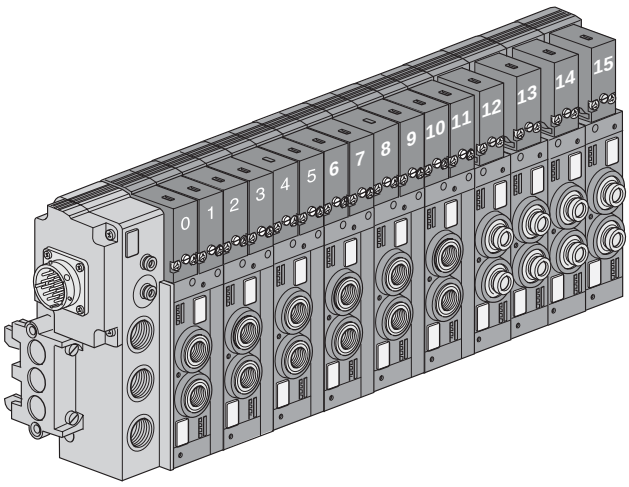
Type of Module	Addresses Assigned		Quantity In stack		Addresses Required
Double solenoid valve	2	x		=	
Single solenoid valve	1	x		=	
TOTAL ADDRESSES				=	

Head Type	Connector Possible Addresses
25-Pin	16
19-Pin	16

PVLC10



25-Pin Connector with Intermediate Air Supply Module:
5 valves
7 addresses



19-Pin Connector:
10 valves
16 addresses

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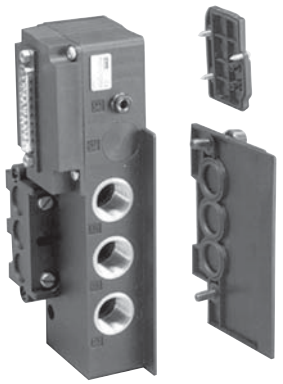
C

Moduflex

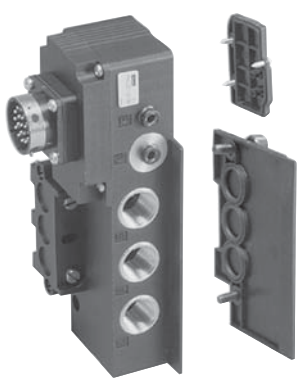
PVL

Head / Tail Sets
Electrical / Pneumatic

Port Size / Type	Connector	Model Number
3/8" NPT, Single	D-Sub, 25-Pin w/ External Pilot (Px)	PVLC27137D25A
3/8" NPT, Single	D-Sub, 25-Pin w/o External Pilot (Px)	**PVLC17137D25A**
3/8" NPT, Single	Circular, 19-Pin w/o External Pilot (Px)	PVLC17137C19A



D-Sub, 25-Pin



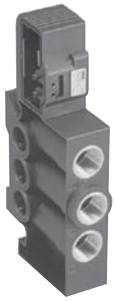
Circular, 19-Pin

Air Supply Modules

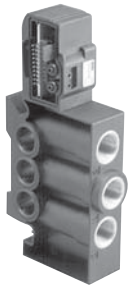
Tail Air Supply Module to be mounted at the end of the manifold for dual air supply for longer manifolds.

Intermediate Air Supply Module used when multiple pressures are required on a manifold.

Port Size / Type	Tail Air Supply Module	Intermediate Air Supply Module
3/8" NPT	**PVULC2137**	**PVULC2137E**
3/8" BSP	PVULC213	PVULC213E



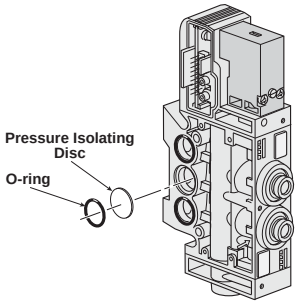
Tail Air Supply Module



Intermediate Air Supply Module

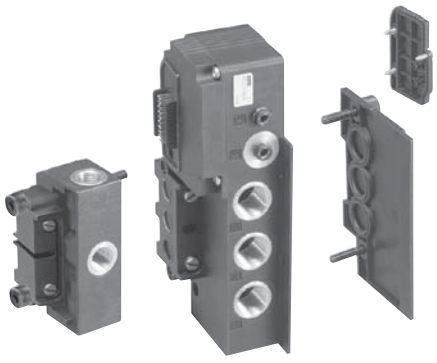
Pressure Isolating Disc

Description	Model Number
Sold in lots of 10	**PVLC1902**



Transition Kits
(PVLB10 to PVLC10)

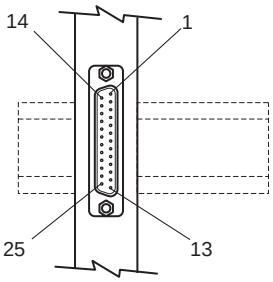
Port Size / Type	Connector	Model Number
1/4" NPT to 3/8" NPT	Transition Kit with External Pilot (Px)	**PVLC27137B19**
1/4" NPT to 3/8" NPT	Transition Kit without External Pilot (Px)	**PVLC17137B19**
1/4" BSP to 3/8" BSP	Transition Kit with External Pilot (Px)	PVLC2713B19
1/4" BSP to 3/8" BSP	Transition Kit without External Pilot (Px)	PVLC1713B19



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D-Sub, 25-Pin Single Size Head / Tail Set

Pin No.	Stack Address	Pin No.	Stack Address
13	0	8	10
25	1	20	11
12	2	7	12
24	3	19	13
11	4	6	14
23	5	18	15
10	6	5	Not Used
22	7	17	24V (feedback) (PVBL10)
9	8	4	0V (feedback) (PVBL10)
21	9	16	Common 0v



D-Sub, 25-Pin Double Size Head / Tail Set*

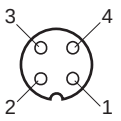
Pin No.	Stack Address	Pin No.	Stack Address
13	0	19	13
25	1	6	14
12	2	18	15
24	3	5	Not Used
11	4	17	24V (feedback)
23	5	4	0V (feedback)
10	6	16	Common 0v
22	7	3	16
9	8	15	17
21	9	2	18
8	10	14	19
20	11	1	20
7	12		

Feedback Connector*

Pin No.	I/O
1	24V (feedback)
2	—
3	0V (feedback)
4	Input

Output Connector*

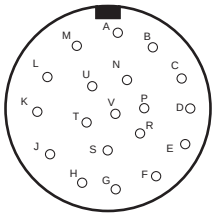
Pin No.	I/O
1	—
2	—
3	Common 0v
4	Output



Notes: Solenoids are polarity sensitive. The common must be at 0V. Switching must be at the high potential.

* Available with PVLB10 Only

19-Pin Circular Connector†

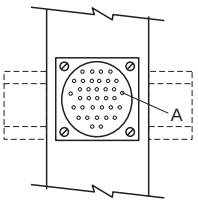


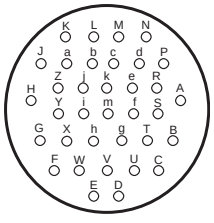
Pin No.	Stack Address
A	0
B	1
C	2
D	3
E	4
F	5
G	6
H	7
J	8
K	9
L	10
M	11
N	12
P	13
R	14
S	15
T	Common 0V
U	Not Used
V	Not Used

† Available with PVLC10 Only

Cylindrical, 35-Pin type "Trident Ringlock" Double Size Head / Tail Set*

Pin No.	Stack Address	Pin No.	Stack Address
A	0	V	18
B	1	W	19
C	2	X	20
D	3	Y	21
E	4	Z	22
F	5	a	23
G	6	b	24
H	7	c	25
J	8	d	26
K	9	e	27
L	10	f	28
M	11	g	29
N	12	h	30
P	13	i	31
R	14	j	Common 0V
S	15	k	0V (feedback)
T	16	m	24V (feedback)
U	17		





* Available with PVLB10 only.

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C

Moduflex

PVL

Operating Pressure Range:

Single Pilot ..... 45 to 150 psi (311 to 1035 kPa)
Double Pilot..... 30 to 150 psi (207 to 1035 kPa)

Temperature Range (Ambient)

Operating..... 5° to 140°F (-15° to 60°C)
Storage..... -40° to 158°F (-40° to 70°C)

⚠ ***CAUTION:***
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Medium:..... Dry or lubricated air or inert gas

Medium Quality:

PVLB & PVLC.....Dry or lubricated air at 50 micron filtration

Materials:

Body .....Glass filled polyamide
Seals .....Polyurethane
Fittings.....Brass

Mounting:

Inline.....Surface mount on flat surface
Stacking .....Mount on 35mm DIN rail or flat surface

Mounting Orientation:.....All positions

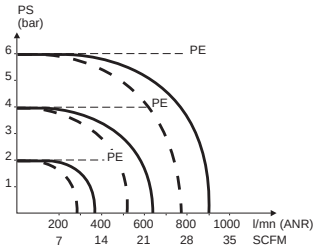
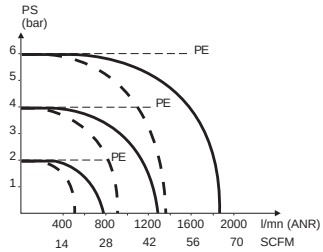
Manual Overrides:..... Locking or non-locking

Lubrication

Valves are pre-lubricated and may be operated with dry air. If lubrication is desired, use F442 oil.

Cycle Life: ..... 30 million (dry air)

Specific Characteristics

Description		1/8" Valves (PVLB) (PVLB10)		1/4" Valves (PVLC) (PVLC10)	
Cv		0.6		1.2	
Flow Rates ——— Threaded connector – – – Instant tube fitting PE = input pressure PS = output pressure					
Port Sizes	Instant tube fitting	1/4"		3/8"	
	Threaded	1/8" Pipe		1/4" Pipe	
Maximum Valve Fitting Torque		7.4 ft-lb (10Nm)		14.8 ft-lb (20Nm)	
Head / Tail Port Size / Max. Torque		1/4" Pipe / 14.8 ft-lb (20Nm)		3/8" Pipe / 40.6 ft-lb (55Nm)	
For Air Operated Valves:		**Single Acting**	**Double Acting**	**Single Acting**	**Double Acting**
Response Time (Input to Output)*		14 ms	8 ms	25 ms	11 ms
Pilot Pressure (@ 90 PSIG Inlet)		44 PSI	29 PSI	44 PSI	29 PSI
Depilot Pressure (@ 90 PSIG Inlet)		15 PSI	—	22 PSI	—
Maximum Operating Frequency		5 Hz	10 Hz	5 Hz	10 Hz
For Solenoid Operated Valves:		**Single Acting**	**Double Acting**	**Single Acting**	**Double Acting**
Response Time (Input to Output)*		22 ms	12 ms	39 ms	17 ms
Maximum Operating Frequency		5 Hz	10 Hz	5 Hz	10 Hz
Power Consumption Hold		DC = 1.2 Watt, AC = 1.6VA		DC = 1.2 Watt, AC = 1.6VA	
Power Consumption Inrush		DC = 1.2 Watt, AC = 3.5VA		DC = 1.2 Watt, AC = 3.5VA	
Voltage Tolerance		+10% to -15% rated voltage @ 70° F (20° C)		+10% to -15% rated voltage @ 70° F (20° C)	
Standard Voltages		12 and 24 VDC 24 and 120 VAC		12 and 24 VDC 24 and 120 VAC	
Rated Insulation Voltage		1500 Volts		1500 Volts	
Protection Rating		IP65		IP65	
Standards		(UL) (except 240 VAC) and NFC 79 300			

* Valves tested with test chamber at 90 PSIG inlet pressure.

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Electrical Characteristics

Standard Voltages:

Solenoid ..... DC = 12 and 24
AC = 24V 50/60 Hz and 120V 60 Hz

Feedback module.....24VDC (designed for sourcing sensor)

Output module.....24VDC

Voltage Tolerance:

+10% to -15% of rated voltage @ 70° F (20° C)

Power Consumption (Solenoid):

Hold .....DC = 1.2W.....AC = 1.6VA
Inrush .....DC = 1.2W.....AC = 3.5VA

Rated Currents (Solenoid)

Voltage	Holding Current	I_d (Drop-out Current)*
12VDC	100 mA	10 mA
24VDC	50 mA	5 mA
48VDC	25 mA	2.5 mA
24VAC	65 mA	22 mA
120VAC	13.3 mA	5 mA

* When using a programmable controller, be sure that the leakage current of the controller outputs is lower than the drop-out current value.

Maximum Allowable Currents:

Stack = 1000 mA (1 Amp)
Output module = 1000 mA (1 Amp)
Feedback Module = 100 mA (supply + load)

Indication:

By LED – one for each stack address

PVLB10 External Connection:

Round connector M12

Protection Rating IP65

⚠ Simultaneous Operation

Some applications require simultaneous use of devices during setup or operation. Under normal single device operation, reliability can be assured by staying within the stated "Maximum Allowable Currents". During simultaneous operation, however, the currents for each device must be added together with the total current not exceeding the 1000 mA (1 Amp) rating for the stack (example: only ten 12VDC solenoids can be operated simultaneously because their total accumulated current = 1000 mA). This is especially true for any connected external load when using the output module. While each output module is rated for 1000 mA, simultaneous operation of this load will reduce this rating. Calculate maximum available current for any externally connected load during simultaneous operation according to the following formula:

Available Current = 1,000 mA - simultaneous current*

* Add all solenoid currents based on system voltage and any other external load operating simultaneously.

Type of Device	Current Required		Quantity (simultaneous)		Current Used	
Solenoid	_____	mA(1) x	_____	=	_____	mA
External Load(2)	_____	mA(3) x	_____	=	_____	mA
Total Required Current				=	_____	mA(4)

(1) Depending on system voltage (see "Rated Currents").

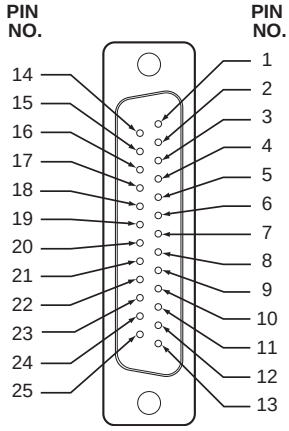
(2) Feedback modules use a separate common so are not used for this calculation, but total feedback current cannot exceed 1000 mA (1 Amp).

(3) Depending on device connected to the output module. Use rated current (mA) for device or calculate: mA = Watts/Volts x 1000.

(4) Must not exceed 1000 mA (1 Amp).

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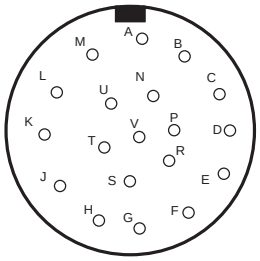
Pin Out Detail D-Sub, 25-Pin Connector*



Output Solenoid No.	D-Sub 25-Pin No.	IP65 Cable Colors	Output Solenoid No.	D-Sub 25-Pin No.	IP65 Cable Colors
0	13	Green	10	8	Blue / Black
1	25	Transparent	11	20	White / Black
2	12	Dark Blue	12	7	Khaki
3	24	Light Blue	13	19	Orange
4	11	Pink	14	6	White
5	23	Purple	15	18	Gray
6	10	Dark Green / Black	Not Used	5	Red / Black
7	22	Yellow	Not Used	17	Red
8	9	Light Green / Black	Not Used	4	Brown
9	21	Yellow / Black	Valve Common	16	Black

Notes: Solenoids are polarity sensitive. The common must be at OV. Switching must be at the high potential.
* Available with PVLB10 Only.

19-Pin Circular Connector*

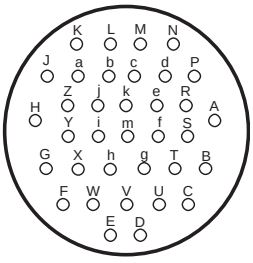


* Available with PVLC10 Only.

Output Solenoid No.	19-Pin Connector	IP65 Cable Colors	Output Solenoid No.	19-Pin Connector	IP65 Cable Colors
0	A	Pink / Brown	10	L	Blue
1	B	White / Green	11	M	Pink
2	C	White / Yellow	12	N	Grey
3	D	White / Grey	13	P	Yellow
4	E	White / Pink	14	R	White
5	F	Brown / Green	15	S	Green
6	G	Red / Blue	Valve Common	T	Black
7	H	Grey / Pink	Not Used	U	Brown
8	J	Brown / Yellow	Not Used	V	Red
9	K	Violet			

Notes: Solenoids are polarity sensitive. The common must be at OV. Switching must be at the high potential. Maximum 16 solenoid outputs with one valve (negative) common line on Pin T.

35-Pin Circular Connector*



* Available with PVLB10 Only.

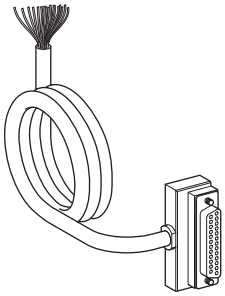
Output Solenoid No.	35-Pin Connector	IP65 Cable Colors	Output Solenoid No.	35-Pin Connector	IP65 Cable Colors
0	A	White / Brown	18	V	Brown / Pink
1	B	White / Green	19	W	Brown / Blue
2	C	White / Yellow	20	X	Brown / Red
3	D	White / Grey	21	Y	Brown / Black
4	E	White / Pink	22	Z	Green / Grey
5	F	White / Blue	23	a	Green / Pink
6	G	White / Red	24	b	Green / Blue
7	H	White / Black	25	c	Green / Red
8	J	Brown / Yellow	26	d	Green / Black
9	K	Violet	27	e	Yellow / Grey
10	L	Blue	28	f	Yellow / Pink
11	M	Pink	29	g	Yellow / Blue
12	N	Grey	30	h	Yellow / Red
13	P	Yellow	31	i	Yellow / Black
14	R	White	0 V valves	j	Black
15	S	Green	0 V inputs	k	Brown
16	T	Brown / Green	24 V inputs	m	Red
17	U	Brown / Grey			

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Cable with Female D-Sub, IP65 Rated, 25-Pin Connector

P8L-MD25A5B	5 Meters / 16.40 Ft

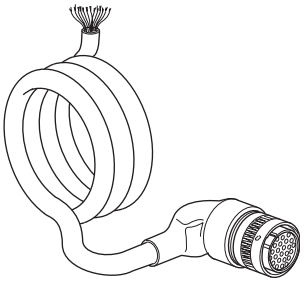
Connection to the control system is through 20 colored wires AWG 24, rated at 2.5 amp.



Cable with Female IP65 Rated, 19-Pin Connector

P8L-MC19A5	5 Meters / 16.40 Ft

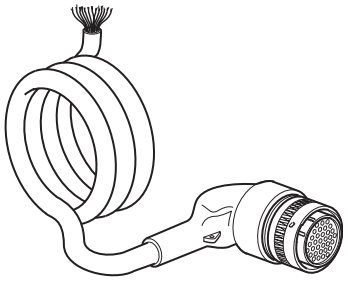
Connection to the control system is through 19 colored wires AWG 20, rated at 5 amp.



Cable with Female IP65 Rated, 35-Pin Connector

P8L-MC35A5	5 Meters / 16.40 Ft

Connection to the control system is through 35 colored wires AWG 20, rated at 5 amp.



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C

Moduflex

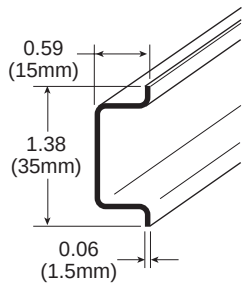
PVL

35mm DIN Rail

AM1DE200	6 Feet

Zinc chromated steel rail for easy mounting of stacks.

DIN rail can be mounted to grids or other surfaces to allow snap in mounting of pneumatic and electrical components.



Adapter Kits

Contains a size transition module and a replacement tail piece for field conversion to a combination stack.

PVLB1940	Double then Single
PVLB1930	Single then Double



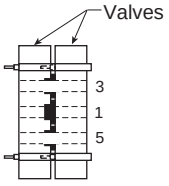
Pressure Isolation Kit

Series	Model Number	Kit includes:
PVLB	**PVLB1901**	3 Isolation Plugs, 2 Open Port Plugs and 2 Extended Cross Rods.
PVLC	**PVLC1901**	
PVLB	**PVLB1902**	10 Isolation Discs
PVLC	**PVLC1902**	

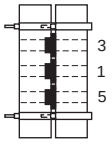


Assembly Instructions

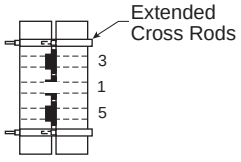
Example 1: Two different pressures P1 and P2 can supply the same bank of power valves, the exhausts remaining common.



Example 2: Complete isolation of the commons in the same bank of power valves: main pressure and exhaust commons.



Example 3: The exhaust commons can be isolated within the same bank of power valves, while the main pressure supply remains common.



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Seals and Gaskets

Series	O-Rings [1]	Gaskets [2]
PVLB	PPRV23	PPRV20
PVLC	PPRV24	PPRV20

Series	O-Rings
PVLB10	PPRV23
PVLC10	PPRV24

Notes:
[1] O-rings seal between stackable valve bodies. Sold in set of 30.
[2] 3-cell gaskets seal between pilot and valve body. Sold as one set of 20 gaskets.



PPRV23 PPRV20

Cross Rods

Series	Model Number
PVLB	PPRV21
PVLC	PPRV22

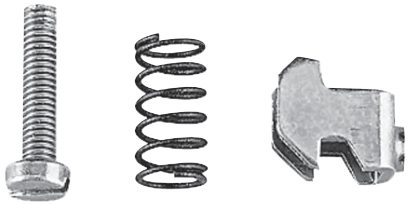
Used in valve stack mounting.
Sold as 1 set of 10 cross rods.



DIN Rail Clip Assembly

PPRL09	Head / Tail Set – All Sizes

Assembly includes: clamp, screw, and spring.
Sold as 1 set of 20 each.



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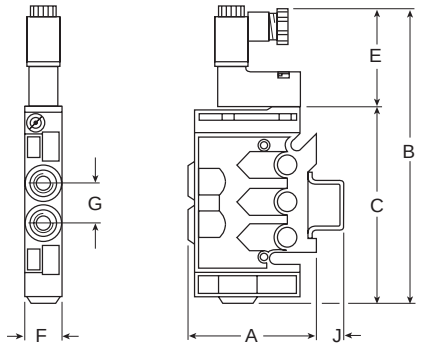
C

Moduflex

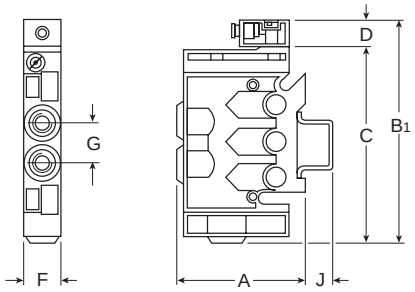
PVL

PVLB Valves

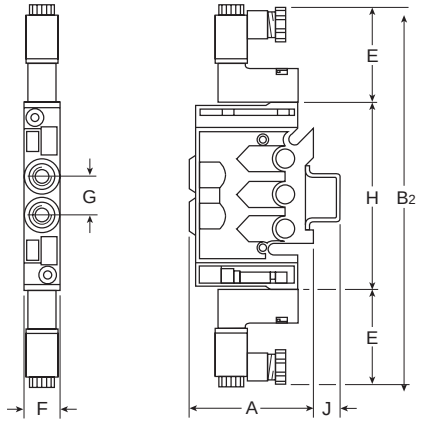
Single Solenoid



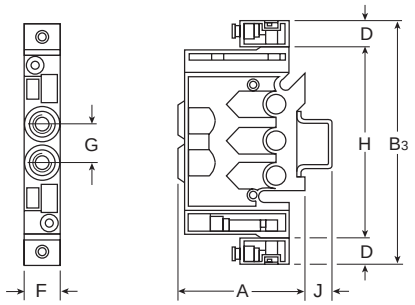
Single Remote Pilot



Double Solenoid



Double Remote Pilot



Dimensions

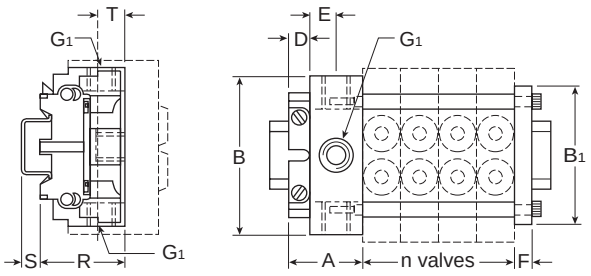
A (Inline Pipe)	2.40 (61)			
A (Inline Tube)	2.80 (71)			
A (Stacking Pipe)	2.40 (61)			
A (Stacking Tube)	2.68 (68)			
B 5.91 (150)	**B1** 4.25 (108)	**B2** 7.91 (201)	**B3** 4.60 (117)	**C** 3.74 (95)
D .51 (13)	**E** 2.17 (55)	**F** .71 (18)	**G** .79 (20)	**H** 3.58 (91)
J .47 (12)				

Inches (mm)

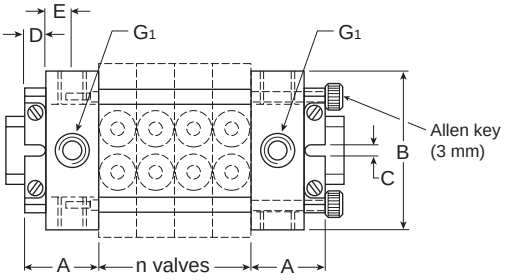
1/8" Pipe or 1/4" tube or 6mm tube for main ports.

Stacking System – PVLB

Single Air Supply



Double Air Supply



Dimensions

A 1.50 (38)	**B** 3.27 (83)	**B1** 2.76 (70)	**C*** .17 (4.2)	**D** .39 (10)
E .47 (12)	**F** .31 (8)	**G1** 1/4"	**R** 1.73 (44)	**S** .35 (9)
T .43 (11)				

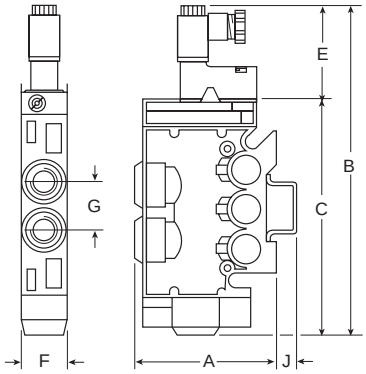
Inches (mm)

* Clearance for #6 screw.

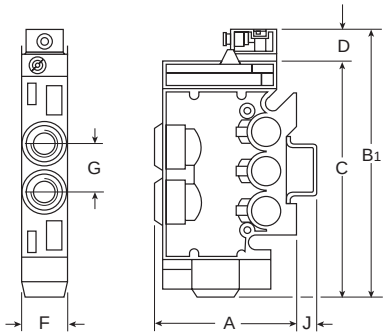
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PVLC Valves

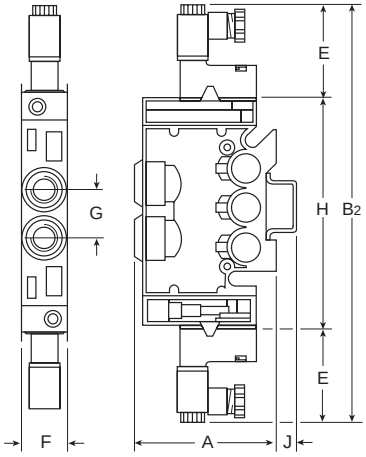
Single Solenoid



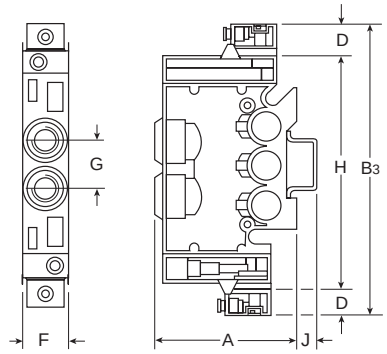
Single Remote Pilot



Double Solenoid



Double Remote Pilot



Dimensions

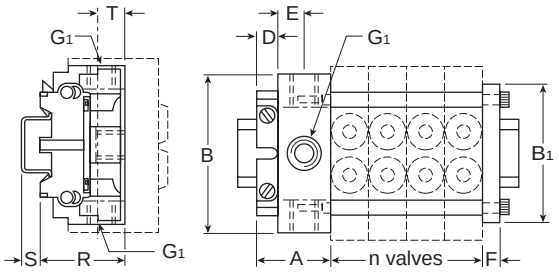
A (Inline Pipe)	2.87 (73)			
A (Inline Tube)	3.66 (93)			
A (Stacking Pipe)	2.87 (73)			
A (Stacking Tube)	3.27 (83)			
B 7.00 (178)	**B1** 5.35 (136)	**B2** 8.94 (227)	**B3** 5.62 (143)	**C** 4.84 (123)
D .51 (13)	**E** 2.17 (55)	**F** .98 (25)	**G** 1.00 (26)	**H** 4.61 (117)
J .43 (11)				

Inches (mm)

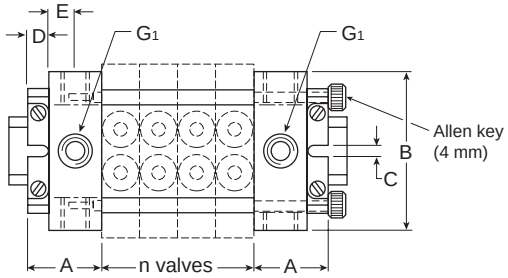
1/4" Pipe or 3/8" tube or 8mm tube for main ports.

Stacking System – PVLC

Single Air Supply



Double Air Supply



Dimensions

A 1.50 (38)	**B** 4.25 (108)	**B1** 3.94 (100)	**C*** .17 (4.2)	**D** .39 (10)
E .47 (12)	**F** .31 (8)	**G1** 3/8"	**R** 2.17 (55)	**S** .35 (9)
T .51 (13)				

Inches (mm)

* Clearance for #6 screw.

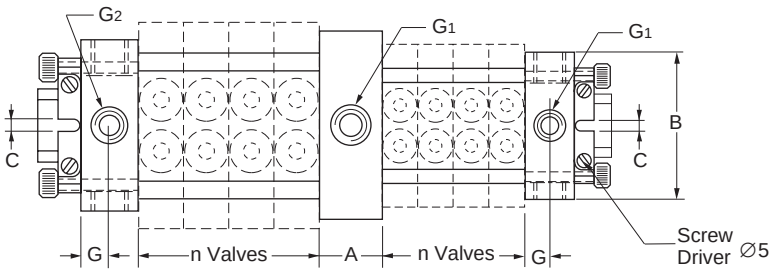
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

C

Moduflex

PVL

Transition Kits – PVLB & PVLC Valves



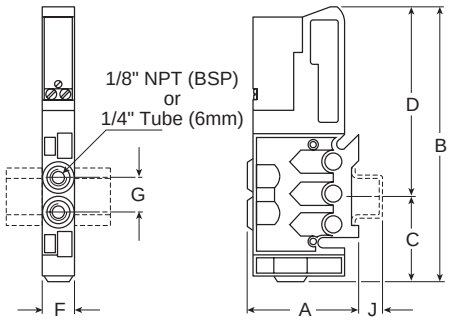
Dimensions

A	B	C	G	G1
.98 (25)	3.94 (100)	.17 (4.2)	.47 (12)	1/4"
G2 3/8"				

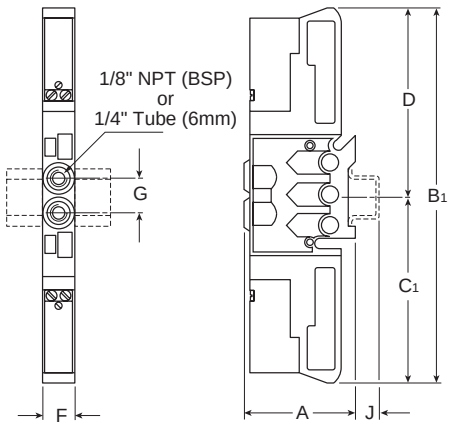
Inches (mm)

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Richland, Michigan
www.parker.com/pneumatics

Single Solenoid



Double Solenoid



Dimensions

A (Inline Pipe)	2.87 (73)
A (Inline Tube)	3.66 (93)
A (Stacking Pipe)	2.87 (73)
A (Stacking Tube)	3.27 (83)

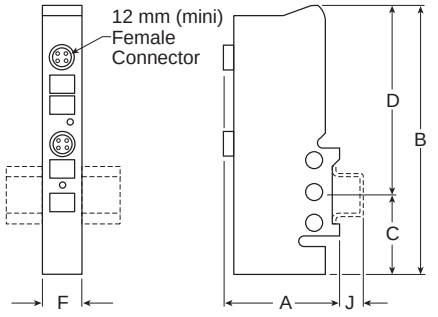
B	**B1**	**C**	**C1**	**D**
5.43 (138)	6.97 (177)	1.93 (49)	3.46 (88)	3.50 (89)

F	**G**	**J**
.71 (18)	.79 (20)	.47 (12)

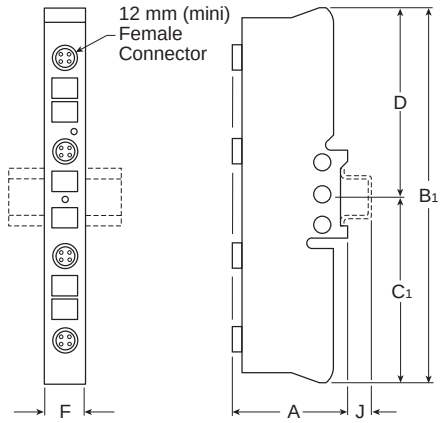
Inches (mm)

External Connection Modules

Single



Double



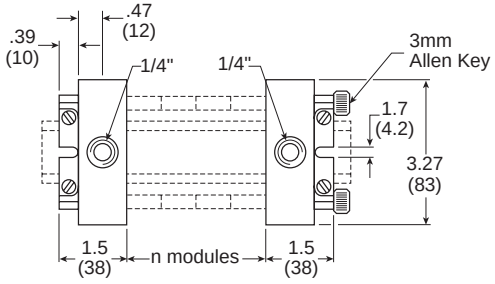
Dimensions

A	**B**	**B1**	**C**	**C1**
2.72 (69)	5.31 (135)	6.97 (177)	1.81 (46)	3.46 (88)

D	**F**	**J**
3.50 (89)	.87 (22)	.47 (12)

Inches (mm)

Pneumatic Head / Tail Set



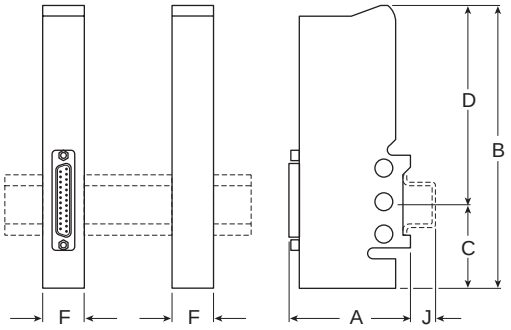
To calculate stack length, add the width of the pneumatic and electrical head / tail sets plus (quantity x width) for each type of active module. Widths shown in inches (mm).

Module	Qty		Width		Total Width
Pneumatic head / tail set	1	x	3.00" (76)	=	3.00" (76)
Electrical head / tail set:	1	x		=	
Select 25-Pin head / tail			*1.73" (44)*		
or 25-Pin w/ transition			*2.60" (66)*		
or 35-Pin head / tail			*2.76" (70)*		
or 35-Pin w/ transition			*3.62" (92)*		
Valves		x	.71" (18)	=	
Feedback/output modules		x	.87" (22)	=	
TOTAL STACK LENGTH				=	

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Electrical Head / Tail Sets*

Single Stack D-Sub, 25-Pin Connector



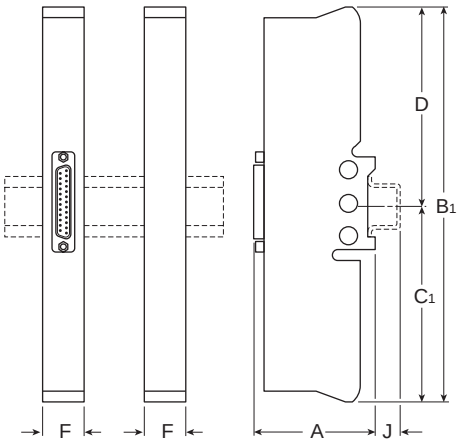
* When the stack contains both single and double modules, you must use a head / tail set that includes a size transition module (shown below).

Dimensions

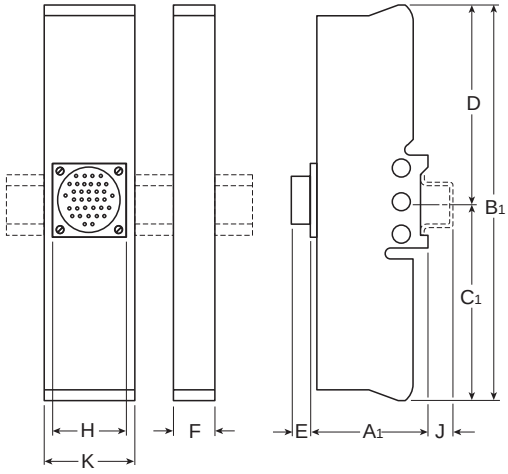
A	A_1	B	B_1	C
2.48 (63)	2.40 (60)	5.31 (135)	6.97 (177)	1.81 (46)
C_1	**D**	**E**	**F**	**H**
3.46 (88)	3.50 (89)	.39 (10)	.87 (22)	1.57 (40)
J	**K**			
.47 (12)	1.89 (48)			

Inches (mm)

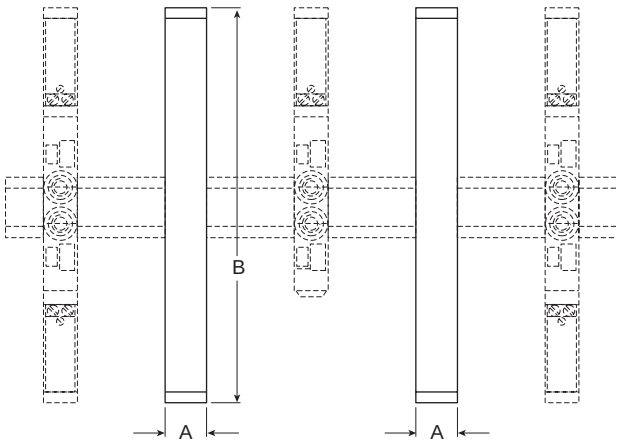
Double Stack D-Sub, 25-Pin Connector



Cylindrical 35-Pin Double Size Head / Tail Set



Size Transition Module



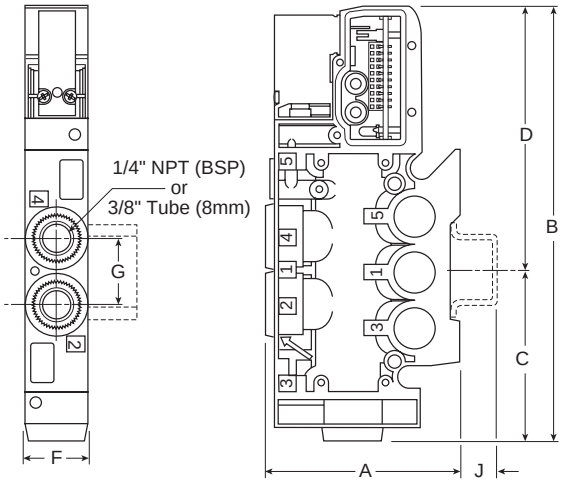
Dimensions

A	B			
.87 (22)	6.97 (177)			

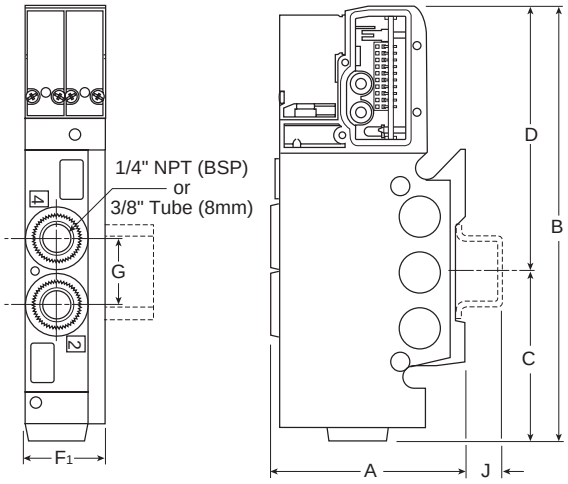
Inches (mm)

Parker Hannifin Corporation
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Single Solenoid



Double Solenoid

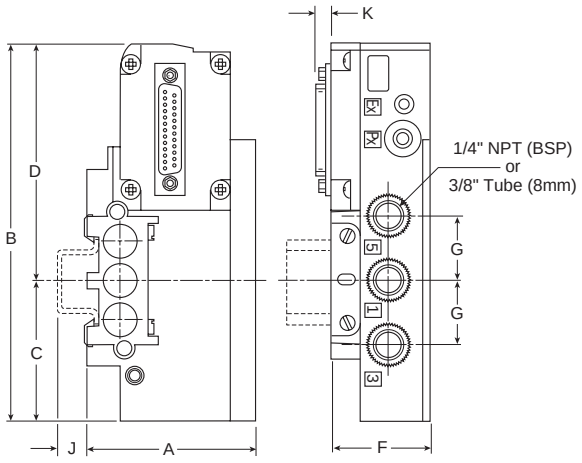


Dimensions

A (Inline Pipe)	2.87 (73)			
A (Inline Tube)	3.66 (93)			
A (Stacking Pipe)	2.87 (73)			
A (Stacking Tube)	3.27 (83)			
B 6.50 (165)	**C** 2.56 (65)	**D** 3.94 (100)	**F** 1.00 (25.4)	**F1** 1.31 (33)
G 1.00 (25.4)	**J** .47 (12)			

Inches (mm)

D-Sub, 25-Pin Connector

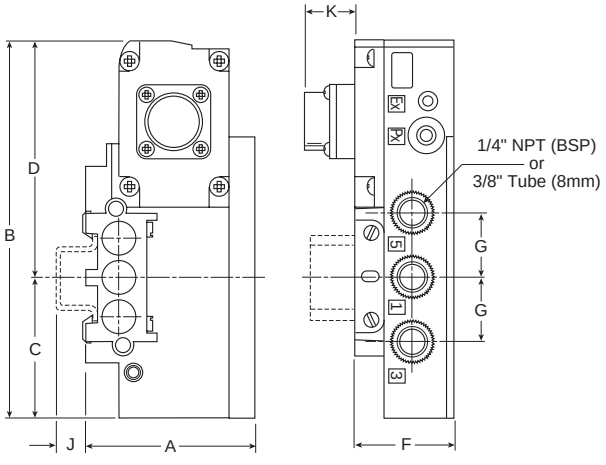


Dimensions

A 2.75 (70)	**B** 6.22 (158)	**C** 2.28 (58)	**D** 3.94 (100)	**F** 1.65 (42)
G 1.06 (27)	**J** .39 (10)	**K** .12 (3)		

Inches (mm)

Cylindrical Connector



Dimensions

A 2.75 (70)	**B** 6.22 (158)	**C** 2.28 (58)	**D** 3.94 (100)	**F** 1.65 (42)
G 1.06 (27)	**J** .39 (10)	**K** .30 (8)		

Inches (mm)

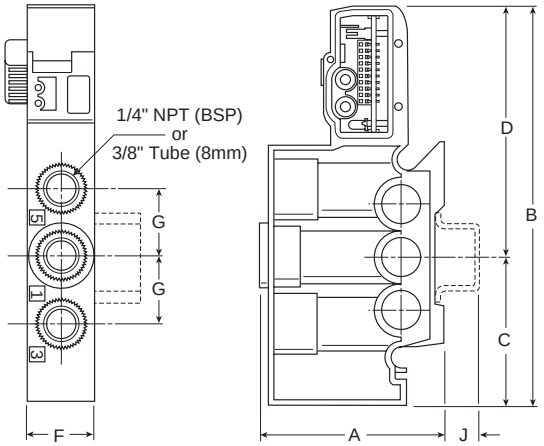
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C

Moduflex

PVL

Intermediary Air Supply Module

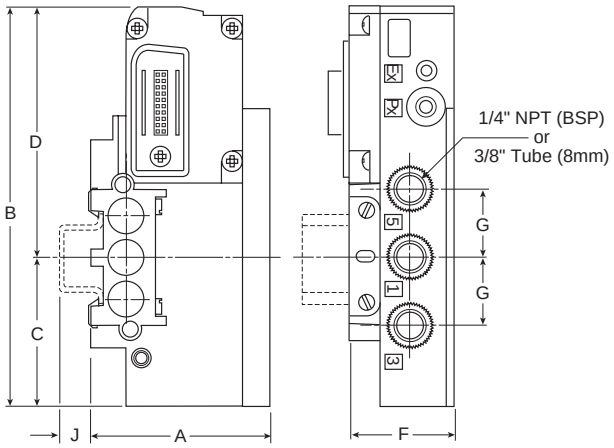


Dimensions

A	B	C	D	F
2.94 (75)	6.22 (158)	2.28 (58)	3.94 (100)	1.08 (28)
G	**J**			
1.06 (27)	.47 (12)			

Inches (mm)

Transfer Module



Dimensions

A	B	C	D	F
2.75 (70)	6.22 (158)	2.28 (58)	3.94 (100)	1.65 (42)
G	**J**			
1.06 (27)	.39 (10)			

Inches (mm)

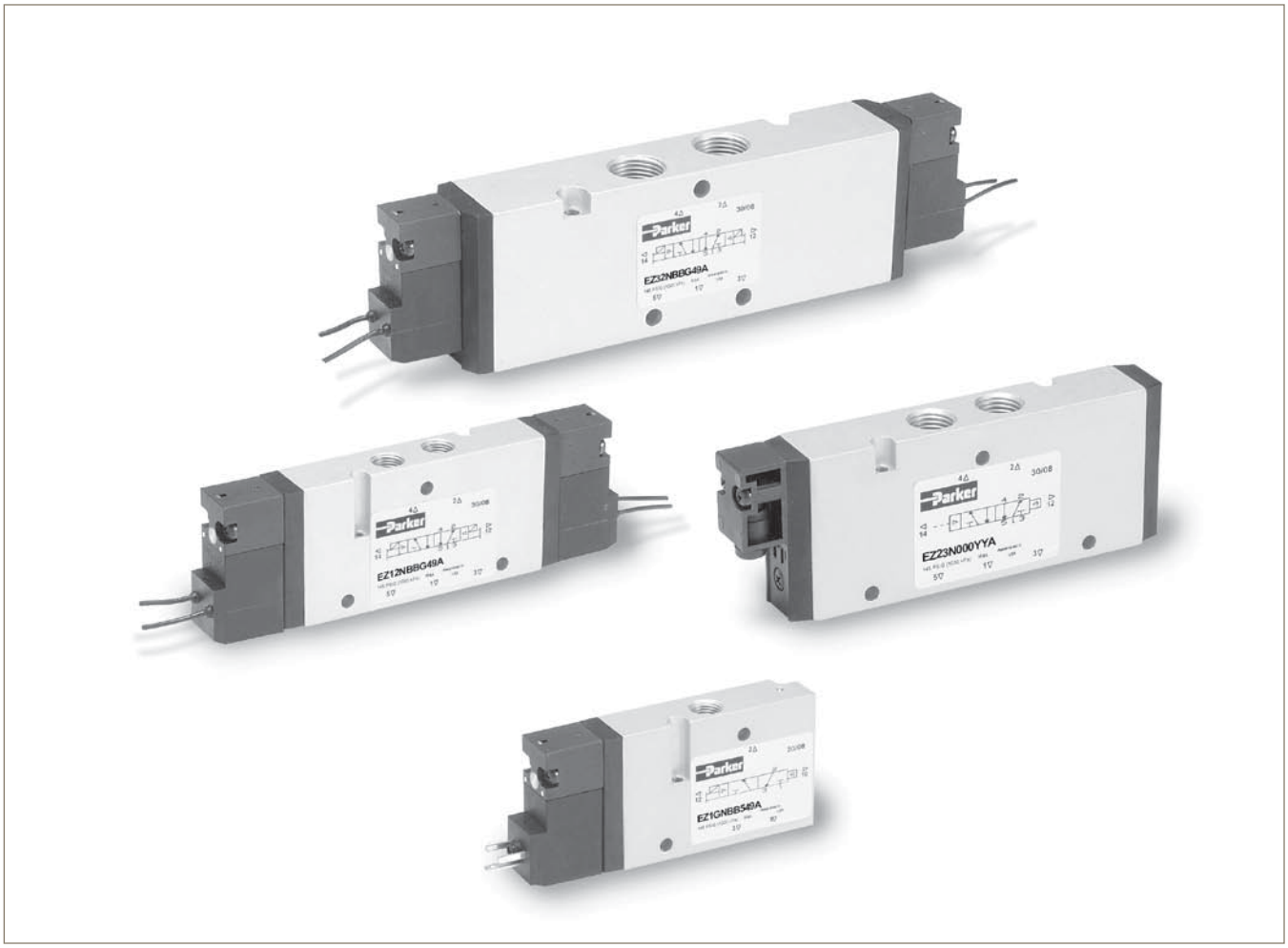
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EZ Inline Series

Air Control Valves

Section D

www.parker.com/pneu/EZinline

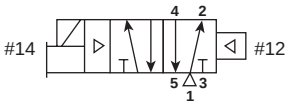


Basic Valve Functions D2-D3
Basic Valve Features D4-D5
Solenoid Operated Valves
Common Part Numbers D6
Model Number Index D7
Remote Pilot Operated Valves
Common Part Numbers D8
Model Number Index D9
IEM Bar Manifolds D10
IEM Bar Manifolds Assemblies D11
Accessories D12
Options & Electrical Connectors D13
Technical Information D14-D15
Exploded View & Kits D16
Technical Information & Weights D17
Dimensions
EZ1 3 & 4-Way D18
EZ2 3 & 4-Way D19
EZ3 3 & 4-Way D20
EZ1 Manifold D21
EZ2 Manifold D22
EZ3 Manifold D23

BOLD ITEMS ARE MOST POPULAR.

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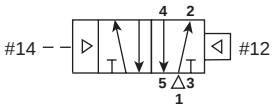
Single Solenoid
4-Way, 2-Position



De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

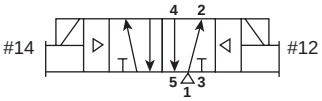
Single Remote Pilot
4-Way, 2-Position



Normal position – Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Operated position – Maintained air signal at port 14. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

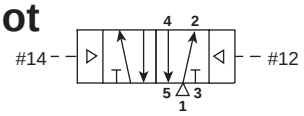
Double Solenoid
4-Way, 2-Position



Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

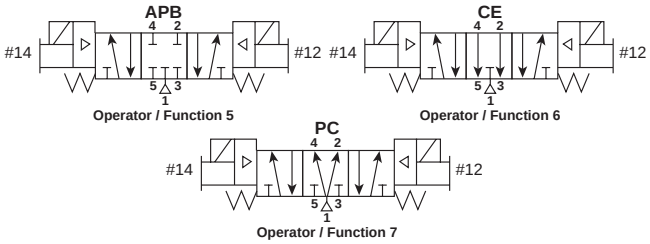
Double Remote Pilot
4-Way, 2-Position



Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Double Solenoid
4-Way, 3-Position



With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

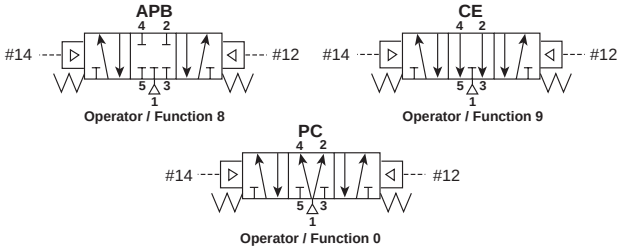
With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 5: All Ports Blocked
All ports blocked in the center position.

Function 6: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 7: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

Double Remote Pilot
4-Way, 3-Position



With #12 operator signaled – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator signaled – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

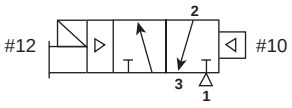
Function 8: All Ports Blocked
All ports blocked in the center position.

Function 9: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 0: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

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Single Solenoid
3-Way, 2-Position NC (NNP)

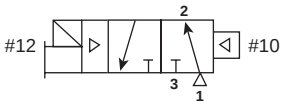


Normally Closed:

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Single Solenoid
3-Way, 2-Position NO (NP)



Normally Open:

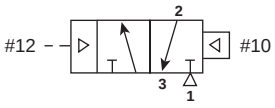
De-energized position – Solenoid #10 de-energized. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Energized position – Solenoid #10 energized. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

3-Way Configuration

Looking at the #1 and #3 ports, the solenoid (or remote operator) is always on the #3 port end.
Different spools are used for NO and NC functions.

Single Remote Pilot
3-Way, 2-Position NC (NNP)

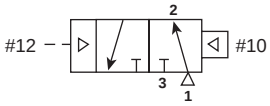


Normally Closed:

Normal position – Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Operated position – Maintained air signal at port 12. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Single Remote Pilot
3-Way, 2-Position NO (NP)



Normally Open:

Normal position – Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Operated position – Maintained air signal at port 10. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Definitions

CSA C US ..... Canadian Standards Association and UL Applicable Testing Methods.

CE..... European Directives Marking

IP65 ..... International classification system for sealing effectiveness for enclosures of electrical equipment. IP stands for "Ingress Protection" and the two digits XY stand for: X - protection from solid objects and Y - protection from moisture. IP 65 is protection from dust and water washdown.

NEMA 4..... National standard for electrical enclosure protection. NEMA 4 provides protection against dirt, dust, water hosedown and rain. (Similar to IP 65)

EN175301-803 ... International standard for the 15mm 3-Pin connector. The pin spacing is 8mm.

3-WAY ..... Valve has three ways for air to flow. Also designated as 3/2.

4-WAY ..... Valve has four ways for air to flow. Also designated as 5/2 for 2-Position and 5/3 for 3-Position.

NC ..... Normally Closed. Pressure is blocked when in neutral position. (Normally Non-Passing)

NO ..... Normally Open. Pressure passes thru when in neutral position. (Normally Passing)

IEM ..... Inlet / Exhaust manifold. The inlet and exhaust ports are located in the manifold. The cylinder ports are accessed in the valve.

NLMOR ..... Non-Locking Manual Override. A constant actuation must be maintained for the valve to remain shifted.

LMOR..... Locking Manual Override. Valve remains shifted without constant end user override actuation.

Surge Suppression
Nullifies reverse EMF generated when a solenoid is de-energized.

SCFM ..... Measure of air flow. Standard Cubic Feet per Minute at 68°F and 36% humidity at sea level.

PSIG ..... Pounds per Square Inch measured with a gage. (Catalog pressure reflects PSIG)

PSIA ..... Pounds per Square Inch atmospheric.

kPa ..... Kilopascals. International measure of pressure. 145 PSIG = 1000 kPa

PSIG = 0 → PSIA = 14.7 → In. of Hg = 0 → kPa = 0

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EZ Inline Features

Robust Design – Wear Compensation System and Balanced Spool Design
Simplified Ordering – Functions Based on Market Demand
Optimized Design – Ultimate Design for Industrial Market
International Offering –Voltage and Port Sizes for all Markets
Global Sourcing – Cost Effective Solution

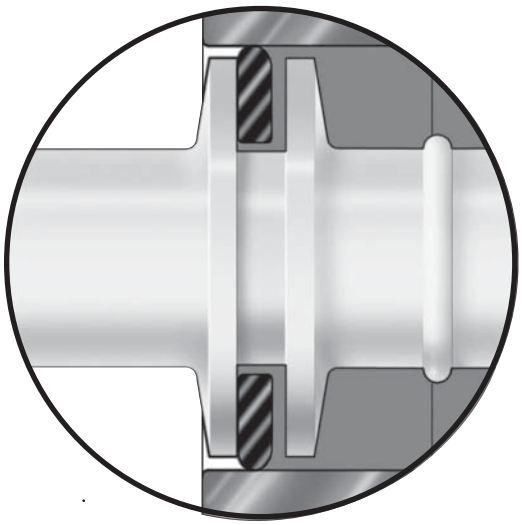
Applications

Food and Beverage Processing
Household and Personal Care Packaging
Printing Processes
Textile Manufacturing and Packaging
Airport Conveyor Systems
Warehousing, Packaging and Conveying

WCS

*W*ear *C*ompensation *S*ystem

- **Maximum Performance**
  - Low Friction - Lower Operating Pressures
  - Fast Response - Less Wear
- **Long Cycle Life** - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- **Non-Lube Service** - No lubrication required for continuous valve shifting.
- **Bi-Directional Spool Seals** - Common spool used for any pressure, including vacuum.



Refer to www.parker.com/pneu/EZinline
Click on Catalog EZ inline

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Flow Characteristics

- EZ1: 0.8 Cv
- EZ2: 1.3 Cv
- EZ3: 2.4 Cv

Operating Pressure

- Vacuum to 145 PSIG

Ports

- EZ1: 1/8 Inch
- EZ2: 1/4 Inch
- EZ3: 3/8 Inch

Mounting

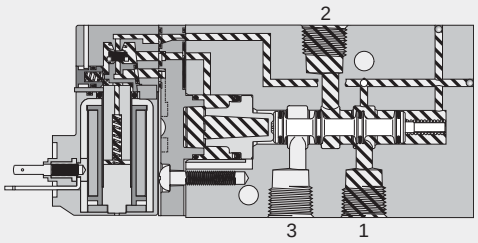
- Inline
- IEM Manifold

Solenoids

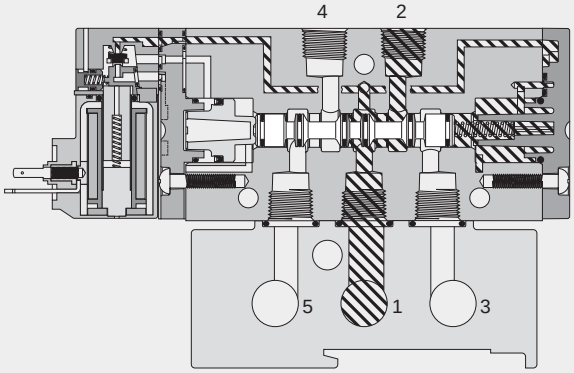
- 2.5 W – 15mm Wide
  - Flying Leads
  - 3-Pin EN175301-803 (Formerly DIN 43650C)
- 1.2 W Option Available

Certification / Approval

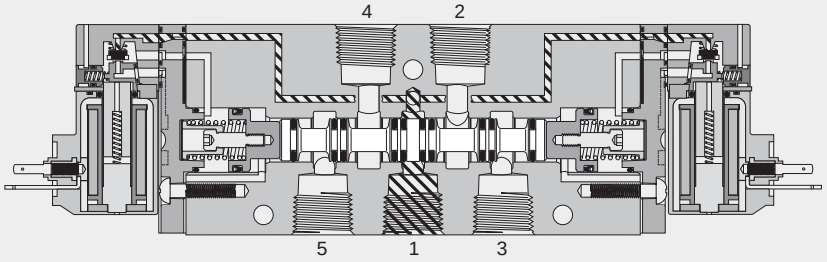
- CSA, C, US
- Solenoid Approved to be CE marked
- IP 65 Rating / NEMA 4



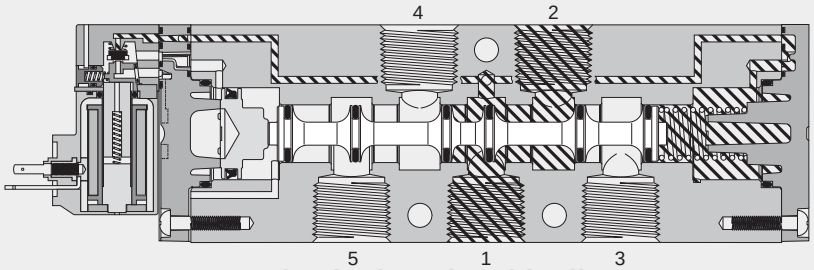
EZ1, 3/2, Single Solenoid Inline
Shown Energized



EZ1, 5/2, Single Solenoid Inline
Shown De-Energized



EZ2, 5/3 Double Solenoid Inline
Shown De-Energized

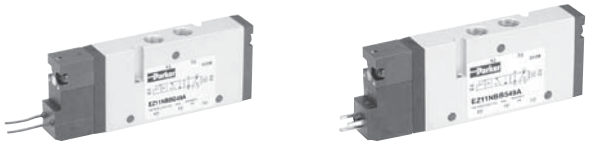


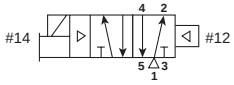
EZ3, 5/2 Single Solenoid Inline
Shown De-Energized

Pressure **Exhaust**

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Single Solenoid
4-Way, 2-Position

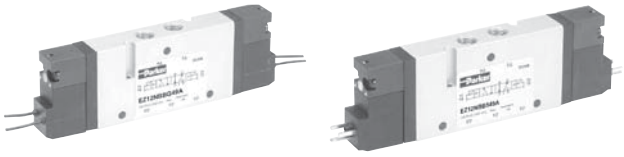


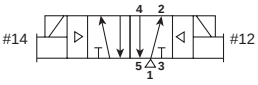


Inline

	Flying Leads	3-Pin			
EZ1	EZ11NBBG53A	EZ11NBB553A	1/8"	120VAC	0.8 Cv
EZ1	EZ11NBBG49A	EZ11NBB549A	1/8"	24VDC	0.8 Cv
EZ2	EZ21NBBG53A	EZ21NBB553A	1/4"	120VAC	1.3 Cv
EZ2	EZ21NBBG49A	EZ21NBB549A	1/4"	24VDC	1.3 Cv
EZ3	EZ31NBBG53A	EZ31NBB553A	3/8"	120VAC	2.4 Cv
EZ3	EZ31NBBG49A	EZ31NBB549A	3/8"	24VDC	2.4 Cv

Double Solenoid
4-Way, 2-Position



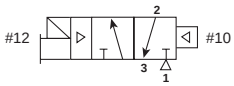


Inline

	Flying Leads	3-Pin			
EZ1	EZ12NBBG53A	EZ12NBB553A	1/8"	120VAC	0.8 Cv
EZ1	EZ12NBBG49A	EZ12NBB549A	1/8"	24VDC	0.8 Cv
EZ2	EZ22NBBG53A	EZ22NBB553A	1/4"	120VAC	1.3 Cv
EZ2	EZ22NBBG49A	EZ22NBB549A	1/4"	24VDC	1.3 Cv
EZ3	EZ32NBBG53A	EZ32NBB553A	3/8"	120VAC	2.4 Cv
EZ3	EZ32NBBG49A	EZ32NBB549A	3/8"	24VDC	2.4 Cv

Single Solenoid
3-Way, 2-Position, NC

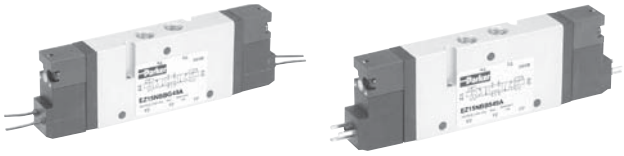


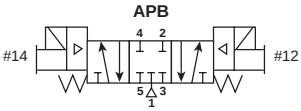


Inline

	Flying Leads	3-Pin			
EZ1	EZ1GNBBG53A	EZ1GNBB553A	1/8"	120VAC	0.8 Cv
EZ1	EZ1GNBBG49A	EZ1GNBB549A	1/8"	24VDC	0.8 Cv
EZ2	EZ2GNBBG53A	EZ2GNBB553A	1/4"	120VAC	1.3 Cv
EZ2	EZ2GNBBG49A	EZ2GNBB549A	1/4"	24VDC	1.3 Cv
EZ3	EZ3GNBBG53A	EZ3GNBB553A	3/8"	120VAC	2.4 Cv
EZ3	EZ3GNBBG49A	EZ3GNBB549A	3/8"	24VDC	2.4 Cv

Double Solenoid
4-Way, 3-Position, APB





Inline

	Flying Leads	3-Pin			
EZ1	EZ15NBBG53A	EZ15NBB553A	1/8"	120VAC	0.6 Cv
EZ1	EZ15NBBG49A	EZ15NBB549A	1/8"	24VDC	0.6 Cv
EZ2	EZ25NBBG53A	EZ25NBB553A	1/4"	120VAC	1.0 Cv
EZ2	EZ25NBBG49A	EZ25NBB549A	1/4"	24VDC	1.0 Cv
EZ3	EZ35NBBG53A	EZ35NBB553A	3/8"	120VAC	1.9 Cv
EZ3	EZ35NBBG49A	EZ35NBB549A	3/8"	24VDC	1.9 Cv

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Solenoid Operated Valves

EZ1 | 1 | N | BB | G | 49 | A

Basic Series		
EZ1 Series	16mm, 1/8"	EZ1
EZ2 Series	19mm, 1/4"	EZ2
EZ3 Series	26mm, 3/8"	EZ3

Operator Function	
3-Way	
Single Solenoid, 2-Position NC - Air Return	**G**
Single Solenoid, 2-Position NO - Air Return	H
Single Solenoid, 2-Position NC - Air Return / Spring Assist	V
Single Solenoid, 2-Position NO - Air Return / Spring Assist	W
4-Way	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return / Spring Assist	E

Voltage	AC		DC
	60Hz	50Hz	
49			24
53	120	110	

Enclosure / Lead Length	
5	**15mm 3-Pin DIN EN175301-803**
G	**Flying Leads 18"**

Pilot Source / Overrides	
BB	**Internal Pilot Source & Flush - Non-Locking Override**
BC	Internal Pilot Source & Flush Locking Override

Thread Type	
3-Way / 4-Way	
N	**NPT**
G	BSPP
R	BSPT



BOLD OPTIONS ARE MOST POPULAR.

CSA Approved Solenoid Operated Valves

EZ1 | 1 | N | BB | 5 | 49 | A | L*

Basic Series		
EZ1 Series	16mm, 1/8"	**EZ1**
EZ2 Series	19mm, 1/4"	**EZ2**
EZ3 Series	26mm, 3/8"	**EZ3**

Operator Function	
3-Way	
Single Solenoid, 2-Position NC - Air Return	G
Single Solenoid, 2-Position NO - Air Return	H
Single Solenoid, 2-Position NC - Air Return / Spring Assist	V
Single Solenoid, 2-Position NO - Air Return / Spring Assist	W
4-Way	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return / Spring Assist	E

* Max pressure: EZ1 145 PSI
EZ2 145 PSI
EZ3 110 PSI

Voltage	AC	DC
	60Hz	
49		24
53	120	
57	240	

Enclosure / Lead Length	
5	15mm 3-Pin DIN EN175301-803

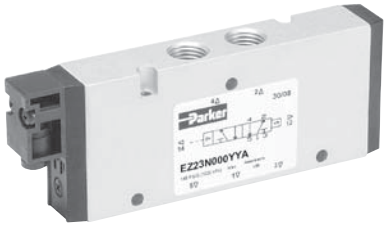
Pilot Source / Overrides	
BB	Internal Pilot Source & Flush - Non-Locking Override
BC	Internal Pilot Source & Flush Locking Override

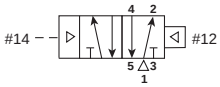
Thread Type	
3-Way / 4-Way	
N	NPT
G	BSPP
R	BSPT



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Single Remote Pilot
4-Way, 2-Position



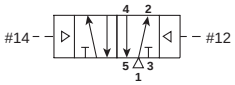


Inline

EZ1	**EZ13N000YYA**	1/8"	16mm	0.8 Cv
EZ2	**EZ23N000YYA**	1/4"	19mm	1.3 Cv
EZ3	**EZ33N000YYA**	3/8"	26mm	2.4 Cv

Double Remote Pilot
4-Way, 2-Position



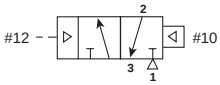


Inline

EZ1	**EZ14N000YYA**	1/8"	16mm	0.8 Cv
EZ2	**EZ24N000YYA**	1/4"	19mm	1.3 Cv
EZ3	**EZ34N000YYA**	3/8"	26mm	2.4 Cv

Single Remote Pilot
3-Way, 2-Position, NC





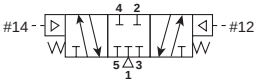
Inline

EZ1	**EZ1KN000YYA**	1/8"	16mm	0.8 Cv
EZ2	**EZ2KN000YYA**	1/4"	19mm	1.3 Cv
EZ3	**EZ3KN000YYA**	3/8"	26mm	2.4 Cv

Double Remote Pilot
4-Way, 3-Position, APB



APB



Inline

EZ1	**EZ18N000YYA**	1/8"	16mm	0.6 Cv
EZ2	**EZ28N000YYA**	1/4"	19mm	1.0 Cv
EZ3	**EZ38N000YYA**	3/8"	26mm	1.9 Cv

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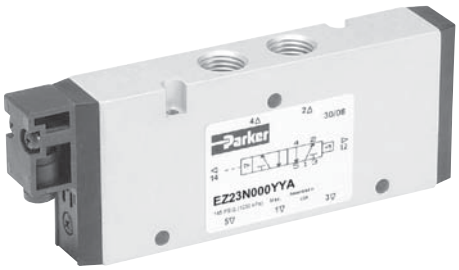
Air Pilot Operated Valves

EZ1	K	N	000	YY	A

Basic Series		
EZ1 Series	**16mm, 1/8"**	**EZ1**
EZ2 Series	**19mm, 1/4"**	**EZ2**
EZ3 Series	**26mm, 3/8"**	**EZ3**

Thread Type	
3-Way / 4-Way	
N	**NPT**
G	BSPP
R	BSPT

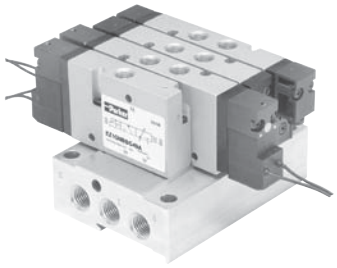
Operator Function	
3-Way	
Single Remote Pilot, 2-Position NC - Air Return	**K**
Single Remote Pilot, 2-Position NO - Air Return	L
Single Remote Pilot, 2-Position NC - Air Return / Spring Assist	X
Single Remote Pilot, 2-Position NO - Air Return / Spring Assist	Y
4-Way	
Single Remote Pilot, 2-Position - Air Return	**3**
Double Remote Pilot, 2-Position	**4**
Double Remote Pilot, 3-Position - APB	**8**
Double Remote Pilot, 3-Position - CE	9
Double Remote Pilot, 3-Position - PC	0
Single Remote Pilot, 2-Position - Air Return / Spring Assist	F



BOLD OPTIONS ARE MOST POPULAR.

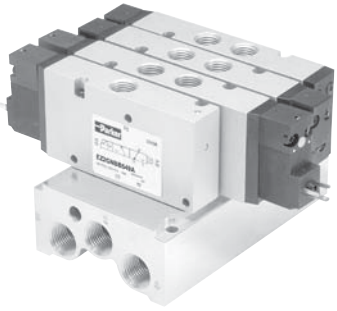
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EZ1



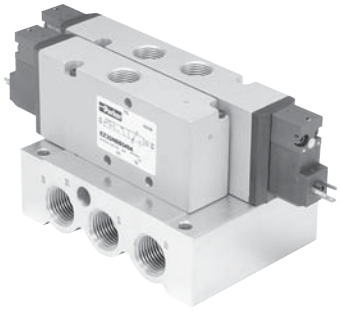
3-Way or 4-Way, NPT	**AAPSMABXN##NP**	## – stations 02 to 12

EZ2



3-Way or 4-Way, NPT	**AAPSMBBXN##NP**	## – stations 02 to 12

EZ3



3-Way or 4-Way, NPT	**AAPSMCBXN##NP**	## – stations 02 to 12

IEM Bar Manifold allows for mounting of 3-Way and 4-Way inline valves on the same manifold.

- Utilizes Inline mount.
- Same manifold for 3-Way & 4-Way valves.
- **Kits (PS....) include:** (1) Manifold, Valve Hold Down Bolts, Gaskets.

IEM Bar Manifold Model Number

	PS	M	A	BX	N	02	NP

Manifold

Manifold Only	Blank
Manifold with Factory Assembled Valves Mounted	AA

Type

IEM, 3-Way or 4-Way	M

Series

EZ1 Series	A
EZ2 Series	B
EZ3 Series	C

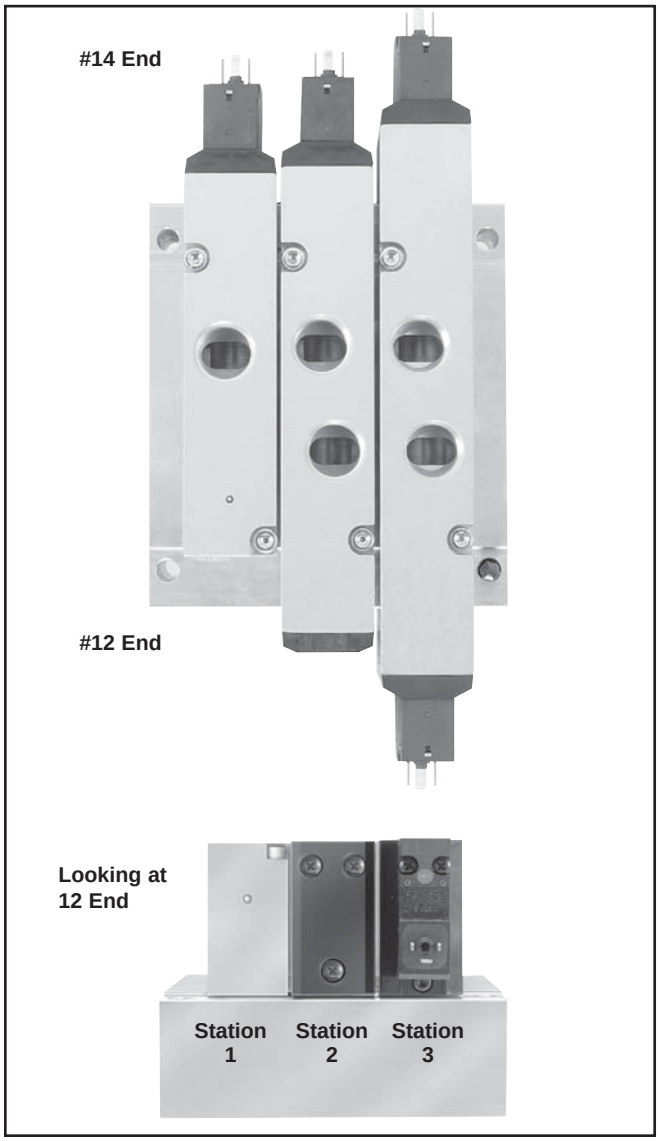
Port Type

N	NPT
G	BSPP "G"
R	BSPT "R"

Stations

02
•
•
•
12

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How To Order Aluminum Bar Manifold Assemblies

1. List Manifold Assembly call out. Use AA + the part number of the aluminum bar manifold. This automatically includes the aluminum bar manifold and assembly.

2. List complete valve model number, listing left to right, LOOKING AT THE #12 END of the manifold. The left most station is station 1.

(If a blank station is needed, list the blanking plate part number at the desired station.)

AA PSM***##NP**

Use Aluminum Bar Manifold Kit Numbers from previous pages.

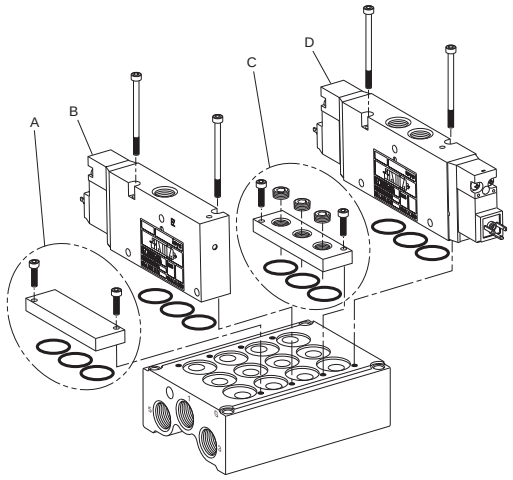
AA Manifold Assembly

Example: Application requires a 3-station "EZ3" manifold with one 3-Way, one 4-Way 2-Position and one 4-Way 3-Position valve assembled.

Qty.	Part No.	Comment
1	AAPSMCBXN03NP	
1	EZ3GNBB549A	Station 1
1	EZ31NBB549A	Station 2
1	EZ35NBB549A	Station 3

EZ2 4-Station Manifold Shown

A. Blanking Plate Kit
B. 3-Way Valve
C. Universal Blanking Plate Kit
D. 4-Way Valve



Manifold Mounting Screw Torque Chart		
Valve Size	**Screw Type**	**Torque Nm (in.lbs.)**
EZ1	M2.5	0.7 to 1.1 (6 to 10)
EZ2	M3	1.1 to 1.3 (10 to 12)
EZ3	M4	1.7 to 2.3 (15 to 20)

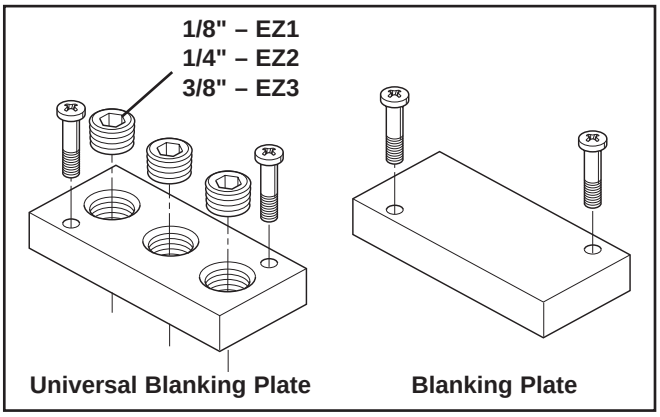
Valve to Base Mounting Screws and O-Rings are supplied with the Base. Additional Screws and O-rings are available as kits.

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Blanking Plate

	Kit Number			
	IEM Universal			
	NPT	BSPP "G"	BSPT "R"	Blank
EZ1	**PS5720P**	PS5721P	PS5722P	**PS5769P**
EZ2	**PS5820P**	PS5821P	PS5822P	**PS5869P**
EZ3	**PS5920P**	PS5921P	PS5922P	**PS5969P**

Kit includes:
(1) Plate, (2) Screws, Seal / Gaskets



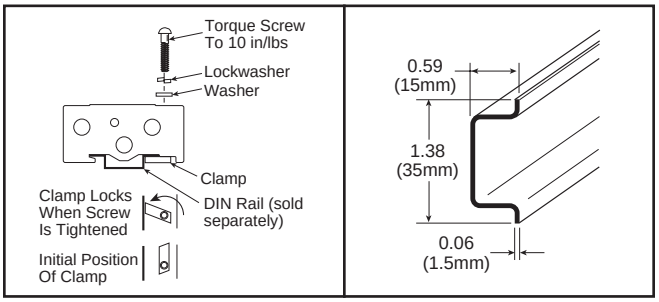
DIN Rail Hardware Kit

Series	Length	Part Number
EZ1	6 Feet	AM1DE200

DIN Rail Hardware Kit

Series	IEM Bar
EZ1	PS2990P

Kit includes: (2) Screws, (2) Nuts, (2) Clamps



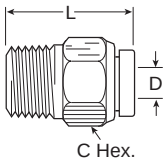
Exhaust Mufflers

	Pipe Thread	Part Number
EZ1	1/8" NPT	**P6M-PAB1**
EZ2	1/4" NPT	**P6M-PAB2**
EZ3	3/8" NPT	**P6M-PAB3**
EZ3	1/2" NPT	**P6M-PAB4**



Fittings

W68PLP Male Connector NPT (Nickel Plated)

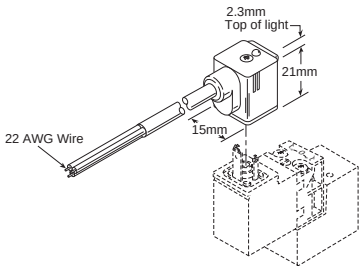


	Part No.	Tube Size	Pipe Thread	C Hex.	L	Flow Dia. D
EZ1	W68PLP-4-2	1/4	1/8	1/2	0.89	0.188
EZ2	W68PLP-6-4	3/8	1/4	5/8	1.08	0.312
EZ3	W68PLP-8-6	1/2	3/8	13/16	1.24	0.344

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15mm 3-Pin EN175301-803

Connector	Connector with Cord	Description
PS2932BP	PS2932HBP 18 Inches	Unlighted
PS2932BP	PS2932JBP 6 Feet	Unlighted
PS294675BP	PS2946J75BP* 6 Feet	Light – 12VAC or DC
PS294679BP	PS2946J79BP* 6 Feet	Light – 24VAC or DC
PS294683BP	PS2946J83BP* 6 Feet	Light – 110/120VAC
PS294687BP	N/A	Light – 240/230VAC



**Molded 6'
Cord Shown**

* LED with surge suppression.

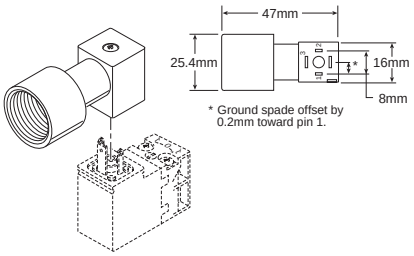
Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord.
IP65 rated when properly installed.

Engineering Data:
Conductors: 2 Poles Plus Ground
Cable Range (Connector Only): 4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm

15mm 3-Pin EN175301-803 to 1/2" Conduit

Connector	Description
PS2998P	1/2" NPTF Conduit – Unlighted with 3' (1m) Leads 20 AWG Wire

Note: Rated up to 250VAC or VDC; 6 Amps
IP65 rated when properly installed.



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Cv Calculations

Cv .....Measure of calculating flow of a valve (or other pneumatic device) that takes into effect the temperature, pressure, pressure drop, and flow. As a rule of thumb. a Cv of 1.0 is 25 SCFM with a 5 PSIG pressure drop.

$$Cv = \frac{\text{Cylinder Area (Sq. In.) (See Table 2)} \times \text{Cylinder Stroke (In.)} \times \text{Compression Factor (Table 1)} \times \text{"A" (Table 1)}}{\text{Stroke Time (sec.)} \times 28.8}$$

Table 1
Compression Factors and "A" Constants

Inlet Pressure (PSIG)	Compression Factor	"A" Constants for Various Pressure Drop*		
		2 PSI △ P	5 PSI △ P	10 PSI △ P
10	1.6	.152	.103	
20	2.3	.126	.084	.065
30	3.0	.111	.073	.055
40	3.7	.100	.065	.048
50	4.4	.091	.059	.044
60	5.1	.085	.055	.040
70	5.7	.079	.051	.037
80	6.4	.075	.048	.035
90	7.1	.071	.046	.033
100	7.8	.068	.044	.032
110	8.5	.065	.042	.030
120	9.2	.063	.040	.029
130	9.9	.061	.039	.028
140	10.6	.058	.037	.027
150	11.2	.057	.036	.026
160	11.9	.055	.035	.025
170	12.6	.053	.034	.024
180	13.3	.052	.033	.024
190	14.0	.051	.032	.023
200	14.7	.050	.032	.023

Note: Use "A" constant at 5 PSI △ P for most applications. On very critical applications. use "A" at 2 PSI △ P. You will find in many cases, a 10 PSI △ P is not detrimental, and can save money and mounting space.

* Tabulated values are the solution of $\frac{1}{22.48}\sqrt{\frac{GT}{(P_1 - P_2)\,P_2}}$ where T is for 68°F and G =1 for Air.

Flow Rating (Cv)

Size	Port Size	Mounting Style	2-Position	3-Position
EZ1	1/8" Ports	Inline	0.8	0.6
EZ2	1/4" Ports	Inline	1.3	1.0
EZ3	3/8" Ports	Inline	2.4	1.9

ANSI / (NFPA) T3.21.3-1990 standard for Cv measurement.

Table 2
Effective Square-Inch Areas for Standard-Bore-Size Cylinders

Bore Size	Cylinder Area (Sq. In.)	Bore Size	Cylinder Area (Sq. In.)
3/4"	.44	4"	12.57
1"	.79	4-1/2"	15.90
1-1/8"	.99	5"	19.64
1-1/4"	1.23	6"	28.27
1-1/2"	1.77	7"	38.48
1-3/4"	2.41	8"	50.27
2"	3.14	10"	78.54
2-1/2"	4.91	12"	113.10
3-1/4"	8.30	14"	153.94
3-5/8"	10.32		

Temperature Rating

5°F to 120°F (-15°C to 49°C) ambient.

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Response Time

Valve Size	Port Size	0 Cu. In. Test Chamber	
		Fill	Exhaust
2-Position Single Solenoid / Internal Air Return			
EZ1	1/8"	21	24
EZ2	1/4"	24	26
EZ3	3/8"	35	36
2-Position Single Solenoid Spring / Air Return			
EZ1	1/8"	20	23
EZ2	1/4"	21	24
EZ3	3/8"	34	34
2-Position Double Solenoid			
EZ1	1/8"	20	23
EZ2	1/4"	21	23
EZ3	3/8"	31	33
3-Position Double Solenoid			
EZ1	1/8"	25	22
EZ2	1/4"	23	23
EZ3	3/8"	20	22

Average Fill Time (ms milliseconds): With 100 PSIG supply, time required to fill from 0-90 PSIG and exhaust from 100 PSIG to 10 PSIG is measured from instant of energizing, or de-energizing 120V/60Hz solenoid. Times shown are average.

Solenoid Information

(Solenoids are rated for continuous duty.)

Code	Voltage			Power Consumption	Holding (Amps)
	AC		DC		
	60Hz	50Hz			
49	—	—	24	2.5W	.022
53	120	110	—	3.0VA	.013
57	240	230	—	3.0VA	.010

Note: Voltage rated +10 / -10%.

Solenoid Information

(CSA Approved Valves)

Code	Voltage			Power Consumption	Holding (Amps)
	AC		DC		
	60Hz	50Hz			
49	—	—	24	1.2W	.049
53	120	110	—	1.6VA	.013
57	240	230	—	1.6VA	.007

Note: Voltage rated +10 / -15%.

Operating Pressures:

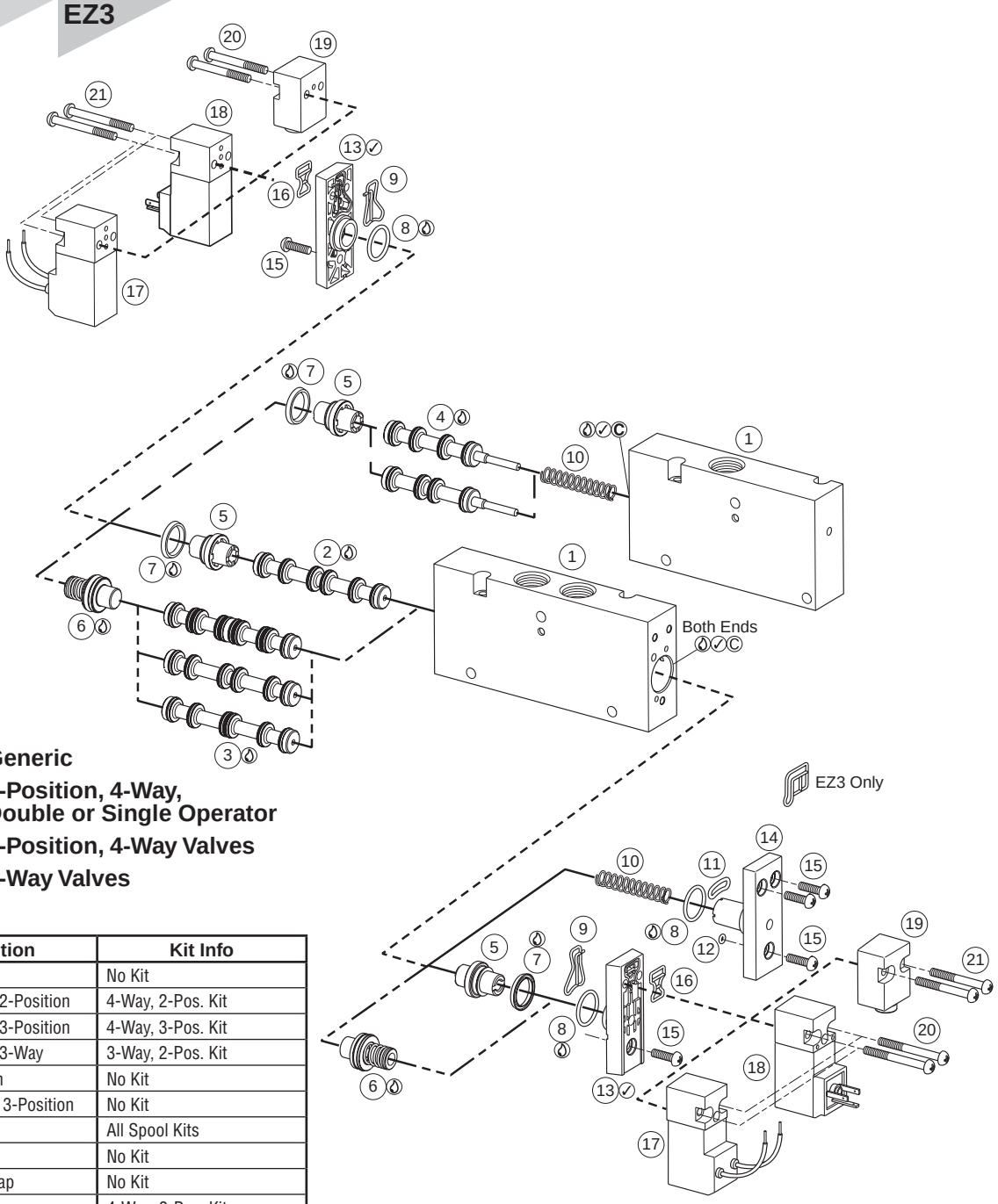
Maximum: 145 PSIG (10.0 bar)*
Minimum: see chart

Operator / Function		EZ1	EZ2	EZ3
1, 3, G, H, K, L	Single Operator, Air Return	30 (2.1)	25 (1.7)	20 (1.4)
2	Double Solenoid Operator, 2-Position	30 (2.1)	25 (1.7)	20 (1.4)
4, 8, 9, 0	Double Remote Pilot Operator	Vacuum	Vacuum	Vacuum
5, 6, 7	Double Solenoid Operator, 3-Position	35 (2.4)	35 (2.4)	30 (2.0)
E, F, V, W, X, Y	Single Operator, Spring / Air Return	35 (2.4)	35 (2.4)	35 (2.4)

Remote Pilot Signal – 35 to 145 PSIG (3.1 to 10 bar)
* Maximum Pressure for EZ3, CSA approved valve is 110 PSIG (7.6 bar)

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EZ1 **EZ2** **EZ3**



EZ2 Valve Shown

Legend

- Generic
- 2-Position, 4-Way, Double or Single Operator
- 3-Position, 4-Way Valves
- 3-Way Valves

Parts List

Item	Description	Kit Info
1	Valve Body	No Kit
2	Spool Assembly, 2-Position	4-Way, 2-Pos. Kit
3	Spool Assembly, 3-Position	4-Way, 3-Pos. Kit
4	Spool Assembly, 3-Way	3-Way, 2-Pos. Kit
5	Piston, 2-Position	No Kit
6	Piston Assembly, 3-Position	No Kit
7	Lip Seal	All Spool Kits
8	O-Ring	No Kit
9	Gasket, 13 End Cap	No Kit
10	Spring	4-Way, 2-Pos. Kit
11	O-Ring, 14 End Cap	No Kit
12	O-Ring	No Kit
13	End Cap, Solenoid Operator	No Kit
14	End Cap, 12 End Return	No Kit
15	Screw, End Cap	No Kit
16	Gasket, Solenoid	Solenoid Kits w/ Air Pilot Kit
17	Solenoid Operator, Flying Lead	Solenoid Kit, Flying Lead
18	Solenoid Operator, DIN	Solenoid Kit, 3-Pin
19	Remote Pilot Adapter	Air Pilot Kit
20	Screw, Solenoid	Solenoid Kits
21	Screw, Remote Pilot Adapter	Remote Pilot Kit
22	Grease Tube, (not shown)	All Spool Kits
23	Instruction Sheet, (not shown)	All Kits (No. V457P)

Note: See Kits on following page.

Lightly grease with provided lubricant.

Inspect for nicks, scratches, and surface imperfections. If present, reduced service life is probable and future replacement should be planned.

Clean with lint-free cloth.

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EZ1 **EZ2** **EZ3**

Spool Kits	EZ1	EZ2	EZ3	Items Included
4-Way, 2-Pos	PS5701	PS5801	PS5901	2, 7, 10, 22, 23
4-Way, 3-Pos APB	PS5702	PS5802	PS5902	3, 7, 22, 23
4-Way, 3-Pos CE	PS5703	PS5803	PS5903	3, 7, 22, 23
4-Way, 3-Pos PC	PS5704	PS5804	PS5904	3, 7, 22, 23
3-Way, 2-Pos NC	PS5771	PS5871	PS5971	4, 7, 10, 22, 23
3-Way, 2-Pos NO	PS5772	PS5872	PS5972	4, 7, 10, 22, 23

Manifold Kits	EZ1	EZ2	EZ3	Items Included
Valve to Base	PS5784	PS5884	PS5984	O-Ring (15), Screws (10)

Solenoid Kits 2.5W Coils	Non-Locking Overide			
	3 Pin EN175301803	Items Included	Flying Leads	Items Included
24VDC (49)	PS575B49P	16, 18, 20, 23	PS57GB49P	16, 17, 20, 23
120VAC (53)	PS575B53P	16, 18, 20, 23	PS57GB53P	16, 17, 20, 23
	Locking Override			
24VDC (49)	PS575C49P	16, 18, 20, 23	PS57GC49P	16, 17, 20, 23
120VAC (53)	PS575C53P	16, 18, 20, 23	PS57GC53P	16, 17, 20, 23

Solenoid Kits CSA Approved*	Non-Locking Overide			
	3 Pin EN175301803	Items Included	Flying Leads	Items Included
24VDC (49)	PS585B49P	16, 18, 20, 23	PS58GB49P	16, 17, 20, 23
120VAC (53)	PS585B53P	16, 18, 20, 23	PS58GB53P	16, 17, 20, 23
240VAC (57)	PS585B57P	16, 18, 20, 23	PS58GB57P	16, 17, 20, 23
	Locking Override			
24VDC (49)	PS585C49P	16, 18, 20, 23	PS58GC49P	16, 17, 20, 23
120VAC (53)	PS585C53P	16, 18, 20, 23	PS58GC53P	16, 17, 20, 23
240VAC (57)	PS585C57P	16, 18, 20, 23	PS58GC57P	16, 17, 20, 23

Remote Pilot Kit	EZ1	EZ2	EZ3	Items Included
Air Pilot Conversion	PS5711	PS5711	PS5711	16, 19, 21

* Only applicable with CSA approved valves.

Materials of Construction

Body ..... Anodized Aluminum
End Caps..... Nylon Polymer - 33% Glass Filled
Seals..... Nitrile
Solenoid..... Polyamide
Spool ..... Aluminum

Product Shipping Weights

Series	Single 4-Way Solenoid Valve	4-Way, 3-Position Valve
EZ1	0.35	0.53
EZ2	0.50	0.60
EZ3	0.85	1.17

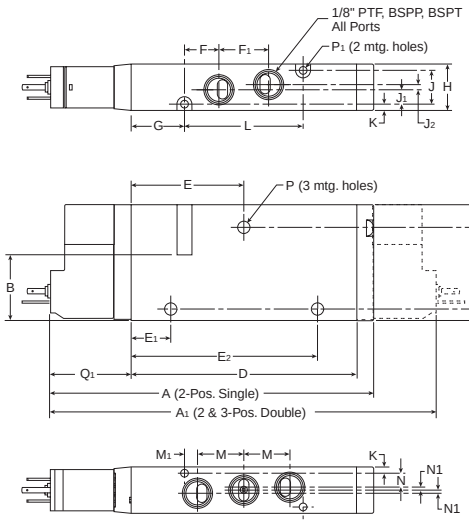
Weights are in pounds and are approximate.

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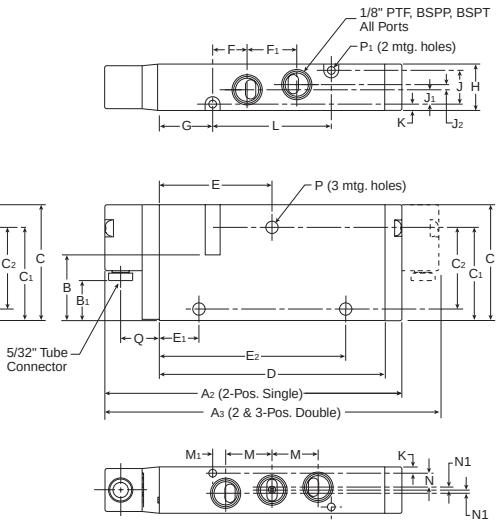
EZ1

Single & Double Operators – 4-Way Inline

Solenoid



Remote Pilot



Note: For CSA Approved valves, add .09 (2.5mm) to dimension A and .19 (5mm) to dimension A_1.

EZ1 4-Way Inline

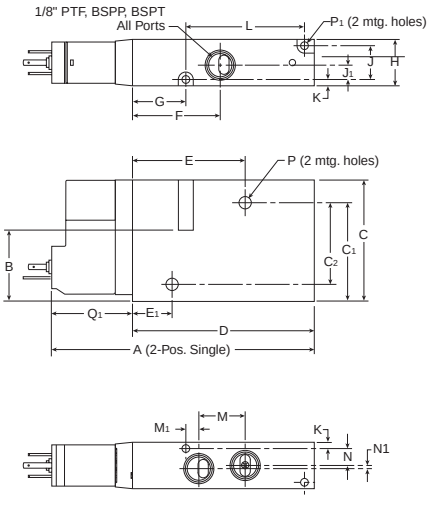
A 4.49 (114)	**A_1** 5.41 (137.4)	**A_2** 4.08 (103.6)	**A_3** 4.59 (116.6)
B .94 (23.9)	**B_1** .65 (16.0)	**C** 1.67 (42.4)	**C_1** 1.36 (34.5)
C_2 1.16 (29.5)	**D** 3.09 (78.6)	**E** 1.55 (39.3)	**E_1** .54 (13.8)
E_2 2.55 (64.8)	**F** .47 (12)	**F_1** 69 (17.4)	**G** .73 (18.6)
H .64 (16.2)	**J** .46 (11.8)	**J_1** .20 (5)	**J_2** .07 (1.8)
K .09 (2.2)	**L** 1.63 (41.4)	**M** .64 (16.2)	**M_1** .18 (4.5)
N .19 (4.8)	**N_1** .04 (1.1)	**P** .17 (4.3)	**P_1** .11 (2.7)
Q .53 (13.5)	**Q_1** 1.16 29.4)		

Inches (mm)

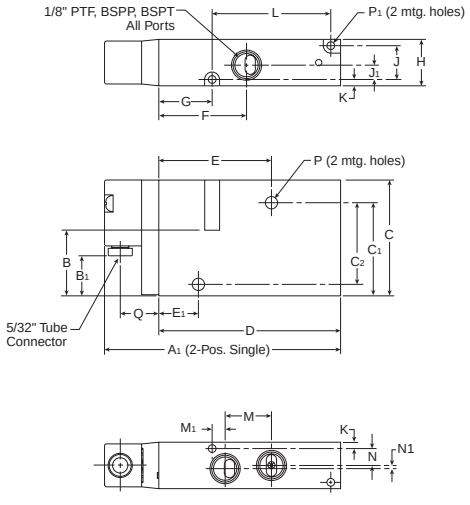
EZ1

Single Operator – 3-Way Inline

Solenoid



Remote Pilot



Note: For CSA Approved valves, add .09 (2.5mm) to dimension A.

EZ1 3-Way Inline

A 3.65 (92.8)	**A_1** 3.24 (82.4)	**B** .90 (23.9)	**B_1** .63 (16)
C 1.67 (42.4)	**C_1** 1.36 (34.5)	**C_2** 1.16 (29.5)	**D** 2.50 (63.4)
E 1.55 (39.3)	**E_1** .54 (13.8)	**F** 1.20 (30.6)	**G** .73 (18.6)
H .64 (16.2)	**J** .46 (11.8)	**J_1** .20 (5)	**K** .09 (2.2)
L 1.63 (41.4)	**M** .64 (16.2)	**M_1** .18 (4.5)	**N** .23 (5.9)
N_1 .04 (1.1)	**P** .17 (4.3)	**P_1** .11 (2.7)	**Q** .53 (13.5)
Q_1 1.16 (29.4)			

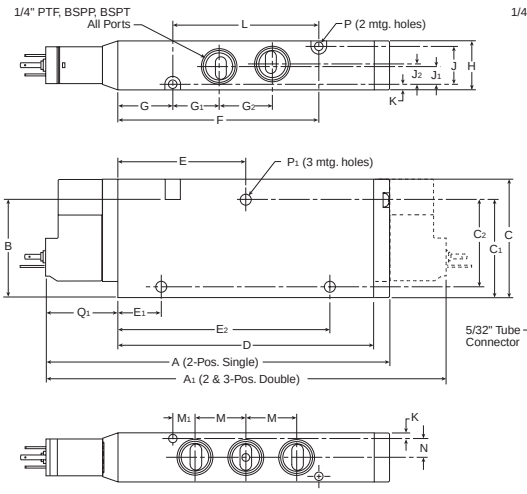
Inches (mm)

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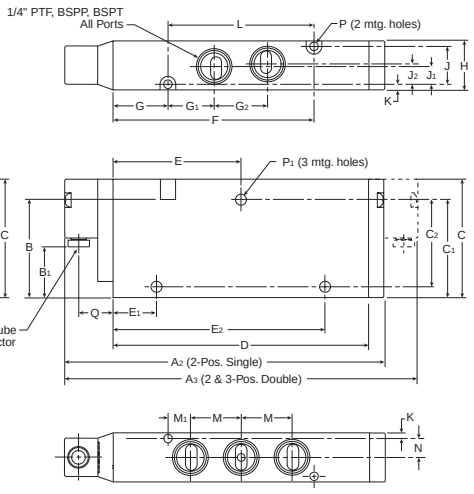
EZ2

Single & Double Operators – 4-Way Inline

Solenoid



Remote Pilot



Note: For CSA Approved valves, add .09 (2.5mm) to dimension A and .19 (5mm) to dimension A_1.

EZ2 4-Way Inline

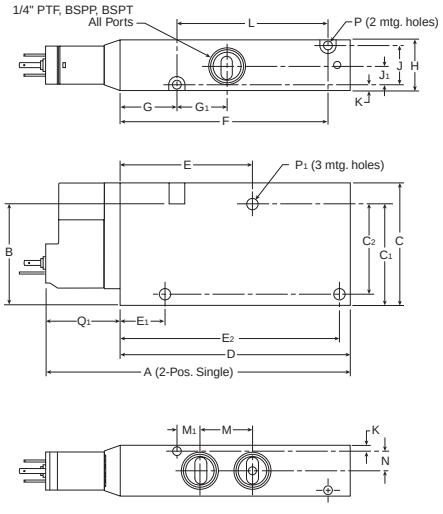
A 5.34 (135.6)	**A_1** 6.26 (159)	**A_2** 4.93 (125.2)	**A_3** 5.44 (138.2)
B 1.51 (38.4)	**B_1** .79 (20)	**C** 1.83 (46.4)	**C_1** 1.43 (36.4)
C_2 1.26 (32)	**D** 3.94 (100.2)	**E** 1.97 (50.1)	**E_1** .67 (17.1)
E_2 3.27 (83.1)	**F** 3.10 (78.7)	**G** .85 (21.5)	**G_1** .71 (18.1)
G_2 .82 (20.9)	**H** .76 (19.2)	**J** .58 (14.8)	**J_1** .27 (6.9)
J_2 .31 (7.9)	**K** .09 (2.2)	**L** 2.25 (57.2)	**M** .78 (19.9)
M_1 .34 (8.7)	**N** .27 (7.4)	**P** .13 (3.3)	**P_1** .17 (4.3)
Q .53 (13.5)	**Q_1** 1.16 (29.4)		

Inches (mm)

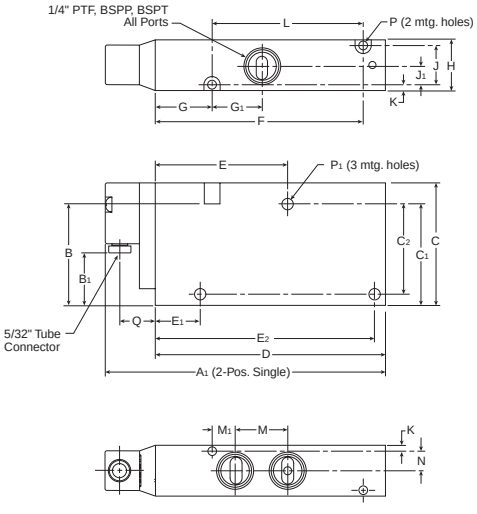
EZ2

Single Operator – 3-Way Inline

Solenoid



Remote Pilot



Note: For CSA Approved valves, add .09 (2.5mm) to dimension A.

EZ2 3-Way Inline

A 4.57 (116.5)	**A_1** 4.18 (106.1)	**B** 1.51 (38.4)	**B_1** .79 (20)
C 1.83 (46.4)	**C_1** 1.43 (36.4)	**C_2** 1.26 (32)	**D** 3.43 (87.1)
E 1.97 (50.1)	**E_1** .67 (17.1)	**E_2** 2.60 (66)	**F** 3.10 (78.7)
G .85 (21.5)	**G_1** .74 (18.8)	**H** .76 (19.2)	**J** .58 (14.8)
J_1 .27 (6.9)	**K** .09 (2.2)	**L** 2.25 (57.2)	**M** .78 (19.9)
M_1 .34 (8.7)	**N** .29 (7.4)	**P** .13 (3.3)	**P_1** .17 (4.3)
Q .53 (13.5)	**Q_1** 1.16 (29.4)		

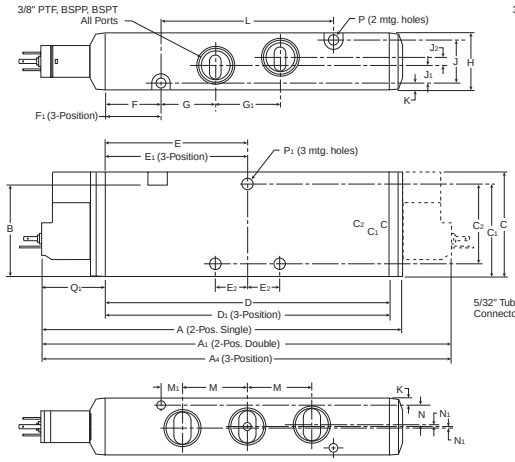
Inches (mm)

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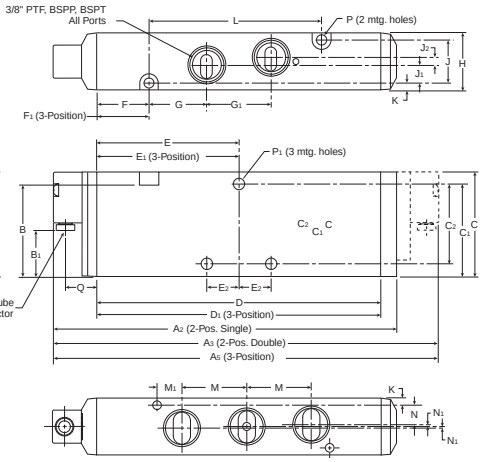
EZ3

Single & Double Operators – 4-Way Inline

Solenoid



Remote Pilot



Note: For CSA Approved valves, add .09 (2.5mm) to dimension A and .19 (5mm) to dimension A_1.

EZ3 4-Way Inline

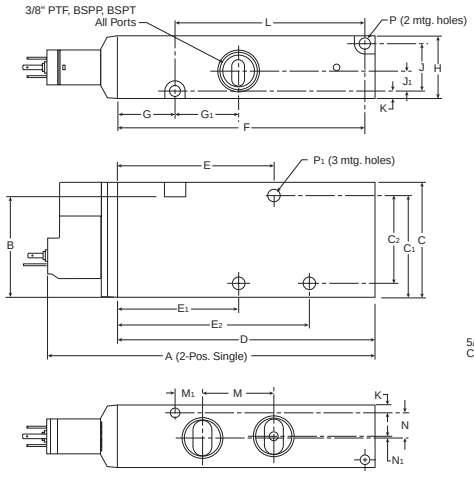
A 6.56 (166.7)	**A_1** 7.52 (191.1)	**A_2** 6.15 (156.3)	**A_3** 6.70 (170.3)
A_4 8.46 (214.9)	**A_5** 7.64 (194.1)	**B** 1.65 (42)	**B_1** .85 (21.6)
C 1.89 (48)	**C_1** 1.67 (42.5)	**C_2** 1.43 (36.5)	**D** 5.13 (130.3)
D_1 6.06 (154.1)	**E** 2.57 (65.2)	**E_1** 3.04 (77.1)	**E_2** .58 (14.7)
F 1.01 (25.7)	**F_1** 1.48 (37.6)	**G** .98 (24.8)	**G_1** 1.16 (29.4)
H 1.02 (26)	**J** .77 (19.6)	**J_1** .31 (8)	**J_2** .15 (3.7)
K .13 (3.2)	**L** 3.11 (79)	**M** 1.17 (29.7)	**M_1** .39 (9.8)
N .36 (9.1)	**N_1** .03 (.8)	**P** .17 (4.4)	**P_1** .21 (5.3)
Q .57 (14.5)	**Q_1** 1.19 (30.4)		

Inches (mm)

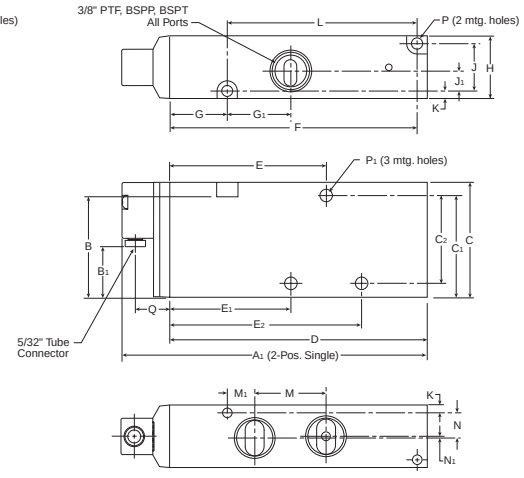
EZ3

Single Operators – 3-Way Inline

Solenoid



Remote Pilot



Note: For CSA Approved valves, add .09 (2.5mm) to dimension A.

EZ3 3-Way Inline

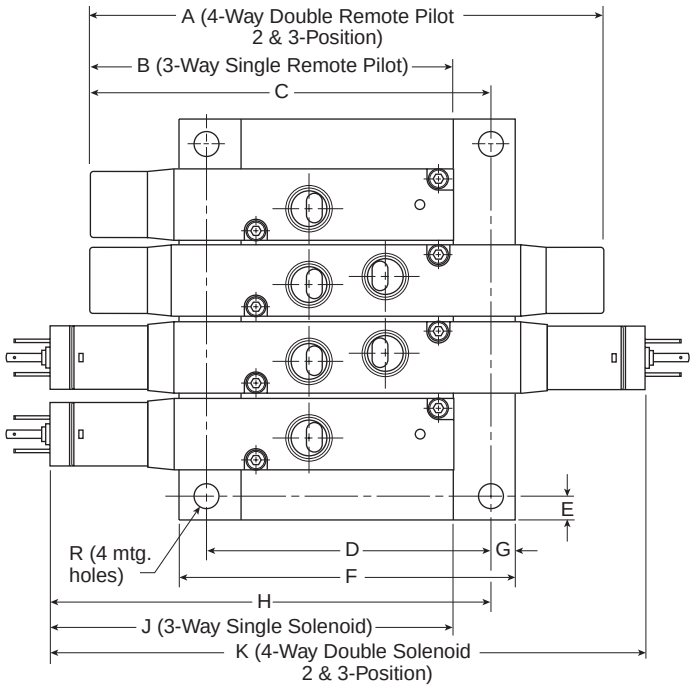
A 5.42 (137.7)	**A_1** 5.01 (127.3)	**B** 1.65 (42)	**B_1** .85 (21.6)
C 1.89 (48)	**C_1** 1.67 (42.5)	**C_2** 1.44 (36.5)	**D** 4.22 (107.3)
E 2.57 (65.2)	**E_1** 1.99 (50.5)	**E_2** 3.15 (79.9)	**F** 4.06 (103)
G .94 (24)	**G_1** 1.03 (26.5)	**H** 1.02 (26)	**J** .77 (19.6)
J_1 .33 (8.3)	**K** .13 (3.2)	**L** 3.11 (79)	**M** 1.17 (29.7)
M_1 .45 (11.5)	**N** .42 (10.6)	**N_1** .03 (.8)	**P** .17 (4.4)
P_1 .21 (5.3)	**Q** .57 (14.5)	**Q** 1.20 (30.4)	

Inches (mm)

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EZ1

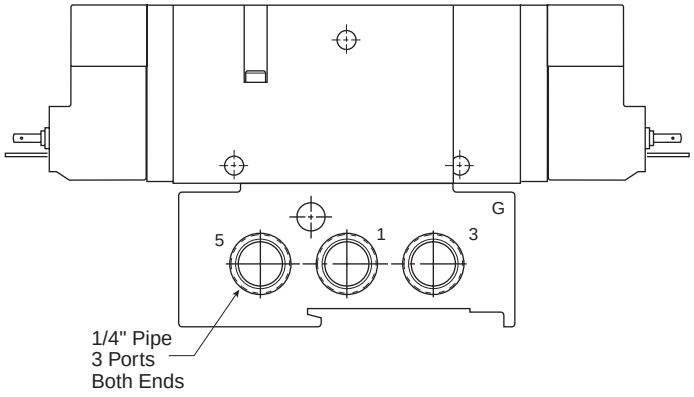
EZ1 Manifold

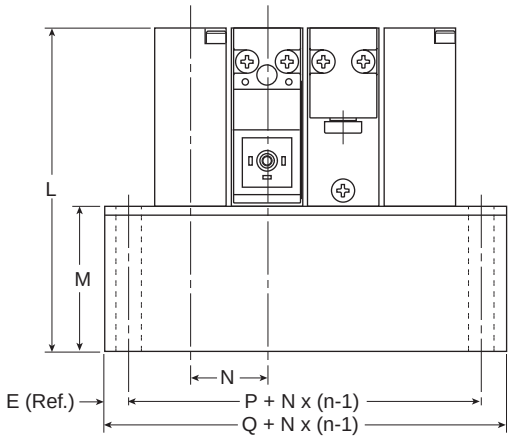


EZ1 Manifold

A	B	C	D
4.59 (116.6)	3.24 (82.4)	3.58 (90.9)	2.54 (64.5)
E	**F**	**G**	**H**
.20 (5)	3.00 (76.2)	.20 (5)	4.11 (104.3)
J	**K**	**L**	**M**
3.75 (95.8)	5.41 (137.4)	2.95 (74.9)	1.28 (32.5)
N	**P**	**Q**	**R**
.68 (17.3)	1.11 (28.2)	1.54 (39)	.25 (6.3)

Inches (mm)



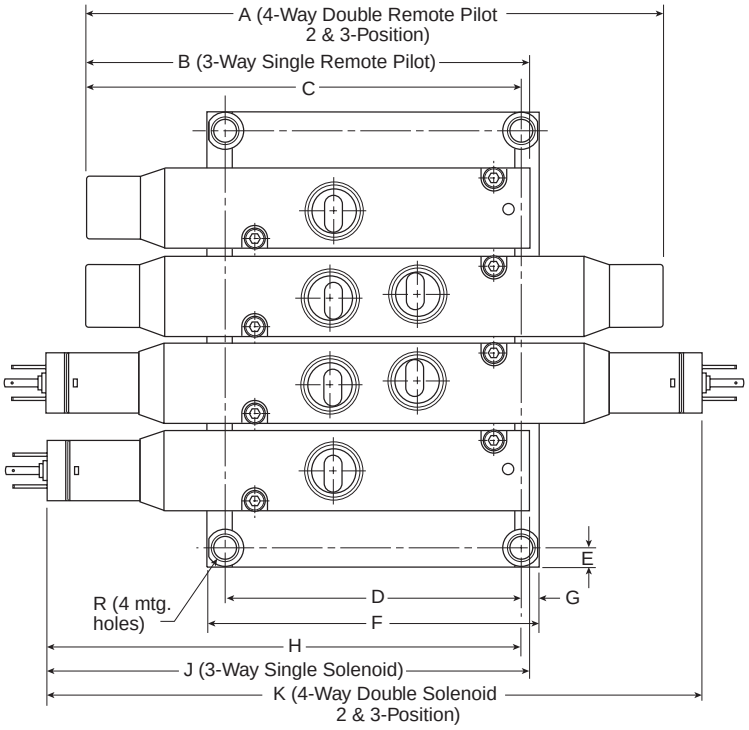


n = Number of Stations

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EZ2

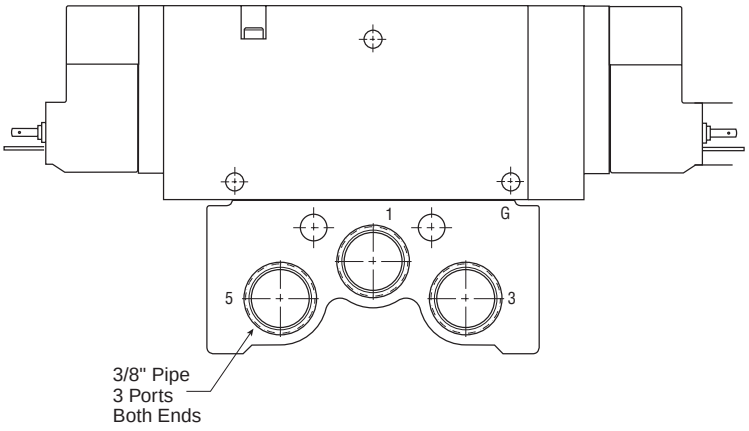
EZ2 Manifold

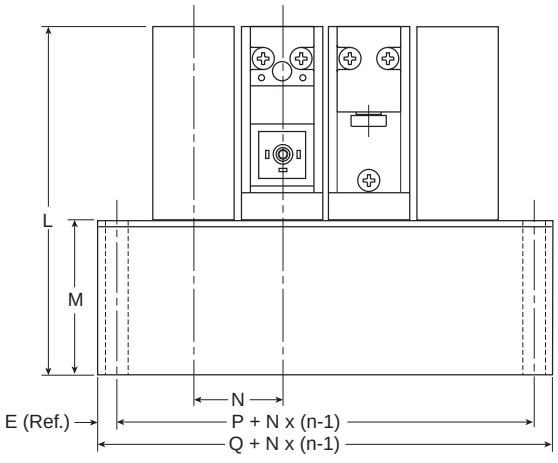


EZ2 Manifold

A	B	C	D
5.44 (138.2)	4.18 (106.1)	4.11 (104.4)	2.78 (70.6)
E	**F**	**G**	**H**
.18 (4.6)	3.12 (79.3)	.17 (4.3)	4.52 (114.8)
J	**K**	**L**	**M**
4.57 (116.5)	6.26 (159)	3.27 (83)	1.44 (36.6)
N	**P**	**Q**	**R**
.81 (20.5)	1.48 (37.6)	1.84 (46.8)	.22 (5.5)

Inches (mm)



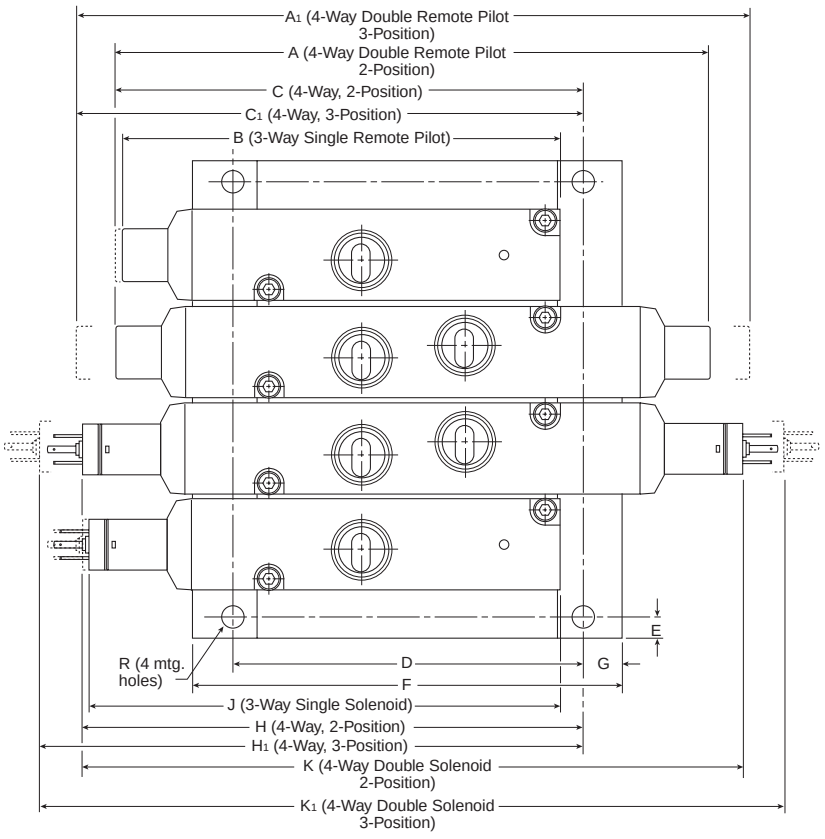


n = Number of Stations

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EZ3

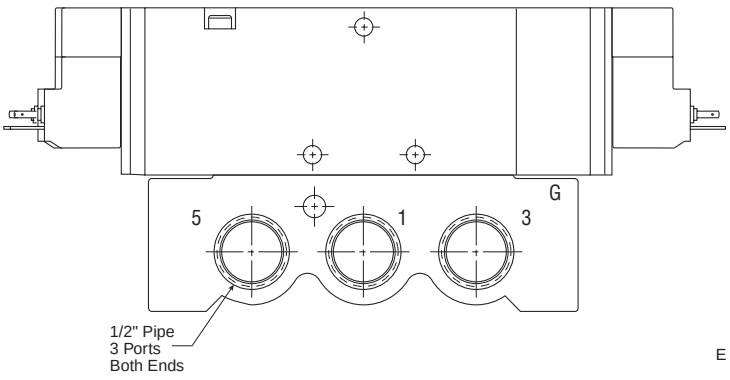
EZ3 Manifold

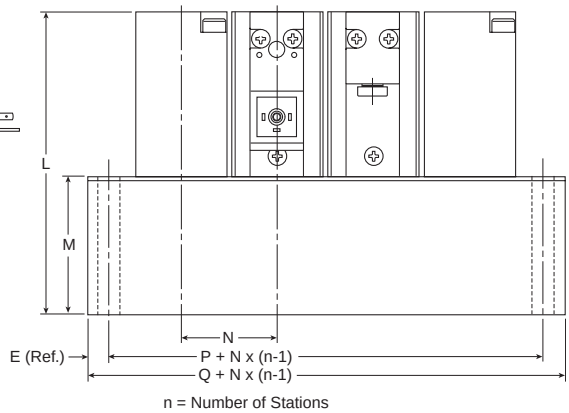


EZ3 Manifold

A	A1	B	C
6.70 (170.3)	7.64 (194.1)	5.01 (127.3)	5.33 (135.5)
C1	**D**	**E**	**F**
5.72 (145.4)	3.94 (100)	.24 (6)	4.84 (123)
G	**H**	**H1**	**J**
.45 (11.5)	5.67 (143.9)	6.13 (155.8)	5.42 (137.7)
K	**K1**	**L**	**M**
7.52 (191.1)	8.46 (214.9)	3.43 (87)	1.54 (39)
N	**P**	**Q**	**R**
1.08 (27.5)	1.64 (41.6)	2.11 (53.6)	.26 (6.5)

Inches (mm)





n = Number of Stations

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Notes

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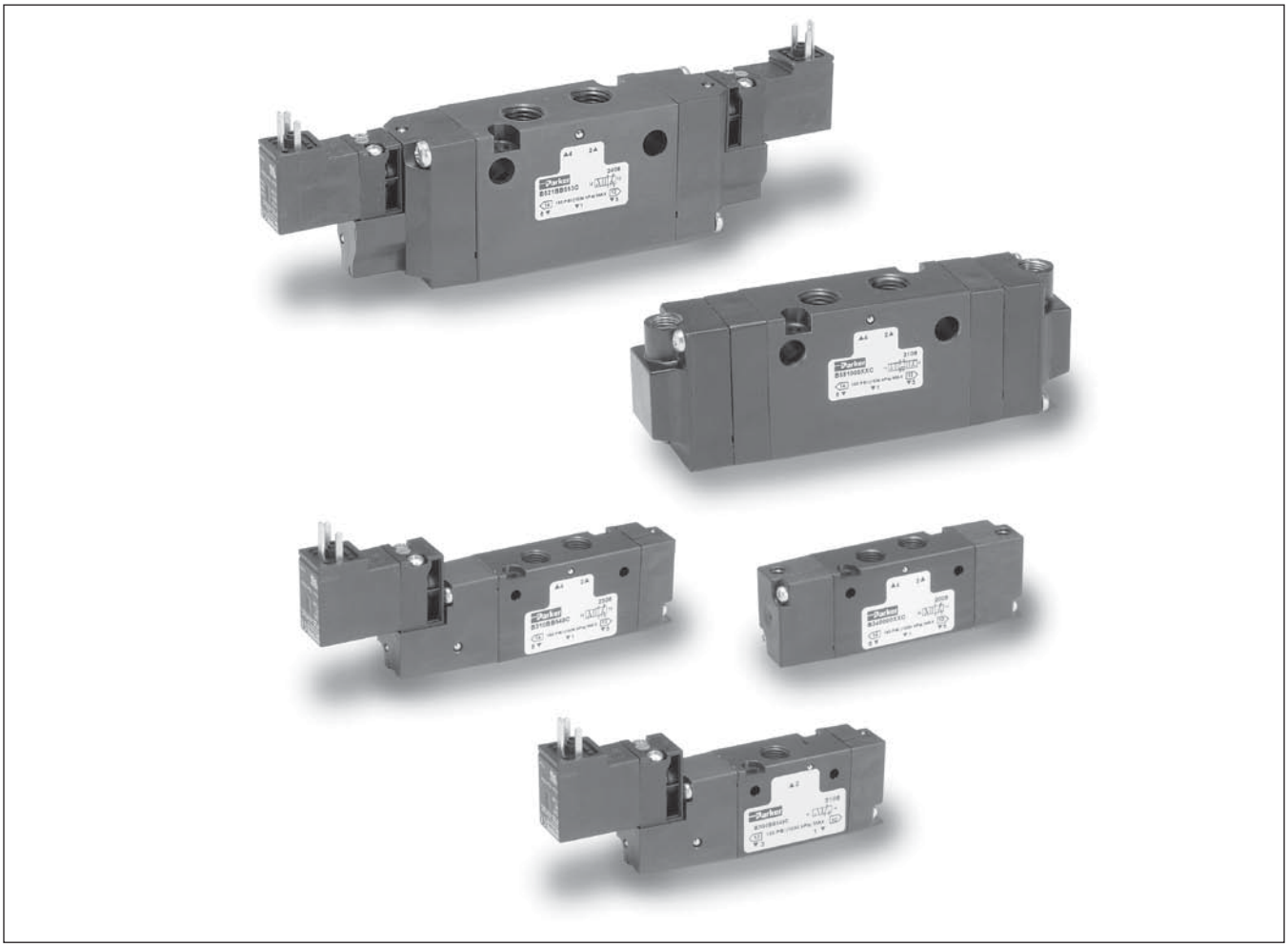
"B" Series

Air Control Valves

B3 –	.75 Cv	1/8", 1/4" Port
B5 –	1.40 Cv	1/4", 3/8" Port
B6 –	2.70 Cv	3/8" Port
B7 –	5.90 Cv	1/2" Port
B8 –	7.00 Cv	3/4" Port

Section D

www.parker.com/pneu/b

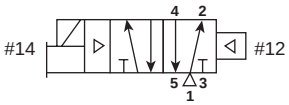


Basic Valve Functions D26-D27
Basic Valve Features D28-D29
Common Part Numbers D30-D31
Model Number Index D32-D35
Manifold / Subbases D36-D39
Accessories D40
Sandwich Regulators D41
Valve Options D42-D43
Electrical Connectors / Accessories D44-D45
Technical Information D46-D48
Solenoid Repair Kits D49
Exploded Views & Kits D50-D53
Dimensions D54-D70
Definitions & Weights D71

BOLD ITEMS ARE MOST POPULAR.

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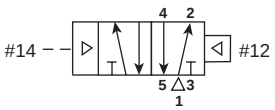
Single Solenoid
4-Way, 2-Position



De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

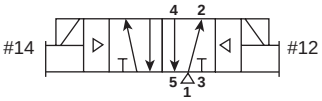
Single Remote Pilot
4-Way, 2-Position



Normal position – Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Operated position – Maintained air signal at port 14. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

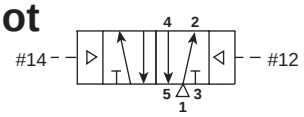
Double Solenoid
4-Way, 2-Position



Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

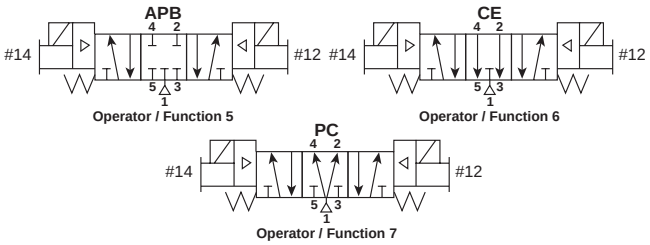
Double Remote Pilot
4-Way, 2-Position



Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Double Solenoid
4-Way, 3-Position



With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

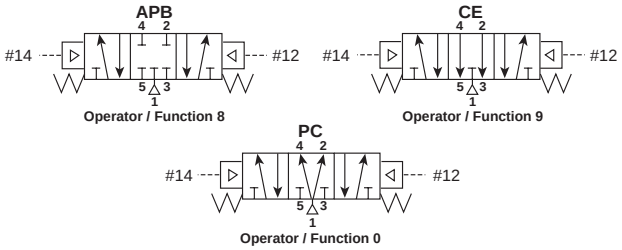
With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 5: All Ports Blocked
All ports blocked in the center position.

Function 6: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 7: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

Double Remote Pilot
4-Way, 3-Position



With #12 operator signaled – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator signaled – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 8: All Ports Blocked
All ports blocked in the center position.

Function 9: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

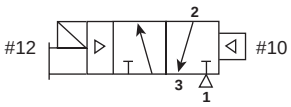
Function 0: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

Dual Pressure:
May be used for dual pressure service with pressure at ports 3 & 5. (Use either external pilot source option "K", "W" or "X", or dual pressure pilot source option "D" or "E".) If pilot source "D" or "E" is selected. the high pressure must be at port #3. If pilot source "K", "W" or "X" is selected, the external pilot must be plumbed to port #14 or "X" respectively. NOTE: The "B6" valve is also available with dual pressure using Port 5 for high pressure (Option "G" & "H"). This is only to be used if converting from a "42" ("CM") Series traditional valve.

In the 3-Position valve, the effect of dual pressure is extremely important when the valve is in the center position, as the CE and PC functions are reversed. Therefore, care should be used when selecting a 3-Position valve.

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Single Solenoid
3-Way, 2-Position
NC (NNP)

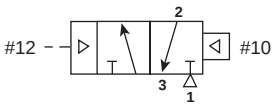


Normally Closed:

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Single Remote Pilot
3-Way, 2-Position
NC (NNP)

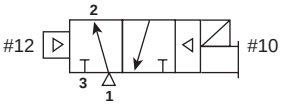


Normally Closed:

Normal position – Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Operated position – Maintained air signal at port 12. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Single Solenoid
3-Way, 2-Position
NO (NP)

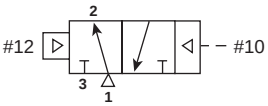


Normally Open:

De-energized position – Solenoid #10 de-energized. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Energized position – Solenoid #10 energized. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Single Remote Pilot
3-Way, 2-Position
NO (NP)

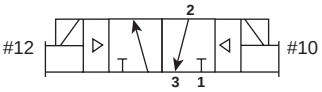


Normally Open:

Normal position – Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Operated position – Maintained air signal at port 10. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

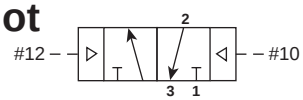
Double Solenoid
3-Way, 2-Position



Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Solenoid operator #10 energized last. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Double Remote Pilot
3-Way, 2-Position



Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Momentary air signal at port 10 last. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

3-Way Configuration

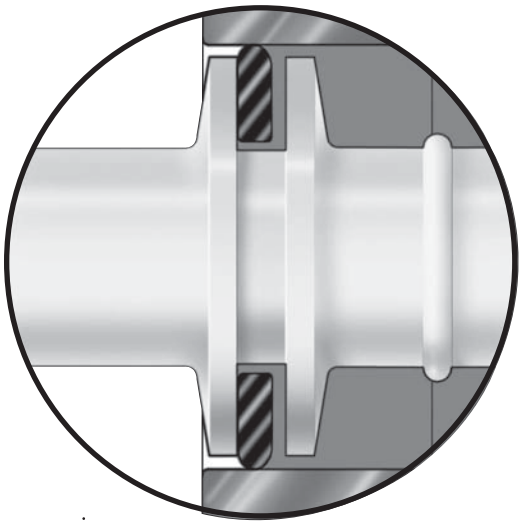
B6, B7, B8:
Looking at the #1 and #3 ports, the solenoid (or remote operator) is always on the #3 port end. Different spools are used for NO and NC functions.

B3, B5:
Looking at the #1 and #3 ports, the solenoid (or remote operator) is on the #3 port end for NC and the #1 port end for NO. The same spool is used for both.

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WCS

*W*ear *C*ompensation *S*ystem



- **Maximum Performance**
  - Low Friction - Lower Operating Pressures
  - Fast Response - Less Wear
- **Long Cycle Life** - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- **Non-Lube Service** - No lubrication required for continuous valve shifting.
- **Bi-Directional Spool Seals** - Common spool used for any pressure, including vacuum.

Refer to www.parker.com/pneu/b
Click on Catalog B Series-E/USA

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"B" Series

Flow Characteristics

- B3: .75 Cv
- B5: 1.40 Cv
- B6: 2.50 Cv
- B7: 5.90 Cv
- B8: 7.00 Cv

Operating Pressure

- Vacuum to 145 PSIG

Ports

- B3: 1/8, 1/4 Inch
- B5: 1/4, 3/8 Inch
- B6: 3/8 Inch
- B7: 1/2 Inch
- B8: 3/4 Inch

Mounting

- Inline
- Subbase
- IEM Stackable Base
- IEM Aluminum Bar
- 5-Port Subbase Aluminum Bar

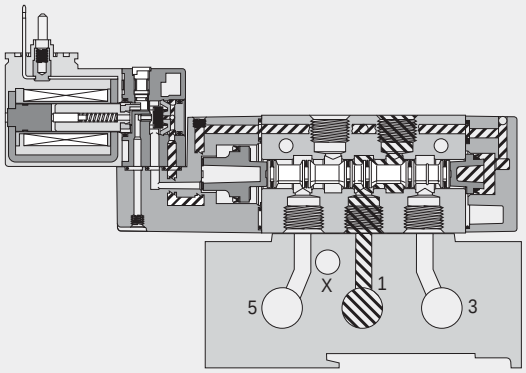
Solenoids

- 1.2 Watt – 15mm 3-Pin (EN 175301-803)
- 2.5 to 7.3 Watt – Conduit, Grommet, 22mm & 30mm 3-Pin DIN (43650)
- 12VDC to 240VAC
- Female DIN Electrical Connectors

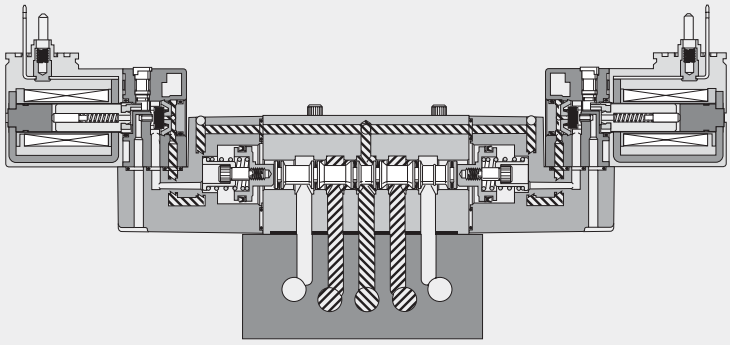
Certification / Approval

- Approved to be CE marked
- IP65 Rated
- CSA C/US*

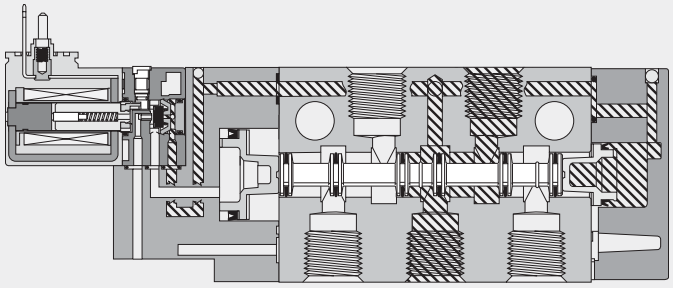
* See catalog technical section for more information.



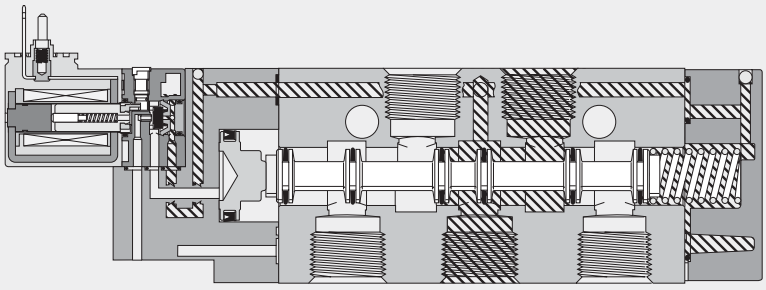
B3 Single Solenoid IEM Aluminum Bar Manifold
Shown De-Energized



B3 Double Solenoid 3-Position Subbase Mounted
Shown De-Energized



B5 Single Solenoid Inline - Air Return
Shown De-Energized



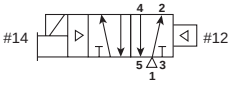
B6, B7 & B8 Single Solenoid Inline - Spring / Air Return
Shown De-Energized

Pressure **Exhaust**

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Single Solenoid
4-Way, 2-Position





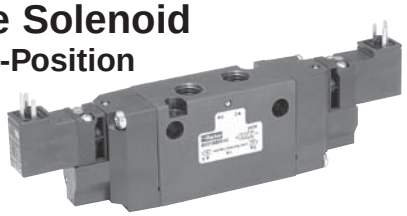
Inline

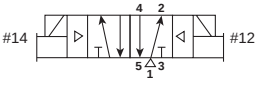
B3	**B310BB553C** **B310BB549C**	120VAC 24VDC	1/8"	0.75 Cv
B5	**B511BB553C** **B511BB549C**	120VAC 24VDC	1/4"	1.4 Cv
	B512BB553C **B512BB549C**	120VAC 24VDC	3/8"	
B6	**B612BB553A** **B612BB549A**	120VAC 24VDC	3/8"	2.7 Cv
B7	**B713BB553A** **B713BB549A**	120VAC 24VDC	1/2"	5.9 Cv
B8	**B814BB553A** **B814BB549A**	120VAC 24VDC	3/4"	7.0 Cv

Subbase

B3	**B31VBB553C** **B31VBB549C**	120VAC 24VDC	Less Base	0.65 Cv

Double Solenoid
4-Way, 2-Position





Inline

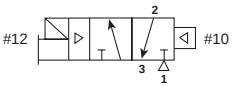
B3	**B320BB553C** **B320BB549C**	120VAC 24VDC	1/8"	0.75 Cv
B5	**B521BB553C** **B521BB549C**	120VAC 24VDC	1/4"	1.4 Cv
	B522BB553C **B522BB549C**	120VAC 24VDC	3/8"	
B6	**B622BB553A** **B622BB549A**	120VAC 24VDC	3/8"	2.7 Cv
B7	**B723BB553A** **B723BB549A**	120VAC 24VDC	1/2"	5.9 Cv
B8	**B824BB553A** **B824BB549A**	120VAC 24VDC	3/4"	7.0 Cv

Subbase

B3	**B32VBB553C** **B32VBB549C**	120VAC 24VDC	Less Base	0.65 Cv

Single Solenoid
3-Way, 2-Position, NC



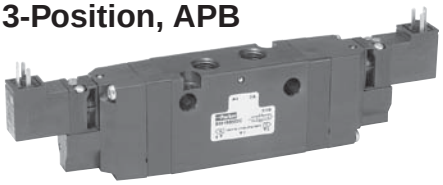


Inline

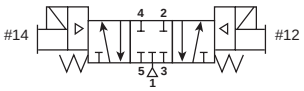
B3	**B3G0BB553C** **B3G0BB549C**	120VAC 24VDC	1/8"	0.75 Cv
B5	**B5G1BB553C** **B5G1BB549C**	120VAC 24VDC	1/4"	1.4 Cv
	B5G2BB553C **B5G2BB549C**	120VAC 24VDC	3/8"	
B6	**B6V2BB553A** **B6V2BB549A**	120VAC 24VDC	3/8"	2.7 Cv
B7	**B7V3BB553A** **B7V3BB549A**	120VAC 24VDC	1/2"	5.9 Cv
B8	**B8V4BB553A** **B8V4BB549A**	120VAC 24VDC	3/4"	7.0 Cv

3-Pin DIN 43650C Electrical Connection.
Non-Locking Flush Override.

Double Solenoid
4-Way, 3-Position, APB



APB



Inline

B3	**B350BB553C** **B350BB549C**	120VAC 24VDC	1/8"	0.60 Cv
B5	**B551BB553C** **B551BB549C**	120VAC 24VDC	1/4"	1.1 Cv
	B552BB553C **B552BB549C**	120VAC 24VDC	3/8"	
B6	**B652BB553A** **B652BB549A**	120VAC 24VDC	3/8"	2.1 Cv
B7	**B753BB553A** **B753BB549A**	120VAC 24VDC	1/2"	5.7 Cv
B8	**B854BB553A** **B854BB549A**	120VAC 24VDC	3/4"	6.6 Cv

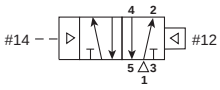
Subbase

B3	**B35VBB553C** **B35VBB549C**	120VAC 24VDC	Less Base	0.50 Cv

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Single Remote Pilot
4-Way, 2-Position





Inline

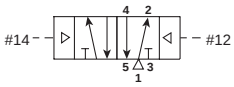
B3	**B330000XXC**	1/8"	0.75 Cv
B5	**B531000XXC**	1/4"	1.4 Cv
	B532000XXC	3/8"	
B6	**B632000XXA**	3/8"	2.7 Cv
B7	**B733000XXA**	1/2"	5.9 Cv
B8	**B834000XXA**	3/4"	7.0 Cv

Subbase

B3	**B33V000XXC**	Less Base	0.65 Cv

Double Remote Pilot
4-Way, 2-Position





Inline

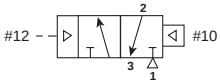
B3	**B340000XXC**	1/8"	0.75 Cv
B5	**B541000XXC**	1/4"	1.4 Cv
	B542000XXC	3/8"	
B6	**B642000XXA**	3/8"	2.7 Cv
B7	**B743000XXA**	1/2"	5.9 Cv
B8	**B844000XXA**	3/4"	7.0 Cv

Subbase

B3	**B34V000XXC**	Less Base	0.65 Cv

Single Remote Pilot
3-Way, 2-Position, NC



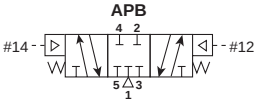


Inline

B3	**B3K0000XXC**	1/8"	0.75 Cv
B5	**B5K1000XXC**	1/4"	1.4 Cv
	B5K2000XXC	3/8"	
B6	**B6X2000XXA**	3/8"	2.7 Cv
B7	**B7X3000XXA**	1/2"	5.9 Cv
B8	**B8X4000XXA**	3/4"	7.0 Cv

Double Remote Pilot
4-Way, 3-Position, APB





Inline

B3	**B380000XXC**	1/8"	0.60 Cv
B5	**B581000XXC**	1/4"	1.1 Cv
	B582000XXC	3/8"	
B6	**B682000XXA**	3/8"	2.1 Cv
B7	**B783000XXA**	1/2"	5.7 Cv
B8	**B884000XXA**	3/4"	6.6 Cv

Subbase

B3	**B38V000XXC**	Less Base	0.50 Cv

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B3 Series

BOLD OPTIONS ARE MOST POPULAR.

B3 1 0 B B 5 49 – C

Basic Series	
B3 Series	B3

Engineering Level	
C	Current

Options	
Blank	None
02	Solenoid Rotated 180° - Pins Down

Operator Function	
3-Way	
Single Solenoid, 2-Position NC - Air Return	**G**
Single Solenoid, 2-Position NO - Air Return	H
Double Solenoid, 2-Position	J
Single Remote Pilot, 2-Position NC - Air Return	**K**
Single Remote Pilot, 2-Position NO - Air Return	L
Double Remote Pilot, 2-Position	M
Single Solenoid, 2-Position NC - Air Return / Spring Assist	V
Single Solenoid, 2-Position NO - Air Return / Spring Assist	W
Single Remote Pilot, 2-Position NC - Air Return / Spring Assist	X
Single Remote Pilot, 2-Position NO - Air Return / Spring Assist	Y
4-Way	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Single Remote Pilot, 2-Position - Air Return	**3**
Double Remote Pilot, 2-Position	**4**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Double Remote Pilot, 3-Position - APB	**8**
Double Remote Pilot, 3-Position - CE	9
Double Remote Pilot, 3-Position - PC	0
Single Solenoid, 2-Position - Air Return / Spring Assist	E
Single Remote Pilot, 2-Position - Air Return / Spring Assist	F

Voltage§	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote Pilot - M5 or Valve Less 15mm Solenoid**		
YY	Remote Pilot - 5/32" (4mm) Tube		

Enclosure / Lead Length	
0	None, Remote Pilot Valve
5	**15mm 3-Pin DIN 43650C (Male Only)**
X	Valve Less 15mm Solenoid

Overrides§	
0	**None, Remote Pilot Valve**
B	**Flush - Non-Locking**
C	**Flush - Locking**
D	Extended - Non-Locking
E	Extended - Locking
X	Valve Less 15mm Solenoid

Port Size / Thread Type	
3-Way	
1/8" NPT Inline	**0***
1/8" BSPP "G" Inline	5*
Dual 3-Way & 4-Way	
1/8" NPT Inline	**0***
1/8" BSPP "G" Inline	5*
1/4" NPT Subbase	H‡
1/8" NPT Face Mount	T**
Subbase Valve Less Base	**V‡**

* Available for use on IEM Manifolds.
** 4-Way only.
‡ Subbase valves available for 4-Way valves only.

Pilot Source / Pilot Exhaust	
0	**None, Remote Pilot Valve**
B†	**Internal - Port #1 / Vented**
E*	Dual Pressure - Port #3 / Vented
K†	External - Body / Tapped M5
X‡	External - Manifold / Vented

* Not available for 3-Way Valves.
† Not available for Remote Pilot Valves.
‡ See Pilot Source Note below.

§ Enclosure '5' – Override / Voltage Availability
S - Standard
O - Option

Voltage Code	Override Code			
	Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Voltage Code	"02" Option			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Pilot Source 'X'
External-Manifold / Vented

INLINE & SUBBASE Valves –
Only used IF an IEM or 5-Ported Subbase Aluminum Bar Manifold requires a common external pilot signal thru the manifold for low pressure / vacuum applications OR when used with Sandwich Regulators.

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B5 Series

BOLD OPTIONS ARE MOST POPULAR.

B5 1 1 B B 5 49 – C

Basic Series	
B5 Series	**B5**

Engineering Level	
C	**Current**

Operator Function	
3-Way	
Single Solenoid, 2-Position NC - Air Return	**G**
Single Solenoid, 2-Position NO - Air Return	H
Double Solenoid, 2-Position	J
Single Remote Pilot, 2-Position NC - Air Return	**K**
Single Remote Pilot, 2-Position NO - Air Return	L
Double Remote Pilot, 2-Position	M
Single Solenoid, 2-Position NC - Air Return / Spring Assist	V
Single Solenoid, 2-Position NO - Air Return / Spring Assist	W
Single Remote Pilot, 2-Position NC - Air Return / Spring Assist	X
Single Remote Pilot, 2-Position NO - Air Return / Spring Assist	Y
4-Way	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Single Remote Pilot, 2-Position - Air Return	**3**
Double Remote Pilot, 2-Position	**4**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Double Remote Pilot, 3-Position - APB	**8**
Double Remote Pilot, 3-Position - CE	9
Double Remote Pilot, 3-Position - PC	0
Single Solenoid, 2-Position - Air Return / Spring Assist	E
Single Remote Pilot, 2-Position - Air Return / Spring Assist	F

Options	
Blank	**None**
02	Solenoid Rotated 180° - Pins Down
MD††	Manual Detent
V0*	Fluorocarbon Seals

* Not available with Enclosure "0", "5", "X", "E" or "F".
†† Only Available with Operator Function 1 & 3 and Enclosure "N", "X" or Mobile Voltages upon Request.

Voltage§	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote Pilot - M5 or Valve Less Solenoid**		
YY	Remote Pilot - 5/32" (4mm) Tube		

Enclosure / Lead Length	
0	None, Remote Pilot Valve
5	**15mm 3-Pin DIN 43650C (Male Only)**
A	30mm Square 3-Pin – ISO 4400 Form A (Male Only)
B	22mm Rectangular 3-Pin – Type B Industrial (Male Only)
C	3-Pin Automotive - Mini
D	5-Pin Automotive - Mini
E*	Intrinsically Safe - 30mm 3-Pin
F**	Hazardous Duty 1/2" NPT Conduit - 18" Leads
G	**Grommet - 18" Leads**
H	**1/2" NPT Conduit - 18" Leads**
N	Valve Less "A - R" Coil
Q	Grommet - 72" Leads
R	1/2" NPT Conduit - 72" Leads
X	Valve Less 15mm Solenoid

* 24 VDC & Override "A" Only.
** 12 VDC, 24 VDC, 120 VAC or 240 VAC.

Port Size / Thread Type	
3-Way	
1/4" NPT Inline	**1***
3/8" NPT Inline	**2***
1/4" BSPP "G" Inline	6*
3/8" BSPP "G" Inline	7*
4-Way	
1/4" NPT Inline	**1***
3/8" NPT Inline	**2***
1/4" BSPP "G" Inline	6*
3/8" BSPP "G" Inline	7*
3/8" NPT Subbase	J†
1/4" NPT NAMUR Mount	T‡†
Subbase Valve Less Base - NPT	V‡
1/4" BSPP "G" NAMUR Mount	W‡†

* Available for use on IEM Manifolds.
† 4-Way only.
‡ Available with pilot source "0", "A", and "B" only.

Pilot Source / Pilot Exhaust	
Enclosures "0, 5 & X"	
None, Remote Pilot Valve	0
Internal - Port #1 / Tapped M5	A†
Internal - Port #1 / Vented	**B†**
Dual Pressure - Port #3 / Vented	E*
External - Body / Tapped M5	K†
External - Manifold / Vented	X‡
Enclosures "A, B, C, D, E, F, G, H, N, Q & R"	
Internal - Port #1 / Tapped M5	**A†**
Internal - Port #1 / Vented	**B†**
Dual Pressure - Port #3 / Tapped M5	D*†
External - Body / Tapped 1/8"	K†

* Not available for 3-Way Valves.
† Not available for Remote Pilot Valves.
‡ See Pilot Source Note below.

Overrides§	
None. Remote Pilot Valve	**0**
No Override	A†
Flush - Non-Locking	**B***
Flush - Locking	**C**
Extended - Non-Locking	D
Extended - Locking	E*
Valve Less 15mm Solenoid	X

* Only Available with Encl. "5".
† Only Available with Encl. "E".

Pilot Source 'X'
External-Manifold / Vented or Tapped M5

INLINE & SUBBASE Valves –
Only used IF an IEM Aluminum Bar Manifold requires a common external pilot signal thru the manifold for low pressure / vacuum applications.

Note: For Mobile Voltages, Contact the Application Team.

§ Enclosure '5' – Override / Voltage Availability
S - Standard
O - Option

Voltage Code	Override Code Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Voltage Code	Override Code "02" Option			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

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B6 Series

BOLD OPTIONS ARE MOST POPULAR.

B6 1 2 B B 5 49 – A

Basic Series	
B6 Series	B6

Engineering Level	
A	Current

Operator Function	
3-Way	
Single Solenoid, 2-Position NC - Air Return / Spring Assist	V
Single Solenoid, 2-Position NO - Air Return / Spring Assist	W
Single Remote Pilot, 2-Position NC - Air Return / Spring Assist	X
Single Remote Pilot, 2-Position NO - Air Return / Spring Assist	Y
4-Way	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Single Remote Pilot, 2-Position - Air Return	**3**
Double Remote Pilot, 2-Position	**4**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Double Remote Pilot, 3-Position - APB	**8**
Double Remote Pilot, 3-Position - CE	9
Double Remote Pilot, 3-Position - PC	0
Single Solenoid, 2-Position - Air Return / Spring Assist	E
Single Remote Pilot, 2-Position - Air Return / Spring Assist	F

Options	
Blank	**None**
02	Solenoid Rotated 180° - Pins Down
42*	Series Cylinder Mount Replacement

* Only Available with Port Size "T" and "0", "A". "B", and "L" Pilot Source.

Voltage§	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote Pilot - M5 or Valve Less 15mm Solenoid**		
YY	Remote Pilot - 5/32" (4mm) Tube		

Enclosure / Lead Length	
0	None, Remote Pilot Valve
5	**15mm 3-Pin DIN 43650C (Male Only)**
A	30mm Square 3-Pin – ISO 4400 Form A (Male Only)
B	22mm Rectangular 3-Pin – Type B Industrial (Male Only)
E*	Intrinsically Safe - 30mm 3-Pin
F**	Hazardous Duty 1/2" NPT Conduit - 18" Leads
G	**Grommet - 18" Leads**
H	**1/2" NPT Conduit - 18" Leads**
N	Valve Less "A - R" Coil
Q	Grommet - 72" Leads
R	1/2" NPT Conduit - 72" Leads
X	Valve Less 15mm Solenoid

* 24 VDC & Override "A" Only.
** 12 VDC, 24 VDC, 120 VAC or 240 VAC.

Port Size / Thread Type	
3-Way / 4-Way	
3/8" NPT Inline	**2***
3/8" BSPP "G" Inline	7*
1/4" NPT NAMUR Mount	T†

* Available for use on IEM Manifolds.
† 4-Way only. Available with pilot source "0", "A", "B" and "L" only.

Pilot Source / Pilot Exhaust	
Enclosures "0, 5 & X"	
None. Remote Pilot Valve	0
Internal - Port #1 / Tapped M5	A†
Internal - Port #1 / Vented	**B†**
Dual Pressure - Port #5 / Vented	H
External - Body / Tapped M5	K†
Enclosures "A, B, C, D, E, F, G, H, N, Q & R"	
Internal - Port #1 / Tapped M5	**A‡**
Internal - Port #1 / Vented	**B‡**
External - Body / Tapped 1/8"	K†

* Not available for 3-Way Valves.
† Not available for Remote Pilot Valves.

Overrides§	
None, Remote Pilot Valve	**0**
No Override	A†
Flush - Non-Locking	**B***
Flush - Locking	**C**
Extended - Non-Locking	D
Extended - Locking	E*
Valve Less 15mm Solenoid	X

* Only Available with Encl. "5".
† Only Available with Encl. "E".

INLINE Valves –
Only used IF an IEM Aluminum Bar Manifold requires a common external pilot signal thru the manifold for low pressure / vacuum applications.

§ Enclosure '5' – Override / Voltage Availability
S - Standard
O - Option

Voltage Code	Override Code Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Voltage Code	Override Code "02" Option			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

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B7 & B8 Series

BOLD OPTIONS ARE MOST POPULAR.

B7 1 3 A B G 53 – A

Basic Series	
B7 Series	**B7**
B8 Series	**B8**

Operator Function	
3-Way	
Single Solenoid, 2-Position NC - Air Return / Spring Assist	V
Single Solenoid, 2-Position NO - Air Return / Spring Assist	W
Single Remote Pilot, 2-Position NC - Air Return / Spring Assist	X
Single Remote Pilot, 2-Position NO - Air Return / Spring Assist	Y
4-Way	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Single Remote Pilot, 2-Position - Air Return	**3**
Double Remote Pilot, 2-Position	**4**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Double Remote Pilot, 3-Position - APB	**8**
Double Remote Pilot, 3-Position - CE	9
Double Remote Pilot, 3-Position - PC	0
Single Solenoid, 2-Position - Air Return / Spring Assist	E
Single Remote Pilot, 2-Position - Air Return / Spring Assist	F

Port Size / Thread Type	
B7 Series	
1/2" NPT Inline	**3***
1/2" BSPP "G" Inline	8*
B8 Series	
3/4" NPT Inline	**4***
3/4" BSPP "G" Inline	9*

* Available for use on IEM Manifolds.

Pilot Source / Pilot Exhaust	
Enclosures "0. 5 & X"	
None. Remote Pilot Valve	0
Internal - Port #1 / Tapped M5	A†
Internal - Port #1 / Vented	**B†**
External - Body / Tapped M5	K†
Enclosures "A, B, C, D, E, F, G, H, N, Q & R"	
Internal - Port #1 / Tapped M5	**A†**
Internal - Port #1 / Vented	**B†**
External - Body / Tapped 1/8"	K†

† Not available for Remote Pilot Valves.

Overrides§	
None, Remote Pilot Valve	**0**
No Override	A†
Flush - Non-Locking	**B***
Flush - Locking	**C**
Extended - Non-Locking	D
Extended - Locking	E*
Valve Less 15mm Solenoid	X

* Only Available with Encl. "5".
† Only Available with Encl. "E".

Voltage§	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote Pilot - M5 or Valve Less Solenoid**		
YY	Remote Pilot - 5/32" (4mm) Tube		

Enclosure / Lead Length	
0	None, Remote Pilot Valve
5	**15mm 3-Pin DIN 43650C (Male Only)**
A	30mm Square 3-Pin – ISO 4400 Form A (Male Only)
B	22mm Rectangular 3-Pin – Type B Industrial (Male Only)
E*	Intrinsically Safe - 30mm 3-Pin
F**	Hazardous Duty 1/2" NPT Conduit - 18" Leads
G	**Grommet - 18" Leads**
H	**1/2" NPT Conduit - 18" Leads**
N	Valve Less "A - R" Coil
R	1/2" NPT Conduit - 72" Leads
X	Valve Less 15mm Solenoid

* 24 VDC & Override "A" Only.
** 12 VDC, 24 VDC, 120 VAC or 240 VAC.

Engineering Level	
A	**Current**

Options	
Blank	**None**

INLINE Valves –
Only used IF an IEM Aluminum Bar Manifold requires a common external pilot signal thru the manifold for low pressure / vacuum applications.

§ Enclosure '5' – Override / Voltage Availability
S - Standard
O - Option

Voltage Code	Override Code			
	Standard			
	B	**C**	**D**	**E**
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

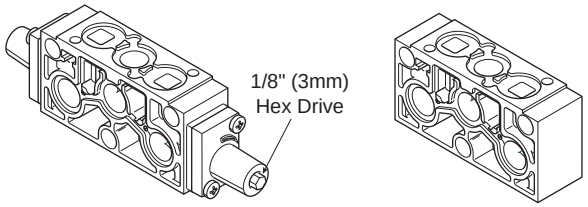
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IEM Stackable Manifolds

Series	Type	Kit Number	
		Standard	Flow Control
B3	4-Way	**PS2917P**	**PS2918P**
B5	4-Way	**PS2817P**	**PS2818P**

- Individual Manifold Bases stack together to form lightweight custom length manifold system.
- Easy-to-connect male / female tie rods for modular assembly.
- Utilizes B3 and B5 4-Way Inline Valves.
- Low-cost built-in Flow Controls with heavy-duty brass adjusting needles to control meter-out exhaust flow.
- Accessories include Isolator Plugs for pressure isolation and Universal Blanking Plates for auxiliary inlet and exhaust supply and future valve additions.
- Kit includes: (1) Manifold Base, (2) Hold-down Bolts, Tie-rods, Gaskets and O-rings.

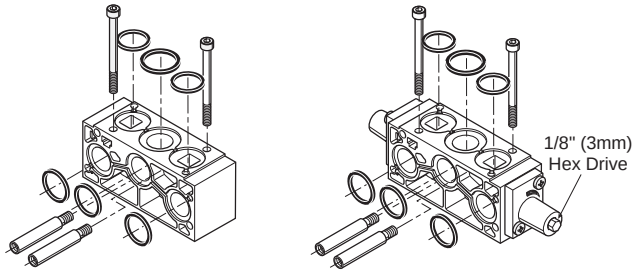
B3



4-Way Manifold with Flow Control

4-Way Manifold

B5



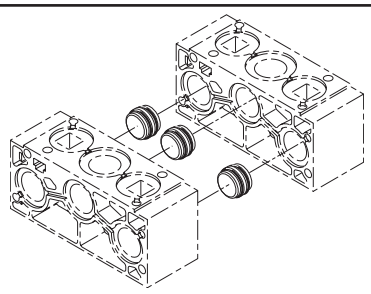
4-Way

4-Way w/ Flow Control

Isolator Plugs

Series	Kit Number
	4-Way
B3	**PS2919P**
B5	**PS2819P**

- Used to isolate the #1, #3 or #5 gallery between two Manifold Bases. (IEM STACKABLE ONLY)
- **Kit includes:** (3) plugs and (6) o-rings



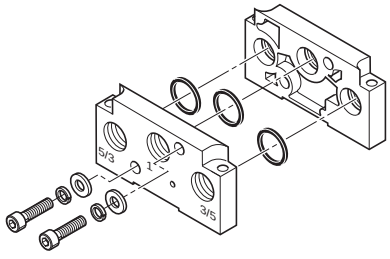
4-Way Isolator Plugs
IEM Stackable

End Plate Kits

Series	Type	Kit Number
		NPT
B3	4-Way	**PS2915P**
B5	4-Way	**PS2815P***

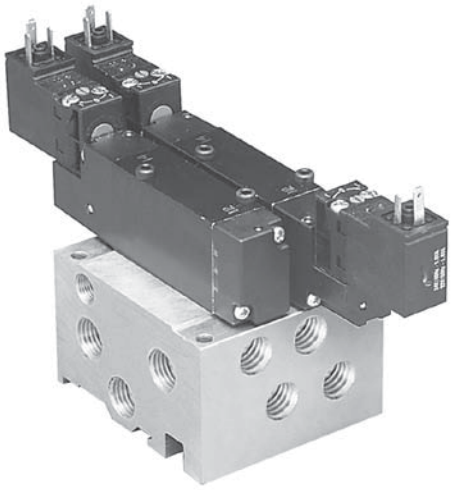
Kit includes: Right and Left End Plate, O-rings, Socket Head Cap Screws, Flat Washers and Lockwashers.

* B5 4-Way use the same Kit.



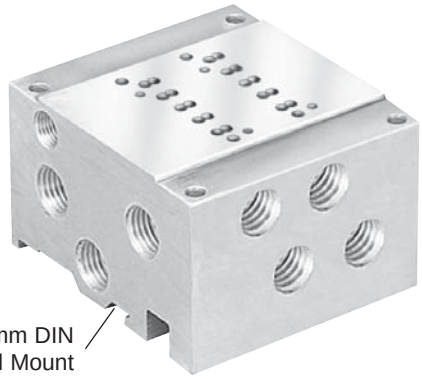
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B3 Series



4-Way, 1/8" NPT	**AAPSJ3B1N##NP**	## – stations 02 to 12

B3 Series



4-Way, 1/8" NPT	**PSJ3B1N##NP**	## – stations 02 to 12

- Utilizes Subbase mount B3 valves.
- Available for 4-Way valves. If 3-Way function is required, plug a cylinder port.
- Common External Pilot galley is standard.
- Standard Internal Pilot valves need not use this galley, and the galley does not need to be plugged.
- External Pilot Valves – "X" or "W", must have Common External Galley pressurized.

Kit includes:
Subbase – (1) Manifold (bolts & gasket come with subbase valve).

Assembly Model Number

	PS	J	3	B	1	N	04	N	P

Manifold

Manifold Only	Blank
Manifold with Valves Mounted	AA

Type

4-Way	
Subbase Bottom Port	K
Subbase End Port	J

Series

B3 Series	3

Pilot

External (B3)	B

Cylinder Ports

1	1/8"

Port Type

G	BSPP "G"
N	NPT

Stations

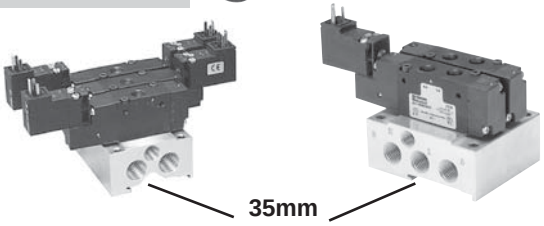
02
•
•
•
12

Options

N	None

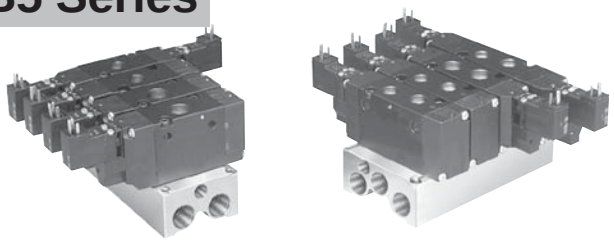
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B3 Series



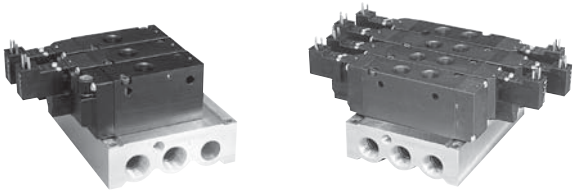
3-Way, NPT	**AAPSG3BXN##NP**	## – stations 02 to 12
4-Way, NPT	**AAPSM3BXN##NP**	

B5 Series



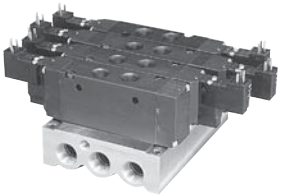
3-Way, NPT	**AAPSG5BXN##NP**	## – stations 02 to 12
4-Way, NPT	**AAPSM5BXN##NP**	

B6 Series



3-Way, NPT	**AAPSG6BXN##NP**	## – stations 02 to 12
4-Way, NPT	**AAPSM6BXN##NP**	

B7 & B8 Series



4-Way, NPT	**AAPSM7BXN##NP**	## – stations 02 to 12

- Utilizes Inline mount "B" Series valves.
- Different manifold for 3-Way & 4-Way valves (B7 and B8 use common manifolds).
- Common External Pilot galley is standard. Standard Internal Pilot valves need not use this galley. This galley does not require a plug for internally piloted valves.
- External Pilot Valves – "X" or "W", must have Common External Galley pressurized.
- **Kits (PS....) include:** (1) Manifold, Valve Hold Down Bolts, Gaskets.

IEM Bar Manifold Model Number

	PS	M	5	B	X	N	04	N	P

Manifold

Manifold Only	Blank
Manifold with Valves Mounted	AA

Type

IEM 3-Way	G*
IEM 4-Way	M

* Not available with B7 or B8.

Series

B3 Series	3
B5 Series	5
B6 Series	6
B7 / B8 Series	7

Pilot

External	B

Cylinder Ports

X	IEM Manifold

Port Type

G	BSPP "G"
N	NPT

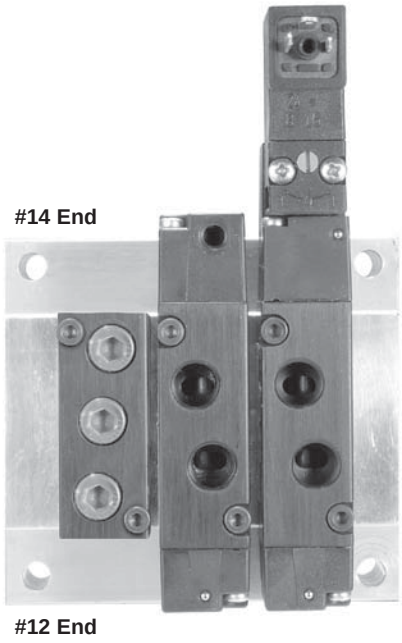
Stations

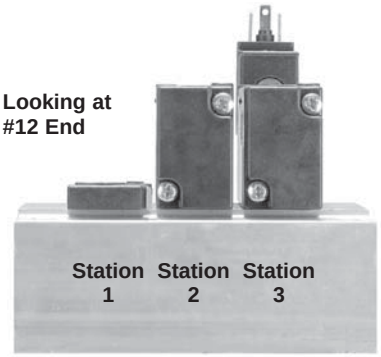
02
•
•
•
12

Options

N	None

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How To Order Aluminum Bar Manifold Assemblies

1. List Manifold Assembly call out. Use AA + the part number of the aluminum bar manifold. This automatically includes the aluminum bar manifold and assembly.

2. List complete valve model number, listing left to right, LOOKING AT THE #12 END of the manifold. The left most station is station 1.

(If a blank station is needed, list the blanking plate part number at the desired station.)

AA PS***##NP**

Use Aluminum Bar Manifold Kit Numbers from previous pages.

AA Manifold Assembly

Example: Application requires a 3-station "B3" 4-Way manifold with station #1 blanked off with valves assembled.

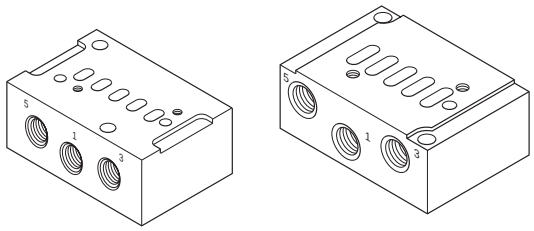
Qty.	Part No.	Comment
1	AAPSM3BXN03NP	
1	PS2920P	Station 1
1	B330000XXC.....	Station 2
1	B310BB549C.....	Station 3

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Subbase

Type		Size	Kit Number
			NPT
B3	4-Way	1/4"	**PS2934P**
B5	4-Way	3/8"	**PS2834P**

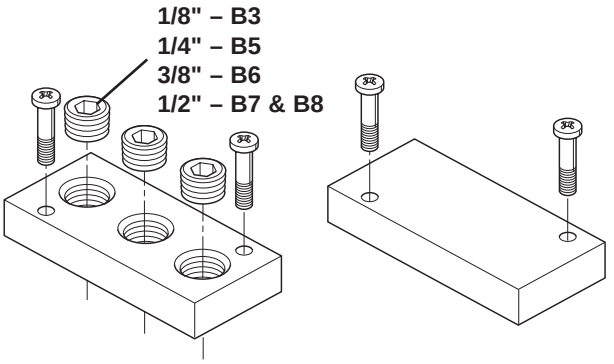
Kit includes: (1) subbase.
(Hold down bolts & gasket are included with valve.)



Blanking Plate

Type		Kit Number			
		IEM Universal		IEM	Subbase
		NPT	BSPP "G"	Blank	Blank
B3	3-Way	**PS2966P**	PS2967P	**PS2968P**	—
	4-Way	**PS2920P**	PS2921P	**PS2969P**	**PS2994P**
B5	3-Way	**PS2866P**	PS2867P	**PS2868P**	**—**
	4-Way	**PS2820P**	PS2821P	**PS2869P**	—
B6	3-Way 4-Way	**PS2620P**	—	—	—
B7 **B8**	4-Way	**PS2520P**	PS2521P	**PS2569P**	—

Kit includes:
(1) Plate, (2) Screws, Seal / Gaskets

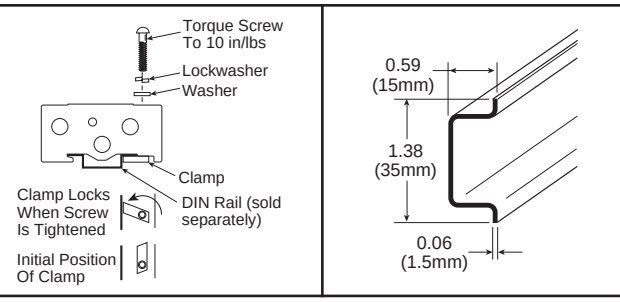


DIN Rail Hardware Kits

Series	Length	Part Number
B3	6 Feet	AM1DE200

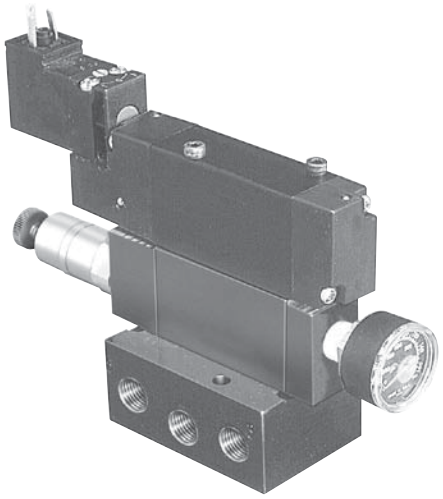
Series	IEM Bar	5-Port Subbase Bar
B3	PS2990P	PS2991P

Kit includes: (2) Screws, (2) Nuts, (2) Clamps



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B3 Series



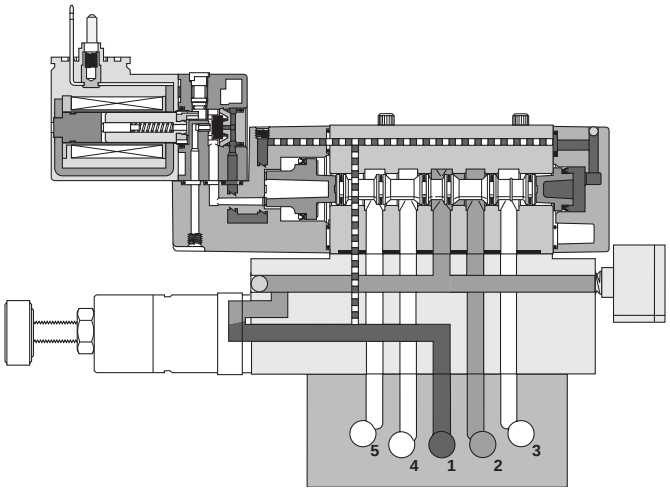
Sandwich Regulators

- Use with B3 Subbase Valves on 5-Ported Subbase Bar Manifolds.
- Common Port or Dual Port regulation control.
- Unregulated Pressure Supplied to Valve Pilot - Use Pilot Source - 'X'.
- Easy adjust knob control.

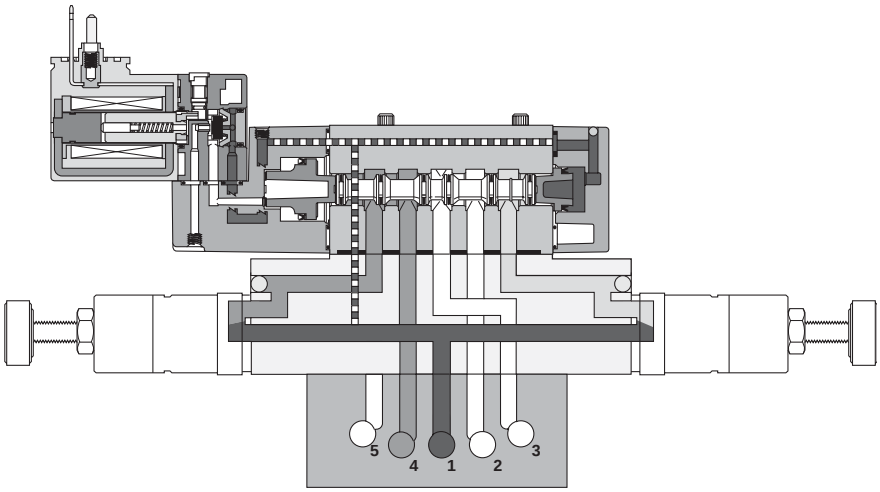
	Common Port with Gauge *	Dual Port without Gauge	Cv
B3 5-125 PSI	PS2930166P	PS2930233P	.33

* Gauge is 160 PSI. Gauge shipped unassembled. For different gauge mounting configuration, use brass adapters listed at bottom of page.

Common Port



Dual Port



Brass Adapters for Gauge –

1/8" to 1/8" Female Coupling..... 207P-2
1/8" Male Pipe Nippled 1.5"..... 215PNL-2-15
1/8" Male to Female Adapter..... 222P-2-2
1/8" to 1/8" 45° Female Elbow..... 2201P-2-2
1/8" to 1/8" 90° Female Elbow..... 2200P-2-2

Gauge 1" Face –

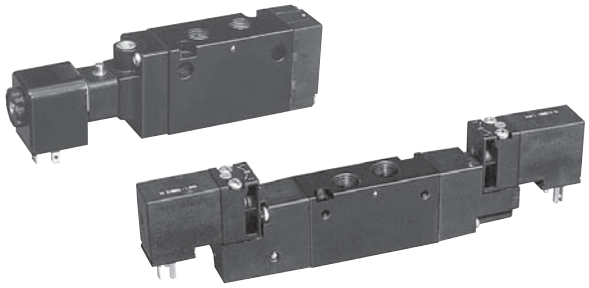
0-160 PSI..... PS4051160BP

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Solenoid Rotated 180° - Pins Down

B3 **B5** **B6** **B7** **B8**

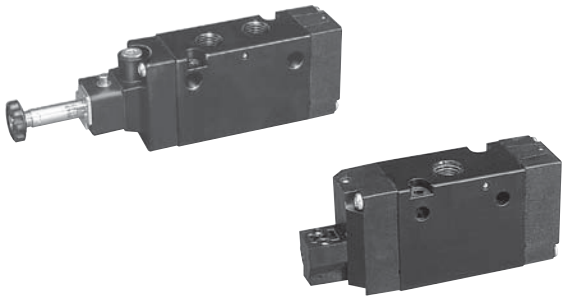
- 1.8W (2.4VA) solenoids – Enclosure "5".
- Override on top for easy access.
- "02" in the Options code.



Valve Less Solenoid

B3 **B5** **B6** **B7** **B8**

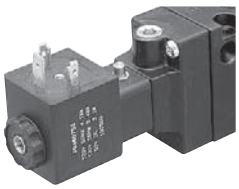
- Valve ordered & shipped without solenoid.
- Efficient method in place of valve repair, fully tested at factory.



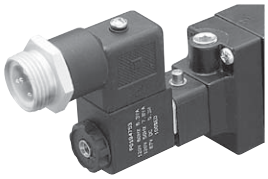
Alternate Solenoid Enclosures

B5 **B6** **B7** **B8**

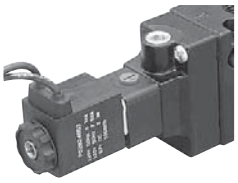
- Enclosure "A": 2.6W - 4.1VA (Coil rotates in 45° increments)
- Enclosure "B" – "R": 4.6W - 7.3VA (Coil rotates in 90° increments)



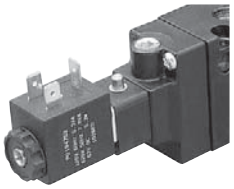
"A" 30mm 3-Pin



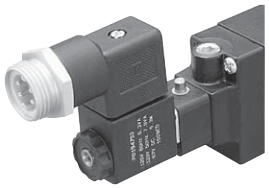
"C" 3-Pin Mini



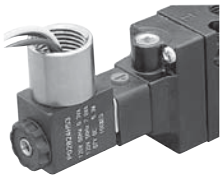
"G". "Q" Grommet



"B" 22mm 3-Pin



"D" 5-Pin Mini



"F". "H". "R" 1/2" Conduit

Tube Fitting Remote Pilot

B3 **B5** **B6** **B7** **B8**

- "YY" Option
- 5/32" (4mm) Tube Fitting



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Intrinsically Safe Solenoid Valves ("E" Option)

Hazardous Location Class:

Class I; Groups A, B, C & D

Class II; Groups E, F, & G

Class III; Div. I

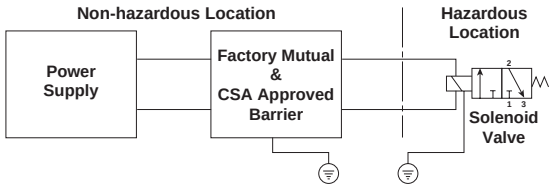
For use in low voltage (24VDC) Intrinsically Safe applications. NO OTHER VOLTAGE IS APPROVED.

36mm Coil width.

Comes standard with non-lighted solenoid connector.

Must be connected to an FM approved Barrier.

For dimensions. reference standard solenoid models. Maximum internally piloted valve pressure is 115 PSIG. Pressures to 145 PSIG can be used when external pilot is utilized and pilot pressure is limited to 115 PSIG.



Intrinsically Safe Solenoid Pilot Assembly Kits

Part Number	Description
P2FS13N1AE49	24VDC

Hazardous Duty Solenoid Valves ("F" Option)

Hazardous Location Class:

Class I; Zone I EX, M, II & T4

Class I; Div. I. Groups A, B, C, & D

Class II & III; Div. I. Groups E, F, & G

Comes standard with 1/2" conduit connection.

Voltage Range = +10° +/- 10%

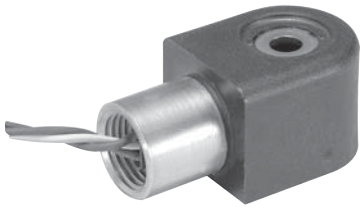
Ambient Temp. Range = -20°C (-4°F) to 60°C (140°F)

Duty Factor = 100%

IP65 Rated (with Connected Conduit Connector)

Notes:

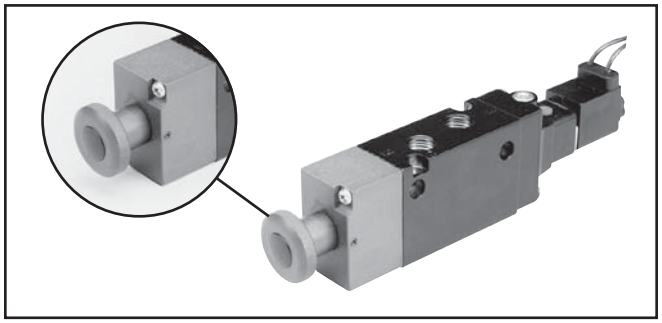
1. Maximum non-hazardous location voltage not to exceed 250V RMS.
2. Connect per Barrier Manufacturers instructions.
3. Factory Mutual requires connections per ISA RP 12.6 instructions.
4. CSA requires "Installation to be in accordance with the Canadian Electrical Code. Part I."
5. The hazardous duty coils are wider in size than both the B5 and the B6 valve. If mounted on a manifold, the valves need to be staggered to fit.



Option F
Hazardous Duty FM / CSA

B5 With Manual Detent

- Positive mechanical contact of the override knob assures actuation of valve, however, knob does not move during normal cycling.
- Hard coated override to resist harsh environments.
- Override return spring is stainless steel, for harsh environments.
- Heavy duty locking mechanism to maintain position.
- Use in combination with mobile voltages or valve less solenoid.

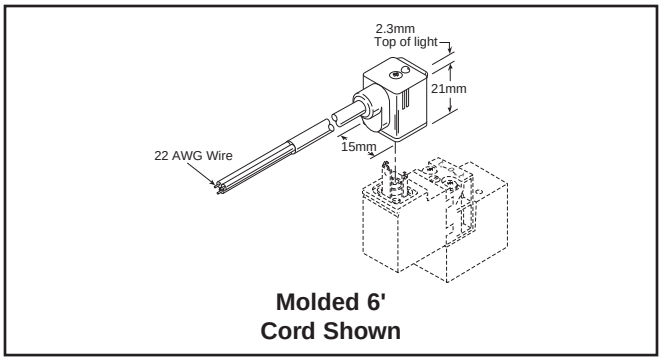


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Female Electrical Connectors

15mm 3-Pin DIN 43650C (Use with Enclosure "5")

Connector	Connector with Cord	Description
PS2932BP	PS2932HBP 18 Inches	Unlighted
PS2932BP	PS2932JBP 6 Feet	Unlighted
PS294675BP	PS2946J75BP* 6 Feet	Light – 12VAC or DC
PS294679BP	PS2946J79BP* 6 Feet	Light – 24VAC or DC
PS294683BP	PS2946J83BP* 6 Feet	Light – 110/120VAC
PS294687BP	N/A	Light – 240/230VAC



Molded 6' Cord Shown

* LED with surge suppression.

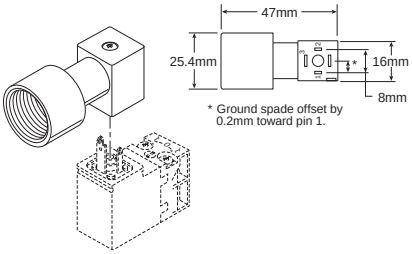
Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord.
IP65 rated when properly installed.

Engineering Data:
Conductors: 2 Poles Plus Ground
Cable Range (Connector Only): 4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm

15mm 3-Pin DIN 43650C to 1/2" Conduit (Use with Enclosure "5")

Connector	Description
PS2998P	1/2" NPTF Conduit – Unlighted with 3' (1m) Leads 20 AWG Wire

Note: Rated up to 250VAC or VDC; 6 Amps
IP65 rated when properly installed.

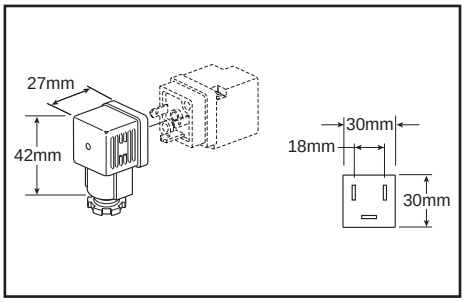


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Female Electrical Connectors / Accessories

30mm Square 3-Pin – ISO 4400, DIN 43650A (Use with Enclosure "A")

Connector	Connector with 6' (2m) Cord	Description
PS2028BP	PS2028JCP	Unlighted
PS203279BP	PS2032J79CP*	Light – 6-48V. 50/60Hz. 6-48VDC
PS203283BP	PS2032J83CP*	Light – 120V/60Hz
PS203283BP	N/A	Light – 240V/60Hz



* LED with surge suppression.

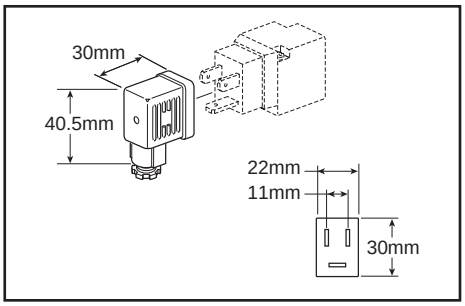
Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 8 to 10mm (0.31 to 0.39 Inch); Contact Spacing: 18mm

22mm Rectangular 3-Pin – Type B Industrial (Use with Enclosure "B")

Connector	Connector with 6' (2m) Cord	Description
PS2429BP	PS2429JBP	Unlighted
PS243079BP	PS2430J79BP*	Light – 24V60Hz. 24VDC
PS243083BP	PS2430J83BP*	Light – 120V/60Hz
PS243087BP	N/A	Light – 240V/60Hz



* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

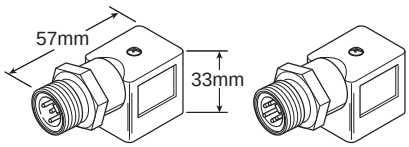
Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 6 to 8mm (0.24 to 0.31 Inch); Contact Spacing: 11mm

3-Pin / 5-Pin Male Automotive Connectors (Use on 22mm Rectangular 3-Pin Solenoid)

3-Pin	5-Pin	Description
PS2893CP	PS2893DP	Unlighted
PS2893C##P	PS2893D##P	Lighted - Voltage

— 79 = 6 to 48VAC/VDC
83 = 100 to 240VAC/48 to 120 VDC



Exhaust Mufflers

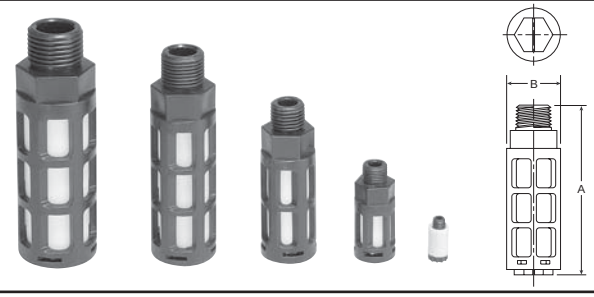
Pipe Thread	Part Number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**
3/8" NPT	**EM37**
1/2" NPT	**EM50**

P6M - Plastic; EM - Sintered Bronze



Plastic Silencers

Thread Size	Part Number NPT	Part Number BSPT	A (mm)	B (mm)
M5	**AS-5**		.43 (11)	.32 (8)
1/8"	**ASN-6**	**AS-6**	1.57 (40)	.63 (16)
1/4"	**ASN-8**	**AS-8**	2.56 (65)	.83 (21)
3/8"	**ASN-10**	**AS-10**	3.35 (85)	.98 (25)
1/2"	**ASN-15**	**AS-15**	3.74 (95)	1.18 (30)



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Flow Rating (Cv)

Size	Port Size	Mounting Style	2-Position	3-Position
B3	1/8" Ports	Inline	.75	.60
	1/4" Tube	Inline	.45	.45
	1/8" Ports	Subbase	.65	.45
	1/4" Ports	Subbase	.65	.50
B5	1/4" Ports	Inline	1.4	1.1
	3/8" Ports	Inline	1.4	1.1
	1/4" Ports	Subbase	1.4	1.1
	3/8" Ports	Subbase	1.4	1.1
B6	3/8" Ports	Inline	2.7	2.1
B7	1/2" Ports	Inline	5.9	5.7
B8	3/4" Ports	Inline	7.0	6.6

ANSI / (NFPA) T3.21.3-1990 standard for Cv measurement.

Temperature Rating

5°F to 120°F (-15°C to 49°C) ambient.
(Buna-N and Fluorocarbon)

Operating Pressure

Maximum: 145 PSIG (1000 kPa)
Minimum:

Operator / Function	Internal Pilot	Minimum PSIG (kPa)				
		B3	B5	B6	B7	B8
1. G. H	Single Solenoid - Air Return	20 (138)	20 (138)	20 (138)	35 (241)	35 (241)
2. A. J. S	Double Solenoid					
3. K. L	Single Remote Pilot - Air Return					
4. M	Double Remote Pilot	Vacuum				
N. P. Q	Double Solenoid - Dual 3/2	40 (275)	—	—	—	—
5. 6. 7	Double Solenoid - APB, CE, PC	30 (207)	30 (207)	30 (207)	45 (310)	45 (310)
8. 9. 0	Double Remote Pilot - APB, CE, PC			Vacuum		
E. V. W	Single Solenoid - Air Return / Spring Assist	35 (241)	35 (241)	35 (241)	35 (241)	35 (241)
F. X. Y	Single Remote Pilot - Air Return / Spring Assist					
External Pilot*†						
All	"B" Series	Vacuum				

* External Pilot Pressure / Remote Pilot Signal 35-145 PSIG (241-1000 kPa).

† External Pilot Not Available with B3 Dual 3/2.

Note: For CSA-NRTL/C approved solenoid valves –
insert an 'L' at the end of the valve part number.
B3: Maximum pressure - 120 PSI
B5: Maximum pressure - 145 PSI*§
B6: Maximum pressure - 145 PSI*§
B7: Maximum pressure - 145 PSI*†
B8: Maximum pressure - 145 PSI*†

* Enclosure Option E is CSA / FM approved at source. For certification of valve / solenoid assembly, consult factory.
† Not Available with Enclosure 5
§ Not available with Enclosures 0. 5 & X

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Solenoid Information (Solenoids are rated for continuous duty.)

Voltage				Enclosure "5"		Voltage				B5 B6 B7 B8 Enclosure "A"		B5 B6 B7 B8 Enclosure "B" to "R"	
Code	AC 60Hz	AC 50Hz	DC	Power Consumption	Holding (Amps)	Code	AC 60Hz	AC 50Hz	DC	Power Consumption	Holding (Amps)	Power Consumption	Holding (Amps)
42	24	22		1.6VA	.065	42	24	22		3.9VA	.136	7.3VA	.309
45			12	1.2W	.098	45			12	2.6W	.208	4.6W	.365
47*			12	0.91W	.074	47*			12	—	—	4.9W	.298
48*			24	0.91W	.033	48*			24	—	—	4.8W	.142
49			24	1.2W	.049	49			24	2.7W	.112	4.8W	.200
53	120	110		1.6W	.013	53	120	110		4.1VA	.033	6.3VA	.047
57	240	230		1.6W	.007	57	240	230		3.7VA	.017	6.4VA	.026

Note: For enclosure "5" with "02" Option, solenoid wattage is 1.8W (2.4VA). Response time is 10% faster. Voltage rated +10 / -15%.

***** 47 and 48 code are mobile voltages. voltage +25 / -30%.

Response Time

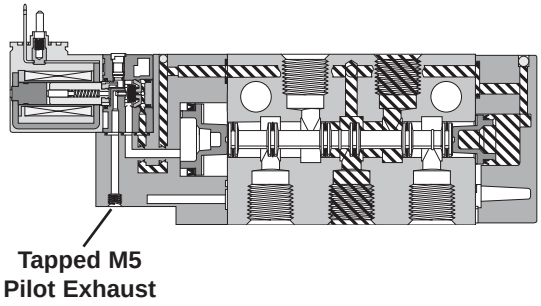
Valve Size	Port Size	Enclosure "5" 0 Cu. In. Test Chamber Fill	Enclosure "5" 0 Cu. In. Test Chamber Exhaust	Enclosure "5" 25* Cu. In. Test Chamber Fill	Enclosure "5" 25* Cu. In. Test Chamber Exhaust	Enclosure "A, B, C, D, G, H, Q & R" 0 Cu. In. Test Chamber Fill	Enclosure "A, B, C, D, G, H, Q & R" 0 Cu. In. Test Chamber Exhaust	Enclosure "A, B, C, D, G, H, Q & R" 25* Cu. In. Test Chamber Fill	Enclosure "A, B, C, D, G, H, Q & R" 25* Cu. In. Test Chamber Exhaust
2-Position Single Solenoid / Internal Air Return									
B3	1/8"	.024	.026	.149	.242	—	—	—	—
B5	1/4"	.038	.040	.106	.156	.025	.026	.090	.142
B5*	3/8"	.039	.041	.150	.245	.025	.027	.141	.241
B6*	3/8"	.037	.038	.096	.132	.016	.018	.084	.119
B7	1/2"	.073	.075	.195	.275	.049	.051	.167	.249
B8	3/4"	.072	.074	.166	.226	.049	.051	.142	.206
2-Position Single Solenoid Spring / Air Return									
B3	1/8"	.019	.022	.128	.217	—	—	—	—
B5	1/4"	.039	.041	.108	.162	.024	.026	.091	.143
B5*	3/8"	.040	.042	.169	.261	.024	.026	.143	.240
B6*	3/8"	.035	.036	.096	.133	.023	.024	.083	.120
B7	1/2"	.071	.074	.194	.275	.049	.051	.167	.249
B8	3/4"	.072	.074	.176	.239	.046	.048	.142	.204
2-Position Double Solenoid									
B3	1/8"	.013	.015	.122	.213	—	—	—	—
B5	1/4"	.016	.018	.082	.132	.012	.014	.077	.128
B5*	3/8"	.016	.018	.129	.222	.016	.018	.128	.225
B6*	3/8"	.016	.017	.074	.110	.012	.013	.071	.107
B7	1/2"	.026	.028	.145	.228	.022	.024	.138	.225
B8	3/4"	.026	.028	.123	.185	.022	.024	.115	.178
3-Position Double Solenoid									
B3	1/8"	.021	.023	.091	.141	—	—	—	—
B5	1/4"	.022	.023	.091	.141	.011	.011	.079	.135
B5*	3/8"	.022	.024	.135	.229	.016	.019	.135	.234
B6*	3/8"	.024	.026	.094	.139	.016	.018	.084	.132
B7	1/2"	.049	.051	.167	.257	.028	.030	.148	.238
B8	3/4"	.035	.037	.136	.206	.028	.030	.130	.195

Average Fill Time (Seconds): With 100 PSIG supply, time required to fill from 0-90 PSIG and exhaust from 100 PSIG to 10 PSIG is measured from instant of energizing, or de-energizing 120V/60Hz solenoid. Times shown are average.

***** For 3/8" ported, 50 cu. in. test chamber is used. For 1/2" & 3/4", a 200 cu. in. test chamber is used.

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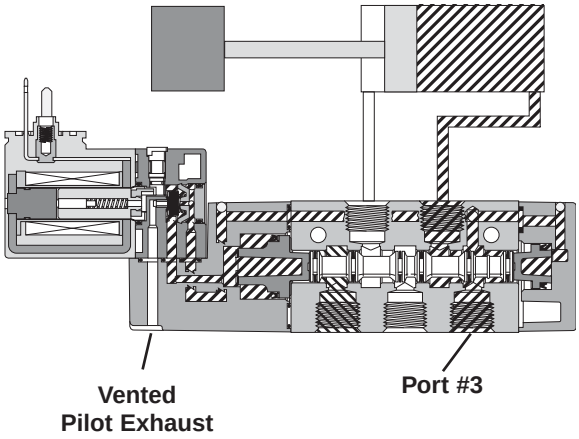
A - Internal - Port #1 / Tapped M5



B5 Shown

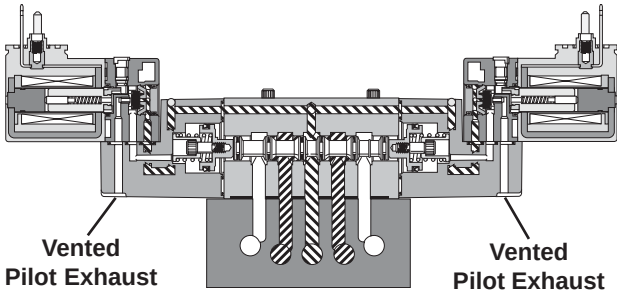
E - Dual Pressure - Port #3 / Vented

H - Dual Pressure - Port #5 / Vented (Similar)



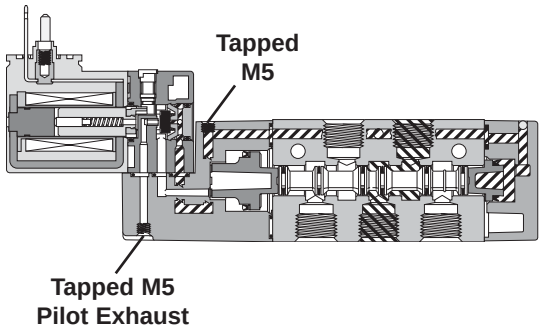
B3 Shown

B - Internal - Port #1 / Vented



B3 Shown

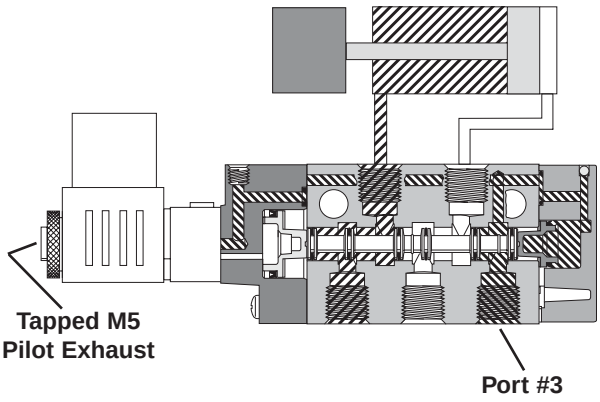
K - External - Body / Tapped M5



B3 Shown

D - Dual Pressure - Port #3 / Tapped M5

G - Dual Pressure - Port #5 / Tapped M5 (Similar)

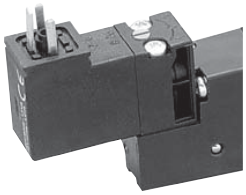


B5 Shown

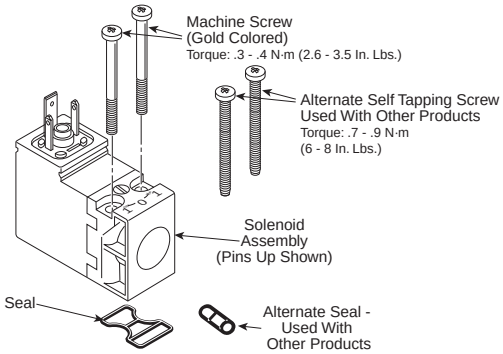
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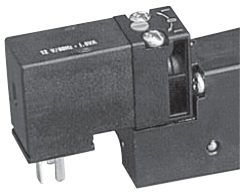
Solenoid Kits – B3 'C', B5 'C', B6 'A', B7 'A', B8 'A'

3-Pin, EN175301-803 (Former DIN 43650C), 15mm



STANDARD





"02" OPTION

PS2982*##P –
Enclosure '5'

Override	## Voltage						
	42	45	47*	48*	49	53	57
B	O	O	–	–	S	S	O
C	O	O	–	–	S	S	O
D	–	–	O	O	O	O	–
E	–	–	O	O	O	O	–

PS3541 *##P –
Enclosure '5 with "02" Option

Override	## Voltage				
	42	45	49	53	57
B	O	O	S	S	O
C	O	O	S	S	O
D	–	–	O	O	–
E	–	–	O	O	–

S - Standard; O - Option

***** Mobile Voltage

Kit Includes: Solenoid, (2) Machine Screws, (2) Self Threading Screws, (1) Gasket, (1) 3-cell Gasket.

Solenoid Kits Alternate Enclosures

P2F C A 4 49

Type	
Solenoid Kit	C

Enclosures / Lead Length	
30mm Square 3-Pin – ISO 4400 Form A (Male Only)	**A**
22mm Rectangular 3-Pin – Type B Industrial (Male Only)	**B**
Hazardous Duty, FM / CSA	F*
Grommet - 18" Leads	**G**
1/2" NPT Conduit - 18" Leads	**H**
Grommet 72" Leads	Q
1/2" Conduit 72" Leads	R

* Only Available with Voltage Codes "45", "49", "53" & "57".

Voltage / Frequency	
42	24VAC
45	12VDC
47*	**12 VDC Mobile**
48*	**24 VDC Mobile**
49	**24VDC**
53	**120VAC**
57	240VAC

* Only Available with Enclosures "A", "B" & "G".



Option A & E
30mm Square
3-Pin ISO 4400, DIN 43650A



Option B
22mm Rectangular
3-Pin DIN, Type B Industrial



Option G & Q
Grommet, 18" or 72" Leads



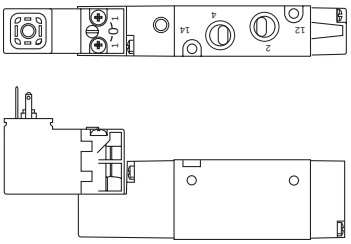
Option F, H & R
1/2" Conduit, 18" or 72" Leads

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B3 Series

Spool / Body Service Kits

		Kit Includes:
PS2901CP	4-Way, 2-Pos	Item 15, 21 (2), 24, 25, 31 (2), grease packet
PS2902CP	4-Way, 3-Pos APB	Item 16, 21 (2), 31 (2), grease packet
PS2903CP	4-Way, 3-Pos CE	Item 16, 21 (2), 31 (2), grease packet
PS2904CP	4-Way, 3-Pos PC	Item 16, 21 (2), 31 (2), grease packet
PS2971CP	3-Way, 2-Pos	Item 15, 21 (2), 24, 25, 31 (2), grease packet



Valve to Manifold Kits

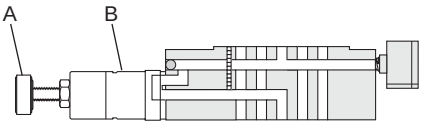
PS2980P	Gasket (10) - Inline 3-Way Valve to Segmented Manifold
PS2981P	Gasket (10) - Inline 4-Way Valve to Segmented Manifold
PS2984P	O-ring (10) - Inline Valve to IEM Bar Manifold
PS2986P	Gasket - Subbase Valve to Subbase Bar Manifold; Item 4 (10), 39 (10)
PS2987P	Mounting Bolts (10) - Inline Valve / Subbase Valve

Manifold to Manifold Kit

PS2995P	O-ring (10), Sleeves (10), Tie Rods (10) - 3-Way Manifold
PS2996P	Gasket (10), Tie Rods (10) - 4-Way Manifold

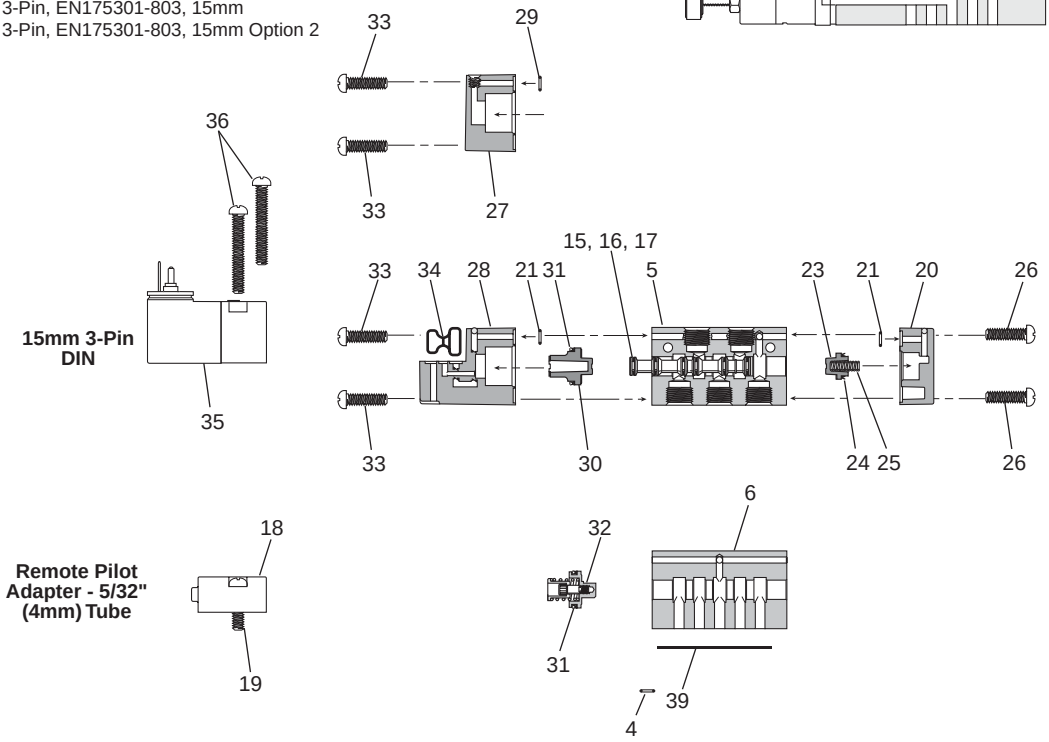
Sandwich Regulator Cartridge Kit

PS299922P	2-60 PSI Cartridge (Item A, B)
PS299933P	5-125 PSI Cartridge (Item A, B)



Solenoid Kit *Kit Includes: 35, 36, 34*

PS2982*##P	3-Pin, EN175301-803, 15mm
PS3541*##P	3-Pin, EN175301-803, 15mm Option 2



Item List – Parts not sold separately.

Item	Description	Item	Description	Item	Description
4*	O-ring - Ext Pilot Valve to Manifold	23	Return Piston	31*	Lip Seal - Operator Piston
5	Inline Body - Tapped Ports	24*	Lip Seal - Return Piston	32	Operator Piston Mechanism - 3-Position
6	Subbase Body	25*	Spring, Return Assist	33	Screws - Operator Adapter
7	Inline Body - Tube Ports	26	Screws - Return Operator	34*	Gasket - Solenoid to Adapter
15*	Spool - 2-Position (Seals Assembled)	27	Remote Pilot Operator	35*	15mm Solenoid
16*	Spool - 3-Position (Seals Assembled)	28a	Solenoid Adapter - Vent Exhaust	36*	Self Tapping Screw - Solenoid (Effective May 99)
17*	Spool Seal	28b	Solenoid Adapter - Ext Pilot. Vent Exhaust	36*	Machine Screw - Solenoid (Jan 96 - May 99)
18	Remote Pilot Adapter (PVAP111)	28c	Solenoid Adapter - Ext Pilot. Tapped Exhaust	39*	Gasket - Subbase Valve to Base
19	Screw - Remote Pilot Adapter	28d	Solenoid Adapter - Tapped Exhaust	40*	Mounting Screws - Subbase Valve
20	Return Operator	29	O-ring - Remote Pilot		
21*	Gasket - Body to Operator	30	Operator Piston - 2-Position		

Note: * Parts are available in kits shown. For kit components, order VALVE LESS SOLENOID for assembled and tested repair valve.

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B5 Series

Spool / Body Service Kits

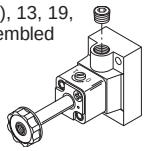
		Kit Includes:
PS2801*P	4-Way, 2-Pos	Item 2, 10 (2), 14, 15, 116, 6 (2), grease packet
PS2802*P	4-Way, 3-Pos APB	Item 3, 6 (2), 10 (2), 13 (2), grease packet
PS2803*P	4-Way, 3-Pos CE	Item 3, 6 (2), 10 (2), 13 (2), grease packet
PS2804*P	4-Way, 3-Pos PC	Item 3, 6 (2), 10 (2), 13 (2), grease packet
PS2871*P	3-Way, 2-Pos NC	Item 2, 10 (2), 14, 15, 116, 6 (2), grease packet

* Viton Seal Kit (i.e. PS2801VP)

Pilot Replacement Kit – Alternate Enclosure

Kit Includes: Item 6, 9, 10, 11, 17 (2), 18 (2), 13, 19, 20, 22, 23, 24 (2), 57, 58 Assembled

PS2897GBP	Non-Locking, BSPP
PS2897GCP	Locking, BSPP
PS2897NBP	Non-Locking, NPT
PS2897NCP	Locking, NPT

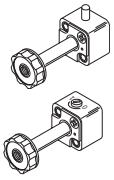


Armature / Override Kit

Kit Includes: Item 22, 23, 24 (2), 57, 58 Assembled

P2FP13N4D* Non-Locking

P2FP13N4C* Locking



* Comes with a Thru Nut and A Diffuser Nut.

Valve to Manifold Kits

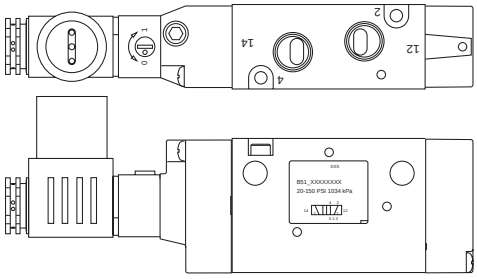
PS2884P	O-ring (10) - Inline Valve to IEM Manifold (All)
PS2886P	Gasket (10) - Subbase Valve to Subbase
PS2887P	Mounting Bolts (10) - Inline & Subbase Valve

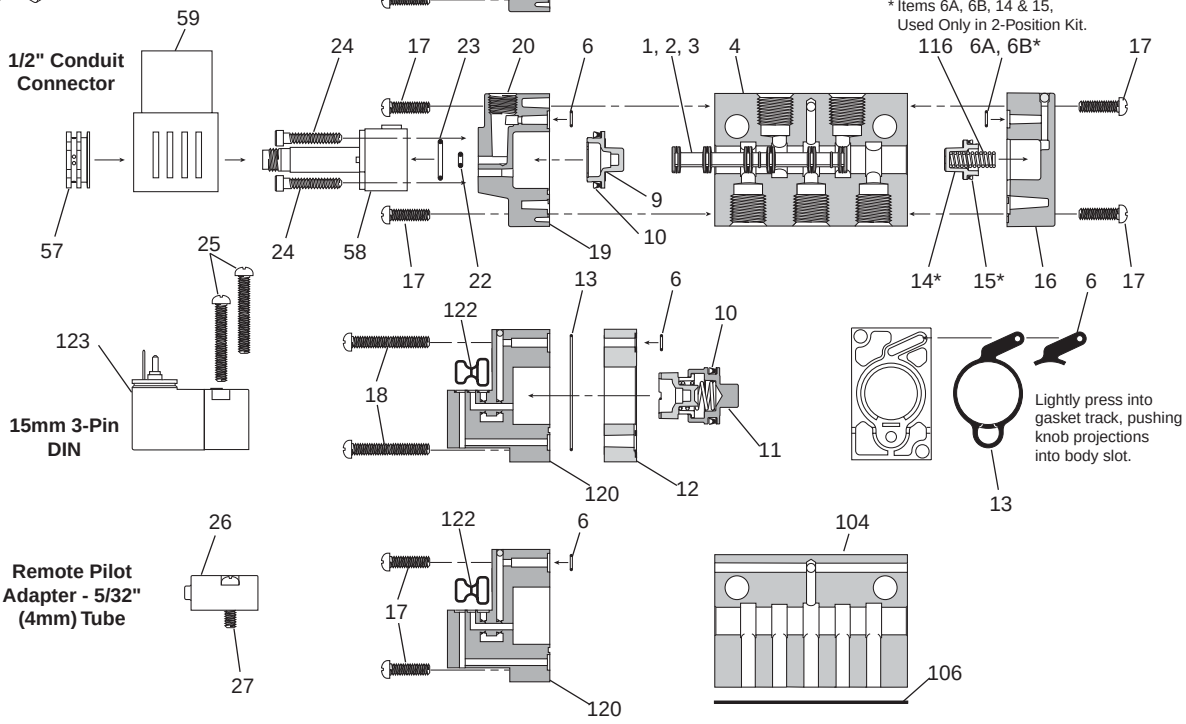
Manifold to Manifold Kit

PS2896P	Gasket (10), Tie Rods (10) - 4-Way Manifold

Solenoid Kit *Kit Includes: 25, 122, 123*

PS2982*##P	3-Pin, EN175301-803, 15mm
PS3541*##P	3-Pin, EN175301-803, 15mm Option 2





Item List – Parts not sold separately.

Item	Description	Item	Description	Item	Description
1*	Spool Seal	15*	Lip Seal - Return Piston	57*	Solenoid Nut
2*	Spool - 2-Position (Seals Assembled)	16	Return Operator	58a*	Solenoid Base Assembly - Locking
3*	Spool - 3-Position (Seals Assembled)	17*	Screws - Operator Adapter - 2-Position	58b*	Solenoid Base Assembly - Non Locking
4	Inline Body	18*	Screws - Operator Adapter - 3-Position	59*	Coil - Alternate Enclosure (see Page D49)
6A*	Gasket - Body to Operator	19*	Operator Adapter - Alt Enclosure	104	Subbase Body
6B	O-ring - Body to Operator (Effective July 2007)	20*	1/8" NPT Pipe Plug	106*	Gasket - Subbase Valve to Base
7	Remote Pilot Operator	22*	O-ring - Small - Solenoid Base	116*	Spring, Return Assist
9	Operator Piston - 2-Position	23*	O-ring - Large - Solenoid Base	120a	Solenoid Adapter - Vent Exhaust
10*	Lip Seal - Operator Piston	24*	Bolts - Solenoid Base	120b	Solenoid Adapter - Tapped Exhaust
11	Operator Piston Mechanism - 3-Position	25a*	Self Tapping Screw - Solenoid (Effective May 99)	120d	Solenoid Adapter - Ext Pilot. Vent Exhaust
12	Adapter - 3-Position	25b*	Machine Screw - Solenoid (Jan 96 - May 99)	120e	Solenoid Adapter - Ext Pilot. Tapped Exhaust
13*	Gasket - 3-Position Adapter to Body	26	Remote Pilot Adapter - 5/32" Tube (PVAP111)	122*	Gasket - Solenoid to Adapter
14	Return Piston	27	Screws - Remote Pilot Adapter	123*	15mm Solenoid

Note: * Parts are available in kits shown. For kit components, order VALVE LESS SOLENOID for assembled and tested repair valve.

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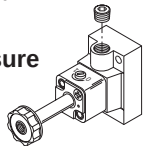
B6 Series

Spool / Body Service Kits

		Kit Includes:
PS2601P	4-Way, 2-Pos	Item 2, 6 (2), 9 (2), 11, 14, grease packet
PS2602P	4-Way, 3-Pos APB	Item 3, 6 (2), 9 (2), 13 (2), grease packet
PS2603P	4-Way, 3-Pos CE	Item 3, 6 (2), 9 (2), 13 (2), grease packet
PS2604P	4-Way, 3-Pos PC	Item 3, 6 (2), 9 (2), 13 (2), grease packet
PS267101P	3-Way, 2-Pos. NC	Item 2, 6, 9, 14, grease packet
PS267102P	3-Way, 2-Pos. NO	Item 2, 6, 9, 14, grease packet

Valve to Manifold Kits

PS2684P	O-ring (10) - Inline Valve to IEM Manifold
PS2887P	Mounting Bolts (10) - Inline Valve



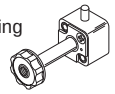
Pilot Replacement Kit – Alternate Enclosure

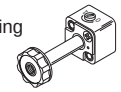
Kit Includes: Item 6, 8, 9, 10, 16 (2), 17 (2), 18, 13, 20, 22, 23, 24 (2), 57, 58 Assembled

PS2897GBP	Non-Locking, BSPP
PS2897GCP	Locking, BSPP
PS2897NBP	Non-Locking, NPT
PS2897NCP	Locking, NPT

Armature / Override Kit –

Kit Includes: Item 22, 23, 24 (2), 57, 58 Assembled

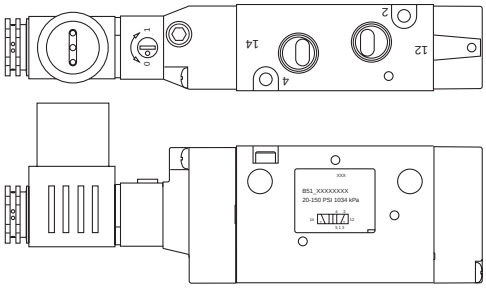
P2FP13N4D* Non-Locking 

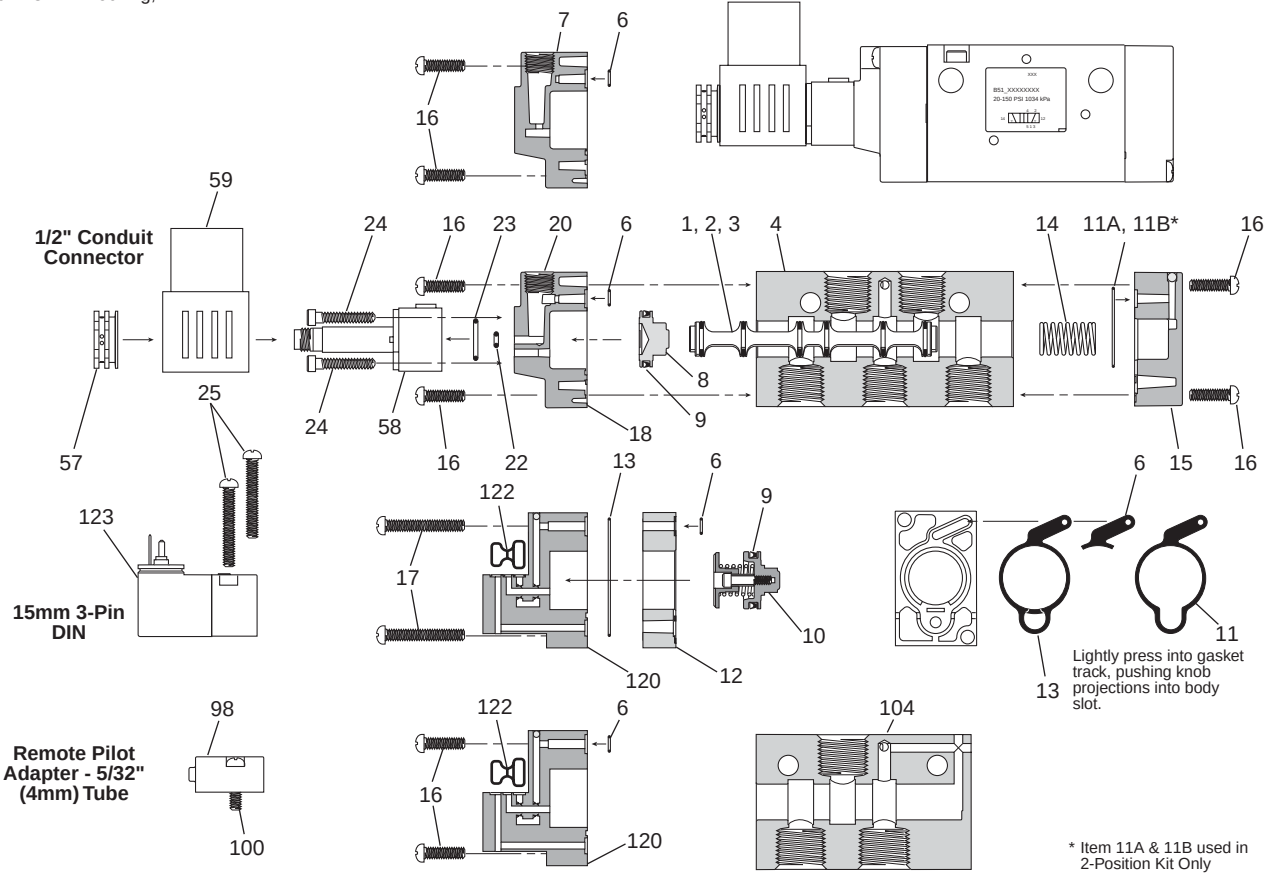
P2FP13N4C* Locking 

* Comes with a Thru Nut and A Diffuser Nut.

Solenoid Kit *Kit Includes: 25, 122, 123*

PS2982*##P	3-Pin, EN175301-803, 15mm
PS3541*##P	3-Pin, EN175301-803, 15mm Option 2





* Item 11A & 11B used in 2-Position Kit Only

Item List – Parts not sold separately.

Item	Description	Item	Description	Item	Description
1*	Spool Seal	14*	Spring, Return Assist	58a*	Solenoid Base Assembly - Locking
2*	Spool - 2-Position (Seals Assembled)	15a	Return Operator	58b*	Solenoid Base Assembly - Non Locking
3*	Spool - 3-Position (Seals Assembled)	15b	Return Operator - CSA Option	59*	Coil - Alternate Enclosure (see Page D49)
4	Inline Body - 4-Way	16*	Screws - Operator Adapter - 2-Position	98*	Remote Pilot Adapter - 5/32" Tube (PVAP111)
6*	Gasket - Body to Operator	17*	Screws - Operator Adapter - 3-Position	100	Screws - Remote Pilot Adapter
7	Remote Pilot Operator	18*	Operator Adapter - Alt Enclosure	104	Inline Body - 3-Way
8	Operator Piston - 2-Position	20*	1/8" NPT Pipe Plug	120a	Solenoid Adapter - Vent Exhaust
9*	Lip Seal - Operator Piston	22*	O-ring - Small - Solenoid Base	120b	Solenoid Adapter - Tapped Exhaust
10	Operator Piston Mechanism - 3-Position	23*	O-ring - Large - Solenoid Base	120c	Solenoid Adapter - Ext Pilot. Vent Exhaust
11A*	Gasket - Body to Return Cap	24*	Bolts - Solenoid Base	120d	Solenoid Adapter - Ext Pilot. Tapped Exhaust
11B*	O-ring - Body to Operator (Effective Feb. 2008)	25*	Self Tapping Screw - Solenoid (Effective Jan 00)	122*	Gasket - Solenoid to Adapter
12	Adapter - 3-Position	57*	Solenoid Nut	123*	15mm Solenoid
13	Gasket - 3-Position Adapter to Body				

Note: * Parts are available in kits shown. For kit components, order VALVE LESS SOLENOID for assembled and tested repair valve.

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B7 & B8 Series

Spool / Body Service Kits

		Kit Includes:
PS2501P	4-Way, 2-Pos	Item 2, 6 (2), 9 (2), 11, grease packet
PS2502P	4-Way, 3-Pos APB	Item 3, 6 (2), 9 (2), 13 (2), grease packet
PS2503P	4-Way, 3-Pos CE	Item 3, 6 (2), 9 (2), 13 (2), grease packet
PS2504P	4-Way, 3-Pos PC	Item 3, 6 (2), 9 (2), 13 (2), grease packet
PS257101P	3-Way, 2-Pos. NC	Item 2, 6, 9, grease packet
PS257102P	3-Way, 2-Pos. NO	Item 2, 6, 9, grease packet

Valve to Manifold Kits

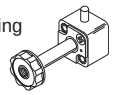
PS2584P	O-ring (10) - Inline Valve to IEM Manifold
PS2587P	Mounting Bolts (10) - Inline Valve

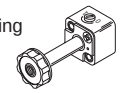
Pilot Replacement Kit – Alternate Enclosure

Kit Includes:	Item 6, 8, 9, 10, 16 (4), 18, 20, 22, 23, 24 (2), 57, 58 Assembled
PS2597GBP	Non-Locking, BSPP
PS2597GCP	Locking, BSPP
PS2597NBP	Non-Locking, NPT
PS2597NCP	Locking, NPT

Armature / Override Kit –

Kit Includes: Item 22, 23, 24 (2), 57, 58 Assembled

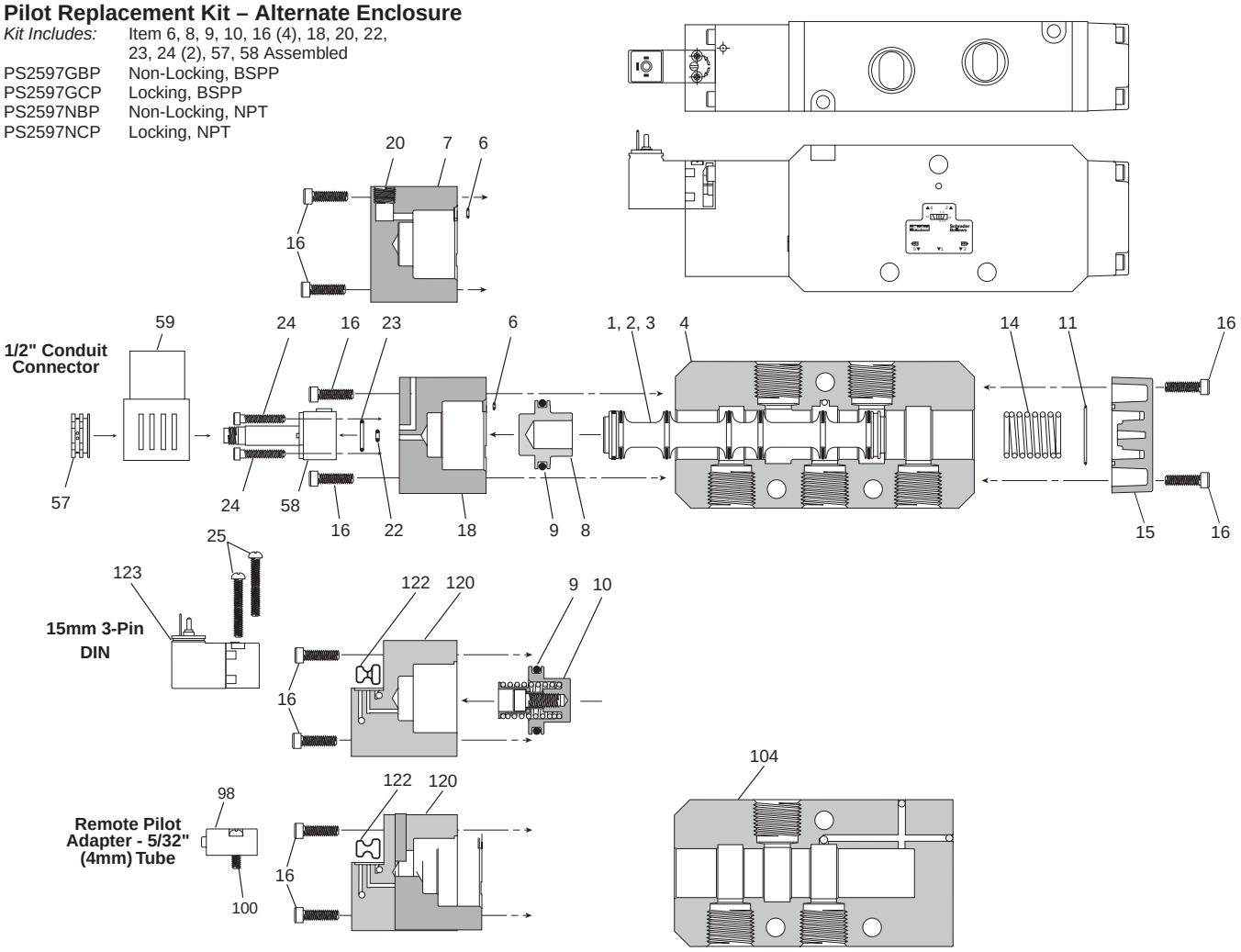
P2FP13N4D* Non-Locking 

P2FP13N4C* Locking 

* Comes with a Thru Nut and A Diffuser Nut.

Solenoid Kit *Kit Includes: 25, 122, 123*

PS2982*##P	3-Pin, EN175301-803, 15mm
PS3541*##P	3-Pin, EN175301-803, 15mm Option 2



Item List – Parts not sold separately.

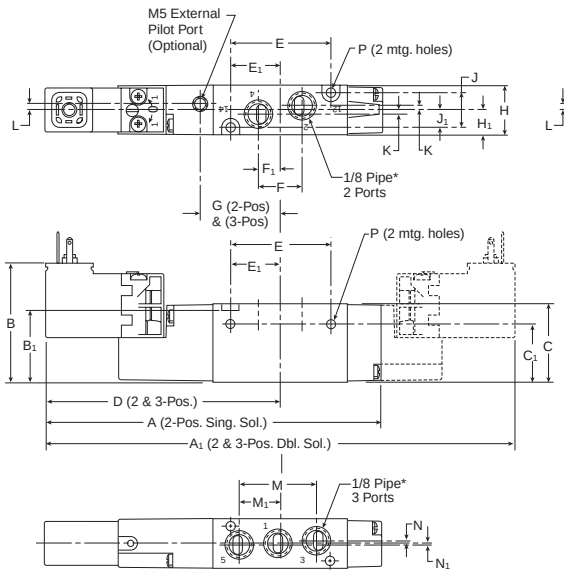
Item	Description	Item	Description	Item	Description
1*	Spool Seal	16*	Screws - Operator Adapter	98*	Remote Pilot Adapter - 5/32" Tube (PVAP111)
2*	Spool - 2-Position (Seals Assembled)	8*	Operator Adapter - Alt Enclosure	100	Screws - Remote Pilot Adapter
3*	Spool - 3-Position (Seals Assembled)	20*	1/8" NPT Pipe Plug	104	Inline Body - 3-Way
4	Inline Body - 4-Way	22*	O-ring - Small - Solenoid Base	120a	Solenoid Adapter - Vent Exhaust
6*	Gasket - Body to Operator	23*	O-ring - Large - Solenoid Base	120b	Solenoid Adapter - Tapped Exhaust
7	Remote Pilot Operator	24*	Bolts - Solenoid Base	120c	Solenoid Adapter - Ext Pilot. Vent Exhaust
8	Operator Piston - 2-Position	25*	Self Tapping Screw - Solenoid (Effective Jan 00)	120d	Solenoid Adapter - Ext Pilot. Tapped Exhaust
9*	Lip Seal - Operator Piston	57*	Solenoid Nut	122*	Gasket - Solenoid to Adapter
10	Operator Piston Mechanism - 3-Position	58a*	Solenoid Base Assembly - Locking	123*	15mm Solenoid
11*	Gasket - Body to Return Cap	58b*	Solenoid Base Assembly - Non Locking		
14*	Spring, Return Assist	59*	Coil - Alternate Enclosure (see Page D49)		
15a	Return Operator				

Note: * Parts are available in kits shown. For kit components, order VALVE LESS SOLENOID for assembled and tested repair valve.

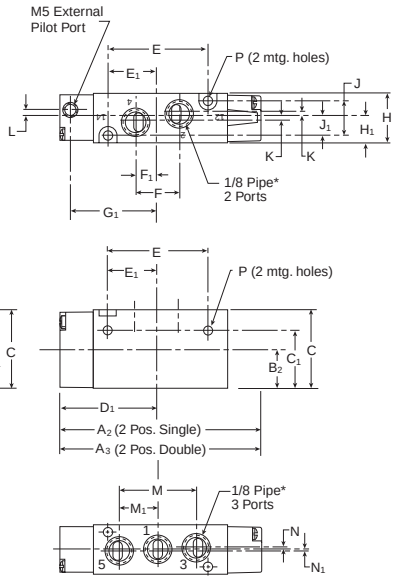
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B3 Single & Double Operators – 4-Way Inline

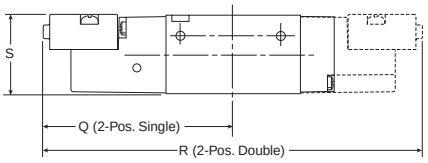
Solenoid



Remote Pilot



Remote Pilot ("YY" Option)



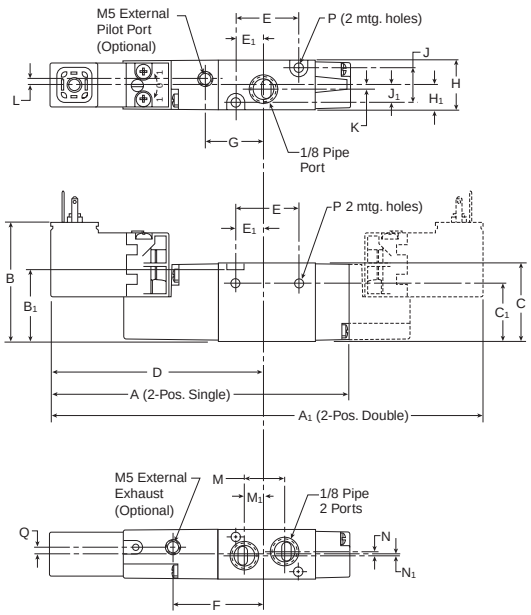
B3 4-Way Inline

A	A1	A2	A3	B
4.67 (119)	6.44 (164)	3.12 (79)	3.33 (85)	1.66 (42)
B1	**B2**	**C**	**C1**	**D**
1.05 (27)	.57 (14)	1.13 (39)	.84 (21)	3.22 (82)
D1	**E**	**E1**	**F**	**F1**
1.66 (42)	1.47 (37)	.732 (19)	.63 (16)	.32 (8)
G	**G1**	**H**	**H1**	**J**
1.13 (29)	1.50 (38)	.71 (18)	.36 (9)	.51 (13)
J1	**K**	**L**	**M**	**M1**
.26 (7)	.06 (2)	.11 (3)	1.12 (28)	.56 (14)
N	**N1**	**P**	**Q**	**R**
.05 (1)	.05 (1)	Ø .13 Ø (3.3)	2.69 (68)	5.37 (136)
S				
1.16 (29)				

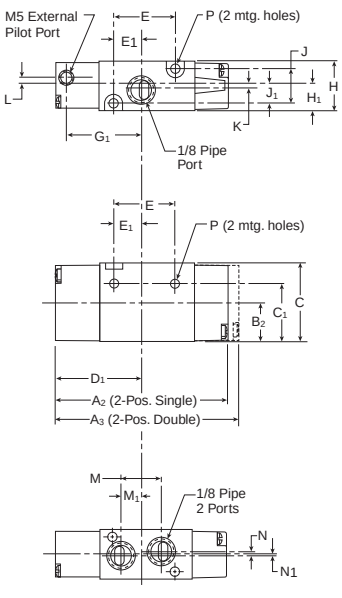
Inches (mm)

B3 Single & Double Operators – 3-Way Inline

Solenoid



Remote Pilot



B3 3-Way Inline

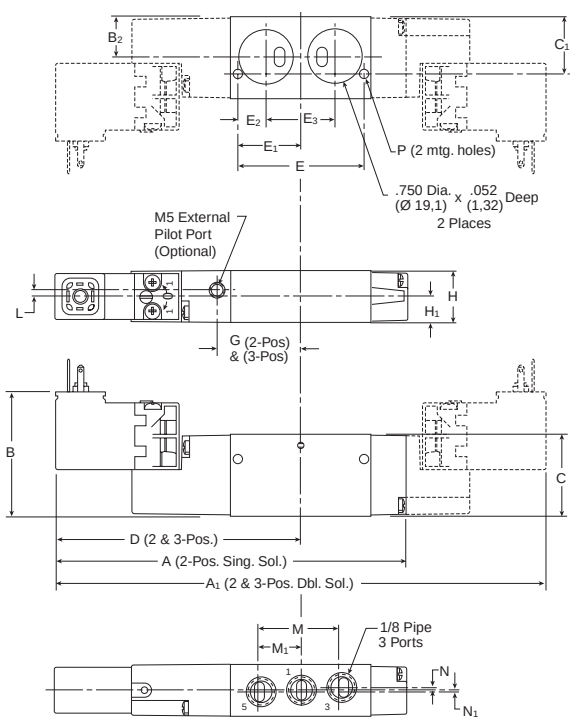
A	A1	A2	A3	B
4.20 (107)	5.96 (151)	2.65 (67)	2.86 (73)	1.66 (42)
B1	**B2**	**C**	**C1**	**D**
1.05 (27)	.57 (14)	1.13 (29)	.84 (21)	2.93 (74)
D1	**E**	**E1**	**F**	**G**
1.38 (35)	.98 (25)	.44 (11)	1.32 (34)	.85 (22)
G1	**H**	**H1**	**J**	**J1**
1.22 (31)	.71 (18)	.36 (9)	.51 (13)	.26 (7)
K	**L**	**M**	**M1**	**N**
.06 (2)	.11 (3)	.63 (16)	.27 (7)	.12 (3)
N1	**P**	**Q**		
.06 (2)	Ø .13 Ø (3.3)	.08 (2)		

Inches (mm)

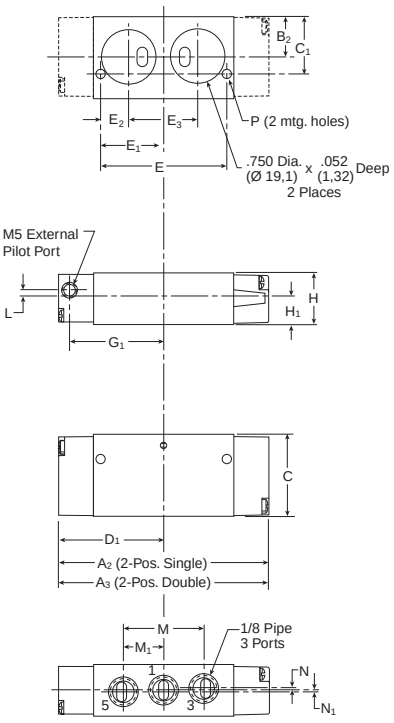
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B3 Single & Double Operators – 4-Way Face Mount

Solenoid



Remote Pilot



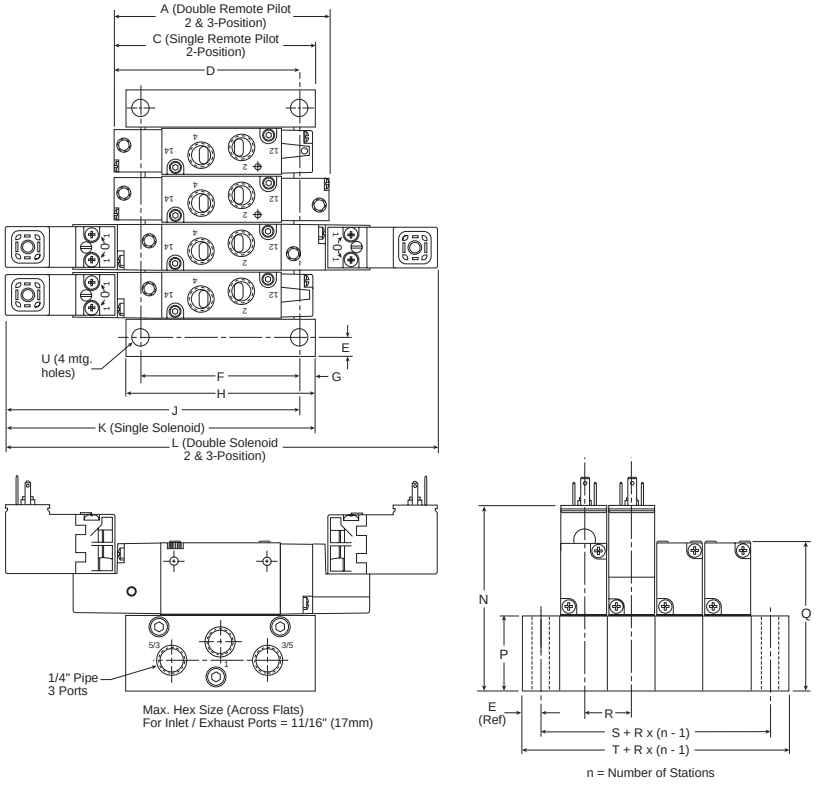
B3 4-Way Face Mount

A	**A1**	**A2**	**A3**	**B**
4.67 (119)	6.44 (164)	3.12 (79)	3.33 (85)	1.66 (42)
B2	**C**	**C1**	**D**	**D1**
.58 (15)	1.13 (29)	.81 (21)	3.22 (82)	1.66 (42)
E	**E1**	**E2**	**E3**	**G**
1.74 (44)	.87 (22)	.39 (10)	.95 (24)	1.13 (29)
G1	**H**	**H1**	**L**	**M**
1.50 (38)	.71 (18)	.36 (9)	.11 (3)	1.12 (28)
M1	**N**	**N1**	**P**	
.56 (14)	.05 (1)	.05 (1)	Ø .13 Ø (3.3)	

Inches (mm)

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B3 Single & Double Operators – 4-Way IEM Stackable



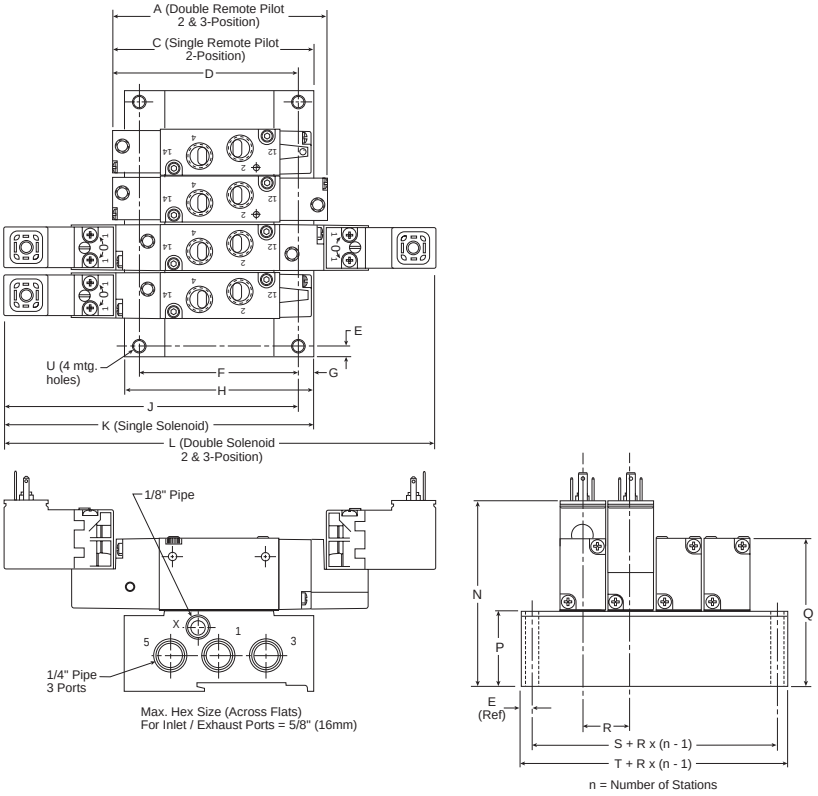
B3 4-Way IEM Stackable

A	C	D	E	F
3.33 (84.6)	3.12 (79.2)	2.91 (73.9)	.30 (7.6)	2.49 (63.3)
G	**H**	**J**	**K**	**L**
.25 (6.4)	3.00 (76.2)	4.46 (113.3)	4.67 (118.6)	6.43 (163.3)
N	**P**	**Q**	**R**	
2.91 (73.9)	1.25 (31.8)	2.38 (60.5)	.74 ±.01 (18.8) ± .3	
S	**T**	**U**		
1.34 (34.0)	1.94 (49.3)	Ø .28 Ø (7.1)		

Inches (mm)

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B3 Single & Double Operators – 4-Way IEM Aluminum Bar

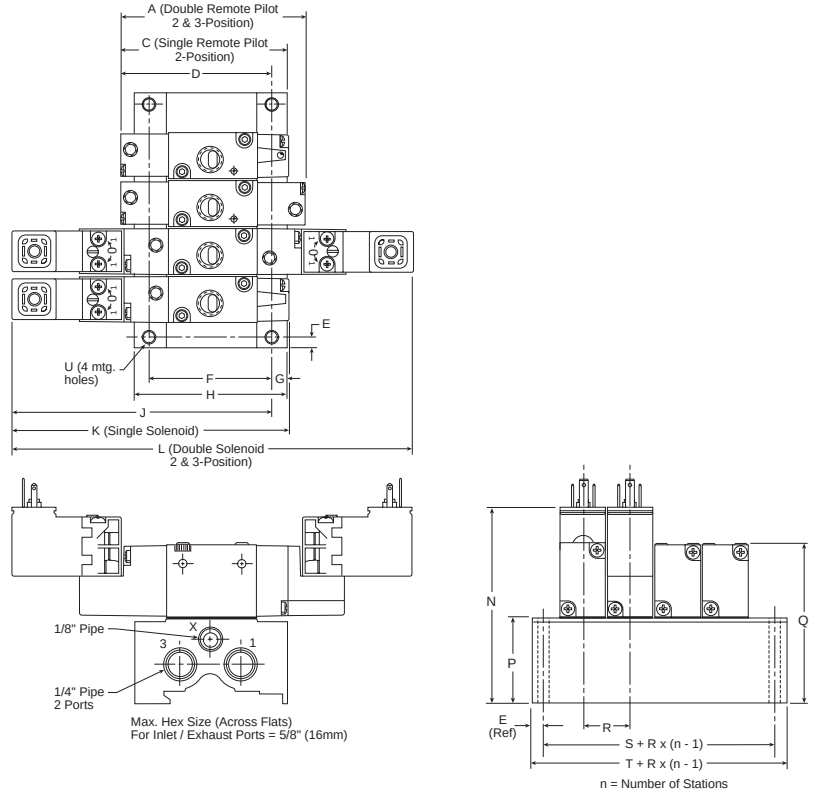


B3 4-Way IEM Aluminum Bar Manifold

A	C	D	E	F
3.33 (84.6)	3.17 (80.5)	2.94 (74.7)	.25 (6.4)	2.54 (64.5)
G	**H**	**J**	**K**	**L**
.23 (5.9)	3.00 (76.2)	4.50 (114.2)	4.73 (120.1)	6.43 (163.3)
N	**P**	**Q**	**R**	**S**
2.94 (74.7)	1.28 (32.5)	2.41 (61.2)	.81 (20.5)	1.13 (28.8)
T	**U**			
1.64 (41.6)	Ø .23 Ø (5.8)			

Inches (mm)

B3 Single & Double Operators – 3-Way IEM Aluminum Bar



B3 4-Way IEM Aluminum Bar Manifold

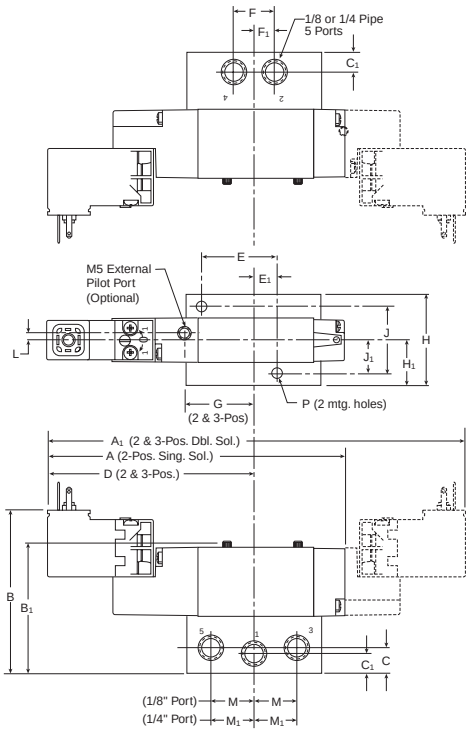
A	C	D	E	F
2.86 (72.6)	2.65 (67.3)	2.33 (59.2)	.25 (6.4)	1.80 (45.7)
G	**H**	**J**	**K**	**L**
.23 (5.9)	2.25 (57.2)	3.88 (98.6)	4.20 (106.7)	5.96 (151.4)
N	**P**	**Q**	**R**	**S**
2.93 (74.5)	1.27 (32.4)	2.40 (61.1)	.81 (20.5)	1.13 (28.8)
T	**U**			
1.64 (41.6)	Ø .23 Ø (5.8)			

Inches (mm)

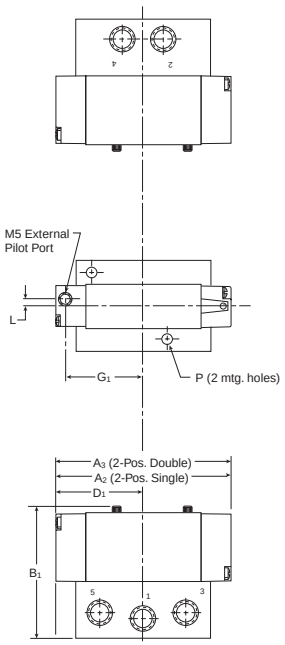
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B3 Single & Double Operators – 4-Way Single Subbase

Solenoid



Remote Pilot

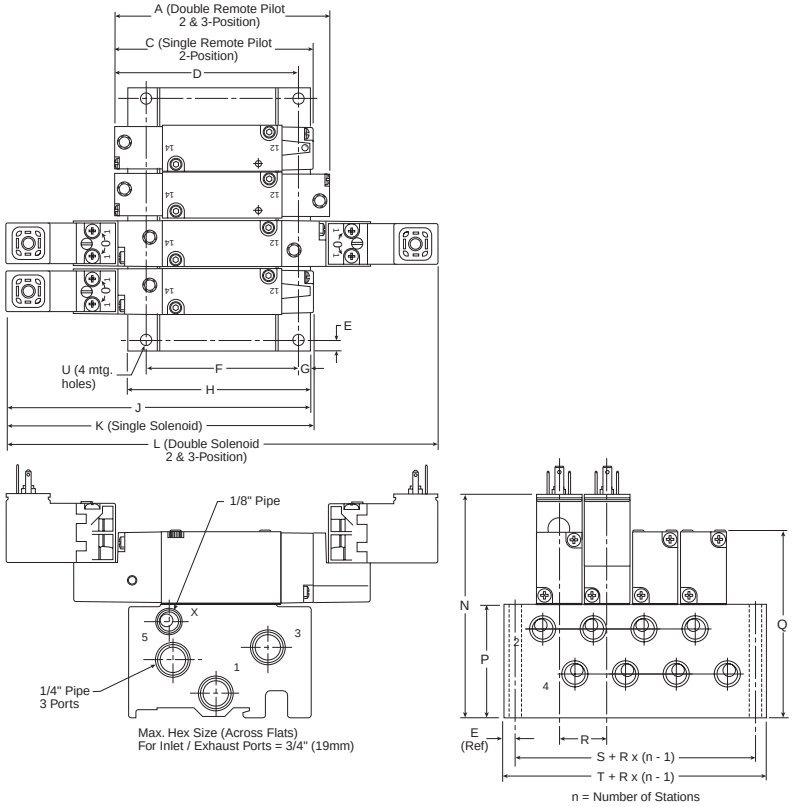


B3 4-Way Single Subbase

A	A1	A2	A3	B
4.67 (119)	6.44 (164)	3.12 (79)	3.33 (85)	2.63 (67)
B1	**C**	**C1**	**D**	**D1**
2.21 (56)	.47 (12)	.37 (9)	3.22 (82)	1.66 (42)
E	**E1**	**F**	**F1**	**G**
1.25 (32)	.38 (10)	.69 (18)	.34 (9)	1.13 (29)
G1	**H**	**H1**	**J**	**J1**
1.50 (38)	1.50 (38)	.75 (19)	1.12 (28)	.56 (14)
M	**M1**	**P**		
.71 (18)	.76 (19)	Ø .18 Ø (4)		

Inches (mm)

B3 Single & Double Operators – 5-Port Subbase Bar Manifold



B3 5-Port Subbase Bar Manifold

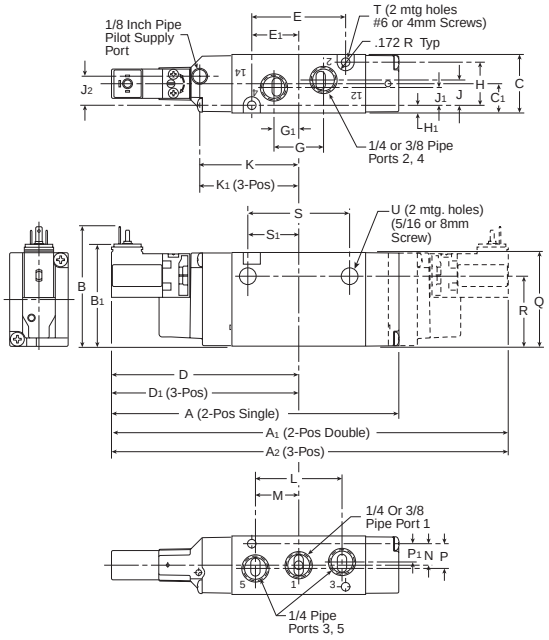
A	C	D	E	F
3.33 (84.6)	3.12 (79.2)	2.88 (73.2)	.25 (6.3)	2.43 (61.7)
G	**H**	**J**	**K**	**L**
.22 (5.5)	2.93 (74.5)	4.66 (118.3)	4.67 (118.6)	6.43 (166.3)
N	**P**	**Q**	**R**	**S**
3.47 (88.2)	1.81 (46.0)	2.94 (74.7)	.81 (20.5)	1.39 (35.4)
T	**U**			
1.89 (48.0)	Ø .22 Ø (5.6)			

Inches (mm)

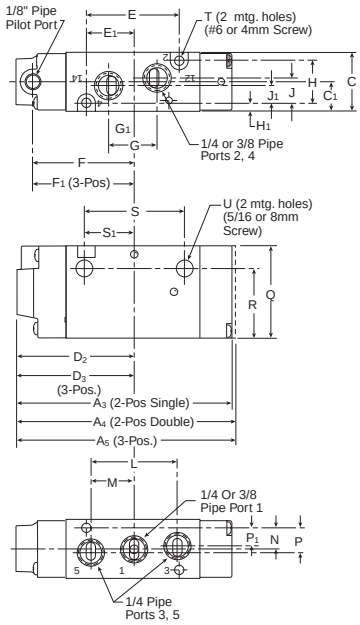
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B5 Single & Double Operators – 4-Way Inline

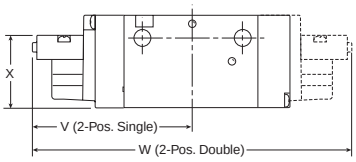
Solenoid



Remote Pilot



Remote Pilot ("YY" Option)



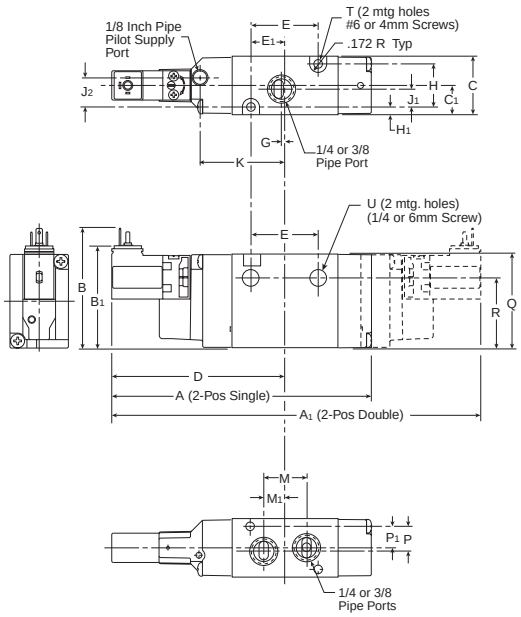
B5 4-Way Inline

A	A1	A2	A3	A4
5.78 (147)	7.51 (191)	8.45 (215)	4.37 (110)	4.70 (119)
A5	**B**	**B1**	**C**	**C1**
5.64 (143)	2.41 (61)	2.06 (52)	1.18 (30)	.59 (15)
D	**D1**	**D2**	**D3**	**E**
3.76 (96)	4.23 (107)	2.35 (60)	2.82 (72)	1.89 (48)
E1	**F**	**F1**	**G**	**G1**
.95 (24)	2.01 (51)	2.47 (63)	1.00 (25)	.50 (13)
H	**H1**	**J**	**J1**	**J**
.87 (22)	.16 (4)	.51 (13)	.36 (9)	.58 (15)
K	**K1**	**L**	**M**	**N**
2.00 (51)	2.47 (63)	1.75 (44)	.88 (22)	.43 (48)
P	**P1**	**Q**	**R**	**S**
.50 (13)	.37 (92)	1.89 (48)	1.41 (36)	2.05 (52)
S1	**T**	**U**	**V**	**W**
1.03 (26)	Ø .177 Ø (4.5)	Ø .34 Ø (9)	3.24 (82)	6.48 (165)
X				
1.50 (383)				

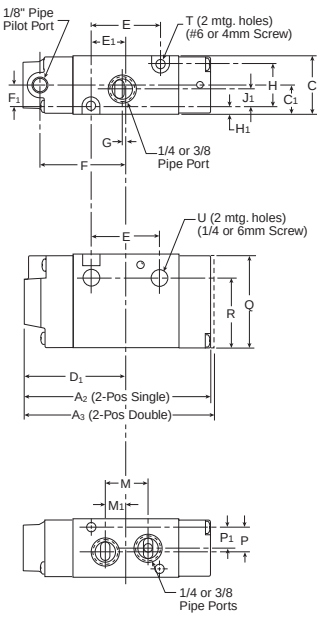
Inches (mm)

B5 Single & Double Operators – 3-Way Inline

Solenoid



Remote Pilot



B5 3-Way Inline

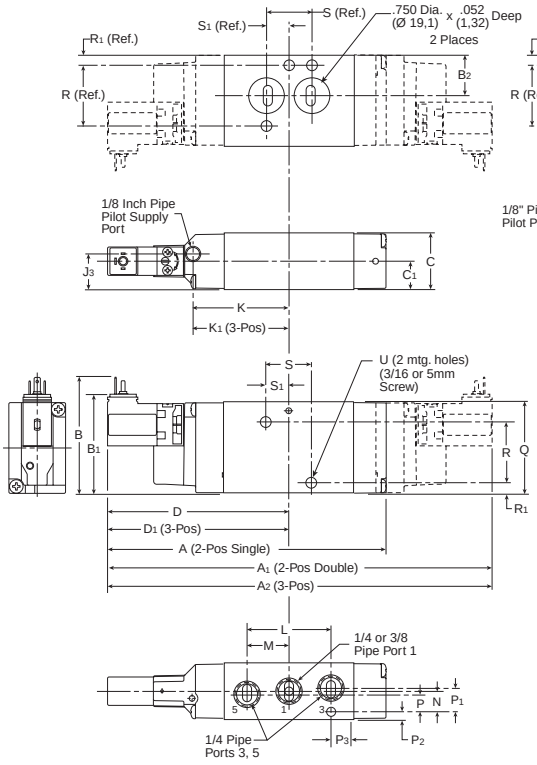
A	A1	A2	A3	B
5.29 (134)	7.03 (179)	3.88 (99)	4.21 (107)	2.41 (61)
B1	**C**	**C1**	**D**	**D1**
2.06 (52)	1.18 (30)	.59 (15)	3.43 (87)	2.11 (54)
E	**E1**	**F**	**F1**	**G**
1.40 (36)	.70 (18)	1.77 (45)	.43 (11)	.06 (2)
H	**H1**	**J1**	**J2**	**K**
.87 (22)	.16 (4)	.36 (9)	.58 (15)	1.67 (42)
M	**M1**	**P**	**P1**	**Q**
.88 (22)	.44 (11)	.50 (13)	.37 (9)	1.89 (48)
R	**T**	**U**		
1.41 (36)	Ø .177 Ø (4.5)	Ø .26 Ø (6.6)		

Inches (mm)

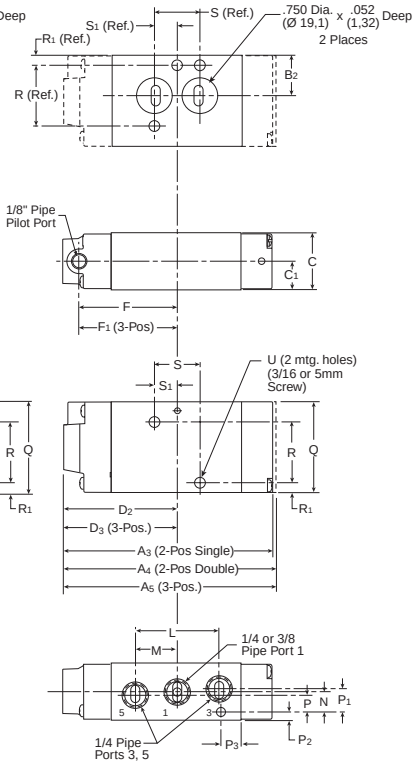
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B5 Single & Double Operators – 4-Way NAMUR Mount

Solenoid



Remote Pilot

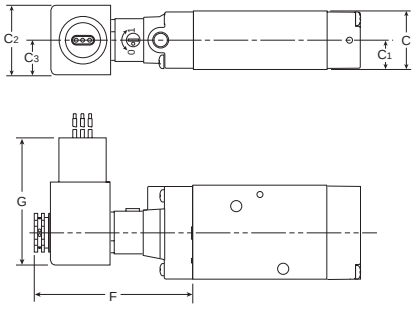


B5 4-Way NAMUR Mount

A	A1	A2	A3	A4
5.78 (147)	7.51 (191)	8.45 (215)	4.37 (110)	4.70 (119)
A5	**B**	**B1**	**B2**	**C**
5.64 (143)	2.41 (61)	2.06 (52)	.84 (21)	1.18 (30)
C1	**D**	**D1**	**D2**	**D3**
.59 (15)	3.76 (96)	4.23 (107)	2.35 (60)	2.82 (72)
F	**F1**	**J3**	**K**	**K1**
2.01 (51)	2.47 (63)	.74 (19)	2.00 (51)	2.47 (63)
L	**M**	**N**	**P**	**P1**
1.75 (44)	.88 (22)	.44 (11)	.37 (9.4)	.50 (13)
P2	**P3**	**Q**	**R**	**R1**
.16 (4)	.40 (10)	1.89 (48)	1.26 (32)	.21 (5)
S	**S1**	**U**		
.94 (24)	.47 (12)	Ø .224 Ø (5.7)		

Inches (mm)

B5 Alternative Electrical Enclosure Option F



Explosion Proof Solenoid Coil

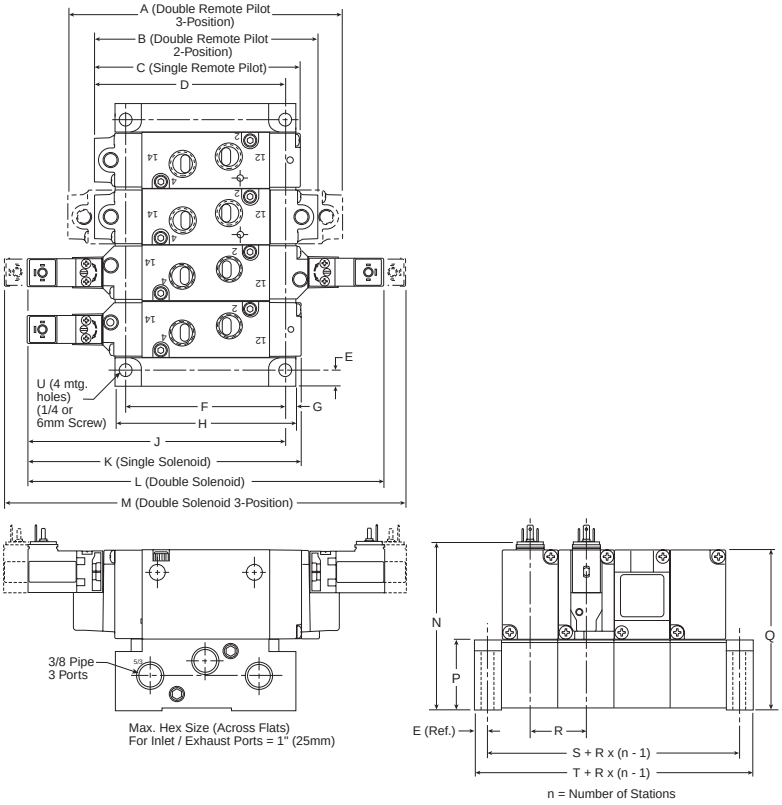
B5 4-Way NAMUR Mount with Option F Enclosure

C	C1	C2	C3	F
1.18 (30)	.59 (15)	1.42 (36)	.71 (18)	3.15 (80)
G				
2.60 (66)				

Inches (mm)

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B5 Single & Double Operators – 4-Way IEM Stackable



B5 4-Way IEM Stackable

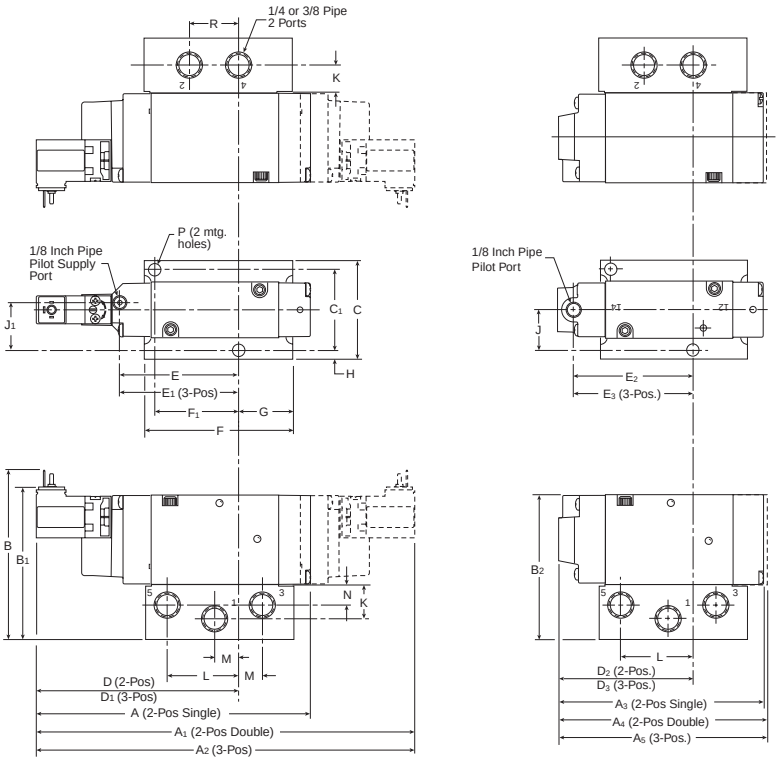
A	B	C	D	E
5.64 (143.3)	4.70 (119.4)	4.37 (110.0)	4.29 (109.0)	.29 (7.4)
F	**G**	**H**	**J**	**K**
3.44 (87.4)	.24 (6.1)	3.92 (99.6)	5.48 (139.2)	5.78 (146.8)
L	**M**	**N**	**P**	**Q**
7.52 (191.0)	8.46 (214.9)	3.56 (90.4)	1.50 (38.1)	3.42 (86.9)
R		**S**	**T**	**U**
1.21 ± .01 (30.7) ± (.3)		1.79 (45.5)	2.37 (60.2)	Ø .28 Ø (7.1)

Inches (mm)

B5 Single & Double Operators – 4-Way Single Subbase

Solenoid

Remote Pilot



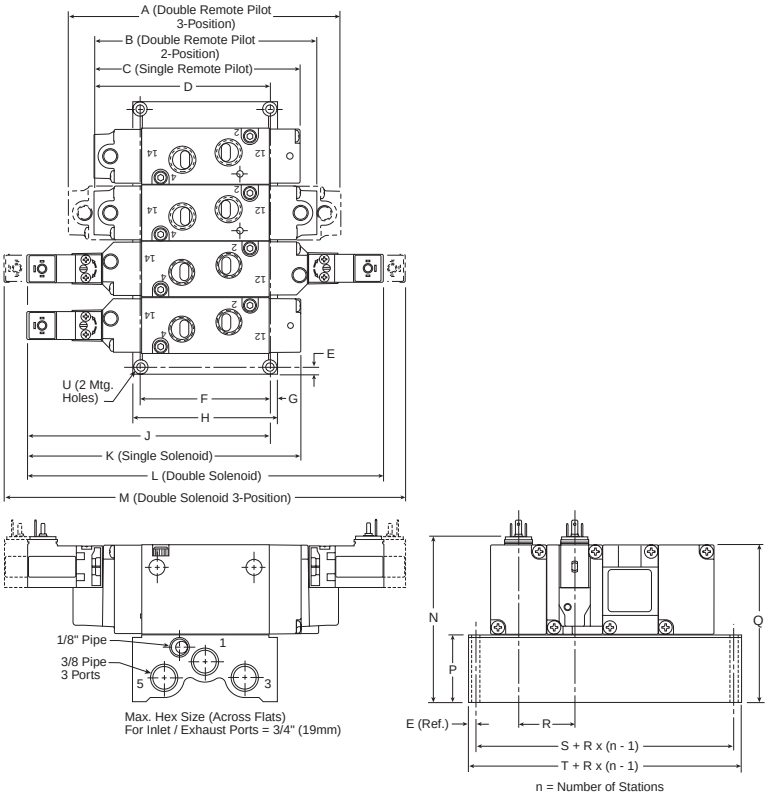
B5 4-Way Subbase

A	A1	A2	A3	A4
5.78 (147)	7.52 (191)	8.46 (215)	4.37 (110)	4.70 (119)
A5	**B**	**B1**	**B2**	**C**
5.64 (143)	3.56 (90)	3.21 (82)	3.03 (77)	2.12 (54)
C1	**D**	**D1**	**D2**	**D3**
1.69 (43)	4.26 (108)	4.73 (120)	2.85 (72)	3.32 (40)
E	**E1**	**E2**	**E3**	**F**
2.51 (65)	2.98 (76)	2.60 (66)	3.07 (80)	2.90 (74)
F1	**G**	**H**	**J**	**J1**
1.69 (43)	.95 (24)	.22 (5)	.84 (21)	.99 (25)
K	**L**	**M**	**N**	**P**
.71 (18)	1.50 (38)	.50 (13)	.46 (12)	Ø .27 Ø (7)
R				
1.00 (25)				

Inches (mm)

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B5 Single & Double Operators – 4-Way IEM Aluminum Bar

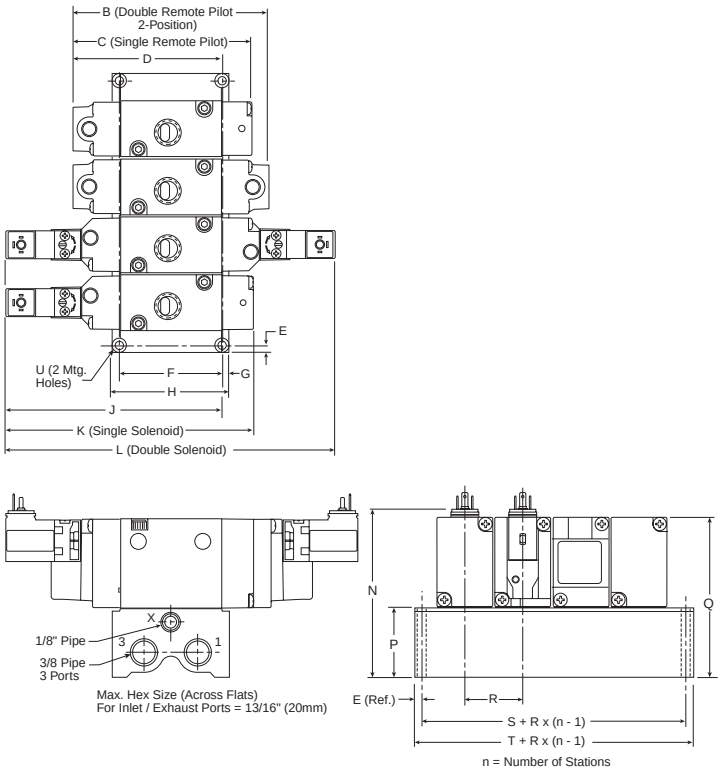


B5 4-Way IEM Aluminum Bar Manifold

A	B	C	D	E
5.64 (143.3)	4.70 (119.4)	4.37 (110.0)	3.74 (95.0)	.18 (4.6)
F	**G**	**H**	**J**	**K**
2.78 (70.6)	.17 (4.3)	3.12 (79.2)	5.15 (130.8)	5.78 (146.8)
L	**M**	**N**	**P**	**Q**
7.52 (191.0)	8.46 (214.9)	3.50 (89.0)	1.44 (36.6)	3.36 (85.3)
R	**S**	**T**	**U**	
1.26 (32.0)	1.78 (45.2)	2.14 (54.4)	Ø .22 Ø (5.5)	

Inches (mm)

B5 Single & Double Operators – 3-Way IEM Aluminum Bar



B5 3-Way IEM Aluminum Bar Manifold

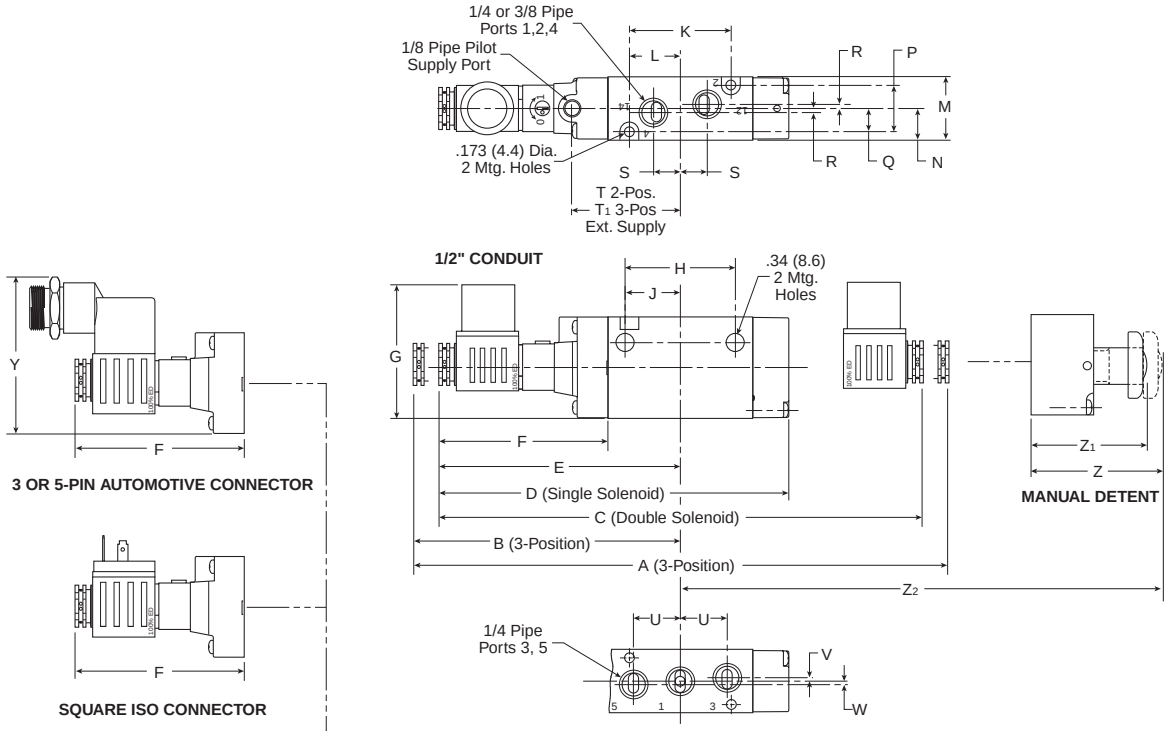
B	C	D	E	F
4.21 (106.9)	3.88 (98.6)	3.41 (86.6)	.18 (4.6)	2.12 (53.8)
G	**H**	**J**	**K**	**L**
.17 (4.3)	2.46 (62.5)	4.82 (122.4)	5.29 (134.4)	7.03 (178.6)
N	**P**	**Q**	**R**	**S**
3.50 (89.0)	1.44 (36.6)	3.36 (85.3)	1.26 (32.0)	1.76 (44.7)
T	**U**			
2.12 (53.8)	Ø .18 Ø (4.6)			

Inches (mm)

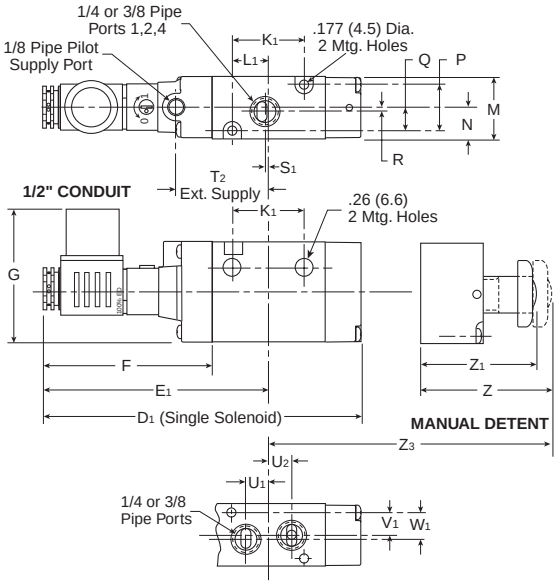
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B5

4-Way Alternative Electrical Enclosures



3-Way Alternative Electrical Enclosures



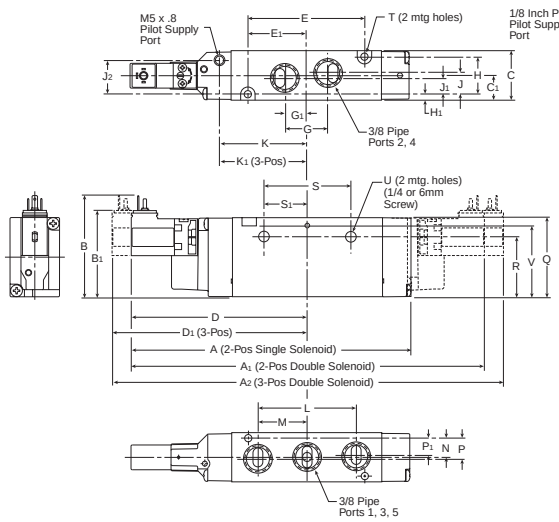
B5 Alternative – Electrical Enclosures Inches (mm)

A	A1	B	C	D	D1	E	E1	F	G	H	J	K
9.94 (252.5)	.872 (221.4)	4.97 (126.2)	9.00 (228.6)	6.52 (165.6)	6.02 (152.9)	4.50 (114.3)	4.26 (108.1)	3.15 (80.0)	2.47 (62.8)	2.05 (52.1)	1.03 (26.2)	1.89 (48.0)
K1	**L**	**L1**	**M**	**N**	**P**	**Q**	**R**	**S**	**S1**	**T**	**T1**	**T2**
1.40 (35.5)	.95 (24.1)	.70 (17.8)	1.18 (30.0)	.59 (15.0)	.87 (22.1)	.43 (10.9)	.08 (2.0)	.50 (12.7)	.06 (1.5)	2.01 (51.1)	2.47 (62.7)	1.76 (44.8)
U	**U1**	**U2**	**V**	**V1**	**W**	**W1**	**Y**	**Z**	**Z1**	**Z2**	**Z3**	
.87 (22.1)	.43 (10.9)	.45 (11.3)	.06 (1.5)	.37 (9.3)	.07 (1.8)	.50 (13)	2.90 (73.6)	2.40 (60.9)	2.12 (53.8)	3.75 (95.2)	4.17 (105.8)	

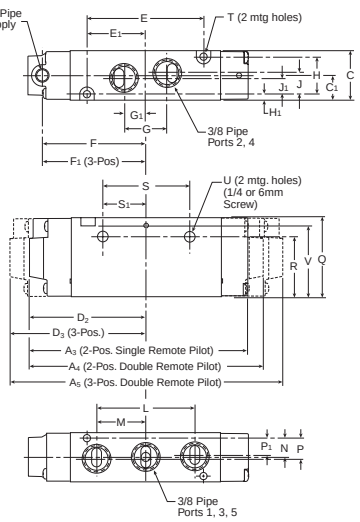
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B6 Single & Double Operators – 4-Way Inline

Solenoid



Remote Pilot



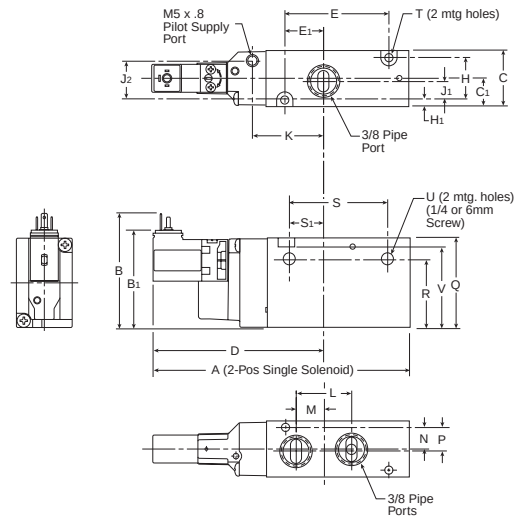
B6 4-Way Inline

A	A1	A2	A3	A4
6.67 (169.5)	8.41 (213.7)	9.35 (237.6)	5.26 (133.7)	5.59 (142.1)
A5	**B**	**B1**	**C**	**C1**
6.54 (166.0)	2.41 (61.3)	2.06 (52.3)	1.18 (30.0)	.59 (15.0)
D	**D1**	**D2**	**D3**	**E**
4.21 (106.8)	4.68 (118.8)	2.80 (71.0)	3.27 (83.0)	2.79 (70.8)
E1	**F**	**F1**	**G**	**G1**
1.39 (35.4)	2.45 (62.3)	2.92 (74.3)	1.03 (26.1)	.51 (13.1)
H	**H1**	**J**	**J1**	**J2**
.91 (23.0)	.14 (3.5)	.51 (13.1)	.39 (10.0)	.81 (20.6)
K	**K1**	**L**	**M**	**N**
2.09 (53.0)	2.56 (64.9)	2.34 (59.4)	1.17 (29.7)	.45 (11.5)
P	**P1**	**Q**	**R**	**S**
.49 (12.5)	.41 (10.5)	1.89 (48.0)	1.45 (36.8)	2.09 (53.0)
S1	**T**	**U**	**V**	
1.04 (26.5)	Ø .17 Ø (4.4)	Ø .27 Ø (6.9)	1.69 (43.0)	

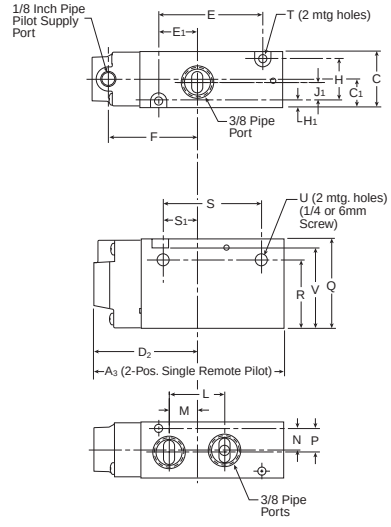
Inches (mm)

B6 Single Operators – 3-Way Inline

Solenoid



Remote Pilot



B6 3-Way Inline

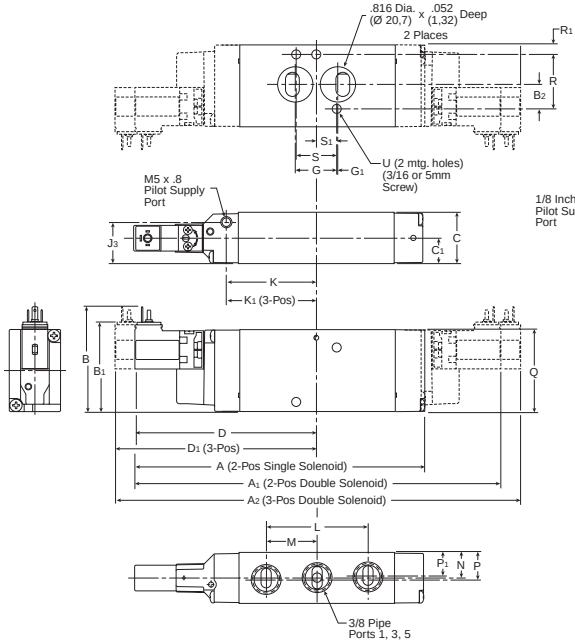
A	A3	B	B1	C
5.42 (137.7)	4.01 (101.9)	2.41 (61.3)	2.06 (52.3)	1.18 (30.0)
C1	**D**	**D2**	**E**	**E1**
.59 (15.0)	3.63 (92.1)	2.22 (56.3)	2.19 (55.6)	0.82 (20.7)
F	**H**	**H1**	**J1**	**J2**
1.87 (47.6)	.91 (23.0)	.14 (3.5)	.39 (10.0)	.81 (20.6)
K	**L**	**M**	**N**	**P**
1.51 (38.3)	1.17 (29.7)	.59 (15.0)	.45 (11.5)	.49 (12.5)
Q	**R**	**S**	**S1**	**T**
1.89 (48.0)	1.45 (36.8)	2.09 (53.0)	0.76 (19.4)	Ø .17 Ø (4.4)
U	**V**			
Ø .27 Ø (6.9)	1.69 (43.0)			

Inches (mm)

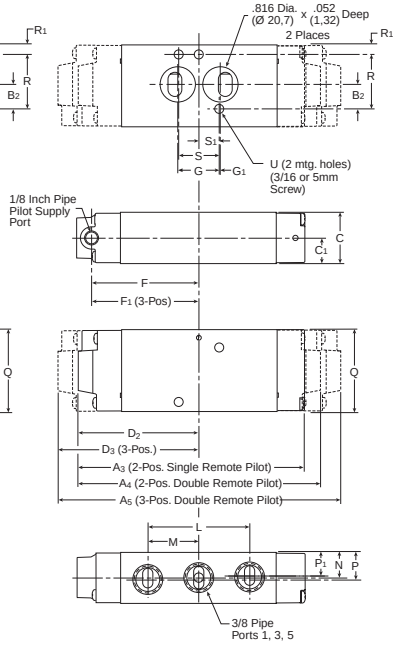
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B6 Single & Double Operators – 4-Way NAMUR Mount

Solenoid



Remote Pilot

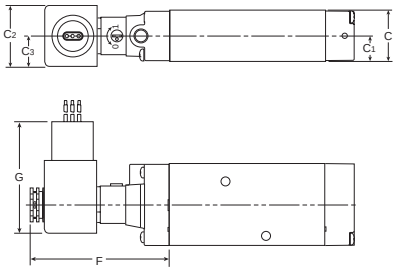


B6 4-Way NAMUR Mount

A	**A1**	**A2**	**A3**	**A4**
6.67 (169.5)	8.41 (213.7)	9.35 (237.6)	5.26 (133.7)	5.59 (142.1)
A5	**B**	**B1**	**B2**	**C**
6.54 (166.0)	2.41 (61.3)	2.06 (52.3)	.57 (14.4)	1.18 (30.0)
C1	**D**	**D1**	**D2**	**D3**
.59 (15)	4.21 (106.8)	4.68 (118.8)	2.80 (71.0)	3.27 (83.0)
F	**F1**	**G**	**G1**	**J3**
2.45 (62.3)	2.92 (74.3)	.95 (24.2)	.02 (0.53)	.95 24.1)
K	**K1**	**L**	**M**	**N**
2.09 (53.0)	2.56 (64.9)	2.34 (59.4)	1.17 (29.7)	.59 (15)
P	**P1**	**Q**	**R**	**R1**
.63 (16)	.55 (14)	1.89 (48.0)	1.26 (32)	.22 (5.5)
S	**S1**	**T**	**U**	
.94 (24)	.47 (12)	Ø .17 Ø (4.4)	Ø .27 Ø (6.9)	

Inches (mm)

B6 Alternative Electrical Enclosure Option F



Hazardous Duty Solenoid Coil

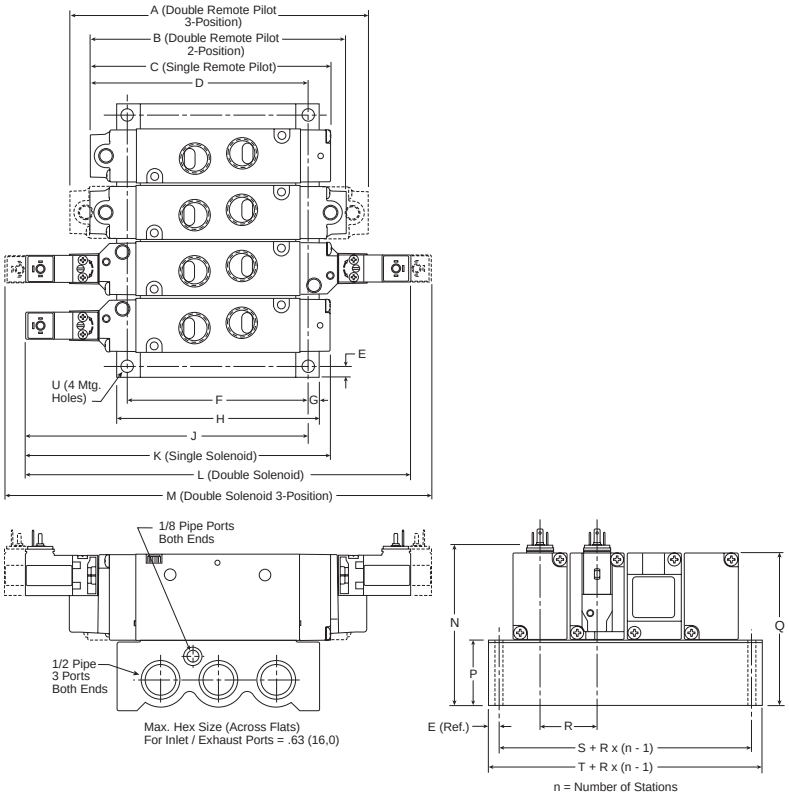
B6 4-Way NAMUR Mount with Option F Enclosure

C	**C1**	**C2**	**C3**	**F**
1.18 (30)	.59 (15)	1.42 (36)	.71 (18)	3.15 (80)
G				
2.60 (66)				

Inches (mm)

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B6 Single & Double Operators – 4-Way IEM Aluminum Bar

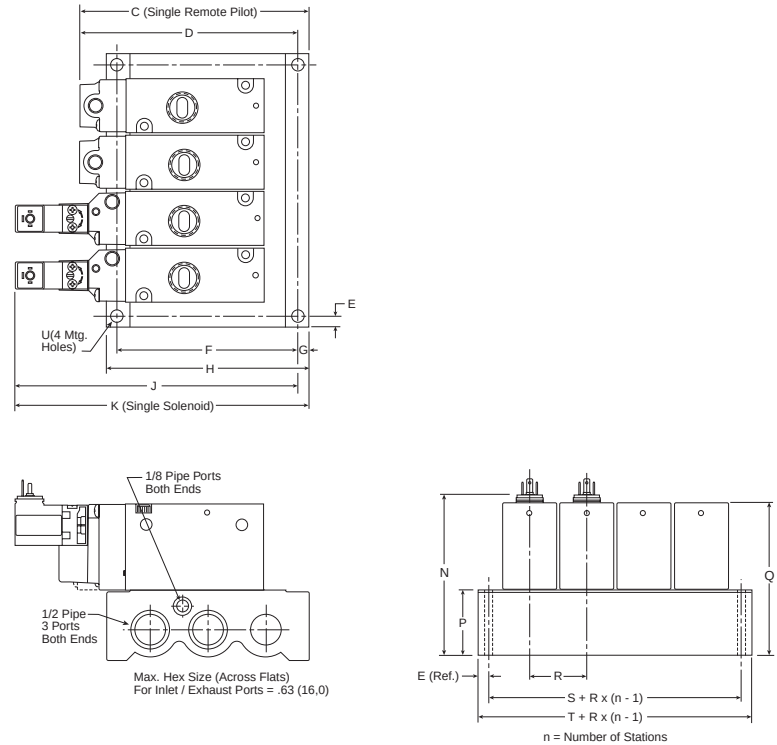


B6 4-Way IEM Aluminum Bar Manifold

A	B	C	D	E
6.54 (166.0)	5.59 (142.1)	5.26 (133.7)	4.76 (121.0)	.24 (6.0)
F	**G**	**H**	**J**	**K**
3.94 (100.0)	.24 (6.0)	4.41 (112.0)	6.17 (156.8)	6.67 (169.5)
L	**M**	**N**	**P**	**Q**
8.41 (213.7)	9.35 (237.6)	3.60 (91.3)	1.54 (39.0)	3.43 (87.0)
R	**S**	**T**	**U**	
1.24 (31.5)	1.77 (45.0)	2.24 (57.0)	ø .26 ø (6.5)	

Inches (mm)

B6 Single Operators – 3-Way IEM Aluminum Bar



B6 3-Way IEM Aluminum Bar Manifold

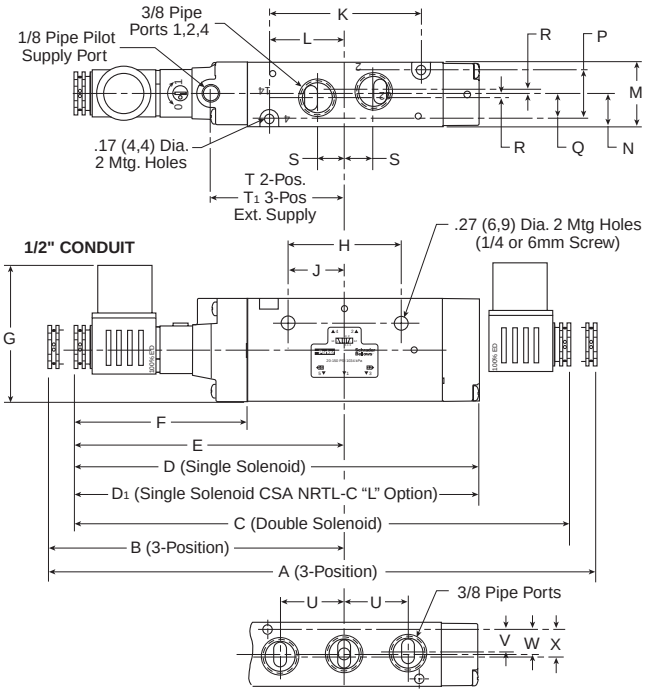
C	D	E	F	G
5.00 (127.0)	4.76 (121.0)	.24 (6.0)	3.94 (100.0)	.24 (6.0)
H	**J**	**K**	**N**	**P**
4.41 (112.0)	6.17 (156.8)	6.41 (162.8)	3.60 (91.3)	1.54 (39.0)
Q	**R**	**S**	**T**	**U**
3.43 (87.0)	1.24 (31.5)	1.77 (45.0)	2.24 (57.0)	Ø .26 Ø (6.5)

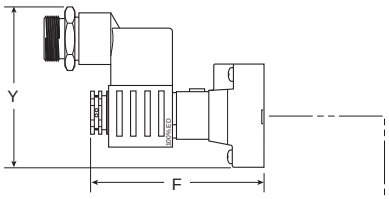
Inches (mm)

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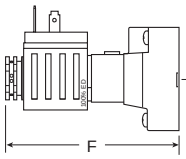
B6

4-Way Alternative Electrical Enclosures

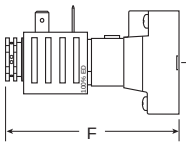




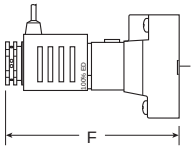
3 OR 5-PIN AUTOMOTIVE CONNECTOR



SQUARE ISO CONNECTOR

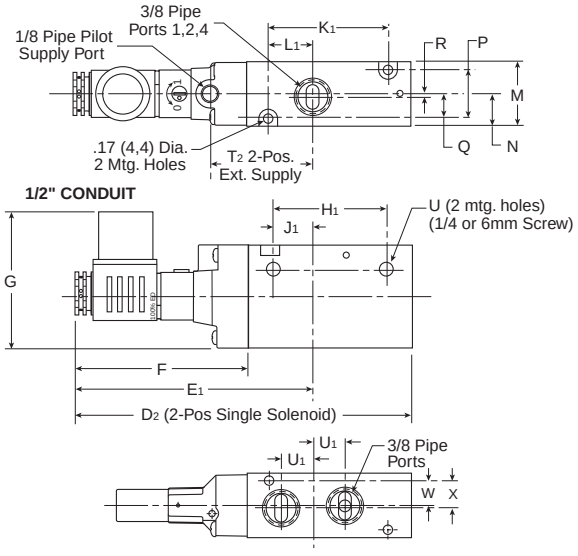


22mm RECT. DIN CONNECTOR



GROMMET/FLYING LEADS

3-Way Alternative Electrical Enclosures



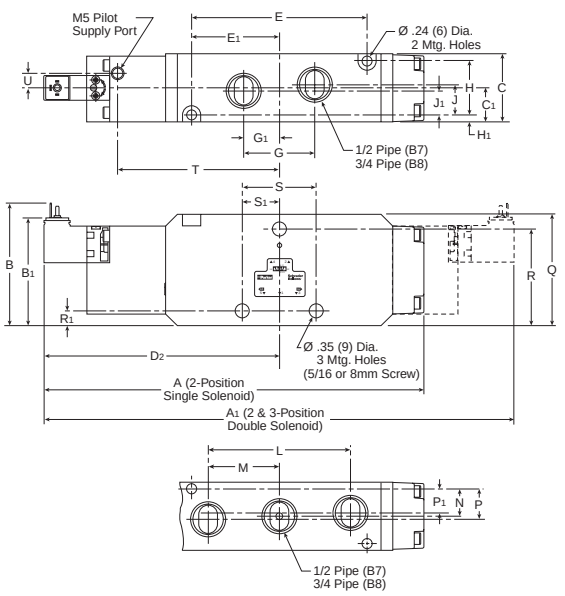
B6 Alternative – Electrical Enclosures Inches (mm)

A	B	C	D	D_1	D_2	E	E_2	F	G	H	H_1	J
10.84 (275.3)	5.41 (137.5)	9.89 (251.3)	7.41 (188.2)	7.74 (196.6)	6.17 (156.6)	4.94 (125.6)	4.37 (111.0)	3.15 (80.0)	2.47 (62.8)	2.09 (53.0)	2.09 (53.0)	1.04 (26.5)
J_1	K	K_1	L	L_1	M	N	P	Q	R	S	T	T_1
0.76 (19.4)	2.79 (70.8)	2.19 (55.6)	1.39 (35.4)	.82 (20.7)	1.18 (30.0)	.59 (15.0)	.91 (23.0)	.45 (11.5)	.06 (1.6)	.51 (13.1)	2.45 (62.3)	2.93 (29.7)
T_2	U	U_1	V	W	X	Y						
1.89 (48.0)	.59 (15.0)	.59 (15.0)	.41 (10.5)	.45 (11.5)	.49 (12.5)	2.90 (73.6)						

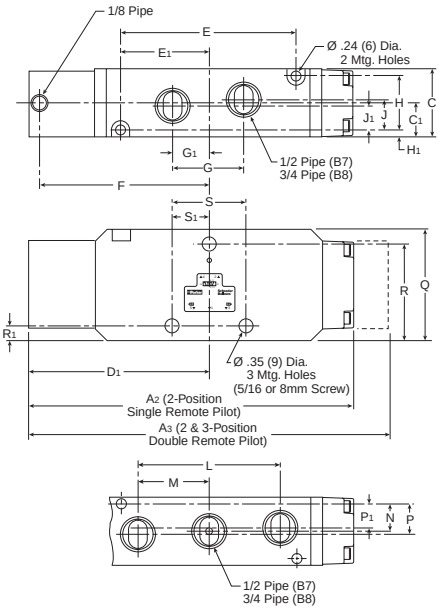
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B7 / B8 Single & Double Operators – 4-Way Inline

Solenoid



Remote Pilot



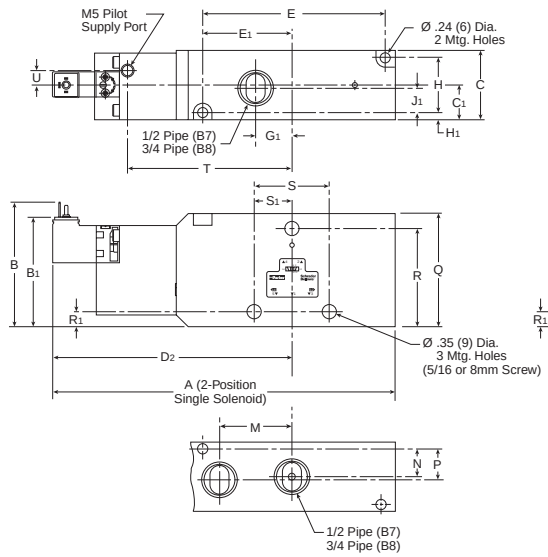
B7 & B8 4-Way Inline

A	A1	A2	A3
9.13 (232)	11.29 (287)	7.79 (198)	8.62 (219)
B	**B1**	**C**	**C1**
2.95 (75)	2.59 (66)	1.65 (42)	.83 (21)
D1	**D2**	**E**	**E1**
4.29 (109)	5.63 (143)	4.21 (107)	2.13 (54)
F	**G**	**G1**	**H**
4.06 (103)	1.73 (44)	.87 (22)	1.29 (33)
H1	**J**	**J1**	**L**
.16 (4)	.75 (19)	.59 (15)	3.39 (86)
M	**N**	**P**	**P1**
1.69 (43)	.67 (17)	.75 (19)	.59 (15)
Q	**R**	**R1**	**S**
2.68 (68)	2.32 (59)	.35 (9)	1.81 (46)
S1	**T**	**U**	
.90 (23)	3.94 (100)	.35 (9)	

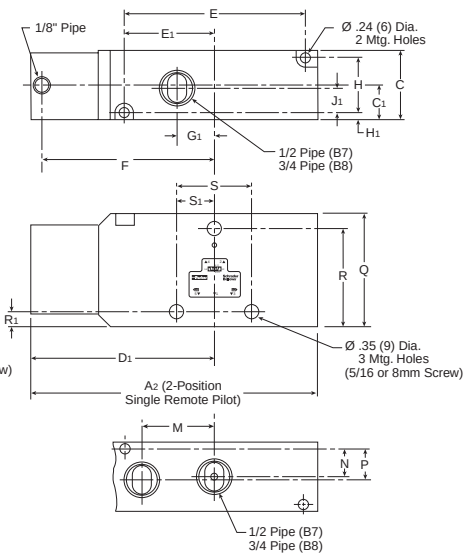
Inches (mm)

B7 / B8 Single Operators – 3-Way Inline

Solenoid



Remote Pilot



B7 & B8 3-Way Inline

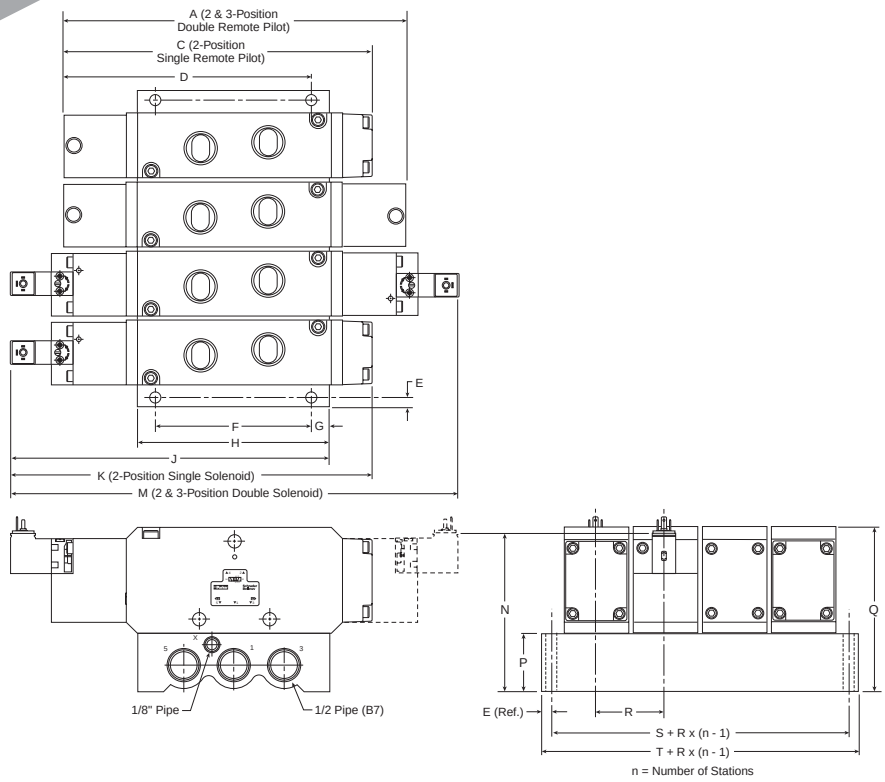
A	A2	B	B1
7.99 (203)	6.65 (169)	2.95 (75)	2.59 (66)
C	**C1**	**D1**	**D2**
1.65 (42)	.83 (21)	4.29 (109)	5.63 (143)
E	**E1**	**F**	**G1**
4.21 (107)	2.13 (54)	4.06 (103)	.86 (22)
H	**H1**	**J1**	**M**
1.29 (33)	.16 (4)	.59 (15)	1.69 (43)
N	**P**	**Q**	**R**
.67 (17)	.75 (19)	2.68 (68)	2.32 (59)
R1	**S**	**S1**	**T**
.35 (9)	1.81 (46)	.90 (23)	3.94 (100)
U			
.35 (9)			

Inches (mm)

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B7 Single & Double Operators – 4-Way IEM Aluminum Bar

B8



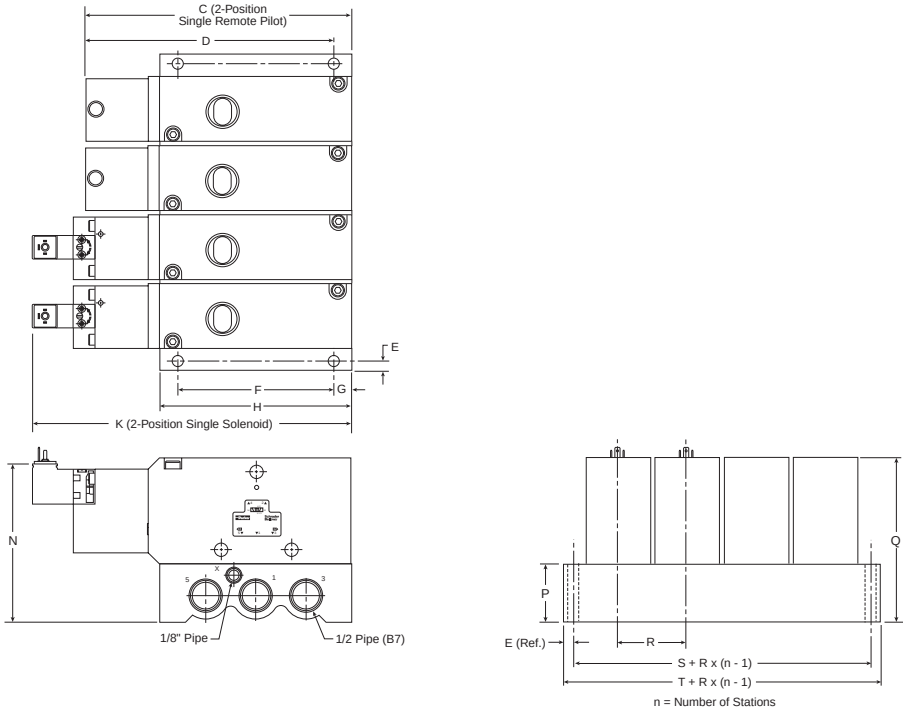
B7 & B8 4-Way IEM Aluminum Bar Manifold

A	C	D	E
7.79 (198)	8.62 (219)	6.26 (159)	.24 (6)
F	**G**	**H**	**J**
3.94 (100)	.45 (11.5)	4.84 (123)	8.07 (205)
K	**M**	**N**	**P**
9.13 (232)	11.29 (287)	4.00 (101.5)	1.48 (37.5)
Q	**R**	**S**	**T**
4.15 (105.5)	1.77 (45)	2.24 (57)	2.72 (69)

Inches (mm)

B7 Single Operators – 3-Way IEM Aluminum Bar

B8



B7 & B8 3-Way IEM Aluminum Bar Manifold

C	D	E	F
6.65 (169)	4.92 (124.9)	.24 (6)	3.94 (100)
G	**H**	**K**	**N**
.45 (11.5)	4.84 (123)	7.99 (203)	4.00 (101.5)
P	**Q**	**R**	**S**
1.48 (37.5)	4.15 (105.5)	1.77 (45)	2.24 (57)
T			
2.72 (69)			

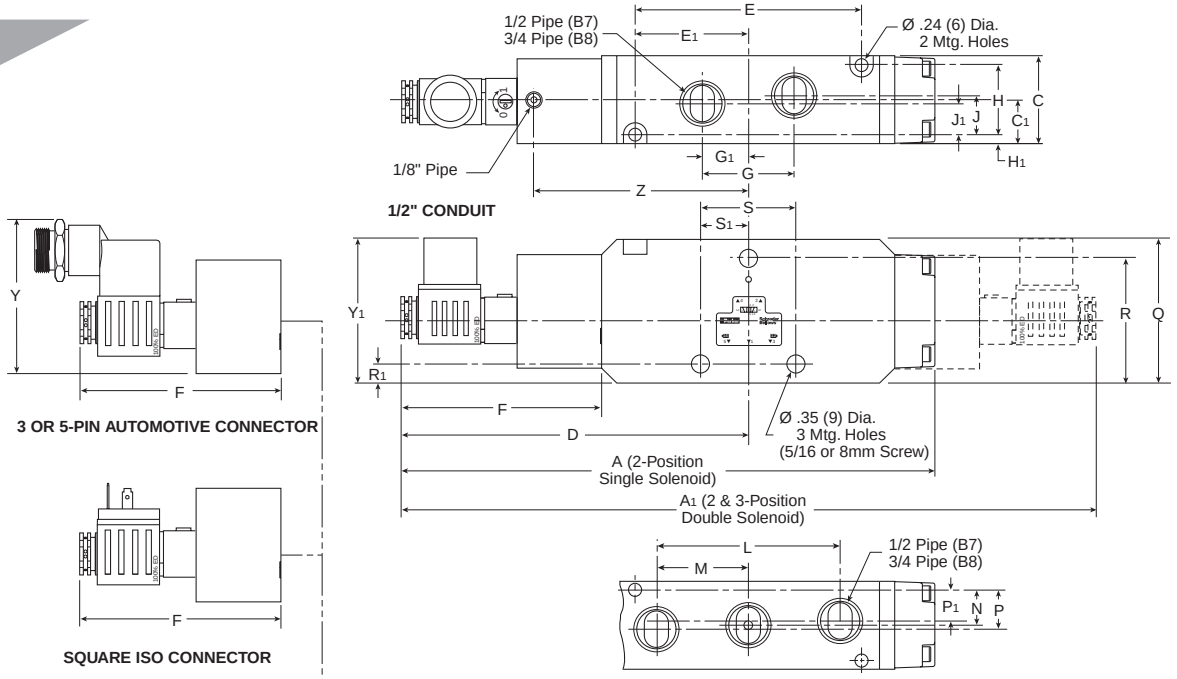
Inches (mm)

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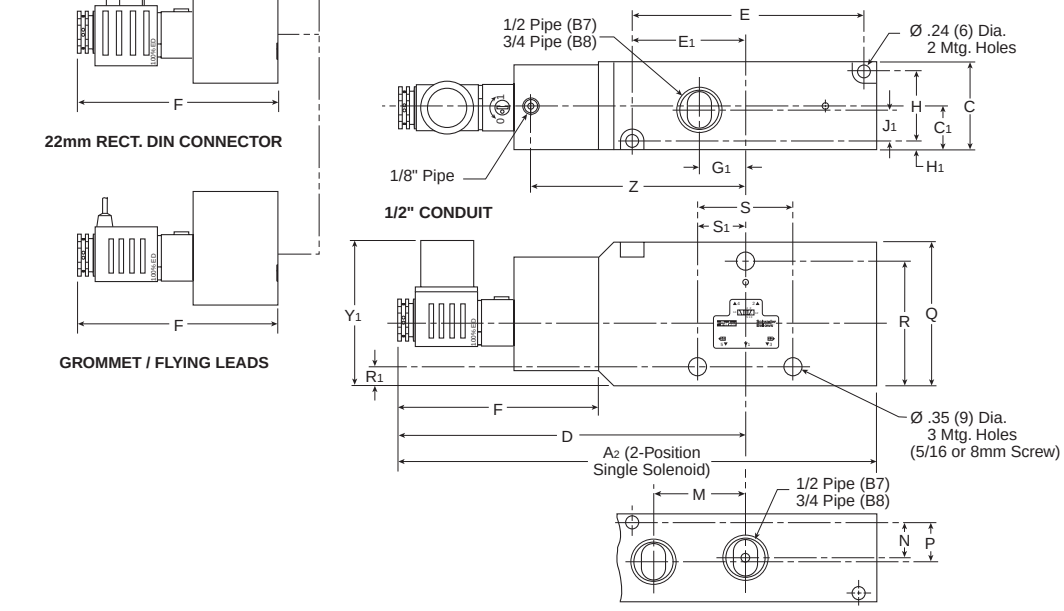
B7

B8

4-Way Alternative Electrical Enclosures



3-Way Alternative Electrical Enclosures



B7 & B8 3 & 4-Way Alternative – Electrical Enclosures Inches (mm)

A	A1	A2	C	C1	D	E	E1	F	G	G1	H	H1
9.92 (252)	12.91 (328)	8.78 (223)	1.65 (42)	.83 (21)	6.46 (164)	4.21 (107)	2.13 (54)	3.74 (95)	1.73 (44)	.86 (22)	1.29 (33)	.16 (4)
J	**J1**	**L**	**M**	**N**	**P**	**P1**	**Q**	**R**	**R1**	**S**	**S1**	**Y**
.75 (19)	.59 (15)	3.39 (86)	1.69 (43)	.67 (17)	.75 (19)	.59 (15)	2.68 (68)	2.32 (59)	.35 (9)	1.81 (46)	.90 (23)	2.87 (73)
Y1	**Z**											
2.71 (69)	3.98 (101)											

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Definitions

CSA C/US ..... Canadian Standards Association and UL Applicable.

IP65 ..... International classification system for sealing effectiveness for enclosures of electrical equipment. IP stands for "Ingress Protection" and the two digits XY stand for: X - protection from solid objects and Y - protection from moisture. IP 65 is protection from dust and water washdown.

NEMA 4 ..... National standard for electrical enclosure protection. NEMA 4 provides protection against dirt, dust, water hosedown and rain. (Similar to IP 65)

DIN 43650C ..... International standard for the 15mm 3-Pin connector. The pin spacing is 8mm.

3-WAY ..... Valve has three ways for air to flow. Also designated as 3/2.

4-WAY ..... Valve has four ways for air to flow. Also designated as 5/2 for 2-Position and 5/3 for 3-Position.

NC ..... Normally Closed. Pressure is blocked when in neutral position. (Normally Non-Passing)

NO ..... Normally Open. Pressure passes thru when in neutral position. (Normally Passing)

IEM ..... Inlet / Exhaust manifold. The inlet and exhaust ports are located in the manifold. The cylinder ports are accessed in the valve.

5-Port Subbase Bar Manifold
Manifold that includes the inlet and outlet ports as well as the #2 & #4 cylinder ports. Utilizes a subbase valve less base.

NLMOR ..... Non-Locking Manual Override. A constant actuation must be maintained for the valve to remain shifted.

LMOR ..... Locking Manual Override. Valve remains shifted without constant end user override actuation.

Surge Suppression
Nullifies reverse EMF generated when a solenoid is de-energized.

SCFM ..... Measure of air flow. Standard Cubic Feet per Minute at 68°F and 36% humidity at sea level.

PSIG ..... Pounds per Square Inch measured with a gage. (Catalog pressure reflects PSIG)

PSIA ..... Pounds per Square Inch atmospheric.

kPa ..... Kilopascals. International measure of pressure. 145 PSIG = 1000 kPa

PSIG = 0 → PSIA = 14.7 → In. of Hg = 0 → kPa = 0

Product Shipping Weights

Series	Single Solenoid	3-Position Solenoid	Manifold Stackable	Subbase	End Plate
B3	.25	.35	.20	.60	.50
B5	.70	.80	.20	.80	.70
B6	1.8	2.4	—	—	—
B7	2.5	2.9	—	—	—
B8	2.5	2.9	—	—	—

Weights are in pounds and are approximate.

Cv Calculations

Cv ..... Measure of calculating flow of a valve (or other pneumatic device) that takes into effect the temperature, pressure, pressure drop, and flow. As a rule of thumb. a Cv of 1.0 is 25 SCFM with a 5 PSIG pressure drop.

$$Cv = \frac{\text{Cylinder Area (Sq. In.) (See Table 2)} \times \text{Cylinder Stroke (In.)} \times \text{Compression Factor (Table 1)} \times \text{"A" (Table 1)}}{\text{Stroke Time (sec.)} \times 28.8}$$

Table 1
Compression Factors and "A" Constants

Inlet Pressure (PSIG)	Compression Factor	"A" Constants for Various Pressure Drop*		
		2 PSI △ P	5 PSI △ P	10 PSI △ P
10	1.6	.152	.103	
20	2.3	.126	.084	.065
30	3.0	.111	.073	.055
40	3.7	.100	.065	.048
50	4.4	.091	.059	.044
60	5.1	.085	.055	.040
70	5.7	.079	.051	.037
80	6.4	.075	.048	.035
90	7.1	.071	.046	.033
100	7.8	.068	.044	.032
110	8.5	.065	.042	.030
120	9.2	.063	.040	.029
130	9.9	.061	.039	.028
140	10.6	.058	.037	.027
150	11.2	.057	.036	.026
160	11.9	.055	.035	.025
170	12.6	.053	.034	.024
180	13.3	.052	.033	.024
190	14.0	.051	.032	.023
200	14.7	.050	.032	.023

Note: Use "A" constant at 5 PSI △ P for most applications. On very critical applications. use "A" at 2 PSI △ P. You will find in many cases, a 10 PSI △ P is not detrimental, and can save money and mounting space.

* Tabulated values are the solution of $\frac{1}{22.48}\sqrt{\frac{GT}{(P_1 - P_2)\,P_2}}$ where T is for 68°F and G =1 for Air.

Table 2
Effective Square-Inch Areas for Standard-Bore-Size Cylinders

Bore Size	Cylinder Area (Sq. In.)	Bore Size	Cylinder Area (Sq. In.)
3/4"	.44	4"	12.57
1"	.79	4-1/2"	15.90
1-1/8"	.99	5"	19.64
1-1/4"	1.23	6"	28.27
1-1/2"	1.77	7"	38.48
1-3/4"	2.41	8"	50.27
2"	3.14	10"	78.54
2-1/2"	4.91	12"	113.10
3-1/4"	8.30	14"	153.94
3-5/8"	10.32		

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Notes

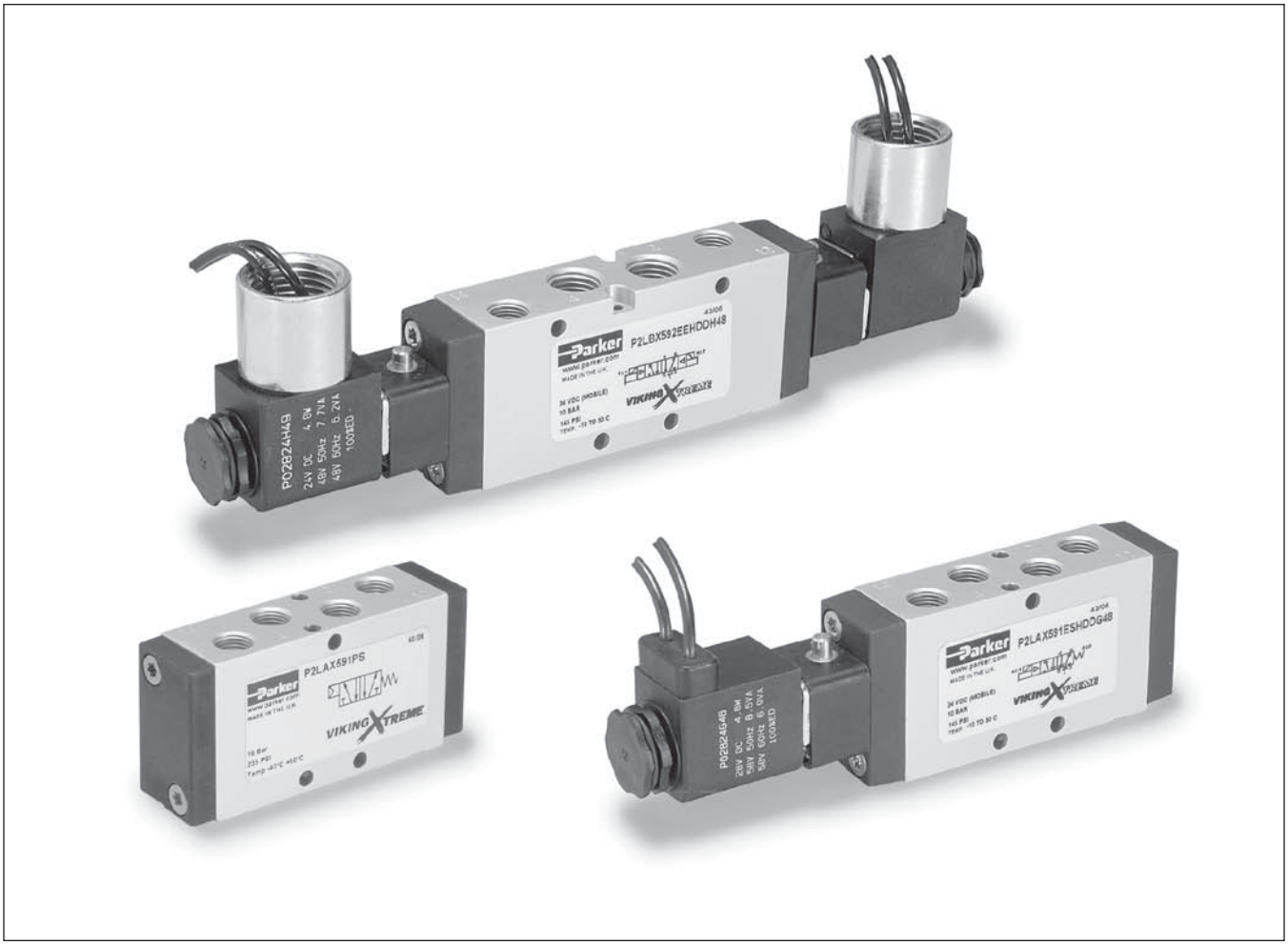
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Air Control Valves

P2LAX – 1/8"
P2LBX – 1/4"
P2LCX – 3/8"
P2LDX – 1/2"

Section D

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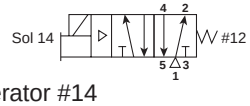


Basic Valve Functions D74
Basic Valve Features D75
Extreme Operation
Solenoid Common Part Numbers D76
Solenoid Model Number Index D77
Remote Air Pilot Common Part Numbers D78
Manual & Remote Air Pilot Model Number Index D79
Normal Operation
Solenoid Common Part Numbers D80
Solenoid Model Number Index D81
IEM Bar Manifolds, Assemblies & Accessories D82
22mm Solenoid Pilot Operators & Solenoid Kits D83-D84
ATEX Complete Valve & Solenoid Pilot Assemblies D85
Intrinsically Safe & Hazardous Duty Solenoid D86
Technical Data D87
Electrical Connectors / Accessories D88-D89
DOT Fittings D90-D91
Dimensions D92-D98

BOLD ITEMS ARE MOST POPULAR.

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Single Solenoid

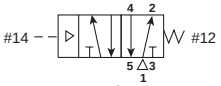


Single Pressure At Inlet Port 1:

De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Single Remote Pilot

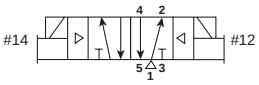


Single Pressure At Inlet Port 1:

Normal position – Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Operated position – Maintained air signal at port 14. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Double Solenoid

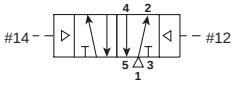


Single Pressure At Inlet Port 1:

Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

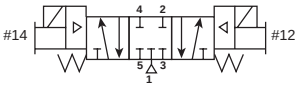
Double Remote Pilot



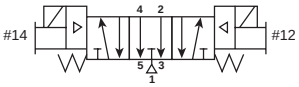
Single Pressure At Inlet Port 1:

Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

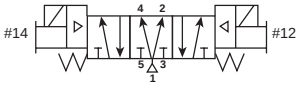
Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.



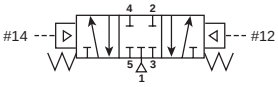
All Ports Blocked



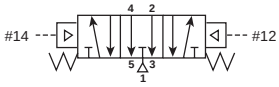
Center Exhaust



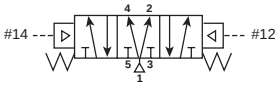
Pressure Center



All Ports Blocked



Center Exhaust



Pressure Center

Double Solenoid 3-Position

With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Closed Center
All ports blocked in the center position.

Vented Center
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Pressurized Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

Double Remote Pilot 3-Position

With #12 operator signaled – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator signaled – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Closed Center
All ports blocked in the center position.

Vented Center
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Pressurized Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

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Specifications

P2LAX: 0.7 Cv
P2LBX: 1.3 Cv
P2LCX: 2.5 Cv
P2LDX: 2.7 Cv

Materials of Construction

- Valve Body: Anodized Aluminum
- Spool: Aluminum & Nitrile Rubber
- End Caps: Anodized Aluminum
- Coils: Thermoplastic
- Fasteners: Stainless Steel

Operating Temperature

- Normal: 14°F to 122°F (-10°C to 50°C)
- Extreme: -40°F to 158°F (-40°C to 70°C)

Operating Pressure

- Normal: Vacuum to 145 PSIG (Vacuum to 10 bar)
- Extreme: Vacuum to 232 PSIG (Vacuum to 16 bar)

Ports

P2LAX: 1/8" NPT & BSPP
P2LBX: 1/4" NPT & BSPP
P2LCX: 3/8" NPT & BSPP
P2LDX: 1/2" NPT & BSPP

Compliance / Approval

- IP65 Rated
- ATEX Option Available

Solenoids

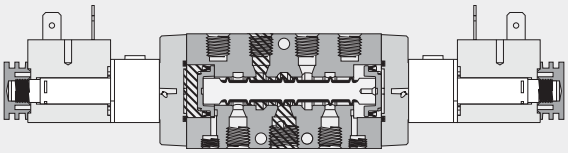
- 2.5 to 7.3 Watt – Conduit, Grommet, 22mm & 30mm 3-Pin (DIN 43650), Hazardous Duty, Intrinsically Safe
- 12VDC to 240VAC

Mounting

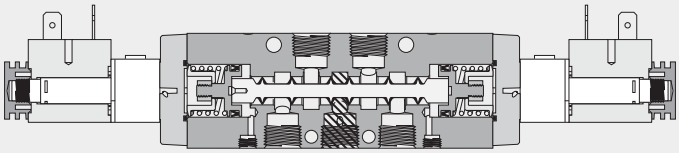
- Inline
- IEM Aluminum Bar

Mobile Applications

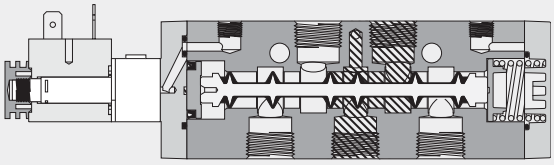
- VIking Xtreme Tested to +5g Shock and Vibration
- Solenoids Operate with Wide Voltage Tolerance Bands
- Corrosion Resistant Design



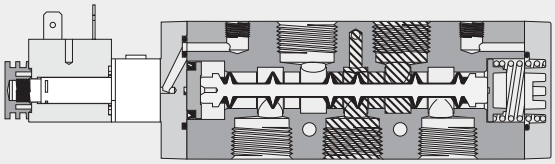
P2LAX
Double Solenoid, Inline,
14 End Energized



P2LBX
Double Solenoid, 3-Position APB
Shown De-energized



P2LCX
Single Solenoid, Inline, Spring Return
Shown De-energized

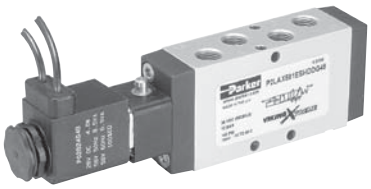


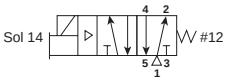
P2LDX
Single Solenoid, Inline, Spring Return
Shown De-energized

Pressure **Exhaust**

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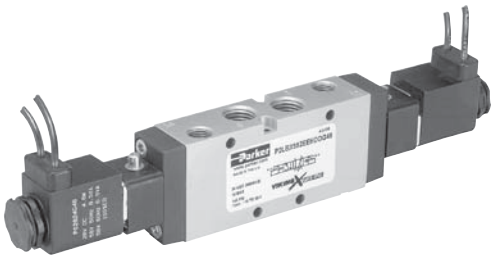
Single Solenoid
2-Position

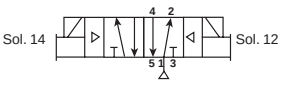




P2LAX	**P2LAX591ESHDDB47**	12VDC	0.7 Cv
	P2LAX591ESHDDG47		
	P2LAX591ESHDDB48	24VDC	
	P2LAX591ESHDDG48		
P2LBX	**P2LBX592ESHDDB47**	12VDC	1.3 Cv
	P2LBX592ESHDDG47		
	P2LBX592ESHDDB48	24VDC	
	P2LBX592ESHDDG48		
P2LCX	**P2LCX593ESHDDB47**	12VDC	2.5 Cv
	P2LCX593ESHDDG47		
	P2LCX593ESHDDB48	24VDC	
	P2LCX593ESHDDG48		
P2LDX	**P2LDX594ESHDDB47**	12VDC	2.7 Cv
	P2LDX594ESHDDG47		
	P2LDX594ESHDDB48	24VDC	
	P2LDX594ESHDDG48		

Double Solenoid
2-Position



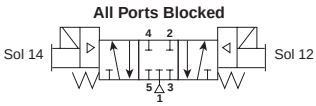


P2LAX	**P2LAX591EEHDDB47**	12VDC	0.7 Cv
	P2LAX591EEHDDG47		
	P2LAX591EEHDDB48	24VDC	
	P2LAX591EEHDDG48		
P2LBX	**P2LBX592EEHDDB47**	12VDC	1.3 Cv
	P2LBX592EEHDDG47		
	P2LBX592EEHDDB48	24VDC	
	P2LBX592EEHDDG48		
P2LCX	**P2LCX593EEHDDB47**	12VDC	2.5 Cv
	P2LCX593EEHDDG47		
	P2LCX593EEHDDB48	24VDC	
	P2LCX593EEHDDG48		
P2LDX	**P2LDX594EEHDDB47**	12VDC	2.7 Cv
	P2LDX594EEHDDG47		
	P2LDX594EEHDDB48	24VDC	
	P2LDX594EEHDDG48		

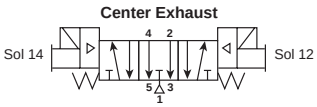
Double Solenoid
3-Position All Ports Blocked
3-Position Center Exhaust



All Ports Blocked



Center Exhaust



All Ports Blocked			
P2LAX	**P2LAX691EEHDDG47**	12VDC	0.5 Cv
	P2LAX691EEHDDG48	24VDC	
P2LBX	**P2LBX692EEHDDG47**	12VDC	0.9 Cv
	P2LBX692EEHDDG48	24VDC	
P2LCX	**P2LCX693EEHDDG47**	12VDC	1.8 Cv
	P2LCX693EEHDDG48	24VDC	
P2LDX	**P2LDX694EEHDDG47**	12VDC	1.9 Cv
	P2LDX694EEHDDG48	24VDC	

Center Exhaust			
P2LAX	**P2LAX891EEHDDG47**	12VDC	0.5 Cv
	P2LAX891EEHDDG48	24VDC	
P2LBX	**P2LBX892EEHDDG47**	12VDC	0.9 Cv
	P2LBX892EEHDDG48	24VDC	
P2LCX	**P2LCX893EEHDDG47**	12VDC	1.8 Cv
	P2LCX893EEHDDG48	24VDC	
P2LDX	**P2LDX894EEHDDG47**	12VDC	1.9 Cv
	P2LDX894EEHDDG48	24VDC	

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Single & Double Solenoid Operated Valves

Vacuum to 232 PSIG (Vacuum to 16 bar)
-40°F to 158°F (-40°C to 70°C)

P2L	A	X	5	91	E	S	H	D	D	G	47

Valve Size	
1/8"	A
1/4"	B
3/8"	C*
1/2"	D*

*See Note Below for Pressure rating.

Valve Type / Function	
Internal Pilot Supply to Solenoid	
2-Position Valve	**5**
3-Position Valve APB	**6**
3-Position Valve PC	7
3-Position Valve CE	**8**
External Pilot Supply to Solenoids through Ports #12 & #14	
2-Position Valve	N
3-Position Valve APB	P
3-Position Valve PC	Q
3-Position Valve CE	R

Main Port Thread	
G1/8 (P2LA)	11
G1/4 (P2LB)	12
G3/8 (P2LC)	13
G1/2 (P2LD)	14
1/8" NPT (P2LA)	**91**
1/4" NPT (P2LB)	**92**
3/8" NPT (P2LC)	**93**
1/2" NPT (P2LD)	**94**

Note: NAMUR Mount for P2LBX is Available Upon Request.

12 End Operator	
Double Solenoid Operated Valve	**E**
Single Solenoid Spring Return	**S***

*Not Available with 3-Position Valves.

	Solenoid Pilot Type
D	**Vented Pilot Exhaust**
N	Tapped Pilot Exhaust (M5)

	Overrides
A	No Override
D	**Extended, Non-Locking**

	Enclosures / Lead Length
A	30mm Square 3-Pin – ISO 4400 Form A (Male Only)
B	**22mm Rectangular 3-Pin – Type B Industrial (Male Only)**
G	**Grommet - 18" Leads**
H	1/2" NPT Conduit - 18" Leads
N	Solenoid Pilot Operator Less Coil

	Voltage / Frequency
42	24VAC
45	12VDC
47*	**12 VDC Mobile**
48*	**24 VDC Mobile**
49	**24VDC**
53	**120VAC**
57	240VAC
Blank	Valve Less Coil

* Only Available with Enclosures "A", "B" & "G". Additional voltages are available upon request. Contact Customer Support for more information.

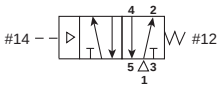
NOTE: P2LCX and P2LDX Solenoid Operated Valves have a maximum pressure rating of 175 PSIG (12 bar).

BOLD ITEMS ARE MOST POPULAR.

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Single Remote Pilot
2-Position

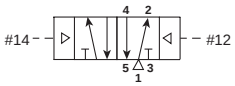




P2LAX	P2LAX591PS	0.7 Cv
P2LBX	P2LBX592PS	1.3 Cv
P2LCX	P2LCX593PS	2.5 Cv
P2LDX	P2LDX594PS	2.7 Cv

Double Remote Pilot
2-Position



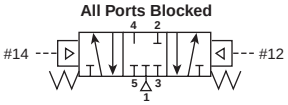


P2LAX	P2LAX591PP	0.7 Cv
P2LBX	P2LBX592PP	1.3 Cv
P2LCX	P2LCX593PP	2.5 Cv
P2LDX	P2LDX594PP	2.7 Cv

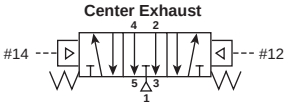
Double Remote Pilot
3-Position All Ports Blocked
3-Position Center Exhaust



All Ports Blocked



Center Exhaust



All Ports Blocked		
P2LAX	P2LAX691PP	0.5 Cv
P2LBX	P2LBX692PP	0.9 Cv
P2LCX	P2LCX693PP	1.8 Cv
P2LDX	P2LDX694PP	1.9 Cv

Center Exhaust		
P2LAX	P2LAX891PP	0.5 Cv
P2LBX	P2LBX892PP	0.9 Cv
P2LCX	P2LCX893PP	1.8 Cv
P2LDX	P2LDX894PP	1.9 Cv

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Remote Air Pilot Operated Valves

Vacuum to 232 PSIG (Vacuum to 16 bar)
-40°F to 158°F (-40°C to 70°C)

P2L A X 5 91 PS

Valve Size	
1/8"	**A**
1/4"	**B**
3/8"	**C***
1/2"	**D***

*See Note Below for Pressure rating.

Valve Type / Function	
2-Position Valve	**5**
3-Position Valve APB	**6**
3-Position Valve PC	7
3-Position Valve CE	**8**

Main Port Thread	
11	G1/8 (P2LA)
12	G1/4 (P2LB)
13	G3/8 (P2LC)
14	G1/2 (P2LD)
91	**1/8" NPT (P2LA)**
92	**1/4" NPT (P2LB)**
93	**3/8" NPT (P2LC)**
94	**1/2" NPT (P2LD)**

Note: NAMUR Mount for P2LBX is Available Upon Request.

Operators / Return	
PP	**Double Remote Pilot**
PS*	**Single Remote Pilot, Spring Return**

* Not Available with 3-Position Valves.

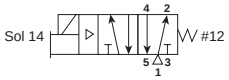
NOTE: P2LCX and P2LDX Manual & Remote Air Pilot Valves have a maximum pressure rating of 175 PSIG (12 bar).

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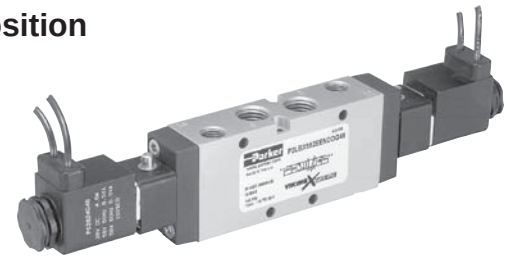
Single Solenoid
2-Position

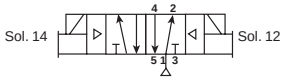




P2LAX	**P2LAX591ESNDDB49**	24VDC	0.7 Cv
	P2LAX591ESNDDG49		
	P2LAX591ESNDDB53	120VAC	
	P2LAX591ESNDDG53		
P2LBX	**P2LBX592ESNDDB49**	24VDC	1.3 Cv
	P2LBX592ESNDDG49		
	P2LBX592ESNDDB53	120VAC	
	P2LBX592ESNDDG53		
P2LCX	**P2LCX593ESNDDB49**	24VDC	2.5 Cv
	P2LCX593ESNDDG49		
	P2LCX593ESNDDB53	120VAC	
	P2LCX593ESNDDG53		
P2LDX	**P2LDX594ESNDDB49**	24VDC	2.7 Cv
	P2LDX594ESNDDG49		
	P2LDX594ESNDDB53	120VAC	
	P2LDX594ESNDDG53		

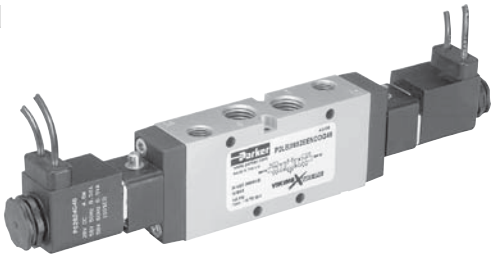
Double Solenoid
2-Position



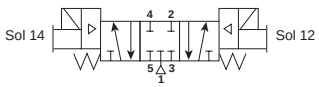


P2LAX	**P2LAX591EENDDB49**	24VDC	0.7 Cv
	P2LAX591EENDDG49		
	P2LAX591EENDDB53	120VAC	
	P2LAX591EENDDG53		
P2LBX	**P2LBX592EENDDB49**	24VDC	1.3 Cv
	P2LBX592EENDDG49		
	P2LBX592EENDDB53	120VAC	
	P2LBX592EENDDG53		
P2LCX	**P2LCX593EENDDB49**	24VDC	2.5 Cv
	P2LCX593EENDDG49		
	P2LCX593EENDDB53	120VAC	
	P2LCX593EENDDG53		
P2LDX	**P2LDX594EENDDB49**	24VDC	2.7 Cv
	P2LDX594EENDDG49		
	P2LDX594EENDDB53	120VAC	
	P2LDX594EENDDG53		

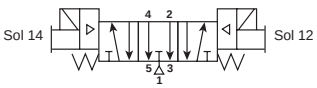
Double Solenoid
3-Position All Ports Blocked
3-Position Center Exhaust



All Ports Blocked



Center Exhaust



All Ports Blocked			
P2LAX	**P2LAX691EENDDG49**	24VDC	0.5 Cv
	P2LAX691EENDDG53	120VAC	
P2LBX	**P2LBX692EENDDG49**	24VDC	0.9 Cv
	P2LBX692EENDDG53	120VAC	
P2LCX	**P2LCX693EENDDG49**	24VDC	1.8 Cv
	P2LCX693EENDDG53	120VAC	
P2LDX	**P2LDX694EENDDG49**	24VDC	1.9 Cv
	P2LDX694EENDDG53	120VAC	

Center Exhaust			
P2LAX	**P2LAX891EENDDG49**	24VDC	0.5 Cv
	P2LAX891EENDDG53	120VAC	
P2LBX	**P2LBX892EENDDG49**	24VDC	0.9 Cv
	P2LBX892EENDDG53	120VAC	
P2LCX	**P2LCX893EENDDG49**	24VDC	1.8 Cv
	P2LCX893EENDDG53	120VAC	
P2LDX	**P2LDX894EENDDG49**	24VDC	1.9 Cv
	P2LDX894EENDDG53	120VAC	

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Single & Double Solenoid Operated Valves

Vacuum to 145 PSIG (Vacuum to 10 bar)
14°F to 122°F (-10°C to 50°C)

P2L	A	X	5	91	E	S	N	D	D	G	49

Valve Size	
1/8"	**A**
1/4"	**B**
3/8"	**C**
1/2"	**D**

Valve Type / Function	
Internal Pilot Supply to Solenoid	
2-Position Valve	**5**
3-Position Valve APB	**6**
3-Position Valve PC	7
3-Position Valve CE	**8**
External Pilot Supply to Solenoids through Ports #12 & #14	
2-Position Valve	N
3-Position Valve APB	P
3-Position Valve PC	Q
3-Position Valve CE	R

Main Port Thread	
G1/8 (P2LA)	11
G1/4 (P2LB)	12
G3/8 (P2LC)	13
G1/2 (P2LD)	14
1/8" NPT (P2LA)	**91**
1/4" NPT (P2LB)	**92**
3/8" NPT (P2LC)	**93**
1/2" NPT (P2LD)	**94**

Note: NAMUR Mount for P2LBX is Available Upon Request.

12 End Operator	
Double Solenoid Operated Valve	**E**
Single Solenoid Spring Return	**S***

*Not Available with 3-Position Valves.

	Solenoid Pilot Type
D	**Pilot Exhaust Vented**
N	Tapped Pilot Exhaust (M5)

	Overrides
A	No Override
C	Flush - Locking
D	**Extended Non-Locking**

	Enclosures / Lead Length
A	30mm Square 3-Pin – ISO 4400 Form A (Male Only)
B	**22mm Rectangular 3-Pin – Type B Industrial (Male Only)**
E*	Intrinsically Safe, FM / CSA
F	Hazardous Duty, FM / CSA
G	**Grommet - 18" Leads**
H	1/2" NPT Conduit - 18" Leads
N	Solenoid Pilot Operator Less Coil

*Only Available with Voltage Code "49" & Override Option "A".

	Voltage / Frequency
42	24VAC
45	12VDC
47*	**12 VDC Mobile**
48*	**24 VDC Mobile**
49	**24VDC**
53	**120VAC**
57	240VAC
Blank	Valve Less Coil

* Only Available with Enclosures "A", "B" & "G". Additional voltages are available upon request. Contact Customer Support for more information.

BOLD ITEMS ARE MOST POPULAR.

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BOLD ITEMS ARE MOST POPULAR.

	P2LAX	M	A	X	N	04	N	P

Manifold	
Manifold Only	**Blank**
Manifold with Valves Mounted	AA

Series
P2LAX Series*
P2LBX Series*
P2LCX Series

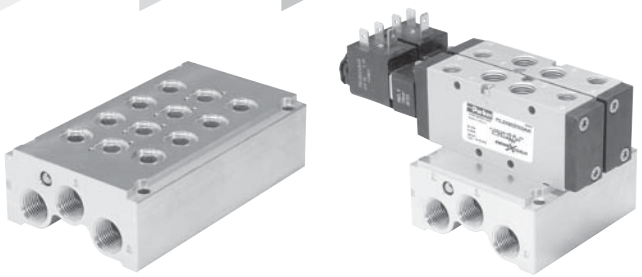
* 30mm Solenoid Coil Option (Enclosure / Lead Length Option A) not available on IEM Bar Manifold P2LAX or P2LBX.

Stations
02
•
•
12

Port Type	
G	BSPP "G"
N	**NPT**

IEM Bar Manifolds

P2LAX **P2LBX** **P2LCX**



Manifold Only	Manifold Assembly	## – stations
P2LAXMAXN##NP	**AAP2LAXMAXN##NP**	02 to 12
P2LBXMAXN##NP	**AAP2LBXMAXN##NP**	02 to 12
P2LCXMAXN##NP	**AAP2LCXMAXN##NP**	02 to 12

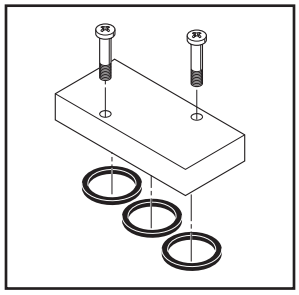
- Utilizes Inline mount Viking Xtreme Series valves.
- **Kits include:** (1) Manifold, (2) Valve Hold Down Bolts per Station, (3) O-rings per Station.

Note: All IEM bar manifolds are 4-Way only with internal pilot air supply. External pilot supply thru a common "X" port not available.

Blanking Plate

Type	Kit Number
P2LAX	**P2LAXK20P**
P2LBX	**P2LBXK20P**
P2LCX	**P2LCXK20P**

Kit includes:
(1) Plate, (2) Screws, (3) O-rings



Manifold Bolts

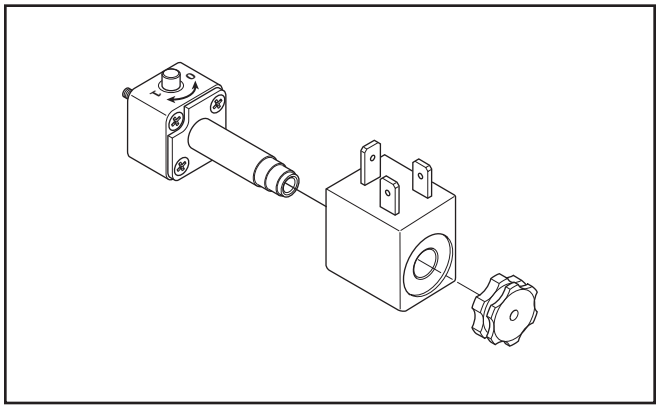
Type	Kit Number	Qty.
P2LAX	**P2LAXK87P**	12
P2LBX	**P2LBXK87P**	12
P2LCX	**P2LCXK87P**	12

Manifold O-rings

Type	Kit Number	Qty.
P2LAX	**P2LAXK84P**	30
P2LBX	**P2LBXK84P**	18
P2LCX	**P2LCXK84P**	12

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22mm Solenoid Pilot Operators & Coils



22mm Solenoid Pilot Options

The P2FP13*4* (NC) 3/2 solenoid pilot operators are designed for piloting pneumatic control valves with compressed air or other inert gases.

The P2FP operator is available for Normal operating pressures up to 10 bar or the Xtreme maximum operating pressure of 16 bar and wide band voltage tolerances required for mobile applications.

Corrosion Resistant Design

The pilot valve body is manufactured in thermoplastic PA6 material and the core tube brass / stainless steel. The plunger / core is made from stainless steel and the valve seats from FKM.

Solenoid Pilot Exhaust

These operators all exhaust out of the top of the core tube which is tapped M5. The standard solenoid nut fitted to the core tube is a diffuser nut which allows the exhaust to escape to atmosphere. This nut also minimizes ingress of dirt into the valve through this port. The alternative plastic knurled nut can be specified (refer to part number system) if the exhaust air needs captured and piped away using the M5 tapped port.

Mobile Applications

Viking Xtreme valves are tested to +5g shock and vibration. Solenoid operated valves are designed to operate with wide voltage tolerance bands within the ambient temperature ranges stated in the technical section.

Coils

Coils are wound with enameled copper wire, having a temperature index of 180°C with class F insulation (155°C) and are encapsulated in Thermoplastic resin. When fitted with suitable connector and correct gasket, they give protection to IP65.

ATEX

ATEX is a European Directive (94/9/EC) valid for products to be used within an explosive atmosphere.

Both ATEX certified solenoid, remote pilot and manual operated valves, as well as complete solenoid pilot assemblies are available. See page H13 for a complete list of valves available. For specific information regarding ATEX certification please visit www.parker/pneumatics.

Manual Override Options

The pilot operators can be supplied with locking or non-locking manual override. The standard manual override is the monostable (spring return) extended brass override. Alternatively the bistable (locking) override can be specified as an alternative for the Normal duty 10 bar option.

Spares

Solenoid operators are available as spares complete with mounting screws and seals. Coils and connectors should be ordered separately unless ATEX certified and intrinsically safe is needed. ATEX certified operators and coils must be ordered together.

Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavorable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors / cable plugs with LEDs include this type of circuit protection.

Materials

Pilot Valve

Body ..... Polyamide

Armature Tube:
- Normal Pilot Operator ..... Brass
- Extreme Pilot Operator ..... Stainless Steel

Plunger & Core ..... Corrosion resistant Cr-Ni Steel

Seals ..... FKM (Viton™)

Screws ..... Stainless Steel

Coil

Encapsulation Material ..... Thermoplastic

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Pilot Operator Kits

P2F	P	1	3	N	4	C

Type	
Pilot Operator Kit	P

Pressure / Temperature	
145 PSIG (10 bar) 14°F to 122°F (-10°C to 50°C)	N
232 PSIG (16 bar) -40°F to 158°F (-40°C to 70°C)	H

Overrides	
A	No Override
C*	Locking (Bistable) Flush - Plastic
D	Non-Locking (Monostable) Extended - Brass

*Only Available with "N" Pressure / Temperature Option.

Solenoid Kits

P2F	C	A	4	49

Type	
Solenoid Kit	C

Enclosures / Lead Length	
30mm Square 3-Pin – ISO 4400 Form A (Male Only)	A
22mm Rectangular 3-Pin – Type B Industrial (Male Only)	B
Hazardous Duty, FM / CSA	F*
Grommet - 18" Leads	G
1/2" NPT Conduit - 18" Leads	H
Grommet 72" Leads	Q
1/2" Conduit 72" Leads	R

* Only Available with Voltage Codes "45", "49", "53" & "57". Not for use with the Xtreme Version (-40°C to 70°C).

Voltage / Frequency	
42	24VAC
45	12VDC
47*	12 VDC Mobile
48*	24 VDC Mobile
49	24VDC
53	120VAC
57	240VAC

* Only Available with Enclosures "A", "B" & "G". Additional voltages are available upon request. Contact Customer Support for more information.

Solenoid Enclosures



Option A
30mm Square,
3-Pin ISO 4400, DIN 43650A



Option B
22mm Rectangular,
3-Pin DIN, Type B Industrial



Option G & Q
Grommet, 18" or 72" Leads



Option H & R
1/2" Conduit, 18" or 72" Leads

BOLD ITEMS ARE MOST POPULAR

Solenoid Information (Solenoids are rated for continuous duty.)

Code	Voltage			Enclosure "A"		Enclosure "B" to "R"	
	AC		DC	Power Consumption	Holding (Amps)	Power Consumption	Holding (Amps)
	60Hz	50Hz					
42	24	22		3.9VA	.14	7.3VA	.31
45	—	—	12	2.6W	.21	4.6W	.37
47*	—	—	12	6.2W	.52	5.5W	.46
48*	—	—	24	6.8W	.29	6.0W	.25
49	—	—	24	2.7W	.11	4.8W	.20
53	120	110	—	4.1VA	.04	6.3VA	.05
57	240	230	—	3.7VA	.02	6.4VA	.03

***** Mobile voltages. Solenoid Voltage Characteristics for all coils located on page D87.

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ATEX Certified Single & Double Solenoid Operated Valves

Vacuum to 145 PSIG (Vacuum to 10 bar)
14°F to 122°F 22mm Coils (Enclosure Option M)
-4°F to 122°F 30mm Coils (Enclosure Option S)

P2L	A	X	5	91	E	S	A	D	D	M	49

Valve Size	
1/8"	A
1/4"	B
3/8"	C
1/2"	D

Valve Type / Function	
Internal Pilot Supply to Solenoid	
2-Position Valve	5
3-Position Valve APB	6
3-Position Valve PC	7
3-Position Valve CE	8
External Pilot Supply to Solenoids through Ports #12 & #14	
2-Position Valve	N
3-Position Valve APB	P
3-Position Valve PC	Q
3-Position Valve CE	R

Main Port Thread	
G1/8 (P2LA)	11
G1/4 (P2LB)	12
G3/8 (P2LC)	13
G1/2 (P2LD)	14
1/8" NPT (P2LA)	91
1/4" NPT (P2LB)	92
3/8" NPT (P2LC)	93
1/2" NPT (P2LD)	94

12 End Operator	
E	Double Solenoid Operated Valve
S	Single Solenoid Spring Return

Solenoid Pilot Type	
D	Vented Pilot Exhaust
N	Tapped Pilot Exhaust (M5)

Overrides	
D	Extended Non-Locking

Enclosures	
M	ATEX 8-22T EExm T4 135°C
S	ATEX 8-30T EExm T6 85°C

Voltage	
49	24VDC

NOTE: For ATEX Certified Manual and Remote Air Pilot Valves, build the valve part number from the model number index on page D79 and add "-EX" following the number.

Example: P2LAX591PS-EX

ATEX Certified Solenoid Pilot Assemblies

P2F	S	1	3	A	3	D	M	49

Voltage	
49	24VDC

Enclosures	
M	ATEX 8-22T EExm T4 135°C
S	ATEX 8-30T EExm T6 85°C

NOTE: All Kits include a 3 Meter Sealed Cable with Assembly.

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Intrinsically Safe Solenoid Valves ("E" Option)

Hazardous Location Class:

Class I; Groups A, B, C & D

Class II; Groups E, F, & G

Class III; Div. I

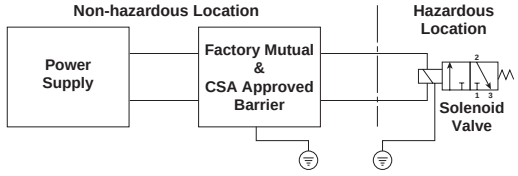
For use in low voltage (24VDC) Intrinsically Safe applications. NO OTHER VOLTAGE IS APPROVED.

Comes standard with non-lighted solenoid connector.

36mm Coil width.

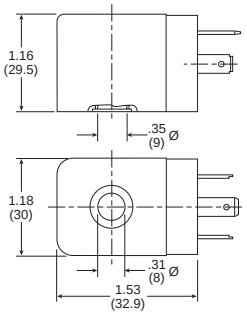
Must be connected to an FM approved Barrier.

For dimensions, reference standard solenoid models. Maximum internally piloted valve pressure is 115 PSIG. Pressures to 145 PSIG can be used when external pilot is utilized and pilot pressure is limited to 115 PSIG.



Intrinsically Safe Solenoid Pilot Assembly Kits

Part Number	Description
P2FS13N1AE49	24VDC



Hazardous Duty Solenoid Valves ("F" Option)

Hazardous Location Class:

Class I; Zone I EX, M, II & T4

Class I; Div. I, Groups A, B, C, & D

Class II & III; Div. I, Groups E, F, & G

Comes standard with 1/2" conduit connection.

Voltage Range = +10° +/- 10%

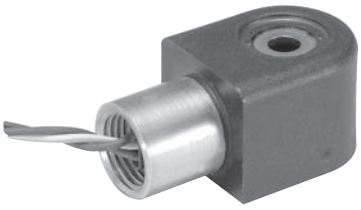
Ambient Temp. Range = -20°C (-4°F) to 60°C (140°F)

Duty Factor = 100%

IP65 Rated (with Connected Conduit Connector)

Notes:

1. Maximum non-hazardous location voltage not to exceed 250V RMS.
2. Connect per Barrier Manufacturers instructions.
3. Factory Mutual requires connections per ISA RP 12.6 instructions.
4. CSA requires "Installation to be in accordance with the Canadian Electrical Code. Part I."
5. The hazardous duty coils are wider in size than size A, B, C & D valves.
   If mounted on a manifold, the valves need to be staggered to fit.

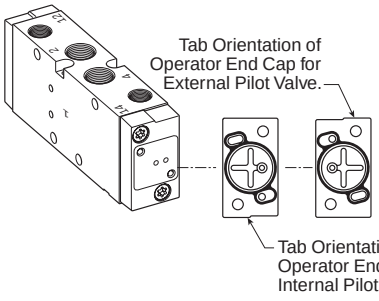


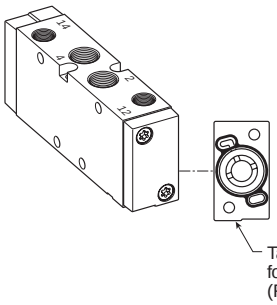
Option F
Hazardous Duty FM / CSA

Internal to External Pilot Conversion (Size A & B Only)

To convert from Internal to External Pilot Valve, simply remove the (2) fasteners that attach the end cap to the valve body. Rotate the end cap 180° and attach back to the valve body. For single solenoid valves, only the 14-End needs to be rotated. For double solenoid valves, both ends must be converted for proper function.

The 12 & 14-Ports are always tapped no matter what Valve Type / Function is selected. For Internal Pilot Function, ports do NOT need to be plugged.





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Operating Temperature

- **Normal** ..... 14°F to 122°F (-10°C to 50°C)
- **Extreme** ..... -40°F to 158°F (-40°C to 70°C)

Flow Rating

Valve Size	Port Size	2-Position	3-Position
P2LAX	1/8"	0.7	0.5
P2LBX	1/4"	1.3	0.9
P2LCX	3/8"	2.5	1.8
P2LDX	1/2"	2.7	1.9

Operating Pressure

Maximum: Normal.....145 PSIG (10 bar)
Extreme.....232 PSIG (16 bar)

Minimum:

Valve Type - Internal Pilot	Minimum PSIG (bar)			
	P2LAX	P2LBX	P2LCX	P2LDX
Single Sol - Spring Return	46 (3.2)	51 (3.5)	51 (3.5)	51 (3.5)
Single Remote Pilot - Spring Return	46 (3.2)	51 (3.5)	51 (3.5)	51 (3.5)
Double Solenoid - 2-Position	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Double Remote Pilot - 2-Position	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Double Solenoid - 3-Position (APB, PC, CE)	55 (3.8)	55 (3.8)	55 (3.8)	55 (3.8)
Double Remote Pilot - 3-Position (APB, PC, CE)	55 (3.8)	55 (3.8)	55 (3.8)	55 (3.8)

Valve Type - External Pilot	P2LAX	P2LBX	P2LCX	P2LDX
All Viking Series	Vacuum			

Response Time

Valve Size	Port Size	Volume			
		0 Cu. In. Test Chamber		20 Cu. In. Test Chamber	
		Fill (mSec)	Exhaust (mSec)	Fill (mSec)	Exhaust (mSec)
2-Position Single Solenoid / Spring Return					
P2LAX	1/8"	17.3	18.0	111.1	210.7
P2LBX	1/4"	19.4	19.7	62.8	92.2
2-Position Double Solenoid					
P2LAX	1/8"	12.0	12.9	108.7	213.7
P2LBX	1/4"	13.4	13.5	56.9	86.4

Solenoid Voltage Characteristics

Non-mobile Coils

+10% / -10% for all Coils with Normal and Extreme Operators

Mobile Coils - Normal Pilot Operator

22mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

Minimum Inlet Pressure (bar)		Operating Temperature		
		-10°C	+10°C	+50°C
	3	+30 / -25% VDC	+30 / -20% VDC	+25 / -15% VDC
	6	+30 / -30% VDC	+30 / -25% VDC	+25 / -20% VDC
	8	+30 / -30% VDC	+30 / -30% VDC	+25 / -25% VDC
	10	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC

30mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

Minimum Inlet Pressure (bar)		Operating Temperature		
		-10°C	+10°C	+50°C
	3	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC
	6	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC
	8	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC
	10	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC

Mobile Coils - Extreme Pilot Operator

22mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

Minimum Inlet Pressure (bar)		Operating Temperature			
		-40°C	+10°C	+50°C	+70°C
	4	+30 / -25% VDC	+30 / -25% VDC	+30 / -10% VDC	+20 / -10% VDC
	8	+30 / -30% VDC	+30 / -25% VDC	+30 / -15% VDC	+20 / -15% VDC
	12	+30 / -30% VDC	+30 / -30% VDC	+30 / -15% VDC	+20 / -15% VDC
	16	+30 / -30% VDC	+30 / -30% VDC	+30 / -20% VDC	+20 / -20% VDC

30mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

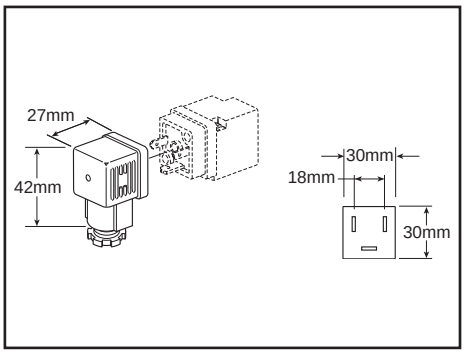
Minimum Inlet Pressure (bar)		Operating Temperature			
		-40°C	+10°C	+50°C	+70°C
	4	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC
	8	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC
	12	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC
	16	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC

Note: All table ratings are based on 100% continuous duty and 5G shock vibration. At 50% continuous duty all ratings are +30% / -30% for all Temperatures and Pressures.

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Female Electrical Connectors / Accessories

30mm Square 3-Pin – ISO 4400, DIN 43650A (Use with Enclosure "A")



Connector	Connector with 6' (2m) Cord	Description
PS2028BP	PS2028JCP	Unlighted
PS203279BP	PS2032J79CP*	Light – 6-48V, 50/60Hz, 6-48VDC
PS203283BP	PS2032J83CP*	Light – 120V/60Hz
PS203283BP	N/A	Light – 240V/60Hz

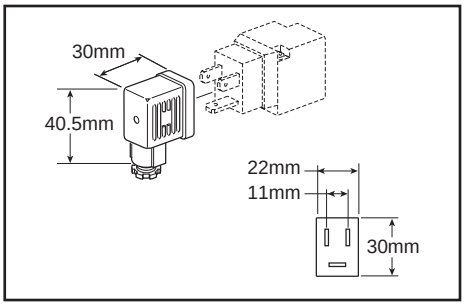
* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 8 to 10mm (0.31 to 0.39 Inch); Contact Spacing: 18mm

22mm Rectangular 3-Pin – Type B Industrial (Use with Enclosure "B")



Connector	Connector with 6' (2m) Cord	Description
PS2429BP	PS2429JBP	Unlighted
PS243079BP	PS2430J79BP*	Light – 24V60Hz, 24VDC
PS243083BP	PS2430J83BP*	Light – 120V/60Hz
PS243087BP	N/A	Light – 240V/60Hz

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

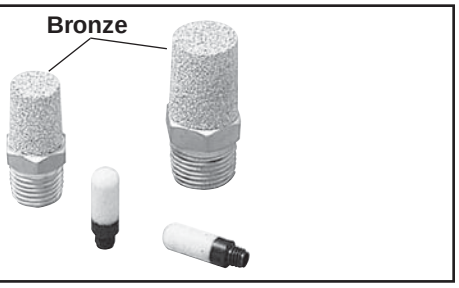
Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 6 to 8mm (0.24 to 0.31 Inch); Contact Spacing: 11mm

Exhaust Mufflers

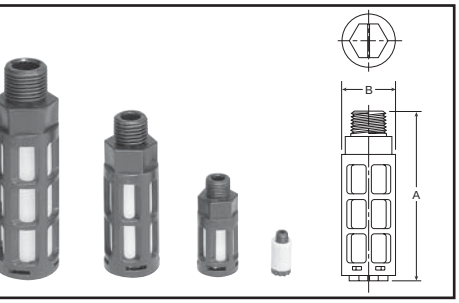
Pipe Thread	Part Number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**
3/8" NPT	**EM37**
1/2" NPT	**EM50**

P6M - Plastic; EM - Sintered Bronze



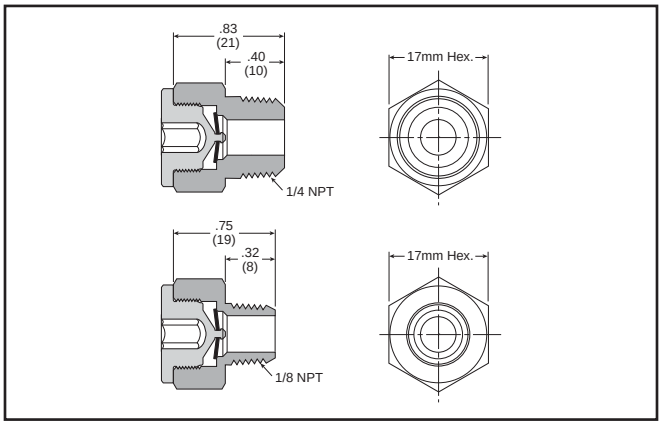
Plastic Silencers

Thread Size	Part Number		A (mm)	B (mm)
	NPT	BSPT		
M5	**AS-5**		.43 (11)	.32 (8)
1/8"	**ASN-6**	**AS-6**	1.57 (40)	.63 (16)
1/4"	**ASN-8**	**AS-8**	2.56 (65)	.83 (21)
3/8"	**ASN-10**	**AS-10**	3.35 (85)	.98 (25)
1/2"	**ASN-15**	**AS-15**	3.74 (95)	1.18 (30)



Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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Exhaust Protector



Specifications

Operating Pressure ..... 0 – 150 PSIG
(0 to 10 bar, 0 to 1034 kPa)

Operating Temperature .....-40°F to 158°F (-40°C to 70°C)

Material:
Body and Pipe Adapter .....Brass
Membrane .....Fluorocarbon

Flow Data (SCFM)

Part Number	Size	60 PSIG Inlet	90 PSIG Inlet	125 PSIG Inlet
E90016	1/8"	40.1	56.5	75.5
E90017	1/4"	44.6	62.7	83.5

Features

- 1/8 and 1/4 NPT male sizes
- Fitted with a Brass Pipe Adapter and a Fluorocarbon Membrane
- Resistant to Rust, Clog, Wash Down and Contamination

Applications

These protectors are intended for mobile applications, quick venting applications and alternative exhaust port breathers that require protection against clogging.

Ideal for valves exposed to harsh environmental conditions (which can cause a “caking up” in the exhaust pipe ports where the bronze mufflers or breather vents are installed).

Particularly suitable for time-sensitive applications such as axle-lift suspensions or pushers or tag axles.

Spool Service Kits

Part Number	Description	Includes Items (qty.)
P2LAXSK1	Size A, 4-Way, 2-Position, Solenoid & Air Pilot Valves	1 (1), 3 (2), 4 (2)
P2LAXSK2	Size A, 4-Way, 3-Position, Solenoid & Air Pilot Valves	1 (1), 2 (2), 3 (2), 4 (2)
P2LAXSK3	Size A, 4-Way, 2-Position, Manual Valves	Spool Only (Not Shown)
P2LAXSK4	Size A, 4-Way, 3-Position, Manual Valves	Spool Only (Not Shown)
P2LBXSK1	Size B, 4-Way, 2 & 3-Position Valves	1 (1), 3 (2), 4 (2)
P2LCXDXSK1	Size C & Size D, 4-Way, 2 & 3-Position Valves	1 (1), 3 (2), 4 (2)

A - 30mm Square
3-Pin ISO Form A

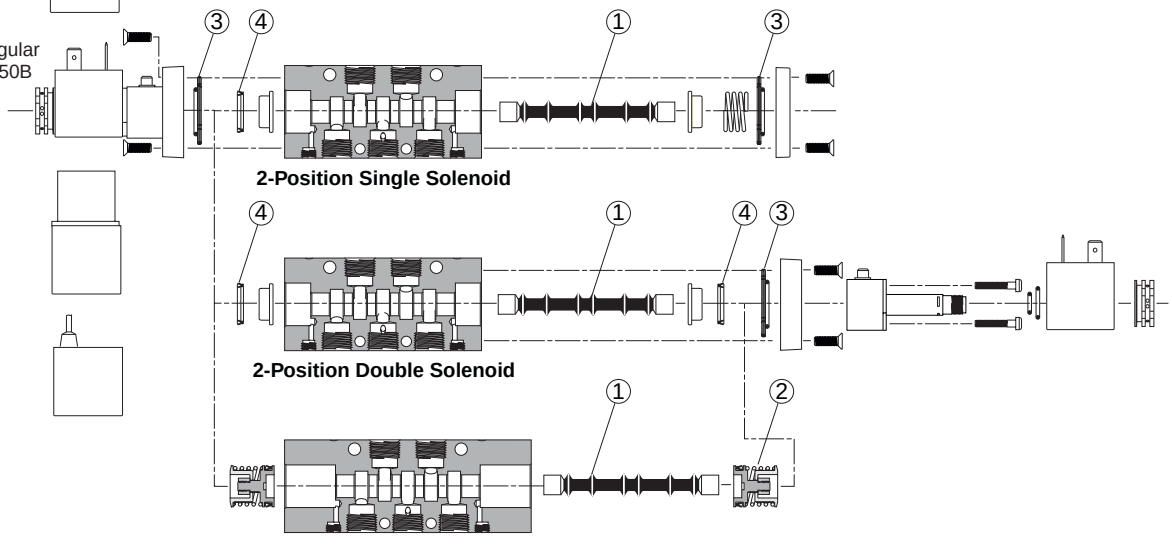
B - 22mm Rectangular
3-Pin DIN 43650B

H - 1/2" Conduit
18" Leads

R - 1/2" Conduit
72" Leads

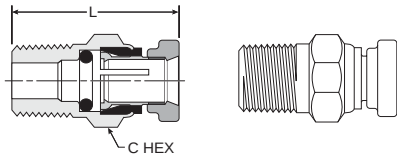
G - Grommet
18" Leads

Q - Grommet
72" Leads



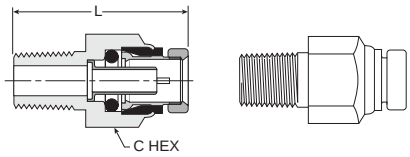
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68PM Male Connector



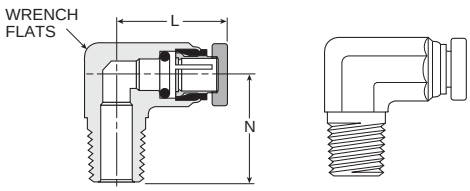
Part No.	Tube Size	Pipe Thread (NPTF)	C Hex	L
68PM-2-1	1/8	1/16	3/82	0.93
68PM-2-2	1/8	1/8	7/16	0.88
68PM-5/32-1	5/32	1/16	3/8	0.95
68PM-5/32-2	5/32	1/8	7/16	0.74
68PM-5/32-4	5/32	1/4	9/16	0.99
68PM-3-1	3/16	1/16	7/16	0.95
68PM-3-2	3/16	1/8	7/16	0.92
68PM-3-4	3/16	1/4	9/16	1.10

68PMT Male Connector



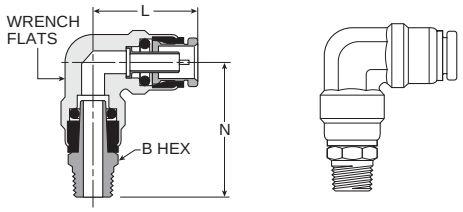
Part No.	Tube Size	Pipe Thread (NPTF)	C Hex	L
68PMT-4-2	1/4	1/8	1/2	1.06
68PMT-4-4	1/4	1/4	9/16	1.19
68PMT-4-6	1/4	3/8	3/4	1.27
68PMT-6-2	3/8	1/8	3/4	1.37
68PMT-6-4	3/8	1/4	3/4	1.43
68PMT-6-6	3/8	3/8	3/4	1.33
68PMT-6-8	3/8	1/2	7/8	1.38
68PMT-8-4	1/2	1/4	7/8	1.72
68PMT-8-6	1/2	3/8	7/8	1.52
68PMT-8-8	1/2	1/2	7/8	1.44
68PMT-10-6	5/8	3/8	1	1.88
68PMT-10-8	5/8	1/2	1	1.88
68PMT-12-8	3/4	1/2	1-3/16	2.03

169PMNS Male Elbow Non-Swivel 90°



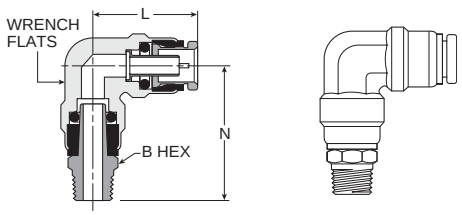
Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	L	N
169PMNS-2-2	1/8	1/8	3/8	0.86	0.68
169PMNS-5/32-2	5/32	1/8	3/8	0.88	0.68
169PMNS-3-2	3/16	1/8	3/8	0.75	0.67
169PMNS-3-4	3/16	1/4	1/2	0.74	0.93

169PMT Male Elbow Swivel 90°



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	B Hex	L	N
169PMT-4-2	1/4	1/8	13/32	7/16	0.84	1.21
169PMT-4-4	1/4	1/4	13/32	9/16	0.84	1.43
169PMT-4-6	1/4	3/8	13/32	11/16	0.84	1.43
169PMT-6-2	3/8	1/8	9/16	9/16	1.11	1.41
169PMT-6-4	3/8	1/4	9/16	9/16	1.11	1.58
169PMT-6-6	3/8	3/8	9/16	11/16	1.11	1.58
169PMT-6-8	3/8	1/2	9/16	7/8	1.11	1.79
169PMT-8-4	1/2	1/4	11/16	5/8	1.27	1.73
169PMT-8-6	1/2	3/8	11/16	3/4	1.27	1.81
169PMT-8-8	1/2	1/2	11/16	7/8	1.27	1.96
169PMT-10-6	5/8	3/8	7/8	3/4	1.53	2.03
169PMT-10-8	5/8	1/2	7/8	7/8	1.53	2.18

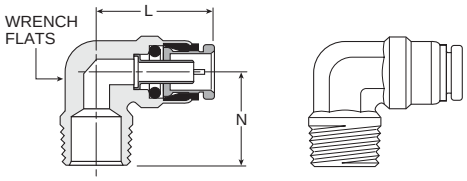
169PMTL Male Elbow Long Non-Swivel 90°



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	B Hex	L	N
169PMTL-6-4	3/8	1/4	9/16	9/16	1.06	1.63
169PMTL-6-6	3/8	3/8	9/16	7/8	1.19	2.50
169PMTL-6-8	3/8	1/2	9/16	7/8	1.19	2.50
169PMTL-8-8	1/2	1/2	11/16	7/8	1.22	2.50
169PMTL-10-8	5/8	1/2	7/8	7/8	1.46	2.50

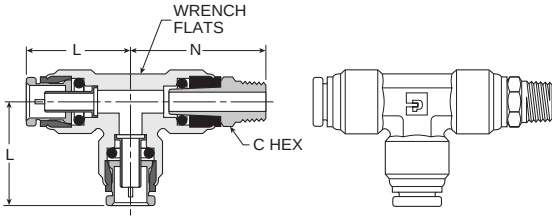
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169PMTNS Male Elbow Non-Swivel 90°



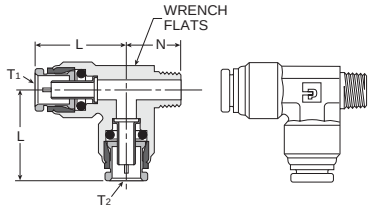
Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	L	N
169PMTNS-4-2	1/4	1/8	1/2	0.84	0.72
169PMTNS-4-4	1/4	1/4	1/2	0.84	0.90
169PMTNS-4-6	1/4	3/8	1/2	0.84	1.06
169PMTNS-6-2	3/8	1/8	9/16	1.05	0.75
169PMTNS-6-4	3/8	1/4	9/16	1.05	0.94
169PMTNS-6-6	3/8	3/8	3/4	1.05	0.94
169PMTNS-6-8	3/8	1/2	11/16	1.12	1.26
169PMTNS-8-4	1/2	1/4	11/16	1.17	1.06
169PMTNS-8-6	1/2	3/8	11/16	1.22	1.06
169PMTNS-8-8	1/2	1/2	11/16	1.22	1.26
169PMTNS-10-6	5/8	3/8	7/8	1.46	1.11
169PMTNS-10-8	5/8	1/2	7/8	1.46	1.32
169PMTNS-12-8	3/4	1/2	1	1.81	1.44

171PMT Male Run Tee Swivel



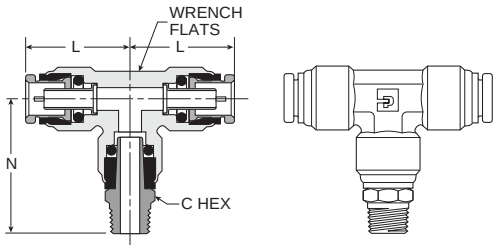
Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	C Hex	L	N
171PMT-4-2	1/4	1/8	1/2	7/16	.85	1.25
171PMT-4-4	1/4	1/4	1/2	9/16	.85	1.48
171PMT-4-6	1/4	3/8	1/2	11/16	.85	1.43
171PMT-6-4	3/8	1/4	5/8	9/16	1.21	1.83
171PMT-6-6	3/8	3/8	5/8	11/16	1.21	1.83
171PMT-8-4	1/2	1/4	7/8	5/8	1.27	1.74
171PMT-8-6	1/2	3/8	7/8	3/4	1.27	1.83
171PMT-8-8	1/2	1/2	7/8	7/8	1.27	1.99

171PMTNS Male Run Tee Non-Swivel



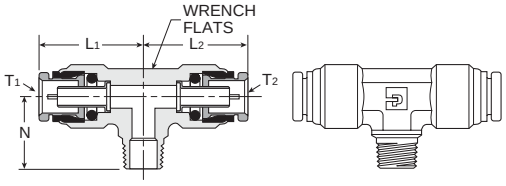
Part No.	Tube 1 Size	Tube 2 Size	Pipe Thread (NPTF)	Wrench Flats	L1	L2	N
171PMTNS-4-4	1/4	1/4	1/4	15-32	0.91	0.91	0.94
171PMTNS-4-6-4	1/4	3/8	1/4	5/8	0.93	1.21	0.97
171PMTNS-6-4	3/8	3/8	1/4	5/8	1.21	1.21	0.97
171PMTNS-6-4-4	3/8	1/4	1/4	5/8	1.21	0.93	0.97
171PMTNS-6-4-6	3/8	1/4	3/8	5/8	1.22	0.97	0.93
171PMTNS-6-6	1/2	3/8	3/8	5/8	1.21	1.27	0.97
171PMTNS-6-8	1/2	3/8	1/2	5/8	1.17	1.27	1.26
171PMTNS-8-4	1/2	1/2	1/4	7/8	1.28	1.27	1.06

172PMT Male Branch Tee Swivel



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	C Hex	L	N
172PMT-4-2	1/4	1/8	1/2	7/16	0.85	1.25
172PMT-4-4	1/4	1/4	1/2	9/16	0.85	1.43
172PMT-6-2	3/8	1/8	5/8	9/16	1.22	1.66
172PMT-6-4	3/8	1/4	5/8	5/8	1.22	1.83
172PMT-6-6	3/8	3/8	5/8	3/4	1.22	1.83
172PMT-8-4	1/2	1/4	7/8	5/8	1.27	1.73
172PMT-8-6	1/2	3/8	7/8	3/4	1.27	1.79
172PMT-8-8	1/2	1/2	7/8	7/8	1.27	1.97

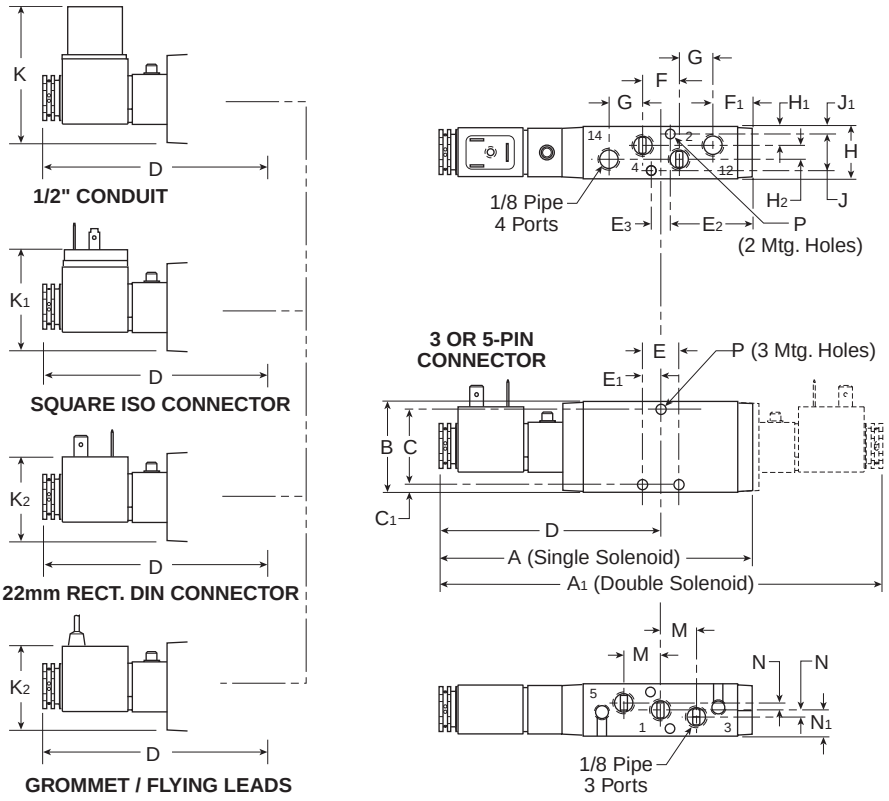
172PMTNS Male Branch Tee Non-Swivel



Part No.	Tube 1 Size	Tube 2 Size	Pipe Thread (NPTF)	Wrench Flats	L1	L2	N
172PMTNS-4-2	1/4	1/4	1/8	1/2	0.91	0.91	0.78
172PMTNS-6-4	3/8	3/8	1/4	5/8	1.21	1.21	0.97
172PMTNS-6-4-4	3/8	1/4	1/4	5/8	1.21	.93	0.97
172PMTNS-6-6	3/8	3/8	3/8	5/8	1.21	1.21	0.97
172PMTNS-6-8	3/8	3/8	1/2	7/8	1.17	1.17	1.26
172PMTNS-8-6	1/2	1/2	3/8	7/8	1.28	1.28	1.06
172PMTNS-8-6-8	1/2	3/8	1/2	7/8	1.25	1.25	1.25
172PMTNS-8-8	1/2	1/2	1/2	7/8	1.34	1.25	1.25

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Single & Double Operators – Solenoid

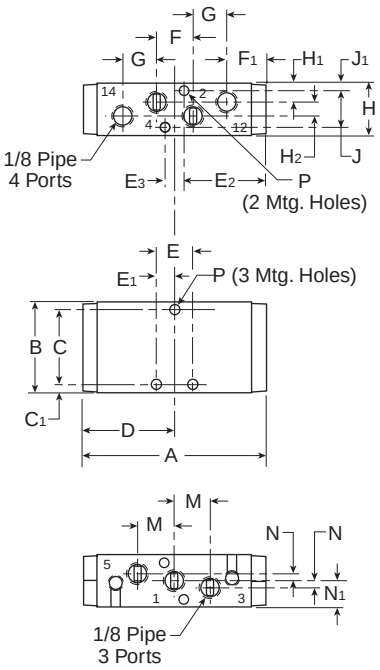


P2LAX (Solenoid)

A	A1	B	C
5.31 (135)	7.72 (196)	1.57 (40)	1.30 (33)
C1	**D**	**E**	**E1**
.14 (3.5)	3.86 (98)	.63 (16)	.31 (8)
E2	**E3**	**F**	**F1**
1.42 (36)	.33 (8.5)	.63 (16)	.67 (17)
G	**H**	**H1**	**H2**
.59 (15)	.87 (22)	.31 (8)	.24 (6)
J	**J1**	**K**	**K1**
.63 (16)	.12 (3)	2.36 (60)	1.61 (41)
K2	**M**	**N**	**N1**
1.50 (38)	.63 (16)	.12 (3)	.43 (11)
P			
Ø .16 Ø (4.1)			

Inches (mm)

Single & Double Operators – Remote Pilot



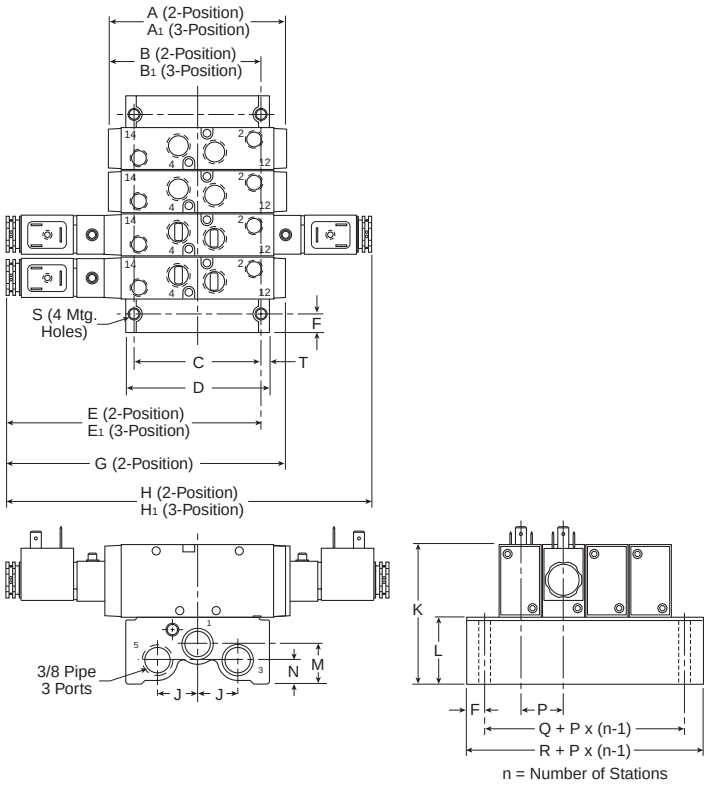
P2LAX (Remote)

A	B	C	C1
3.19 (81)	1.57 (40)	1.30 (33)	.14 (3.5)
D	**E**	**E1**	**E2**
1.57 (40)	1.47 (16)	.31 (8)	1.42 (36)
E3	**F**	**F1**	**G**
.33 (8.5)	.63 (16)	.67 (17)	.59 (15)
H	**H1**	**H2**	**J**
.87 (22)	.31 (8)	.24 (6)	.63 (16)
J1	**M**	**N**	**N1**
.12 (3)	.63 (16)	.12 (3)	.43 (11)
P			
Ø .16 Ø (4.1)			

Inches (mm)

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Single & Double Operators – IEM Aluminum Bar Manifold



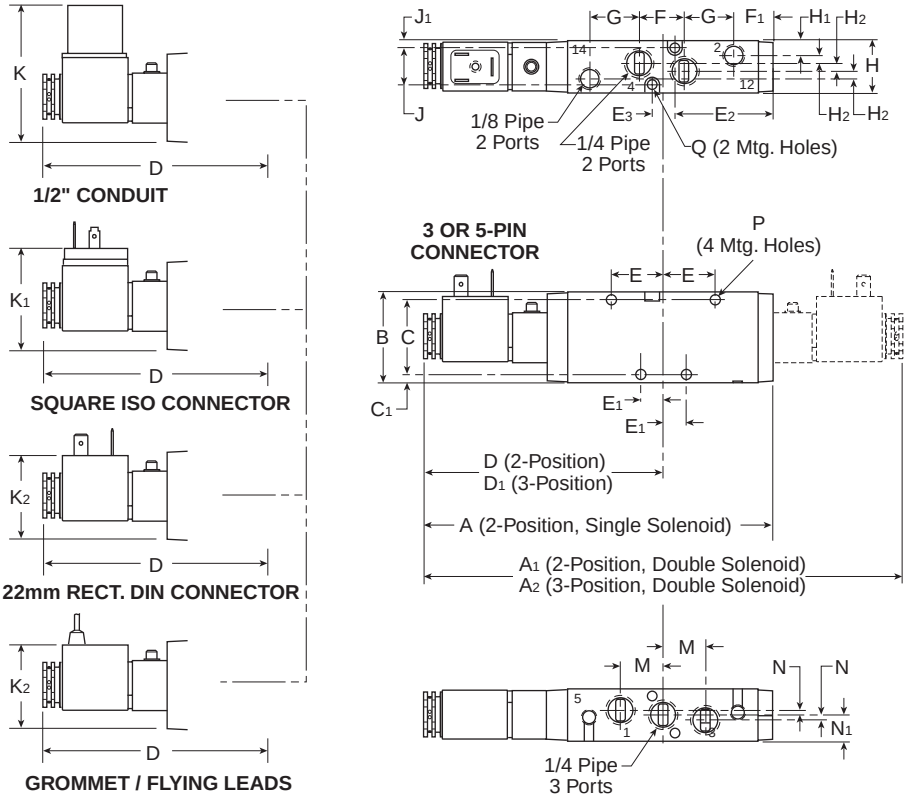
IEM Aluminum Bar Manifold

A	B	C	D
3.19 (81)	2.95 (75)	2.76 (70)	3.12 (79)
E	**F**	**G**	**H**
5.24 (133)	41 (10.5)	5.31 (135)	7.72 (196)
J	**K**	**L**	**M**
.87 (22)	3.11 (79)	1.54 (39)	.87 (22)
N	**P**	**Q**	**R**
.52 (13.2)	.93 (23.5)	1.56 (39.5)	2.36 (60)
S	T		
Ø .22 Ø (5.5)	.18 (4.6)		

Inches (mm)

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Single & Double Operators – Solenoid

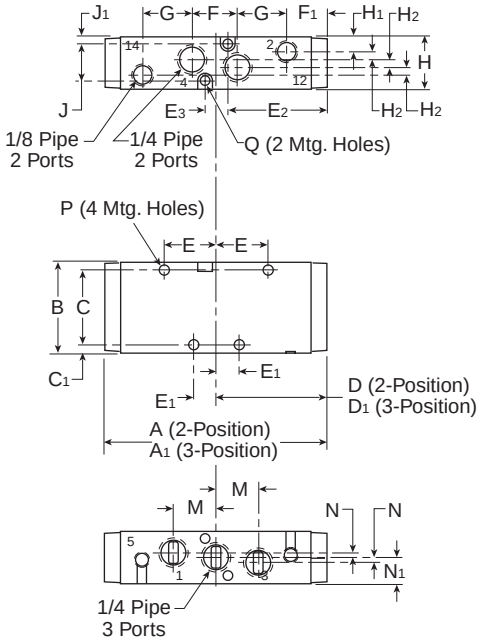


P2LBX (Solenoid)

A	A1	A2	B
6.14 (156)	8.39 (213)	9.06 (230)	1.57 (40)
C	**C1**	**D**	**D1**
1.26 (32)	.16 (4)	4.21 (107)	4.55 (116)
E	**E1**	**E2**	**E3**
91 (23)	.39 (10)	1.73 (44)	.39 (10)
F	**F1**	**G**	**H**
.79 (20)	.67 (17)	.87 (22)	.87 (22)
H1	**H2**	**J**	**J1**
.26 (6.6)	.12 (3)	.65 (16.5)	.11 (2.8)
K	**K1**	**K2**	**M**
2.36 (60)	1.61 (41)	1.50 (38)	.79 (20)
N	**N1**	**P**	**Q**
.08 (2)	.43 (11)	Ø .17 Ø (4.3)	Ø .12 Ø (3.1)

Inches (mm)

Single & Double Operators – Remote Pilot



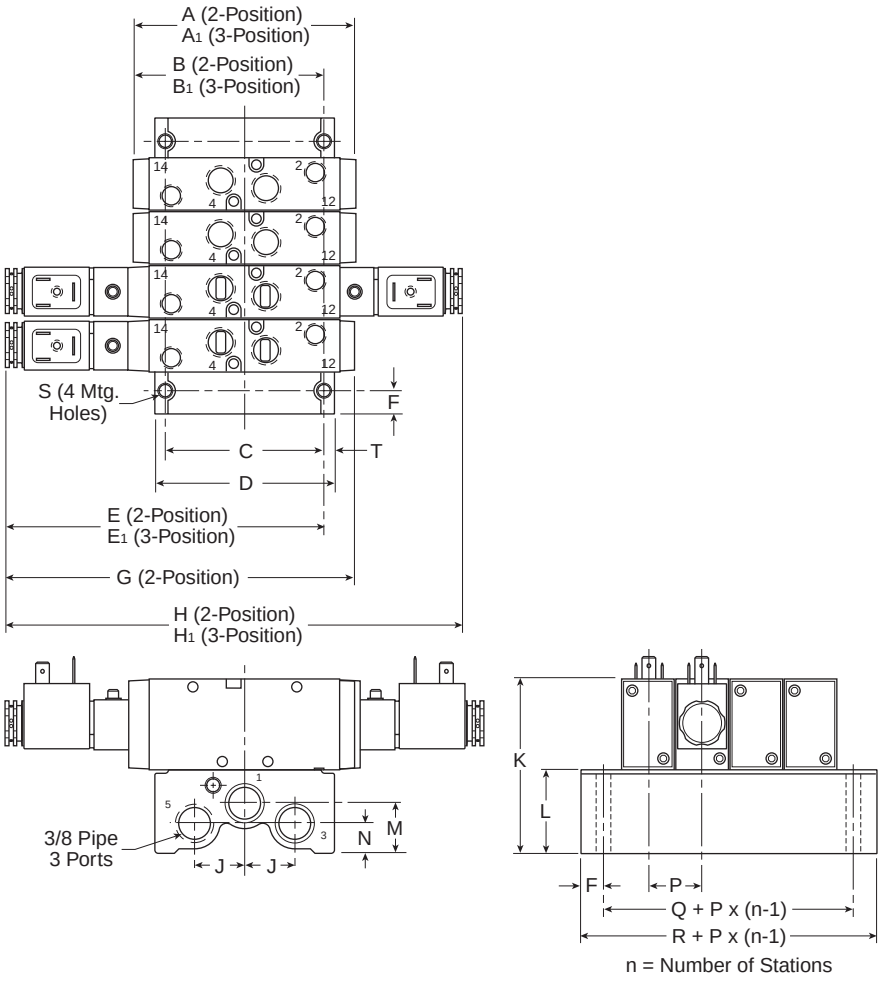
P2LBX (Remote)

A	A1	B	C
3.95 (100)	4.61 (117)	1.57 (40)	1.26 (32)
C1	**D**	**D1**	**E**
.16 (4)	1.93 (49)	2.28 (58)	91 (23)
E1	**E2**	**E3**	**F**
.39 (10)	1.73 (44)	.39 (10)	.79 (20)
F1	**G**	**H**	**H1**
.67 (17)	.87 (22)	.87 (22)	.26 (6.6)
H2	**J**	**J1**	**K**
.12 (3)	.65 (16.5)	.11 (2.8)	2.90 (74)
M	**N**	**N1**	**P**
.79 (20)	.08 (2)	.43 (11)	Ø .17 Ø (4.3)
Q			
Ø .12 Ø (3.1)			

Inches (mm)

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Single & Double Operators – IEM Aluminum Bar Manifold



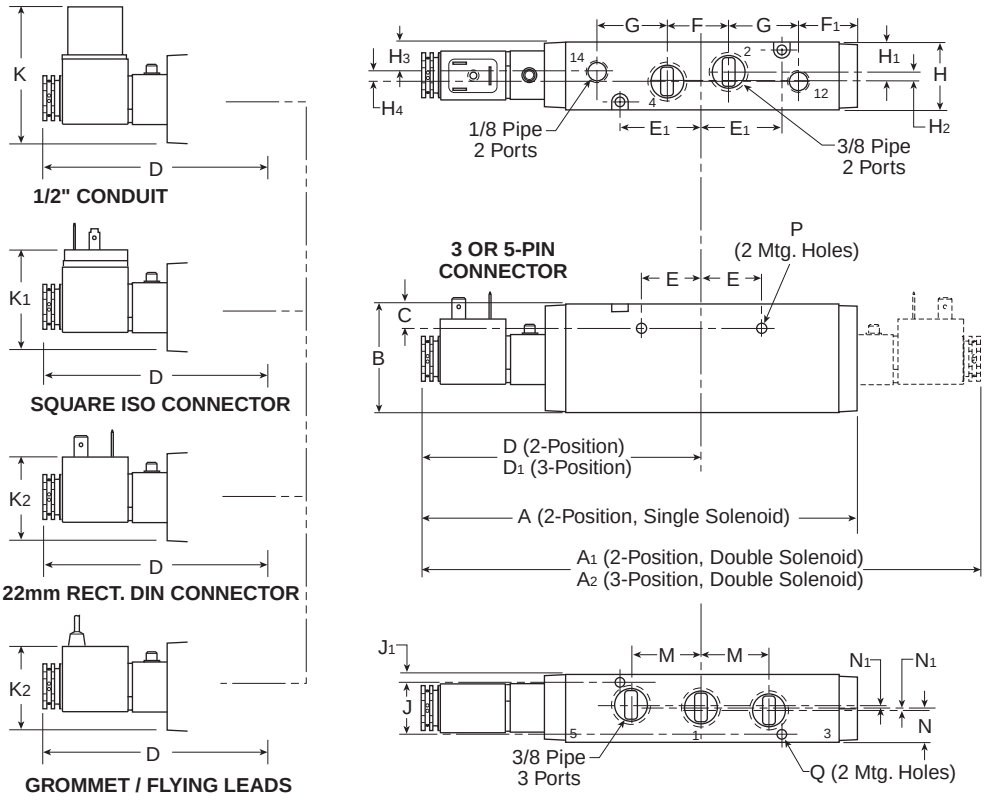
IEM Aluminum Bar Manifold

A	A1	B	B1
3.95 (100)	4.61 (117)	3.42 (87)	3.76 (96)
C	**D**	**E**	**E1**
2.76 (70)	3.12 (79)	5.47 (139)	5.81 (148)
F	**G**	**H**	**H1**
.40 (10.2)	6.10 (155)	8.39 (213)	9.06 (230)
J	**K**	**L**	**M**
.87 (22)	3.11 (79)	1.47 (37)	.87 (22)
N	**P**	**Q**	**R**
.52 (13.2)	.93 (23.5)	1.56 (39.5)	2.36 (60)
S	T		
Ø .22 Ø (5.5)	.18 (4.6)		

Inches (mm)

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Single & Double Operators – Solenoid

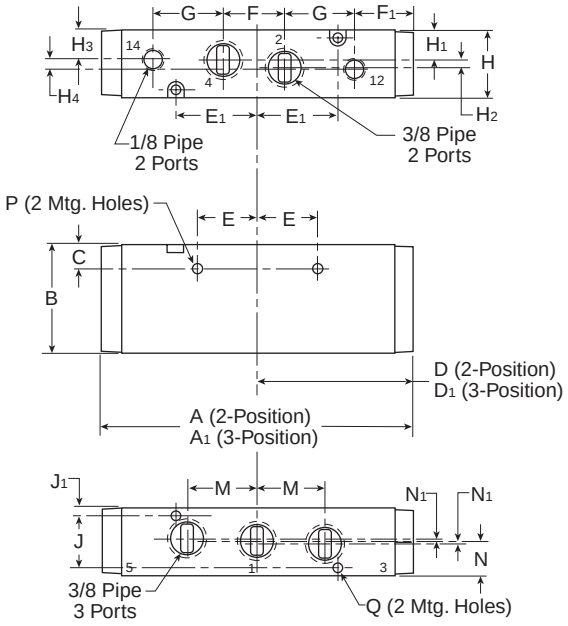


P2LCX (Solenoid)

A	A1	A2	B
7.64 (194)	9.84 (250)	10.71 (272)	1.89 (48)
C	**D**	**D1**	**E**
.44 (11.2)	4.92 (125)	5.35 (136)	1.04 (26.5)
E1	**F**	**F1**	**G**
1.39 (35.4)	1.06 (27)	1.02 (26)	1.22 (31)
H	**H1**	**H2**	**H3**
1.18 (30)	.53 (13.5)	.12 (3)	.51 (13)
H4	**J**	**J1**	**K**
.16 (4)	.91 (23)	.14 (3.5)	2.52 (64)
K1	**K2**	**M**	**N**
1.77 (45)	1.65 (42)	1.18 (30)	.59 (15)
N1	**P**	**Q**	
.04 (1)	Ø .27 Ø (6.9)	Ø .17 Ø (4.4)	

Inches (mm)

Single & Double Operators – Remote Pilot



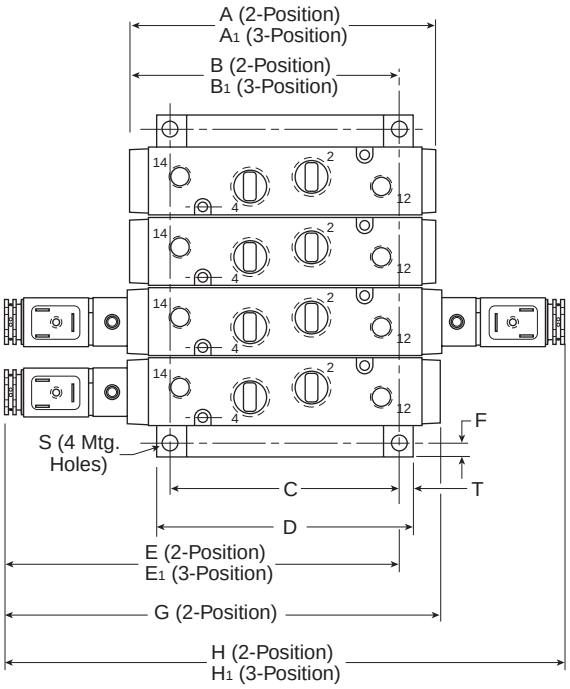
P2LCX (Remote)

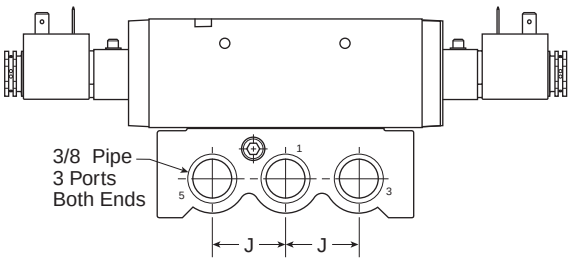
A	A1	B	C
5.51 (140)	6.38 (162)	1.89 (48)	.44 (11.2)
D	**D1**	**E**	**E1**
2.76 (70)	3.18 (81)	1.04 (26.5)	1.39 (35.4)
F	**F1**	**G**	**H**
1.06 (27)	1.02 (26)	1.22 (31)	1.18 (30)
H1	**H2**	**H3**	**H4**
.53 (13.5)	.12 (3)	.51 (13)	.16 (4)
J	**J1**	**K**	**M**
.91 (23)	.14 (3.5)	2.47 (62.8)	1.18 (30)
N	**N1**	**P**	**Q**
.59 (15)	.04 (1)	Ø .27 Ø (6.9)	Ø .17 Ø (4.4)

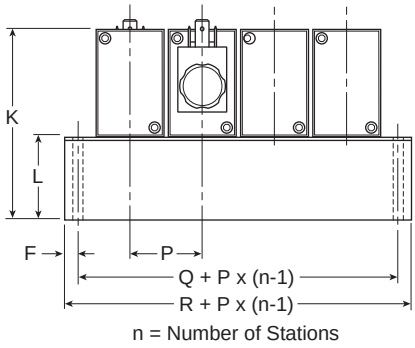
Inches (mm)

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Single & Double Operators – IEM Aluminum Bar Manifold







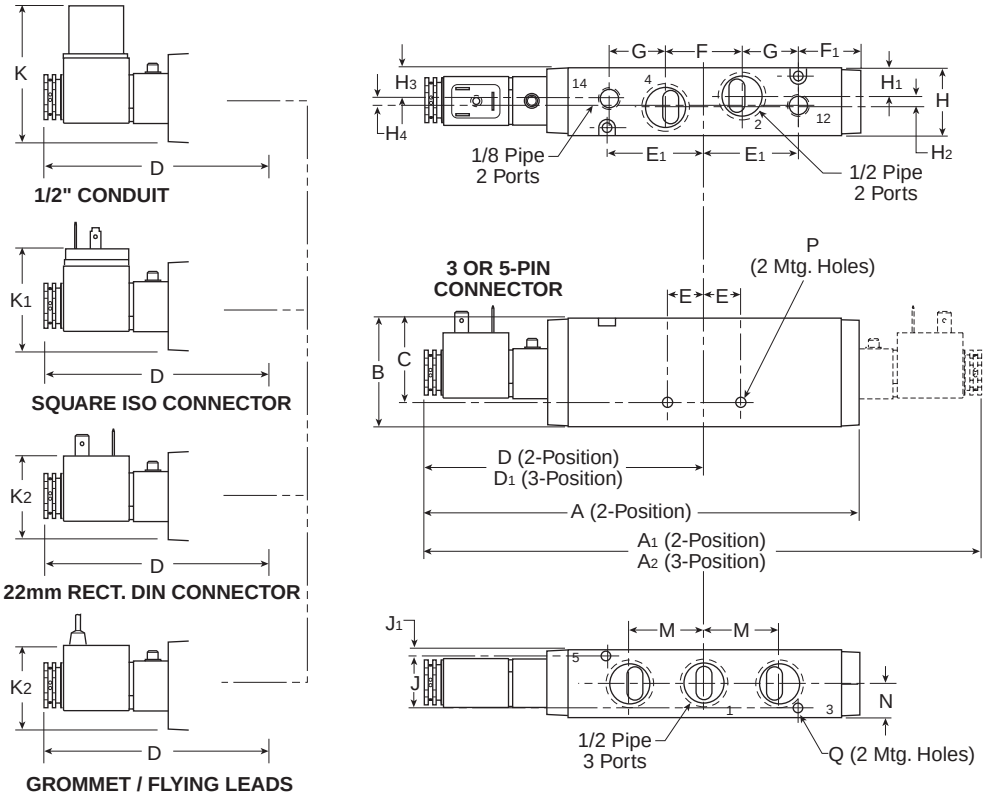
IEM Aluminum Bar Manifold

A	A1	B	B1
5.51 (140)	6.38 (162)	4.72 (120)	5.16 (131)
C	**D**	**E**	**E1**
3.94 (100)	4.41 (112)	6.89 (170)	7.13 (181)
F	**G**	**H**	**H1**
.24 (6)	7.68 (195)	9.84 (250)	10.71 (272)
J	**K**	**L**	**P**
1.26 (32)	3.43 (87)	1.54 (39)	1.24 (31.5)
Q	**R**	**S**	
1.77 (45)	2.24 (57)	Ø .26 Ø (6.5)	

Inches (mm)

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Single & Double Operators – Solenoid

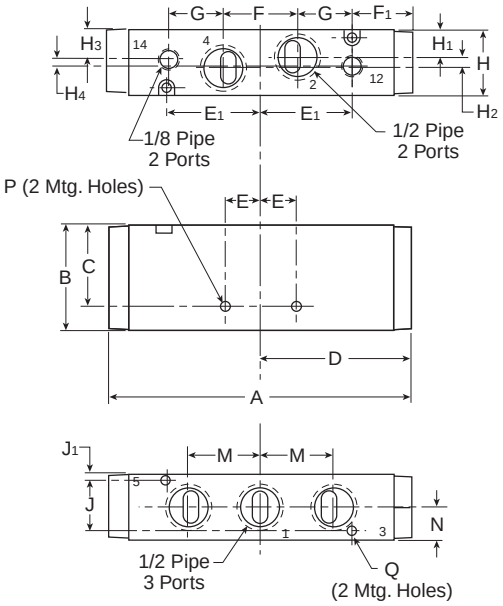


P2LDX (Solenoid)

A	A1	A2	B
7.64 (194)	9.84 (250)	10.70 (273)	1.89 (48)
C	**D**	**D1**	**E**
1.59 (40.5)	4.92 (125)	5.83 (148)	.67 (17)
E1	**F**	**F1**	**G**
1.65 (42)	1.34 (34)	1.08 (27.5)	.98 (25)
H	**H1**	**H2**	**H3**
1.18 (30)	.49 (12.5)	.20 (5)	.51 (13)
H4	**J**	**J1**	**K**
.16 (4)	.91 (23)	.14 (3.5)	2.52 (64)
K1	**K2**	**M**	**N**
1.77 (45)	1.65 (42)	1.29 (32.7)	.59 (15)
P	**Q**		
Ø .26 Ø (6.6)	Ø .17 Ø (4.4)		

Inches (mm)

Single & Double Operators – Remote Pilot



P2LDX (Remote)

A	B	C	D
5.47 (139)	1.89 (48)	1.59 (40.5)	2.63 (67)
E	**E1**	**F**	**F1**
.67 (17)	1.65 (42)	1.34 (34)	1.08 (27.5)
G	**H**	**H1**	**H2**
.98 (25)	1.18 (30)	.49 (12.5)	.20 (5)
H3	**H4**	**J**	**J1**
.51 (13)	.16 (4)	.91 (23)	.14 (3.5)
K	**M**	**N**	**P**
2.47 (62.8)	1.29 (32.7)	.59 (15)	Ø .26 Ø (6.6)
Q			
Ø .17 Ø (4.4)			

Inches (mm)

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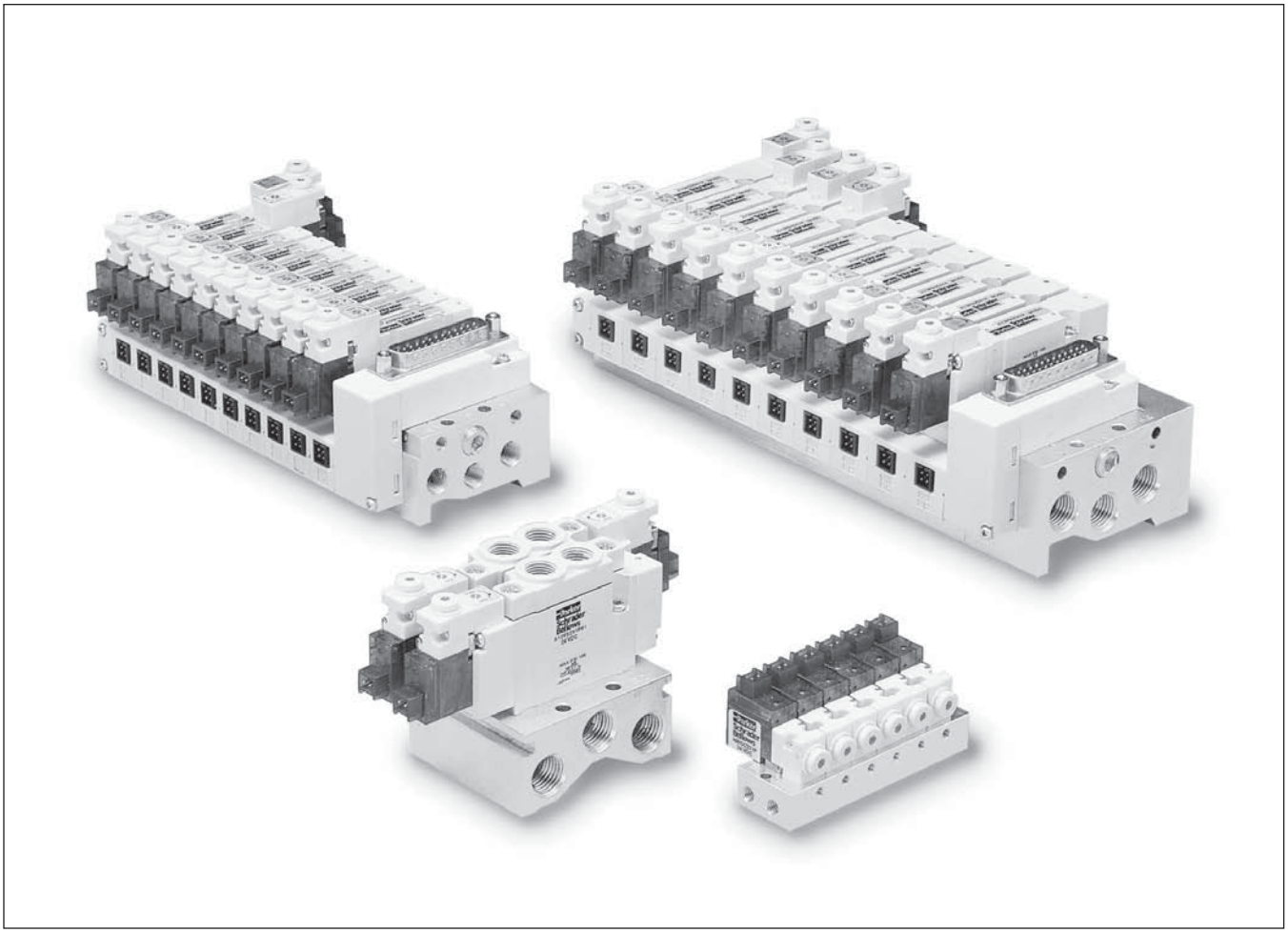
"ADEX" Series

Air Control Valves

A00 – .01 Cv M3 Port
A05 – .18 Cv M5 Port
A12 – .47 Cv 1/8" Port

Section D

www.parker.com/pneu/adex



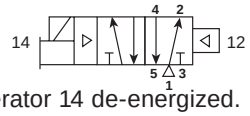
Basic Valve Functions D100
Basic Valve Features D101
Common Part Numbers – P / R Type Valves D102
Model Number Index – P / R Type Valves D103
Common Part Numbers
A00 Subbase Valve D104
IEM Bar Manifold D105
Subbase Bar Manifold D106
Ordering Information
Collective Wiring D107
Pin Mapping D107
Ordering Information
Kits & Accessories D108-D112
Technical Information D113
Dimensions
A00 .....D114
A05 P / R and A12 P / R D115-D118

BOLD ITEMS ARE MOST POPULAR.

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Single Solenoid

4-Way, 2-Position

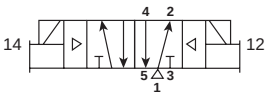


De-energized position – Solenoid operator 14 de-energized.
Pressure at inlet port 1 connected to outlet port 2.
Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator 14 energized.
Pressure at inlet port 1 connected to outlet port 4.
Outlet port 2 connected to exhaust port 3.

Double Solenoid

4-Way, 2-Position

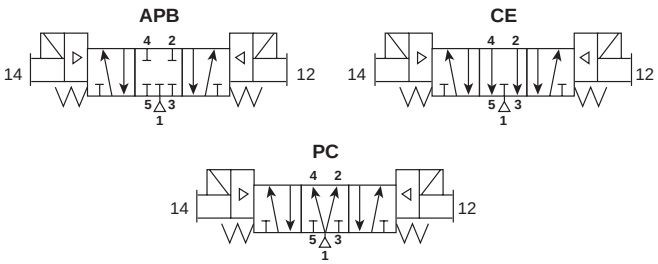


Solenoid operator 14 energized last.
Pressure at inlet port 1 connected to outlet port 4.
Outlet port 2 connected to exhaust port 3.

Solenoid operator 12 energized last.
Pressure at inlet port 1 connected to outlet port 2.
Outlet port 4 connected to exhaust port 5.

Double Solenoid

4-Way, 3-Position



With 12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With 14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 1: All Ports Blocked (APB)
All ports blocked in the center position.

Function 2: Center Exhaust (CE)
Cylinder ports 4 and 2 connected to exhaust ports 5 and 3 in center position. Port 1 is blocked.

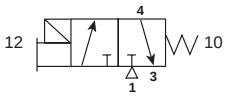
Function 3: Pressure Center (PC)
Pressure port 1 connected to cylinder ports 4 and 2, and exhaust ports 5 and 3 blocked in center position.

Dual Pressure (Subbase valves only):

May be used for dual pressure service with pressure at ports 3 & 5. **Specify External Pilot option "X" on Valve AND Manifold.** In the 3-Position valve, the effect of dual pressure is extremely important when the valve is in the center position, as the CE and PC functions are reversed. Therefore, care should be used when selecting a 3-Position valve.

Single Solenoid

3-Way, 2-Position NC



Normally Closed:

De-energized position – Solenoid 12 de-energized.
Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

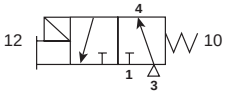
Energized position – Solenoid 12 energized.
Pressure at inlet port 1 connected to outlet port 2, exhaust port 3 is blocked.

Vacuum Applications (Device becomes NO):
'1' port is connected to atmosphere or compressed air † when required.
'2' port is outlet
'3' port is connected to vacuum

† When both vacuum and compressed air are required, maximum pressure is 85 PSIG (586 kPa).

Single Solenoid

3-Way, 2-Position NO*



Normally Open:

De-energized position – Solenoid 12 de-energized.
Pressure at inlet port 3 connected to outlet port 2, exhaust port 1 is blocked.

Energized position – Solenoid 12 energized. Pressure at inlet
port 3 blocked, outlet port 2 connected to exhaust port 1.

* To obtain NO function, ports 1 & 3 are reversed (1 becomes exhaust and 3 becomes supply).

Vacuum Applications (Device becomes NC):
'1' port is connected to vacuum
'2' port is outlet
'3' port is connected to atmosphere or compressed air † when required.

† When both vacuum and compressed air are required, maximum pressure is 58 PSIG (400 kPa).

***Caution:** Normally Open and Normally Closed 3-Way valve cannot be mixed on the same manifold.*

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

"A00" Valve
"A05" Valve
"A12" Valve

Flow Ratings*

- A00: .02 Cv
- A05: .18 Cv
- A12: .47 Cv

Operating Pressure

- Vacuum to 100 PSIG*
- A00S (NO) vacuum to 70 PSIG

Ports

- A00: M3
- A05: M5
- A12: 1/8 Inch

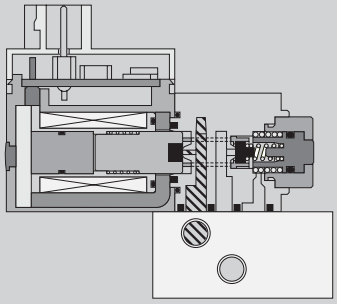
Mounting

- Inline
- Subbase Mount

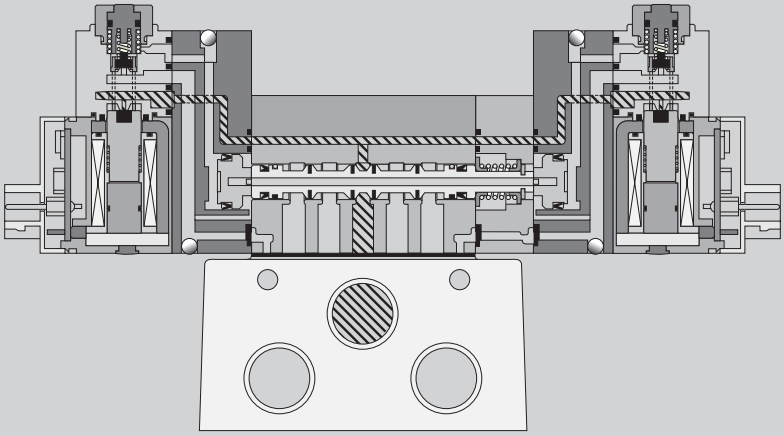
Solenoids

- 0.6 Watt
- 5VDC, 12VDC, 24VDC and 110/120VAC
- LED and Surge Suppression

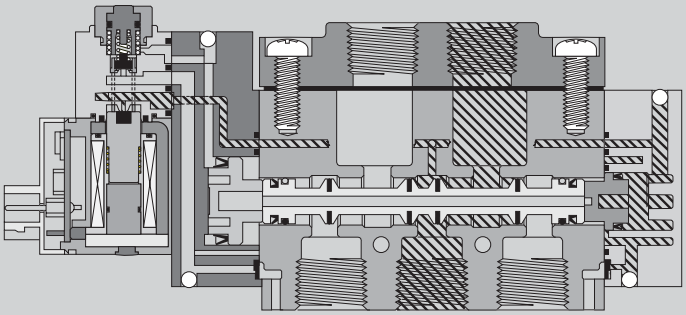
* See catalog technical section for more information.



A00S Single Solenoid Normally Closed (NC)



A05P Double Solenoid 3-Position Subbase Mounted

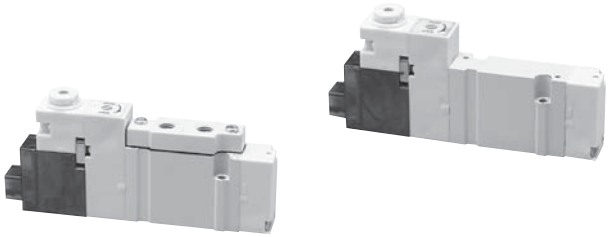


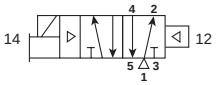
A12R Single Solenoid Inline

Pressure **Exhaust**

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Pneumatic Division
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Single Solenoid
4-Way, 2-Position





Inline

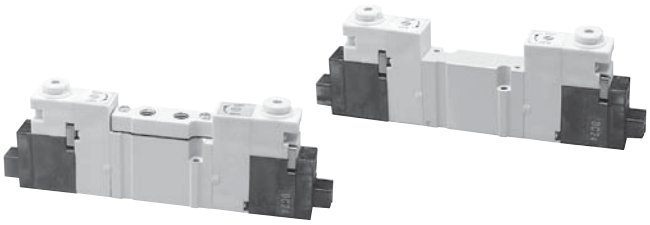
A05	**A05RS251PM5MF**	24VDC	M5	.17 Cv
	A05RS252PM5MF	12VDC		
A12	**A12RS251PN1MF**	24VDC	1/8"	.47 Cv
	A12RS252PN1MF	12VDC		

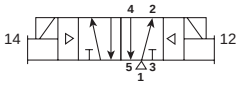
Subbase

A05	**A05PS251P**	24VDC	Less Base	.18 Cv
	A05PS252P	12VDC		
A12	**A12PS251P**	24VDC	Less Base	.44 Cv
	A12PS252P	12VDC		

Note: Wired electrical connectors sold separately. See Accessory Section.

Double Solenoid
4-Way, 2-Position





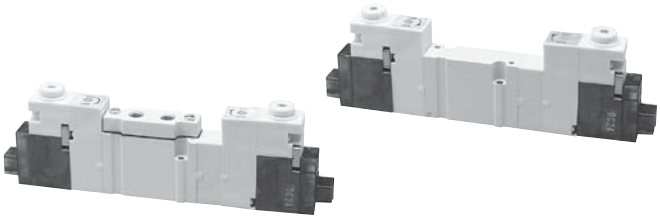
Inline

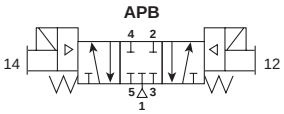
A05	**A05RD251PM5MF**	24VDC	M5	.17 Cv
	A05RD252PM5MF	12VDC		
A12	**A12RD251PN1MF**	24VDC	1/8"	.47 Cv
	A12RD252PN1MF	12VDC		

Subbase

A05	**A05PD251P**	24VDC	M5	.18 Cv
	A05PD252P	12VDC		
A12	**A12PD251P**	24VDC	1/8"	.44 Cv
	A12PD252P	12VDC		

Double Solenoid
4-Way, 3-Position, APB





Inline

A05	A05RD351PM5MF	24VDC	M5	.16 Cv
	A05RD352PM5MF	12VDC		
A12	A12RD351PN1MF	24VDC	1/8"	.43 Cv
	A12RD352PN1MF	12VDC		

Subbase

A05	A05PD351P	24VDC	Less Base	.16 Cv
	A05PD352P	12VDC		
A12	A12PD351P	24VDC	Less Base	.40 Cv
	A12PD352P	12VDC		

ANSI Cv vs. JIS Cv

*For Pneumatic Valve flow, the measurement **Cv** – Coefficient of Flow – is used to convey to the user how much air can flow through a given valve. Most valve manufactures publish this information in their catalogs to assist the user in choosing the proper valve for their application. In publishing this data however, there are discrepancies in how the **Cv** is calculated, resulting in some **Cv**'s being OVERSTATED by **20 to 40%**. This can adversely affect the user's application because the valve flows LESS than the published **Cv**.*

The reason for the large discrepancy is in the method of calculation - the ANSI (NFPA) or the JIS standard.

*Parker's **Cv** valve is calculated using the ANSI (NFPA) T3.21.3-1990 standard. The ANSI (NFPA) method is a structured test using very specific tube sizes and lengths, inlet pressures and pressure drops, and volume chambers.*

Locking Flush Override. Mounting screws and gaskets included with valve.

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Pneumatic Division
Richland, Michigan
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"ADEX" Series

BOLD OPTIONS ARE MOST POPULAR.

A05 R S25 — 1 P M5 MF

Basic Series	
Series	**A05**
Series	**A12**

Body Type	
Subbase	**P**
Inline	**R**

Operator / Function	
4-Way	
Single Solenoid, 2-Position, Air Return	**S25**
Double Solenoid, 2-Position	**D25**
Double Solenoid, 3-Position, APB	D35
Double Solenoid, 3-Position,CE	E35
Double Solenoid, 3Position, PC	035

Pilot Source / Exhaust	
Internal	**Blank**
External	X*

Voltage	
1	**24VDC**
2	**12VDC**
9	120/60 VAC

Options	
P	**Lights / Surge Suppression**

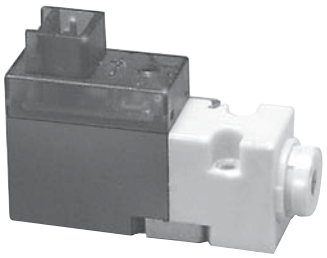
Port Size / Thread Type†	
Blank	**None (Subbase)**
M5	**M5 (A05R Only)**
N1	**1/8" NPT (A12R Only)**
G1	1/8" BSPP "G" (A12R Only)

† Required for inline models only, port size code not used for subbase versions.

Valve Type	
Blank	**None (Subbase)**
MF	**Inline**

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Richland, Michigan
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Valve Only – Single Solenoid
3-Way, 2-Position*



A00SC231P Shown

* Screwdriver-Operated, Locking Manual Override (LMOR).

A00S C23 — 1 P

Function	
Single Solenoid Normally Open	023
Single Solenoid Normally Closed	**C23**

Flow	
Standard Type	**Blank**
Large Flow Type	J

Voltage	
1	**24VDC**
2	12VDC
4*	5VDC
8*	110/50 VAC
9	120/60 VAC

* Special Order

Connector Position	
P	**With Indicator Light & Surge Suppression**

Subbase



A00SBM3 Shown

Model Number	All Ports
A00 **A00SBM3**	M3

Mounting screws and gaskets included with valve.

Manifold*



MMFS6A00M3 Shown

* Normally Closed valves (A00SC23•P) and Normally Open valves (A00S023•P) cannot be mounted on the same manifold simultaneously.

Mounting screws and gaskets included with valve.

MMFS 2 A00 M5

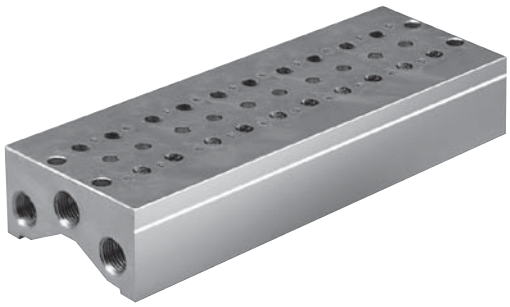
Number of Stations	
2 Stations	2
3 Stations	3
4 Stations	4
•	•
•	•
20 Stations	20

Port Size
M3
M5

BOLD OPTIONS ARE MOST POPULAR.

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"A05" Valve



MMFU10A05F Shown

4-Way, NPTF (Individual Wiring Type)	**MMFU##A05F**
4-Way, NPTF (Collective Wiring Type)	**MMCU‡‡A05F**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

"A12" Valve



MMFU10A12F Shown

4-Way, NPTF (Individual Wiring Type)	**MMFU##A12F**
4-Way, NPTF (Collective Wiring Type)	**MMCU‡‡A12F**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

- Utilizes Inline mount ADEX valves.
- Bolts and Gaskets are included with valve.
- A05 Collective Wiring Type Manifold Kits also include an Adapter Plate for use with the MCS Module.

Pilot Exhaust for IEM Manifold –
is captured through the "3" and "5" galley.

Model Number

BOLD OPTIONS ARE MOST POPULAR.

M MF U 2 A05 F

Type	
Bar Manifold	M

Port Type	
F	NPTF
G	BSPP "G"

Wiring	
Manifold, Individual	MF
Manifold Collective	MC

Valve Size	
A05	10mm
A12	15mm

Type / Pilot	
IEM	U

Number of Stations	
MF (Individual)	MC (Collective)
2	2
3	4
4	6
•	8
•	10
20	12 †

† Maximum of 12 stations available for "MC" Type. (Even # stations only.)

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"A05" Valve



4-Way, M5 (Individual Wiring Type)	**MMFS##A05FM5**
4-Way, M5 (Collective Wiring Type)	**MMCS‡‡A05FM5**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

"A12" Valve



4-Way, 1/8" NPTF (Individual Wiring Type)	**MMFS##A12FF1**
4-Way, 1/8" NPTF (Collective Wiring Type)	**MMCS‡‡A12FF1**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

- Utilizes Subbase mount ADEX valves.
- Bolts and Gaskets are included with valve.

Internally Piloted Manifolds –
Pilot exhaust is captured through the "3" and "5" galley.

Externally Pilot Manifold –
Pilot exhaust is captured through the "Y" galley.

Model Number

BOLD OPTIONS ARE MOST POPULAR.

M MF S 2 A05 F M5

Type	
Bar Manifold	**M**

Wiring	
Manifold, Individual	**MF**
Manifold Collective	**MC**

Type/Pilot	
Subbase, Internally Piloted	**S**
Subbase, Externally Piloted	X

Number of Stations	
MF (Individual)	**MC (Collective)**
2	**2**
3	**4**
4	**6**
•	**8**
•	**10**
20	**12 †**

† Maximum of 12 stations available for "MC" Type. (Even # stations only.)

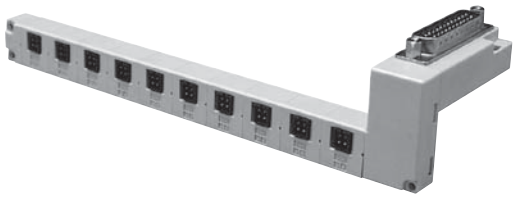
Valve Size	
A05	**10mm**
A12	**15mm**

Port Type	
F	**NPTF**
G	BSPP "G"

Port Type	
A05 Manifolds	
M5	**M5**
A12 Manifolds	
F1	1/8" NPFT
G1	1/8" BSPP "G"

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Collective Wiring



MCS10A05PDL Shown

MCS | 2 | A05 | P | DL

Type	
Manifold Collective Wiring System	MCS

Number of Stations*	
2 Stations	2
4 Stations	4
6 Stations	6
8 Stations	8
10 Stations	10
12 Stations	12

* Even Number of Stations Only.

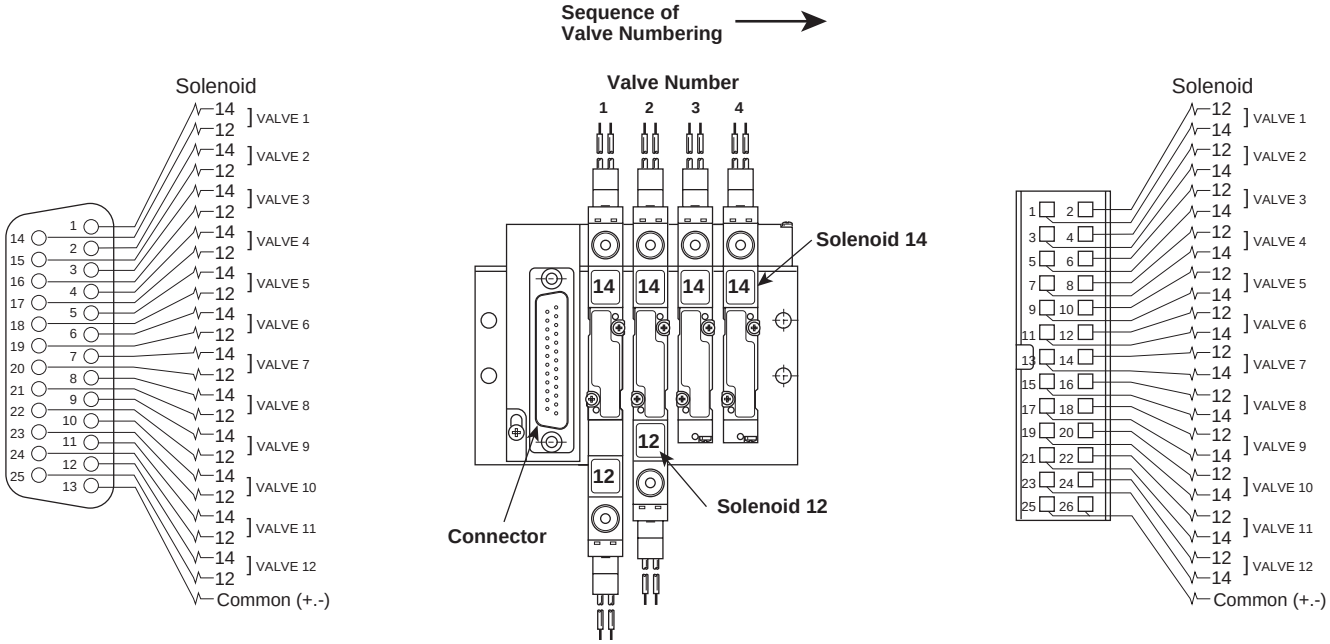
Valve Size	
A05	10mm
A12	15mm

Options	
DL	D-Sub 25
ML	26-Pin Ribbon

BOLD OPTIONS ARE MOST POPULAR.

Collective Wiring Pin Mapping

(Not Available for AC Voltages)



Pin Map for D-Sub 25 Connector | **Valve and Solenoid Addresses** | **Pin Map for 26-Pin Ribbon Connector**

Notes:

1. The MCS Collective Wiring System is "Polarity Neutral". Polarity is addressed with the Collective Wired Connectors (page D108).
   Example: When 'positive' common is used, an A05 single solenoid valve uses an A05PSCC. When 'negative' common is used, use A05PSCCM.
2. The MCS Collective Wiring System provides for both the "14" and "12" addresses at each valve location. When single solenoid valves are used, skip the "12" address for both wiring and controller programming.
3. Be sure that the leakage current of the controller outputs is less than 1.5 ma.

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Individual Wired Connectors

P / R Type

Size	Voltage	Length	Part Number
A00	DC	.5 meter	A05PDCCL5
A05		1 meter	A05PDCCL10
A12		3 meter	A05PDCCL30
	AC	.5 meter	A05PACCL5
		1 meter	A05PACCL10

DC Voltage: Positive "+" (Red Wire)
Negative "–" (Black Wire)
AC Voltage: Both Wires are Blue (Polarity Neutral)



A05PDCCL##

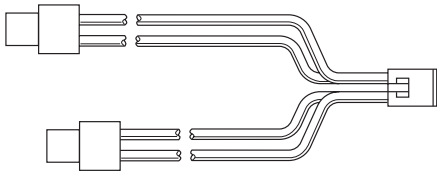
Collective Wired Connectors

P / R Type

Size		Part Number	
		PNP	NPN
A05	Single	A05PSCCM	A05PSCC
A12	Double	A05PDCCM	A05PDCC

PNP = SOURCING = "Negative Common" = Yellow Wires

NPN = SINKING = "Positive Common" = Red Wires

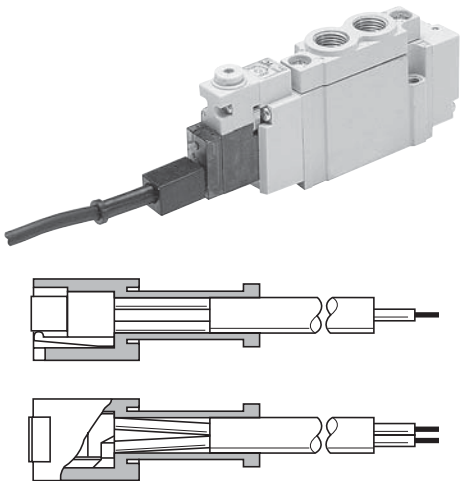


A05PDCC

Wired Connectors with Protective Cover - P / R Type

Size	Length	Part Number
A00	1 meter	A05PDCCB10
A05		
A12		

The cover is made of chloroprene rubber for electrical use, assuring excellent weather and insulation resistance. However, be careful not to place it under splash of cutting oil.



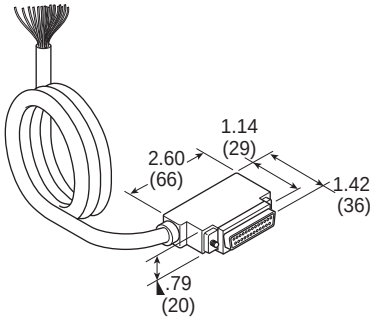
A05PDCCB10

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Cable with Female D-Sub, 25-Pin Connector

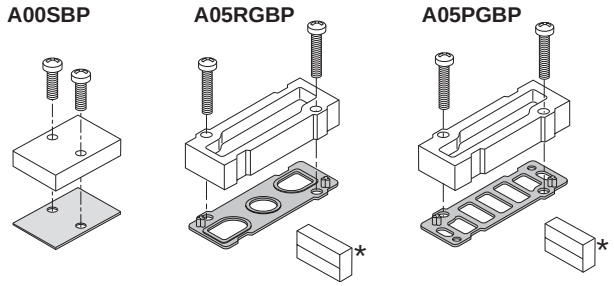
Part Number	Description
DSS25FB1K	25-Pin, D-Sub Cable, 1 meter (3.3 ft.)

Note: For use with ADEX MCS system only.
Connection to control system is through 25 colored wires AWG 24. Includes (2) M2.5 mm screws.



Blanking Plate

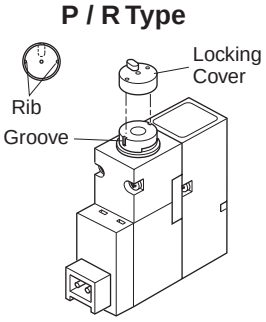
Size	Type	Part Number
A00	Subbase	**A00SBP**
A05	Body Ported	**A05RGBP**
	Subbase	**A05PGBP**
A12	Body Ported	**A12RGBP**
	Subbase	**A12PGBP**



* Outlet Pin Cover used with Collective Wiring System only.

Extended Override Cover

Size	Orange: For 14 Side Solenoid	Green: For 12 Side Solenoid
A00	**A05PLA**	**A05PLB**
A05		
A12		

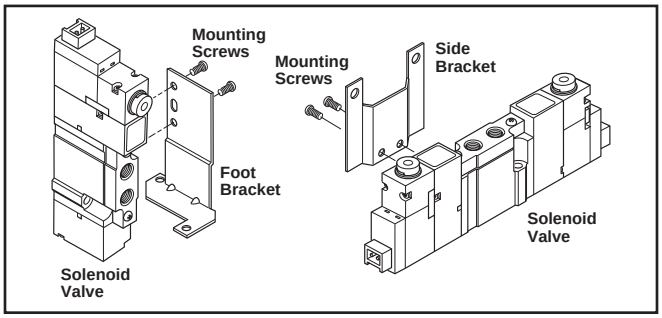


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Mounting Bracket

Size	Type	Part Number
A05	Side	**A05RBS**
	Foot	A05RBF
A12	Side	**A12RBS**
	Foot	A12RBF

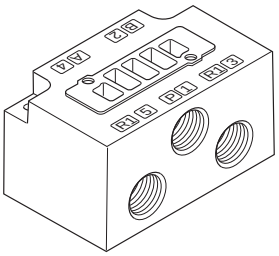
Kit Includes: (1) Bracket, (2) Screws



Subbases

Size	Port Size	Part Number
A05	1/8" NPT	**A05PBN1**
	1/8" BSPP "G"	A05PBG1
A12	1/4" NPT	**A12PBN2**
	1/4" BSPP "G"	A12PBG2

Kit Includes: (1) Subbase (Holddown Bolts and Gasket are included with valve)



A05PB

Individual Air Supply Spacer

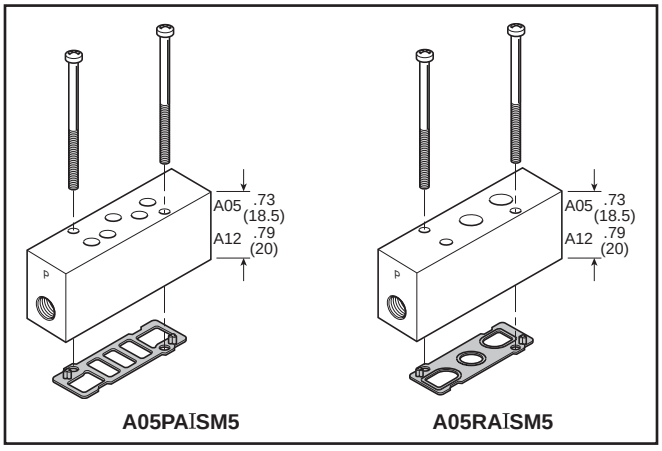
Mounts between valve and manifold. Supply from the manifold is blocked and only the valve mounted on the spacer receives the individual supply.

Size	Type	Port Size	Internal Pilot Part Number	External Pilot* Part Number
A05	Inline	M5	A05RAISM5	A05RAXISM5
	Subbase	M5	A05PAISM5	A05PAXISM5
A12	Inline	1/8" NPT	A12RAISN1	A12RAXISN1
	Subbase	1/8" NPT	A12PAISN1	A12PAXISN1

Can only be used on Collective wiring type manifolds.

* Can only be used with External Piloted valve. External pilot is located on the X Port of the manifold

Kit Includes: (1) Spacer, (2) Screws, and (1) Gasket



A05PAISM5 **A05RAISM5**

Individual Air Exhaust Spacer

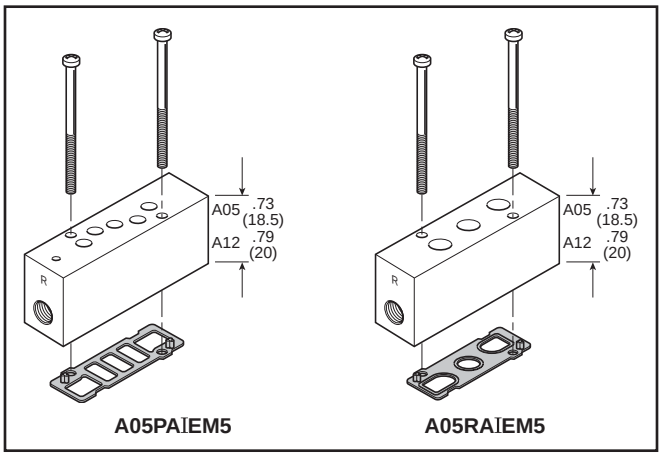
Mounts between valve and manifold. Exhaust from the manifold is blocked and only the valve mounted on the spacer has the individual exhaust.

Size	Type	Port Size	Internal Pilot Part Number	External Pilot* Part Number
A05	Inline	M5	A05RAIEM5	A05RAXIEM5
	Subbase	M5	A05PAIEM5	A05PAXIEM5
A12	Inline	1/8" NPT	A12RAIEN1	A12RAXIEN1
	Subbase	1/8" NPT	A12PAIE N1	A12PAXIEN1

Can only be used on Collective wiring type manifolds.

* Can only be used with External Piloted valve. External pilot is located on the X Port of the manifold

Kit Includes: (1) Spacer, (2) Screws, and (1) Gasket

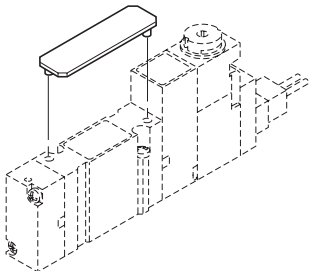


A05PAIEM5 **A05RAIEM5**

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Labeling Tag

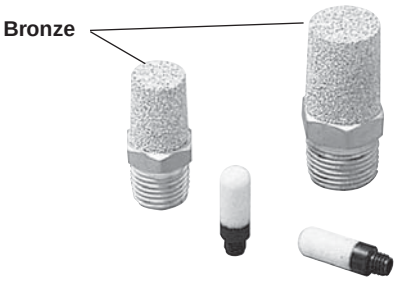
Size	Description	Part Number
A05 A12	White Label Tag	**A05PN**



Exhaust Mufflers

Male Thread	Model Number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**

P6M - Plastic; EM - Sintered Bronze



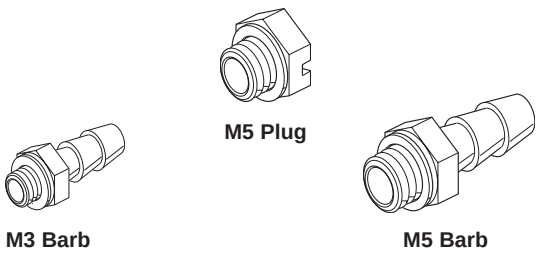
Plastic Silencers

Thread Size	Part Number		A (mm)	B (mm)
	NPT	BSPT "R"		
M5	**AS-5**		.43 (11)	.32 (8)
1/8"	**ASN-6**	**AS-6**	1.57 (40)	.63 (16)
1/4"	**ASN-8**	**AS-8**	2.56 (65)	.83 (21)



M3 & M5 Fittings

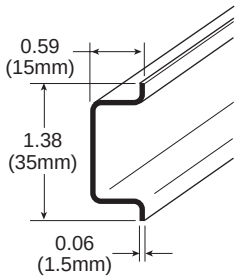
Description	Part Number
M5 Plug Fitting	**N220-1900J**
M3 to 3mm Barb	**BC03M3**
M3 to 4mm Barb	**BC04M3**
M5 to 3mm Barb	**BC03M5**



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DIN Rail

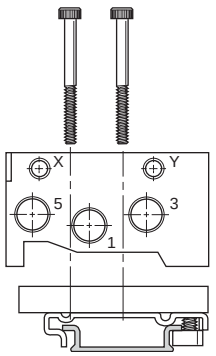
Part Number	Description
AM1DE200	6 Foot Rail Length

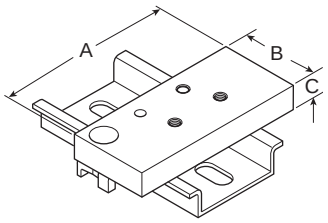


DIN Rail Hardware Kit

Size	Type	Part Number	Dimensions		
			A	B	C
A05	IEM	**MFUA05DB**	2.24	1.00	.31
	Subbase	**MFSA05DB**	(57)	(25)	(8)
A12	IEM	**MFUA12DB**	2.91	1.00	.39
	Subbase	**MFSA12DB**	(74)	(25)	(10)

Kit includes: (2) Screws, (2) Clamps

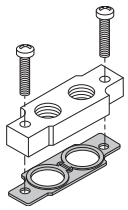




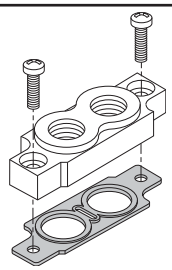
Replacement Kits

Cylinder Port Plate Kits

Size	Fitting	Part Number
A05	M5	**A05RABM5**
A12	1/8" NPT	A12RABN1
	1/8" BSPP "G"	A12RABG1



A05RABM5



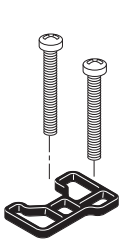
A12RABN1

Base Gasket Kits

Size	Type	Gasket Only	Screw
A00	Subbase	**A00SG**	**A00SS**
A05	Body Ported	**A05RG**	**A05RS**
	Subbase Int.	**A05PG**	**A05PS**
	Subbase Ext.	**A05PXG**	**A05PS**
A12	Body Ported	**A12RG**	**A12RS**
	Subase Int.	**A12PG**	**A12PS**
	Subbase Ext.	**A12PXG**	**A12PS**

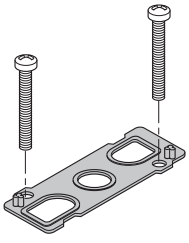
These are spare parts, mounting screws and gaskets included with valves.

A00SS



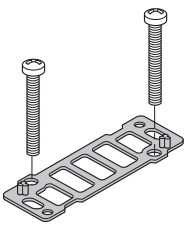
A00SG

Screws
A05RS



Gaskets
A05RG

A05PS



A05PXG

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Flow Rating (Cv)

Size	Port Size	Mounting Style	ANSI / (NFPA)		JIS Method	
			2-Position	3-Position	2-Position	3-Position
A00	M3	Subbase	.010	—	—	—
	M5	Subbase	.017	—	—	—
A00****J	M5	Subbase	.020	—	—	—
A05	M5	Inline	.18	.16	.22	.20
	M5	Subbase	.17	.16	.32	.32
A12	1/8" Ports	Inline	.47	.43	.48	.46
	1/8" Ports	Subbase	.44	.40	.61	.42

ANSI / (NFPA) T3.21.3-1990 standard for Cv measurement.

Response Time

Valve Size	Port Size	0 Cu. In. Test Chamber	
		Fill	Exhaust
2-Position Single Solenoid / Air Return			
A00	M3	.004	.006
A05	M5	.014	.025
A12	1/8"	.016	.030
2-Position Double Solenoid			
A00	M3	—	—
A05	M5	.011	.015
A12	1/8"	.010	.012
3-Position Double Solenoid			
A00	M3	—	—
A05	M5	.013	.017
A12	1/8"	.013	.014

Average Fill Time (Seconds): With 100 PSIG supply, time required to fill from 0-90 PSIG and exhaust from 100 PSIG to 10 PSIG is measured from instant of energizing, or de-energizing 24VDC solenoid. Times shown are average.

Tested per ANSI / (NFPA) T3.21.8.

Temperature Rating

Intermittent Duty (AC & DC Voltage):
32°F to 122°F (0°C to 50°C)
Voltage Rated +10 / –10%

Continuous Duty (DC Voltage Only):
32°F to 104°F (0°C to 40°C)
Voltage Rated +0 / –10%

Operating Pressure

Maximum: **4-Way:** 100 PSIG (690 kPa)
3-Way: 100 PSIG (690 kPa) NC*
70 PSIG (483 kPa) NO*

Minimum:

Description		Internal Pilot		External Pilot	
		PSIG	kPa	PSIG	kPa
4-Way	Single Solenoid	22	152	Vacuum	
				36	248
	Double Solenoid – 2-Position	15	104	Vacuum	
				36	248
	Double Solenoid – 3-Position	30	207	Vacuum	
				36	248
3-Way	A00 Series	Vacuum			

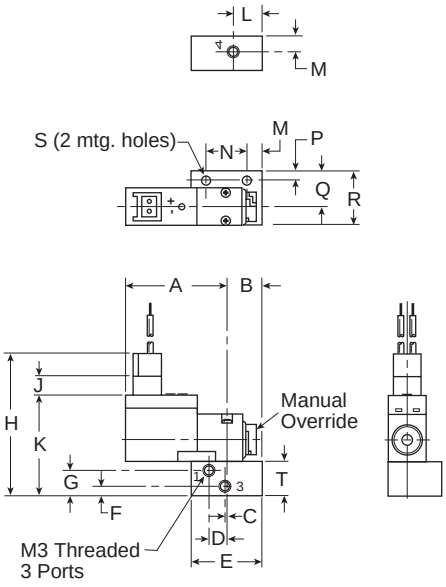
* When using vacuum and pressure on ports 1 & 3 – 85 PSIG (586 kPa) NC; 58 PSIG (400 kPa) NO (see page D100).

Solenoid Information

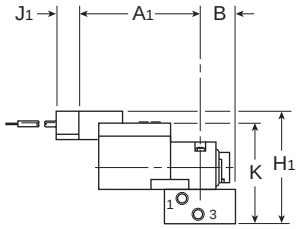
Power Consumption	**Standard**			
				With Indicator Light & Surge Suppressor
	DC		W	**0.6**
	AC	100V	VA	**1.2**
		110V	VA	**1.4**
	High Flow			
				With Indicator Light & Surge Suppressor
	DC		W	**0.91**
	AC	100V	VA	—
		110V	VA	—

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A00 Subbase



P & S Option



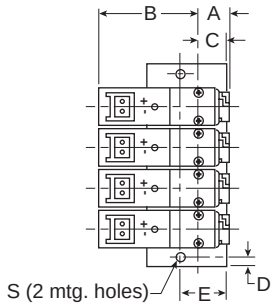
Q & B Option

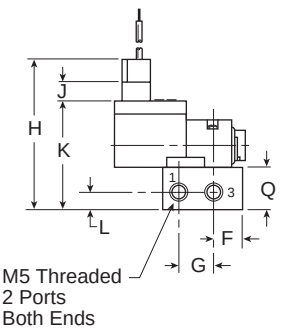
A00 - Subbase

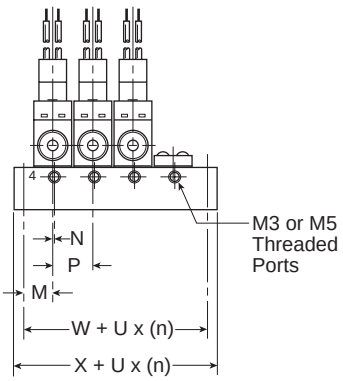
A	A1	B	C	D
1.00 (25)	1.18 (30)	.41 (11)	.015 (.4)	.17 (4)
E	**F**	**G**	**H**	**H1**
.79 (20)	.12 (3)	.28 (7)	1.54 (39)	1.38 (34)
J	**J1**	**K**	**L**	**M**
.24 (6)	.20 (5)	1.11 (28)	.32 (8)	.18 (5)
N	**P**	**Q**	**R**	**S**
.47 (12)	.10 (3)	.39 (10)	.59 (15)	.106 (2.7)
T				
.38 (10)				

Inches (mm)

A00 Manifold







A00 - Manifold

A	B	C	D	E
.36 (9)	1.00 (25)	.31 (8)	.10 (3)	.51 (13)
F	**G**	**H**	**J**	**K**
.31 (8)	.39 (10)	1.63 (42)	.20 (5)	1.22 (31)
L	**M**	**N**	**P**	**Q**
.20 (5)	.33 (9)	.02 (.6)	.41 (10.5)	.47 (12)
S	**U**	**X**	**W**	
.125 (3.2)	.41 (10.5)	.45 (11.5)	.26 (6.5)	

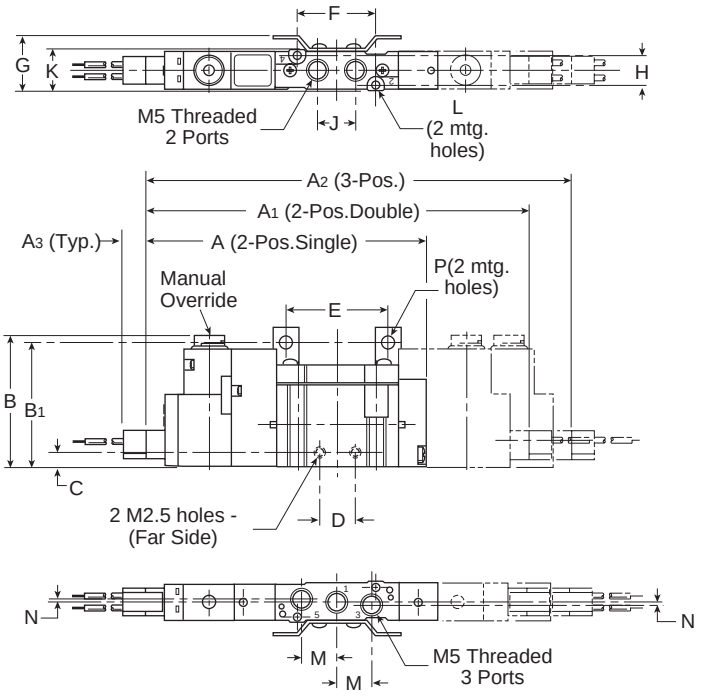
Inches (mm)

n = Number of stations.

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A05

Single & Double Operators – Inline



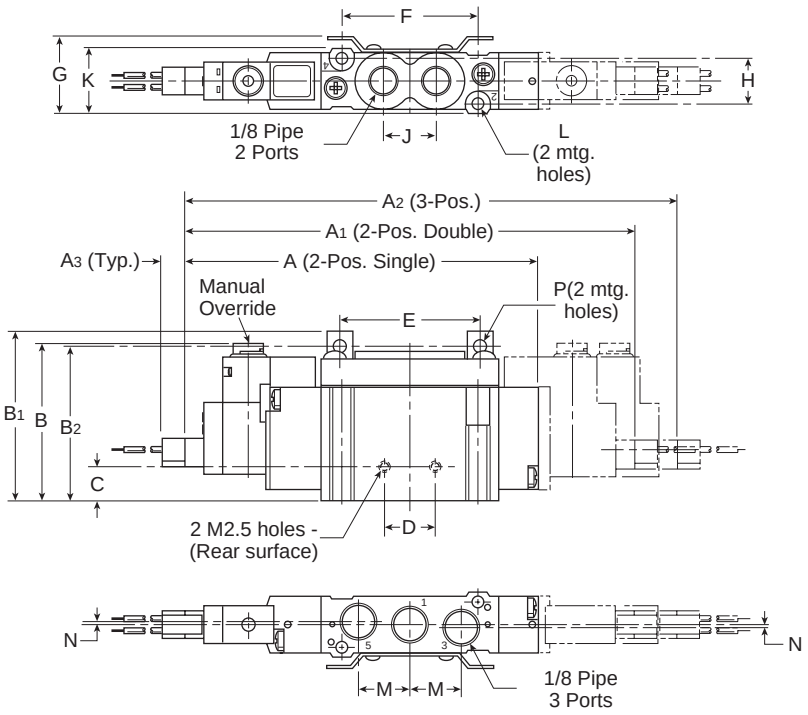
A05R – Inline

A	A1	A2	A3	B
2.91 (74)	3.94 (100)	4.25 (108)	.24 (6)	1.38 (35)
B1	**C**	**D**	**E**	**F**
1.30 (33)	.16 (4)	.38 (10)	1.06 (27)	.83 (21)
G	**H**	**J**	**K**	**L**
.57 (15)	.33 (9)	.40 (10)	.45 (11.4)	Ø .08 Ø (2.1)
M	**N**	**P**		
.37 (10)	.04 (1)	Ø .14 Ø (3.5)		

Inches (mm)

A12

Single & Double Operators – Inline



A12R – Inline

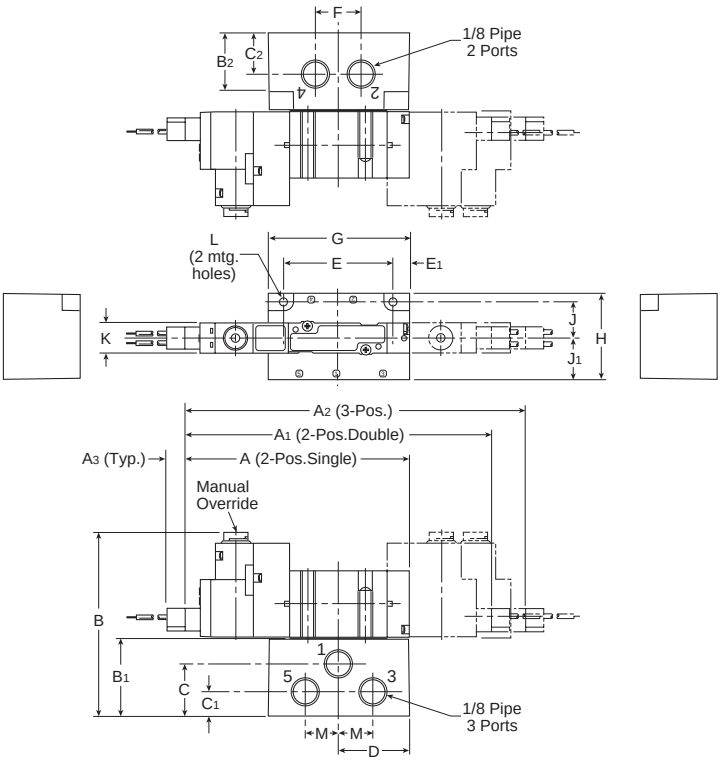
A	A1	A2	A3	B
3.68 (94)	4.69 (119)	5.12 (130)	.24 (6)	1.64 (42)
B1	**B2**	**C**	**D**	**E**
1.77 (45)	1.70 (43)	.35 (9)	.51 (13)	1.46 (37
F	**G**	**H**	**J**	**K**
1.42 (36)	.80 (20)	.47 (12)	.55 (14)	.68 (17)
L	**M**	**N**	**P**	
Ø .12 Ø (3.1)	.55 (14)	.03 (0.8)	Ø .14 Ø (3.5)	

Inches (mm)

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A05

Single & Double Operators – Subbase



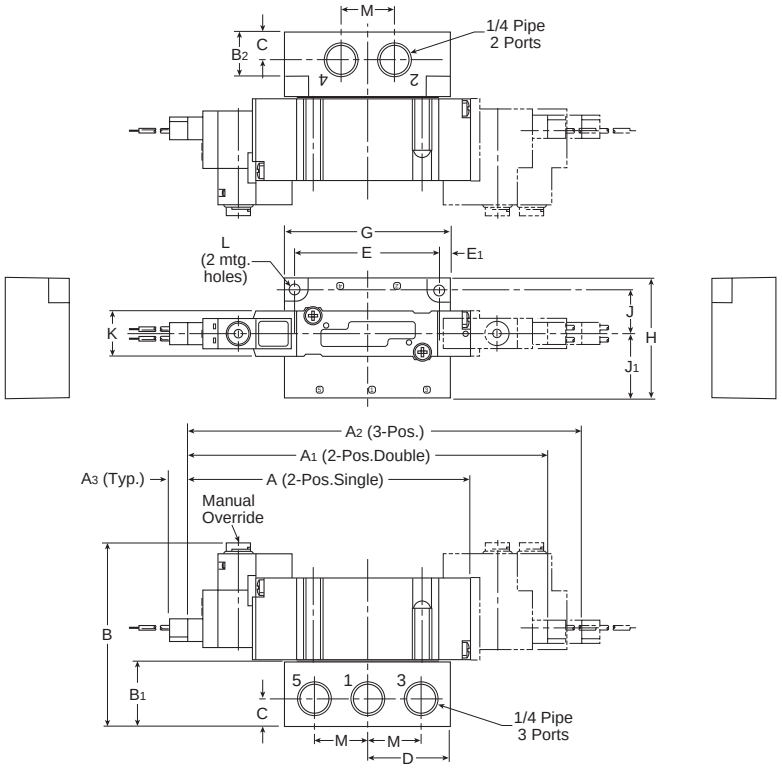
A05P – Subbase

A	A1	A2	A3	B
2.91 (74)	3.94 (100)	4.25 (108)	.24 (6)	2.35 (60)
B1	**B2**	**C**	**C1**	**C2**
.96 (25)	.75 (19)	.65 (17)	.30 (8)	.53 (14)
D	**E**	**E1**	**F**	**G**
.89 (23)	1.38 (35)	.20 (5)	.57 (15)	1.77 (45)
H	**J**	**J1**	**K**	**L**
.08 (28)	.45 (11.5)	.51 (13)	.39 (10)	Ø .13 Ø (3.2)
M				
.45 (12)				

Inches (mm)

A12

Single & Double Operators – Subbase



A12P – Subbase

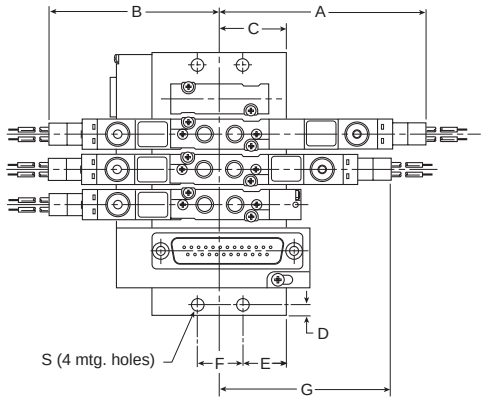
A	A1	A2	A3	B
3.68 (94)	4.69 (119)	5.12 (130)	.24 (6)	2.41 (61)
B1	**B2**	**C**	**D**	**E**
.87 (22)	.75 (19)	.37 (10)	1.10 (28)	1.89 (48)
E1	**G**	**H**	**J**	**J1**
.16 (4)	2.20 (56)	1.59 (41)	.57 (14.5)	.87 (22)
K	**L**	**M**		
.59 (15)	Ø .17 Ø (4.3)	.71 (18)		

Inches (mm)

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A05

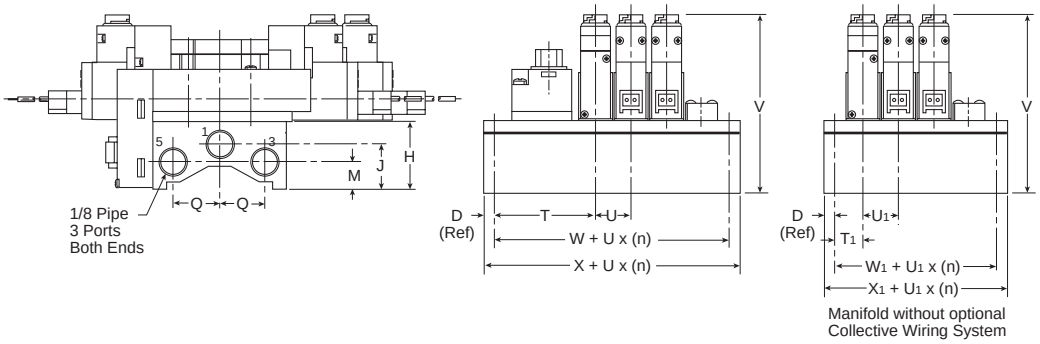
Manifold – Valve Inline



A05R - Manifold, Valve Inline

A	B	C	D	E	F
2.52 (64)	2.21 (56)	.94 (24)	.16 (4)	.61 (16)	.63 (16)
G	**H**	**J**	**M**	**Q**	**S**
2.21 (56)	.94 (24)	.61 (16)	.37 (10)	.63 (16)	Ø .18 Ø (4.5)
T	**T_1**	**U**	**U_1**	**V**	**W**
1.34 (34)	.51 (13)	.49 (12.5)	.41 (10.5)	2.32 (59)	1.36 (35)
W_1	**X**	**X_1**			
.37 (9.5)	167 (43)	.68 (17.5)			

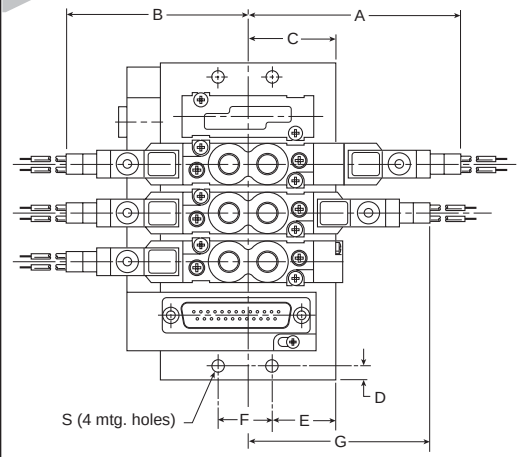
Inches (mm)



n = Number of stations.

A12

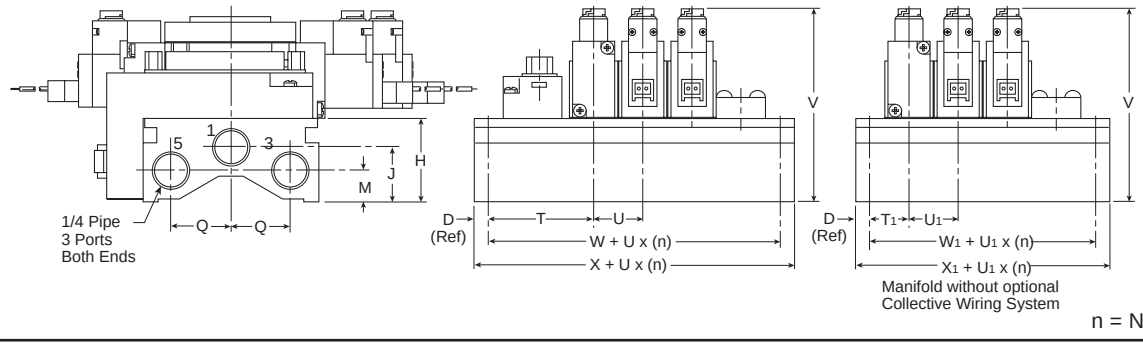
Manifold – Valve Inline



A12R - Manifold, Valve Inline

A	B	C	D	E	F
3.01 (77)	2.58 (66)	1.14 (29)	.20 (5)	.76 (19)	.77 (19.6)
G	**H**	**J**	**M**	**Q**	**S**
2.58 (66)	1.08 (28)	.71 (18)	.41 (11)	.77 (20)	Ø .18 Ø (4.5)
T	**T_1**	**U**	**U_1**	**V**	**W**
1.48 (38)	.51 (13)	.69 (17.5)	.63 (16)	2.74 (70)	1.34 (34)
W_1	**X**	**X_1**			
.39 (10)	1.73 (44)	.79 (20)			

Inches (mm)

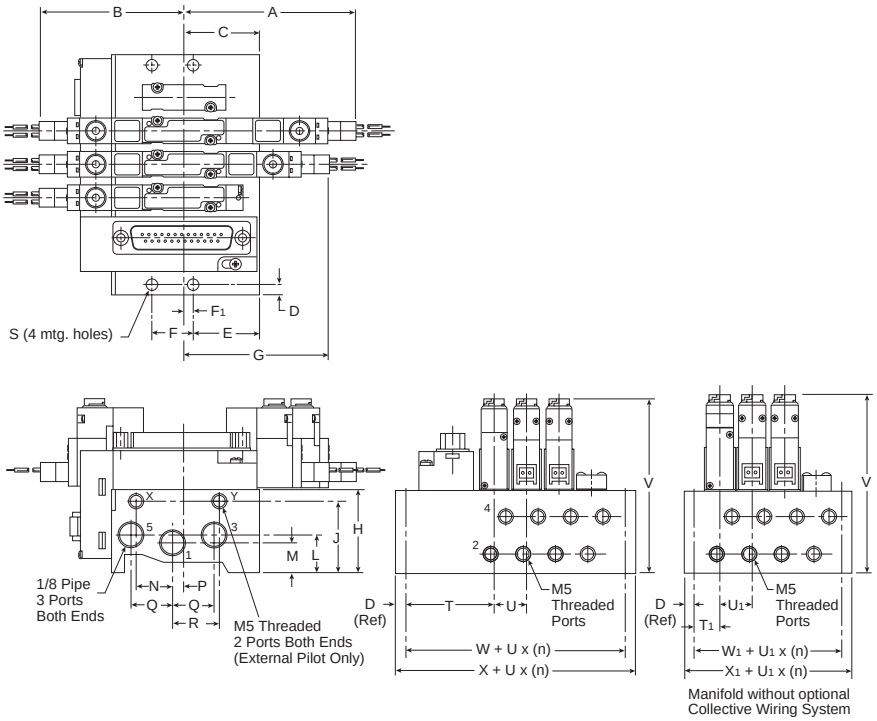


n = Number of stations.

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A05

Manifold – Side Ports



A05P – Manifold, Side Ports

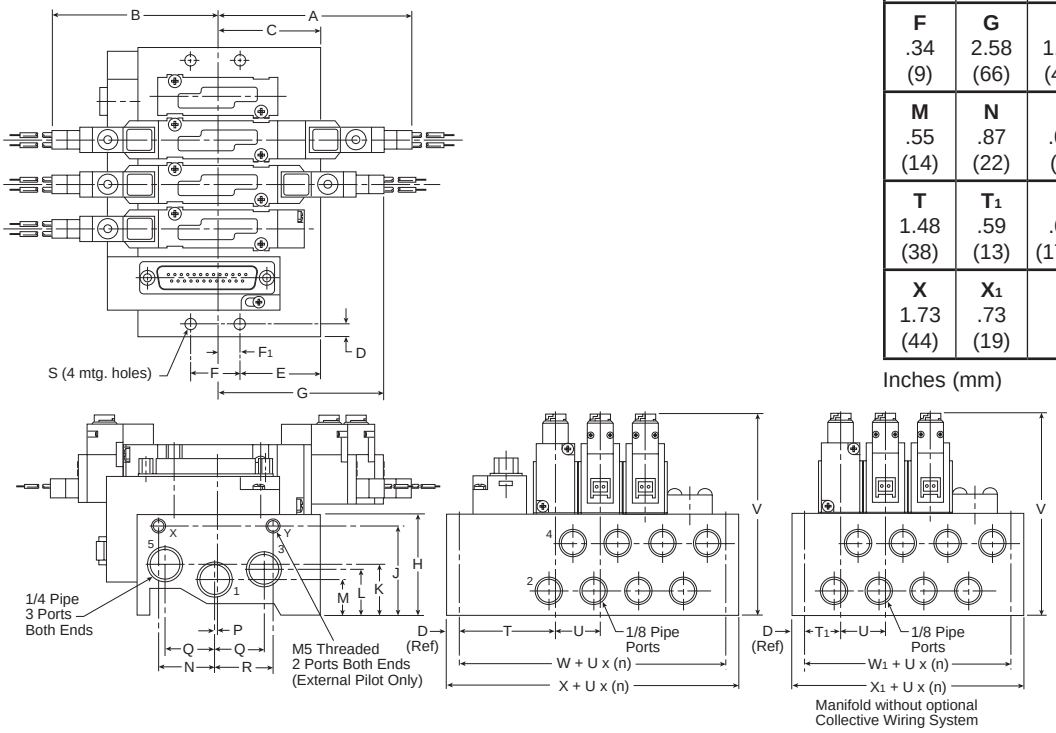
A	B	C	D	E	F
2.52 (64)	2.21 (56)	1.12 (29)	.16 (4)	1.00 (26)	.63 (16)
F_1	**G**	**H**	**J**	**L**	**M**
.19 (5)	2.21 (56)	1.26 (32)	1.08 (28)	.59 (15)	.45 (11.5)
N	**P**	**Q**	**R**	**S**	**T**
.55 (14)	.13 (3)	.63 (16)	.71 (18)	Ø .18 Ø (4.5)	1.34 (34)
T_1	**U**	**U_1**	**V**	**W**	**W_1**
.39 (10)	.49 (12.5)	.41 (10.5)	2.64 (67)	1.32 (34)	.37 (10)
X	**X_1**				
1.65 (42)	.67 (18)				

Inches (mm)

n = Number of stations.

A12

Manifold – Side Ports



A12P – Manifold, Side Ports

A	B	C	D	E	F
3.01 (77)	2.58 (66)	1.59 (40)	.20 (5)	1.25 (32)	.77 (20)
F	**G**	**H**	**J**	**K**	**L**
.34 (9)	2.58 (66)	1.57 (40)	1.38 (35)	.79 (20)	.71 (18)
M	**N**	**P**	**Q**	**R**	**S**
.55 (14)	.87 (22)	.04 (1)	.77 (20)	.91 (23)	Ø .18 Ø (4.5)
T	**T_1**	**U**	**V**	**W**	**W_1**
1.48 (38)	.59 (13)	.69 (17.5)	3.09 (79)	1.34 (34)	.33 (9)
X	**X_1**				
1.73 (44)	.73 (19)				

Inches (mm)

n = Number of stations.

Parker Hannifin Corporation
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"N" Series

High Speed
Inline Poppet Valves
2 & 3-Way

Section D
www.parker.com/pneu/n



Basic Valve Functions D120
"N" Series Basic Features D121
Common Part Numbers D122-D123
Model Number Index D124-D125
Technical Information
- Pilot Supply D126-D127
- Electrical Connections D128
- Solenoid Characteristics D129

Solenoid & Parts Lists D130-D132
- Coil Information D133

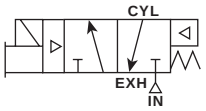
Time Delay Modules D134

Dimensions
- Single Solenoid D135-D138
- Remote Operated D139-D140

BOLD ITEMS ARE MOST POPULAR.

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Single Solenoid 3-Way, 2-Position NC (NNP)



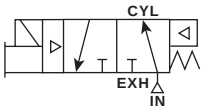
Normal position – Pressure at inlet port marked "IN" blocked. Cylinder port connected to exhaust port (3-Way).

Energized position – Solenoid operator energized, pressurized "IN" port connects to cylinder port. Exhaust port is blocked (3-Way).

⚠ **CAUTION:**
These are poppet valves, ***Do Not*** restrict the inlet.

Note: For 2-Way, Normally Closed, Exhaust Port is Plugged.

Single Solenoid 3-Way, 2-Position NO (NP)



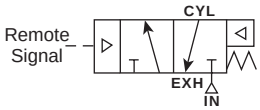
Normal position – Pressure at inlet port marked "IN" open to cylinder. Exhaust port is blocked (3-Way).

Energized position – Solenoid operator energized. Pressure at inlet port marked "IN" is blocked. Cylinder open to exhaust (3-Way).

⚠ **CAUTION:**
These are poppet valves, ***Do Not*** restrict the inlet.

Note: For 2-Way, Normally Open, Exhaust Port is Plugged.

Single Remote Pilot 3-Way, 2-Position, NC (NNP)



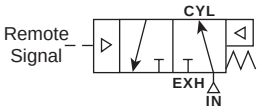
Normal position –
Pressure at inlet port marked "IN" blocked. Cylinder port connected to exhaust port (3-Way).

Operated position – With maintained air signal at pilot port, pressurized "IN" port connects to cylinder port. Exhaust port is blocked (3-Way).

⚠ **CAUTION:**
These are poppet valves, ***Do Not*** restrict the inlet.

Note: For 2-Way, Normally Closed, Exhaust Port is Plugged.

Single Remote Pilot 3-Way, 2-Position, NO (NP)



Normal position –
Pressure at inlet port marked "IN" open to cylinder. Exhaust port is blocked (3-Way).

Operated position – With maintained air signal at pilot port, pressure at inlet port marked "IN" is blocked. Cylinder open to exhaust (3-Way).

⚠ **CAUTION:**
These are poppet valves, ***Do Not*** restrict the inlet.

Note: For 2-Way, Normally Open, Exhaust Port is Plugged.

For Information on Options that are no longer available and the Suggested Cross Reference or Kit Info, refer to www.parker.com/pneumatic/classicvalves & Catalog N Series-E/USA

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www.parker.com/pneumatics

"N" Series

Specifications

- 2-Way NC
- 3-Way NO & NC
- Selector Function

Flow

- 3/8" Body – 3.0 to 4.4 Cv
- 3/4" Body – 9.0 to 11.0 Cv
- 1-1/4" Body – 20.0 to 30.0 Cv

Port Sizes

- 3/8" Body – 3/8", 1/2" NPT
- 3/4" Body – 1/2", 3/4", 1" NPT
- 1-1/4" Body – 1", 1-1/4", 1-1/2" NPT
- BSPP "G" Threads Available

Operating Pressure

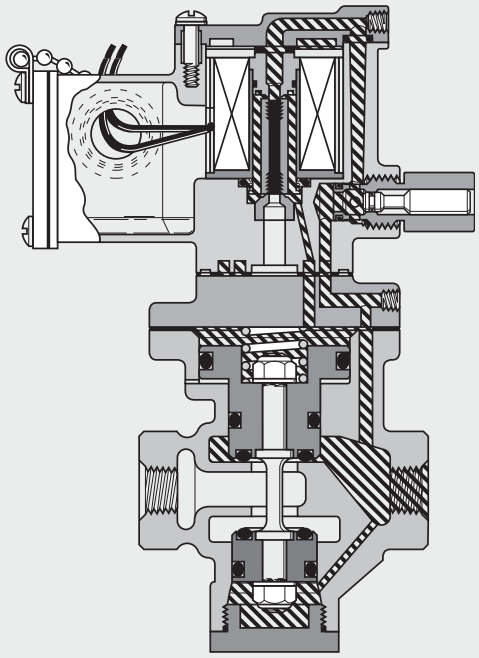
- 30 to 250 PSI (0 to 1000 kPa)
- Vacuum with External Pilot

Features

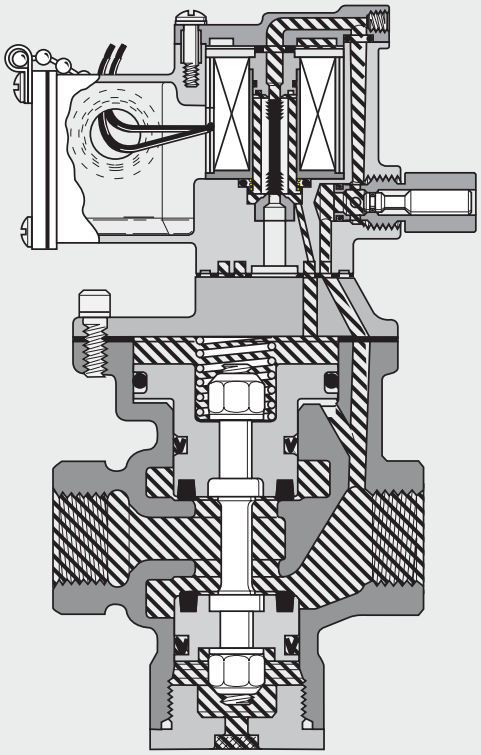
- Continuous Duty Rated Option
- Non-Lube Service
- Hi-Flow, Short Stroke Poppet
- Indicator Lights Available

Certification / Approval

- Approved to be CE Marked (Standard L-Pilot & P-Pilot)
- NEMA 4 Option
- Hazardous Duty Option



3/8" Solenoid Pilot De-Energized
Normally Closed



1-1/4" Solenoid Pilot De-Energized
Normally Open

Pressure **Exhaust**

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Single Solenoid Normally Closed

2-Way, 2-Position
3-Way, 2-Position



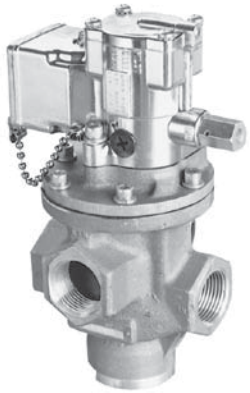
3/8" & 3/4" Body Size

	2-Way Normally Closed	3-Way Normally Closed	In/Cyl Ports	Exh. Port
3/8"	N315 39 045 53	N355 39 045 53	3/8"	1/2"
	N315 49 045 53	N355 49 045 53	1/2"	1/2"
3/4"	N315 59 045 53	N355 59 045 53	1/2"	3/4"
	N315 69 045 53	N355 69 045 53	3/4"	1"
	N315 79 045 53	N355 79 045 53	1"	1"

Locking Manual Override, Internal "P" Pilot 140 PSI, Standard Service, Junction Box w/ Light, 120VAC.

Single Solenoid Normally Open

3-Way, 2-Position



3/8" & 3/4" Body Size

	3-Way Normally Open	In/Cyl Ports	Exh Port
3/8"	N375 39 045 53	3/8"	1/2"
	N375 49 045 53	1/2"	1/2"
3/4"	N375 59 045 53	1/2"	3/4"
	N375 69 045 53	3/4"	1"
	N375 79 045 53	1"	1"

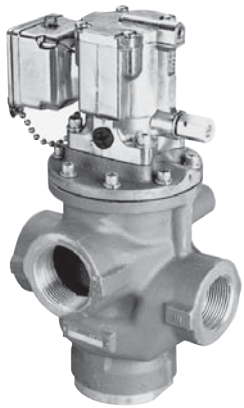
Locking Manual Override, Internal "P" Pilot 140 PSI, Standard Service, Junction Box w/ Light, 120VAC.



1-1/4" Body Size

	2-Way Normally Closed	3-Way Normally Closed	In/Cyl Ports	Exh. Port
1-1/4"	N325 79 047 53	N365 79 047 53	1"	1-1/4"
	N325 89 047 53	N365 89 047 53	1-1/4"	1-1/2"
	N325 99 047 53	N365 99 047 53	1-1/2"	1-1/2"

Locking Manual Override, Internal "P" Pilot 125 PSI, Standard Service, P-Pilot Junction Box w/ Light, 120VAC.



1-1/4" Body Size

	3-Way Normally Open	In/Cyl Ports	Exh. Port
1-1/4"	N385 79 047 53	1"	1-1/4"
	N385 89 047 53	1-1/4"	1-1/2"
	N385 99 047 53	1-1/2"	1-1/2"

Locking Manual Override, Internal "P" Pilot 125 PSI, Standard Service, P-Pilot Junction Box w/ Light, 120VAC.

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Single Remote Pilot Normally Closed

2-Way, 2-Position
3-Way, 2-Position



3/8" & 3/4" Body Size

	2-Way Normally Closed	3-Way Normally Closed	In/Cyl Ports	Exh. Port
3/8"	N314 31 091	N354 31 091	3/8"	1/2"
	N314 41 091	N354 41 091	1/2"	1/2"
3/4"	N314 51 091	N354 51 091	1/2"	3/4"
	N314 61 091	N354 61 091	3/4"	1"
	N314 71 091	N354 71 091	1"	1"

1/4" NPT Remote Pilot Port with Internal Pilot Return.

Single Remote Pilot Normally Open

3-Way, 2-Position



3/8" & 3/4" Body Size

	3-Way Normally Open	In/Cyl Ports	Exh. Port
3/8"	N374 31 091	3/8"	1/2"
	N374 41 091	1/2"	1/2"
3/4"	N374 51 091	1/2"	3/4"
	N374 61 091	3/4"	1"
	N374 71 091	1"	1"

1/4" NPT Remote Pilot Port with Internal Pilot Return.



1-1/4" Body Size

	2-Way Normally Closed	3-Way Normally Closed	In/Cyl Ports	Exh. Port
1-1/4"	N324 71 091	N364 71 091	1"	1-1/4"
	N324 81 091	N364 81 091	1-1/4"	1-1/2"
	N324 91 091	N364 91 091	1-1/2"	1-1/2"

1/4" NPT Remote Pilot Port with Internal Pilot Return.



1-1/4" Body Size

	3-Way Normally Open	In/Cyl Ports	Exh. Port
1-1/4"	N384 71 091	1"	1-1/4"
	N384 81 091	1-1/4"	1-1/2"
	N384 91 091	1-1/2"	1-1/2"

1/4" NPT Remote Pilot Port with Internal Pilot Return.

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"N" Series 3/8", 3/4" & 1-1/4" Body Sizes - Solenoid 'L' Pilot

N	315	3	9	0	45	53	—

Valve Function - Solenoid	
3/8" & 3/4" Body	
2-Way, Normally Closed	**315**
3-Way, Normally Closed	**355**
3-Way, Normally Open	**375**
1-1/4" Body	
2-Way, Normally Closed	**325**
3-Way, Normally Closed	**365**
3-Way, Normally Open	**385**

Port Size / Thread Type	
3/8" Body Size	
3/8" Inlet & Cyl - 1/2" Exhaust - NPT	3
1/2" Inlet & Cyl - 1/2" Exhaust - NPT	4
1/2" Inlet & Cyl - 1/2" Exhaust - BSPP	N
3/4" Body Size	
1/2" Inlet & Cyl - 3/4" Exhaust - NPT	5
3/4" Inlet & Cyl - 1" Exhaust - NPT	**6**
3/4" Inlet & Cyl - 1" Exhaust - BSPP	Q
1" Inlet & Cyl - 1" Exhaust - NPT	7
1-1/4" Body Size	
1" Inlet & Cyl - 1 1/4"Exhaust - NPT	**7**
1-1/4" Inlet & Cyl – 1-1/2" Exhaust - NPT	**8**
1-1/4" Inlet & Cyl – 1-1/2" Exhaust - BSPP	S*
1-1/2" Inlet & Cyl – 1-1/2" Exhaust - NPT	**9**
1-1/2" Inlet & Cyl – 1-1/2" Exhaust - BSPP	T*

* Not available with Valve Function 325.

Note: BSPP is to the ISO 228 Standard, and requires an R-BSPT male fitting.

Solenoid Enclosure	
Basic Pilot	**1**
Basic Pilot NLMO	2
Basic Pilot LMO	3
Junction Box NLMO	**5**
Junction Box LMO	6
Junction Box NLMO w/ Light	**8**
Junction Box LMO w/ Light	**9**
Basic Pilot Ext. LMO	W
JIC NLMO w/Light - 3-Pin Automotive	E
JIC NLMO w/ Light - 4-Pin M12	J
JIC NLMO w/ Light - 5-Pin Automotive	N

Options	
Blank	**None**
L	72" Leads - '51' Voltage Code Only
C	Chrysler Wiring - Enclosure 'J' & 'N'
F	Ford Wiring - Enclosure 'E', 'J', & 'N'
G	GM wiring - Enclosure 'J' & 'N'

"L" Pilot Code						
Code	Voltage			Solenoid Enclosure Options		
	AC 60hz	AC 50hz	DC	Standard Duty (01, 45)	Cont. Duty (04, 48)	200 PSI (46)
42	24	24	6	5, 6	6	
45			12	1, 5, 6		
49			**24**	**1, 2, 3, 5, 6, 8, 9, W**	**6, 8, 9**	**9**
51			48	1		
53	**120**	**110**		**1, 2, 3, 5, 6, 8, 9, E, N, W**	**1, 6, 8, 9, N**	**8, 9, E**
57	240	220		1, 3, W		
61			120	5, 6		
79			24	E, J	E, J	E, J

"L" Pilot Configuration	
01*	External Pilot, Std Service, 140 PSI
04*	External Pilot, Cont Duty, 140 PSI
45	**Internal Pilot, Std Service, 140 PSI**
46	Internal Pilot, Std Service, 200 PSI
48	**Internal Pilot, Cont Duty, 140 PSI**

* Not available with Valve Function 325, 365, and 385 (1-1/4" Body).

Solenoid Type	
0	**Standard**
5*	Hazardous Duty
8*	NEMA 4 Solenoid

* Available with Solenoid Enclosure 2 & 3, 'L' Pilot Configuration 04 & 48, and Voltage 49 & 53 ONLY.

BOLD OPTIONS ARE MOST POPULAR.

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"N" Series 1-1/4" Body Sizes - Solenoid Hi-Flow 'P' Pilot

N 365 8 9 0 47 53

Valve Function - Solenoid	
1-1/4" Body	
2-Way, Normally Closed	**325**
3-Way, Normally Closed	**365**
3-Way, Normally Open	**385**

Port Size / Thread Type	
1-1/4" Body Size	
1" Inlet & Cyl - 1 1/4"Exhaust - NPT	**7**
1-1/4" Inlet & Cyl – 1-1/2" Exhaust - NPT	**8**
1-1/4" Inlet & Cyl – 1-1/2" Exhaust - BSPP	S
1-1/2" Inlet & Cyl – 1-1/2" Exhaust - NPT	**9**
1-1/2" Inlet & Cyl – 1-1/2" Exhaust - BSPP	T

Note: BSPP is to the ISO 228 Standard, and requires an R-BSPT male fitting.

Solenoid Enclosure	
Junction Box NLMO	5
Junction Box LMO	6
Junction Box NLMO w/ Light	**8**
Junction Box LMO w/ Light	**9**

Solenoid Type	
0	**Standard**

"P" Pilot Configuration	
02	External Pilot, Std Service, 125 PSI
47	**Internal Pilot, Std Service, 125 PSI**

"P" Pilot Code				
	Voltage			Enclosure Options
Code	AC 60hz	AC 50hz	DC	Standard Duty
49			24	5, 6
53	**120**	**110**		**5, 6, 8, 9**

"N" Series 3/8", 3/4" & 1-1/4" Body Sizes - Remote Pilot

N 314 3 0 91

Valve Function - Solenoid	
3/8" & 3/4" Body	
2-Way, Normally Closed	**314**
3-Way, Normally Closed	**354**
3-Way, Normally Open	**374**
1-1/4" Body	
2-Way, Normally Closed	**324**
3-Way, Normally Closed	**364**
3-Way, Normally Open	**384**

Port Size / Thread Type	
3/8" Body Size	
3/8" Inlet & Cyl - 1/2" Exhaust - NPT	**3**
1/2" Inlet & Cyl - 1/2" Exhaust - NPT	**4**
1/2" Inlet & Cyl - 1/2" Exhaust - BSPP	N
3/4" Body Size	
1/2" Inlet & Cyl - 3/4" Exhaust - NPT	5
1/2" Inlet & Cyl - 3/4" Exhaust - BSPP	P
3/4" Inlet & Cyl - 1" Exhaust - NPT	**6**
3/4" Inlet & Cyl - 1" Exhaust - BSPP	Q
1" Inlet & Cyl - 1" Exhaust - NPT	7
1-1/4" Body Size	
1" Inlet & Cyl - 1 1/4"Exhaust - NPT	**7**
1-1/4" Inlet & Cyl – 1-1/2" Exhaust - NPT	**8**
1-1/4" Inlet & Cyl – 1-1/2" Exhaust - BSPP	S*
1-1/2" Inlet & Cyl – 1-1/2" Exhaust - NPT	**9**
1-1/2" Inlet & Cyl – 1-1/2" Exhaust - BSPP	T*

* Not available with Valve Function 325.

Note: BSPP is to the ISO 228 Standard, and requires an R-BSPT male fitting.

Pilot Configuration	
089	External Pilot Return
091	**Internal Pilot Return**

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Operating Pressure

Internal Pilot – Solenoid Valves

3/8" & 3/4" Body

- 20 to 140 PSIG (standard)

1-1/4" Body

- 25 to 140 PSIG (200 PSIG option available)

Internal Pilot – Remote Pilot Valve

Operating Pressure Limitations			
Air Pressure Thru Valve	Remote Pilot Pressure (PSI)		
	3/8" Basic	3/4" Basic	1-1/4" Basic
25 PSI	30-250	30-250	30-250
50 PSI	50-250	50-250	50-250
75 PSI	70-250	75-250	70-250
100 PSI	95-250	95-250	90-250
150 PSI	140-250	145-250	130-250
200 PSI	175-250	185-250	175-250
250 PSI	215-250	230-250	205-250

Solenoid Valves: External Supply

3/8" & 3/4" Basic

Air Pressure Thru Valve (PSI)	External Pilot Pressure Required (PSI)*	
	3/8" Basic	3/4" Basic
25 PSI	35-200	35-200
50 PSI	45-200	40-200
75 PSI	55-200	50-200
100 PSI	65-200	65-200

Vacuum up to 1" HG, less than a perfect vacuum.

* With 200 PSI option.

Do not exceed 140 PSI with standard pilots.



3/8" & 3/4" Body
Single Solenoid External Pilot
Normally Closed



3/8" & 3/4" Body
Single Solenoid External Pilot
Normally Open





3/8" & 3/4" Body **1-1/4" Body**
Remote Operated External Return
Normally Closed





3/8" & 3/4" Body **1-1/4" Body**
Remote Operated External Return
Normally Open

External Pilot supply should be used when the main valve needs to operate below the Minimum Operating Pressure or at Vacuum. A Selector function can also be achieved (pressurizing the IN and EXHAUST ports) with an External Pilot Supply. Refer to charts for required external pilot pressure.

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Flow

Basic Valve Size	Inlet Port Size	Exhaust Port Size	Cv Inlet to Cylinder	Cv Cylinder to Exhaust
3/8" 3-Way Normally Closed	3/8" Pipe	1/2" Pipe	3.6	4.2
	1/2" Pipe	1/2" Pipe	3.8	4.3
3/8" 3-Way Normally Open	3/8" Pipe	1/2" Pipe	3.6	4.1
	1/2" Pipe	1/2" Pipe	3.9	4.5
3/4" 3-Way Normally Closed	1/2" Pipe	3/4" Pipe	8.2	9.2
	3/4" Pipe	1" Pipe	9.3	10.8
3/4" 3-Way Normally Open	1/2" Pipe	3/4" Pipe	7.7	6.6
	3/4" Pipe	1" Pipe	9.6	11.4
1-1/4" 3-Way Normally Closed	1" Pipe	1-1/4" Pipe	19.5	23.5
	1-1/4" Pipe	1-1/2" Pipe	23.3	26.9
	1-1/2" Pipe	1-1/2" Pipe	23.3	26.9
1-1/4" 3-Way Normally Open	1" Pipe	1-1/4" Pipe	20.4	24.8
	1-1/4" Pipe	1-1/2" Pipe	25.0	29.1
	1-1/2" Pipe	1-1/2" Pipe	26.7	29.9

Temperature Rating

Operating Temperature Range:

Operator Type	Duty Cycle*	Minimum Ambient Temperature	Maximum Ambient Temperature
Standard Service	Intermittent	0°F (-18°C)	125°F (52°C)
Solenoid	Continuous	0°F (-18°C)	100°F (38°C)
Special Service	Intermittent	0°F (-18°C)	125°F (52°C)
Solenoid	Continuous	0°F (-18°C)	125°F (52°C)
Remote Pilot	Not Applicable	0°F (-18°C)	200°F (93°C

* Applications with pilot valves energized for ten (10) minutes or longer with a duty cycle greater than 70% are considered to be continuously energized.

$$\text{Duty cycle} = \frac{\text{Time energized}}{\text{Time energized + time off}} \times 100\% = \%\ \text{Duty Cycle}$$

Materials of Construction

Valve Body .....Cast Aluminum

Poppet Assembly..... Aluminum and Stainless Steel

Pilot Valve.....Zinc, Stainless Steel, Brass, Copper, Zinc Plated Steel

Seals .....Nitrile

Selection

Although reasonable safety factors are designed into each speed poppet valve, it is important that application requirements do not exceed the rated limitation of the valve. This precaution insures a sufficient safety factor.

Life Expectancy

Normal multimillion cycle life expectancy of high speed poppet series valves is based on the use of properly filtered and lubricated air at room temperature. In actual laboratory tests, the high speed poppet valves provide maintenance-free service life in excess of 20,000,000 cycles.

Lubrication

The high speed poppet valves are pre-lubricated to permit use with non-lubricated air. However, air should be lubricated to assure maximum seal life.

F442 lubricating oil is recommended. This oil is specially formulated to provide peak performance and maximum service life from air-operated equipment.

Other good air line lubricating oils may be used provided they atomize readily and are of the medium aniline type. Aniline point range must be between 180°F - 220°F. Viscosity SUS @ 100°F of 140-170. High aniline oils will shrink seals; low aniline oils will swell seals, reducing operating life and expectancy.

Installation

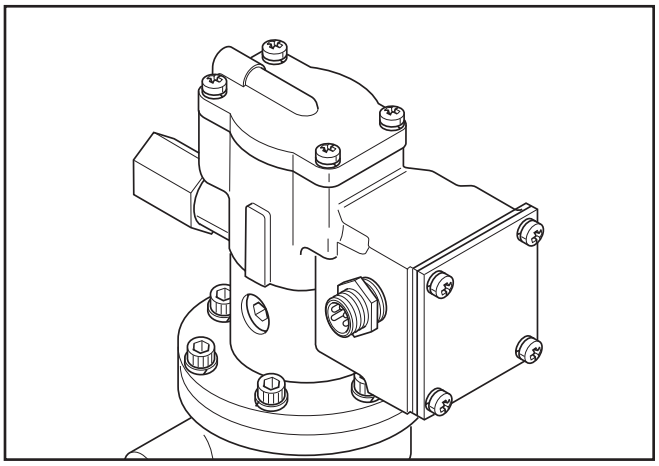
Valves should be installed with reasonable accessibility for service whenever possible. Care should be taken to hold piping length to a minimum and to protect valves from exposure to extreme heat, dirt and moisture. Piping should be clean and clear of dirt and chips. Threads should be the correct size and undamaged. Pipe joint compound should be used sparingly and only on pipe threads, never in the valve body. Care should be taken in installation to avoid undue strain on valve.

For the small port size options, it is recommended that an air reservoir is located close to the valve inlet as to not starve the valve of air pressure.

⚠ ***CAUTION:*** **DO NOT RESTRICT THE INLET TO POPPET VALVES**

Restriction of the inlet can starve the air supply to the pilot section of internally piloted poppet valves and result in slow shifting or failure of the valve to shift properly. Always connect the supply line directly to the inlet of the valve using the full pipe size of the valve inlet. Never use a quick coupling to connect a poppet valve to the air supply. On valves with a small inlet port, use of an upstream surge tank may be required at lower operating pressures to insure an adequate air supply and proper operation.

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Automotive Connections

- 3-Pin & 5-Pin "Mini" (7/8 UNF Thread)
- 4-Pin "Micro" (M12 Thread)

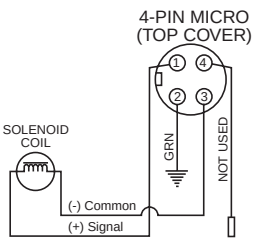
Solenoid Configurations

"E", "J", "N"

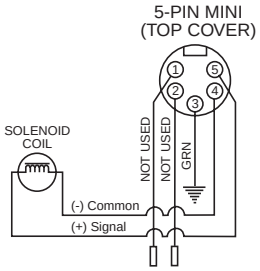
Wiring Connections

Chrysler Connection

4-Pin Male/Single Solenoid
(Encl. Option J, Wiring Option C)

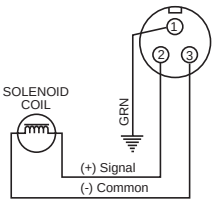


5-Pin Male/Single Solenoid
(Encl. Option N, Wiring Option C)

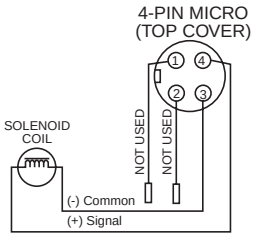


Ford Connection

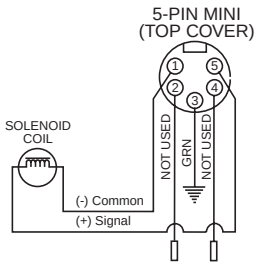
3-Pin Male/Single Solenoid
(Encl. Option E, Wiring Option F)



4-Pin Male/Single Solenoid
(Encl. Option J, Wiring Option F)

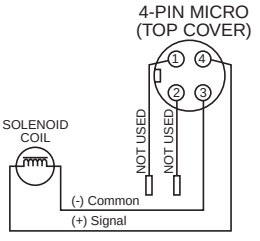


5-Pin Male/Single Solenoid
(Encl. Option N, Wiring Option F)

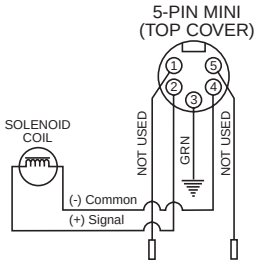


GM Connection

4-Pin Male/Single Solenoid
(Encl. Option J, Wiring Option G)



5-Pin Male/Single Solenoid
(Encl. Option N, Wiring Option G)



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Solenoid Characteristics Chart

Voltage Range +10/-15% of Nominal

3/8" & 3/4" Basic – L-Pilot					
Voltage/ Cycles	**Amps Inrush**	**Amps Holding**	**Resistance Ohms**	**Watts**	**Insulation Class**
120/60VAC	.29	.18	122	12	B
110/50VAC	.21	.14	122	12	B
240/60VAC	.18	.12	610	12	B
24/60VAC	1.6	1.0	4.5	9.5	B
24/50VAC	1.2	.75	6.4	9.5	B
6VDC	–	1.4	4.5	7.6	B
12VDC	–	.66	17.7	9	B
24VDC	–	.32	71	9	B
48VDC	–	.22	216	11	B

1-1/4" Basic – P-Pilot					
Voltage/ Cycles	**Amps Inrush**	**Amps Holding**	**Resistance Ohms**	**Watts**	**Insulation Class**
120/60VAC	.46	.25	35	18.5	B
110/50VAC	.36	.19	48	12	B
230/60VAC	.26	.15	125	19.5	B
220/50VAC	.20	.11	191	15	B
24/60VAC	2.3	1.4	1.3	20	B
24/50VAC	1.6	.9	2.1	12	B
12VDC	–	.7	17	8	B
24VDC	–	.33	68	8	B
48VDC	–	.16	275	7.5	B

NOTE: Continuous duty type service is for applications where pilot valve is energized more than ten (10) minutes.

Hazardous Duty Solenoid Listing

Valves with solenoid operators designed for hazardous locations are UL & CSA Approved as follows:

National Electric Code	Ambient Conditions	NEMA Classification
Class I Div. 1 Group C	Ethyl, Ether, Etc. Gases & Vapors	VII (7)
Class I Div. 1 Group D	Gasoline, Etc. Gases & Vapors	VII (7)
Class I Div. 2 Group B	Butadiene, Etc., Liquid, Fluid or Vapor Normally Contained, or Atmosphere Ventilated	VII (7)
Class II Div. 1 Group E	Metal Dust	IX (9)
Class II Div. 1 Group F	Coal, Coke, Carbon Black Dust	IX (9)
Class II Div. 1 Group G	Flour, Starch, Grain Dust	IX (9)

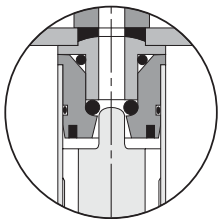
See Article 500 – Hazardous (Classified) Locations, National Electric Code.

Continuous Duty Pilots

Continuous duty pilots are designed for applications where cycling is infrequent and the pilot is to be energized for indefinite periods of time . . . hours, days or weeks. Typical uses include fail-safe or emergency shutdown circuits where the pilot is to be energized and the valve open as long as the main control is "live" in order to shut off air to equipment in the event of power failure.

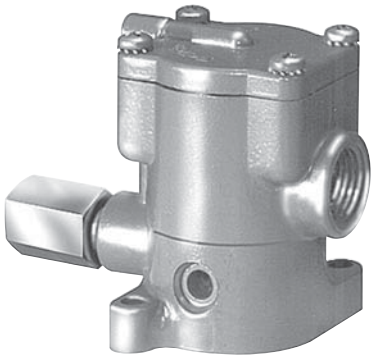
The Continuous duty pilot operates satisfactorily in ambient temperatures up to 125°F, even when continuously energized and without the benefit of the cooling air which normally flows through the pilot during frequent cycling. Under certain conditions, satisfactory operation may be obtained at ambient temperatures above 125°F. CONSULT FACTORY.

Incorporating the performance-proven design features of the standard L-Pilot, the continuous duty pilot utilizes a bullet-shaped stem on the upper end of the plunger. This bullet-shaped stem, seating in a high-temperature rubber o-ring, provides both a bubble-tight seal and positive release.

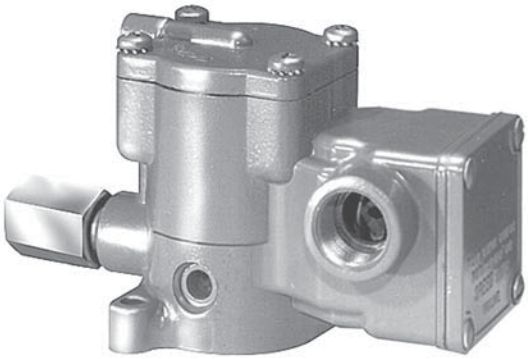


Continuous Duty Pilot

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Basic L-Pilot

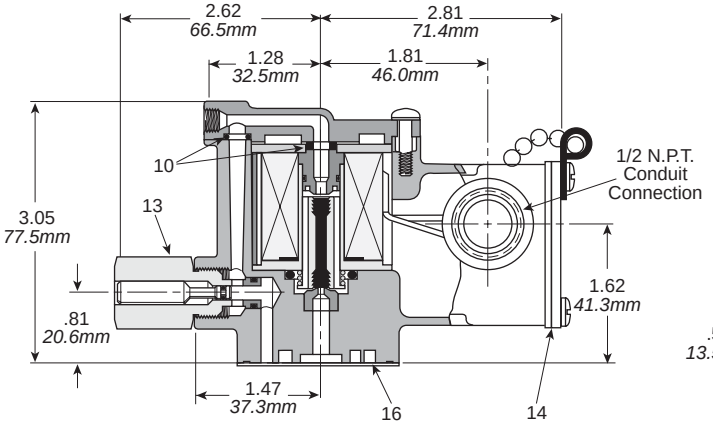


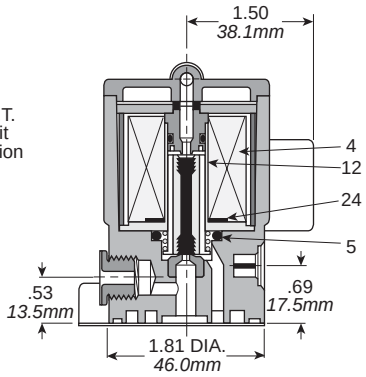
Junction Box L-Pilot

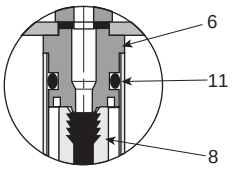
Replacement Pilots

Description	Standard L-Pilot		Continuous Duty L-Pilot	
Override Type	**Locking**	**Non-Locking**	**Locking**	**Non-Locking**
Basic with Override	K065 3035**	K065 2035**	K085 3025**	K085 2025**
JIC with Junction Box & Override	K065 6035**	K065 5035**	K085 6025**	K085 5025**
JIC Pilot with Junction Box & Override & Indicator Lights (120VAC Only)	K065 9035**	K065 8035**	K085 9025**	K085 8025**

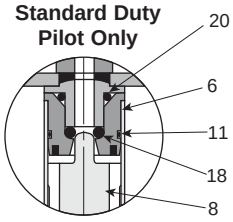
** Voltage Code - (Reference Model Index for Availability)







Standard Duty Pilot Only



Continuous Duty Pilot Only

Parts List

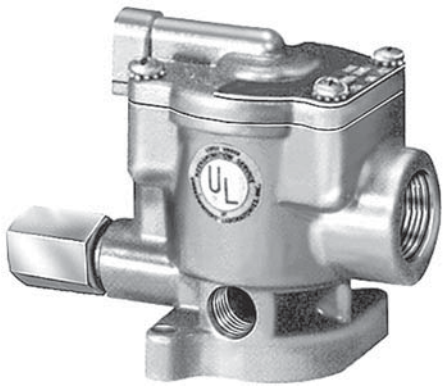
Item No.	Part Number	Description
4	**K593 025**	**Coil 120V 60Hz / 110V 50Hz**
	K593 035	**Coil 240V 60Hz / 220V 50Hz**
	K593 003	Coil 6VDC / 24V 60Hz
	K593 010	Coil 12VDC
	K593 014	**Coil 24VDC**
	K593 041	**Coil 120VDC**
5	H142 13	Seal
6	K423 006	Top Seat
	K423 010	Top Seat (Continuous Duty)
8	**K343 002**	**Plunger (STD. Service)**
	K343 001	**Plunger (Continuous Duty)**
10*	H142 01	Seal
11*	K41RB72011	O-Ring (STD. Service)
	H249 69	O-Ring (Continuous Duty)

Item No.	Part Number	Description
12	K272 004	Plunger Guide
13	K152 003	Override Assembly
14*	K183 047	Cover Gasket
16*	K183 001	Gasket
18*	H134 73	O-Ring
20*	H134 13	O-Ring
22	H191 02	120 AC Only – Indicator Light
24	K183 108	Gasket

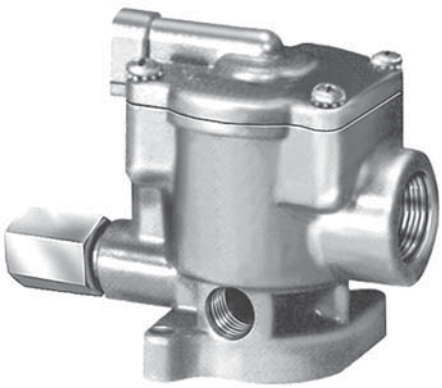
Coil leads are 19" long.

* Parts included in Service Kit.
Continuous Duty Kit K352 366
Standard Service Kit K352 166

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Hazardous Duty L-Pilot

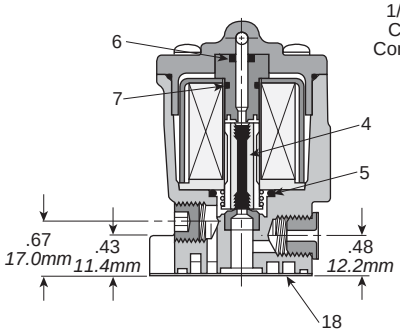


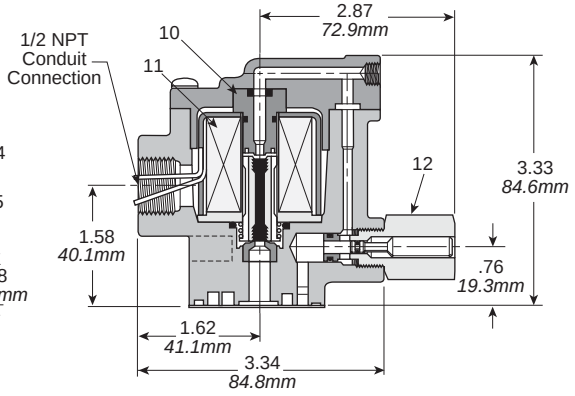
NEMA 4 L-Pilot

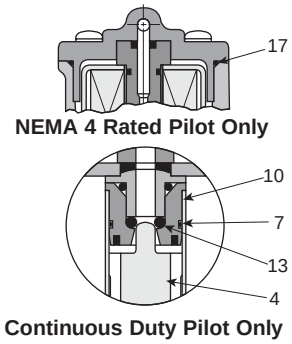
Replacement Pilots

Description	Continuous Duty L-Pilot	
Hazardous Duty L-Pilot - UL & CSA	K045 1025**	—
Override Type	**Locking**	**Non-Locking**
Hazardous Duty with Override	K045 3025**	K045 2025**
NEMA 4 with Override	K255 3025**	K255 202549

** Voltage Code - 49 & 53







Parts List

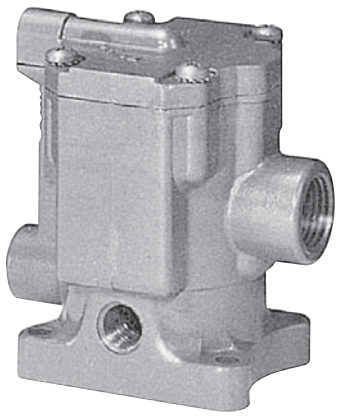
Item No.	Part Number	Description
4*	**K343 002**	**Plunger (STD. Service)**
	K343 001	**Plunger (Continuous Duty)**
5*	K142 13	Seal
6*	K41RB72009	O-Ring
	K41RB72008	O-Ring (STD. Service)
7*	K41RB72011	O-Ring (STD. Service)
	H249 69	O-Ring (Continuous Duty)
10	K423 001	Top Seat
	K423 002	Top Seat (Continuous Duty)
11	**K593 025**	**Coil 120V 60Hz / 110V 50Hz**
	K593 035	**Coil 240V 60Hz / 220V 50Hz**
	K593 003	Coil 6VDC / 24V 60Hz
	K593 010	Coil 12VDC
	K593 014	**Coil 24VDC**
	K593 041	**Coil 120VDC**

Item No.	Part Number	Description
12	K152 003	Override Assembly
13*	H134 73	O-Ring
17*	H137 16	Gasket (NEMA 4 Rated Pilot Only)
18*	K183 001	Gasket

Coil leads are 19" long.

* Parts included in Service Kit.
Continuous Duty Kit K352 366
Standard Service Kit K352 166

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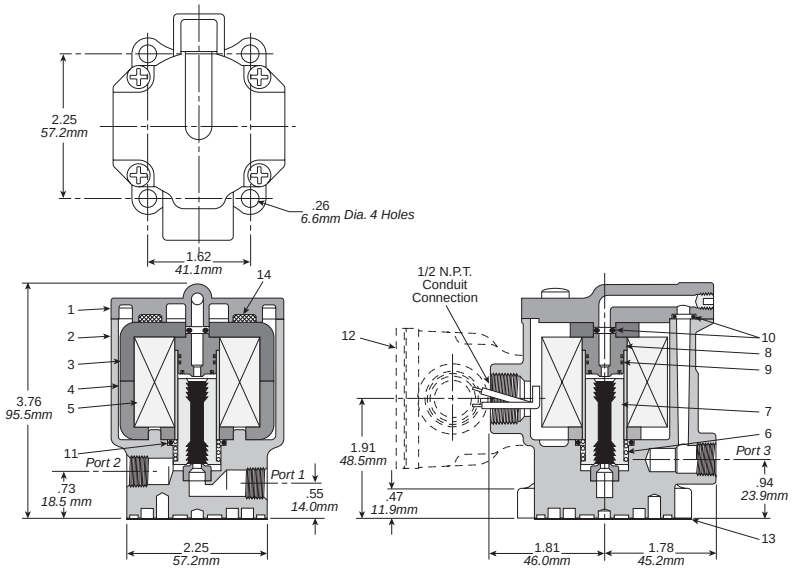


Heavy Duty P-Pilot

Replacement Pilots

Description	Standard P-Pilot		
Override Type	**No Override**	**Non-Locking**	**Locking**
Basic with Override	K135 1045**	N/A	N/A
JIC with Junction Box & Override	N/A	K135 5045**	K135 6045**
JIC Pilot with Junction Box & Override & Indicator Lights (120VAC Only)	N/A	K135 804553	K135 904553

** Voltage Code - 49 & 53



Parts List

Item No.	Part Number	Description
1	K062 005	Cover Assy
2	K112 045	Body, Man. Mtd. (1/8" Bottom Seal)
	K112 046	Body, Man. Mtd. (3/16" Bottom Seal)
3	K013 001	Magnet Bar
4	K272 002	Sleeve Sub Assy
5*	K593 108	Coil (115V 60Hz)
	K593 112	Coil (230V 60Hz)
	K593 097	Coil 24VDC
	K593 107	Coil 115VDC

Item No.	Part Number	Description
6	K473 010	Spring N.O. Valve
	K473 011	Spring N.C. Valve
• 7	K343 042	Plunger
8	K423 020	Top Seat (1/8" Orifice)
	K423 022	Top Seat (3/16" Orifice)
• 9	H134 36	Seal
• 10	H142 02	Seal
• 11	H142 15	Seal
12	K322 004	Junction Box Kit
• 13	K183 012	Gasket

* Coil leads are 19" long.

• Parts included in Seal Kit K352 064.

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Coils for L-Pilot Operated Valves

Voltage Code **	Voltage			Coil	
	60Hz	50Hz	DC	19" Leads	72" Leads
40	12	—	—	K593007	—
41,42	24	—	6	K593003	—
45*	**—**	**—**	**12**	**K593010**	**—**
49*	**—**	**—**	**24 (Standard)**	**K593014**	**—**
79	—	—	24 (Arc Suppressed)	K593271	—
51*	—	—	48	—	K593185
53*	**120**	**110**	**—**	**K593025**	**—**
57*	**240**	**240**	**—**	**K593035**	**—**
60	**240**	**220**	**—**	**K593035**	**—**
61	**—**	**—**	**120**	**K593041**	**—**

* Indicates voltages approved for solenoid operators designed for use in hazardous locations.

Coils for P-Pilot Operated Valves

Voltage Code **	Voltage			Coil	
	60Hz	50Hz	DC	19" Leads	72" Leads
42	24	—	—	K593099	—
43	—	24	—	K593098	—
45	**—**	**—**	**12**	**K593094**	**—**
49	**—**	**—**	**24**	**K593097**	**—**
51	—	—	48	—	K593254
53	**115**	**—**	**—**	**K593108**	**—**
58	**—**	**230**	**—**	**K593111**	**—**

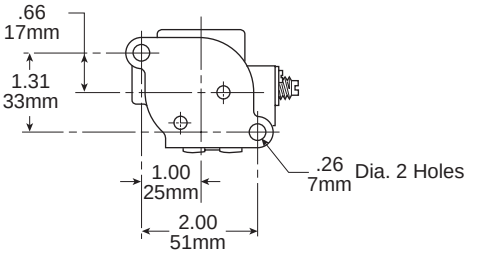
N □□□ □□ □□□ **
Voltage Code

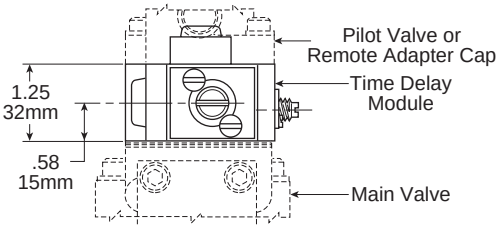
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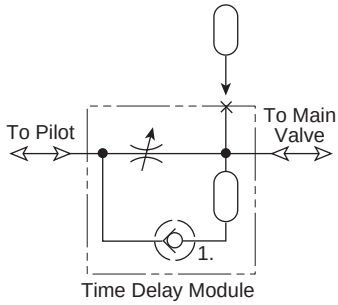
Time Delay Modules Provide:

- Delay of valve action upon application of control signal, removal of control signal or both application and removal of control signal.
- Delay intervals from 0-6, 5-12 or 10-30 seconds . . . up to several minutes with the addition of a small external reservoir.
- Repeatability within 10%, using clean filtered air.
- Change of function without disassembly . . . with line pressure on the valve.









1. Time Delay After Application of Signal to Solenoid. (Elect. Pointer)
2. Time Delay After Removal of Signal From Solenoid. 

3. Time Delay After Application and Removal of Signal to Solenoid. 

Function

Time delay to be used with **external pressure return** valve only.

Time delay modules provide precise, consistent delay of valve shift. They eliminate the need for electrical timers and relays and simplify circuitry.

Delay interval is controlled by an externally adjustable metering screw. Change of function is accomplished by loosening two lock screws, turning the slotted selector plate to the desired function and re-tightening the lock screws. By adding a small external reservoir, delay interval can be extended up to several minutes.

Setting Selector for Desired Function

For valves which are solenoid pilot operated, or valves being controlled by normally open remote pilot, match the pointer marker **"Elect"** with the desired function indicator line.

For valves which are being controlled by normally closed pilot, match the pointer marked **"Air"** with the desired function indicator line.

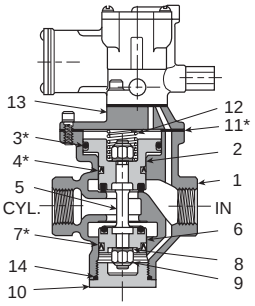
How to Order Kits

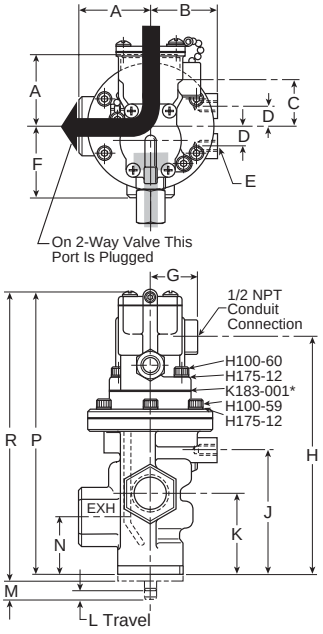
Kits are suitable for both solenoid and remote operated valves. Kits include module, gaskets, screws, and installation instructions.

Delay Interval	Module Kit Number
0-6 Seconds	K705 1001
5-12 Seconds	K705 1002
10-30 Seconds	K705 1003

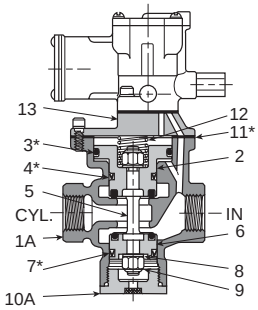
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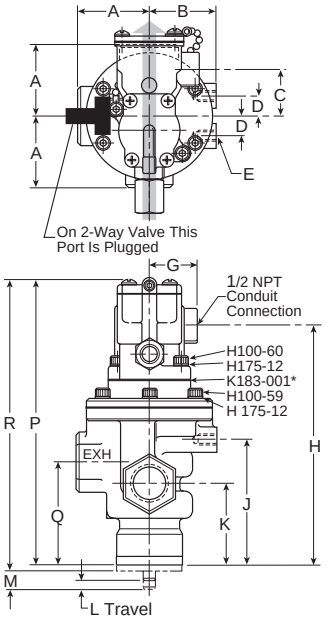
Normally Closed





Normally Open





Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Dimensions

Key	3/8" Body		3/4" Body	
	Inch	mm	Inch	mm
A	1.56	40	2.13	54
B	1.50	38	1.94	49
C	1.81	46	1.34	34
D	.56	14	.56	14
E	3/8-16UNC 7/16" deep		3/8-16UNC 9/16" deep	
F	1.75	44	2.25	57
G	1.50	38	1.50	38
H	5.92	150	7.14	181
J	3.19	81	3.75	95
K	1.88	47	2.44	62
L	.11	3	.16	4
M	.50	13	.50	13
N	1.44	37	1.78	45
P	7.36	196	8.58	218
Q	2.31	59	3.09	84
R	7.92	201	8.83	224

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic Valve with standard service L-Pilots.....**K352 076**

3/8" Basic Valve with continuous duty L-Pilots **K352 276**

3/4" Basic Valve with standard service L-Pilots.....**K352 077**

3/4" Basic Valve with continuous duty L-Pilots **K352 277**

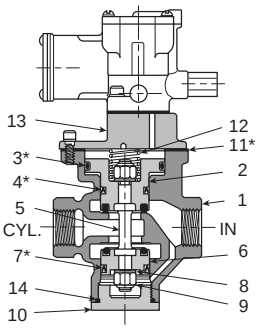
Key	3/8" Valve	3/4" Valve	Description
1	—	1/2" Tap K053 075	Body (N.C.)
	3/8" Tap K053 022	3/4" Tap K053 076	
	1/2" Tap K053 023	1" Tap K053 220	
1A	—	3/4" Tap K053 077	Body (N.O.)
	3/8" Tap K053 025	3/4" Tap K053 078	
	1/2" Tap K053 026	1" Tap K053 218	
2	K212 001	K212 002	Upper Piston Assy
3*	H136 48	H137 28	Seal
4*	H145 10	H136 76	U-Cup (3/8), O-Ring (3/4)

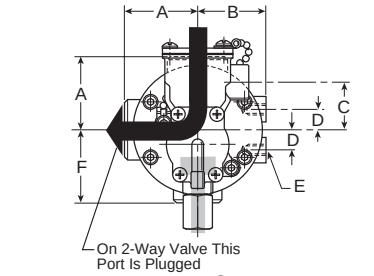
Key	3/8" Valve	3/4" Valve	Description
5	K493 002	K493 009	Stem
6	K202 001	K202 002	Lower Piston Assy.
7*	H145 09	H136 76	U-Cup (3/8), O-Ring (3/4)
8	H178 11	H178 13	Washer (2)
9	H063 26	H063 32	Stop Nut (2)
10	K103 035	K103 053	Bottom Cap (N.C.)
10A	K092 020	K092 034	Bottom Cap Assy. (N.O.)
11*	K183 049	K183 057	Gasket
12	K473 014	K473 015	Spring
13	K563 015	K563 017	Adapter
14*	K41RB72121	K41RB72221	O-Ring

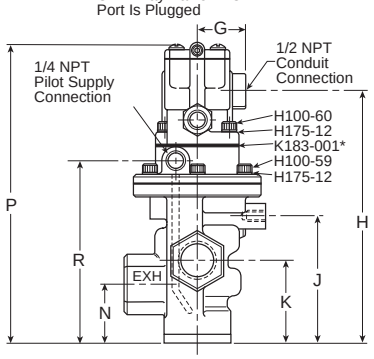
*** Parts included in seal kit**

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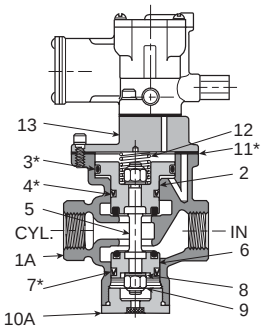
Normally Closed

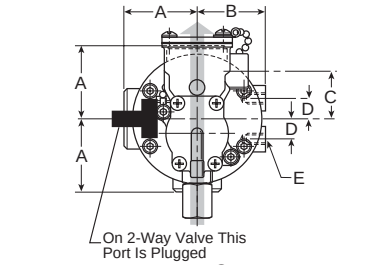


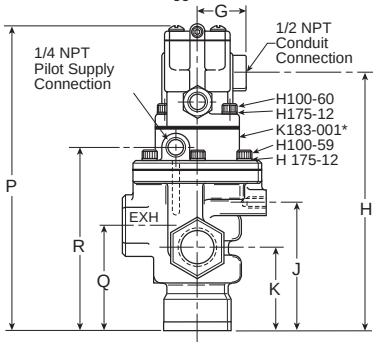




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Dimensions

Key	3/8" Body		3/4" Body	
	Inch	mm	Inch	mm
A	1.56	40	2.13	54
B	1.50	38	1.94	49
C	1.81	46	1.34	34
D	.56	14	.56	14
E	3/8-16UNC 7/16" deep		3/8-16UNC 9/16" deep	
F	1.75	44	2.25	57
G	1.50	38	1.50	38
H	6.42	163	7.45	189
J	3.19	81	3.75	95
K	1.88	47	2.44	62
N	1.44	37	1.78	45
P	7.86	200	8.89	226
Q	2.31	59	3.09	84
R	4.34	110	5.38	137

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic Valve with standard service L-Pilots.....**K352 076**

3/8" Basic Valve with continuous duty L-Pilots **K352 276**

3/4" Basic Valve with standard service L-Pilots.....**K352 077**

3/4" Basic Valve with continuous duty L-Pilots **K352 277**

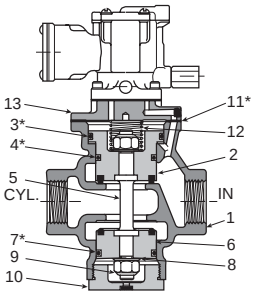
Key	3/8" Valve	3/4" Valve	Description
1	—	1/2" Tap K053 067	Body (N.C.)
	3/8" Tap K053 019	3/4" Tap K053 069	
	1/2" Tap K053 157	1" Tap K053 221	
1A	—	3/4" Tap K053 065	Body (N.O.)
	3/8" Tap K053 018	3/4" Tap K053 070	
	1/2" Tap K053 064	1" Tap K053 219	
2	K212 001	K212 002	Upper Piston Assy
3*	H136 48	H137 28	Seal
4*	K41RB72211	H136 76	O-Ring

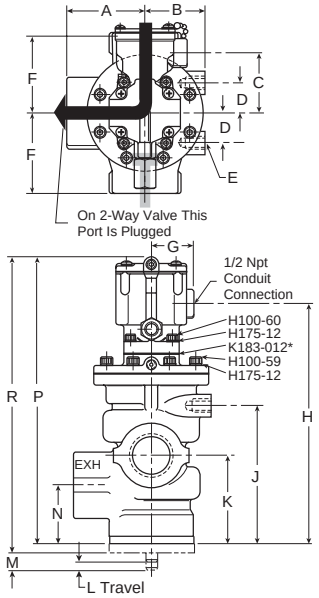
Key	3/8" Valve	3/4" Valve	Description
5	K493 002	K493 009	Stem
6	K202 001	K202 002	Lower Piston Assy.
7*	K41RB72210	H136 76	O-Ring
8	H178 11	H178 13	Washer (2)
9	H063 26	H063 32	Stop Nut (2)
10	K103 035	K103 053	Bottom Cap (N.C.)
10A	K092 020	K092 034	Bottom Cap Assy. (N.O.)
11	K473 014	K473 015	Spring
12*	K183 049	K183 057	Gasket
13	K563 016	K563 021	Adapter
14*	K41RB72121	K41RB72221	O-Ring

*** Parts included in seal kit**

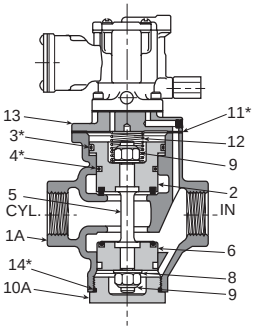
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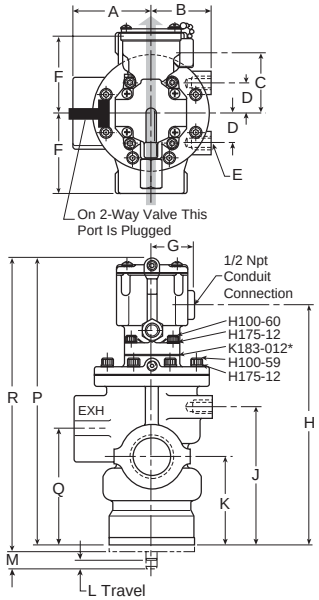
Normally Closed





Normally Open





Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Dimensions

Key	1-14" Body	
	Inch	mm
H	9.30	236
J	5.34	136
K	3.44	87
L	.25	6
M	.50	13
N	2.31	59
P	11.14	283
Q	4.56	116
R	11.48	292

Service Kits

Includ e all parts normally required for in-service maintenance:

1-1/4" Basic Valve with standard service P-Pilot **K352 078**

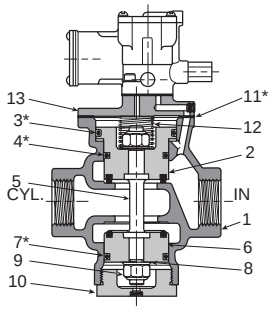
Key	1-1/4" Valve	Description
1	1" Tap K053 111	Body (N.C.)
	1-1/4" Tap K053 112	
	1-1/2" Tap K053 113	
1A	1" Tap K053 114	Body (N.O.)
	1-1/4" Tap K053 115	
	1-1/2" Tap K053 116	
2	K313 029	Upper Piston Assy
3*	H137 52	O-Ring
4*	H137 28	Seal

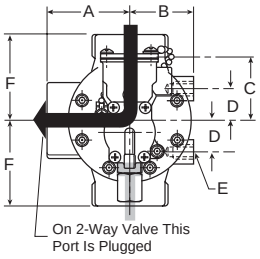
Key	1-1/4" Valve	Description
5	K493 016	Stem
6	K313 028	Lower Piston
7*	H137 28	Seal
8	H178 17	Washer
9	H063 38	Stop Nut
10	K092 046	Bottom Cap (N.C.)
10A	K103 061	Bottom Cap (N.O.)
11*	K183 058	Gasket
12	K473 016	Spring
13	K012 003	Adapter
14*	K41RB72143	O-Ring

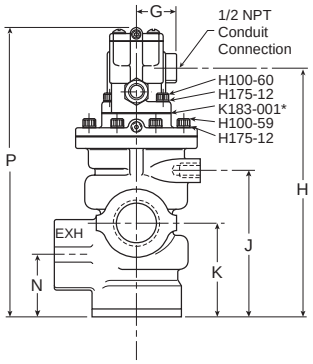
*** Parts included in seal kit**

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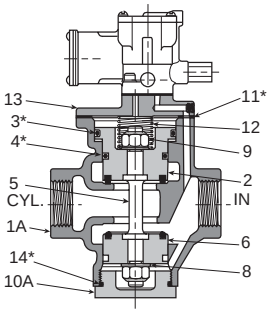
Normally Closed

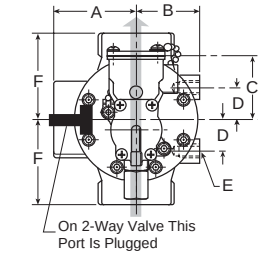


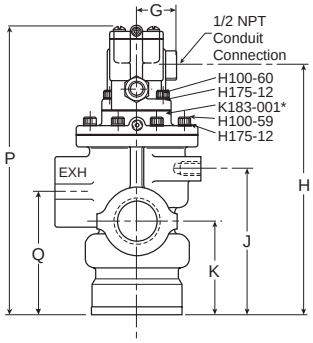




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Dimensions

Key	1-1/4" Body	
	Inch	mm
A	3.00	76
B	2.25	57
C	1.34	34
D	1.19	30
E	1/2-13 UNC 3/4 Deep	
F	3.13	80
G	1.50	38
H	9.02	229
J	5.34	136
K	3.44	87
N	2.31	59
P	10.45	265
Q	4.56	116

Service Kits

Include all parts normally required for in-service maintenance:

1-1/4" Basic Valve with continuous duty L-Pilot.....**K352 080**

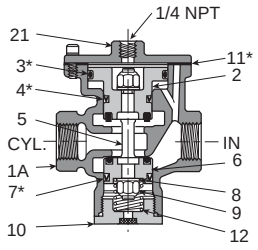
Key	1-1/4" Valve	Description
1	1" Tap K053 111	Body (N.C.)
	1-1/4" Tap K053 112	
	1-1/2" Tap K053 113	
1A	1" Tap K053 114	Body (N.O.)
	1-1/4" Tap K053 115	
	1-1/2" Tap K053 116	
2	K313 029	Upper Piston Assy
3*	H137 52	O-Ring
4*	H137 28	Seal

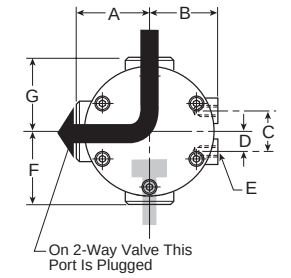
Key	1-1/4" Valve	Description
5	K493 016	Stem
6	K313 028	Lower Piston
7*	H137 28	Seal
8	H178 17	Washer
9	H063 38	Stop Nut
10	K092 046	Bottom Cap (N.C.)
10A	K103 061	Bottom Cap (N.O.)
11*	K183 058	Gasket
12	K473 016	Spring
13	K012 003	Adapter
14*	K41RB72143	O-Ring

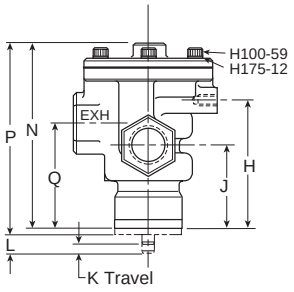
*** Parts included in seal kit**

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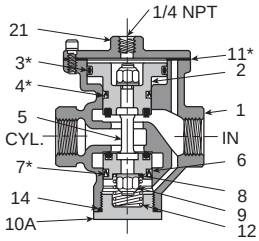
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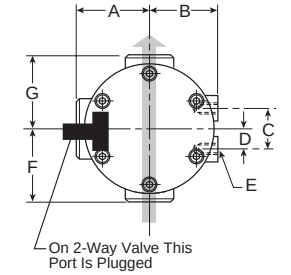


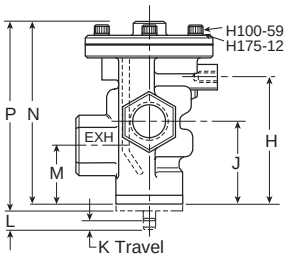




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve.

NOTE: For normal valve operation, override must be in "out" position.

Dimensions

Key	3/8" Body		3/4" Body		1-1/4" Body	
	Inch	mm	Inch	mm	Inch	mm
H	3.19	81	3.75	95	5.34	136
J	1.88	48	2.44	62	3.44	87
K	.50	13	.50	13	.50	13
L	.11	3	.16	4	.25	6
M	1.44	37	1.78	45	2.66	67
N	4.22	107	5.31	135	7.19	183
P	4.78	121	5.56	141	7.53	191
Q	2.31	59	3.09	78	4.56	116

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic Valve.....**K352 073**
3/4" Basic Valve.....**K352 074**
1-1/4" Basic Valve.....**K352 075**

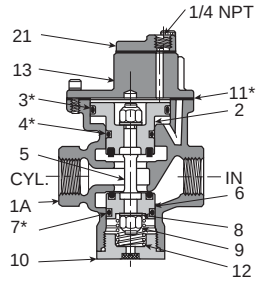
Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
1	—	1/2" Tap K053 075	1" Tap K053 111	Body (N.O.)
	3/8" Tap K053 022	3/4" Tap K053 076	1-1/4" Tap K053 112	
	1/2" Tap K053 023	1" Tap K053 220	1-1/2" Tap K053 113	
1A	—	1/2" Tap K053 077	1" Tap K053 114	Body (N.C.)
	3/8" Tap K053 025	3/4" Tap K053 078	1-1/4" Tap K053 115	
	1/2" Tap K053 026	1" Tap K053 218	1-1/2" Tap K053 116	
2	K212 001	K212 002	K313 029	Upper Piston Assy
3*	H136 48	H137 28	H137 52	Seal
4*	H145 10	H136 76	H137 28	Seal

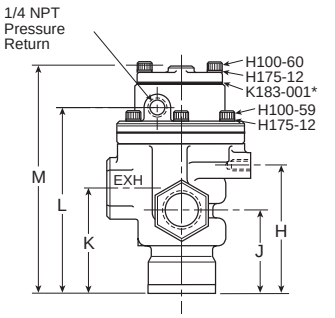
Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
5	K493 002	K493 009	K493 016	Stem
6	K202 001	K202 002	K313 028	Lower Piston Assy.
7*	H134 99	H136 76	H137 28	Seal
8	H178 11	H178 13	H178 17	Washer (2)
9	H063 26	H063 32	H063 38	Stop Nut (2)
10	K092 020	K092 034	K092 046	Bottom Cap (N.C.)
10A	K103 035	K103 053	K103 061	Bottom Cap (N.O.)
11*	K183 049	K183 057	K183 058	Gasket
12	K473 014	K473 015	K473 016	Spring
14*	K41RB72121	K41RB72221	K41RB72143	O-Ring
21	K123 018	K123 021	K123 024	Cover

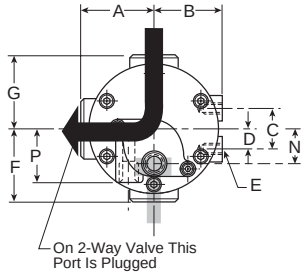
*** Parts included in seal kit**

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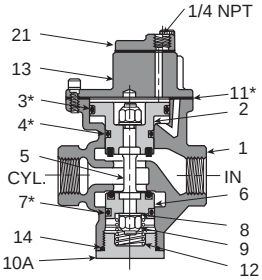
Normally Closed

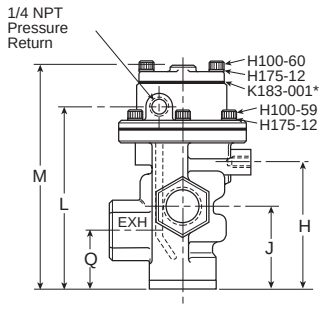


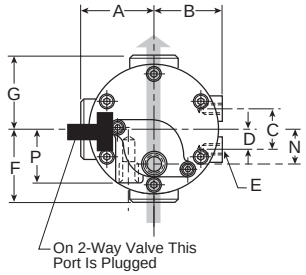




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve.

NOTE: For normal valve operation, override must be in "out" position.

Dimensions

	3/8" Body		3/4" Body		1-1/4" Body	
Key	Inch	mm	Inch	mm	Inch	mm
A	1.56	40	2.13	54	3.00	76
B	1.50	38	1.94	49	2.25	57
C	1.13	29	1.13	29	2.38	60
D	.56	14	.56	14	1.19	30
E	3/8–16UNC 7/16" deep		3/8–16UNC 9/16" deep		1/2–13UNC 3/4" deep	
F	1.75	44	2.25	57	3.13	79
G	1.56	40	2.13	54	3.13	79
H	3.19	81	3.75	95	5.34	136
J	1.88	48	2.44	62	3.44	87
K	2.31	59	3.09	78	4.56	116
L	4.34	110	5.38	137	7.31	186
M	5.31	135	6.34	161	7.88	200
N	Left of center				On center	
	.53	13	1.00	25		
Q	1.44	37	1.78	45	2.31	59

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic Valve.....**K352 031**

3/4" Basic Valve.....**K352 056**

1-1/4" Basic Valve.....**K352 083**

Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
1	1/4" Tap K053 011	1/2" Tap K053 067	1" Tap K053 143	Body (N.O.)
	—	3/4" Tap K053 069	1-1/4" Tap K053 110	
	1/2" Tap K053 157	1" Tap K053 221	1-1/2" Tap K053 146	
1A	1/4" Tap K053 010	1/2" Tap K053 065	1" Tap K053 159	Body (N.C.)
	—	3/4" Tap K053 070	1-1/4" Tap K053 144	
	1/2" Tap K053 064	1" Tap K053 219	1-1/2" Tap K053 145	
2	K212 001	K212 002	K313 029	Upper Piston Assy
3*	H136 48	H137 28	H137 52	Seal
4*	H135 29	H136 76	H137 28	Seal

Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Part
5	K493 002	K493 009	K493 016	Stem
6	K202 001	K202 002	K313 028	Lower Piston Assy.
7*	H134 99	H136 76	H137 28	Seal
8	H178 11	H178 13	H178 17	Washer (2)
9	H063 26	H063 32	H063 38	Stop Nut (2)
10	K092 020	K092 034	K092 046	Bottom Cap Assy. (N.C.)
10A	K103 035	K103 053	K103 061	Bottom Cap (N.O.)
11*	K183 049	K183 057	K183 058	Gasket
12	K473 014	K473 015	K473 016	Spring
13	K563 016	K563 021	K563 027	Adapter
14*	K41RB72121	K41RB72221	K41RB72143	O-Ring
21	K323 027	K323 027	Not used	Cover

*** Parts included in seal kit**

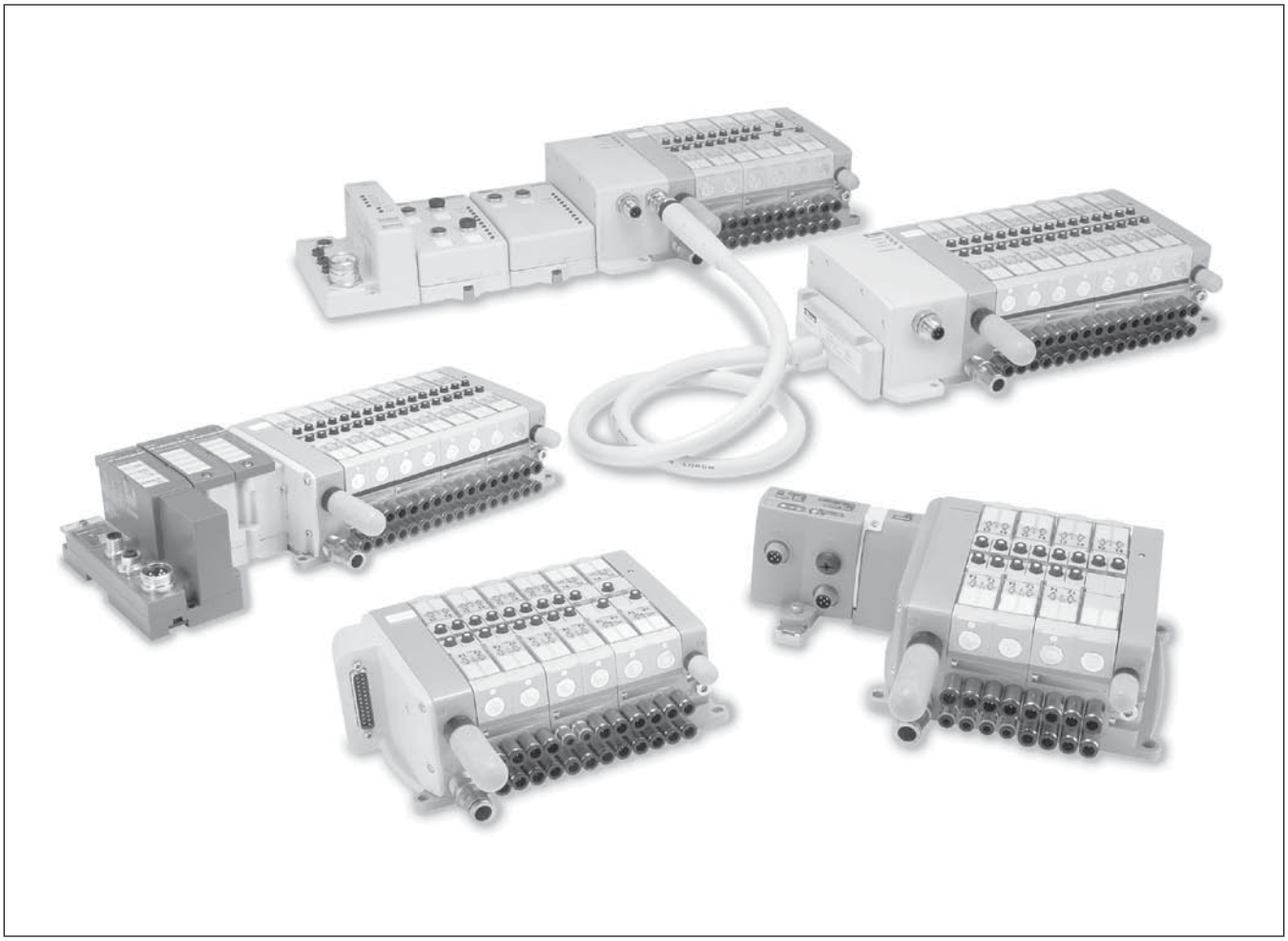
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Isys Micro Series

Air Control Valves

Section E

www.parker.com/pneu/Isysmicro



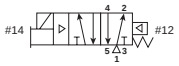
Basic Valve Functions E2
Basic Valve Features E3
Product Overview E4
Cv Charts E5
Plug-in Valve Part Numbers E6
Plug-in Manifolds E7
Plug-in End Plate Kits E8
Simple Manifold & Valve Assemblies E9
Add-A-Fold Assemblies E10-E13
Multiple Pressure Zones E14-E15
Pilot Configuration & Pressure Requirements E16
Service & Repair Kits E17-E18
Technical Information & Addressing E19-E23
Dimensions E24-E28
Fittings E29-E30

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Basic Valve Functions

Single Solenoid

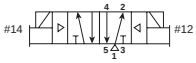


Single Pressure At Inlet Port 1:

De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

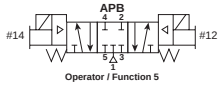
Double Solenoid



Single Pressure At Inlet Port 1:

Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.



Operator / Function 5

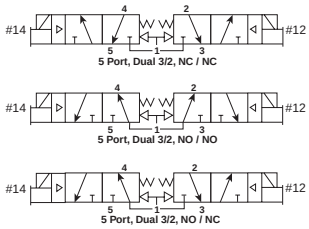
Double Solenoid 3-Position

Function 5: All Ports Blocked

With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

All ports blocked in the center position.



Double Solenoid
Dual 3-Way, 2-Position NC / NC (NNP)

With #14 & #12 operators both de-energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

With #14 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #14 & #12 operators both energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

Dual 3-Way, 2-Position NO / NO (NP)

With #14 & #12 operators both de-energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

With #14 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #14 & #12 operators both energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

Dual 3-Way, 2-Position 14 End NO / 12 End NC (NP / NNP)

With #14 & #12 operators both de-energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #14 operator energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

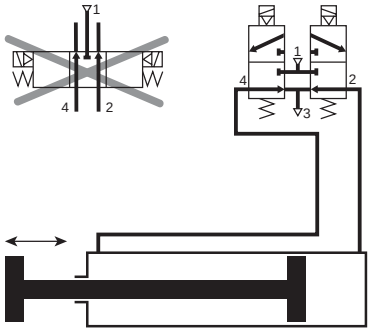
With #12 operator energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

With #14 & #12 operators both energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

Dual 3/2 Valves Replace 3-Position Valves for Better Performance

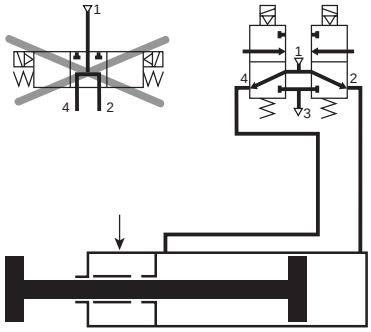
3-Position Center Exhaust

A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module. Both cylinder chambers are exhausted and rod and piston are free to move.



3-Position Pressure Center

A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.



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Specifications

2-Position & Dual 3/2
0.35 Cv
C = 1.2 Nl/s x bar, b = 0.13
Qn = 282 Nl/min
Qmax = 510 Nl/min

3-Position
0.30 Cv
C = 1 Nl/s x bar, b = 0.13
Qn = 228 Nl/min
Qmax = 402 Nl/min

Materials of Construction

- Valve Spool: Brass
- Valve Spool Enclosure: Brass
- Dynamic Seals: Nitrile
- Valve Body: Polyamide Reinforced Fiberglass
- Seals: Nitrile
- Springs: Stainless Steel
- Screws: Zinc Plated Steel
- Top Cover: Polyester
- Manifold - End Plates: Aluminum

Operating Pressure

- Vacuum to 145 PSIG
- Minimum Operating Pressure
  – 2-Position, Double Solenoid: 25 PSI
  – 2-Position, Single Solenoid: 40 PSI
  – 3-Position: 45 PSI
  – Dual 3/2: 40 PSI

Ports

- M7 on Manifolds
- NPT and BSPP “G” on End Plates

Manifolds

- Collective Wiring
  – 25-Pin, D-Sub
  – Moduflex Fieldbus
  – Isysnet Fieldbus

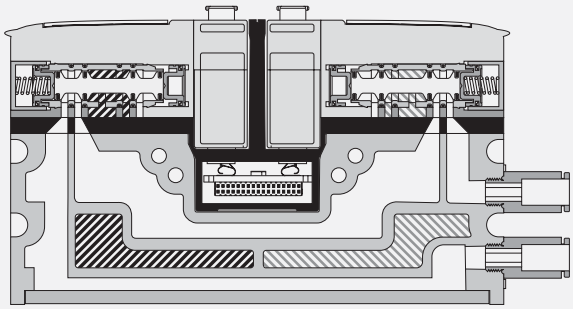
Certification / Approval

- EMC / CE Mark: According to EN 61 000-6-2
- Dust & Water Protection: IP65 According to EN 60529

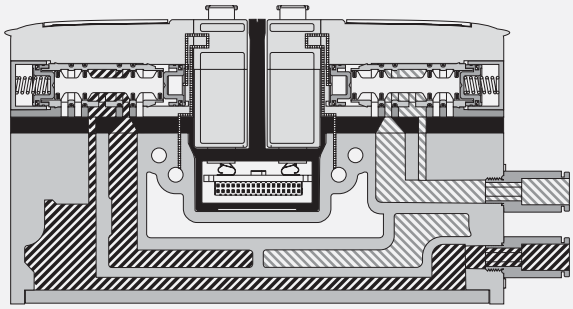
Solenoids

- Bi-Polar
- Surge Suppression (Standard)
- Low Watt – 1.0, 24VDC
- Indicator Lights

Single Solenoid Valves Shown
Solenoid is De-energized



Side Exhaust
4 Ports Connected to Exhaust Port
(5 & 3 Common)

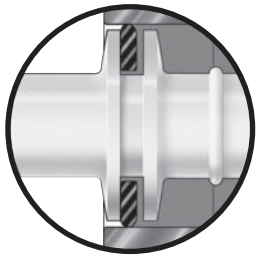


Side Pressure
2 Ports Connected to Inlet Port 1

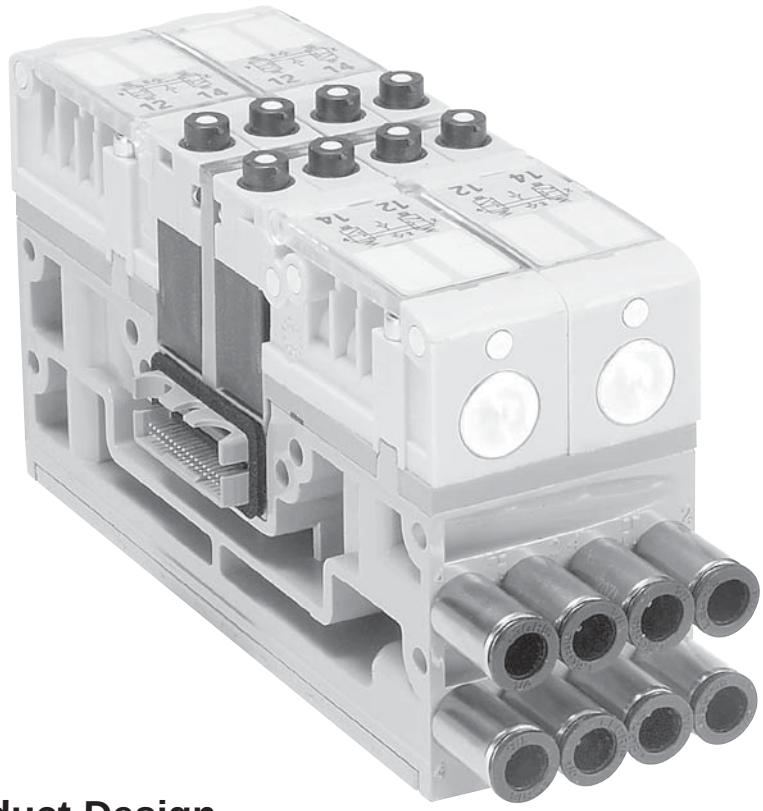
Inlet Port #1 for Rear Valves
Inlet Port #1 for Front Valves
3 & 5 Common Exhaust for Front & Rear Valves

*W*ear Compensation *S*ystem

- **Maximum Performance**
  - Low Friction - Lower Operating Pressures
  - Fast Response - Less Wear
- **Long Cycle Life** - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- **Non-Lube Service** - No lubrication required for continuous valve shifting.
- **Bi-Directional Spool Seals** - Common spool used for any pressure, including vacuum.



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Innovative Product Design

- Back to Back Valve Mounting Design Centralizes Wiring in the Manifold
- 4 Valves on a 42mm Wide Manifold Provides a 10.5mm Wide Valve Solution with a Reduced Cost
- High flow of 0.35 Cv Allows for Broad Application Use
- Plug-in Valve Electronics Reduce and Eliminate Wiring System Costs
- Multiple Pressure Zones for Many Applications on the Same Manifold

Standard Features

- Integrated LED's Identify when Solenoids are Active
- Side and Bottom Porting Options on Manifolds and End Plates for Versatile Mounting
- All Valve Functions Available for Complete Product Offering
- Valves can be Arranged in Any Combination for Maximum Flexibility
- Internal and External Pilot Options Available for Vacuum to 145 PSI Applications
- IP65 Protection Enables Direct Machine Mounting
- Product Identification, Valve Function, and Port Description Tags are Standard on Every Manifold and are Clearly Visible thru a Protective Cover
- User Configurable Overrides for Non-Locking, Locking, or No Override Options

Manifold Platforms

- 25 Pin D-Sub Manifolds for Control Systems with Discrete Outputs
- Cost Effective Moduflex Fieldbus Manifolds for Control Systems with DeviceNet™, Profibus®, Interbus and CANopen Fieldbus and no Inputs or Outputs Near Valves
- Cost Effective Moduflex Fieldbus Manifolds with AS-i Communication offer both Inputs and Solenoid Control
- Fully Functional Isysnet Fieldbus Manifolds for Control Systems with Inputs and Outputs Attached to the Valve Manifold
- Enhanced Isysnet Bus Expansion Allows 4 Isysnet Valve Manifolds to be Connected to a Single Communication Module Significantly Reducing Costs on Large Machines
- Rockwell Automation RS Logix 5000™ Users can take Advantage of Preferred Connectivity, by Using the Preloaded Device Profiles

Complete Assemblies

- All Products Offered as Component Level Parts for Individual Assembly
- Simple Manifolds Offer Sub-Assembly Level Products with Valves and Fittings Attached to Manifold Bases in a Single Part Number
- Add-A-Fold Systems Offer Complete Assemblies; Including Valves, Manifolds, End Plates, Fittings, and Mufflers in as few as 2 Part Numbers

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Cv Values - Isys Micro

The charts below represent the minimum required Cv values for pneumatic systems operating at 80 PSI with a 5 PSI pressure drop.

To use the chart, locate the diameter of the cylinder across the horizontal axis, then the average required rod speed of the cycle. The intersection point is Cv value needed.

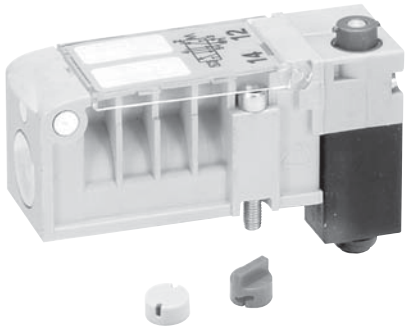
Grayed out values are not attainable with Isys Micro. Please select a larger Parker valve.

Average Rod Speed (mm/s)	Cylinder Diameter (mm)												
	6	8	10	12	16	20	25	32	40	50	63	80	100
25	0.000	0.001	0.001	0.002	0.003	0.005	0.008	0.013	0.021	0.032	0.051	0.083	0.129
50	0.001	0.002	0.003	0.004	0.007	0.010	0.016	0.026	0.041	0.065	0.103	0.166	0.259
75	0.001	0.002	0.004	0.006	0.010	0.016	0.024	0.040	0.062	0.097	0.154	0.248	0.388
100	0.002	0.003	0.005	0.007	0.013	0.021	0.032	0.053	0.083	0.129	0.205	0.331	0.517
125	0.002	0.004	0.006	0.009	0.017	0.026	0.040	0.066	0.103	0.162	0.257	0.414	0.647
150	0.003	0.005	0.008	0.011	0.020	0.031	0.049	0.079	0.124	0.194	0.308	0.497	0.776
175	0.003	0.006	0.009	0.013	0.023	0.036	0.057	0.093	0.145	0.226	0.359	0.580	0.906
200	0.004	0.007	0.010	0.015	0.026	0.041	0.065	0.106	0.166	0.259	0.411	0.662	1.035
225	0.004	0.007	0.012	0.017	0.030	0.047	0.073	0.119	0.186	0.291	0.462	0.745	1.164
250	0.005	0.008	0.013	0.019	0.033	0.052	0.081	0.132	0.207	0.323	0.513	0.828	1.294
275	0.005	0.009	0.014	0.020	0.036	0.057	0.089	0.146	0.228	0.356	0.565	0.911	1.423
300	0.006	0.010	0.016	0.022	0.040	0.062	0.097	0.159	0.248	0.388	0.616	0.994	1.552
350	0.007	0.012	0.018	0.026	0.046	0.072	0.113	0.185	0.290	0.453	0.719	1.159	1.811
400	0.007	0.013	0.021	0.030	0.053	0.083	0.129	0.212	0.331	0.517	0.822	1.325	2.070
450	0.008	0.015	0.023	0.034	0.060	0.093	0.146	0.238	0.373	0.582	0.924	1.490	2.329
500	0.009	0.017	0.026	0.037	0.066	0.103	0.162	0.265	0.414	0.647	1.027	1.656	2.587

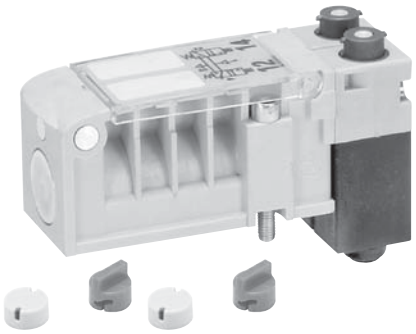
Average Rod Speed (in/s)	Cylinder Diameter (in)																
	5/16"	7/16"	9/16"	3/4"	7/8"	1"	1-1/16"	1-1/8"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"	3"	3-1/4"	3-5/8"	4"
1	0.001	0.002	0.003	0.005	0.006	0.008	0.010	0.011	0.013	0.019	0.026	0.034	0.053	0.076	0.090	0.111	0.136
2	0.002	0.003	0.005	0.010	0.013	0.017	0.019	0.021	0.026	0.038	0.052	0.068	0.106	0.153	0.179	0.223	0.271
3	0.002	0.005	0.008	0.014	0.019	0.025	0.029	0.032	0.040	0.057	0.078	0.102	0.159	0.229	0.269	0.334	0.407
4	0.003	0.006	0.011	0.019	0.026	0.034	0.038	0.043	0.053	0.076	0.104	0.136	0.212	0.305	0.358	0.446	0.543
5	0.004	0.008	0.013	0.024	0.032	0.042	0.048	0.054	0.066	0.095	0.130	0.170	0.265	0.382	0.448	0.557	0.678
6	0.005	0.010	0.016	0.029	0.039	0.051	0.057	0.064	0.079	0.114	0.156	0.204	0.318	0.458	0.537	0.669	0.814
7	0.006	0.011	0.019	0.033	0.045	0.059	0.067	0.075	0.093	0.134	0.182	0.237	0.371	0.534	0.627	0.780	0.950
8	0.007	0.013	0.021	0.038	0.052	0.068	0.077	0.086	0.106	0.153	0.208	0.271	0.424	0.611	0.717	0.891	1.085
9	0.007	0.015	0.024	0.043	0.058	0.076	0.086	0.097	0.119	0.172	0.234	0.305	0.477	0.687	0.806	1.003	1.221
10	0.008	0.016	0.027	0.048	0.065	0.085	0.096	0.107	0.132	0.191	0.260	0.339	0.530	0.763	0.896	1.114	1.357
11	0.009	0.018	0.030	0.052	0.071	0.093	0.105	0.118	0.146	0.210	0.286	0.373	0.583	0.839	0.985	1.226	1.492
12	0.010	0.019	0.032	0.057	0.078	0.102	0.115	0.129	0.159	0.229	0.312	0.407	0.636	0.916	1.075	1.337	1.628
14	0.012	0.023	0.038	0.067	0.091	0.119	0.134	0.150	0.185	0.267	0.364	0.475	0.742	1.068	1.254	1.560	1.899
16	0.013	0.026	0.043	0.076	0.104	0.136	0.153	0.172	0.212	0.305	0.415	0.543	0.848	1.221	1.433	1.783	2.171
18	0.015	0.029	0.048	0.086	0.117	0.153	0.172	0.193	0.238	0.343	0.467	0.611	0.954	1.374	1.612	2.006	2.442
20	0.017	0.032	0.054	0.095	0.130	0.170	0.191	0.215	0.265	0.382	0.519	0.678	1.060	1.526	1.791	2.229	2.713

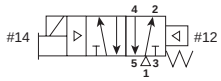
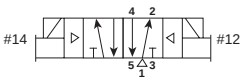
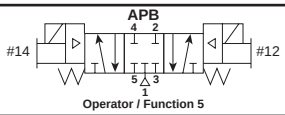
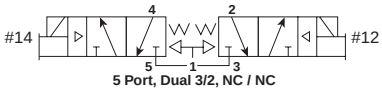
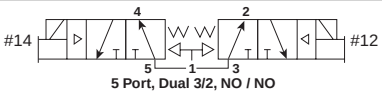
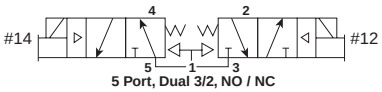
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HM Series Single Solenoid



HM Series Double Solenoid



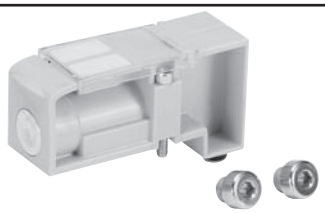
	**HMEVX2049A**	Single Solenoid, 2-Position, Air Return, Spring Assist
	**HM2VX2049A**	Double Solenoid, 2-Position
	**HM5VX2049A**	Double Solenoid, 3-Position, APB
	**HMNVX2049A**	Double Solenoid, Dual 3/2, NC/NC
	**HMPVX2049A**	Double Solenoid, Dual 3/2, NO/NO
	**HMQVX2049A**	Double Solenoid, Dual 3/2, 14 End NO, 12 End NC

- All valves, except double solenoid 2-position, ship with multi functional overrides. Standard valve configuration is non-locking manual override. Each solenoid can be configured for locking override or no override with the included manual override caps.
- All valve options include an LED, which is built into the manifold.
- All valve options pull pilot pressure from the manifold. The manifold assembly can be configured for internal or external pilot on the end plate.

Blanking Plate Kits

Kit Number
HMBVX00XXA

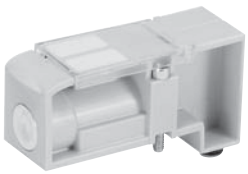
Kit includes: Blanking Plugs, Gasket, and Mounting Screws.
Blanking Plugs must be inserted into the 2 and 4 ports of the manifold corresponding to the Blanking Plate.



Intermediate Air Supply Base

Kit Number
HMCVX00XXA

Kit includes: Gasket and Mounting Screws.
Fittings (Not Included) must be inserted into the 2 and 4 ports of the manifold corresponding to the intermediate air supply. Auxiliary pressure should be supplied through these fittings, which will directly feed the #1 pressure galley.

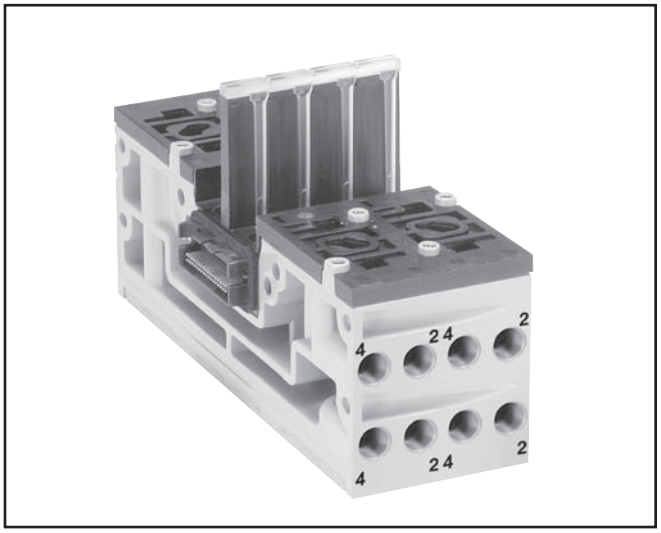


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Each manifold holds 4 Isys Micro Valves. Double address circuit boards contain outputs for 8 solenoids, and can be used with any valve. When a single solenoid valve is used, one address is not used but is still present on the manifold. Single address circuit boards contain outputs for 4 solenoids. Only single solenoid valves can be used.

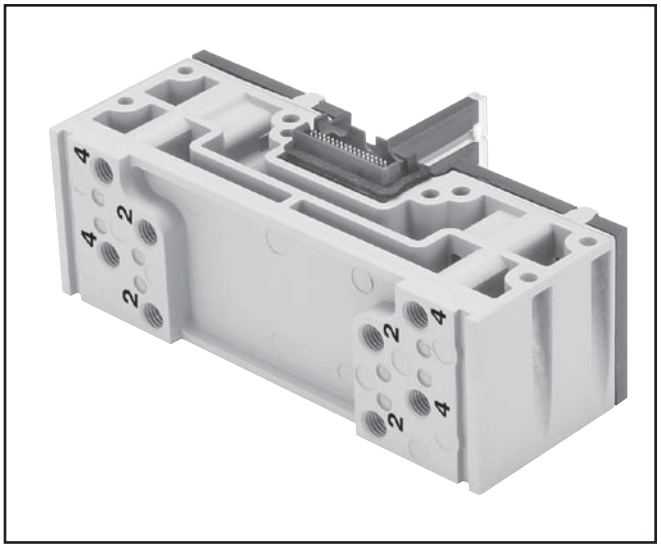
Side Ported, Plug-in Manifold Kits

Kit Number	Description
PSM21JAP	Circuit Board, Single Address
PSM21MAP	Circuit Board, Double Address



Bottom Ported, Plug-in Manifold Kits

Kit Number	Description
PSM22JAP	Circuit Board, Single Address
PSM22MAP	Circuit Board, Double Address

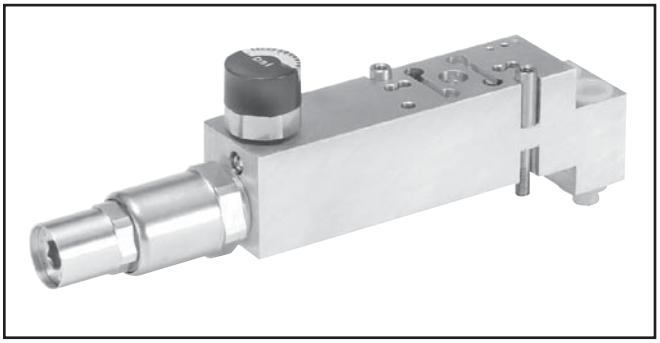


Sandwich Regulator

Kit Number	Description
PSMRAX6AP	Common Port Regulator, 5 to 125 PSI with Gauge

Note: Cv values are reduced when using a sandwich regulator to 0.20 for 2-Position and Dual 3/2 valves, and 0.17 for 3-Position APB valves.

Note: The sandwich regulator passes full pilot pressure from the manifold, allowing the regulated pressure to adjusted down to 5 PSI without affecting valve functionality.



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Plug-in End Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

PSM	L2	1	A	P

Basic Series	
Isys Micro End Plate Kits	PSM

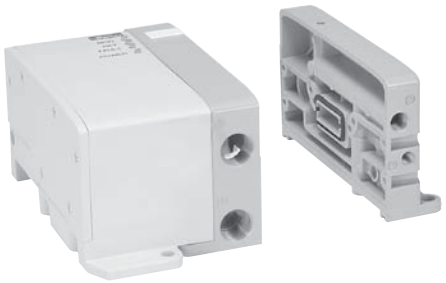
End Plate Options	
25-Pin, D-Sub	L2
Isysnet with Valve Driver Module	L6
Isysnet with Valve Driver Module and Bus Extension Connector	M5
Isysnet with Valve Driver Module and 24VDC Connector	M6
Isysnet with Valve Driver Module, Bus Extension Connector and 24VDC Connector	M7
Moduflex 16 Outputs	M4
Turck Fieldbus with Valve Driver Module - 16 outputs	T1
Turck Fieldbus with Valve Driver Module - 32 outputs	T2

Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

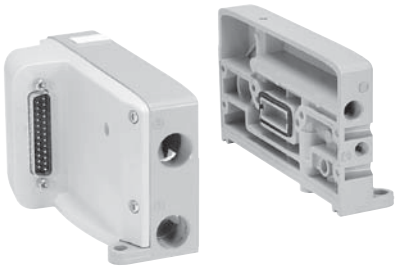
Port Size / Thread Type, Base Style	
1	BSPP, Side Port, Internal Pilot
2	BSPP, Bottom Port, Internal Pilot
5	NPT, Side Port, Internal Pilot
6	NPT, Bottom Port, Internal Pilot

All End Plate Options can be converted to external pilot. See Technical Section.

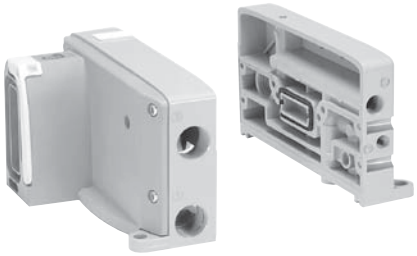
Engineering Level	
A	Current



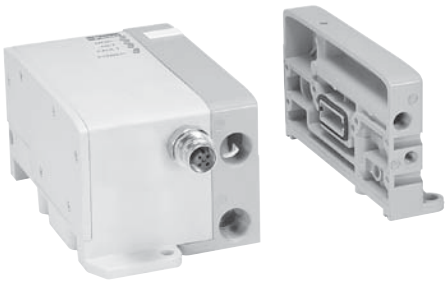
L6: **Isysnet Fieldbus End Plates**



L2: **25-Pin, D-Sub End Plates**



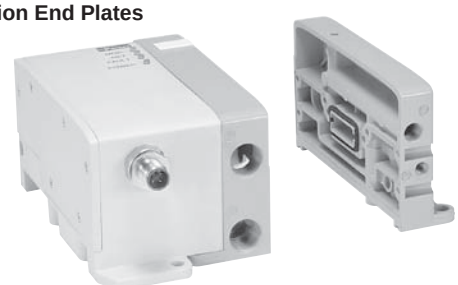
M4: **Moduflex Fieldbus End Plates**



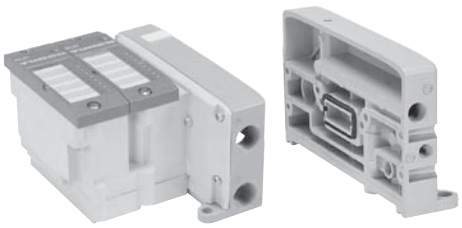
M5: **Isysnet Fieldbus with Bus Extension End Plates**



M7: **Isysnet Fieldbus with Bus Extension & 24VDC Connector End Plates**



M6: **Isysnet Fieldbus with 24VDC Connector End Plates**



T1, T2: **Isys Micro Turck End Plates**

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Simple Manifold Assemblies

Includes a valve manifold with 4 valves and fittings installed. End Plates must be ordered separately.

BOLD OPTIONS ARE MOST POPULAR.

					A		B		C		D	
					9	10	11	12	13	14	15	16
PSM3	**1**	**M**	**A**	**P**	**N**	**7**	**N**	**7**	**N**	**7**	**N**	**7**

Base Style	
4-Station Manifold with Valve and / or Fitting	PSM3

Mounting Style	
Side Ported	1
Bottom Ported	2

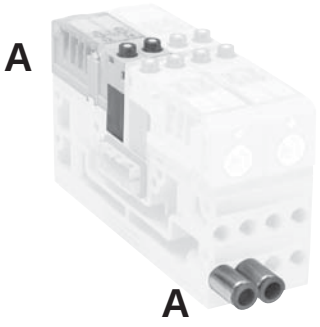
Enclosure / Lead Length	
Single Address Circuit Board	J
Double Address Circuit Board	M

Engineering Level	
Current	A

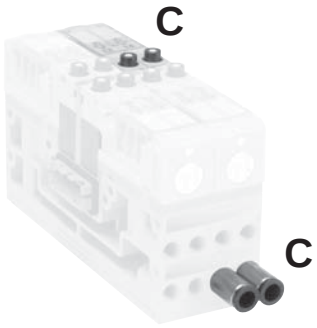
10, 12, 14, 16	Fitting
0	Without Fitting
4	Straight Fitting for 5/32 Inch or 4mm OD Tube
6	Straight Fitting for 6mm OD Tube
7	Straight Fitting for 1/4 Inch OD Tube
P	Plug for Blanking Module

9, 11, 13, 15	Valve Type
N*	Double Solenoid, Dual 3/2, NC/NC
P*	Double Solenoid, Dual 3/2, NO/NO
Q*	Double Solenoid, Dual 3/2, 14 End NO - 12 End NC
X	No Valve
E	Single Solenoid, 2-Position - Air Return, Spring Assist
2*	Double Solenoid, 2-Position
5*	Double Solenoid, 3-Position - APB
B**	Blanking Module
C	Intermediate Air Supply Module

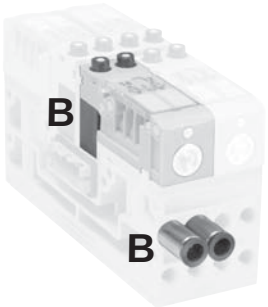
* Requires Double Address Circuit Board, Enclosure "M".
** Requires Fitting "P".



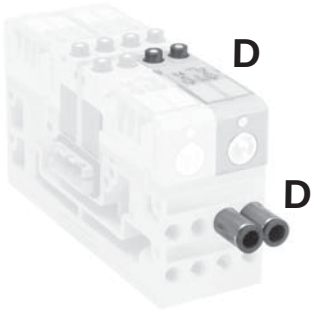
Valve Position A - Character 9
Fitting Position A - Character 10



Valve Position C - Character 13
Fitting Position C - Character 14



Valve Position B - Character 11
Fitting Position B - Character 12



Valve Position D - Character 15
Fitting Position D - Character 16

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How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List Simple Manifold Assemblies. List left to right, LOOKING AT THE CYLINDER PORTS on the manifold.

Maximum Number of Solenoids (Maximum Energized Simultaneously)

	25-Pin D-Sub	Moduflex	Isysnet*
24VDC	24 (24)	16 (16)	32 (32)

*Maximum of 32 solenoids per manifold. With Bus Extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same network.

Add-A-Fold Assembly Model Number

AAHM D 3 24 0 0 0 0

Valve Series	
Isys Micro Add-A-Fold	AAHM

End Plate Option	
Turck Fieldbus with Valve Driver Module - 16 Outputs	A
Turck Fieldbus with Valve Driver Module - 32 Outputs	B
25-Pin, D-Sub - 24 Outputs	D
Isysnet with Valve Drive Module - 32 Outputs	Y
Isysnet with Valve Drive Module and Bus Extension Connector - 32 Outputs	W
Isysnet with Valve Drive Module and 24VDC Connector - 32 Outputs	X
Isysnet with Valve Drive Module and Bus Extension and 24VDC Connector - 32 Outputs	Z
Moduflex - 16 Outputs	T

Isysnet and Moduflex communication modules must be ordered separately.

	End Plate Type	
BSPP Threads	BSPP Side Port, Internal Pilot	1
	BSPP Bottom Port, Internal Pilot	2
	BSPP Side Port, External Pilot	3
	BSPP Bottom Port, External Pilot	4
NPT Threads	NPT Side Port, Internal Pilot	5
	NPT Bottom Port, Internal Pilot	6
	NPT Side Port, External Pilot	7
	NPT Bottom Port, External Pilot	8

Number of Stations	
4 Valve Manifold	04
8 Valve Manifold	08
12 Valve Manifold	12
16 Valve Manifold	16
20 Valve Manifold	20
24 Valve Manifold	24
28 Valve Manifold	28
32 Valve Manifold	32

3/8" Inlet Port on End Plate		
0	Without Fitting	
8	Straight Fitting for 8mm OD Tube	*BSPP Threads*
A	Straight Fitting for 10mm OD Tube	
7	Straight Fitting for 1/4 Inch OD Tube	*NPT Threads*
9	Straight Fitting for 3/8 Inch OD Tube	

3/8" Exhaust on End Plate		
0	Without Fitting	
M	Muffler	
8	Straight Fitting for 8mm OD Tube	*BSPP Threads*
A	Straight Fitting for 10mm OD Tube	
7	Straight Fitting for 1/4 Inch OD Tube	*NPT Threads*
9	Straight Fitting for 3/8 Inch OD Tube	

M7 Pilot Port on End Plate		
	Internal Pilot End Plate	
0	With Standard Plug	
	External Pilot End Plate	
0	Without Fitting	
4	Straight Fitting for 4mm OD Tube	*BSPP Threads*
6	Straight Fitting for 6mm OD Tube	
4	Straight Fitting for 5/32 Inch OD Tube	*NPT Threads*
7	Straight Fitting for 1/4 Inch OD Tube	

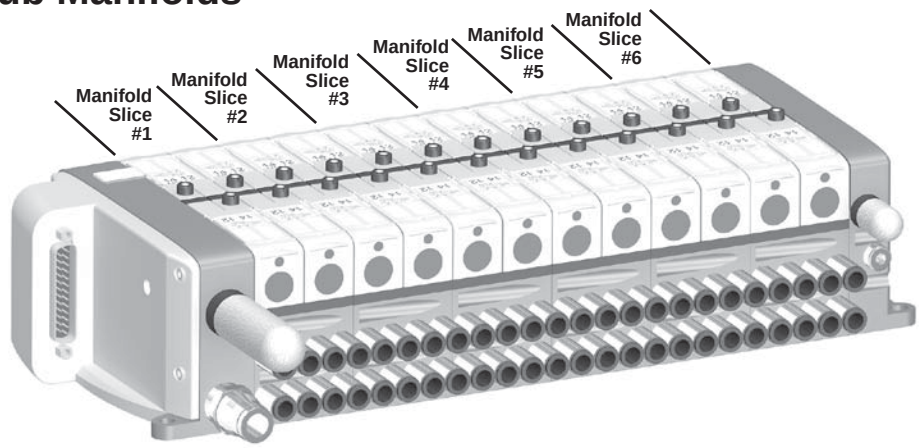
Pilot Exhaust on End Plate		
0	Without Fitting	
M	Muffler	
4	Straight Fitting for 4mm OD Tube	*BSPP Threads*
6	Straight Fitting for 6mm OD Tube	
4	Straight Fitting for 5/32 Inch OD Tube	*NPT Threads*
7	Straight Fitting for 1/4 Inch OD Tube	

Note:
BSPP fittings can only be used with BSPP Manifolds.

NPT fittings can only be used with NPT Manifolds.

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25-Pin, D-Sub Manifolds



24 Single Solenoid Valves

Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

Item	Qty	Part Number	Description
01	1	AAHMD5249M0M	24 Valve Add-A-Fold with End Plates
02	6	PSM31JAPE7E7E7E7	4 Valve Simple Manifold Slices #1-6

Component Level

Item	Qty	Part Number	Description
01	1	PSML25AP	25-Pin, D-Sub, End Plate
02	24	HMEVX2049A	Single Solenoid Valve
03	6	PSM21JAP	Manifold, Side Ported, Single Address
04	50	PS567925	1/4" Tube Fittings (In box quantity)
05	10	PS568338	3/8" Tube Fittings (In box quantity)
06	1	P6M-PAB3	3/8" Exhaust Muffler
07	1	P6M-PAB1	1/8" Exhaust Muffler

Additional Components

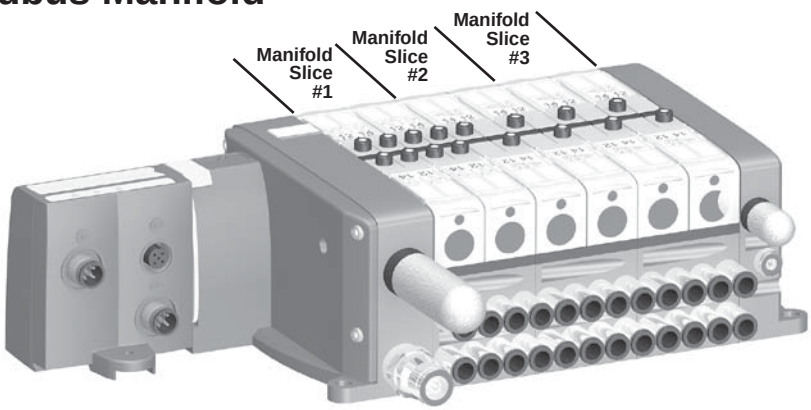
25-Pin, D-Sub Cable (Female)



Part Number	Description	Length
P8LMH25M3A	25-Pin, D-Sub Cable, IP20	3 Meters
SCD259D	25-Pin, D-Sub Cable, IP20	9 Meters
SCD253W	25-Pin, D-Sub Cable, IP65	3 Meters
	25-Pin, D-Sub Cable, IP65	9 Meters

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Moduflex Fieldbus Manifold



4 Double Solenoid Valves, 8 Single Solenoid Valves

Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

Item	Qty	Part Number	Description
01	1	AAHMT5129M0M	12 Valve Add-A-Fold with End Plates
02	1	PSM31MAPN7N7N7N7	4 Valve Simple Manifold Slice #1
3	2	PSM31JAPE7E7E7E7	4 Valve Simple Manifold Slice #2-3

Component Level

Item	Qty	Part Number	Description
01	1	PSMM45AP	Moduflex Fieldbus, End Plate
02	4	HMNVX2049A	Double Solenoid, Dual 3/2, NC/NC
03	1	PSM21MAP	Manifold, Side Ported, Double Address
4	8	HMEVX2049A	Single Solenoid Valve
5	2	PSM21JAP	Manifold, Side Ported, Single Address
6	30	PS567925	1/4" Tube Fittings (In box quantity)
05	10	PS568338	3/8" Tube Fittings (In box quantity)
06	1	P6M-PAB3	3/8" Exhaust Muffler
07	1	P6M-PAB1	1/8" Exhaust Muffler

Additional Components

Moduflex Communication Modules

Bus Protocol	Order Code
Profibus DP	**P2M2HBVP21600**
DeviceNet	**P2M2HBVD21600**
CANopen	**P2M2HBVC21600**
InterBus-S	P2M2HBVS11600

Fieldbus Accessories

	Bus Protocol	Connector Type	Order Code
Power Supply Female Straight Connector	Profibus DP / InterBus-S	M12 type A	**P8CS1205AA**
	DeviceNet / CANopen	M12 type B	**P8CS1205AB**
Line Termination Resistor	Profibus DP	M12 type B	**P8BPA00MB**
	DeviceNet / CANopen	M12 type A	**P8BPA00MA**

Standard AS-i Protocol (up to 31 nodes)

Communication Module for 8 Solenoids Max. (2 nodes per module, 4 inputs, 4 solenoids per node)

Input / Output Capability	Order Code
0 inputs and 8 solenoid outputs	**P2M2HBVA10800**
8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	**P2M2HBVA10808A**
8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	P2M2HBVA10808B

AS-i Version 2.1 Protocol (up to 62 nodes)

Communication Module for 6 Solenoids Max. (2 nodes per module, 4 inputs, 4 solenoids per node)

Input / Output Capability	Order Code
0 inputs and 6 solenoid outputs	**P2M2HBVA20600**
8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	**P2M2HBVA20608A**
8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	P2M2HBVA20608B

AS-i Bus Accessories

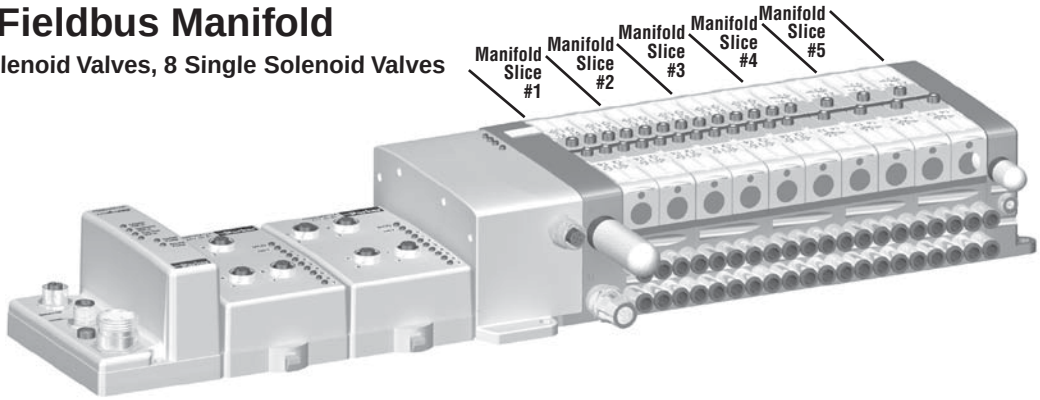
M12 Cable with Jack for Addressing

Length	Order Code
1 m	**P8LS12JACK**

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Isysnet Fieldbus Manifold

12 Double Solenoid Valves, 8 Single Solenoid Valves



Add-A-Fold

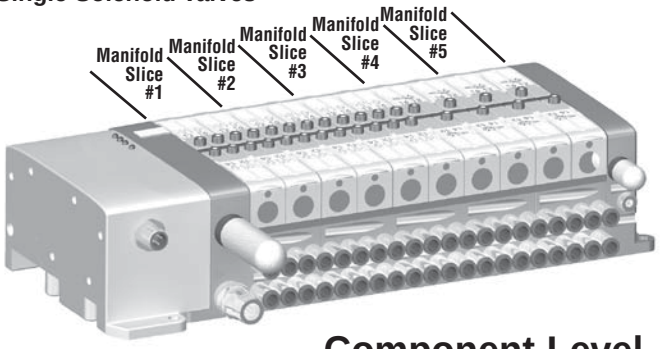
Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

Item	Qty	Part Number	Description
01	1	AAHMW5209M0M	20 Valve Add-A-Fold with End Plates
02	3	PSM31MAPN7N7N7N7	4 Valve Simple Manifold Slices #1-3
03	2	PSM31JAPE7E7E7E7	4 Valve Simple Manifold Slices #4-5

Component Level

Item	Qty	Part Number	Description
01	1	PSMM55AP	Isysnet, with Valve Driver Module and Bus Extension Connector
02	12	HMNVX2049A	Double Solenoid, Dual 3/2, NC/NC
03	3	PSM21MAP	Manifold, Side Ported, Double Address
04	8	HMEVX2049A	Single Solenoid, 2-Position, Air Return, Spring Assist
05	2	PSM21JAP	Manifold, Side Ported, Single Address
06	40	PS567925	1/4" Tube Fittings (In box quantity)
07	10	PS568338	3/8" Tube Fittings (In box quantity)
08	1	P6M-PAB3	3/8" Exhaust Muffler
09	1	P6M-PAB1	1/8" Exhaust Muffler

12 Double Solenoid Valves, 8 Single Solenoid Valves



Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

Item	Qty	Part Number	Description
01	1	AAHMX5209M0M	20 Valve Add-A-Fold with End Plates
02	3	PSM31MAPN7N7N7N7	4 Valve Simple Manifold Slices #1-3
03	2	PSM31JAPE7E7E7E7	4 Valve Simple Manifold Slices #4-5

Component Level

Item	Qty	Part Number	Description
01	1	PSMM65AP	Isysnet, with Valve Driver Module and 24VDC Connector
02	12	HMNVX2049A	Double Solenoid, Dual 3/2, NC/NC
03	3	PSM21MAP	Manifold, Side Ported, Double Address
04	8	HMEVX2049A	Single Solenoid, 2-Position, Air Return, Spring Assist
05	2	PSM21JAP	Manifold, Side Ported, Single Address
06	40	PS567925	1/4" Tube Fittings (In box quantity)
07	10	PS568338	3/8" Tube Fittings (In box quantity)
08	1	P6M-PAB3	3/8" Exhaust Muffler
09	1	P6M-PAB1	1/8" Exhaust Muffler

Additional Components

Part Number	Description
PSSCDM12A	Isysnet Devicenet Communication
PSSN8M12A	8 Digital Input, 24VDC, M12 Connectors
PSSVEXT1	Isys Micro Bus Extender Cable

See Isysnet section of catalog for more information.

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Intermediate Air Supply and Manifold Isolation Gaskets

- Run Multiple Pressure Zones in the Same Manifold
- Block Supply Ports, Exhaust Ports or Both
- Intermediate Air Supplies can be placed anywhere within the pressure zone.

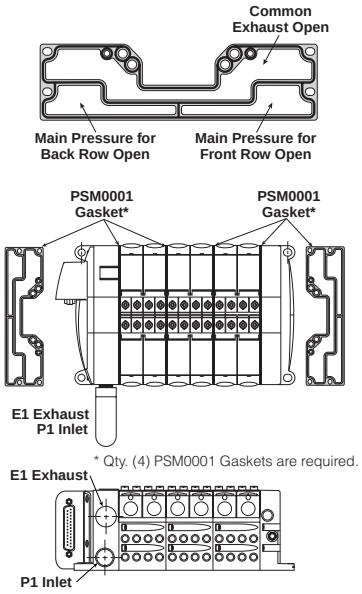
NOTE: Internal pilot pressure is supplied to the entire manifold from the right hand end plate, where the main pressure for the front row of valves is connected to the pilot pressure galley. See Technical Section for more information.

Multiple Pressure Zones

PSM0001 –

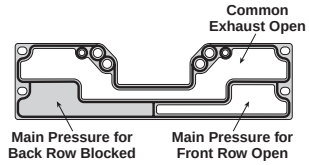
All Ports Open. Common Pressure for Front and Rear Manifold.
Common Exhausts.

Standard gasket included with each Manifold and End Plate

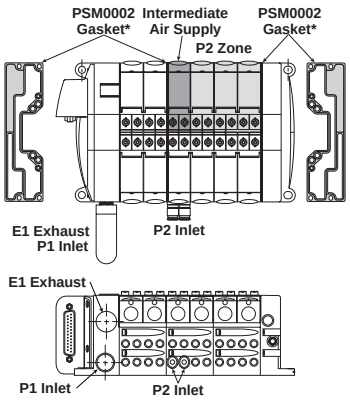


PSM0002 –

Rear Manifold Blocked for Separate Pressure Supply.
Common Exhausts.

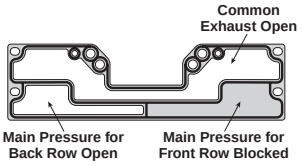


Internal Pilot Pressure from P1 Inlet

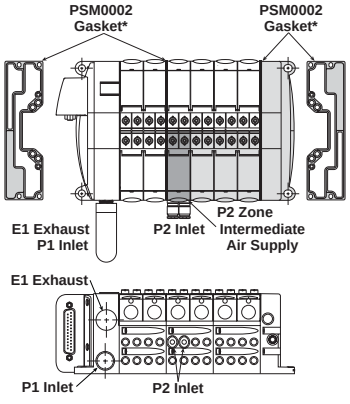


* Qty. (2) PSM0002 Gaskets are required.
Remainder are PSM0001 Gaskets (Not shown)

Front Manifold Blocked for Separate Pressure Supply.
Common Exhausts.



Internal Pilot Pressure from P2 Inlet

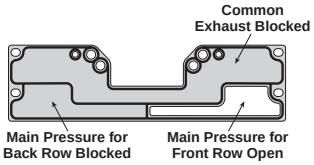


* Qty. (2) PSM0002 Gaskets are required.
Remainder are PSM0001 Gaskets (Not shown)

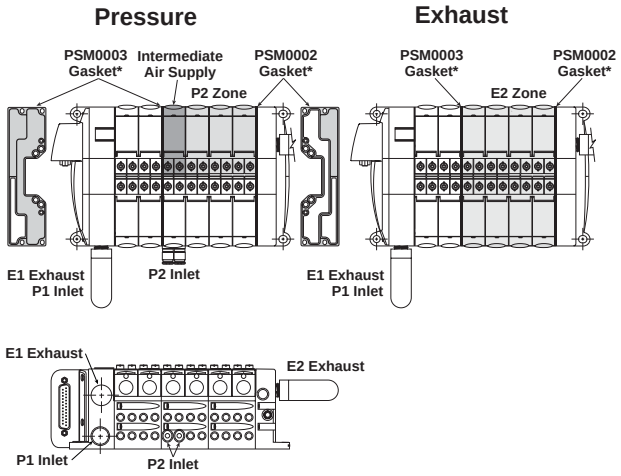
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PSM0003 –

Rear Manifold Blocked for Separate Pressure Supply.
Exhaust Blocked Also.

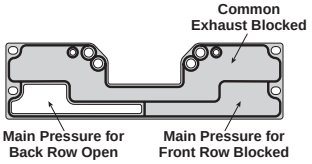


Internal Pilot Pressure from P1 Inlet

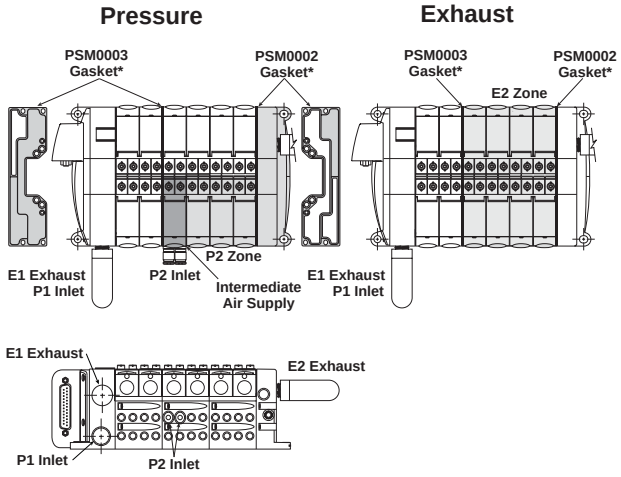


* Qty. (1) PSM0003 and Qty. (1) PSM0002 Gaskets are required.
Remainder are PSM0001 Gaskets (Not shown)

Front Manifold Blocked for Separate Pressure Supply.
Exhaust Blocked Also.



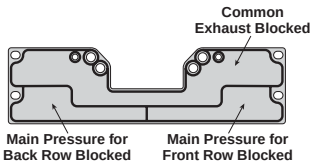
Internal Pilot Pressure from P2 Inlet



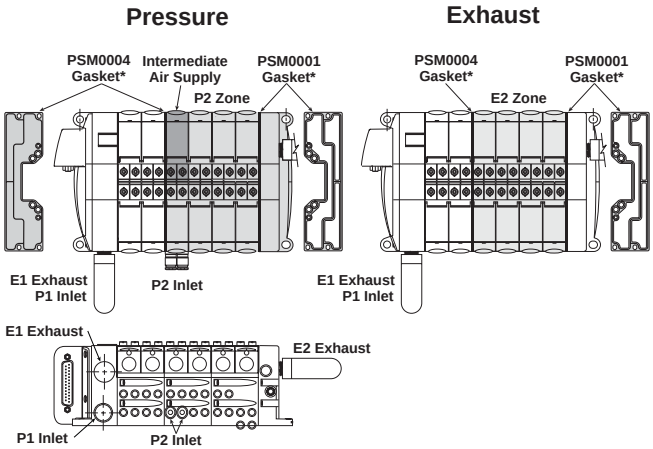
* Qty. (1) PSM0003 and Qty. (1) PSM0002 Gaskets are required.
Remainder are PSM0001 Gaskets (Not shown)

PSM0004 –

All Galleys Blocked.
Two Pressure Zones and Two Exhaust Zones.

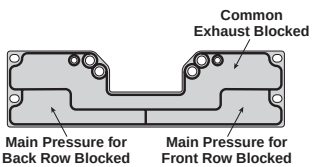


Internal Pilot Pressure from P2 Inlet

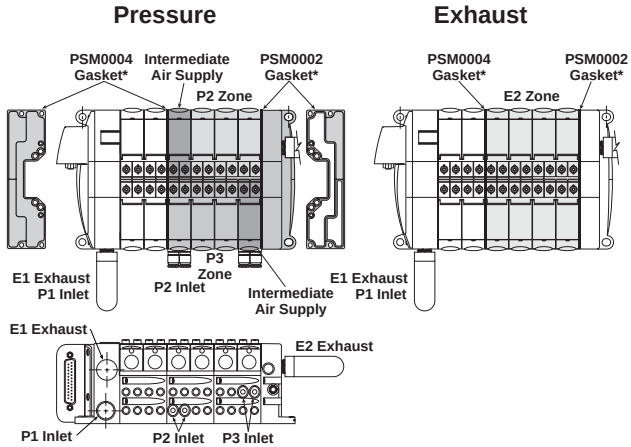


* Qty. (1) PSM0004 Gasket is required.
Remainder are PSM0001 Gaskets (Not shown)

All Galleys Blocked.
Three Pressure Zones and Two Exhaust Zones.



Internal Pilot Pressure from P3 Inlet

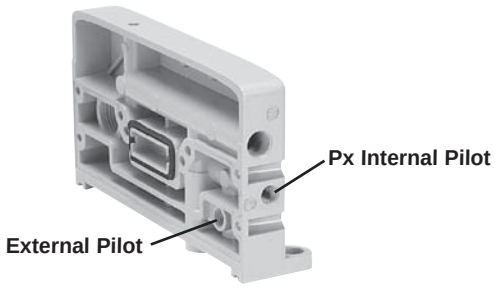


* Qty. (1) PSM0004 and Qty. (1) PSM0002 Gaskets are required.
Remainder are PSM0001 Gaskets (Not shown)

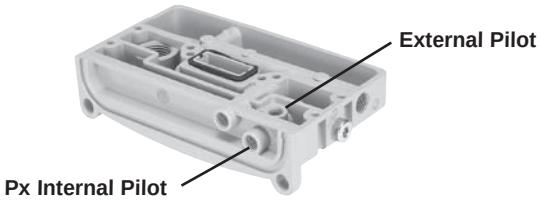
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Pilot Configuration

Manifolds can be configured for either internal or external pilot in the field. Side ported manifolds are configured for internal pilot when the M7 plug is located in the Px port on the front of the right hand end plate. Moving this plug to the inside of the right hand end plate and replacing it with a fitting allows an external pilot to be used.



Bottom ported manifolds are configured for internal pilot when the M7 plug is located in the Px port on the bottom of the right hand end plate. Moving this plug to the inside of the right hand end plate and replacing it with a fitting allows an external pilot to be used.

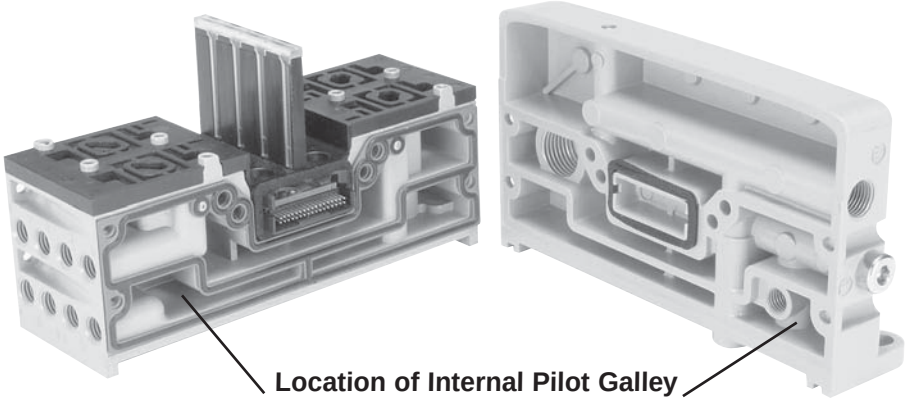


Pilot Pressure Requirements

Internal pilot pressure is supplied to the entire manifold from the right hand end plate, where the main pressure for the front row of valves is connected to the pilot pressure galley.

Maximum Pilot Pressure is 120 PSI. For applications requiring working pressures from 120 to 145 PSI, an External Pilot supply less than 120 PSI is required.

Valve Number	Minimum Pilot Pressure	Maximum Pilot Pressure
HMEVX2049A	40 PSI	120 PSI
HM2VX2049A	25 PSI	120 PSI
HM5VX2049A	45 PSI	120 PSI
HMNVX2049A	40 PSI	120 PSI
HMPVX2049A	40 PSI	120 PSI
HMQVX2049A	40 PSI	120 PSI



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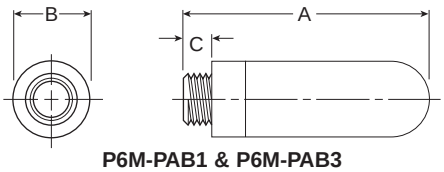

P6M-PAB3


P6M-PAB1

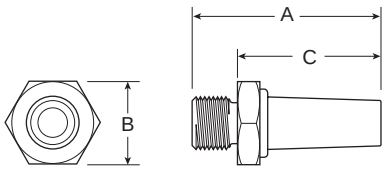

P0568800

Mufflers

P6M-PAB1	1/8" Pilot Exhaust – BSPP or NPT
P6M-PAB3	3/8" Main Exhaust – BSPP or NPT
P0568800	M7 Bottom Port Pilot Exhaust
PS568800	M7 Bottom Port Pilot Exhaust (Must be ordered in multiples of 10)



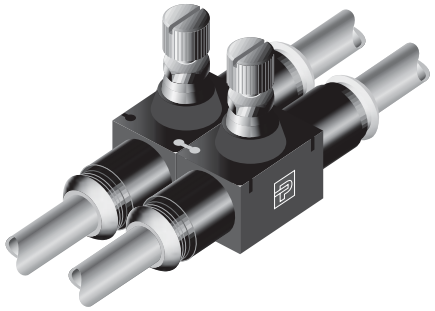
P6M-PAB1 & P6M-PAB3



P0568800

Port Thread	A	Diameter B	C	Weight (grams)	Part Number
1/8	1.14 (29)	0.55 (14)	0.24 (6)	0.02	**P6M-PAB1**
3/8	2.36 (60)	0.98 (25)	0.35 (9)	0.06	**P6M-PAB3**
M7 x 1	0.98 (25)	0.43 (11)	0.75 (19)	5	**P0568800**

Note: Recommended tube durometer of 95 or higher. A tube support may be required if tube durometer is less than 95.



Flow Controls

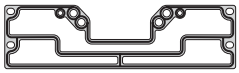
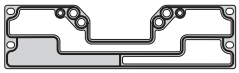
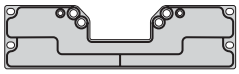
FC800-5/32	4mm to 4mm or 5/32" to 5/32" OD Tube
FC800-4	1/4" to 1/4" O.D. Tube

Fittings – Must be ordered in multiples of 10

	Kit Number	Thread	Tube O.D.
Manifold or Pilot Supply Ports – Straight			
	**PS567904**	M7	4mm or 5/32"
	PS567906	M7	6mm
	PS567925	M7	1/4"
Main Inlet or Exhaust Ports			
	**PS568325**	3/8" NPT	1/4"
	PS568338	3/8" NPT	3/8"
	PS568308	3/8" BSPP	8mm
	PS568310	3/8" BSPP	10mm
Pilot Exhaust Ports			
	**PS568215**	1/8" NPT	5/32"
	PS568225	1/8" NPT	1/4"
	PS568204	1/8" BSPP	4mm
	PS568206	1/8" BSPP	6mm

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Manifold to Manifold Gaskets*

	**PSM0001**	All Galleys Passing
	**PSM0002**	Main Pressure to Rear or Front Valves Blocked, Exhaust Passing
	**PSM0003**	Main Pressure to Rear or Front Valves Blocked, Exhaust Blocked
	**PSM0004**	All Galleys Blocked

* Includes 1 Gasket

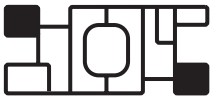
Replacement Solenoid Kit

	**PSM0010**	24VDC Solenoid Kit with Screws

Replacement Override Caps

	**PSM0011**	Set of 10 Manual Override Caps

Replacement Gaskets and Valve Screws

	**PSM0012**	Set of 5 Valve to Manifold Gaskets and 10 Screws

Replacement Plugs

	**PSM0013**	Set of 10 M7 Plugs (Part No. PS567900) for Auxiliary and Pilot Pressure Ports

Valve Labels*

PSM002E	Single Solenoid Diagram
PSM0022	Double Solenoid Diagram
PSM0025	Double Solenoid Diagram – APB
PSM002N	Double Solenoid Diagram – Dual 3/2 NC/NC
PSM002P	Double Solenoid Diagram – Dual 3/2 NO/NO
PSM002Q	Double Solenoid Diagram – Dual 3/2, 14 End NO, 12 End NC

*Includes 10 Labels.

Replacement Screws

	**PSM0014**	Set of 10 Manifold to Manifold M3 Screws

Replacement Regulator Gauge

	**P0566202**	5 to 125 PSI Gauge

Replacement Protective Cover

	PS5706	Protective Polyester Cover Set of 10

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Maximum Number of Solenoids
(Maximum Energized Simultaneously)

	25-Pin D-Sub	Moduflex	Isysnet*
24VDC	24 (24)	16 (16)	32 (32)

*Maximum of 32 solenoids per manifold. With Bus Extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same network.

Operating Pressure

Maximum: 145 PSIG (10 bar)

Minimum: Vacuum

Maximum and minimum values with external pilot pressure

Temperature Rating

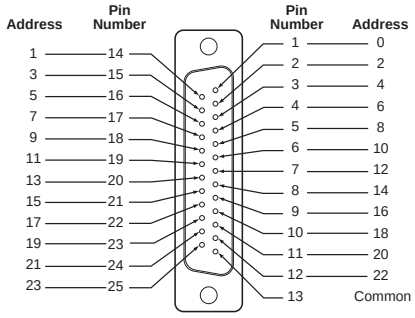
-15°C to 49°C (5°F to 120°F)

Pilot Pressure Requirements

Valve Number	Minimum Pilot Pressure	Maximum Pilot Pressure
HMEVX2049A	40 PSI	120 PSI
HM2VX2049A	25 PSI	120 PSI
HM5VX2049A	45 PSI	120 PSI
HMNVX2049A	40 PSI	120 PSI
HMPVX2049A	40 PSI	120 PSI
HMQVX2049A	40 PSI	120 PSI

Vibration According to IEC 68-2-6	2G to 150Hz
Shock According to IEC-68-2-27	15G – 11ms
Rated Coil Voltage	24VDC / -15% / +10%
Power Consumption	1W (42mA) with LED
Duty Factor	100% at 20°C

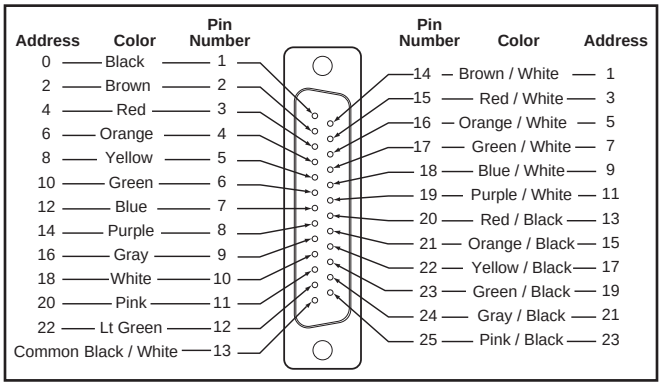
25-Pin, D-Sub Connector (Male)



View into End Plate Connector - Male D-Sub, 25-Pin

25-Pin, D-Sub Cable (Female)

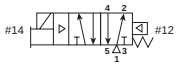




Part Number	Description	Length
P8LMH25M3A	25-Pin, D-Sub Cable, IP20	3 Meters
SCD259D	25-Pin, D-Sub Cable, IP20	9 Meters
SCD253W	25-Pin, D-Sub Cable, IP65	3 Meters
SCD259WE	25-Pin, D-Sub Cable, IP65	9 Meters

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Single Solenoid



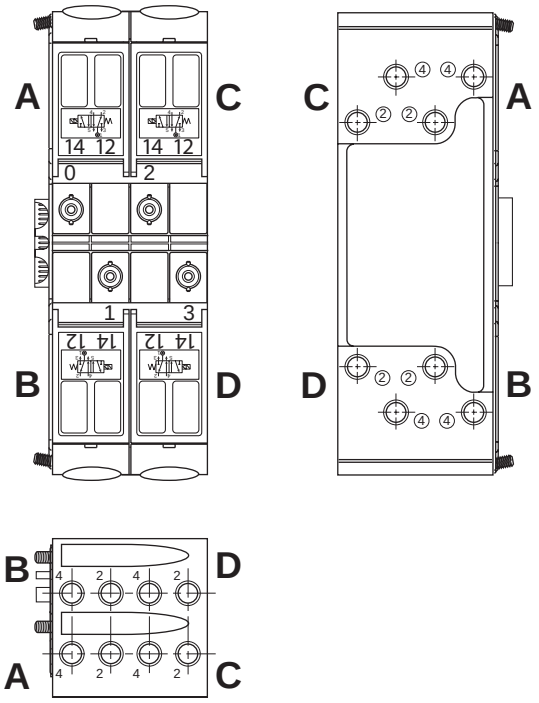
Single Pressure At Inlet Port 1:

De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

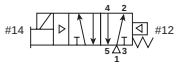
Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

HMEVX2049A - Single Address Manifolds

Valve Position A		Valve Position C	
Output 0		Output 2	
On	Off	On	Off
1→4 3←2	1→2 5←4	1→4 3←2	1→2 5←4
Valve Position B		**Valve Position D**	
Output 1		Output 3	
On	Off	On	Off
1→4 3←2	1→2 5←4	1→4 3←2	1→2 5←4



Single Solenoid



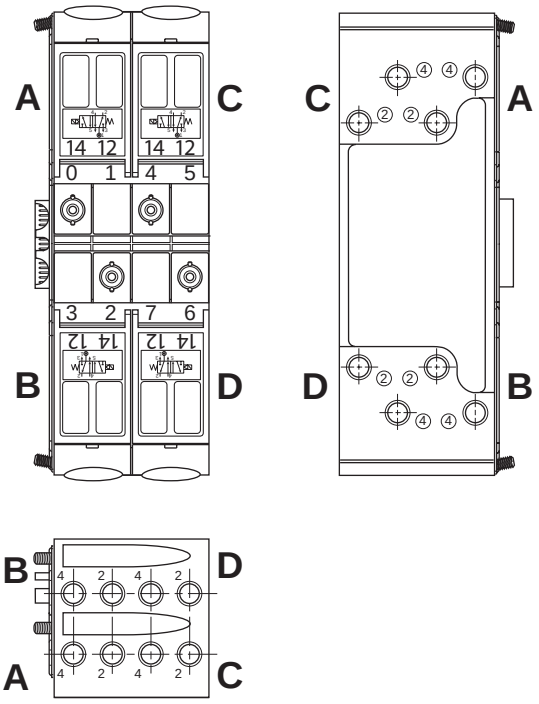
Single Pressure At Inlet Port 1:

De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

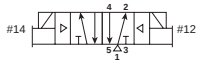
HMEVX2049A - Double Address Manifolds

Valve Position A				Valve Position C			
Output 0		Output 1		Output 4		Output 5	
On	Off	On	Off	On	Off	On	Off
1→4 3←2	1→2 5←4	Output Lost 1→2 5←4	 1→2 5←4	1→4 3←2	1→2 5←4	Output Lost 1→2 5←4	 1→2 5←4
Valve Position B				**Valve Position D**			
Output 3		Output 2		Output 7		Output 6	
On	Off	On	Off	On	Off	On	Off
Output Lost 1→2 5←4	 1→2 5←4	1→4 3←2	1→2 5←4	Output Lost 1→2 5←4	 1→2 5←4	1→4 3←2	1→2 5←4



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Double Solenoid



Single Pressure At Inlet Port 1:

Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

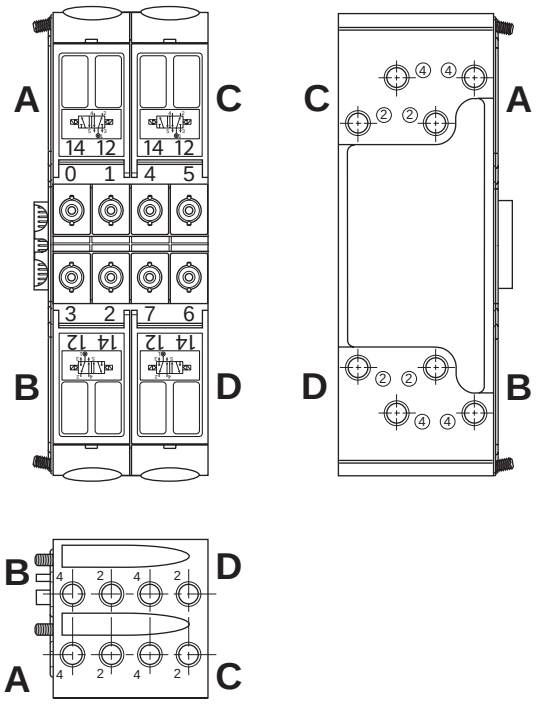
A 2-Position, Double Solenoid Valve is a detented valve. When the output is removed, the spool remains in its position.

HM2VX2049A - Double Address Manifolds - Last state #12 Energized

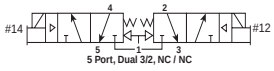
Valve Position A				Valve Position C			
Output 0		Output 1		Output 4		Output 5	
On	Off	On	Off	On	Off	On	Off
1→4 3←2	1→2 5←4	1→2 5←4	1→2 5←4	1→4 3←2	1→2 5←4	1→2 5←4	1→2 5←4
Valve Position B				**Valve Position D**			
Output 3		**Output 2**		**Output 7**		**Output 6**	
On	Off	On	Off	On	Off	On	Off
1→2 5←4	1→2 5←4	1→4 3←2	1→2 5←4	1→2 5←4	1→2 5←4	1→4 3←2	1→2 5←4

HM2VX2049A - Double Address Manifolds - Last state #14 Energized

Valve Position A				Valve Position C			
Output 0		Output 1		Output 4		Output 5	
On	Off	On	Off	On	Off	On	Off
1→4 3←2	1→4 3←2	1→2 5←4	1→4 3←2	1→4 3←2	1→4 3←2	1→2 5←4	1→4 3←2
Valve Position B				**Valve Position D**			
Output 3		**Output 2**		**Output 7**		**Output 6**	
On	Off	On	Off	On	Off	On	Off
1→2 5←4	1→4 3←2	1→4 3←2	1→4 3←2	1→2 5←4	1→4 3←2	1→4 3←2	1→4 3←2



Double Solenoid
Dual 3-Way, 2-Position
NC / NC (NNP)



With #14 & #12 operators both de-energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

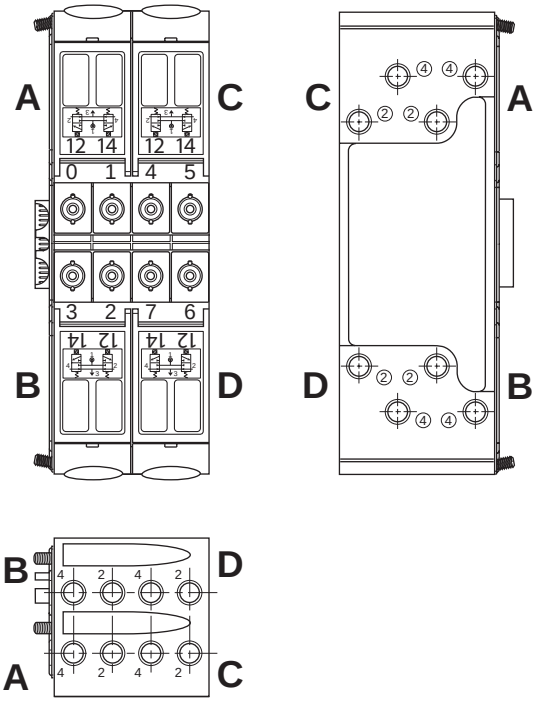
With #14 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #14 & #12 operators both energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

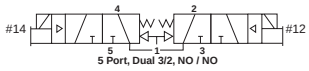
HMNVX2049A - Double Address Manifolds

Valve Position A				Valve Position C			
Output 0		Output 1		Output 4		Output 5	
On	Off	On	Off	On	Off	On	Off
1→2 3⊣	1⊣ 3←2	1→4 5⊣	1⊣ 5←4	1→2 3⊣	1⊣ 3←2	1→4 5⊣	1⊣ 5←4
Valve Position B				**Valve Position D**			
Output 3		**Output 2**		**Output 7**		**Output 6**	
On	Off	On	Off	On	Off	On	Off
1→4 5⊣	1⊣ 5←4	1→2 3⊣	1⊣ 3←2	1→4 5⊣	1⊣ 5←4	1→2 3⊣	1⊣ 3←2



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Dual 3-Way, 2-Position NO / NO (NP)

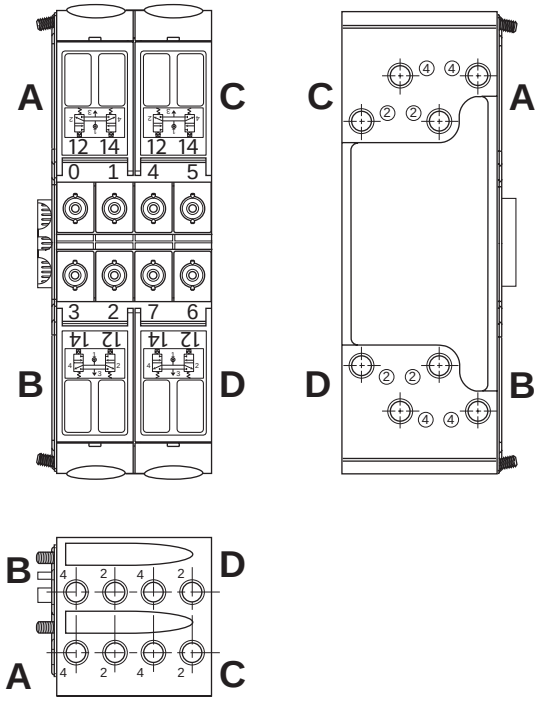


With #14 & #12 operators both de-energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

With #14 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

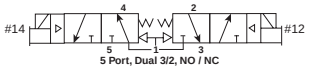
With #14 & #12 operators both energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.



HMPVX2049A - Double Address Manifolds

Valve Position A				Valve Position C			
Output 0		Output 1		Output 4		Output 5	
On	Off	On	Off	On	Off	On	Off
1⊣ 3←2	1→2 3⊣	1⊣ 5←4	1→4 5⊣	1⊣ 3←2	1→2 3⊣	1⊣ 5←4	1→4 5⊣
Valve Position B				Valve Position D			
Output 3		Output 2		Output 7		Output 6	
On	Off	On	Off	On	Off	On	Off
1⊣ 5←4	1→4 5⊣	1⊣ 3←2	1→2 3⊣	1⊣ 5←4	1→4 5⊣	1⊣ 3←2	1→2 3⊣

Dual 3-Way, 2-Position 14 End NO / 12 End NC (NP / NNP)

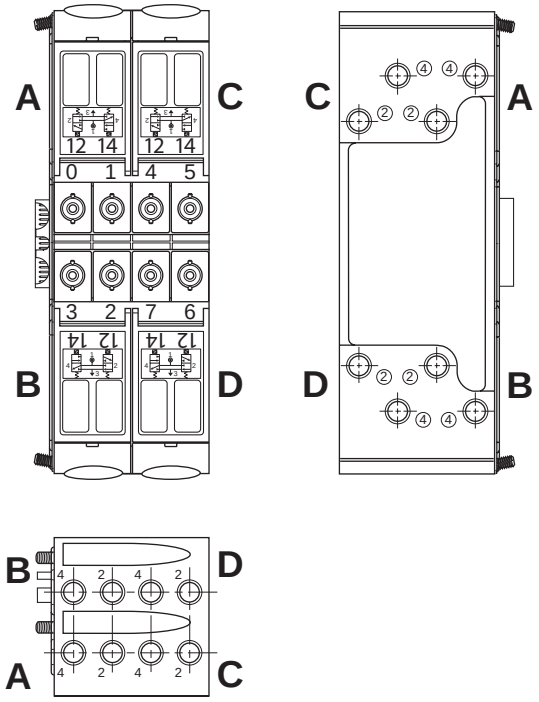


With #14 & #12 operators both de-energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #14 operator energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

With #12 operator energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

With #14 & #12 operators both energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

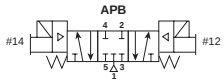


HMQVX2049A - Double Address Manifolds

Valve Position A				Valve Position C			
Output 0		Output 1		Output 4		Output 5	
On	Off	On	Off	On	Off	On	Off
1→2 3⊣	1⊣ 3←2	1⊣ 5←4	1→4 5⊣	1→2 3⊣	1⊣ 3←2	1⊣ 5←4	1→4 5⊣
Valve Position B				Valve Position D			
Output 3		Output 2		Output 7		Output 6	
On	Off	On	Off	On	Off	On	Off
1⊣ 5←4	1→4 5⊣	1→2 3⊣	1⊣ 3←2	1⊣ 5←4	1→4 5⊣	1→2 3⊣	1⊣ 3←2

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Double Solenoid 3-Position

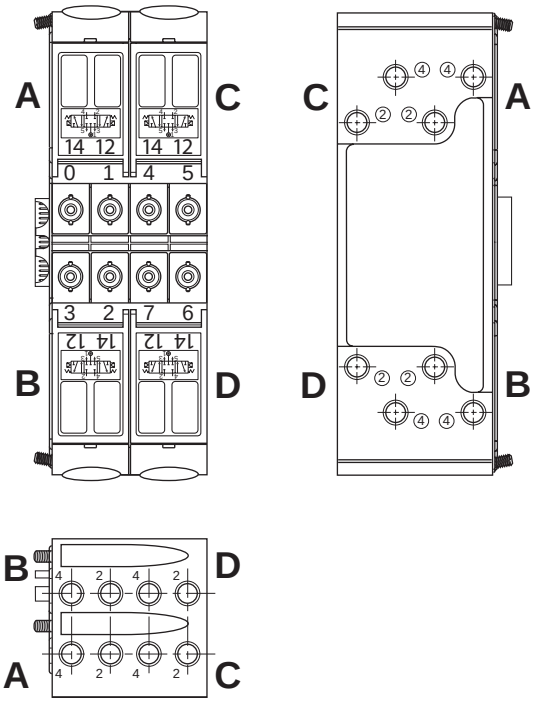


Function 5: All Ports Blocked

With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

All ports blocked in the center position.



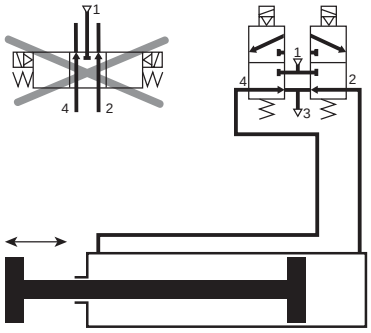
HM5VX2049A - Double Address Manifolds

Valve Position A			Valve Position C		
Output 0 On Output 1 Off	Output 0 Off Output 1 On	Output 0 Off Output 1 Off	Output 4 On Output 5 Off	Output 4 Off Output 5 On	Output 4 Off Output 5 Off
5⊣ 1→4 3←2	5←4 1→2 3⊣	3⊣ ⊢4 1⊣ ⊢2 5⊣	5⊣ 1→4 3←2	5←4 1→2 3⊣	3⊣ ⊢4 1⊣ ⊢2 5⊣
Valve Position B			**Valve Position D**		
Output 2 On Output 3 Off	Output 2 Off Output 3 On	Output 2 Off Output 3 Off	Output 6 On Output 7 Off	Output 6 Off Output 7 On	Output 6 Off Output 7 Off
5⊣ 1→4 3←2	5←4 1→2 3⊣	3⊣ ⊢4 1⊣ ⊢2 5⊣	5⊣ 1→4 3←2	5←4 1→2 3⊣	3⊣ ⊢4 1⊣ ⊢2 5⊣

Dual 3/2 Valves Replace 3-Position Valves for Better Performance

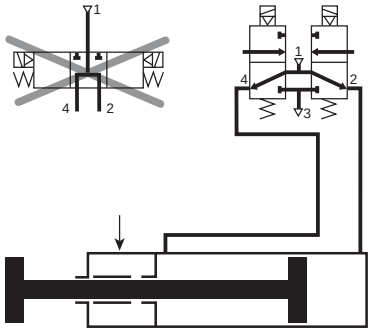
3-Position Center Exhaust

A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module. Both cylinder chambers are exhausted and rod and piston are free to move.

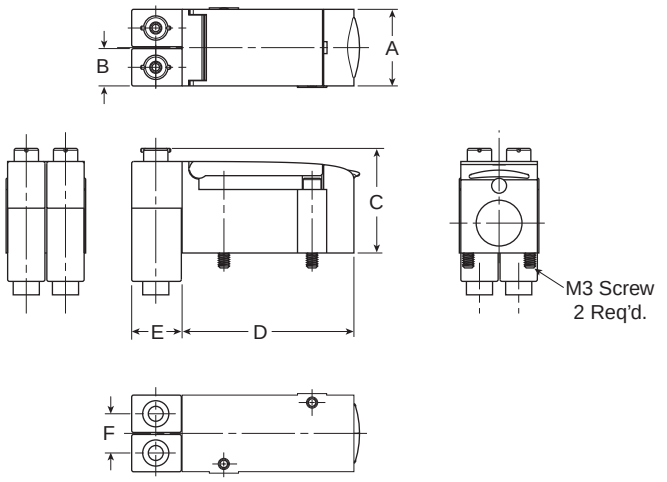


3-Position Pressure Center

A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.



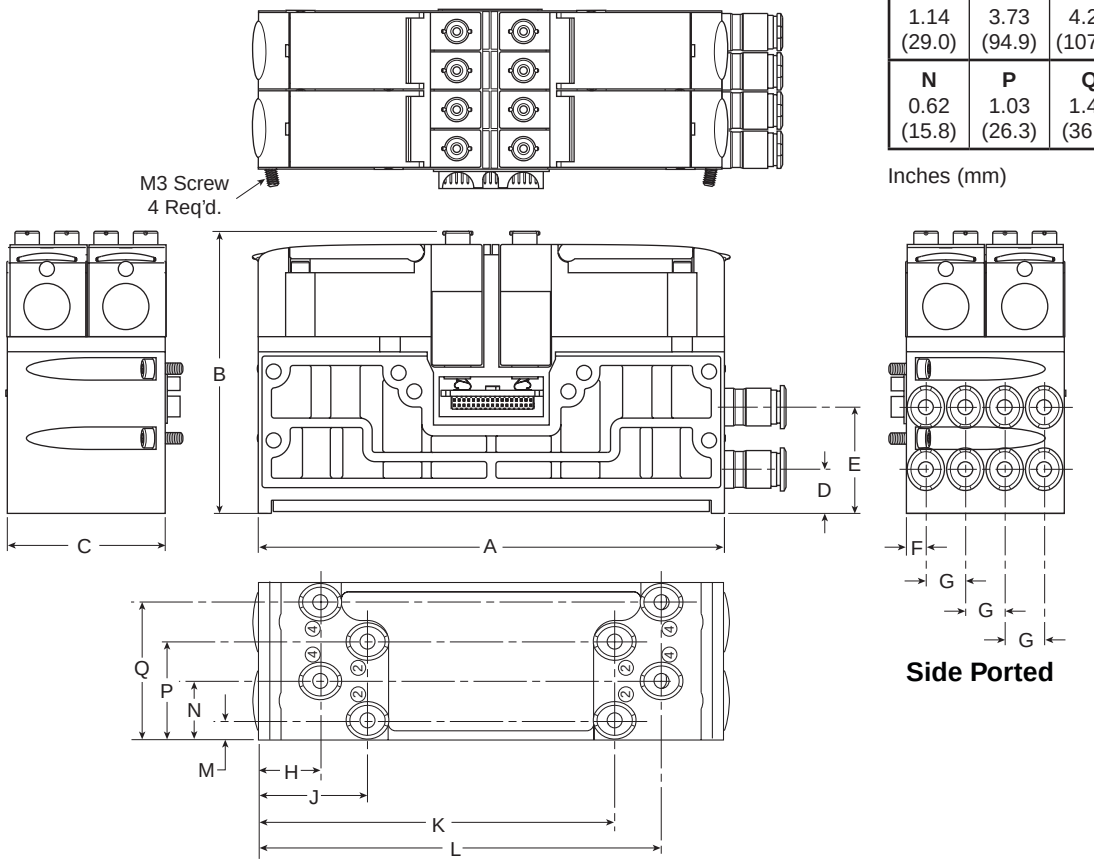
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Dimensions

A	B	C	D
0.83 (21.0)	0.40 (10.0)	1.12 (28.4)	1.83 (46.5)
E	**F**		
0.52 (13.3)	0.43 (10.8)		

Inches (mm)



Side Ported

Bottom Ported

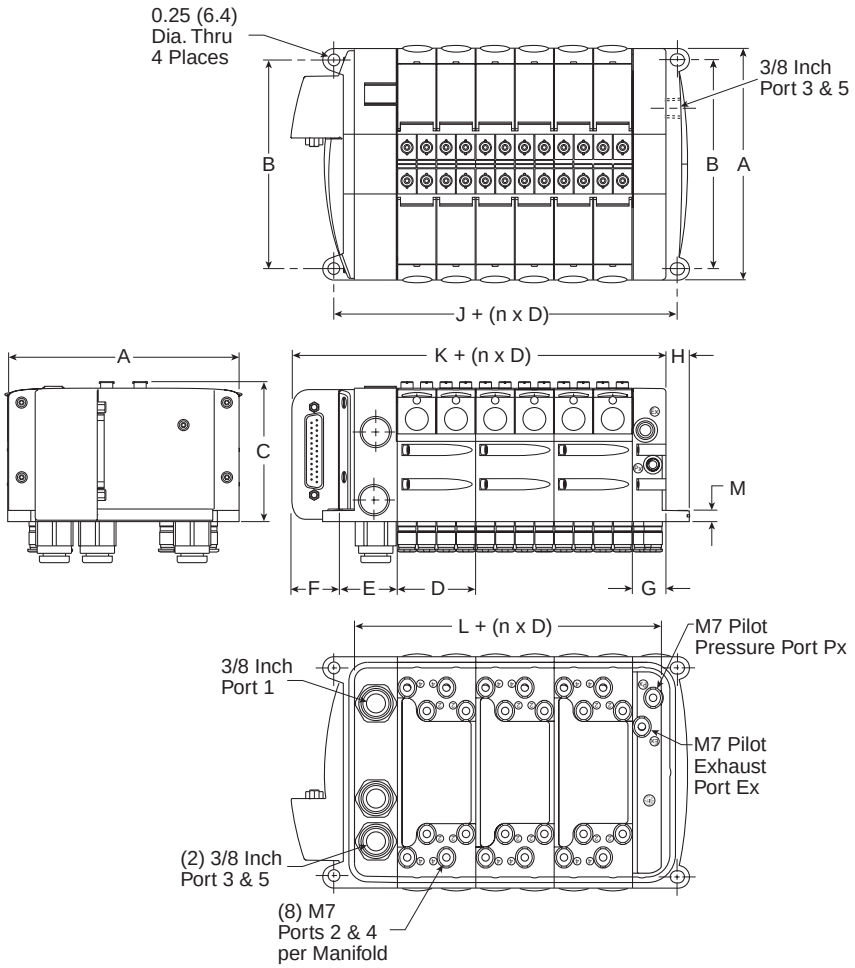
Dimensions

A	B	C	D
4.88 (123.8)	2.95 (75.0)	1.65 (42.0)	0.47 (11.9)
E	**F**	**G**	**H**
1.11 (28.3)	0.21 (5.2)	0.41 (10.5)	0.64 (16.4)
J	**K**	**L**	**M**
1.14 (29.0)	3.73 (94.9)	4.23 (107.4)	0.21 (5.3)
N	**P**	**Q**	
0.62 (15.8)	1.03 (26.3)	1.45 (36.8)	

Inches (mm)

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25-Pin, D-Sub, Bottom Ported

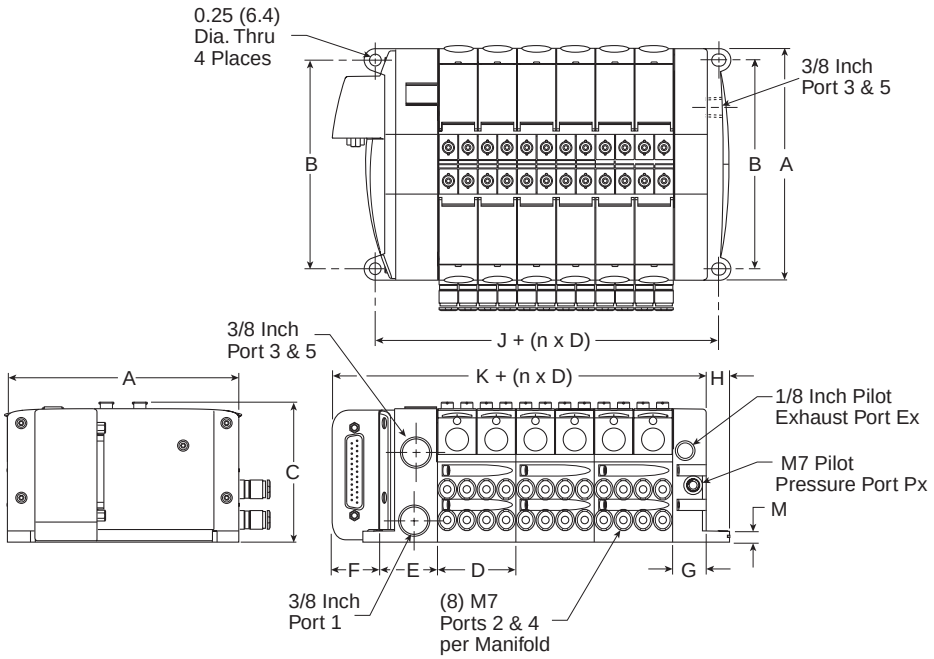


Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.02 (26.0)	0.71 (18.0)	0.49 (12.5)
J	**K**	**L**	**M**
2.28 (58.0)	3.44 (87.5)	1.69 (43.0)	0.24 (6.1)

Inches (mm)
n = Number of Manifolds

25-Pin, D-Sub, Side Ported



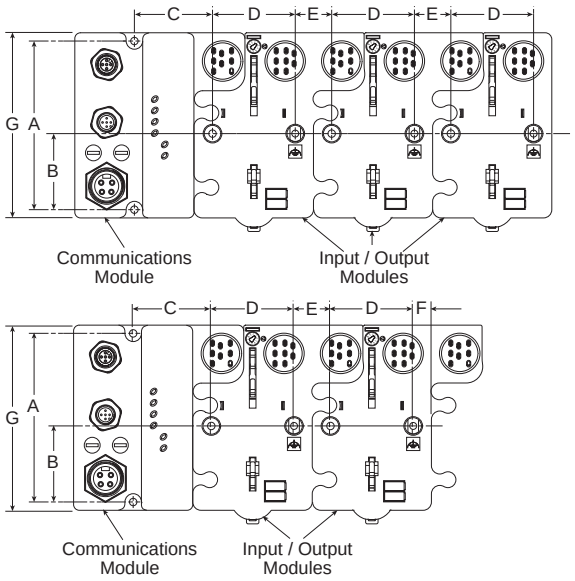
Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.02 (26.0)	0.71 (18.0)	0.49 (12.5)
J	**K**	**M**	
2.28 (58.0)	3.44 (87.5)	0.24 (6.1)	

Inches (mm)
n = Number of Manifolds

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Isysnet Modules

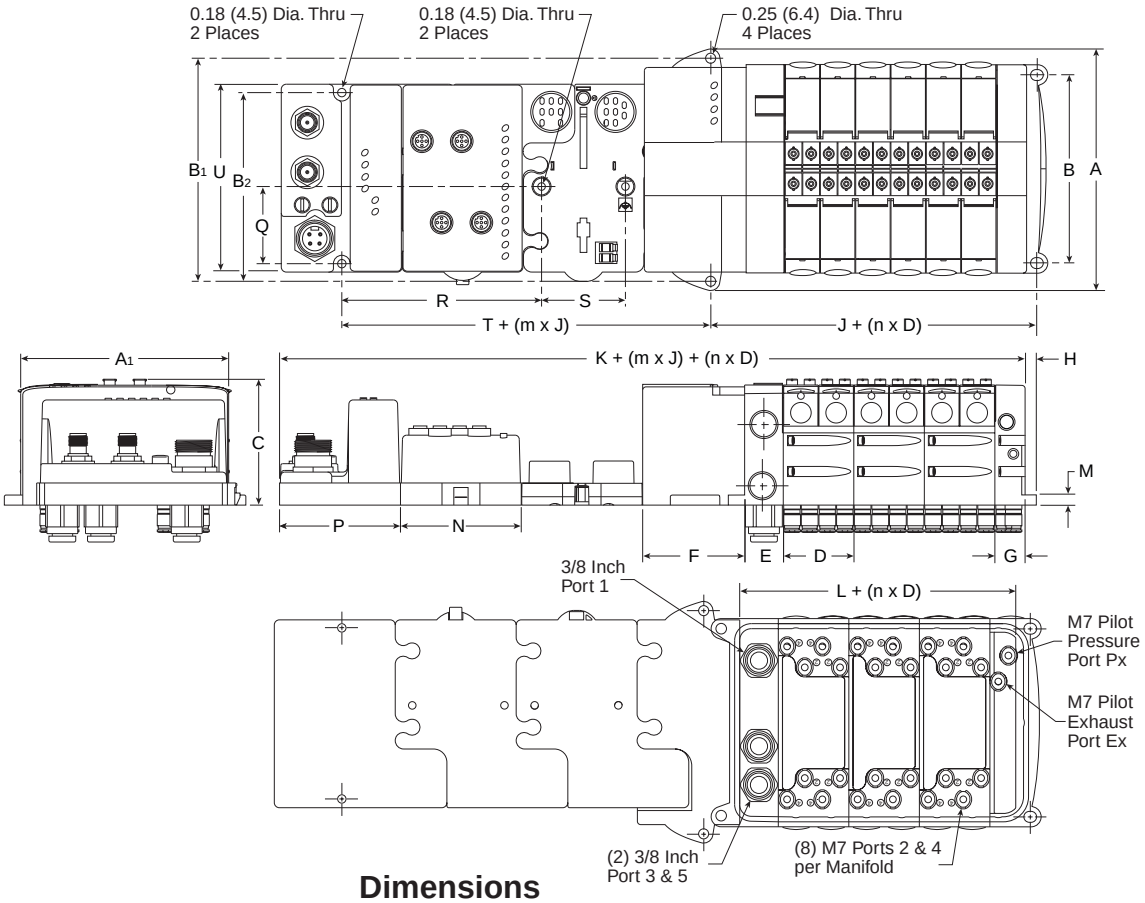


Dimensions

A	B	C	D
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)
E	**F**	**G**	
.87 (22)	.43 (11)	4.41 (112)	

Inches (mm)

Isysnet, Bottom Ported



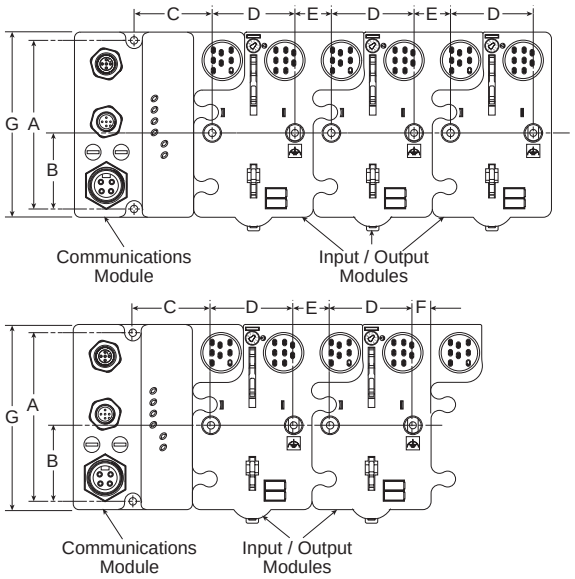
Dimensions

A	A1	B	B1	B2	C	D	E	F	G	H
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	2.40 (61.0)	0.71 (18.0)	0.49 (12.5)
J	**K**	**L**	**M**	**N**	**P**	**Q**	**R**	**S**	**T**	**U**
2.72 (69.0)	7.32 (186.0)	1.69 (43.0)	0.24 (6.1)	2.83 (72.0)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)	4.41 (112)

Inches (mm)
n = Number of Manifolds
m = Number of Modules

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Isysnet Modules

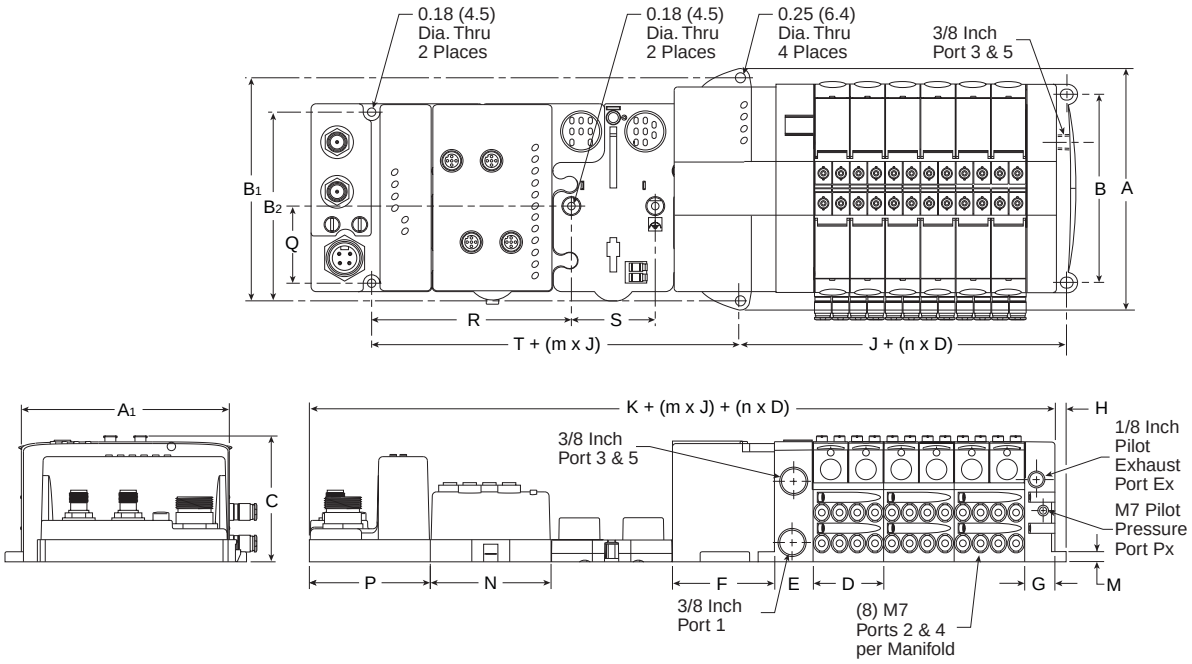


Dimensions

A	B	C	D
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)
E	**F**	**G**	
.87 (22)	.43 (11)	4.41 (112)	

Inches (mm)

Isysnet, Side Ported



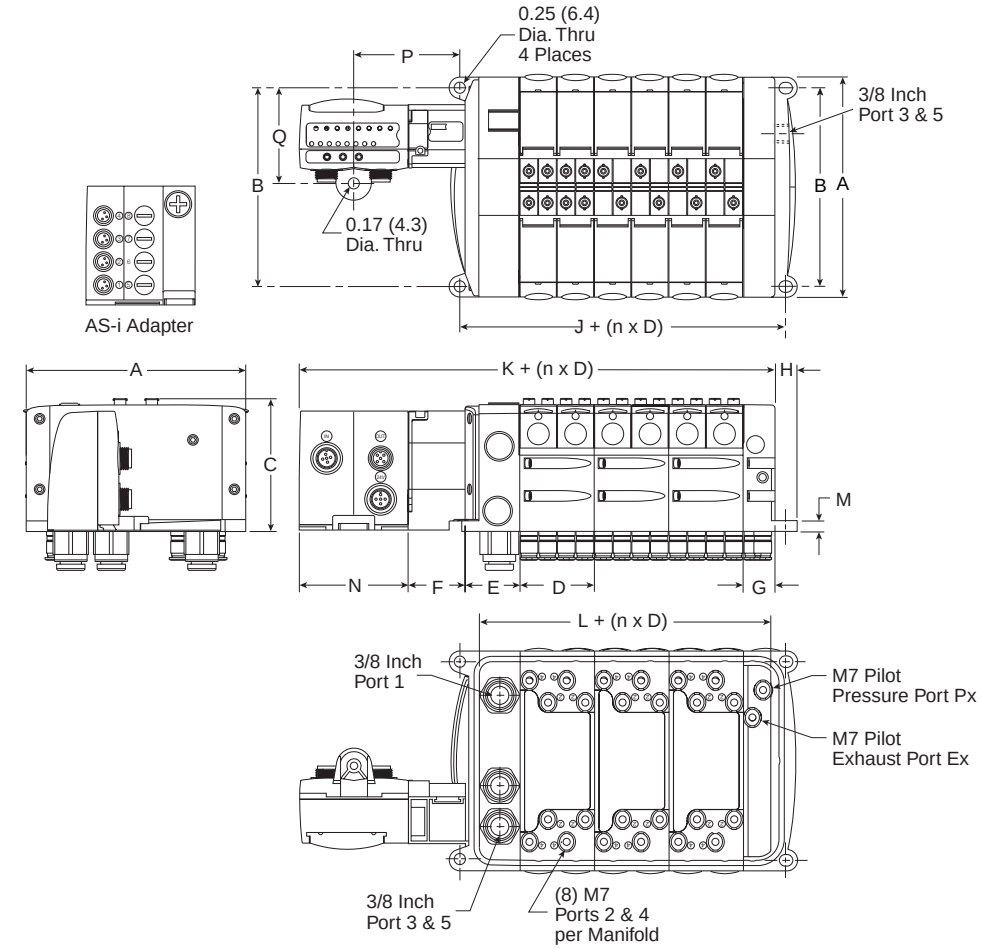
Dimensions

A	A1	B	B1	B2	C	D	E	F	G
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	2.40 (61.0)	0.71 (18.0)
H	**J**	**K**	**M**	**N**	**P**	**Q**	**R**	**S**	**T**
0.49 (12.5)	2.72 (69.0)	7.32 (186.0)	0.24 (6.1)	2.83 (72.0)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)

Inches (mm)
n = Number of Manifolds
m = Number of Modules

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Moduflex Adapter, Bottom Ported

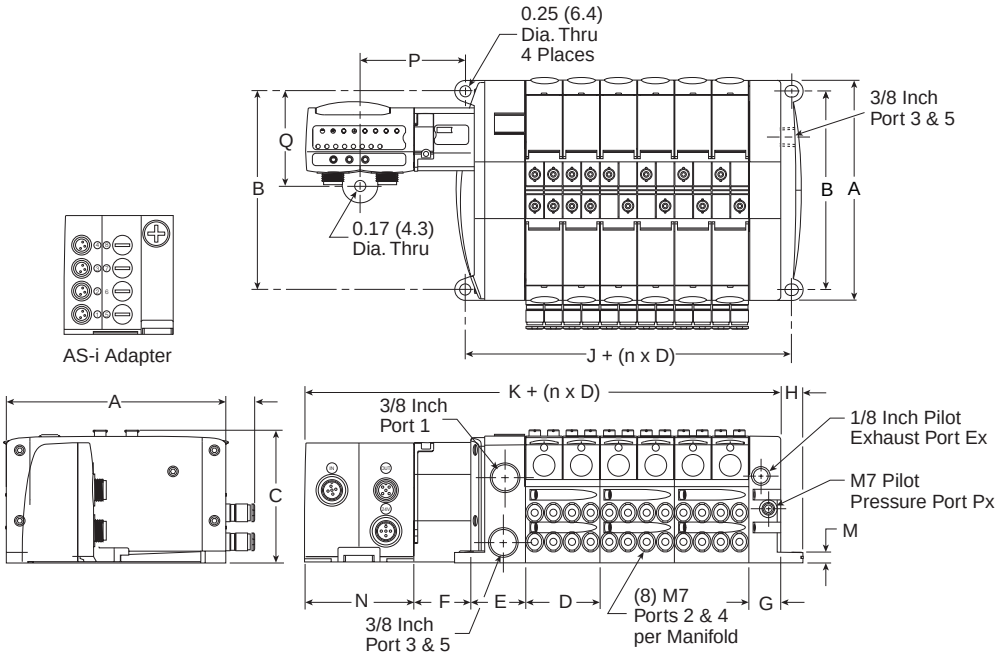


Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.28 (32.5)	0.71 (18.0)	0.49 (12.5)
J	**K**	**L**	**M**
2.28 (58.0)	6.10 (155.0)	1.69 (43.0)	0.24 (6.1)
N	**P**	**Q**	
2.40 (61.0)	2.36 (60.0)	2.07 (52.5)	

Inches (mm)
n = Number of Manifolds

Moduflex Adapter, Side Ported



Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.28 (32.5)	0.71 (18.0)	0.49 (12.5)
J	**K**	**M**	**N**
2.28 (58.0)	6.10 (155.0)	0.24 (6.1)	2.40 (61.0)
P	**Q**		
2.36 (60.0)	2.07 (52.5)		

Inches (mm)
n = Number of Manifolds

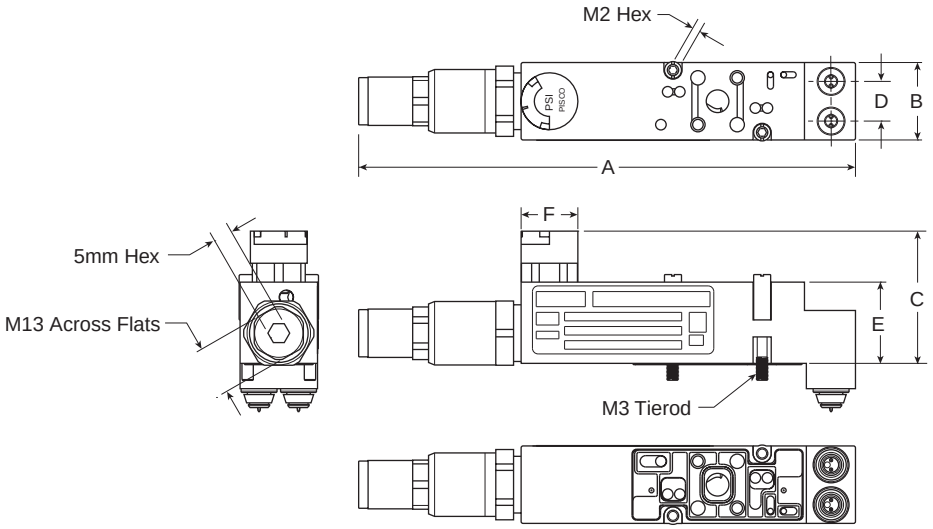
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Sandwich Regulator

Dimensions

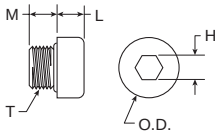
A	B	C	D
5.20 (132.0)	0.81 (20.5)	1.38 (35.0)	0.41 (10.5)
E	**F**		
0.85 (21.5)	0.59Ø (15Ø)		

Inches (mm)



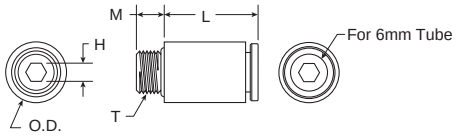
M7 Fittings

PS567900 – Kit PSM0013



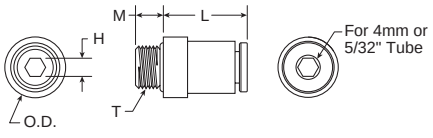
Part No.	L	M	H Hex	T Thread	O.D.
PS567900	0.18 (4.5)	0.20 (5)	0.16 (4)	M7 x 1	0.39 (10)

PS567906



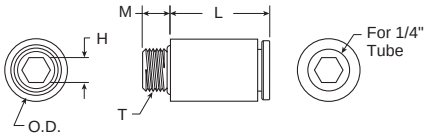
Part No.	Tube Size	L	M	H Hex	T Thread	O.D.
PS567906	6mm	0.63 (16)	0.20 (5)	0.12 (3)	M7 x 1	0.39 (10)

PS567904



Part No.	Tube Size	L	M	H Hex	T Thread	O.D.
PS567904	4mm or 5/32"	0.55 (14)	0.20 (5)	0.12 (3)	M7 x 1	0.39 (10)

PS567925

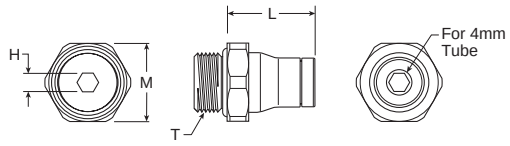


Part No.	Tube Size	L	M	H Hex	T Thread	O.D.
PS567925	1/4"	0.65 (16.5)	0.18 (4.6)	0.16 (4)	M7 x 1	0.41 (10.3)

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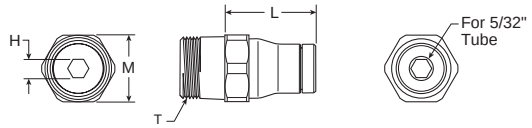
1/8 Inch Fittings

PS568204



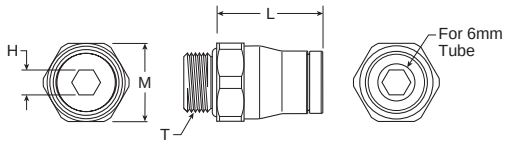
Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568204	4mm	0.57 (14.5)	0.51 (13)	0.12 (3)	G1 /8

PS568215



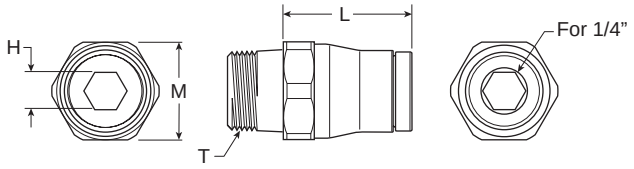
Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568215	5/32"	0.59 (15)	0.43 (11)	0.12 (3)	1/8 NPT

PS568206



Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568206	6mm	0.69 (17.5)	0.51 (13)	0.16 (4)	G1/8

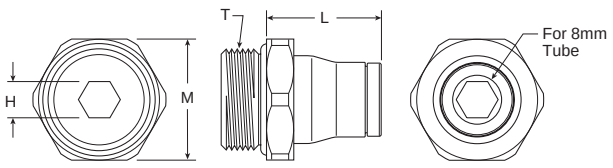
PS568225



Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568225	1/4"	0.67 (17)	0.51 (13)	0.20 (5)	1/8 NPT

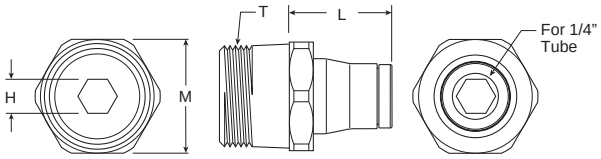
3/8 Inch Fittings

PS568308



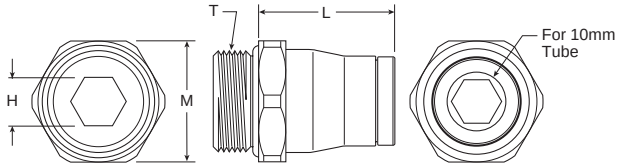
Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568308	8mm	0.75 (19)	0.79 (20)	0.24 (6)	G3/8

PS568325



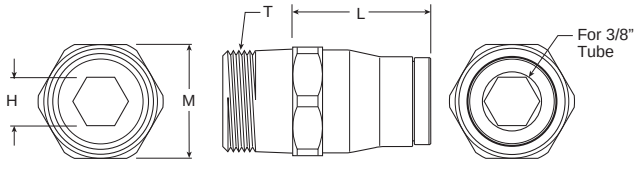
Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568325	1/4"	0.67 (17)	0.71 (18)	0.20 (5)	3/8 NPT

PS568310



Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568310	10mm	0.89 (22.5)	0.79 (20)	0.31 (8)	G3/8

PS568338



Part No.	Tube Size	L	M Hex	H Hex	T Thread
PS568338	3/8"	0.91 (23)	0.71 (18)	0.31 (8)	3/8 NPT

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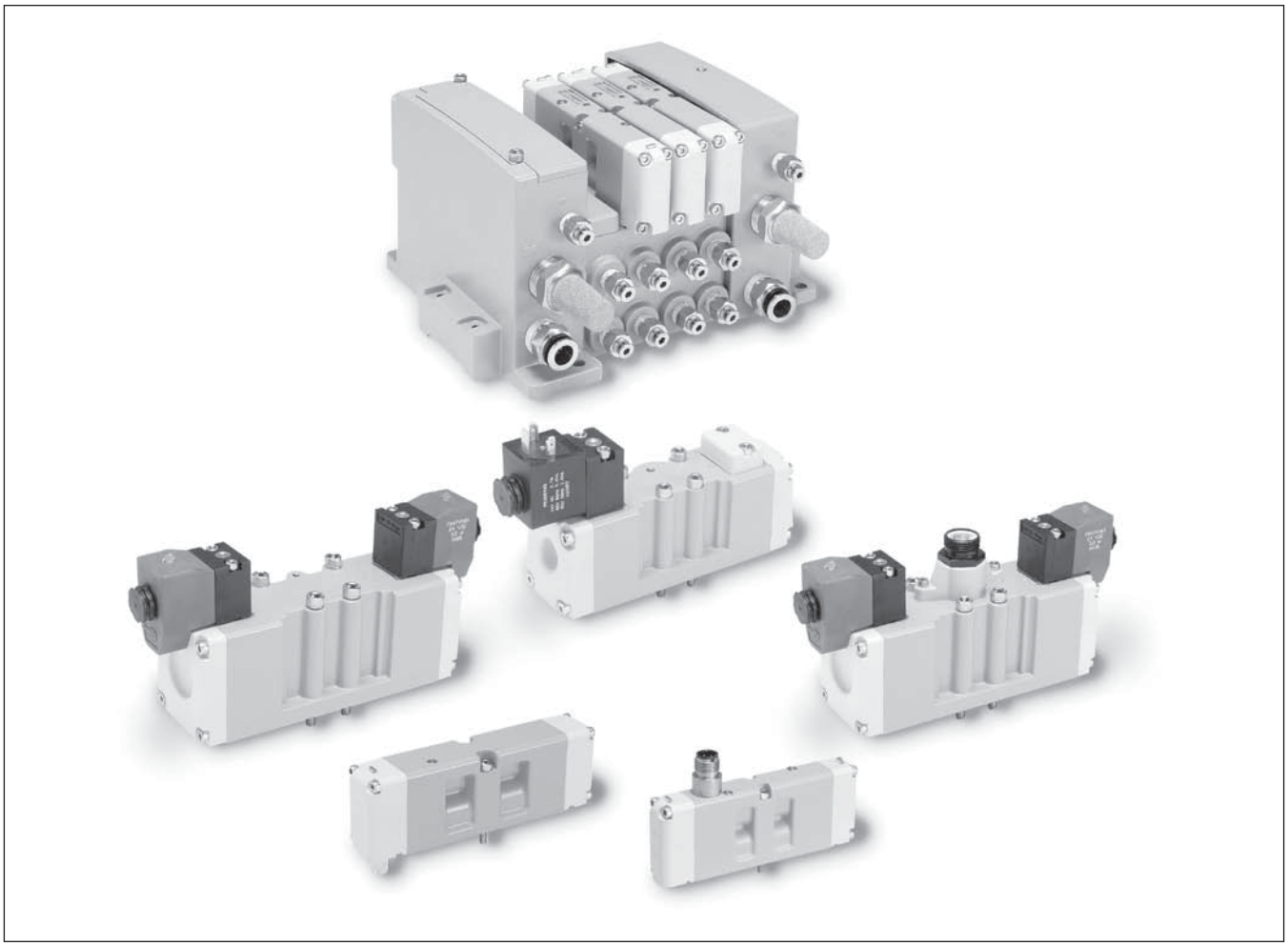
Isys ISO Series

ISO Air Control Valves

15407-2 & 15407-1, 5599-2 & 5599-1
Sizes 18mm, 26mm, 1, 2, & 3

Section E

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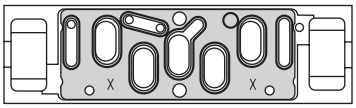
Basic Valve Functions E32-E33
Features E34-E35
Plug-in Valves
15407-2 Part Numbers & Model Number Index E36-E37
15407-2 Manifold, Subbase, End Plate Ordering Info E38-E39
15407-2 Add-A-Fold Assemblies E40
15407-2 Accessories E41-E45
5599-2 Part Numbers & Model Number Index E46-E47
5599-2 Manifold, Subbase, End Plate Ordering Info E48-E49
5599-2 Add-A-Fold Assemblies E50-E51
5599-2 Accessories E52-E57
Non Plug-in Valves
15407-1 Part Numbers & Model Number Index E58-E59
15407-1 Manifold, Subbase, End Plate Ordering Info E60-E61
15407-1 Add-A-Fold Assemblies E62
15407-1 Accessories E63-E67
5599-1 Part Numbers & Model Number Index E68-E71
5599-1 Manifold, Subbase, End Plate Ordering Info E72-E73
5599-1 Add-A-Fold Assemblies E74-E75
5599-1 Accessories E76-E83
Technical Information E84-E87
Service & Repair Kits E88-E90
Fittings E91
Dimensions E92-E102

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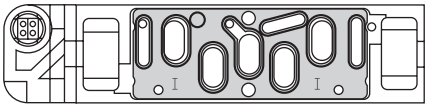
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ISO Pneumatic Valve Standard Definitions

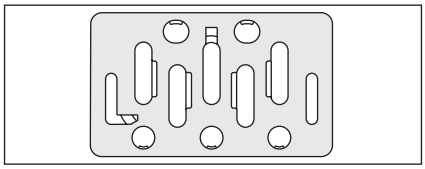
15407-1: Non-Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



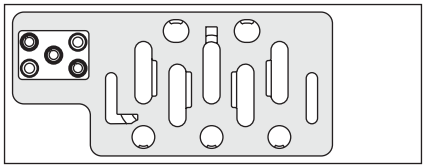
15407-2: Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



5599-1: Non-Plug-in Standards for Sizes 1, 2, 3

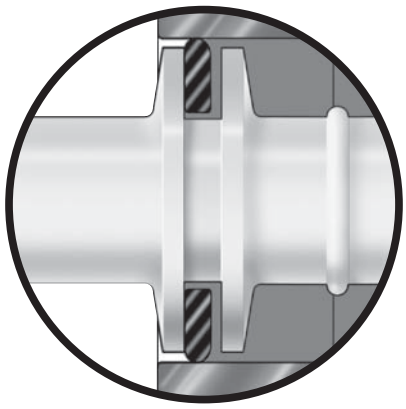


5599-2: Plug-in Standards for Size 1, 2, 3



*W*ear Compensation *S*ystem

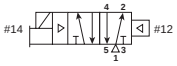
- **Maximum Performance**
  - Low Friction - Lower Operating Pressures
  - Fast Response - Less Wear
- **Long Cycle Life** - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- **Non-Lube Service** - No lubrication required for continuous valve shifting.
- **Bi-Directional Spool Seals** - Common spool used for any pressure, including vacuum.



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Basic Valve Functions

Single Solenoid

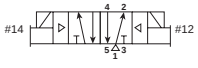


Single Pressure At Inlet Port 1:

De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Double Solenoid

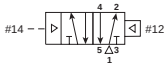


Single Pressure At Inlet Port 1:

Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Single Remote Pilot

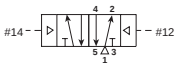


Single Pressure At Inlet Port 1:

Normal position – Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Operated position – Maintained air signal at port 14. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

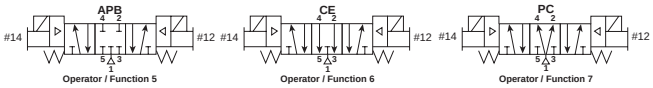
Double Remote Pilot



Single Pressure At Inlet Port 1:

Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.



Double Solenoid 3-Position

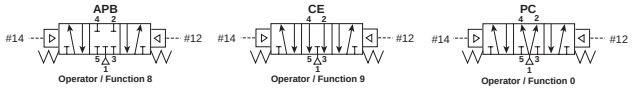
With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 5: All Ports Blocked
All ports blocked in the center position.

Function 6: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 7: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.



Double Remote Pilot 3-Position

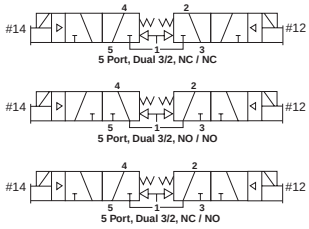
With #12 operator signaled – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator signaled – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 8: All Ports Blocked
All ports blocked in the center position.

Function 9: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 0: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.



Double Solenoid / Remote Pilot Dual 3-Way, 2-Position NC / NC (NNP)

With #14 & #12 operators both de-energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

With #14 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #14 & #12 operators both energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

Dual Pressure:

May be used for dual pressure service with pressure at ports 3 & 5. (Use either external pilot source option “L” or “X” or internal pilot source option “B”.) If pilot source “B” is selected, the high pressure must be at port #3. If pilot source “L” or “X” is selected, the external pilot must be plumbed to either port #14 or #12 respectively. In the 3-Position valve, the effect of dual pressure is extremely important when the valve is in the center position, as the CE and PC functions are reversed. Therefore care should be used when selecting a 3-Position valve.

Dual 3-Way, 2-Position NO / NO (NP)

With #14 & #12 operators both de-energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

With #14 operator energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #12 operator energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

With #14 & #12 operators both energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

Dual 3-Way, 2-Position 14 End NC / 12 End NO (NNP / NP)

With #14 & #12 operators both de-energized – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

With #14 operator energized – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

With #12 operator energized – pressure at inlet port 1 blocked, outlet port 4 connected to exhaust port 5, outlet port 2 connected to exhaust port 3.

With #14 & #12 operators both energized – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

15407-2 15407-1

Specifications

HB **HB (18mm)**: 0.55 Cv
C = 1.5 Nl/s x bar, b = 0.25
Qn = 390 l/min,
Qmax = 648 l/min

HA **HA (26mm)**: 1.1 Cv
C = 3.6 Nl/s x bar, b = 0.30
Qn = 918 l/min,
Qmax = 1518 l/min

Materials of Construction

- End Caps: PBT
- Fasteners: Zinc Plated Steel
- Valve Body: Aluminum
- Coils: Thermoset Plastic

Operating Pressure

- Vacuum to 145 PSIG
- Minimum Operating Pressure
  – 2-Position: 25 PSI
  – 3-Position: 35 PSI

Ports

- NPT and BSPP “G” Standard

Manifolds

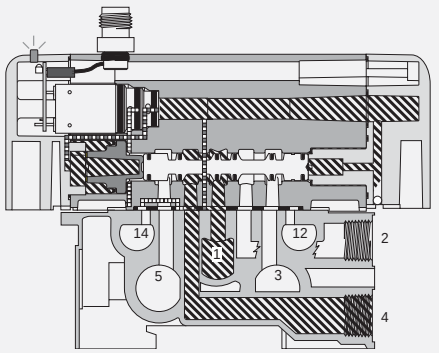
- Terminal Block Wiring (HA Only)
- Collective Wiring
  – 25-Pin, D-Sub
  – 19-Pin, Brad Harrison
  – 16 Point Terminal Strip
  – 12-Pin, M23
  – 19-Pin, M23
  – Moduflex Fieldbus
  – Isysnet Fieldbus

Certification / Approval

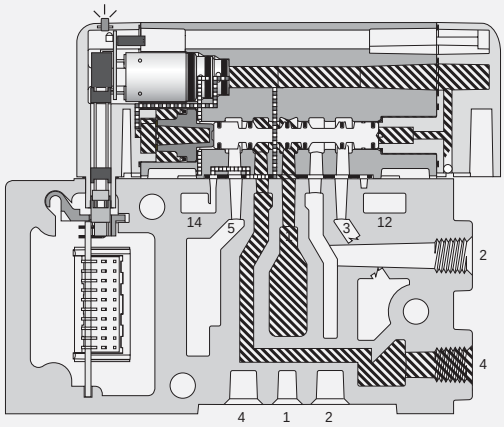
- CSA / C-US Approved
- NEMA 4
- IP65
- BSPP Manifold and Subbase Ports Meet ISO 1179 Specifications

Solenoids

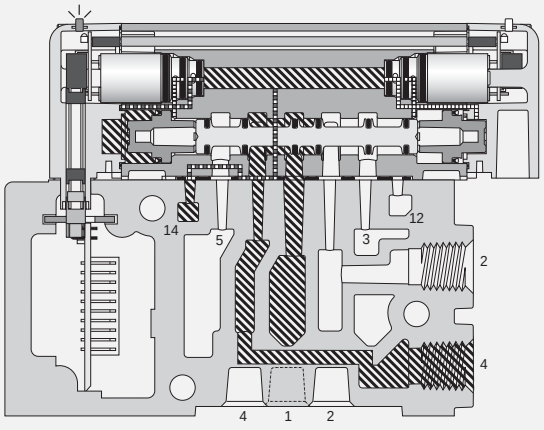
- Bi-Polar
- Surge Suppression (Standard)
- Low Watt – 1.0, 24VDC, 2.0VA, 120VAC
- Indicator Lights



15407-1 18mm Single Solenoid Internal Pilot Manifold Mounted



15407-2 18mm Single Solenoid Internal Pilot Manifold Mounted



15407-2 26mm Double Solenoid External Pilot Manifold Mounted

Pressure **Exhaust**

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

5599-2 5599-1

Specifications

H1 **H1 (Size 1)**: 1.5 Cv
C = 5.0 Nl/s x bar, b = 0.25
Qn = 1248 l/min,
Qmax = 2070 l/min

H2 **H2 (Size 2)**: 3.0 Cv
C = 9.7 Nl/s x bar, b = 0.35
Qn = 2520 l/min,
Qmax = 4140 l/min

H3 **H3 (Size 3)**: 6.0 Cv
C = 18.7 Nl/s x bar, b = 0.35
Qn = 5022 l/min,
Qmax = 7848 l/min

Materials of Construction

- End Caps: PBT
- Fasteners: Zinc Plated Steel
- Valve Body: Die Cast Aluminum
- Coils: Thermoset Plastic

Operating Pressure

- Vacuum to 145 PSIG
- Minimum Operating Pressure
  - 2-Position: 25 PSI
  - 3-Position: 35 PSI

Ports

- NPT and BSPP “G”

Manifolds

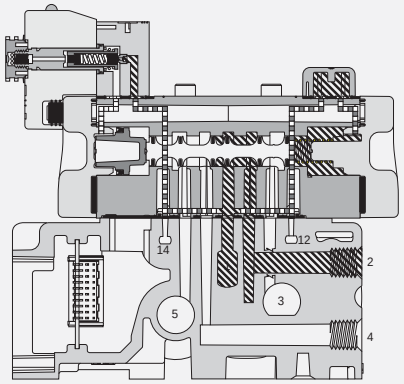
- Flying Leads
- Terminal Block Wiring
- Connector in the Base
- Collective Wiring
  - 25-Pin, D-Sub
  - 19-Pin, Brad Harrison
  - 12-Pin, M23
  - 19-Pin, M23
  - Moduflex Fieldbus
  - Isysnet Fieldbus

Certification / Approval

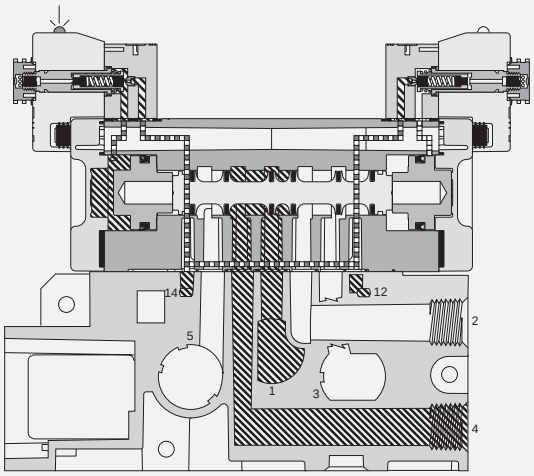
- CSA / C-US Approved
- NEMA 4
- IP65
- BSPP Manifold and Subbase Ports Meet ISO 1179 Specifications

Solenoids

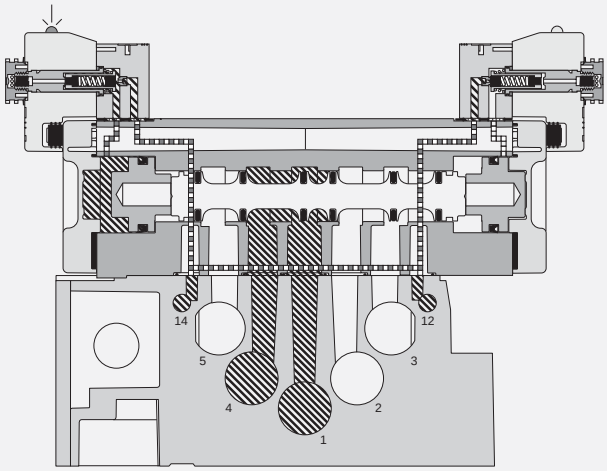
- Bi-Polar
- Surge Suppression (On Lighted Coils)
- Low Watt – 3.2, 24VDC, 4.5VA, 120VAC
- Indicator Lights, 24VDC & 120VAC



H1 5599-2 Single Solenoid Internal Pilot Manifold Mounted



H2 5599-2 Double Solenoid External Pilot Manifold Mounted



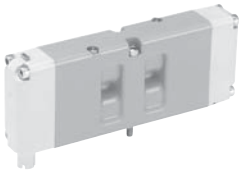
H3 5599-2 Double Solenoid External Pilot Subbase Mounted

Pressure **Exhaust**

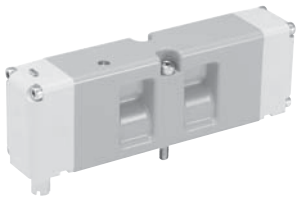
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

15407-2, Plug-in, Size 18mm (HB) & 26mm (HA)

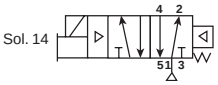
Single Solenoid
2-Position



HB: 18mm

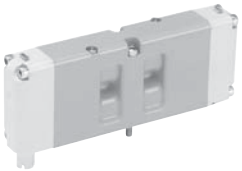


HA: 26mm

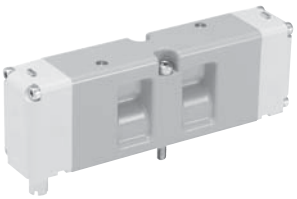


HB	**HBEVXBG023A**	120VAC	0.55 Cv C = 1.5 Nl/s x bar, b = 0.25 Qn = 390 l/min, Qmax = 648 l/min
	HBEVXBG0G9A	24VDC	
HA	**HAEVXBG023A**	120VAC	1.1 Cv C = 3.6 Nl/s x bar, b = 0.30 Qn = 918 l/min, Qmax = 1518 l/min
	HAEVXBG0G9A	24VDC	

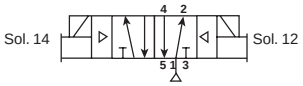
Double Solenoid
2-Position



HB: 18mm

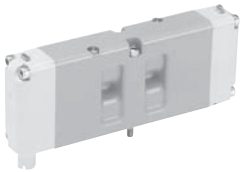


HA: 26mm

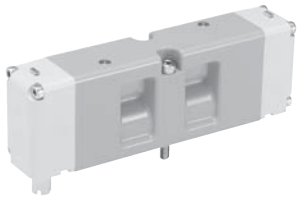


HB	**HB2VXBG023A**	120VAC	0.55 Cv C = 1.5 Nl/s x bar, b = 0.25 Qn = 390 l/min, Qmax = 648 l/min
	HB2VXBG0G9A	24VDC	
HA	**HA2VXBG023A**	120VAC	1.1 Cv C = 3.6 Nl/s x bar, b = 0.30 Qn = 918 l/min, Qmax = 1518 l/min
	HA2VXBG0G9A	24VDC	

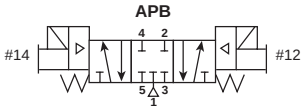
Double Solenoid
3-Position APB
3-Position CE
3-Position PC

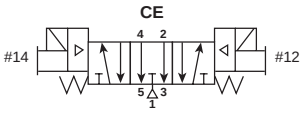


HB: 18mm

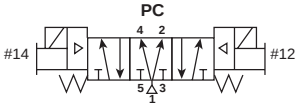


HA: 26mm





APB			
HB	**HB5VXBG023A**	120VAC	0.50 Cv C = 1.4 Nl/s x bar, b = 0.25 Qn = 360 l/min, Qmax = 595 l/min
	HB5VXBG0G9A	24VDC	
HA	**HA5VXBG023A**	120VAC	1.0 Cv C = 3.3 Nl/s x bar, b = 0.30 Qn = 845 l/min, Qmax = 1395 l/min
	HA5VXBG0G9A	24VDC	
CE			
HB	**HB6VXBG023A**	120VAC	0.50 Cv C = 1.4 Nl/s x bar, b = 0.25 Qn = 360 l/min, Qmax = 595 l/min
	HB6VXBG0G9A	24VDC	
HA	**HA6VXBG023A**	120VAC	1.0 Cv C = 3.3 Nl/s x bar, b = 0.30 Qn = 845 l/min, Qmax = 1395 l/min
	HA6VXBG0G9A	24VDC	



PC			
HB	**HB7VXBG023A**	120VAC	0.50 Cv C = 1.4 Nl/s x bar, b = 0.25 Qn = 360 l/min, Qmax = 595 l/min
	HB7VXBG0G9A	24VDC	
HA	**HA7VXBG023A**	120VAC	1.0 Cv C = 3.3 Nl/s x bar, b = 0.30 Qn = 845 l/min, Qmax = 1395 l/min
	HA7VXBG0G9A	24VDC	

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15407-2, Plug-in, Size 18mm (HB) & 26mm (HA)

BOLD OPTIONS ARE MOST POPULAR.

HB 1 VX B G 0 G9 A

Basic Series 15407-2	
ISO 15407-2 18mm	HB
ISO 15407-2 26mm	HA

15407-2 Operator / Function	
Single Solenoid, 2-Position - Air Return	1
Double Solenoid, 2-Position	2
Double Solenoid, 3-Position - APB	5
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return, Spring Assist	E
Double Solenoid, Dual 3/2, NC/NC	N*
Double Solenoid, Dual 3/2, NO/NO	P*
Double Solenoid, Dual 3/2, 14 End NC – 12 End NO	Q*

*Available on HB Only, must use Internal Pilot Source Option "B".

Mounting	
15407-2 Valve Less Base	VX

15407-2 Pilot Source / Pilot Exhaust	
Internal Pilot, Port #1 / Vented	B
External Pilot #14 Port / Vented	L*

* Must be specified when using Sandwich Regulators.

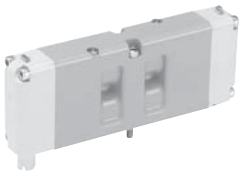
15407-2 Overrides / Lights	
G	Non-Locking, Flush, Push - w/ Light
H	Locking, Flush, Push / Turn - w/ Light

15407-2 Enclosure / Lead Length	
0	Valve Less Base

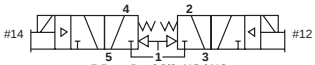
15407-2 Voltage & Frequency				
	AC		DC	Light & Surge Suppression
	60Hz	50Hz		
G9			24	LED & Suppression
23	120	115		LED & Suppression

15407-2 Engineering Level	
A	Current

Double Solenoid
Dual 3/2 NC/NC
Dual 3/2 NO/NO
Dual 3/2 NC/NO



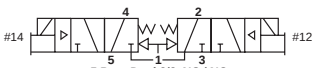
HB: 18mm



5 Port, Dual 3/2, NC / NC



5 Port, Dual 3/2, NO / NO



5 Port, Dual 3/2, NC / NO

NC / NC			
HB	HBNVXBG023A	120VAC	0.45 Cv C = 1.25 Nl/s x bar, b = 0.25 Qn = 320 l/min, Qmax = 535 l/min
	HBNVXBG0G9A	24VDC	
NO / NO			
HB	HBPVXBG023A	120VAC	0.45 Cv C = 1.25 Nl/s x bar, b = 0.25 Qn = 320 l/min, Qmax = 535 l/min
	HBPVXBG0G9A	24VDC	

NC / NO - 14 End NC			
HB	HBQVXBG023A	120VAC	0.45 Cv C = 1.25 Nl/s x bar, b = 0.25 Qn = 320 l/min, Qmax = 535 l/min
	HBQVXBG0G9A	24VDC	

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15407-2, Plug-in, Size 18mm (HB) & 26mm (HA) Manifold / Subbase Kits

PS551113 C P

Mounting Style / Port Size	
ISO 15407-2, 18mm HB	
Manifold with 1/8 NPT End Ports	**PS561151**
Manifold with 1/8 BSPP End Port	PS561152*
Manifold with 1/8 NPT Bottom / End Port	PS561161
Manifold with 1/8 BSPP Bottom / End Port	PS561162*
ISO 15407-2, 26mm HA	
Subbase with 1/4 NPT Side Ports	**PS551113**
Subbase with 1/4 BSPP Side Ports	PS551114*
Subbase with 1/4 NPT Bottom / Side Port	PS551123
Subbase with 1/4 BSPP Bottom / Side Port	PS551124*
Manifold with 1/4 NPT End Port	**PS551153**
Manifold with 1/4 BSPP End Port	PS551154*
Manifold with 1/4 NPT Bottom / End Port	PS551163
Manifold with 1/4 BSPP Bottom / End Port	PS551164*

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Enclosures / Lead Length	
Individually Wired Base	
C†	**Terminal Strip**
Collective Wired Base	
J*	Circuit Board, Single Address
M*	**Circuit Board, Double Address**
N*§	Single Address Circuit Board with 32 Output Expansion
P*‡	Double Address Circuit Board with 32 Output Expansion

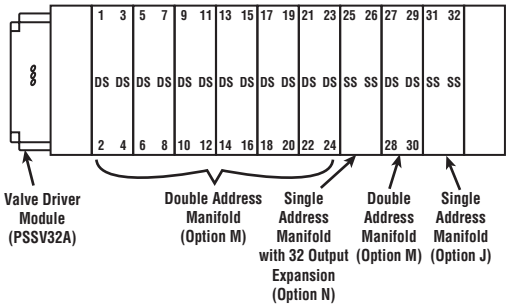
* Manifolds Only.

† Available with HA (26mm). Conduit port included on left hand end plate for wires to exit.

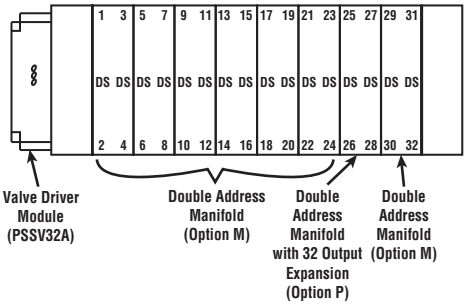
§ When using an HA or HB manifold base with the "N" Enclosure / Lead Length option:
- Outputs 1 – 24 can be single or double address bases. Use a base with "J" or "M" Enclosure / Lead Length option.
- Outputs 25 – 26 are a single address base. Use a base with "N" Enclosure / Lead Length option (this is a single address board with a ribbon connection from the valve driver module, PSSV32A).
- Outputs 27 – 32 can be single or double. Use a base with "J" or "M" Enclosure / Lead Length option.

‡ When using an HA or HB manifold base with the "P" Enclosure / Lead Length option:
- Outputs 1 – 24 can be single or double address bases. Use a base with "J" or "M" Enclosure / Lead Length option.
- Outputs 25 – 28 are a double address base. Use a base with "P" Enclosure / Lead Length option (this is a double address board with a ribbon connection from the valve driver module, PSSV32A).
- Outputs 29 – 32 can be single or double. Use a base with "J" or "M" Enclosure / Lead Length option.

BOLD OPTIONS ARE MOST POPULAR.



Option "N"



Option "P"

Subbase Kits



HA Series Subbase

Manifold Kits



HB Series 2-Station Manifold



HA Series 2-Station Manifold

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Plug-in, 15407-2, Size 18mm (HB) & 26mm (HA) End Plate Kits

HB HA

BOLD OPTIONS ARE MOST POPULAR.

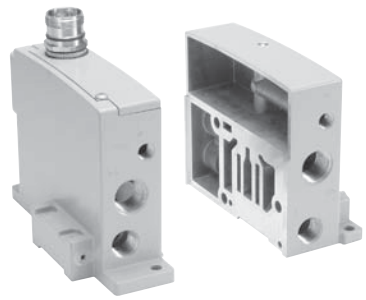
PS5620L6 | **0** | **P**

	Thread Type
0	**NPT**
1*	BSPP "G"

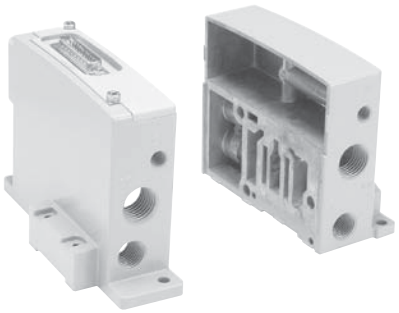
* BSPP Conforms to ISO 1179-1 w 228-1 Threads

	End Plate Type
PS563101	**No Connector - Use with Individually Wired Base**
PS5620L2*	**25-Pin, D-Sub**
PS5620L3	**19-Pin, Round, Brad Harrison**
PS5620L4	12-Pin, M23
PS5620L5	16-Point Terminal Strip
PS5620M2	19-Pin, M23
PS5620M4	**Moduflex Fieldbus**
PS5620L6	**Isysnet, with Valve Driver Module**
PS5620T1	**Turck Fieldbus with Valve Driver Module - 16 outputs**
PS5620T2	**Turck Fieldbus with Valve Driver Module - 32outputs**

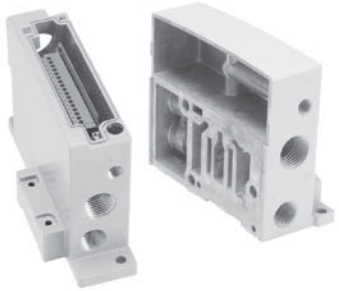
* 120VAC is not CSA rated.
Turck, Isysnet, and Moduflex communication modules must be ordered separately.
See Fieldbus Section for more information.



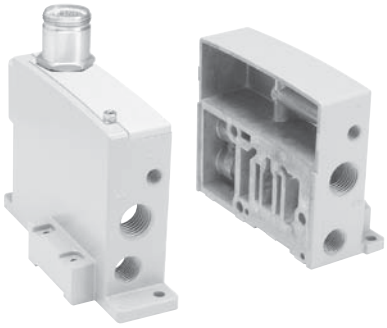
L4 or M2: **HB - HA M23 with 12-Pin or 19-Pin End Plates**



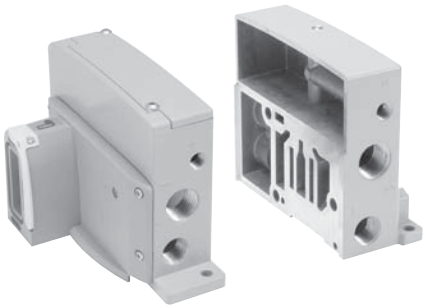
L2: **HB - HA 25-Pin End Plates**



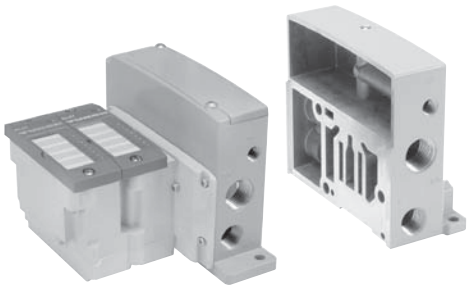
L5: **HB - HA 16-Point Terminal Strip End Plates**



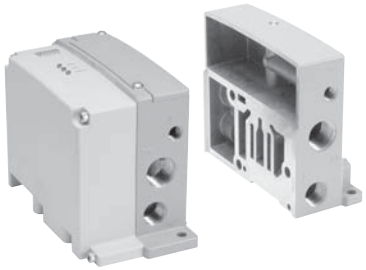
L3: **HB - HA 19-Pin Brad Harrison End Plates**



M4: **HB - HA Moduflex Fieldbus End Plates**



T1, T2: **Isys HA Turck End Plates**

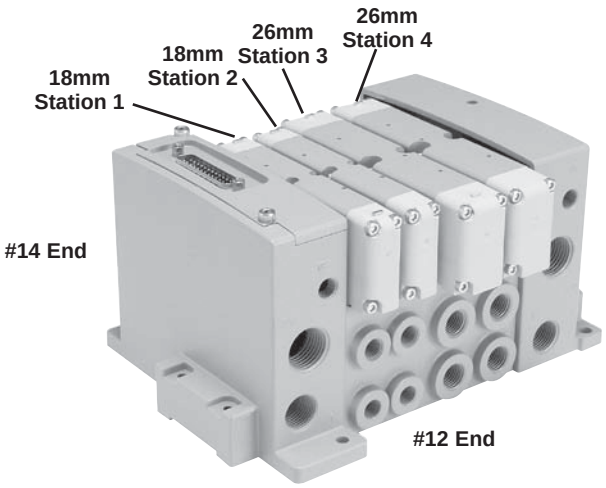


L6: **HB - HA Isysnet Fieldbus End Plates**

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How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold.
   The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
4-Station Manifold with (2) 18mm and (2) 26mm Valves On Manifold Bases

Maximum Number of Solenoids
(Maximum Energized Simultaneously)

HA / HB	Voltage Code	25-Pin D-Sub	19-Pin Brad Harrison	12-Pin M23	19-Pin M23	Moduflex	Isysnet
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	16 (16)	32 (32)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A

* Not CSA certified for 25-Pin, D-Sub option.

Add-A-Fold Assembly Model Number

AA	HB	D	0	04	

Valve Series

Right & Left End Plate 15407-2 (Plug-in, HB 18mm & HA 26mm)	HB*

* Common End Plates for HA & HB.

End Plate Type

Turck Fieldbus with Valve Driver Module - 16 Outputs	A
Turck Fieldbus with Valve Driver Module - 32 Outputs	B
25-Pin, D-Sub	D
19-Pin, Brad Harrison	E
16 Point Terminal Strip	F
12-Pin, M23	G
19-Pin, M23	H
Moduflex Fieldbus	T*
Isysnet, with Valve Driver Module	Y*

* Must order communication modules separately.

Thread Type

0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Number of Stations*

02
04
•
24
•
32

* Must be ordered in multiples of (2) unless using the HB/HA to H2 Transition Plate.

Transition Plate

Blank	No Transition Plate
B	HB / HA to H2

Example

Application requires a 4-Station manifold.
(Two 18mm + Two 26mm Stations)

Item	Qty.	Part No.	Location
01	1	AAHBD004	
02	1	HB1VXBG0G9A	Station 1
03	1	HB2VXLG0G9A	Station 2
04	1	PS561151MP	Station 1 & 2
05	2	HA1VXBG0G9A	Station 3 & 4
06	1	PS551151MP	Station 3 & 4

NOTE: Construct manifold assemblies from left to right while looking at the ports. Valves must be ordered as External Pilot when using Sandwich Regulator.

When using an HA or HB manifold base with the "N" Enclosure / Lead Length option:
- Outputs 1 – 24 can be single or double address bases. Use a base with "J" or "M" Enclosure / Lead Length option.
- Outputs 25 – 26 are a single address base. Use a base with "N" Enclosure / Lead Length option (this is a single address board with a ribbon connection from the valve driver module, PSSV32A).
- Outputs 27 – 32 can be single or double. Use a base with "J" or "M" Enclosure / Lead Length option.

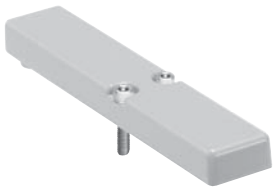
When using an HA or HB manifold base with the "P" Enclosure / Lead Length option:
- Outputs 1 – 24 can be single or double address bases. Use a base with "J" or "M" Enclosure / Lead Length option.
- Outputs 25 – 28 are a double address base. Use a base with "P" Enclosure / Lead Length option (this is a double address board with a ribbon connection from the valve driver module, PSSV32A).
- Outputs 29 – 32 can be single or double. Use a base with "J" or "M" Enclosure / Lead Length option.

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Blanking Plate Kits

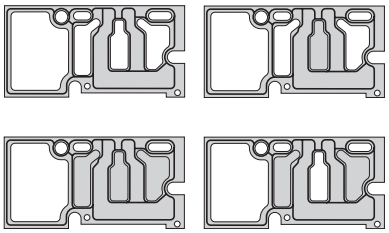
Size	Kit Number
HB	PS5634P
HA	PS5534P

Kit includes: Blanking Plate, Gasket, and Mounting Bolts.



Manifold to Manifold Gasket Kits

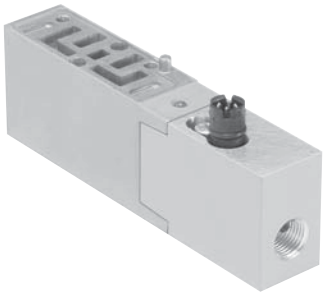
15407 PS5511 & PS5611 Manifolds				
Size	Standard	Blocked #1 Port	Blocked #1, 3, 5 Ports	Blocked #3, 5 Ports
HB / HA	PS561AP	PS561BP	PS561CP	PS561DP



Sandwich Supply & Exhaust Modules

Valve Size		Port Size	NPT	BSPP "G"
HB	Supply	1/8"	PS561600P	PS561601P
15407-2	Exhaust		PS561700P	PS561701P
HA	Supply	1/4"	PS551600P	PS551601P
15407-2	Exhaust		PS551700P	PS551701P

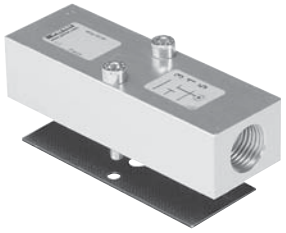
Quantity 1
- Used on HB & HA valves to provide a pressure or exhaust path to individual valves.



Intermediate Air Supply Base 15407

Size	Port Size	Kit Number
		NPT
HB	1/8"	D02P-01-80
HA	1/4"	D01P-02-80

Kit includes: Gasket and Mounting Bolts.



D01P-02-80 Shown

Sandwich Flow Controls

- Both adjustment screws are located on the 12 end of the unit.
- Sandwich Flow Control mounts with its own studs, which means the valve uses standard bolts for mounting.
- Sandwich Flow Control is not to be used as a shut off device and is not bubble tight when needles are fully turned down.

Valve Size	Plug-In 15407-2
HB	PS5635P
HA	PS5535P



Plug-in 15407-2 18mm Shown

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BOLD OPTIONS ARE MOST POPULAR

PS5638 | 1 | 6 | 6 | P

Basic Series	
HB	
15407-2, 18mm, Plug-in	**PS5638**
HA	
15407-2, 26mm, Plug-in	**PS5538**

Regulator Function	
Common Pressure Regulator	**1**
Independent Pressure Regulator	**2**

#2 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	**5-125 PSIG w/Gauge**

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

#4 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	**5-125 PSIG w/Gauge**

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

Ordering Components
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*



HB - 18mm
(Independent Dual Port Regulator Shown)



HA - 26mm
(Common Port Regulator Shown)

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator HA, HB
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

Gauge Adapter Kit

Included with all HB Regulators. Both kits are required on all HA & HB Regulators when the Regulator is on the last Station on the Right (14) End.

Description	Part Number
Gauge Kit	PS5651160P
1/8" Female to 1/8" Female Coupling	207P-2*
1/8" Male to 1/8" Male Long Nipple	VS215PNL-2-15*

* Included in Gauge Kit PS5651160P



Sandwich Regulator Cv Flow Chart*

	Common Pressure Code 166				Dual Pressure Code 266			
	1-2	**1-4**	**2-3**	**4-5**	**1-2**	**1-4**	**2-3**	**4-5***
HB	0.20	0.20	0.41	0.34	0.23	0.19	0.28	0.27
HA	0.41	0.43	0.87	0.89	0.42	0.45	0.68	0.66

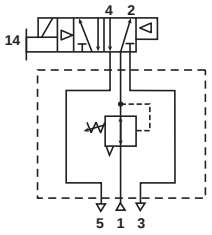
* Regulator Port exhaust through Base Port 3.
Note: All Cv's calculated with regulator adjusted full open.

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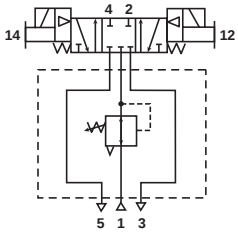
Plug-in, HB & HA Common Port Regulation

Provides adjustable regulated air pressure to the valve's #1 port which gives the same pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

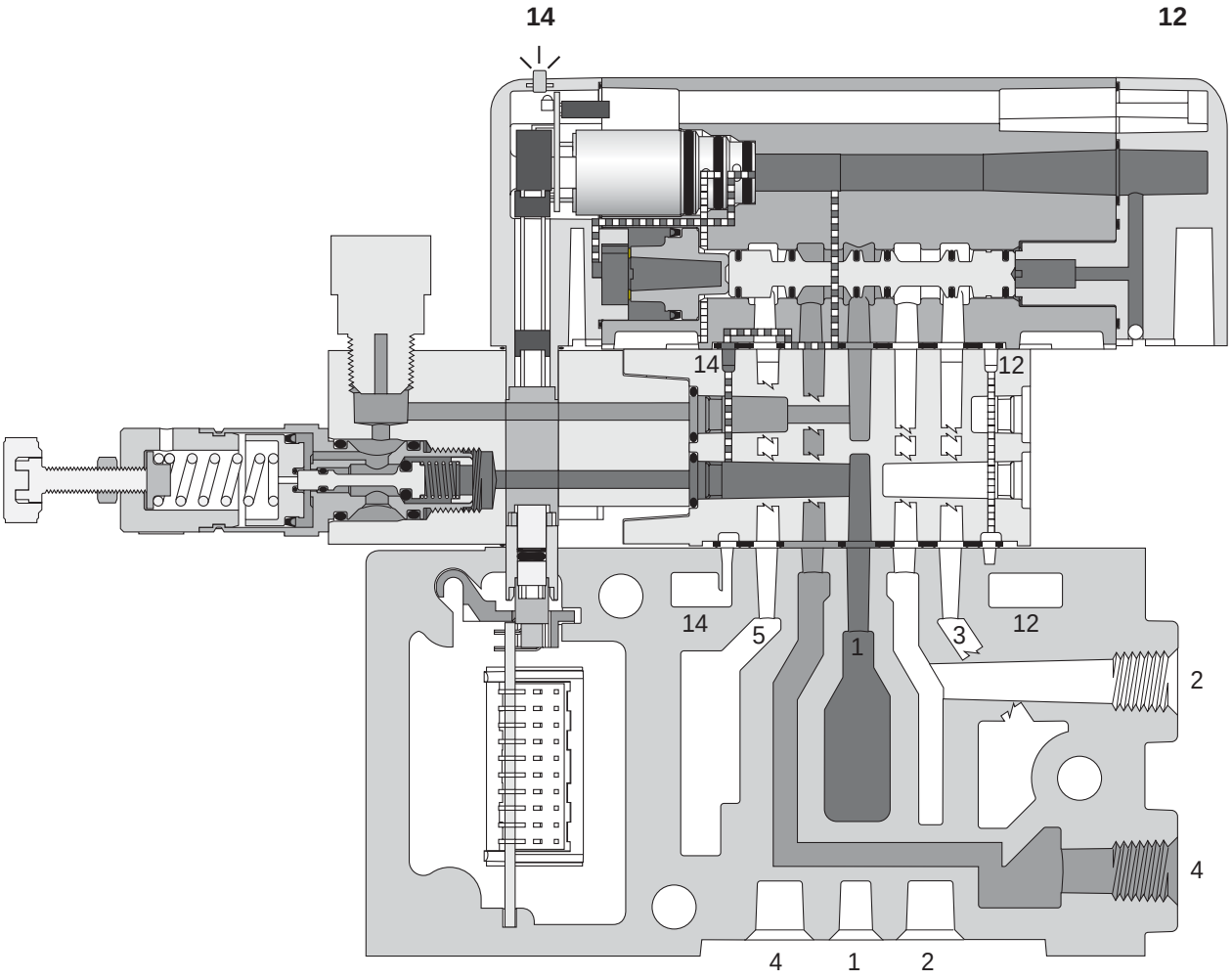
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve



Common Port Regulator with 4-Way, 3-Position APB Valve



HB Common Port Regulator Shown - Single Solenoid, 14 Energized



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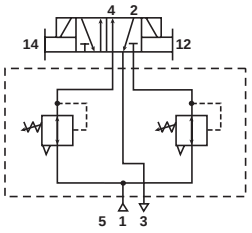
Plug-in, HB & HA Independent Dual Port Regulation

Dual Port Regulator

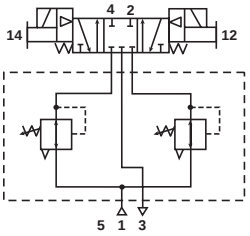
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on right.)

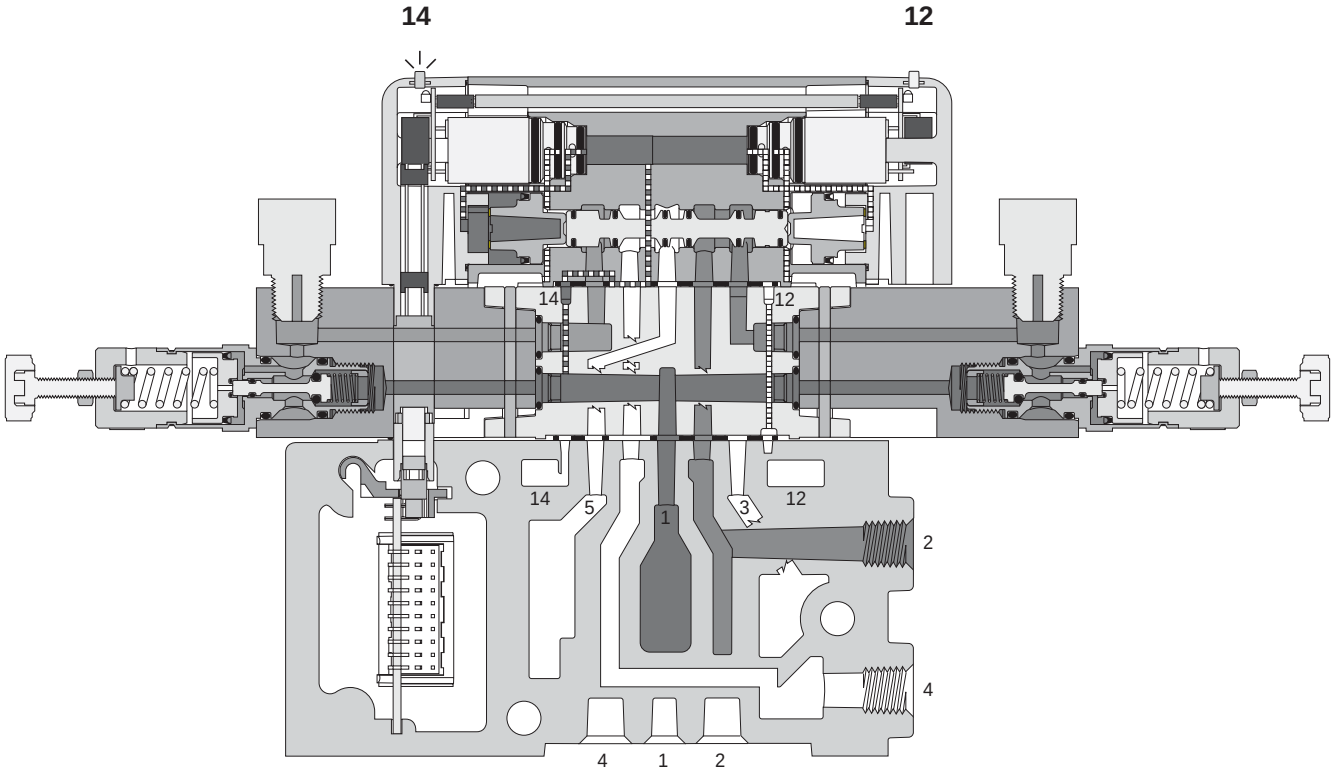
Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve



Independent Dual Port Regulator with 4-Way, 3-Position Double Solenoid Valve



HB Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized



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Plug-in, 15407-2 Transition Plate Kits

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HA HB

PS5624 L2 0 P

Transition Plate Type*	
HA / HB to H2	PS5624

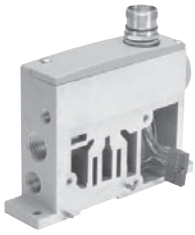
* Includes Left Hand and Right Hand End Plates

	Thread Type
0	**NPT**
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.

	Options
L2	**25-Pin, D-Sub**
L3	**19-Pin, Round, Brad Harrison**
L4	12-Pin, M23
L5	16-Pt. Terminal Strip
M2	19-Pin, M23
M4*	**Moduflex Fieldbus**
L6*	**Isysnet, with Valve Driver Module**

* Must Order Communication Miodule Seperately.



Left Hand End Plate



Transition Plate



Right Hand End Plate

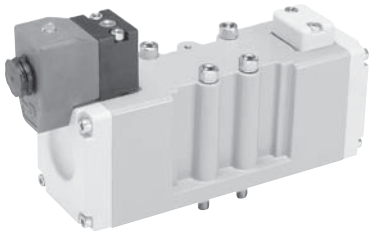
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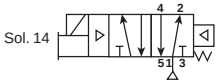
Plug-in, 5599-2, Size 1, 2, & 3

Single Solenoid

2-Position, Spring / Air Return

(H2 Series Shown)



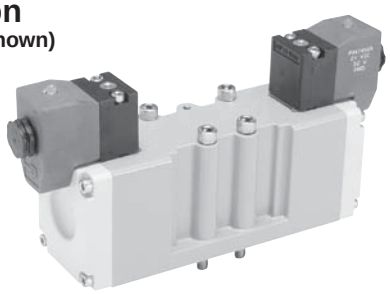


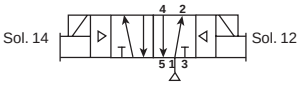
H1	**H1EVXBG023C**	120VAC	1.5 Cv C = 5.0 Nl/s x bar, b = 0.30 Qn = 1248 l/min, Qmax = 2070 l/min
	H1EVXBG0B9C	24VDC	
H2	**H2EVXBG023C**	120VAC	3.0 Cv C = 9.7 Nl/s x bar, b = 0.35 Qn = 2520 l/min, Qmax = 4140 l/min
	H2EVXBG0B9C	24VDC	
H3	**H3EVXBG023C**	120VAC	6.0 Cv C = 18.7 Nl/s x bar, b = 0.35 Qn = 5022 l/min, Qmax = 7848 l/min
	H3EVXBG0B9C	24VDC	

Double Solenoid

2-Position

(H2 Series Shown)





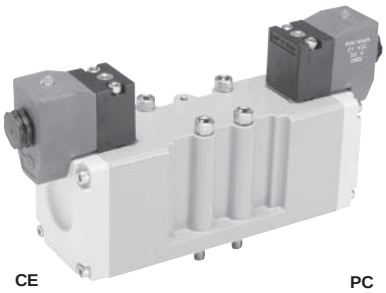
H1	**H12VXBG023C**	120VAC	1.5 Cv C = 5.0 Nl/s x bar, b = 0.30 Qn = 1248 l/min, Qmax = 2070 l/min
	H12VXBG0B9C	24VDC	
H2	**H22VXBG023C**	120VAC	3.0 Cv C = 9.7 Nl/s x bar, b = 0.35 Qn = 2520 l/min, Qmax = 4140 l/min
	H22VXBG0B9C	24VDC	
H3	**H32VXBG023C**	120VAC	6.0 Cv C = 18.7 Nl/s x bar, b = 0.35 Qn = 5022 l/min, Qmax = 7848 l/min
	H32VXBG0B9C	24VDC	

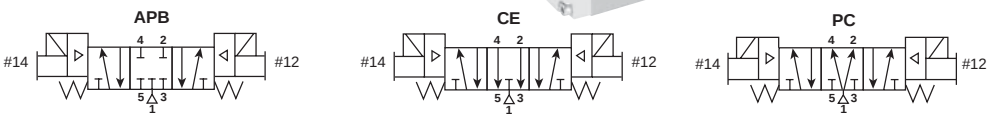
Double Solenoid

3-Position APB
3-Position CE

3-Position PC

(H2 Series Shown)





APB			
H1	**H15VXBG023C**	120VAC	1.2 Cv C = 4.1 Nl/s x bar, b = 0.30 Qn = 1000 l/min, Qmax = 1660 l/min
	H15VXBG0B9C	24VDC	
H2	**H25VXBG023C**	120VAC	2.8 Cv C = 9.0 Nl/s x bar, b = 0.35 Qn = 2340 l/min, Qmax = 3860 l/min
	H25VXBG0B9C	24VDC	
H3	**H35VXBG023C**	120VAC	5.0 Cv C = 15.4 Nl/s x bar, b = 0.35 Qn = 4185 l/min, Qmax = 6545 l/min
	H35VXBG0B9C	24VDC	
CE			
H1	**H16VXBG023C**	120VAC	1.2 Cv C = 4.1 Nl/s x bar, b = 0.30 Qn = 1000 l/min, Qmax = 1660 l/min
	H16VXBG0B9C	24VDC	
H2	**H26VXBG023C**	120VAC	2.8 Cv C = 9.0 Nl/s x bar, b = 0.35 Qn = 2340 l/min, Qmax = 3860 l/min
	H26VXBG0B9C	24VDC	
H3	**H36VXBG023C**	120VAC	5.0 Cv C = 15.4 Nl/s x bar, b = 0.35 Qn = 4185 l/min, Qmax = 6545 l/min
	H36VXBG0B9C	24VDC	

PC			
H1	**H17VXBG023C**	120VAC	1.2 Cv C = 4.1 Nl/s x bar, b = 0.30 Qn = 1000 l/min, Qmax = 1660 l/min
	H17VXBG0B9C	24VDC	
H2	**H27VXBG023C**	120VAC	2.8 Cv C = 9.0 Nl/s x bar, b = 0.35 Qn = 2340 l/min, Qmax = 3860 l/min
	H27VXBG0B9C	24VDC	
H3	**H37VXBG023C**	120VAC	5.0 Cv C = 15.4 Nl/s x bar, b = 0.35 Qn = 4185 l/min, Qmax = 6545 l/min
	H37VXBG0B9C	24VDC	

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Plug-in, 5599-2, Size 1, 2, & 3

BOLD OPTIONS ARE MOST POPULAR.

H1 E VX B G 0 B9 C

Basic Series 5599-2	
ISO 5599-2 Size 1	H1
ISO 5599-2 Size 2	H2
ISO 5599-2 Size 3	H3

5599-2 Operator / Function	
Single Solenoid, 2-Position - Air Return	1
Double Solenoid, 2-Position	2
Double Solenoid, 3-Position - APB	5
Double Solenoid, 3-Position - CE	6
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return, Spring Assist	E

5599-2 Mounting	
5599-2 Valve Less Base	VX

5599-2 Pilot Source / Pilot Exhaust	
Internal Pilot, Port #1 / Vented	B
External Pilot #12 or #14 Port / Vented	X*

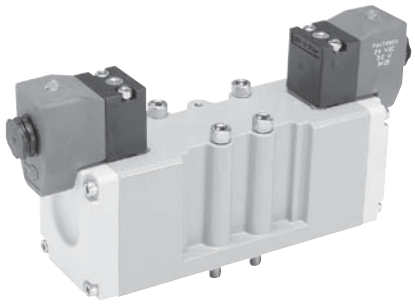
* Must be specified when using Sandwich Regulators.

5599-2 Overrides / Lights		
	Voltage Code	
B	42, 45, 57	Non-Locking, Flush, Push - w/o Light
C	42, 45, 57	Locking, Flush, Push / Turn - w/o Light
G	B9, 23	Non-Locking, Flush, Push - w/ Light
H	B9, 23	Locking, Flush, Push / Turn - w/ Light

5599-2 Engineering Level	
C	Current

5599-2 Voltage & Frequency				
	AC		DC	Light & Surge Suppression
	60Hz	50Hz		
42	24			
45			12	
B9			24	LED & Suppression
23	120	115		LED & Suppression
57	240			

5599-2 Enclosure / Lead Length	
0	None, Valve Less Base



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Plug-in, 5599-2, Size 1, 2 & 3 Manifold / Subbase Kits

BOLD OPTIONS ARE MOST POPULAR.

PS401155 M [ ] C P

Wiring Options	
Blank	**None**
C	Chrysler
F	**SAE / Ford**
G	General Motors

Enclosures / Lead Length	
Individually Wired Base**	
7†	3-Pin Mini Connector in Base
8†	4-Pin M12 Micro Connector in Base
9†	5-Pin Mini Connector in Base
A	**6" Leads**
C	Terminal Block
Collective Wired Base	
J*	Circuit Board, Single Address
M*	**Circuit Board, Double Address**

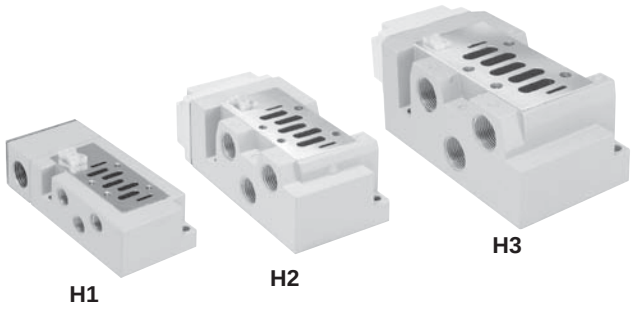
* Not Available with Subbase Kits.
** Use Plate with No Connection.
† Must Specify Valve Auto Wiring Option "C", "F", or "G".

Note:
When using the Enclosure / Lead Length "J" or "M" option:
12VDC - Maximum number of coils energized simultaneously is 13
24VDC - Maximum number of coils energized simultaneously is 21
120VAC - Coils limited by the number of pins available in the connector (25-Pin D-Sub = 24 coils, 19-Pin Brad Harrison = 16, 12-Pin M23 = 8)
240VAC - Must use "A" or "C" Option, Lead Wires or Terminal Blocks

Mounting Base Style / Port Size					
ISO 5599-2, Size 1 H1 Series		**ISO 5599-2, Size 2 H2 Series**		**ISO 5599-2, Size 3 H3 Series**	
Subbase: 3/8 NPT Side Ports	**PS401115**	**Subbase: 1/2 NPT Side Ports**	**PS411117**	**Subbase: 3/4 NPT Side Ports**	**PS421119**
Subbase: 3/8 BSPP Side Ports	PS401116	Subbase: 1/2 BSPP Side Ports	PS411118*	Subbase: 3/4 BSPP Side Port	PS421110*
Manifold: 3/8 NPT End Ports	**PS401155**	**Manifold: 1/2 NPT End Port**	**PS411157**	**Manifold: 3/4 NPT End Port**	**PS421159**
Manifold: 3/8 BSPP End Ports	PS401156*	Manifold: 1/2 BSPP End Ports	PS411158*	Manifold: 3/4 BSPP End Port	PS421150*
Manifold: 3/8 NPT Bottom / End Port	PS401165†	Manifold: 1/2 NPT Bottom / End Port	PS411167	Manifold: 3/4 NPT Bottom / End Port	PS421169
Manifold: 3/8 BSPP Bottom / End Port	PS401166*†	Manifold: 1/2 BSPP Bottom / End Port	PS411168*	Manifold: 3/4 BSPP Bottom / End Port	PS421160*

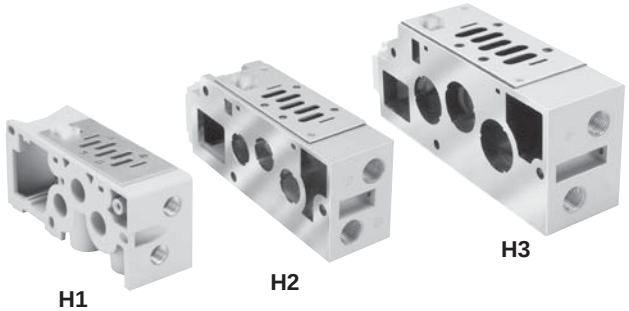
* BSPP Conforms to ISO 1179-1 w 228-1 Theads.
† #1 Bottom Port - 1/4".

Subbase Kits



Automotive Connectors
Mounted in 1/2" Conduit Port
- *3-Pin - Wired for Single Solenoid*
- *4-Pin / 5-Pin - Wired for Double Solenoid*

Manifold Kits



Automotive Connectors
Mounted in Individual Manifold Conduit Cover
- *3-Pin - Wired for Single Solenoid*
- *4-Pin / 5-Pin - Wired for Double Solenoid*

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Plug-in, 5599-2 End Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

H1 H2 H3

PS40 | 20L2 | 0 | C | P

Basic Series	
ISO 5599, Size 1	**PS40**
ISO 5599, Size 2	**PS41**
ISO 5599, Size 3	**PS42**

Options	
No Connector - Use with Individually Wired Base	**3101**
25-Pin, D-Sub	**20L2***
19-Pin, Round, Brad Harrison	**20L3**
12-Pin, M23	20L4
19-Pin, M23	20M2
Moduflex Fieldbus	**20M4**
Isysnet, with Valve Driver Module	**20L6**
Turck Fieldbus with Valve Driver Module - 16 Outputs	**20T1**
Turck Fieldbus with Valve Driver Module - 32 Outputs	**20T2**

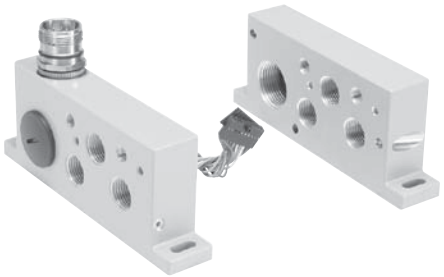
* 120VAC is Not CSA Rated.

Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

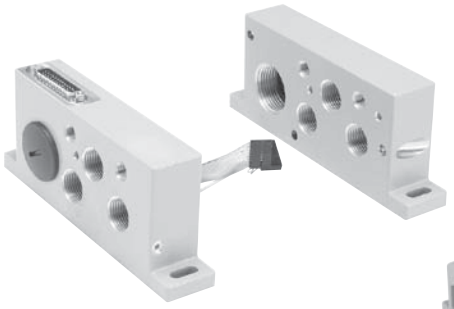
Engineering Level	
C	**Current**

Thread Type	
0	**NPT**
1*	BSPP "G"

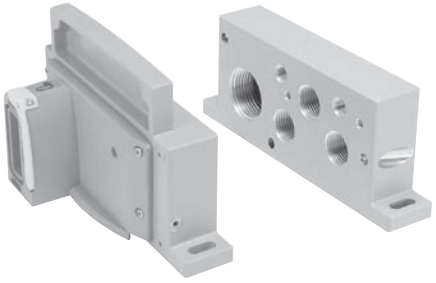
* BSPP Conforms to ISO 1179-1 w 228-1 Threads



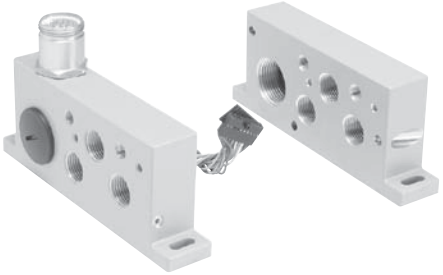
L4 or M2: **H1, M23, 12-Pin or 19-Pin End Plates**



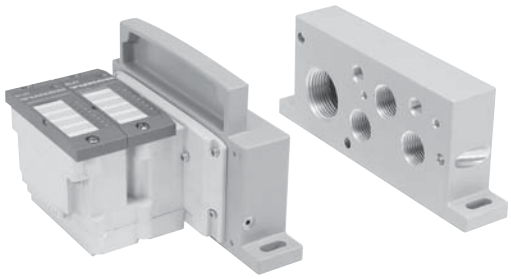
L2: **H1 25-Pin D-Sub End Plates**



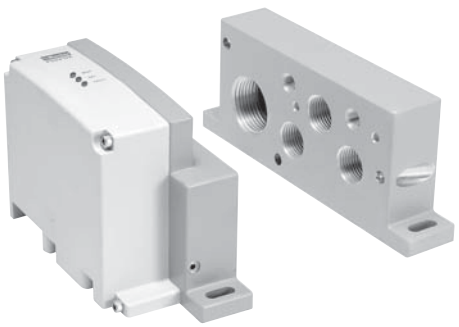
M4: **H1 Moduflex Fieldbus End Plates**



L3: **H1 19-Pin Brad Harrison End Plates**



T1, T2: **Turck Fieldbus with Valve Driver Module End Plates**

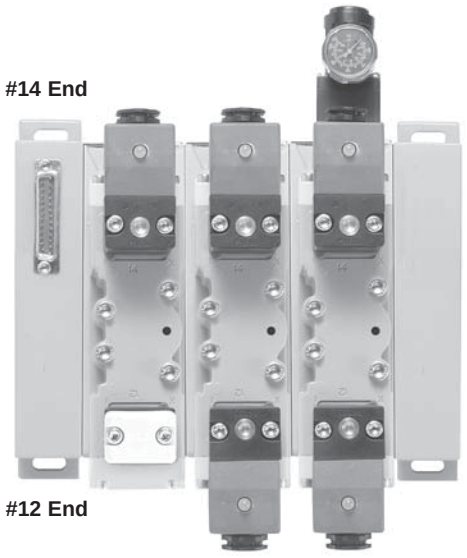


L6: **H1 Isysnet Fieldbus End Plates**

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How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
3-Station Manifold with (3) H1 Valves On Manifold Bases and Regulator at Station 3

Maximum Number of Solenoids
(Maximum Energized Simultaneously)

H1	Voltage Code	25-Pin D-Sub	19-Pin Brad Harrison	12-Pin M23	19-Pin M23	Moduflex	Isysnet
12VDC	45	24 (13)	16 (13)	8 (8)	16 (13)	N/A	N/A
24VAC*	42	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A
24VDC	B9	24 (20)	16 (16)	8 (8)	16 (16)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A

* Not CSA certified for 25-Pin, D-Sub option.

Add-A-Fold Assembly Model Number

AA	H1	D	0	03	

Valve Series

Right & Left End Plate	H1

End Plate Type

Turck Fieldbus with Valve Driver Module - 16 Outputs	A
Turck Fieldbus with Valve Driver Module - 32 Outputs	B
25-Pin, D-Sub	D
19-Pin, Brad Harrison	E
12-Pin, M23	G
19-Pin, M23	H
Moduflex Fieldbus	T*
Isysnet, with Valve Driver Module	X*

* Must order Communication Modules Separately.

Thread Type

0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Number of Stations

01
02
03
04
•
•
24

Transition Plate

Blank	No Transition Plate
C	H1 to H2
D	H1 to H3

Example

Application requires a 3-Station manifold with a valve, regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH1D003	
02	1	H11VXBG0B9C	Station 1
03	1	PS401155MCP	Station 1
04	1	H12VXBG0B9C	Station 2
05	1	PS401155MCP	Station 2
06	1	H12VXXG0B9C	Station 3
07	1	PS4038166CP	Station 3
08	1	PS401155MCP	Station 3

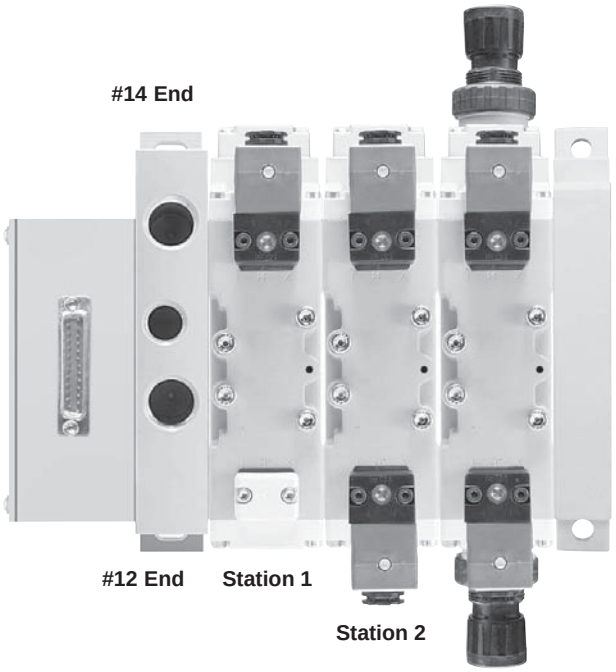
NOTE:
Construct manifold assemblies from left to right while looking at the cylinder ports.

Valves must be ordered as External Pilot when using Sandwich Regulator.

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How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
3-Station Manifold with (3) H2 Valves On Manifold Bases and Regulator at Station 3

Maximum Number of Solenoids
(Maximum Energized Simultaneously)

H2 / H3	Voltage Code	25-Pin D-Sub	19-Pin Brad Harrison	12-Pin M23	19-Pin M23	Moduflex	Isysnet
12VDC	45	24 (13)	16 (13)	8 (8)	16 (13)	N/A	N/A
24VAC*	42	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A
24VDC	B9	24 (20)	16 (16)	8 (8)	16 (16)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A

* Not CSA certified for 25-Pin, D-Sub option.

Add-A-Fold Assembly Model Number

AA	H2	D	0	03	

Valve Series	
Right & Left End Plate	H2
Right & Left End Plate	H3

End Plate Type	
Turck Fieldbus with Valve Driver Module - 16 Outputs	A
Turck Fieldbus with Valve Driver Module - 32 Outputs	B
25-Pin, D-Sub	D†
19-Pin, Brad Harrison	E†
12-Pin, M23	G†
19-Pin, M23	H†
Moduflex Fieldbus	T*
Isysnet, with Valve Driver Module	Y*

* Must order Communication Modules Separately.
† Collective Wiring Module Included.

Thread Type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Number of Stations
01
02
03
04
•
•
24

Transition Plate	
Blank	No Transition Plate
E*	H2 to H3

* Must Specify Valve Series H3.

Example

Application requires a 3-Station manifold with a valve and regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH2D003	
02	1	H21VXBG0B9C	Station 1
03	1	PS411157MCP	Station 1
04	1	H22VXBG0B9C	Station 2
05	1	PS401157MCP	Station 2
06	1	H22VXXG0B9C	Station 3
07	1	PS4138166CP	Station 3
08	1	PS401157MCP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.

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Blanking Plate Kits

Size	Kit Number
H1	PS4034CP
H2	PS4134CP
H3	PS4234CP

Kit includes: Blanking Plate, Gasket, and Mounting Bolts.

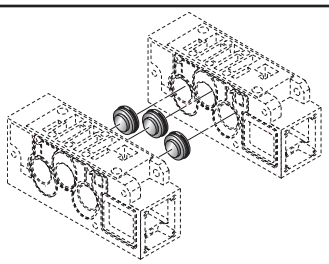


Manifold Port Isolation Kits

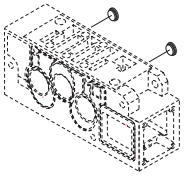
Main Galley (1, 3, 5)

Size	Kit Number
H1	PS4032CP
H2	PS4132CP
H3	PS4232CP

Kit includes: Plugs with O-rings.



H1, H2, H3 Main Galley



H1, H2, H3 Pilot Galley

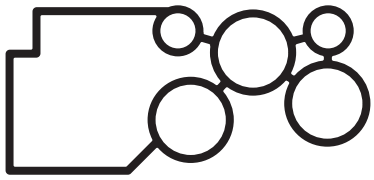
Pilot Galley

Size	Kit Number
H1 H2 H3	PS4033CP

Kit includes: Plugs with O-rings.

Manifold to Manifold Gasket Kits

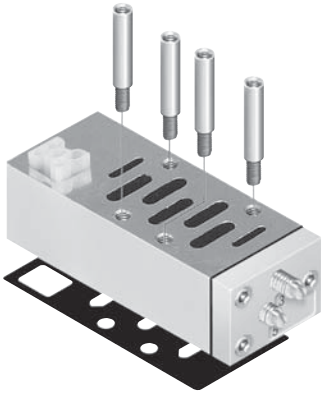
5599 PS4011, PS4111 & PS4211 Manifolds	
H1	PS4013P
H2	PS4113P
H3	PS4213P



Sandwich Flow Controls

Size	Plug-in 5599-2
H1	PS4035CP
H2	PS4135CP
H3	PS4235CP

A Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.



Plug-in 5599-2 Size 2 Shown

H1 Auxiliary Access Plate Kits

Size	Port Size	Kit Number	
		NPT	BSPP "G"
H1	1/4" & 3/8"	PS403000CP	PS403001CP

Kit includes: Pilot Port Access Plate, Gasket and Mounting Screws.
- Used on H1 Manifolds to provide auxiliary access to Ports 1, 3 & 5.
- Port 1: 1/4", Ports 3 & 5: 3/8". Height: .72 Inch



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BOLD OPTIONS ARE MOST POPULAR

PS4038 1 6 6 C P

Basic Series	
H1	
5599-2, Plug-in	PS4038
H2	
5599-2, Plug-in	PS4138
H3	
5599-2, Plug-in	PS4238

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

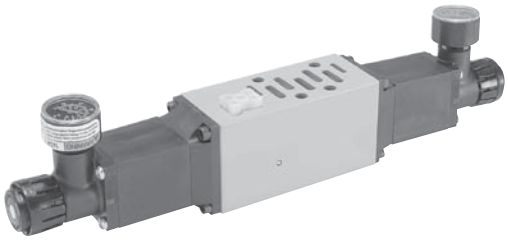
** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

#4 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

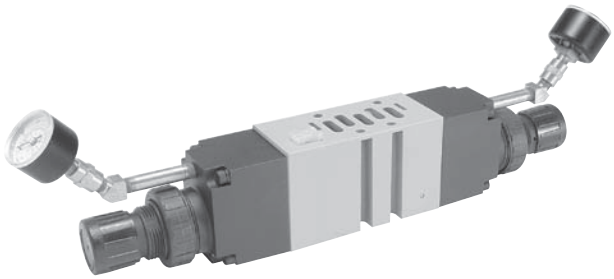
* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

Ordering Components
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*



H1 - Size 1
(Independent Dual Port Regulator Shown)



H2 - Size 2
(Independent Dual Port Regulator Shown)

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator H1, H2 & H3
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration of Sandwich Regulator H1, H2, H3
An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

Sandwich Regulator Cv Flow Chart*

	Common Pressure Code 166				Single Pressure 2 Code 266				Single Pressure 4 Code 260				Dual Pressure Code 266			
	1-2	1-4	2-3	4-5	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*
H1	0.62	0.61	1.28	1.18	0.73	0.96	0.96	0.93	0.34	0.70	0.94	0.98	0.52	0.48	0.86	0.88
H2	1.47	1.60	2.41	2.33	1.71	1.90	1.52	1.75	1.74	1.67	1.73	1.79	1.61	1.62	1.50	1.67
H3	2.37	2.39	4.30	4.47	2.37	2.81	2.75	3.01	2.65	2.59	2.68	2.74	2.43	2.41	3.16	3.04

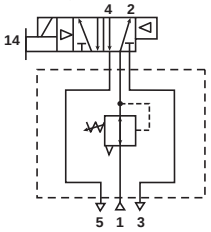
* Regulator Port exhaust through Base Port 3.
Note: All Cv's calculated with regulator adjusted full open.

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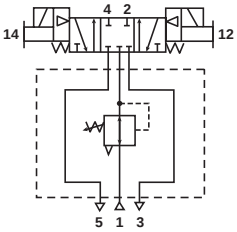
Plug-in, H1, H2, H3 Common Port Regulation

Provides adjustable regulated air pressure to the valve's #1 port which gives the same regulated pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

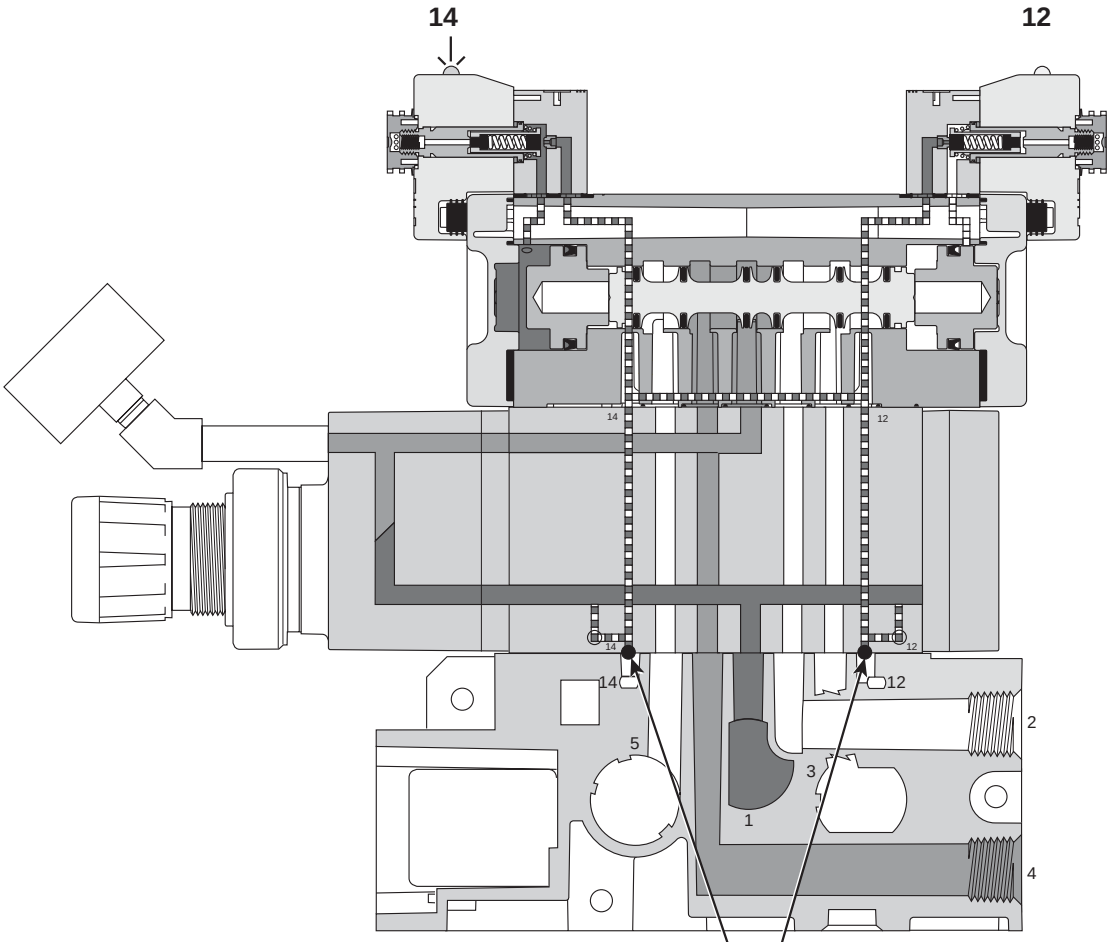
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve



Common Port Regulator with 4-Way, 3-Position APB Valve



H2 Common Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of the I & E Pilot Holes which prevents line pressure from escaping through the manifold.

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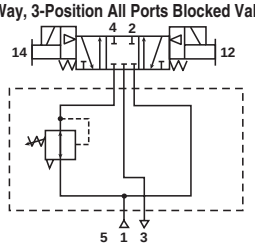
Plug-in, H1, H2, H3 Independent Port Regulation

Single Port Regulator

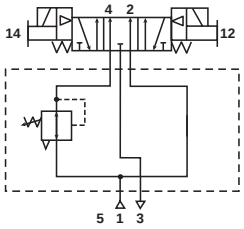
Provides regulated pressure to one of the ports and full line pressure to the other by use of the Line Pressure By-Pass Plate. Pressure regulation can occur out of the #4 port of the valve.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on right.)

Independent Port Regulator with 4-Way, 3-Position All Ports Blocked Valve

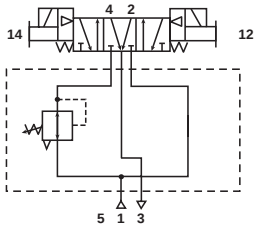


Independent Port Regulator with 4-Way, 3-Position, Inlet to Cylinder Function



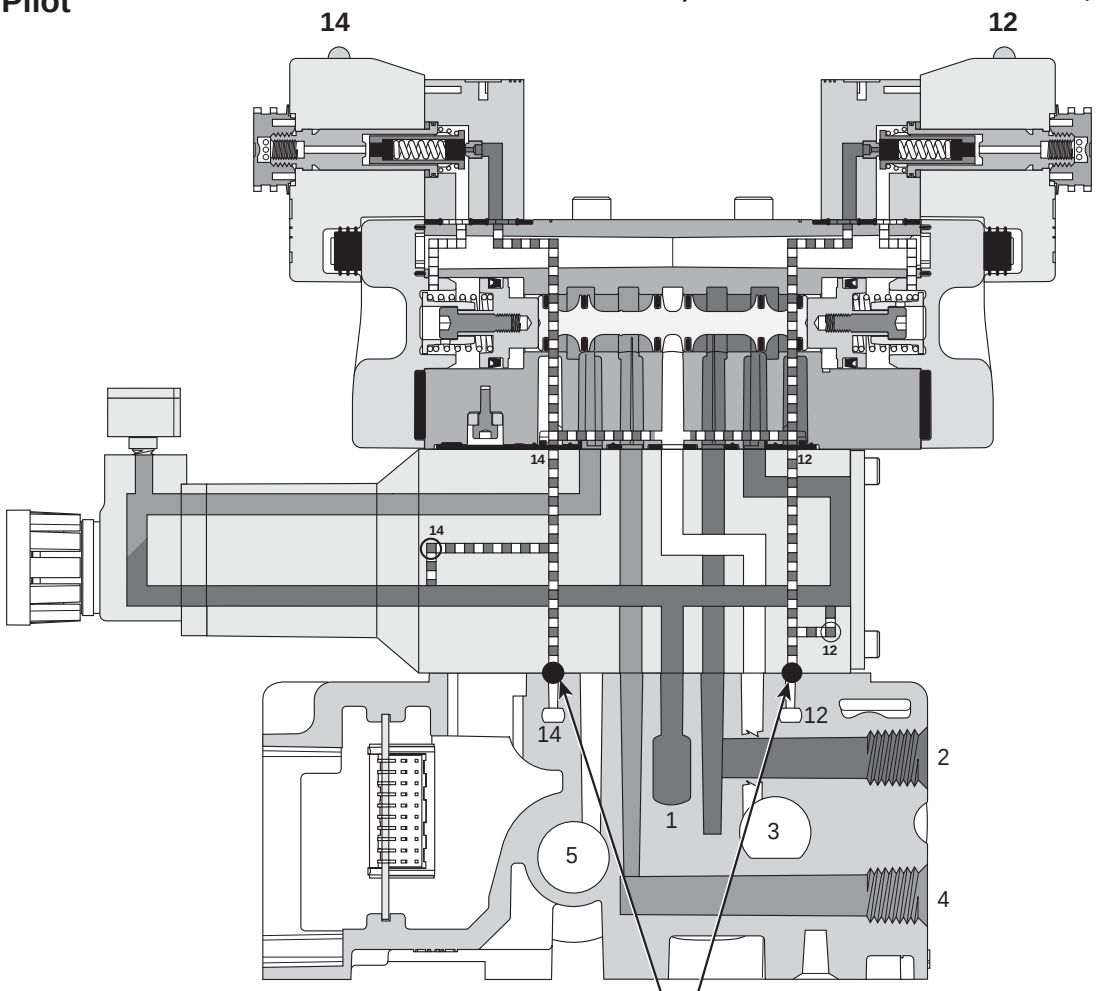
⚠ CAUTION: Requires 4-Way, 3-Position, Cylinder to Exhaust Valve

Independent Port Regulator with 4-Way, 3-Position, Cylinder to Exhaust Function



⚠ CAUTION: Requires 4-Way, 3-Position, Inlet to Cylinder Valve

H1 Independent Port Regulator Shown - Double Solenoid, De-energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

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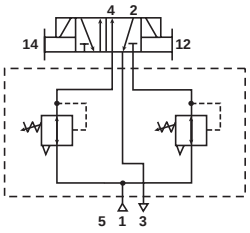
Plug-in, H1, H2, H3 Independent Dual Port Regulation

Dual Port Regulator

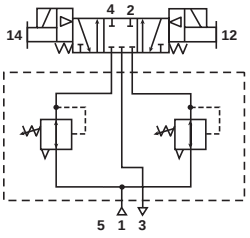
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on right.)

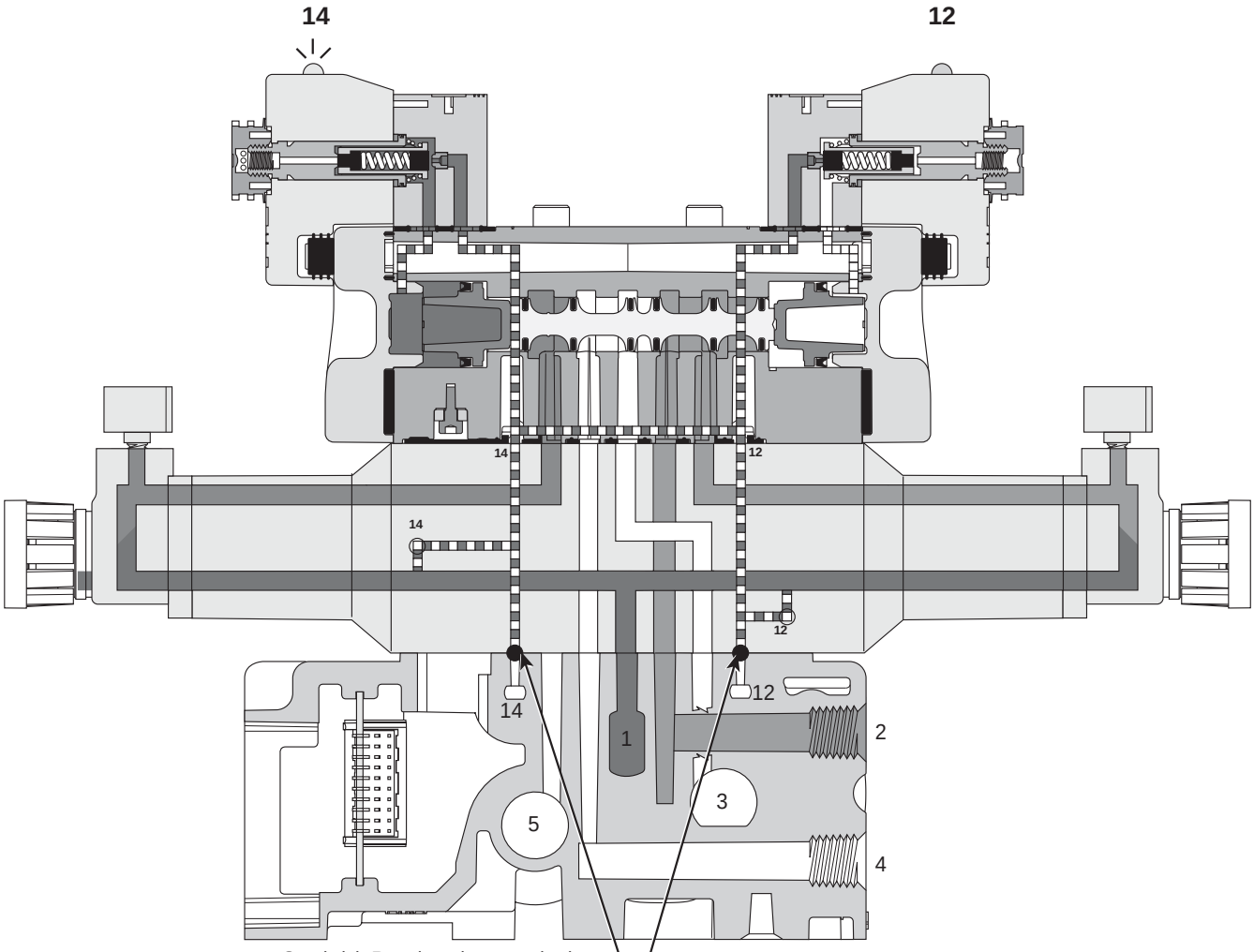
Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve



Independent Dual Port Regulator with 4-Way, 3-Position Double Solenoid Valve



H1 Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

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Plug-in, 5599-2 Transition Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

H1 H2 H3

PS4026 L2 0 C P

Transition Plate Type*	
H1 to H2 to H3	**PS4025**
H1 to H3	**PS4026**
H1 to H2	**PS4027**
H2 to H3	**PS4028**

* Includes Left Hand and Right Hand End Plates

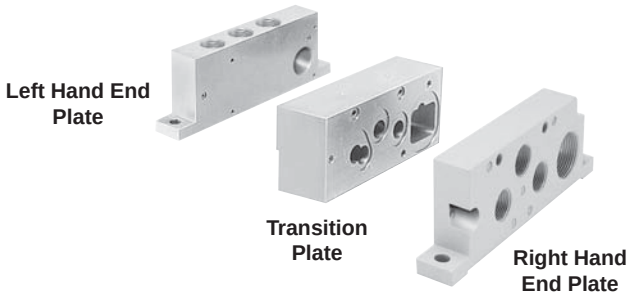
Engineering Level	
C	**Basic Series PS40**

Thread Type	
0	**NPT**
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.

Options	
25-Pin, D-Sub	**L2**
19-Pin, Round, Brad Harrison	**L3**
12-Pin, M23	L4
19-Pin, M23	M2
Moduflex Fieldbus	**M4***
Isysnet, with Valve Driver Module	**L6***
Turck Fieldbus with Valve Driver Module - 16 Outputs	**T1**
Turck Fieldbus with Valve Driver Module - 32 Outputs	**T2**

* Must Order Communication Miodule Seperately
Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

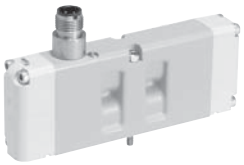


H1 to H2 Shown

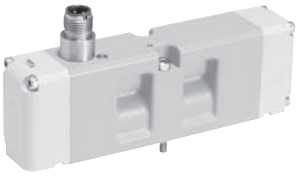
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Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA)

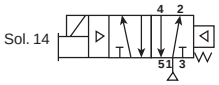
Single Solenoid
2-Position



HB: 18mm

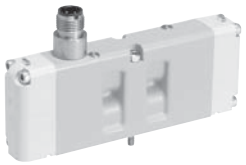


HA: 26mm

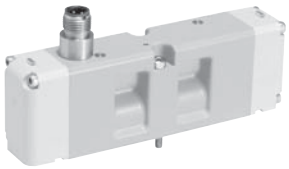


HB **HBEWXBG2G9000FA**	24VDC	0.55 Cv C = 1.5 Nl/s x bar, b = 0.25 Qn = 390 l/min, Qmax = 648 l/min
HA **HAEWXBG2G9000FA**	24VDC	1.1 Cv C = 3.6 Nl/s x bar, b = 0.30 Qn = 918 l/min, Qmax = 1518 l/min

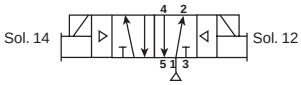
Double Solenoid
2-Position



HB: 18mm

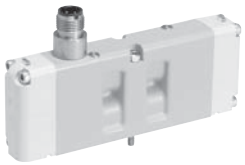


HA: 26mm

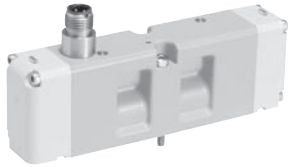


HB **HB2WXBG2G9000FA**	24VDC	0.55 Cv C = 1.5 Nl/s x bar, b = 0.25 Qn = 390 l/min, Qmax = 648 l/min
HA **HA2WXBG2G9000FA**	24VDC	1.1 Cv C = 3.6 Nl/s x bar, b = 0.30 Qn = 918 l/min, Qmax = 1518 l/min

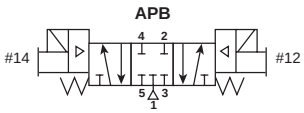
Double Solenoid
3-Position APB
3-Position CE
3-Position PC

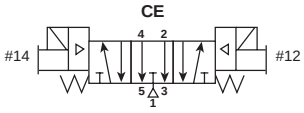


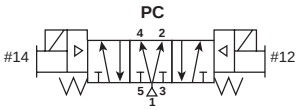
HB: 18mm



HA: 26mm







APB		
HB **HB5WXBG2G9000FA**	24VDC	0.50 Cv C = 1.4 Nl/s x bar, b = 0.25 Qn = 360 l/min, Qmax = 595 l/min
HA **HA5WXBG2G9000FA**	24VDC	1.0 Cv C = 3.3 Nl/s x bar, b = 0.30 Qn = 845 l/min, Qmax = 1395 l/min
CE		
HB **HB6WXBG2G9000FA**	24VDC	0.50 Cv C = 1.4 Nl/s x bar, b = 0.25 Qn = 360 l/min, Qmax = 595 l/min
HA **HA6WXBG2G9000FA**	24VDC	1.0 Cv C = 3.3 Nl/s x bar, b = 0.30 Qn = 845 l/min, Qmax = 1395 l/min

HB **HB7WXBG2G9000FA**	24VDC	0.50 Cv C = 1.4 Nl/s x bar, b = 0.25 Qn = 360 l/min, Qmax = 595 l/min
HA **HA7WXBG2G9000FA**	24VDC	1.0 Cv C = 3.3 Nl/s x bar, b = 0.30 Qn = 845 l/min, Qmax = 1395 l/min

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Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA)

BOLD OPTIONS ARE MOST POPULAR.

HB E WX B G 2 G9 000F A

Basic Series 15407-1	
ISO 15407-1 18mm	HB
ISO 15407-1 26mm	HA

15407-1 Operator / Function	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	**6**
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return, Spring Assist	**E**
Double Solenoid, Dual 3/2, NC/NC	**N†**
Double Solenoid, Dual 3/2, NO/NO	**P†**
Double Solenoid, Dual 3/2, 14 End NC – 12 End NO	**Q†**

† Available on HB Only, must use Internal Pilot Source Option "B".

15407-1 Mounting	
Valve Less Base	**WX**

15407-1 Pilot Source / Pilot Exhaust	
B	**Internal Pilot, Port #1 / Vented**
L*	External Pilot #14 Port / Vented

* Must be specified when using Sandwich Regulators.

15407-1 Overrides / Lights	
G	**Non-Locking, Flush, Push - w/ Light**
H	Locking, Flush, Push / Turn - w/ Light

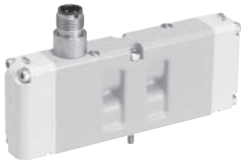
15407-1 Enclosure / Lead Length	
2	**4-Pin, M12 Micro, Straight Connector**

15407-1 Voltage & Frequency		
G9	**24VDC**	**LED & Suppression**

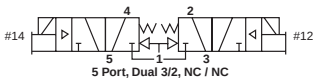
15407-1 Central Connector Wiring Options	
000F	**SAE / Ford, ISO 20401**

15407-1 Engineering Level	
A	**Current**

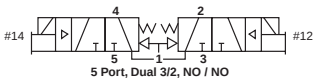
Double Solenoid
Dual 3/2 NC/NC
Dual 3/2 NO/NO
Dual 3/2 NC/NO



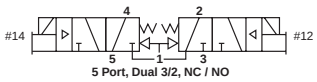
HB: 18mm



5 Port, Dual 3/2, NC / NC



5 Port, Dual 3/2, NO / NO



5 Port, Dual 3/2, NC / NO

NC / NC		
HB **HBNWXBG2G9000FA**	24VDC	0.45 Cv C = 1.25 Nl/s x bar, b = 0.25 Qn = 320 l/min, Qmax = 535 l/min
NO / NO		
HB **HBPWXBG2G9000FA**	24VDC	0.45 Cv C = 1.25 Nl/s x bar, b = 0.25 Qn = 320 l/min, Qmax = 535 l/min

NC / NO - 14 End NC		
HB **HBQWXBG2G9000FA**	24VDC	0.45 Cv C = 1.25 Nl/s x bar, b = 0.25 Qn = 320 l/min, Qmax = 535 l/min

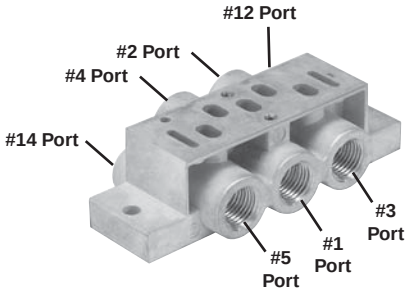
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Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA) Manifold / Subbase Kits

Individual Subbase Kit
with Side Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
HB	1/8"	**PL02-01-80**	PL02-01-70
HA	1/4"	**PL01-02-80**	PL01-02-70

Note: Can be used for external, single, or double remote pilot.



Two Station Manifold Base
with End Ports

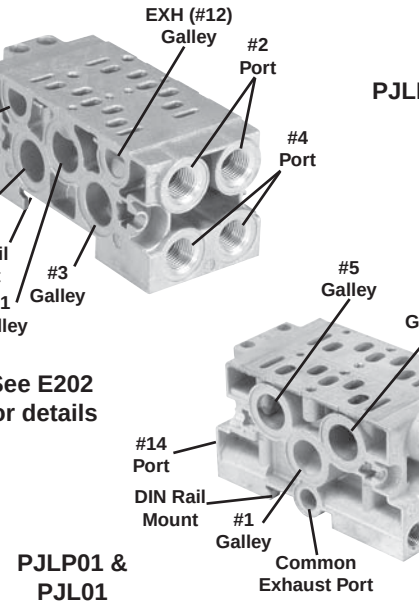
Size	Port Size	Kit Number	
		NPT	BSPP "G"
HB	1/8"	**PJLP02-201-80***	PJLP02-201-70*
HA	1/4"	**PJLP01-202-80***	PJLP01-202-70*

***** Can be used for external pilot, not remote pilot.
Note: Gaskets and assembly hardware included.

Two Station Manifold Base
with End Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
HA	1/4"	**PJL01-202-80***	PJL01-202-70*

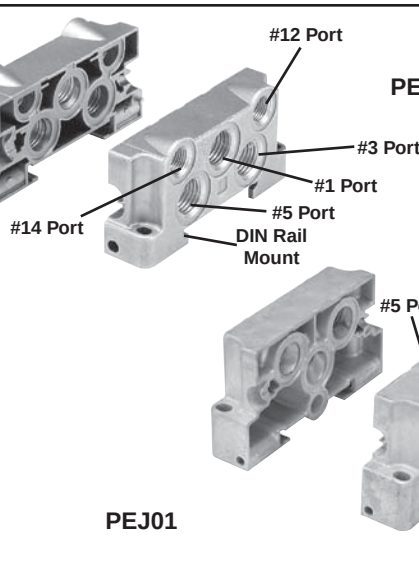
***** Can be used for single and double remote pilot and external pilot using the #14 Port.
Note: Gaskets and assembly hardware included.



End Plate Kit
for End Ported Two Station Manifold Base

Size	Port Size	Kit Number	
		NPT	BSPP "G"
HB	1/4"	**PEJ02-02-80***	PEJ02-02-70*
HA	3/8"	**PEJ01-03-80**†	PEJ01-03-70†

***** Use with PJLP02.....
† Use with PJLP01 or PJL01.....



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Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA) Manifold / Subbase Kits

PS561151 | **0** | **P**

Enclosures / Lead Length	
0	None, No Electrical Plug - 15407-1

Mounting Style / Port Size			
ISO 15407-1, 18mm, HB		15407-1, 26mm, HA	
Manifold with 1/8 NPT End Ports	**PS561151**	**Subbase with 1/4 NPT Side Ports**	**PS551113**
Manifold with 1/8 BSPP End Port	PS561152*	Subbase with 1/4 BSPP Side Ports	PS551114*
Manifold with 1/8 NPT Bottom / End Port	PS561161	Subbase with 1/4 NPT Bottom / Side Port	PS551123
Manifold with 1/8 BSPP Bottom / End Port	PS561162*	Subbase with 1/4 BSPP Bottom / Side Port	PS551124*
		Manifold with 1/4 NPT End Port	**PS551153**
		Manifold with 1/4 BSPP End Port	PS551154*
		Manifold with 1/4 NPT Bottom / End Port	PS551163
		Manifold with 1/4 BSPP Bottom / End Port	PS551164*

BOLD OPTIONS ARE MOST POPULAR.

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Subbase Kits



HA

Manifold Kits



HB



HA

Non-Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA) End Plate Kits

HB HA

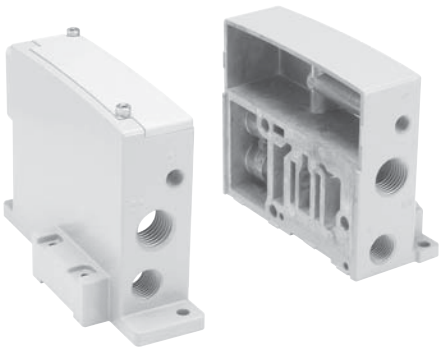
PS563101 | **0** | **P**

Basic Series	
ISO 15407, Size HB, 18mm & HA, 26mm End Plate, Non-Collective Wiring	PS563101

Thread Type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

BOLD OPTIONS ARE MOST POPULAR.

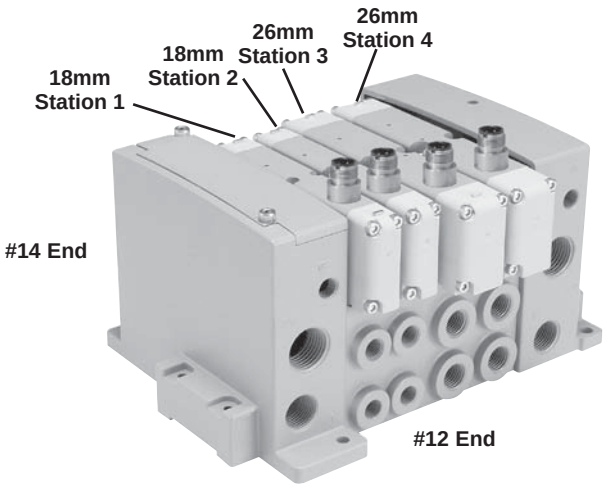


HB - HA Non-Collective Wiring End Plates

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How To Order Non-Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold.
   The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
4-Station Manifold with (2) 18mm and (2) 26mm Valves On Manifold Bases

Add-A-Fold Assembly Model Number

AA HBS 0 04 [ ]

Valve Series	
Right & Left End Plate 15407-1 (Non Plug-in, HA 26mm)	01U*
Right & Left End Plate 15407-1 (Non Plug-in, HB 18mm)	02U**
Right & Left End Plate 15407-1 (HB 18mm & HA 26mm)	HBS†

* For use with PJLP01 or PJL01 Manifolds.
** For use with PJLP02 Manifolds.
† For use with PS5511 and PS5611 Manifolds.

Transition Plate	
Blank	No Transition Plate
B*	HB / HA to H2

* Not Available with End Plate Type "01U or 02U".

Number of Stations*
02
04
•
24
•
32

* Must be ordered in multiples of (2) unless using the HB/HA to H2 Transition Plate.

Thread Type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads for End Plate Type "S".

Example

Application requires a 4-Station manifold.
(Two 18mm + Two 26mm Stations)

Item	Qty.	Part No.	Location
01	1	AAHBS004	
02	1	HB1WXBG2G9000FA	Station 1
03	1	HB2WXBG2G9000FA	Station 2
04	1	PS5611510P	Station 1 & 2
05	2	HA1WXBG2G9000FA	Station 3 & 4
06	1	PS5511510P	Station 3 & 4

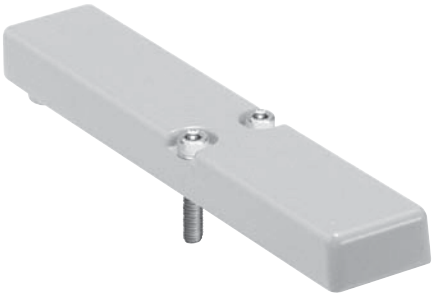
NOTE: Construct manifold assemblies from left to right while looking at the ports. Valves must be ordered as External Pilot when using Sandwich Regulator.

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Blanking Plate Kits

Size	Kit Number
HB	PS5634P
HA	PS5534P

Kit includes: Blanking Plate, Gasket, and Mounting Bolts.

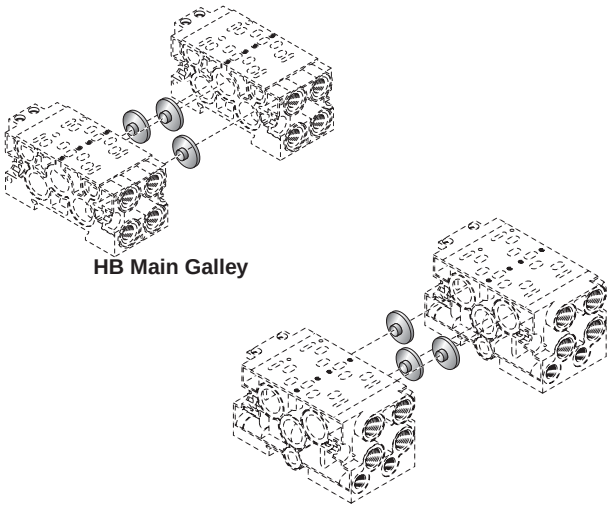


Manifold Port Isolation Kits

Main Galley (1, 3, 5)

Size	Kit Number
HB	D02BD0*
HA	D01BD0*

* For use on PJLP and PJL Series Manifolds.
Kit includes: Plugs with O-rings.

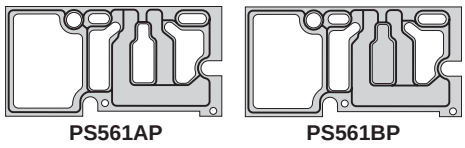


HB Main Galley

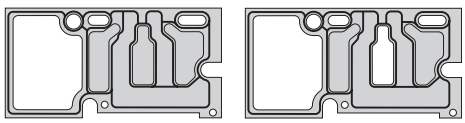
HA Main Galley

Manifold to Manifold Gasket Kits

15407 PS5511 & PS5611 Manifolds				
Size	**Standard**	**Blocked #1 Port**	**Blocked #1, 3, 5 Ports**	**Blocked #3, 5 Ports**
HB / HA	PS561AP	PS561BP	PS561CP	PS561DP
15407 PJLP & PJL Manifolds				
HB	DX02M2MGSKT (PJLP02)			
HA	DX01M2MGSKT (PJLP01)			



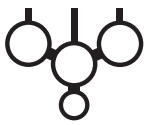
PS561AP **PS561BP**



PS561CP **PS561DP**



DX02M2MGSKT (PJLP02)



DX01M2MGSKT (PJLP01)

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Sandwich Supply & Exhaust Modules

Valve Size		Port Size	NPT	BSPP "G"
HB	Supply	1/8"	PS562600P	PS562601P
15407-1	Exhaust		PS562700P	PS562701P
HA	Supply	1/4"	PS552600P	PS552601P
15407-1	Exhaust		PS552700P	PS552701P

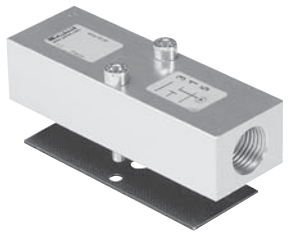
Quantity 1
- Used on HB & HA valves to provide a pressure or exhaust path to individual valves.



Intermediate Air Supply Base 15407

Size	Port Size	Kit Number
		NPT
HB	1/8"	D02P-01-80
HA	1/4"	D01P-02-80

Kit includes: Gasket and Mounting Bolts.



D01P-02-80 Shown

Sandwich Flow Control

- Both adjustment screws are located on the 12 end of the unit.
- Sandwich Flow Control mounts with its own studs, which means the valve uses standard bolts for mounting.
- Sandwich Flow Control is not to be used as a shut off device and is not bubble tight when needles are fully turned down.

Valve Size	Non Plug-In 15407-1
HB	PS5642P
HA	PS5542P



A Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.

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BOLD OPTIONS ARE MOST POPULAR

PS5637 | 1 | 6 | 6 | P

Basic Series	
HB	
15407-1, 18mm, Non Plug-In	**PS5637**
HA	
15407-1, 26mm, Non Plug-In	**PS5537**

Regulator Function	
Common Pressure Regulator	**1**
Independent Pressure Regulator	**2**

#2 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	**5-125 PSIG w/Gauge**

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

#4 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	**5-125 PSIG w/Gauge**

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)



HB - 18mm
(Independent Dual Port Regulator Shown)



HA - 26mm
(Common Port Regulator Shown)

Gauge Adapter Kit

Included with all HB Regulators. Both kits are required on all HA & HB Regulators when the Regulator is on the last Station on the Right (14) End.

Description	Part Number
Gauge Kit	PS5651160P
1/8" Female to 1/8" Female Coupling	207P-2*
1/8" Male to 1/8" Male Long Nipple	VS215PNL-2-15*

* Included in Gauge Kit PS5651160P



Ordering Components
- *Manifold or Subbase Kit required.*
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

How to Configure Sandwich Regulator / Valve Combinations

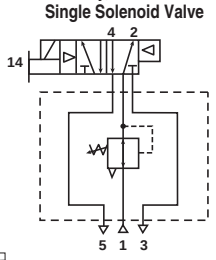
Internal Pilot Configuration of Sandwich Regulator HA, HB
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

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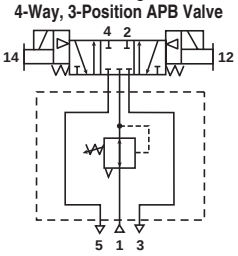
Non Plug-in, HB & HA Common Port Regulation

Provides adjustable regulated air pressure to the valve's #1 port which gives the same pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

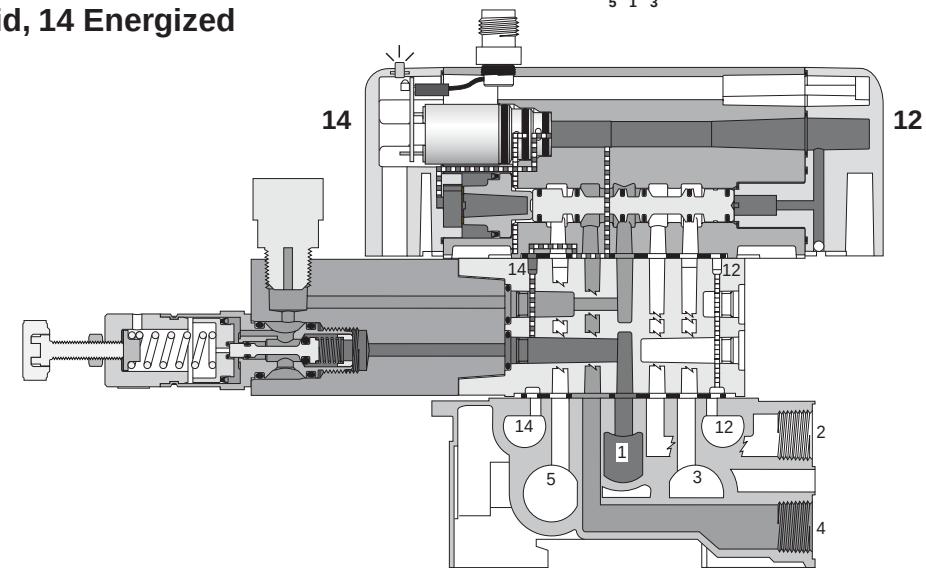
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve



Common Port Regulator with 4-Way, 3-Position APB Valve



HB Common Port Regulator Shown - Single Solenoid, 14 Energized

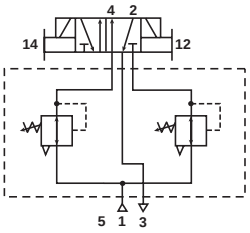


HB & HA Independent Dual Port Regulation

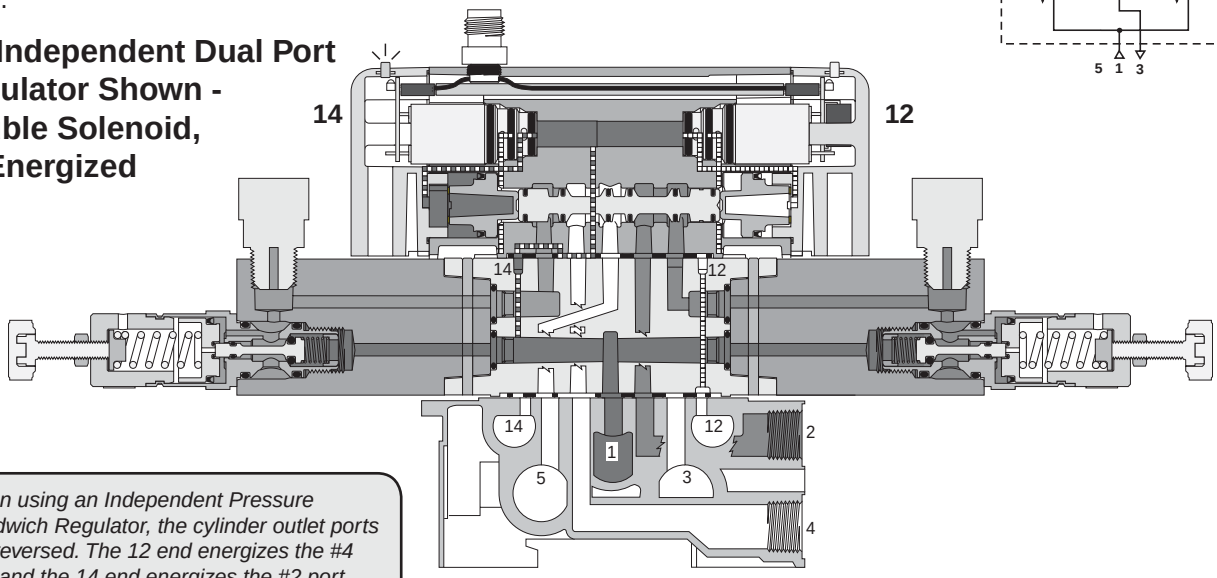
Dual Port Regulator

Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve



HB Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized



When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics above.)

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Non Plug-in, 15407-1 Transition Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

HB HA H1 H2 H3

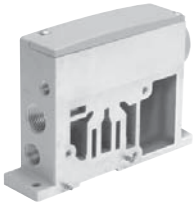
PS562401 0 P

Transition Plate Type*	
HA / HB to H2	PS562401

* Includes Left Hand and Right Hand End Plates.
Use with PS5511 and PS5611 Manifolds Only.

	Thread Type
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.



Left Hand End Plate



Transition Plate

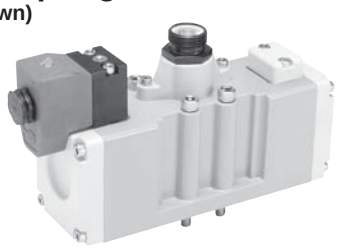


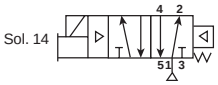
Right Hand End Plate

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Non Plug-in, 5599-1, Central Connector - Size 1, 2, & 3

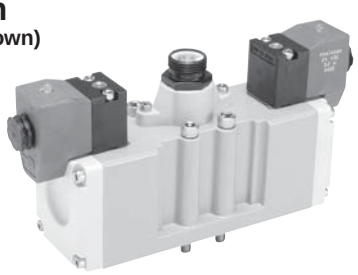
Single Solenoid
2-Position, Spring / Air Return
(H2 Series Shown)

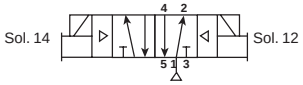




H1	**H1EWXBG323000*C**	120VAC	1.5 Cv, C = 5.0 Nl/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min
	H1EWXBG2B9000*C	24VDC	
H2	**H2EWXBG323000*C**	120VAC	3.0 Cv, C = 9.7 Nl/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min
	H2EWXBG2B9000*C	24VDC	
H3	**H3EWXBG323000*C**	120VAC	6.0 Cv, C = 18.7 Nl/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min
	H3EWXBG2B9000*C	24VDC	

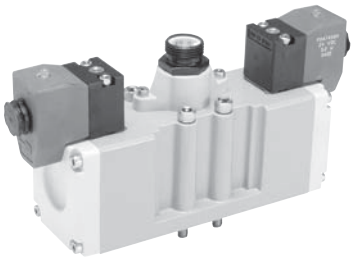
Double Solenoid
2-Position
(H2 Series Shown)



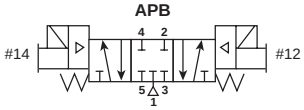


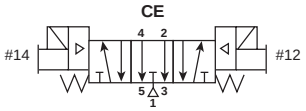
H1	**H12WXBG323000*C**	120VAC	1.5 Cv, C = 5.0 Nl/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min
	H12WXBG2B9000*C	24VDC	
H2	**H22WXBG323000*C**	120VAC	3.0 Cv, C = 9.7 Nl/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min
	H22WXBG2B9000*C	24VDC	
H3	**H32WXBG323000*C**	120VAC	6.0 Cv, C = 18.7 Nl/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min
	H32WXBG2B9000*C	24VDC	

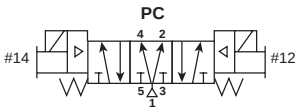
Double Solenoid
3-Position APB
3-Position CE
3-Position PC
(H2 Series Shown)



*** Specify Automotive Wiring Code**
C - Chrysler
F - SAE / Ford
G - GM







APB			
H1	**H15WXBG323000*C**	120VAC	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
	H15WXBG2B9000*C	24VDC	
H2	**H25WXBG323000*C**	120VAC	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
	H25WXBG2B9000*C	24VDC	
H3	**H35WXBG323000*C**	120VAC	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min
	H35WXBG2B9000*C	24VDC	
CE			
H1	**H16WXBG323000*C**	120VAC	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
	H16WXBG2B9000*C	24VDC	
H2	**H26WXBG323000*C**	120VAC	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
	H26WXBG2B9000*C	24VDC	
H3	**H36WXBG323000*C**	120VAC	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min
	H36WXBG2B9000*C	24VDC	

PC			
H1	**H17WXBG323000*C**	120VAC	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
	H17WXBG2B9000*C	24VDC	
H2	**H27WXBG323000*C**	120VAC	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
	H27WXBG2B9000*C	24VDC	
H3	**H37WXBG323000*C**	120VAC	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min
	H37WXBG2B9000*C	24VDC	

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Non Plug-in, 5599-1, Central Connector - Size 1, 2, & 3

BOLD OPTIONS ARE MOST POPULAR

H1 **E** **WX** **B** **G** **2B9** **000F** **C**

Basic Series 5599-1	
ISO 5599-1 Size 1	**H1**
ISO 5599-1 Size 2	**H2**
ISO 5599-1 Size 3	**H3**

5599 -1 Engineering Level	
C	**Current**

5599-1 Central Connector Wiring Options	
000C	**Chrysler**
000F*	**SAE / Ford, ISO 20401**
000G	General Motors

* Complies to ISO 20401 with Enclosure Lead Length "2".

5599-1 Operator / Function	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	**6**
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return, Spring Assist	**E**

5599-1 Mounting	
Valve Less Base	**WX**

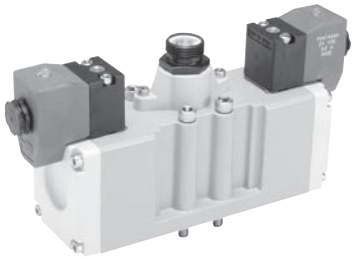
5599-1 Pilot Source / Pilot Exhaust	
Internal Pilot, Port #1 / Vented	**B**
External Pilot #12 or #14 Port / Vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Overrides / Lights	
Non-Locking, Flush, with Light	**G**
Locking, Flush, with Light	H

Enclosure / Lead Length / Voltage*		AC		DC
		60Hz	50Hz	
1B9†	3-Pin, Central Mini Connector			24
123†	3-Pin, Central Mini Connector	120	115	
2B9	**4-Pin, Central M12 Connector**			**24**
3B9	5-Pin, Central Mini Connector			24
323	5-Pin, Central Mini Connector	120	115	
619‡	2-Pin, M12 Connector On Coil			24

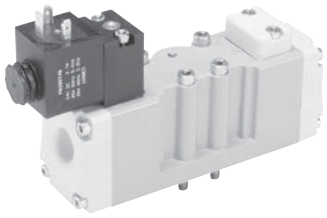
* All Coils Include LED & Suppression
† Operator Function "1" or "E"
‡ Only Available with Wiring Option "000F"

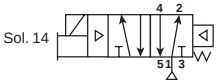


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Non Plug-in, 5599-1, CNOMO - Size 1, 2, & 3

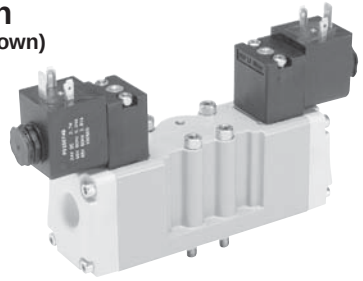
Single Solenoid
2-Position, Spring / Air Return
(H1 Series Shown)

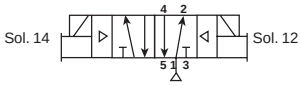




H1	**H1EWXBBL53C**	120VAC	1.5 CvI, C = 5.0 Nl/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min
	H1EWXBBL49C	24VDC	
H2	**H2EWXBBL53C**	120VAC	3.0 Cv, C = 9.7 Nl/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min
	H2EWXBBL49C	24VDC	
H3	**H3EWXBBL53C**	120VAC	6.0 Cv, C = 18.7 Nl/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min
	H3EWXBBL49C	24VDC	

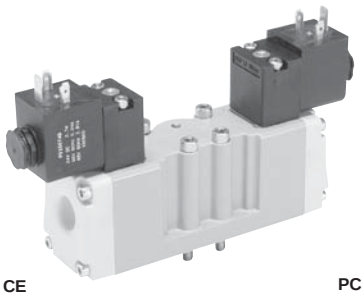
Double Solenoid
2-Position
(H1 Series Shown)

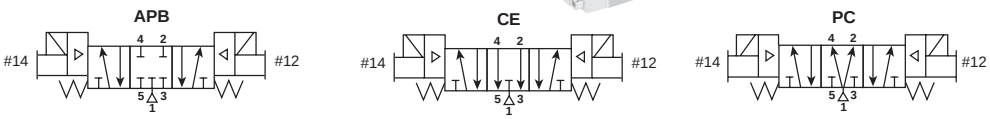




H1	**H12WXBBL53C**	120VAC	1.5 Cv, C = 5.0 Nl/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min
	H12WXBBL49C	24VDC	
H2	**H22WXBBL53C**	120VAC	3.0 Cv, C = 9.7 Nl/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min
	H22WXBBL49C	24VDC	
H3	**H32WXBBL53C**	120VAC	6.0 Cv, C = 18.7 Nl/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min
	H32WXBBL49C	24VDC	

Double Solenoid
3-Position APB
3-Position CE
3-Position PC
(H1 Series Shown)





APB			
H1	**H15WXBBL53C**	120VAC	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
	H15WXBBL49C	24VDC	
H2	**H25WXBBL53C**	120VAC	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
	H25WXBBL49C	24VDC	
H3	**H35WXBBL53C**	120VAC	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min
	H35WXBBL49C	24VDC	
CE			
H1	**H16WXBBL53C**	120VAC	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
	H16WXBBL49C	24VDC	
H2	**H26WXBBL53C**	120VAC	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
	H26WXBBL49C	24VDC	
H3	**H36WXBBL53C**	120VAC	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min
	H36WXBBL49C	24VDC	

PC			
H1	**H17WXBBL53C**	120VAC	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
	H17WXBBL49C	24VDC	
H2	**H27WXBBL53C**	120VAC	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
	H27WXBBL49C	24VDC	
H3	**H37WXBBL53C**	120VAC	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min
	H37WXBBL49C	24VDC	

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Non Plug-in, 5599-1, CNOMO - Size 1, 2, & 3

BOLD OPTIONS ARE MOST POPULAR.

H1	E	WX	B	B	L53	C

Basic Series 5599-1	
ISO 5599-1 Size 1	**H1**
ISO 5599-1 Size 2	**H2**
ISO 5599-1 Size 3	**H3**

5599-1 Operator / Function	
Single Solenoid, 2-Position - Air Return	**1**
Double Solenoid, 2-Position	**2**
Double Solenoid, 3-Position - APB	**5**
Double Solenoid, 3-Position - CE	**6**
Double Solenoid, 3-Position - PC	7
Single Solenoid, 2-Position - Air Return, Spring Assist	**E**

5599-1 Mounting	
Valve Less Base	**WX**

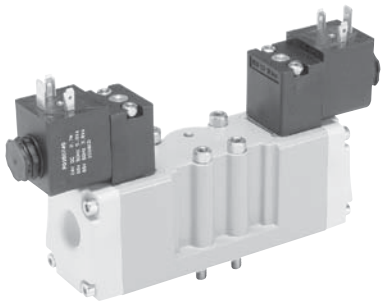
5599-1 Pilot Source / Pilot Exhaust	
Internal Pilot, Port #1 / Vented	**B**
External Pilot #12 or #14 Port / Vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Overrides / Lights	
B	**Non-Locking, Flush, Push - No Light**
C	Locking, Flush, Push / Turn - No Light

5599-1 Engineering Level	
C	**Current**

Enclosure / Lead Length / Voltage		AC		DC
		60Hz	50Hz	
L42	3-Pin, 30mm DIN 43650A with CNOMO Connector	24		
L45	3-Pin, 30mm DIN 43650A with CNOMO Connector			12
L49	**3-Pin, 30mm DIN 43650A with CNOMO Connector**			**24**
L53	**3-Pin, 30mm DIN 43650A with CNOMO Connector**	**120**	**115**	
L57	3-Pin, 30mm DIN 43650A with CNOMO Connector	240		
NXX	Valve Less Coil			

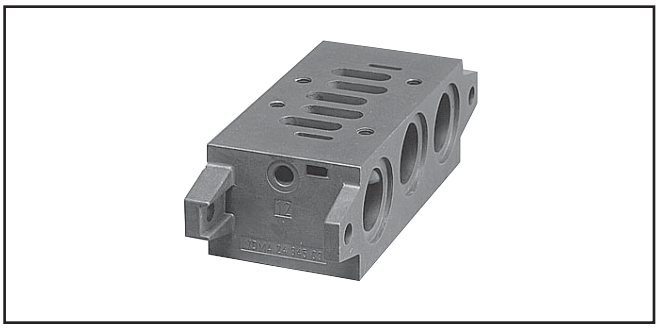


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Non Plug-in, 5599-1, VDMA - Size 1, 2, & 3 Manifold / Subbase Kits

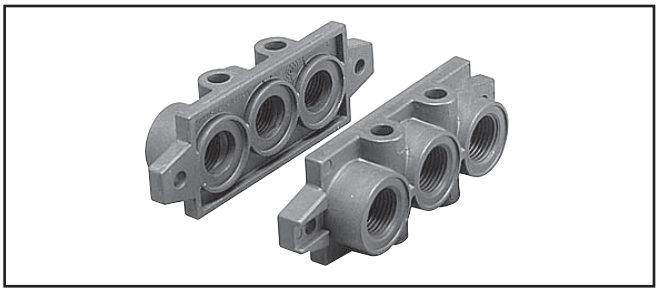
Manifold VDMA – Form C Bottom Port

Size	Port Size	Kit Number
		BSPP "G"
H1	1/4"	P2N-VM512MB
H2	3/8"	P2N-WM513MB
H3	1/2"	P2N-YM514MB



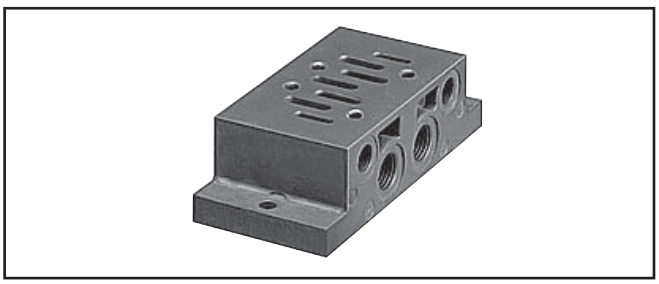
VDMA End Plates – Form D

Size	Port Size	Kit Number
		BSPP "G"
H1	3/8"	P2N-VM513ES
H2	1/2"	P2N-WM514ES
H3	1"	P2N-YM518ES



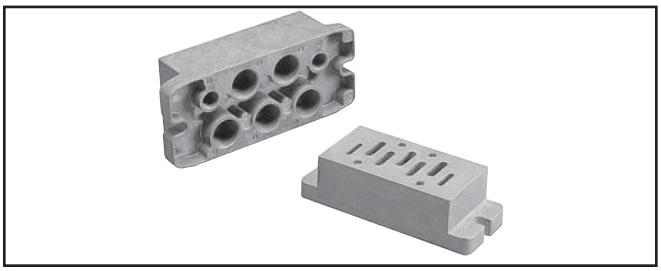
Subbase – Side Ports (5599-1 & VDMA)

Size	Port Size	5599-1 Kit Number		VDMA Kit
		NPT	BSPP "G"	BSPP "G"
H1	1/4"	**PL1-1/4-80**	PL1-1/4-70	P2N-VS512SD
H2	3/8"	**PL2-3/8-80**	PL2-3/8-70	P2N-WS513SD
H3	1/2"	PL3-1/2-80	PL3-1/2-70	P2N-YS514SD



Subbase – Bottom Ports

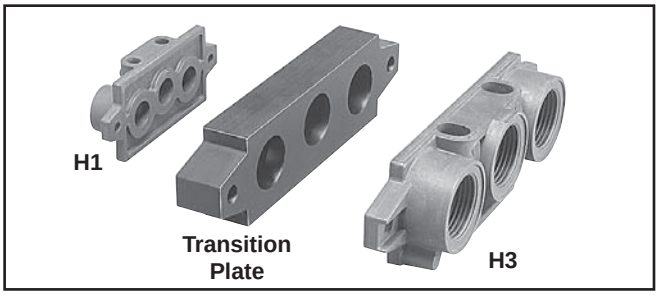
Size	Port Size	5599-1 Kit Number	
		NPT	BSPP "G"
H1	1/4"	PD1-1/4-80	PD1-1/4-70
H2	3/8"	PD2-3/8-80	PD2-3/8-70



VDMA Transition Plate

Kit Number
P2N-VM500AK

Kit includes: Transition Plate Only. Order P2N-VM513ES and P2N-YM518ES Separately to Assemble Add-A-Fold



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Non Plug-in, 5599-1, Size 1, 2, & 3 Manifold / Subbase Kits

BOLD OPTIONS ARE MOST POPULAR.

PS401155 | 0 | C | P

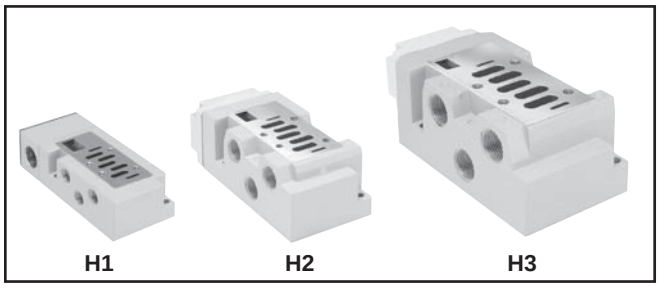
Enclosures / Lead Length	
0	None, No Electrical Plug - 5599-1

Mounting Base Style / Port Size					
H1 Series		H2 Series		H3 Series	
Subbase: 3/8 NPT Side Ports	**PS401115**	**Subbase: 1/2 NPT Side Ports**	**PS411117**	**Subbase: 3/4 NPT Side Ports**	**PS421119**
Subbase: 3/8 BSPP Side Ports	PS401116	Subbase: 1/2 BSPP Side Ports	PS411118*	Subbase: 3/4 BSPP Side Port	PS421110*
Manifold: 3/8 NPT End Ports	**PS401155**	**Manifold: 1/2 NPT End Port**	**PS411157**	**Manifold: 3/4 NPT End Port**	**PS421159**
Manifold: 3/8 BSPP End Ports	PS401156*	Manifold: 1/2 BSPP End Ports	PS411158*	Manifold: 3/4 BSPP End Port	PS421150*
Manifold: 3/8 NPT Bottom / End Port	PS401165†	Manifold: 1/2 NPT Bottom / End Port	PS411167	Manifold: 3/4 NPT Bottom / End Port	PS421169
Manifold: 3/8 BSPP Bottom / End Port	PS401166*†	Manifold: 1/2 BSPP Bottom / End Port	PS411168*	Manifold: 3/4 BSPP Bottom / End Port	PS421160*

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

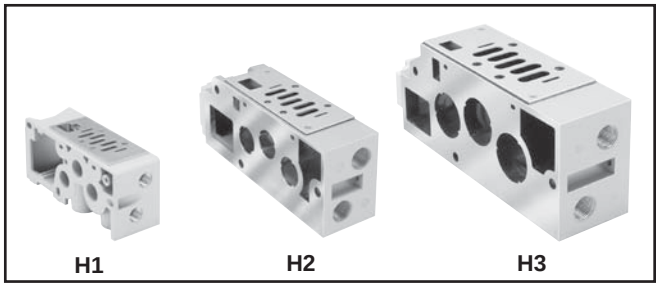
† #1 Bottom Port - 1/4".

Subbase Kits



H1 H2 H3

Manifold Kits



H1 H2 H3

Non-Plug-in, 5599-1, End Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

H1 H2 H3

PS403101 | 0 | C | P

Basic Series	
ISO 5599, Size 1	PS403101
ISO 5599, Size 2	PS413101
ISO 5599, Size 3	PS423101

Thread Type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

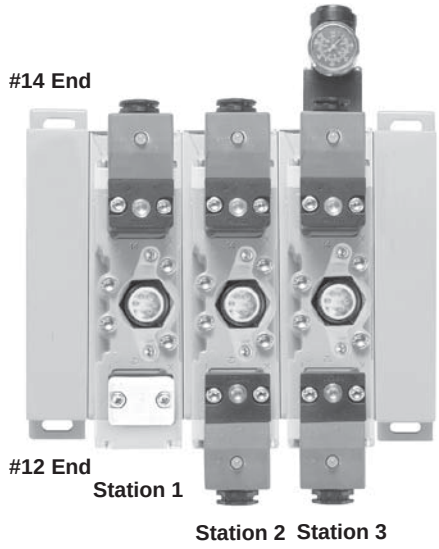


H1 Non-Collective Wiring End Plates

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How To Order Non Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
3-Station Manifold with (3) H1 Valves
On Manifold Bases
and Regulator at Station 3

Add-A-Fold Assembly Model Number

AA	H1	S	0	03	

Valve Series

Right & Left End Plate	H1

End Plate Type

Standard - Non-Collective Wiring	S†
VDMA 5599-1	V*

* Not Available in NPT. For use with P2N Style Mmanifolds.
† For use with PS4... Style Manifolds.

Transition Plate

Blank	No Transition Plate
C*	H1 to H2
D	H1 to H3

* Not Available with Type "V".

Number of Stations

01
02
03
04
•
•
24

Thread Type

0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Example

Application requires a 3-Station manifold with a valve, regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH1S003	
02	1	H11WXBG3B9000FC	Station 1
03	1	PS4011550CP	Station 1
04	1	H12WXBG3B9000FC	Station 2
05	1	PS4011550CP	Station 2
06	1	H12WXXG3B9000FC	Station 3
07	1	PS4037166CP	Station 3
08	1	PS4011550CP	Station 3

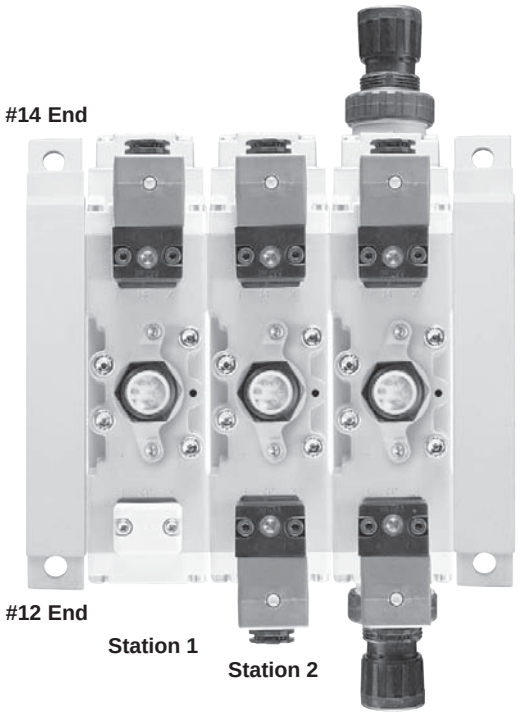
NOTE:
Construct manifold assemblies from left to right while looking at the cylinder ports.

Valves must be ordered as External Pilot when using Sandwich Regulator.

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How To Order Non Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
3-Station Manifold with (3) H2 Valves On Manifold Bases and Regulator at Station 3

Add-A-Fold Assembly Model Number

AA	H2	S	0	03	

Valve Series

Right & Left End Plate	H2
Right & Left End Plate	H3

End Plate Type

Standard - Non-Collective Wiring	S†
VDMA 5599-1	V*

* Not Available in NPT. For use with P2N Style Mmanifolds.
† For use with PS4... Style Manifolds.

Transition Plate

Blank	No Transition Plate
E*	H2 to H3

* Use Largest Size (H3) Number. Not Available with Type "V".

Number of Stations

01
02
03
04
•
•
24

Thread Type

0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Example

Application requires a 3-Station manifold with a valve and regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH2S003	
02	1	H21WXBG3B9000C	Station 1
03	1	PS4111570CP	Station 1
04	1	H22WXBG3B9000C	Station 2
05	1	PS4111570CP	Station 2
06	1	H22WXXG3B9000C	Station 3
07	1	PS4137166CP	Station 3
08	1	PS4111570CP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.

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Blanking Plate Kits

Size	Kit Number
H1	PS4034CP
H2	PS4134CP
H3	PS4234CP

Kit includes: Blanking Plate, Gasket, and Mounting Bolts.



Manifold Port Isolation Kits

Main Galley (1, 3, 5)

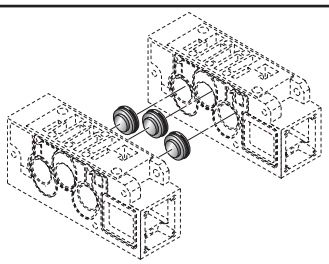
Size	Kit Number	
	PS4 Manifolds	P2N Manifolds
H1	PS4032CP	P2N-VK0P
H2	PS4132CP	P2N-WK0P
H3	PS4232CP	—

Kit includes: Plugs with O-rings.

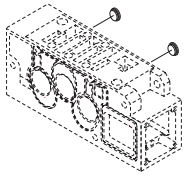
Pilot Galley

Size	Kit Number
H1 H2 H3	PS4033CP

Kit includes: Plugs with O-rings.
For use on PS4... Series Manifolds.



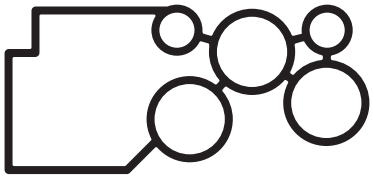
H1, H2, H3 Main Galley



H1, H2, H3 Pilot Galley

Manifold to Manifold Gasket Kits

5599 PS4011, PS4111 & PS4211 Manifolds
H1 PS4013P
H2 PS4113P
H3 PS4213P



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H1 Auxiliary Access Plate Kits

Size	Port Size	Kit Number	
		NPT	BSPP "G"
H1	1/4" & 3/8"	PS403000CP	PS403001CP

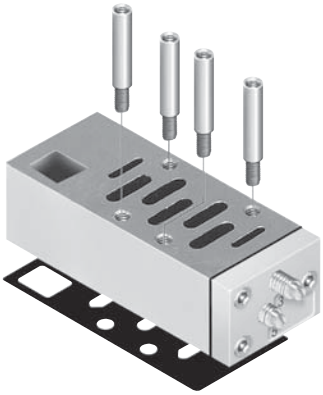
Kit includes: Pilot Port Access Plate, Gasket and Mounting Screws.
- Used on H1 Manifolds to provide auxiliary access to Ports 1, 3 & 5.
- Port 1: 1/4", Ports 3 & 5: 3/8". Height: .72 Inch



Sandwich Flow Controls

Size	Kit Number
H1	PS4042CP
H2	PS4142CP
H3	PS4242CP

A Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.



Non Plug-in
5599-1
Size 2 Shown

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BOLD OPTIONS ARE MOST POPULAR

PS4037 1 6 6 C P

Basic Series	
H1	
5599-1, Non Plug-in	PS4037
H2	
5599-1, Non Plug-in	PS4137
H3	
5599-1,Non Plug-in	PS4237

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

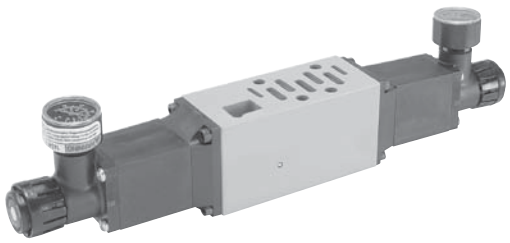
** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

#4 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

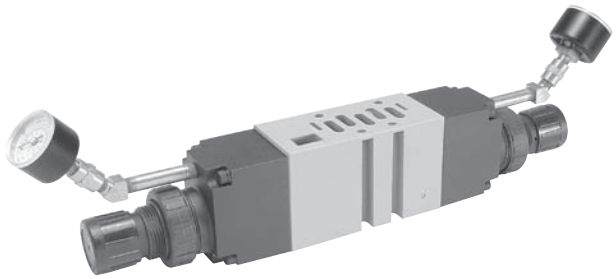
* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

Ordering Components
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*



H1 - Size 1
(Independent Dual Port Regulator Shown)



H2 - Size 2
(Independent Dual Port Regulator Shown)

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator H1, H2 & H3
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration of Sandwich Regulator H1, H2, H3
An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

Sandwich Regulator Cv Flow Chart*

	Common Pressure Code 166				Single Pressure 2 Code 266				Single Pressure 4 Code 260				Dual Pressure Code 266			
	1-2	1-4	2-3	4-5	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*
H1	0.62	0.61	1.28	1.18	0.73	0.96	0.96	0.93	0.34	0.70	0.94	0.98	0.52	0.48	0.86	0.88
H2	1.47	1.60	2.41	2.33	1.71	1.90	1.52	1.75	1.74	1.67	1.73	1.79	1.61	1.62	1.50	1.67
H3	2.37	2.39	4.30	4.47	2.37	2.81	2.75	3.01	2.65	2.59	2.68	2.74	2.43	2.41	3.16	3.04

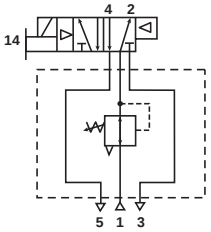
* Regulator Port exhaust through Base Port 3.
Note: All Cv's calculated with regulator adjusted full open.

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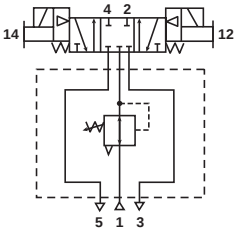
Non Plug-in, H1, H2, H3 Common Port Regulation

Provides adjustable regulated air pressure to the valve's #1 port which gives the same regulated pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

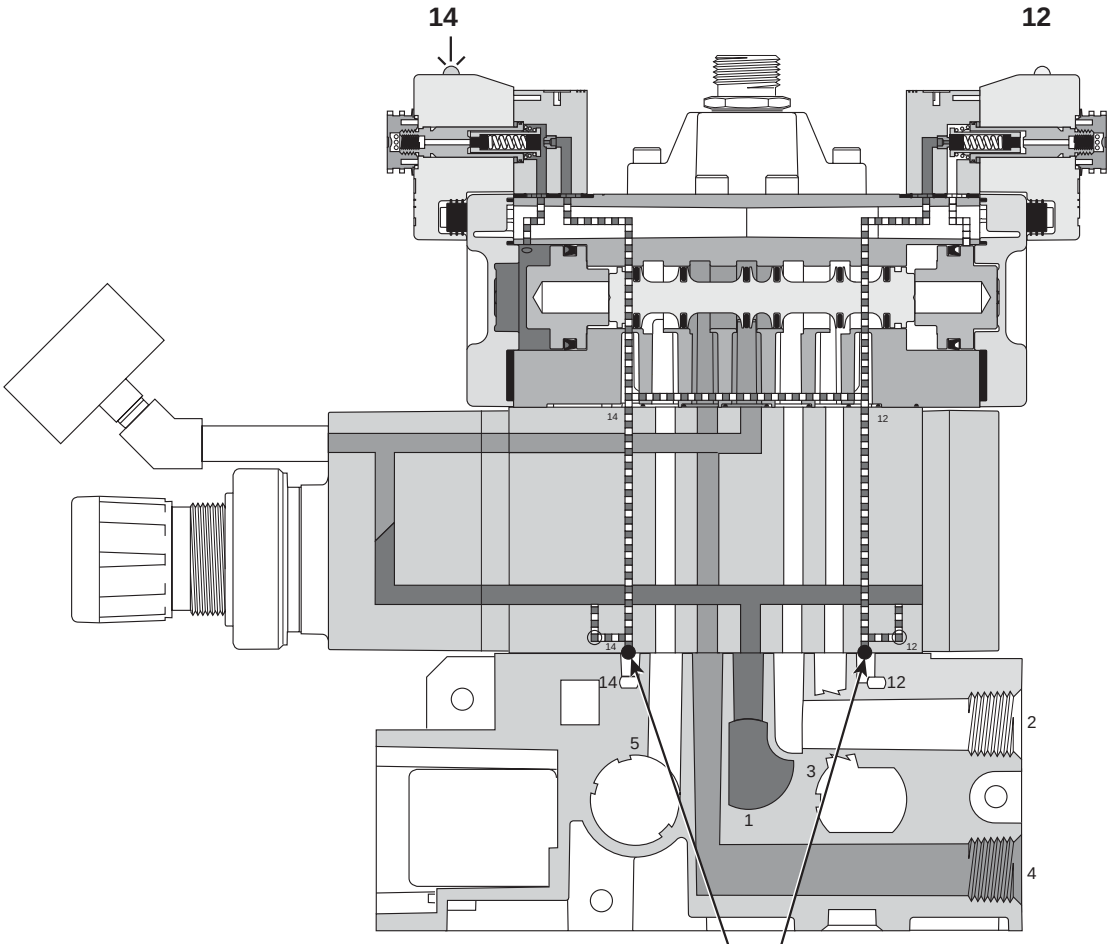
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve



Common Port Regulator with 4-Way, 3-Position APB Valve



H2 Common Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of the I & E Pilot Holes which prevents line pressure from escaping through the manifold.

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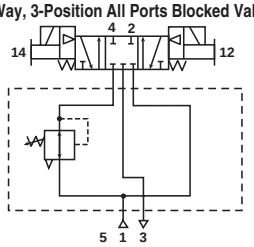
Non Plug-in, H1, H2, H3 Independent Port Regulation

Single Port Regulator

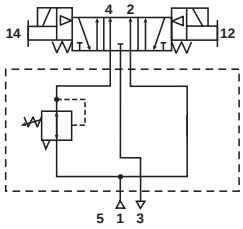
Provides regulated pressure to one of the ports and full line pressure to the other by use of the Line Pressure By-Pass Plate. Pressure regulation can occur out of the #4 port of the valve.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on right.)

Independent Port Regulator with 4-Way, 3-Position All Ports Blocked Valve

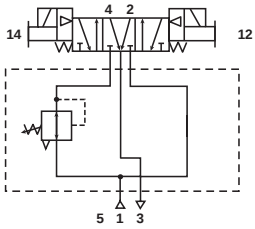


Independent Port Regulator with 4-Way, 3-Position, Inlet to Cylinder Function



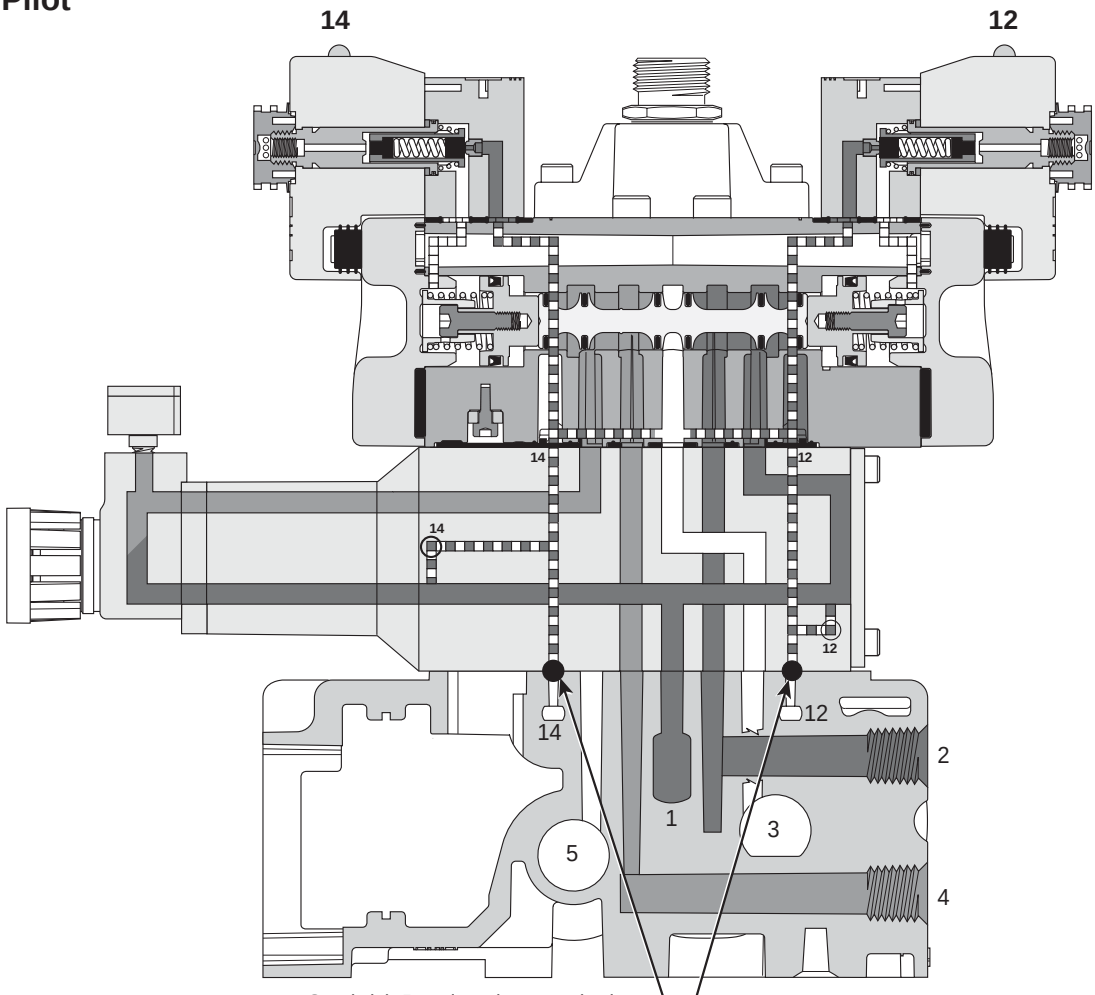
⚠ **CAUTION: Requires 4-Way, 3-Position, Cylinder to Exhaust Valve**

Independent Port Regulator with 4-Way, 3-Position, Cylinder to Exhaust Function



⚠ **CAUTION: Requires 4-Way, 3-Position, Inlet to Cylinder Valve**

H1 Independent Port Regulator Shown - Double Solenoid, De-energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

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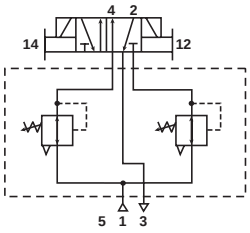
Non Plug-in, H1, H2, H3 Independent Dual Port Regulation

Dual Port Regulator

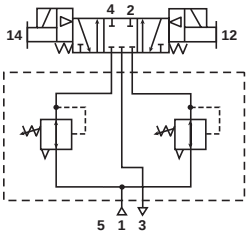
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on right.)

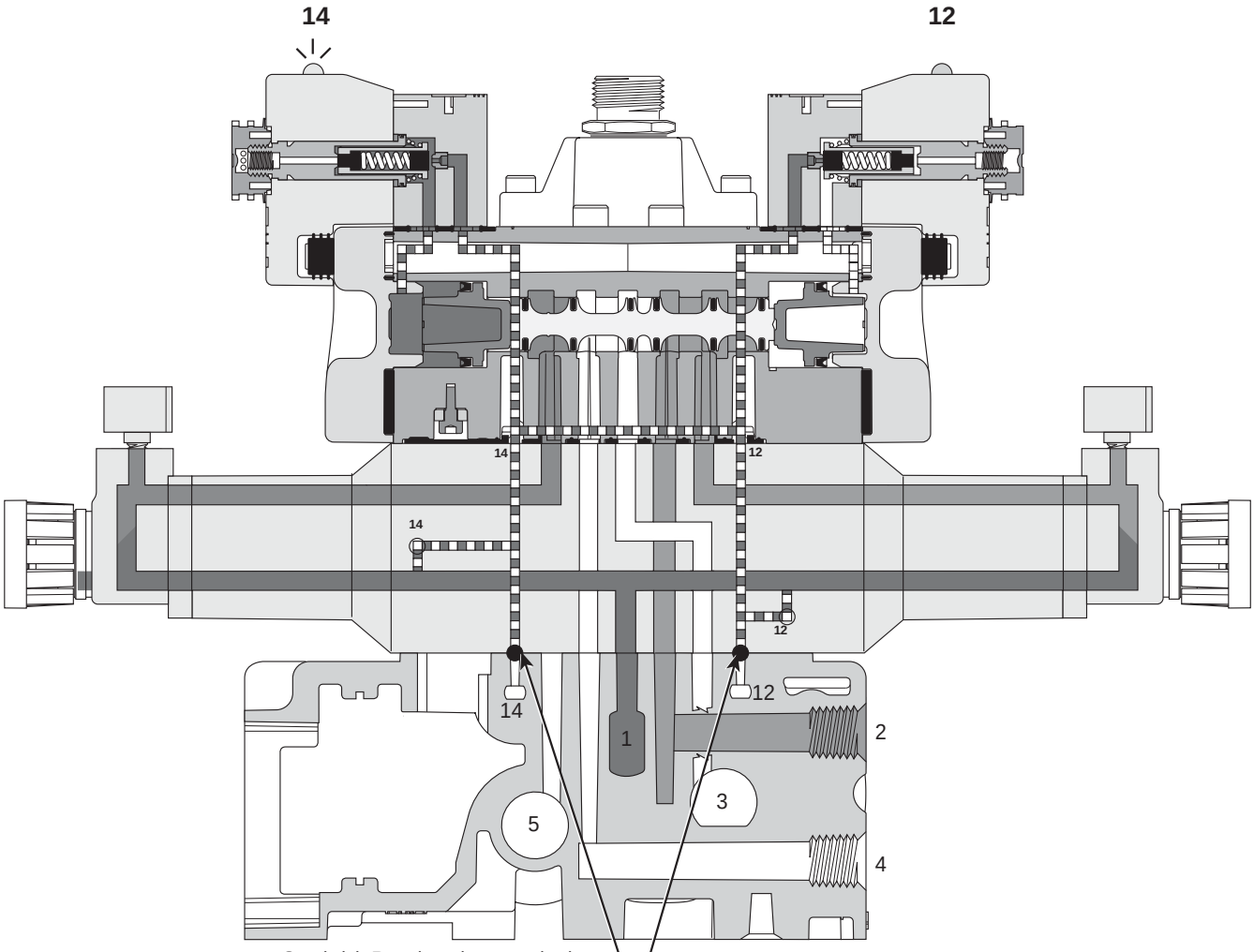
Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve



Independent Dual Port Regulator with 4-Way, 3-Position Double Solenoid Valve



H1 Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

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5599-1 Non Plug-in Transition Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

H1 H2 H3

PS402601 0 C P

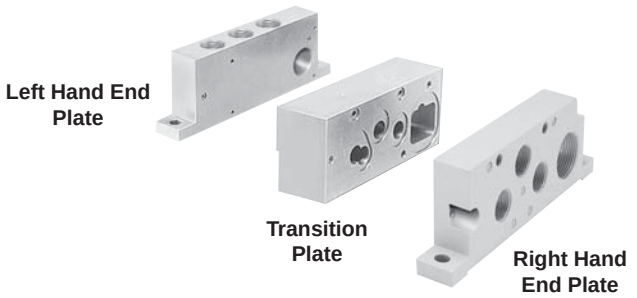
Transition Plate Type*	
H1 to H2 to H3	PS402501
H1 to H3	PS402601
H1 to H2	PS402701
H2 to H3	PS402801

* Includes Left Hand and Right Hand End Plates.
Use with PS4... Series Manifolds Only.

Engineering Level	
C	Current

Thread Type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.



H1 to H2 Shown

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Remote Pilot, Size 18mm (HB), 26mm (HA), H1, H2, & H3

BOLD OPTIONS ARE MOST POPULAR.

H1 **4** **WX000XX** **C**

Basic Series	
ISO 15407-1 18mm	HB
ISO 15407-1 26mm	HA*
ISO 5599-1 Size 1	H1*
ISO 5599-1 Size 2	H2*
ISO 5599-1 Size 3	H3*

* Must Order Remote Pilot Access Plates for Manifolds.

15407-1 Operator / Function	
Single Remote Pilot, 2-Position - Air Return	3
Double Remote Pilot, 2-Position	4
Double Remote Pilot, 3-Position - APB	8
Double Remote Pilot, 3-Position - CE	9
Double Remote Pilot, 3-Position - PC	0
Single Remote Pilot, 2-Position - Air Return, Spring Assist	F

Remote Pilot Valve	
WX000XX	Remote Pilot Valve

Engineering Level	
A	15407 Current
C	5599 Current

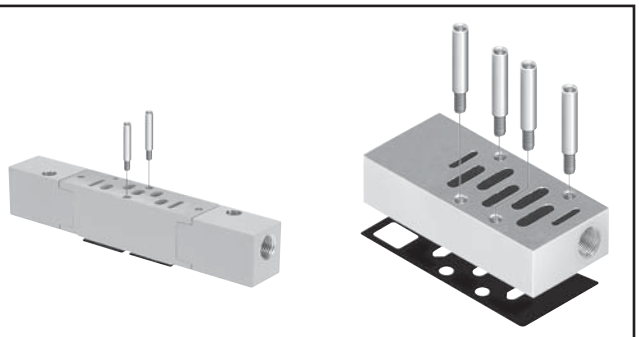
Note: For manifolds, end plates, and accessories, see 15407-1 & 5599-1 Non Plug-in valve section.

Note: HB 18mm Valve Remote Pilot Option only available with PL02 Individual Subbase Kits

Remote Pilot Access Plate Kits

Size	Port Size	Kit Number	
		NPT	BSPP "G"
HA	1/4"	PS551500P	PS551501P
H1	1/8"	PS401500CP	PS401501CP
H2	1/8"	PS411500CP	PS411501CP
H3	1/8"	PS421500CP	PS421501CP

Kit includes: Pilot Port Access Plate, Gasket and Mounting Studs.



HA H1, H2, H3

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Temperature Rating

HB	HA	H1	H2	H3
-15°C to 49°C (5°F to 120°F) Ambient.				

CSA / C-US

HB	HA	H1	H2	H3
Standard at - 1000kPa (145 PSIG)				

Flow Rating (Cv)

Valve Size	Port Size	2-Position	3-Position
HB	1/8"	0.55 Cv, C = 1.5 Nl/s x bar, b = 0.25, Qn = 390 l/min, Qmax = 648 l/min	0.50 Cv, C = 1.4 Nl/s x bar, b = 0.25, Qn = 360 l/min, Qmax = 595 l/min
HA	1/4"	1.1 Cv, C = 3.6 Nl/s x bar, b = 0.30, Qn = 918 l/min, Qmax = 1518 l/min	1.0 Cv, C = 3.3 Nl/s x bar, b = 0.30, Qn = 845 l/min, Qmax = 1395 l/min
H1	3/8"	1.5 Cv, C = 5.0 Nl/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min	1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
H2	1/2"	3.0 Cv, C = 9.7 Nl/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min	2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
H3	3/4"	6.0 Cv, C = 18.7 Nl/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min	5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min

Cv tested per ANSI / (NFPA) T3.21.3
Flow tested According to ISO 6358.

Response Time** (ms)

Valve Size	Port Size	0 Cu. In. Chamber		## Cu. In. Chamber	
		Fill	Exhaust	Fill	Exhaust
Single Solenoid 2-Position - Air Return / Spring Assist					
HB	1/8"	28	30	141	154
HA	1/4"	24	26	77	124
H1	3/8"	39	41	159	210
H2	1/2"	78	81	219	310
H3	3/4"	90	93	244	320

HB (12), HA (25), H1 (50), H2 (100), H3 (200)

** With 100 PSIG supply, time (ms) required to fill from 0 to 90 PSIG and Exhaust from 100 PSIG to 10 PSIG measured from the instant of energizing or de-energizing 24VDC solenoid.

Tested per ANSI / (NFPA) T3.21.8

Minimum Operating Voltage

	HB	HA	H1	H2	H3
MOV (24VDC)	20.4	20.4	20.4	20.4	20.4
MOV (120VAC)	102*	102*	102	102	102

* 120V AC coils have a dropout voltage of 10VAC when used with solid state relays. A pull-down resister may be necessary.

Operating Pressure

HB	HA	H1	H2	H3

Maximum: 145 PSIG (1000 kPa)
Minimum:

Operator / Function	Internal Pilot	PSIG (Min. kPa) HB	PSIG (Min. kPa) HA	PSIG (Min. kPa) H1	PSIG (Min. kPa) H2	PSIG (Min. kPa) H3
1	Single Solenoid - 2-Position	30 (207)	25 (173)	25 (173)	25 (173)	35 (241)
2	Double Solenoid- 2-Position					
3	Single Remote Pilot - 2-Position **	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
4	Double Remote Pilot - 2-Position**	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
5, 6, 7	Double Solenoid - 3-Position APB, CE, PC	35 (241)	35 (241)	35 (241)	50 (345)	50 (345)
8, 9, 0	Double Remote Pilot - 3-Position** APB, CE, PC	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
E	Single Solenoid Pilot - 2-Position Air Return / Spring Assist	30 (207)	30 (207)	35 (241)	45 (310)	45 (310)
F	Single Remote Pilot - 2-Position** Air Return / Spring Assist					
N, P, Q	Double Solenoid - Dual 3/2	30 (207)	N/A	N/A	N/A	N/A
	External Pilot*	*	*	*	*	*
All	Isys	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum

* External Pilot Pressure / Remote Pilot Supply - Must meet or exceed minimum pilot pressure for internal pilot option. Not available on Operator / Function N, P, or Q.

** Must be equal to or greater than operating pressure.

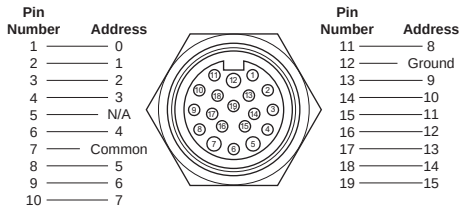
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Maximum Number of Solenoids
(Maximum Energized Simultaneously)

HA / HB	Voltage Code	25-Pin D-Sub	19-Pin Brad Harrison	12-Pin M23	19-Pin M23	Moduflex	Isysnet
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	16 (16)	32 (32)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A
H1 / H2 / H3	**Voltage Code**	**25-Pin D-Sub**	**19-Pin Brad Harrison**	**12-Pin M23**	**19-Pin M23**	**Moduflex**	**Isysnet**
12VDC	45	24 (13)	16 (13)	8 (8)	16 (13)	N/A	N/A
24VAC*	42	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A
24VDC	B9	24 (20)	16 (16)	8 (8)	16 (16)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A

* Not CSA certified for 25-Pin, D-Sub option.

19-Pin Round Brad Harrison



Face View - Male 19-Pin Connector

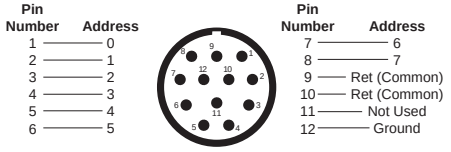
19-Pin Round Cable Specifications

Common Pin "7" is rated for 8 amps. Cable common wire must be greater than total amperage of solenoids on Add-A-Fold assembly.

Example: 8 station manifold, 16 solenoids,
120VAC - 16 x .039 amps = .63 total amp rating.

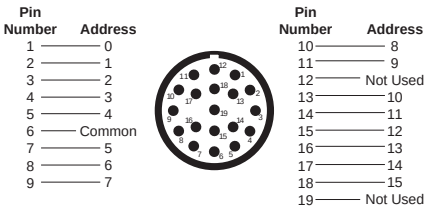
NEMA 4 rated with properly assembled NEMA 4 rated cable.

M23, 12-Pin Round Connector (Male)



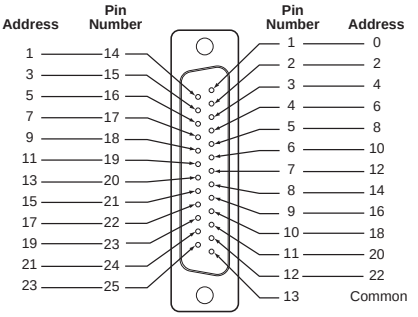
View into End Plate Connector - Male M23, 12-Pin

M23,19-Pin Round Connector (Male)



View into End Plate Connector - Male M23, 19-Pin

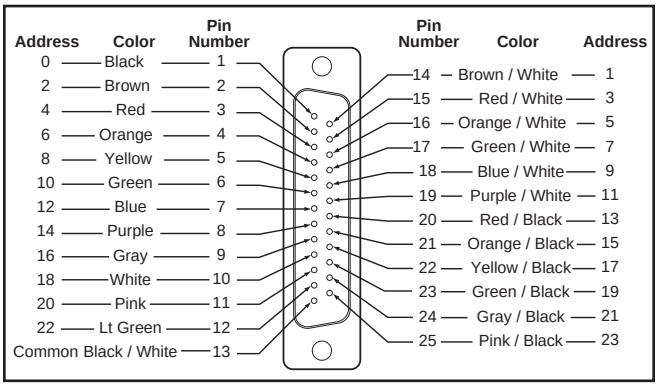
25-Pin, D-Sub Connector (Male)



View into End Plate Connector - Male D-Sub, 25-Pin

25-Pin, D-Sub Cable (Female)

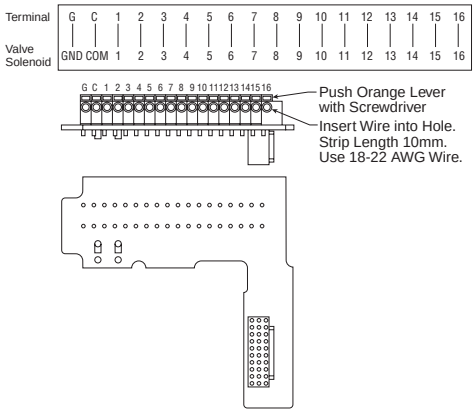




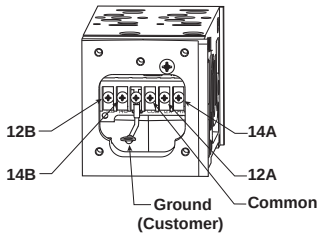
Part Number	Description	Length
P8LMH25M3A	25-Pin, D-Sub Cable, IP20	3 Meters
SCD259D	25-Pin, D-Sub Cable, IP20	9 Meters
SCD253W	25-Pin, D-Sub Cable, IP65	3 Meters
SCD259WE	25-Pin, D-Sub Cable, IP65	9 Meters

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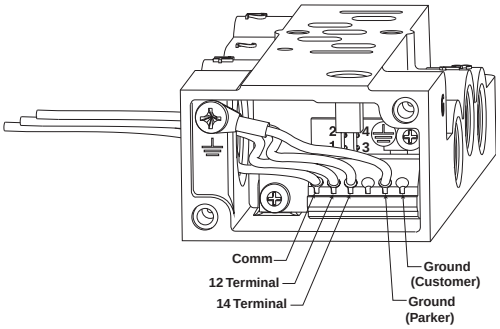
16-Point Terminal Strip



Manifold Wiring



Subbase Wiring

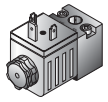


Connections

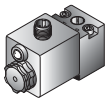
	14 Solenoid	12 Solenoid
Valves with Wires	Black Wires	Red Wires
Valves with Terminal Block (Will accept 18 to 24 Gauge Wires)	14 and Com Terminals	12 and Com Terminals

Electrical Connectors - Size 1, 2 & 3

5599-1 CNOMO



30mm 3-Pin ISO 4400 (DIN 43650A)

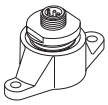


2-Pin M12 Euro

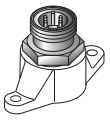
5599-1 AUTO



3-Pin Mini

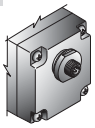


4-Pin Micro

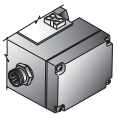


5-Pin Mini

5599-2



Manifold Auto Connector

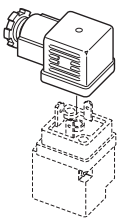


Subbase Auto Connector

Female Electrical Connectors (IP65 Rated)

30mm 3-Pin ISO 4400 (DIN 43650A)

Connector	Connector with 6' (2m) Cord	Description
PS2028BP	PS2028JCP	Unlighted
PS203279BP	PS2032J79CP*	Light – 6-48V, 50/60Hz; 6-48VDC
PS203283BP	PS2032J83CP*	Light – 120V/60Hz
PS203283BP	N/A	Light – 240V/60Hz



* With surge suppression.

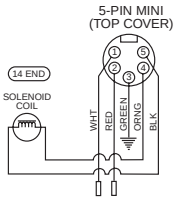
Engineering Data:
Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 8 to 10mm (0.31 to 0.39 Inch);
Contact Spacing: 18mm

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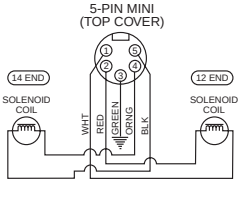
Automotive Connection – Wiring Options

'C' Chrysler Connection

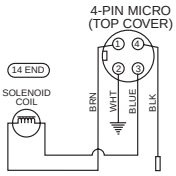
5-Pin Male / Single Solenoid
(Encl. Option 3, Auto Option C)



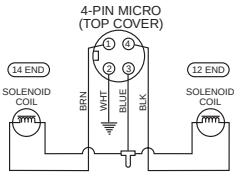
5-Pin Male / Double Solenoid
(Encl. Option 3, Auto Option C)



4-Pin Male / Single Solenoid
(Encl. Option 2, Auto Option C)

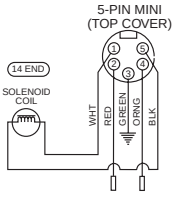


4-Pin Male / Double Solenoid
(Encl. Option 2, Auto Option C)

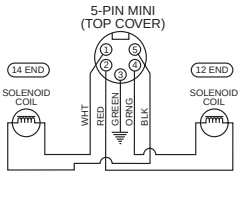


'F' SAE / Ford Wiring

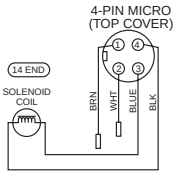
5-Pin Male / Single Solenoid
(Encl. Option 3, Auto Option F)



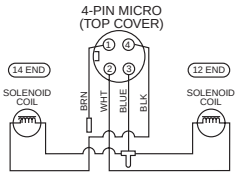
5-Pin Male / Double Solenoid
(Encl. Option 3, Auto Option F)



ISO 20401
4-Pin Male / Single Solenoid
(Encl. Option 2, Auto Option F)

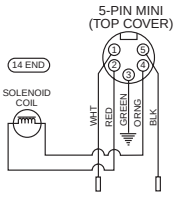


ISO 20401
4-Pin Male / Double Solenoid
(Encl. Option 2, Auto Option F)

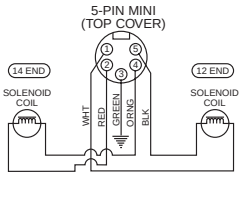


'G' GM Wiring

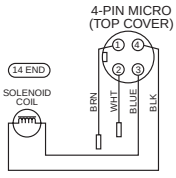
5-Pin Male / Single Solenoid
(Encl. Option 3, Auto Option G)



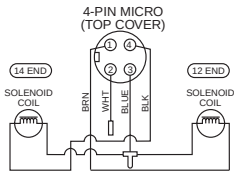
5-Pin Male / Double Solenoid
(Encl. Option 3, Auto Option G)



4-Pin Male / Single Solenoid
(Encl. Option 2, Auto Option G)

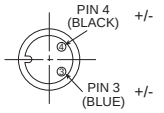


4-Pin Male / Double Solenoid
(Encl. Option 2, Auto Option G)

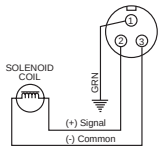


CNOMO Connection - Wiring Options

2-Pin Male / Single Solenoid
(Encl. Option 6, Auto Option F)

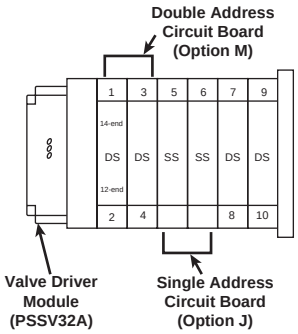


3-Pin Male / Single Solenoid
(Encl. Option 1, Auto Options C, F & G)

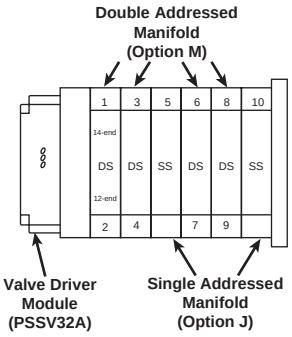


I/O Addressing Examples

HB & HA Example
Two Station Manifold Bases



H1, H2 & H3 Example:
Single Station Manifold Bases



Notes: SS = Single Solenoid Valve
DS = Double Solenoid Valve
First output address the #14 end of the valve closest to the valve driver module.

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Richland, Michigan
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5599-2 & 5599-1 AUTO Solenoid Kits

H1 H2 H3	
Voltage Code	**Coil Kit Number**
42 (24VAC)	PS404142P
45 (12VDC)	PS404145P
B9 (24VDC)	PS4041B9P
23 (120VAC)	PS404123P
57 (240VAC)	PS404157P

Quantity 1

5599-1 CNOMO Solenoid Kits

Voltage Code	3-Pin 30mm 'L' Coil Kit	2-Pin M12 Euro '6' Coil Kit
19	—	PS2828619P
42	P2FCA442	—
45	P2FCA445	—
49	P2FCA449	—
53	P2FCA453	—
57	P2FCA457	—

Quantity 1

Pilot Operator - CNOMO

Valve Size		Kit Number
H1 H2 H3	Locking	PS4052CP
	Non-Locking	PS4053CP

Manifold Hardware Kits – PS Series

Valve Size	Kit Number
HB	PS5612P
HA	PS5512P
H1	PS4012P
H2	PS4112P
H3	PS4212P

Quantity 12

Valve Bolt Kits

Valve Size	Kit Number
HB	PS5687P
HA	PS5587P
H1	PS4087CP
H2	PS4187CP
H3	PS4287CP

Quantity 12

Regulator Kits

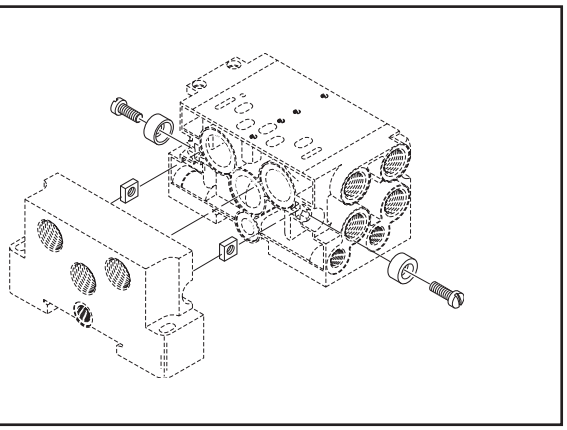
Valve Size	Kit Number
H1	PS4039P
H2 H3	PS4139P

Manifold Hardware Kit – PJL Series

Part Number	Items
DX02M2MB*	Bolt, Washer & Nut*

* Includes 10 Bolts, 10 Washers, 10 Nuts

** Use this number for both sizes, PJLP02 & PJLP01.



Valve to Base Gasket Kits

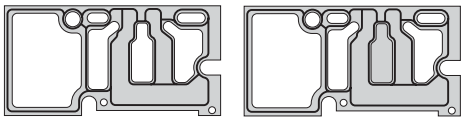
Valve Size	Standard	Remote Pilot	Dual Pressure #3	Dual Pressure #5
HB	PS5605P*	—	—	—
HA	PS5505P*	—	—	—
H1	PS4005CP	PS4006CP	PS40D3CP	—
H2	PS4105CP	PS4106CP	PS41D3CP	PS41D5CP
H3	PS4205CP	PS4206CP	PS42D3CP	PS42D5CP

Quantity 1
* Quantity 10

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

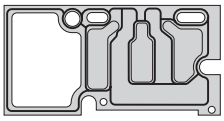
Manifold to Manifold Gasket Kits

15407 PS5511 & PS5611 Manifolds				
Size	**Standard**	**Blocked #1 Port**	**Blocked #1, 3, 5 Ports**	**Blocked #3, 5 Ports**
HB / HA	PS561AP	PS561BP	PS561CP	PS561DP
15407 PJLP & PJLManifolds				
HB	DX02M2MGSKT (PJLP02)			
HA	DX01M2MGSKT (PJLP01)			
5599 PS4011, PS4111 & PS4211 Manifolds				
H1	PS4013P	—	—	—
H2	PS4113P	—	—	—
H3	PS4213P	—	—	—

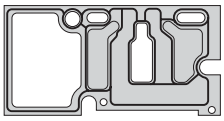


PS561AP

PS561BP



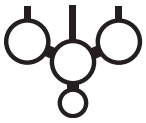
PS561CP



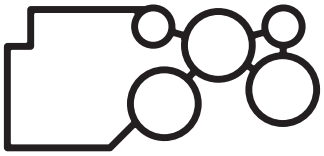
PS561DP



DX02M2MGSKT (PJLP02)



DX01M2MGSKT (PJLP01)



PS4013P

Regulator & Flow Control Mounting Studs

Type	HB	HA
Flow Control	PS5636P	PS5536P
Regulator	PS5636P	PS5536P

Type	H1	H2	H3
Flow Control	PS4036P	PS4136P	PS4236P
Regulator	PS4040P	PS4140P	PS4240P

Quantity 12

Regulator Gauge Kits – Size 1, 2 & 3

Gauge Type	Kit Number
1" Face Air - Standard	
0-60 PSIG	PS4051060BP
0-160 PSIG	**PS4051160BP**
1-1/2" Face Air - Large*	
0-60 PSIG	PS4053060BP
0-160 PSIG	PS4053160BP
1-1/2" Face Liquid*	
0-160 PSIG	PS4052160BP

* Includes brass pipe fitting extensions
Quantity 1

Regulator Spring Range Kits

Spring Range	H1	H2 / H3
0 to 30 PSIG	PS4050030P	PS4150030BP
2 to 60 PSIG	PS4050060P	PS4150060BP
5 to125 PSIG	PS4050125P	PS4150125BP

Quantity 1

Regulator Conversion Kits

Valve Size	Manual Bonnet Assembly (w/o Spring)	Air Pilot Bonnet Assembly	Independent By-Pass Plate
H1	PS4045BP	PS4047BP	PS4048BP
H2 / H3	PS4145BP	PS4147BP	PS4148BP

Quantity 1

Body Service Kits

Valve Size	2-Position	3-Position		
		APB	CE	PC
HB	PS5601P	PS5602P	PS5603P	PS5604P
HA	PS5501P	PS5502P	PS5503P	PS5504P
H1	PS4001CP	PS4002CP	PS4003CP	PS4004CP
H2	PS4101CP	PS4102CP	PS4103CP	PS4104CP
H3	PS4201CP	PS4202CP	PS4203CP	PS4204CP

HB / HA Kit Includes: Spool assembly with seals.

H1, H2, H3 Kit Includes: Spool assembly with seals, all piston seals, return spring, pilot selector gasket, coil to end cap gasket.

Quantity 1

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Pilot By-Pass Plate

Valve Size	Kit Number
H1 H2 H3	PS4051P

Quantity 10

Collective Wiring Module Kits Size 2 & 3

Size	Kit Number
25-Pin, D-Sub Module*†	**SCD251MC**
M23, 12-Pin*†	**SCM231MC**
19-Pin Heavy Duty Round*†	**SCC191MC**

*** Kit includes:** Wiring Module with Circuit Board Connection, Gasket, Tie Rods and Bolts.

† Available with Isys, ISO 5599-2, Sizes 2 & 3.

H2 H3



25-Pin, D-Sub Collective Wiring Module



19-Pin Heavy Duty Wiring Module



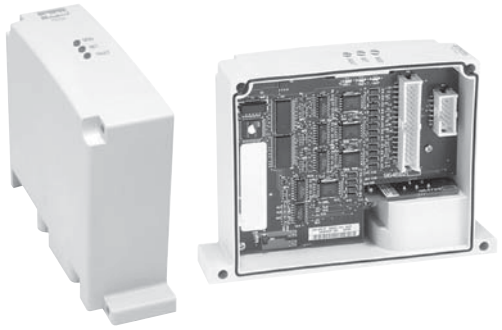
HB, HA, H1, H2, H3 25-Pin, D-Sub Cable

Valve Driver Module

Driver Module	Part Number
32 Point Module – HB, HA, H1, H2, H3	**PSSV32A*†**
24 Output Cable – HB, HA	**PS5624P †**
25 - 32 Output Cable – HB, HA	**PS5632P †**
24 Output Cable – H1, H2, H3	**PS4024P †**

* Reference Document E100P for Installation Instructions. See www.parker.com/pneu/Isysnet

† Isysnet Add-A-Fold assemblies and end plate kits include a valve driver module (PSSV32A) and cable.
HB / HA 24 output manifolds require a PS5624P.
HB / HA 32 output manifolds require a PS5624P + PS5632P.
H1, H2, H3 manifolds require a PS4024P, allowing 21 outputs.

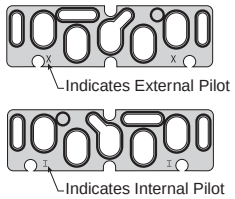


PSSV32A

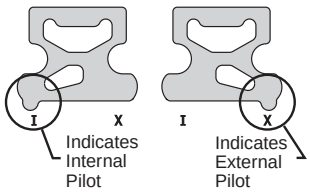
Pilot Select Gasket Kits

Valve Size	Kit Number
HB	PS5605P
HA	PS5505P
H1 H2 H3	PS4007P

Quantity 10



HB Shown



H1, H2, H3

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Pneumatic Division
Richland, Michigan
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Subbases

Size	Port Numbers	Port Size	Acceptable Fittings	Notes
H1	#1 to #3 or #5	1/4" BSPP	EO Fittings; Prestolok; P6M Mufflers; EO Plugs	1, 2, 3, 4, 5
		3/8" BSPP	Prestolok; EO Plugs	1, 2, 3, 4, 5
	#2 to #4	1/4" BSPP	EO Fittings; Prestolok; EO Plugs	1, 2, 3, 4, 5
		3/8" BSPP	Prestolok; EO Plugs; EO Fittings	1, 3, 4, 5, 6
	#12 to #2 and #14 to #4	1/8" & 1/4" BSPP	EO Fittings; EO Plugs; Prestolok	1, 2, 3, 4, 5
		1/8" & 3/8" BSPP	Prestolok; EO Plugs	1, 2, 3, 4, 5
	#1 to #2 to #3 to #4 to #5 All Inclusive Bottom Ports	1/4" BSPP	EO Fittings; EO Plugs; Prestolok; P6M Mufflers	1, 2, 3, 4, 5
H2	#1 to #3 or #5	3/8" BSPP	EO Fittings; Prestolok; ES, ASN, P6M Mufflers	1, 2, 3, 4, 5
		1/2" BSPP	EO Fittings; Prestolok; EO Plugs; ASN, P6M Mufflers	1, 2, 3, 4, 5
	#2 to #4	3/8" BSPP	EO Fittings; Prestolok; EO Plugs	1, 2, 3, 4, 5
		1/2" BSPP	EO Fittings; Prestolok; EO Plugs	1, 2, 3, 4, 5
	#12 to #2 and #14 to #4	1/8" & 3/8" BSPP	EO Fittings; EO Plugs; Prestolok	1, 2, 3, 4, 5
		1/8" & 1/2" BSPP	EO Fittings; EO Plugs; Prestolok	1, 2, 3, 4, 5
	#1 to #2 to #3 to #4 to #5 All Inclusive Bottom Ports Also Includes #12 & #14	3/8" & 1/2" BSPP	EO Fittings; Prestolok; EO Plugs	1, 2, 3, 4, 5
H3	#1 to #3 or #5	1/2" BSPP	EO Fittings; EO Plugs; Prestolok; ES, ASN, P6M Mufflers	1, 2, 3, 4, 5
		3/4" BSPP	EO Fittings; EO Plugs; ES & P6M Mufflers	1, 3, 4, 5
	#2 to #4	1/2" BSPP	EO Fittings; EO Plugs; Prestolok	1, 2, 3, 4, 5
		3/4" BSPP	EO Fittings; EO Plugs	1, 3, 4, 5
	#12 to #2 and #14 to #4	1/8" & 1/2" BSPP	EO Fittings; EO Plugs; Prestolok	1, 2, 3, 4, 5
		1/8" & 3/4" BSPP	EO Fittings; EO Plugs	1,3, 4, 5
	#1 to #2 to #3 to #4 to #5 All Inclusive Bottom Ports Also Includes #12 & #14	1/2" & 3/4" BSPP	EO Fittings; EO Plugs; P6M Mufflers; Prestolok	1, 3, 4, 5, 7

Manifold Bases

Size	Port Numbers	Port Size	Acceptable Fittings	Notes
H1	End Ports #2 & #4	1/4" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	Bottom Ports #2 & #4	1/4" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	End Ports #2 & #4	3/8" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	Bottom Ports #2 & #4	3/8" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
H2	End Ports #2 & #4	3/8" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	Bottom Ports #1, #2, & #4	3/8" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	End Ports #2 & #4	1/2" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	Bottom Ports #1, #2, & #4	1/2" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
H3	End Ports #2 & #4	1/2" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	Bottom Ports #2 & #4	1/2" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	End Ports #2 & #4	3/4" BSPP	EO Fittings	1, 3, 4, 5
	Bottom Ports #2 & #4	3/4" BSPP	EO Fittings	1, 3, 4, 5

End Plates

Size	Port Numbers	Port Size	Acceptable Fittings	Notes
H1	#1 to #3 & #5	1/2" BSPP	EO Fittings; Prestolok	1, 2, 3, 4, 5
	#12 to #3	1/8" to 1/2" BSPP	EO Fittings; Prestolok; P6M Muffler	1, 2, 3, 4, 5
	#14 to #5	1/8" to 1/2" BSPP	EO Fittings; Prestolok; P6M Muffler	1, 2, 3, 4, 5
H2	#1 to #3 & #5	3/4" BSPP	EO Fittings	1, 3, 4, 5
	#12 to #3	1/8" to 3/4" BSPP	EO Fittings; EO Plugs; P6M Muffler	1, 3, 4, 5
	#14 to #5	1/8" to 3/4" BSPP	EO Fittings; EO Plugs; P6M Muffler	1, 3, 4, 5
H3	#1 to #3 & #5	1" BSPP	EO Fittings	1, 3, 4, 5
	#12 to #3	1/8" to 1" BSPP	EO Fittings; EO Plugs; P6M & ES Muffler	1, 3, 4, 5
	#14 to #5	1/8" to 1" BSPP	EO Fittings; EO Plugs; P6M & ES Muffler	1, 3, 4, 5

Collective Wiring Interface Plates

Size	Port Numbers	Port Size	Acceptable Fittings	Notes
H1	TOP #1 to #3 & #5	1/2" BSPP	Prestolok; P6M Muffler; EO Fittings	1, 2, 3, 4, 5
H2	TOP #1 to #3 & #5	3/4" BSPP	EO Fittings; P6M & ES Mufflers	1, 3, 4, 5
H3	TOP #1 to #3 & #5	1" BSPP	EO Fittings; P6M & ES Mufflers	1, 3, 4, 5

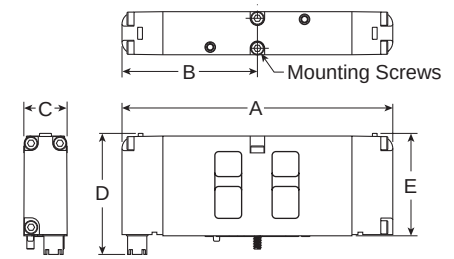
General Notes Applicable to Applications

1) **EO and EO2 Fittings** are metric tube ends and male BSPP threads to valve components – Light Duty Series – spot faces for B & E and G & H types of flat face sealing. Straights are the **BE-R-ED** Series and elbows are **WEE-R** Adjustable Lock Nut Series.
2) **Prestolok Fittings** are metric push-in fittings with tube ends and BSPP threads to valve components. Straights are the **F4PB** Series and elbows are **C64PB** Adjustable Series.
3) In most applications, there is not enough swing clearance to install elbows in adjacent ports.
4) In a few applications ay be necessary to remove the tube nut during installation.
5) In specifically identified installations, assembly with specific fittings is made provided that the hex points are not aligned along the port center to center line.
6) 3/8" EO fittings with 12 mm tubing only.
7) Prestolok available in 1/2" size only.

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HB

15407-2

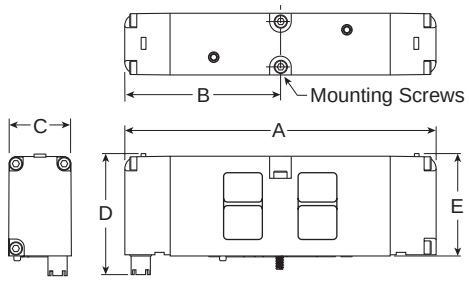


18mm Dimensions

A	B	C	D
4.43 (113)	2.22 (56)	.72 (18)	1.98 (50)
E			
1.68 (43)			

Inches (mm)

HA



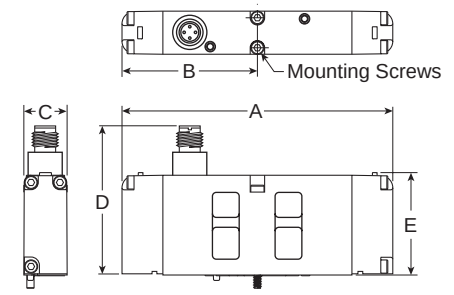
26mm Dimensions

A	B	C	D
5.10 (130)	2.55 (65)	1.02 (26)	1.98 (50)
E			
1.66 (42)			

Inches (mm)

HB

15407-1

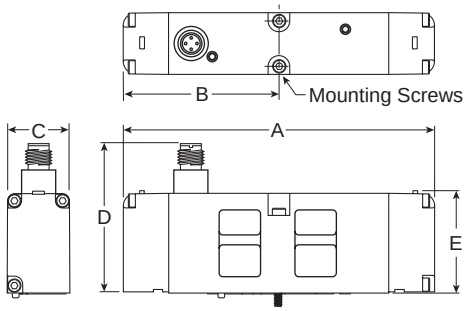


18mm Dimensions

A	B	C	D
4.43 (113)	2.22 (56)	.72 (18)	2.40 (61)
E			
1.68 (43)			

Inches (mm)

HA



26mm Dimensions

A	B	C	D
5.10 (130)	2.55 (65)	1.02 (26)	2.40 (61)
E			
1.66 (42)			

Inches (mm)

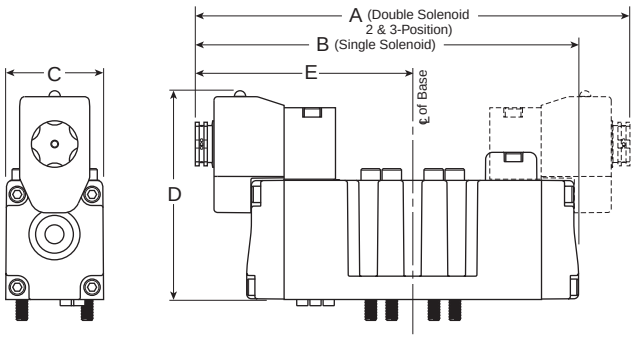
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H1

H2

H3

5599-2

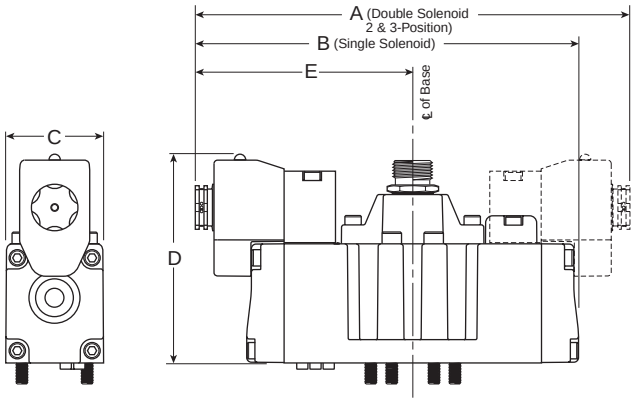


H1 Dimensions

A	A1	B	C
7.32 (186)	5.59 (142)	6.46 (164)	1.65 (42)
D	**D1**	**D2**	**D3**
3.54 (90)	4.29 (109)	4.29 (109)	2.50 (63.5)
D4	**E**	**E1**	
2.48 (63)	3.66 (93)	2.80 (71)	

Inches (mm)

5599-1 Auto



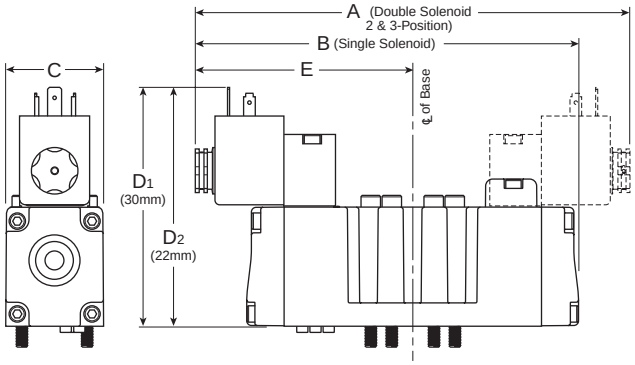
H1 Valve Dimensions Shown

H2 Dimensions

A	A1	B	C
8.35 (212)	6.62 (168)	7.48 (190)	2.17 (55)
D	**D1**	**D2**	**D3**
4.05 (103)	4.80 (122)	4.57 (116)	2.99 (76)
E	**E1**		
4.17 (106)	3.31 (84)		

Inches (mm)

5599-1 CNOMO

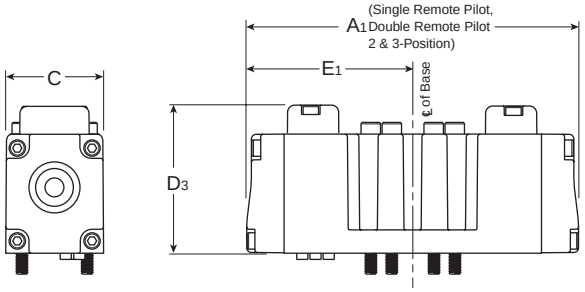


H3 Dimensions

A	A1	B	C
9.49 (241)	6.98 (177)	8.23 (209)	2.17 (55)
D	**D1**	**D2**	**D3**
4.05 (103)	4.80 (122)	4.57 (116)	2.99 (76)
E	**E1**		
4.74 (121)	3.49 (89)		

Inches (mm)

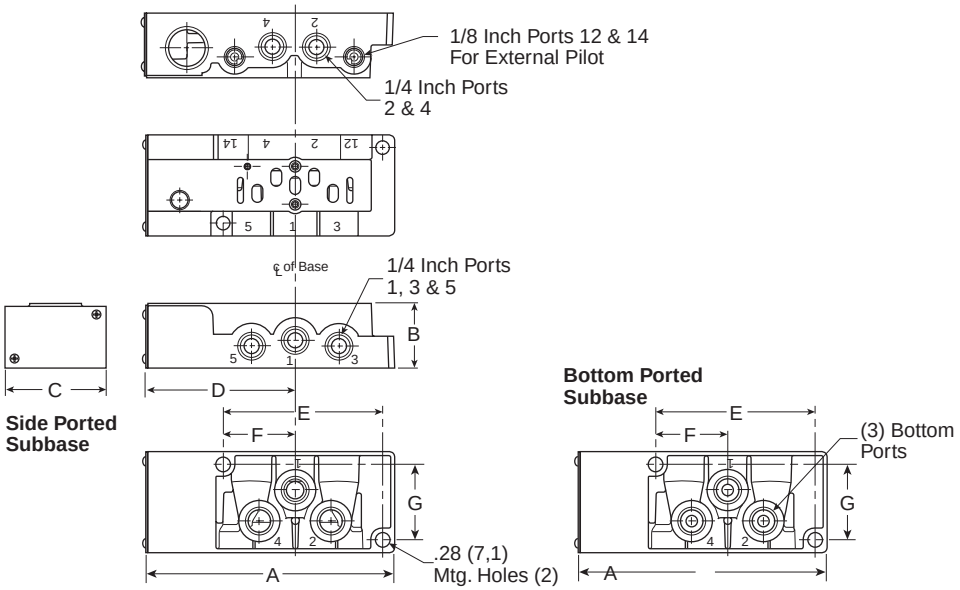
5599-2 / 5599-1 Remote Pilot



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HA

HA 15407-2 & 15407-1, PS5511 Subbases



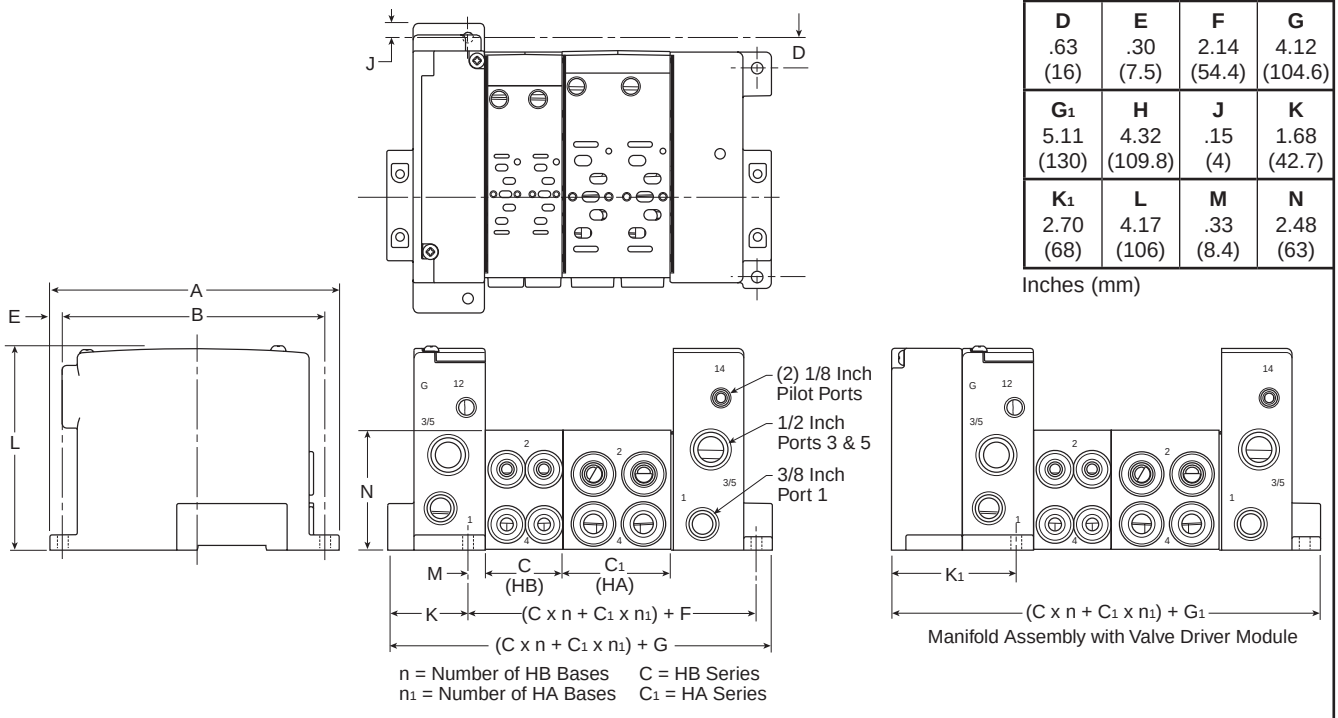
HA Dimensions

A	B	C	D
4.88 (124)	1.28 (32.5)	2.00 (50.8)	2.91 (74)
E	**F**	**G**	
1.43 (36.2)	3.16 (80.2)	1.49 (37.9)	

Inches (mm)

HB HA

HB & HA 15407-2 & 15407-1, PS5611 & PS5511 Manifolds



HB & HA Dimensions

A	B	C	C1
5.98 (152)	5.39 (137)	1.61 (40.8)	2.24 (56.8)
D	**E**	**F**	**G**
.63 (16)	.30 (7.5)	2.14 (54.4)	4.12 (104.6)
G1	**H**	**J**	**K**
5.11 (130)	4.32 (109.8)	.15 (4)	1.68 (42.7)
K1	**L**	**M**	**N**
2.70 (68)	4.17 (106)	.33 (8.4)	2.48 (63)

Inches (mm)

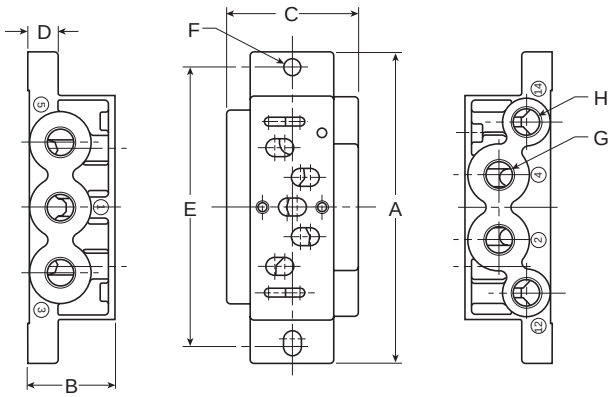
n = Number of HB Bases
n1 = Number of HA Bases
C = HB Series
C1 = HA Series

Manifold Assembly with Valve Driver Module

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HB HA

Individual Subbase



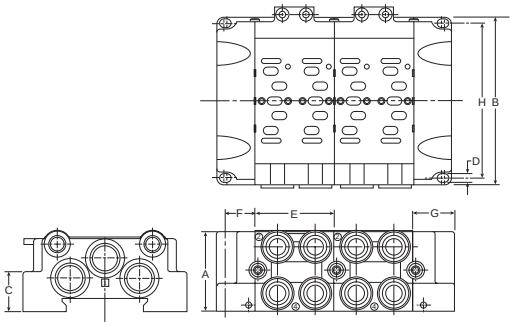
Series	Part Number	A	B	C	D	E	F	G	H
HB	PL02	3.15 (80)	.87 (22)	1.06 (27)	.31 (8)	2.76 (70)	.216 Dia. (Ø 5.5)	1/8	M5
HA	PL01	3.94 (100)	1.10 (28)	1.65 (42)	.39 (10)	3.54 (90)	.216 Dia. (Ø 5.5)	1/4	1/8

Inches (mm)

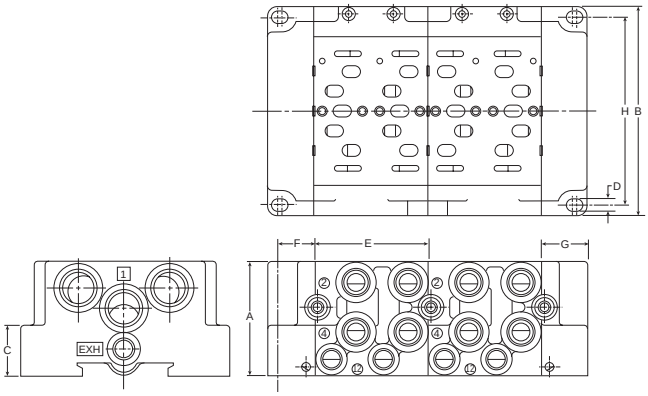
HB HA

2-Station Manifold Bases

HB Manifolds



HA Manifolds



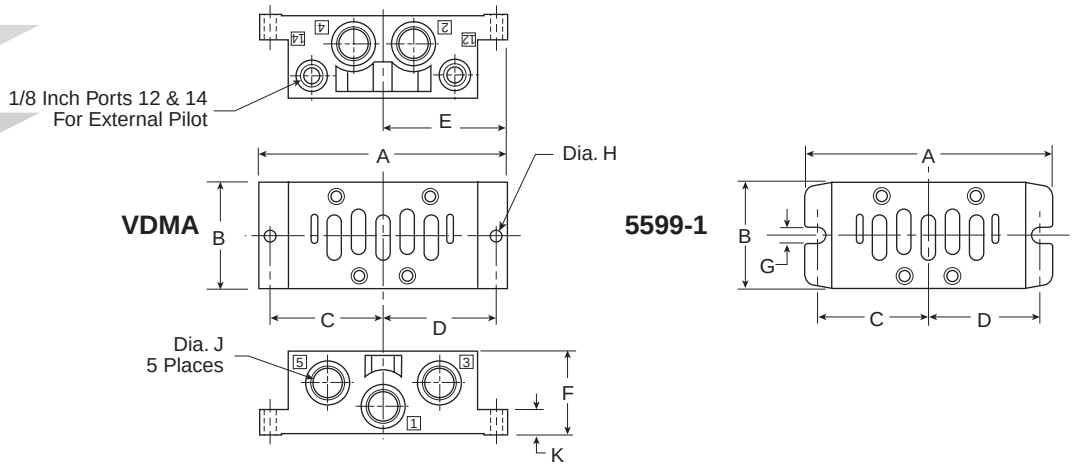
Series	Part Number	A	B	C	D	E	F	G	H
HB	PJLP02 / PEJ02	1.52 (38.5)	3.15 (80)	.47 (12)	.165 Dia. (Ø 4.2)	1.50 (38)	.55 (14)	.71 (18)	2.83 (72)
HA	PJL01 / PJLP01 / PEJ01	2.17 (55)	3.94 (100)	.94 (24)	.216 Dia. (Ø 5.5)	2.13 (54)	.67 (17)	.87 (22)	3.54 (90)

Inches (mm)

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H1
H2
H3

VDMA & 5599-1 Side Ported Subbase

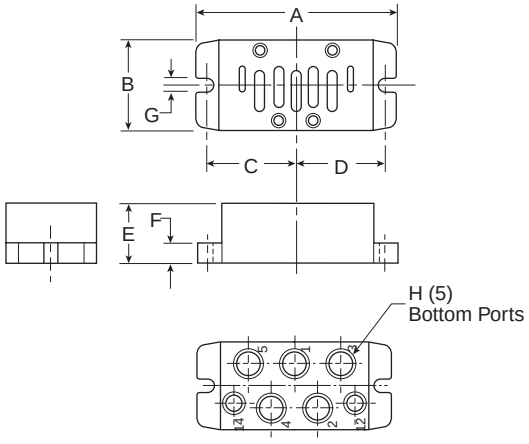


	Series	Part Number	J	A	B	C	D	E	F	G	H	K
VDMA	H1	P2N-VS512SD	BSPP G1/4	4.33 (110)	1.89 (48)	1.93 (49)	1.93 (49)	2.17 (55)	1.26 (32)	—	.22 (5.6)	.39 (9.9)
	H2	P2N-WS513SD	BSPP G3/8	4.88 (124)	2.20 (56)	2.21 (56)	2.21 (56)	2.44 (62)	1.57 (40)	—	.22 (5.5)	.51 (13)
	H3	P2N-YS514SD	BSPP G1/2	5.87 (149)	2.80 (71)	2.68 (68)	2.68 (68)	2.93 (74.5)	2.05 (52)	—	0.26 (6.6)	0.71 (18)
5599-1	H1	PL1-1/4-70	BSPP G1/4	4.33 (110)	1.81 (46)	1.93 (49)	1.93 (49)	2.17 (55)	1.14 (29)	0.22 (5.5)	—	0.24 (6)
		PL1-1/4-80	NPT 1/4									
	H2	PL2-3/8-70	BSPP G3/8	4.88 (124)	2.21 (56)	2.17 (55)	2.17 (55)	2.44 (62)	1.46 (37)	0.22 (5.5)	—	0.24 (6)
		PL2-3/8-80	NPT 3/8									
	H3	PL3-1/2-70	BSPP G1/2	5.87 (149)	2.80 (71)	2.68 (68)	2.68 (68)	2.93 (74.5)	2.36 (60)	0.26 (6.6)	—	0.71 (18)
		PL3-1/2-80	NPT 1/2									

Inches (mm)

H1
H2

5599-1 Bottom Ported Subbase



Bottom Ported Subbase

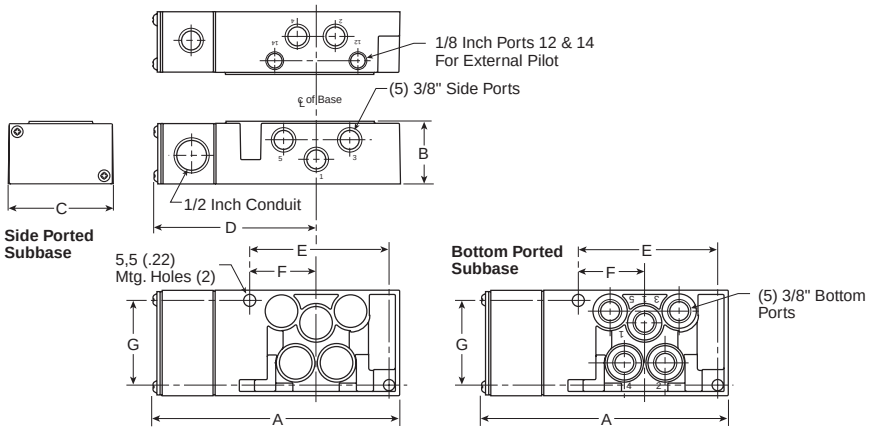
Series	Part Number	H	A	B	C	D	E	F	G
H1	PD1-1/4-70	BSPP G1/4	4.33 (110)	1.81 (46)	1.93 (49)	1.93 (49)	1.14 (29)	.24 (6)	0.22 (5.5)
	PD1-1/4-80	NPT1/4							
H2	PD2-3/8-70	BSPP G3/8	4.88 (124)	2.20 (56)	2.17 (55)	2.17 (55)	1.46 (37)	.24 (6)	.0.22 (5.5)
	PD2-3/8-80	NPT3/8							

Inches (mm)

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H1

PS4011 Subbase

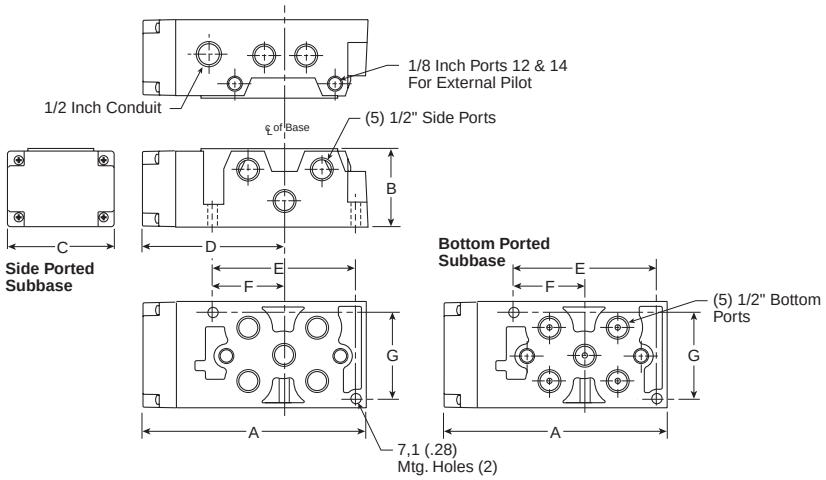


A	B	C	D
5.83 (148)	1.48 (38)	2.50 (64)	3.86 (98)
E	**F**	**G**	
3.29 (84)	1.57 (40)	2.00 (51)	

Inches (mm)

H2

PS4111 Subbase

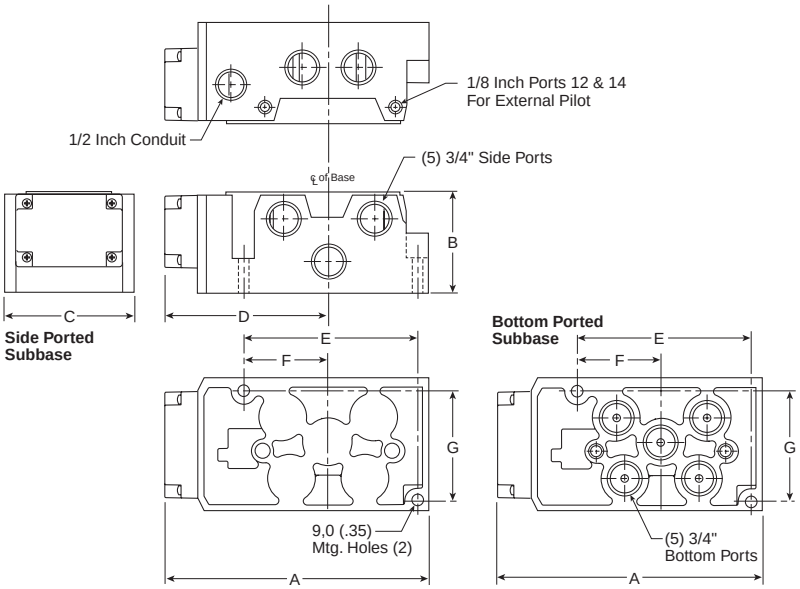


A	B	C	D
6.69 (170)	2.33 (59)	3.15 (80)	4.25 (108)
E	**F**	**G**	
4.21 (107)	2.07 (52)	2.56 (65)	

Inches (mm)

H3

PS4211 Subbase

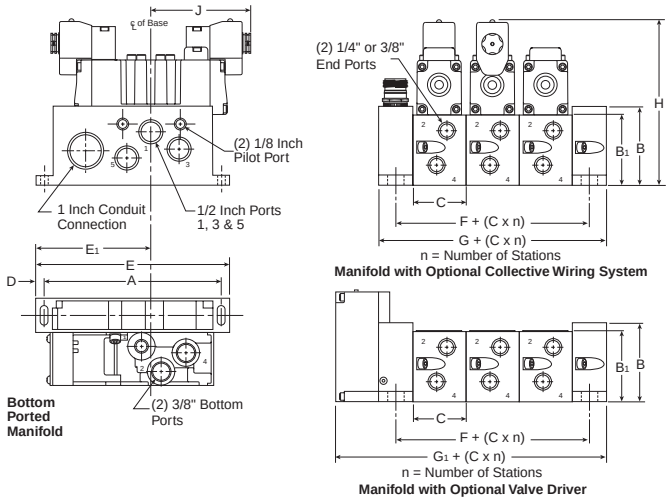


A	B	C	D
7.90 (201)	2.96 (75)	3.90 (99)	4.92 (125)
E	**F**	**G**	
5.14 (131)	2.50 (64)	3.24 (82)	

Inches (mm)

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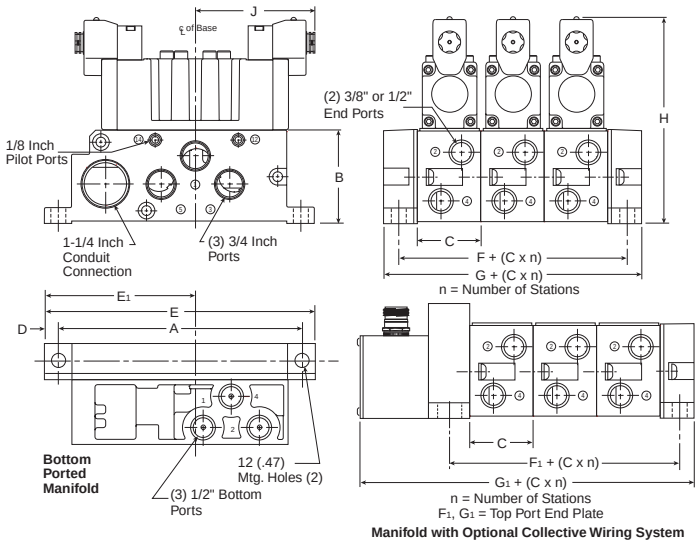
H1 PS4011 Manifold



A	B	B1	C	D
6.50 (165)	2.87 (73)	2.64 (67)	1.96 (50)	.33 (8)
E	**E1**	**F**	**G**	**G1**
7.15 (182)	4.25 (108)	1.25 (32)	2.50 (63.5)	4.06 (86)
H	**J**			
6.18 (157)	3.66 (93)			

Inches (mm)

H2 PS4111 Manifold



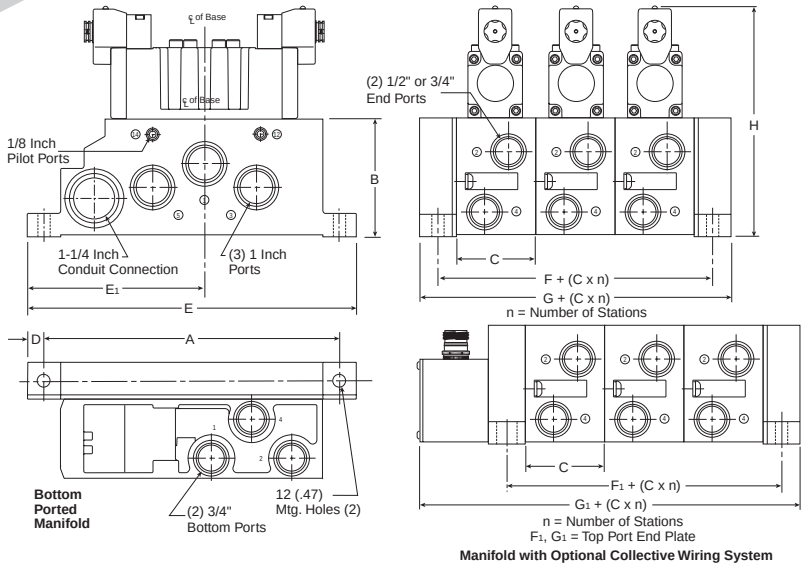
A	B	C	D	E
8.46 (215)	3.35 (85)	2.20 (56)	.47 (12)	9.41 (239)
E1	**F**	**F1**	**G**	**G1***
5.28 (134)	1.18 (30)	1.30 (33)	2.36 (60)	3.78 (96)
H	**J**			
7.40 (188)	4.17 (106)			

Inches (mm)

* For Isysnet End Plate, add 0.39" (10mm) to the G1 dimensions.

For 19-Pin Round Connector Module, add 1.08" (27.5mm) to the G1 dimensions.

H3 PS4211 Manifold



A	B	C	D	E
10.41 (265)	4.13 (105)	2.80 (71)	.59 (15)	11.61 (295)
E1	**F**	**F1**	**G**	**G1***
6.26 (159)	1.30 (33)	1.60 (41)	2.60 (63)	4.37 (111)
H				
8.19 (208)				

Inches (mm)

* For Isysnet End Plate, add 0.39" (10mm) to the G1 dimensions.

For 19-Pin Round Connector Module, add 1.08" (27.5mm) to the G1 dimensions.

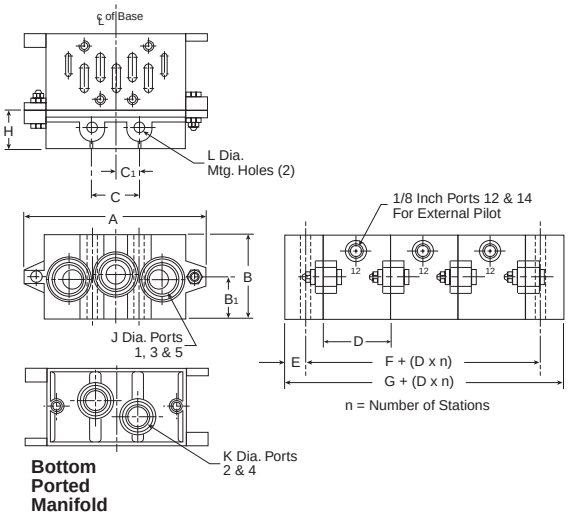
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H1

H2

H3

5599-1 VDMA – Form C Manifold & 5599-1 VDMA - Form D End Plates



VDMA Form C Manifold

Series	Part Number	A	B	B_1	D	E	F	G	Ø J	Ø K
H1	P2N-VM512MB	4.33 (110)	1.81 (46)	0.94 (24)	1.69 (55)	0.43 (22)	0.87 (22)	1.73 (44)	BSPP G3/8	BSPP G1/4
H2	P2N-WM513MB	5.31 (135)	1.85 (47)	0.94 (24)	2.20 (56)	0.51 (13)	1.02 (26)	2.05 (52)	BSPP G1/2	BSPP G3/8
H3	P2N-YM514MB	7.48 (190)	2.20 (56)	1.34 (34)	2.80 (71)	0.59 (15)	1.18 (30)	2.36 (60)	BSPP G1	BSPP G1/2

VDMA Form D End Plate

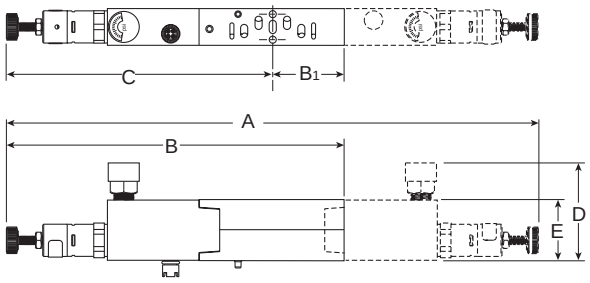
Series	Part Number	A	B	B_1	C	C_1	H	Ø L
H1	P2N-VM513ES	4.33 (110)	1.81 (46)	0.94 (24)	1.10 (28)	0.55 (14)	0.87 (22)	0.28 (7)
H2	P2N-WM514ES	5.31 (135)	1.85 (47)	0.94 (24)	1.38 (35)	0.69 (18)	1.02 (26)	0.34 (9)
H3	P2N-YM518ES	7.48 (190)	2.20 (56)	1.34 (34)	2.05 (52)	1.03 (26)	1.18 (30)	0.47 (12)

Inches (mm)

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HB

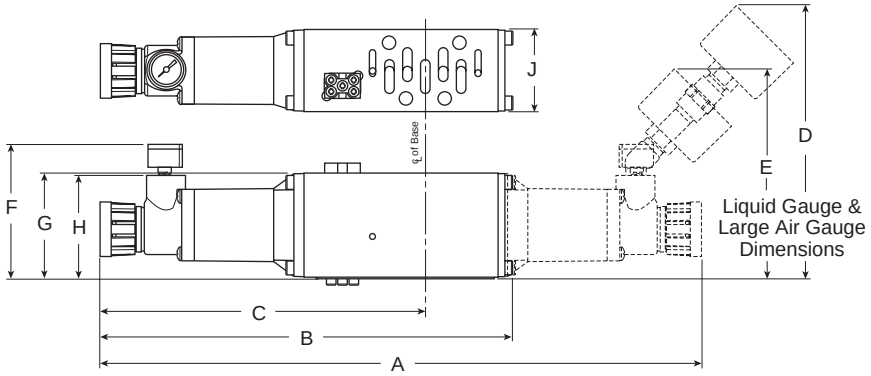
HA



Series	Part Number	A	B	B_1	C	D	E
HB	**PS5637**	10.28 (261)	6.14 (156)	1.02 (26)	5.13 (130)	2.60 (66)	1.18 (30)
HA	**PS5537**	10.00 (254)	6.42 (163)	1.42 (36)	5.00 (127)	2.72 (69)	1.18 (30)

Inches
(mm)

H1

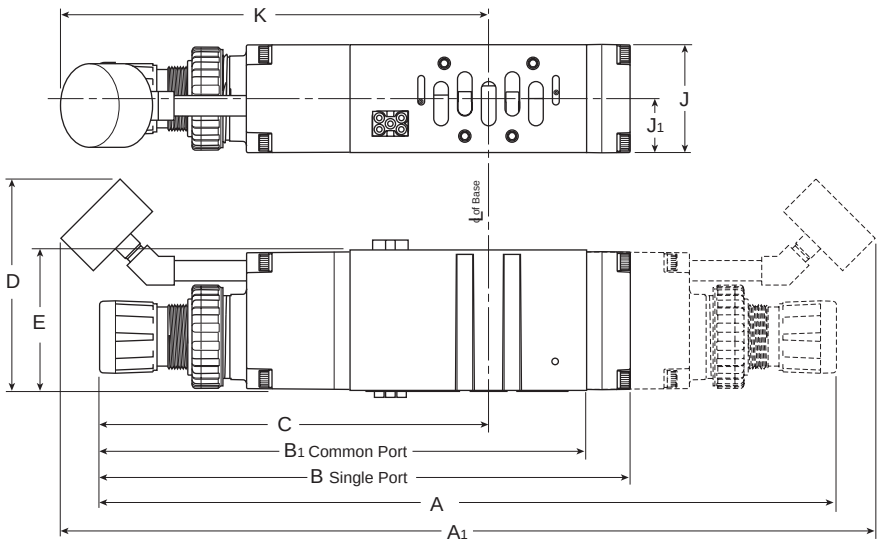


Series	Part Number	A	B	C	D	E	F	G	H	J
H1	**PS4037**	11.84 (301)	8.13 (207)	6.40 (163)	5.45 (138	4.25 (108)	2.85 (72)	2.09 (53)	2.05 (52)	1.63 (41)
	PS4038									

Inches
(mm)

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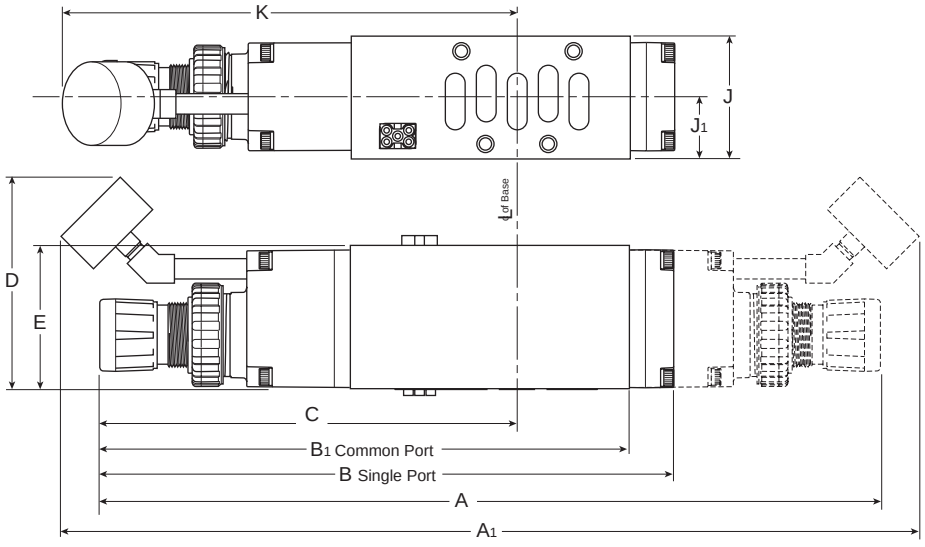
H2



Series	Part Number	A	A1	B	B1	C	D	E	J	J1	K
H2	PS4137	14.65 (372	16.18 (411)	10.56 (268)	9.84 (250	7.71 (196)	4.20 (107)	2.80 (71)	2.15 (55)	1.07 (27)	8.50 (216)
	PS4138										

Inches
(mm)

H3



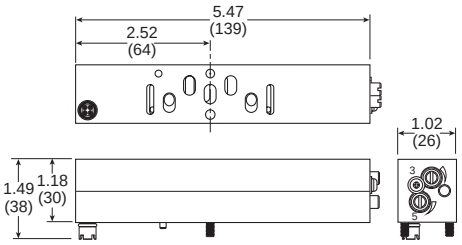
Series	Part Number	A	A1	B	B1	C	D	E	J	J1	K
H3	PS4237	15.67 (398)	17.15 (436)	11.53 (293)	10.67 (271)	8.37 (213)	4.20 (107)	2.93 (75)	2.50 (64)	1.25 (32)	9.10 (231)
	PS4238										

Inches
(mm)

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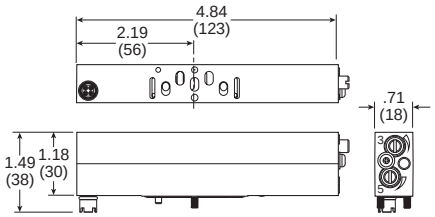
HA

HA Flow Control



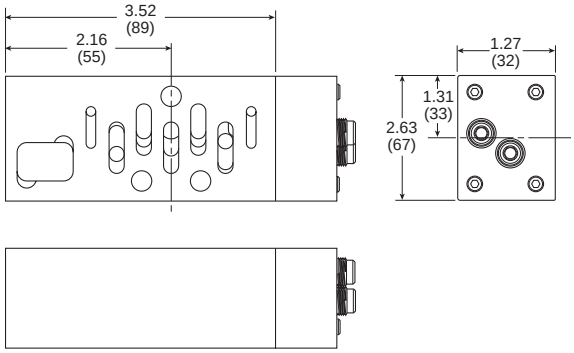
HB

HB Flow Control



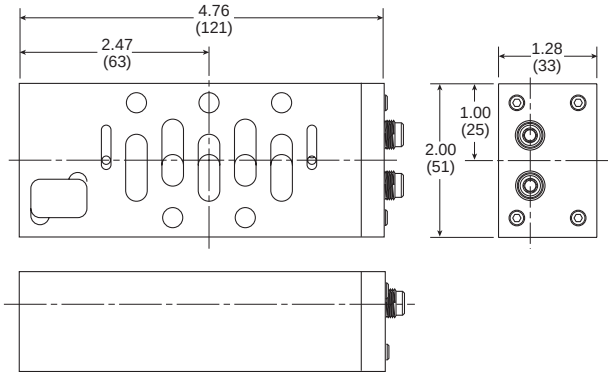
H1

H1 Flow Control



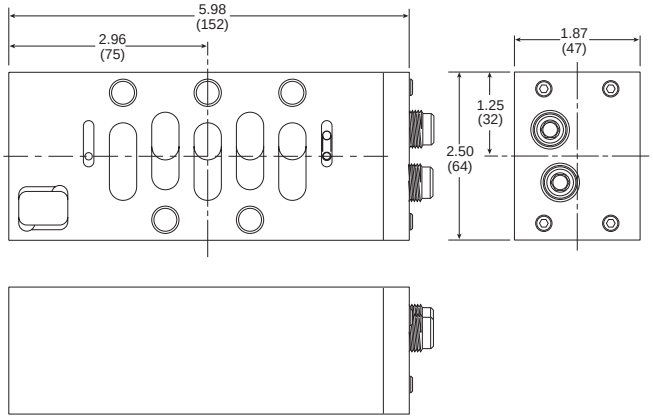
H2

H2 Flow Control



H3

H3 Flow Control

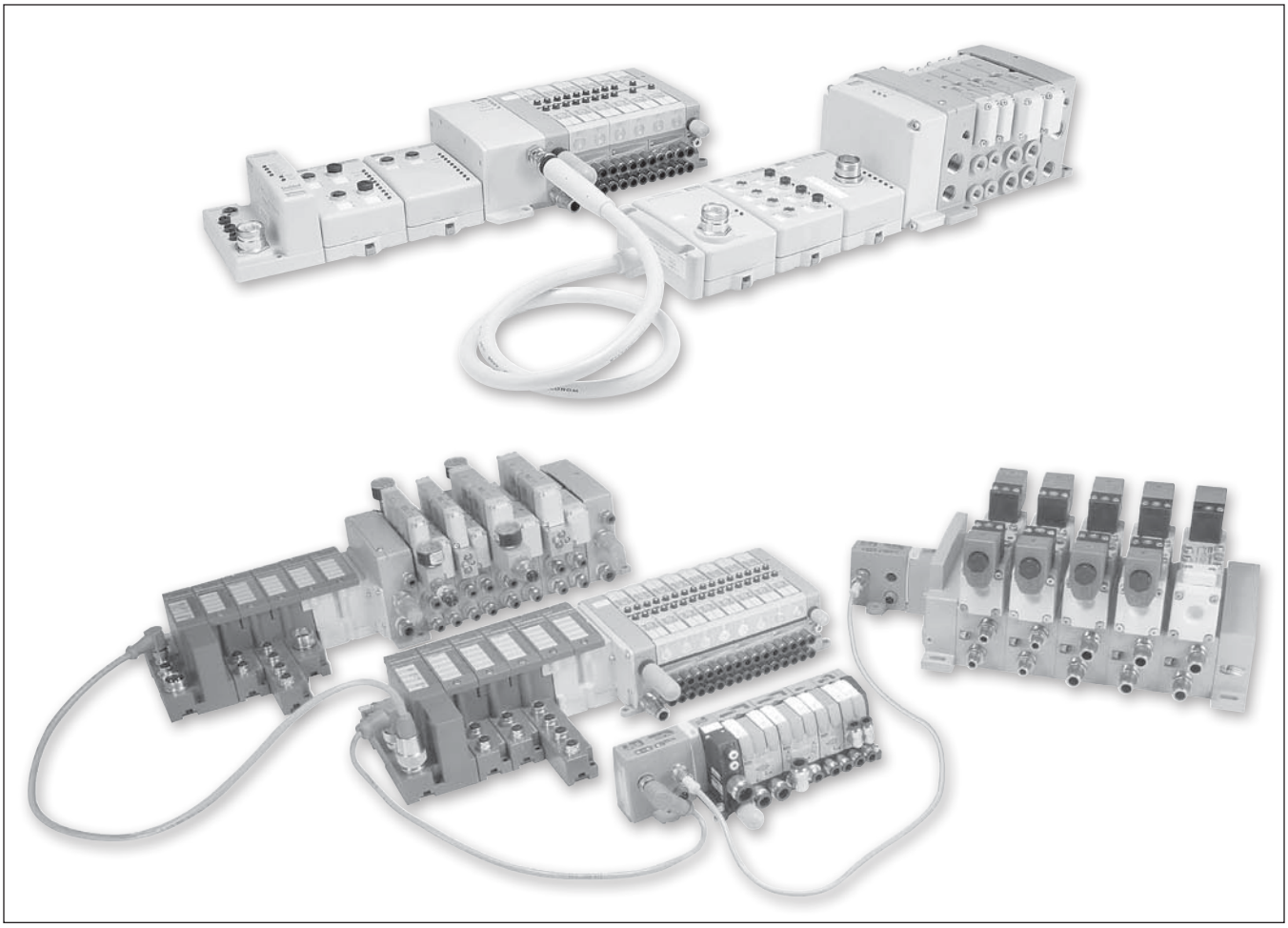


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Fieldbus Systems

Section E

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Overview & Protocol Recommendations E104-E105
Introduction to Control Systems E106-E115
Moduflex Fieldbus System E116-E124
Isysnet Fieldbus System E125-E146
Turck Fieldbus System E147-E175
Cables & Cordsets E176-E179
Dimensions
- Isysnet E180-E181
- Turck E182-E183
- Moduflex E183-E184

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	Fieldbus Offering		
Valve Series	**Moduflex**	**Isysnet**	**Turck**
Moduflex	X		
Isys Micro	X	X	X
Isys ISO	X	X	X

	Fieldbus Offering		
Protocol	**Moduflex**	**Isysnet**	**Turck**
DeviceNet	X	X	X
Ethernet/IP		X	X
Profibus-DP	X	X	X
Profinet			X
Modbus/TCP			X
AS-i	X		
CANopen	X		X
Interbus-S	X		
ControlNet		X	

	Fieldbus Offering		
Options	**Moduflex**	**Isysnet**	**Turck**
Digital inputs / outputs*		X	X
Analog inputs / outputs		X	X
16 Solenoid control*	X		X
32 Solenoid control		X	X
Short circuit protection on inputs			X
Current sensing outputs			X
Bus expansion		X	
DeviceNet subnet			X
Programmable comm modules			X
Power over DeviceNet / CANopen			X
Preferred Connectivity		X	
CANopen Expansion			X

* Modulfex AS-i modules are available with 6 or 8 inputs and 6 or 8 solenoid outputs

	Turck Fieldbus	**Isysnet**	**Moduflex**
Solenoid Control	Up to 32 solenoids on main valve manifold Devicenet Subnet Allows an additional 32 solenoids per node 63 nodes maximum CANopen expansion Allows an additional 64 solenoids per expansion 5 expansions maximum	Up to 32 solenoids on main valve manifold Isys Micro Bus Expansion Allows an additional 32 solenoids per expansion 3 expansions maximum 1 meter fixed cable length per expansion	Up to 16 solenoids on main valve manifold
I/O Capabilities	256 maximum inputs and outputs directly connected to communication module Devicenet Subnet Allows an additional 256 I/O per node 63 nodes maximum Third party DeviceNet modules can be used CANopen expansion Allows an additional 64 I/O per expansion 5 expansions maximum Third party CANopen modules can be used	Maximum of 256 inputs and 256 outputs directly connected to the communication module, including Isys Micro Bus Expansion	8 Inputs available on AS-i communication only.
Short Circuit Protection	SXG and diagnostic electronic modules have each point isolated All other electronic modules are isolated from the backplane	Devices must be fused between input / output and electronic module.	

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		Moduflex					Isysnet				Turck Fieldbus					
		AS-i	CANopen	DeviceNet	Interbus	Profibus	ControlNet	DeviceNet	EtherNet	Profibus	CANopen	DeviceNet	Ethernet/IP	Modbus/TCP	Profibus	Profinet
Rockwell Automation	PLC-5™			X								X				
	SLC 500™			X								X	X			
	1756 Logix™			X								X	X			
	1769-L32C, -35CR			X			X	X	X			X	X			
	1769 CompactLogix™			X			X	X	X			X	X			
	SoftLogix5800™			X			X	X	X			X	X			
	FlexLogic™			X			X	X	X			X	X			
	1789 ControlLogix™			X			X	X	X			X	X			
Siemens	SIMATIC S7-200	X				X				X					X	
	SIMATIC S7-300	X				X				X					X	
	SIMATIC S7-400					X				X					X	X
	SIMATIC S7-1200					X				X					X	X
Omron	SYSMAC One			X								X				
	SYSMAC CJ1			X								X				
	SYSMAC CJ2			X								X				
	SYSMAC CP1			X								X				
	SYSMAC CS1			X								X				
	SYSMAC CQM1H			X								X				
	SYSMAC Alpha			X								X				
	SYSMAC CVM1/CV			X								X				
	SYSMAC CPM			X								X				
Schneider	Modicon Premium		X		X	X				X	X		X	X	X	
	Quantum	X			X								X	X		
	M340™	X	X								X		X	X		
	Momentum™												X	X		
Automation Direct	Productivity 3000			X								X				
	DirectLogic 05			X								X				
	DirectLogic 06			X								X				
	DirectLogic 105			X								X				
	DirectLogic 205			X								X	X	X		
	DirectLogic 305			X								X	X	X		
	DirectLogic 405			X								X	X	X		

Note: Above information believed correct at the time of printing. Confirm manufacturers specifications to ensure product compatibility.

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Basic Systems

- Up to 24 solenoids per manifold
- Discretely wired solenoids - Optimized for PLCs with onboard Inputs and Outputs
- 25-Pin D-Sub, 19-Pin Brad Harrison or M23, or 12-Pin M23 connectors available.

Centralized Application

Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space
- Eliminates junction boxes required for valves
- Eliminates conduit runs for valves

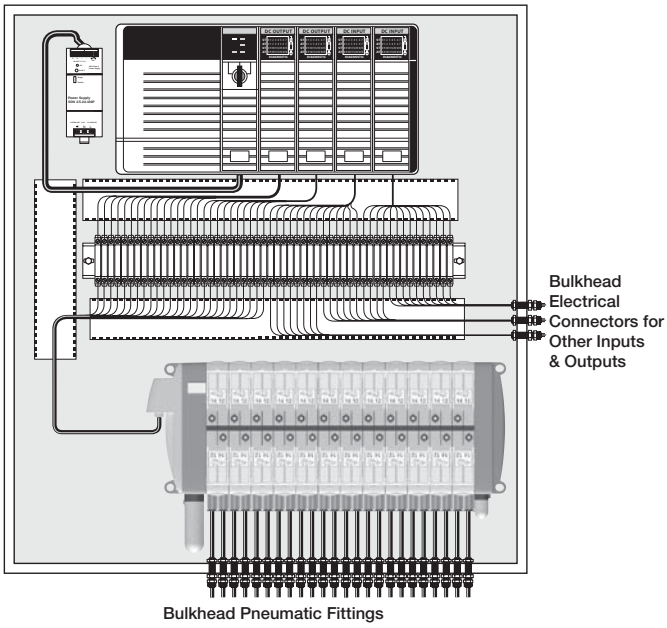
Decentralized Application

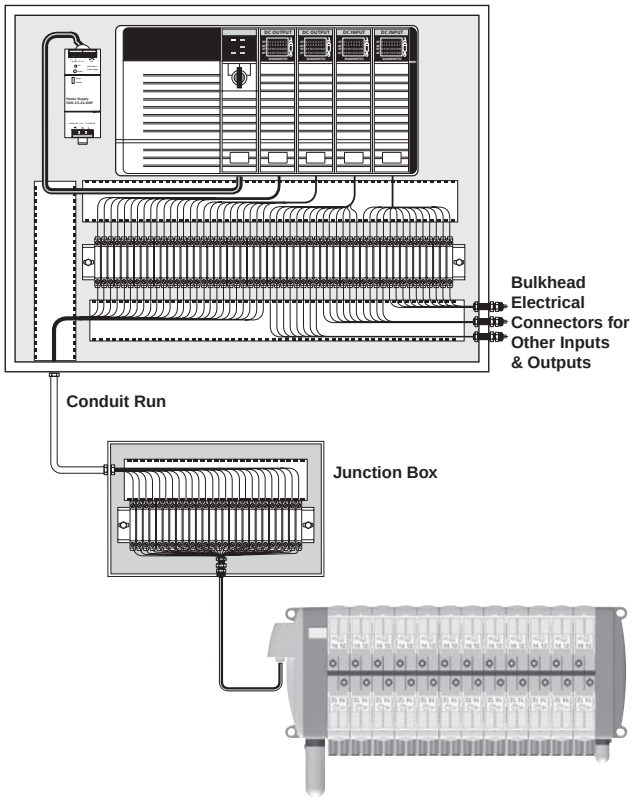
valves Outside Control Cabinet

- Valves located near application - Ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- Reduces control cabinet size
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet





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Basic Systems: Moduflex Fieldbus

- Up to 16 solenoids per manifold
- Fieldbus equipped manifolds – optimized for PLCs with fieldbus capability
- Routinely used on medium sized machines
- Connectivity to Moduflex, Isys Micro and Isys ISO valves.

Centralized Application

Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures
- Additional inputs and outputs are not directly attached to valve manifold

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space
- Eliminates terminal strips and wire ways for valves
- Greatly reduces wiring time
- Eliminates junction boxes for valves
- Eliminates conduit runs for valves

Decentralized Application

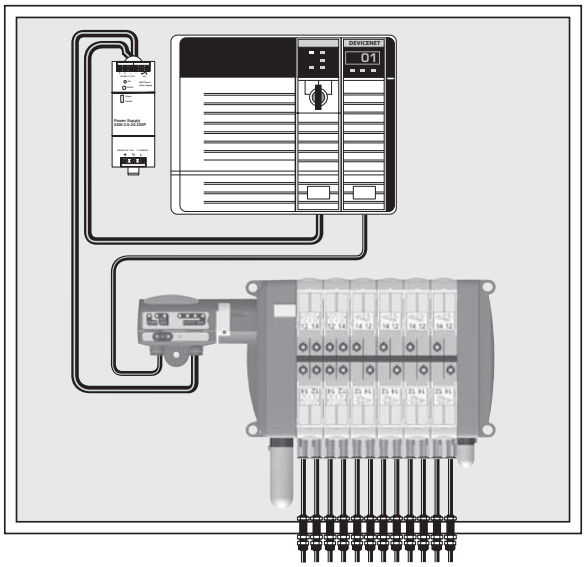
Isys Micro Outside Control Cabinet

- Valves located near application - Ready for machine mounting
- IP65 rating suitable for dusty and wet environments
- Additional inputs and outputs are not directly attached to valve manifold

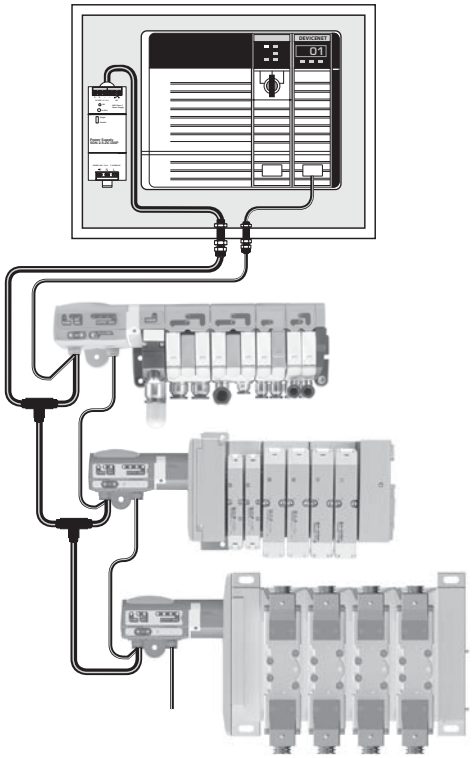
Advantages

- Smallest control cabinet
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet
- Many fieldbus nodes can be attached to the network with little incremental cost – valve manifolds, inputs, outputs and other devices.
- Eliminates terminal strips and wire ways for valves
- Greatly reduces wiring time
- Eliminates junction boxes for valves
- Eliminates conduit runs for valves

DeviceNet™ PROFIBUS PROCESS FIELD BUS CANopen INTERBUS-S AS-i INTERFACE



Bulkhead Pneumatic Fittings



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Complete Fieldbus Systems: Isysnet Fieldbus System

- Up to 32 Solenoids per Manifold
- With Isys Micro Bus Extension Functionality, 4 Manifolds with up to 32 Solenoids each can be connected on the same Node
- Add Inputs and Outputs to the Isysnet Network
- Fieldbus equipped Manifolds – optimized for PLC's with Fieldbus capability
- Connectivity to Isys Micro and Isys ISO valves

Centralized Application

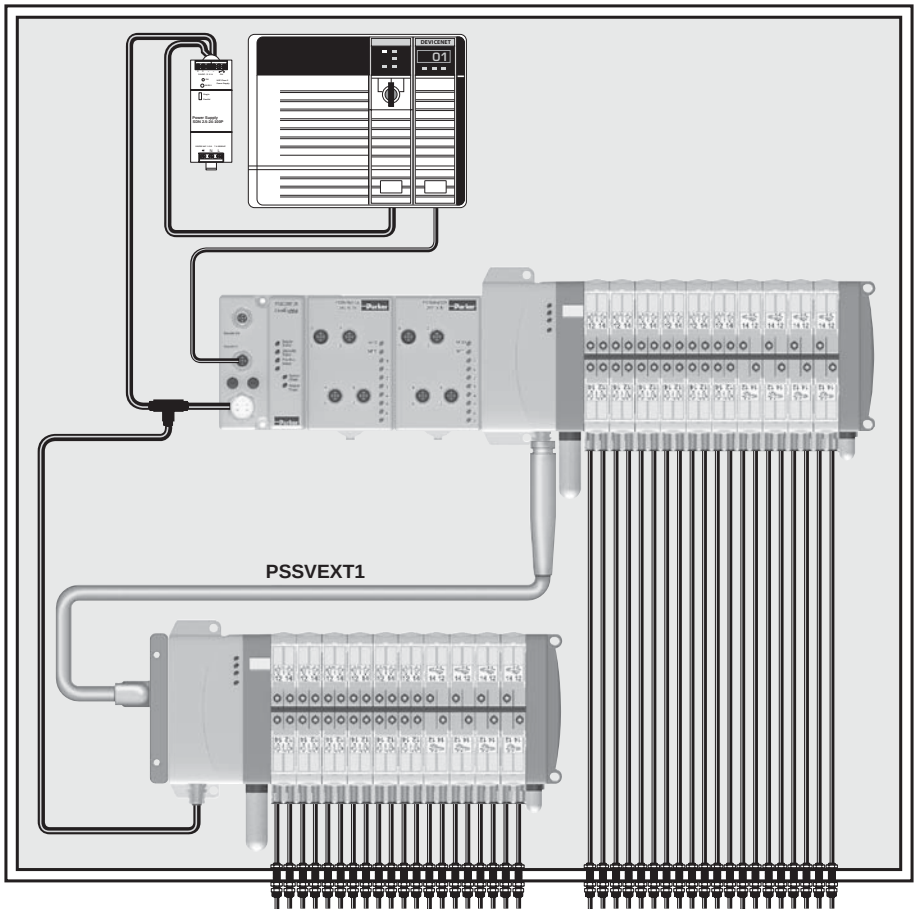
Valves Inside Control Cabinet

- Isysnet Fieldbus System with Inputs and Outputs
- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures
- Additional inputs and outputs are directly attached to valve manifold

Advantages

- Handle All I/O from One Node
- Eliminate PLC Input / Output Cards
- Up to 128 Solenoids per Node with Bus Extension Cables
- Up to 256 Inputs and 256 Outputs per Isysnet Node
- Analog Inputs / Outputs available
- Highest degree of environmental protection
- One location for all control devices
- Eliminates terminal strips and wire ways
- Greatly reduces wiring time

DeviceNet™ EtherNet/IP™ ControlNet™ PROFIBUS PROCESS FIELD BUS



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Complete Fieldbus Systems: Isysnet Fieldbus System

- Up to 32 Solenoids per Manifold
- With Isys Micro Bus Extension Functionality, 4 Manifolds with up to 32 Solenoids each can be connected on the same Node
- Add Inputs and Outputs to the Isysnet Network
- Fieldbus equipped Manifolds – optimized for PLC's with Fieldbus capability
- Connectivity to Isys Micro and Isys ISO valves

Decentralized Application

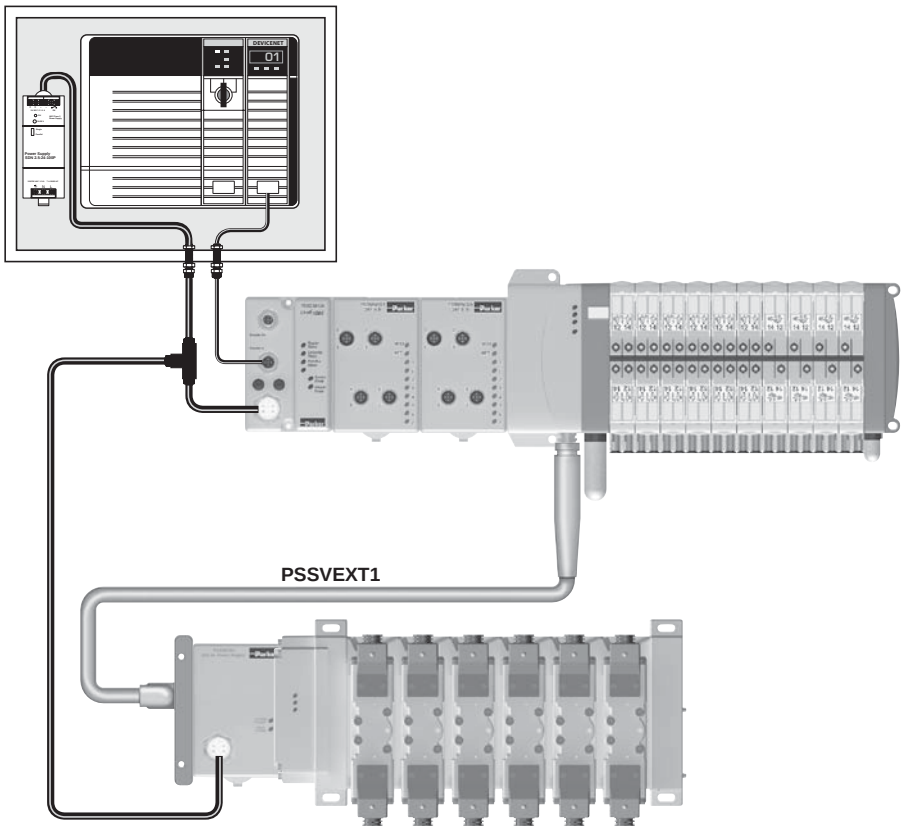
Valves Outside Control Cabinet

- Isysnet Fieldbus System with Inputs and Outputs
- Valves located near application - Ready for machine mounting
- IP65 rating suitable for dusty and wet environments
- Additional inputs and outputs are directly attached to valve manifold

DeviceNet™ EtherNet/IP™ ControlNet™ PROFIBUS PROCESS FIELD BUS

Advantages

- Handle All I/O from One Node
- Eliminate PLC Input / Output Cards
- Up to 128 Solenoids per Node with Bus Extension Cables
- Up to 256 Inputs and 256 Outputs per Isysnet Nodes
- Analog Inputs / Outputs available
- Smallest control cabinet
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet
- Many fieldbus nodes can be attached to the network with little incremental cost – valve manifolds, inputs, outputs and other devices.
- Eliminates terminal strips and wire ways
- Greatly reduces wiring time
- Eliminates junction boxes for all inputs and outputs
- Eliminates conduit runs for all inputs and outputs



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Complete Fieldbus Systems: Turck Fieldbus System

General Product Features

- Turck Fieldbus System with up to 256 inputs / outputs and 32 Solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to Isys Micro and Isys ISO valves system

Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Fieldbus equipped manifolds – optimized for PLC's with fieldbus capability
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

Centralized Application

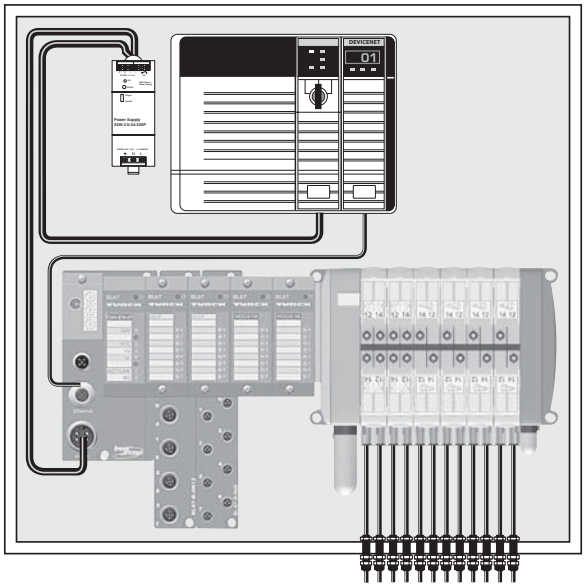
Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

DeviceNet™ EtherNet/IP™ PROFIBUS PROFINET Modbus/TCP™ CANopen



Bulkhead Pneumatic Fittings

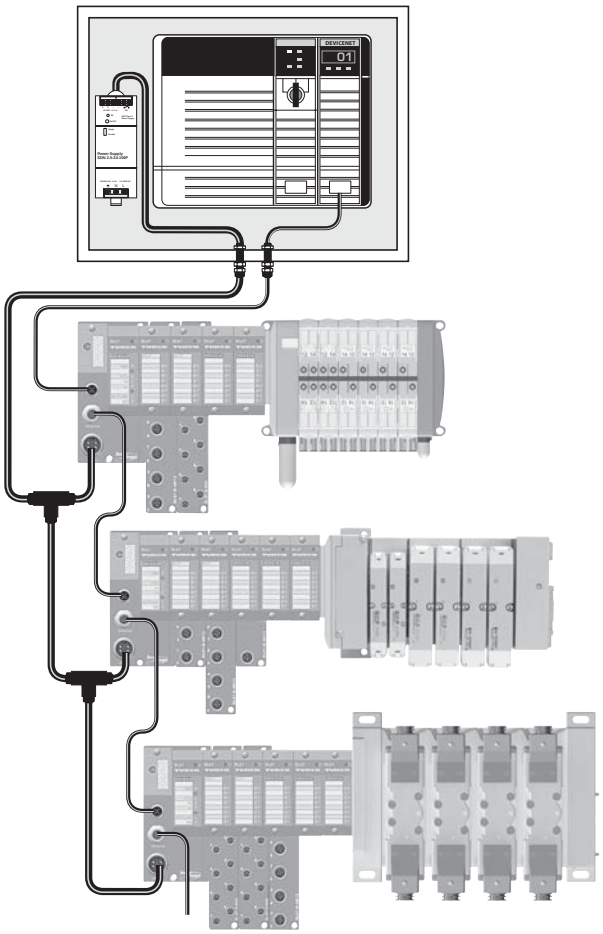
Decentralized Application

Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



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Complete Fieldbus Systems: Turck Fieldbus System with CANopen Expansion

General Product Features

- Turck Fieldbus System with up to 256 inputs / outputs and 32 Solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to Isys Micro and Isys ISO valves

CANopen Expansion Features

- Using a CANopen Interface module, a CANopen subnet is created within the BL67 network, controlling an additional 64 inputs, outputs, or solenoids.
- The CANopen subnet is independent of the main fieldbus network, and is not visible to the master PLC.
- Additional Moduflex CANopen modules can be attached to the CANopen subnet to provide a connection for 16 solenoids each.
- Other 3rd party CANopen devices can also be used on this network, within the 64 bit CANopen Expansion limit.

System Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Fieldbus equipped manifolds – optimized for PLC's with fieldbus capability
- Several CANopen fieldbus nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- CANopen expansion allows additional devices to be attached to the system without a CANopen scanner card
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

Centralized Application

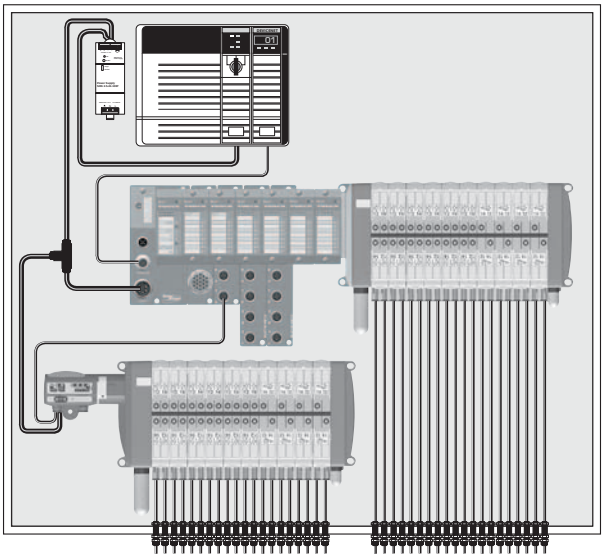
Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

DeviceNet™ EtherNet/IP™ PROFIBUS PROFINET Modbus/TCP™ CANopen



Bulkhead Pneumatic Fittings

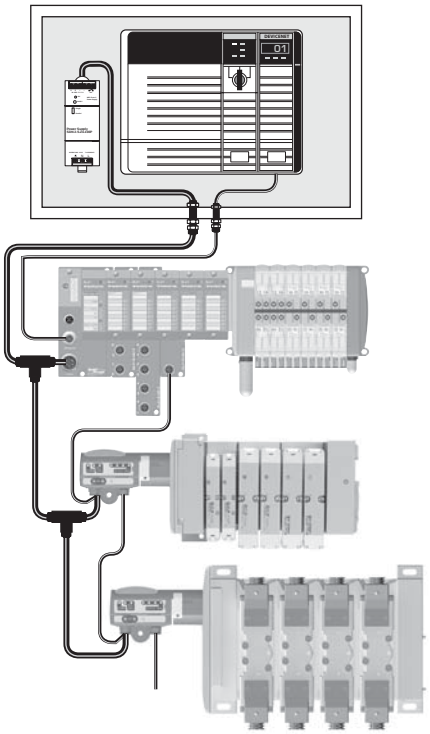
Decentralized Application

Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



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Complete Fieldbus Systems: Turck Fieldbus System with BL Remote DeviceNet Subnet

General Product Features

- Turck Fieldbus System with up to 256 inputs / outputs and 32 Solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to Isys Micro and Isys ISO valves

BL Remote DeviceNet Subnet Features

- With BL Remote DeviceNet Subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control
- BL Remote DeviceNet Subnet is independent of the main fieldbus network, and is not visible to the master PLC
- Moduflex DeviceNet modules can be attached to the subnet to provide a connection for 16 solenoids each
- Turck DeviceNet modules can be attached to the subnet to provide a connection for 16 or 32 solenoids each and inputs and outputs up to the 256 input and output limitation

System Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Fieldbus equipped manifolds – optimized for PLC's with fieldbus capability
- Many DeviceNet nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

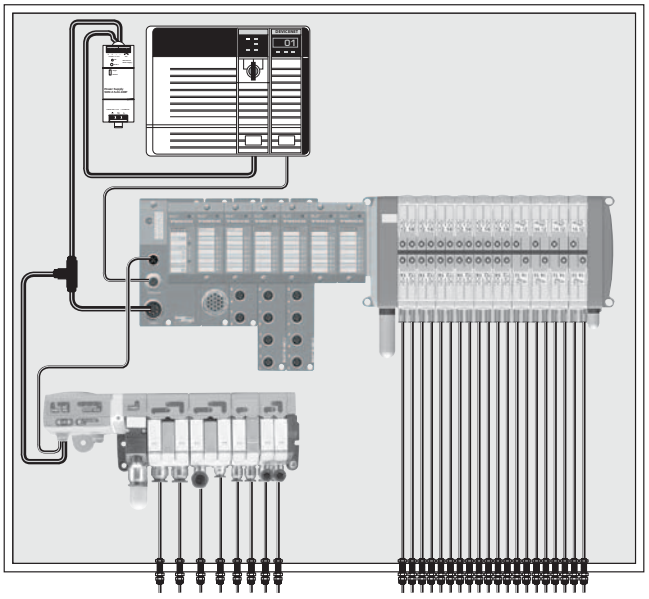
Centralized Application

Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space



Bulkhead Pneumatic Fittings

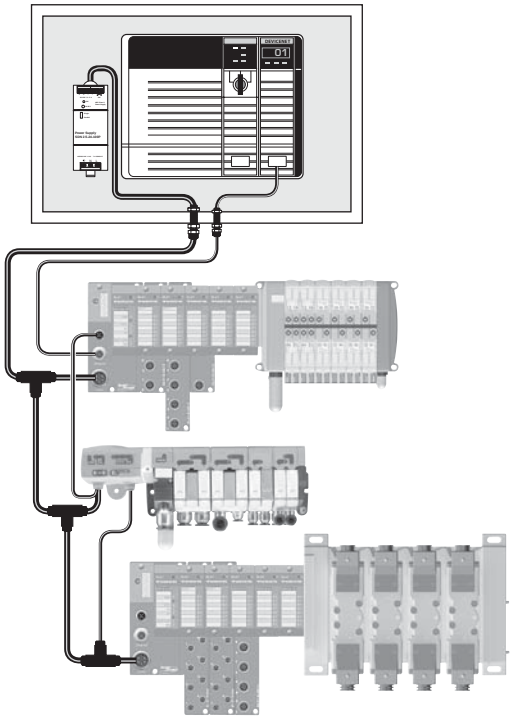
Decentralized Application

Valves Outside Control Cabinet

- Valves located near application, ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



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Complete Fieldbus Systems: Turck Fieldbus System with Stand alone Control

General Product Features

- Turck Fieldbus System with up to 256 inputs / outputs and 32 Solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to Isys Micro and Isys ISO valves

Stand Alone Control Features

- Communication modules equipped with standalone control – programmed according to IEC61131-3 with CoDeSys
- 512KB Program memory with 32 bit RISC processor
- Run 1000 instructions in less than 1 ms
- Fieldbus equipped manifolds – optimized for PLC's with fieldbus capability or standalone controllers that need to interface with other devices

System Advantages

- Handle all I/O and control with one system; eliminate the PLC when used as the main controller for smaller machines
- Reduces programming and bandwith requirements on large machines with a master PLC controller by handling local I/O and interfacing with the PLC over the fieldbus network
- Fieldbus equipped manifolds provide connectivity to other fieldbus devices
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

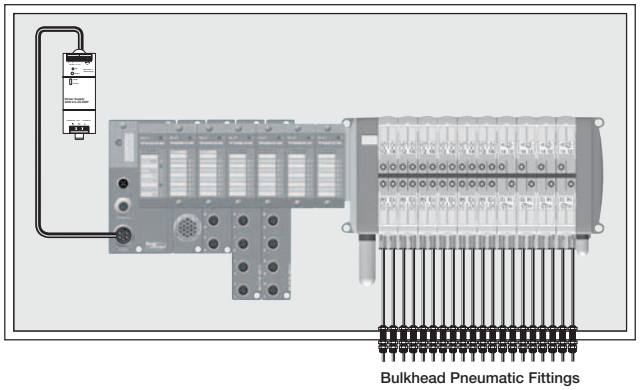
Centralized Application Valves

Inside Control Cabinet

- Valves attached to the machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices



Bulkhead Pneumatic Fittings

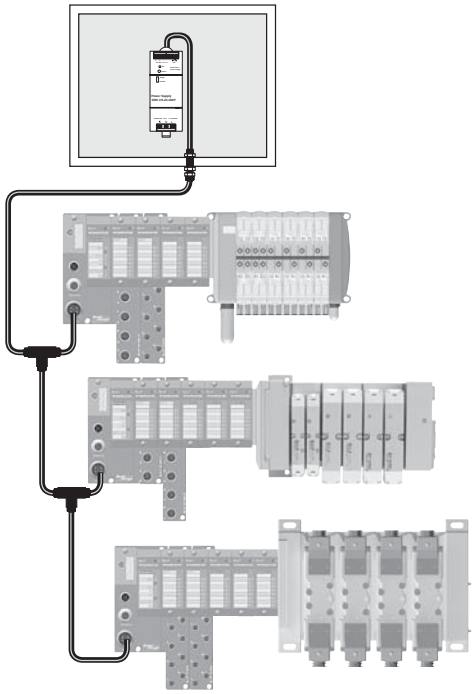
Decentralized Application

Valves Outside Control Cabinet

- Valves and machine control located near application, ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- No control cabinet needed when used as the main controller
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



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Complete Fieldbus Systems: Turck Fieldbus System with Stand Alone Control and BL Remote DeviceNet Subnet

General Product Features

- Turck Fieldbus System with up to 256 inputs / outputs and 32 Solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to Isys Micro and Isys ISO valves

Stand Alone Control Features

- Communication modules equipped with standalone control – programmed according to IEC61131-3 with CoDeSys
- 512KB Program memory with 32 bit RISC processor
- Run 1000 instructions in less than 1 ms

BL Remote DeviceNet Subnet Features

- With BL Remote DeviceNet Subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control
- BL Remote DeviceNet Subnet is independent of the main fieldbus network, and is not visible to the master PLC
- Moduflex DeviceNet modules can be attached to the subnet to provide a connection for 16 solenoids each
- Turck DeviceNet modules can be attached to the subnet to provide a connection for 16 or 32 solenoids each and inputs and outputs up to the 256 input and output limitation

System Advantages

- Handle all I/O and control with one system; eliminate the PLC when used as the main controller for smaller machines
- Reduces programming and bandwith requirements on large machines with a master PLC controller by handling local I/O and interfacing with the PLC over the fieldbus network
- Fieldbus equipped manifolds provide connectivity to other fieldbus devices
- Many DeviceNet nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

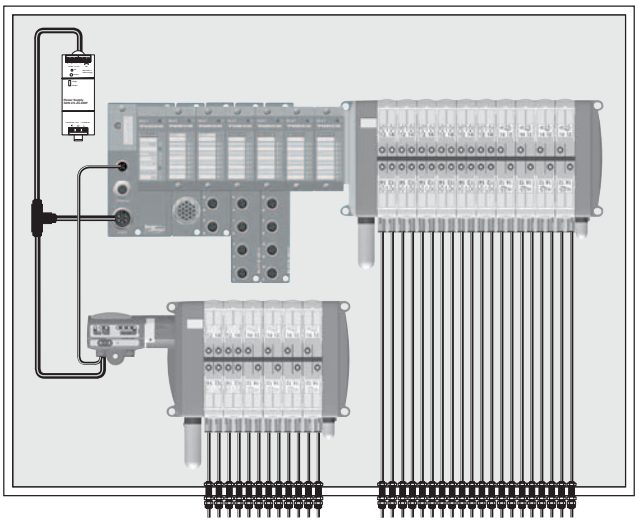
Centralized Application

Valves Inside Control Cabinet

- Valves attached to the machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space



Bulkhead Pneumatic Fittings

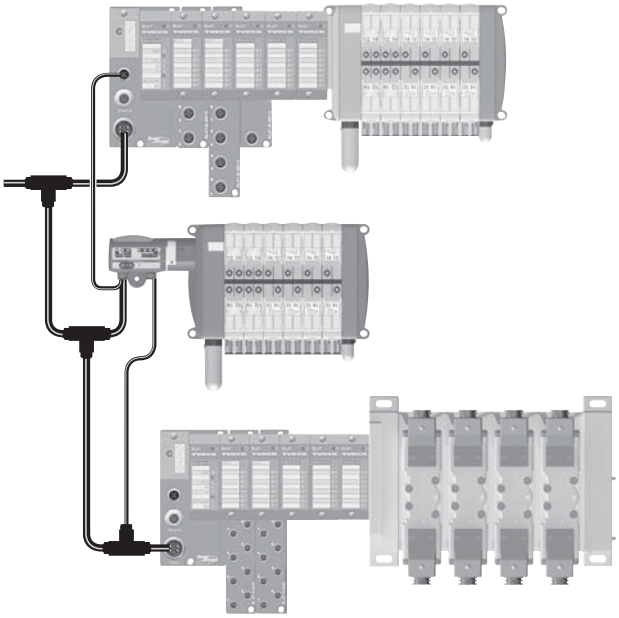
Decentralized Application

Valves Outside Control Cabinet

- Valves and machine control located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- No control cabinet needed when used as the main controller
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet



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Complete Fieldbus Systems: Turck Fieldbus System with Stand Alone Control, BL Remote DeviceNet Subnet, and CANopen Expansion

General Product Features

- Turck Fieldbus System with up to 256 inputs / outputs and 32 Solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to Isys Micro and Isys ISO valves

Stand Alone Control Features

- Communication modules equipped with standalone control – programmed according to IEC61131-3 with CoDeSys
- 512KB Program memory with 32 bit RISC processor
- Run 1000 instructions in less than 1 ms

BL Remote DeviceNet Subnet Features

- Each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control
- BL Remote DeviceNet Subnet is independent of the main fieldbus network, and is not visible to the master PLC
- Moduflex DeviceNet modules can be attached to the subnet to provide a connection for 16 solenoids each
- Turck DeviceNet modules can be attached to the subnet to provide a connection for 16 or 32 solenoids each and inputs and outputs up to the 256 input and output limitation

CANopen Expansion Features

- Using a CANopen Interface module, a CANopen subnet is created within the BL67 network, controlling an additional 64 inputs, outputs, or solenoids
- The CANopen subnet is independent of the main fieldbus network, and is not visible to the master PLC
- Additional Moduflex CANopen modules can be attached to the CANopen subnet to provide a connection for 16 solenoids each
- Other 3rd party CANopen devices can also be used on this network, within the 64 bit CANopen Expansion limit

System Advantages

- Handle all I/O and control with one system; eliminate the PLC when used as the main controller for smaller machines
- Reduces programming and bandwith requirements on large machines with a master PLC controller by handling local I/O and interfacing with the PLC over the fieldbus network
- Fieldbus equipped manifolds provide connectivity to other fieldbus devices
- Many DeviceNet nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- Several CANopen nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- CANopen expansion allows additional devices to be attached to the system without a CANopen scanner card
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

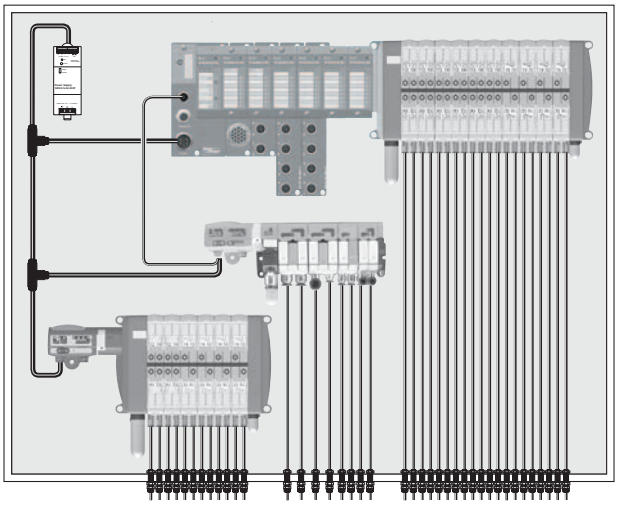
Centralized Application

Valves Inside Control Cabinet

- Valves attached to the machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space



Bulkhead Pneumatic Fittings

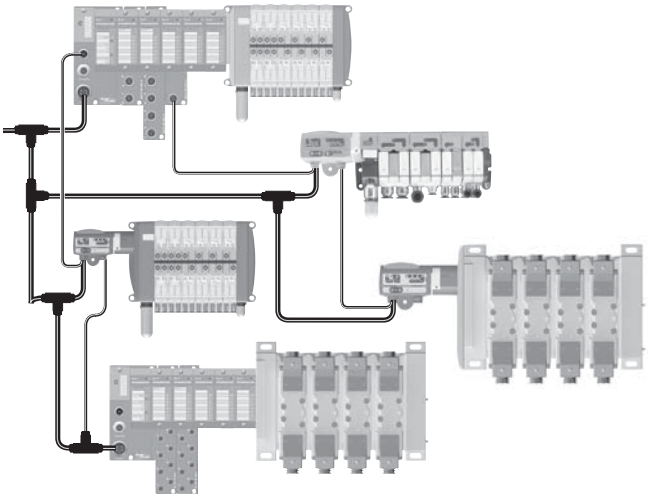
Decentralized Application

Valves Outside Control Cabinet

- Valves and machine control located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- No control cabinet needed when used as the main controller
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet



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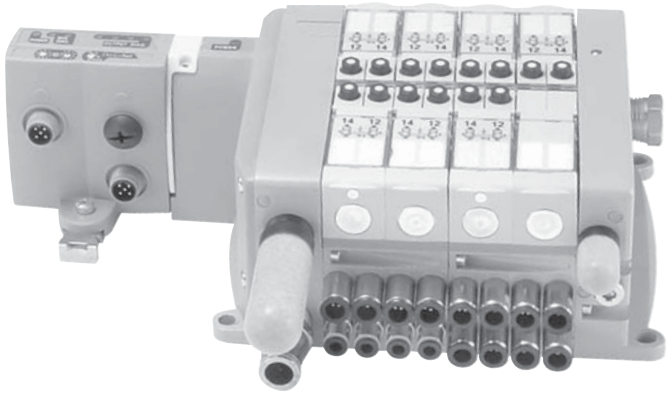
The Moduflex Fieldbus System

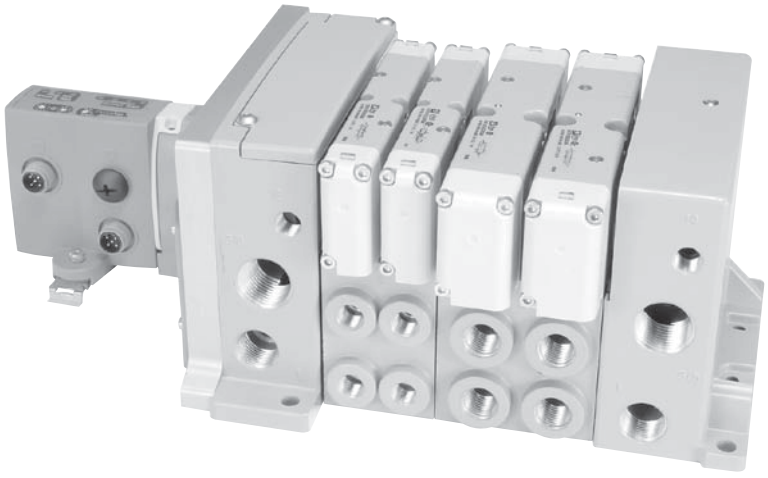
Moduflex communication modules directly attach to the end plate. It offers a compact and low cost fieldbus solution.

Moduflex Features

- Small, compact product design
- Broad protocol offering, including DeviceNet, Profibus, AS-i, CANopen, and Interbus
- Channel-level diagnostics (LED and Electronic)
- Inputs available with AS-i modules
- Horizontal and vertical mounting without derating
- 5g vibration
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- CE certification







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Communication Modules

DeviceNet™ CANopen PROFIBUS PROCESS FIELD BUS INTERBUS-S

Control for up to 16 solenoids



P2M2HBVP11600

Protocol	Part Number
Profibus DP	**P2M2HBVP21600**
DeviceNet	**P2M2HBVD21600**
CANopen	**P2M2HBVC21600**
InterBus-S	P2M2HBVS11600

Fieldbus Accessories

	Protocol	Connector Type	Part Number
Power Supply Field Wireable Connector	Profibus DP / InterBus-S / DeviceNet / CANopen	M12 type A Female	**P8CS1205AA**
Line Termination Resistor	Profibus DP	M12 type B	**P8BPA00MB**
	DeviceNet / CANopen	M12 type A	**P8BPA00MA**

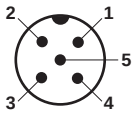
Note: Use standard cables and connectors for bus communications from your electrical supplier.

M12 (Male) Power Supply Connector

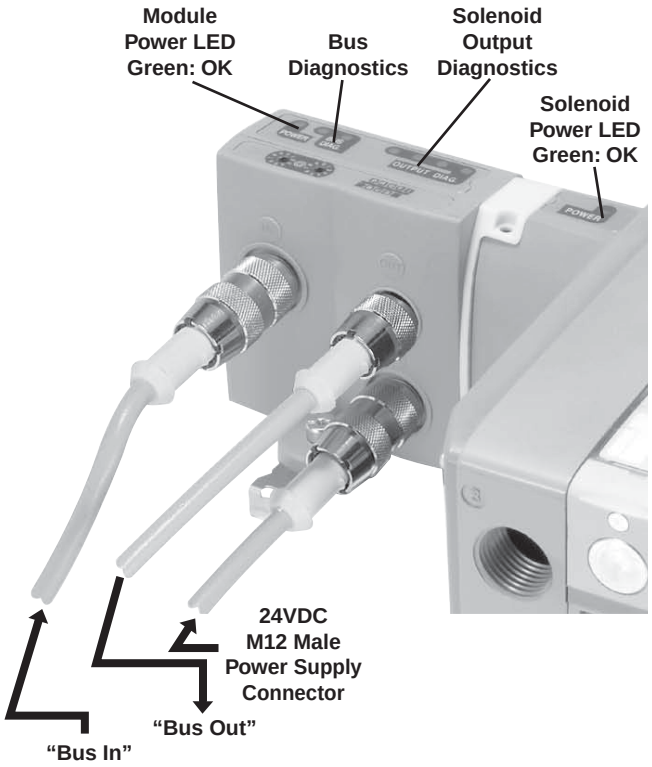
1 - 24VDC Module (Not Connected for DeviceNet and CANopen)
2 - Not Connected
3 - 0VDC Module and Solenoid
4 - 24VDC Solenoid
5 - Protected Earth (PE)

Profibus DP / DeviceNet / CANopen / InterBus-S

24VDC
(As Seen On Module)



M12 Male
Type A



Connection

All communication modules have an M12 male connector for power supply.

Connector on Moduflex Modules are labeled. Bus Connectors are labeled "Bus In" and "Bus Out" while, Power Supply Connections are labeled "24VDC". Connect Fieldbus to "Bus In" and "Bus Out" and Power Supply to "24VDC".

Diagnostic

The two "power" indicators shown on the illustrations provide visual indication of the module and solenoid supply status.

Note: Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing communications to remain on. This can be done by placing the user's Emergency Stop switch or other hard-wired control contact between Pin 1 and Pin 4. If this feature is not required, Pin 1 and Pin 4 should be wired together.

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Communication Module: Connections, Addressing, Diagnostic

Bus Cable Connections

Profibus DP standard male and female type B M12 connectors.

Line termination P8BPA00MB, is necessary on the “bus out” connector of the last station.

This module incorporates an Autobaud detect feature, eliminating the need to set switches.

Addressing

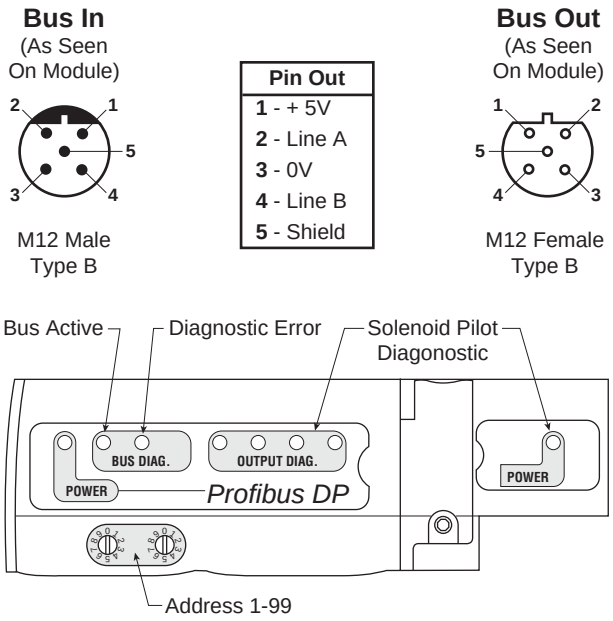
Use the GSD file on web site.

The rotary switches enable configuration of the decimal address.

• www.parker.com/pneu/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



Bus Cable Connections

DeviceNet standard male and female type A M12 connectors.

Line termination P8BPA00MA, is necessary on the “bus out” connector of the last station.

Addressing

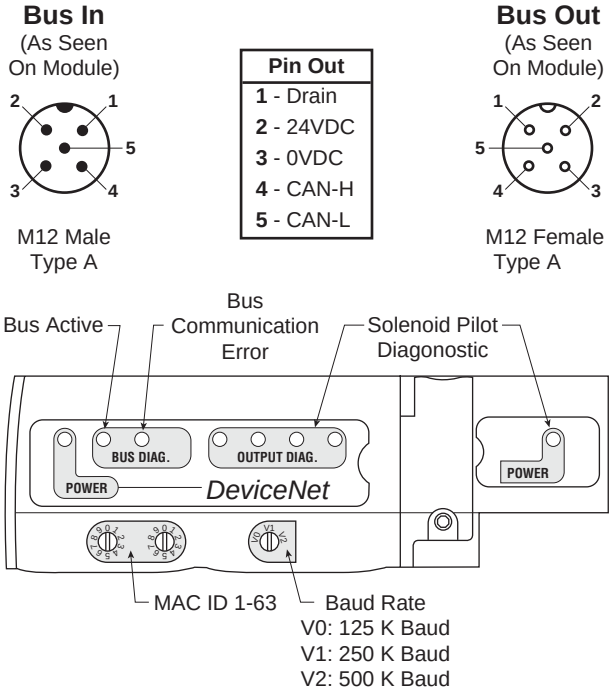
Use the EDS file on web site.

The rotary switches enable configuration of the node address (MAC ID) and the baud rate.

• www.parker.com/pneu/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



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CANopen

Bus Cable Connections

CANopen standard male and female type A M12 connectors.

Line termination P8BPA00MA, is necessary on the “bus out” connector of the last station.

Addressing

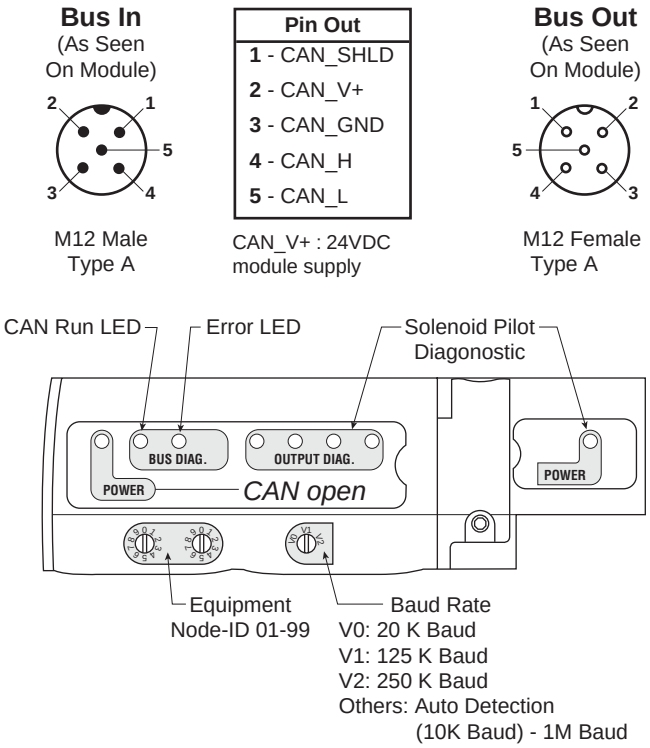
Use the EDS file on web site.

The rotary switches enable configuration of the decimal address.

- www.parker.com/pneu/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



INTERBUS-S

Bus Cable Connections

The M23 connectors conform to “Interbus remote bus”.

This module operates at 500 kbps.

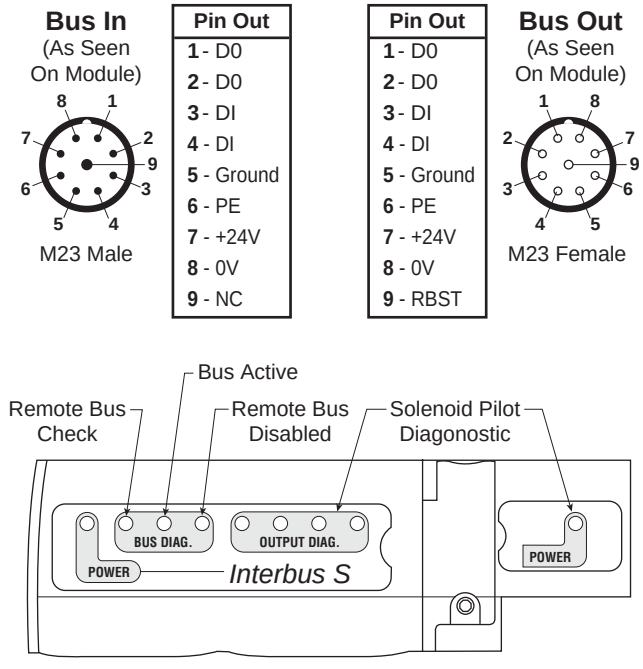
Addressing

InterBus-S is self addressing; therefore, it does not need any software or hardware configuration.

Diagnostic

Diagnostic according to the module dialog shown on the illustration.

This diagnostic conforms to the InterBus-S standard.



Note: For more details, please consult “Interbus remote bus” documentation.

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AS-i Bus Communication Modules



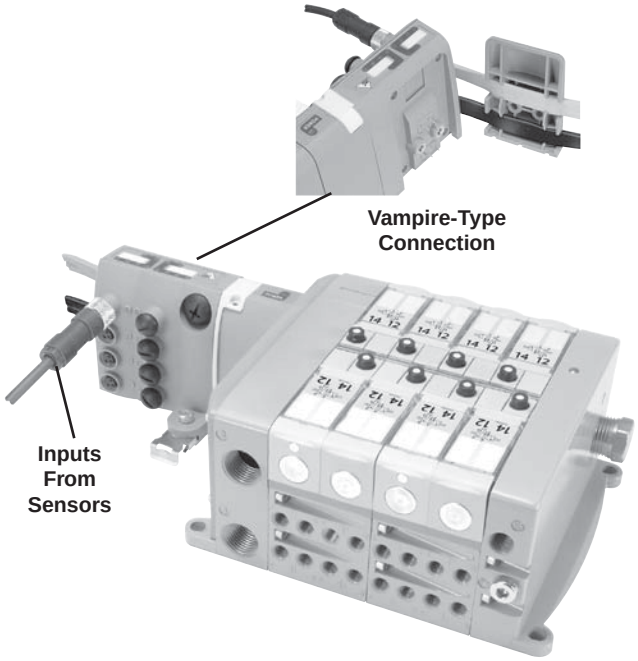
P2M2HBVA10808A



P2M2HBVA10808B



P2M2HBVA10800



Standard AS-i Protocol (up to 31 nodes)

Communication Module for 8 Solenoids Max. (2 nodes per module, 4 inputs, 4 solenoids per node)

Input / Output Capability	Weight (oz)	Part Number
0 inputs and 8 solenoid outputs	5.29	**P2M2HBVA10800**
8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	7.05	**P2M2HBVA10808A**
8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	7.05	P2M2HBVA10808B

AS-i Version 2.1 Protocol (up to 62 nodes)

Communication Module for 6 Solenoids Max. (2 nodes per module, 4 inputs, 3 solenoids per node)

Input / Output Capability	Weight (oz)	Part Number
0 inputs and 6 solenoid outputs	5.29	**P2M2HBVA20600**
8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	7.05	**P2M2HBVA20608A**
8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	7.05	P2M2HBVA20608B

AS-i Bus Accessories

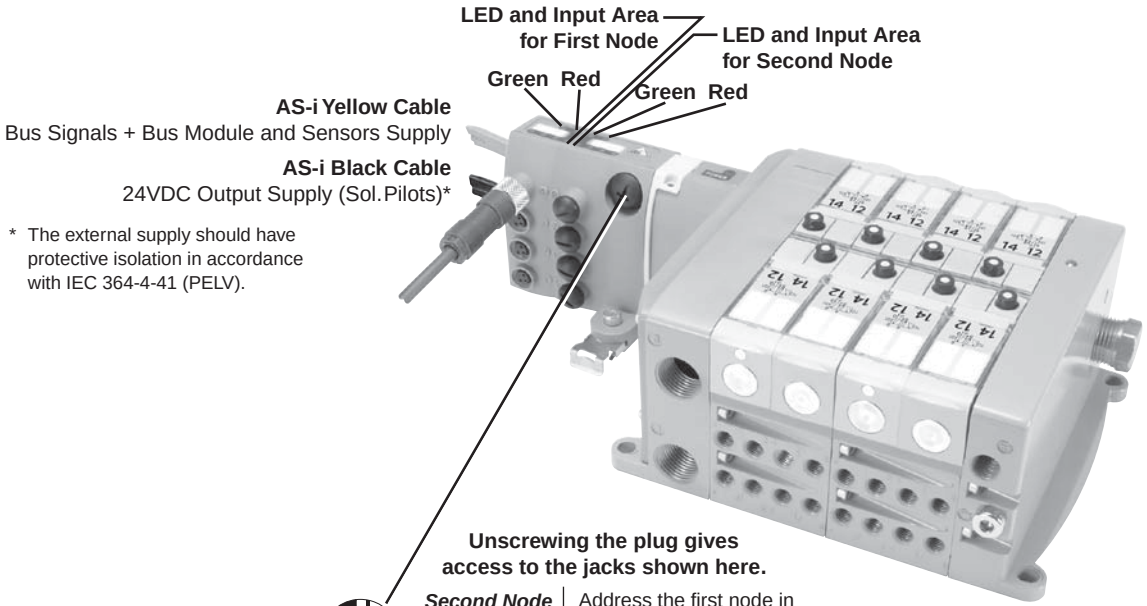
M12 Cable with Jack for Addressing

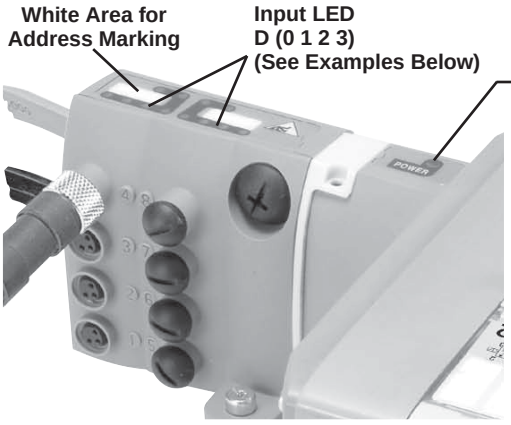
Length	Weight (oz)	Part Number
1 m	3.53	**P8LS12JACK**

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AS-i Bus Communication Module: Addressing, Diagnostic, Input Wiring

Bus Addressing, First and Second Node





Bus Diagnostic

"Power" LED State	Off	Green	Red
Power Supply	Sol. Pilot Supply	Normal Operation	Solenoid Overload

First Node LEDs State		Second Node LEDs State		System Condition
Green LED	Red LED	Green LED	Red LED	
✷	❍	✷	❍	Normal Operation
❍	❍	❍	❍	No Module + Sensor Supply
❍	✳	❍	✳	Input Overload
❍	✷	❍	✳	No AS-i Communication
✳	✷	❍	✳	Address First Node = 0
✷	❍	✳	✷	Address Second Node = 0

✷ ON ❍ OFF ✳ BLINK

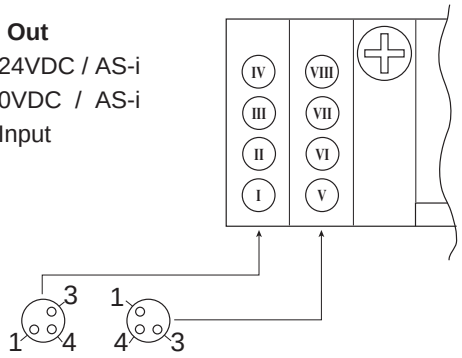
Input Wiring

Physical Input (I, II, III, IV) = D (0 1 2 3) First Node,
Physical Input (V, VI, VII, VIII) = D (0 1 2 3) Second Node.

Examples: Physical Input III = Logical Input 6.2,
Physical Input V = Logical Input 7.0.

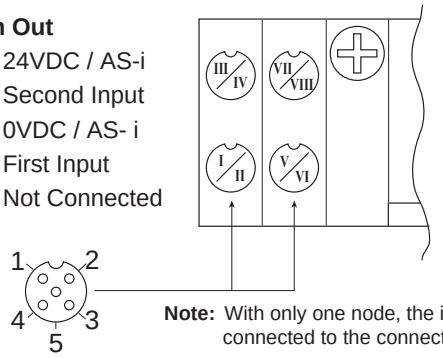
M8 Female Connectors

Pin Out
1 - 24VDC / AS-i
3 - 0VDC / AS-i
4 - Input



M12 Female Connectors

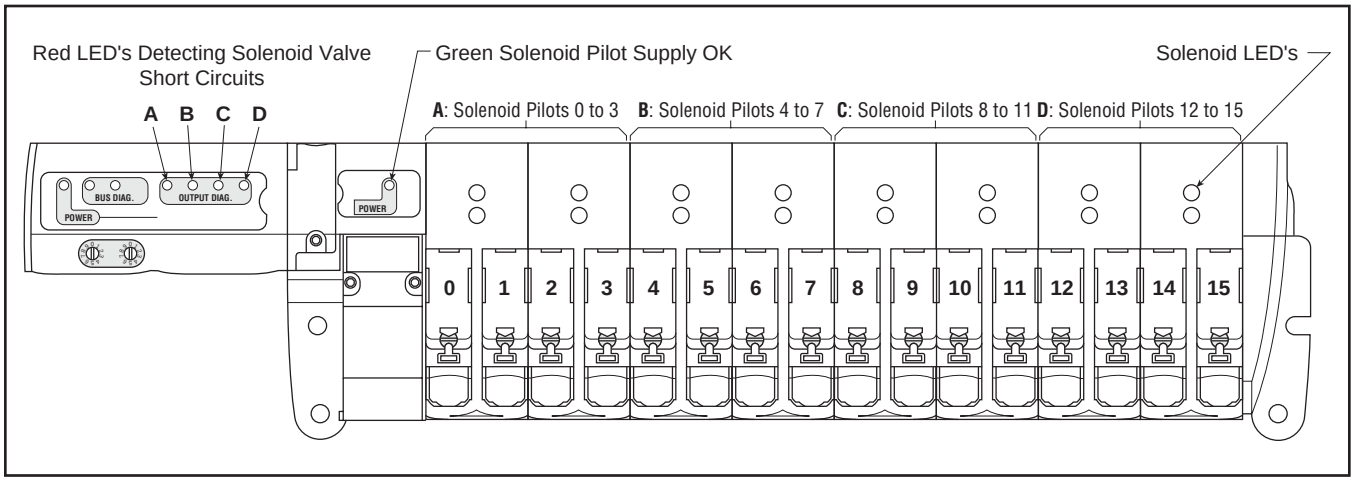
Pin Out
1 - 24VDC / AS-i
2 - Second Input
3 - 0VDC / AS- i
4 - First Input
5 - Not Connected



Note: With only one node, the inputs II and IV are connected to the connections on the right.

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Solenoid Pilot Diagnostic Common to All Device Bus Modules



Inside the communication module, solenoid valve control is protected against short-circuits with the following visual indication provided:

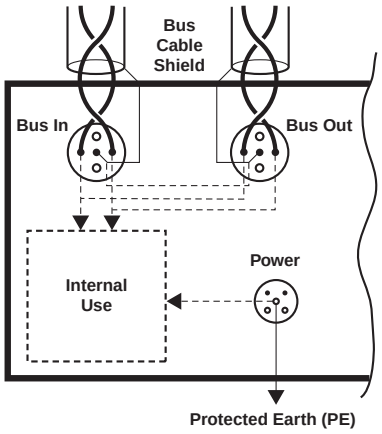
- The red LEDs with code, shown above, detect solenoid valve short-circuits.
- Supply is OK when the solenoid pilot power supply indicator is green.

Bus Cable Protection

Shield Connections for Profibus DP, DeviceNet and CANopen

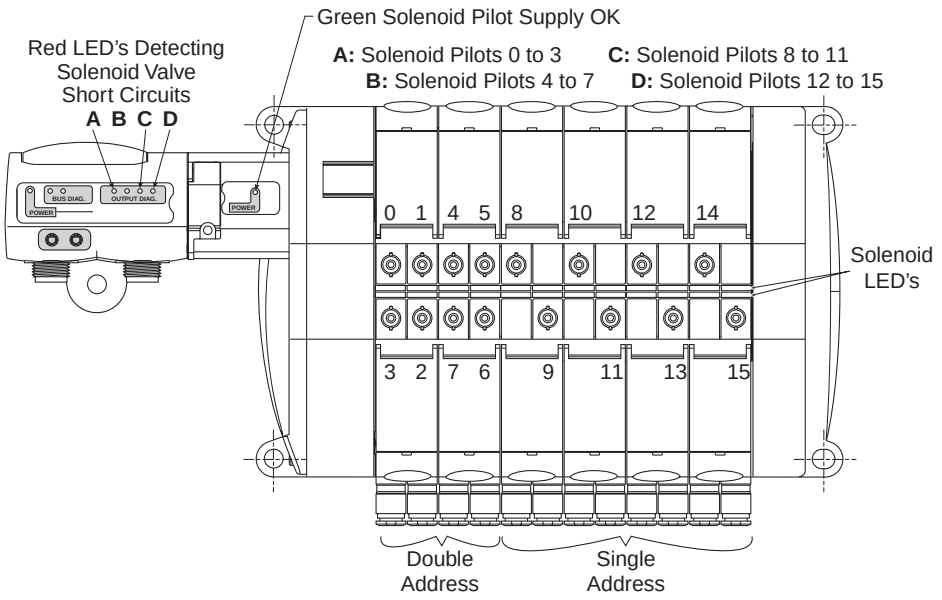
To provide protection against electro-magnetic interferences, the bus cables are shielded. The “bus in” and “bus out” connectors each include a pin for connecting the cable shield. It is safer to connect the shield to the protected earth (PE) at both ends of the bus. Within the communication module, provision is made to enable shield continuity by connecting the two shield pins.

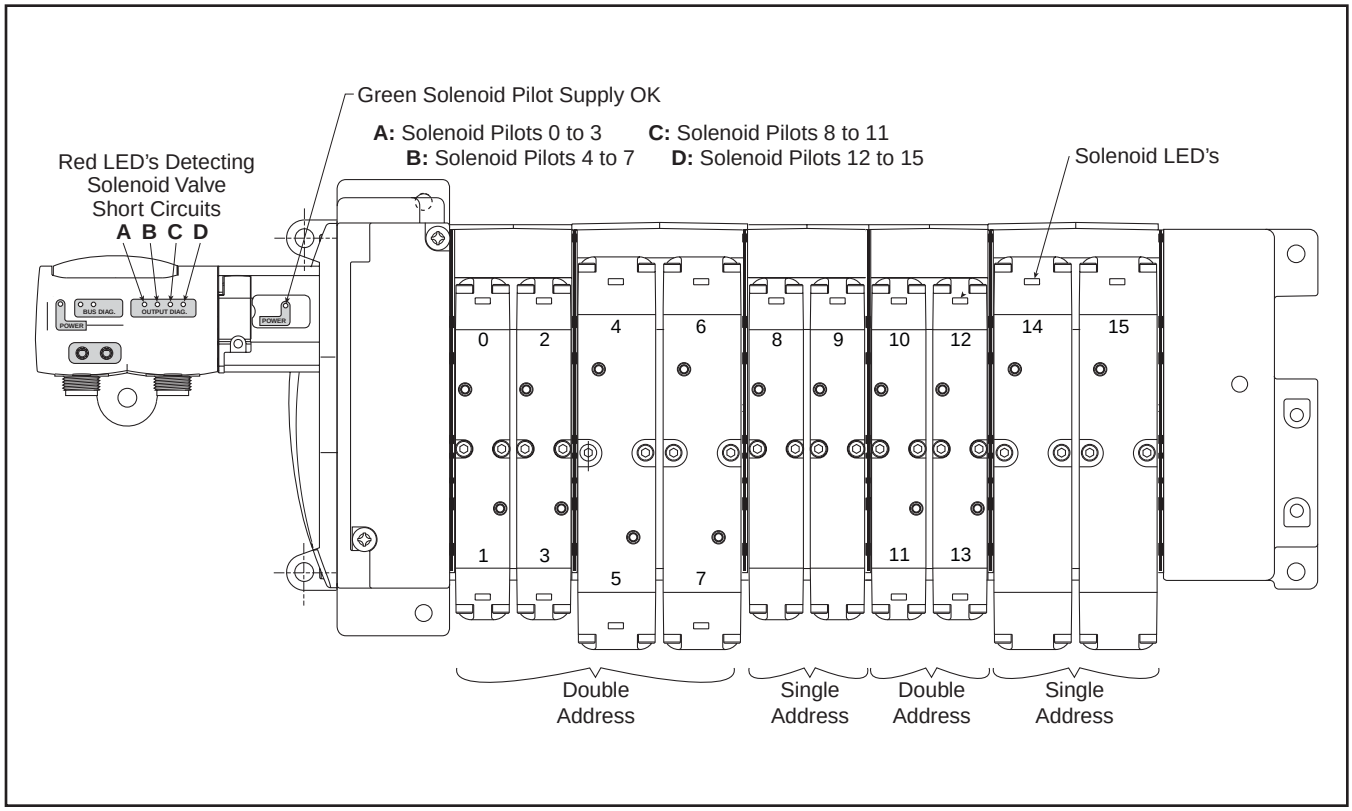
The protected earth must be connected locally on each module for CE accordance.



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Solenoid Pilot Diagnostic Common to All Moduflex Fieldbus Modules





Inside the communication module, solenoid valve control is protected against short-circuits with the following visual indication provided:

- The red LEDs with code, shown above, detect solenoid valve short-circuits.
- Supply is OK when the solenoid pilot power supply indicator is green.

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Serial Bus Specifications

All Buses	EMC / CE Mark	According to EN 61 000-6-2	EN 50081-2

AS-i Bus	AS-i Line	According to EN 50295
	Solenoid Pilot Voltage	24VDC
	Module Consumption	max. 70 mA (2 nodes)
	Max. Supply for All Inputs	240 mA (including internal input consumption)
	Internal Input Consump.	9 mA for each active input
	Inputs	According to IEC 1131-2 class 2
	Certification	These products have been developed according to the association complete specification (v.2.11) and to the slave profiles S-7.F.E or S-B.F.E

Device Bus	Bus Line	According to each bus specification		
	Module Voltage	20 to 30VDC		
	Solenoid Pilot Voltage	24VDC		
	Module Consumption	Profibus DP max. 1.5W	DeviceNet / CANopen max. 1.5W	InterBus-S max. 2W
	Outputs	Overload protection		
	Certification	DeviceNet: Compliant to Composite Test Revision 17, Test Suite: M002		
		Profibus-DP: Compliant to Test Specifications for Profibus DP Slaves, Version 2.0, February 2000, based on EN 50170-2 at Siemens AG in Furth.		
		InterBus-S: This product has passed the relevant tests in accordance with the Interbus conformance requirements Certified No. 385.		

I/O Tables Common to All Device Bus Modules

Input Data Table								
Byte	**Bit 0**	**Bit 1**	**Bit 2**	**Bit 3**	**Bit 4**	**Bit 5**	**Bit 6**	**Bit 7**
0	Discrete Input 0 (Diagnostic LED 0-3)	Discrete Input 1 (Diagnostic LED 4-7)	Discrete Input 2 (Diagnostic LED 8-11)	Discrete Input 3 (Diagnostic LED 12-15)	—	—	—	—
Output Data Table								
Byte	**Bit 0**	**Bit 1**	**Bit 2**	**Bit 3**	**Bit 4**	**Bit 5**	**Bit 6**	**Bit 7**
0	Discrete Output 0	Discrete Output 1	Discrete Output 2	Discrete Output 3	Discrete Output 4	Discrete Output 5	Discrete Output 6	Discrete Output 7
1	Discrete Output 8	Discrete Output 9	Discrete Output 10	Discrete Output 11	Discrete Output 12	Discrete Output 13	Discrete Output 14	Discrete Output 15

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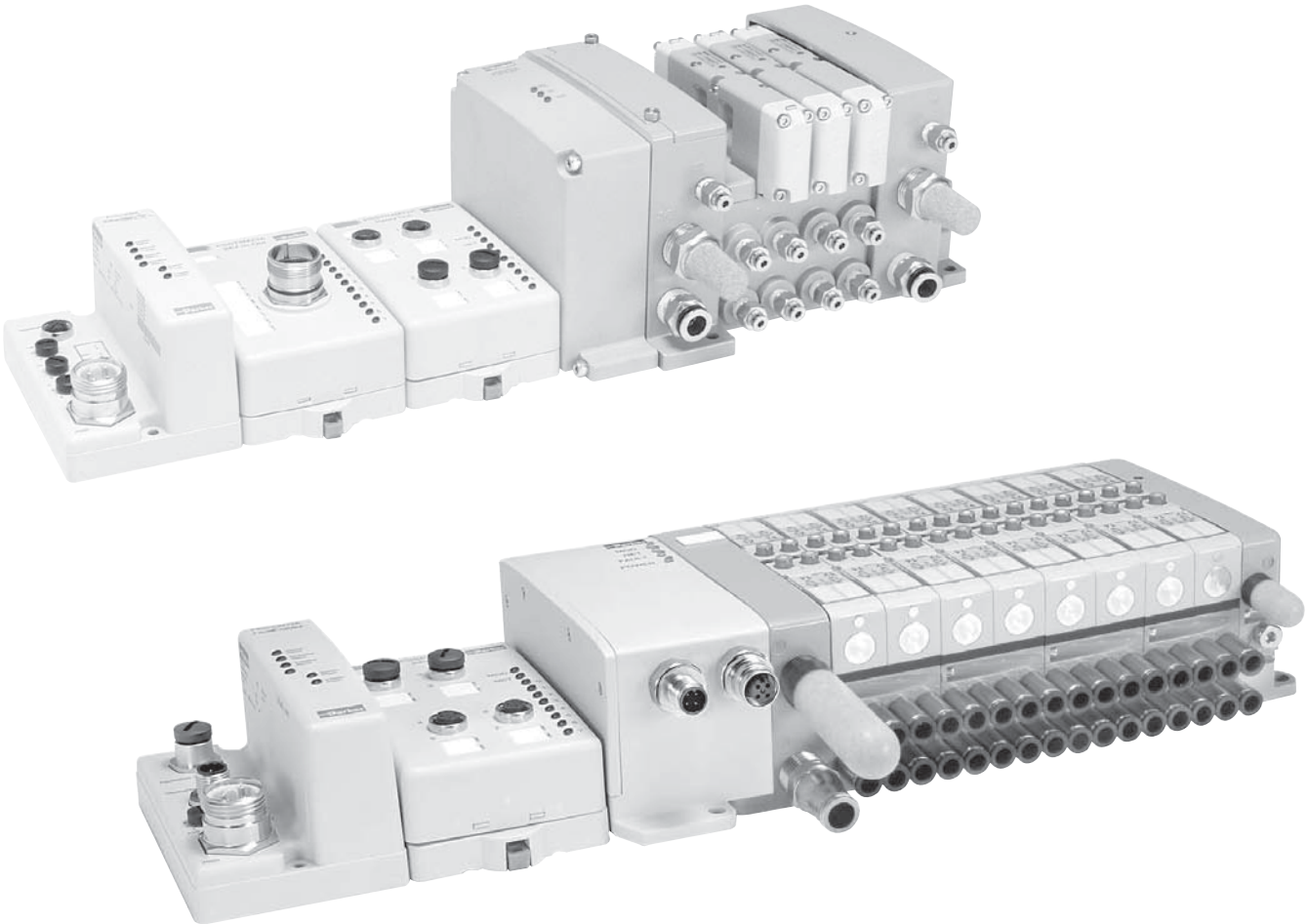
The Isysnet System

Isysnet has four major components:

- **Valve driver module** provide control for 32 solenoids on a manifold, with bus extension providing connectivity to 3 more manifolds
- **I/O modules** provide the field interface, system-interface circuitry, and bases for mounting
- **Communication modules** provide the network-interface circuitry
- **Power distribution module** provide 5 additional power inputs to the Isysnet system

Isysnet Features

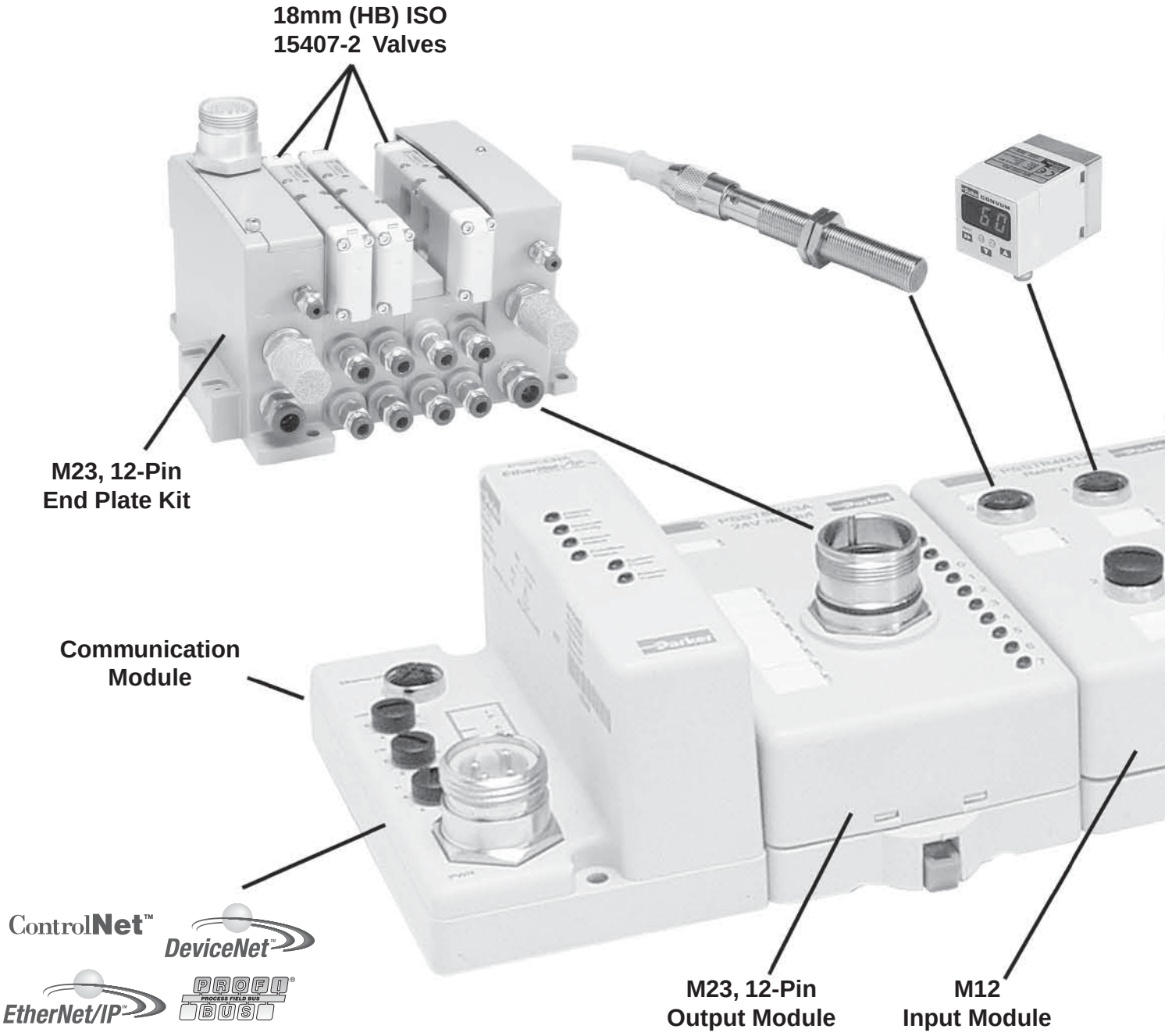
- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Parameter-level explicit messaging
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, C-UL, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits



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Isys & Isysnet Fieldbus System

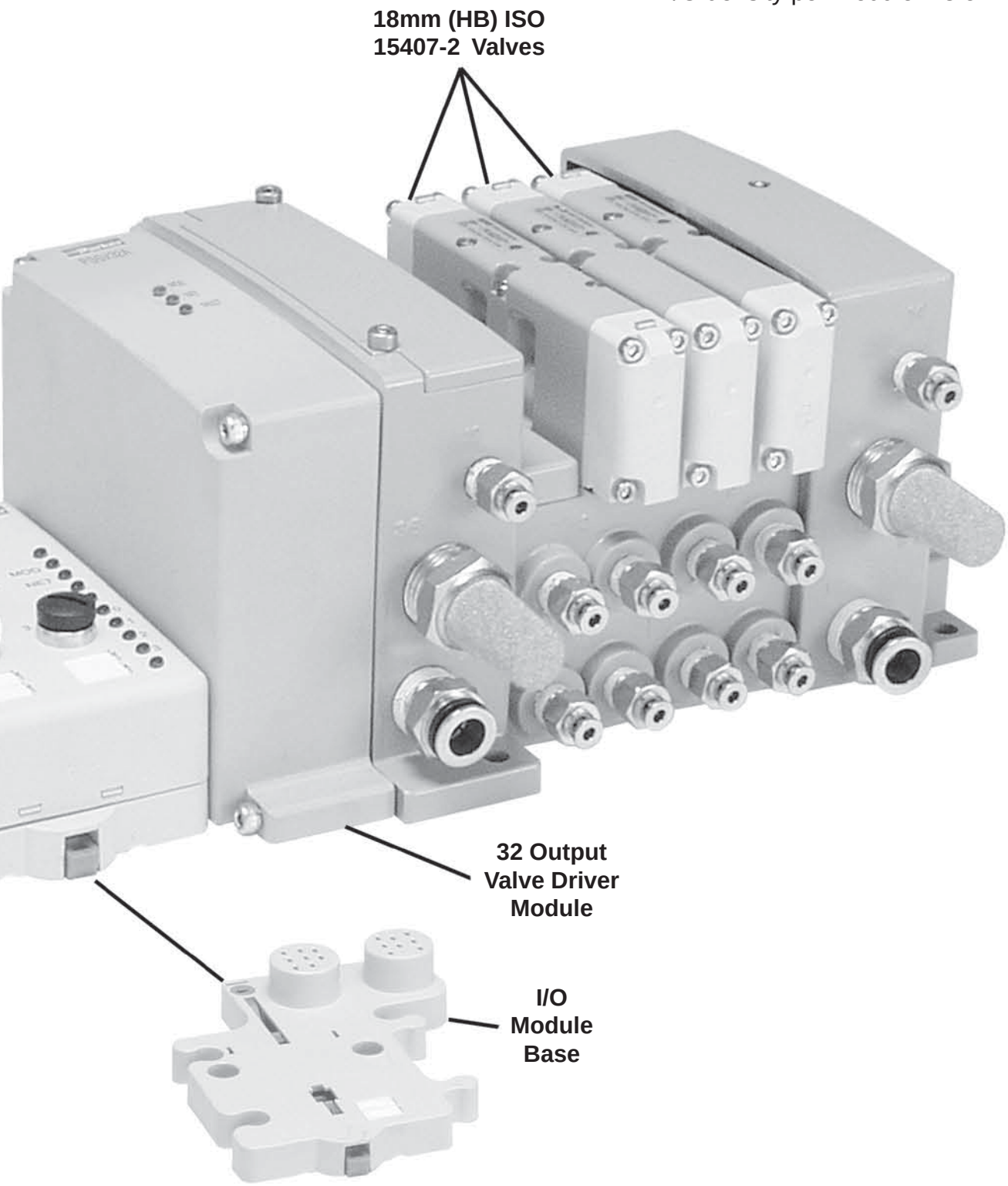
- A complete fieldbus communication offering for all Isys ISO and Isys Micro valves.
- CSA, C-US and CE certifications (as marked).



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I/O Configuration

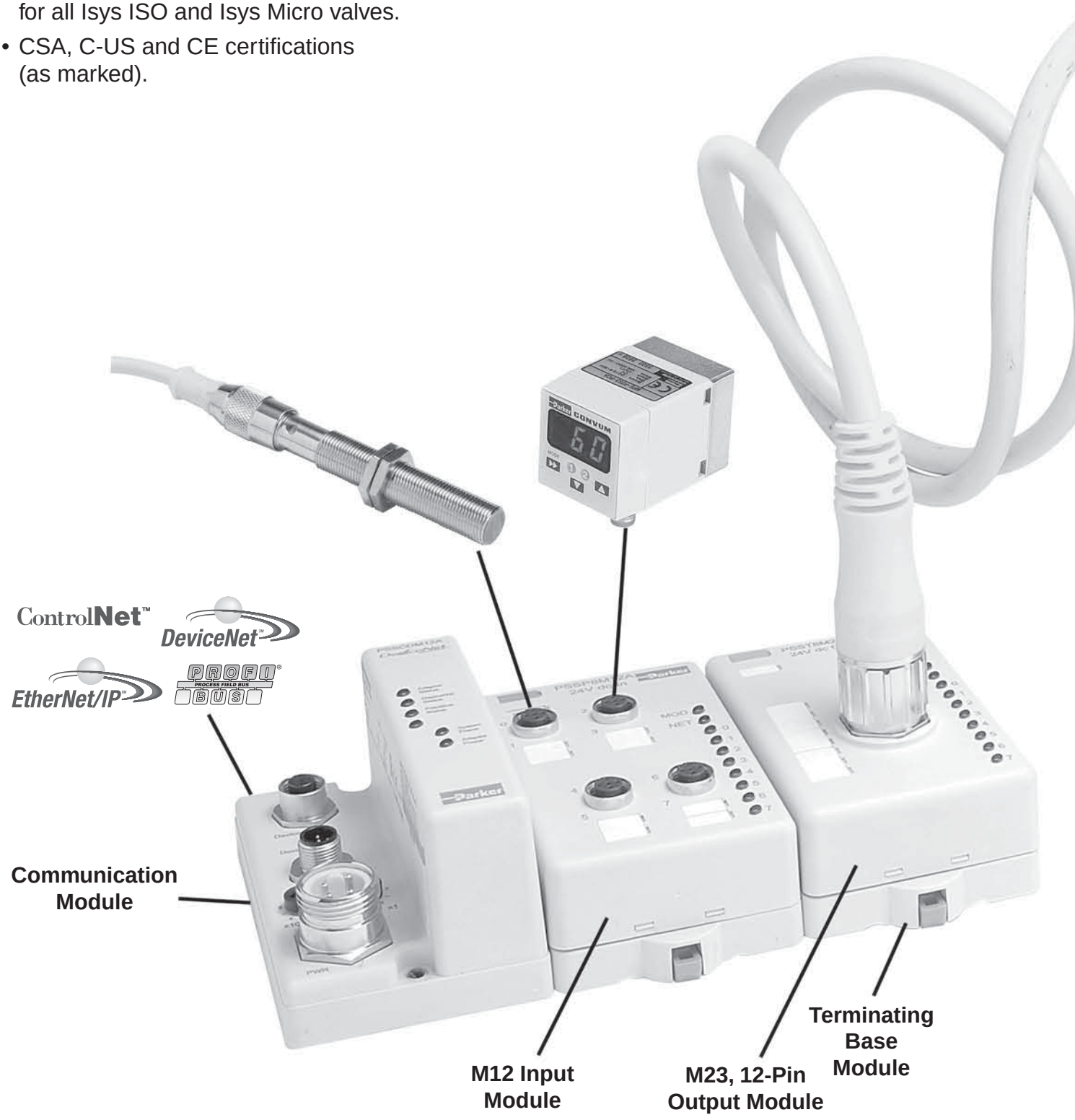
- Centralized Isysnet system.
- Pneumatics and I/O are in close proximity to one another.
- I/O density per module = 8 or 16.



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Isys & Isysnet Fieldbus System

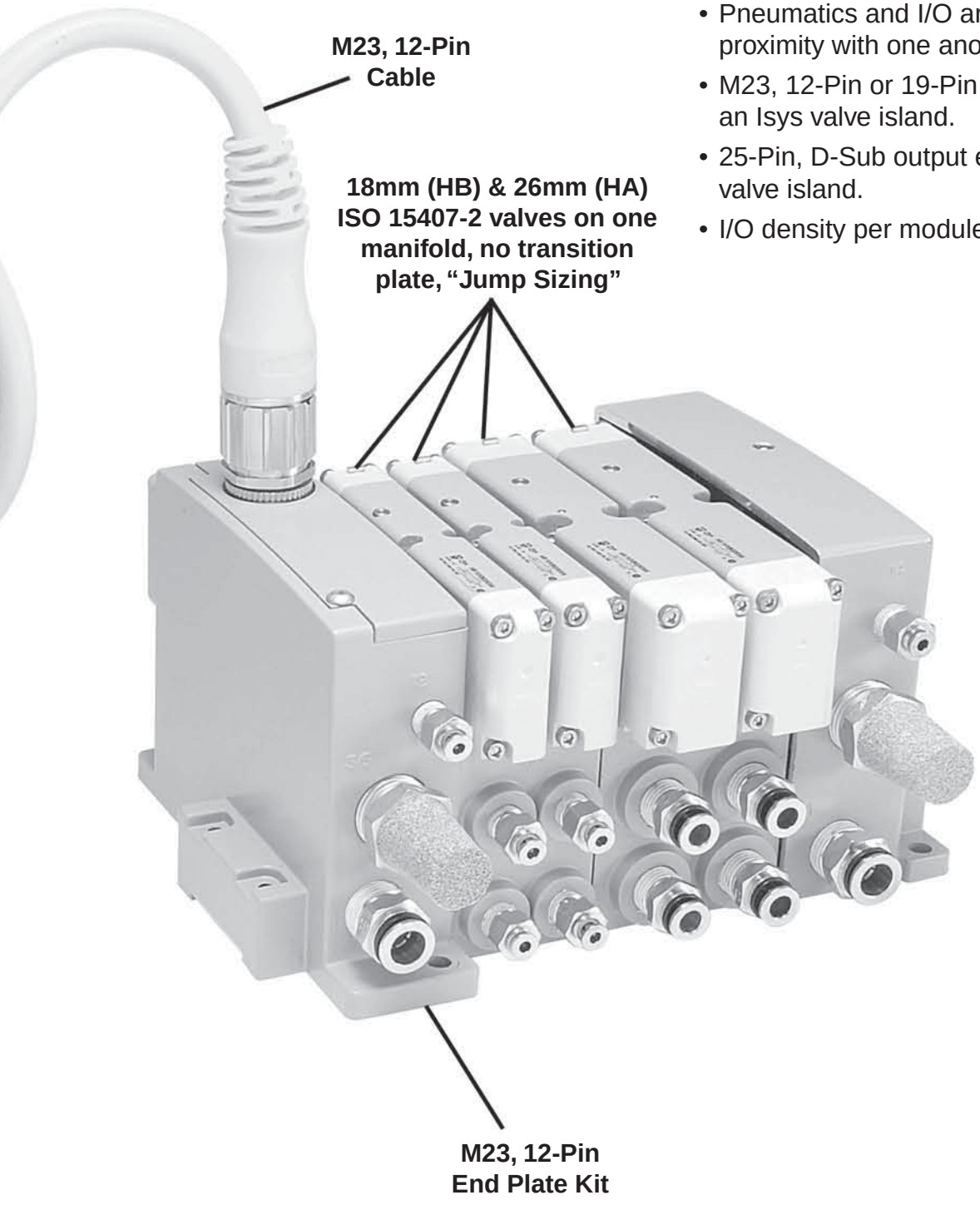
- A complete fieldbus communication offering for all Isys ISO and Isys Micro valves.
- CSA, C-US and CE certifications (as marked).



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I/O Configuration

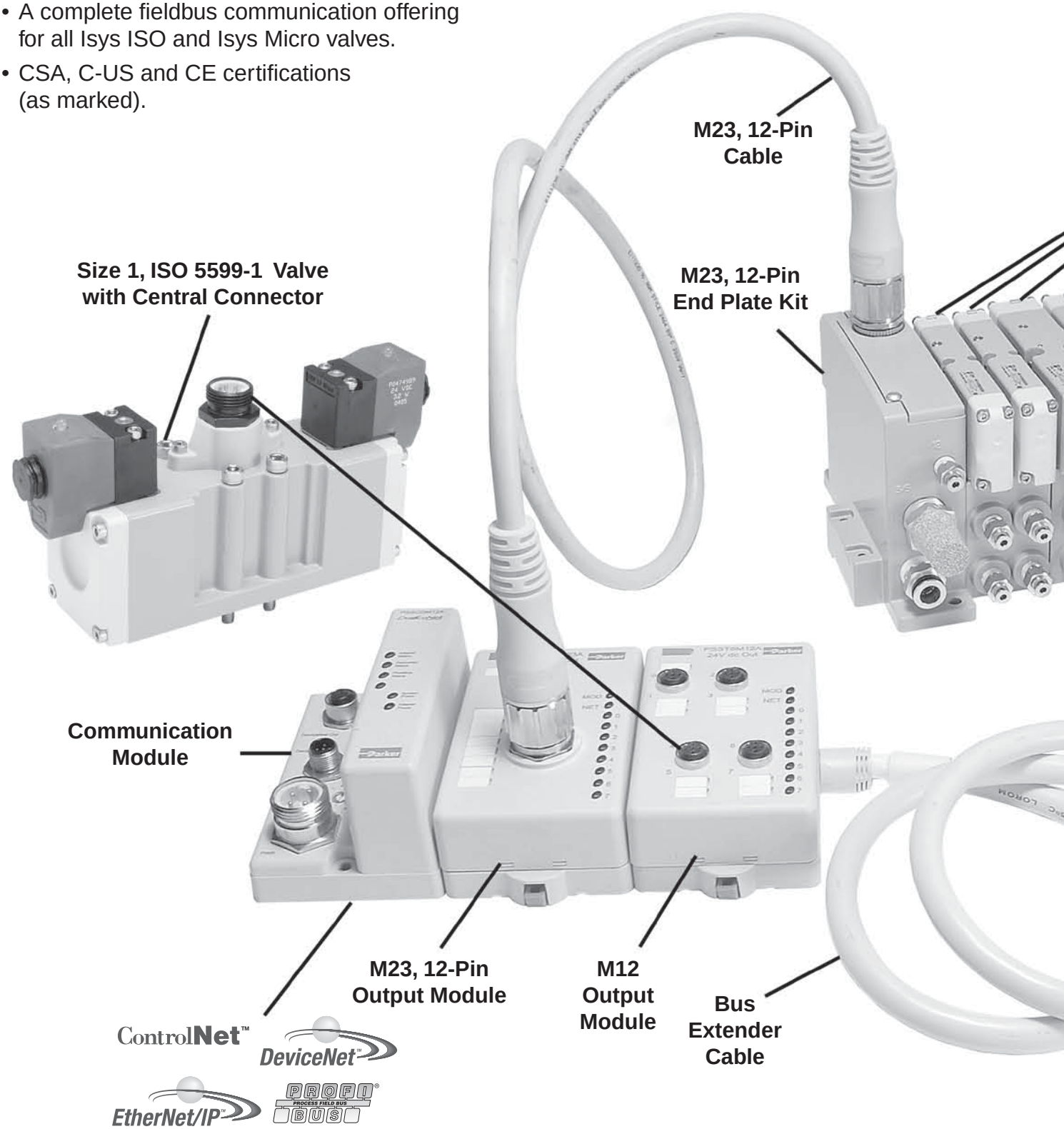
- Decentralized Isysnet system.
- Pneumatics and I/O are not in close proximity with one another.
- M23, 12-Pin or 19-Pin output extension to an Isys valve island.
- 25-Pin, D-Sub output extension to an Isys valve island.
- I/O density per module = 8 or 16.



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Isys & Isysnet Fieldbus System

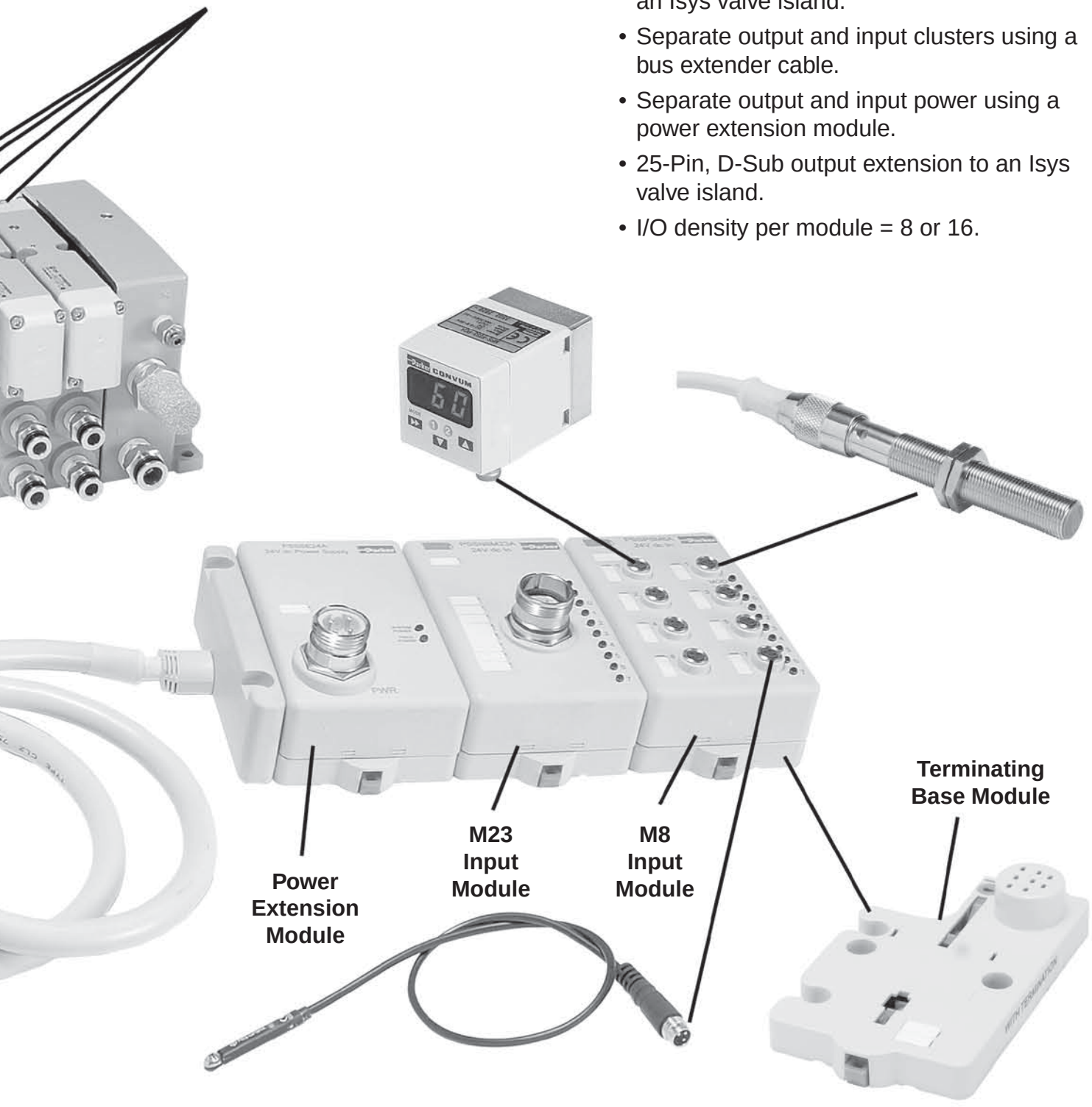
- A complete fieldbus communication offering for all Isys ISO and Isys Micro valves.
- CSA, C-US and CE certifications (as marked).



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I/O Configuration

- Decentralized Isysnet system.
- Pneumatics and I/O are not in close proximity with one another.
- M23, 12-Pin or 19-Pin output extension to an Isys valve island.
- Separate output and input clusters using a bus extender cable.
- Separate output and input power using a power extension module.
- 25-Pin, D-Sub output extension to an Isys valve island.
- I/O density per module = 8 or 16.



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Communications Module

Protocol	Part Number
Device**Net™**	**PSSCDM18PA** (7/8" Mini) **or PSSCDM12A** (M12)
Control**Net**™	**PSSCCNA**
EtherNet I/P™	**PSSCENA**
Profibus-DP®	**PSSCPBA**

All Modules IP67 Certified
Reference the following Documents for Installation Instructions.
DeviceNet - E101P, PSS-UM001A; Control Net - E103P
Ethernet I/P - E104P; Profibus-DP - E102P
EDS and GSD files located at www.parker.com/pneu/Isysnet



PSSCENA



PSSCCNA

Devicebus Terminating Resistor

DeviceNet M12 Type A	P8BPA00MA
Profibus-DP M12 Type B	P8BPA00MB



P8BPA00MA

Digital Inputs

I/O Modules	Part Number	Voltage
16 Digital Inputs M12, 5-Pin used with PNP Sourcing Input Device	**PSSN16M12A**	10 to 28.8VDC
8 Digital Inputs M12, 5-Pin used with PNP Sourcing Input Device	**PSSN8M12A**	10 to 28.8VDC
8 Digital Inputs M12, 5-Pin used with NPN Sinking Input Device	**PSSP8M12A**	10 to 28.8VDC
8 Digital Inputs M8, 3-Pin used with PNP Sourcing Input Device	**PSSN8M8A**	10 to 28.8VDC
8 Digital Inputs M8, 3-Pin used with NPN Sinking Input Device	**PSSP8M8A**	10 to 28.8VDC
8 Digital Inputs M23, 12-Pin used with NPN Sinking Input Device	**PSSP8M23A**	10 to 28.8VDC
8 Digital Inputs M23, 12-Pin used with PNP Sourcing Input Device	**PSSN8M23A**	10 to 28.8VDC

All Modules IP67 Certified
Reference E106P Documents for Installation Instructions.
See www.parker.com/pneu/Isysnet



PSSN16M12A



PSSN8M8A



PSSP8M23A

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Digital Outputs

I/O Modules	Part Number	Voltage
[+] 16 Digital Outputs M23, 19-Pin used with PNP Sourcing Outputs	**PSST16M23A**	10 to 28.8VDC
[+] 16 Digital Outputs D-Sub, 25-Pin used with PNP Sourcing Outputs	**PSST16D25A**	10 to 28.8VDC
[+] 16 Digital Outputs M12, 5-Pin used with PNP Sourcing Outputs	**PSST16M12A**	10 to 28.8VDC
[+] 8 Digital Outputs M12, 5-Pin used with PNP Sourcing Outputs	**PSST8M12A**	10 to 28.8VDC
[+] 8 Digital Outputs M8, 3-Pin used with PNP Sourcing Outputs	**PSST8M8A**	10 to 28.8VDC
[§] 4 Digital Output, High Watt Relay M12, 5-Pin used with PNP Sourcing Outputs (2 Amp)	**PSSTR4M12A**	24VDC
[+] 8 Digital Outputs M23, 12-Pin used with PNP Sourcing Outputs	**PSST8M23A**	10 to 28.8VDC

All Modules IP67 Certified
Reference the following Documents for Installation Instructions.
[+] E107P
[§] E109P
See www.parker.com/pneu/Isysnet



PSST16D25A

PSST16M12A

PSST8M12A

Analog Inputs

I/O Modules	Part Number	Voltage
[‡] 2 Analog Inputs Voltage M12, 5-Pin	**PSSNAVM12A**	-10 to 10VDC or 0 to 10VDC
[‡] 2 Analog Inputs Current M12, 5-Pin	**PSSNACM12A**	4 to 20mA or 0 to 20mA

All Modules IP67 Certified
Reference the following Documents for Installation Instructions.
[‡] E110P
See www.parker.com/pneu/Isysnet



PSSNACM12A

Analog Outputs

I/O Modules	Part Number	Voltage
[**] 2 Analog Outputs Voltage M12, 5-Pin	**PSSTAVM12A**	0 to 10V ± 10V
[**] 2 Analog Outputs Current M12, 5-Pin	**PSSTACM12A**	4 to 20mA or 0 to 20mA

All Modules IP67 Certified
Reference the following Documents for Installation Instructions.
**E111P
See www.parker.com/pneu/Isysnet



PSSTACM12A

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Terminating Base Module

Base Module	Part Number
Termination Base for Stand Alone Units	**PSSTERM**

Used as the last Terminating Module for a Stand Alone Isysnet Assembly.



PSSTERM

Power Extender Module

Extender Module	Part Number
24VDC Field Power Module	**PSSSE24A**

A Power Extender Module must be used on every 14th Module in an Isysnet assembly. See www.parker.com/pneu/Isysnet

Reference Document E105P and PSS-SG001 for configuration instructions. See www.parker.com/pneu/Isysnet



PSSSE24A

Replacement Base Module

Base Module	PSSBASE



PSSBASE

Bus Extender Cable

1 Meter Cable*	PSSEXT1	24VDC
3 Meter Cable*	PSSEXT3	24VDC

* Requires a PSSSE24 Power Extender Module

IP67 Certified

Reference the following Documents for Installation Instructions. E117P

See www.parker.com/pneu/Isysnet



PSSEXT1

Isys Micro Bus Extender Cable

1 Meter Cable*	PSSVEXT1	24VDC

* IP67 Certified.



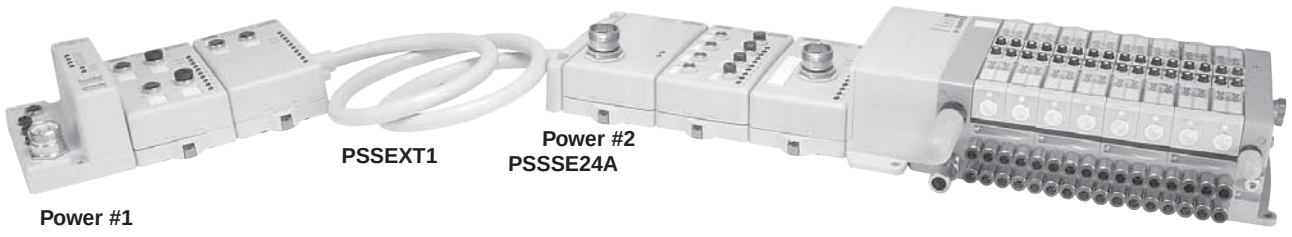
PSSVEXT1

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Using Bus Extender Cables

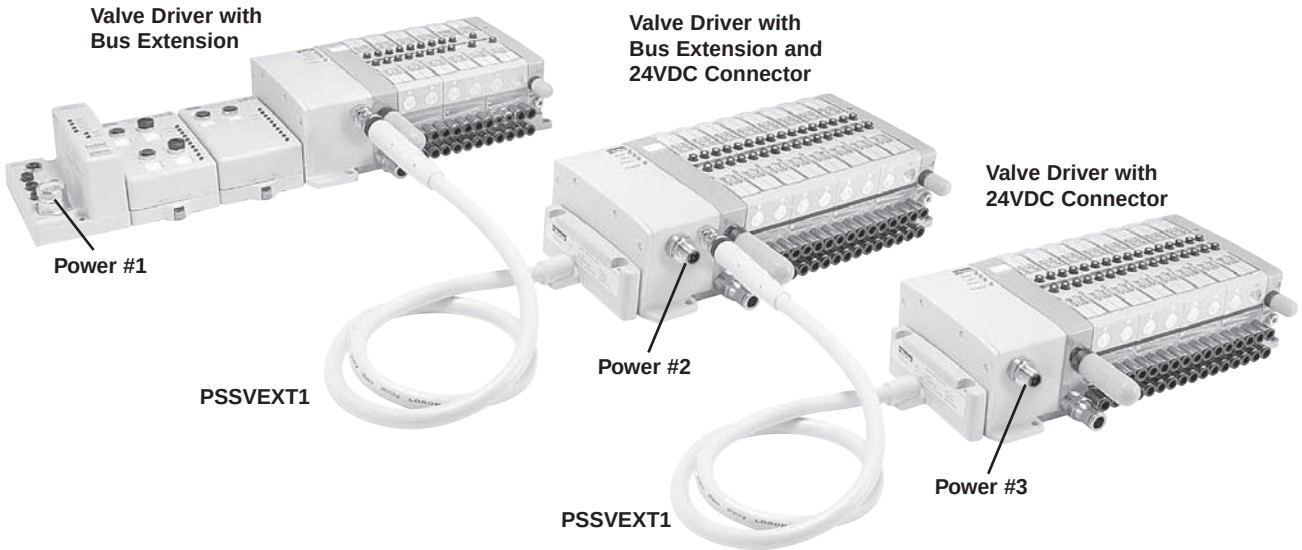
Example #1:
Isys with Standard Bus Extender Cable

- Separate the communication module and a portion of the I/O from other I/O and the valve manifold.
- Commonly used when overall length is restricted.
- PSSSE24A is needed on the extension. No 24VDC connector needed on the Isysnet end plate.
- Can be used with Isys ISO and Isys Micro valves.



Example #2:
Isys Micro with Bus Extension on Valve Driver Module – No additional I/O at the Extension

- Add up to three additional valve manifolds without adding another communication module.
- No PSSSE24A is needed on the Extension when the Valve Driver Module with 24VDC Connector is used.
- Commonly used when many valves are required.
- Bus expansion only available with Isys Micro valves.

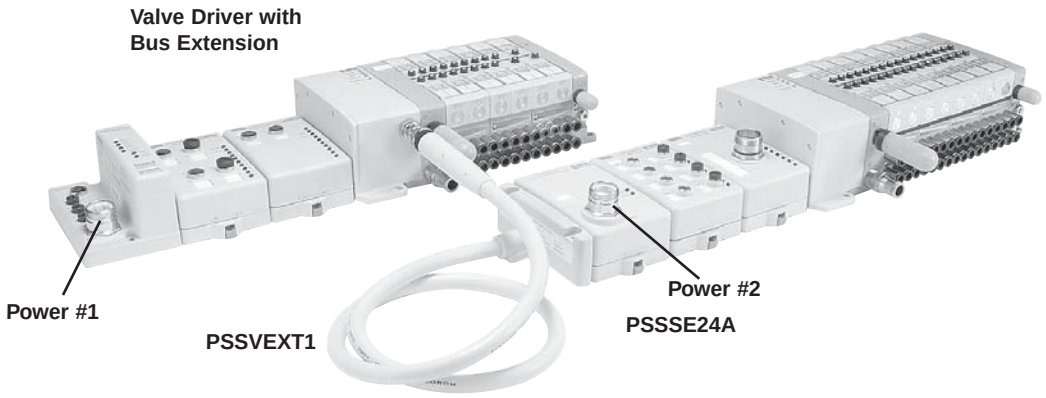


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Using Bus Extender Cables

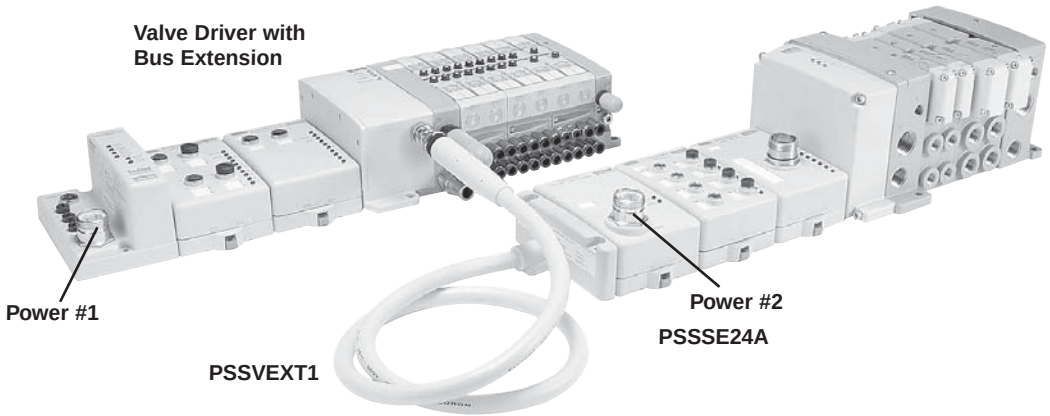
Example #3:
Isys Micro with Bus Extension on Valve Driver – With I/O at Extension

- Add up to three additional valve manifolds without adding another communication module.
- PSSSE24A is needed on the Extension. No 24VDC Connector needed on the Isysnet end plate.
- Commonly used when many valves are required, and each location requires additional I/O.
- Bus expansion only available with Isys Micro.



Example #4:
Isys Micro with Bus Extension on Valve Driver Module – With I/O at the Extension and larger Isys ISO Valve Manifold

- Add up to two additional Isys Micro valve manifolds and one Isys ISO valve manifold without adding another communication module.
- PSSSE24A is needed on the Extension.
- Isys ISO valve manifold must be the last manifold on the Extension
- Commonly used when many valves are required, and each location requires additional I/O.
- Bus expansion only available with Isys Micro. Isys ISO manifold must be the last manifold in the system.



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Digital I/O Modules

Choose digital I/O modules when you need:

- **Input Modules.** An input module responds to an input signal in the following manner:
  - Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data. All input modules use input filtering.
  - Optical isolation shields logic circuits from possible damage due to electrical transients.
  - Logic circuits process the signal.
  - An input LED turns on or off indicating the status of the corresponding input device.
- **Output Modules.** An output module controls the output signal in the following manner:
  - Logic circuits determine the output status.
  - An output LED indicates the status of the output signal.
  - Optical isolation separates module logic and bus circuits from field power.
  - The output driver turns the corresponding output on or off.
- **Surge Suppression.** Most output modules have built-in surge suppression to reduce the effects of high-voltage transients. However, we recommend that you use an additional suppression device if an output is being used to control inductive devices, such as:
  - Relays
  - Motor starters
  - Solenoids
  - Motors

  Additional suppression is especially important if your inductive device is in series with, or parallel to, hard contacts such as:
  - Push buttons
  - Selector switches

The digital I/O modules support:

- A wide variety of voltage interface capabilities
- Isolated and non-isolated module types
- Point-level output fault states
- Choice of direct-connect or rack-optimized communications
- Field-side diagnostics on select modules

Connector types are indicated by the catalog number. For example, the PSSN8M12A has an M12 connector.

Digital DC Input Modules

	PSSN8M8A PSSN8M12A PSSN8M23A	**PSSN16M12A**	**PSSP8M8A PSSP8M12A PSSP8M23A**
Number of Inputs	8 PNP Sourcing	16 PNP Sourcing	8 NPN Sinking
Keyswitch Position	1		
Voltage, On-State Input, Nom.	24VDC		
Voltage, On-State Input, Min.	10VDC		
Voltage, On-State Input, Max.	28.8VDC		
Input Delay Time, ON to OFF	0.5 ms hardware + (0…65 ms selectable)*		
Current, On-State Input, Min.	2 mA		
Current, On-State Input, Max.	5 mA		
Current, Off-State Input, Max.	1.5 mA		
Bus Power Current (mA)	75		
Power Dissipation, Max.	1.0 W @ 28.8VDC		

* Input ON-to-OFF delay time is the time from a valid input signal to recognition by the module.

Digital DC Output Modules

	PSST8M8A PSST8M12A PSST8M23A	**PSST16M223A PSST16D25A PSST16M12A**
Number of Outputs	8 PNP sourcing	16 PNP Sourcing
Keyswitch Position	1	
Voltage, On-State Output, Nom.	24VDC	
Voltage, On-State Output, Min.	10VDC	
Voltage, On-State Output, Max.	28.8VDC	
Output Current Rating, Max.	3.0 A per module, 1.0 A per channel	
Bus Power Current (mA)	75	
Power Dissipation, Max.	1.2 W @ 28.8VDC	

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Relay Output Module

	PSSTR4M12A
Number of Outputs	4 Form A (N.O.) relays, isolated
Key switch Position	7
Output Delay Time, ON to OFF, Max.	26 ms*
Contact Resistance, Initial	30 mΩ
Current Leakage, Off-State Output, Max.	1.2 mA and bleed resistor thru snubber circuit @ 240V ac
Output Current Rating, Max	8.0 A per module, 2.0 A per channel
Bus Power Current (mA)	90
Power Dissipation, Max.	0.5 W

*Time from valid output off signal to relay de-energization by module.

Analog I/O Modules

The Isysnet analog modules support: on-board, channel-level data alarming (four set-points per channel); scaling to engineering units; channel-level diagnostics (electronic bits and LEDs); and integer format.

Choose analog I/O modules when you need:

- **Individually configurable channels** to use the module(s) with a variety of sensors.
- **On-board scaling** to eliminate the need to scale the data in the controller. Controller processing time and power are preserved for more important tasks, such as I/O control, communications, or other user-driven functions.
- **On-line configuration.** Modules can be configured in the RUN mode using the programming software or the control program. This allows you to change configuration while the system is operating. For example, the input filter for a particular channel could be changed, or a channel could be disabled based on a batch condition. To use this feature, the controller and network interface must also support this feature.
- **Over- and under-range detections and indications.** This eliminates the need to test values in the control program, saving valuable processing power of the controller. In addition, since alarms are handled by the module, the response is faster and only a single bit per channel is monitored to determine if an error condition has occurred.
- **Ability to direct output device operation during an abnormal condition.** Each channel of the output module can be individually configured to hold its last value or assume a user-defined value on a fault condition. This feature allows you to set the condition of your analog devices, and therefore your control process, which may help to ensure a reliable shutdown.
- **Ability to individually enable and disable channels.** Disabling unused channels improves module performance.
- **Selectable input filters** This lets you select the filter frequencies for each channel that best meets the performance needs of your application based on environmental limitations. Lower filter settings provide greater noise rejection and resolution. Higher filter settings provide faster performance. Note: The analog modules provide four input filter selections.
- **Selectable response to broken input sensor.** This feature provides feedback to the controller that a field device is not connected or operating properly. This lets you specify corrective action based on the bit or channel condition.
- **High accuracy.** The modules share a high accuracy rating of ±0.1% of full-scale accuracy at 25 °C.

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Analog Input Modules

	PSSNACM12A	PSSNAVM12A
Number of Inputs	2	2
Key switch Position	3	3
Input Signal Range	4…20 mA 0…20 mA	-10 to 10VDC 0 to 10VDC
Input Resolution, Bits	16 bits - over 21 mA 0.32 µA/cnt	15 bits plus sign 320 µV/cnt in unipolar or bipolar mode
Absolute Accuracy, Current Input	0.1% Full Scale @ 25°C*†	—
Absolute Accuracy, Voltage Input	—	0.1% Full Scale @ 25°C*†
Input Step Response, per Channel	70 ms @ Notch = 60 Hz (default) 80 ms @ Notch = 50 Hz 16 ms @ Notch = 250 Hz 8 ms @ Notch = 500 Hz	70 ms @ Notch = 60 Hz (default) 80 ms @ Notch = 50 Hz 16 ms @ Notch = 250 Hz 8 ms @ Notch = 500 Hz
Input Conversion Type	Delta Sigma	Delta Sigma
Bus Power Current (mA)	75	75
Power Dissipation, Max.	0.6 W @ 28.8VDC	0.6 W @ 28.8VDC

* Includes offset, gain, non-linearity and repeatability error terms.

† Analog input modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting; four-alarm and annunciation set-points; calibration mode and electronic reporting; under- and over-range and electronic reporting; channel signal range and update rate and on-board scaling; filter-type; channel update rate.

Analog Output Modules

	PSSTACM12A	PSSTAVM12A
Number of Outputs	2	2
Key switch Position	4	4
Output Signal Range	4…20 mA 0…20 mA	-10 to 10VDC 0 to 10VDC
Output Resolution, Bits	13 bits - over 21 mA 2.5 µA/cnt	14 bits (13 plus sign) 1.28 mV/cnt in unipolar or bipolar mode
Absolute Accuracy, Current Output	0.1% Full Scale @ 25°C*†	—
Absolute Accuracy, Voltage Output	—	0.1% Full Scale @ 25°C*†
Step Response to 63% of FS,	24 µs	— Current Output
Step Response to 63% of FS,	—	20 µs Voltage Output
Output Conversion Rate	16 µs	20 µs
Bus Power Current (mA)	75	75
Power Dissipation, Max.	1.0 W @ 28.8VDC	1.0 W @ 28.8VDC

* Includes offset, gain, non-linearity and repeatability error terms.

† Analog output modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting (PSSTACM12A only); fault mode; idle mode; alarms; channel signal range and on-board scaling.

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Valve Driver Modules

The PSSV32A and PSSVM32A valve driver modules provide an interface between the Isysnet serial bus system and the valve assembly. These modules will always be the last on the Isysnet serial bus, and control 32 digital outputs at 24VDC. Depending on the valve selection, a valve driver module can control up to 32 single solenoid valves or 16 double solenoid valves.

PSSV32A is used with Isys ISO valves and PSSVM32A is used with Isys Micro valves.

Valve Driver Module Specifications

	PSSV32A and PSSVM32A
Outputs per Module	32, PNP sourcing
Voltage Drop, On-State Output, Maximum	0.2VDC
Voltage, Off-State Output, Maximum	28.8VDC
Voltage, On-State Output, Maximum Minimum Nominal	 28.8VDC 10VDC 24VDC
Output Current Rating	200 mA per channel, not to exceed 6.0 A per module
Output Surge Current, Maximum	0.5 A for 10 ms, repeatable every 3 seconds
Current Leakage, Off-State Output, Maximum	0.1 mA
Current, On-State Output Minimum	200 mA per channel
Output Delay Time OFF to ON, Maximum[1]	0.1 ms
Output Delay Time, ON to OFF, Maximum[1]	0.1 ms
External DC Power Supply Voltage Range	10 to 28.8VDC
External DC Power Supply Voltage Nominal	24VDC

1. OFF to ON or ON to OFF delay is time from a valid output “on” or “off” signal to output energization or de-energization.

Select the Appropriate Power Supply

Power Specifications

Part Number	Power Supply Input Voltage, Nom.	Operating Voltage Range	Maximum Continuous Current Draw	Power Supply Inrush Current, Max.	Input Overvoltage Protection	Power Supply Interruption Protection
PSSCDM12A	24VDC	10...28.8VDC	10 A	6 A for 10 ms	Reverse polarity protected	Output voltage will stay within specifications when input drops out for max. load.
PSSCDM18PA						
PSSCCNA						
PSSCENA						
PSSCPBA						
PSSSE24A						

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Power Extender Module

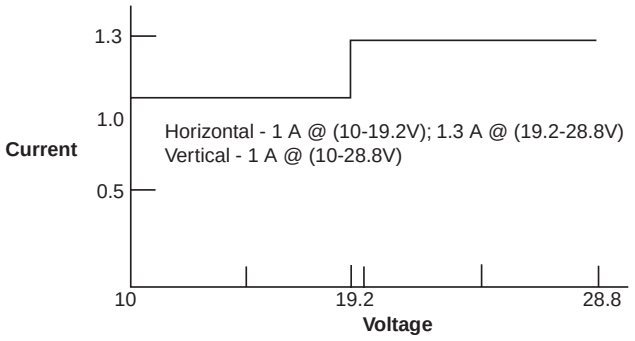
The PSSSE24A expansion power unit passes 24VDC field power to the I/O modules to the right of it. This unit extends the backplane bus power and creates a new field voltage partition segment for driving field devices for up to 13 I/O modules. The expansion power unit separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for:

- Separating field power between input and output modules
- Separating field power to the analog and digital modules
- Grouping modules to perform a specific task or function

You can use multiple expansion power units with any of the communication adapters to assemble a full system. If you are using the PSSCDM12A adapter, you may use a PSSSE24A expansion power unit to add additional modules. For example, if you had a 36 module system with a PSSCDM12A adapter, you would have at least two or more PSSSE24A expansion power units to provide more bus power current for modules to the right of the supply.

- 1.3A of additional bus power
- Starts new voltage distribution
- Partitioning for E-Stop wiring

PSSSE24A Current Derating for Mounting



Power Distribution General Specifications

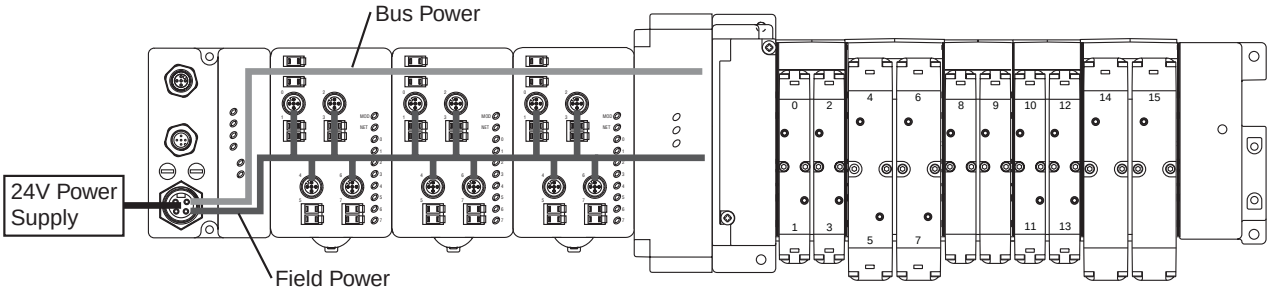
	PSSSE24A
Power Supply Requirements	Note: In order to comply with CE Low Voltage Directives (LVD), you must use a Safety Extra Low Voltage (SELV) or a Protected Extra Low Voltage (PELV) power supply to power this adapter
Field Side Power Requirements	24VDC (+20% = 28.8VDC max.) @ 400 mA
Inrush Current, Max.	6 A for 10 ms
Input Overvoltage Protection	Reverse polarity protected
Power Supply Interruption Protection	Output voltage will stay within specifications when input drops out for 10 ms at 10V with max. load
Power Supply Input Voltage, Nom.	24VDC
Operating Voltage Range	10…28.8VDC
Power Consumption, Max.	9.8 W @ 28.8VDC
Power Dissipation, Max.	3.0 W @ 28.8VDC
Thermal Dissipation, Max.	10.0 BTU/hr @ 28.8VDC
Isolation Voltage	1250V rms
Bus Power Supply Current, Max.	1.5 A
Field Power Supply Current, Max.	10 A

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Power Distribution Options for Isys ISO

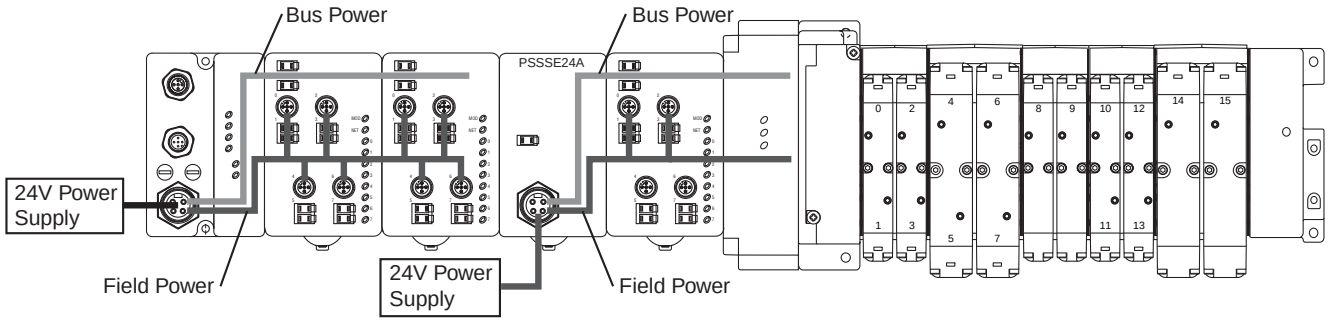
Isysnet Communication and I/O Modules

An auxiliary 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 I/O modules with a maximum of 10 A field power, using the auxiliary power.



Isysnet System with 24VDC Expansion Power Unit (PSSSE24A)

The auxiliary power from the communication module supports up to 13 I/O modules with a maximum of 10 A field power. The 24VDC Power Extender Module (PSSSE24A) extends the backplane bus power and I/O Module field power to support up to 13 more I/O modules. Connect additional Power Extender Modules to expand the I/O assembly up to the maximum of 63 I/O modules. This secondary 24VDC connector on the PSSSE24A can be wired into an Emergency Stop circuit.

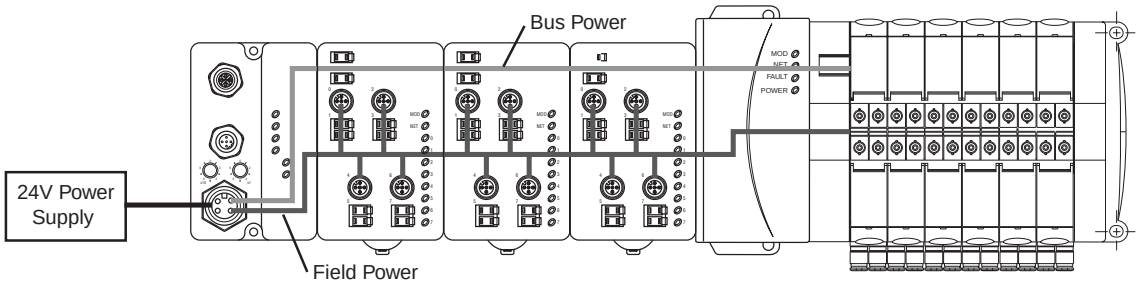


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Power Distribution Options for Isys Micro

Isysnet Communication and I/O Modules

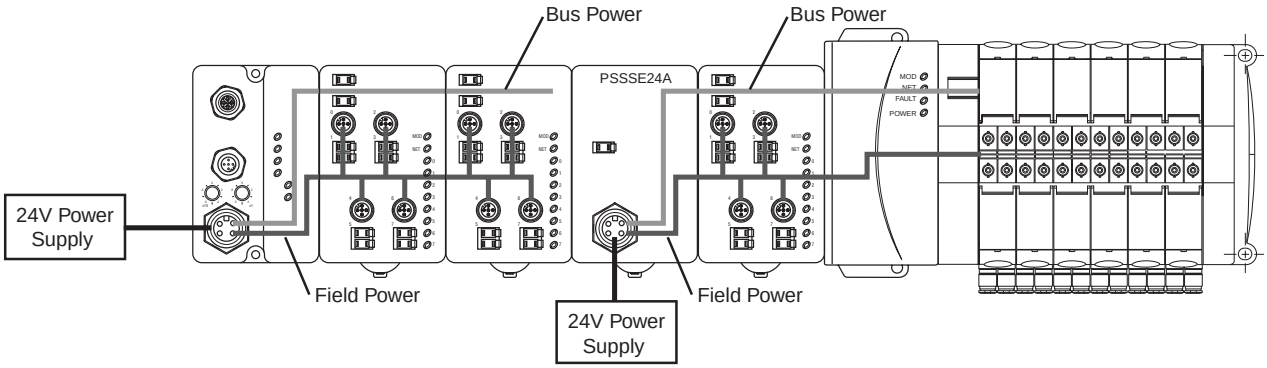
The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10 A field power, using this power source.



Isysnet Communication and I/O Modules

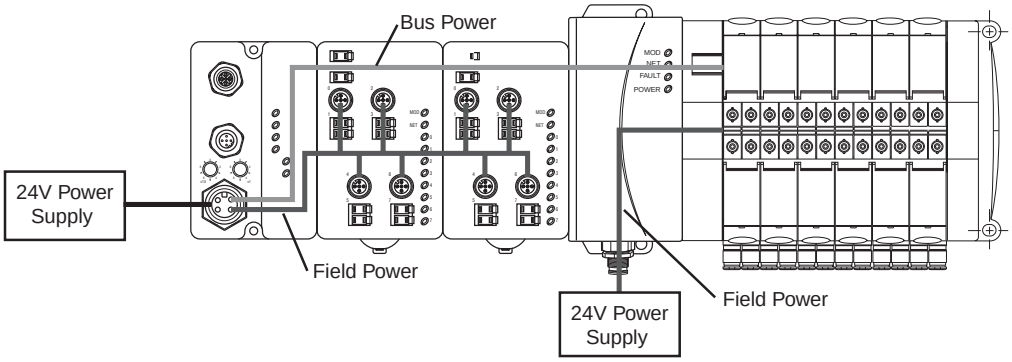
The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10 A field power, using this power source.

The 24VDC Power Extender Module (PSSSE24A) extends the backplane bus power and I/O module field power to support up to 13 more modules. Connect additional Power Extender Modules to expand the assembly up to the maximum of 63 I/O modules. The Valve Driver Module is the last module on the system, and will draw bus power and field power from the PSSSE24A to the left of it. This secondary 24VDC connector on the PSSSE24A can be wired into an Emergency Stop circuit.



Isysnet Communication Module and Valve Driver Module with 24VDC Connector

The 24VDC power supply from the Communication Adaptor provides power to the backplane bus power and I/O module field power for up to 13 modules and an adapter with a maximum of 10 A Field Power. In this configuration, backplane bus power and I/O module field power are supplied to the input and output modules. The communication module only supplies backplane bus power to the Valve Driver Module, as the Isys Micro with 24VDC Connector separates the field power from the rest of the network. This secondary 24VDC Connector on the Valve Driver Module supplies Field Power to the valves, and can be wired into an Emergency Stop Circuit.

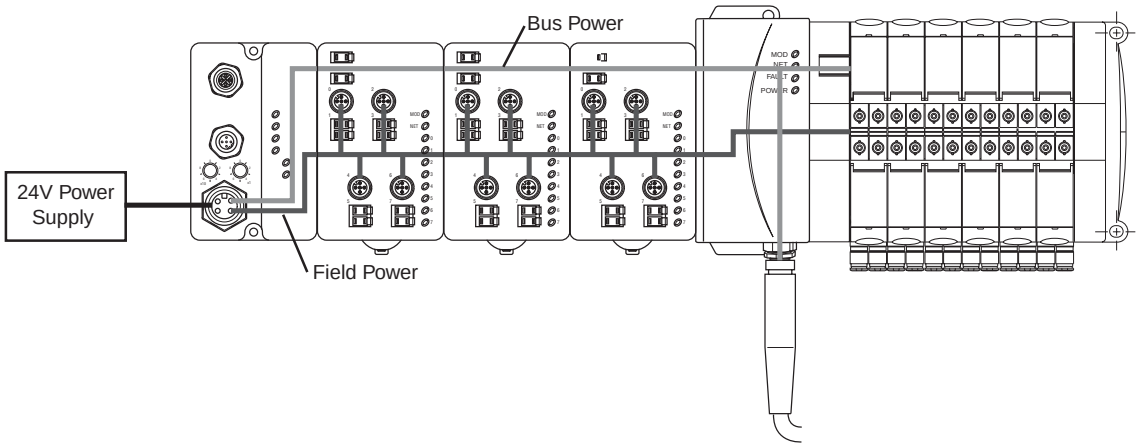


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Power Distribution Options for Isys Micro (Continued)

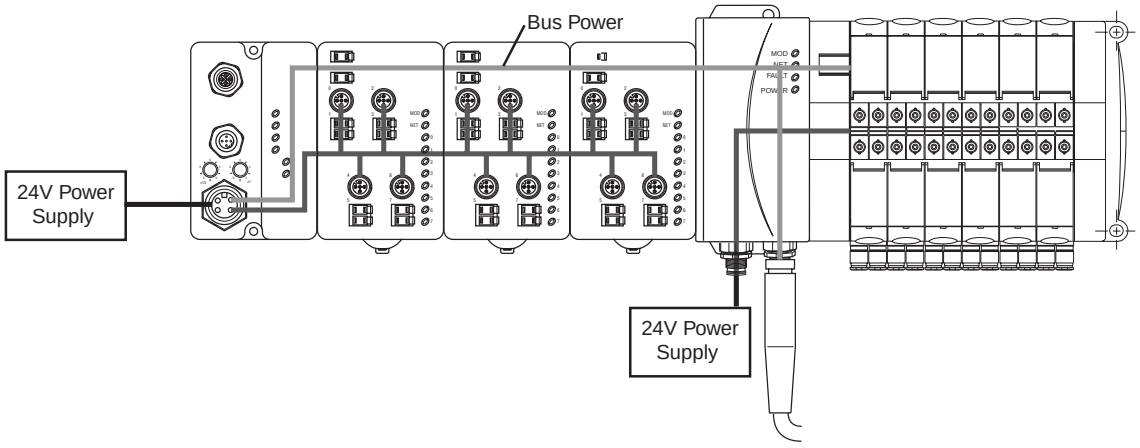
Isysnet Communication Module with Bus Extension Connector and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10 A field power, using this power source. The Isys Micro with Bus Extension Connector carries backplane bus power and communication down to another Isysnet Assembly through the PSSVEXT1 cable. If additional Isysnet Input and Output Modules or Isys ISO valve manifold is used on this extension, a PSSSE24A Power Extender Module is required to provide Field Power. If the extension is attached directly to an Isys Micro Manifold, Field Power can be supplied directly by using the 24VDC Connector option.



Isysnet Communication Module with 24VDC and Bus Extension Connectors and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. In this configuration, bus power and field power are supplied to the input and output modules. The communication module only supplies bus power to the Valve Driver Module, as the 24VDC Connector separates the Field Power from the rest of the network. This secondary 24VDC connector on the Valve Driver Module supplies field power to the valves, and can be wired into an Emergency Stop Circuit. The Bus Extension Connector carries bus power and communication down to another Isysnet Assembly through the PSSVEXT1 cable. If additional Isysnet input and output modules or Isys ISO valve manifold is used on this extension, a PSSSE24A Power Extender Module is required to provide field power. If the extension is attached directly to an Isys Micro Manifold with 24VDC Connector, field power can be supplied directly by using the 24VDC Connector option.



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Placing Isysnet Modules

Maximum Size Layout

Part Number	Bus Power Supply	Maximum I/O Modules with 24VDC Backplane Current at 75 mA each	Maximum I/O Modules with Expansion Power Supplies
PSSCDM12A on DeviceNet	1000	Up to 13	63
PSSCDM18PA on DeviceNet			
PSSCCNA on ControlNet			
PSSCENA on EtherNet/IP			
PSSCPBA on PROFIBUS			
PSSSE24A Expansion Power	Horizontal mounting: 1A@ 10...19.2V input; 1.3A @ 19.2...28.8V input Vertical mounting: 1A @ 10...28.8V input		

Power Supply Distance Rating

Modules are placed to the right of the power supply. Each Isysnet module can be placed in any of the slots to the right of the power supply until the usable backplane current of that supply has been exhausted. A Communication Module provides 1 A current to the PointBus. The Power Extend Module, PSSSE24A, provides up to 1.3 A and I/O modules require from 75 mA (typical for the digital and analog I/O modules) up to 90 mA or more.

Current Requirements

Part Number	PointBus Current Requirements
PSSN8xxx	75 mA
PSSP8xxx	
PSST8xxx	
PSSN16xxx	
PSST16xxx	
PSSTR4MRA	90 mA
PSSNACM12A	75 mA
PSSTACM12A	
PSSNAVM12A	
PSSTAVM12A	
PSSV32A	
PSSVM32A	

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Related Documentation

Additional user documentation presents information according to the tasks you perform and the programming environment you use. Refer to the table below for information on Isysnet products.

Isysnet Related Publications*

	Part Number	Description	Instruction Sheet*
General Information	—	Industrial Automation Wiring and Grounding Guidelines	E115P
		Safety Guidelines for the Application, Installation and Maintenance of Solid State Control	E116P
Communication Interfaces	PSSCDM12A	Isysnet DeviceNet Adapter Module, Drop or Pass-through, with male and female M12 connectors	E101P, Installation Instructions PSS-UM001, User Manual
	PSSCDM18PA	Isysnet DeviceNet Adapter Module, Drop or Pass-through, with male and female M18 connectors	
	PSSCCNA	Isysnet Redundant ControlNet Adapter Module	E103P, Installation Instructions
	PSSCENA	Isysnet Ethernet/IP 10/100 Mbps Adapter Module	E104P, Installation Instructions
	PSSCPBA	Isysnet PROFIBUS Adapter Module	E102P, Installation Instructions
Valve Driver Module	PSSV32A, PSSVM32A	32 Point Valve Driver Module	E100P
DC I/O	PSSN16M12A	24VDC 16 Sink Input w/8 M12 connectors, 2 points per connector	E106P
	PSSN8M8A	24VDC 8 Sink Input w/8 M8 connectors	
	PSSN8M12A	24VDC 8 Sink Input w/4 M12 connectors, 2 points per connector	
	PSSN8M23A	24VDC 8 Sink Input w/1 M23 connector	
	PSSP8M8A	24VDC 8 Source Input w/8 M8 connectors	
	PSSP8M12A	24VDC 8 Source Input w/4 M12 connectors, 2 points per connector	
	PSSP8M23A	24VDC 8 Source Input w/1 M23 connectors	
	PSST16M23A	24VDC 16 Source Output w/1 M23	E107P
	PSST16D25A	24VDC 16 Source Output w/1 25-Pin, D-Sub	
	PSST16M12A	24VDC 16 Source Output w/8 M12	
	PSST8M8A	24VDC 8 Source Output w/1 M23	
	PSST8M12A	24VDC 8 Source Output w/4 M12	
	PSST8M23A	24VDC 8 Source Output w/8 M8	
Analog	PSSNACM12A	24VDC Analog Current Input w/ 2 M12 connectors	E110P
	PSSNAVM12A	24VDC 2 Analog Voltage Input w/ 2 M12 connectors	
	PSSTACM12A	24VDC Analog Current Output w/ 2 M12 connectors	E111P
	PSSTAVM12A	24VDC Analog Voltage Output w/ 2 M12 connectors	
Power Unit	PSSSE24A	24VDC Expansion Power Supply	E105P
Relay Output	PSSTR4M12A	4 From A isolated (normally open) electromechanical relays	E109P

* Publications are electronic versions only. To make copies of these publications, go to: **http://www.parker.com/pneu/Isysnet**

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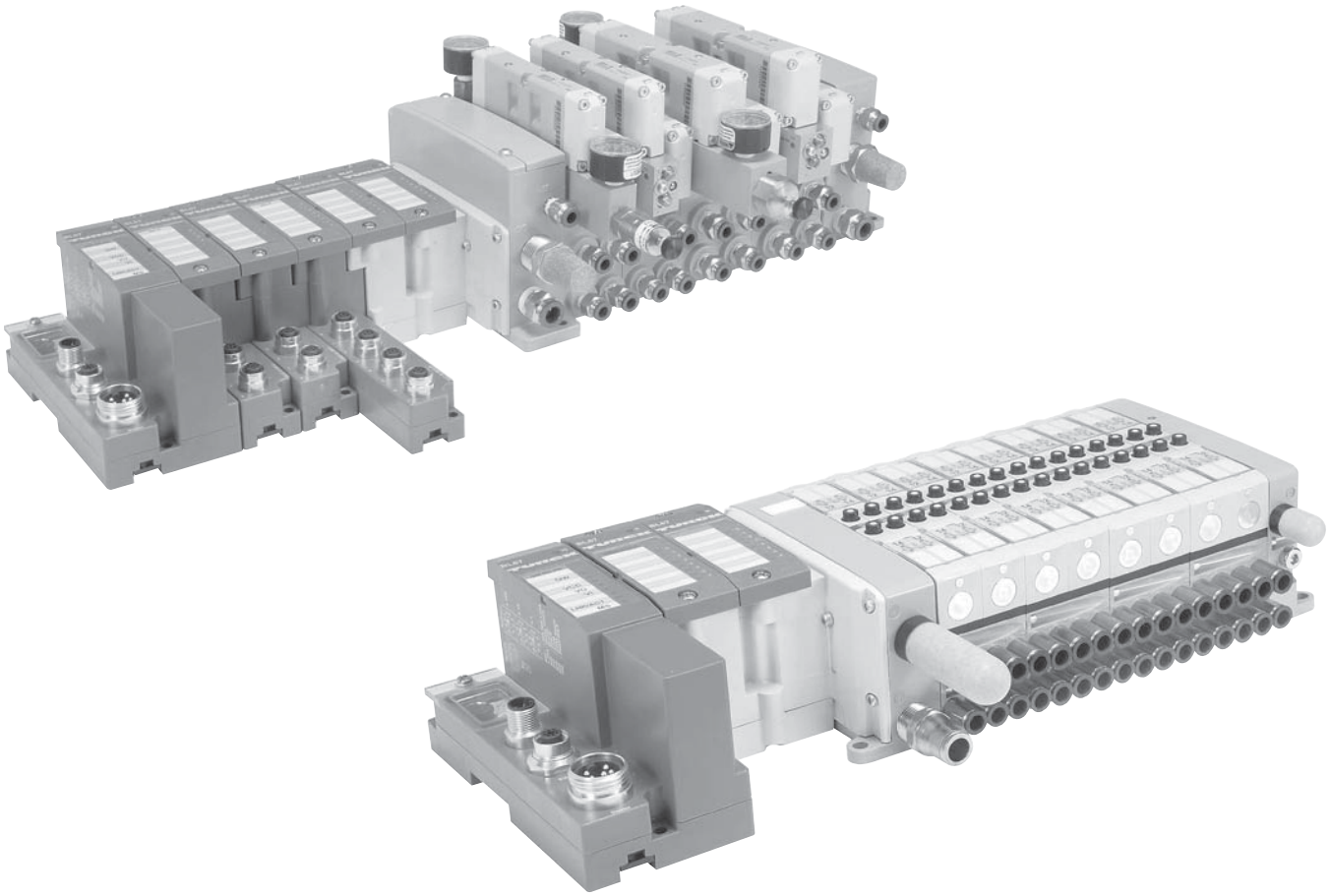
The Turck Fieldbus System

Isysnet has four major components:

- **Valve driver module** provide control for either 16 or 32 solenoids on a manifold
- **I/O modules** provide the field interface and system-interface circuitry
- **Communication modules** provide the network-interface circuitry
- **Power distribution module** provide 5 additional power inputs to the Turck system

Turck Features

- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED and electronic)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Channel-level short-circuit detection with electronic feedback
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, C-UL, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits

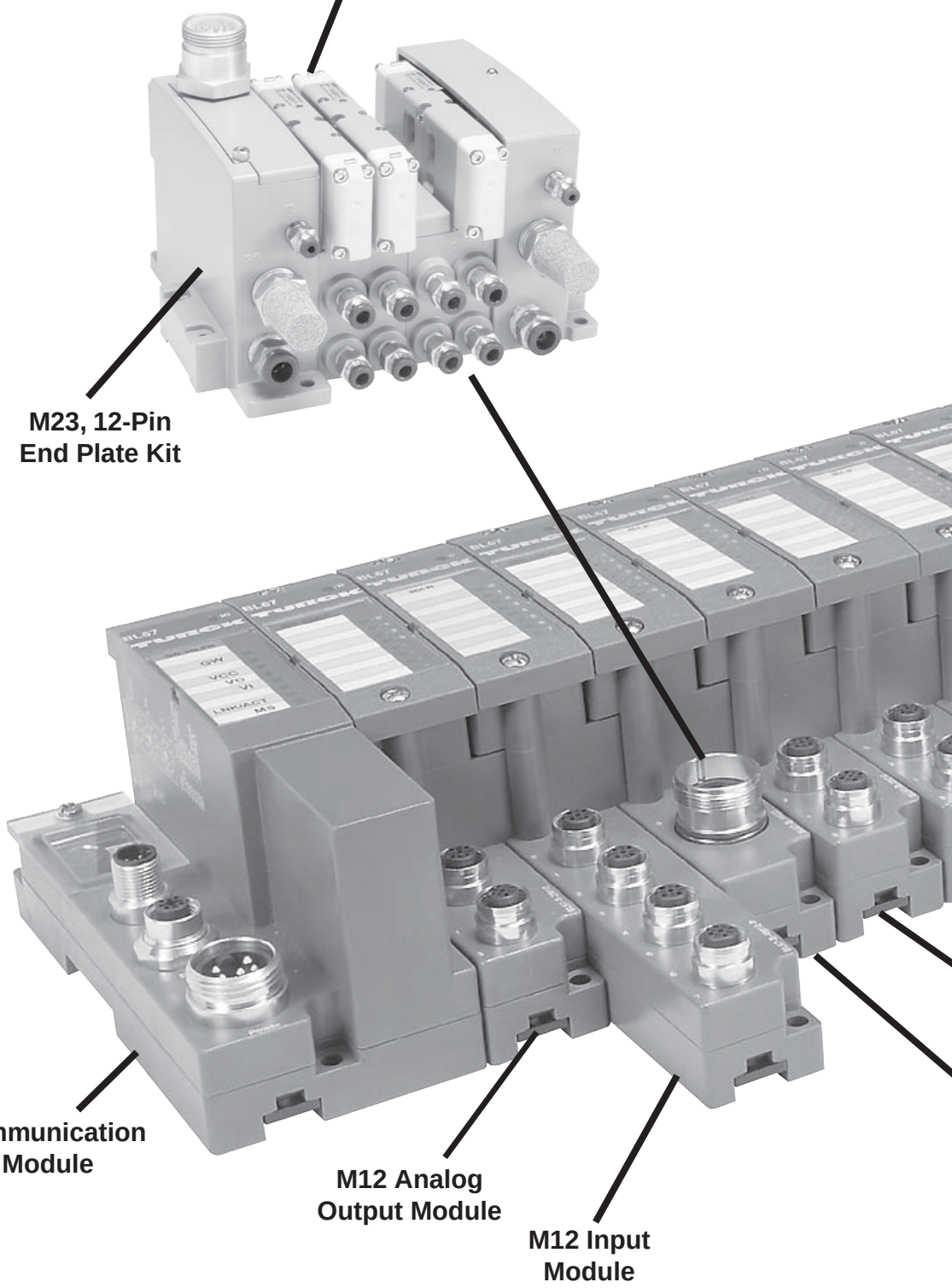


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Turck Fieldbus System

- A complete fieldbus communication offering for all Isys ISO and Isys Micro valves.
- CSA, C-US and CE certifications (as marked).

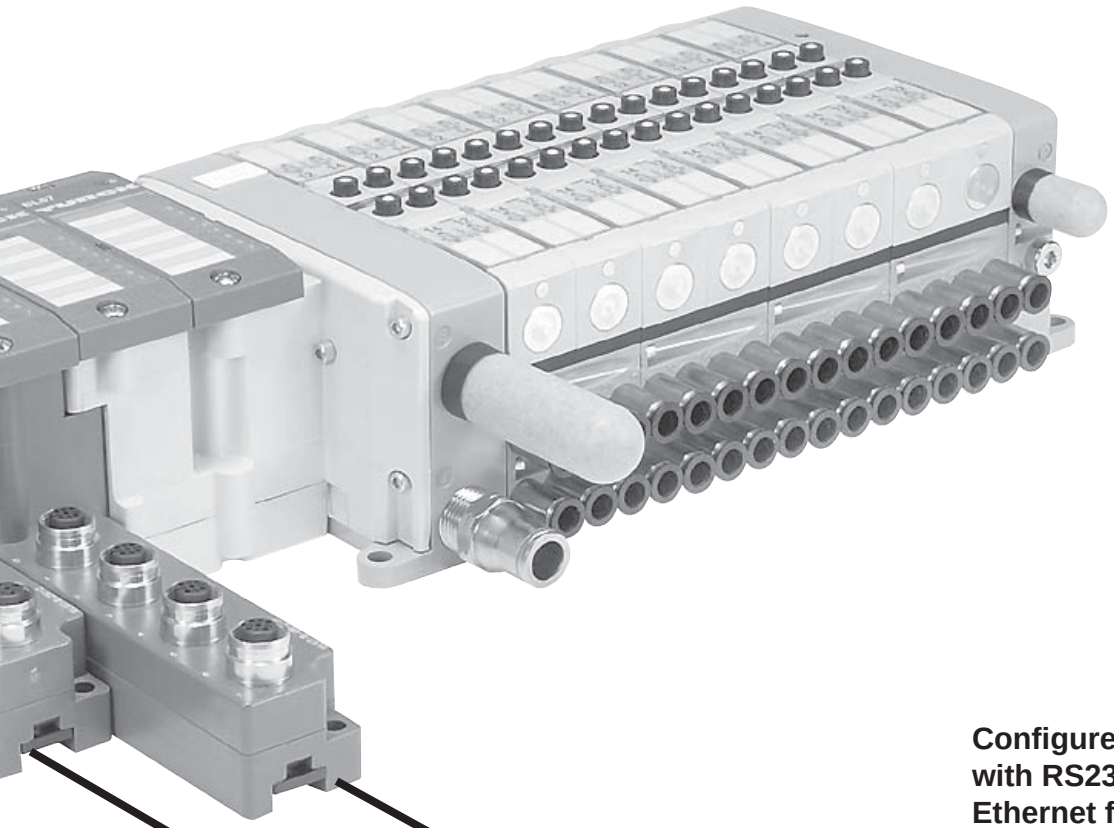
DeviceNet™
EtherNet/IP™
PROFIBUS PROCESS FIELD BUS
PROFINET INDUSTRIAL ETHERNET
Modbus/TCP™
CANopen



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I/O Configuration

- Centralized Turck Fieldbus system.
- Pneumatics and I/O are in close proximity with one another.
- M23, 12-Pin or 19-Pin output extension to an additional Isys valve island.
- I/O density per module = 4, 8 or 16.



M12 Output Module

M12 Analog Input Module

M23, 12-Pin Output Module

M12 Configurable Input or Output Module

Configure / Program any module with RS232, or directly through Ethernet for any module with an Ethernet physical layer.

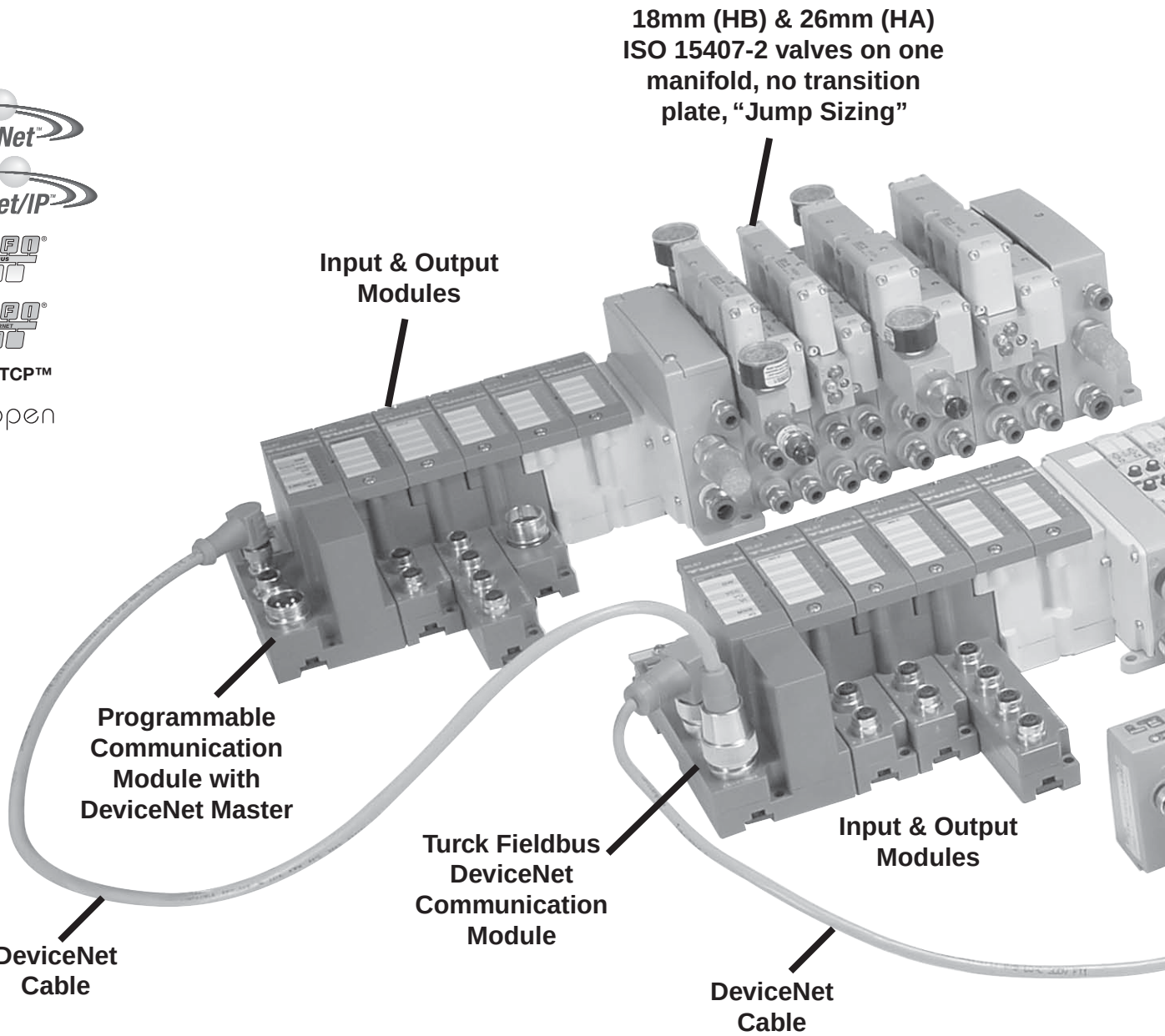


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Turck Fieldbus System

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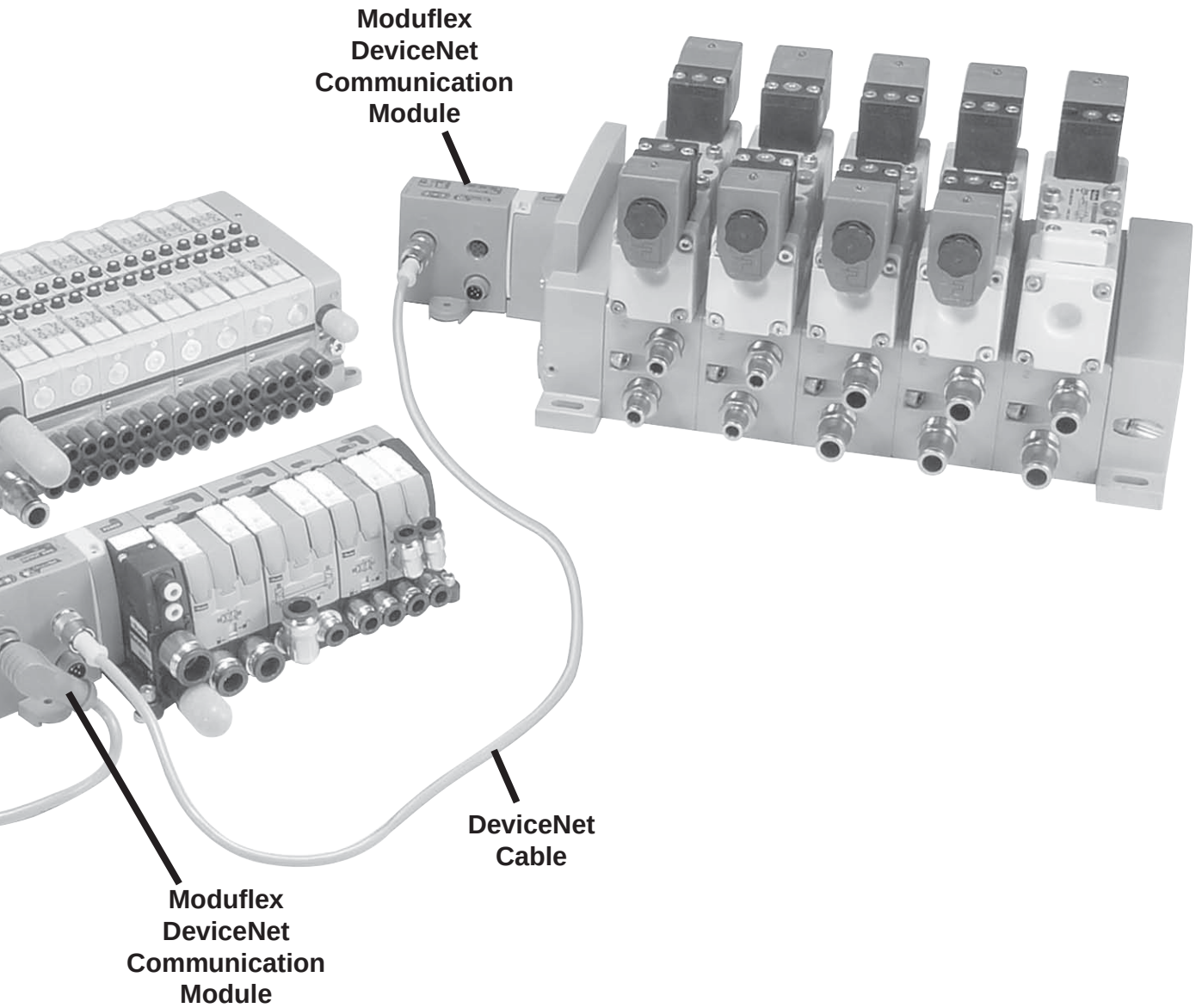
DeviceNet™
EtherNet/IP™
PROFIBUS PROCESS FIELD BUS
PROFINET INDUSTRIAL ETHERNET
Modbus/TCP™
CANopen



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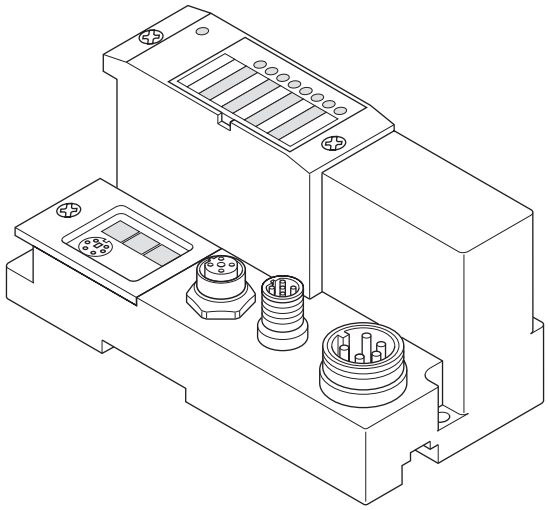
I/O Configuration

- Complete control of all I/O and valves with stand alone control.
- Additional I/O and valves connected over DeviceNet with BL Remote Subnet.
- BL Remote connection to Moduflex and Turck fieldbus DeviceNet equipped communication modules.
- I/O density per module = 4, 8 or 16.



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Communications Module

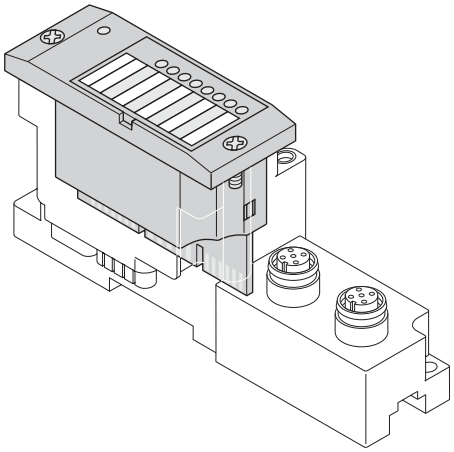


BL67 communication modules are the heart of a BL67 station. They are designed to connect the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen, Ethernet).

All BL67 electronic modules communicate over the internal module bus with the communication modules. The communication module structures the data and sends them clustered via fieldbus nodes to the higher control system.

This way all I/O modules can be configured independently of the fieldbus system.

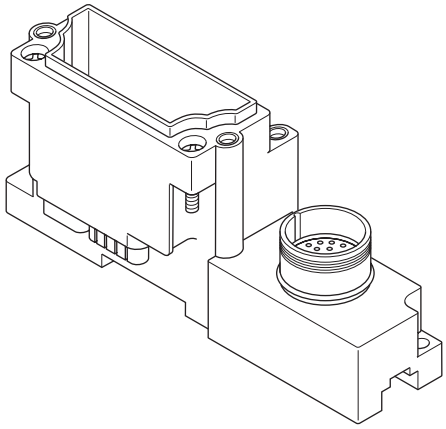
Electronic Module



BL67 electronic modules are inserted into the passive base modules from above and then simply affixed with two screws. Maintenance is extremely simplified due to the separation of connection level and module electronics.

Moreover, flexibility is enhanced because the base modules provide different types of connectors. Voltage supply for the electronic modules is either provided via the communication modules or a Power Extender module. Power Extender modules can be used to create galvanically isolated potential groups.

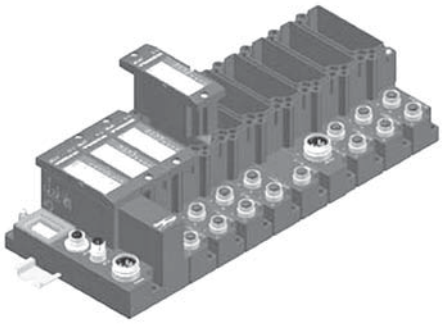
Base Module



BL67 base modules are aligned one by one to the right of the communication module and are tightened each with two screws, either with the communication modules or with the previous module. A DIN rail is not required. This way a compact and stable unit is created which can be mounted directly on the machine.

The base modules serve for connection of the field devices an are available with different connection types (M8, M12, M23 and 7/8).

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A BL67 system can be extended to a total length of 1 m, comprising of a communication module for PROFIBUS-DP, DeviceNet™/ CANopen or Ethernet and a maximum of 32 modules.

Maximum System Extension PROFIBUS-DP, DeviceNet™ , CANopen

	PROFIBUS		DeviceNet		CANopen	
Module type	**Number of chan.**	**Number of mod.**	**Number of chan.**	**Number of mod.**	**Number of chan.**	**Number of mod.**
Digital inputs, 4 DI	128	32	128	32	128	32
Digital inputs, 8 DI	256	32	256	32	256	32
Digital outputs, 4 DO	128	32	128	32	128	32
Digital outputs, 8 DO	256	32	256	32	256	32
Digital outputs, 16 DO	512	32	512	32	512	32
Analog inputs, 2AI	64	32	64	32	64	32
Analog inputs, 4AI	112	28	124	31	124	31
Analog inputs, 2 AI-PT	56	28	64	32	64	32
Analog inputs, 2 AI-TC	64	32	64	32	64	32
Analog outputs, 2 AO-I	38	19	64	32	64	32
Analog outputs, 2 AO-V	38	19	50	25	50	25

System supply: The power supply for the BL67 system is either derived separately for PROFIBUSDP and Ethernet communication modules or directly from the DeviceNet™ / CANopen cable for the DeviceNet™ / CANopen communication module.

Power Extender modules can be inserted anywhere in the BL67 station. They provide isolated field voltage for the I/O modules mounted to their right.

Thus Power Extender modules can also be used to create different potential groups.

Maximum System Extension EtherNet Based Protocols

	ModbusTCP		EtherNet/IP		PROFIBUS	
Module type	**Number of chan.**	**Number of mod.**	**Number of chan.**	**Number of mod.**	**Number of chan.**	**Number of mod.**
Digital inputs, 4 DI	128	32	128	32	128	32
Digital inputs, 8 DI	256	32	256	32	256	32
Digital outputs, 4 DO	128	32	128	32	128	32
Digital outputs, 8 DO	256	32	256	32	256	32
Digital outputs, 16 DO	512	32	512	32	512	32
Analog inputs, 2AI	64	32	64	32	64	32
Analog inputs, 4AI	128	32	128	32	128	32
Analog inputs, 2 AI-PT	64	32	64	32	64	32
Analog inputs, 2 AI-TC	64	32	64	32	64	32
Analog outputs, 2 AO-I	64	32	64	32	64	32
Analog outputs, 2 AO-V	50	25	50	25	50	25

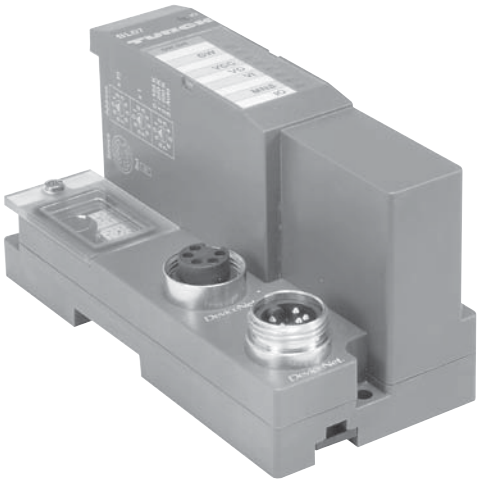
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BL67-GW-DN

DeviceNet Communication Module with Power over the Network

BL67-GW-CO-T

CANopen Communication Module with Power over the Network



7/8 Mini bus In wiring,
view into male connector



1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

7/8 Mini bus out wiring,
view into female connector



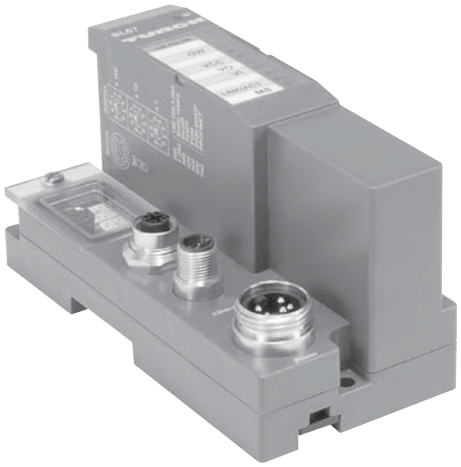
1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

Turck Fieldbus System with up to 256 inputs, outputs, and 32 solenoids per Isys Micro or Isys ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. DeviceNet communication speeds selectable between 120, 250, 500 kbps, and CANopen communication speeds are selectable between 10 kbps up to 1 Mbps. Addressing for either module can be selected via rotary switches or set through software.

With the Power over the Network feature, it is only necessary to connect one cable to the communication module. For networks requiring additional power, a Bus Power Tee can be installed to combine separate network and power feeds into the communication module. See the Cables and Cordsets section for additional information.

BL67-GW-CO

CANopen Communication Module



M12 A-code bus out Wiring,
view into female connector



1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

M12 A-code bus In Wiring,
view into male connector



1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

7/8 Mini Power in wiring,
view into male connector



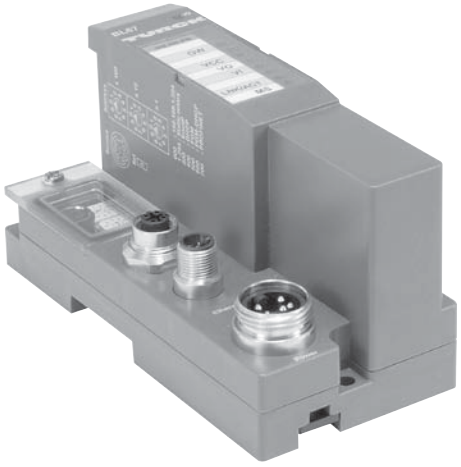
1 = GND
2 = GND
3 = PE
4 = V_i
5 = V_o

Turck Fieldbus System with up to 256 inputs, outputs, and 32 solenoids per Isys Micro or Isys ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. CANopen communication speeds are selectable between 10 kbps up to 1 Mbps, and addressing can be selected via rotary switches or set through software.

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BL67-GW-DPV1

Profibus Communication Module



M12 B-code bus out Wiring,
view into female connector



1 = 5 VDC
2 = GN (Bus A)
3 = GND
4 = RD (Bus B)
5 = Shield

M12 B-code bus In Wiring,
view into male connector



1 = n.c.
2 = GN (Bus A)
3 = n.c.
4 = RD (Bus B)
5 = Shield

7/8 Mini Power in wiring,
view into male connector



1 = GND
2 = GND
3 = PE
4 = V_I
5 = V_O

Turck Fieldbus System with up to 256 inputs, outputs, and 32 solenoids per Isys Micro or Isys ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. Profibus communication speeds are selectable between 9.6 kbps up to 12 Mbps, and addressing can be selected via rotary switches or set through software.

BL67-GW-EN

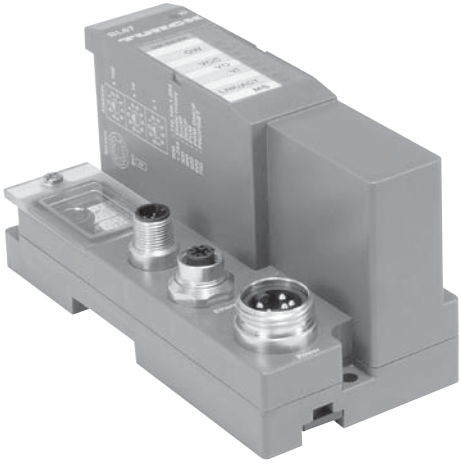
Modbus / TCP Communication Module

BL67-GW-EN-IP

Ethernet / IP Communication Module

BL67-GW-EN-PN

Profinet Communication Module



M12 D-code
Ethernet in Wiring,
view into female connector



1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

7/8 Mini Power in wiring,
view into male connector



1 = GND
2 = GND
3 = PE
4 = V_I
5 = V_O

Turck Fieldbus System with up to 256 inputs, outputs, and 32 solenoids per Isys Micro or Isys ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. Communication speeds of 10/100 Mbps, and addressing can be selected via rotary switches, BOOTP, DHCP, or through software.

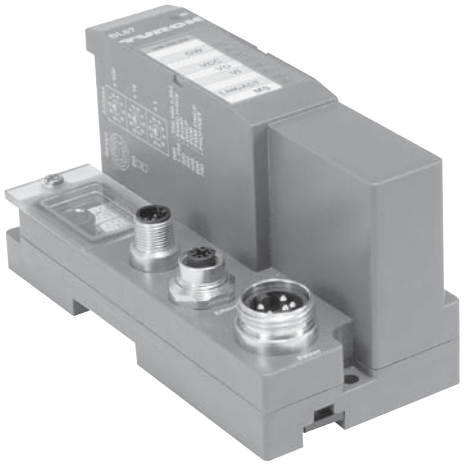
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BL67-GW-EN-DN

Modbus / TCP Communication Module with DeviceNet Subnet

BL67-GW-EN-IP-DN

Ethernet / IP Communication Module with DeviceNet Subnet



DeviceNet OUT



1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

M12 D-code
Ethernet in Wiring,
view into female connector



1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

7/8 Mini Power in wiring,
view into male connector



1 = GND
2 = GND
3 = PE
4 = V_i
5 = V_o

With BL Remote DeviceNet Subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control. BL Remote DeviceNet Subnet is independent of the main fieldbus network, and is not visible to the master PLC.

BL67-PG-DP

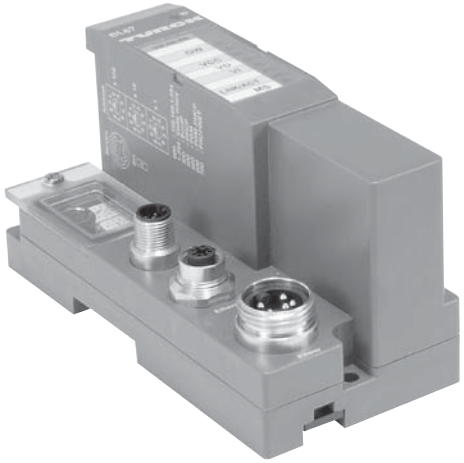
Profibus Programmable Communication Module

BL67-PG-EN

Modbus / TCP Programmable Communication Module

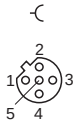
BL67-PG-EN-IP

Ethernet / IP Programmable Communication Module



Profibus Wiring

M12 B-code bus out Wiring,
view into female connector



1 = 5 VDC
2 = GN (Bus A)
3 = GND
4 = RD (Bus B)
5 = Shield

M12 B-code bus in Wiring,
view into female connector



1 = n.c.
2 = GN (Bus A)
3 = n.c.
4 = RD (Bus B)
5 = Shield

Ethernet Wiring

M12 D-code
Ethernet in Wiring,
view into female connector



1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

7/8 Mini Power in wiring,
view into male connector
Common to modules



1 = GND
2 = GND
3 = PE
4 = V_i
5 = V_o

Communication modules are equipped with a built in standalone controller which is programmed according to IEC61131-3 with CoDeSys. Each module has 512KB Program memory with 32 bit RISC processor, and can run 1000 instructions in less than 1 ms. These fieldbus equipped modules are optimized to interface with PLC's with fieldbus capability or act as standalone controllers that need to interface with other fieldbus equipped devices.

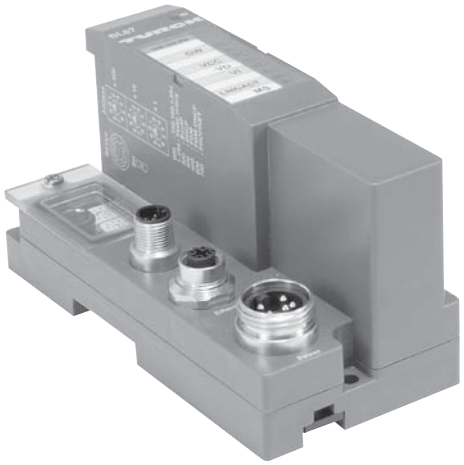
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BL67-PG-EN-DN

Modbus / TCP Programmable Communication Module with DeviceNet Subnet

BL67-PG-EN-IP-DN

Ethernet / IP Programmable Communication Module with DeviceNet Subnet



DeviceNet OUT



1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

M12 D-code
Ethernet in Wiring,
view into female connector



1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

7/8 Mini Power in wiring,
view into male connector



1 = GND
2 = GND
3 = PE
4 = V_i
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Communication modules are equipped with a built in standalone controller which is programmed according to IEC61131-3 with CoDeSys. Each module has 512KB Program memory with 32 bit RISC processor, and can run 1000 instructions in less than 1 ms. These fieldbus equipped modules are optimized to interface with PLC's with fieldbus capability or act as standalone controllers that need to interface with other fieldbus equipped devices.

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	Base Modules												
	BL67-B-4M8	BL67-B-8M8	BL67-B-1M12	BL67-B-1M12-8	BL67-B-2M12	BL67-B-2M12-P	BL67-B-4M12	BL67-B-4M12-P	BL67-B-1M23	BL67-B-1M23-19	BL67-B-1RSM	BL67-B-1RSM-4	BL67-1RSM-VO
Power Extender Modules													
BL67-PF-24VDC											✔	✔	✔
Digital Input Modules													
BL67-4DI-P	✔				✔	✔	✔		✔				
BL67-8DI-P		✔					✔	✔	✔				
BL67-4DI-PD	✔				✔	✔	✔		✔				
BL67-8DI-PD		✔					✔	✔	✔				
BL67-4DI-N	✔				✔	✔	✔		✔				
BL67-8DI-N		✔					✔	✔	✔				
Digital Output Modules													
BL67-4DO-0.5A-P	✔				✔	✔	✔		✔				
BL67-4DO-2A-P	✔				✔	✔	✔		✔				
BL67-8DO-0.5A-P		✔					✔	✔	✔				
BL67-16DO-0.1A-P										✔			
BL67-4DO-2A-N	✔				✔	✔	✔		✔				
BL67-8DO-0.5A-N		✔					✔	✔	✔				
Relay Output Modules													
BL67-8DO-R-NO								✔					
Digital Input / Output Modules													
BL67-4DI4DO-PD		✔					✔	✔	✔				
Configurable Digital Input / Output Modules													
BL67-8XSG-PD		✔					✔	✔	✔				
Analog Input Modules													
BL67-2AI-I					✔								
BL67-2AI-V					✔								
BL67-4AI-V/I							✔						
BL67-2AI-PT					✔								
BL67-2AI-TC					✔								
Analog Output Modules													
BL67-2AO-I					✔								
BL67-2AO-V					✔								
Technology Modules													
BL67-1RS232			✔	✔					✔				
BL67-1RS485/422			✔	✔					✔				
BL67-1SSI				✔					✔				
BL67-1CNT/ENC				✔					✔				
BL67-1CVI			✔										
***BL Ident*® RFID Modules**													
BL67-2RFID-A					✔								
BL67-2RFID-C					✔								

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System Supply via the Module Bus

The number of BL67 modules that can be powered by the communication module, depends on the nominal current draw of all the modules in the system. The total bus power current consumption of the installed BL67 modules may not exceed 1.5 A. The total field power current for inputs may not exceed 4 A, and the total field power for outputs may not exceed 8 A for DeviceNet and CANopen with power over the network, or 10A for all other communication modules.

When using the software PACTware, the menu item <Station - Verify> will automatically generate an error message if the system supply via the module bus is not reliably ensured.

Nominal Current Consumption

The following table shows the nominal current consumption of the various BL67 modules:

Modules	Bus Power Current (mA)	Field Power for Inputs[1] (mA)	Field Power for Outputs (mA)
PROFIBUS-DP Communication Module	0		150
DeviceNet™ Communication Module	0		150
CANopen Communication Module	0		150
Ethernet Communication Module	0		150
Valve Driver with 16 Outputs	30		< 109 mA (Plus Load Current)
Valve Driver with 32 Outputs	60		< 218 mA (Plus Load Current)
BL67-PF-24VDC	30		9
BL67-4DI-P	30	< 49 mA	
BL67-4DI-N	30	< 10 mA	
BL67-4DI-PD	30	< 109 mA	
BL67-8DI-P	30	< 49 mA	
BL67-8DI-N	30	< 10 mA	
BL67-8-DI-PD	30	< 109 mA	
BL67-4DO-0.5A-P	30		< 109 mA (Plus Load Current)
BL67-4DO-2A-P	30		< 109 mA (Plus Load Current)
BL67-4DO-2A-N	30		< 109 mA (Plus Load Current)
BL67-8DO-0.5A-P	30		< 109 mA (Plus Load Current)
BL67-8DO-0.5A-N	30		< 109 mA (Plus Load Current)
BL67-16DO-0.1A-P	30		< 109 mA (Plus Load Current)
BL67-4DI4DO-PD	30		< 109 mA (Plus Load Current)
BL67-8XSG-PD	30		< 109 mA (Plus Load Current)
BL67-8DO-R-NO	30		< 109 mA (Plus Load Current)
BL67-2AI-V	35	< 22 mA	
BL67-2AI-I	35	< 22 mA	
BL67-4AI-I/V	35	< 22 mA	
BL67-2AI-TC	35	< 40 mA	
BL67-2AI-PT	45	< 58 mA	
BL67-2AO-I	40		< 62 mA
BL67-2AO-V	60		< 67 mA
BL67-1RS232	140	< 90 mA	
BL67-1RS485/422	60	< 42 mA	
BL67-1SSI	50	< 39 mA	
BL67-1CNT/ENC	30	< 109 mA	
BL67-1CVI	30	< 109 mA	

1) Is limited to 4 A by means of the integrated short-circuit protection.

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Digital Input Modules

I/O Modules	Voltage	Part Number
8 PNP Input Module	7 to 30 VDC	**BL67-8DI-P**
8 PNP Input Module, with Diagnostics	7 to 30 VDC	**BL67-8DI-PD**
8 NPN Input Module	24 VDC	**BL67-8DI-N**



Base Module	Part Number	
8 x M8, 3 Pole, Female	**BL67-B-8M8**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12-P**	
1 x M23, 12 Pole, Female	**BL67-B-1M23**	

I/O Modules	Voltage	Part Number
4 PNP Input Module	7 to 30 VDC	**BL67-4DI-P**
4 PNP Input Module, with Diagnostics	7 to 30 VDC	**BL67-4DI-PD**
4 NPN Input Module	24 VDC	**BL67-4DI-N**

Base Module	Part Number	
4 x M8, 3 Pole, Female	**BL67-B-4M8**	
2 x M12, 5 Pole, Female, A-code	**BL67-B-2M12**	
2 x M12, 5 Pole, Female, A-code	**BL67-B-2M12-P**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	
1 x M23, 12 Pole, Female	**BL67-B-1M23**	

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Digital Output Modules

I/O Modules	Output Current	Part Number
8 PNP Output Module	0.5 Amps per Channel	**BL67-8DO-0.5A-P**
8 NPN Output Module	0.5 Amps per Channel	**BL67-8DO-0.5A-N**



Base Module	Part Number	
8 x M8, 3 Pole, Female	**BL67-B-8M8**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12-P**	
1 x M23, 12 Pole, Female	**BL67-B-1M23**	

I/O Modules	Output Current	Part Number
4 PNP Output Module	0.5 Amps per Channel	**BL67-4DO-0.5A-P**
4 PNP Output Module	2 Amps per Channel	**BL67-4DO-2A-P**
4 PNP Output Module	4 Amps per Channel	**BL67-4DO-4A-P**
4 NPN Output Module	2 Amps per Channel	**BL67-4DO-2A-N**

Base Module	Part Number	
4 x M8, 3 Pole, Female	**BL67-B-4M8**	
2 x M12, 5 Pole, Female, A-code	**BL67-B-2M12**	
2 x M12, 5 Pole, Female, A-code	**BL67-B-2M12-P**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	
1 x M23, 12 Pole, Female	**BL67-B-1M23**	

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Digital Output Modules

I/O Modules	Output Current	Part Number
16 PNP Output Module	0.14 Amps per Channel	**BL67-16DO-0.1A-P**

Base Module	Part Number	
1 x M23, 19 Pole, Female	**BL67-B-1M23-19**	

Relay Output Modules

I/O Modules	Output Current	Part Number
8 Normally Open Relays	0.1 Amps per Channel	**BL67-8DO-R-NO**

Base Module	Part Number	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12-P**	

Combination Input / Output Modules

I/O Modules	Input Voltage & Output Current	Part Number
4 PNP Output 4 PNP Input Module, with Diagnostics	7 to 30 VDC 0.5 Amps	**BL67-4DI4DO-PD**
8 PNP Configurable Input or Output Module, with Diagnostics	7 to 30 VDC 0.5 Amps	**BL67-8XSG-PD**

Base Module	Part Number	
8 x M8, 3 Pole, Female	**BL67-B-8M8**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12-P**	

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Analog Input Modules

I/O Modules	Input Type	Part Number
4 Configurable Current or Voltage Analog Input Module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	**BL67-4AI-V/I**

Base Module	Part Number	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	

I/O Modules	Input Type	Part Number
2 Current Analog Input Module	4 to 20 mA or 0 to 20 mA	**BL67-2AI-I**
2 Voltage Analog Input Module	-10 to +10 VDC or 0 to +10 VDC	**BL67-2AI-V**
2 Temperature Analog Input Module	PT100, PT200, PT500, PT1000, Ni100, Ni1000	**BL67-2AI-PT**
2 Temperature Analog Input Module	Type B, E, J, K, N R, S, T	**BL67-2AI-TC**

Base Module	Part Number	
2 x M12, 5 Pole, Female, A-code	**BL67-B-2M12**	

Analog Output Modules

I/O Modules	Input Type	Part Number
4 Voltage Analog Output Module	-10 to +10 VDC or 0 to +10 VDC	**BL67-4AO-V**

Base Module	Part Number	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	

I/O Modules	Input Type	Part Number
2 Current Analog Output Module	4 to 20 mA or 0 to 20 mA	**BL67-2AO-I**
2 Voltage Analog Output Module	-10 to +10 VDC or 0 to +10 VDC	**BL67-2AO-V**

Base Module	Part Number	
2 x M12, 5 Pole, Female, A-code	**BL67-B-2M12**	

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Combination Analog Input / Output Modules

I/O Modules	Output Current	Part Number
4 Configurable Input and 4 Configurable Output Current or Voltage Analog Module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	**BL67-4AI4AO-V/I**

Base Module	Part Number	
8 x M8, 3 Pole, Female	**BL67-B-8M8**	
4 x M12, 5 Pole, Female, A-code	**BL67-B-4M12**	
2 x M12, 8 Pole, Female, A-code	**BL67-B-2M12-8-P**	

I/O Modules	Output Current	Part Number
2 Configurable Input and 2 Configurable Output Current or Voltage Analog Module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	**BL67-2AI2AO-V/I**

Base Module	Part Number	
8 x M8, 3 Pole, Female	**BL67-B-8M8**	
2 x M12, 8 Pole, Female, A-code	**BL67-B-2M12-8**	
2 x M12, 8 Pole, Female, A-code	**BL67-B-2M12-8-P**	

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Power Extender Module

Extender Module	Current Capacity	Part Number
24 VDC Field Power Module	10 Amps Input	**BL67-PF-24VDC**

Base Module	Part Number	
5 Pole Mini Connector to Supply Bus Power and Field Power	**BL67-B-1RSM**	
5 Pole Mini Connector to Field Power Only	**BL67-B-1RSM-VO**	
4 Pole Mini Connector to Supply Bus Power and Field Power	**BL67-B-1RSM-4**	

CANopen Subnet Module

Extender Module	Capacity	Part Number
1 CANopen Connection	64 Bits of Inputs or Outputs	**BL67-1CVI**

Base Module	Part Number	
1 x M12, 5 Pole, Female, A-code	**BL67-B-1M12**	

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Serial Interface Module

Extender Module	Capacity	Part Number
1 RS232 Serial Interface	300 to 115200 bps	**BL67-1RS232**
1 RS485 or 422 Serial Interface	300 to 115200 bps	**BL67-1RS485/422**

Base Module	Part Number	
1 x M12, 5 Pole, Female, A-code	**BL67-B-1M12**	
1 x M12, 8 Pole, Female, A-code	**BL67-B-1M12-8**	
1 x M23, 12 Pole, Female	**BL67-B-1M23**	

SSI and Counting Modules

Extender Module	Capacity	Part Number
1 SSI Sensor Interface	65 kbps up to 1 Mbps	**BL67-1SSI**
1 Counter Interface	Up to 250 kHz	**BL67-1CNT/ENC**

Base Module	Part Number	
1 x M12, 8 Pole, Female, A-code	**BL67-B-1M12-8**	
1 x M23, 12 Pole, Female	**BL67-B-1M23**	

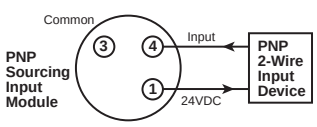
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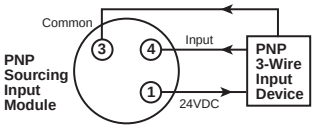
Digital PNP Input Modules

Digital DC Input Module	BL67-4DI-P	BL67-8DI-P	BL67-4DI-PD	BL67-8DI-PD
Number of Inputs	4	8	4	8
Sensor Requirement	PNP Sourcing		PNP Sourcing	
Voltage, On-State Input, Nom.	24 VDC		24 VDC	
Field Power for Inputs Current Consumption	49 mA		109 mA	
Bus Power Current Consumption	30 mA		30 mA	
Low Level Signal Voltage	<4.5 V		<4.5 V	
High Level Signal Voltage	7…30V		7…30V	
Low Level Signal Current	<1.5 mA		<1.5 mA	
High Level Signal Current	2.1…3.7 mA		2.1…3.7 mA	
Type of Diagnositcs	Group Diagnostics		Channel Diagnostics	
Short Circuit Protection	Group Protection		Channel Protection	
Input Delay	0.25 ms		0.25; 2.5 ms	

PNP (Sourcing)

PNP input modules provide sourcing capabilities. When the input field device is passing, current flows from the input device into the Turck input module.



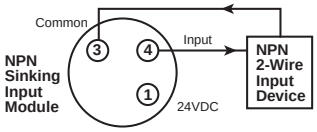


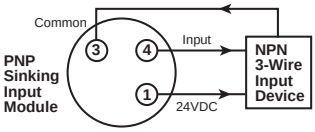
Digital NPN Input Modules

Digital DC Input Module	BL67-4DI-N	BL67-8DI-N
Number of Inputs	4	8
Sensor Requirement	NPN Sinking	
Voltage, On-State Input, Nom.	24 VDC	
Field Power for Inputs Current Consumption	10 mA	
Bus Power Current Consumption	30 mA	
Low Level Signal Voltage	>7 V	
High Level Signal Voltage	<5 V	
Low Level Signal Current	<2.5 mA	<1.2 mA
High Level Signal Current	>3 mA	>1.5 mA
Type of Diagnositcs	Group Diagnostics	
Short Circuit Protection	Group Protection	
Input Delay	0.25 ms	

NPN (Sinking)

NPN input modules provide sinking capabilities. When the input field device is passing, current out of the Turck input module into the field input device.





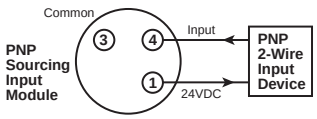
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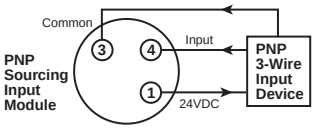
Digital PNP Output Modules

Digital DC Output Module	BL67-4DO-0.5A-P	BL67-8DO-0.5A-P	BL67-4DO-2A-P	BL67-16DO-0.1A-P
Number of Outputs	4	8	4	16
Sensor Requirement	PNP Sourcing			
Output Voltage	24 VDC			
Field Power for Outputs Current Consumption	109 mA (Plus load current)			
Bus Power Current Consumption	30 mA			
Output Current per Channel	0.5 A		2.0A	0.1 A
Output Delay	3 ms			
Load Type	Resistive, Inductive, Lamp Load			Resistive, Inductive
Load Resistance, Resistive	>48 Ohm		>12 Ohm	>250 Ohm
Load Resistance, Inductive	<1.2 H			
Lamp Load	< 3W		< 10W	
Switching Frequency, Resistive	<200 Hz			
Switching Frequency, Inductive	< 2 Hz			
Switching Frequency, Lamp Load	< 20 Hz			
Short-Circuit Protection	Group Protection			
Diagnostic Bits	4	8	4	16

PNP (Sourcing)

PNP input modules provide sourcing capabilities. When the input field device is passing, current flows from the input device into the Turck input module.



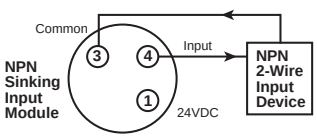


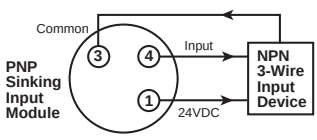
Digital NPN Output Modules

Digital DC Output Module	BL67-8DO-0.5A-N	BL67-4DO-2A-N
Number of Outputs	8	4
Sensor Requirement	NPN Sinking	
Output Voltage	24 VDC	
Field Power for Outputs Current Consumption	109 mA (Plus load current)	
Bus Power Current Consumption	30 mA	
Output Current per Channel	0.5 A	2.0 A
Output Delay	3 ms	
Load Type	Resistive, Inductive, Lamp Load	
Load Resistance, Resistive	>48 Ohm	
Load Resistance, Inductive	<1.2 H	
Lamp Load	< 3W	
Switching Frequency, Resistive	<200 Hz	
Switching Frequency, Inductive	< 2 Hz	
Switching Frequency, Lamp Load	< 20 Hz	
Short-Circuit Protection	Group Protection	
Diagnostic Bits	4	8

NPN (Sinking)

NPN input modules provide sinking capabilities. When the input field device is passing, current out of the Turck input module into the field input device.





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Relay Output Modules

Relay Output Module	BL67-8DO-R-NO
Number of Outputs	8
Output Type	Relay
Output Voltage	24 VDC
Field Power for Outputs Current Consumption	109 mA (Plus load current)
Bus Power Current Consumption	30 mA
Output Current per Channel	100 mA
Output Delay	3 ms
Load Type	Resistive, TTL logic
Switching Resistor	<31 Ohm
Switching Frequency, Resistive	<200 Hz
Short-Circuit Protection	None

Combination Digital Modules

Combination Input and Output Modules	BL67-4DI4DO-PD	BL-67-8XSG-PD
Number of Outputs	4	Configurable 0 to 8
Number of Inputs	4	Configurable 0 to 8
Total Channels	8	8
Sensor Requirement	PNP Sourcing	
Voltage, On-State Input, Nom.	24 VDC	
Output Voltage	24 VDC	
Field Power for Outputs Current Consumption	109 mA	
Bus Power Current Consumption	30 mA	
Input Low Level Signal Voltage	<4.5 V	
Input High Level Signal Voltage	7…30V	
Input Low Level Signal Current	<1.5 mA	
Input High Level Signal Current	2.1…3.7 mA	
Input Delay	0.25; 2.5 ms	
Output Current per Channel	0.5 A	
Output Delay	3 ms	
Load Type	Resistive, Inductive, Lamp Load	
Load Resistance, Resistive	>48 Ohm	
Load Resistance, Inductive	<1.2 H	
Lamp Load	< 3W	
Switching Frequency, Resistive	<200 Hz	
Switching Frequency, Inductive	< 2 Hz	
Switching Frequency, Lamp Load	< 20 Hz	
Short-Circuit Protection	Channel Protection	
Diagnostic Bits	8	12

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Analog Input Modules

Analog Input Module	BL67-2AI-I	BL67-2AI-V	BL67-4AI-V/I
Number of Inputs	2	2	4
Nominal Voltage	24 VDC		
Field Power for Inputs Current Consumption	22 mA		
Bus Power Current Consumption	35 mA		
Analog Input Type	0/4…20mA	-10/0…+10 VDC	0/4…20mA or -10/0…+10 VDC
Input Resistance	<0.125 kOhm	<98.5 kOhm	<0.125 kOhm or <98.5 kOhm
Maximum Limiting Frequency	50 Hz		20 Hz
Fault Limit @ 23 degree C	<0.2%		<0.3%
Repeatability	0.05%		
Temperature Coefficient (ppm/degree C of full scale)	<300	<150	<300
Resolution	16 Bit		
Measuring Principle	Sigma Delta		
Measured Value Display	16 Bit Signed Integer, 12 Bit Full Range Left Justified		
Diagnostic Bits	16		32

Temperature Inputs

Analog Input Module	BL67-2AI-PT	BL67-2AI-TC
Number of Inputs	2	2
Nominal Voltage	24 VDC	
Field Power for Inputs Current Consumption	58 mA	40 mA
Bus Power Current Consumption	45 mA	35 mA
Temperature Input Type	PT100, PT200, PT500, PT1000, Ni100, Ni1000	B, E, J, K, N, R, S, T
Voltage Resolution	n/a	+/- 50mV; <2uV
Fault Limit @ 23 degree C	<0.2%	
Repeatability	0.05%	
Temperature Coefficient (ppm/degree C of full scale)	<300	
Resolution	16 Bit	
Measured Value Display	16 Bit Signed Integer, 12 Bit Full Range Left Justified	
Diagnostic Bits	16	

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Analog Input Modules

Analog Input Module	BL67-2AO-I	BL67-2AO-V
Number of Inputs	2	2
Nominal Voltage	24 VDC	
Field Power for Outputs Current Consumption	62 mA	67 mA
Bus Power Current Consumption	40 mA	60 mA
Analog Output Type	0/4…20mA	-10/0…+10 VDC
Output Current per Channel	n/a	250 mA
Load Resistance, Resistive	<0.45 kOhm	> 1kOhm
Load Resistance, Inductive	<1 mH	n/a
Load Resistance, Capacitive	n/a	> 1 uF
Transmission Frequency	<200 Hz	<100 Hz
Fault Limit @ 23 degree C	<0.2%	
Repeatability	0.05%	
Temperature Coefficient (ppm/degree C of full scale)	<150	<300
Resolution	16 Bit	
Measured Value Display	16 Bit Signed Integer, 12 Bit Full Range Left Justified	

Combination Analog Modules

Analog Combination Module	BL67-4AI4AO-V/I	BL67-2AI2AO-V/I
Number of Analog Inputs	4	2
Number of Analog Outputs	4	2
Nominal Voltage	24 VDC	
Field Power for Outputs Current Consumption	67 mA	
Bus Power Current Consumption	60 mA	
Analog Input Type	0/4…20mA or -10/0…+10 VDC	
Input Resistance	0.065 or 225 kOhm	
Maximum Limiting Frequency	20 Hz	
Fault Limit @ 23 degree C	<0.3%	
Repeatability	0.05%	
Temperature Coefficient (ppm/degree C of full scale)	<300	
Resolution	16 Bit	
Measuring Principle	Sigma Delta	
Measured Value Display	16 Bit Signed Integer 12 Bit Full Range Left Justified	
Analog Output Type	-10/0…+10 VDC	
Output Current per Channel	250 mA	
Load Resistance, Resistive	>1 kOhm	
Load Resistance, Capacitive	<1 uF	
Transmission Frequency	<100 Hz	
Fault Limit @ 23 degree C	<0.3%	
Repeatability	0.05%	
Temperature Coefficient (ppm/degree C of full scale)	<300	
Resolution	16 Bit	
Measured Value Display	16 Bit Signed Integer, 12 Bit Full Range Left Justified	
Diagnostic Bits	8	4

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Power Extender Module

Power Extender Module	BL67-PF-24VDC
Nominal Voltage	24 VDC
Field Power for Outputs Current Consumption	9 mA
Bus Power Current Consumption	30 mA
Supply for Field Power for Inputs Current	4.0 A
Supply for Field Power for Outputs Current	10 A
Diagnostic Bits	3

RS232 Interface

RS232 Interface	BL67-1RS232
Number of Channels	1
Field Power for Inputs Current Consumption	90 mA
Bus Power Current Consumption	140 mA
Transmission Level Active (U RS1)	-15 to -3 VDC
Transmission Level Inactive (URSO)	3 to 15 VDC
Common-mode Range (UGL)	-7 to 12 VDC
Transmission Signals	RxD, TxD, RTS, CTS
Data Buffer Received	128 Byte
Send Data Buffer	64 Byte
Connection Type	Full Duplex
Transmission Rate	300 to 115200 bps
Parameter	Transmission Rate, Diagnostics, Data Bits, Stop Bits, XON - Character, XOFF - Character, Parity, Flow Control
Cable Length	15 m
Diagnostic Bits	8

RS485 / 422 Interface

RS485/422 Interface	BL67-1RS485/422
Number of Channels	1
Field Power for Inputs Current Consumption	42 mA
Bus Power Current Consumption	60 mA
Transmission Signals	RxD, TxD
Connection Type	2 Wire Half Duplex or 4 Wire Full Duplex
Transmission Rate	300 to 115200 bps
Parameter	RS485/422, Transmission Rate, Diagnostics, Data Bits, Stop Bits, XON - Character, XOFF - Character, Parity, Flow Control
Cable Length	1000 m
Line Impedance	120 Ohm
Bus Termination	External
Diagnostic Bits	8

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SSI Sensor Interface

SSI Sensor Interface	BL67-1SSI
Number of Channels	1
Field Power for Inputs Current Consumption	39 mA
Bus Power Current Consumption	50 mA
Transmission Signals	CL, D
Connection Type	4 Wire Full Duplex (Clock Output/Signal Input)
Transmission Rate	62.5 kbps up to 1 Mbps
Parameter	Transmission Rate, Diagnostics, Data Format (Binary / GRAY coded), Data Fram Bits (1-32), Number of Invalid Bits (LSB: 0-15, MSB 0-7)
Cable Length	30 m
Diagnostic Bits	8

Counting Module

Counting Module	BL67-1CNT/ENC
Number of Channels	1
Field Power for Inputs Current Consumption	109 mA
Bus Power Current Consumption	30 mA
Input Type	PNP
Output Type	PNP
Output Current per Channel	0.5 A
Output Delay	2 ms
Load Type	Resistive
Frequency Measurement	Up to 250 kHz
Speed Measurement	Factor Configurable
Period Duration Measurement	2 usec
Upper Count Limit	0x80000000 up to 0xFFFFFFFF
Lower Count Limit	0x80000000 up to 0xFFFFFFFF
Short Circuit Protection	Channel Protection

CANopen Expansion Module

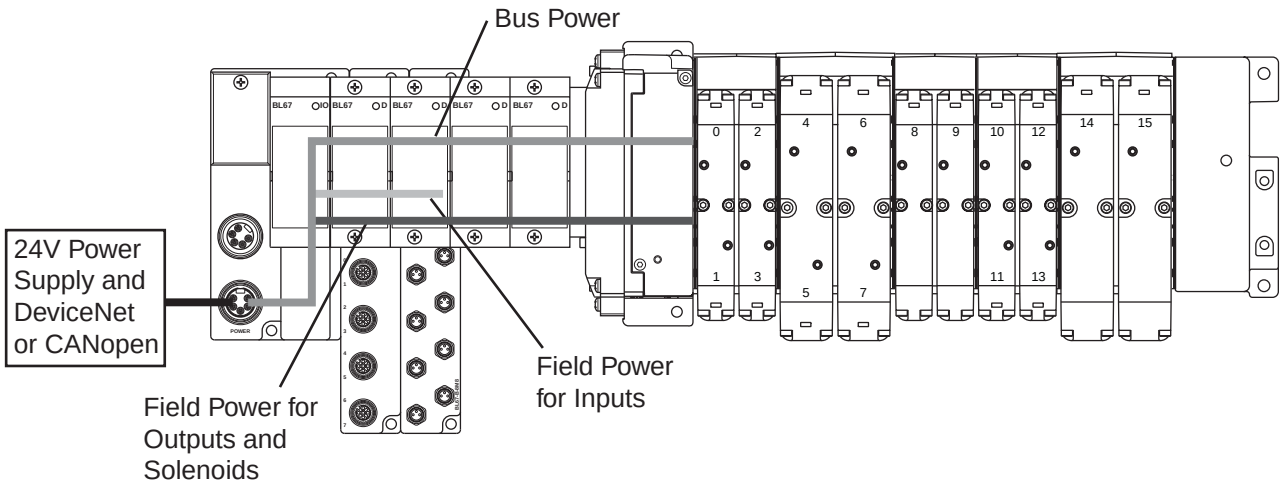
CANopen Expansion Module	BL67-1CVI
Number of Channels	1
Field Power for Inputs Current Consumption	109 mA
Bus Power Current Consumption	30 mA
Transmission Signals	CAN High, CAN Low
Connection Type	CANopen
Transmission Speed	10 kbps up to 1 Mbps
Parameter	Transmission Rate, Diagnostics, Bus Termination, Range of I/O Data
Bus Termination	Internal
Diagnostic Bits	48
Max Number of CANopen Nodes	8
Max Processing Data per Module	8 Byte
Max Data Per Node	4 Byte

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Power Distribution Options for Turck Fieldbus

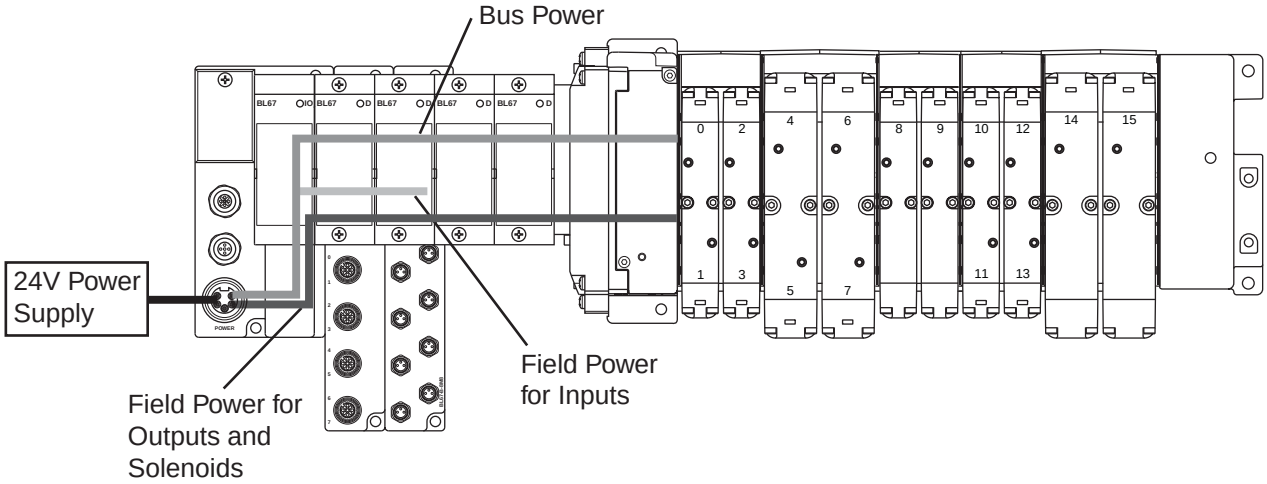
Turck Communication and I/O Modules - DeviceNet and CANopen, Power over Network

The 24VDC power supply pins from the DeviceNet or CANopen network connection on the communication module provides a single power circuit. This circuit provides 1.5 A bus power, 4 A field power for inputs and 8A field power for outputs.



Turck Communication and I/O Modules - Ethernet/IP, Modbus/TCP, Profinet, Profibus, and CANopen

An auxiliary 24VDC power supply from the communication module provides power across two separate circuits. The first circuit provides 1.5 A bus power and 4 A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs.

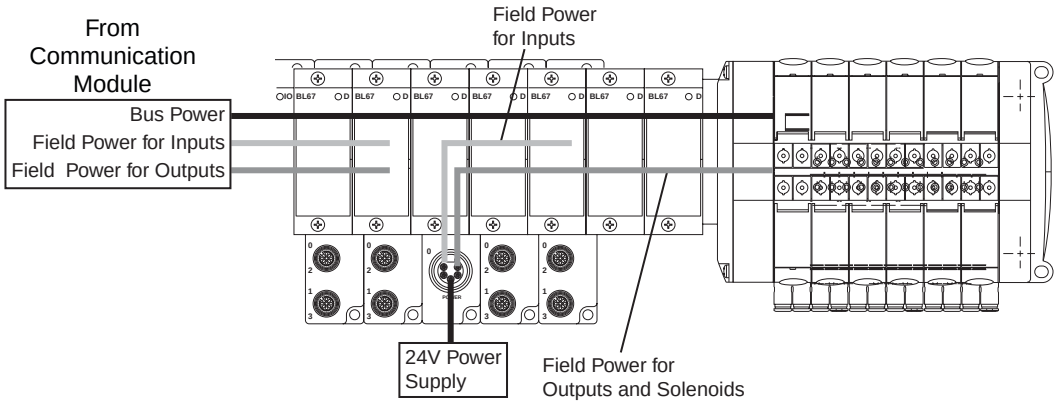


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Power Distribution Options for Turck Fieldbus

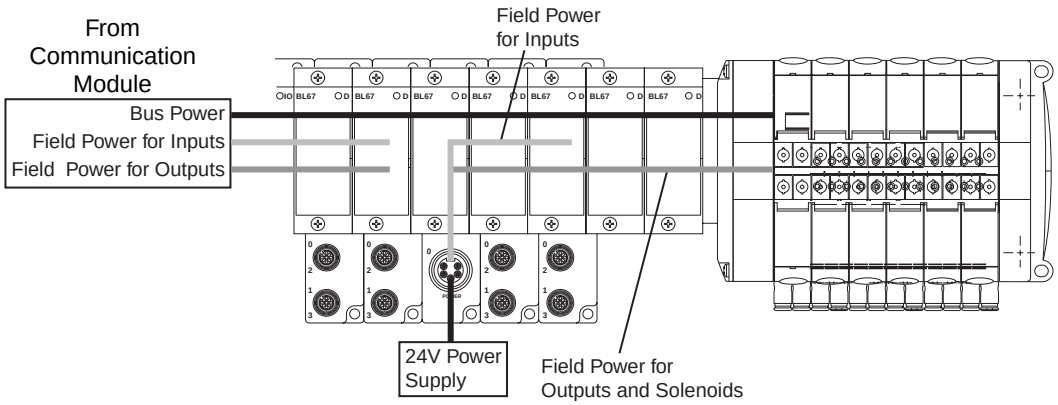
24VDC Power Extender Module (BL67-PF-24VDC) with base module BL67-B-1RSM

This configuration creates an auxiliary 24VDC power supply and provides power across two separate circuits, regardless of the communication module used. The first circuit provides 4 A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5 A bus power is uninterrupted, and is still supplied from the communication module.



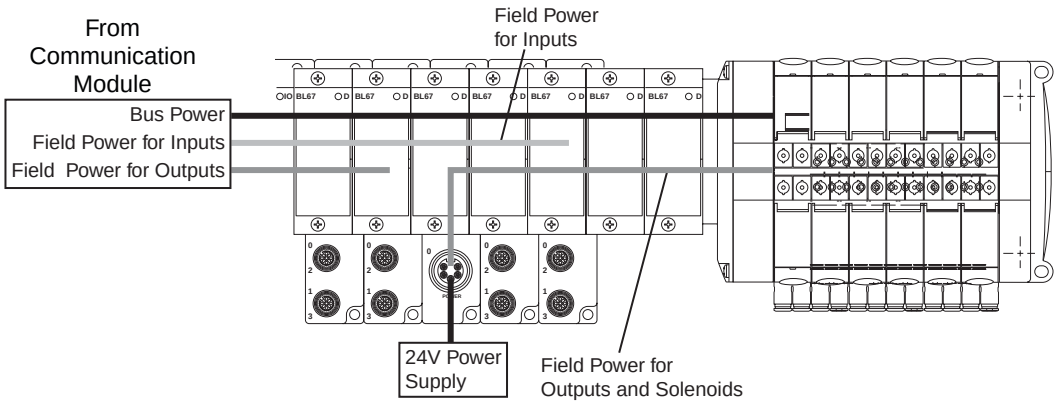
24VDC Power Extender Module (BL67-PF-24VDC) with base module BL67-B-1RSM-4

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 4 A field power for inputs and 10A field power for outputs. The 1.5 A bus power is uninterrupted, and is still supplied from the communication module.



24VDC Power Extender Module (BL67-PF-24VDC) with base module BL67-B-1RSM-VO

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5 A bus power and 4 A field power for inputs are uninterrupted, and are still supplied from the communication module.



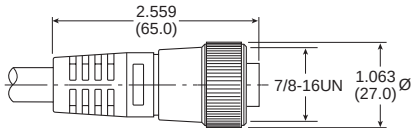
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7/8" Mini Power Cables

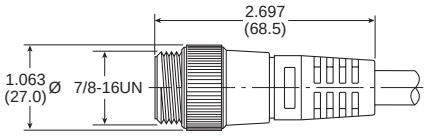
Part Number	Description
RKM 46-xM/S1587	4 Pin Female to Flying Lead Cable, TPE
RKM 56-xM/S1587	5 Pin Female to Flying Lead Cable, TPE
RSM RKM 46-x/S1587	4 Pin Male to Female Cable, TPE
RSM RKM 56-x/S1587	5 Pin Male to Female Cable, TPE
WKM 46-xM/S1587	4 Pin Right Angle Female to Flying Lead Cable, TPE
WKM 56-xM/S1587	5 Pin Right Angle Female to Flying Lead Cable, TPE

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

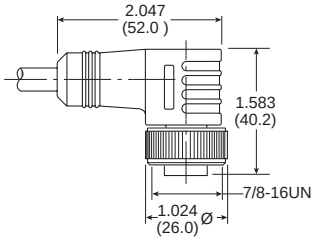
RKM Female Socket

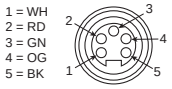


RSM Male Pins

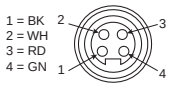


WKM Female Socket





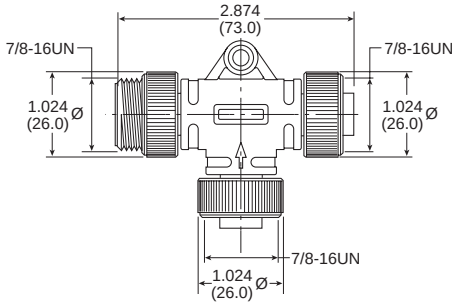
5-Pin Female
Wiring Diagram

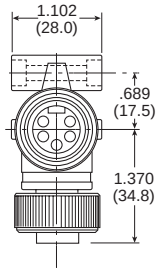


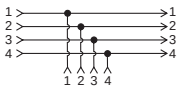
4-Pin Female
Wiring Diagram

Power Tee

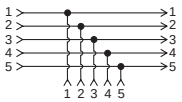
Part Number	Description
RSM-2RKM 40	4 Pin Male to 2 Female Sockets
RSM-2RKM 50	5 Pin Male to 2 Female Sockets







RSM-2RKM 40



RSM-2RKM 50

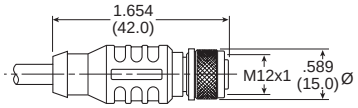
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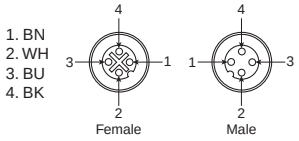
M12 A-code Cables

Part Number	Description
RKC 4.4T-*	4 Pin Female to Flying Lead Cable, PVC
RSC 4.4T-*	4 Pin Male to Flying Lead Cable, PVC
RKC 4.4T-*-RSC 4.4T	4 Pin Male to Female Cable, PVC
RKC 4.5T-*/S1587	5 Pin Female to Flying Lead Cable, TPE
RSC 4.5T-*/S1587	5 Pin Male to Flying Lead Cable, TPE
RKC 4.5T-*-RSC 4.5T/S1587	5 Pin Male to Female Cable, TPE

Where * = 1, 2, 3, 4 meter standard lengths

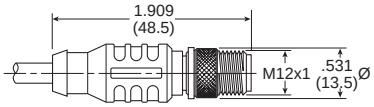
RKC Female Sockets

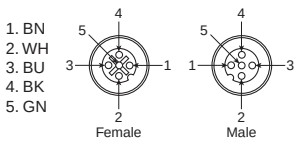




4-Pin Female Wiring Diagram

RSC Male Pins



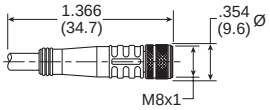


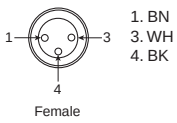
5 -Pin Female Wiring Diagram

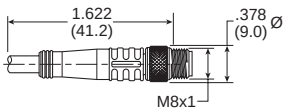
M8 Cables

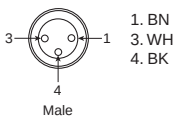
Part Number	Description
PKG 3M-*M/S90	3 Pin Female to Flying Lead Cable, PUR
PSG 3M-*M/S90	3 Pin Male to Flying Lead Cable, PUR
PKG 3M-*M-PSG 3M/S90	3 Pin Male to Female Cable, PUR

Where * = 1, 2, 3, 4 meter standard lengths







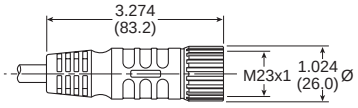


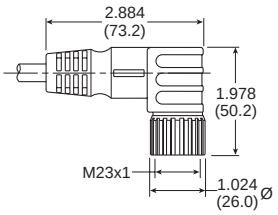
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M23 Cables

Part Number	Description
CSCM CKCM 12-11-x/S90	12 Pin Double Ended Female Thread with Male Pins and Female Socket, PUR. Pinout optimized for Isysnet Fieldbus.
CSM CKM 19-19-x/S90	19 Pin Double Ended Female Thread with Male Pins and Female Socket, PUR. Pinout optimized for Isysnet Fieldbus.
CSWM CKWM 19-19-x/CS12852	19 Pin Double Ended Female Thread with Male Pins and Female Socket, PUR. Pinout optimized for Turck Fieldbus.

Where x = 1, 2, 3, 4 meter standard lengths

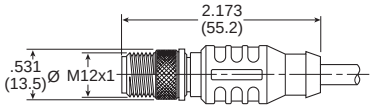




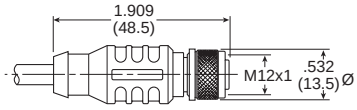
Profibus Cables

Part Number	Description
RSSW RKSW 455-xM	M12 Male to M12 Female, PUR

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths



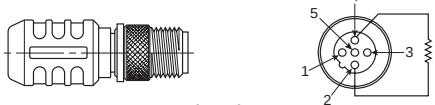
RSSW Side, Male Pins



RKSW Side, Female Sockets

Profibus Terminating Resistor

Part Number	Description
P8BPA00MB	M12 Male Pin Terminating Resistor

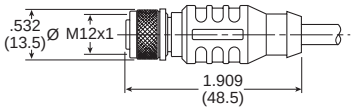


Male Pins

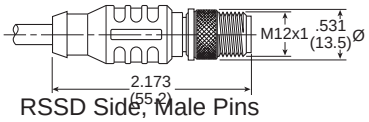
Ethernet Cables

Part Number	Description
RSSD RKSD 443-xM	M12 Female to M12 Male, PUR
RSSD RJ45S 443-xM	RJ45 to M12 Male, PUR

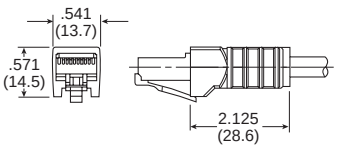
Where x = 2, 5, 10, 15, 20, 30 meter standard lengths



RKSD Side, Female Sockets



RSSD Side, Male Pins



RJ45S Side

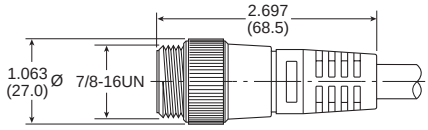
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DeviceNet and CANopen Cables

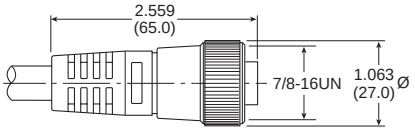
Part Number	Description
RSM RKM 5711-xM	7/8" Mini Male to 7/8" Mini Female, PUR
RSM RKC 5711-xM	7/8" Mini Male to M12 Female, PUR
RSC RKC 5711-xM	M12 Male to M12 Female, PUR
RSC RKM 5711-xM	M12 Male to 7/8" Mini Female, PUR

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

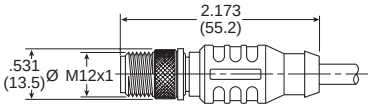
RSM Side, 7/8 Mini with male Pins



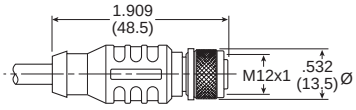
RKM Side, 7/8 Mini with male Pins



RSC Side, Male Pins



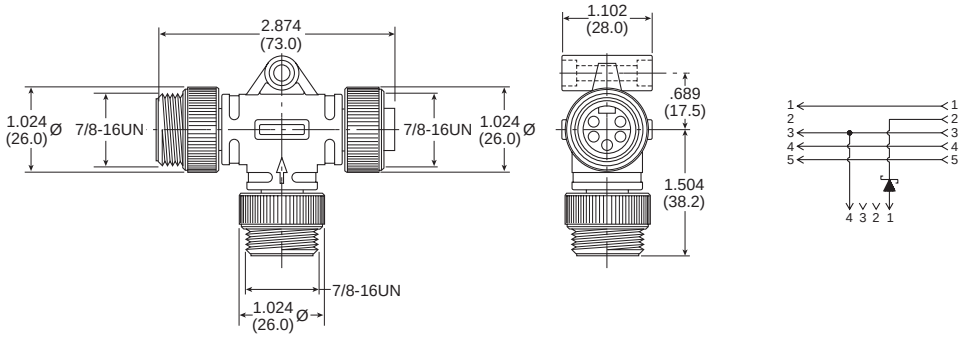
RKC Side, Female Sockets



Bus Power Tee

Part Number	Description
RSM RKM 57 WSM 40 PST	Bus Power Tee

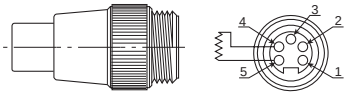
For systems not equipped with Power over network, combines separate network and power feeds into the communication module. Includes reverse current protection



DeviceNet and CANopen Terminating Resistor

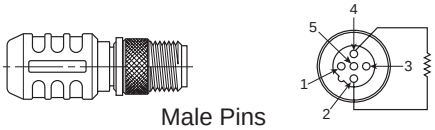
Part Number	Description
RSM 57-TR2	7/8" Mini Male Pin Terminating Resistor
P8BPA00MA	M12 Male Pin Terminating Resistor

RSM 57-TR2



Male Pins

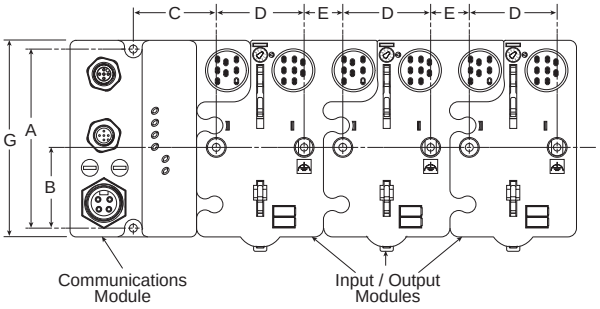
P8BPA00MB

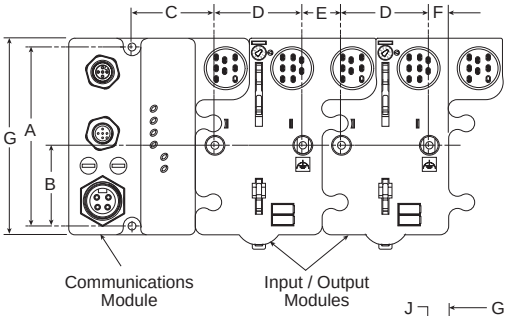


Male Pins

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Isysnet with Isys ISO Valves





Dimensions

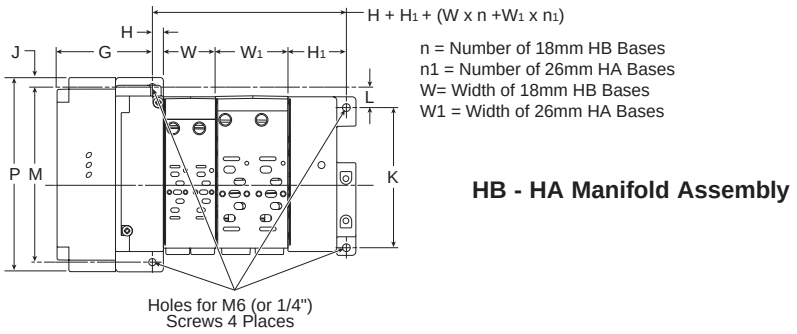
A	B	C	D
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)
E	**F**	**G**	
.87 (22)	.43 (11)	4.41 (112)	

Inches (mm)

HB - HA Dimensions

G	H	H_1	J	K
2.68 (68)	.33 (8.4)	1.80 (45.8)	.15 (4)	4.32 (110)
L	**M**	**P**	**W**	**W_1**
.63 (16)	5.39 (137)	5.98 (152)	1.61 (40.8)	2.24 (56.8)

Inches (mm)



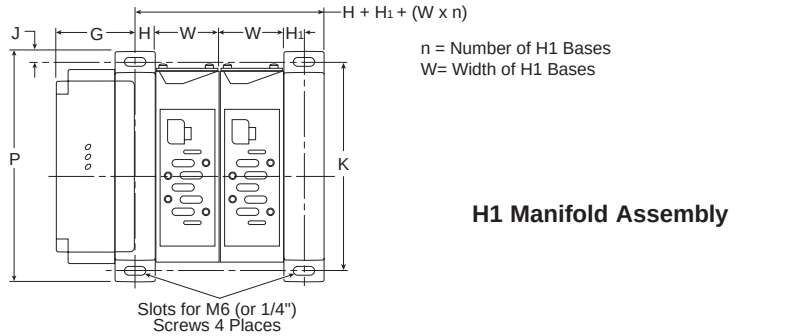
n = Number of 18mm HB Bases
n1 = Number of 26mm HA Bases
W= Width of 18mm HB Bases
W1 = Width of 26mm HA Bases

HB - HA Manifold Assembly

H1 Dimensions

G	H	H_1	J	K
2.20 (56)	.63 (15.9)	.63 (15.9)	.33 (8.5)	6.50 (165)
P	**W**			
7.17 (182)	1.93 (49)			

Inches (mm)



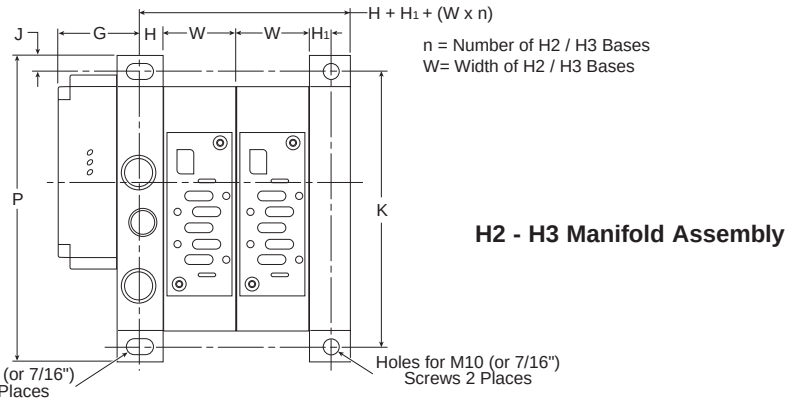
n = Number of H1 Bases
W= Width of H1 Bases

H1 Manifold Assembly

H2 Dimensions

G	H	H_1	J	K
2.28 (58)	.71 (18)	.59 (15)	.47 (12)	8.46 (215)
P	**W**			
9.41 (239)	2.20 (56)			

Inches (mm)



n = Number of H2 / H3 Bases
W= Width of H2 / H3 Bases

H2 - H3 Manifold Assembly

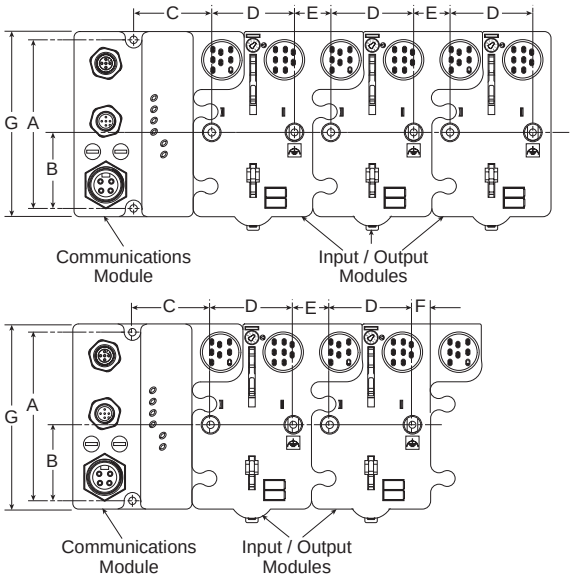
H3 Dimensions

G	H	H_1	J	K
2.52 (64)	.94 (24)	.65 (16.5)	.59 (15)	10.43 (265)
P	**W**			
11.61 (295)	2.80 (71)			

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Isysnet with Isys Micro Valves

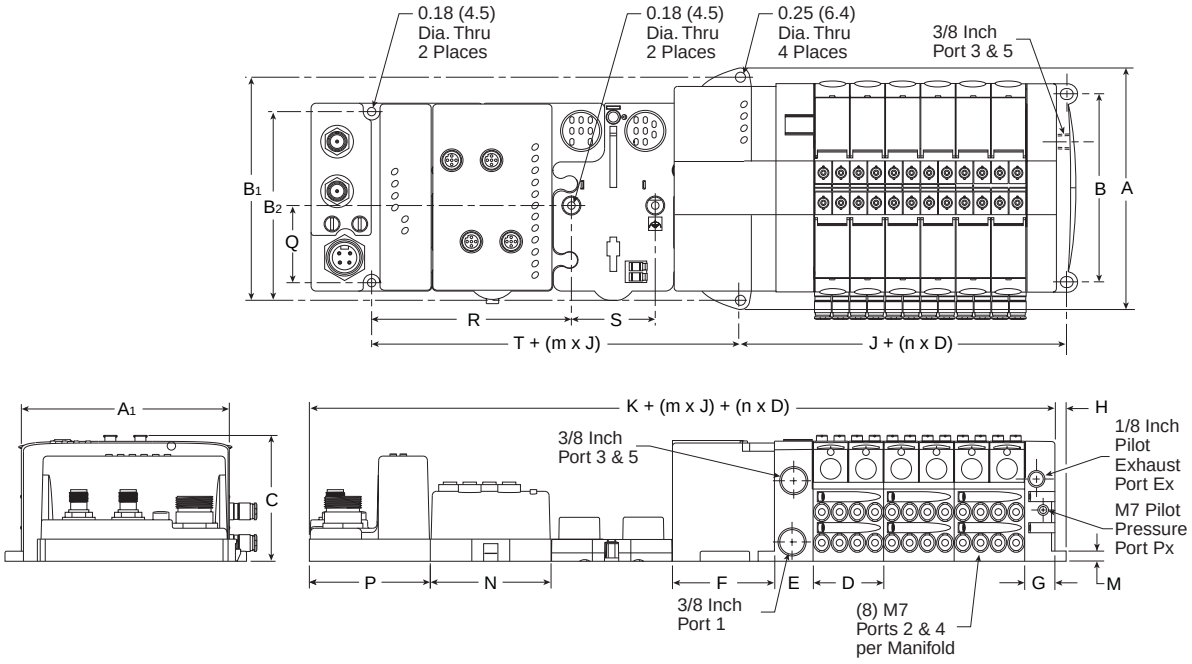


Dimensions

A	B	C	D
4.0 (102)	1.8 (46)	1.9 (48)	2.0 (50)
E	**F**	**G**	
.87 (22)	.43 (11)	4.41 (112)	

Inches (mm)

Isys Micro Manifold Assembly



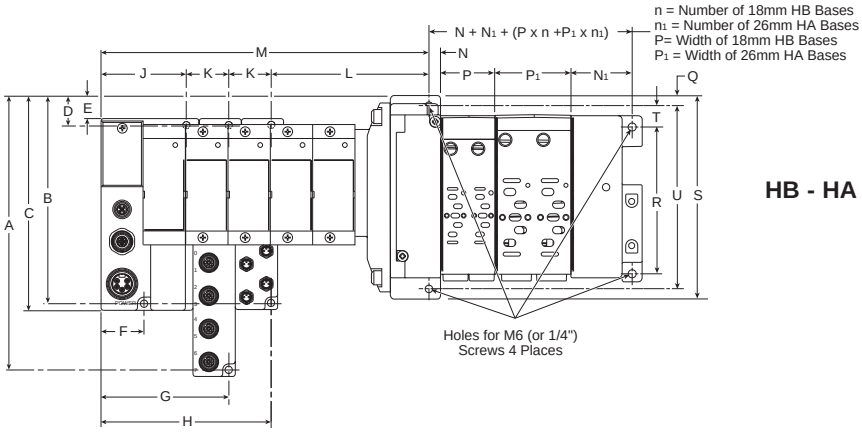
Dimensions

A	A1	B	B1	B2	C	D	E	F	G
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	2.40 (61.0)	0.71 (18.0)
H	**J**	**K**	**M**	**N**	**P**	**Q**	**R**	**S**	**T**
0.49 (12.5)	2.72 (69.0)	7.32 (186.0)	0.24 (6.1)	2.83 (72.0)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)

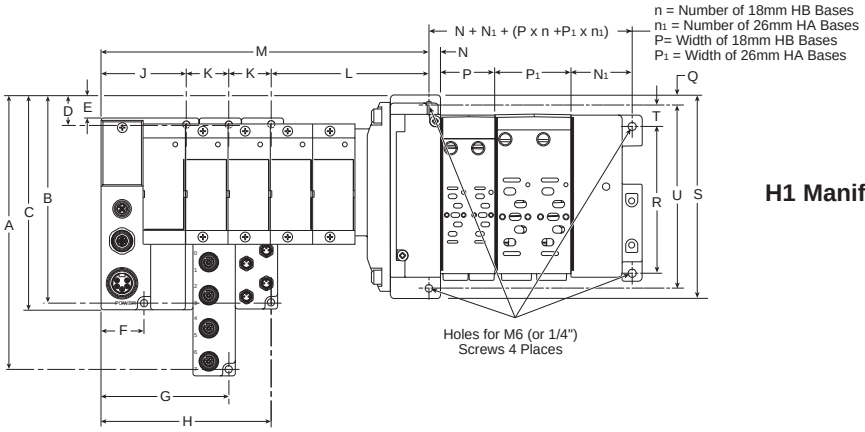
Inches (mm)
n = Number of Manifolds
m = Number of Modules

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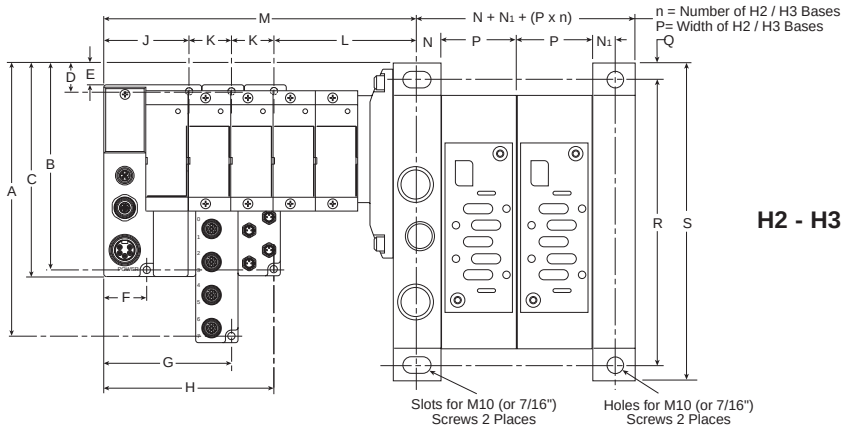
Turck with Isys ISO Valves



HB - HA Manifold Assembly



H1 Manifold Assembly



H2 - H3 Manifold Assembly

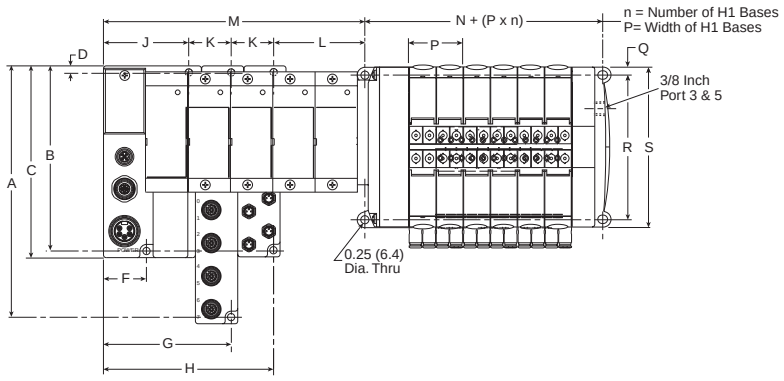
Dimensions

	A	B	C	D	E	F	G	H	J	K	L	M	N	N1	P	P1	Q	R	S	T	U
HA / HB	8.05 (204.5)	6.08 (154.5)	6.28 (159.5)	0.75 (19.5)	0.57 (14.5)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.75 (120.8)	See note 1	.33 (8.4)	1.80 (45.8)	1.61 (40.8)	2.24 (56.8)	.15 (4)	4.32 (110)	5.98 (152)	.63 (16)	5.39 (137)
H1	8.53 (216.7)	6.56 (166.7)	6.76 (171.7)	1.25 (31.7)	1.05 (26.7)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.27 (108.5)	See note 1	.63 (15.9)	.63 (15.9)	1.93 (49)	—	.33 (8.5)	6.50 (165)	7.17 (182)	—	—
H2	8.38 (212.9)	6.41 (162.9)	6.61 (167.9)	1.10 (27.9)	.90 (22.9)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.26 (108.6)	See note 1	.71 (18)	.59 (15)	2.20 (56)	—	.47 (12)	8.46 (215)	9.41 (239)	—	—
H3	8.62 (218.9)	6.65 (168.9)	6.85 (173.9)	1.33 (33.9)	1.14 (28.9)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.59 (116.6)	See note 1	.94 (24)	.65 (16.5)	2.80 (71)	—	.59 (15)	10.43 (265)	11.61 (295)	—	—

Note 1: M =J+L+n2xK, where n2 = Number of Turck input / output modules
Inches (mm)

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Turck with Isys Micro Valves

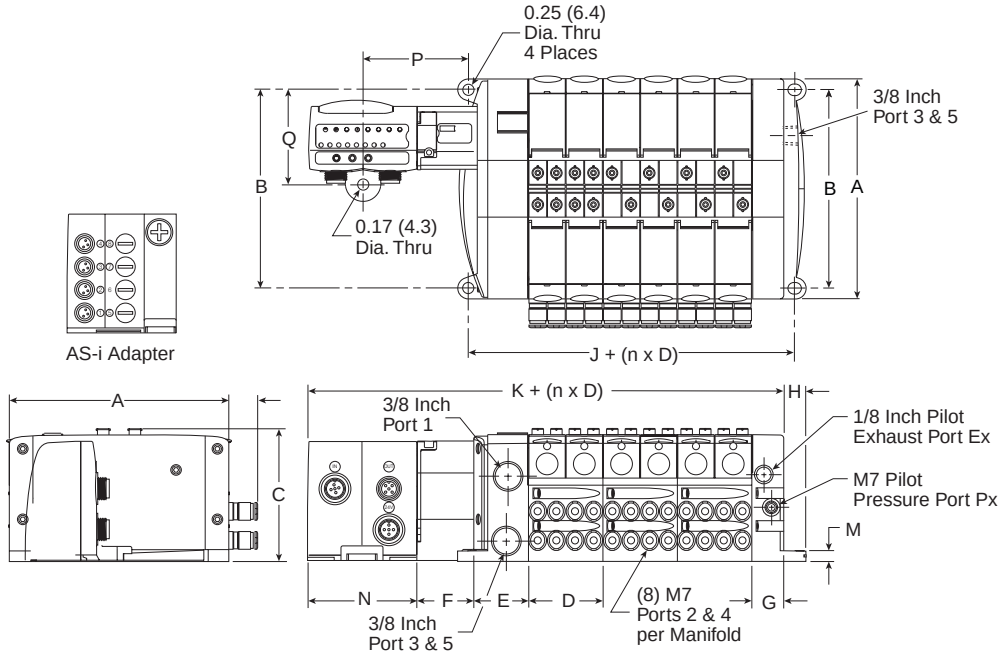


Dimensions

A	B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S
7.48 (190)	5.51 (140)	5.71 (145)	0.20 (5)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	2.54 (64)	See note 1	2.28 (58)	1.65 (42)	.19 (4.9)	4.41 (112)	4.88 (124)

Note 1: M =J+L+n2xK, where n2 = Number of Turck input / output modules
Inches (mm)

Moduflex Adapter, Side Ported



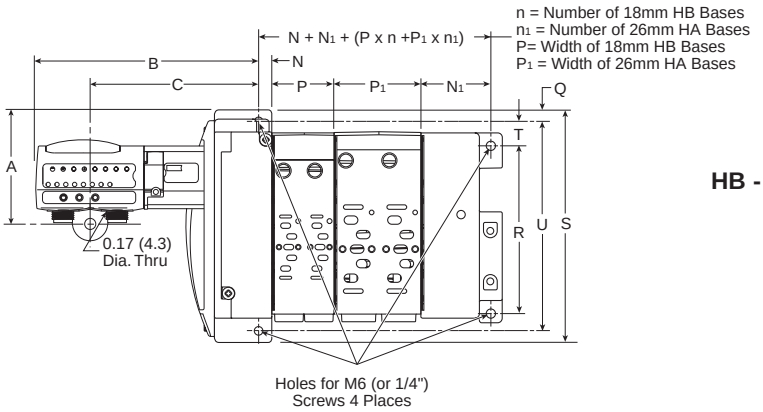
Dimensions

A	B	C	D	E	F	G	H	J	K	M	N	P	Q
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)	1.22 (31.0)	1.28 (32.5)	0.71 (18.0)	0.49 (12.5)	2.28 (58.0)	6.10 (155.0)	0.24 (6.1)	2.40 (61.0)	2.36 (60.0)	2.07 (52.5)

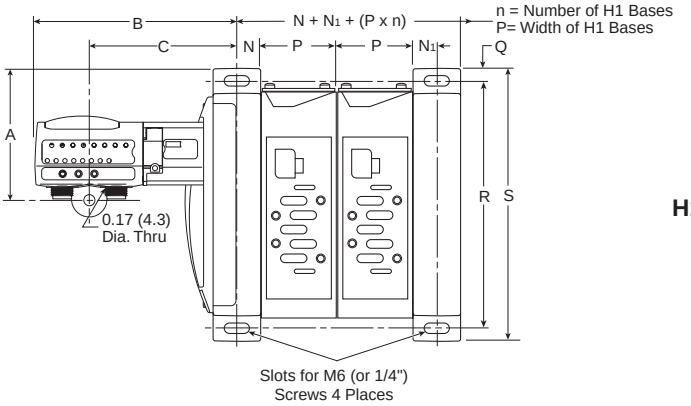
Inches (mm)
n = Number of Manifolds

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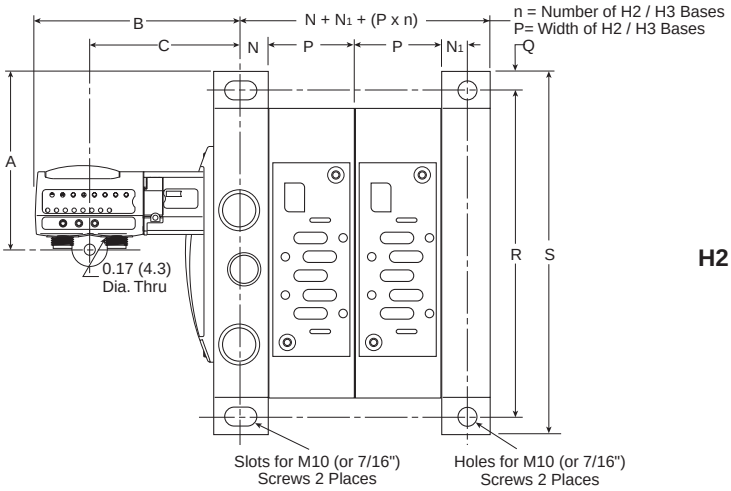
Moduflex with Isys ISO Valves



HB - HA Manifold Assembly



H1 Manifold Assembly



H2 - H3 Manifold Assembly

Dimensions

	A	B	C	N	N1	P	P1	Q	R	S	T	U
HA / HB	2.75 (69.8)	5.61 (142.5)	4.40 (111.8)	.33 (8.4)	1.80 (45.8)	1.61 (40.8)	2.24 (56.8)	.15 (4)	4.32 (110)	5.98 (152)	.63 (16)	5.39 (137)
H1	3.23 (82)	5.13 (130.2)	6.33 (160.9)	.63 (15.9)	.63 (15.9)	1.93 (49)	—	.33 (8.5)	6.50 (165)	7.17 (182)	—	—
H2	3.08 (78.2)	5.13 (130.3)	6.34 (161)	.71 (18)	.59 (15)	2.20 (56)	—	.47 (12)	8.46 (215)	9.41 (239)	—	—
H3	3.31 (84.2)	5.44 (138.2)	6.65 (168.9)	.94 (24)	.65 (16.5)	2.80 (71)	—	.59 (15)	10.43 (265)	11.61 (295)	—	—

Inches (mm)

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"DX" ISOMAX Series

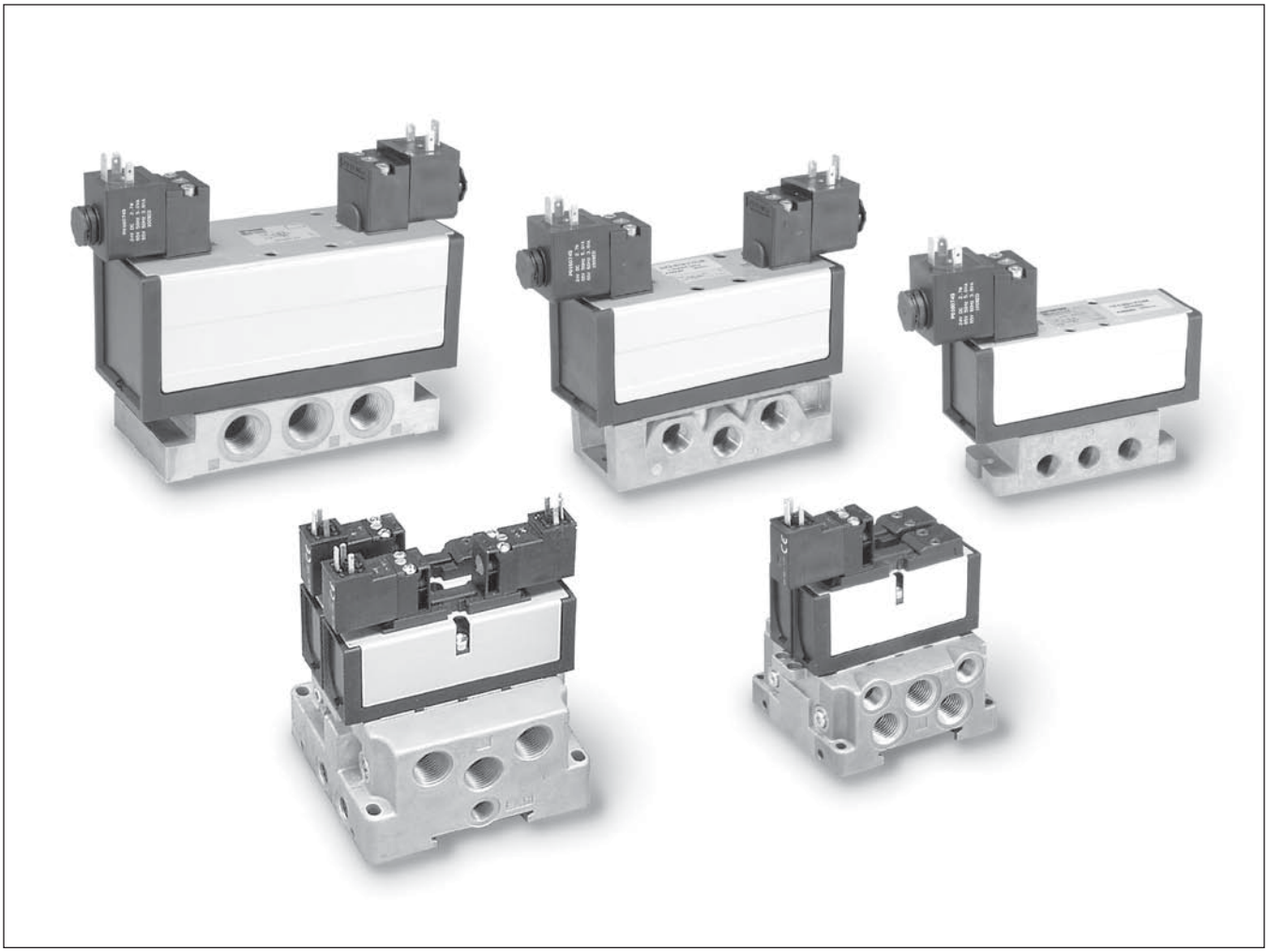
Directional Control Valves

15407-1 & 5599-1

DX02 – 0.55 Cv
DX01 – 0.75 Cv
DX1 – 1.15 Cv
DX2 – 2.50 Cv
DX3 – 4.15 Cv

Section E

www.parker.com/pneu/isomax



ISOMAX 15407-1 Ceramic, DX02 & DX01

Valve Range & Features E186
Features E187
Specifications E188
Common Part Numbers E189
Model Number Index E190
Add-A-Fold Ordering Information E191
Subbases & Manifolds E192-E195
Accessories E196-E198
Selector Gasket Conversion Instructions E199-E200
DX01 Manifold Assembly & Conversion Instructions E201-E204
DX02 Manifold Assembly E205-E207
Subbase Assembly E208
Dimensions E209-E210

ISOMAX 5599-1 Ceramic, DX1 1/4", DX2 3/8", DX3 1/2"

Specifications E211
Common Part Numbers E212
Model Number Index E213
Add-A-Fold Assemblies E214
Accessories E215-E219
Electrical Connectors E220
Internal / External Pilot Conversion Instructions E221
Dimensions E222-E226

BOLD ITEMS ARE MOST POPULAR.

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Valve Range

DX02 1/8", ISO 15407-1, Size 02
DX01 1/4", ISO 15407-1, Size 01

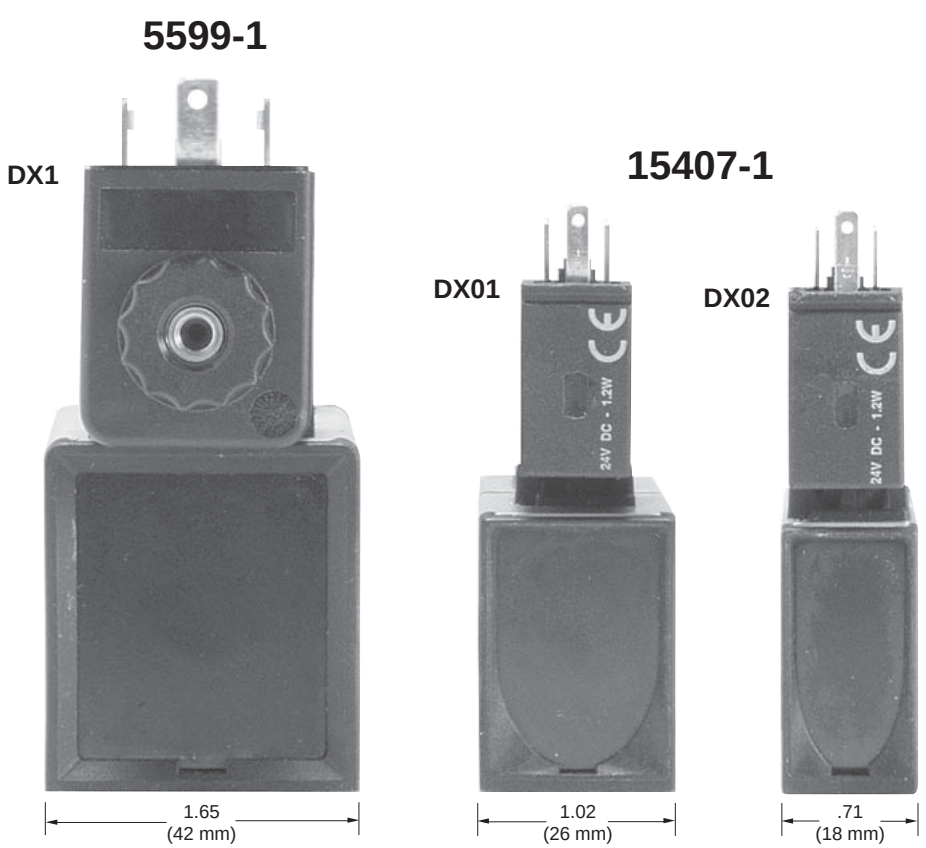
DX1 1/4", ISO 5599-1, Size 1
DX2 3/8", ISO 5599-1, Size 2
DX3 1/2", ISO 5599-1, Size 3

ISO 15407-1

The ISOMAX range of directional control valves complies with ISO 15407-1 and VDMA 24563 for sizes 02 and 01 and ISO 5599-1 for sizes 1, 2 and 3. ISOMAX provides flows from 0.55 Cv to 4.15 Cv.

ISO 5599-1

The ISOMAX range includes valves for pneumatic and electrical actuation with a wide choice of subbases and manifolds to suit different application needs.



Corrosion Free and Modern Design

With the valve body in Polyamide reinforced fiberglass and the casing in anodized aluminium, the complete ISOMAX range presents a coherent modern design to suit most industrial environments.

Vacuum Operation

All ISOMAX valves may be used for either vacuum or pressure applications.

Dual Pressure

In order to supply 2 different pressures to the same actuator, it is possible to connect 2 main pressure supplies to the exhaust ports and use the pressure port 1 as exhaust port.

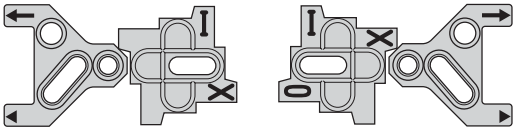
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Features

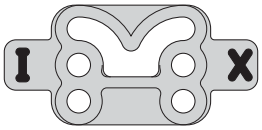
Ceramic Technology

All ISOMAX products use high-tech ceramic switching technology providing:

- **Excellent Reliability**
  Long life in excess of 100 million operations*.
  Operates with lubricated or non-lubricated air.
  Low sensitivity to air quality changes.
- **High Performance**
  Slide valve concept allows high flow / size ratio and short response time due to short slide stroke and low friction.
- **Stable Long Lasting Performances**
  Low friction switching: minimum wear of the valve member / seal assembly.
- **Valves Fitted with Switchable Selector to Give Internal or External Pilot Supply**



DX02 & DX01 Selector Gaskets



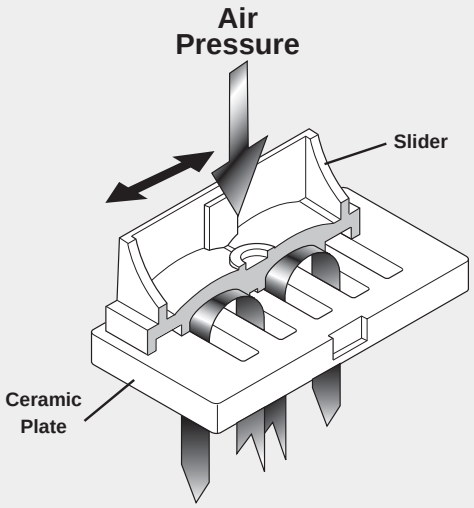
DX1, DX2 & DX3 Selector Gasket

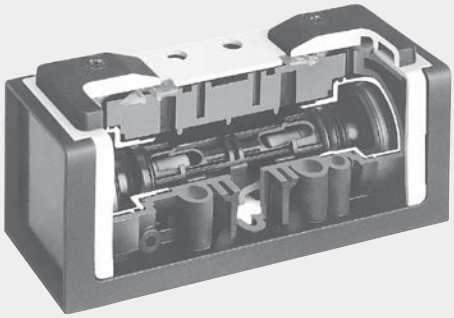
Applicable Markets

Industries where ISO standardization is accepted.

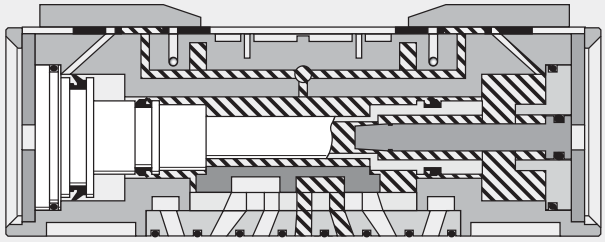
- Automotive
- Food Processing
- Medical
- Chemical
- Tire Manufacturing
- Steel Processing
- Glass Processing
- Where OEM'S Export Globally

* Refer to our warranty conditions.





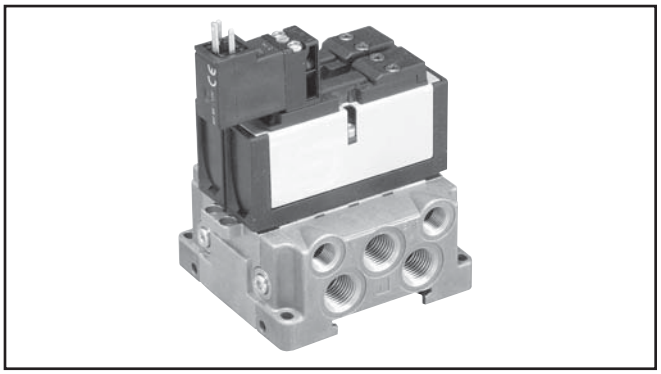
Remote Pilot



Pressure **Exhaust**

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

ISOMAX 15407-1



Specifications

Standard Subbase:
ISO 15407-1 and VDMA 24563

Permissible Fluid
Air or Inert Gas, filtered 40µ (Class 5 per ISO 8573-1), Lubricated or Non-lubricated

Pressure Supply:
Possible to supply Exhaust Ports 3 or 5 or Cylinder Ports 2 or 4, with Internal Pilot Supply. (Not possible with APB).

Flow:
DX01 = .75Cv, DX02 = .55Cv

Working Temperatures:
-10°C to 60°C (14°F to 140°F)

Storage Temperatures:
-20°C to 70°C (-4°F to 158°F)

Mechanical Life:
> 100 million operations (Dry air filtered 40µ, 2Hz, 6 bar, 20°C)

Actuation Type:
Electric / Pneumatic with 15mm Solenoid Valve Interface CNOMO E06.36120N

Flow Rating (Cv)

Size	Port Size	Mounting Style	2-Position	3-Position
DX02	1/8"	Manifold	0.45	0.35
		Subbase	0.55	0.40
DX01	1/4"	Manifold	0.70	0.45
		Subbase	0.75	0.50

Cv tested per ANSI / (NFPA) T3.21.3

Solenoid Information

Code	Voltage			Power (W / VA)
	AC		DC	
	60Hz	50Hz		
M	—	—	24	1.2W
J	120	110	—	1.6VA

Data tested with LED and Surge Suppression.

Response Time**
Single Solenoid 2-Position - Air Return / Spring Assist

Valve Size	Port Size	0 Cu. In. Chamber		## Cu. In. Chamber	
		Fill	Exhaust	Fill	Exhaust
DX02	1/8"	0.025	0.030	0.125	0.220
DX01	1/4"	0.015	0.020	0.122	0.200

DX01 (25), DX02 (12.5)

** With 100 PSIG supply, time required to fill from 0 to 90 PSIG and Exhaust from 100 PSIG to 10 PSIG measured from the instant of energizing or de-energizing 24VDC solenoid.

Tested per ANSI / (NFPA) T3.21.8

Operating Pressure

Vacuum to 145 PSIG (10 bar)

Function		M.O.P (PSIG)
20, 21, 22, 23	2-Position, Spring Return	36
50, 51, 53, 54	2-Position, Air Return	30
04, 05, 06, 08	2-Position	15
09, 11, 12, 27	3-Position, CE	45
16, 18, 19, 25	3-Position, APB	45

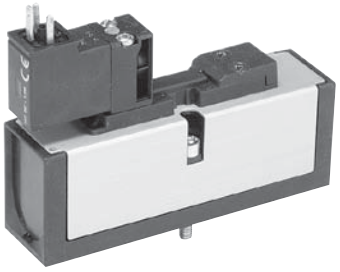
Material Specifications

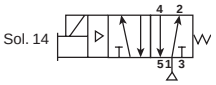
Valve Member ..... Self Lubricating Acetal
Seat ..... Ceramic
Body ..... Polyamide Reinforced Fiberglass
Casing ..... Anodized Aluminum
End Plates ..... Painted Zinc Plated Steel
Valve Plate ..... Zinc
Seals ..... Nitrile
Springs ..... Stainless Steel
Screws ..... Zinc Plated Steel
Function Selector ..... Polyamide Reinforced Fiberglass
Top Cover Seal ..... Polyester

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Single Solenoid

2-Position

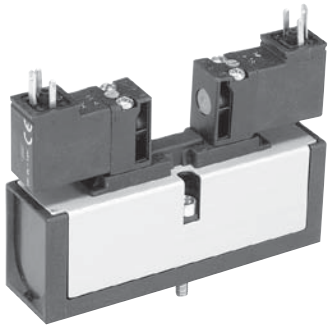


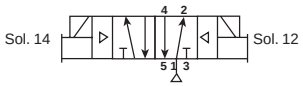


DX02	**DX02-621-951J**	120VAC	0.55 Cv C = 1.5 Nl/s x bar, b = 0.25 Qn = 378 l/min, Qmax = 636 l/min
	DX02-621-951M	24VDC	
DX01	**DX01-621-951J**	120VAC	.75 Cv C = 2.5 Nl/s x bar, b = 0.25 Qn = 588 l/min, Qmax = 1026 l/min
	DX01-621-951M	24VDC	

Double Solenoid

2-Position

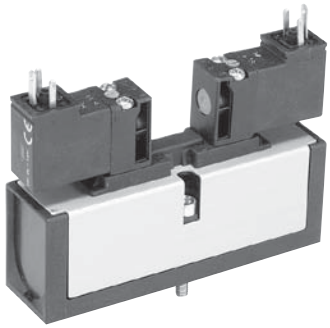


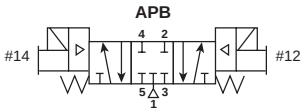


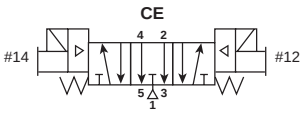
DX02	**DX02-606-951J**	120VAC	0.55 Cv C = 1.5 Nl/s x bar, b = 0.25 Qn = 378 l/min, Qmax = 636 l/min
	DX02-606-951M	24VDC	
DX01	**DX01-606-951J**	120VAC	.75 Cv C = 2.5 Nl/s x bar, b = 0.25 Qn = 588 l/min, Qmax = 1026 l/min
	DX01-606-951M	24VDC	

Double Solenoid

3-Position APB
3-Position CE







APB				CE		
DX02	**DX02-616-951J**	120VAC	0.40 Cv C = 1.1 Nl/s x bar, b = 0.25 Qn = 275 l/min, Qmax = 464 l/min	**DX02-611-951J**	120VAC	0.40 Cv C = 1.1 Nl/s x bar, b = 0.25 Qn = 275 l/min, Qmax = 464 l/min
	DX02-616-951M	24VDC		**DX02-611-951M**	24VDC	
DX01	**DX01-616-951J**	120VAC	.50 Cv C = 1.7 Nl/s x bar, b = 0.25 Qn = 392 l/min, Qmax = 684 l/min	**DX01-611-951J**	120VAC	.50 Cv C = 1.7 Nl/s x bar, b = 0.25 Qn = 392 l/min, Qmax = 684 l/min
	DX01-616-951M	24VDC		**DX01-611-951M**	24VDC	

Torque Specifications
DX02: 15 to 25 in-lbs (1.69 to 2.82 Nm)
DX01: 20 to 30 in-lbs (2.26 to 3.39 Nm)

For Subbases and Manifolds, see page E178 thru E179.

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DX02 – 6 06 – 95 1 M

Basic Series	
ISO 15407-1 (18mm)	DX02
ISO 15407-1 (26mm)	DX01

Pilot	
Air Operated Remote Pilot	4
Solenoid Operated	6

Function	
Internal Pilot Supply / Captured Exhaust 12	
2-Position, Spring Return	21
2-Position, Air Return	51
2-Position	06
3-Position, CE	11
3-Position, APB	16
External Pilot 14 Supply / Captured Exhaust 12*	
2-Position, Spring Return	23
2-Position, Air Return	54
2-Position	05
3-Position, CE	09
3-Position, APB	19
Internal Pilot Supply / Vented Exhaust	
2-Position, Spring Return	20
2-Position, Air Return	50
2-Position	04
3-Position, CE	27
3-Position, APB	25
External Pilot Supply / Vented Exhaust*	
2-Position, Spring Return	22
2-Position, Air Return	53
2-Position	08
3-Position, CE	12
3-Position, APB	18

* Must be specified when using Sandwich Regulators.

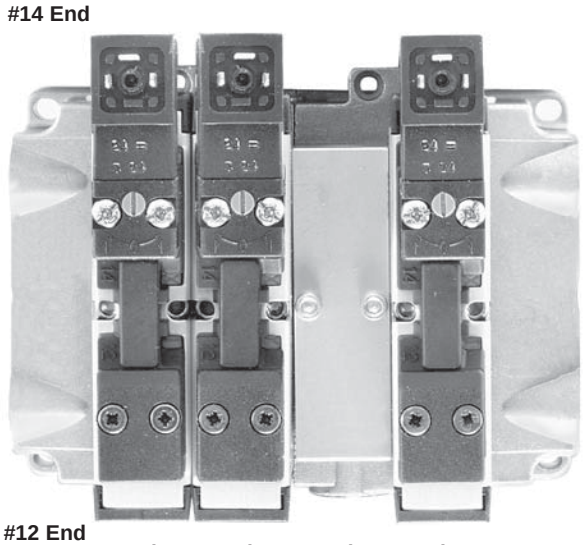
Operator	
60	None, Remote Pilot Valve
95	15mm, 3-Pin, DIN 43650C

Override	
Blank	Remote Pilot
1	Non-Locking, Flush
3	Locking, Flush

Voltage & Frequency			
	AC		DC
	60Hz	50Hz	
J	120	110	
M			24
Blank	Remote Pilot		

Note: DX02 18mm Valve Remote Pilot Option only available with PL02 Individual Subbase Kits

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* Each Manifold has two (2) Stations
(Even number of Stations Required)

How To Order Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve/base model number. List left to right, looking at the cylinder ports on the #12 end of the manifold. The left most station is station 1.

   (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Model Number

AA 02U 0 04

Valve Series	
Right & Left End Plate 15407-1, DX01	01U†
Right & Left End Plate 15407-1, DX02	02U**
Right & Left End Plate 15407, DX01 & DX02	HBS*

* Common End Plates for DX01 & DX02. For use with PS5 Manifolds.
**For use with PJLP02 Manifolds.
† For use with PJLP01 or PJL01 Manifolds.

	Number of Stations*
02	2 Stations
04	4 Stations
•	
24	24 Stations
•	
32†	32 Stations

* Must be ordered in multiples of 2.
† Maximum Number.

	Port Type
0	NPT
1	BSPP "G"

Example: Application requires a 3-Valve manifold.

Qty.	Part No.	
1	AA02U004	
1	DX02-651-951M	Valve Station 1
1	DX02-651-951M	Valve Station 2
1	PJLP02-201-80	Base Station 1 & 2
1	DX02BLK	Valve Station 3
1	DX02-651-951M	Valve Station 4
1	PJLP02-201-80	Base Station 3 & 4

Note: DX02 Manifolds cannot be used for remote pilot.

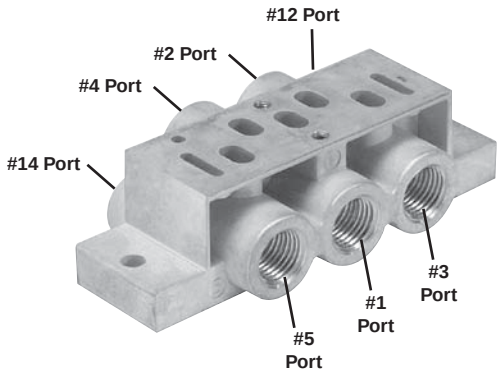
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Individual Subbase Kit

with Side Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
18mm DX02	1/8"	**PL02-01-80**	PL02-01-70

Note: Can be used for external, single, or double remote pilot.

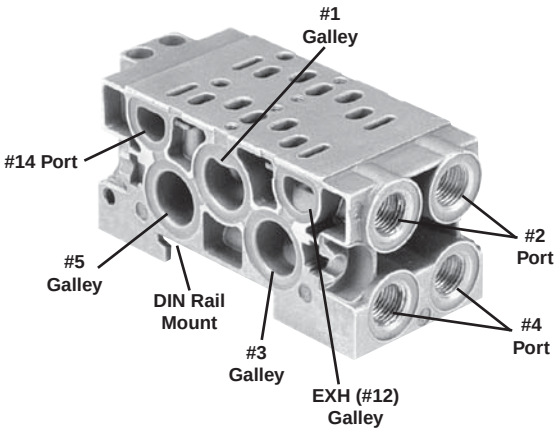


Two Station Manifold Base

with Side Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
18mm DX02	1/8"	**PJLP02-201-80**	PJLP02-201-70

Note: Can be used for external pilot, not remote pilot.
Gaskets and assembly hardware included.



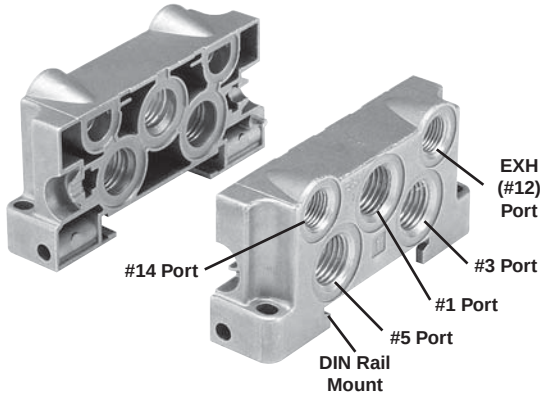
PJLP02

End Plate Kit

for Side Ported Two Station Manifold Base

Size	Port Size	Kit Number	
		NPT	BSPP "G"
18mm DX02	1/8"	**PEJ02-02-80***	PEJ02-02-70

Notes: Put a vent or muffler in "EXH" port when capturing pilot exhaust pressure with a solenoid valve. (See page E182 for gasket selector details.
Gaskets and assembly hardware included.
Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)



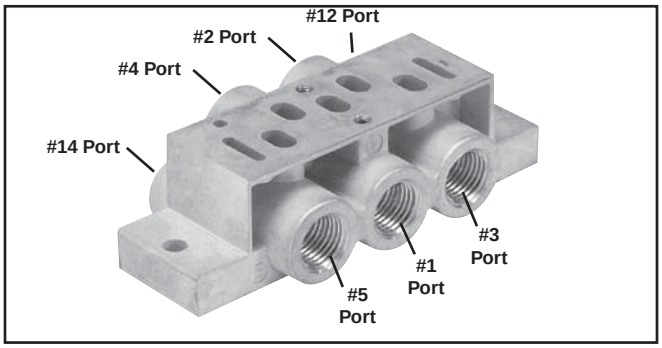
PEJ02
(Type "P")

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Individual Subbase Kit
with Side Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/4"	**PL01-02-80**	PL01-02-70

Note: Can be used for external, single, or double remote pilot.

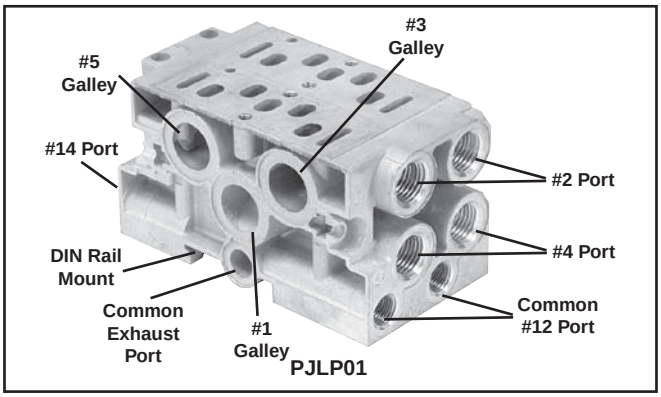


Two Station Manifold Base
with Side Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/4"	**PJLP01-202-80**	PJLP01-202-70

Notes: Can be used for single remote pilot using the #14 Port and external pilot.

Gaskets and assembly hardware included.



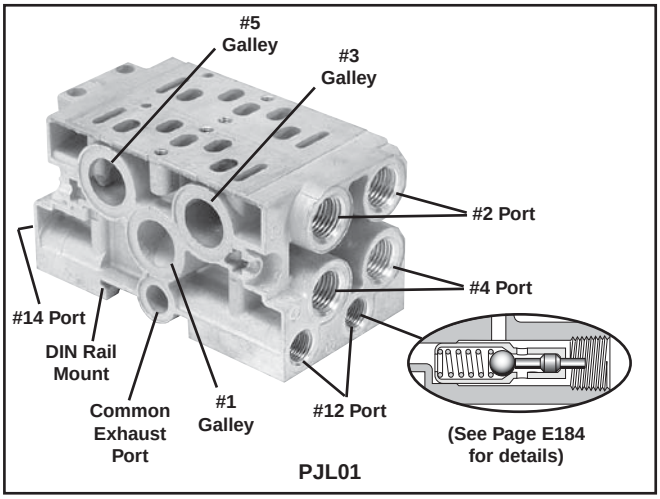
PJLP01

Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/4"	**PJL01-202-80**	PJL01-202-70

Notes: #12 ports work independently when plunger is not depressed by a plug. When a plug is inserted in #12 Port along with the captured pilot exhaust gasket selector option, pilot exhaust is sent to ther Common Exhaust Port. Do Not plug exhaust, insert a vent of muffler.

Gaskets and assembly hardware included.

Can be used for external, single or double remote pilot.



PJL01

End Plate Kit
for Side Ported Two Station Manifold Base

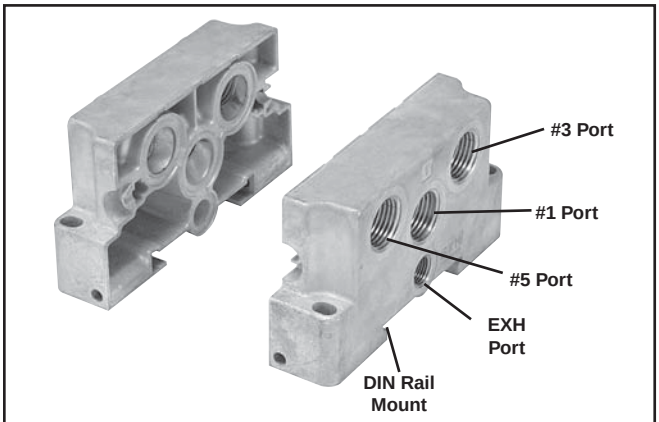
Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/4"	**PEJ01-03-80***	PEJ01-03-70

* Use with PJLP01 or PJL01

Notes: Put a vent or muffler in "EXH" port when capturing pilot exhaust pressure with a solenoid valve. See page J18 for gasket selector details.

Gaskets and assembly hardware included.

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)



PEJ01

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15407-1, DX02 & DX01 Manifold / Subbase Kits

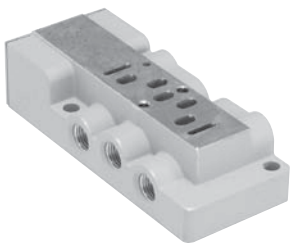
PS5511 13 0 P

Basic Series	
ISO 15407-1 DX02	PS5611
ISO 15407-1 DX01	PS5511

Enclosures / Lead Length	
0	None, No Electrical Plug - 15407-1

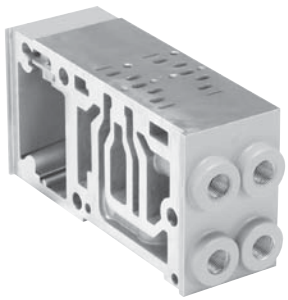
Mounting Style / Port Size	
DX02	
Manifold with 1/8 NPT End Ports	**51**
Manifold with 1/8 BSPP End Port	52
Manifold with 1/8 NPT Bottom / End Port	61
Manifold with 1/8 BSPP Bottom / End Port	62
DX01	
Subbase with 1/4 NPT Side Ports	**13**
Subbase with 1/4 BSPP Side Ports	14
Subbase with 1/4 NPT Bottom / Side Port	23
Subbase with 1/4 BSPP Bottom / Side Port	24
Manifold with 1/4 NPT End Port	**53**
Manifold with 1/4 BSPP End Port	54
Manifold with 1/4 NPT Bottom / End Port	63
Manifold with 1/4 BSPP Bottom / End Port	64

Subbase Kits

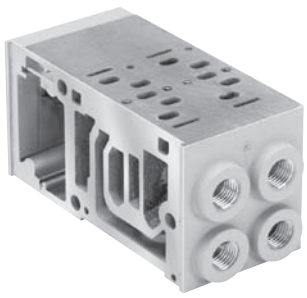


DX01 Series Subbase

Manifold Kits



DX02 Series 2-Station Manifold



DX01 Series 2-Station Manifold

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15407-1, DX02 & DX01 End Plate Kits

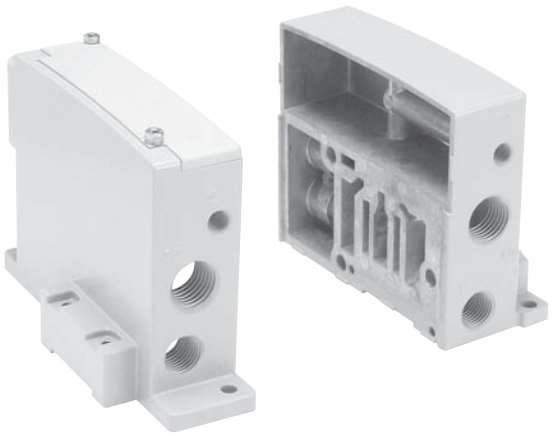
PS56 31 01 0 P

Basic Series	
ISO 15407, Size DX02, DX01	PS56

End Plate Kit Type	
End Plate, Non-Collective Wiring	31

Options	
01	Non-Collective Wiring

Thread Type	
0	NPT
1	BSPP "G"



DX02 - DX01 Non-Collective Wiring End Plates

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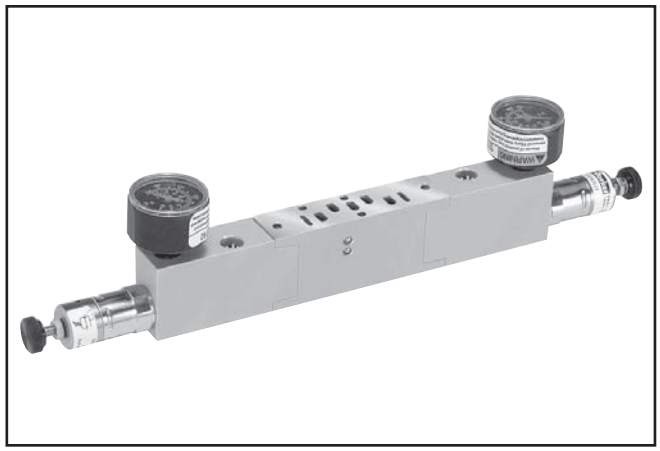
Sandwich Regulators Features

- Remote Air Pilot Operated for hard-to-reach pressure control.
- Unregulated Pilot Pressure to valve for consistent valve shifting regardless of pressure adjustment.

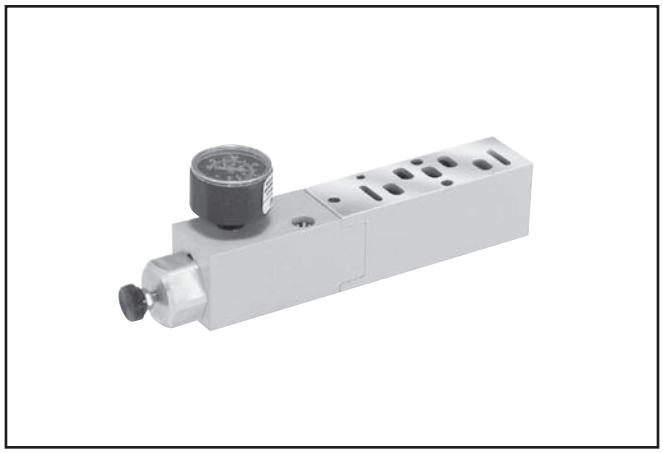
Remote Pilot Access Plate Kit

Size	Port Size	Kit Number	
		NPT	BSPP
26mm DX01	1/8"	**PS551500P**	**PS551501P**

DX02
(Independent Dual Port Regulator Shown)



DX01
(Common Port Regulator Shown)



BOLD OPTIONS ARE MOST POPULAR

PS5637 1 6 6 P

Basic Series	
DX02	
15407-1, 18mm	PS5637
DX01	
15407-1, 26mm	PS5537

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	**5-125 PSIG w/Gauge**

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

#4 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	**5-125 PSIG w/Gauge**

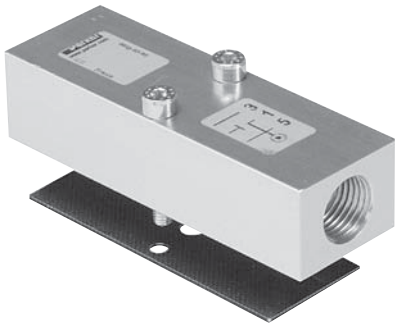
* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

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Intermediate Air Supply Base

Size	Port Size	Kit Number
		NPT
18mm DX02	1/8" NPT	**D02P-01-80**
26mm DX01	1/4" NPT	**D01P-02-80**

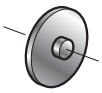
Notes: Gasket & Mounting Bolts included.
Torque Specifications
Size 02: 15 to 25 in-lbs (1.69 to 2.82 Nm)
Size 01: 20 to 30 in-lbs (2.26 to 3.39 Nm)



Manifold Port Isolation Disc

Size	Common Pressure
18mm DX02	**D02BD0**
26mm DX01	**D01BD0**

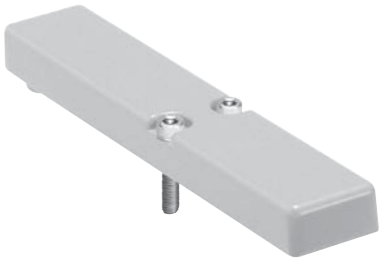
Notes: 3 Discs per Kit.
Used on PJL Manifolds.



Blanking Plate

Size	Common Pressure
18mm DX02	**PS5634P**
26mm DX01	**PS5534P**

Notes: Gasket & Mounting Bolts included.
Torque Specifications
Size 02: 15 to 25 in-lbs (1.69 to 2.82 Nm)
Size 01: 20 to 30 in-lbs (2.26 to 3.39 Nm)



Sandwich Flow Control Features

- Both adjustment screws are located on the 12 end of the unit.
- Sandwich Flow Control mounts with its own studs, which means the valve uses standard bolts for mounting.
- Sandwich Flow Control is not to be used as a shut off device and is not bubble tight when needles are fully turned down.

Size	Kit Number
18mm DX02	**PS5642P**
26mm DX01	**PS5542P**



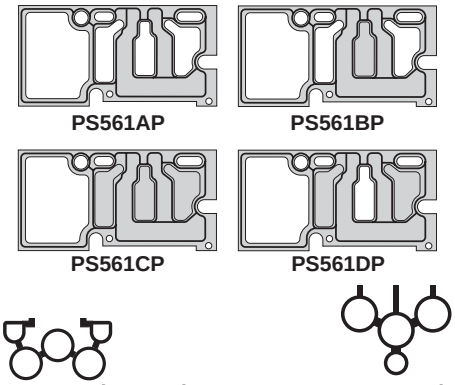
DX02
18mm Shown

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Manifold to Manifold Gasket Kits

Size	Standard	Blocked #1 Port	Blocked #1, 3, 5 Ports	Blocked #3, 5 Ports
DX02 * / DX01 *	PS561AP	PS561BP	PS561CP	PS561DP
DX02	DX02M2MGSKT (PJLP02)			
DX01	DX01M2MGSKT (PJLP01)			

* Gaskets used with PS5611 & PS5511 Manifolds.



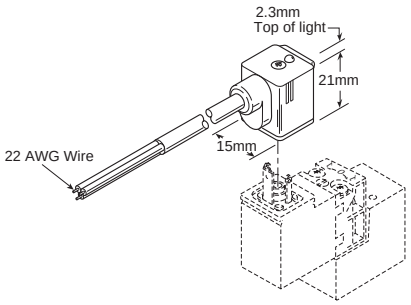
15mm 3-Pin DIN 43650C Connectors

Connector	Connector with 6' (2m) Cord	Description
PS2932BP	PS2932JBP	No Circuit Board
PS294679BP	PS2946J79BP*	Light – 24DC
PS294683BP	PS2946J83BP*	Light – 110/120VAC

* LED with surge suppression.

Note: Max. ø6.5mm cable size required for connector without 6' (2m) cord.
IP65 rated when properly installed.

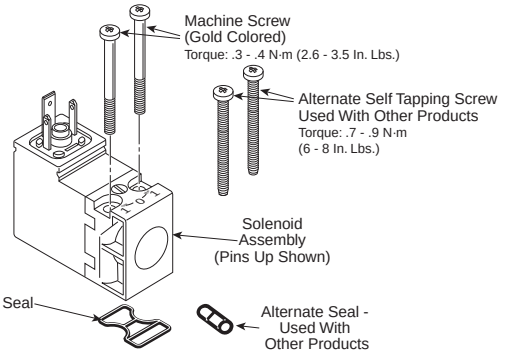
Engineering Data:
Conductors: 2 Poles Plus Ground
Cable Range (Connector Only): 4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm



Molded 6' Cord Shown

15mm 3-Pin DIN 43650C Replacement Solenoid Kits

Voltage	Non-Locking	Locking
24VDC	PS2982B49P	PS2982C49P
110/50, 120/60	PS2982B53P	PS2982C53P



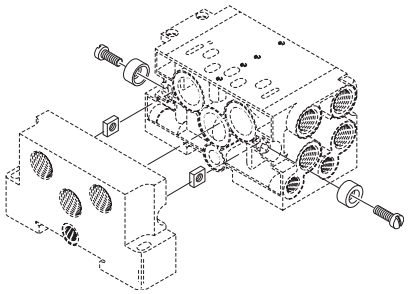
Manifold Hardware Kits

Part Number	Items
DX02M2MB**	Bolt, Washer & Nut*
PS5612P	Tie Rods for PS5611 Manifold (Qty. 12)
PS5512P	Tie Rods for PS5511 Manifold (Qty. 12)

* Includes 10 Bolts, 10 Washers, 10 Nuts

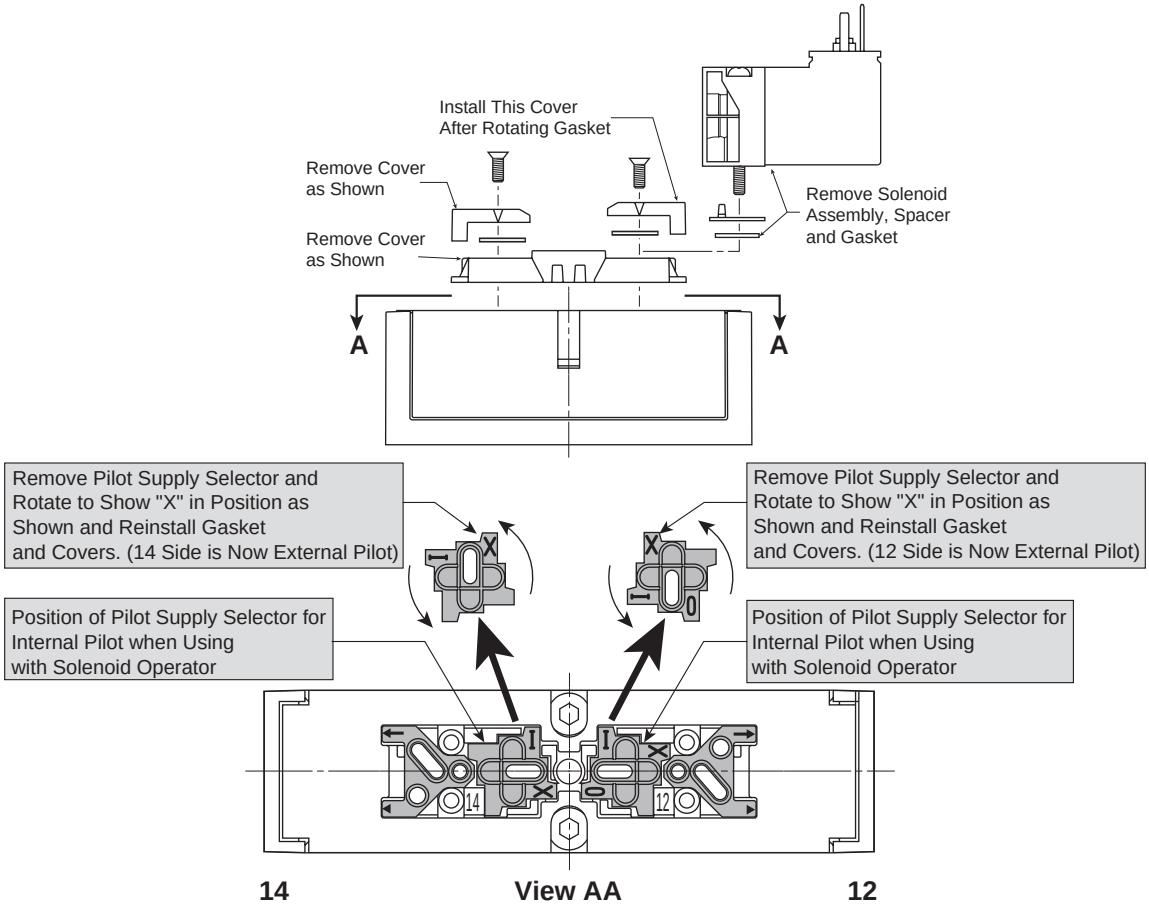
** Use this number for both sizes, PJLP02 & PJLP01.

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)

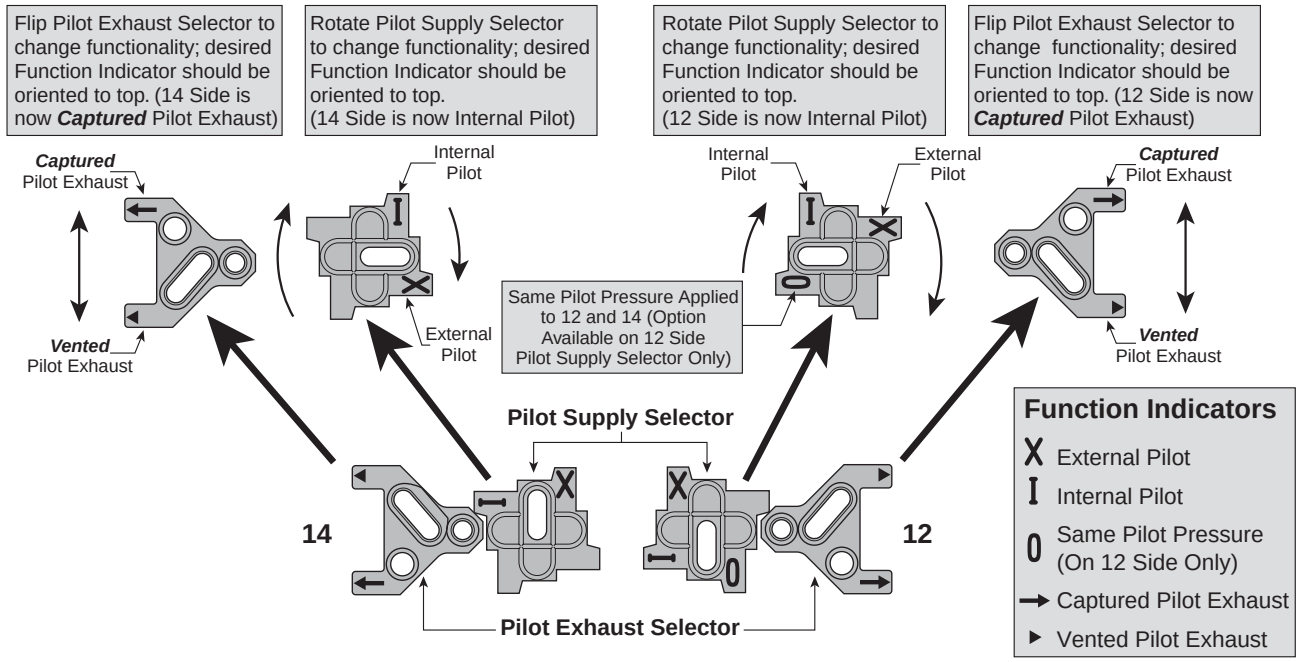


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Changing from **Internal** to **External** Pilot Supply

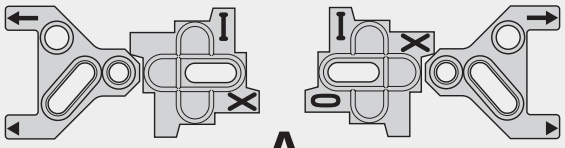


Changing from **External** Pilot Supply, Vented Pilot Exhaust to **Internal** Pilot Supply, Captured Pilot Exhaust

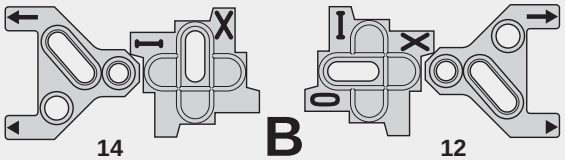


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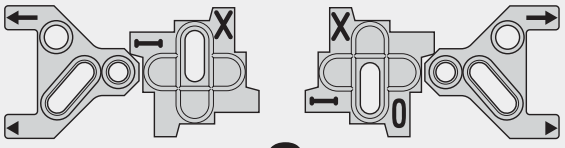
Internal Pilot Supply;
Captured Pilot Exhaust through 12



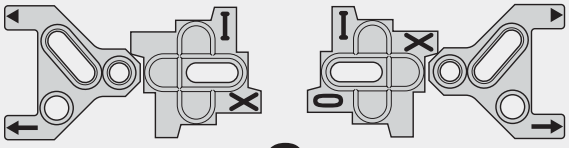
External or Single Remote Pilot Supply on 14;
Internal Pilot Supply on 12;
Captured Pilot Exhaust through 12



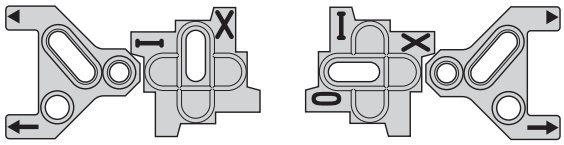
External, Double Remote Pilot Supply on 14 & 12;
Captured Pilot Exhaust



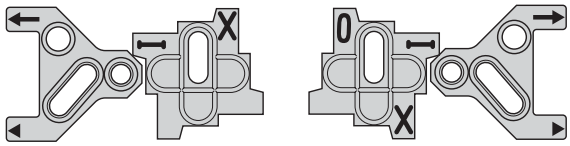
Internal Pilot Supply;
Vented Pilot Exhaust



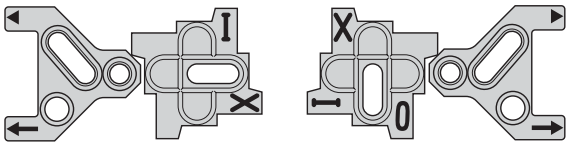
External Pilot Supply on 14;
Internal Pilot Supply on 12;
Vented Pilot Exhaust



External Pilot Supply 14 Common to 12;
Captured Pilot Exhaust through 12



Internal Pilot Supply on 14;
External Pilot Supply on 12;
Vented Pilot Exhaust



Base Pilot Port Used	None	14	14 and 12	None	14	14	12
Pilot Air Supply	**Internal Pilot Supply**	**14 External Pilot 12 Internal Pilot**	**External, Double Remote Pilot for 14 and 12**	**Internal Pilot Supply**	**14 External Pilot 12 Internal Pilot**	**One Common External Pilot Pressure for 14 and 12**	**14 Internal Pilot 12 External Pilot**
Pilot Exhaust	**Captured**	**Captured**	**Captured**	**Vented**	**Vented**	**Captured**	**Vented**
5/2 Double Solenoid	606 A	—	406 C	604 G	D	E	F
5/2 Single Solenoid,	621	421	C	620	D	E	F
Spring Return	A	B		G			
5/2 Single Solenoid, Differential Return	651 A	451 B	C	65 G	D	E	F
5/3 Pressure Center Exhaust	611 A	—	411 C	627 G	D	E	F
5/3 Pressure All Ports Blocked	616 A	—	416 C	625 G	D	E	F
	Part Numbers Available From Factory				**See Gasket Configurations Above for These Special Adaptations**		

Insert a muffler or vent in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates or #12 of PL02 & PL01 Subbases when using solenoids with a ***Captured*** Exhaust.

A plug may be inserted in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates #14 or #12 of PL02 & PL01 Subbases when using a ***Vented*** Exhaust.

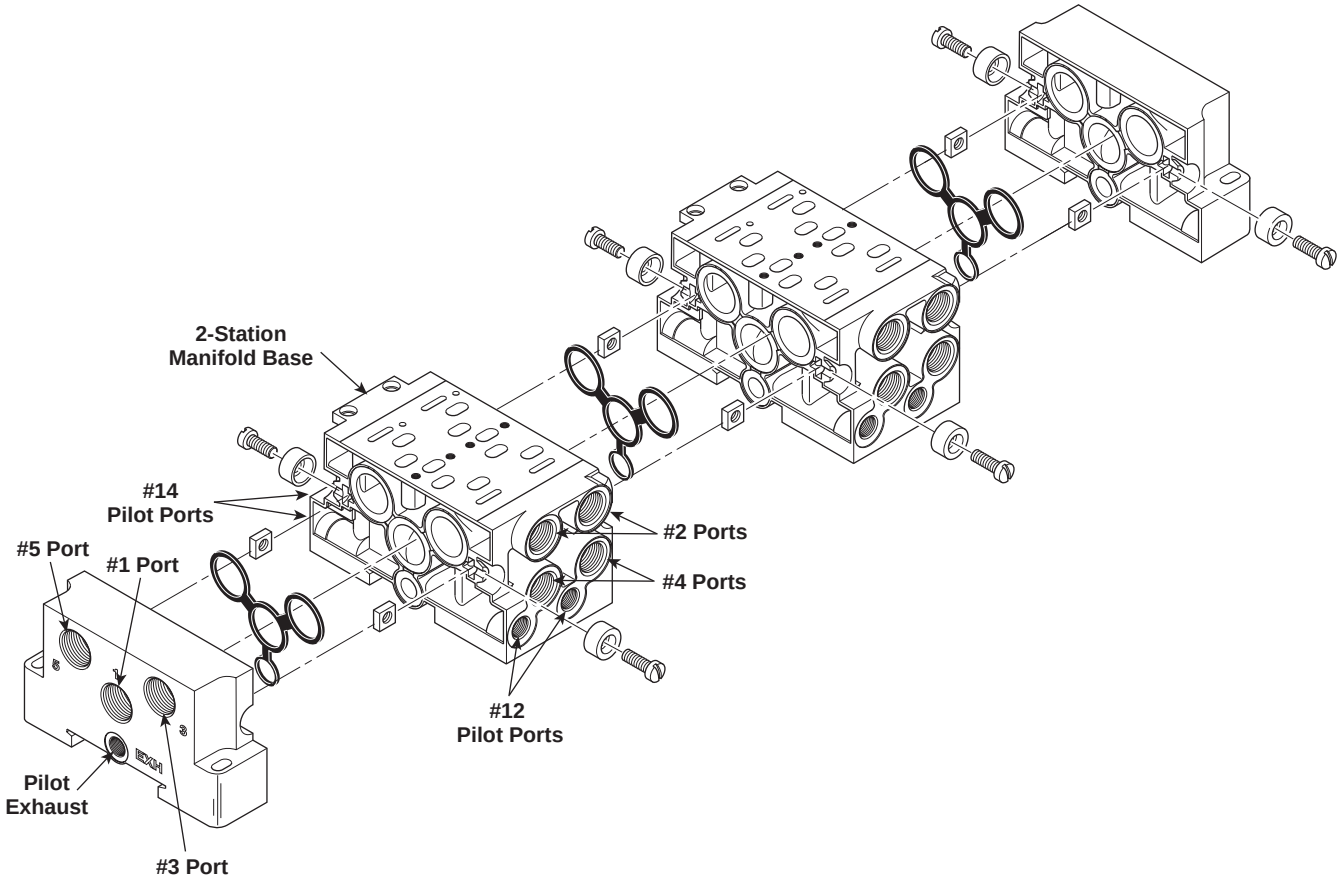
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Manifold Assembly

Ports

1 .....Pressure
2 .....#2 Cylinder Port, 1 to 2 Flow Path
3 .....Cylinder Exhaust Port, 2 to 3 Flow Path
4 .....#4 Cylinder Port, 1 to 4 Flow Path
5 .....Cylinder Exhaust Port, 4 to 5 Flow Path
14 .....#14 Pilot Port
12 ..... #12 Pilot Port

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)



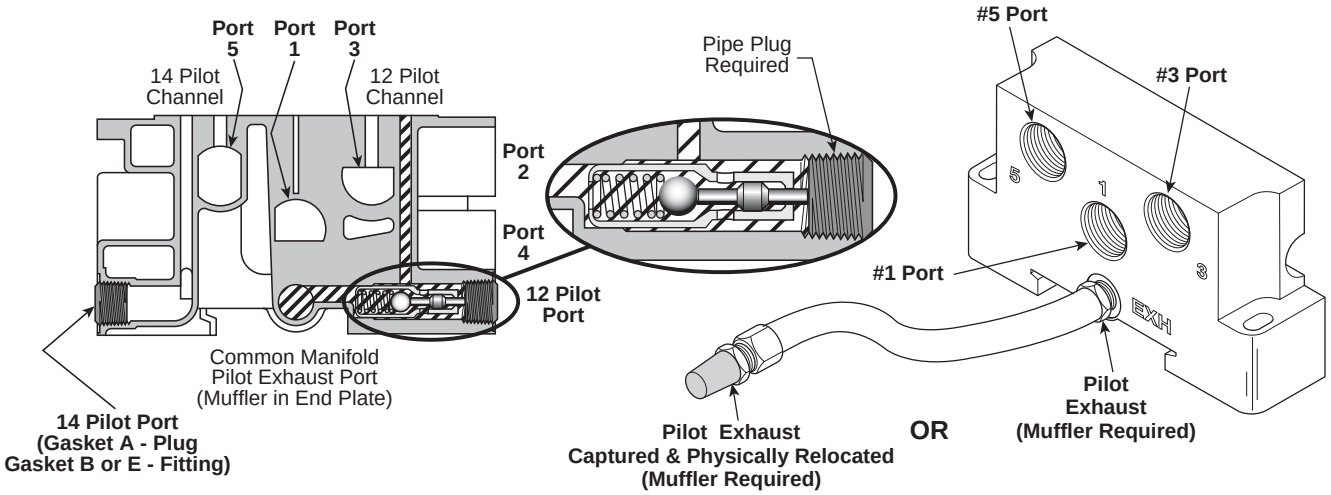
DX01 Shown

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Captured Pilot Exhaust

PJL01, Size 01

A Built-in 2-Position Selector converts the External Pilot Channel (12) into a Common Solenoid Pilot Exhaust Channel.



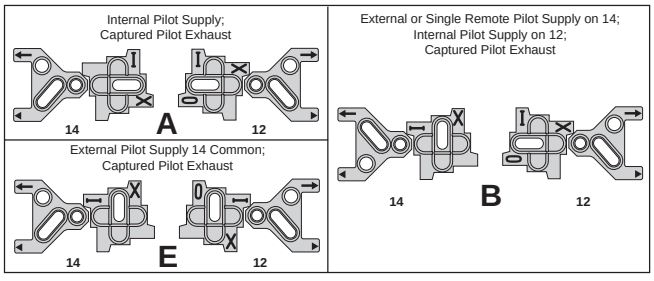
Built-in Selector

When using A, B or E ***Captured*** Selector Gasket Positions, the 12 Pilot Port is plugged. The 14 Pilot Port has a plug when using Gasket A or a fitting when using Gasket B or E. When in place, the Plug in the 12 Pilot Port depresses the Selector to connect the Valve Solenoid Pilot Exhaust to a Common Manifold Exhaust Port. The Plug **must** make contact with the Pin of the Internal Check Valve.

Insert a Muffler in the EXH Port of the End Plate.

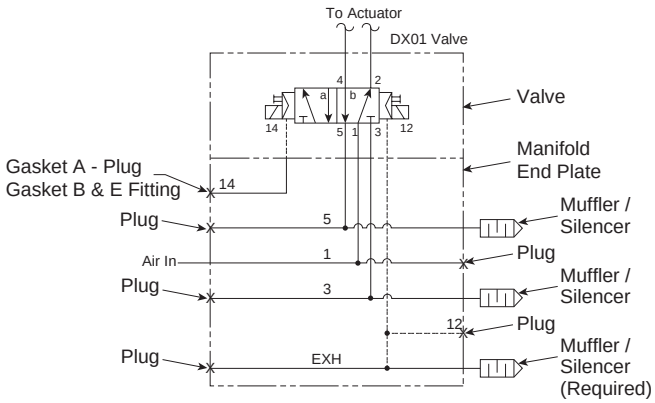
Captured Selector Gasket Positions

When using A, B or E Selector Gasket Positions as shown in the schematic at right.



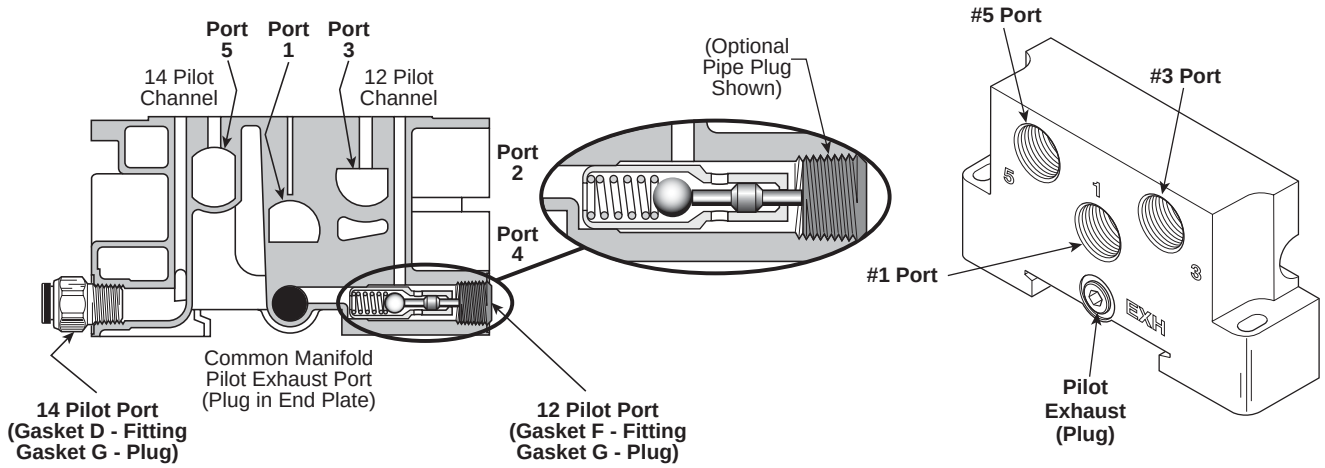
Insert a muffler or vent in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates or #12 of PL02 & PL01 Subbases when using solenoids with ***Captured*** Pilot Exhaust.

DX01 Manifold Assembly Schematic for *Captured* Selector Gasket Positions A, B and E



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Vented
Pilot Exhaust



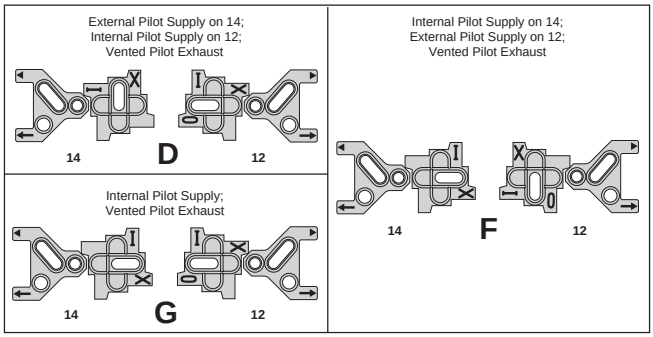
Manifold **End Plate**

Built-in Selector

When using D or G ***Vented*** Selector Gasket Positions, the 12 Pilot Port may be plugged (Optional). The 14 Pilot Port has a plug when using Gasket G or a fitting when using Gasket D or F. The valve solenoid pilot exhaust vents out the pilot adapter on the G Gasket Selection.

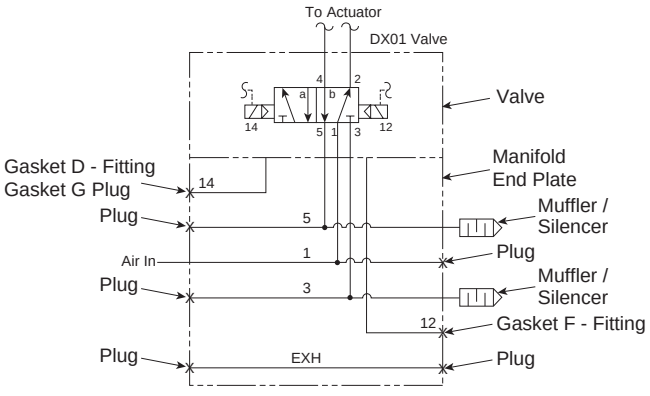
Vented Selector Gasket Positions

When using D, F or G Selector Gasket Positions, pilot exhaust air is vented out the valve.



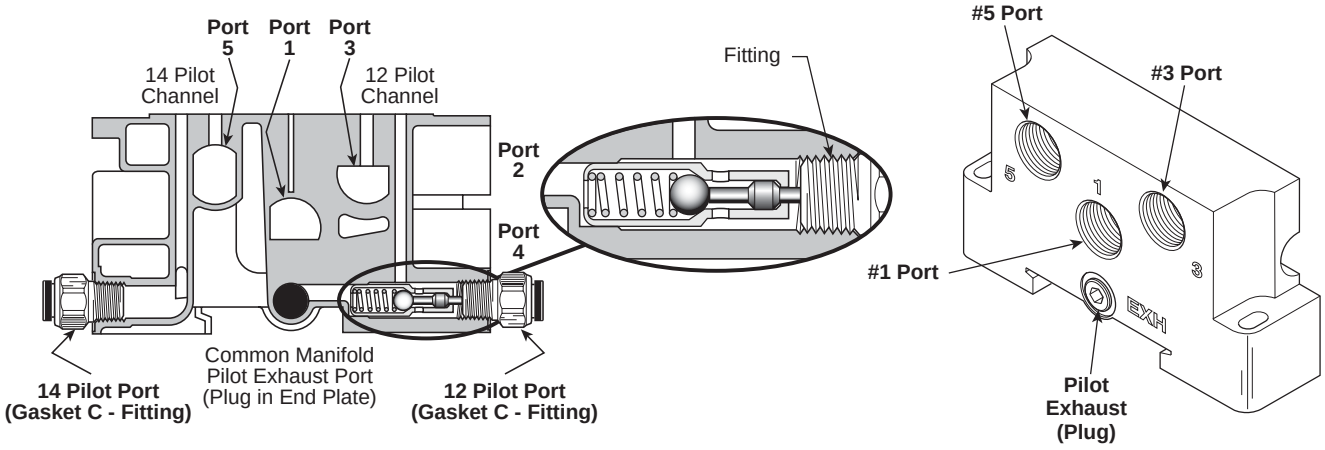
A plug may be inserted in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates, #12 of PL02 & PL01 Subbases.

DX01 Manifold Assembly Schematic for *Vented* Selector Gasket Positions D or G



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External Double Remote Pilot

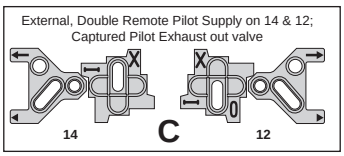


Built-in Selector

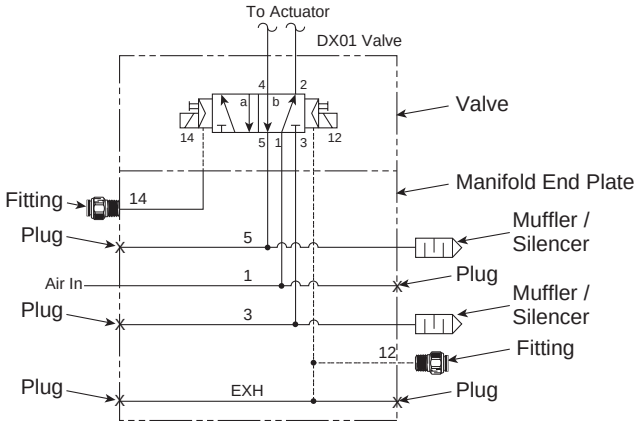
When using C ***External Double Remote Pilot*** Selector Gasket Position, a fitting is used in Pilot Port 14 & 12. Free flow between Port 14 & 12 and the valve allows Remote Pilot Pressure and an exhaust path for the captured pilot exhaust.

External Double Remote Pilot Selector Gasket Position

When using C Selector Gasket Position.



DX01 Manifold Assembly Schematic for *External Double Remote Pilot* Selector Gasket Position C



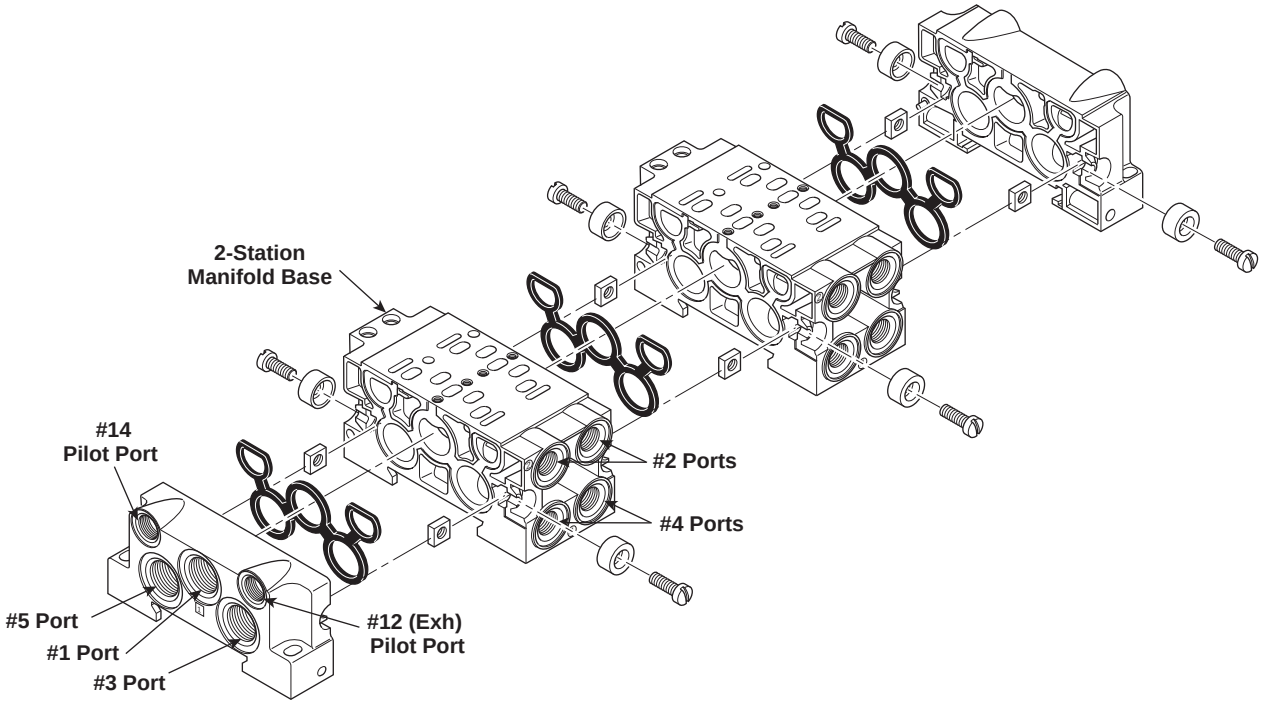
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Manifold Assembly

Ports

1.....Pressure
2.....#2 Cylinder Port, 1 to 2 Flow Path
3.....Cylinder Exhaust Port, 2 to 3 Flow Path
4.....#4 Cylinder Port, 1 to 4 Flow Path
5.....Cylinder Exhaust Port, 4 to 5 Flow Path
14.....#14 Pilot Port
12.....#12 Pilot Port

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)



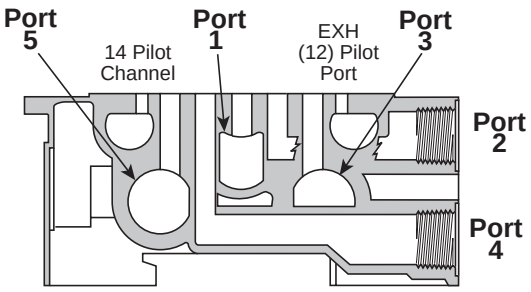
DX02 Shown

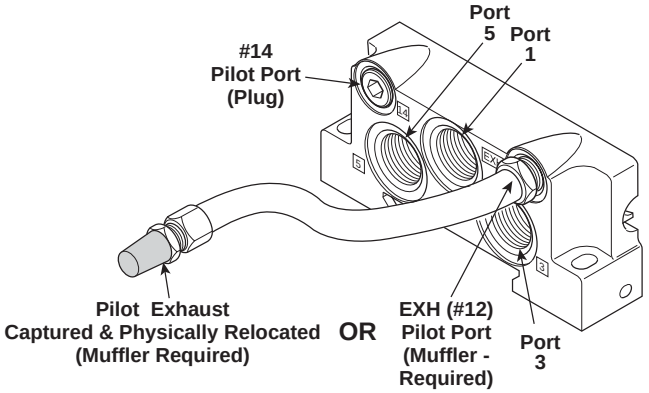
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Captured Pilot Exhaust

PJLP02, Size 02*

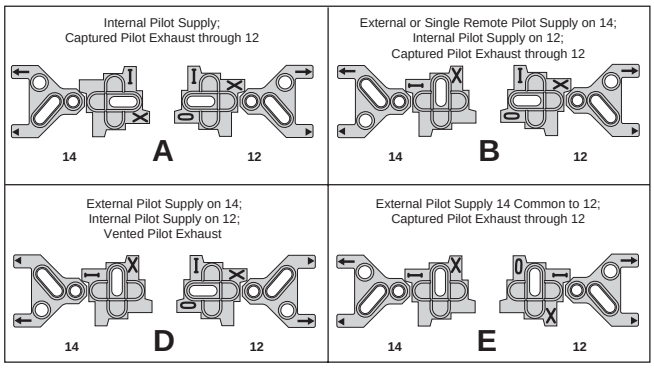
As shown in the illustrations below, the EXH (12) & 14 Pilot Ports are exhausted internally in the valve body into a single chamber labeled EXH on the end plate. When using A, B, D or E Selector Gasket Positions, the EXH (12) Pilot Port is vented with a muffler or micron screen. The 14 Pilot Port is plugged.





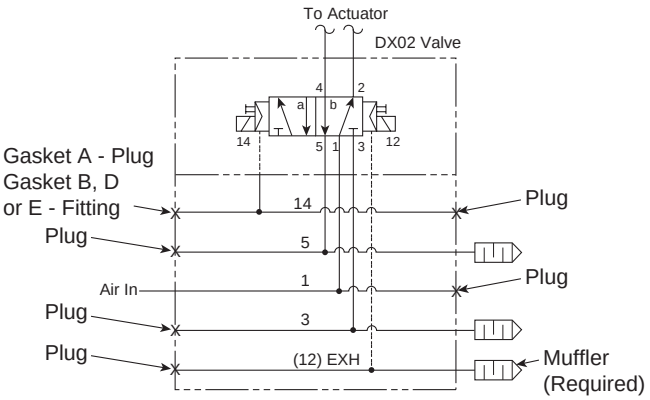
Captured Selector Gasket Positions

When using A, B, D or E, Selector Gasket Positions, the ports must be either plugged or vented with a muffler or micron screen as shown in the schematic at right.



* PJLP02 Manifolds can be used for External Pilot, **NOT** Remote Pilot

DX02 Manifold Assembly Schematic for *Captured* Selector Gasket Positions A, B, D and E

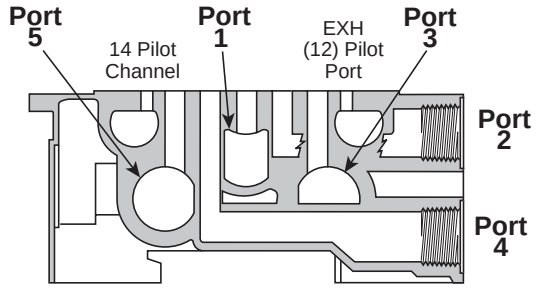


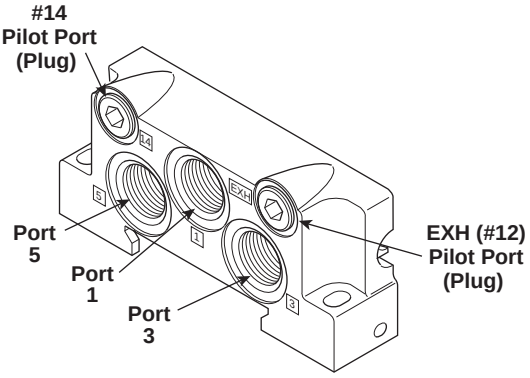
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Vented
Pilot Exhaust

PJLP02, Size 02

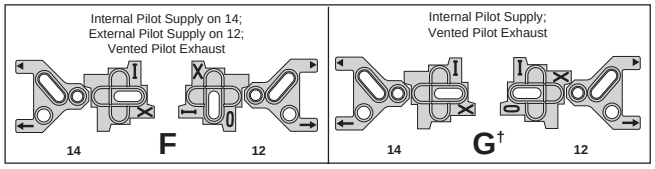
When using F or G Selector Gasket Positions, the EXH (12) Pilot Port and the 14 Pilot Port are plugged and the Pilot Exhaust is vented through the Pilot Adapter.





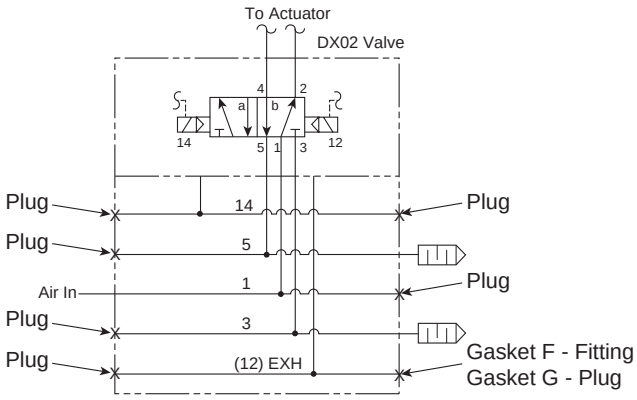
Vented Selector Gasket Positions

When using F or G, Selector Gasket Positions, the ports must be either plugged or vented with a muffler or micron screen as shown in the schematic at right.



† A plug may be inserted in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates or #12 of PL02 & PL01 Subbases.

DX02 Manifold Assembly Schematic for *Vented* Selector Gasket Positions F and G

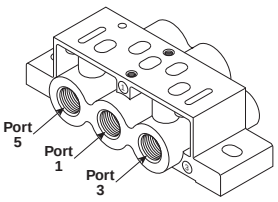


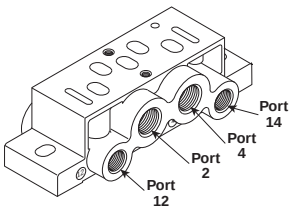
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Subbase Assembly

Ports

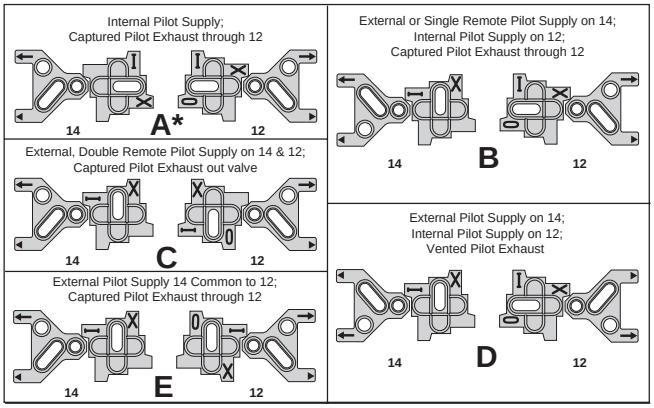
1.....Pressure
2.....#2 Cylinder Port. 1 to 2 Flow Path.
3.....Cylinder Exhaust Port. 2 to 3 Flow Path.
4.....#4 Cylinder Port. 1 to 4 Flow Path.
5.....Cylinder Exhaust Port. 4 to 5 Flow Path.
14..... #14 Pilot Port
12..... #12 Pilot Port



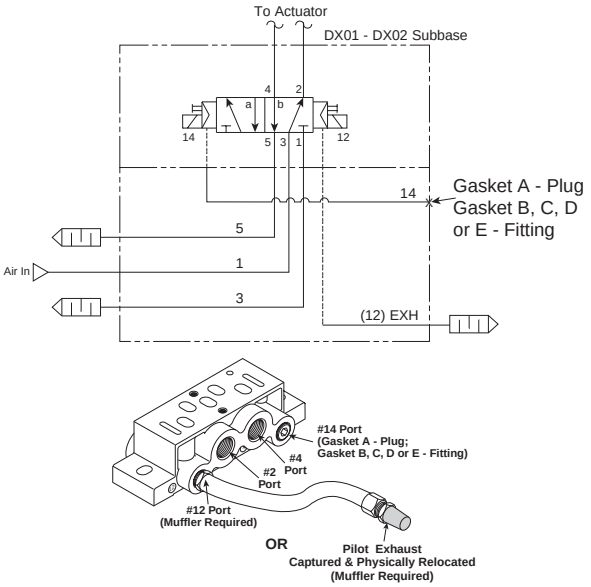


Captured Selector Gasket Positions

When using A, B, C, D or E, Selector Gasket Positions, the ports must be either plugged or vented with a muffler or micron screen as shown in the schematic at right.

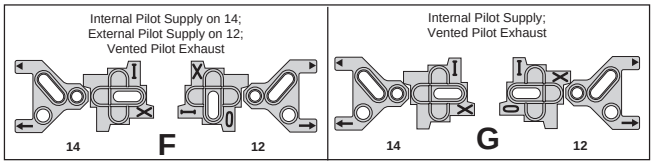


DX02 & DX01 Subbase Assembly Schematic for *Captured* Selector Gasket Positions A, B, C, D and E

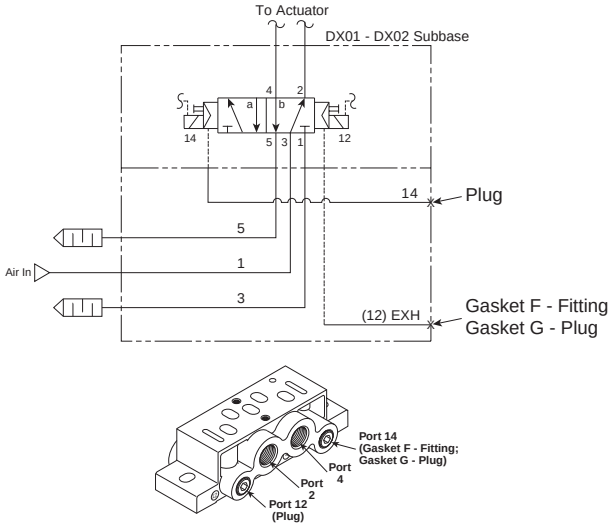


Vented Selector Gasket Positions

When using F or G, Selector Gasket Positions, the ports must be either plugged or vented with a muffler or micron screen as shown in the schematic at right.



DX02 & DX01 Subbase Assembly Schematic for *Vented* Selector Gasket Positions F and G

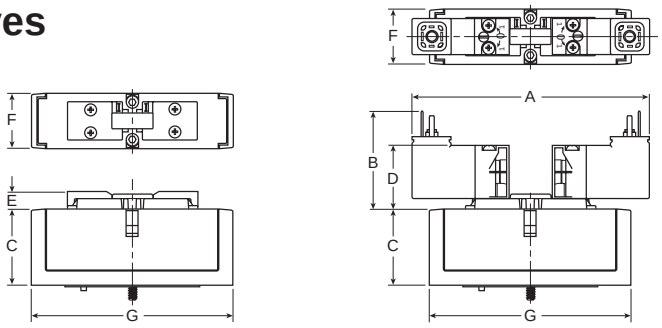


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DX02

DX01

Valves



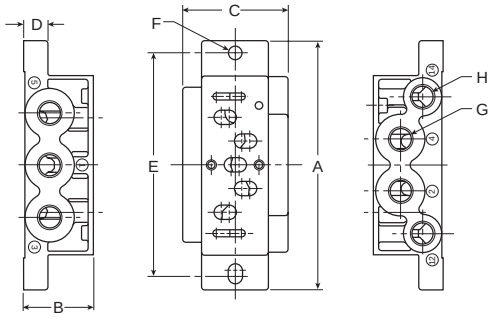
Series	A	B	C	D	E	F	G
DX02	4.06 (103)	1.61 (41)	1.41 (36)	1.06 (27)	.31 (8)	.71 (18)	3.15 (80)
DX01	4.06 (103)	1.61 (41)	1.41 (36)	1.06 (27)	.31 (8)	1.02 (26)	3.94 (100)

Inches (mm)

DX02

DX01

Individual Subbase



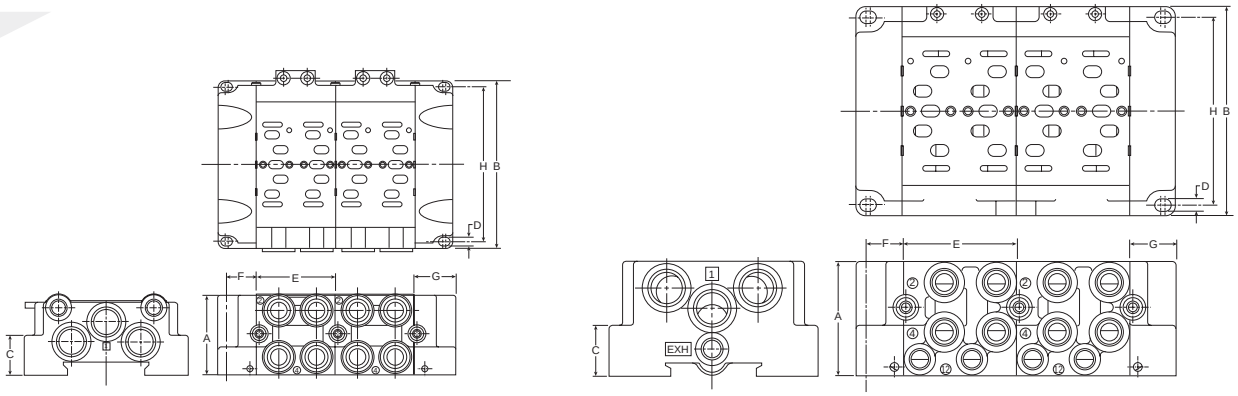
Series	Part Number	A	B	C	D	E	F	G	H
DX02	PL02	3.15 (80)	.87 (22)	1.06 (27)	.31 (8)	2.76 (70)	.216 Dia. (Ø 5.5)	1/8	M5
DX01	PL01	3.94 (100)	1.10 (28)	1.65 (42)	.39 (10)	3.54 (90)	.216 Dia. (Ø 5.5)	1/4	1/8

Inches (mm)

DX02

DX01

2-Station Manifold Bases



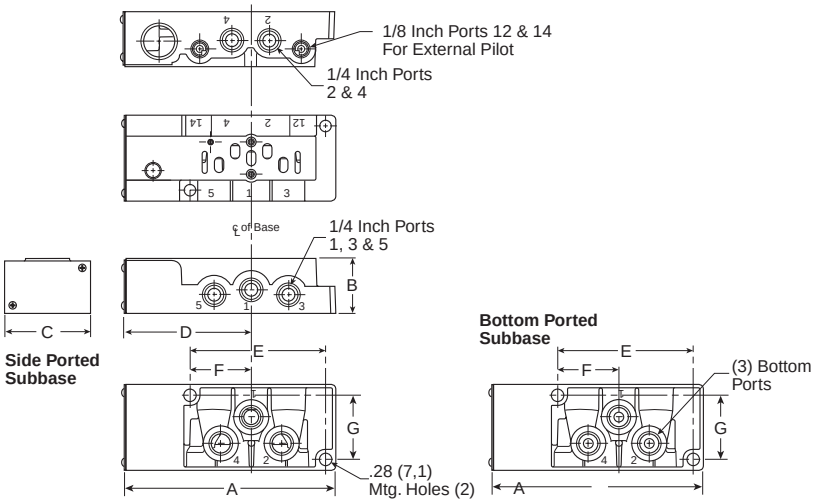
Series	Part Number	A	B	C	D	E	F	G	H
DX02	PJLP02 / PEJ02	1.52 (38.5)	3.15 (80)	.47 (12)	.165 Dia. (Ø 4.2)	1.50 (38)	.55 (14)	.71 (18)	2.83 (72)
DX01	PJL01 / PJLP01 / PEJ01	2.17 (55)	3.94 (100)	.94 (24)	.216 Dia. (Ø 5.5)	2.13 (54)	.67 (17)	.87 (22)	3.54 (90)

Inches (mm)

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DX01

DX01 15407-1, PS5511 Subbases



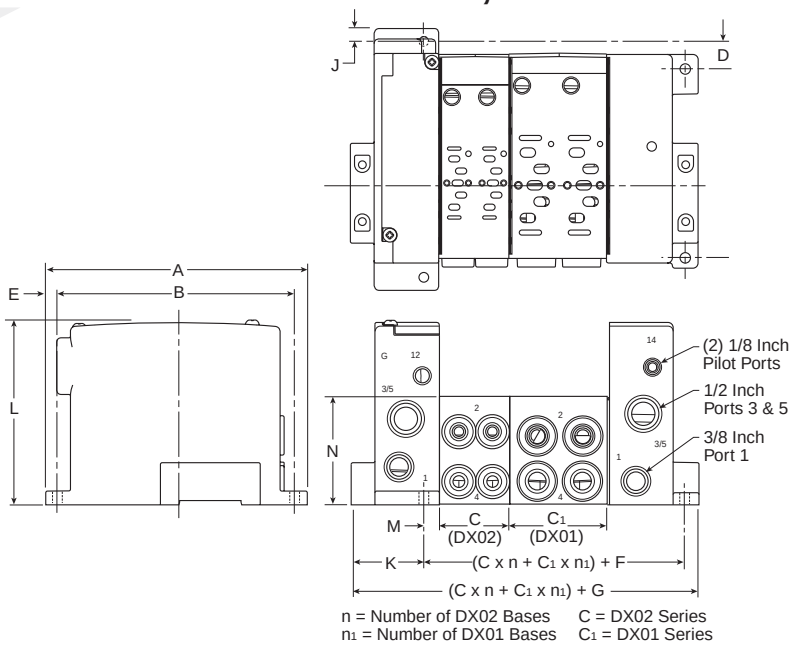
A	B	C	D
4.88 (124)	1.28 (32.5)	2.00 (50.8)	2.91 (74)
E	**F**	**G**	
1.43 (36.2)	3.16 (80.2)	1.49 (37.9)	

Inches (mm)

DX02

DX02 & DX01 15407-1, PS5611 & PS5511 Manifolds

DX01

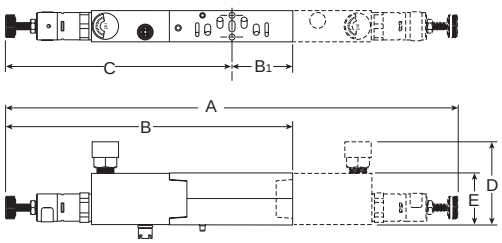


A	B	C	C_1
5.98 (152)	5.39 (137)	1.61 (40.8)	2.24 (56.8)
D	**E**	**F**	**G**
.63 (16)	.30 (7.5)	2.14 (54.4)	4.12 (104.6)
H	**J**	**K**	**L**
4.32 (109.8)	.15 (4)	1.68 (42.7)	4.17 (106)
M	**N**		
.33 (8.4)	2.48 |(63)		

Inches (mm)

DX01

DX02

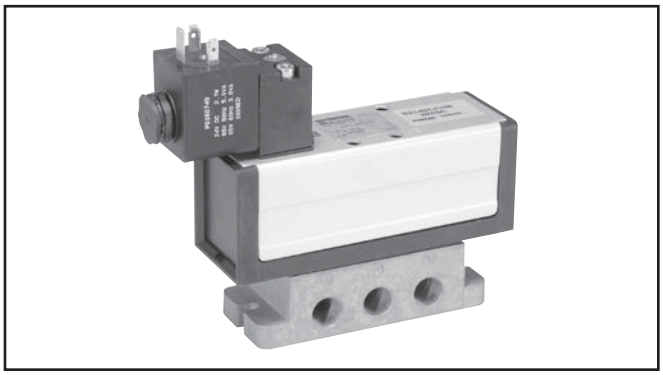


Series	Part Number	A	B	B_1	C	D	E
DX02	PS5637	10.28 (261)	6.14 (156)	1.02 (26)	5.13 (130)	2.60 (66)	1.18 (30)
DX01	PS5537	10.00 (254)	6.42 (163)	1.42 (36)	5.00 (127)	2.72 (69)	1.18 (30)

Inches (mm)

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Richland, Michigan
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ISOMAX 5599-1



Ceramic Technology / Valve Specifications

- Subbase Mounted Valves Conforming to ISO Standard 5599/1
- High Flow: DX1 (1.15 Cv), DX2 (2.50 Cv), DX3 (4.15 Cv)
- Air or Solenoid Operation Using CNOMO Solenoids
- Can Be Vacuum Operated

Air Condition:
Filtered to 40µ

Dual Pressure Supply from Exhaust Ports:
Yes - Without additional pressure at 12 and 14

Dust and Water Protection:
IP 65 (According to EN 60529)

Mechanical Life:
> 100 million operations (Dry air filtered 40 µ, 2 Hz, 6 bar, 20°C)

Media:
Air or inert gas, filtered 40 µ (Class 5 according to ISO 8573-1), lubricated or non-lubricated

Operating Temperature Range:
-10°C to 60°C (14°F to 140°F)

Flow Rating (Cv)

Size	Port Size	Mounting Style	2-Position	3-Position
DX1	1/4" Ports	Subbase	1.15	0.75
	1/4" Ports	Manifold	0.80	0.60
DX2	3/8" Ports	Subbase	2.50	2.40
	3/8" Ports	Manifold	2.05	1.95
DX3	1/2" Ports	Subbase	4.15	4.00
	1/2" Ports	Manifold	4.10	3.65

Cv tested per ANSI / (NFPA) T3.21.3

Flow Rating (Cv) with Sandwich Regulator

	Common Pressure				Dual Pressure			
	1-2	1-4	2-3	4-5	1-2	1-4	2-3	4-5
DX1	0.55	0.49	1.06	1.02	0.32	0.42	0.25	0.38
DX2	1.06	1.05	2.33	2.17	0.93	0.66	0.77	1.15

Note: All Cv's calculated with regulator adjusted full open.

Response Time**

Single Solenoid 2-Position - Air Return / Spring Assist

Valve Size	Port Size	0 Cu. In. Chamber		## Cu. In. Chamber	
		Fill	Exhaust	Fill	Exhaust
DX1	1/4"	.025	.030	.160	.235
DX2	3/8"	.040	.045	.170	.235
DX3	1/2"	.060	.065	.245	.330

DX1 (50), DX2 (100), DX3 (200)

** With 100 PSIG supply, time required to fill from 0 to 90 PSIG and Exhaust from 100 PSIG to 10 PSIG measured from the instant of energizing or de-energizing 24VDC solenoid.

Tested per ANSI / (NFPA) T3.21.8

Solenoid Information

Code	Voltage			Power (W / VA)
	AC		DC	
	60Hz	50Hz		
19	—	—	24	2.8W
49	—	—	24	2.7W
53	120	115	—	3.7VA

Data tested with LED and Surge Suppression.

Operating Pressure

Vacuum to 145 PSIG (10 bar)

Function		M.O.P. (PSIG)		
Internal Pilot		DX1	DX2	DX3
21	2-Position, Spring Return	36	30	30
51	2-Poswition, Air Return	30	30	30
06	2-Position	15	15	15
11	3-Position, CE	45	36	36
16	3-Position, APB	45	36	36
13	3-Position, PC	45	36	—
External Pilot		DX1	DX2	DX3
22	2-Position, Spring Return	36	30	30
53	2-Position, Air Return	30	30	30
08	2-Position	15	15	15
12	3-Position, CE	45	36	36
18	3-Position, APB	45	36	36
24	3-Position, PC	45	36	—

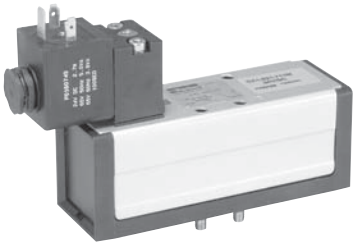
Material Specification

Body ..... Polyamide Reinforced Fiberglass
Casing - End Plates ..... Anodized Aluminium
Seals ..... Nitrile
Screws ..... Zinc Plated Steel
Valve Member / Seat ..... Self Lubricating / Ceramic
Valve Plate ..... Zinc

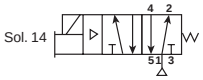
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Single Solenoid

2-Position



DX1 Shown

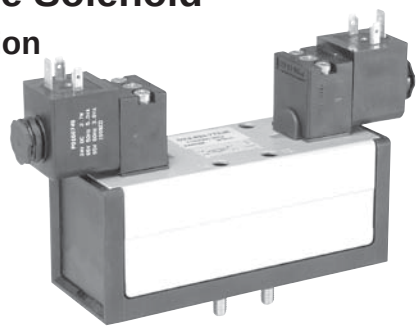


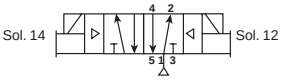
DX1	**DX1-621-BL53**	120VAC	1.15 Cv C = 3.8 Nl/s x bar, b = 0.35 Qn = 1032 l/min, Qmax = 1530 l/min
	DX1-621-BL49	24VDC	
DX2	**DX2-621-BL53**	120VAC	2.50 Cv C = 8.2 Nl/s x bar, b = 0.35 Qn = 2298 l/min, Qmax = 3522 l/min
	DX2-621-BL49	24VDC	
DX3	**DX3-621-BL53**	120VAC	4.15 Cv C = 14.5 Nl/s x bar, b = 0.35 Qn = 3840 l/min, Qmax = 6060 l/min
	DX3-621-BL49	24VDC	

30mm 3-Pin Solenoid, NLMOR, Unlighted, Internal Pilot, Valve Less Base

Double Solenoid

2-Position



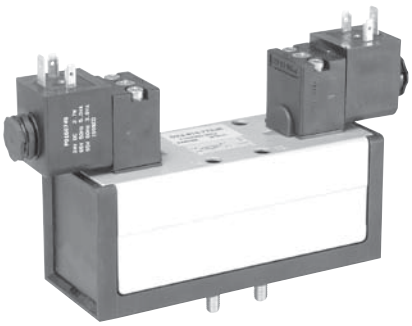


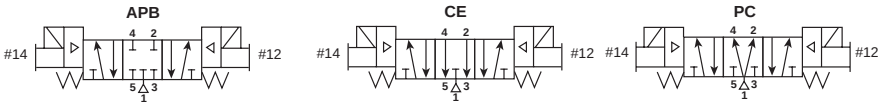
DX1	**DX1-606-BL53**	120VAC	1.15 Cv C = 3.8 Nl/s x bar, b = 0.35 Qn = 1032 l/min, Qmax = 1530 l/min
	DX1-606-BL49	24VDC	
DX2	**DX2-606-BL53**	120VAC	2.50 Cv C = 8.2 Nl/s x bar, b = 0.35 Qn = 2298 l/min, Qmax = 3522 l/min
	DX2-606-BL49	24VDC	
DX3	**DX3-606-BL53**	120VAC	4.15 Cv C = 14.5 Nl/s x bar, b = 0.35 Qn = 3840 l/min, Qmax = 6060 l/min
	DX3-606-BL49	24VDC	

30mm 3-Pin Solenoid, NLMOR, Unlighted, Internal Pilot, Valve Less Base

Double Solenoid

3-Position APB
3-Position CE





	APB	CE	PC		
DX1	**DX1-616-BL53**	**DX1-611-BL53**	**DX1-613-BL53**	120VAC	0.75 Cv C =2.5 Nl/s x bar, b = 0.35 Qn = 672 l/min, Qmax = 995 l/min
	DX1-616-BL49	**DX1-611-BL49**	**DX1-613-BL49**	24VDC	
DX2	**DX2-616-BL53**	**DX2-611-BL53**	**DX2-613-BL53**	120VAC	2.4 Cv C = 7.9 Nl/s x bar, b = 0.35 Qn = 2206 l/min, Qmax = 3381 l/min
	DX2-616-BL49	**DX2-611-BL49**	**DX2-613-BL49**	24VDC	
DX3	**DX3-616-BL53**	**DX3-611-BL53**	—	120VAC	4.0 Cv C = 13.9 Nl/s x bar, b = 0.35 Qn = 3686 l/min, Qmax = 5815 l/min
	DX3-616-BL49	**DX3-611-BL49**	—	24VDC	

30mm 3-Pin Solenoid, NLMOR, Unlighted, Internal Pilot, Valve Less Base.

Torque Specifications
DX1: 25 to 35 in-lbs (2.82 to 3.95 Nm)
DX2: 115 to 130 in-lbs (12.99 to 14.69 Nm)
DX3: 120 to 1430 in-lbs (13.56 to 15.82 Nm)

For Compact and VDMA Subbase and Manifold, see page E201.
For Hi-Flow Subbases and Manifolds, see page E202.

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BOLD OPTIONS ARE MOST POPULAR

Basic Series	
ISO 5599-1	**DX1 - Size 1**
ISO 5599-1	**DX2 - Size 2**
ISO 5599-1	**DX3 - Size 3**

Pilot	
Air Operated Remote Pilot	**4**
Solenoid Operated	**6**

Function	
Internal Pilot Supply	
2-Position, Spring Return, Air Assist	**21**
2-Position, Diff Return	**51**
2-Position	**06**
3-Position, CE	**11**
3-Position, APB	**16**
3-Position, PC	**13***
External Pilot Supply†	
2-Position, Spring Return, Air Assist	22
2-Position, Diff Return	53
2-Position	08
3-Position, CE	12
3-Position, APB	18
3-Position, PC	24*

* Not offered with DX3 Valves.
† Must be specified when using Sandwich Regulators.

Voltage & Frequency			
	AC		DC
	60Hz	50Hz	
19*			24
49			**24**
53	**120**	**110**	
Blank	Remote Pilot or Valve Less Coil		

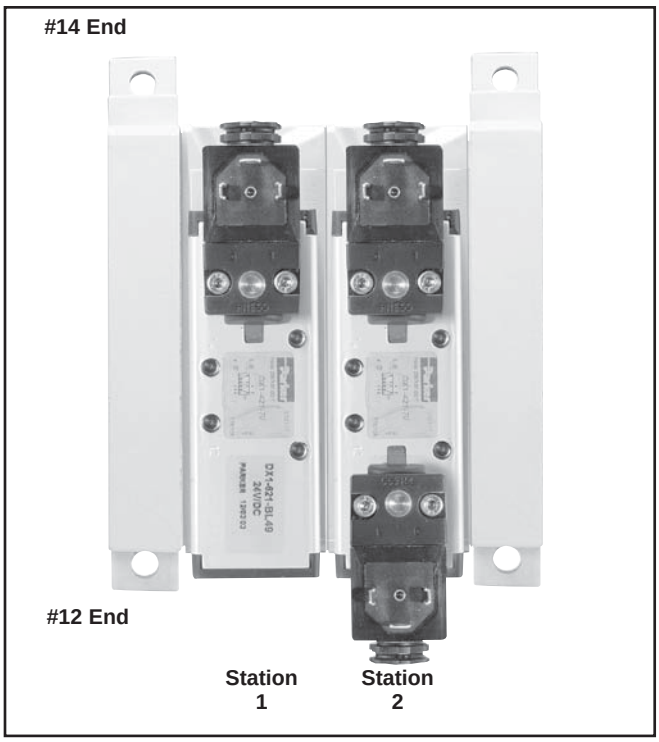
* LED & Surge Suppression.
Only Available with Enclosure "6".

5599-1 Enclosure / Lead Length / Light	
0**	**None, Remote Pilot Valve**
6*	2-Pin, M12 EURO Connector with CNOMO Operator, Light
L	**3-Pin, 30mm DIN 43650A with CNOMO Connector, No Light**
P	3-Pin, 22mm Industrial with CNOMO Connector, No Light
N†	None, Valve Less Coil, No Light

* Only available with Voltage & Frequency "19".
**Must use Overrides Option "6".
† Must use Overrides Option "B" or "C".

5599-1 Overrides	
6	**Remote Pilot / Without Solenoid**
B	**Non-Locking, Flush, Push**
C	Locking, Flush, Push / Turn

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How To Order Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.

2. List complete valve/base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1.

(If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Model Number

AA H1 S 0 03 —

Valve Series	
DX1, ISO Size 1	H1
DX2, ISO Size 2	H2
DX3, ISO Size 3	H3

End Plate Type	
Standard Non-Collective Wiring	S
VDMA, 5599-1	V

Port Type	
NPT	0
BSPP "G"	1

Number of Stations	
01	1 Station
•	•
•	•
•	•
21	21 Stations

Transition Plate	
Blank	No Transition Plate
C*	DX1 to DX2
D*	DX1 to DX3
E**	DX2 to DX3

* Use DX1 Valve Series.
** Use DX3 Valve Series.

Example: Application requires a 2-Station manifold.

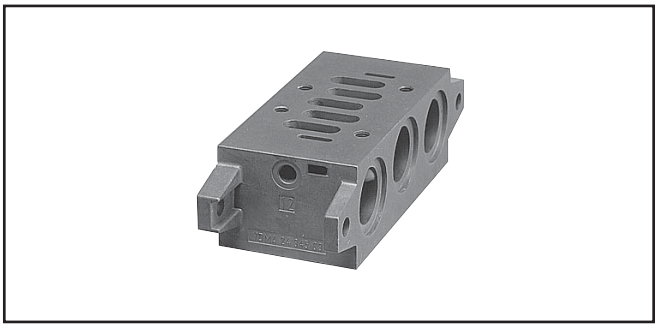
Qty.	Part No.
1	AAH2S002
1	DX2-621-BL49..... Valve Station 1
1	PS4111570CP.....Base Station 1
1	DX2-606-BL49 ..... Valve Station 2
1	PS4111570CP.....Base Station 2

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5599-1 Compact Manifolds, Subbases & Accessories

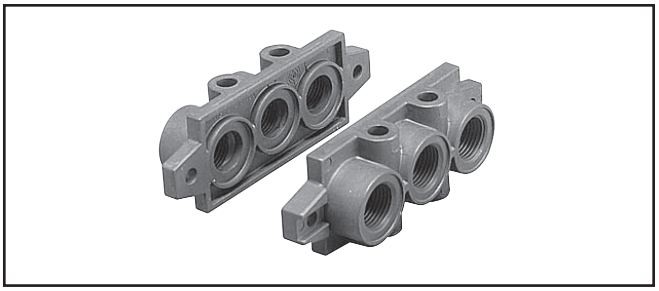
Manifold VDMA – Form C Bottom Port

Size	Port Size	Kit Number
		BSPP "G"
DX1	1/4"	P2N-VM512MB
DX2	3/8"	P2N-WM513MB
DX3	1/2"	P2N-YM514MB



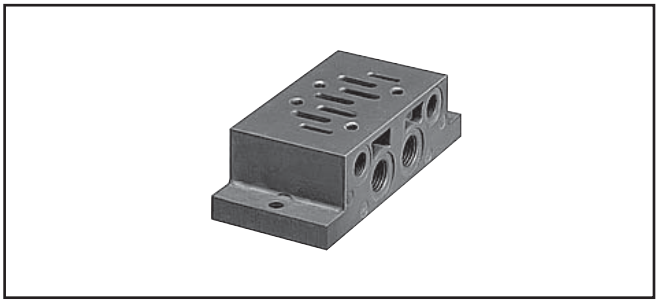
VDMA End Plates – Form D

Size	Port Size	Kit Number
		BSPP "G"
DX1	3/8"	P2N-VM513ES
DX2	1/2"	P2N-WM514ES
DX3	1"	P2N-YM518ES



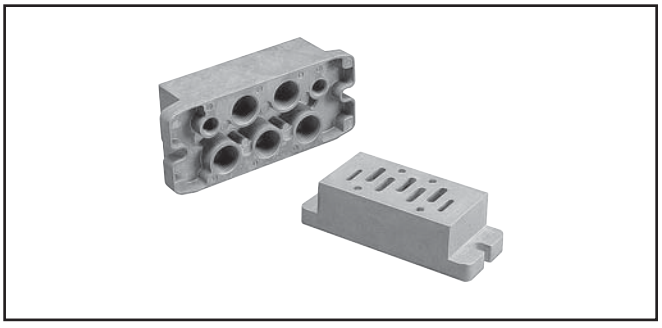
Subbase – Side Ports (5599-1 & VDMA)

Size	Port Size	5599-1 Kit Number		VDMA Kit
		NPT	BSPP "G"	BSPP "G"
DX1	1/4"	**PL1-1/4-80**	PL1-1/4-70	P2N-VS512SD
DX2	3/8"	**PL2-3/8-80**	PL2-3/8-70	P2N-WS513SD
DX3	1/2"	PL3-1/2-80	PL3-1/2-70	P2N-YS514SD



Subbase – Bottom Ports

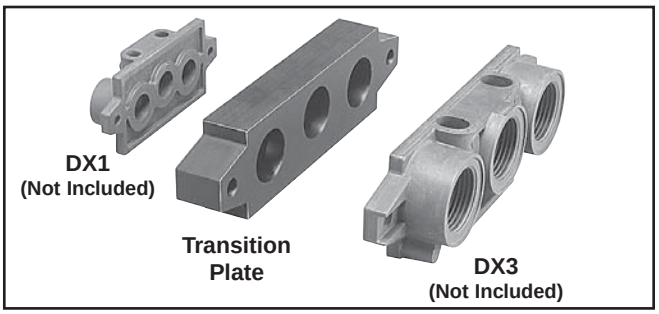
Size	Port Size	5599-1 Kit Number	
		NPT	BSPP "G"
DX1	1/4"	PD1-1/4-80	PD1-1/4-70
DX2	3/8"	PD2-3/8-80	PD2-3/8-70



VDMA Transition Plate

Kit Number
P2N-VM500AK

Kit includes: Transition Plate Only. Order P2N-VM513ES and P2N-YM518ES Separately to Assemble Add-A-Fold



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5599-1, DX1, DX2 & DX3
Hi-Flow Manifold / Subbase Kits

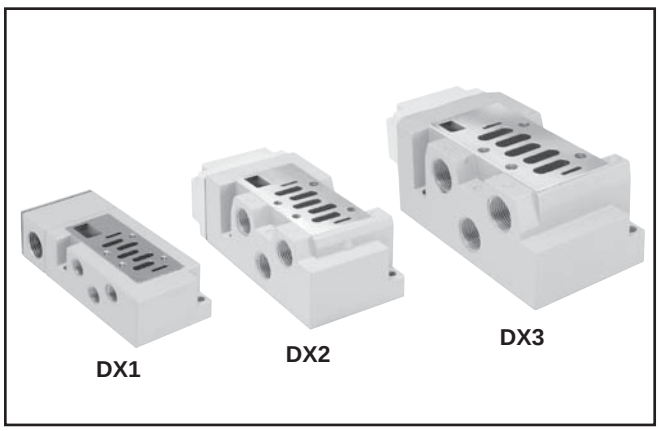
PS401155 0 C P

Enclosures / Lead Length	
0	None, No Electrical Plug - 5599-1

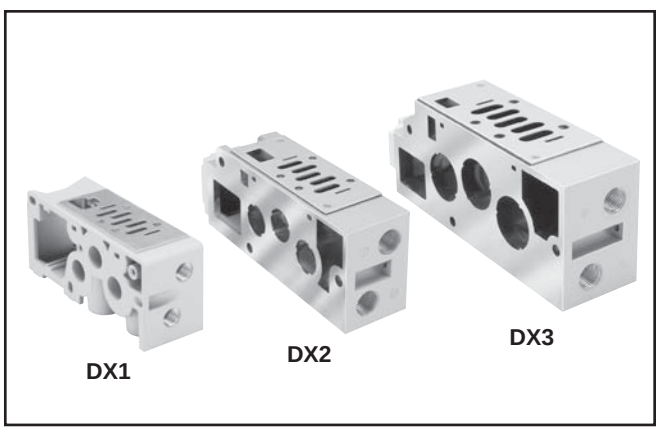
Mounting Base Style / Port Size					
DX1 Series		DX2 Series		DX3 Series	
Subbase: 3/8 NPT Side Ports	**PS401115**	**Subbase: 1/2 NPT Side Ports**	**PS411117**	**Subbase: 3/4 NPT Side Ports**	**PS421119**
Subbase: 3/8 BSPP Side Ports	PS401116	Subbase: 1/2 BSPP Side Ports	PS411118*	Subbase: 3/4 BSPP Side Port	PS421110*
Manifold: 3/8 NPT End Ports	**PS401155**	Subbase: 1/2 NPT Bottom / End Port	PS411127	Subbase: 3/4 NPT Bottom / End Port	PS421129
Manifold: 3/8 BSPP End Ports	PS401156*	Subbase: 1/2 BSPP Bottom / End Port	PS411128*	Subbase: 3/4 BSPP Bottom / End Port	PS421120*
Manifold: 3/8 NPT Bottom / End Port	PS401165†	**Manifold: 1/2 NPT End Port**	**PS411157**	**Manifold: 3/4 NPT End Port**	**PS421159**
Manifold: 3/8 BSPP Bottom / End Port	PS401166*†	Manifold: 1/2 BSPP End Ports	PS411158*	Manifold: 3/4 BSPP End Port	PS421150*
		Manifold: 1/2 NPT Bottom / End Port	PS411167	Manifold: 3/4 NPT Bottom / End Port	PS421169
		Manifold: 1/2 BSPP Bottom / End Port	PS411168*	Manifold: 3/4 BSPP Bottom / End Port	PS421160*

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.
† #1 Bottom Port - 1/4".

Subbase Kits



Manifold Kits



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5599-1, DX1, DX2 & DX3
End Plate Kits for PS4 Manifolds

PS403101 0 C P

Basic Series	
DX1	PS403101
DX2	PS413101
DX3	PS423101

Thread Type	
0	NPT
1	BSPP "G"

Engineering Level	
C	Current



DX1 Non-Collective Wiring End Plates

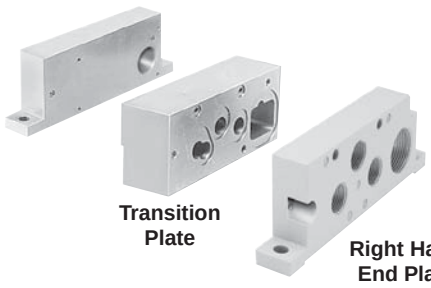
5599-1, DX1, DX2 & DX3
Transition Plate Kits for PS4 Manifolds

PS402701 0 C P

Transition Plate Type	
DX1 to DX2 to DX3	PS402501
DX1 to DX3	PS402601
DX1 to DX2	PS402701
DX2 to DX3	PS402801

Thread Type	
0	NPT
1	BSPP "G"

Engineering Level	
C	Current



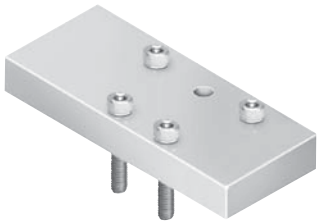
DX1 to DX2 Shown

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Pneumatic Division
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Blanking Plate Kits

Size	Kit Number
DX1	**PS4034CP**
DX2	**PS4134CP**
DX3	**PS4234CP**

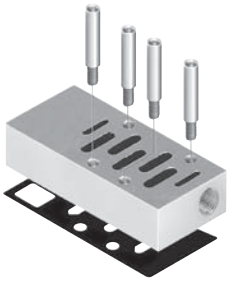
Kit includes: Blanking Plate, Gasket, and Mounting Bolts.



Remote Pilot Access Plate Kits

Size	Port Size	Kit Number	
		NPT	BSPP "G"
H1	1/8"	PS401500CP	PS401501CP
H2	1/8"	PS411500CP	PS411501CP
H3	1/8"	PS421500CP	PS421501CP

Kit includes: Pilot Port Access Plate, Gasket and Mounting Studs.



Manifold Port Isolation Kits

Main Galley (1, 3, 5)

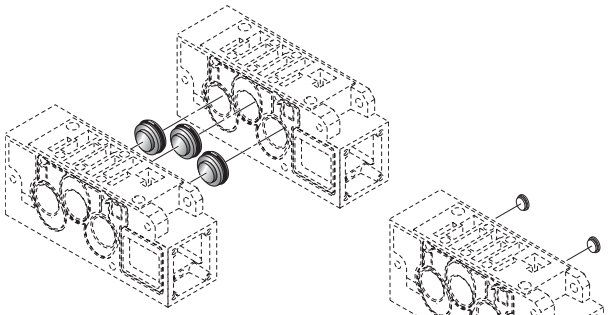
Size	Kit Number	
	PS4 Manifolds	P2N Manifolds
DX1	**PS4032CP**	P2N-VK0P
DX2	**PS4132CP**	P2N-WK0P
DX3	**PS4232CP**	P2N-YK0P

Kit includes: Plugs with O-rings.

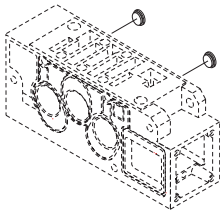
Pilot Galley

Size			Kit Number
DX1	DX2	DX3	**PS4033CP**

Kit includes: Plugs with O-rings.
For use with PS4 Series Manifolds.



DX1, DX2, DX3 Main Galley

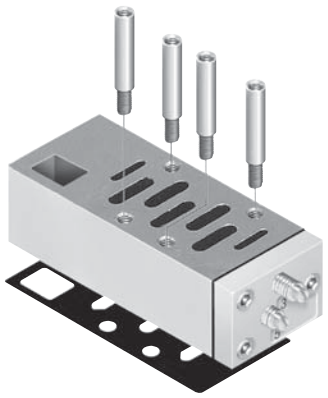


DX1, DX2, DX3 Pilot Galley

Sandwich Flow Controls Features

- Both adjustment screws are located on the 12 end of the unit.
- Sandwich Flow Control mounts with its own studs, which means the valve uses standard bolts for mounting.
- Sandwich Flow Control is not to be used as a shut off device and is not bubble tight when needles are fully turned down.

Size	Kit Number
DX1	PS4042CP
DX2	PS4142CP
DX3	PS4242CP



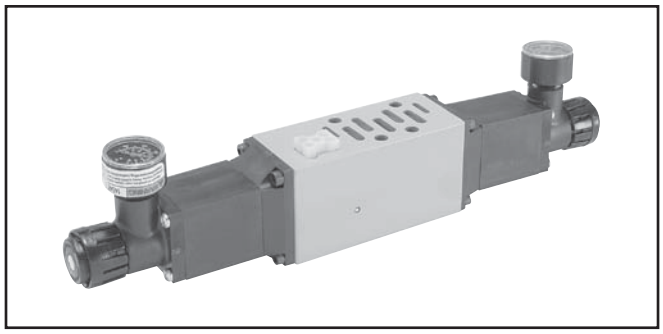
DX2 Shown

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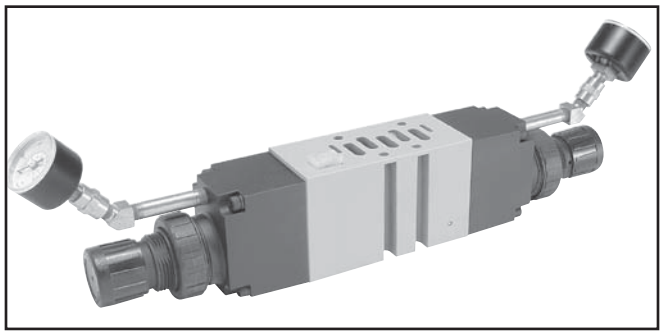
Sandwich Regulators Features

- Remote Air Pilot Operated for hard-to-reach pressure control.
- Unregulated Pilot Pressure to valve for consistent valve shifting regardless of pressure adjustment.

DX1 - Size 1
(Independent Dual Port Regulator Shown)



DX2 - Size 2
(Independent Dual Port Regulator Shown)



BOLD OPTIONS ARE MOST POPULAR

PS4037 | 1 | 6 | 6 | C | P

Basic Series	
DX1	
5599-1	PS4037
DX2	
5599-1	PS4137
DX3	
5599-1	PS4237

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent and Selector Regulators (Option 2 & 3 in Sandwich Block Function).

#4 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent and Selector Regulators (Option 2 & 3 in Sandwich Block Function).

Ordering Components
- *Manifold or Subbase Kit required.*
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

How to Configure Sandwich Regulator / Valve Combinations

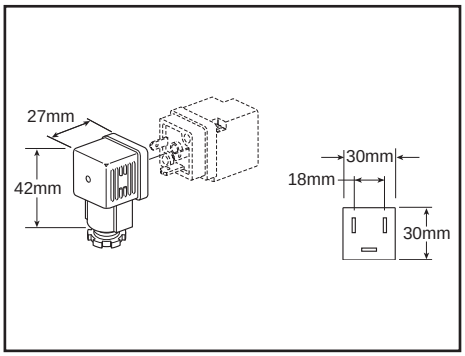
Internal Pilot Configuration -
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration - DX1, DX2, DX3
An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

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Female Electrical Connectors / Accessories

30mm Square 3-Pin – ISO 4400, DIN 43650A (Use with Enclosure "A")



Connector	Connector with 6' (2m) Cord	Description
PS2028BP	PS2028JCP	Unlighted
PS203279BP	PS2032J79CP*	Light – 6-48V, 50/60Hz, 6-48VDC
PS203283BP	PS2032J83CP*	Light – 120V/60Hz
PS203283BP	N/A	Light – 240V/60Hz

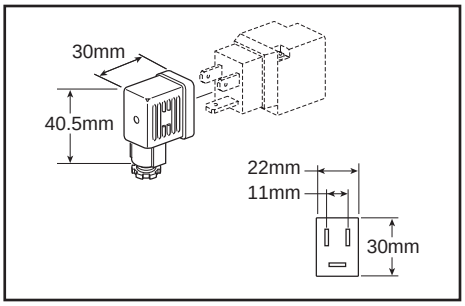
* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 8 to 10mm (0.31 to 0.39 Inch); Contact Spacing: 18mm

22mm Rectangular 3-Pin – Type B Industrial (Use with Enclosure "B")



Connector	Connector with 6' (2m) Cord	Description
PS2429BP	PS2429JBP	Unlighted
PS243079BP	PS2430J79BP*	Light – 24V60Hz, 24VDC
PS243083BP	PS2430J83BP*	Light – 120V/60Hz
PS243087BP	N/A	Light – 240V/60Hz

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 6 to 8mm (0.24 to 0.31 Inch); Contact Spacing: 11mm

CNOMO Operator Adapter

Description	Kit Number
Operator Adapter	**PS2855P**



PS2855P

5599-1 CNOMO Solenoid Kits

Voltage Code	3-Pin 30mm 'L' Coil Kit	2-Pin M12 Euro '6' Coil Kit
19 (24VDC)	—	PS2828619P
42 (24VAC)	P2FCA442	—
45 (12 VDC)	P2FCA445	—
49 (24 VDC)	P2FCA449	—
53 (120VAC)	P2FCA453	—
57 (240VAC)	P2FCA457	—

Quantity 1

CNOMO Operator Kit

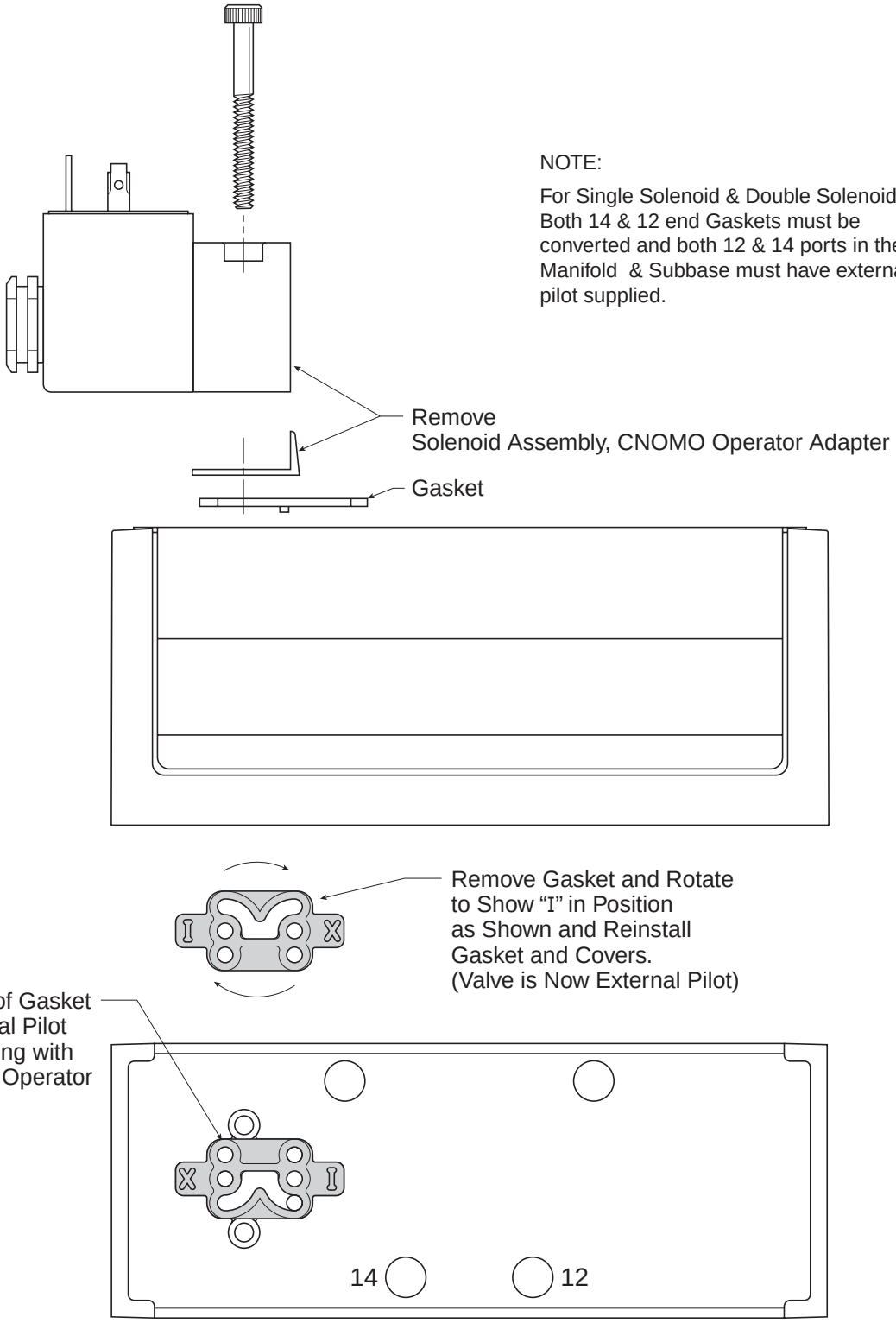
Description	Kit Number
Locking 30mm CNOMO Pilot Operator with Diffuser Nut	**PS4052CP**
Non-Locking 30mm CNOMO Pilot Operator with Diffuser Nut	**PS4053CP**

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DX1
DX2
DX3

DX1 / DX2 / DX3

Internal / External Pilot Conversion Instructions



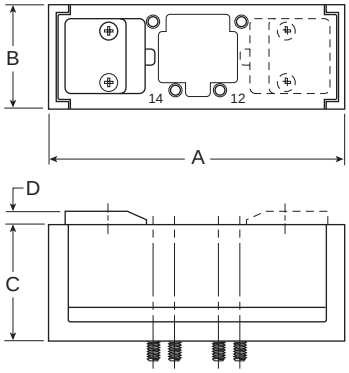
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DX1
DX2
DX3

Air Operated Valves

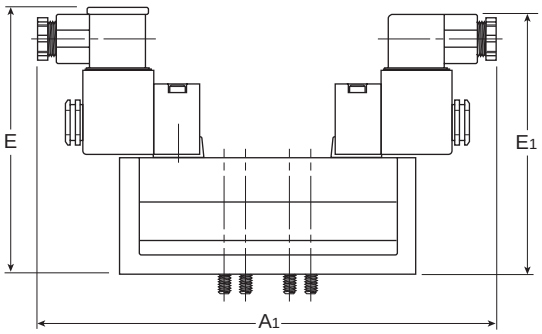
Series	A	B	C	D
DX1	4.72 (120)	1.65 (42)	1.85 (47)	.20 (5)
DX2	5.51 (140)	2.13 (54)	2.30 (58.5)	.20 (5)
DX3	6.69 (170)	2.68 (68)	2.80 (71)	.20 (5)

Inches (mm)



DX1
DX2
DX3

Solenoid Operated Valves



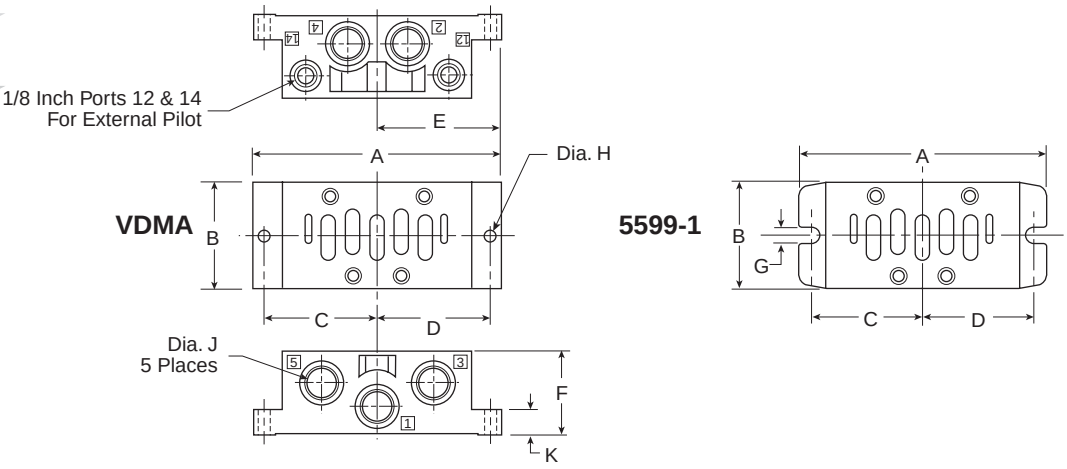
Series	A_1	E	E_1	E_2
DX1	7.97 (202.5)	4.43 (112.5)	4.69 (119)	4.53 (115)
DX2	8.58 (218)	4.86 (123.5)	5.12 (130)	4.98 (126.5)
DX3	9.27 (235.5)	5.35 (136)	5.61 (142.5)	5.47 (139)

Inches (mm)

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Pneumatic Division
Richland, Michigan
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DX1
DX2
DX3

VDMA & 5599-1 Side Ported Subbase

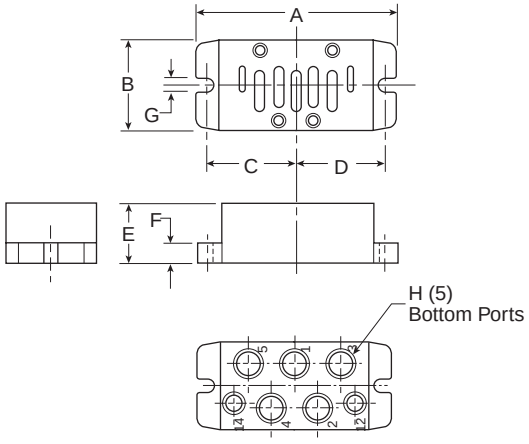


	Series	Part Number	J	A	B	C	D	E	F	G	H	K
VDMA	DX1	P2N-VS512SD	BSPP G1/4	4.33 (110)	1.89 (48)	1.93 (49)	1.93 (49)	2.17 (55)	1.26 (32)	—	.22 (5.6)	.39 (9.9)
	DX2	P2N-WS513SD	BSPP G3/8	4.88 (124)	2.21 (56)	2.21 (56)	2.21 (56)	2.44 (62)	1.57 (40)	—	0.26 (6.6)	.51 (13)
	DX3	P2N-YS514SD	BSPP G1/2	5.87 (149)	2.80 (71)	2.68 (68)	2.68 (68)	2.93 (74.5)	2.05 (52)	—	0.26 (6.6)	0.71 (18)
5599-1	DX1	PL1-1/4-70	BSPP G1/4	4.33 (110)	1.81 (46)	1.93 (49)	1.93 (49)	2.17 (55)	1.14 (29)	0.22 (5.5)	—	0.24 (6)
		PL1-1/4-80	NPT 1/4									
	DX2	PL2-3/8-70	BSPP G3/8	4.88 (124)	2.21 (56)	2.17 (55)	2.17 (55)	2.44 (62)	1.46 (37)	0.22 (5.5)	—	0.24 (6)
		PL2-3/8-80	NPT 3/8									
	DX3	PL3-1/2-70	BSPP G1/2	5.87 (149)	2.80 (71)	2.68 (68)	2.68 (68)	2.93 (74.5)	2.36 (60)	0.26 (6.6)	—	0.71 (18)
		PL3-1/2-80	NPT 1/2									

Inches (mm)

DX1
DX2

5599-1 Bottom Ported Subbase



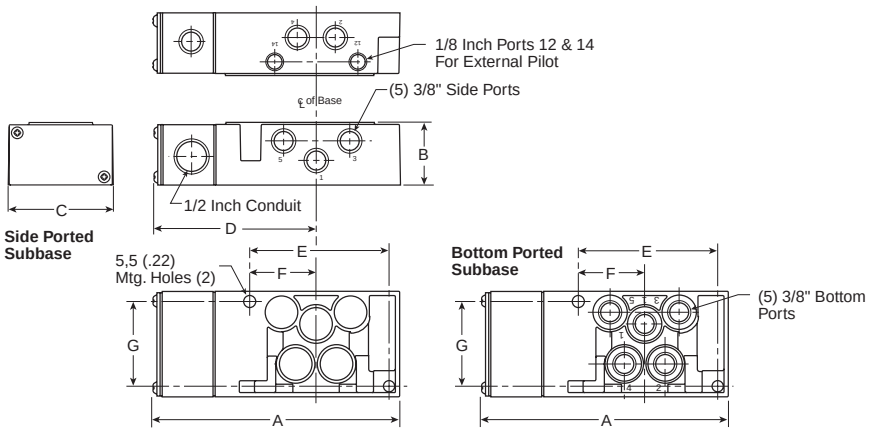
Bottom Ported Subbase

Series	Part Number	H	A	B	C	D	E	F	G
DX1	PD1-1/4-70	BSPP G1/4	4.33 (110)	1.81 (46)	1.93 (49)	1.93 (49)	1.14 (29)	.24 (6)	0.22 (5.5)
	PD1-1/4-80	NPT1/4							
DX2	PD2-3/8-70	BSPP G3/8	4.88 (124)	2.20 (56)	2.17 (55)	2.17 (55)	1.46 (37)	.24 (6)	.0.22 (5.5)
	PD2-3/8-80	NPT3/8							

Inches (mm)

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DX1

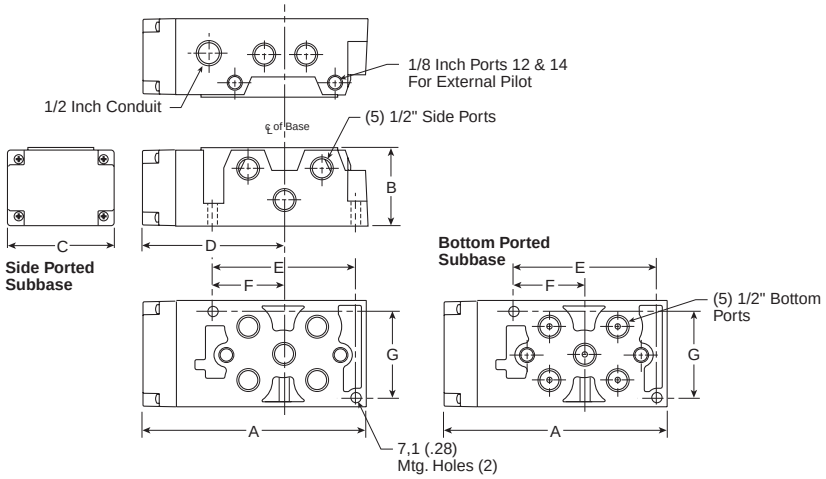


PS4011 Subbase

A	B	C	D
5.83 (148)	1.48 (38)	2.50 (64)	3.86 (98)
E	**F**	**G**	
3.29 (84)	1.57 (40)	2.00 (51)	

Inches (mm)

DX2

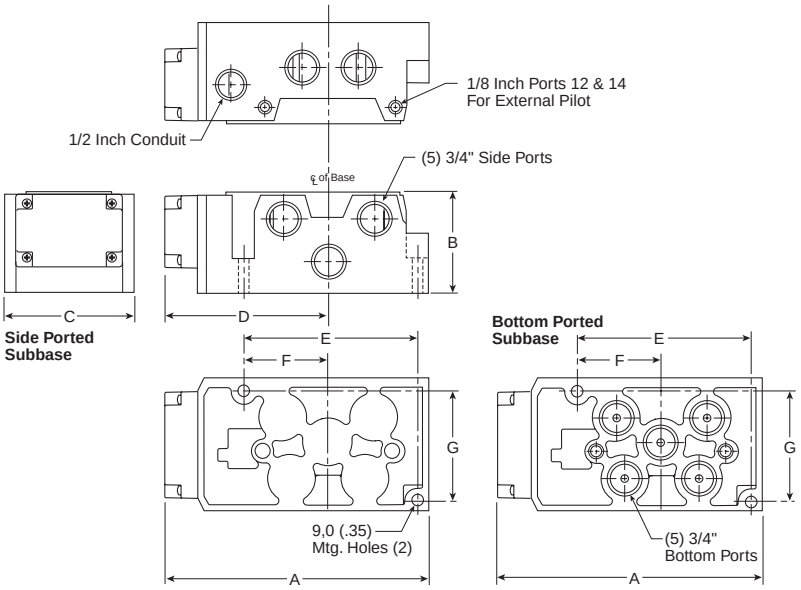


PS4111 Subbase

A	B	C	D
6.69 (170)	2.33 (59)	3.15 (80)	4.25 (108)
E	**F**	**G**	
4.21 (107)	2.07 (52)	2.56 (65)	

Inches (mm)

DX3



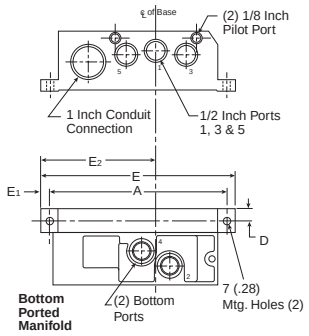
PS4211 Subbase

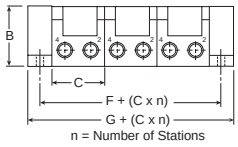
A	B	C	D
7.90 (201)	2.96 (75)	3.90 (990)	4.92 (125)
E	**F**	**G**	
5.14 (131)	2.50 (64)	3.24 (82)	

Inches (mm)

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DX1



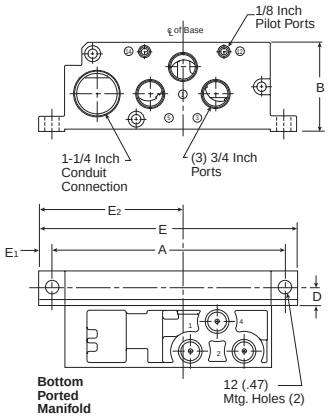


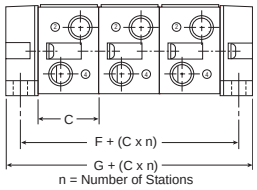
PS4011 Manifold

A	B	C	D	E
6.50 (165)	2.20 (56)	1.93 (49)	.44 (11)	7.15 (182)
E₁	**E₂**	**F**	**G**	
.33 (8)	4.25 (108)	.87 (22)	1.80 (46)	

Inches (mm)

DX2



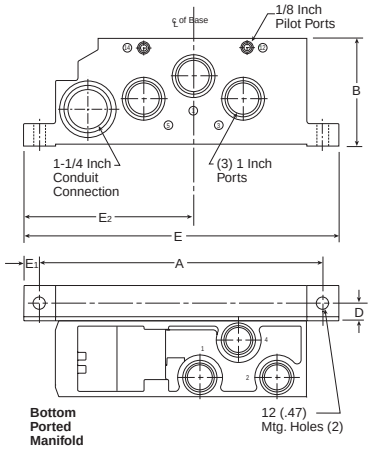


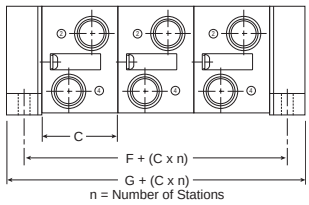
PS4111 Manifold

A	B	C	D	E
8.46 (215)	3.35 (85)	2.20 (56)	.59 (15)	9.41 (239)
E₁	**E₂**	**F**	**G**	
.47 (12)	5.28 (134)	1.18 (30)	2.36 (60)	

Inches (mm)

DX3





PS4211 Manifold

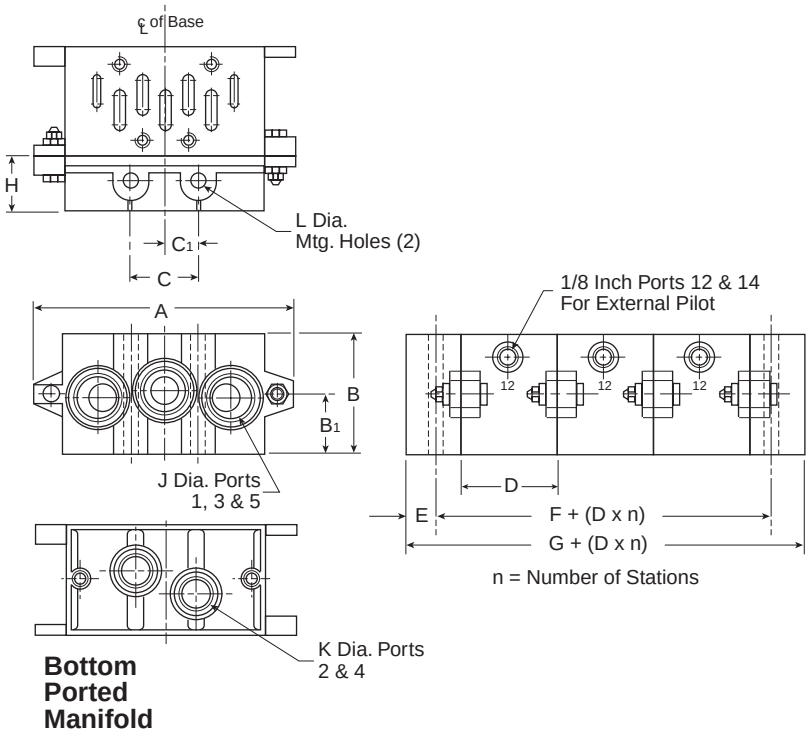
A	B	C	D	E
10.41 (265)	4.13 (105)	2.80 (71)	.65 (175)	11.61 (295)
E₁	**E₂**	**F**	**G**	
.59 (15)	6.26 (159)	1.30 (33)	2.60 (63)	

Inches (mm)

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

DX1
DX2
DX3

5599-1 VDMA – Form C Manifold
&
5599-1 VDMA - Form D End Plates



Bottom Ported Manifold

VDMA Form C Manifold

Series	Part Number	A	B	B_1	D	E	F	G	J	K
DX1	P2N-VM512MB	4.33 (110)	1.81 (46)	0.94 (24)	1.69 (55)	0.43 (22)	0.87 (22)	1.73 (44)	BSPP G3/8	BSPP G1/4
DX2	P2N-WM513MB	5.31 (135)	1.85 (47)	0.94 (24)	2.20 (56)	0.51 (13)	1.02 (26)	2.05 (52)	BSPP G1/2	BSPP G3/8
DX3	P2N-YM514MB	7.48 (190)	2.20 (56)	1.34 (34)	2.80 (71)	0.59 (15)	1.18 (30)	2.36 (60)	BSPP G1/2	BSPP G1/2

VDMA Form D End Plate

Series	Part Number	A	B	B_1	C	C_1	H	L
DX1	P2N-VM513ES	4.33 (110)	1.81 (46)	0.94 (24)	1.10 (28)	0.55 (14)	0.87 (22)	0.28 (7)
DX2	P2N-WM514ES	5.31 (135)	1.85 (47)	0.94 (24)	1.38 (35)	0.69 (18)	1.02 (26)	0.34 (9)
DX3	P2N-YM518ES	7.48 (190)	2.20 (56)	1.34 (34)	2.05 (52)	1.03 (26)	1.18 (30)	0.47 (12)

Inches (mm)

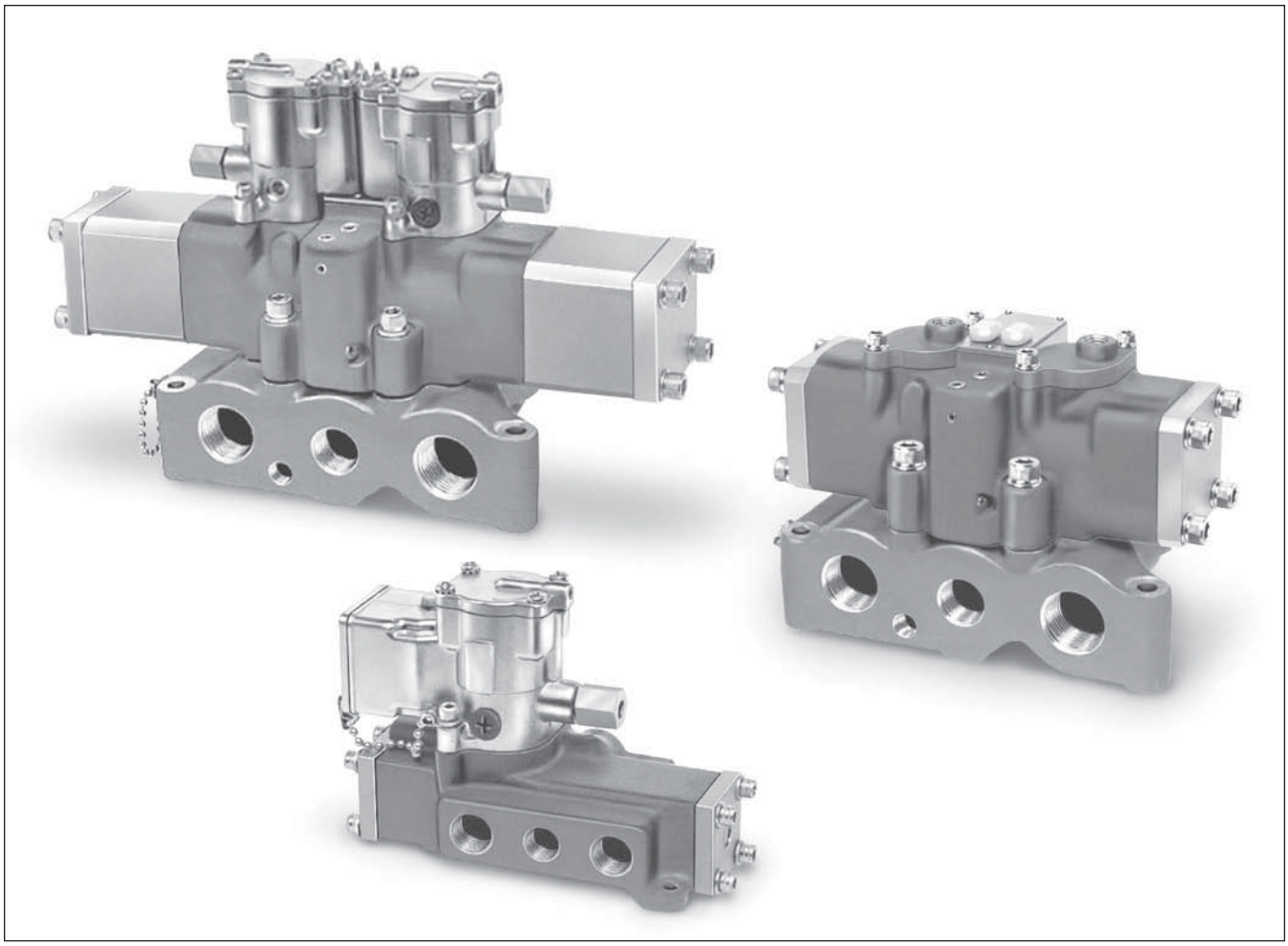
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Richland, Michigan
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Valvair II

Solenoid Operated Directional Spool Valves

Section E

www.parker.com/pneu



Basic Valve Functions E228
Basic Valve Features E229
Common Part Numbers
- Plug-In E230-E232
- Direct Pipe Ported E233-E235

Model Number Index
- Plug-In E236
- Direct Pipe Ported E237

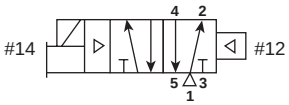
Plug-In Regulators E238-E243
Modular Regulators E244-E245
Accessories E246
Replacement Parts E247
Technical Information E248-E251
Dimensions
- Plug-In E252-E257
- Direct Pipe Ported E258-E263

Plug-In Manifold Dimensions E264-E265

BOLD ITEMS ARE MOST POPULAR.

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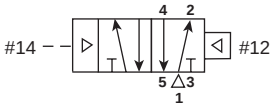
Single Solenoid
4-Way, 2-Position



De-energized position – Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Energized position – Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

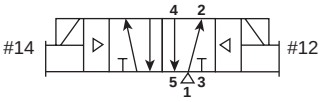
Single Remote Pilot
4-Way, 2-Position



Normal position – Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Operated position – Maintained air signal at port 14. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

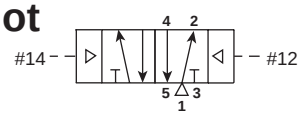
Double Solenoid
4-Way, 2-Position



Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

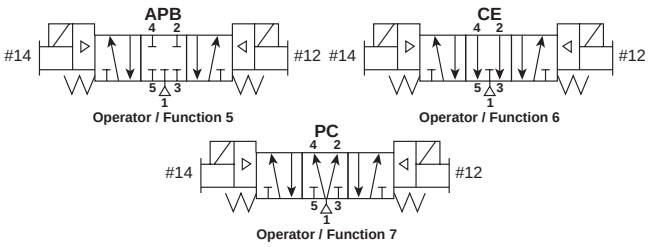
Double Remote Pilot
4-Way, 2-Position



Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.

Double Solenoid
4-Way, 3-Position



With #12 operator energized – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

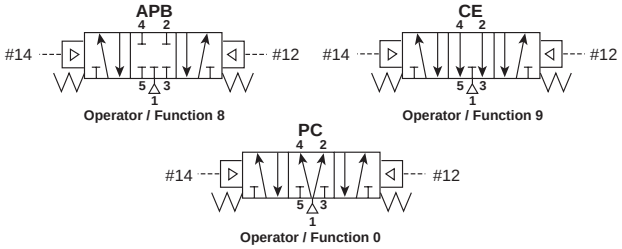
With #14 operator energized – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 5: All Ports Blocked
All ports blocked in the center position.

Function 6: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 7: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

Double Remote Pilot
4-Way, 3-Position



With #12 operator signaled – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator signaled – inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Function 8: All Ports Blocked
All ports blocked in the center position.

Function 9: Center Exhaust
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 0: Pressure Center
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

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Pneumatic Division
Richland, Michigan
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- Full Air Operation for fastest response.
- “Plug-In” Design simplifies maintenance and installation. Reduces downtime. No wiring or plumbing to disturb.
- “Direct Pipe” Design for economy and performance.
- Solenoids Interchange between all styles of plug-in valves.
- Variety of Operators Available; Direct Conduit, (JIC) Junction Box, NEMA 4, Hazardous Duty, (UL, CSA), and remote air pilot.
- Locking Manual Overrides Standard. Non-locking overrides optional.
- Indicator Lights Standard on 120VAC and 24VDC models.
- Encapsulated Coil designed for low-power consumption and maximum life.
- Field Convertible to External Pilot Supply for vacuum or other services.
- “Oversized” Flow Areas.
- Synthetic Rubber O-Ring Seals are specially compounded for minimum compression and friction for superior wear and abrasion resistance.
- Precision Ground Spool “floats” on O-ring seals. Closed center cross-over design saves air.
- Plug-In “Sandwich” Regulators (Available for specific models) fit between valve and base, increase systems design capabilities.
- CSA - Selected Valves are Canadian Standards Association approved for general purpose use.

General Purpose Approvals

CSA - Canadian Standards Association
File Number 42024

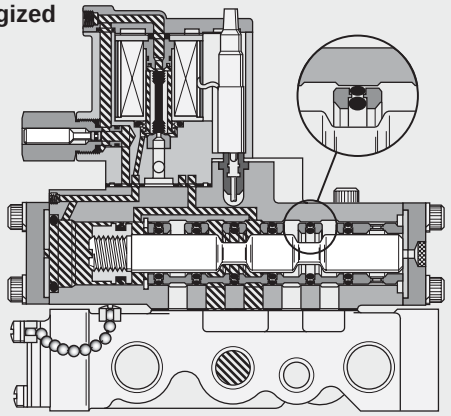
Hazardous Duty Approvals

UL - Underwriters Laboratories, Inc.
File Number E42542
Category Y107

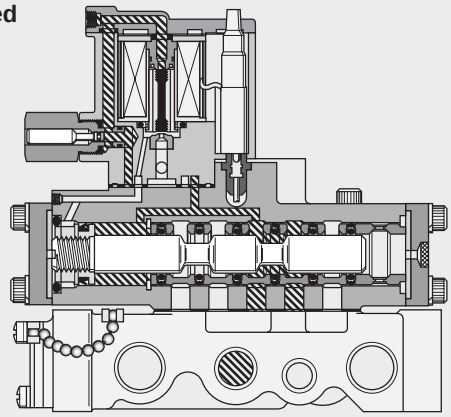
CSA - Canadian Standards Association
File Number 24349

Plug-In

De-Energized

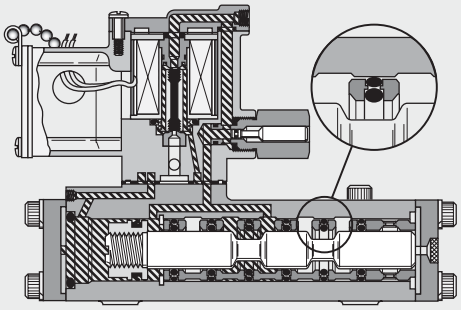


Energized

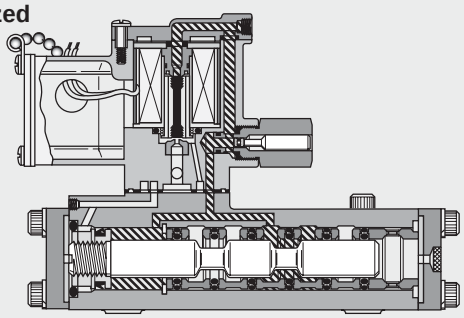


Direct Pipe Ported

De-Energized



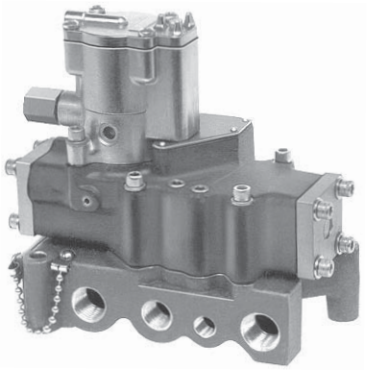
Energized

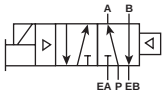


Pressure **Exhaust**

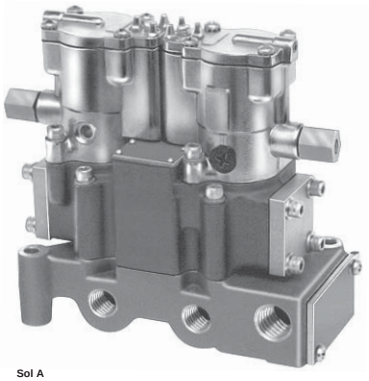
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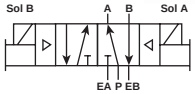
L675 (3/8" Basic Valve)
Single Solenoid
4-Way, 5-Port, 2-Position





L655 (3/8" Basic Valve)
Double Solenoid
4-Way, 5-Port, 2-Position



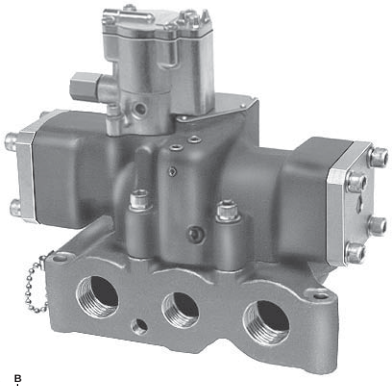


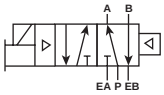
Valve Only		Voltage	Subbase (Side Ports)	Manifold † (End & Bottom Ports)	Port Size (NPT)	Nominal Cv
Single Solenoid	Double Solenoid					
L675 39 102 53	L655 39 102 53	120V 60Hz	K022 090	K142 230	3/8"	4.8
		110V 50Hz	K022 091	K142 231	1/2"	4.8
L675 33 102 **	L655 33 102 **	Other	K022 101	K142 270	3/4"	4.8

See page E236 for variations and (**) voltage codes.

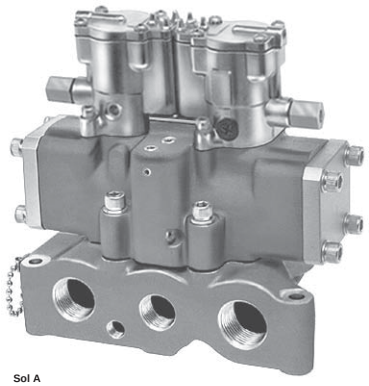
† Manifolds include mounting hardware.

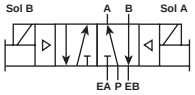
L675 (1" Basic Valve)
Single Solenoid
4-Way, 5-Port, 2-Position





L655 (1" Basic Valve)
Double Solenoid
4-Way, 5-Port, 2-Position





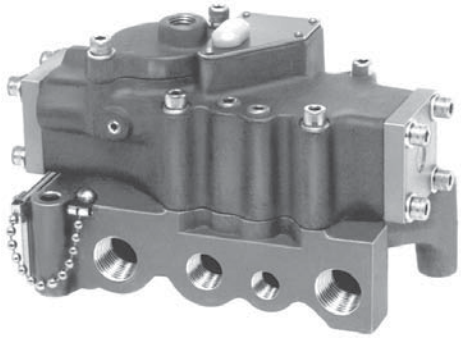
Valve Only		Voltage	Subbase (Side Ports)	Manifold † (End & Bottom Ports)	Port Size (NPT)	Port Adapter (Manifolds)	Nominal Cv
Single Solenoid	Double Solenoid						
L675 89 102 53	L655 89 102 53	120V 60Hz	—	—	3/4"	K122 016 Kit Includes Both Ends	11.3
		110V 50Hz	K022 095	—	1"		
L675 83 102 **	L655 83 102 **	Other	—	—	1-1/4"		

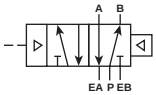
See page E236 for variations and (**) voltage codes.

† Manifolds include mounting hardware, except for port adapters. See chart, order separately.

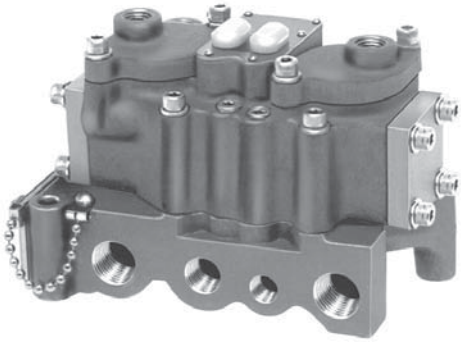
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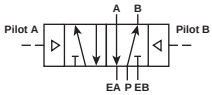
L674 (3/8" Basic Valve)
Single Remote Pilot
4-Way, 5-Port, 2-Position





L654 (3/8" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 2-Position

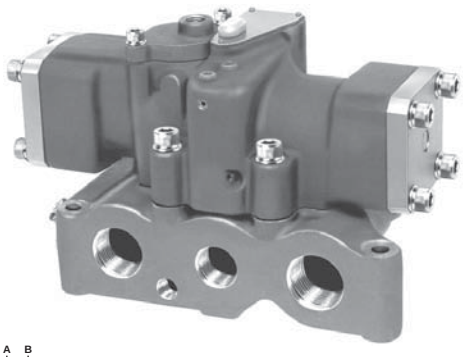


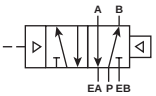


Valve Only		Subbase (Side Ports)	Manifold † (End & Bottom Ports)	Port Size (NPT)	Nominal Cv
Single Remote	Double Remote				
L674 31 102	L654 31 102	K022 090	K142 230	3/8"	4.8
		K022 091	K142 231	1/2"	4.8
		K022 101	K142 270	3/4"	4.8

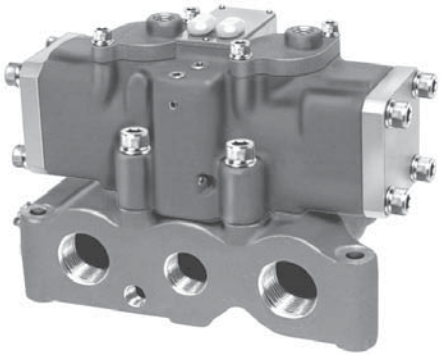
† Manifolds include mounting hardware.

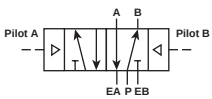
L674 (1" Basic Valve)
Single Remote Pilot
4-Way, 5-Port, 2-Position





L654 (1" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 2-Position



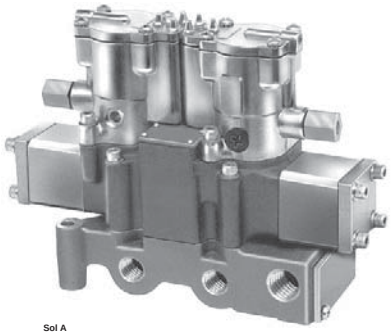


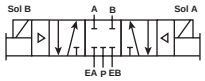
Valve Only		Subbase (Side Ports)	Manifold † (End & Bottom Ports)	Port Size (NPT)	Port Adapter (Manifolds)	Nominal Cv
Single Remote	Double Remote					
L674 81 102	L654 81 102	—	—	3/4"	K122 016 Kit Includes Both Ends	11.3
		K022 095	—	1"		
		—	—	1-1/4"		

† Manifolds include mounting hardware, except for port adapters.
See chart, order separately.

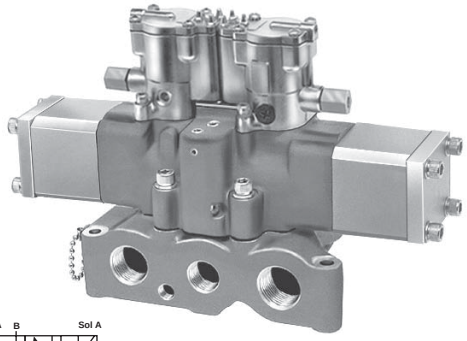
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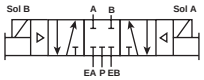
L665 (3/8" Basic Valve)
Double Solenoid
4-Way, 5-Port, 3-Position





L665 (1" Basic Valve)
Double Solenoid
4-Way, 5-Port, 3-Position



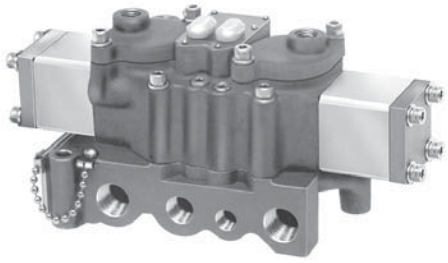


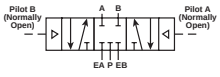
Valve Only	Voltage	Subbase (Side Ports)	Manifold † (End & Bottom Ports)	Port Size (NPT)	Port Adapter	Nominal Cv
L665 39 211 53	120V 60Hz	K022 090	K142 230	3/8"	Not Req'd	4.8
	110V 50Hz	K022 091	K142 231	1/2"		
L665 33 211 **	Other	K022 101	K142 270	3/4"		
L665 89 211 53	120V 60Hz	—	—	3/4"	K122 016 Kit Includes Both Ends	11.3
	110V 50Hz	K022 095	—	1"		
L665 83 211 **	Other	—	—	1-1/4"		

See page E236 for variations in class of neutral configuration and (**) voltage codes.

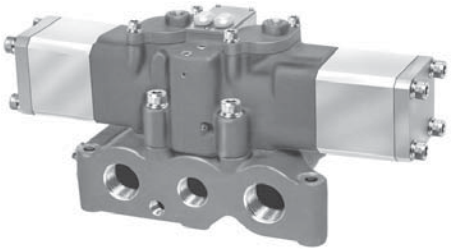
† Manifolds include mounting hardware, except for port adapters. See chart, order separately.

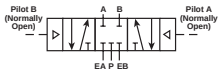
L664 (3/8" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 3-Position





L664 (1" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 3-Position





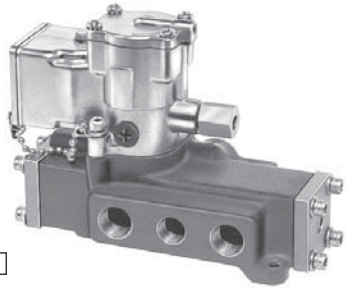
Valve Only	Subbase (Side Ports)	Manifold † (End & Bottom Ports)	Port Size (NPT)	Port Adapter	Nominal Cv
L664 31 211	K022 090	K142 230	3/8"	Not Req'd	4.8
	K022 091	K142 231	1/2"		
	K022 101	K142 270	3/4"		
L664 81 211	—	—	3/4"	K122 016 Kit Includes Both Ends	11.3
	K022 095	—	1"		
	—	—	1-1/4"		

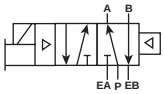
See page E236 for variations in class of neutral configurations.

†Manifolds include mounting hardware.

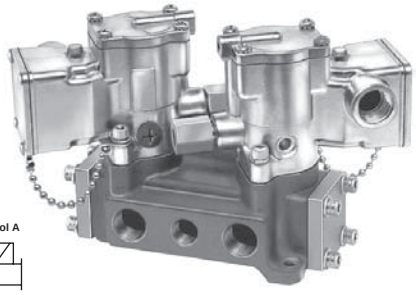
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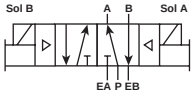
L705 (3/8" Basic Valve)
Single Solenoid
4-Way, 5-Port, 2-Position





L685 (3/8" Basic Valve)
Double Solenoid
4-Way, 5-Port, 2-Position



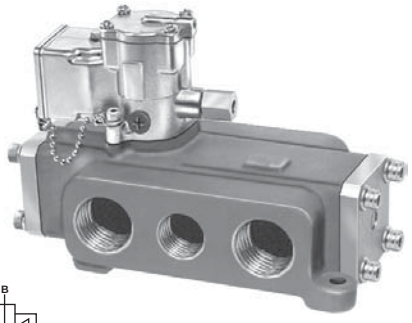


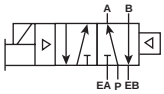
Valve		Voltage	Port Size (NPT)		Operator Type	Nominal Cv
Single Solenoid	Double Solenoid		P, A & B	EA & EB		
L705 39 102 53	**L685 39 102 53**	120V 60Hz 110V 50Hz	3/8"	1/2"	Junction Box	4.8
L705 49 102 53	**L685 49 102 53**		1/2"	1/2"		
L705 36 102 **	**L685 36 102 ****	Other	3/8"	1/2"	Junction Box	4.8
L705 46 102 **	**L685 46 102 ****		1/2"	1/2"		
L705 33 102 **	**L685 33 102 ****	Any	3/8"	1/2"	Basic	4.8
L705 43 102 **	**L685 43 102 ****		1/2"	1/2"		
L705 33 802 **	**L685 33 802 ****	Any	3/8"	1/2"	NEMA 4	4.8
L705 43 802 **	**L685 43 802 ****		1/2"	1/2"		
L705 33 602 **	**L685 33 602 ****	See Voltage Chart	3/8"	1/2"	† Hazardous Duty	4.8
L705 43 602 **	**L685 43 602 ****		1/2"	1/2"		

See page E237 for variations and (**) voltage codes.

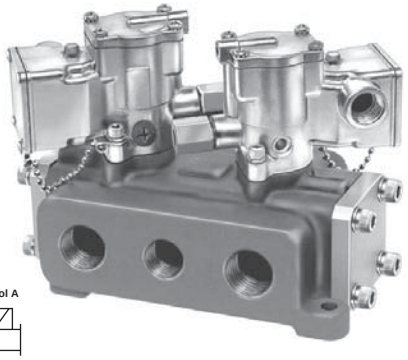
†UL & CSA Approved.

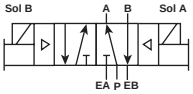
L705 (1" Basic Valve)
Single Solenoid
4-Way, 5-Port, 2-Position





L685 (1" Basic Valve)
Double Solenoid
4-Way, 5-Port, 2-Position





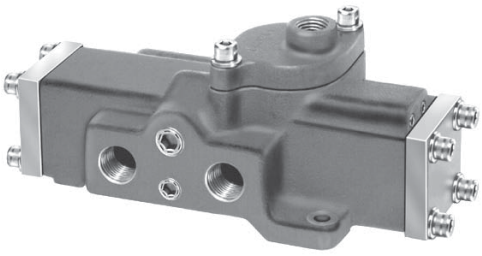
Valve		Voltage	Port Size (NPT)		Type	Nominal Cv
Single Solenoid	Double Solenoid		P, A & B	EA & EB		
L705 89 102 53	**L685 89 102 53**	110V 50Hz	1"	1-1/4"	Junction Box	12.0
L705 99 102 53	**L685 99 102 53**		1-1/4"	1-1/4"		
L705 86 102 **	**L685 86 102 ****	Other	1"	1-1/4"	Junction Box	12.0
L705 96 102 **	**L685 96 102 ****		1-1/4"	1-1/4"		
L705 83 602 **	**L685 83 602 ****	See Voltage Chart	1"	1-1/4"	†Hazardous Duty	12.0
L705 93 602 **	**L685 93 602 ****		1-1/4"	1-1/4"		

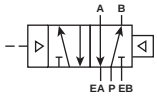
See page E237 for variations and (**) voltage codes.

†UL & CSA Approved.

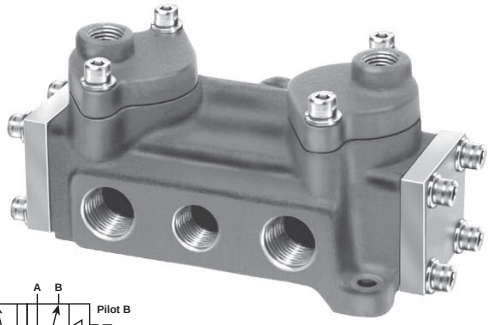
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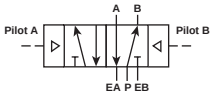
L704 (3/8" Basic Valve)
Single Remote Pilot
4-Way, 5-Port, 2-Position





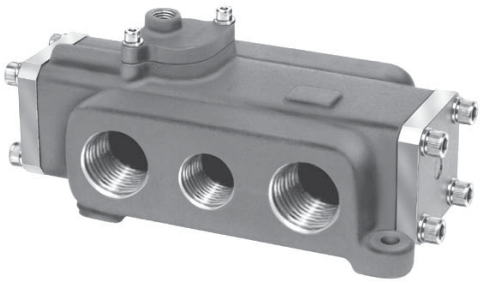
L684 (3/8" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 2-Position

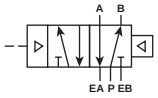




Valve		Port Size (NPT)		Nominal Cv
Single Remote	Double Remote	P, A & B	EA & EB	
L704 31 102	L684 31 102	3/8"	1/2"	4.8
L704 41 102	L684 41 102	1/2"	1/2"	

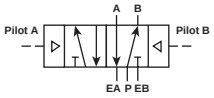
L704 (1" Basic Valve)
Single Remote Pilot
4-Way, 5-Port, 2-Position





L684 (1" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 2-Position

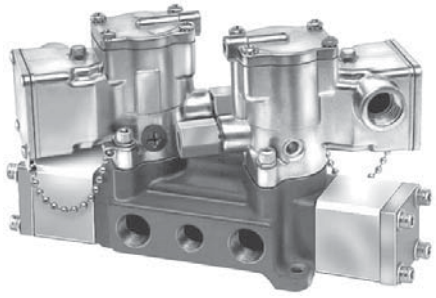


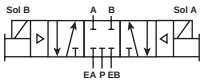


Valve		Port Size (NPT)		Nominal Cv
Single Remote	Double Remote	P, A & B	EA & EB	
L704 81 102	L684 81 102	1"	1-1/4"	12.0
L704 91 102	L684 91 102	1-1/4"	1-1/4"	

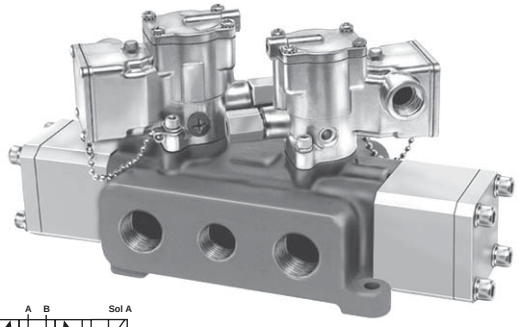
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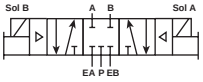
L695 (3/8" Basic Valve)
Double Solenoid
4-Way, 5-Port, 3-Position





L695 (1" Basic Valve)
Double Solenoid
4-Way, 5-Port, 3-Position

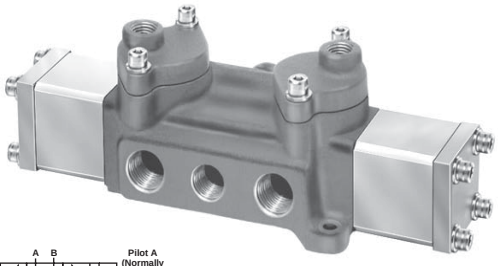


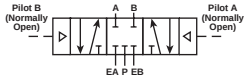


Valve		Voltage	Port Size (NPT)		Type	Nominal Cv
3/8" Basic Size	1" Basic Size		P, A & B	EA & EB		
L695 39 211 53	—	120V 60Hz 110V 50Hz	3/8"	1/2"	Junction Box	4.5
L695 49 211 53	—		1/2"	1/2"		
—	L695 89 211 53		1"	1-1/4"		12.0
—	L695 99 211 53		1-1/4"	1-1/4"		
L695 36 211 **	—	Other	3/8"	1/2"	Basic	4.5
L695 46 211 **	—		1/2"	1/2"		
—	L695 86 211 **		1"	1-1/4"		12.0
—	L695 96 211 **		1-1/4"	1-1/4"		

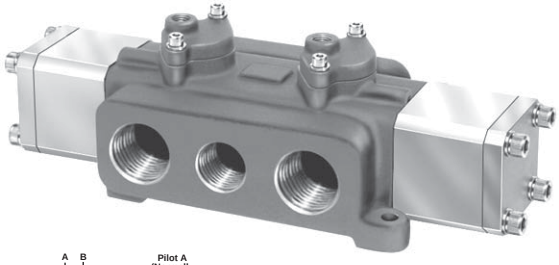
See page E237 for variations in class of neutral configuration and (**) voltage codes.

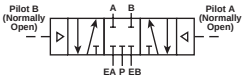
L695 (3/8" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 3-Position





L695 (1" Basic Valve)
Double Remote Pilot
4-Way, 5-Port, 3-Position





Valve	Port Size (NPT)		Nominal Cv
	P, A & B	EA & EB	
L694 31 211	3/8"	1/2"	4.5
L694 41 211	1/2"	1/2"	
L694 81 211	1"	1-1/4"	12.0
L694 91 211	1-1/4"	1-1/4"	

See page E237 for ordering other neutral configurations.

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Lubricated Non-Lubricated Service
2-Position, Plug-In
3/8" & 1" Basic Size

BOLD ITEMS ARE MOST POPULAR.

L	67	5	3	9	10	2	53

Type	
Double	**65**
Single	**67**

Operator	
Remote	4
Solenoid	**5**

Size	
3/8" Basic	**3**
1" Basic	**8**

Operator Options	
Solenoid (Basic) or Remote	**1**
Solenoid with Locking Override	3
Solenoid w/Light (120VAC, 24VDC) & Non-Locking Override	8
Solenoid w/Light (120VAC, 24VDC) & Locking Override	**9**

Enclosure "Class"	
10	**Standard (NEMA 1 & 12) or Remote**

Duty Cycle	
2	**Standard Service, Solenoid or Remote**
4	Continuous Service Solenoid

Voltage & Frequency			
	60Hz	**50Hz**	**DC**
45	—	—	12
49	**—**	**—**	**24**
53	**120**	**110**	**—**
57	240	220	—

Lubricated or Non-Lubricated Service
3-Position, Plug-In
3/8" & 1" Basic Size

L	66	5	3	9	21	1	53

Type	
Double	**66**

Operator	
Remote	4
Solenoid	**5**

Size	
3/8" Basic	**3**
1" Basic	**8**

Operator Options	
Solenoid (Basic) or Remote	**1**
Solenoid with Locking Override	3
Solenoid w/Light (120VAC, 24VDC) & Non-Locking Override	8
Solenoid w/Light (120VAC, 24VDC) & Locking Override	**9**

Enclosure "Class"	
21	**All Ports Blocked in Neutral (NEMA 1 & 12 Enclosure) or Remote**
22	Cyl. Ports Open to Exh. in Neutral (NEMA 1 & 12 Enclosure) or Remote
23	Cyl. Ports Open to Inlet in Neutral (NEMA 1 & 12 Enclosure) or Remote

Duty Cycle	
1	**Standard Service, Solenoid or Remote**
5	Continuous Service Solenoid

Voltage & Frequency			
	60Hz	**50Hz**	**DC**
45	—	—	12
49	**—**	**—**	**24**
53	**120**	**110**	**—**
57	240	220	—

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Lubricated or Non-Lubricated Service 2-Position, Direct Pipe Ported, 3/8" & 1" Basic Size

BOLD ITEMS ARE MOST POPULAR.

L	70	5	3	9	10	2	53	—

Type

Double	**68**
Single	**70**

Operator

Remote	4
Solenoid	**5**

Size

3/8" NPT Inlet & Cylinder 1/2" NPT Exhaust	**3**
1/2" NPT Inlet, Cylinder & Exhaust	**4**
1" NPT Inlet & Cylinder 1-1/4" NPT Exhaust	**8**
1-1/4" NPT Inlet Cylinder & Exhaust	9*

* Not available operator option 4 - Remote Pilot.

Operator Options

Solenoid (Basic) or Remote	1
Solenoid with Locking Override	**3**
Solenoid w/ Junction Box & Locking Override	6
Solenoid w/ Junction Box & Light (120VAC, 24VDC) & Non-Locking Override	8
Solenoid w/ Junction Box & Light (120VAC, 24VDC) & Locking Override	**9**

Enclosure "Class"

10	**Standard (NEMA 1 & 12) or Remote**
60*†	Hazardous Duty (NEMA 7 & 9)
80†	NEMA 4

* Voltage 49 / 53 only.
† Use with operator options 1, 2 & 3 only, voltage 53 only.

Duty Cycle

2	**Standard Service, Solenoid or Remote**
4	Continuous Service Solenoid

Voltage & Frequency

	60Hz	50Hz	DC
45	—	—	12
49	**—**	**—**	**24**
53	**120**	**110**	**—**
57	240	220	—

Lead Length

Blank	**19" (Standard)**

Lubricated or Non-Lubricated Service 3-Position, Direct Pipe Ported, 3/8" & 1" Basic Size

L	69	5	3	9	21	1	53	—

Type

Double	**69**

Operator

Remote	4
Solenoid	**5**

Size

3/8" NPT Inlet & Cylinder 1/2" NPT Exhaust	**3**
1/2" NPT Inlet, Cylinder & Exhaust	**4**
1" NPT Inlet & Cylinder 1-1/4" NPT Exhaust	8
1-1/4" NPT Inlet Cylinder & Exhaust	9*

* Not available operator option 4 - Remote Pilot.

Operator Options

Solenoid (Basic) or Remote	1
Solenoid with Locking Override	**3**
Solenoid w/ Junction Box & Locking Override	6
Solenoid w/ Junction Box & Light (120VAC, 24VDC) & Non-Locking Override	8
Solenoid w/ Junction Box & Light (120VAC, 24VDC) & Locking Override	**9**

Enclosure "Class"

All Ports Blocked in Neutral	
21	**Standard (NEMA 1 & 12) or Remote**
71*†	Hazardous Duty (NEMA 7 & 9)
91†	NEMA 4
Cyl. Ports Open to Exh. in Neutral	
22	Standard (NEMA 1 & 12) or Remote
72*†	Hazardous Duty (NEMA 7 & 9)
92†	NEMA 4
Cyl. Ports Open to Inlet in Neutral	
23	Standard (NEMA 1 & 12) or Remote
73*†	Hazardous Duty (NEMA 7 & 9)
93†	NEMA 4

* Voltage 49 / 53 only.
† Use with operator options 1, 2 & 3 only, voltage 53 only.

Duty Cycle

1	**Standard Service, Solenoid or Remote**
5	Continuous Service Solenoid

Voltage & Frequency

	60Hz	50Hz	DC
45	—	—	12
49	**—**	**—**	**24**
53	**120**	**110**	**—**
57	240	220	—

Lead Length

Blank	**19" (Standard)**

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Modular Pneumatic Controls Plug-In Sandwich Block Design for Modular Port Regulation

These modular regulators assemble to any 3/8" basic valve interface pattern.

Port Regulation Made Easy

Place the sandwich on the manifold or subbase, tighten the four securing screws, then plug the valve into the sandwich and tighten its securing screws to complete the assembly.

Within minutes, these modular components can be installed in new, or used to improve existing manifold systems, without disturbing wiring or air connections.

3-Configurations

1. **Common Port Regulation** - A common regulated pressure is selected to both cylinder ports.
2. **Single Port Regulation** - Line pressure is available to one cylinder port, while a single regulated pressure is selected to the other cylinder port.
3. **Independent Port Regulation** - Two independently regulated pressures selected to the cylinder ports.

NOTE: When using single or independent port sandwich regulators, be aware that:

1. Cylinder port outlets are reversed.
2. 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.

Manual or Remote secondary pressure adjustment.

Three Pressure Ranges are standard for manual units:

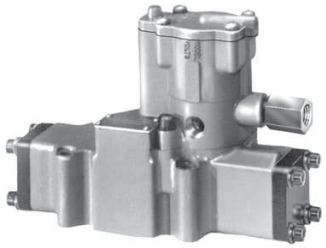
1-30 PSIG

1-60 PSIG

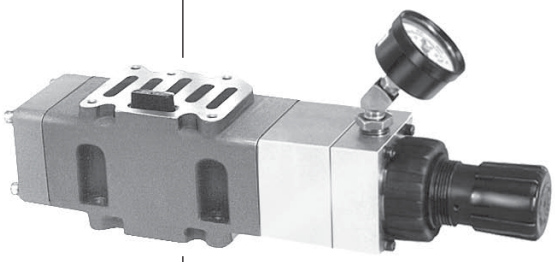
2-125 PSIG

Range for Remote: 0-140 PSIG

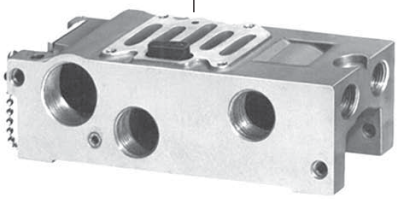
Gauges are furnished standard; liquid filled gauges are optional.



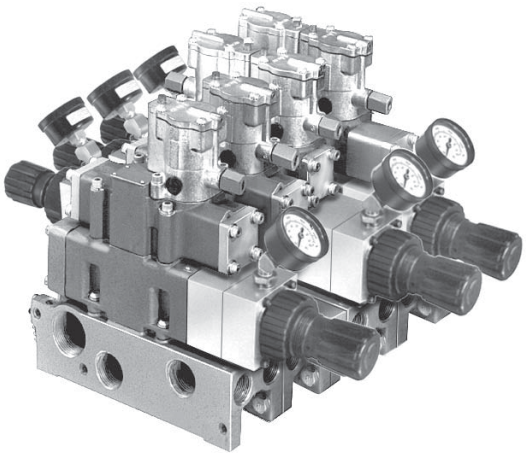
Solenoid Valve Assembly



Regulator Assembly



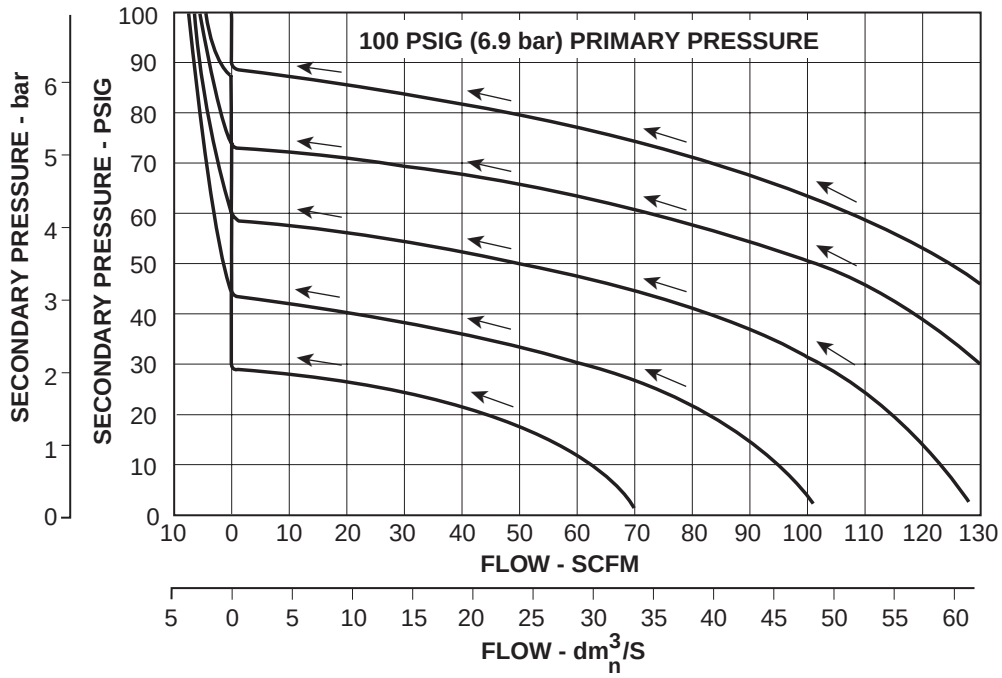
Manifold



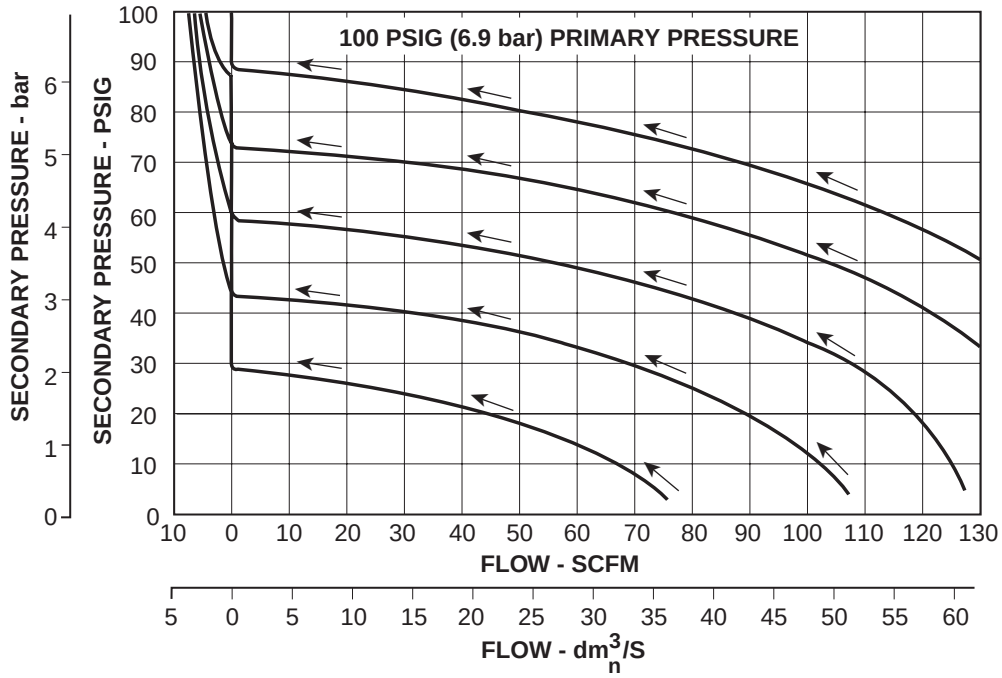
Typical Assembly

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RELIEF AND FLOW CHARACTERISTICS
COMMON PORT REGULATION



RELIEF AND FLOW CHARACTERISTICS
INDEPENDENT OR SINGLE PORT REGULATION



The above curves illustrate flow characteristics through an assembled valve, air regulator, and base (or modular manifold) unit.

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Function

This modular air pressure regulator assembly, installed between a 3/8" basic, 4-Way valve and subbase, supplies regulated pressures to both cylinder ports.

Valve must be converted to external pilot supply.

Features

Regulated pressure output from the valve is adjusted by knob on the manually set model or by air pressure signal applied to the regulator pilot port on the remotely set model.

Furnished with pressure gauge as standard.

Assembly “A” (Shown at right) or Assembly “B” may be specified as a matter of convenience, or to satisfy space limitations.*

Pressure Range Options

Maximum Supply Pressure.....140 PSIG

Output Pressure Range.....1 - 60 PSIG
2 - 125 PSIG

Operating Temperature Range

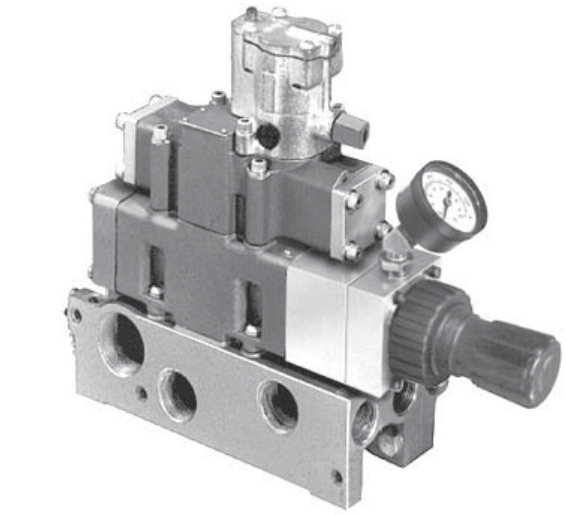
32°F (0°C) to 175°F (79°C)

How To Order

1. Select type of adjustment.
2. Select pressure range.
3. Select assembly style.

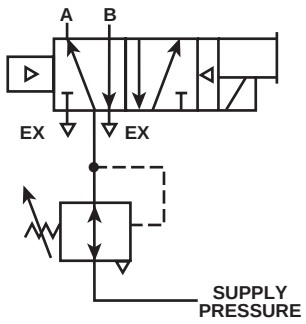
Example: Manual adjusted.
1-60 PSIG with regulator positioned over the junction box.

Model No. L554 08 302C

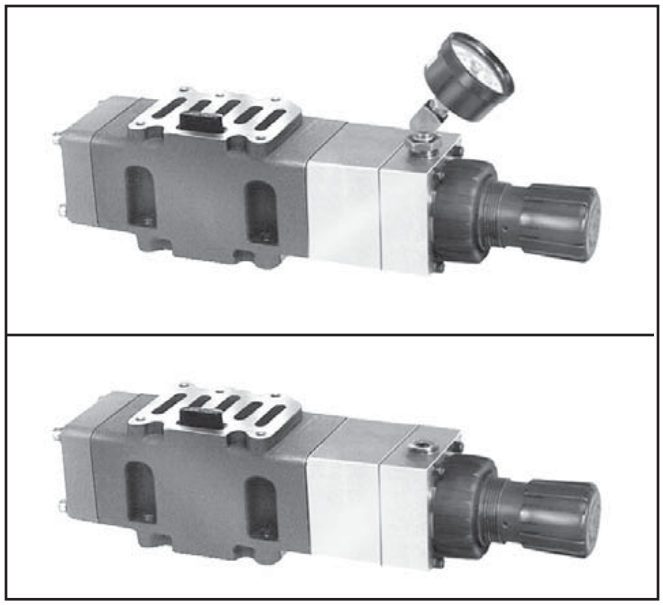


Assembly “A”

Graphic Symbol



Regulated Pressure at Both “A” & “B”



Pressure Adjustment	Pressure Range	Model Number	
	PSIG	Assembly “A”	Assembly “B”
Manual	1 - 60	L554 02 308C	L554 08 302C
	2 - 125	L554 03 308C	L554 08 303C
Remote	0 - 140	L554 11 308C	L554 08 311C

* Assembly “A” places the regulator on the end opposite the electrical junction box. Assembly “B” places the regulator over the electrical junction box.

See page E245 for gauges.

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Function

This modular air pressure regulator assembly, when installed between a 3/8" basic, 4-Way valve and subbase or modular manifold, supplies one or more regulated pressures to one of the valve cylinder ports and supply pressure to the other cylinder port.

On Single Port Cylinder Port Regulation Units controlled by a single solenoid valve, cylinder port “B” is the normally open cylinder port. The solenoid is energized to open cylinder Port “A”. On double solenoid operated valves, energizing solenoid “B” opens cylinder port “A” and energizing solenoid “A” opens cylinder port “B”.

Valve must be converted to external pilot supply.

Features

Regulated pressure output from the valve is adjusted by knob on the manually set model or by air pressure signal applied to the regulator pilot port on the remotely set model.

For reduced pressure at “A” cylinder port, the regulator is mounted per assembly “A” on end opposite the electrical junction box. For reduced pressure at “B” cylinder port the regulator is mounted per Assembly “B” which places the regulator over the electrical junction box.

Furnished with pressure gauge as standard.

Pressure Range Options

Maximum Supply Pressure.....140 PSIG

Output Pressure Range.....1 - 30 PSIG
1 - 60 PSIG
2 - 125 PSIG

Operating Temperature Range

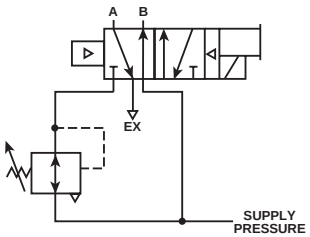
32°F (0°C) to 175°F (79°C)

How To Order

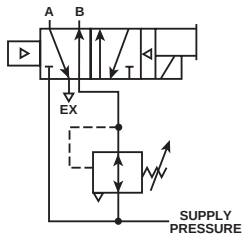
1. Select type of adjustment desired.
2. Select pressure range.
3. Select working port for reduced pressure.

Example: Manual adjustment, 5-60 PSIG, Port A reduced.
Model No. L554 05 307C

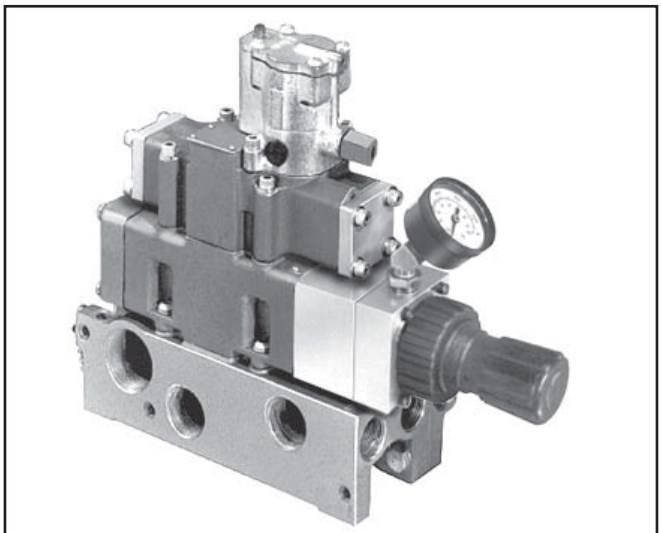
Graphic Symbol



Supply Pressure at “B” & Regulated at “A”



Supply Pressure at “A” & Regulated at “B”



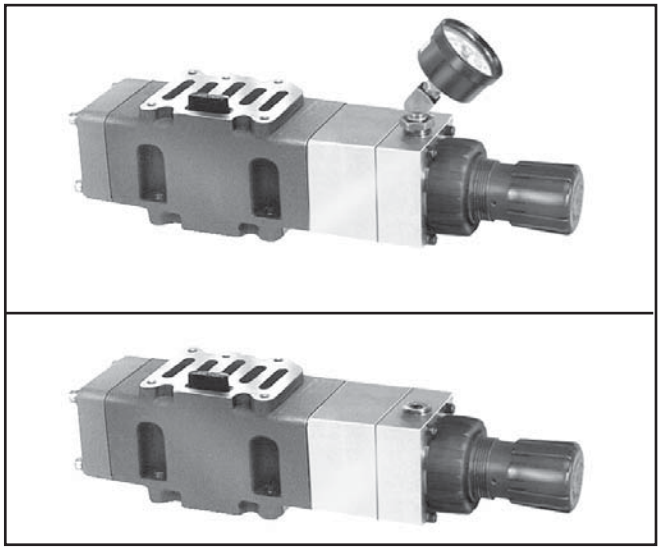
Assembly “A”

Pressure Adjustment	Pressure Range	Model Number	
		Reduced Pressure	
	PSIG	Cyl. Port “A”	Cyl. Port “B”
Manual	1 - 60	L554 05 307C	L554 07 305C
	2 - 125	L554 06 307C	L554 07 306C
Remote	0 - 140	L554 14 307C	L554 07 314C

Note: When using single or independent port sandwich regulators, be aware that:

1. Cylinder port outlets are reversed.
2. 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.

See page E245 for gauges.



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Function

This modular air pressure regulation assembly, when installed between a 3/8" basic, 4-Way valve and subbase or modular manifold, supplies one or more regulated pressures to each of the valve cylinder ports.

Regulated pressure to cylinder port “A”, and a second regulated pressure to cylinder port “B”; independently adjustable.

On Independent Cylinder Port Regulation Units controlled by a single solenoid valve, cylinder port “B” is the normally open cylinder port. The solenoid is energized to open cylinder port “A”. On double solenoid operated valves, energizing solenoid “B” opens cylinder port “A” and energizing solenoid “A” opens cylinder port “B”

Valve must be converted to external pilot supply.

Features

Regulated pressure output from the valve is adjusted by knob on the manually set model or by air pressure signal applied to the regulator pilot port on the remotely set model.

Furnished with pressure gauge as standard.

The regulator controlling pressure to port “A” is mounted on the end opposite the electrical junction box (Assembly “A”). Regulated pressure from cylinder port “B” is controlled by the regulator installed over the electrical junction box (Assembly “B”).

Pressure Range Options

Maximum Supply Pressure.....140 PSIG

Output Pressure Range.....1 - 60 PSIG
2 - 125 PSIG

Operating Temperature Range

32°F (0°C) to 175°F (79°C)

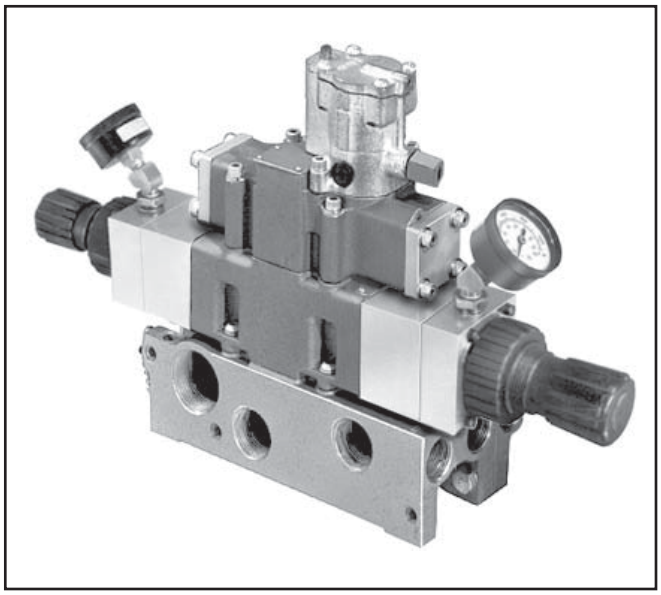
How To Order

1. Select type of adjustment.
2. Select pressure range for each cylinder port.

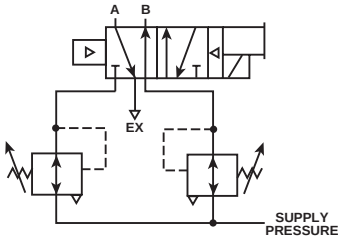
Example: Manual adjusted.
5-60 PSIG range for cylinder port “A”
and 10-125 PSIG for cylinder port “B”
Model No. L554 06 305C

NOTE: When using single or independent port sandwich regulators, be aware that:

1. Cylinder port outlets are reversed.
2. 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.



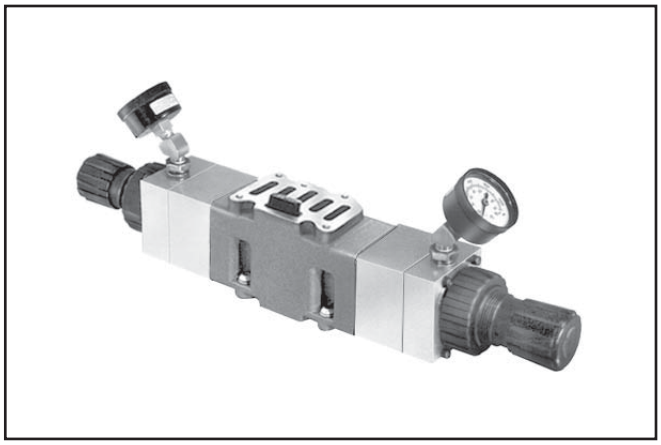
Graphic Symbol



Independently Regulated Pressure at Both “A” & “B”

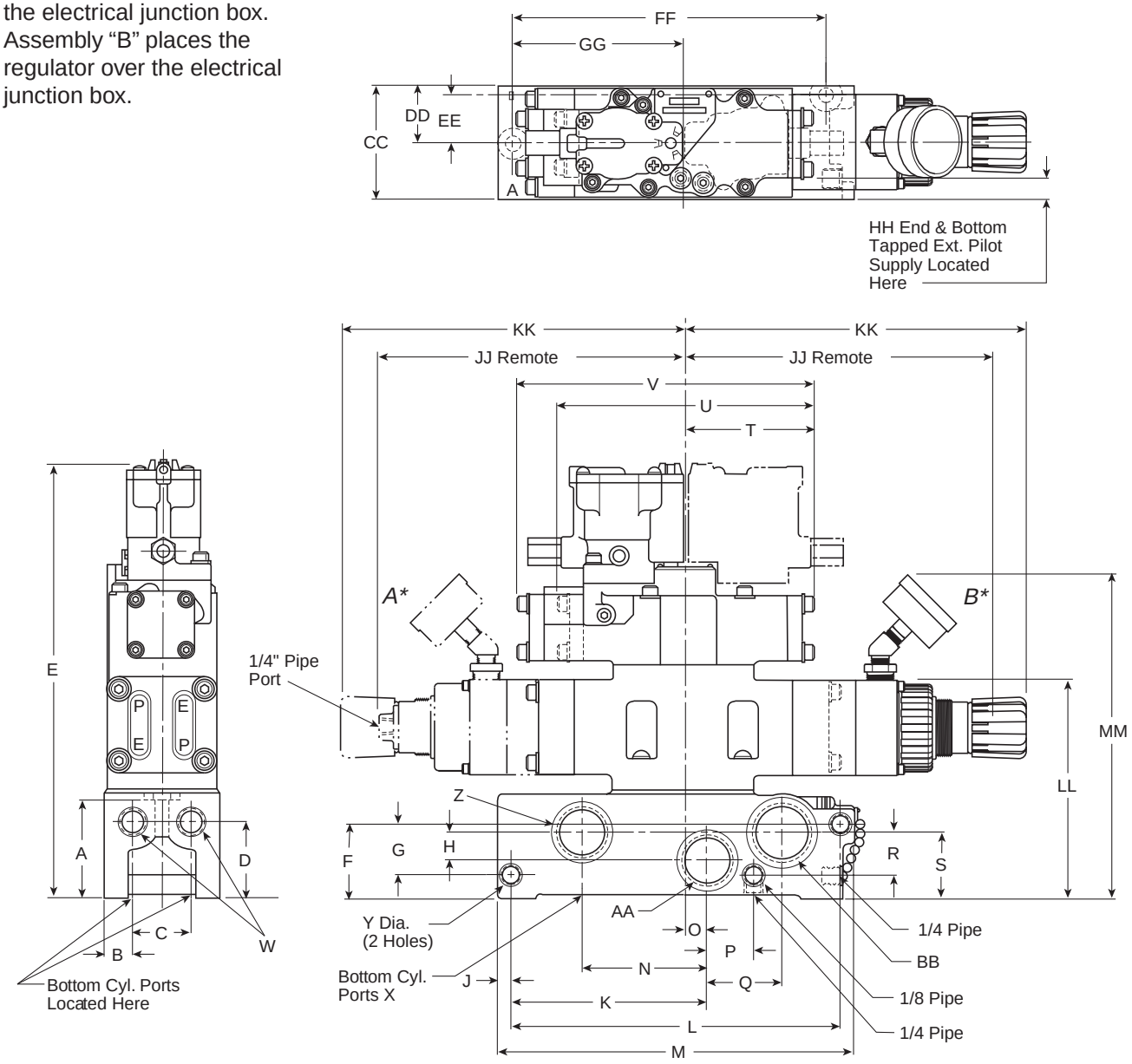
Pressure Adjustment	Cylinder Port “A”	Model Number	
		Cylinder Port “B”	
	PSIG	5 - 60	10 - 125†
Manual	1 - 60	L554 05 305C	—
Remote	0 - 140	—	L554 14 314C†

† Remote operator units 0-140 PSIG



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* Assembly “A” places the regulator on the end opposite the electrical junction box. Assembly “B” places the regulator over the electrical junction box.



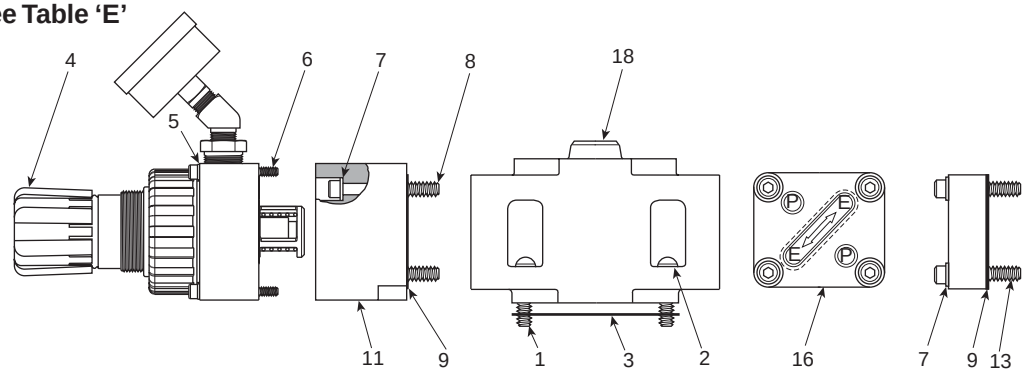
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**	**L**	**M**	**N**
2.56 (65.0)	.75 (19.1)	1.50 (38.1)	2.09 (53.1)	11.28 (286.5)	2.06 (52.3)	1.41 (35.8)	.75 (19.1)	.34 (8.64)	5.00 (127.0)	8.44 (214.4)	9.09 (230.9)	3.19 (81.0)
O	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**AA**
.61 (15.5)	1.19 (30.2)	1.91 (48.5)	1.09 (27.7)	1.81 (46.0)	3.32 (84.3)	6.64 (168.7)	7.56 (192.0)	3/8", 1/2" or 3/4" NPTF		.39 (9.9)	1" NPTF	1" NPTF
BB	**CC**	**DD**	**EE**	**FF**	**GG**	**HH**	**JJ**	**KK**	**LL**	**MM**		
1-1/4" NPTF	3.00 (76.2)	1.50 (38.1)	1.24 (31.5)	7.97 (202.4)	4.34 (110.2)	.40 (10.2)	8.53 (216.6)	10.15 (257.8)	5.46 (138.6)	8.80 (223.5)		

Inches (mm)

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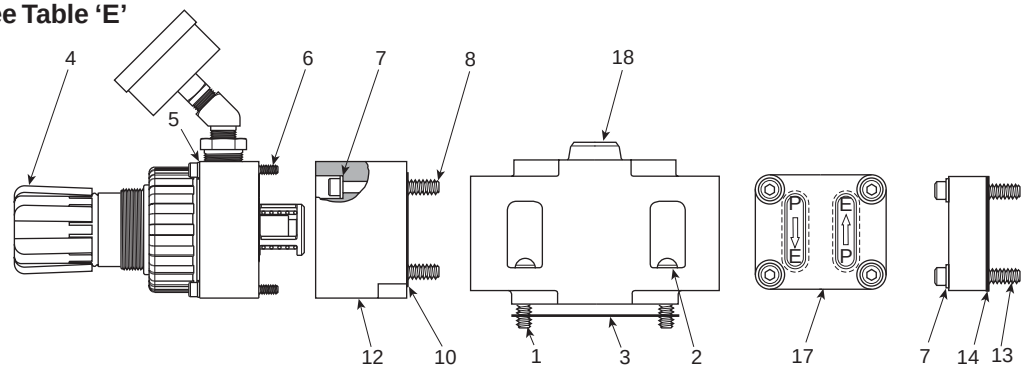
Common Port Regulation

Parts: See Table 'E'



Single Port Regulation

Parts: See Table 'E'



Independent Port Regulation

Parts: See Table 'E'

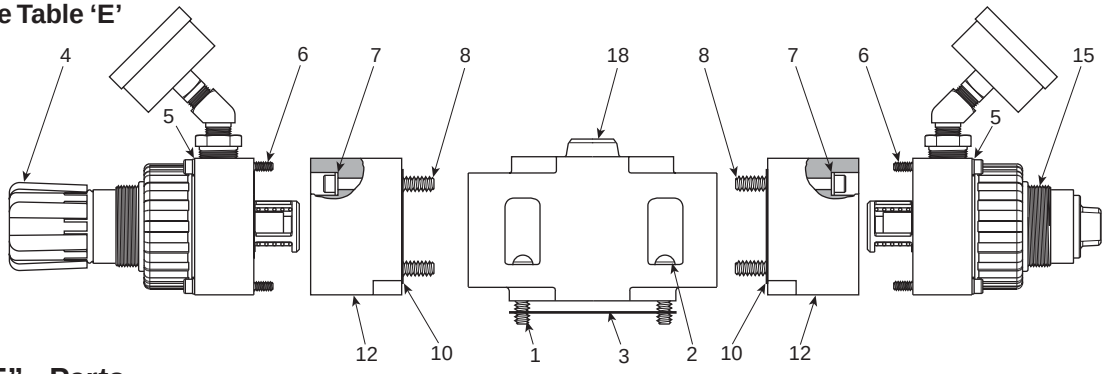


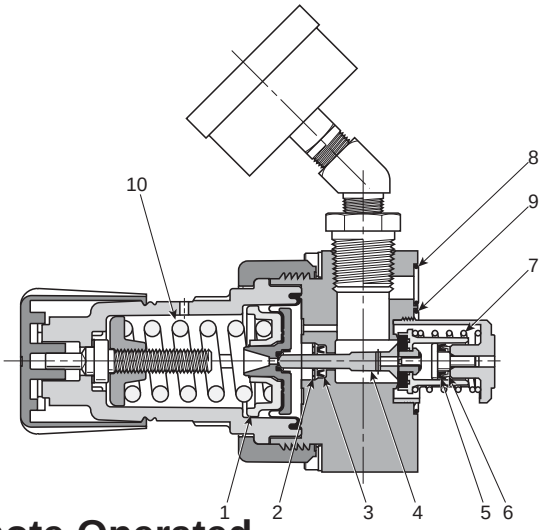
Table "E": Parts

Item No.	Part Number	Description
1	H098 15	Screw (4)
2	H175 12	Lockwasher (4)
3	K183 077	Gasket
4	Standard	Manual Reg. Assy. (w/Gauge)
	K472 001C	1-30 PSIG
	K472 002C	1-60 PSIG
	K472 003C	2-125 PSIG
5	H175 09	#10 Lockwasher
6	H100 32	#10-32 x 1.75" Lg. SHCS
7	H175 11	1/4" Lockwasher
8	H100 69	1/4-20 x 2.25" Lg. SHCS

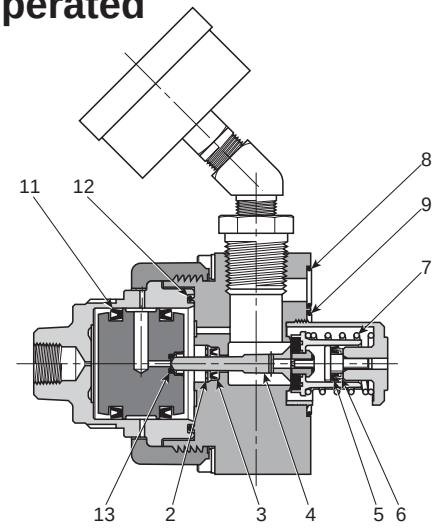
Item No.	Part Number	Description
9	K183 082	Gasket
10	K183 084	Gasket
11	K043 012	Function Block (P to P)
12	K043 011	Function Block (P to E)
13	H100 107	1/4-20 x 1-1/2" Lg. SHCS
14	K183 083	Gasket
15	Standard	Remote Reg. Assy. (w/Gauge)
	K472 009C	0-140 PSIG
16	K362 308	Function Plate Assy. (Incl. 7, 9, 13)
17	K362 307	Function Plate Assy. (Incl. 7, 13, 14)
18	K032 270	Body Assy. (Incl. 1, 2, 3)

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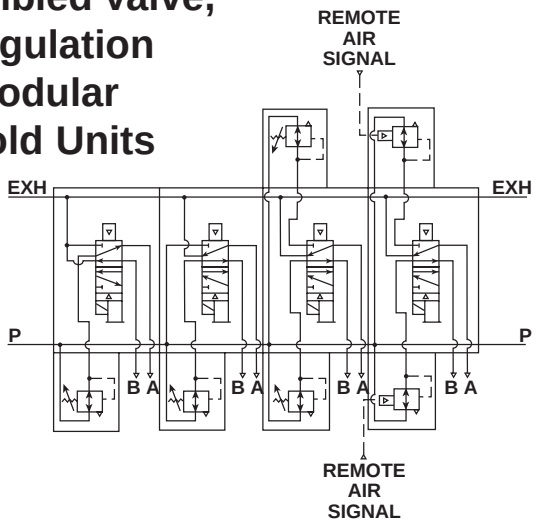
Manual Adjusting



Remote Operated



Suggested Schematic of Assembled Valve, Air Regulation and Modular Manifold Units



Replacement Parts

Item No.	Part Number		Description
1	○		Diaphragm Assembly
2	○	●	Retaining Ring
3	○	●	Vee Packing
4	○	●	Poppet Assembly
5	○	●	Vee Packing
6	○	●	Backflow Retainer
7	○	●	Poppet Spring
8	○	●	.989 ID x .070 W O-Ring
9	○	●	1.301 ID x .070 W O-Ring
10	P01698		1-30 PSI Spring
	P04062		1-60 PSI Spring (Blue)
	P04063		2-125 PSI Spring
11	●		Vee Packing
12	●		1.674 ID x .103 W O-Ring
13	●		Vent Seal

○ Parts included in K352409 Service Kit for Manual Operated Modular Regulators.

● Parts included in K352411 Service Kit for Remote Operated Modular Regulators.

Replacement Gauges

PSIG	Standard
0-60	K4520N14060
0-160	K4520N14160
0-300	K4520N14300

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Blank Station Covers

Manifold Assembly	Blank Cover Kit
—	K060 20007
K142 230	K060 20003
K142 231	
K142 270	
K142 233	K060 20009
K142 236	K060 20004

Flush Type" Hex Drive Pipe Plugs for Port Isolation

Part No.	Size (NPTF)
K21R02012L	1/8"
K21R02025L	1/4"
K21R02037L	3/8"
K21R02050L	1/2"
K21R02075L	3/4"

Conversion Kits: Lubricated to Non-Lubricated Operation

Basic Size	Operators (Solenoid or Remote Pilot)	
	Single	Double (2-Position)
3/8"	K322 012	K322 013

Interchangeable Manual Override Assemblies for Solenoid Operators



Non-Locking Type	Locking Type
K162 001	K152 003

To override valve, use a flat head screwdriver to press in and rotate plunger 90° until plunger locks in place. For proper valve operation, override should be in the out position.

Service Kits

To use this chart you must know the Basic Valve Series, Quantity, and Type of Operators, or the first three characters of the Valve Model Number.

Basic Valve		Solenoid Operated *				Remote Pilot Operated	
		Standard Service (Intermittent Duty)		Special Service ** (Continuous Duty)			
Size	Series (Prefix)	Single	Double 2 & 3-Position	Single	Double 2 & 3-Position	Single	Double 2 & 3-Position
3/8"	L65	–	K352 126	–	K352 127	–	K352 355
	L66	–	K352 126	–	K352 127	–	K352 355
	L67	K352 124	–	K352 125	–	K352 362	–
	L68	–	K352 126	–	K352 127	–	K352 355
	L69	–	K352 126	–	K352 127	–	K352 355
	L70	K352 124	–	K352 125	–	K352 362	–
1"	L65	–	K352 130	–	K352 131	–	K352 360
	L66	–	K352 130	–	K352 131	–	K352 360
	L67	K352 128	–	K352 129	–	K352 359	–
	L68	–	K352 130	–	K352 131	–	K352 360
	L69	–	K352 130	–	K352 131	–	K352 360
	L70	K352 128	–	K352 129	–	K352 359	–

Notes:
* Kits for solenoid operated valves include solenoid service kits.
****** Special service (continuous duty) solenoids may be identified as having gold colored solenoid tops.

Voltage Suffix Codes

L□□□ □□ □□□ **

Voltage Code

Code	Voltage			Coil Number	
**	60 Hz	50 Hz	DC	Plug-In	Flying Lead (19") *
49	–	–	24†	K593 060 K593 274‡	K593 014
53	120†	110	–	K593 071 K593 125‡	K593 025
57	240†	220	–	K593 081	K593 035

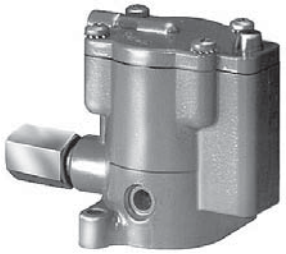
Notes: Bold Face type indicated primary coil rating.
† Indicates voltages approved for solenoid operators designed for use in hazardous locations. (See page E251.)
* 19" Coil lead length is standard. Other lead lengths may be available, consult supplier.
‡ Assembly includes indicator light socket, less light.

Electrical Connectors Single or Double Solenoid Valves

Basic Size	Valve Body		Subbase / Manifold	
	Single Solenoid	Double Solenoid	19" Leads	72" Leads
3/8"	H027 23	H027 22	H027 13	H027 89
1"				

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Plug-In Pilot



With Indicator Light

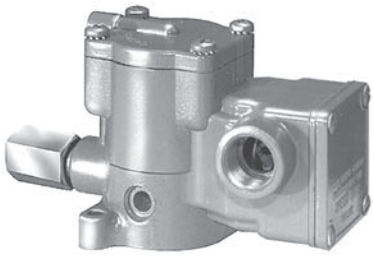
Description	Standard Service		Special Service	
Override Type	**Locking**	**Non-Locking**	**Locking**	**Non-Locking**
With Override (120VAC)	K175 9035 53	K175 8035 53	K185 9025 53	K185 8025 53
With Override (Other than 120VAC)	K175 3035**	—	K185 3025**	—

** See voltages on page E246.

NEMA 1 & 12



Basic Pilot

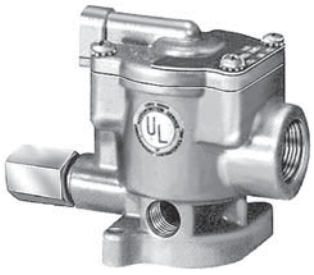


JIC Pilot

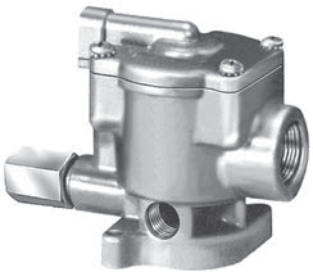
Description	Standard Service		Special Service	
Override Type	**Locking**	**Non-Locking**	**Locking**	**Non-Locking**
Basic with Override	K065 3035**	—	K085 3025**	—
JIC with Junction Box & Override	K065 6035**	K065 5035**	K085 6025**	K085 5025**
JIC Pilot with Junction Box & Override & Indicator Lights (120VAC Only)	K065 9035**	K065 8035**	K085 9025**	K085 8025**

** See voltages on page E246.

NEMA 4, 7 & 9



Hazardous Duty



NEMA 4 Pilot

Description	Standard Service		Special Service	
Hazardous Duty Pilot - UL & CSA	K025 1035** †		K045 1025** †	
NEMA 4 Pilot	K235 1035** †		—	
Override Type	**Locking**	**Non-Locking**	**Locking**	**Non-Locking**
Hazardous Duty with Override	K025 3035** †	K025 2035** †	K045 3025** †	K045 2025** †
NEMA 4 with Override	—	K235 3035** †	K235 2035** †	—

† 49 / 53 only ** See voltages on page E246.

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Installation

Valves should be installed with reasonable accessibility for service. Exercise care in keeping piping lengths to a minimum. Piping should be free of dirt, chips & scale. Pipe joint compound should be used sparingly applied only to the thread, never to the valve body. Avoid undue strain at piping joints. Protect the valve from exposure to extreme temperatures, dirt and moisture to maximize life.

Note: Valves equipped with locking manual overrides. Override(s) must be in the fully extended position for proper valve operation.

Double Solenoid / Remote Caution

Note: It is recommended that double solenoid and double remote 2-Position valves be mounted with the main spool in the horizontal plane.

Wiring Instructions for Base Mounted Valves

Single Solenoid:
Use wires marked “2” & “3” for connection. Units with DC Solenoids and indicator lights are polarity sensitive. Wire marked “3” is positive (+).

Double Solenoid:
Use wires marked “1” & “2” for Solenoid “A”. Use wires marked “3” & “4” for Solenoid “B”. Units with DC Solenoids and indicator lights are polarity sensitive. Wires marked “1” and “3” are positive.

⚠ ***Caution:***
DC Solenoids are polarity sensitive. Observe polarities indicated above.

Units with Flying Leads

Wires are not polarity sensitive.

⚠ ***Caution:***
DC solenoids with indicator lights and / or arc suppression coils are polarity sensitive. Use red wire as positive.

Listing Agencies

General Purpose Approvals

CSA - Canadian Standards Association
File Number 42024

Hazardous Duty Approvals

UL - Underwriters Laboratories, Inc.
File Number E42542
Category Y107

CSA - Canadian Standards Association
File Number 24349

See page E251 for Approved Hazardous Location Class, Group & Division.

“Special Service” Solenoid (Continuous Duty)

Special Service Solenoids are designed for use when the solenoid duty cycle is greater that 70% or when energization times are for 10 minutes or longer.

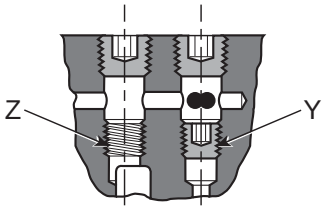
These solenoids should be used when valves are to be held energized for hours, days or weeks… or when extended ambient temperature operation is required. Apply the duty cycle formula to determine if this type of solenoid is required.

Duty Cycle Formula

$$\frac{\text{Time Energized}}{\text{Time Energized + Time Off}} \times 100 = \%\ \text{Duty Cycle}$$

If Duty Cycle is 70% or greater, then Special Service (Continuous Duty) Solenoid should be used.

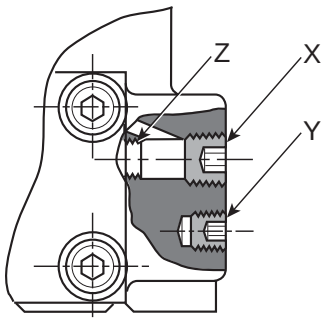
Pilot Supply Conversion



Base Mounted

For field conversion to external pilot supply, remove two 1/8" NPTF plugs from top of valve body and move bottom plug from “Y” to “Z”.

Replace 1/8" NPTF plugs and connect pilot pressure to the 1/4" NPTF external pilot supply port “X” in subbase.



Direct Pipe Ported

For field conversion to external pilot supply, remove and discard 1/4" NPTF plug in external pilot supply port “X”. Move stored plug “Y” to location “Z” in bottom of pilot supply port “X”. Then connect pilot pressure to port “X” in valve body.

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Flow Capacities

Valve Type	Cylinder Port Size (NPTF)	Mounting Style	Cv Flow Rating Inlet to Cylinder "A"
3/8" Double	3/4"	Subbase	5.0
	3/4"	Manifold	4.9
3/8" Double 3-Position	3/4"	Subbase	4.5
	3/4"	Manifold	4.1
1" Single & Double	1"	Subbase	11.3

Valve Type	Cylinder Port Size (NPTF)	Mounting Style	Cv Flow Rating Inlet to Cylinder "A"
3/8" Single	3/8"	Direct Pipe	4.7
	1/2"	Direct Pipe	5.3
3/8" Double	3/8"	Direct Pipe	4.5
	1/2"	Direct Pipe	5.5
3/8" Double 3-Position	3/8"	Direct Pipe	4.1
	1/2"	Direct Pipe	4.5
1" Single & Double	1"	Direct Pipe	12.0

Materials of Construction

Valve Bodies ..... Aluminum alloy

Valve Spool –
* Aluminum alloy with special coating on 3/8" basic valves

Hard chrome plated AISI type 416 stainless steel on 1/4" & 1/2" basic valves.

Resilient Seals: In Valve Body -
Dynamic ..... Polyurethane base on 3/8" basic valves*
Static / Dynamic ..... Nitrile base w / 12% Molybdenum Disulphide on 1/4" & 1/2" basic valves

Other Seals ..... Nitrile

Shock Pads ..... Polyurethane

Valve Spacers ..... Brass

Manifolds & Subbases ..... Aluminum alloy

Solenoid Bodies ..... Plated zinc alloy
Internal Components ..... Corrosion resistant steel
Resilient Seals –
Standard Service ..... Nitrile
Special Service (continuous duty) ..... Fluorocarbon & Silicone

Other Seals ..... Nitrile

Coil ..... Class "B" epoxy encapsulated (Class "H" also available on some models, consult supplier)

* These materials are specially designed for valves used on non-lubricated service

Recommended Filtration

Maintained 40 Micron Filtration

Life Expectancy

Valves designed for non-lubricated service as well as those designed for lubricated service will provide millions of maintenance free cycles. Under laboratory conditions service life exceeds 25,000,000 cycles.

Factory Pre-Lubrication

Valves are lubricated at assembly with Sunaplex 781 or equivalent. Valves specified for vacuum service are lubricated with Dow Corning Valve Seal A.

Valves for Non-Lubricated Service

3/8" basic valve sizes are designed to operate in applications where in-service lubrication is not desirable. Valves are factory pre-lubed as noted above. These valves may be used for lubricated service as well.

Lubrication

Air Line Lubricant (compatible with Nitrile & Polyurethane seals) must readily atomize and be of the medium analine type. Analine point range must be between 180° and 220°F.
Viscosity @ 100°F: 140-170 SUS.

Recommended Lubricant

If in-service lubrication is required, use F442 oil, or equivalent. F442 is specially formulated to provide peak performance and maximum service life for air operated equipment.

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Pressure Range for Solenoid Operated Valves

Media	Internal Pilot Supply Basic Valve Size			External Pilot Supply Basic Valve Size				
	1/4"	3/8"	1/2"	1/4"		3/8"	1/2"	1"
Air	35-140* PSIG			N.A.	Main	0-250 PSIG		
					Pilot	35-140* PSIG		
Vacuum	Do Not Use			N.A.	Main	Within 1 Hg of Perfect		
					Pilot	35-140* PSIG		
Other	Consult Supplier							

* 200 PSIG Solenoid Is Optional (consult supplier).

Pressure Range for Remote Pilot Operated Valves

Media		Valve Type	
		Single	Double & 3-Position
Air	Main	35-250 PSIG	0-250 PSIG
	Pilot	35-200 PSIG	35-200 PSIG
Vacuum	Main	Do Not Use	Within 1" Hg of Perfect
	Pilot	Do Not Use	35-200 PSIG
Other	Consult Supplier		

Ambient Temperature Range Standard Service Solenoid Operator

Minimum	Maximum	
	Intermittent Duty	Continuous Duty
0°F	125°F	100°F

Special Service (Continuous Duty) Solenoid Operator

Minimum	Maximum	
	Intermittent Duty	Continuous Duty
0°F	125°F	125°F

As the above chart indicates, Standard Duty Solenoids may be used on continuous duty but ambient temperature is de-rated.

In some cases, Special Service Solenoids may be rated for higher ambient temperatures (consult supplier).

Ambient Temperature Range Remote Pilot Operated Valves

Minimum	Maximum
0°F	200°F

Caution:
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage and unpredictable behavior.

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Solenoid Enclosure Ratings

Type	Listing Agency	NEMA Rating	Description
Plug-In	CSA	1 & 12	General Purpose Indoor Only Dust Tight
Conduit / Flying Lead	CSA	1 & 12	General Purpose Indoor Only Dust Tight
* Conduit (As Specified)	UL & CSA	7 & 9	Hazardous Location See Chart Below)
* Conduit (As Specified)	CSA	4	General Purpose Indoor / Outdoor

* See ordering information on specific valve type. (Direct Pipe Ported Valves Only.)

Solenoid Characteristics Chart

Voltage Range +10/-15% of Nominal

3/8" & 3/4" Basic – L-Pilot					
Voltage/ Cycles	Amps Inrush	Amps Holding	Resistance Ohms	Watts	Insulation Class
120/60VAC	.29	.18	122	12	B
110/50VAC	.21	.14	122	12	B
240/60VAC	.18	.12	610	12	B
24/60VAC	1.6	1.0	4.5	9.5	B
24/50VAC	1.2	.75	6.4	9.5	B
6VDC	–	1.4	4.5	7.6	B
12VDC	–	.66	17.7	9	B
24VDC	–	.32	71	9	B
48VDC	–	.22	216	11	B

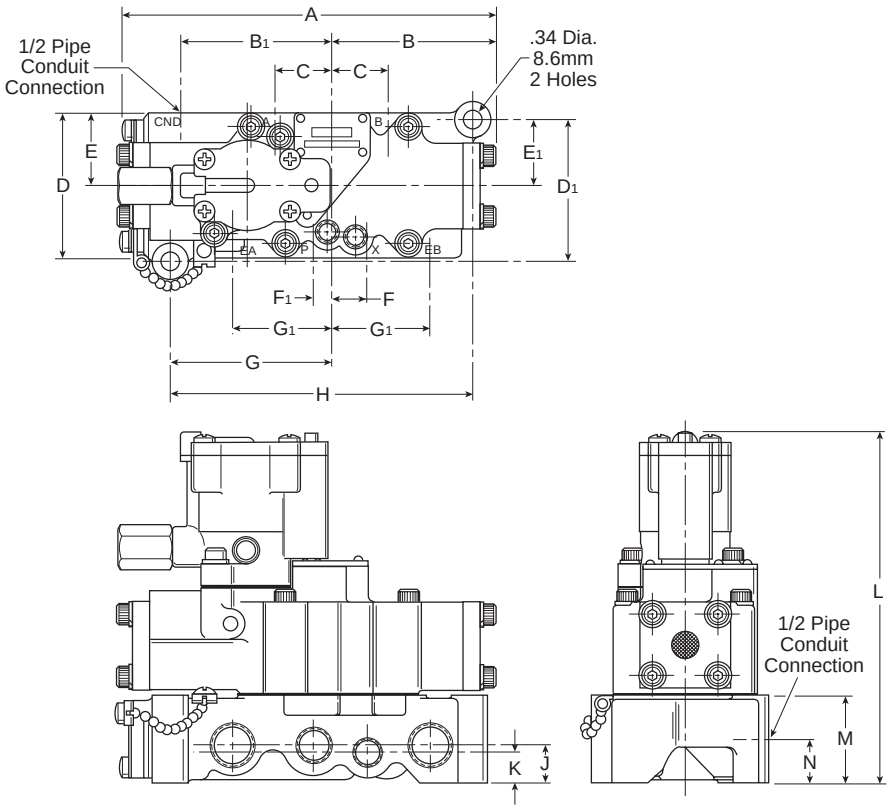
Hazardous Duty Solenoid Listing

Valves with solenoid operators designated for hazardous locations are UL & CSA Approved as follows:

National Electric Code	Ambient Conditions	NEMA Classification
Class I Div. 1 Group C	Ethyl, Ether, Etc., Gases & Vapors	VII (7)
Class I Div. 1 Group D	Gasoline, Etc., Gases & Vapors	VII (7)
Class I Div. 2 Group B	Butadiene, Etc., Liquid, Fluid or Vapor Normally Contained, or Atmosphere Ventilated	VII (7)
Class II Div. 1 Group E	Metal Dust	IX (9)
Class II Div. 1 Group F	Coal, Coke, Carbon Black Dust	IX (9)
Class II Div. 1 Group G	Flour, Starch, Grain Dust	IX (9)

See Article 500 - Hazardous (Classified) Locations, National Electric Code.

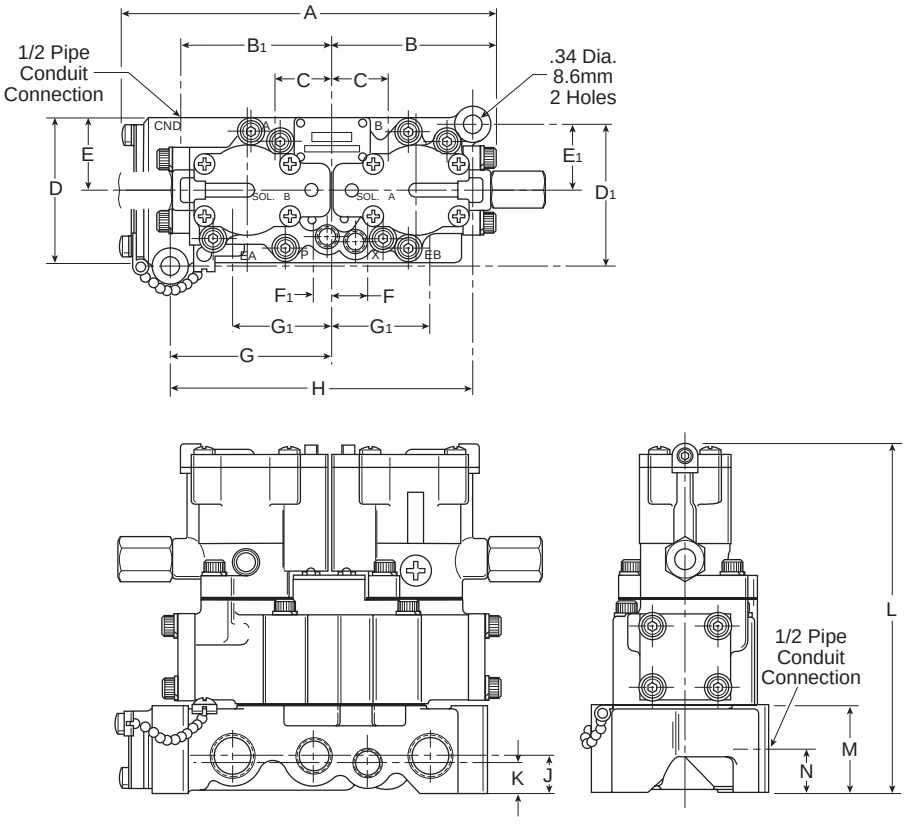
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Dimensions

A	B	B1	C
7.56 (192)	3.32 (84.3)	2.94 (74.7)	1.12 (28.4)
D	**D1**	**E**	**E1**
2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)
F	**F1**	**G**	**G1**
75 (19.1)	.38 (9.7)	3.16 (80.3)	2.00 (50.8)
H	**J**	**K**	**L**
6.03 (153.2)	.75 (19.1)	.62 (15.7)	6.93 176)
M	**N**		
1.75 (44.5)	1.00 (25.4)		

Inches (mm)

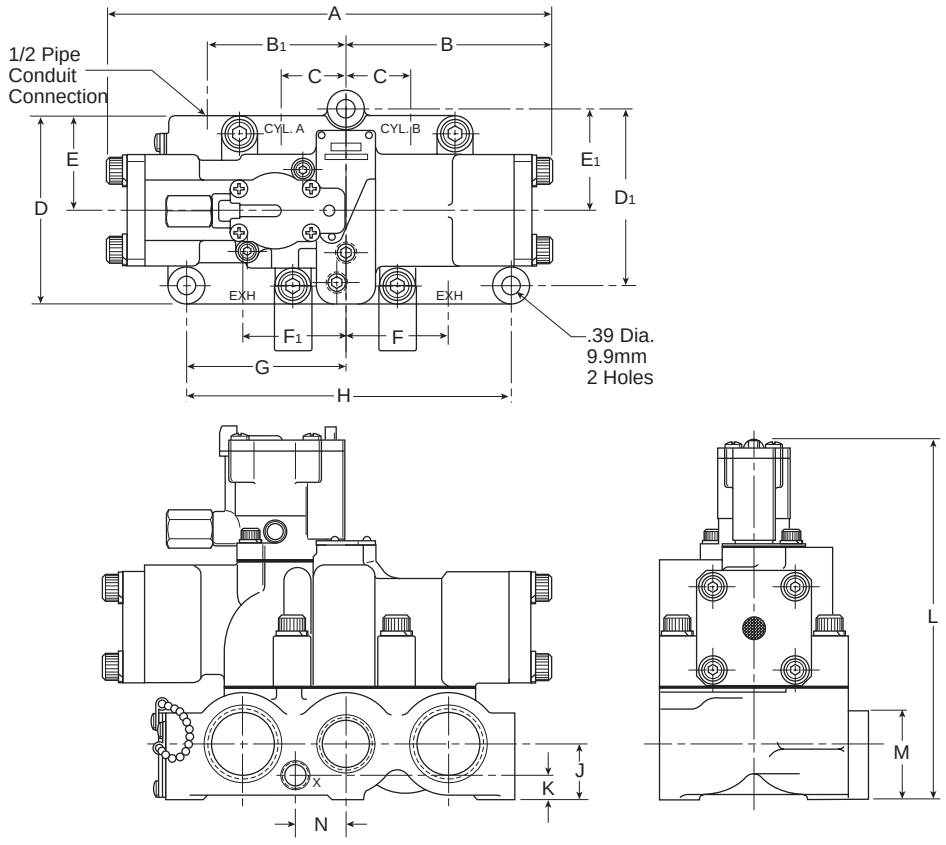


Dimensions

A	B	B1	C
7.38 (187.5)	3.32 (84.3)	2.94 (74.7)	1.12 (28.4)
D	**D1**	**E**	**E1**
2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)
F	**F1**	**G**	**G1**
.75 (19.1)	.38 (9.7)	3.16 (80.3)	2.00 (50.8)
H	**J**	**K**	**L**
6.03 (153.2)	.75 (19.1)	.62 (15.7)	6.93 (176)
M	**N**		
1.75 (44.5)	1.00 (25.4)		

Inches (mm)

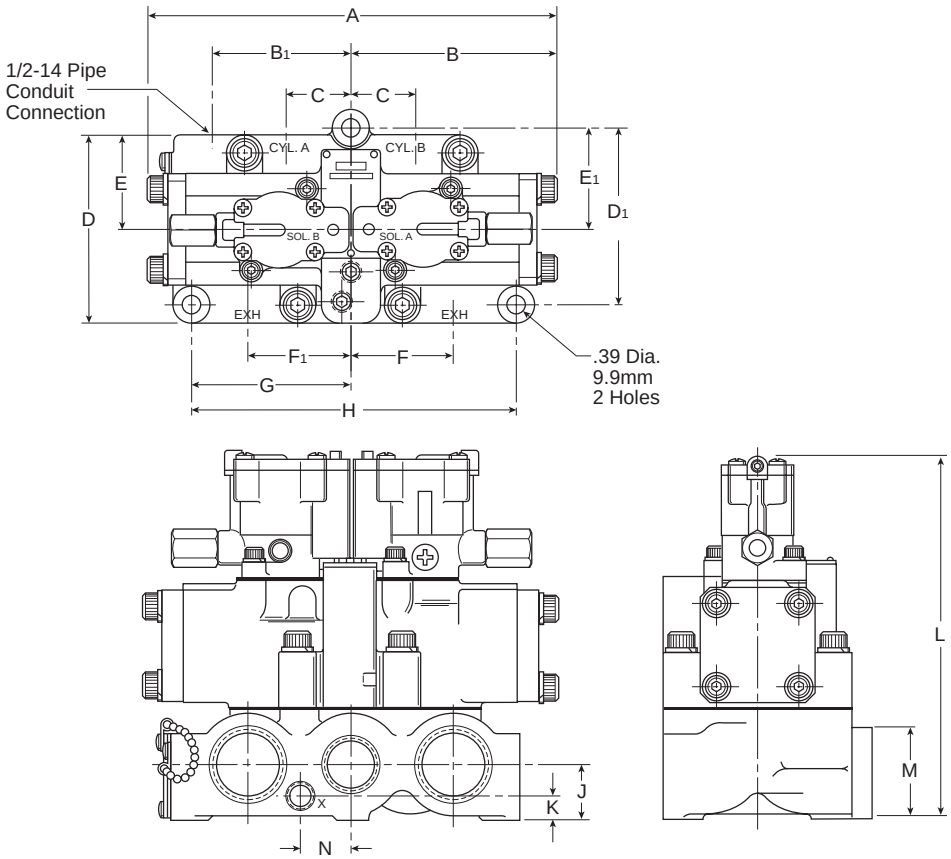
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Dimensions

A 10.46 (265.7)	**B** 4.75 (120.6)	**B1** 3.38 (85.8)	**C** 1.53 (38.9)
D 4.56 (115.8)	**D1** 4.28 (108.7)	**E** 2.28 (57.9)	**E1** 2.44 (62)
F 2.45 (62.2)	**F1** 2.46 (62.5)	**G** 3.81 (96.8)	**H** 7.62 (193.5)
J 1.31 (33.3)	**K** .59 (15)	**L** 8.74 (222)	**M** 2.09 (53.1)
N 1.22 (31)			

Inches (mm)

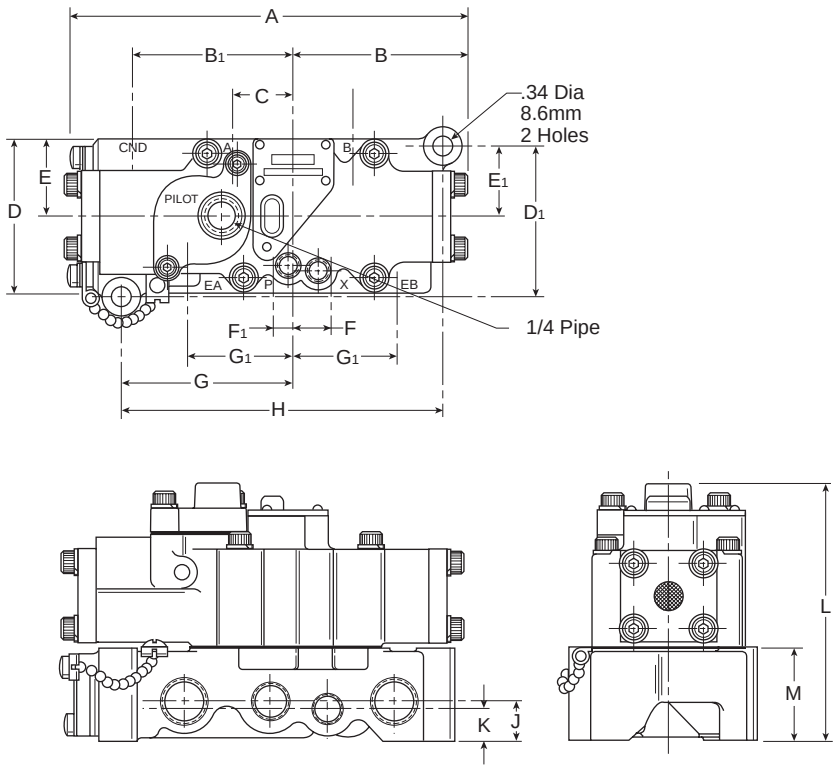


Dimensions

A 9.50 (241.3)	**B** 4.75 (120.6)	**B1** 3.38 (85.8)	**C** 1.53 (38.9)
D 4.56 (115.8)	**D1** 4.28 (108.7)	**E** 2.28 (57.9)	**E1** 2.44 (62)
F 2.45 (62.2)	**F1** 2.46 (62.5)	**G** 3.81 (96.8)	**H** 7.62 (193.5)
J 1.31 (33.3)	**K** .59 (15)	**L** 8.74 (222)	**M** 2.09 (53.1)
N 1.22 (31)			

Inches (mm)

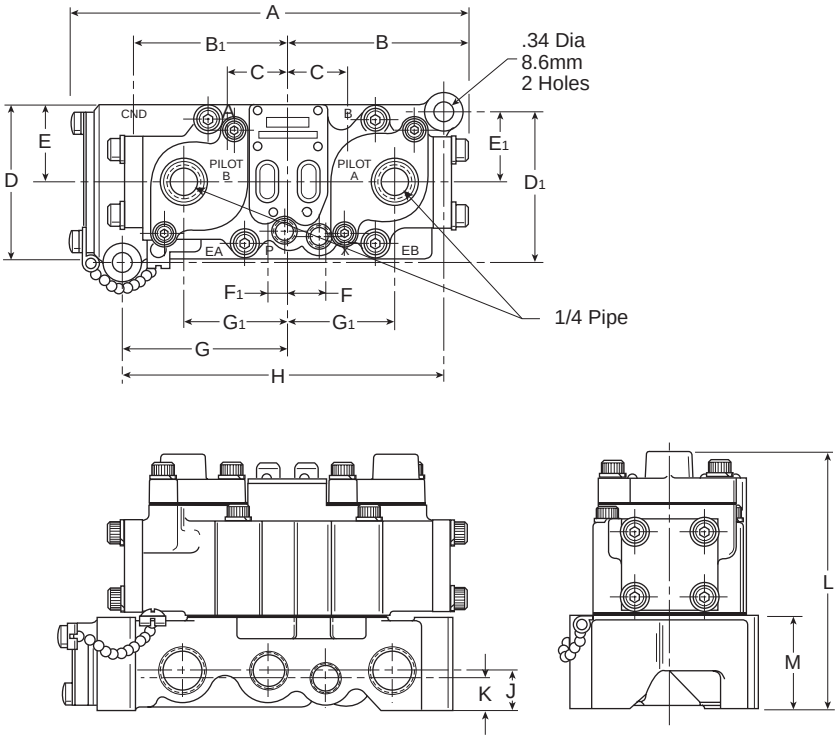
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Dimensions

A	B	B1	C
7.56 (192)	3.32 (84.3)	2.94 (74.7)	1.12 (28.4)
D	**D1**	**E**	**E1**
2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)
F	**F1**	**G**	**G1**
.75 (19.1)	.38 (9.7)	3.16 (80.3)	2.00 (50.8)
H	**J**	**K**	**L**
6.03 (153.2)	.75 (19.1)	.62 (15.7)	4.76 (120.9)
M			
1.75 (44.5)			

Inches (mm)

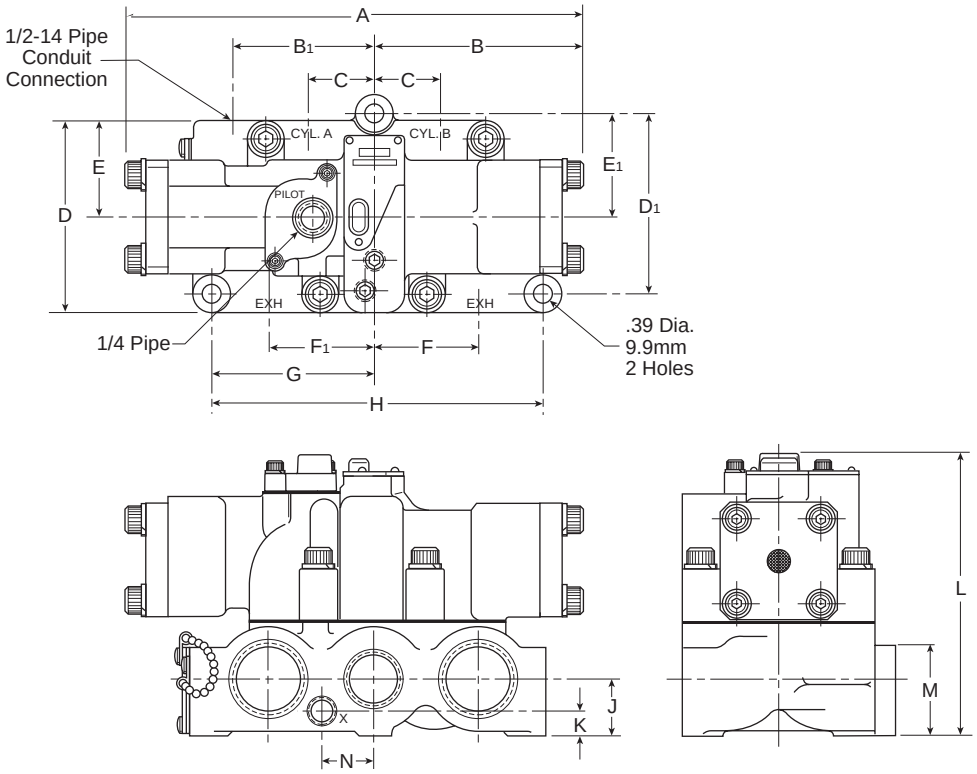


Dimensions

A	B	B1	C
7.56 (192)	3.32 (84.3)	2.94 (74.7)	1.12 (28.4)
D	**D1**	**E**	**E1**
2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)
F	**F1**	**G**	**G1**
.75 (19.1)	.38 (9.7)	3.16 (80.3)	2.00 (50.8)
H	**J**	**K**	**L**
6.03 (153.2)	.75 (19.1)	.62 (15.7)	4.76 (120.9)
M			
1.75 (44.5)			

Inches (mm)

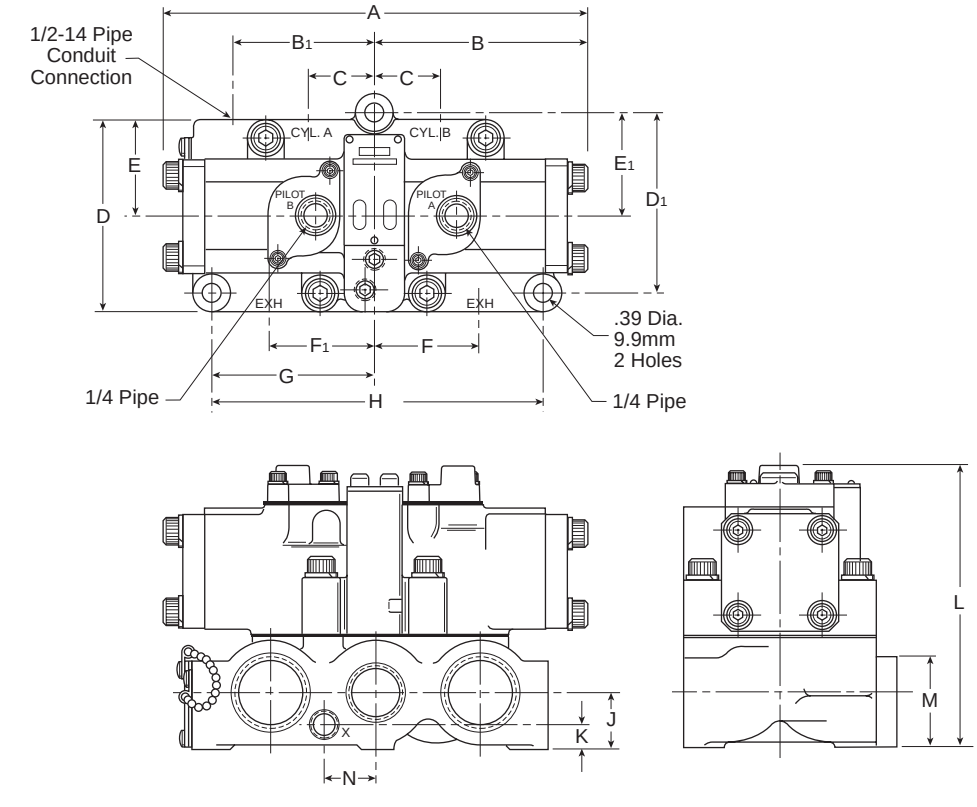
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Dimensions

A	B	B1	C
10.46 (265.7)	4.75 (120.6)	3.38 (85.8)	1.53 (38.9)
D	**D1**	**E**	**E1**
4.56 (115.8)	4.28 (108.7)	2.28 (57.9)	2.44 (62)
F	**F1**	**G**	**H**
2.45 (62.2)	2.46 (62.5)	3.81 (96.8)	7.62 (193.5)
J	**K**	**L**	**M**
1.31 (33.3)	.59 (15)	6.57 (166.9)	2.09 (53.1)
N			
1.22 (31)			

Inches (mm)

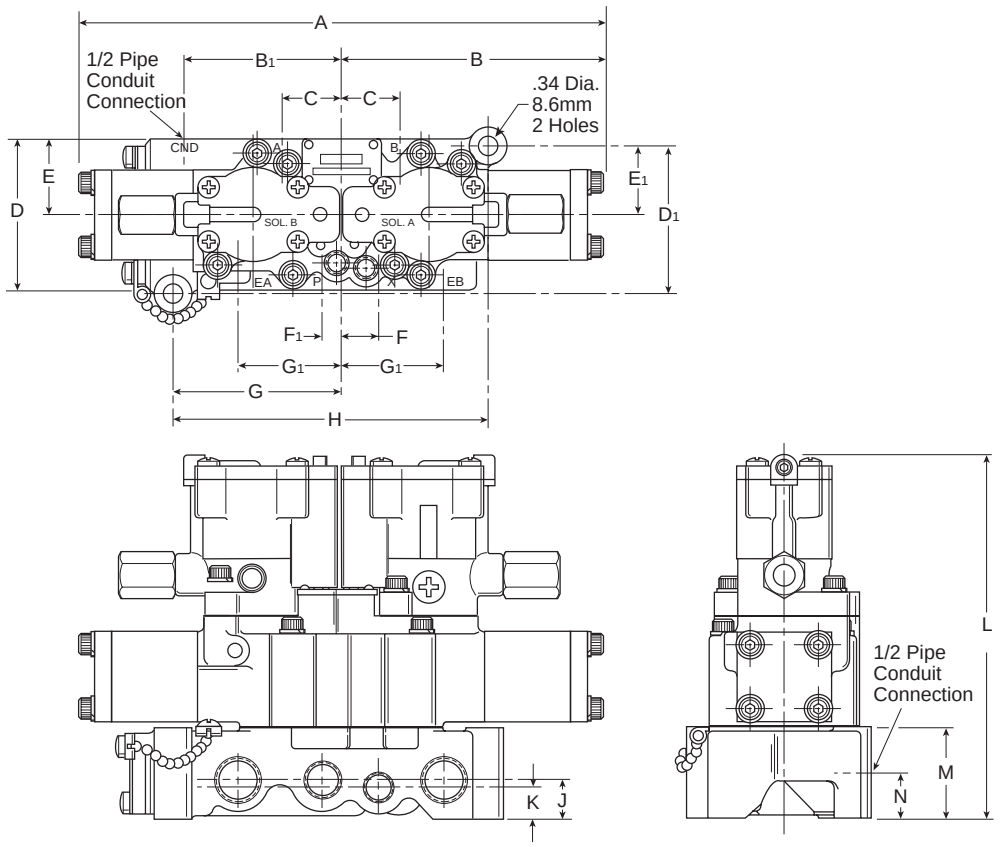


Dimensions

A	B	B1	C
9.50 (241.3)	4.75 (120.6)	3.38 (85.8)	1.53 (38.9)
D	**D1**	**E**	**E1**
4.56 (115.8)	4.28 (108.7)	2.28 (57.9)	2.44 (62)
F	**F1**	**G**	**H**
2.45 (62.2)	2.46 (62.5)	3.81 (96.8)	7.62 (193.5)
J	**K**	**L**	**M**
1.31 (33.3)	.59 (15)	6.57 (166.9)	2.09 (53.1)
N			
1.22 (31)			

Inches (mm)

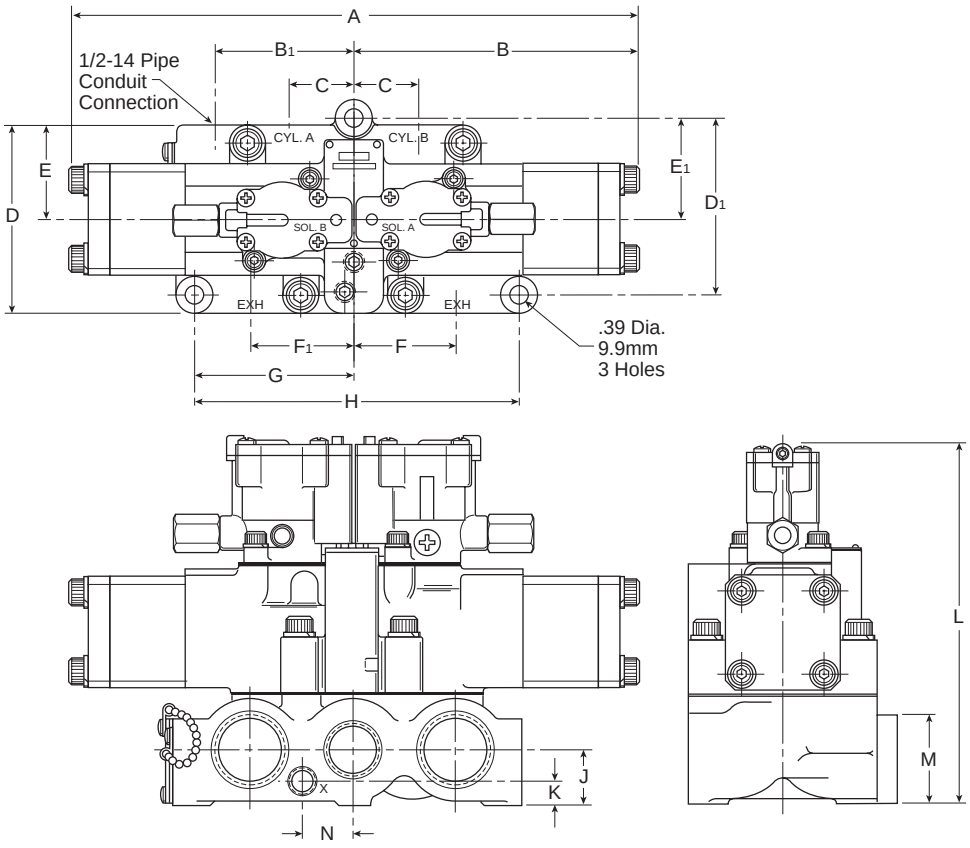
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Dimensions

A	B	B1	C
9.64 (244.8)	4.82 (122.4)	2.94 (74.7)	1.12 (28.4)
D	**D1**	**E**	**E1**
2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)
F	**F1**	**G**	**G1**
.75 (19.1)	.38 (9.7)	3.16 (80.3)	2.00 (50.8)
H	**J**	**K**	**L**
6.03 (153.2)	.75 (19.1)	.62 (15.7)	6.93 (176)
M			
1.00 (25.4)			

Inches (mm)

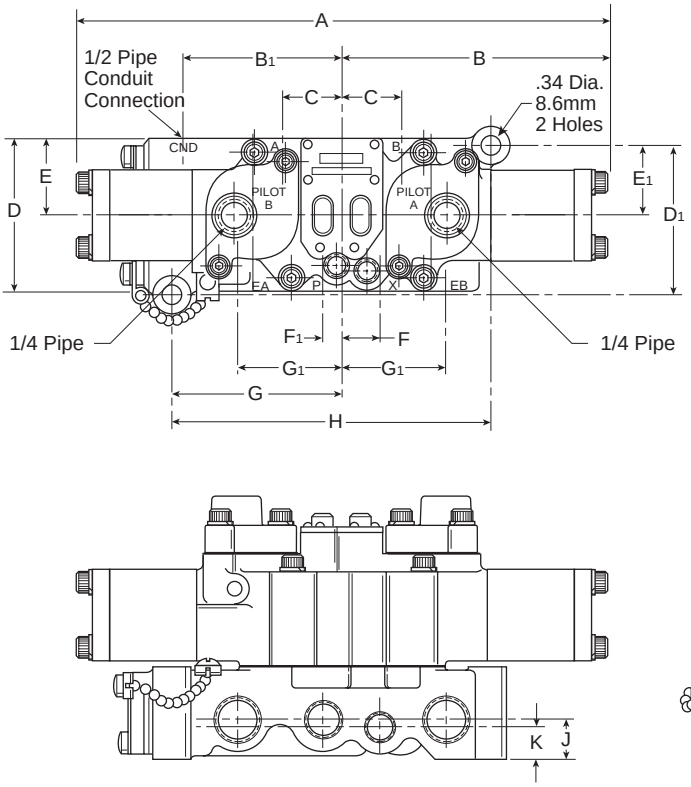


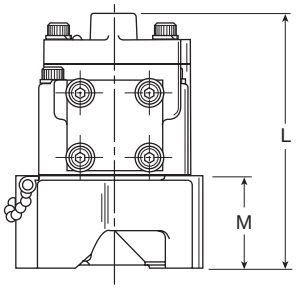
Dimensions

A	B	B1	C
13.62 (345.9)	6.81 (173)	3.38 (85.8)	1.53 (38.9)
D	**D1**	**E**	**E1**
4.56 (115.8)	4.28 (108.7)	2.28 (57.9)	2.44 (62)
F	**F1**	**G**	**H**
2.45 (62.2)	2.46 (62.5)	3.81 (96.8)	7.62 (193.5)
J	**K**	**L**	**M**
1.31 (33.3)	.59 (15)	8.74 (222)	2.09 (53.1)
N			
1.22 (31)			

Inches (mm)

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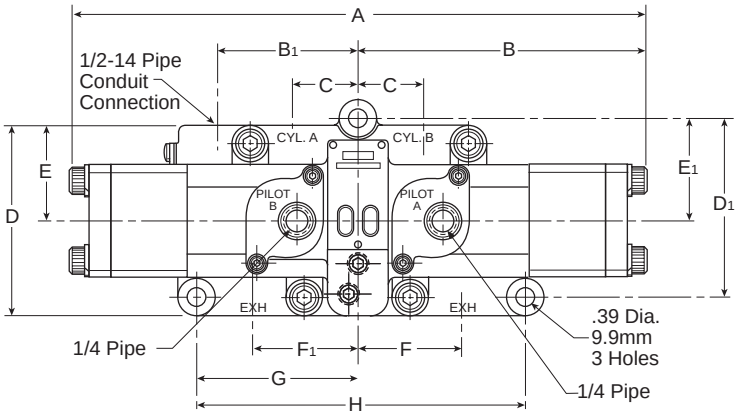


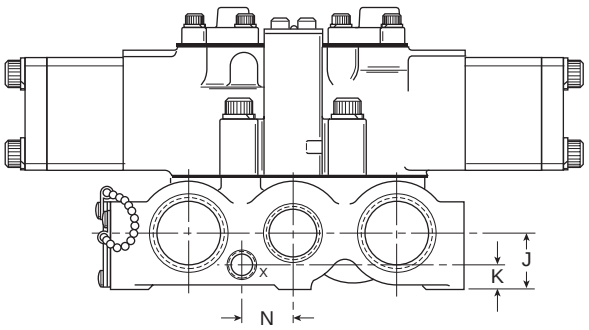


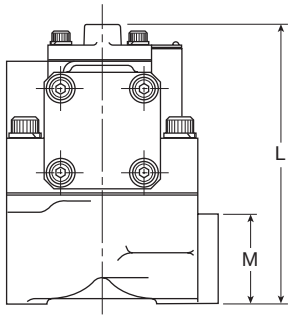
Dimensions

A	B	B1	C
9.64 (244.8)	4.82 (122.4)	2.94 (74.7)	1.12 (28.4)
D	**D1**	**E**	**E1**
2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)
F	**F1**	**G**	**G1**
.75 (19.1)	.38 (9.7)	3.16 (80.3)	2.00 (50.8)
H	**J**	**K**	**L**
6.03 (153.2)	.75 (19.1)	.62 (15.7)	4.76 (120.9)
M			
1.75 (44.5)			

Inches (mm)





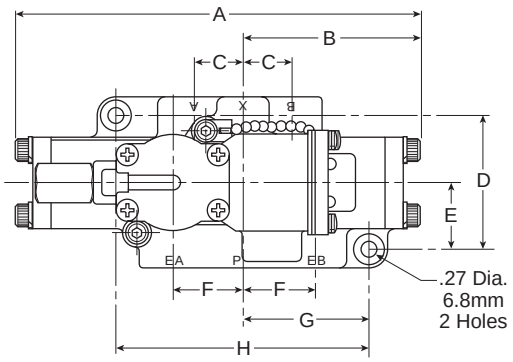


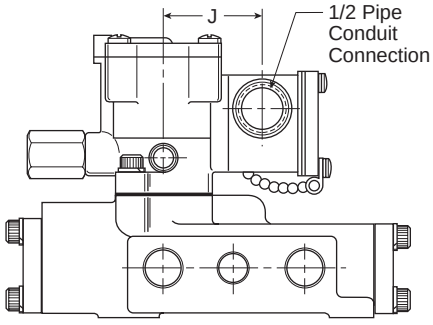
Dimensions

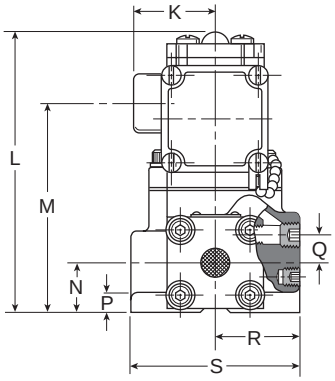
A	B	B1	C
13.62 (345.9)	6.81 (173)	3.38 (85.8)	1.53 (38.9)
D	**D1**	**E**	**E1**
4.56 (115.8)	4.28 (108.7)	2.28 (57.9)	2.44 (62)
F	**F1**	**G**	**H**
2.45 (62.2)	2.46 (62.5)	3.81 (96.8)	7.62 (193.5)
J	**K**	**L**	**M**
1.31 (33.3)	.59 (15)	6.57 (166.8)	2.09 (53.1)
N			
1.22 (31)			

Inches (mm)

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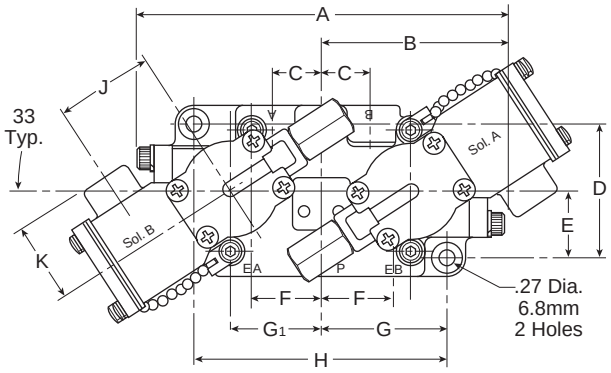


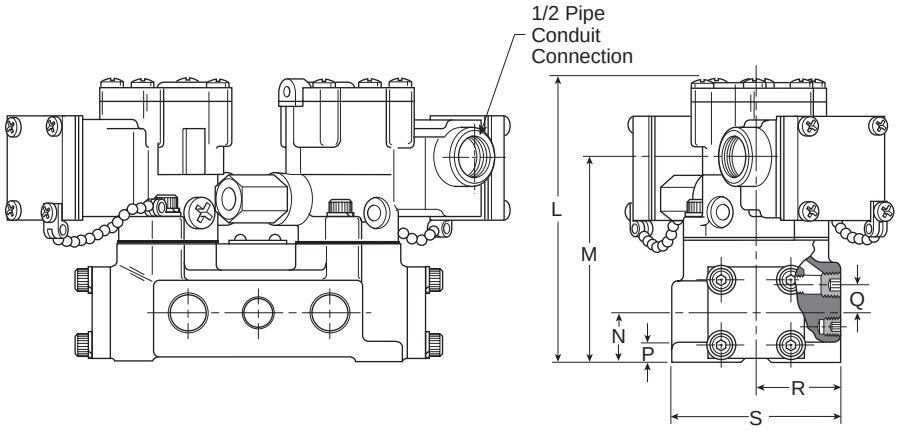


Dimensions

A	B	C	D
7.56 (192)	3.32 (84.3)	.90 (22.9)	2.56 (65)
E	**F**	**G**	**H**
1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	4.69 (119.1)
J	**K**	**L**	**M**
1.82 (46.2)	1.50 (38.1)	5.35 (135.9)	3.91 (99.3)
N	**P**	**Q**	**R**
.94 (23.9)	.38 (9.7)	.53 (13.5)	1.62 (41.1)
S			
3.25 (82.6)			

Inches (mm)



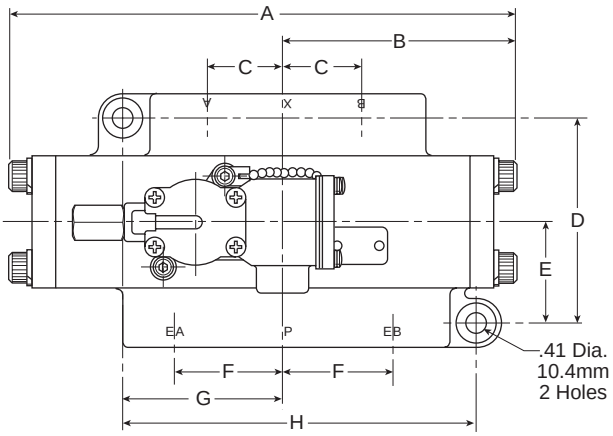


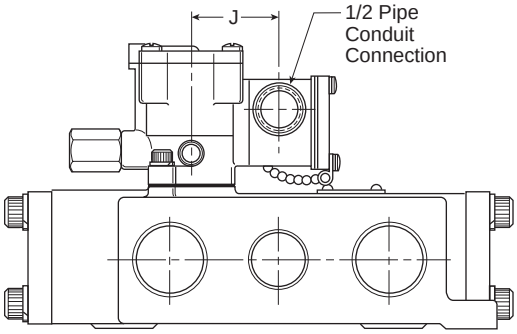
Dimensions

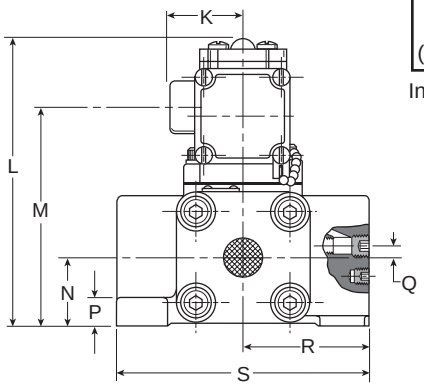
A	B	C	D
7.56 (192)	3.32 (84.3)	.90 (22.9)	2.56 (65)
E	**F**	**G**	**G1**
1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	1.66 (42.4)
H	**J**	**K**	**L**
4.69 (119.1)	1.82 (46.2)	1.50 (38.1)	5.35 (135.9)
M	**N**	**P**	**Q**
3.91 (99.3)	.94 (23.9)	.38 (9.7)	.53 (13.5)
R	**S**		
1.62 (41.1)	3.25 (82.6)		

Inches (mm)

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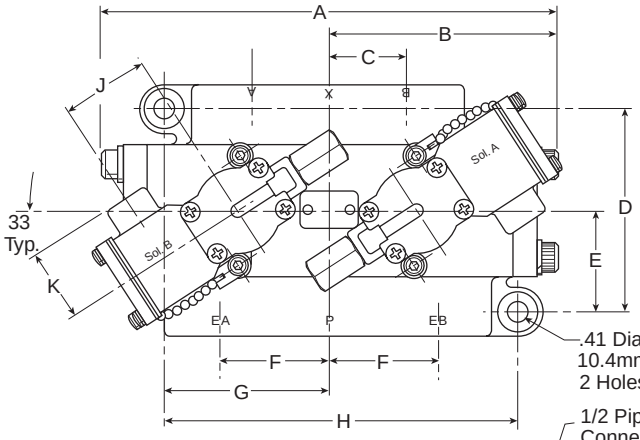


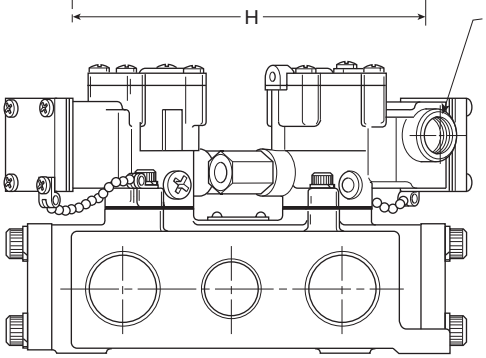


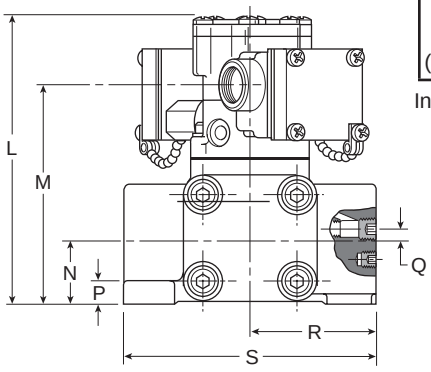
Dimensions

A	B	C	D
10.46 (265.7)	4.75 (120.6)	1.62 (41.1)	4.25 (108)
E	**F**	**G**	**H**
2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)
J	**K**	**L**	**M**
1.82 (46.2)	1.50 (38.1)	6.44 (163.6)	4.95 (125.7)
N	**P**	**Q**	**R**
1.50 (38.1)	.69 (17.5)	.20 (5.1)	2.62 (66.5)
S			
5.25 (133.4)			

Inches (mm)





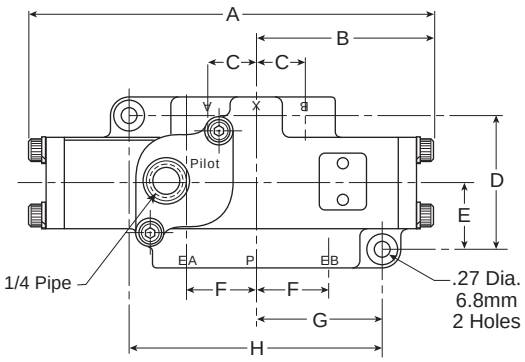


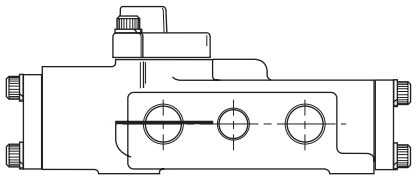
Dimensions

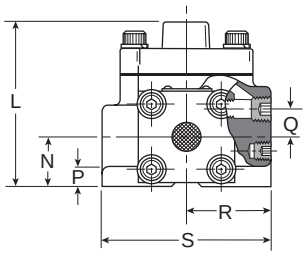
A	B	C	D
9.50 (241.3)	4.75 (120.6)	1.62 (41.1)	4.25 (108)
E	**F**	**G**	**H**
2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)
J	**K**	**L**	**M**
1.82 (46.2)	1.50 (38.1)	6.44 (163.6)	4.95 (125.7)
N	**P**	**Q**	**R**
1.50 (38.1)	.69 (17.5)	.20 (5.1)	2.62 (66.5)
S			
5.25 (133.4)			

Inches (mm)

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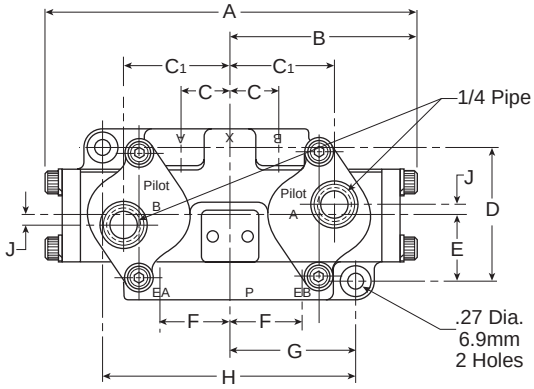


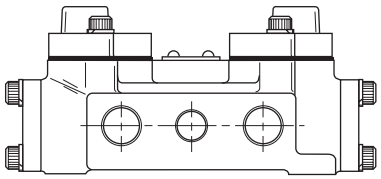


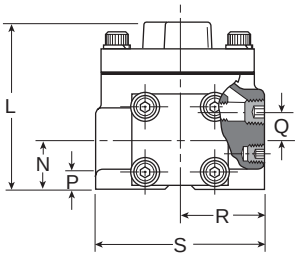
Dimensions

A	B	C	D
7.56 (192)	3.32 (84.3)	.90 (22.9)	2.56 (65)
E	**F**	**G**	**H**
1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	4.69 (119.1)
L	**N**	**P**	**Q**
3.18 (80.8)	.94 (23.9)	.38 (9.7)	.53 (13.5)
R	**S**		
1.62 (41.1)	3.25 (82.6)		

Inches (mm)





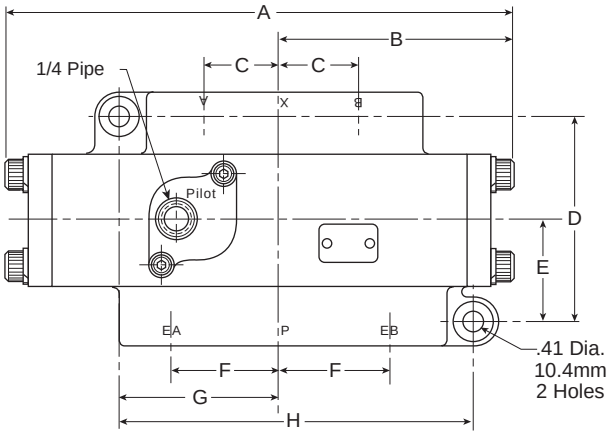


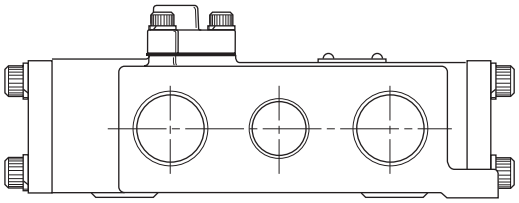
Dimensions

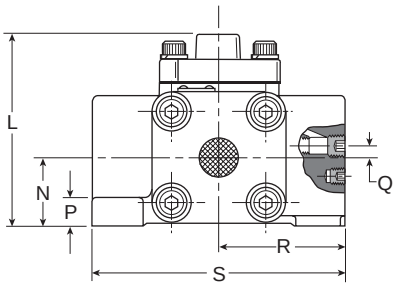
A	B	C	C1
6.64 (168.7)	3.32 (84.3)	.90 (22.9)	1.98 (50.3)
D	**E**	**F**	**G**
2.56 (65)	1.28 (32.5)	1.33 (33.8)	2.34 (59.4)
H	**J**	**L**	**N**
4.69 (119.1)	.22 (5.6)	3.05 (77.5)	.94 (23.9)
P	**Q**	**R**	**S**
.38 (9.7)	.53 (13.5)	1.62 (41.1)	3.25 (82.6)

Inches (mm)

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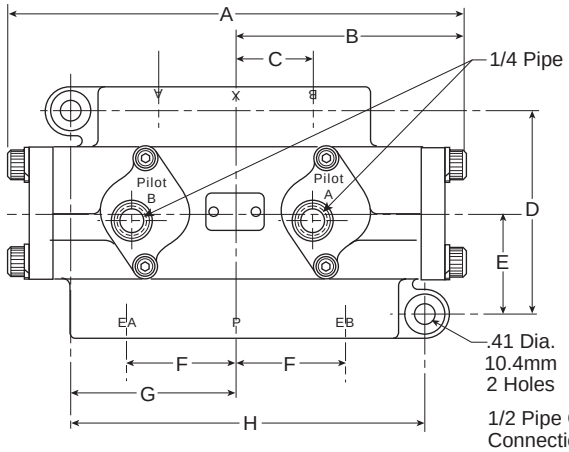


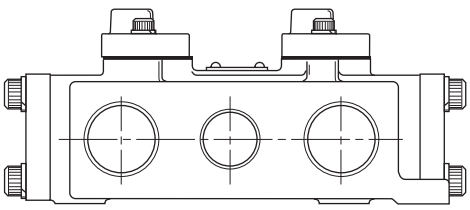


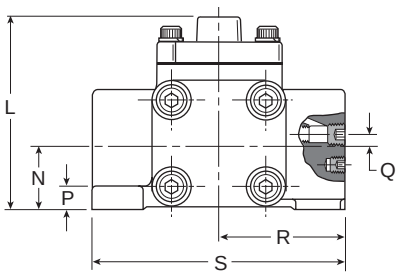
Dimensions

A	B	C	D
10.46 (265.7)	4.75 (120.6)	1.62 (41.1)	4.25 (108)
E	**F**	**G**	**H**
2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)
L	**N**	**P**	**Q**
4.09 (103.9)	1.50 (38.1)	.69 (17.5)	.20 (5.1)
R	**S**		
2.62 (66.5)	5.25 (133.4)		

Inches (mm)





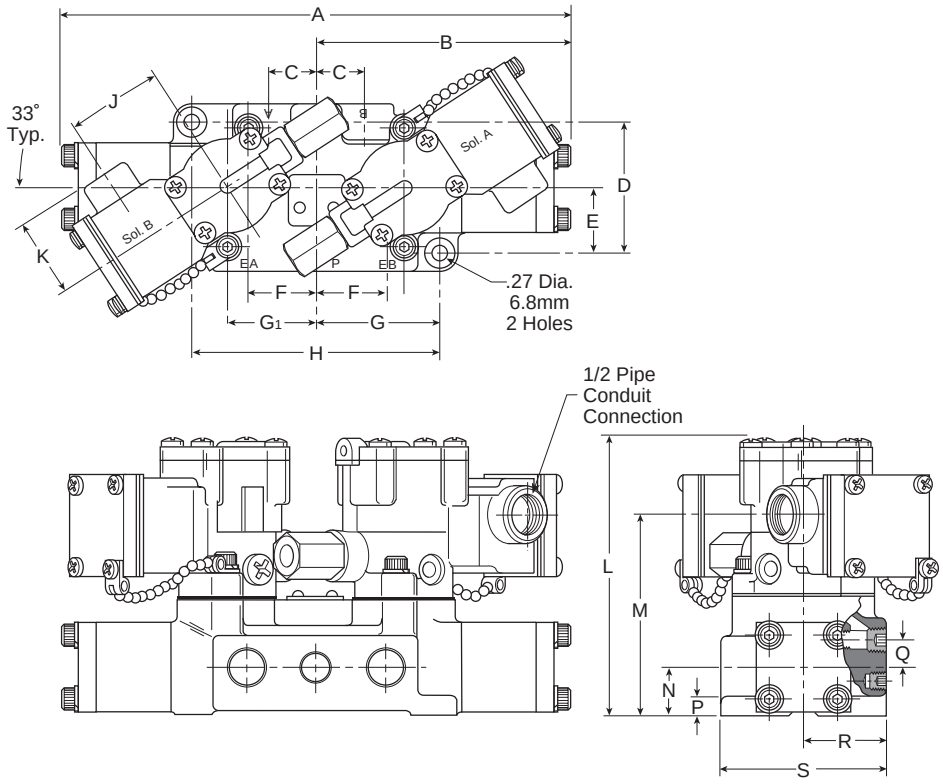


Dimensions

A	B	C	D
9.50 (241.3)	4.75 (120.6)	1.62 (41.1)	4.25 (108)
E	**F**	**G**	**H**
2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)
L	**N**	**P**	**Q**
4.09 (103.9)	1.50 (38.1)	.69 (17.5)	.20 (5.1)
R	**S**		
2.62 (66.5)	5.25 (133.4)		

Inches (mm)

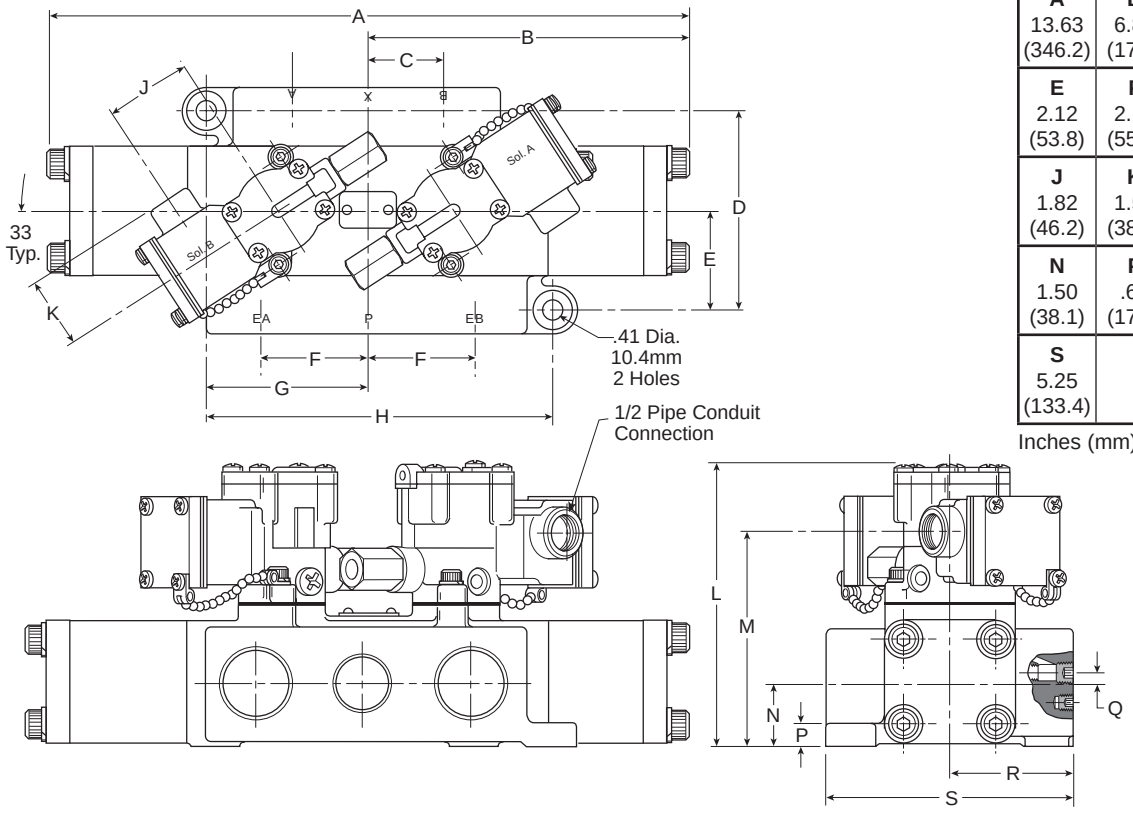
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Dimensions

A	B	C	D
9.64 (244.8)	4.82 (122.4)	.90 (22.9)	2.56 (65)
E	**F**	**G**	**G1**
1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	1.66 (42.4)
H	**J**	**K**	**L**
4.69 (119.1)	1.82 (46.2)	1.50 (38.1)	5.35 (135.9)
M	**N**	**P**	**Q**
3.91 (99.3)	.94 (23.9)	.38 (9.7)	.53 (13.5)
R	**S**		
1.62 (41.1)	3.25 (82.6)		

Inches (mm)

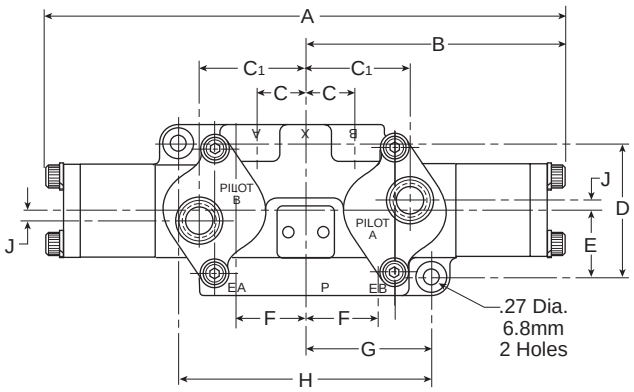


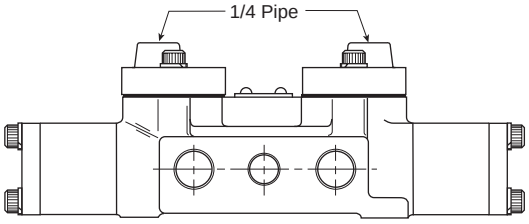
Dimensions

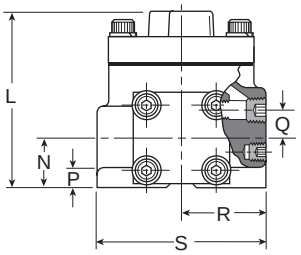
A	B	C	D
13.63 (346.2)	6.81 (173)	1.62 (41.1)	4.25 (108)
E	**F**	**G**	**H**
2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)
J	**K**	**L**	**M**
1.82 (46.2)	1.50 (38.1)	6.44 (163.6)	4.95 (125.7)
N	**P**	**Q**	**R**
1.50 (38.1)	.69 (17.5)	.20 (5.1)	2.62 (66.5)
S			
5.25 (133.4)			

Inches (mm)

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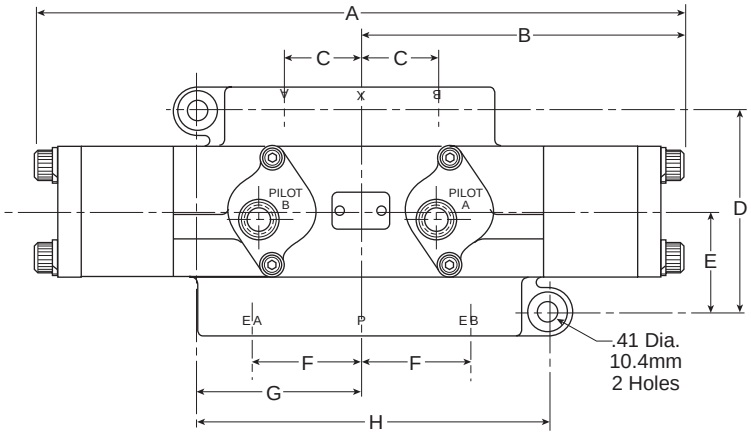


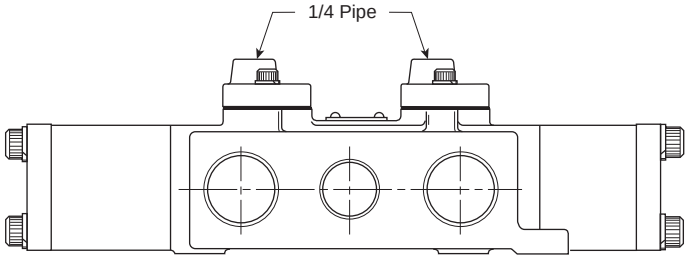


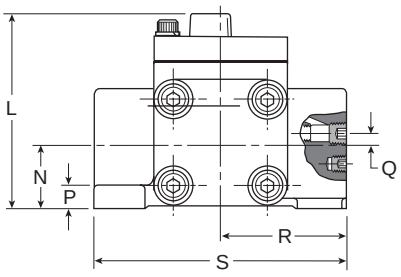
Dimensions

A	B	C	C1
9.64 (244.8)	4.82 (122.4)	.90 (22.9)	1.98 (50.3)
D	**E**	**F**	**G**
2.56 (65)	1.28 (32.5)	1.33 (33.8)	2.34 (59.4)
H	**J**	**L**	**N**
4.69 (119.1)	.22 (5.6)	3.05 (77.5)	.94 (23.9)
P	**Q**	**R**	**S**
.38 (9.7)	.53 (13.5)	1.62 (41.1)	3.25 (82.6)

Inches (mm)







Dimensions

A	B	C	D
13.63 (346.2)	6.81 (173)	1.62 (41.1)	4.25 (108)
E	**F**	**G**	**H**
2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)
L	**N**	**P**	**Q**
6.44 (163.6)	1.50 (38.1)	.69 (17.5)	.20 (5.1)
R	**S**		
2.62 (66.5)	5.25 (133.4)		

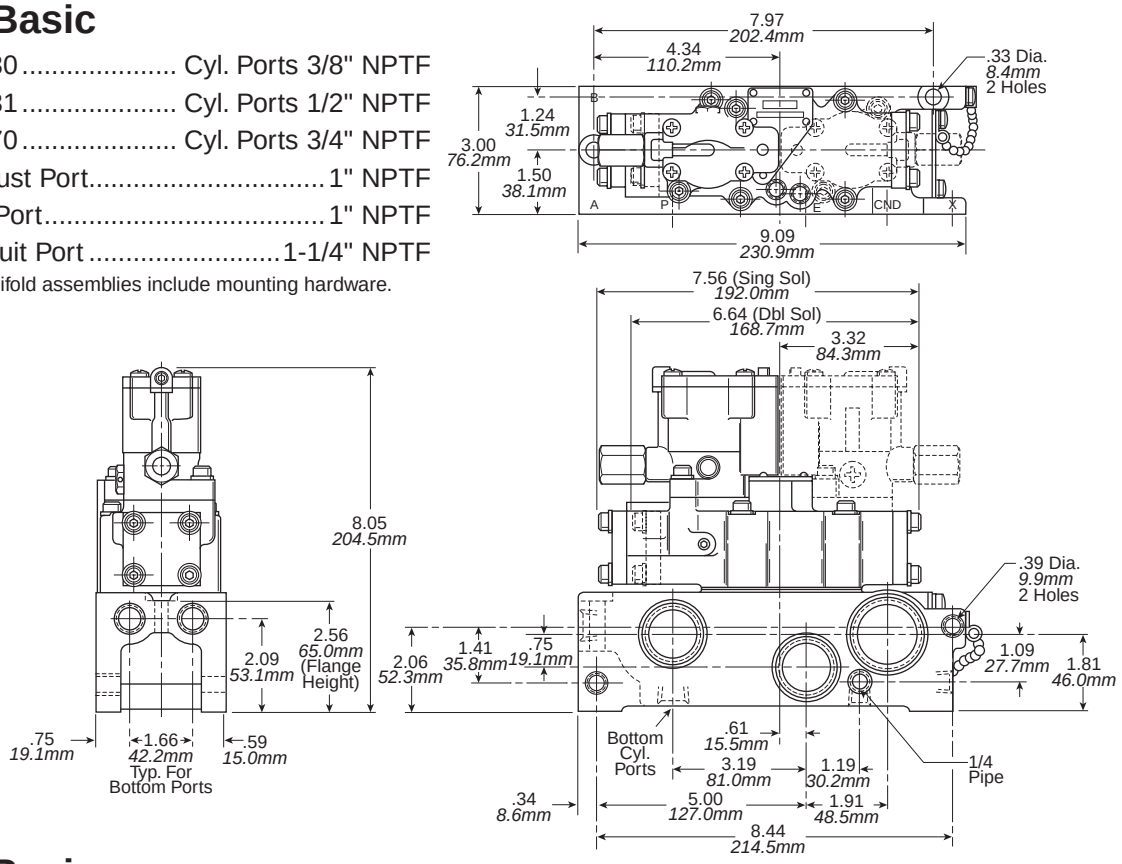
Inches (mm)

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3/8" Basic

K142 230 ..... Cyl. Ports 3/8" NPTF
K142 231 ..... Cyl. Ports 1/2" NPTF
K142 270 ..... Cyl. Ports 3/4" NPTF
Exhaust Port.....1" NPTF
Inlet Port.....1" NPTF
Conduit Port .....1-1/4" NPTF

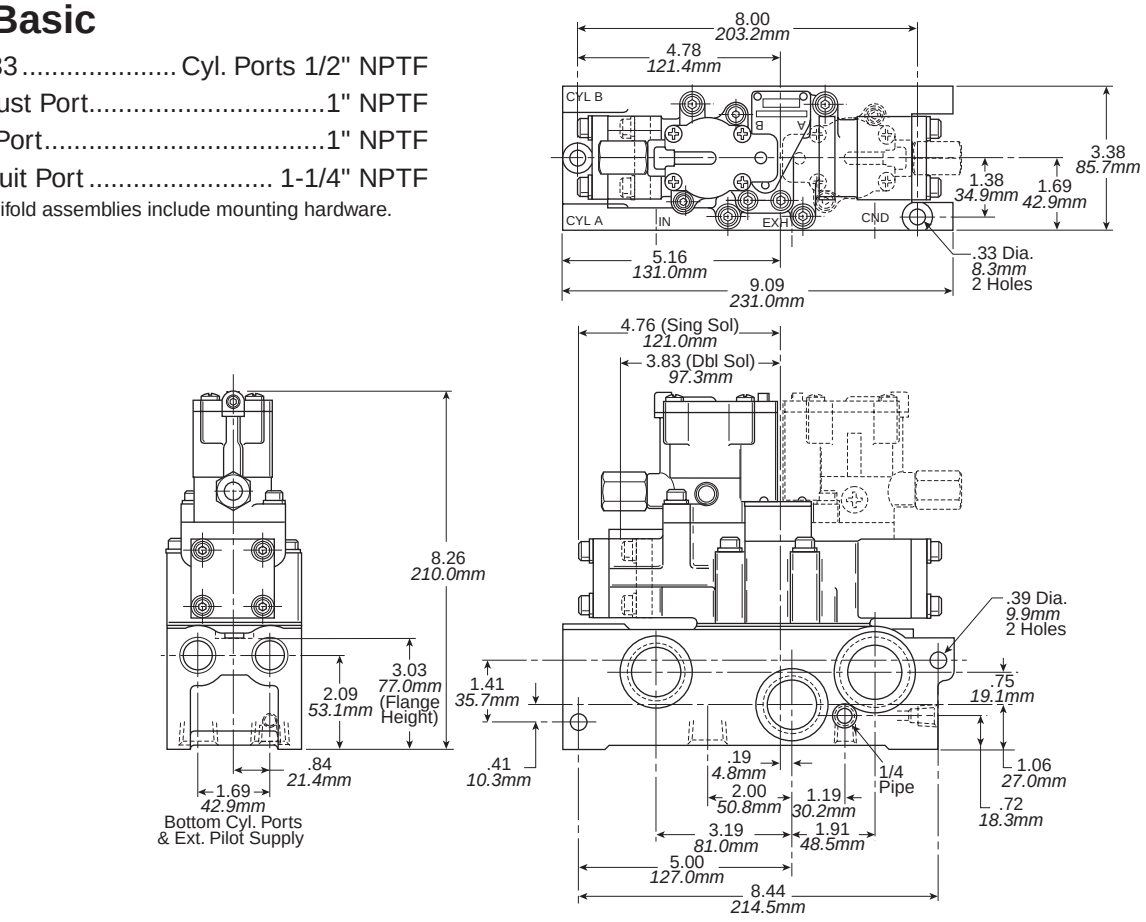
Note: Manifold assemblies include mounting hardware.



1/2" Basic

K142 233 ..... Cyl. Ports 1/2" NPTF
Exhaust Port.....1" NPTF
Inlet Port.....1" NPTF
Conduit Port ..... 1-1/4" NPTF

Note: Manifold assemblies include mounting hardware.



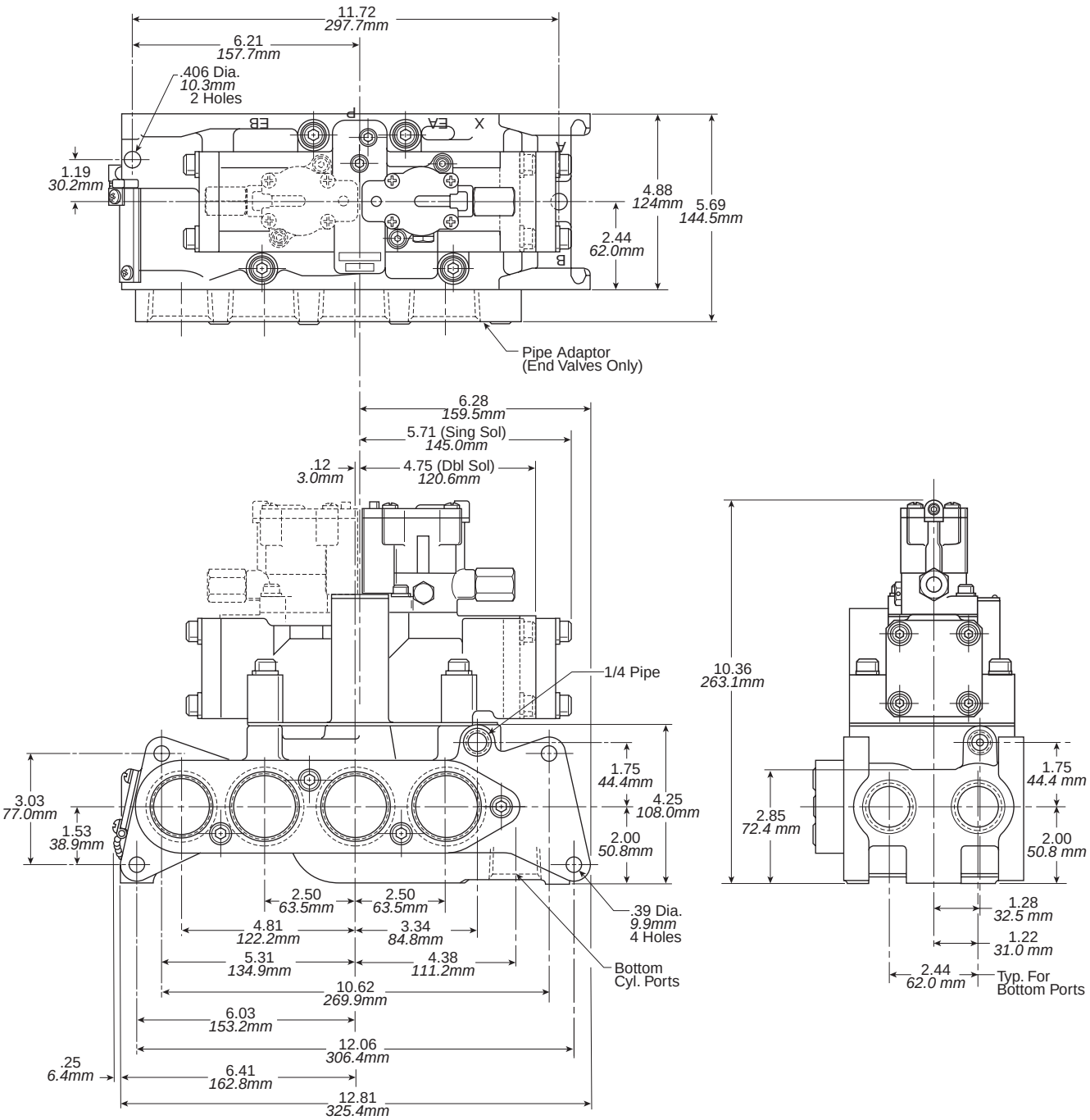
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1" Basic

K142 236 ..... Cyl. Ports 1" NPTF
K122 016 ..... End Plate Kit (Both Plates)
Exhaust Port..... 1-1/2" NPTF (Port Plate)
Inlet Port..... 1-1/2" NPTF (Port Plate)
Conduit Port ..... 1-1/4" NPTF (Port Plate)

Note:

K142 236 dimension is for reference only. The manifold is discontinued as of August 15, 2008.



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Notes

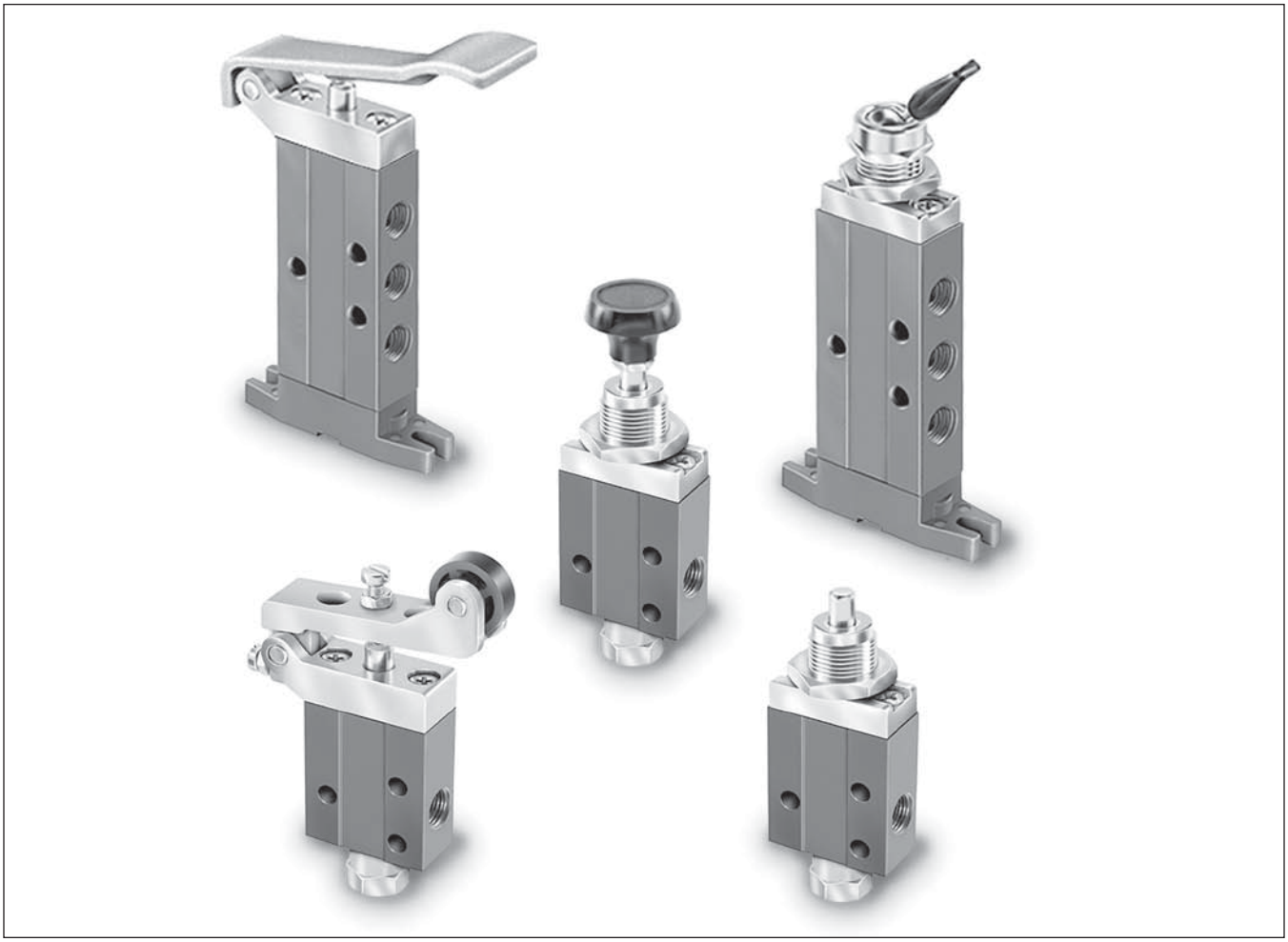
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Directair 2 Series

Inline Valves
Manual / Mechanical
3 & 4-Way, 3 & 5-Port, 2-Position

Section F

www.parker.com/pneu/directair



Directair 2 Series Basic Features..... F3
3-Way Poppet Valves..... F4
3-Way Spool Valves.....F5-F6
4-Way Spool Valves.....F7-F8
Model Number Index..... F9
Technical Information..... F10
Dimensions
Poppet Valves.....F11-F12
Spool Valves.....F13-F16

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Directair 2 Series

Specifications

Inline Valve
- 1/8" Port
- 4-Way, 2-Position
- 3-Way, 2-Position

Manual Operators
- Lever
- Toggle
- Button

Mechanical Operators
- Plunger
- Roller
- One-Way Tripper

Spool Style

Packed Bore Style – .20 Cv
- Stainless Steel Spool
- Fluorocarbon O-Rings
- 3-Way & 4-Way

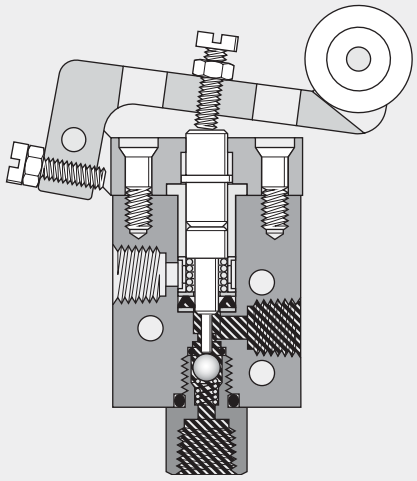
Poppet Style – .17 Cv
- Economical
- 3-Way Normally Closed Function

Operating Pressure

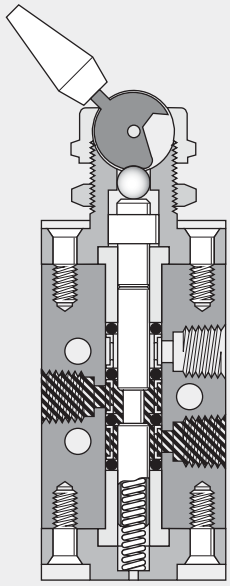
- Vacuum to 150 PSI (28" Hg to 1035 kPa) for spool style
- 0 to 150 PSI (0 to 1035 kPa) for poppet style

Operating Temperature

- 32°F to 175°F (0°C to 80°C)



Roller Operated



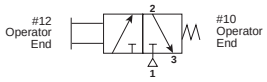
Toggle Operated

Pressure **Exhaust**

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Plunger Operated

404111000 Plunger Operated, Spring Return





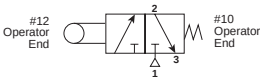
Spring Return

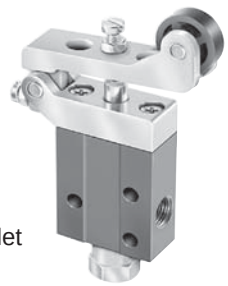
Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Roller Operated

404211000 Roller Operated, Spring Return





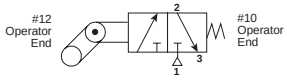
Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Tripper Operated

404311000 One-Way Tripper Operated, Spring Return





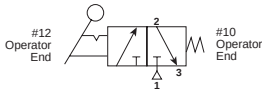
Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Toggle Operated

404811000 Detented Toggle, Spring Return





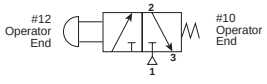
Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated (Detented) Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Button Operated

404411000 Button Operated, Spring Return





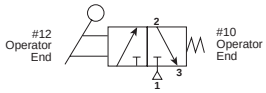
Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2 Exhaust Port 3 is blocked.

Hand Lever Operated

404711000 Hand Lever Operated, Spring Return





Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

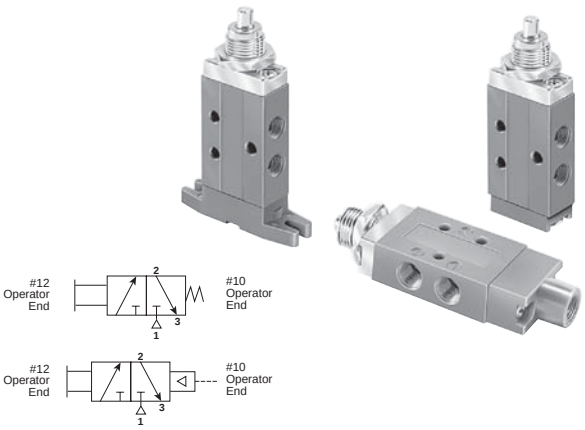
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Plunger Operated

414111000 Plunger Operated, Spring Return

414121000 Plunger Operated, Spring Return, Foot Mounted

414151000 Plunger Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

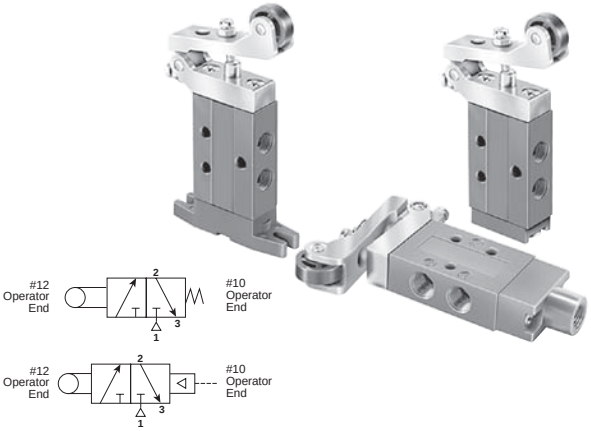
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2 Exhaust Port 3 is blocked.

Roller Operated

414211000 Roller Operated, Spring Return

414221000 Roller Operated, Spring Return, Foot Mounted

414251000 Roller Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

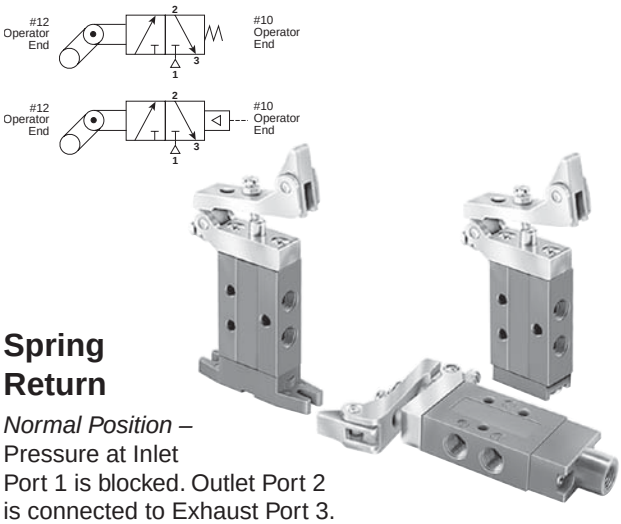
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

One-Way Tripper Operated

414311000 One-Way Tripper, Spring Return

414321000 One-Way Tripper, Spring Return, Foot Mounted

414351000 One-Way Tripper, Pilot Return



Spring Return

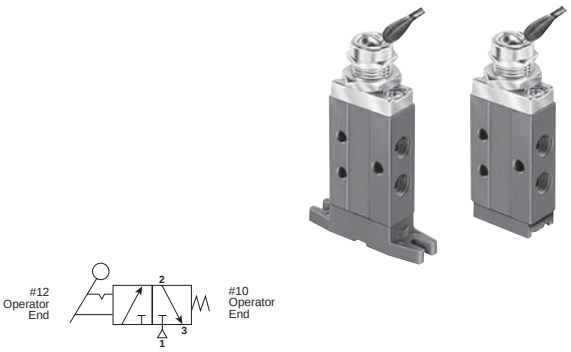
Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Toggle Operated

414811000 Detented Toggle, Spring Return

414821000 Detented Toggle, Spring Return, Foot Mounted



Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked.

Outlet Port 2 is connected to Exhaust Port 3.

Actuated (Detented) Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

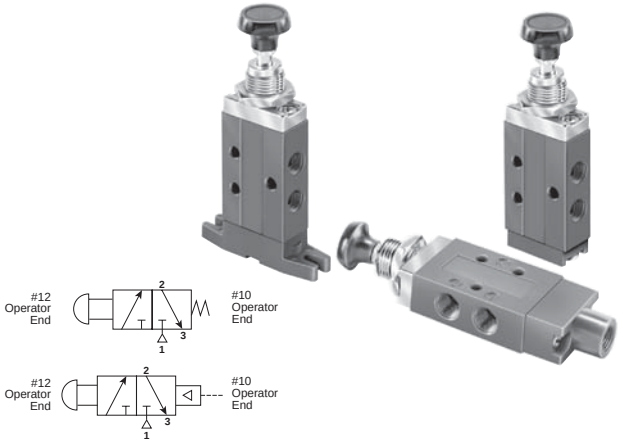
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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Button Operated

414411000 Button Operated, Spring Return

414421000 Button Operated, Spring Return, Foot Mounted

414451000 Button Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

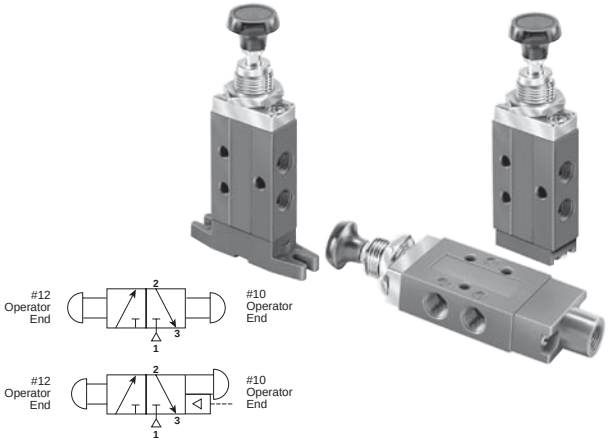
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Button Operated

414931000 Button Operated, Manual Return

414941000 Button Operated, Manual Return, Foot Mounted

414951000 Button Operated, Manual Return or Pilot Return



Manual Return

Operator pulled last – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

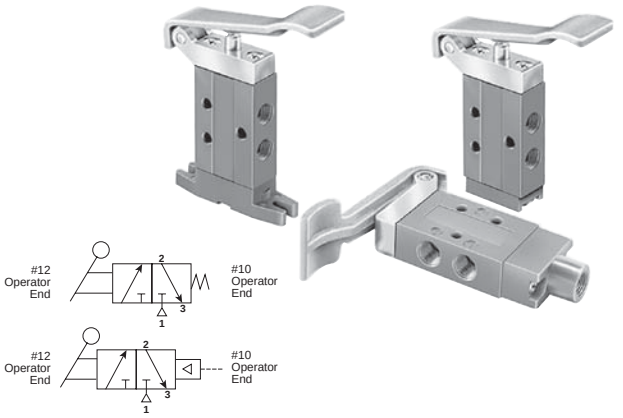
Operator pushed last – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Hand Lever Operated

414711000 Hand Lever Operated, Spring Return

414721000 Hand Lever Operated, Spring Return, Foot Mounted

414751000 Hand Lever Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

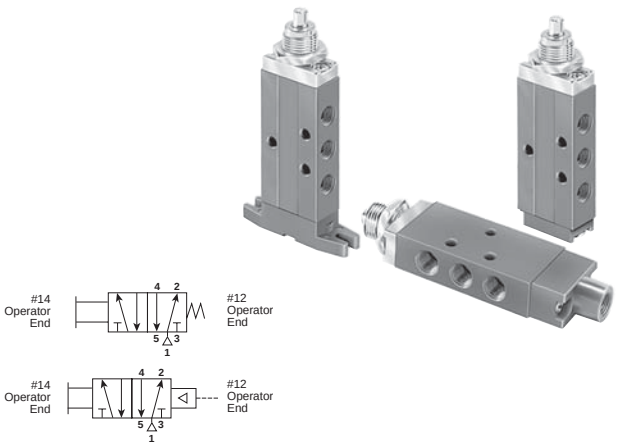
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Plunger Operated

410111000 Plunger Operated, Spring Return

410121000 Plunger Operated, Spring Return, Foot Mounted

410151000 Plunger Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

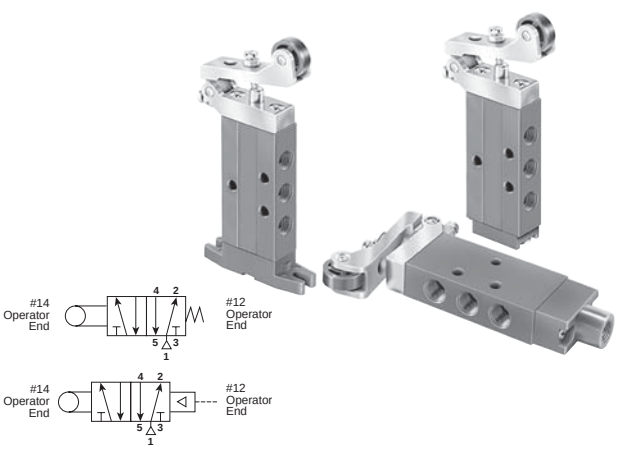
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Roller Operated

410211000 Roller Operated, Spring Return

410221000 Roller Operated, Spring Return, Foot Mounted

410251000 Roller Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

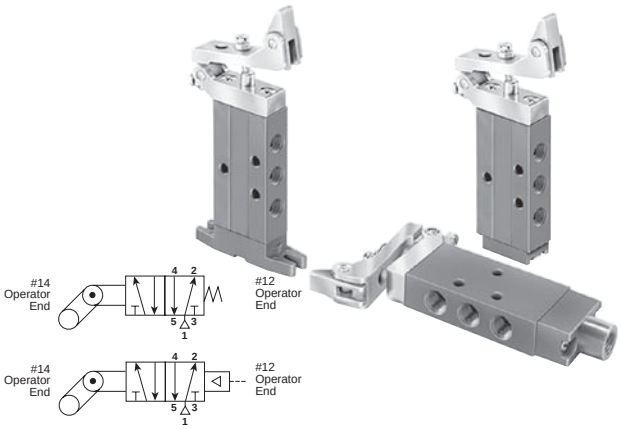
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

One-Way Tripper Operated

410311000 One-Way Tripper, Spring Return

410321000 One-Way Tripper, Spring Return, Foot Mounted

410351000 One-Way Tripper, Pilot Return



Spring Return

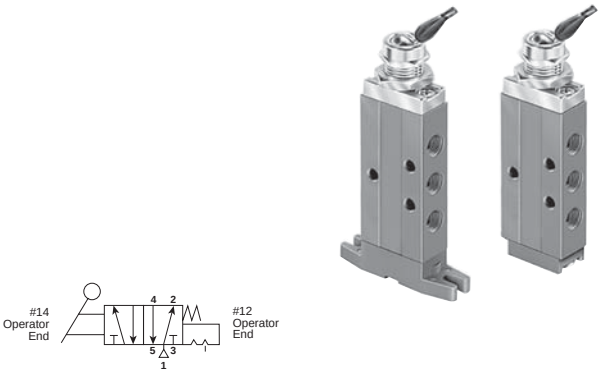
Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Toggle Operated

410811000 Detented Toggle, Spring Return

410821000 Detented Toggle, Spring Return, Foot Mounted



Spring Return

Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Actuated (Detented) Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

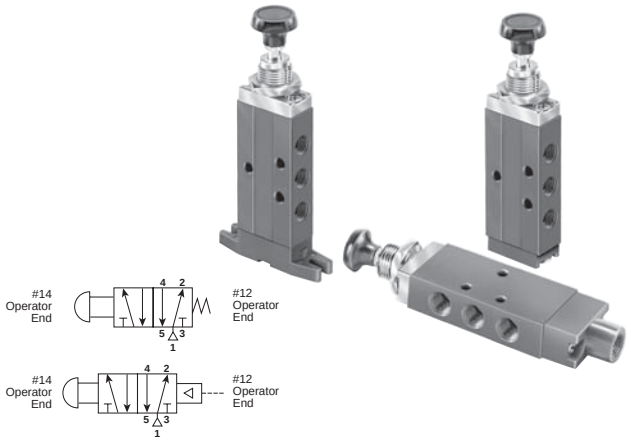
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Button Operated

410411000 Button Operated, Spring Return

410421000 Button Operated, Spring Return, Foot Mounted

410451000 Button Operated, Pilot Return



Spring Return

Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

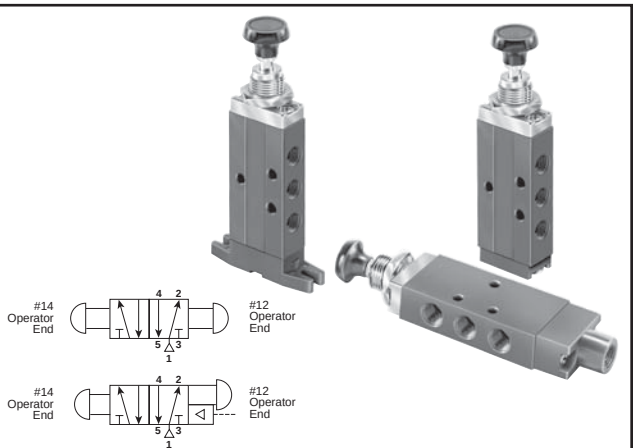
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Button Operated

410931000 Button Operated, Manual Return

410941000 Button Operated, Manual Return, Foot Mounted

410951000 Button Operated, Manual Return or Pilot Return



Manual Return

Operator pulled last – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

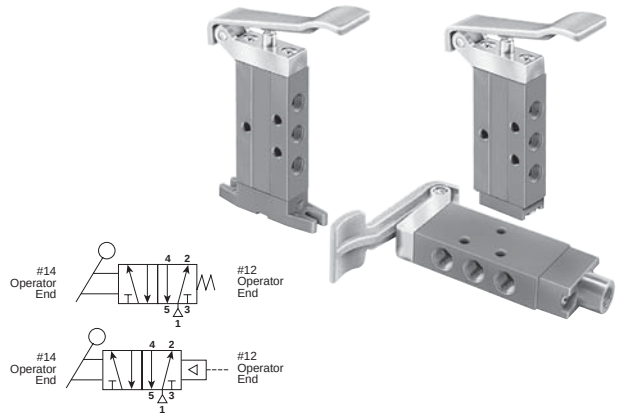
Operator pushed last – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Hand Lever Operated

410711000 Hand Lever Operated, Spring Return

410721000 Hand Lever Operated, Spring Return, Foot Mounted

410751000 Hand Lever Operated, Pilot Return



Spring Return

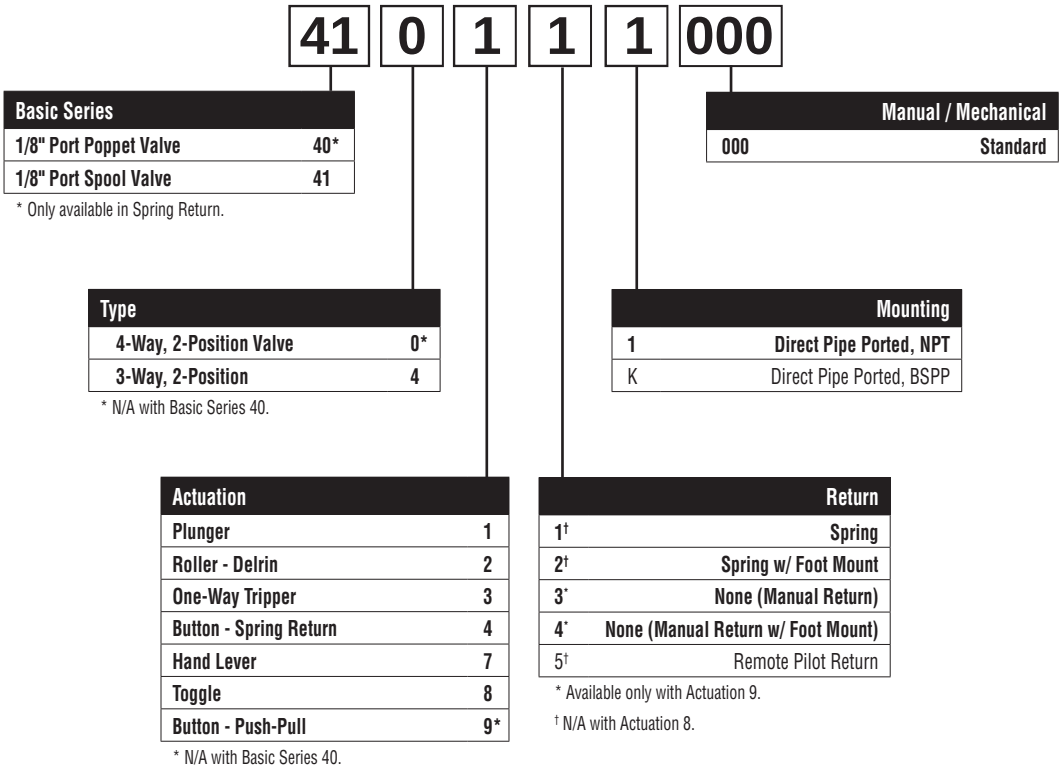
Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

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Directair 2 Series

BOLD OPTIONS ARE MOST POPULAR.



Basic Series	
1/8" Port Poppet Valve	**40***
1/8" Port Spool Valve	**41**

* Only available in Spring Return.

Type	
4-Way, 2-Position Valve	**0***
3-Way, 2-Position	**4**

* N/A with Basic Series 40.

Actuation	
Plunger	**1**
Roller - Delrin	**2**
One-Way Tripper	**3**
Button - Spring Return	**4**
Hand Lever	**7**
Toggle	**8**
Button - Push-Pull	**9***

* N/A with Basic Series 40.

	Return
1†	**Spring**
2†	**Spring w/ Foot Mount**
3*	**None (Manual Return)**
4*	**None (Manual Return w/ Foot Mount)**
5†	Remote Pilot Return

* Available only with Actuation 9.

† N/A with Actuation 8.

Mounting	
1	**Direct Pipe Ported, NPT**
K	Direct Pipe Ported, BSPP

Manual / Mechanical	
000	**Standard**

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Operating Pressure

150 PSI (28" Hg to 1035 kPa)*

* Poppet valves cannot be used for vacuum.
Minimum operating pressure = 0 PSIG.

Temperature Range

32°F to 175°F (0°C to 80°C)

⚠ **CAUTION:**
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Materials

Body and Operator Housings.....Aluminum Extrusion
Spool .....Stainless Steel
Bushings.....Brass
Spacers ..... Zinc Die Cast
Dynamic O-Rings.....Fluorocarbon
Operator O-Rings.....Buna (Nitrile)
Operator U-Cups.....Buna (Nitrile)
Poppet Ball.....Nylon

Lubrication

For maximum service life use clean, lubricated air. Valves are shipped pre-lubricated and can be operated without additional lubrication with reduced service life.

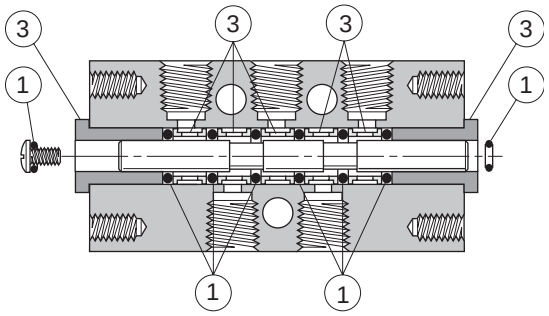
Suggested Lubricant

F442 Oil

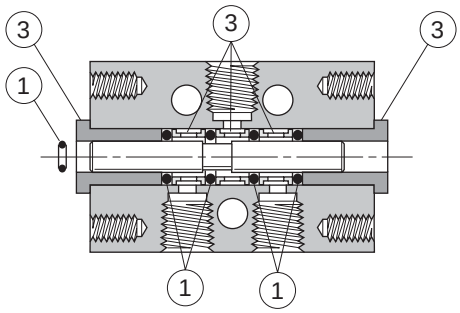
Flow Rating (Cv)

Flow Path	Direct Pipe Spool, 1/8" Ports	Direct Pipe Poppet, 1/8" Ports
1 → 2	.199	.125
1 → 4	.191	—
2 → 3	.192	.215
4 → 5	.212	—
Avg.	.199	N/A

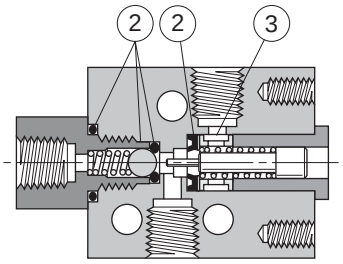
Service Kits



4-Way Spool



3-Way Spool



3-Way Poppet

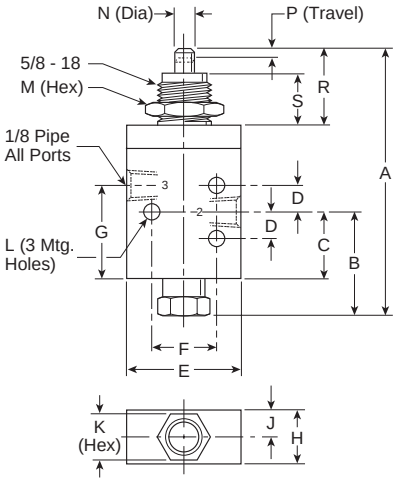
(1) Spool Valve Seal Kit
(3 & 4-Way, Direct Pipe Ported) **41000 8000**
(2) Poppet Valve Seal Kit **40411 8000**
(3) Body Service Kit..... **41000 8005**

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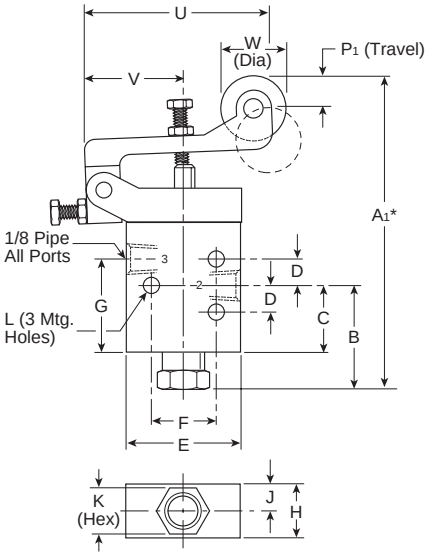
Plunger, Roller, One-Way Tripper & Toggle Operated

3-Way, 3-Port, 2-Position – 1/8" Ports

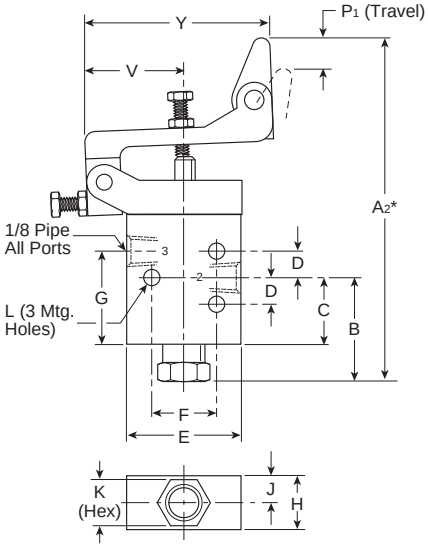
Plunger Operated



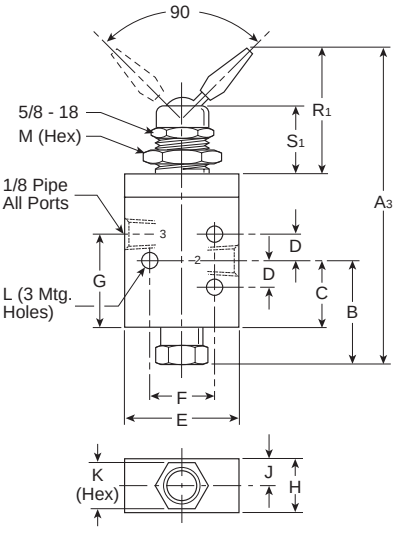
Roller Operated



One-Way Tripper Operated



Toggle Operated



3-Way, 3-Port, 2-Position

A	A₁*	A₂*	A₃	B
3.37 (86)	4.21 (107)	4.46 (113)	3.99 (101)	1.03 (26)
C	**D**	**E**	**F**	**G**
.55 (14)	.31 (8)	1.31 (33)	.75 (19)	.90 (23)
H	**J**	**K**	**L**	**M**
.62 (16)	.31 (8)	.56 (14)	.19 (5)	.88 (22)
N	**P**	**P₁**	**R**	**R₁**
.25 (6)	.17 (4)	.38 (10)	.91 (23)	1.53 (39)
S	**S₁**	**U**	**V**	**W**
.62 (16)	.78 (20)	2.28 (58)	1.19 (30)	.75 (19)
X	**Y**			
.19 (5)	2.19 (56)			

* Dimensions may be reduced .44" using adjusting screw.

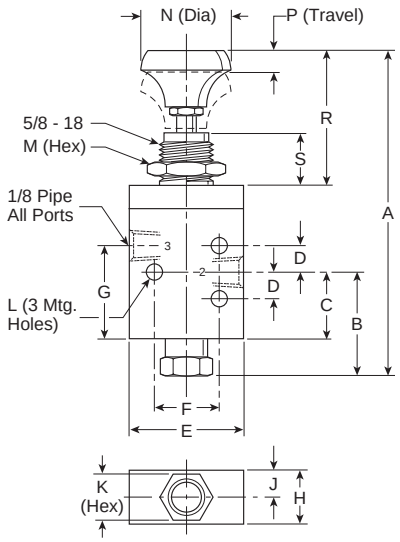
Inches (mm)

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Button & Hand Lever Operated

3-Way, 3-Port, 2-Position – 1/8" Ports

Button Operated

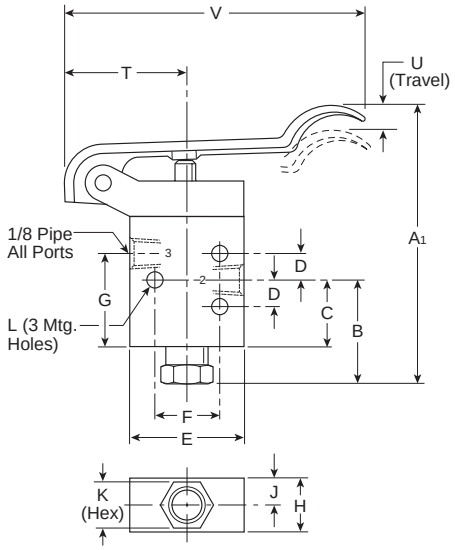


3-Way, 3-Port, 2-Position

A	A_1	B	C	D
4.13 (105)	3.34 (85)	1.03 (26)	.55 (14)	.31 (8)
E	**F**	**G**	**H**	**J**
1.31 (33)	.75 (19)	.90 (23)	.62 (16)	.31 (8)
K	**L**	**M**	**N**	**P**
.56 (14)	.19 (5)	.88 (22)	1.06 (27)	.17 (4)
R	**S**	**T**	**U**	**V**
1.67 (42)	.63 (16)	1.19 (30)	.53 (13)	3.38 (86)

Inches (mm)

Hand Lever Operated

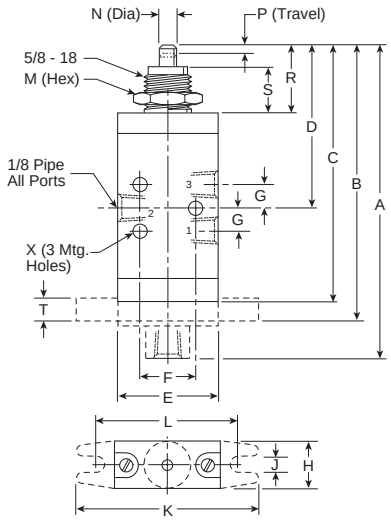


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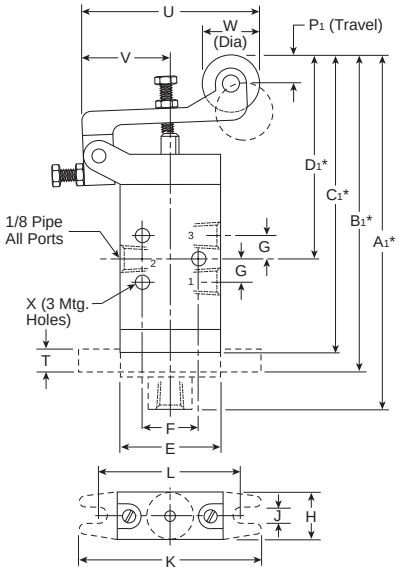
Plunger, Roller, One-Way Tripper & Toggle Operated

3-Way, 3-Port, 2-Position – 1/8" Ports

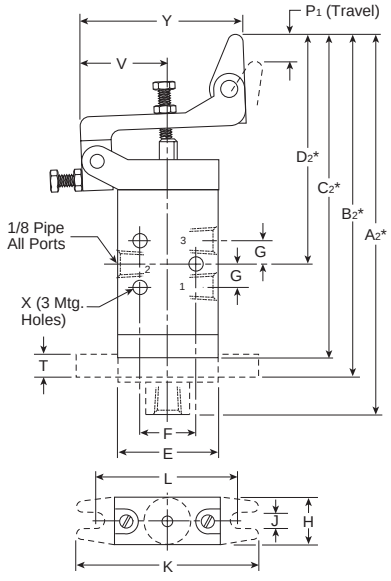
Plunger Operated



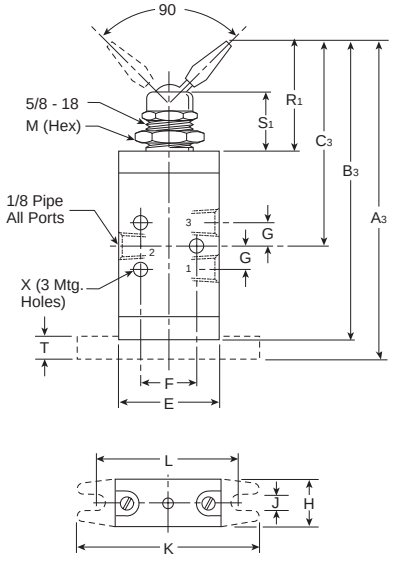
Roller Operated



One-Way Tripper Operated



Toggle Operated



3-Way, 3-Port, 2-Position

A	**A₁***	**A₂***	**A₃**	**B**
4.14 (105)	4.98 (126)	5.23 (133)	4.23 (107)	3.61 (92)
B₁	**B₂**	**B₃**	**C**	**C₁**
4.45 (113)	4.70 (119)	4.00 (102)	3.38 (86)	4.22 (107)
C₂	**C₃**	**D**	**D₁**	**D₂**
4.47 (113)	2.75 (70)	2.05 (52)	2.98 (76)	3.22 (82)
E	**F**	**G**	**H**	**J**
1.31 (33)	.75 (19)	.31 (8)	.62 (16)	.20 (5)
K	**L**	**M**	**N**	**P**
2.38 (60)	1.88 (48)	.88 (22)	.25 (6)	.17 (4)
P₁	**R**	**R₁**	**S**	**S₁**
.38 (10)	.91 (23)	1.53 (39)	.62 (16)	.78 (20)
T	**U**	**V**	**W**	**X**
.25 (6)	2.28 (58)	1.19 (30)	.75 (19)	.19 (5)
Y				
2.19 (56)				

* Dimensions may be reduced .44" using adjusting screw.

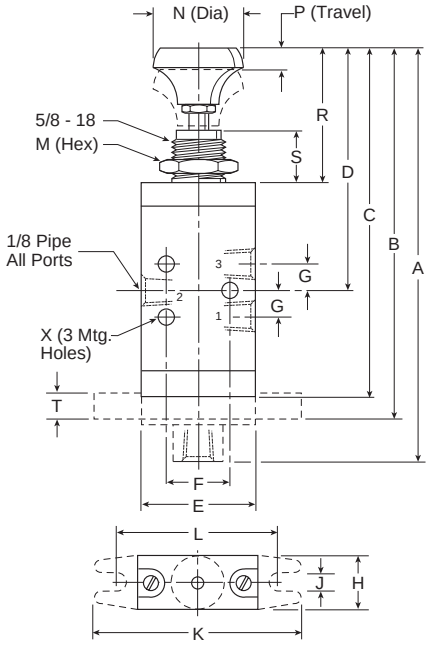
Inches (mm)

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Pneumatic Division
Richland, Michigan
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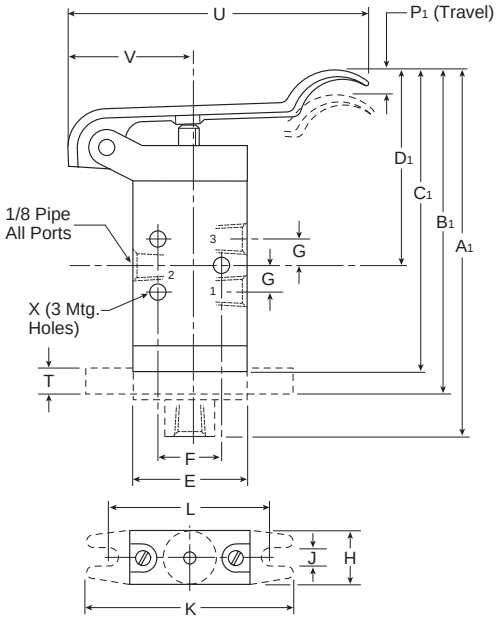
Button, Hand Lever Operated

3-Way, 3-Port, 2-Position – 1/8" Ports

Button Operated



Hand Lever Operated



3-Way, 3-Port, 2-Position

A	**A_1**	**B**	**B_1**	**C**
5.08 (129)	4.29 (109)	4.55 (115)	3.77 (96)	4.31 (109)
C_1	**D**	**D_1**	**E**	**F**
3.53 (90)	3.08 (78)	2.29 (58)	1.31 (33)	.75 (19)
G	**H**	**J**	**K**	**L**
.31 (8)	.62 (16)	.20 (5)	2.38 (60)	1.88 (48)
M	**N**	**P**	**P_1**	**R**
.88 (22)	1.06 (27)	.17 (4)	.53 (13)	1.67 (42)
S	**T**	**U**	**V**	**X**
.63 (16)	.25 (6)	3.38 (86)	1.19 (30)	.19 (5)
Y				
.59 (15)				

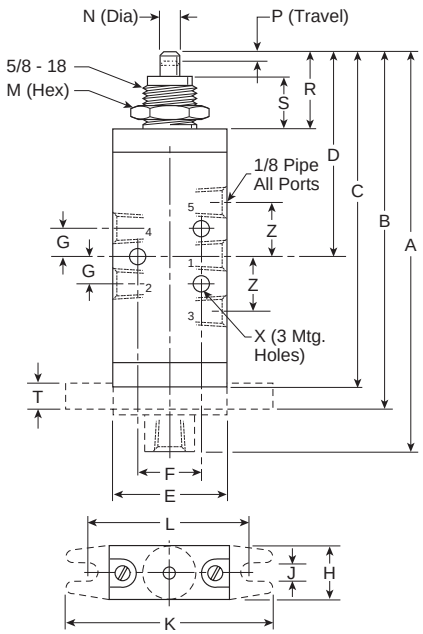
Inches (mm)

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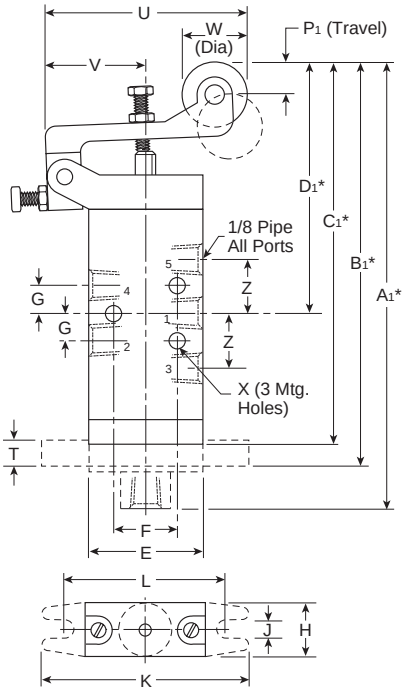
Plunger, Roller, One-Way Tripper & Toggle Operated

4-Way, 5-Port, 2-Position – 1/8" Ports

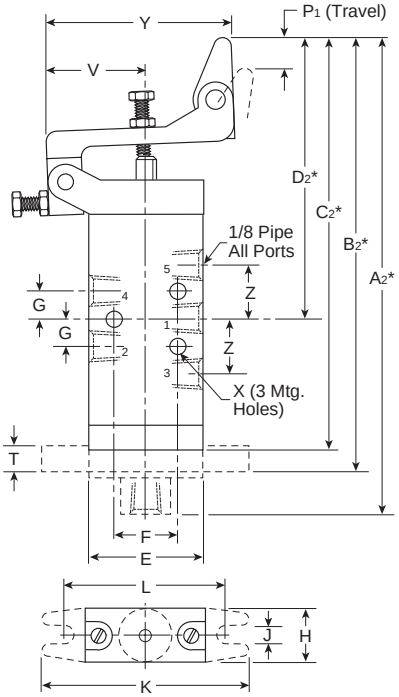
Plunger Operated



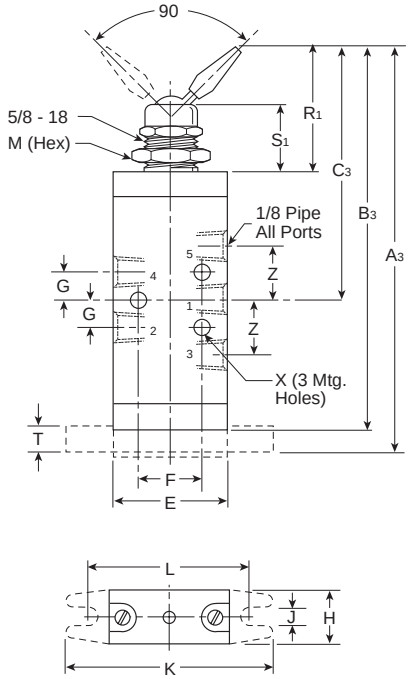
Roller Operated



One-Way Tripper Operated



Toggle Operated



4-Way, 5-Port, 2-Position

A	**A₁***	**A₂***	**A₃**	**B**
4.75 (121)	5.59 (142)	5.84 (148)	4.84 (123)	4.22 (107)
B₁*	**B₂***	**B₃**	**C**	**C₁***
5.06 (128)	5.31 (135)	4.61 (117)	3.99 (102)	4.83 (123)
C₂*	**C₃**	**D**	**D₁***	**D₂***
5.08 (129)	3.06 (78)	2.44 (62)	3.28 (83)	3.53 (90)
E	**F**	**G**	**H**	**J**
1.31 (33)	.75 (19)	.31 (8)	.62 (16)	.20 (5)
K	**L**	**M**	**N**	**P**
2.38 (60)	1.88 (48)	.88 (22)	.25 (6)	.17 (4)
P₁	**R**	**R₁**	**S**	**S₁**
.38 (10)	.91 (23)	1.53 (39)	.62 (16)	.78 (20)
T	**U**	**V**	**W**	**X**
.25 (6)	2.28 (58)	1.19 (30)	.75 (19)	.19 (5)
Y	**Z**			
2.19 (56)	.62 (16)			

* Dimensions may be reduced .44" using adjusting screw.

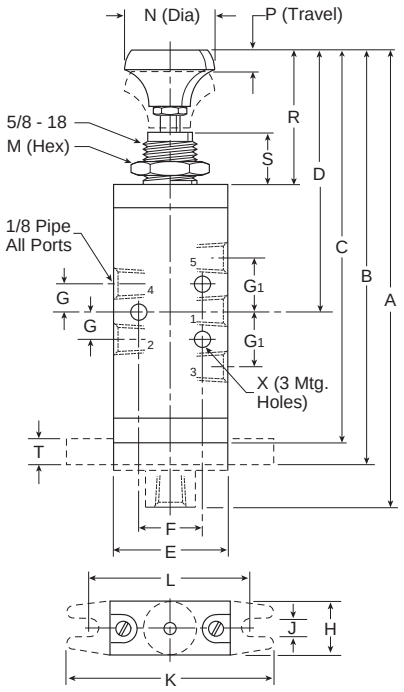
Inches (mm)

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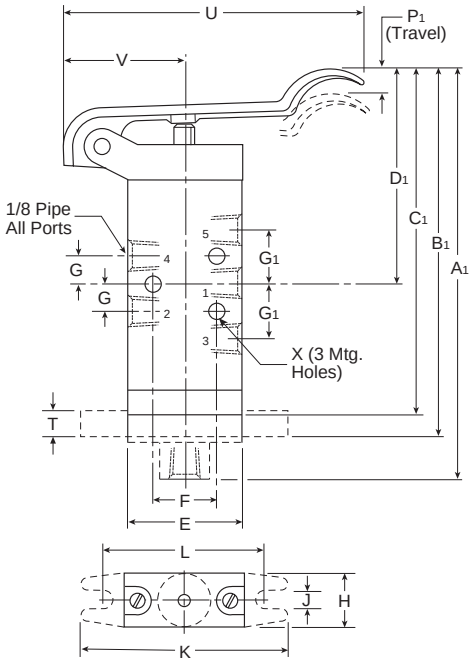
Button & Hand Lever Operated

4-Way, 5-Port, 2-Position – 1/8" Ports

Button Operated



Hand Lever Operated



4-Way, 5-Port, 2-Position

A	A1	B	B1	C
5.69 (144)	4.90 (124)	5.16 (131)	4.38 (111)	4.92 (125)
C1	**D**	**D1**	**E**	**F**
4.14 (105)	3.67 (93)	2.90 (74)	1.31 (33)	.75 (19)
G	**G1**	**H**	**J**	**K**
.31 (8)	.63 (16)	.62 (16)	.20 (5)	2.38 (60)
L	**M**	**N**	**P**	**P1**
1.88 (48)	.88 (22)	1.06 (27)	.17 (4)	.53 (13)
R	**S**	**T**	**U**	**V**
1.67 (42)	.63 (16)	.25 (6)	3.38 (86)	1.19 (30)
X	**Y**			
.19 (5)	.59 (15)			

Inches (mm)

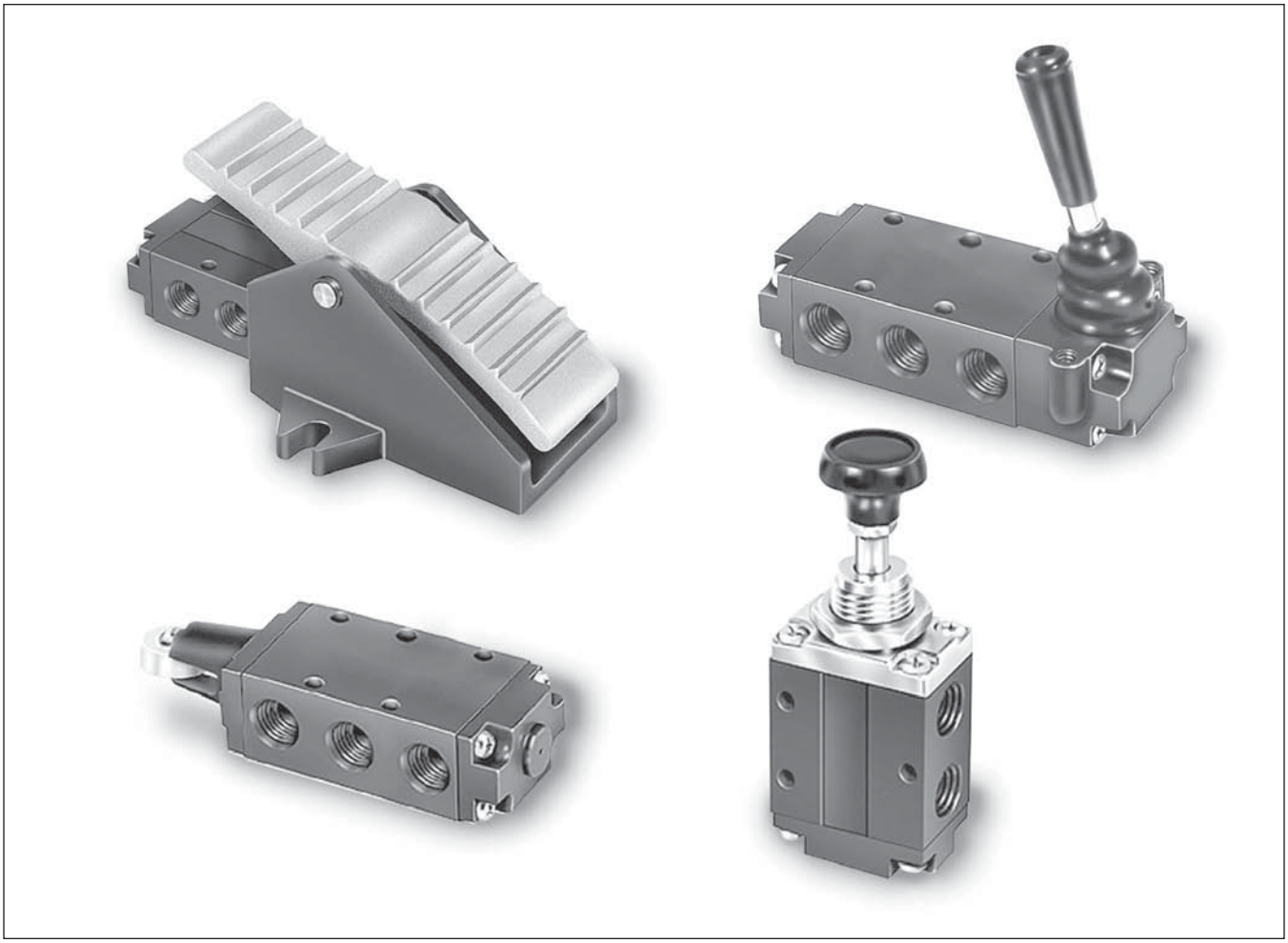
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Directair 4 Series

Inline Valves
Manual / Mechanical
3 & 4-Way, 3 & 5-Port, 2 & 3-Position

Section F

www.parker.com/pneu/directair



Directair 4 Series Basic Features..... F19
3-Way Spool Valves.....F20-F21
4-Way Spool Valves.....F22-F23
Model Number Index..... F24
Accessories & Service Kits F25
Technical Information..... F26

Dimensions
3-Way – Button, Roller & Treadle..... F27
3-Way – Lever & Pedal F28
4-Way – Button, Roller, Pedal & Treadle..... F29
4-Way – Lever F30

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Directair 4 Series

Specifications

Inline Valve
- 1/4" Port
- 4-Way, 2 & 3-Position
- 3-Way, 2 & 3-Position

Manual Operators
- Lever
- Pedal
- Treadle
- Button

Mechanical Operators
- Roller

Packed Bore Style - .83 Cv
- Stainless Steel Spool
- Fluorocarbon O-rings

Operating Pressure

- Vacuum to 150 PSI (28" Hg to 1035 kPa)

Operating Temperature

- 32 to 175°F (0 to 80°C)



Button Operated



Lever Operated

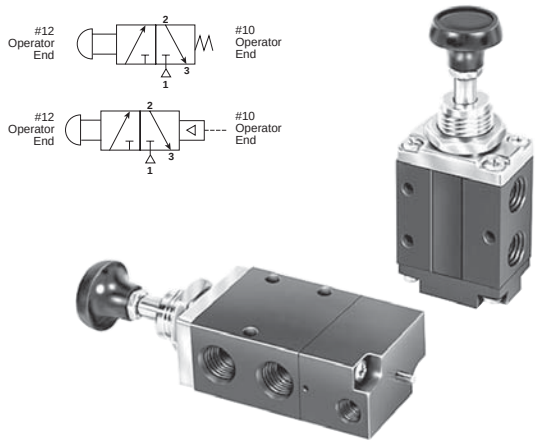


Treadle Operated

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Button Operated

524411000 Button Operated, Spring Return
524451000 Button Operated, Pilot Return



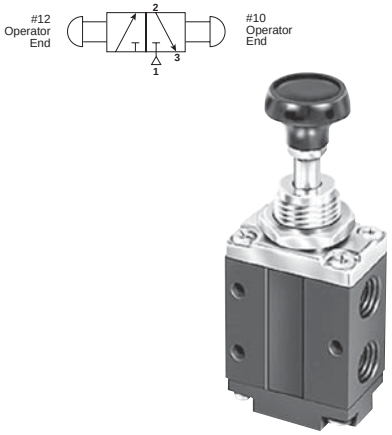
Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Button Operated

524431000 Button Operated, Manual Return



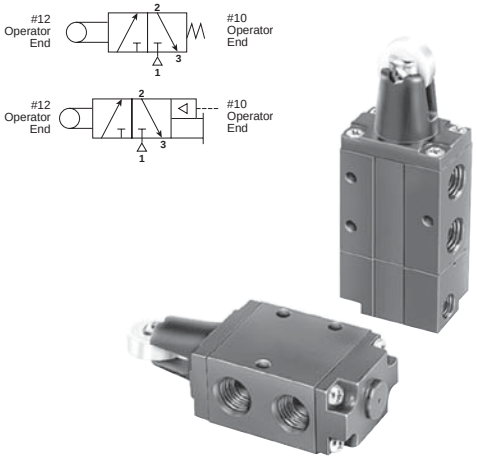
Manual Return

Operator pulled last – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Operator pushed last – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Roller Operated

524211000 Delrin Roller Operated, Spring Return
524251000 Delrin Roller Operated, Pilot Return
524A11000 Steel Roller Operated, Spring Return
524A51000 Steel Roller Operated, Pilot Return



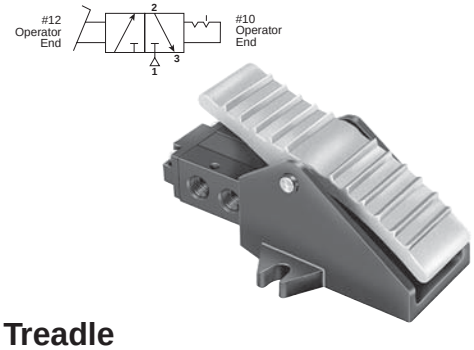
Roller

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Treadle Operated

524931000 Treadle Operated



Treadle

Toe pressed last – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

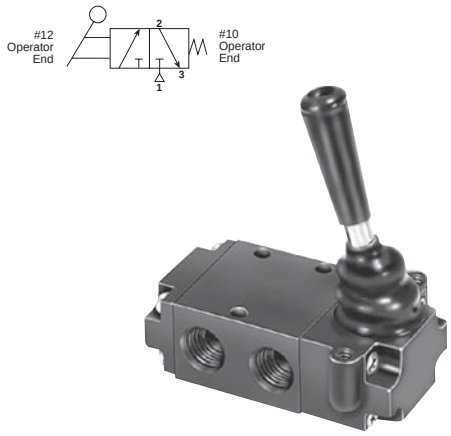
Heel pressed last – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.
See Accessories page for Pedal Guard Kit.

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Lever Operated

524811000 Lever Operated, Spring Return



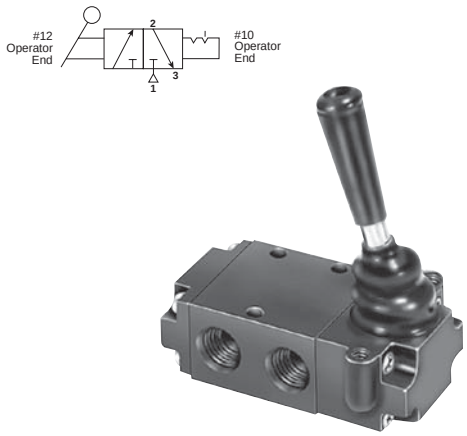
Spring Return

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Lever Operated

524831000 Lever Operated, Manual Return



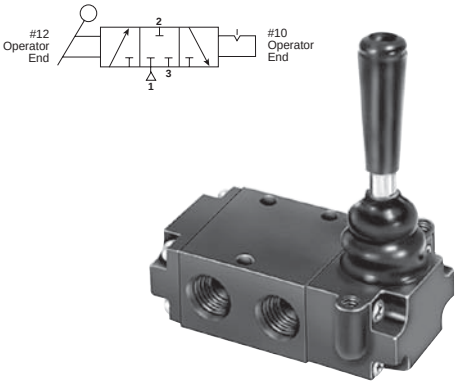
Manual Return

Operator pushed last (toward body) – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Operator pulled last (away from body) – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Lever Operated – 3-Position

523831000 Lever Operated, 3-Position Detented, All Ports Blocked



Lever

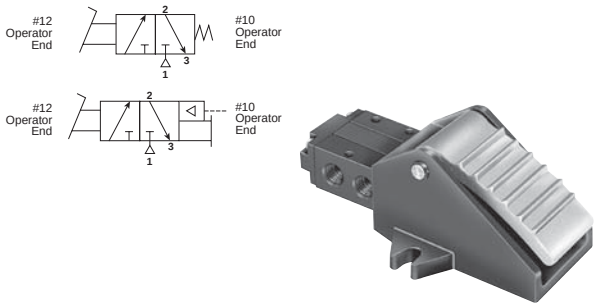
Operator pushed last (*toward body)* – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

Operator pulled last (away from body) – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

Center Position – All Ports blocked.

Pedal Operated

524711000 Pedal Operated, Spring Return
524751000 Pedal Operated, Pilot Return



Pedal

Normal Position – Pressure at Inlet Port 1 is blocked. Outlet Port 2 is connected to Exhaust Port 3.

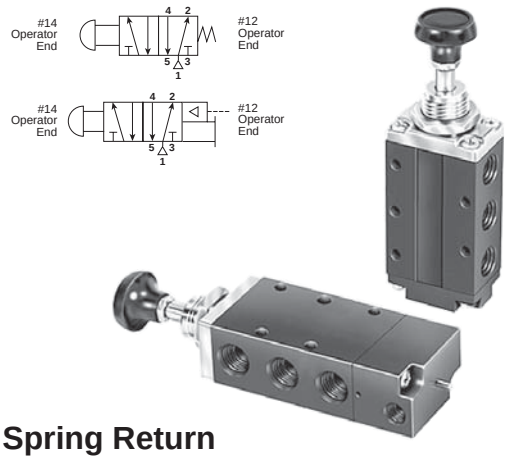
Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Exhaust Port 3 is blocked.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.
See Accessories page for Pedal Guard Kit.

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Button Operated

520411000 Button Operated, Spring Return
520451000 Button Operated, Pilot Return



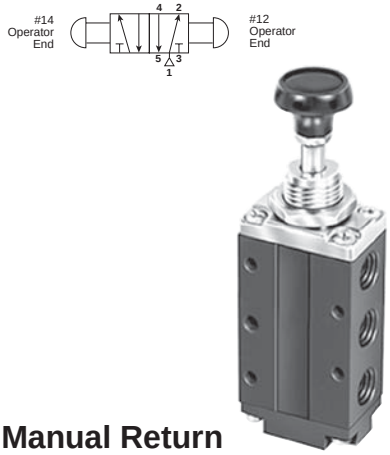
Spring Return

Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Button Operated

520431000 Button Operated, Manual Return



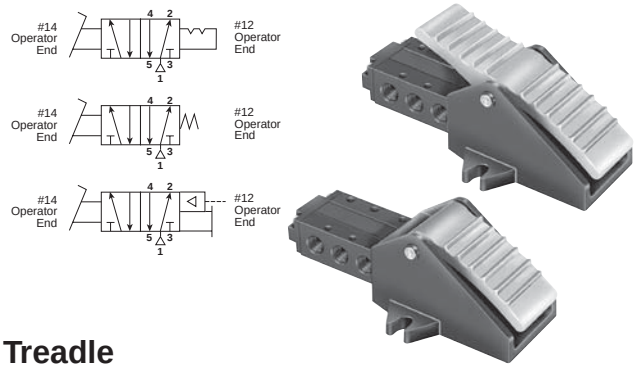
Manual Return

Operator pulled last – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Operator pushed last – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Pedal & Treadle Operated

520711000 Pedal Operated, Spring Return
520751000 Pedal Operated, Pilot Return
520931000 Treadle Operated



Treadle

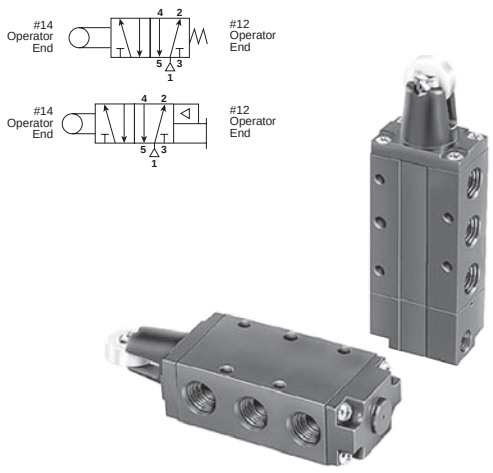
Toe pressed last – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Heel pressed last – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.
See Accessories page for Pedal Guard Kit.

Roller Operated

520211000 Delrin Roller Operated, Spring Return
520251000 Delrin Roller Operated, Pilot Return
520A11000 Steel Roller Operated, Spring Return
520A51000 Steel Roller Operated, Pilot Return



Roller

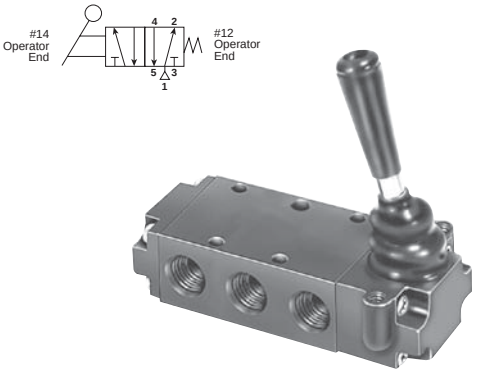
Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

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Lever Operated

520811000 Lever Operated, Spring Return



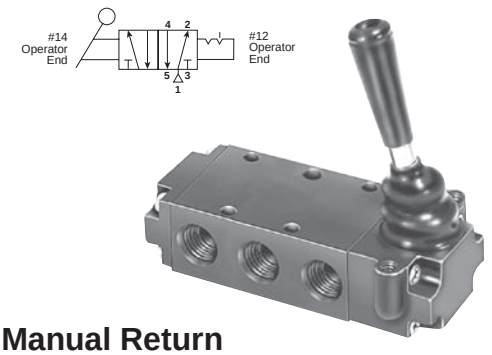
Spring Return

Normal Position – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Actuated Position – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Lever Operated

520831000 Lever Operated, Manual Return



Manual Return

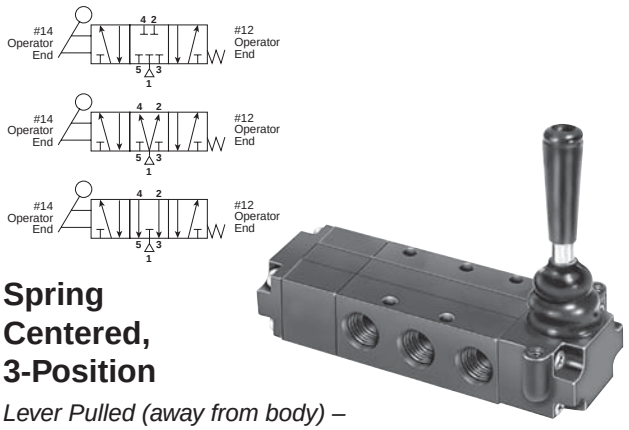
Operator pushed last (toward body) – Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Operator pulled last (away from body) – Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Lever Operated, 3-Position

Lever, Spring Centered

521811000 Type 1, Closed Center
522811000 Type 2, Pressure Center
529811000 Type 9, Exhaust Center



Spring Centered, 3-Position

Lever Pulled (away from body) –
Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Lever Pushed (toward body) –
Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Centered Position –
Type 1: All Ports blocked.

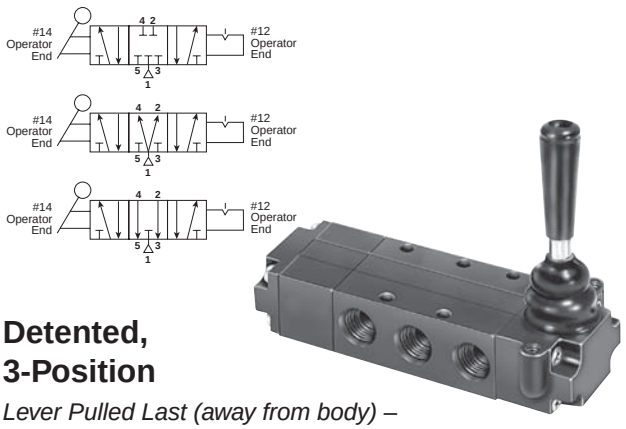
Type 2: Pressure at Inlet Port 1 is connected to Outlet Ports 2 & 4.

Type 9: Pressure at Inlet Port 1 is blocked. Outlet Ports 2 & 4 are connected to Exhaust Ports 3 & 5.

Lever Operated, 3-Position

Lever, Detented

521831000 Type 1, Closed Center
522831000 Type 2, Pressure Center
529831000 Type 9, Exhaust Center



Detented, 3-Position

Lever Pulled Last (away from body) –
Pressure at Inlet Port 1 is connected to Outlet Port 4. Outlet Port 2 is connected to Exhaust Port 3.

Lever Pushed Last (toward body) –
Pressure at Inlet Port 1 is connected to Outlet Port 2. Outlet Port 4 is connected to Exhaust Port 5.

Centered Position –
Type 1: All Ports blocked.

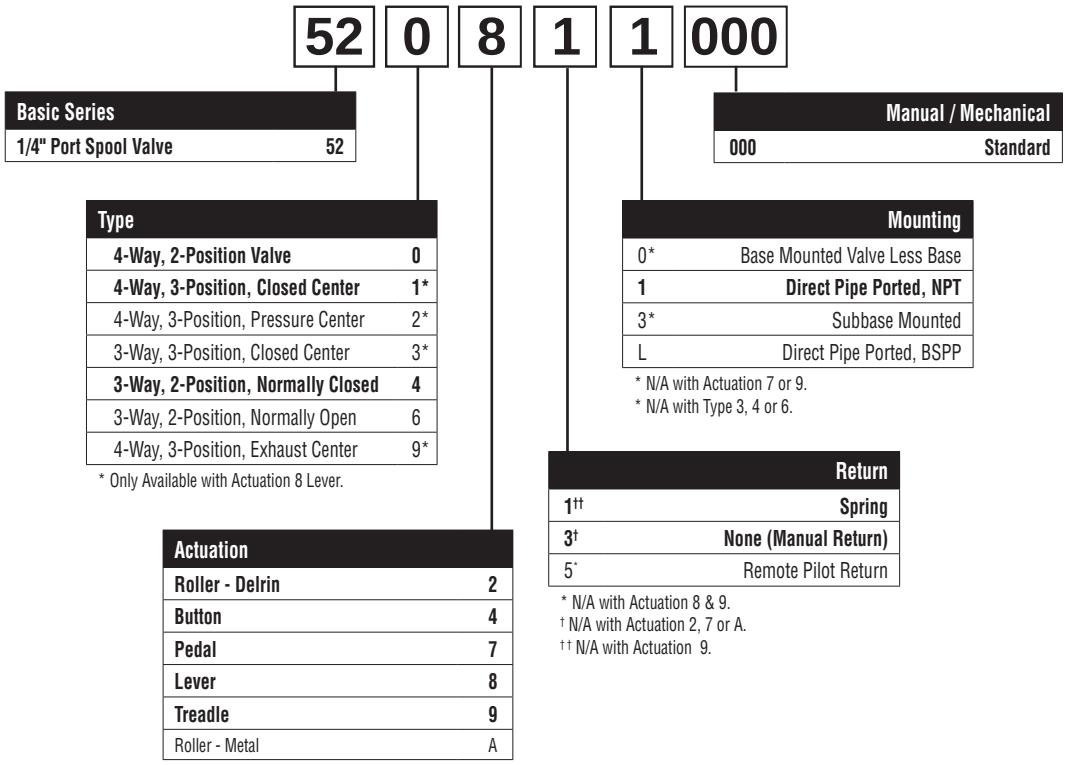
Type 2: Pressure at Inlet Port 1 is connected to Outlet Ports 2 & 4.

Type 9: Pressure at Inlet Port 1 is blocked. Outlet Ports 2 & 4 are connected to Exhaust Ports 3 & 5.

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Directair 4 Series

BOLD OPTIONS ARE MOST POPULAR.



Basic Series	
1/4" Port Spool Valve	**52**

Type	
4-Way, 2-Position Valve	**0**
4-Way, 3-Position, Closed Center	**1***
4-Way, 3-Position, Pressure Center	2*
3-Way, 3-Position, Closed Center	3*
3-Way, 2-Position, Normally Closed	**4**
3-Way, 2-Position, Normally Open	6
4-Way, 3-Position, Exhaust Center	9*

* Only Available with Actuation 8 Lever.

Actuation	
Roller - Delrin	**2**
Button	**4**
Pedal	**7**
Lever	**8**
Treadle	**9**
Roller - Metal	A

	Mounting
0*	Base Mounted Valve Less Base
1	**Direct Pipe Ported, NPT**
3*	Subbase Mounted
L	Direct Pipe Ported, BSPP

* N/A with Actuation 7 or 9.
* N/A with Type 3, 4 or 6.

	Return
1††	**Spring**
3†	**None (Manual Return)**
5*	Remote Pilot Return

* N/A with Actuation 8 & 9.
† N/A with Actuation 2, 7 or A.
†† N/A with Actuation 9.

Manual / Mechanical	
000	**Standard**

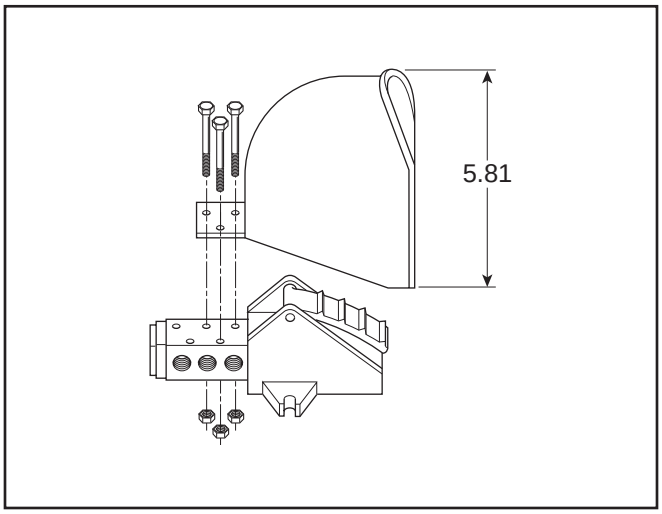
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Pedal Guard Kit
No. 52071 8001

Pedal guard meets safety requirements for foot operated valves by protecting pedal from accidental tripping from all angles. Guard is constructed of lightweight aluminum casting for strength and durability. Bolts quickly into place with only three screws without special valve mounting. One modeL fits any pedal (not treadle) operated “Directair 4” Series valve.

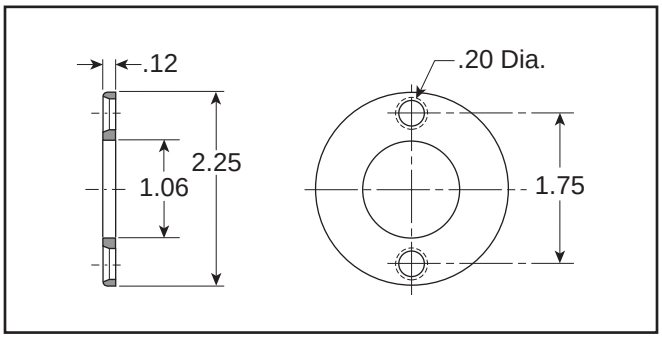
⚠ ***CAUTION:***

This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.



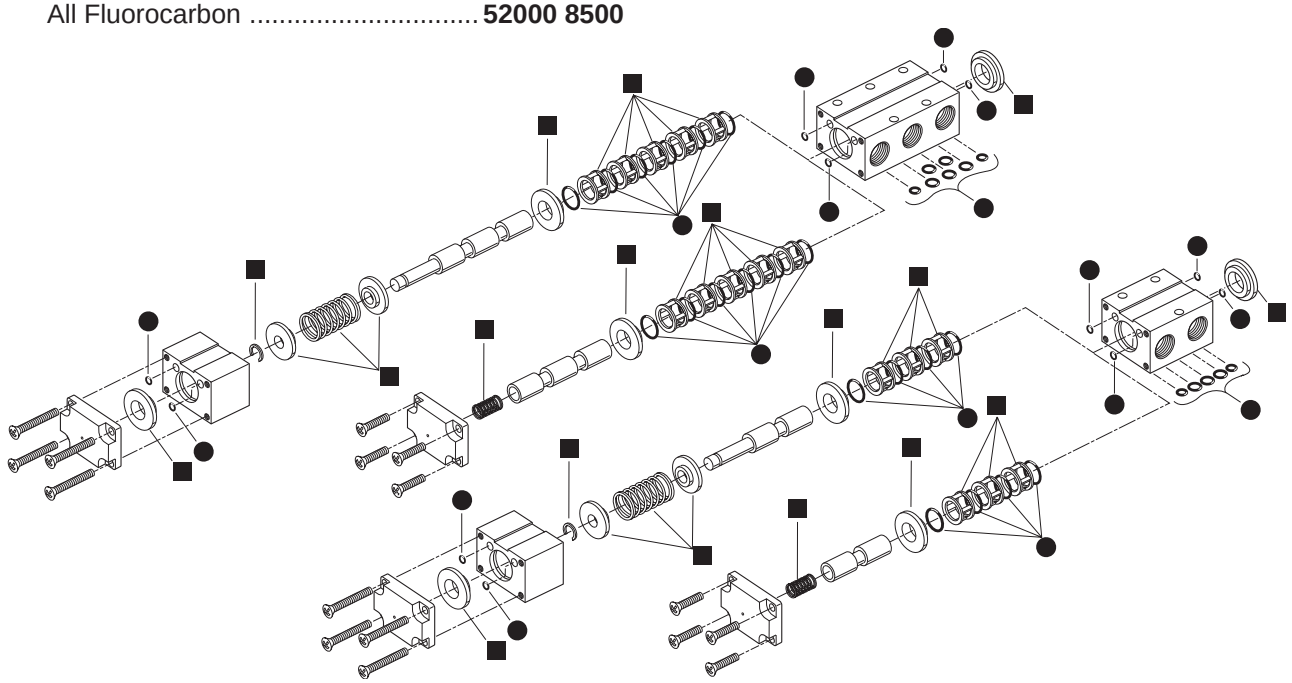
Panel Mounting Kit
No. 52083 8004

Available for panel mounting direct pipe ported, lever operated “Directair 4” Series valves only. Kit includes a flange and two screws.



Service Kits

- Valve Seal Kit **52000 8050**
  (Contains all soft seals found in 3 & 4-Way bodies and all actuator styles.)
  All Fluorocarbon **52000 8500**
- Body Service Kit **52001 8005**
  (Contains bushing, springs, retainers and shell from 2 & 3-Position, 3 & 4-Way bodies.)



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Operating Pressure

Vacuum to 150 PSI (28" Hg to 1035 kPa)

Temperature Range

32°F to 175°F (0°C to 80°C)

⚠ ***CAUTION:***
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Materials

Body and Operator Housings.....Aluminum Extrusion
Spool ..... Stainless Steel
Bushings and Pilot Piston ..... Brass
Dynamic Seals ..... Fluorocarbon
U-Cups ..... Buna (Nitrile)
Spacers ..... Aluminum

Lubrication

For maximum service life use clean, lubricated air. Valves are shipped pre-lubricated and can be operated without additional lubrication with reduced service life.

Suggested Lubricant

F442 Oil

Flow Rating (Cv)

Flow Path	Direct Pipe Ported 1/4" Ports	Subbase Mounted 1/4" Side Ports
1 → 2	.82	.64
1 → 4	.84	.66
2 → 3	.84	.63
4 → 5	.83	.63
Avg.	.83	.64

Mechanically Operated Actuating Forces in Lbs.

	2-Position Spring Return	2-Position Manual Return	3-Position Spring Return	3-Position Manual Return
Button Actuator	13.0	2.0	13.0	N/A
Roller Actuator	13.0	N/A	N/A	N/A
Lever Actuator	4.0	2.0	4.0	2.5

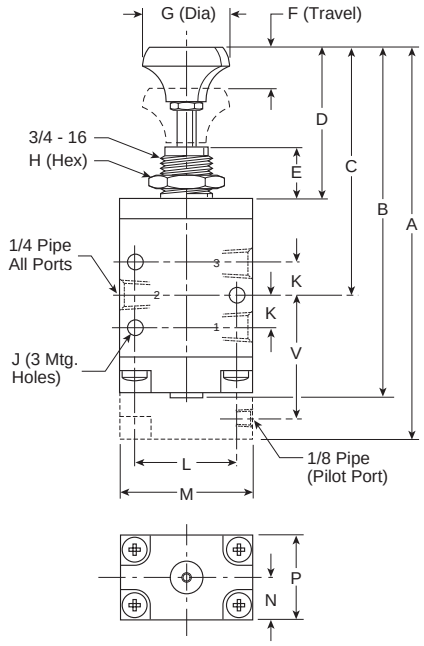
Notes: N/A = Not Applicable
All valves are at 100 PSIG inlet pressure to the valve.

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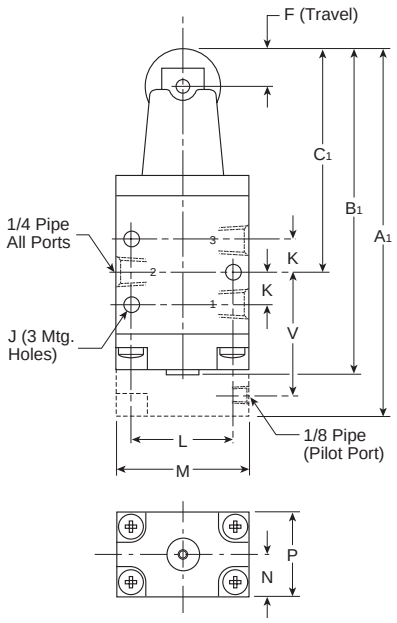
Button, Roller & Treadle Operated

3-Way, 3-Port, 2-Position

Button Operated



Roller Operated

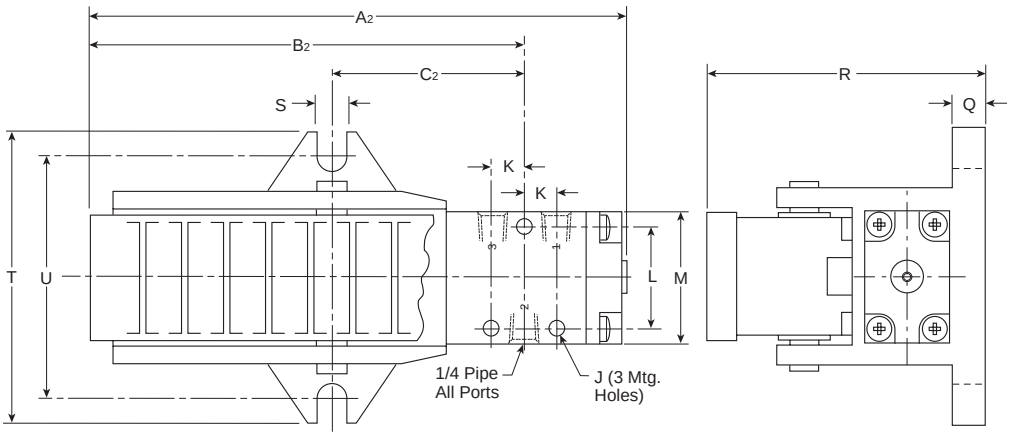


3-Way, 3-Port, 2-Position

A 4.91 (125)	**A_1** 4.25 (108)	**A_2** 6.55 (166)	**B** 4.44 (113)	**B_1** 3.78 (96)
B_2 5.20 (132)	**C** 3.10 (79)	**C_1** 2.44 (62)	**C_2** 2.19 (56)	**D** 2.00 (51)
E .63 (16)	**F** .32 (8)	**G** 1.05 (27)	**H** 1.00 (25)	**J** .19 (5)
K .41 (10)	**L** 1.25 (32)	**M** 1.63 (42)	**N** .53 (14)	**P** 1.06 (27)
Q .37 (10)	**R** 2.40 (61)	**S** .34 (9)	**T** 3.50 (89)	**U** 3.00 (76)
V 1.52 (39)				

Inches (mm)

Treadle Operated



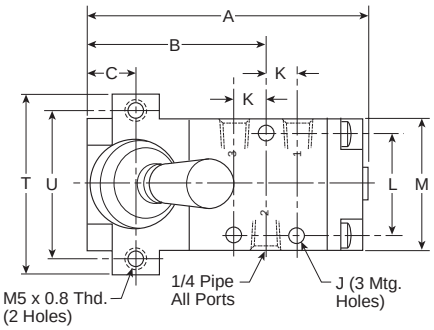
⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.
See Accessories page for Pedal Guard Kit.

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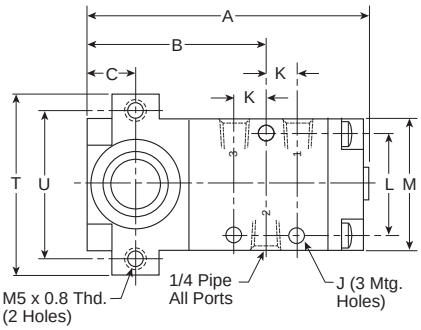
Lever & Pedal Operated

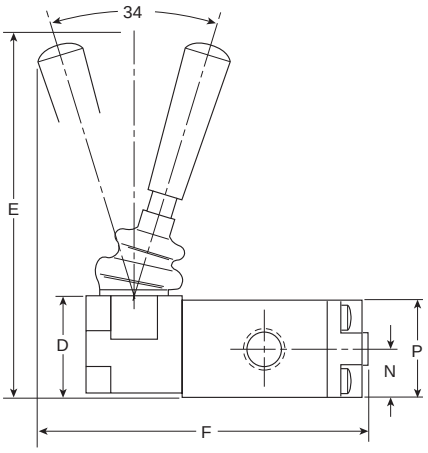
3-Way, 3-Port, 2 & 3-Position

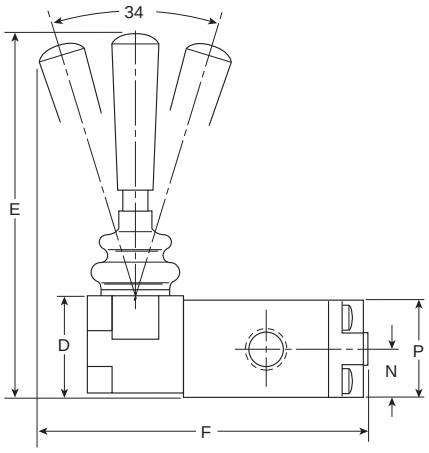
Lever Operated 2-Position



Lever Operated 3-Position





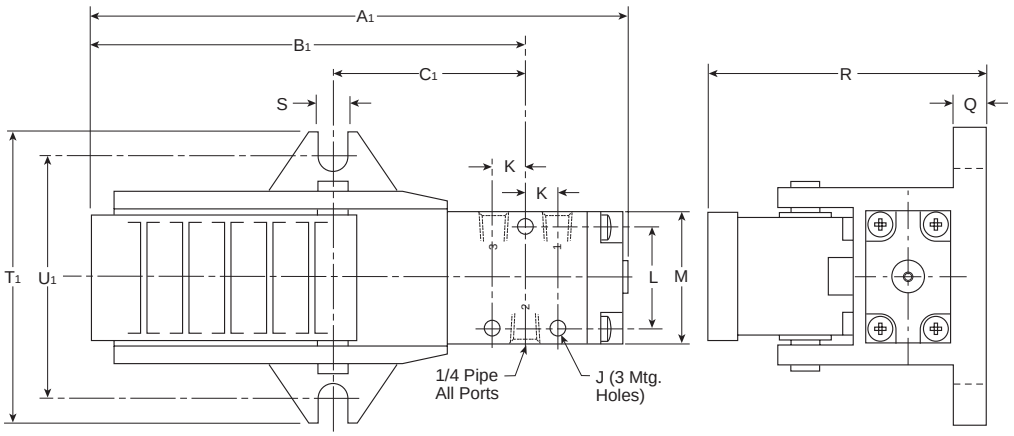


3-Way, 3-Port, 2 & 3-Position

A	**A_1**	**B**	**B_1**	**C**
3.31 (84)	6.55 (166)	1.97 (50)	5.20 (132)	.53 (14)
C_1	**D**	**E**	**F**	**J**
2.19 (56)	1.12 (28)	4.06 (103)	3.90 (99)	.19 (5)
K	**L**	**M**	**N**	**P**
.41 (10)	1.25 (32)	1.63 (42)	.53 (14)	1.06 (27)
Q	**R**	**S**	**T**	**T_1**
.37 (10)	2.40 (61)	.34 (9)	2.13 (54)	3.50 (89)
U	**U_1**			
1.75 (44)	44 (76)			

Inches (mm)

Pedal Operated



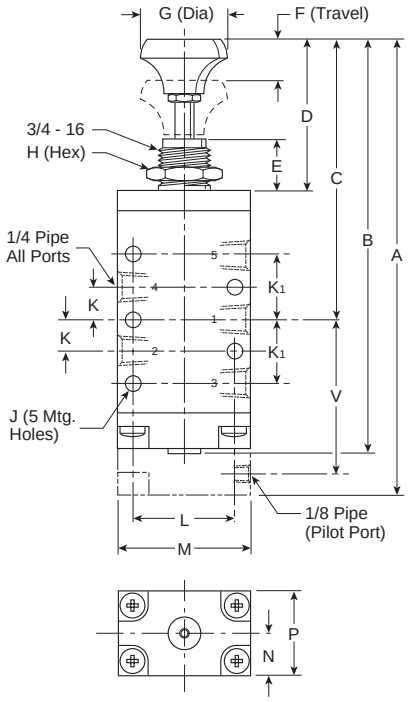
⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.
See Accessories page for Pedal Guard Kit.

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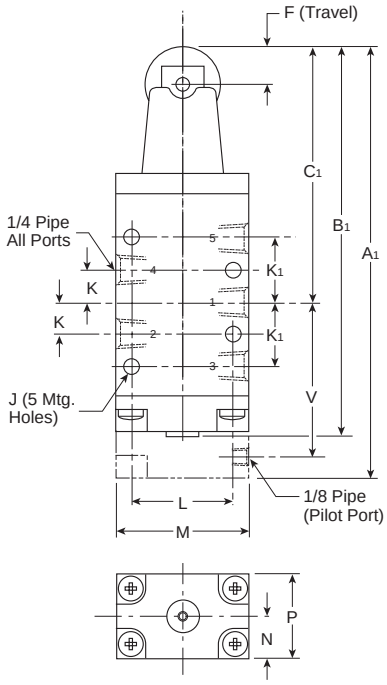
Button, Roller, Pedal & Treadle Operated

4-Way, 5-Port, 2-Position

Button Operated



Roller Operated

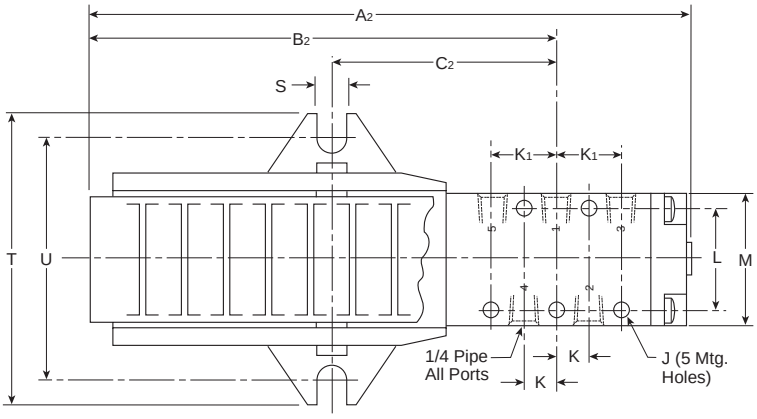


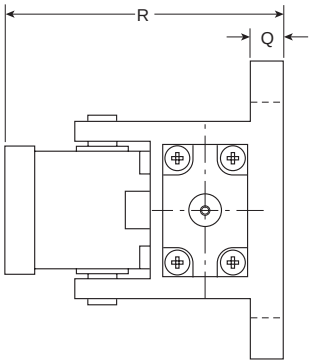
4-Way, 5-Port, 2-Position

A	**A1**	**A2**	**B**	**B1**
5.75 (146)	5.13 (130)	7.41 (189)	5.28 (134)	4.66 (118)
B2	**C**	**C1**	**C2**	**D**
5.63 (143)	3.50 (89)	2.88 (73)	2.64 (67)	2.00 (51)
E	**F**	**G**	**H**	**J**
.63 (16)	.32 (8)	1.05 (27)	1.00 (25)	.19 (5)
K	**K1**	**L**	**M**	**N**
.44 (11)	.84 (21)	1.25 (32)	1.63 (41)	.53 (14)
P	**Q**	**R**	**S**	**T**
1.06 (27)	.37 (10)	2.40 (61)	.34 (9)	3.50 (89)
U	**V**			
3.00 (76)	1.96 (50)			

Inches (mm)

Pedal and Treadle Operated





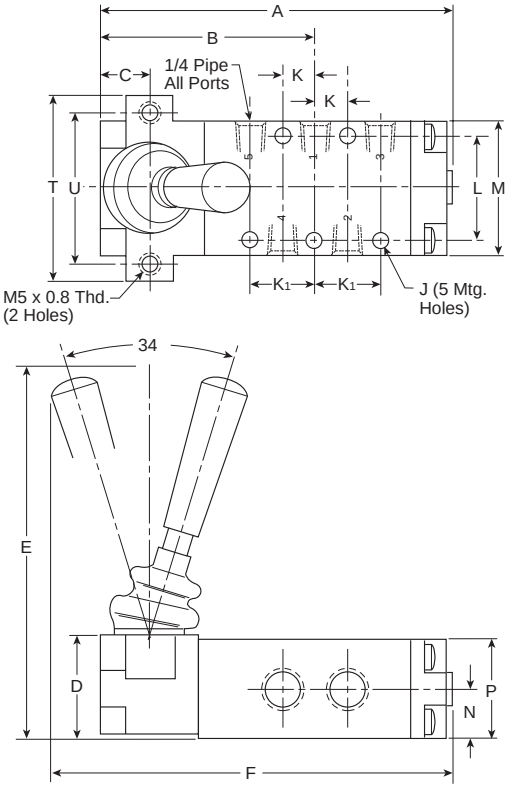
⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.
See Accessories page for Pedal Guard Kit.

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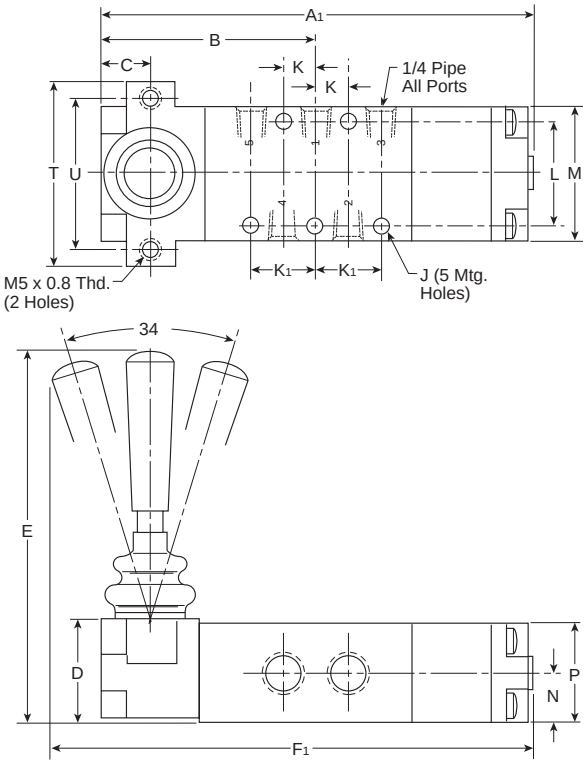
Lever Operated

4-Way, 5-Port, 2 & 3-Position

Lever Operated 2-Position



Lever Operated 3-Position



4-Way, 5-Port, 2 & 3-Position

A	A1	B	C	D
4.19 (106)	5.09 (129)	2.41 (61)	.53 (14)	1.12 (28)
E	**F**	**F1**	**J**	**K**
4.06 (103)	4.78 (121)	5.78 (147)	.19 (5)	.44 (11)
K1	**L**	**M**	**N**	**P**
.84 (21)	1.25 (32)	1.63 (42)	.53 (14)	1.06 (27)
T	**U**			
2.13 (54)	1.75 (44)			

Inches (mm)

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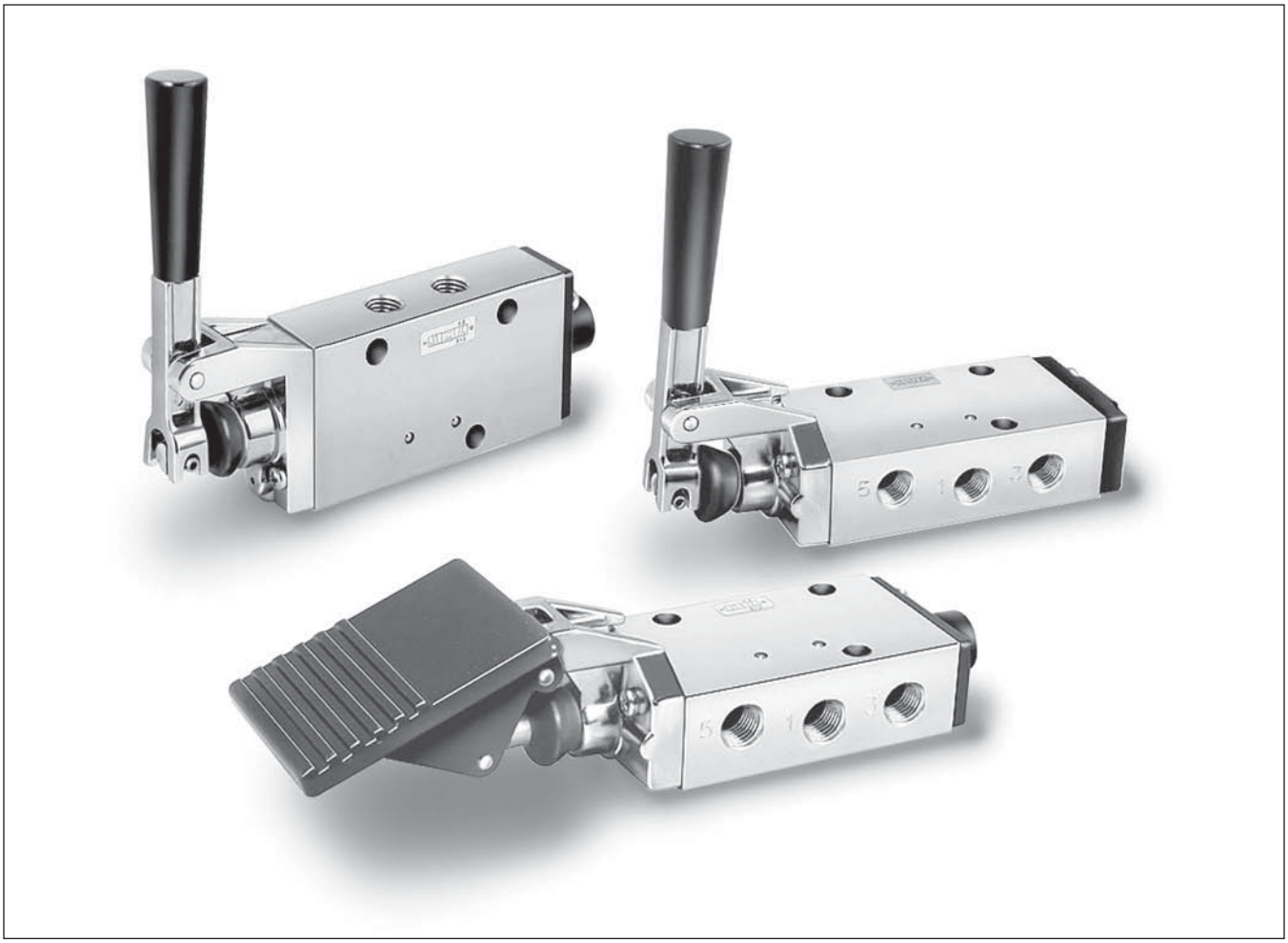
“42” Series

Lever / Pedal Valves

4-Way, 5-Port, 2 & 3-Position

Section F

www.parker.com/pneu/42ser



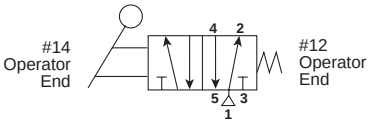
Basic Valve Functions F32
“42” Series Basic Valve Features F33
Common Part Numbers..... F34
Model Number Index & Accessories F35
Dimensions
Lever Valve F36
Foot Pedal Valve, Foot Pedal Guard F37

BOLD ITEMS ARE MOST POPULAR.

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Lever Valves – Parallel & Perpendicular Operated

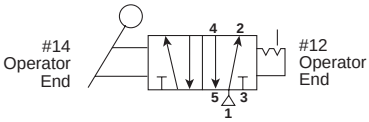
2-Position, Spring Return



Single Pressure at Port #1 – The Hand Lever alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When actuating Hand Lever, port 4 is pressurized; when releasing Hand Lever, spring returns the spool, pressurizing port 2.

Dual Pressure – Pressure at port 3 & 5 alternately pressurizes port 2 or 4 while exhausting at port 1. When actuating Hand Lever, port 2 is pressurized; when releasing Hand Lever, spring returns the spool, pressurizing port 4. (Must be ordered as dual pressure)

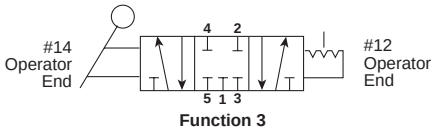
2-Position, Detent



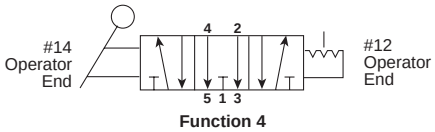
Single Pressure at Port #1 – The Hand Lever alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When pulling Hand Lever, port 4 is pressurized; when pushing Hand Lever, port 2 is pressurized. Spool stays in last actuated position.

Dual Pressure – Pressure at port 3 & 5 alternately pressurizes port 2 or 4 while exhausting at port 1. When pulling Hand Lever, port 2 is pressurized; when pushing Hand Lever, port 4 is pressurized. Spool stays in last actuated position. (Must be ordered as dual pressure.)

3-Position, Detent



Function 3



Function 4

Single Pressure at Port #1 – The Hand Lever alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When pulling Hand Lever, port 4 is pressurized; when pushing Hand Lever, port 2 is pressurized. When Hand Lever is vertical, it is in the center position - either APB or CE. Spool stays in last actuated position.

Center Functions

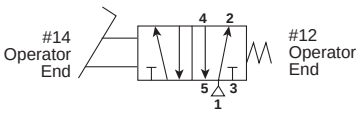
All Ports Blocked – Function 3

Center Exhaust – Function 4

⚠ ***CAUTION:***
For 3-Position lever function, do not restrict exhaust ports with speed controls.

Foot Pedal Operated

2-Position, Spring Return



⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

See Dimension page for Pedal Guard Kit.

Single Pressure at Port #1 – The Foot Pedal alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When pressing Foot Pedal down, port 4 is pressurized; when releasing Foot Pedal, spring returns the spool, pressurizing port 2.

Dual Pressure – Pressure at port 3 & 5 alternately pressurizes port 2 or 4 while exhausting at port 1. When pressing Foot Pedal down, port 2 is pressurized; when releasing Foot Pedal, spring returns the spool, pressurizing port 4. (Must be ordered as dual pressure)

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"42" Series

Specifications

Heavy Duty Lever
- Parallel Mount
- Perpendicular Mount

Heavy Duty Foot Pedal

Inline Valve
- 1/4" Port – 1.3 to 2.2 Cv
- 3/8" Port – 1.3 to 2.9 Cv

2-Position

3-Position
- All Ports Blocked
- Center Exhaust

Operating Pressure

- Vacuum to 150 PSI (710mm HG to 1035 kPa)

Operating Temperature

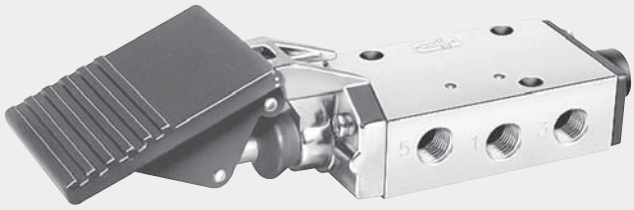
- 0°F to 140°F (-18°C to 60°C)

Flow Rating (Cv)

Port Size	Mounting Style	2-Position	3-Position
1/4" Ports	Inline	2.2	1.3
3/8" Ports	Inline	2.9	1.3



Lever Valve – Parallel



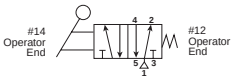
Foot Pedal Valve

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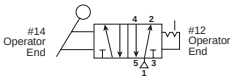
Lever Valve – 2-Position

(Parallel Shown)





Spring Return



Detented

Inline – Parallel

Single Pressure	Return	Port
422CS011K	Spring	1/4" NPT
422CS021K		3/8" NPT
422CS011W	Detent	1/4" NPT
422CS021W		3/8" NPT

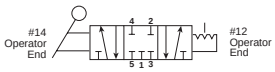
Inline – Perpendicular

Single Pressure	Return	Port
422CR011K	Spring	1/4" NPT
422CR021K		3/8" NPT
422CR011W	Detent	1/4" NPT
422CR021W		3/8" NPT

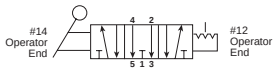
Lever Valve – 3-Position

(Perpendicular Shown)





APB



CE

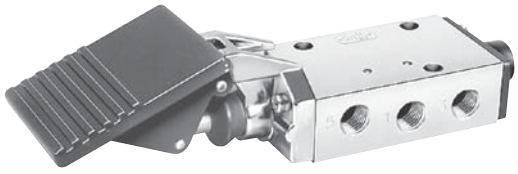
Inline – Parallel

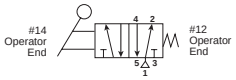
Single Pressure	Type	Port
422CS013W	3-Pos APB	1/4" NPT
422CS023W		3/8" NPT
422CS014W	3-Pos CE	1/4" NPT
422CS024W		3/8" NPT

Inline – Perpendicular

Single Pressure	Type	Port
422CR013W	3-Pos APB	1/4" NPT
422CR023W		3/8" NPT
422CR014W	3-Pos CE	1/4" NPT
422CR024W		3/8" NPT

Foot Pedal Valve – 2-Position





Spring Return

Inline

Single Pressure	Type	Return	Port
422CT011K	2-Pos	Spring	1/4" NPT
422CT021K			3/8" NPT

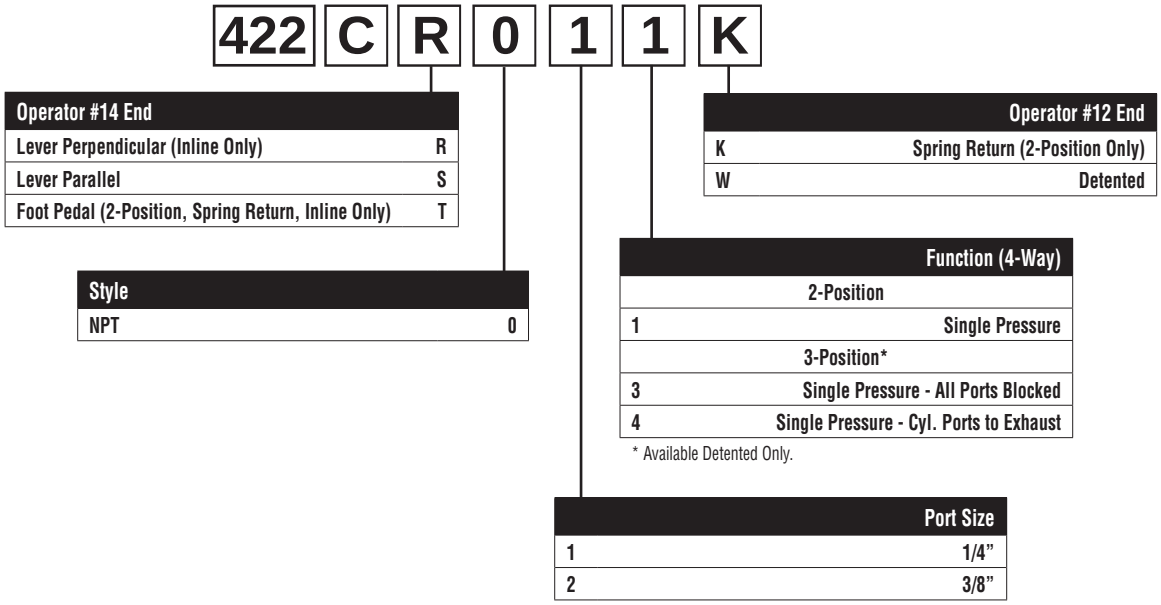
⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

See Dimensions page for Pedal Guard Kit.

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"42" Series

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Valve Body Service Kits

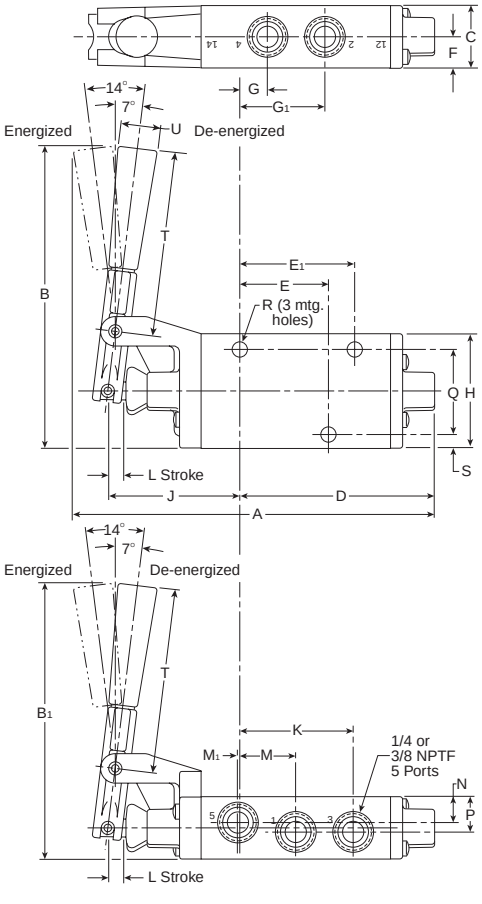
Function / Operator	Single Pressure	Dual Pressure
2-Position / Manual	PS2038P	PS2039P
3-Position / Manual, Detented	PS2041P	

Kit includes: all soft seals and spool.

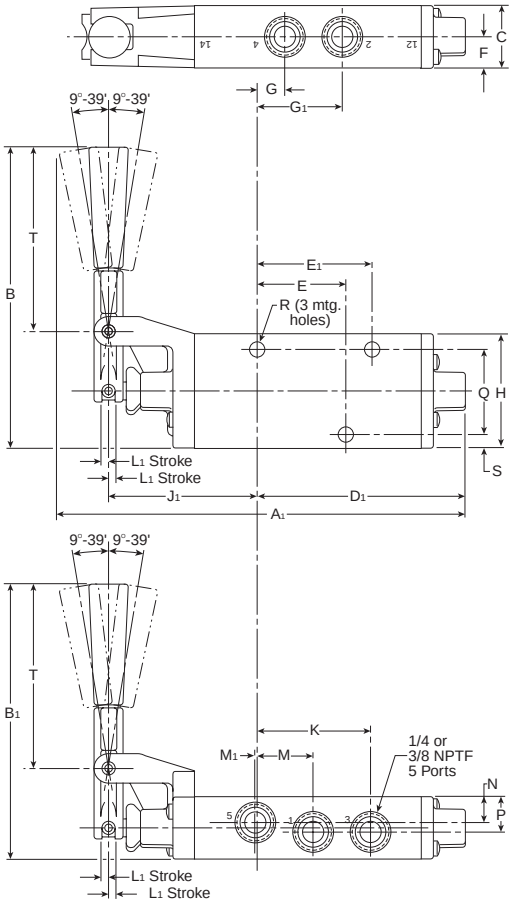
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Lever Valve

2-Position



3-Position



Lever Valve

A	A1	B	B1	C
6.70 (170)	7.58 (193)	5.55 (141)	5.05 (128)	1.15 (29)

D	D1	E	E1	F
3.59 (91)	3.83 (97)	1.58 (40)	2.06 (52)	.57 (14)

G NPT	G1 NPT	H
1/4" .51 (13) 3/8" .55 (14)	1/4" 1.56 (40) 3/8" 1.51 (38)	2.13 (54)

J	J1	K NPT	L
2.44 (62)	2.80 (71)	1/4" 2.08 (53) 3/8" 2.13 (54)	.25 (6)

L1	M	M1 NPT	N
.18 (5)	1.03 (36)	1/4" .02 (.5) 3/8" .06 (2)	.50 (13)

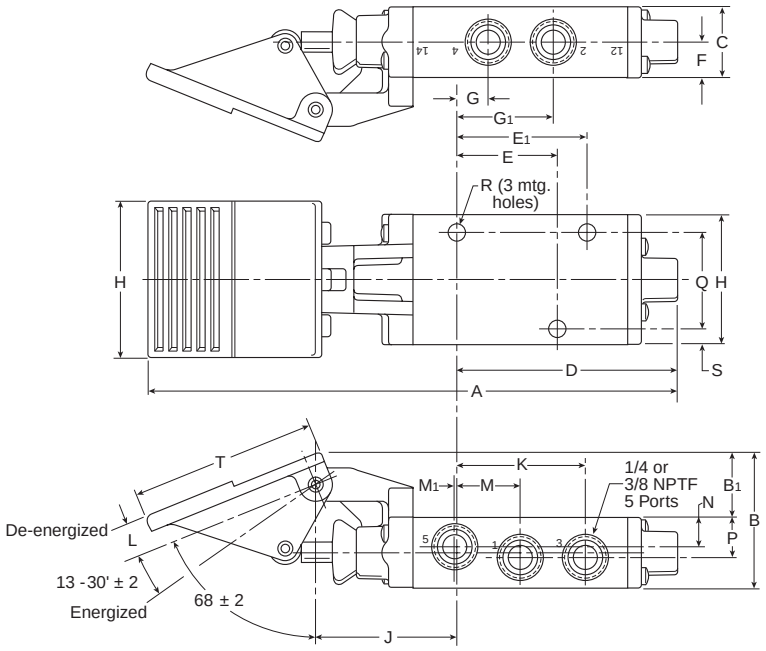
P	Q	R	S	T
.65 (17)	1.58 (40)	.33 (8)	.27 (7)	3.42 (87)

U Dia
.75 (19)

Inches (mm)

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Foot Pedal Valve



Foot Pedal Valve

A	B	B1	C	D
8.64 (220)	2.18 (55)	1.03 (26)	1.15 (29)	3.59 (91)

E	E1	F	G NPT
1.58 (40)	2.06 (52)	.57 (14)	1/4" .51 (13) 3/8" .55 (14)

G1 NPT	H	H1	J
1/4" 1.56 (40) 3/8" 1.51 (38)	2.13 (54)	2.50 (64)	2.32 (59)

K NPT	L	M
1/4" 2.08 (53) 3/8" 2.13 (54)	.60 (15)	1.03 (26)

M1 NPT	N	P	Q
1/4" .02 (.5) 3/8" .06 (2)	.50 (13)	.65 (17)	1.58 (40)

R	S	T	U
.33 (8)	.27 (7)	3.00 (76)	.48 (11)

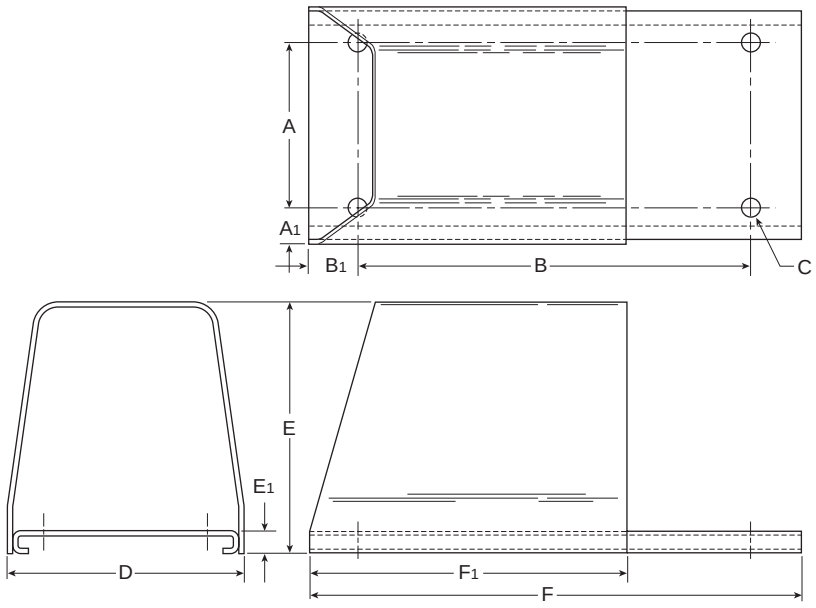
Inches (mm)

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press.
Do not use this valve on punch presses or press brakes.
See OSHA 1910.217.

Foot Pedal Valve Guard

To order Foot Pedal Valve Guard, specify part number PS2043P.

This kit contains the valve mounting hardware.



Foot Valve Guard

A	A1	B	B1	C
4.50 (114)	.75 (19)	10.50 (267)	1.25 (32)	.48 (11)

D	E	E1	F	F1
6.00 (152)	7.13 (181)	.50 (13)	13.00 (330)	8.38 (213)

Inches (mm)

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Lever Operated Air Control Valves

P2LAX – 1/8"
P2LBX – 1/4"
P2LCX – 3/8"
P2LDX – 1/2"

Section F

www.parker.com/pneu/vikingx



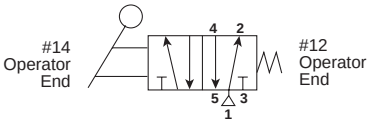
Basic Valve Functions F40
Basic Valve Features F41
P2LAX Common Part Numbers F42-F43
P2LBX Common Part Numbers F43
P2LCX Common Part Numbers F43
P2LDX Common Part Numbers F43
Electrical Connectors & Accessories F44
DOT Fittings F45-F46
Dimensions F47-F50

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Lever Valves

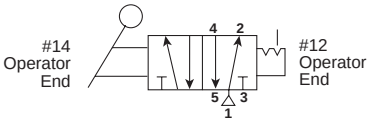
2-Position, Spring Return



Single Pressure at Port #1 – The Hand Lever alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When actuating Hand Lever, port 4 is pressurized; when releasing Hand Lever, spring returns the spool, pressurizing port 2.

Dual Pressure – Pressure at port 3 & 5 alternately pressurizes port 2 or 4 while exhausting at port 1. When actuating Hand Lever, port 2 is pressurized; when releasing Hand Lever, spring returns the spool, pressurizing port 4. (Must be ordered as dual pressure)

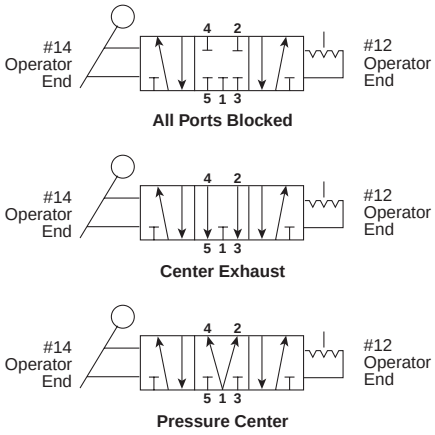
2-Position, Detent



Single Pressure at Port #1 – The Hand Lever alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When pulling Hand Lever, port 4 is pressurized; when pushing Hand Lever, port 2 is pressurized. Spool stays in last actuated position.

Dual Pressure – Pressure at port 3 & 5 alternately pressurizes port 2 or 4 while exhausting at port 1. When pulling Hand Lever, port 2 is pressurized; when pushing Hand Lever, port 4 is pressurized. Spool stays in last actuated position. (Must be ordered as dual pressure.)

3-Position, Detent



Single Pressure at Port #1 – The Hand Lever alternately pressurizes port 2 or 4 while exhausting at port 3 or 5. When pulling Hand Lever, port 4 is pressurized; when pushing Hand Lever, port 2 is pressurized. When Hand Lever is vertical, it is in the center position - either APB or CE. Spool stays in last actuated position.

Center Functions

All Ports Blocked

Center Exhaust

Pressure Center

⚠ ***CAUTION:***
For 3-Position lever function, do not restrict exhaust ports with speed controls.

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Specifications

- Heavy Duty Lever
- Inline Valve
  – 1/8", 1/4", 3/8", 1/2" NPT
- 2-Position Models
- 3-Position Models
  – All Ports Blocked
  – Pressure Center
  – Center Exhaust

Operating Temperature

- Extreme: -40°F to 140°F
  (-40°C to 60°C)

Operating Pressure

- Type A & B: Vacuum to 232 PSIG
  (Vacuum to 16 bar Max.)
- Type C & D: Vacuum to 174 PSIG
  (Vacuum to 12 bar Max.)

Material Specifications

- Valve Body: Anodized Aluminum
- End Covers: Anodized Aluminum
- Lever Housing: Acetal Plastic
- Spool: Aluminum & Nitrile Rubber
- Piston: Acetal Plastic / Anodized Aluminum
- Seals: Nitrile Rubber
- Screws: Stainless Steel
- Springs: Dacromet - Processed Steel, Stainless Steel
- Lever: Reinforced Polyamide Plastic

Size A



P2LAX
2-Position, Detent

Size B



P2LBX
2-Position, Spring

Size C



P2LCX
2-Position, Lever

Size D



P2LDX
3-Position APB

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Lever Operated Valves

Vacuum to 232 PSIG (Vacuum to 16 bar)
-40°F to 158°F (-40°C to 70°C)

P2L A X 5 91 VS

Valve Size	
1/8"	A
1/4"	B
3/8"	C*
1/2"	D*

*See Note Below for Pressure rating.

Valve Type / Function	
Internal Pilot Supply	
2-Position Valve	**5**
3-Position Valve APB	**6**
3-Position Valve PC	7
3-Position Valve CE	**8**
External Pilot Supply through Ports #12 & #14	
NC 2-Position	L
2-Position Valve	N
3-Position Valve APB	P
3-Position Valve PC	Q
3-Position Valve CE	R

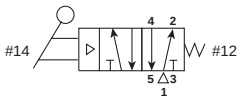
Actuator / Return	
S	**Spring (Return Only)**
V	**Lever 2-Position**
1	**Lever 3-Position Self Centered**
2	**Lever 3-Position**
VS*	**Spring Return Lever, 2-Position, 90° to Ports, P2LA Only**
VV*	**Lever, Detent, 2-Position, 90° to Ports, P2LA Only**
11	Spring Centered Lever, 3-Position, 90° to Ports, P2LA Only
22	Lever, Detent, 3-Position, 90° to Ports, P2LA Only

* Not Available with 3-Position Valves.

Main Port Thread	
11	G1/8 (P2LA)
12	G1/4 (P2LB)
13	G3/8 (P2LC)
14	G1/2 (P2LD)
91	**1/8" NPT (P2LA)**
92	**1/4" NPT (P2LB)**
93	**3/8" NPT (P2LC)**
94	**1/2" NPT (P2LD)**

Lever Operated
2-Position

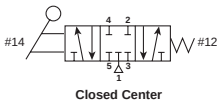




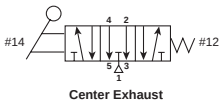
P2LAX			
	P2LAX591VS	Spring Return	0.7 Cv
	P2LAX591VV	Detent	

Lever Operated
3-Position





Closed Center



Center Exhaust

All Ports Blocked			
P2LAX	**P2LAX69111**	Spring-Centered	0.5 Cv
	P2LAX69122	Detent	

Center Exhaust			
P2LAX	**P2LAX89111**	Spring-Centered	0.5 Cv
	P2LAX89122	Detent	

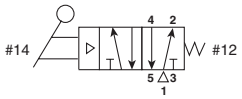
NOTE: P2LCX and P2LDX Manual & Remote Air Pilot Valves have a maximum pressure rating of 175 PSIG (12 bar).

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Lever Operated
2-Position

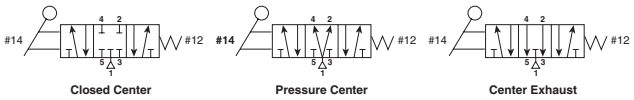




P2LBX	**P2LBX592VV**	5/2 Lever	1.3 Cv
	P2LBX592VS	5/2 Spring	
P2LCX	**P2LCX593VV**	5/2 Lever	2.5 Cv
	P2LCX593VS	5/2 Spring	
P2LDX	**P2LDX594VV**	5/2 Lever	2.7 Cv
	P2LDX594VS	5/2 Spring	

Lever Operated
3-Position





All Ports Blocked			
P2LBX	**P2LBX69222**	Lever - APB	1.3 Cv
	P2LBX69211	Spring - APB	
P2LCX	**P2LCX69322**	Lever - APB	2.5 Cv
	P2LCX69311	Spring - APB	
P2LDX	**P2LDX69422**	Lever - APB	2.7 Cv
	P2LDX69411	Spring - APB	

Pressure Center			
P2LBX	**P2LBX79222**	Lever - PC	1.3 Cv
	P2LBX79211	Spring - PC	
P2LCX	**P2LCX79322**	Lever - PC	2.5 Cv
	P2LCX79311	Spring - PC	
P2LDX	**P2LDX79422**	Lever - PC	2.7 Cv
	P2LDX79411	Spring - PC	

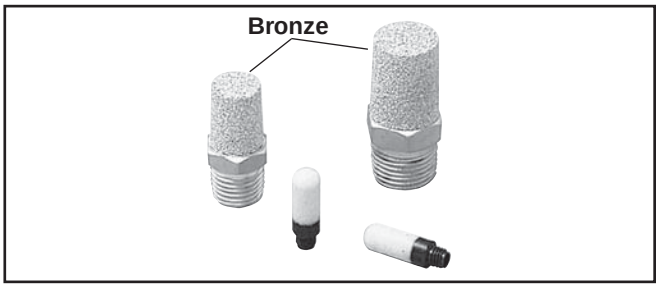
Center Exhaust			
P2LBX	**P2LBX89222**	Lever - CE	1.3 Cv
	P2LBX89211	Spring - CE	
P2LCX	**P2LCX89322**	Lever - CE	2.5 Cv
	P2LCX89311	Spring - CE	
P2LDX	**P2LDX89422**	Lever - CE	2.7 Cv
	P2LDX89411	Spring - CE	

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Exhaust Mufflers

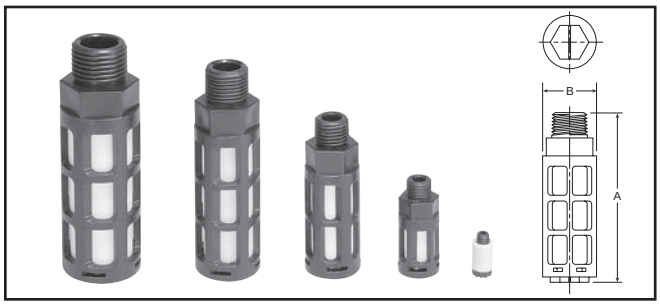
Pipe Thread	Part Number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**
3/8" NPT	**EM37**
1/2" NPT	**EM50**

P6M - Plastic; EM - Sintered Bronze

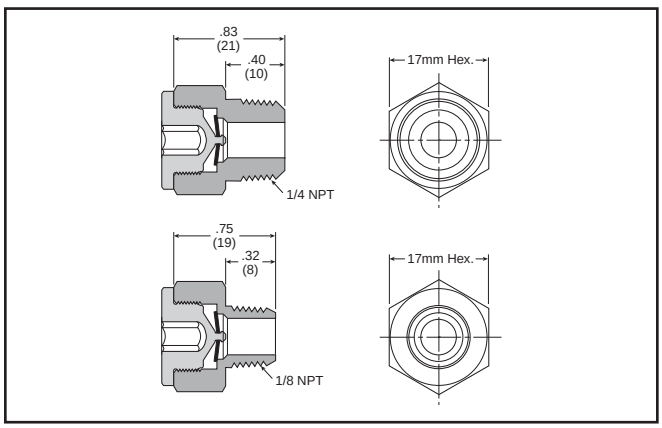


Plastic Silencers

Thread Size	Part Number		A (mm)	B (mm)
	NPT	BSPT		
M5	**AS-5**		.43 (11)	.32 (8)
1/8"	**ASN-6**	**AS-6**	1.57 (40)	.63 (16)
1/4"	**ASN-8**	**AS-8**	2.56 (65)	.83 (21)
3/8"	**ASN-10**	**AS-10**	3.35 (85)	.98 (25)
1/2"	**ASN-15**	**AS-15**	3.74 (95)	1.18 (30)



Exhaust Protector



Specifications

Operating Pressure ..... 0 – 150 PSIG
(0 to 10 bar, 0 to 1034 kPa)

Operating Temperature .....-40°F to 158°F (-40°C to 70°C)

Material:

Body and Pipe Adapter ..... Brass
Membrane .....Fluorocarbon

Flow Data (SCFM)

Part Number	Size	60 PSIG Inlet	90 PSIG Inlet	125 PSIG Inlet
E90016	1/8"	40.1	56.5	75.5
E90017	1/4"	44.6	62.7	83.5

Features

- 1/8 and 1/4 NPT male sizes
- Fitted with a Brass Pipe Adapter and a Fluorocarbon Membrane
- Resistant to Rust, Clog, Wash Down and Contamination

Applications

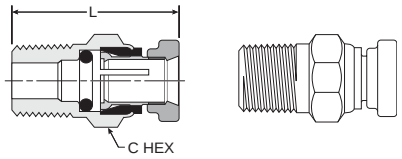
These protectors are intended for mobile applications, quick venting applications and alternative exhaust port breathers that require protection against clogging.

Ideal for valves exposed to harsh environmental conditions (which can cause a “caking up” in the exhaust pipe ports where the bronze mufflers or breather vents are installed).

Particularly suitable for time-sensitive applications such as axle-lift suspensions or pushers or tag axles.

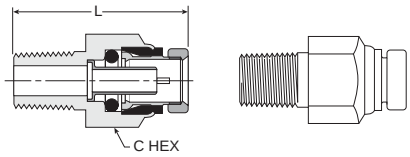
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68PM Male Connector



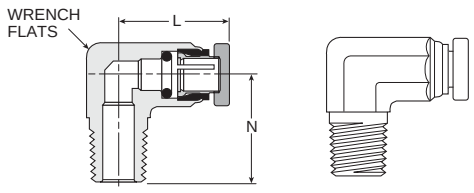
Part No.	Tube Size	Pipe Thread (NPTF)	C Hex	L
68PM-2-1	1/8	1/16	3/82	0.93
68PM-2-2	1/8	1/8	7/16	0.88
68PM-5/32-1	5/32	1/16	3/8	0.95
68PM-5/32-2	5/32	1/8	7/16	0.74
68PM-5/32-4	5/32	1/4	9/16	0.99
68PM-3-1	3/16	1/16	7/16	0.95
68PM-3-2	3/16	1/8	7/16	0.92
68PM-3-4	3/16	1/4	9/16	1.10

68PMT Male Connector



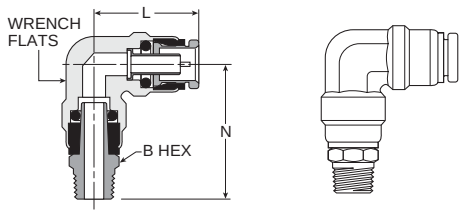
Part No.	Tube Size	Pipe Thread (NPTF)	C Hex	L
68PMT-4-2	1/4	1/8	1/2	1.06
68PMT-4-4	1/4	1/4	9/16	1.19
68PMT-4-6	1/4	3/8	3/4	1.27
68PMT-6-2	3/8	1/8	3/4	1.37
68PMT-6-4	3/8	1/4	3/4	1.43
68PMT-6-6	3/8	3/8	3/4	1.33
68PMT-6-8	3/8	1/2	7/8	1.38
68PMT-8-4	1/2	1/4	7/8	1.72
68PMT-8-6	1/2	3/8	7/8	1.52
68PMT-8-8	1/2	1/2	7/8	1.44
68PMT-10-6	5/8	3/8	1	1.88
68PMT-10-8	5/8	1/2	1	1.88
68PMT-12-8	3/4	1/2	1-3/16	2.03

169PMNS Male Elbow Non-Swivel 90°



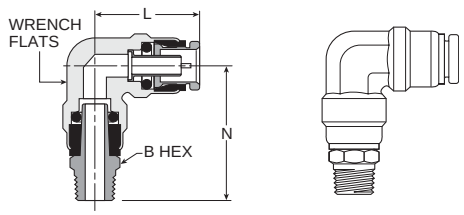
Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	L	N
169PMNS-2-2	1/8	1/8	3/8	0.86	0.68
169PMNS-5/32-2	5/32	1/8	3/8	0.88	0.68
169PMNS-3-2	3/16	1/8	3/8	0.75	0.67
169PMNS-3-4	3/16	1/4	1/2	0.74	0.93

169PMT Male Elbow Swivel 90°



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	B Hex	L	N
169PMT-4-2	1/4	1/8	13/32	7/16	0.84	1.21
169PMT-4-4	1/4	1/4	13/32	9/16	0.84	1.43
169PMT-4-6	1/4	3/8	13/32	11/16	0.84	1.43
169PMT-6-2	3/8	1/8	9/16	9/16	1.11	1.41
169PMT-6-4	3/8	1/4	9/16	9/16	1.11	1.58
169PMT-6-6	3/8	3/8	9/16	11/16	1.11	1.58
169PMT-6-8	3/8	1/2	9/16	7/8	1.11	1.79
169PMT-8-4	1/2	1/4	11/16	5/8	1.27	1.73
169PMT-8-6	1/2	3/8	11/16	3/4	1.27	1.81
169PMT-8-8	1/2	1/2	11/16	7/8	1.27	1.96
169PMT-10-6	5/8	3/8	7/8	3/4	1.53	2.03
169PMT-10-8	5/8	1/2	7/8	7/8	1.53	2.18

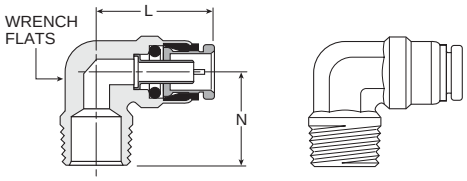
169PMTL Male Elbow Long Non-Swivel 90°



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	B Hex	L	N
169PMTL-6-4	3/8	1/4	9/16	9/16	1.06	1.63
169PMTL-6-6	3/8	3/8	9/16	7/8	1.19	2.50
169PMTL-6-8	3/8	1/2	9/16	7/8	1.19	2.50
169PMTL-8-8	1/2	1/2	11/16	7/8	1.22	2.50
169PMTL-10-8	5/8	1/2	7/8	7/8	1.46	2.50

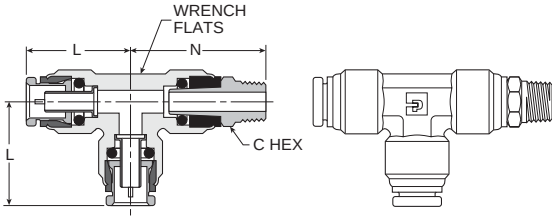
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169PMTNS Male Elbow Non-Swivel 90°



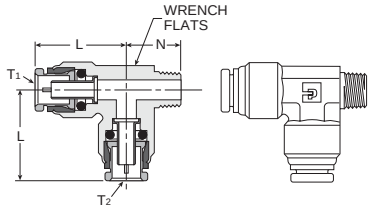
Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	L	N
169PMTNS-4-2	1/4	1/8	1/2	0.84	0.72
169PMTNS-4-4	1/4	1/4	1/2	0.84	0.90
169PMTNS-4-6	1/4	3/8	1/2	0.84	1.06
169PMTNS-6-2	3/8	1/8	9/16	1.05	0.75
169PMTNS-6-4	3/8	1/4	9/16	1.05	0.94
169PMTNS-6-6	3/8	3/8	3/4	1.05	0.94
169PMTNS-6-8	3/8	1/2	11/16	1.12	1.26
169PMTNS-8-4	1/2	1/4	11/16	1.17	1.06
169PMTNS-8-6	1/2	3/8	11/16	1.22	1.06
169PMTNS-8-8	1/2	1/2	11/16	1.22	1.26
169PMTNS-10-6	5/8	3/8	7/8	1.46	1.11
169PMTNS-10-8	5/8	1/2	7/8	1.46	1.32
169PMTNS-12-8	3/4	1/2	1	1.81	1.44

171PMT Male Run Tee Swivel



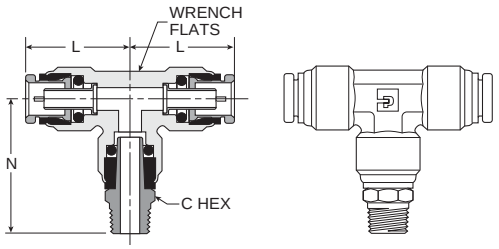
Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	C Hex	L	N
171PMT-4-2	1/4	1/8	1/2	7/16	.85	1.25
171PMT-4-4	1/4	1/4	1/2	9/16	.85	1.48
171PMT-4-6	1/4	3/8	1/2	11/16	.85	1.43
171PMT-6-4	3/8	1/4	5/8	9/16	1.21	1.83
171PMT-6-6	3/8	3/8	5/8	11/16	1.21	1.83
171PMT-8-4	1/2	1/4	7/8	5/8	1.27	1.74
171PMT-8-6	1/2	3/8	7/8	3/4	1.27	1.83
171PMT-8-8	1/2	1/2	7/8	7/8	1.27	1.99

171PMTNS Male Run Tee Non-Swivel



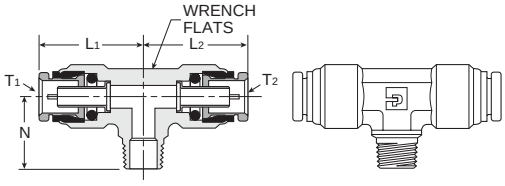
Part No.	Tube 1 Size	Tube 2 Size	Pipe Thread (NPTF)	Wrench Flats	L1	L2	N
171PMTNS-4-4	1/4	1/4	1/4	15-32	0.91	0.91	0.94
171PMTNS-4-6-4	1/4	3/8	1/4	5/8	0.93	1.21	0.97
171PMTNS-6-4	3/8	3/8	1/4	5/8	1.21	1.21	0.97
171PMTNS-6-4-4	3/8	1/4	1/4	5/8	1.21	0.93	0.97
171PMTNS-6-4-6	3/8	1/4	3/8	5/8	1.22	0.97	0.93
171PMTNS-6-6	1/2	3/8	3/8	5/8	1.21	1.27	0.97
171PMTNS-6-8	1/2	3/8	1/2	5/8	1.17	1.27	1.26
171PMTNS-8-4	1/2	1/2	1/4	7/8	1.28	1.27	1.06

172PMT Male Branch Tee Swivel



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	C Hex	L	N
172PMT-4-2	1/4	1/8	1/2	7/16	0.85	1.25
172PMT-4-4	1/4	1/4	1/2	9/16	0.85	1.43
172PMT-6-2	3/8	1/8	5/8	9/16	1.22	1.66
172PMT-6-4	3/8	1/4	5/8	5/8	1.22	1.83
172PMT-6-6	3/8	3/8	5/8	3/4	1.22	1.83
172PMT-8-4	1/2	1/4	7/8	5/8	1.27	1.73
172PMT-8-6	1/2	3/8	7/8	3/4	1.27	1.79
172PMT-8-8	1/2	1/2	7/8	7/8	1.27	1.97

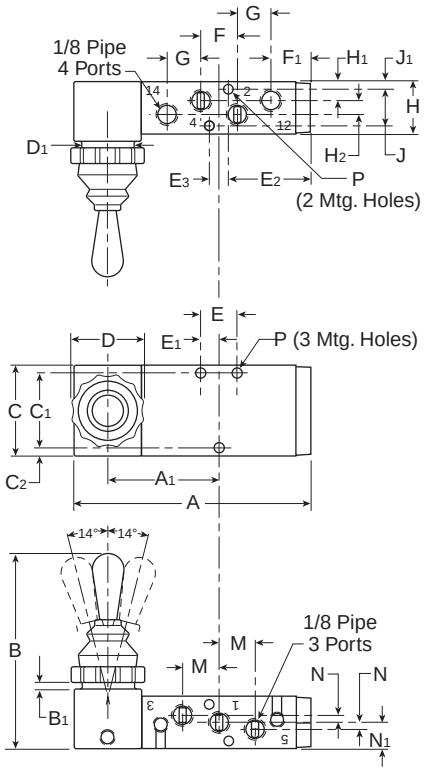
172PMTNS Male Branch Tee Non-Swivel

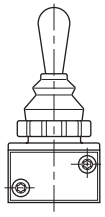


Part No.	Tube 1 Size	Tube 2 Size	Pipe Thread (NPTF)	Wrench Flats	L1	L2	N
172PMTNS-4-2	1/4	1/4	1/8	1/2	0.91	0.91	0.78
172PMTNS-6-4	3/8	3/8	1/4	5/8	1.21	1.21	0.97
172PMTNS-6-4-4	3/8	1/4	1/4	5/8	1.21	.93	0.97
172PMTNS-6-6	3/8	3/8	3/8	5/8	1.21	1.21	0.97
172PMTNS-6-8	3/8	3/8	1/2	7/8	1.17	1.17	1.26
172PMTNS-8-6	1/2	1/2	3/8	7/8	1.28	1.28	1.06
172PMTNS-8-6-8	1/2	3/8	1/2	7/8	1.25	1.25	1.25
172PMTNS-8-8	1/2	1/2	1/2	7/8	1.34	1.25	1.25

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Hand Lever Operated



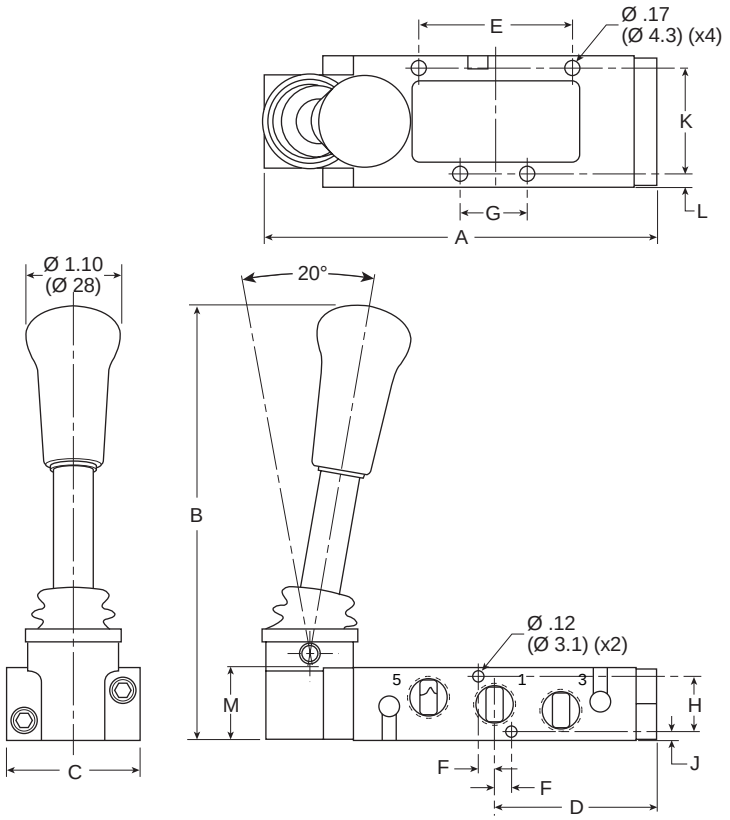


P2LAX Hand Lever

A 4.02 (102)	**A1** 1.89 (48)	**B** 3.23 (82)	**B1** .12 (3)
C 1.57 (40)	**C1** 1.30 (33)	**C2** .14 (3.5)	**D** 1.18 (30)
D1 .89 (22.5)	**E** .63 (16)	**E1** .31 (8)	**E2** 1.42 (36)
E3 .33 (8.5)	**F** .63 (16)	**F1** .67 (17)	**G** .59 (15)
H .87 (22)	**H1** .31 (8)	**H2** .24 (6)	**J** .63 (16)
J1 .12 (3)	**M** .63 (16)	**N** .12 (3)	**N1** .43 (11)
P Ø .16 Ø (4.1)			

Inches (mm)

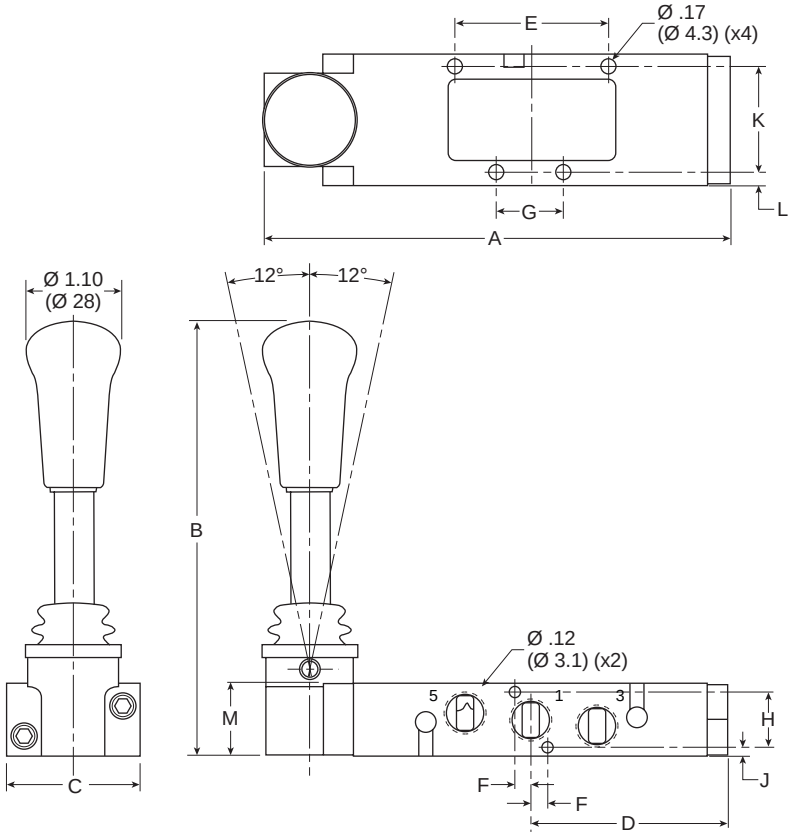
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P2LBX 2-Position Hand Lever

A	B	C	D
4.67 (118.5)	5.19 (131.8)	1.57 (40)	1.93 (49)
E	**F**	**G**	**H**
1.81 (46)	.20 (5)	.79 (20)	.65 (16.5)
J	**K**	**L**	**M**
.11 (2.85)	1.26 (32)	.16 (4)	.87 (22.2)

Inches (mm)

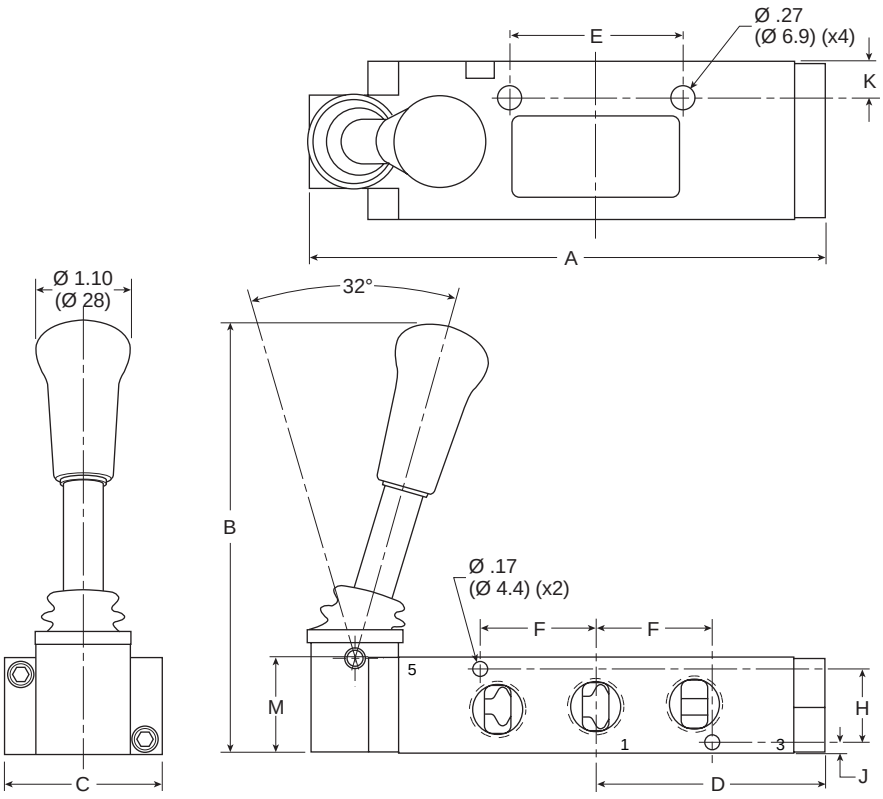


P2LBX 3-Position Hand Lever

A	B	C	D
5.51 (140)	5.19 (131.8)	1.57 (40)	2.35 (59.8)
E	**F**	**G**	**H**
1.81 (46)	.20 (5)	.79 (20)	.65 (16.5)
J	**K**	**L**	**M**
.11 (2.85)	1.26 (32)	.16 (4)	.87 (22.2)

Inches (mm)

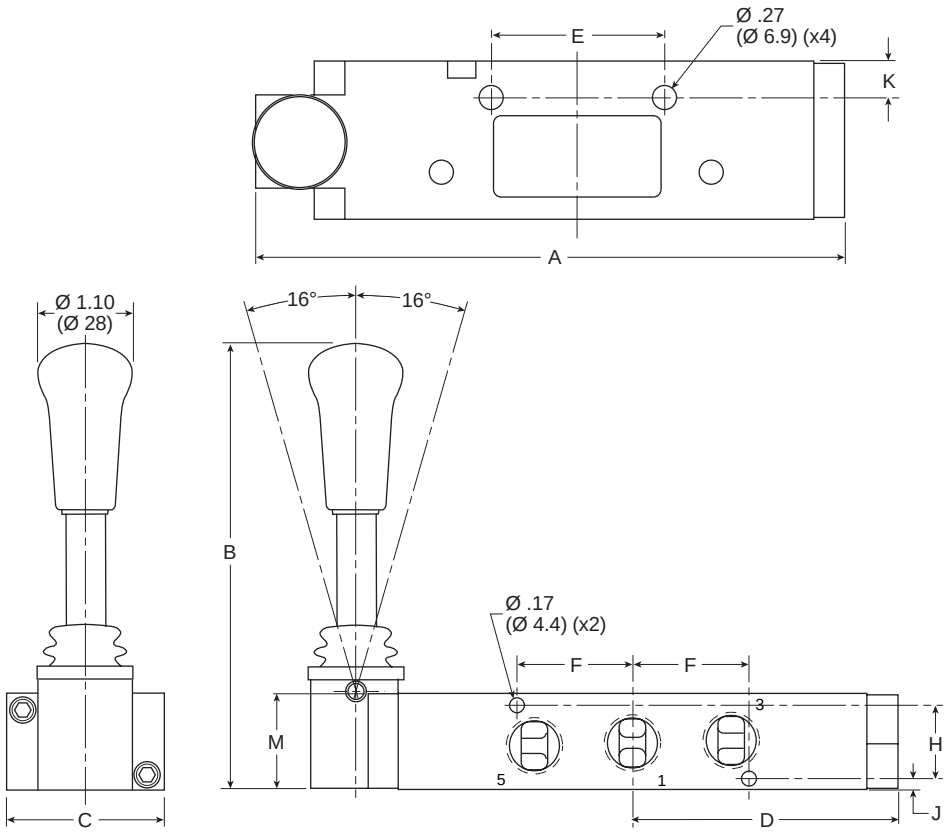
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P2LCX 2-Position Hand Lever

A	B	C	D
6.20 (157.5)	5.24 (133)	1.89 (48)	2.76 (70)
E	**F**	**H**	**J**
2.09 (53)	1.40 (35.5)	.91 (23)	.14 (3.5)
K	**M**		
.43 (11)	1.18 (30)		

Inches (mm)

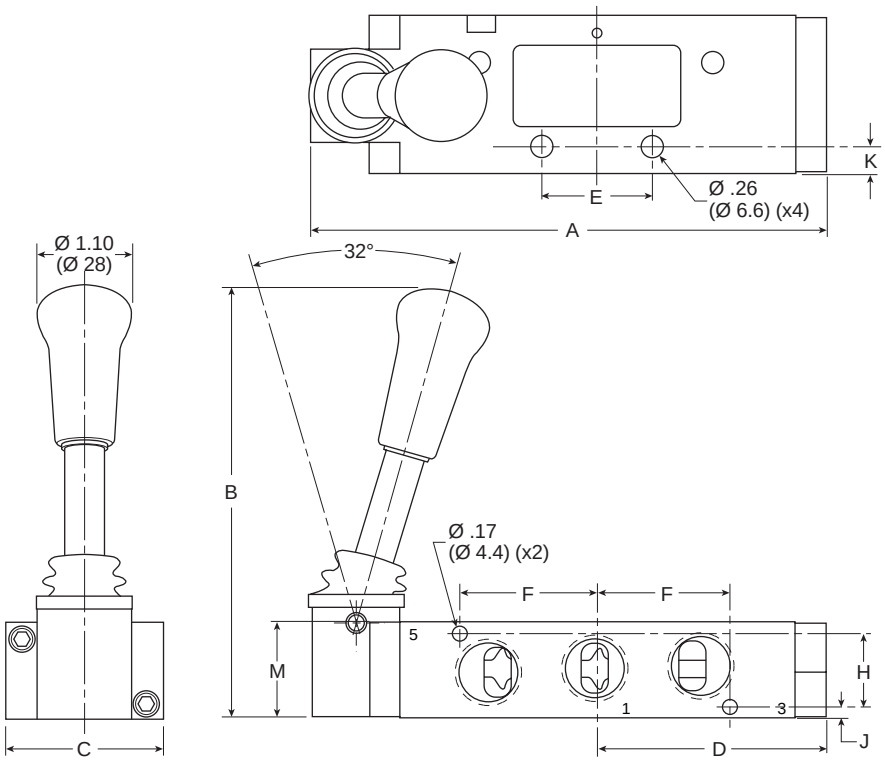


P2LCX 3-Position Hand Lever

A	B	C	D
7.07 (179.5)	5.36 (136.3)	1.89 (48)	3.19 (81)
E	**F**	**H**	**J**
2.09 (53)	1.40 (35.5)	.91 (23)	.14 (3.5)
K	**M**		
.43 (11)	1.18 (30)		

Inches (mm)

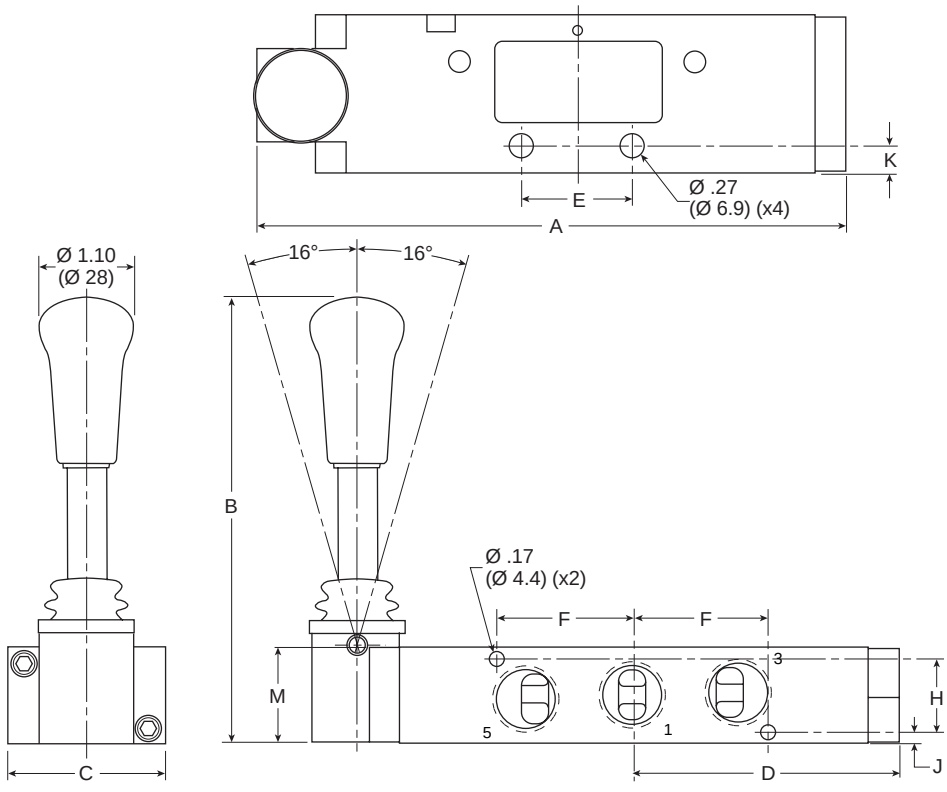
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P2LDX 2-Position Hand Lever

A	B	C	D
6.20 (157.5)	5.24 (133)	1.89 (48)	2.76 (70)
E	**F**	**H**	**J**
1.34 (34)	1.65 (42)	.91 (23)	.14 (3.5)
K	**M**		
.30 (7.5)	1.18 (30)		

Inches (mm)



P2LDX 3-Position Hand Lever

A	B	C	D
7.07 (179.5)	5.36 (136.3)	1.89 (48)	3.19 (81)
E	**F**	**H**	**J**
1.34 (34)	1.65 (42)	.91 (23)	.14 (3.5)
K	**M**		
.30 (7.5)	1.18 (30)		

Inches (mm)

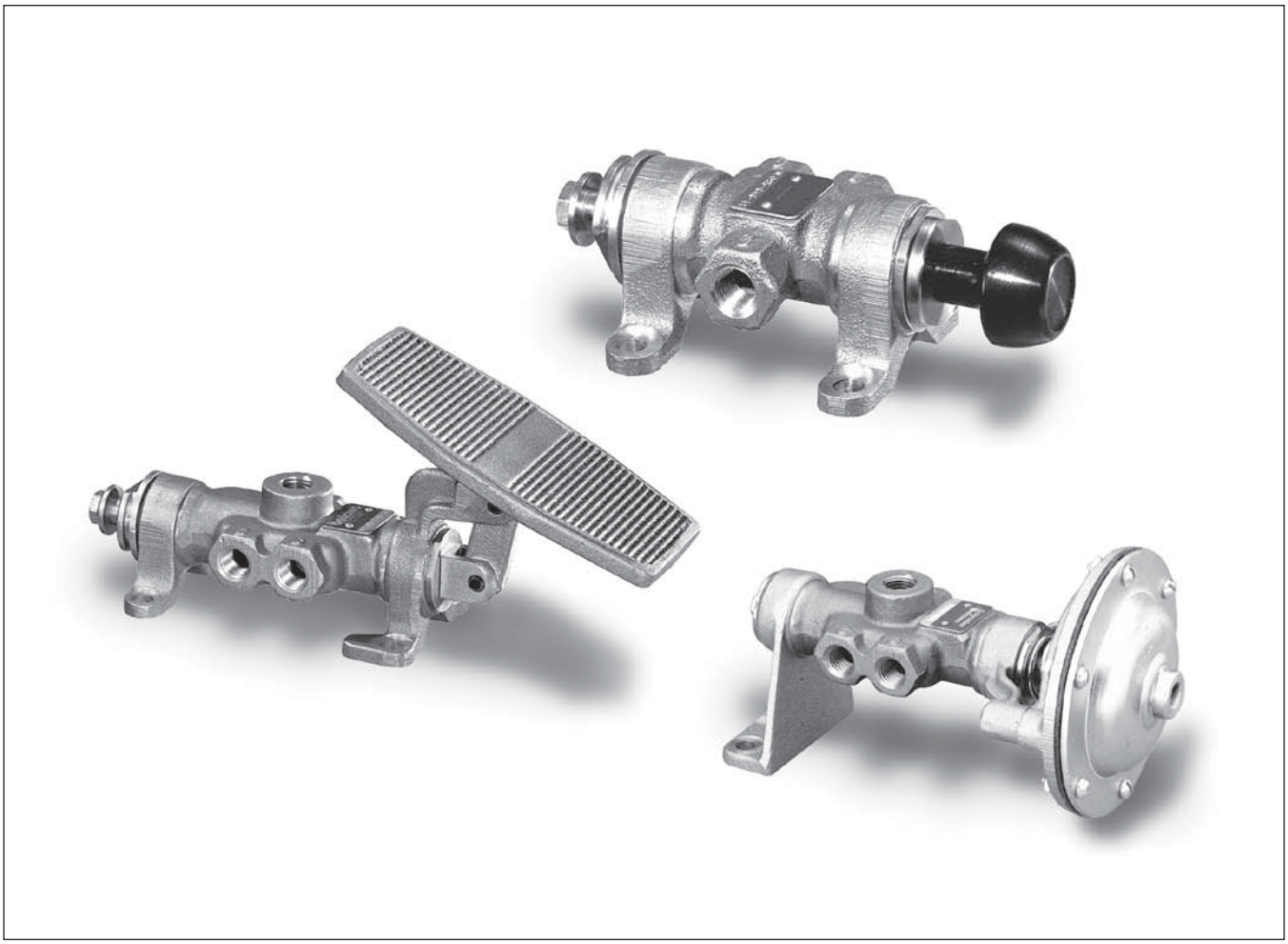
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Valvair Manual Spool Valves

Air Pilot, Manual & Mechanically Actuated

Section F

www.parker.com/pneu



Specifications F52
Basic Valve Features F53
Model Numbering System F54
Technical Data F55
Manually Operated Valves F56-F57
Mechanically Operated Valves F58-59
Detent Valves F60
Spring Centered Valves F61
Lockout Detent Valve F62
Dimensions F63-F81
Manual Mechanical Operators F82-F83
Pneumatic Operators F84-F85
End Sections F86-F87
Body Sections F88
Accessories & Service Kits F89

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Materials and Construction

Body: Cast from high pressure valve bronze for durability and corrosion resistance.

Stem: Machined from stainless steel* and hard chrome plated to resist abrasion (*1-1/2" basic stem is hard-anodized aluminum).

Spacers and End Bearings: Machined from quality brass bar stock (1-1/2" basic – aluminum).

Operators: Machined from quality iron castings; steel rod, bar and tube, and plated for corrosion resistance. Knobs and palm buttons are anodized aluminum.

Springs: Wound from high quality steel and plated for corrosion resistance.

O-rings: Specially compounded of Buna-N and impregnated with Molybdenum Disulfide to assure long life where no air line lubrication is desirable.

Lubrication

Air should be lubricated to assure maximum valve life and trouble-free operation. We recommend F442 oil for lubrication or a similar quality lubricant with a medium aniline point range between 180° and 220°F. Lubrication oil must not contain additives or contaminants, such as diesters, that will adversely affect Buna-N compounds. High aniline oil will shrink o-rings, while low aniline oils will swell o-rings, reducing operating life and efficiency.

Media

Standard valves are compatible with inert gases, medium aniline oils and partial vacuums.

⚠ ***CAUTION:***
Manual valves are not warranted for oxygen, natural gas, acetylene or other explosive media, or life-support systems. Use of these valves for applications not recommended by Parker is done solely at the purchaser's risk.

Engineering Data

Temperature Rating: -15°F to 200°F (-26° to 93°C)

Cv Flow Rating: See Cv Ratings Chart on Technical Data Page.

Lubrication: For best results and service life use clean, moisture-free lubricated air.

Warnings

⚠ Install guards on all hand operated valves if accidental operation can cause personal injury.

⚠ Foot operated valves must be protected against inadvertent operation that can cause serious bodily injury. Use of a guard is strongly recommended as it will reduce the likelihood of inadvertent operation.

Optional Functions

Section A – Knob Type Push to Operate
Section B – Knob Type Pull to Operate

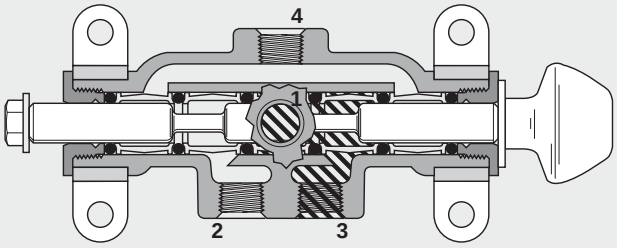
Valve Function			Pressure Service				Vacuum Service			
			Port 1	Port 2	Port 3	Port 4	Port 1	Port 2	Port 3	Port 4
A	2-Way	N.O.	Inlet	Outlet	Plugged	—	Pump	Device	Plugged	—
		N.C.	Plugged	Outlet	Inlet	—	Plugged	Device	Pump	—
	3-Way	N.O.	Inlet	Cylinder	Exhaust	—	Pump	Device	Open	—
		N.C.	Exhaust	Cylinder	Inlet	—	Open	Device	Pump	—
B	2-Way	N.O.	Plugged	Outlet	Inlet	—	Plugged	Device	Pump	—
		N.C.	Inlet	Outlet	Plugged	—	Pump	Device	Plugged	—
	3-Way	N.O.	Exhaust	Cylinder	Inlet	—	Open	Device	Pump	—
		N.C.	Inlet	Cylinder	Exhaust	—	Pump	Device	Open	—
C	4-Way		Inlet	Cylinder	Cylinder	Exhaust	Pump	Device	Device	Open

For Information on Options that are no longer available and the Suggested Cross Reference or Kit Info, refer to www.parker.com/pneumatic/classicvalves & Catalog VAL-M0-E/USA

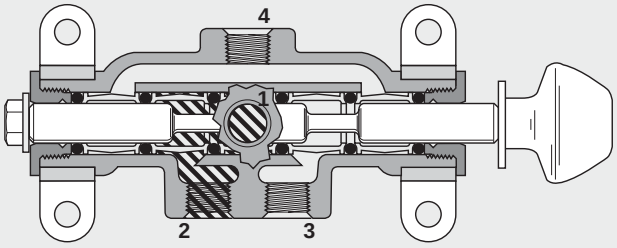
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Features

- 1/4" to 1" NPTF Ports
- Corrosion Resistant Bronze Body*
- High Flow Brass Spacers* Position O-ring, Permit Reverse Piping and Vacuum Service
- Specially Compounded O-rings Suitable for Non-lube Air Service and Low Pressure Oil Service
- Floating Stem of Hard Chrome Plated Stainless Steel; No Metal to Metal Contact
- Closed at Crossover Design for Air Savings
- Piped Exhaust Convenient for Muffling
- Interchangeable Operators
- Interchangeable End Sections
- Service without Disturbing Plumbing
- Dual Mounting Brackets on Most Models



Default Position



Actuated Position

Pressure **Exhaust**

* 1-1/2" lockout valves use cast aluminum bodies, aluminum spacers and hard anodized stems.

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BOLD OPTIONS ARE STANDARD

M0 48 3 18 85

Valve Series	
Basic Series	**M0**

Operating End Section	
Cam Follower	**03**
Clevis, Small Bracket	**05**
Double Acting Cylinder	**13**
Double Cylinder, Large Bracket	16**
Double Cylinder	**19**
Single Cylinder	**26**
Single Diaphragm, Std. Spring	**30***
Single Diaphragm, Heavy Spring	**31***
Single Diaphragm, Light Spring	**32***
Double Diaphragm	**33****
Diaphragm, Large Top, Std. Spring	35
Diaphragm, Large Top, Heavy Spring	36
Diaphragm, Large Top Light Spring	37
Double Diaphragm, Large Top	39
Pedal	**40****
Lever, Inverted Handle	42**
Lever, Mounting Feet	**43**
Lever, In-line Handle, Foot Bracket	45**
Lever, In-line Handle	46
Knob, Large Bracket	47**
Knob, Small Bracket	**48**
Knob Less Bracket	50
Knob, Panel Mounted	**51**
Palm Button, Panel Mounted	**59**
Treadle	**88****
Palm Button	**99**

* N/A with Port Sizes 6, Q, 8, S or End 84.
** N/A with Port Sizes 6, Q, 8, and S.

Pipe Size		
NPT	BSPP	**Port Size**
1/4	L	**2**
3/8	M	**3**
1/2	N	**4**
3/4	Q*	**6***
1	S*	**8***

* N/A with Ends 16, 30, 31, 32, 33, 40, 42, 45, 47, 84, 88.

End Section	
19	**Double Cylinder**
54	**Ball Detent 2 & 3-position, Small Bracket**
58	**Ball Detent, Panel Mounted**
62	**Direct Acting Spring Return, Less Bracket (Push Lever)**
63	**Reverse Acting Spring Return, Less Bracket (Pull Lever)**
64	**Light Spring Return Direct Acting, Less Bracket (Pull Knob)**
65	**Light Spring Return Reverse Acting, Less Bracket (Push Knob)**
66	**Stem Stop Small Bracket Electrical Enclosure Lock-out**
74	**Spring Centered 3-Position, Standard Spring**
76*	**Spring Centered 3-Position, Light Spring**
78	**Spring Centered 3-Position, Heavy Spring (Double Acting Cyl)**
84*	**Stem Stop, Large Bracket**
85	**Stem Stop, Small Bracket**
87	**Stem Stop, Less Bracket**
95	**Direct Acting Spring Return, Small Bracket (Push Lever)**
96	**Reverse Acting Spring Return, Small Bracket (Pull Lever)**
97	**Light Spring Return Direct Acting, Small Bracket (Pull Knob)**
98	**Light Spring Return Reverse Acting, Small Bracket (Push Knob)**

* N/A with Port Sizes 6, Q, 8, and S.

Body / Function	
01*	2-Way
03*†	2-Way, 2-Position Detent
14*†	**3-Way, Lockout Detent**
18	**3-Way**
24†	**3-Way, 2-Position Detent**
46	**4-Way**
49	**4-Way, Spring Centered, 3-Position, All Ports Blocked**
51†	**4-Way, 3-Position Detent, All Ports Blocked**
54†	**4-Way, 2-Position Detent**

* N/A with Port Sizes 6, Q, 8, and S.
† At least one end section must be coded either 54 or 58.

CAUTION:
Be sure to order end sections that are functionally effective with each other and with the body section selected. Model number combinations are possible which may not operate.

NOTE: Bold items are standard body and end sections.

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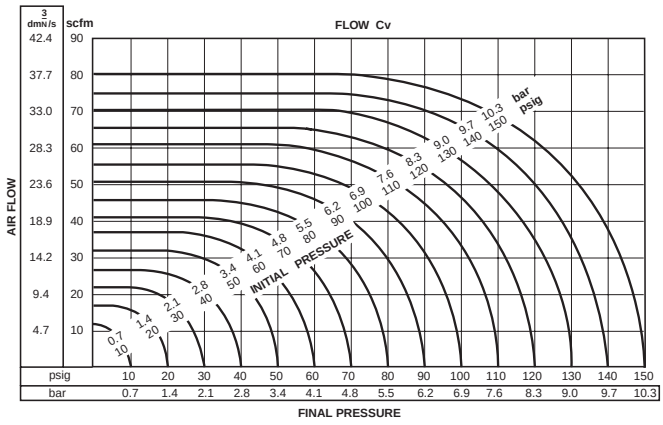
Flow Capacities

The capacity curves shown in the chart are for a theoretical valve having a Cv = 1.0 for air at standard conditions. Flow rating determined in accordance with NFPA recommended standard NFPA/T3.21.3 - 1974.

Flow Cv Ratings

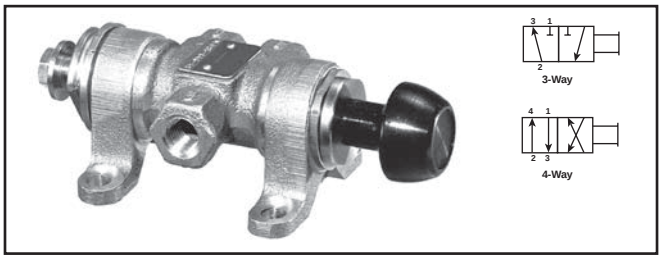
Valve Type	Port Size	Port 1 to 2	Port 1 to 3	Port 2 to 3	Port 2 to 4	Port 3 to 4
3-Way 2-Position	1/4	2.4	—	2.4	—	—
	3/8	3.2	—	3.4	—	—
	1/2	5.0	—	5.1	—	—
	3/4	9.5	—	9.8	—	—
	1	12.1	—	13.1	—	—
4-Way 2-Position	1/4	2.4	2.4	—	2.0	2.2
	3/8	3.4	3.2	—	3.0	3.1
	1/2	5.2	5.3	—	4.7	4.7
	3/4	8.7	9.2	—	7.9	8.0
	1	12.8	13.2	—	11.6	11.6
4-Way 3-Position	1/4	2.1	2.4	—	1.9	2.1
	3/8	3.5	3.1	—	2.9	3.2
	1/2	5.2	5.2	—	4.5	4.7
	3/4	8.7	8.4	—	7.8	7.5
	1	12.4	12.9	—	11.6	12.1

Flow Cv



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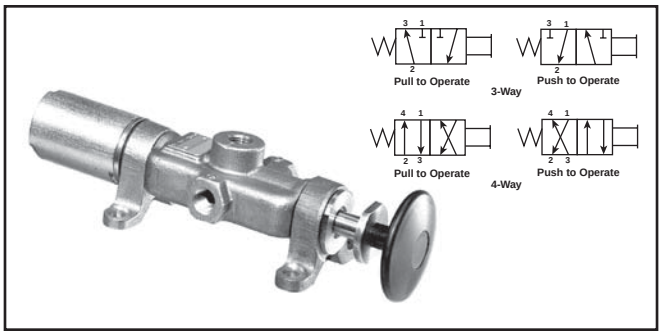
M085 Knob Operated, Manual Return



Features

Knob operated control valves, manually shifted and returned. 2-Way valves are used for on-off control; 3-Way and 4-Way valves are used for single-acting and double-acting cylinder control, respectively.

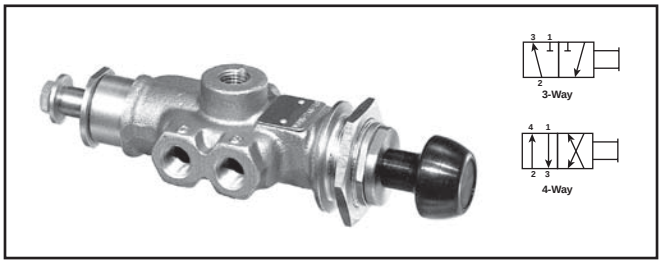
M097 & M098 Knob & Palm Button Operated, Spring Return



Features

Knob actuated valves are offered for Push or Pull to Operate. Palm button actuators are recommended for Push to Operate only. Enclosed spring end section is field convertible to opposite (Push or Pull) action.

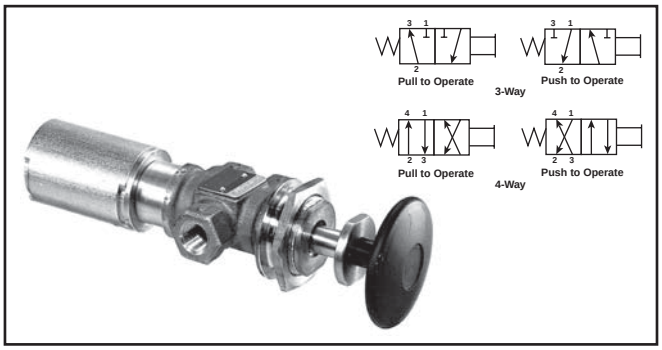
M087 Panel Mounted, Knob Operated



Features

Universal panel mounting adaptor adjusts to varying panel thickness to hold valve securely. Maximum panel thickness and appropriate Greenlee Punch Number are listed in table above right.

M064 & M065 Panel Mounted, Palm Button Operated, Spring Return



Features

Enclosed spring end section is field convertible to opposite (Push or Pull) action. Universal panel mounting adaptor adjusts to varying panel thickness to hold valve securely. Maximum panel thickness and appropriate Greenlee Punch Number are listed in table below.

Hole Size and Maximum Panel Thickness

Valve Size	Dia. Hole in Panel	Greenlee Chassis Punch Set No.		Max. Panel Thickness
		Control No.	Cat. No.	
1/4	1.50	500 2421.3	730	0.36
3/8	1.62	500 2422.1	730	0.48
1/2	1.88	500 2424.8	730	0.58
3/4	2.25	500 2427.2	730	0.76

NOTE: Punch set listed is recommended for up to 16 Ga. metal. Thicker panel should be bored or saw cut.

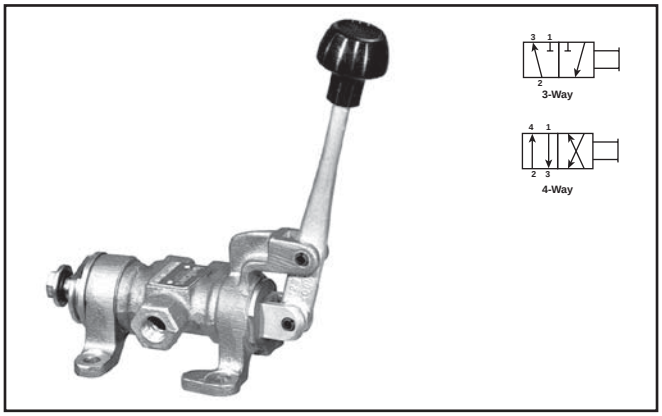
Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	200 (1380)	180 (1240)
	3/8	175 (1210)	170 (1170)
	1/2	160 (1100)	150 (1030)
	3/4	150 (1030)	150 (1030)
Vacuum	All	Within 1" Hg of perfect	
Other	Consult Factory		

‡ For compatible inert gas and hydraulic media, see Specifications.

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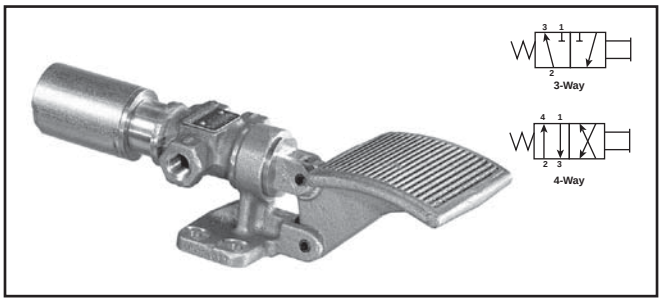
M085 Lever Operated, Manual Return



Features

Lever operated control valves, manually shifted. 2-Way valves are used for ON-OFF control; 3-Way and 4-Way valves are used for single-acting and double-acting cylinder control, respectively.

M062 Pedal Operated, Spring Return

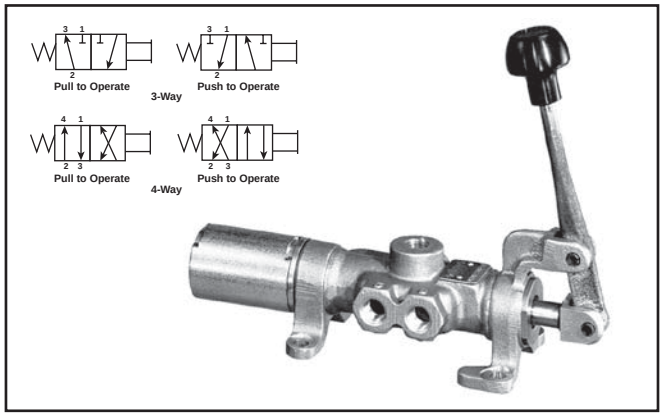


Features

Pedal operator is designed for minimum operating force. A pedal guard is available, with or without door, to prevent accidental operation of pedal valves. See Accessories.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

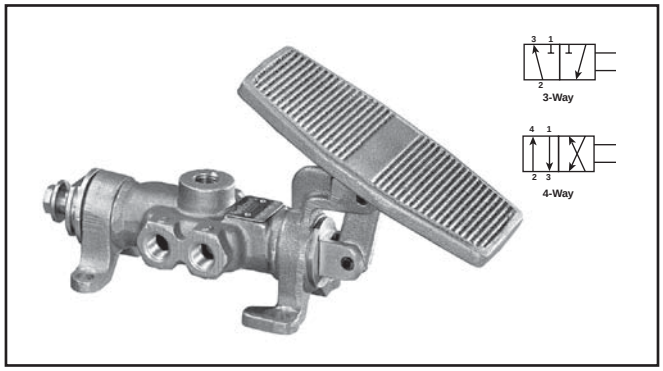
M095 & M096 Lever Operated, Spring Return



Features

Lever operated valves are offered for Push or Pull to Operate. Enclosed spring end section is field convertible to opposite (Push or Pull) action.

M085 Treadle Operated, Manual Return



Features

Treadle operator is designed for reduction in perceived operating force.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

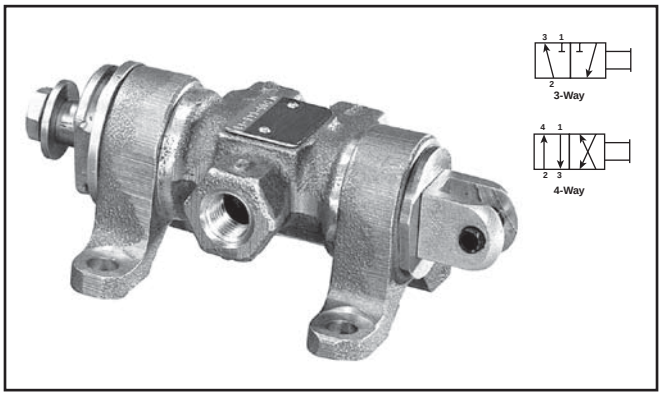
Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
	1	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other		Consult Factory	

‡ For compatible inert gas and hydraulic media, see Specifications.

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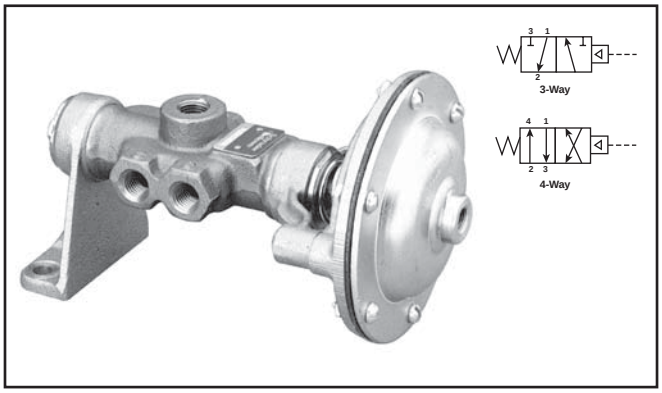
M085 Clevis Operated, Mechanical Return



Features

Clevis operator provides an easily adaptable means of attaching valve to a mechanical operating control source, thereby providing automatic valve action. The clevis valve is also suitable for remote operation by connection to a solid rod control linkage.

M084 Single Diaphragm Operated, Spring Return

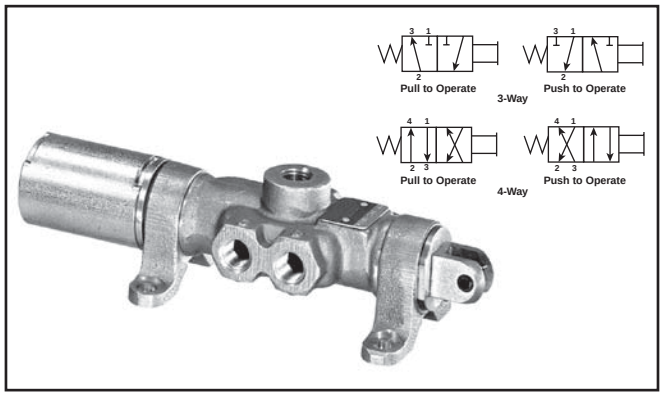


Features

Standard single diaphragm operator is used for maintained pilot signal pressures of 20 to 60 psi (140 to 410 kPa)†. Optional operators feature a light-load spring for 15 psi (100 kPa) minimum air signal pressure. Single diaphragm operated valves may be controlled by a 3-Way pilot valve from a remote location.

† For pilot signal pressure greater than 60 psi (410 kPa), use cylinder operated valves.

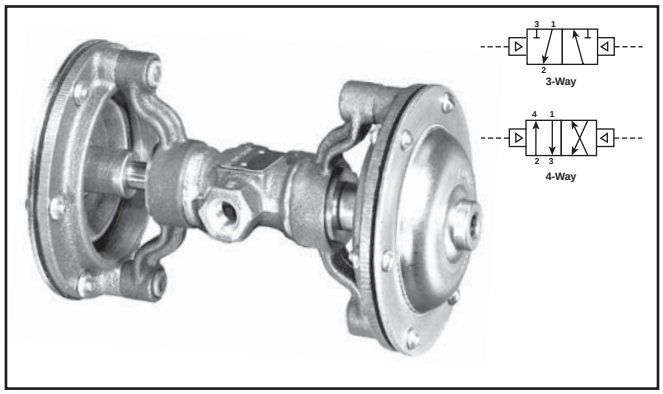
M095 & M096 Clevis Operated, Spring Return



Features

Clevis actuated valves are offered for Push or Pull to Operate. Enclosed spring end section is field convertible to opposite (Push or Pull) action.

M033 Double Diaphragm Operated



Features

Double diaphragm operators are suitable for use with standard or low pressure momentary or maintained air pilot signals from 5 to 60 psi (30 to 410 kPa)†. Double diaphragm valves may be controlled by a single 4-Way pilot valve, or two coordinated 3-Way pilots.

† For pilot signal pressure greater than 60 psi (410 kPa), use cylinder operated valves.

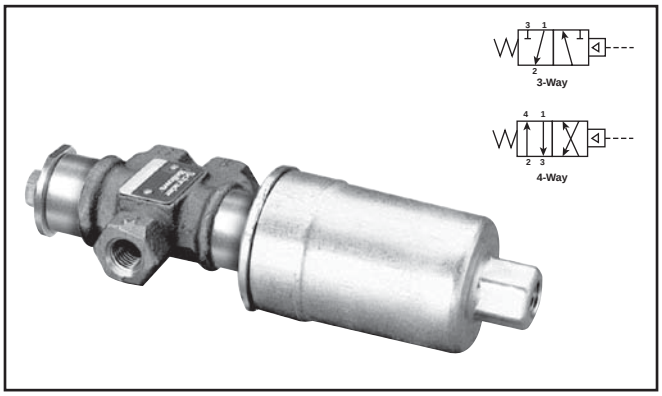
Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
	1	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other		Consult Factory	

‡ For compatible inert gas and hydraulic media, see Specifications.

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M085 Single Cylinder Operated, Spring Return

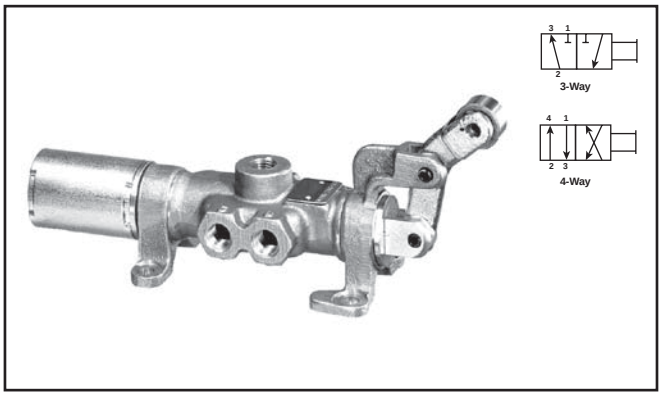


Features

Single cylinder operator is suitable for use with maintained pilot signal pressure of 45 to 250 psi (310 to 1720 kPa)† for exceptionally high cyclic rates and very rugged service. Single cylinder operated valves may be controlled by a 3-Way pilot valve from a remote location.

† For air pilot signal pressure less than 45 psi (310 kPa), use diaphragm operated valves.

M095 Cam Operated, Spring Return

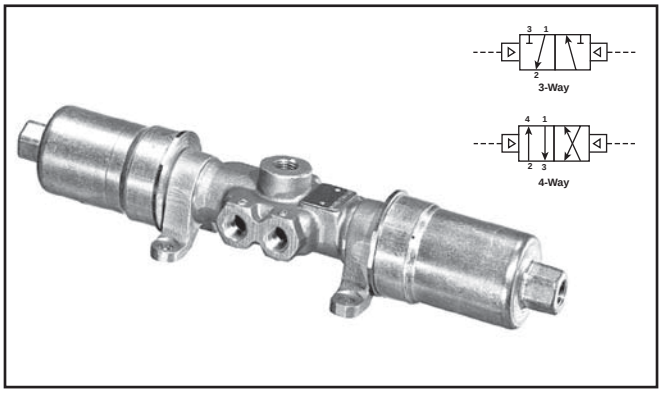


Features

Cam follower operating arm is a heat treated steel forging, and the wide-faced roller is of needle bearing type to guarantee long trouble-free operation in severe service.

Cam roller is 0.88" (22.4 mm) diameter x 0.50" (12.7 mm) wide for 1/4" and 3/8" valves and 1.00" (25.4 mm) diameter x 0.62" (15.7 mm) wide for 1/2", 3/4" and 1" valves.

M019 Double Cylinder Operated



Features

Double cylinder operators are suitable for use with momentary or maintained pilot signal pressure of 20 to 250 psi (140 to 1720 kPa)† for exceptionally high cyclic rates and very rugged service. Double cylinder operated valves may be controlled by a single 4-Way pilot valve or two coordinated 3-Way pilots.

† For air pilot signal pressure less than 20 psi (140 kPa), use diaphragm operated valves.

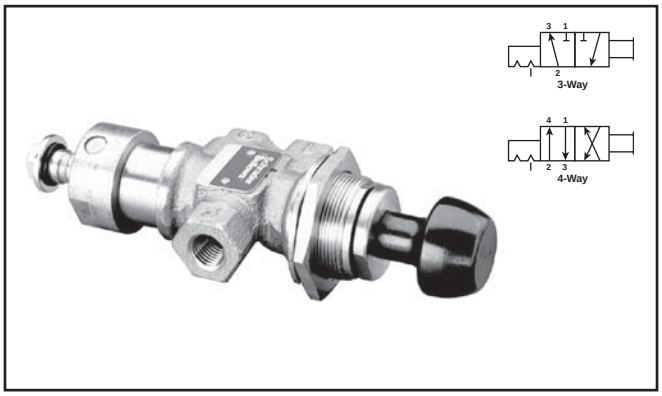
Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
	1	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other		Consult Factory	

‡ For compatible inert gas and hydraulic media, see Specifications.

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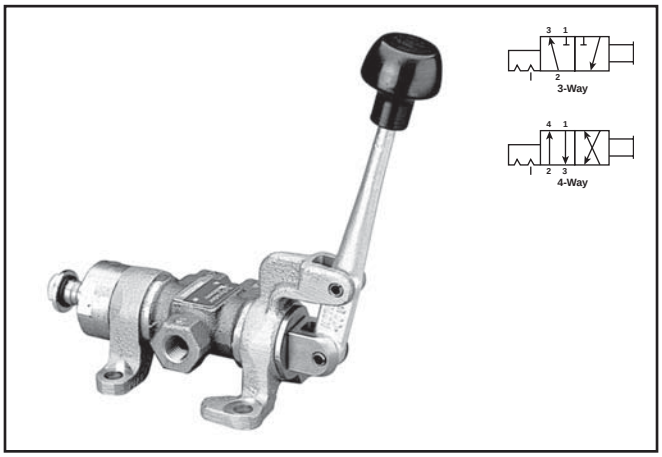
M054 & M058 Knob Operated, 2-Position Detent



Features

Ball detent positions and locates the valve spool in either operating position.

M054 Lever & Treadle Operated, 2-Position Detent



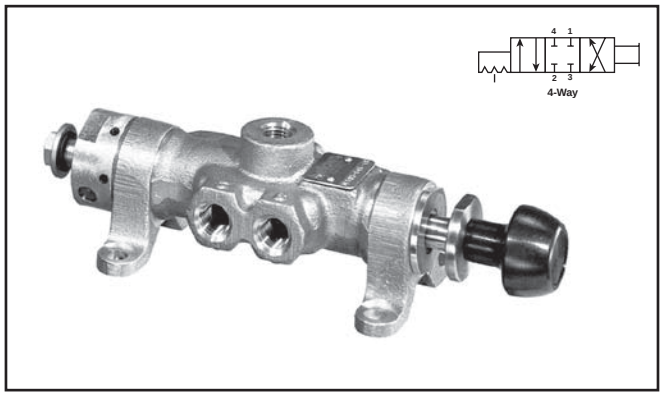
Features

Ball detent positions and locates the valve spool in either operating position.

⚠ ***CAUTION:***
Foot operated valves must be protected against inadvertent operation that can cause serious bodily injury. Use of a guard or equivalent protection is strongly recommended as it will reduce the likelihood of inadvertent operation.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

M054 Knob, Lever & Clevis Operated, 3-Position Detent



Features

All ports blocked center position provides a means to stop or momentarily delay the movement of an air device. Ball detent accurately positions and retains the valve spool preventing drift for valves subjected to severe vibration.

NOTE: Three position valves are available on special order with the following optional flow conditions in the center position:

- Inlet port (#1) blocked and both outlet ports (#2 & #3) open to exhaust port (#4)
- Inlet open to both outlet ports and exhaust blocked.

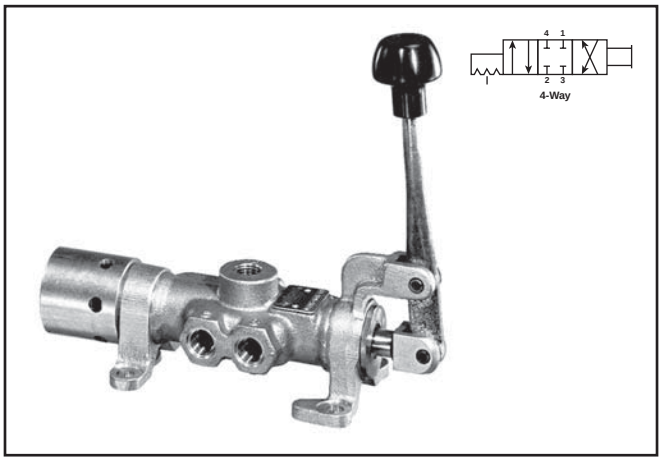
Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
	1	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other	Consult Factory		

‡ For compatible inert gas and hydraulic media, see Specifications.

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M054 Knob, Lever & Clevis Operated, 3-Position Detent



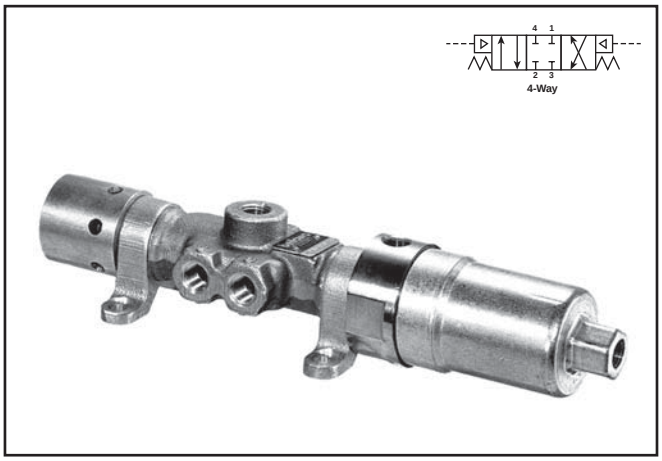
Features

All ports blocked center position provides a means to stop or momentarily delay the movement of an air device.

NOTE: Three position valves are available on special order with the following optional flow conditions in the center position:

- Inlet port (#1) blocked and both outlet ports (#2 & #3) open to exhaust port (#4)
- Inlet open to both outlet ports and exhaust blocked.

M074 & M078 Treadle & Double Acting Cylinder, 3-Position



Features

All ports blocked center position provides a means to stop or momentarily delay the movement of an air device. Double-acting cylinder operators are suitable for use with a remote maintained pilot signal pressure of 40 to 250 psi (2.8 to 17.2 bar) from a single 4-Way pilot valve or two coordinated 3-Way pilots.

NOTE: Three position valves are available on special order with the following optional flow conditions in the center position:

- Inlet port (#1) blocked and both outlet ports (#2 & #3) open to exhaust port (#4)
- Inlet open to both outlet ports and exhaust blocked.

⚠ ***CAUTION:***
Foot operated valves must be protected against inadvertent operation that can cause serious bodily injury. Use of a guard or equivalent protection is strongly recommended as it will reduce the likelihood of inadvertent operation.

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

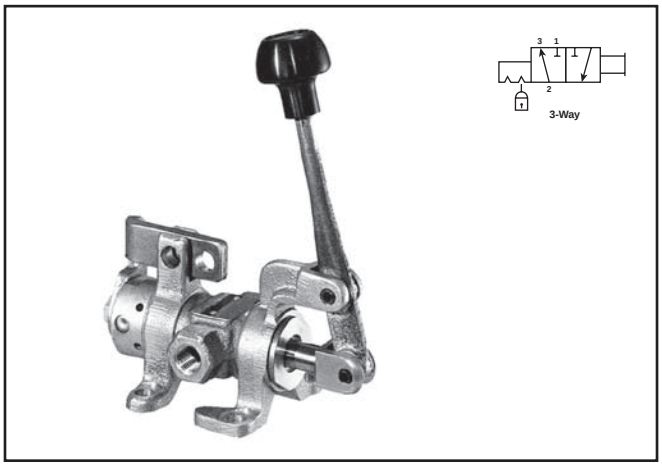
Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
	1	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other	Consult Factory		

‡ For compatible inert gas and hydraulic media, see Specifications.

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M054 & M058 Knob Operated, 2-Position Detent



Features

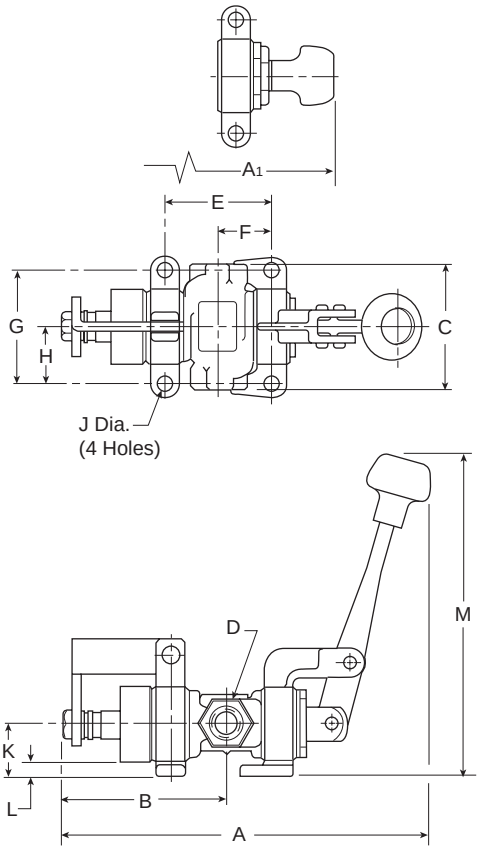
Valve may be padlocked "Off" for safety to avoid accidental equipment operation during maintenance, or for air savings to avoid air loss from leaky piping connections when machinery is not in use. Lock-out valves have inlet and outlet ports "in-line" for ease of piping, and an open exhaust with diffuser for venting downstream air.

Pressure Limitations

Media	Port Size	PSI (kPa)	
		3-Way	4-Way
Air and Hydraulic ‡	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
	1	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other	Consult Factory		

‡ For compatible inert gas and hydraulic media, see Specifications.

Dimensions

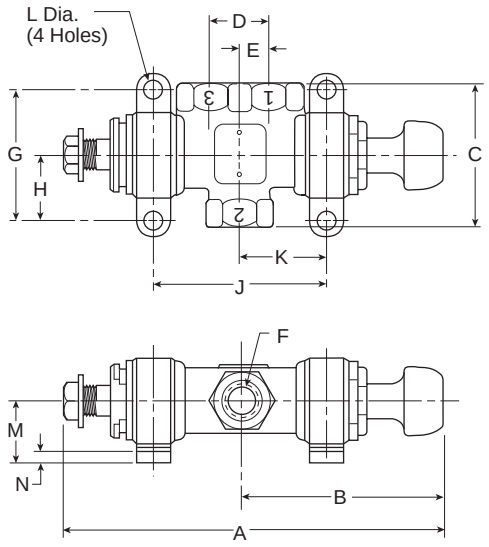


	1/4	3/8	1/2	3/4	1
A	6.74 (171.2)	7.59 (192.8)	8.66 (220.0)	10.99 (279.2)	11.64 (295.7)
A1	5.97 (151.6)	6.53 (165.9)	7.60 (193.0)	9.13 (231.9)	— —
B	3.02 (76.7)	3.35 (85.1)	3.96 (100.7)	4.84 (123.0)	5.23 (132.9)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
E	1.88 (47.8)	2.21 (56.2)	2.67 (67.7)	3.30 (83.8)	3.82 (97.0)
F	0.94 (23.9)	1.10 (27.9)	1.33 (33.8)	1.64 (41.7)	1.91 (48.5)
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
K	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
L	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
M	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)

Inches (mm)

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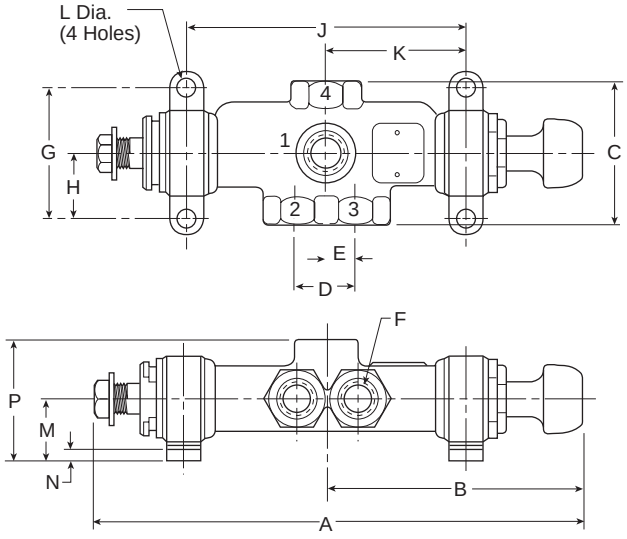
M085
3-Way



	1/4	3/8	1/2	3/4
A	5.99 (152.2)	6.69 (169.9)	7.90 (200.7)	9.60 (243.8)
B	3.32 (84.3)	3.64 (92.5)	4.17 (105.9)	4.99 (126.8)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)
J	2.64 (67.1)	3.14 (79.8)	3.73 (94.7)	4.67 (118.6)
K	1.32 (33.5)	1.57 (39.9)	1.87 (47.5)	2.33 (59.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

M085
4-Way

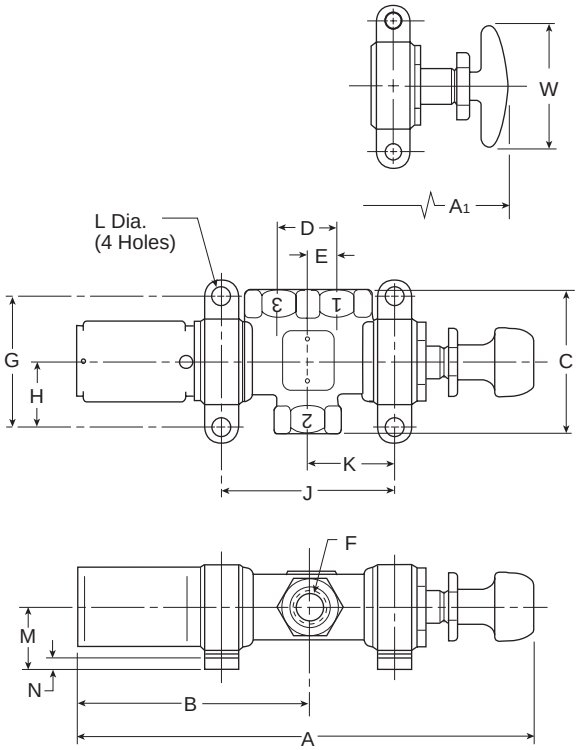


	1/4	3/8	1/2	3/4
A	7.49 (190.2)	8.53 (216.7)	10.01 (254.2)	12.31 (312.7)
B	4.02 (102.1)	4.56 (115.8)	5.73 (145.5)	6.34 (161.0)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)
K	2.07 (52.6)	2.49 (63.2)	2.93 (74.4)	3.69 (93.7)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

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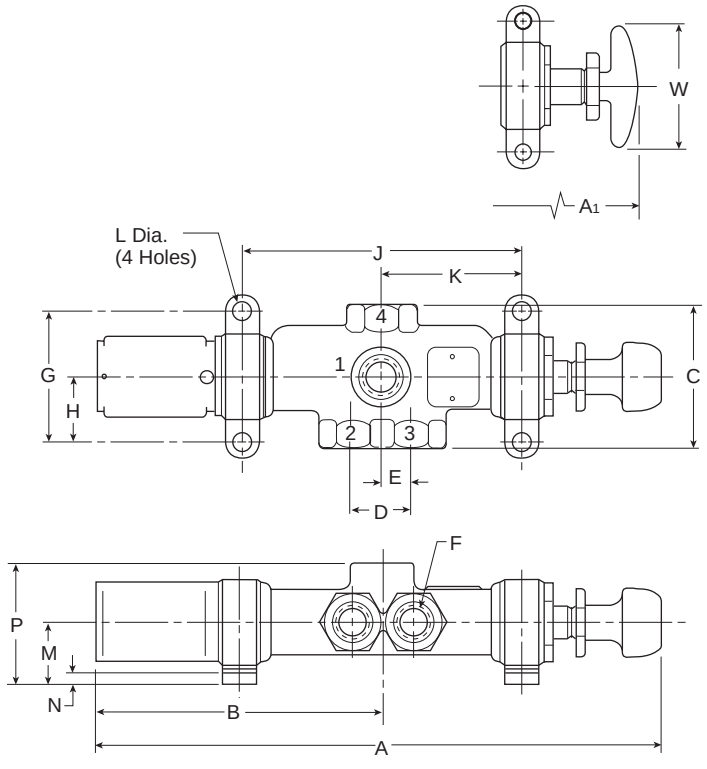
M097 & M098
3-Way



	1/4	3/8	1/2	3/4
A	7.86 (199.8)	8.55 (217.2)	10.36 (263.1)	13.01 (330.4)
A1	7.55 (191.8)	8.24 (209.3)	10.05 (255.3)	12.70 (322.6)
B	3.92 (99.6)	4.24 (107.7)	5.32 (135.2)	6.92 (175.8)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)
J	2.64 (67.1)	3.14 (79.8)	3.73 (94.7)	4.67 (118.6)
K	1.32 (33.5)	1.57 (39.9)	1.87 (47.5)	2.33 (59.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)
W	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

M097 & M098
4-Way

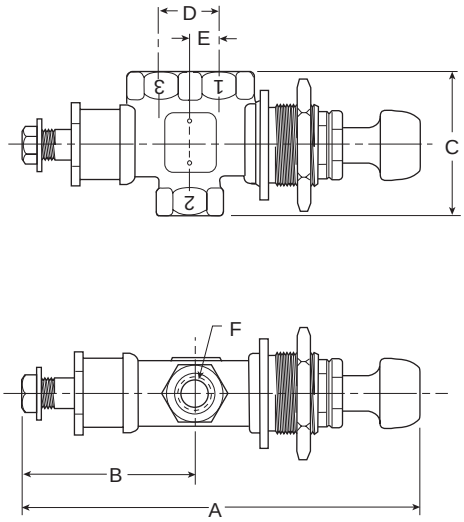


	1/4	3/8	1/2	3/4
A	9.36 (237.9)	10.39 (263.9)	12.48 (317.0)	15.73 (399.5)
A1	9.05 (229.9)	10.08 (256.0)	12.17 (309.1)	15.42 (391.7)
B	4.67 (118.5)	5.15 (130.8)	6.37 (161.8)	8.27 (210.1)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)
K	2.07 (52.6)	2.49 (63.2)	2.93 (74.4)	3.69 (93.7)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)
W	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

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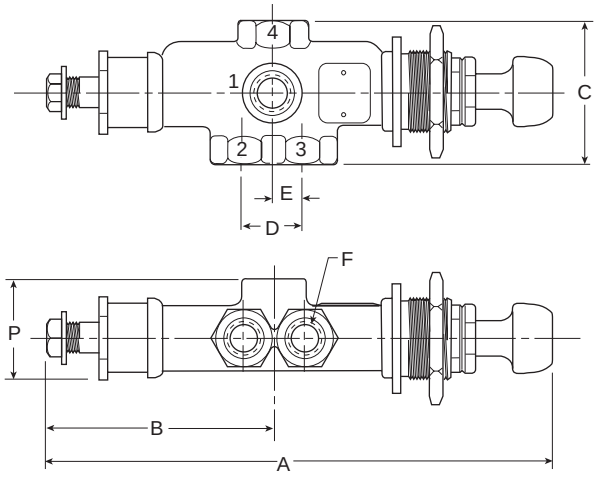
M087
3-Way



	1/4	3/8	1/2	3/4
A	6.00 (152.4)	6.68 (169.6)	8.91 (226.2)	9.24 (234.6)
B	2.68 (68.1)	3.06 (77.7)	4.85 (123.2)	4.62 (117.3)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

M087
4-Way

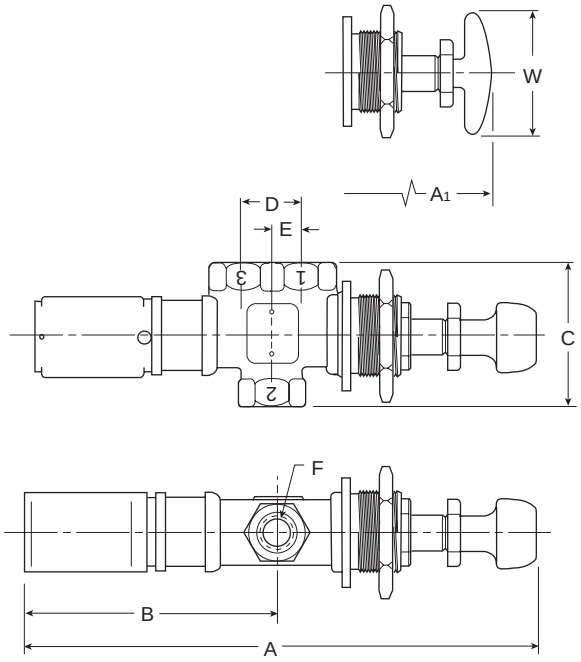


	1/4	3/8	1/2	3/4
A	7.49 (190.2)	8.52 (216.4)	11.03 (280.2)	11.95 (303.6)
B	3.42 (86.9)	3.97 (100.8)	5.91 (150.1)	5.97 (151.6)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

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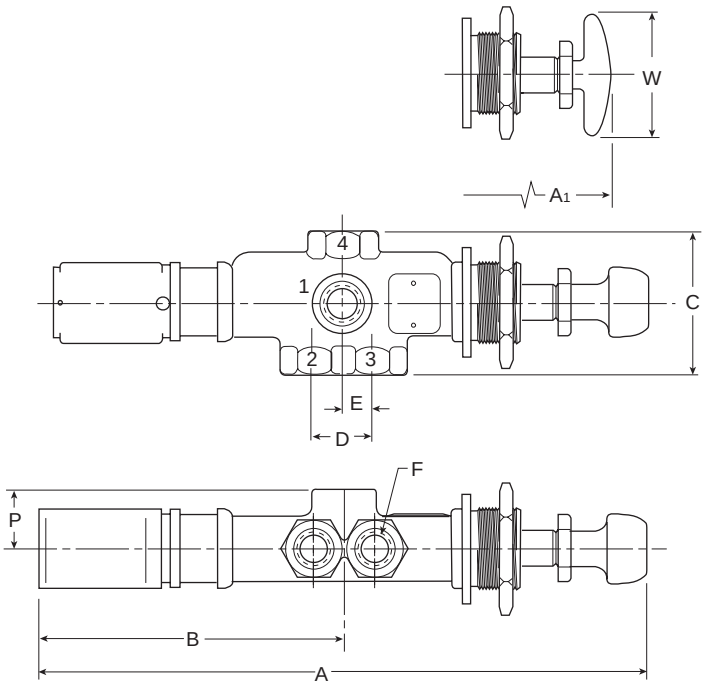
M064 & M065
3-Way



	1/4	3/8	1/2	3/4
A	7.86 (199.6)	8.55 (217.1)	10.36 (263.1)	13.01 (330.4)
A1	7.55 (191.8)	8.24 (209.3)	10.05 (255.3)	12.70 (322.6)
B	3.96 (99.5)	4.23 (107.4)	5.31 (134.9)	6.91 (175.5)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
W	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

M064 & M065
4-Way

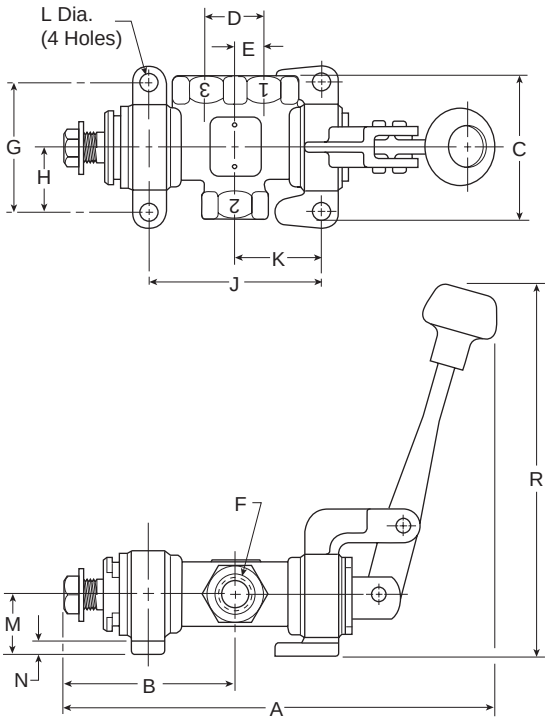


	1/4	3/8	1/2	3/4
A	9.36 (237.7)	10.39 (263.9)	12.48 (317.0)	15.73 (399.5)
A1	9.05 (229.9)	10.08 (256.0)	12.17 (309.1)	15.42 (391.7)
B	4.67 (118.5)	5.15 (130.8)	6.37 (161.8)	8.27 (210.1)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)
W	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)

Inches (mm)

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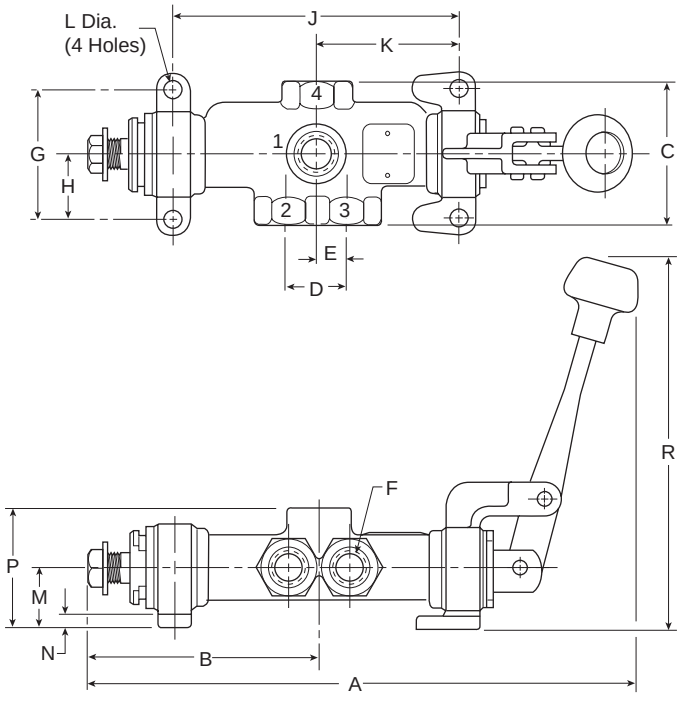
M085
3-Way



	1/4	3/8	1/2	3/4	1
A	6.77 (172.0)	7.76 (197.1)	9.29 (236.0)	11.46 (291.1)	12.34 (313.4)
B	2.67 (67.8)	3.05 (77.5)	3.72 (94.5)	4.61 (117.1)	5.13 (130.3)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)	5.41 (137.4)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)	2.70 (68.6)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
R	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M085
4-Way

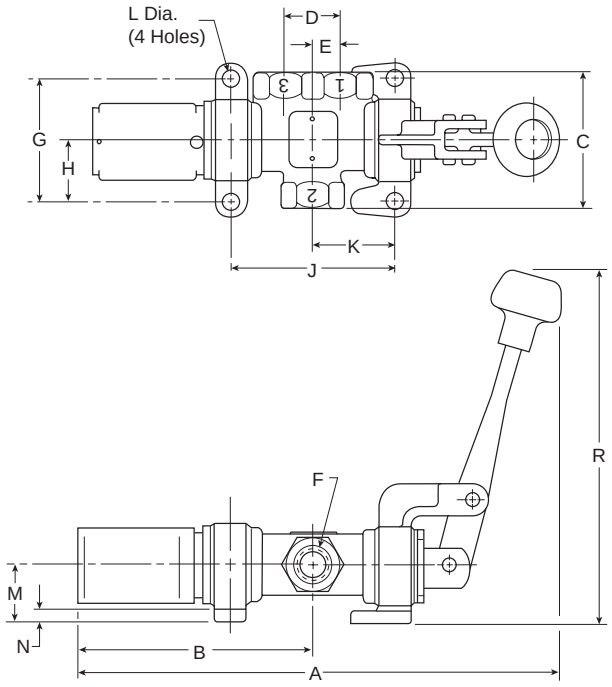


	1/4	3/8	1/2	3/4	1
A	8.28 (210.3)	9.60 (243.8)	11.08 (281.4)	14.17 (359.9)	15.52 (394.2)
B	3.42 (86.9)	3.97 (100.8)	4.78 (121.4)	5.97 (151.6)	6.71 (170.4)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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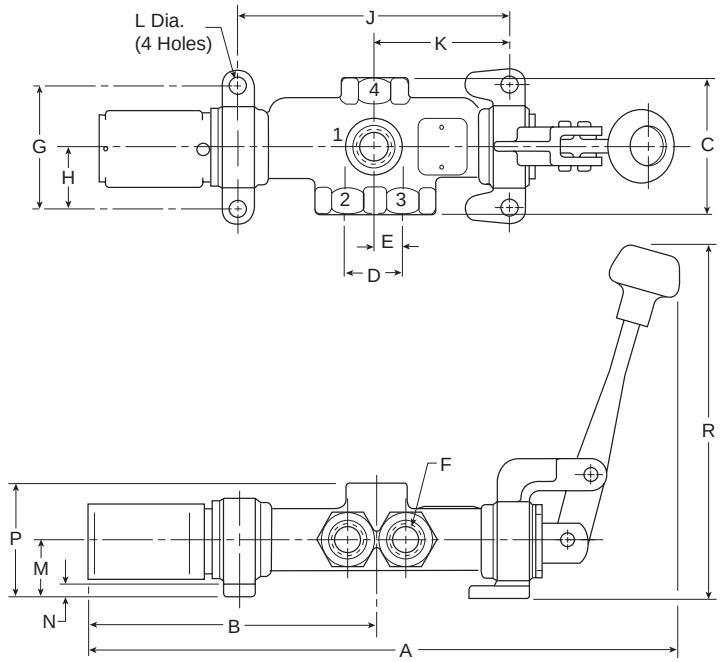
M095 & M096
3-Way



	1/4	3/8	1/2	3/4	1
A	7.99 (202.8)	8.94 (227.0)	10.88 (276.4)	13.76 (349.5)	14.56 (369.8)
B	3.92 (99.5)	4.24 (107.6)	5.31 (134.9)	6.92 (175.8)	7.35 (186.7)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)	5.41 (137.4)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)	2.70 (68.6)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
R	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M095 & M096
4-Way

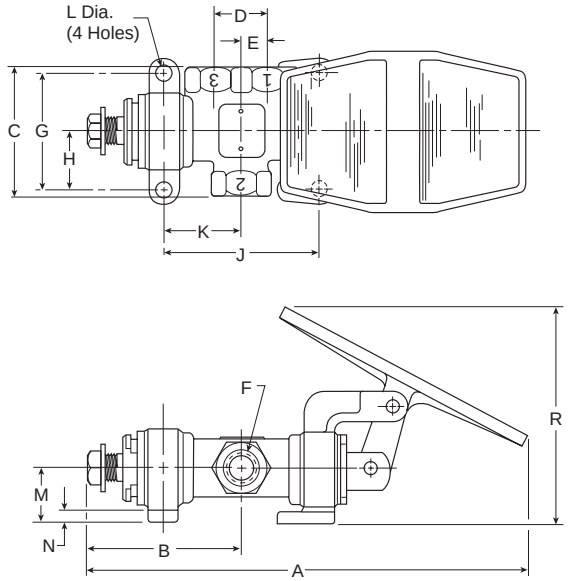


	1/4	3/8	1/2	3/4	1
A	9.53 (242.1)	10.78 (273.8)	12.67 (321.8)	16.47 (418.3)	17.74 (450.6)
B	4.67 (118.6)	5.15 (130.8)	5.68 (144.3)	8.27 (210.1)	8.93 (226.8)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" PIpe	3/8" PIpe	1/2" PIpe	3/4" PIpe	1" PIpe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)
Travel	0.62 (15.7)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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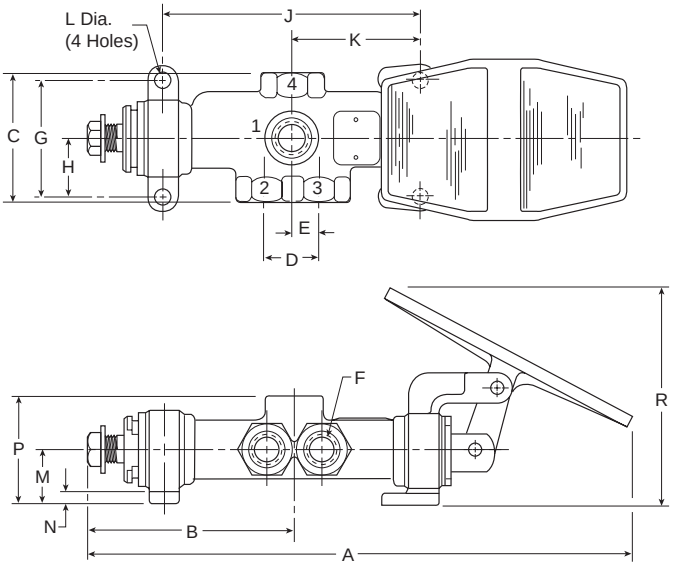
M085
3-Way



	1/4	3/8	1/2	3/4	1
A	8.01 (203.4)	8.73 (221.7)	10.32 (262.1)	12.12 (307.8)	13.00 (330.2)
B	2.67 (68.8)	3.06 (77.7)	4.06 (103.1)	4.63 (117.6)	5.13 (130.3)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)	5.41 (137.4)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)	2.70 (68.6)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
R	4.51 (114.6)	4.65 (118.1)	4.85 (123.2)	6.03 (153.2)	6.03 (153.2)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M085
4-Way

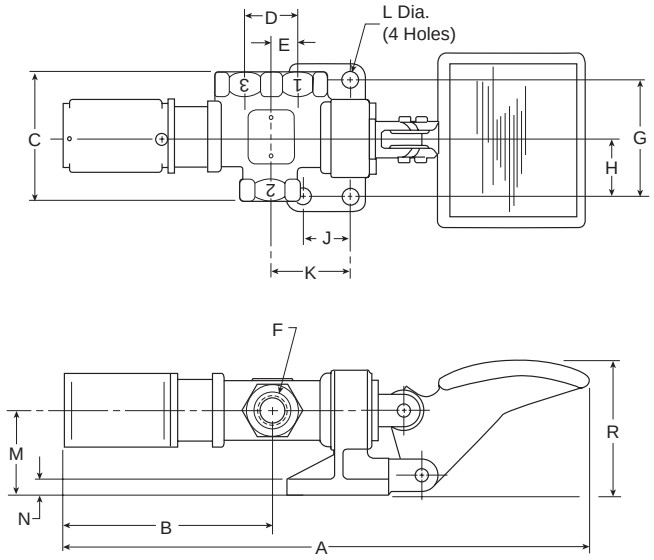


	1/4	3/8	1/2	3/4	1
A	9.52 (241.8)	10.57 (268.5)	12.11 (307.6)	14.83 (376.7)	16.18 (411.0)
B	3.42 (86.9)	3.97 (100.8)	4.78 (121.4)	5.97 (151.6)	6.71 (170.4)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	4.51 (114.6)	4.65 (118.1)	4.85 (123.2)	6.03 (153.2)	6.03 (153.2)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (1.8)

Inches (mm)

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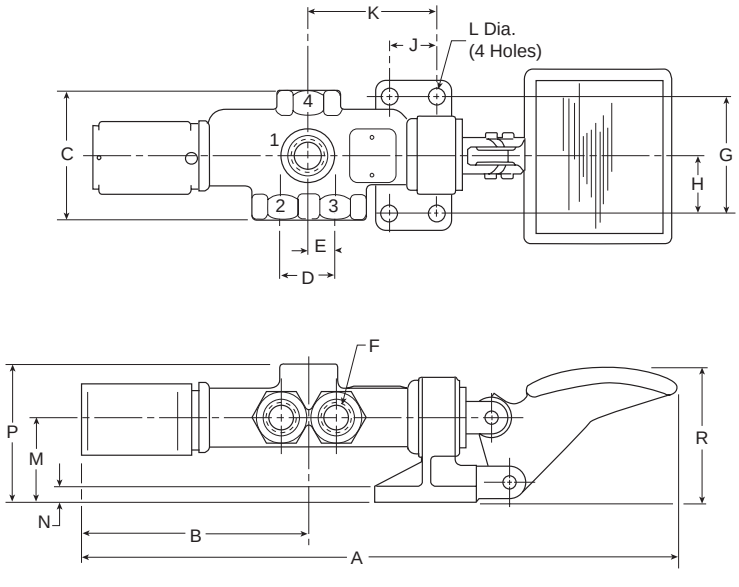
M062
3-Way



	1/4	3/8	1/2	3/4	1
A	9.99 (253.8)	10.50 (269.2)	12.66 (321.6)	14.97 (380.2)	15.77 (400.6)
B	3.92 (99.5)	4.23 (107.4)	5.31 (134.9)	6.91 (175.5)	7.35 (186.7)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	0.97 (24.6)	0.97 (24.6)	1.12 (28.4)	1.38 (35.0)	1.38 (35.0)
K	1.44 (36.6)	1.56 (39.6)	1.83 (46.5)	3.23 (82.0)	3.45 (87.6)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.72 (43.7)	1.72 (43.7)	2.00 (50.8)	2.38 (60.4)	2.50 (63.5)
N	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)	0.38 (9.6)	0.38 (9.6)
R	2.66 (67.6)	2.71 (68.8)	2.74 (69.6)	3.42 (86.9)	3.42 (86.9)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28)	1.25 (31.8)

Inches (mm)

M062
4-Way

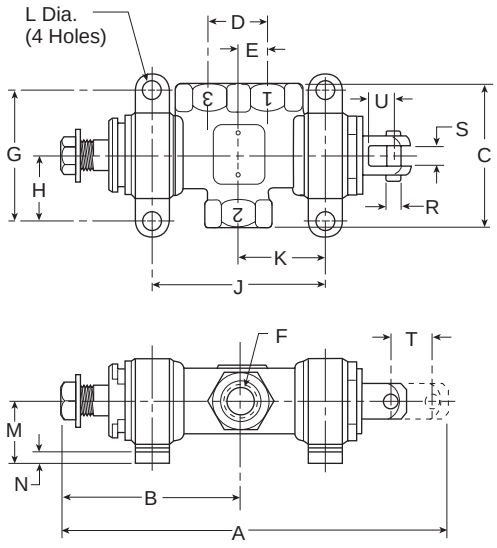


	1/4	3/8	1/2	3/4	1
A	11.50 (292.1)	12.44 (315.9)	14.45 (367.0)	17.68 (449.1)	18.95 (481.3)
B	4.67 (118.5)	5.15 (130.8)	5.68 (144.3)	8.27 (210.1)	8.93 (226.8)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	0 .97 (24.6)	0.97 (24.6)	1.12 (28.4)	1.38 (35.0)	1.38 (35.0)
K	2.19 (55.6)	2.48 (63.0)	2.89 (73.4)	4.59 (116.6)	5.20 (132.1)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.72 (43.7)	1.72 (43.7)	2.00 (50.8)	2.38 (60.4)	2.50 (63.5)
N	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)	0.38 (9.6)	0.38 (9.6)
P	2.72 (69.1)	2.78 (70.6)	3.38 (85.8)	3.88 (98.6)	4.25 (108.0)
R	2.66 (67.6)	2.71 (68.8)	2.74 (69.6)	3.42 (86.9)	3.42 (86.9)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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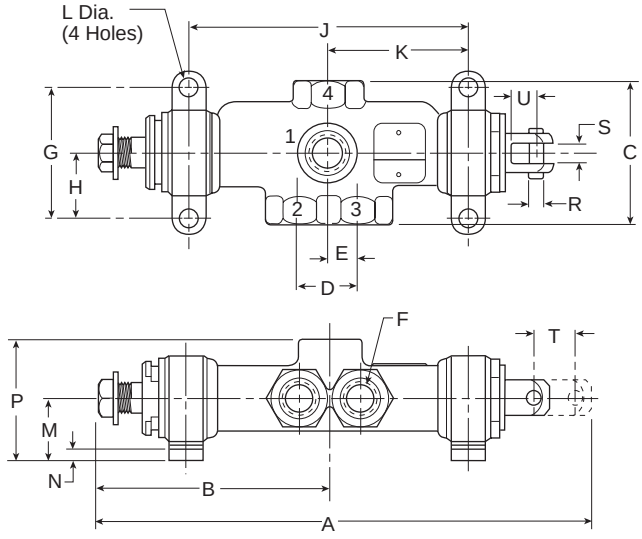
M085
3-Way



	1/4	3/8	1/2	3/4	1
A	5.31 (134.9)	6.01 (152.6)	7.36 (186.9)	8.92 (226.6)	9.80 (248.9)
B	2.68 (68.1)	3.06 (77.7)	4.85 (123.2)	4.62 (117.3)	4.61 (117.1)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.64 (67.1)	3.14 (79.8)	3.73 (94.7)	4.67 (118.6)	5.42 (137.7)
K	1.32 (33.5)	1.57 (39.9)	1.87 (47.5)	2.33 (59.2)	2.71 (68.8)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
R	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.31 (7.9)
S	0.38 (9.6)	0.38 (9.6)	0.44 (11.2)	0.44 (11.2)	0.44 (11.2)
U	0.47 (11.9)	0.47 (11.9)	0.56 (14.2)	0.62 (15.8)	0.62 (15.8)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M085
4-Way

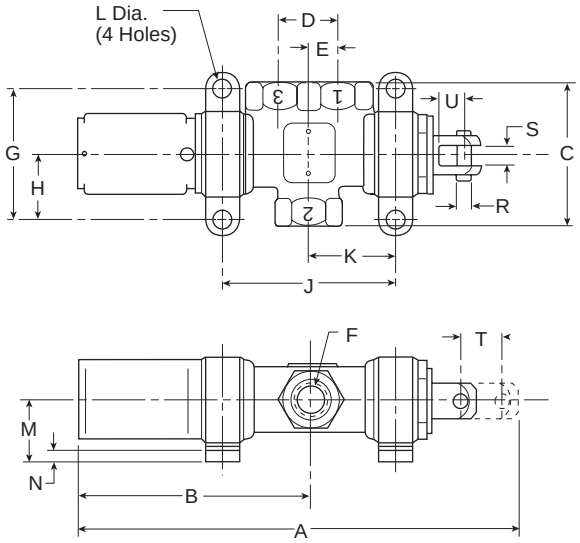


	1/4	3/8	1/2	3/4	1
A	6.81 (173.0)	7.85 (199.4)	9.48 (240.8)	11.64 (295.7)	12.99 (330.0)
B	3.42 (86.9)	3.97 (100.8)	5.91 (150.1)	5.97 (151.6)	5.96 (151.4)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.31 (7.9)
S	0.38 (9.6)	0.38 (9.6)	0.44 (11.2)	0.44 (11.2)	0.44 (11.2)
U	0.47 (11.9)	0.47 (11.9)	0.56 (14.2)	0.62 (15.8)	0.62 (15.8)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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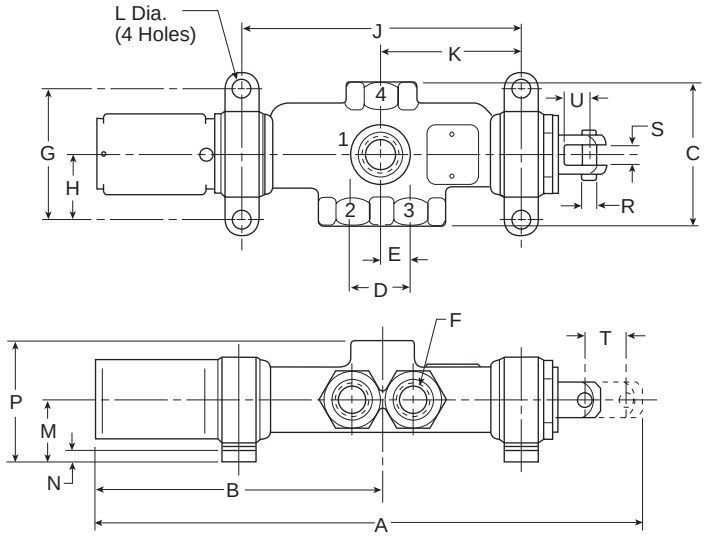
M095 & M096
3-Way



	1/4	3/8	1/2	3/4	1
A	6.56 (166.5)	7.19 (182.6)	8.95 (227.3)	11.22 (285.0)	12.02 (305.3)
B	3.92 (99.5)	4.24 (107.6)	5.31 (134.9)	6.92 (175.8)	7.35 (186.7)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)	5.41 (137.4)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)	2.70 (68.6)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
R	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.31 (7.9)
S	0.38 (9.6)	0.38 (9.6)	0.44 (11.2)	0.44 (11.2)	0.44 (11.2)
U	0.47 (11.9)	0.47 (11.9)	0.56 (14.2)	0.62 (15.8)	0.62 (15.8)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M095 & M096
4-Way

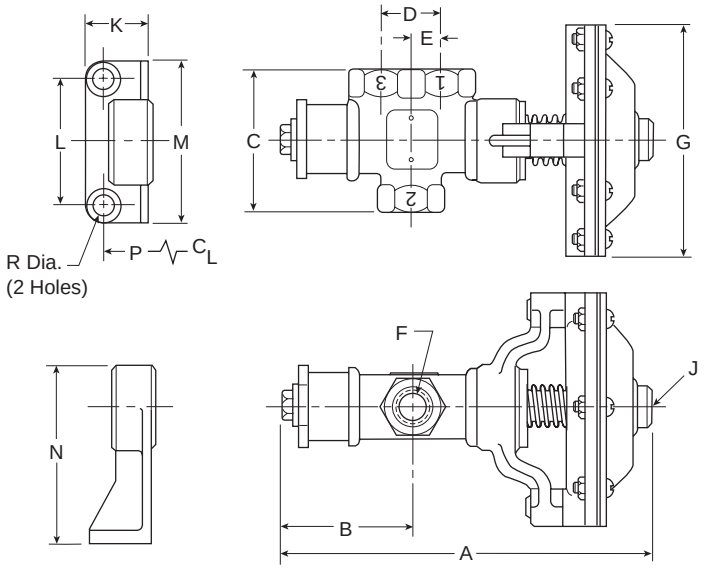


	1/4	3/8	1/2	3/4	1
A	8.06 (204.6)	9.03 (229.3)	11.07 (281.2)	13.94 (354.1)	15.30 (388.6)
B	4.67 (118.6)	5.15 (130.8)	5.68 (144.3)	8.27 (210.1)	8.93 (226.8)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.9 (74.2)	3.69 (93.7)	4.30 (109.2)
L	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	0.25 (6.4)	0.25 (6.4)	0.31 (7.9)	0.31 (7.9)	0.31 (7.9)
S	0.38 (9.6)	0.38 (9.6)	0.44 (11.2)	0.44 (11.2)	0.44 (11.2)
U	0.47 (11.9)	0.47 (11.9)	0.56 (14.2)	0.62 (15.8)	0.62 (15.8)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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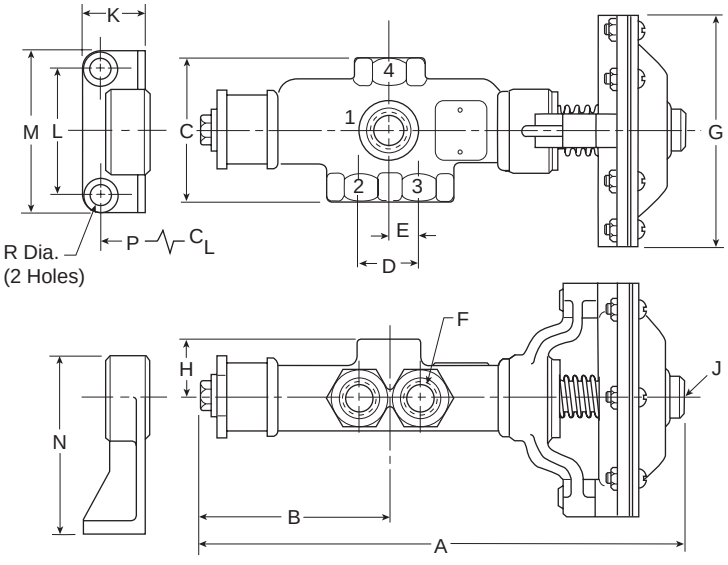
M084
3-Way



	1/4	3/8	1/2	3/4	1
A	6.14 (156.0)	6.85 (174.0)	8.03 (204.0)	9.89 (251.2)	10.77 (273.6)
B	2.03 (51.6)	2.36 (59.9)	2.83 (71.9)	3.48 (88.4)	3.86 (98.0)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	4.34 (110.2)	4.34 (110.2)	4.34 (110.2)	5.27 (133.9)	5.27 (133.9)
J	1/8" Pipe	1/8" Pipe	1/8" Pipe	1/8" Pipe	1/8" Pipe
K	1.12 (28.4)	1.12 (28.4)	1.75 (44.4)	2.00 (50.8)	2.00 (50.8)
L	2.00 (50.8)	2.38 (60.4)	2.00 (50.8)	3.25 (82.6)	3.62 (92.0)
M	2.75 (69.8)	3.00 (76.2)	3.00 (76.2)	4.19 (106.4)	4.56 (115.8)
N	3.22 (81.8)	3.28 (83.3)	3.40 (86.4)	4.00 (101.6)	4.22 (107.2)
P	1.81 (46.0)	2.03 (51.6)	2.74 (69.6)	3.18 (80.8)	3.55 (90.2)
R	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M084
4-Way

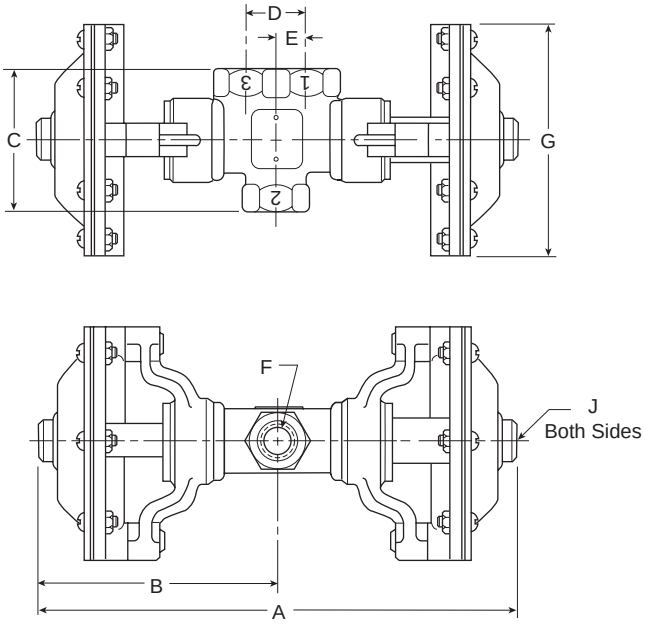


	1/4	3/8	1/2	3/4	1
A	7.65 (194.3)	8.69 (220.7)	9.82 (249.4)	12.60 (320.0)	13.95 (354.3)
B	2.79 (70.9)	3.28 (83.3)	3.89 (98.8)	4.84 (122.9)	5.45 (138.4)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	0.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	0.47 (11.9)	0.53 (13.5)	0.62 (15.8)	0.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	4.34 (110.2)	4.34 (110.2)	4.34 (110.2)	5.27 (133.9)	5.27 (133.9)
H	1.00 (25.4)	1.06 (26.9)	1.38 (30.0)	1.50 (38.1)	1.75 (44.4)
J	1/8 Pipe	1/8 Pipe	1/8 Pipe	1/8 Pipe	1/8 Pipe
K	1.12 (28.4)	1.12 (28.4)	1.75 (44.4)	2.00 (50.8)	2.00 (50.8)
L	2.00 (50.8)	2.38 (60.4)	2.00 (50.8)	3.25 (82.6)	3.62 (92.0)
M	2.75 (69.8)	3.00 (76.2)	3.00 (76.2)	4.19 (106.4)	4.56 (115.8)
N	3.22 (81.8)	3.28 (83.3)	3.40 (86.4)	4.00 (101.6)	4.22 (107.2)
P	2.57 (65.3)	2.95 (74.9)	3.80 (96.5)	4.54 (115.3)	5.15 (130.8)
R	0.34 (8.6)	0.34 (8.6)	0.41 (10.4)	0.41 (10.4)	0.41 (10.4)
Travel	0.62 (15.8)	0.69 (17.5)	0.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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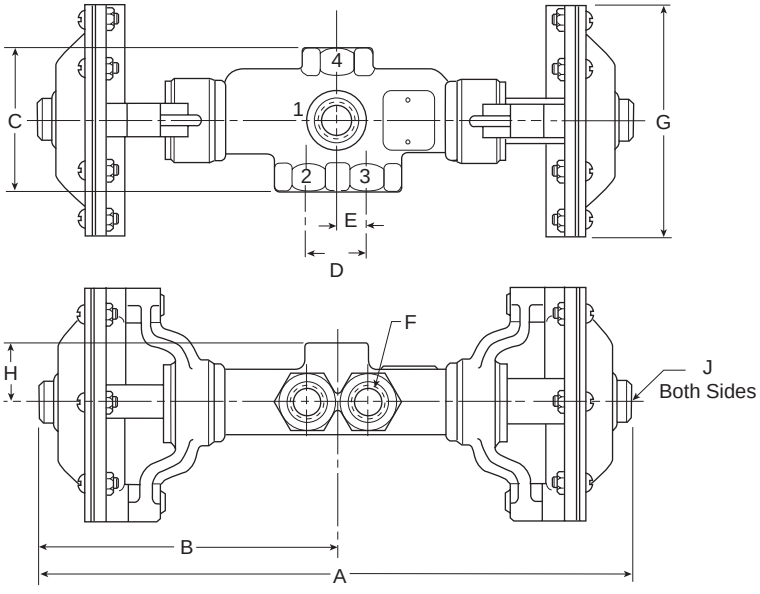
M033
3-Way



	1/4	3/8	1/2	3/4	1
A	8.22 (208.8)	8.98 (228.1)	10.40 (264.2)	12.82 (325.6)	13.82 (351.0)
B	4.11 (104.4)	4.49 (114.0)	5.20 (132.1)	6.41 (162.8)	6.91 (175.5)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	4.34 (110.2)	4.34 (110.2)	4.34 (110.2)	5.27 (133.9)	5.27 (133.9)
J	1/8" Pipe	1/8" Pipe	1/8" Pipe	1/8" Pipe	1/8" Pipe

Inches (mm)

M033
4-Way

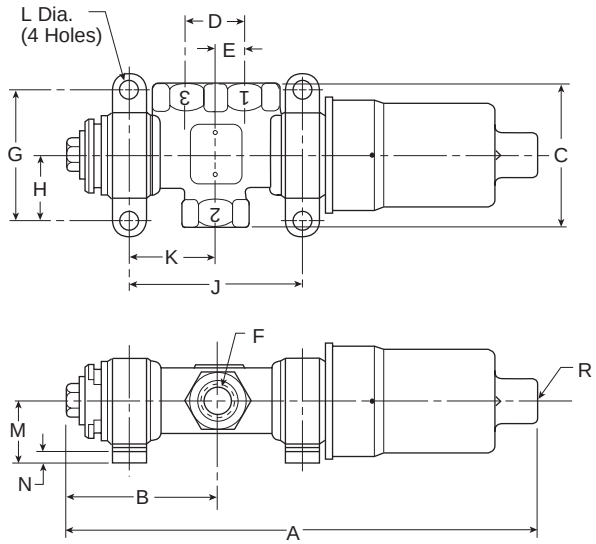


	1/4	3/8	1/2	3/4	1
A	9.72 (246.9)	10.82 (274.8)	11.86 (301.2)	15.52 (394.2)	17.00 (431.8)
B	4.86 (123.4)	5.41 (137.4)	5.93 (150.6)	7.76 (197.1)	8.50 (215.9)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	4.34 (110.2)	4.34 (110.2)	4.34 (110.2)	5.27 (133.9)	5.27 (133.9)
H	1.00 (25.4)	1.06 (26.9)	1.38 (30.0)	1.50 (38.1)	1.75 (44.4)
J	1/8" Pipe	1/8" Pipe	1/8" Pipe	1/8" Pipe	1/8" Pipe

Inches (mm)

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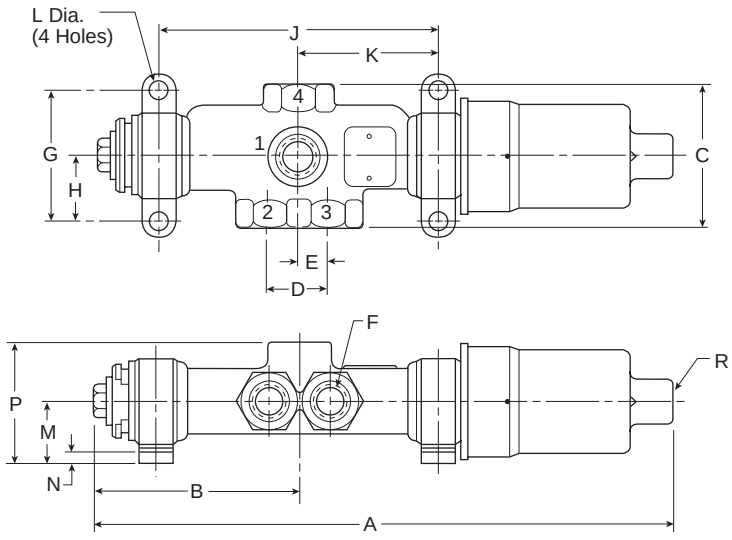
M085
3-Way



	1/4	3/8	1/2	3/4	1
A	7.50 (190.5)	8.14 (206.8)	9.03 (229.4)	11.18 (284.0)	11.93 (303.0)
B	2.03 (51.6)	2.36 (59.9)	2.83 (71.9)	3.48 (88.4)	3.86 (98.0)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.64 (67.1)	3.14 (79.8)	3.73 (94.7)	4.67 (118.6)	5.42 (137.7)
K	1.32 (33.5)	1.57 (39.9)	1.87 (47.5)	2.33 (59.2)	2.71 (68.8)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
R	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe
Travel	.62 (15.7)	.69 (17.5)	.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

M085
4-Way

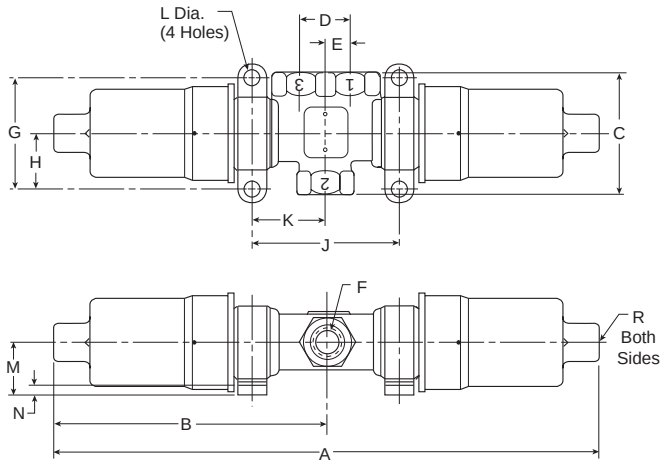


	1/4	3/8	1/2	3/4	1
A	9.00 (228.6)	9.98 (253.5)	11.15 (283.2)	13.90 (353.1)	15.12 (384.0)
B	2.79 (70.9)	3.28 (83.3)	3.89 (98.8)	4.84 (122.9)	5.45 (138.4)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	1/4" Pipe	1/4" PIpe	1/4" Pipe	1/4" Pipe	1/4" Pipe
Travel	.62 (15.8)	.69 (17.5)	.88 (22.4)	1.12 (28.4)	1.25 (31.8)

Inches (mm)

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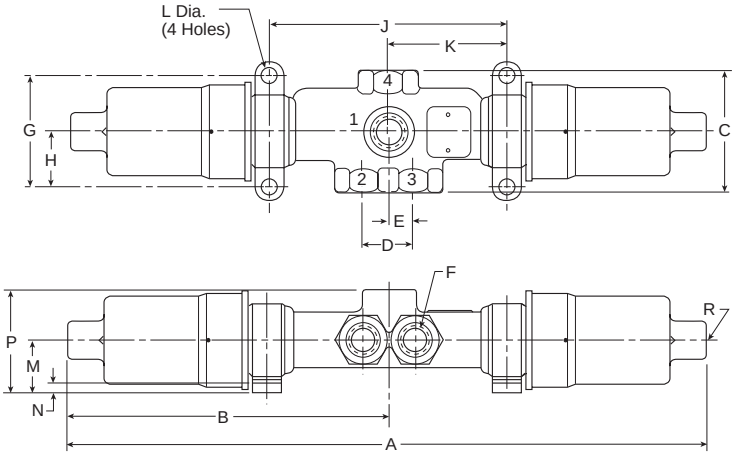
M019
3-Way



	1/4	3/8	1/2	3/4	1
A	10.94 (277.9)	11.56 (293.6)	12.40 (315.0)	15.40 (391.2)	16.14 (410.0)
B	5.47 (138.9)	5.78 (146.8)	6.20 (157.5)	7.70 (195.6)	8.07 (205.0)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.64 (67.1)	3.14 (79.8)	3.73 (94.7)	4.67 (118.6)	5.42 (137.7)
K	1.32 (33.5)	1.57 (39.9)	1.87 (47.5)	2.33 (59.2)	2.71 (68.8)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
R	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe

Inches (mm)

M019
4-Way

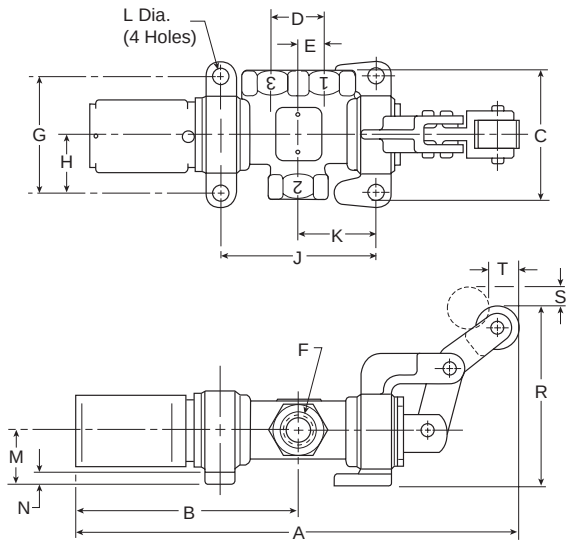


	1/4	3/8	1/2	3/4	1
A	12.42 (315.5)	13.40 (340.4)	14.52 (368.8)	18.12 (460.2)	19.34 (491.2)
B	6.21 (157.7)	6.70 (170.2)	7.26 (184.4)	9.06 (230.1)	9.67 (245.6)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe

Inches (mm)

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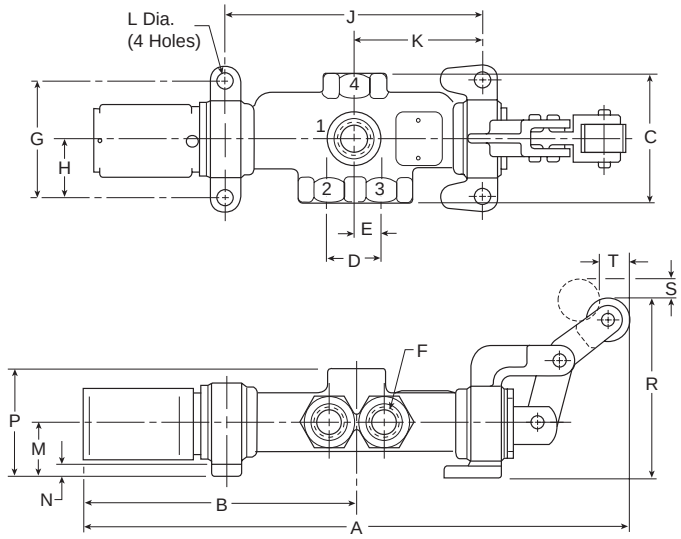
M095 3-Way



	1/4	3/8	1/2	3/4	1
A	7.98 (202.6)	8.72 (221.5)	10.77 (273.6)	13.54 (343.9)	14.34 (364.2)
B	3.92 (99.6)	4.24 (107.7)	5.31 (134.9)	6.92 (175.8)	7.35 (186.7)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)	5.41 (137.4)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)	2.70 (68.6)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (38.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
R	3.88 (98.6)	3.88 (98.6)	4.23 (107.4)	4.88 (124.0)	4.88 (124.0)
S	.43 (10.9)	.47 (11.9)	.70 (17.8)	.67 (17.0)	.76 (19.3))
Travel	.53 (13.5)	.59 (15.0)	.75 (19.0)	.81 (20.6)	.91 (23.1)

Inches (mm)

M095 4-Way

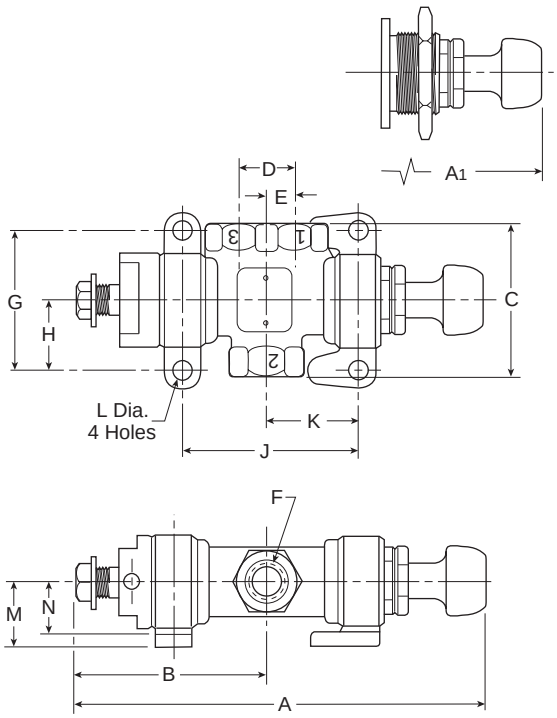


	1/4	3/8	1/2	3/4	1
A	9.48 (204.7)	10.56 (268.2)	12.89 (327.4)	16.26 (413.0)	17.53 (445.3)
B	4.67 (118.6)	5.15 (130.8)	5.68 (144.3)	8.27 (210.1)	8.93 (226.8)
C	2.38 (60.4)	2.62 (66.6)	3.12 (79.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	3.88 (98.6)	3.88 (98.6)	4.23 (107.4)	4.88 (124.0)	4.88 (124.0)
S	.43 (10.9)	.47 (11.9)	.70 (17.8)	.67 (17.0)	.76 (19.3)
Travel	.53 (13.5)	.59 (15.0)	.75 (19.0)	.81 (20.6)	.91 (23.1)

Inches (mm)

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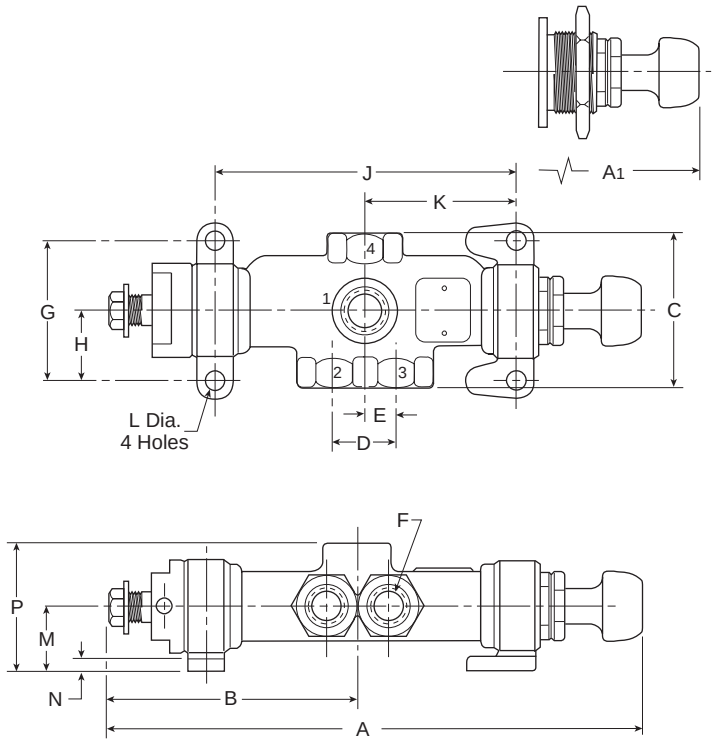
M054 & M058
3-Way



	1/4	3/8	1/2	3/4
A	6.57 (166.9)	7.30 (185.4)	8.56 (217.4)	10.40 (264.2)
A1	6.57 (166.9)	7.30 (185.4)	8.56 (217.4)	10.40 (264.2)
B	3.25 (82.6)	3.66 (93.0)	4.39 (111.5)	5.41 (137.4)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)

Inches (mm)

M054 & M058
4-Way

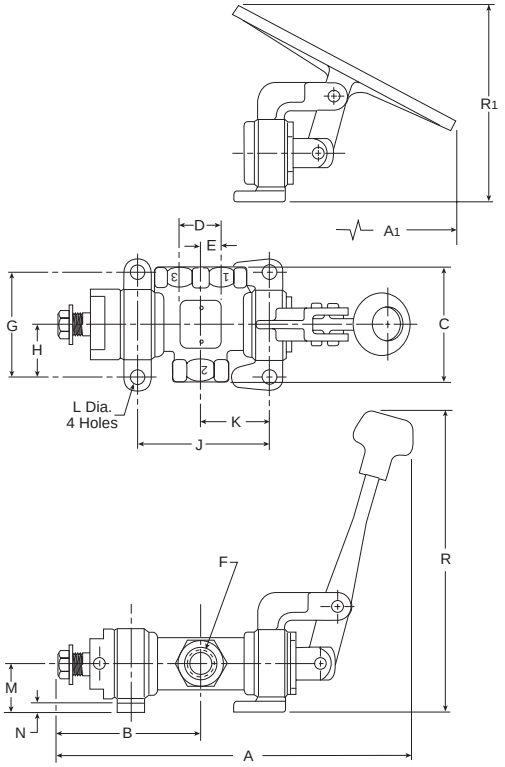


	1/4	3/8	1/2	3/4
A	8.02 (203.7)	9.13 (231.9)	11.17 (283.7)	13.10 (332.7)
A1	8.02 (203.7)	9.13 (231.9)	11.17 (283.7)	13.10 (332.7)
B	4.00 (101.6)	4.57 (116.1)	5.44 (138.2)	6.76 (171.7)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)

Inches (mm)

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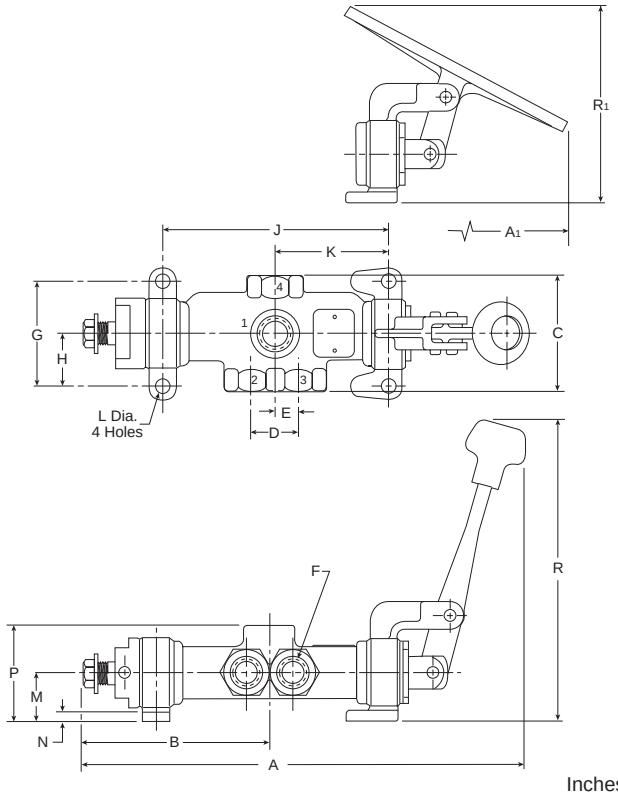
M054
3-Way



Inches (mm)

	1/4	3/8	1/2	3/4	1
A	7.35 (186.7)	8.36 (212.3)	9.95 (252.7)	12.25 (311.2)	13.12 (333.2)
A1	8.59 (218.2)	9.33 (237.0)	10.65 (270.5)	12.90 (327.7)	13.77 (349.8)
B	3.25 (82.6)	3.66 (93.0)	4.39 (11.5)	5.41 (137.4)	5.90 (149.9)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	2.63 (66.8)	3.13 (79.5)	3.72 (94.5)	4.56 (115.8)	5.41 (137.4)
K	1.31 (33.3)	1.56 (39.6)	1.86 (47.2)	2.28 (57.9)	2.70 (68.6)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
R1	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)
R2	4.51 (114.6)	4.65 (18.1)	4.85 (123.2)	6.03 (153.2)	6.03 (153.2)

M054
4-Way

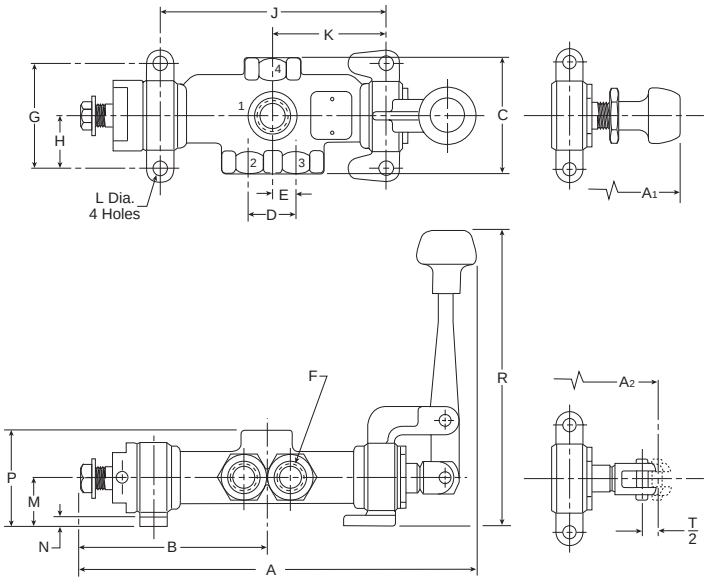


Inches (mm)

	1/4	3/8	1/2	3/4	1
A	8.86 (225.0)	10.20 (259.1)	11/74 (298.2)	14/96 (380.0)	16.30 (414.0)
A1	10.01 (254.2)	11.17 (283.7)	12.77 (324.4)	15.62 (396.8)	16.96 (430.8)
B	4.00 (101.6)	4.57 (116.1)	5.44 (138.2)	6.76 (171.7)	7.49 (190.2)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	3.25 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (28.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R1	6.78 (172.2)	6.78 (172.2)	8.10 (205.7)	10.73 (272.5)	10.73 (272.5)
R2	4.51 (114.6)	4.65 (18.1)	4.85 (123.2)	6.03 (153.2)	6.03 (153.2)

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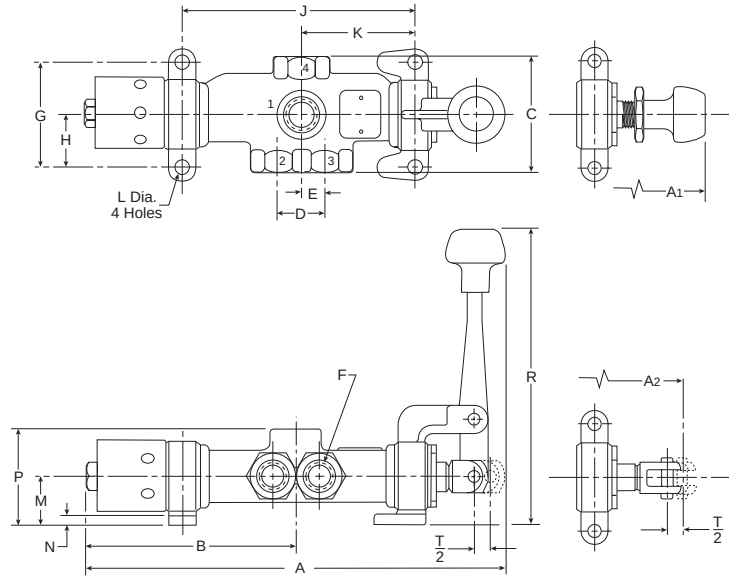
M054
4-Way



Inches (mm)

	1/4	3/8	1/2	3/4	1
A	7.79 (197.9)	8.86 (225.0)	10.27 (260.9)	12.63 (320.8)	13.94 (354.1)
A1	8.15 (206.9)	9.20 (233.6)	11.18 (283.9)	13.10 (332.8)	— —
A2	7.94 (201.7)	8.91 (226.3)	11.06 (380.9)	13.04 (331.2)	14.54 (369.3)
B	3.75 (95.2)	4.26 (108.2)	5.01 (127.2)	6.20 (157.5)	6.90 (175.3)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	.325 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (38.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	6.80 (172.7)	6.84 (173.7)	8.12 (206.2)	10.88 (276.4)	10.88 (276.4)

M074 & M076
4-Way

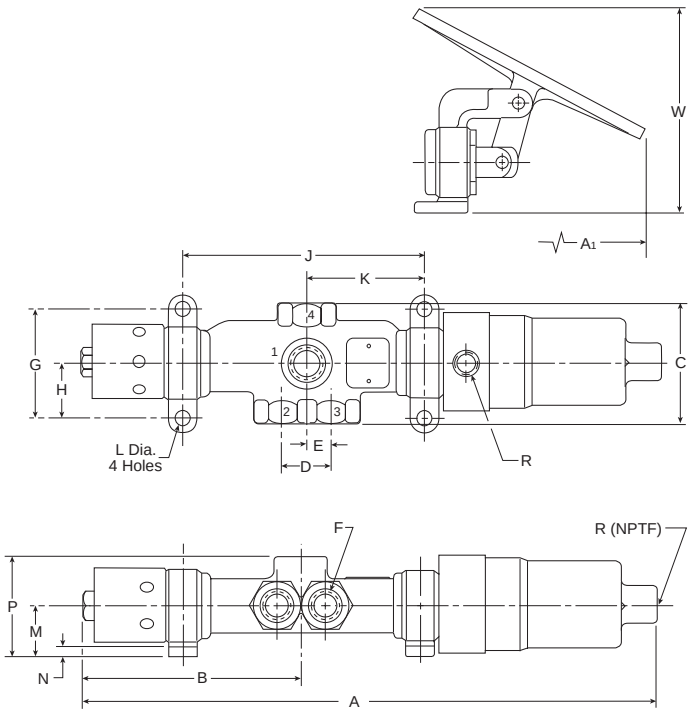


Inches (mm)

	1/4	3/8	1/2	3/4	1
A	8.21 (208.5)	9.25 (235.0)	10.49 (266.4)	13.24 (336.3)	14.55 (369.6)
A1	8.57 (217.6)	9.59 (243.5)	11.40 (289.6)	13.71 (348.3)	— —
A2	7.94 (201.7)	8.91 (226.3)	11.06 (280.9)	13.04 (331.2)	14.54 (369.3)
B	4.17 (105.9)	4.65 (118.1)	5.23 (132.8)	6.81 (173.0)	7.51 (190.8)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	.325 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (38.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	6.80 (172.7)	6.84 (173.7)	8.12 (206.2)	10.88 (276.4)	10.88 (276.4)
Travel	.62 (15.8)	.69 (17.5)	.88 (22.4)	1.12 (28.4)	1.25 (31.8)

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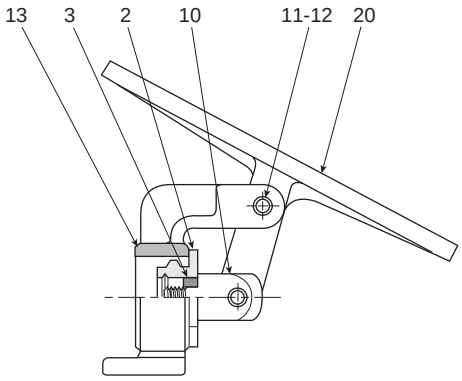
M074 & M078
4-Way



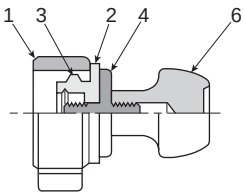
	1/4	3/8	1/2	3/4	1
A	10.37 (263.4)	11.33 (287.8)	12.47 (316.7)	15.85 (402.6)	17.16 (435.9)
A1	10.30 (261.6)	11.31 (287.3)	12.62 (320.6)	16.02 (406.9)	17.33 (440.2)
B	4.17 (105.9)	4.65 (118.1)	5.23 (132.8)	6.81 (173.0)	7.51 (190.8)
C	2.38 (60.4)	2.62 (66.6)	3.00 (76.2)	3.62 (92.0)	4.38 (111.2)
D	.94 (23.9)	1.06 (26.9)	1.25 (31.8)	1.62 (41.2)	2.00 (50.8)
E	.47 (11.9)	.53 (13.5)	.62 (15.8)	.81 (20.6)	1.00 (25.4)
F	1/4" Pipe	3/8" Pipe	1/2" Pipe	3/4" Pipe	1" Pipe
G	2.25 (57.2)	2.38 (60.4)	2.62 (66.6)	.325 (82.6)	3.62 (92.0)
H	1.12 (28.4)	1.19 (30.2)	1.31 (33.3)	1.62 (41.2)	1.81 (46.0)
J	4.14 (105.2)	4.98 (126.5)	5.85 (148.6)	7.39 (187.7)	8.61 (218.7)
K	2.07 (52.6)	2.49 (63.2)	2.92 (74.2)	3.69 (93.7)	4.30 (109.2)
L	.34 (8.6)	.34 (8.6)	.41 (10.4)	.41 (10.4)	.41 (10.4)
M	1.12 (38.4)	1.12 (28.4)	1.25 (31.8)	1.56 (39.6)	1.56 (39.6)
N	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)	.38 (9.6)
P	2.12 (53.8)	2.18 (55.4)	2.63 (66.8)	3.06 (77.7)	3.31 (84.1)
R	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe	1/4" Pipe
W	3.90 (99.1)	3.90 (99.1)	4.20 (106.7)	5.23 (132.8)	5.23 (132.8)

Inches (mm)

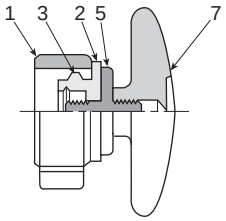
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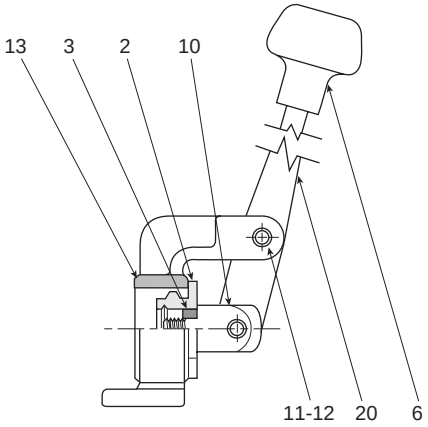
Treadle
M062 *88



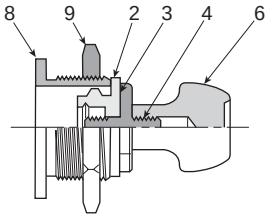
Knob
M062 *48



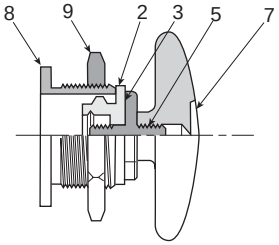
Palm Button
M062 *99



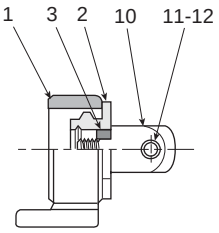
Lever
M062 *43



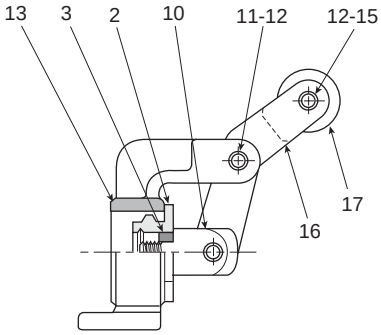
Panel Mounted Knob
M062 *51



Panel Mounted Palm Button
M062 *59

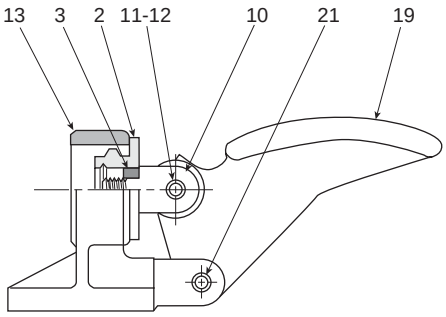


Clevis
M062 *05



Cam
M062 *03

Port Size	Use No. *
1/4	2
3/8	3
1/2	4
3/4	6
1	8



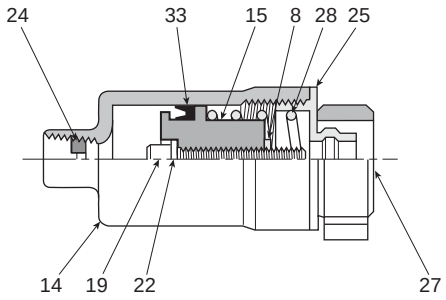
Pedal

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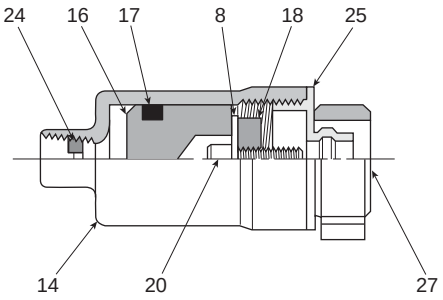
Item No.	Part Number					Description
	1/4"	3/8"	1/2"	3/4"	1"	
1	M073 016	M073 026	M073 037	M073 046	M073 065	Bracket
2	M103 012	M103 047	M103 066	M103 108	M103 104	End Bearing
3	H177 05	H177 05	H177 06	H174 08	H174 08	Lockwasher
4	M013 011	M013 011	M013 012	M013 013	—	Knob Adapter
5	M013 011	M013 011	M013 012	M013 013	—	Palm Knob Adapter
6	H050 28	H050 28	H050 28	H050 28	H050 28	Knob
7	H050 29	H050 29	H050 29	H050 29	—	Palm Button
8	M013 014	M013 015	M013 016	M013 017	—	Panel Adapter
9	M303 005	M303 006	M303 007	M303 008	—	Jam Nut
10	M133 003	M133 003	M133 012	M133 018	M133 018	Clevis
11	H072 29	H072 29	M333 013	M333 013	M333 013	Pivot Pin (2)
12	—	—	H089 03	H089 03	H089 03	Retaining Ring (4)
13	M073 009	M073 022	M073 033	M073 042	M073 054	Bracket
14	M273 022	M273 022	M273 023	M273 024	M273 024	Lever
15	H072 30	H072 30	M333 016	M333 016	M333 016	Roller Trunnion
16	M273 002	M273 002	M273 006	M273 007	M273 007	Cam Arm
17	M443 003	M443 003	M443 002	M443 002	M443 002	Roller
18	M073 003	M073 019	M073 030	—	—	Bracket
19	M323 005	M323 005	M323 006	M323 007	M323 007	Pedal
20	M553 004	M553 004	M553 005	—	—	Treadle
21	H072 29	H072 29	M333 013	M333 014	M333 014	Pivot Pin

NOTE: ( ) denotes quantity required when more than one.

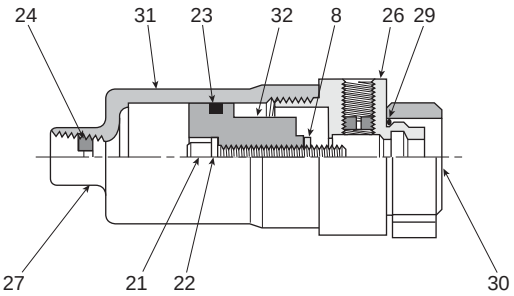
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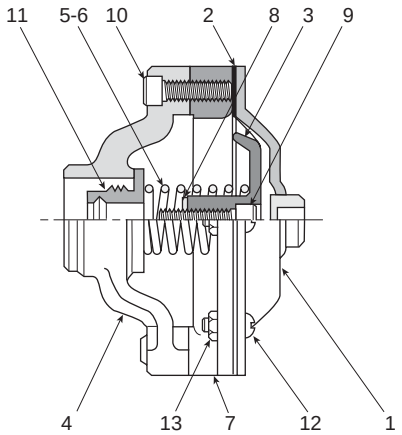
Single Cylinder
M062 *26



Double Cylinder
M062 *19

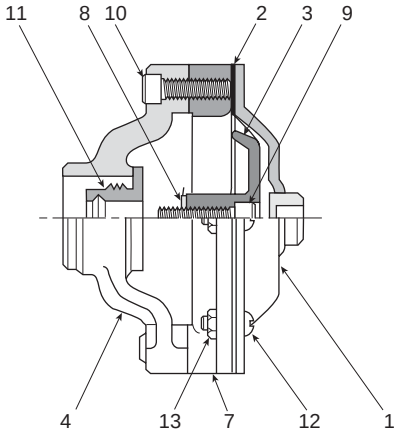


Double Acting Cylinder
M062 *13



Single Diaphragm
M062 *30

Inst. Air Single Diaphragm
M062 *32



Double Diaphragm
M062 *33

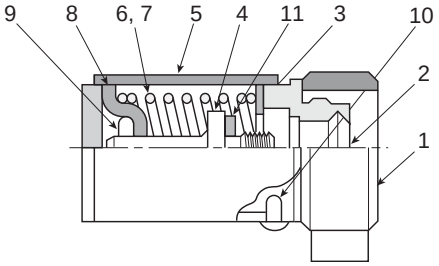
Port Size	Use No. *
1/4	2
3/8	3
1/2	4
3/4	6
1	8

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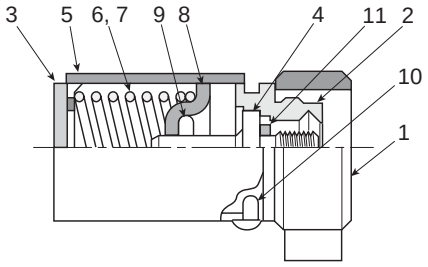
Item No.	Part Number					Description
	1/4"	3/8"	1/2"	3/4"	1"	
1	M163 005	M163 005	M163 005	M163 012	M163 012	Cover
2	M193 002	M193 002	M193 002	M193 005	M193 005	Diaphragm
3	M343 038	M343 038	M343 032	M343 039	M343 039	Piston
4	M573 004	M573 003	M573 001	M573 011	—	Yoke
5	M493 024	M493 024	M493 010	M493 023	M493 023	Spring
6	M493 022	M493 022	M493 009	M493 028	M493 028	Spring (Inst. Air)
7	M423 002	M423 002	M423 002	M423 004	M423 004	Ring
8	H177 05	H177 05	H177 06	H174 08	H174 08	Lockwasher
9	H101 19	H101 19	H101 45	H102 17	H102 17	Screw
10	H101 15	H101 15	H101 15	H101 15	H101 17	Screw (2)
11	M103 012	M103 047	M103 066	M103 108	M103 104	End Bearing
12	H113 33	H113 33	H113 33	H113 33	H113 33	Screw (6)
13	H064 16	H064 16	H064 16	H064 16	H064 16	Nut (6)
14	M243 028	M243 028	M243 028	M243 036	M243 036	Housing
15	M343 019	M343 019	M343 018	M343 027	M343 027	Piston – Single Act.
16	M343 022	M343 022	M343 022	M343 028	M343 028	Piston – Double Cyl.
17	H145 15	H145 15	H145 15	H145 20	H145 20	Packer
18	M013 005	M013 005	M013 007	M013 009	M013 009	Adapter
19	H101 21	H101 21	H101 47	H102 19	H102 19	Screw – Single Act.
20	H101 17	H101 17	H101 45	H102 15	H102 15	Screw – Double Act.
21	H101 21	H101 21	H101 47	H102 18	H102 18	Screw – Double Act.
22	H175 14	H175 14	H175 19	H175 24	H175 24	Lockwasher
23	K41RB72220	K41RB72220	K41RB72220	K41RB72328	K41RB72328	O-Ring
24	M363 002	M363 002	M363 002	M363 002	M363 002	Restrictor
25	M383 007	M383 011	M383 018	M383 029	M383 030	Retainer
26	M383 009	M383 017	M383 015	M383 024	M383 026	Retainer – Dbl. Act.
27	M073 016	M073 026	M073 037	M073 046	M073 065	Bracket
28	M493 015	M493 015	M493 015	M493 020	M493 020	Spring
29	K41RB72116	K41RB72118	K41RB72121	K41RB72125	K41RB72132	O-Ring
30	K41RB72127	K41RB72127	K41RB72127	H13781	H13781	Gasket
31	M243 012	M243 012	M243 012	M243 040	M243 040	Housing – Dbl. Act.
32	M343 021	M343 021	M343 017	M343 029	M343 029	Piston – Dbl. Act. Cyl.
33	H222 32	H222 32	H222 32	H145 20	H145 20	Packer

NOTE: ( ) denotes quantity required when more than one.

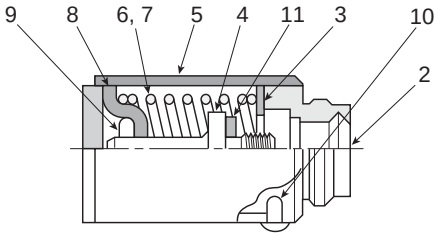
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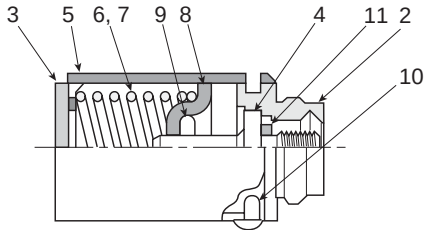
Direct Acting Spring Return with Bracket
M062 *95 Push Lever
M062 *97 Pull Knob



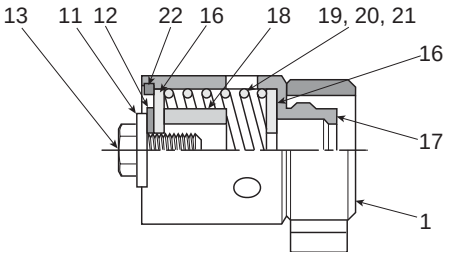
Reverse Acting Spring Return with Bracket
M062 *96 Pull Lever
M062 *98 Push Knob



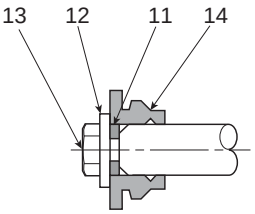
Direct Acting Spring Return less Bracket
M062 *62 Push Lever
M062 *64 Pull Knob



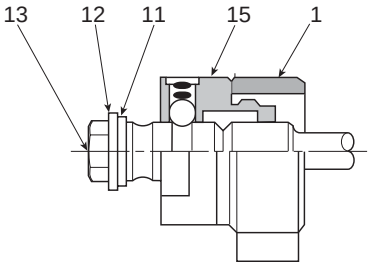
Reverse Acting Spring Return less Bracket
M062 *63 Pull Lever
M062 *65 Push Knob



Spring Centered Neutral
M062 *74 Standard Spring
M062 *76 Light Spring
M062 *78 Heavy Spring

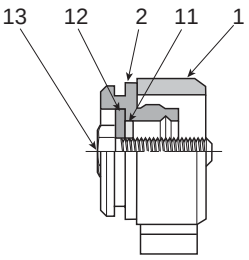


Stem Stop less Bracket
M062 *87

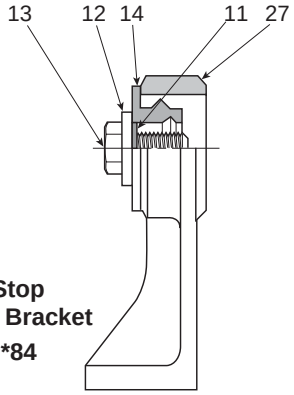


Ball Detent, 3-Position
M062 *54

Port Size	Use No. *
1/4	2
3/8	3
1/2	4
3/4	6
1	8



Stem Stop with Small Bracket
M062 *85



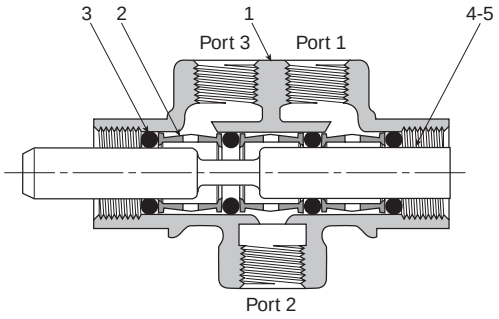
Stem Stop with Large Bracket
M062 *84

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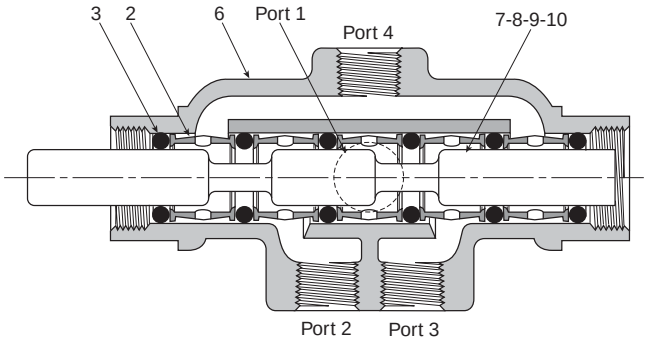
Item No.	Part Number					Description
	1/4"	3/8"	1/2"	3/4"	1"	
1	M073 016	M073 026	M073 037	M073 046	M073 065	Bracket
2	M103 111	M103 112	M103 113	M103 114	M103 115	End Bearing
3	M413 015	M413 015	M413 016	M413 017	M413 018	Spring Retainer Washer
4	M523 009	M523 009	M523 010	M523 011	M523 012	Stem Stop – Guide
5	M243 043	M243 043	M243 044	M243 045	M243 046	Spring Housing
6	M493 037	M493 037	M493 027	M493 026	—	Spring – Knob Oper.
7	M493 038	M493 038	M493 011	M493 012	M493 013	Spring – Other Oper.
8	M383 032	M383 032	M383 033	M383 034	M383 035	Spring Retainer
9	H072 54	H072 54	H072 70	H072 71	H072 72	Roll Pin
10	H11215	H11215	H11216	H11217	H112181	Screw
11	H177 05	H177 05	H177 06	H174 08	H174 08	Lockwasher
12	M563 002	M563 002	M563 006	M563 014	M563 014	Stem Stop
13	H096 26	H096 26	H096 45	H097 06	H097 06	Stem Stop Screw
14	M103 012	M103 047	M103 066	M103 108	M103 104	End Bearing – Plain
15	M012 001	M012 002	M012 003	M012 005	M012 006	Ball Detent Assembly
16	M563 007	M563 009	M563 008	M563 016	M563 016	Washer
17	M243 008	M243 019	M243 027	M243 032	M243 038	Spring Housing
18	M083 003	M083 004	M083 005	M083 008	M083 007	Spacer
19	M493 008	M493 008	M493 008	M493 014	M493 014	Spring
20	M493 019	M493 019	M493 019	—	—	Spring – Knob Oper.
21	M493 006	M493 006	M493 006	M493 007	M493 007	Spring – Dbl. Act. Cyl.
22	H090 25	H090 25	H090 25	H090 12	H090 12	Retainer Ring
24	—	—	—	M353 036	M353 045	Lock Plate
27	M073 006	M073 017	M073 028	—	—	Large Bracket

NOTE: ( ) denotes quantity required when more than one.

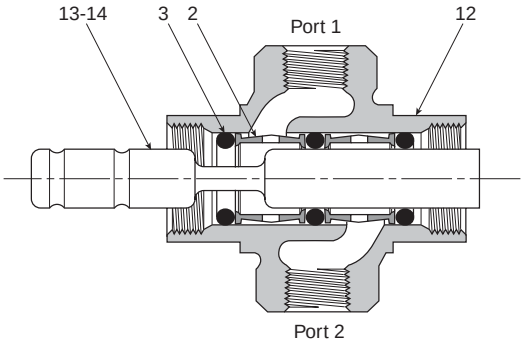
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M032 *18
Standard 3-Way
M032 *24
2-Position Detent



M032 *46 **Standard 4-Way**
M032 *54 **2-Position Detent**
M032 *51 **3-Position Detent**
M032 *49 **Spring Centered Neutral**
M032 *47 **Spring Centered Double Acting Cylinder**



M032 *14
2-Position Detent

Port Size	Use No. *
1/4	2
3/8	3
1/2	4
3/4	6
1	8

Item No.	Part Number					Description
	1/4"	3/8"	1/2"	3/4"	1"	
1	M053 007	M053 019	M053 030	M053 038	M053 042	Body – 3-Way
2	M313 004	M313 011	M313 013	M313 017	M313 023	Spacer (2-3-5)
3	H134 66	H135 88	H135 80	H135 84	H136 89	O-Ring (3-4-6)
4	M373 014	M373 060	M373 102	M373 142	M373 176	Stem – 3-Way
5	M373 020	M373 064	M373 103	M373 146	—	Stem – 3-Way 2-Pos. Detent
6	M053 003	M053 020	M053 033	M053 039	M053 043	Body – 4-Way
7	M373 033	M373 074	M373 116	M373 156	M373 185	Stem – 4-Way
8	M373 039	M373 076	M373 118	—	—	Stem – 4-Way 2-Pos. Detent
9	M373 040	M373 077	M373 119	M373 160	—	Stem – 4-Way 3-Pos. Detent (APB)
10	M373 044	M373 083	M373 123	M373 162	—	Stem – 4-Way 3-Pos. Spring Center (APB)
12	M053 005	M053 015	M053 028	—	—	Body – 3-Way Lockout
13	M373 003	—	—	—	—	Stem – 3-Way Open End Exhaust
14	M373 008	—	—	M373 139	—	Stem – 3-Way Lockout

NOTE: ( ) denotes quantity required when more than one.

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Replacement Knobs & Palm Buttons

Description	1/4" & 3/8"	1/2"	3/4"
Knob & Adapter Kit	M122001	M122002	M122003
Palm Button & Adapter Kit	M122004	M122005	M122006



Knob & Adapter Kit



Palm Button & Adapter Kit

Hex Drive Pipe Plugs

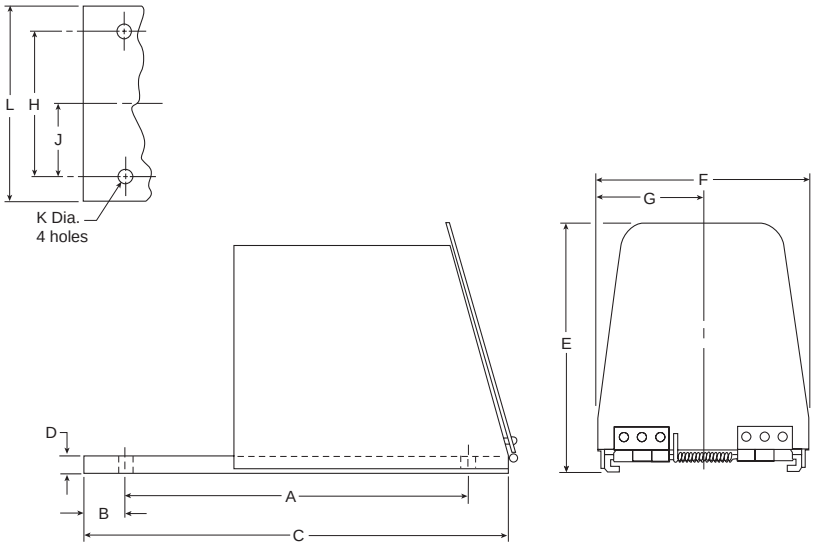
Port Size	1/4"	3/8"	1/2"	3/4"	1"
Part Number	K21R02025L	K21R02037L	K21R02050L	K21R02075L	K21R02100L

Pedal Guard
(Fits all pedal operated valves)

Description	Model Number
Guard with door	M232 001
Guard without door	M232 002
Guard with door for 1/4 and 3/8 valve	M232 003*
Guard without door for 1/4 and 3/8 valve	M232 004*
Guard with door for 1/2, 3/4 and 1" valve	M232 005*
Guard without door for 1/2, 3/4 and 1" valve	M232 006*

* Includes mounting hardware.

CAUTION:
Foot valves utilizing this guard shall not be used to actuate a punch presse. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.



Dimensions

A	B	C	D
10.50 266.7	1.25 31.8	13.00 330.2	.50 12.7
E	**F**	**G**	**H**
7.38 187.4	6.36 161.5	3.18 80.8	4.50 114.3
J	**K**	**L**	
2.25 57.2	.44 11.2	6.00 152.4	

Service Kits

(Field Service Instructions)

Description (For all 3 & 4-Way Valves)	1/4	3/8	1/2	3/4	1
Manual & Mechanical Operators	M242 001	M242 002	M242 003	M242 004	M242 005
Cylinder (Single, Double & Double-Acting)	M242 006	M242 007	M242 008	M242 009	M242 010
Diaphragm (Single & Double)	M242 011	M242 012	M242 013	M242 014	M242 015

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Notes

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"LV" & "EZ" Series

Lockout Valves, 3-Way, 3-Port, 2-Position

Section F

www.parker.com/pneu/lv



"LV" Series

- Basic Features F92
- Applications F92
- Mounting F92
- Dimensions F92
- Technical Information
  - Operation F93
  - Specifications F93
  - Ordering Information F93

"EZ" Series

- Basic Features F94
- Applications F94
- Mounting F94
- Dimensions F94
- Technical Information
  - Operation F95
  - Specifications F95
  - Ordering Information F95

Flow & Safety Standards F96

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"LV" Series

Features

- Used in systems for compliance with OSHA Standard 29 CFR Part 1910
- 3/8 inch to 1-1/4 inch Pipe Sizes
- Cv's from 6.0 to 14
- 3/4 and 1-1/4 inch Exhaust Ports available
- Rugged Cast Aluminum Alloy Body
- Inline or Surface Mountable
- Safety Yellow and Red for High Visibility
- Detented Spool
- Exhaust Port Threaded for Installation of Silencer or Line for Remote Exhausting



1-1/4" Exhaust Shown

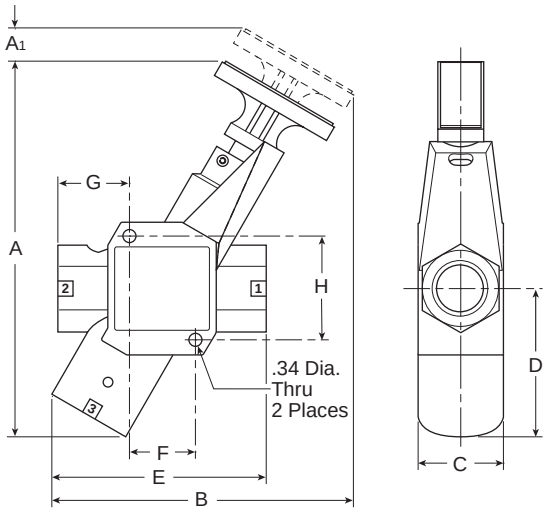
Applications

Lockout valves are installed in pneumatic drop legs, or individual pneumatic control lines (see Figure 1). In accordance with OSHA procedures, lockout valves are used during maintenance and service procedures of pneumatically (air) operated equipment. Prior to servicing, the red handle is pressed inward, blocking pressure and relieving all downstream air pressure. A padlock is installed through the locking hasp, Preventing accidental actuation during the maintenance procedure. Following maintenance, the padlock is removed and the red handle is pulled outward, returning air pressure to the system. (For complete Lockout / Tagout procedures, consult OSHA Standard 29 CFR Part 1910 in U.S. Federal Register/Vol. 54 No. 169, Friday, September 1, 1989 / Page 36644.)

Mounting

Valves can be inline mounted or surface mounted using the two 11/32" mounting holes provided in the valve body. Mount valves in plain view with the handle oriented for accessibility.

Dimensions



LV Series, 3/4" Exhaust Port **Inches (mm)**

A	A1	B	C	D
8.32 (211)	0.64 (16)	6.60 (168)	2.00 (51)	3.06 (78)
E	**F**	**G**	**H**	
4.24 (108)	1.32 (111)	1.56 (40)	2.21 (56)	

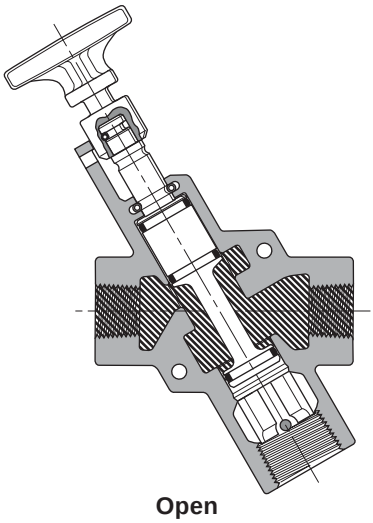
LV Series, 1-1/4" Exhaust Port **Inches (mm)**

A	A1	B	C	D
9.91 (252)	0.85 (22)	7.95 (202)	2.25 (57)	3.91 (99)
E	**F**	**G**	**H**	
5.65 (144)	1.74 (44)	1.89 (48)	2.74 (70)	

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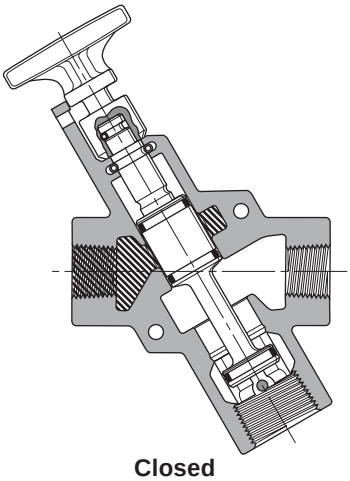
Operation

Normal Machine Operation – Valve Open
With the handle pulled outward. Inlet Port 1 is open to outlet Port 2. Exhaust Port 3 is blocked.



Open

Lockout Operation – Valve Closed
With the handle pushed inward. Inlet Port 1 is blocked. Outlet Port 2 is open to Exhaust Port 3.



Closed

Specifications

Operating Pressure Range:
0 to 250 PSIG (0 to 1725 kPa)

Operating Temperature Range (Ambient):
32°F to 160°F (0°C to 71°C)

Lubrication:
For best results and service life, use clean, moisture free, lubricated air.

Recommended Lubricant:
F442 Oil

Materials of Construction

Body ..... Cast Aluminum Alloy
Handle .....3/4" Exhaust Port - Cast Aluminum Alloy
1-1/4" Exhaust Port - Plastic
Spool ..... Aluminum
Seals .....Carboxylated Nitrile
Detent Spring.....Stainless Steel
Grease .....Magnalube G†

LV Series Model Number Index

LV 6 N A B

Port Size (Inlet & Outlet Ports 1 & 2)	
3/8"*	3
1/2"*	4
3/4"* ‡	6
1" ‡	8
1-1/4" ‡	A

* Available with 3/4" Exhaust Port.
‡ Available with 1-1/4" Exhaust Port.

Thread Type (Ports 1, 2 & 3)	
NPT	N
BSPP (G)	B

Port Size (Exhaust Port 3)	
6	3/4"
A	1-1/4"

Design Level	
B	Current

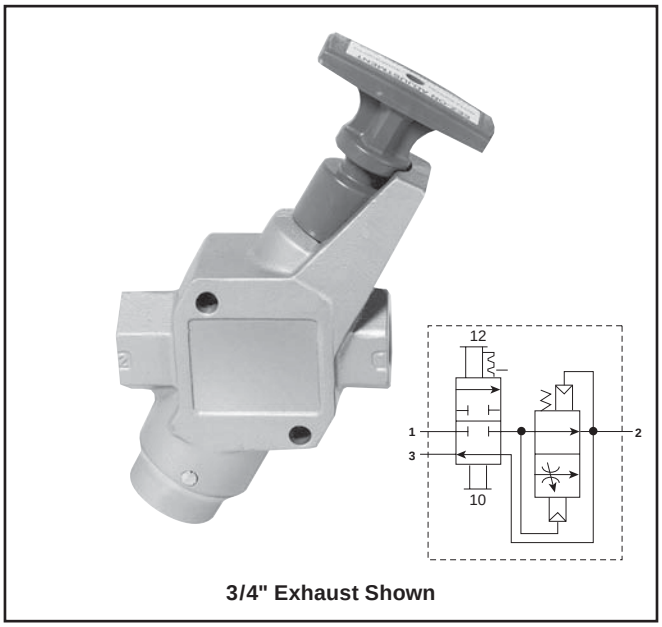
† Trademark Magnalube

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"EZ" Series

Features

- Combines Lockout and Soft-Start Functions in a Single Unit
- Used in systems for compliance with OSHA Standard 29 CFR Part 1910
- 3/8 inch to 1-1/4 inch Pipe Sizes
- Cv's from 3.7 to 13.7
- 3/4 and 1-1/4 inch: Exhaust Ports available
- Rugged Cast Aluminum Alloy Body
- Exhaust Port Threaded for Installation of Silencer or Line for Remote Exhausting
- Inline or Surface Mountable



3/4" Exhaust Shown

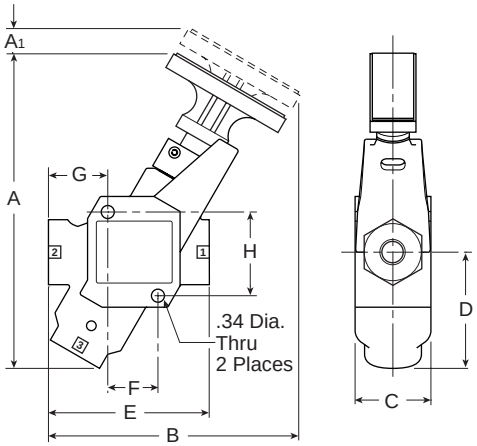
Applications

EZ valves are installed in pneumatic drop legs, or individual pneumatic control lines (see Figure 1). In accordance with OSHA procedures, EZ valves are used during maintenance and service procedures of pneumatically (air) operated equipment. Prior to servicing, the blue handle is pressed inward, blocking pressure and relieving all downstream air pressure. A padlock is installed through the locking hasp, preventing accidental actuation during the maintenance procedure. Following maintenance, the padlock is removed and the blue handle is pulled outward, gradually returning air pressure to the system. (For complete Lockout / Tagout procedures, consult OSHA Standard 29 CFR Part 1910 in U.S. Federal Register/Vol. 54 No. 169, Friday, September 1, 1989 / Page 36644.)

Mounting

Valves can be inline mounted or surface mounted using the two 11/32" mounting holes provided in the valve body. Mount valves in plain view with the handle oriented for accessibility.

Dimensions



EZ Series, 3/4" Exhaust Port Inches (mm)

A	A1	B	C	D
8.32 (211)	0.64 (16)	6.60 (168)	2.00 (51)	3.06 (78)
E	**F**	**G**	**H**	
4.24 (108)	1.32 (111)	1.56 (40)	2.21 (56)	

EZ Series, 1-1/4" Exhaust Port Inches (mm)

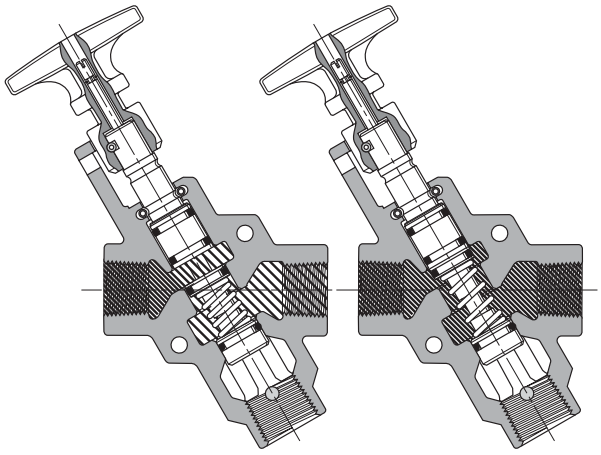
A	A1	B	C	D
9.91 (252)	0.85 (22)	7.95 (202)	2.25 (57)	3.91 (99)
E	**F**	**G**	**H**	
5.65 (144)	1.74 (44)	1.89 (48)	2.74 (70)	

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Operation

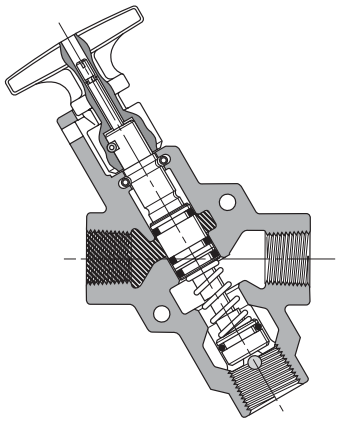
Normal Machine Operation – Valve Open
When the blue handle is pulled outward, the adjustable needle valve (accessed through the top of the handle) setting determines the rate of pressure buildup. When downstream pressure reaches the full flow described in the specifications below, Inlet Port 1 is open to outlet Port 2. Exhaust Port 3 is blocked.

Lockout Operation – Valve Closed
When the blue handle is pushed inward, the Inlet Port 1 is blocked. Downstream air is exhausted through Exhaust Port 3.



Open
Pressure Building Up

Open
Full Flow



Closed

Specifications

Operating Pressure Range:
30 to 150 PSIG (2 to 10 bar)
Open to Full Flow: Inlet Pressure - 25 PSIG (1.7 bar)

Operating Temperature Range (Ambient):
40°F to 175°F (4°C to 80°C)

Lubrication:
For best results and service life, use clean, moisture free, lubricated air.

Recommended Lubricant:
F442 Oil

Materials of Construction

Body ..... Cast Aluminum Alloy
Handle ..... Plastic
Spool ..... Aluminum
Seals ..... Carboxylated Nitrile
Detent Spring ..... Stainless Steel
Grease ..... Magnalube G†

EZ Combination EEZ-On Series Model Number Index

EZ 03 N B A

Port Size (Inlet & Outlet Ports 1 & 2)	
3/8"*	03
1/2"*	04
3/4"* ‡	06
1" ‡	08
1-1/4" ‡	0A

* Available with 3/4" Exhaust Port.
‡ Available with 1-1/4" Exhaust Port.

Port Size (Exhaust Port 3)	
6	3/4"
A	1-1/4"

Design Level	
B	Current

Thread Type (Ports 1, 2 & 3)	
NPT	N
BSPP (G)	B
BSPT (R)	R

† Trademark Magnalube

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Flow

Model	1 to 2 Cv	2 to 3 Cv
LV3N6B	6.00	8.00
LV4N6B	7.10	8.30
LV6N6B	8.60	9.50
LV6NAB	13.00	12.00
LV8NAB	13.00	14.00
LVANAB	20.00	14.00

Model	1 to 2 Cv	2 to 3 Cv
EZ03NB6	3.79	3.78
EZ04NB6	5.31	3.77
EZ06NBA	6.01	9.25
EZ08NBA	11.18	8.13
EZ0ANBA	13.74	8.03

Schematic

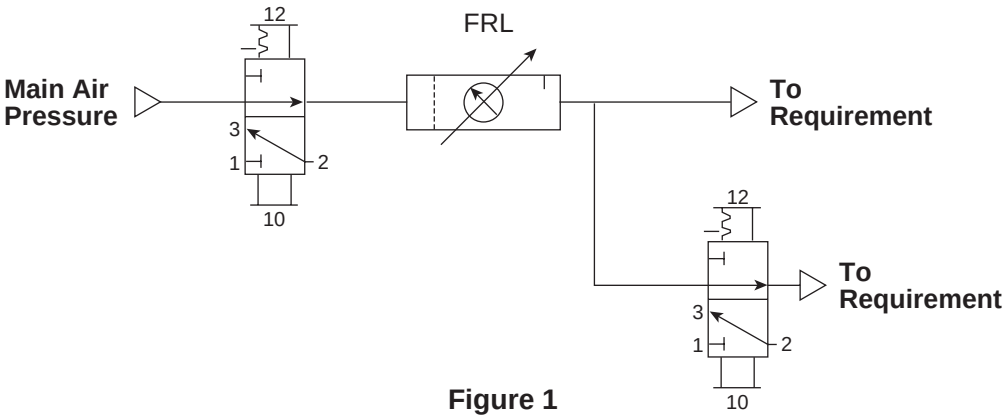


Figure 1
Lockout Valves Shown In The Passing Condition

Friday, September 1, 1989 the Occupational Safety and Health Administration (OSHA) passed a standard, 29CFR Part 1910, requiring certain lockout and / or tagout procedures for the control of a hazardous energy source. This standard addresses practices and procedures that are necessary to disable the release of potentially hazardous energy while maintenance and servicing activities are being performed. Tagout refers to the use of tags to warn workers when equipment using potentially hazardous energy is being serviced. Lockout is the procedure which ensures that all power to a piece of equipment is isolated, locked or blocked and dissipated using a method that cannot be readily removed to bypassed. Dissipation means stored energy at the equipment is brought to a neutral state. This standard is expected to save 120 lives and prevent 60,000 accidents a year. This OSHA Standard became effective October 31, 1989.

A typical application (Figure 1) shows a main lockout valve mounted in the main drop leg, before the split to machine functions. Additional lockout valves can be used to isolate individual control lines. Before servicing, the valve can be actuated and locked to isolate downstream from pressure, and exhaust downstream to atmosphere thus making equipment safe for maintenance.

To reference this standard see the U.S. Federal Register / Vol. 54, No. 169 / Friday, September 1, 1989 / Page 36644. For copies of this standard, contact U.S. Department of Labor, Occupational Safety and Health Administration, Office of Publication, Room N3101, Washington, DC 20210, (202) 523-9667.

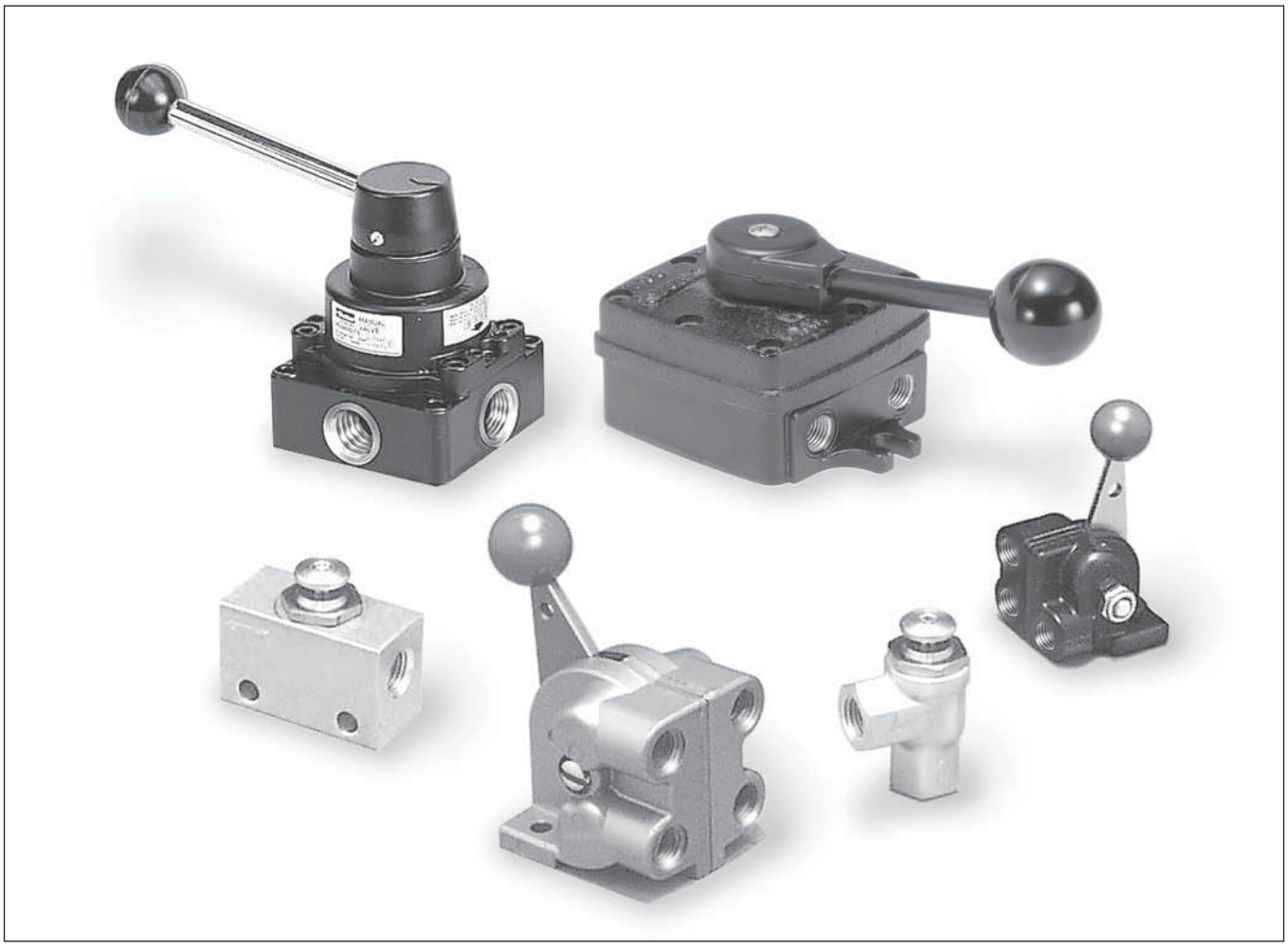
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Sliding Seal & Brass Poppet Valves

Manually Operated

Section F

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PL / VL Series F98-F99
HV Valve F100-F101
Hand Operated Valves, Dimensions F102-F103
Button Operated Valves F104
Hand / Cam Button Valves F105
Bleed Valve F106

BOLD ITEMS ARE MOST POPULAR.

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Application

These are 4-Way, 3-Position, rotary disc, direct-operated air valves. Two different types of control are offered. The forged bronze disc and the cast iron surface upon which the disc works are ground and lapped to provide a leak-proof seal. Air pressure from the inlet port is confined beneath the disc, making the seal tighter as the pressure increases, yet friction between the lapped surfaces is so low that only 15 pounds of force is required to move the lever at 100 PSI line pressure. The need for packing to seal around the stem is eliminated.

Valve can be furnished for gasketing to a manifold on customer's machine or with an adaptor for tapped bottom porting.

Valves are detented.

Operating handles may be installed in any of four positions.

Flow Ratings (Cv)

Standard Side Port	Optional Bottom Port Adapter	Optional Bottom Manifold	Cv	Port Size
PL 25 **VL 25**	PLD 25 VLD 25	PLA 25 VLA 25	2.5	1/4" NPT
PL 37 **VL 37**	PLD 37 VLD 37	PLA 37 VLA 37	3.0	3/8" NPT
PL 50 **VL 50**	PLD 50 VLD 50	PLA 50 VLA 50	6.2	1/2" NPT

Optional Items and Accessories

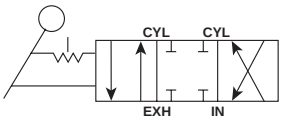
Bottom Porting for gasket mounting to customer's manifold. Four holes are drilled (see following page for dimensions) through the base into the four port chambers. Side ports are plugged. Customer provides suitable means of gasketing. Specify Series PLA or VLA.

Bottom Ported Adaptor Plate, o-ring gasketed to base (four o-rings furnished). Adaptor plate has four drilled and tapped ports. Side ports are plugged. Specify Series PLD or VLD.

Operation

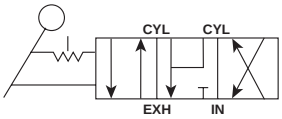
Series PL

This type has a 90° lever movement. In neutral position, inlet is closed to pressure – outlets closed to exhaust. With clockwise (CW), inlet is connected to cylinder port directly opposite. Other cylinder port is connected to exhaust. With counterclockwise (CCW), inlet is connected to cylinder port diagonally opposite. Other cylinder port is connected to exhaust. Recommended for stationary air cylinders, arbor presses, and as a throttling valve for positioning air cylinders.



Series VL

This type has a 90° lever movement. In neutral position, inlet is closed to pressure – outlets open to exhaust. With clockwise (CW), inlet is connected to cylinder port directly opposite. Other cylinder port is connected to exhaust. With counterclockwise (CCW), inlet is connected to cylinder port diagonally opposite. Other cylinder port is connected to exhaust. This valve is particularly suited for pneumatic chuck operation.



Operating Pressure

0 to 150 PSI (0 to 1035 kPa)

Operating Temperature

18°F to 200°F (-8°C to 93°C)

Lubrication

Filtered and lubricated air recommended for maximum valve life and minimum maintenance.

Service Kit and Parts Available

Lever Assembly Service Kits:

PL25, PL25HP, PL37, PL37HP, VL25, & VL37 ..... PL2425BP

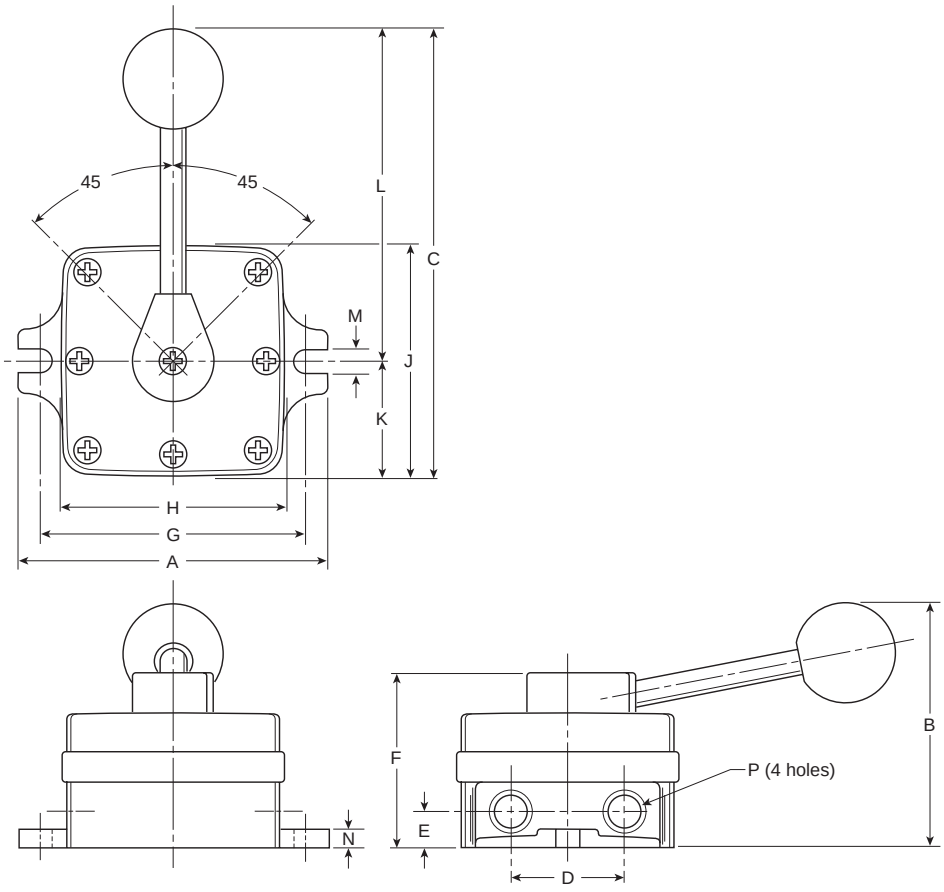
PL50, PL50HP & VL50 ..... PL2424BP

Body Gasket:

PL25, PL25HP, PL37, PL37HP, VL25, & VL37 ..... P66837

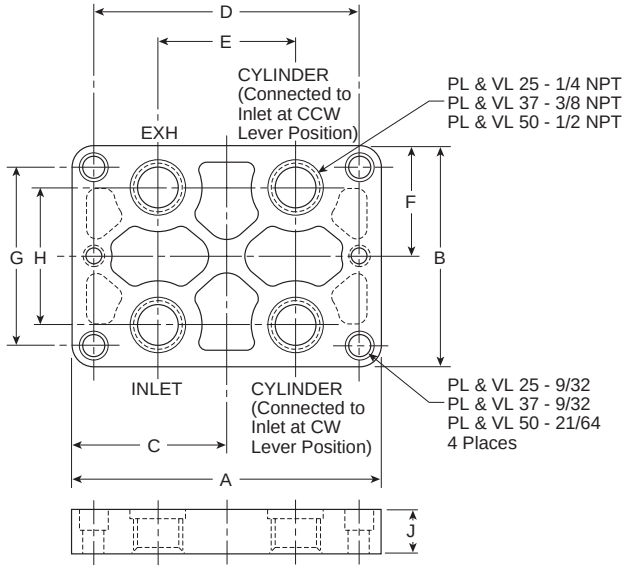
PL50, PL50HP & VL50 ..... P66829

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Dimensions

	PL-25 VL-25	PL-37 VL-37	PL-50 VL-50
A	4.75 (121)	4.75 (121)	5.62 (143)
B	3.81 (97)	3.81 (97)	4.44 (113)
C	6.81 (173)	6.81 (173)	8.94 (227)
D	1.69 (43)	1.69 (43)	2.12 (54)
E	.56 (14)	.56 (14)	.66 (17)
F	2.75 (70)	2.56 (65)	3.25 (83)
G	4.12 (105)	4.12 (105)	5.00 (127)
H	3.50 (89)	3.50 (89)	4.38 (111)
J	3.50 (89)	3.50 (89)	4.38 (111)
K	1.69 (43)	1.69 (43)	2.12 (54)
L	5.06 (129)	5.06 (129)	6.75 (171)
M	.34 (9)	.34 (9)	.34 (9)
N	.28 (7)	.28 (7)	.34 (9)
P	1/4 NPT	3/8 NPT	1/2 NPT



Adapter Plate for Series PLD and VLD

Dimensions

	PLD-25, PLD-37 VLD-25, VLD-37	PLD-50 VLD-50
A	4.75 (121)	5.62 (143)
B	3.38 (86)	4.25 (108)
C	2.38 (60)	2.81 (71)
D	4.12 (105)	5.00 (127)
E	2.19 (56)	2.59 (66)
F	1.69 (43)	2.12 (54)
G	2.75 (70)	3.62 (92)
H	2.06 (52)	2.81 (71)
J	.58 (15)	.70 (18)

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Features

- Compact and Simple Design
- 4-Way, 3-Position
- Rotary Disc, Direct Operated Valves
- Side Porting
- Detent Action
  Smooth Lever Actuation
- General Pneumatic Applications

Flow Rating

Port Size	Cv (ANSI)	Cv (JIS)
1/4"	0.5	0.4
3/8"	1.4	2.72
1/2"	1.5	3.26

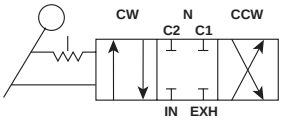
Service Kit & Parts Available

Disk and Seal Service Kit:

HV4200	**HVRK420001**
HV4400	**HVRK440001**

Operation

These closed center valves have a 90° lever movement. In neutral position, the inlet is closed to pressure and outlets are closed to exhaust. With clockwise (CW) rotation, inlet (IN) is connected to C2, C1 is connected to exhaust (EXH). With counter-clockwise (CCW) rotation, inlet (IN) is connected to C1, C2 is connected to exhaust (EXH). These valves are recommended for stationary air cylinders, and as throttling valves for positioning air cylinders. They are not to be used on punch presses or press brakes.



Operating Pressure

0 - 150 PSIG (0 - 10 bar)

Operating Temperature

32° - 166°F (0° - 60°C)

Lubrication

Filtered and lubricated air recommended for maximum valve life and minimum maintenance.

Materials

Cover ..... Zinc
Body ..... Aluminum
Seals ..... Polyurethane

ANSI Cv vs. JIS Cv

*For Pneumatic Valve flow, the measurement **Cv** – Coefficient of Flow – is used to convey to the user how much air can flow through a given valve. Most valve manufacturers publish this information in their catalogs to assist the user in choosing the proper valve for their application. In publishing this data however, there are discrepancies in how the **Cv** is calculated, resulting in some **Cv**'s being OVERSTATED by **20 to 40**%. This can adversely affect the user's application because the valve flows LESS than the published **Cv**.*

*The reason for the large discrepancy is in the method of calculation - the ANSI (NFPA) or the JIS standard. Parker's **Cv** valve is calculated using the ANSI (NFPA)*

T3.21.3-1990 standard. The ANSI (NFPA) method is a structured test using very specific tube sizes and lengths, inlet pressures and pressure drops, and volume chambers.

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HV Model Number Index

H	V	N	42	0	0	–	8

Port Type

BSPT "Rc"	Blank
NPT	**N**
BSPP "G"	G

Body Type

4-Port, 3-Position Mini	**42**
4-Port, 3-Position Medium	**44**

Valve Type

0	**Closed Center**

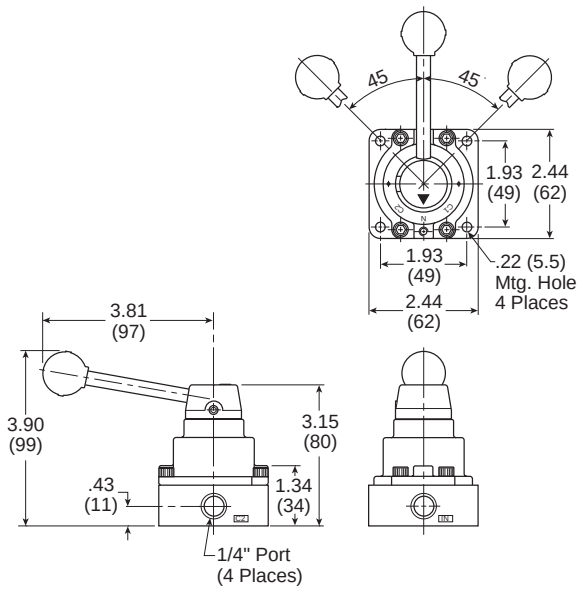
Port Option

0	**Side Port**

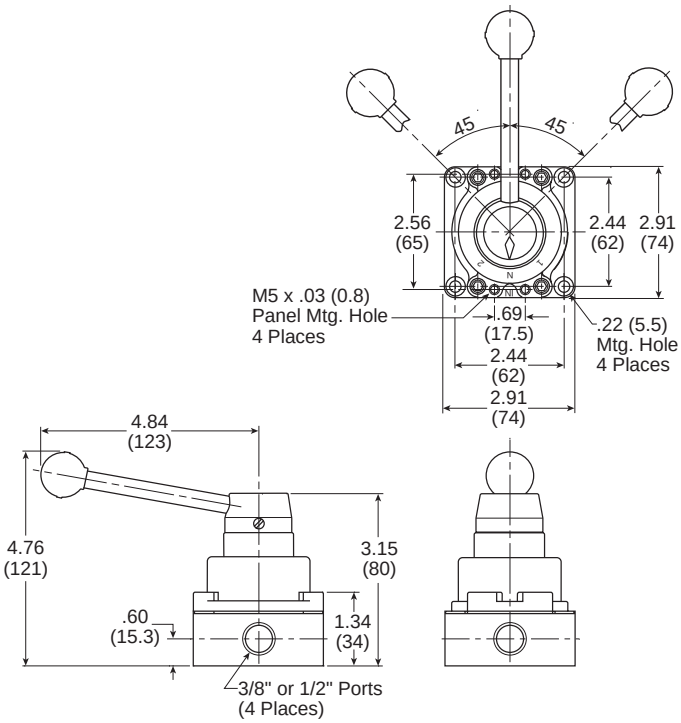
Port Size

8	**1/4" (42 Type Only)**
10	**3/8" (44 Type Only)**
15	**1/2" (44 Type Only)**

Dimensions

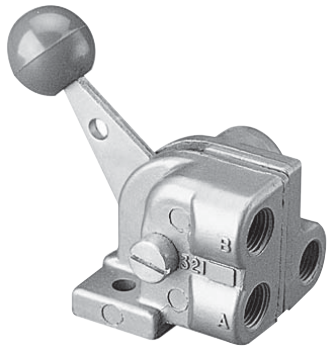


HVN4200-8

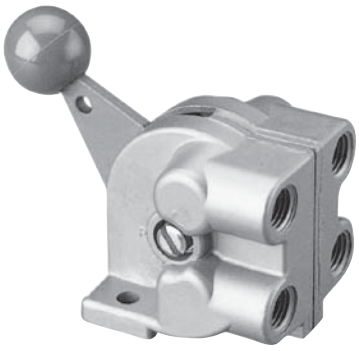


HVN4400-10, 15

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1/8" 3-Way



1/4" 4-Way

Application

Sliding seal valves provide 3 or 4-Way directional control in a compact body size. Comfortable hand lever is easy to operate and maintains set position. Disc type valve has minimum number of moving parts. Valves should be used with filtered and lubricated air.

⚠ ***CAUTION:***
Install guards on all hand operated valves.
Accidental operation can cause personal injury.

Operating Temperature

-40°F to 212°F (-40°C to 100°C)

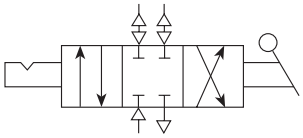
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Operating Pressure

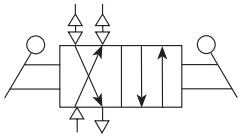
Maximum.....200 PSIG air only
Minimum.....26" Hg vacuum

Materials

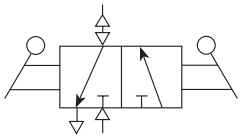
Seals ..... Buna N
Internal Components.....Brass, Stainless Steel
Body ..... Die Cast Zinc



4-Way 3-Position



4-Way 2-Position



3-Way 2-Position

Note: 3-Way exhaust passage is through an untapped hole in bottom side of valve.

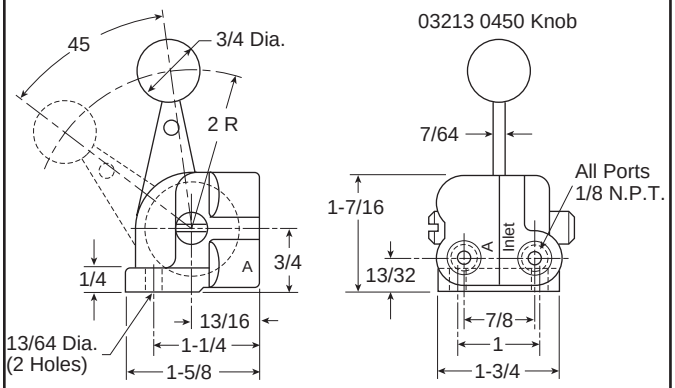
Model Selection and Performance Data

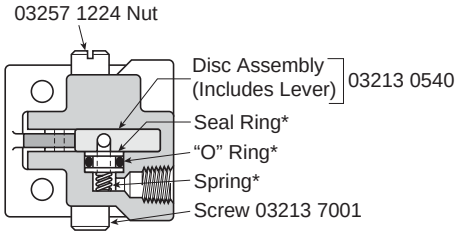
Port Size	Function	Model Number	Old Number	Cv (Avg)	Service Kit*
1/8"	3-Way, 2-Position	03213 0599	3213H	0.54	03213 0899
1/8"	4-Way, 2-Position	03214 0299	3214H	0.54	03213 0899
1/4"	3-Way, 2-Position	00823 0109	823H	1.25	00823 0299
1/4"	4-Way, 3-Position	00824 0109	824H	1.25	00823 0299

* Contains asterisk items from next page.

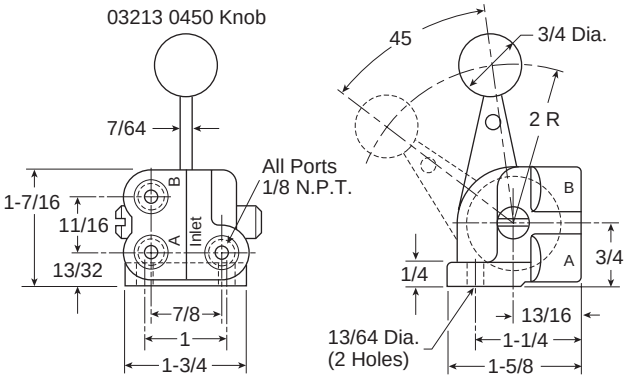
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1/8" 3-Way
(Model No. 03213 0599)

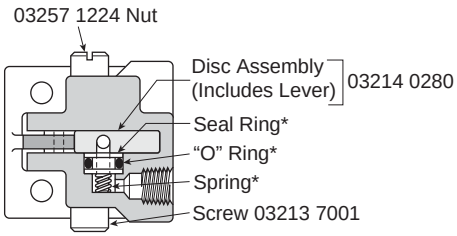




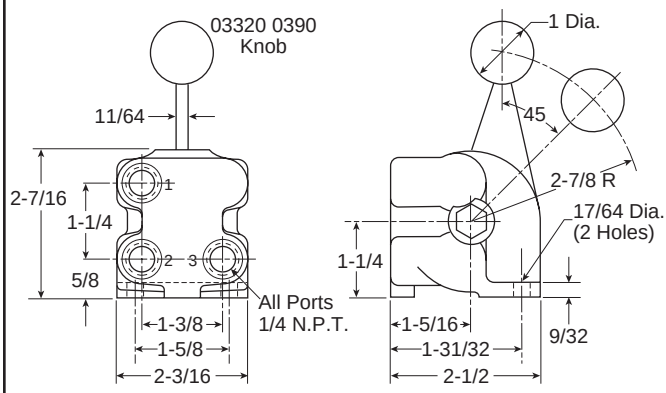
1/8" 4-Way
(Model No. 03214 0299)

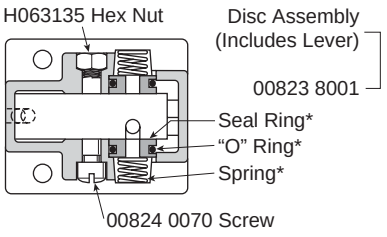


NOTE: With lever in position shown, inlet pressure is connected to port A.

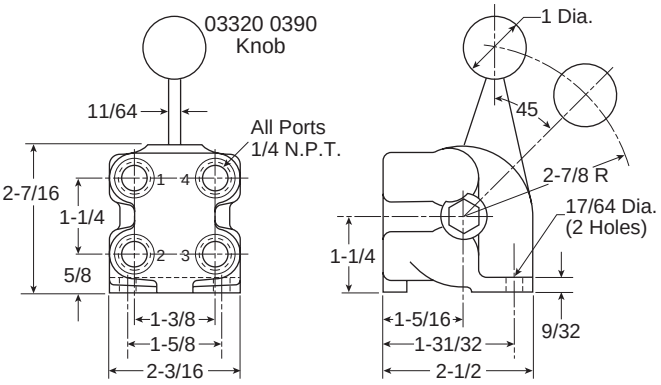


1/4" 3-Way
(Model No. 00823 0109)

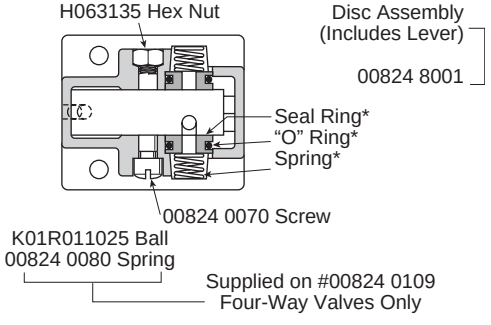




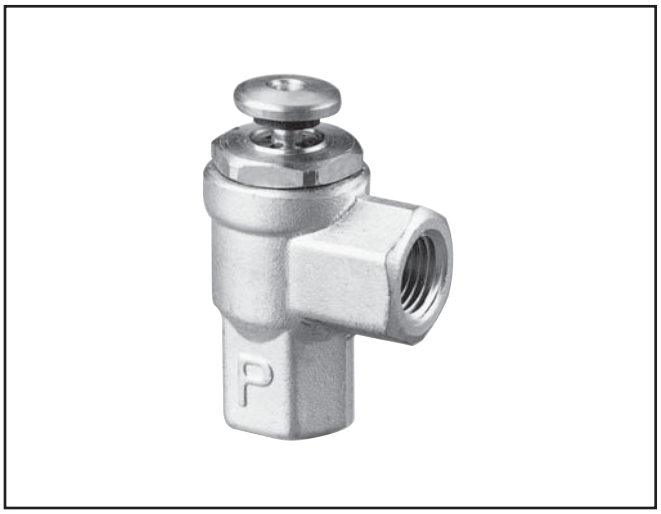
1/4" 4-Way
(Model No. 00824 0109)



NOTE: With lever in position shown, inlet port 3 is connected to port 4 and exhaust is through port 1.



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Application

Normally-closed poppet valve operates at the press of a button and may be installed in a pipe line or used as a portable blow gun attached to a length of hose.

⚠ ***CAUTION:***
Install guards on all hand operated valves.
Accidental operation can cause personal injury.

Operating Temperatures:

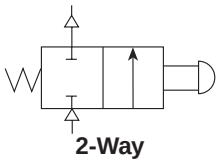
-20°F to 180°F (-28°C to 82°C)

Operating Pressures:

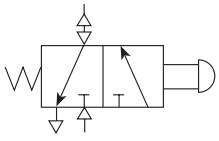
Maximum..... 150 PSIG air only
Minimum..... 0 PSIG

Materials:

Seals ..... Buna N
Internal Components..... Brass, Stainless and Plated Steel
Body ..... Brass

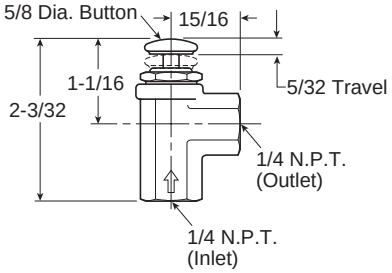


2-Way

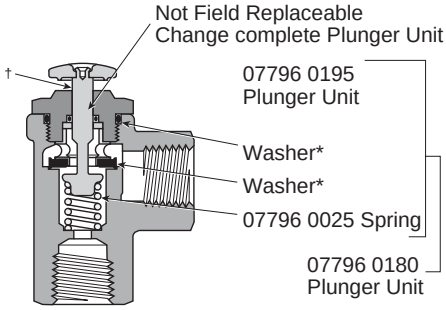


3-Way

Dimensions



Replacement Parts



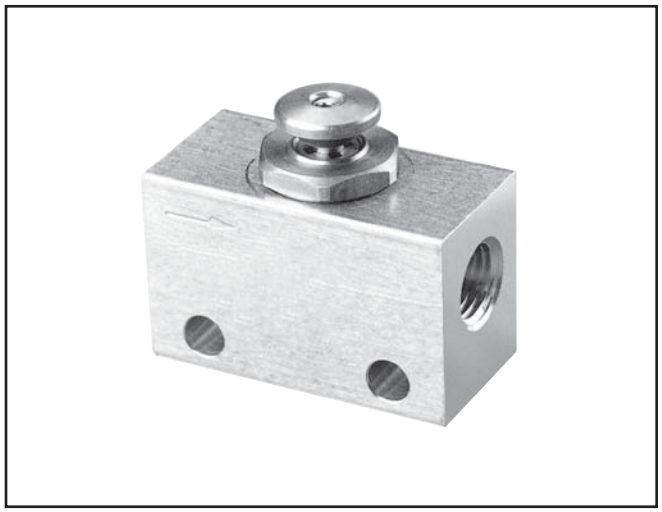
† 07796 0199 2-Way valve shown.
Plunger unit for 08187 0199 3-Way valve shown on page V9.

* Included in service kits listed below.

Model Selection and Performance Data

Port Size	Function	Model Number	Old Number	Cv (Avg)	Service Kit
1/4"	2-Way	07796 0199	7796SP1	0.94	07796 0105
1/4"	3-Way	08187 0129	8187	0.94	07796 0105

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Application

Inline, button-operated, normally closed poppet valve has mounting holes for single or gang mounting. Actuation by hand, cam or mechanical fingers.
Valves should be used with filtered and lubricated air.

⚠ ***CAUTION:***
Install guards on all hand operated valves.
Accidental operation can cause personal injury.

Operating Temperatures:

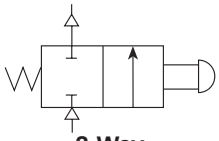
-20°F to 180°F (-28°C to 82°C)

Operating Pressures:

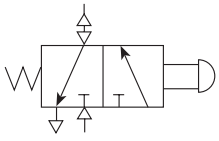
Maximum.....150 PSIG air only
Minimum.....0 PSIG

Materials:

Seals ..... Buna N
Internal Components..... Brass, Stainless and Plated Steel
Body ..... Aluminum bar stock

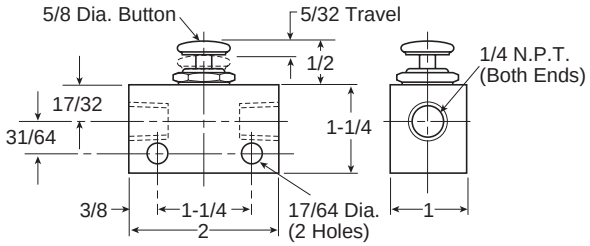


2-Way

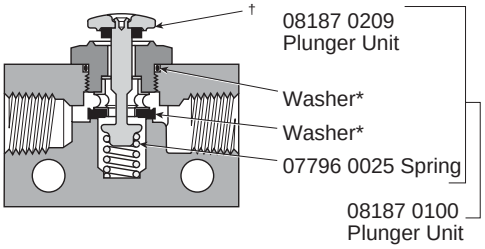


3-Way

Dimensions



Replacement Parts



† 08187 0139 3-Way valve shown.
Plunger unit for 07796 0319 2-Way valve shown on page V8.
* Included in service kits listed below.

Model Selection and Performance Data

Port Size	Function	Model Number	Old Number	Cv (Avg)	Service Kit
1/4"	2-Way	07796 0319	7796SP5	0.94	07796 0105
1/4"	3-Way	08187 0139	8187SP1	0.94	07796 0105

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Application

This 2-Way normally closed bleeder valve is an accessory that may be used with any double pilot-operated valve (bleed type). It provides manual or cam-operated control. A 1/4" pipe thread fits either the pilot valve port or the feeder airline. Opposite end has standard 1/2-20 thread for easy mounting on machine or panel. Valves should be used with filtered and lubricated air.

Operating Temperatures:

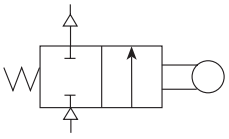
-40°F to 450°F (-40°C to 232°C)

Operating Pressures:

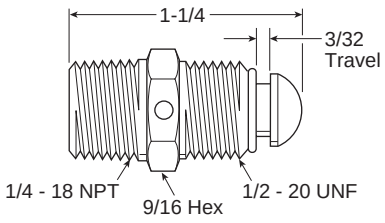
Maximum..... 150 PSIG air only
Minimum..... 0 PSIG

Materials:

Seals ..... Fluorocarbon
Internal Components..... Brass, Stainless Steel
Body ..... Brass



Dimensions



Model Selection

Pipe Size	Function	Model Number
1/4"	2-Way	31513 9000

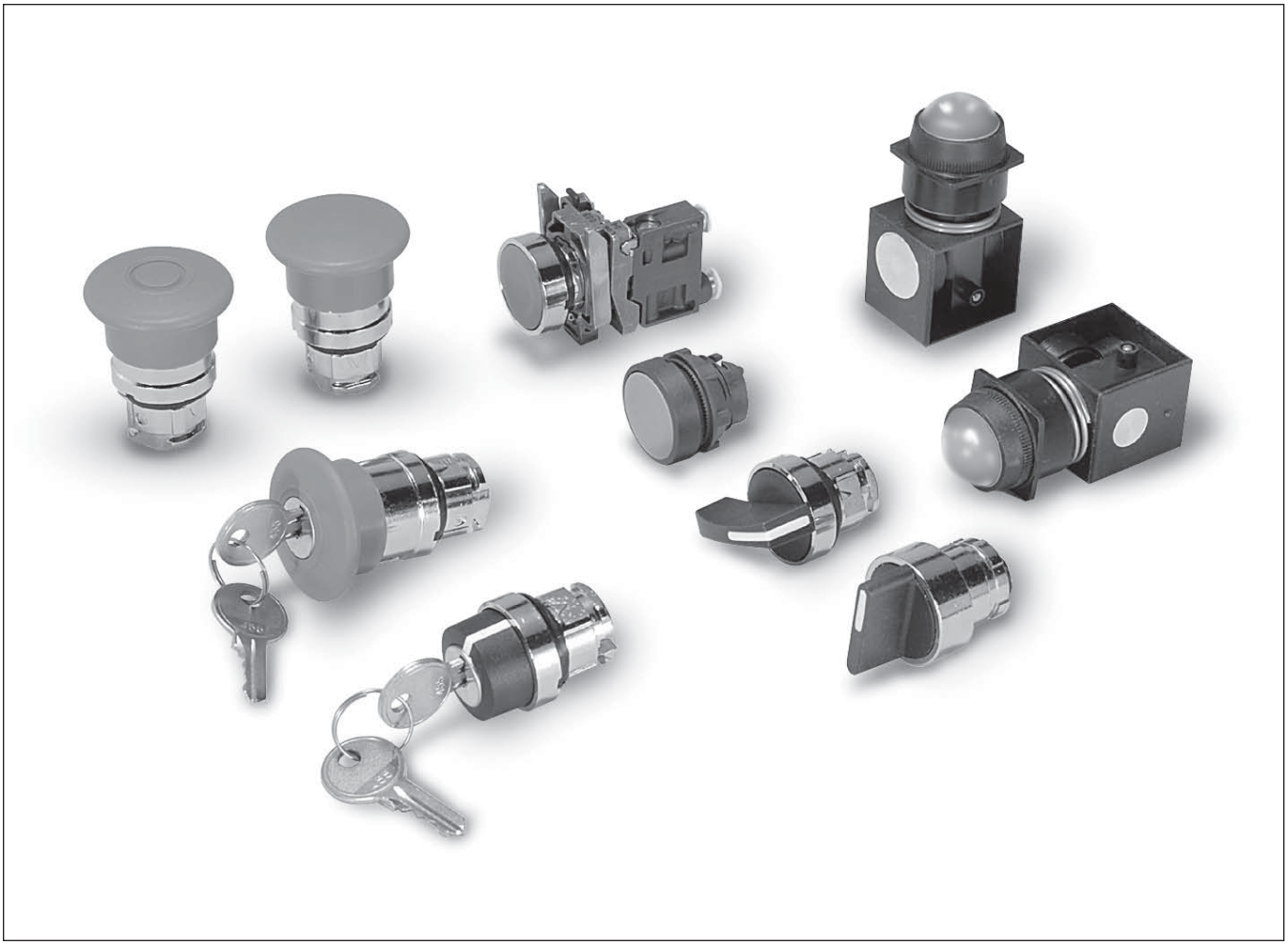
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Control Panel Products

Human / Machine Dialog

Section G

www.parker.com/pneu/cpp

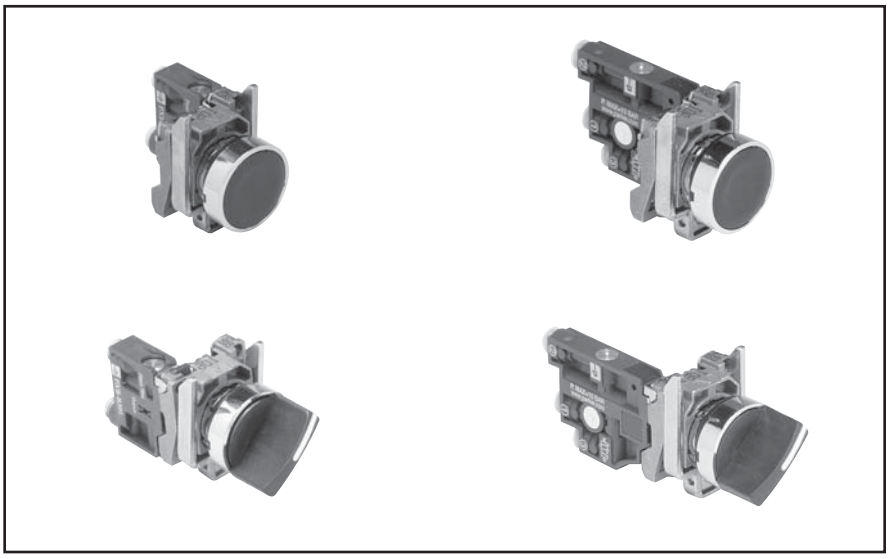


Basic Features G2-G3
Push Button, Selector Switches with Bodies G4
Push Buttons G5
Selector Switches G6
Valve Bodies & Accessories G7
Dimensions & Assembly G8
Legend Plates, Specifications G9
Mounting G10
Visual Indicators 22mm (7/8") G11
Rotary Selector Switches, 22mm (7/8") G12
Joystick Operators G13
Foot Pedal Operated Switches G14
Two-Hand Controls G15-G16

BOLD ITEMS ARE MOST POPULAR.

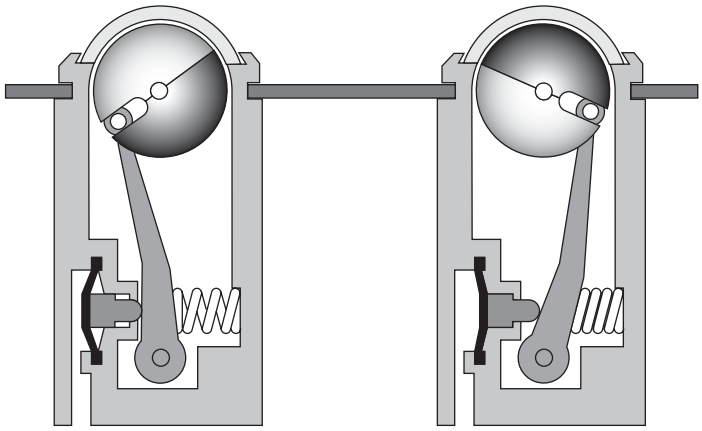
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HUMAN-MACHINE DIALOG requires devices such as push buttons and selector switches to provide command inputs. A wide variety of these devices is available to meet most application needs. Both pneumatic and electrical switch bodies are available to match system technology. All of these devices use the 22 mm (7/8") mounting standard.



PNEUMATIC VISUAL INDICATORS

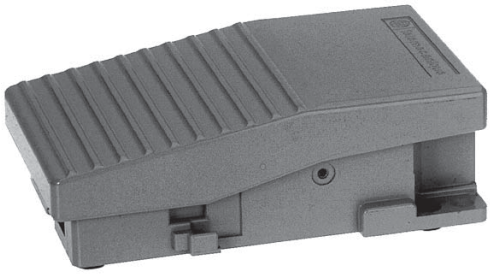
An indicator ball is rotated by a pneumatic input, changing the visible color. The ball sits behind a clear plastic window, providing a wide field of view. The visual indicators are available in five brightly colored Day-Glow paints for increased visibility. Like push buttons and selector switches, visual indicators use the 22mm (7/8") mounting standard.



Unactuated State **Actuated State**

FOOT PEDAL SWITCHES

When the application requires the use of foot pedals, these devices can be used to initiate a cycle or a step within a cycle. A metal foot pedal is available with protective guard.



Metal Model



Plastic Model

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MODULAR PNEUMATIC / ELECTRIC PUSH BUTTONS

As with electrical contact switches, pneumatic valve modules can be mounted on a number of different operating heads.

- Pneumatic normally non passing (NNP) is equivalent to electrical normally open (N.O.).
- Pneumatic normally passing (NP) is equivalent to electrical normally closed (N.C.).

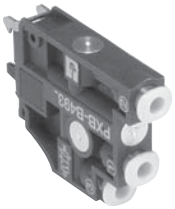
Note: Electrical switches can be stacked, but the rear connection on pneumatic switches prevents stacking. Therefore, when mixing electrical and pneumatic switch bodies on the same operator, the pneumatic switch must be mounted last.



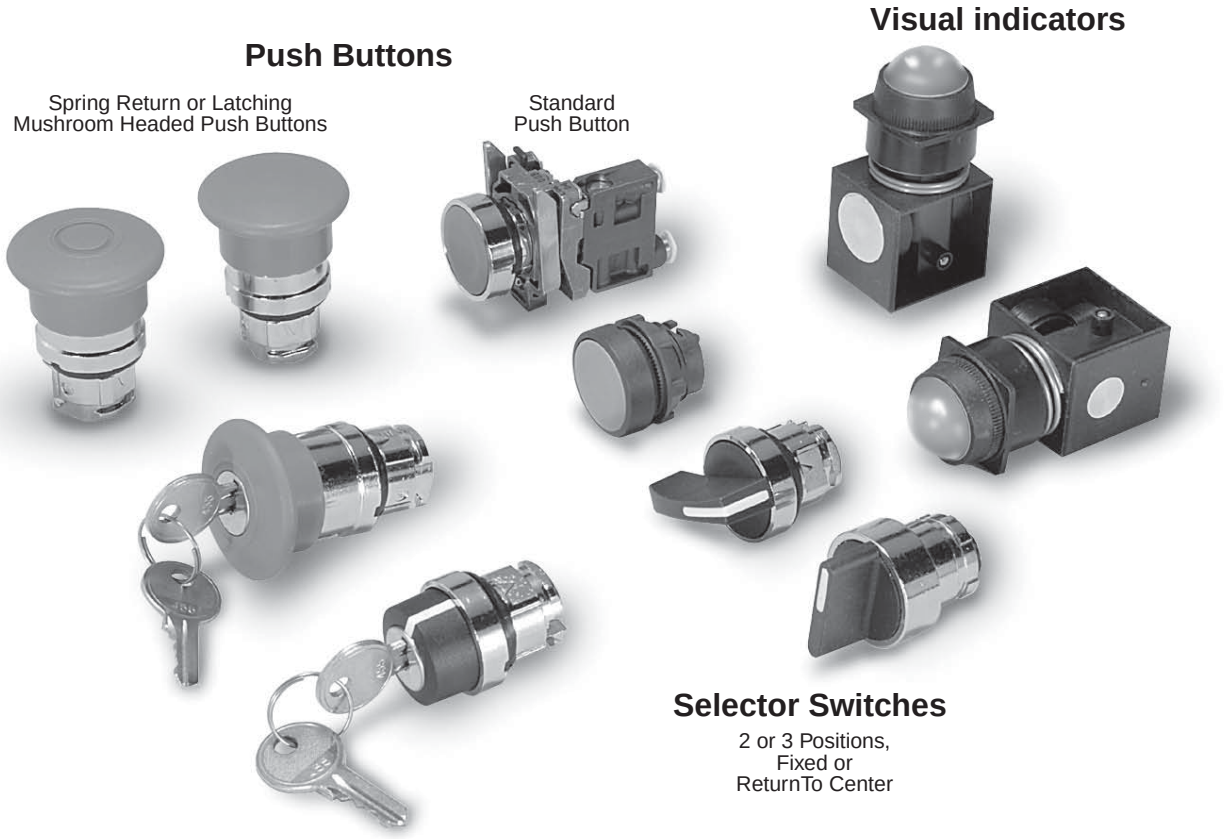
PXBB3911



PXBB4932



PXBB4931



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With 3/2 Valve Bodies 5/32" Instant Straight Connections

Flush Push Buttons



PXBB3111BA2



PXBB4131BA2

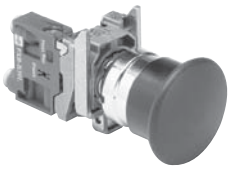
Part Number	Color	Function	Type of Switching*
PXBB3111BA2	Black	Spring Return	NNP
PXBB3111BA3	Green		
PXBB3111BA4	Red		
PXBB3251BA2	Black	Spring Return	NNP+NP
PXBB4131BA2	Black	Spring Return	Single Universal 3-Way
PXBB4131BA3	Green		
PXBB4131BA4	Red		
PXBB4231BA2	Black	Spring Return	Dual Universal 3-Way

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

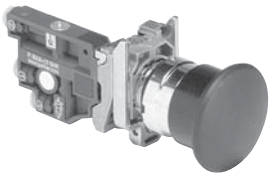
Note: Mount up to three valves on mounting ring.

Mushroom Head Push Buttons

(40mm Diameter)



PXBB3111BC2



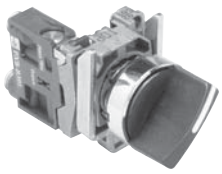
PXBB4131BC2

Part Number	Color	Function	Type of Switching*
PXBB3111BC2	Black	Spring Return	NNP
PXBB3111BT4	Red	Push-Pul	
PXBB3121BT4	Red	Push-Pull	NP
PXBB4131BC2	Black	Spring Return	Single Universal 3-Way
PXBB4131BT4	Red	Push-Pull	

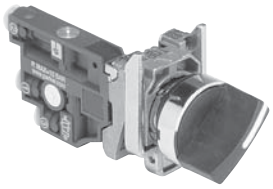
* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

Note: Mount up to three valves on mounting ring.

Selector Switches



PXBB3111BD2



PXBB4131BD2

Part Number	Color	Function	Type of Switching*
PXBB3111BD2	Black	2 Maintained	NNP
PXBB3211BD2	Black	Positions with	NNP+NNP
PXBB3251BD2	Black	Std. Handle	NNP+NP
PXBB3211BD3	Black	3 Maintained Positions with Std. Handle	NNP+NNP
PXBB3251BD3	Black		NNP+NP
PXBB3211BJ5	Black	3 Positions, Spring Return to Center with Long Handle	NNP+NNP
PXBB4131BD2	Black	2 Maintained Positions with Std. Handle	Single Universal 3-Way
PXBB4231BD2	Black	2 Maintained Positions with Std. Handle	Dual Universal 3-Way
PXBB4231BD3	Black	3 Maintained Positions with Std. Handle	Dual Universal 3-Way
PXBB4231BJ5	Black	3 Maintained Positions with Long Handle	Dual Universal 3-Way

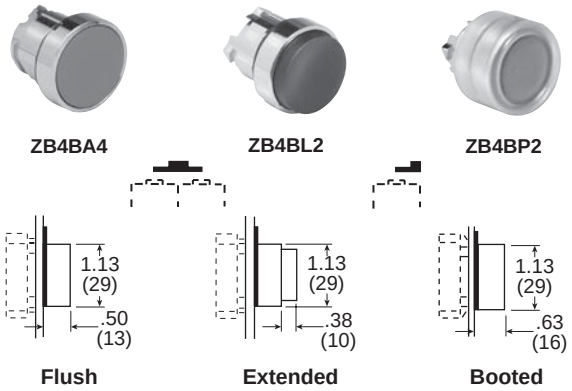
* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

BOLD ITEMS ARE MOST POPULAR.

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For Use With PXBB Valve Bodies and ZBE Electrical Switch Bodies

Push Buttons



Plastic Head ZB5**	Metal Head ZB4*			
Part Number	**Part Number**	**Color**	**Function**	**Description**
ZB5AA2	**ZB4BA2**	Black	Spring Return	Flush
ZB5AA3	**ZB4BA3**	Green		
ZB5AA4	**ZB4BA4**	Red		
—	ZB4BA5	Yellow		
—	ZB4BA6	Blue		
ZB5AL2	**ZB4BL2**	Black	Spring Return	Extended
ZB5AL3	**ZB4BL3**	Green		
ZB5AL4	**ZB4BL4**	Red		
—	ZB4BL5	Yellow		
—	ZB4BP2	Black	Spring Return	Booted
—	ZB4BP3	Green		
—	ZB4BP4	Red		

* ZB4*** Model Numbers are Metal Head Operators

** ZB5*** Model Numbers are Plasticl Head Operators

Push / Push Buttons

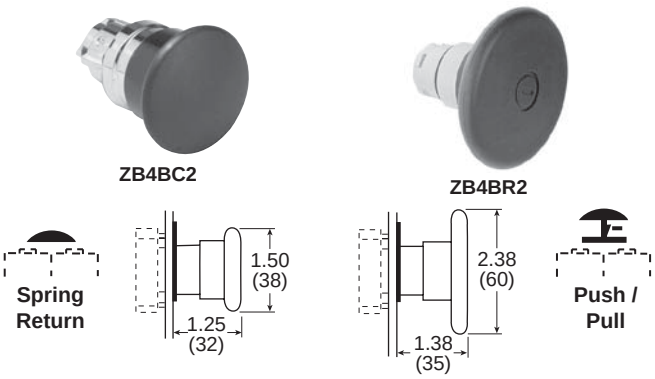


ZB4BH02

Part Number*	Color	Function	Description
ZB4BH02	Black	Detent 2-Position	Flush
ZB4BH03	Green		
ZB4BH04	Red		

* ZB4**** Model Numbers are Metal Head Operators

Mushroom Head Push Buttons



Part Number*	Color	Function	Description
ZB4BC2	Black	Spring Return	Ø 40mm Head
ZB4BC3	Green		
ZB4BC4	Red		
ZB4BT2	Black	Latching Push-Pull	
ZB4BT3	Green		
ZB4BT4	Red		
ZB4BR2	Black	Spring Return	Ø 60mm Head
ZB4BR3	Green		
ZB4BR4	Red		

* ZB4*** Model Numbers are Metal Head Operators

Mounting Accessories



ZB5AZ905

Part Number	Color	Description
ZB5AZ905	—	Plastic Head (ZB5) Mounting Nut Tightening Tool
ZBZ1602	Black Plastic	Guard for 40mm

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For Use With PXBB Variable Composition Switch Bodies

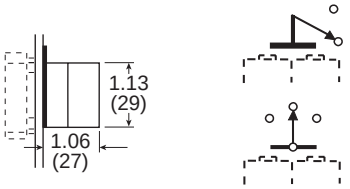
Selector Switches



ZB4BD3



ZB4BJ3



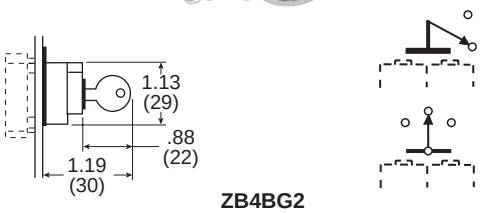
Standard Selector **Knob Lever**

Standard Black Handle		
Part Number*	**Description**	**Function**
ZB4BD2	Maintained	2-Positions
ZB4BD4	Spring Return from Right to Left	
ZB4BD3	Maintained	3-Positions
ZB4BD5	Spring Return to Center from Left and Right	
ZB4BD7	Maintained Right Spring Return from Left to Center	3-Positions
ZB4BD8	Maintained Left Spring Return from Right to Center	3-Positions
Long Black Handle		
ZB4BJ2	Maintained	2-Positions
ZB4BJ4	Spring Return from Right to Left	
ZB4BJ3	Maintained	3-Positions
ZB4BJ5	Spring Return to Center from Left and Right	

* ZB4*** Model Numbers are Metal Head Operators

Key Operated Selectors



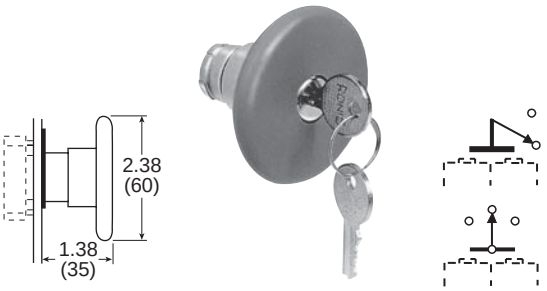


ZB4BG2

Key Operated		
Part Number*	**Key Withdrawal**	**Function**
ZB4BG2	Left	2 Maintained Positions
ZB4BG4	Left and Right	
ZB4BG3	Center	3 Maintained Positions
ZB4BG5	Left and Right	
ZB4BG7	Center	3-Positions 2 Spring Return to Center

* ZB4*** Model Numbers are Metal Head Operators

Mushroom Head Push Buttons with Key Select



ZB4BS24

Part Number*	Color	Function	Description
ZB4BS54	Red	Latching Turn to Release	Ø 40mm Head
ZB4BS14	Red	Key Latching	
ZB4BS64	Red	Latching Turn to Release	Ø 60mm Head
ZB4BS24	Red	Key Latching	

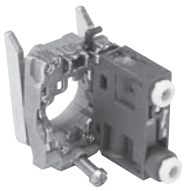
* ZB4**** Model Numbers are Metal Head Operators

BOLD ITEMS ARE MOST POPULAR.

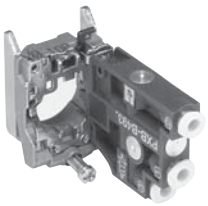
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For Use With 22mm (7/8") Metal Operating Heads 5/32" Instant Connections

3/2 Valve Bodies with Mounting Ring



PXBB3111B



PXBB4131B

Part Number	Connections	Function	Type of Switching*
PXBB3111B	5/32" Instant	3/2	NNP
PXBB3121B	5/32" Instant	3/2	NP
PXBB4131B	5/32" Instant	3/2	Universal 3-Way

Note: • Mount up to 3 valves on mounting ring for push buttons.
• Mount up to 2 valves on mounting ring for selector switches, Valves **cannot** be mounted in center position.

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry ..... 40 µm Filtration

Flow –
PXBB3• ..... Cv=.08
PXBB4• ..... Cv=.18

Materials –
Body ..... Polyamide
Operating Head ..... Zinc Alloy & Plastic

Operating Positions ..... All Positions

Operating Pressure –
PXBB3• ..... 15 to 115 PSIG (1 to 9 bar)
PXBB4• ..... 15 to 145 PSIG (1 to 10 bar)

Ports ..... 5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating ..... 5°F to 140°F (-15°C to + 60°C)

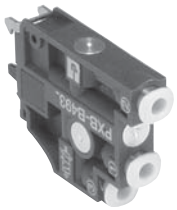
Additional Valve Bodies



PXBB3911



PXBB4932



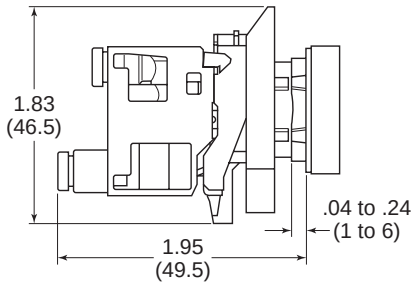
PXBB4931

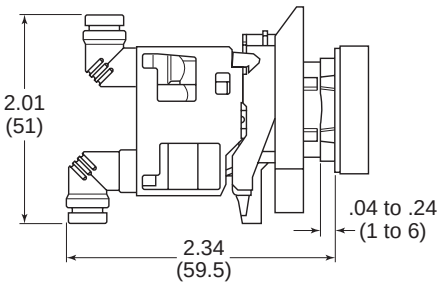
Part Number	Connections	Function	Type of Switching*
PXBB3911	5/32" Instant Straight	3/2	NNP
PXBB3912	5/32" Instant Swivel		
PXBB3921	5/32" Instant Straigh	3/2	NP
PXBB3922	5/32" Instant Swivel		
PXBB4931	5/32" Instant Straight	3/2	Universal 3-Way
PXBB4932	5/32" Instant Swivel		

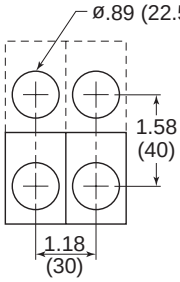
BOLD ITEMS ARE MOST POPULAR.

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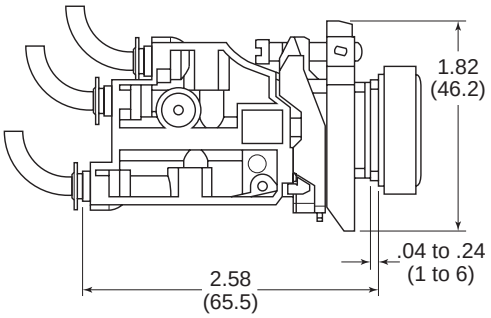
PXB-B3 Dimensions





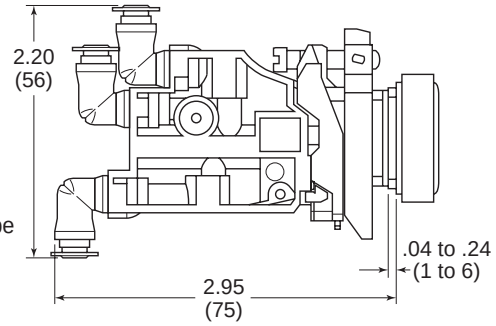


PXB-B4 Dimensions



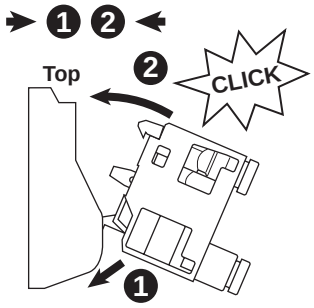
Tube Bending Radius
For PXBB3 and PXBB4

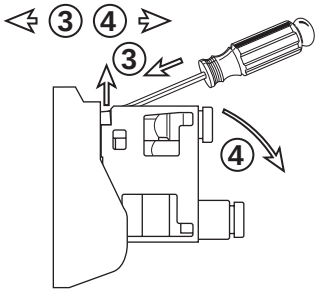
- 4 mm O.D. x 2 mm I.D. Tube = Minimum 0.39 (10) Radius
- 4 mm O.D. x 2.7 mm I.D. Tube = Minimum 0.59 (15) Radius



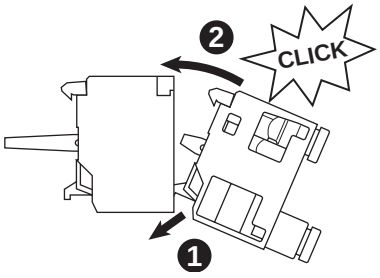
Assembly

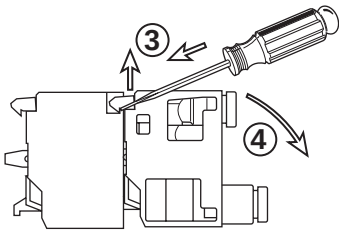
Assembling PXB Valves On Mounting Block





Assembling PXB Valves On the Back of the Electrical Contact





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For Push Buttons and Visual Indicators

Legend Plates for PXBB Devices (22mm)



ZBY••••

Part Number	Description		
Without Text For Customer Engraving			
ZBY2101	Black / Red Background (White Letters)		
ZBY4101	Yellow / White Background (Black Letters)		
With Text For Push Buttons			
ZBY2303	Start		
ZBY2304	Stop		
ZBY2305	Forward		
ZBY2306	Reverse		
ZBY2307	Up		
ZBY2308	Down		
ZBY2309	Right		
ZBY2310	Left		
ZBY2311	On		
ZBY2312	Off		
ZBY2313	Open		
ZBY2314	Close		
ZBY2321	Inch		
ZBY2323	Reset		
ZBY2326	Power On		
ZBY2327	Slow		
ZBY2328	Fast		
ZBY2330	Emergency Stop		
ZBY2334	Run		
With Text For 2-Position Selectors			
ZBY2367	Off	On	
With Text For 3-Position Selectors			
ZBY2387	Hand	Off	Auto

Blank Legend Plates for Inscription

For PXBB Devices *(2 lines of 11 characters maximum)*

Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Part Number	Description
ZBY2002	Black Background / White Letters

For 22mm Visual Indicators Only

2 lines of 11 characters maximum

Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Part Number	Description
ZB2BY2002	Black Background / White Letters

Accessories



ZBE101

Electrical Switch Bodies

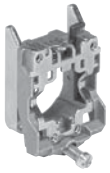
When combined with pneumatic valves ,these contact blocks allow different forms of power to be provided from a single push button. Can be mounted with both types of valves PXBB3 / PXBB4.

Electrical Specification: 240V, 10Amp

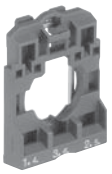
Part Number	Type of Contact
ZBE101	Normally Open (NO)
ZBE102	Normally Closed (NC)

Note: Plastic Mounting Ring ZB5AZ009 to be used with ZB5 Plastic Operating Heads.

Metal Mounting Ring ZB4BZ009 to be used with ZB4 Metal Operating Heads.



Metal: ZB4BZ009



Plastic: ZB5AZ009

Mounting Ring for Valve Bodies, Switch Bodies and Operating Heads

To make up a complete push button with one to three switching elements with 5/32" instant connections, use this mounting block and select the operating heads and bodies in this Section.

Part Number	Description
ZB4BZ009	Metal Mounting Ring
ZB5AZ009	Plastic Mounting Ring

To make up a complete selector switch with one or two switching elements with 5/32" instant connections, use this mounting block and select the operating heads and bodies in this Section.

Part Number	Description
ZB4BZ009	Metal Mounting Ring
ZB5AZ009	Plastic Mounting Ring

Note: To release push button from mounting ring, pull lever on top of mounting ring up and remove push button operator. To assemble push button operator to mounting ring, align arrows and snap into place.

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Functionality Explanation

Fluid Power			Universal Description	Electrical	
Function	Symbol			Function	Symbol
Normally Closed (N.C.)	2-Way	3-Way	Normally Non-Passing (NNP)	Normally Open (N.O.)	
Normally Open (N.O.)	2-Way	3-Way	Normally Passing (NP)	Normally Closed (N.C.)	

Type of Switching: Universal 3-Way: Valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

NP 3 2 NNP 1 2

NNP: Normally Non-Passing.

NP: Normally Passing.

NNP + NNP: Double Switch Body, Both Normally Non-Passing.

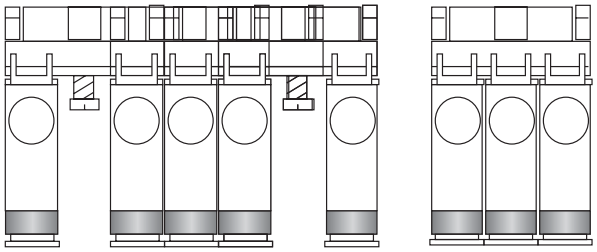
NNP + NP: Normally Non passing and Normally-Passing.

NP + NP: Both Normally Passing.

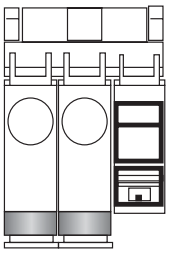
Combination of Output Devices On a Single Mounting Block

Up to 3 output devices (valves or electrical contacts) can be mounted side by side on 1 mounting block.

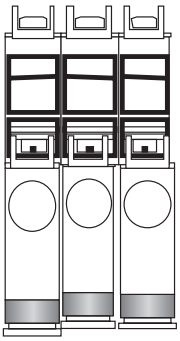
Note: The central position can only be activated by push button heads.



Electrical Contacts and Valves can be Combined Either Side by Side, or by Mounting the Valve on the Back of the Electrical Contact.

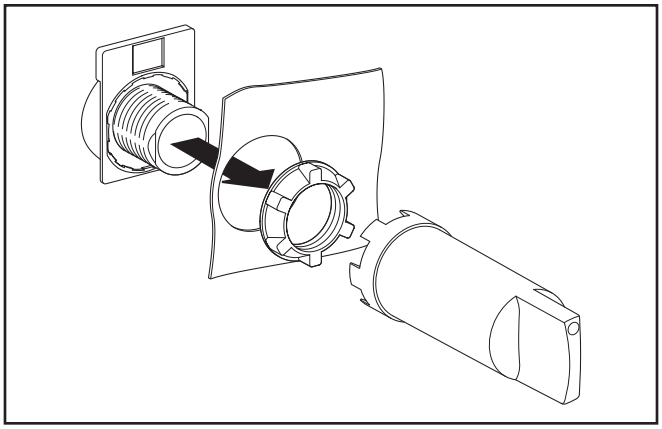


Side by Side Combination

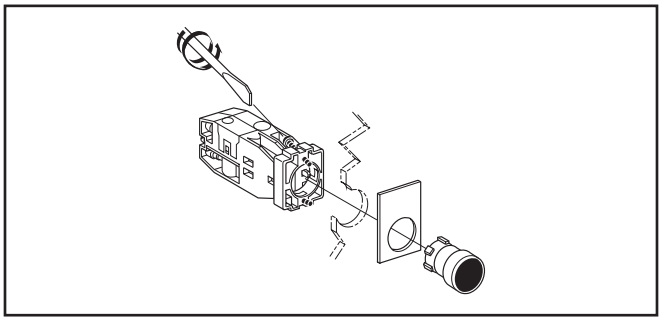


Combination by Mounting Valves On the Back of the Electrical Contact

Assembling Output Devices and Heads On ZB5 Series Mounting Block



Replacement Old Style Mounting



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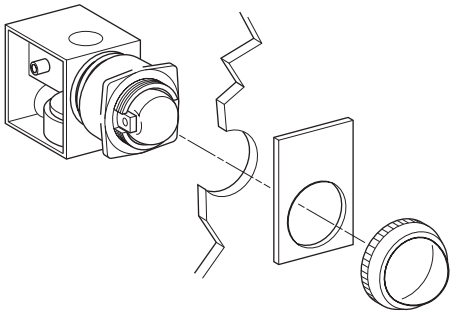
With 5/32" Instant Connections

22mm Visual Indicators





PXVF131



Mounting

Black Plastic Bezel		
Part Number "ON" Indicator	**Part Number "OFF" Indicator**	**Color**
PXVF131	**PXVF1213**	Green
PXVF141	**PXVF1214**	Red
PXVF151	**PXVF1215**	Yellow
PXVF161	**PXVF1216**	Blue
PXVF111	**PXVF1211**	White

Notes:

- The Pneumatic Indicators are black in one position and colored in the other. The colored position corresponds either to the presence of a pressure ("ON" Indicator) or the absence of pressure ("OFF" Indicator).
- For Legend Plates, see page G9.

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz..... 1 million Operations
Mushroom Head ..... 300,000 Operations

Operating Positions..... All Positions

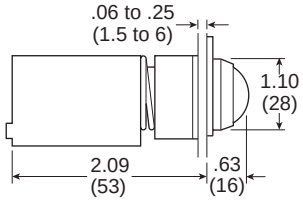
Operating Pressure ..... 15 to 115 PSIG (1 to 8 bar)

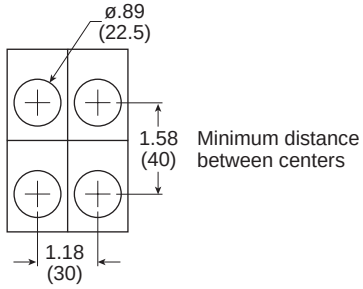
Ports –
Standard .....5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Temperature –
Operating .....32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to +60°C)

Dimensions

PXVF1• •

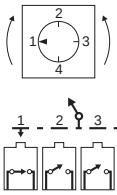


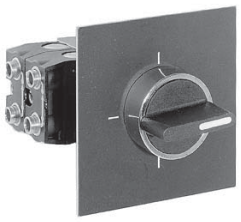


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With 5/32" Instant Connections, 1/16" I.D. Internal Orifice

4-Positions, 4-Outputs 3/2

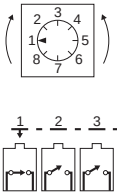


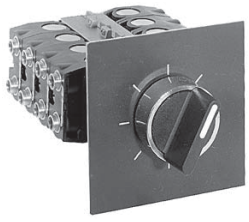


PXBDD104

Without Mechanical Stop		
Part Number	**Operating Head**	**Type of Switching***
PXBDD104	Black Handle with 2.5" x 2.5" (64 x 64 mm) Legend Plate, Red or Black Background	NNP

8-Positions, 8-Outputs 3/2





PXBDD508

Without Mechanical Stop		
Part Number	**Operating Head**	**Type of Switching***
PXBDD508	Black Handle with 2.5" x 2.5" (64 x 64 mm) Legend Plate, Red or Black Background	NNP

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic

Minimum Operating Force ..... 9.4 Lb (42 N)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz..... 1 million Operations
Mushroom Head ..... 300,000 Operations

Operating Positions..... All Positions

Operating Pressure ..... 15 to 115 PSIG (1 to 8 bar)

Ports –
Standard: 5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube

10-32 UNF Available.

Temperature –
Operating .....32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to +60°C)

Notes:

These Rotary Switches operate in either direction. They come assembled with switch PXBB1921 (Normally Passing). All switches are held in the actuated non-passing position except the one associated with a given dial position, which is in the unactuated Normally Passing position.

Example of Operation: Rotation from Position 1 to Position 2:

- Switch 1 changes from unactuated Normally Passing to actuated non-passing.
- Switch 2 changes from actuated non-passing to unactuated Normally Passing.

Units will accept all switch bodies shown earlier in this Section, but care must be taken in selecting switch type.

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With 5/32" Instant Connections, 1/16" I.D. Internal Orifice

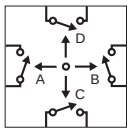
2-Position Unit

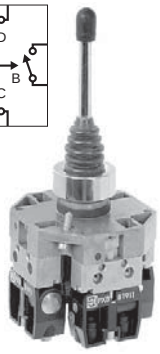




PXBGA8211

4-Position Unit





PXBGA8411

Note: These Joystick Operators come assembled with switch type PXBB1911, but will accept all Switch Bodies shown later in this Section.

Part Number	Position	Function	Type of Switching*	Operating Head
PXBGA8211	2	Maintained Position in Each Direction	NNP	Chrome Plated Lever with Protective Bellows 1.6" x 2.5"
PXBGA8411	4			
PXBGA8221	2	Spring Return in Each Direction	NNP	(40 x 64 mm) Legend Plate Red or Black Background
PXBGA8421	4			

*NNP: Normally Non-Passing. 

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR) 1.8 (50)

Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)..... 1/16" (1.5)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz..... 1 million Operations

Operating Angle..... 18°

Operating Positions..... All Positions

Operating Pressure ..... 15 to 115 PSIG (1 to 8 bar)

Operating Torque ..... 59.5 oz-in (420 mNm)

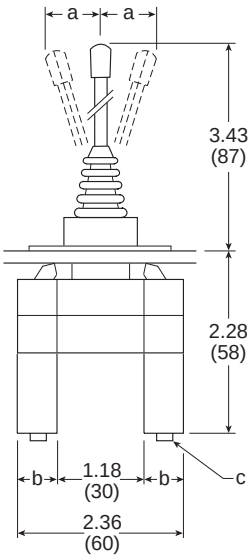
Ports –
Standard:.....5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube

10-32 UNF Available

Temperature –
Operating .....32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to +60°C)

Dimensions

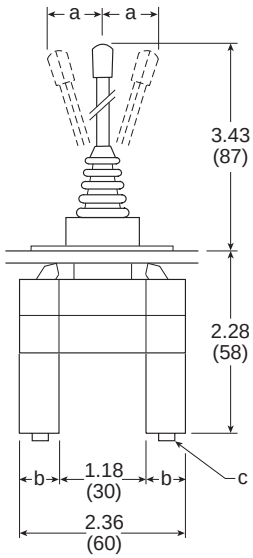
PXBGA82••



	inch	mm
a*	1.57	40
b	.59	15
c	5/32 Dia.	4 Dia.

* In both directions

PXBGA84••



	inch	mm
a*	1.57	40
b	.59	15
c	5/32 Dia.	4 Dia.

* In all 4 directions

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Standard Duty 1/6" I.D. Valves with 5/32" Instant Connections

Protective Guard



PXPEM510

Part Number	Function	Material	Type of Switching*
PXPEM510	High resistance protective guard, with interlock mechanism to prevent accidental operation by a falling object.	Metal	NNP

Foot Switches Without Protective Guard



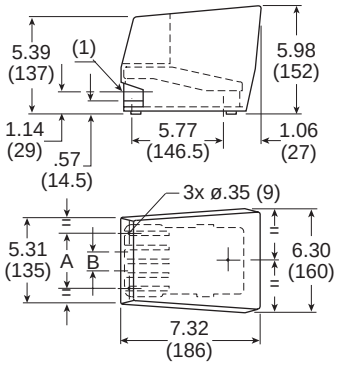
PXPEA110

Part Number	Function	Material	Type of Switching*
PXPEA110	Spring Return	Plastic	NNP
PXPEM110	Spring Return	Metal	NNP

⚠ **CAUTION:**
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

Dimensions

PXPEM510



(1) 2 mounting ports for adaptors for conduit fittings

(2) 7° operating angle

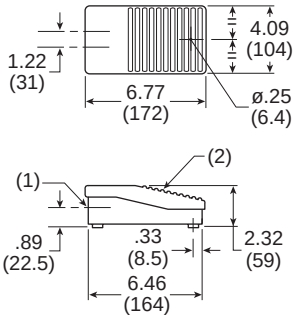
	inch	mm
a	3.53	940
b	1.22	31

Notes: These Foot Pedal Operators come assembled with switch PXBB1921 (Normally Passing). With the pedal in the unoperated position, the switch is in the actuated non-passing position. With the pedal actuated, the switch is in the unactuated Normally Passing position.

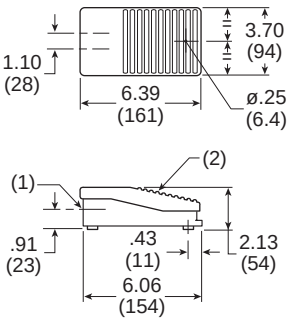
Units will accept all switch bodies shown earlier in this Section, but care must be taken in selecting switch type.

Dimensions

PXPEM110



PXPEA110



(1) .825" diameter thru hole

(2) 6° operating angle

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR) 1.8 (50)

Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)..... 1/16" (1.5)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz..... 1 million Operations

Operating Positions..... All Positions

Operating Pressure ..... 15 to 115 PSIG (1 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to + 60°C)

* NNP: Normally Non-Passing.

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Features

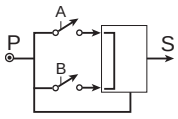
- The pre-assembled two-hand control enclosure occupies both hands of an operator by requiring nearly simultaneous operation of two pushbuttons
- Poppet – snap-acting (no spools)
- Same air as in cylinders – Filtration: 40 micron
- No lubrication required



PXPC111

Part Number	Connections
PXPC111	5/32" Instant

Operation



- Output "S" will appear only if "A" and "B" are simultaneously operated (within .5 seconds or less of each other).
- If the operator actuates only one pushbutton, either "A" or "B", or if both "A" and "B" are actuated but at an interval greater than .5 seconds, output "S" will not appear.
- Output "S" is regenerated by supply "P". Output "S" will therefore disappear if supply "P" is cut off.
- Output "S" will disappear if either "A" or "B" is released.
- If output "S" disappears for any reason, "A" and "B" must be nearly simultaneously actuated to again provide output "S".
- Since output "S" is regenerated it appears sharply, at full force (snap-acting), and is quickly exhausted upon deactivation. In addition the module is not affected by the length or diameter of tubing used for output "S".

General Characteristics

Operating Pressure .....40 to 120 PSI (3 to 8 bar)

Permissible Fluids –
Air or neutral gas 40 micron filtration, lubricated or dry

Flow at 90 PSI (6 bar) ..... 7 SCFM (200 l/mn ANR)

Operating Temperature .....-5°F to 140°F (-15°C to 60°C)

Below 40°F (5°C), an air dryer is required

Storage Temperature.....-40°F to 160°F (-40°C to 70°C)

Number of operations with dry air at 90 PSI (6 bar), 68°F (20°C), frequency 1 Hz..... 1 Million Operations

Vibration resistance –
Conforms to section 19-2 of bureau Véritas regulations (November 1987)

Materials –
Body.....Glass Filled Nylon

Operating Head ..... Zinc Alloy and Plastic

Connections:..... 5/32" instant

Mounting

Approvals:

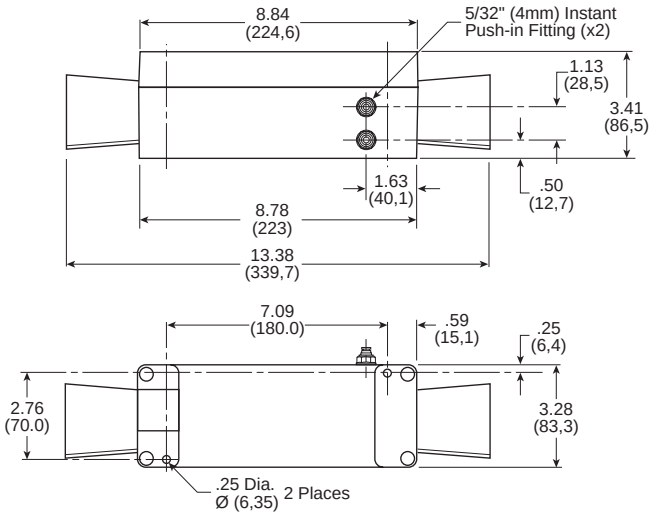
- In accordance with European Standard EN 574 - September 1996
- Conforms to the model that has obtained CE Type Test Certificate No. 02526 520 4631 0397

⚠ WARNING

These devices should NOT be used in any application involving rotary clutch presses. Two hand control modules do not of themselves insure the safety of any machine. Users and original equipment manufacturers are responsible for making sure that installations meet all relevant safety regulations.

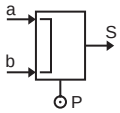
Dimensions

Inches (mm)



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Two-Hand Control Module

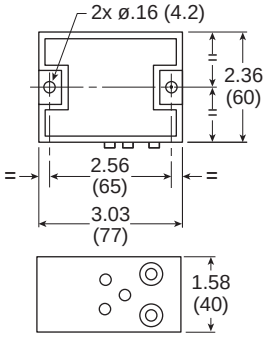




PXPA11

Part Number	Connections
PXPA11	5/32" Instant

Dimensions



PXPA11

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration
Flow at 90 PSI (6 bar) in SCFM (l/mn ANR) 7 (200)
Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic
Nominal Bore Ø in Inches (mm)..... 7/64" (2.5)
Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz ..... 1 million Operations
Operating Positions..... All Positions
Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)
Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to + 60°C)
Vibration resistance:
Conforms to section 19-2 of bureau Véritas regulations (November 1987)

⚠ WARNING

These devices should NOT be used in any application involving rotary clutch presses. Two hand control modules do not of themselves insure the safety of any machine. Users and original equipment manufacturers are responsible for making sure that installations meet all relevant safety regulations.

Notes: These two-hand control modules provide an output signal upon nearly concurrent operation of two pushbuttons.

Two-Hand Control Module Guard



PPRL15

Part Number	Base Component
PPRL15	PXPC111

Two Hand Repair Parts

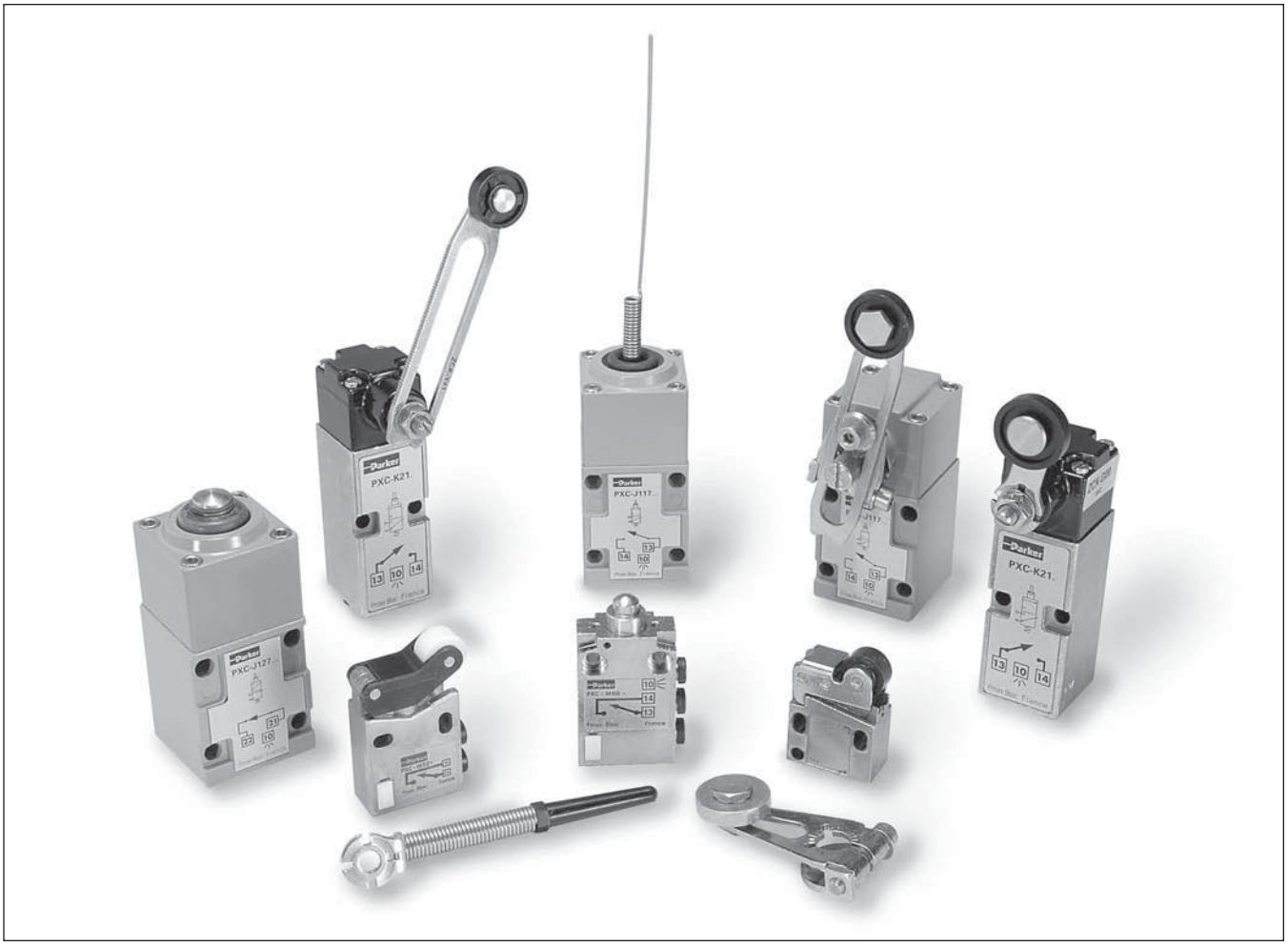
Part Number	Quantity Required	Description
PXPA11	1	Control Module
PXBB3111B	2	Valve Body & Mounting Ring
ZB4BR*	2	Push Button
PPRL15	2	Control Module Guard

* 2 = Black, 3 = Green, 4 = Red

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Section G

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Basic Features – Pneumatic Sensors G18

Limit Switches

3/2 Miniature Limit Switches G19-G20

3/2 Compact Limit Switches..... G21-G22

"K" Series – Standard Duty Limit Switches... G23-G26

"J" Series – Heavy Duty Limit Switches..... G27-G29

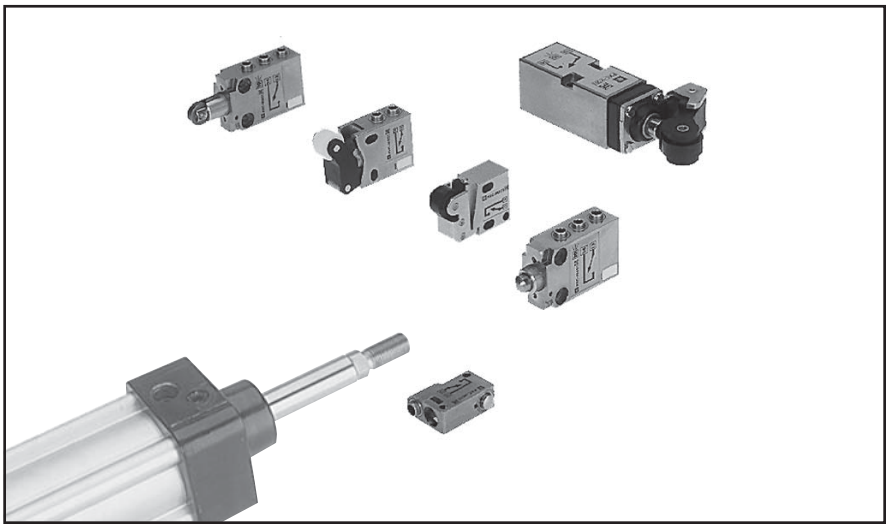
PWBA Blocking Valves G30-G31

Threshold Sensors G32-G34

To achieve the sensing or feedback function, pneumatic sensors can be:

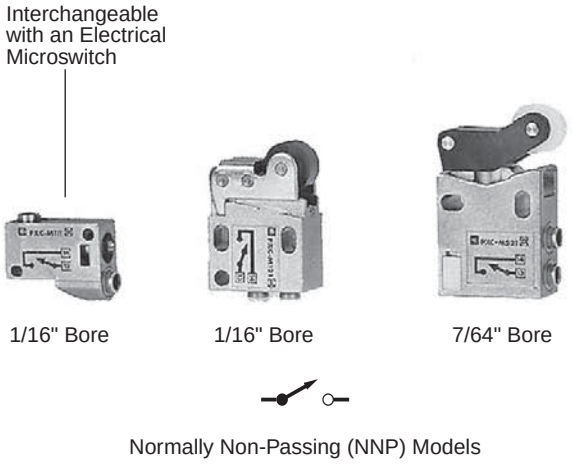
- Limit Switches in a Variety of Sizes and Configurations
- Pressure Switches with Many Adjustable Ranges
- Components Designed Specifically for Pneumatic Technology using Pressure Variation, Air Bleed or Blocking for Detection.

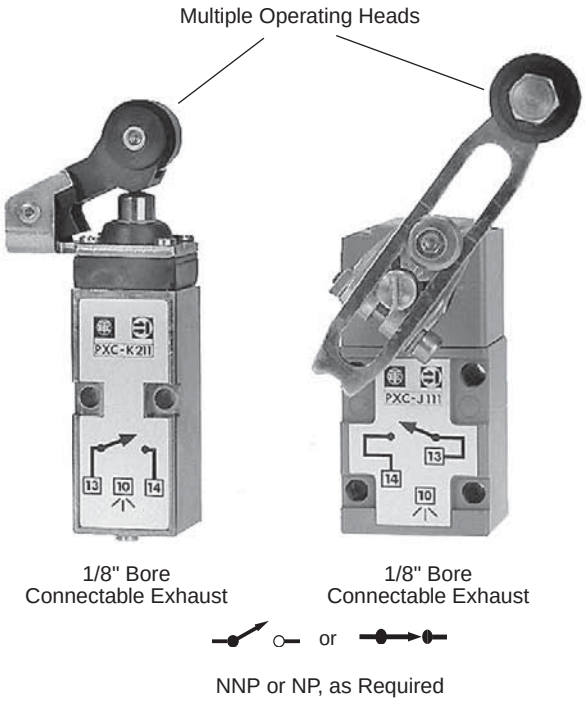
A wide variety of pneumatic sensors are available to suit any application requirement.



PNEUMATIC LIMIT SWITCHES

Pneumatic limit switches are non-passing (NNP) or passing (NP) when actuated by a moving part. The various operating levers, bore dimensions and functions are given below.





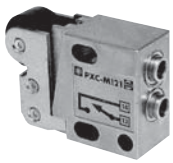
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Direct Acting Limit Switches

1/16" I.D. Internal Orifice



PXCM111



PXCM121

Part Number	Connection	Actuator	Type of Switching*
PXCM111	5/32" Instant	Steel Plunger Operating Levers Available (See Below)	NNP
PXCM115	10-32 UNF		
PXCM121	5/32" Instant	Plastic Roller	NNP
PXCM125	10-32 UNF		

7/64" I.D. Internal Orifice



PXCM521

Part Number	Connection	Actuator	Type of Switching*
PXCM521	5/32" Instant	Plastic Roller	NNP

Actuators For Steel Plunger



PXCZ11

Use with PXCM11*

Part Number	Actuator
PXCZ11	Plastic Roller Lever
PXCZ12	Plastic Roller Lever, One Way Trip

* NNP: Normally Non-Passing.

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min) –
PXCM111 ..... 2.2 (60)
PXCM121 ..... 3.0 (85)
PXCM521 ..... 8.8 (250)

Materials –
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximum Operating Frequency ..... 5 Hz

Nominal Bore Ø –
PXCM111, PXCM121 ..... 1/16" (1.5 mm)
PXCM521 ..... 7/64" (2.5 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz ..... 10 Million

Operating Positions ..... All Positions

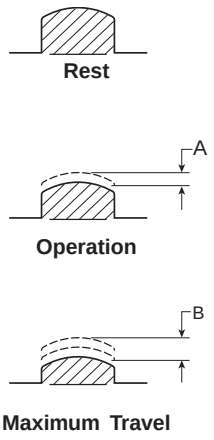
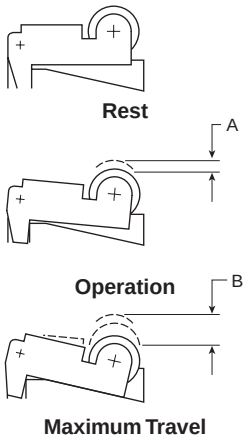
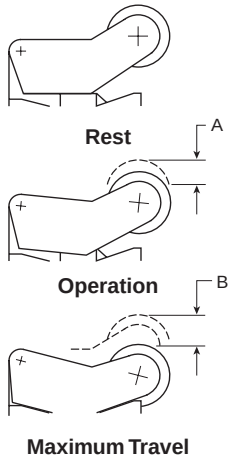
Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to + 60°C)

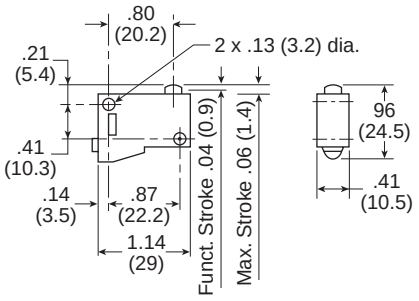
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Operator Specifications

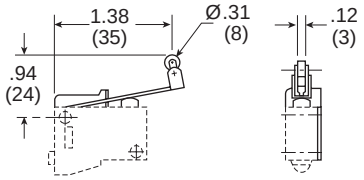
	PXCM111	PXCM121	PXCM521
Differential Travel at 90 PSI (6 bar)	.006" (0.15 mm)	.012" (0.3 mm)	.020" (0.5 mm)
Maximum Travel (B) at 90 PSIG (6 bar)	.055" (1.4 mm)	.126" (3.2 mm)	.228" (5.8 mm)
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.035" (0.9 mm)	.079" (2 mm)	.087" (2.2 mm)
Minimum Operating Force at 90 PSI (6 bar)	2.5 lb (11 N)	1.0 lb (4.5 N)	1.6 lb (7 N)
Operating Diagram			

Dimensions

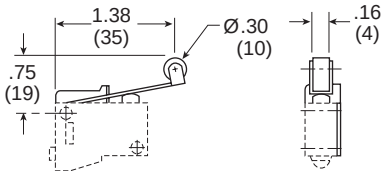
PXCM111



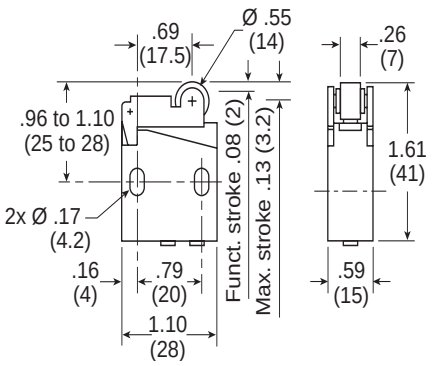
PXCZ12



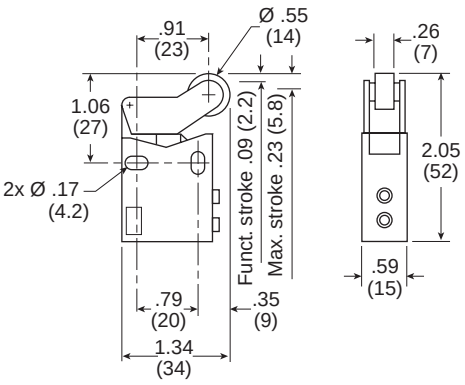
PXCZ11



PXCM121, PXCM131



PXCM521



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Pilot Operated Compact Limit Switches

5/32" Instant Connections
Pipeable Exhaust Port
7/64" I.D. Internal Orifice



PXCM601A110



PXCM601A102



PXCM601A103

Part Number	Actuator	Type of Switching*
PXCM601A110	Steel Plunger Operating Levers Available (See Below)	NNP
PXCM601A102	Steel Roller Plunger	
PXCM601A103	90° Steel Roller Plunger	

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min) 8.8 (250)

Materials –
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency ..... 5 Hz

Nominal Bore Ø ..... 7/64" (2.5 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz ..... 10 Million

Operating Positions ..... All Positions

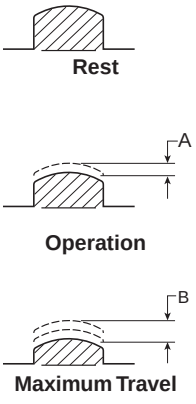
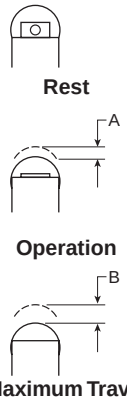
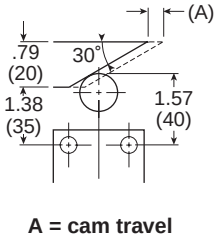
Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to + 60°C)

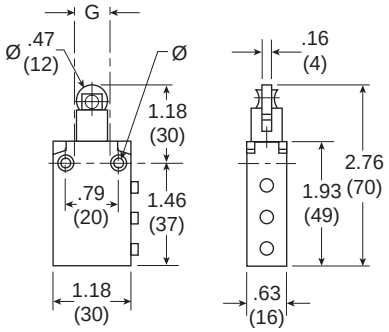
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Operator Specifications

	PXCM601A110	PXCM601A102	PXCM601A103	PXCM601A110 + XCMZ24
Differential Travel at 90 PSI (6 bar)	.012" (0.3 mm)	.008" (0.2 mm)	.020" (0.5 mm)	.047" (1.2 mm) (A)
Maximum Travel (B) at 90 PSIG (6 bar)	.197" (5 mm)	.197" (5 mm)	.197" (5 mm)	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.066" (1.7 mm)	.066" (1.7 mm)	.066" (1.7 mm)	.370" (9.4 mm) (A)
Minimum Operating Force at 90 PSI (6 bar)	5.4 lbf (24 N)	5.2 lbf (23 N)	5.2 lbf (23)	4.3 lbf (19)
Operating Diagram				

Dimensions

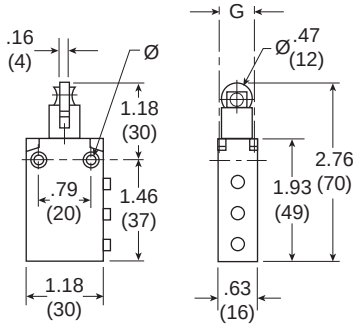
PXCM601A102



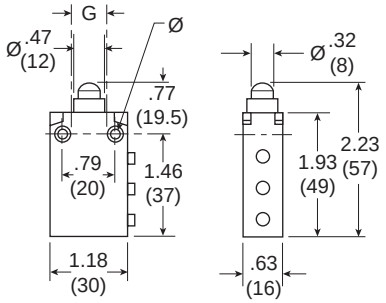
Ø:
2 mounting holes Ø .17" (4.3)
2 countersunk Ø .32" (8.2)
depth 4 mm

G:
top mounting holes, 2 x M5
.71" (18 mm) centers

PXCM601A103



PXCM601A110



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Limit Switches

Plunger Operated

5/32" Instant Connections
Pipeable Exhaust Port
1/8" I.D. Internal Orifice



PXCK21101 **PXCK21102** **PXCK21121** **PXCK21106**

Complete Assemblies		
Part Number	**Actuator**	**Type of Switching***
PXCK21101	Steel Plunger	NNP
PXCK22101		NP
PXCK21102	Steel Roller Plunger	NNP
PXCK22102		NP
PXCK21121	Plastic Roller Plunger	NNP
PXCK22121		NP
PXCK21106	Cats Whisker	NNP
PXCK22106		NP

Roller Operated

5/32" Instant Connections
Pipeable Exhaust Port
1/8" I.D. Internal Orifice



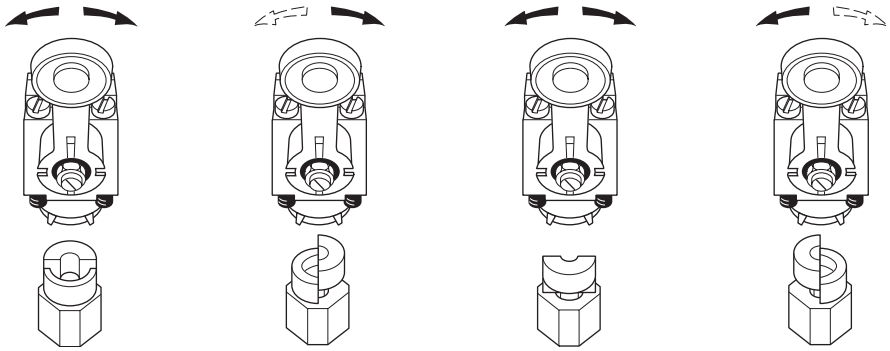
PXCK2110031 **PXCK2110041**

With Die Cast Rotary Operating Head and Operating Lever - Complete Assemblies		
Part Number	**Actuator**	**Type of Switching***
PXCK2110031	Fixed Delrin Roller Lever Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK2210031		NP
PXCK2110041	Adjustable Delrin Roller Lever Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK2210041		NP

NNP: Normally Non-Passing 

NP: Normally Passing

Field Conversion of Rotary Operating Head



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Separate Pneumatic Switch Bodies



PXCK211

Part Number	Actuator	Type of Switching*
PXCK211	For Use with ZCK Series Operating Heads	NNP
PXCK221		NP

Pneumatic Switch Bodies with Rotary Heads



PXCK21100

Part Number	Actuator	Type of Switching*
PXCK21100	Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK22100		NP

Operating Heads
For Use With PXCK Switch Bodies



ZCKG00

Part Number	Actuator	Description
Rotary Operated		
ZCKG00	—	Die Cast Zinc
Plunger Operated		
ZCKD02	Roller Plunger	Plunger Operated
ZCKD06	Whisker	
ZCKD10	Rod Plunger	
ZCKD21	Delrin Roller Lever On Plunger	
ZCKD23	Steel Roller Lever On Plunger	

Operating Levers for Rotary Heads



ZCKY81



ZCKY91

For Use With Rotary Head ZCKG00		
Part Number	**Actuator**	**Description**
ZCKY51	Steel 1/8" Square	Rod Levers
ZCKY52	Fiberglas 1/8" Dia. Round	
ZCKY81	Plastic Spring Rod Lever	
ZCKY91	Metal Spring Rod Lever	
ZCKY11	Delrin Roller Lever	Roller Levers
ZCKY13	Steel Roller Lever	
ZCKY41	Adjust. Delrin Roller Lever	
ZCKY43	Adjust. Steel Roller Lever	

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Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min) 7.4 (210)

Materials –
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency ..... 5 Hz

Nominal Bore Ø ..... 1/8" (3 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz ..... 10 Million

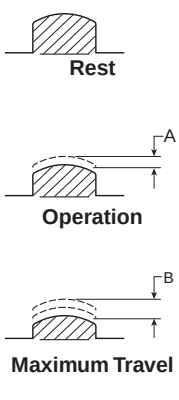
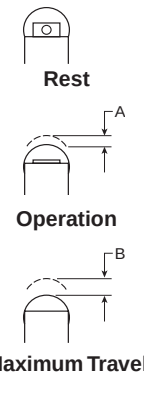
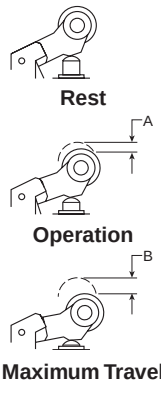
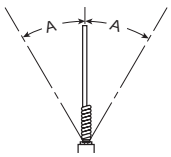
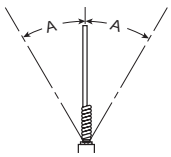
Operating Positions ..... All Positions

Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to +60°C)

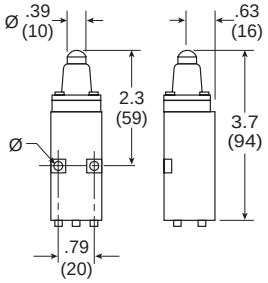
Operator Specifications

	PXCK2••01	PXCK2••02	PXCK2••03	PXCK2••06	PXCK2••00 + Actuator
Differential Angle	—	—	—	12°	3°
Differential Travel	.008" (0.2 mm)	.008" (0.2 mm)	.008" (0.2 mm)		
Maximum Angle of Travel	—	—	—	—	80°
Maximum Travel (B) at 90 PSIG (6 bar)	.228" (5.8 mm)	.228" (5.8 mm)	.228" (5.8 mm)	—	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.087" (2.2 mm)	.087" (2.2 mm)	.102" (2.6 mm)	—	—
Minimum Operating Force at 90 PSI (6 bar)	3.6 lbf (16N)	4.5 lbf (20N)	3.4 lbf (15N)	—	—
Minimum Operating Torque at 90 PSI (6 bar)	—	—	—	17.0 oz in (120mNm	29.8 oz in (210mNm)
Operating Angle	—	—	—	35°	31° (Minimum Lever Travel Including Pre-Travel Required For Operation)
Operating Diagram					

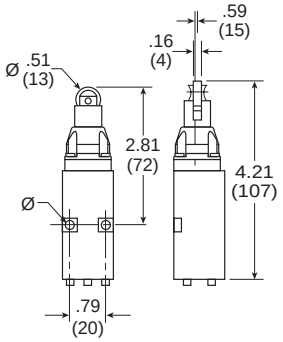
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Dimensions

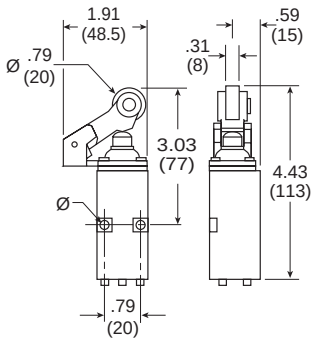
PXCK21101, PXCK22101



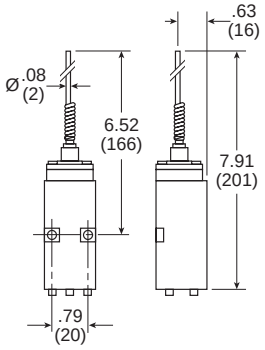
PXCK21102, PXCK22102



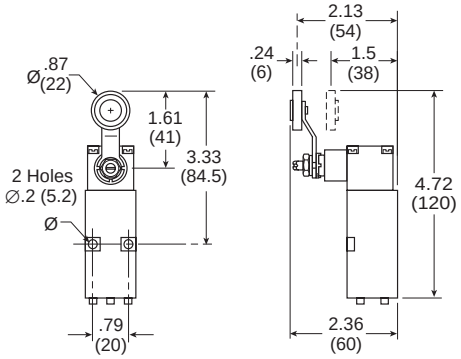
PXCK21121, PXCK22121



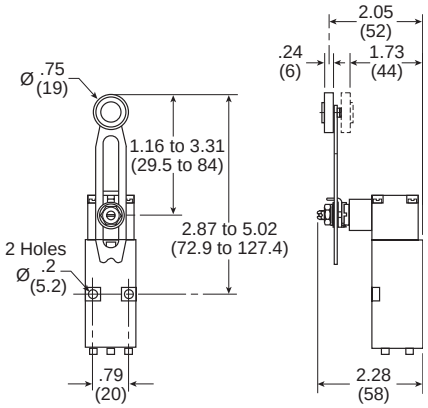
PXCK21106, PXCK22106



PXCK2110031, PXCK2210031

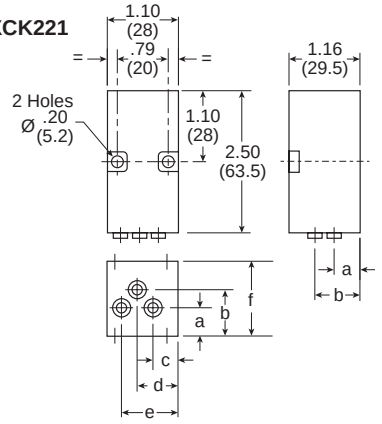


PXCK2110041, PXCK2210041



Pneumatic Switch Bodies

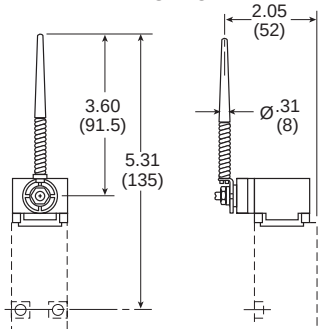
PXCK211, PXCK221



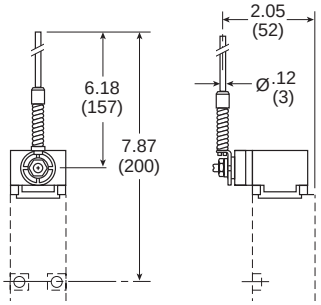
	inch	mm
a	.39	10
b	.77	19.5
c	.35	9
d	.61	15.5
e	.87	22
r	1.66	29.5

Rotary Heads with Operating Levers

ZCKY81



ZCKY91



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Switch Bodies Only



PXCJ117

Part Number	Type of Switching*
PXCJ117	NNP
PXCJ127	NP

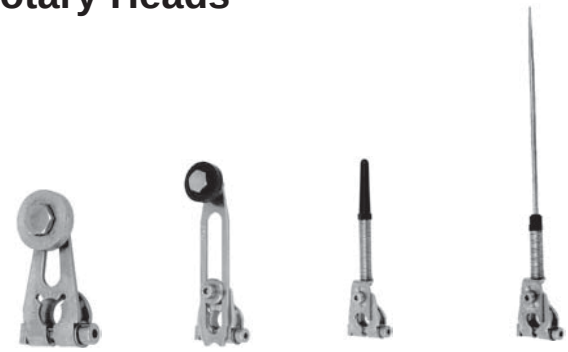
Switch Bodies with Rotary Head



PXCJ11701

Part Number	Direction of Actuation	Type of Switching*
PXCJ11701	Right & Left, Spring Return	NNP
PXCJ11705	Right or Left, Spring Return	
PXCJ12701	Right & Left, Spring Return	NP
PXCJ12705	Right or Left, Spring Return	

Operating Levers for Rotary Heads



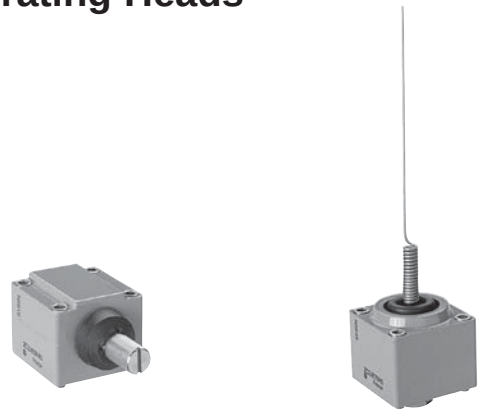
ZC2JY11 **ZC2JY31** **ZC2JY81** **ZC2JY91**

Die Cast Zinc. For Use With PXCJ Switch Bodies		
Part Number	**Operator**	**Description**
ZC2JY11	Delrin Roller	Spring Return
ZC2JY13	Steel Roller	
ZC2JY21	Offset Delrin Roller	
ZC2JY81	Plastic Spring Rod	
ZC2JY91	Metal Spring Rod	
ZC2JY31	Delrin Roller	Adjustable Roller
ZC2JY41	Offset Delrin Roller	
ZC2JY51		Rod Lever
ZC2JY71	Single Track, Delrin Roller	Fork Lever
ZC2JY61	Double Track, Delrin Rollers	

NNP: Normally Non-Passing

NP: Normally Passing

Top Plunger & Rotary Operating Heads



ZC2JE70 **ZC2JE01**

Die Cast Zinc. For Use With PXCJ Switch Bodies		
Top Plunger Type		
Part Number	**Operation**	**Description**
ZC2JE61	Top Push	Spring Return
ZC2JE62	Top Roller Push	
ZC2JE63	Side Push	
ZC2JE70	Cat's Whisker	
Rotary Type		
ZC2JE01	From Left & Right	Spring Return
ZC2JE02	Counterclockwise From Right	
ZC2JE03	Clockwise From Left	
ZC2JE05	From Left or Right	
ZC2JE09	Maintained Positions	

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Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min) 7.4 (210)

Materials –
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency ..... 5 Hz

Nominal Bore Ø ..... 1/8" (3 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz ..... 10 Million

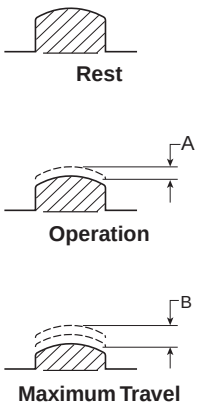
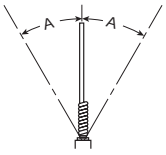
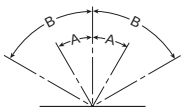
Operating Positions ..... All Positions

Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)

Ports ..... 1/8" NPT

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to +60°C)

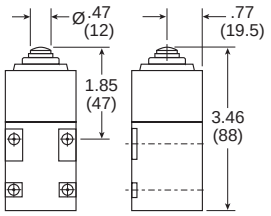
Operator Specifications

	ZC2JE61	ZC2JE62	ZC2JE70	ZC2JE01	ZC2JE05
Differential Angle	—	5°	5°	2°	2°
Differential Travel at 90 PSI (6 bar)	.008" (0.2 mm)	—	—	—	—
Maximum Angle of Travel	—	—	—	75°	75°
Maximum Travel (B) at 90 PSIG (6 bar)	228" (5.8 mm)	—	—	—	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.059" (1.5 mm)	—	—	—	—
Minimum Operating Force at 90 PSI (6 bar)	3.6 lbf (16N)	—	—	—	—
Minimum Operating Torque at 90 PSI (6 bar)	7.1 oz in (50Nm)	35.4 oz in (250Nm)	35.4 oz in (250Nm)	35.4 oz in (250Nm)	—
Operating Angle (Minimum Lever Travel Including Pre-Travel Required For Operation)	—	23°	23°	12°	12°
Operating Diagram					

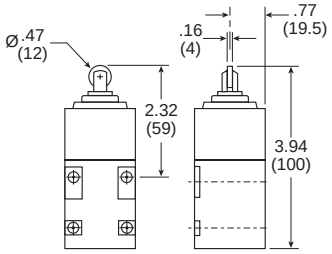
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Switch Body With Plunger Heads

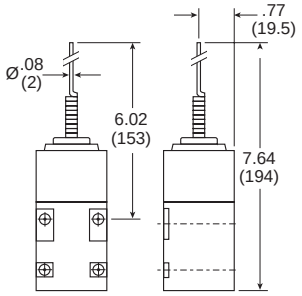
With ZC2JE61



With ZC2JE62

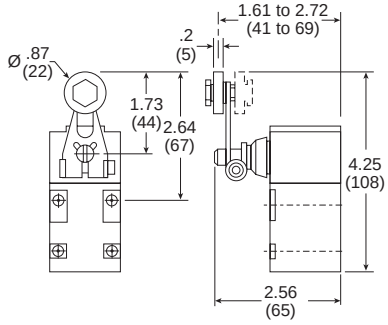


With ZC2JE70

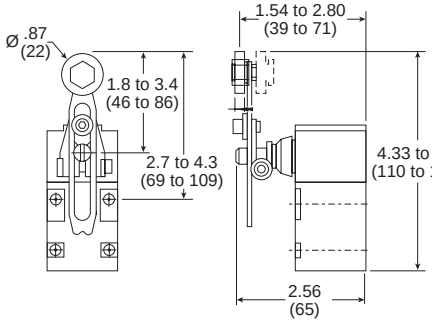


Switch Body With Rotary Heads and Operating Levers

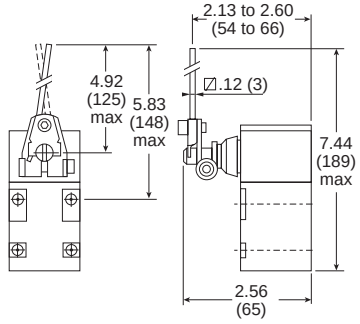
With ZC2JY11



With ZC2JY31

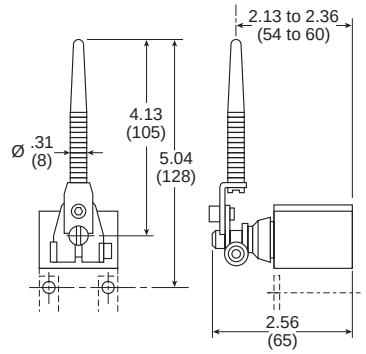


With ZC2JY51

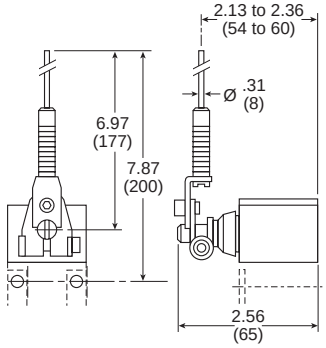


Rotary Heads With Operating Levers

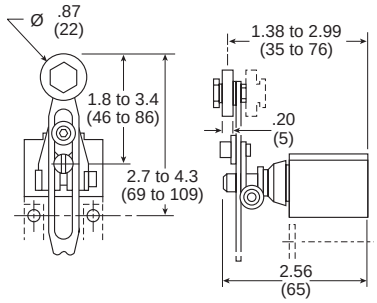
ZC2JY81



ZC2JY91

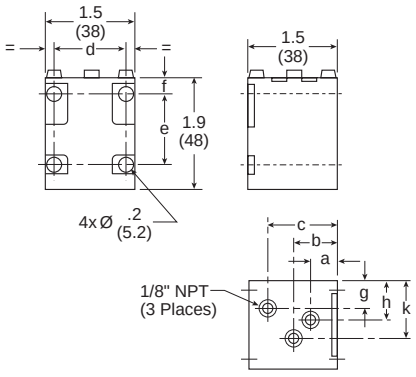


ZC2JY41



Pneumatic Switch Bodies

PXCJ117, PXCJ127



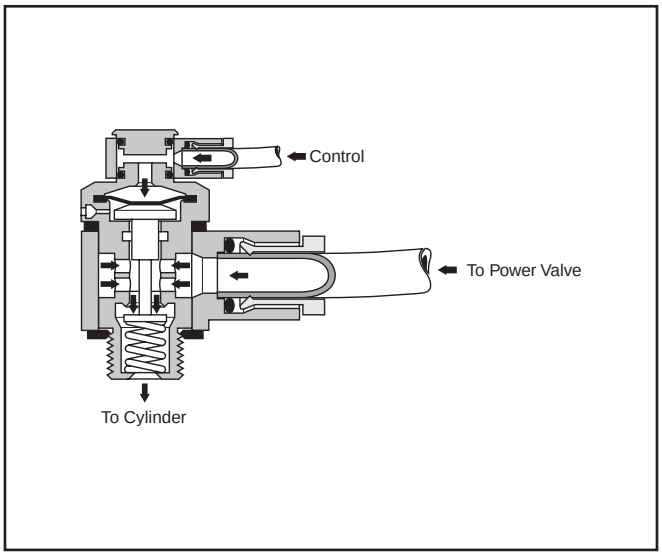
	inch	mm
a	.47	12
b	.75	19
c	1.16	29.5
d	1.14 to 1.18	29 to 30
e	1.18	30
f	.28	7
g	.43	11
h	.51	13
k	.94	24

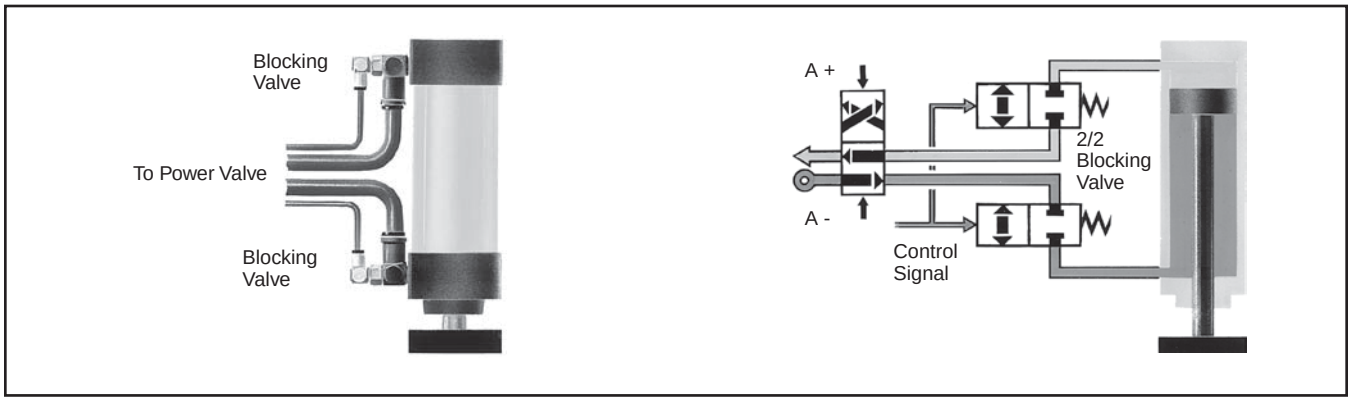
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Blocking Valves

The blocking valve is a single acting spring return 2/2 valve in a fitting format. The device requires a pneumatic pilot signal to open, which allows free flow of air, gas or liquid to pass. As long as a pilot signal is present, the device will remain open. When the pilot signal is removed, the internal spring will close the blocking valve, bubble tight. The blocking valve is oil serviceable and rated to 150 PSI.

These devices have two primary design uses: (1) to prevent unwanted gravity induced motion in cylinders during shut down procedures or during periods of lost supply pressure and (2) freezing the cylinder position by using a blocking valve at each end of the cylinder. Application needs such as tool or work piece protection, horizontal indexing or inspection stops are often satisfied by these devices.





PWBA General Characteristics

Operating Pressure	0 to 150 PSI
Permissible Fluids	Air or neutral gas, 50 µm filtration, lubricated or not
Operating Temperature	5° to 140°F (-15° to 60°C)
Storage Temperature	-40° to 160°F (-40° to 70°C)
Flow	See page w15
Mechanical Life	10 Million
Maximum Operating Frequency	10Hz
Material: Body	Zinc alloy
Mounting Screw	Brass
Maximum Mounting Torque: 10-32 UNF and M5	88 inch pounds
1/8"	70 inch pounds
1/4"	105 inch pounds
3/8"	265 inch pounds
1/2"	310 inch pounds
Adjustment	N/A
Adjustment Locking	N/A

Piloting and De-Piloting Pressure

Blocking Valve Sizes	**Pilot with Operating Pressure of:**			
	30 PSI	**60 PSI**	**90 PSI**	**120 PSI**
1/8" BSP or NPT	33 PSI	40 PSI	45 PSI	50 PSI
1/4" BSP or NPT	33 PSI	40 PSI	45 PSI	50 PSI
3/8" BSP or NPT	35 PSI	40 PSI	45 PSI	50 PSI
1/2" BSP or NPT	45 PSI	50 PSI	55 PSI	60 PSI
Blocking Valve Sizes	**Depilot with Operating Pressure of:**			
	30 PSI	**60 PSI**	**90 PSI**	**120 PSI**
1/8" BSP or NPT	20 PSI	25 PSI	30 PSI	34 PSI
1/4" BSP or NPT	20 PSI	25 PSI	30 PSI	34 PSI
3/8" BSP or NPT	20 PSI	25 PSI	30 PSI	34 PSI
1/2" BSP or NPT	25 PSI	30 PSI	34 PSI	40 PSI

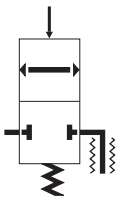
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For Cylinder Mounting
(Can also be mounted in Threshold Sensor Banjo)

With Instant Tube Fittings



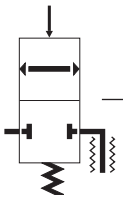
PWBA3469

BSP					NPT			
Symbol	Connection for Pilot	Cylinder Port Thread (Male)	Connection for Tube	Catalog Number	Connection for Pilot	Cylinder Port Thread (Male)	Connection for Tube	Catalog Number
	4mm Tube	1/8"	6mm	PWBA1468	5/32" Tube	1/8"	1/4"	PWBA3468
		1/4"	6mm	PWBA1469		1/4"	1/4"	PWBA3469
		1/4"	8mm	PWBA1489				
		3/8"	8mm	PWBA1483		3/8"	3/8"	PWBA3493
		3/8"	10mm	PWBA1493				
		1/2"	12mm	PWBA1412		1/2"	1/2"	PWBA3412

With Threaded Connections and Tube Pilot Port



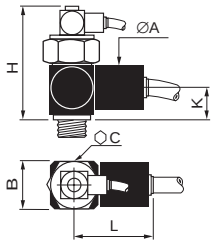
PWBA3833

BSP					NPT			
Symbol	Connection for Pilot	Cylinder Port Thread (Male)	Connection from Valve (Female)	Catalog Number	Connection for Pilot	Cylinder Port Thread (Male)	Connection from Valve (Female)	Catalog Number
	4mm Tube	1/8"	1/4"	PWBA1898	5/32" * Tube	1/8"	1/8"	PWBA3888
		1/4"	1/4"	PWBA1899		1/4"	1/4"	PWBA3899
	M5 Female	3/8"	3/8"	PWBA1833	5/32" * Tube	3/8"	3/8"	PWBA3833
		1/2"	1/2"	PWBA1822		1/2"	1/2"	PWBA3822

* Instant fitting

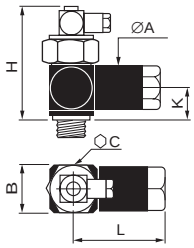
With Threaded Connections and Threaded Pilot Port

PWBA14/34

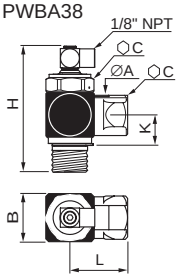


NPT			
Connection for Pilot	Cylinder Port Thread (Male)	Connection from Valve	Catalog Number
1/8" pipe	1/8"	1/8"	PWBA38887
	1/4"	1/4"	PWBA38997
	3/8"	3/8"	PWBA38337
	1/2"	1/2"	PWBA38227

PWBA18/38



PWBA38



Dimensions: Inches (mm)

	Flow*	ØA	B	C	K	H	L
PWBA1468/3468	14.8	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.32" (59)	1.54" (39)
PWBA1469/3469 PWBA1489	19.4	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.09" (53)	1.54" (39)
PWBA1483 PWBA1493/3493	45.9	1.06""(27)	1.10" (28)	0.94" (24)	0.55" (14)	2.09" (53)	1.98" (50)
PWBA1412/3412	81.2	1.22" (31)	1.30" (33)	1.30" (33)	0.94" (24)	2.59" (66)	2.59" (66)
PWBA1898/3888	14.8	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.32" (59)	1.71" (43.5)
PWBA1899/3899	19.4	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.09" (53)	1.71" (43.5)
PWBA1833/3833	45.9	1.06" (27)	1.10" (28)	0.94" (24)	0.55" (14)	2.09" (53)	2.18" (55)
PWBA1822/3822	81.2	1.22" (31)	1.30" (33)	1.30" (33)	0.94" (24)	2.59" (66)	2.47" (63)
PWBA38887	14.8	0.75" (19)	0.87" (22)	0.83" (21)	0.67" (17)	2.20" (56)	1.73" (44)
PWBA38997	19.4	0.75" (19)	0.87" (22)	0.83" (21)	0.67" (17)	2.20" (56)	1.73" (44)
PWBA38337	45.9	1.06" (27)	1.18" (30)	1.06" (27)	0.91" (23)	2.64" (67)	1.42" (36)
PWBA38227	81.2	1.06" (27)	1.18" (30)	1.06" (27)	0.91" (23)	2.64" (67)	1.42" (36)

*SCFM at 90 PSI

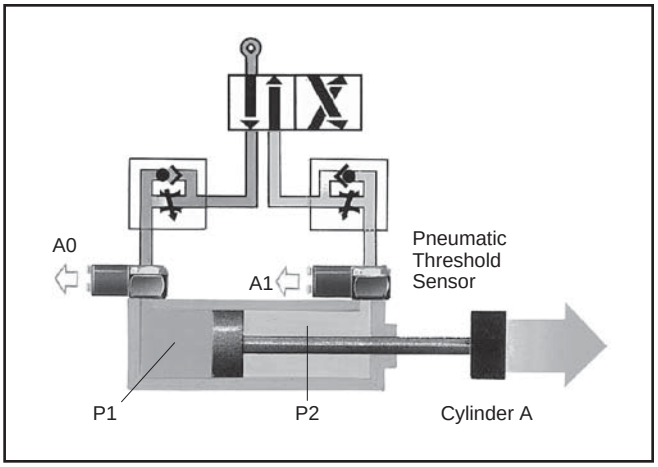
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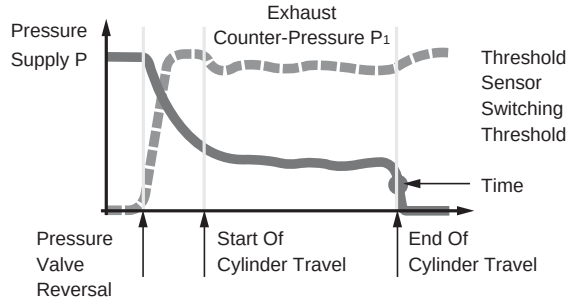
General Description

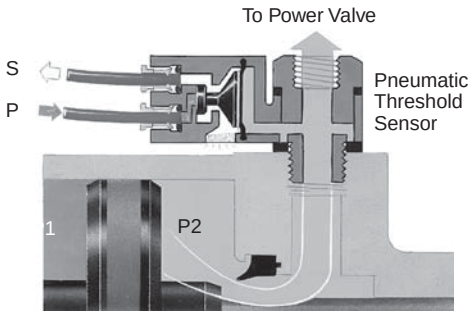
Threshold Sensors – PWS

The plug-in threshold sensors provide feedback information on pneumatic cylinder status in one of three possible outputs . . . pneumatic, electric, or electronic. Mounted into the cylinder port, these devices monitor the back pressure of the cylinder's exhaust. When the cylinder's piston stops, the back pressure rapidly drops and the threshold sensor provides the desired output. Ideal for variable stroke applications such as robotics where other sensor type devices such as limit switches are impractical, these devices provide a signal whenever the cylinder stops motion.

The threshold sensor consists of two complementary sub assemblies (1) the banjo fitting and (2) the plug-in sensor element. In all cases, the sensor is easily plugged into the banjo fitting and locked in place with a spring clip. The banjo fitting is designed to accept (piggy backed) other functional fittings such as flow controls or blocking valves. Simply select the sensor based on the type feedback signal that best fits the application.







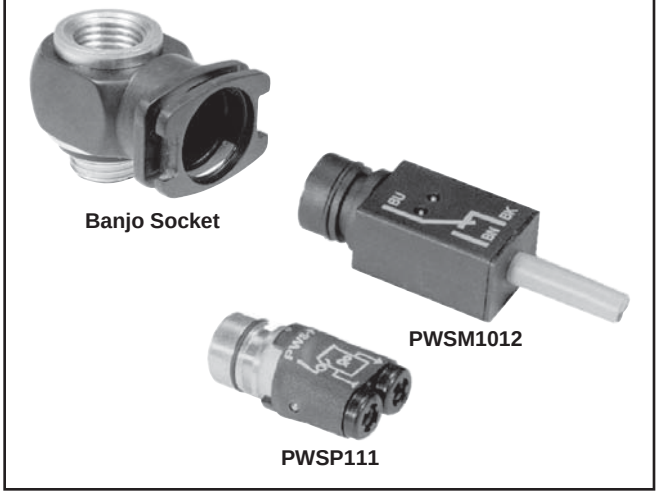
PWS General Characteristics

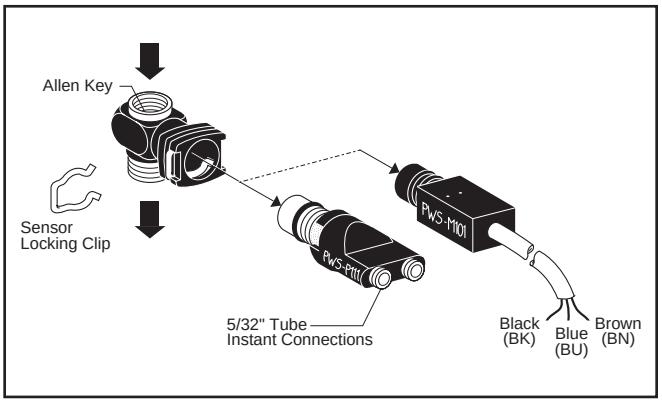
Operating Pressure	0 to 150 PSI
Permissible Fluids	Air or neutral gas, 50 µm filtration, lubricated or not
Operating Temperature	5° to 140°F (-15° to 60°C)
Storage Temperature	-40° to 160°F (-40° to 70°C)
Flow	N/A
Mechanical Life	10 Million
Maximum Operating Frequency	10Hz
Material: Body	Thermoplastic
Mounting Screw	Brass
Maximum Mounting Torque: 10-32 UNF and M5	88 inch pounds
1/8"	70 inch pounds
1/4"	105 inch pounds
3/8"	265 inch pounds
1/2"	310 inch pounds
Adjustment	N/A
Adjustment Locking	N/A

Piloting and De-Piloting Pressure

Threshold Sensors	Pilot with Operating Pressure of 90 PSI	Depilot with Operating Pressure of 90 PSI
PWSP111	64 PSI	6 PSI
PWSM1012	15 PSI	9 PSI
PWSE101 and PWSE111	10 PSI	7 PSI

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Model Selection

Banjo Sockets (with Sensor Clip)		
Port Size	**Model Number**	**Wrench**
10-32	**PWSB1557**	5/16" Hex
1/8"	**PWSB1887**	3/16" Allen
1/4"	**PWSB1997**	5/16" Allen
3/8"	**PWSB1337**	3/8" Allen
1/2"	**PWSB1227**	1/2" Allen

Plug-in Sensors		
Output	**Model Number**	**Connection**
Pneumatic	**PWSP111**	5/32" push-in
Electrical	**PWSM1012**	3-wire cable (6 ft)

Application

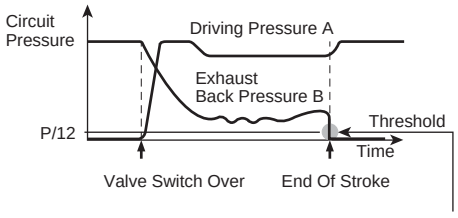
The threshold sensor provides electrical or pneumatic feedback information on pneumatic (air) cylinder status. These devices monitor the back pressure of the cylinder's exhausting chamber. When the cylinder stops, the back pressure drops and the threshold sensor provides the desired output. Ideal for variable stroke applications. The banjo fitting and the feedback element are two separate subassemblies, giving the user flexibility between electrical and pneumatic outputs as feedback.

Mounting

Banjo fittings in 10-32 to 1/2" pipe sizes are designed to be installed directly into actuator ports (up to 5" bore cylinders). The banjo fitting can accommodate other functional fittings and components such as right angle flow control valves or blocking valves. Banjo fittings screw into actuators using an Allen wrench or 5/16" hex head wrench for 10-32 size. Electrical or pneumatic feedback element snaps into place using a locking clip.

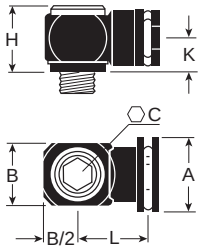
Operation

Pneumatic sensors have a continuous pressure signal applied to the sensor device. Electrical sensors have a continuous electrical signal applied to the sensor device. The threshold sensor assembly mounted directly into the cylinder Port provides an output signal S, which can be pneumatic or electrical, when the falling back pressure in the exhausting chamber of the cylinder reaches the operating threshold (approximately 6-9 PSIG). (The device is a normally passing device. The output is only on when there is nearly zero pressure at the cylinder.)

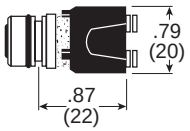


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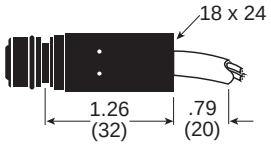
Dimensions



Banjo Socket



PWSP111



PWSM1012

Model	A	B	C	H	K	L
PWSB1557	.98 (25)	.43 (11)	5/16" Hex	.79 (20)	.40 (10)	.67 (17)
PWSB1887	.98" (25)	.63 (16)	3/16" Allen	.71 (18)	.40 (10)	.79 (20)
PWSB1997	.98 (25)	.83 (21)	5/16" Allen	.71 (18)	.40 (10)	.87 (22)
PWSB1337	.98 (25)	1.10 (28)	3/8" Allen	.79 (20)	.47 (12)	.98 (25)
PWSB1227	.98 (25)	1.30 (33)	1/2" Allen	.93 (24)	.55 (14)	1.02 (26)

inches
(mm)

Specifications

Operating Pressure ..... 0 to 150 PSIG (0 to 10 bar)

Temperature Range.....5°F to 140°F (-15°C to 60°C)

⚠ ***CAUTION:*** **If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.**

Maximum Operating Frequency..... 10 Hz

Pilot Pressure (PWSP111) ..... >64 PSIG (4.4 bar)

Threshold Pressure..... 6 to 9 PSIG (.4 to .6 bar)

Output Flow Rate (PWSP111).....3 SCFM at 90 PSIG

Current Rating (PWSM1012) –
5 VA, 250 VAC
5W, 48 VAC

Materials –
Body.....Thermoplastic
Mounting Screw & Threads.....Brass

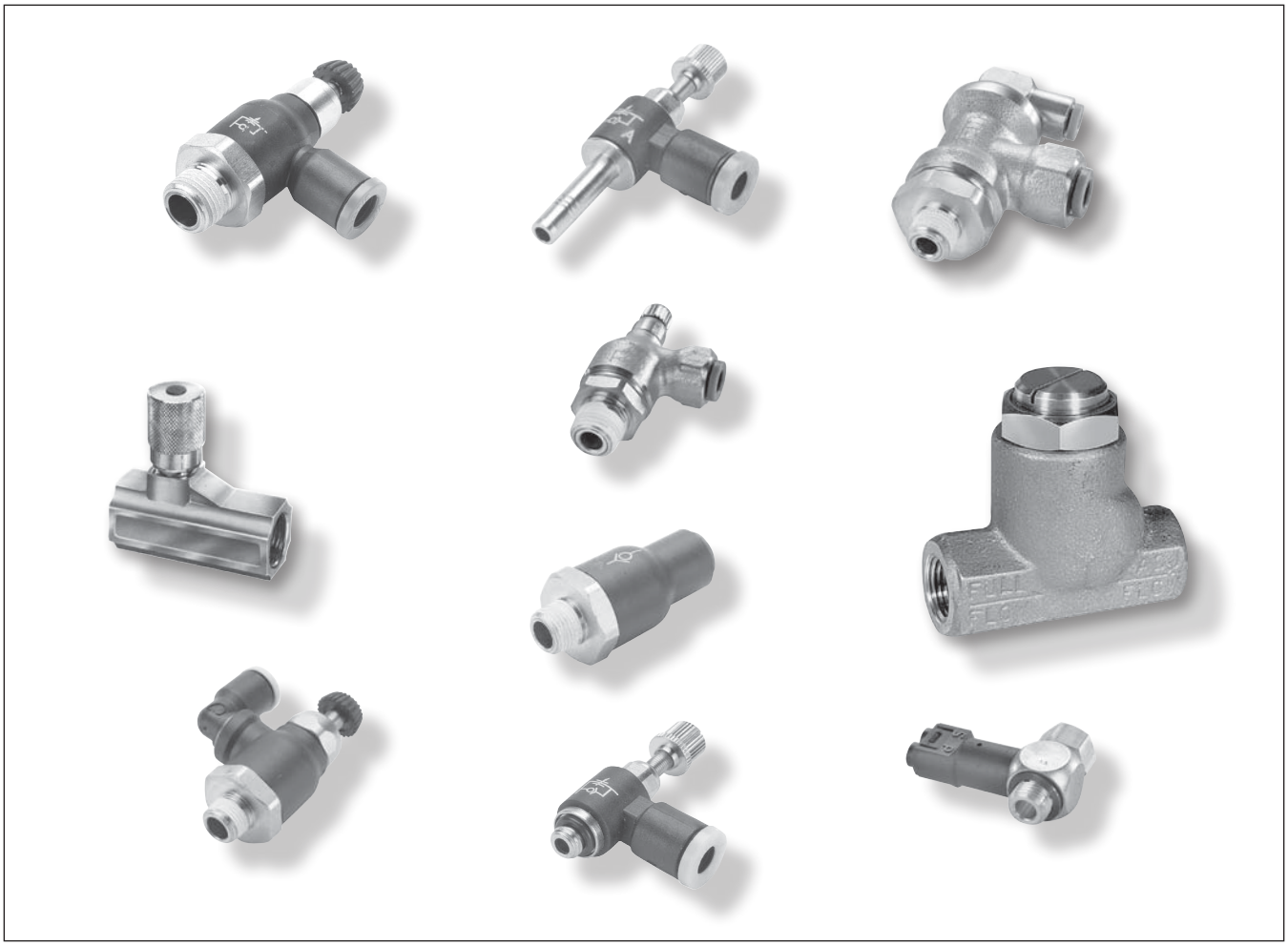
Life Expectancy –
10 million cycles with dry air at 90 PSIG, 68°F, and 1 Hz operating frequency

Voltage Range (PWSM1012) –
12 - 240 VAC
12 - 48 VDC

Fluid Power			Universal Description	Electrical	
Function	Symbol			Function	Symbol
Normally Closed (N.C.)	2-Way	3-Way	Normally Non-Passing (NNP)	Normally Open (N.O.)	
Normally Open (N.O.)	2-Way	3-Way	Normally Passing (NP)	Normally Closed (N.C.)	

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Section G



Product Index G36-G37
Compact Flow Control Valves G38-G39
Miniature Flow Control Valves G40-G41
Swivel Outlet Flow Control Valves.....G42-G43
Plug-in Flow Control Valves.....G44-G45
In-line Flow Control Valves G46-G49
Compact Metal Flow Control Valves.....G50-G51
Flow Control Check Valves.....G52-G54
Blocking Flow Controls Valves.....G56-G57
Threshold Sensor G58-G59

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Compact Flow Control Valves	**FCC731** Meter Out  Page G38	**FC731** Meter Out - BSPP  Page G39	**FCCB731** Bi-Directional Flow Control  Page G39	**FCCB731** Bi-directional Flow Control - BSPP  Page G39	**FCKC731** Knobless Meter Out Flow Control  Page G39
FCKC731 Knobless Flow Control - BSPP  Page G39	**FCKCB731** Knobless Bi-directional Flow Control - BSPP  Page G39	**Miniature Fow Control Valves**	**FCM731** Meter Out Flow Control  Page G41	**FCM731** Flow Control - BSPP  Page G41	**FCMB731** Bi-directional Flow Control - BSPP  Page G41
FCMK731 Knobless Mini Meter Out Flow Control  Page G41	**Swivel Outlet Flow Control Valves**	**FCCS731** Compact Swivel Outlet Flow Control  Page G43	**FCMS731** Mini Swivel Outlet Flow Control  Page G43	**FCMS731** Miniature Swivel Outlet - BSPP  Page G43	**FCCS731** Compact Swivel Outlet - BSPP  Page G43
Plug-In Flow Control Valves	**FCMSP731** Mini Flow Control  Page G45	**FCMSP701** Miniature Flow Control  Page G45	**FCCSP731** Compact Flow Control  Page G45	**In-Line Flow Control Valves**	**FC832** Flow Control  Page G47
FCB832 Bi-directional Flow Control  Page G47	**FC832** Flow Control  Page G47	**FCB832** Bi-directional Flow Control  Page G47	**FCPM832** Panel Mountable Flow Control  Page G47	**FC836** Threaded Flow Control  Page G47	**FC836** Threaded Flow Control - BSPP  Page G48
337 Series Micrometer Flow Control Valves  Page G48	**337 Series** Micrometer Flow Control Valves - BSPP  Page G48	**338 Series** Bi-directional Flow Control Valves  Page G48	**338 Series** Bi-directional Flow Control Valves - BSPP  Page G48	**3250 Series** Flow Control Valves  Page G48	**3250 Series** Flow Control Valves - BSPP  Page G49
3250 Series Flow Control Valves  Page G49	**3250 Series** Flow Control Valves - BSPP  Page G49	**Compact Metal Flow Control Valves**	**3251 Series** Right Angle Flow Control Valves  Page G51	**FC705** Push-to-Connect Metal Flow Control  Page G51	**FC701** Push-to-Connect Metal Flow Control - BSPP  Page G51
FC708 Threaded Port Meter Out Flow Control  Page G51	**FC702** Threaded Port Metal Flow Control - BSPP  Page G51	**Flow Control Check Valves**	**32PLCK** In-Line Check Valve  Page G53	**32PLCK** In-Line Check Valve  Page G53	**W68PLCK** Male Check Valve  Page G53

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W68PLCKI Male Check Valve Meter In  Page G53	**68PLCK** Male Check Valve Meter Out - BSPP  Page G53	**68PLCKI** Male Check Valve Meter In - BSPP  Page G53	**VC** Check Valve  Page G53	**339 Series** Check Valve  Page G54	**339 Series** Check Valve - BSPP  Page G54
3047 Series Check Valve  Page G54	**Blocking Flow Control Valves**	**FC601** Push-to-Connect Lock Out Valves  Page G57	**FC601** Push-to-Connect Lock-Out Valve - BSPP  Page G57	**FC602** Threaded Port Lock Out Valves  Page G57	**FC608** Threaded Port Lock-Out Valve - BSPP  Page G57
Threshold Sensor	**PSBJ731** Pneumatic - 5/32 Pilot  Page G59	**PSBJ731** Pneumatic - 4mm Pilot  Page G59	**PSPJ731** Pneumatic - 10-32 Pilot  Page G59	**PSBJ708** Pneumatic - M5 Pilot  Page G59	**PSPE701** Pneumati / Electric - BSPP  Page G59

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Materials Of Construction	
Body (Depending upon the Model):	• Glass reinforced nylon 6.6 • Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass

Nomenclature	
Example:FCC731-4-2	**Attribute:**
FC	Flow control
C	Compact
7	Right angle
3	Nylon body
1	Tube x Pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

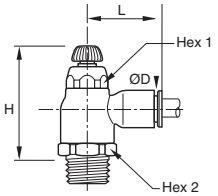
Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



Compact flow control regulators ensure excellent performance of flow and are perfectly suited for reduced spaces due to their small size. The sensitivity of the adjustment screw provides very precise air flow control and regulation. A locking nut guarantees stability of adjustment against vibration tampering of the flow setting.

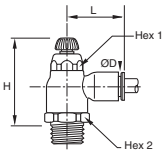




FCC731 Compact Meter Out

Part No.	Tube Size (In)	NPT	Hex 1 (In)	Hex 2 (In)	H Open	H Closed	L
FCC731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-5/32-4	5/32	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-6-4	3/8	1/4	0.91	0.67	2.03	1.71	1.22
FCC731-6-6	3/8	3/8	0.91	0.67	2.03	1.71	1.22

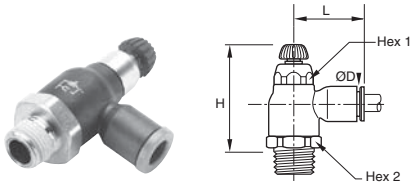




FC731 Compact Meter Out - BSPP

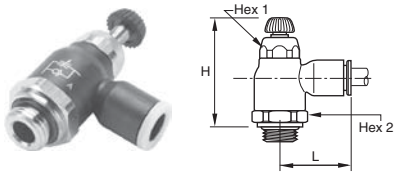
Part No.	Tube Size (mm)	BSPT	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	L
FC731-4M-2G	4	1/8	10	16	38.0	44.0	22.0
FC731-6M-2G	6	1/8	10	16	38.0	44.0	22.0
FC731-6M-4G	6	1/4	10	16	36.5	42.5	22.0
FC731-8M-2G	8	1/8	14	19	41.5	48.0	28.0
FC731-8M-4G	8	1/4	14	19	41.5	48.0	28.0
FC731-8M-6G	8	3/8	14	19	41.5	48.0	28.0
FC731-10M-4G	10	1/4	17	23	45.5	53.5	31.5
FC731-10M-6G	10	3/8	17	23	45.5	54.0	31.5
FC731-12M-6G	12	3/8	17	23	45.5	54.0	35.0
FC731-12M-8G	12	1/2	17	24	45.5	54.0	35.0

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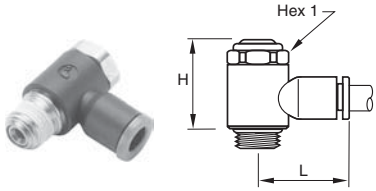
FCCB731 Compact Bi-Directional Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 (In)	Hex 2 (In)	H Open	H Closed	L
FCCB731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCCB731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCCB731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85



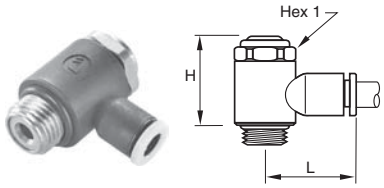
FCCB731 Compact Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	L
FCCB731-4M-2G	4	1/8	10	16	38.0	44.0	22.0
FCCB731-6M-2G	6	1/8	10	16	38.0	44.0	22.0
FCCB731-6M-4G	6	1/4	10	16	36.5	42.5	22.0
FCCB731-8M-2G	8	1/8	14	19	41.5	48.0	28.0
FCCB731-8M-4G	8	1/4	14	19	41.5	48.0	28.0
FCCB731-8M-6G	8	3/8	14	19	41.5	48.0	28.0



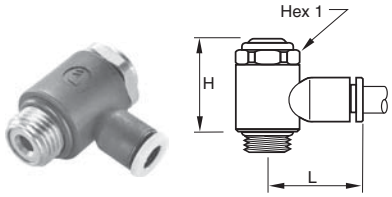
FCKC731 Knobless Meter Out Flow Control

Part No.	Tube Size (In)	NPT / UNF	Hex 1 (mm)	H	L
FCKC731-2-0	1/8	10-32		0.69	0.65
FCKC731-2-2	1/8	1/8	13	0.79	0.75
FCKC731-5/32-0	5/32	10-32		0.69	0.65
FCKC731-5/32-2	5/32	1/8	13	0.79	0.75
FCKC731-4-0	1/4	10-32		0.69	0.77
FCKC731-4-2	1/4	1/8	13	0.79	0.85
FCKC731-4-4	1/4	1/4	17	1.04	0.89
FCKC731-5-2	5/16	1/8	13	0.79	1.02
FCKC731-5-4	5/16	1/4	17	1.04	1.06
FCKC731-6-4	3/8	1/4	17	1.04	1.14
FCKC731-6-6	3/8	3/8	20	1.14	1.36



FCKC731 Knobless Compact Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP / M5	Hex 1 (mm)	H	L
FCKC731-4M-M5	4	M5X0.8	8.0	17.5	17.0
FCKC731-4M-2G	4	1/8	13.0	25.0	19.0
FCKC731-6M-M5	6	M5X0.8	8.0	17.5	19.0
FCKC731-6M-2G	6	1/8	13.0	25.0	21.0
FCKC731-6M-4G	6	1/4	17.0	26.5	22.0
FCKC731-8M-2G	8	1/8	13.0	25.0	26.0
FCKC731-8M-4G	8	1/4	17.0	26.5	27.0
FCKC731-8M-6G	8	3/8	20.0	37.5	29.0
FCKC731-10M-4G	10	1/4	17.0	26.5	29.0
FCKC731-10M-6G	10	3/8	20.0	37.5	31.0
FCKC731-10M-8G	10	1/2	23.0	43.0	37.0
FCKC731-12M-6G	12	3/8	20.0	37.5	6.8
FCKC731-12M-8G	12	1/2	23.0	43.0	37.0



FCKCB731 Knobless Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP / M5	Hex 1 (mm)	H	L
FCKCB731-4M-M5	4	M5X0.8	8	17.5	17.0
FCKCB731-4M-2G	4	1/8	13	25.0	19.0
FCKCB731-6M-M5	6	M5X0.8	8	17.5	19.0
FCKCB731-6M-2G	6	1/8	13	25.0	21.0
FCKCB731-6M-4G	6	1/4	17	26.5	22.0
FCKCB731-8M-2G	8	1/8	13	25.0	26.0
FCKCB731-8M-4G	8	1/4	17	26.5	27.0
FCKCB731-8M-6G	8	3/8	20	37.5	29.0

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Materials of Construction	
Body (Depending upon the Model):	• Glass reinforced nylon 6.6 • Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass

Nomenclature	
Example: FCM731-4-2	**Attribute:**
FC	Flow control
M	Miniature
7	Right angle
3	Nylon body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

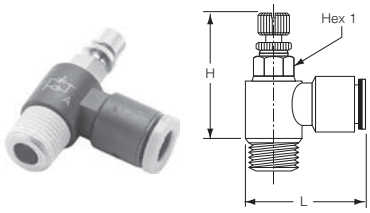
Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4
Tube O.D. (mm)	3, 4, 6, 8

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



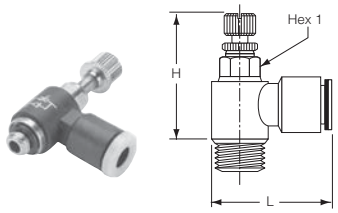
The miniature flow control regulator is especially adapted for all very small sized pneumatic applications (micro-pneumatic in particular). They are specifically designed for use with small bore cylinders (pancake / flat cylinders). Miniature flow control regulators are available in meter out, meter in and bi-directional versions.

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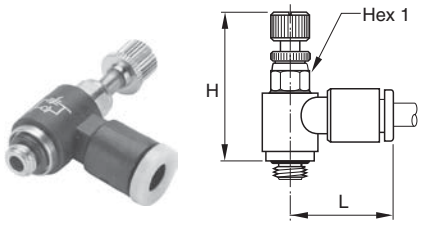
FCM731 Miniature Meter Out Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	H Open	H Closed	L
FCM731-2-0	1/8	10-32	6	1.14	0.91	0.67
FCM731-2-2	1/8	1/8	7	1.41	1.26	0.69
FCM731-5/32-0	5/32	10-32	6	1.02	0.93	0.67
FCM731-5/32-2	5/32	1/8	7	1.16	1.06	0.71
FCM731-4-0	1/4	10-32	6	1.02	0.93	0.73
FCM731-4-2	1/4	1/8	7	1.16	1.06	0.75
FCM731-4-4	1/4	1/4	8	1.28	1.18	0.77



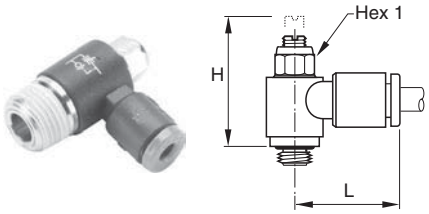
FCM731 Miniature Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1	H Closed	H Open	L
FCM731-3M-M3	3	M3X0.5	6	23.5	26.0	17.0
FCM731-3M-M5	3	M5X0.8	6	23.5	26.0	17.0
FCM731-4M-M3	4	M3X0.5	6	23.5	26.0	16.5
FCM731-4M-M5	4	M5X0.8	6	23.5	26.0	17.0
FCM731-4M-2G	4	1/8	7	27.0	29.5	18.0
FCM731-6M-M5	6	M5X0.8	6	23.5	26.0	18.0
FCM731-6M-2G	6	1/8	7	27.0	29.5	18.5
FCM731-6M-4G	6	1/4	8	30.0	32.5	19.0
FCM731-8M-2G	8	1/8	13	26.5	31.0	26.0
FCM731-8M-4G	8	1/4	16	29.0	34.0	27.5
FCM731-8M-6G	8	3/8	20	36.0	42.0	29.0



FCMB731 Miniature Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1	H Closed	H Open	L
FCMB731-4M-M5	4	M5X0.8	6	23.5	26.0	16.5
FCMB731-4M-2G	4	1/8	7	27.0	29.5	17.0
FCMB731-6M-M5	6	M5X0.8	6	23.5	26.0	18.0
FCMB731-6M-2G	6	1/8	7	27.0	29.5	18.0
FCMB731-6M-4G	6	1/4	8	30.0	32.5	18.5



FCMK731 Knobless Mini Meter Out Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	H Open	H Closed	L
FCMK731-2-0	1/8	10-32	6	0.79	0.65	0.65
FCMK731-2-2	1/8	1/8	6	0.85	0.71	0.71
FCMK731-5/32-0	5/32	10-32	6	0.79	0.65	0.65
FCMK731-5/32-2	5/32	1/8	6	0.85	0.71	0.71
FCMK731-4-0	1/4	10-32	6	0.79	0.65	0.65
FCMK731-4-2	1/4	1/8	6	0.85	0.71	0.73
FCMK731-4-4	1/4	1/4	6	0.97	0.83	0.73

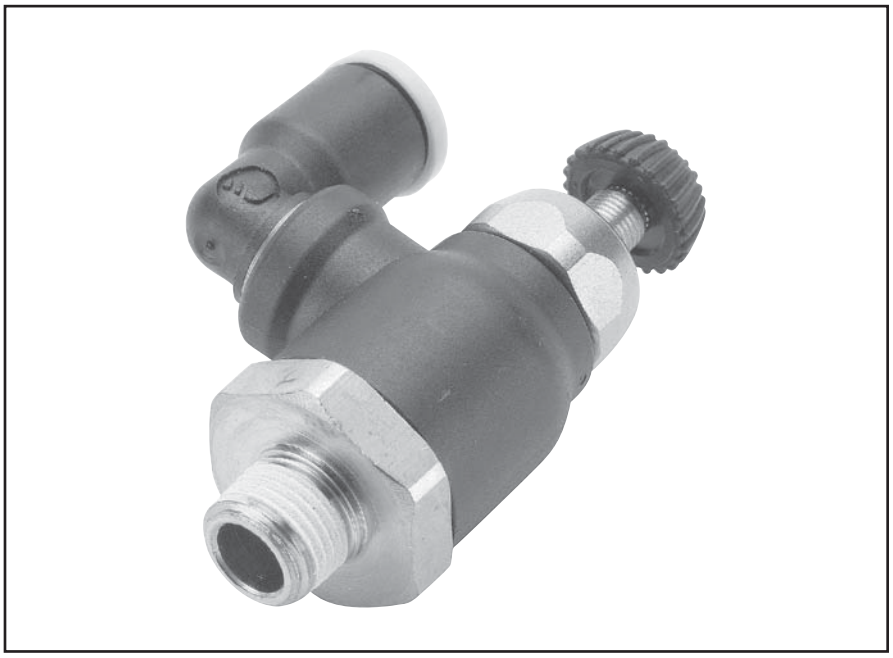
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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Materials of Construction	
Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass

Nomenclature	
Example: FCMS731-5/32-2	**Attribute:**
FC	Flow control
M	Miniature
S	Swivel outlet
7	Right angle
3	Nylon body
1	Tube x pipe
5/32	5/32 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12

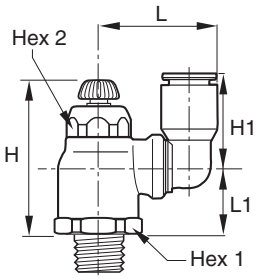
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



Flow control regulators with “swivel outlet” are especially designed to allow a vertical or angled tube exit where access is restricted. The swivel outlet comes with instant push-in connection to ease installation. Flow control regulators with swivel outlet are available in meter out and meter in versions.

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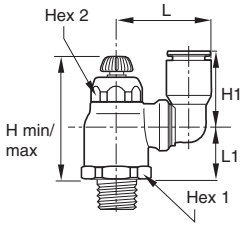




FCCS731 Compact Swivel Outlet Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	Hex 2 mm	H Closed	H Open	H1	L	L1
FCCS731-4-2	1/4	1/8	19	10	1.87	2.09	0.63	0.93	0.65
FCCS731-4-4	1/4	1/4	19	14	1.79	1.99	0.73	1.00	0.89
FCCS731-6-4	3/8	1/4	23	17	1.93	2.20	1.04	1.34	0.97
FCCS731-6-6	3/8	3/8	23	17	1.93	2.20	1.04	1.34	0.97

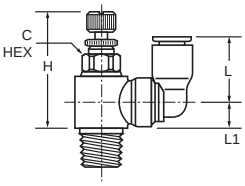




FCCS731 Compact Swivel Outlet - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 mm	Hex 2 mm	H Closed	H Open	H1	L	L1
FCCS731-6M-2G	6	1/8	16	10	38.0	44.0	16.0	23.5	18.0
FCCS731-6M-4G	6	1/4	16	10	36.5	42.5	16.0	23.5	16.5
FCCS731-8M-2G	8	1/8	19	14	41.5	48.0	23.0	28.0	19.0
FCCS731-8M-4G	8	1/4	19	14	41.5	48.0	23.0	28.0	19.5
FCCS731-8M-6G	10	3/8	19	14	41.5	48.0	23.0	28.0	17.5
FCCS731-10M-4G	10	1/4	23	17	45.5	53.5	26.5	35.0	21.0
FCCS731-10M-6G	10	3/8	23	17	45.5	54.0	26.5	35.0	21.5
FCCS731-12M-6G	12	3/8	23	17	45.5	54.0	31.0	38.0	21.5
FCCS731-12M-8G	12	1/2	23	17	45.5	54.0	31.0	38.0	21.0

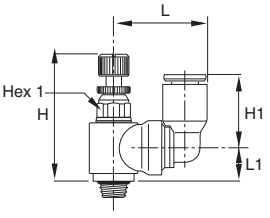




FCMS731 Mini Swivel Outlet Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	H Closed	H Open	H1	L	L1
FCMS731-5/32-0	5/32	10-32	6	0.96	1.08	0.55	0.73	0.26
FCMS731-5/32-2	5/32	1/8	8	1.08	1.20	0.55	0.73	0.33





FCMS731 Miniature Swivel Outlet - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 mm	H Closed	H Open	H1	L	L1
FCMS731-4M-M5	4	M5X0.8	6	24.5	27.5	14.5	19.5	6.5
FCMS731-4M-2G	4	1/8	7	27.5	31.0	14.5	20.0	8.5
FCMS731-6M-M5	6	M5X0.8	6	24.5	27.5	16.0	21.5	6.5
FCMS731-6M-2G	6	1/8	7	27.5	31.0	16.0	22.0	8.5

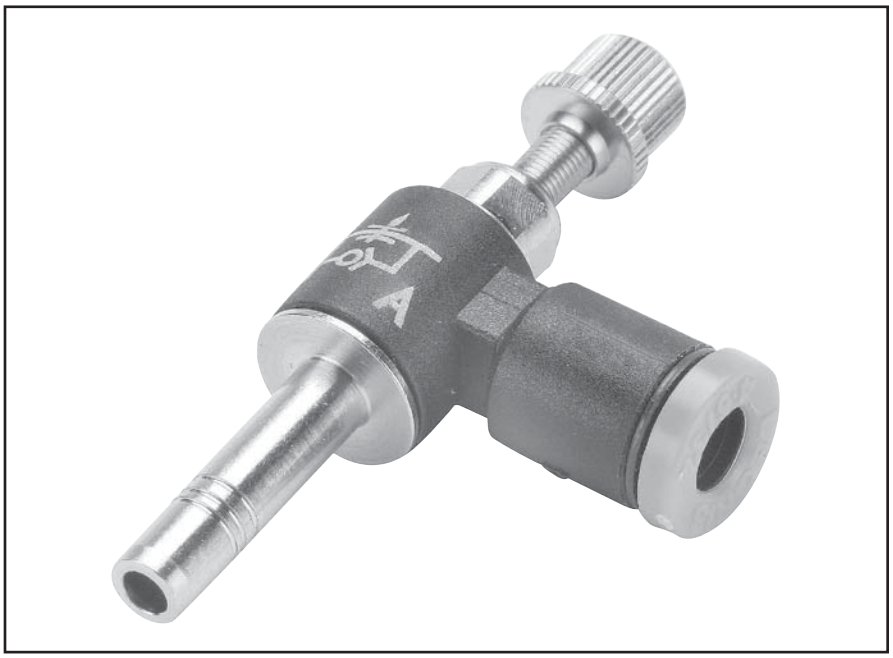
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Materials of Construction	
Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass

Nomenclature	
Example: FCMS731-5/32-2	**Attribute:**
FC	Flow control
M	Miniature
7	Right angle
3	Nylon body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4
Tube O.D. (mm)	4, 6, 8, 10, 12

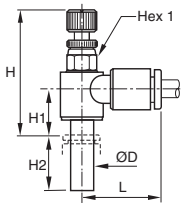
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



Plug-in flow control regulators can be directly mounted into existing fittings and allow very compact installations. They are particularly suited for mounting in manifolds using cartridges. Their design and function give equal performance to that of flow control regulators with threaded connections.

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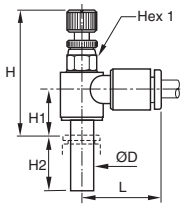




FCMSP731 Plug-In Mini Flow Control

Part No.	Tube Size (In)	Hex 1 mm	H Open	H Closed	H1	H2	L
FCMSP731-2	1/8	6	1.04	0.94	0.12	0.59	0.67
FCMSP731-5/32	5/32	6	1.10	1.00	0.37	0.61	0.67
FCMSP731-4	1/4	7	1.18	1.08	0.12	0.73	0.73

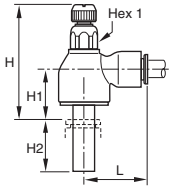




FCMSP701 - Plug-In Miniature Flow Control

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	H1	H2	L
FCMSP701-4M	4	6	25.5	28.0	9.5	15.5	17.0
FCMSP701-6M	6	7	27.5	29.0	10.5	17.0	18.5





FCCSP731 Plug-In Compact Flow Control

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	H1	H2	L
FCCSP731-6M	6	10	35.0	41.0	14.0	17.0	22.0
FCCSP731-8M	8	14	39.5	46.5	16.0	21.5	28.0
FCCSP731-10M	10	17	43.5	51.5	17.5	24.5	31.5
FCCSP731-12M	12	17	43.0	51.0	17.0	27.0	31.5

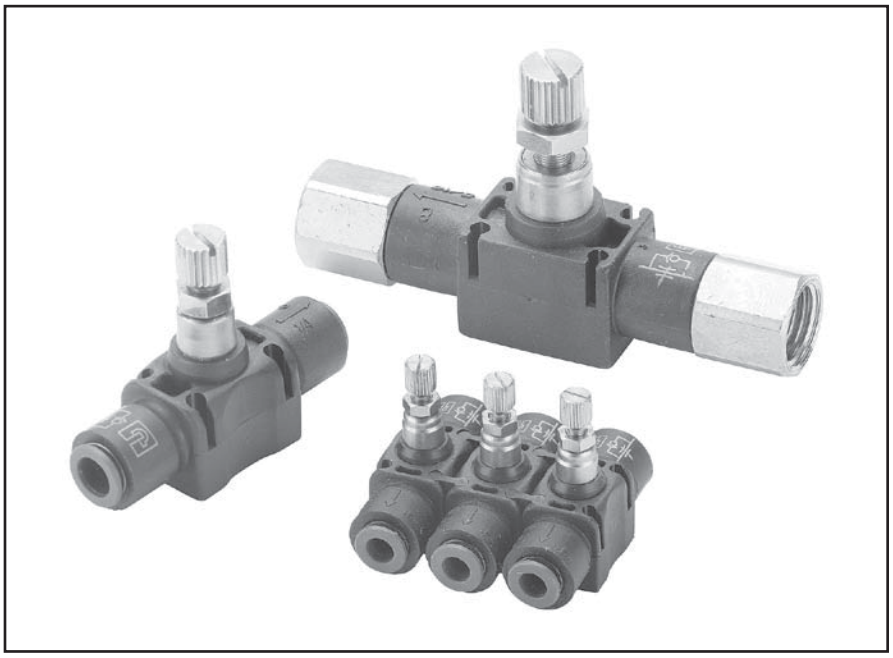
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Materials of Construction	
Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass

Nomenclature	
Example: FCMS731-5/32-2	**Attribute:**
FC	Flow control
M	Miniature
8	In-line
3	Nylon body
2	Tube x pipe
4	1/4 Tube O.D.

Applicable Tube	
Tube O.D.	5/32, 1/4, 5/16, 3/8, 1/2
Tube O.D. (mm)	4, 6, 8, 10, 12

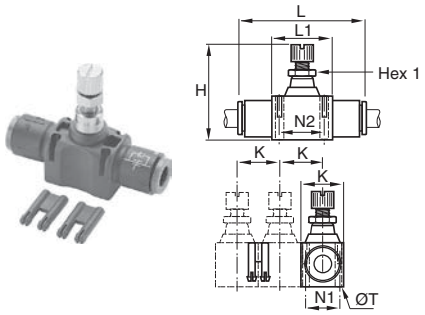
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



In-line flow controls are unidirectional flow control valves. Intake air flows freely through the flow control; exhaust air is metered out through a specially designed adjustment screw. An arrow on the body of the valve indicates the direction of controlled flow. They can be easily added to existing circuitry. Simply splice it into the cylinder port line.

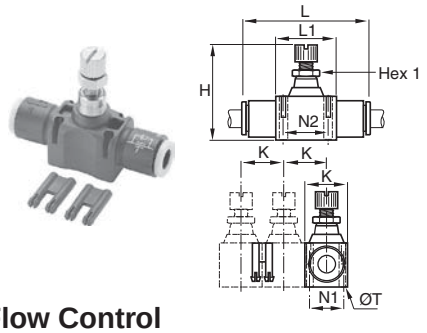
They can be used individually or they may be stacked together using two joining clips.

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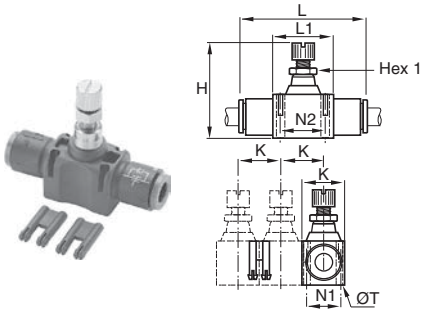
FC832 In-Line Flow Control

Part No.	Tube Size (In)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FC832-5/32	5/32	5	1.15	1.31	0.47	1.52	0.59	0.31	0.43	0.09
FC832-4	1/4	8	1.54	1.74	0.66	2.00	0.90	0.43	0.66	0.12
FC832-5	5/16	11	1.73	1.97	0.73	2.38	1.02	0.49	0.79	0.13
FC832-6	3/8	14	2.03	2.38	0.94	2.87	1.29	0.62	1.01	1.60
FC832-8	1/2	14	2.24	2.63	1.09	3.35	1.37	0.78	1.07	0.16



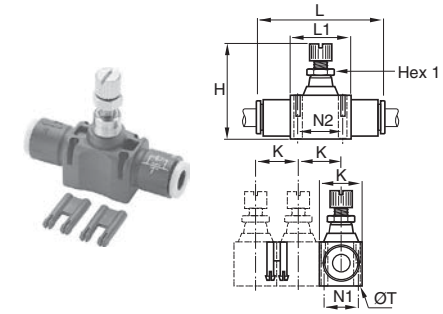
FC832 In-Line Flow Control

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FC832-4M	4	5	29.5	33.5	12.0	39.0	15.0	8.0	11.0	2.2
FC832-6M	6	8	39.5	44.5	17.0	54.0	23.0	11.0	17.0	3.2
FC832-8M	8	11	44.0	50.0	18.5	60.5	26.0	12.5	20.0	3.2
FC832-10M	10	14	52.0	61.0	24.0	76.0	33.0	16.0	26.0	4.2
FC832-12M	12	14	57.5	67.5	28.0	86.0	35.0	20.0	27.5	4.2



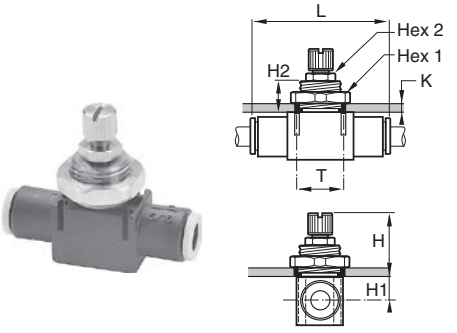
FCB832 In-Line Bi-directional Flow Control

Part No.	Tube Size (In)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FCB832-5/32	5/32	5	1.15	1.31	0.47	1.52	0.59	0.31	0.43	0.09
FCB832-4	1/4	8	1.54	1.74	0.66	2.00	0.90	0.43	0.66	0.12
FCB832-5	5/16	11	1.73	1.97	0.73	2.38	1.02	0.49	0.79	0.13



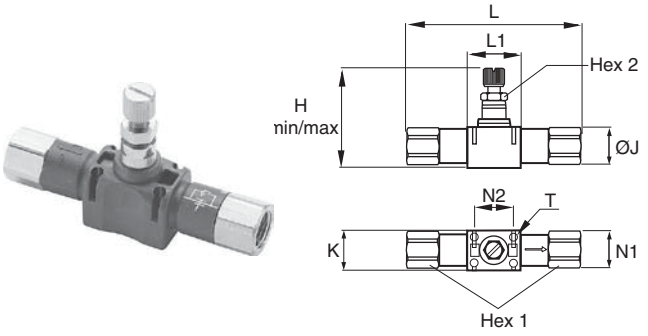
FCB832 In-Line Bi-directional Flow Control

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FCB832-4M	4	5	29.5	33.5	12.0	39.0	15.0	8.0	11.0	2.2
FCB832-6M	6	8	39.5	44.5	17.0	54.0	23.0	11.0	17.0	3.2
FCB832-8M	8	11	44.0	50.0	18.5	60.5	26.0	12.5	20.0	3.2



FCPM832 In-Line Panel Mountable Flow Control

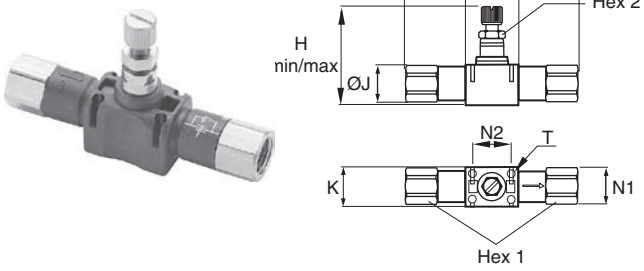
Part No.	Tube Size (mm)	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	K	L	H1	H2	T
FCPM832-4M	4	14		21.5	25.5	6.0	39.0	6.5	11.0	10.5
FCPM832-6M	6	19		27.5	32.5	7.0	54.0	7.5	13.5	16.5
FCPM832-8M	8	24	11	28.5	34.5	7.0	60.5	9.0	13.5	18.5
FCPM832-10M	10	30	14	29.5	38.5	7.0	76.0	11.5	13.5	24.5
FCPM832-12M	12	32	14	32.0	42.0	8.0	86.0	12.5	15.5	27.5



FC836 Threaded In-Line Flow Control

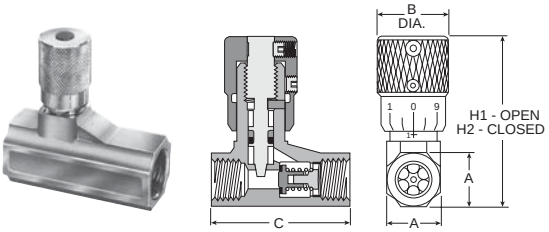
Part No.	NPT	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	K	L	L1	N1	N2	T
FC836-2	1/8	13	8.00	1.56	1.75	0.67	2.70	0.91	0.43	0.67	0.12
FC836-4	1/4	16	11.00	1.73	1.97	0.73	3.27	1.02	0.49	0.79	0.12
FC836-6	3/8	22	14.00	2.05	2.40	0.94	3.82	1.30	0.63	1.02	0.16
FC836-8	1/2	24	14.00	2.26	2.66	1.10	4.76	1.38	0.79	1.08	0.16

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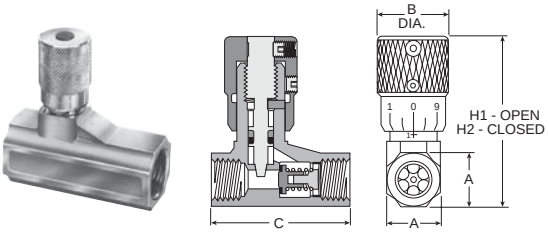
FC836 Threaded In-Line Flow Control - BSPP

Part No.	BSPP	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	K	L	N1	N2	T
FC836-2G	1/8	13	8	39.5	44.5	17.0	68.5	11.0	17.0	3.2
FC836-4G	1/4	16	11	44.0	50.0	18.5	83.0	12.5	20.0	3.2
FC836-6G	3/8	19	14	52.0	61.0	24.0	97.0	16.0	26.0	4.2
FC836-8G	1/2	24	14	57.5	67.5	28.0	121.0	20.0	27.5	4.2



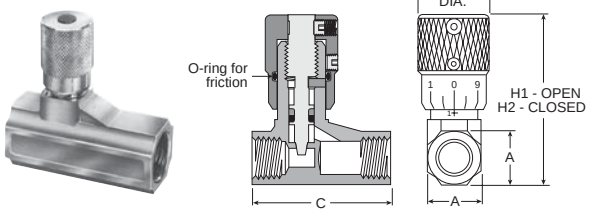
337 Micrometer Flow Control Valves

Part No.	Port Size	A	B	C	H1	H2
00337 1000	1/8"	9/16"	0.75	1.47	2.03	1.81
00337 1001	1/4"	11/16"	0.75	1.47	2.28	2.03
00337 1002	3/8"	7/8"	0.88	2.31	2.84	2.53
00337 1003	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00337 1004	3/4"	1-3/8"	1.06	3.25	3.72	3.31



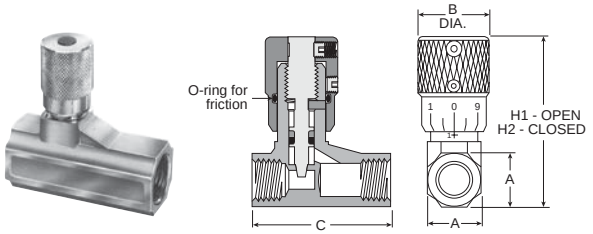
337 Micrometer Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	H1	H2
00337G1000	1/8"	9/16"	0.75	1.47	2.03	1.81
00337G1001	1/4"	11/16"	0.75	1.47	2.28	2.03
00337G1002	3/8"	7/8"	0.88	2.31	2.84	2.53
00337G1003	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00337G1004	3/4"	1-3/8"	1.06	3.25	3.72	3.31



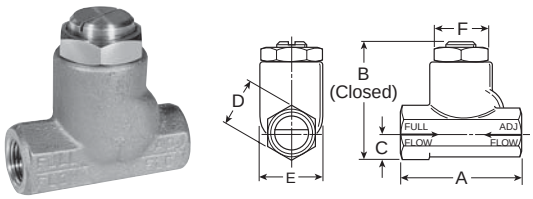
338 Bi-directional Flow Control Valves

Part No.	Port Size	A	B	C	H1	H2
00338 1100	1/8"	9/16"	0.75	1.47	2.03	1.81
00338 1101	1/4"	11/16"	0.75	1.47	2.28	2.03
00338 1102	3/8"	7/8"	0.88	2.31	2.84	2.53
00338 1103	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00338 1104	3/4"	1-3/8"	1.06	3.25	3.72	3.31



338 Bi-directional Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	H1	H2
00338G1100	1/8"	9/16"	0.75	1.47	2.03	1.81
00338G1101	1/4"	11/16"	0.75	1.47	2.28	2.03
00338G1102	3/8"	7/8"	0.88	2.31	2.84	2.53
00338G1103	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00338G1104	3/4"	1-3/8"	1.06	3.25	3.72	3.31

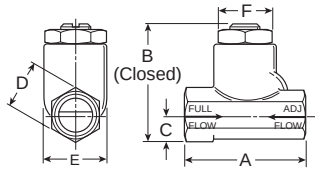


3250 Flow Control Valves

Part No.	Port Size	A	B	C	D	E	F
03250 0119	1/8"	1.75	1.56	0.37	0.62	0.81	0.68
03250 0219	1/4"	2.33	1.97	0.44	0.75	1.09	0.94
03250 0319	3/8"	2.66	2.44	0.56	1.00	1.38	1.19
03250 0419	1/2"	3.11	3.06	0.75	1.25	1.63	1.38
03250 0519	3/4"	3.56	3.69	0.88	1.50	2.00	1.75

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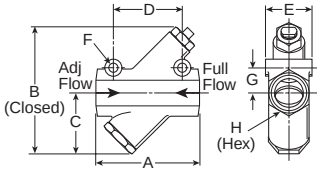




3250 Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	D	E	F
3250G0119	1/8"	1.75	1.56	0.37	0.62	0.81	0.68
3250G0219	1/4"	2.33	1.97	0.44	0.75	1.09	0.94
3250G0319	3/8"	2.66	2.44	0.56	1.00	1.38	1.19
3250G0419	1/2"	3.11	3.06	0.75	1.25	1.63	1.38
3250G0519	3/4"	3.56	3.69	0.88	1.50	2.00	1.75

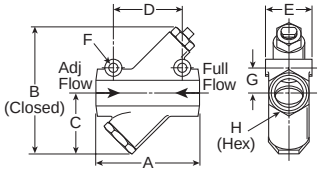




3250 Flow Control Valves

Part No.	Port Size	A	B	C	D	E	F	G	H
3250G1000	1"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
3250G1250	1-1/4"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
3250G1500	1-1/2"	5.88	8.00	3.75	3.50	2.50	.39	1.50	2.38





3250 Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	D	E	F	G	H
03250 1000	1"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
03250 1250	1-1/4"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
03250 1500	1-1/2"	5.88	8.00	3.75	3.50	2.50	.39	1.50	2.38

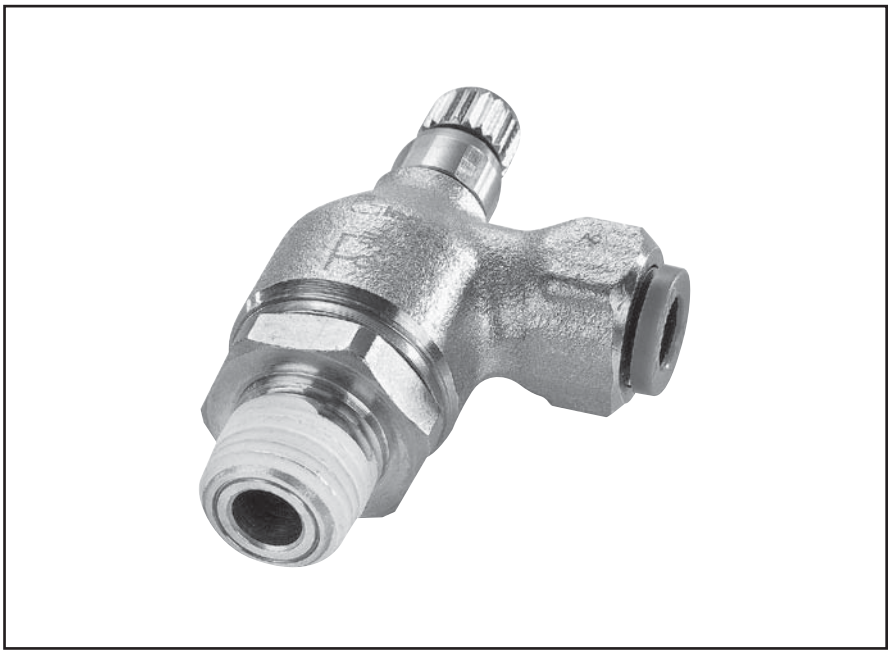
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Materials of Construction	
Body:	Treated Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass

Nomenclature	
Example: FCMS731-5/32-2	**Attribute:**
FC	Flow control
7	Right angle
0	Brass body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12, 14

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



Metal flow control regulators are suited for use in severe conditions (temperatures, sparks, abrasion, etc). The screw and locking nut have been designed for easy manipulation, by hand. Adjustment can be made with a screwdriver and locking by use of a wrench.

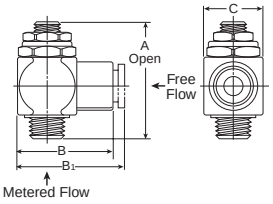
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Shown with Threaded Inlet

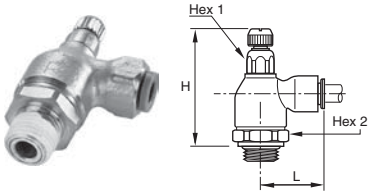


Shown with Prestolok Inlet Fitting



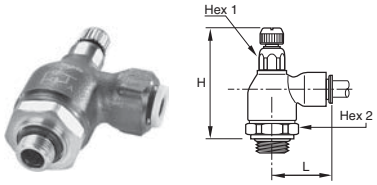
Model Number	Thread (NPT) Male	Thread (NPT) Female	A mm	B mm	C mm	Weight kg.	Cv Adjusted Flow	Cv Free Flow
03251 0125	1/8	1/8	44	30	17	0.9	0.26	0.20
03251 0250	1/4	1/4	51	36	23	2.0	0.75	0.68
03251 0375	3/8	3/8	58	43	27	3.2	0.84	0.72
03251 0500	1/2	1/2	68	53	32	5.0	1.64	1.41
With Prestolok Fittings								
03251 1215	1/8	5/32	44	30	17	0.9	0.19	0.16
03251 1225	1/8	1/4	44	30	17	0.9	0.28	0.22
03251 2525	1/4	1/4	51	36	23	2.0	0.51	0.44
03251 2538	1/4	3/8	51	36	23	2.0	0.62	0.53
03251 3838	3/8	3/8	58	43	27	3.2	0.78	0.65

CAUTION: If it is possible that the ambient temperature may fall below freezing, the medium must be moisture-free to prevent internal damage or unpredictable behavior.



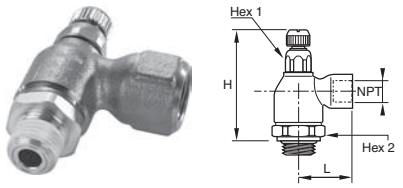
FC705 Push-to-Connect Metal Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	Hex 2 mm	H Closed	H Open	L
FC705-5/32-2	5/32	1/8	19	10	1.79	2.01	0.85
FC705-4-2	1/4	1/8	19	10	1.79	2.01	0.97
FC705-4-4	1/4	1/4	19	10	1.79	2.01	0.97
FC705-6-4	3/8	1/4	19	14	1.91	2.11	1.14
FC705-6-6	3/8	3/8	25	17	2.15	2.40	1.40



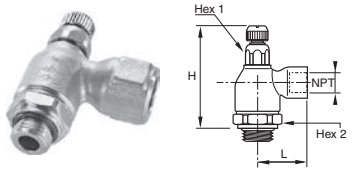
FC701 Push-to-Connect Metal Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1	Hex 2	H Closed	H Open	L
FC701-4M-2G	4	1/8	10	19	47.0	53.0	21.0
FC701-6M-2G	6	1/8	10	19	47.0	53.0	24.5
FC701-6M-4G	6	1/4	10	19	47.5	53.0	24.5
FC701-8M-2G	8	1/8	14	19	50.0	55.0	29.0
FC701-8M-4G	8	1/4	14	19	50.0	56.0	29.0
FC701-8M-6G	8	3/8	17	25	56.0	62.0	30.5
FC701-10M-4G	10	1/4	14	19	50.0	56.0	35.0
FC701-10M-6G	10	3/8	17	25	56.0	62.0	35.0
FC701-12M-6G	12	3/8	17	25	56.0	62.0	38.0
FC701-12M-8G	12	1/2	17	25	55.0	62.0	38.0
FC701-14M-8G	14	1/2	17	25	55.0	62.0	41.0



FC708 Threaded Port Meter Out Flow Control

Part No.	NPT	Hex 1 mm	Hex 2 mm	H Closed	H Open	L	L1	L2
FC708-2	1/8	19	10	1.79	2.01	0.89	0.87	1.14
FC708-4	1/4	19	14	1.91	2.11	1.28	0.87	1.28
FC708-6	3/8	25	17	2.15	2.40	1.36	0.91	1.44
FC708-8	1/2	25	17	2.15	2.40	1.50	0.91	1.50



FC702 Threaded Port Metal Flow Control - BSPP

Part No.	BSPP	Hex 1 mm	Hex 2 mm	H Closed	H Open	L
FC702-2G	1/8	10	19	47.0	52.5	22.5
FC702-4G	1/4	14	19	50.5	55.5	32.0
FC702-6G	3/8	17	25	56.0	62.0	34.5
FC702-8G	1/2	17	25	55.0	62.0	37.5

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Materials of Construction	
Body:	• 32PLCK: Nylon/nickel plated brass • 68PLCK: Nylon body with nickel-plated brass base • VC: Acetal
Gripping Ring:	Stainless Steel
O-Ring:	• Nitrile (32PLCK & 68PLCK) • EPDM (VC)

Nomenclature	
Example: W68PLCK-4-2	**Attribute:**
W	White thread sealant
68	Tube x Pipe
PL	Prestolok
CK	Check Valve
4	1/4 Tube O.D.
2	1/8 Pipe thread

Nomenclature	
Example: A4VC4-MG	**Attribute:**
A	Acetal
4	1/4 Tube O.D.
VC	Valve, Check
4	1/4 Tube O.D.
MG	Metal gripping ring

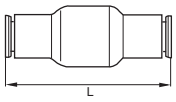
Applicable Tube	
Tube O.D.	• PLCK: 5/32, 1/4, 5/16, 3/8 • VC: 1/4, 5/16, 3/8
Tube O.D. (mm)	PLCK: 4, 6, 8, 10, 12

Specifications	
Pressure Range:	15 TO 145 PSI
Temperature Ranges:	34°F to 150°F
Cracking Pressure:	• PLCK: 7 PSI • VC: 1/3 PSI
Working Fluid:	Compressed air



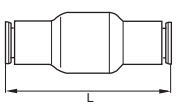
These in-line check valves allows air to pass in one direction while blocking flow in the other direction. Their extreme compactness and light weight make them suitable as a safety item in compressed air circuits. The body of the fitting contains an arrow to indicate the direction of flow.

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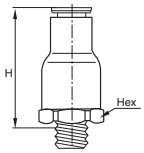
32PLCK In-Line Check Valve

Part No.	Tube Size (In)	L
32PLCK-5/32	5/32	1.52
32PLCK-4	1/4	1.61
32PLCK-5	5/16	2.03
32PLCK-6	3/8	2.50

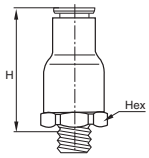
32PLCK In-Line Check Valve

Part No.	Tube Size (mm)	L
32PLCK-4M	4	38.5
32PLCK-6M	6	41.0
32PLCK-8M	8	51.5
32PLCK-10M	10	63.5
32PLCK-12M	12	66.5

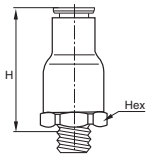
W68PLCK Male Check Valve

Part No.	Tube Size (in)	NPT / UNF	Hex (mm)	H
68PLCK-5/32-0	5/32	10-32	9	1.26
W68PLCK-5/32-2	5/32	1/8	16	1.12
W68PLCK-4-2	1/4	1/8	19	1.42
W68PLCK-4-4	1/4	1/4	19	1.42
W68PLCK-6-4	3/8	1/4	23	1.65
W68PLCK-6-6	3/8	3/8	23	1.65

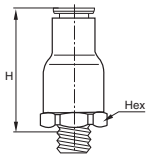
W68PLCKI Male Check Valve Meter In

Part No.	Tube Size (In)	NPT / UNF	Hex (mm)	H
68PLCKI-5/32-0	5/32	10-32	9	1.26
W68PLCKI-5/32-2	5/32	1/8	16	1.12
W68PLCKI-4-2	1/4	1/8	19	1.42
W68PLCKI-4-4	1/4	1/4	19	1.42
W68PLCKI-6-4	3/8	1/4	23	1.65
W68PLCKI-6-6	3/8	3/8	23	1.65

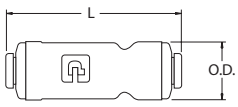
68PLCK Male Check Valve Meter Out - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	H
68PLCK-4M-M5	4	M5X0.8	9	32.0
68PLCK-4M-2G	4	1/8	16	28.5
68PLCK-6M-2G	6	1/8	16	30.5
68PLCK-6M-4G	6	1/4	16	30.5
68PLCK-8M-2G	8	1/8	19	36.0
68PLCK-8M-4G	8	1/4	19	36.0

68PLCKI Male Check Valve Meter In - BSPP

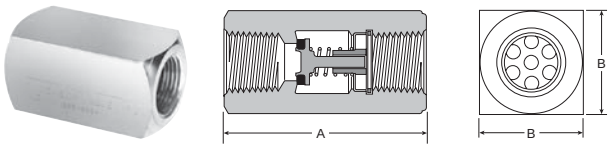
Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	H
68PLCKI-4M-M5	4	M5X0.8	9	32.0
68PLCKI-6M-2G	6	1/8	16	30.5
68PLCKI-8M-2G	8	1/8	19	36.0
68PLCKI-8M-4G	8	1/4	19	36.0
68PLCKI-10M-6G	10	3/8	23	42.0
68PLCKI-12M-6G	12	3/8	23	42.0
68PLCKI-12M-8G	12	1/2	23	44.0

VC – Check Valve

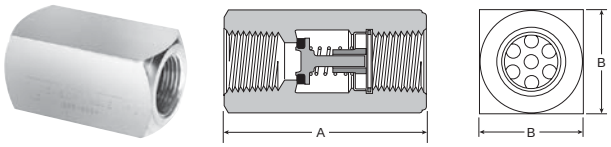
Part No.	Tube Size (In)	L	O.D.
A4VC4-MG	1/4	2.00	.66
A5VC5-MG	5/16	2.10	.70
A6VC6-MG	3/8	2.15	.80

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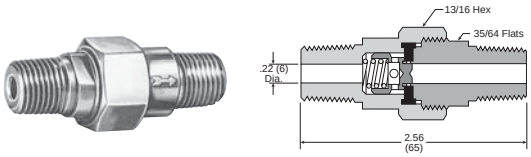
339 Check Valve

Part No.	Port Size	A	B
00339 3000	1/8"	1.22	0.56
00339 3001	1/4"	1.34	0.69
00339 3002	3/8"	2.00	0.88
00339 3003	1/2"	2.56	1.19
00339 3004	3/4"	2.66	1.38



339 Check Valve - BSPP

Part No.	Port Size	A	B
00339G3000	1/8"	1.22	0.56
00339G3001	1/4"	1.34	0.69
00339G3002	3/8"	2.00	0.88
00339G3003	1/2"	2.56	1.19
00339G3004	3/4"	2.66	1.38



3047 Check Valve

Model Number	Pipe Thread
03047 0099	1/4"

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Notes

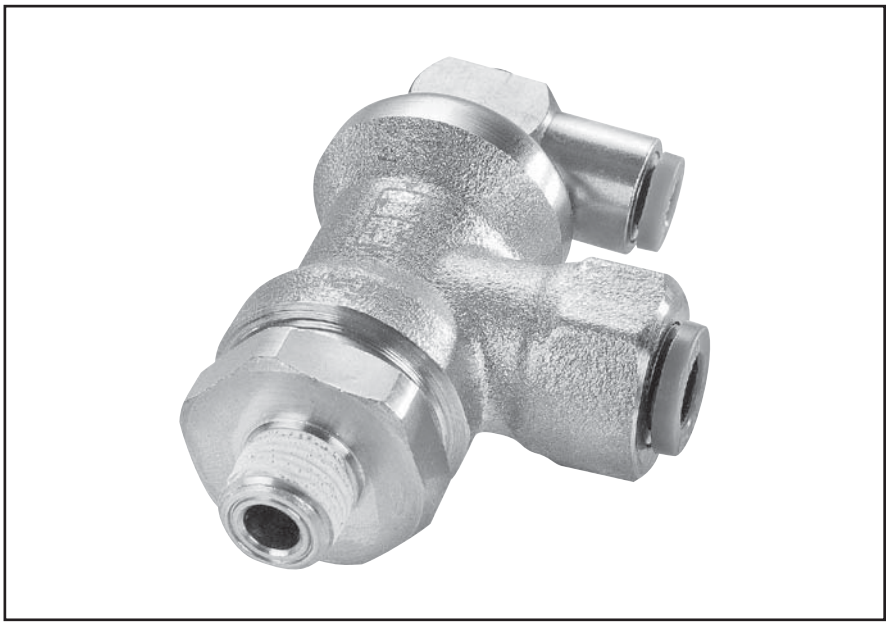
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Materials of Construction	
Body:	Treated Brass
Gripping Ring:	Stainless Steel
Seals, Diaphragm:	Nitrile

Nomenclature	
Example: FC601-4-2	**Attribute:**
FC	Flow control
6	Blocking
0	Brass body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12, 14

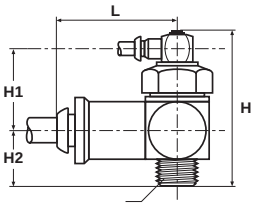
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	-4° to 160°F
Number of Cycles	> 10 million at 68°F and 1 Hz
Leak Rate:	< 3.2 CCM
Working Fluid:	Compressed air



Blocking valves prevents damage to work and equipment in the event of a loss of pressure. Blocking valves which are mounted in pairs on a cylinder lock the piston by simultaneously cutting off the supply and exhaust. Functional locks are more precise and rapid when blocking valves are located on the cylinder: the volume of air in the pipework no longer needs to be taken into consideration.

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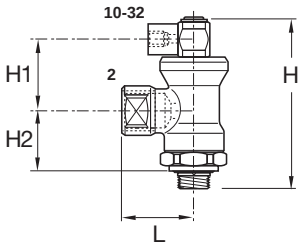




FC601 Push-to-Connect Lockout Valves

Part No.	Tube Size (in)	NPT	Hex (mm)	H	H1	H2	L
FC601-4-2	1/4	1/8	21	2.03	1.24	0.79	1.10
FC601-4-4	1/4	1/4	21	2.03	1.24	0.79	1.10
FC601-6-6	3/8	3/8	24	2.19	1.14	1.04	1.38
FC601-8-8	1/2	1/2	24	2.19	1.14	1.04	1.69

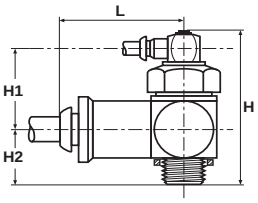




FC602 Threaded Port Lockout Valves

Part No.	1 NPT	2 NPT	Hex (mm)	H	H1	H2	L
FC602-2	1/4	1/8	21	2.03	1.24	0.79	1.04
FC602-4	1/4	1/4	21	2.03	1.24	0.79	1.04
FC602-6	3/8	3/8	24	2.19	1.14	1.04	1.34
FC602-8	1/2	1/2	24	2.19	1.14	1.04	1.57

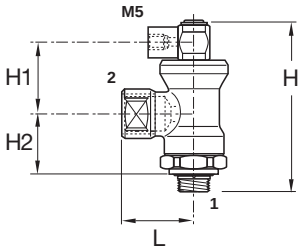




FC601 Push-to-Connect Lockout Valve - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	H	H1	H2	L
FC601-6M-2G	6	1/8	21	53	24.5	21.0	28.0
FC601-6M-4G	6	1/4	21	53	24.5	21.0	28.0
FC601-8M-4G	8	1/4	21	53	24.5	21.0	28.0
FC601-8M-6G	8	3/8	24	56	25.0	23.0	34.5
FC601-10M-6G	10	3/8	24	56	25.0	23.0	35.0
FC601-12M-8G	12	1/2	24	56	25.0	23.0	37.5





FC608 Threaded Port Lockout Valve - BSPP

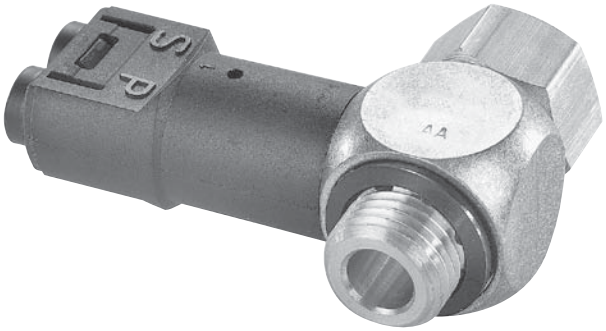
Part No.	BSPP 1	BSPP 2	Hex 1 (mm)	H	H1	H2	L
FC608-4G-2G	1/8	1/4	21	53	24.5	21.0	28.0
FC608-4G-4G	1/4	1/4	21	53	24.5	21.0	28.0
FC608-6G-6G	3/8	3/8	24	56	25.0	23.0	34.0
FC608-8G-8G	1/2	1/2	24	56	25.0	23.0	41.0

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Specifications: Models PSBJ, PSPJ	
Working Temperature:	5° to 140°F
Working Pressure:	45 to 115 PSI
Breaking Pressure:	8.5 PSI
Response Time:	3 Ms

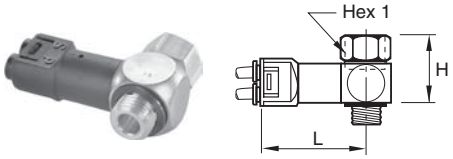
Specifications: Model PSPE	
Working Pressure:	45 to 115 PSI
Breaking Pressure:	7 PSI
Current Rating:	5A / 250VAC - 5W / 48VDC

UL Listed Component	
Reset Pressure:	10 PSI



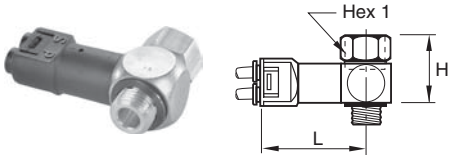
The sensor fitting detects the absence of pressure and translates it to a high pressure pneumatic output. When used to monitor the decaying or exhausting side of a pneumatic cylinder's piston, it emits a positive output. When the cylinder comes to the end of its stroke, wherever that may be, the signal emitted from the sensor can then be used to pilot the next step.

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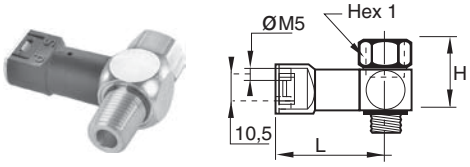
PSBJ731 Pneumatic Threshold Sensor - 5/32 Pilot

Part No.	NPT / UNF	Hex (mm)	H	L
PSBJ731-0	10-32	5/16	0.62	1.70
PSBJ731-2	1/8	9/16	0.90	1.74
PSBJ731-4	1/4	5/8	1.09	1.81
PSBJ731-6	3/8	7/8	1.13	1.91
PSBJ731-8	1/2	1	1.17	2.05



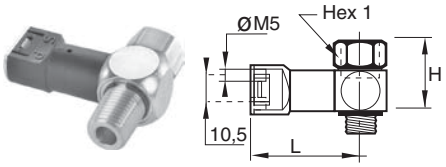
PSBJ731 Pneumatic Threshold Sensor - 4mm Pilot

Part No.	BSPP	Hex 1 (mm)	H	L
PSBJ731-M5	M5X0.8	8	16	43.5
PSBJ731-2G	1/8	14	23	44.5
PSBJ731-4G	1/4	17	28	46.5
PSBJ731-6G	3/8	22	29	49.0
PSBJ731-8G	1/2	27	30	52.5



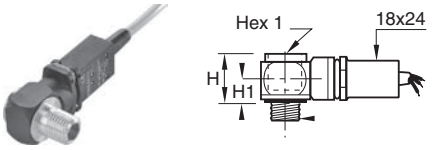
PSPJ731 Pneumatic Threshold Sensor - 10-32 Pilot

Part No.	NPT	Hex 1 (mm)	H	L
PSPJ731-2	1/8	9/16	0.90	1.58
PSPJ731-4	1/4	5/8	1.09	1.66
PSPJ731-6	3/8	7/8	1.13	1.76



PSBJ708 Pneumatic Threshold Sensor - M5 Pilot

Part No.	BSPP	Hex 1 (mm)	H	L
PSBJ708-2G	1/8	14	23	40.5
PSBJ708-4G	1/4	17	28	42.5



PSPE701 Pneumatic / Electric Threshold Sensor - BSPP

Part No.	BSPP	Hex 1 (mm)	H	H1	L
PSPE701-M5	M5X0.8	8	20	10	49
PSPE701-2G	1/8	6	20	10	52
PSPE701-4G	1/4	8	20	10	54
PSPE701-6G	3/8	10	22	12	57
PSPE701-8G	1/2	12	26	14	58

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Accessories

Section G

www.parker.com/accessories



Tank Valves & Air Chucks.....G62
EM Series Exhaust Mufflers.....G63
Muffler / Flow Controls G63
Breather Vents.....G64
ES Series Silencer G64
ASN Air Line Silencer.....G65
P6M Air Line Silencer G66
Muffler-Reclassifier ECS G67
Automatic Drip Leg Drain & Relief Valve.....G68
Relief Valves - Diaphragm Type.....G69
Shuttle Valves & Quick Exhaust G70-G72
Pressure Switches.....G73-G75
Drain Valves.....G76-G77

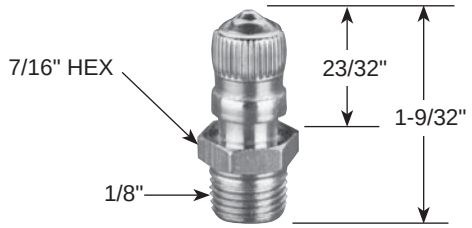
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Tank Valves

For tanks, steel barrels, compressors and other pneumatic containers where a dependable automatic air valve is needed. Equipped with standard valve core and sealing cap. Maximum operating pressure is 185 PSIG. Temperature range is -40°F to 220°F.

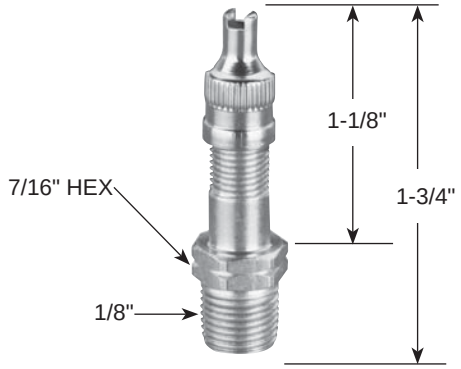
Model No. 09166 0060

Has a 1/8" pipe thread at bottom for minimum protrusion. N/P finish, dome shaped cap.
Packed 25 to a box.



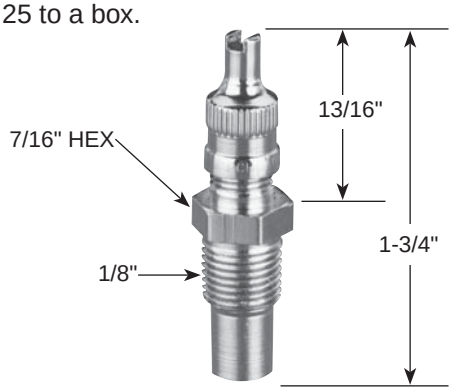
Model No. 00645 0060

A 1/8" pipe thread at bottom permits maximum protrusion. N/P finish, screwdriver type cap.
Packed 25 to a box.



Model No. 01468 0006

Has a 1/8" pipe thread part way up the stem which allows for minimum protrusion. N/P finish, has screwdriver type cap.
Packed 25 to a box.



Air Chucks

For regular airlines.

Model No. 05499 0000

Ball-foot air chuck, 1/4" female port.
Packed 10 to a box.



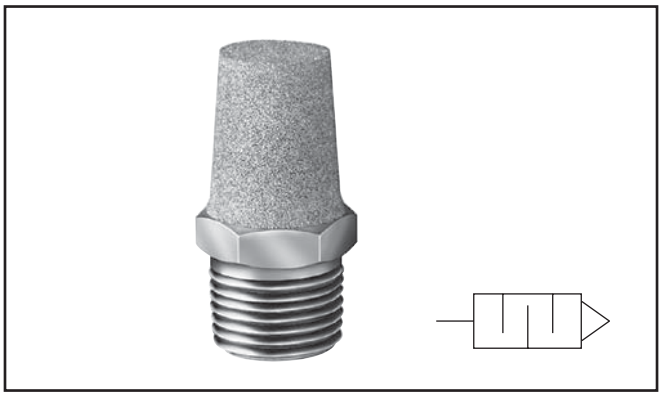
Model No. 06739 0000

Ball-foot air chuck with clip. Fits standard valve mouth. Saves holding on by hand. Has 1/4" port for connecting to hose.
Packed 10 to a box.



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EM Series – Sintered Bronze Muffler / Filters



General Description

Muffler / filters effectively reduce air exhaust noises to an industry accepted level with minimum flow restriction. They protect valves, impact wrenches, screw drivers and other air tools by preventing dirt and other foreign matter from entering the system. Non-corrosive. Can be cleaned with many common solvents.

Specifications

Maximum Operating Pressure.....250 PSIG (Air)

Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
EM12	1/8"	1.00	7/16"
EM25	1/4"	1.32	9/16"
EM37	3/8"	1.54	11/16"
EM50	1/2"	1.85	7/8"
EM75	3/4"	2.29	1-1/6"
EM100	1"	2.91	1-5/16"
EM125	1-1/4"	3.25	1-11/16"
EM150	1-1/2"	3.69	2"

Muffler / Flow Controls



General Description

Muffler / flow controls provide an acceptable exhaust noise level and effectively meter exhaust. Installed in valve exhaust ports, they control cylinder piston speeds throughout a wide range. The adjusting screw cannot be accidently blown out, can be locked to maintain setting. Brass and bronze construction. Clean with commonly used solvents.

Specifications

Maximum Operating Pressure.....250 PSIG (Air)

Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
04502 0002	1/8"	1.15	9/16"
04504 0004	1/4"	1.42	1/2"
04506 0060	3/8"	1.49	11/16"
04508 0080	1/2"	1.77	7/8"
04512 0012	3/4"	1.98	1-1/16"
04516 0016	1"	2.15	1-5/16"

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Breather Vents



NOTE: Breather vents should not be used as exhaust mufflers.

General Description

These low silhouette versions of the muffler / filter are useful where space is a problem and / or to prevent contamination. Use for vacuum relief or pressure equalization in gear boxes, oil tanks, reservoirs, etc. Non-corrosive.

Specifications

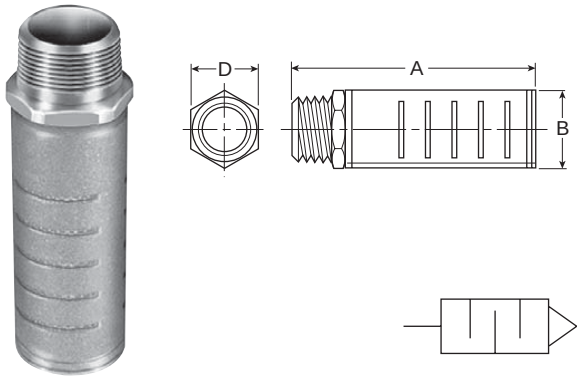
Maximum Operating Pressure.....150 PSIG (Air)

Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
04702 0002	1/8"	0.44	7/16"
04704 0004	1/4"	0.63	9/16"
04706 0006	3/8"	0.75	11/16"
04708 0008	1/2"	0.88	7/8"
04712 0012	3/4"	1.00	1-1/6"
04716 0016	1"	1.31	1-5/16"
04720 0020	1-1/4"	1.41	1-11/16"
04724 0024	1-1/2"	1.50	2"

ES Series – Silencer



General Description

These low silhouette versions of the muffler / filter are useful where space is a problem and / or to prevent contamination. Use for vacuum relief or pressure equalization in gear boxes, oil tanks, reservoirs, etc. Non-corrosive.

The silencer is designed to give superior performance in noise control with a minimum effect on air efficiency. “Trimline” design allows location in the tightest places without extra plumbing and fittings. Fits directly into the exhaust port of more than 90% of present commercial valves. Slotted body permits rapid discharge of air without undesirable back pressure. Unique nylon screen element resists dirt buildup or clogging.

Specifications

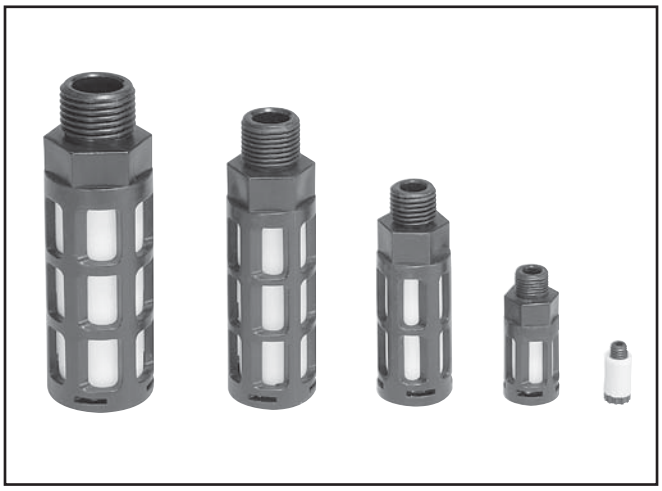
Maximum Operating Pressure.....250 PSIG (Air)

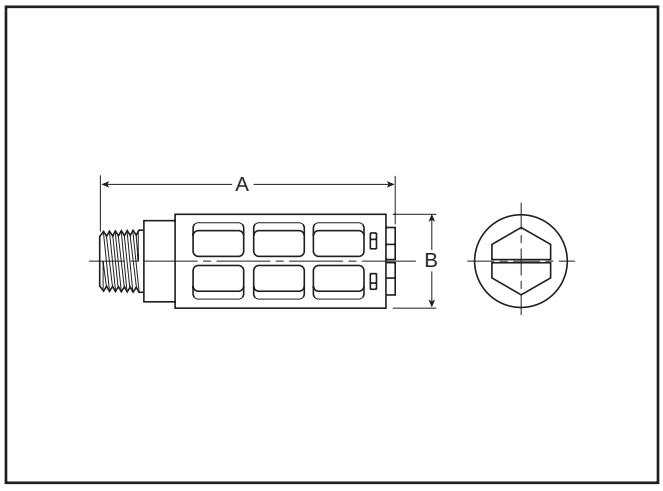
Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Numbers		Pipe Thread	Flow SCFM @ 100 PSIG Inlet	Dimensions		
NPTF	BSPT (R)			A	B	D
ES12MC	**ESB12MC**	1/8"	115	1.85	0.81	0.63
ES25MC	**ESB25MC**	1/4"	129	1.85	0.81	0.63
ES37MC	**ESB37MC**	3/8"	219	3.31	1.26	1.00
ES50MC	**ESB50MC**	1/2"	549	3.31	1.26	1.00
ES75MC	**ESB75MC**	3/4"	893	4.56	2.01	1.62
ES100MC	**ESB100MC**	1"	1,013	4.56	2.01	1.62
ES125MC	**ESB125MC**	1-1/4"	1,486	5.69	2.88	—
ES150MC	**ESB150MC**	1-1/2"	1,580	5.69	2.88	—

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Features

- Compact
- Lightweight
- Easy to Install
- Excellent Noise Reduction
- Protects Components from Contamination
- NPT and BSPT Threads Available

Part Number		Thread Size	A (mm)	B (mm)	Maximum Flow (SCFM) 100 PSIG Inlet	Sound Pressure Level (dBA)	
NPT	BSPT					20 PSIG Inlet	100 PSIG Inlet
AS-5		M5	0.43 (11)	0.32 (8)	15	69	79
ASN-6	**AS-6**	1/8"	1.57 (40)	0.63 (16)	51	69	81
ASN-8	**AS-8**	1/4"	2.56 (65)	0.83 (21)	124	67	84
ASN-10	**AS-10**	3/8"	3.35 (85)	0.98 (25)	247	83	98
ASN-15	**AS-15**	1/2"	3.74 (95)	1.18 (30)	370	69	96

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The "Trimline" design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Specifications

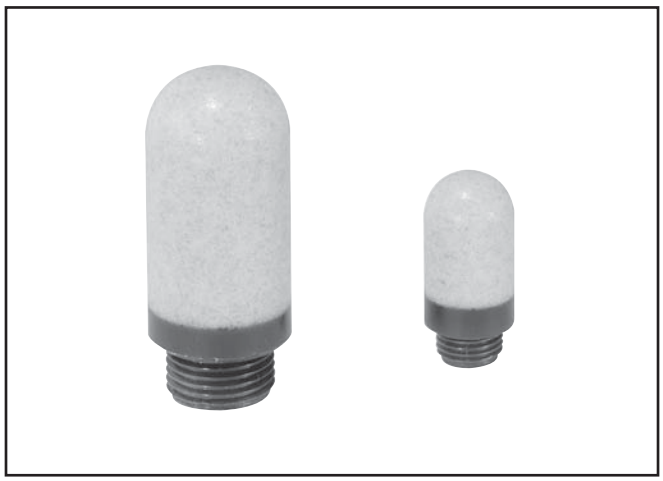
Pressure Rating.....0 to 150 PSIG (0 to 10 bar, 0 to 1034 kPa)

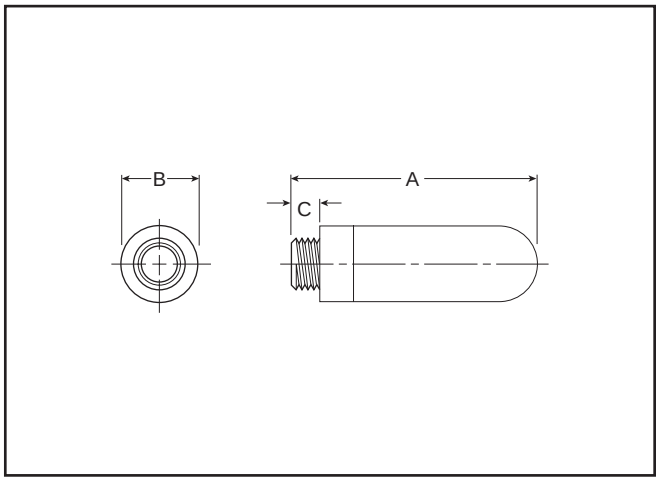
Temperature Rating .....14°F to 140°F (-10°C to 60°C)

Body .....Acetal (Plastic)

Element ..... Polyethylene

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Features

- All Plastic Ultra Light Weight Versions
- High Noise Level Reduction
- Low Back Pressure Generation

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The "Trimline" design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Part Number	Port Thread	A	Diameter B	C	Weight (grams)
P6M-PAC5	M5	0.91 (23)	0.26 (6,5)	0.16 (4)	0.01
P6M-PAB1	G1/8	1.14 (29)	0.55 (14)	0.24 (6)	0.02
P6M-PAB2	G1/4	1.34 (34)	0.67 (17)	0.24 (6)	0.04
P6M-PAB3	G3/8	2.36 (60)	0.98 (25)	0.35 (9)	0.06
P6M-PAB4	G1/2	2.52 (64)	0.98 (25)	0.43 (11)	0.10
P6M-PAB6	G3/4	5.51 (140)	1.50 (38)	0.55 (14)	0.50
P6M-PAB8	G1	6.30 (160)	1.89 (48)	0.79 (20)	0.62

Specifications

Pressure Rating..... 0 to 246 PSIG
(0 to 17 bar, 0 to 1700 kPa)

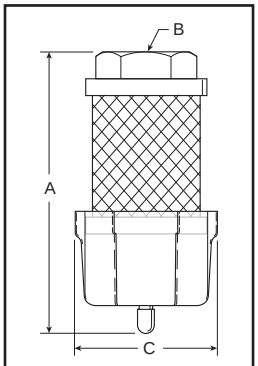
Temperature Rating

Plastic .....14°F to 176 °F (-10°C to 80°C)
Metal.....14°F to 165 °F (-10°C to 74°C)

Efficiency 92%

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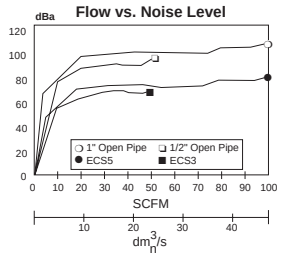


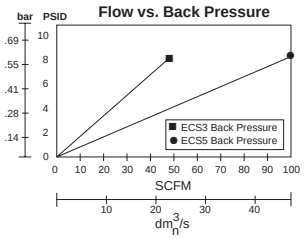


Dimensions:

Model	A	B	C
ECS3	5.30 (135 mm)	1/2" NPT	2.57 (65 mm)
ECS5	7.30 (185mm)	1" NPT	2.57 (65mm)

Performance Characteristics





Features

The ECS (Muffler-Reclassifier) eliminates unwanted oil mist and reduces exhaust noise from pneumatic valves, cylinders and air motors.

- 99.97% Oil Removal Efficiencies
- 25 dBA Noise Attenuation
- 1/2" NPT and 1" NPT
- Disposable Units
- Continuous or Plugged Drain Option
- Metal Retained Construction
- Fast Exhaust Time

Improve Overall Plant Environment

Exhaust oil mist and noise pollution have a direct impact on worker productivity.

Oil aerosol mist from lubricators and compressors is pervasive and enters the industrial plant environment through the exhaust ports of valves, cylinders and air motors. This rapidly expanding exhaust also produces sudden and excessive noise.

The ECS (Muffler-Reclassifier) is 99.97% efficient at removing the oil aerosols. The ECS also acts as a silencer to lower the dBA levels below O.S.H.A. requirements.

The result is a cleaner, quieter environment which equates to greater work productivity and safety.

Operation

Compressor oils and lubricating oils are exhausted from valves, cylinders and air motors into the ECS. Oil aerosols are “coalesced” into larger droplets and gravity pulls them into the attached drain sump. The sump can then be drained manually or by using a 1/4" ID plastic tube drain. The air flowing into the ECS is also muffled or silenced as it enters the inside of the ECS and passes through the filter media into the atmosphere.

Proven Technology

The ECS units are constructed from the same materials that go into our oil removal coalescing filter elements.

The seamless design insures media uniformity and strength. This proven technology provides high coalescing efficiency with low pressure drop.

The filter media is supported by cylindrical perforated steel retainers both inside and out. These retainers, fully plated for excellent corrosion resistance, give the ECS units high rupture strength in either flow direction. These filters can also be used as high efficiency inlet or bypass filters for vacuum pumps, or breather elements to protect the air above critical process liquids.

ECS3 / ECS5

The ECS solves two problems inherent in compressed air exhaust from valves, cylinders and air motors - oil mist removal and noise abatement.

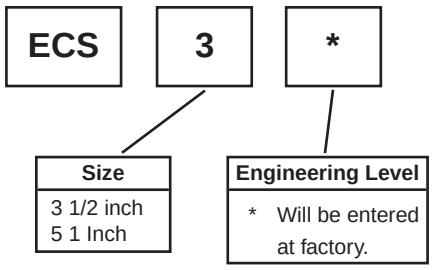
The ECS will improve your industrial plant environment, thereby improving worker productivity.

Specifications

Maximum Operating Temperature .....125°F (52°C)

Maximum Line Pressure.....100 PSIG (6.8 bar)

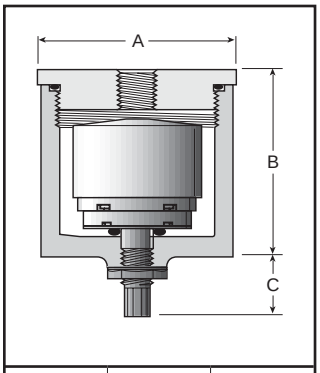
Ordering Information



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Automatic Drip Leg Drain





A	B	C
2.50	2.37	0.87
64 mm	60 mm	22 mm

Features

- Auto Drain Ported 1/8" to Pipe Away Liquid.
- Drain has Manual Override
- Easily Serviced without Tool
- 20-250 PSIG Range
- Compact Size

Specifications

Housing & Cap.....Aluminum

Port Threads..... 1/4" - 1/2" Top
1/8" Drain

Pressure and Temperature Ratings:

Metal Bowl..... 20 to 250 PSIG (0 to 17.2 bar)
32°F to 175°F (0°C to 80°C)

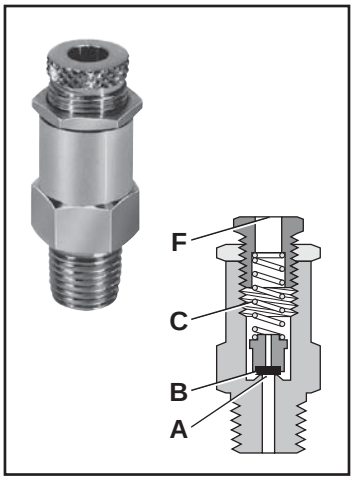
Seals.....Buna N

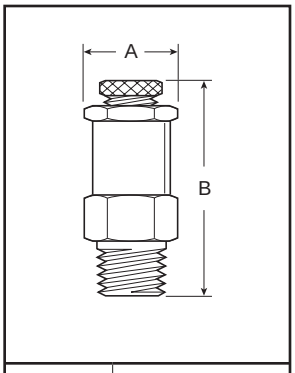
Ordering Information

Consists of Drip Leg Drain Housing WITH Auto Drain.

Model No.	Size
06D1NA	1/4"
06D3NA	1/2"

Relief Valve





A	B
0.75 Hex	1.88 - 2.25
19 mm	47.8 - 57.2 mm

Features

- Large Relief Capacity (70.39 SCFM @ 150 PSI when fully opened) in a Compact Size
- Lightweight Aluminum Construction with Resilient Seat

Application

The RV01A1N Pop Off Relief Valve is designed to protect against excessive pressure buildup in a pneumatic circuit or system.

Operation*

With the relief valve mounted in a reservoir or system, the force of system pressure at **(A)** is offset by the force of spring **(C)** acting on poppet seat **(B)**. At pressures lower than the setting, the poppet seat **(B)** is held against the body at **(A)** effecting a seal. As pressure approaches set point, the poppet begins to vent until set point is reached, at which time the poppet seat **(B)** lifts off the body at **(A)** allowing the excess pressure to vent to atmosphere at **(F)**. When the excess pressure has been vented, the spring **(C)** acts on the poppet seat **(B)** forcing it to seat on the body at **(A)**, sealing off the flow of air.

Specification

Body & Adjusting Screw.....Aluminum

Locking Nut.....Steel

Seat.....Nitrile

Spring.....Steel

Poppet..... Plastic

Operating Temperature.....32°F to 200°F (0°C to 93°C)

Port Threads..... 1/4 Inch Male

Relief Range..... 10 to 200 PSIG (.7 to 14 bar)
with standard spring.

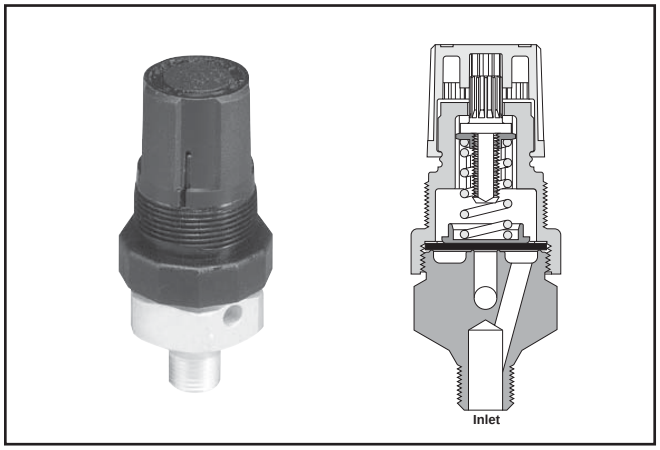
* Ref: 1RV100B Installation & Service Instructions

Ordering Information

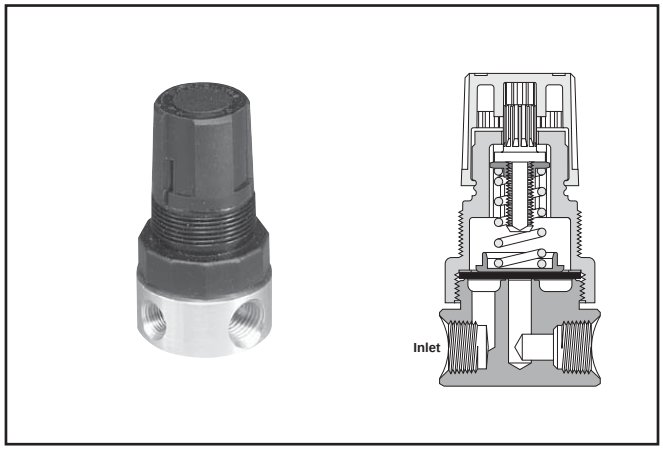
RV01A1N	XXX	Seals
	10 -200 PSI	**Blank** **BUNA** V Flurocarbon

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130 Relief Valve



134 Relief Valve



Features

- Compact, Sensitive Diaphragm-type Relief Valve
- Push-pull, Locking Knob
- Knob and Top Work the Same as a Miniature Regulator
- 130 has Lightweight Aluminum Construction
- 134 has a brass body, captured exhaust and is an Inline Type with 3 Inlet Ports and 1 Outlet Port

Applications

- Designed to Protect Against Excessive Pressure Buildup in a Pneumatic Circuit or System
- For Use where Gradual Proportional Relief is Required

Operation

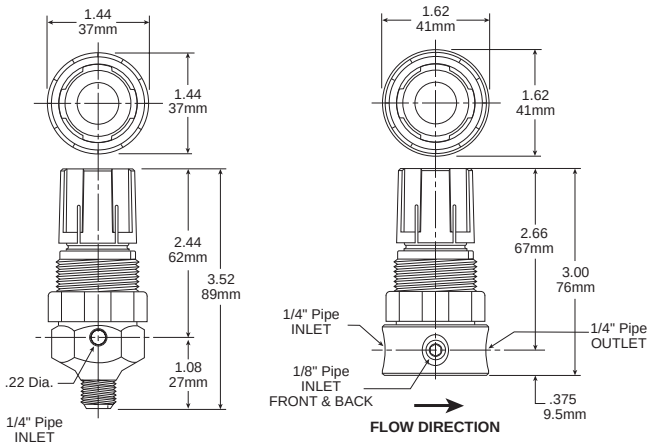
- Turn relief valve knob clockwise for maximum pressure.
- Set pressure going into relief valve at desired pressure.
- Turn relief valve knob counter-clockwise until exhaust starts to bleed.
- Turn relief valve knob clockwise until exhaust stops bleeding. Push to lock knob.

Ordering Information

Relief Valve	Spring Range			
	0-15 PSIG	0-25 PSIG	0-50 PSIG	0-100 PSIG
130	130-02AA 130-02AAP*	130-02A 130-02AP*	130-02B 130-02BP*	130-02C 130-02CP*
134	134-02AA 134-02AAP*	134-02A 134-02AP*	134-02B 134-02BP*	134-02C 134-02CP*

* Panel mount nut included.

Dimensions



130 **134**

Relief Valve Kits

Bonnet Assembly Kit PCKR364Y
Panel Mount Nut PR05X51

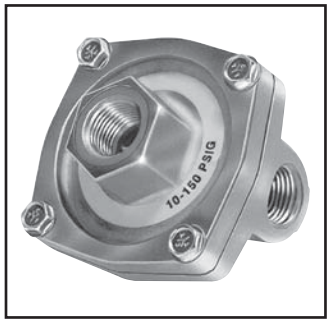
Specifications

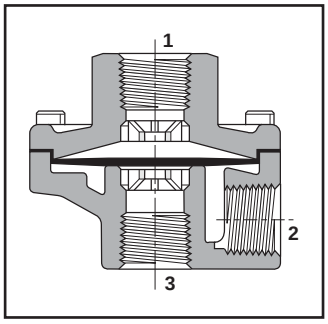
Relief Range ..... 0 to 100 PSIG (0 to 6.9 bar)
Maximum Inlet Pressure ..... 300 PSIG (20.7 bar)
Operating Temperature ..... 40°F to 120°F (4°C to 49°C)
Port Threads:
130 ..... 1/4" Pipe Male Only
134 ..... Inlet Port – Two 1/8" & One 1/4" Pipe
Outlet Port – 1/4" Pipe

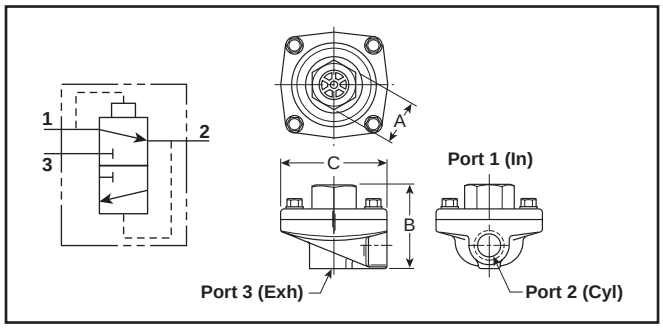
Materials of Construction

Adjusting Knob ..... Polypropylene
Adjusting Screw ..... Zinc-plated Steel
Body ..... Aluminum (130); Brass (134)
Diaphragm / Disc ..... Buna-N
Nut ..... Chromated Steel
Spring Cage ..... Acetal
Spring ..... Zinc-plated Steel

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General Information

Quick exhaust valves provide rapid exhaust of control air when placed between control valve and actuator. They can also be used as shuttle valves. Diaphragm materials are available in urethane, Nitrile, Fluorocarbon, and PTFE to meet a wide variety of operating conditions.

Valve Specifications

Operating Pressure (Air)

Maximum:

150 PSIG

200 PSIG for Model No. 0R37TB (PTFE diaphragm)

Minimum:

3 PSIG

50 PSIG for Model No. 0R37TB (PTFE diaphragm)

Operating Temperature:

Urethane: 0°F to 180°F* (-18°C to 80°C)

Nitrile: 0°F to 180°F* (-18°C to 80°C)

Fluorocarbon: 0°F to 400°F* (-18°C to 205°C)

PTFE: 0°F to 500°F* (-18°C to 260°C)

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Component Materials

Body Material..... Die cast aluminum

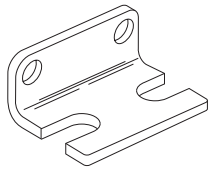
Static Seals.....Nitrile standard with urethane (Others see below)

Diaphragm ..... Standard – Urethane
Optional – Fluorocarbon, PTFE, or Nitrile (Depending on size)

Mounting Bracket Kit – No. 03640 8100

(Including body screws)

For “0R12” and “0R25” sizes with 7/8" “A” Dimension.



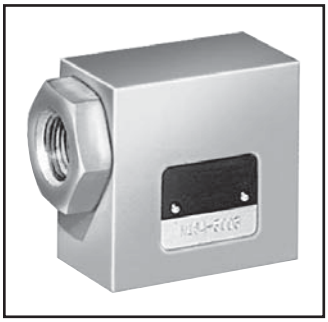
Model Selection, Performance Data and Dimensions

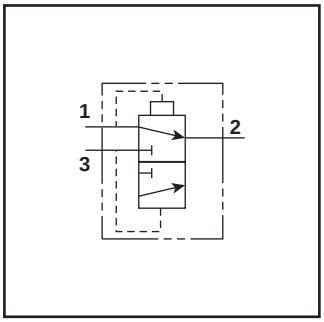
Port			Flow	Model Number		A	B	C	Service
1	2	3	(SCFM†)	NPTF	BSPP “G”				Kit No.
STANDARD URETHANE DIAPHRAGMS (Nitrile static seals)									
1/4"	1/4"	3/8"	150	**0R25NB**	0RB25NB	1" Hex	2.06	2.44	03340 0105
	3/8"	3/8"	240	**0R25PB**	—	1" Hex	2.06	2.44	03340 0105
3/8"	3/8"	3/8"	240	**0R37B**	0RB37B	1" Hex	2.06	2.44	03340 0105
1/2"	1/2"	1/2"	450	**0R50B**	0RB50B	1-1/2" Hex	2.88	3.38	03475 0109
3/4"	3/4"	3/4"	550	**0R75B**	0RB75B	1-1/2" Hex	2.88	3.38	03475 0109
NITRILE DIAPHRAGMS (Nitrile static seals)									
1/8"	1/8"	1/8"	70	**0R12B**	0RB12B	7/8" Sq.	1.75	1.88	03640 8000
	1/8"	1/4"	70	**0R12NB**	0RB12NB	7/8" Sq.	1.75	1.88	03640 8000
1/4"	1/4"	1/4"	90	**0R25B**	0RB25B	7/8" Sq.	1.75	1.88	03640 8000
	1/4"	3/8"	90	0R25NFB	0RB25NFB	7/8" Sq.	1.75	1.88	03340 8000
3/8"	3/8"	3/8"	240	0R37FB	0RB37FB	1" Hex	2.06	2.44	03340 8000
3/4"	3/4"	3/4"	550	0R75FB	0RB75FB	1-1/2" Hex	2.88	3.38	03475 9000
FLUOROCARBON DIAPHRAGMS for extended temperature operation (Fluorocarbon static seals)									
1/8"	1/8"	1/8"	70	0R12VB	0RB12VB	7/8" Sq.	1.75	1.88	03650 8000
	1/8"	1/4"	70	0R12NVB	0RB12NVB	7/8" Sq.	1.75	1.88	03650 8000
1/4"	1/4"	1/4"	90	0R25VB	0RB25VB	7/8" Sq.	1.75	1.88	03650 8000
3/8"	3/8"	3/8"	240	0R37VB	0RB37VB	1" Hex	2.06	2.44	03340 0319
1/2"	1/2"	1/2"	450	0R50VB	0RB50VB	1-1/2" Hex	2.88	3.38	03475 0120
3/4"	3/4"	3/4"	550	0R75VB	0RB75VB	1-1/2" Hex	2.88	3.38	03475 0120
PTFE DIAPHRAGMS for higher pressure and temperature (Fibre static seals)									
3/8"	3/8"	3/8"	240	0R37TB	0RB37TB	1" Hex	2.06	2.44	03340 0504

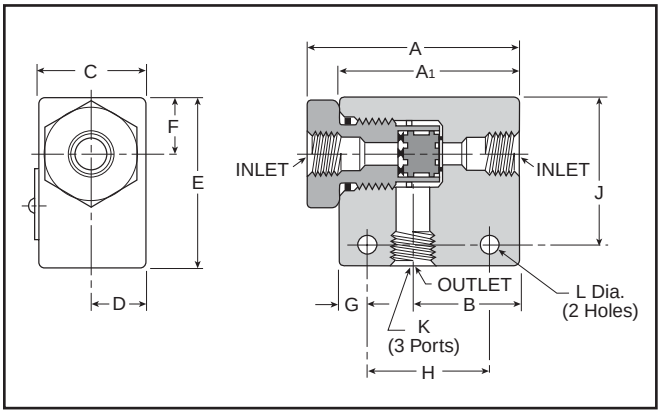
† At 100 PSIG inlet pressure with full pressure drop.

BOLD ITEMS ARE MOST POPULAR.

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General Information

Shuttle valves determine a single pneumatic output from two separate inputs. If pressure is applied to both ports simultaneously, the valve will select the port with the higher pressure.

Valve Specifications

Maximum Operating Pressure.....200 PSIG Maximum
3 PSIG Minimum: Differential Pressure

Operating Temperature .....0° to 160°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Component Materials

Body Material.....Aluminum
Internal Components..... Aluminum
Seals.....Nitrile

Model Selection and Dimensions

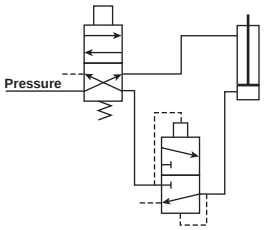
Model Number	Port Size	Dimensions											
		A	A1	B	C	D	E	F	G	H	J	K	L
N164 1001	1/8"	N/A	1.62	0.81	0.62	0.31	1.00	0.281	0.312	1.00	0.75	1/8 - 27	0.219
N164 2003	1/4"	2.50	2.12	1.25	1.25	0.62	2.00	0.67	0.265	1.25	1.35	1/4 - 18	0.219
N164 3003	3/8"	2.50	2.12	1.25	1.25	0.62	2.00	0.67	0.265	1.25	1.35	3/8 - 16	0.219

Performance Data – Flow

Model Number	Port Size	Flow (Cv)
N164 1001	1/8"	0.32
N164 2003	1/4"	1.65
N164 3003	3/8"	2.02

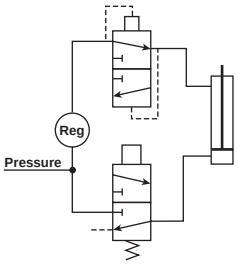
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Typical "Quick Exhaust Valve" Applications



Rapid Retraction – Double Acting Cylinder

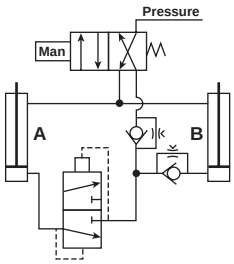
In this circuit, air is exhausted through a Quick Exhaust Valve that is **close coupled** to the cap end of the cylinder. Because the Quick Exhaust Valve has a greater exhaust capacity than the four-way Control Valve, increased cylinder speed can be accomplished with a smaller and less expensive control valve.



Dual Pressure Actuation of Double Acting Cylinder

This circuit utilizes a Quick Exhaust Valve and a three-way Control Valve to permit rapid extension of the cylinder at a high pressure. nder life.

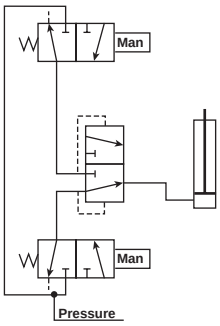
NOTE: Line pressure must be 3 or 4 times greater than rod end pressure. Effective working pressure is the differential between the cap and rod end.



Bi-Directional Control of Two Double Acting Cylinders

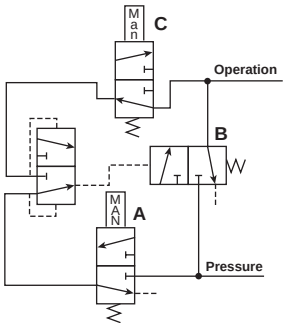
This circuit provides maximum control with a minimum of valving. A large four-way Control Valve is not needed to permit the rapid retraction of Cylinder A, as the Quick Exhaust Valve performs this function. The extension of Cylinders A and B and retraction of Cylinder B are controlled by Speed Control Valves.

Typical "Shuttle Valve" Applications



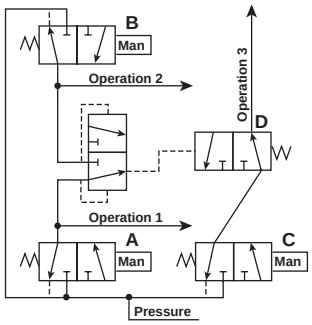
"OR" Circuit

The most common application of the Shuttle Valve is the "OR" Circuit. Here a cylinder or other work device can be actuated by either control valve. The valves can be manually or electrically actuated and located in any position.



Memory Circuit

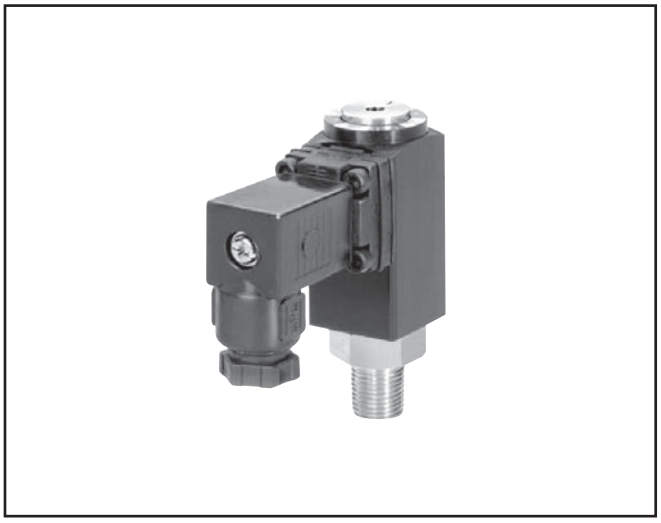
This circuit enables continuous operation once initiated. Pressure is delivered to the circuit when Valve A is actuated. This allows pressure to pass through the shuttle valve actuating Valve B. Pressure then flows through Valve B and also the other side of the shuttle valve which holds Valve B open for continuous operation. To unlock the circuit, Valve C must be opened to exhaust the circuit and allow Valve B to return to its normally closed position.



Interlock

This circuit prevents the occurrence of a specific operation while one or another operation takes place. When either Valve A or B is actuated to perform operation 1 or 2, Valve D is shifted to the closed position and prevents operation 3 from occurring.

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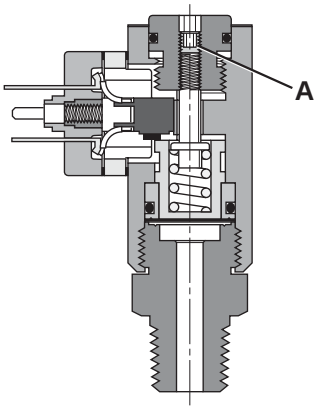
Features:

- Inline Mounting
- Dial Indicator for Easy Pressure Setting
- 5 amp Rated Snap Action Micro Switch
- Heavy Duty Aluminum Components
- Compact Size
- DIN 43650HCM Connector
- IP65 Rated
- Field Adjustable 30-150 PSIG
- +/- 2% Repeatability
- Single Pole/Double Throw Switch

Operation

The pressure switch monitors the air pressure in your pneumatic system. When the pressure in your system either drops below or exceeds the set point pressure, an electrical output is given.

Using a 0.125" (3mm) hex wrench, turn the adjusting screw **(A)** clockwise to increase the pressure set point and counterclockwise to decrease the pressure setting. One complete revolution of the adjusting screw covers the complete adjustment range of 30 to 150 PSIG (2 to 10 bar).



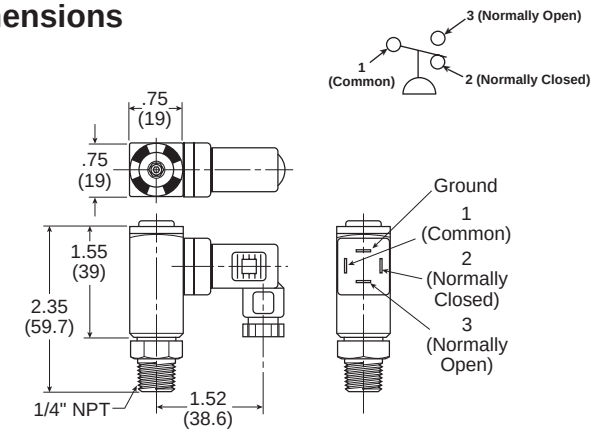
Definitions and Terminology

Repeatability — Accuracy is the maximum allowable set point deviation of a single pressure or temperature switch under one given set of environmental and operational conditions.

Single Pole Double Throw (SPDT) Switching element — A SPDT switching element has one normally open, one normally closed and one common terminal. Three terminals mean that the switch can be wired with the circuit either normally open (NO), or normally closed (NC), or both.

Dead Band — The dead band, sometimes referred to as “differential” or “hysterisis”, is the change in pressure between actuation and deactuation set points.

Dimensions



Kits and Accessories

Bushing 1/4" to 3/8" 209P-6-4
Bushing 1/4" to 1/2" 209P-8-4

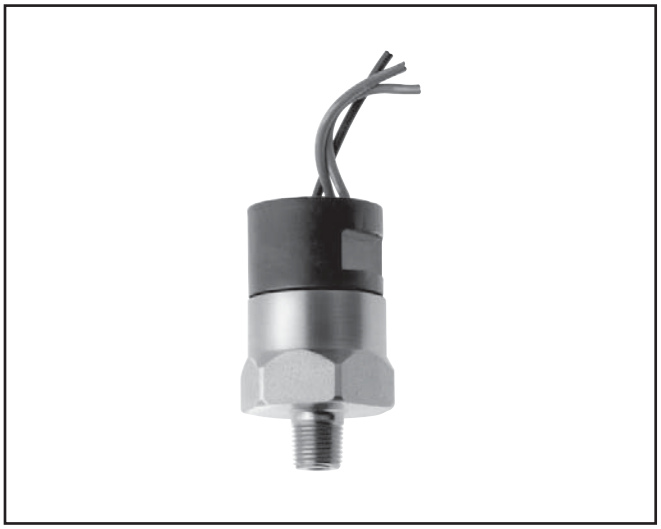
Specifications

Electrical ..... 5 AMP, 12/24VDC, 125/250VAC
Maximum Inlet Pressure ..... 300 PSIG (20 bar)
Mechanical Life ..... 10^6 at standard operating conditions
Electrical Connection ..... DIN 43650HCM
Electrical Protection IP65
Repeatability ..... ±2% at 70°F (20°C) Ambient
Temperature Range ..... -40°F to 180°F (-40°C to 80°C)
Weight ..... 0.13 lb. (0.06 Kg)

Materials of Construction

Diaphragm ..... Nitrile
Housing ..... Anodized Aluminum

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Features:

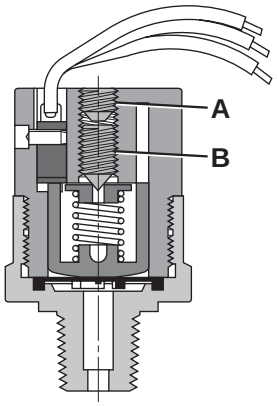
- Inline Mounting
- 5 amp Rated Snap Action Micro Switch
- Brass Body
- Compact Size
- Flying Leads Electrical Connection
- IP65 Rated
- Field Adjustable 25-100 PSIG
- +/- 2% Repeatability
- Single Pole / Double Throw Switch

Operation

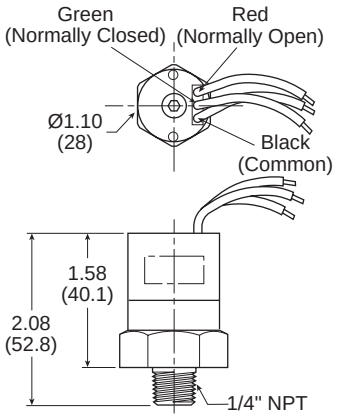
The pressure switch monitors the air pressure in your pneumatic system. When the pressure in your system either drops below or exceeds the set point pressure, an electrical output is given.

Remove screw **(A)** from the top of the switch. Using a 0.125" (3mm) hex wrench, turn the adjusting screw **(B)** clockwise to increase the pressure set point and counterclockwise to decrease the pressure setting, replace screw **(A)**. Adjustment range of 25 to 100 PSIG (1.7 to 7.5 bar).

Standard electrical circuit
Black..... Common
Green..... Normally Closed
Red..... Normally Open



Dimensions



Kits and Accessories

Bushing 1/4" to 3/8" 209P-6-4
Bushing 1/4" to 1/2" 209P-8-4

Definitions and Terminology

Repeatability — Accuracy is the maximum allowable set point deviation of a single pressure or temperature switch under one given set of environmental and operational conditions.

Single Pole Double Throw (SPDT) Switching element — A SPDT switching element has one normally open, one normally closed and one common terminal. Three terminals mean that the switch can be wired with the circuit either normally open (NO), or normally closed (NC), or both.

Dead Band — The dead band, sometimes referred to as “differential” or “hysterisis”, is the change in pressure between actuation and deactuation set points.

Specifications

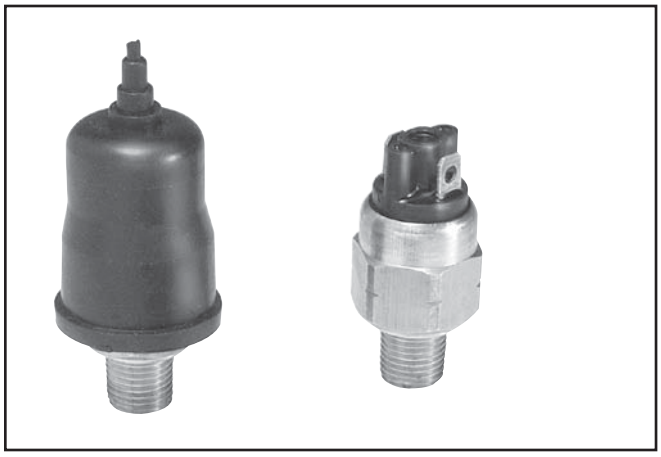
Electrical ..... 5 AMP, 12/24VDC, 125/250VAC
Maximum Inlet Pressure ..... 300 PSIG (20 bar)
Mechanical Life ..... $2x10^6$ at 75 PSIG (5 bar)
Electrical Connection ..... 18" Flying Leads
Electrical Protection IP65
Repeatability ..... ±2% at 70°F (20°C) Ambient
Temperature Range ..... -40°F to 180°F (-40°C to 80°C)
Weight ..... 0.23 lb. (0.11 Kg)

Materials of Construction

Diaphragm ..... Nitrile
Housing ..... Brass

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Mobile Pressure Switch
P04159 – Normally Closed
P04160 – Normally Open



Features

- Inline Mounting
- 4 Amp Rated Snap Action Micro Switch
- Brass Body
- Compact Size
- Spade Electrical Connection
- Field Adjustable 15 to 150 PSIG
- Rubber Boot Protection
- ±5% Repeatability @ 70°F (20°C) Ambient Temperature
- Temperature Range -40°F to 220°F (-40°C to 105°C)

Applications

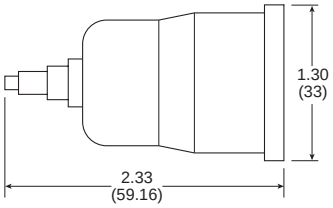
These Pressure Switches are intended for use in mobile, general-purpose, compressed air systems. Product is suitable for all trailer air-ride systems, truck suspension systems, associated bus door systems, and electro-pneumatic operations. The performance requirements and reliability are suitable for the extreme cold weather environment of North American winters.

Operation

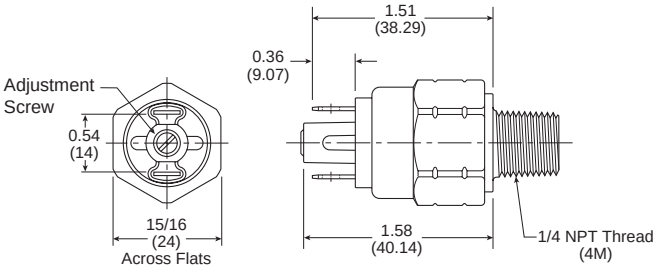
The pressure switch monitors air pressure and provides an electrical output when the pressure drops below or exceeds an adjustable preset pressure.

Adjust the pressure switch using a flat head screwdriver; turn adjustment screw clockwise to increase set point or counterclockwise to decrease set point.

Dimensions



Rubber Boot



Kits and Accessories

Rubber Boot P04161

Specifications

Switch Position
P04159 ..... Normally Closed
P04160 ..... Normally Open

Electrical Rating 100VA

Electrical Life ..... 4 Amp in Rush @ 12VDC
>2,000,000 Cycles

Maximum Inlet Pressure ..... 300 PSIG (20 bar)

Mechanical Life ..... >2 x 10^6 @ 75 PSIG (5 bar)

Electrical Connection ..... 1/4 x 1/32 Spade

Electrical Protection ..... Rubber Boot

Repeatability ..... ±5% @ 70°F (20°C)

Ambient & Medium
Temperature Range ..... -40°F to 220°F
(-40°C to 105°C)

Weight ..... 0.14 lb. (0.06 Kg)

Materials of Construction

Diaphragm ..... Kapton

Housing ..... Brass

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WDV3-G

The WDV3 Electrical Drain is designed to remove condensate from compressors, compressed air dryers and receivers up to any size, type or manufacturer.

The WDV3 offers true installation simplicity and it is recognized as the most reliable and best performing condensate drain worldwide. The large orifice in the direct acting valve, combined with its sophisticated timer module ensure many years of trouble-free draining of condensate.

Benefits

- Does Not Air-Lock During Operation
- Compressed Air Systems Up to Any Size
- Also Available In Stainless Steel
- The Direct Acting Valve Is Serviceable
- Suitable for All Types of Compressors
- TEST (Micro-Switch) Feature
- High Time Cycle Accuracy
- Large (4.5mm) Valve Orifice

Ordering Information

	Family	Voltage	Pipe Size	Valve Material	Pressure
WDV3 –	G	1	2	B	L

Family
G General

Voltage
1 120V AC
2 230V AC
3* 24VDC
* Available in 1/2" Only

Pipe Size
2 1/4" General
3 3/8" General
4 1/2" General

Valve Material
B Brass

Pressure
L 230 PSIG (16 bar)

Specifications

Operating Pressure..... 230 PSIG (15,9 bar)

Ambient Operating Range Temperature:
34° to 130°F (1.1° to 54°C)

Coil Insulation
Class H .....340°F (171.1°C)

Voltages
AC 115, 230/50-60

Timer:
Open Time..... .5 to 10 sec., Adjustable
Cycle Time..... .5 sec. to 45 min., Adjustable

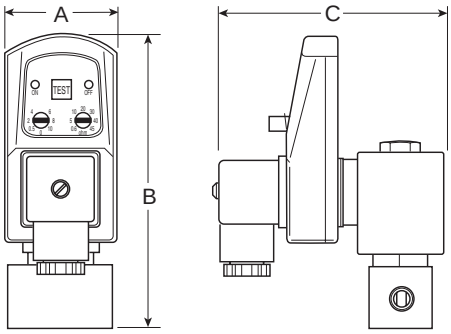
Maximum Current Rating .....4mA Max.

Port Size..... 1/4, 3/8, 1/2 NPT

Weight ..... 1.8 lb. (0.8 kg)

Materials of Construction

aling Material ..... FPM (Fluorocarbon)



Model Selection and Dimensions

Model Number	A	B	C
WDV3-G**BL	1.73 (44)	4.53 (115)	3.46 (88)

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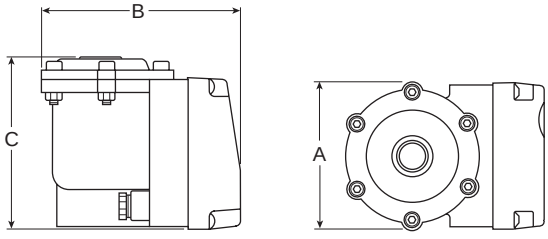
WDV2-425

Features

- Zero Air Loss
- Automatically Self-Adjusting for Voltages from 110 to 230V
- Sensor Device with No Moving Parts
- Sophisticated Electronic Controls
- Alarm with Remote Contacts
- Large Inlet Port to Eliminate Clogging
- Manual Push-to-Test Button
- Automatically Clears Slugs

Benefits

- Energy Efficient
- World-Wide Applications
- Long Life
- High Reliability
- Versatility, Early Warning
- Low Maintenance
- On Demand Operation
- Maintenance Free



Model Selection and Dimensions

Model Number	A	B	C
WDV2-425	3.23 (82)	4.61 (117)	4.65 (118)

Specifications

Drain Volume .....0.01 Gallons / Cycle
Maximum Fluid Temperature .....150°F (60°C)
Voltage .....110 to 240V, 50/60 Hz
Inlet Ports (2)..... 1/2" NPT
Outlet Ports (1) ..... 5/16" (8mm) I.D. Hose

Operating Conditions

Ambient Temperature.....33° to 140°F (0° to 60°C)
Maximum Operating Pressure..... 232 PSIG (16 bar)

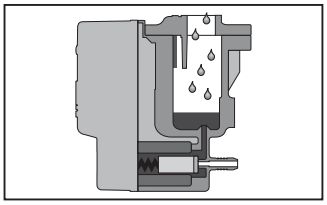
The WDV2 Electronic Demand Drain Valves, with zero air loss, are suitable for all compressed air system applications from aftercoolers to filters to receivers to refrigerated dryers. These drain valves activate automatically and are both reliable and economical.

Alarm Mode

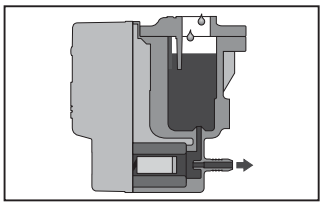
Should the drain fail to discharge due to an excessive volume of condensate or blocked outlet piping, an alarm condition is activated. During the alarm condition, the drain cycles continuously in an attempt to remove the excess condensate. At the same time, the volt free alarm contacts change state and the normally green power LED flashes to indicate a problem. When the excess condensate or blockage has been cleared, the drain will resume normal operation.

Operation

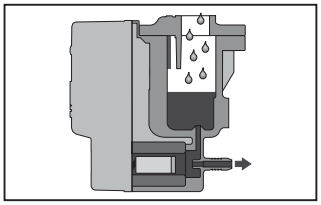
1. Upon power up, the outlet valve is closed and sensor is constantly monitoring for presence of liquid.



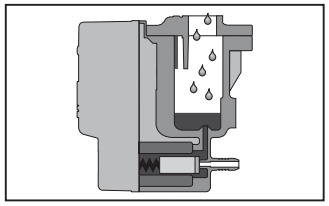
2. When condensate is detected by the sensor, the outlet valve is opened for a pre-set time.



3. The condensate is discharged from the outlet port, due to the system pressure acting on the top of the liquid.



4. The outlet valve is closed after a pre-set time has expired. The opening time has been calculated to always ensure a small amount of liquid remains in bowl. This liquid acts as a seal, preventing air loss.



Level monitoring and discharge operation are continuous.

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Notes

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Index
Model Number to Page Number

Section H

Model No.	Section / Page No.
00337G100*	G48
00338110*	G48
00338G110*	G48
00339300*	G54
00339G300*	G54
03250****	G49
032500*19	G48
03251****	G51
03340****	G70
03475****	G70
036*08000	G70
06D*NA	G68
0R***B	G70
0R**B	G70
0R12NVB	G70
0R25NFB	G70
0RB***B	G70
0RB**B	G70
0RB12NVB	G70
0RB25NFB	G70
130-02A	G69
130-02AA	G69
130-02AAP	G69
130-02B	G69
130-02BP	G69
130-02C	G69
130-02CP	G69
134-02	G69
134-02AA	G69
134-02AAP	G69
134-02AP	G69
134-02B	G69
134-02BP	G69
134-02C	G69
134-02CP	G69
14680006	G62
169PMNS-*-*	D90
169PMNS-*-*	F45
169PMT-*-*	D90
169PMT-*-*	F45
169PMT-**-*	D90
169PMT-**-*	F45
169PMTL-*-*	D90
169PMTL-*-*	F45
169PMTL-**-*	D90
169PMTL-**-*	F45
169PMTNS-*-*	D91
169PMTNS-*-*	F46
169PMTNS-**-*	D91
169PMTNS-**-*	F46
171PMT-*-*	D91
171PMT-*-*	F46
171PMTNS-*-*	D91
171PMTNS-*-*	F46
171PMTNS-*-*-*	D91
171PMTNS-*-*-*	F46
172PMT-*-*	D91
172PMT-*-*	F46
172PMTNS-*-*	D91
172PMTNS-*-*	F46
172PMTNS-*-*-*	D91
172PMTNS-*-*-*	F46
207P-2	D41
207P-2	E65
207P-2*	E42
209P-*-*	G73, G74
215PNL-2-15	D41
220*P-2-2	D41
222P-2-2	D41
30470099	G54
315139000	F106
32130599	F102, F103
32130899	F102
32140299	F102, F103
3250G0*19	G49
3250G1**0	G49
32PLCK-*	G53
32PLCK-**	G53
32PLCK-***	G53
40****000	F9
404111000	F4
404118000	F4
4101*1000	F7
4102*1000	F7
4103*1000	F7
4104*1000	F8
4107*1000	F8
4108*1000	F7
4109*1000	F8
4141*1000	F5
4142*1000	F5
4143*1000	F5
4144*1000	F6
4147*1000	F6
4148*1000	F5
4149*1000	F6
422CR0***	F35
422CR01**	F34
422CR02**	F34
422CS0***	F35
422CS01**	F34
422CS02**	F34
422CT0***	F35
422CT0*1K	F34
45020002	G63
45040004	G63
45060060	G63
4508008	G63
45120012	G63
45160016	G63
47020002	G64
47040004	G64
47060006	G64
47080008	G64
47120012	G64
47160016	G64
47200020	G64
47240024	G64
52****000	F24
520008050	F25
520008500	F25
520018005	F20, F25
520838004	F25
523831000	F21
5298*1000	F23
54990000	G62
62PM	E29, E30
6450060	G62
67390000	G62
68PLCK-**-**	G53
68PLCKI-**-**	G53
68PLCKI-***-**	G53
68PLCKI-5/32-0	G53
68PM-*-*	D90, F45
68PMT-*-*	D90
68PMT-**-*	D90, F45
77960105	F104, F105
77960199	F104
77960319	F105
81870129	F104
81870139	F105
8230109	F102, F103
8230299	F102
8240109	F102, F103

* Represents an insignificant digit for model to page referencing.

H

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Model No.	Section / Page No.
91660060	G62
A00S*	D112
A00S*****P	D104
A00SBM3	D104
A00SBP	D109
A00SC231P	D104
A05P*	D111, D112
A05PACCL10	D108
A05PACCL5	D108
A05PAI*M5	D110
A05PAXI*M5	D110
A05PB*1	D110
A05PD25*P	D102
A05PD35*P	D102
A05PDCC	D108
A05PDCC**0	D108
A05PDCCL5	D108
A05PDCCM	D108
A05PG	D112
A05PGBP	D109
A05PL*	D109
A05PS251P	D102
A05PS252P	D102
A05PSCC	D108
A05PSCCM	D108
A05PXG	D112
A05R*	D112
A05RABM5	D112
A05RAI*M5	D110
A05RAXI*M5	D110
A05RB*	D110
A05RD*5*PM5MF	D102
A05RGBP	D109
A05RS25*PM5MF	D102
A12******P****	D103
A12P*	D112
A12PAI*N1	D110
A12PAXI*N1	D110
A12PB*2	D110
A12PD*5*P	D102
A12PGBP	D109
A12PS25*P	D102
A12PXG	D112
A12R*	D112
A12RAB*1	D112
A12RAI*N1	D110
A12RAXI*N1	D110
A12RB*	D110
A12RD*5*PN1MF	D102
A12RGBP	D109
A12RS25*PN1MF	D102
A4VC4-MG	G53
A5VC5-MG	G53
A6VC6-MG	G53
AA***XN*N**NP	B7
AA01U***	E62, E191
AA02U***	E62, E191
AA02U004	E191
AAH1****	E50, E74
AAH1*****	E214
AAH2****	E51, E75
AAH2*****	E214
AAH2S002	E214
AAH3****	E51, E75
AAH3*****	E214
AAHB****	E40
AAHBS***	E62, E191
AAHM********	E10
AAHMD5249M0M	E11
AAHMT5129M0M	E12
AAHMW5209M0M	E13
AAHMX5209M0M	E13
AAP2LAXMAX***NP	D82
AAP2LAXMAXN**NP	D82
AAP2LBXMAXN**NP	D82
AAP2LCXMAXN**NP	D82
AAPS*******NP	D39
AAPS**BX***NP	D38
AAPS*3B1***NP	D37
AAPSG*BXN**NP	D38
AAPSJ3B1N**NP	D37
AAPSM*BXN**NP	D38
AAPSMABXN**NP	D10
AAPSMBBXN**NP	D10
AAPSMCBXN**NP	D10
AAPSMCBXN03NP	D11
AM1DE200	C84, D12, D40, D112
AS-10	D45, D88, G65, F44
AS-15	D45, D88, G65, F44
AS-5	D45, D88, D111, G65, F44
AS-6	D45, D88, D111, G65, F44
AS-8	D45, D88, D111, G65, F44
ASN-10	D45, D88, G65, F44
ASN-15	D45, D88, G65, F44
ASN-6	D45, D88, D111, G65, F44
ASN-8	D45, D88, D111, G65, F44
B3********C	D32
B3*0000XXC	D31
B3*0BB5**C	D30
B3*V000XXC	D31
B3*VBB5**C	D30
B350BB5**C	D30
B3G0BB5**C	D30
B5********C	D33
B5**000XXC	D31
B512BB5**C	D30
B52*BB5**C	D30
B53*000XXC	D31
B55*BB5**C	D30
B58*000XXC	D31
B5G*BB5**C	D30
B5G2BB5*C	D30
B5K*000XXC	D31
B6********A	D34
B6*2000XXA	D31
B6*2BB5**A	D30
B68*000XXA	D31
B6V2BB5**A	D30
B6X2000XXA	D31
B7********A	D35
B7*3000XXA	D31
B7*3BB5**A	D30
B7V3BB5**A	D30
B8********A	D35
B8*4000XXA	D31
B8*4BB5**A	D30
B8V4BB5**A	D30
BC0*M*	D111
BL67-16DO-0.1A-P	E158, E159, E162, E168
BL67-1CNT/ENC	E158, E159, E166, E173
BL67-1CVI	E158, E159, E165, E173
BL67-1RS232	E158, E159, E166, E172
BL67-1RS485/422	E158, E159, E166, E172
BL67-1RSM-VO	E158
BL67-1SSI	E158, E159, E166, E173
BL67-2AI2AO-V/I	E164, E171
BL67-2AI-I	E158, E159, E163, E170
BL67-2AI-PT	E158, E159, E163, E170
BL67-2AI-TC	E158, E159, E163, E170
BL67-2AI-V	E158, E159, E163, E170
BL67-2AO-I	E158, E159, E163, E171
BL67-2AO-V	E158, E159, E163, E171
BL67-2RFID-A	E158
BL67-2RFID-C	E158
BL67-4AI4AO-V/I	E164, E171
BL67-4AI-I/V	E159
BL67-4AI-V/	E170
BL67-4AI-V/I	E158, E163
BL67-4AO-V	E163
BL67-4DI4DO-PD	E158, E159, E162
BL67-4DI-N	E158, E159, E160, E167
BL67-4DI-P	E158, E159, E160, E167
BL67-4DI-PD	E158, E159, E160, E167
BL67-4DO-0.5A-P	E158, E159, E161, E168
BL67-4DO-2A-*	E158, E159, E161, E168
BL67-4DO-4A-P	E161
BL67-8DI-N	E158, E160, E167
BL67-8DI-P	E158, E159, E160, E167
BL67-8DI-PD	E158, E160, E167
BL67-8-DI-PD	E159
BL67-8DO-0.5A-*	E158, E159, E161, E168
BL67-8DO-R-NO	E158, E159, E162, E169
BL67-8XSG-P	E162
BL67-8XSG-PD	E158, E159, E162
BL67-B-1M12	E158, E165, E166
BL67-B-1M12-8	E158, E166
BL67-B-1M23	E158, E160, E161, E166
BL67-B-1M23-19	E158, E162
BL67-B-1RSM	E158, E165
BL67-B-1RSM-4	E158, E165
BL67-B-1RSM-VO	E165
BL67-B-2M12	E158, E160, E161
BL67-B-2M12-8	E164
BL67-B-2M12-8-P	E164
BL67-B-2M12-P	E158, E160, E161
BL67-B-4M12	E158, E160, E161, E162, E163, E164
BL67-B-4M12-P	E158, E160, E161, E162
BL67-B-4M8	E158, E160, E161
BL67-B-8M8	E158, E160, E161, E162, E164
BL67-PF-24VDC	E158, E159, E165, E172
CB-M8-4P-*M	C41
CMD0*-*B	C7, C9, C13, C15, C18, C20, C34, C35, C36, C37, C40

H

* Represents an insignificant digit for model to page referencing.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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Model No.	Section / Page No.
CMD0*-1	C7, C13, C18, C34, C36, C37, C40
CMD**-2	C9, C15, C20, C35, C36, C37
D0*BD0	E63
D01BD0	E197
D01P-02-80	E41, E64, E197
D02BD0	E197
D02P-01-80	E41, E64, E197
DSS25FB1K	D109
DX01-***-****	E190, E213
DX01-606-951*	E189
DX01-611-951*	E189
DX01-616-951*	E189
DX01-621-951*	E189
DX01M2MGSKT	E63, E89
DX01M2MGSKT	E198
DX02-***-****	E190, E213
DX02-606-951*	E189
DX02-611-951*	E189
DX02-616-951*	E189
DX02-621-951*	E189
DX02M2MB	E88
DX02M2MB	E198
DX02M2MGSKT	E63, E89
DX02M2MGSKT	E198
DX1-606-BL**	E212
DX1-611-BL**	E212
DX1-613-BL**	E212
DX1-616-BL**	E212
DX1-621-BL**	E212
DX2-606-BL**	E212
DX2-611-BL**	E212
DX2-613-BL**	E212
DX2-616-BL**	E212
DX2-621-BL*	E212
DX2-621-BL**	E212
DX3-***-****	E213
DX3-606-BL**	E212
DX3-611-BL**	E212
DX3-616-BL**	E212
DX3-621-BL**	E212
E9001*	D89
E90016	F44
E90017	F44
ECS3*	G67
EM**	G63
EM1**	G63
EM12	D45, D88, D111, F44
EM25	D45, D88, D111, F44
EM37	D45, D88, F44
EM50	D45, D88, F44
ES**MC	G64
ES1**MC	G64
ESB**MC	G64
ESB1**MC	G64
EZ03*B*	F95
EZ03NB6	F96
EZ04*B*	F95
EZ04NB6	F96
EZ06*B*	F95
EZ06NBA	F96
EZ08*B*	F95
EZ08NBA	F96
EZ0A*B*	F95
EZ0ANBA	F96
EZ1*N000YYA	D8
EZ11NBB5**A	D6
EZ11NBBG**A	D6
EZ12NBB5**A	D6
EZ12NBBG**A	D6
EZ15NBB5**A	D6
EZ15NBBG**A	D6
EZ1GNBB5**A	D6
EZ1GNBBG**A	D6
EZ1KN000YYA	D8
EZ2*N000YYA	D8
EZ21NBB5**A	D6
EZ21NBBG**A	D6
EZ22NBB5**A	D6
EZ22NBBG**A	D6
EZ25NBB5**A	D6
EZ25NBBG**A	D6
EZ2GNBB5**A	D6
EZ2GNBBG**A	D6
EZ3*N000YYA	D8
EZ31NBB5**A	D6
EZ31NBBG**A	D6
EZ32NBB5**A	D6
EZ32NBBG**A	D6
EZ35NBB5**A	D6
EZ35NBBG**A	D6
EZ3GNBB5**A	D6
EZ3GNBBG**A	D6
EZ3KN000YYA	D8
FC601-*-*	G57
FC601-**-**	G57
FC601-***-**	G57
FC602-*	G57
FC608-**-**	G57
FC701-**-**	G51
FC701-***-**	G51
FC702-**	G51
FC705-*-*	G51
FC708-*	G51
FC731-**-**	G38
FC731-***-**	G38
FC800-4	E17
FC800-5/32	E17
FC832-*	G47
FC832-**	G47
FC832-***	G47
FC836-*	G47
FC836-**	G48
FCB832-*	G47
FCB832-**	G47
FCC731-*-*	G38
FCC731-**-*	G38
FCCB731-*-*	G39
FCCB731-**-**	G39
FCCB731-5/32-2	G39
FCCS731-*-*	G43
FCCS731-**-**	G43
FCCS731-***-**	G43
FCCSP731-**	G45
FCCSP731-***	G45
FCKC731-*-*	G39
FCKC731-**-*	G39
FCKC731-**-**	G39
FCKC731-***-**	G39
FCKC731-4M-**	G39
FCKCB731-**-**	G39
FCM731-*-*	G41
FCM731-**-**	G41
FCM731-5/32-2	G41
FCMB731-**-**	G41
FCMK731-*-*	G41
FCMK731-**-*	G41
FCMS731-**-*	G43
FCMS731-**-**	G43
FCMSP701-4M	G45
FCMSP701-6M	G45
FCMSP731-*	G45
FCMSP731-5/32	G45
FCPM832-**	G47
FCPM832-***	G47
FMD**-2B	C9, C15, C20, C35, C36, C37
FMD0*-1	C7, C13, C18, C34, C36, C37, C40
FMD**-2	C9, C15, C20, C35, C36, C37
FMD07-*B	C7, C9, C13, C15, C18, C20, C34, C35, C36, C37, C40
H027 **	E228, E246
H063**	D135, D136, D137, D138, D140
H098 15	E244
H09815	E226
H1*VX**0**C	E47
H1*WX*********C	E69
H1*WX*****C	E71
H1*WX000XX*	E83
H100 **	E244
H100 107	E244
H100**	E226
H100107	E226
H12VXBG0**C	E46
H12WXBBL**C	E70
H12WXBG2B9000*C	E68
H12WXBG323000*C	E68
H134**	D130, D131, D132, D140
H13529	D140
H136**	D135, D136, D140
H137**	D131, D135, D136, D137, D138, D140
H142**	D130, D132
H145**	D135
H15VXBG0**C	E46
H15WXBBL**C	E70
H15WXBG2B9000*C	E68
H15WXBG323000*C	E68
H16VXBG0**C	E46
H16WXBBL**C	E70
H16WXBG2B9000*C	E68
H16WXBG323000*C	E68
H175 **	E226, E244
H178**	D135, D136, D137, D138, D140
H17VXBG0**C	E46
H17WXBBL**C	E70
H17WXBG2B9000*C	E68
H17WXBG323000*C	E68
H19102	D130
H1EVXBG0**C	E46
H1EWXBBL**C	E70
H1EWXBG2B9000*C	E68
H1EWXBG323000*C	E68
H2*VX**0**C	E47
H2*WX*********C	E69
H2*WX*****C	E71
H2*WX000XX*	E83
H22VXBG0**C	E46
H22WXBBL**C	E70
H22WXBG2B9000*C	E68
H22WXBG323000*C	E68
H24969	D130, D131
H25VXBG0**C	E46
H25WXBBL**C	E70
H25WXBG2B9000*C	E68
H25WXBG323000*C	E68
H26VXBG0**C	E46
H26WXBBL**C	E70
H26WXBG2B9000*C	E68
H26WXBG323000*C	E68

* Represents an insignificant digit for model to page referencing.

H

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Model No.	Section / Page No.
H27VXBG0**C	E46
H27WXBBL**C	E70
H27WXBG2B9000*C	E68
H27WXBG323000*C	E68
H2EVXBG0**C	E46
H2EWXBBL**C	E70
H2EWXBG2B9000*C	E68
H2EWXBG323000*C	E68
H3*VX**0**C	E47
H3*WX*********C	E69
H3*WX*****C	E71
H3*WX000XX*	E83
H32VXBG0**C	E46
H32WXBBL**C	E70
H32WXBG2B9000*C	E68
H32WXBG323000*C	E68
H35VXBG0**C	E46
H35WXBBL**C	E70
H35WXBBL53C	E70
H35WXBG2B9000*C	E68
H35WXBG323000*C	E68
H36VXBG0**C	E46
H36WXBBL**C	E70
H36WXBG2B9000*C	E68
H36WXBG323000*C	E68
H37VXBG0**C	E46
H37WXBBL**C	E70
H37WXBG2B9000*C	E68
H37WXBG323000*C	E68
H3EVXBG0**C	E46
H3EWXBBL**C	E70
H3EWXBG2B9000*C	E68
H3EWXBG323000*C	E68
HA*VX**0**A	E37
HA*WX**2G9000FA	E59
HA*WX000XX*	E83
HA*WXBG2G9000FA	E58
HA2VXBG0**A	E36
HA5VXBG0**A	E36
HA6VXBG0**A	E36
HA7VXBG0**A	E36
HAEVXBG0**A	E36
HB*VX**0**A	E37
HB*WX**2G9000FA	E59
HB*WX000XX*	E83
HB*WXBG2G9000FA	E58, E59
HB2VXBG0**A	E36
HB5VXBG0**A	E36
HB6VXBG0**A	E36
HB7VXBG0**A	E36
HBEVXBG0**A	E36
HBNVXBG0**A	E37
HBPVXBG0**A	E37
HBQVXBG0**A	E37
HM*VX00XXA	E6
HM*VX2049A	E6, E11, E16, E19
HM2VX2049A	E6, E16, E19, E21
HM5VX2049A	E6, E16, E19, E23
HMBVX00XXA	E6
HMCVX00XXA	E6
HMDXX*	C7, C9, C13, C15, C18, C20, C34, C35, C36, C37, C40
HMEVX2049A	E6, E11, E12, E13, E16, E19, E20
HMNVX2049A	E6, E12, E13, E16, E19, E21
HMPVX2049A	E6, E16, E19, E22
HMQVX2049A	E6, E16, E19, E22
HVRK420001	F100
HVRK440001	F100
K012003	D137, D138
K013001	D132
K022 ***	E230, E231, E232
K022***	E212, E213, E214
K025 1035**	E247
K025 2035**	E247
K025 3035**	E247
K0251035**	E229
K0252035**	E229
K0253035**	E229
K032 270	E244
K032270	E226
K043 ***	E244
K043***	E226
K045 1025**	E247
K045 2025**	E247
K045 3025**	E247
K045*025	D131
K0451025**	E229
K0452025**	E229
K0453025**	E229
K0530**	D135, D136, D140
K05301	D140
K0531*	D137, D138
K0531**	D136, D137, D138, D140
K0532**	D135, D136, D140
K060 2000*	E246
K0602000*	E228
K062005	D132
K065 3035**	E247
K065 5035**	E247
K065 6035**	E247
K065 8035**	E247
K065 9035**	E247
K065*035	D130
K0652035	D130
K0653035**	D130
K0653035**	E229
K0655035	D130
K0655035**	E229
K0656035**	D130
K0656035**	E229
K0658035**	E229
K0659035**	E229
K085 3025**	E247
K085 5025**	E247
K085 6025**	E247
K085 8025**	E247
K085 9025**	E247
K085*025	D130
K0853025**	E229
K0855025**	E229
K0856025**	E229
K0858025**	E229
K0859025**	E229
K0920**	D135, D136, D137, D138, D140
K1030**	D135, D136, D137, D138, D140
K11204*	D132
K122 016	E230, E231, E232, E265
K122016	E212, E213, E214, E247
K135*045	D132
K135*04553	D132
K142 2**	E230, E231, E232, E246, E264, E265
K14213	D131
K1422**	E212, E213, E214, E228, E246, E247
K152 003	E246
K152003	D130, D131, E228
K162 001	E246
K162001	E228
K175 3035**	E247
K175 8035 53	E247
K175 9035 53	E247
K1753035**	E229
K175803553	E229
K175903553	E229
K183 ***	E244
K183***	E226
K1830**	D130, D131, D132, D135, D136, D137, D138, D140
K183108	D130
K185 3025**	E247
K185 8025 53	E247
K185 9025 53	E247
K1853025**	E229
K185*02553	E229
K20200*	D135, D136, D140
K21200*	D135, D136, D140
K21R020**L	E228, E246
K235 1035**	E247
K235 2035**	E247
K235 3035**	E247
K2351035**	E229
K2352035**	E229
K2353035**	E229
K255202549	D131
K2553025	D131
K27200*	D130, D132
K31302*	D137, D138, D140
K322 01*	E246
K322004	D132
K32201*	E228
K323027	D140
K3430**	D130, D131, D132
K352 1**	E246
K352 3**	E246
K352***	D130, D131, D135, D136
K3520**	D135, D136, D137, D138, D139, D140
K3521**	E228
K3523**	E228
K362 30*	E244
K36230*	E226
K41RB72***	D130, D131, D135, D136, D137, D138, D140
K4230**	D130, D131, D132
K4520N14**0	E227, E245
K472 00*C	E244
K47200*C	E226
K4730**	D132, D135, D136, D137, D138, D140
K4930**	D135, D136, D137, D138, D140
K5630**	D135, D136, D140
K593 ***	E246
K593***	D132, E228
K5930**	D130, D131, D132, D133
K5931**	D133
K5932**	D133
L554 ** 3**C	E240, E241, E242
L554 02 308C	E240
L554**3**C	E222, E223, E224
L55402308C	E222
L65***10***	E218, E236
L654 *1 102	E231

* Represents an insignificant digit for model to page referencing.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Model No.	Section / Page No.
L654*1102	E213
L655 ** 102 **	E230
L655**102**	E212
L66********	E218, E236
L664 *1 211	E232
L664*1211	E214
L665 ** 211 **	E232
L665**211**	E214
L67***10***	E218, E236
L674 *1 102	E231
L674*1102	E213
L675 ** 102 **	E230
L675**102**	E212
L68********-	E219, E237
L684 *1 102	E234
L684*1102	E216
L685 ** 102 **	E233
L685 ** 602 **	E233
L685 33 *02 **	E233
L685 43 802 **	E233
L685**102**	E215
L685**602**	E215
L68533*02**	E215
L68543802**	E215
L69********-	E219, E237
L694 *1 211	E235
L694*1211	E217
L695 ** 211 **	E235
L695**211**	E217
L70********-	E219, E237
L704 *1 102	E234
L704*1102	E216
L705 ** 102 **	E233
L705 ** 602 **	E233
L705 ** 802 **	E233
L705** 602 **	E233
L705**102**	E215
L705**602**	E215
L705**602**	E215
L705**802**	E215
LV3**B	F93
LV3N6B	F96
LV4**B	F93
LV4N6B	F96
LV6**B	F93
LV6N6B	F96
LV6NAB	F96
LV8**B	F93
LV8NAB	F96
LVA**B	F93
LVANAB	F96
M**U*****	D105
MCS****P**	D107
MCS10A05PDL	D107
MF**********	D106
MFSA**DB	D112
MFSA12DB	D112
MFUA**DB	D112
MMCS**A05FM5	D106
MMCS**A12FF1	D106
MMCU**A05F	D105
MMCU**A12F	D105
MMDVA1	C7, C13, C18, C40
MMDVA2	C9, C15, C20
MMFS**A05FM5	D106
MMFS**A12FF1	D106
MMFS*A00**	D104
MMFS6A00M3	D104
MMFU**A**F	D105
MPS-V6T-*C	C41
N164****	G71
N220-1900J	D111
N314*0**	D125
N314*1091	D123
N315*******-	D124
N315*904553	D122
N324*0**	D125
N324*1091	D123
N325*******-	D124
N325**0****	D125
N325*904753	D122
N354*0**	D125
N354*1091	D123
N355*******-	D124
N355*904553	D122
N364*0**	D125
N365*******-	D124
N365**0****	D125
N365*904753	D122
N374*0**	D125
N374*1091	D123
N375*******-	D124
N384*0**	D125
N384*1091	D123
N385*******-	D124
N385**0****	D125
N385*904753	D122
P01908	G74
P01909	G73
P04159	G75
P04160	G75
P04161	G75
P0566202	E18
P0568800	E17
P2D8V32C5	C47
P2E-KS31C*	C74
P2E-KS31F*	C74
P2E-KS32B*	C74
P2E-KS32C*	C74
P2E-KV31*1	C67
P2E-KV32*1	C67
P2FC*4**	D49, D84
P2FCA44*	E88
P2FCA44*	E220
P2FCA45*	E88, E220
P2FP13*4*	D84
P2FP13N4*	D51, D52, D53
P2FS13A3D*49	D85
P2FS13N1AE49	D43
P2L*X*****	F42
P2LAX*****	D79
P2LAX***E*A*D*49	D85
P2LAX***E*H*****	D77
P2LAX***E*N*****	D81
P2LAX591EEHDDB**	D76
P2LAX591EEHDDG**	D76
P2LAX591EENDDB**	D80
P2LAX591EENDDG**	D80
P2LAX591ESHDDB**	D76
P2LAX591ESHDDG**	D76
P2LAX591ESNDDB**	D80
P2LAX591ESNDDG**	D80
P2LAX591PP	D78
P2LAX591PS	D78
P2LAX591VS	F42, F43
P2LAX591VV	F42, F43
P2LAX69111	F42, F43
P2LAX69122	F42, F43
P2LAX691EEHDDG**	D76
P2LAX691EENDDG**	D80
P2LAX691PP	D78
P2LAX79111	F43
P2LAX79122	F43
P2LAX89111	F42, F43
P2LAX89122	F42, F43
P2LAX891EEHDDG**	D76
P2LAX891EENDDG**	D80
P2LAX891PP	D78
P2LAXK20P	D82
P2LAXK8*P	D82
P2LAXMAX***NP	D82
P2LAXMAXN**NP	D82
P2LAXMAXN04NP	D82
P2LAXSK*	D89
P2LBX*****	D79
P2LBX***E*A*D*49	D85
P2LBX***E*H*****	D77
P2LBX***E*N*****	D81, D85
P2LBX592EEHDDB**	D76
P2LBX592EEHDDG**	D76
P2LBX592EENDDB**	D80
P2LBX592EENDDG**	D80
P2LBX592ESHDDB**	D76
P2LBX592ESHDDG**	D76
P2LBX592ESNDDB**	D80
P2LBX592ESNDDG**	D80
P2LBX592P*	D78
P2LBX592VS	F43
P2LBX592VV	F43
P2LBX69*PP	D78
P2LBX69211	F43
P2LBX69222	F43
P2LBX692EEHDDG**	D76
P2LBX692EENDDG**	D80
P2LBX79211	F43
P2LBX79222	F43
P2LBX89*PP	D78
P2LBX89211	F43
P2LBX89222	F43
P2LBX892EEHDDG**	D76
P2LBX892EENDDG**	D80
P2LBXK20P	D82
P2LBXK8*P	D82
P2LBXMAXN##NP	D82
P2LBXSK1	D89
P2LCX*****	D79
P2LCX***E*A*D*49	D85
P2LCX***E*H*****	D77
P2LCX***E*N*****	D81, D85
P2LCX593EEHDDB**	D76
P2LCX593EEHDDG**	D76
P2LCX593EENDDB**	D80
P2LCX593EENDDG**	D80
P2LCX593ESHDDB**	D76
P2LCX593ESHDDG**	D76
P2LCX593ESNDDB**	D80
P2LCX593ESNDDG**	D80
P2LCX593P*	D78
P2LCX593VS	F43
P2LCX593VV	F43
P2LCX69311	F43
P2LCX69322	F43
P2LCX693EEHDDG**	D76
P2LCX693EENDDG**	D80
P2LCX693PP	D78
P2LCX79311	F43
P2LCX79322	F43
P2LCX89311	F43
P2LCX89322	F43
P2LCX893EEHDDG**	D76
P2LCX893EENDDG**	D80
P2LCX893PP	D78
P2LCXDXSK1	D89
P2LCXK20P	D82
P2LCXK87P	D82
P2LCXMAXN**NP	D82

* Represents an insignificant digit for model to page referencing.

H

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Model No.	Section / Page No.
P2LDX*****	D79
P2LDX***E*A*D*49	D85
P2LDX***E*H*****	D77
P2LDX***E*N*****	D81, D85
P2LDX594EEHDDB**	D76
P2LDX594EEHDDG**	D76
P2LDX594EENDDB**	D80
P2LDX594EENDDG**	D80
P2LDX594ESHDDB**	D76
P2LDX594ESHDDG**	D76
P2LDX594ESNDDB**	D80
P2LDX594ESNDDG**	D80
P2LDX594P*	D78
P2LDX594VS	F43
P2LDX594VV	F43
P2LDX69411	F43
P2LDX69422	F43
P2LDX694EEHDDG**	D76
P2LDX694EENDDG**	D80
P2LDX694PP	D78
P2LDX79411	F43
P2LDX79422	F43
P2LDX89411	F43
P2LDX89422	F43
P2LDX894EEHDDG**	D76
P2LDX894EENDDG**	D80
P2LDX894PP	D78
P2M*PX******	C38
P2M*S**********	C10
P2M*T*******0**	C16
P2M*V***2CV00**	C22
P2M1K0GL	C34, C35
P2M1K0GN	C34, C35
P2M1K0GT	C34, C35
P2M1K0TASD	C13, C15, C19, C21
P2M1PX**	C34, C36, C37, C40, C41
P2M1PXVA********	C40
P2M1S*EE2C	C6
P2M1S*ES2C	C6
P2M1S*PP	C6
P2M1S*PS	C6
P2M1T*EE2C	C12
P2M1T*ES2C	C12
P2M1T*PP	C12
P2M1T*PS	C12
P2M1TJEE2C	C12
P2M1V*EE2CV	C18
P2M1V*ES2CV	C18
P2M1X*EE	C47
P2M1X*ES	C47
P2M2*CEE2CV	C20
P2M2BX*0*****	C42
P2M2BX*0A	C13, C15, C19, C21
P2M2HBV**1600	C27
P2M2HBV*11600	E12
P2M2HBV*21600	E12
P2M2HBVA1080	E12
P2M2HBVA10800	C30, E12, E120
P2M2HBVA10808*	C30, E12
P2M2HBVA10808A	E12, E120
P2M2HBVA10808B	E12, E120
P2M2HBVA20600	C30
P2M2HBVA20600	E12, E120
P2M2HBVA20608*	C30, E12
P2M2HBVA20608A	E12, E120
P2M2HBVA20608B	E12, E120
P2M2HBVC21600	E12, E117
P2M2HBVD21600	E12, E117
P2M2HBVP21600	E12, E117
P2M2HBVS11600	E12, E117
P2M2HEV0*	C19, C21
P2M2HXT0*	C13, C15, C19, C21
P2M2K0*A	C47
P2M2PX*A	C36, C37
P2M2PXS*	C35
P2M2S*EE2C	C8
P2M2S*ES2C	C8
P2M2S*PP	C8
P2M2S*PS	C8
P2M2T*EE2C	C14
P2M2T*ES2C	C14
P2M2T*PP	C14
P2M2T*PS	C14
P2M2V*EE2CV	C20
P2M2V*ES2CV	C20
P2M2X*EE	C47
P2M2X*ES	C47
P2MA*********	C44
P2N-VK0P	E76
P2N-VK0P	E218
P2N-VM500AK	E72, E215
P2N-VM512MB	E72, E99, E215
P2N-VM513ES	E72, E99, E215
P2N-VS512SD	E72, E96, E215
P2N-WK0P	E76, E218
P2N-WM513MB	E72, E99, E215
P2N-WM514ES	E72, E99, E215
P2N-WS513SD	E72, E96, E215
P2N-YK0P	E218
P2N-YM514MB	E72, E99, E215
P2N-YM518ES	E72, E99, E215
P2N-YS514SD	E72, E96, E215
P66829	F98
P66837	F98
P6M-PAB*	D12, E11, E12, E13, E17, G66
P6M-PAB1	E11, E12, E13, E17
P6M-PAB3	E11, E12, E13, E17
P6M-PAC5	D45, D88, D111, G66, F44
P8BPA00M*	C27, E12, E117, E132, E178
P8CS0803J	C7, C9, C13, C15
P8CS1204J	C7, C9, C13, C15
P8CS1205A*	E12
P8CS1205AA	C27, E12, E117
P8CS1205AB	E12
P8L-MC**A5	C83
P8L-MD25A5B	C83
P8LMH20M*A	C19, C21, C25
P8LMH20M9A	C19, C21, C25
P8LMH25M3A	C19, C21, C24, E11, E19, E85
P8LS08L*26C	C7, C9, C13, C15
P8LS12JACK	C30
P8LS12JACK	E12, E120
PCKR364	G69
PD1-1/4-*0	E72, E96, E215
PD2-3/8-*0	E72, E96, E215
PDE2536CDV3.1-ev	C57
PEJ0*	E95, E209
PEJ01-03-*0	E60, E193
PEJ02-02-*0	E60, E192
PESC1*	B9
PESC2001F	B9
PESC2020B	B9
PESC2201F	B9
PESC2220B	B9
PJL01	E95, E209
PJL01-202-*0	E193
PJLP0*	E95
PJLP01	E209
PJLP01-202-*0	E60
PJLP01-202-70	E193
PJLP01-202-80	E193
PJLP02	E209
PJLP02-201-*0	E60< E192
PKG 3M-*M/S90	E177
PKG 3M-*M-PSG 3M/S90	E177
PL0*	E95, E209
PL01-02-*0	E60, E193
PL02-01-*0	E60, E192
PL1-1/4-*0	E72, E96
PL1-1/4-80	E215
PL2-3/8-*0	E72, E96
PL2-3/8-80	E215
PL2424BP	F98
PL2425BP	F98
PL3-1/2-*0	E72, E96
PL3-1/2-80	E215
PMDYY*	C7, C9, C13, C15, C18, C20, C34, C35
PPRL09	C85
PPRL15	G16
PPRV2*	C85
PR05X51	G69
PS**BX***NP	D38
PS*3B1***NP	D37
PS2028BP	D45, D88, E86, E220
PS2028JCP	D45, E86, E220
PS2032**9BP	E86
PS2032**BP	D45, D88, E86, E220
PS2032J**CP	D45
PS2032J**CP	E220
PS2032J83CP	E86
PS2038P	F35
PS2039P	F35
PS2041P	F35
PS2429BP	D45, D88, E220
PS2429JBP	D45, E220
PS2430**BP	D45, D88, E220
PS2430J**BP	D45, E220
PS250*P	D53
PS252*P	D40
PS2569P	D40
PS25710*P	D53
PS258*P	D53
PS2597**P	D53
PS260**P	D52
PS2620P	D40
PS26710**P	D52
PS2684P	D52
PS280*P	D51
PS281*P	D36
PS282*P	D40
PS2828619P	E88, E220
PS2834P	D40
PS2855P	E220
PS286*P	D40
PS2871P	D51
PS288*P	D51, D52
PS2893C**P	D45

H

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Parker Hannifin Corporation
Pneumatic Division
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Model No.	Section / Page No.
PS2893CP	D45
PS2893D##P	D45
PS2893DP	D45
PS2896P	D51
PS290*CP	D50
PS291*P	D36
PS292*P	D40
PS2930166P	D41
PS2930233P	D41
PS2932*BP	B20, C68, D13, D44
PS2932BP	B20, C68, D13, D44
PS2932JBP	E198
PS2934P	D40
PS2946**BP	B20, C68, D13, D44
PS2946J**BP	B20, C68, D13, D44, E198
PS296*P	D40
PS2971CP	D50
PS298*P	D50
PS2982*##P	D50, D51, D52, D53
PS2982***P	B19
PS2982B**P	C67
PS2982B**P	E198
PS2982C**P	E198
PS299*P	D12, D13, D40, D44, D50
PS2999**P	D50
PS3202***P	B19
PS3441***P	B19
PS3441B**P	C74
PS3441B*P	C74
PS3441C**P	C74
PS3541*##P	D50, D51, D52, D53
PS3541***P	B19
PS4*D3CP	E88
PS4*D5CP	E88
PS40*****CP	E49
PS40**CP	E218, E220
PS400*CP	E88, E89
PS4007P	E90
PS4011	E97, E98
PS4011**	E216
PS4011**0CP	E73, E216
PS401155**CP	E48
PS4012P	E88
PS4013P	E52, E76, E89
PS40150*CP	E83, E218
PS4024P	E90
PS4025***CP	E57
PS402501	E217
PS402501*CP	E82, E217
PS4026***CP	E57
PS402601	E217
PS402601*CP	E82, E217
PS4027***CP	E57
PS402701	E217
PS402701*CP	E82, E217
PS4028***CP	E57
PS402801	E217
PS402801*CP	E82, E217
PS403*CP	E218
PS403000CP	E52, E77
PS403001CP	E52, E77
PS403101	E217
PS403101*CP	E73, E217
PS4032CP	E52, E76
PS4033CP	E52, E76
PS4034CP	E52, E76
PS4035CP	E52
PS4036P	E89
PS4037	E100, E219
PS4037***CP	E78, E219
PS4038	E100
PS4038***CP	E53
PS4039P	E88
PS4040P	E89
PS4041**P	E88
PS4041B9P	E88
PS4042CP	E77
PS4045BP	E89
PS4047BP	E89
PS4048BP	E89
PS405**60BP	E89
PS4050***P	E89
PS4051160BP	D41
PS4051P	E90
PS4052CP	E88
PS4053CP	E88
PS4087CP	E88
PS41*****CP	E49
PS410*CP	E88, E89
PS4111	E97, E98
PS4111**	E216
PS4111**0CP	E73, E216
PS4112P	E88
PS4113P	E52, E76, E89
PS41150*CP	E83, E218
PS411500*P	E83
PS413*CP	E218
PS413101	E217
PS413101*CP	E73, E217
PS4132CP	E52, E76
PS4134CP	E52, E76
PS4135CP	E52
PS4136P	E89
PS4137	E101, E219
PS4137***CP	E78, E219
PS4138	E101
PS4138***CP	E53
PS4139P	E88
PS4140P	E89
PS4142CP	E77, E218
PS4145BP	E89
PS4147BP	E89
PS4148BP	E89
PS4150***BP	E89
PS4187CP	E88
PS42*****CP	E49
PS4201CP	E89
PS4202CP	E89
PS4203CP	E89
PS4204CP	E89
PS4205CP	E88
PS4206CP	E88
PS4211	E97, E98
PS4211**	E216
PS4211**0CP	E73, E216
PS4212P	E88
PS4213P	E52, E76, E89
PS42150*CP	E83, E218
PS423*	E101
PS423*CP	E218
PS423101	E217
PS423101*CP	E73, E217
PS4232CP	E52, E76
PS4234CP	E52, E76
PS4235CP	E52
PS4236P	E89
PS4237	E219
PS4237***CP	E78, E219
PS4238***CP	E53
PS4240P	E89
PS4242CP	E77, E128
PS4287CP	E88
PS55**P	E197, E198
PS550*P	E88, E89, E90
PS551*01P	E41
PS5511	E210
PS5511***P	E38
PS5511**0P	E61, E194
PS5512P	E88
PS55150*P	E83, E196
PS55160*P	E41
PS55170*P	E41
PS55260*P	E64
PS55270*P	E64
PS5534P	E41, E63
PS5535P	E41
PS5536P	E89
PS5537	E100
PS5537***P	E196
PS5538***P	E42
PS5542P	E64, E197
PS5587P	E88
PS56**P	E197, E198
PS560*P	E88, E89, E90
PS561*00P	E41
PS561*01P	E41
PS561*P	E41, E63, E89
PS5611	E210
PS5611***P	E38
PS5611**0P	E61, E194
PS5612P	E88
PS56160*P	E41
PS56170*P	E41
PS5620***P	E39
PS5624***P	E45
PS562401*P	E67
PS5624P	E90
PS56260*P	E64
PS56270*P	E64
PS5631***P	E39
PS563101*P	E61, E195
PS5632P	E90
PS5634P	E41, E63
PS5635P	E41
PS5636P	E89
PS5637	E100
PS5637***P	E65, E196
PS5638***P	E42, E65
PS5642P	E64
PS5651160P	E42, E65
PS5679**	E11, E12, E13, E17, E29
PS567900	E29
PS567904	E17, E29
PS567906	E17, E29
PS567925	E11, E12, E13, E17, E29
PS5682**	E17, E30
PS568204	E17, E30
PS568206	E17, E30
PS568215	E17, E30
PS568225	E17, E30
PS5683**	E11, E12, E13, E17, E30
PS568308	E17, E30
PS568310	E17, E30
PS568325	E17, E30
PS568338	E11, E12, E13, E17, E30
PS5687P	E88
PS568800	E17

* Represents an insignificant digit for model to page referencing.

Parker Hannifin Corporation
Pneumatic Division
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Model No.	Section / Page No.
PS570*	D17
PS5706	E18
PS571*	D17
PS572*P	D12
PS575B**P	D17
PS575C**P	D17
PS5769P	D12
PS577*	D17
PS5772	D17
PS5784	D17
PS57GB**P	D17
PS57GC**P	D17
PS580*	D17
PS582*P	D12
PS585B**P	D17
PS585C**P	D17
PS5869P	D12
PS587*	D17
PS5884	D17
PS58GB**P	D17
PS58GC**P	D17
PS590*	D17
PS592*P	D12
PS5969P	D12
PS597*	D17
PS5984	D17
PSBJ708-**	G59
PSBJ731-**	G59
PSE*N0****P	B18
PSF*N0****P	B18
PSG 3M-*M/S90	E177
PSJ3B1N**NP	D37
PSM***AP	E7, E8, E11, E12, E13
PSM000*	E15, E18
PSM0001	E18
PSM0002	E14, E18
PSM0003	E15, E18
PSM0004	E15, E18
PSM001*	E18, E29
PSM0010	E18
PSM0011	E18
PSM0012	E18
PSM0013	E29
PSM0014	E18
PSM002*	E18
PSM0022	E18
PSM0025	E18
PSM002E	E18
PSM002N	E18
PSM002P	E18
PSM002Q	E18
PSM21*AP	E7, E11, E12, E13
PSM21JAP	E7, E11, E12, E13
PSM21MAP	E7, E12, E13
PSM22JAP	E7
PSM22MAP	E7
PSM3**AP********	E9
PSM31JAPE7E7E7E7	E11, E12, E13
PSM31MAPN7N7N7N7	E12, E13
PSML25AP	E11
PSMM45AP	E12
PSMM55AP	E13
PSMM65AP	E13
PSMRAX6AP	E7
PSMXNXN**NP	B6
PSPE701-**	G59
PSPJ731-*	G59
PSSBASE	E134
PSSCCNA	E132, E140, E145, E146
PSSCDM12A	E13
PSSCDM12A	E132, E140, E145, E146
PSSCDM18PA	E132, E140, E145, E146
PSSCENA	E132, E140, E145, E146
PSSCPBA	E132, E140, E145, E146
PSSEXT1	E134, E135
PSSEXT3	E134
PSSN16M12A	E132, E137, E146
PSSN16xxx	E145
PSSN8M12A	E13, E132, E137, E146
PSSN8M23A	E132, E137, E146
PSSN8M8A	E132, E137, E146
PSSN8xxx	E145
PSSNACM12A	E133, E139, E145, E146
PSSNAVM12A	E133, E139, E145, E146
PSSP8M12A	E132, E137, E146
PSSP8M23A	E132, E137, E146
PSSP8M8A	E132, E137, E146
PSSP8xxx	E145
PSSSE24	E140
PSSSE24A	E134, E135, E136, E141, E145, E146
PSST16D25A	E133, E137, E146
PSST16M12A	E133, E137, E146
PSST16M223A	E137
PSST16M23A	E133, E146
PSST16xxx	E145
PSST8M12A	E133, E137, E146
PSST8M23A	E133, E137, E146
PSST8M8A	E133, E137, E146
PSST8xxx	E145
PSSTACM12A	E133, E139, E145, E146
PSSTAVM12A	E133, E139, E145, E146
PSSTERM	E134
PSSTR4M12A	E133, E138, E146
PSSTR4MRA	E145
PSSV32A	E90, E140, E145, E146
PSSVEXT1	E13, E134, E135, E136
PSSVM32A	E140, E145, E146
PSXM2186P	B9
PSXM31010P	B6
PSXM40900P	B9
PSXM530CP	B6
PSXM8100P	B9
PSXM8288P	B9
PSXM8310P	B9
PVAP11*	C67
PVLB1*1302	C76
PVLB1*2304	C76
PVLB1016067W*	C72
PVLB1016187W*	C72
PVLB1026067W*	C72
PVLB1026187W*	C72
PVLB1056187W*	C72
PVLB1076067W*	C72
PVLB1076187W*	C72
PVLB1086067W*	C72
PVLB1086187W*	C72
PVLB11*6067	C66
PVLB11*618	C66
PVLB11*6187	C66
PVLB1116067	C66
PVLB1116187	C66
PVLB12*606	C64
PVLB12*6067	C64
PVLB12*618	C64
PVLB12*6187	C64
PVLB17*9	C65, C76
PVLB17*97	C65, C76
PVLB19**	C65, C76, C84
PVLB19*125	C76
PVLB19*235	C76
PVLC*713B19	C78
PVLC1**6197	C64
PVLC1016097W*	C73
PVLC1016197W*	C73
PVLC1026097W*	C73
PVLC1026197W*	C73
PVLC1056197W*	C73
PVLC1076197W*	C73
PVLC1086197W*	C73
PVLC1116*97	C66
PVLC1126*97	C66
PVLC1216*97	C64
PVLC1226*97	C64
PVLC17*3	C65
PVLC17137	C65
PVLC17137B19	C78
PVLC17137C19A	C78
PVLC17137D25A	C78
PVLC17237	C65
PVLC190*	C65, C78, C84
PVLC27137B19	C78
PVLC27137D25A	C78
PVULC213	C78
PVULC2137	C78
PVULC2137E	C78
PVULC213E	C78
PVULCB119	C65
PVULCB1197	C65
PWBA14**	G31
PWBA1412/3412	G31
PWBA1468/3468	G31
PWBA1469/3469	G31
PWBA1493/3493	G31
PWBA18**	G31
PWBA1822/3822	G31
PWBA1833/3833	G31
PWBA1898/3888	G31
PWBA1899/3899	G31
PWBA34**	G31
PWBA38**	G31
PWBA38***	G31
PWSB1**7	G33
PWSM1012	G33
PWSP111	G33
PXB-B3	G8
PXBB3111B	G7, G16
PXBB3111B**	G4
PXBB3121B	G7
PXBB3121BT4	G4
PXBB3211B**	G4
PXBB3251B**	G4
PXBB39**	G7
PXB-B4	G8
PXBB4131B	G7
PXBB4131B**	G4

H

* Represents an insignificant digit for model to page referencing.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Model No.	Section / Page No.
PXBB4231B**	G4
PXBB4931	G7
PXBB4932	G7
PXBDD104	G12
PXBDD508	G12
PXBGA82*1	G13
PXBGA84*1	G13
PXCJ1****	G27
PXCJ117	G27
PXCJ127	G27
PXCK211	G24
PXCK211**	G23, G24
PXCK21100*1	G23
PXCK221	G24
PXCK221**	G23, G24
PXCK22100*1	G23
PXCM***	G19
PXCM601A1**	G21
PXCZ11	G19
PXPA11	G16
PXPC111	G15
PXPEA110	G14
PXPEM110	G14
PXPEM510	G14
PXVF111	G11
PXVF121*	G11
PXVF131	G11
PXVF141	G11
PXVF151	G11
PXVF161	G11
RKC 4.4T-*	E177
RKC 4.4T-*-RSC 4.4T	E177
RKC 4.5T-*/S1587	E177
RKC 4.5T-*-RSC 4.5T/S1587	E177
RKM 46-xM/S1587	E176
RKM 56-xM/S1587	E176
RSC 4.4T-*	E177
RSC 4.5T-*/S1587	E177
RSC RKC 5711-xM	E179
RSC RKM 5711-xM	E179
RSM RKC 5711-xM	E179
RSM RKM 46-x/S1587	E176
RSM RKM 56-x/S1587	E176
RSM RKM 57 WSM 40 PST	E179
RSM RKM 5711-xM	E179
RSM-2RKM 40	E176
RSM-2RKM 50	E176
RSSD RJ45S 443-xM	E178
RSSD RKSD 443-xM	E178
RSSW RKSW 455-xM	E178
RV01A1N	G68
S2032J79CP	E86
S421159	E216
SCC191MC	E90
SCD251MC	E90
SCD253W	C19, C21, C24, E11, E19, E85
SCD259D	C19, C21, C24, E11, E19, E85
SCD259WE	C19, C21, C24, E11, E19, E85
SCM231MC	E90
VS215PNL-2-15	E42, E65
W68PLCK-*-*	G53
W68PLCK-5/32-*	G53
W68PLCKI-*-*	G53
W68PLCKI-5/32-2	G53
W68PLP-*-*	D12
WDV2-425	G77
WDV3-G	G76
WKM 46-xM/S1587	E176
WKM 56-xM/S1587	E176
XCZ12	G19
XM3**B****A	B5
XM30NB5**A	B4
XM30NBG**A	B4
XM30NBH**A	B4
XM3VNB5**A	B4
XM3VNBG**A	B4
XM4**B****A	B5
XM40NB5**A	B4
XM40NBG**A	B4
XM40NBH**A	B4
XM4VNB5**A	B4
XM4VNBG**A	B4
ZB2BY2002	G9
ZB4BA*	G5
ZB4BC*	G5
ZB4BD*	G6
ZB4BG*	G6
ZB4BH0*	G5
ZB4BJ*	G6
ZB4BL*	G5
ZB4BP*	G5
ZB4BR	G16
ZB4BR*	G5
ZB4BS*4	G6
ZB4BT*	G5
ZB4BZ009	G9
ZB5AA*	G5
ZB5AL*	G5
ZB5AZ***	G9
ZBE10*	G9
ZBY2002	G9
ZBY2101	G9
ZBY23**	G9
ZBY4101	G9
ZBZ1602	G5
ZC2JE**	G27
ZC2JY**	G27
ZCKD**	G24
ZCKG00	G24
ZCKY**	G24

* Represents an insignificant digit for model to page referencing.

H

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Notes

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Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

⚠ WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

1.3 Relevant International Standards: For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.6. Safety Devices: Safety devices should not be removed, or defeated.

1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.8. Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

2.1. Flow Rate: The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

2.2. Pressure Rating: Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

H

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2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

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Offer of Sale

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods or work described will be referred to as "Products".

1. Terms and Conditions. Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is expressly conditioned on Buyer's assent to these Terms and Conditions and to the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional term or condition of Buyer's order or any other docum ent issued by Buyer.

2. Price Adjustments; Payments. Prices stated on the reverse side or preceding pages of this document are valid for 30 days. After 30 days, Seller may change prices to reflect any increase in its costs resulting from state, federal or local legislation, price increases from its suppliers, or any change in the rate, charge, or classification of any carrier. The prices stated on the reverse or preceding pages of this document do not include any sales, use, or other taxes unless so stated specifically. Unless otherwise specified by Seller, all prices are F.O.B. Seller's facility, and payment is due 30 days from the date of invoice. After 30 days, Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. Delivery Dates; Title and Risk; Shipment. All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon tender to the carrier at Seller's facility (i.e., when it's on the truck, it's yours). Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's changes in shipping, product specifications or in accordance with Section 13, herein.

4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. This warranty is made only to Buyer and does not extend to anyone to whom Products are sold after purchased from Seller. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 60 days after delivery or, in the case of an alleged breach of warranty, within 30 days after the date within the warranty period on which the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for any amount due to Seller from Buyer) must be commenced within thirteen months from the date of tender of delivery by Seller or, for a cause of action based upon an alleged breach of warranty, within thirteen months from the date within the warranty period on which the defect is or should have been discovered by Buyer.

6. LIMITATION OF LIABILITY. UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. Contingencies. Seller shall not be liable for any default or delay in performance if caused by circumstances beyond the reasonable control of Seller.

8. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

9. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

10. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

11. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest. Seller shall have a security interest in, and lien upon, any property of Buyer in Seller's possession as security for the payment of any amounts owed to Seller by Buyer.

12. Improper use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

13. Cancellations and Changes. Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

14. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

15. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of the agreement. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

16. Waiver and Severability. Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

17. Termination. This agreement may be terminated by Seller for any reason and at any time by giving Buyer thirty (30) days written notice of termination. In addition, Seller may by written notice immediately terminate this agreement for the following: (a) Buyer commits a breach of any provision of this agreement (b) the appointment of a trustee, receiver or custodian for all or any part of Buyer's property (b) the filing of a petition for relief in bankruptcy of the other Party on its own behalf, or by a third party (c) an assignment for the benefit of creditors, or (d) the dissolution or liquidation of the Buyer.

18. Governing Law. This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement. Disputes between the parties shall not be settled by arbitration unless, after a dispute has arisen, both parties expressly agree in writing to arbitrate the dispute.

19. Indemnity for Infringement of Intellectual Property Rights. Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

20. Taxes. Unless otherwise indicated, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of Products.

21. Equal Opportunity Clause. For the performance of government contracts and where dollar value of the Products exceed $10,000, the equal employment opportunity clauses in Executive Order 11246, VEVRAA, and 41 C.F.R. §§ 60-1.4(a), 60-741.5(a), and 60-250.4, are hereby incorporated.

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