Index

Parker Pneumatic

Inline & Base Mounted Air Control Valves

Catalog 0638-3/USA

Telepneumatic

Global Pneumatics

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Parker Pneumatic

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Pneumatic Division
Richland, Michigan
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VS High Flow Inline Valves
VS High Flow Subbase Valves
VSP Modular Electronic Valve Islands
ISOMAX Subbase Valves 15407-1 Ceramic
ISOMAX Subbase Valves 5599-1
International Inline Valves
1/8" Pilot Valve
Offer of Sale

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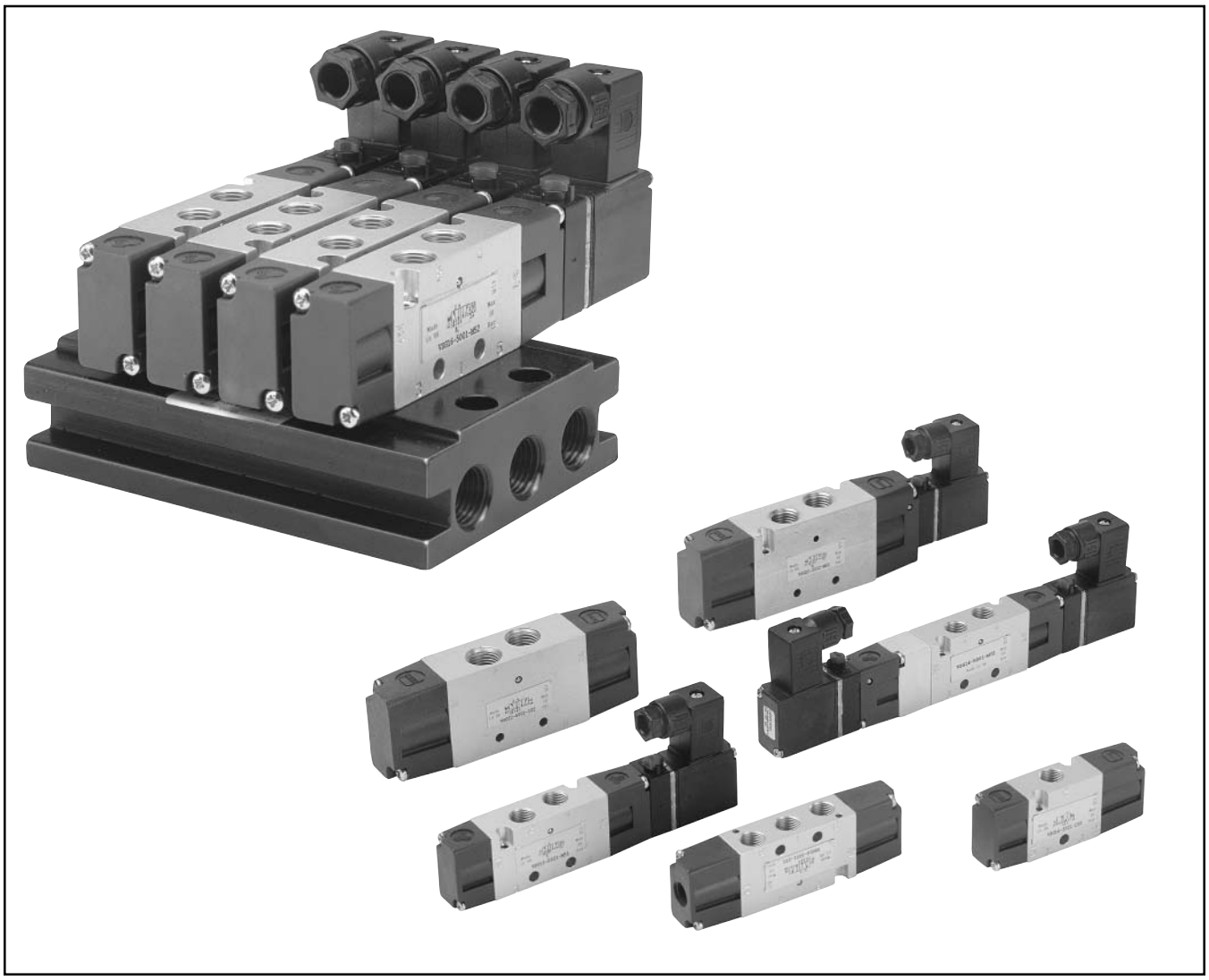
Parker Pneumatic

VS High Flow

Inline Valves

16mm and 22mm

Section A



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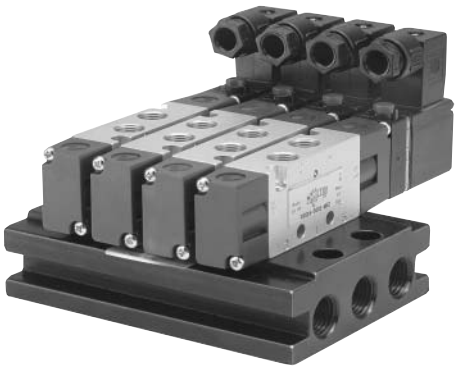
VS High Flow Inline Valve



Valve Size and Port Size
16mm Ported 1/8 - BSP or NPT
22mm Ported 1/4 - BSP or NPT
- Compact and Aesthetic Design

Valve Types
16mm - 3/2, 5/2 & 5/3
22mm - 3/2, 5/2 & 5/3 & Namur Interface Valves
- Complete Inline Valve Range

Valve Flow
16mm - 1150 l/min (.6 Cv)
- Powering up to an 80mm Cylinder Diameter

22mm - 2000 l/min (1.2 Cv)
- Powering up to a 125mm Cylinder Diameter

Pilot Operator Options – 16mm & 22mm Inline valves
Pressure - Pressure
Pressure - Spring
Solenoid - Solenoid
Solenoid - Spring
- Index Locking Manual Override as Standard on all Solenoid Valves

Solenoid Voltage Options
24VDC (1 Watt)
- Low-wattage Coils

24 or 48VDC/AC, 110 or 230VAC (2-3 Watt)
- Complete Option of Solenoid Coils

Ports
NPT & BSP Ports on Valves and Manifolds
- A Global Valve Range for Every Pneumatic Application

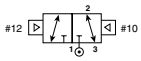
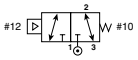
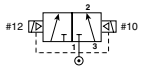
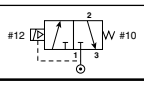
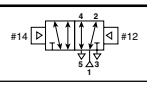
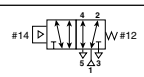
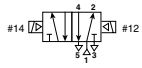
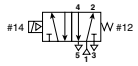
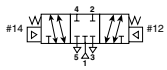
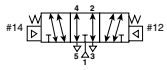
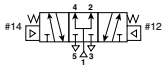
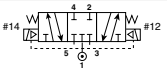
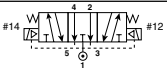
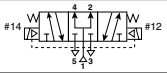
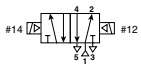
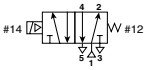
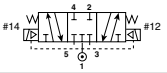
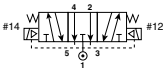
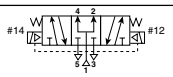
Maximum Number of Stations on Manifold
2 - 24 Station Manifolds
- Available in Equal Numbers Stations (2, 4, 6, 8, etc.)

Which Valves Can Be Manifold Mounted
5/2, 5/3 & 3/2 Valves
(Different Manifolds for 3/2 & 5/2 Valves)
- All High Flow Inline Valves are Manifold Mountable

Long Life Expectancy of Valves
Life Expectancy is 50-Million Cycles
- Life Expectancy Extended to five Times Longer than Traditional Nitrile Seals

Corrosion Resistant
Anodized Aluminium Valve Bodies, Spools and Manifolds
- High Surface Finish & Protection in Harsh Industrial Environments

Inline 16 & 22mm Spool Valves (Manifold Mountable – Supplied Without Connector)

Function	Valve Type		16mm - 1/8	22mm - 1/4
3-Port, 2-Position Inline				
	Pressure - Pressure	BSP NPT	VSG16-301-101 VSN16-301-101	VSG22-302-101 VSN22-302-101
	Pressure - Spring	BSP NPT	VSG16-301-102 VSN16-301-102	VSG22-302-102 VSN22-302-102
	Solenoid - Solenoid	BSP NPT	VSG16-301-*50 VSN16-301-*50	VSG22-302-*50 VSN22-302-*50
	Solenoid - Spring	BSP NPT	VSG16-301-*52 VSN16-301-*52	VSG22-302-*52 VSN22-302-*52
5-Port, 2-Position Inline			**16mm - 1/8**	**22mm - 1/4**
	Pressure - Pressure	BSP NPT	VSG16-501-101 VSN16-501-101	VSG22-502-101 VSN22-502-101
	Pressure - Spring	BSP NPT	VSG16-501-102 VSN16-501-102	VSG22-502-102 VSN22-502-102
	Solenoid - Solenoid	BSP NPT	VSG16-501-*50 VSN16-501-*50	VSG22-502-*50 VSN22-502-*50
	Solenoid - Spring	BSP NPT	VSG16-501-*52 VSN16-501-*52	VSG22-502-*52 VSN22-502-*52
5-Port, 3-Position Inline			**16mm - 1/8**	**22mm - 1/4**
	Press-Press - C-Blocked (APB)	BSP NPT	VSG16-501-125 VSN16-501-125	VSG22-502-125 VSN22-502-125
	Press-Press - C-Open (CE)	BSP NPT	VSG16-501-135 VSN16-501-135	VSG22-502-135 VSN22-502-135
	Press-Press - C-Applied (PC)	BSP NPT	VSG16-501-155 VSN16-501-155	VSG22-502-155 VSN22-502-155
	Sol-Sol - C-Blocked (APB)	BSP NPT	VSG16-501-*65 VSN16-501-*65	VSG22-502-*65 VSN22-502-*65
	Sol-Sol - C-Open (CE)	BSP NPT	VSG16-501-*75 VSN16-501-*75	VSG22-502-*75 VSN22-502-*75
	Sol-Sol - C-Applied (PC)	BSP NPT	VSG16-501-*85 VSN16-501-*85	VSG22-502-*85 VSN22-502-*85
5-Port Namur Valves				
	Solenoid - Solenoid	BSP NPT		VSGNM-502-*50 VSNNM-502-*50
	Solenoid - Spring	BSP NPT		VSGNM-502-*52 VSNNM-502-*52
	Sol-Sol - C-Blocked	BSP NPT		VSGNM-502-*65 VSNNM-502-*65
	Sol-Sol - C-Open	BSP NPT		VSGNM-502-*75 VSNNM-502-*75
	Sol-Sol - C-Applied	BSP NPT		VSGNM-502-*85 VSNNM-502-*85

Replace * with appropriate voltage code letter. External pilot supply valves on request.

Voltage Code	A	J	M	M1	L
Voltage	230V AC (3VAC)	110V AC (3VAC)	24V DC (2W)	24V DC (1W)	12V DC (2W)

Connectors – Standard 15mm, 3-Pin, DIN 43650C

Voltage	12VDC/AC	24VDC/AC	110/120VAC	220/240VAC
Cord Grip	PS2932P	PS2932P	PS2932P	PS2932P
Cord Grip with 6' Cord	PS2932JP	PS2932JP	PS2932JP	PS2932JP
Lighted Cord Grip*	PS294675P	PS294679P	PS294683P	N/A
Lighted Cord Grip* with 6' Cord	PS2946J75P	PS2946J79P	PS2946J83P	N/A
1/2" Conduit - Unlighted	PS2998P	PS2998P	PS2998P	PS2998P

* LED with surge suppression

Spare Coils for Solenoid Operated Valves

Spare coils are supplied without connectors, please order connectors separately						
Coil	**230VAC**	**110VAC**	**24VAC**	**24VDC (2W)**	**24VDC (1W)**	**12VDC**
Part Number	2EV15A3	2EV15J3	2EV15C2	2EV15M2	2EV15M1	2EV15L2

Low Profile Manifolds for 16mm Inline Valves

Port Type	Number of Valve Stations				
	2	**4**	**6**	**8**	**10**
3-Port Valves	VAN16-3002-02	VAN16-3002-04	VAN16-3002-06	VAN16-3002-08	VAN16-3002-10
5-Port Valves	VAN16-5002-02	VAN16-5002-04	VAN16-5002-06	VAN16-5002-08	VAN16-5002-10

For BSP manifolds , replace "N" in part number with "G".

Low Profile Manifolds for 22mm Inline Valves

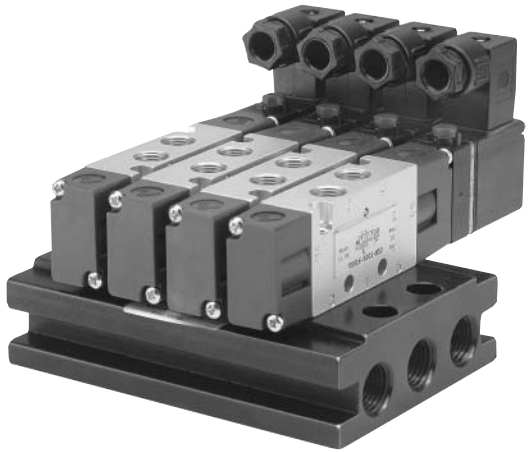
Port Type	Number of Valve Stations				
	2	**4**	**6**	**8**	**10**
3-Port Valves	VAN22-3003-02	VAN22-3003-04	VAN22-3003-06	VAN22-3003-08	VAN22-3003-10
5-Port Valves	VAN22-5003-02	VAN22-5003-04	VAN22-5003-06	VAN22-5003-08	VAN22-5003-10

For BSP manifolds, replace "N" in part number with "G".
Manifolds with 12 to 24 stations available; please contact factory.

Manifold Accessories

Description	16mm	22mm
Blanking Plate Kit 5-Port Manifolds	VA016-5000-BLK	VA022-5000-BLK
Blanking Plate Kit 3-Port Manifolds	VA016-3000-BLK	VA022-3000-BLK
Din Rail Mounting Kit	VA016-5000-DIN	N/A

Low Profile Manifolds



Material Specifications

Body ..... Anodized aluminium (black)
Screws ..... Plated steel
Seals ..... Nitrile

Valves

Material Specifications

Body ..... Anodized Aluminium
End Caps ..... Glass-filled Acetal
End Cover Seals ..... Nitrile
Piston Operator ..... Acetal
Piston Seals ..... Polyurethane
Screws ..... Zinc Plated Steel
Spool ..... Anodized Aluminium
Spool Seals ..... Polyurethane
Springs ..... High-grade Stainless Steel

Performance

Flow Rate (at 6 bar):
16mm - 1150 l/min (.6 Cv)
22mm - 2000 l/min (1.2 Cv)

Insulation Protection:
IP65

Typical Response Time:
Pressure - Spring = 25ms ON, 35ms OFF
Pressure - Pressure = 23ms ON, 30ms OFF
Solenoid - Spring = 20ms ON, 28ms OFF
Solenoid - Solenoid = 22ms ON, 22ms OFF

Valve Specifications

Air Condition:
Filtered to 40µ, regulated,
lubricated or non-lubricated, dry

Ambient Temperature Range:
-10°C to 50°C (14°F to 122°F)

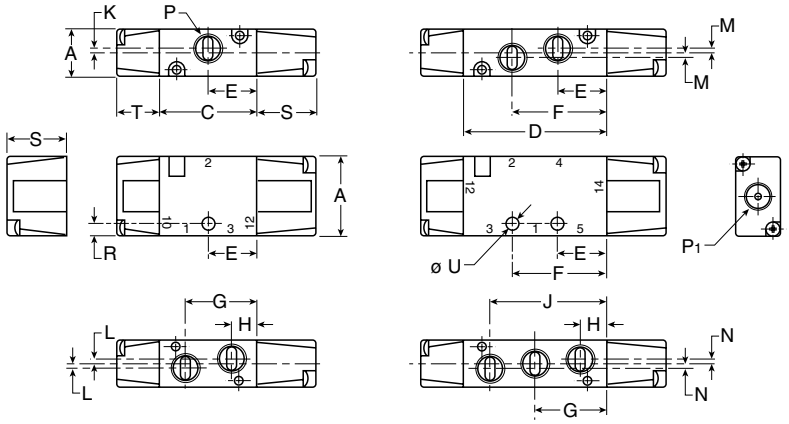
Operating Temperature Range:
-20°C to 70°C (-4°F to 154°F)

Pressure Range:
0 to 10 bar* (0 to 145 PSIG)

Voltage Tolerance:
-10% to +10%

* 8-bar maximum for 24V DC 1-Watt coil.

3/2 & 5/2 Inline Valves



3/2 and 5/2 Pressure / Spring and Pressure / Pressure Inline Valves

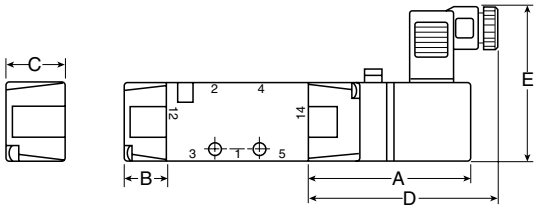
	A	B	C	D	E	F	G	H	J	K
16mm	0.63 (16)	1.10 (28)	1.34 (34)	1.97 (50)	0.67 (17.0)	1.30 (33.0)	0.98 (25.0)	0.35 (9.0)	2.09 (41.0)	0.06 (1.5)
22mm	0.87 (22)	1.57 (40)	1.69 (43)	2.48 (63)	0.85 (21.5)	1.63 (41.5)	1.24 (31.5)	0.45 (11.5)	2.03 (51.5)	0.08 (2.0)
	L	**M**	**N**	**P**	**P_1**	**R**	**S**	**T**	**U**	
16mm	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)	1/8	G1/8	0.18 (4.5)	0.83 21	0.59 15.0	0.17 4.3	
22mm	0.06 (1.5)	0.08 (2.0)	0.06 (1.5)	(1/4)	(G1/8)	0.28 (7.0)	0.95 (24)	1.00 (25.5)	0.17 (4.3)	

Inches (mm)

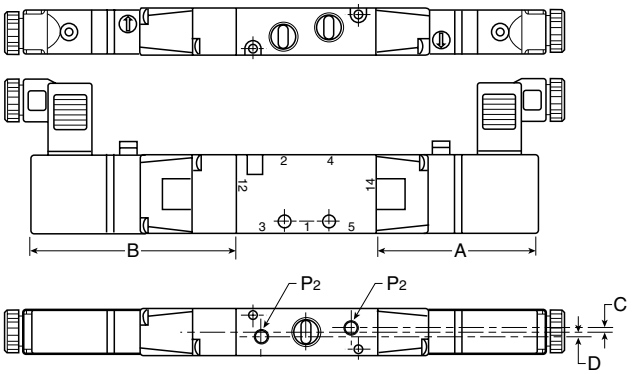
3/2 and 5/2 Solenoid / Spring and Solenoid / Solenoid

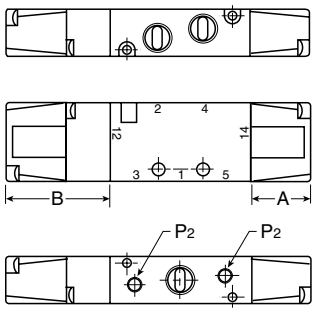
	A	B	C	D	E
16mm	2.26 (57.5)	0.59 (15.0)	0.83 (21)	2.74 (69.5)	2.13 (54)
22mm	2.48 (63.0)	1.00 (25.5)	0.95 (24)	2.95 (75.0)	2.40 (61)

Inches (mm)



5/3 Inline Valves





5/3 Solenoid / Solenoid Inline Valves

	A	B	C	D	P_2
16mm	2.26 (57.5)	2.89 (73.5)	0.83 (1.5)	0.83 (1.5)	(M5)
22mm	2.48 (63.0)	3.23 (82.0)	0.83 (1.5)	0.83 (1.5)	(1/8)

5/3 Pressure / Pressure Inline Valves

	A	B	P_2
16mm	0.83 (21)	0.95 (37)	(M3)
22mm	0.95 (24)	1.69 (43)	(1/8)

Inches (mm)

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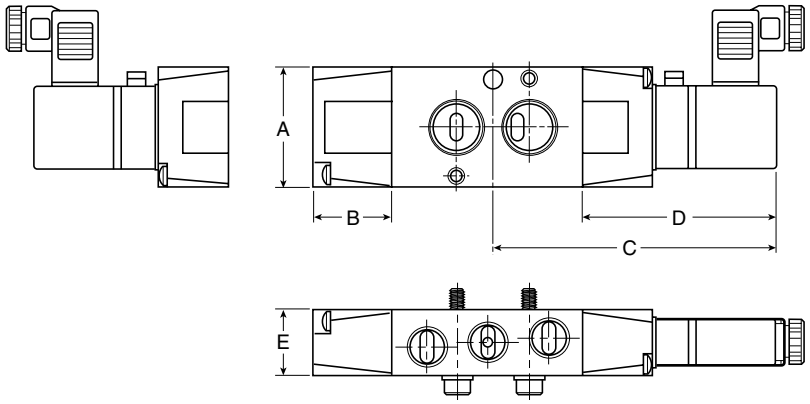
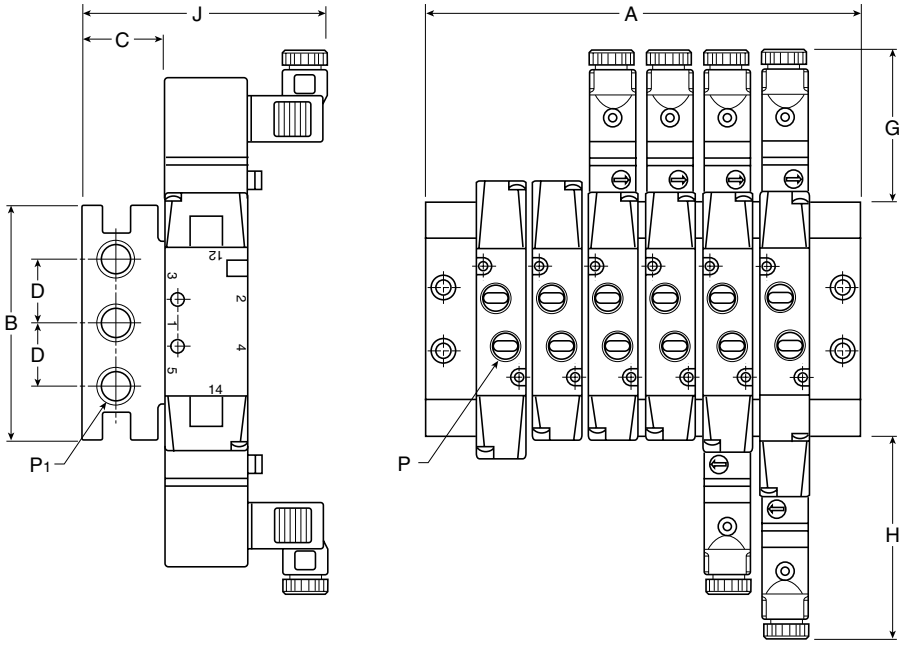
Namur Valve



Dimensions

	A	B	C	D	E
Inches (mm)	1.57 (40)	1.00 (25.5)	3.64 (92.5)	2.48 (63)	.87 (22)

Manifolds



Dimensions

	A					B	C	D	G	H	J	P	P_1
	2 Station	4 Station	6 Station	8 Station	10 Station								
16mm	2.72 (69.0)	4.21 (107.0)	5.71 (145.0)	7.20 (183.0)	8.70 (221.0)	3.07 (78.0)	1.06 (27.0)	.83 (21.0)	2.13 (54.0)	2.76 (70.0)	3.23 (82.0)	1/8"	1/4"
22mm	2.85 (72.5)	4.63 (117.5)	6.40 (162.5)	8.17 (207.5)	9.94 (252.5)	3.15 (80.0)	1.20 (30.5)	1.04 (26.5)	2.56 (65.0)	3.31 (84.0)	3.62 (92.0)	1/4"	3/8"

Inches
(mm)

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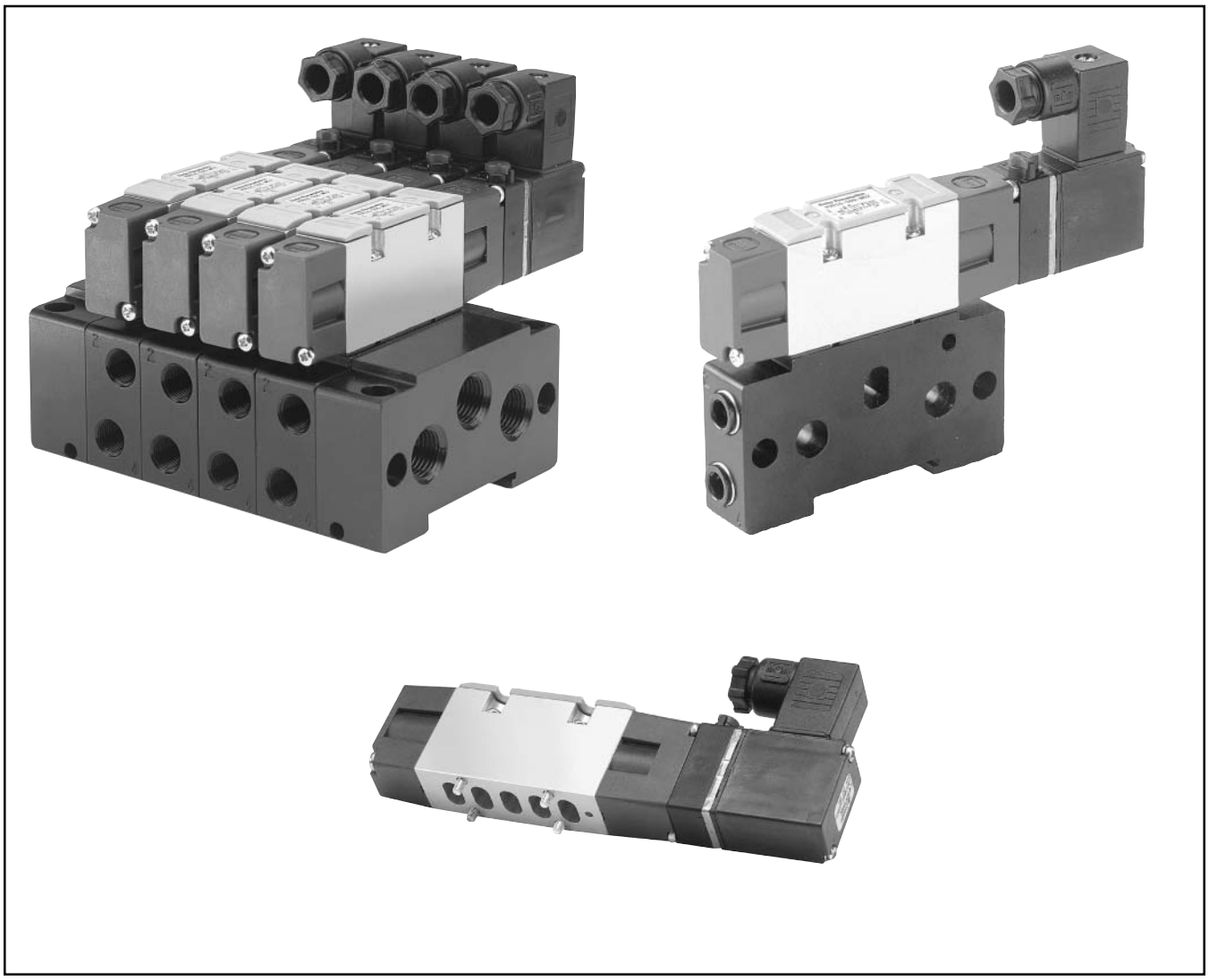
VS High Flow Subbase Valves

Section B



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Ordering Information 14-15
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Pneumatic Division
Richland, Michigan
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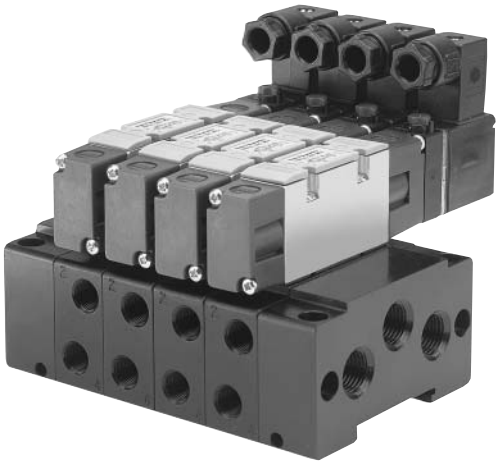
This Range Represents a Real Advance in Valve Design and Technology, Offering High Size-to-Flow Ratios



Valves Last 5 Times Longer

The abrasion resistant polyurethane seals last up to five times longer than nitrile seals!

In Demanding Environments

Manufactured from aluminium and anodized for a superior finish and corrosion resistance—these valves will withstand the most demanding environments.

Saving Cost On Assembly

The new Subbase system has a simple to assemble modular manifold. Stations can be added or altered at any time saving cost and expensive downtime.

One Valve Range – Every Solution

Using the same technology as our Inline valves, the new spool valve family covers every pneumatic application.

This will change the way you think about valve selection!

VS High Flow Inline Valve

Valve Size
16mm
- Compact and Aesthetic Design

Valve Types
5/2 & 5/3
- Wide Range of Options

Valve Flow
16mm - 900 l/min (.45 Cv)
- Powering up to a 63mm Cylinder Diameter

Pilot Options
Pressure - Pressure
Pressure - Spring
Solenoid - Solenoid
Solenoid - Spring
- Index Locking Manual Override as Standard on all Solenoid Valves

Solenoid Voltage Options
24VDC (1 watt)
- Low-wattage Coils

24V or 48VDC & AC, 110V or 230VAC
- Complete Option of Solenoid Coils

Manifold Assembly
A simple "Pokka Yoke" Manifold System
- Cost Saving on Quick and Simple Manifold Assembly

Porting Options
NPT, BSP & Push-in Cartridge Modules
Supply through Exhaust
- A Versatile Subbase System
- Available with Non-solenoid Operated Valves or with External Supplied Solenoid Valves

Corrosion Resistant
Anodized Aluminium Construction of Both Manifolds and Valve Body
- High Surface Finish and Resistant to Harsh Industrial Environments

Manifold Pitch
19mm Valve Pitch on Subbase Modules
- All Modules are 19mm

Manifold Configuring and Number of Stations
Modular Easily Assembled in any Configuration
- Consult Factory for Maximum Manifold Length

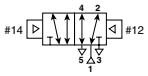
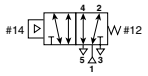
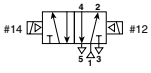
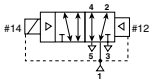
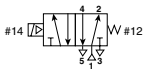
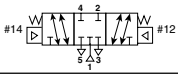
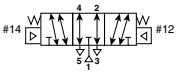
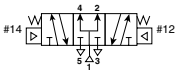
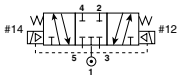
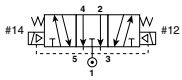
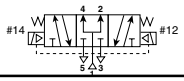
Multiple Pressures in One Manifold
Intermediate Supply Modules
(Push-in Cartridge or Ported 1/8)
- To Enable Multiple Pressures or for Additional Air Supply

Blanking Discs
- Allows for Simple Supply & Exhaust Control End or Front Ported Supply End Plate Kits
- Various Assembly Applications

External Air Supply to Solenoids is Fed into the Manifold
- For Low-pressure and Vacuum Operations

Mounting of Manifold
Din Rail Mountable or Through Mounting Holes
- Suitable for All Applications

Subbase 16mm Valves (Supplied without Connector)

Function	Valve Type	16mm Valves
5-Port, 2-Position Inline		
	Pressure - Pressure	VS016-500-101
	Pressure - Spring	VS016-500-102
	Pressure - Solenoid	VS016-500-*50
	Bistable - Sol-Sol	VS016-500-M143
	Solenoid - Spring	VS016-500-*52
5-Port, 3-Position Inline		
	Press-Press - C-Blocked (APB)	VS016-500-125
	Press-Press - C-Open (CE)	VS016-500-135
	Press-Press - C-Applied (PC)	VS016-500-155
	Sol-Sol - C-Blocked (APB)	VS016-500-*65
	Sol-Sol - C-Open (CE)	VS016-500-*75
	Sol-Sol - C-Applied (PC)	VS016-500-*85

Replace * with appropriate voltage code letter. External pilot supply valves on request.

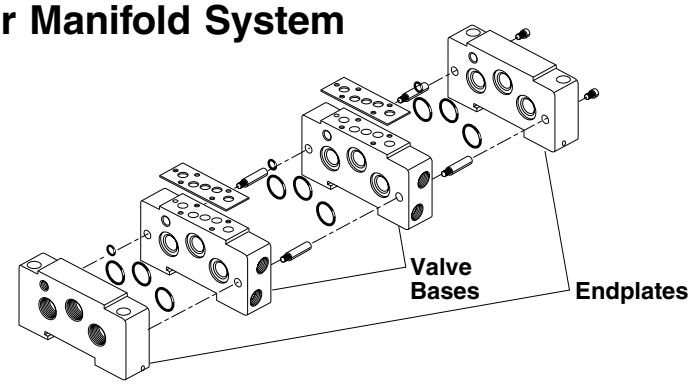
Voltage Code	A	J	M	M1	L
Voltage	230V AC (3VAC)	110V AC (3VAC)	24V DC (2W)	24V DC (1W)	12V DC (2W)

Connectors – Standard 15mm 3-Pin DIN 43650C

Voltage	12VDC/AC	24VDC/AC	110/120VAC	220/240VAC
Cord Grip	PS2932P	PS2932P	PS2932P	PS2932P
Cord Grip with 6' Cord	PS2932JP	PS2932JP	PS2932JP	PS2932JP
Lighted Cord Grip*	PS294675P	PS294679P	PS294683P	N/A
Lighted Cord Grip* with 6' Cord	PS2946J75P	PS2946J79P	PS2946J83P	N/A
1/2" Conduit - Unlighted	PS2998P	PS2998P	PS2998P	PS2998P

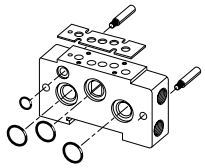
* LED with surge suppression

Subbase Modular Manifold System



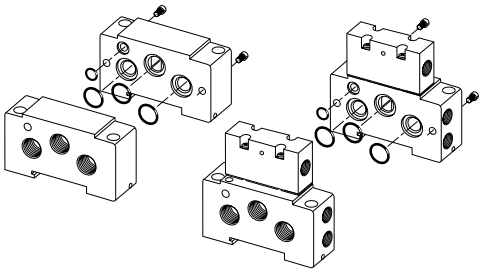
Valve Bases

Description	Port Type	Part Number
Manifold Module	1/8 BSP	VBG16-5001-01
Manifold Module	1/8 NPT	VBN16-5001-01
Manifold Module	6mm Push-in	VBT16-5M06-01
Manifold Module	1/4 Push-in	VBT16-5A08-01



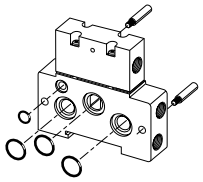
End Plates

Description	Port Type	Part Number
L & R End Plate Kit (End Supply)	1/4 BSP	VBG16-5002-LRE
L & R End Plate Kit (End Supply)	1/4 NPT	VBN16-5002-LRE
L & R End Plate Kit (Front Supply)	8mm Push-in	VBT16-5M08-LRF
L & R End Plate Kit (Front Supply)	5/16 Push-in	VBT16-5A10-LRF



Intermediate Supply

Description	Port Type	Part Number
Intermediate Supply Module	1/8 BSP	VBG16-5001-SCE
Intermediate Supply Module	1/8 NPT	VBN16-5001-SCE
Intermediate Supply Module	8mm Push-in	VBT16-5M08-SCE
Intermediate Supply Module	5/16 Push-in	VBT16-5A10-SCE



Accessories

Description	Port Type	Part Number
Internal Blanking Discs (Kit of 3)	No Ports	VB016-5000-DSC

Subbase Valves

Material Specifications

Body ..... Anodized Aluminium
End Caps ..... Glass-filled Acetal
End Cover Seals ..... Nitrile
Piston Operator ..... Acetal
Piston Seals ..... Polyurethane
Screws ..... Steel
Spool ..... Anodized Aluminium
Spool Seals ..... Polyurethane
Springs ..... High-grade Stainless Steel

Valve Specifications

Air Condition:
Filtered to 40µ, regulated,
lubricated or non-lubricated, dry

Ambient Temperature Range of Solenoid:
-10°C to 50°C (-14°F to 122°F)

Pressure Range:
2 to 10 bar* (29 to 145 PSIG)

Temperature Range:
-20°C to 70°C (-4°F to 154°F)

Voltage Tolerance:
-10% to +10%

* 8-bar maximum for 1-Watt coils.

Performance

Flow Rate (at 6 bar):
16mm - 900 l/min (.45 Cv)

Insulation Protection:
IP65

Life Expectancy:
52-Million Operations

Typical Response Time:
Press - Spring = 25ms ON, 35ms OFF
Press - Press = 23ms ON, 30ms OFF
Sol. - Spring = 20ms ON, 28ms OFF
Sol. - Sol. = 22ms ON, 22ms OFF

Subbase Modular Manifolds

Material Specification

Blanking Discs
(Supplied in Kit of 3) ... Stainless Steel Coated in Nitrile
Body ..... Anodized Aluminium (Black)
Screws ..... Plated Steel
Seals ..... Nitrile

Technical Information

Assembly Torque ..... 2 Nm
End Plate Ports Sizes
End Supply ..... 1/4" (BSP or NPT)
Front Supply End Plate Kits
Front Supply ..... 8mm or 5/16"
Manifold
Mounting ..... Din Rail or Direct Bolting through Manifold
Pitch ..... 19mm Modules

The Subbase system has been design to be assembled quickly and with a minimum of tools.

All parts of the system will only fit together one way and it is very difficult to build a manifold incorrectly.

1. Take the left-hand end plate and assemble the first module using the nutted studs to a tension of 2Nm. Ensure o-ring seals are correctly in place.
2. Assemble all modules in required sequence. Ensure Intermediate Supply Modules and blanking discs are positioned correctly to blank the flow in exhaust or supply ports as required.
3. Assemble the right-hand end plate using 3mm Allen Key to a torque of 2Nm (17 inch pounds).

NOTE: Assemble manifolds on a flat surface ensuring the construction is straight.

4. Attach manifold to the machine bolting through the end plates or mounting onto DIN rail as required.
5. Fit all fittings onto the manifold.
6. Assemble valves onto the manifold in required sequence.

Intermediate Supply Module

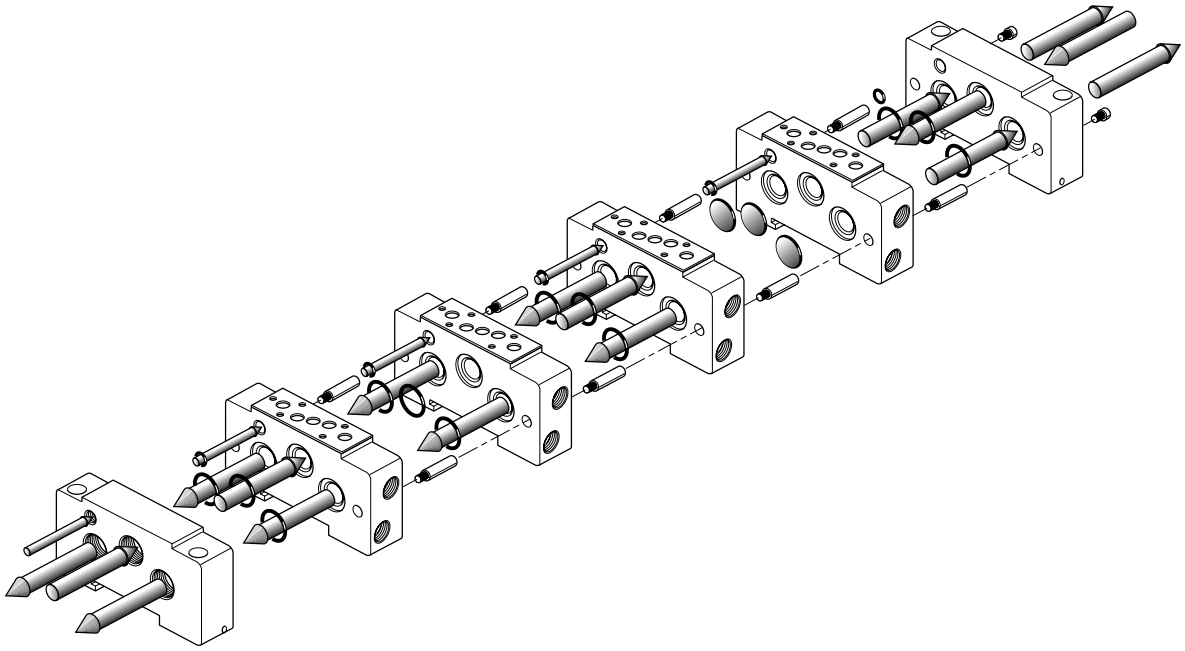
The intermediate supply module can be used to supply additional air into the manifold

When more than two pressures are required from one manifold, at least one intermediate supply module will be required to supply the third air supply.

Blanking Discs

When multiple pressures are required from one manifold, it is necessary to fit blanking discs at the required separation point.

The blanking discs stop the flow of exhaust or air supply at module of application.



External Supply-to-Solenoid Pilots

External supply-to-solenoid pilots are fed into the manifold from the end plate kits through the port marked EXT (M5/10-32).

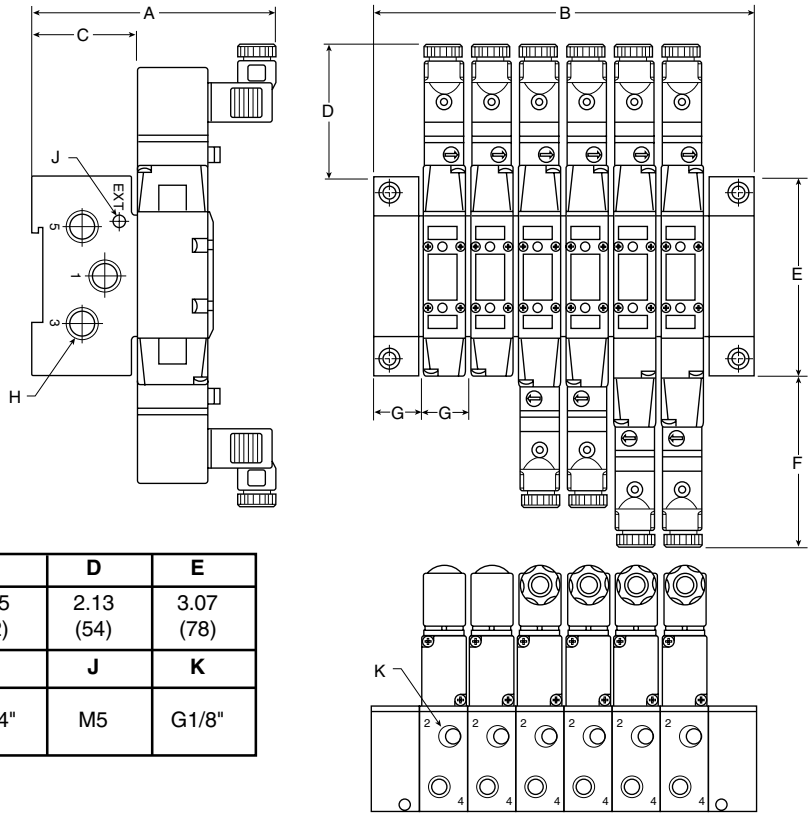
The external solenoid option must be specified when ordering the valve type (see Ordering reference).

External supply allows low-pressure operation and vacuum operation.

Supply Through Exhaust Ports

The manifold can be supplied through the exhaust ports when different pressures are required on the cylinder ports.
It is necessary to have external supply to the solenoid or air operated pilots on the valves for this option.

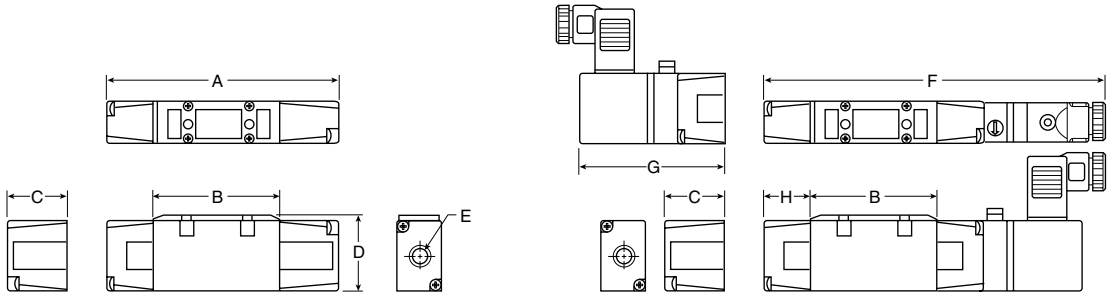
Subbase Manifold



Dimensions

A	B	C	D	E
3.82 (97)	5.98 (152)	1.65 (42)	2.13 (54)	3.07 (78)
F	**G**	**H**	**J**	**K**
2.76 (70)	.75 (19)	G1/4"	M5	G1/8"

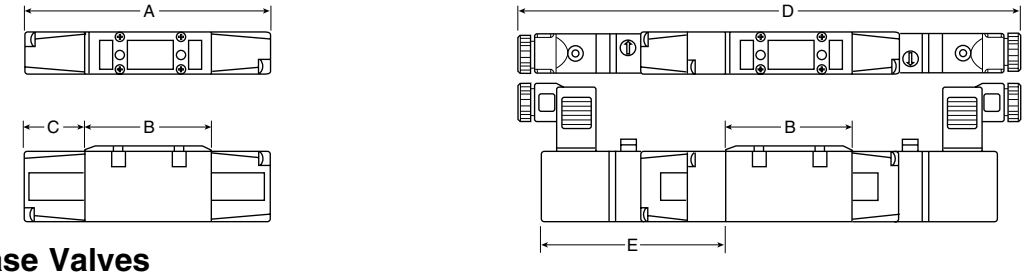
Inches
(mm)



5/2 Subbase Valves

A	B	C	D	E	F	G	H
3.39 (86)	1.97 (50)	.83 (21)	1.18 (30)	G1/8"	5.24 (133)	2.26 (57.5)	.59 (15)

Inches
(mm)



5/3 Subbase Valves

A	B	C	D	E
4.25 (108)	1.97 (50)	1.46 (37)	7.13 (181)	2.89 (73.5)

Inches
(mm)

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Parker Pneumatic

VSP Modular Electronic Valve Islands

C

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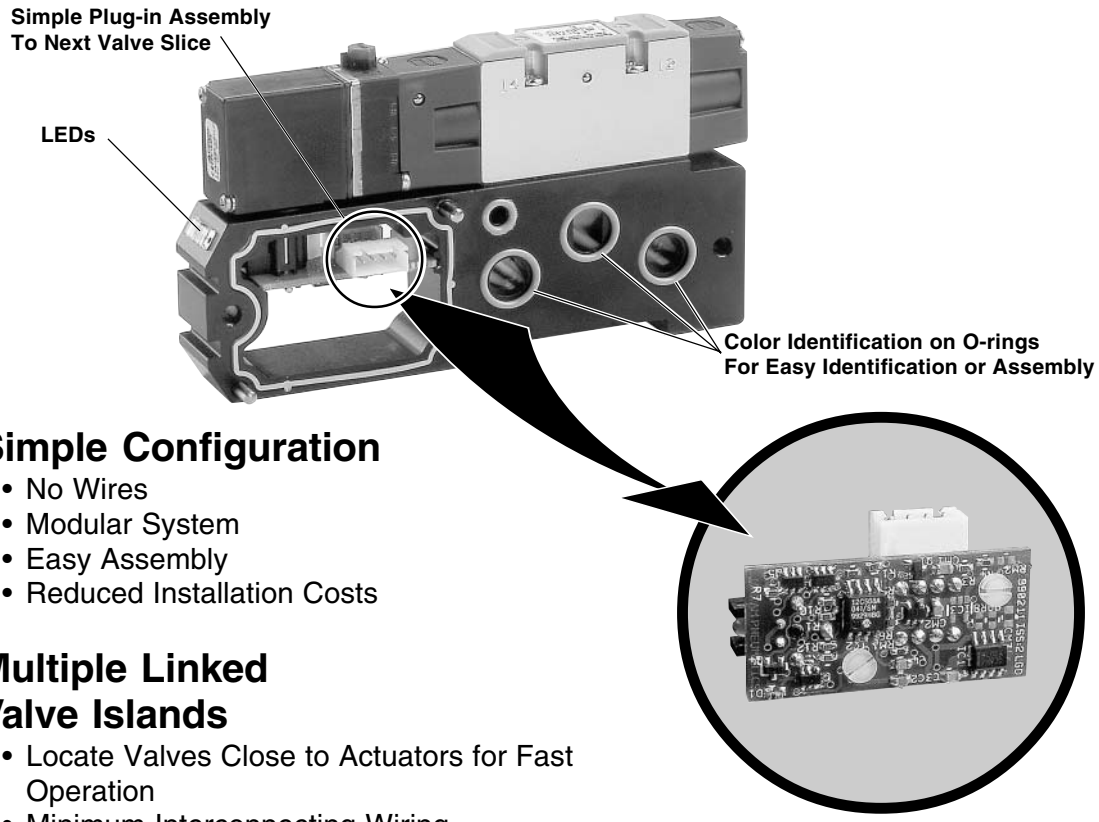


Simple Configuration

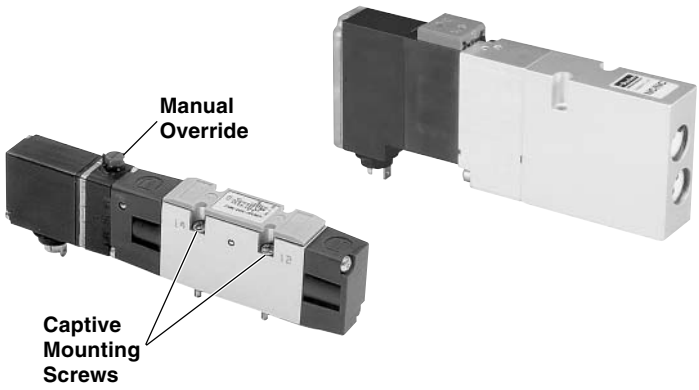
- No Wires
- Modular System
- Easy Assembly
- Reduced Installation Costs

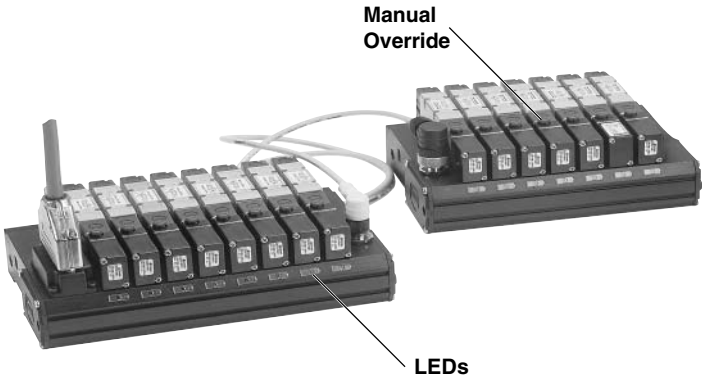
Multiple Linked Valve Islands

- Locate Valves Close to Actuators for Fast Operation
- Minimum Interconnecting Wiring

Pneumatic Control Valves with Integrated Bus System

- **Designed to Meet IP65 Full CE Approval**
- **Versatile System**
  Multiple Pressures from One Manifold Vacuum Operation
- **Robust Design**
  Excellent Electronic Integrity
  Anodized for Corrosion Resistance
  Electronics Housed within Manifold
- **User Friendly Design**
  DIN Rail Mountable
  Direct Mounting
  Quick Release Push-in Cartridge or Tapped Ports
- **Multiple Valve Islands**
  Linked Via Low-cost Cable
  Reduced Wiring Costs
- **Two Valves In One Available**
  Double 3/2 Valves
  Double 5/2 Valves





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

Cable Coming from PLC
D-Sub, 25-Pin
Cable SUBD25 (1, 3 or 5 Meter)

Maximum Number of Addresses
Up to 23
- 11 Stations - Bistable Valves (2 Addresses for Bistable Valves)
- 23 Stations - Monostable Valves (1 Address for Monostable Valves)

Voltage
24V DC
- 1-Watt Coils as Standard
- 2-Watt Coils as Option

Protection
Surge Protection
- Flywheel Diode

Ingress Protection
- Designed to Meet IP65

Pneumatic Functions
5/2 Monostable
- 5/2 Spring Return

5/2 Bistable
- 1 Bistable Solenoid (Uses 2 Addresses)

Manual Override
Index Locking or Impulse (Spring Return)

Manifold Port Size
G1/8, NPT1/8, 6mm Push-in Cartridge & 1/4" Push-in Cartridge

Multiple Pressures on One Manifold
Intermediate Supply / Exhaust Modules and Blanking Discs

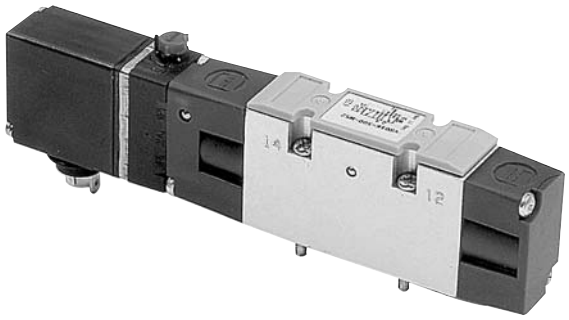
Manifold Mounting
DIN Rail or Direct Bolting through End Plate Kits

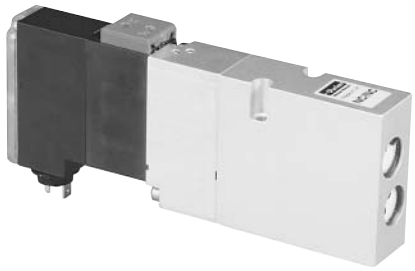
External Solenoid Supply
High Flow Spool Valves for Low-pressure or Vacuum Operation

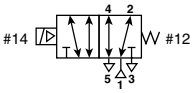
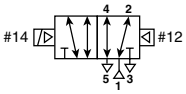
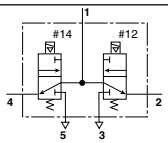
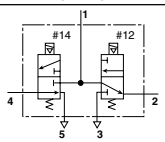
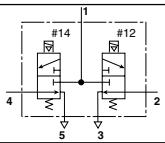
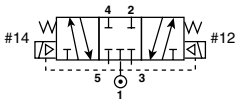
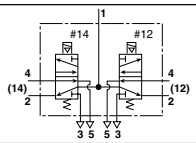
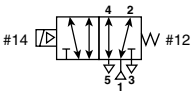
Vacuum Operation
High Flow Spool Valves Only - External Air Supply to Solenoids fed through End Plates (Port EXT)

Supply Through Exhaust
Use External Pilot Solenoid Configuration

VS High Flow Spool Valves





Valve Ordering	Reference	Manual Override
5/2 Solenoid Spring Return 	VSP16-500-M152	Index Locking (Locking)
5/2 Bistable Double Solenoid 	VSP16-500-M143	Index Locking (Locking)
Double 3/2 NO + NO (Can be used for 5/3 C-Applied) 	VSP18-300-M1A2	Impulse (Nonlocking)
Double 3/2 NO + NC 	VSP18-300-M1B2	Impulse (Nonlocking)
Double 3/2 NC + NC (Can be used for 5/3 C-Exhaust) 	VSP18-300-M1C2	Impulse (Nonlocking)
Double 3/2 Blocked Center (Can be used for 5/3 C-Blocked) 	VSP18-500-M165	Impulse (Nonlocking)
Double 5/2 	VSP18-500-M1D0	Impulse (Nonlocking)
External Air Supply to Solenoid Pilot for Low-pressure and Vacuum Operation		
5/2 Monostable Spring Return 	VSP16-500-M192	Index Locking (Locking)

Note: Voltage = 24 VDC
Monostable & Bistable Coils = 1 Watt
Double 3/2 & 5/2 = 2 Watt

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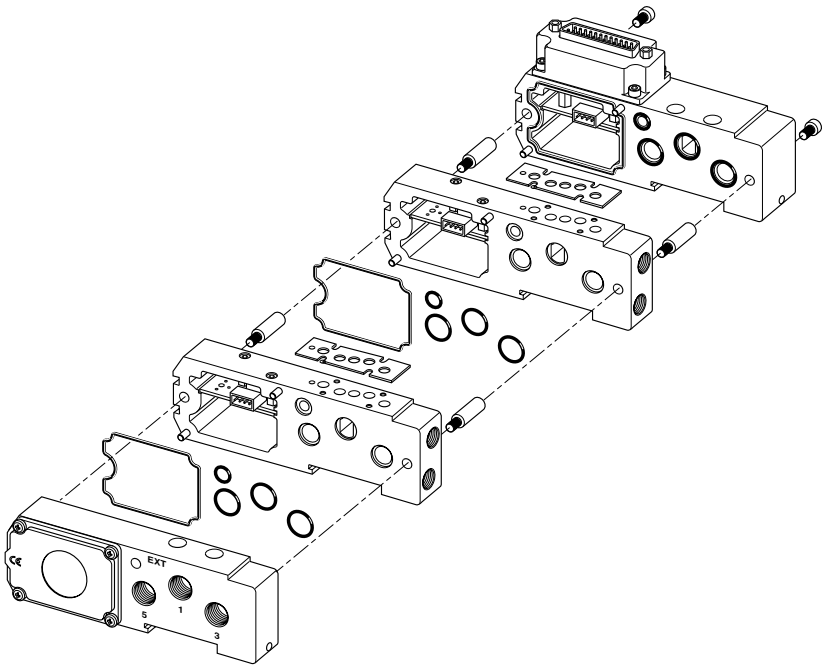


Valve Base Modules

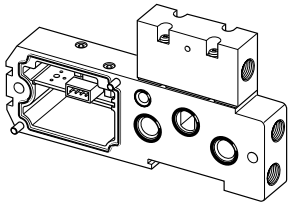
	NPT	BSPP
Monostable Threaded Port	VCN16-5001-TCM	VCG16-5001-TCM
1/4" Tube	VCT16-5A08-TCM	
Bistable Threaded Port	VCN16-5001-TCB	VCG16-5001-TCB
1/4" Tube	VCT16-5A08-TCB	
Double 3/32 Threaded Port	VCN18-3001-02D	VCG18-3001-02D
1/4" Tube	VCT18-3A08-02D	
Double 5/32 5/32" Tube	VCT18-5M04-02D	

Tube Port

Threaded Port

Intermediate Supply Modules

	NPT	BSPP
Threaded Port	VCN16-5001-SCE	VCG16-5001-SCE
1/4" Tube	VCT16-5A08-SCE	



Blanking Discs

All Models	VBO16-5000-DSC

Sandwich Regulator & Flow Controls

For use with VSP16 valves only

Sandwich Regulator	VRP16-500-080
Sandwich Flow Control	VFP16-500-FC

Modular Electronic Valve Islands

The new modular manifold system has the unique capability of controlling remote positioned valve islands via low-cost, non-shielded, 4-core cable of up to 10m in length.

A maximum of 23 monostable Solenoid / Spring valves can be controlled down stream from the D-Sub input, on any number of valve manifolds.

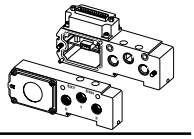
There are a number of different end plate options available to produce manifolds for various functions.

End Plates

LRD

Standard end plate kit with D-Sub input and standard Left-hand end plate.
Up to 23-station manifold.

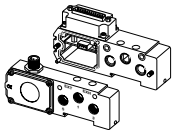
VCN16-5002-LRD



LRX

End plate kit with D-Sub input and M12 connector on the Left-hand end plate. Used in multiple manifold applications, these end plates would be used for the first manifold in a chain.

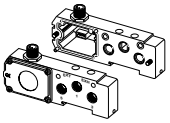
VCN16-5002-LRX



LRY

End plate kit with M12 input connector on Right -hand and M12 output connector on Left Hand end plate.
Used in multiple manifold applications for units mid-line.

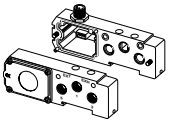
VCN16-5002-LRY



LRZ

End plate kit with M12 input connector on Right-hand and standard Left-hand end plate. Used for the last manifold in a chain.

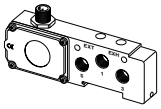
VCN16-5002-LRZ



LAM

Single, Left-hand end plate with M12 output connector. Used to replace standard Left-hand end plate when additional manifolds are required to produce a chain.

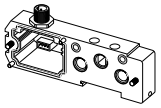
VCN16-5002-LAM



RAM

Single, Right-hand end plate with M12 input connector.
Used to replace D-Sub end plate as required.

VCN16-5002-RAM



Cables

D-Sub Cable

25-Pin female cables for connection to the D-Sub input socket located on the Right-hand end plates.
Cables are available IP65 plus each cable is labeled.

Description	Part Number
D-Sub 25 pin connector with 5m lead (IP65 protection)	SUBD25-5

M12 - 4 Core Manifold Link Cable

Low-cost 4 core cable with M12 female / female connectors to suit the male plugs on the LRX, LRY, LRZ, LAM and RAM end plates.

Description	Length	Part Number
M12 - 4 core cable unshielded IP65	2 meters	M12-2
M12 - 4 core cable unshielded IP65	5 meters	M12-5
M12 - 4 core cable unshielded IP65	10 meters	M12-10

Material Specification

Spool Valves:

Body ..... Anodized aluminium
End Caps ..... Glass-filled Acetal
End Cover Seals ..... Nitrile
Piston Operator ..... Acetal
Piston Seals ..... Polyurethane
Screws ..... Zinc Plated Steel
Spool ..... Anodized Aluminium
Spool Seals ..... Polyurethane
Springs ..... High-grade Stainless Steel

Manifold:

Body ..... Anodized Aluminium
Nutted Studs ..... Zinc Plated Steel
Seals ..... Nitrile

Valve Specifications

Air Condition:
Filtered to 40µ, regulated, lubricated or non-lubricated, dry

Operating Temperature Range:
-10°C to 55°C (14°F to 131°F)

Pressure Range:
0 to 8 bar* (0 to 116 PSIG)

Voltage Tolerance:
-10% to +10%

* 10-bar maximum with 2-Watt coils.

Performance

Flow Rate (at 6 bar):
VSP16 - 900 l/min (.45 Cv)
VSP18 - 900 l/min (.25 Cv)

Insulation Protection:
IP65

Life Expectancy:
50-Million Operations

Typical Response Time:
Solenoid - Spring = 20ms ON, 28ms OFF
Solenoid - Solenoid = 22ms ON, 22ms OFF

* Test conditions: Filtered air 40µ, dry (dewpoint - 40°C - 40°F) non-lubricated, pressure 6 bar.

Plug-in Manifold / Electrical Data

The equipment is CE compliant for use in both industrial and commercial environments and is in conformity with Council Directive 89/336EEC (EMC Directive)

Complies to Standard	Description
BS EN50081-2: 1994	Electromagnetic Compatibility Emissions
BS EN55011	Radiated Emissions Class A
BS EN50082-2: 1995	Electromagnetic Compatibility Immunity
EN61000-4-3	Radiated Immunity 10 V/m
EN61000-4-6	Conducted RF Immunity 10 V/m
EN61000-4-4	Electrical Fast Transient / Burst Immunity Test
EN61000-4-2	Electrostatic Discharge 4KV Contact, 8KV Air Discharge

Conditions of Use

Storage Temperature Range:
-20°C to 60°C (-4°F to 140°F)

Working Temperature Range:
-10°C to 55°C (14°F to 131°F)

Working Voltage:
24V DC ± 10%

Maximum Working Current:
2A

Characteristics

Insulation Protection:
Designed to meet IP65

LED Status:
VSP16 – Pilot Port 14 Green (Mono and Bi-stable)
Pilot Port 12 Red (Bi-stable)
VSP18 – LEDs are Yellow located on Pilot Solenoid (No LED lens on slice)

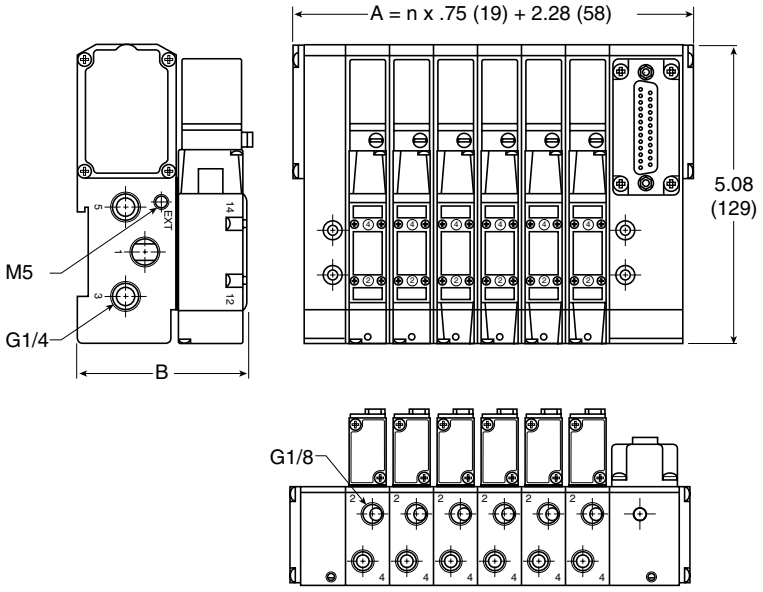
M12 Cable:
4-Core Unshielded Cable Protected to IP65

Response Time:
1-2 m/secs

Surge Suppression:
By Flywheel Diode

Patent Pending

High Flow Power Valves



B Dimension

VSP16 = 2.87 (73)

VSP18 = 3.52 (89.3)

Inches
(mm)

Parker Pneumatic

ISOMAX

Directional Control Valves

15407-1 & 5599-1

DX02 – 0.55 Cv **DX01 – 0.75Cv**
DX1 – 1.15 Cv **DX2 – 2.50 Cv**
DX3 – 4.15 Cv

Section D

D

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Applicable Markets

Industries where ISO standardization is accepted.

- Automotive
- Food Processing
- Medical
- Chemical
- Tire Manufacturing
- Steel Processing
- Glass Processing
- Where OEM'S Export Globally

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Bold text part numbers are standard.

Standard text part numbers may have longer lead times.

Valve Range

DX02 1/8", ISO 15407-1, Size 02
DX01 1/4", ISO 15407-1, Size 01

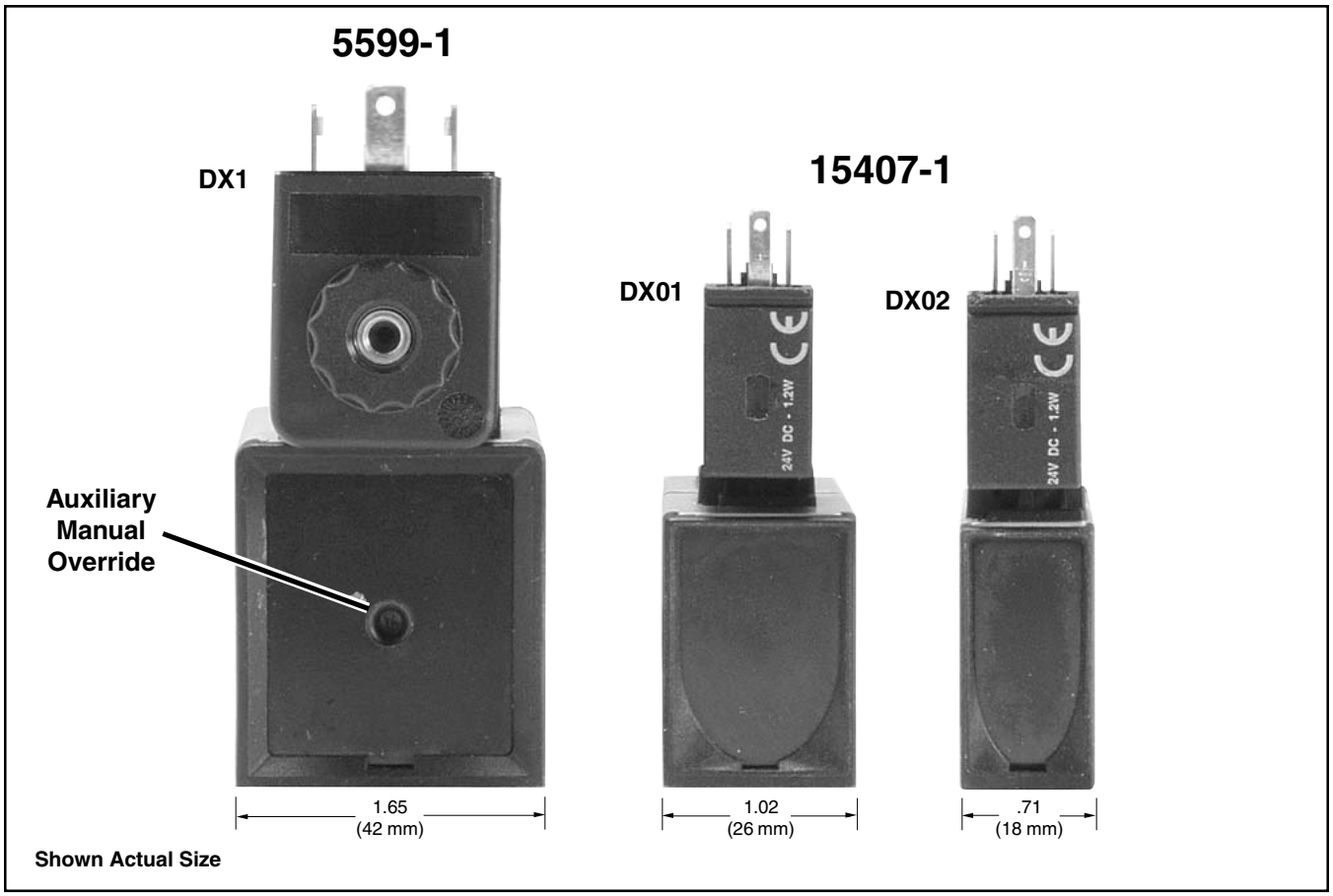
ISO 15407-1

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 5599-1

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.

The ISOMAX range includes valves for pneumatic and electrical actuation with a wide choice of subbases and manifolds to suit different application needs.



Auxiliary Manual Pilot in Option

Manual overrides are supplied as standard on solenoids. An auxiliary manual pilot acting directly on the spool is available as standard on all ISO 5599-1 versions.

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.

Central M12 Electrical Connector Versions

All sizes of ISO 5599-1 valves are supplied in a new version with central M12 connector.

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.

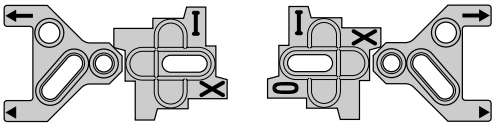
- **High Performance**

  Slide valve concept allows high flow / size ratio and short response time due to short slide stroke and low friction.

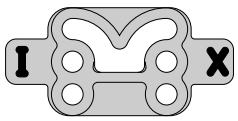
- **Stable Long Lasting Performances**

  Low friction switching: minimum wear of the valve member / seal assembly.

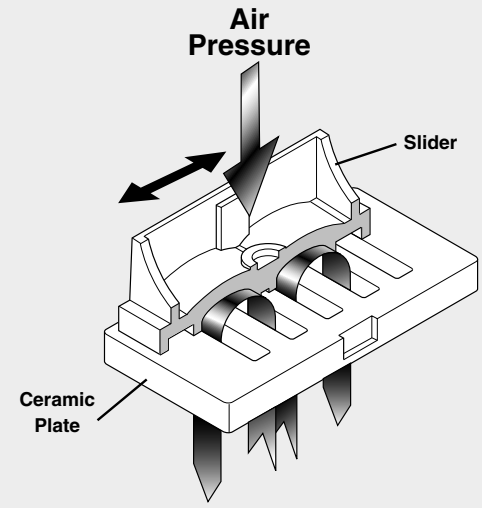
- **Valves Fitted with Switchable Selector to Give Internal or External Pilot Supply**

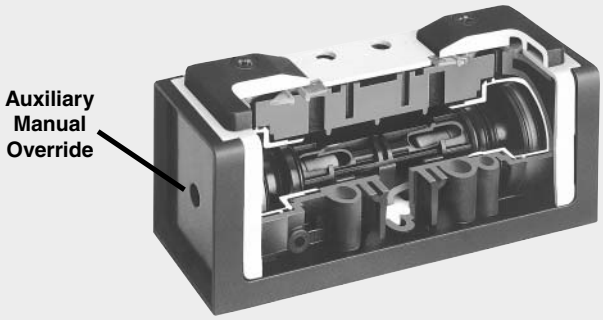


DX02 & DX01 Selector Gaskets

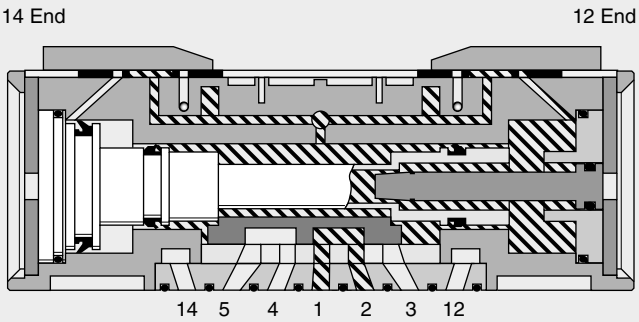


DX1, DX2 & DX3 Selector Gasket





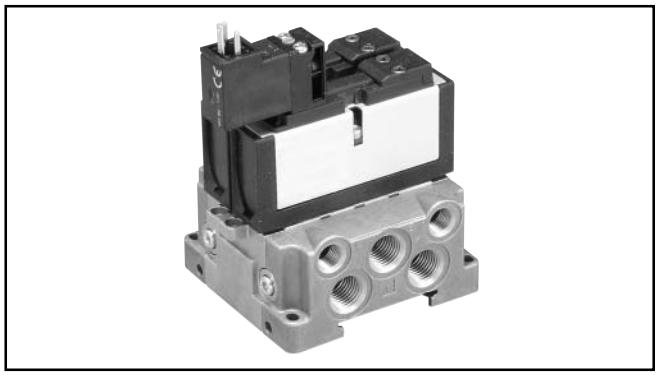
Remote Pilot



Pressure **Exhaust**

* Refer to our warranty conditions.

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 (C_V)

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

Voltage				Power (W / VA)
Code	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

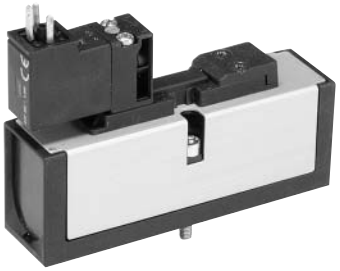
Vacuum to 145 PSIG (10 bar)

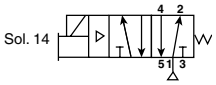
Function		M.O.P (bar)
External Remote Pilot		**DX02 & DX01**
421	Single Remote Pilot, Spring Return	2.5
451	Single Remote Pilot, Differential Return	2.0
406	Double Remote Pilot	1.0
411	Double Remote Pilot, 3-Position, CE	3.0
416	Double Remote Pilot, 3-Position, APB	3.0
Solenoid Operated		**DX02 & DX01**
621	Single Solenoid, 2-Position, Spring Return	2.5
651	Single Solenoid, 2-Position, Differential Return	2.0
606	Double Solenoid, 2-Position	1.0
611	Double Solenoid, 3-Position, CE	3.0
616	Double Solenoid, 3-Position, APB	3.0

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

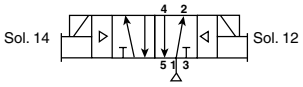
Single Solenoid
2-Position





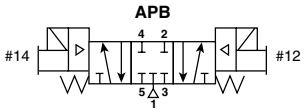
DX02	**DX02-621-951J**	120VAC	.55 Cv
	DX02-621-951M	24VDC	
DX01	**DX01-621-951J**	120VAC	.75 Cv
	DX01-621-951M	24VDC	

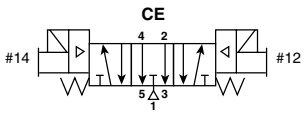
Double Solenoid
2-Position



DX02	**DX02-606-951J**	120VAC	.55 Cv
	DX02-606-951M	24VDC	
DX01	**DX01-606-951J**	120VAC	.75 Cv
	DX01-606-951M	24VDC	

Double Solenoid
3-Position APB
3-Position CE





	APB			CE		
DX02	**DX02-616-951J**	120VAC	.40 Cv	**DX02-611-951J**	120VAC	.40 Cv
	DX02-616-951M	24VDC		**DX02-611-951M**	24VDC	
DX01	**DX01-616-951J**	120VAC	.50 Cv	**DX01-611-951J**	120VAC	.50 Cv
	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 58 & 59.

BOLD OPTIONS ARE STOCKED

= "Most Popular"

Basic Series		Function		Operator	Override	Voltage
DX02	—	606	—	95	1	M

DX02-18mm ISO 15407-1

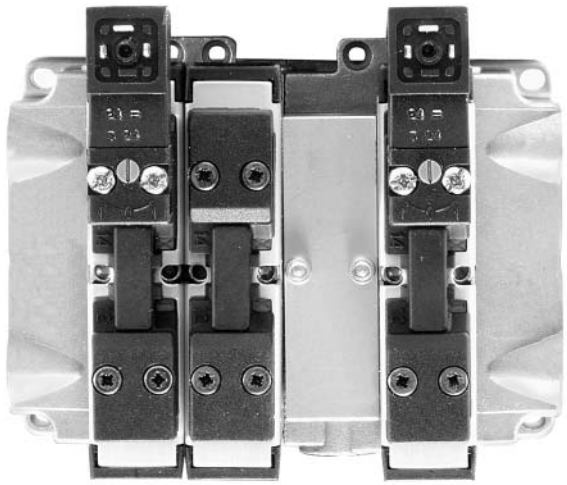
DX01-26mm ISO 15407-1

Function	
External Remote Pilot	
421	**Single Remote Pilot, Spring Return**
451	**Single Remote Pilot, Diff Return**
406	**Double Remote Pilot**
411	**Double Remote Pilot, 3-Position, CE**
416	**Double Remote Pilot, 3-Position, APB**
Solenoid Operated, Captured Pilot Exhaust	
621	Single Solenoid, 2-Position, Spring Return
651	Single Solenoid, 2-Position, Diff Return
606	Double Solenoid, 2-Position
611	Double Solenoid, 3-Position, CE
616	Double Solenoid, 3-Position, APB
Solenoid Operated, Vented Pilot Exhaust	
620	Single Solenoid, 2-Position, Spring Return
650	Single Solenoid, 2-Position, Diff Return
604	Double Solenoid, 2-Position
627	Double Solenoid, 3-Position, CE
625	Double Solenoid, 3-Position, APB

Operator	
60	**None, Remote Pilot Valve**
95	**15mm, 3-Pin, DIN 43650C**

Override	
Blank	**Remote Pilot**
1	**Non-Locking, Manual Override**
3	Locking, Manual Override

Voltage & Frequency			
	AC		DC
	60Hz	50Hz	
J	120	110	
M			24
Blank	Remote Pilot		



* 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

= "Most Popular"

	Valve Series	Base Type	Port Type	Number of Stations
AA	DX02	L	N	04

Valve Series
DX02
DX01

Base Type	
L*	With Check Valve
P	Without Check Valve

* Must use PEJ01 End Plates

Port Type	
G	BSPP "G"
N	NPT

Number of Stations
02
04
06
08
10
12

Example: Application requires a 4-Station manifold.

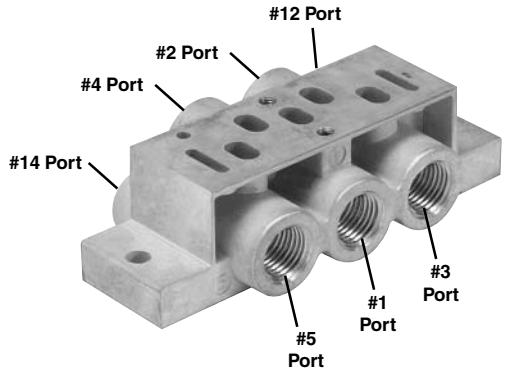
Qty.	Part No.
1	AADX02PN04
1	DX02-651-951M ..... Valve Station 1
1	DX02-451-951M ..... Valve Station 2
1	PJLP02-201-80 ..... Base Station 1 & 2
1	D02P-01-80 ..... Valve Station 3
1	DX02BLK ..... Valve Station 4
1	PJLP02-201-80 ..... Base Station 3 & 4

Note: DX02 Manifolds cannot be used for remote pilot.

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.

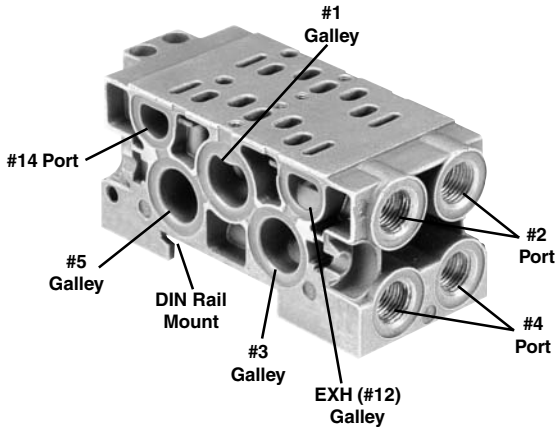


Two Station Manifold Base
with Side Ports
(Prefered Base for Solenoid Valves)

Size	Port Size	Kit Number	
		NPT	BSPP "G"
18mm DX02	1/8"	**PJLP02-201-80**	PJLP02-201-70

Notes: 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

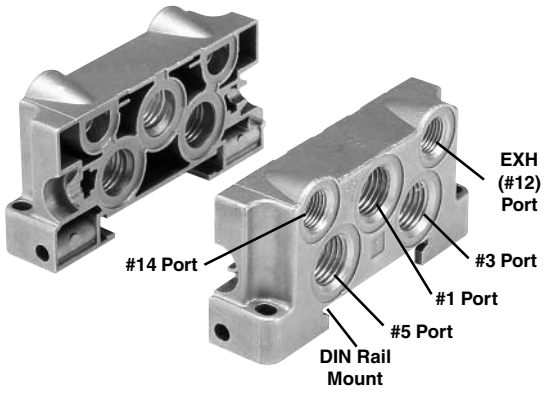
Size	Port Size	Kit Number	
		NPT	BSPP "G"
18mm DX02	1/8"	**PEJ02-02-80***	PEJ02-02-70

* Use with PJLP02

Notes: Put a vent or muffler in "EXH" port when capturing pilot exhaust pressure with a solenoid valve. (See page 63 for gasket selector details.

Gaskets and assembly hardware included.

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)

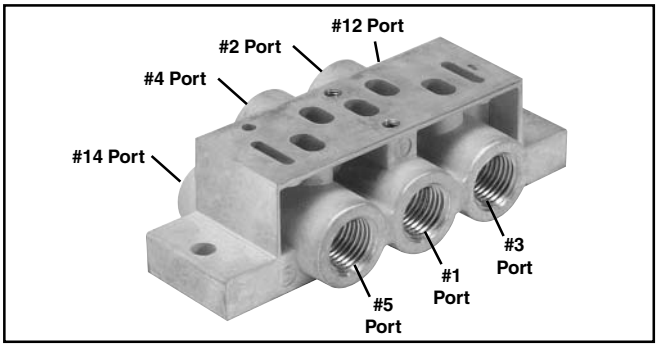


PEJ02
(Type "P")

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.

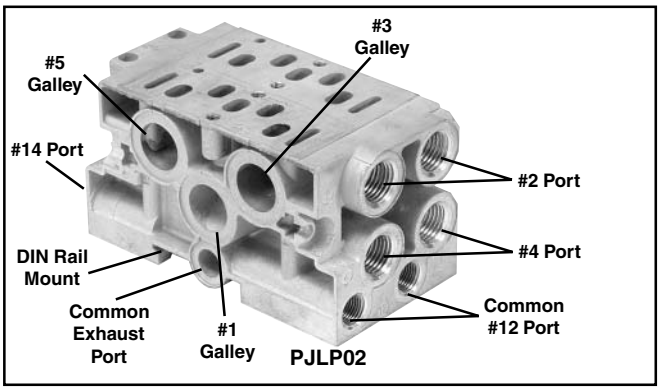


Two Station Manifold Base
with Side Ports

Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/8"	**PJLP01-201-80**	—
	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.

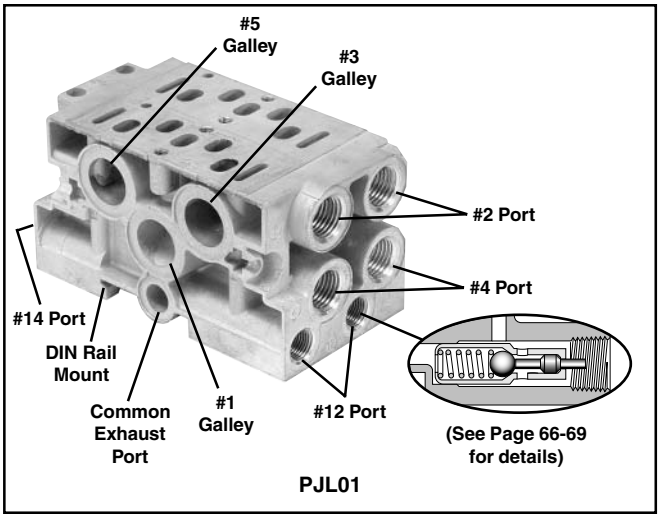


Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/8"	**PJL01-201-80**	—
	1/4"	**PJL01-202-80**	PJL01-202-70

Notes: #12 ports work independently when plunger is not depressedby 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.



End Plate Kit
for Side Ported Two Station Manifold Base

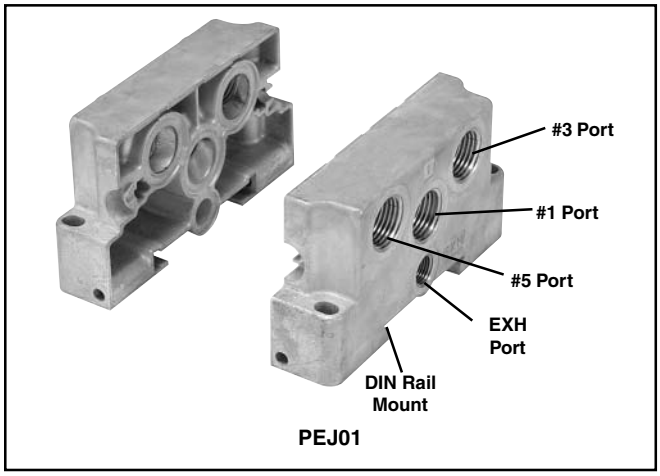
Size	Port Size	Kit Number	
		NPT	BSPP "G"
26mm DX01	1/4"	**PEJ01-03-80***	PEJ01-03-70

* 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 63 for gasket selector details.

Gaskets and assembly hardware included.

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)

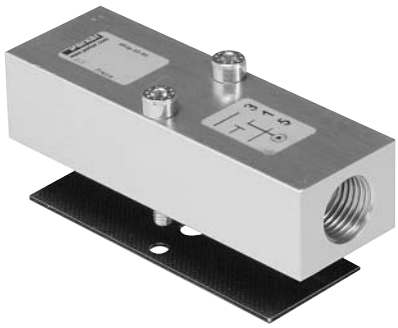


Intermediate Air Supply Base

Size	Port Size	Kit Number
		NPT
18mm DX02	1/8"	**D02P-01-80**
26mm DX01	1/4"	**D01P-02-80**

Note: 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)

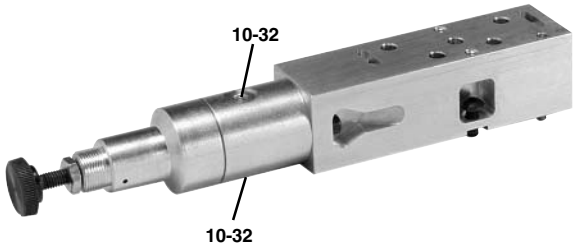


Sandwich Regulator

Size	Common Pressure
DX01	**SFR01DX**

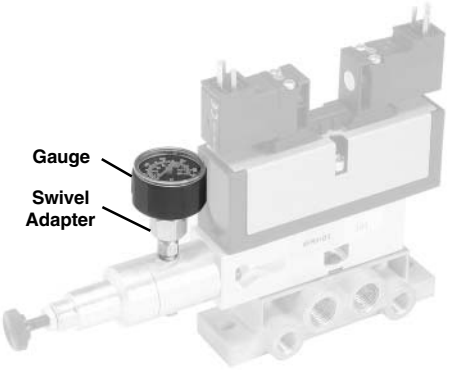
Notes: Gasket & Mounting Bolts included.

Torque Specifications: 20 to 30 in-lbs (2.26 to 3.39 Nm)



Gauge Kit & Swivel Adapter Kit

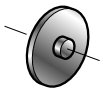
Size	Kit Number
#10-32 to 1/8" Female Straight Swivel (Qty. 5)	**PS2196P**
0 to 160 PSIG 3/4" Face (0.91" O.D.)	**PS3451160P**



Manifold Port Isolation Disc

Size	Kit Number
18mm DX02	**D02BD0**
26mm DX01	**D01BD0**

Note: 3 Discs per Kit.



Blanking Plate

Size	Kit Number
18mm DX02	**DX02BLK**
26mm DX01	**DX01BLK**

Note: 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)

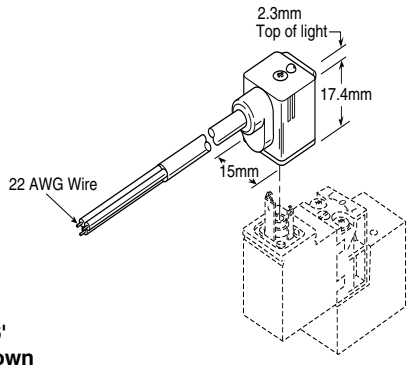
15mm 3-Pin DIN 43650C Connectors

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.

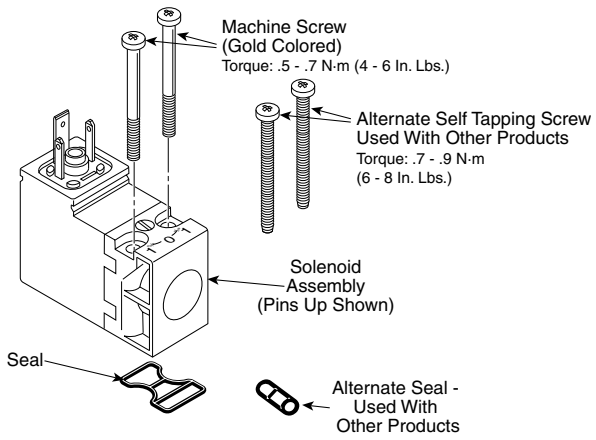
Engineering Data:
Conductors: 2 Poles Plus Ground
Cable Range (Connector Only): 4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm



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 Bolt Kit

Part Number	Items
DX02M2MB**	Bolt, Washer & Nut*

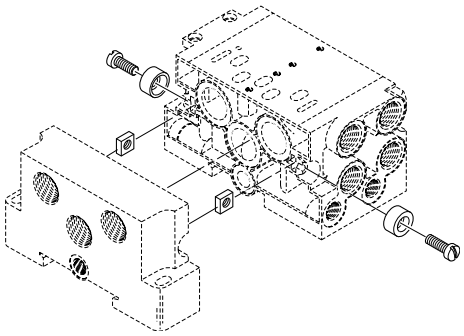
* Includes 10 Bolts, 10 Washers, 10 Nuts

** Use this number for both sizes, DX02 & DX01.

Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)

Screws for: Size1 DX1 ..... CHC M5 x 40
Size2 DX2 ..... CHC M6 x 50
Size3 DX3 ..... CHC M8 x 60

(Screws also available in stainless steel)



15mm DIN 43650C to 5-Pin, M12 Connector*

Note: IP65 rated when properly installed.

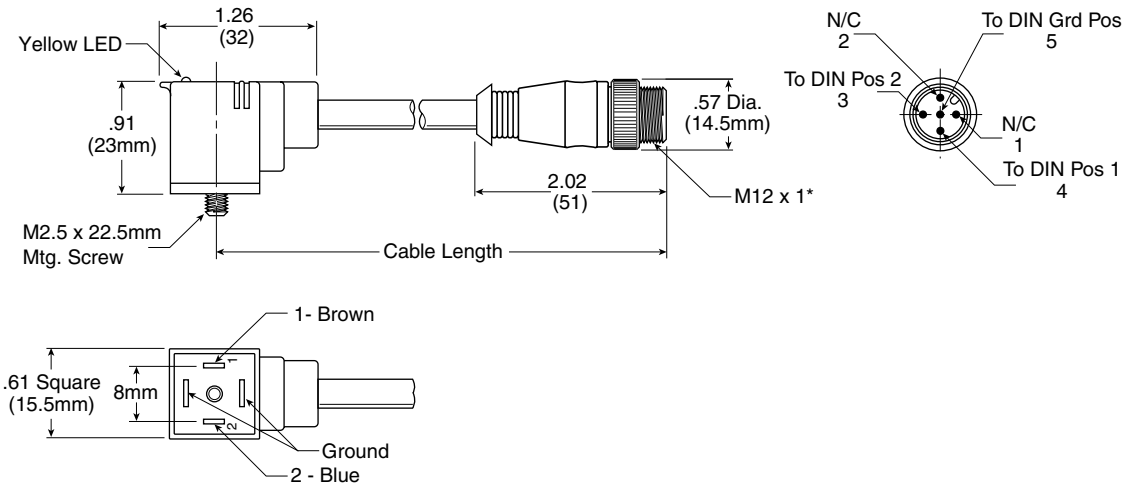
Engineering Data:

Conductors: 2 Poles Plus Ground
Cable: Yellow #18 AW#G PUR Jacket &
PVC Insulation over 15 x #32 Copper Stranding
Contact Spacing: 8mm

H850B**0**B08M**XXX**

Micro-Change Connector Type	
0	Straight Male
2	90° Male

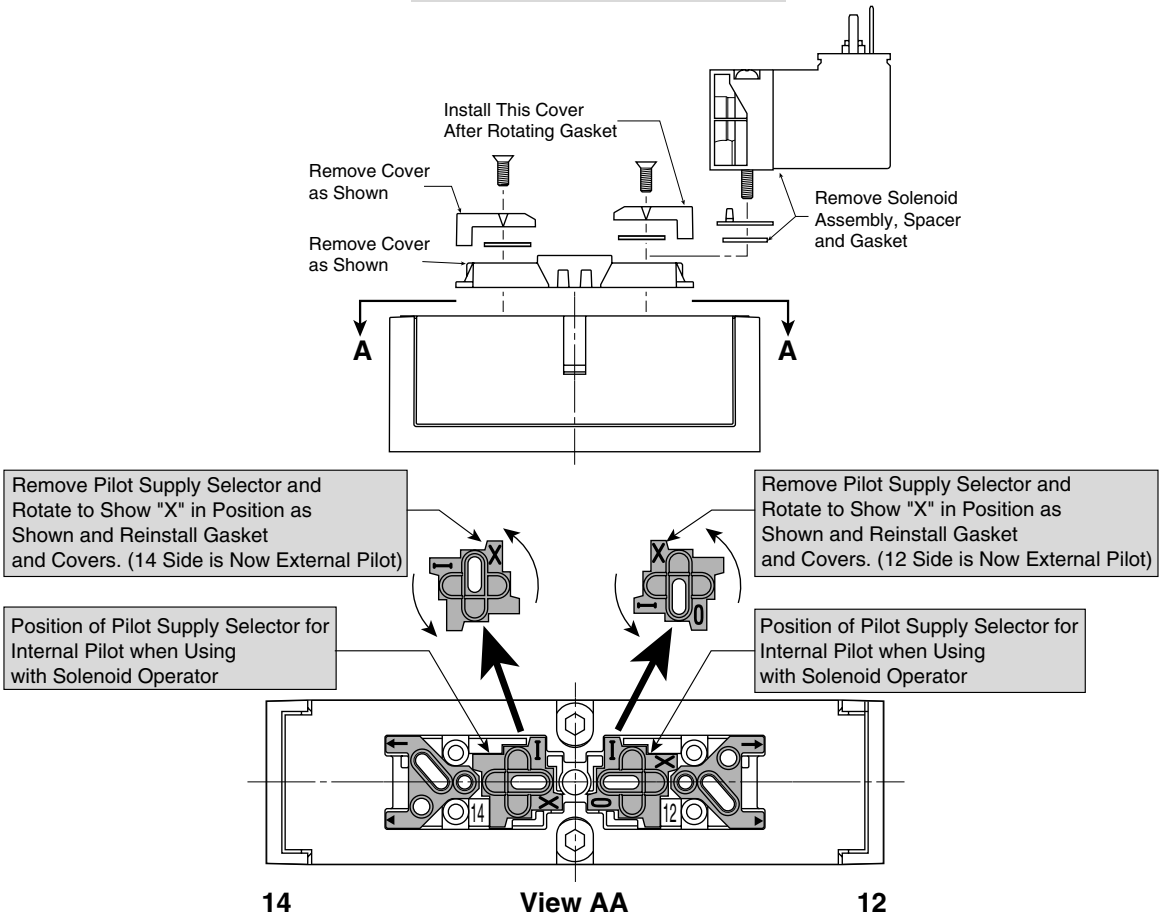
Cable Length	
003	0.3 Meter
006	0.6 Meter
010	1 Meter
015	1.5 Meter
020	2 Meter
030	3 Meter
050	5 Meter



* Available with 90˚ M12

***For Availability, Contact Woodhead - Brad Harrison**
www.connector .com, 1-800-225-7724

Changing from **Internal** to **External** Pilot Supply



14 **View AA** **12**

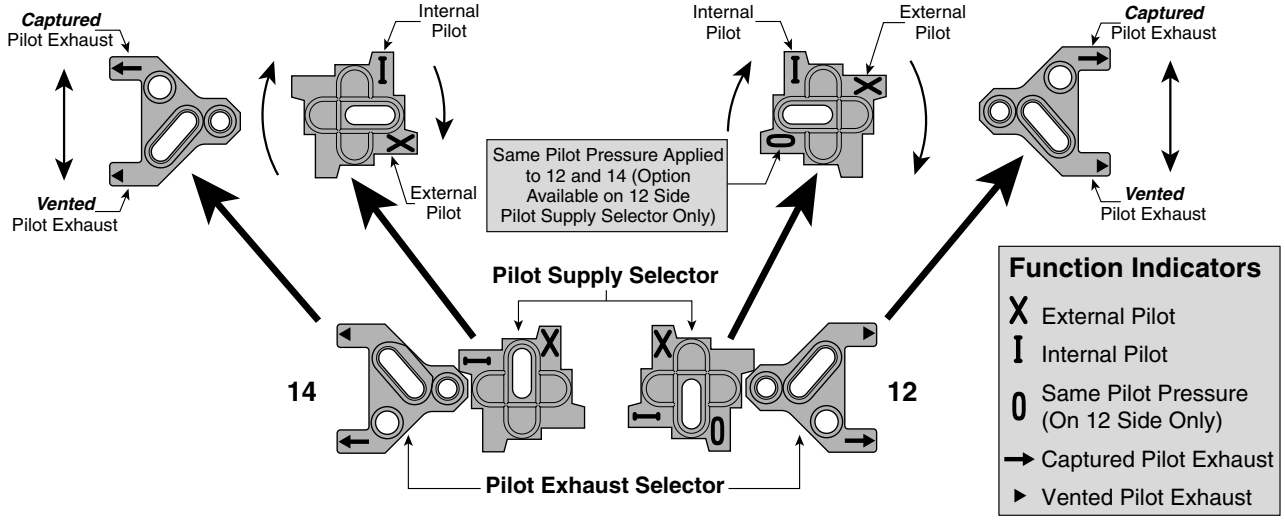
Changing from **External** Pilot Supply, Vented Pilot Exhaust to **Internal** Pilot Supply, Captured Pilot Exhaust

Flip Pilot Exhaust Selector to change functionality; desired Function Indicator should be oriented to top. (14 Side is now ***Captured*** Pilot Exhaust)

Rotate Pilot Supply Selector to change functionality; desired Function Indicator should be oriented to top.
(14 Side is now Internal Pilot)

Rotate Pilot Supply Selector to change functionality; desired Function Indicator should be oriented to top.
(12 Side is now Internal Pilot)

Flip Pilot Exhaust Selector to change functionality; desired Function Indicator should be oriented to top. (12 Side is now ***Captured*** Pilot Exhaust)



Function Indicators

- X External Pilot
- I Internal Pilot
- 0 Same Pilot Pressure (On 12 Side Only)
- → Captured Pilot Exhaust
- ▸ Vented Pilot Exhaust

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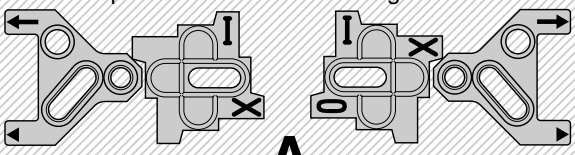
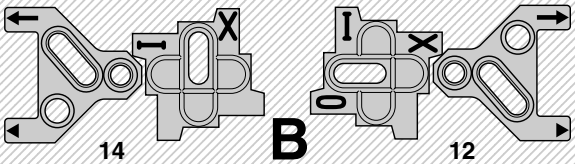
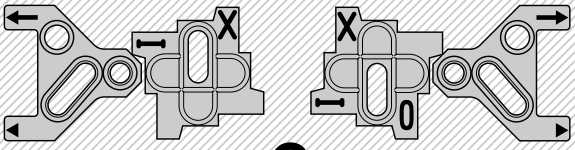
Internal Pilot Supply;
Captured Pilot Exhaust through 12



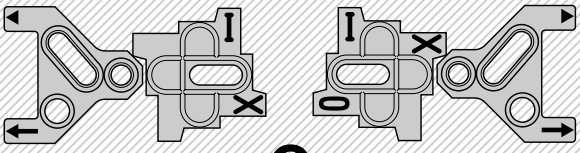
External or Single Remote Pilot Supply on 14;
Internal Pilot Supply on 12;
Captured Pilot Exhaust through 12



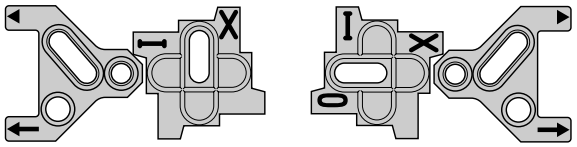
External, Double Remote Pilot Supply on 14 & 12;
Captured Pilot Exhaust



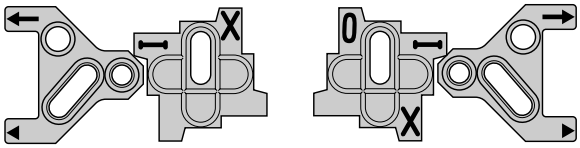
Internal Pilot Supply;
Vented Pilot Exhaust



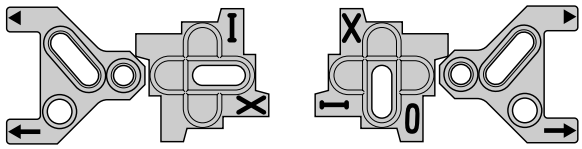
External Pilot Supply on 14;
Internal Pilot Supply on 12;
Vented Pilot Exhaust



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, Spring Return	621 A	421 B	C	620 G	D	E	F
5/2 Single Solenoid, Differential Return	651 A	451 B	C	650 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.

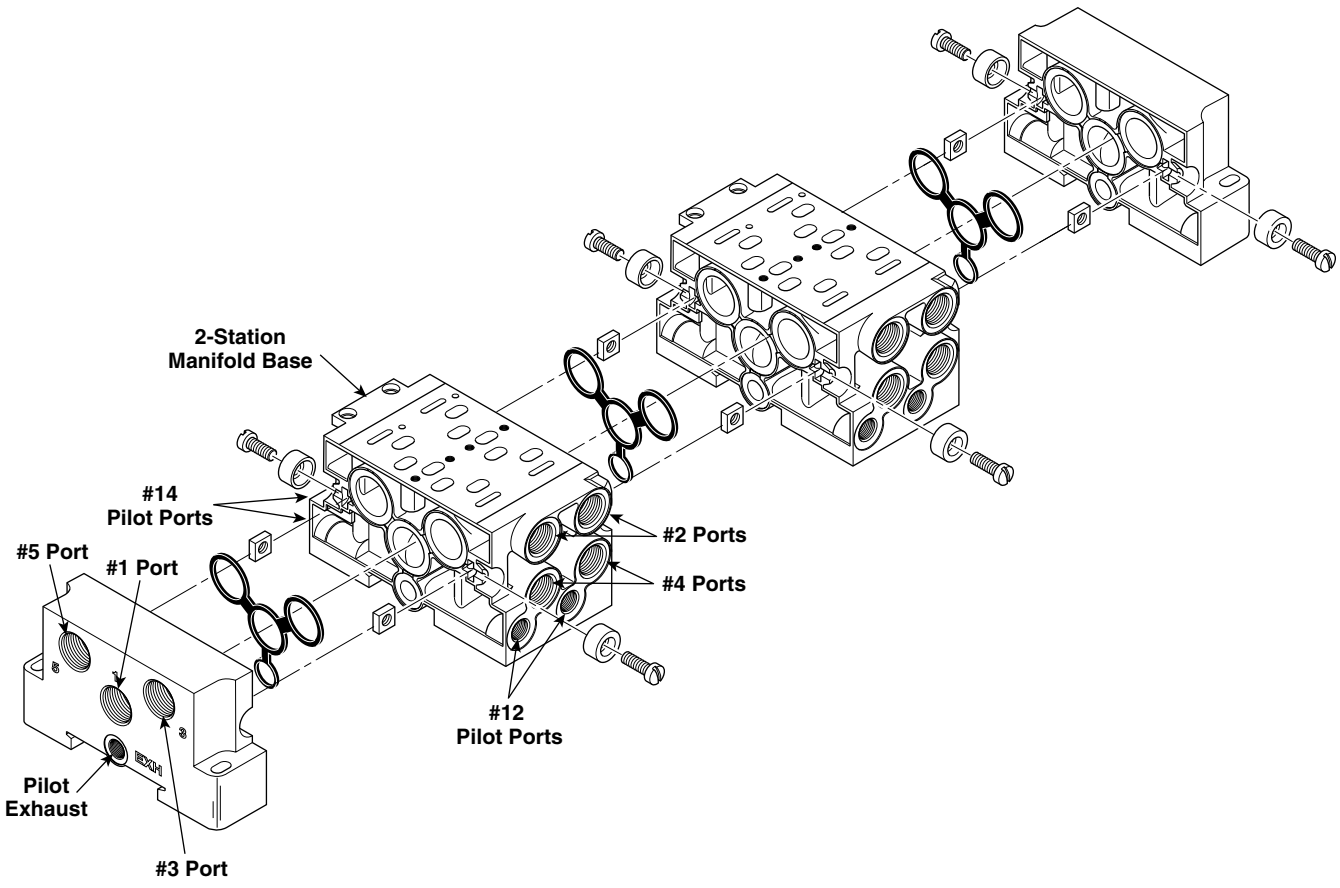
A plug may be inserted in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates #14 or #12 of PL02 & PL01 Subbases when using a ***Vented*** Exhaust.

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)

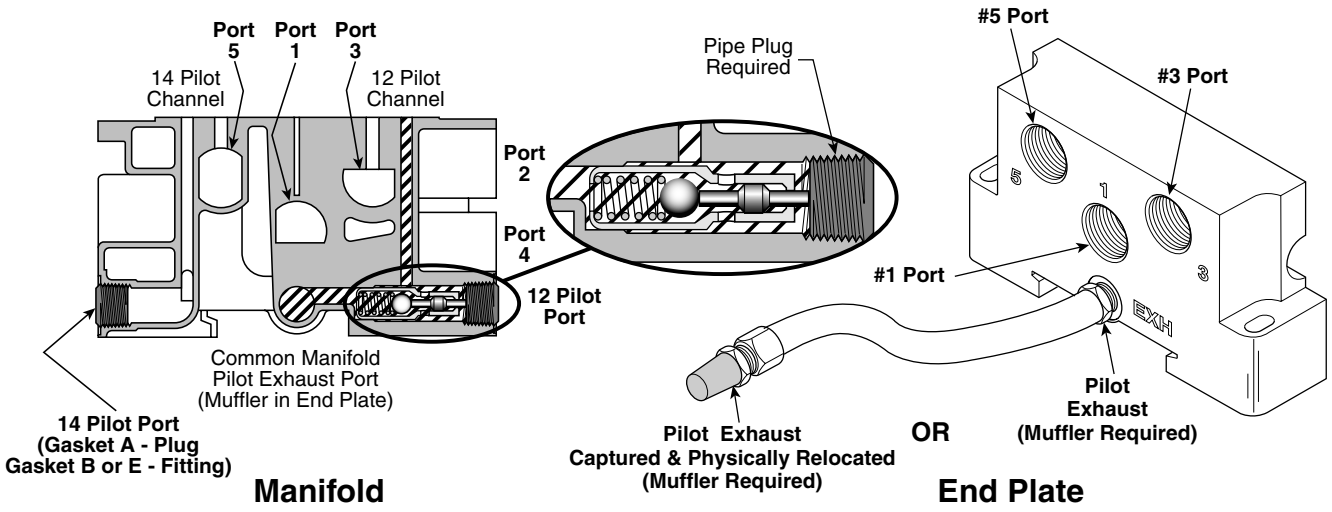


DX01 Shown

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.



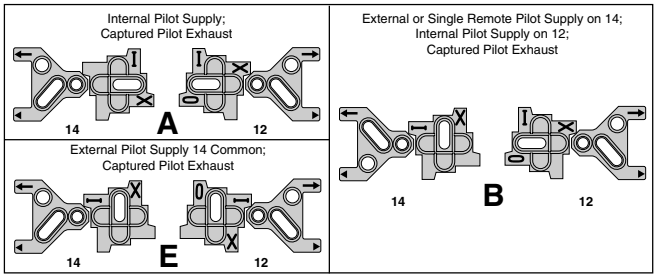
Built-in Selector

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.

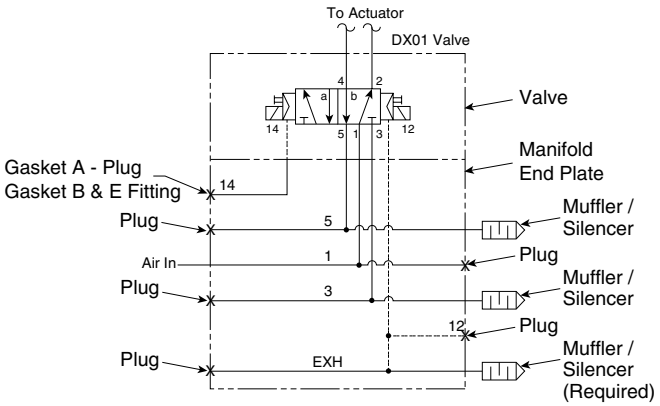
Captured Selector Gasket Positions

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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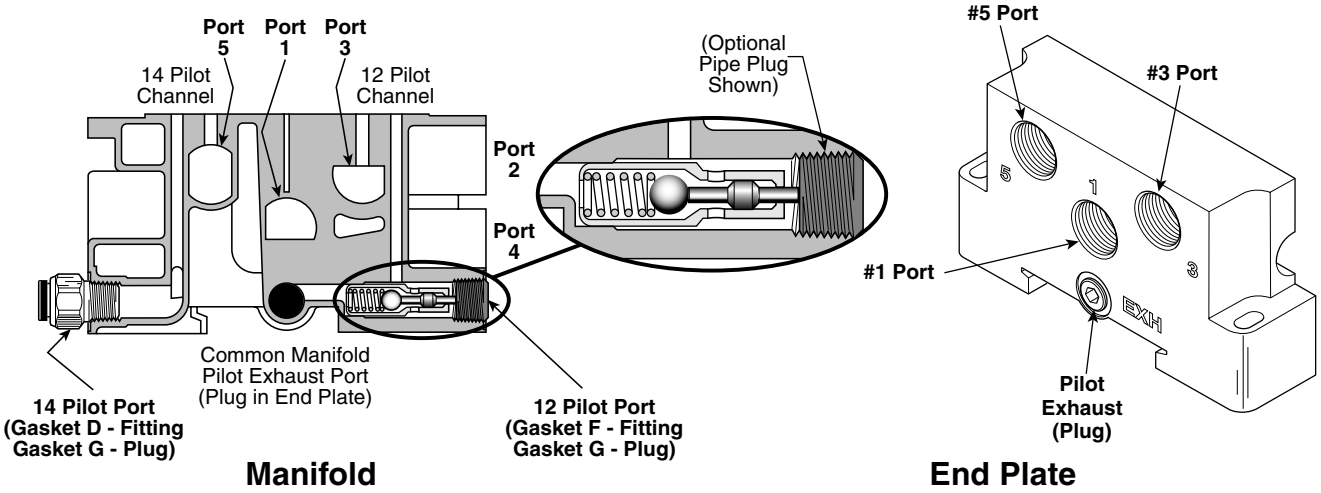
Vented
Pilot Exhaust

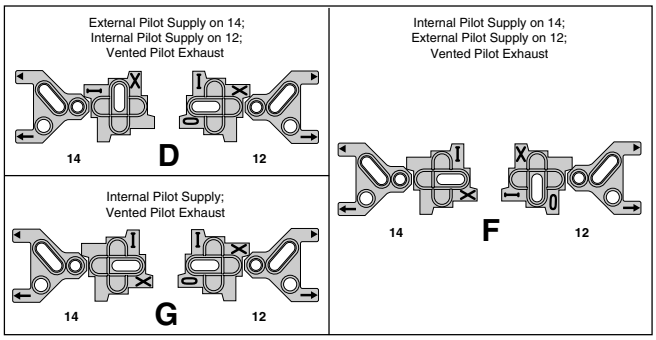


Built-in Selector

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.

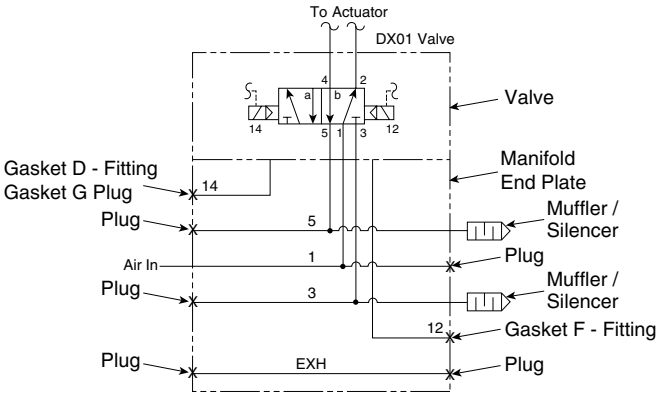
Vented Selector Gasket Positions

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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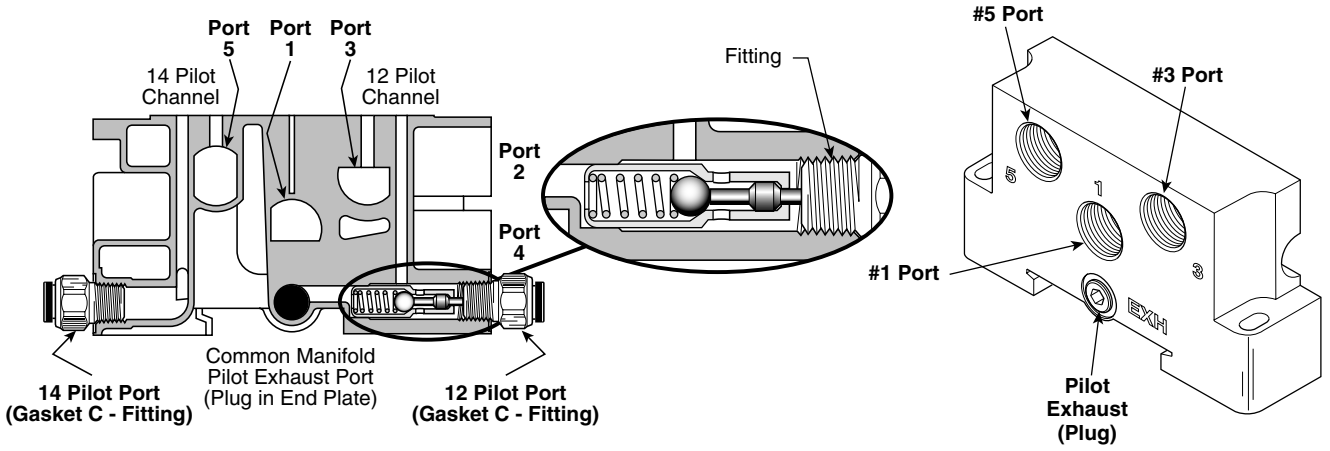
External Double Remote Pilot

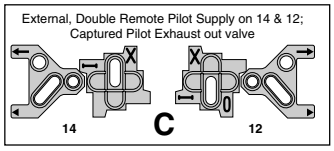


Built-in Selector

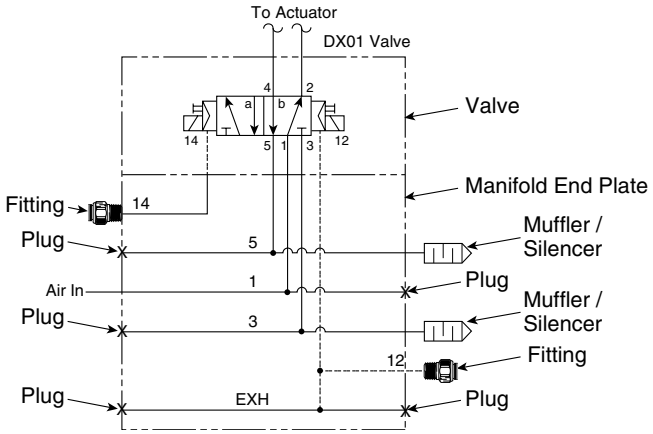
When using C ***External Double Remote Pilot*** Selector Gasket Position, a fitting is used in Pilot Port 14 & 12. Free flow between Port 14 & 12 and the valve allows Remote Pilot Pressure and an exhaust path for the captured pilot exhaust.

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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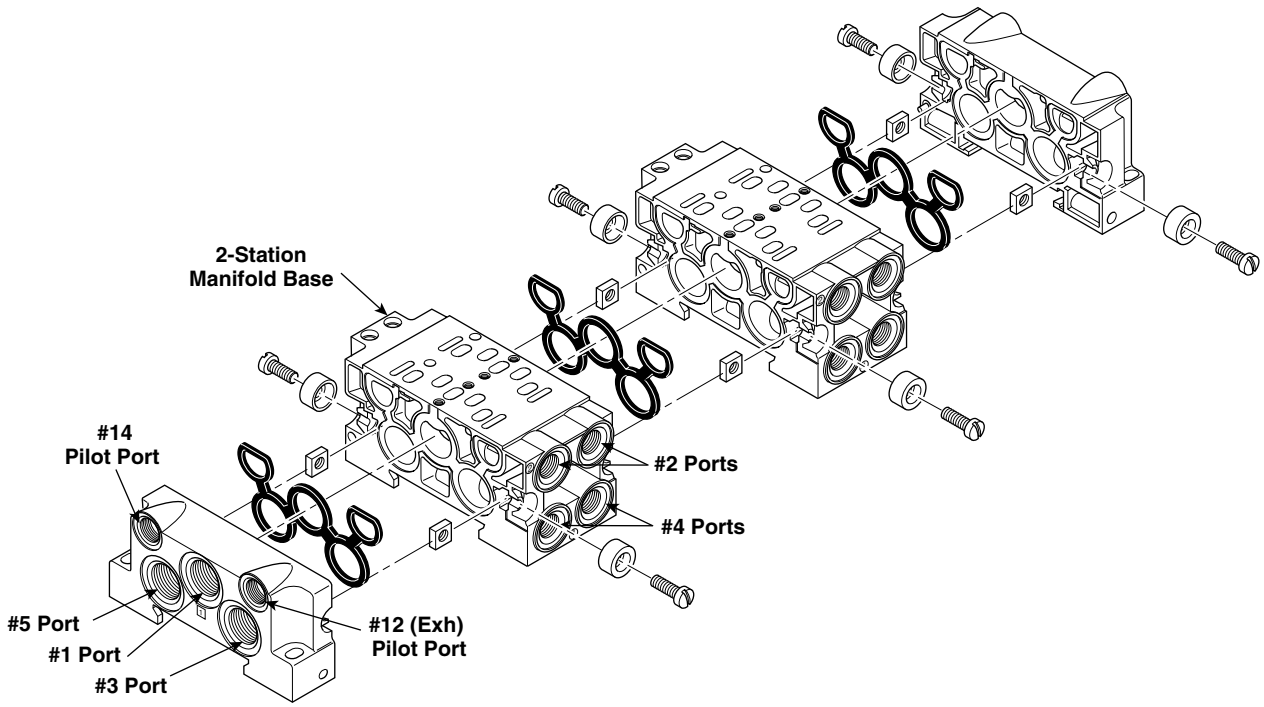
Manifold Assembly

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)

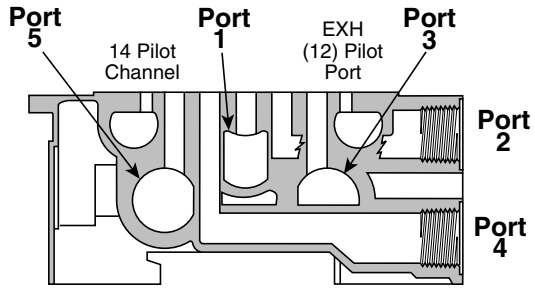


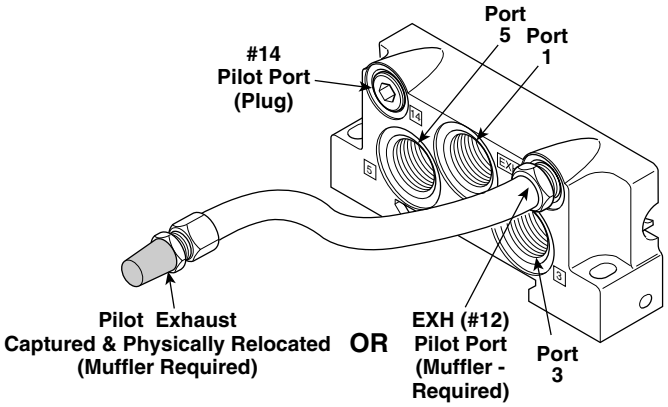
DX02 Shown

Captured
Pilot Exhaust

PJLP02, Size 02*

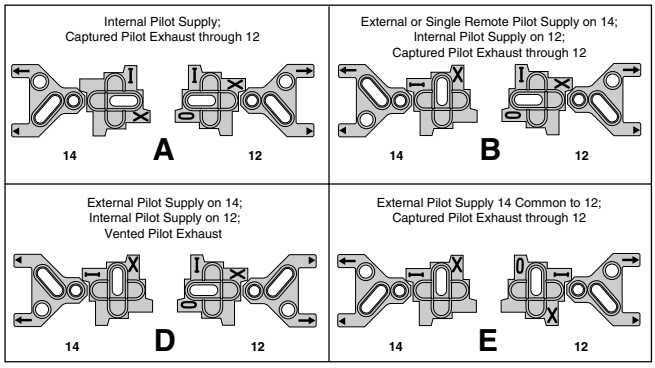
As shown in the illustrations below, the EXH (12) & 14 Pilot Ports are exhausted internally in the valve body into a single chamber labeled EXH on the end plate. When using A, B, D or E Selector Gasket Positions, the EXH (12) Pilot Port is vented with a muffler or micron screen. The 14 Pilot Port is plugged.





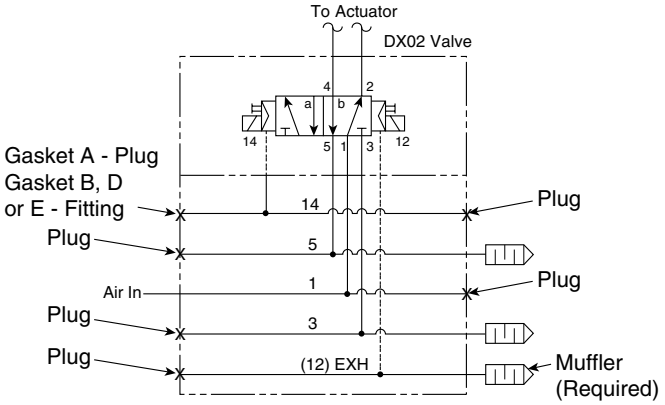
Captured Selector Gasket Positions

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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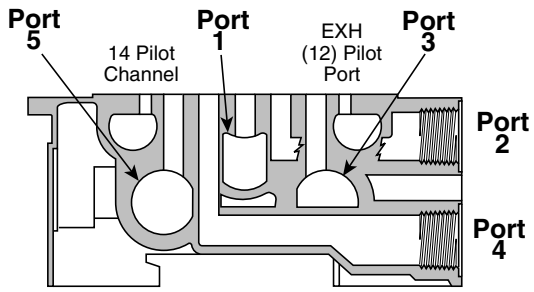
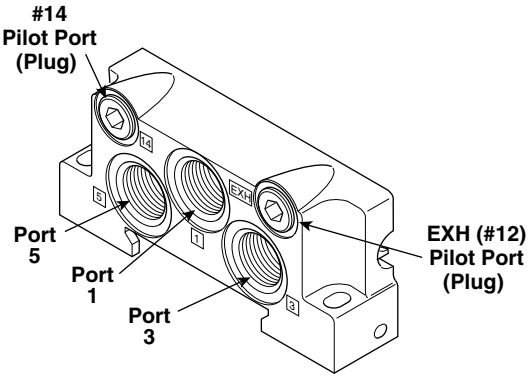
Vented
Pilot Exhaust

PJLP02, Size 02

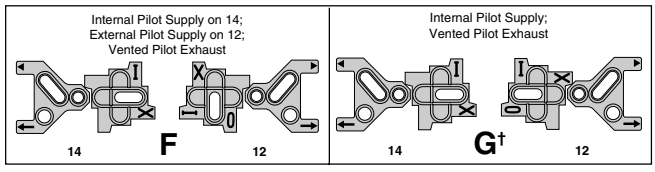
When using F or G Selector Gasket Positions, the EXH (12) Pilot Port and the 14 Pilot Port are plugged and the Pilot Exhaust is vented through the Pilot Adapter.





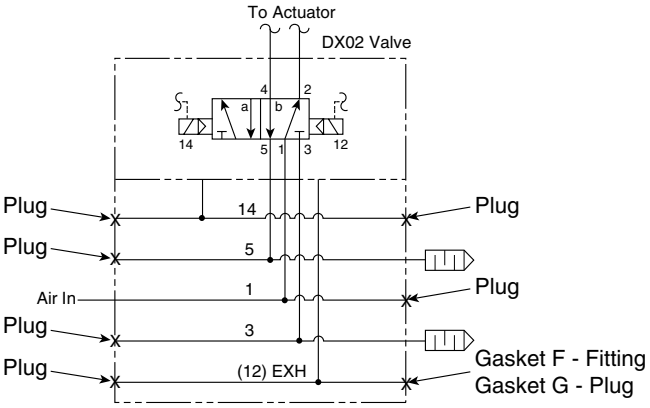
Vented Selector Gasket Positions

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.

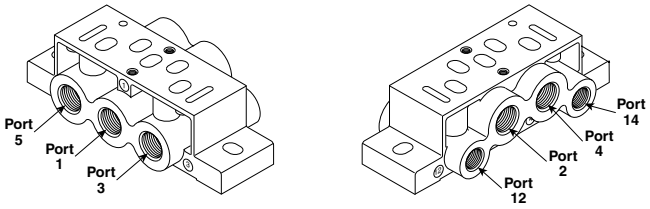
DX02 Manifold Assembly Schematic for *Vented* Selector Gasket Positions F and G



Subbase Assembly

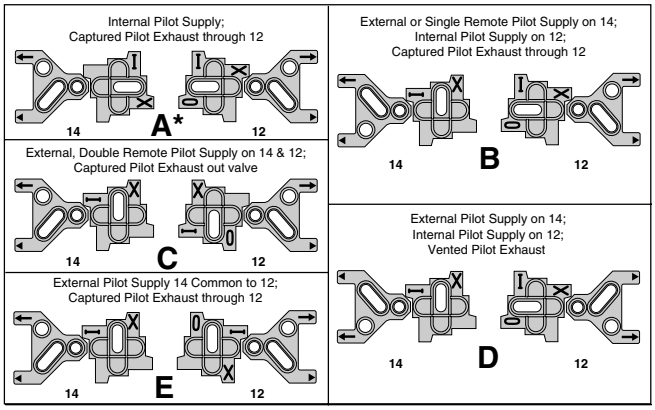
Ports

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

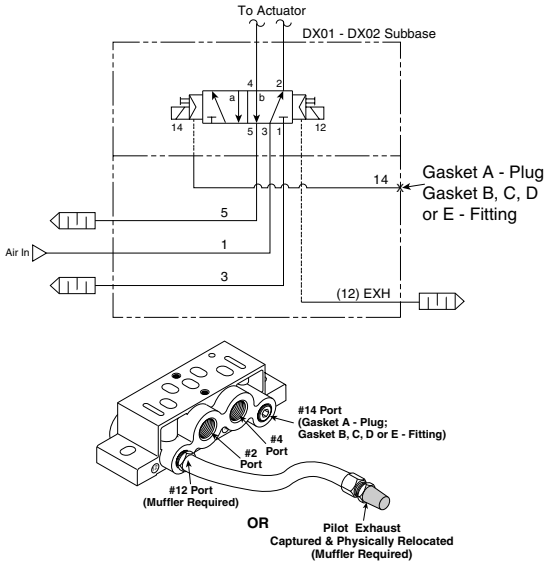


Captured Selector Gasket Positions

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.

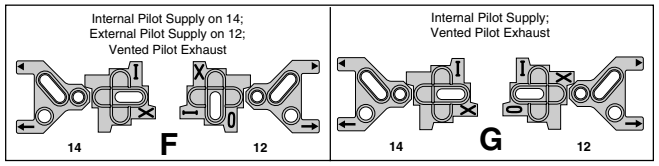


DX02 & DX01 Subbase Assembly Schematic for *Captured* Selector Gasket Positions A, B, C, D and E

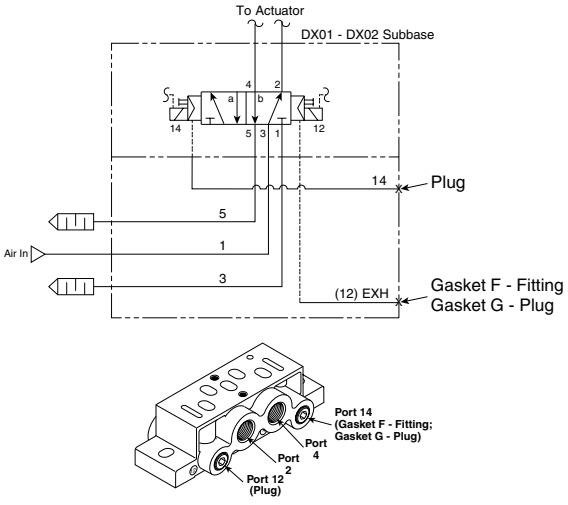


Vented Selector Gasket Positions

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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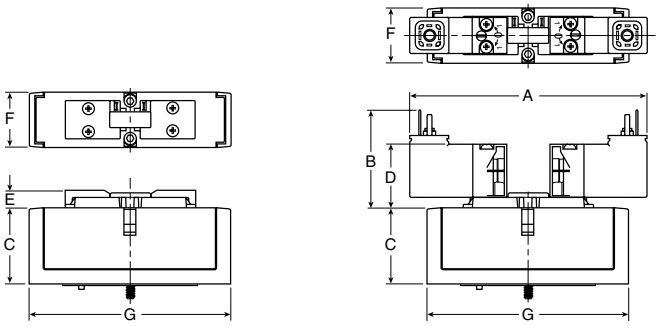
Valves

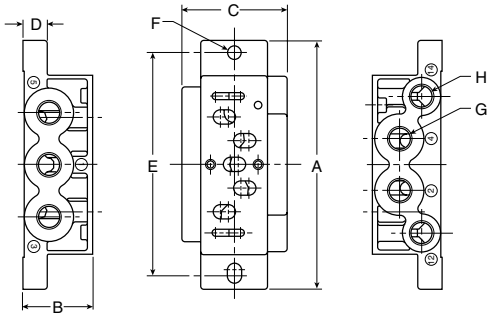


DX02 and DX01

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)

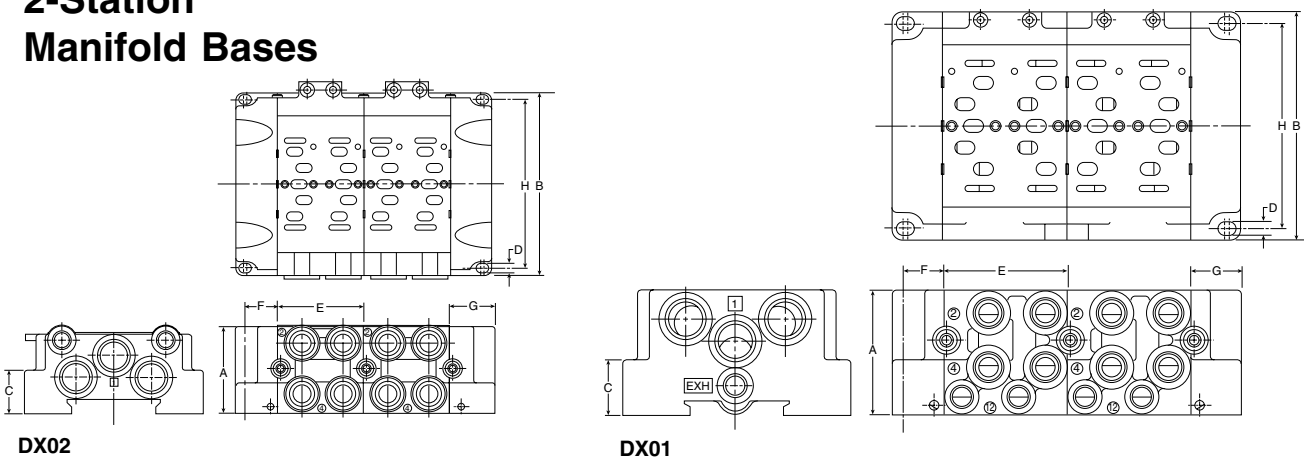
Individual Subbase



Series	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)

2-Station Manifold Bases

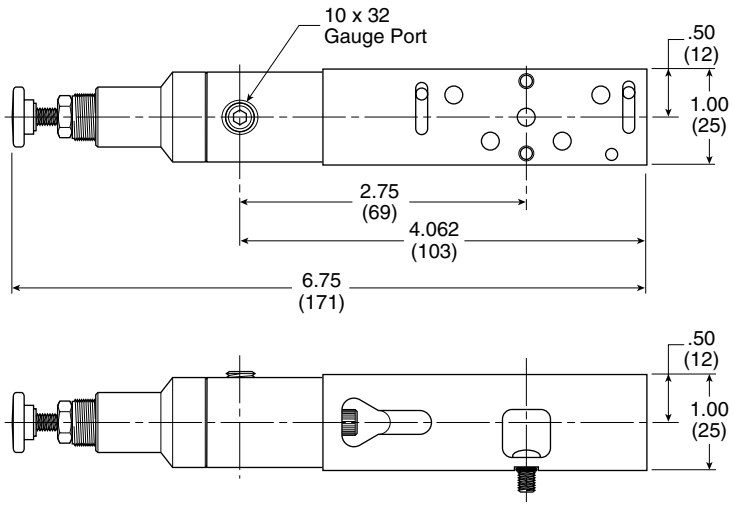


DX02 DX01

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)

Sandwich Regulator Kit
SFR01DX



Inches
(mm)

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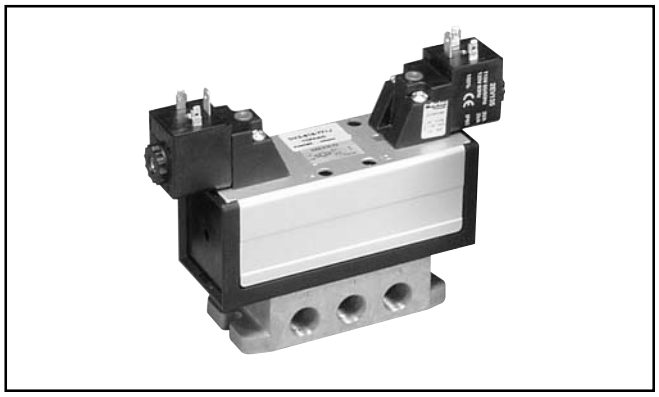
ISOMAX 5599-1



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 (C_V)

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		DC	Power (W / VA)
	AC			
	60Hz	50Hz		
M	—	—	24	2.5W
J	120	115	—	3.0VA

Data tested with LED and Surge Suppression.

Operating Pressure

Vacuum to 145 PSIG (10 bar)

Function		M.O.P. (bar)		
Remote Pilot		**DX1**	**DX2**	**DX3**
421	Single Remote Pilot, Spring Return	2.5	2.0	2.0
451	Single Remote Pilot, Differential Return	2.0	2.0	2.0
406	Double Remote Pilot	1.0	1.0	1.0
411	Double Remote Pilot, 3-Position, CE	3.0	2.5	2.5
416	Double Remote Pilot, 3-Position, APB	3.0	2.5	2.5
Solenoid Operated		**DX1**	**DX2**	**DX3**
621	Single Solenoid, 2-Position, Spring Return	2.5	2.0	2.0
651	Single Solenoid, 2-Position, Differential Return	2.0	2.0	2.0
606	Double Solenoid, 2-Position	1.0	1.0	1.0
611	Double Solenoid, 3-Position, CE	3.0	2.5	2.5
616	Double Solenoid, 3-Position, APB	3.0	2.5	2.5

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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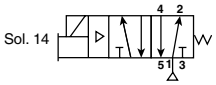
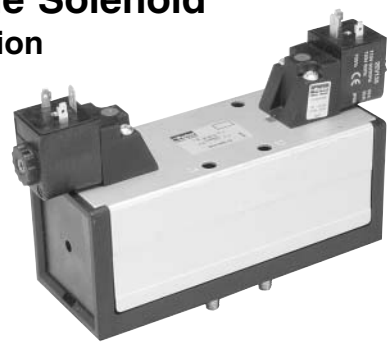
Single Solenoid
2-Position

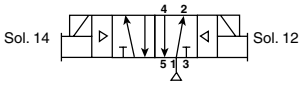


DX1	**DX1-621-771J**	120VAC	1.15 Cv
	DX1-621-771M	24VDC	
DX2	**DX2-621-771J**	120VAC	2.50 Cv
	DX2-621-771M	24VDC	
DX3	**DX3-621-771J**	120VAC	4.15 Cv
	DX3-621-771M	24VDC	

30mm 3-Pin Solenoid, NLMOR, Unlighted, Internal Pilot, Valve Less Base

Double Solenoid
2-Position

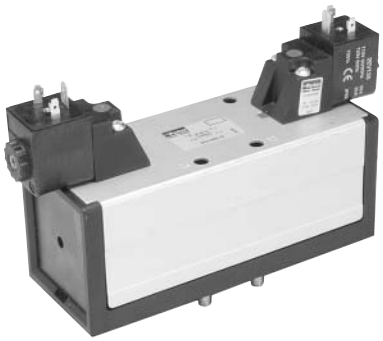


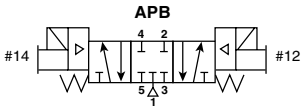


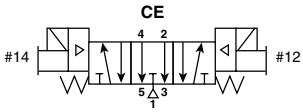
DX1	**DX1-606-771J**	120VAC	1.15 Cv
	DX1-606-771M	24VDC	
DX2	**DX2-606-771J**	120VAC	2.50 Cv
	DX2-606-771M	24VDC	
DX3	**DX3-606-771J**	120VAC	4.15 Cv
	DX3-606-771M	24VDC	

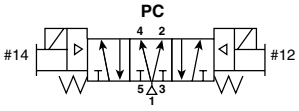
30mm 3-Pin Solenoid, NLMOR, Unlighted, Internal Pilot, Valve Less Base

Double Solenoid
3-Position APB
3-Position CE









	APB			CE			PC		
DX1	**DX1-616-771J**	120VAC	.75 Cv	**DX1-611-771J**	120VAC	.75 Cv	**DX1-613-771J**	120VAC	.75 Cv
	DX1-616-771M	24VDC		**DX1-611-771M**	24VDC		**DX1-613-771M**	24VDC	
DX2	**DX2-616-771J**	120VAC	2.40 Cv	**DX2-611-771J**	120VAC	2.40 Cv	**DX2-613-771J**	120VAC	2.40 Cv
	DX2-616-771M	24VDC		**DX2-611-771M**	24VDC		**DX2-613-771M**	24VDC	
DX3	**DX3-616-771J**	120VAC	4.00 Cv	**DX3-611-771J**	120VAC	4.00 Cv			
	DX3-616-771M	24VDC		**DX3-611-771M**	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 Hi-Flow Subbases and Manifolds, see pages 82.
For Compact and VDMA Subbase and Manifold, see pages 79 and 81.

BOLD OPTIONS ARE STOCKED

= "Most Popular"

Basic Series		Function		Operator	Override	Voltage	Connector
DX1	—	606	—	77	1	M	—

DX1 - size 1
ISO 5599-1

DX2 - size 2
ISO 5599-1

DX3 - size 3
ISO 5599-1

Function	
Remote Pilot	
421	**Single Remote Pilot, Spring Return****
451	**Single Remote Pilot, Diff Return**
406	**Double Remote Pilot**
411	**Double Remote Pilot, 3-Position, CE**
413	**Double Remote Pilot, 3-Position, PC***
416	**Double Remote Pilot, 3-Position, APB**
Solenoid Operated	
621	Single Solenoid, 2-Position, Spring Return**
651	Single Solenoid, 2-Position, Diff Return
606	Double Solenoid, 2-Position
611	Double Solenoid, 3-Position, CE
613	Double Solenoid, 3-Position, PC*
616	Double Solenoid, 3-Position, APB

* Not offered with DX3 Valves.

** Spring Return versions are air assisted.

Solenoid Operator	
70	**Remote Pilot**
77	**30mm**
96	15mm* Solenoid

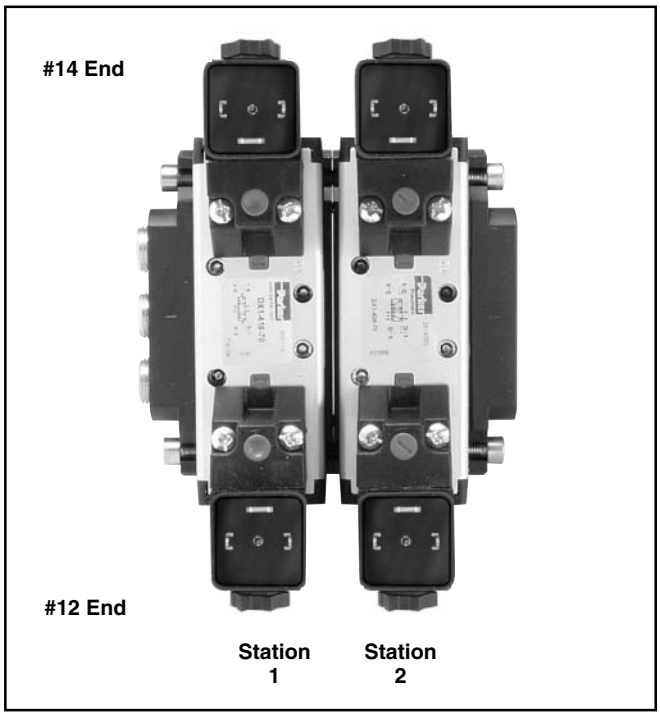
* Only offered with 24VDC and M12 Connector option, Non-locking Only.

Override	
Blank	**Remote Pilot**
1	**Flush Non-Locking**
3	Flush Locking

Voltage & Frequency	AC		DC
	60Hz	50Hz	
J	**120**		
M			**24**
Blank	Remote Pilot		

Connector	
Blank	**No Connector**
B	M12 Micro Connector*

* Only Available for Solenoid Operator Code "96".



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

= "Most Popular"

	Valve Series	Base Type	Port Type	Number of Stations	Transition Plate Kit
AA	DX1	C	N	03	—

Valve Series

DX1 ISO Size 1
DX2 ISO Size 2
DX3* ISO Size 3

* Only available with High Flow Bases

Base Type

H	High Flow
C	Compact
V*	VDMA

* Only available with G Ports

Port Type

G	BSPP "G"
N	NPT

Number of Stations

01
•
•
•
12

Transition Plate

Blank	No Transition Plate
C*	DX1 to DX2
D*	DX1 to DX3
E*	DX2 to DX3

* For Hi-Flow Manifolds Only.

Example: Application requires a 2-Station manifold.

Qty.	Part No.	
1	AADX2CN02	
1	DX2-621-771M	Valve Station 1
1	PJ2-SPB	Base Station 1
1	DX2-606-771M	Valve Station 2
1	PJ2-SPB	Base Station 2

5599-1 Compact Manifolds, Subbases & Accessories

Compact Subbases – Side Ported

ISO Size	Port Size	NPT	BSPP "G"
DX1	1/4	P2N-GS592SD	P2N-GS512SD
DX2	3/8	P2N-HS593SS	P2N-HS513SS

Note: See Hi-Flow for DX3.

Compact Subbases – Bottom Ported

ISO Size	Port Size	NPT
DX1	1/4	P2N-GS592SB
DX2	3/8	P2N-HS593SB

Compact Manifolds with End Ports

ISO Size	Port Size	NPT
DX1	1/4	PJ1-SPB
DX2	3/8	PJ2-SPB

Note: Includes Manifold Bolt Kit

PJ2-SPB

End Plate Kits

ISO Size	Port Size	NPT*
DX1	1/4	EP1DX
DX2	3/8	EP2DX

* Use only with NPT end plates shown above.

EP1DX

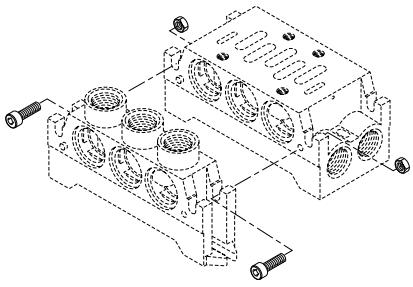
EP2DX

Manifold Bolt Kit (for PJ1-SPB & PJ2-SPB)

Part Number	Items
DX1M2MB	M5 Bolt & Nut*
DX2M2MB	M6 Bolt & Nut*

*Includes 10 Bolts & 10 Nuts

Torque Specifications
Size 1: 35 to 45 in-lbs (3.95 to 5.08 Nm)
Size 2: 130 to 140 in-lbs (14.69 to 15.82 Nm)

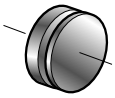


Compact Port Isolation Discs

ISO Size	Part Number
DX1	D1BD1
DX2	D2BD2
	D3BD3

Note: 3 Discs per Kit.

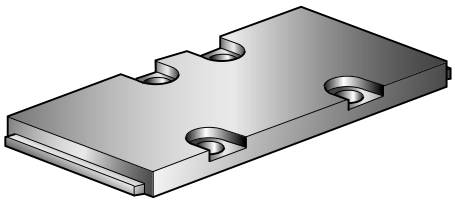
For PJ1-SPB & PJ2-SPB



Blanking Plate

ISO Size	Part Number
DX1	P2N-AA5B
DX2	P2N-BA5B
DX3	P2N-CA5B

Note: Gasket & Mounting Bolts included.



Sandwich Flow Control

ISO Size	Part Number
DX1	SFC1DX
DX2	SFC2DX

Note: Gasket & Mounting Bolts included.

Flow Control Bolt Kits

ISO Size	Part Number
DX1	FBK1DX
DX2	FBK2DX

Note: 4 Bolts per Kit.

Sandwich Regulator

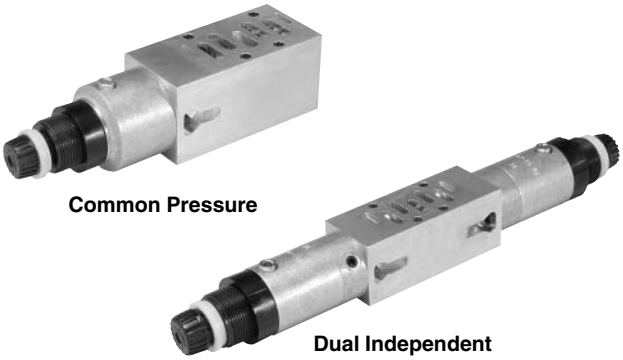
ISO Size	Common Pressure	Dual Independent
DX1	SFR1DX	DFR1DX
DX2	SFR2DX	DFR2DX

Note: Gasket & Mounting Bolts included.

Sandwich Regulator Bolt Kits

ISO Size	Part Number
DX1	RBK1DX
DX2	RBK2DX

Note: 4 Bolts per Kit.



Regulator & Flow Control Bolt Kits

ISO Size	Part Number
DX1	CBK1DX
DX2	CBK2DX

Note: Bolts used to stack valve, regulator and flow control to base.

Note: 4 Bolts per Kit.

VDMA Bottom Port Manifolds – Form C

ISO Size	Port Size	BSPP "G"
DX1	1/4"	P2N-VM512MB
DX2	3/8"	P2N-WM513MB

Note: See High Flow Bases for DX3.

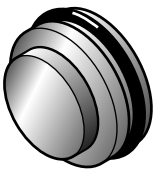
VDMA End Plates – Form D

ISO Size	Port Size	BSPP "G"
DX1	3/8"	P2N-VM513E
DX2	1/2"	P2N-WM514ES

Note: For use with VDMA Form C Manifolds.

VDMA Isolation Plugs – Main Galley

ISO Size	Part Number
DX1 1	P2N-VK0P
DX2 2	P2N-WK0P



Hi-Flow Manifold and Subbase Kit Ordering Code

Basic Series	Mounting/ Port Size	Enclosures/ Lead Length	Wiring Options	Factory Designator
PS4011 PS4111 PS4211	55	0	–	P

Mounting/ Port Size

1	**Subbase, Side Port**	3	1/4" NPT – 1
2	Subbase, Bottom / Side Port	4	1/4" BSPP "G" – 1
5*	**Manifold, End Ports**	**5**	**3/8" NPT – 1, 2**
6	**Manifold, Bottom / End Port**	**6**	**3/8" BSPP "G" – 1, 2**
8**	Manifold, Aux In / Out Bottom / End Port	**7**	**1/2" NPT – 2, 3**
		8	**1/2" BSPP "G" – 2, 3**
		9	**3/4" NPT – 3**
		0	**3/4" BSPP "G" – 3**

* N/A for DX1
** N/A for DX2 / DX3

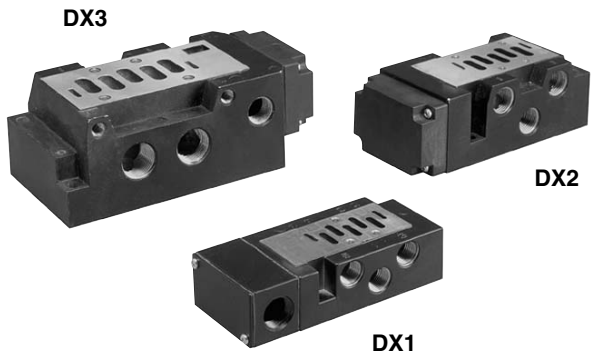
Enclosures/ Lead Length

0	**None, No Electrical Plug**

Wiring Options

Blank	**None**

Subbase Kits

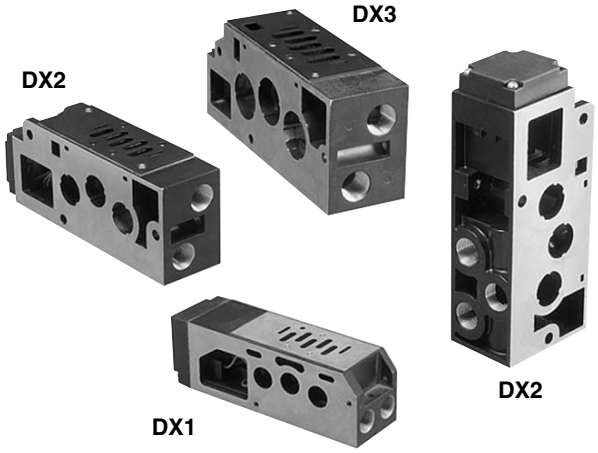


Mounting / Base Style DX1 | DX2 | DX3

1 *#1, #2, #3, #4, and #5 Side Ports Tapped; #12 & #14 Side Pilot Ports Tapped 1/8"*

2 *#1, #2, #3, #4, and #5 Side / Bottom Ports Tapped; (5) Pipe Plugs Included; #12 & #14 Side Pilot Ports Tapped 1/8"*

Manifold Kits



Mounting / Base Style DX1

6 *#2 & #4 End / Bottom Ports Tapped; (2) Pipe Plugs Included.*

8 *#2 & #4 End & Bottom Ports tapped with drilled hole in #1 Galley (flat side) and hole in #2 Galley (gasket track side).*

Mounting / Base Style DX2 | DX3

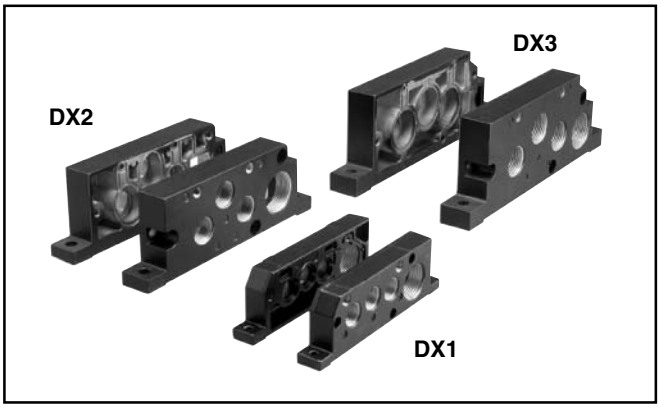
5 *#2 & #4 End Ports Tapped*

6 *#2 & 4 End Ports, #1, #2 & #4 Bottom Ports Tapped; (3) Pipe Plugs Included*

End Plate

Size	Port Size	Kit Number	
		NPT	BSPP "G"
DX1	1/2"	**PS353100BP**	PS353101BP
DX2	3/4"	**PS363100P**	PS363101P
DX3	1"	**PS373100P**	PS373101P

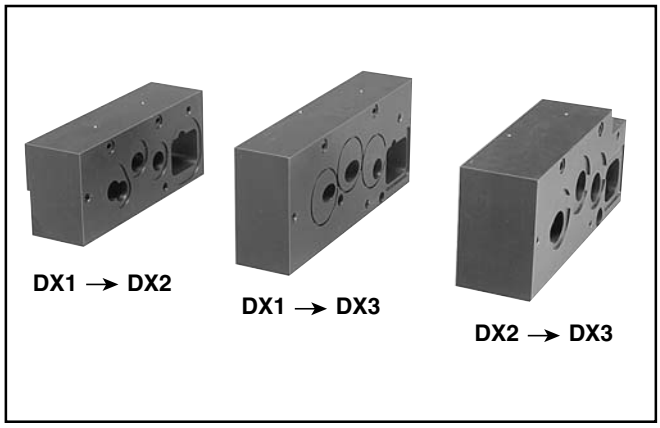
Kit includes: (3) Lock Washers, (3) Socket Head Screws, (3) Flat Washers, (1) Gasket, (1) End Plate without gasket track, and (1) End Plate with gasket track.



Transition Plate

Size	Kit Number	
	NPT	BSPP "G"
DX1 to DX2	PS3627000P	PS3627001P
DX1 to DX3	PS3726000P	PS3726001P
DX2 to DX3	PS3727000P	PS3727001P

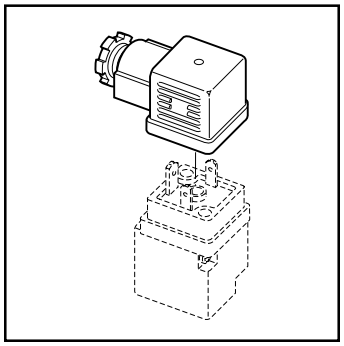
- Allows manifolding of multiple size ISO valves.
- LOOKING AT THE CYLINDER PORTS, the smaller valve is on the LEFT.
- Transition Plate width:
  - 1 to 2 55 mm (2.16")
  - 1 to 3 49 mm (1.93")
  - 2 to 3 61.5 mm (2.42")
- **Kit includes:** (1) Standard Left Hand End Plate - smaller, (1) Standard Right Hand End Plate - larger, (1) Transition Plate, Bolts, Washers and Gaskets.



Female Electrical Connectors (IP65 Rated)

30mm 3-Pin ISO 4400 (DIN 43650A), Enclosure "L"

Connector	Connector with 6' (2m) Cord	Description
PS2028CP	PS2028JCP	Unlighted
PS203279CP	PS2032J79CP*	Light – 6-48V, 50/60Hz; 6-48VDC
PS203283CP	PS2032J83CP*	Light – 120V/60Hz
PS203283CP	N/A	Light – 240V/60Hz



* With surge suppression.

Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 8 to 10 mm (0.31 to 0.39 Inch); Contact Spacing: 18 mm

Solenoid Replacements

120VAC	24VDC
PS2EV135J	PS2EV133M

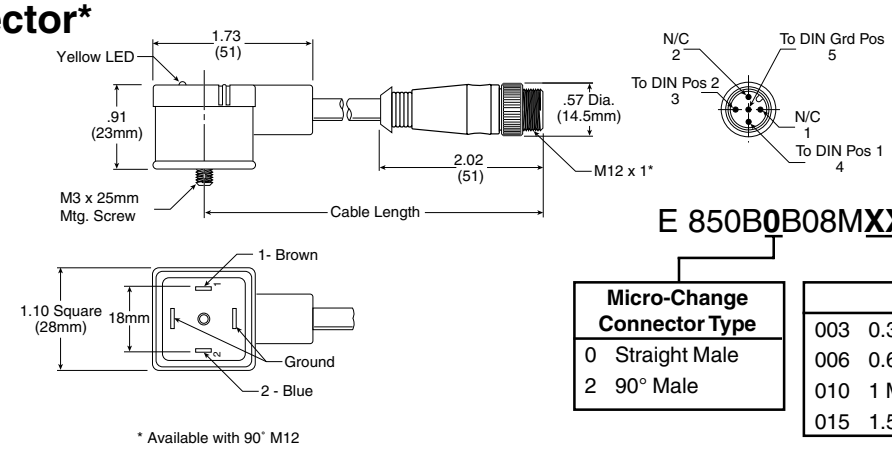
* Contact factory for other voltages.

CNOMO Air Pilot to Solenoid Conversion Kit

Voltage*	120VAC	24VDC
Type EV30 3.0W (Connector 30 x 30)	**3VA**	**2.5W**
Impulse Manual Override (Nonlocking)	EV30J1200	EV30M1200
Index Locking Manual Override (Locking)	EV30J3200	EV30M3200

* Contact factory for other voltages.

30mm DIN 43650A to 5-Pin, M12 Connector*



E 850B**0**B08M**XXX**

Micro-Change Connector Type	
0	Straight Male
2	90° Male

Cable Length			
003	0.3 Meter	020	2 Meter
006	0.6 Meter	030	3 Meter
010	1 Meter	050	5 Meter
015	1.5 Meter		

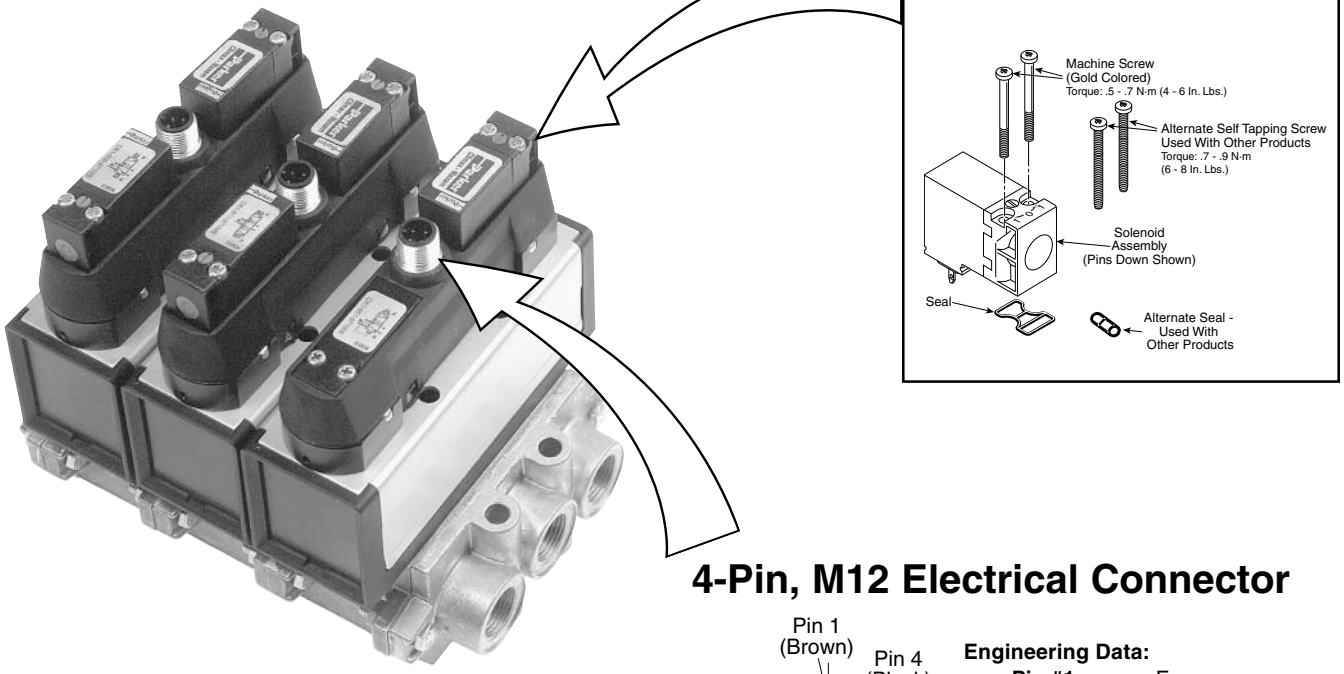
*** For Availability, Contact Woodhead - Brad Harrison www.connector .com, 1-800-225-7724**

15mm Solenoid Replacement Kit

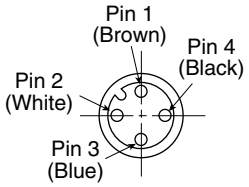
(For Solenoid Operator Option "96")

Voltage		Power	Holding	Inrush	Override
Code	DC	(VA 60Hz/W)	(mA)	(mA)	Non-Locking
M	24	2.3W	94	—	PS3541B49P

Data tested with LED and Surge Suppression.
Voltage rated +10 / -15%.



4-Pin, M12 Electrical Connector



Engineering Data:

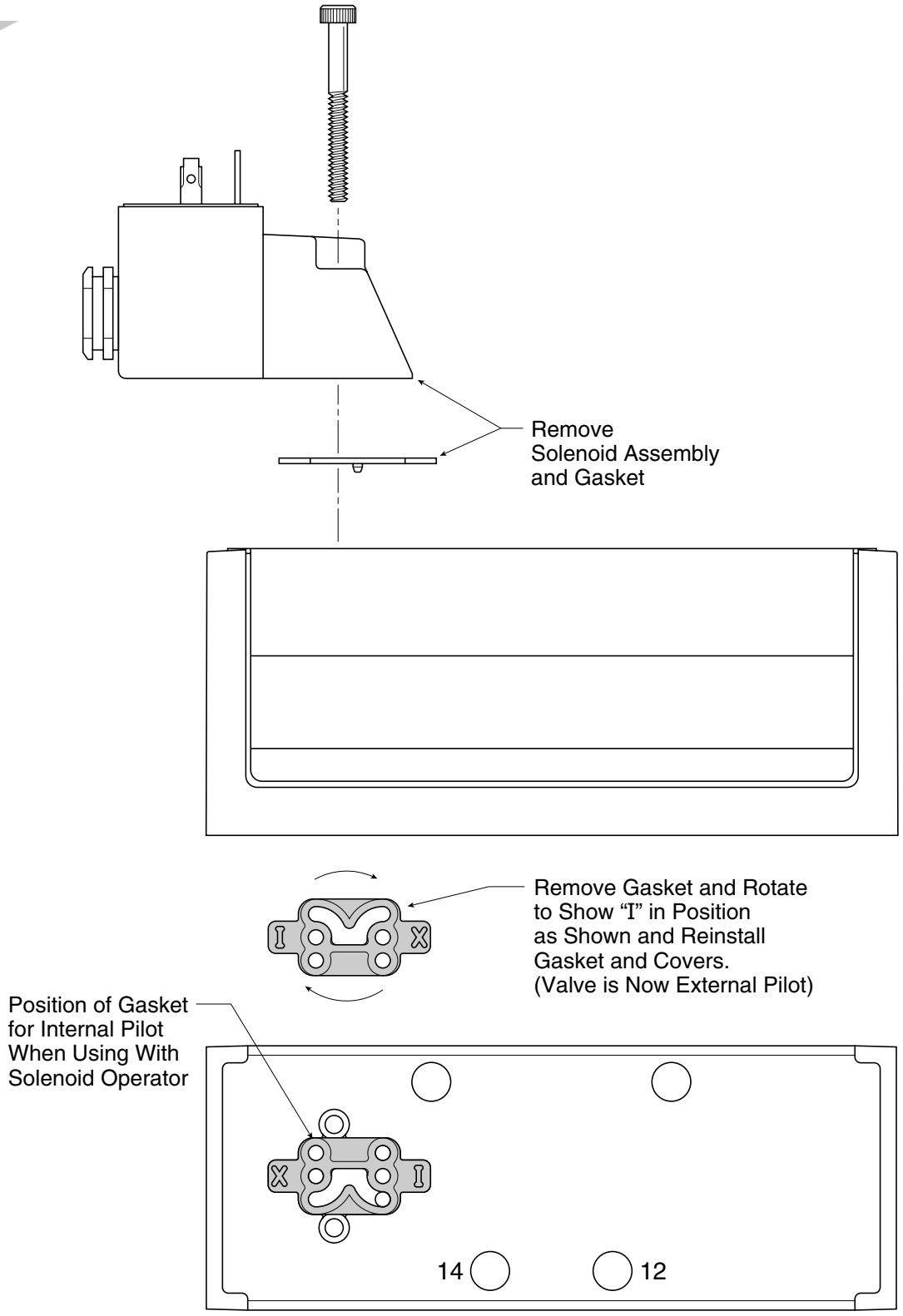
Pin #1	Free
Pin #2	24VDC, Side 12
Pin #3	0V Common
Pin #4	24VDC, Side 14

DX1

DX2

DX3

DX1 / DX2 / DX3
Internal / External Pilot Conversion Instructions



DX1

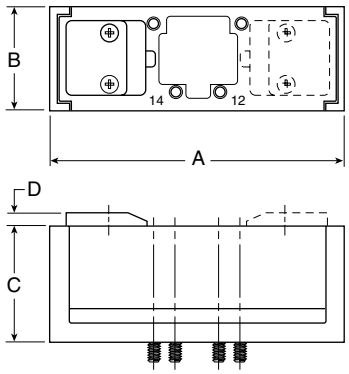
DX2

DX3

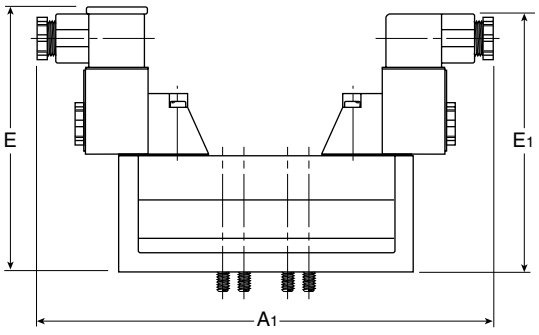
Air Operated Valves

	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)



Solenoid Operated Valves



	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
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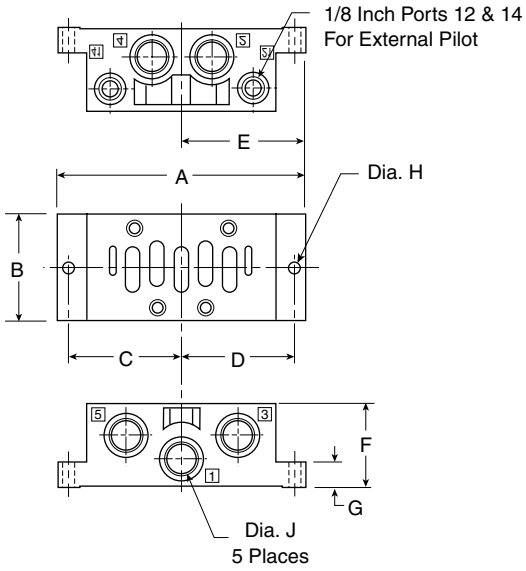
DX1
DX2
DX3

Side Ported Subbase

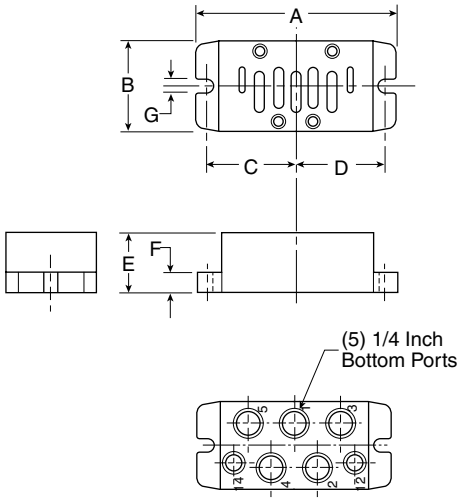


	J	A	B	C	D	E	F	G	H
P2N-GS592SD	NPT1/4"	4.33 (110)	1.89 (48)	1.93 (49)	1.93 (49)	2.17 (55)	1.26 (32)	.39 (9.9)	.22 (5.6)
P2N-GS512SD	G1/4"								
P2N-HS593SS	NPT3/8"	4.88 (124)	2.20 (56)	2.21 (56)	2.21 (56)	2.44 (62)	1.57 (40)	.51 (13)	.22 (5.5)
P2N-HS513SS	G3/8"								

Inches (mm)

DX1
DX2
DX3

Bottom Ported Subbase



Bottom Ported Subbase

	H	A	B	C	D	E	F	G
P2N-GS592SB	NPT1/4"	3.94 (100)	1.58 (40)	1.77 (45)	1.77 (45)	1.14 (29)	.39 (10)	.21 (5.4)
P2N-HS593SB	NPT3/8"	4.57 (116)	1.97 (50)	2.05 (52)	2.05 (52)	1.26 (32)	.39 (10)	.25 (6.4)

Inches (mm)

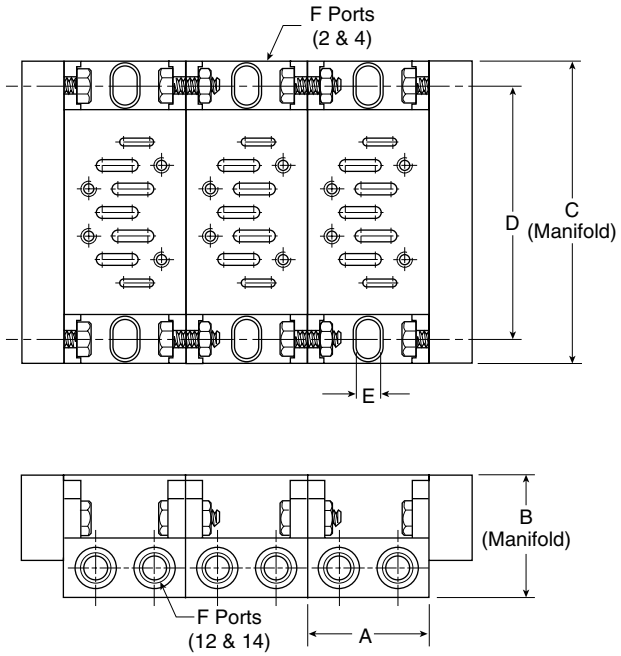
DX1

DX2

DX3

Manifolds

Manifold Mounting Bases with End Ports



DX3 Shown

Inches (mm)

						F	
	A	**B**	**C**	**D**	**E**	**Ports 12 & 14**	**Ports 2 & 4**
PJ1-SPB	1.85 (47)	1.81 (46)	4.53 (115)	3.78 (96)	.24 (6)	1/8"	1/4"
PJ2-SPB	2.20 (56)	1.97 (50)	4.72 (120)	4.13 (105)	.24 (6)	1/8"	3/8"

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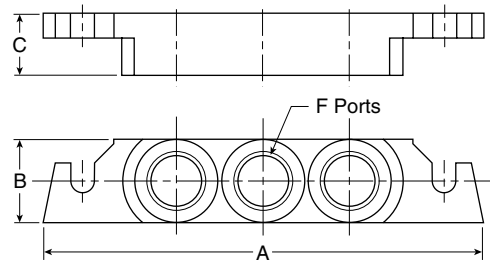
DX1

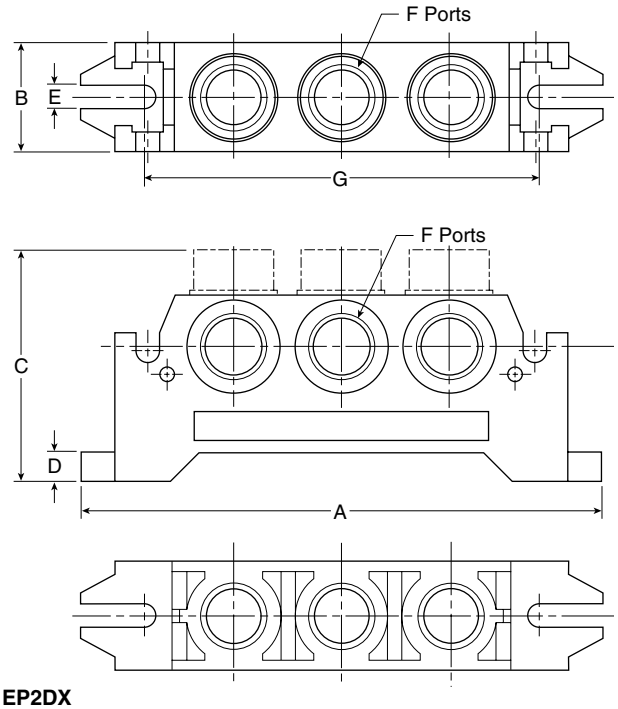
DX2

DX3

End Plates



EP1DX



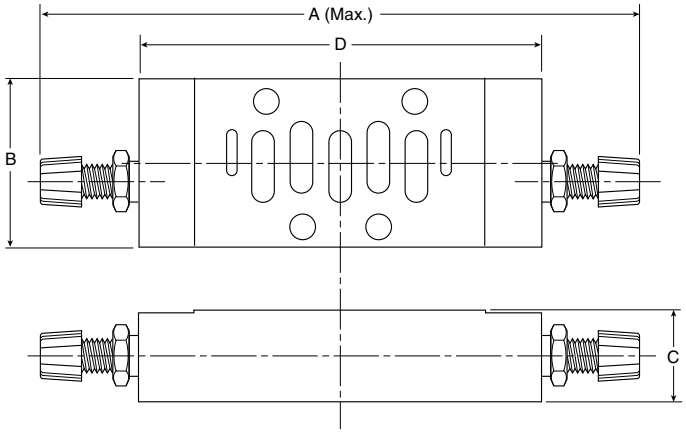
EP2DX

Inches (mm)

	A	B	C	D	E	F	G
EP1DX	4.53 (115)	0.91 (23)	0.63 (16)	—	—	3/8"	—
EP2DX	5.43 (138)	1.04 (26)	2.44 (62)	.27 (7)	.25 (6)	1/2"	4.13 (105)

DX1
DX2

Sandwich Flow Controls

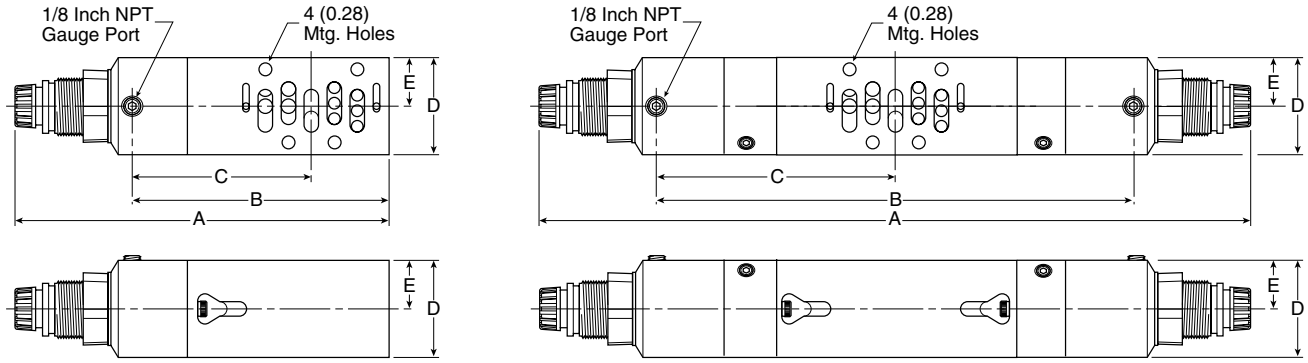


	A	B	C	D
SFC1DX	6.00 (152)	1.50 (38)	.94 (24)	3.81 (97)
SFC2DX	7.09 (180)	2.06 (52)	1.14 (29)	4.91 (125)

Inches (mm)

DX1
DX2

Sandwich Regulators



Part Number (Series)	A	B	C	D	E
SFR1DX (DX1)	6.73 (170.9)	4.49 (114)	3.19 (81)	1.54 (39.1)	.77 (19.6)
SFR2DX (DX2)	7.67 (194.8)	5.23 (132.8)	3.62 (91.9)	2.05 (52.1)	1.03 (26)

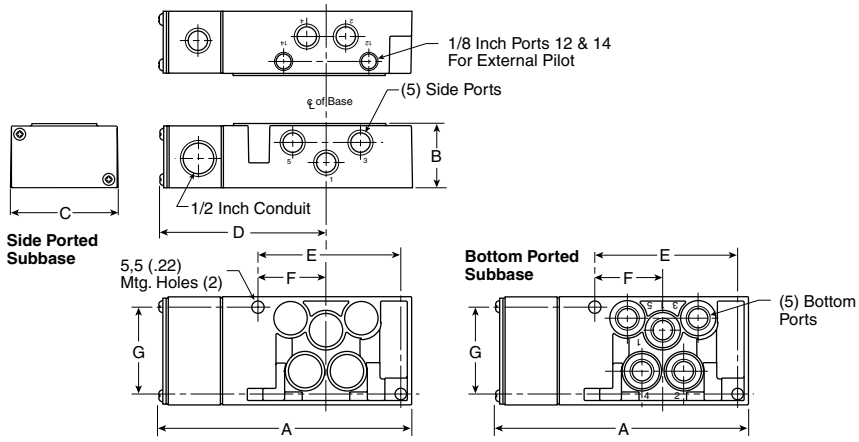
Inches (mm)

Part Number (Series)	A	B	C	D	E
DFR1DX (DX1)	12.12 (307.8)	7.64 (194.1)	3.82 (97)	1.54 (39.1)	.77 (19.6)
DFR2DX (DX2)	13.54 (343.98)	8.66 (219.9)	4.33 (109.9)	2.05 (52.1)	1.03 (26)

Inches (mm)

DX1

DX1 / 5599-1 Subbase



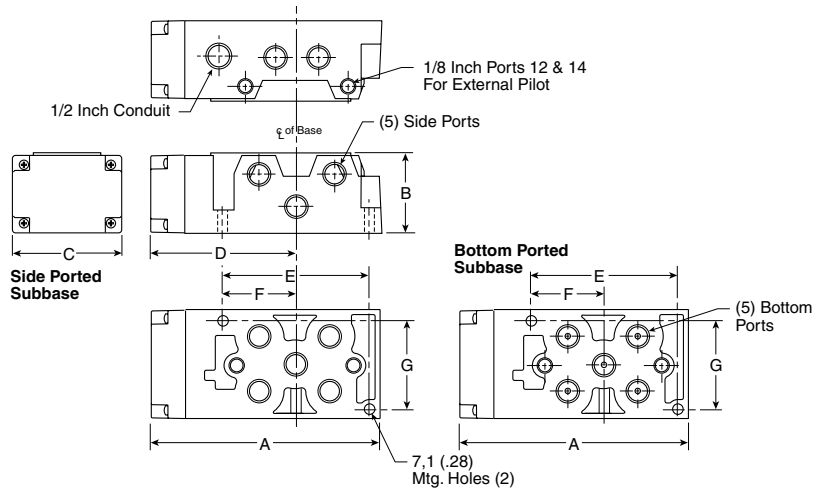
Dimensions

A	B	C	D	E
5.83 (148)	1.48 (38)	2.50 (64)	3.86 (98)	3.29 (84)
F	**G**			
1.57 (40)	2.00 (51)			

Inches (mm)

DX2

DX2 / 5599-1 Subbase



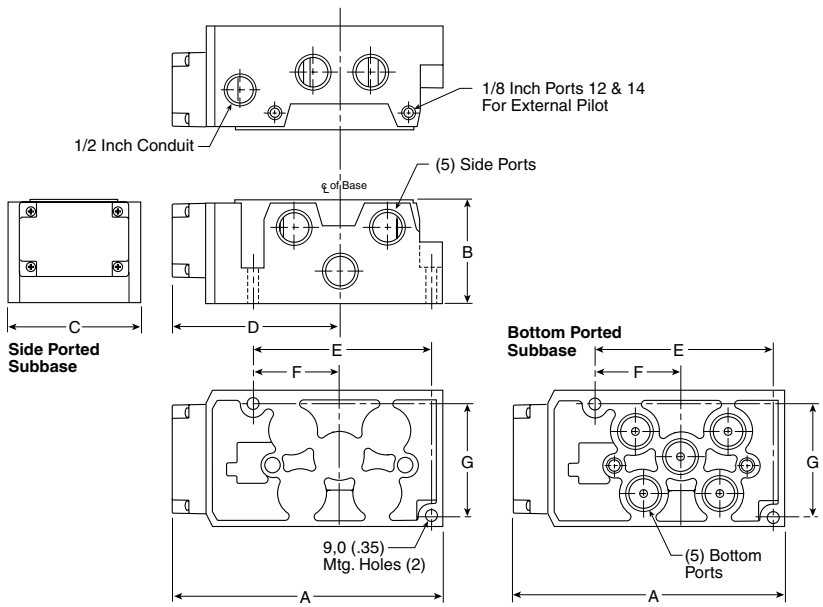
Dimensions

A	B	C	D	E
6.69 (170)	2.33 (59)	3.15 (80)	4.25 (108)	4.21 (107)
F	**G**			
2.07 (53)	2.56 (65)			

Inches (mm)

DX3

DX3 / 5599-1 Subbase



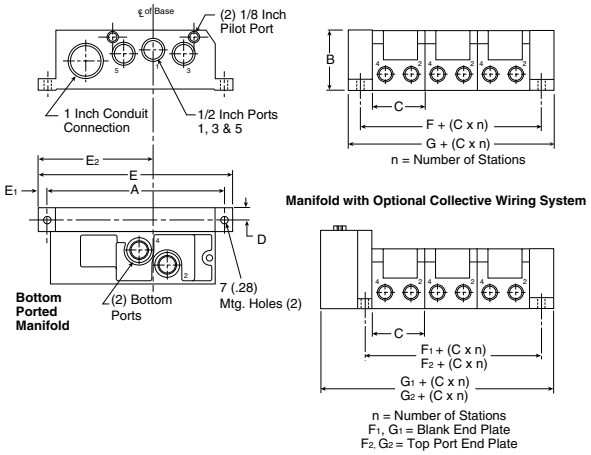
Dimensions

A	B	C	D	E
7.90 (201)	2.96 (75)	3.90 (99)	4.92 (125)	5.14 (131)
F	**G**			
2.50 (64)	3.24 (82)			

Inches (mm)

DX1

DX1 5599-1 Manifold



Dimensions

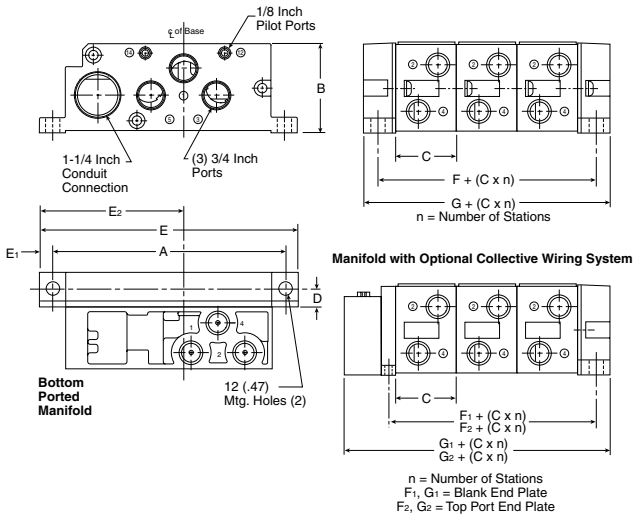
A	B	C	D	E
6.50 (165)	2.20 (56)	1.93 (49)	.44 (11)	7.15 (182)
E_1	**E_2**	**F**	**F_1**	**F_2**
.33 (8)	4.25 (108)	.87 (22)	.64 (16)	.90 (23)
G	**G_1***	**G_2***		
1.80 (46)	2.56 (65)	3.26 (83)		

Inches (mm)

* For 19-Pin Round Connector Module, add 1.08" (27.5mm) to the G1 & G2 dimensions.

DX2

DX2 5599-1 Manifold



Dimensions

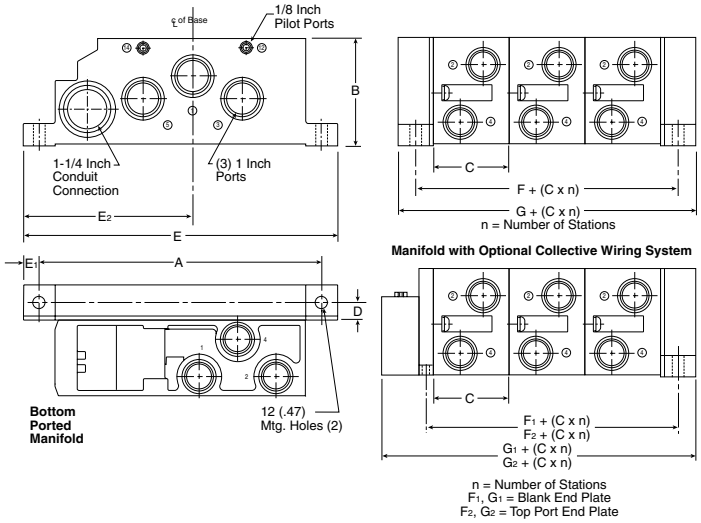
A	B	C	D	E
8.46 (215)	3.35 (85)	2.20 (56)	.59 (15)	9.41 (239)
E_1	**E_2**	**F**	**F_1**	**F_2**
.47 (12)	5.28 (134)	1.18 (30)	1.06 (27)	1.30 (33)
G	**G_1***	**G_2***		
2.36 (60)	3.41 (87)	3.88 (99)		

Inches (mm)

* For 19-Pin Round Connector Module, add 1.08" (27.5mm) to the G1 & G2 dimensions.

DX3

DX3 5599-1 Manifold



Dimensions

A	B	C	D	E
10.43 (265)	4.13 (105)	2.80 (71)	.65 (17)	11.61 (295)
E_1	**E_2**	**F**	**F_1**	**F_2**
.59 (15)	6.26 (159)	1.30 (33)	1.12 (29)	1.59 (41)
G	**G_1***	**G_2***		
2.60 (63)	3.54 (90)	4.49 (114)		

Inches (mm)

* For 19-Pin Round Connector Module, add 1.08" (27.5mm) to the G1 & G2 dimensions.

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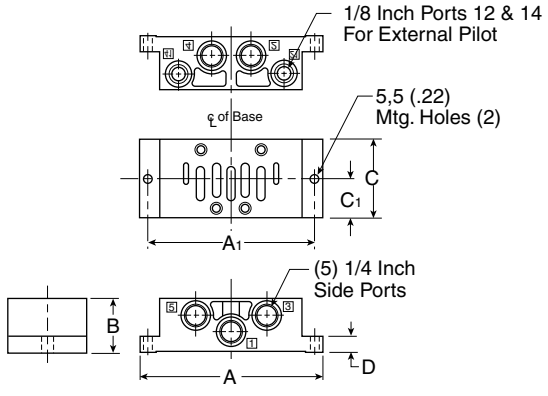
DX1 VDMA Subbase

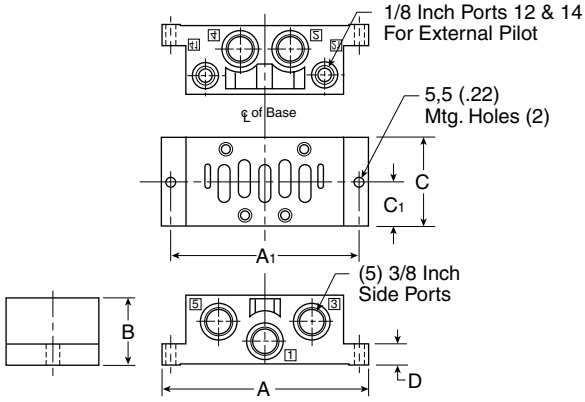


Dimensions

A	A1	B	C	C1
4.33 (110)	3.86 (98)	1.26 (32)	1.89 (48)	.94 (24)
D				
.39 (10)				

Inches (mm)

DX2 VDMA Subbase

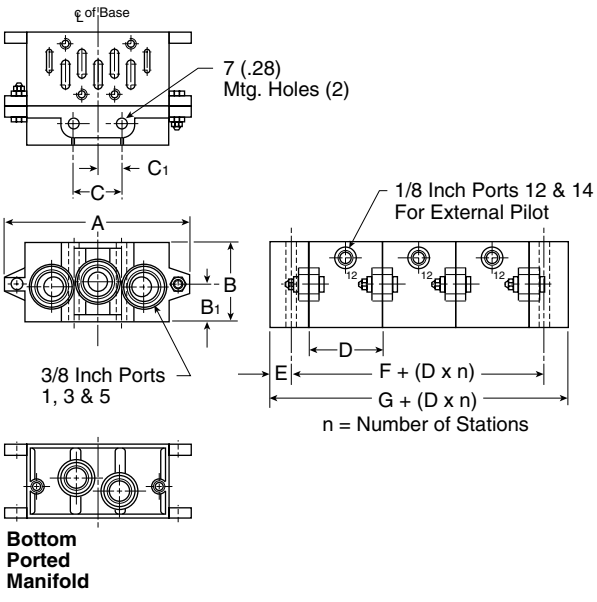


Dimensions

A	A1	B	C	C1
4.88 (124)	4.41 (112)	1.57 (40)	2.20 (56)	1.10 (28)
D				
.51 (13)				

Inches (mm)

DX1 VDMA Manifold

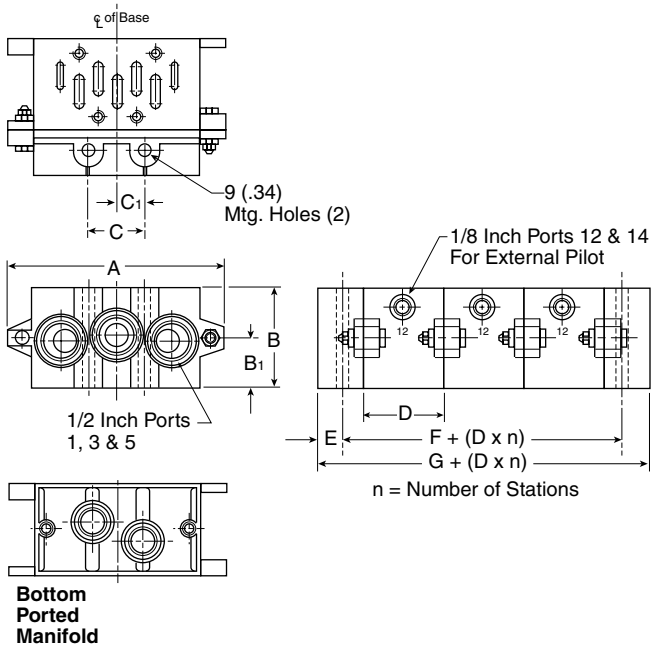


Dimensions

A	B	B1	C	C1
4.33 (110)	1.81 (46)	.94 (24)	1.10 (28)	.55 (14)
D	**E**	**F**	**G**	
1.69 (44)	.43 (11)	.87 (22)	1.74 (44)	

Inches (mm)

DX2 VDMA Manifold



Dimensions

A	B	B1	C	C1
5.31 (135)	1.85 (47)	.94 (24)	1.38 (35)	.69 (18)
D	**E**	**F**	**G**	
2.20 (56)	.51 (13)	1.02 (26)	2.05 (52)	

Inches (mm)

Definitions

CE ..... Certification of a product to meet European Community standards.

CSA NRTL-C ... Canadian Standards Association and applicable for UL. (See Pages 28 & 44)

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

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

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

Bi-Polar ... Solenoids are non-polarity sensitive and can be reverse wired.

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

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

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

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

bar ..... 14.7 PSIA

kPa ..... Kilopascals. International measure of pressure. 1035 kPa = 150 PSIG

PSIG = 0 PSIA = 14.7 In. of Hg = 29.92 kPa = 0

Product Shipping Weights (lb)

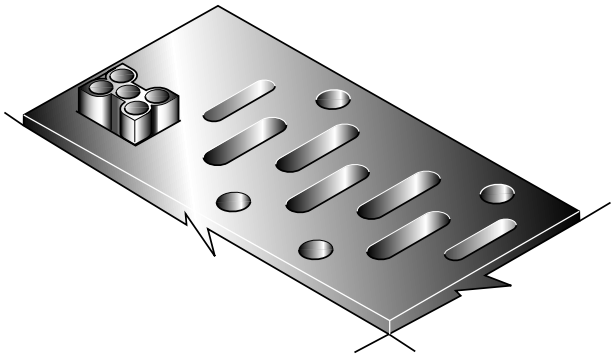
DX1	1.2 lbs.
DX1	1.8 lbs.
DX3	2.9 lbs.
DX01	0.5 lbs.
DX02	0.4 lbs.

Electrical Enclosure IP Ratings

		2nd Numeral: Degree of protection with respect to harmful ingress of water								
		0	1	2	3	4	5	6	7	8
1st Numeral: Degree of Protection with respect to persons and solid objects		Non Protected	Protected against dripping	Protected against dripping water ±15° angle	Protected against spraying water of ±60° angle	Protected against splashing water of	Protected against water jets water	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

Parker Pneumatic

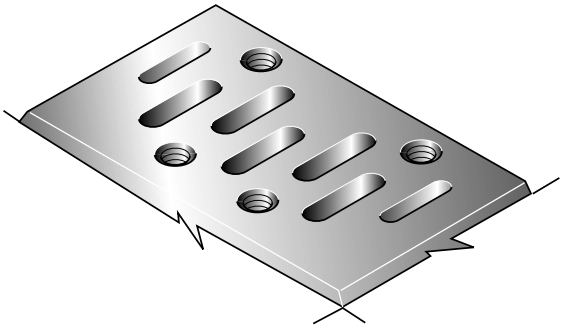
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatic



5599-2

Body-to-Base Plug-In Subbase Valves

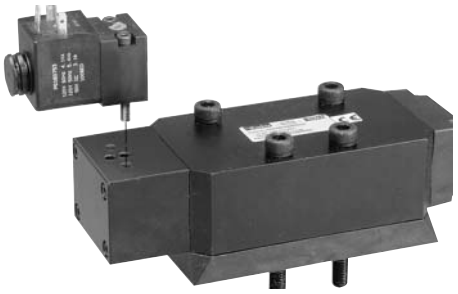
The ISO Standard 5599-2 specifies an interface pattern for a common subbase valve consisting of pressure passages 1, 3, 5, 2, & 4, pilot passages 12 & 14, and a plug-in electrical connector. The width of the pattern and location of the 4-bolt holes are also specified. This ISO standard specifies 6 different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



5599-1

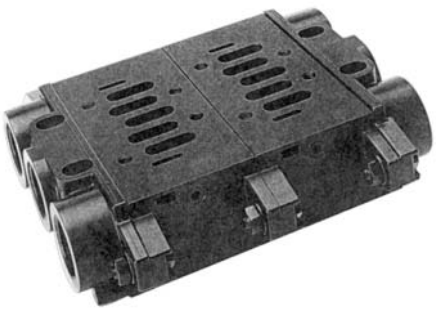
External Electrical Connection Subbase Valves

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.



CNOMO 06-05-01

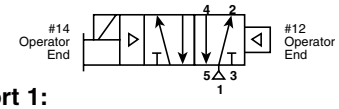
The solenoid pilot interface often used with ISO 5599-1 valves is the CNOMO interface. The CNOMO interface specifies the pressure and actuator port, and the screw holes for the mounting of this solenoid pilot. It is commonly used in European automotive plants, and its usage is becoming more prevalent for industrial ISO 5599-1 valves.



VDMA 24345

The VDMA 24345 is a standard for ISO 5599-1 Manifolds and Subbase specifying a common base mounting footprint in addition to ISO 5599-1 Interface standard. (VDMA is a German organization - Verband Deutscher Maschinen und Anlagen-Bauer - which is translated to Federation of German Machine and Unit Builders.)

Single Solenoid

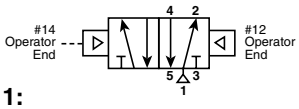


Single Pressure At Inlet Port 1:

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

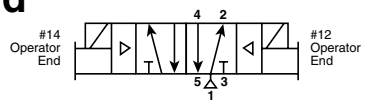


Single Pressure At Inlet Port 1:

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

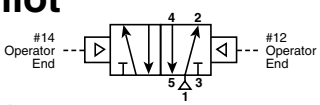


Single Pressure At Inlet Port 1:

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.

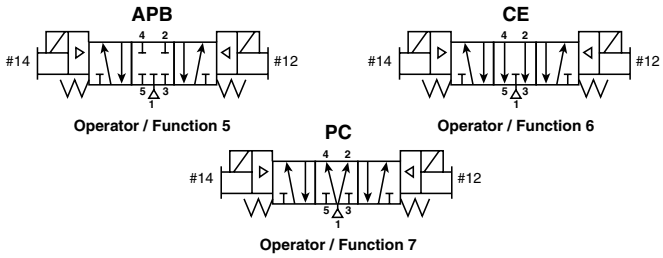
Double Remote Pilot

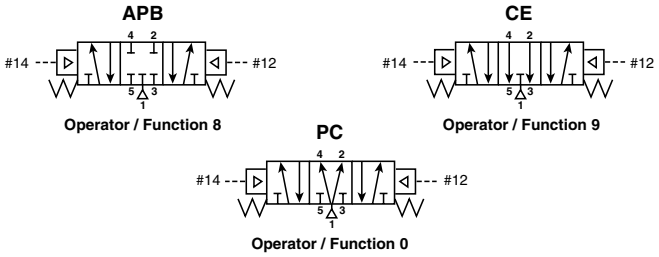


Single Pressure At Inlet Port 1:

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.





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

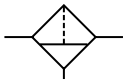
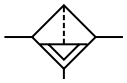
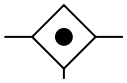
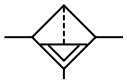
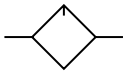
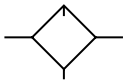
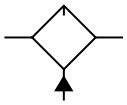
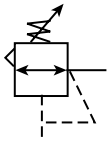
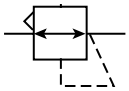
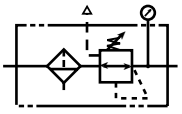
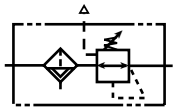
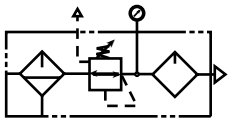
Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Function 0: Pressure Center

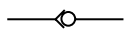
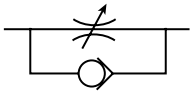
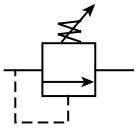
Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.

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

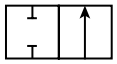
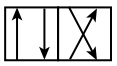
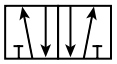
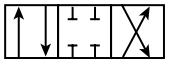
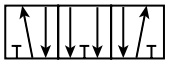
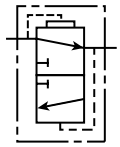
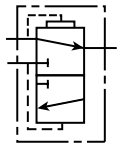
AIR PREPARATION UNITS

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

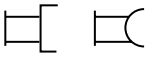
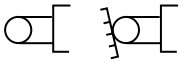
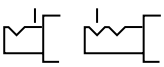
PNEUMATIC VALVES

Symbol	Description
	CHECK
	FLOW CONTROL
	RELIEF VALVE

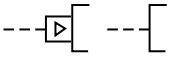
PNEUMATIC VALVES (Cont'd)

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

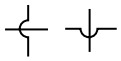
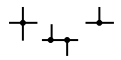
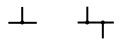
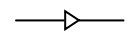
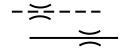
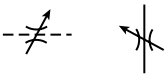
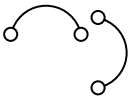
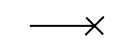
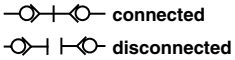
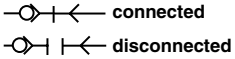
VALVE ACTUATORS

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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Saving Money and Space by Sizing Your Valves Properly
This catalog gives you a flow rating (C_V) for each valve in the Parker Hannifin line. You can "plug" *your* requirements into the following simple formula, and determine the C_V 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 C_V (Capacity Co-efficient).

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

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 C_V 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 (C_V) tables which describe the individual valve capacities.

Selecting the Valve Model, Options and Accessories
Having determined C_V, 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 ΔP	5 PSI ΔP	10 PSI ΔP
10	1.6	.155	.102	
20	2.3	.129	.083	.066
30	3.0	.113	.072	.055
40	3.7	.097	.064	.048
50	4.4	.091	.059	.043
60	5.1	.084	.054	.040
70	5.7	.079	.050	.037
80	6.4	.075	.048	.035
90	7.1	.071	.045	.033
100	7.8	.068	.043	.031
110	8.5	.065	.041	.030
120	9.2	.062	.039	.029
130	9.9	.060	.038	.028
140	10.6	.058	.037	.027
150	11.2	.056	.036	.026
160	11.9	.055	.035	.026
170	12.6	.054	.034	.025
180	13.3	.052	.033	.024
190	14.0	.051	.032	.024
200	14.7	.050	.031	.023

Note: Use "A" constant at 5 PSI Δ P for most applications. On very critical applications, use "A" at 2 PSI Δ P. You will find in many cases, a 10 PSI Δ 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

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

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

C_V = Q x "A" (Table 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.)

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Notes

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International Inline Valves

Manual and Mechanical

Section F

F

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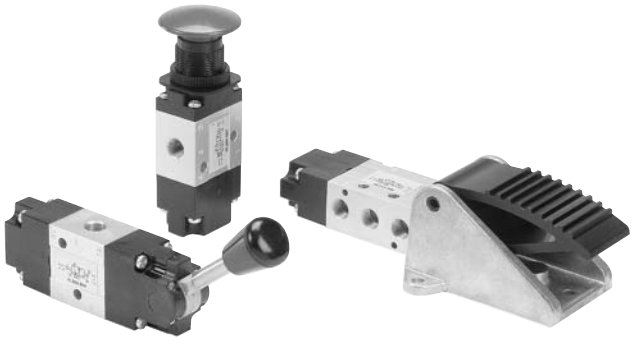
International Inline Valves

- 1/8", 1/4", 1/2" Ports
- 3 & 5-Port, 2 & 3-Position
- Dry, Non-lubricated or Lubricated Air Supply
- Robust Design



Material Specifications

Body ..... Aluminium
Seals ..... Polyurethane - 1/8" & 1/4", Nitrile - 1/2"
Spool ..... Nickel-plated Aluminum

Valve Specifications

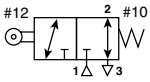
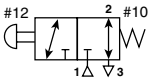
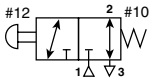
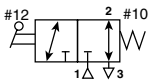
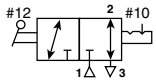
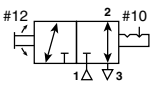
Air Condition:
Filtered, regulated, non-lubricated, lubricated or dry

Flow Rate at 6 bar:
1/8" Valves 14dm3/sec (30 SCFM)
1/4" Valves 28dm3/sec (59 SCFM)
1/2" Valves 98dm3/sec (208 SCFM)

Maximum Operating Pressure:
10 bar (145 PSIG)

Operating Temperature Range:
-20°C to 70°C (-4°F to 158°F)

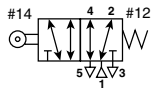
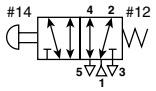
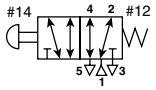
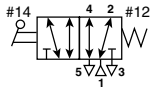
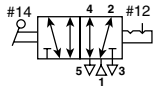
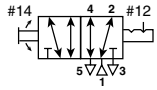
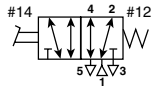
3/2 Valves

Valve Type			Valve Size		
			1/8	1/4	1/2
	Roller - Spring	BSP	8L301-372	8L302-372	—
		NPT	8M301.372	8M302.372	—
	Push-button - Spring	BSP	8L301-302*	8L302-302*	—
		NPT	8M301.302*	8M302.302*	—
	Palm-Button - Spring	BSP	8L301-312*	8L302-312*	—
		NPT	8M301.312*	8M302.312*	—
	Lever - Spring	BSP	—	8L302-202	—
		NPT	—	8M302.202	—
	Lever - Detent	BSP	8L301-204	8L302-204	8L304-204
		NPT	8M301.204	8M302.204	8M304.204
	Twist - Detent	BSP	—	8L302-254	—
		NPT	—	8M302.254	—

* Replace asterisk with appropriate button reference color letter: B-Black, G-Green, R-Red.

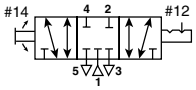
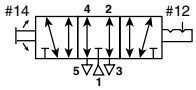
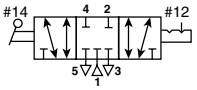
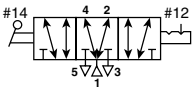
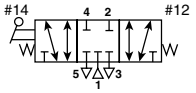
F

5/2 Valves

Valve Type			Valve Size		
			1/8	1/4	1/2
	Roller - Spring	BSP	8L501-372	8L502-372	—
		NPT	8M501.372	8M502.372	—
	Push-button - Spring	BSP	8L501-302*	8L502-302*	—
		NPT	8M501.302*	8M502.302*	—
	Palm-button - Spring	BSP	8L501-312*	8L502-312*	—
		NPT	8M501.312*	8M502.312*	—
	Lever - Spring	BSP	—	8L502-202	—
		NPT	—	8M502.202	—
	Lever - Detent	BSP	8L501-204	8L502-204	8L504-204
		NPT	8M501.204	8M502.204	8M504.204
	Twist - Detent	BSP	—	8L502-254	—
		NPT	—	8M502.254	—
	Foot - Spring	BSP	—	8L512-382	—
		NPT	—	8M512.382	—

* Replace asterisk with appropriate button reference color letter: B-Black, G-Green, R-Red.

5/3 Valves

Valve Type			Valve Size
			1/4
	Twist - Detent (APB) (Pressure Held)	BSP	8L502-264
		NPT	8M502.264
	Twist - Detent (CE) (Pressure Exhaust)	BSP	8L502-274
		NPT	8M502.274
	Lever - Detent (APB) (Pressure Held)	BSP	8L502-224
		NPT	8M502.224
	Lever - Detent (CE) (Pressure Applied)	BSP	8L502-235
		NPT	8M502.235
	Lever - Spring (APB) (Pressure Held)	BSP	8L502-225
		NPT	8M502.225

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1/8" Pilot Valves

Manual and Mechanical

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1/8" Pilot Valves

- 1/8" Port General Purpose Range
  Normally Closed (NC) or Normally Open (NO)
- Universal Body Type with Poppet-type Construction
- Wide Variety of Remote, Rotary, Mechanical and Manual Operators

Material Specifications

Basic Valve Body ..... Zinc Base Alloy
Internal Plunger..... Plastic / Steel

Valve Specifications

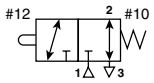
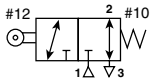
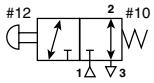
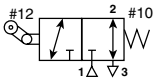
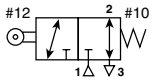
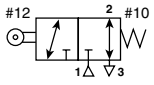
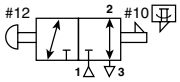
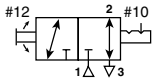
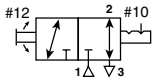
Air Condition:
Filtered, regulated, lubricated or non-lubricated

Flow Rate at 5.5 bar:
5.5dm3/sec (11.6 SCFM)

Maximum Operating Pressure:
NC - 10 bar (145 PSIG)
NO - 8.5 bar (123 PSIG)

Temperature Range:
-20°C to 70°C (-4°F to 158°F)

1/8" Pilot Valves

Valve Type			Part Number
	Plunger Operated	BSP	703111810A
		NPT	4N301.362
	Roller Operated	BSP	703110410A
		NPT	4N301.342
	Push-lever Operated	BSP	703110310A
		NPT	4N301.392
	One-way Trip Operated	BSP	703110210A
		NPT	4N301.402
	Shrouded Push-button Operated	BSP	703113310A
		NPT	4N301.302
	Palm-button Operated	BSP	703111210A
		NPT	4N301.312B
	Push-lock-button Operated (Key Release)	BSP	703113610A
		NPT	4N301.332
	Key-lock Operated	BSP	703113510A
		NPT	4N301.354
	Twist Operated	BSP	703111710A
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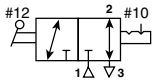	Toggle Operated	BSP	703113810A
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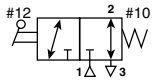	Joy Stick Operated	BSP	703113910A
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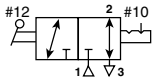	Lever Operated	BSP	703111310A
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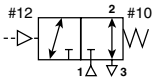	Pressure Operated	BSP	703115410A
		NPT	4N301.102

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Parker Hannifin Corporation

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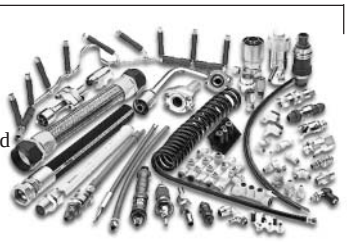

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