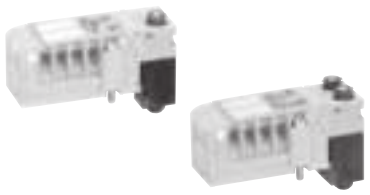
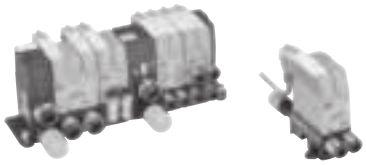
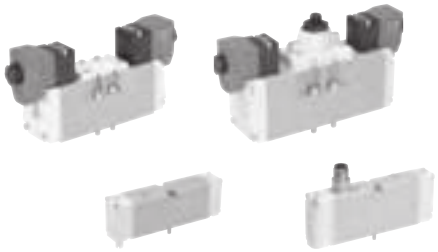
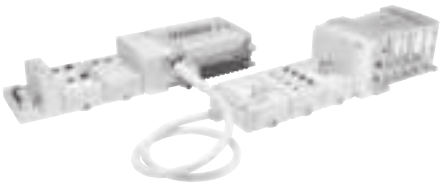
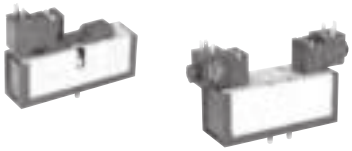










## Pneumatic Valve Products
### Subbase and Manifold Valve Series







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

# H Series Micro

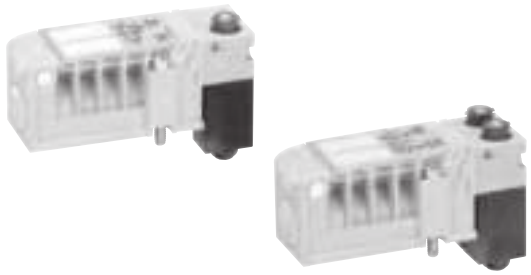
The H Series Micro Valve System incorporates a space saving back to back valve mounting design, and achieves flow rates of 0.35 Cv per valve with 4 valves having a combined width of 42mm. This plug-in valve solution simplifies wiring with the use of 25 pin connectors or fieldbus systems.

**Ports**
- M7 on manifolds
- 3/8 Inch on end plates

**Mounting**
- Manifold

**Solenoids**
- 24 VDC, 1.0 watt

**Certification / approval**
- IP65 rated
- EMC / CE Mark: According to EN 61 000-6-2



## Material specifications

| | |
|---|---|
| Body | Polyamide reinforced fiberglass |
| End plates | Aluminum |
| Fasteners | Zinc plated steel |
| Manifolds | Aluminum |
| Spool | Brass and nitrile rubber |
| Spool enclosure | Brass |

## Operating information

Operating pressure: Vacuum to 120 PSIG (Vacuum to 8.2 bar)

Temperature range: 5°F to 120°F (-15°C to 49°C)

**2-Position & Dual 3/2**
0.35 Cv
C = 1.2 Nl/s x bar, b = 0.13
Qn = 282 Nl/min
Qmax = 510 Nl/min

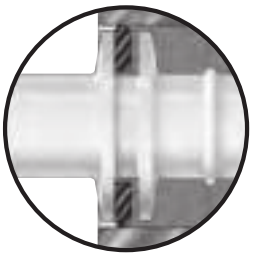
**3-Position**
0.30 Cv
C = 1 Nl/s x bar, b = 0.13
Qn = 228 Nl/min
Qmax = 402 Nl/min

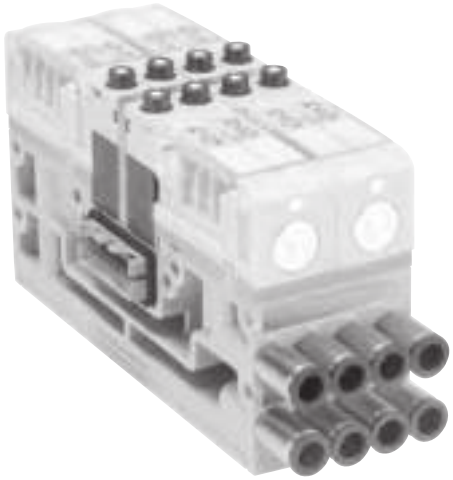
Pilot pressure requirements:

| Valve number | Minimum pilot pressure | Maximum pilot pressure |
|---|---|---|
| **HMEVX2049A** | 40 PSI | 120 PSI |
| **HM2VX2049A** | 25 PSI | 120 PSI |
| **HM5VX2049A** | 45 PSI | 120 PSI |
| **HMNVX2049A** | 40 PSI | 120 PSI |
| **HMPVX2049A** | 40 PSI | 120 PSI |
| **HMQVX2049A** | 40 PSI | 120 PSI |

## *W*ear Compensation System

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





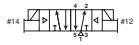
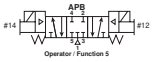
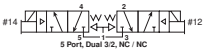
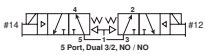
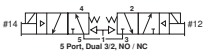
**Innovative Product Design**
- Back to back valve mounting design centralizes wiring in the manifold
- 4 valves on a 42mm wide manifold provides a 10.5mm wide valve solution with a reduced cost
- High flow of 0.35 Cv allows for broad application use
- Plug-in valve electronics reduce and eliminate wiring system costs
- Multiple pressure zones for many applications on the same manifold

**Standard Features**
- Integrated LED's identify when solenoids are active
- Side and bottom porting options on manifolds and end plates for versatile mounting
- All valve functions available for complete product offering
- Valves can be arranged in any combination for maximum flexibility
- Internal and external pilot options available for vacuum to 145 PSI applications
- IP65 protection enables direct machine mounting
- Product identification, valve function, and port description tags are standard on every manifold and are clearly visible thru a protective cover
- User configurable overrides for non-locking, locking, or no override options

**Manifold Platforms**
- 25 pin D-sub manifolds for control systems with discrete Outputs
- IO-Link Type A & Type B communication modules
- Cost effective moduflex fieldbus manifolds for control systems with DeviceNet™, Profibus®, Interbus and CANopen fieldbus and no inputs or outputs near valves
- Cost effective moduflex fieldbus manifolds with AS-i communication offer both Inputs and solenoid control
- Fully functional H Series fieldbus manifolds for control systems with inputs and outputs attached to the valve manifold
- Enhanced H Series bus expansion allows 4 H Series fieldbus valve manifolds to be connected to a single communication module significantly reducing costs on large machines
- Rockwell Automation RS Logix 5000™ users can take Advantage of Preferred Connectivity, by using the preloaded device profiles

**Complete Assemblies**
- All products offered as component level parts for individual assembly
- Simple manifolds offer sub-assembly level products with valves and fittings attached to manifold bases in a single part number
- Add-a-fold systems offer complete assemblies; including valves, manifolds, end plates, fittings, and mufflers in as few as 2 part numbers

## H Series Micro Valves

| | Symbol | Type | Cv | Operator | Part number |
|---|---|---|---|---|---|
|  |  | 4-way, 2-position | 0.35 | Single solenoid | **HMEVX2049A** |
| |  | 4-way, 2-position | 0.35 | Double solenoid | **HM2VX2049A** |
| |  | 4-way, 3-position, all ports blocked | 0.3 | Double solenoid | **HM5VX2049A** |
|  |  | 3-way, 2-position, dual valve, NC/NC | 0.35 | Double solenoid | **HMNVX2049A** |
| |  | 3-way, 2-position, dual valve, NO/NO | 0.35 | Double solenoid | **HMPVX2049A** |
| |  | 3-way, 2-position, dual valve, NO/NC | 0.35 | Double solenoid | **HMQVX2049A** |
|  | | Blanking plate | N/A | N/A | **HMBVX00XXA** |
|  | | Intermediate air supply | N/A | N/A | **HMCVX00XXA** |

- All valves, except double solenoid 2-position, ship with multi functional overrides. Standard valve configuration is non-locking manual override. Each solenoid can be configured for locking override or no override with the included manual override caps.
- All valve options include an LED, which is built into the manifold.
- All valve options pull pilot pressure from the manifold. The manifold assembly can be configured for internal or external pilot on the end plate.

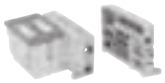
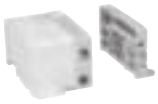
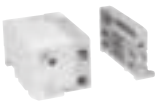
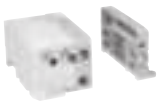
## Manifold Bases

| | | Part numbers | | |
|---|---|---|---|---|
| **Plug-in valve manifolds** | | **Side port** | | **Bottom port** |
| Single solenoid outputs only |  | **PSM21JAP** |  | **PSM22JAP** |
| Double or single solenoid outputs | | **PSM21MAP** | | **PSM22MAP** |

Each manifold holds 4 H Series Micro Valves. Double address circuit boards contain outputs for 8 solenoids, and can be used with any valve. When a single solenoid valve is used, one address is not used but is still present on the manifold. Single address circuit boards contain outputs for 4 solenoids. Only single solenoid valves can be used.

Most popular.

## Internal Pilot End Plate Kits

| | Electrical option | Porting | Side port | Bottom port |
|---|---|---|---|---|
|  | 25-pin, D-sub | NPT | **PSML25AP** | **PSML26AP** |
| | | BSPP | **PSML21AP** | **PSML22AP** |
|  | Turck fieldbus with valve driver module - 16 outputs | NPT | **PSMT15AP** | **PSMT16AP** |
| | | BSPP | **PSMT11AP** | **PSMT12AP** |
| | Turck fieldbus with valve driver module - 32 outputs | NPT | **PSMT25AP** | **PSMT26AP** |
| | | BSPP | **PSMT21AP** | **PSMT22AP** |
|  | Moduflex up to 24 outputs | NPT | **PSMM45AP** | **PSMM46AP** |
| | | BSPP | **PSMM41AP** | **PSMM42AP** |
|  | H Series Fieldbus with valve driver module | NPT | **PSML65AP** | **PSML66AP** |
| | | BSPP | **PSML61AP** | **PSML62AP** |
|  | H Series Fieldbus with valve driver module and bus extension connector | NPT | **PSMM55AP** | **PSMM56AP** |
| | | BSPP | **PSMM51AP** | **PSMM52AP** |
|  | H Series Fieldbus with valve driver module and 24VDC connector | NPT | **PSMM65AP** | **PSMM66AP** |
| | | BSPP | **PSMM61AP** | **PSMM62AP** |
|  | H Series Fieldbus with valve driver module, bus extension connector and 24VDC connector | NPT | **PSMM75AP** | **PSMM76AP** |
| | | BSPP | **PSMM71AP** | **PSMM72AP** |

Most popular.

## Simple Manifold Assemblies

Includes a valve manifold with 4 valves and fittings installed.
End Plates must be ordered separately.

| | | | | | A | | B | | C | | D | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| PSM3 | 1 | M | A | P | N | 7 | N | 7 | N | 7 | N | 7 |

| Base style | |
|---|---|
| 4-Station manifold with valve and / or fitting | PSM3 |

| Mounting style | |
|---|---|
| Side ported | 1 |
| Bottom ported | 2 |

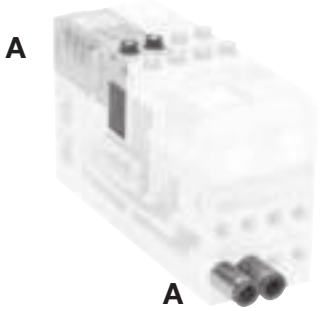
| Enclosure / Lead length | |
|---|---|
| Single address circuit board | J |
| Double address circuit board | M |

| Engineering level | |
|---|---|
| Current | A |

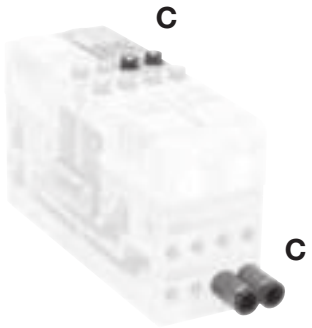
| 10, 12, 14, 16 | Fitting |
|---|---|
| 0 | Without fitting |
| 4 | Straight fitting for 5/32 inch or 4mm OD tube |
| 6 | Straight fitting for 6mm OD tube |
| 7 | Straight fitting for 1/4 inch OD tube |
| P | Plug for blanking module |

| 9, 11, 13, 15 | Valve type |
|---|---|
| N* | Double solenoid, dual 3/2, NC/NC |
| P* | Double solenoid, dual 3/2, NO/NO |
| Q* | Double solenoid, dual 3/2, 14 end NO - 12 end NC |
| E | Single solenoid, 2-position - air return, spring assist |
| 2* | Double solenoid, 2-position |
| 5* | Double solenoid, 3-position - APB |
| B** | Blanking module |
| C | Intermediate air supply module |

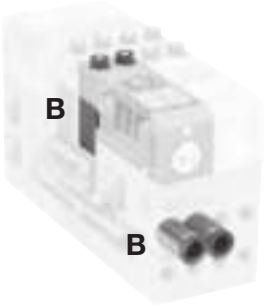
* Requires double address circuit board, enclosure "M".
** Requires fitting "P".



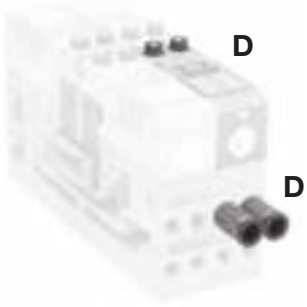

**Valve Position A - Character 9**
**Fitting Position A - Character 10**




**Valve Position C - Character 13**
**Fitting Position C - Character 14**




**Valve Position B - Character 11**
**Fitting Position B - Character 12**




**Valve Position D - Character 15**
**Fitting Position D - Character 16**

☐ Most popular.

## Plug-in End Plate Kits

BOLD OPTIONS ARE MOST POPULAR.

**PSM L2 1 A P**

| Basic Series | |
|---|---|
| H Series Micro End Plate Kits | PSM |

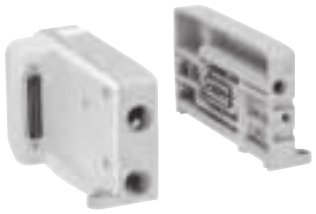
| End Plate Options | |
|---|---|
| 25-Pin, D-Sub | L2 |
| H Series Fieldbus with Valve Driver Module | L6 |
| H Series Fieldbus with Valve Driver Module and Bus Extension Connector | M5 |
| H Series Fieldbus with Valve Driver Module and 24VDC Connector | M6 |
| H Series Fieldbus with Valve Driver Module, Bus Extension Connector and 24VDC Connector | M7 |
| Moduflex up to 24 outputs | M4 |
| Turck Fieldbus with Valve Driver Module - 16 outputs | T1 |
| Turck Fieldbus with Valve Driver Module - 32 outputs | T2 |

Turck, H Series Fieldbus, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

| Port Size / Thread Type, Base Style | |
|---|---|
| 1 | BSPP, Side Port, Internal Pilot |
| 2 | BSPP, Bottom Port, Internal Pilot |
| 5 | NPT, Side Port, Internal Pilot |
| 6 | NPT, Bottom Port, Internal Pilot |

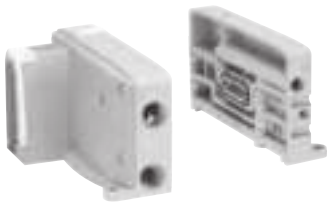
All End Plate Options can be converted to external pilot. See Technical Section.

| Engineering Level | |
|---|---|
| A | Current |

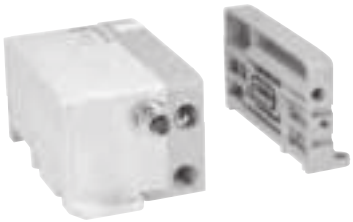


L2: 25-Pin, D-Sub End Plates

L6: H Series Fieldbus End Plates



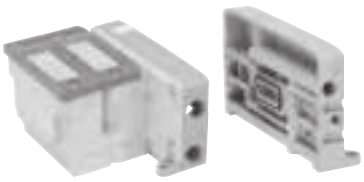
M4: Moduflex Fieldbus End Plates



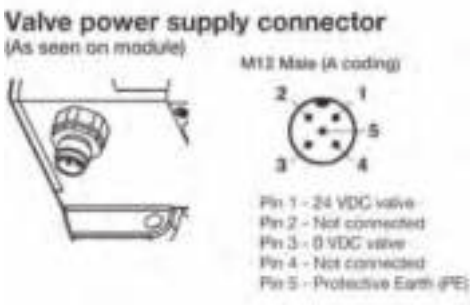
M5: H Series Fieldbus with Bus Extension End Plates

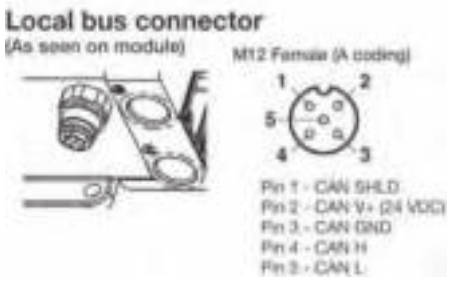
M6: H Series Fieldbus with 24VDC Connector End Plates

M7: H Series Fieldbus with Bus Extension & 24VDC Connector End Plates



T1, T2: H Series Micro Turck End Plates



## How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List Simple Manifold Assemblies. List left to right, LOOKING AT THE CYLINDER PORTS on the manifold.

## Maximum Number of Solenoids
**(Maximum Energized Simultaneously)**

| | 25-pin D-sub | Moduflex | H Series Fieldbus* | Turck 16 Outputs | Turck 32 Outputs |
|---|---|---|---|---|---|
| 24VDC | 24 (24) | 24 (24) | 32 (32) | 16 (16) | 32 (32) |

* Maximum of 32 solenoids per manifold. With Bus Extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same network.

## Add-A-Fold Assembly Model Number

**AAHM D 3 24 0 0 0 0**

**Valve series**

| | |
|---|---|
| H Series micro add-a-fold | AAHM |

**End plate option**

| | |
|---|---|
| Turck fieldbus with valve driver module - 16 outputs | A |
| Turck fieldbus with valve driver module - 32 outputs | B |
| 25-pin, D-sub - 24 outputs | D |
| H Series Fieldbus with valve drive module - 32 outputs | Y |
| H Series Fieldbus with valve drive module and bus extension connector - 32 outputs | W |
| H Series Fieldbus with valve drive module and 24VDC connector - 32 outputs | X |
| H Series Fieldbus with valve drive module and bus extension and 24VDC connector - 32 outputs | Z |
| Moduflex - up to 24 outputs | T |

H Series Fieldbus and Moduflex communication modules must be ordered separately.

**End plate type**

| | | |
|---|---|---|
| *BSPP Threads* | BSPP side port, internal pilot | 1 |
| | BSPP bottom port, internal pilot | 2 |
| | BSPP side port, external pilot | 3 |
| | BSPP bottom port, external pilot | 4 |
| *NPT Threads* | NPT side port, internal pilot | 5 |
| | NPT bottom port, internal pilot | 6 |
| | NPT side port, external pilot | 7 |
| | NPT bottom port, external pilot | 8 |

**Number of stations***

| | |
|---|---|
| 4 Valve manifold | 04 |
| 8 Valve manifold | 08 |
| 12 Valve manifold | 12 |
| 16 Valve manifold | 16 |
| 20 Valve manifold | 20 |
| 24 Valve manifold | 24 |
| 28 Valve manifold | 28 |
| 32 Valve manifold | 32 |

* For an Add-A-Fold part number to be valid, all stations must have a corresponding electrical connection at the end plate. See Maximum Number of Solenoids chart.

**3/8" inlet port on end plate**

| | | |
|---|---|---|
| 0 | Without fitting | |
| 8 | Straight fitting for 8mm OD tube | *BSPP Threads* |
| A | Straight fitting for 10mm OD tube | |
| 7 | Straight fitting for 1/4 inch OD tube | *NPT Threads* |
| 9 | Straight fitting for 3/8 inch OD tube | |

**3/8" exhaust on end plate**

| | | |
|---|---|---|
| 0 | Without fitting | |
| M | Muffler | |
| 8 | Straight fitting for 8mm OD tube | *BSPP Threads* |
| A | Straight fitting for 10mm OD tube | |
| 7 | Straight fitting for 1/4 inch OD tube | *NPT Threads* |
| 9 | Straight fitting for 3/8 inch OD tube | |

**M7 pilot port on end plate**

| | | |
|---|---|---|
| | *Internal pilot end plate* | |
| 0 | With standard plug | |
| | *External pilot end plate* | |
| 0 | Without fitting | |
| 4 | Straight fitting for 4mm OD tube | *BSPP Threads* |
| 6 | Straight fitting for 6mm OD tube | |
| 4 | Straight fitting for 5/32 inch OD tube | *NPT Threads* |
| 7 | Straight fitting for 1/4 inch OD tube | |

**Pilot exhaust on end plate**

| | | |
|---|---|---|
| 0 | Without fitting | |
| M | Muffler | |
| 4 | Straight fitting for 4mm OD tube | *BSPP Threads* |
| 6 | Straight fitting for 6mm OD tube | |
| 4 | Straight fitting for 5/32 inch OD tube | *NPT Threads* |
| 7 | Straight fitting for 1/4 inch OD tube | |

**Note:**
BSPP fittings can only be used with BSPP Manifolds.
NPT fittings can only be used with NPT Manifolds.

☐ Most popular.

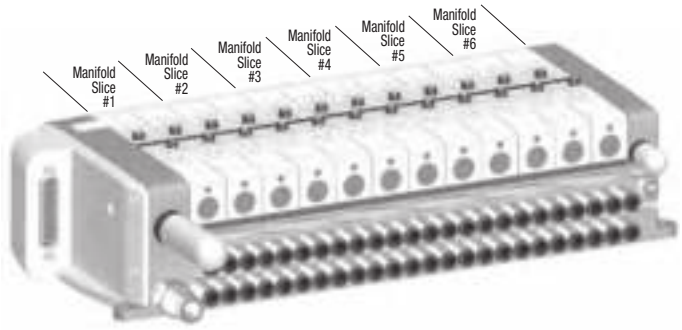




**Parker Hannifin Corporation**
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

## 25-pin, D-Sub Manifolds

### 24 Single Solenoid Valves




## Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | 24 valve Add-A-Fold with end plates | **AAHMD5249M0M** |
| 02 | 6 | 4 valve simple manifold slices #1-6 | **PSM31JAPE7E7E7E7** |

## Component Level

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | 25-pin, D-sub, end plate | **PSML25AP** |
| 02 | 24 | Single solenoid valve | **HMEVX2049A** |
| 03 | 6 | Manifold, side ported, single address | **PSM21JAP** |
| 04 | 50 | 1/4" Tube fittings (in box quantity) | **PS567925** |
| 05 | 10 | 3/8" Tube fittings (in box quantity) | **PS568338** |
| 06 | 1 | 3/8" Exhaust muffler | **P6M-PAB3** |
| 07 | 1 | 1/8" Exhaust muffler | **P6M-PAB1** |

## Sandwich Regulator

| | Description | Kit number |
|---|---|---|
|  | Common port regulator, 5 to 125 PSI with gauge | **PSMRAX6AP** |

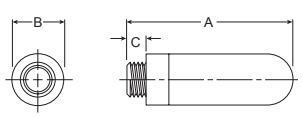
Notes: Cv values are reduced when using a sandwich regulator to 0.20 for 2-position and Dual 3/2 valves, and 0.17 for 3-position APB valves.
The sandwich regulator passes full pilot pressure from the manifold, allowing the regulated pressure to adjusted down to 5 PSI without affecting valve functionality.

## Flow Controls

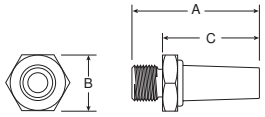
| | Description | Kit number |
|---|---|---|
|  | 4mm to 4mm or 5/32" to 5/32" OD tube | **FC832-5/32** |
| | 1/4" to 1/4" O.D. tube | **FC832-4** |

Most popular.

## Mufflers




P6M-PAB1 & P6M-PAB3




P0568800

| | Port thread | A | Ø B | C | Weight (grams) | Part number |
|---|---|---|---|---|---|---|
|  | 1/8 pilot exhaust – BSPP or NPT | 1.14 (29) | 0.55 (14) | 0.24 (6) | 0.02 | **P6M-PAB1** |
|  | 3/8 main exhaust – BSPP or NPT | 2.36 (60) | 0.98 (25) | 0.35 (9) | 0.06 | **P6M-PAB3** |
|  | M7 x 1 bottom port pilot exhaust * | 0.98 (25) | 0.43 (11) | 0.75 (19) | 5 | **P0568800** |

**Note:** Recommended tube durometer of 95 or higher. A tube support may be required if tube durometer is less than 95.

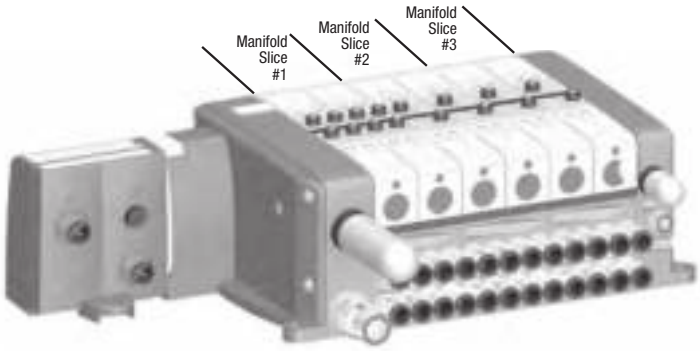
* Must be order in multiples of 10.

## Fittings – Must be ordered in multiples of 10

| | Thread | Tube O.D. | Part number |
|---|---|---|---|
| **Manifold or pilot supply ports – straight** | | | |
|  | M7 | 4mm or 5/32" | **PS567904** |
| | M7 | 6mm | **PS567906** |
| | M7 | 1/4" | **PS567925** |
| **Main inlet or exhaust ports** | | | |
|  | 3/8" NPT | 1/4" | **PS568325** |
| | 3/8" NPT | 3/8" | **PS568338** |
| | 3/8" BSPP | 8mm | **PS568308** |
| | 3/8" BSPP | 10mm | **PS568310** |
| **Pilot exhaust ports** | | | |
|  | 1/8" NPT | 5/32" | **PS568215** |
| | 1/8" NPT | 1/4" | **PS568225** |
| | 1/8" BSPP | 4mm | **PS568204** |
| | 1/8" BSPP | 6mm | **PS568206** |

## Moduflex Fieldbus Manifold

**4 Double Solenoid Valves,**
**8 Single Solenoid Valves**




### Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | 12 valve add-a-fold with end plates | **AAHMT5129M0M** |
| 02 | 1 | 4 valve simple manifold slice #1 | **PSM31MAPN7N7N7N7** |
| 03 | 2 | 4 valve simple manifold slice #2-3 | **PSM31JAPE7E7E7E7** |

### Component Level

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | Moduflex fieldbus, end plate | **PSMM45AP** |
| 02 | 4 | Double solenoid, dual 3/2, NC/NC | **HMNVX2049A** |
| 03 | 1 | Manifold, side ported, double address | **PSM21MAP** |
| 04 | 8 | Single solenoid valve | **HMEVX2049A** |
| 05 | 2 | Manifold, side ported, single address | **PSM21JAP** |
| 06 | 30 | 1/4" tube fittings (in box quantity) | **PS567925** |
| 05 | 10 | 3/8" tube fittings (in box quantity) | **PS568338** |
| 06 | 1 | 3/8" exhaust muffler | **P6M-PAB3** |
| 07 | 1 | 1/8" exhaust muffler | **P6M-PAB1** |

## Additional Components

### Moduflex Communication Modules

| IO-Link - 24 outputs | | Part number |
|---|---|---|
| Class A | 3-Pin, Aux power 1 & 3 | **P2M2HBVL12400A13** |
| | 3-Pin, Aux power 4 & 3 | **P2M2HBVL12400A43** |
| | 3-Pin, Aux power 4 & 2 | **P2M2HBVL12400A42** |
| Class B | 5-Pin, Aux power 2 & 5 | **P2M2HBVL12400B25** |

| Bus protocol - 16 outputs | Part number |
|---|---|
| Profibus DP | **P2M2HBVP21600** |
| DeviceNet | **P2M2HBVD21600** |
| CANopen | **P2M2HBVC21600** |
| InterBus-S | **P2M2HBVS11600** |

### Fieldbus Accessories

| | Bus Protocol | Connector Type | Part number |
|---|---|---|---|
| Power Supply Female Straight Connector | Profibus DP/ InterBus-S | M12 type A | **P8CS1205AA** |
| | DeviceNet/ CANopen | M12 type B | **P8CS1205AB** |
| Line Termination Resistor | Profibus DP | M12 type B | **P8BPA00MB** |
| | DeviceNet/ CANopen | M12 type A | **P8BPA00MA** |
| Power & Communi-cation Cable | IO-Link | 5-pin male to female cable, TPE | **RKC 4.5T-*-RSC 4.5T/S1587** |

Where * = 1, 2, 3, 4, 5, 10, 20 meter standard lengths

Most popular.

### Standard AS-i Protocol (up to 31 nodes)

Communication module for 8 solenoids max.
(2 nodes per module, 4 inputs, 4 solenoids per node)

| Input / output capability | Part number |
|---|---|
| 0 inputs and 8 solenoid outputs | **P2M2HBVA10800** |
| 8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs | **P2M2HBVA10808A** |
| 8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs | **P2M2HBVA10808B** |

### AS-i Version 2.1 Protocol (up to 62 nodes)

Communication module for 6 solenoids max.
(2 nodes per module, 4 inputs, 4 solenoids per node)

| Input / output capability | Part number |
|---|---|
| 0 inputs and 6 solenoid outputs | **P2M2HBVA20600** |
| 8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs | **P2M2HBVA20608A** |
| 8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs | **P2M2HBVA20608B** |

### AS-i Bus Accessories

M12 cable with jack for addressing

| Length | Part number |
|---|---|
| 1 m | **P8LS12JACK** |





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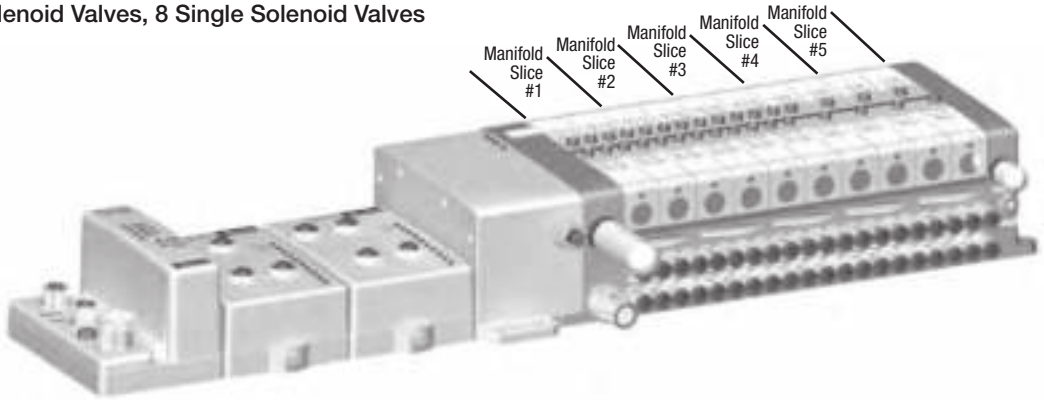
## H Series Fieldbus Manifold

### 12 Double Solenoid Valves, 8 Single Solenoid Valves




### Add-A-Fold

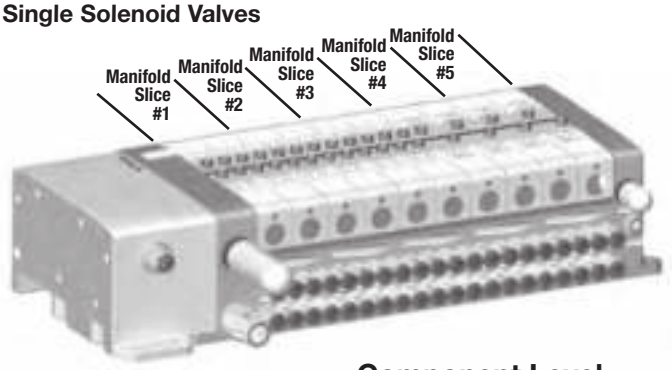
Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | 20 valve add-a-fold with end plates | **AAHMW5209M0M** |
| 02 | 3 | 4 valve simple manifold slices #1-3 | **PSM31MAPN7N7N7N7** |
| 03 | 2 | 4 valve simple manifold slices #4-5 | **PSM31JAPE7E7E7E7** |

### Component Level

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | H Series Fieldbus, with valve driver module and bus extension connector | **PSMM55AP** |
| 02 | 12 | Double solenoid, dual 3/2, NC/NC | **HMNVX2049A** |
| 03 | 3 | Manifold, side ported, double address | **PSM21MAP** |
| 04 | 8 | Single solenoid, 2-position, air return, spring assist | **HMEVX2049A** |
| 05 | 2 | Manifold, side ported, single address | **PSM21JAP** |
| 06 | 40 | 1/4" tube fittings (in box quantity) | **PS567925** |
| 07 | 10 | 3/8" tube fittings (in box quantity) | **PS568338** |
| 08 | 1 | 3/8" exhaust muffler | **P6M-PAB3** |
| 09 | 1 | 1/8" exhaust muffler | **P6M-PAB1** |

### 12 Double Solenoid Valves, 8 Single Solenoid Valves




### Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | 20 valve add-a-fold with end plates | **AAHMX5209M0M** |
| 02 | 3 | 4 valve simple manifold slices #1-3 | **PSM31MAPN7N7N7N7** |
| 03 | 2 | 4 valve simple manifold slices #4-5 | **PSM31JAPE7E7E7E7** |

### Component Level

| Item | Qty | Description | Part number |
|---|---|---|---|
| 01 | 1 | H series fieldbus, with valve driver Module and 24VDC connector | **PSMM65AP** |
| 02 | 12 | Double solenoid, dual 3/2, NC/NC | **HMNVX2049A** |
| 03 | 3 | Manifold, side ported, double address | **PSM21MAP** |
| 04 | 8 | Single solenoid, 2-position, air return, spring assist | **HMEVX2049A** |
| 05 | 2 | Manifold, side ported, single address | **PSM21JAP** |
| 06 | 40 | 1/4" tube fittings (in box quantity) | **PS567925** |
| 07 | 10 | 3/8" tube fittings (in box quantity) | **PS568338** |
| 08 | 1 | 3/8" exhaust muffler | **P6M-PAB3** |
| 09 | 1 | 1/8" exhaust muffler | **P6M-PAB1** |

### Additional Components

| Description | Part number |
|---|---|
| H Series Fieldbus Devicenet Communication | **PSSCDM12A** |
| 8 Digital Input, 24VDC, M12 Connectors | **PSSN8M12A** |
| H Series Micro Bus Extender Cable | **PSSVEXT1** |

See H Series Fieldbus section of catalog for more information.

Most popular.







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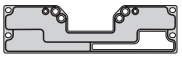
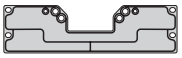
## Manifold to Manifold Gaskets*

| | Description | Part number |
|---|---|---|
|  | All galleys passing | **PSM0001** |
|  | Main pressure to rear or front valves blocked, exhaust passing | **PSM0002** |
|  | Main pressure to rear or front valves blocked, exhaust blocked | **PSM0003** |
|  | All galleys blocked | **PSM0004** |

* Includes 1 Gasket

## Solenoid Kit

| | Description | Part number |
|---|---|---|
|  | 24VDC solenoid kit with screws | **PSM0010** |

## Blanking Plate Kits

| | Description | Part number |
|---|---|---|
|  | Blanking plugs, gasket, and mounting screws. | **HMBVX00XXA** |

Blanking plugs must be inserted into the 2 and 4 ports of the manifold corresponding to the blanking plate.

## Intermediate Air Supply Base

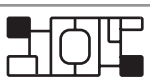
| | Description | Part number |
|---|---|---|
|  | Gasket and mounting screws. | **HMCVX00XXA** |

Fittings (not included) must be inserted into the 2 and 4 ports of the manifold corresponding to the intermediate air supply. Auxiliary pressure should be supplied through these fittings, which will directly feed the #1 pressure galley.

## Override Caps

| | Description | Part number |
|---|---|---|
|  | Set of 10 manual override caps | **PSM0011** |

## Gaskets and Valve Screws

| | Description | Part number |
|---|---|---|
|  | Set of 5 valve to manifold gaskets and 10 screws | **PSM0012** |

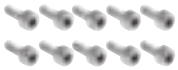
## Regulator Gauge

| | Description | Part number |
|---|---|---|
|  | 5 to 125 PSI gauge | **P0566202** |

## Plugs

| | Description | Part number |
|---|---|---|
|  | Set of 10 M7 plugs (Part No. PS567900) for auxiliary and pilot pressure ports | **PSM0013** |

## Screws

| | Description | Part number |
|---|---|---|
|  | Set of 10 manifold to manifold M3 screws | **PSM0014** |

## Valve Labels*

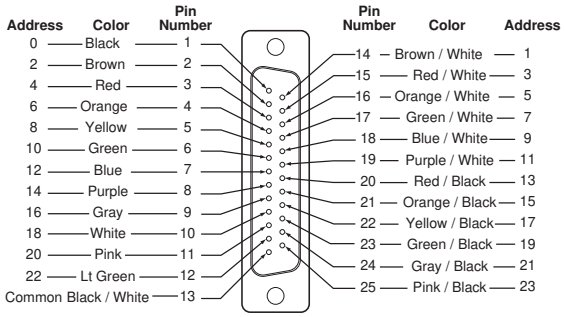
| Description | Part number |
|---|---|
| Single solenoid diagram | **PSM002E** |
| Double solenoid diagram | **PSM0022** |
| Double solenoid diagram – APB | **PSM0025** |
| Double solenoid diagram – Dual 3/2 NC/NC | **PSM002N** |
| Double solenoid diagram – Dual 3/2 NO/NO | **PSM002P** |
| Double solenoid diagram – Dual 3/2, 14 end NO, 12 end NC | **PSM002Q** |

*Includes 10 Labels.

## Protective Cover

| | Description | Part number |
|---|---|---|
|  | Protective polyester cover<br>Set of 10 | **PS5706** |

## 25-Pin, D-Sub Cable (Female)

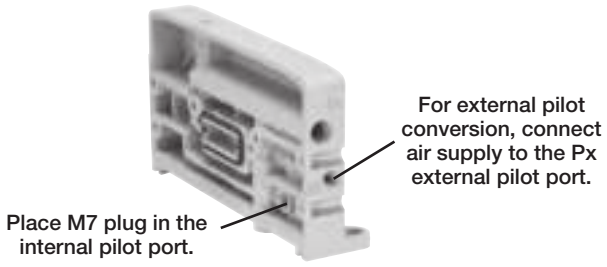



| | Description | Length | Part number |
|---|---|---|---|
|  | 25-pin, D-sub cable, IP20 | 3 meters | **P8LMH25M3A** |
| | 25-pin, D-sub cable, IP20 | 9 meters | **SCD259D** |
| | 25-pin, D-sub cable, IP65 | 3 meters | **SCD253W** |
| | 25-pin, D-sub cable, IP65 | 9 meters | **SCD259WE** |

## Pilot Configuration

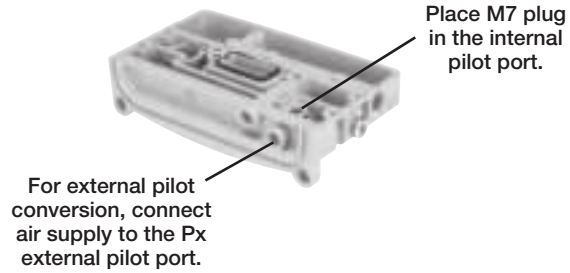
### Side Ported

Manifolds can be configured for either internal or external pilot in the field. Side ported manifolds are configured for internal pilot when the M7 plug is located in the Px port on the front of the right hand end plate. Moving this plug to the internal pilot port of the right hand end plate and replacing it with a fitting allows an external pilot to be used.




### Bottom Ported

Bottom ported manifolds are configured for internal pilot when the M7 plug is located in the Px port on the bottom of the right hand end plate. Moving this plug to the internal pilot port of the right hand end plate and replacing it with a fitting allows an external pilot to be used.

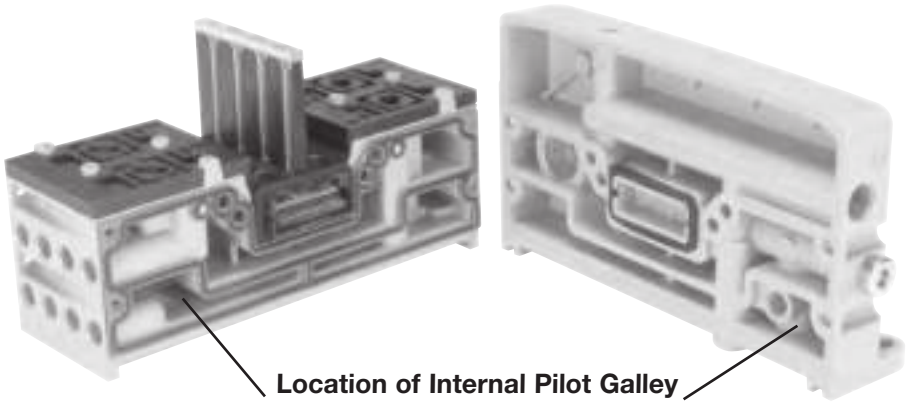



## Pilot Pressure Requirements

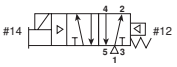
Internal pilot pressure is supplied to the entire manifold from the right hand end plate, where the main pressure for the front row of valves is connected to the pilot pressure galley.

Maximum pilot pressure is 120 PSI. For applications requiring working pressures from 120 to 145 PSI, an external pilot supply less than 120 PSI is required.

| Valve number | Minimum pilot pressure | Maximum pilot pressure |
|---|---|---|
| **HMEVX2049A** | 40 PSI | 120 PSI |
| **HM2VX2049A** | 25 PSI | 120 PSI |
| **HM5VX2049A** | 45 PSI | 120 PSI |
| **HMNVX2049A** | 40 PSI | 120 PSI |
| **HMPVX2049A** | 40 PSI | 120 PSI |
| **HMQVX2049A** | 40 PSI | 120 PSI |



## Single Solenoid - Single Address Manifolds




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

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

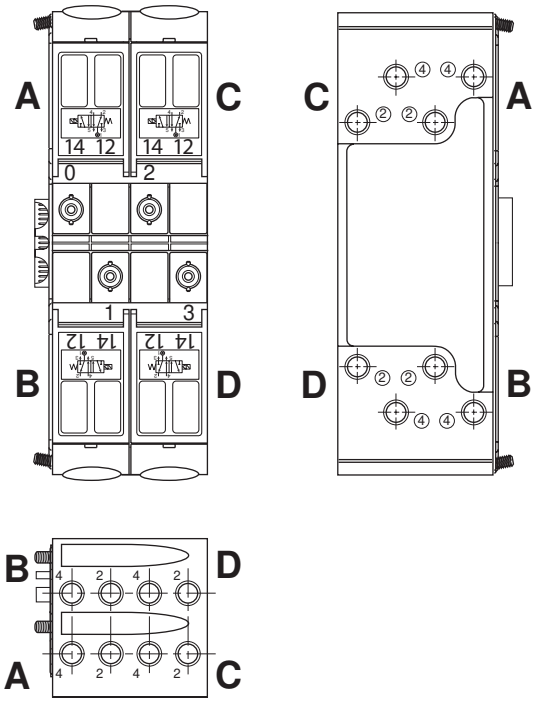
### HMEVX2049A - Single Address Manifolds

| Valve Position A | |
|---|---|
| Output 0 | |
| On | Off |
| 1→4<br>3←2 | 1→2<br>5←4 |

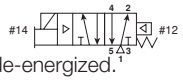
| Valve Position C | |
|---|---|
| Output 2 | |
| On | Off |
| 1→4<br>3←2 | 1→2<br>5←4 |

| Valve Position B | |
|---|---|
| Output 1 | |
| On | Off |
| 1→4<br>3←2 | 1→2<br>5←4 |

| Valve Position D | |
|---|---|
| Output 3 | |
| On | Off |
| 1→4<br>3←2 | 1→2<br>5←4 |




## Single Solenoid - Double Address Manifolds




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

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

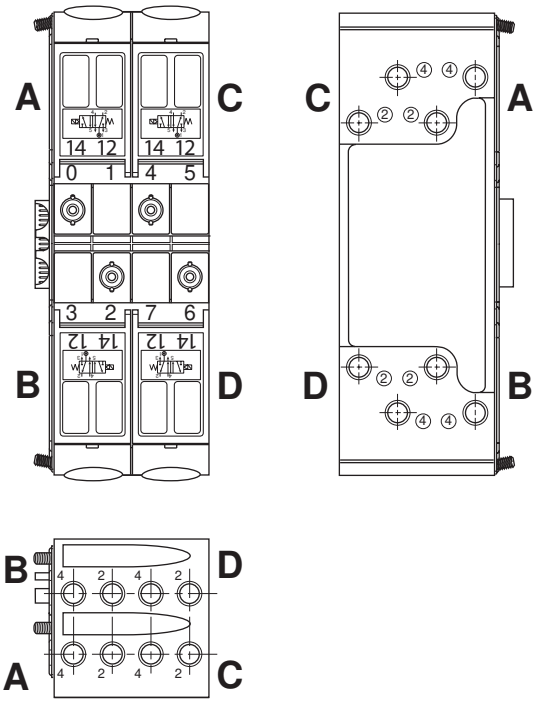
### HMEVX2049A - Double Address Manifolds

| Valve Position A | | | |
|---|---|---|---|
| Output 0 | | Output 1 | |
| On | Off | On | Off |
| 1→4<br>3←2 | 1→2<br>5←4 | Output Lost<br>1→2<br>5←4 | 1→2<br>5←4 |

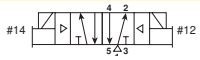
| Valve Position C | | | |
|---|---|---|---|
| Output 4 | | Output 5 | |
| On | Off | On | Off |
| 1→4<br>3←2 | 1→2<br>5←4 | Output Lost<br>1→2<br>5←4 | 1→2<br>5←4 |

| Valve Position B | | | |
|---|---|---|---|
| Output 3 | | Output 2 | |
| On | Off | On | Off |
| Output Lost<br>1→2<br>5←4 | 1→2<br>5←4 | 1→4<br>3←2 | 1→2<br>5←4 |

| Valve Position D | | | |
|---|---|---|---|
| Output 7 | | Output 6 | |
| On | Off | On | Off |
| Output Lost<br>1→2<br>5←4 | 1→2<br>5←4 | 1→4<br>3←2 | 1→2<br>5←4 |



## Double Solenoid - Double Address Manifolds, Last state #12 Energized or #14 Energized




### Single Pressure At Inlet Port 1:

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

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

A 2-Position, Double Solenoid Valve is a detented valve. When the output is removed, the spool remains in its position.

### HM2VX2049A - Double Address Manifolds - Last state #12 Energized

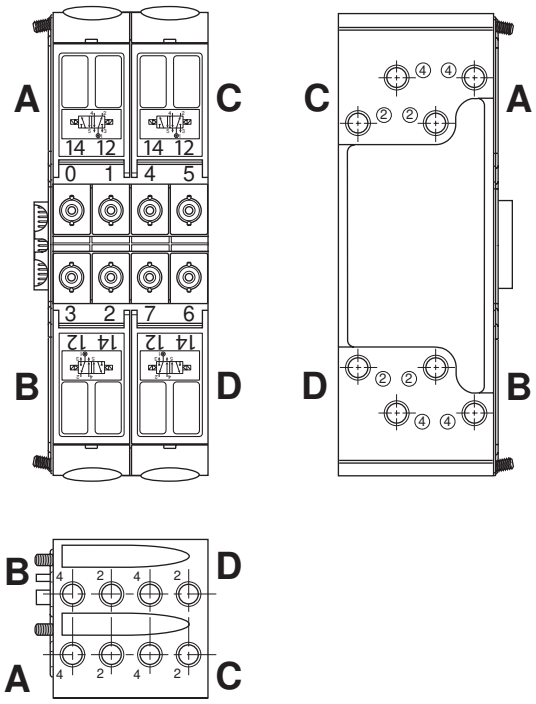
| Valve Position A | | | | Valve Position C | | | |
|---|---|---|---|---|---|---|---|
| Output 0 | | Output 1 | | Output 4 | | Output 5 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→4 | 1→2 | 1→2 | 1→2 | 1→4 | 1→2 | 1→2 | 1→2 |
| 3←2 | 5←4 | 5←4 | 5←4 | 3←2 | 5←4 | 5←4 | 5←4 |

| Valve Position B | | | | Valve Position D | | | |
|---|---|---|---|---|---|---|---|
| Output 3 | | Output 2 | | Output 7 | | Output 6 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→2 | 1→2 | 1→4 | 1→2 | 1→2 | 1→2 | 1→4 | 1→2 |
| 5←4 | 5←4 | 3←2 | 5←4 | 5←4 | 5←4 | 3←2 | 5←4 |

### HM2VX2049A - Double Address Manifolds - Last state #14 Energized

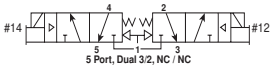
| Valve Position A | | | | Valve Position C | | | |
|---|---|---|---|---|---|---|---|
| Output 0 | | Output 1 | | Output 4 | | Output 5 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→4 | 1→4 | 1→2 | 1→4 | 1→4 | 1→4 | 1→2 | 1→4 |
| 3←2 | 3←2 | 5←4 | 3←2 | 3←2 | 3←2 | 5←4 | 3←2 |

| Valve Position B | | | | Valve Position D | | | |
|---|---|---|---|---|---|---|---|
| Output 3 | | Output 2 | | Output 7 | | Output 6 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→2 | 1→4 | 1→4 | 1→4 | 1→2 | 1→4 | 1→4 | 1→4 |
| 5←4 | 3←2 | 3←2 | 3←2 | 5←4 | 3←2 | 3←2 | 3←2 |




## Double Solenoid - Double Address Manifolds

### Dual 3-Way, 2-Position NC / NC (NNP)




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

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

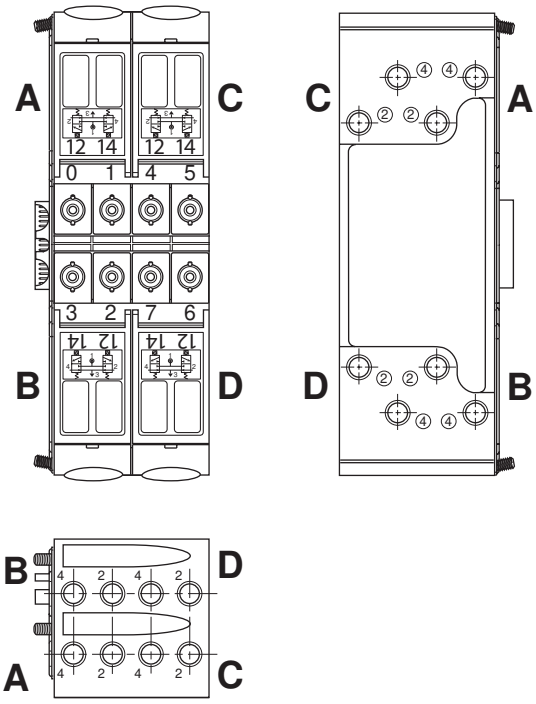
***With #12 operator energized*** – pressure at inlet port 1 connected to outlet port 2, exhaust port 3 blocked, outlet port 4 connected to exhaust port 5.

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

### HMNVX2049A - Double Address Manifolds

| Valve Position A | | | | Valve Position C | | | |
|---|---|---|---|---|---|---|---|
| Output 0 | | Output 1 | | Output 4 | | Output 5 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→2 | 1⊣ | 1→4 | 1⊣ | 1→2 | 1⊣ | 1→4 | 1⊣ |
| 3⊣ | 3←2 | 5⊣ | 5←4 | 3⊣ | 3←2 | 5⊣ | 5←4 |

| Valve Position B | | | | Valve Position D | | | |
|---|---|---|---|---|---|---|---|
| Output 3 | | Output 2 | | Output 7 | | Output 6 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→4 | 1⊣ | 1→2 | 1⊣ | 1→4 | 1⊣ | 1→2 | 1⊣ |
| 5⊣ | 5←4 | 3⊣ | 3←2 | 5⊣ | 5←4 | 3⊣ | 3←2 |





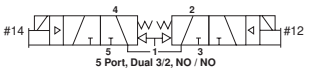



For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

## Double Solenoid - Double Address Manifolds

### Dual 3-Way, 2-Position NO / NO (NP)




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

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

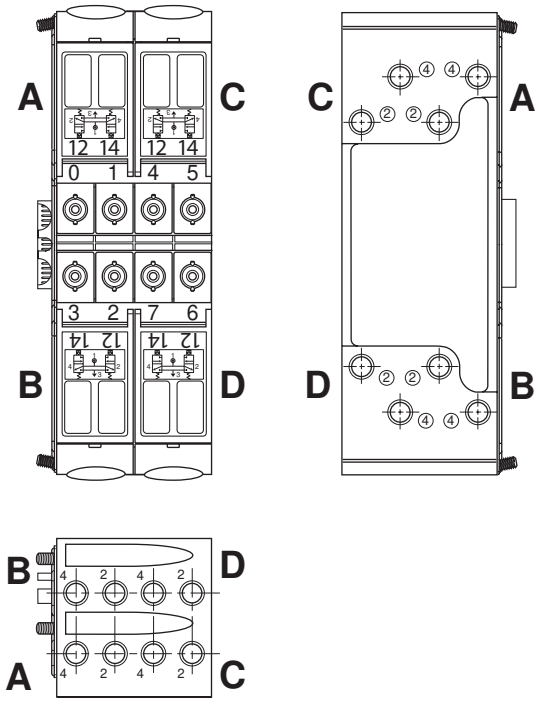
***With #12 operator energized*** – pressure at inlet port 1 connected to outlet port 4, exhaust port 5 blocked, outlet port 2 connected to exhaust port 3.

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

### HMPVX2049A - Double Address Manifolds

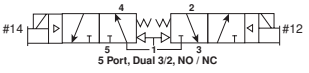
| Valve Position A | | | | Valve Position C | | | |
|---|---|---|---|---|---|---|---|
| Output 0 | | Output 1 | | Output 4 | | Output 5 | |
| On | Off | On | Off | On | Off | On | Off |
| 1⊣ | 1→2 | 1⊣ | 1→4 | 1⊣ | 1→2 | 1⊣ | 1→4 |
| 3←2 | 3⊣ | 5←4 | 5⊣ | 3←2 | 3⊣ | 5←4 | 5⊣ |

| Valve Position B | | | | Valve Position D | | | |
|---|---|---|---|---|---|---|---|
| Output 3 | | Output 2 | | Output 7 | | Output 6 | |
| On | Off | On | Off | On | Off | On | Off |
| 1⊣ | 1→4 | 1⊣ | 1→2 | 1⊣ | 1→4 | 1⊣ | 1→2 |
| 5←4 | 5⊣ | 3←2 | 3⊣ | 5←4 | 5⊣ | 3←2 | 3⊣ |




## Double Solenoid - Double Address Manifolds

### Dual 3-Way, 2-Position 14 End NO / 12 End NC (NP / NNP)




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

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

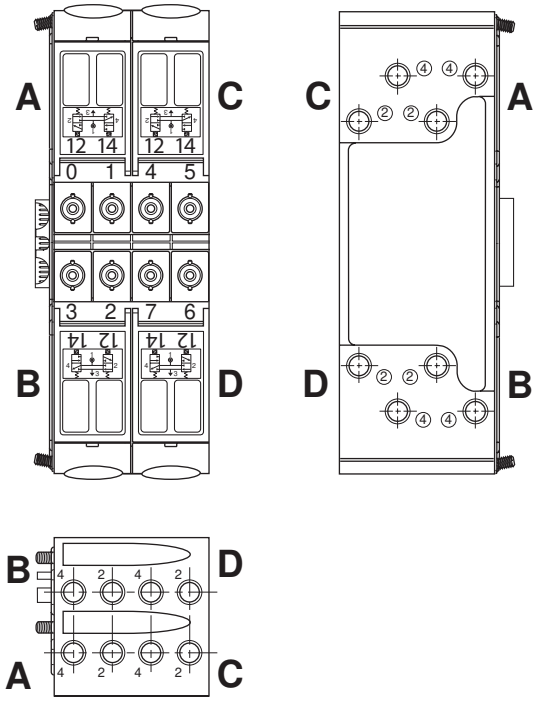
***With #12 operator energized*** – pressure at inlet port 1 connected to outlet ports 4 & 2, exhaust ports 3 & 5 blocked.

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

### HMQVX2049A - Double Address Manifolds

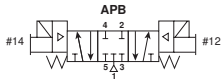
| Valve Position A | | | | Valve Position C | | | |
|---|---|---|---|---|---|---|---|
| Output 0 | | Output 1 | | Output 4 | | Output 5 | |
| On | Off | On | Off | On | Off | On | Off |
| 1→2 | 1⊣ | 1⊣ | 1→4 | 1→2 | 1⊣ | 1⊣ | 1→4 |
| 3⊣ | 3←2 | 5←4 | 5⊣ | 3⊣ | 3←2 | 5←4 | 5⊣ |

| Valve Position B | | | | Valve Position D | | | |
|---|---|---|---|---|---|---|---|
| Output 3 | | Output 2 | | Output 7 | | Output 6 | |
| On | Off | On | Off | On | Off | On | Off |
| 1⊣ | 1→4 | 1→2 | 1⊣ | 1⊣ | 1→4 | 1→2 | 1⊣ |
| 5←4 | 5⊣ | 3⊣ | 3←2 | 5←4 | 5⊣ | 3⊣ | 3←2 |



## Double Solenoid - Double Address Manifolds

### 3-Position




**Function 5: All Ports Blocked**

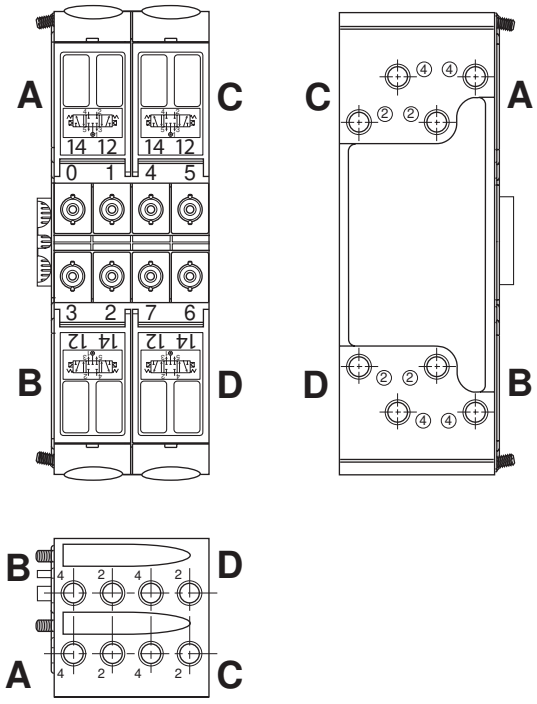
***With #12 operator energized*** – inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

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

All ports blocked in the center position.

**HM5VX2049A - Double Address Manifolds**

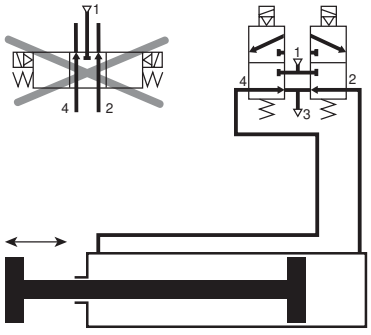
| Valve Position A | | | Valve Position C | | |
|---|---|---|---|---|---|
| Output 0 On<br>Output 1 Off | Output 0 Off<br>Output 1 On | Output 0 Off<br>Output 1 Off | Output 4 On<br>Output 5 Off | Output 4 Off<br>Output 5 On | Output 4 Off<br>Output 5 Off |
| 5⊣<br>1→4<br>3←2 | 5←4<br>1→2<br>3⊣ | 3⊣ ⊢4<br>1⊣ ⊢2<br>5⊣ | 5⊣<br>1→4<br>3←2 | 5←4<br>1→2<br>3⊣ | 3⊣ ⊢4<br>1⊣ ⊢2<br>5⊣ |
| **Valve Position B** | | | **Valve Position D** | | |
| Output 2 On<br>Output 3 Off | Output 2 Off<br>Output 3 On | Output 2 Off<br>Output 3 Off | Output 6 On<br>Output 7 Off | Output 6 Off<br>Output 7 On | Output 6 Off<br>Output 7 Off |
| 5⊣<br>1→4<br>3←2 | 5←4<br>1→2<br>3⊣ | 3⊣ ⊢4<br>1⊣ ⊢2<br>5⊣ | 5⊣<br>1→4<br>3←2 | 5←4<br>1→2<br>3⊣ | 3⊣ ⊢4<br>1⊣ ⊢2<br>5⊣ |




## Dual 3/2 valves replace 3-position valves for better performance

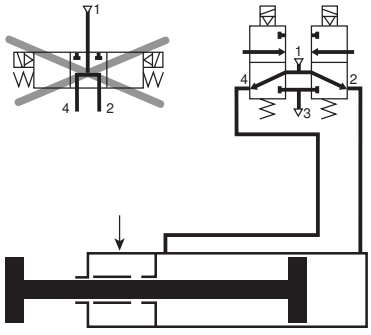
**3-position center exhaust**

A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module. Both cylinder chambers are exhausted and rod and piston are free to move.




**3-position pressure center**

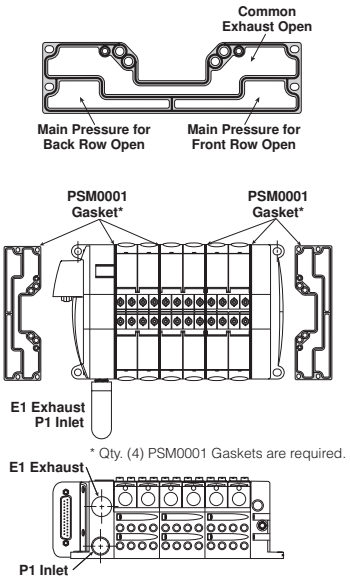
A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.



## Multiple Pressure Zones

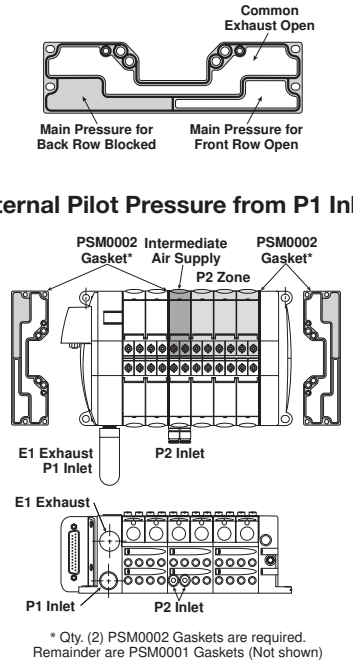
**PSM0001 –**

All ports open. Common pressure for front and rear manifold.
Common exhausts.
Standard gasket included with each manifold and end plate.



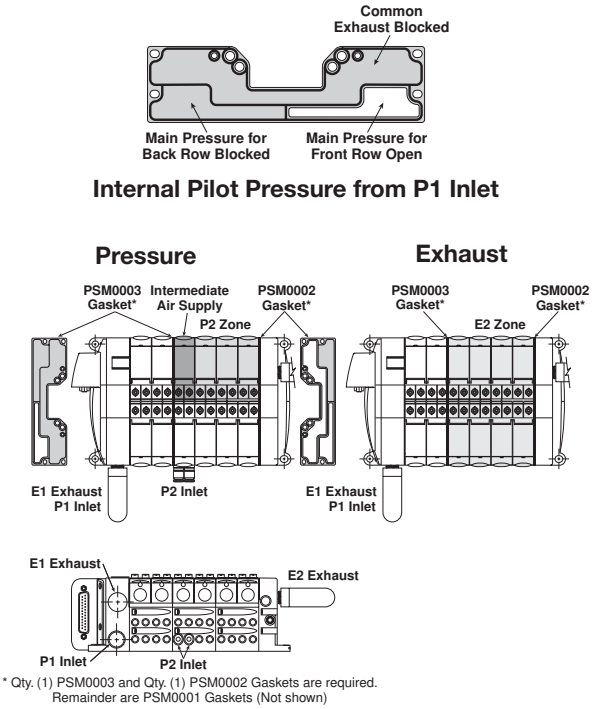

**PSM0002 –**

Rear manifold blocked for separate pressure supply.
Common exhausts.
Flip gasket to block front of manifold.



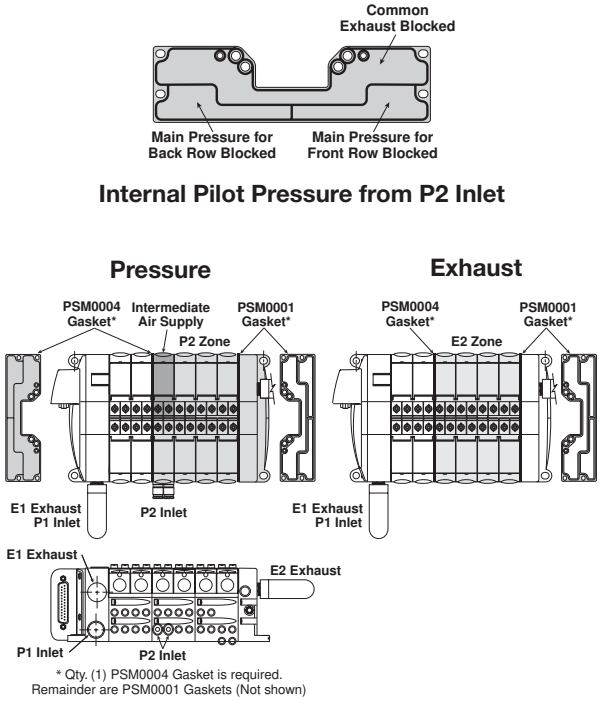

**PSM0003 –**

Rear manifold blocked for separate pressure supply.
Exhaust blocked also.
Flip gasket to block front of manifold.
If used with bottom ported end plates, second exhaust must be piped from the side of the right end plate.




**PSM0004 –**

All galleys blocked.
Two pressure zones and two exhaust zones.
If used with bottom ported end plates, second exhaust must be piped from the side of the right end plate.



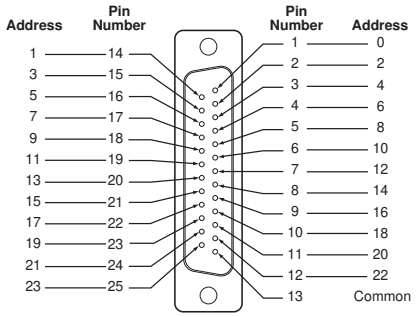
## Maximum Number of Solenoids

**(Maximum Energized Simultaneously)**

| | 25-Pin D-Sub | Moduflex | H Series Fieldbus* |
|---|---|---|---|
| 24VDC | 24 (24) | 24 (24) | 32 (32) |

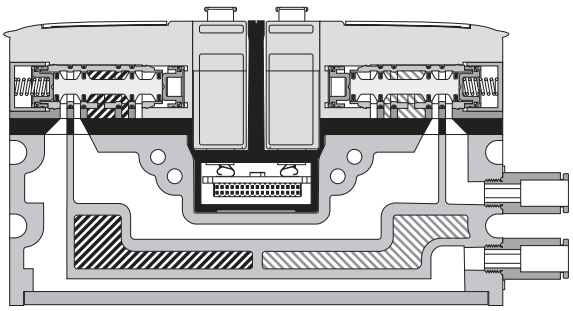
* Maximum of 32 solenoids per manifold. With Bus Extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same network.

## 25-Pin, D-Sub Connector (Male)

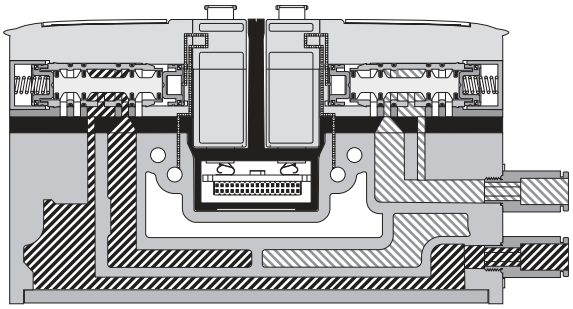



View into End Plate Connector - Male D-Sub, 25-Pin

## Single Solenoid Valves Shown
## Solenoid is De-energized



**Side Exhaust**
4 Ports Connected to Exhaust Port
(5 & 3 Common)



**Side Pressure**
2 Ports Connected to Inlet Port 1

**Inlet Port #1 for Rear Valves**

**Inlet Port #1 for Front Valves**

**3 & 5 Common Exhaust for Front & Rear Valves**

## Cv Values - H Series Micro

The charts below represent the minimum required Cv values for pneumatic systems operating at 80 PSI with a 5 PSI pressure drop.

To use the chart, locate the diameter of the cylinder across the horizontal axis, then the average required rod speed of the cycle. The intersection point is Cv value needed.

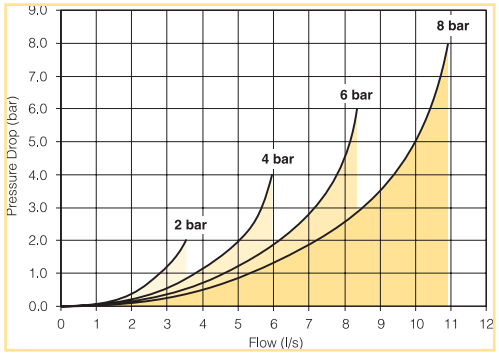
Grayed out values are not attainable with H Series Micro. Please select a larger Parker valve.

| Average Rod Speed (mm/s) | Cylinder Diameter (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| 25 | 0.000 | 0.001 | 0.001 | 0.002 | 0.003 | 0.005 | 0.008 | 0.013 | 0.021 | 0.032 | 0.051 | 0.083 | 0.129 |
| 50 | 0.001 | 0.002 | 0.003 | 0.004 | 0.007 | 0.010 | 0.016 | 0.026 | 0.041 | 0.065 | 0.103 | 0.166 | 0.259 |
| 75 | 0.001 | 0.002 | 0.004 | 0.006 | 0.010 | 0.016 | 0.024 | 0.040 | 0.062 | 0.097 | 0.154 | 0.248 | 0.388 |
| 100 | 0.002 | 0.003 | 0.005 | 0.007 | 0.013 | 0.021 | 0.032 | 0.053 | 0.083 | 0.129 | 0.205 | 0.331 | 0.517 |
| 125 | 0.002 | 0.004 | 0.006 | 0.009 | 0.017 | 0.026 | 0.040 | 0.066 | 0.103 | 0.162 | 0.257 | 0.414 | 0.647 |
| 150 | 0.003 | 0.005 | 0.008 | 0.011 | 0.020 | 0.031 | 0.049 | 0.079 | 0.124 | 0.194 | 0.308 | 0.497 | 0.776 |
| 175 | 0.003 | 0.006 | 0.009 | 0.013 | 0.023 | 0.036 | 0.057 | 0.093 | 0.145 | 0.226 | 0.359 | 0.580 | 0.906 |
| 200 | 0.004 | 0.007 | 0.010 | 0.015 | 0.026 | 0.041 | 0.065 | 0.106 | 0.166 | 0.259 | 0.411 | 0.662 | 1.035 |
| 225 | 0.004 | 0.007 | 0.012 | 0.017 | 0.030 | 0.047 | 0.073 | 0.119 | 0.186 | 0.291 | 0.462 | 0.745 | 1.164 |
| 250 | 0.005 | 0.008 | 0.013 | 0.019 | 0.033 | 0.052 | 0.081 | 0.132 | 0.207 | 0.323 | 0.513 | 0.828 | 1.294 |
| 275 | 0.005 | 0.009 | 0.014 | 0.020 | 0.036 | 0.057 | 0.089 | 0.146 | 0.228 | 0.356 | 0.565 | 0.911 | 1.423 |
| 300 | 0.006 | 0.010 | 0.016 | 0.022 | 0.040 | 0.062 | 0.097 | 0.159 | 0.248 | 0.388 | 0.616 | 0.994 | 1.552 |
| 350 | 0.007 | 0.012 | 0.018 | 0.026 | 0.046 | 0.072 | 0.113 | 0.185 | 0.290 | 0.453 | 0.719 | 1.159 | 1.811 |
| 400 | 0.007 | 0.013 | 0.021 | 0.030 | 0.053 | 0.083 | 0.129 | 0.212 | 0.331 | 0.517 | 0.822 | 1.325 | 2.070 |
| 450 | 0.008 | 0.015 | 0.023 | 0.034 | 0.060 | 0.093 | 0.146 | 0.238 | 0.373 | 0.582 | 0.924 | 1.490 | 2.329 |
| 500 | 0.009 | 0.017 | 0.026 | 0.037 | 0.066 | 0.103 | 0.162 | 0.265 | 0.414 | 0.647 | 1.027 | 1.656 | 2.587 |

| Average Rod Speed (in/s) | Cylinder Diameter (in) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5/16" | 7/16" | 9/16" | 3/4" | 7/8" | 1" | 1-1/16" | 1-1/8" | 1-1/4" | 1-1/2" | 1-3/4" | 2" | 2-1/2" | 3" | 3-1/4" | 3-5/8" | 4" |
| 1 | 0.001 | 0.002 | 0.003 | 0.005 | 0.006 | 0.008 | 0.010 | 0.011 | 0.013 | 0.019 | 0.026 | 0.034 | 0.053 | 0.076 | 0.090 | 0.111 | 0.136 |
| 2 | 0.002 | 0.003 | 0.005 | 0.010 | 0.013 | 0.017 | 0.019 | 0.021 | 0.026 | 0.038 | 0.052 | 0.068 | 0.106 | 0.153 | 0.179 | 0.223 | 0.271 |
| 3 | 0.002 | 0.005 | 0.008 | 0.014 | 0.019 | 0.025 | 0.029 | 0.032 | 0.040 | 0.057 | 0.078 | 0.102 | 0.159 | 0.229 | 0.269 | 0.334 | 0.407 |
| 4 | 0.003 | 0.006 | 0.011 | 0.019 | 0.026 | 0.034 | 0.038 | 0.043 | 0.053 | 0.076 | 0.104 | 0.136 | 0.212 | 0.305 | 0.358 | 0.446 | 0.543 |
| 5 | 0.004 | 0.008 | 0.013 | 0.024 | 0.032 | 0.042 | 0.048 | 0.054 | 0.066 | 0.095 | 0.130 | 0.170 | 0.265 | 0.382 | 0.448 | 0.557 | 0.678 |
| 6 | 0.005 | 0.010 | 0.016 | 0.029 | 0.039 | 0.051 | 0.057 | 0.064 | 0.079 | 0.114 | 0.156 | 0.204 | 0.318 | 0.458 | 0.537 | 0.669 | 0.814 |
| 7 | 0.006 | 0.011 | 0.019 | 0.033 | 0.045 | 0.059 | 0.067 | 0.075 | 0.093 | 0.134 | 0.182 | 0.237 | 0.371 | 0.534 | 0.627 | 0.780 | 0.950 |
| 8 | 0.007 | 0.013 | 0.021 | 0.038 | 0.052 | 0.068 | 0.077 | 0.086 | 0.106 | 0.153 | 0.208 | 0.271 | 0.424 | 0.611 | 0.717 | 0.891 | 1.085 |
| 9 | 0.007 | 0.015 | 0.024 | 0.043 | 0.058 | 0.076 | 0.086 | 0.097 | 0.119 | 0.172 | 0.234 | 0.305 | 0.477 | 0.687 | 0.806 | 1.003 | 1.221 |
| 10 | 0.008 | 0.016 | 0.027 | 0.048 | 0.065 | 0.085 | 0.096 | 0.107 | 0.132 | 0.191 | 0.260 | 0.339 | 0.530 | 0.763 | 0.896 | 1.114 | 1.357 |
| 11 | 0.009 | 0.018 | 0.030 | 0.052 | 0.071 | 0.093 | 0.105 | 0.118 | 0.146 | 0.210 | 0.286 | 0.373 | 0.583 | 0.839 | 0.985 | 1.226 | 1.492 |
| 12 | 0.010 | 0.019 | 0.032 | 0.057 | 0.078 | 0.102 | 0.115 | 0.129 | 0.159 | 0.229 | 0.312 | 0.407 | 0.636 | 0.916 | 1.075 | 1.337 | 1.628 |
| 14 | 0.012 | 0.023 | 0.038 | 0.067 | 0.091 | 0.119 | 0.134 | 0.150 | 0.185 | 0.267 | 0.364 | 0.475 | 0.742 | 1.068 | 1.254 | 1.560 | 1.899 |
| 16 | 0.013 | 0.026 | 0.043 | 0.076 | 0.104 | 0.136 | 0.153 | 0.172 | 0.212 | 0.305 | 0.415 | 0.543 | 0.848 | 1.221 | 1.433 | 1.783 | 2.171 |
| 18 | 0.015 | 0.029 | 0.048 | 0.086 | 0.117 | 0.153 | 0.172 | 0.193 | 0.238 | 0.343 | 0.467 | 0.611 | 0.954 | 1.374 | 1.612 | 2.006 | 2.442 |
| 20 | 0.017 | 0.032 | 0.054 | 0.095 | 0.130 | 0.170 | 0.191 | 0.215 | 0.265 | 0.382 | 0.519 | 0.678 | 1.060 | 1.526 | 1.791 | 2.229 | 2.713 |

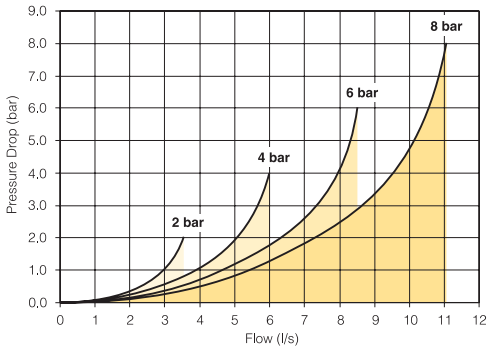
## Flow Characteristics

### Dual 3/2



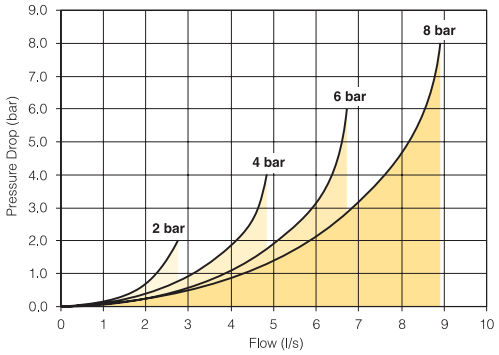

| | |
|---|---|
| Operating pressure: | 39 to 120.3 PSI (2.7 to 8.3 bar) |
| Change-over time (side 14): | Actuation 15 ms<br>Return 20 ms P = 6b |
| Change-over time (side 12): | 15 ms / 25 ms P = 6b |
| Flow (acc. to ISO 6358): | c = 1.2 Nl/s x bar<br>b = 0.13<br>Qn = 4.6 Nl/s<br>Qmax = 8.4 Nl/s |

### 5/2 single and double solenoid




| | |
|---|---|
| Operating pressure: | |
| Single solenoid | 39 to 120.3 PSI (2.7 to 8.3 bar) |
| Double solenoid | 24.6 to 120.3 PSI (1.7 to 8.3 bar) |
| Change-over time: | |
| Single solenoid | Actuation 15 ms<br>Return 20 ms P = 6b |
| Double solenoid | 13 ms / 13 ms P = 6b |
| Flow (acc. to ISO 6358): | c = 1.2 Nl/s x bar<br>b = 0.13<br>Qn = 4.7 Nl/s<br>Qmax = 8.5 Nl/s |

### 5/3 all ports blocked



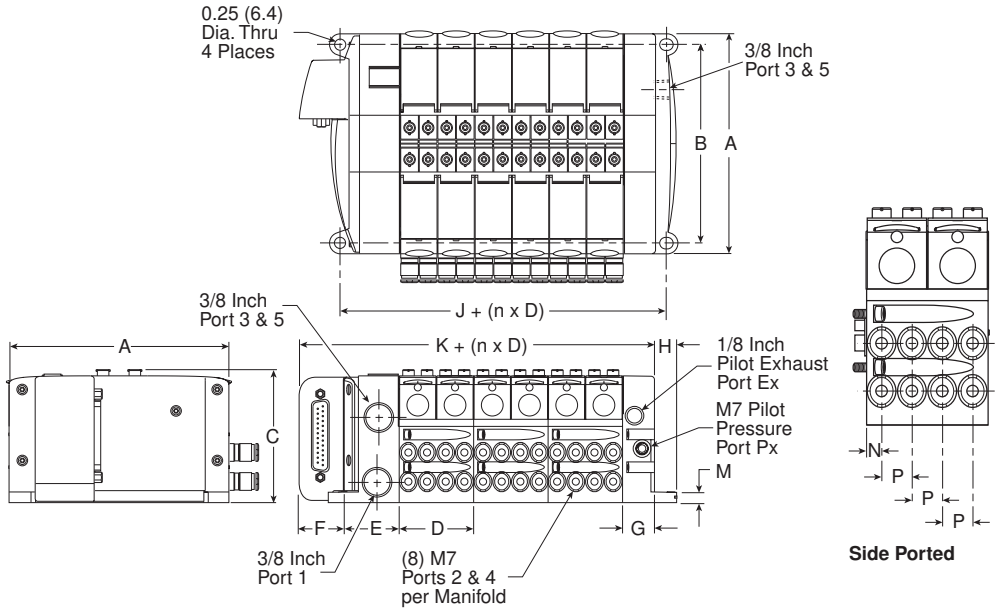

| | |
|---|---|
| Operating pressure: | 39 to 120.3 PSI (2.7 to 8.3 bar) |
| Change-over time: | Actuation 20 ms<br>Return 20 ms P = 6b |
| Flow (acc. to ISO 6358): | c = 1 Nl/s x bar<br>b = 0.14<br>Qn = 3.8 Nl/s<br>Qmax = 6.7 Nl/s |

## Characteristics

| | |
|---|---|
| Fluid: | Air or inert gas<br>Filtered 40 µ<br>Class 5 (according to ISO 8573-1)<br>Dry class 4 (according to ISO 8573-1)<br>Non-lubricated or lubricated |
| Storage temperature: | 104°F to 158°F (-40°C to 70°C) |
| Working temperature: | 5°F to 122°F (-15°C to 50°C) |
| Vibration: | according to IEC 68-2-6<br>2G to 150 Hz |
| Shock: | according to IEC 68-2-27<br>15G 11 ms |

| | |
|---|---|
| Operating pressure: | -13 to 120.3 PSI (-0.9 to 8,3 bar)<br>with external pressure 87 PSI (6 bar) |
| Piloting pressure: | 37 to 120.3 PSI (2.7 to 8.3 bar) |
| Exhaust collection: | Independent exhaust collection |
| Rated coil voltage: | 24 VDC -15 % / +10 % |
| Electrical connection: | Not polarized |
| Coil insulation: | Class B |
| Power consumption: | 1 W (42 mA) with LED |
| Duty factor: | 100 % at 68°F (20°C) |

## 25-pin, D-Sub with H Series Micro Valves, Side Ported



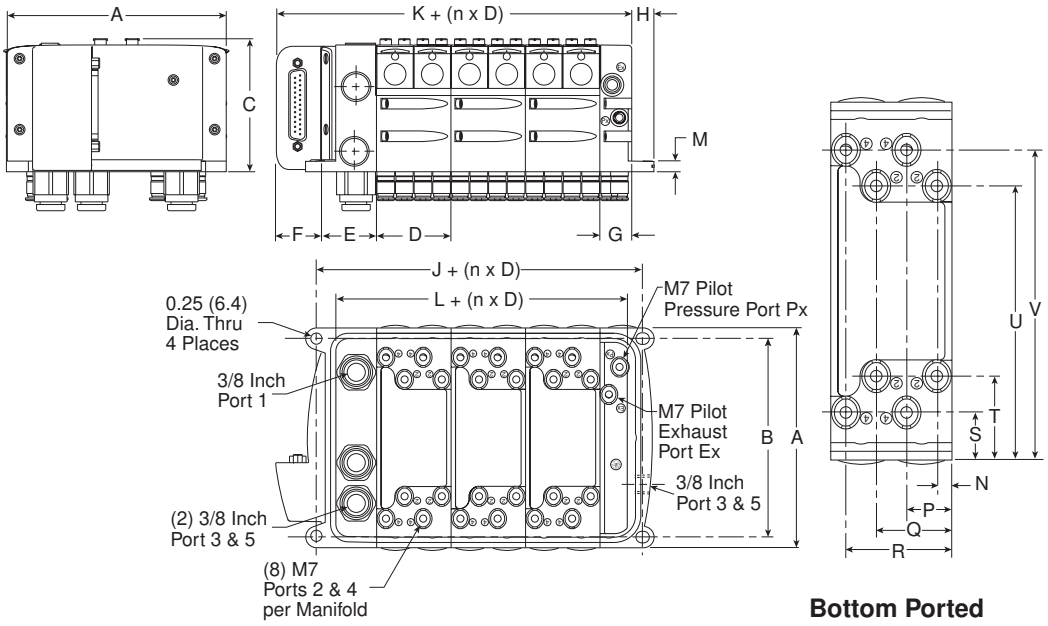

**Side Ported**

### Dimensions

| A | B | C | D |
|---|---|---|---|
| 4.88 (124.0) | 4.41 (112.0) | 2.95 (75.0) | 1.65 (42.0) |
| **E** | **F** | **G** | **H** |
| 1.22 (31.0) | 1.02 (26.0) | 0.71 (18.0) | 0.49 (12.5) |
| **J** | **K** | **M** | **N** |
| 2.28 (58.0) | 3.44 (87.5) | 0.24 (6.1) | 0.21 (5.2) |
| **P** | | | |
| 0.41 (10.5) | | | |

Inches (mm)
n = Number of manifolds

## 25-pin, D-Sub with H Series Micro Valves, Bottom Ported




**Bottom Ported Detail**

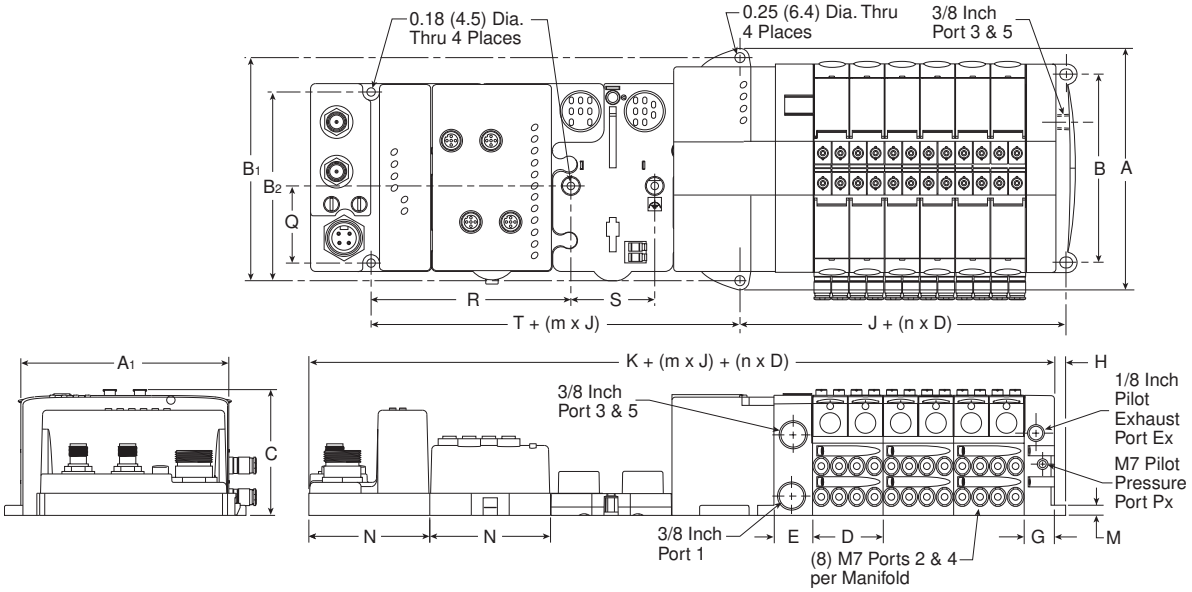
### Dimensions

| A | B | C | D |
|---|---|---|---|
| 4.88 (124.0) | 4.41 (112.0) | 2.95 (75.0) | 1.65 (42.0) |
| **E** | **F** | **G** | **H** |
| 1.22 (31.0) | 1.02 (26.0) | 0.71 (18.0) | 0.49 (12.5) |
| **J** | **K** | **L** | **M** |
| 2.28 (58.0) | 3.44 (87.5) | 1.69 (43.0) | 0.24 (6.1) |
| **N** | **P** | **Q** | **R** |
| 0.21 (5.3) | 0.62 (15.8) | 1.03 (26.3) | 1.45 (36.8) |
| **S** | **T** | **U** | **V** |
| 0.64 (16.40) | 1.14 (29.0) | 3.73 (94.9) | 4.23 (107.4) |

Inches (mm)
n = Number of manifolds

**Note:**
See Fieldbus Section for the dimensions of manifolds utilizing the H Series Fieldbus, Turck, or Moduflex end plate type.

## H Series Fieldbus with H Series Micro Valves, Side Ported



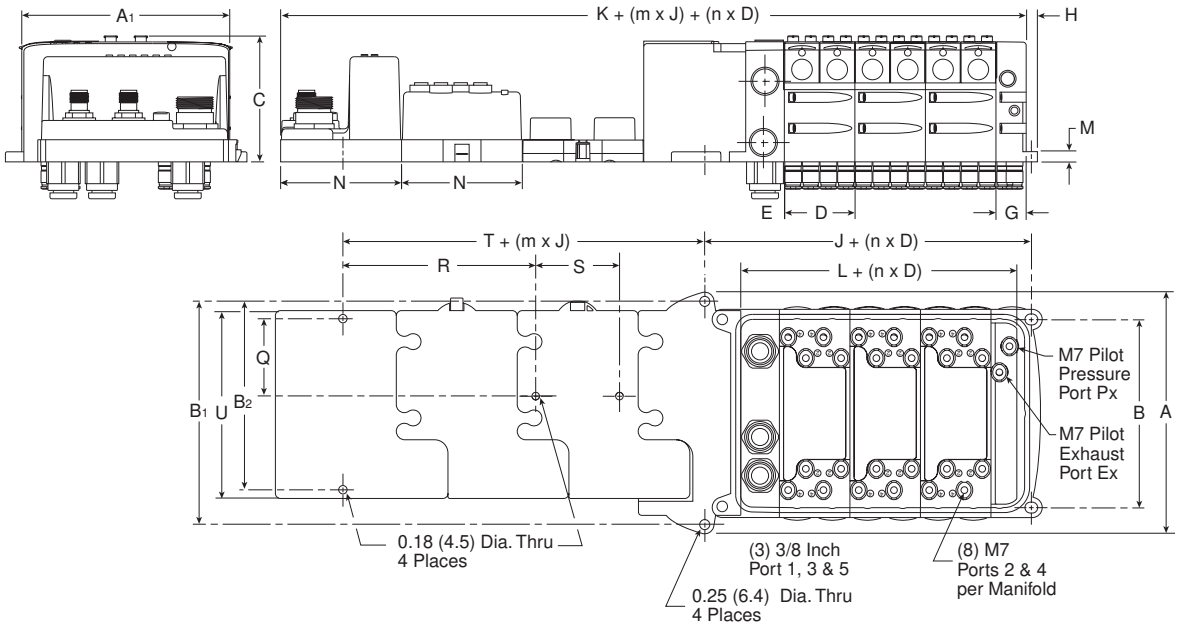

### Dimensions

| A | A1 | B | B1 | B2 | C | D | E | G |
|---|---|---|---|---|---|---|---|---|
| 5.67 (144.0) | 4.88 (124.0) | 4.41 (112.0) | 5.24 (133.0) | 4.02 (102.0) | 2.95 (75.0) | 1.65 (42.0) | 0.91 (23.0) | 0.71 (18.0) |

| H | J | K | M | N | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|
| 0.49 (12.5) | 2.72 (69.0) | 7.32 (186.0) | 0.24 (6.1) | 2.83 (72.0) | 1.81 (46.0) | 4.72 (120.0) | 2.01 (51.0) | 2.01 (51.0) |

Inches (mm)
n = Number of Manifolds
m = Number of Modules

## H Series Fieldbus with H Series Micro Valves, Bottom Ported




### Dimensions

| A | A1 | B | B1 | B2 | C | D | E | G | H |
|---|---|---|---|---|---|---|---|---|---|
| 5.67 (144.0) | 4.88 (124.0) | 4.41 (112.0) | 5.24 (133.0) | 4.02 (102.0) | 2.95 (75.0) | 1.65 (42.0) | 0.91 (23.0) | 0.71 (18.0) | 0.49 (12.5) |

| J | K | L | M | N | Q | R | S | T | U |
|---|---|---|---|---|---|---|---|---|---|
| 2.72 (69.0) | 7.32 (186.0) | 1.69 (43.0) | 0.24 (6.1) | 2.83 (72.0) | 1.81 (46.0) | 4.72 (120.0) | 2.01 (51.0) | 2.01 (51.0) | 4.41 (112) |

Inches (mm)
n = Number of Manifolds
m = Number of Modules





For inventory, lead time, and kit lookup, visit www.pdnplu.com

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Pneumatic Division
Richland, Michigan
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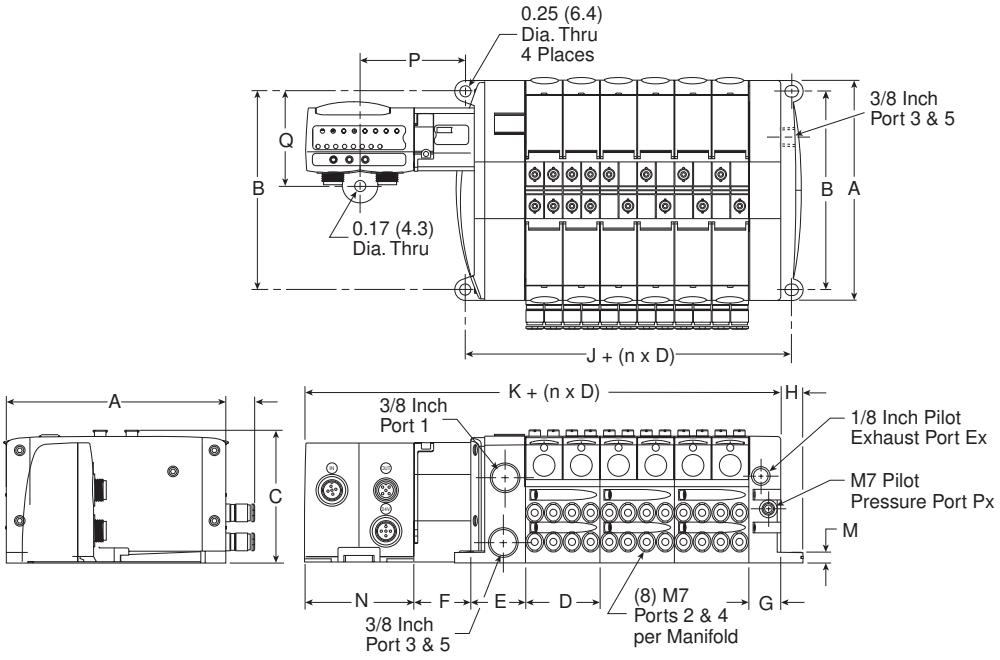
## Moduflex with H Series Micro Valves, Side Ported

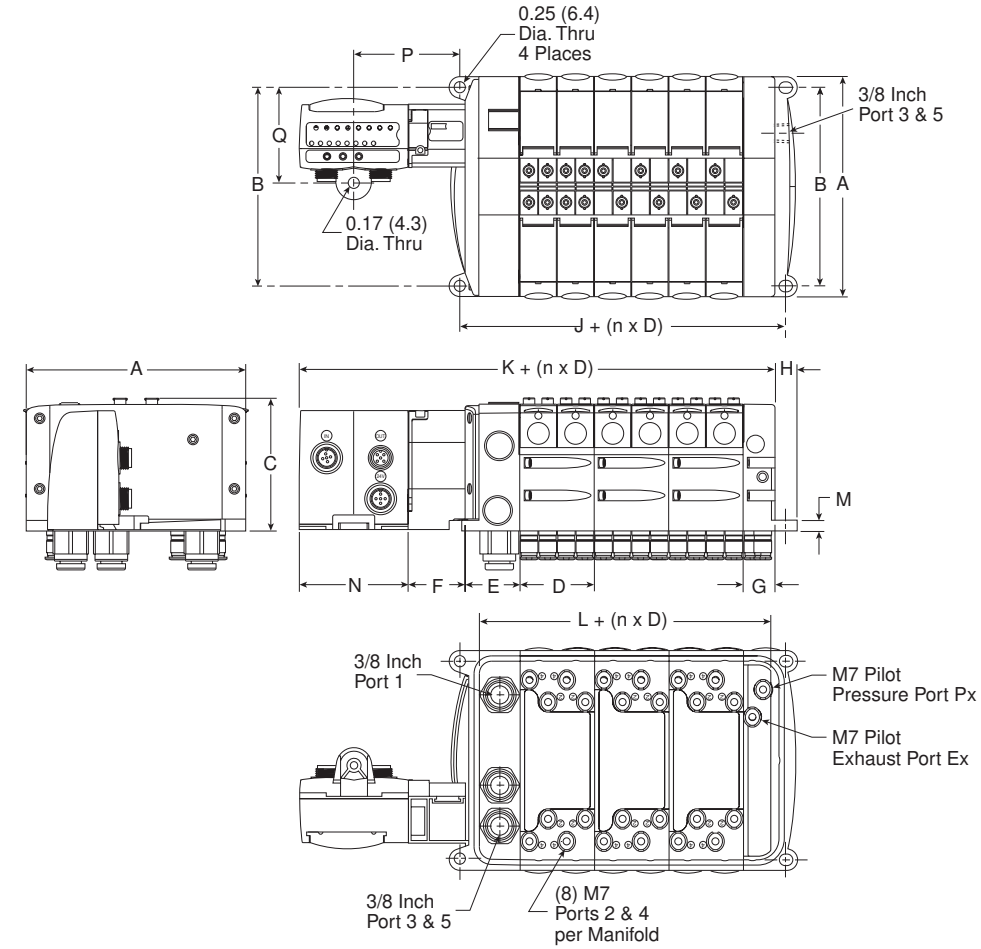



### Dimensions

| A | B | C | D |
|---|---|---|---|
| 4.88 (124.0) | 4.41 (112.0) | 2.95 (75.0) | 1.65 (42.0) |
| **E** | **F** | **G** | **H** |
| 1.22 (31.0) | 1.28 (32.5) | 0.71 (18.0) | 0.49 (12.5) |
| **J** | **K** | **M** | **N** |
| 2.28 (58.0) | 6.10 (155.0) | 0.24 (6.1) | 2.40 (61.0) |
| **P** | **Q** | | |
| 2.36 (60.0) | 2.07 (52.55) | | |

Inches (mm)
n = Number of manifolds

## Moduflex with H Series Micro Valves, Bottom Ported




### Dimensions

| A | B | C | D |
|---|---|---|---|
| 4.88 (124.0) | 4.41 (112.0) | 2.95 (75.0) | 1.65 (42.0) |
| **E** | **F** | **G** | **H** |
| 1.22 (31.0) | 1.02 (26.0) | 0.71 (18.0) | 0.49 (12.5) |
| **J** | **K** | **L** | **M** |
| 2.28 (58.0) | 6.10 (155.0) | 1.69 (43.0) | 0.24 (6.1) |
| **N** | **P** | **Q** | |
| 2.40 (61.0) | 2.36 (60.0) | 2.07 (52.55) | |

Inches (mm)
n = Number of manifolds





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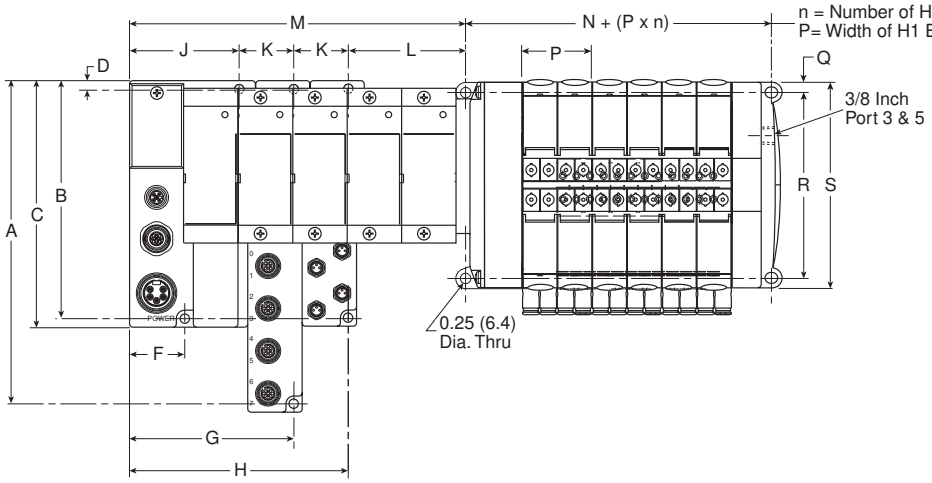
## Turck with H Series Micro Valves, Side Ported

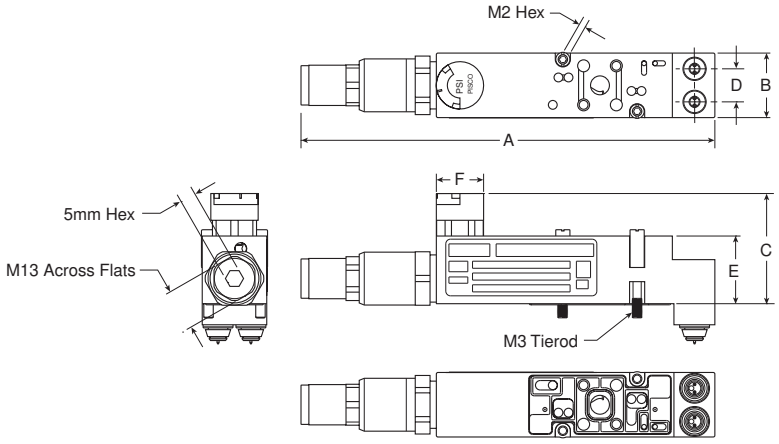



### Dimensions

| A | B | C | D |
|---|---|---|---|
| 7.48 (190) | 5.51 (140) | 5.71 (145) | 0.20 (5) |
| **F** | **G** | **H** | **J** |
| 1.28 (32.5) | 3.79 (96.5) | 5.06 (128.5) | 2.53 (64.5) |
| **K** | **L** | **M** | **N** |
| 1.26 (32) | 2.54 (64) | See note 1 | 2.28 (58) |
| **P** | **Q** | **R** | **S** |
| 1.65 (42) | .19 (4.9) | 4.41 (112) | 4.88 (124) |

Note 1: M =J+L+$n_2$xK, where $n_2$ = Number of Turck input / output modules
Inches (mm)

## Sandwich Regulator



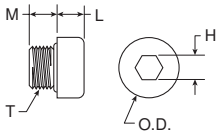

### Dimensions

| A | B | C | D |
|---|---|---|---|
| 5.20 (132) | 0.81 (20.5) | 1.38 (35) | 0.41 (10.5) |
| **E** | **F** | | |
| 0.85 (21.5) | 0.59Ø (15Ø) | | |

Inches (mm)

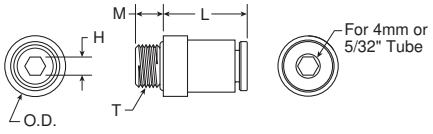
## M7 Fittings

### PS567900 – Kit PSM0013



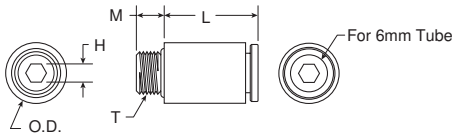

| Part no. | L | M | H hex | T thread | O.D. |
|---|---|---|---|---|---|
| PS567900 | 0.18 (4.5) | 0.20 (5) | 0.16 (4) | M7 x 1 | 0.39 (10) |

### PS567904



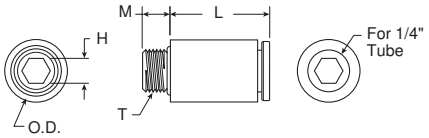

| Part no. | Tube size | L | M | H Hex | T thread | O.D. |
|---|---|---|---|---|---|---|
| PS567904 | 4mm or 5/32" | 0.55 (14) | 0.20 (5) | 0.12 (3) | M7 x 1 | 0.39 (10) |

### PS567906




| Part no. | Tube size | L | M | H Hex | T thread | O.D. |
|---|---|---|---|---|---|---|
| PS567906 | 6mm | 0.63 (16) | 0.20 (5) | 0.12 (3) | M7 x 1 | 0.39 (10) |

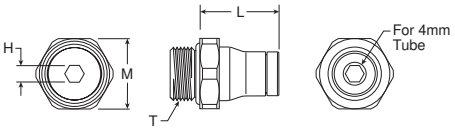
### PS567925




| Part no. | Tube size | L | M | H Hex | T thread | O.D. |
|---|---|---|---|---|---|---|
| PS567925 | 1/4" | 0.65 (16.5) | 0.18 (4.6) | 0.16 (4) | M7 x 1 | 0.41 (10.3) |

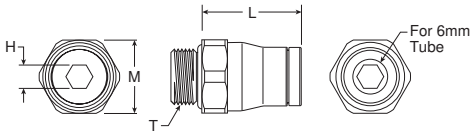
## 1/8 Inch Fittings

### PS568204



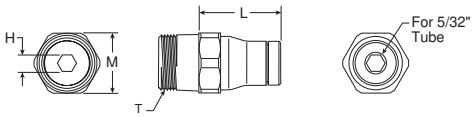

| Part No. | Tube Size | L | M Hex | H Hex | T Thread |
|---|---|---|---|---|---|
| PS568204 | 4mm | 0.57 (14.5) | 0.51 (13) | 0.12 (3) | G1 /8 |

### PS568206



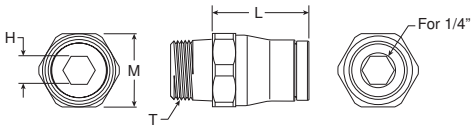

| Part no. | Tube size | L | M Hex | H Hex | T thread |
|---|---|---|---|---|---|
| PS568206 | 6mm | 0.69 (17.5) | 0.51 (13) | 0.16 (4) | G1/8 |

### PS568215




| Part No. | Tube Size | L | M Hex | H Hex | T Thread |
|---|---|---|---|---|---|
| PS568215 | 5/32" | 0.59 (15) | 0.43 (11) | 0.12 (3) | 1/8 NPT |

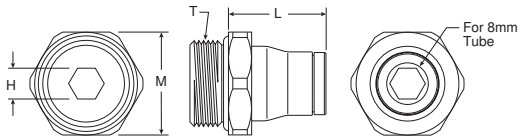
### PS568225




| Part no. | Tube size | L | M Hex | H Hex | T thread |
|---|---|---|---|---|---|
| PS568225 | 1/4" | 0.67 (17) | 0.51 (13) | 0.20 (5) | 1/8 NPT |

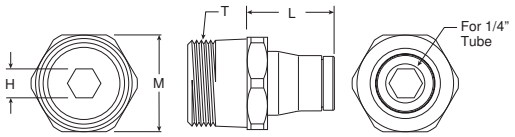
## 3/8 Inch Fittings

### PS568308



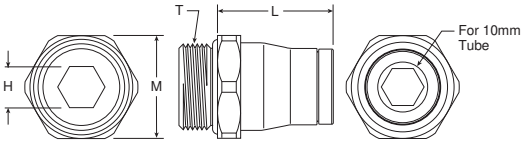

| Part no. | Tube size | L | M Hex | H Hex | T thread |
|---|---|---|---|---|---|
| **PS568308** | 8mm | 0.75 (19) | 0.79 (20) | 0.24 (6) | G3/8 |

### PS568325



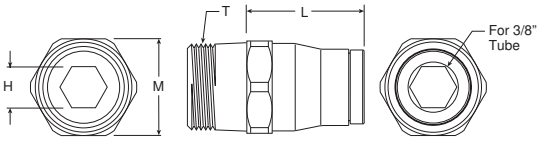

| Part no. | Tube size | L | M Hex | H Hex | T thread |
|---|---|---|---|---|---|
| **PS568325** | 1/4" | 0.67 (17) | 0.71 (18) | 0.20 (5) | 3/8 NPT |

### PS568310




| Part no. | Tube size | L | M Hex | H Hex | T thread |
|---|---|---|---|---|---|
| **PS568310** | 10mm | 0.89 (22.5) | 0.79 (20) | 0.31 (8) | G3/8 |

### PS568338




| Part no. | Tube size | L | M Hex | H Hex | T thread |
|---|---|---|---|---|---|
| **PS568338** | 3/8" | 0.91 (23) | 0.71 (18) | 0.31 (8) | 3/8 NPT |

# Moduflex Series

The Moduflex Valve System redefines flexibility for pneumatic users. Whether configured from basic components or ordered as a pre-assembled and tested valve manifold, Moduflex flexibility is unmatched in the market place.

**Ports**

- Size 1: Push-in connectors for 5/32, 1/4 inch, 4, 6mm OD tube
- Size 2: Push-in connectors for 1/4, 3/8, 1/2 inch, 6, 8, 10, 12 mm OD tube

**Mounting**

- S Series – Individual subbase
- T Series – Manifold mount with individual connectors
- V Series – Manifold mount with collective wiring or fieldbus

**Fieldbus options**

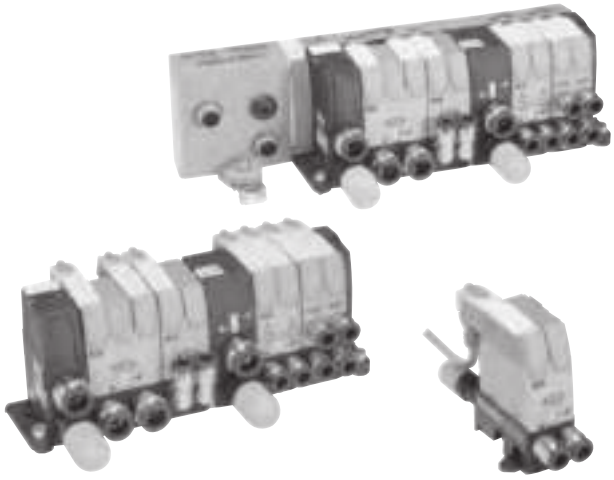
- IO-Link – Class A & Class B
- DeviceNet, Profibus, CANopen, AS-i, Interbus-S

**Solenoids**

- 1.0 Watt
- 24 VDC
- Compatible with PNP or NPN outputs

**Certification / approval**

- IP65 rated
- CE, as marked



## Operating information

| | |
|---|---|
| Operating pressure: | Vacuum to 123 PSIG (Vacuum to 8.3 bar) |
| Operating temperature: | 5°F to 140°F (-15°C to 60°C) |
| Fieldbus operating temperature: | 32°F to 130°F (0°C to 55°C) |

## Material specifications

| | |
|---|---|
| End plates (T and V series) | Plastic |
| Fasteners | Nickel plated steel |
| Spool | Aluminum and nitrile rubber or ceramic plate |
| Subbase or manifold | Plastic |
| Valve body | Plastic |



Most popular.



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

## Module Series Selection and Assembly Procedures

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

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

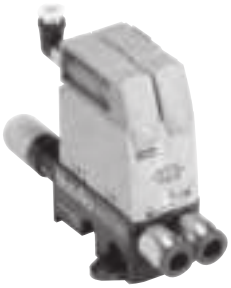
Valve islands can be easily assembled using the following procedure.

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

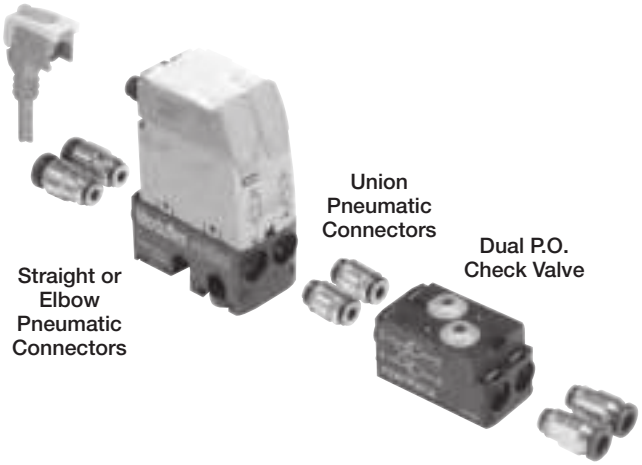
## "S" Series Stand Alone Valves

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

**"S" Series Size 1 Single Solenoid**

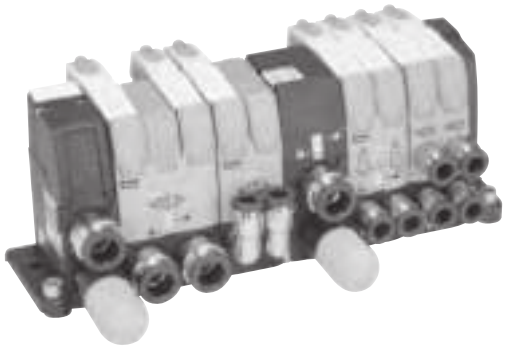


**"S" Series Size 1 Single Air Pilot**



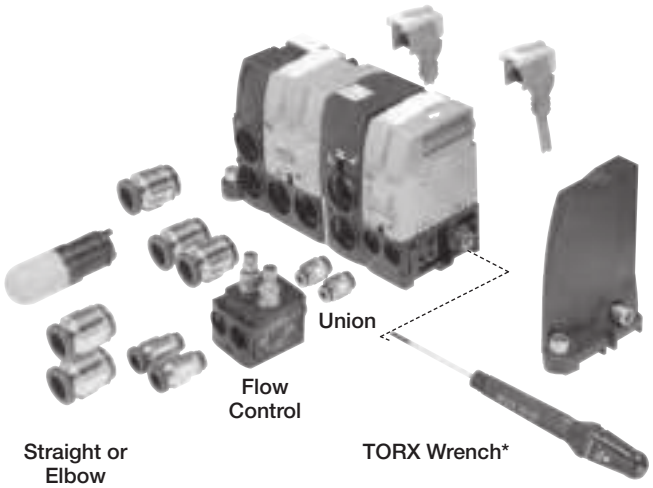

## "T" Series Valve Island Modules with Individual Connectors

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



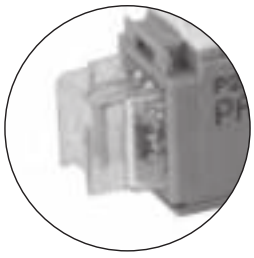
**"T" Series Island Modules**

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




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

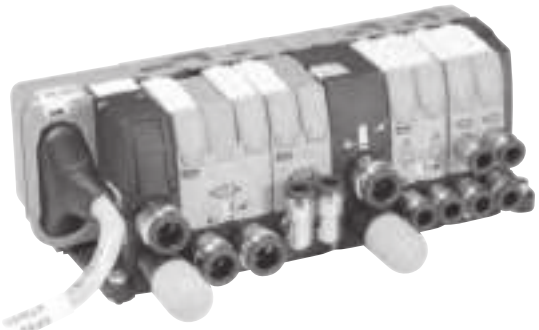
**M8 2-pin, male connector**



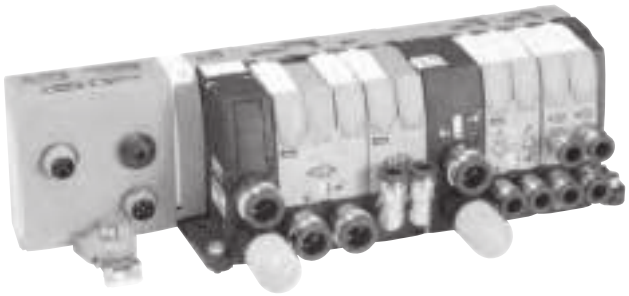
**Clip Connector with LED & surge protection**

## "V" Series Valve Island Modules with Integrated Connections

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

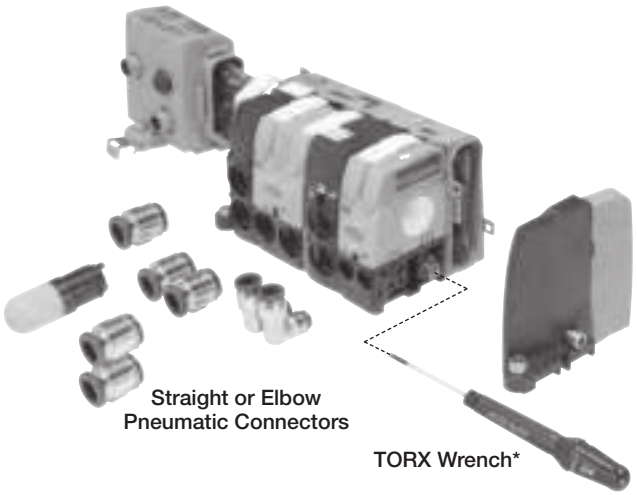


**"V" Series with 20-Pin Connector**



**"V" Series with Field Bus Connection**

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



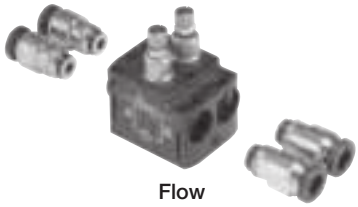
**Straight or Elbow Pneumatic Connectors**

**TORX Wrench***

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

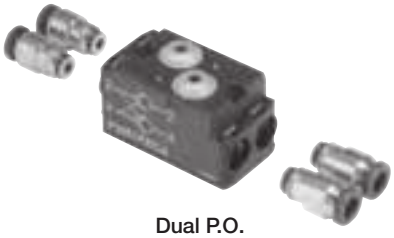
## "P" Series Peripheral Modules

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

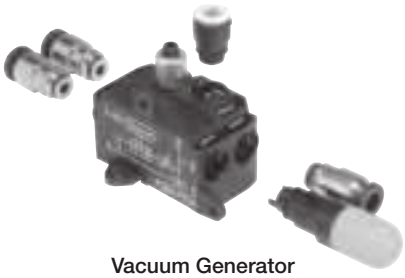


**Flow Control**

**Pressure Regulator**

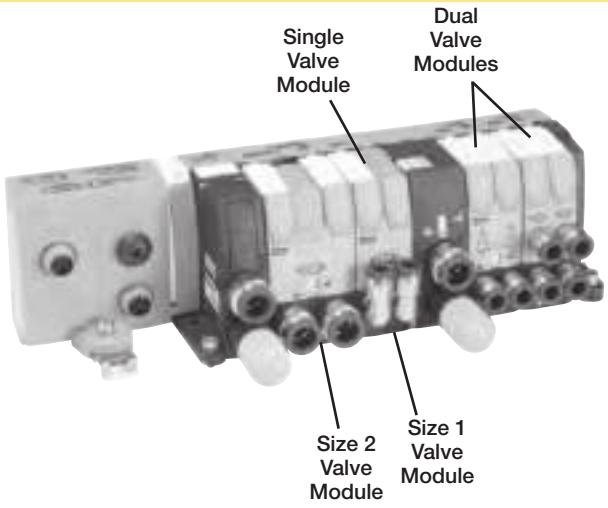


**Dual P.O. Check Valve**



**Vacuum Generator**

## Valve Function



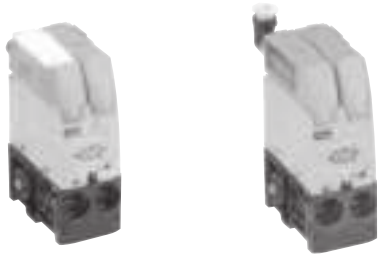
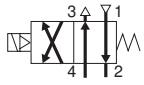
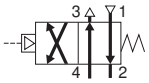
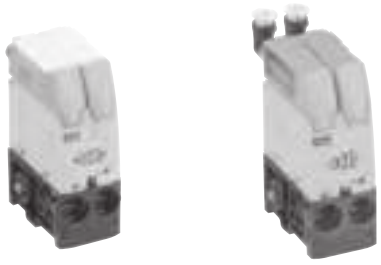
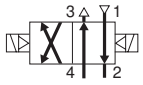
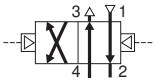

Moduflex Valve Islands offer the greatest flexibility for your design requirements.

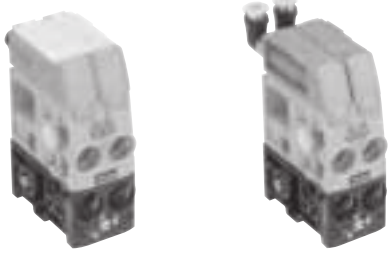
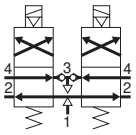
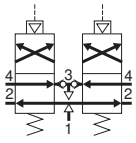
Valve Modules are available as 4-Way or 3-Way valves and can be ordered as single or dual valves. A Single Valve Module has one valve in one valve body. A Dual Valve Module will have 2 valves in one valve body. Each Valve in the Dual Valve Body is controlled by a solenoid or air pilot and can be operated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

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

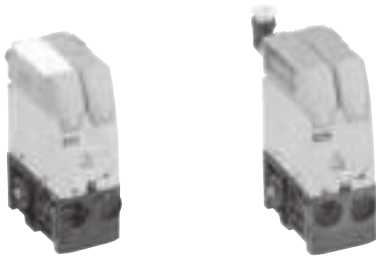
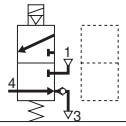
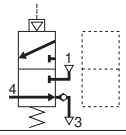
Valve Modules are available in two different valve body sizes. Size 1 and Size 2 Valve Modules can be combined in both "T" and "V" Series Valve Islands without transition kits.

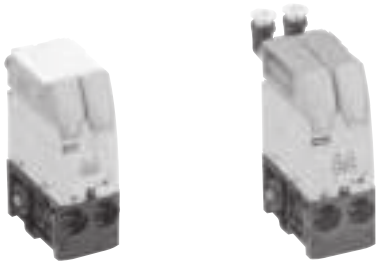
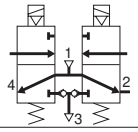
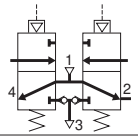
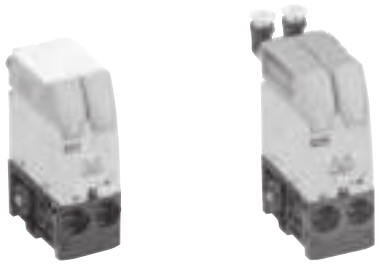
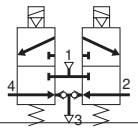
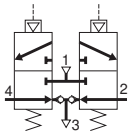
## 4/2, 4-Way, 2-Position Valves

| Single Valves | ANSI Symbol | Description | Size 1 Body | Size 2 Body |
|---|---|---|---|---|
|  |  | Single Solenoid, Spring Return Valve | Cv = .32 | Cv = .80 |
| |  | Single Air Pilot, Spring Return Valve | | |
|  |  | Double Solenoid Valve | Cv = .32 | Cv = .80 |
| |  | Double Air Pilot Valve | | |

| Dual Valves | ANSI Symbol | Description | Size 1 Body | Size 2 Body |
|---|---|---|---|---|
|  |  | (2) Single Solenoid, Spring Return Valve with Exhaust Check.<br>Double Solenoid Valve Body | Cv = .18 | N/A |
| |  | (2) Single Air Pilot, Spring Return Valve with Exhaust Check.<br>Double Air Pilot Valve Body | | |

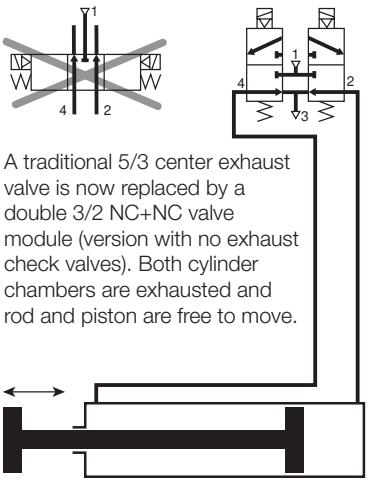
## 3/2, 3-Way, 2-Position Valves

| Single Valves | ANSI Symbol | Description | Size 1 Body | Size 2 Body |
|---|---|---|---|---|
|  |  | Single Solenoid, NC, Spring Return Valve with Exhaust Check. | Cv = .22 | Cv = .44 |
| |  | Single Air Pilot, NC, Spring Return Valve with Exhaust Check. | | |

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

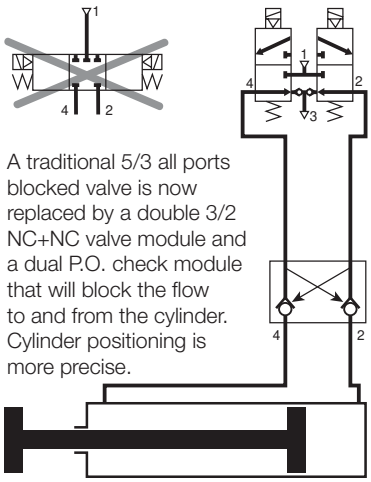
## Dual 3/2 Valves Replace All 3-Position Valves for a Better Performance

### 3-Position Center Exhaust



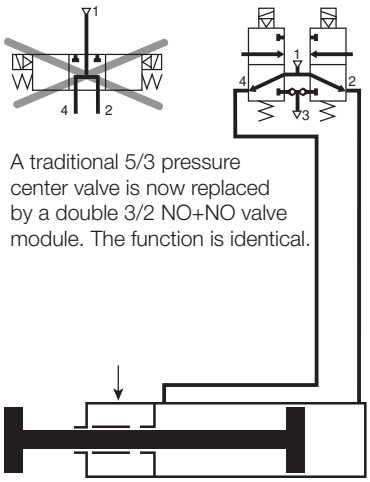
A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module (version with no exhaust check valves). Both cylinder chambers are exhausted and rod and piston are free to move.

### 3-Position All Ports Blocked



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

### 3-Position Pressure Center



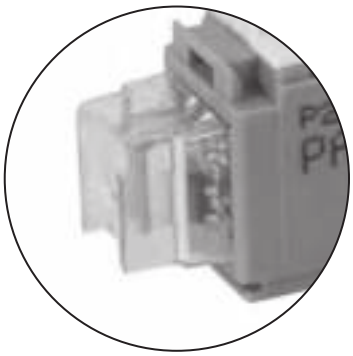
A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.

## "S" Series Individual Subbase Valves (Valve & Base without Pneumatic Connectors)

| | Symbol | Type | Operator | Pilot connector | Cv | Part number Size 1 | Cv | Part number Size 2 |
|---|---|---|---|---|---|---|---|---|
|  Single Solenoid |  | 4-way, 2-position | Single solenoid | M8 Lockable | 0.32 | **P2M1S4ES2C** | 0.8 | **P2M2S4ES2C** |
| | | | | Clip | | **P2M1S4ES2CW** | | **P2M2S4ES2CW** |
| | | | Single air pilot | | | **P2M1S4PS** | | **P2M2S4PS** |
| |  | 4-way, 2-position | Double solenoid | M8 Lockable | 0.32 | **P2M1S4EE2C** | 0.8 | **P2M2S4EE2C** |
| | | | | Clip | | **P2M1S4EE2CW** | | **P2M2S4EE2CW** |
| | | | Double air pilot | | | **P2M1S4PP** | | **P2M2S4PP** |
|  Double Solenoid |  | 3-way, 2-position, dual valve, NC/NC w/ exhaust check | Double solenoid | M8 Lockable | 0.22 | **P2M1SDEE2C** | 0.44 | **P2M2SDEE2C** |
| | | | | Clip | | **P2M1SDEE2CW** | | **P2M2SDEE2CW** |
| | | | Double air pilot | | | **P2M1SDPP** | | **P2M2SDPP** |
| |  | 3-way, 2-position, dual valve, NO/NO w/ exhaust check | Double solenoid | M8 Lockable | 0.22 | **P2M1SCEE2C** | 0.44 | **P2M2SCEE2C** |
| | | | | Clip | | **P2M1SCEE2CW** | | **P2M2SCEE2CW** |
| | | | Double air pilot | | | **P2M1SCPP** | | **P2M2SCPP** |
|  Single Air Pilot |  | 3-way, 2-position, dual valve, NC/NO w/ exhaust check | Double solenoid | M8 Lockable | 0.22 | **P2M1SEEE2C** | 0.44 | **P2M2SEEE2C** |
| | | | | Clip | | **P2M1SEEE2CW** | | **P2M2SEEE2CW** |
| |  | 3-way, 2-position, NC w/ exhaust check | Single solenoid | M8 Lockable | 0.22 | **P2M1S3ES2C** | 0.44 | **P2M2S3ES2C** |
| | | | | Clip | | **P2M1S3ES2CW** | | **P2M2S3ES2CW** |
| | | | Single air pilot | | | **P2M1S3PS** | | **P2M2S3PS** |
| |  | 3-way, 2-position, dual valve, NC/NC | Double solenoid | M8 Lockable | 0.22 | **P2M1SGEE2C** | 0.44 | **P2M2SGEE2C** |
| | | | | Clip | | **P2M1SGEE2CW** | | **P2M2SGEE2CW** |

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

**M8 2-pin, male connector**



**Clip Connector with LED & surge protection**

Most popular.



For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

## "S" Series Accessories

| | Description | Tube Size (OD) | Option | Part number Size 1 | Part number Size 2 |
|---|---|---|---|---|---|
|  | Push to connect fitting | 5/32" | Elbow | **CMD04-1** | — |
| | | | Straight | **FMD04-1** | — |
| | | 1/4" | Elbow | **CMD07-1B** | **CMD07-2B** |
| | | | Straight | **FMD07-1B** | **FMD07-2B** |
| | | 3/8" | Elbow | — | **CMD09-2B** |
|  | | | Straight | — | **FMD09-2B** |
| | | 1/2" | Straight | — | **FMD13-2B** |
| | | 6mm | Elbow | **CMD06-1** | **CMD06-2** |
| | | | Straight | **FMD06-1** | **FMD06-2** |
|  | | 8mm | Elbow | — | **CMD08-2** |
| | | | Straight | — | **FMD08-2** |
| | | 10mm | Elbow | — | **CMD10-2** |
|  | | | Straight | — | **FMD10-2** |
| | | 12mm | Elbow | — | **CMD12-2** |
| | | | Straight | — | **FMD12-2** |
|  | Muffler for exhaust port | | | **MMDVA1** | **MMDVA2** |
|  | Plug | | | — | **PMDYY2** |
|  | Double male union | | Connecting peripheral modules | **HMDXX1** | **HMDXX2** |
|  | M8 female connector to flying lead - IP67 LED and surge protection | | 2m Cable | **P8LS08L226C** | **P8LS08L226C** |
| | | | 5m Cable | **P8LS08L526C** | **P8LS08L526C** |
| | | | 9m Cable | **P8LS08L926C** | **P8LS08L926C** |
|  | Clip connector – IP40<br>Individual: including 2 flying leads<br>Multiple: 1 common (0 VDC) and 1 flying lead per connector | 1 x Clip connector | 1 meter | **P8LW021C** | **P8LW021C** |
| | | 2 x Clip connector | 1 meter | **P8LW021C02** | **P8LW021C02** |
| | | 4 x Clip connector | 1 meter | **P8LW021C04** | **P8LW021C04** |
| | | 8 x Clip connector | 1 meter | **P8LW021C08** | **P8LW021C08** |
|  | Field wireable connector | | M8 Connector | **P8CS0803J** | **P8CS0803J** |
| | | | M12 Connector | **P8CS1204J** | **P8CS1204J** |

**Note: 85 Durometer minimum for pneumatic connectors.**



☐ Most popular.

## "S" Series Individual Subbase Valve
***(Complete with Pneumatic and Electrical Connectors)***

**P2M 1 S 4ES 2C 00 A F4**

| Basic series | |
|---|---|
| Moduflex | P2M |

| Size | |
|---|---|
| Size 1 | 1 |
| Size 2 | 2 |

| Valve series | |
|---|---|
| Individual subbase | S |

| Valve type / function | |
|---|---|
| ***3-way / 2-position*** | |
| **Single solenoid, NC spring return** | **3ES** |
| Single air pilot, NC spring return | 3PS |
| ***4-way / 2-position*** | |
| **Single solenoid, spring return** | **4ES** |
| Single air pilot, spring return | 4PS |
| Double solenoid | 4EE |
| Double air pilot | 4PP |
| ***Dual 3-way, 2-position, spring return*** | |
| Solenoid, NC / NC + PO check (4/3 APB) | BEE* |
| Air pilot, NC / NC + PO check (4/3 APB) | BPP* |
| Solenoid, NO / NO (4/3 Pressure Ctr.) | CEE |
| Air pilot NO / NO (4/3 Pressure Ctr.) | CPP |
| **Solenoid, NC / NC with exhaust check** | **DEE** |
| Air pilot, NC / NC with exhaust check | DPP |
| Solenoid, NO / NC with exhaust check | EEE |
| Solenoid, NC / NC without check (4/3 Exh. Ctr.) | GEE |

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

| Operator voltage | |
|---|---|
| **24VDC** | **2C** |
| Remote pilot - 5/32" (4mm) Tube | 00 |

| LED / Cable | |
|---|---|
| **00** | **No cable, no LED, no surge suppression** |
| **V2** | **2 Meter cable with LED and surge suppression** |
| V5 | 5 Meter cable with LED and surge suppression |
| V9 | 9 Meter cable with LED and surge suppression |
| W0 | No Cable |
| W1 | 1 Meter cable, clip connector |

| Fitting configuration | |
|---|---|
| **A*** | **Straight fittings** |
| **B*** | **Elbow fittings** |
| **C*†** | **Straight fitting & muffler** |
| **D*†** | **Elbow fitting & muffler** |

* Ports 1 & 3 fittings sizes are same as ports 2 & 4 (see example at left.)

† Fitting in port 1, muffler in port 3.

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

* Only available with size 2 valves.

**Example for fitting configuration:**

**Size 1**

**CF7** Ports 1 & 3
1/4" straight fitting
& muffler
Ports 2 & 4
1/4" straight fittings

**Size 2**

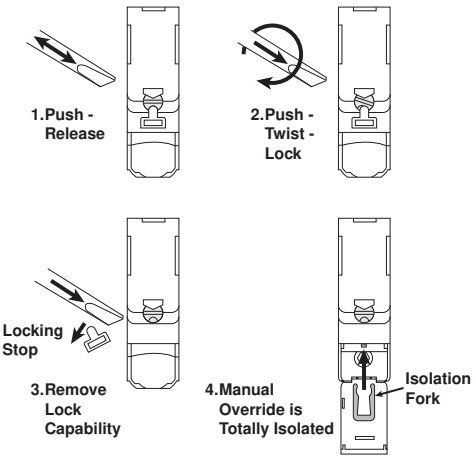
**AC0** Ports 1 & 3
10mm elbow fittings
Ports 2 & 4
10mm elbow fittings

### With only one universal solenoid pilot for all configurations

24VDC is now a global standard for all machines.

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

### Multi-function adaptable manual override




Most popular.

"S" Series Single Solenoid

**Example:**

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

## How to Order Complete Valve Assembly

| Line Item | Quantity | Part Number | Description |
|---|---|---|---|
| 1 | 1 | **P2M1S4ES2CV2CF7** | Size 1, Individual Subbase Valve, 4 Way, Single Solenoid, 2m Cable with LED / Surge Suppression, Exhaust Muffler with 1/4" OD Straight Port Fittings |

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

## How to Order Components

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| 1 | 1 | **P2M1S4ES2C** | Size 1, Individual Subbase Valve, Single Solenoid, 4 Way |
| 2 | 1 | **P8LS08L226C** | 2m Cable with LED / Surge Suppression |
| 3 | 3 | **FMD07-1B** | Size 1, 1/4" OD Tube Push In Connector |
| 4 | 1 | **MMDVA1** | Size 1, Muffler for Exhaust Port |

## "T" Series Manifold Valves with Individual Connectors

| | Symbol | Type | Operator | Pilot connector | Cv | Part number Size 1 | Cv | Part number Size 2 |
|---|---|---|---|---|---|---|---|---|
|  Single Solenoid |  | 4-way, 2-position | Single solenoid | M8 Lockable | 0.32 | **P2M1T4ES2C** | 0.8 | **P2M2T4ES2C** |
| | | | | Clip | | **P2M1T4ES2CW** | | **P2M2T4ES2CW** |
| | | | Single air pilot | | | **P2M1T4PS** | | **P2M2T4PS** |
| |  | 4-way, 2-position | Double solenoid | M8 Lockable | 0.32 | **P2M1T4EE2C** | 0.8 | **P2M2T4EE2C** |
| | | | | Clip | | **P2M1T4EE2CW** | | **P2M2T4EE2CW** |
| | | | Double air pilot | | | **P2M1T4PP** | | **P2M2T4PP** |
| |  | 4-way, 2-position, dual valve w/ exhaust check | Double solenoid | M8 Lockable | 0.18 | **P2M1TJEE2C** | | — |
| | | | | Clip | | **P2M1TJEE2CW** | | — |
| | | | Double air pilot | | | **P2M1TJPP** | | — |
|  Double Solenoid |  | 3-way, 2-position, dual valve, NC/NC w/ exhaust check | Double solenoid | M8 Lockable | 0.22 | **P2M1TDEE2C** | 0.44 | **P2M2TDEE2C** |
| | | | | Clip | | **P2M1TDEE2CW** | | **P2M2TDEE2CW** |
| | | | Double air pilot | | | **P2M1TDPP** | | **P2M2TDPP** |
| |  | 3-way, 2-position, dual valve, NO/NO w/ exhaust check | Double solenoid | M8 Lockable | 0.22 | **P2M1TCEE2C** | 0.44 | **P2M2TCEE2C** |
| | | | | Clip | | **P2M1TCEE2CW** | | **P2M2TCEE2CW** |
| | | | Double air pilot | | | **P2M1TCPP** | | **P2M2TCPP** |
|  Single Air Pilot |  | 3-way, 2-position, dual valve, NC/NO w/ exhaust check | Double solenoid | M8 Lockable | 0.22 | **P2M1TEEE2C** | 0.44 | **P2M2TEEE2C** |
| | | | | Clip | | **P2M1TEEE2CW** | | **P2M2TEEE2CW** |
| |  | 3-way, 2-position, NC w/ exhaust check | Single solenoid | M8 Lockable | 0.22 | **P2M1T3ES2C** | 0.44 | **P2M2T3ES2C** |
| | | | | Clip | | **P2M1T3ES2CW** | | **P2M2T3ES2CW** |
| | | | Single air pilot | | | **P2M1T3PS** | | **P2M2T3PS** |
| |  | 3-way, 2-position, dual valve, NC/NC | Double solenoid | M8 Lockable | 0.22 | **P2M1TGEE2C** | 0.44 | **P2M2TGEE2C** |
| | | | | Clip | | **P2M1TGEE2CW** | | **P2M2TGEE2CW** |

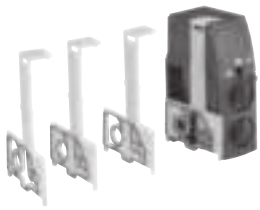
**Note: Includes 5/32" (4mm) Air Pilot Connectors.**

## Manifold Options

| Module | Part number |
|---|---|
| Pneumatic end plate kit | **P2M2HXT01*** |
| Pneumatic end plate kit with torx screwdriver | **P2M2HXT0T*** |
| Intermediate supply module (Includes 4 configuration plates) | **P2M2BXT0A*** |

* Use Fittings for Size 2 Modules Only


P2M2HXT01


P2M2BXT0A


**M8 2-pin, male connector**


**Clip Connector with LED & surge protection**

Most popular.



For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

## "T" Series Size Accessories

| | Description | Tube size OD | Option | Part number Size 1 | Part number Size 2 |
|---|---|---|---|---|---|
|  | Push to connect fitting | 5/32" or 4mm | Elbow | **CMD04-1** | — |
| | | | Straight | **FMD04-1** | — |
| | | 1/4" | Elbow | **CMD07-1B** | **CMD07-2B** |
| | | | Straight | **FMD07-1B** | **FMD07-2B** |
|  | | 3/8" | Elbow | — | **CMD09-2B** |
| | | | Straight | — | **FMD09-2B** |
| | | 1/2" | Straight | — | **FMD13-2B** |
|  | | 6mm | Elbow | **CMD06-1** | **CMD06-2** |
| | | | Straight | **FMD06-1** | **FMD06-2** |
| | | 8mm | Elbow | — | **CMD08-2** |
| | | | Straight | — | **FMD08-2** |
|  | | 10mm | Elbow | — | **CMD10-2** |
| | | | Straight | — | **FMD10-2** |
| | | 12mm | Elbow | — | **CMD12-2** |
| | | | Straight | — | **FMD12-2** |
|  | Muffler for exhaust port | | | **MMDVA1** | **MMDVA2** |
|  | Plug | | | **PMDYY1** | **PMDYY2** |
|  | Double male union | | Connecting peripheral modules | **HMDXX1** | **HMDXX2** |
|  | M8 female connector to flying lead - IP67 LED and surge protection | | 2M cable | **P8LS08L226C** | **P8LS08L226C** |
| | | | 5M cable | **P8LS08L526C** | **P8LS08L526C** |
| | | | 9M cable | **P8LS08L926C** | **P8LS08L926C** |
|  | Clip connector – IP40 | 1 x Clip connector | 1 meter | **P8LW021C** | **P8LW021C** |
| | Individual: including 2 flying leads | 2 x Clip connector | 1 meter | **P8LW021C02** | **P8LW021C02** |
| | Multiple: 1 common (0 VDC) and 1 flying lead per connector | 4 x Clip connector | 1 meter | **P8LW021C04** | **P8LW021C04** |
| | | 8 x Clip connector | 1 meter | **P8LW021C08** | **P8LW021C08** |
|  | Field wireable connector | | M8 connector | **P8CS0803J** | **P8CS0803J** |
| | | | M12 connector | **P8CS1204J** | **P8CS1204J** |
|  | Torx screwdriver | | | **P2M1K0TASD** | **P2M1K0TASD** |

**Note: 85 Durometer minimum for pneumatic connectors.**

☐ **Most popular.**

## "T" Series Valve Manifold with Individual Connectors

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

**P2M | 1 | T | 4ES | 2C | 00 | 0 | F4**

| Basic series | |
|---|---|
| Valvetronic modules | P2M |

| Size | |
|---|---|
| Size 1 | 1 |
| Size 2 | 2 |

| Valve series | |
|---|---|
| Individual wire | T |

| Valve type / function | |
|---|---|
| *3-way / 2-position* | |
| Single solenoid, NC spring return | 3ES |
| Single air pilot, NC spring return | 3PS |
| *4-way / 2-position* | |
| Single solenoid, spring return | 4ES |
| Single air pilot, spring return | 4PS |
| Double solenoid | 4EE |
| Double air pilot | 4PP |
| *Dual 3-way, 2-position, spring return* | |
| Solenoid, NC / NC + PO check (4/3 APB) | BEE* |
| Air pilot, NC / NC + PO check (4/3 APB) | BPP* |
| Solenoid, NO / NO (4/3 Pressure Ctr.) | CEE |
| Air pilot NO / NO (4/3 Pressure Ctr.) | CPP |
| Solenoid, NC / NC with exhaust check | DEE |
| Air pilot, NC / NC with exhaust check | DPP |
| Solenoid, NO / NC with exhaust check | EEE |
| Solenoid, NC / NC without check (4/3 Exh. Ctr.) | GEE |
| *Dual 4-way, 2-position, Spring Return* | |
| Solenoid | JEE** |
| Air pilot | JPP** |

* Valve includes peripheral P. O. check valve and union fittings.
** Size 1 only.

| Operator Voltage | |
|---|---|
| 2C | 24VDC |
| 00 | Remote pilot - 5/32" (4mm) tube |

| LED / Cable | |
|---|---|
| 00 | No cable, no LED, no surge suppression |
| V2 | 2 Meter cable with LED and surge suppression |
| V5 | 5 Meter cable with LED and surge suppression |
| V9 | 9 Meter cable with LED and surge suppression |
| W0 | No Cable |
| W1 | 1 Meter cable, clip connector |

| Ports 1 & 3 | |
|---|---|
| 0 | None |

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

* Only available with size 2 valves.

### With only one universal solenoid pilot for all configurations

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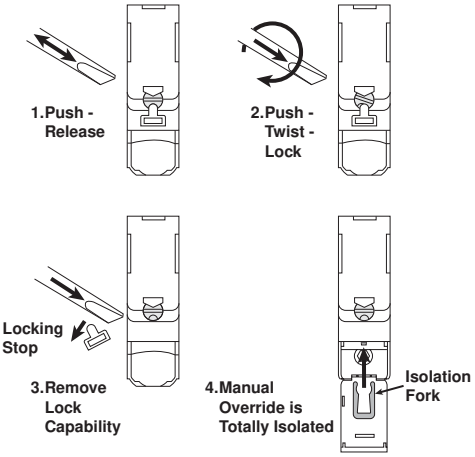
### Multi-function adaptable manual override




Most popular.

**"T" Series Single Solenoid**

**Example:**

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

## How to Order Complete Valve Assembly

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| 1 | 1 | **P2M1T4ES2CV20F7** | Size 1, T Series Manifold Valves, 4 Way, Single Solenoid, 2m Cable with LED / Surge Suppression, 1/4" OD Straight Port Fittings |

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

## How to Order Components

| Line Item | Quantity | Part Number | Description |
|---|---|---|---|
| 1 | 1 | **P2M1T4ES2C** | Size 1, T Series Manifold Valves, Single Solenoid, 4 Way |
| 2 | 1 | **P8LS08L226C** | 2m Cable with LED / Surge Suppression |
| 3 | 2 | **FMD07-1B** | Size 1, 1/4" OD Tube Push In Connector |

## "V" Series Manifold Valves with Collective Wiring

Single Solenoid

Double Solenoid

| Symbol | Type | Operator | Cv | Part number Size 1 | Cv | Part number Size 2 |
|---|---|---|---|---|---|---|
|  | 4-way, 2-position | Single solenoid | 0.32 | **P2M1V4ES2CV** | 0.8 | **P2M2V4ES2CV** |
|  | 4-way, 2-position | Double solenoid | 0.32 | **P2M1V4EE2CV** | 0.8 | **P2M2V4EE2CV** |
|  | 4-way, 2-position, dual valve, w/ exhaust check | Double solenoid | 0.18 | **P2M1VJEE2CV** | | |
|  | 3-way, 2-position, dual valve, NC/NC w/ exhaust check | Double solenoid | 0.22 | **P2M1VDEE2CV** | 0.44 | **P2M2VDEE2CV** |
|  | 3-way, 2-position, dual valve, NO/NO w/ exhaust check | Double solenoid | 0.22 | **P2M1VCEE2CV** | 0.44 | **P2M2VCEE2CV** |
|  | 3-way, 2-position, dual valve, NC/NO w/ exhaust check | Double solenoid | 0.22 | **P2M1VEEE2CV** | 0.44 | **P2M2VEEE2CV** |
|  | 3-way, 2-position, NC w/ exhaust check | Single solenoid | 0.22 | **P2M1V3ES2CV** | 0.44 | **P2M2V3ES2CV** |
|  | 3-way, 2-position, dual valve, NC/NC | Double solenoid | 0.22 | **P2M1VGEE2CV** | 0.44 | **P2M2VGEE2CV** |

Most popular.

## "V" Series Accessories

| | Description | Tube size OD | Option | Part number Size 1 | Size 2 |
|---|---|---|---|---|---|
|  | Push to connect fitting | 5/32" | Elbow | **CMD04-1** | — |
| | | | Straight | **FMD04-1** | — |
|  | | 1/4" | Elbow | **CMD07-1B** | **CMD07-2B** |
| | | | Straight | **FMD07-1B** | **FMD07-2B** |
| | | 3/8" | Elbow | — | **CMD09-2B** |
| | | | Straight | — | **FMD09-2B** |
| | | 1/2" | Straight | — | **FMD13-2B** |
|  | | 6mm | Elbow | **CMD06-1** | **CMD06-2** |
| | | | Straight | **FMD06-1** | **FMD06-2** |
| | | 8mm | Elbow | — | **CMD08-2** |
| | | | Straight | — | **FMD08-2** |
|  | | 10mm | Elbow | — | **CMD10-2** |
| | | | Straight | — | **FMD10-2** |
| | | 12mm | Elbow | — | **CMD12-2** |
| | | | Straight | — | **FMD12-2** |
|  | Muffler for exhaust port | | — | **MMDVA1** | **MMDVA2** |
|  | Plug | | — | **PMDYY1** | **PMDYY2** |
|  | Double male union | | Connecting peripheral modules | **HMDXX1** | **HMDXX2** |
|  | Electrical 20-pin multi-connector cable with flying leads | IP65 rated | 2M cable | **P8LMH20M2A** | **P8LMH20M2A** |
| | | | 5M cable | **P8LMH20M5A** | **P8LMH20M5A** |
| | | | 9M cable | **P8LMH20M9A** | **P8LMH20M9A** |
|  | Electrical 25-pin D-sub cable | IP20 rated | 3M cable | **P8LMH25M3A** | **P8LMH25M3A** |
| | | | 9M cable | **SCD259D** | **SCD259D** |
| | | IP65 rated | 3M cable | **SCD253W** | **SCD253W** |
| | | | 9M cable | **SCD259WE** | **SCD259WE** |
| | Field wireable connector for power supply | Female | M12 - A code | **P8CS1205AA** | |
| | Line termination resistor | Profibus DP | M12 type B | **P8BPA00MB** | |
| | | Devicenet or Canopen | M12 type A | **P8BPA00MA** | |
|  | Power & Communication Cable | IO-Link | 5-pin male to female cable, TPE | **RKC 4.5T-*-RSC 4.5T/S1587** | |
| | AS-i M12 cable with jack for addressing | | 1M cable | **P8LS12JACK** | |
|  | Torx screwdriver | | — | **P2M1K0TASD** | **P2M1K0TASD** |

Where * = 1, 2, 3, 4, 5, 10, 20 meter standard lengths

**Note: 85 Durometer minimum for pneumatic connectors.**



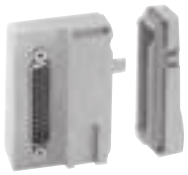


**Parker Hannifin Corporation**
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

## Electrical Connections

| Description | Part number |
|---|---|
| 20-pin, Multi-connector electrical head module | **P2M2HEV0A** |
| 25-pin, D-sub, electrical head module | **P2M2HEV0D** |

P2M2HEV0A



P2M2HEV0D

## Fieldbus Connections

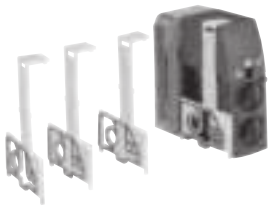
| Description | | Part number |
|---|---|---|
| IO-Link Class A | 3-Pin, Aux power 1 & 3 | **P2M2HBVL12400A13** |
| IO-Link Class A | 3-Pin, Aux power 4 & 3 | **P2M2HBVL12400A43** |
| IO-Link Class A | 3-Pin, Aux power 4 & 2 | **P2M2HBVL12400A42** |
| IO-Link Class B | 5-Pin, Aux power 2 & 5 | **P2M2HBVL12400B25** |
| Profibus DP | | **P2M2HBVP21600** |
| DeviceNet | | **P2M2HBVD21600** |
| CANopen | | **P2M2HBVC21600** |
| Interbus S | | **P2M2HBVS11600** |
| AS-i | 0 inputs and 8 solenoid outputs | **P2M2HBVA10800** |
| AS-i | 8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs | **P2M2HBVA10808A** |
| AS-i | 8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs | **P2M2HBVA10808B** |
| AS-i Version 2.1 ProtocolAS-i | 0 inputs and 6 solenoid outputs | **P2M2HBVA20600** |
| AS-i Version 2.1 ProtocolAS-i | 8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs | **P2M2HBVA20608A** |
| AS-i Version 2.1 ProtocolAS-i | 8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs | **P2M2HBVA20608B** |

## Manifold Options

| Module | Part number |
|---|---|
| Pneumatic end plate kit | **P2M2HXT01*** |
| Pneumatic end plate kit with torx screwdriver | **P2M2HXT0T*** |
| Intermediate supply module (Includes 4 configuration plates) | **P2M2BXV0A*** |

* Use Fittings for Size 2 Modules Only

P2M2HXT01



P2M2BXV0A

Most popular.

## "V" Series Valve Manifold with Collective Wiring
***(Complete with Pneumatic Connectors)***

**P2M 1 V 4ES 2C V0 0 F4**

| Basic series | |
|---|---|
| Valvetronic modules | P2M |

| Size | |
|---|---|
| Size 1 | 1 |
| Size 2 | 2 |

| Valve series | |
|---|---|
| Collective wiring | V |

| Valve type / Function | |
|---|---|
| *3-way / 2-position* | |
| Single solenoid, NC spring return | 3ES |
| *4-way / 2-position* | |
| Single solenoid, spring return | 4ES |
| Double solenoid | 4EE |
| *Dual 3-way, 2-position, spring return* | |
| Solenoid, NC / NC + PO check (4/3 APB) | BEE* |
| Solenoid, NO / NO (4/3 Pressure Ctr.) | CEE |
| Solenoid, NC / NC with exhaust check | DEE |
| Solenoid, NO / NC with exhaust check | EEE |
| Solenoid, NC / NC without check (4/3 Exh. Ctr.) | GEE |
| *Dual 4-way, 2-position, spring return* | |
| Solenoid | JEE** |

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

| Operator voltage | |
|---|---|
| 2C | 24VDC |

| LED / Cable | |
|---|---|
| V0 | No cable with LED and surge suppression |

| Ports 1 & 3 | |
|---|---|
| 0 | None |

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

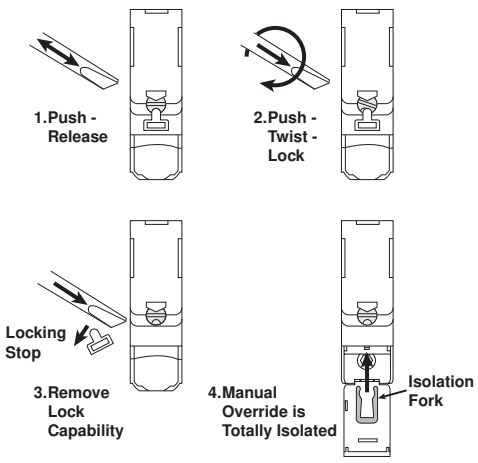
* Only available with size 2 valves.

### With only one universal solenoid pilot for all configurations

24VDC is now a global standard for all machines.

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

### Multi-function adaptable manual override




☐ Most popular.

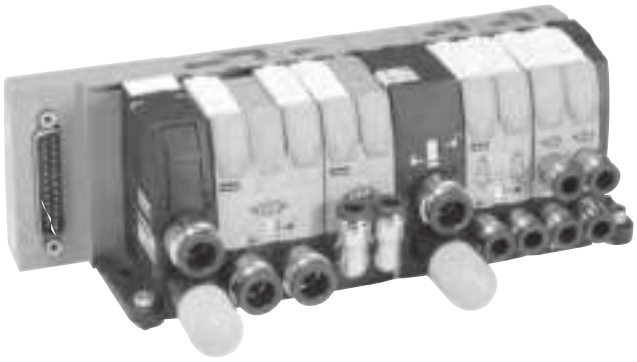
## "V" Series Single Solenoid

### How to Order -

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

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| **Complete Peripheral Module** | | | |
| 1 | 1 | **P2M2V4ES2CV00F7** | Size 1, V Series Manifold Valves, 4 Way, Single Solenoid, LED / Surge Suppression, 1/4" OD Straight Port Fittings |
| **Components** | | | |
| 1 | 1 | **P2M1V4ES2CV** | Size 1, V Series Manifold Valves, Single Solenoid, 4 Way |
| 2 | 2 | **FMD07-1B** | Size 1, 1/4" OD Tube Push In Connector |

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



**P8LMH25M3A - Cable**

### Valve Island Head 25-Pin, Multi-Connector

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

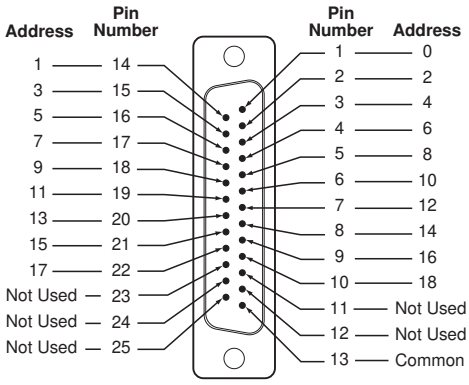
Its plug-in function is secured in position with a guillotine lock with easy access from the front of the island.

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

### 25-Pin, Multi-Connector Addressing

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

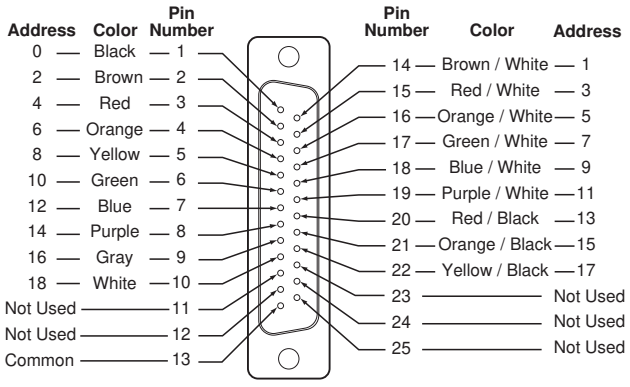
Each wire color code corresponds a solenoid pilot position in the island.




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

### Electrical 25-Pin D-Sub Cable

| Length (meters) | Weight (oz) | IP | Part number |
|---|---|---|---|
| 3 | 14.3 | 20 | **P8LMH25M3A** |
| 3 | 14.3 | 65 | **SCD253W** |
| 9 | 55.8 | 20 | **SCD259D** |
| 9 | 55.8 | 65 | **SCD259WE** |

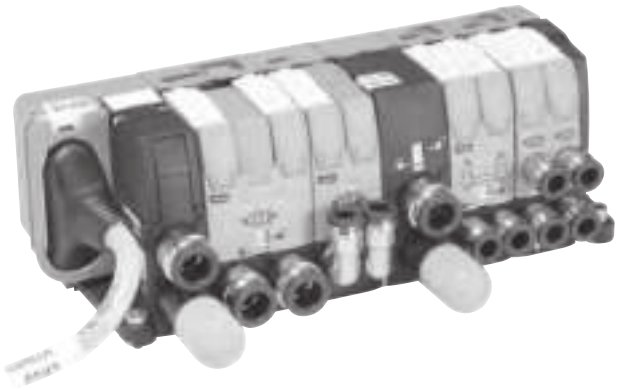



Face View - Female D-Sub, 25-Pin Cable Connector

### Electrical Specifications

| | |
|---|---|
| Rated voltage | 24VDC |
| Maximum addresses | 19 |
| Maximum energized simultaneously | 19 |
| Electrical connection | 25-Pin, D-Sub DIN41652, MIL-C-24308, NFC93425 Type HE5 |
| Polarity | Insensitive: PNP and NPN compatible |
| Dust and water protection | IP40 / IP65 |

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



### Valve Island Head 20-Pin, Multi-Connector

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

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

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

### Cable Specification:

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

Minimum Static Radius: 6.5 mm (.255")

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

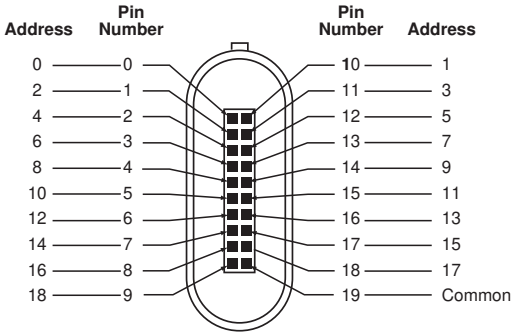
**P8LMH20M2A - Cable**

### 20-Pin, Multi-Connector Addressing

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

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

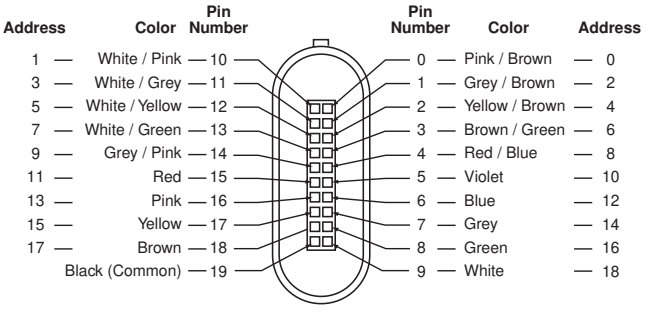
Each wire color code corresponds a solenoid pilot position in the island.




**Face View - Male 20-Pin Head Module Connector**

### Electrical 20-Pin Multi-Connector with Flying Lead Cable

| Cable length | Weight (oz) | IP | Part number |
|---|---|---|---|
| 2 m | 10.97 | 65 | **P8LMH20M2A** |
| 5 m | 27.41 | 65 | **P8LMH20M5A** |
| 9 m | 49.38 | 65 | **P8LMH20M9A** |




**Face View - Female 20-Pin Cable Connector**

### Electrical Specifications

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

## The Moduflex Fieldbus System

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

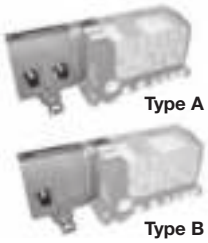
**Features**

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

## "V" Series Valve Island
## Electrical fieldbus head module for IO-Link

Electrical Module for 19 outputs (Moduflex Pilot Valves)
(The last 5 outputs of this 24 DO module can't be used with Moduflex Valve)

IO-Link




| | | M12 A coded Connector connection | | | | |
|---|---|---|---|---|---|---|
| **Description** | **IO-Link Class** | **IO-Link** | **Aux. Power** | **Aux. Power Pinout** | **Weight (g)** | **Part number** |
| Moduflex IO-Link Communication Module | Class A | 3 Pin's | 3 Pin's | 1 & 3 | 160 | **P2M2HBVL12400A13** |
| | | 3 Pin's | 3 Pin's | 4 & 3 | 160 | **P2M2HBVL12400A43** |
| | | 3 Pin's | 5 Pin's | 4 & 2 | 160 | **P2M2HBVL12400A42** |
| | Class B | 5 Pin's | | 2 & 5 | 140 | **P2M2HBVL12400B25** |
| Power & Communication Cable | | | | | | **RKC 4.5T-*-RSC 4.5T/S1587** |

IODD file can be downloaded from IODD Finder or the Moduflex web site:
https://ioddfinder.io-link.com or www.parker.com/pdn/io-link

Where * = 1, 2, 3, 4, 5, 10, 20 meter standard lengths

## Moduflex Class A module with independent Auxiliary Power Supply

The Moduflex **IO-Link** Class A module can handle a Moduflex Valve bank having up to 19 pilot solenoid valves.

Thanks to its 2 x M12 A coded male connectors, it can be connected to any IO-Link Class A master and separately receive its auxiliary power supply for valves from an independent source.

The Moduflex **IO-Link** Class A module exists in 3 versions with the Auxiliary Power M12 connector pin out adapted to any sourcing through a standard M12 cable:

- P2M2HBVL12400A13 version: 24VDC / 0VDC on pins 1 & 3 – Standard version
- P2M2HBVL12400A43 version: 24VDC / 0VDC on pins 4 & 3 – Compatible with Siemens wiring
- P2M2HBVL12400A42 version: 24VDC / 0VDC on pins 4 & 2 – Compatible with Rockwell wiring and Turck

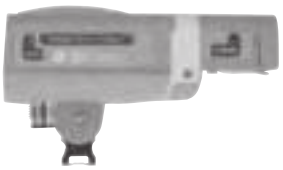
## Moduflex Class B module

The Moduflex **IO-Link** Class B module can handle a Moduflex Valve bank having up to 19 pilot solenoid valves.

Thanks to its single M12 A coded male connectors, it can be connected to any IO-Link Class B master receiving its auxiliary power supply for valves on pins 2 & 5 from the only cable simplifying the connection.

- P2M2HBVL12400B25 version: 24VDC / 0VDC on pins 2 & 5

## Diagnostic



The Moduflex **IO-Link** module offers a local diagnostic through 4 LED's located on the visible top side, showing:

- IO-Link com status
- Module error
- Output error
- Auxiliary power

Additional useful diagnostic information can be read by the PLC through the network simplifying diagnostic and allowing predictive maintenance (all details in the user manual).

## Auxiliary power for safe supply

The Moduflex **IO-Link** module is compatible with SAFE power source for valve control.

For more details, refer to next page.

☐ Most popular.

## IO-Link module connection and diagnostic functions

IO-Link

### IO-Link module connection

Standard male M12 – type A

Usage of standard manufactured cables available from your usual electrical supplier is recommended.

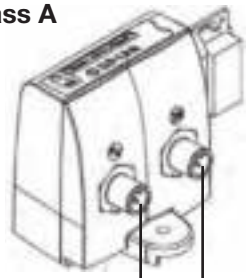
Note: Auxiliary power for solenoids can be wired allowing the user to turn outputs off while the communications remains on.

### Configuration

IODD file can be downloaded from IODD Finder or the Moduflex web site:
https://ioddfinder.io-link.com
www.parker.com/pdn/io-link

**Class B**

**Class A**



**Legend**

| Symbol | Description |
|---|---|
| L+ | IO-Link Power Supply "+" |
| L- | IO-Link Power Supply "-" |
| C/Q | IO-Link communication |
| Aux + | Auxilliary Power Supply 24 VDC |
| Aux - | Auxilliary Power Supply 0 VDC |

| Class B 5 Pin's P2M...B.. | Class A 3 Pin's P2M...A.. | M12 Pin's |
|---|---|---|
| L+ | L+ | 1 |
| Aux + | - | 2 |
| L- | L- | 3 |
| C/Q | C/Q | 4 |
| Aux - | - | 5 |

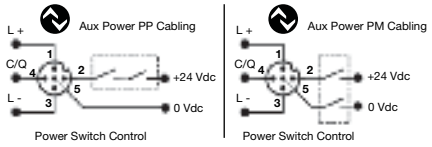
| Class A | | |
|---|---|---|
| 3 Pin's | | 5 Pin's |
| P2M...A13 | P2M...A43 | P2M...A42 |
| Aux + | Not used | Not used |
| - | - | Aux - |
| Aux - | Aux - | Not used |
| n.c. | Aux + | Aux + |
| - | - | Not used |

## Auxiliary Power Supply Compatibility

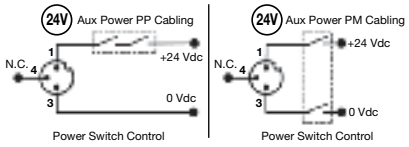
The Moduflex IO-Link Module can be powered from a 24VDC auxilliary source in PP or PM mode as grounds are isolated.

For compatibility with a safe output pulsed module, please refer to user manual document available on www.parker.com/pdn/io-link

**Class B**




**Class A**




Cabling for
P2M2HBVL12400A13

## IO-Link module diagnostic functions

The Moduflex IO-Link module offers additional useful module status information:

- Solenoid overload or short circuit
- Auxiliary Voltage out of tolerance
- Cycle counter for each solenoid
- Module temperature

For more information on product technical information and module diagnostic functionalities, please refer to the User Manual available from the product web page:

www.parker.com/pdn/io-link

**Green LED** (COM.)

| LED Status | Description | Solving |
|---|---|---|
| OFF | IO-Link L+ / L- not powered | Check connection |
| ON | IOL L+ / L- powered IO mode | Set IO-Link mode in IO-Link master |
| Blinking | IO-Link communication active | NA |

**Module — Error Red LED**

| LED Status | Description | Solving |
|---|---|---|
| OFF | Standard mode | NA |
| ON | 24 VDC AUX power missing or any active malfunction | Check power supply or change module |

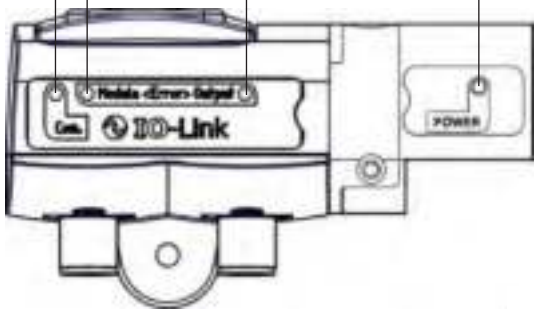
**Error — Output Red LED**

| LED Status | Description | Solving |
|---|---|---|
| OFF | Standard mode | NA |
| ON | Any driver error (overload, over temperature, etc.) | Fix solenoid issue then acknowledge error |

**Green LED** (POWER)

| LED Status | Description | Solving |
|---|---|---|
| OFF | AUX power failure | Check Auxilliary Power Supply |
| ON | Standard | NA |
| Blinking | Aux Power is out of range, alarm level | Check Auxilliary Power Supply |

IO-Link Communication | Module Diagnostic | Outputs (valves) Diagnostic | Auxiliary Power Supply



## Input Data

**One byte of diagnostic input data is transferred from Moduflex to the IO-Link Master.**

**Process Input Data**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| Output Driver SPI Error | Output Driver Channel Error | Polyfuse Tripped | Temperature Warning | SPI Error | AUX Voltage Error | AUX Voltage Warning | Acknowledge Required |

## Output Data

**Three bytes of process data are received by Moduflex from the IO-Link Master for control of solenoids.**

**Process Output Data (Byte 0)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV8 | EV7 | EV6 | EV5 | EV4 | EV3 | EV2 | EV1 |

**Process Output Data (Byte 1)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV16 | EV15 | EV14 | EV13 | EV12 | EV11 | EV10 | EV9 |

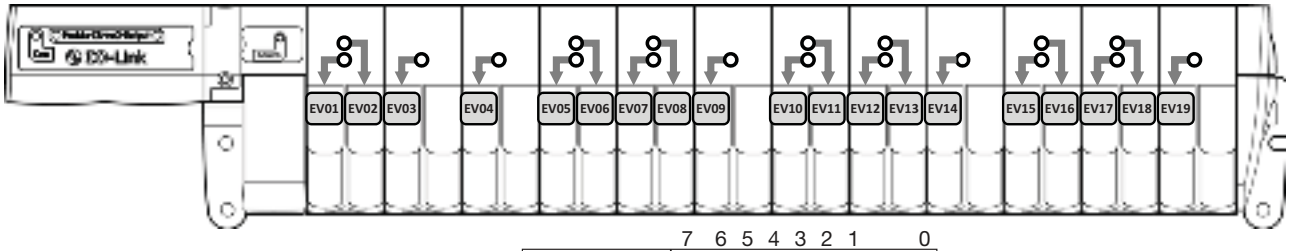
**Process Output Data (Byte 2)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV24 | EV23 | EV22 | EV21 | EV20 | EV19 | EV18 | EV17 |

## Solenoid Pilots Addressing And Process Mapping

### IO-Link Module addressing used with Moduflex Valve System

The Moduflex IO-Link module used with Moduflex Valve System can handle up to 19 pilot solenoid valves. Addressing will be done as shown below.




PLC mapping Process output

| | 7 6 5 4 3 2 1 0 |
|---|---|
| Byte 0 | EV08 ..... EV01 |
| Byte 1 | EV16 ..... EV09 |
| Byte 2 | EV24 ..... EV17 |

## IO-Link Module Electrical Specifications

| | |
|---|---|
| IO-Link Power Supply | According to IO-Link standard V1.1.2 |
| Speed Communication | Com 2 – 38 kBd |
| Auxiliary Power Supply | 20.4 VDC to 26.4 VDC |
| Current Limit per channel | 150 mA |
| Max Current Limit | 4 A |
| Polarity inversion | YES |
| Short Circuit Protection | YES |
| Operating Temperature | 0°C to 55°C |
| Storage Temperature | -25°C to 70°C |
| Shock According to IEC | 60068-2-27:2008 |
| Vibration According to IEC | 60068-2-6:2007 |
| EMC According to IEC | 61000-4-2 up to -4-6 |

## Network diagnostic through Process mapping:

The Moduflex IO-Link module offers diagnostic data transmitted to the PLC through the master:

PLC mapping Process input

| | 7 6 5 4 3 2 1 0 |
|---|---|
| Byte 0 | Diag 7 . . . . . Diag 0 |

| Diag bit | Error message | Detail |
|---|---|---|
| Diag 0..... | Fail-safe status ..... | Acknowlegment required |
| Diag 1..... | Auxiliary voltage warning..... | Check auxiliary power |
| Diag 2..... | Auxiliary voltage failure..... | Check auxiliary power |
| Diga 3..... | Module failure ..... | Module HS. must be replaced |
| Diag 4..... | Module over-temperature | |
| Diag 5..... | Module over-load | |
| Diag 6..... | Pilot Solenoid(s) short circuit ..... | Solenoid must be replaced |
| Diag 7..... | Outputs stage failure | |

For further details, refer to the User Manual: Can be downloaded from www.parker.com/pdn/io-link





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

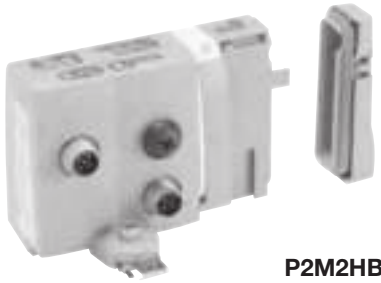
## "V" Series Fieldbus Connections

### Valve Island Electrical Head Modules for Bus Connections and Control

DeviceNet™ PROFIBUS PROCESS FIELD BUS CANopen INTERBUS-S

### Device Bus Electrical Head Modules

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



**P2M2HBVP11600**

### Moduflex Communication Modules

| Bus protocol | Weight | Part number |
|---|---|---|
| Profibus DP | 8.82 | **P2M2HBVP21600** |
| DeviceNet | 8.82 | **P2M2HBVD21600** |
| CANopen | 8.82 | **P2M2HBVC21600** |
| InterBus-S | 10.58 | **P2M2HBVS11600** |

### Fieldbus Accessories

| | Bus protocol | Connector type | Weight (oz) | Part number |
|---|---|---|---|---|
| Power supply female straight field wireable connector | Profibus DP / InterBus-S / DeviceNet / CANopen | M12 type A | 0.88 | **P8CS1205AA** |
| Line termination resistor | Profibus DP | M12 type B | 0.88 | **P8BPA00MB** |
| | DeviceNet / CANopen | M12 type A | 0.88 | **P8BPA00MA** |

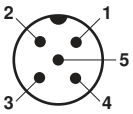
**Note:** Use standard cables and connectors for bus communications from your electrical supplier.

### M12 (Male) Power Supply Connector

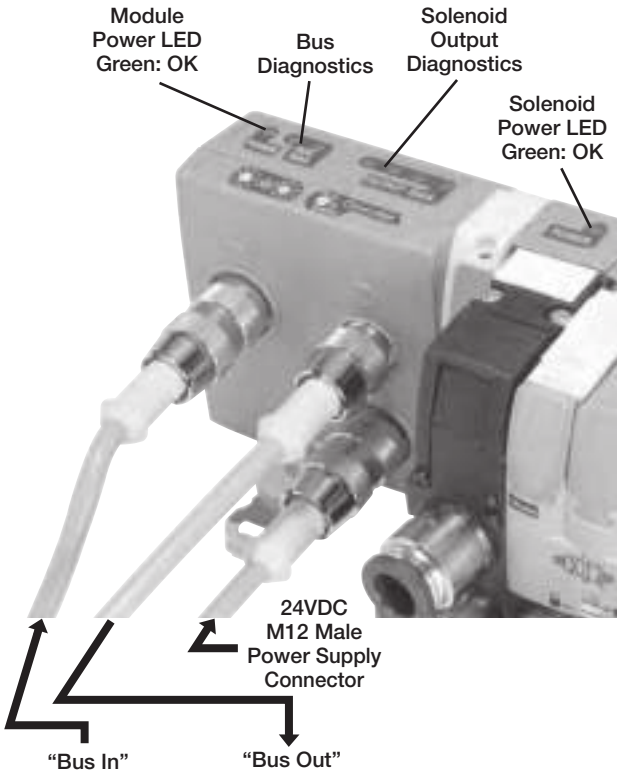
1 - 24VDC Module (Not Connected for DeviceNet and CANopen)
2 - Not Connected
3 - 0VDC Module and Solenoid
4 - 24VDC Solenoid
5 - Protected Earth (PE)

**Profibus DP / DeviceNet / CANopen / InterBus-S**

**24VDC**
(As Seen On Module)




M12 Male Type A




### Connection

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

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

### Diagnostic

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

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

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

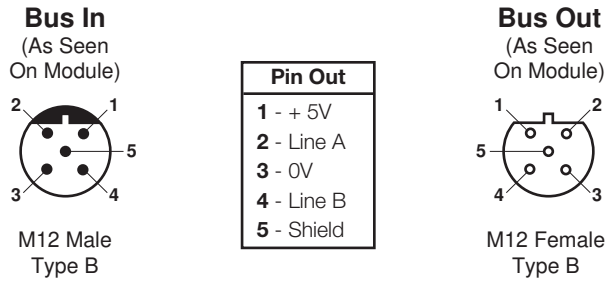
### Bus Cable Connections

Profibus DP standard male and female type B M12 connectors.

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

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

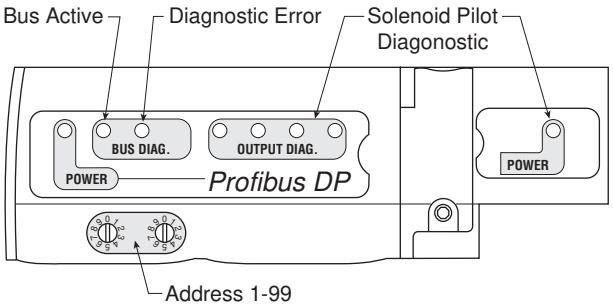
This module incorporates an Autobaud detect feature, eliminating the need to set switches.




### Addressing

Use the GSD file on web site.

The rotary switches enable configuration of the decimal address.




### Diagnostic

Diagnostic according to the module dialog shown on the illustration.

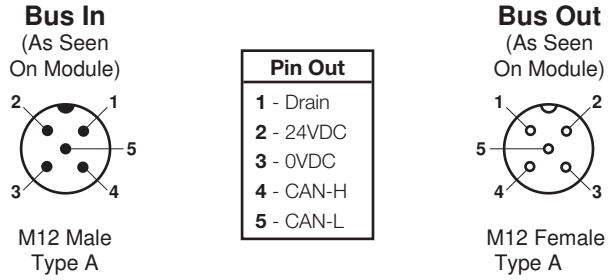
## DeviceNet™

### Bus Cable Connections

DeviceNet standard male and female type A M12 connectors.

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

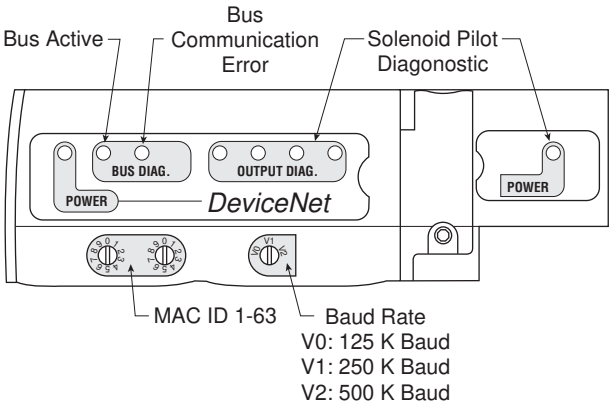
Line termination P8BPA00MA, is necessary on the "bus out" connector of the last station.




### Addressing

Use the EDS file on web site.

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




### Diagnostic

Diagnostic according to the module dialog shown on the illustration.

# CANopen

## Bus Cable Connections

CANopen standard male and female type A M12 connectors.

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

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

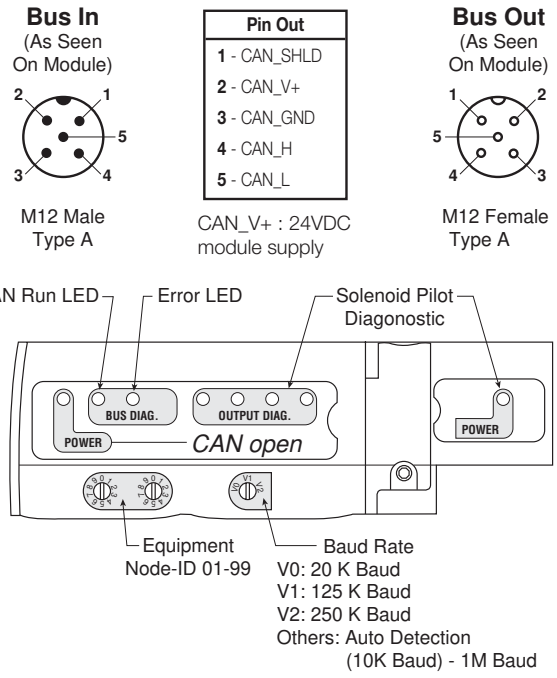
## Addressing

Use the EDS file on web site.

The rotary switches enable configuration of the decimal address.

## Diagnostic

Diagnostic according to the module dialog shown on the illustration.




# INTERBUS-S

## Bus Cable Connections

The M23 connectors conform to "Interbus remote bus".

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

This module operates at 500 kbps.

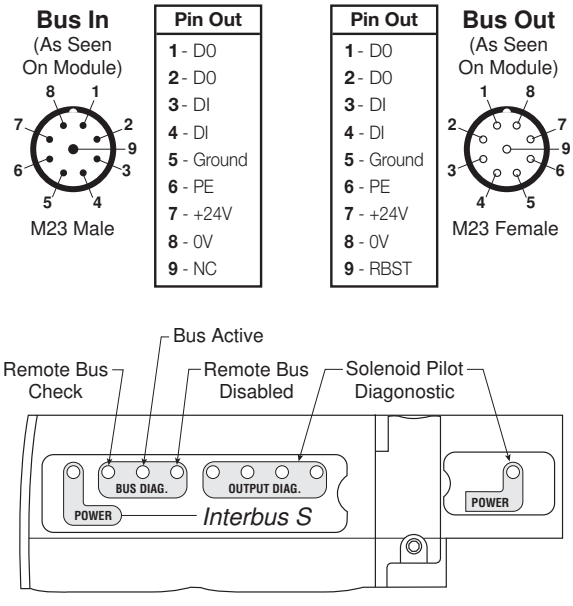
## Addressing

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

## Diagnostic

Diagnostic according to the module dialog shown on the illustration.

This diagnostic conforms to the InterBus-S standard.




**Note:** For more details, please consult "Interbus remote bus" documentation.

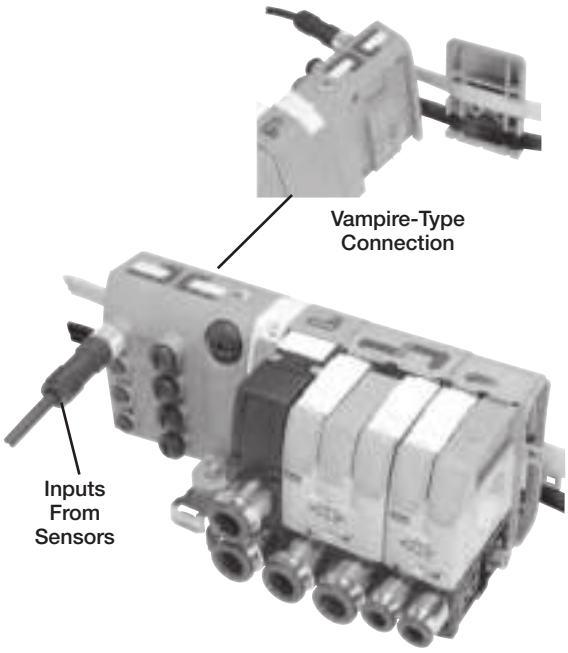
## "V" Series Bus Connections Modules

### Valve Island Electrical Head Modules for Bus Connections and Control

P2M2HBVA10808A

P2M2HBVA10808B

P2M2HBVA10800




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

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

| Input / output capability | Weight (oz) | Part number |
|---|---|---|
| 0 inputs and 8 solenoid outputs | 5.29 | **P2M2HBVA10800** |
| 8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs | 7.05 | **P2M2HBVA10808A** |
| 8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs | 7.05 | **P2M2HBVA10808B** |

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

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

| Input / output capability | Weight (oz) | Part number |
|---|---|---|
| 0 inputs and 6 solenoid outputs | 5.29 | **P2M2HBVA20600** |
| 8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs | 7.05 | **P2M2HBVA20608A** |
| 8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs | 7.05 | **P2M2HBVA20608B** |

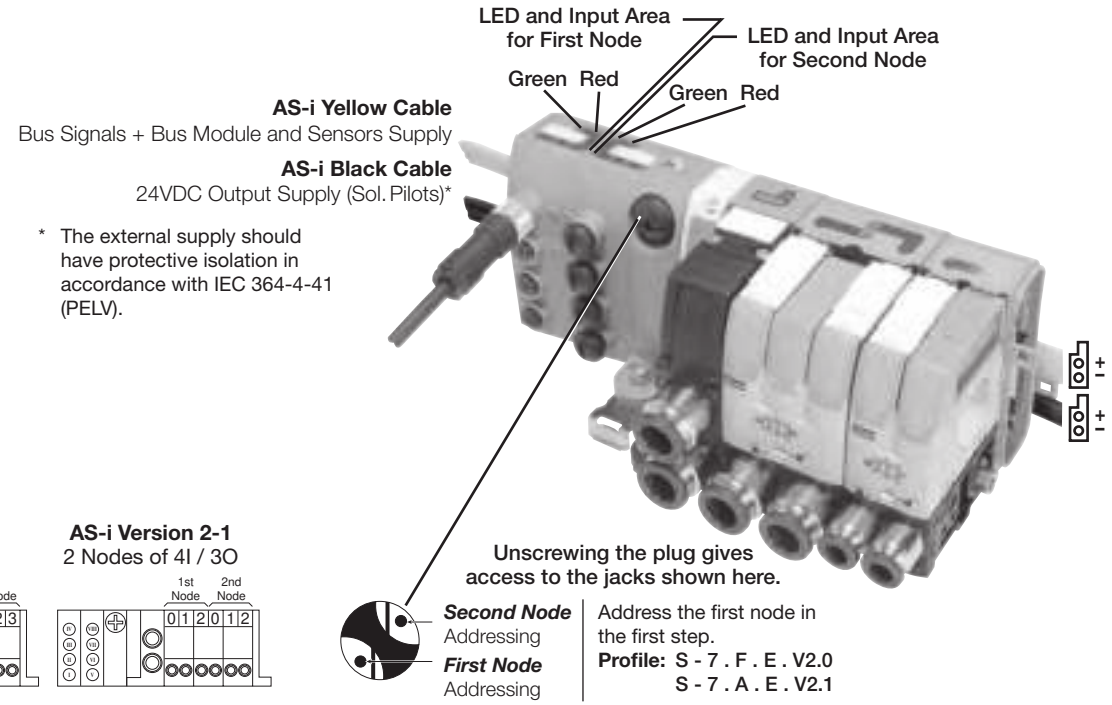
### AS-i Bus Accessories

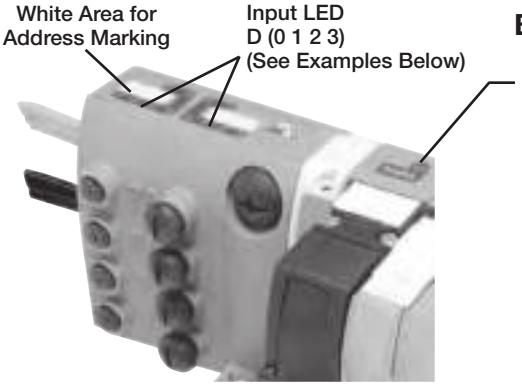
**M12 Cable with Jack for Addressing**

| Length | Weight (oz) | Part Number |
|---|---|---|
| 1 m | 3.53 | **P8LS12JACK** |

☐ Most popular.

## AS-i Bus Communication Module: Addressing, Diagnostic, Input Wiring
## Bus Addressing, First and Second Node




### Bus Diagnostic

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

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

✸ON ❍OFF ☼BLINK

### Input Wiring

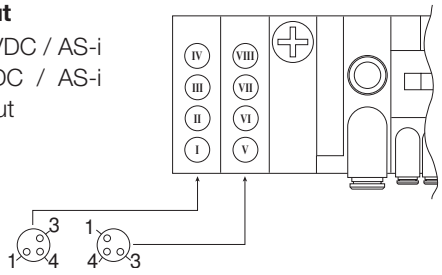
Physical Input (**I, II, III, IV**) = D (0 1 2 3) First Node,
Physical Input (**V, VI, VII, VIII**) = D (0 1 2 3) Second Node.

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

### M8 Female Connectors

**Pin Out**

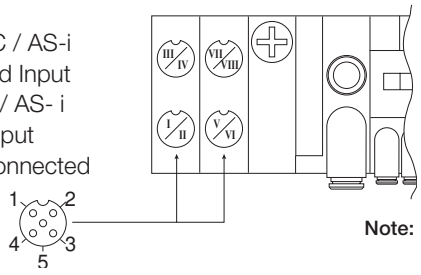
**1** - 24VDC / AS-i
**3** - 0VDC / AS-i
**4** - Input




### M12 Female Connectors

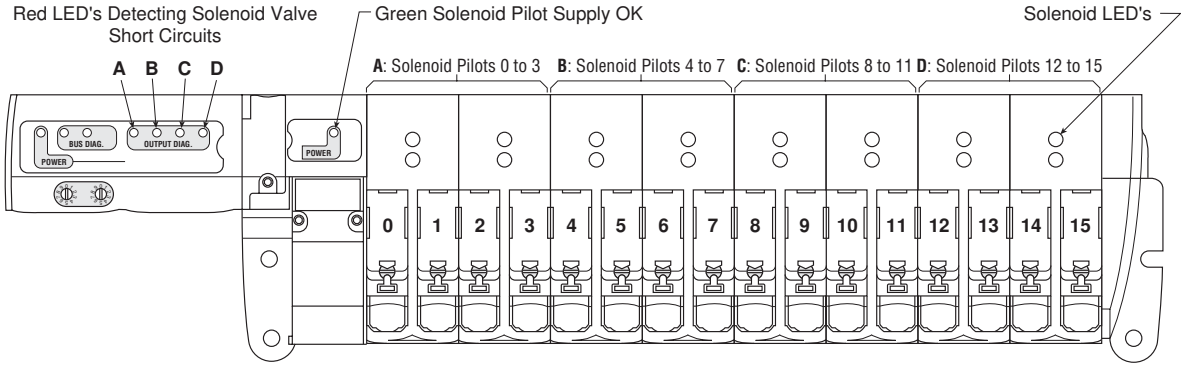
**Pin Out**

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




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

## Solenoid Pilot Diagnostic Common to All Device Bus Modules




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

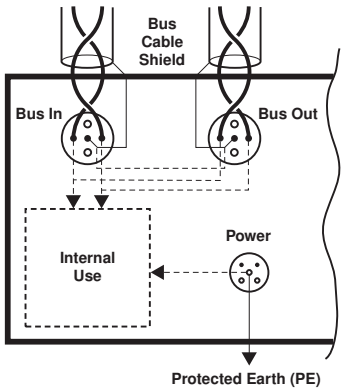
- The red LEDs with code, shown above, detect solenoid valve short-circuits.
- Supply is OK when the solenoid pilot power supply indicator is green.

## Bus Cable Protection

### Shield Connections for Profibus DP, DeviceNet and CANopen

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

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



## Serial Bus Specifications

| | | | | |
|---|---|---|---|---|
| **All Buses** | EMC / CE Mark | According to EN 61 000-6-2 | EN 50081-2 | |
| **AS-i Bus** | AS-i Line | According to EN 50295 | | |
| | Solenoid Pilot Voltage | 24VDC | | |
| | Module Consumption | max. 70 mA (2 nodes) | | |
| | Max. Supply for All Inputs | 240 mA (including internal input consumption) | | |
| | Internal Input Consump. | 9 mA for each active input | | |
| | Inputs | According to IEC 1131-2 class 2 | | |
| | Certification | These products have been developed according to the association complete specification (v.2.11) and to the slave profiles S-7.F.E or S-B.F.E | | |
| **Device Bus** | Bus Line | According to each bus specification | | |
| | Module Voltage | 20 to 30VDC | | |
| | Solenoid Pilot Voltage | 24VDC | | |
| | Module Consumption | Profibus DP max. 1.5W | DeviceNet / CANopen max. 1.5W | InterBus-S max. 2W |
| | Outputs | Overload protection | | |
| | Certification | **DeviceNet:** Compliant to Composite Test Revision 17, Test Suite: M002 | | |
| | | **Profibus-DP:** Compliant to Test Specifications for Profibus DP Slaves, Version 2.0, February 2000, based on EN 50170-2 at Siemens AG in Furth. | | |
| | | **InterBus-S:** This product has passed the relevant tests in accordance with the Interbus conformance requirements Certified No. 385. | | |

## I/O Tables Common to All Device Bus Modules

### Input Data Table

| Byte | Bit 0 | Bit 1 | Bit 2 | Bit 3 | Bit 4 | Bit 5 | Bit 6 | Bit 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | Discrete Input 0 (Diagnostic LED 0-3) | Discrete Input 1 (Diagnostic LED 4-7) | Discrete Input 2 (Diagnostic LED 8-11) | Discrete Input 3 (Diagnostic LED 12-15) | — | — | — | — |

### Output Data Table

| Byte | Bit 0 | Bit 1 | Bit 2 | Bit 3 | Bit 4 | Bit 5 | Bit 6 | Bit 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | Discrete Output 0 | Discrete Output 1 | Discrete Output 2 | Discrete Output 3 | Discrete Output 4 | Discrete Output 5 | Discrete Output 6 | Discrete Output 7 |
| 1 | Discrete Output 8 | Discrete Output 9 | Discrete Output 10 | Discrete Output 11 | Discrete Output 12 | Discrete Output 13 | Discrete Output 14 | Discrete Output 15 |

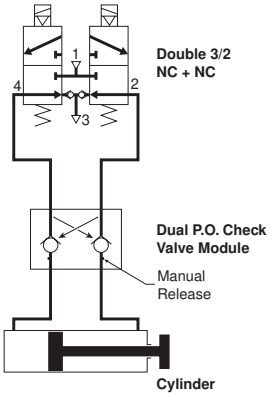
## Peripheral Modules

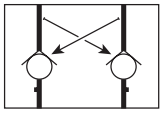
| | Acessories | Description | Option | Part number Size 1 | Part number Size 2 |
|---|---|---|---|---|---|
|  | Pressure regulator without gauge | | 0 to 30 PSI | **P2M1PXST** | **P2M2PXST** |
| | | | 0 to 60 PSI | **P2M1PXSL** | **P2M2PXSL** |
| | | | 0 to 120 PSI | **P2M1PXSN** | **P2M2PXSN** |
|  | Pressure regulator with gauge | | 0 to 30 PSI | **P2M1PXSR** | **P2M2PXSR** |
| | | | 0 to 60 PSI | **P2M1PXSM** | **P2M2PXSM** |
| | | | 0 to 120 PSI | **P2M1PXSG** | **P2M2PXSG** |
|  | Gauge | | 0 to 30 PSI | **P2M1K0GT** | **P2M1K0GT** |
| | | | 0 to 60 PSI | **P2M1K0GL** | **P2M1K0GL** |
| | | | 0 to 120 PSI | **P2M1K0GN** | **P2M1K0GN** |
| | Push to connect fitting | 5/32" or 4mm OD tube | Elbow | **CMD04-1** | |
|  | | | Straight | **FMD04-1** | |
| | | 1/4" OD tube | Elbow | **CMD07-1B** | **CMD07-2B** |
| | | | Straight | **FMD07-1B** | **FMD07-2B** |
|  | | 3/8" OD tube | Elbow | | **CMD09-2B** |
| | | | Straight | | **FMD09-2B** |
| | | 1/2" OD tube | Straight | | **FMD13-2B** |
| | | 6mm OD tube | Elbow | **CMD06-1** | **CMD06-2** |
|  | | | Straight | **FMD06-1** | **FMD06-2** |
| | | 8mm OD tube | Elbow | | **CMD08-2** |
| | | | Straight | | **FMD08-2** |
|  | | 10mm OD tube | Elbow | | **CMD10-2** |
| | | | Straight | | **FMD10-2** |
| | | 12mm OD tube | Elbow | | **CMD12-2** |
| | | | Straight | | **FMD12-2** |
|  | Double male union | Connecting peripheral modules | | **HMDXX1** | **HMDXX2** |
|  | Muffler for vacuum exhaust port | | | **MMDVA1** | **MMDVA2** |
|  | Plug | | | **PMDYY1** | **PMDYY2** |

**Note: 85 Durometer minimum for pneumatic connectors.**

## Dual P.O. Check Valve

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



P2M1PXCA

### Application

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

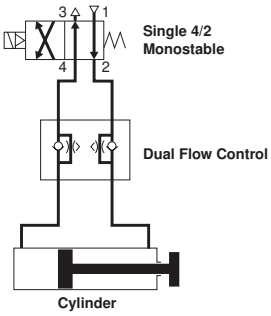
The manual pressure releases may then eventually be used for an adequate machine positioning.

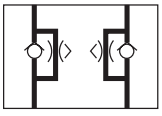
### Dual P.O. Check Valve

| | Part number |
|---|---|
| Size 1 | **P2M1PXCA** |
| Size 2 | **P2M2PXCA** |

## Dual Flow Control

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



P2M1PXFA

### Application

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

### Dual Flow Control Module

| | Weight | Part number |
|---|---|---|
| Size 1 | 1.06 oz | **P2M1PXFA** |
| Size 2 | 1.59 oz | **P2M2PXFA** |

## "P" Series Peripheral Modules Model Number Index

***(Complete with Pneumatic Connectors)***

| P2M | 1 | PX | S | L | F4 | F4 |
|---|---|---|---|---|---|---|

| Basic series | |
|---|---|
| Electro-pneumatic valve modules | P2M |

| Size | |
|---|---|
| Size 1 | 1 |
| Size 2 | 2 |

| Style / Function | |
|---|---|
| Peripheral | PX |

| Accessory type | |
|---|---|
| Dual pilot operated check | C |
| Dual flow control | F |
| Single pressure regulator | S |

| Accessory option | |
|---|---|
| Flow control or pilot operated check | A* |
| 0 - 120 PSI - Gauge | G |
| 0 - 60 PSI - No gauge | L |
| 0 - 60 PSI - Gauge | M |
| 0 - 120 PSI - No gauge | N |
| 0 - 30 PSI - Gauge | R |
| 0 - 30 PSI - No gauge | T |

* Must be used with accessory type "C" or "F".

| Ports 1 & 3 (Supply / Exhaust) | |
|---|---|
| C0* | 10mm Elbow fitting |
| C2* | 12mm Elbow fitting |
| **C4** | **5/32" (4mm) Elbow fitting** |
| C6 | 6mm Elbow fitting |
| **C7** | **1/4" Elbow fitting** |
| C8* | 8mm Elbow fitting |
| **C9*** | **3/8" Elbow fitting** |
| F0* | 10mm Straight fitting |
| F2* | 12mm Straight fitting |
| **F3*** | **1/2" Straight fitting** |
| **F4** | **5/32" (4mm) Straight fitting** |
| F6 | 6mm Straight fitting |
| **F7** | **1/4" Straight fitting** |
| F8* | 8mm Straight fitting |
| **F9*** | **3/8" Straight fitting** |
| **JJ** | **Double male union** |
| **XX** | **No fittings** |

* Only available with size 2 valves.

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

* Only available with size 2 valves.

### Regulator with Gauge

**How to Order - Example:** Size 1, Regulator with gauge, 1/4" OD straight fittings.

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| **Complete Peripheral Module** | | | |
| 1 | 1 | **P2M1PXSGF7F7** | Size 1, Regulator with 0-160 PSI Gauge, 1/4" OD Straight Port Fittings in port 1, 2, 3, 4 |
| **Components** | | | |
| 1 | 1 | **P2M1PXSG** | Size 1, Regulator with 0-160 PSI Gauge |
| 2 | 4 | **FMD07-1B** | Size 1-1/4" OD Tube Push-In Connector |

### Flow Control with Fittings

**How to Order - Example:** Size 1, Dual Flow Control, 1/4" OD straight fittings.

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| **Complete Peripheral Module** | | | |
| 1 | 1 | **P2M1PXFAF7F7** | Size 1, Dual Flow Control, 1/4" OD Straight Port Fittings in Port 1, 2, 3, 4 |
| **Components** | | | |
| 1 | 1 | **P2M1PXFA** | Size 1, Dual Flow Control |
| 2 | 4 | **FMD07-1B** | Size 1-1/4" OD Tube Push-In Connector |

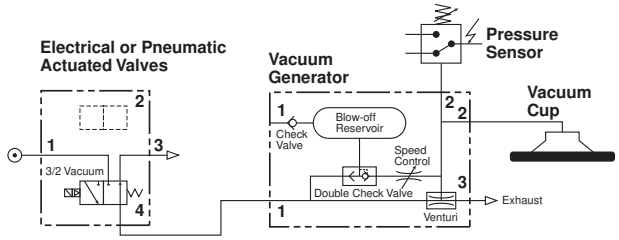
## Vacuum Generator Applications

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

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

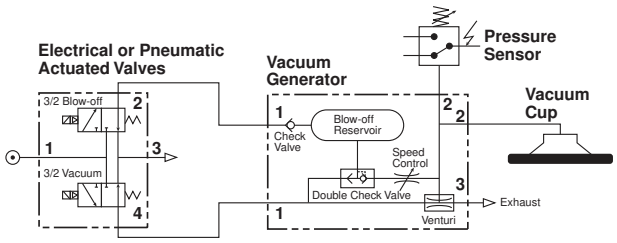
### Single 3/2 NC Air Control Valve

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




### Dual 3/2 3/2 Valve Control

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




## Vacuum Flow (SCFM)

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

## Evacuation Time

| Series / Nozzle Diameter | Air supply pressure | Air consumption | Evacuation time in sec / ft³ * to reach different vacuum levels (inHg) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PSI | SCFM | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 |
| **P2M1PXVA** | 70 | 1.60 | 5.6 | 14.2 | 22.0 | 42.4 | 62.3 | 85.0 | 116 | 198 | — |

* 1 ft³ = 28.31 liters

## Vacuum Generator Model Number Index

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

| Basic configuration | |
|---|---|
| Basic unit | P2M1PXVA |

| #1 Pressure port | |
|---|---|
| 5/32" (4mm) elbow | C4 |
| 6mm elbow | C6 |
| 1/4" elbow | C7 |
| Joint fitting | JJ |
| 5/32" (4mm) straight | F4 |
| 6mm straight | F6 |
| 1/4" straight | F7 |
| No fittings | XX |

| Port #1 configuration | |
|---|---|
| Fitting in pressure port and blow-off port | A |
| Fitting in pressure port and blow-off port plugged* | B |

* Can not be directly mounting to valve.

| #2 Sensor port | |
|---|---|
| A | 6mm plug |
| B | Plug |
| K | 1/4" straight |
| L | 1/4" elbow |
| M | 6mm elbow |

| #2 Vacuum port | |
|---|---|
| C4 | 5/32" (4mm) elbow |
| C6 | 6mm elbow |
| C7 | 1/4" elbow |
| F4 | 5/32" (4mm) straight |
| F6 | 6mm straight |
| F7 | 1/4" straight |

| #3 Exhaust port | |
|---|---|
| C4 | 5/32" (4mm) elbow |
| C6 | 6mm elbow |
| C7 | 1/4" elbow |
| F4 | 5/32" (4mm) straight |
| F6 | 6mm straight |
| F7 | 1/4" straight |
| MA | Muffler |





For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

## Intermediate Supply Module Model Number Index

**P2M2BX** **V** **0** **4** **F9** **MM**

| Intermediate supply module | |
|---|---|
| Basic unit | P2M2BX |

| Valve type | |
|---|---|
| Individually wired | T |
| Collective wiring | V |

| Wiring style | |
|---|---|
| No cable | 0 |

| Plate configuration | |
|---|---|
| #1 & #3 Blocked | 1 |
| #1 Open & #3 Blocked | 2 |
| #1 Blocked & #3 Open | 3 |
| #1 & #3 Open | 4 |

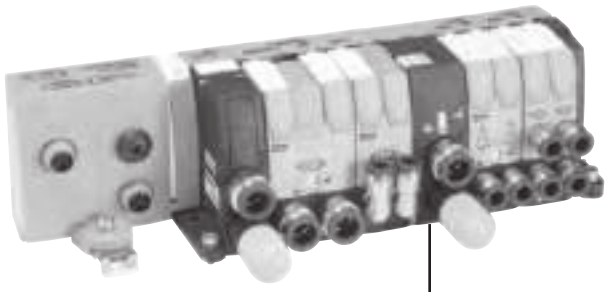
| Inlet port type (#1 pressure)* | |
|---|---|
| C0 | 10mm Elbow fitting |
| C2 | 12mm Elbow fitting |
| C6 | 6mm Elbow fitting |
| **C7** | **1/4" Elbow fitting** |
| C8 | 8mm Elbow fitting |
| **C9** | **3/8" Elbow fitting** |
| F0 | 10mm Straight fitting |
| F2 | 12mm Straight fitting |
| **F3** | **1/2" Straight fitting** |
| F6 | 6mm Straight fitting |
| **F7** | **1/4" Straight fitting** |
| F8 | 8mm Straight fitting |
| **F9** | **3/8" Straight fitting** |
| **MM** | **Clip-in muffler** |
| **PP** | **Clip-in plug** |

* Elbow fittings face up.

| Exhaust port type (#3 exhaust)* | |
|---|---|
| C0 | 10mm Elbow fitting |
| C2 | 12mm Elbow fitting |
| C6 | 6mm Elbow fitting |
| **C7** | **1/4" Elbow fitting** |
| C8 | 8mm Elbow fitting |
| **C9** | **3/8" Elbow fitting** |
| F0 | 10mm Straight fitting |
| F2 | 12mm Straight fitting |
| **F3** | **1/2" Straight fitting** |
| F6 | 6mm Straight fitting |
| **F7** | **1/4" Straight fitting** |
| F8 | 8mm Straight fitting |
| **F9** | **3/8" Straight fitting** |
| **MM** | **Clip-in muffler** |
| **PP** | **Clip-in plug** |

* Elbow fittings face up.

## Plate Configuration



**#1 & #3 Blocked**

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

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

**#1 Open, #3 Blocked**

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

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

**#1 Blocked, #3 Open**

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

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

**#1 & #3 Open**

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

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

## Solenoid Pilot 24VDC

| Description | Part number |
|---|---|
| Solenoid pilot (without plug-in electrical connector) | **P2D8V32C5** |
| Air pilot with 5/32" (4mm) tube fitting | **P2M2K0PA** |
| Solenoid pilot (without clip connector) | **P2D2W3226C5** |


P2D2W3226C5


P2D8V32C5


P2M2K0PA

## Size 1 Valve Without Solenoid Pilot and Without Subbase


P2M1X4EE

### 4-way / 2-position / Single Valve

| | Solenoid | Part number |
|---|---|---|
|  | Single solenoid (Monostable) | **P2M1X4ES** |
|  | Double solenoid (Bistable) | **P2M1X4EE** |

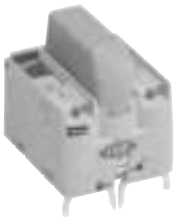
### 4-way / 2-position / Dual Valve

| | Solenoid | Part number |
|---|---|---|
|  | Solenoid spring with exhaust check | **P2M1XJEE** |

### 3-way / 2-position / Dual Valve

| | Solenoid | Part number |
|---|---|---|
|  | Double solenoid NC + NC with exhaust check | **P2M1XDEE** |
|  | Double solenoid NO + NO with exhaust check | **P2M1XCEE** |
|  | Double solenoid NC + NO with exhaust check | **P2M1XEEE** |
|  | Single solenoid NC with exhaust check | **P2M1X3ES** |

## Size 2 Valve Without Solenoid Pilot and Without Subbase


P2M2X4EE

### 4-way / 2-position / Dual Valve

| | Solenoid | Part number |
|---|---|---|
|  | Single solenoid (Monostable) | **P2M2X4ES** |
|  | Double solenoid (Bistable) | **P2M2X4EE** |

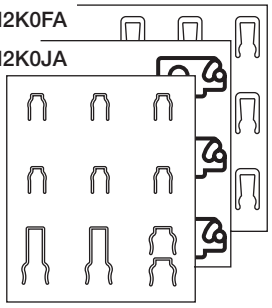
### 3-way / 2-position / Dual Valve

| | Solenoid | Part number |
|---|---|---|
|  | Double solenoid NC + NC with exhaust check | **P2M2XDEE** |
|  | Double solenoid NO + NO with exhaust check | **P2M2XCEE** |
|  | Double solenoid NC + NO with exhaust check | **P2M2XEEE** |
|  | Single solenoid NC with exhaust check | **P2M2X3ES** |

## Set of Maintenance Parts

| Description | | Part number |
|---|---|---|
| Clips | Set of 10 clips: 6 for size 1 valves, 2 for size 2 valves, 2 for end plate and intermediate modules | **P2M2K0CA** |
| Seals | Set of 10 seals: 3 for manifold to manifold seals, 3 under solenoid pilot seals, 4 under valve seals (two size 1 seals, two size 2 seals) | **P2M2K0JA** |
| Forks | Set of 10 isolation forks for solenoid pilot manual override | **P2M2K0FA** |

P2M2K0FA
P2M2K0JA



P2M2K0CA





For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

## Moduflex Add-A-Fold Assembly Model Number Index
***(Complete with Pneumatic and Electrical Connectors)***

### How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List valves and manifolds. List left to right, LOOKING AT THE CYLINDER PORTS on the manifold.

**P2MA V 0 1 C9 C9 ##**

| Moduflex island assembly | |
|---|---|
| Add-A-Fold | P2MA* |

*Includes pneumatic H & T end plate kit.

| Style | |
|---|---|
| Individually wired | T |
| Collective wiring | V* |

* Includes 20-pin multi-connector or 25-pin, D-sub electrical head module.

| Wiring / Bus protocol | |
|---|---|
| No cable (20-pin or multi-connector T series) | 0† |
| 2 Meter cable (20-pin) | 2 |
| 5 Meter cable (20-pin) | 5 |
| 9 Meter cable (20-pin) | 9 |
| Bus | B* |
| No cable (25-pin, D-sub) | D |
| 3 Meter cable (25-pin, D-sub) | F |

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

| Pilot source | |
|---|---|
| Internal supply / Internal exhaust | 1 |
| Internal supply / External exhaust | 2 |
| External supply / Internal exhaust | 3 |
| External supply / External exhaust | 4 |

| Number of stations† | |
|---|---|
| 01 - 19* | V-Type |
| 01 - 30 | T-Type |

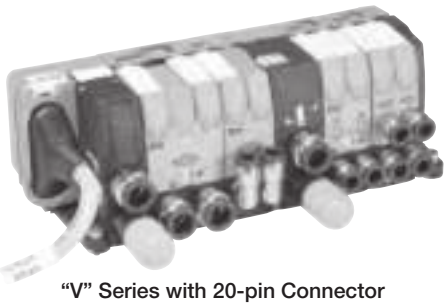
* Max. number of addresses for V type is 19. Single solenoid valves equal one address. Double solenoid valves equal two addresses. Maximum address may depend upon choice of bus protocol.
† Intermediate modules are considered stations, but do not count against maximum number of addresses for manifold.

| Exhaust port type (#3 Exhaust)* | |
|---|---|
| C0 | 10mm Elbow fitting |
| C2 | 12mm Elbow fitting |
| C6 | 6mm Elbow fitting |
| **C7** | **1/4" Elbow fitting** |
| C8 | 8mm Elbow fitting |
| **C9** | **3/8" Elbow fitting** |
| F0 | 10mm Straight fitting |
| F2 | 12mm Straight fitting |
| **F3** | **1/2" Straight fitting** |
| F6 | 6mm Straight fitting |
| **F7** | **1/4" Straight fitting** |
| F8 | 8mm Straight fitting |
| **F9** | **3/8" Straight fitting** |
| **MM** | **Clip-in muffler** |
| **PP** | **Clip-in plug** |

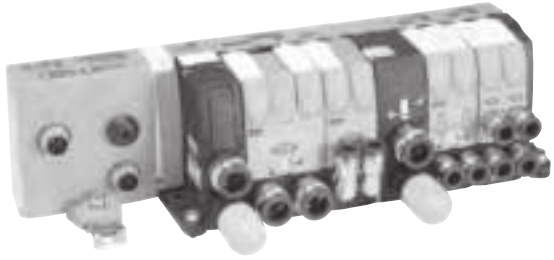
* Elbow fittings face up.

| Inlet port type (#1 pressure)* | |
|---|---|
| C0 | 10mm Elbow fitting |
| C2 | 12mm Elbow fitting |
| C6 | 6mm Elbow fitting |
| **C7** | **1/4" Elbow fitting** |
| C8 | 8mm Elbow fitting |
| **C9** | **3/8" Elbow fitting** |
| F0 | 10mm Straight fitting |
| F2 | 12mm Straight fitting |
| **F3** | **1/2" Straight fitting** |
| F6 | 6mm Straight fitting |
| **F7** | **1/4" Straight fitting** |
| F8 | 8mm Straight fitting |
| **F9** | **3/8" Straight fitting** |
| **MM** | **Clip-in muffler** |
| **PP** | **Clip-in plug** |

* Elbow fittings face up.



"V" Series with 20-pin Connector



"V" Series with Field Bus Connection

## How to Order -

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

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| **Complete Manifold Assembly** | | | |
| 1 | 1 | **P2MAV21F9MM05** | Moduflex Island Assembly, Pneumatic Head and Tail Module Set, Internal Pilot Supply, Internal Pilot Exhaust, 3/8" Straight Fitting Port 1, Port 3 Muffler. |
| 2 | 1 | **P2M2V4EE2CV00F9** | Size 2, Double Solenoid, 4/2, 3/8" Straight Pneumatic Connectors. |
| 3 | 1 | **P2M1V4ES2CV00C7** | Size 1, Single Solenoid, 1/4" Elbow Pneumatic Connectors. |
| 4 | 1 | **P2M2BXV0A1F9MM** | Intermediate Module 3/8" Straight Fitting with Exhaust Muffler |
| 5 | 1 | **P2M1VDEE2CV00C7** | Size 1, Dual 3/2 NC + NC, 1/4" Elbow Pneumatic Connectors. |
| 6 | 2 | **P2M1VJEE2CV00F7** | Size 1, Dual 4/2, 1/4" Straight Pneumatic Connectors. |
| **Components** | | | |
| 1 | 1 | **P2M2HXT01** | Pneumatic Head and Tail Module Set |
| 2 | 1 | **P2M2HEV0A** | 20-Pin, Multi-Connector Electrical Head Module |
| 3 | 1 | **P8LMH20M2A** | 2 Meter, 20-Pin Cable |
| 4 | 1 | **P2M2V4EE2CV** | Size 2, V Series Island Valve Module, Double Solenoid, 4-Way |
| 5 | 1 | **P2M1V4ES2CV** | Size 1, V Series Island Valve Module, Single Solenoid, 4-Way |
| 6 | 1 | **P2M2BXV0A** | Intermediate Module |
| 7 | 1 | **P2M1VGEE2CV** | Size 1, V Series Island Valve Module, Dual 3/2 NC + NC |
| 8 | 2 | **P2M1VJEE2CV** | Size 1, V Series Island Valve Module, Dual 4/2 |
| 9 | 2 | **CMD07-1B** | Size 1, 1/4" OD Tube Elbow Push-in Connector |
| 10 | 6 | **FMD07-1B** | Size 1, 1/4" OD Tube Straight Push-in Connector |
| 11 | 4 | **FMD09-2B** | Size 2, 3/8" OD Tube Straight Push-in Connector |
| 12 | 2 | **MMDVA2** | Clip-on Muffler |

## How to Order -

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

| Line item | Quantity | Part number | Description |
|---|---|---|---|
| **Complete Manifold Assembly** | | | |
| 1 | 1 | **P2MAVB1F9MM05** | Moduflex Island Assembly, Pneumatic Head and Tail Module Set, Internal Pilot Supply, Internal Pilot Exhaust, 3/8" Straight Fitting Port 1, Port 3 Muffler. |
| 2 | 1 | **P2M2HBVD11600** | DeviceNet Module |
| 3 | 1 | **P2M2V4EE2CV00F9** | Size 2, Double Solenoid, 4/2, 3/8" Straight Pneumatic Connectors. |
| 4 | 1 | **P2M1V4ES2CV00C7** | Size 1, Single Solenoid, 1/4" Elbow Pneumatic Connectors. |
| 5 | 1 | **P2M2BXV0A1F9MM** | Intermediate Module 3/8" Straight Fitting with Exhaust Muffler |
| 6 | 2 | **P2M1VDEE2CV00C7** | Size 1, Dual 3/2 NC + NC, 1/4" Elbow Pneumatic Connectors. |
| 7 | 1 | **P2M1VJEE2CV00F7** | Size 1, Dual 4/2, 1/4" Straight Pneumatic Connectors. |
| **Components** | | | |
| 1 | 1 | **P2M2HXT01** | Pneumatic Head and Tail Module Set |
| 2 | 1 | **P2M2HBVD11600** | DeviceNet Module |
| 3 | 1 | **P2M2V4EE2CV** | Size 2, V Series Island Valve Module, Double Solenoid, 4-Way |
| 4 | 1 | **P2M1V4ES2CV** | Size 1, V Series Island Valve Module, Single Solenoid, 4-Way |
| 5 | 1 | **P2M2BXV0A** | Intermediate Module |
| 6 | 1 | **P2M1VGEE2CV** | Size 1, V Series Island Valve Module, Dual 3/2 NC + NC |
| 7 | 2 | **P2M1VJEE2CV** | Size 1, V Series Island Valve Module, Dual 4/2 |
| 8 | 2 | **CMD07-1B** | Size 1, 1/4" OD Tube Elbow Push-in Connector |
| 9 | 6 | **FMD07-1B** | Size 1, 1/4" OD Tube Straight Push-in Connector |
| 10 | 4 | **FMD09-2B** | Size 2, 3/8" OD Tube Straight Push-in Connector |
| 11 | 2 | **MMDVA2** | Clip-on Muffler |

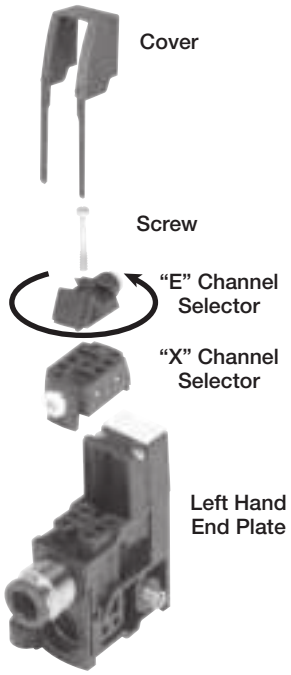
## Internal and external pilot supply options

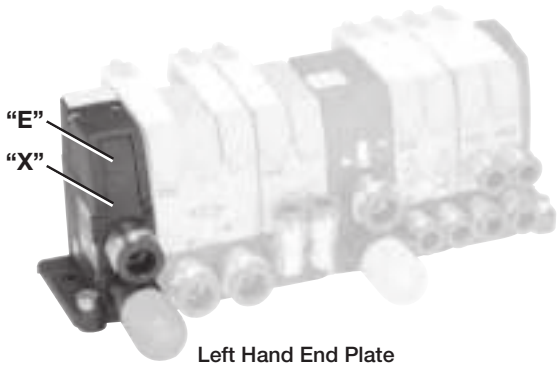
All T and V Series Valve bases incorporate an auxiliary channel **"X"** to supply pressure to the solenoid pilots. The **"X"** galley is pressurized from the left hand end plate. Depending on the configuration of the left hand end plate, this pressure is either supplied from the #1 port in the left hand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

## Internal and external solenoid pilot exhaust options

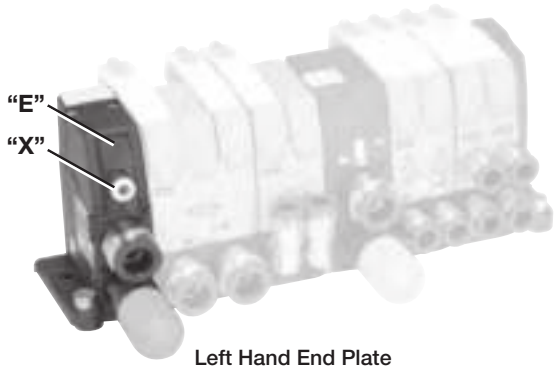
All T and V Series Valve bases incorporate an auxiliary channel **"E"** which is used to exhaust the solenoid pilot pressure from each solenoid valve. The **"E"** galley is connected to the left hand end plate. Depending on the configuration of the left hand end plate, this exhaust is either connected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

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

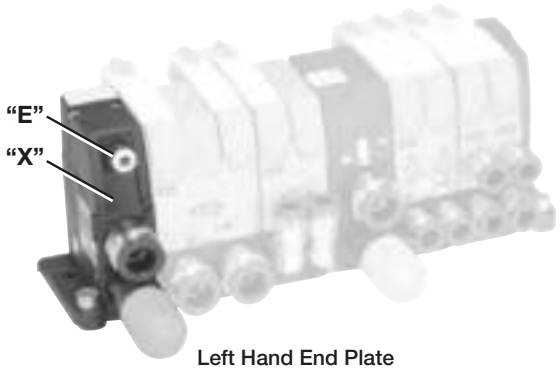


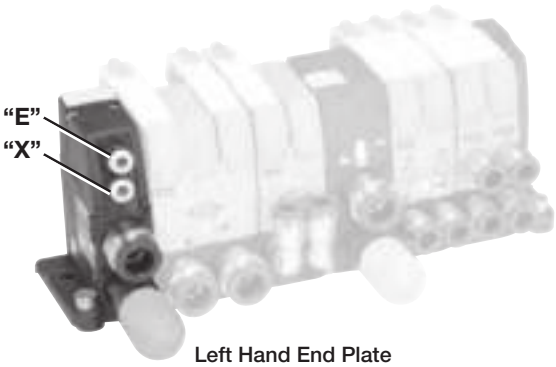

Left Hand End Plate
"E" Channel Internal Exhaust
"X" Channel Internal Pilot




Left Hand End Plate
"E" Channel Internal Exhaust
"X" Channel External Pilot




Left Hand End Plate
"E" Channel External Exhaust
"X" Channel Internal Pilot

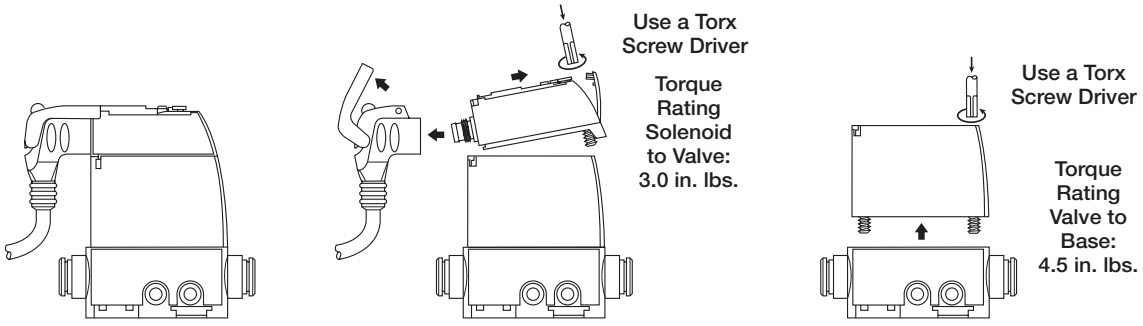



Left Hand End Plate
"E" Channel External Exhaust
"X" Channel External Pilot

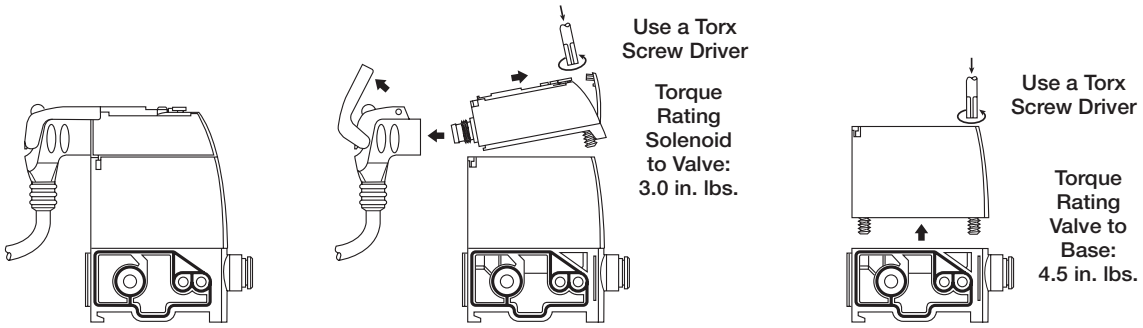
## "V", "T" and "S" Series Maintenance

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

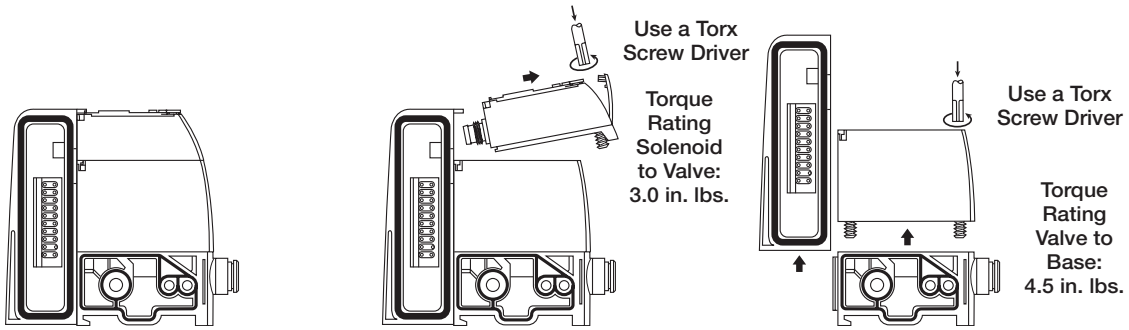
### "S" Series



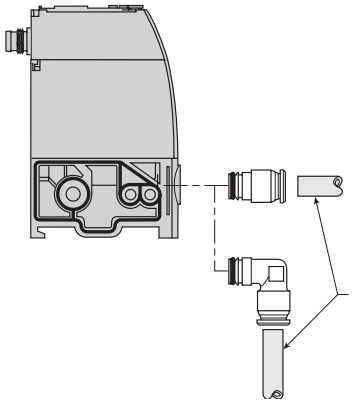

### "T" Series




### "V" Series




## Fitting and Tubing Installation



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

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

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

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

## Pneumatic Valve Specifications

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

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

## Electrical Specifications

| | | | | |
|---|---|---|---|---|
| Rated Coil Voltage | 24VDC | | | |
| Allowable Voltage Fluctuation | -15% to +10 % of nominal voltage | | | |
| Electrical Connection | Polarity insensitive: PNP and NPN compatible | | | |
| Coil insulation Type | Class B | | | |
| Power Consumption | 1W (42 mA) | | | |
| Manual Override | Locking or non-locking, isolated if required | | | |
| Response Time of the Complete Valve | 9.6 ms ± 1.2 on 4/2 Double Solenoid Valve Size 1<br>12.0 ms ± 1.2 on 4/2 Single Solenoid Valve Size 1<br>14.8 ms ± 2 on 4/2 Double Solenoid Valve Size 2<br>17.0 ms ± 2 on 4/2 Single Solenoid Valve Size 2 | | According to ISO 12238 | |
| Type of Use | Continuous-duty Solenoid | | | |
| Dust and Water Protection | According to EN 60 529 | “S” and “T” Series: | M8 | IP67 |
| | | | Clip | IP40 |
| | | “V” Series: | | IP65 |

## Specifications

### 1/4", 3/8" and 1/2" Fittings

**Construction**

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

**Recommended Parker Tubing Series:**

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

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

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

### 6mm, 8mm, 10mm, 12mm Fittings

**Construction**

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

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

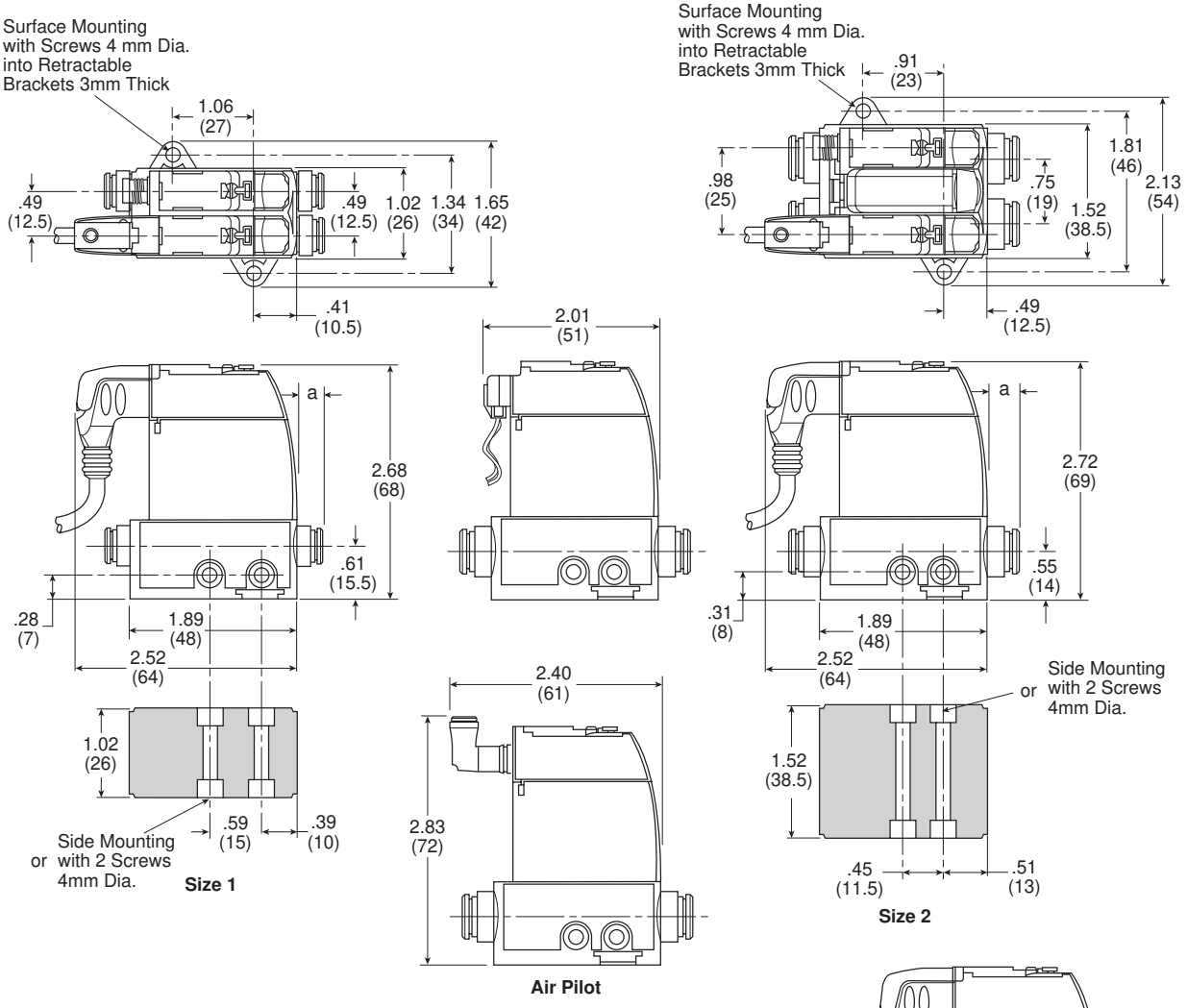
E (Linear Low Density Polyethylene), N (Plasticized Polyamide, Nylon), U (Polyurethane 90 Durometer Shore A), HU (Polyurethane 95 Durometer Shore A)

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

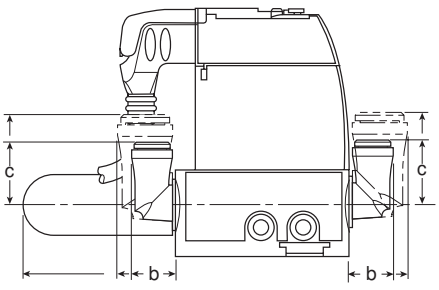
## "S" Series Individual Subbase Valve Dimensions and Mounting

**Subbase Valve Size 1**

**Subbase Valve Size 2**




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



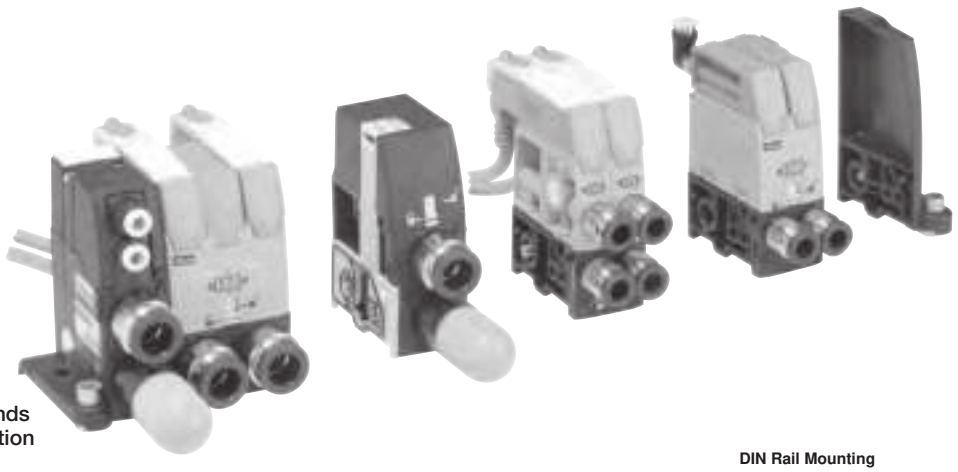

**Special Case:** 4/3 all ports blocked. Add the dual P.O. check valve that has been plugged in the basic valve.



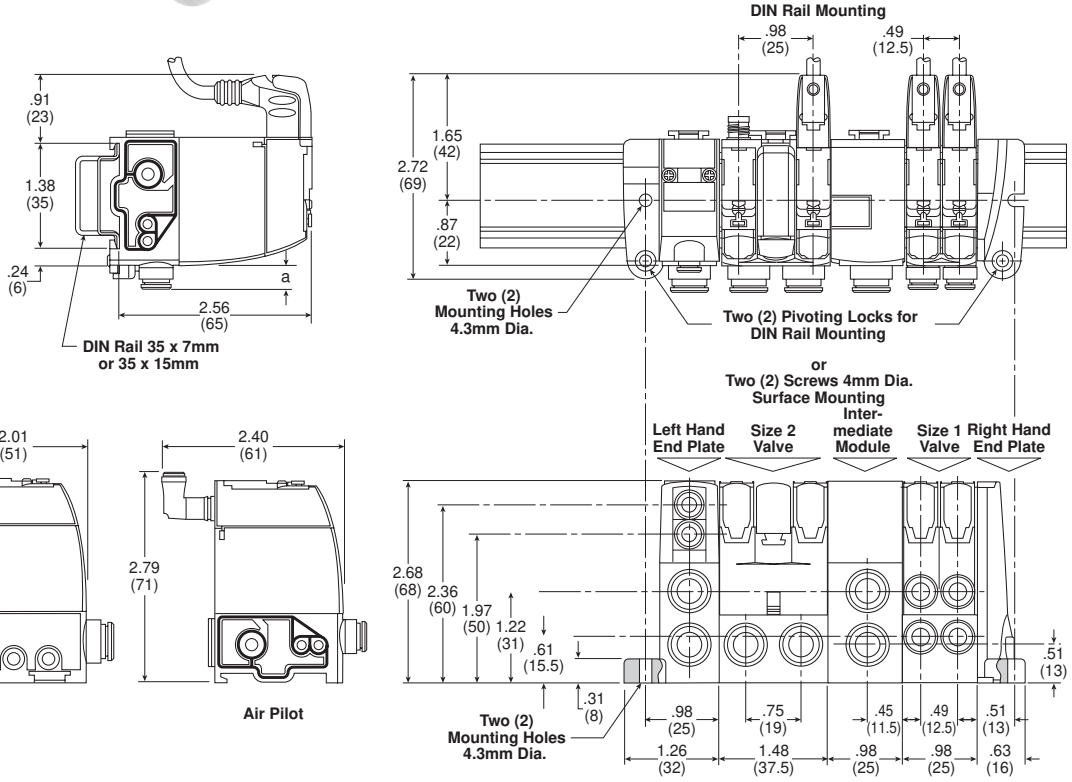
For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

## "T" Series Manifold Dimensions and Mounting



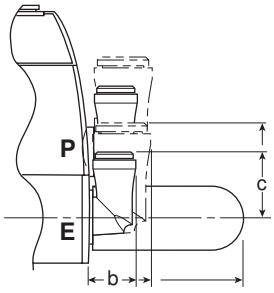
Total Width Depends on Valve Composition



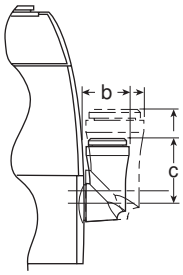

**Special Case:** 4/3 all ports blocked function within island version, add the dimensions of the dual P.O. check valve plugged into the island.

## End Plate and Intermediate Modules

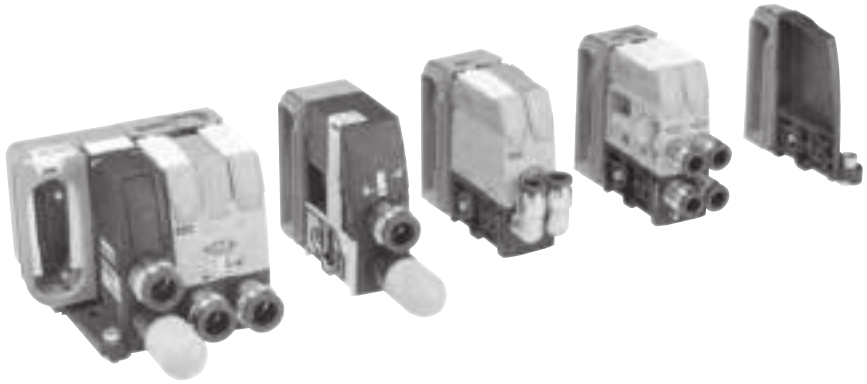
| | a | b | c |
|---|---|---|---|
| 6 mm Tube OD | 8 | 13 | 16 |
| 1/4" Tube OD | 12 | 18 | 22 |
| 8 mm Tube OD | 9 | 16 | 19 |
| 3/8" Tube OD | 16 | 23 | 26 |
| 10 mm Tube OD | 13 | 18 | 25 |
| 12 mm Tube OD | 13 | 19 | 25 |
| 1/2" Tube OD | 13 | | |
| Muffler | | 40 | |



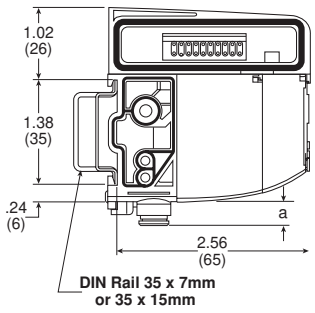

| OD Tube | Ext. | a | b | c |
|---|---|---|---|---|
| Size 1 Valves | 5/32" (4 mm) | 8 | 10 | 12 |
| | 6 mm | 8 | 13 | 16 |
| | 1/4" | 15 | 18 | 22 |
| Size 2 Valves | 1/4" | 12 | 18 | 22 |
| | 8 mm | 9 | 16 | 19 |
| | 3/8" | 16 | 23 | 26 |
| | 10 mm | 13 | 18 | 22 |

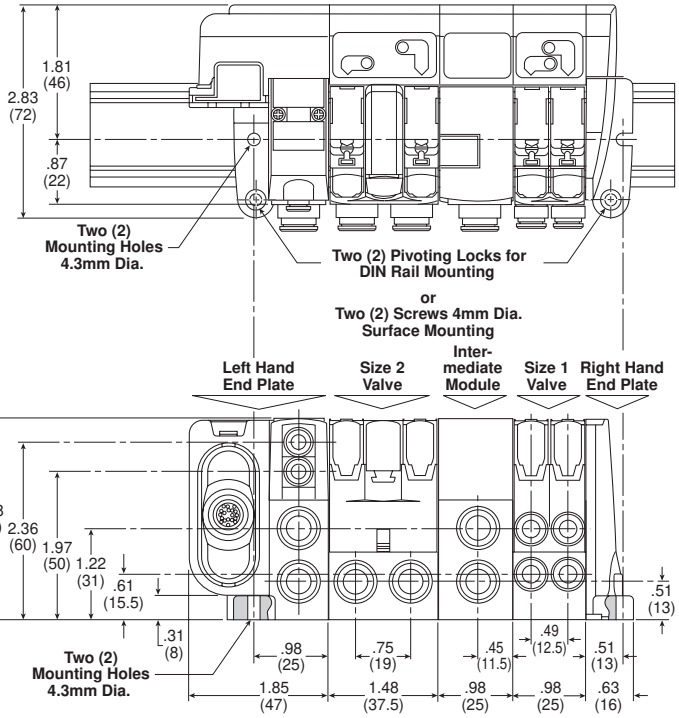


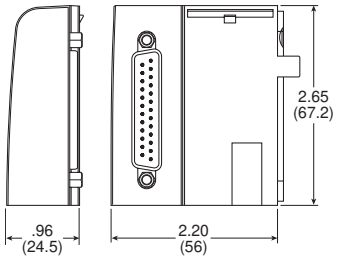
## "V" Series Manifold Dimensions and Mounting
**20-pin, Multi-Connector Valve Manifold**



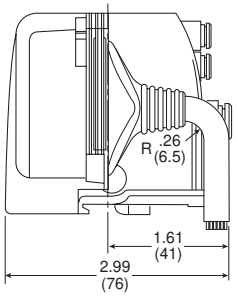
Total Width Depends on Valve Composition



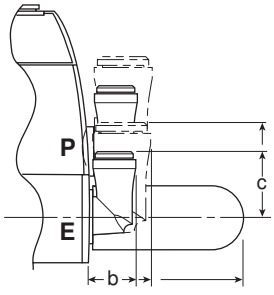

25-pin,
D-Sub



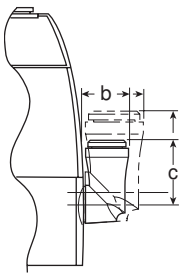

20-pin,
Multi-Connector

## End Plate and Intermediate Modules

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



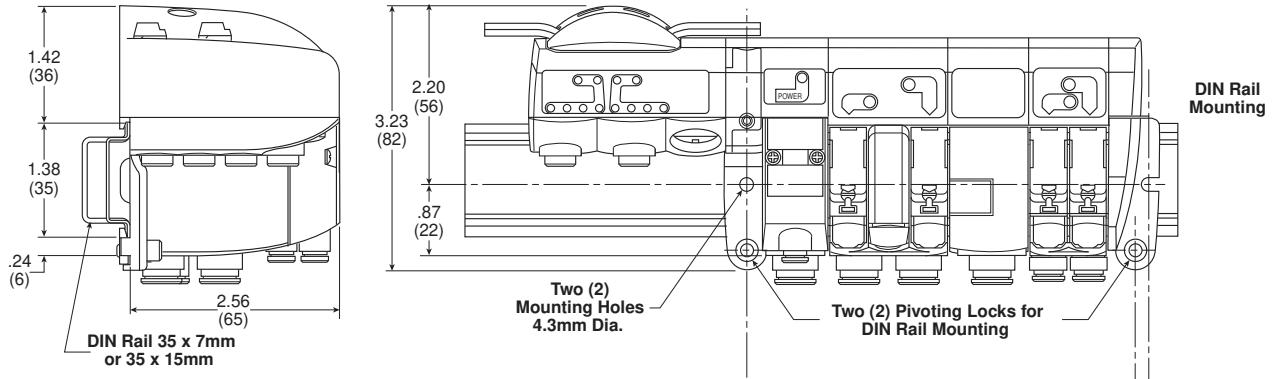

| OD Tube | Ext. | a | b | c |
|---|---|---|---|---|
| Size 1 Modules | 5/32" (4 mm) | 8 | 10 | 12 |
| | 6 mm | 8 | 13 | 16 |
| | 1/4" | 15 | 18 | 22 |
| Size 2 Modules | 1/4" | 12 | 18 | 22 |
| | 8 mm | 9 | 16 | 19 |
| | 3/8" | 16 | 23 | 26 |
| | 10 mm | 13 | 18 | 22 |



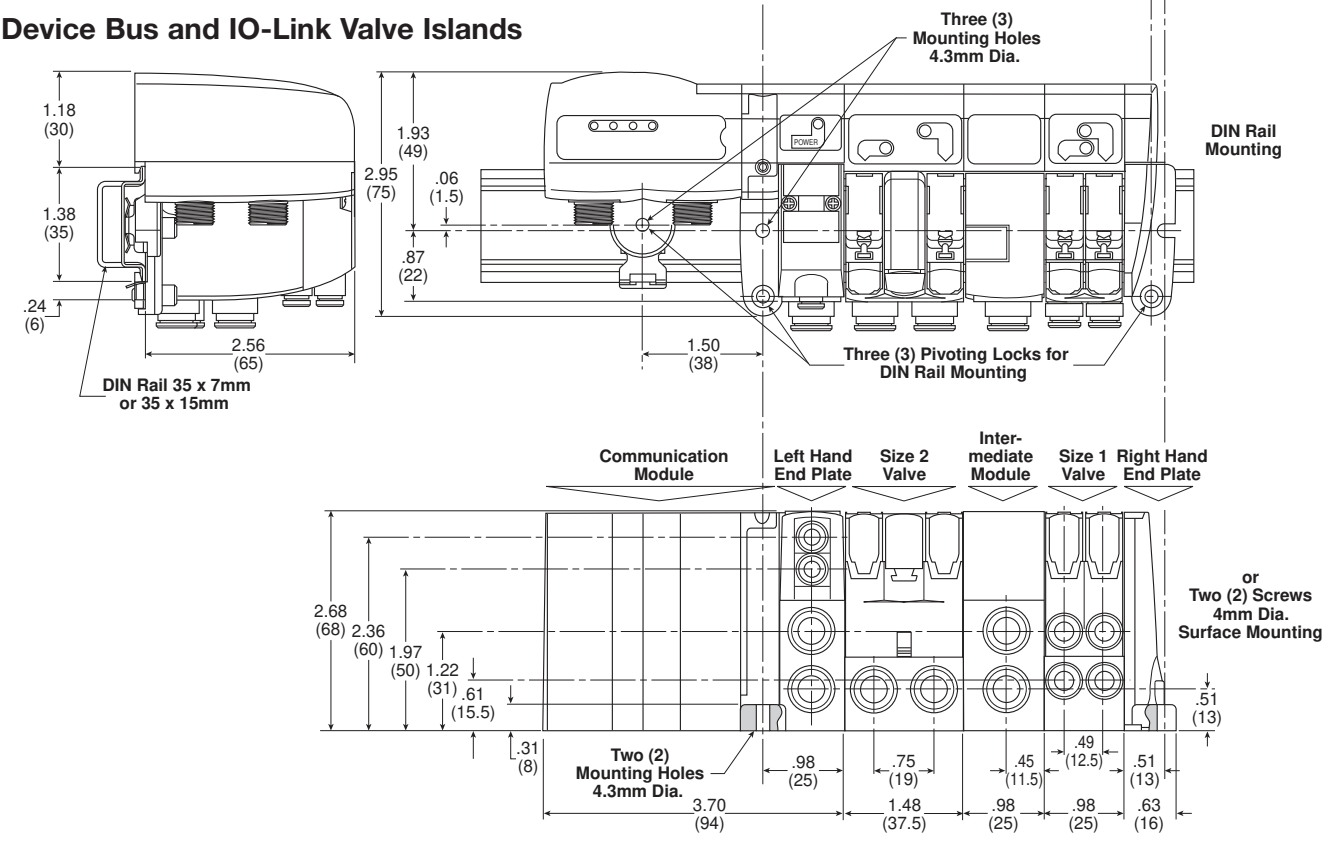
## "V" Series Manifold Dimensions and Mounting
**Fieldbus Connected Manifolds**

Total Width Depends on Valve Composition

### AS-i Bus Islands



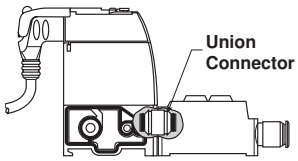

### Device Bus and IO-Link Valve Islands



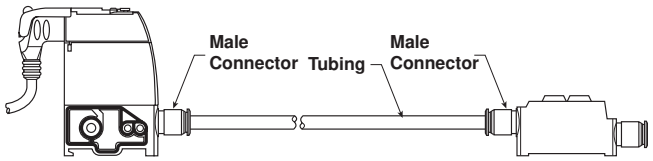
## "P" Series Peripheral Modules Dimensions and Mounting

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

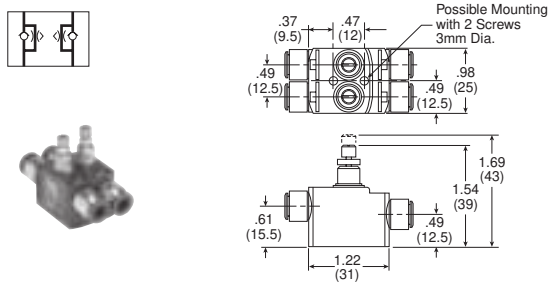
Peripheral Module
Plugged in a Valve



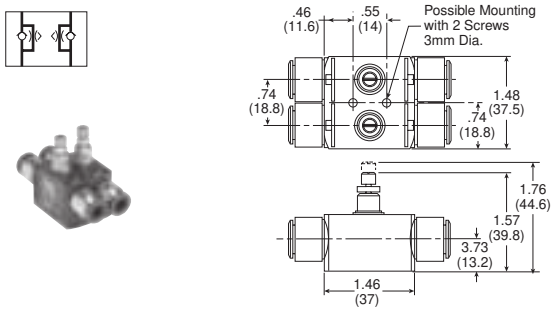

In-Line Peripheral Modules:
Mounting is Required




### Dual Flow Control Size 1

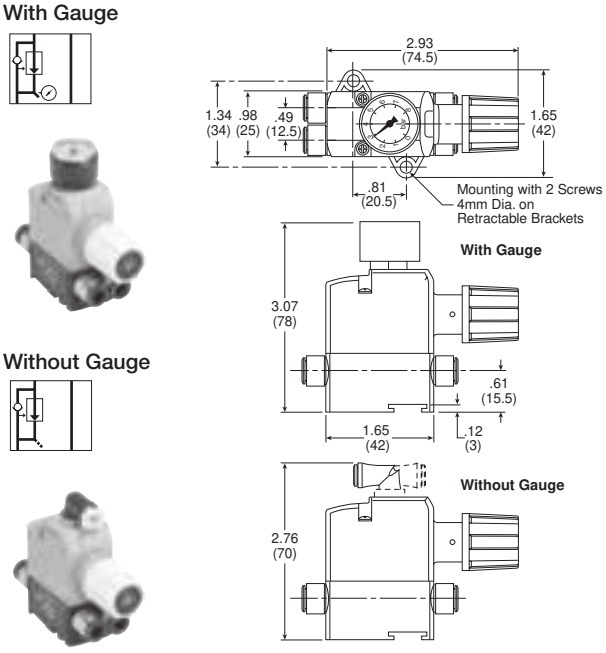



### Dual Flow Control Size 2




### Pressure Regulator Size 1

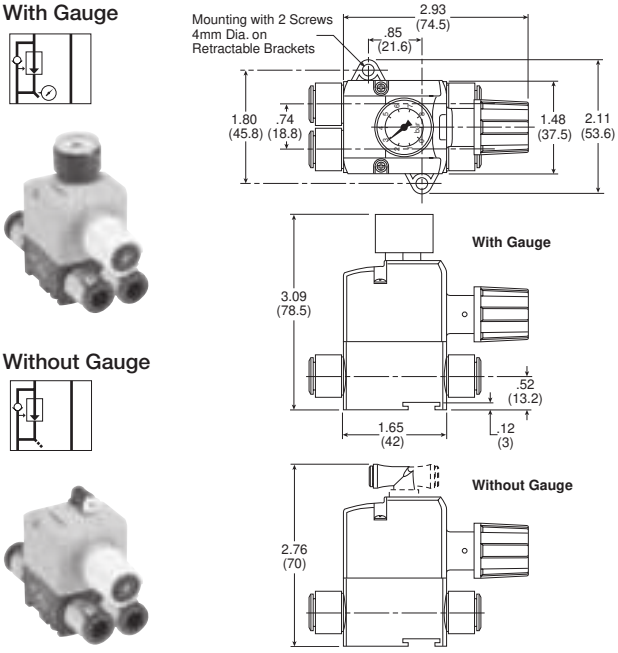
With Gauge




Without Gauge

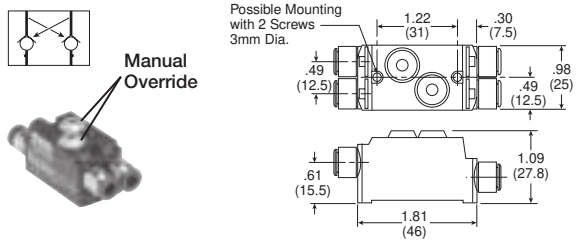
### Pressure Regulator Size 2

With Gauge

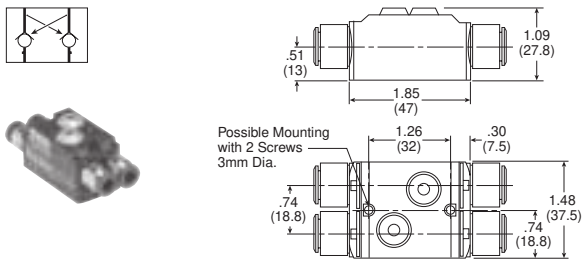



Without Gauge

### Dual P.O. Check Valve Size 1




### Dual P.O. Check Valve Size 2





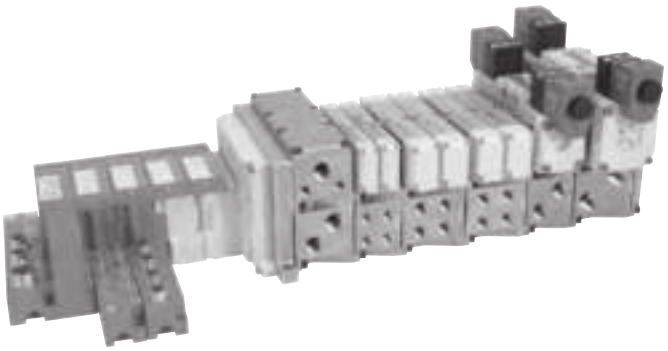



For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

# H Series ISO

The H Series ISO valve conforms to international standards 15407 and 5599, providing maximum flexibility for end users. As Parker's premier manifold mount product offering, H Series ISO offers machine builders a complete offering with a wide variety of accessories and options in a valve family with flow ranges from 0.55 Cv up to 6.0 Cv. HB/HA/H1/H2 can be mounted on the same manifold. Individual wiring is available with DIN or central connectors, and collective solutions offer installation time savings with either multi-pin connectors or network solutions.



### Ports, Flow

- H Universal Manifold
  HB: 1/8 inch, 0.55 Cv
  HA: 1/4 inch, 1.1 Cv
  H1: 3/8 inch, 1.5 Cv
  H2: 1/2 inch, 3.0 Cv
- H Classic Manifold (not compatible with H universal)
  H3: 3/4 inch, 6.0 Cv
- NPT and BSPP "G" standard

### Solenoids

- HB & HA: 24 VDC, 1.0 Watt, and 120 VAC, 1.0 VA
- H1, H2, & H3: 24 VDC, 3.2 Watt, and 120 VAC, 4.5 VA

### Certification / approval

- IP65 rated
- cCSAus approved voltages:
  15407-2 & 5599-2 24VDC manifolds only
  15407-2 & 5599-2 single subbase, all voltages
  15407-1 & 5599-1 manifold and single subbase, all voltages
- BSPP manifold and subbase ports meet ISO 1179 specifications

## Operating information

| | |
|---|---|
| Operating pressure: | Vacuum to 145 PSIG (Vacuum to 10 bar) |
| Pilot pressure: | See chart |
| Temperature range: | 5°F to 120°F (-15°C to 49°C) |

## Material specifications

| | |
|---|---|
| Body | Aluminum |
| End caps | PBT |
| End plates | Aluminum |
| Fasteners | Zinc plated steel |
| Manifolds | Aluminum |
| Seals | Nitrile |
| Spool | Aluminum |

## Operating Pressure

**Maximum: 145 PSIG (1000 kPa)**

**Minimum:**

| Operator / function | Internal pilot | PSIG (Min. kPa) HB | PSIG (Min. kPa) HA | PSIG (Min. kPa) H1 | PSIG (Min. kPa) H2 | PSIG (Min. kPa) H3 |
|---|---|---|---|---|---|---|
| 1 | Single solenoid - 2-position | 30 (207) | 25 (173) | 25 (173) | 25 (173) | 35 (241) |
| 2 | Double solenoid- 2-position | | | | | |
| 3 | Single remote pilot - 2-position ** | Vacuum | Vacuum | Vacuum | Vacuum | Vacuum |
| 4 | Double remote pilot - 2-position** | Vacuum | Vacuum | Vacuum | Vacuum | Vacuum |
| 5, 6, 7 | Double solenoid - 3-position APB, CE, PC | 35 (241) | 35 (241) | 35 (241) | 50 (345) | 50 (345) |
| 8, 9, 0 | Double remote pilot - 3-position** APB, CE, PC | Vacuum | Vacuum | Vacuum | Vacuum | Vacuum |
| E | Single solenoid pilot - 2-position Air return / spring assist | 30 (207) | 30 (207) | 35 (241) | 45 (310) | 45 (310) |
| F | Single remote pilot - 2-position** Air return / spring assist | | | | | |
| N, P, Q | Double solenoid - dual 3/2 | 30 (207) | N/A | N/A | N/A | N/A |
| | External pilot* | * | * | * | * | * |
| All | H Series | Vacuum | Vacuum | Vacuum | Vacuum | Vacuum |

* External Pilot Pressure / Remote Pilot Supply - Must meet or exceed minimum pilot pressure for internal pilot option. Not available on Operator / Function N, P, or Q.

** Must be equal to or greater than operating pressure.



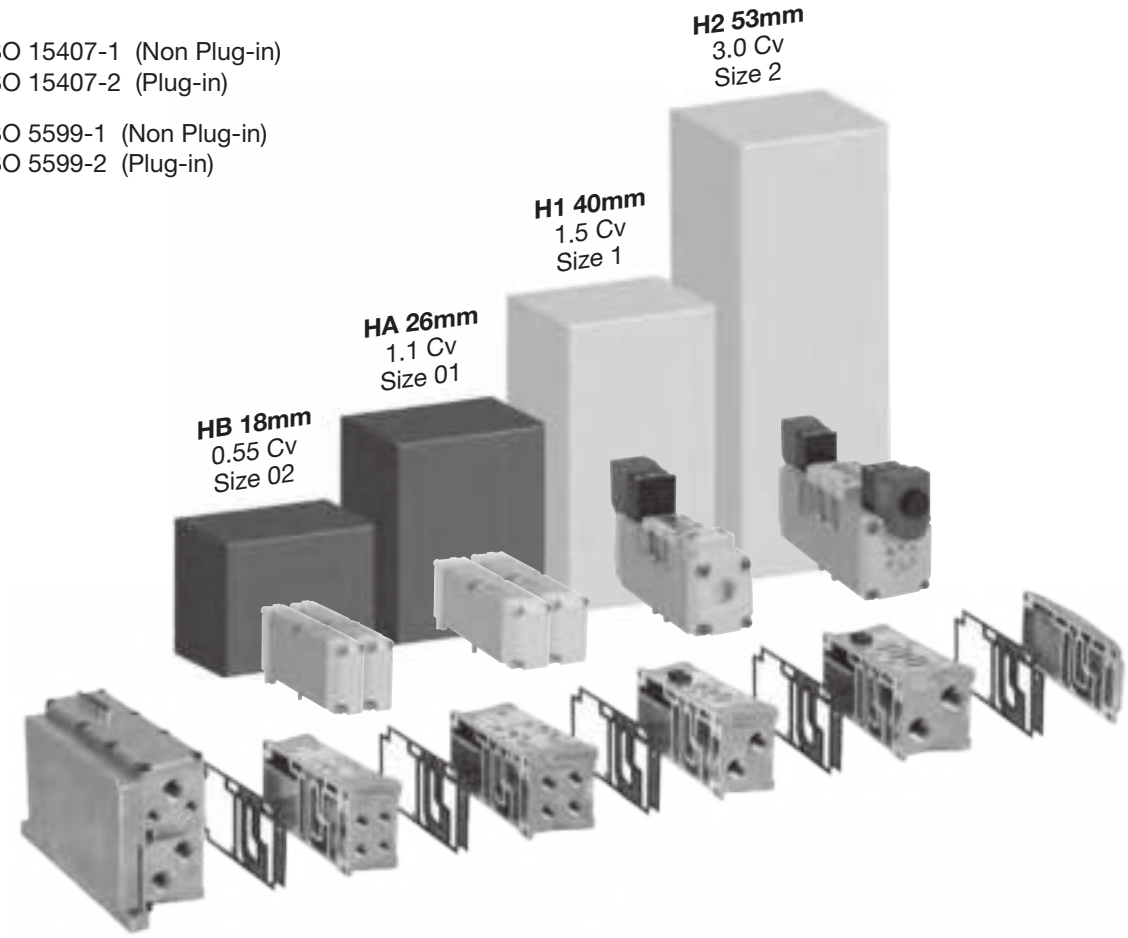


**Parker Hannifin Corporation**
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

## Right Sizing

ISO 15407-1 (Non Plug-in)
ISO 15407-2 (Plug-in)

ISO 5599-1 (Non Plug-in)
ISO 5599-2 (Plug-in)

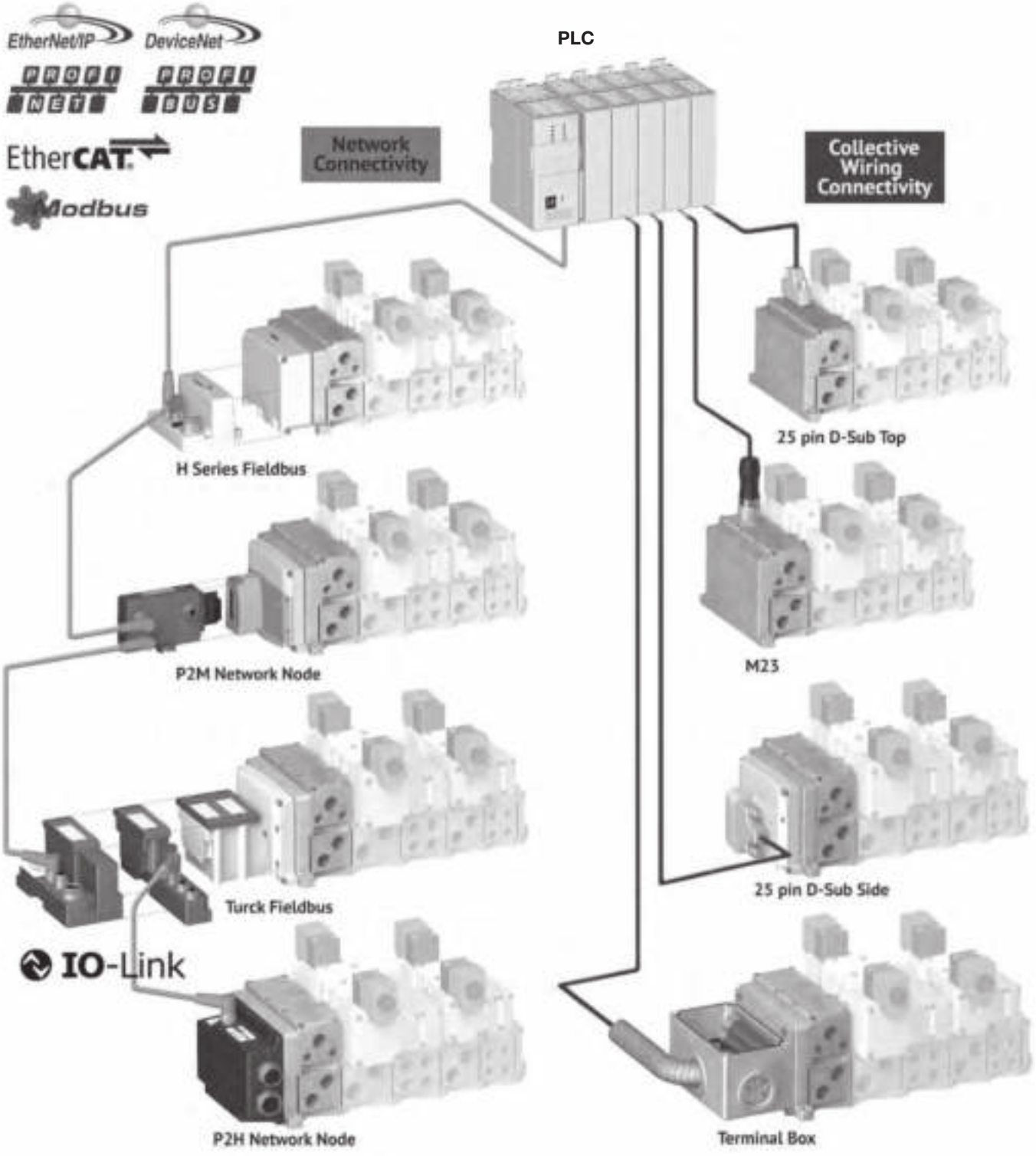



**Cylinder Bore Size - inches (mm)**

| Cylinder Speed - in/s (mm/s) | 1-1/4" (32 mm) | 1-1/2" (40 mm) | 2.00" (50 mm) | 2-1/2" (63 mm) | 3-1/4" (80 mm) | 4.00" (100 mm) | 5.00" (125 mm) | 6.00" (150 mm) |
|---|---|---|---|---|---|---|---|---|
| 1.96 (50) | 0.03 | 0.04 | 0.06 | 0.10 | 0.17 | 0.26 | 0.41 | 0.59 |
| 3.93 (100) | 0.05 | 0.08 | 0.13 | 0.21 | 0.35 | 0.53 | 0.82 | 1.19 |
| 5.90 (150) | 0.08 | 0.12 | 0.20 | 0.31 | 0.52 | 0.79 | 1.24 | 1.78 |
| 7.87 (200) | 0.10 | 0.16 | 0.26 | 0.41 | 0.69 | 1.05 | 1.64 | 2.37 |
| 9.84 (250) | 0.13 | 0.20 | 0.33 | 0.52 | 0.87 | 1.32 | 2.06 | 2.97 |
| 11.81 (300) | 0.16 | 0.25 | 0.40 | 0.62 | 1.05 | 1.58 | 2.47 | 3.56 |
| 13.77 (350) | 0.18 | 0.29 | 0.46 | 0.72 | 1.22 | 1.85 | 2.88 | 4.15 |
| 15.74 (400) | 0.21 | 0.33 | 0.53 | 0.82 | 1.39 | 2.11 | 3.30 | 4.75 |
| 17.71 (450) | 0.24 | 0.37 | 0.59 | 0.93 | 1.57 | 2.37 | 3.71 | 5.34 |
| 19.68 (500) | 0.26 | 0.41 | 0.66 | 1.03 | 1.74 | 2.64 | 4.12 | 5.94 |
| | HB | | HA | | H1 | H2 | H3 | |



## Connectivity



## Two easy ways to order H Universal

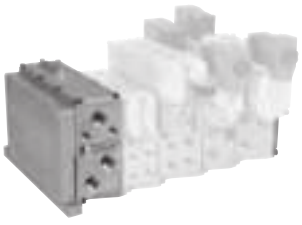
### 1 Online Configuration

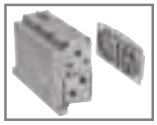
Navigate to the landing page
www.parker.com/pdn/HSeriesISO
Customize your manifold assembly
Create and save a unique assembled part number
Generate a CAD model

*OR*

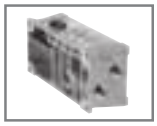
### 2 Order Components

**A** **Select Endplate Kit**
Includes Left and Right Hand Endplate

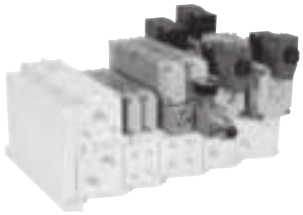


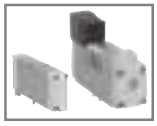


**B** **Select Valve Manifold Segments**
Manifold (size HB, HA, H1 or H2)
Air Supply Module



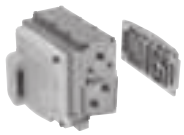
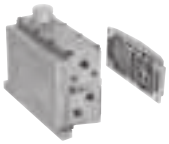
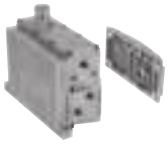
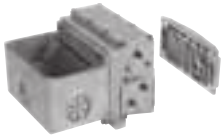
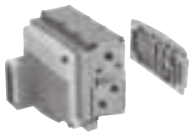
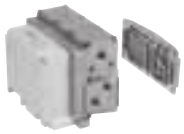
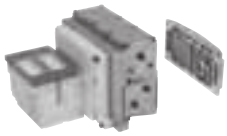
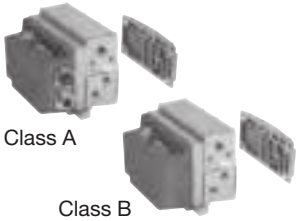
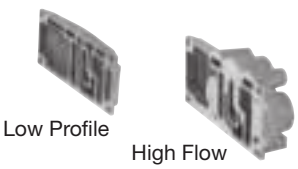
**C** **Select Valve Stations**
Valves (size HB, HA, H1 or H2)
Blanking Plate





**D** **Select Sandwich Accessories**
Sandwich Regulators
Sandwich Flow Control
Pilot Exhaust

## End Plate Kits - Universal for use with HB, HA, H1 H2

| | Electrical option | NPT port | BSPP port |
|---|---|---|---|
|  | 25-pin, D-Sub<br>Side, 24 address | **PSHU20L100P** | **PSHU20L101P** |
|  | 25-pin, D-Sub<br>Top, 24 address | **PSHU20L200P** | **PSHU20L201P** |
|  | 19-pin, round, Brad Harrison,<br>16 address | **PSHU20L300P** | **PSHU20L301P** |
|  | 12-pin, M23, 8 address | **PSHU20L400P** | **PSHU20L401P** |
| | 19-pin, M23, 16 address | **PSHU20M200P** | **PSHU20M201P** |
|  | Terminal box, 32 address | **PSHU20L500P** | **PSHU20L501P** |
|  | P2M Network Node, 24 address | **PSHU20M400P** | **PSHU20M401P** |
|  | H Series Network, with valve driver module,<br>32 address | **PSHU20L600P** | **PSHU20L601P** |
|  | Turck Network with valve driver module, 16 address | **PSHU20T100P** | **PSHU20T101P** |
| | Turck Network with valve driver module, 32 address | **PSHU20T200P** | **PSHU20T201P** |
|  <br>Class A<br>Class B | P2H IO Link Class B, standard version, 24 address | **PSHU20N200P** | **PSHU20N201P** |
| | P2H IO Link Class B, safe version, 24 address | **PSHU20S200P** | **PSHU20S201P** |
| | P2H IO Link Class A, 4-pin safe version, 24 address | **PSHU20S400P** | **PSHU20S401P** |
| | P2H IO Link Class A, 5-pin safe version, 24 address | **PSHU20S500P** | **PSHU20S501P** |
|  <br>Low Profile<br>High Flow | Right hand end plate only, low profile no port | **PSHU4000P** | — |
| | Right hand end plate only, high flow 1/2" ports | **PSHU4100P** | **PSHU4101P** |
| | Right hand end plate only, high flow 3/4" ports | **PSHU4200P** | **PSHU4201P** |

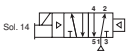
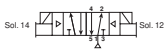
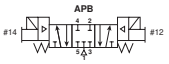
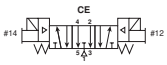
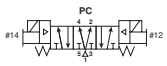
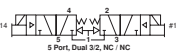
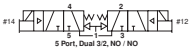
Most popular.





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

## Valve - 15407-2, Plug-in, Size 18mm (HB)

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 0.55 | Single solenoid | 24 VDC | Internal | **HBEVXBG0G9A** | **HBEVXBH0G9A** |
| | | | | | | External | **HBEVXLG0G9A** | **HBEVXLH0G9A** |
| | | | | | 120 VAC | Internal | **HBEVXBG023A** | **HBEVXBH023A** |
| | | | | | | External | **HBEVXLG023A** | **HBEVXLH023A** |
| |  | 4-way, 2-position, air return | 0.55 | Single solenoid | 24 VDC | Internal | **HB1VXBG0G9A** | **HB1VXBH0G9A** |
| | | | | | | External | **HB1VXLG0G9A** | **HB1VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HB1VXBG023A** | **HB1VXBH023A** |
| | | | | | | External | **HB1VXLG023A** | **HB1VXLH023A** |
| |  | 4-way, 2-position | 0.55 | Double solenoid | 24 VDC | Internal | **HB2VXBG0G9A** | **HB2VXBH0G9A** |
| | | | | | | External | **HB2VXLG0G9A** | **HB2VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HB2VXBG023A** | **HB2VXBH023A** |
| | | | | | | External | **HB2VXLG023A** | **HB2VXLH023A** |
| |  | 4-way, 3-position, all ports blocked | 0.5 | Double solenoid | 24 VDC | Internal | **HB5VXBG0G9A** | **HB5VXBH0G9A** |
| | | | | | | External | **HB5VXLG0G9A** | **HB5VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HB5VXBG023A** | **HB5VXBH023A** |
| | | | | | | External | **HB5VXLG023A** | **HB5VXLH023A** |
|  |  | 4-way, 3-position, center exhaust | 0.5 | Double solenoid | 24 VDC | Internal | **HB6VXBG0G9A** | **HB6VXBH0G9A** |
| | | | | | | External | **HB6VXLG0G9A** | **HB6VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HB6VXBG023A** | **HB6VXBH023A** |
| | | | | | | External | **HB6VXLG023A** | **HB6VXLH023A** |
| |  | 4-way, 3-position, pressure center | 0.5 | Double solenoid | 24 VDC | Internal | **HB7VXBG0G9A** | **HB7VXBH0G9A** |
| | | | | | | External | **HB7VXLG0G9A** | **HB7VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HB7VXBG023A** | **HB7VXBH023A** |
| | | | | | | External | **HB7VXLG023A** | **HB7VXLH023A** |
| |  | 3-way, 2-position, dual valve, NC/NC | 0.45 | Double solenoid | 24 VDC | Internal | **HBNVXBG0G9A** | **HBNVXBH0G9A** |
| | | | | | 120 VAC | Internal | **HBNVXBG023A** | **HBNVXBH023A** |
| |  | 3-way, 2-position, dual valve, NO/NO | 0.45 | Double solenoid | 24 VDC | Internal | **HBPVXBG0G9A** | **HBPVXBH0G9A** |
| | | | | | 120 VAC | Internal | **HBPVXBG023A** | **HBPVXBH023A** |

## Manifold Base - 2-Station, 15407-2, Plug-in, Size 18mm (HB)

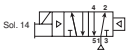
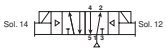
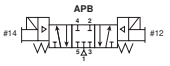
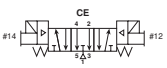
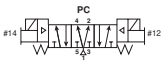
| End ported bases | Enclosure / Lead length | Solenoid addresses | 1/8" NPT | 1/8" BSPP |
|---|---|---|---|---|
|  | Circuit board | Single solenoid - 2 address | **PSHU1151J1P** | **PSHU1152J1P** |
| | Circuit board | Double solenoid - 4 addresses | **PSHU1151M1P** | **PSHU1152M1P** |

## Accessories - 15407-2, Plug-in, Size 18mm (HB)

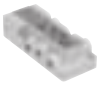
| | Accessories | Description | | Part number |
|---|---|---|---|---|
|  | Gauge adapter kit | Includes 1/8" coupling, long nipple, and gauge | | **PS5651160P** |
|  | Blanking plate kit | | | **PS5634P** |
|  | Sandwich flow control for individual valve | | | **PS5635P** |
|  | Sandwich regulator | | Common pressure | Independent pressure |
| | | 2-60 PSIG w/ gauge | **PS5638155P** | **PS5638255P** |
| | | 5-125 PSIG w/ gauge | **PS5638166P** | **PS5638266P** |
|  | Sandwich module | | Supply module | Exhaust module |
| | | 1/8" NPT | **PS561600P** | **PS561700P** |
| | | 1/8" BSPP | **PS561601P** | **PS561701P** |

Most popular.

## Valve - 15407-2, Plug-in, Size 26mm (HA)

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 1.1 | Single solenoid | 24 VDC | Internal | **HAEVXBG0G9A** | **HAEVXBH0G9A** |
| | | | | | | External | **HAEVXLG0G9A** | **HAEVXLH0G9A** |
| | | | | | 120 VAC | Internal | **HAEVXBG023A** | **HAEVXBH023A** |
| | | | | | | External | **HAEVXLG023A** | **HAEVXLH023A** |
| |  | 4-way, 2-position, air return | 1.1 | Single solenoid | 24 VDC | Internal | **HA1VXBG0G9A** | **HA1VXBH0G9A** |
| | | | | | | External | **HA1VXLG0G9A** | **HA1VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HA1VXBG023A** | **HA1VXBH023A** |
| | | | | | | External | **HA1VXLG023A** | **HA1VXLH023A** |
| |  | 4-way, 2-position | 1.1 | Double solenoid | 24 VDC | Internal | **HA2VXBG0G9A** | **HA2VXBH0G9A** |
| | | | | | | External | **HA2VXLG0G9G9A** | **HA2VXLH0G9G9A** |
| | | | | | 120 VAC | Internal | **HA2VXBG023A** | **HA2VXBH023A** |
| | | | | | | External | **HA2VXLG023A** | **HA2VXLH023A** |
|  |  | 4-way, 3-position, all ports blocked | 1.0 | Double solenoid | 24 VDC | Internal | **HA5VXBG0G9A** | **HA5VXBH0G9A** |
| | | | | | | External | **HA5VXLG0G9A** | **HA5VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HA5VXBG023A** | **HA5VXBH023A** |
| | | | | | | External | **HA5VXLG023A** | **HA5VXLH023A** |
| |  | 4-way, 3-position, center exhaust | 1.0 | Double solenoid | 24 VDC | Internal | **HA6VXBG0G9A** | **HA6VXBH0G9A** |
| | | | | | | External | **HA6VXLG0G9A** | **HA6VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HA6VXBG023A** | **HA6VXBH023A** |
| | | | | | | External | **HA6VXLG023A** | **HA6VXLH023A** |
| |  | 4-way, 3-position, pressure center | 1.0 | Double solenoid | 24 VDC | Internal | **HA7VXBG0G9A** | **HA7VXBH0G9A** |
| | | | | | | External | **HA7VXLG0G9A** | **HA7VXLH0G9A** |
| | | | | | 120 VAC | Internal | **HA7VXBG023A** | **HA7VXBH023A** |
| | | | | | | External | **HA7VXLG023A** | **HA7VXLH023A** |

## Single Subbase - 15407-2, Plug-in, Size 26mm (HA)

| | Enclosure / Lead length | Solenoid addresses | 1/4" NPT | 1/4" BSPP |
|---|---|---|---|---|
|  | Terminal strip in the base | Double solenoid - 2 addresses | **PS551113CP** | **PS551114CP** |

## Manifold Base - 2-Station, 15407-2, Plug-in, Size 26mm (HA)

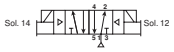
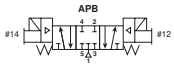
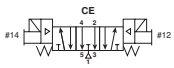
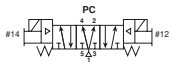
| End ported bases | Enclosure / Lead length | Solenoid addresses | 1/4" NPT | 1/4" BSPP |
|---|---|---|---|---|
|  | Circuit board | Single solenoid - 2 address | **PSHU1153J1P** | **PSHU1154J1P** |
| | Circuit board | Double solenoid - 4 addresses | **PSHU1153M1P** | **PSHU1154M1P** |

## Accessories - 15407-2, Plug-in, Size 26mm (HA)

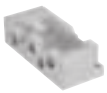
| | Accessories | Description | | Part number |
|---|---|---|---|---|
|  | Gauge adapter kit | Includes 1/8" coupling, long nipple, and gauge | | **PS5651160P** |
|  | Blanking plate kit | | | **PS5534P** |
|  | Sandwich flow control for individual valve | | | **PS5535P** |
| | | | Common pressure | Independent pressure |
|  | Sandwich regulator | 2-60 PSIG w/ gauge | **PS5538155P** | **PS5538255P** |
| | | 5-125 PSIG w/ gauge | **PS5538166P** | **PS5538266P** |
| | | | Supply module | Exhaust module |
|  | Sandwich module | 1/4" NPT | **PS562600P** | **PS562700P** |
| | | 1/4" BSPP | **PS562601P** | **PS562701P** |

Most popular.

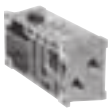
## Valve - 5599-2, Plug-in, Size 1 (H1)

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 1.5 | Single solenoid | 24 VDC | Internal | **H1EVXBG0B9D** | **H1EVXBH0B9D** |
| | | | | | | External | **H1EVXXG0B9D** | **H1EVXXH0B9D** |
| | | | | | | Internal | **H1EVXBG023D** | **H1EVXBH023D** |
| | | | | | | External | **H1EVXXG023D** | **H1EVXXH023D** |
| |  | 4-way, 2-position, air return | 1.5 | Single solenoid | 24 VDC | Internal | **H11VXBG0B9D** | **H11VXBH0B9D** |
| | | | | | | External | **H11VXXG0B9D** | **H11VXXH0B9D** |
| | | | | | | Internal | **H11VXBG023D** | **H11VXBH023D** |
| | | | | | | External | **H11VXXG023D** | **H11VXXH023D** |
| |  | 4-way, 2-position | 1.5 | Double solenoid | 24 VDC | Internal | **H12VXBG0B9D** | **H12VXBH0B9D** |
| | | | | | | External | **H12VXXG0B9D** | **H12VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H12VXBG023D** | **H12VXBH023D** |
| | | | | | | External | **H12VXXG023D** | **H12VXXH023D** |
|  |  | 4-way, 3-position, all ports blocked | 1.2 | Double solenoid | 24 VDC | Internal | **H15VXBG0B9D** | **H15VXBH0B9D** |
| | | | | | | External | **H15VXXG0B9D** | **H15VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H15VXBG023D** | **H15VXBH023D** |
| | | | | | | External | **H15VXXG023D** | **H15VXXH023D** |
| |  | 4-way, 3-position, center exhaust | 1.2 | Double solenoid | 24 VDC | Internal | **H16VXBG0B9D** | **H16VXBH0B9D** |
| | | | | | | External | **H16VXXG0B9D** | **H16VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H16VXBG023D** | **H16VXBH023D** |
| | | | | | | External | **H16VXXG023D** | **H16VXXH023D** |
| |  | 4-way, 3-position, pressure center | 1.2 | Double solenoid | 24 VDC | Internal | **H17VXBG0B9D** | **H17VXBH0B9D** |
| | | | | | | External | **H17VXXG0B9D** | **H17VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H17VXBG023D** | **H17VXBH023D** |
| | | | | | | External | **H17VXXG023D** | **H17VXXH023D** |

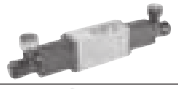
## Single Subbase - 5599-2, Plug-in, Size 1 (H1)

| Side ported | Enclosure / Lead length | Solenoid addresses | 3/8" NPT | 3/8" BSPP |
|---|---|---|---|---|
|  | Terminal strip in base | Double solenoid - 2 addresses | **PS401115CDP** | **PS401116CDP** |
| | 6" flying leads | Double solenoid - 2 addresses | **PS401115ADP** | **PS401116ADP** |
| | 4-pin, M12 micro connector in base, SAE / Ford wiring | Double solenoid - 2 addresses | **PS4011158FDP** | **PS4011168FDP** |

## Manifold Base - 5599-2, Plug-in, Size 1 (H1)

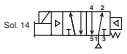
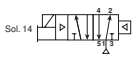
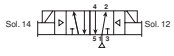
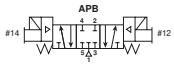
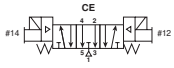
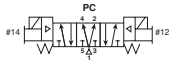
| End Ported | Enclosure / Lead length | Solenoid addresses | 3/8" NPT | 3/8" BSPP |
|---|---|---|---|---|
|  | Circuit board | Single solenoid - 1 address | **PSHU1155J1P** | **PSHU1156J1P** |
| | Circuit board | Double solenoid - 2 addresses | **PSHU1155M1P** | **PSHU1156M1P** |

## Accessories - 5599-2, Size 1 (H1)

| | Accessory | Description | | Part number |
|---|---|---|---|---|
|  | Sandwich regulator | Common pressure | 5-125 PSIG w/ gauge | **PS4038166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4038266CP** |
|  | Blanking plate kit | | | **PS4034CP** |
|  | Sandwich flow control<br>A Sandwich Flow Control and Common Port Sandwich Regulator may be used together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator. | | | **PS4035CP** |

☐ Most popular.

## Valve - 5599-2, Plug-in, Size 2 (H2)

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 3.0 | Single solenoid | 24 VDC | Internal | **H2EVXBG0B9D** | **H2EVXBH0B9D** |
| | | | | | | External | **H2EVXXG0B9D** | **H2EVXXH0B9D** |
| | | | | | 120 VAC | Internal | **H2EVXBG023D** | **H2EVXBH023D** |
| | | | | | | External | **H2EVXXG023D** | **H2EVXXH023D** |
| |  | 4-way, 2-position, air return | 3.0 | Single solenoid | 24 VDC | Internal | **H21VXBG0B9D** | **H21VXBH0B9D** |
| | | | | | | External | **H21VXXG0B9D** | **H21VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H21VXBG023D** | **H21VXBH023D** |
| | | | | | | External | **H21VXXG023D** | **H21VXXH023D** |
|  |  | 4-way, 2-position | 3.0 | Double solenoid | 24 VDC | Internal | **H22VXBG0B9D** | **H22VXBH0B9D** |
| | | | | | | External | **H22VXXG0B9D** | **H22VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H22VXBG023D** | **H22VXBH023D** |
| | | | | | | External | **H22VXXG023D** | **H22VXXH023D** |
| |  | 4-way, 3-position, all ports blocked | 2.8 | Double solenoid | 24 VDC | Internal | **H25VXBG0B9D** | **H25VXBH0B9D** |
| | | | | | | External | **H25VXXG0B9D** | **H25VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H25VXBG023D** | **H25VXBH023D** |
| | | | | | | External | **H25VXXG023D** | **H25VXXH023D** |
| |  | 4-way, 3-position, center exhaust | 2.8 | Double solenoid | 24 VDC | Internal | **H26VXBG0B9D** | **H26VXBH0B9D** |
| | | | | | | External | **H26VXXG0B9D** | **H26VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H26VXBG023D** | **H26VXBH023D** |
| | | | | | | External | **H26VXXG023D** | **H26VXXH023D** |
| |  | 4-way, 3-position, pressure center | 2.8 | Double solenoid | 24 VDC | Internal | **H27VXBG0B9D** | **H27VXBH0B9D** |
| | | | | | | External | **H27VXXG0B9D** | **H27VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H27VXBG023D** | **H27VXBH023D** |
| | | | | | | External | **H27VXXG023D** | **H27VXXH023D** |

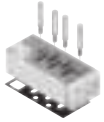
## Single Subbase - 5599-2, Plug-in, Size 2 (H2)

| Side ported base | Enclosure / Lead length | Solenoid addresses | 1/2" NPT | 1/2" BSPP |
|---|---|---|---|---|
|  | Terminal strip in base | Double solenoid - 2 address | **PS411117CCP** | **PS411118CCP** |
| | 6" flying leads | Double solenoid - 2 addresses | **PS411117ACP** | **PS411118ACP** |

## Manifold Base - 5599-2, Plug-in, Size 2 (H2)

| End Ported | Enclosure / Lead length | Solenoid addresses | 1/2" NPT | 1/2" BSPP |
|---|---|---|---|---|
|  | Circuit board | Single solenoid - 1 address | **PSHU1157J1P** | **PSHU1158J1P** |
| | Circuit board | Double solenoid - 2 addresses | **PSHU1157M1P** | **PSHU1158M1P** |

## Accessories - 5599-2, Size 2 (H2)

| | Accessory | Description | | Part number |
|---|---|---|---|---|
|  | Sandwich regulator | Common pressure | 5-125 PSIG w/ gauge | **PS4138166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4138266CP** |
|  | Blanking plate kit | | | **PS4134CP** |
|  | Sandwich flow control<br>A Sandwich Flow Control and Common Port Sandwich Regulator may be used together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator. | | | **PS4135CP** |

☐ Most popular.

## End Plate Kit - Universal Plug-in

**PSHU20 L1 0 0 P**

| Valve Type | |
|---|---|
| **Plug-in (internal pilot)** | **PSHU20** |
| Plug-in (external pilot) | **PSHU2X** |

| Thread Type | |
|---|---|
| **0** | **NPT** |
| 1* | BSPP "G" |

* BSPP conforms to ISO 1179-1 w 228-1 threads

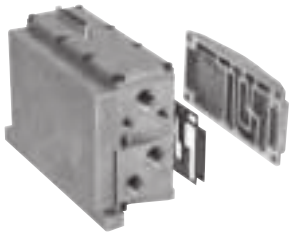
| Left Hand End Plate Type † | |
|---|---|
| **25-Pin, D-Sub (side)** | **L1** |
| **25-Pin, D-Sub (top)** | **L2** |
| 19-Pin, Round, Brad Harrison | L3 |
| 12-Pin, M23 | L4 |
| **32-Point Terminal Strip** | **L5** |
| **H Series Network, with valve driver module ‡** | **L6** |
| 19-Pin, M23 | M2 |
| **P2M Network Node ‡** | **M4** |
| **P2H IO Link Class B, 24 Address, Standard Version** | **N2** |
| P2H IO Link Class B, 24 Address, Safe Version | S2 |
| **P2H IO Link Class A, 24 Address, 4-Pin, Safe Version** | **S4** |
| P2H IO Link Class A, 24 Address, 5-Pin, Safe Version | S5 |
| **Turck Network with valve driver module - 16 outputs ‡** | **T1** |
| **Turck Network with valve driver module - 32 outputs ‡** | **T2** |

| Right Hand End Plate Type / Port | |
|---|---|
| **0** | **Low profile (no ports)** |
| 1 | 1/2 Exhaust and inlet port |
| 2 | 3/4 Exhaust and inlet port |

* 120VAC is not CSA rated.

‡ Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately. See Network Connectivity section for more information.

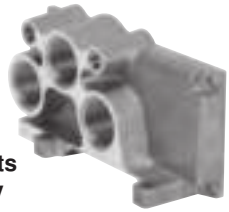
† PSHU11P gaskets included in each end plate kit.



**25-pin D-Sub (top) with low profile end plate shown 3.97 Cv**

### Hi-flow - right hand end plates

**1/2" ports 6.07 Cv**



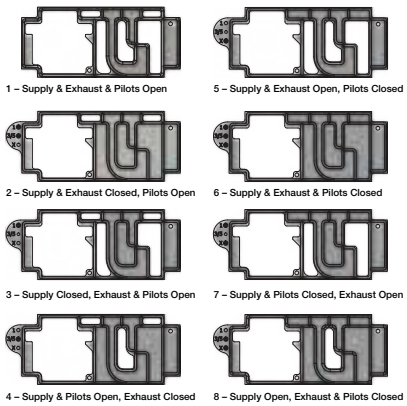
**3/4" ports 8.35 Cv**

### Optional Installation Bracket

**PSHU60P**

See Technical section for more details

## Gasket Kit - Universal Manifold to Manifold




| Description | | Part number |
|---|---|---|
| Pilots opened | 1 – Supply & Exhaust & Pilots Open | **PSHU11P** |
| | 2 – Supply & Exhaust Closed, Pilots Open | **PSHU12P** |
| | 3 – Supply Closed, Exhaust & Pilots Open | **PSHU13P** |
| | 4 – Supply & Pilots Open, Exhaust Closed | **PSHU14P** |
| Pilots blocked | 5 – Supply & Exhaust Open, Pilots Closed | **PSHU15P** |
| | 6 – Supply & Exhaust & Pilots Closed | **PSHU16P** |
| | 7 – Supply & Pilots Closed, Exhaust Open | **PSHU17P** |
| | 8 – Supply Open, Exhaust & Pilots Closed | **PSHU18P** |

## Valve - 15407-2 Plug-in, Size 18mm (HB) & 26mm (HA)

**HB 1 VX B G 0 G9 A**

| Basic series 15407-2 | |
|---|---|
| ISO 15407-2 18mm | HB |
| ISO 15407-2 26mm | HA |

| 15407-2 Operator / Function | |
|---|---|
| Single solenoid, 2-position - air return | 1 |
| Double solenoid, 2-position | 2 |
| Double solenoid, 3-position - APB | 5 |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| Single solenoid, 2-position - air return, spring assist | E |
| Double solenoid, dual 3/2, NC/NC | N* |
| Double solenoid, dual 3/2, NO/NO | P* |
| Double solenoid, dual 3/2, 14 end NC – 12 end NO | Q* |

* Available on HB Only, must use Internal Pilot Source Option "B".

| Mounting | |
|---|---|
| 15407-2 Valve less base | VX |

| | 15407-2 Pilot source / Pilot exhaust |
|---|---|
| B | Internal pilot, port #1 / vented |
| L* | External pilot, port #14 / vented |

* Must be specified when using Sandwich Regulators.

| | 15407-2 Overrides / Lights |
|---|---|
| G | Non-locking, flush, push - w/ light |
| H | Locking, flush, push / turn - w/ light |

| 15407-2 Enclosure / Lead length | |
|---|---|
| 0 | Valve less base |

| 15407-2 Engineering level | |
|---|---|
| A | Current |

| | 15407-2 Voltage & frequency | | | |
|---|---|---|---|---|
| | AC | | DC | Light & surge suppression |
| | 60Hz | 50Hz | | |
| G9 | | | 24 | LED & suppression |
| 23 | 120 | 115 | | LED & suppression |

HB 18mm Valve Shown

## Valve - 5599-2 Plug-in, Size H1 & H2

**H1 E VX B G 0 B9 D**

| Basic series 5599-2 | |
|---|---|
| ISO 5599-2 Size 1 | H1 |
| ISO 5599-2 Size 2 | H2 |

| 5599-2 Operator / Function | |
|---|---|
| Single solenoid, 2-position - air return | 1 |
| Double solenoid, 2-position | 2 |
| Double solenoid, 3-position - APB | 5 |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| Single solenoid, 2-position - air return, spring assist | E |

| 5599-2 Mounting | |
|---|---|
| 5599-2 Valve less base | VX |

| 5599-2 Pilot source / Pilot exhaust | |
|---|---|
| Internal pilot, port #1 / vented | B |
| External pilot, port #12 or #14 / vented | X* |

* Must be specified when using Sandwich Regulators.

| | 5599-2 Overrides / Lights | |
|---|---|---|
| | Voltage code | |
| B | 42, 45, 57 | Non-locking, flush, push - w/o light |
| C | 42, 45, 57 | Locking, flush, push / turn - w/o light |
| G | B9, L9, 23 | Non-locking, flush, push - w/ light |
| H | B9, L9, 23 | Locking, flush, push / turn - w/ light |

| 5599-2 Enclosure / Lead length | |
|---|---|
| 0 | None, valve less base |

| 5599-2 Engineering level | |
|---|---|
| D | Current |

| | 5599-2 Voltage & Frequency | | | |
|---|---|---|---|---|
| | AC | | DC | Light & surge suppression |
| | 60Hz | 50Hz | | |
| 42 | 24 | | | |
| 45 | | | 12 | |
| B9 | | | 24 | LED & suppression |
| 23 | 120 | 115 | | LED & suppression |
| 57* | 240 | | | |

* Single subbase only. Not available for 5599-2 manifold mount.

H1 Valve Shown

☐ Most popular.

## Manifold Kit - Universal Plug-in

**PSHU1153 J 1 P**

| Mounting Style / Port Size | |
|---|---|
| **HB manifold with 1/8 NPT end ports** | **PSHU1151** |
| HB manifold with 1/8 BSPP end ports | PSHU1152* |
| **HA manifold with 1/4 NPT end ports** | **PSHU1153** |
| HA manifold with 1/4 BSPP end ports | PSHU1154* |
| **H1 manifold with 3/8 NPT end ports** | **PSHU1155** |
| H1 manifold with 3/8 BSPP end ports | PSHU1156* |
| **H2 manifold with 1/2 NPT end ports** | **PSHU1157** |
| H2 manifold with 1/2 BSPP end ports | PSHU1158* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

| Gasket Options | |
|---|---|
| **1** | **1,3,5 ports open and pilots open** |
| 2 | 1,3,5 ports closed and pilots open |
| 3 | 1 closed, 3,5 ports open and pilots open |
| 4 | 1 port open, 3,5 ports closed and pilots open |
| 5 | 1,3,5 ports open and pilots closed |
| 6 | 1,3,5 ports closed and pilots closed |
| 7 | 1 closed, 3,5 ports open and pilots closed |
| 8 | 1 port open, 3,5 ports closed and pilots closed |

| Circuit Board Address Configuration | |
|---|---|
| **J** | **Interconnect, Single Address** |
| **M** | **Interconnect, Double Address** |

**HA manifold shown.**

## Intermediate Air Supply - Universal Plug-in

**PSHU115A T 1 P**

| Mounting Style / Port Size | |
|---|---|
| **Intermediate air supply, NPT / internal pilot** | **PSHU115A** |
| Intermediate air supply, BSPP / internal **pilot** | PSHU115B* |
| **Intermediate air supply, NPT / external pilot** | **PSHU115C** |
| Intermediate air supply, BSPP / external **pilot** | PSHU115D* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

| Gasket Options | |
|---|---|
| **1** | **1,3,5 ports open and pilots open** |
| 2 | 1,3,5 ports closed and pilots open |
| 3 | 1 closed, 3,5 ports open and pilots open |
| 4 | 1 port open, 3,5 ports closed and pilots open |
| 5 | 1,3,5 ports open and pilots closed |
| 6 | 1,3,5 ports closed and pilots closed |
| 7 | 1 closed, 3,5 ports open and pilots closed |
| 8 | 1 port open, 3,5 ports closed and pilots closed |

| Circuit Board Address Configuration | |
|---|---|
| **T** | **With electrical pass through** |
| **E** | **With electrical expansion to 25th address** |

**Intermediate air supply module shown.**

## Subbase Kit - Plug-in

**PS55** | **1113** | **C** | | | **P**

| Series | |
|---|---|
| **HA Subbase** | **PS55** |
| **H1 Subbase** | **PS40** |
| **H2 Subbase** | **PS41** |

| Mounting Style / Port Size | |
|---|---|
| **HA Series** | |
| **1/4 NPT side ports** | **1113** |
| 1/4 BSPP side ports | 1114* |
| 1/4 NPT bottom / side ports | 1123 |
| 1/4 BSPP bottom / side ports | 1124* |
| **H1 Series** | |
| **3/8 NPT side ports** | **1115** |
| 3/8 BSPP side ports | 1116* |
| **H2 Series** | |
| **1/2 NPT side ports** | **1117** |
| 1/2 BSPP side ports | 1118* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

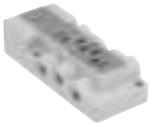
| Engineering Level | |
|---|---|
| Blank | HA Series |
| D | H1 Series |
| C | H2 Series |

| Wiring Options | |
|---|---|
| Blank | None |
| C‡ | Chrysler |
| F‡ | SAE / Ford |
| G‡ | General Motors |

‡ Not available on HA series.

| Enclosures / Lead Length | |
|---|---|
| **Individually Wired Base*** | |
| 7†‡ | 3-Pin mini connector in base |
| 8†‡ | 4-Pin M12 micro connector in base |
| 9†‡ | 5-Pin mini connector in base |
| **A‡** | **6" Leads** |
| **C** | **Terminal block** |

* Use plate with no connection.
† Must specify valve auto wiring option "C", "F", or "G".
‡ Not available on HA series.



**HA subbase**



Most popular.

## Sandwich Regulator - 15407-2, Plug-in,

**PS5638 | 1 | 6 | 6 | P**

| Basic Series | |
|---|---|
| HB 15407-2, 18mm, Plug-in | PS5638 |
| HA 15407-2, 26mm, Plug-in | PS5538 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| #2 Port Regulator / Gauge* | |
|---|---|
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

| #4 Port Regulator / Gauge* | |
|---|---|
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

***Ordering Components***
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

**HB - 18mm**
**(Independent Dual Port Regulator Shown)**

**HA - 26mm**
**(Common Port Regulator Shown)**

### How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration of Sandwich Regulator HA, HB***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

### Sandwich Regulator Cv Flow Chart*

| | Common Pressure Code 166 | | | | Dual Pressure Code 266 | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-2 | 1-4 | 2-3 | 4-5 | 1-2 | 1-4 | 2-3 | 4-5* |
| **HB** | 0.20 | 0.20 | 0.41 | 0.34 | 0.23 | 0.19 | 0.28 | 0.27 |
| **HA** | 0.41 | 0.43 | 0.87 | 0.89 | 0.42 | 0.45 | 0.68 | 0.66 |

* Regulator Port exhaust through Base Port 3.
**Note:** All Cv's calculated with regulator adjusted full open.

## Sandwich Regulator - 5599-2, Plug-in,

**PS4038 | 1 | 6 | 6 | C | P**

| Basic Series | |
|---|---|
| H1 5599-2, Plug-in | PS4038 |
| H2 5599-2, Plug-in | PS4138 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| #2 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

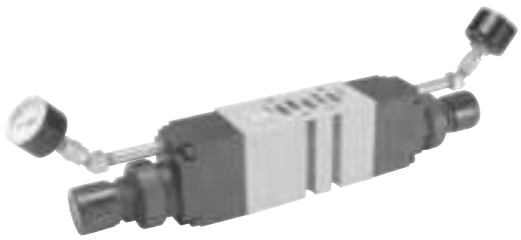
| #4 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

***Ordering Components***
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

**H1 - Size 1**
**(Independent Dual Port Regulator Shown)**



**H2 - Size 2**
**(Independent Dual Port Regulator Shown)**

### How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration of Sandwich Regulator H1, H2***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

***External Pilot Configuration of Sandwich Regulator H1, H2***
*An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.*

## Sandwich Regulator Cv Flow Chart*

| | Common Pressure Code 166 | | | | Single Pressure 2 Code 206 | | | | Single Pressure 4 Code 260 | | | | Dual Pressure Code 266 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 | 1-4 | 2-3 | 4-5 | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* |
| **H1** | 0.62 | 0.61 | 1.28 | 1.18 | 0.73 | 0.96 | 0.96 | 0.93 | 0.34 | 0.70 | 0.94 | 0.98 | 0.52 | 0.48 | 0.86 | 0.88 |
| **H2** | 1.47 | 1.60 | 2.41 | 2.33 | 1.71 | 1.90 | 1.52 | 1.75 | 1.74 | 1.67 | 1.73 | 1.79 | 1.61 | 1.62 | 1.50 | 1.67 |

* Regulator Port exhaust through Base Port 3.

**Note:** All Cv's calculated with regulator adjusted full open.

## Add-A-Fold - Universal Plug-in

**AA HU20 L1 0 0 P 04**

| Valve Type | |
|---|---|
| **Plug-in (internal)** | **AAHU20** |
| Plug-in (external) | AAHU2X |

| Left Hand End Plate Type † | |
|---|---|
| **25-Pin, D-Sub (side)** | **L1** |
| **25-Pin, D-Sub (top)** | **L2** |
| 19-Pin, Round, Brad Harrison | L3 |
| 12-Pin, M23 | L4 |
| **32-Point Terminal Strip** | **L5** |
| **H Series Network, with valve driver module** | **L6** |
| 19-Pin, M23 | M2 |
| **P2M Network Node** | **M4** |
| **P2H IO Link Class B, 24 Address, Standard Version** | **N2** |
| P2H IO Link Class B, 24 Address, Safe Version | S2 |
| **P2H IO Link Class A, 24 Address, 4-Pin, Safe Version** | **S4** |
| P2H IO Link Class A, 24 Address, 5-Pin, Safe Version | S5 |
| **Turck Network with valve driver module - 16 outputs** | **T1** |
| **Turck Network with valve driver module - 32 outputs** | **T2** |

* 120VAC is not CSA rated. Not available with 240VAC coils.

Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately. See Network Connectivity section for more information.

† (1) PSHU11P gasket included in each end plate kit.

| Number of Segments |
|---|
| 01 |
| ↓ |
| 32 |

| Thread Type | |
|---|---|
| **0** | **NPT** |
| 1* | BSPP "G" |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads

| Right Hand End Plate Type / Port | |
|---|---|
| **0** | **Low profile (no ports)** |
| 1 | 1/2 Exhaust and inlet port |
| 2 | 3/4 Exhaust and inlet port |

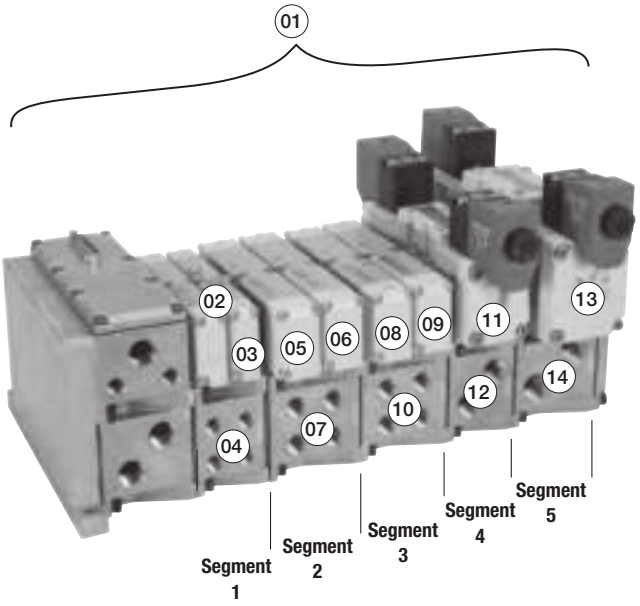
## How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

### *Example*

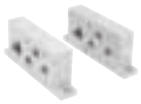
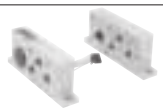
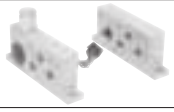
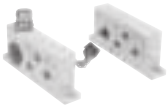
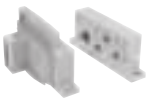
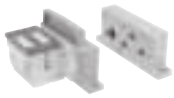
Application requires a 5 segment manifold.

| Item | Part No. | Location | |
|---|---|---|---|
| 01 | AAHUL200P05 | | |
| 02 | HB2VXBG0G9A | Segment 1 | Valve station 1 |
| 03 | HB2VXBG0G9A | | Valve station 2 |
| 04 | PSHU1151M1P | | Manifold base |
| 05 | HA1VXBG0G9A | Segment 2 | Valve station 3 |
| 06 | HA2VXBG0G9A | | Valve station 4 |
| 07 | PSHU1153M1P | | Manifold base |
| 08 | HA1VXBG0G9A | Segment 3 | Valve station 5 |
| 09 | HA2VXBG0G9A | | Valve station 6 |
| 10 | PSHU1153M1P | | Manifold base |
| 11 | H12VXBG0B9A | Segment 4 | Valve station 7 |
| 12 | PSHU1155M1P | | Manifold base |
| 13 | H22VXBG0B9A | Segment 5 | Valve station 8 |
| 14 | PSHU1157M1P | | Manifold base |




**Example:**
**5 segment manifold with (2) HB, (4) HA, (1) H1, and (1) H2 valve on manifold bases with 25-pin, D-Sub end plate.**

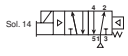
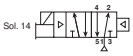
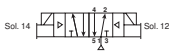
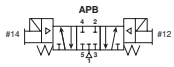
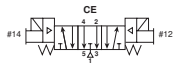
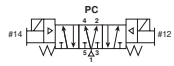
## End Plate Kit - Plug-in, 5599-2, Size 3 (H3) * Not compatible with H Universal

| Electrical option | | NPT port | BSPP port |
|---|---|---|---|
|  | No connector - use with individually wired base | **PS4231010DP** | **PS4231011DP** |
|  | 25-pin, D-sub | **PS4220L20DP** | **PS4220L21DP** |
|  | 19-pin, round, Brad Harrison | **PS4220L30DP** | **PS4220L31DP** |
|  | 12-pin, M23 | **PS4220L40DP** | **PS4220L41DP** |
| | 19-pin, M23 | **PS4220M20DP** | **PS4220M21DP** |
|  | P2M Network Node | **PS4220M40DP** | **PS4220M41DP** |
|  | H Series Network, with valve driver module | **PS4220L60DP** | **PS4220L61DP** |
|  | Turck Network with valve driver module - 16 address | **PS4220T10DP** | **PS4220T11DP** |
| | Turck Network with valve driver module - 24 address | **PS4220T20DP** | **PS4220T21DP** |

Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately.
See Network Connectivity Section for more information.

**Note:**
For cable part numbers and pin out information see Network Connectivity Accessories.

## Valve - 5599-2, Plug-in, Size 3 (H3) * Not compatible with H Universal

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 6.0 | Single solenoid | 24 VDC | Internal | **H3EVXBG0B9D** | **H3EVXBH0B9D** |
| | | | | | | External | **H3EVXXG0B9D** | **H3EVXXH0B9D** |
| | | | | | 120 VAC | Internal | **H3EVXBG023D** | **H3EVXBH023D** |
| | | | | | | External | **H3EVXXG023D** | **H3EVXXH023D** |
| |  | 4-way, 2-position, air return | 6.0 | Single solenoid | 24 VDC | Internal | **H31VXBG0B9D** | **H31VXBH0B9D** |
| | | | | | | External | **H31VXXG0B9D** | **H31VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H31VXBG023D** | **H31VXBH023D** |
| | | | | | | External | **H31VXXG023D** | **H31VXXH023D** |
|  |  | 4-way, 2-position | 6.0 | Double solenoid | 24 VDC | Internal | **H32VXBG0B9D** | **H32VXBH0B9D** |
| | | | | | | External | **H32VXXG0B9D** | **H32VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H32VXBG023D** | **H32VXBH023D** |
| | | | | | | External | **H32VXXG023D** | **H32VXXH023D** |
| |  | 4-way, 3-position, all ports blocked | 5.0 | Double solenoid | 24 VDC | Internal | **H35VXBG0B9D** | **H35VXBH0B9D** |
| | | | | | | External | **H35VXXG0B9D** | **H35VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H35VXBG023D** | **H35VXBH023D** |
| | | | | | | External | **H35VXXG023D** | **H35VXXH023D** |
| |  | 4-way, 3-position, center exhaust | 5.0 | Double solenoid | 24 VDC | Internal | **H36VXBG0B9D** | **H36VXBH0B9D** |
| | | | | | | External | **H36VXXG0B9D** | **H36VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H36VXBG023D** | **H36VXBH023D** |
| | | | | | | External | **H36VXXG023D** | **H36VXXH023D** |
| |  | 4-way, 3-position, pressure center | 5.0 | Double solenoid | 24 VDC | Internal | **H37VXBG0B9D** | **H37VXBH0B9D** |
| | | | | | | External | **H37VXXG0B9D** | **H37VXXH0B9D** |
| | | | | | 120 VAC | Internal | **H37VXBG023D** | **H37VXBH023D** |
| | | | | | | External | **H37VXXG023D** | **H37VXXH023D** |

## Subbase - Single 5599-2, Plug-in, Size 3 (H3)

| Side ported base | Enclosure / Lead length | Solenoid addresses | 3/4" NPT | 3/4" BSPP |
|---|---|---|---|---|
|  | Terminal strip in base | Double solenoid - 2 address | **PS421119CCP** | **PS421110CCP** |
| | 6" flying leads | Double solenoid - 2 addresses | **PS421119ACP** | **PS421110ACP** |

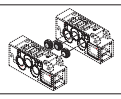
## Manifold Base - 5599-2, Plug-in, Size 3 (H3) * Not compatible with H Universal

| Bottom / End ported bases | Enclosure / Lead length | Solenoid addresses | 3/4" NPT | 3/4" BSPP |
|---|---|---|---|---|
|  | Circuit board | Single solenoid - 1 address | **PS421169JDP** | **PS421160JDP** |
| | Circuit board | Double solenoid - 2 addresses | **PS421169MCP** | **PS421160MCP** |
| | Terminal strip in base | Double solenoid - 2 address | **PS421169CCP** | **PS421160CCP** |
| | 6" flying leads | Double solenoid - 2 addresses | **PS421169ACP** | **PS421160ACP** |

| End Ported | Enclosure / Lead length | Solenoid addresses | 3/4" NPT | 3/4" BSPP |
|---|---|---|---|---|
|  | Circuit board | Single solenoid - 1 address | **PS421159JCP** | **PS421150JCP** |
| | Circuit board | Double solenoid - 2 addresses | **PS421159MCP** | **PS421150MCP** |
| | Terminal strip in base | Double solenoid - 2 address | **PS421159CCP** | **PS421150CCP** |
| | 6" flying leads | Double solenoid - 2 addresses | **PS421159ACP** | **PS421150ACP** |

Most popular.

## Accessories - 5599-2, Size 3 (H3) * Not compatible with H Universal

| | Accessory | Description | | Part number |
|---|---|---|---|---|
|  | Sandwich regulator | Common pressure | 5-125 PSIG w/ gauge | **PS4238166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4238266CP** |
|  | Blanking plate kit | | | **PS4234CP** |
|  | Sandwich flow control<br>A Sandwich Flow Control and Common Port Sandwich Regulator may be used together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator. | | | **PS4235CP** |
|  | Manifold to manifold gasket kits | | | **PS4213P** |
|  | Manifold isolation kit | Main galley (1, 3, 5) | | **PS4232CP** |
|  | | Pilot galley | | **PS4033CP** |



Most popular.

## End Plate Kit - Plug-in, 5599-2, Size 3 (H3) * Not compatible with H Universal

| PS42 | 20L2 | 0 | D | P |
|---|---|---|---|---|

| Basic Series | |
|---|---|
| ISO 5599, Size 3 | PS42 |

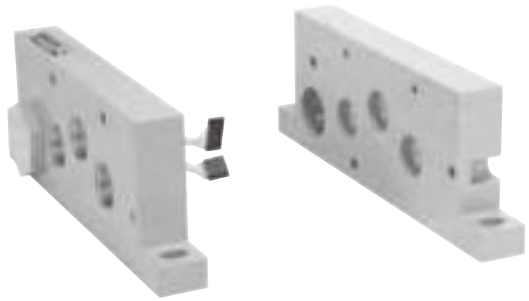
| Options † | |
|---|---|
| **25-Pin, D-Sub** | **20L2*** |
| 19-Pin, Round, Brad Harrison | 20L3 |
| 12-Pin, M23 | 20L4 |
| 19-Pin, M23 | 20M2 |
| **P2M Network Node** | **20M4** |
| H Series Network, with Valve Driver Module | 20L6 |
| Turck Network with Valve Driver Module - 16 Outputs | 20T1 |
| Turck Network with Valve Driver Module - 24 Outputs | 20T2 |

* 120VAC is Not CSA Rated.

† Manifold bases must have a circuit board.
Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately.
See Network Connectivity Section for more information.

| Thread Type | |
|---|---|
| 0 | NPT |
| 1* | BSPP "G" |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads



**H3 25-pin D-Sub end plate shown.**

## Valve - Plug-in, 5599-2, Size 3 * Not compatible with H Universal

| H3 | E | VX | B | G | 0 | B9 | D |
|---|---|---|---|---|---|---|---|

**Basic series 5599-2**

| | |
|---|---|
| ISO 5599-2 Size 3 | H3 |

**5599-2 Operator / Function**

| | |
|---|---|
| **Single solenoid, 2-position - air return** | **1** |
| **Double solenoid, 2-position** | **2** |
| **Double solenoid, 3-position - APB** | **5** |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| **Single solenoid, 2-position - air return, spring assist** | **E** |

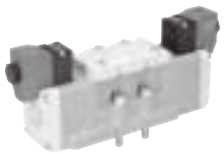
**5599-2 Mounting**

| | |
|---|---|
| **5599-2 Valve less base** | **VX** |

**5599-2 Pilot source / Pilot exhaust**

| | |
|---|---|
| **Internal pilot, port #1 / vented** | **B** |
| External pilot, port #12 or #14 / vented | X* |

* Must be specified when using Sandwich Regulators.



**5599-2 Enclosure / Lead length**

| | |
|---|---|
| **0** | **None, valve less base** |

**5599-2 Overrides / Lights**

| | Voltage code | |
|---|---|---|
| B | 42, 45, 57 | Non-locking, flush, push - w/o light |
| C | 42, 45, 57 | Locking, flush, push / turn - w/o light |
| **G** | **B9, 23** | **Non-locking, flush, push - w/ light** |
| H | B9, 23 | Locking, flush, push / turn - w/ light |

**5599-2 Engineering level**

| | |
|---|---|
| **D** | **Current** |

**5599-2 Voltage & Frequency**

| | AC | | DC | Light & surge suppression |
|---|---|---|---|---|
| | 60Hz | 50Hz | | |
| 42 | 24 | | | |
| 45 | | | 12 | |
| **B9** | | | **24** | **LED & suppression** |
| **23** | **120** | **115** | | **LED & suppression** |
| 57 | 240 | | | |

## Manifold / Subbase Kit - Plug-in, 5599-2, Size 3 * Not compatible with H Universal

**PS421159 M [ ] C P**

| Mounting Base Style / Port Size | |
|---|---|
| **Subbase: 3/4 NPT side port** | **PS421119** |
| Subbase: 3/4 BSPP side port | PS421110* |
| **Manifold: 3/4 NPT end port** | **PS421159** |
| Manifold: 3/4 BSPP end port | PS421150* |
| Manifold: 3/4 NPT bottom / end port | PS421169 |
| Manifold: 3/4 BSPP bottom / end port | PS421160* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

| Engineering Level | |
|---|---|
| **C** | **H3** |

| Wiring Options | |
|---|---|
| **Blank** | **None** |
| C | Chrysler |
| **F** | **SAE / Ford** |
| G | General Motors |

| Enclosures / Lead Length | |
|---|---|
| **Individually Wired Base**** | |
| 7† | 3-pin mini connector in base |
| 8† | 4-pin M12 micro connector in base |
| 9† | 5-pin mini connector in base |
| **A** | **6" Leads** |
| **C** | **Terminal block** |
| **Collective Wired Base** | |
| **J*** | **Circuit board, single address** |
| **M*** | **Circuit board, double address** |

* Not available with subbase kits.
** Use plate with no connection.
† Must specify valve auto wiring option "C", "F", or "G".

**Note:**
When using the enclosure / lead length "J" or "M" option:
12VDC - Maximum number of coils energized simultaneously is 13
24VDC - Maximum number of coils energized simultaneously is 21
120VAC - Coils limited by the number of pins available in the connector (25-pin D-Sub = 24 coils, 19-Pin Brad Harrison = 16, 12-pin M23 = 8)
240VAC - Must use "A" or "C" option, lead wires or terminal blocks

### Subbase Kit

**Automotive Connectors**
Mounted in 1/2" Conduit Port
- 3-Pin - Wired for Single Solenoid
- 4-Pin / 5-Pin - Wired for Double Solenoid

### Manifold Kit

**Automotive Connectors**
Mounted in Individual Manifold Conduit Cover
- 3-Pin - Wired for Single Solenoid
- 4-Pin / 5-Pin - Wired for Double Solenoid

## Sandwich Regulator - Plug-in, 5599-2

**PS4038 | 1 | 6 | 6 | C | P**

| Basic Series | |
|---|---|
| H1 5599-2, Plug-in | PS4038 |
| H2 5599-2, Plug-in | PS4138 |
| H3 5599-2, Plug-in | PS4238 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| #2 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

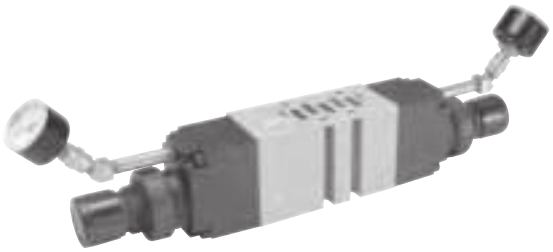
| #4 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

***Ordering Components***
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

**H1 - Size 1**
**(Independent Dual Port Regulator Shown)**



**H2 - Size 2**
**(Independent Dual Port Regulator Shown)**

## How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration of Sandwich Regulator H1, H2 & H3***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

***External Pilot Configuration of Sandwich Regulator H1, H2, H3***
*An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.*

## Sandwich Regulator Cv Flow Chart*

| | Common Pressure Code 166 | | | | Single Pressure 2 Code 206 | | | | Single Pressure 4 Code 260 | | | | Dual Pressure Code 266 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 | 1-4 | 2-3 | 4-5 | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* |
| **H1** | 0.62 | 0.61 | 1.28 | 1.18 | 0.73 | 0.96 | 0.96 | 0.93 | 0.34 | 0.70 | 0.94 | 0.98 | 0.52 | 0.48 | 0.86 | 0.88 |
| **H2** | 1.47 | 1.60 | 2.41 | 2.33 | 1.71 | 1.90 | 1.52 | 1.75 | 1.74 | 1.67 | 1.73 | 1.79 | 1.61 | 1.62 | 1.50 | 1.67 |
| **H3** | 2.37 | 2.39 | 4.30 | 4.47 | 2.37 | 2.81 | 2.75 | 3.01 | 2.65 | 2.59 | 2.68 | 2.74 | 2.43 | 2.41 | 3.16 | 3.04 |

* Regulator Port exhaust through Base Port 3.

**Note:** All Cv's calculated with regulator adjusted full open.





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

## Add-A-Fold Assembly - Plug-in, 5599-2, Size 3 * Not compatible with H Universal

| AA | H3 | D | 0 | 0 | 03 |
|---|---|---|---|---|---|

**Valve Series**

| | |
|---|---|
| Right & left end plate | H3 |

**End Plate Type**

| | |
|---|---|
| Turck Network with valve driver module - 16 address | A* |
| Turck Network with valve driver module - 32 address | B* |
| 25-pin, D-sub | D† |
| 19-pin, Brad Harrison | E† |
| 12-pin, M23 | G† |
| 19-pin, M23 | H† |
| Standard, non-collective wiring | S |
| P2M Network Node | T* |
| H Series Network, with valve driver module | Y* |

* Must order communication modules separately.
† Collective wiring module included.

**Thread Type**

| | |
|---|---|
| 0 | NPT |
| 1* | BSPP "G" |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads

**Number of Segments**

| |
|---|
| 01 |
| ↓ |
| 32 |

## Maximum Number of Solenoids (Maximum energized simultaneously)

| Voltage | Voltage code | 25-pin D-sub | 19-pin M23 or Brad Harrison | 12-pin M23 | P2M Network Node | H Series Network | Turck Network | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 16 Outputs | 32 Outputs |
| 24VDC | G9 | 24 (24) | 16 (16) | 8 (8) | 24 (24)† | 24 (21) | 16 (16) | 24 (21) |
| 120VAC* | 23 | 24 (24) | 16 (16) | 8 (8) | N/A | N/A | N/A | N/A |

* Not CSA certified for 25-pin, D-Sub option.
† Use Type A IO-Link module for 24 outputs simultaneously.

## How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

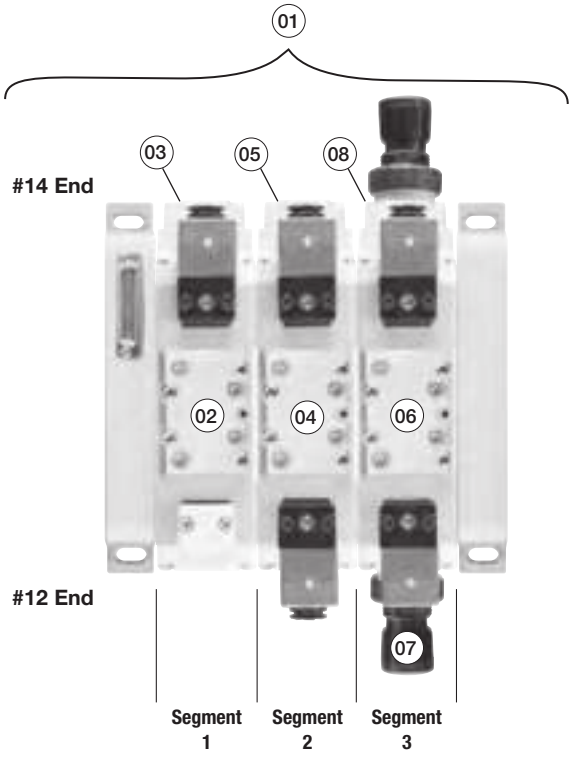
### *Example*

Application requires a 3 segment manifold and regulator on segment 3.

| Item | Part No. | Location | |
|---|---|---|---|
| 01 | AAH3D003 | | |
| 02 | H31VXBG0B9D | Segment 1 | Valve station 1 |
| 03 | PS421159MCP | | Manifold base |
| 04 | H32VXBG0B9D | Segment 2 | Valve station 2 |
| 05 | PS421159MCP | | Manifold base |
| 06 | H32VXXG0B9D | Segment 3 | Valve station 3 |
| 07 | PS4238166CP | | Sandwich regulator |
| 08 | PS421159MCP | | Manifold base |

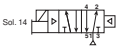
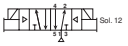
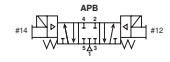
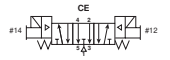
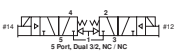
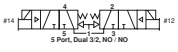
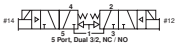
**NOTE:** Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.

Most popular.

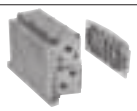



**Example:**
**3 segment manifold with (3) H3 valves on manifold bases and regulator at segment 3.**

## Valve -15407-1, Non Plug-in, Size 18mm (HB)

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 0.55 | Single solenoid | 24 VDC | Internal | **HBEWXBG2G9000FA** | **HBEWXBH2G9000FA** |
| | | | | | | External | **HBEWXLG2G9000FA** | **HBEWXLH2G9000FA** |
| |  | 4-way, 2-position, air return | 0.55 | Single solenoid | 24 VDC | Internal | **HB1WXBG2G9000FA** | **HB1WXBH2G9000FA** |
| | | | | | | External | **HB1WXLG2G9000FA** | **HB1WXLH2G9000FA** |
| |  | 4-way, 2-position | 0.55 | Double solenoid | 24 VDC | Internal | **HB2WXBG2G9000FA** | **HB2WXBH2G9000FA** |
| | | | | | | External | **HB2WXLG2G9000FA** | **HB2WXLH2G9000FA** |
| |  | 4-way, 3-position, all ports blocked | 0.5 | Double solenoid | 24 VDC | Internal | **HB5WXBG2G9000FA** | **HB5WXBH2G9000FA** |
| | | | | | | External | **HB5WXLG2G9000FA** | **HB5WXLH2G9000FA** |
| |  | 4-way, 3-position, center exhaust | 0.5 | Double solenoid | 24 VDC | Internal | **HB6WXBG2G9000FA** | **HB6WXBH2G9000FA** |
|  | | | | | | External | **HB6WXLG2G9000FA** | **HB6WXLH2G9000FA** |
| |  | 4-way, 3-position, pressure center | 0.5 | Double solenoid | 24 VDC | Internal | **HB7WXBG2G9000FA** | **HB7WXBH2G9000FA** |
| | | | | | | External | **HB7WXLG2G9000FA** | **HB7WXLH2G9000FA** |
| |  | 3-way, 2-position, dual valve, NC/NC | 0.45 | Double solenoid | 24 VDC | Internal | **HBNWXBG2G9000FA** | **HBNWXBH2G9000FA** |
| |  | 3-way, 2-position, dual valve, NO/NO | 0.45 | Double solenoid | 24 VDC | Internal | **HBPWXBG2G9000FA** | **HBPWXBH2G9000FA** |
| |  | 3-way, 2-position, dual valve, NC/NO | 0.45 | Double solenoid | 24 VDC | Internal | **HBQWXBG2G9000FA** | NA |

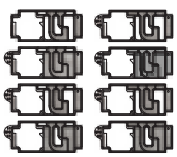
## Base / End Plate - 15407-1, Non Plug-in, Size 18mm (HB)

| | | Description | NPT | BSPP |
|---|---|---|---|---|
|  | Universal manifold base | 2 station, end ported | **PSHU115101P** | **PSHU115201P** |
|  | Universal end plate | Non-collective wiring | **PSHU31L000P** | **PSHU31L001P** |

## Accessories - 15407-1, Non-Plug-in, Size 18mm (HB)

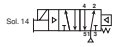
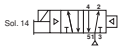
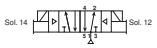
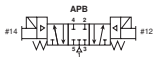
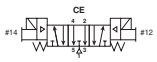
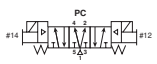
| | Accessories | Description | Part number |
|---|---|---|---|
|  | Gauge adapter kit | Includes 1/8" coupling and long nipple | **PS5651160P** |
|  | Blanking plate kit | | **PS5634P** |
|  | Sandwich supply module | 1/8" NPT | **PS562600P** |
| | | 1/8" BSPP | **PS562601P** |
|  | Sandwich exhaust module | 1/8" NPT | **PS562700P** |
| | | 1/8" BSPP | **PS562701P** |
|  | Sandwich flow control | | **PS5642P** |

| | | | Common pressure | Independent pressure |
|---|---|---|---|---|
|  | Sandwich regulator | 2-60 PSIG w/ gauge | **PS5637155P** | **PS5637255P** |
| | | 5-125 PSIG w/ gauge | **PS5637166P** | **PS5637266P** |

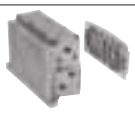
| | | | Pilot open | Pilot blocked |
|---|---|---|---|---|
|  | Manifold to manifold gasket kits | #1, 3, 5 ports open | **PSHU11P** | **PSHU15P** |
| | | Blocked #1 port | **PSHU12P** | **PSHU16P** |
| | | Blocked #1, 3, 5, ports | **PSHU13P** | **PSHU17P** |
| | | Blocked #3, 5 ports | **PSHU14P** | **PSHU18P** |

Most popular.

## Valve - 15407-1, Non Plug-in, Size 26mm (HA)

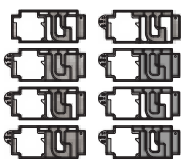
| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 1.1 | Single solenoid | 24 VDC | Internal | **HAEWXBG2G9000FA** | **HAEWXBH2G9000FA** |
| | | | | | | External | **HAEWXLG2G9000FA** | **HAEWXLH2G9000FA** |
| |  | 4-way, 2-position, air return | 1.1 | Single solenoid | 24 VDC | Internal | **HA1WXBG2G9000FA** | **HA1WXBH2G9000FA** |
| | | | | | | External | **HA1WXLG2G9000FA** | **HA1WXLH2G9000FA** |
|  |  | 4-way, 2-position | 1.1 | Double solenoid | 24 VDC | Internal | **HA2WXBG2G9000FA** | **HA2WXBH2G9000FA** |
| | | | | | | External | **HA2WXLG2G9000FA** | **HA2WXLH2G9000FA** |
| |  | 4-way, 3-position, all ports blocked | 1.0 | Double solenoid | 24 VDC | Internal | **HA5WXBG2G9000FA** | **HA5WXBH2G9000FA** |
| | | | | | | External | **HA5WXLG2G9000FA** | **HA5WXLH2G9000FA** |
| |  | 4-way, 3-position, center exhaust | 1.0 | Double solenoid | 24 VDC | Internal | **HA6WXBG2G9000FA** | **HA6WXBH2G9000FA** |
| | | | | | | External | **HA6WXLG2G9000FA** | **HA6WXLH2G9000FA** |
| |  | 4-way, 3-position, pressure center | 1.0 | Double solenoid | 24 VDC | Internal | **HA7WXBG2G9000FA** | **HA7WXBH2G9000FA** |
| | | | | | | External | **HA7WXLG2G9000FA** | **HA7WXLH2G9000FA** |

## Base / End Plate - 15407-1, Non Plug-in, Size 26mm (HA)

| | | Description | NPT | BSPP |
|---|---|---|---|---|
|  | Single subbase | Side ported base, 1/4" port | **PS5511130P** | **PS5511140P** |
|  | Universal manifold base | 2 station, end ported | **PSHU115301P** | **PSHU115401P** |
|  | Universal end plate | Non-collective wiring | **PSHU31L000P** | **PSHU31L001P** |

## Accessories - 15407-1, Non-Plug-in, Size 26mm (HA)

| | Accessories | Description | Part number |
|---|---|---|---|
|  | Gauge adapter kit | Includes 1/8" coupling and long nipple | **PS5651160P** |
|  | Blanking plate kit | | **PS5534P** |
|  | Sandwich supply module | 1/4" NPT | **PS552600P** |
| | | 1/4" BSPP | **PS552601P** |
|  | Sandwich exhaust module | 1/4" NPT | **PS552700P** |
| | | 1/4" BSPP | **PS552701P** |
|  | Sandwich flow control | | **PS5542P** |
| | Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator. | | |

| | | | Common pressure | Independent pressure |
|---|---|---|---|---|
|  | Sandwich regulator | 2-60 PSIG w/ gauge | **PS5537155P** | **PS5537255P** |
| | | 5-125 PSIG w/ gauge | **PS5537166P** | **PS5537266P** |
| | | | **Pilot open** | **Pilot blocked** |
|  | Manifold to manifold gasket kits | #1, 3, 5 ports open | **PSHU11P** | **PSHU15P** |
| | | Blocked #1 port | **PSHU12P** | **PSHU16P** |
| | | Blocked #1, 3, 5, ports | **PSHU13P** | **PSHU17P** |
| | | Blocked #3, 5 ports | **PSHU14P** | **PSHU18P** |

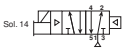
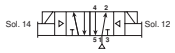
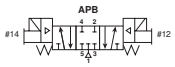
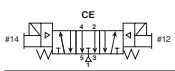
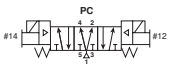
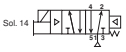
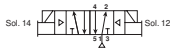
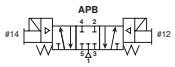
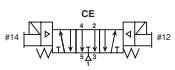
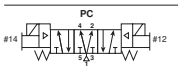
Most popular.



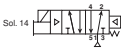
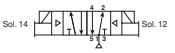
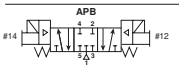
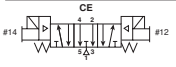
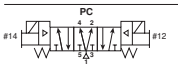
For inventory, lead times, and kit lookup, visit www.pdnplu.com

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

## Valve with Central Connector - 5599-1, Non Plug-in, Size 1 (H1)

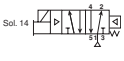
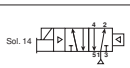
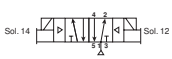
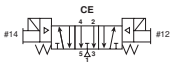
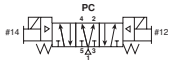
| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
| **4-Pin Central M12 Connector, 24 VDC** | | | | | | | | |
|  |  | 4-way, 2-position, spring return | 1.5 | Single solenoid | 24 VDC | Internal | **H1EWXBG2B9000FD** | **H1EWXBH2B9000FD** |
| | | | | | | External | **H1EWXXG2B9000FD** | **H1EWXXH2B9000FD** |
| |  | 4-way, 2-position, air return | 1.5 | Single solenoid | 24 VDC | Internal | **H11WXBG2B9000FD** | **H11WXBH2B9000FD** |
| | | | | | | External | **H11WXXG2B9000FD** | **H11WXXH2B9000FD** |
|  |  | 4-way, 2-position | 1.5 | Double solenoid | 24 VDC | Internal | **H12WXBG2B9000FD** | **H12WXBH2B9000FD** |
| | | | | | | External | **H12WXXG2B9000FD** | **H12WXXH2B9000FD** |
| |  | 4-way, 3-position, all ports blocked | 1.2 | Double solenoid | 24 VDC | Internal | **H15WXBG2B9000FD** | **H15WXBH2B9000FD** |
| | | | | | | External | **H15WXXG2B9000FD** | **H15WXXH2B9000FD** |
| |  | 4-way, 3-position, center exhaust | 1.2 | Double solenoid | 24 VDC | Internal | **H16WXBG2B9000FD** | **H16WXBH2B9000FD** |
| | | | | | | External | **H16WXXG2B9000FD** | **H16WXXH2B9000FD** |
| |  | 4-way, 3-position, pressure center | 1.2 | Double solenoid | 24 VDC | Internal | **H17WXBG2B9000FD** | **H17WXBH2B9000FD** |
| | | | | | | External | **H17WXXG2B9000FD** | **H17WXXH2B9000FD** |
| **5-Pin Central 7/8" Mini Connector, 120 VAC** | | | | | | | | |
|  |  | 4-way, 2-position, spring return | 1.5 | Single solenoid | 120 VAC | Internal | **H1EWXBG323000FD** | **H1EWXBH323000FD** |
| | | | | | | External | **H1EWXXG323000FD** | **H1EWXXH323000FD** |
| |  | 4-way, 2-position, air return | 1.5 | Single solenoid | 120 VAC | Internal | **H11WXBG323000FD** | **H11WXBH323000FD** |
| | | | | | | External | **H11WXXG323000FD** | **H11WXXH323000FD** |
|  |  | 4-way, 2-position | 1.5 | Double solenoid | 120 VAC | Internal | **H12WXBG323000FD** | **H12WXBH323000FD** |
| | | | | | | External | **H12WXXG323000FD** | **H12WXXH323000FD** |
| |  | 4-way, 3-position, all ports blocked | 1.2 | Double solenoid | 120 VAC | Internal | **H15WXBG323000FD** | **H15WXBH323000FD** |
| | | | | | | External | **H15WXXG323000FD** | **H15WXXH323000FD** |
| |  | 4-way, 3-position, center exhaust | 1.2 | Double solenoid | 120 VAC | Internal | **H16WXBG323000FD** | **H16WXBH323000FD** |
| | | | | | | External | **H16WXXG323000FD** | **H16WXXH323000FD** |
| |  | 4-way, 3-position, pressure center | 1.2 | Double solenoid | 120 VAC | Internal | **H17WXBG323000FD** | **H17WXBH323000FD** |
| | | | | | | External | **H17WXXG323000FD** | **H17WXXH323000FD** |

## Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 1 (H1)

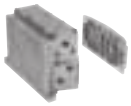
| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
| **3-Pin DIN Connector, 24 VDC** | | | | | | | | |
|  |  | 4-way, 2-position, spring return | 1.5 | Single solenoid | 24 VDC | Internal | **H1EWXBBL49D** | **H1EWXBDL49D** |
| | | | | | | External | **H1EWXXBL49D** | **H1EWXXDL49D** |
| |  | 4-way, 2-position, air return | 1.5 | Single solenoid | 24 VDC | Internal | **H11WXBBL49D** | **H11WXBDL49D** |
| | | | | | | External | **H11WXXBL49D** | **H11WXXDL49D** |
|  |  | 4-way, 2-position | 1.5 | Double solenoid | 24 VDC | Internal | **H12WXBBL49D** | **H12WXBDL49D** |
| | | | | | | External | **H12WXXBL49D** | **H12WXXDL49D** |
| |  | 4-way, 3-position, all ports blocked | 1.2 | Double solenoid | 24 VDC | Internal | **H15WXBBL49D** | **H15WXBDL49D** |
| | | | | | | External | **H15WXXBL49D** | **H15WXXDL49D** |
| |  | 4-way, 3-position, center exhaust | 1.2 | Double solenoid | 24 VDC | Internal | **H16WXBBL49D** | **H16WXBDL49D** |
| | | | | | | External | **H16WXXBL49D** | **H16WXXDL49D** |
| |  | 4-way, 3-position, pressure center | 1.2 | Double solenoid | 24 VDC | Internal | **H17WXBBL49D** | **H17WXBDL49D** |
| | | | | | | External | **H17WXXBL49D** | |

Most popular.

## Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 1 (H1) (continued)

| Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
| **3-Pin DIN Connector, 120 VAC** | | | | | | | |
|   | 4-way, 2-position, spring return | 1.5 | Single solenoid | 120 VAC | Internal | **H1EWXBBL53D** | **H1EWXBDL53D** |
| | | | | | External | **H1EWXXBL53D** | **H1EWXXDL53D** |
|  | 4-way, 2-position, air return | 1.5 | Single solenoid | 120 VAC | Internal | **H11WXBBL53D** | **H11WXBDL53D** |
| | | | | | External | **H11WXXBL53D** | **H11WXXDL53D** |
|   | 4-way, 2-position | 1.5 | Double solenoid | 120 VAC | Internal | **H12WXBBL53D** | **H12WXBDL53D** |
| | | | | | External | **H12WXXBL53D** | **H12WXXDL53D** |
| | 4-way, 3-position, all ports blocked | 1.2 | Double solenoid | 120 VAC | Internal | **H15WXBBL53D** | **H15WXBDL53D** |
| | | | | | External | **H15WXXBL53D** | **H15WXXDL53D** |
|  | 4-way, 3-position, center exhaust | 1.2 | Double solenoid | 120 VAC | Internal | **H16WXBBL53D** | **H16WXBDL53D** |
| | | | | | External | **H16WXXBL53D** | **H16WXXDL53D** |
|  | 4-way, 3-position, pressure center | 1.2 | Double solenoid | 120 VAC | Internal | **H17WXBBL53D** | **H17WXBDL53D** |
| | | | | | External | **H17WXXBL53D** | **H17WXXDL53D** |

## Base / End Plate - 5599-1, Non Plug-in, Size 1 (H1)

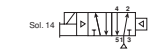
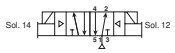
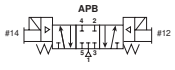
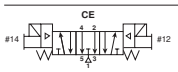
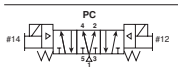
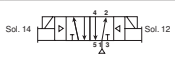
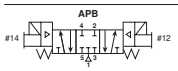
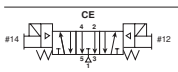
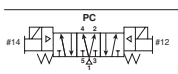
| | Description | NPT | BSPP |
|---|---|---|---|
|  Single subbase | Side ported, 3/8" port | **PS4011150DP** | **PS4011160DP** |
|  Universal manifold base | End ported | **PSHU115501P** | **PSHU115601P** |
|  Universal end plate | Non-collective wiring | **PSHU31L000P** | **PSHU31L001P** |

## Accessories - 5599-1, Non Plug-in, Size 1 (H1)

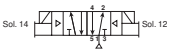
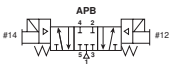
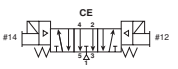
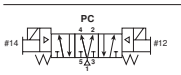
| Accessory | Description | | Part number |
|---|---|---|---|
|  Sandwich regulator | Common pressure | 5-125 PSIG w/ gauge | **PS4037166CP** |
| | Independent pressure | 5-125 PSIG w/ gauge | **PS4037266CP** |
|  Blanking plate kit | | | **PS4034CP** |
|  Sandwich flow control | | | **PS4042CP** |
| Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator. | | | |

Most popular.

## Valve with Central Connector - 5599-1, Non Plug-in, Size 2 (H2)

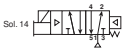
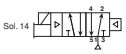
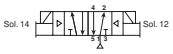
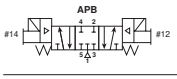
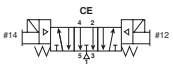
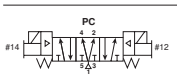
| Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
| **4-Pin Central M12 Connector, 24 VDC** | | | | | | | |
|   | 4-way, 2-position, spring return | 3.0 | Single solenoid | 24 VDC | Internal | **H2EWXBG2B9000FD** | **H2EWXBH2B9000FD** |
| | | | | | External | **H2EWXXG2B9000FD** | **H2EWXXH2B9000FD** |
|  | 4-way, 2-position, air return | 3.0 | Single solenoid | 24 VDC | Internal | **H21WXBG2B9000FD** | **H21WXBH2B9000FD** |
| | | | | | External | **H21WXXG2B9000FD** | **H21WXXH2B9000FD** |
|  | 4-way, 2-position | 3.0 | Double solenoid | 24 VDC | Internal | **H22WXBG2B9000FD** | **H22WXBH2B9000FD** |
| | | | | | External | **H22WXXG2B9000FD** | **H22WXXH2B9000FD** |
|   | 4-way, 3-position, all ports blocked | 2.8 | Double solenoid | 24 VDC | Internal | **H25WXBG2B9000FD** | **H25WXBH2B9000FD** |
| | | | | | External | **H25WXXG2B9000FD** | **H25WXXH2B9000FD** |
|  | 4-way, 3-position, center exhaust | 2.8 | Double solenoid | 24 VDC | Internal | **H26WXBG2B9000FD** | **H26WXBH2B9000FD** |
| | | | | | External | **H26WXXG2B9000FD** | **H26WXXH2B9000FD** |
|  | 4-way, 3-position, pressure center | 2.8 | Double solenoid | 24 VDC | Internal | **H27WXBG2B9000FD** | **H27WXBH2B9000FD** |
| | | | | | External | **H27WXXG2B9000FD** | **H27WXXH2B9000FD** |
| **5-Pin Central 7/8" Connector, 120 VAC** | | | | | | | |
|   | 4-way, 2-position, spring return | 3.0 | Single solenoid | 120 VAC | Internal | **H2EWXBG323000FD** | **H2EWXBH323000FD** |
| | | | | | External | **H2EWXXG323000FD** | **H2EWXXH323000FD** |
|  | 4-way, 2-position, air return | 3.0 | Single solenoid | 120 VAC | Internal | **H21WXBG323000FD** | **H21WXBH323000FD** |
| | | | | | External | **H21WXXG323000FD** | **H21WXXH323000FD** |
|  | 4-way, 2-position | 3.0 | Double solenoid | 120 VAC | Internal | **H22WXBG323000FD** | **H22WXBH323000FD** |
| | | | | | External | **H22WXXG323000FD** | **H22WXXH323000FD** |
|   | 4-way, 3-position, all ports blocked | 2.8 | Double solenoid | 120 VAC | Internal | **H25WXBG323000FD** | **H25WXBH323000FD** |
| | | | | | External | **H25WXXG323000FD** | **H25WXXH323000FD** |
|  | 4-way, 3-position, center exhaust | 2.8 | Double solenoid | 120 VAC | Internal | **H26WXBG323000FD** | **H26WXBH323000FD** |
| | | | | | External | **H26WXXG323000FD** | **H26WXXH323000FD** |
|  | 4-way, 3-position, pressure center | 2.8 | Double solenoid | 120 VAC | Internal | **H27WXBG323000FD** | **H27WXBH323000FD** |
| | | | | | External | **H27WXXG323000FD** | **H27WXXH323000FD** |

## Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 2 (H2)

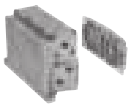
| Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
| **3-Pin DIN Connector on Coil, 24 VDC** | | | | | | | |
|   | 4-way, 2-position, spring return | 3.0 | Single solenoid | 24 VDC | Internal | **H2EWXBBL49D** | **H2EWXBCL49D** |
| | | | | | External | **H2EWXXBL49D** | **H2EWXXCL49D** |
|  | 4-way, 2-position, air return | 3.0 | Single solenoid | 24 VDC | Internal | **H21WXBBL49D** | **H21WXBCL49D** |
| | | | | | External | **H21WXXBL49D** | **H21WXXCL49D** |
|  | 4-way, 2-position | 3.0 | Double solenoid | 24 VDC | Internal | **H22WXBBL49D** | **H22WXBCL49D** |
| | | | | | External | **H22WXXBL49D** | **H22WXXCL49D** |
|   | 4-way, 3-position, all ports blocked | 2.8 | Double solenoid | 24 VDC | Internal | **H25WXBBL49D** | **H25WXBCL49D** |
| | | | | | External | **H25WXXBL49D** | **H25WXXCL49D** |
|  | 4-way, 3-position, center exhaust | 2.8 | Double solenoid | 24 VDC | Internal | **H26WXBBL49D** | **H26WXBCL49D** |
| | | | | | External | **H26WXXBL49D** | **H26WXXCL49D** |
|  | 4-way, 3-position, pressure center | 2.8 | Double solenoid | 24 VDC | Internal | **H27WXBBL49D** | **H27WXBCL49D** |
| | | | | | External | **H27WXXBL49D** | **H27WXXCL49D** |

Most popular.

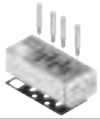
## Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 2 (H2) (continued)

| | Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|---|
| **3-Pin DIN connector on coil, 120 VAC** | | | | | | | | |
|  |  | 4-way, 2-position, spring return | 3.0 | Single solenoid | 120 VAC | Internal | **H2EWXBBL53D** | **H2EWXBCL53D** |
| | | | | | | External | **H2EWXXBL53D** | **H2EWXXCL53D** |
| |  | 4-way, 2-position, air return | 3.0 | Single solenoid | 120 VAC | Internal | **H21WXBBL53D** | **H21WXBCL53D** |
| | | | | | | External | **H21WXXBL53D** | **H21WXXCL53D** |
|  |  | 4-way, 2-position | 3.0 | Double solenoid | 120 VAC | Internal | **H22WXBBL53D** | **H22WXBCL53D** |
| | | | | | | External | **H22WXXBL53D** | **H22WXXCL53D** |
| |  | 4-way, 3-position, all ports blocked | 2.8 | Double solenoid | 120 VAC | Internal | **H25WXBBL53D** | **H25WXBCL53D** |
| | | | | | | External | **H25WXXBL53D** | **H25WXXCL53D** |
| |  | 4-way, 3-position, center exhaust | 2.8 | Double solenoid | 120 VAC | Internal | **H26WXBBL53D** | **H26WXBCL53D** |
| | | | | | | External | **H26WXXBL53D** | **H26WXXCL53D** |
| |  | 4-way, 3-position, pressure center | 2.8 | Double solenoid | 120 VAC | Internal | **H27WXBBL53D** | **H27WXBCL53D** |
| | | | | | | External | **H27WXXBL53D** | **H27WXXCL53D** |

## Base / End Plate - 5599-1, Non Plug-in, Size 2 (H2)

| | | Description | 1/2" NPT | 1/2" BSPP |
|---|---|---|---|---|
|  | Single subbase | Side ported, 1/2" port | **PS4111170CP** | **PS4111180CP** |
|  | Universal manifold base | End ported | **PSHU115701P** | **PSHU115801P** |
|  | Universal end plate | Non-collective wiring | **PSHU31L000P** | **PSHU31L001P** |

## Accessories - 5599-1, Non Plug-in, Size 2 (H2)

| | Accessory | Description | | Part number |
|---|---|---|---|---|
|  | Sandwich regulator | Common pressure | 5-125 PSIG w/ gauge | **PS4137166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4137266CP** |
|  | Blanking plate kit | | | **PS4134CP** |
|  | Sandwich flow control | | | **PS4142CP** |

Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.

Most popular.

## Valve - Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA)

| HB | E | WX | B | G | 2 | G9 | 000F | A |
|---|---|---|---|---|---|---|---|---|

**Basic series 15407-1**

| | |
|---|---|
| ISO 15407-1 18mm | HB |
| ISO 15407-1 26mm | HA |

**15407-1 Operator / Function**

| | |
|---|---|
| **Single solenoid, 2-position - air return** | **1** |
| **Double solenoid, 2-position** | **2** |
| **Double solenoid, 3-position - APB** | **5** |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| **Single solenoid, 2-position - air return, spring assist** | **E** |
| **Double solenoid, dual 3/2, NC/NC** | **N†** |
| Double solenoid, dual 3/2, NO/NO | P† |
| Double solenoid, dual 3/2, 14 end NC – 12 end NO | Q† |

† Available on HB Only, must use Internal Pilot Source Option "B".

**15407-1 Mounting**

| | |
|---|---|
| **Valve less base** | **WX** |

**15407-1 Pilot source / Pilot exhaust**

| | |
|---|---|
| **B** | **Internal pilot, port #1 / vented** |
| L* | External pilot, port #14 / vented |

* Must be specified when using Sandwich Regulators.

**15407-1 Overrides / Lights**

| | |
|---|---|
| **G** | **Non-locking, flush, push - w/ light** |
| H | Locking, flush, push / turn - w/ light |

**15407-1 Enclosure / Lead length**

| | |
|---|---|
| **2** | **4-pin, M12 micro, straight connector** |

**15407-1 Voltage & frequency**

| | |
|---|---|
| **G9** | **24VDC LED & suppression** |

**15407-1 Central connector wiring options**

| | |
|---|---|
| **000F** | **SAE / Ford, ISO 20401** |

**15407-1 Engineering level**

| | |
|---|---|
| **A** | **Current** |

## Valve - Non Plug-in, 5599-1, Central Connector - Size 1 & 2

| H1 | E | WX | B | G | 2B9 | 000F | D |
|---|---|---|---|---|---|---|---|

**Basic series 5599-1**

| | |
|---|---|
| ISO 5599-1 Size 1 | H1 |
| ISO 5599-1 Size 2 | H2 |

**5599 -1 Engineering level**

| | |
|---|---|
| D | Current |

**5599-1 Operator / Function**

| | |
|---|---|
| **Single solenoid, 2-position - air return** | **1** |
| **Double solenoid, 2-position** | **2** |
| **Double solenoid, 3-position - APB** | **5** |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| **Single solenoid, 2-position - air return, spring assist** | **E** |

**5599-1 Central connector wiring options**

| | |
|---|---|
| 000C | Chrysler |
| **000F*** | **SAE / Ford, ISO 20401** |
| 000G | General Motors |

* Complies to ISO 20401 with Enclosure Lead Length "2".

**5599-1 Mounting**

| | |
|---|---|
| **Valve less base** | **WX** |

**5599-1 Pilot source / Pilot exhaust**

| | |
|---|---|
| **Internal pilot, port #1 / vented** | **B** |
| External pilot, port #12 or #14 / vented | X* |

* Must be specified when using Sandwich Regulators.

**5599-1 Overrides / Lights**

| | |
|---|---|
| **Non-locking, flush, with light** | **G** |
| Locking, flush, with light | H |

**Enclosure / Lead length / Voltage***

| | AC | | DC | |
|---|---|---|---|---|
| | 60Hz | 50Hz | | |
| 1B9† | | | 24 | 3-pin, central mini connector |
| 123† | 120 | 115 | | 3-pin, central mini connector |
| **2B9** | | | **24** | **4-pin, central M12 connector** |
| 3B9 | | | 24 | 5-pin, central mini connector |
| 323 | 120 | 115 | | 5-pin, central mini connector |
| 619‡ | | | 24 | 2-pin, M12 connector on coil |

* All coils include LED & suppression
† Operator function "1" or "E"
‡ Only available with wiring option "000F"

## Valve - Non Plug-in, 5599-1, CNOMO - Size 1 & 2

| H1 | E | WX | B | B | L53 | D |
|---|---|---|---|---|---|---|

**Basic series 5599-1**

| | |
|---|---|
| ISO 5599-1 Size 1 | H1 |
| ISO 5599-1 Size 2 | H2 |

**5599-1 Engineering level**

| | |
|---|---|
| D | Current |

**5599-1 Operator / Function**

| | |
|---|---|
| **Single solenoid, 2-position - air return** | **1** |
| **Double solenoid, 2-position** | **2** |
| **Double solenoid, 3-position - APB** | **5** |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| **Single solenoid, 2-position - air return, spring assist** | **E** |

**Enclosure / Lead length / Voltage**

| | AC | | DC | |
|---|---|---|---|---|
| | 60Hz | 50Hz | | |
| L42 | 24 | | | 3-pin, 30mm DIN 43650A with CNOMO connector |
| L45 | | | 12 | 3-pin, 30mm DIN 43650A with CNOMO connector |
| **L49** | | | **24** | **3-pin, 30mm DIN 43650A with CNOMO connector** |
| **L53** | **120** | **115** | | **3-pin, 30mm DIN 43650A with CNOMO connector** |
| L57 | 240 | | | 3-pin, 30mm DIN 43650A with CNOMO connector |
| NXX | | | | Valve less coil |

**5599-1 Mounting**

| | |
|---|---|
| **Valve less base** | **WX** |

**5599-1 Pilot source / Pilot exhaust**

| | |
|---|---|
| **Internal pilot, port #1 / vented** | **B** |
| External pilot, port #12 or #14 / vented | X* |

* Must be specified when using Sandwich Regulators.

**5599-1 Overrides / Lights**

| | |
|---|---|
| **B** | **Non-locking, flush, push - no light** |
| C | Locking, flush, push / turn - no light |

☐ Most popular.

## Remote Pilot - Size 26mm (HA), H1, & H2

**H1** **4** **WX000XX** **D**

| Basic Series | |
|---|---|
| ISO 15407-1 26mm | HA* |
| ISO 5599-1 Size 1 | H1* |
| ISO 5599-1 Size 2 | H2* |

* Must order remote pilot access plates for manifolds.

| 15407-1 Operator / Function | |
|---|---|
| Single remote pilot, 2-position - air return | 3 |
| Double remote pilot, 2-position | 4 |
| Double remote pilot, 3-position - APB | 8 |
| Double remote pilot, 3-position - CE | 9 |
| Double remote pilot, 3-position - PC | 0 |
| Single remote pilot, 2-position - air return, spring assist | F |

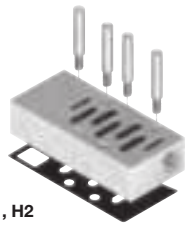
| Remote Pilot Valve | |
|---|---|
| WX000XX | Remote pilot valve |

| Engineering Level | |
|---|---|
| A | 15407 Current |
| D | 5599 Current |

*Note: For manifolds, end plates, and accessories, see 15407-1 & 5599-1 Non Plug-in valve section.*

## Remote Pilot Access Plate Kit

HA



H1, H2

| Size | Port size | NPT | BSPP "G" |
|---|---|---|---|
| HA | 1/4" | **PS551500P** | **PS551501P** |
| H1 | 1/8" | **PS401500CP** | **PS401501CP** |
| H2 | 1/8" | **PS411500CP** | **PS411501CP** |

**Kit includes:** Pilot port access plate, gasket and mounting studs.



☐ Most popular.

## Manifold Kit - Universal Non Plug-in

**PSHU1153** | **0** | **1** | **P**

| Mounting Style / Port Size | |
|---|---|
| **HB manifold with 1/8 NPT end ports** | **PSHU1151** |
| HB manifold with 1/8 BSPP end ports | PSHU1152* |
| **HA manifold with 1/4 NPT end ports** | **PSHU1153** |
| HA manifold with 1/4 BSPP end ports | PSHU1154* |
| **H1 manifold with 3/8 NPT end ports** | **PSHU1155** |
| H1 manifold with 3/8 BSPP end ports | PSHU1156* |
| **H2 manifold with 1/2 NPT end ports** | **PSHU1157** |
| H2 manifold with 1/2 BSPP end ports | PSHU1158* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

| Gasket Options | |
|---|---|
| **1** | **1,3,5 ports open and pilots open** |
| 2 | 1,3,5 ports closed and pilots open |
| 3 | 1 closed, 3,5 ports open and pilots closed |
| 4 | 1 port open, 3,5 ports closed and pilots open |
| 5 | 1,3,5 ports open and pilots closed |
| 6 | 1,3,5 ports closed and pilots closed |
| 7 | 1 closed, 3,5 ports open and pilots closed |
| 8 | 1 port open, 3,5 ports closed and pilots open |

| Circuit Board Address Configuration | |
|---|---|
| **0** | **No interconnect** |

**HA manifold**

## Intermediate Air Supply - Universal Non Plug-in

**PSHU115A** | **0** | **1** | **P**

| Mounting Style / Port Size | |
|---|---|
| **Intermediate air supply, NPT / internal pilot** | **PSHU115A** |
| Intermediate air supply, BSPP / internal pilot | PSHU115B* |
| **Intermediate air supply, NPT / external pilot** | **PSHU115C** |
| Intermediate air supply, BSPP / external pilot | PSHU115D* |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.

| Gasket Options | |
|---|---|
| **1** | **1,3,5 ports open and pilots open** |
| 2 | 1,3,5 ports closed and pilots open |
| 3 | 1 closed, 3,5 ports open and pilots closed |
| 4 | 1 port open, 3,5 ports closed and pilots open |
| 5 | 1,3,5 ports open and pilots closed |
| 6 | 1,3,5 ports closed and pilots closed |
| 7 | 1 closed, 3,5 ports open and pilots closed |
| 8 | 1 port open, 3,5 ports closed and pilots open |

| Circuit Board Address Configuration | |
|---|---|
| **0** | **No electrical** |

**Intermediate air supply**

☐ Most popular.

## End Plate Kit - Universal Non Plug-in

**PSHU31 L0 0 0 P**

| Valve Type | |
|---|---|
| Non Plug-in (internal pilot) | PSHU31 |
| Non Plug-in (external pilot) | PSHU3X |

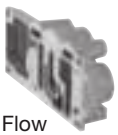
| Left Hand End Plate Type | |
|---|---|
| Non Plug-in | L0 |

| Right Hand End Plate Type / Port | |
|---|---|
| 0 | Low profile (no ports) |
| 1 | 1/2 Exhaust and inlet port |
| 2 | 3/4 Exhaust and inlet port |

| Thread Type | |
|---|---|
| 0 | NPT |
| 1* | BSPP "G" |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads

**Left hand end plate**

| Right Hand End Plate | Electrical option | NPT port | BSPP port |
|---|---|---|---|
|  Low Profile  High Flow | Right hand end plate only, low profile | **PSHU4000P** | **PSHU4001P** |
| | Right hand end plate only, high flow 1/2" ports | **PSHU4100P** | **PSHU4101P** |
| | Right hand end plate only, high flow 3/4" ports | **PSHU4200P** | **PSHU4201P** |

## Subbase Kit - Non Plug-in

**PS55 1113 0 P**

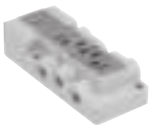
| Series | |
|---|---|
| HA Subbase | PS55 |
| H1 Subbase | PS40 |
| H2 Subbase | PS41 |

| Engineering Level | |
|---|---|
| Blank | HA Series |
| D | H1 Series |
| C | H2 Series |

| Mounting Style / Port Size | |
|---|---|
| **HA Series** | |
| **1/4 NPT side ports** | **1113** |
| 1/4 BSPP side ports | 1114* |
| 1/4 NPT bottom / side ports | 1123 |
| 1/4 BSPP bottom / side ports | 1124* |
| **H1 Series** | |
| **3/8 NPT side ports** | **1115** |
| 3/8 BSPP side ports | 1116* |
| **H2 Series** | |
| **1/2 NPT side ports** | **1117** |
| 1/2 BSPP side ports | 1118* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

| Enclosures / Lead Length | |
|---|---|
| 0 | None, No Electrical Plug |



**HA non plug-in subbase shown.**

☐ Most popular.

## Add-A-Fold - Universal Non Plug-in

**AAHU31 L0 0 0 P 06**

| Valve Type | |
|---|---|
| **Non plug-in (internal)** | **AAHU31** |
| Non plug-in (external) | AAHU3X |

| Left Hand End Plate Type | |
|---|---|
| **No connector, non plug-in** | **L0** |

| Right Hand End Plate Type / Port | |
|---|---|
| **Low profile (no ports)** | **0** |
| 1/2 Exhaust and inlet port | 1 |
| 3/4 Exhaust and inlet port | 2 |

| Thread Type | |
|---|---|
| **0** | **NPT** |
| 1* | BSPP "G" |

* BSPP conforms to ISO 1179-1 w 228-1 threads

| Number of Segments |
|---|
| 01 |
| ↓ |
| 32 |

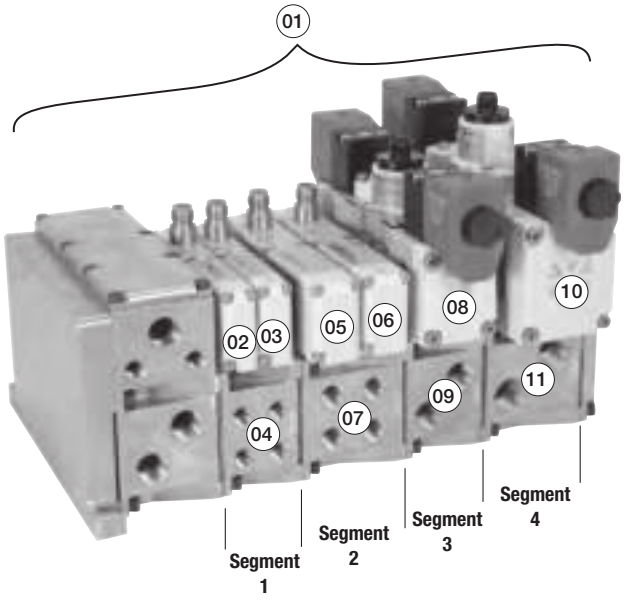
## How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

### *Example*

Application requires a 4 segment manifold.

| Item | Part No. | Location | |
|---|---|---|---|
| 01 | AAHU31L000P04 | | |
| 02 | HB2WXBG2G9000FA | Segment 1 | Valve station 1 |
| 03 | HB2WXBG2G9000FA | | Valve station 2 |
| 04 | PSHU115101P | | Manifold base |
| 05 | HA1WXBG2G9000FA | Segment 2 | Valve station 3 |
| 06 | HA2WXBG2G9000FA | | Valve station 4 |
| 07 | PSHU115301P | | Manifold base |
| 08 | H12WXBG2B9000FD | Segment 3 | Valve station 5 |
| 09 | PSHU115501P | | Manifold base |
| 10 | H22WXBG2B9000FD | Segment 4 | Valve station 6 |
| 11 | PSHU115701P | | Manifold base |




**Example:**
**4 segment manifold with (2) HB, (2) HA, (1) H1, and (1) H2 valve on manifold bases with low profile, NPT end plate.**

☐ Most popular.

## Sandwich Regulator - Non Plug-in, 15407-1

**PS5637 | 1 | 6 | 6 | P**

| Basic Series | |
|---|---|
| HB 15407-1, 18mm, Non Plug-In | PS5637 |
| HA 15407-1, 26mm, Non Plug-In | PS5537 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

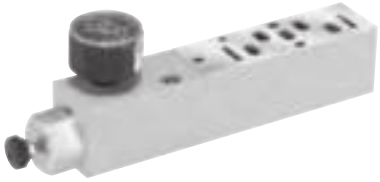
| #2 Port Regulator / Gauge* | |
|---|---|
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

| #4 Port Regulator / Gauge* | |
|---|---|
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

**HB - 18mm**
**(Independent Dual Port Regulator Shown)**



**HA - 26mm**
**(Common Port Regulator Shown)**

***Ordering Components***
- *Manifold or Subbase Kit required.*
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

### How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration of Sandwich Regulator HA, HB***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

## Sandwich Regulator - Non Plug-in, 5599-1

**PS4037 | 1 | 6 | 6 | C | P**

| Basic Series | |
|---|---|
| H1 5599-1, Non Plug-in | PS4037 |
| H2 5599-1, Non Plug-in | PS4137 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| #2 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure lne by-pass option can only be used with independent pressure regulators.

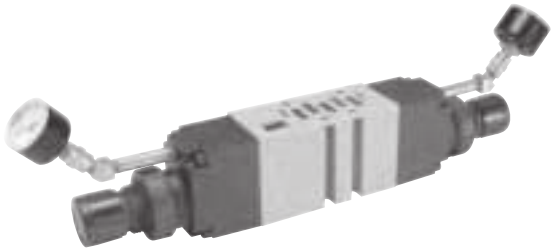
| #4 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure lne by-pass option can only be used with independent pressure regulators.

***Ordering Components***
- *Sandwich regulator kit configured for internal pilot as standard.*
- *Order valve as external pilot.*

**H1 - Size 1**
**(Independent Dual Port Regulator Shown)**



**H2 - Size 2**
**(Independent Dual Port Regulator Shown)**

### How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration of Sandwich Regulator H1 & H2***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

***External Pilot Configuration of Sandwich Regulator H1 & H2***
*An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.*

## Sandwich Regulator Cv Flow Chart*

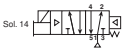
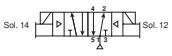
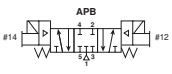
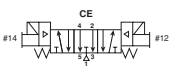
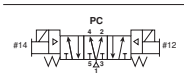
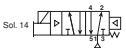
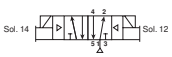
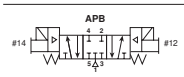
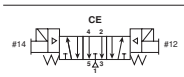
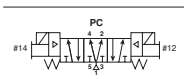
| | Common Pressure Code 166 | | | | Single Pressure 2 Code 206 | | | | Single Pressure 4 Code 260 | | | | Dual Pressure Code 266 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 | 1-4 | 2-3 | 4-5 | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* |
| **H1** | 0.62 | 0.61 | 1.28 | 1.18 | 0.73 | 0.96 | 0.96 | 0.93 | 0.34 | 0.70 | 0.94 | 0.98 | 0.52 | 0.48 | 0.86 | 0.88 |
| **H2** | 1.47 | 1.60 | 2.41 | 2.33 | 1.71 | 1.90 | 1.52 | 1.75 | 1.74 | 1.67 | 1.73 | 1.79 | 1.61 | 1.62 | 1.50 | 1.67 |

* Regulator Port exhaust through Base Port 3.

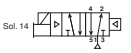
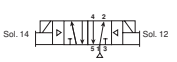
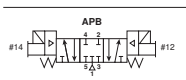
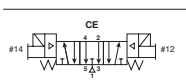
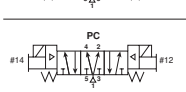
**Note:** All Cv's calculated with regulator adjusted full open.

☐ Most popular.

## Valve with Central Connectors - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

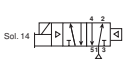
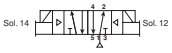
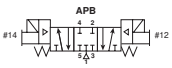
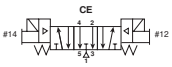
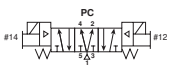
| Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
| **4-Pin Central M12 Connector, 24 VDC** | | | | | | | |
|   | 4-way, 2-position, spring return | 6.0 | Single solenoid | 24 VDC | Internal | **H3EWXBG2B9000FD** | **H3EWXBH2B9000FD** |
| | | | | | External | **H3EWXXG2B9000FD** | **H3EWXXH2B9000FD** |
|  | 4-way, 2-position, air return | 6.0 | Single solenoid | 24 VDC | Internal | **H31WXBG2B9000FD** | **H31WXBH2B9000FD** |
| | | | | | External | **H31WXXG2B9000FD** | **H31WXXH2B9000FD** |
|   | 4-way, 2-position | 6.0 | Double solenoid | 24 VDC | Internal | **H32WXBG2B9000FD** | **H32WXBH2B9000FD** |
| | | | | | External | **H32WXXG2B9000FD** | **H32WXXH2B9000FD** |
|  | 4-way, 3-position, all ports blocked | 5.0 | Double solenoid | 24 VDC | Internal | **H35WXBG2B9000FD** | **H35WXBH2B9000FD** |
| | | | | | External | **H35WXXG2B9000FD** | **H35WXXH2B9000FD** |
|  | 4-way, 3-position, center exhaust | 5.0 | Double solenoid | 24 VDC | Internal | **H36WXBG2B9000FD** | **H36WXBH2B9000FD** |
| | | | | | External | **H36WXXG2B9000FD** | **H36WXXH2B9000FD** |
|  | 4-way, 3-position, pressure center | 5.0 | Double solenoid | 24 VDC | Internal | **H37WXBG2B9000FD** | **H37WXBH2B9000FD** |
| | | | | | External | **H37WXXG2B9000FD** | **H37WXXH2B9000FD** |
| **5-Pin, Central 7/8" Mini Connector, 120 VAC** | | | | | | | |
|   | 4-way, 2-position, spring return | 6.0 | Single solenoid | 120 VAC | Internal | **H3EWXBG323000FD** | **H3EWXBH323000FD** |
| | | | | | External | **H3EWXXG323000FD** | **H3EWXXH323000FD** |
|  | 4-way, 2-position, air return | 6.0 | Single solenoid | 120 VAC | Internal | **H31WXBG323000FD** | **H31WXBH323000FD** |
| | | | | | External | **H31WXXG323000FD** | **H31WXXH323000FD** |
|   | 4-way, 2-position | 6.0 | Double solenoid | 120 VAC | Internal | **H32WXBG323000FD** | **H32WXBH323000FD** |
| | | | | | External | **H32WXXG323000FD** | **H32WXXH323000FD** |
|  | 4-way, 3-position, all ports blocked | 5.0 | Double solenoid | 120 VAC | Internal | **H35WXBG323000FD** | **H35WXBH323000FD** |
| | | | | | External | **H35WXXG323000FD** | **H35WXXH323000FD** |
|  | 4-way, 3-position, center exhaust | 5.0 | Double solenoid | 120 VAC | Internal | **H36WXBG323000FD** | **H36WXBH323000FD** |
| | | | | | External | **H36WXXG323000FD** | **H36WXXH323000FD** |
|  | 4-way, 3-position, pressure center | 5.0 | Double solenoid | 120 VAC | Internal | **H37WXBG323000FD** | **H37WXBH323000FD** |
| | | | | | External | **H37WXXG323000FD** | **H37WXXH323000FD** |

## Valve with 3-Pin DIN Connectors - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

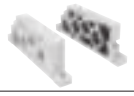
| Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
| **3-Pin DIN Connector on Coil, 24 VDC** | | | | | | | |
|   | 4-way, 2-position, spring return | 6.0 | Single solenoid | 24 VDC | Internal | **H3EWXBBL49D** | **H3EWXBCL49D** |
| | | | | | External | **H3EWXXBL49D** | **H3EWXXCL49D** |
|  | 4-way, 2-position, air return | 6.0 | Single solenoid | 24 VDC | Internal | **H31WXBBL49D** | **H31WXBCL49D** |
| | | | | | External | **H31WXXBL49D** | **H31WXXCL49D** |
|   | 4-way, 2-position | 6.0 | Double solenoid | 24 VDC | Internal | **H32WXBBL49D** | **H32WXBCL49D** |
| | | | | | External | **H32WXXBL49D** | **H32WXXCL49D** |
|  | 4-way, 3-position, all ports blocked | 5.0 | Double solenoid | 24 VDC | Internal | **H35WXBBL49D** | **H35WXBCL49D** |
| | | | | | External | **H35WXXBL49D** | **H35WXXCL49D** |
|  | 4-way, 3-position, center exhaust | 5.0 | Double solenoid | 24 VDC | Internal | **H36WXBBL49D** | **H36WXBCL49D** |
| | | | | | External | **H36WXXBL49D** | **H36WXXCL49D** |
|  | 4-way, 3-position, pressure center | 5.0 | Double solenoid | 24 VDC | Internal | **H37WXBBL49D** | **H37WXBCL49D** |
| | | | | | External | **H37WXXBL49D** | **H37WXXCL49D** |

Most popular.

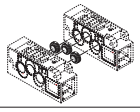
## Valve with 3-Pin DIN Connectors - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

| Symbol | Type | Cv | Operator | Voltage | Pilot | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
| 3-Pin DIN Connector on Coil, 120 VDC | | | | | | | |
|   | 4-way, 2-position, spring return | 6.0 | Single solenoid | 120 VAC | Internal | **H3EWXBBL53D** | **H3EWXBCL53D** |
| | | | | | External | **H3EWXXBL53D** | **H3EWXXCL53D** |
|  | 4-way, 2-position, air return | 6.0 | Single solenoid | 120 VAC | Internal | **H31WXBBL53D** | **H31WXBCL53D** |
| | | | | | External | **H31WXXBL53D** | **H31WXXCL53D** |
|   | 4-way, 2-position | 6.0 | Double solenoid | 120 VAC | Internal | **H32WXBBL53D** | **H32WXBCL53D** |
| | | | | | External | **H32WXXBL53D** | **H32WXXCL53D** |
|  | 4-way, 3-position, all ports blocked | 5.0 | Double solenoid | 120 VAC | Internal | **H35WXBBL53D** | **H35WXBCL53D** |
| | | | | | External | **H35WXXBL53D** | **H35WXXCL53D** |
|  | 4-way, 3-position, center exhaust | 5.0 | Double solenoid | 120 VAC | Internal | **H36WXBBL53D** | **H36WXBCL53D** |
| | | | | | External | **H36WXXBL53D** | **H36WXXCL53D** |
|  | 4-way, 3-position, pressure center | 5.0 | Double solenoid | 120 VAC | Internal | **H37WXBBL53D** | **H37WXBCL53D** |
| | | | | | External | **H37WXXBL53D** | **H37WXXCL53D** |

## Base / End Plate - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

| | Description | NPT | BSPP |
|---|---|---|---|
|  Single subbase | Side ported base, 3/4" port | **PS4211190CP** | **PS4211180CP** |
|  Manifold base | End ported bases | **PS4211590CP** | **PS4211500CP** |
| | Bottom / end ported bases | **PS4211690CP** | **PS4211600CP** |
| | **Note:** Manifolds include 2 pipe plugs | | |
|  End plate | End plate - non-collective wiring | **PS4231010DP** | **PS4231011DP** |

## Accessories - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

| | Accessory | Description | | Part number |
|---|---|---|---|---|
|  | Sandwich regulator | Common pressure | 5-125 PSIG w/ gauge | **PS4237166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4237266CP** |
|  | Blanking plate kit | | | **PS4234CP** |
|  | Sandwich flow control | | | **PS4242CP** |
| | Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator. | | | |
|  | Manifold to manifold gasket kits | | | **PS4213P** |
|  | Manifold port isolation kit | Main galley (1, 3, 5) | | **PS4232CP** |
|  | | Pilot galley | | **PS4033CP** |

Most popular.

## Valve Central Connector - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

**H3 E WX B G 2B9 000F D**

| Basic series 5599-1 | |
|---|---|
| ISO 5599-1 Size 3 | H3 |

| 5599 -1 Engineering level | |
|---|---|
| D | Current |

| 5599-1 Operator / Function | |
|---|---|
| Single solenoid, 2-position - air return | 1 |
| Double solenoid, 2-position | 2 |
| Double solenoid, 3-position - APB | 5 |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| Single solenoid, 2-position - air return, spring assist | E |

| 5599-1 Central connector wiring options | |
|---|---|
| 000C | Chrysler |
| 000F* | SAE / Ford, ISO 20401 |
| 000G | General Motors |

* Complies to ISO 20401 with Enclosure Lead Length "2".

| 5599-1 Mounting | |
|---|---|
| Valve less base | WX |

| 5599-1 Pilot source / Pilot exhaust | |
|---|---|
| Internal pilot, port #1 / vented | B |
| External pilot, port #12 or #14 / vented | X* |

* Must be specified when using Sandwich Regulators.

| 5599-1 Overrides / Lights | |
|---|---|
| Non-locking, flush, with light | G |
| Locking, flush, with light | H |

| Enclosure / Lead length / Voltage* | AC 60Hz | AC 50Hz | DC | |
|---|---|---|---|---|
| 1B9† | | | 24 | 3-pin, central mini connector |
| 123† | 120 | 115 | | 3-pin, central mini connector |
| **2B9** | | | **24** | **4-pin, central M12 connector** |
| 3B9 | | | 24 | 5-pin, central mini connector |
| 323 | 120 | 115 | | 5-pin, central mini connector |
| 619‡ | | | 24 | 2-pin, M12 connector on coil |

* All coils include LED & suppression
† Operator function "1" or "E"
‡ Only available with wiring option "000F"

## Valve CNOMO - Non Plug-in, 5599-1 Size 3 (H3) * Not compatible with H Universal

**H3 E WX B B L53 D**

| Basic series 5599-1 | |
|---|---|
| ISO 5599-1 Size 3 | H3 |

| 5599-1 Engineering level | |
|---|---|
| D | Current |

| 5599-1 Operator / Function | |
|---|---|
| Single solenoid, 2-position - air return | 1 |
| Double solenoid, 2-position | 2 |
| Double solenoid, 3-position - APB | 5 |
| Double solenoid, 3-position - CE | 6 |
| Double solenoid, 3-position - PC | 7 |
| Single solenoid, 2-position - air return, spring assist | E |

| Enclosure / Lead length / Voltage | AC 60Hz | AC 50Hz | DC | |
|---|---|---|---|---|
| L42 | 24 | | | 3-pin, 30mm DIN 43650A with CNOMO connector |
| L45 | | | 12 | 3-pin, 30mm DIN 43650A with CNOMO connector |
| **L49** | | | **24** | **3-pin, 30mm DIN 43650A with CNOMO connector** |
| **L53** | **120** | **115** | | **3-pin, 30mm DIN 43650A with CNOMO connector** |
| L57 | 240 | | | 3-pin, 30mm DIN 43650A with CNOMO connector |
| NXX | | | | Valve less coil |

| 5599-1 Mounting | |
|---|---|
| Valve less base | WX |

| 5599-1 Pilot source / Pilot exhaust | |
|---|---|
| Internal pilot, port #1 / vented | B |
| External pilot, port #12 or #14 / vented | X* |

* Must be specified when using Sandwich Regulators.

| 5599-1 Overrides / Lights | |
|---|---|
| B | Non-locking, flush, push - no light |
| C | Locking, flush, push / turn - no light |

Most popular.

## Remote Pilot - Size 3 (H3) * Not compatible with H Universal

**H3** **4** **WX000XX** **D**

| Basic Series | |
|---|---|
| ISO 5599-1 Size 3 | H3* |

* Must Order Remote Pilot Access Plates for Manifolds.

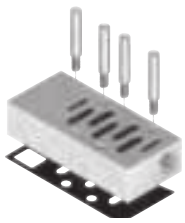
| 15407-1 Operator / Function | |
|---|---|
| **Single remote pilot, 2-position - air return** | **3** |
| **Double remote pilot, 2-position** | **4** |
| **Double remote pilot, 3-position - APB** | **8** |
| Double remote pilot, 3-position - CE | 9 |
| Double remote pilot, 3-position - PC | 0 |
| Single remote pilot, 2-position - air return, spring assist | F |

| Remote Pilot Valve | |
|---|---|
| WX000XX | Remote pilot valve |

| Engineering Level | |
|---|---|
| D | 5599 Current |

*Note: For manifolds, end plates, and accessories, see 5599-1 Non Plug-in valve section.*

## Remote Pilot Access Plate Kits * Not compatible with H Universal



| Size | Port size | NPT | BSPP "G" |
|---|---|---|---|
| H3 | 1/8" | **PS421500CP** | **PS421501CP** |

**Kit includes:** Pilot Port Access Plate, Gasket and Mounting Studs.

Most popular.

## Manifold / Subbase Kit - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

**PS421159 0 C P**

| Mounting Base Style / Port Size | |
|---|---|
| **Subbase: 3/4 NPT side ports** | **PS421119** |
| Subbase: 3/4 BSPP side port | PS421110* |
| **Manifold: 3/4 NPT End port** | **PS421159** |
| Manifold: 3/4 BSPP end port | PS421150* |
| Manifold: 3/4 NPT bottom / end port | PS421169 |
| Manifold: 3/4 BSPP bottom / end port | PS421160* |

* BSPP conforms to ISO 1179-1 w 228-1 threads.

| Engineering Level | |
|---|---|
| C | H3 |

| Enclosures / Lead Length | |
|---|---|
| 0 | None, No Electrical Plug - 5599-1 |

**H3 Subbase shown.**

**H3 Manifold shown.**

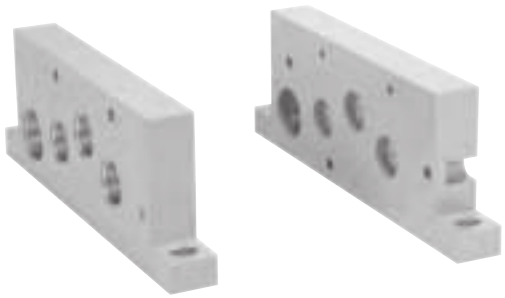
## End Plate Kit - Non-Plug-in, 5599-1 * Not compatible with H Universal

**PS423101 0 C P**

| Basic Series | |
|---|---|
| ISO 5599, Size 3 | PS423101 |

| Thread Type | |
|---|---|
| 0 | NPT |
| 1* | BSPP "G" |

* BSPP conforms to ISO 1179-1 w 228-1 threads.



**H3 Non-Collective Wiring End Plates**

☐ Most popular.

## Add-A-Fold Assembly - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

| AA | H3 | S | 0 | 0 | 03 |
|---|---|---|---|---|---|

**Valve Series**
Right & left end plate — H3

**End Plate Type**
Standard - non-collective wiring — S

**Thread Type**
0 — NPT

**Number of Segments**
01
↓
32

## How To Order Non Plug-in Add-A-Fold Assemblies

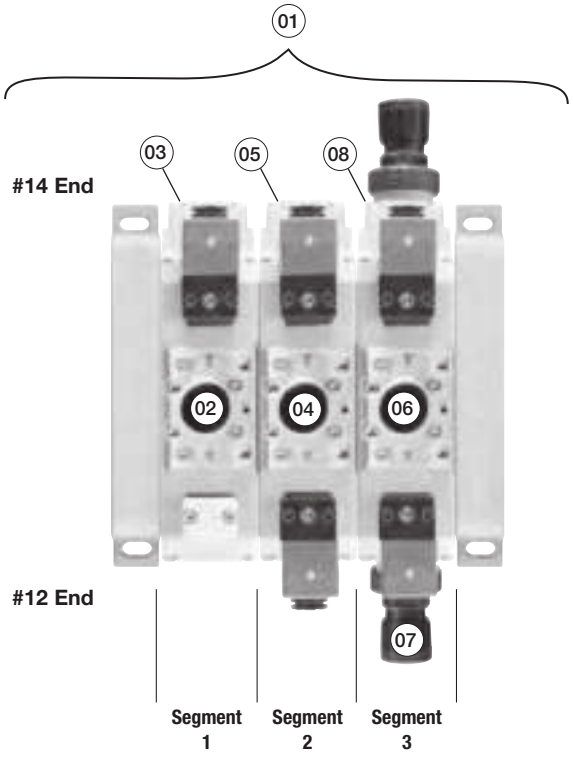
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

### *Example*

Application requires a 3 segment manifold and regulator on segment 3.

| Item | Part No. | Location | |
|---|---|---|---|
| 01 | AAH3S003 | | |
| 02 | H31WXBG2B9000FD | Segment 1 | Valve station 1 |
| 03 | PS4211590CP | | Manifold base |
| 04 | H32WXBG2B9000FD | Segment 2 | Valve station 2 |
| 05 | PS4211590CP | | Manifold base |
| 06 | H32WXXG2B9000FD | | Valve station 3 |
| 07 | PS4237166CP | Segment 3 | Sandwich regulator |
| 08 | PS4211590CP | | Manifold base |

**NOTE:** Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.




**Example:**
**3 segment manifold with (3) H3 valves on manifold bases and regulator at segment 3.**

☐ Most popular.

## Sandwich Regulator - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

**PS4237 | 1 | 6 | 6 | C | P**

| Basic Series | |
|---|---|
| H3 5599-1, Non Plug-in | PS4237 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| | #2 Port Regulator / Gauge* |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure lne by-pass option can only be used with independent pressure regulators.

| | #4 Port Regulator / Gauge* |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |
| D | Remote Pilot ISO 2 & 3 only |

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure lne by-pass option can only be used with independent pressure regulators.

***Ordering Components***
- *Sandwich regulator kit configured for internal pilot as standard.*
- *Order valve as external pilot.*

### How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration of Sandwich Regulator H3***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

***External Pilot Configuration of Sandwich Regulator H3***
*An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.*

## Sandwich Regulator Cv Flow Chart*

| | Common Pressure Code 166 | | | | Single Pressure 2 Code 206 | | | | Single Pressure 4 Code 260 | | | | Dual Pressure Code 266 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 | 1-4 | 2-3 | 4-5 | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* | 1-2 | 1-4 | 2-3 | 4-5* |
| **H3** | 2.37 | 2.39 | 4.30 | 4.47 | 2.37 | 2.81 | 2.75 | 3.01 | 2.65 | 2.59 | 2.68 | 2.74 | 2.43 | 2.41 | 3.16 | 3.04 |

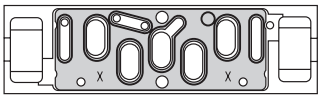
* Regulator Port exhaust through Base Port 3.

**Note:** All Cv's calculated with regulator adjusted full open.

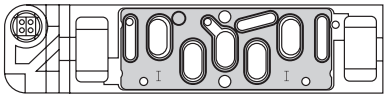
Most popular.

## ISO Pneumatic Valve Standard Definitions

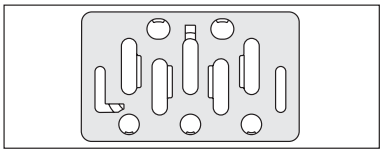
**15407-1:** Non-Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



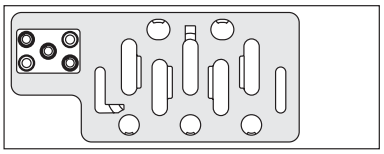
**15407-2:** Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valve**s**



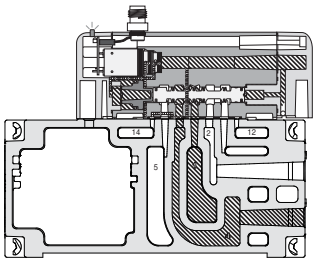
**5599-1:** Non-Plug-in Standards for Sizes 1, 2, 3



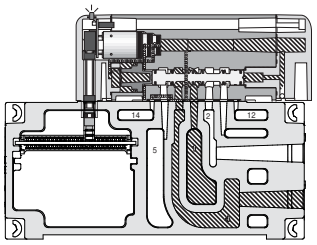
**5599-2:** Plug-in Standards for Size 1, 2, 3



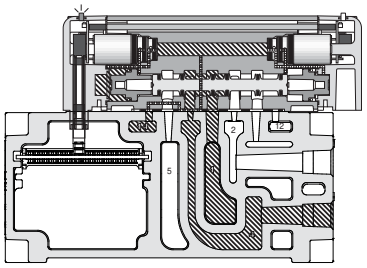
### HB / HA Series



15407-1 18mm Single Solenoid Internal Pilot Manifold Mounted



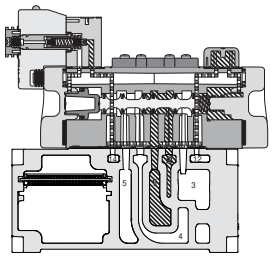
15407-2 18mm Single Solenoid Internal Pilot Manifold Mounted



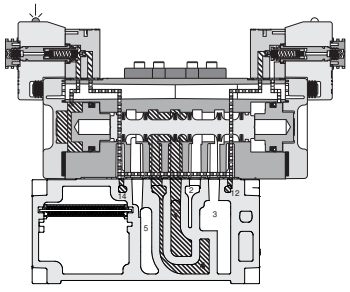
15407-2 26mm Double Solenoid External Pilot Manifold Mounted

Pressure Exhaust

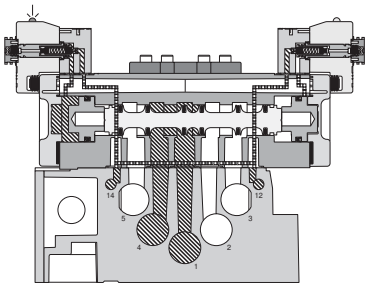
### H1, H2, H3 Series



H1 5599-2 Single Solenoid Internal Pilot Manifold Mounted



H2 5599-2 Double Solenoid External Pilot Manifold Mounted

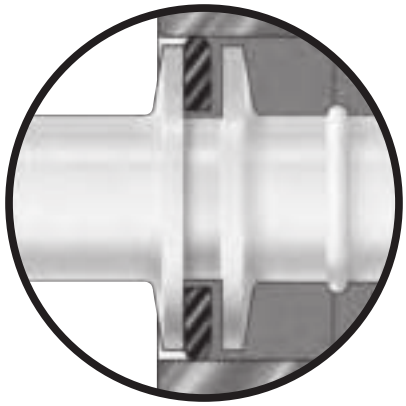


H3 5599-2 Double Solenoid External Pilot Subbase Mounted

Pressure Exhaust

# *Wear Compensation System*

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



## Flow Rating (Cv)

| Valve size | Port size | 2-Position | 3-Position |
|---|---|---|---|
| HB | 1/8" | 0.55 Cv, C = 1.5 Nl/s x bar, b = 0.25, Qn = 390 l/min, Qmax = 648 l/min | 0.50 Cv, C = 1.4 Nl/s x bar, b = 0.25, Qn = 360 l/min, Qmax = 595 l/min |
| HA | 1/4" | 1.1 Cv, C = 3.6 Nl/s x bar, b = 0.30, Qn = 918 l/min, Qmax = 1518 l/min | 1.0 Cv, C = 3.3 Nl/s x bar, b = 0.30, Qn = 845 l/min, Qmax = 1395 l/min |
| H1 | 3/8" | 1.5 Cv, C = 5.0 Nl/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min | 1.2 Cv, C = 4.1 Nl/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min |
| H2 | 1/2" | 3.0 Cv, C = 9.7 Nl/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min | 2.8 Cv, C = 9.0 Nl/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min |
| H3 | 3/4" | 6.0 Cv, C = 18.7 Nl/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min | 5.0 Cv, C = 15.4 Nl/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min |

**Cv tested per ANSI / (NFPA) T3.21.3**
**Flow tested According to ISO 6358.**

## Response Time** (ms)

| Valve Size | Port Size | 0 Cu. In. Chamber | | ## Cu. In. Chamber | |
|---|---|---|---|---|---|
| | | Fill | Exhaust | Fill | Exhaust |
| Single Solenoid 2-Position - Air Return / Spring Assist | | | | | |
| HB | 1/8" | 28 | 30 | 141 | 154 |
| HA | 1/4" | 24 | 26 | 77 | 124 |
| H1 | 3/8" | 28 | 39 | 124 | 198 |
| H2 | 1/2" | 38 | 76 | 149 | 295 |
| H3 | 3/4" | 56 | 70 | 163 | 235 |

## HB (12), HA (25), H1 (50), H2 (100), H3 (200)

** With 100 PSIG supply, time (ms) required to fill from 0 to 90 PSIG and Exhaust from 100 PSIG to 10 PSIG measured from the instant of energizing or de-energizing 24VDC solenoid.

**Tested per ANSI / (NFPA) T3.21.8**



## Left End Plate Field Conversion

End plate kits and manifold assemblies are ordered as internal or single external pilot however field conversion is possible.

### End Plate Configuration - Internal Pilot *

Insert 2 pipe plugs in locations A & B (1/8" NPT or G 1/8) as shown

Blocking off the pilot supply ports will configure the left end plate as internally piloted. Pilot pressure required to operate the H Series valves will be drawn from the supply or #1 port and no additional connections are required. Port locations C & D must be left unplugged for this option to function properly.

### End Plate Configuration - Single External Pilot *

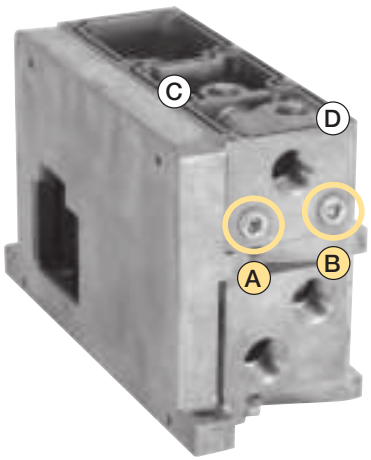
Insert 1 pipe plug into location C (1/4" NPT) as shown to configure the left end plate as single externally piloted.

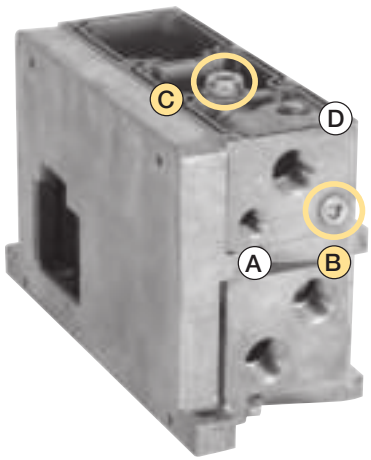
Pilot pressure required to operate the H Series valves must be supplied to the 14 port only at location A which is internally connected to the 12 pilot.

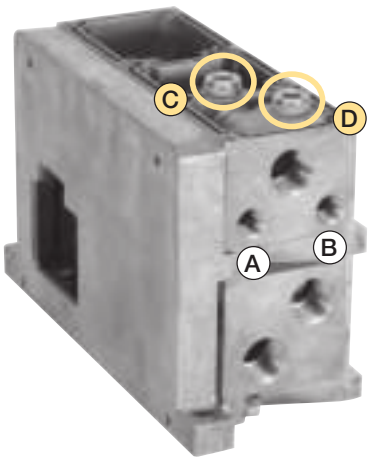
### End Plate Configuration - Double External Pilot

Insert 2 pipe plugs in locations C & D (1/4" NPT) as shown to configure the left end plate as double externally piloted.

Pilot pressure required to operate the H Series valves must be supplied separately to both ports 14 and 12 (locations A and B).



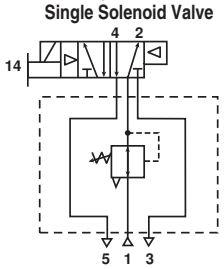

* Standard in catalog

Note: Left end plate shown with cover removed.

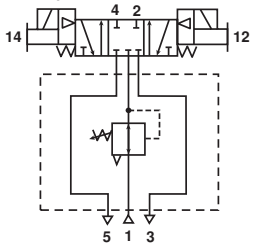
## Common Port Regulation - Plug-in, HB & HA

Provides adjustable regulated air pressure to the valve's #1 port which gives the same pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

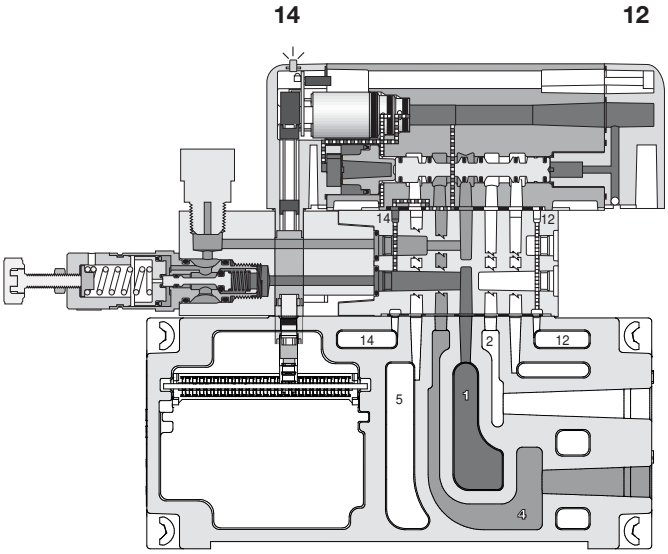
**Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve**




**Common Port Regulator with 4-Way, 3-Position APB Valve**




**HB Common Port Regulator Shown - Single Solenoid, 14 Energized**

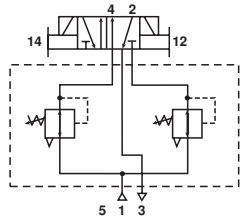



## Independent Dual Port Regulation - Plug-in, HB & HA

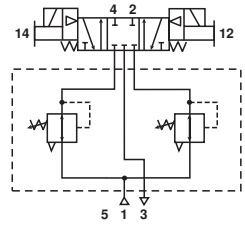
### Dual Port Regulator

Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

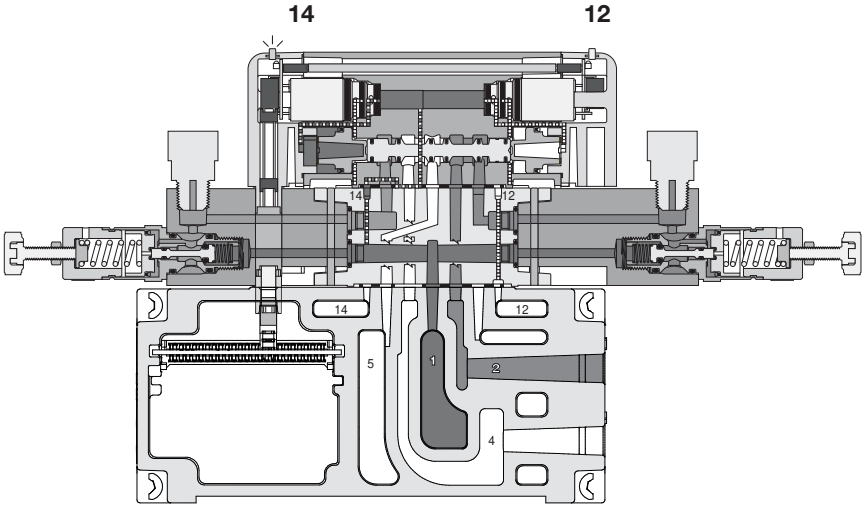
**Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve**




**Independent Dual Port Regulator with 4-Way, 3-Position Double Solenoid Valve**




**HB Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized**

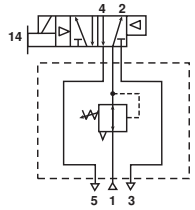



*When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics above.)*

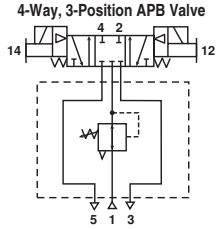
## Common Port Regulation - Non Plug-in, HB & HA

Provides adjustable regulated air pressure to the valve's #1 port which gives the same pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

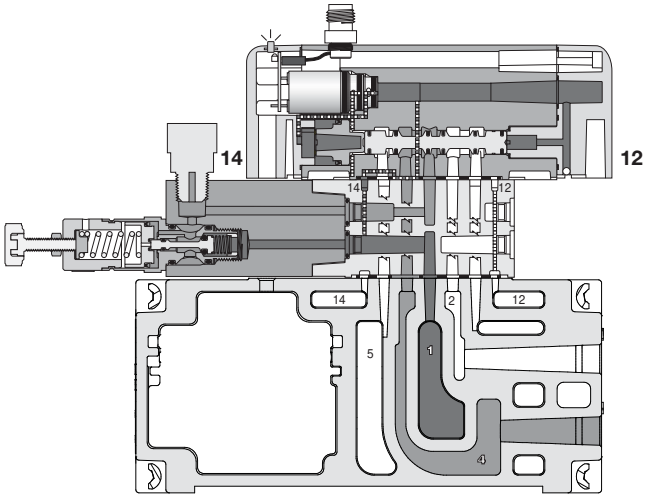
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve




Common Port Regulator with 4-Way, 3-Position APB Valve




**HB Common Port Regulator Shown - Single Solenoid, 14 Energized**

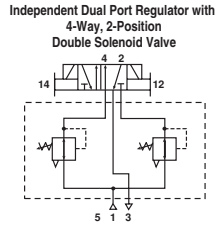



## Independent Dual Port Regulation - Non Plug-in, HB & HA

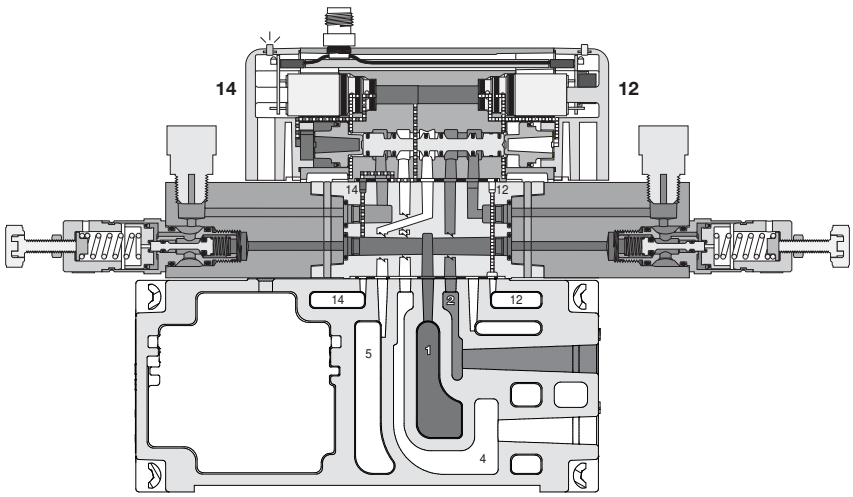
**Dual Port Regulator**

Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve




**HB Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized**



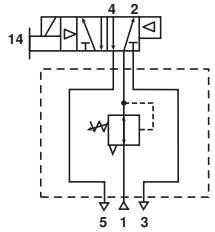

*When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on above.)*

Most popular.

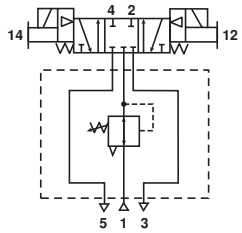
## Common Port Regulation - Plug-in, H1, H2, H3

Provides adjustable regulated air pressure to the valve's #1 port which gives the same regulated pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

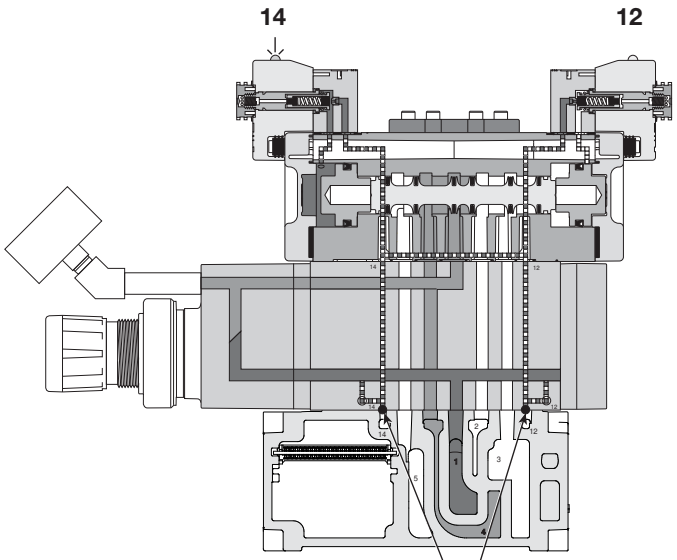
**Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve**




**Common Port Regulator with 4-Way, 3-Position APB Valve**




**H2 Common Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot**



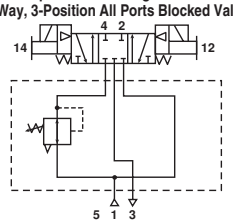

Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of the I & E Pilot Holes which prevents line pressure from escaping through the manifold.

## Independent Port Regulation - Plug-in, H1, H2, H3

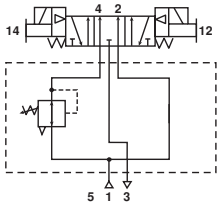
### Single Port Regulator

Provides regulated pressure to one of the ports and full line pressure to the other by use of the Line Pressure By-Pass Plate. Pressure regulation can occur out of the #4 port of the valve.

**Independent Port Regulator with 4-Way, 3-Position All Ports Blocked Valve**

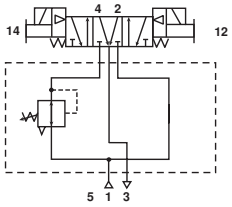



**Independent Port Regulator with 4-Way, 3-Position, Inlet to Cylinder Function**



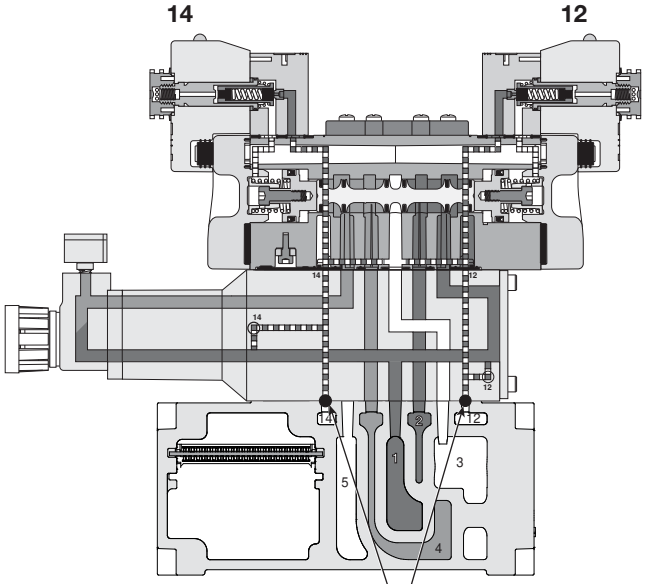

⚠ CAUTION: Requires 4-Way, 3-Position, Cylinder to Exhaust Valve

**Independent Port Regulator with 4-Way, 3-Position, Cylinder to Exhaust Function**




⚠ CAUTION: Requires 4-Way, 3-Position, Inlet to Cylinder Valve

**H1 Independent Port Regulator Shown - Double Solenoid, De-energized, Internal Pilot**



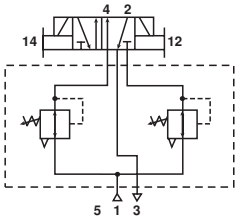

Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

*When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics above.)*

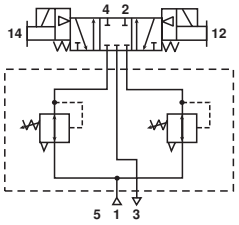
## Independent Dual Port Regulation - Plug-in, H1, H2, H3

**Dual Port Regulator**
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

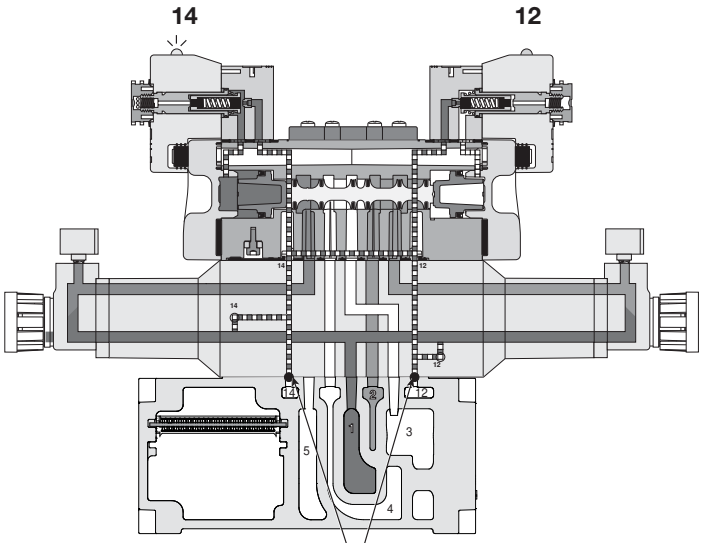
**Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve**




**Independent Dual Port Regulator with 4-Way, 3-Position Double Solenoid Valve**




**H1 Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot**



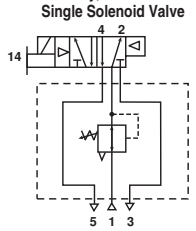

Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

*When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on above.)*

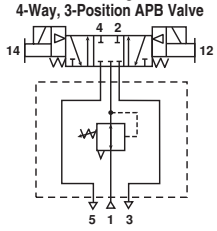
## Common Port Regulation - Non Plug-in, H1, H2, H3

Provides adjustable regulated air pressure to the valve's #1 port which gives the same regulated pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

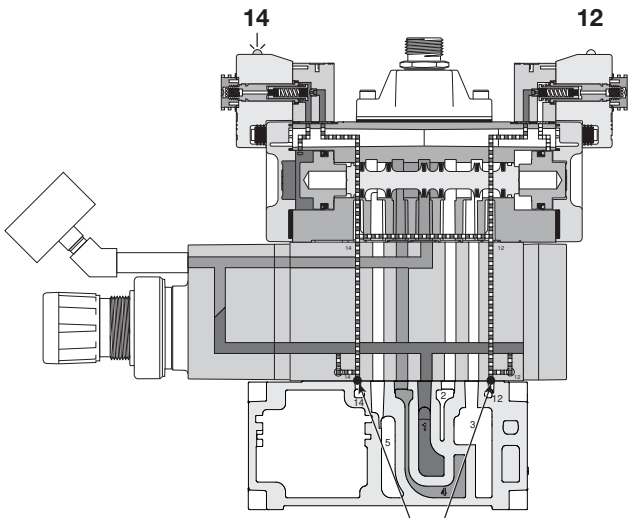
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve




Common Port Regulator with 4-Way, 3-Position APB Valve




### H2 Common Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



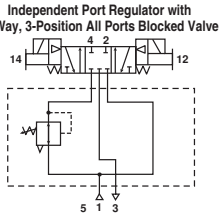

Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of the I & E Pilot Holes which prevents line pressure from escaping through the manifold.

## Independent Port Regulation - Non Plug-in, H1, H2, H3

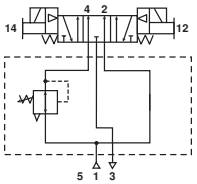
### Single Port Regulator

Provides regulated pressure to one of the ports and full line pressure to the other by use of the Line Pressure By-Pass Plate. Pressure regulation can occur out of the #4 port of the valve.

Independent Port Regulator with 4-Way, 3-Position All Ports Blocked Valve

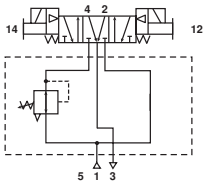



Independent Port Regulator with 4-Way, 3-Position, Inlet to Cylinder Function



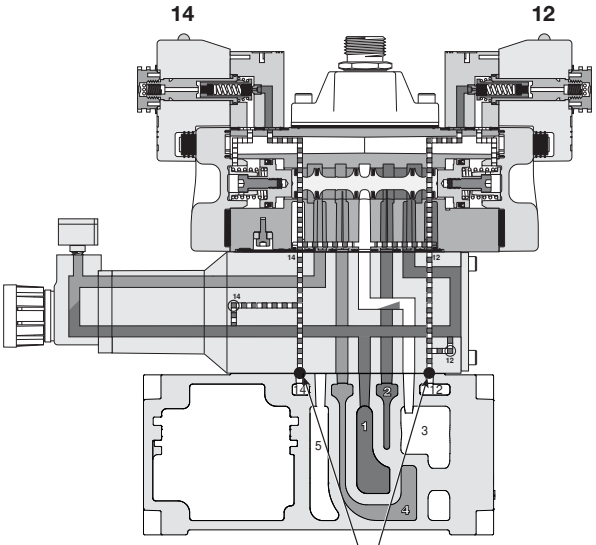

⚠CAUTION: Requires 4-Way, 3-Position, Cylinder to Exhaust Valve

Independent Port Regulator with 4-Way, 3-Position, Cylinder to Exhaust Function




⚠CAUTION: Requires 4-Way, 3-Position, Inlet to Cylinder Valve

### H1 Independent Port Regulator Shown - Double Solenoid, De-energized, Internal Pilot



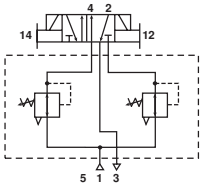

Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

## Independent Dual Port Regulation - Non Plug-in, H1, H2, H3

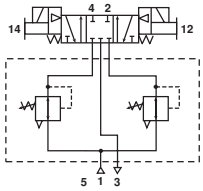
### Dual Port Regulator

Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

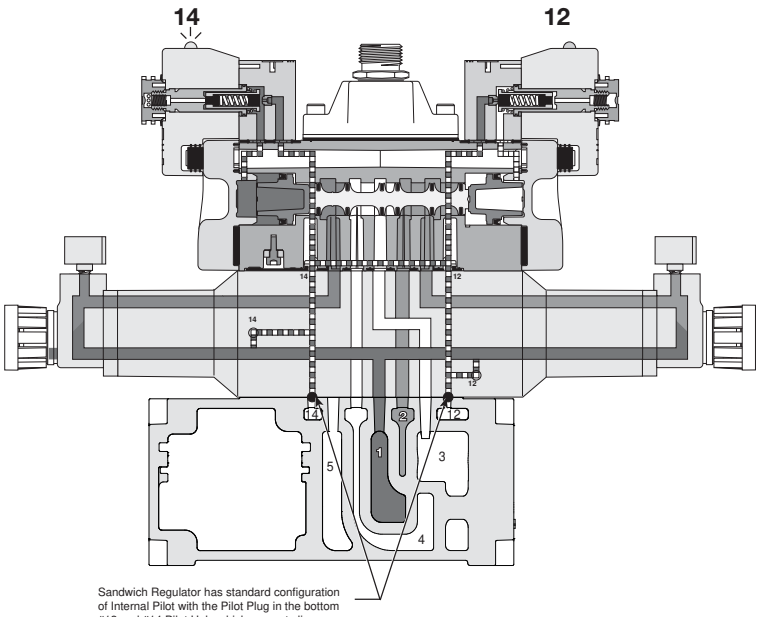
Independent Dual Port Regulator with 4-Way, 2-Position Double Solenoid Valve




Independent Dual Port Regulator with 4-Way, 3-Position Double Solenoid Valve




### H1 Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot




Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

*When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on above.)*

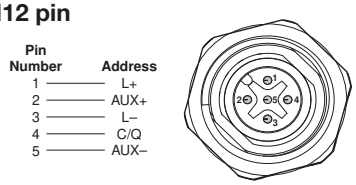
## Minimum Operating Voltage

| | HB | HA | H1 | H2 | H3 |
|---|---|---|---|---|---|
| **MOV (24VDC)** | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 |
| **MOV (120VAC)** | 102* | 102* | 102 | 102 | 102 |

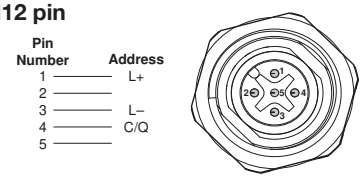
* 120VAC coils have a dropout voltage of 10VAC when used with solid state relays. A pull-down resister may be necessary.

## P2H IO-Link

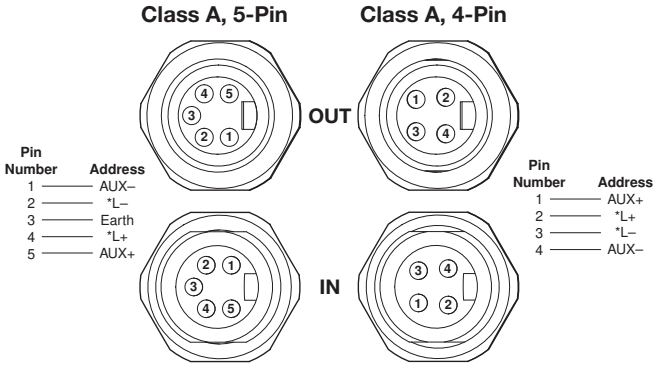
### Class B, M12 pin




### Class A, M12 pin



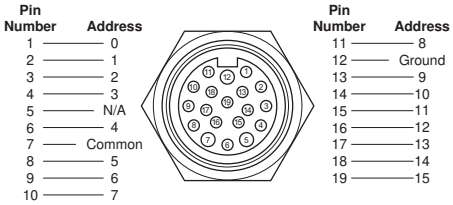

### Class A, Power IN / OUT 7/8 pin




* 7/8" logic power has no connection to internal P2H unit but does carryover to OUT 7/8" connector (for jumper logic power only). Logic power for P2H unit will be supplied from M12 (pin 1 & 3).

## 19-Pin Connector, Round Brad Harrison

### Male, face view




### 19-Pin Round Cable Specifications

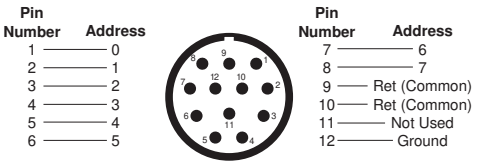
Common Pin "7" is rated for 8 amps. Cable common wire must be greater than total amperage of solenoids on Add-A-Fold assembly.

***Example:*** 8 segment manifold, 16 solenoids, 120VAC - 16 x .039 amps = .63 total amp rating.

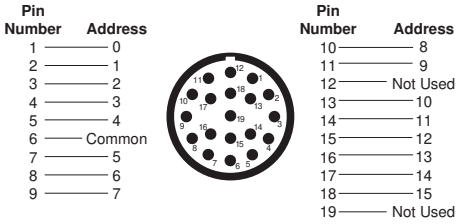
NEMA 4 rated with properly assembled NEMA 4 rated cable.

## M23, Round Connector

### Male 12-pin connector, face view

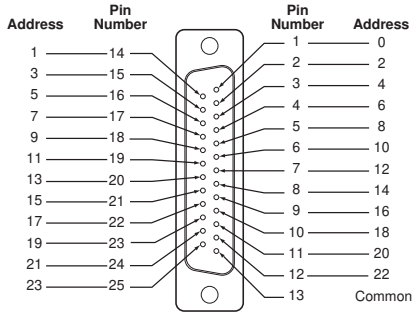



### Male 19-pin connector, view into end plate

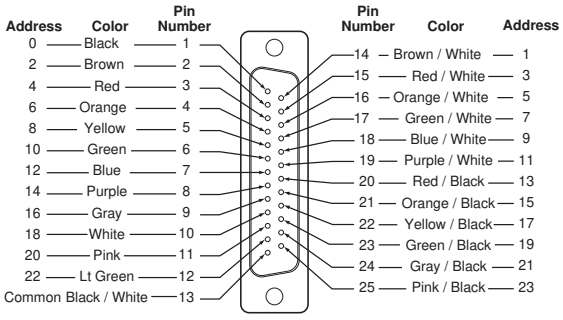



## 25-Pin, D-Sub Connector

### Male, view into end plate connector




### Female, view into cable connector




| | Description | Length | Part number |
|---|---|---|---|
|  | 25-pin, D-sub cable, IP20 | 3 Meters | **P8LMH25M3A** |
| | 25-pin, D-sub cable, IP20 | 9 Meters | **SCD259D** |
| | 25-pin, D-sub cable, IP65 | 3 Meters | **SCD253W** |
| | 25-pin, D-sub cable, IP65 | 9 Meters | **SCD259WE** |

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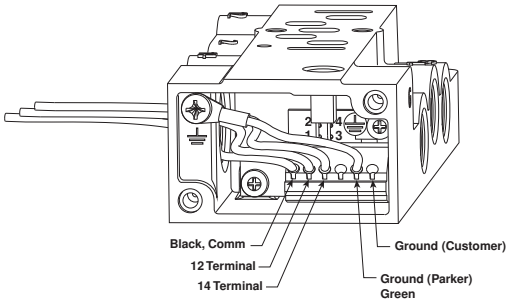
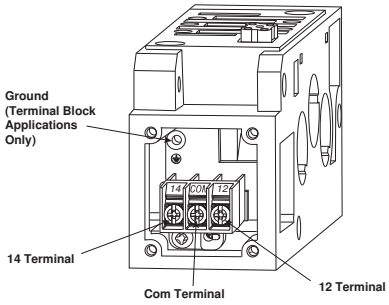
## Subbase Wiring




All commons internally connected on terminal strip

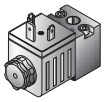
| Connections | 14 Solenoid | 12 Solenoid |
|---|---|---|
| Valves with Wires | Black Wires | Red Wires |
| Valves with Terminal Block (Will accept 18 to 24 Gauge Wires) | 14 and Com Terminals | 12 and Com Terminals |

## Manifold Wiring - Size 3

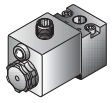



## Electrical Connectors - Size 1, 2 & 3

### 5599-1 CNOMO



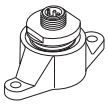
**30mm 3-Pin ISO 4400 (DIN 43650A)**



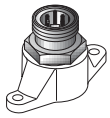
**2-Pin M12 Euro**

### 5599-1 AUTO

**3-Pin Mini**

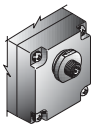


**4-Pin Micro**

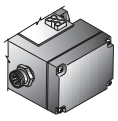


**5-Pin Mini**

### 5599-2



**Manifold Auto Connector (H3 Only)**

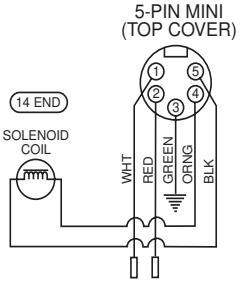


**Subbase Auto Connector**

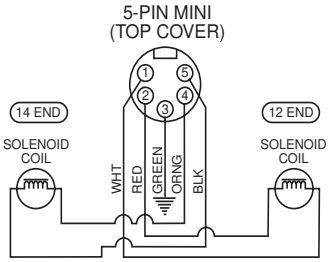
# Automotive Connection – Wiring Options

## 'C' Chrysler Connection

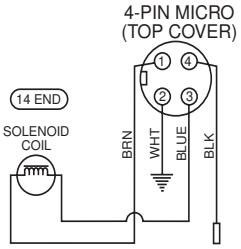
**5-Pin Male / Single Solenoid**
(Encl. Option 3, Auto Option C)



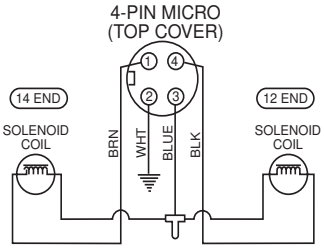

**5-Pin Male / Double Solenoid**
(Encl. Option 3, Auto Option C)




**4-Pin Male / Single Solenoid**
(Encl. Option 2, Auto Option C)

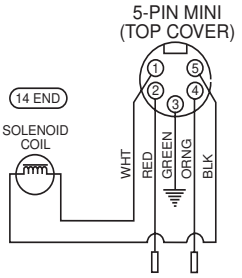



**4-Pin Male / Double Solenoid**
(Encl. Option 2, Auto Option C)

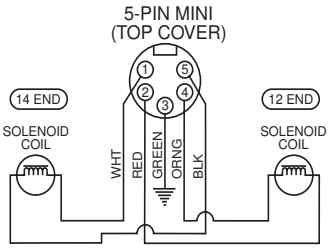



## 'F' SAE / Ford Wiring

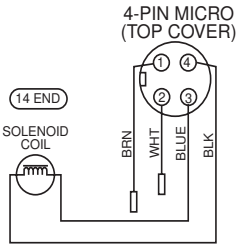
**5-Pin Male / Single Solenoid**
(Encl. Option 3, Auto Option F)



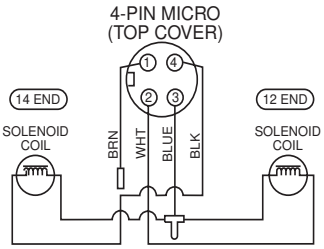

**5-Pin Male / Double Solenoid**
(Encl. Option 3, Auto Option F)




**ISO 20401**
**4-Pin Male / Single Solenoid**
(Encl. Option 2, Auto Option F)

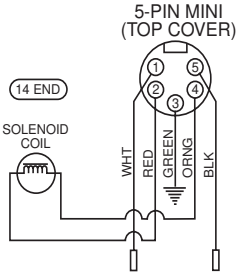



**ISO 20401**
**4-Pin Male / Double Solenoid**
(Encl. Option 2, Auto Option F)

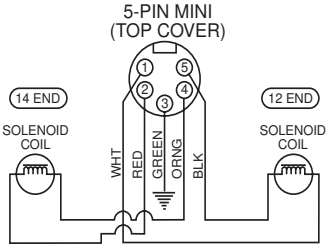



## 'G' GM Wiring

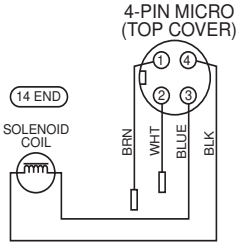
**5-Pin Male / Single Solenoid**
(Encl. Option 3, Auto Option G)



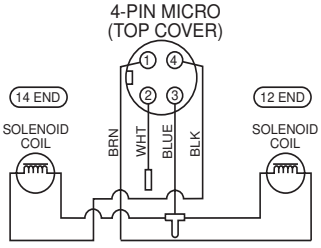

**5-Pin Male / Double Solenoid**
(Encl. Option 3, Auto Option G)




**4-Pin Male / Single Solenoid**
(Encl. Option 2, Auto Option G)

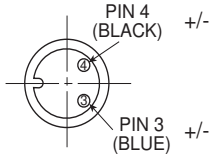



**4-Pin Male / Double Solenoid**
(Encl. Option 2, Auto Option G)

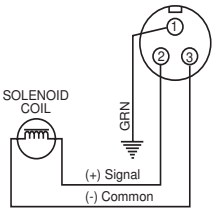



## CNOMO Connection - Wiring Options

**2-Pin Male / Single Solenoid**
(Encl. Option 6, Auto Option F)




**3-Pin Male / Single Solenoid**
(Encl. Option 1, Auto Options C, F & G)





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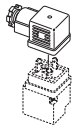
## Maximum Number of Solenoids
**(Maximum energized simultaneously)**

| HA & HB | Voltage code | 25-pin D-sub | 19-pin Brad Harrison | 12-Pin M23 | 19-pin M23 | P2M Network Node | H Series Network | Turck Network 16 Outputs | Turck Network 32 Outputs |
|---|---|---|---|---|---|---|---|---|---|
| 24VDC | G9 | 24 (24) | 16 (16) | 8 (8) | 16 (16) | 24 (24) | 32 (32) | 16 (16) | 32 (32) |
| 120VAC* | 23 | 24 (24) | 16 (16) | 8 (8) | 16 (16) | N/A | N/A | N/A | N/A |

| H1, H2 & H3 | Voltage code | 25-pin D-sub | 19-pin Brad Harrison | 12-Pin M23 | 19-pin M23 | P2M Network Node | H Series Network | Turck Network 16 Outputs | Turck Network 32 Outputs |
|---|---|---|---|---|---|---|---|---|---|
| 12VDC | 45 | 24 (13) | 16 (13) | 8 (8) | 16 (13) | N/A | N/A | N/A | N/A |
| 24VAC* | 42 | 24 (24) | 16 (16) | 8 (8) | 16 (16) | N/A | N/A | N/A | N/A |
| 24VDC | B9 | 24 (20) | 16 (16) | 8 (8) | 16 (16) | 24 (24) † | 24 (21) | 16 (16) | 24 (21) |
| 120VAC* | 23 | 24 (24) | 16 (16) | 8 (8) | 16 (16) | N/A | N/A | N/A | N/A |

* Not CSA certified for 25-pin, D-sub option.
† Use Type A IO-Link module for 24 outputs simultaneously.

## Female Electrical Connectors (IP65 Rated) 30mm, 3-Pin ISO 4400, (DIN 43650A)

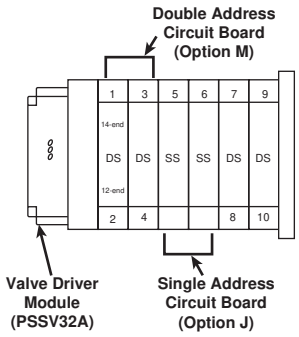


| Description | Connector with 6' (2m) cord | Connector |
|---|---|---|
| Unlighted | **PS2028JCP** | **PS2028BP** |
| Light – 6-48V, 50/60Hz; 6-48VDC | **PS2032J79CP*** | **PS203279BP** |
| Light – 120V/60Hz | **PS2032J83CP*** | **PS203283BP** |
| Light – 240V/60Hz | N/A | **PS203283BP** |

* With surge suppression.
**Engineering data:**
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 inch); Contact spacing: 18mm

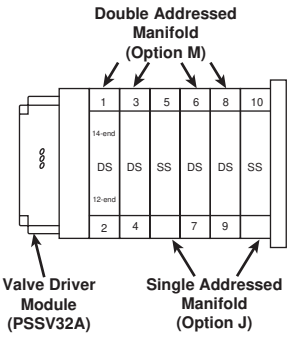
## I/O Addressing Examples

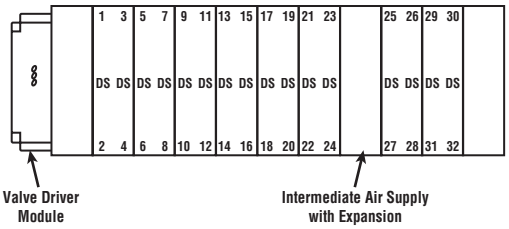
HB & HA Example
Two Station Manifold Bases




Notes: SS = Single Solenoid Valve
DS = Double Solenoid Valve
First output address the #14 end of the valve closest to the valve driver module.

H1, H2 & H3 Example:
Single Station Manifold Bases



## 5599-2 & 5599-1 AUTO Solenoid Kits

| Valve size | Voltage code | Coil kit number |
|---|---|---|
| H1, H2 & H3 | 42 (24VAC) | **PS404142P** |
| | 45 (12VDC) | **PS404145P** |
| | B9 (24VDC) | **PS4041B9P** |
| | 23 (120VAC) | **PS404123P** |
| | 57 (240VAC) | **PS404157P** |

Quantity 1

## 5599-1 CNOMO Solenoid Kits

| Voltage code | 3-pin, 30mm 'L' coil kit | 2-pin, M12 Euro '6' coil kit |
|---|---|---|
| 19 | — | **PS2828619P** |
| 42 | **P2FCA442** | — |
| 45 | **P2FCA445** | — |
| 49 | **P2FCA449** | — |
| 53 | **P2FCA453** | — |
| 57 | **P2FCA457** | — |

Quantity 1

## Pilot Operator - CNOMO

| Valve size | | Kit number |
|---|---|---|
| H1, H2 & H3 | Locking | **PS4052CP** |
| | Non-locking | **PS4053CP** |

## Manifold Hardware Kits – PS Series

| Valve size | Kit number |
|---|---|
| HB, HA, H1, H2 | **PSHU10P** |
| H3 | **PS4212P** |

Quantity 12

## Valve Bolt Kits

| Valve size | Kit number |
|---|---|
| HB | **PS5687P** |
| HA | **PS5587P** |
| H1 | **PS4087DP** |
| H2 | **PS4187DP** |
| H3 | **PS4287DP** |

Quantity 12

## Valve to Base Gasket Kits

| Valve size | Standard | Remote pilot | Dual pressure #3 | Dual pressure #5 |
|---|---|---|---|---|
| HB | **PS5605P*** | — | — | — |
| HA | **PS5505P*** | — | — | — |
| H1 | **PS4005DP** | **PS4006DP** | **PS40D3DP** | — |
| H2 | **PS4105DP** | **PS4106DP** | **PS41D3DP** | **PS41D5DP** |
| H3 | **PS4205DP** | **PS4206DP** | **PS42D3DP** | **PS42D5DP** |

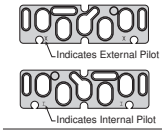
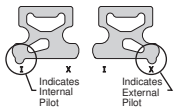
Quantity 1
* Quantity 10

## Body Service Kits

| Valve size | 2-position | 3-position | | |
|---|---|---|---|---|
| | | APB | CE | PC |
| HB | **PS5601P** | **PS5602P** | **PS5603P** | **PS5604P** |
| HA | **PS5501P** | **PS5502P** | **PS5503P** | **PS5504P** |
| H1 | **PS4001CP** | **PS4002CP** | **PS4003CP** | **PS4004CP** |
| H2 | **PS4101CP** | **PS4102CP** | **PS4103CP** | **PS4104CP** |
| H3 | **PS4201CP** | **PS4202CP** | **PS4203CP** | **PS4204CP** |

HB / HA Kit Includes: Spool assembly with seals.
H1, H2, H3 Kit Includes: Spool assembly with seals, all piston seals, return spring, pilot selector gasket, coil to end cap gasket.
Quantity 1

## Pilot Select Gasket Kits

| | Valve size | Part number |
|---|---|---|
|   | HB | **PS5605P** |
| | HA | **PS5505P** |
|   | H1, H2 & H3 | **PS4007P** |

Quantity 10

## Regulator Kits

| Valve size | Part number |
|---|---|
| H1 | **PS4039P** |
| H2, H3 | **PS4139P** |

## Regulator & Flow Control Mounting Studs

| Valve type | Type | Part number |
|---|---|---|
| HB | Flow Control & Regulator | **PS5636P** |
| HA | Flow Control & Regulator | **PS5536P** |
| H1 | Flow Control | **PS4036P** |
| | Regulator | **PS4040P** |
| H2 | Flow Control | **PS4136P** |
| | Regulator | **PS4140P** |
| H3 | Flow Control | **PS4236P** |
| | Regulator | **PS4240P** |

Quantity 12

## Regulator Gauge Kits – Size H1, H2 & H3

| Gauge type | | Part number |
|---|---|---|
| **1" Face Air - Standard** | | |
| | 0 to 60 PSIG | **PS4051060BP** |
| | 0 to 160 PSIG | **PS4051160BP** |
| **1-1/2" Face Air - Large*** | | |
| | 0 to 60 PSIG | **PS4053060BP** |
| | 0 to 160 PSIG | **PS4053160BP** |
| **1-1/2" Face Liquid*** | | |
| | 0 to 160 PSIG | **PS4052160BP** |

*** Includes brass pipe fitting extensions**
**Quantity 1**

## Regulator Spring Range Kits – Size H1, H2 & H3

| Spring range | Valve size | Part number |
|---|---|---|
| 0 to 30 PSIG | H1 | **PS4050030P** |
| | H2, H3 | **PS4150030BP** |
| 2 to 60 PSIG | H1 | **PS4050060P** |
| | H2, H3 | **PS4150060BP** |
| 5 to 125 PSIG | H1 | **PS4050125P** |
| | H2, H3 | **PS4150125BP** |

**Quantity 1**

## Regulator Conversion Kits – Size H1, H2 & H3

| Valve size | Description | Part number |
|---|---|---|
| H1 | Manual Bonnet Assembly (w/o Spring) | **PS4045BP** |
| | Air Pilot Bonnet Assembly | **PS4047BP** |
| | Independent By-Pass Plate | **PS4048BP** |
| H2, H3 | Manual Bonnet Assembly (w/o Spring) | **PS4145BP** |
| | Air Pilot Bonnet Assembly | **PS4147BP** |
| | Independent By-Pass Plate | **PS4148BP** |

**Quantity 1**

## Pilot By-Pass Plate

| Valve size | Part number |
|---|---|
| H1, H2, H3 | **PS4051CP** |

Quantity 10

## Valve Driver Module

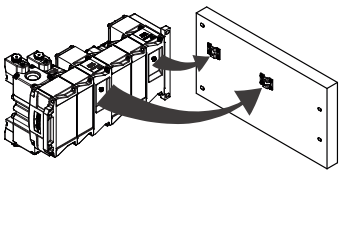
| | Driver Module | Part number |
|---|---|---|
|  | 32 Point Module – HB, HA, H1, H2, H3 | **PSSV32A*†** |

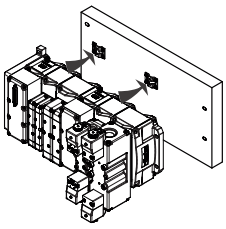
**PSSV32A**

* Reference Document E100P for Installation Instructions. See www.pdnplu.com

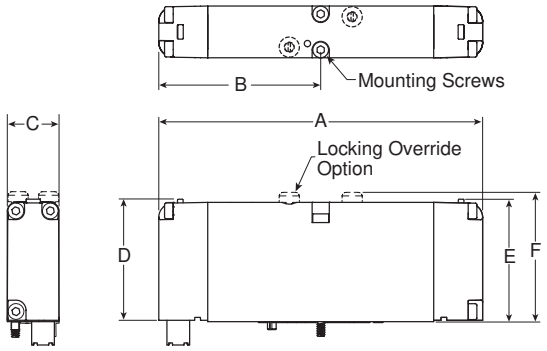
## Installation Bracket

| | Bracket | Part number |
|---|---|---|
|  | Bracket and Bolt (Quantity 2) | **PSHU60P** |





## H Series ISO 15407-2, Plug-in, Size 18mm (HB)



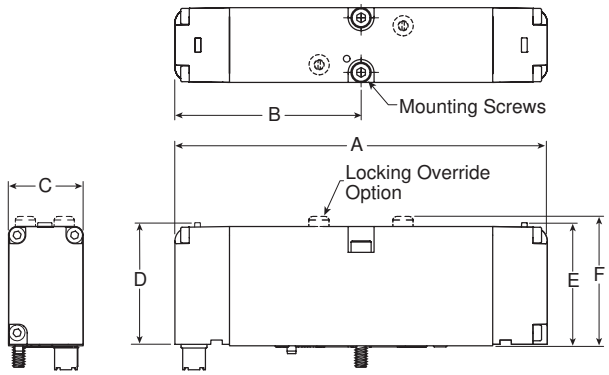

**18mm Dimensions**

| A | B | C | D |
|---|---|---|---|
| 4.43 (113) | 2.22 (56) | .72 (18) | 1.98 (50) |

| E | F |
|---|---|
| 1.68 (43) | 1.77 (45) |

Inches (mm)

## H Series ISO 15407-2, Plug-in, Size 26mm (HA)



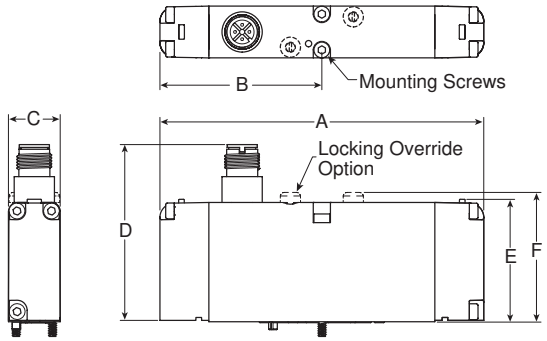

**26mm Dimensions**

| A | B | C | D |
|---|---|---|---|
| 5.10 (130) | 2.55 (65) | 1.02 (26) | 1.98 (50) |

| E | F |
|---|---|
| 1.68 (43) | 1.77 (45) |

Inches (mm)

## H Series ISO 15407-1, Non Plug-in, Size 18mm (HB)



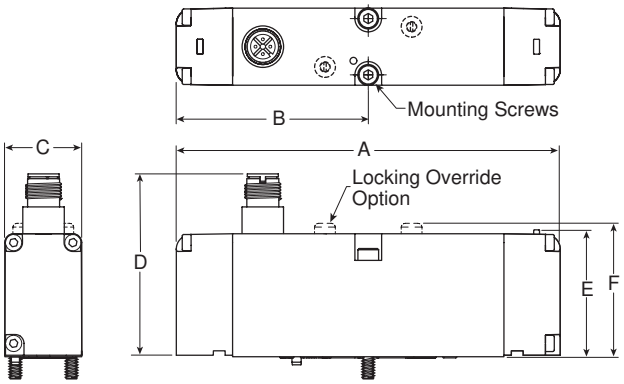

**18mm Dimensions**

| A | B | C | D |
|---|---|---|---|
| 4.43 (113) | 2.22 (56) | .72 (18) | 2.40 (61) |

| E | F |
|---|---|
| 1.68 (43) | 1.77 (45) |

Inches (mm)

## H Series ISO 15407-1, Non Plug-in, Size 26mm (HA)




**26mm Dimensions**

| A | B | C | D |
|---|---|---|---|
| 5.10 (130) | 2.55 (65) | 1.02 (26) | 2.40 (61) |

| E | F |
|---|---|
| 1.68 (43) | 1.77 (45) |

Inches (mm)





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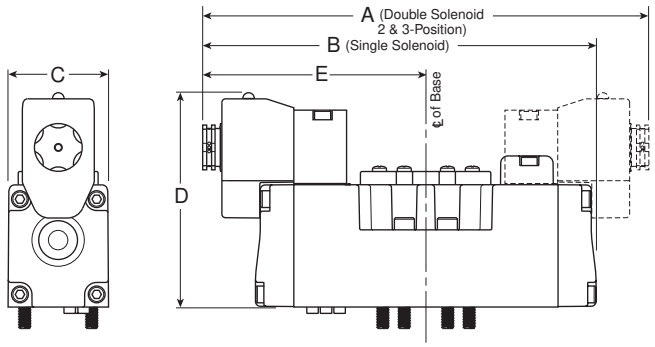
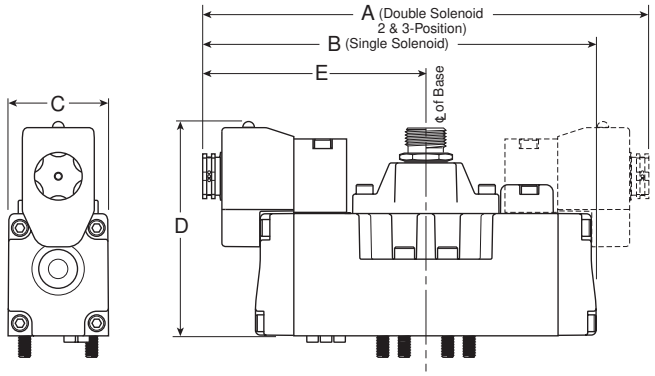
## H Series ISO 5599-2

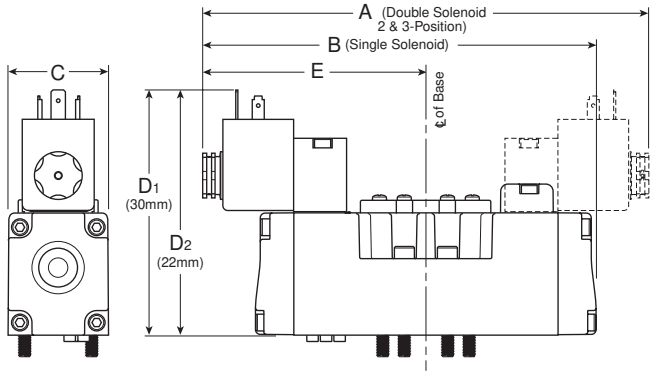



**H1 Valves Shown**

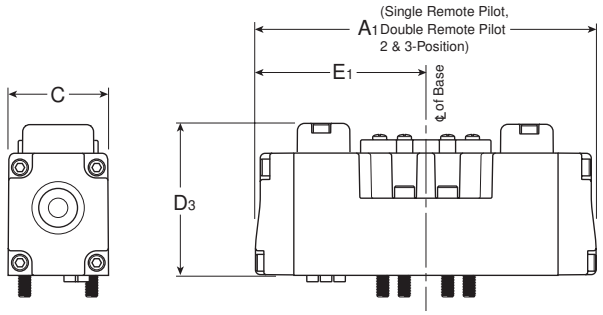
## H Series ISO 5599-1 Auto




## H Series ISO 5599-1 CNOMO




## H Series ISO 5599-2 / 5599-1 Remote Pilot




### H1 Dimensions

| A | A1 | B | C |
|---|---|---|---|
| 7.32 (186) | 5.59 (142) | 6.46 (164) | 1.65 (42) |
| **D** | **D1** | **D2** | **D3** |
| 3.54 (90) | 4.29 (109) | 4.29 (109) | 2.50 (63.5) |
| **D4** | **E** | **E1** | |
| 2.48 (63) | 3.66 (93) | 2.80 (71) | |

Inches (mm)

### H2 Dimensions

| A | A1 | B | C |
|---|---|---|---|
| 8.35 (212) | 6.62 (168) | 7.48 (190) | 2.17 (55) |
| **D** | **D1** | **D2** | **D3** |
| 4.05 (103) | 4.80 (122) | 4.57 (116) | 2.99 (76) |
| **E** | **E1** | | |
| 4.17 (106) | 3.31 (84) | | |

Inches (mm)

### H3 Dimensions

| A | A1 | B | C |
|---|---|---|---|
| 9.68 (246) | 6.98 (177) | 8.68 (220) | 2.17 (55) |
| **D** | **D1** | **D2** | **D3** |
| 4.05 (103) | 4.80 (122) | 4.57 (116) | 2.99 (76) |
| **E** | **E1** | | |
| 4.74 (121) | 3.49 (89) | | |

Inches (mm)





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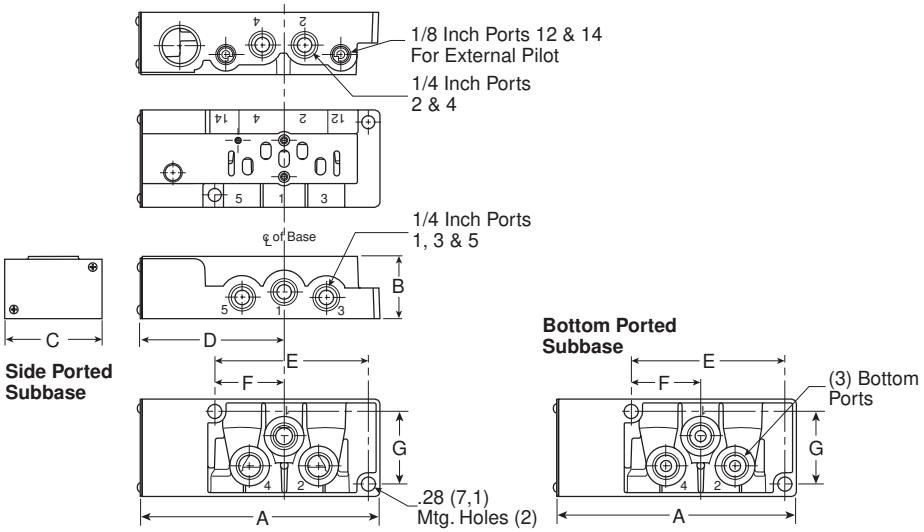
## H Series ISO 15407-2 & 15407-1 Size 26mm (HA), Plug-in Subbases

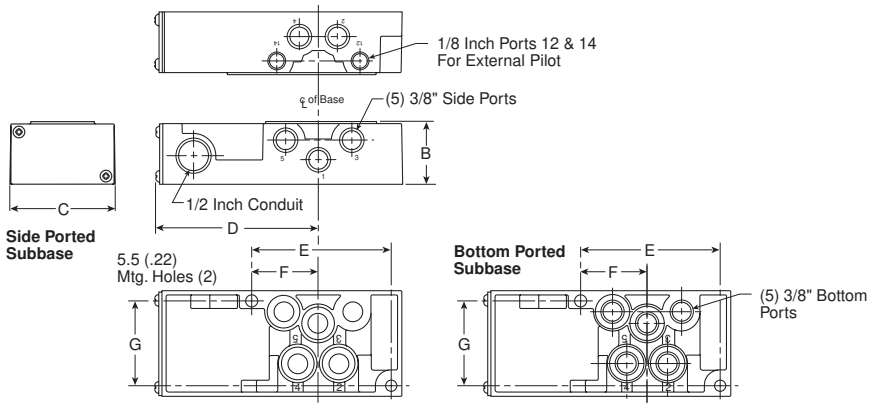



**HA Dimensions**

| A | B | C | D |
|---|---|---|---|
| 4.88 (124) | 1.28 (32.5) | 2.00 (50.8) | 2.91 (74) |
| **E** | **F** | **G** | |
| 1.43 (36.2) | 3.16 (80.2) | 1.49 (37.9) | |

Inches (mm)

## H Series ISO 5599-1 Size H1, PS4011 Subbase



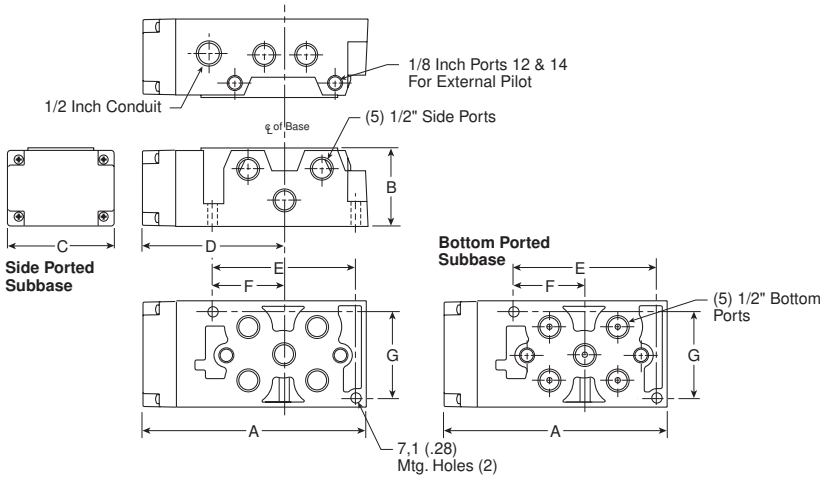

**PS4011 Subbase Dimensions**

| A | B | C | D |
|---|---|---|---|
| 5.83 (148) | 1.48 (38) | 2.50 (64) | 3.86 (98) |

| E | F | G |
|---|---|---|
| 3.29 (84) | 1.57 (40) | 2.00 (51) |

Inches (mm)

## H Series ISO 5599-1 Size H2, PS4111 Subbase



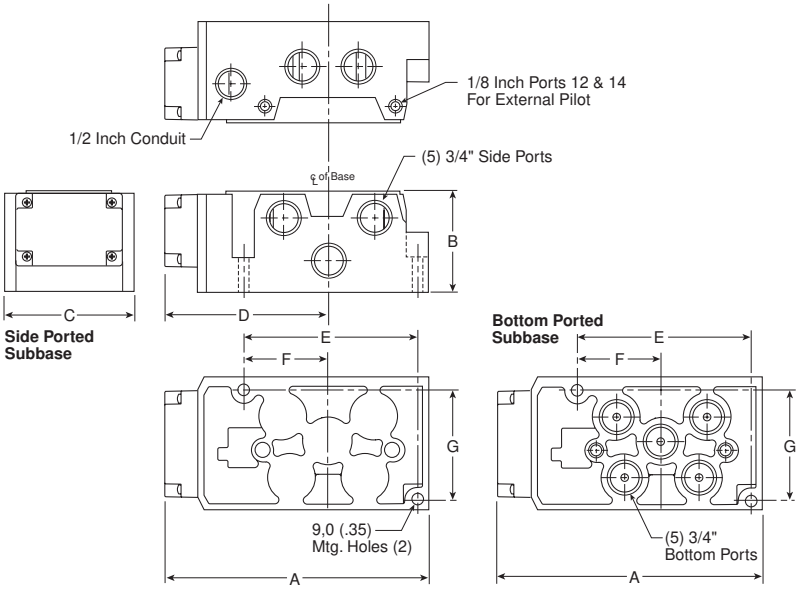

**PS4111 Subbase Dimensions**

| A | B | C | D |
|---|---|---|---|
| 6.69 (170) | 2.33 (59) | 3.15 (80) | 4.25 (108) |

| E | F | G |
|---|---|---|
| 4.21 (107) | 2.07 (52) | 2.56 (65) |

Inches (mm)

## H Series ISO 5599-1 Size H3, PS4211 Subbase



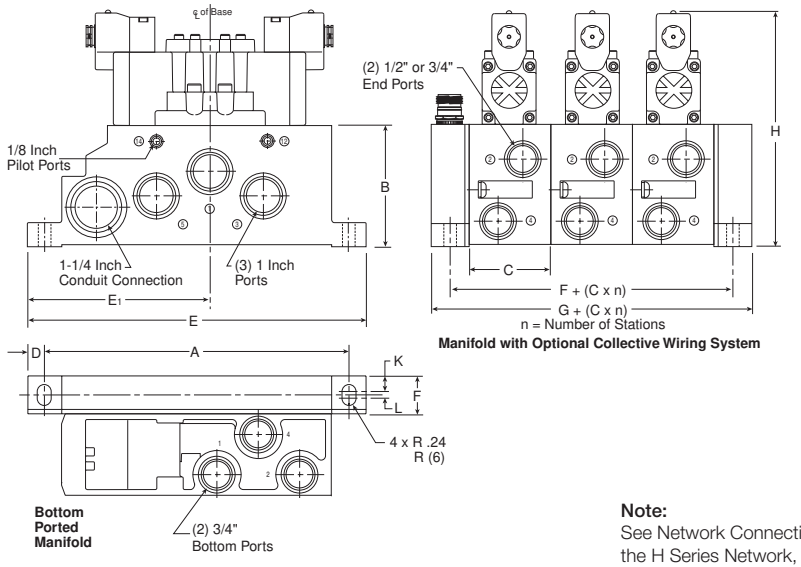

### PS4211 Subbase Dimensions

| A | B | C | D |
|---|---|---|---|
| 7.90 (201) | 2.96 (75) | 3.90 (99) | 4.92 (125) |

| E | F | G |
|---|---|---|
| 5.14 (131) | 2.50 (64) | 3.24 (82) |

Inches (mm)

## H Series ISO 5599 Size H3, PS4211 Manifold




### PS4211 Manifold Dimensions

| A | B | C | D | E |
|---|---|---|---|---|
| 10.41 (265) | 4.13 (105) | 2.80 (71) | .59 (15) | 11.61 (295) |

| $E_1$ | F | G | H |
|---|---|---|---|
| 6.26 (159) | 1.30 (33) | 2.60 (63) | 8.19 (208) |

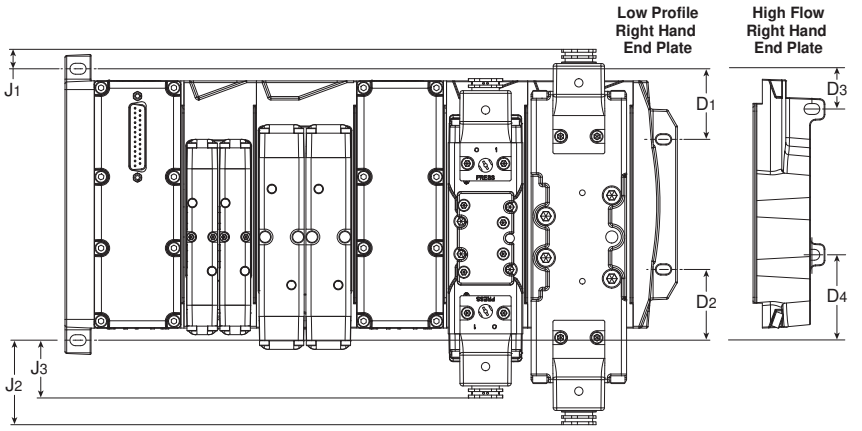
| K | L |
|---|---|
| .53 (13.5) | .24 (6) |

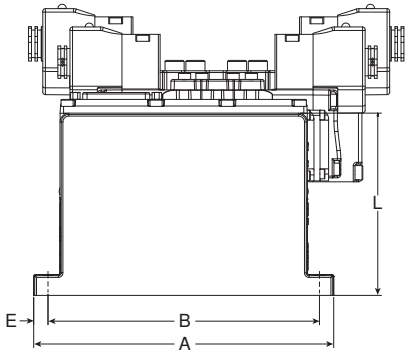
Inches (mm)

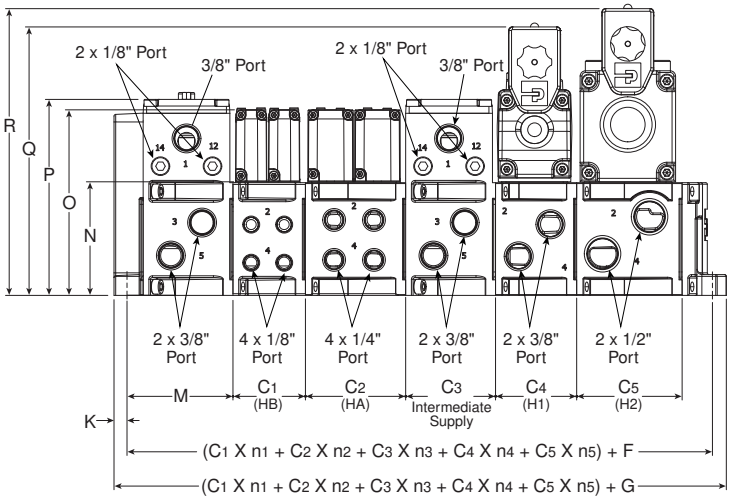
**Note:**
See Network Connectivity Section for the dimensions of manifolds utilizing the H Series Network, Turck Network, or P2M Network Node end plate type.

## H Series ISO Universal Manifold

Network Connectivity dimensions (P2H, Turck, H Net, and P2M) are located at the end of the Network Connectivity Section.



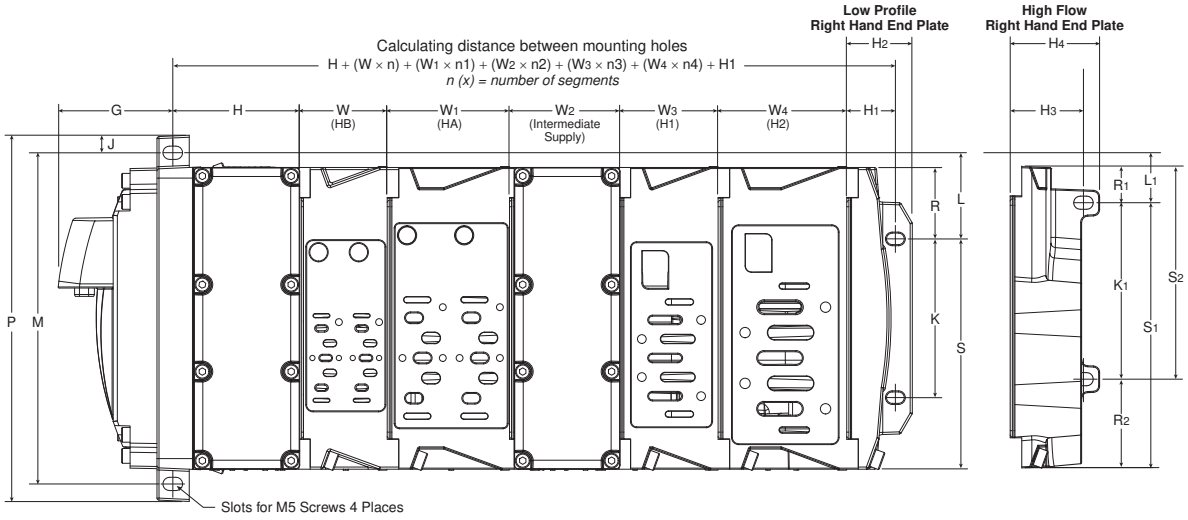




| A | B | C1 | C2 | C3 | C4 |
|---|---|---|---|---|---|
| 6.81 (172.95) | 6.16 (156.5) | 1.65 (41.79) | 2.28 (57.79) | 2.04 (51.79) | 1.84 (46.79) |
| **C5** | **D1** | **D2** | **D3** | **D4** | **F** |
| 2.39 (60.79) | 1.60 (40.71) | 1.60 (40.71) | 0.96 (24.3) | 1.92 (48.8) | 3.09 (78.58) |
| **G** | **J1** | **J2** | **J3** | **K** | **L** |
| 4.39 (111.58) | 0.44 (11.2) | 1.92 (48.7) | 1.31 (33.3) | 0.30 (7.5) | 4.14 (105.08) |
| **M** | **N** | **O** | **P** | **Q** | **R** |
| 2.40 (61.08) | 1.92 (48.7) | 4.21 (107) | 4.45 (113) | 6.09 (154.77) | 6.51 (165.32) |

Inches (mm)

## 25-Pin Side with H Series ISO Valves



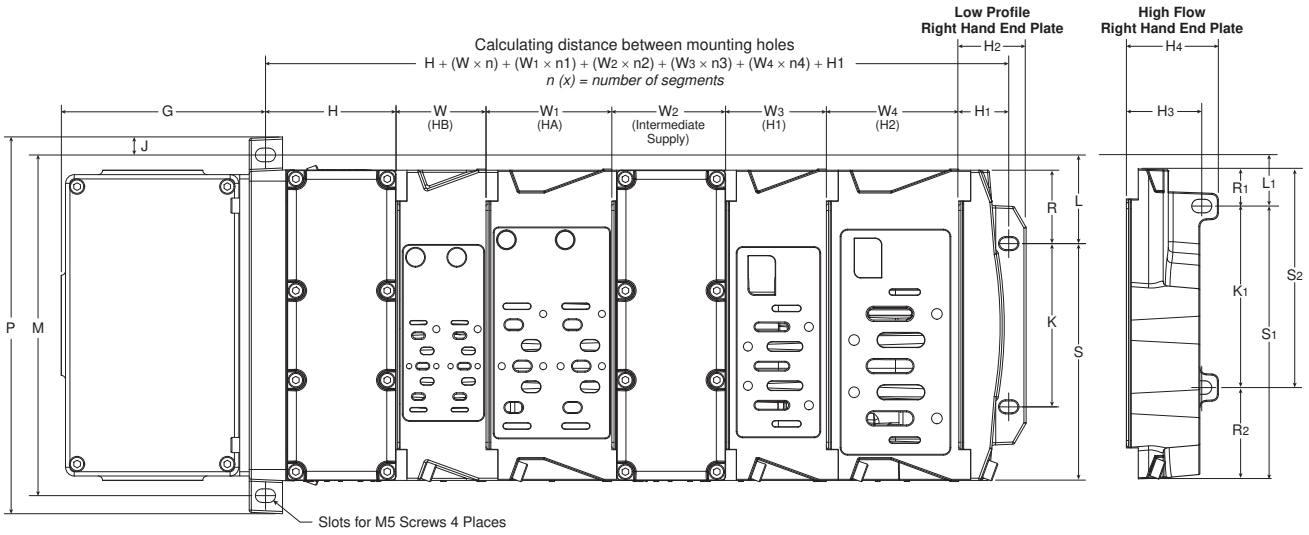

**n (x)** = number of segments

| G | H | H1 | H2 | H3 | H4 | J | K | K1 | L | L1 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.13 | 2.36 | 0.90 | 1.22 | 1.36 | 1.66 | 0.33 | 2.95 | 3.28 | 1.60 | 0.96 | 6.16 |
| (54.0) | (60.0) | (23.0) | (31.0) | (34.6) | (42.3) | (8.3) | (75.0) | (83.4) | (40.7) | (24.3) | (156.5) |

| P | S | S1 | S2 | R | R1 | R2 | W | W1 | W2 | W3 | W4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.81 | 4.28 | 4.93 | 3.96 | 1.33 | 0.68 | 1.6 | 1.63 | 2.28 | 2.06 | 1.82 | 2.39 |
| (173.1) | (108.8) | (125.2) | (100.7) | (33.7) | (17.3) | (41.8) | (41.3) | (57.8) | (52.3) | (46.3) | (60.8) |

Inches (mm)

## Terminal Block with H Series ISO Valves



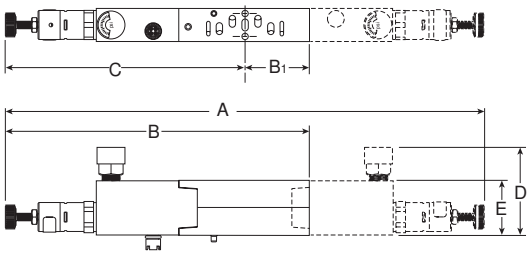

**n (x)** = number of segments

| G | H | H1 | H2 | H3 | H4 | J | K | K1 | L | L1 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.69 (93.8) | 2.36 (60.0) | 0.90 (23.0) | 1.22 (31.0) | 1.36 (34.6) | 1.66 (42.3) | 0.33 (8.3) | 2.95 (75.0) | 3.28 (83.4) | 1.60 (40.7) | 0.96 (24.3) | 6.16 (156.5) |

| P | S | S1 | S2 | R | R1 | R2 | W | W1 | W2 | W3 | W4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.81 (173.1) | 4.28 (108.8) | 4.93 (125.2) | 3.96 (100.7) | 1.33 (33.7) | 0.68 (17.3) | 1.65 (41.8) | 1.63 (41.3) | 2.28 (57.8) | 2.06 (52.3) | 1.82 (46.3) | 2.39 (60.8) |

Inches (mm)

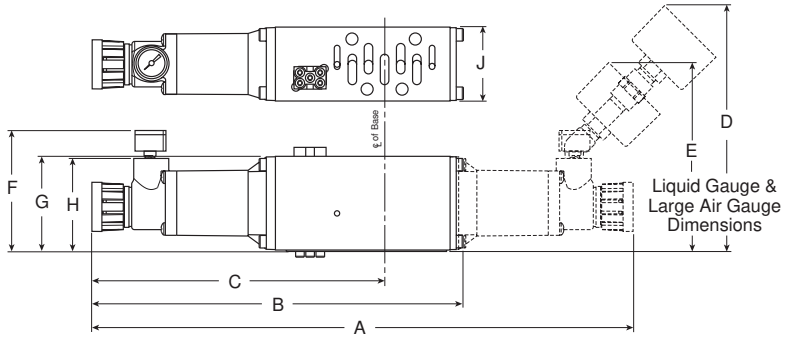
## H Series ISO 15407, HB / HA Sandwich Regulator




| Series | Part number | A | B | B1 | C | D | E |
|---|---|---|---|---|---|---|---|
| HB | **PS5637** | 10.28 (261) | 6.14 (156) | 1.02 (26) | 5.13 (130) | 2.60 (66) | 1.18 (30) |
| HA | **PS5537** | 10.00 (254) | 6.42 (163) | 1.42 (36) | 5.00 (127) | 2.72 (69) | 1.18 (30) |

Inches (mm)

## H Series ISO 5599, Size H1 Sandwich Regulator

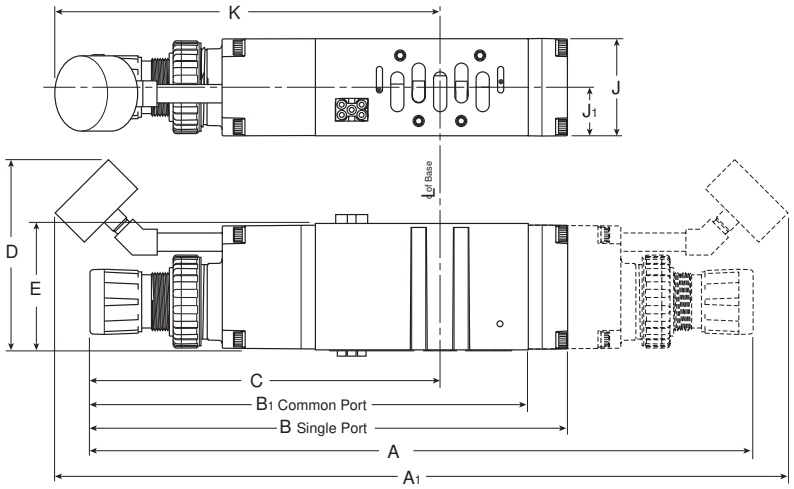



| Series | Part number | A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|
| H1 | **PS4037** | 11.84 (301) | 8.13 (207) | 6.40 (163) | 5.45 (138 | 4.25 (108) | 2.85 (72) | 2.09 (53) | 2.05 (52) | 1.63 (41) |
| | **PS4038** | | | | | | | | | |

Inches (mm)

## H Series ISO 5599, Size H2 & H3 Sandwich Regulator

### H2 Sandwich Regulator Shown

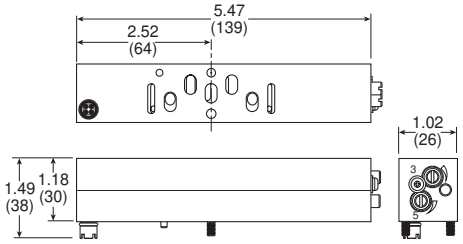



| Series | Part number | A | A1 | B | B1 | C | D | E | J | J1 | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H2 | **PS4137** | 14.65 (372 | 16.18 (411) | 10.56 (268) | 9.84 (250 | 7.71 (196) | 4.20 (107) | 2.80 (71) | 2.15 (55) | 1.07 (27) | 8.50 (216) |
| | **PS4138** | | | | | | | | | | |
| H3 | **PS4237** | 15.67 (398) | 17.15 (436) | 11.53 (293) | 10.67 (271) | 8.37 (213) | 4.20 (107) | 2.93 (75) | 2.50 (64) | 1.25 (32) | 9.10 (231) |
| | **PS4238** | | | | | | | | | | |

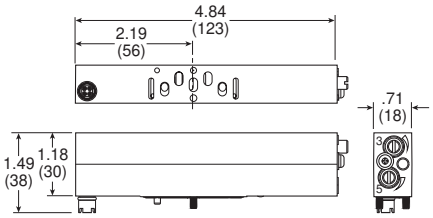
Inches (mm)

## H Series ISO 15407, Size 18mm (HB) & 26mm (HA), Flow Control

### HA Flow Control

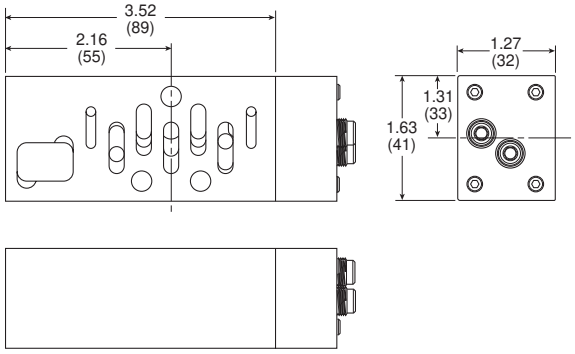



### HB Flow Control

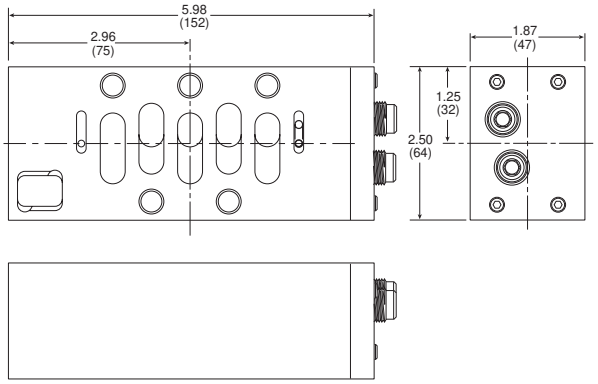



## H Series ISO 5599, Size H1, H2 & H3, Flow Control

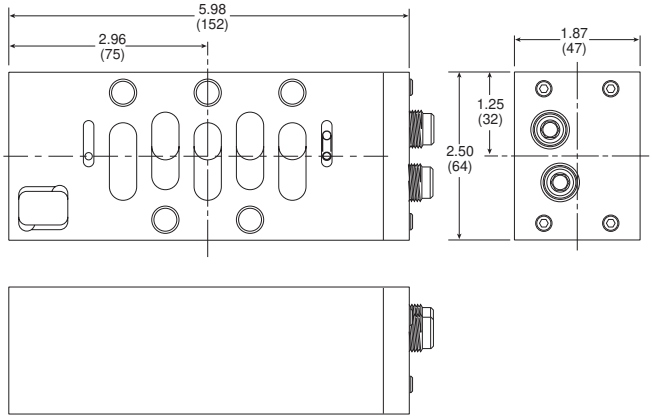
### H1 Flow Control




### H2 Flow Control




### H3 Flow Control



# Network Connectivity

## Offering

| Valve series | P2M | P2H | H Series | Turck |
|---|---|---|---|---|
| Moduflex | X | | | |
| H Series Micro | X | | X | X |
| H Series ISO | X | X | X | X |

| Protocol | P2M | P2H | H Series | Turck |
|---|---|---|---|---|
| IO-Link | X | X | | |
| DeviceNet | X | | X | X |
| Ethernet/IP | X | | X | X |
| PROFIBUS-DP | X | | X | X |
| PROFINET | X | | | X |
| Modbus/TCP | X | | | X |
| EtherCAT | X | | | |
| PowerLink | X | | | |
| AS-i | X | | | |
| CANopen | X | | | X |
| InterBus-S | X | | | |
| ControlNet | | | X | |

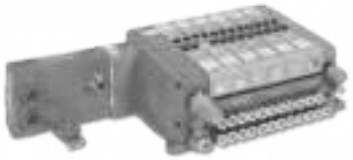
| Options | P2M | P2H | H Series | Turck |
|---|---|---|---|---|
| Digital inputs / outputs* | X | | X | X |
| Analog inputs / outputs | | | X | X |
| Class A IO-Link master module | | | | X |
| 24 Solenoid control** | X | X | | X |
| 32 Solenoid control | | | X | X |
| Short circuit protection on inputs | | | | X |
| Current sensing outputs | | | | X |
| Bus expansion | | | X | |
| DeviceNet subnet | | | | X |
| Programmable comm modules | | | | X |
| Power over DeviceNet / CANopen | | | | X |
| Preferred connectivity | | | X | |
| CANopen expansion | | | | X |

* P2M AS-i modules are available with 6 or 8 inputs and 6 or 8 solenoid outputs.

** P2M DeviceNet, Profibus, AS-I, CANopen, Interbus-S, and ControlNet only 16 solenoids

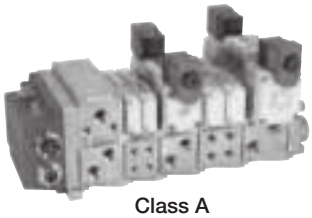
### P2M Network Nodes (shown on H Micro & Moduflex)

Moduflex

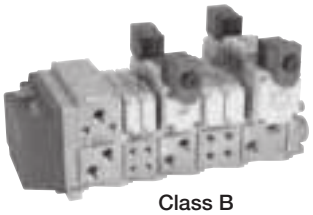


H Micro

### P2H Network Nodes (shown on H Series ISO)

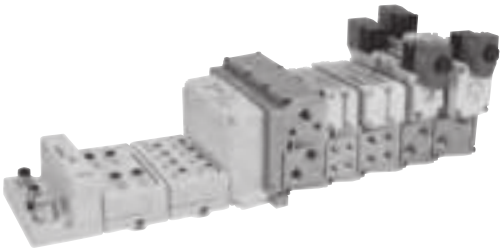


Class A

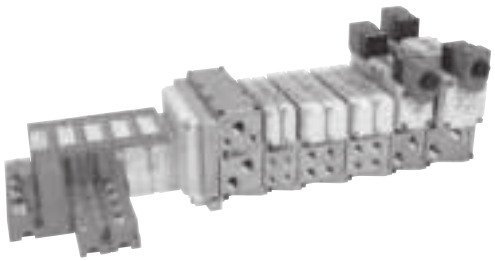


Class B

### H Series Network Portal (shown on H Series ISO)

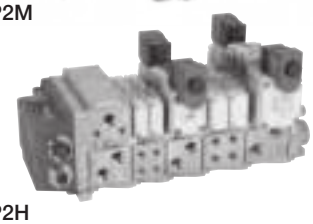


### Turck Network Portal (shown on H Series ISO)



## P2M & P2H Network Nodes: Network diagnostics made simple!

P2M

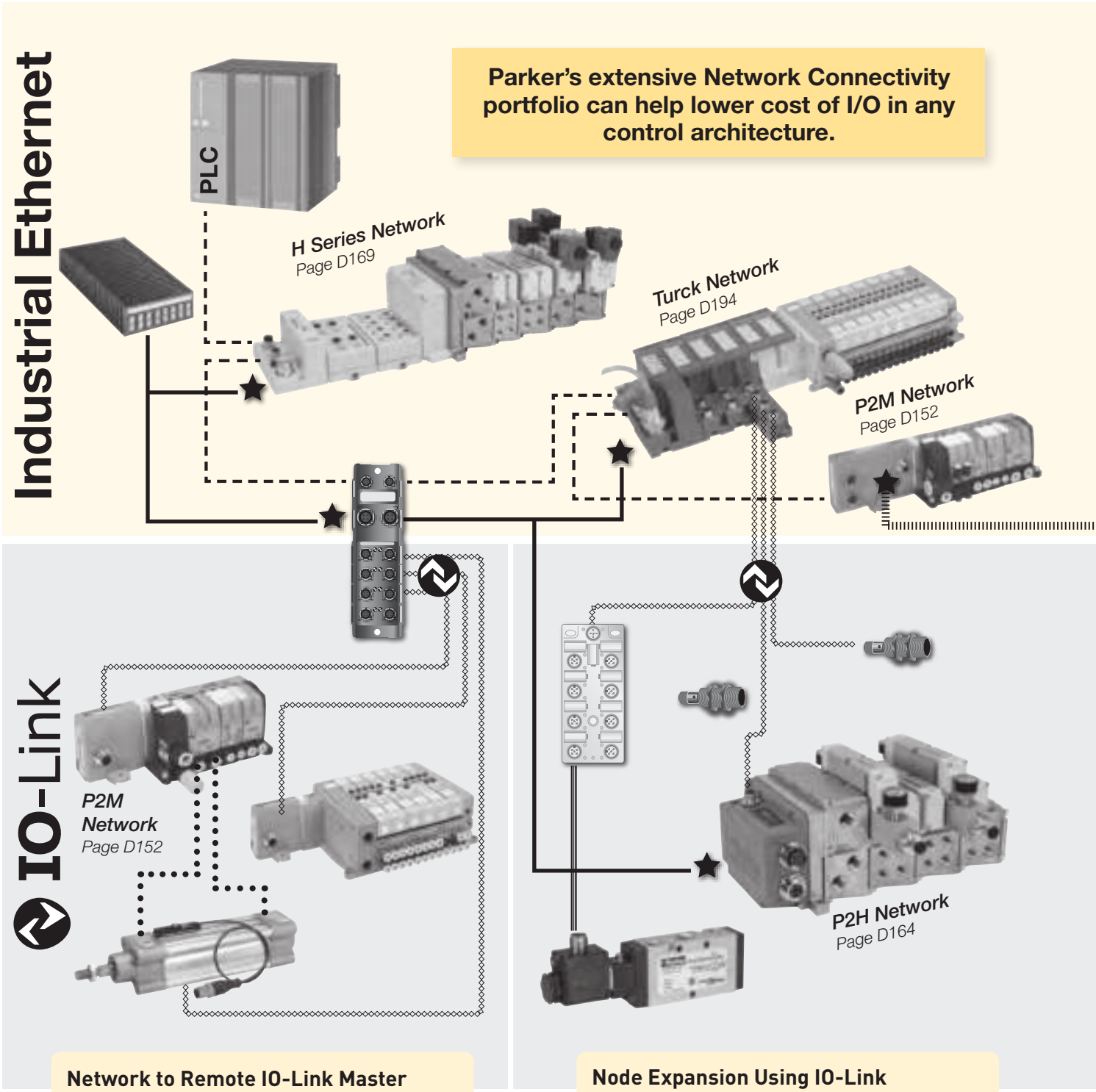


P2H

Standard on any IO-Link or Industrial Ethernet protocol

- Useful diagnostic flags in process (cyclic) data for easy access
  - Voltage warnings
  - Internal communication error & more
- Detailed diagnostic information in parameter (acyclic) data
  - Cycle count for each solenoid

Add on Instructions / Function Blocks are also available!




**Parker's extensive Network Connectivity portfolio can help lower cost of I/O in any control architecture.**

### Network to Remote IO-Link Master

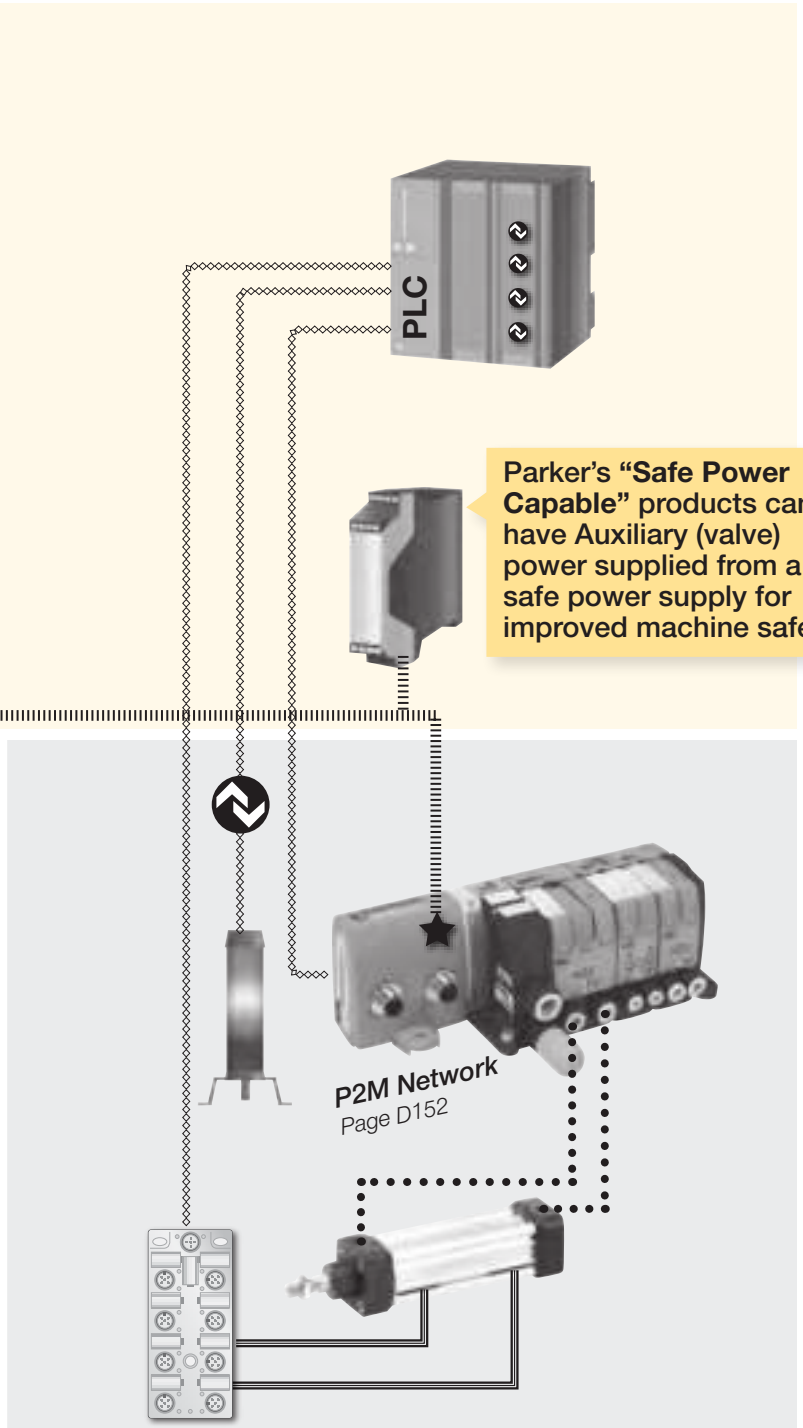
Reduce cabinet size by using a de-centralized "on-machine" IO-Link Master

* Control all local I/O with IO-Link Masters
  - Discrete I/O
  - "Smart" I/O
  - P2M IO-Link Class B & CPS pictured
    see www.parker.com/pdn/CPS

### Node Expansion Using IO-Link

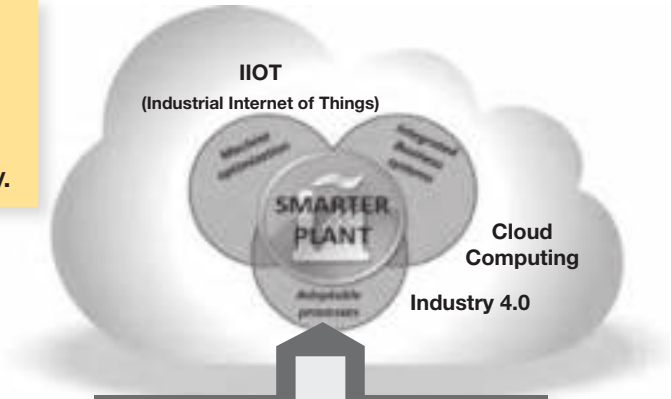
Reduce node count by adding an IO-Link Master module onto BL67 manifold

* 20m max length for I/O-Link cables
* Control all "smart I/O" on 1 node
* Reduce cost of secondary valve manifold
  - P2H IO-Link Class A pictured
    see www.parker.com/pdn/P2H_IOL




Parker's **"Safe Power Capable"** products can have Auxiliary (valve) power supplied from a safe power supply for improved machine safety.

- Industrial Network
- IO-Link
- Discrete Wired Input / Output
- 24 VDC Power
- 24 VDC SAFE Power
- Pneumatic




**IO-Link** is another step towards the smarter plant by lowering the cost for gathering component level prognostics and diagnostics.

Out of Tolerance Warnings
* Voltage
* Temperature

Error Descriptors
* Solenoid short circuit
* IO-Link communication error cycle count for each valve

**Non-Network I/O Control Using IO-Link**

Use PLC with integrated IO-Link Master for machines with smaller I/O counts

* 20m max length for I/O-Link cables
* Control all local I/O with IO-Link
  - Discrete I/O
  - "Smart" I/O
  - P2M IO-Link Class A pictured

**THIS IS EASIER**
Faster installation than discrete wiring
Standard IP67 M12 cable

**THIS IS SAVINGS**
Fewer network nodes
Easy expandability

**THIS IS VALUE**
Easy access diagnostics
Prognostics to prevent downtime

## System Overview - Discrete Wiring

- Up to 24 solenoids per manifold
- Discretely wired solenoids - optimized for PLCs with onboard inputs and outputs
- 25-Pin D-Sub, 19-Pin Brad Harrison or M23, or 12-Pin M23 connectors available

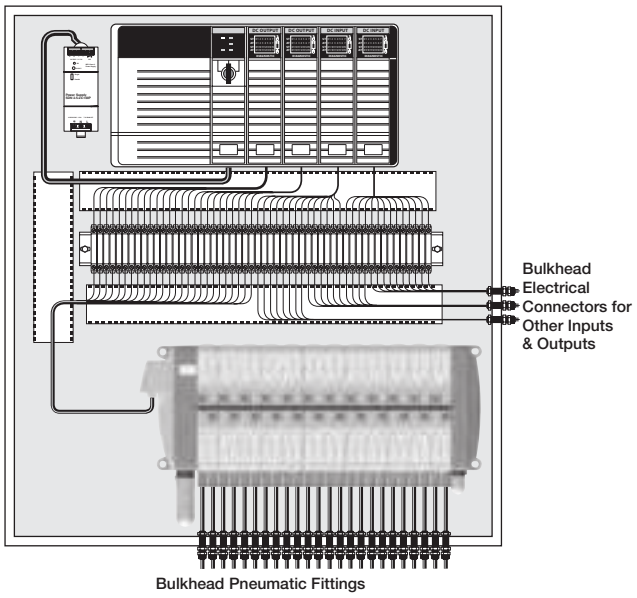
### Centralized Application

**Valves Inside Control Cabinet**

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

**Disadvantages**

- Difficult to troubleshoot
- Difficult to maintain
- Expensive bulkhead fittings
- Long wiring time in cabinet



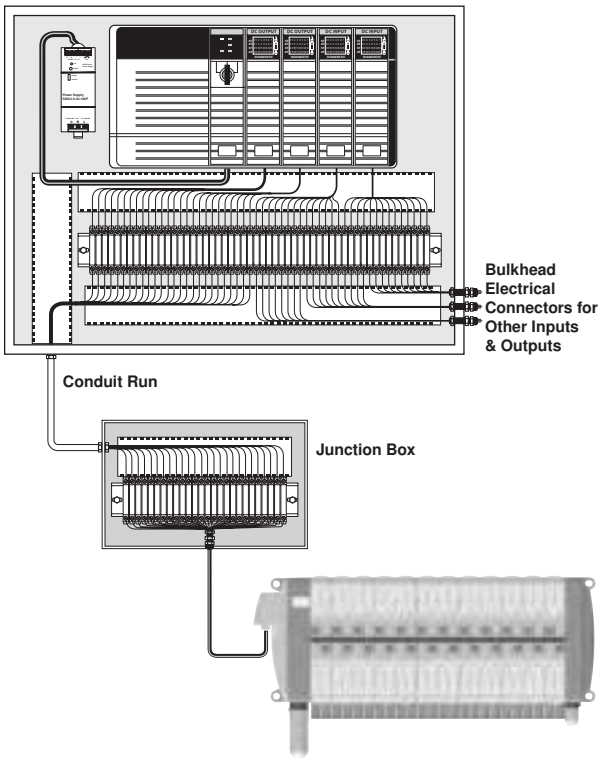

### De-centralized Application

**Valves Outside Control Cabinet**

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

**Disadvantages**

- Difficult to troubleshoot
- Difficult to maintain
- Long wiring time in cabinet
- Long wiring time in junction box



## System Overview - P2M Network Node

- Up to 24 solenoids per manifold
- Optimized for PLCs with network capability
- Routinely used on medium sized machines
- Connectivity to Moduflex, H Series Micro and H Series ISO valves

### Centralized Application

**Valves Inside Control Cabinet**

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures
- Additional inputs and outputs are not directly attached to valve manifold

**Advantages**

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space
- Eliminates terminal strips and wire ways for valves
- Greatly reduces wiring time
- Eliminates junction boxes for valves
- Eliminates conduit runs for valves

### De-centralized Application

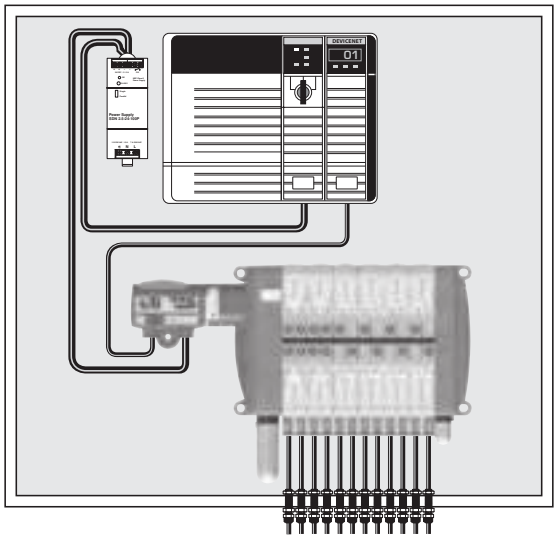
**H Series Micro Outside Control Cabinet**

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments
- Additional inputs and outputs are not directly attached to valve manifold

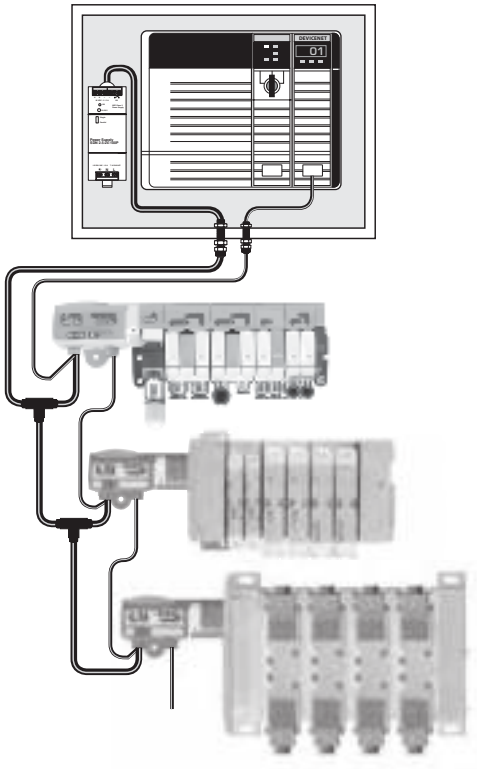
**Advantages**

- Smallest control cabinet
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet
- Many network nodes can be attached to the network with little incremental cost – valve manifolds, inputs, outputs and other devices
- Eliminates terminal strips and wire ways for valves
- Greatly reduces wiring time
- Eliminates junction boxes for valves
- Eliminates conduit runs for valves

IO-Link INTERBUS-S PROFIBUS PROCESS FIELD BUS
ETHERNET POWERLINK CANopen PROFINET INDUSTRIAL ETHERNET
DeviceNet EtherCAT AS-i INTERFACE
EtherNet/IP Modbus



**Bulkhead Pneumatic Fittings**



## System Overview - H Series Network Portal

- Up to 32 solenoids per manifold
- With H Series Micro bus extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same node
- Add inputs and outputs to the H Series Network Portal
- Optimized for PLC's with network capability
- Connectivity to H Series Micro and H Series ISO valves

### Centralized Application

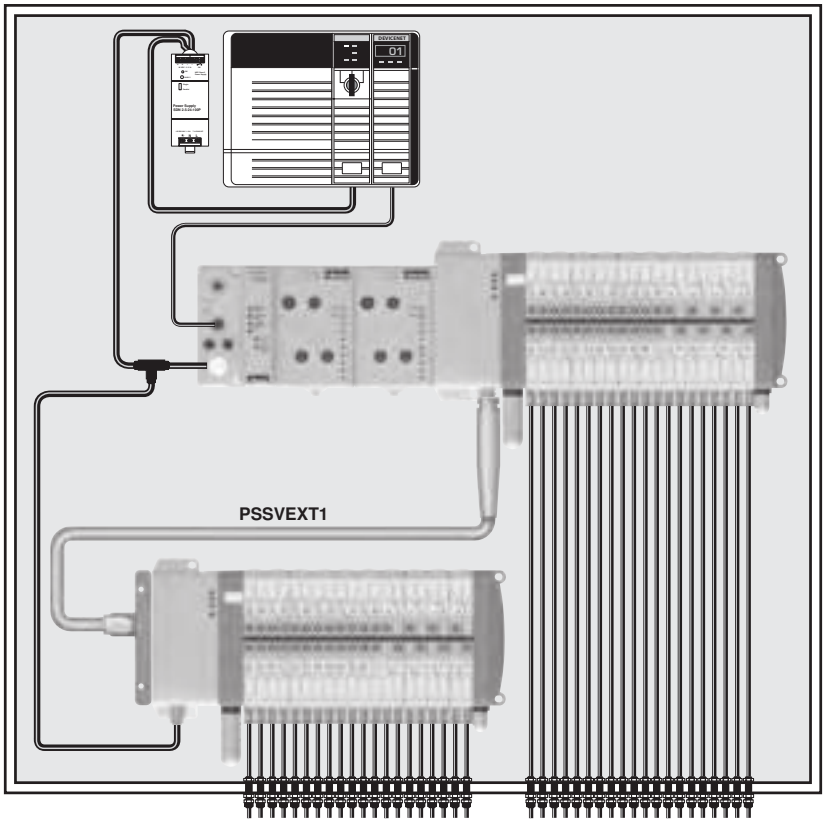
**Valves Inside Control Cabinet**

- H Series Network Portal with inputs and outputs
- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures
- Additional inputs and outputs are directly attached to valve manifold

**Advantages**

- Handle all I/O from one node
- Eliminate PLC input / output cards
- Up to 128 solenoids per node with bus extension cables
- Up to 256 inputs and 256 outputs per H Series Network node
- Analog inputs / outputs available
- Highest degree of environmental protection
- One location for all control devices
- Eliminates terminal strips and wire ways
- Greatly reduces wiring time

DeviceNet™ EtherNet/IP™ ControlNet™ PROFIBUS PROCESS FIELD BUS




Bulkhead Pneumatic Fittings

## System Overview - H Series Network Portal

- Up to 32 solenoids per manifold
- With H Series Micro bus extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same node
- Add inputs and outputs to the H Series Network
- Optimized for PLC's with network capability
- Connectivity to H Series Micro and H Series ISO valves

### De-centralized Application

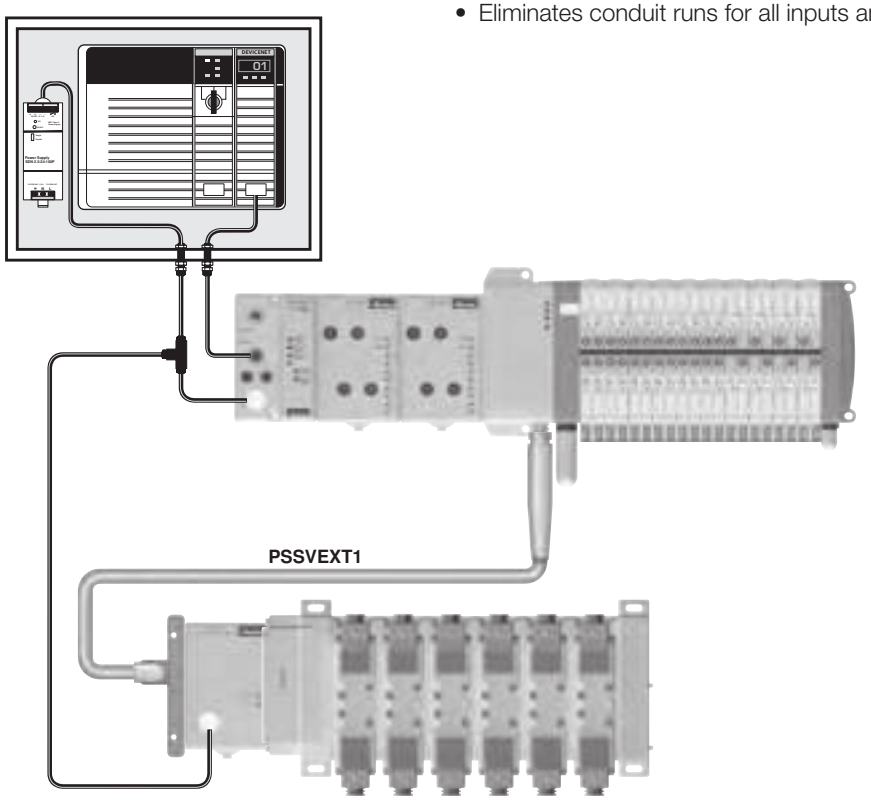
**Valves Outside Control Cabinet**

- H Series Network Portal with inputs and outputs
- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments
- Additional inputs and outputs are directly attached to valve manifold

DeviceNet™ EtherNet/IP™ ControlNet™ PROFIBUS PROCESS FIELD BUS

**Advantages**

- Handle all I/O from one node
- Eliminate PLC input / output cards
- Up to 128 solenoids per node with bus extension cables
- Up to 256 inputs and 256 outputs per H Series Network nodes
- Analog Inputs / outputs available
- Smallest control cabinet
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet
- Many network nodes can be attached to the network with little incremental cost – valve manifolds, inputs, outputs and other devices.
- Eliminates terminal strips and wire ways
- Greatly reduces wiring time
- Eliminates junction boxes for all inputs and outputs
- Eliminates conduit runs for all inputs and outputs



## System Overview - Turck Network Portal

### General Product Features

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves system

### Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Optimized for PLC's with network capability
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

## Centralized Application

### Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

### Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

## De-centralized Application

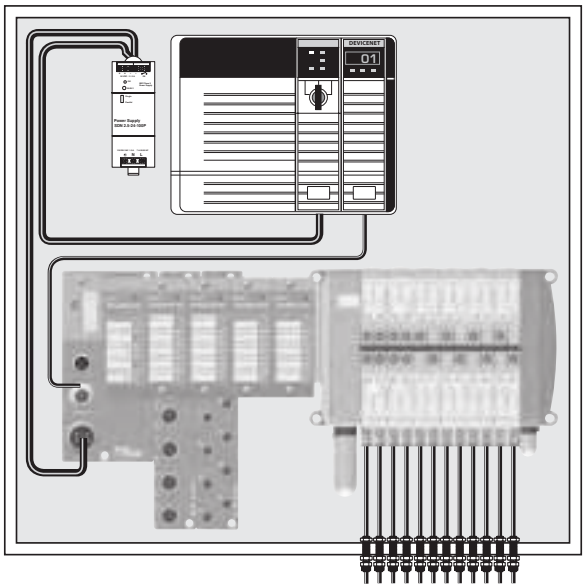
### Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

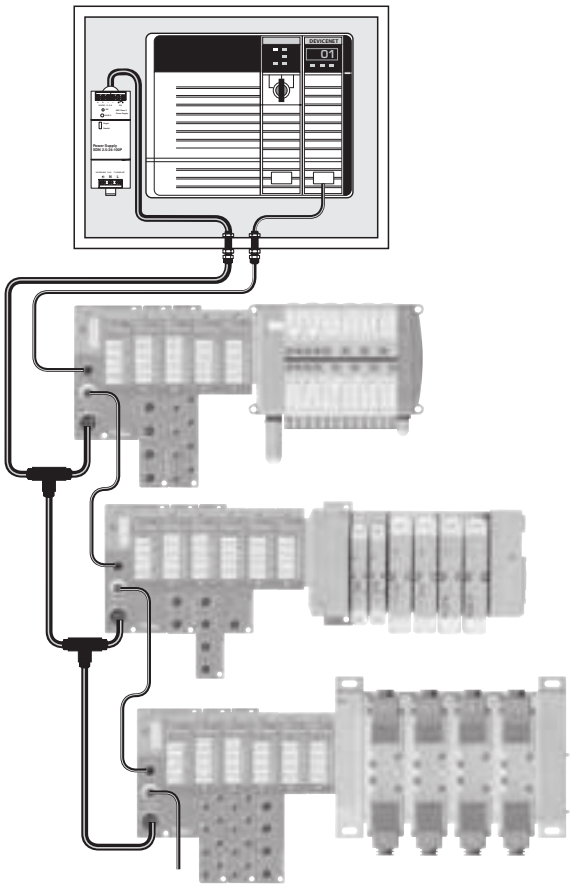
### Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet

DeviceNet™ EtherNet/IP™ PROFIBUS PROFINET Modbus/TCP™ CANopen



Bulkhead Pneumatic Fittings



## System Overview - Turck Network Portal with CANopen Expansion

### General Product Features

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves

### CANopen Expansion Features

- Using a CANopen interface module, a CANopen subnet is created within the Turck BL67 network, controlling an additional 64 inputs, outputs, or solenoids.
- The CANopen subnet is independent of the main network, and is not visible to the master PLC.
- Additional P2M CANopen modules can be attached to the CANopen subnet to provide a connection for 16 solenoids each.
- Other 3rd party CANopen devices can also be used on this network, within the 64 bit CANopen expansion limit.

### System Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Optimized for PLC's with network capability
- Several CANopen nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- CANopen expansion allows additional devices to be attached to the system without a CANopen scanner card
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

## Centralized Application

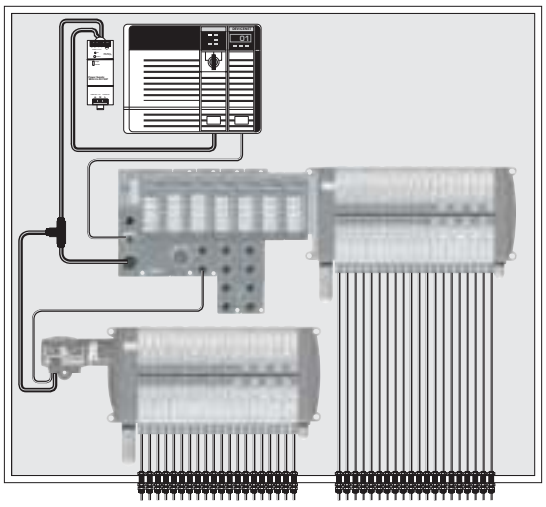
### Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

### Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

DeviceNet™ EtherNet/IP™ PROFIBUS PROFINET Modbus/TCP™ CANopen



Bulkhead Pneumatic Fittings

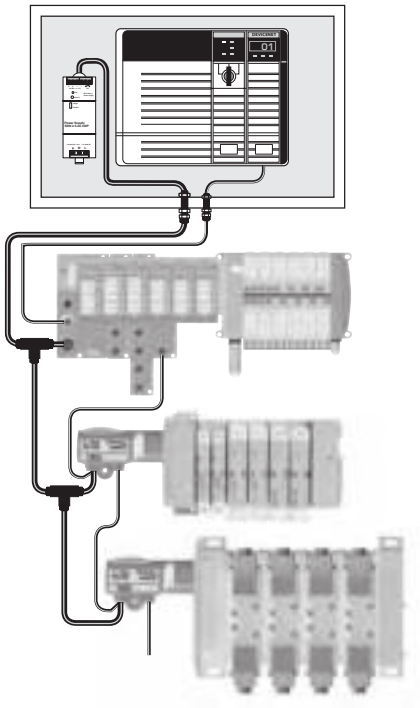
## De-centralized Application

### Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

### Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



## System Overview - Turck Network Portal with BL Remote DeviceNet Subnet

### General Product Features

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves

### BL Remote DeviceNet Subnet Features

- With BL remote DeviceNet subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control
- BL remote DeviceNet subnet is independent of the main network, and is not visible to the master PLC
- P2M DeviceNet modules can be attached to the subnet to provide a connection for 16 solenoids each
- Turck DeviceNet modules can be attached to the subnet to provide a connection for 16 or 32 solenoids each and inputs and outputs up to the 256 input and output limitation

### System Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Optimized for PLC's with network capability
- Many DeviceNet nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

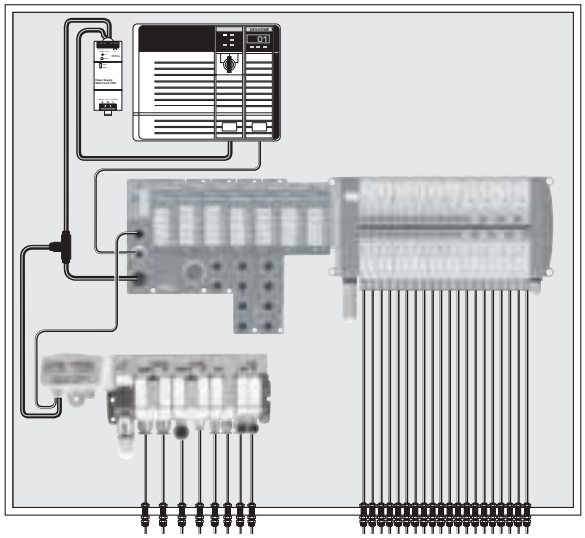
## Centralized Application

### Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas or extreme temperatures

### Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space



Bulkhead Pneumatic Fittings

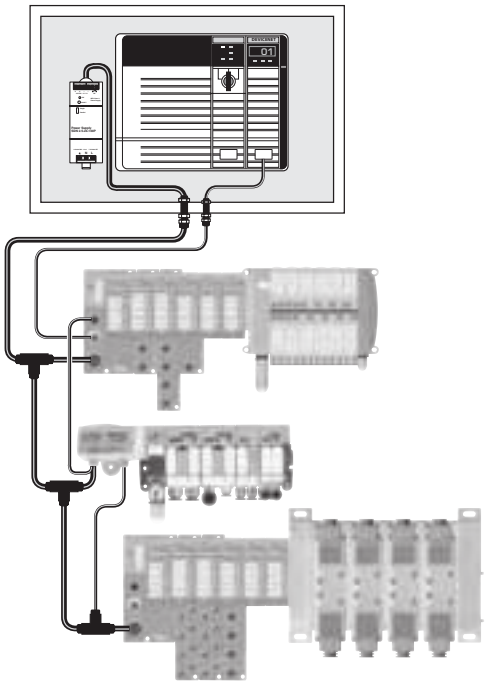
## De-centralized Application

### Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

### Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



## System Overview - Turck Network Portal with Stand Alone Control

### General Product Features

- Turck Network Portal with up to 256 inputs / outputs and 32 olenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves

### Stand Alone Control Features

- Communication modules equipped with standalone control – programmed according to IEC61131-3 with CoDeSys
- 512KB program memory with 32 bit RISC processor
- Run 1000 instructions in less than 1 ms
- Optimized for PLC's with network capability or standalone controllers that need to interface with other devices

### System Advantages

- Handle all I/O and control with one system; eliminate the PLC when used as the main controller for smaller machines
- Reduces programming and bandwith requirements on large machines with a master PLC controller by handling local I/O and interfacing with the PLC over the network
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

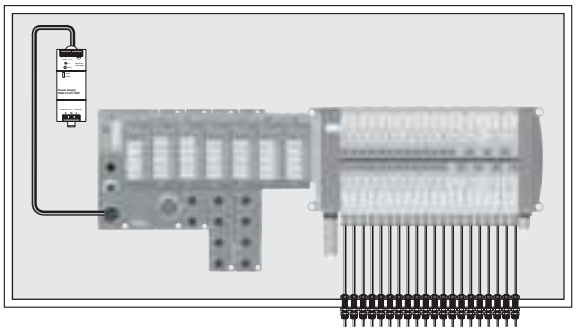
## Centralized Application Valves

### Inside Control Cabinet

- Valves attached to the machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

### Advantages

- Highest degree of environmental protection
- One location for all control devices



Bulkhead Pneumatic Fittings

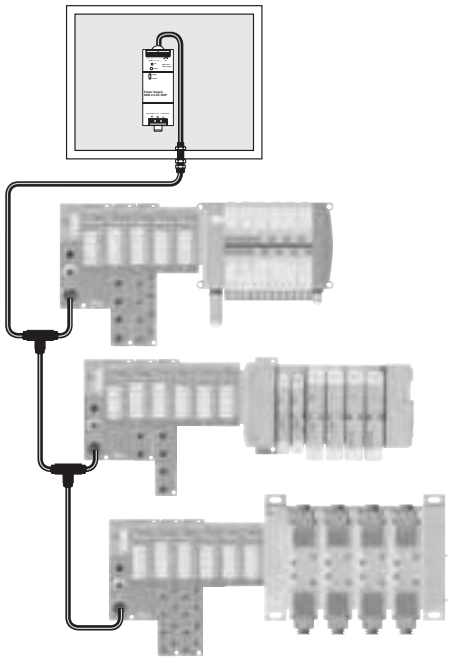
## De-centralized Application

### Valves Outside Control Cabinet

- Valves and machine control located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

### Advantages

- No control cabinet needed when used as the main controller
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet

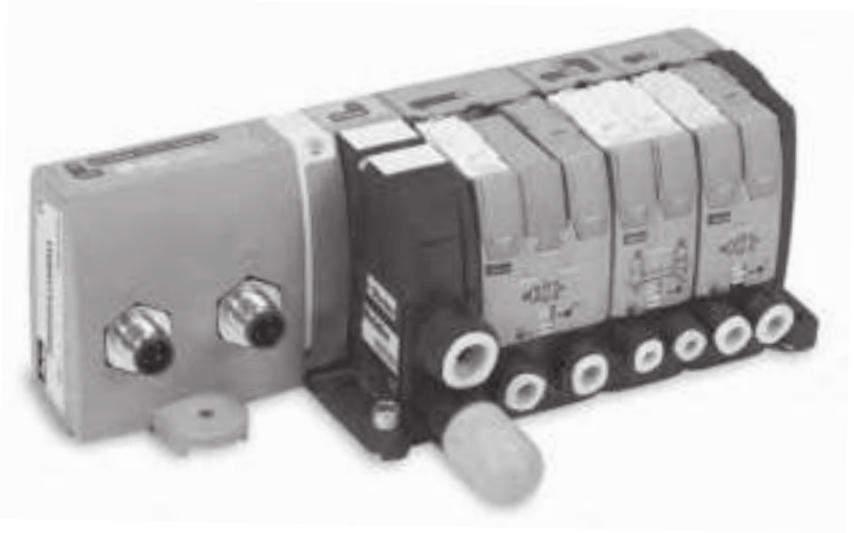


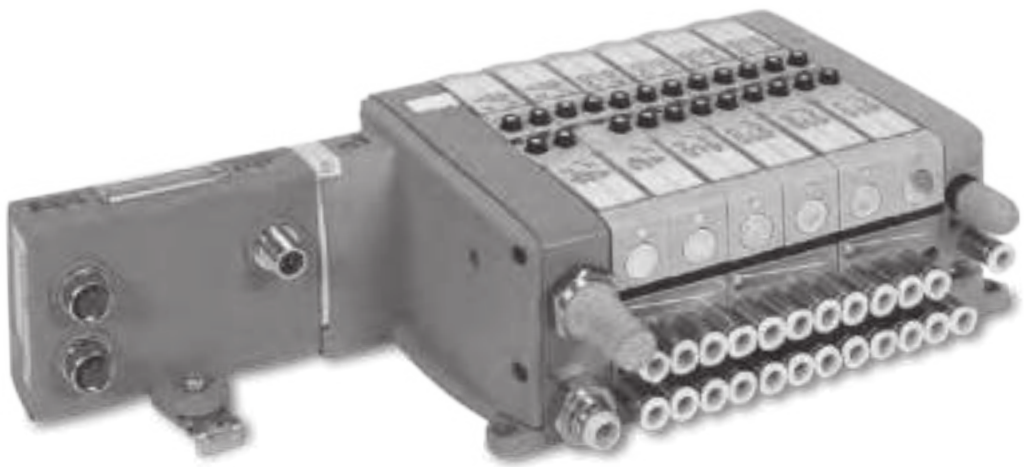
## P2M Network Nodes

P2M communication nodes attach directly to the Moduflex valve series as well as the P2M endplates of the H Series Micro and H Series ISO valve products. The P2M node offers a compact and low cost network solution.

**Features**

- Small, compact product design
- IO-Link Class A & Class B nodes
- Broad protocol offering
- Channel-level diagnostics (LED and Electronic)
- Inputs available with AS-i modules
- Horizontal and vertical mounting without derating
- 5g vibration
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- CE certification



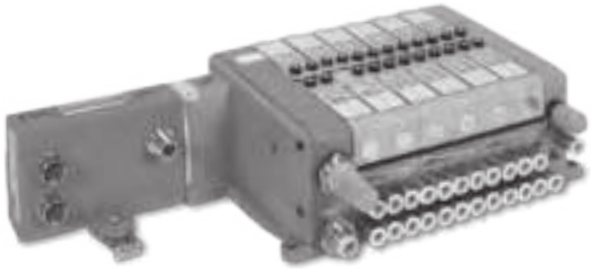


## P2M Network Nodes

P2M communication nodes attach directly to the end plate. It offers a compact and low cost network solution.

### Features

- Small, compact product design
- IO-Link Class A & Class B nodes
- Broad protocol offering
- Inputs available with AS-i modules
- Built-in panel grounding
- CE certification



| Industrial Ethernet Protocol | Part number |
|---|---|
| EtherNet/IP *(Safe Power Capable)* | **P2M2HBVE12400** |
| PROFIBUS *(Safe Power Capable)* | **P2M2HBVN12400** |
| EtherCAT *(Safe Power Capable)* | **P2M2HBVT12400** |
| Modbus/TCP *(Safe Power Capable)* | **P2M2HBVM12400** |
| PowerLink *(Safe Power Capable)* | **P2M2HBVW12400** |

| Bus Protocol | Part number |
|---|---|
| PROFIBUS-DP | **P2M2HBVP21600** |
| DeviceNet | **P2M2HBVD21600** |
| CANopen | **P2M2HBVC21600** |
| InterBus-S | **P2M2HBVS11600** |

**Control for up to 16 solenoids**

**P2M2HBVP21600**
(PROFIBUS shown)

| | IO-Link class | IO-Link | Aux. power | Aux. power pinout | Part number | |
|---|---|---|---|---|---|---|
| | | | | | Standard | Safe power capable * |
|  | Class A | 3 Pins | 3 Pins | 1 & 3 | **P2M2HBVL12400A13** | **P2M2HBVL12400A13-SPC** |
| | | 3 Pins | 3 Pins | 4 & 3 | **P2M2HBVL12400A43** | **P2M2HBVL12400A43-SPC** |
| | | 3 Pins | 5 Pins | 4 & 2 | **P2M2HBVL12400A42** | **P2M2HBVL12400A42-SPC** |
|  | Class B | 5 Pins | | 2 & 5 | **P2M2HBVL12400B25** | **P2M2HBVL12400B25-SPC** |

* Safe Power Capable (-SPC) version is suitable for connection to an OSSD (test pulsed) SAFE output source.
Further details: www.parker.com/pdn/P2M_IOL

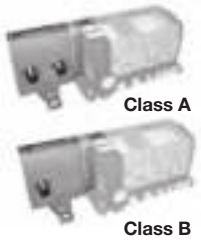
Most popular.

## "V" Series Valve Island
## P2M head module for IO-Link

Electrical Module for 24 outputs
(The last 5 outputs of this 24 DO module can't be used with Moduflex Valve)

IO-Link

**M12 A coded Connector connection**




| Description | IO-Link class | IO-Link | Aux. power | Aux. power pinout | Weight (g) | Part number Standard | Part number Safe power capable |
|---|---|---|---|---|---|---|---|
| P2M IO-Link communication module | Class A | 3 Pin's | 3 Pin's | 1 & 3 | 160 | **P2M2HBVL12400A13** | **P2M2HBVL12400A13-SPC** |
| | | 3 Pin's | 3 Pin's | 4 & 3 | 160 | **P2M2HBVL12400A43** | **P2M2HBVL12400A43-SPC** |
| | | 3 Pin's | 5 Pin's | 4 & 2 | 160 | **P2M2HBVL12400A42** | **P2M2HBVL12400A42-SPC** |
| | Class B | 5 Pin's | | 2 & 5 | 140 | **P2M2HBVL12400B25** | **P2M2HBVL12400B25-SPC** |
| Power & communication cable | | | | | | **RKC 4.5T-*-RSC 4.5T/S1587** | |

IODD file can be downloaded from IODD Finder or the Moduflex web site:
https://ioddfinder.io-link.com or www.parker.com/pdn/io-link

Where * = 1, 2, 3, 4, 5, 10, 20 meter standard lengths

## P2M Class A Module with Independent Auxiliary Power Supply

The P2M **IO-Link** Class A module can handle a Moduflex valve bank having up to 19 solenoid outputs, or H Series Micro / ISO up to 24 solenoid outputs.

Thanks to its 2 x M12 A coded male connectors, the P2M node can be connected to any IO-Link Class A master and separately receive its auxiliary power supply for valves from an independent source.

The P2M **IO-Link** Class A module exists in 3 versions with the auxiliary power M12 connector pin out adapted to any sourcing through a standard M12 cable:

- P2M2HBVL12400A13 version: 24VDC / 0VDC on pins 1 & 3 – Standard version
- P2M2HBVL12400A43 version: 24VDC / 0VDC on pins 4 & 3 – Compatible with Siemens wiring
- P2M2HBVL12400A42 version: 24VDC / 0VDC on pins 4 & 2 – Compatible with Rockwell wiring and Turck wiring

## P2M Class B module

The P2M **IO-Link** Class B module can handle a Moduflex valve bank having up to 19 solenoid outputs, or H Series Micro / ISO up to 24 solenoid outputs.

Thanks to its single M12 A coded male connectors, P2M node can be connected to any IO-Link Class B master receiving its auxiliary power supply for valves on pins 2 & 5 from the only cable simplifying the connection.

- P2M2HBVL12400B25 version: 24VDC / 0VDC on pins 2 & 5

## Diagnostic

The P2M **IO-Link** module offers a local diagnostic through 4 LED's located on the visible top side, showing:

- IO-Link com status
- Module error
- Output error
- Auxiliary power

Additional useful diagnostic information can be read by the PLC through the network simplifying diagnostic and allowing predictive maintenance (all details in the user manual).

## Auxiliary power for safe supply

The P2M **IO-Link** module is compatible with a SAFE power source for valve control.

For more details, refer to next page.

☐ Most popular.

## IO-Link Module Connection and Diagnostic Functions

IO-Link

### IO-Link Module Connection

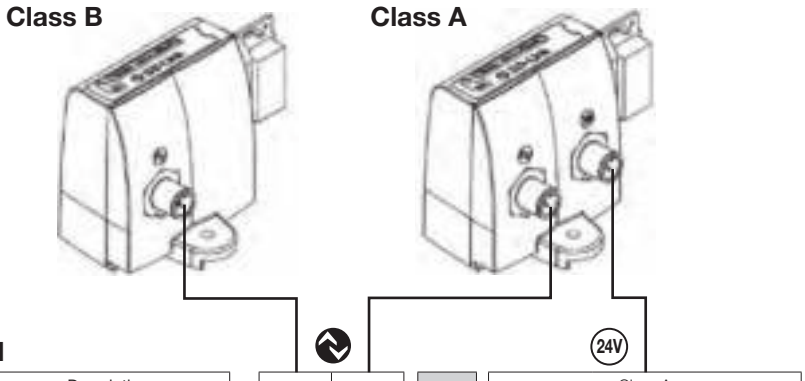
Standard male M12 – type A

Usage of standard manufactured cables available from your usual electrical supplier is recommended.

Note: Auxiliary power for solenoids can be wired allowing the user to turn outputs off while the communications remains on.

### Configuration

IODD file can be downloaded from IODD Finder or the P2M web site:
https://ioddfinder.io-link.com
www.parker.com/pdn/P2M_IOL




**Legend**

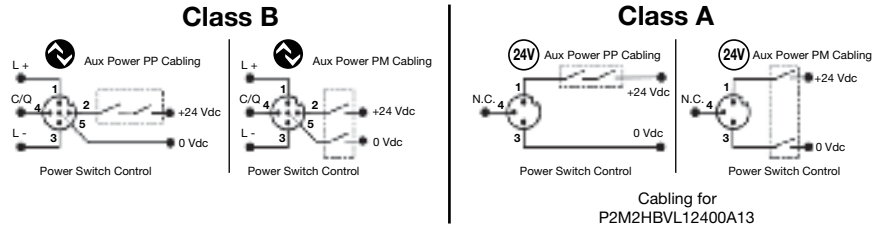
| Symbol | Description |
|---|---|
| L+ | IO-Link power supply "+" |
| L- | IO-Link power supply "-" |
| C/Q | IO-Link communication |
| Aux + | Auxiliary power supply 24 VDC |
| Aux - | Auxiliary power supply 0 VDC |

| Class B 5 pin's P2M...B.. | Class A 3 pin's P2M...A.. | M12 pin's | Class A | | |
|---|---|---|---|---|---|
| | | | 3 pin's | | 5 pin's |
| | | | P2M...A13 | P2M...A43 | P2M...A42 |
| L+ | L+ | 1 | Aux + | Not used | Not used |
| Aux + | - | 2 | - | - | Aux - |
| L- | L- | 3 | Aux - | Aux - | Not used |
| C/Q | C/Q | 4 | n.c. | Aux + | Aux + |
| Aux - | - | 5 | - | - | Not used |

### Auxiliary Power Supply Compatibility

The P2M IO-Link Module can be powered from a 24VDC auxiliary source in PP or PM mode as grounds are isolated.

The P2M Safe Power Capable (-SPC) versions can be connected from a SAFE OSSD test pulsed power source.




### IO-Link Module Diagnostic Functions

The P2M IO-Link module offers additional useful module status information:

- Solenoid overload or short circuit
- Auxiliary voltage out of tolerance
- Cycle counter for each solenoid
- Module temperature

For more information on product technical information and module diagnostic functionalities, please refer to the user manual available from the product web page:

www.parker.com/pdn/P2M_IOL

**Green LED** (COM.)

| LED Status | Description | Solving |
|---|---|---|
| OFF | IO-Link L+ / L- not powered | Check connection |
| ON | IOL L+ / L- powered IO mode | Set IO-Link mode in IO-Link master |
| Blinking | IO-Link communication active | NA |

**Red LED** (Module — Error)

| LED Status | Description | Solving |
|---|---|---|
| OFF | Standard mode | NA |
| ON | 24 VDC AUX power missing or any active malfunction | Check power supply or change module |

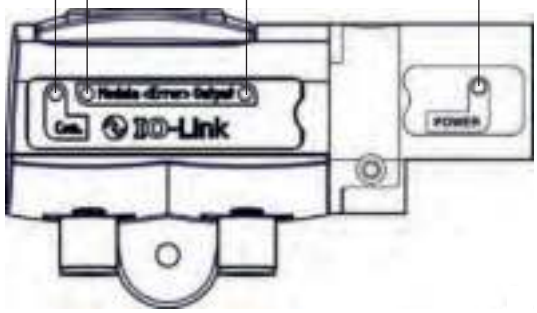
**Red LED** (Error — Output)

| LED Status | Description | Solving |
|---|---|---|
| OFF | Standard mode | NA |
| ON | Any driver error (overload, over temperature, etc.) | Fix solenoid issue then acknowledge error |

**Green LED** (POWER)

| LED Status | Description | Solving |
|---|---|---|
| OFF | AUX power failure | Check Auxiliary Power Supply |
| ON | Standard | NA |
| Blinking | Aux Power is out of range, alarm level | Check Auxiliary Power Supply |

IO-Link Communication | Module Diagnostic | Outputs (valves) Diagnostic | Auxiliary Power Supply



## Input Data

**One byte of diagnostic input data is transferred from P2M IO-Link to the IO-Link Master.**

**Process input data**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| Output driver SPI error | Output driver channel error | Polyfuse tripped | Temperature warning | SPI error | AUX voltage error | AUX voltage warning | Acknowledge Required |

## Output Data

**Three bytes of process data are received by P2M IO-Link from the IO-Link Master for control of solenoids.**

**Process output data (Byte 0)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV8 | EV7 | EV6 | EV5 | EV4 | EV3 | EV2 | EV1 |

**Process output data (Byte 1)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV16 | EV15 | EV14 | EV13 | EV12 | EV11 | EV10 | EV9 |

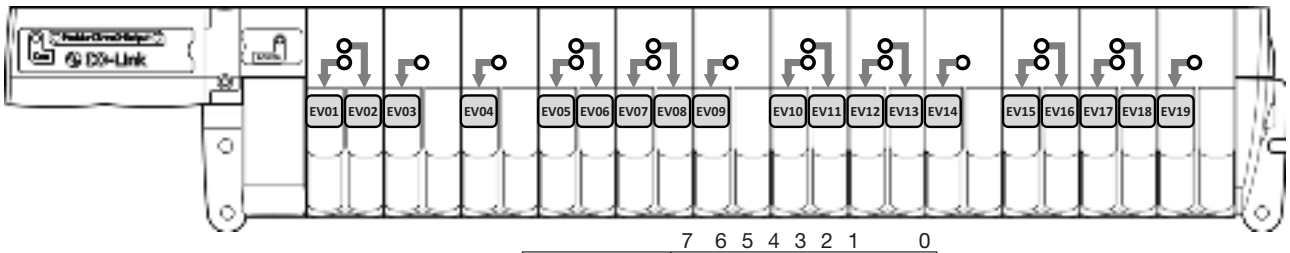
**Process output data (Byte 2)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV24 | EV23 | EV22 | EV21 | EV20 | EV19 | EV18 | EV17 |

## Solenoid Pilots Addressing and Process Mapping

**P2M IO-Link node addressing used with Moduflex Valve System**

The P2M IO-Link node, when used with Moduflex Valve System can handle up to 19 pilot solenoid valves. Addressing will be done as shown below.




| PLC mapping Process output | 7 6 5 4 3 2 1 0 |
|---|---|
| Byte 0 | EV08 ..... EV01 |
| Byte 1 | EV16 ..... EV09 |
| Byte 2 | EV24 ..... EV17 |

## P2M IO-Link Module Electrical Specifications

| | |
|---|---|
| IO-Link power supply | According to IO-Link standard V1.1.2 |
| Speed communication | Com 2 – 38 kBd |
| Auxiliary power supply | 20.4 VDC to 26.4 VDC |
| Current limit per channel | 150 mA |
| Max current limit | 4 A |
| Polarity inversion | YES |
| Short circuit protection | YES |
| Operating temperature | 0°C to 55°C |
| Storage temperature | -25°C to 70°C |
| Shock according to IEC | 60068-2-27:2008 |
| Vibration according to IEC | 60068-2-6:2007 |
| EMC according to IEC | 61000-4-2 up to -4-6 |

## Network Diagnostic Through Process Mapping:

The P2M IO-Link module offers diagnostic data transmitted to the PLC through the master:

| PLC mapping Process input | 7 6 5 4 3 2 1 0 |
|---|---|
| Byte 0 | Diag 7 . . . . . Diag 0 |

| Diag bit | Error message | Detail |
|---|---|---|
| Diag 0..... | Fail-safe status ..... | Acknowlegment required |
| Diag 1..... | Auxiliary voltage warning..... | Check auxiliary power |
| Diag 2..... | Auxiliary voltage failure..... | Check auxiliary power |
| Diga 3..... | Module failure ..... | Module HS. must be replaced |
| Diag 4..... | Module over-temperature | |
| Diag 5..... | Module over-load | |
| Diag 6..... | Pilot solenoid(s) short circuit..... | Solenoid must be replaced |
| Diag 7..... | Outputs stage failure | |

For further details, refer to the user manual: can be downloaded from www.parker.com/pdn/P2M_IOL

P2M2HBVA10808A P2M2HBVA10808B

## Standard AS-i Protocol (up to 31 nodes)

**Communication module for 8 solenoids max.**
**(2 nodes per module, 4 inputs, 4 solenoids per node)**

| Input / output capability | Weight (oz) | Part number |
|---|---|---|
| 0 inputs and 8 solenoid outputs | 5.29 | **P2M2HBVA10800** |
| 8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs | 7.05 | **P2M2HBVA10808A** |
| 8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs | 7.05 | **P2M2HBVA10808B** |

## Network Connectivity Accessories

| | Protocol | Connector type | Part number |
|---|---|---|---|
| Power supply field wireable connector | PROFIBUS-DP / InterBus-S / DeviceNet / CANopen | M12 type A female | **P8CS1205AA** |
| Line termination resistor | PROFIBUS-DP | M12 type B | **P8BPA00MB** |
| | DeviceNet / CANopen | M12 type A | **P8BPA00MA** |

## AS-i Version 2.1 Protocol (up to 62 nodes)

**Communication module for 6 solenoids max.**
**(2 nodes per module, 4 inputs, 3 solenoids per node)**

| Input / output capability | Weight (oz) | Part number |
|---|---|---|
| 0 inputs and 6 solenoid outputs | 5.29 | **P2M2HBVA20600** |
| 8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs | 7.05 | **P2M2HBVA20608A** |
| 8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs | 7.05 | **P2M2HBVA20608B** |

## AS-i Bus Accessories

**M12 Cable with Jack for Addressing**

| Length | Weight (oz) | Part number |
|---|---|---|
| 1 m | 3.53 | **P8LS12JACK** |

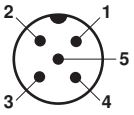
Most popular.

## M12 (Male) Power Supply Connector

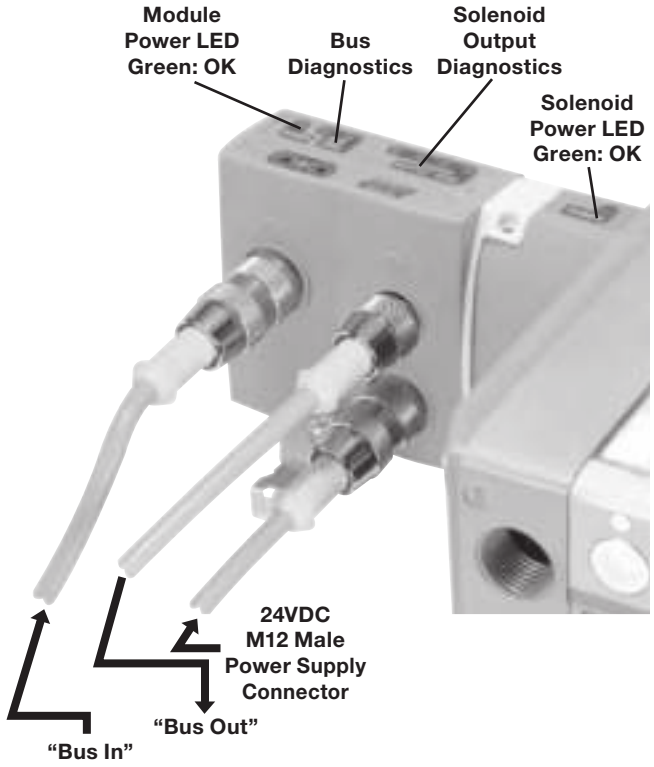
**1** - 24VDC node (not connected for DeviceNet and CANopen)
**2** - Not connected
**3** - 0VDC node and solenoid
**4** - 24VDC solenoid
**5** - Protected earth (PE)

**PROFIBUS-DP / DeviceNet / CANopen / InterBus-S**

**24VDC**
(As Seen On Module)




M12 Male Type A




### Connection

All communication nodes have an M12 male connector for power supply.

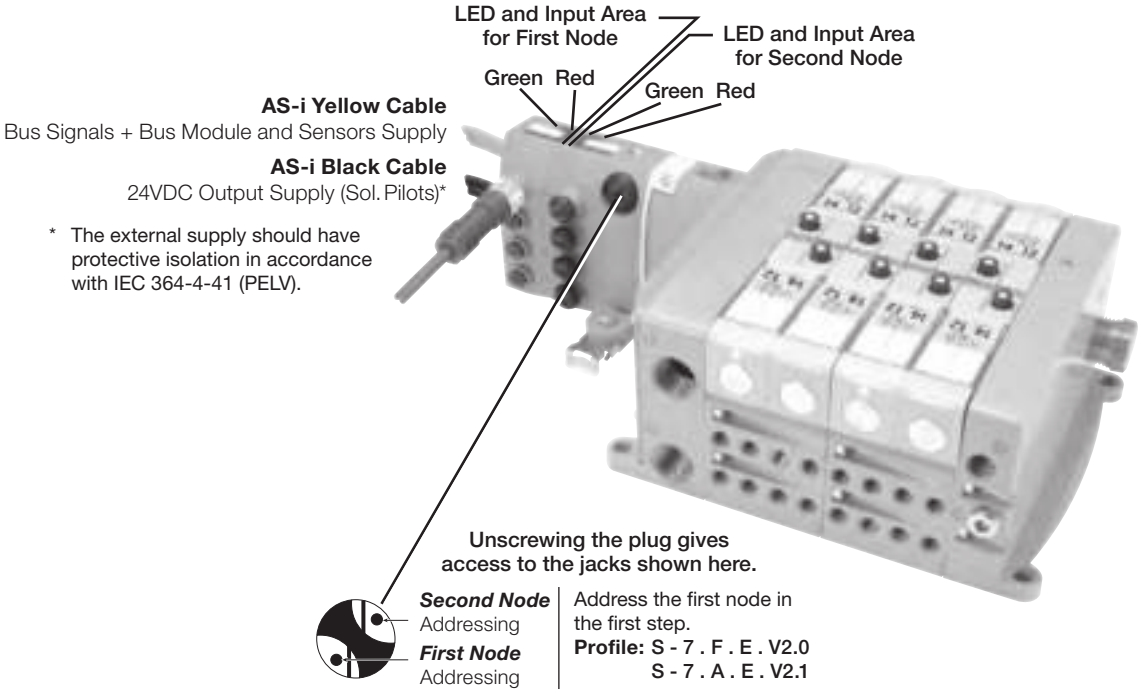
Connector on P2M nodes are labeled. Bus connectors are labeled "Bus In" and "Bus Out" while, power supply connections are labeled "24VDC". Connect to "Bus In" and "Bus Out" and power supply to "24VDC".

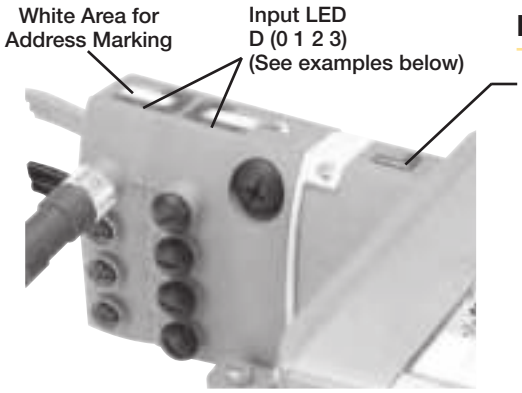
### Diagnostic

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

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

## AS-i Bus Communication Module: Addressing, Diagnostic, Input Wiring
## Bus Addressing, First and Second Node




## Bus Diagnostic

| "Power" LED state | Off | Green | Red |
|---|---|---|---|
| Power supply | Sol. pilot supply | Normal operation | Solenoid overload |

| First node LEDs state | | Second node LEDs state | | System Condition |
|---|---|---|---|---|
| Green LED | Red LED | Green LED | Red LED | |
| ✸ | ❍ | ✸ | ❍ | Normal operation |
| ❍ | ❍ | ❍ | ❍ | No module + sensor supply |
| ❍ | ☼ | ❍ | ☼ | Input overload |
| ❍ | ✸ | ❍ | ☼ | No AS-i communication |
| ☼ | ✸ | ❍ | ☼ | Address first node = 0 |
| ✸ | ❍ | ☼ | ✸ | Address second node = 0 |

✸ ON ❍ OFF ☼ BLINK

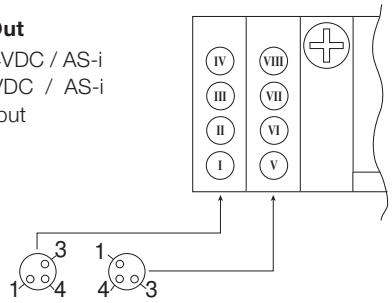
## Input Wiring

Physical input (**I, II, III, IV**) = D (0 1 2 3) first node
Physical input (**V, VI, VII, VIII**) = D (0 1 2 3) second node

*Examples:* Physical input **III** = logical input 6.2
Physical input **V** = logical input 7.0

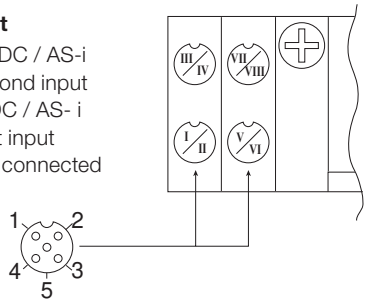
## M8 Female Connectors

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




## M12 Female Connectors

**Pin Out**
**1** - 24VDC / AS-i
**2** - Second input
**3** - 0VDC / AS- i
**4** - First input
**5** - Not connected




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





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

## Communication Module: Connections, Addressing, Diagnostic

### Bus Cable Connections

PROFIBUS-DP standard male and female type B M12 connectors.

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

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

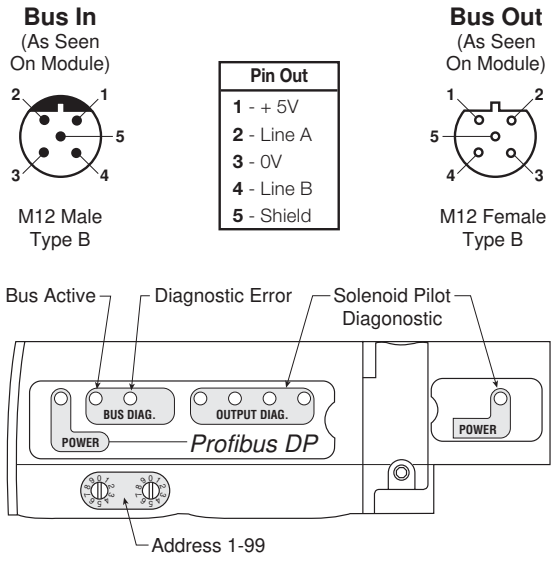
### Addressing

Use the GSD file on web site.

The rotary switches enable configuration of the decimal address.

### Diagnostic

Diagnostic according to the module dialog shown on the illustration.




### Bus Cable Connections

DeviceNet standard male and female type A M12 connectors.

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

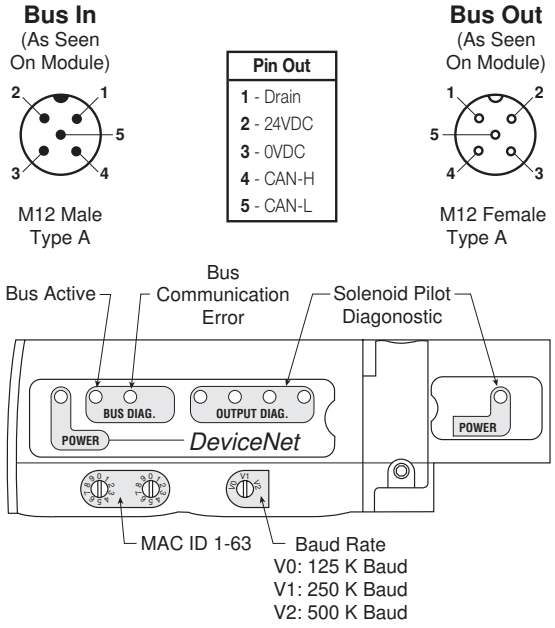
### Addressing

Use the EDS file on web site.

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

### Diagnostic

Diagnostic according to the module dialog shown on the illustration.



# CANopen

## Bus Cable Connections

CANopen standard male and female type A M12 connectors.

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

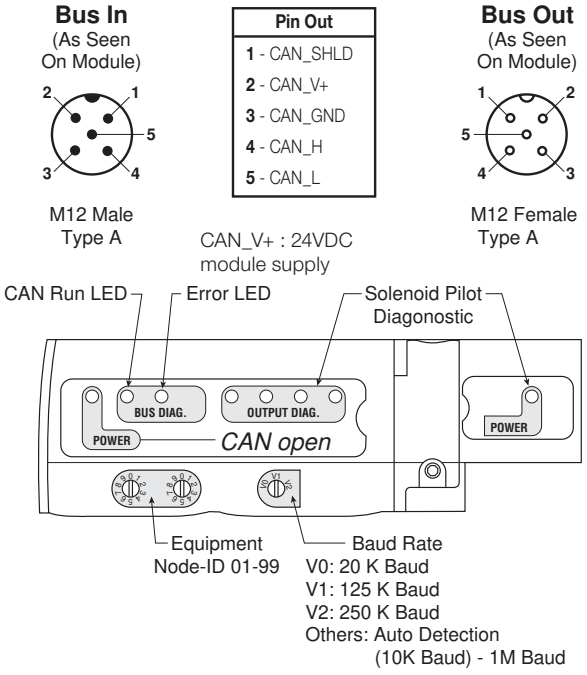
## Addressing

Use the EDS file on web site.

The rotary switches enable configuration of the decimal address.

## Diagnostic

Diagnostic according to the module dialog shown on the illustration.




# INTERBUS-S

## Bus Cable Connections

The M23 connectors conform to “Interbus remote bus”.

This module operates at 500 kbps.

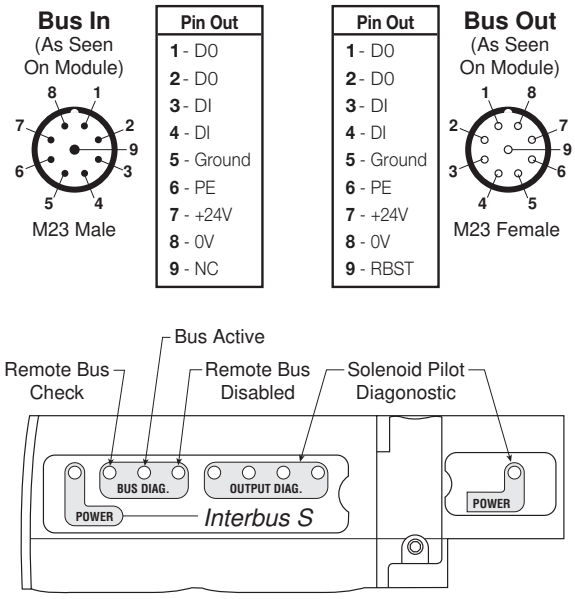
## Addressing

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

## Diagnostic

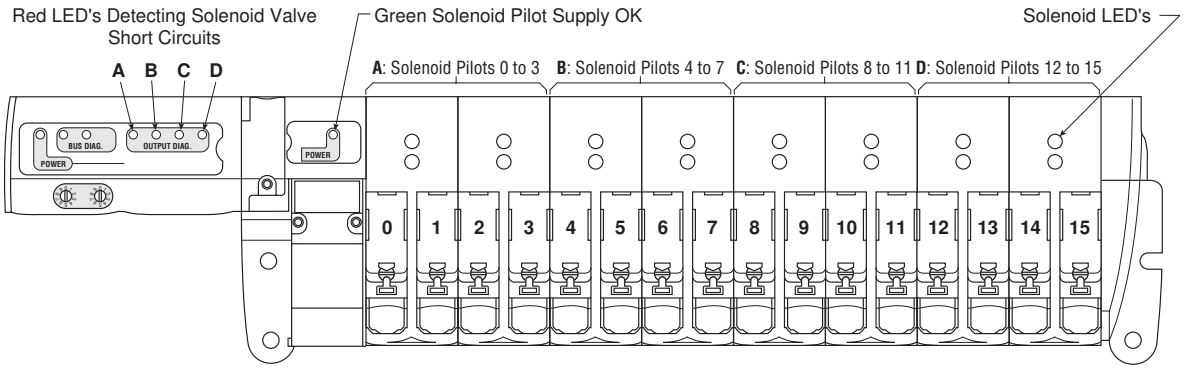
Diagnostic according to the module dialog shown on the illustration.

This diagnostic conforms to the InterBus-S standard.




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

## Solenoid Pilot Diagnostic Common to All Device Bus Modules




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

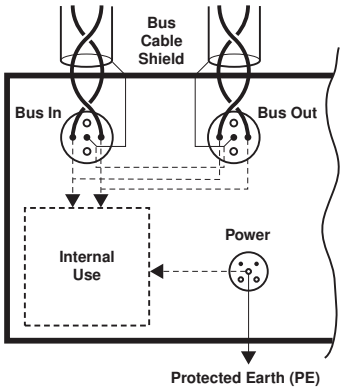
- The red LEDs with code, shown above, detect solenoid valve short-circuits
- Supply is OK when the solenoid pilot power supply indicator is green

## Bus Cable Protection

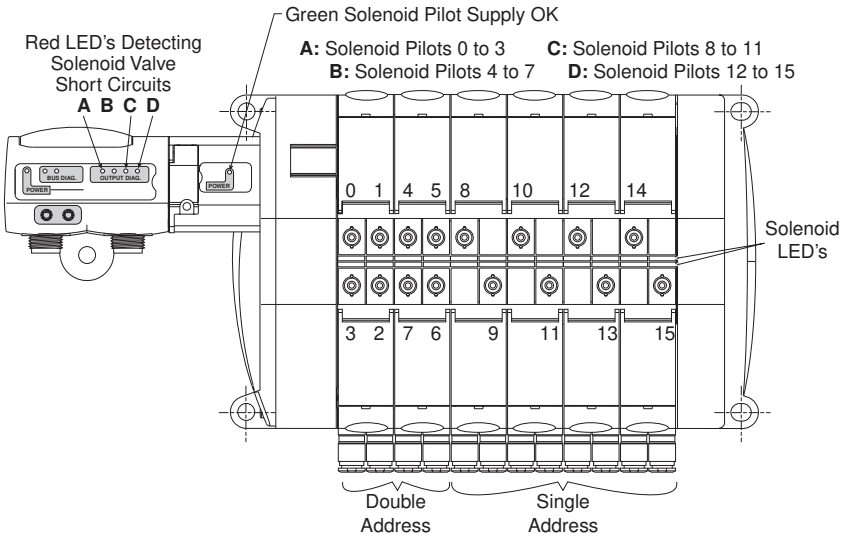
### Shield Connections for PROFIBUS-DP, DeviceNet and CANopen

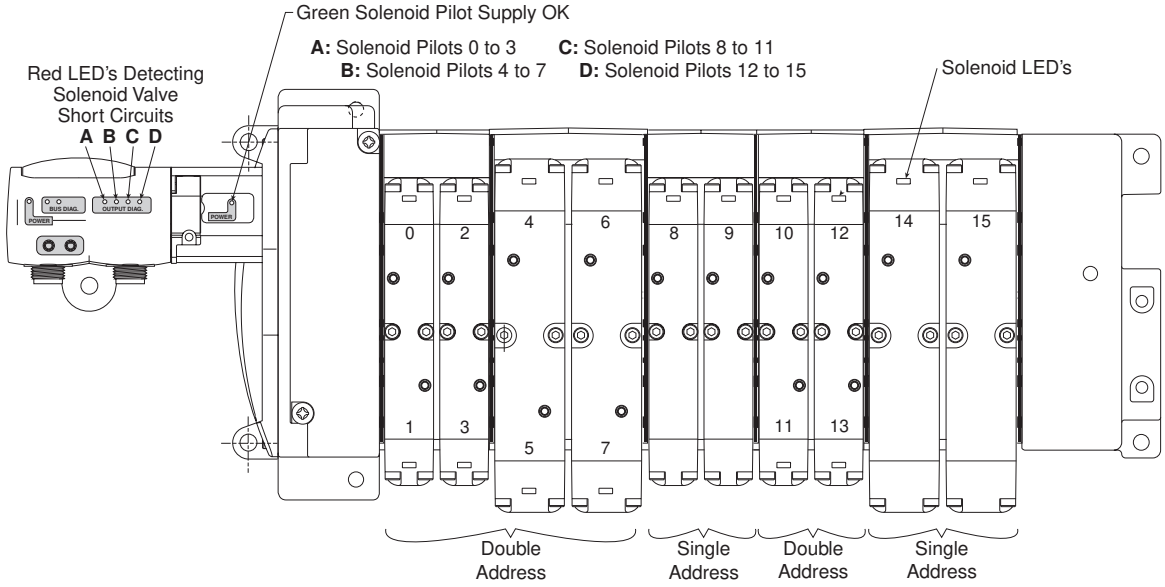
To provide protection against electro-magnetic interferences, the bus cables are shielded. The “bus in” and “bus out” connectors each include a pin for connecting the cable shield. It is safer to connect the shield to the protected earth (PE) at both ends of the bus. Within the communication module,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

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



## Solenoid Pilot Diagnostic Common to All P2M Nodes




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

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

## Serial Bus Specifications

| | | | | |
|---|---|---|---|---|
| **All Buses** | EMC / CE Mark | According to EN 61 000-6-2 | EN 50081-2 | |
| **AS-i Bus** | AS-i line | According to EN 50295 | | |
| | Solenoid pilot voltage | 24VDC | | |
| | Module consumption | max. 70 mA (2 nodes) | | |
| | Max. supply for all inputs | 240 mA (including internal input consumption) | | |
| | Internal input consumption | 9 mA for each active input | | |
| | Inputs | According to IEC 1131-2 class 2 | | |
| | Certification | These products have been developed according to the association complete specification (v.2.11) and to the slave profiles S-7.F.E or S-B.F.E | | |
| **Device Bus** | Bus line | According to each bus specification | | |
| | Module voltage | 20 to 30VDC | | |
| | Solenoid pilot voltage | 24VDC | | |
| | Module consumption | PROFIBUS-DP max. 1.5W | DeviceNet / CANopen max. 1.5W | InterBus-S max. 2W |
| | Outputs | Overload protection | | |
| | Certification | **DeviceNet:** Compliant to composite test revision 17, test suite: M002 | | |
| | | **PROFIBUS-DP:** Compliant to test specifications for PROFIBUS-DP slaves, version 2.0, February 2000, based on EN 50170-2 at Siemens AG in Furth | | |
| | | **InterBus-S:** This product has passed the relevant tests in accordance with the InterBus conformance requirements Certified no. 385 | | |

## I/O Tables Common to All Device Bus Modules

### Input Data Table

| Byte | Bit 0 | Bit 1 | Bit 2 | Bit 3 | Bit 4 | Bit 5 | Bit 6 | Bit 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | Discrete input 0 (diagnostic LED 0-3) | Discrete input 1 (diagnostic LED 4-7) | Discrete input 2 (diagnostic LED 8-11) | Discrete input 3 (diagnostic LED 12-15) | — | — | — | — |

### Output Data Table

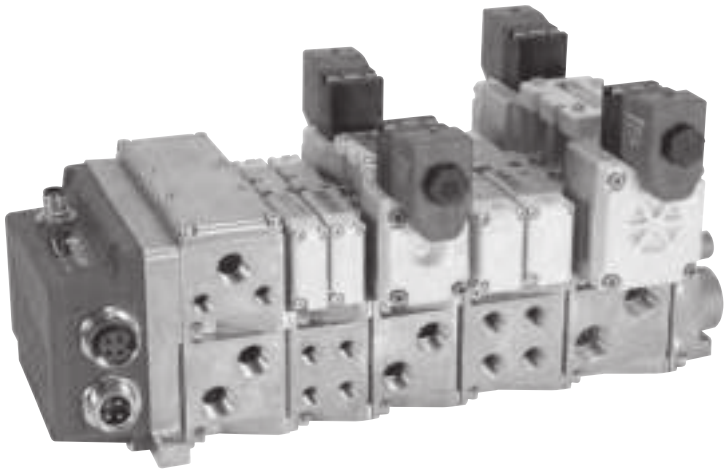
| Byte | Bit 0 | Bit 1 | Bit 2 | Bit 3 | Bit 4 | Bit 5 | Bit 6 | Bit 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | Discrete output 0 | Discrete output 1 | Discrete output 2 | Discrete output 3 | Discrete output 4 | Discrete output 5 | Discrete output 6 | Discrete output 7 |
| 1 | Discrete output 8 | Discrete output 9 | Discrete output 10 | Discrete output 11 | Discrete output 12 | Discrete output 13 | Discrete output 14 | Discrete output 15 |

## P2H Network Node

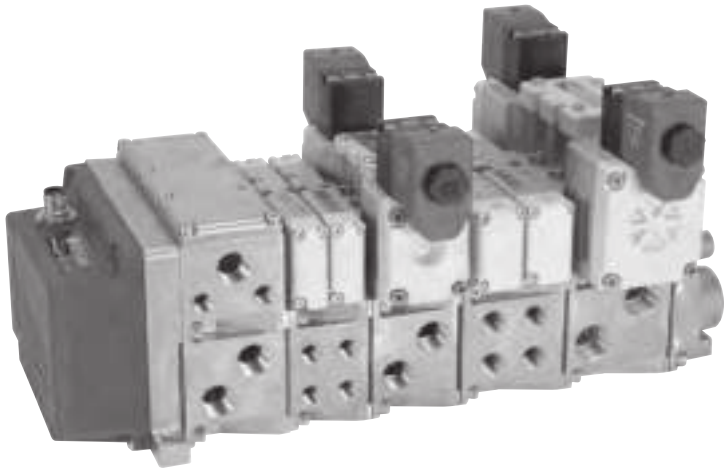
The P2H Network Node is available with IO-Link connectivity for the industries first connection of ISO valves (5599 & 15407) to the low cost IO-Link network.

### Features

- Compact, robust product design
- Weld splatter resistant housing material
- Simple connection to IO-Link Class A or Class B masters
- Industries first power in & out capability for Class A version
- Industries first 7/8" power connectors on Class A version
- IO-Link connection to new H Series ISO Universal Manifold, capable of mixing valve sizes from 0.5 Cv – 3 Cv
- Safe Power Capable for supplying valve power from a safety device (ie. safe relay)
- Diagnostics made SIMPLE! Useful diagnostic flags in process (cyclic) data for easy access and use for preventative maintenance
- Certified to IP65 ingress protection
- CE certification



Class A Node



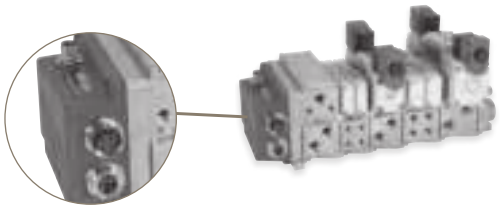
Class B Node

## Overview - P2H Network Node

Designed to integrate directly with the new H Series ISO valve, the P2H IO-Link network node provides a compact, robust and cost efficient solution for IO-Link capability. The P2H IO-Link network node is offered as an end plate kit on the H Series valve for four sizes (HB, HA, H1 and H2). The P2H node is suitable for use on a valve manifold with up to 24 solenoid outputs.

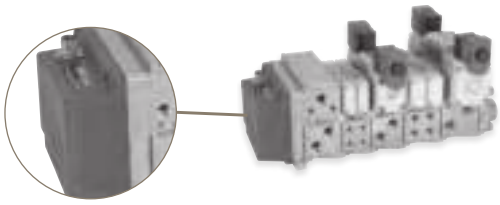
## Connection Types and Power:

Class A Node



The Class A node has (1) 3 pin M12 connector for communication and logic power from any class A IO-Link master, and (2) 7/8" connectors for auxiliary valve power IN and OUT.

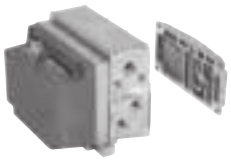
Class B Node



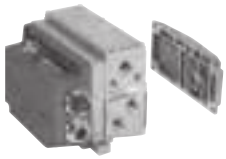
The Class B node has (1) 5 pin M12 connector to connect IO-Link for communication to a Class B IO-Link master, logic power and auxiliary power for the valve solenoids (up to the limit of the Class B node output*).

*It is recommended to use the Class A node with auxiliary power if the Class B master cannot provide enough power.

## Left and Right Hand End Plate



Class B



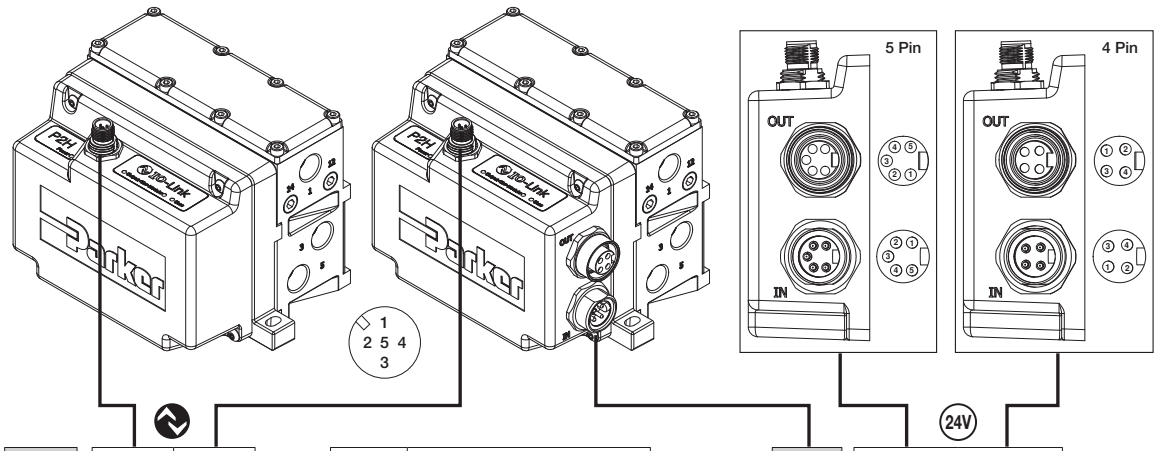
Class A

| IO-Link class / type | Current | NPT port | BSPP port |
|---|---|---|---|
| P2H IO-Link Class B, standard version, 24 address | 3.2A max | **PSHU20N200P** | **PSHU20N201P** |
| P2H IO-Link Class B, Safe Power Capable, 24 address | 2.0A max | **PSHU20S200P** | **PSHU20S201P** |
| P2H IO-Link Class A, 4-pin Safe Power Capable, 24 address | 3.2A max | **PSHU20S400P** | **PSHU20S401P** |
| P2H IO-Link Class A, 5-pin Safe Power Capable, 24 address | 3.2A max | **PSHU20S500P** | **PSHU20S501P** |

www.parker.com/pdn/P2H_IOL

| Description | | Standard version | - Safe power capable versions |
|---|---|---|---|
| IO-Link power supply | | According to IO-Link standard V1.1.2 | |
| Speed communication | | Com 2 – 38 kBd | |
| Auxiliary power supply | voltage | 20,4 VDC to 26,4 VDC | |
| | OSSD compatibility | No | Yes |
| Short circuit protection | | Yes | |
| Operating temperature | | 0°C to +55°C | |
| Shock | | According to IEC 60068-2-27:2008 | |
| Vibration | | According to IEC 60068-2-6:2007 | |
| EMC | | According to EN 55011 & EN 61000-4-2 to -4-6 | |
| Ingress protection | | Certified to IP65 | |

## P2H Network Node – Connections and LED Diagnostics




| M12 pin's | Class B 5 pin's P2HLB.. | Class A 5 pin's P2HLA.. |
|---|---|---|
| 1 | L+ | L+ |
| 2 | Aux + | - |
| 3 | L- | L- |
| 4 | C/Q | C/Q |
| 5 | Aux - | - |

| Symbol | Description |
|---|---|
| L+ | IO-Link power supply 24 VDC |
| L- | IO-Link power supply 0 VDC |
| C/Q | IO-Link communication |
| Aux + | Auxiliary power supply 24 VDC |
| Aux - | Auxiliary power supply 0 VDC |

| 7/8 pin's | Class A | |
|---|---|---|
| | 5 pin's P2HLA24P5 | 4 pin's P2HLA24P4 |
| 1 | Aux - | Aux + |
| 2 | *L - | *L + |
| 3 | Earth | *L - |
| 4 | *L + | Aux - |
| 5 | Aux + | - |

Note:
*7/8" logic power has no connection to internal P2H unit but does carryover to OUT 7/8" connector (for jumper logic power only). Logic power for P2H unit will be supplied from M12 (pin 1 & 3)

### Local diagnostic through LED:

The P2H IO-Link Node offers a local diagnostic through 4 LED's status with interpretation described in the table below:

**Power ○ Green LED**

| LED Status | Description | Solving |
|---|---|---|
| OFF ○ | Auxiliary power failure < 18V or > 28,5V | Check auxiliary power supply |
| ON ● | Standard mode (auxiliary power within normal range 20,4V* to 26.4V*) | N/A |
| Blinking ✸ | Auxiliary power out of range (warning level*) | Check auxiliary power supply, check/reset adjusted values |

**○ Output<Err> Red LED**

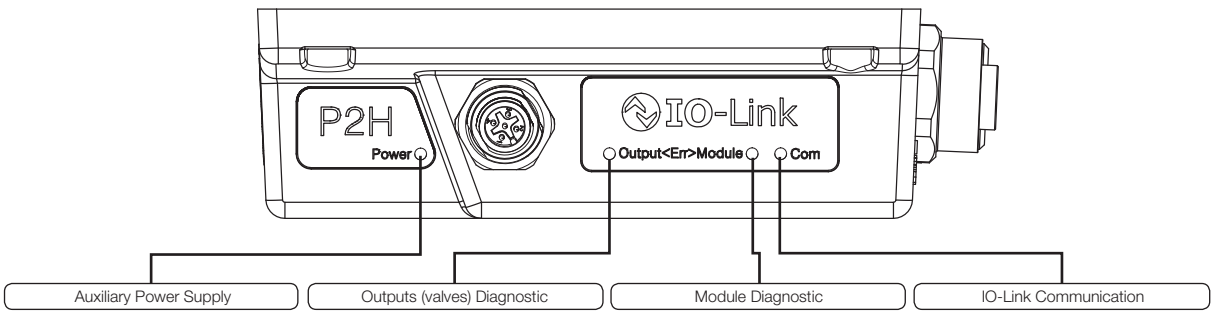
| LED Status | Description | Solving |
|---|---|---|
| OFF ○ | Standard mode (No error active) | N/A |
| ON ● | Any outputs driver error (auxiliary power error, overload, short circuit, over temperature, …) | If auxiliary power OK (see Power LED status), check error messages and related troubleshooting |

**<Err>Module ○ Red LED**

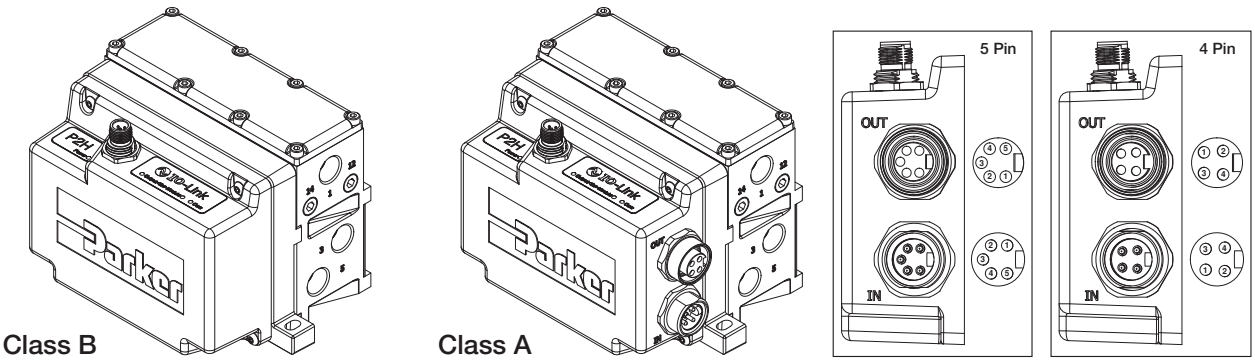
| LED Status | Description | Solving |
|---|---|---|
| OFF ○ | Standard mode (No error active) | N/A |
| ON ● | 24 VDC auxiliary power missing or any active malfunction | Check Auxiliary power supply. If auxiliary power supply OK, module must be replaced |

**○ Com Green LED**

| LED Status | Description | Solving |
|---|---|---|
| OFF ○ | IO-Link L+ / L- line not powered | Check IO-Link power supply from IO-Link Master (pin's 1 & 3) |
| ON ● | IO-Link L+ / L- line powered<br>IO-Link master port set as SIO mode | Set IO-Link master channel in IO-Link mode |
| Blinking ✸ | IO-Link communication active | N/A |



## P2H Network Node – Connections and LED Diagnostics

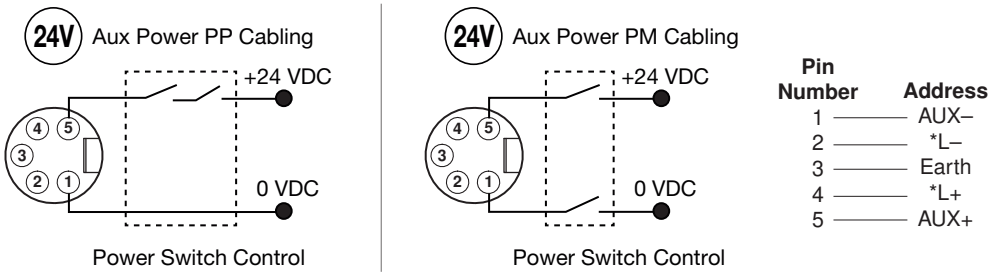



SAFETY

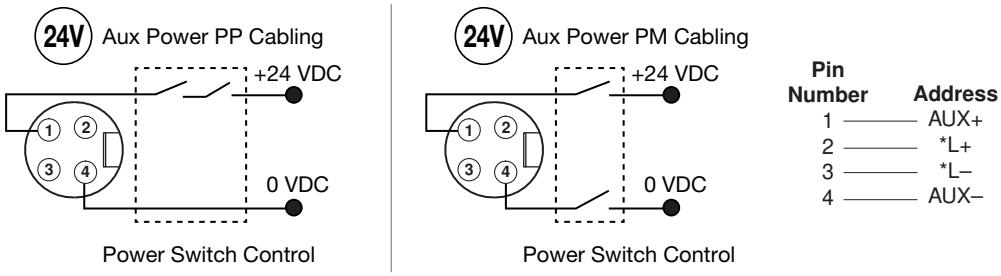
### P2H IO-Link 24DO Node connection to SAFE Power PP / PM mode for valve control

The P2H IO-Link 24DO node can be powered from a SAFE 24 VDC auxiliary source in PP or PM mode as grounds are isolated. Auxiliary power for solenoids can be wired allowing the functionality to turn outputs OFF while communications remain active.

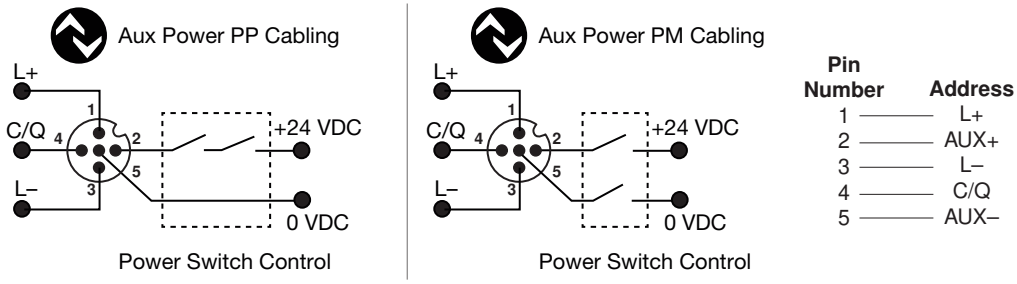
## Class A – 5 Pin




## Class A – 4 Pin




## Class B




* 7/8" logic power has no connection to internal P2H unit but does carryover to OUT 7/8" connector (for jumper logic power only). Logic power for P2H unit will be supplied from M12 (pin 1 & 3).

## P2H Network Node – Input / Output Data Mapping

### Input Data

**One byte of diagnostic input data is transferred from Moduflex to the IO-Link Master.**

**Process Input Data**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| Output driver SPI error | Output driver channel error | Polyfuse tripped | Temperature warning | SPI error | Aux voltage error | Aux voltage warning | Acknowledge required |

| Diag bit | Error Message | Detail |
|---|---|---|
| Diag 0 | Fail-safe status | Acknowledgment required |
| Diag 1 | Auxiliary voltage warning | Auxiliary voltage out of range, check auxiliary power line |
| Diag 2 | Auxiliary voltage failure | Auxiliary voltage out of order, check auxiliary power source |
| Diag 3 | Module failure | Switch OFF / ON auxiliary power, if error message persists, replace the module |
| Diag 4 | Module over-temperature | Switch OFF / ON auxiliary power, if error message persists, replace the module |
| Diag 5 | Module over-load | Check overall pilot solenoid valves, if error message persists, replace the module |
| Diag 6 | Pilot solenoid(s) short circuit | Check faulty pilot solenoid valve(s), replace if necessary |
| Diag 7 | Outputs stage not available | Auxiliary power is OFF |

### Output Data

**Three bytes of process data are received by Moduflex from the IO-Link Master for control of solenoids.**

**Process Output Data (Byte 0)**

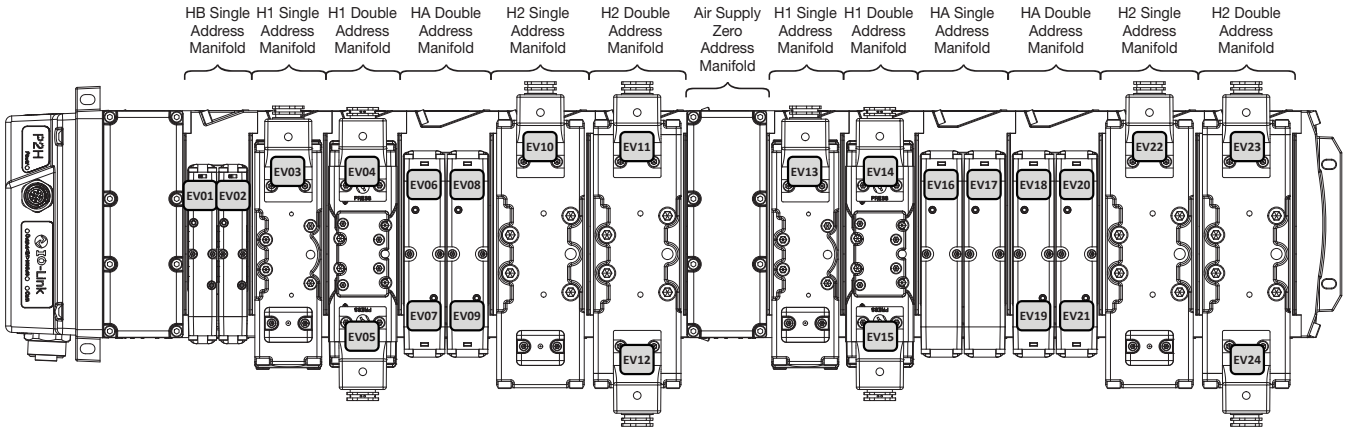
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV8 | EV7 | EV6 | EV5 | EV4 | EV3 | EV2 | EV1 |

**Process Output Data (Byte 1)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV16 | EV15 | EV14 | EV13 | EV12 | EV11 | EV10 | EV9 |

**Process Output Data (Byte 2)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| EV24 | EV23 | EV22 | EV21 | EV20 | EV19 | EV18 | EV17 |




7 . . . . . 0

PLC Process outputs data mapping

| | |
|---|---|
| Byte 0 | EV08 ..... EV01 |
| Byte 1 | EV16 ..... EV09 |
| Byte 2 | EV24 ..... EV17 |

### Configuration IODD File

IODD file can be downloaded from IODD Finder or the P2H IO-Link web site:

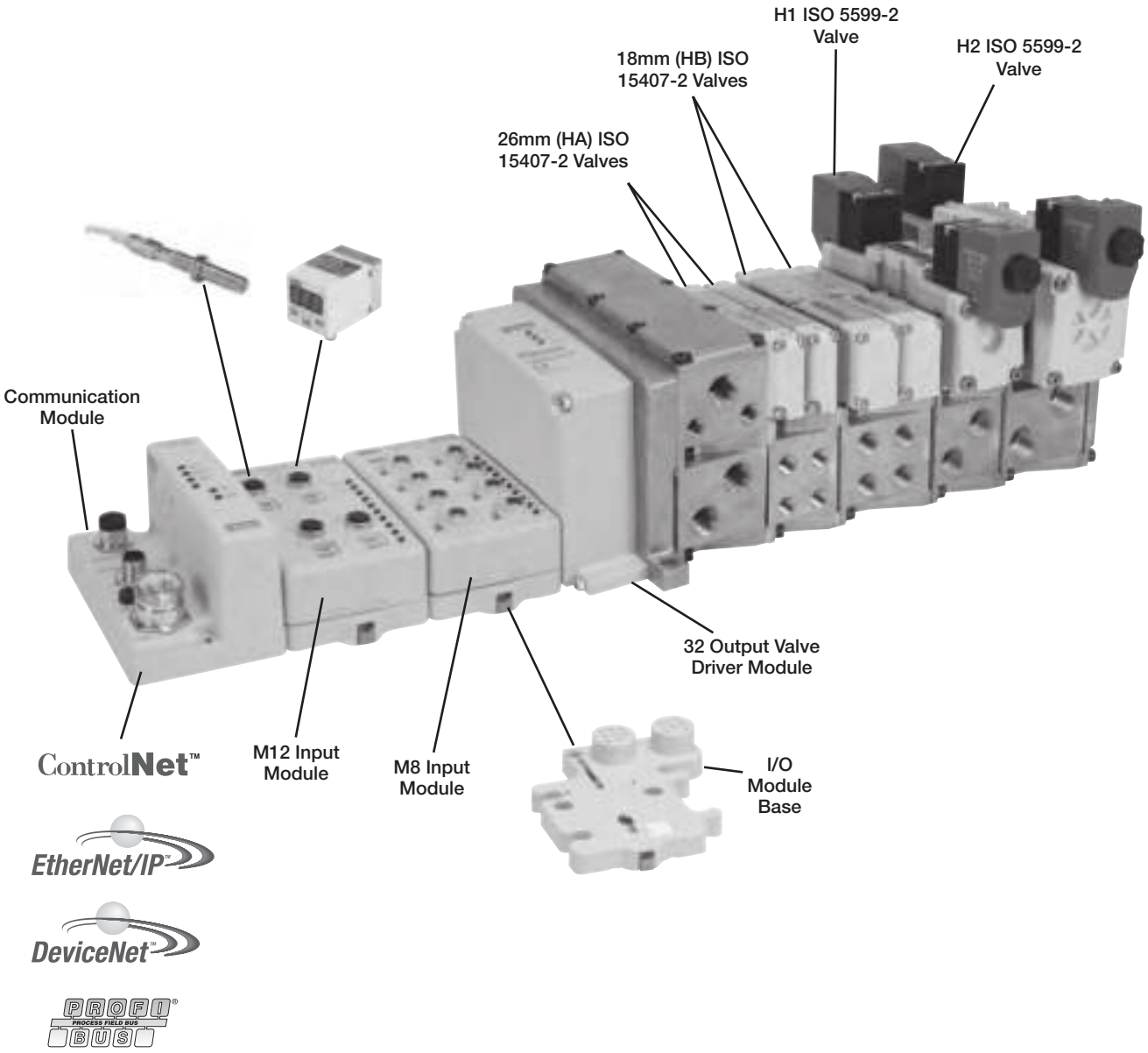
- https://ioddfinder.io-link.com
- www.Parker.com/pdn/P2H_IOL

## H Series ISO & H Series Network Portal

- A complete network communication offering for all H Series ISO and H Series Micro valves
- CSA, cCSAus and CE certifications (as marked)

## I/O Configuration

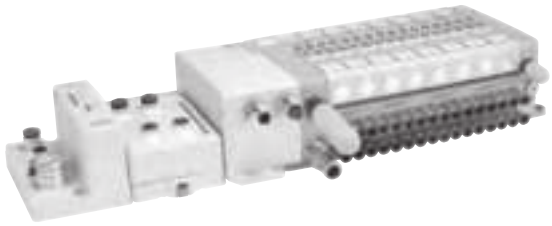
- De-centralized H Series Network Portal
- M23, 12-Pin or 19-Pin output extension to an H Series ISO valve manifold
- Separate output and input clusters using a bus extender cable
- Separate output and input power using a power extension module
- 25-Pin, D-Sub output extension to an H Series ISO valve manifold
- I/O density per module = 8 or 16



## The H Series Network Portal

**H Series Network Portal has four major components:**

- Valve driver module provide control for 32 solenoids on a manifold, with bus extension providing connectivity to 3 more manifolds
- I/O modules provide the field interface, system-interface circuitry, and bases for mounting
- Communication modules provide the network-interface circuitry
- Power distribution module provide 5 additional power inputs to the H Series Network Portal



## Features

- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Parameter-level explicit messaging
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, $C_{UL}$, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits

## Communications Node

PSSCENA

| Protocol | Part number |
|---|---|
| DeviceNet | **PSSCDM18PA (7/8" Mini) or PSSCDM12A (M12)** |
| ControlNet | **PSSCCNA** |
| EtherNet/IP | **PSSCENA** |
| PROFIBUS-DP | **PSSCPBA** |

All nodes are IP67 certified.

Reference the following documents for installation instructions.
DeviceNet - E101P, PSS-UM001A; ControlNet - E103P
EtherNet/IP - E104P; PROFIBUS-DP - E102P

## Digital Inputs

PSSN16M12A

PSSN8M8A

| I/O modules | Voltage | Part number |
|---|---|---|
| 16 digital inputs M12, 5-pin used with PNP sourcing input device | 10 to 28.8VDC | **PSSN16M12A** |
| 8 digital inputs M12, 5-pin used with PNP sourcing input device | 10 to 28.8VDC | **PSSN8M12A** |
| 8 digital inputs M12, 5-pin used with NPN sinking input device | 10 to 28.8VDC | **PSSP8M12A** |
| 8 digital inputs M8, 3-pin used with PNP sourcing input device | 10 to 28.8VDC | **PSSN8M8A** |
| 8 digital inputs M23, 12-pin used with PNP sourcing input device | 10 to 28.8VDC | **PSSN8M23A** |

Reference E106P document for installation instructions.

☐ Most popular.





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

## Digital Outputs

| | I/O modules | Voltage | Part number |
|---|---|---|---|
|  PSST16D25A | 16 digital outputs M23, 19-pin used with PNP sourcing outputs* | 10 to 28.8VDC | **PSST16M23A** |
| | 16 digital outputs D-sub, 25-pin used with PNP sourcing outputs* | 10 to 28.8VDC | **PSST16D25A** |
| | 16 digital outputs M12, 5-pin used with PNP sourcing outputs* | 10 to 28.8VDC | **PSST16M12A** |
|  PSST16M12A | 8 digital outputs M12, 5-pin used with PNP sourcing outputs* | 10 to 28.8VDC | **PSST8M12A** |
| | 8 digital outputs M8, 3-pin used with PNP sourcing outputs* | 10 to 28.8VDC | **PSST8M8A** |
| | 4 digital output, high watt relay M12, 5-pin used with PNP sourcing outputs (2 Amp) § | 24VDC | **PSSTR4M12A** |
|  PSST8M12A | 8 digital outputs M23, 12-pin used with PNP sourcing outputs* | 10 to 28.8VDC | **PSST8M23A** |

All nodes are IP67 certified.
Reference the following documents for installation instructions.
+ E107P
§ E109P
See www.pdnplu.com

## Analog Inputs

| | I/O modules | Voltage | Part number |
|---|---|---|---|
|  PSSNACM12A | 2 Analog inputs voltage M12, 5-pin ‡ | -10 to 10VDC or 0 to 10VDC | **PSSNAVM12A** |
| | 2 Analog inputs current M12, 5-pin ‡ | 4 to 20mA or 0 to 20mA | **PSSNACM12A** |

All nodes are IP67 certified,
‡ Reference E110P document for installation instructions.
See www.pdnplu.com

## Analog Outputs

| | I/O modules | Voltage | Part number |
|---|---|---|---|
|  PSSTACM12A | 2 Analog outputs voltage M12, 5-pin** | 0 to 10V ± 10V | **PSSTAVM12A** |
| | 2 Analog outputs current M12, 5-pin** | 4 to 20mA or 0 to 20mA | **PSSTACM12A** |

All nodes are IP67 certified.
** Reference E111P document for installation instructions.
See www.pdnplu.com

## Terminating Base Module

| | Base module | Part number |
|---|---|---|
|  | Termination base for stand alone units | **PSSTERM** |

Used as the last terminating module for a stand alone H Series network assembly.

Most popular.

## Power Extender Module

| | Extender module | Part number |
|---|---|---|
|  | 24VDC field power module | **PSSSE24A** |

A Power Extender Module must be used on every 14th module in H Series Network assembly.
Reference document E105P and PSS-SG001 for configuration instructions.
See www.pdnplu.com

## Bus Extender Cable

| | Description | Voltage | Part number |
|---|---|---|---|
|  | 1 meter cable* | 24VDC | **PSSEXT1** |
| | 3 meter cable* | 24VDC | **PSSEXT3** |

* Requires a PSSSE24 Power Extender Module.
IP67 certified.
Reference E117P document for installation instructions.
See www.pdnplu.com

## H Series Micro Bus Extender Cable

| | Description | Voltage | Part number |
|---|---|---|---|
|  | 1 meter cable* | 24VDC | **PSSVEXT1** |

* IP67 certified.

## Replacement Base Module

| | Description | Part number |
|---|---|---|
|  | Base module | **PSSBASE** |



Most popular.

## Using Bus Extender Cables

### Example #1:

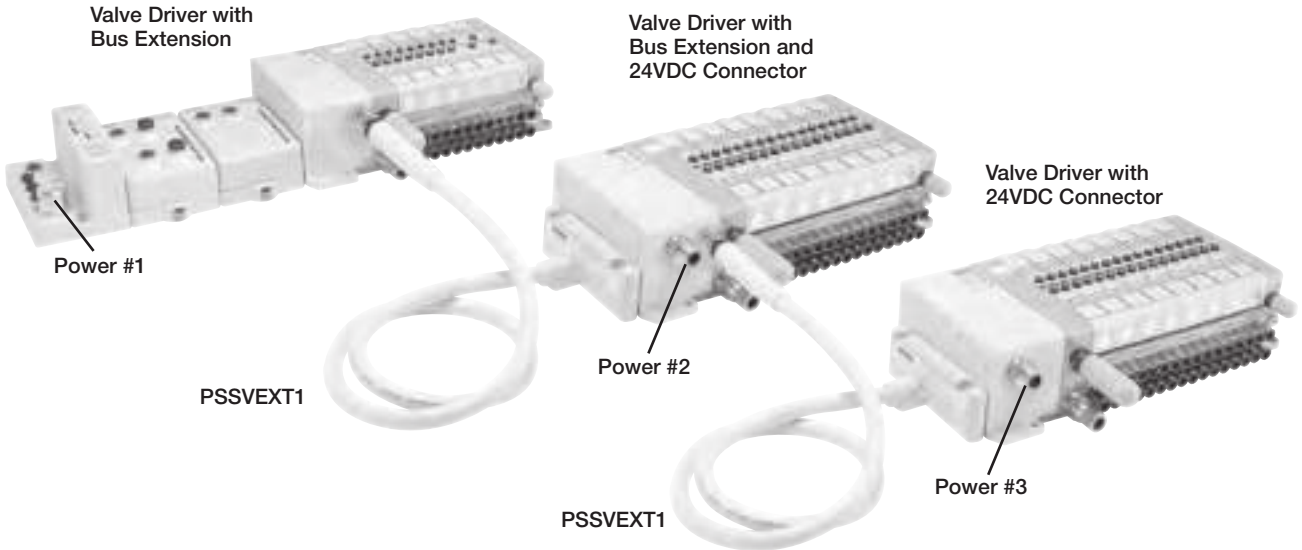
### H Series Micro with Standard Bus Extender Cable

- Separate the communication module and a portion of the I/O from other I/O and the valve manifold
- Commonly used when overall length is restricted
- PSSSE24A is needed on the extension. No 24VDC connector needed on the H Series Network end plate
- Can be used with H Series ISO and H Series Micro valves


### Example #2:

### H Series Micro with Bus Extension on Valve Driver Module – No additional I/O at the Extension

- Add up to three additional valve manifolds without adding another communication module
- No PSSSE24A is needed on the extension when the valve driver module with 24VDC connector is used
- Commonly used when many valves are required
- Bus expansion only available with H Series Micro valves

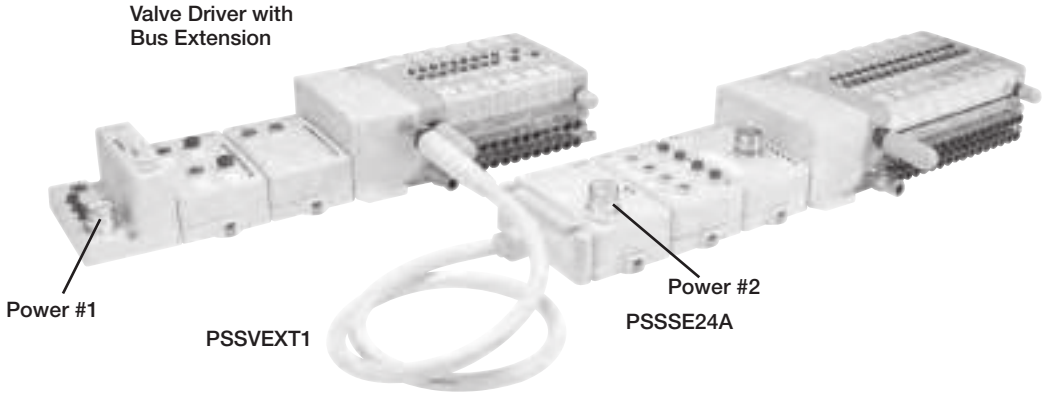


## Using Bus Extender Cables (continued)

### Example #3:

**H Series Micro with Bus Extension on Valve Driver – With I/O at Extension**

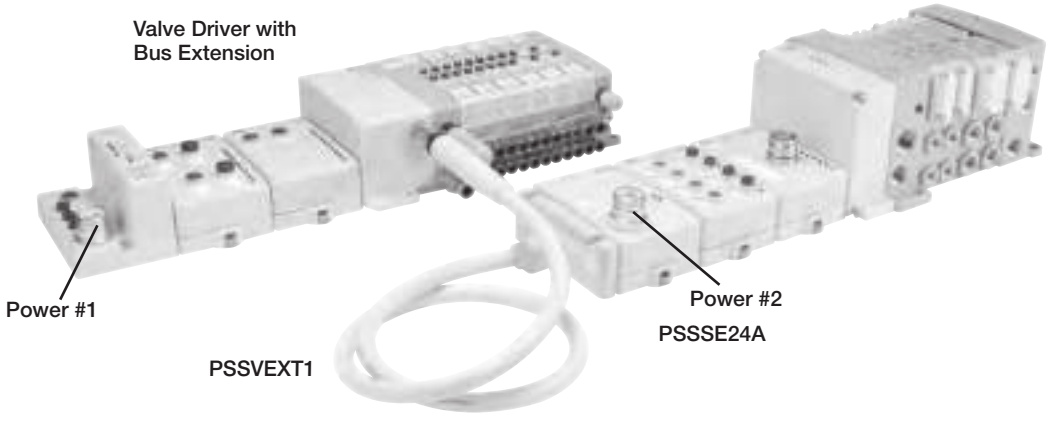
- Add up to three additional valve manifolds without adding another communication module
- PSSSE24A is needed on the extension. No 24VDC connector needed on the H Series Network end plate
- Commonly used when many valves are required, and each location requires additional I/O
- Bus expansion only available with H Series Micro




### Example #4:

**H Series Micro with Bus Extension on Valve Driver Module – With I/O at the Extension and Larger H Series ISO Valve Manifold**

- Add up to two additional H Series Micro valve manifolds and one H Series ISO valve manifold without adding another communication module
- PSSSE24A is needed on the extension
- H Series ISO valve manifold must be the last manifold on the extension
- Commonly used when many valves are required, and each location requires additional I/O
- Bus expansion only available with H Series Micro, H Series ISO manifold must be the last manifold in the system



## Digital I/O Modules

Choose digital I/O modules when you need:

- **Input Modules.** An input module responds to an input signal in the following manner:
  - Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data. All input modules use input filtering.
  - Optical isolation shields logic circuits from possible damage due to electrical transients.
  - Logic circuits process the signal.
  - An input LED turns on or off indicating the status of the corresponding input device.
- **Output Modules.** An output module controls the output signal in the following manner:
  - Logic circuits determine the output status.
  - An output LED indicates the status of the output signal.
  - Optical isolation separates module logic and bus circuits from field power.
  - The output driver turns the corresponding output on or off.
- **Surge Suppression.** Most output modules have built-in surge suppression to reduce the effects of high-voltage transients. However, we recommend that you use an additional suppression device if an output is being used to control inductive devices, such as:
  - Relays
  - Motor starters
  - Solenoids
  - Motors

  Additional suppression is especially important if your inductive device is in series with, or parallel to, hard contacts such as:
  - Push buttons
  - Selector switches

The digital I/O modules support:

- A wide variety of voltage interface capabilities
- Isolated and non-isolated module types
- Point-level output fault states
- Choice of direct-connect or rack-optimized communications
- Field-side diagnostics on select modules

Connector types are indicated by the catalog number. For example, the PSSN8M12A has an M12 connector.

### Digital DC Input Modules

| | PSSN8M8A<br>PSSN8M12A<br>PSSN8M23A | PSSN16M12A | PSSP8M12A |
|---|---|---|---|
| Number of inputs | 8 PNP sourcing | 16 PNP sourcing | 8 NPN sinking |
| Key switch position | 1 | | |
| Voltage, on-state input, nom. | 24VDC | | |
| Voltage, on-state input, min. | 10VDC | | |
| Voltage, on-state input, max. | 28.8VDC | | |
| Input delay time, ON to OFF | 0.5 ms hardware + (0…65 ms selectable)* | | |
| Current, on-state input, min. | 2 mA | | |
| Current, on-state input, max. | 5 mA | | |
| Current, off-state input, max. | 1.5 mA | | |
| Bus power current (mA) | 75 | | |
| Power dissipation, max. | 1.0 W @ 28.8VDC | | |

* Input ON-to-OFF delay time is the time from a valid input signal to recognition by the module.

### Digital DC Output Modules

| | PSST8M8A<br>PSST8M12A<br>PSST8M23A | PSST16M223A<br>PSST16D25A<br>PSST16M12A |
|---|---|---|
| Number of outputs | 8 PNP sourcing | 16 PNP sourcing |
| Keyswitch position | 1 | |
| Voltage, on-state output, nom. | 24VDC | |
| Voltage, on-state output, min. | 10VDC | |
| Voltage, on-state output, max. | 28.8VDC | |
| Output current rating, max. | 3.0 A per module, 1.0 A per channel | |
| Bus power current (mA) | 75 | |
| Power dissipation, max. | 1.2 W @ 28.8VDC | |

### Relay Output Module

| | PSSTR4M12A |
|---|---|
| Number of outputs | 4 Form A (N.O.) relays, isolated |
| Key switch position | 7 |
| Output delay time, ON to OFF, max. | 26 ms* |
| Contact resistance, initial | 30 mΩ |
| Current leakage, Off-state output, max. | 1.2 mA and bleed resistor thru snubber circuit @ 240V ac |
| Output current rating, max | 8.0 A per module, 2.0 A per channel |
| Bus power current (mA) | 90 |
| Power dissipation, max. | 0.5 W |

*Time from valid output off signal to relay de-energization by module.

## Analog I/O Modules

The H Series Network Portal analog modules support: on-board, channel-level data alarming (four set-points per channel); scaling to engineering units; channel-level diagnostics (electronic bits and LEDs); and integer format.

Choose analog I/O modules when you need:

- **Individually configurable channels** to use the module(s) with a variety of sensors.
- **On-board scaling** to eliminate the need to scale the data in the controller. Controller processing time and power are preserved for more important tasks, such as I/O control, communications, or other user-driven functions.
- **On-line configuration.** Modules can be configured in the RUN mode using the programming software or the control program. This allows you to change configuration while the system is operating. For example, the input filter for a particular channel could be changed, or a channel could be disabled based on a batch condition. To use this feature, the controller and network interface must also support this feature.
- **Over- and under-range detections and indications.** This eliminates the need to test values in the control program, saving valuable processing power of the controller. In addition, since alarms are handled by the module, the response is faster and only a single bit per channel is monitored to determine if an error condition has occurred.
- **Ability to direct output device operation during an abnormal condition.** Each channel of the output module can be individually configured to hold its last value or assume a user-defined value on a fault condition. This feature allows you to set the condition of your analog devices, and therefore your control process, which may help to ensure a reliable shutdown.
- **Ability to individually enable and disable channels.** Disabling unused channels improves module performance.
- **Selectable input filters** This lets you select the filter frequencies for each channel that best meets the performance needs of your application based on environmental limitations. Lower filter settings provide greater noise rejection and resolution. Higher filter settings provide faster performance. Note: The analog modules provide four input filter selections.
- **Selectable response to broken input sensor.** This feature provides feedback to the controller that a field device is not connected or operating properly. This lets you specify corrective action based on the bit or channel condition.
- **High accuracy.** The modules share a high accuracy rating of ±0.1% of full-scale accuracy at 25°C.

### Analog Input Modules

| | PSSNACM12A | PSSNAVM12A |
|---|---|---|
| Number of inputs | 2 | 2 |
| Key switch position | 3 | 3 |
| Input signal range | 4…20 mA<br>0…20 mA | -10 to 10VDC<br>0 to 10VDC |
| Input resolution, bits | 16 bits - over 21 mA<br>0.32 µA/cnt | 15 bits plus sign<br>320 µV/cnt in unipolar or bipolar mode |
| Absolute accuracy, current input | 0.1% full scale @ 25°C*† | — |
| Absolute accuracy, voltage input | — | 0.1% full scale @ 25°C*† |
| Input step response, per channel | 70 ms @ notch = 60 Hz (default)<br>80 ms @ notch = 50 Hz<br>16 ms @ notch = 250 Hz<br>8 ms @ notch = 500 Hz | 70 ms @ notch = 60 Hz (default)<br>80 ms @ notch = 50 Hz<br>16 ms @ notch = 250 Hz<br>8 ms @ notch = 500 Hz |
| Input conversion type | Delta Sigma | Delta Sigma |
| Bus power current (mA) | 75 | 75 |
| Power dissipation, max. | 0.6 W @ 28.8VDC | 0.6 W @ 28.8VDC |

* Includes offset, gain, non-linearity and repeatability error terms.

† Analog input modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting; four-alarm and annunciation set-points; calibration mode and electronic reporting; under- and over-range and electronic reporting; channel signal range and update rate and on-board scaling; filter-type; channel update rate.

### Analog Output Modules

| | PSSTACM12A | PSSTAVM12A |
|---|---|---|
| Number of outputs | 2 | 2 |
| Key switch position | 4 | 4 |
| Output signal range | 4…20 mA<br>0…20 mA | -10 to 10VDC<br>0 to 10VDC |
| Output resolution, bits | 13 bits - over 21 mA<br>2.5 µA/cnt | 14 bits (13 plus sign)<br>1.28 mV/cnt in unipolar or bipolar mode |
| Absolute accuracy, current output | 0.1% full scale @ 25°C*† | — |
| Absolute accuracy, voltage output | — | 0.1% full scale @ 25°C*† |
| Step response to 63% of FS, | 24 µs | —<br>Current output |
| Step response to 63% of FS, | — | 20 µs<br>Voltage output |
| Output conversion rate | 16 µs | 20 µs |
| Bus power current (mA) | 75 | 75 |
| Power dissipation, max. | 1.0 W @ 28.8VDC | 1.0 W @ 28.8VDC |

* Includes offset, gain, non-linearity and repeatability error terms.

† Analog output modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting (PSSTACM12A only); fault mode; idle mode; alarms; channel signal range and on-board scaling.





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

## Valve Driver Modules

The PSSV32A and PSSVM32A valve driver modules provide an interface between the H Series Network Portal and the valve assembly. These modules will always be the last on the H Series Network serial bus, and control 32 digital outputs at 24VDC. Depending on the valve selection, a valve driver module can control up to 32 single solenoid valves or 16 double solenoid valves.

PSSV32A is used with H Series ISO valves and PSSVM32A is used with H Series Micro valves.

### Specifications

| | PSSV32A and PSSVM32A |
|---|---|
| Outputs per module | 32, PNP sourcing |
| Voltage drop, on-state output, maximum | 0.2VDC |
| Voltage, off-state output, maximum | 28.8VDC |
| Voltage, on-state output,<br>maximum<br>minimum<br>nominal | <br>28.8VDC<br>10VDC<br>24VDC |
| Output current rating | 200 mA per channel, not to exceed 6.0 A per module |
| Output surge current, naximum | 0.5 A for 10 ms, repeatable every 3 seconds |
| Current leakage, off-state output, Maximum | 0.1 mA |
| Current, on-state output minimum | 200 mA per channel |
| Output delay time OFF to ON, Maximum[1] | 0.1 ms |
| Output delay time, ON to OFF, Maximum[1] | 0.1 ms |
| External DC power supply voltage range | 10 to 28.8VDC |
| External DC power supply voltage nominal | 24VDC |

1. OFF to ON or ON to OFF delay is time from a valid output “on” or “off” signal to output energization or de-energization.

## Select the Appropriate Power Supply

| Part number | Power supply input voltage, nom. | Operating voltage range | Maximum continuous current draw | Power supply inrush current, max. | Input overvoltage protection | Power supply interruption protection |
|---|---|---|---|---|---|---|
| **PSSCDM12A** | 24VDC | 10...28.8VDC | 10 A | 6 A for 10 ms | Reverse polarity protected | Output voltage will stay within specifications when input drops out for max. load. |
| **PSSCDM18PA** | | | | | | |
| **PSSCCNA** | | | | | | |
| **PSSCENA** | | | | | | |
| **PSSCPBA** | | | | | | |
| **PSSSE24A** | | | | | | |

## Power Extender Module

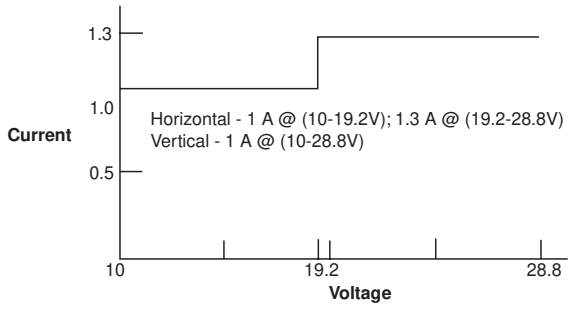
The PSSSE24A expansion power unit passes 24VDC field power to the I/O modules to the right of it. This unit extends the backplane bus power and creates a new field voltage partition segment for driving field devices for up to 13 I/O modules. The expansion power unit separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for:

- Separating field power between input and output modules
- Separating field power to the analog and digital modules
- Grouping modules to perform a specific task or function

You can use multiple expansion power units with any of the communication adapters to assemble a full system. If you are using the PSSCDM12A adapter, you may use a PSSSE24A expansion power unit to add additional modules. For example, if you had a 36 module system with a PSSCDM12A adapter, you would have at least two or more PSSSE24A expansion power units to provide more bus power current for modules to the right of the supply.

- 1.3A of additional bus power
- Starts new voltage distribution
- Partitioning for E-Stop wiring

### PSSSE24A Current Derating for Mounting



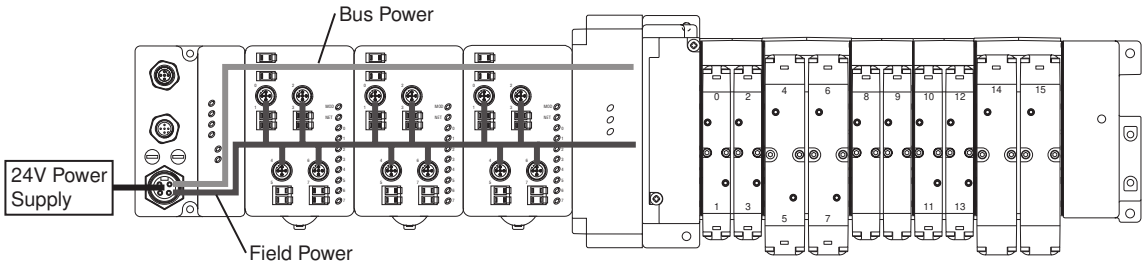

## Power Distribution General Specifications

| | PSSSE24A |
|---|---|
| Power supply requirements | **Note:** In order to comply with CE low voltage directives (LVD), you must use a safety extra low voltage (SELV) or a protected extra low voltage (PELV) power supply to power this adapter |
| Field side power requirements | 24VDC (+20% = 28.8VDC max.) @ 400 mA |
| Inrush current, max. | 6 A for 10 ms |
| Input overvoltage protection | Reverse polarity protected |
| Power supply interruption protection | Output voltage will stay within specifications when input drops out for 10 ms at 10V with max. load |
| Power supply input voltage, nom. | 24VDC |
| Operating voltage range | 10…28.8VDC |
| Power consumption, max. | 9.8 W @ 28.8VDC |
| Power dissipation, max. | 3.0 W @ 28.8VDC |
| Thermal dissipation, max. | 10.0 BTU/hr @ 28.8VDC |
| Isolation voltage | 1250V rms |
| Bus power supply current, max. | 1.5 A |
| Field power supply current, max. | 10 A |

## Power Distribution Options for H Series ISO

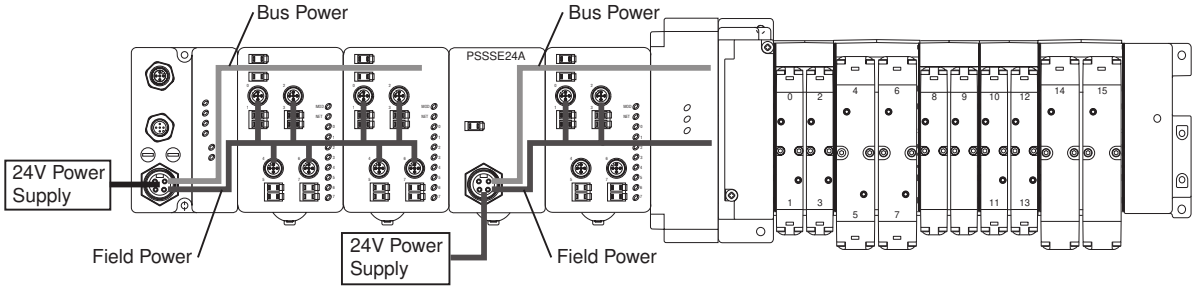
### H Series Network Communication and I/O Modules

An auxiliary 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 I/O modules with a maximum of 10A field power, using the auxiliary power.




### H Series Network Portal with 24VDC Expansion Power Unit (PSSSE24A)

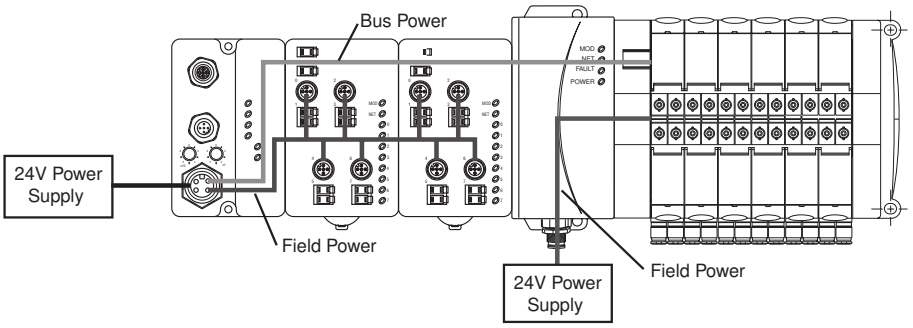
The auxiliary power from the communication module supports up to 13 I/O modules with a maximum of 10A field power. The 24VDC power extender module (PSSSE24A) extends the backplane bus power and I/O Module field power to support up to 13 more I/O modules. Connect additional power extender modules to expand the I/O assembly up to the maximum of 63 I/O modules. This secondary 24VDC connector on the PSSSE24A can be wired into an emergency stop circuit.



## Additional Power Distribution Options for H Series Micro

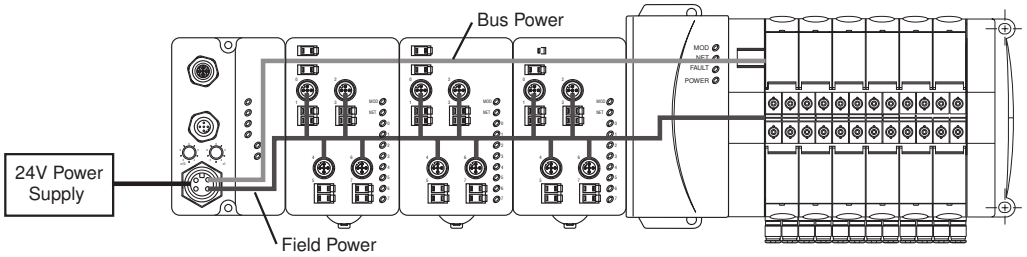
### H Series Network Communication Module and Valve Driver Module with 24VDC Connector

The 24VDC power supply from the communication adaptor provides power to the backplane bus power and I/O module field power for up to 13 modules and an adapter with a maximum of 10A field power. In this configuration, backplane bus power and I/O module field power are supplied to the input and output modules. The communication module only supplies backplane bus power to the valve driver module, as the H Series Micro with 24VDC connector separates the field power from the rest of the network. This secondary 24VDC connector on the valve driver module supplies field power to the valves, and can be wired into an emergency stop circuit.




### H Series Network Communication and I/O Modules

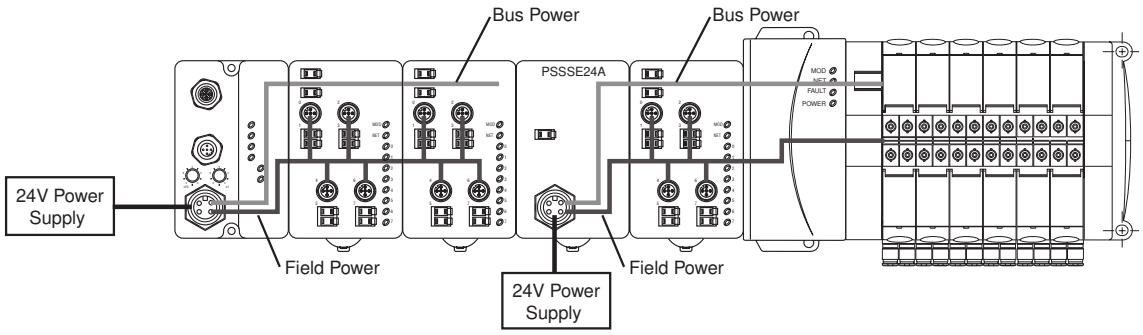
The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10A field power, using this power source.




### H Series Network Communication and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10A field power, using this power source.

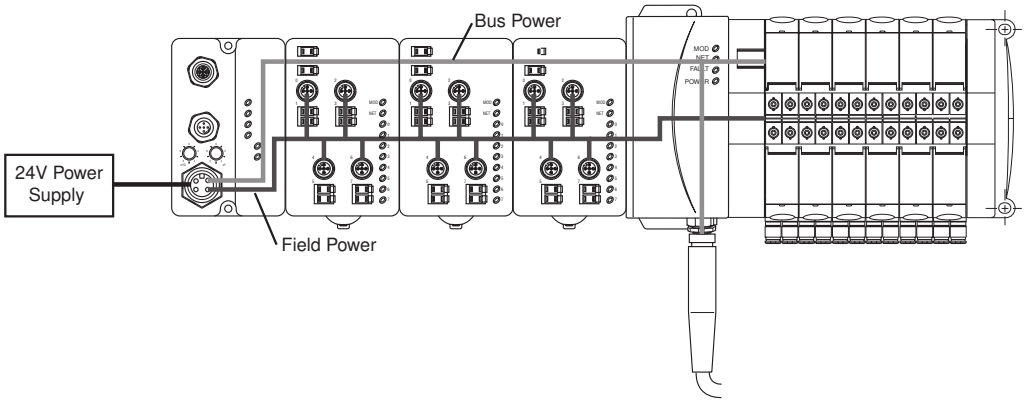
The 24VDC power extender module (PSSSE24A) extends the backplane bus power and I/O module field power to support up to 13 more modules. Connect additional power extender modules to expand the assembly up to the maximum of 63 I/O modules. The valve driver module is the last module on the system, and will draw bus power and field power from the PSSSE24A to the left of it. This secondary 24VDC connector on the PSSSE24A can be wired into an emergency stop circuit.



## Power Distribution Options for H Series Micro (Continued)

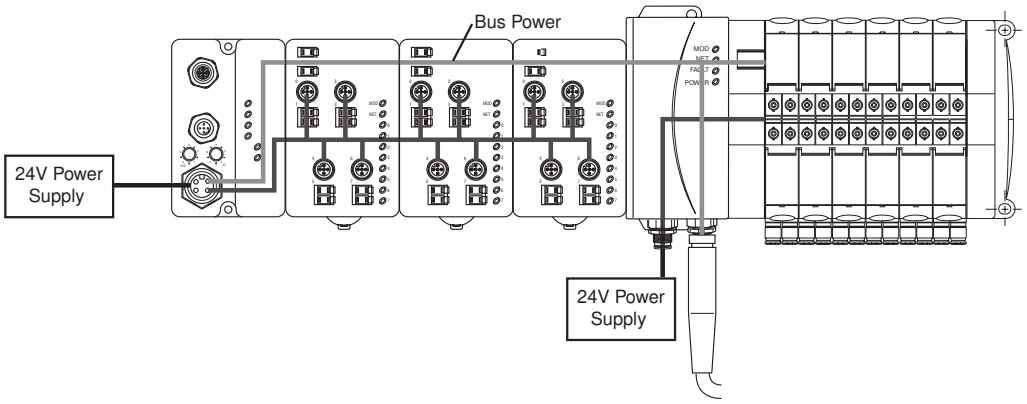
### H Series Network Communication Module with Bus Extension Connector and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10A field power, using this power source. The H Series Micro with bus extension connector carries backplane bus power and communication down to another H Series network assembly through the PSSVEXT1 cable. If additional H Series Network input and output modules or H Series ISO valve manifold is used on this extension, a PSSSE24A power extender module is required to provide field power. If the extension is attached directly to an H Series Micro manifold, field power can be supplied directly by using the 24VDC connector option.




### H Series Network Communication Module with 24VDC and Bus Extension Connectors and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. In this configuration, bus power and field power are supplied to the input and output modules. The communication module only supplies bus power to the valve driver module, as the 24VDC connector separates the field power from the rest of the network. This secondary 24VDC connector on the valve driver module supplies field power to the valves, and can be wired into an emergency stop circuit. The bus extension connector carries bus power and communication down to another H Series Network assembly through the PSSVEXT1 cable. If additional H Series Network input and output modules or H Series ISO valve manifold is used on this extension, a PSSSE24A power extender module is required to provide field power. If the extension is attached directly to an H Series Micro manifold with 24VDC connector, field power can be supplied directly by using the 24VDC connector option.



## Placing H Series Network Modules

### Maximum Size Layout

| Part number | Bus power supply | Maximum I/O modules with 24VDC backplane current at 75 mA each | Maximum I/O modules with expansion power supplies |
|---|---|---|---|
| PSSCDM12A on DeviceNet | 1000 | Up to 13 | 63 |
| PSSCDM18PA on DeviceNet | | | |
| PSSCCNA on ControlNet | | | |
| PSSCENA on EtherNet/IP | | | |
| PSSCPBA on PROFIBUS | | | |
| PSSSE24A Expansion Power | Horizontal mounting: 1A @ 10...19.2V input; 1.3A @ 19.2...28.8V input<br>Vertical mounting: 1A @ 10...28.8V input | | |

### Power Supply Distance Rating

Modules are placed to the right of the power supply. Each H Series Network module can be placed in any of the slots to the right of the power supply until the usable backplane current of that supply has been exhausted. A communication module provides 1 A current to the PointBus. The power extend module, PSSSE24A, provides up to 1.3 A and I/O modules require from 75 mA (typical for the digital and analog I/O modules) up to 90 mA or more.

### Current Requirements

| Part number | PointBus current requirements |
|---|---|
| **PSSN8xxx** | 75 mA |
| **PSSP8xxx** | |
| **PSST8xxx** | |
| **PSSN16xxx** | |
| **PSST16xxx** | |
| **PSSTR4MRA** | 90 mA |
| **PSSNACM12A** | 75 mA |
| **PSSTACM12A** | |
| **PSSNAVM12A** | |
| **PSSTAVM12A** | |
| **PSSV32A** | |
| **PSSVM32A** | |

## Related Documentation

Additional user documentation presents information according to the tasks performed and the programming environment used. Refer to the table below for information on H Series Network Portal products.

### H Series Network Portal Related Publications*

| | Part number | Description | Instruction sheet* |
|---|---|---|---|
| General information | — | Industrial automation wiring and grounding guidelines | E115P |
| | | Safety guidelines for the application, installation and maintenance of solid state control | E116P |
| Communication interfaces | **PSSCDM12A** | H Series DeviceNet adapter module, drop or dass-through, with male and female M12 connectors | E101P, installation instructions PSS-UM001, user manual |
| | **PSSCDM18PA** | H Series DeviceNet adapter module, drop or dass-through, with male and female M18 connectors | |
| | **PSSCCNA** | H Series redundant ControlNet adapter module | E103P, installation instructions |
| | **PSSCENA** | H Series EtherNet/IP 10/100 Mbps adapter module | E104P, installation instructions |
| | **PSSCPBA** | H Series PROFIBUS adapter module | E102P, installation instructions |
| Valve driver module | **PSSV32A, PSSVM32A** | 32 Point valve driver module | E100P |
| DC I/O | **PSSN16M12A** | 24VDC 16 sink input w/8 M12 connectors, 2 points per connector | E106P |
| | **PSSN8M8A** | 24VDC 8 sink input w/8 M8 connectors | |
| | **PSSN8M12A** | 24VDC 8 sink input w/4 M12 connectors, 2 points per connector | |
| | **PSSN8M23A** | 24VDC 8 sink input w/1 M23 connector | |
| | **PSSP8M12A** | 24VDC 8 source input w/4 M12 connectors, 2 points per connector | |
| | **PSST16M23A** | 24VDC 16 source output w/1 M23 | E107P |
| | **PSST16D25A** | 24VDC 16 source output w/1 25-pin, D-Sub | |
| | **PSST16M12A** | 24VDC 16 source output w/8 M12 | |
| | **PSST8M8A** | 24VDC 8 source output w/1 M23 | |
| | **PSST8M12A** | 24VDC 8 source output w/4 M12 | |
| | **PSST8M23A** | 24VDC 8 source output w/8 M8 | |
| Analog | **PSSNACM12A** | 24VDC analog current input w/ 2 M12 connectors | E110P |
| | **PSSNAVM12A** | 24VDC 2 analog voltage input w/ 2 M12 connectors | |
| | **PSSTACM12A** | 24VDC analog current output w/ 2 M12 connectors | E111P |
| | **PSSTAVM12A** | 24VDC analog voltage output w/ 2 M12 connectors | |
| Power unit | **PSSSE24A** | 24VDC expansion power supply | E105P |
| Relay output | **PSSTR4M12A** | 4 from A isolated (normally open) electromechanical relays | E109P |

* Publications are electronic versions only. To make copies of these publications, go to: www.pdnplu.com

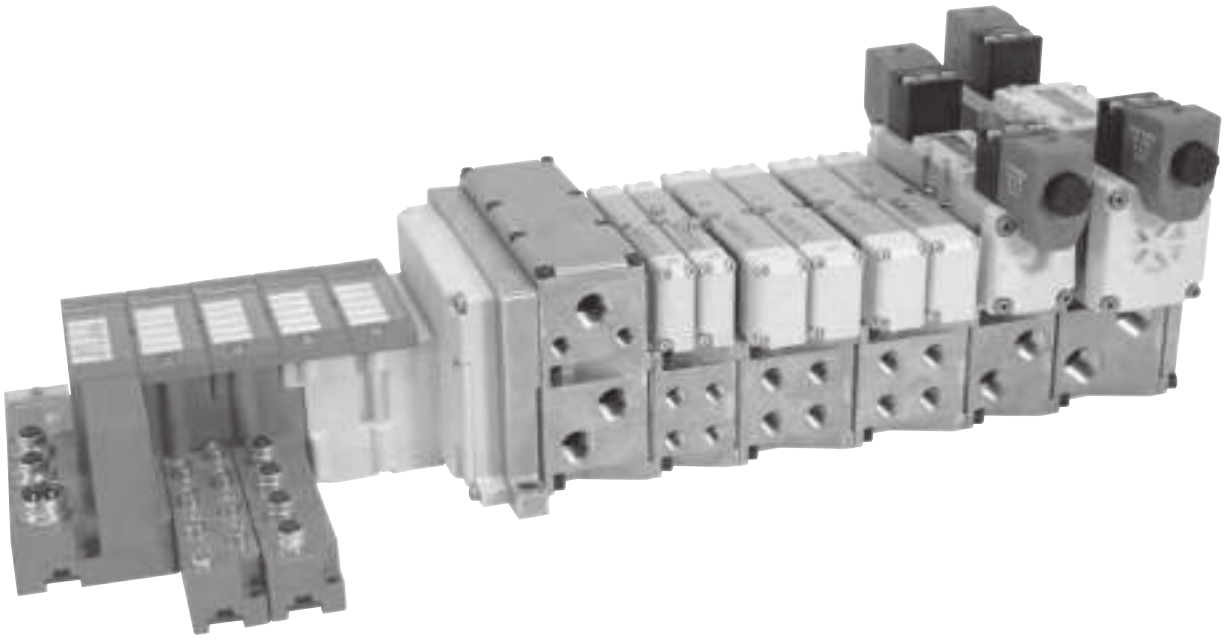
## The Turck Network Portal

Turck Network Portal has four major components:

- **Valve Driver Module** provide control for either 16 or 32 solenoids on a manifold
- **I/O Modules** provide the field interface and system-interface circuitry
- **Communication Modules** provide the network-interface circuitry
- **Power Distribution Module** provide 5 additional power inputs to the Turck system

## Turck Features

- Highly modular design (4pt – 16pt modularity)
- Broad app.lication coverage
- Expandable 4 port Class A IO-Link master
- Channel-level diagnostics (LED and electronic)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Channel-level short-circuit detection with electronic feedback
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, cCSAus, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits







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

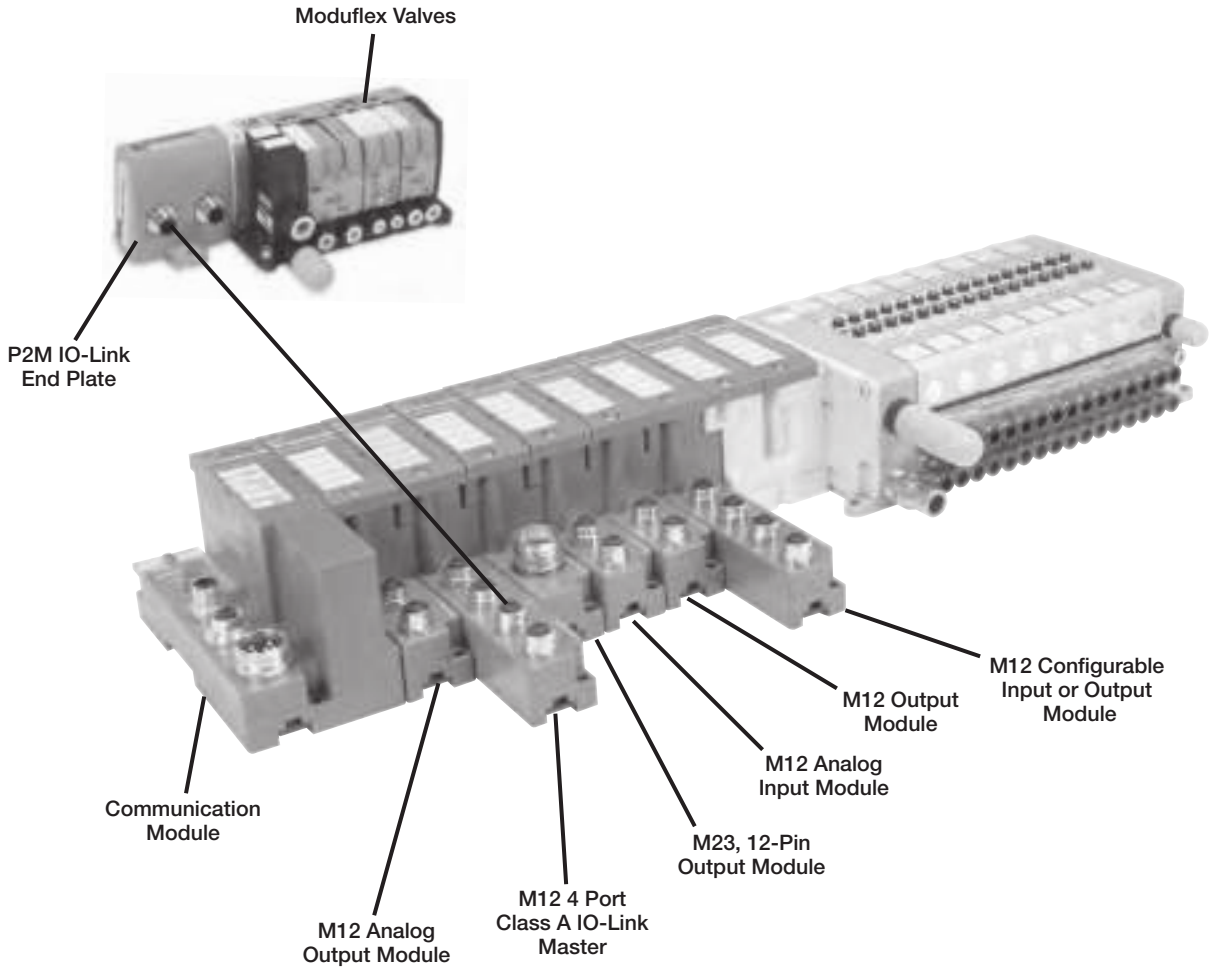
## Turck Network Portal

- A complete network communication offering for all H Series ISO and H Series Micro valves
- CSA, $C_{US}$ and CE certifications (as marked)

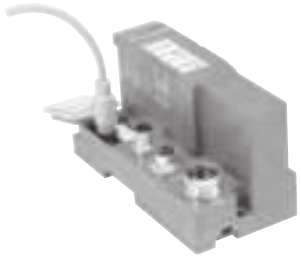
## I/O Configuration

- Centralized Turck Network Portal
- Pneumatics and I/O are in close proximity with one another
- M23, 12-Pin or 19-Pin output extension to an additional H Series valve manifold
- I/O density per module = 4, 8 or 16

DeviceNet™ EtherNet/IP™ PROFIBUS PROCESS FIELD BUS PROFINET INDUSTRIAL ETHERNET Modbus/TCP™ CANopen




**Configure / Program any module with RS232, or directly through Ethernet for any module with an Ethernet physical layer.**



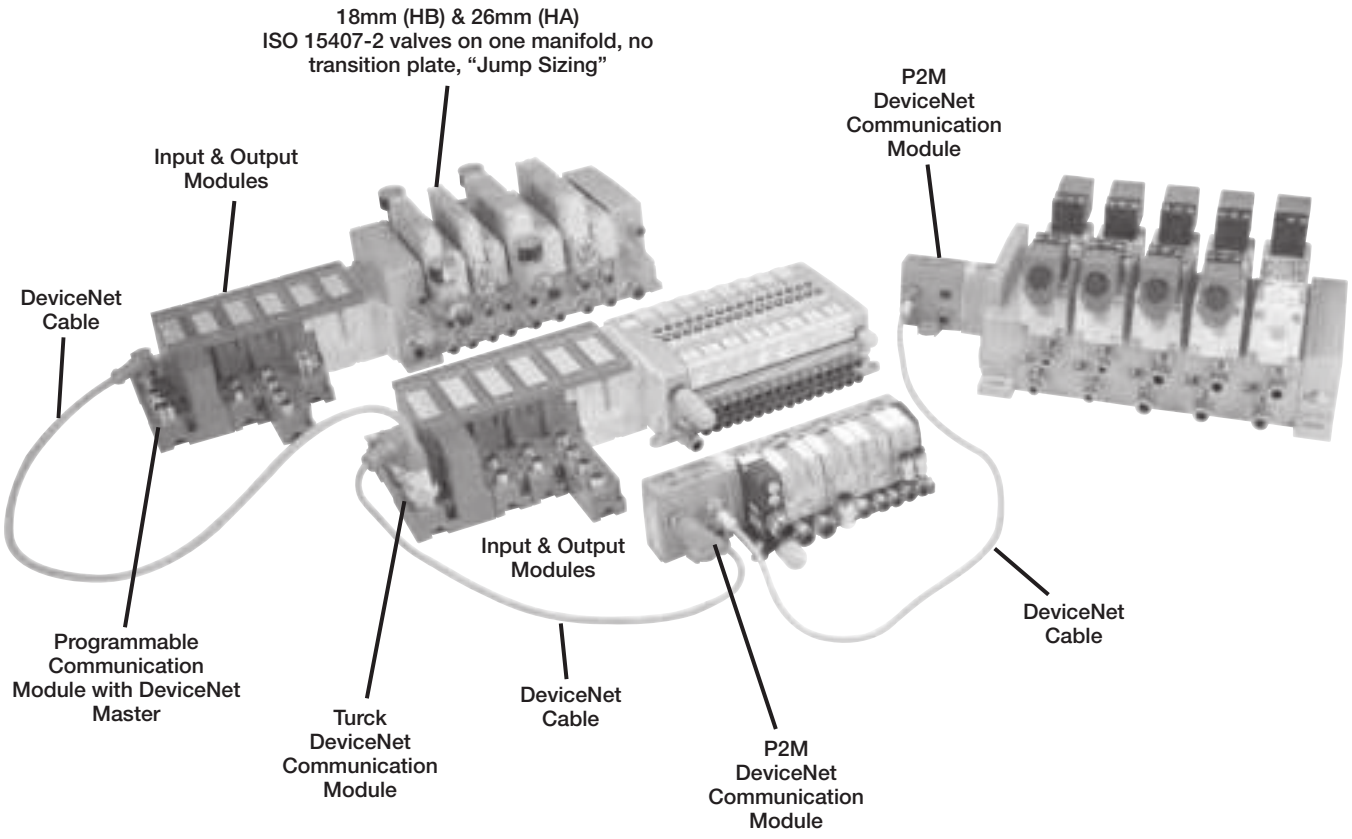
## Turck Network Portal

- A complete network communication offering for all H Series ISO and H Series Micro valves.
- CSA, cCSAus and CE certifications (as marked).

## I/O Configuration

- Complete control of all I/O and valves with stand alone control
- Additional I/O and valves connected over DeviceNet with BL Remote Subnet
- BL Remote connection to P2M and Turck DeviceNet equipped communication modules
- I/O density per module = 4, 8 or 16

DeviceNet™ EtherNet/IP™ PROFIBUS PROFINET Modbus/TCP™ CANopen

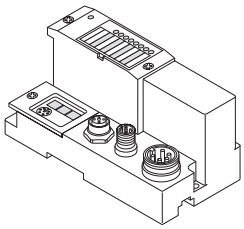






**Parker Hannifin Corporation**
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

## Communications Module

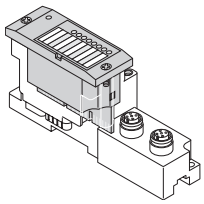


BL67 communication modules are the heart of a BL67 station. They are designed to connect the modular nodes to the higher level network (PROFIBUS-DP, DeviceNet, CANopen, Ethernet).

All BL67 electronic modules communicate over the internal module bus with the communication modules. The communication module structures the data and sends them clustered via network nodes to the higher control system.

This way all I/O modules can be configured independently of the system.

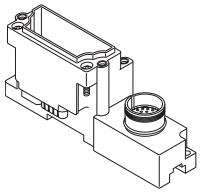
## Electronic Module



BL67 electronic modules are inserted into the passive base modules from above and then simply affixed with two screws. Maintenance is extremely simplified due to the separation of connection level and module electronics.

Moreover, flexibility is enhanced because the base modules provide different types of connectors. Voltage supply for the electronic modules is either provided via the communication modules or a Power Extender module. Power Extender modules can be used to create galvanically isolated potential groups.

## Base Module



BL67 base modules are aligned one by one to the right of the communication module and are tightened each with two screws, either with the communication modules or with the previous module. A DIN rail is not required. This way a compact and stable unit is created which can be mounted directly on the machine.

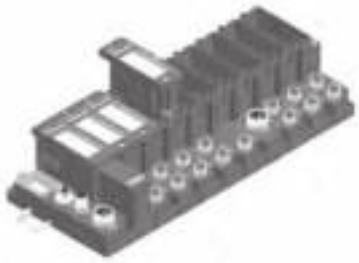
The base modules serve for connection of the field devices an are available with different connection types (M8, M12, M23 and 7/8).

A BL67 system can be extended to a total length of 1 m, comprising of a communication module for PROFIBUS-DP, DeviceNet / CANopen or Ethernet and a maximum of 32 modules.

System supply: The power supply for the BL67 system is either derived separately for Profibus-DP and Ethernet communication modules or directly from the DeviceNet / CANopen cable for the DeviceNet / CANopen communication module.

Power Extender modules can be inserted anywhere in the BL67 station. They provide isolated field voltage for the I/O modules mounted to their right.

Thus Power Extender modules can also be used to create different potential groups.

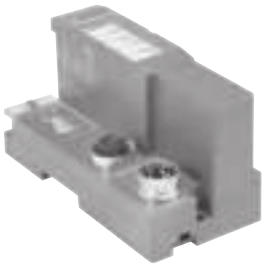


## Maximum System Extension

| | | PROFIBUS | | DeviceNet | | CANopen | | ModbusTCP | | EtherNet/IP | | PROFINET | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number of | | Number of | | Number of | | Number of | | Number of | | Number of | |
| Module type | | chan. | mod. | chan. | mod. | chan. | mod. | chan. | mod. | chan. | mod. | chan. | mod. |
| Digital inputs | 4 DI | 128 | 32 | 128 | 32 | 128 | 32 | 128 | 32 | 128 | 32 | 128 | 32 |
| | 8 DI | 256 | 32 | 256 | 32 | 256 | 32 | 256 | 32 | 256 | 32 | 256 | 32 |
| Digital outputs | 4 DO | 128 | 32 | 128 | 32 | 128 | 32 | 128 | 32 | 128 | 32 | 128 | 32 |
| | 8 DO | 256 | 32 | 256 | 32 | 256 | 32 | 256 | 32 | 256 | 32 | 256 | 32 |
| | 16 DO | 512 | 32 | 512 | 32 | 512 | 32 | 512 | 32 | 512 | 32 | 512 | 32 |
| Analog inputs | 2AI | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 |
| | 4AI | 112 | 28 | 124 | 31 | 124 | 31 | 128 | 32 | 128 | 32 | 128 | 32 |
| | 2 AI-PT | 56 | 28 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 |
| | 2 AI-TC | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 |
| Analog outputs | 2 AO-I | 38 | 19 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 | 64 | 32 |
| | 2 AO-V | 38 | 19 | 50 | 25 | 50 | 25 | 50 | 25 | 50 | 25 | 50 | 25 |

## BL67-GW-DN

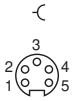
DeviceNet Communication Module with Power Over the Network



**7/8 Mini bus in wiring, view into male connector**


1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

**7/8 Mini bus out wiring, view into female connector**



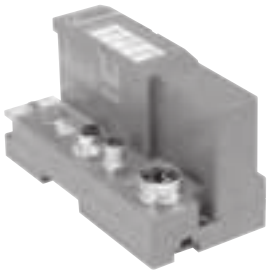

1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. DeviceNet communication speeds selectable between 120, 250, 500 kbps, and CANopen communication speeds are selectable between 10 kbps up to 1 Mbps. Addressing for either module can be selected via rotary switches or set through software.

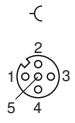
With the Power over the Network feature, it is only necessary to connect one cable to the communication module. For networks requiring additional power, a Bus Power Tee can be installed to combine separate network and power feeds into the communication module. See the Cables and Cordsets section for additional information.

## BL67-GW-CO

CANopen Communication Module



**M12 A-code bus out Wiring, view into female connector**




1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

**M12 A-code bus In Wiring, view into male connector**


1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

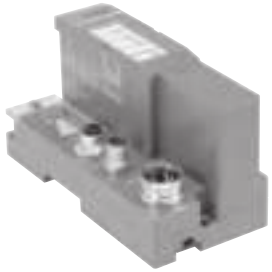
**7/8 Mini Power in wiring, view into male connector**


1 = GND
2 = GND
3 = PE
4 = $V_i$
5 = $V_o$

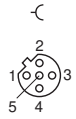
Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. CANopen communication speeds are selectable between 10 kbps up to 1 Mbps, and addressing can be selected via rotary switches or set through software.

## BL67-GW-DPV1

PROFIBUS Communication Module

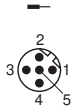


**M12 B-code bus out Wiring, view into female connector**




1 = 5 VDC
2 = GN (Bus A)
3 = GND
4 = RD (Bus B)
5 = Shield

**M12 B-code bus In Wiring, view into male connector**




1 = n.c.
2 = GN (Bus A)
3 = n.c.
4 = RD (Bus B)
5 = Shield

**7/8 Mini Power in wiring, view into male connector**


1 = GND
2 = GND
3 = PE
4 = $V_i$
5 = $V_o$

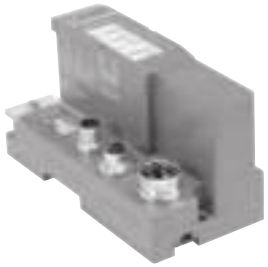
Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. PROFIBUS communication speeds are selectable between 9.6 kbps up to 12 Mbps, and addressing can be selected via rotary switches or set through software.

## BL67-GW-EN

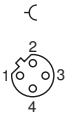
Modbus/TCP, EtherNet/IP, and PROFINET

## BL67-GW-EN-PN

PROFINET Communication Module



**M12 D-code Ethernet in Wiring, view into female connector**




1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

**7/8 Mini Power in wiring, view into male connector**


1 = GND
2 = GND
3 = PE
4 = $V_i$
5 = $V_o$

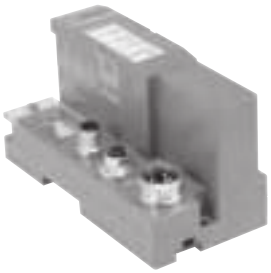
Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. Communication speeds of 10/100 Mbps, and addressing can be selected via rotary switches, BOOTP, DHCP, or through software.

## BL67-GW-EN-DN

Modbus/TCP Communication Module with DeviceNet Subnet

## BL67-GW-EN-IP-DN

EtherNet/IP Communication Module with DeviceNet Subnet



**DeviceNet OUT**


1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

**M12 D-code Ethernet in Wiring, view into female connector**


1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

**7/8 Mini Power in wiring, view into male connector**


1 = GND
2 = GND
3 = PE
4 = $V_i$
5 = $V_o$

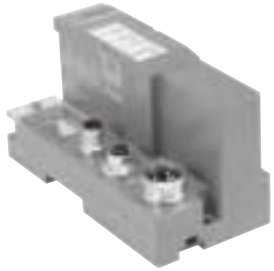
With BL Remote DeviceNet subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control. BL Remote DeviceNet subnet is independent of the main network, and is not visible to the master PLC.

## BL67-PG-EN-DN

Modbus/TCP Programmable Communication Module with DeviceNet Subnet

## BL67-PG-EN-IP-DN

EtherNet/IP Programmable Communication Module with DeviceNet Subnet



**DeviceNet OUT**


1 = Shield
2 = RD (V +)
3 = BK (V -)
4 = WH (CAN H)
5 = BU (CAN L)

**M12 D-code Ethernet in Wiring, view into female connector**


1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

**7/8 Mini Power in wiring, view into male connector**


1 = GND
2 = GND
3 = PE
4 = $V_i$
5 = $V_o$

Communication modules are equipped with a built in standalone controller which is programmed according to IEC61131-3 with CoDeSys. Each module has 512KB Program memory with 32 bit RISC processor, and can run 1000 instructions in less than 1 ms. These network equipped modules are optimized to interface with PLC's with network capability or act as standalone controllers that need to interface with other network equipped devices.

With BL Remote DeviceNet subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control. BL Remote DeviceNet subnet is independent of the main network, and is not visible to the master PLC.

## BL67-PG-DP

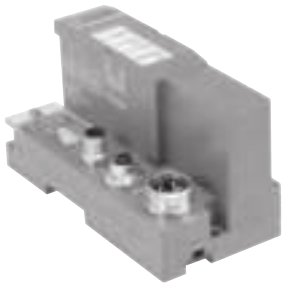
PROFIBUS Programmable Communication Module

## BL67-PG-EN

Modbus/TCP Programmable Communication Module

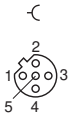
## BL67-PG-EN-IP

EtherNet/IP Programmable Communication Module



**Profibus Wiring**

**M12 B-code bus out Wiring, view into female connector**




1 = 5 VDC
2 = GN (Bus A)
3 = GND
4 = RD (Bus B)
5 = Shield

**M12 B-code bus in Wiring, view into female connector**


1 = n.c.
2 = GN (Bus A)
3 = n.c.
4 = RD (Bus B)
5 = Shield

**Ethernet Wiring**

**M12 D-code Ethernet in Wiring, view into female connector**


1 = YE (TX+)
2 = WH (RX+)
3 = OG (TX-)
4 = BU (RX-)

**7/8 Mini Power in wiring, view into male connector Common to modules**


1 = GND
2 = GND
3 = PE
4 = $V_i$
5 = $V_o$

Communication modules are equipped with a built in standalone controller which is programmed according to IEC61131-3 with CoDeSys. Each module has 512KB Program memory with 32 bit RISC processor, and can run 1000 instructions in less than 1 ms. These network equipped modules are optimized to interface with PLC's with network capability or act as standalone controllers that need to interface with other network equipped devices.

| | Base Modules | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BL67-B-4M8 | BL67-B-8M8 | BL67-B-1M12 | BL67-B-1M12-8 | BL67-B-2M12 | BL67-B-2M12-P | BL67-B-4M12 | BL67-B-4M12-P | BL67-B-1M23 | BL67-B-1M23-19 | BL67-B-1RSM | BL67-B-1RSM-4 | BL67-1RSM-VO |
| **Power Extender Modules** | | | | | | | | | | | | | |
| BL67-PF-24VDC | | | | | | | | | | | ✔ | ✔ | ✔ |
| **Digital Input Modules** | | | | | | | | | | | | | |
| BL67-4DI-P | ✔ | | | | ✔ | ✔ | ✔ | | ✔ | | | | |
| BL67-8DI-P | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| BL67-4DI-PD | ✔ | | | | ✔ | ✔ | ✔ | | ✔ | | | | |
| BL67-8DI-PD | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| BL67-4DI-N | ✔ | | | | ✔ | ✔ | ✔ | | ✔ | | | | |
| BL67-8DI-N | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| **Digital Output Modules** | | | | | | | | | | | | | |
| BL67-4DO-0.5A-P | ✔ | | | | ✔ | ✔ | ✔ | | ✔ | | | | |
| BL67-4DO-2A-P | ✔ | | | | ✔ | ✔ | ✔ | | ✔ | | | | |
| BL67-8DO-0.5A-P | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| BL67-16DO-0.1A-P | | | | | | | | | | ✔ | | | |
| BL67-4DO-2A-N | ✔ | | | | ✔ | ✔ | ✔ | | ✔ | | | | |
| BL67-8DO-0.5A-N | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| **Relay Output Modules** | | | | | | | | | | | | | |
| BL67-8DO-R-NO | | | | | | | | ✔ | | | | | |
| **Digital Input / Output Modules** | | | | | | | | | | | | | |
| BL67-4DI4DO-PD | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| **Configurable Digital Input / Output Modules** | | | | | | | | | | | | | |
| BL67-8XSG-PD | | ✔ | | | | | ✔ | ✔ | ✔ | | | | |
| **Analog Input Modules** | | | | | | | | | | | | | |
| BL67-2AI-I | | | | | ✔ | | | | | | | | |
| BL67-2AI-V | | | | | ✔ | | | | | | | | |
| BL67-4AI-V/I | | | | | | | ✔ | | | | | | |
| BL67-2AI-PT | | | | | ✔ | | | | | | | | |
| BL67-2AI-TC | | | | | ✔ | | | | | | | | |
| **Analog Output Modules** | | | | | | | | | | | | | |
| BL67-2AO-I | | | | | ✔ | | | | | | | | |
| BL67-2AO-V | | | | | ✔ | | | | | | | | |
| **Technology Modules** | | | | | | | | | | | | | |
| BL67-1RS232 | | | ✔ | ✔ | | | | | ✔ | | | | |
| BL67-1RS485/422 | | | ✔ | ✔ | | | | | ✔ | | | | |
| BL67-1SSI | | | | ✔ | | | | | ✔ | | | | |
| BL67-1CNT/ENC | | | | ✔ | | | | | ✔ | | | | |
| BL67-1CVI | | | ✔ | | | | | | | | | | |
| **BL *Ident*® RFID Modules** | | | | | | | | | | | | | |
| BL67-2RFID-A | | | | | ✔ | | | | | | | | |
| BL67-2RFID-S | | | | | ✔ | | | | | | | | |

## System Supply via the Module Bus

The number of BL67 modules that can be powered by the communication module, depends on the nominal current draw of all the modules in the system. The total bus power current consumption of the installed BL67 modules may not exceed 1.5 A. The total field power current for inputs may not exceed 4 A, and the total field power for outputs may not exceed 8 A for DeviceNet and CANopen with power over the network, or 10A for all other communication modules.

When using the software PACTware, the menu item <Station - Verify> will automatically generate an error message if the system supply via the module bus is not reliably ensured.

## Nominal Current Consumption

The following table shows the nominal current consumption of the various BL67 modules:

| Modules | Bus power current (mA) | Field power for inputs[1)] (mA) | Field power for outputs (mA) |
|---|---|---|---|
| PROFIBUS-DP communication module | 0 | | 150 |
| DeviceNet communication module | 0 | | 150 |
| CANopen communication module | 0 | | 150 |
| Ethernet communication module | 0 | | 150 |
| Valve driver with 16 outputs | 30 | | < 109 mA (plus load current) |
| Valve driver with 32 outputs | 60 | | < 218 mA (plus load current) |
| BL67-PF-24VDC | 30 | | 9 |
| BL67-4DI-P | 30 | < 49 mA | |
| BL67-4DI-N | 30 | < 10 mA | |
| BL67-4DI-PD | 30 | < 109 mA | |
| BL67-8DI-P | 30 | < 49 mA | |
| BL67-8DI-N | 30 | < 10 mA | |
| BL67-8-DI-PD | 30 | < 109 mA | |
| BL67-4DO-0.5A-P | 30 | | < 109 mA (plus load current) |
| BL67-4DO-2A-P | 30 | | < 109 mA (plus load current) |
| BL67-4DO-2A-N | 30 | | < 109 mA (plus load current) |
| BL67-8DO-0.5A-P | 30 | | < 109 mA (plus load current) |
| BL67-8DO-0.5A-N | 30 | | < 109 mA (plus load current) |
| BL67-16DO-0.1A-P | 30 | | < 109 mA (plus load current) |
| BL67-4DI4DO-PD | 30 | | < 109 mA (plus load current) |
| BL67-8XSG-PD | 30 | | < 109 mA (plus load current) |
| BL67-8DO-R-NO | 30 | | < 109 mA (plus load current) |
| BL67-2AI-V | 35 | < 22 mA | |
| BL67-2AI-I | 35 | < 22 mA | |
| BL67-4AI-I/V | 35 | < 22 mA | |
| BL67-2AI-TC | 35 | < 40 mA | |
| BL67-2AI-PT | 45 | < 58 mA | |
| BL67-2AO-I | 40 | | < 62 mA |
| BL67-2AO-V | 60 | | < 67 mA |
| BL67-1RS232 | 140 | < 90 mA | |
| BL67-1RS485/422 | 60 | < 42 mA | |
| BL67-1SSI | 50 | < 39 mA | |
| BL67-1CNT/ENC | 30 | < 109 mA | |
| BL67-1CVI | 30 | < 109 mA | |

1) Is limited to 4A by means of the integrated short-circuit protection.

## Digital Input Modules

| | I/O modules | Voltage | Part number |
|---|---|---|---|
|  | 8 PNP input module | 7 to 30 VDC | **BL67-8DI-P** |
| | 8 PNP input module, with diagnostics | 7 to 30 VDC | **BL67-8DI-PD** |
| | 8 NPN input module | 24 VDC | **BL67-8DI-N** |

| | Base module | Part number |
|---|---|---|
|  | 8 x M8, 3 pole, female | **BL67-B-8M8** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12-P** |
|  | 1 x M23, 12 pole, female | **BL67-B-1M23** |

| I/O modules | Voltage | Part number |
|---|---|---|
| 4 PNP input module | 7 to 30 VDC | **BL67-4DI-P** |
| 4 PNP input module, with diagnostics | 7 to 30 VDC | **BL67-4DI-PD** |
| 4 NPN input module | 24 VDC | **BL67-4DI-N** |

| | Base module | Part number |
|---|---|---|
|  | 4 x M8, 3 pole, female | **BL67-B-4M8** |
|  | 2 x M12, 5 pole, female, A-code | **BL67-B-2M12** |
|  | 2 x M12, 5 pole, female, A-code | **BL67-B-2M12-P** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |
|  | 1 x M23, 12 pole, female | **BL67-B-1M23** |

## Digital Output Modules

| | I/O modules | Output current | Part number |
|---|---|---|---|
|  | 8 PNP output module | 0.5 amps per channel | **BL67-8DO-0.5A-P** |
| | 8 NPN output module | 0.5 amps per channel | **BL67-8DO-0.5A-N** |

| | Base module | Part number |
|---|---|---|
|  | 8 x M8, 3 pole, female | **BL67-B-8M8** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12-P** |
|  | 1 x M23, 12 pole, female | **BL67-B-1M23** |

| I/O modules | Output Current | Part number |
|---|---|---|
| 4 PNP output module | 0.5 amps per channel | **BL67-4DO-0.5A-P** |
| 4 PNP output module | 2 amps per channel | **BL67-4DO-2A-P** |
| 4 PNP output module | 4 amps per channel | **BL67-4DO-4A-P** |
| 4 NPN output module | 2 amps per channel | **BL67-4DO-2A-N** |

| | Base module | Part number |
|---|---|---|
|  | 4 x M8, 3 pole, female | **BL67-B-4M8** |
|  | 2 x M12, 5 pole, female, A-code | **BL67-B-2M12** |
|  | 2 x M12, 5 pole, female, A-code | **BL67-B-2M12-P** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |
|  | 1 x M23, 12 pole, female | **BL67-B-1M23** |

Most popular.

## Digital Output Modules

| I/O modules | Output current | Part number |
|---|---|---|
| 16 PNP output module | 0.14 amps per channel | **BL67-16DO-0.1A-P** |

| | Base module | Part number |
|---|---|---|
|  | 1 x M23, 19 pole, female | **BL67-B-1M23-19** |

## Relay Output Modules

| I/O modules | Output current | Part number |
|---|---|---|
| 8 normally open relays | 0.14 amps per channel | **BL67-8DO-R-NO** |

| | Base module | Part number |
|---|---|---|
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12-P** |

## Analog Input Modules

| I/O modules | Input type | Part number |
|---|---|---|
| 4 configurable current or voltage analog input module | 4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC | **BL67-4AI-V/I** |

| | Base module | Part number |
|---|---|---|
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |

| I/O modules | Input type | Part number |
|---|---|---|
| 2 current analog input module | 4 to 20 mA or 0 to 20 mA | **BL67-2AI-I** |
| 2 voltage analog input module | -10 to +10 VDC or 0 to +10 VDC | **BL67-2AI-V** |
| 2 temperature analog input module | PT100, PT200, PT500, PT1000, Ni100, Ni1000 | **BL67-2AI-PT** |
| 2 temperature analog input module | Type B, E, J, K, N R, S, T | **BL67-2AI-TC** |

| | Base module | Part number |
|---|---|---|
|  | 2 x M12, 5 pole, female, A-code | **BL67-B-2M12** |

## Combination Input / Output Modules

| I/O modules | Input voltage & output current | Part number |
|---|---|---|
| 4 PNP output 4 PNP input module, with diagnostics | 7 to 30 VDC 0.5 Amps | **BL67-4DI4DO-PD** |
| 8 PNP configurable input or output module, with diagnostics | 7 to 30 VDC 0.5 Amps | **BL67-8XSG-PD** |

| | Base module | Part number |
|---|---|---|
|  | 8 x M8, 3 pole, female | **BL67-B-8M8** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12P** |

## Analog Output Modules

| I/O modules | Input type | Part number |
|---|---|---|
| 4 voltage analog output module | -10 to +10 VDC or 0 to +10 VDC | **BL67-4AO-V** |

| | Base module | Part number |
|---|---|---|
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |

| I/O modules | Input type | Part number |
|---|---|---|
| 2 current analog output module | 4 to 20 mA or 0 to 20 mA | **BL67-2AO-I** |
| 2 voltage analog output module | -10 to +10 VDC or 0 to +10 VDC | **BL67-2AO-V** |

| | Base module | Part number |
|---|---|---|
|  | 2 x M12, 5 pole, female, A-code | **BL67-B-2M12** |

Most popular.

## Combination Analog Input / Output Modules

| I/O modules | Output current | Part number |
|---|---|---|
| 4 configurable input and 4 configurable output current or voltage analog module | 4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC | **BL67-4AI4AO-V/I** |

| | Base module | Part number |
|---|---|---|
|  | 8 x M8, 3 pole, female | **BL67-B-8M8** |
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |

## CANopen Subnet Module

| Extender module | Capacity | Part number |
|---|---|---|
| 1 CANopen connection | 64 bits of inputs or outputs | **BL67-1CVI** |

| | Base module | Part number |
|---|---|---|
|  | 1 x M12, 5 pole, female, A-code | **BL67-B-1M12** |

## IO-Link Class A Master

| Extender module | Part number |
|---|---|
| 4 master channels | **BL67-4IOL** |

| | Base module | Part number |
|---|---|---|
|  | 4 x M12, 5 pole, female, A-code | **BL67-B-4M12** |

## Power Extender Module

| Extender module | Current capacity | Part number |
|---|---|---|
| 24 VDC field power module | 10 amps input | **BL67-PF-24VDC** |

| | Base module | Part number |
|---|---|---|
|  | 5 pole mini connector to supply bus power and field power | **BL67-B-1RSM** |
|  | 5 pole mini connector to field power only | **BL67-B-1RSM-VO** |
|  | 4 pole mini connector to supply bus power and field power | **BL67-B-1RSM-4** |

| I/O modules | Output current | Part number |
|---|---|---|
| 2 configurable input and 2 configurable output current or voltage analog module | 4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC | **BL67-2AI2AO-V/I** |

| | Base module | Part number |
|---|---|---|
|  | 8 x M8, 3 pole, female | **BL67-B-8M8** |

## Serial Interface Module

| Extender module | Capacity | Part number |
|---|---|---|
| 1 RS232 serial interface | 300 to 115200 bps | **BL67-1RS232** |
| 1 RS485 or 422 serial interface | 300 to 115200 bps | **BL67-1RS485/422** |

| | Base module | Part number |
|---|---|---|
|  | 1 x M12, 5 pole, female, A-code | **BL67-B-1M12** |
|  | 1 x M12, 8 pole, female, A-code | **BL67-B-1M12-8** |
|  | 1 x M23, 12 pole, female | **BL67-B-1M23** |

## SSI and Counting Modules

| Extender module | Capacity | Part number |
|---|---|---|
| 1 SSI sensor interface | 65 kbps up to 1 Mbps | **BL67-1SSI** |
| 1 counter interface | Up to 250 kHz | **BL67-1CNT/ENC** |

| | Base module | Part number |
|---|---|---|
|  | 1 x M12, 8 pole, female, A-code | **BL67-B-1M12-8** |
|  | 1 x M23, 12 pole, female | **BL67-B-1M23** |

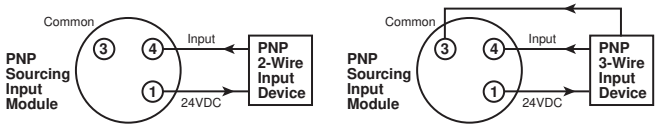
Most popular.

## Digital PNP Input Modules

| DC Input Module | BL67-4DI-P | BL67-8DI-P | BL67-4DI-PD | BL67-8DI-PD |
|---|---|---|---|---|
| Number of inputs | 4 | 8 | 4 | 8 |
| Sensor requirement | PNP Sourcing | | PNP Sourcing | |
| Voltage, on-state input, nom. | 24 VDC | | 24 VDC | |
| Field power for inputs current consumption | 49 mA | | 109 mA | |
| Bus power current consumption | 30 mA | | 30 mA | |
| Low level signal voltage | <4.5 V | | <4.5 V | |
| High level signal voltage | 7…30V | | 7…30V | |
| Low level signal current | <1.5 mA | | <1.5 mA | |
| High level signal current | 2.1…3.7 mA | | 2.1…3.7 mA | |
| Type of diagnostics | Group Diagnostics | | Channel Diagnostics | |
| Short circuit protection | Group Protection | | Channel Protection | |
| Input delay | 0.25 ms | | 0.25; 2.5 ms | |

### PNP (Sourcing)

PNP input modules provide sourcing capabilities. When the input field device is passing, current flows from the input device into the Turck input module.

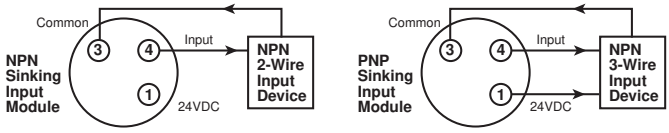



## Digital NPN Input Modules

| Digital DC Input Module | BL67-4DI-N | BL67-8DI-N |
|---|---|---|
| Number of inputs | 4 | 8 |
| Sensor requirement | NPN Sinking | NPN Sinking |
| Voltage, on-state input, nom. | 24 VDC | 24 VDC |
| Field power for inputs current consumption | 10 mA | 10 mA |
| Bus power current consumption | 30 mA | 30 mA |
| Low level signal voltage | >7 V | >7 V |
| High level signal voltage | <5 V | <5 V |
| Low level signal current | <2.5 mA | <1.2 mA |
| High level signal current | >3 mA | >1.5 mA |
| Type of diagnostics | Group Diagnostics | Group Diagnostics |
| Short circuit protection | Group Protection | Group Protection |
| Input delay | 0.25 ms | 0.25 ms |

### NPN (Sinking)

NPN input modules provide sinking capabilities. When the input field device is passing, current out of the Turck input module into the field input device.

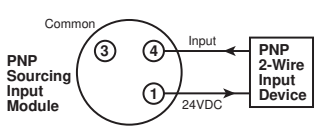


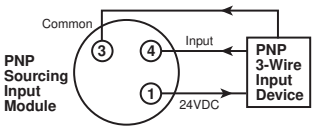
## Digital PNP Output Modules

| Digital DC Output Module | BL67-4DO-0.5A-P | BL67-8DO-0.5A-P | BL67-4DO-2A-P | BL67-16DO-0.1A-P |
|---|---|---|---|---|
| Number of outputs | 4 | 8 | 4 | 16 |
| Sensor requirement | PNP Sourcing | PNP Sourcing | PNP Sourcing | PNP Sourcing |
| Output voltage | 24 VDC | 24 VDC | 24 VDC | 24 VDC |
| Field power for outputs current consumption | 109 mA (Plus load current) | 109 mA (Plus load current) | 109 mA (Plus load current) | 109 mA (Plus load current) |
| Bus power current consumption | 30 mA | 30 mA | 30 mA | 30 mA |
| Output current per channel | 0.5 A | 0.5 A | 2.0A | 0.1 A |
| Output delay | 3 ms | 3 ms | 3 ms | 3 ms |
| Load type | Resistive, Inductive, Lamp Load | Resistive, Inductive, Lamp Load | Resistive, Inductive, Lamp Load | Resistive, Inductive |
| Load resistance, resistive | >48 Ohm | >48 Ohm | >12 Ohm | >250 Ohm |
| Load resistance, inductive | <1.2 H | <1.2 H | <1.2 H | <1.2 H |
| Lamp load | < 3W | < 3W | < 10W | < 10W |
| Switching frequency, resistive | <200 Hz | <200 Hz | <200 Hz | <200 Hz |
| Switching frequency, inductive | < 2 Hz | < 2 Hz | < 2 Hz | < 2 Hz |
| Switching frequency, lamp load | < 20 Hz | < 20 Hz | < 20 Hz | < 20 Hz |
| Short-circuit protection | Group Protection | Group Protection | Group Protection | Group Protection |
| Diagnostic bits | 4 | 8 | 4 | 16 |

### PNP (Sourcing)

PNP input modules provide sourcing capabilities. When the input field device is passing, current flows from the input device into the Turck input module.



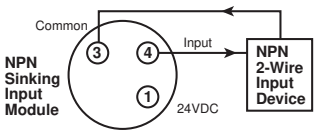



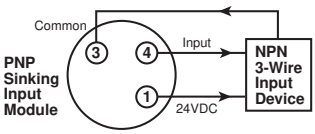

## Digital NPN Output Modules

| Digital DC Output Module | BL67-8DO-0.5A-N | BL67-4DO-2A-N |
|---|---|---|
| Number of outputs | 8 | 4 |
| Sensor requirement | NPN Sinking | NPN Sinking |
| Output voltage | 24 VDC | 24 VDC |
| Field power for outputs current consumption | 109 mA (Plus load current) | 109 mA (Plus load current) |
| Bus power current consumption | 30 mA | 30 mA |
| Output current per channel | 0.5 A | 2.0 A |
| Output delay | 3 ms | 3 ms |
| Load type | Resistive, Inductive, Lamp Load | Resistive, Inductive, Lamp Load |
| Load resistance, resistive | >48 Ohm | >48 Ohm |
| Load resistance, inductive | <1.2 H | <1.2 H |
| Lamp load | < 3W | < 3W |
| Switching frequency, resistive | <200 Hz | <200 Hz |
| Switching frequency, inductive | < 2 Hz | < 2 Hz |
| Switching frequency, lamp load | < 20 Hz | < 20 Hz |
| Short-circuit protection | Group Protection | Group Protection |
| Diagnostic bits | 4 | 8 |

### NPN (Sinking)

NPN input modules provide sinking capabilities. When the input field device is passing, current out of the Turck input module into the field input device.



## Relay Output Modules

| Relay Output Module | BL67-8DO-R-NO |
|---|---|
| Number of outputs | 8 |
| Output type | Relay |
| Output voltage | 24 VDC |
| Field power for outputs current consumption | 109 mA (Plus load current) |
| Bus power current consumption | 30 mA |
| Output current per channel | 100 mA |
| Output delay | 3 ms |
| Load type | Resistive, TTL logic |
| Switching resistor | <31 Ohm |
| Switching frequency, resistive | <200 Hz |
| Short-circuit protection | None |

## Combination Digital Modules

| Combination Input and Output Modules | BL67-4DI4DO-PD | BL-67-8XSG-PD |
|---|---|---|
| Number of outputs | 4 | Configurable 0 to 8 |
| Number of inputs | 4 | Configurable 0 to 8 |
| Total channels | 8 | 8 |
| Sensor requirement | PNP Sourcing | PNP Sourcing |
| Voltage, on-state input, nom. | 24 VDC | 24 VDC |
| Output voltage | 24 VDC | 24 VDC |
| Field power for outputs current consumption | 109 mA | 109 mA |
| Bus power current consumption | 30 mA | 30 mA |
| Input low level signal voltage | <4.5 V | <4.5 V |
| Input high level signal voltage | 7…30V | 7…30V |
| Input low level signal current | <1.5 mA | <1.5 mA |
| Input high level signal current | 2.1…3.7 mA | 2.1…3.7 mA |
| Input delay | 0.25; 2.5 ms | 0.25; 2.5 ms |
| Output current per channel | 0.5 A | 0.5 A |
| Output delay | 3 ms | 3 ms |
| Load type | Resistive, Inductive, Lamp Load | Resistive, Inductive, Lamp Load |
| Load resistance, resistive | >48 Ohm | >48 Ohm |
| Load resistance, inductive | <1.2 H | <1.2 H |
| Lamp load | < 3W | < 3W |
| Switching frequency, resistive | <200 Hz | <200 Hz |
| Switching frequency, inductive | < 2 Hz | < 2 Hz |
| Switching frequency, lamp load | < 20 Hz | < 20 Hz |
| Short-circuit protection | Channel Protection | Channel Protection |
| Diagnostic bits | 8 | 12 |

## Analog Input Modules

| Analog Input Module | BL67-2AI-I | BL67-2AI-V | BL67-4AI-V/I |
|---|---|---|---|
| Number of inputs | 2 | 2 | 4 |
| Nominal voltage | 24 VDC | 24 VDC | 24 VDC |
| Field power for inputs current consumption | 22 mA | 22 mA | 22 mA |
| Bus power current consumption | 35 mA | 35 mA | 35 mA |
| Analog input type | 0/4…20mA | -10/0…+10 VDC | 0/4…20mA or -10/0…+10 VDC |
| Input resistance | <0.125 kOhm | <98.5 kOhm | <0.125 kOhm or <98.5 kOhm |
| Maximum limiting frequency | 50 Hz | | 20 Hz |
| Fault limit @ 23 degree C | <0.2% | | <0.3% |
| Repeatability | 0.05% | 0.05% | 0.05% |
| Temperature coefficient (ppm/degree c of full scale) | <300 | <150 | <300 |
| Resolution | 16 Bit | 16 Bit | 16 Bit |
| Measuring principle | Sigma Delta | Sigma Delta | Sigma Delta |
| Measured value display | 16 bit signed integer, 12 bit full range left justified | 16 bit signed integer, 12 bit full range left justified | 16 Bit signed integer, 12 bit full range left justified |
| Diagnostic bits | 16 | | 32 |

## Temperature Inputs

| Analog Input Module | BL67-2AI-PT | BL67-2AI-TC |
|---|---|---|
| Number of inputs | 2 | 2 |
| Nominal voltage | 24 VDC | 24 VDC |
| Field power for inputs current consumption | 58 mA | 40 mA |
| Bus power current consumption | 45 mA | 35 mA |
| Temperature input type | PT100, PT200, PT500, PT1000, Ni100, Ni1000 | B, E, J, K, N, R, S, T |
| Voltage resolution | n/a | +/- 50mV; <2uV |
| Fault limit @ 23 degree C | <0.2% | <0.2% |
| Repeatability | 0.05% | 0.05% |
| Temperature coefficient (ppm/degree c of full scale) | <300 | <300 |
| Resolution | 16 Bit | 16 Bit |
| Measured value display | 16 bit signed integer, 12 bit full range left justified | 16 bit signed integer, 12 bit full range left justified |
| Diagnostic bits | 16 | 16 |

## Analog Input Modules

| Analog Input Module | BL67-2AO-I | BL67-2AO-V |
|---|---|---|
| Number of inputs | 2 | 2 |
| Nominal voltage | 24 VDC | 24 VDC |
| Field power for outputs current consumption | 62 mA | 67 mA |
| Bus power current consumption | 40 mA | 60 mA |
| Analog output type | 0/4…20mA | -10/0…+10 VDC |
| Output current per channel | n/a | 250 mA |
| Load resistance, resistive | <0.45 kOhm | > 1kOhm |
| Load resistance, inductive | <1 mH | n/a |
| Load resistance, capacitive | n/a | > 1 uF |
| Transmission frequency | <200 Hz | <100 Hz |
| Fault limit @ 23 degree C | <0.2% | <0.2% |
| Repeatability | 0.05% | 0.05% |
| Temperature coefficient (ppm/degree c of full scale) | <150 | <300 |
| Resolution | 16 bit | 16 bit |
| Measured value display | 16 bit signed integer, 12 bit full range left justified | 16 bit signed integer, 12 bit full range left justified |

## Combination Analog Modules

| Analog Combination Module | BL67-4AI4AO-V/I | BL67-2AI2AO-V/I |
|---|---|---|
| Number of analog inputs | 4 | 2 |
| Number of analog outputs | 4 | 2 |
| Nominal voltage | 24 VDC | 24 VDC |
| Field power for outputs current consumption | 67 mA | 67 mA |
| Bus power current consumption | 60 mA | 60 mA |
| Analog input type | 0/4…20mA or -10/0…+10 VDC | 0/4…20mA or -10/0…+10 VDC |
| Input resistance | 0.065 or 225 kOhm | 0.065 or 225 kOhm |
| Maximum limiting frequency | 20 Hz | 20 Hz |
| Fault limit @ 23 degree c | <0.3% | <0.3% |
| Repeatability | 0.05% | 0.05% |
| Temperature coefficient (ppm/degree c of full scale) | <300 | <300 |
| Resolution | 16 bit | 16 bit |
| Measuring principle | Sigma Delta | Sigma Delta |
| Measured value display | 16 bit signed integer, 12 bit full range left justified | 16 bit signed integer, 12 bit full range left justified |
| Analog output type | -10/0…+10 VDC | -10/0…+10 VDC |
| Output current per channel | 250 mA | 250 mA |
| Load resistance, resistive | >1 kOhm | >1 kOhm |
| Load resistance, capacitive | <1 uF | <1 uF |
| Transmission frequency | <100 Hz | <100 Hz |
| Fault limit @ 23 degree C | <0.3% | <0.3% |
| Repeatability | 0.05% | 0.05% |
| Temperature coefficient (ppm/degree c of full scale) | <300 | <300 |
| Resolution | 16 bit | 16 bit |
| Measured value display | 16 bit signed integer, 12 bit full range left justified | 16 bit signed integer, 12 bit full range left justified |
| Diagnostic bits | 8 | 4 |

## Power Extender Module

| Power Extender Module | BL67-PF-24VDC |
|---|---|
| Nominal voltage | 24 VDC |
| Field power for outputs current consumption | 9 mA |
| Bus power current consumption | 30 mA |
| Supply for field power for inputs current | 4.0 A |
| Supply for field power for outputs current | 10 A |
| Diagnostic bits | 3 |

## RS232 Interface

| RS232 Interface | BL67-1RS232 |
|---|---|
| Number of channels | 1 |
| Field power for inputs current consumption | 90 mA |
| Bus power current consumption | 140 mA |
| Transmission level active (u rs1) | -15 to -3 VDC |
| Transmission level inactive (urso) | 3 to 15 VDC |
| Common-mode range (ugl) | -7 to 12 VDC |
| Transmission signals | RxD, TxD, RTS, CTS |
| Data buffer received | 128 Byte |
| Send data buffer | 64 Byte |
| Connection type | Full Duplex |
| Transmission rate | 300 to 115200 bps |
| Parameter | Transmission Rate, Diagnostics, Data Bits, Stop Bits, XON - Character, XOFF - Character, Parity, Flow Control |
| Cable length | 15 m |
| Diagnostic bits | 8 |

## RS485 / 422 Interface

| RS485/422 Interface | BL67-1RS485/422 |
|---|---|
| Number of channels | 1 |
| Field power for inputs current consumption | 42 mA |
| Bus power current consumption | 60 mA |
| Transmission signals | RxD, TxD |
| Connection type | 2 Wire Half Duplex or 4 Wire Full Duplex |
| Transmission rate | 300 to 115200 bps |
| Parameter | RS485/422, Transmission Rate, Diagnostics, Data Bits, Stop Bits, XON - Character, XOFF - Character, Parity, Flow Control |
| Cable length | 1000 m |
| Line impedance | 120 Ohm |
| Bus termination | External |
| Diagnostic bits | 8 |

## SSI Sensor Interface

| SSI Sensor Interface | BL67-1SSI |
|---|---|
| Number of channels | 1 |
| Field power for inputs current consumption | 39 mA |
| Bus power current consumption | 50 mA |
| Transmission signals | CL, D |
| Connection type | 4 Wire Full Duplex (Clock Output/Signal Input) |
| Transmission rate | 62.5 kbps up to 1 Mbps |
| Parameter | Transmission Rate, Diagnostics, Data Format (Binary / GRAY coded), Data Fram Bits (1-32), Number of Invalid Bits (LSB: 0-15, MSB 0-7) |
| Cable length | 30 m |
| Diagnostic bits | 8 |

## Counting Module

| Counting Module | BL67-1CNT/ENC |
|---|---|
| Number of channels | 1 |
| Field power for inputs current consumption | 109 mA |
| Bus power current consumption | 30 mA |
| Input type | PNP |
| Output type | PNP |
| Output current per channel | 0.5 A |
| Output delay | 2 ms |
| Load type | Resistive |
| Frequency measurement | Up to 250 kHz |
| Speed measurement | Factor Configurable |
| Period duration measurement | 2 usec |
| Upper count limit | 0x80000000 up to 0xFFFFFFFF |
| Lower count limit | 0x80000000 up to 0xFFFFFFFF |
| Short circuit protection | Channel Protection |

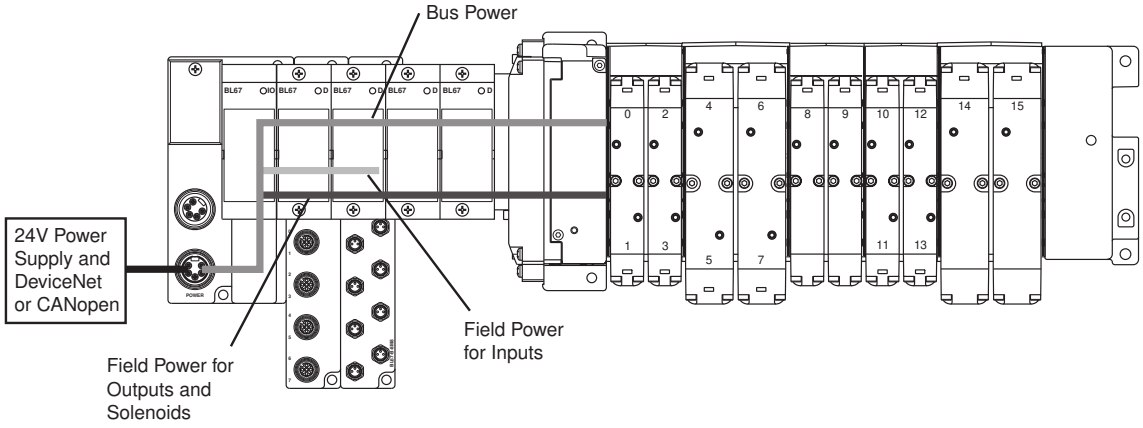
## CANopen Expansion Module

| CANopen Expansion Module | BL67-1CVI |
|---|---|
| Number of channels | 1 |
| Field power for inputs current consumption | 109 mA |
| Bus power current consumption | 30 mA |
| Transmission signals | CAN High, CAN Low |
| Connection type | CANopen |
| Transmission speed | 10 kbps up to 1 Mbps |
| Parameter | Transmission Rate, Diagnostics, Bus Termination, Range of I/O Data |
| Bus termination | Internal |
| Diagnostic bits | 48 |
| Max number of CANopen nodes | 8 |
| Max processing data per module | 8 Byte |
| Max data per node | 4 Byte |

## Power Distribution Options for Turck Network Portal

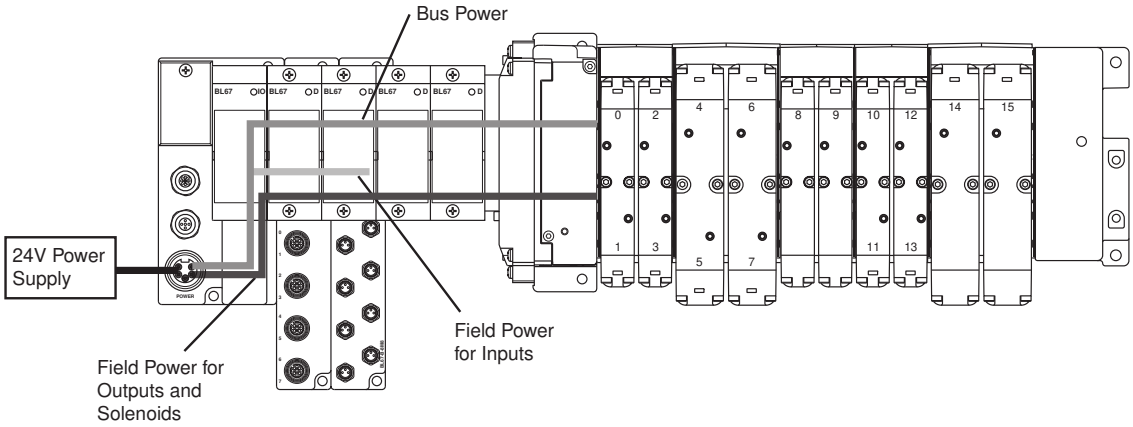
### Turck Communication and I/O Modules - DeviceNet and CANopen, Power Over Network

The 24VDC power supply pins from the DeviceNet or CANopen network connection on the communication module provides a single power circuit. This circuit provides 1.5A bus power, 4A field power for inputs and 8A field power for outputs.




### Turck Communication and I/O Modules - EtherNet/IP, Modbus/TCP, PROFINET, PROFIBUS, and CANopen

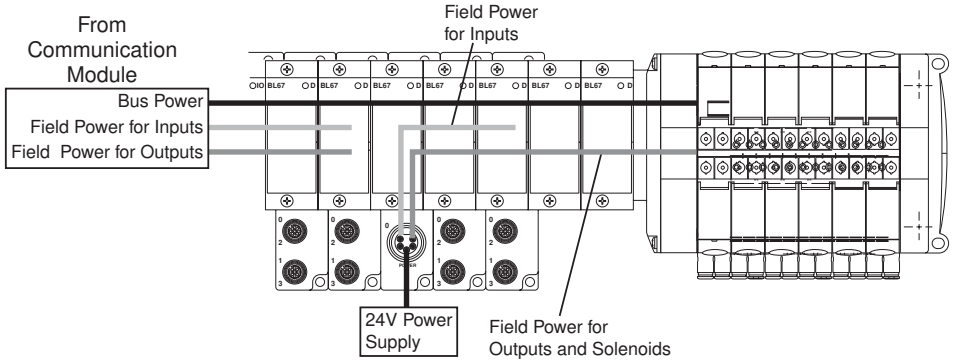
An auxiliary 24VDC power supply from the communication module provides power across two separate circuits. The first circuit provides 1.5A bus power and 4A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs.



## Power Distribution Options for Turck Network Portal (continued)

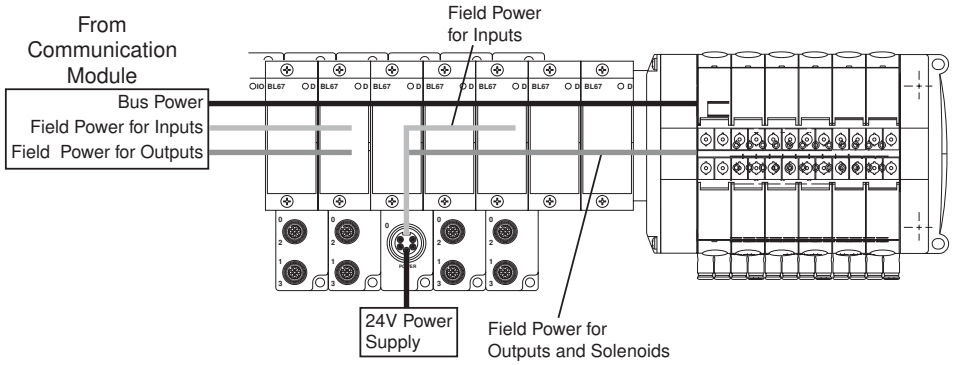
### 24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM

This configuration creates an auxiliary 24VDC power supply and provides power across two separate circuits, regardless of the communication module used. The first circuit provides 4A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5A bus power is uninterrupted, and is still supplied from the communication module.



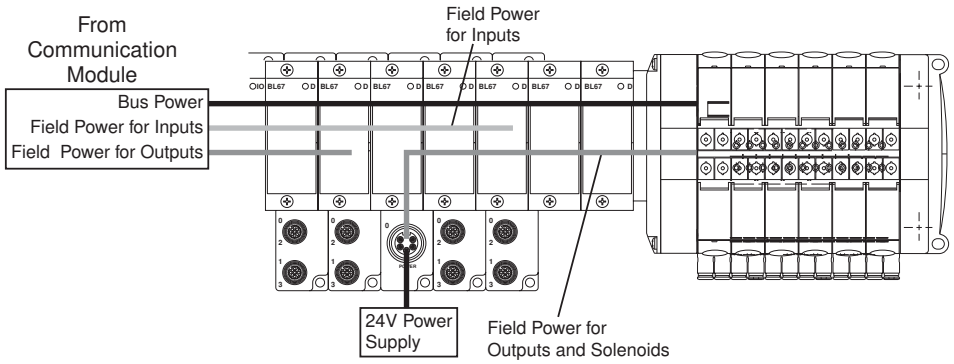

### 24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM-4

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 4A field power for inputs and 10A field power for outputs. The 1.5A bus power is uninterrupted, and is still supplied from the communication module.

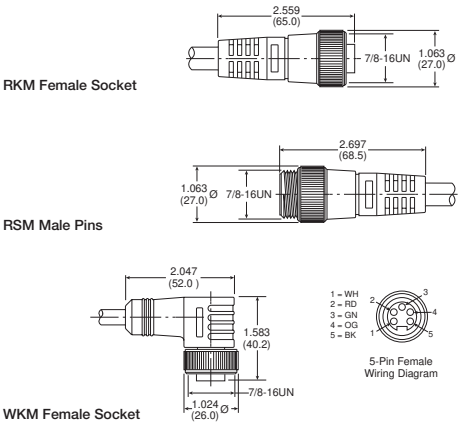



### 24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM-VO

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5A bus power and 4A field power for inputs are uninterrupted, and are still supplied from the communication module.



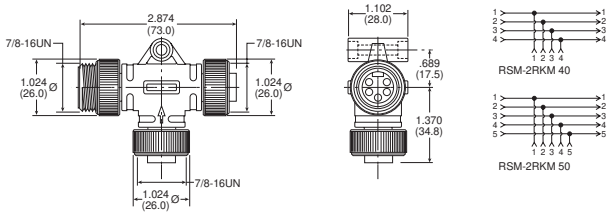
## 7/8" Mini Power Cables - P2H Network Node, H Series Network Portal, Turck Network Portal




| Description | Part number |
|---|---|
| 4-pin female to flying lead cable, 5 meters, TPE | **RKM 46-5M/S1587** |
| 5-pin female to flying lead cable, 5 meters, TPE | **RKM 56-5M/S1587** |
| 4-pin male to female cable, TPE | **RSM RKM 46-x/S1587** |
| 5-pin male to female cable, TPE | **RSM RKM 56-x/S1587** |
| 4-pin right angle female to flying lead cable, 5 meters,TPE | **WKM 46-5M/S1587** |
| 5-pin right angle female to flying lead cable, TPE | **WKM 56-5M/S1587** |

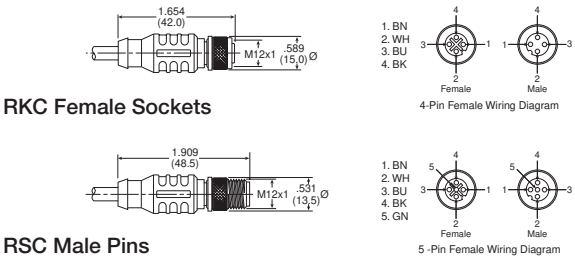
Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

## Power Tee - P2H Network Node, H Series Network Portal, Turck Network Portal




| Description | Part number |
|---|---|
| 4-pin Male to 2 female sockets | **RSM-2RKM 40** |
| 5-pin Male to 2 female sockets | **RSM-2RKM 50** |

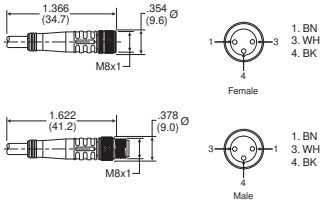
## M12 A-code Cables - P2M IO-Link, P2H IO-Link, H Series IO-Link Network Portal, Turck IO-Link Network Portal




| Description | Part number |
|---|---|
| 4-pin female to flying lead cable, PVC | **RKC 4.4T-1** |
| 4-pin male to flying lead cable, PVC | **RSC 4.4T-*** |
| 4-pin male to female cable, PVC | **RKC 4.4T-*-RSC 4.4T** |
| 5-pin female to flying lead cable, TPE | **RKC 4.5T-*/S1587** |
| 5-pin male to flying lead cable, TPE | **RSC 4.5T-4/S1587** |
| 5-pin male to female cable, TPE | **RKC 4.5T-*-RSC 4.5T/S1587** |

Where * = 1, 2, 3, 4 meter standard lengths

## M8 Cables - H Series IO-Link Network Portal, Turck IO-Link Network Portal

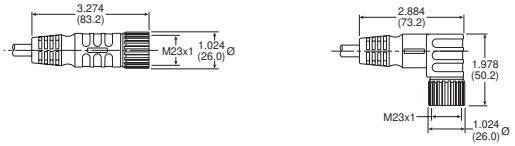



| Description | Part number |
|---|---|
| 3-pin female to flying lead cable, PUR | **PKG 3M-4/S90** |
| 3-pin male to flying lead cable, PUR | **PSG 3M-*/S90** |
| 3-pin male to female cable, PUR | **PKG 3M-*-PSG 3M/S90** |

Where * = 1, 2, 3, 4 meter standard lengths

Most popular.

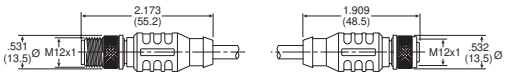
## M23 Cables




| Description | Part number |
|---|---|
| 12-pin, double ended female thread with male pins and female socket, PUR. Pinout optimized for H Series Network Portal. | **CSCM CKCM 12-11-x/S90** |
| 19-pin, double ended female thread with male pins and female socket, PUR. Pinout optimized for H Series Network Portal. | **CSM CKM 19-19-x/S90** |
| 19-pin, 90° double ended female thread with male pins and female socket, PUR. Pinout optimized for Turck Network Portal. | **CSWM CKWM 19-19-x/CS12852** |

Where x = 1, 2, 3, 4 meter standard lengths

## PROFIBUS Cables - P2M Network Node, Turck Network Portal




RSSW Side, Male Pins  RKSW Side, Female Sockets

| Description | Part number |
|---|---|
| M12 male to M12 female, PUR | **RSSW RKSW 455-xM** |

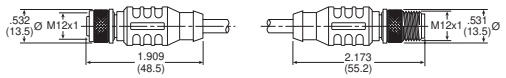
Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

## PROFIBUS Terminating Resistor - P2M Network Node, Turck Network Portal

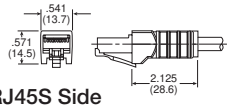

Male Pins

| Description | Part number |
|---|---|
| M12 male pin terminating resistor | **P8BPA00MB** |

## Ethernet Cables - P2M Network Node, H Series Network Portal, Turck Network Portal




RKSD Side, Female Sockets  RSSD Side, Male Pins




RJ45S Side

| Description | Part number |
|---|---|
| M12 female to M12 male, PUR | **RSSD RKSD 443-xM** |
| RJ45 to M12 male, PUR | **RSSD RJ45S 443-2M** |

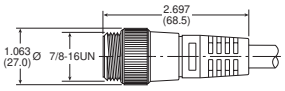
Where x = 2, 5, 10, 15, 20, 30 meter standard lengths

## 25-pin, D-Sub Cable (Female)

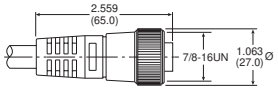
| Description | Length | Part number |
|---|---|---|
| 25-pin, D-sub cable, IP20 | 3 meters | **P8LMH25M3A** |
| 25-pin, D-sub cable, IP20 | 9 meters | **SCD259D** |
| 25-pin, D-sub cable, IP65 | 3 meters | **SCD253W** |
| 25-pin, D-sub cable, IP65 | 9 meters | **SCD259WE** |

Most popular.

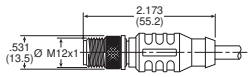
## DeviceNet and CANopen Cables - P2M Network Node, H Series Network Portal, Turck Network Portal



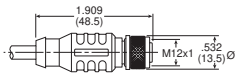

RSM Side, 7/8 Mini with Male Pins




RKM Side, 7/8 Mini with Male Pins




RSC Side, Male Pins

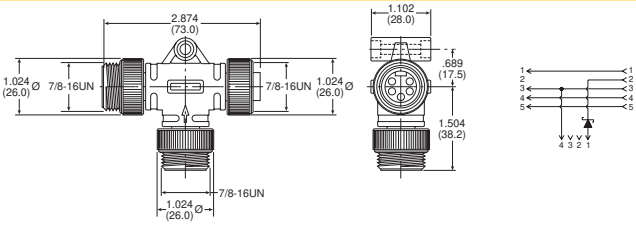



RKC Side, Female Sockets

| Description | Part number |
|---|---|
| 7/8" mini male to 7/8" mini female, PUR | **RSM RKM 5711-xM** |
| 7/8" mini male to M12 female, PUR | **RSM RKC 5711-xM** |
| M12 male to M12 female, PUR | **RSC RKC 5711-xM** |
| M12 male to 7/8" mini female, PUR | **RSC RKM 5711-xM** |

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

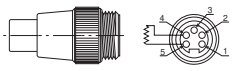
## Bus Power Tee - P2M Network Node, H Series Network Portal, Turck Network Portal




| Description | Part number |
|---|---|
| Bus power tee | **RSM RKM 57 WSM 40 PST** |

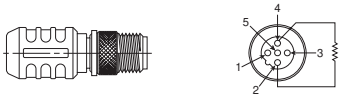
For systems not equipped with Power over network, combines separate network and power feeds into the communication module. Includes reverse current protection

## DeviceNet & CANopen Terminating Resistor - P2M Network Node, H Series Network Portal, Turck Network Portal



RSM 57-TR2

Male Pins



P8BPA00MB

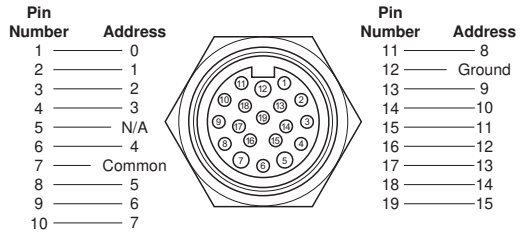
Male Pins

| Description | Part number |
|---|---|
| 7/8" Mini Male Pin Terminating Resistor | **RSM 57-TR2** |
| M12 Male Pin Terminating Resistor | **P8BPA00MA** |



☐ Most popular.

## 19-Pin Round Brad Harrison




**Face View - Male 19-Pin Connector**

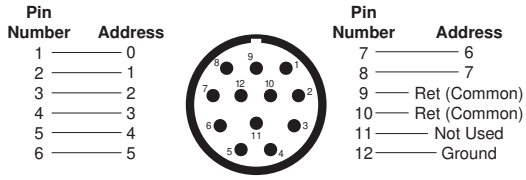
### 19-Pin Round Cable Specifications

Common Pin "7" is rated for 8 amps. Cable common wire must be greater than total amperage of solenoids on Add-A-Fold assembly.

*Example:* 8 segment manifold, 16 solenoids, 120VAC - 16 x .039 amps = .63 total amp rating.

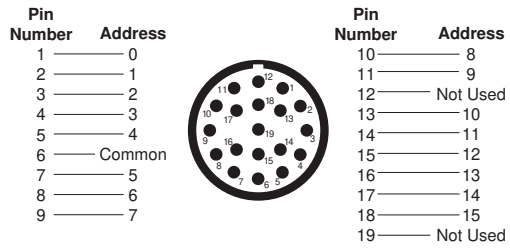
NEMA 4 rated with properly assembled NEMA 4 rated cable.

## M23, 12-Pin Round Connector (Male)



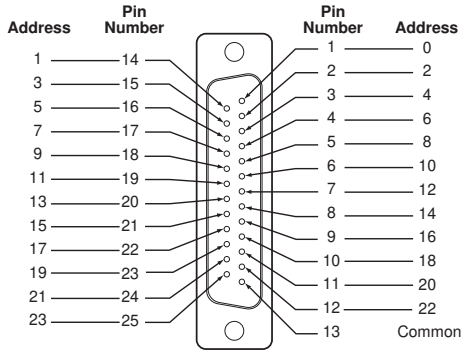

**Face View - Male 19-Pin Connector**

## M23,19-Pin Round Connector (Male)



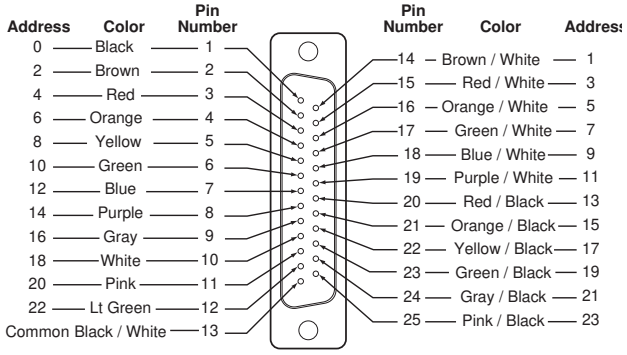

**View into End Plate Connector - Male M23, 19-Pin**

## 25-Pin, D-Sub Connector (Male)

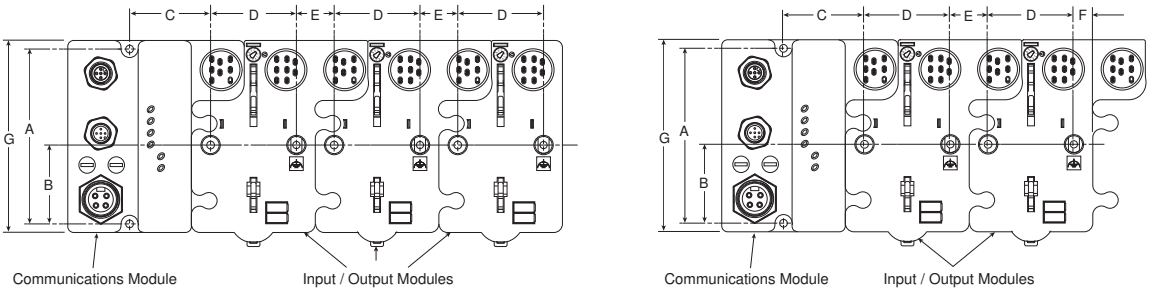



**View into End Plate Connector - Male D-Sub, 25-Pin**

## 25-Pin, D-Sub Cable (Female)

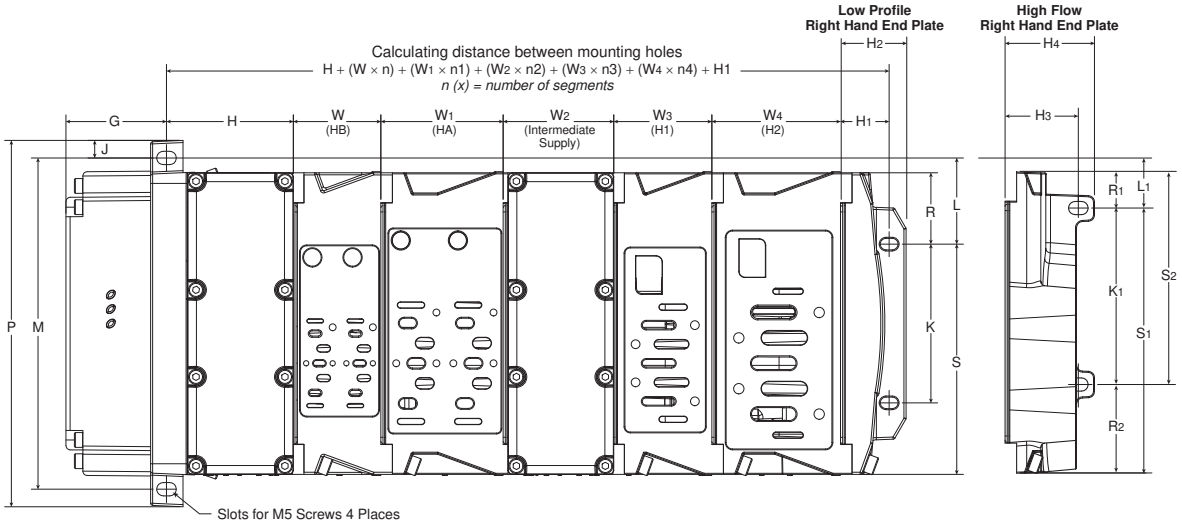


## H Series Network with H Series ISO Valves




| A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 4.00 | 1.80 | 1.90 | 2.00 | .87 | .43 | 4.41 |
| (102) | (46) | (48) | (50) | (22) | (11) | (112) |

Inches (mm)



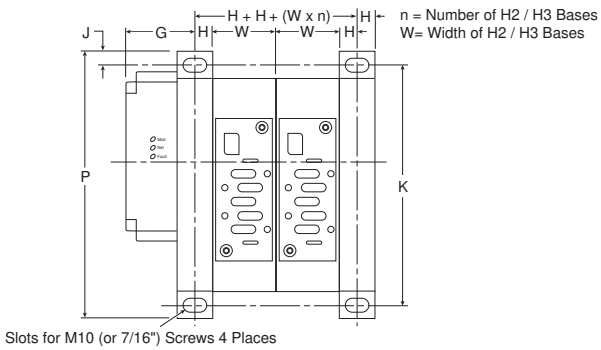

**n (x)** = number of segments

| G | H | H1 | H2 | H3 | H4 | J | K | K1 | L | L1 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.87 | 2.36 | 0.90 | 1.22 | 1.36 | 1.66 | 0.33 | 2.95 | 3.28 | 1.60 | 0.96 | 6.16 |
| (47.5) | (60.0) | (23.0) | (31.0) | (34.6) | (42.3) | (8.3) | (75.0) | (83.4) | (40.7) | (24.3) | (156.5) |

| P | S | S1 | S2 | R | R1 | R2 | W | W1 | W2 | W3 | W4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.81 | 4.28 | 4.93 | 3.96 | 1.33 | 0.68 | 1.65 | 1.63 | 2.28 | 2.06 | 1.82 | 2.39 |
| (173.1) | (108.8) | (125.2) | (100.7) | (33.7) | (17.3) | (41.8) | (41.3) | (57.8) | (52.3) | (46.3) | (60.8) |

Inches (mm)

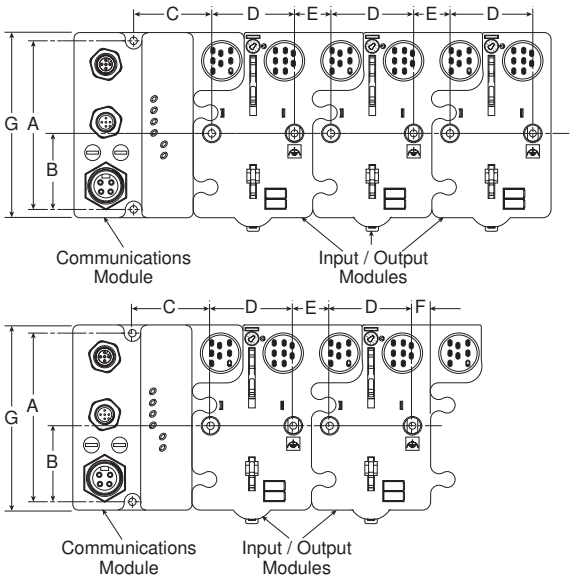
### H3 Manifold Assembly




| G | H | J | K | P | W |
|---|---|---|---|---|---|
| 2.34 | .65 | .59 | 10.43 | 11.61 | 2.80 |
| (59.5) | (16.5) | (15) | (265) | (295) | (71) |

Inches (mm)

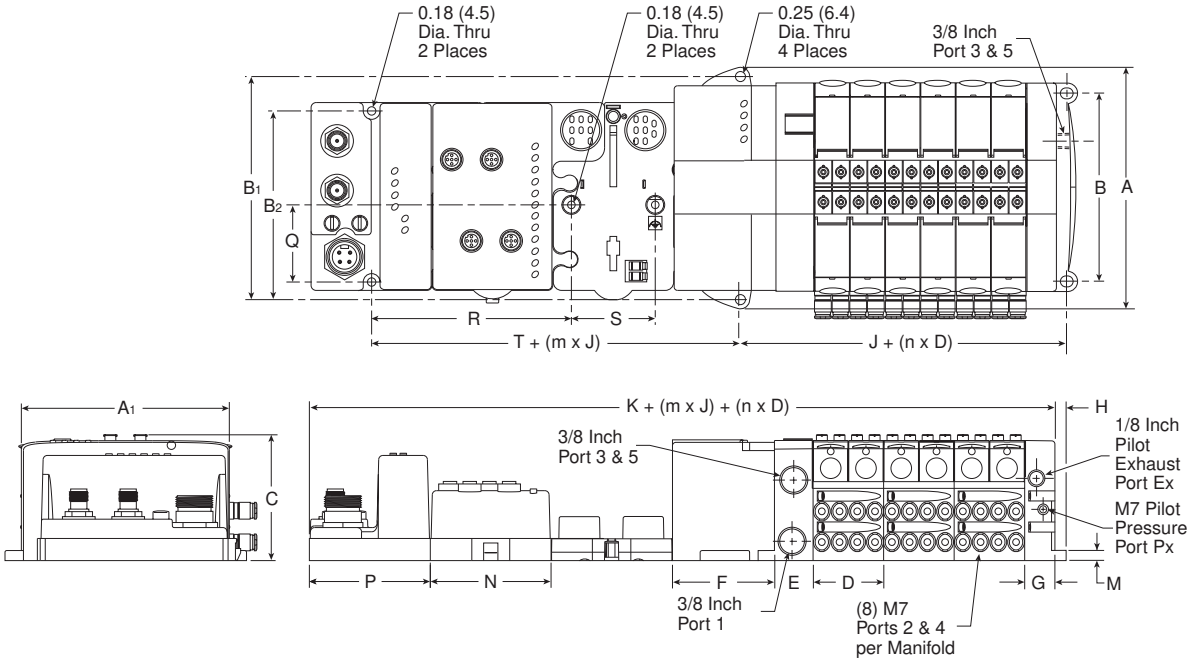
## H Series Network with H Series Micro Valves




| A | B | C | D |
|---|---|---|---|
| 4.00 (102) | 1.80 (46) | 1.90 (48) | 2.00 (50) |

| E | F | G |
|---|---|---|
| .87 (22) | .43 (11) | 4.41 (112) |

Inches (mm)



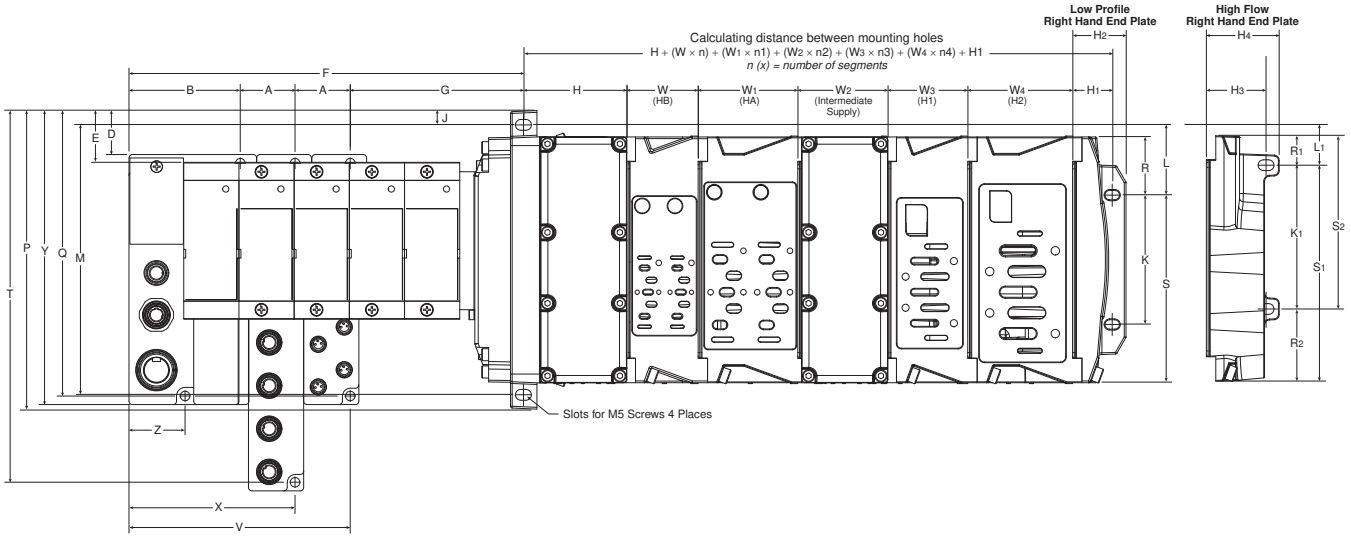

| A | A1 | B | B1 | B2 | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| 5.67 (144.0) | 4.88 (124.0) | 4.41 (112.0) | 5.24 (133.0) | 4.02 (102.0) | 2.95 (75.0) | 1.65 (42.0) | 0.91 (23.0) | 2.40 (61.0) | 0.71 (18.0) |

| H | J | K | M | N | P | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|---|
| 0.49 (12.5) | 2.72 (69.0) | 7.32 (186.0) | 0.24 (6.1) | 2.83 (72.0) | 2.83 (72.0) | 1.81 (46.0) | 4.72 (120.0) | 2.01 (51.0) | 2.01 (51.0) |

Inches (mm)

n = Number of Manifolds
m = Number of Modules

## Turck with H Series ISO Valves




**n (x)** = number of segments

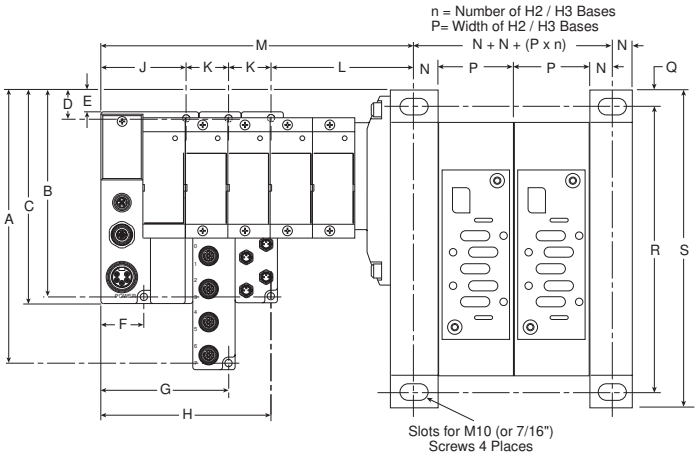
| A | B | D | E | F | G | H | H1 | H2 | H3 | H4 | J |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.26 (32.0) | 2.54 (64.5) | 1.00 (25.4) | 1.18 (29.9) | 8.99 (228.4) | 3.94 (100.1) | 2.36 (60.0) | 0.90 (23.0) | 1.22 (31.0) | 1.36 (34.6) | 1.66 (42.3) | 0.33 (8.3) |

| K | K1 | L | L1 | M | P | Q | R | R1 | R2 | S | S1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.95 (75.0) | 3.28 (83.4) | 1.60 (40.7) | 0.96 (24.3) | 6.16 (156.5) | 6.81 (173.1) | 6.51 (165.4) | 1.33 (33.7) | 0.68 (17.3) | 1.65 (41.8) | 4.28 (108.8) | 4.93 (125.2) |

| S2 | T | V | W | W1 | W2 | W3 | W4 | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.96 (100.7) | 8.48 (215.4) | 5.05 (128.3) | 1.63 (41.3) | 2.28 (57.8) | 2.06 (52.3) | 1.82 (46.3) | 2.39 (60.8) | 3.79 (96.3) | 6.71 (170.4) | 1.28 (32.5) |

Inches (mm)

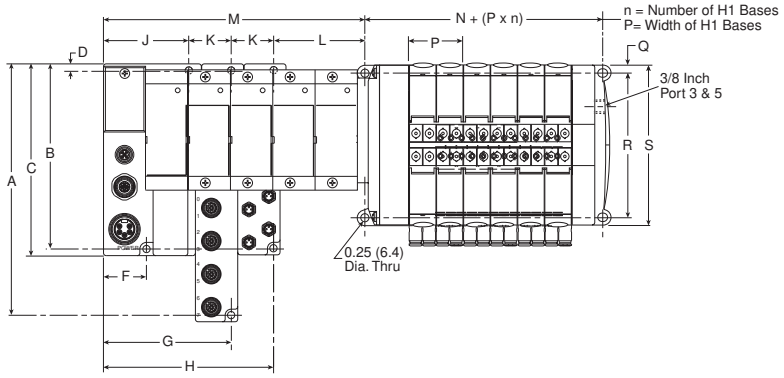
### H3 Manifold Assembly




| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.62 (218.9) | 6.65 (168.9) | 6.85 (173.9) | 1.33 (33.9) | 1.14 (28.9) | 1.28 (32.5) | 3.79 (96.5) | 5.06 (128.5) | 2.53 (64.5) | 1.26 (32) | 4.34 (110) | See note 1 | .65 (16.5) | 2.80 (71) | .59 (15) | 10.43 (265) | 11.61 (295) |

Note 1: M =J+L+$n_2$xK, where $n_2$ = Number of Turck input / output modules
Inches (mm)

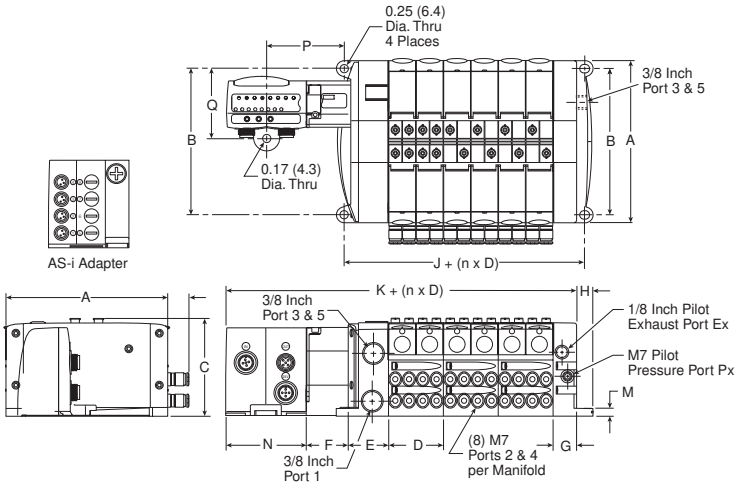
## Turck with H Series Micro Valves




| A | B | C | D | F | G | H | J | K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.48 | 5.51 | 5.71 | 0.20 | 1.28 | 3.79 | 5.06 | 2.53 | 1.26 | 2.54 | See | 2.28 | 1.65 | .19 | 4.41 | 4.88 |
| (190) | (140) | (145) | (5) | (32.5) | (96.5) | (128.5) | (64.5) | (32) | (64) | note 1 | (58) | (42) | (4.9) | (112) | (124) |

Note 1: M =J+L+$n_2$xK, where $n_2$ = Number of Turck input / output modules
Inches (mm)

## P2M Adapter, Side Ported

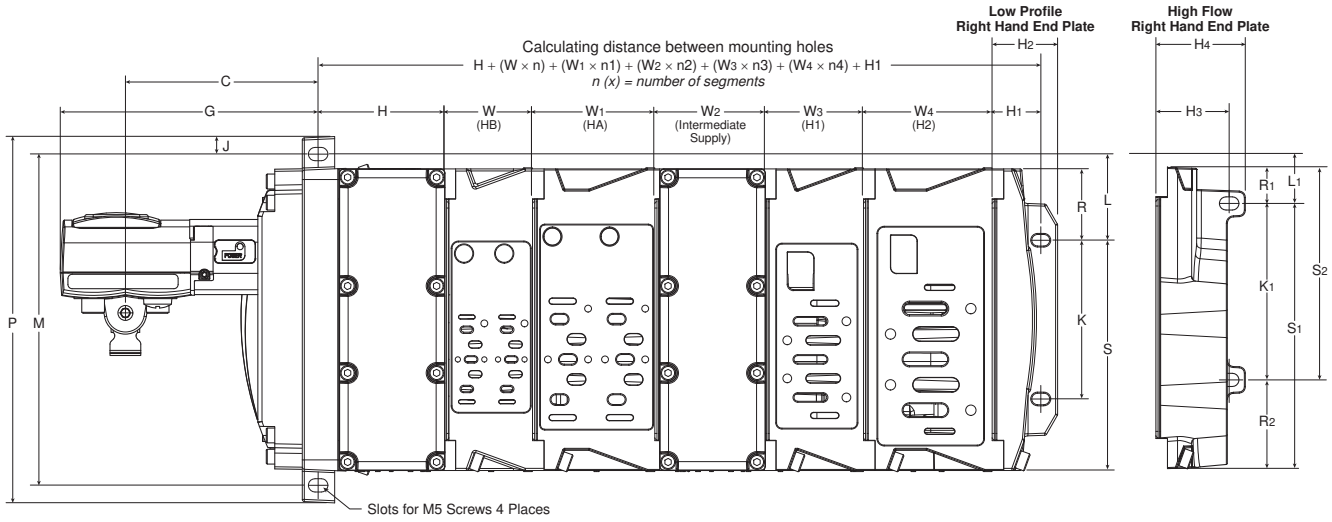



n = Number of Manifolds

| A | B | C | D | E | F | G | H | J | K | M | N | P | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.88 | 4.41 | 2.95 | 1.65 | 1.22 | 1.28 | 0.71 | 0.49 | 2.28 | 6.10 | 0.24 | 2.40 | 2.36 | 2.07 |
| (124.0) | (112.0) | (75.0) | (42.0) | (31.0) | (32.5) | (18.0) | (12.5) | (58.0) | (155.0) | (6.1) | (61.0) | (60.0) | (52.5) |

Inches (mm)

## P2M with H Series ISO Valves



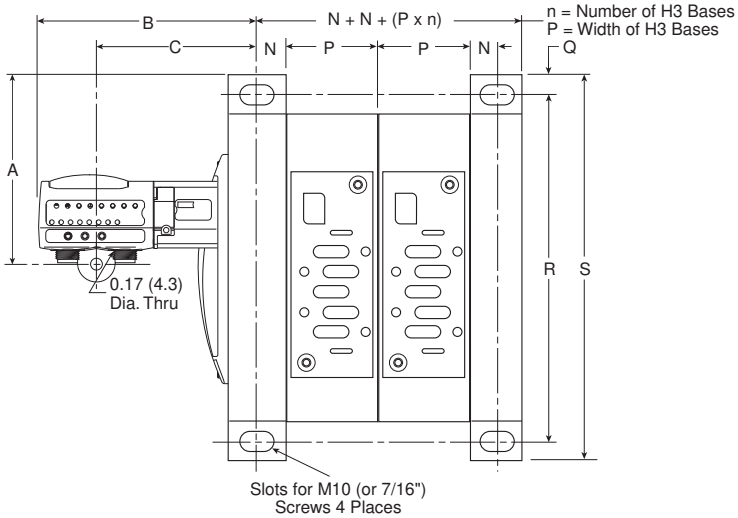

**n (x)** = number of segments

| C | G | H | H1 | H2 | H3 | H4 | J | K | K1 | L | L1 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.57 (90.8) | 4.79 (121.6) | 2.36 (60.0) | 0.90 (23.0) | 1.22 (31.0) | 1.36 (34.6) | 1.66 (42.3) | 0.33 (8.3) | 2.95 (75.0) | 3.28 (83.4) | 1.60 (40.7) | 0.96 (24.3) | 6.16 (156.5) |

| P | S | S1 | S2 | R | R1 | R2 | W | W1 | W2 | W3 | W4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.81 (173.1) | 4.28 (108.8) | 4.93 (125.2) | 3.96 (100.7) | 1.33 (33.7) | 0.68 (17.3) | 1.65 (41.8) | 1.63 (41.3) | 2.28 (57.8) | 2.06 (52.3) | 1.82 (46.3) | 2.39 (60.8) |

Inches (mm)

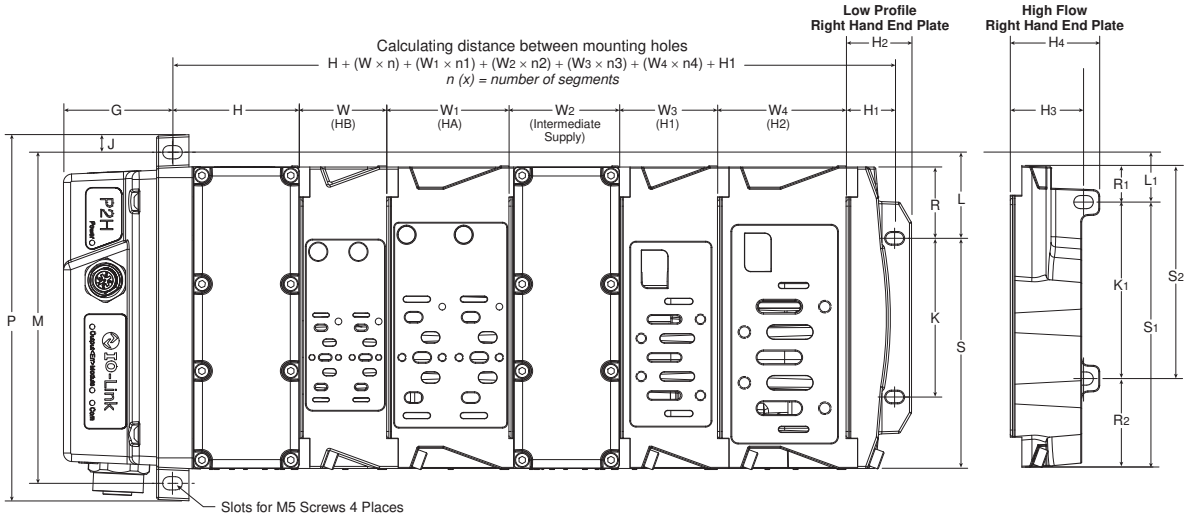
### H3 Manifold Assembly




| | A | B | C | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|
| H3 | 3.31 (84.2) | 6.40 (161.5) | 5.19 (131.8) | .65 (16.5) | 2.80 (71) | .59 (15) | 10.43 (265) | 11.61 (295) |

Inches (mm)

## P2H with H Series ISO Valves




**n (x)** = number of segments

| G | H | H1 | H2 | H3 | H4 | J | K | K1 | L | L1 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.03 (51.5) | 2.36 (60.0) | 0.90 (23.0) | 1.22 (31.0) | 1.36 (34.6) | 1.66 (42.3) | 0.33 (8.3) | 2.95 (75.0) | 3.28 (83.4) | 1.60 (40.7) | 0.96 (24.3) | 6.16 (156.5) |

| P | S | S1 | S2 | R | R1 | R2 | W | W1 | W2 | W3 | W4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.81 (173.1) | 4.28 (108.8) | 4.93 (125.2) | 3.96 (100.7) | 1.33 (33.7) | 0.68 (17.3) | 1.65 (41.8) | 1.63 (41.3) | 2.28 (57.8) | 2.06 (52.3) | 1.82 (46.3) | 2.39 (60.8) |

Inches (mm)

# DX ISOMAX Series

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.

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

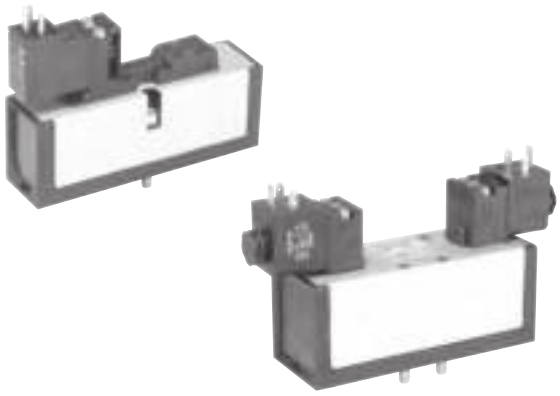
Valves fitted with switchable selector to give internal or external pilot supply

Corrosion free and modern design

Vacuum operation

Dual pressure

* Refer to our warranty conditions.



## Operating information

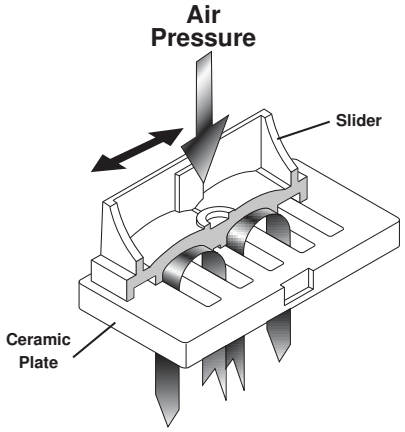
Operating Pressure: Vacuum to 145 PSIG (10 bar)

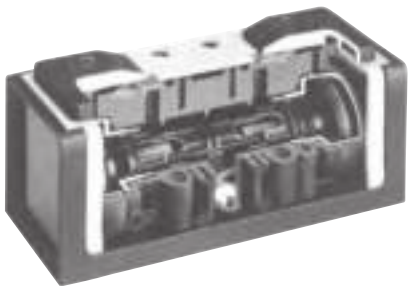
| Function | | M.O.P (PSIG) |
|---|---|---|
| 20, 21, 22, 23 | 2-position, spring return | 36 |
| 50, 51, 53, 54 | 2-position, air return | 30 |
| 04, 05, 06, 08 | 2-position | 15 |
| 09, 11, 12, 27 | 3-position, CE | 45 |
| 16, 18, 19, 25 | 3-position, APB | 45 |

Working temperatures: -10°C to 60°C (14°F to 140°F)
Storage temperatures: -20°C to 70°C (-4°F to 158°F)

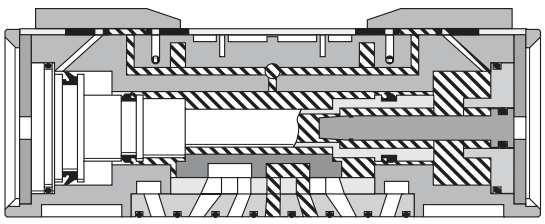
## Material specifications

| | |
|---|---|
| Body | Polyamide reinforced fiberglass |
| Casing | Anodized aluminum |
| End plates | Painted zinc plated steel |
| Function selector | Polyamide reinforced fiberglass |
| Screws | Zinc plated steel |
| Seals | Nitrile |
| Seat | Ceramic |
| Springs | Stainless steel |
| Top cover seals | Polyester |
| Valve members | Self lubricating acetal |
| Valve plate | Zinc |



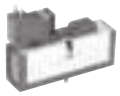
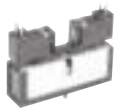
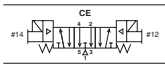
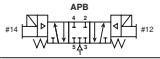



Remote Pilot

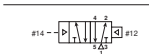
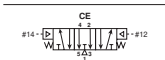
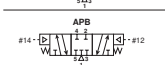


Pressure Exhaust

## DX02 ISO Solenoid Valves

| | Symbol | Type | Cv | Operator | Pilot | Override | 24 VDC | 120 VAC |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 0.55 | Single solenoid | Internal | Non-locking | **DX02-621-951M** | **DX02-621-951J** |
| |  | 4-way, 2-position, air return | 0.55 | Single solenoid | Internal | Non-locking | **DX02-651-951M** | **DX02-651-951J** |
|  |  | 4-way, 2-position | 0.55 | Double solenoid | Internal | Non-locking | **DX02-606-951M** | **DX02-606-951J** |
| |  | 4-way, 3-position, center exhaust | 0.4 | Double solenoid | Internal | Non-locking | **DX02-611-951M** | **DX02-611-951J** |
| |  | 4-way, 3-position, all ports blocked | 0.4 | Double solenoid | Internal | Non-locking | **DX02-616-951M** | **DX02-616-951J** |

## DX02 ISO Remote Pilot Valves

| | Symbol | Type | Cv | Operator | Pilot | Part number |
|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 0.55 | Single remote pilot | Remote | **DX02-421-60** |
| |  | 4-way, 2-position, air return | 0.55 | Single remote pilot | Remote | **DX02-451-60** |
|  |  | 4-way, 2-position | 0.55 | Double remote pilot | Remote | **DX02-406-60** |
| |  | 4-way, 3-position, center exhaust | 0.4 | Double remote pilot | Remote | **DX02-411-60** |
| |  | 4-way, 3-position, all ports blocked | 0.4 | Double remote pilot | Remote | **DX02-416-60** |

**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)

## DX02 Series Accessories

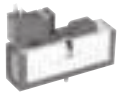
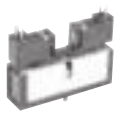
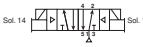
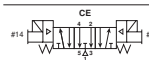
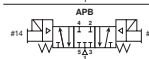
| Accessory | | Description | | Part number |
|---|---|---|---|---|
| Sandwich regulator |  | Common pressure | 2-60 PSIG w/ gauge | **PS5637155DXP** |
| | | Common pressure | 5-125 PSIG w/ gauge | **PS5637166DXP** |
| | | Independent pressure | 2-60 PSIG w/ gauge | **PS5637255DXP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS5637266DXP** |
| Gauge adapter kit | | Includes 1/8" coupling and long nipple | | **PS5651160P** |
| Sandwich supply module | | 1/8" NPT | | **PS562600P** |
| | | 1/8" BSPP | | **PS562601P** |
| Sandwich exhaust module | | 1/8" NPT | | **PS562700P** |
| | | 1/8" BSPP | | **PS562701P** |

| 2 Station manifold bases |  | **Description** | **1/8" NPT** | **1/8" BSPP** |
|---|---|---|---|---|
| | | End ported bases | **PS5611510P** | **PS5611520P** |

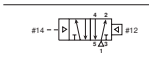
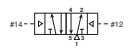
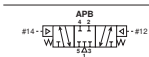
| End plate kit |  | **Description** | **NPT port** | **BSPP port** |
|---|---|---|---|---|
| | | Non-collective wiring end plate | **PS5631010P** | **PS5631011P** |

Most popular.

## DX01 ISO Solenoid Valves

| | Symbol | Type | Cv | Operator | Pilot | Override | 24 VDC | 120 VAC |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 0.75 | Single solenoid | Internal | Non-locking | **DX01-621-951M** | **DX01-621-951J** |
| |  | 4-way, 2-position, air return | 0.75 | Single solenoid | Internal | Non-locking | **DX01-651-951M** | **DX01-651-951J** |
|  |  | 4-way, 2-position | 0.75 | Double solenoid | Internal | Non-locking | **DX01-606-951M** | **DX01-606-951J** |
| |  | 4-way, 3-position, center exhaust | 0.5 | Double solenoid | Internal | Non-locking | **DX01-611-951M** | **DX01-611-951J** |
| |  | 4-way, 3-position, all ports blocked | 0.5 | Double solenoid | Internal | Non-locking | **DX01-616-951M** | **DX01-616-951J** |

## DX01 ISO Remote Pilot Valves

| | Symbol | Type | Cv | Operator | Pilot | Part number |
|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 0.75 | Single remote pilot | Remote | **DX01-421-60** |
| |  | 4-way, 2-position, air return | 0.75 | Single remote pilot | Remote | **DX01-451-60** |
|  |  | 4-way, 2-position | 0.75 | Double remote pilot | Remote | **DX01-406-60** |
| |  | 4-way, 3-position, center exhaust | 0.5 | Double remote pilot | Remote | **DX01-411-60** |
| |  | 4-way, 3-position, all ports blocked | 0.5 | Double remote pilot | Remote | **DX01-416-60** |

**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)

## DX01 Series Accessories

| Accessory | | Description | | Part number |
|---|---|---|---|---|
| Sandwich regulator |  | Common pressure | 2-60 PSIG w/ gauge | **PS5537155DXP** |
| | | Common pressure | 5-125 PSIG w/ gauge | **PS5537166DXP** |
| | | Independent pressure | 2-60 PSIG w/ gauge | **PS5537255DXP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS5537266DXP** |
| Gauge adapter kit | | Includes 1/8" coupling and long nipple | | **PS5651160P** |
| Remote pilot access plate kit | | 1/4" NPT | | **PS551500P** |
| | | 1/4" BSPP | | **PS551501P** |
| Sandwich supply module | | 1/4" NPT | | **PS552600P** |
| | | 1/4" BSPP | | **PS552601P** |
| Sandwich exhaust module | | 1/4" NPT | | **PS552700P** |
| | | 1/4" BSPP | | **PS552701P** |
| Manifold to manifold gasket kits | | Used with manifold PJLP02 | | **DX01M2MGSKT** |
| Manifold hardware kit | | Includes 10 bolts, 10 washers, 10 nuts | | **DX02M2MB** |

| 2 Station manifold bases |  | **Description** | **1/4" NPT** | **1/4" BSPP** |
|---|---|---|---|---|
| | | End ported bases | **PS5511530P** | **PS5511540P** |

| End plate kit |  | **Description** | **NPT port** | **BSPP port** |
|---|---|---|---|---|
| | | Non-collective wiring end plate | **PS5631010P** | **PS5531011P** |

☐ Most popular.

## Model Number

**DX02 – 6 06 – 95 1 M**

| Basic Series | |
|---|---|
| ISO 15407-1 (18mm) | DX02 |
| ISO 15407-1 (26mm) | DX01 |

| Pilot | |
|---|---|
| Air Operated Remote Pilot | 4 |
| Solenoid Operated | 6 |

| Function | |
|---|---|
| **Internal Pilot Supply / Captured Exhaust 12** | |
| **2-Position, Spring Return** | **21** |
| **2-Position, Air Return** | **51** |
| **2-Position** | **06** |
| **3-Position, CE** | **11** |
| **3-Position, APB** | **16** |
| **External Pilot 14 Supply / Captured Exhaust 12*** | |
| 2-Position, Spring Return | 23 |
| 2-Position, Air Return | 54 |
| 2-Position | 05 |
| 3-Position, CE | 09 |
| 3-Position, APB | 19 |
| **Internal Pilot Supply / Vented Exhaust** | |
| 2-Position, Spring Return | 20 |
| 2-Position, Air Return | 50 |
| 2-Position | 04 |
| 3-Position, CE | 27 |
| 3-Position, APB | 25 |
| **External Pilot Supply / Vented Exhaust*** | |
| 2-Position, Spring Return | 22 |
| 2-Position, Air Return | 53 |
| 2-Position | 08 |
| 3-Position, CE | 12 |
| 3-Position, APB | 18 |

* Must be specified when using Sandwich Regulators.

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

| Override | |
|---|---|
| Blank | Remote Pilot |
| 1 | Non-Locking, Flush |
| 3 | Locking, Flush |

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

*Note: DX02 18mm Valve Remote Pilot Option only available with PL02 Individual Subbase Kits*

## 15407-1, DX02 & DX01 Manifold / Subbase Kits

**PS5511 13 0 P**

| Basic Series | |
|---|---|
| ISO 15407-1 DX02 | PS5611 |
| ISO 15407-1 DX01 | PS5511 |

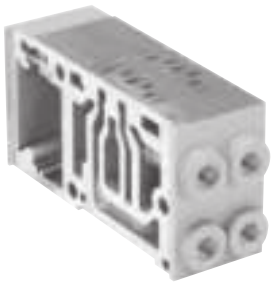
| Enclosures / Lead Length | |
|---|---|
| 0 | None, No Electrical Plug - 15407-1 |

| Mounting Style / Port Size | |
|---|---|
| DX02 | |
| Manifold with 1/8 NPT End Ports | 51 |
| Manifold with 1/8 BSPP End Port | 52 |
| Manifold with 1/8 NPT Bottom / End Port | 61 |
| Manifold with 1/8 BSPP Bottom / End Port | 62 |
| DX01 | |
| Subbase with 1/4 NPT Side Ports | 13 |
| Subbase with 1/4 BSPP Side Ports | 14 |
| Subbase with 1/4 NPT Bottom / Side Port | 23 |
| Subbase with 1/4 BSPP Bottom / Side Port | 24 |
| Manifold with 1/4 NPT End Port | 53 |
| Manifold with 1/4 BSPP End Port | 54 |
| Manifold with 1/4 NPT Bottom / End Port | 63 |
| Manifold with 1/4 BSPP Bottom / End Port | 64 |

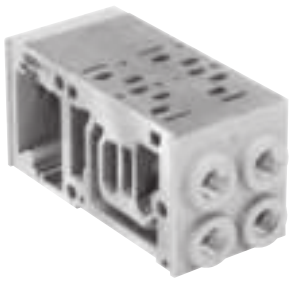
### Subbase Kits

DX01 Series Subbase

### Manifold Kits



DX02 Series 2-Station Manifold



DX01 Series 2-Station Manifold

## 15407-1, DX02 & DX01 End Plate Kits

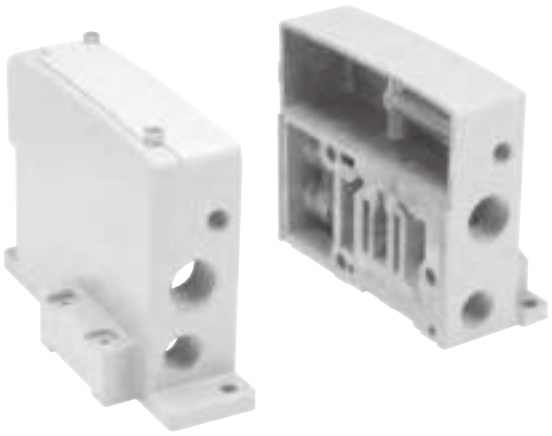
**PS56 | 31 | 01 | 0 | P**

| Basic Series | |
|---|---|
| ISO 15407, Size DX02, DX01 | PS56 |

| End Plate Kit Type | |
|---|---|
| End Plate, Non-Collective Wiring | 31 |

| Options | |
|---|---|
| 01 | Non-Collective Wiring |

| Thread Type | |
|---|---|
| 0 | NPT |
| 1 | BSPP "G" |



DX02 - DX01 Non-Collective Wiring
End Plates

## Sandwich Regulators Features

- Remote Air Pilot Operated for hard-to-reach pressure control.
- Unregulated Pilot Pressure to valve for consistent valve shifting regardless of pressure adjustment.

**PS5637 | 1 | 6 | 6 | DX | P**

| Basic Series | |
|---|---|
| DX02 | |
| 15407-1, 18mm | PS5637 |
| DX01 | |
| 15407-1, 26mm | PS5537 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| #2 Port Regulator / Gauge* | |
|---|---|
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

| #4 Port Regulator / Gauge* | |
|---|---|
| 5 | 2-60 PSIG w/Gauge |
| **6** | **5-125 PSIG w/Gauge** |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

**DX02**
**(Independent Dual Port Regulator Shown)**

**DX01**
**(Common Port Regulator Shown)**

## Remote Pilot Access Plate Kit

| | | Part number | |
|---|---|---|---|
| Size | Port size | NPT | BSPP |
| 26mm DX01 | 1/8" | **PS551500P** | **PS551501P** |

## How To Order 15407-1 Non Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

### Add-A-Fold Assembly Model Number

**AA HBS 0 04**

| Valve series | |
|---|---|
| Right & left end plate 15407-1 (HB 18mm & HA 26mm) | HBS† |

† For use with PS5511 and PS5611 manifolds.

| Thread type | |
|---|---|
| NPT | 0 |
| BSPP "G" | 1* |

* BSPP conforms to ISO 1179-1 w 228-1 threads for end plate Type "S".

| Number of stations* |
|---|
| 02 |
| 04 |
| • |
| 24 |
| • |
| 32 |

* Must be ordered in multiples of (2) unless using the HB/HA to H2 transition plate.

### Example

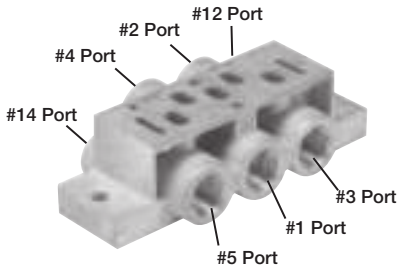
Application requires a 4-Station manifold.
(Two 18mm + Two 26mm Stations)

| Item | Qty. | Part No. | Location |
|---|---|---|---|
| 01 | 1 | AAHBS004 | |
| 02 | 1 | DX02-651-951M | Station 1 |
| 03 | 1 | DX02-651-951M | Station 2 |
| 04 | 1 | PS5611510P | Station 1 & 2 |
| 05 | 2 | DX01-606-951M | Station 3 & 4 |
| 06 | 1 | PS5511510P | Station 3 & 4 |

**NOTE:** Construct manifold assemblies from left to right while looking at the ports. Valves must be ordered as External Pilot when using Sandwich Regulator.

## DX02 Series Subbase & Manifolds

### Single Subbase

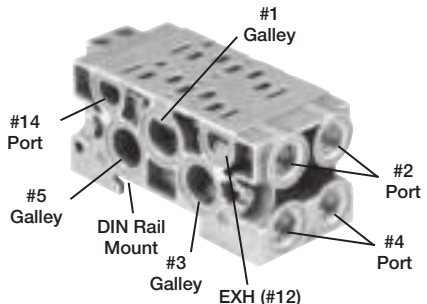



Side ported base
18mm DX02

| 1/8" NPT | 1/8" BSPP |
|---|---|
| **PL02-01-80** | **PL02-01-70** |

**Note:** Can be used for external, single, or double remote pilot.

### 2 Station Manifold Bases



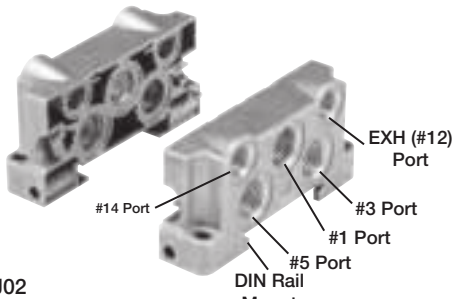

PJLP02

End ported bases
18mm DX02

| 1/8" NPT | 1/8" BSPP |
|---|---|
| **PJLP02-201-80** | **PJLP02-201-70** |

**Note:** Can be used for external pilot, not remote pilot. Gaskets and assembly hardware included.

### End Plate Kit




PEJ02
(Type "P")

Side ported two station manifold base
18mm DX02

| 1/8" NPT port | 1/8" BSPP port |
|---|---|
| **PEJ02-02-80*** | **PEJ02-02-70** |

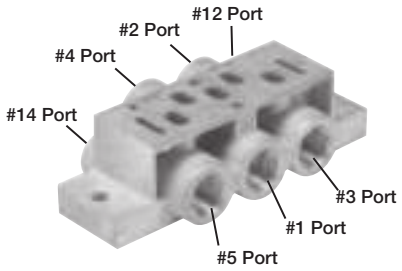
***Note:** Put a vent or muffler in "EXH" port when capturing pilot exhaust pressure with a solenoid valve. (See gasket selector page for details. Gaskets and assembly hardware included.
Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)



☐ Most popular.

## DX01 Series Subbase & Manifolds

### Single Subbase

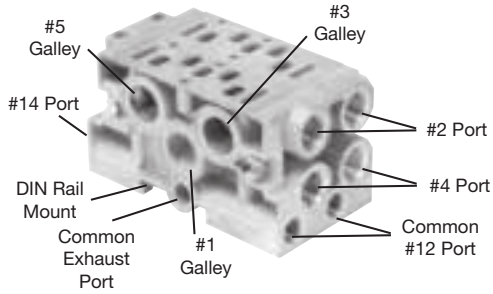



Side ported base
26mm DX01

| Part number | |
|---|---|
| 1/4" NPT | 1/4" BSPP |
| **PL01-02-80** | **PL01-02-70** |

**Note:** Can be used for external, single, or double remote pilot.

### 2 Station Manifold Bases

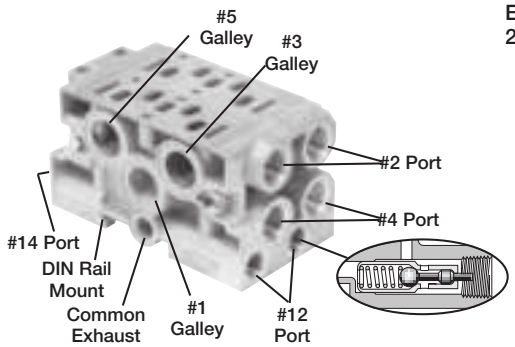



PJLP01

End ported bases
26mm DX01

| 1/4" NPT | 1/4" BSPP |
|---|---|
| **PJLP01-202-80** | **PJLP01-202-70** |

**Note:** Can be used for single remote pilot using the #14 Port and external pilot. Gaskets and assembly hardware included.




PJL01

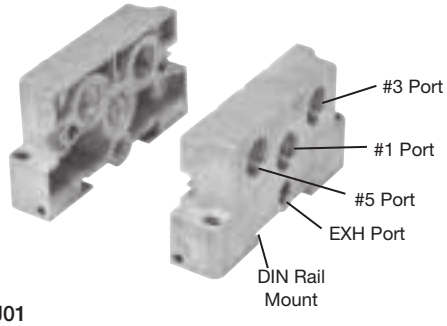
End ported bases
26mm DX01

| 1/4" NPT | 1/4" BSPP |
|---|---|
| **PJL01-202-80** | **PJL01-202-70** |

**Notes:** #12 ports work independently when plunger is not depressed by a plug. When a plug is inserted in #12 Port along with the captured pilot exhaust gasket selector option, pilot exhaust is sent to the 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




PEJ01

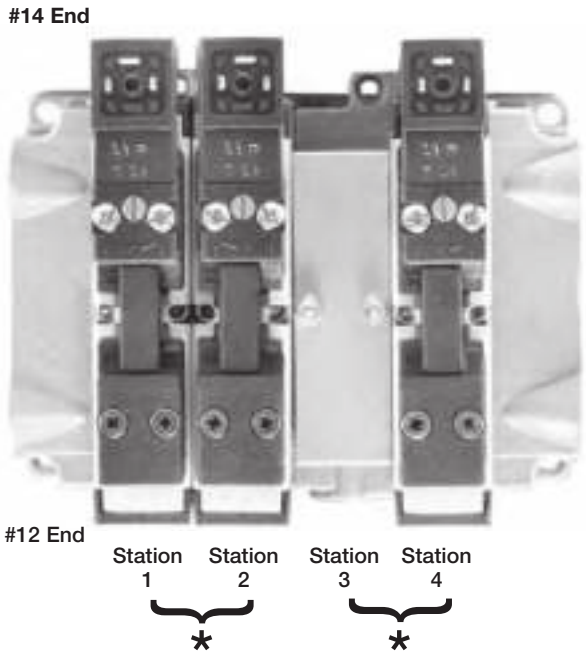
Side ported two station manifold base
26mm DX01

| 3/8 NPT port | 3/8 BSPP port |
|---|---|
| **PEJ01-03-80*** | **PEJ01-03-70** |

* Use with PJLP01 or PJL01

Notes: Put a vent or muffler in "EXH" port when capturing pilot exhaust pressure with a solenoid valve. See page J18 for gasket selector details. Gaskets and assembly hardware included. Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)

☐ Most popular.




* Each Manifold has two (2) Stations
(Even number of Stations Required)

## How To Order Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve/base model number. List left to right, looking at the cylinder ports on the #12 end of the manifold. The left most station is station 1.

   (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

## Model Number

**AA 02U 0 04**

| Valve Series | |
|---|---|
| Right & Left End Plate 15407-1, DX01 | 01U† |
| Right & Left End Plate 15407-1, DX02 | 02U** |
| Right & Left End Plate 15407, DX01 & DX02 | HBS* |

* Common End Plates for DX01 & DX02. For use with PS5 Manifolds.
** For use with PJLP02 Manifolds.
† For use with PJLP01 or PJL01 Manifolds.

| Number of Stations* | |
|---|---|
| 02 | 2 Stations |
| 04 | 4 Stations |
| • | |
| 24 | 24 Stations |
| • | |
| 32† | 32 Stations |

* Must be ordered in multiples of 2.
† Maximum Number.

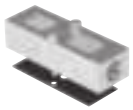
| Port Type | |
|---|---|
| 0 | NPT |
| 1 | BSPP "G" |

***Example:*** Application requires a 3-Valve manifold.

| Qty. | Part No. |
|---|---|
| 1 | AA02U004 |
| 1 | DX02-651-951M ..... Valve Station 1 |
| 1 | DX02-651-951M ..... Valve Station 2 |
| 1 | PJLP02-201-80..... Base Station 1 & 2 |
| 1 | DX02BLK ..... Valve Station 3 |
| 1 | DX02-651-951M ..... Valve Station 4 |
| 1 | PJLP02-201-80..... Base Station 3 & 4 |

**Note: DX02 Manifolds cannot be used for remote pilot.**

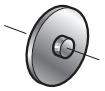
## Intermediate Air Supply Base



| Size | Port size | Part number |
|---|---|---|
| 18mm DX02 | 1/8" NPT | **D02P-01-80** |
| 26mm DX01 | 1/4" NPT | **D01P-02-80** |

**Notes:** Gasket & Mounting Bolts included.
Torque Specifications
Size 02: 15 to 25 in-lbs (1.69 to 2.82 Nm)
Size 01: 20 to 30 in-lbs (2.26 to 3.39 Nm)

## Manifold Port Isolation Disc



| Size | | Part number |
|---|---|---|
| 18mm DX02 | Common Pressure | **D02BD0** |
| 26mm DX01 | | **D01BD0** |

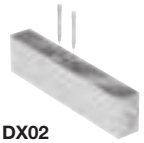
**Notes:** 3 Discs per Kit.
**Used on PJL Manifolds.**

## Blanking Plate

| Size | | Part number |
|---|---|---|
| 18mm DX02 | Common Pressure | **PS5634P** |
| 26mm DX01 | | **PS5534P** |

**Notes:** Gasket & Mounting Bolts included.
Torque Specifications
Size 02: 15 to 25 in-lbs (1.69 to 2.82 Nm)
Size 01: 20 to 30 in-lbs (2.26 to 3.39 Nm)

## Sandwich Flow Control Features

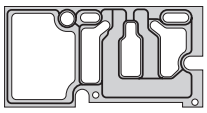


**DX02**
**18mm Shown**

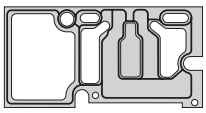
| Size | Part number |
|---|---|
| 18mm DX02 | **PS5642P** |
| 26mm DX01 | **PS5542P** |

- Both adjustment screws are located on the 12 end of the unit.
- Sandwich Flow Control mounts with its own studs, which means the valve uses standard bolts for mounting.
- Sandwich Flow Control is not to be used as a shut off device and is not bubble tight when needles are fully turned down.

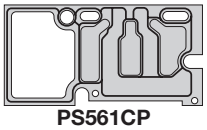
## Manifold to Manifold Gasket Kits



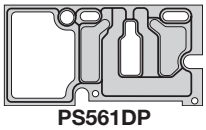
**PS561AP**



**PS561BP**



**PS561CP**



**PS561DP**

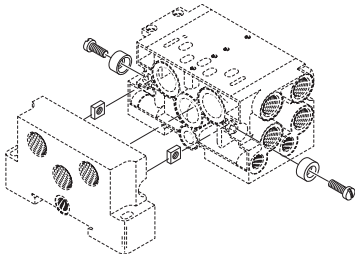
**DX02M2MGSKT (PJLP02)**

**DX01M2MGSKT (PJLP01)**

| Size | Standard | Blocked #1 Port | Blocked #1, 3, 5 Ports | Blocked #3, 5 Ports |
|---|---|---|---|---|
| DX02* DX01* | **PS561AP** | **PS561BP** | **PS561CP** | **PS561DP** |
| DX02 | **DX02M2MGSKT** (PJLP02) | | | |
| DX01 | **DX01M2MGSKT** (PJLP01) | | | |

* Gaskets used with PS5611 & PS5511 Manifolds.

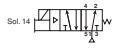
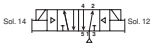
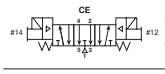
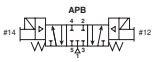
## Manifold Hardware Kits



| Description | Part number |
|---|---|
| Bolt, Washer & Nut* | **DX02M2MB**** |
| Tie Rods for PS5611 Manifold (Qty. 12) | **PS5612P** |
| Tie Rods for PS5511 Manifold (Qty. 12) | **PS5512P** |

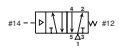
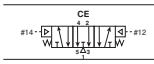
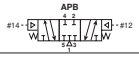
* Includes 10 Bolts, 10 Washers, 10 Nuts
** Use this number for both sizes, PJLP02 & PJLP01.
Torque Specifications: 25 to 35 in-lbs (2.82 to 3.95 Nm)

## DX1 ISO Solenoid Valves

| | Symbol | Type | Cv | Operator | Pilot | Override | 24 VDC | 120 VAC |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 1.15 | Single solenoid | Internal | Non-locking | **DX1-621-BL49** | **DX1-621-BL53** |
| | | | | | | Locking | **DX1-621-CL49** | **DX1-621-CL53** |
| |  | 4-way, 2-position, air return | 1.15 | Single solenoid | Internal | Non-locking | **DX1-651-BL49** | **DX1-651-BL53** |
| | | | | | | Locking | **DX1-651-CL49** | **DX1-651-CL53** |
|  |  | 4-way, 2-position | 1.15 | Double solenoid | Internal | Non-locking | **DX1-606-BL49** | **DX1-606-BL53** |
| | | | | | | Locking | **DX1-606-CL49** | **DX1-606-CL53** |
| |  | 4-way, 3-position, center exhaust | 0.75 | Double solenoid | Internal | Non-locking | **DX1-611-BL49** | **DX1-611-BL53** |
| | | | | | | Locking | **DX1-611-CL49** | **DX1-611-CL53** |
| |  | 4-way, 3-position, all ports blocked | 0.75 | Double solenoid | Internal | Non-locking | **DX1-616-BL49** | **DX1-616-BL53** |
| | | | | | | Locking | **DX1-616-CL49** | **DX1-616-CL53** |

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

## DX1 ISO Remote Pilot Valves

| | Symbol | Type | Cv | Operator | Pilot | Part number |
|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 1.15 | Single remote pilot | Remote | **DX1-421-60** |
| |  | 4-way, 2-position, air return | 1.15 | Single remote pilot | Remote | **DX1-451-60** |
|  |  | 4-way, 2-position | 1.15 | Double remote pilot | Remote | **DX1-406-60** |
| |  | 4-way, 3-position, center exhaust | 0.75 | Double remote pilot | Remote | **DX1-411-60** |
| |  | 4-way, 3-position, all ports blocked | 0.75 | Double remote pilot | Remote | **DX1-416-60** |

## DX1 Series Subbase & Manifolds

| Single subbase | Description | 3/8" NPT | 3/8" BSPP |
|---|---|---|---|
|  | Side ported base | **PS4011150DP** | **PS4011160DP** |

| Manifold bases | | 3/8" NPT | 3/8" BSPP |
|---|---|---|---|
|  | End ported bases | **PS4011550DP** | **PS4011560CP** |
| | Bottom / End ported bases | **PS4011650CP** | **PS4011660CP** |

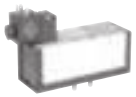
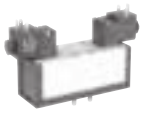
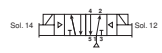
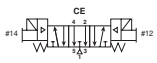
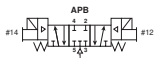
| End plate kits | | NPT port | BSPP port |
|---|---|---|---|
|  | DX1 non-collective wiring end plates | **PS4031010CP** | **PS4031011DP** |

## 5599-1, DX1 Accessories

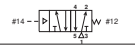
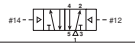
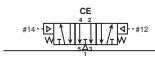
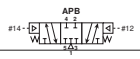
| Accessories | | Description | | Part number |
|---|---|---|---|---|
| Sandwich regulator |  | Common pressure | 5-125 PSIG w/ gauge | **PS4037166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4037266CP** |
| Manifold to manifold gasket kit | | | | **PS4013P** |
| Auxiliary access plate kit | | 1/4" & 3/8" | NPT | **PS403000CP** |
| | | | BSPP | **PS403001CP** |

☐ Most popular.

## DX2 ISO Valves

| | Symbol | Type | Cv | Operator | Pilot | Override | 24 VDC | 120 VAC |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 2.5 | Single solenoid | Internal | Non-locking | **DX2-621-BL49** | **DX2-621-BL53** |
| | | | | | | Locking | **DX2-621-CL49** | **DX2-621-CL53** |
| |  | 4-way, 2-position, air return | 2.5 | Single solenoid | Internal | Non-locking | **DX2-651-BL49** | **DX2-651-BL53** |
| | | | | | | Locking | **DX2-651-CL49** | **DX2-651-CL53** |
|  |  | 4-way, 2-position | 2.5 | Double solenoid | Internal | Non-locking | **DX2-606-BL49** | **DX2-606-BL53** |
| | | | | | | Locking | **DX2-606-CL49** | **DX2-606-CL53** |
| |  | 4-way, 3-position, center exhaust | 2.4 | Double solenoid | Internal | Non-locking | **DX2-611-BL49** | **DX2-611-BL53** |
| | | | | | | Locking | **DX2-611-CL49** | **DX2-611-CL53** |
| |  | 4-way, 3-position, all ports blocked | 2.4 | Double solenoid | Internal | Non-locking | **DX2-616-BL49** | **DX2-616-BL53** |
| | | | | | | Locking | **DX2-616-CL49** | **DX2-616-CL53** |

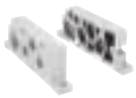
## DX2 ISO Remote Pilot Valves

| | Symbol | Type | Cv | Operator | Pilot | Part number |
|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 2.5 | Single remote pilot | Remote | **DX2-421-60** |
| |  | 4-way, 2-position, air return | 2.5 | Single remote pilot | Remote | **DX2-451-60** |
|  |  | 4-way, 2-position | 2.5 | Double remote pilot | Remote | **DX2-406-60** |
| |  | 4-way, 3-position, center exhaust | 2.4 | Double remote pilot | Remote | **DX2-411-60** |
| |  | 4-way, 3-position, all ports blocked | 2.4 | Double remote pilot | Remote | **DX2-416-60** |

## DX2 Series Subbase & Manifolds

| Single subbase | Description | 1/2" NPT | 1/2" BSPP |
|---|---|---|---|
|  | Side ported base | **PS4111170CP** | **PS4111180CP** |

| Manifold bases | | 1/2" NPT | 1/2" BSPP |
|---|---|---|---|
|  | Bottom / End ported bases | **PS4111670CP** | **PS4111680CP** |
| | **Note:** Manifolds include 2 pipe plugs | | |

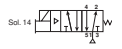
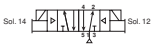
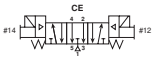
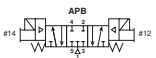
| End plate kits | | NPT port | BSPP port |
|---|---|---|---|
|  | H2 Non-collective wiring end plates | **PS4131010DP** | **PS4131011DP** |

## 5599-1, DX2 Accessories

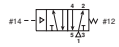
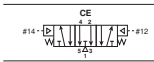
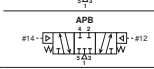
| Accessories | | Description | | Part number |
|---|---|---|---|---|
| Sandwich regulator |  | Common pressure | 5-125 PSIG w/ gauge | **PS4137166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4137266CP** |
| Manifold to manifold gasket kit | | | | **PS4113P** |

☐ Most popular.

## DX3 ISO Valves

| | Symbol | Type | Cv | Operator | Pilot | Override | 24 VDC | 120 VAC |
|---|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 4.15 | Single solenoid | Internal | Non-locking | **DX3-621-BL49** | **DX3-621-BL53** |
| | | | | | | Locking | **DX3-621-CL49** | **DX3-621-CL53** |
| |  | 4-way, 2-position, air return | 4.15 | Single solenoid | Internal | Non-locking | **DX3-651-BL49** | **DX3-651-BL53** |
| | | | | | | Locking | **DX3-651-CL49** | **DX3-651-CL53** |
|  |  | 4-way, 2-position | 4.15 | Double solenoid | Internal | Non-locking | **DX3-606-BL49** | **DX3-606-BL53** |
| | | | | | | Locking | **DX3-606-CL49** | **DX3-606-CL53** |
| |  | 4-way, 3-position, center exhaust | 4.0 | Double solenoid | Internal | Non-locking | **DX3-611-BL49** | **DX3-611-BL53** |
| | | | | | | Locking | **DX3-611-CL49** | **DX3-611-CL53** |
| |  | 4-way, 3-position, all ports blocked | 4.0 | Double solenoid | Internal | Non-locking | **DX3-616-BL49** | **DX3-616-BL53** |
| | | | | | | Locking | **DX3-616-CL49** | **DX3-616-CL53** |

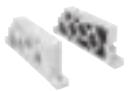
## DX3 ISO Remote Pilot Valves

| | Symbol | Type | Cv | Operator | Pilot | Part number |
|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 4.15 | Single remote pilot | Remote | **DX3-421-60** |
| |  | 4-way, 2-position, air return | 4.15 | Single remote pilot | Remote | **DX3-451-60** |
|  |  | 4-way, 2-position | 4.15 | Double remote pilot | Remote | **DX3-406-60** |
| |  | 4-way, 3-position, center exhaust | 4.0 | Double remote pilot | Remote | **DX3-411-60** |
| |  | 4-way, 3-position, all ports blocked | 4.0 | Double remote pilot | Remote | **DX3-416-60** |

## DX3 Series Subbase & Manifolds

| Single subbase | Description | 3/4" NPT | 3/4" BSPP |
|---|---|---|---|
|  | Side ported base | **PS4211190CP** | **PS4211100CP** |

| Manifold bases | | 3/4" NPT | 3/4" BSPP |
|---|---|---|---|
|  | Bottom / End ported bases | **PS4211690CP** | **PS4211600CP** |
| | **Note:** Manifolds include 2 pipe plugs | | |

| End plate kits | | NPT port | BSPP port |
|---|---|---|---|
|  | H3 Non-collective wiring end plates | **PS4231010DP** | **PS4231011DP** |

## 5599-1, DX3 Accessories

| Accessories | | Description | | Part number |
|---|---|---|---|---|
| Sandwich regulator |  | Common pressure | 5-125 PSIG w/ gauge | **PS4237166CP** |
| | | Independent pressure | 5-125 PSIG w/ gauge | **PS4237266CP** |
| Manifold to manifold gasket kit | | | | **PS4213P** |

☐ Most popular.

**DX1** **6** **21** **B** **L** **53**

| Basic Series | |
|---|---|
| ISO 5599-1 | DX1 - Size 1 |
| ISO 5599-1 | DX2 - Size 2 |
| ISO 5599-1 | DX3 - Size 3 |

| Pilot | |
|---|---|
| Air Operated Remote Pilot | 4 |
| Solenoid Operated | 6 |

| Function | |
|---|---|
| **Internal Pilot Supply** | |
| 2-Position, Spring Return, Air Assist | 21 |
| 2-Position, Diff Return | 51 |
| 2-Position | 06 |
| 3-Position, CE | 11 |
| 3-Position, APB | 16 |
| 3-Position, PC | 13* |
| **External Pilot Supply†** | |
| 2-Position, Spring Return, Air Assist | 22 |
| 2-Position, Diff Return | 53 |
| 2-Position | 08 |
| 3-Position, CE | 12 |
| 3-Position, APB | 18 |
| 3-Position, PC | 24* |

* Not offered with DX3 Valves.
† Must be specified when using Sandwich Regulators.

| Voltage & Frequency | | | |
|---|---|---|---|
| | AC | | DC |
| | 60Hz | 50Hz | |
| 19* | | | 24 |
| 49 | | | 24 |
| 53 | 120 | 110 | |
| Blank | Remote Pilot or Valve Less Coil | | |

* LED & Surge Suppression.
Only Available with Enclosure "6".

| 5599-1 Enclosure / Lead Length / Light | |
|---|---|
| 0** | None, Remote Pilot Valve |
| 6* | 2-Pin, M12 EURO Connector with CNOMO Operator, Light |
| L | 3-Pin, 30mm DIN 43650A with CNOMO Connector, No Light |
| P | 3-Pin, 22mm Industrial with CNOMO Connector, No Light |
| N† | None, Valve Less Coil, No Light |

* Only available with Voltage & Frequency "19".
**Must use Overrides Option "6".
† Must use Overrides Option "B" or "C".

| 5599-1 Overrides | |
|---|---|
| 6 | Remote Pilot / Without Solenoid |
| B | Non-Locking, Flush, Push |
| C | Locking, Flush, Push / Turn |

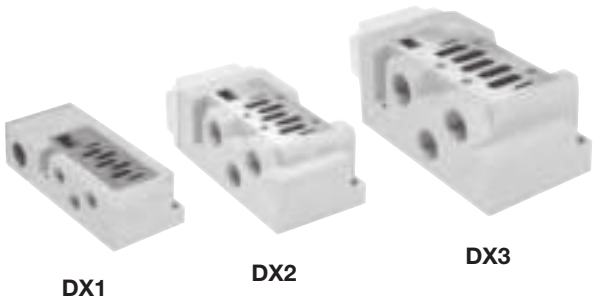
## 5599-1, DX1, DX2 & DX3 Hi-Flow Manifold / Subbase Kits

**PS401155 0 C P**

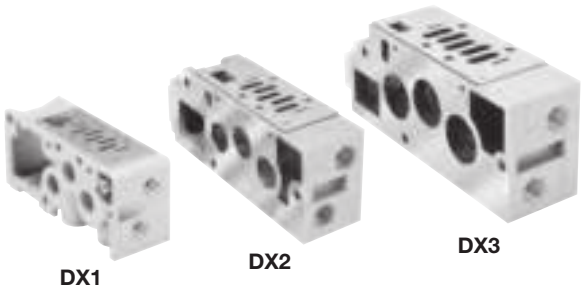
| Enclosures / Lead Length | |
|---|---|
| 0 | None, No Electrical Plug - 5599-1 |

| Mounting Base Style / Port Size | | | | | |
|---|---|---|---|---|---|
| DX1 Series | | DX2 Series | | DX3 Series | |
| **Subbase: 3/8 NPT Side Ports** | **PS401115** | **Subbase: 1/2 NPT Side Ports** | **PS411117** | **Subbase: 3/4 NPT Side Ports** | **PS421119** |
| Subbase: 3/8 BSPP Side Ports | PS401116 | Subbase: 1/2 BSPP Side Ports | PS411118* | Subbase: 3/4 BSPP Side Port | PS421110* |
| **Manifold: 3/8 NPT End Ports** | **PS401155** | Subbase: 1/2 NPT Bottom / End Port | PS411127 | Subbase: 3/4 NPT Bottom / End Port | PS421129 |
| Manifold: 3/8 BSPP End Ports | PS401156* | Subbase: 1/2 BSPP Bottom / End Port | PS411128* | Subbase: 3/4 BSPP Bottom / End Port | PS421120* |
| Manifold: 3/8 NPT Bottom / End Port | PS401165† | **Manifold: 1/2 NPT End Port** | **PS411157** | **Manifold: 3/4 NPT End Port** | **PS421159** |
| Manifold: 3/8 BSPP Bottom / End Port | PS401166*† | Manifold: 1/2 BSPP End Ports | PS411158* | Manifold: 3/4 BSPP End Port | PS421150* |
| | | Manifold: 1/2 NPT Bottom / End Port | PS411167 | Manifold: 3/4 NPT Bottom / End Port | PS421169 |
| | | Manifold: 1/2 BSPP Bottom / End Port | PS411168* | Manifold: 3/4 BSPP Bottom / End Port | PS421160* |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.
† #1 Bottom Port - 1/4".



Subbase Kits



Manifold Kits

## Non-Plug-in, 5599-1, End Plate Kits

**PS403101 0 C P**

| Basic Series | |
|---|---|
| ISO 5599, Size 1 | PS403101 |
| ISO 5599, Size 2 | PS413101 |
| ISO 5599, Size 3 | PS423101 |

| Thread Type | |
|---|---|
| 0 | NPT |
| 1* | BSPP "G" |

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.

**H1 Non-Collective Wiring End Plates**

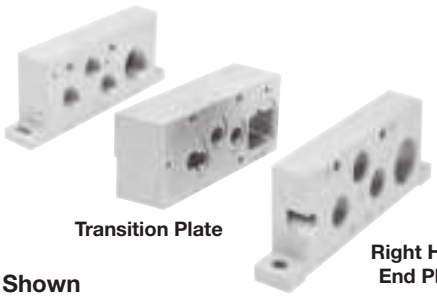
## 5599-1, DX1, DX2 & DX3 Transition Plate Kits for PS4 Manifolds

**PS402701 0 C P**

| Transition Plate Type | |
|---|---|
| DX1 to DX2 to DX3 | PS402501 |
| DX1 to DX3 | PS402601 |
| DX1 to DX2 | PS402701 |
| DX2 to DX3 | PS402801 |

| Engineering Level | |
|---|---|
| C | Current |

| Thread Type | |
|---|---|
| 0 | NPT |
| 1 | BSPP "G" |




**DX1 to DX2 Shown**

## Sandwich Regulators Features

- Remote Air Pilot Operated for hard-to-reach pressure control.
- Unregulated Pilot Pressure to valve for consistent valve shifting regardless of pressure adjustment.

**PS4037 | 1 | 6 | 6 | C | P**

| Basic Series | |
|---|---|
| DX1 | |
| 5599-1 | PS4037 |
| DX2 | |
| 5599-1 | PS4137 |
| DX3 | |
| 5599-1 | PS4237 |

| Regulator Function | |
|---|---|
| Common Pressure Regulator | 1 |
| Independent Pressure Regulator | 2 |

| #2 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| 6 | 5-125 PSIG w/Gauge |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

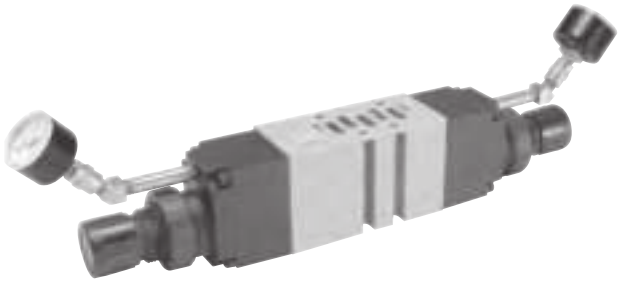
** Pressure Line By-Pass Option can only be used with Independent and Selector Regulators (Option 2 & 3 in Sandwich Block Function).

| #4 Port Regulator / Gauge* | |
|---|---|
| 0** | Line By-Pass Plate |
| 4 | 1-30 PSIG w/Gauge |
| 5 | 2-60 PSIG w/Gauge |
| 6 | 5-125 PSIG w/Gauge |

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent and Selector Regulators (Option 2 & 3 in Sandwich Block Function).

**DX1 - Size 1**
**(Independent Dual Port Regulator Shown)**



**DX2 - Size 2**
**(Independent Dual Port Regulator Shown)**

***Ordering Components***
- *Manifold or Subbase Kit required.*
- *Sandwich Regulator Kit configured for Internal Pilot as standard.*
- *Order valve as External Pilot.*

## How to Configure Sandwich Regulator / Valve Combinations

***Internal Pilot Configuration -***
*Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.*

***External Pilot Configuration - DX1, DX2, DX3***
*An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.*

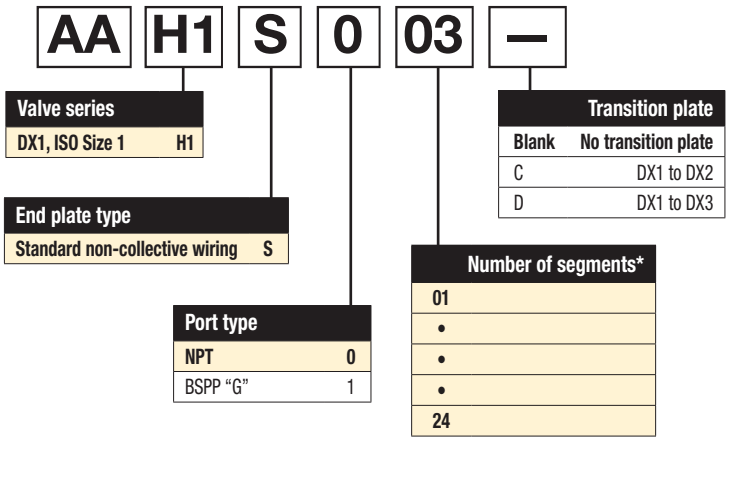
## How To Order Add-A-Fold Assemblies

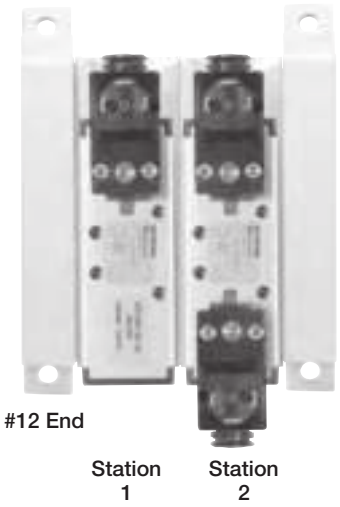
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve/base model number. List left to right, looking at the cylinder ports on the #12 end of the manifold. The left most segment is segment 1.

   (If a blank segment is needed, list the blanking plate part number and the individual manifold number in the segment specified.)

**Example:** Application requires a 3-Station manifold.

| Qty. | Part No. |
|---|---|
| 1 | AAH1S003 |
| 1 | DX1-621-BL49..... Valve Station 1 |
| 1 | PS4011550CP.....Base Station 1 |
| 1 | DX1-616-BL49 ..... Valve Station 2 |
| 1 | PS4011550CP.....Base Station 2 |
| 1 | DX1-611-BL49 ..... Valve Station 3 |
| 1 | PS4011550CP.....Base Station 3 |




Most popular.

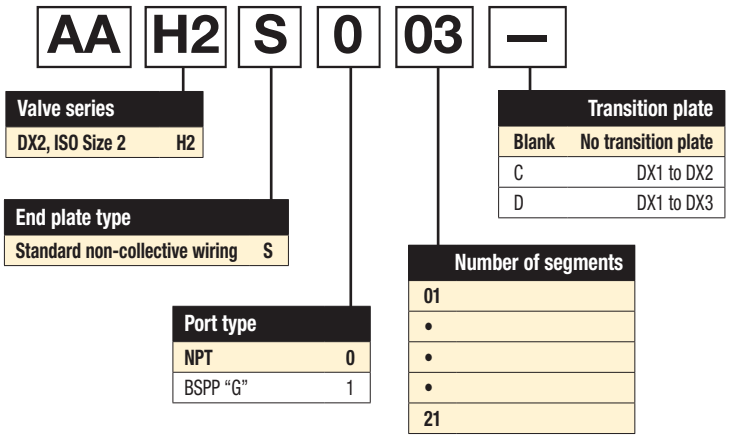
## How To Order Add-A-Fold Assemblies

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 segment is segment 1.

   (If a blank segment is needed, list the blanking plate part number and the individual manifold number in the segment specified.)

**Example:** Application requires a 3-segment manifold.

| Qty. | Part No. |
|---|---|
| 1 | AAH2S003 |
| 1 | DX2-621-BL49..... Valve Station 1 |
| 1 | PS4111570CP.....Base Station 1 |
| 1 | DX2-616-BL49 ..... Valve Station 2 |
| 1 | PS4111570CP.....Base Station 2 |
| 1 | DX2-611-BL49 ..... Valve Station 3 |
| 1 | PS4111570CP.....Base Station 3 |






☐ Most popular.

## 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 segment is segment 1.

   (If a blank segment is needed, list the blanking plate part number and the individual manifold number in the segment specified.)

**AA H3 S 0 03 —**

| Valve series | |
|---|---|
| DX3, ISO Size 3 | H3 |

| End plate type | |
|---|---|
| Standard non-collective wiring | S |

| Port type | |
|---|---|
| NPT | 0 |
| BSPP "G" | 1 |

| Number of segments |
|---|
| 01 |
| • |
| • |
| • |
| 21 |

| Transition plate | |
|---|---|
| Blank | No transition plate |
| C | DX1 to DX2 |
| D | DX1 to DX3 |

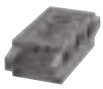
**Example:** Application requires a 3-segment manifold.

| Qty. | Part No. |
|---|---|
| 1 | AAH3S003 |
| 1 | DX3-621-BL49..... Valve Station 1 |
| 1 | PS4111590CP.....Base Station 1 |
| 1 | DX3-616-BL49 ..... Valve Station 2 |
| 1 | PS4111590CP.....Base Station 2 |
| 1 | DX3-611-BL49 ..... Valve Station 3 |
| 1 | PS4111590CP.....Base Station 3 |

☐ Most popular.

## 5599-1 Compact Manifolds, Subbases & Accessories

### Manifold VDMA – Form C Bottom Port



| Size | Port size | Part number BSPP G |
|---|---|---|
| DX1 | 1/4" | **P2N-VM512MB** |
| DX2 | 3/8" | **P2N-WM513MB** |
| DX3 | 1/2" | **P2N-YM514MB** |

### VDMA End Plates – Form D

| Size | Port size | Part number BSPP G |
|---|---|---|
| DX1 | 3/8" | **P2N-VM513ES** |
| DX2 | 1/2" | **P2N-WM514ES** |
| DX3 | 1" | **P2N-YM518ES** |

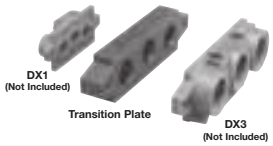
### Subbase – Side Ports (5599-1 & VDMA)

| Size | Port Size | 5599-1 Part number NPT | 5599-1 Part number BSPP "G" | VDMA Part number BSPP "G" |
|---|---|---|---|---|
| DX1 | 1/4" | **PL1-1/4-80** | **PL1-1/4-70** | **P2N-VS512SD** |
| DX2 | 3/8" | **PL2-3/8-80** | **PL2-3/8-70** | **P2N-WS513SD** |
| DX3 | 1/2" | **PL3-1/2-80** | **PL3-1/2-70** | **P2N-YS514SD** |

### Subbase – Bottom Ports

| Size | Port size | 5599-1 Part number NPT | 5599-1 Part number BSPP "G" |
|---|---|---|---|
| DX1 | 1/4" | **PD1-1/4-80** | **PD1-1/4-70** |
| DX2 | 3/8" | **PD2-3/8-80** | **PD2-3/8-70** |

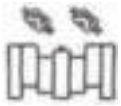
### VDMA Transition Plate




Part number
**P2N-VM500AK**

**Kit includes:** Transition Plate Only. Order P2N-VM513ES and P2N-YM518ES Separately to Assemble Add-A-Fold

### External Seal Kit



| Size | Part number |
|---|---|
| DX1 | **JJDX10-A** |
| DX2 | **JJDX20-A** |
| DX3 | **JJDX30-A** |

### Complete Seal Kit

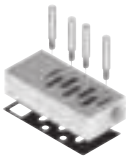
| Size | Part number |
|---|---|
| DX1 | **JJDX15-A** |
| DX2 | **JJDX25-A** |
| DX3 | **JJDX35-A** |

## Blanking Plate Kits

| Size | Part number |
|---|---|
| DX1 | **PS4034CP** |
| DX2 | **PS4134CP** |
| DX3 | **PS4234CP** |

Kit includes:
Blanking Plate, Gasket, and Mounting Bolts.

## Remote Pilot Access Plate Kits

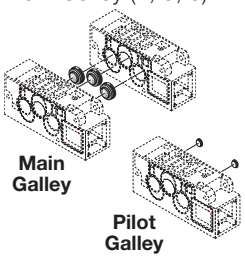


| Size | Port Size | Part number NPT | Part number BSPP "G" |
|---|---|---|---|
| DX1 | 1/8" | **PS401500CP** | **PS401501CP** |
| DX2 | 1/8" | **PS411500CP** | **PS411501CP** |
| DX3 | 1/8" | **PS421500CP** | **PS421501CP** |

Kit includes: Pilot Port Access Plate, Gasket and Mounting Studs.

## Manifold Port Isolation Kits

Main Galley (1, 3, 5)




| Size | Part number PS4 Manifolds | Part number P2N Manifolds |
|---|---|---|
| DX1 | **PS4032CP** | **P2N-VK0P** |
| DX2 | **PS4132CP** | **P2N-WK0P** |
| DX3 | **PS4232CP** | **P2N-YK0P** |

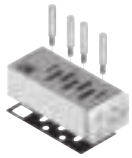
Kit includes: Plugs with O-rings.

## Pilot Galley

| Size | Part number |
|---|---|
| DX1, DX2, DX3 | **PS4033CP** |

Kit includes: Plugs with O-rings.
For use with PS4 Series Manifolds.

## Sandwich Flow Controls Features



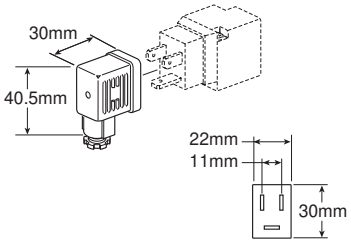
| Size | Part number |
|---|---|
| DX1 | **PS4042CP** |
| DX2 | **PS4142CP** |
| DX3 | **PS4242CP** |

**DX2 Shown**

- Both adjustment screws are located on the 12 end of the unit.
- Sandwich Flow Control mounts with its own studs, which means the valve uses standard bolts for mounting.
- Sandwich Flow Control is not to be used as a shut off device and is not bubble tight when needles are fully turned down.

## 22mm Rectangular 3-Pin – Type B Industrial

(Use with Enclosure "B")



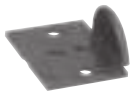

| Description | Connector | Connector with 6' (2m) Cord |
|---|---|---|
| Unlighted | **PS2429BP** | **PS2429JBP** |
| Light – 24V60Hz, 24VDC | **PS243079BP** | **PS2430J79BP*** |
| Light – 120V/60Hz | **PS243083BP** | **PS2430J83BP*** |
| Light – 240V/60Hz | **PS243087BP** | N/A |

* LED with surge suppression.

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

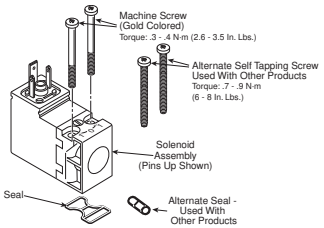
**Engineering Data:**
Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 6 to 8mm (0.24 to 0.31 Inch); Contact Spacing: 11mm

## CNOMO Operator Adapter



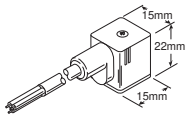
| Size | Part number |
|---|---|
| DX1, DX2, DX3 | **PS2855P** |

## 15mm 3-Pin DIN 43650C Replacement Solenoid Kits

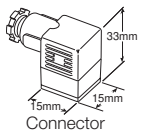



| Voltage | Non-locking | Locking |
|---|---|---|
| 24VDC | **PS2982B49P** | **PS2982C49P** |
| 110/50, 120/60 | **PS2982B53P** | **PS2982C53P** |

## 15mm 3-Pin DIN 43650C Connectors



Connector with cord



Connector only

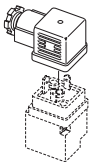
| Description | Connector with 6' (2m) Cord | Connector |
|---|---|---|
| No circuit board | **PS2932JBP** | **PS2932BP** |
| Light – 24DC | **PS2946J79BP*** | **PS294679BP** |
| Light – 110/120VAC | **PS2946J83BP*** | **PS294683BP** |

* 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

## Female Electrical Connectors (IP65 Rated) 30mm, 3-Pin ISO 4400, (DIN 43650A)



| Description | Connector with 6' (2m) cord | Connector |
|---|---|---|
| Unlighted | **PS2028JCP** | **PS2028BP** |
| Light – 6-48V, 50/60Hz; 6-48VDC | **PS2032J79CP*** | **PS203279BP** |
| Light – 120V/60Hz | **PS2032J83CP*** | **PS203283BP** |
| Light – 240V/60Hz | N/A | **PS203283BP** |

* With surge suppression.

**Engineering data:**
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 inch); Contact spacing: 18mm

## 5599-1 CNOMO Solenoid Kits

| Voltage code | 3-pin, 30mm 'L' coil kit | 2-pin, M12 Euro '6' coil kit |
|---|---|---|
| 19 | — | **PS2828619P** |
| 42 | **P2FCA442** | — |
| 45 | **P2FCA445** | — |
| 49 | **P2FCA449** | — |
| 53 | **P2FCA453** | — |
| 57 | **P2FCA457** | — |

Quantity 1

## Pilot Operator - CNOMO

| Valve size | | Kit number |
|---|---|---|
| DX1, DX2 & DX3 | Locking | **PS4052CP** |
| | Non-locking | **PS4053CP** |

## 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:**
IP65 (According to EN 60529)

**Mechanical Life:**
> 100 million operations (Dry air filtered 40 µ, 2 Hz, 6 bar, 20°C)

**Media:**
Air or inert gas, filtered 40 µ (Class 5 according to ISO 8573-1), lubricated or non-lubricated

**Operating Temperature Range:**
-10°C to 60°C (14°F to 140°F)

## Flow Rating (Cv)

| Size | Port Size | Mounting Style | 2-Position | 3-Position |
|---|---|---|---|---|
| DX1 | 1/4" Ports | Subbase | 1.15 | 0.75 |
| | 1/4" Ports | Manifold | 0.80 | 0.60 |
| DX2 | 3/8" Ports | Subbase | 2.50 | 2.40 |
| | 3/8" Ports | Manifold | 2.05 | 1.95 |
| DX3 | 1/2" Ports | Subbase | 4.15 | 4.00 |
| | 1/2" Ports | Manifold | 4.10 | 3.65 |

Cv tested per ANSI / (NFPA) T3.21.3

### Flow Rating (Cv) with Sandwich Regulator

| Size | Common Pressure | | | | Dual Pressure | | | |
|---|---|---|---|---|---|---|---|---|
| DX1 | 1-2 | 1-4 | 2-3 | 4-5 | 1-2 | 1-4 | 2-3 | 4-5 |
| DX2 | 0.55 | 0.49 | 1.06 | 1.02 | 0.32 | 0.42 | 0.25 | 0.38 |
| DX3 | 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

| Size | Port Size | 0 Cu. In. Chamber Fill | 0 Cu. In. Chamber Exhaust | ## Cu. In. Chamber Fill | ## Cu. In. Chamber 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 AC 60Hz | Voltage AC 50Hz | Voltage DC | Power (W / VA) |
|---|---|---|---|---|
| 19 | — | — | 24 | 2.8W |
| 49 | — | — | 24 | 2.7W |
| 53 | 120 | 115 | — | 3.7VA |

Data tested with LED and Surge Suppression.

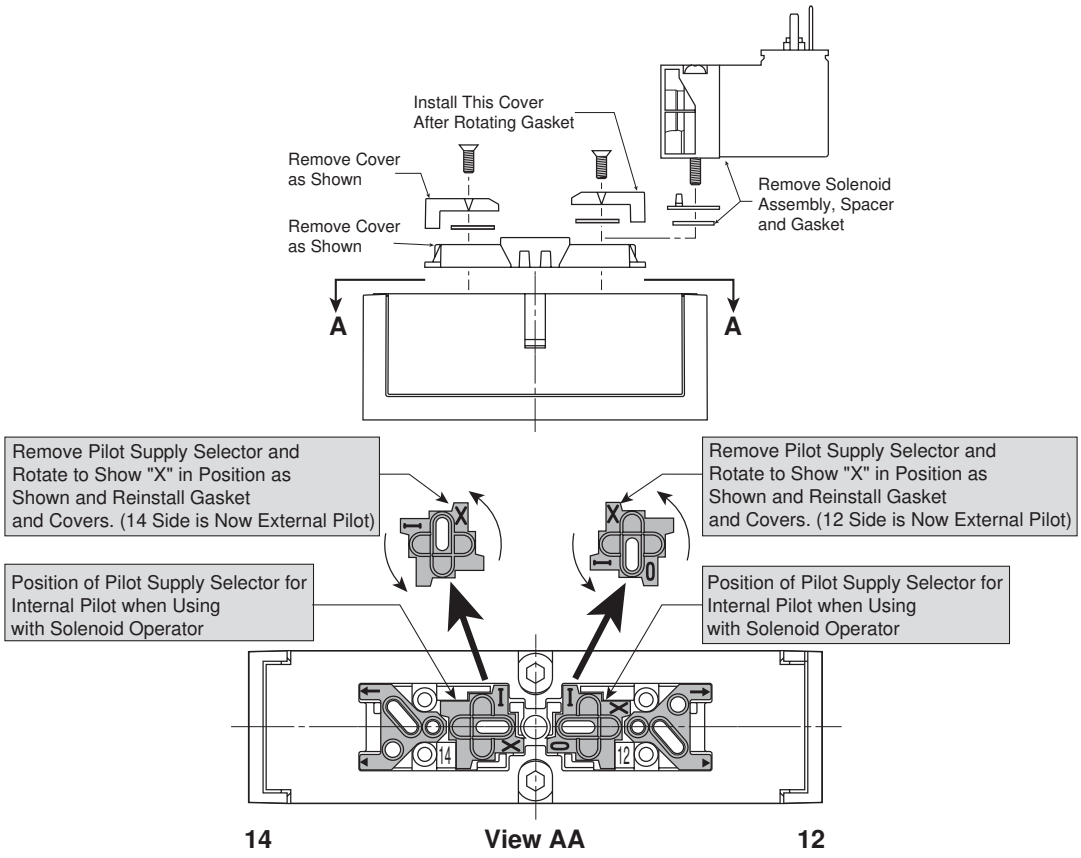
## Operating Pressure

Vacuum to 145 PSIG (10 bar)

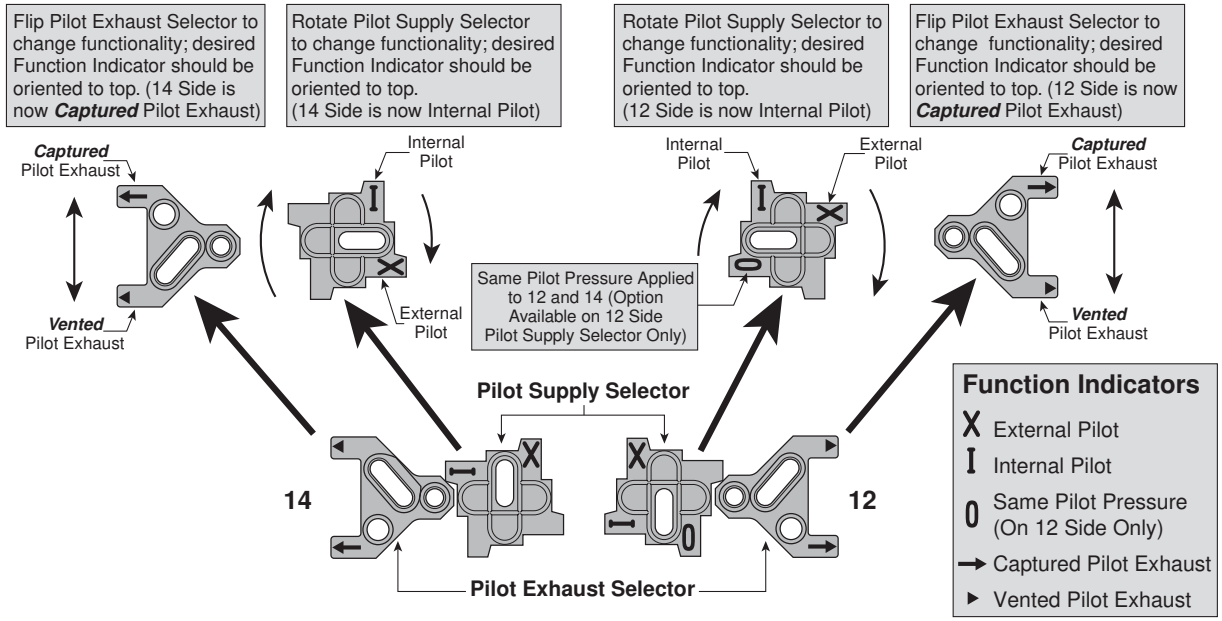
| Function | | M.O.P. (PSIG) DX1 | DX2 | DX3 |
|---|---|---|---|---|
| **Internal Pilot** | | | | |
| 21 | 2-Position, Spring Return | 36 | 30 | 30 |
| 51 | 2-Position, Air Return | 30 | 30 | 30 |
| 06 | 2-Position | 15 | 15 | 15 |
| 11 | 3-Position, CE | 45 | 36 | 36 |
| 16 | 3-Position, APB | 45 | 36 | 36 |
| 13 | 3-Position, PC | 45 | 36 | — |
| **External Pilot** | | | | |
| 22 | 2-Position, Spring Return | 36 | 30 | 30 |
| 53 | 2-Position, Air Return | 30 | 30 | 30 |
| 08 | 2-Position | 15 | 15 | 15 |
| 12 | 3-Position, CE | 45 | 36 | 36 |
| 18 | 3-Position, APB | 45 | 36 | 36 |
| 24 | 3-Position, PC | 45 | 36 | — |

## DX ISOMAX Selector Gasket Conversion Instructions

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




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

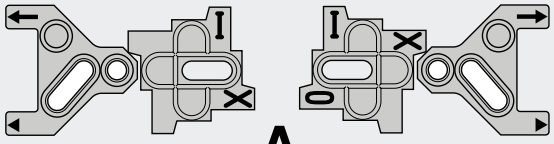




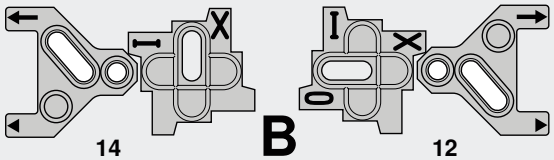



**Parker Hannifin Corporation**
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

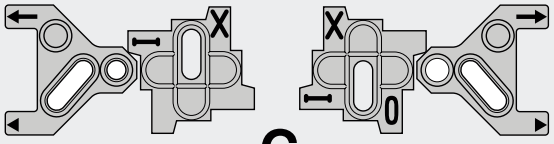
Internal Pilot Supply;
Captured Pilot Exhaust through 12



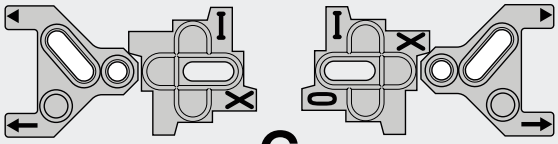

External or Single Remote Pilot Supply on 14;
Internal Pilot Supply on 12;
Captured Pilot Exhaust through 12



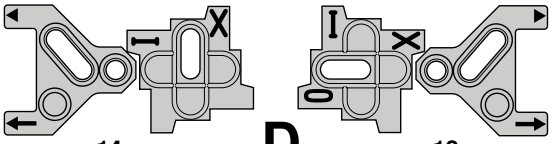

External, Double Remote Pilot Supply on 14 & 12;
Captured Pilot Exhaust



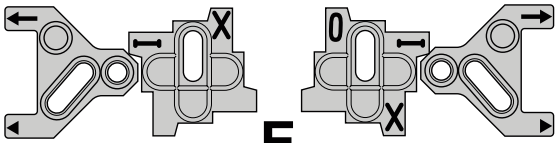

Internal Pilot Supply;
Vented Pilot Exhaust



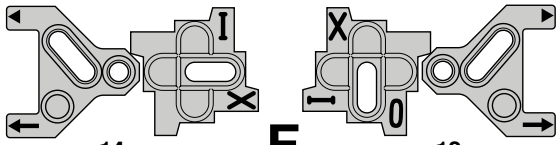

External Pilot Supply on 14;
Internal Pilot Supply on 12;
Vented Pilot Exhaust



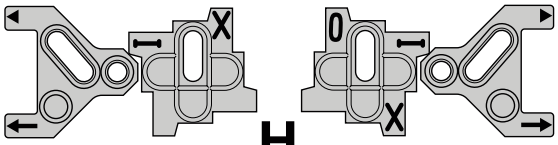

External Pilot Supply 14 Common to 12;
Captured Pilot Exhaust through 12




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




External Pilot Supply 14 Common to 12;
Vented Pilot Exhaust




| Base Pilot Port Used | None | 14 | 14 and 12 | None | 14 | 14 | 12 |
|---|---|---|---|---|---|---|---|
| **Pilot Air Supply** | **Internal Pilot Supply** | **14 External Pilot 12 Internal Pilot** | **External, Double Remote Pilot for 14 and 12** | **Internal Pilot Supply** | **14 External Pilot 12 Internal Pilot** | **One Common External Pilot Pressure for 14 and 12** | **14 Internal Pilot 12 External Pilot** |
| **Pilot Exhaust** | **Captured** | **Captured** | **Captured** | **Vented** | **Vented** | **Captured** | **Vented** |
| 5/2 Double Solenoid | 606 A | — | 406 C | 604 G | D | E | F |
| 5/2 Single Solenoid | 621 | 421 | C | 620 | D | E | F |
| 5/2 Double Solenoid, on Sandwich Regulator | — | — | — | — | External Pilot Supply 14 Common to 12 Vented Pilot Exhaust – See Diagram 'H' | | |
| Spring Return | A | B | — | G | — | — | — |
| 5/2 Single Solenoid, Differential Return | 651 A | 451 B | C | 65 G | D | E | F |
| 5/3 Pressure Center Exhaust | 611 A | — | 411 C | 627 G | D | E | F |
| 5/3 Pressure All Ports Blocked | 616 A | — | 416 C | 625 G | D | E | F |
| | **Part Numbers Available From Factory** | | | | **See Gasket Configurations Above for These Special Adaptations** | | |

Insert a muffler or vent in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates or #12 of PL02 & PL01 Subbases when using solenoids with a ***Captured*** Exhaust.

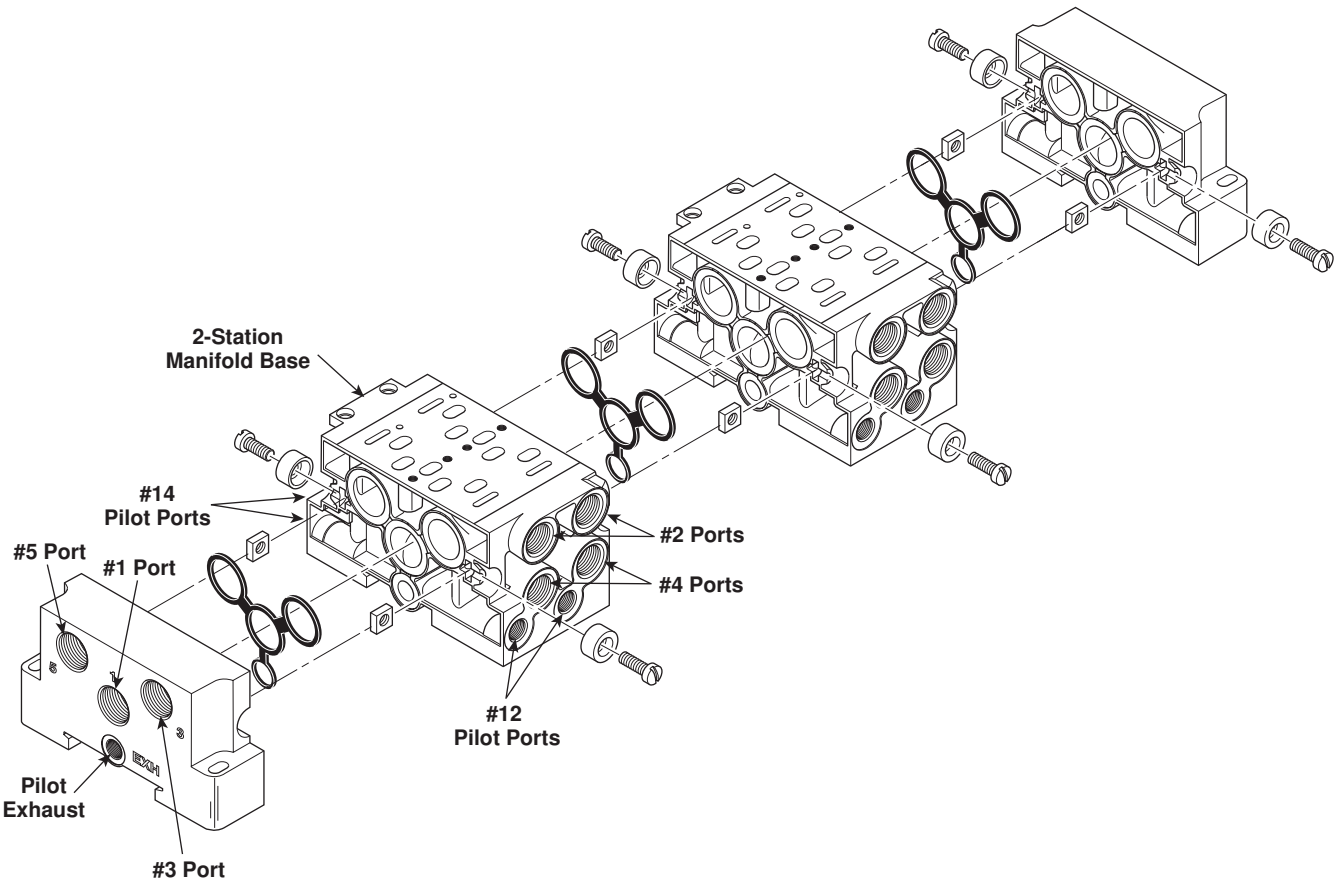
A plug may be inserted in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates #14 or #12 of PL02 & PL01 Subbases when using a ***Vented*** Exhaust.

## DX01 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)



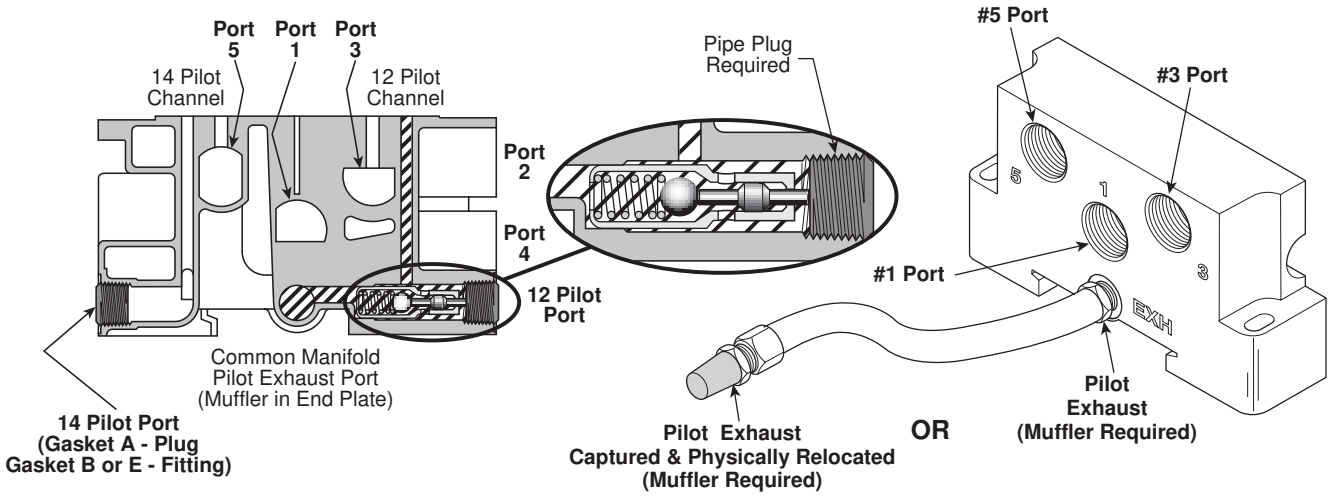

**DX01 Shown**

## DX 15407-1 Size 01, Manifold Conversion Instructions

# *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.**



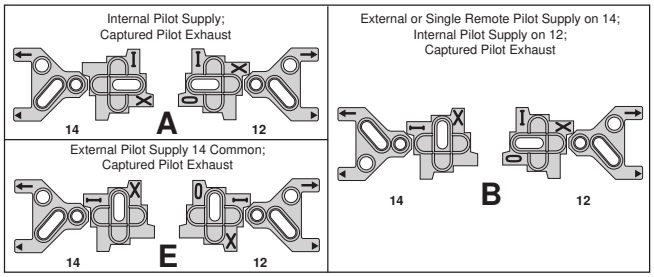

## Built-in Selector

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.**

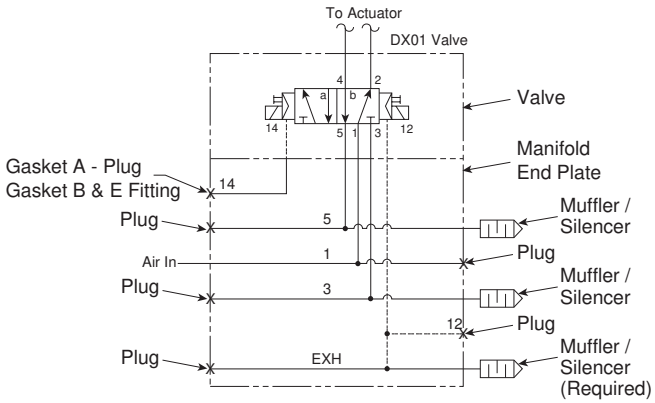
### *Captured* Selector Gasket Positions

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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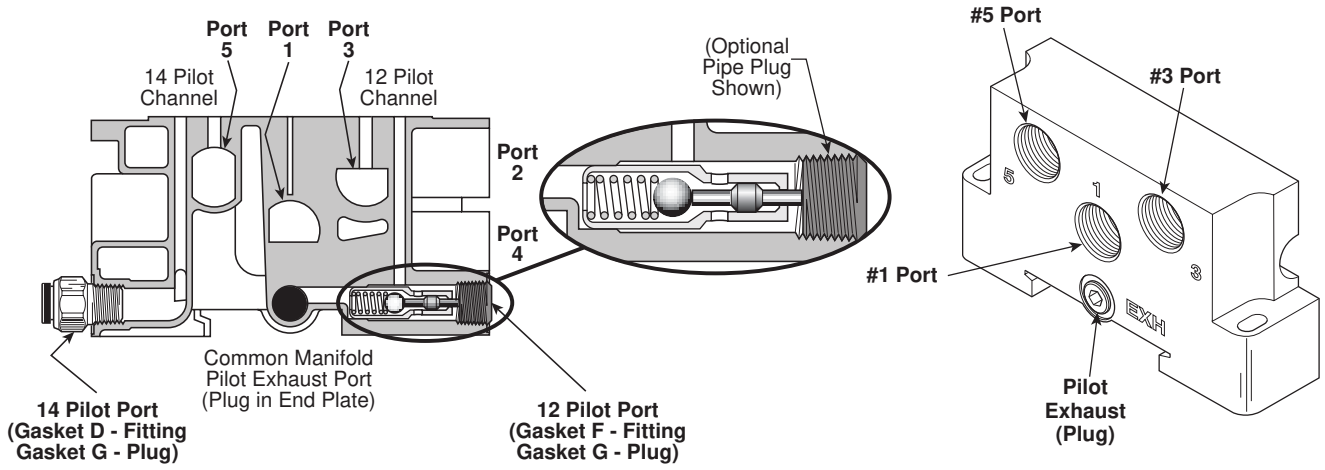
## DX 15407-1 Size 01, Manifold Conversion Instructions

# *Vented*
## Pilot Exhaust



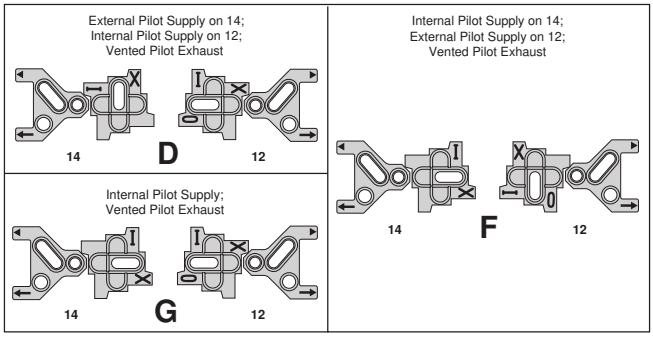

**Manifold** **End Plate**

## Built-in Selector

When using D or G ***Vented*** Selector Gasket Positions, the 12 Pilot Port may be plugged (Optional). The 14 Pilot Port has a plug when using Gasket G or a fitting when using Gasket D or F. The valve solenoid pilot exhaust vents out the pilot adapter on the G Gasket Selection.

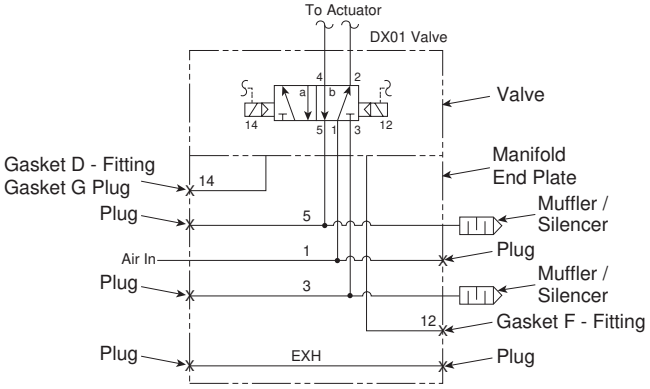
### *Vented* Selector Gasket Positions

**When using D, F or G Selector Gasket Positions, pilot exhaust air is vented out the valve.**




**A plug may be inserted in the EXH Port of the PEJ02 & PEJ01 Manifold End Plates, #12 of PL02 & PL01 Subbases.**

### DX01 Manifold Assembly Schematic for *Vented* Selector Gasket Positions D or G







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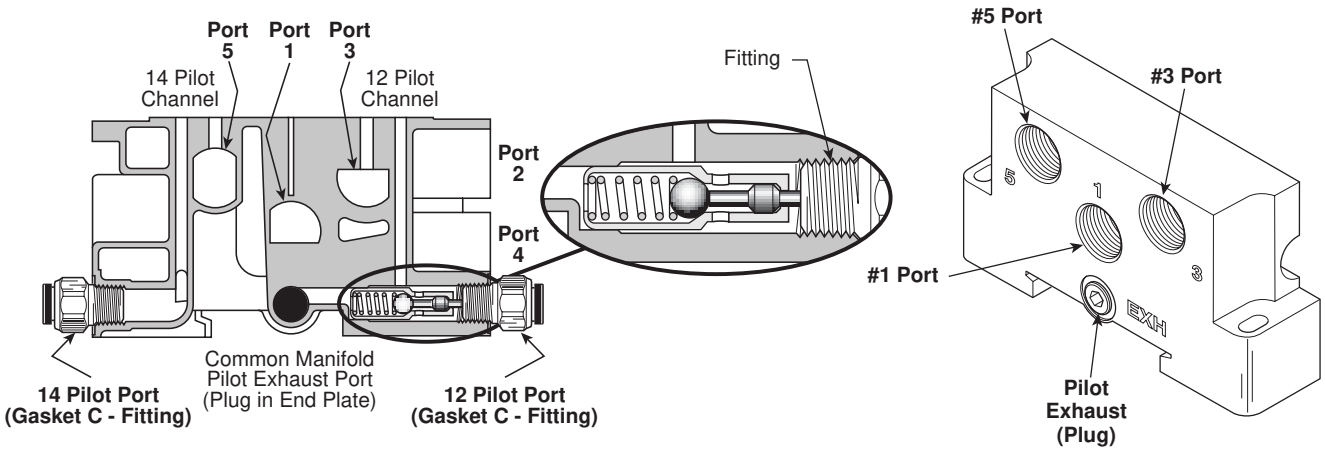
**DX 15407-1 Size 01, Manifold Conversion Instructions**

# *External Double Remote Pilot*

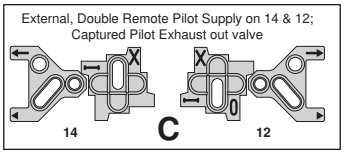



## Built-in Selector

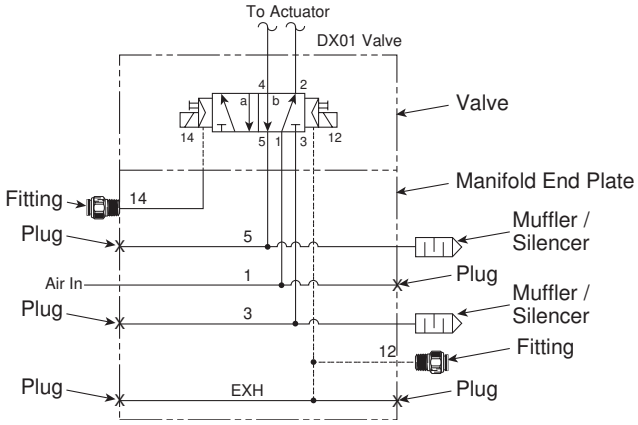
When using C ***External Double Remote Pilot*** Selector Gasket Position, a fitting is used in Pilot Port 14 & 12. Free flow between Port 14 & 12 and the valve allows Remote Pilot Pressure and an exhaust path for the captured pilot exhaust.

### *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

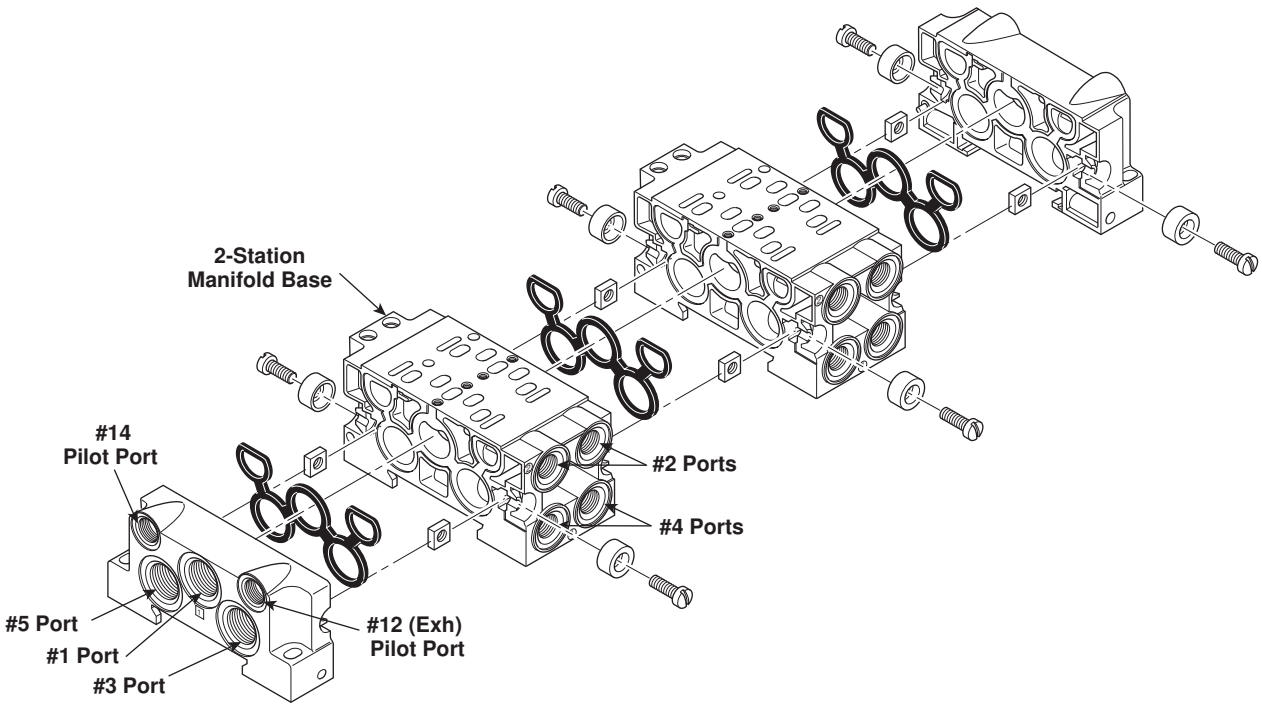


## DX02 Manifold Assembly

### 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)**



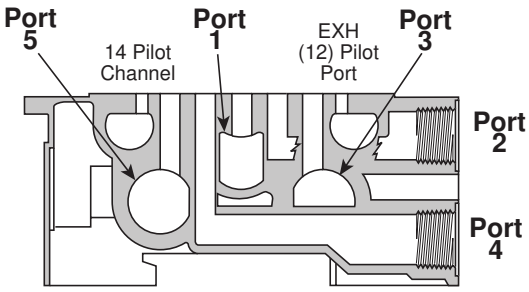

**DX02 Shown**

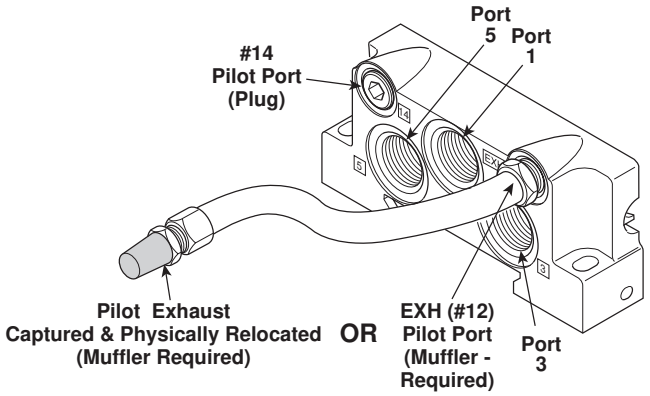
## DX 15407-1 Size 02, Manifold Conversion Instructions

# *Captured*
## Pilot Exhaust

### PJLP02, Size 02*

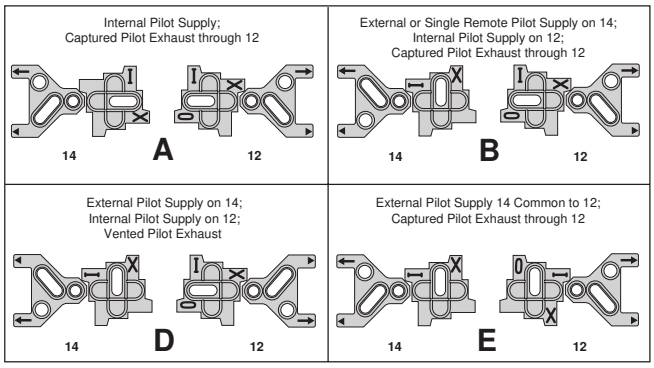
As shown in the illustrations below, the EXH (12) & 14 Pilot Ports are exhausted internally in the valve body into a single chamber labeled EXH on the end plate. When using A, B, D or E Selector Gasket Positions, the EXH (12) Pilot Port is vented with a muffler or micron screen. The 14 Pilot Port is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



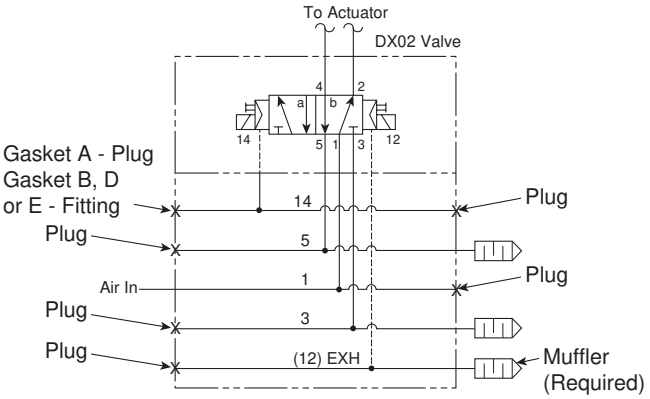

### *Captured* Selector Gasket Positions

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








For inventory, lead times, and kit lookup, visit www.pdnplu.com

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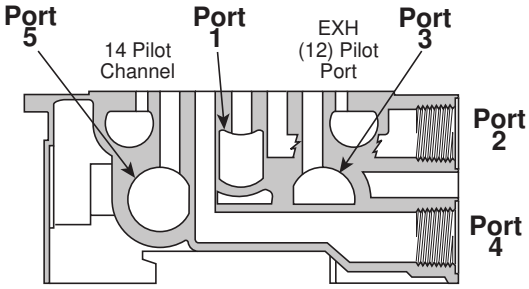
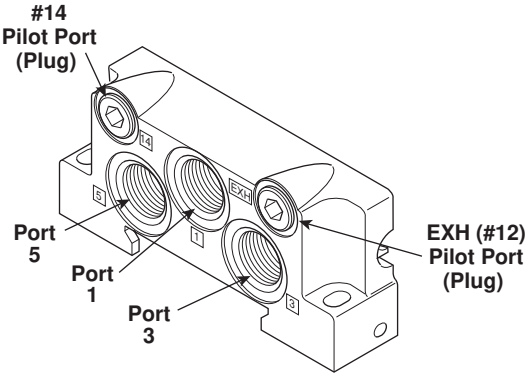
## DX 15407-1 Size 02, Manifold Conversion Instructions

# *Vented*
## Pilot Exhaust

### PJLP02, Size 02

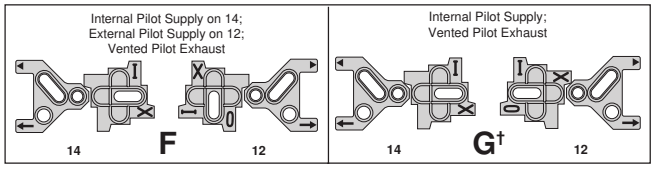
When using F or G Selector Gasket Positions, the EXH (12) Pilot Port and the 14 Pilot Port are plugged and the Pilot Exhaust is vented through the Pilot Adapter.



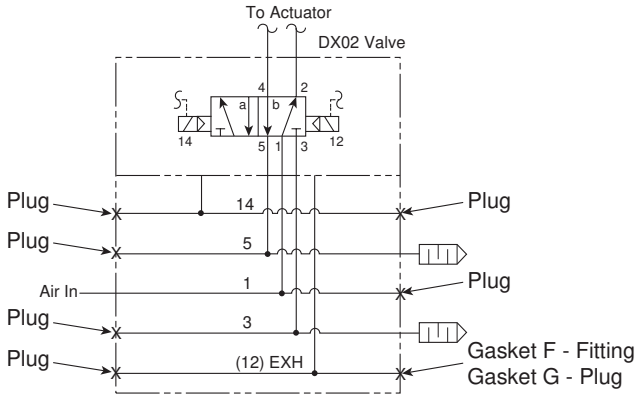

### *Vented* Selector Gasket Positions

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.

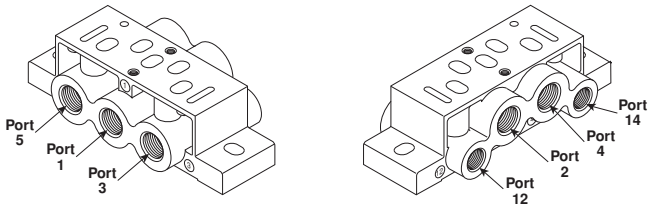
### DX02 Manifold Assembly Schematic for *Vented* Selector Gasket Positions F and G



## Subbase Assembly

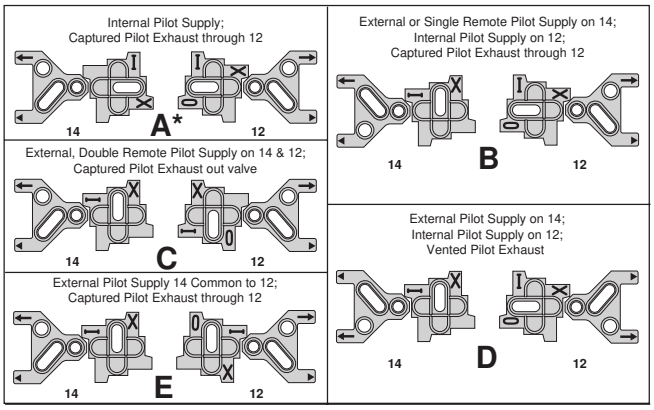
### Ports

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

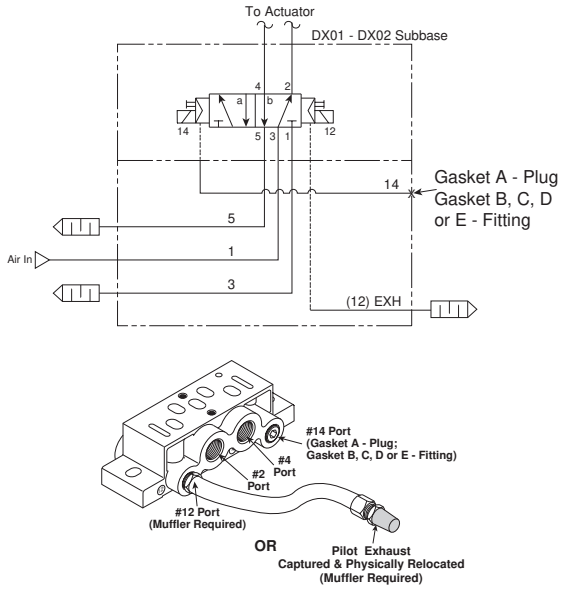



## *Captured* Selector Gasket Positions

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.

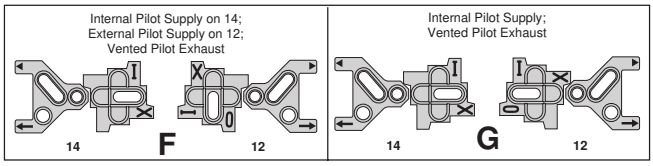



## DX02 & DX01 Subbase Assembly Schematic for *Captured* Selector Gasket Positions A, B, C, D and E

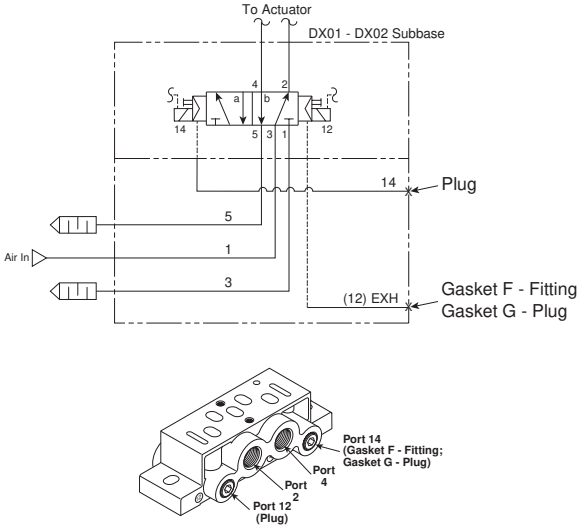



## *Vented* Selector Gasket Positions

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.

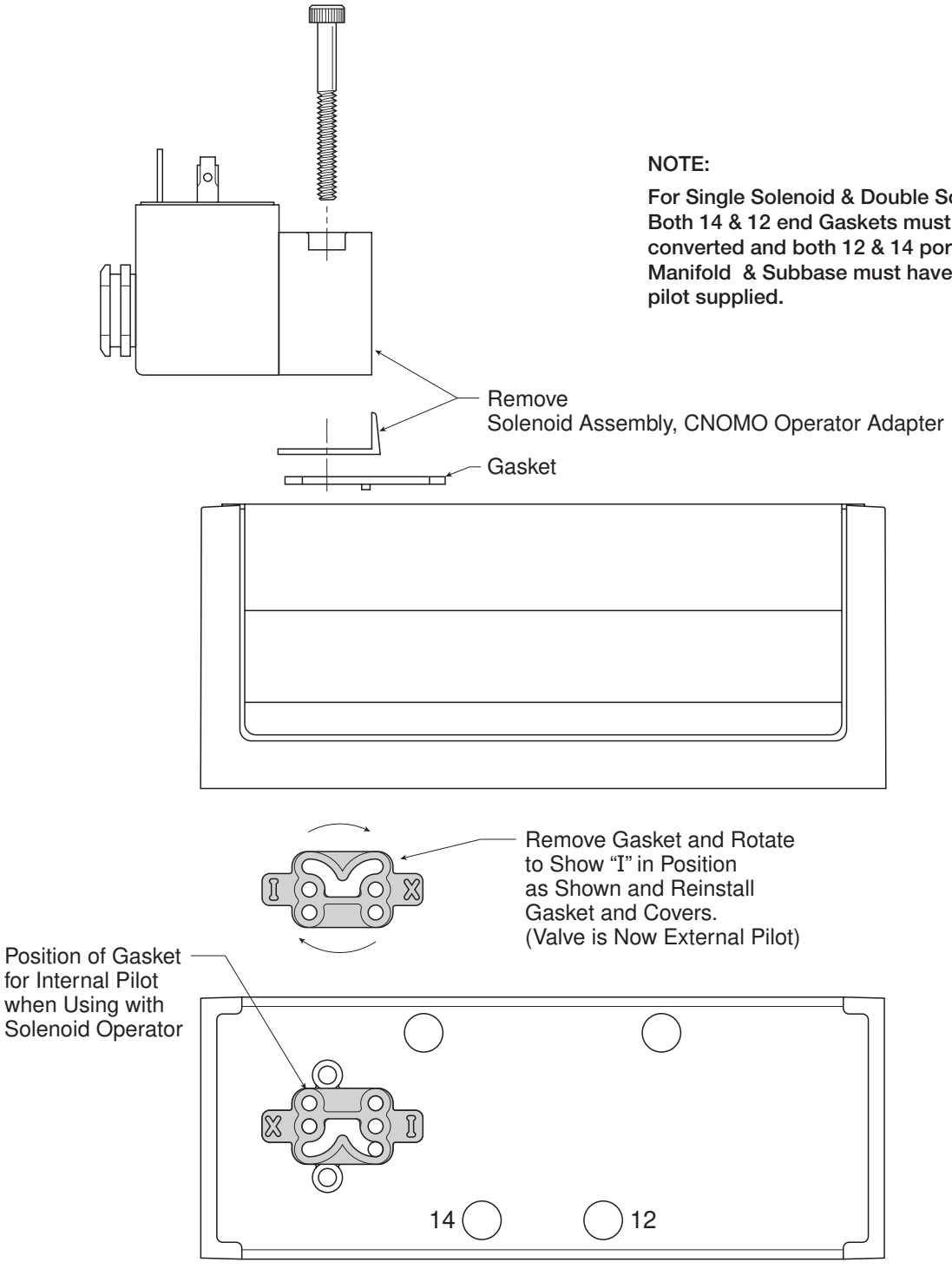



## DX02 & DX01 Subbase Assembly Schematic for *Vented* Selector Gasket Positions F and G



## DX1 / DX2 / DX3

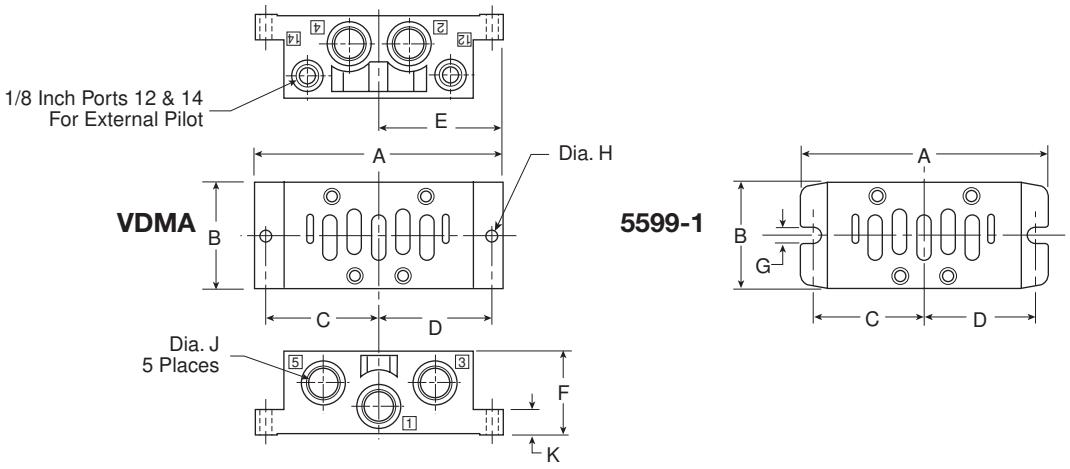
### Internal / External Pilot Conversion Instructions




**NOTE:**

**For Single Solenoid & Double Solenoid – Both 14 & 12 end Gaskets must be converted and both 12 & 14 ports in the Manifold & Subbase must have external pilot supplied.**

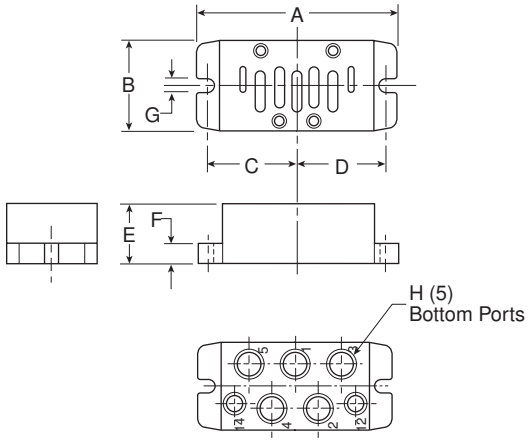
## DX1, DX2, DX3 VDMA & 5599-1 Side Ported Subbase




| | Series | Part number | J | A | B | C | D | E | F | G | H | K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VDMA | DX1 | **P2N-VS512SD** | BSPP G1/4 | 4.33 (110) | 1.89 (48) | 1.93 (49) | 1.93 (49) | 2.17 (55) | 1.26 (32) | — | 0.22 (5.5) | 0.39 (9.9) |
| | DX2 | **P2N-WS513SD** | BSPP G3/8 | 4.88 (124) | 2.21 (56) | 2.21 (56) | 2.21 (56) | 2.44 (62) | 1.57 (40) | — | 0.26 (6.6) | 0.51 (13) |
| | DX3 | **P2N-YS514SD** | BSPP G1/2 | 5.87 (149) | 2.80 (71) | 2.68 (68) | 2.68 (68) | 2.93 (74.5) | 2.05 (52) | — | 0.26 (6.6) | 0.71 (18) |
| 5599-1 | DX1 | **PL1-1/4-70** | BSPP G1/4 | 4.33 (110) | 1.81 (46) | 1.93 (49) | 1.93 (49) | 2.17 (55) | 1.14 (29) | 0.22 (5.5) | — | 0.24 (6) |
| | | **PL1-1/4-80** | NPT 1/4 | | | | | | | | | |
| | DX2 | **PL2-3/8-70** | BSPP G3/8 | 4.88 (124) | 2.21 (56) | 2.17 (55) | 2.17 (55) | 2.44 (62) | 1.46 (37) | 0.22 (5.5) | — | 0.24 (6) |
| | | **PL2-3/8-80** | NPT 3/8 | | | | | | | | | |
| | DX3 | **PL3-1/2-70** | BSPP G1/2 | 5.87 (149) | 2.80 (71) | 2.68 (68) | 2.68 (68) | 2.93 (74.5) | 2.36 (60) | 0.26 (6.6) | — | 0.71 (18) |
| | | **PL3-1/2-80** | NPT 1/2 | | | | | | | | | |

Inches (mm)

## DX1, DX2 5599-1 Bottom Ported Subbase

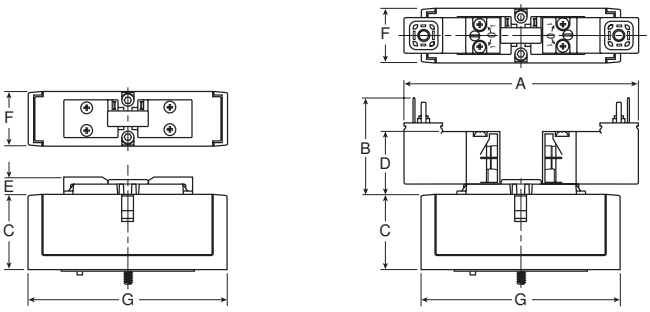



**Bottom Ported Subbase**

| Series | Part number | H | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| DX1 | **PD1-1/4-70** | BSPP G1/4 | 4.33 (110) | 1.81 (46) | 1.93 (49) | 1.93 (49) | 1.14 (29) | 0.24 (6) | 0.22 (5.5) |
| | **PD1-1/4-80** | NPT 1/4 | | | | | | | |
| DX2 | **PD2-3/8-70** | BSPP G13/8 | 4.88 (124) | 2.20 (56) | 2.17 (55) | 2.17 (55) | 1.46 (37) | 0.24 (6) | 0.22 (5.5) |
| | **PD2-3/8-80** | NPT 3/8 | | | | | | | |

Inches (mm)

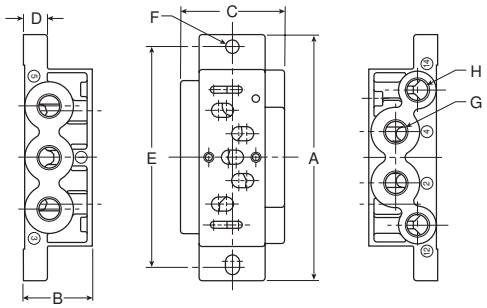
## DX01 & DX02 Valve




| 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)

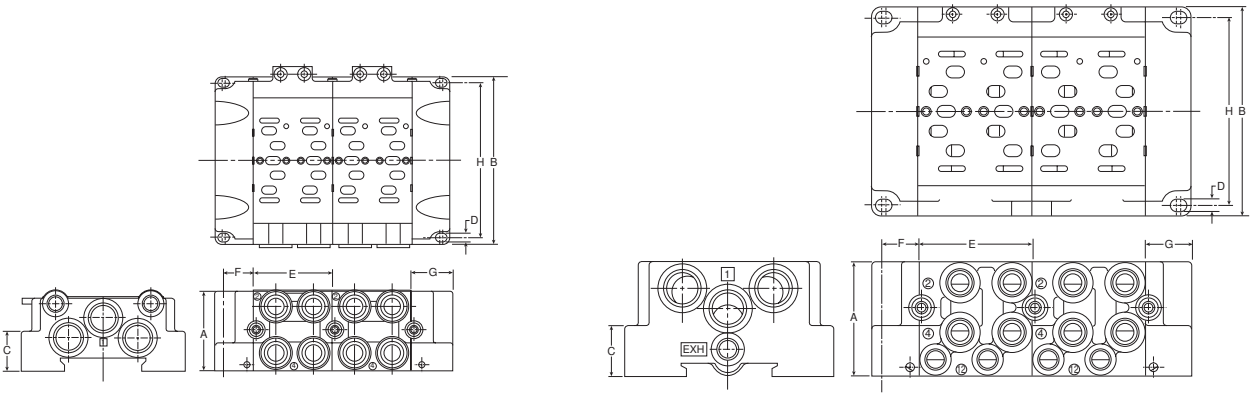
## DX01 & DX02 Individual Subbase




| Series | Part number | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| DX02 | **PL02** | 3.15 (80) | .87 (22) | 1.06 (27) | .31 (8) | 2.76 (70) | .216 Dia. (Ø 5.5) | 1/8 | M5 |
| DX01 | **PL01** | 3.94 (100) | 1.10 (28) | 1.65 (42) | .39 (10) | 3.54 (90) | .216 Dia. (Ø 5.5) | 1/4 | 1/8 |

Inches (mm)

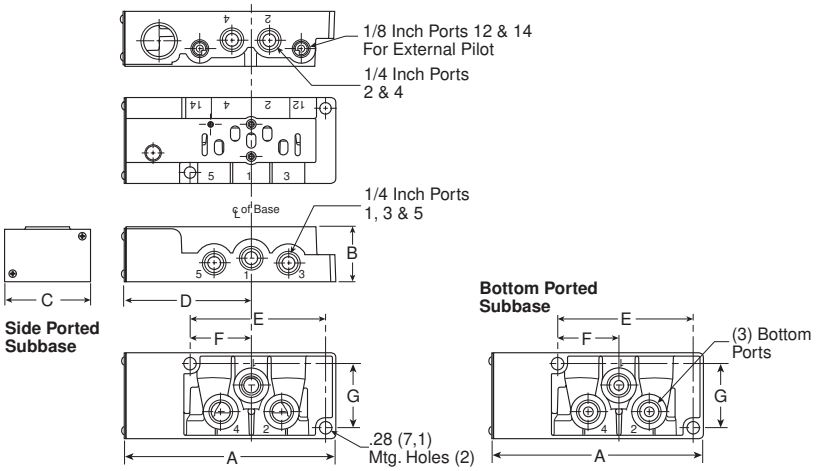
## DX01 & DX02 2-Station Manifold Base




| 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)

## DX01 15407-1, PS5511 Subbases

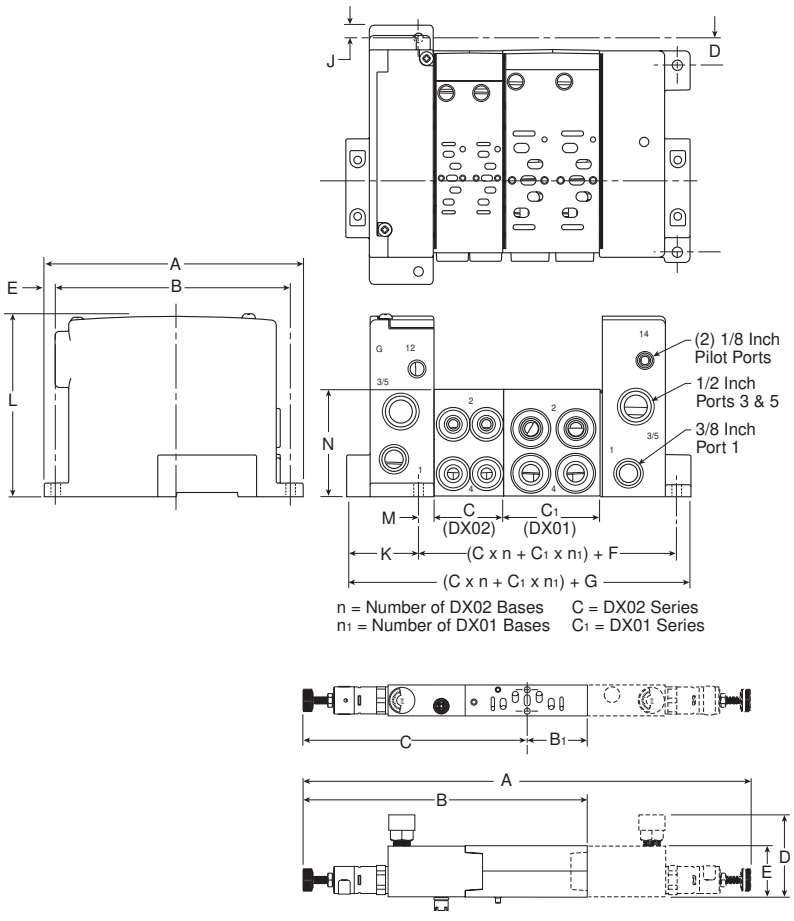



**PS5511 Subbase**

| A | B | C | D |
|---|---|---|---|
| 4.88 (124) | 1.28 (32.5) | 2.00 (50.8) | 2.91 (74) |
| **E** | **F** | **G** | |
| 1.43 (36.2) | 3.16 (80.2) | 1.49 (37.9) | |

Inches (mm)

## DX02 & DX01 15407-1, PS5611 & PS5511 Manifolds




**PS5611 & PS5511 Manifolds**

| A | B | C | $C_1$ |
|---|---|---|---|
| 5.98 (152) | 5.39 (137) | 1.61 (40.8) | 2.24 (56.8) |
| **D** | **E** | **F** | **G** |
| .63 (16) | .30 (7.5) | 2.14 (54.4) | 4.12 (104.6) |
| **H** | **J** | **K** | **L** |
| 4.32 (109.8) | .15 (4) | 1.68 (42.7) | 4.17 (106) |
| **M** | **N** | | |
| .33 (8.4) | 2.48 (63) | | |

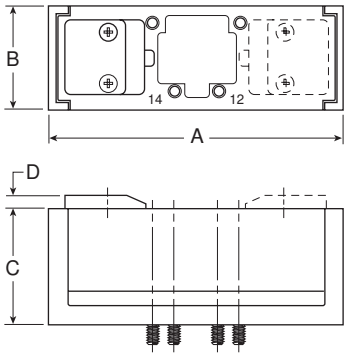
Inches (mm)




| Series | Part number | A | B | B1 | C | D | E |
|---|---|---|---|---|---|---|---|
| DX02 | **PS5637** | 10.28 (261) | 6.14 (156) | 1.02 (26) | 5.13 (130) | 2.60 (66) | 1.18 (30) |
| DX01 | **PS5537** | 10.00 (254) | 6.42 (163) | 1.42 (36) | 5.00 (127) | 2.72 (69) | 1.18 (30) |

Inches (mm)

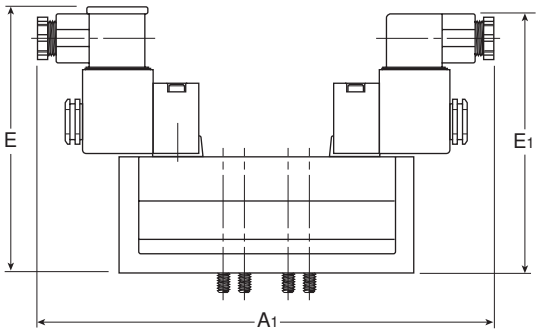
## DX1, DX2 & DX3 Air Operated Valve




| Series | A | B | C | D |
|---|---|---|---|---|
| DX1 | 4.72 (120) | 1.65 (42) | 1.85 (47) | .20 (5) |
| DX2 | 5.51 (140) | 2.13 (54) | 2.30 (58.5) | .20 (5) |
| DX3 | 6.69 (170) | 2.68 (68) | 2.80 (71) | .20 (5) |

Inches (mm)

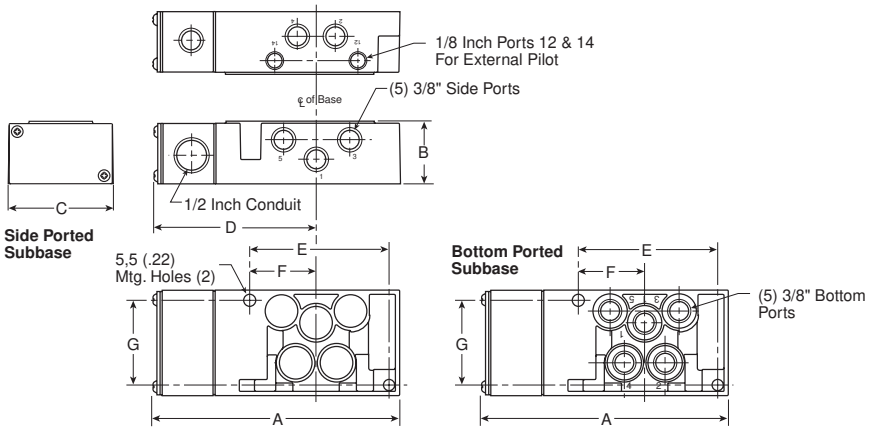
## DX1, DX2 & DX3 Solenoid Operated Valve




| Series | $A_1$ | E | $E_1$ | $E_2$ |
|---|---|---|---|---|
| DX1 | 7.97 (202.5) | 4.43 (112.5) | 4.69 (119) | 4.53 (115) |
| DX2 | 8.58 (218) | 4.86 (123.5) | 5.12 (130) | 4.98 (126.5) |
| DX3 | 9.27 (235.5) | 5.35 (136) | 5.61 (142.5) | 5.47 (139) |

Inches (mm)

## DX1 Subbase

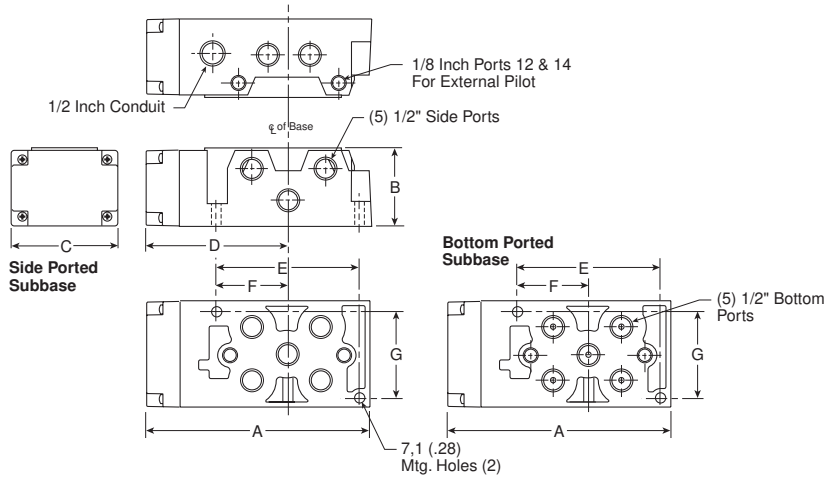



**PS4011 Subbase**

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

Inches (mm)

## DX2 Subbase

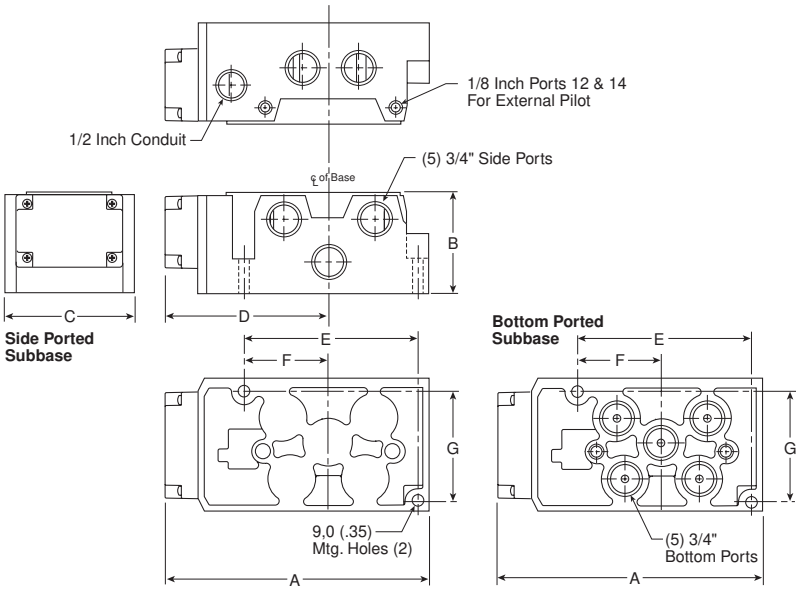



**PS4111 Subbase**

| A | B | C | D |
|---|---|---|---|
| 6.69 (170) | 2.33 (59) | 3.15 (80) | 4.25 (108) |
| **E** | **F** | **G** | |
| 4.21 (107) | 2.07 (52) | 2.56 (65) | |

Inches (mm)

## DX3 Subbase

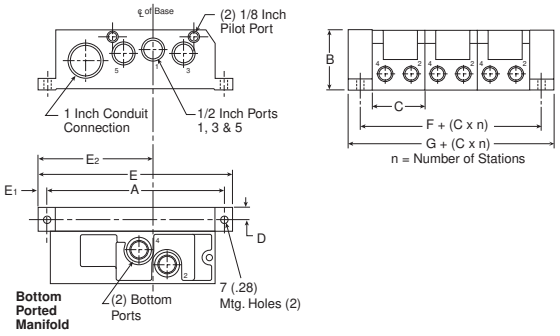



**PS4211 Subbase**

| A | B | C | D |
|---|---|---|---|
| 7.90 (201) | 2.96 (75) | 3.90 (990) | 4.92 (125) |
| **E** | **F** | **G** | |
| 5.14 (131) | 2.50 (64) | 3.24 (82) | |

Inches (mm)

## DX1 Manifold



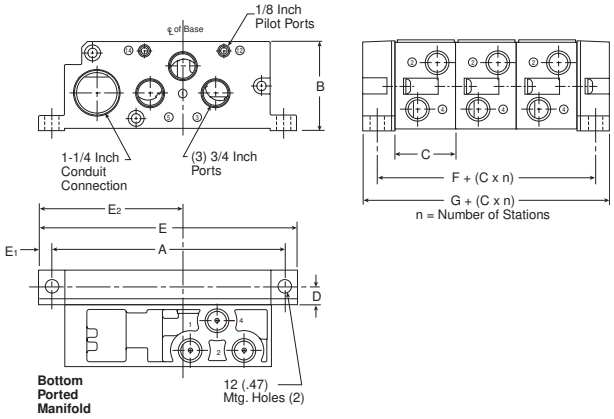

### PS4011 Manifold

| A | B | C | D | E |
|---|---|---|---|---|
| 6.50 (165) | 2.20 (56) | 1.93 (49) | .44 (11) | 7.15 (182) |

| E1 | E2 | F | G |
|---|---|---|---|
| .33 (8) | 4.25 (108) | .87 (22) | 1.80 (46) |

Inches (mm)

## DX2 Manifold



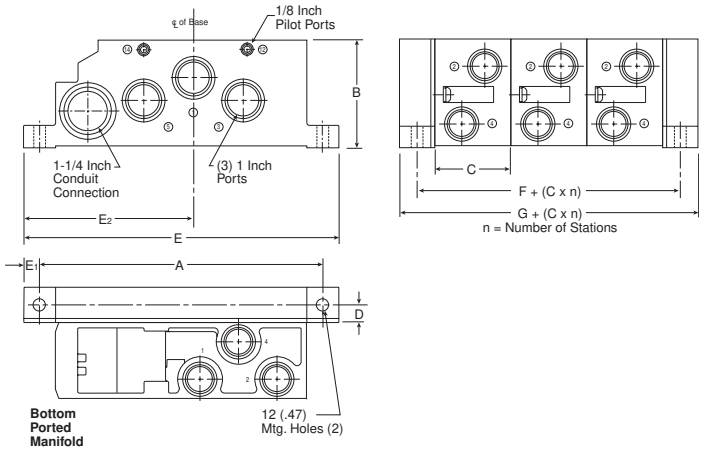

### PS4111 Manifold

| A | B | C | D | E |
|---|---|---|---|---|
| 8.46 (215) | 3.35 (85) | 2.20 (56) | .59 (15) | 9.41 (239) |

| E1 | E2 | F | G |
|---|---|---|---|
| .47 (12) | 5.28 (134) | 1.18 (30) | 2.36 (60) |

Inches (mm)

## DX3 Manifold




### PS4211 Manifold

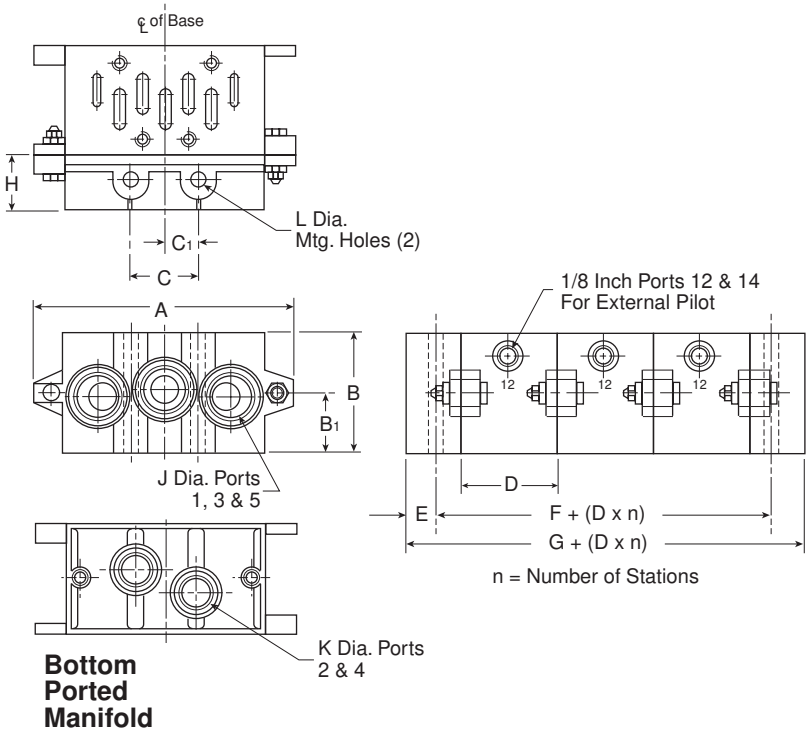
| A | B | C | D | E |
|---|---|---|---|---|
| 10.41 (265) | 4.13 (105) | 2.80 (71) | .65 (175) | 11.61 (295) |

| E1 | E2 | F | G |
|---|---|---|---|
| .59 (15) | 6.26 (159) | 1.30 (33) | 2.60 (63) |

Inches (mm)

## DX1, DX2, DX3 5599-1 VDMA

### Form C Manifold & Form D End Plates




### VDMA Form C Manifold

| Series | Part number | A | B | B1 | D | E | F | G | J | K |
|---|---|---|---|---|---|---|---|---|---|---|
| DX1 | **P2N-VM512MB** | 4.33 (110) | 1.81 (46) | 0.94 (24) | 1.69 (55) | 0.43 (22) | 0.87 (22) | 1.73 (44) | BSPP G3/8 | BSPP G1/4 |
| DX2 | **P2N-WM513MB** | 5.31 (135) | 1.85 (47) | 0.94 (24) | 2.20 (56) | 0.51 (13) | 1.02 (26) | 2.05 (52) | BSPP G1/2 | BSPP G3/8 |
| DX3 | **P2N-YM514MB** | 7.48 (190) | 2.20 (56) | 1.34 (34) | 2.80 (71) | 0.59 (15) | 1.18 (30) | 2.36 (60) | BSPP G1/2 | BSPP G1/2 |

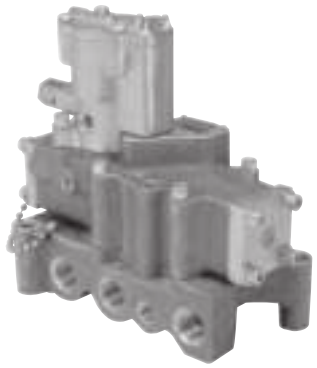
### VDMA Form D End Plate

| Series | Part number | A | B | B1 | C | C1 | H | L |
|---|---|---|---|---|---|---|---|---|
| DX1 | **P2N-VM513ES** | 4.33 (110) | 1.81 (46) | 0.94 (24) | 1.10 (28) | 0.55 (14) | 0.87 (22) | 0.28 (7) |
| DX2 | **P2N-WM514ES** | 5.31 (135) | 1.85 (47) | 0.94 (24) | 1.38 (35) | 0.69 (18) | 1.02 (26) | 0.34 (9) |
| DX3 | **P2N-YM518ES** | 7.48 (190) | 2.20 (56) | 1.34 (34) | 2.05 (52) | 1.03 (26) | 1.18 (30) | 0.47 (12) |

Inches (mm)

# Valvair II Series

- Full air operation for fastest response
- "Plug-in" option simplifies maintenance and installation Reduces downtime. No wiring or plumbing to disturb
- "Direct pipe" design for economy and performance
- Variety of operators available; direct conduit, (JIC) junction box, NEMA 4, hazardous duty, (UL, CSA), and remote air pilot
- Field convertible to external pilot supply for vacuum or other services
- Synthetic rubber o-ring seals are specially compounded for minimum compression and friction for superior wear and abrasion resistance
- Precision ground spool "floats" on o-ring seals. Closed center cross-over design saves air
- General Purpose Approvals
  - CSA - Canadian Standards Association File number 42024
- Hazardous Duty Approvals
  - UL - Underwriters Laboratories, Inc. File number E42542 Category Y107
  - CSA - Canadian Standards Association File number 24349



## Material specifications

| | | |
|---|---|---|
| Manifolds & subbases | Aluminum alloy | |
| Other seals | Nitrile | |
| Resilient seals: in valve body | | |
| Dynamic | Polyurethane base on 3/8" basic valves* | |
| Static / dynamic | Nitrile base w / 12% Molybdenum Disulphide on 1/4" & 1/2" basic valves | |
| Shock pads | Polyurethane | |
| Solenoid bodies | Plated zinc alloy | |
| Internal components | Corrosion resistant steel | |
| Resilient seals | Standard service | Nitrile |
| | Special service (continuous duty) | Fluorocarbon & Silicone |
| Other seals | Nitrile | |
| Coil | Class "B" epoxy encapsulated (Class "H" also available on some models, consult supplier) | |
| Valve bodies | Aluminum alloy | |
| Valve spacers | Brass | |
| Valve spool | Aluminum alloy with special coating on 3/8" basic valves*. | |
| | Hard chrome plated AISI type 416 stainless steel on 1/4" & 1/2" basic valves. | |

* These materials are specially designed for valves used on non-lubricated service

## Operating information

### Pressure range for solenoid operated valves

| Media | Internal pilot supply | | | External pilot supply | | | |
|---|---|---|---|---|---|---|---|
| | 1/4" | 3/8" | 1/2" | 1/4" | 3/8" | 1/2" | 1" |
| Air | 35-140* PSIG | | | N.A. | Main 0-250 PSIG<br>Pilot 35-140* PSIG | | |
| Vacuum | do not use | | | N.A. | Main within 1 Hg of perfect<br>Pilot 35-140* PSIG | | |
| Other | Consult supplier | | | | | | |

* 200 PSIG solenoid is optional (consult supplier).

### Pressure range for remote pilot operated valves

| Media | | Valve type Single | Double & 3-position |
|---|---|---|---|
| Air | Main | 35-250 PSIG | 0-250 PSIG |
| | Pilot | 35-200 PSIG | 35-200 PSIG |
| Vacuum | Main | Do not use | Within 1" Hg of perfect |
| | Pilot | Do not use | 35-200 PSIG |
| Other | Consult supplier | | |

### Ambient temperature – standard service solenoid operator

| Minimum | Maximum Intermittent duty | Continuous duty |
|---|---|---|
| 0°F | 125°F | 100°F |
| Special service (continuous duty) solenoid operator | | |
| 0°F | 125°F | 125°F |

### Ambient temperature – remote pilot operated valves

| | |
|---|---|
| 0°F | 200°F |

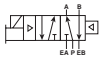
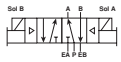
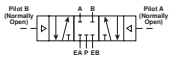
As the above chart indicates, Standard Duty Solenoids may be used on continuous duty but ambient temperature is de-rated.

In some cases, Special Service Solenoids may be rated for higher ambient temperatures (consult supplier).

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

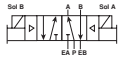
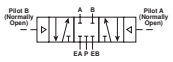
☐ Most popular.

## 3/8" Basic plug-in solenoid valve only with light

| | Symbol | Type | Cv | Operator | Voltage | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 4.8 | Single solenoid | 24 VDC | **L6753810249** | **L6753910249** |
| | | | | | 110 VAC | **L6753810253** | **L6753910253** |
|  |  | 4-way, 2-position | 4.8 | Double solenoid | 24 VDC | **L6553810249** | **L6553910249** |
| | | | | | 110 VAC | **L6553810253** | **L6553910253** |
|  |  | 4-way, 3-position, all ports blocked | 4.8 | Double solenoid | 24 VDC | **L6653821149** | **L6653921149** |
| | | | | | 110 VAC | **L6653821153** | **L6653921153** |
| |  | 4-way, 3-position, center exhaust | 4.8 | Double solenoid | 24 VDC | **L6653822149** | **L6653922149** |
| | | | | | 110 VAC | **L6653822153** | **L6653922153** |
| |  | 4-way, 3-position, pressure center | 4.8 | Double solenoid | 24 VDC | **L6653823149** | **L6653923149** |
| | | | | | 110 VAC | **L6653823153** | **L6653923153** |

* Order subbase or manifold seperately.

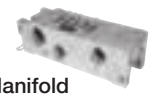
## 3/8" Basic plug-in remote pilot valve only

| | Symbol | Type | Cv | Operator | Part number |
|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 4.8 | Single remote | **L67431102** |
|  |  | 4-way, 2-position | 4.8 | Double remote | **L65431102** |
|  |  | 4-way, 3-position, all ports blocked | 4.8 | Double remote | **L66431211** |
| |  | 4-way, 3-position, center exhaust | 4.8 | Double remote | **L66431221** |
| |  | 4-way, 3-position, pressure center | 4.8 | Double remote | **L66431231** |

* Order subbase or manifold seperately.

## 3/8" Valve Subbase and Manifolds


Subbase


Manifold

| Cv | Port | Subbase † (side ports) | Manifolds † (end & bottom ports) |
|---|---|---|---|
| 4.8 | 3/8" | **K022090** | **K142230** |
| 4.8 | 1/2" | **K022091** | **K142231** |
| 4.8 | 3/4" | **K022101** | **K142270** |

† Manifolds include mounting hardware, except for port adapters. Subbase includes valve mounting hardware.

### Plug-in Subbase, 3/8" Basic

K022090 .....Inlet & Cylinder Ports 3/8" NPTF
Exhaust ports ..... 1/2" NPTF
K022091 .....Inlet & Cylinder Ports 1/2" NPTF
Exhaust ports ..... 1/2" NPTF
K022101 .....Inlet & Cylinder Ports 3/4" NPTF
Exhaust port ..... 3/4" NPTF
Conduit port ..... 1/2" NPTF

**Note:** Subbase assemblies include mounting hardware.

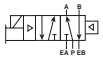
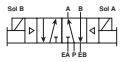
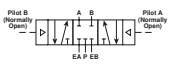
### Plug-in Manifold, 3/8" Basic

K142230 .....Cylinder ports 3/8" NPTF
K142231 .....Cylinder ports 1/2" NPTF
K142270 .....Cylinder ports 3/4" NPTF
Exhaust port..... 1" NPTF
Inlet port..... 1" NPTF
Conduit port .....1-1/4" NPTF

**Note:** Manifold assemblies include mounting hardware.

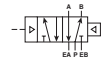
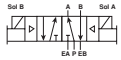
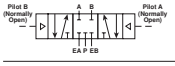
Most popular.

## 1" Basic plug-in solenoid valve only with light

| | Symbol | Type | Cv | Operator | Voltage | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 11.3 | Single solenoid | 24 VDC | **L6758810249** | **L6758910249** |
| | | | | | 110 VAC | **L6758810253** | **L6758910253** |
|  |  | 4-way, 2-position | 11.3 | Double solenoid | 24 VDC | **L6558810249** | **L6558910249** |
| | | | | | 110 VAC | **L6558810253** | **L6558910253** |
|  |  | 4-way, 3-position, all ports blocked | 11.3 | Double solenoid | 24 VDC | **L6658821149** | **L6658921149** |
| | | | | | 110 VAC | **L6658821153** | **L6658921153** |
| |  | 4-way, 3-position, center exhaust | 11.3 | Double solenoid | 24 VDC | **L6658822149** | **L6658922149** |
| | | | | | 110 VAC | **L6658822153** | **L6658922153** |
| |  | 4-way, 3-position, pressure center | 11.3 | Double solenoid | 24 VDC | **L6658823149** | **L6658923149** |
| | | | | | 110 VAC | **L6658823153** | **L6658923153** |

* Order subbase seperately.

## 1" Basic plug-in valve remote pilot valve only

| | Symbol | Type | Cv | Operator | Part number |
|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 11.3 | Single remote | **L67481102** |
|  |  | 4-way, 2-position | 11.3 | Double remote | **L65481102** |
| |  | 4-way, 3-position, all ports blocked | 11.3 | Double remote | **L66481211** |
|  |  | 4-way, 3-position, center exhaust | 11.3 | Double remote | **L66481221** |
| |  | 4-way, 3-position, pressure center | 11.3 | Double remote | **L66481231** |

* Order subbase seperately.

## 1" Valve Subbase

Subbase

| Cv | Port | Subbase † (side ports) |
|---|---|---|
| 11.3 | 1" | **K022095** |

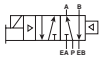
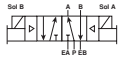
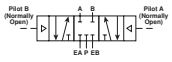
† Subbase includes valve mounting hardware.

## Plug-in Subbase, 1" Basic

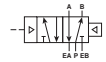
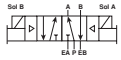
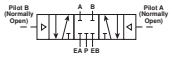
K022095 ..... Inlet & Cylinder Ports 1" NPTF
Exhaust ports ..... 1-1/4" NPTF
Conduit port ..... 1/2" NPTF

**Note:** Subbase assemblies include mounting hardware.

## 3/8" Basic direct pipe ported valve only. Solenoid junction box with light, 1/2" NPT ports

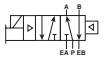
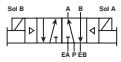
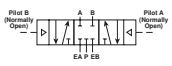
| | Symbol | Type | Cv | Operator | Voltage | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 4.8 | Single solenoid | 24 VDC | **L7054810249** | **L7054910249** |
| | | | | | 110 VAC | **L7054810253** | **L7054910253** |
|  |  | 4-way, 2-position | 4.8 | Double solenoid | 24 VDC | **L6854810249** | **L6854910249** |
| | | | | | 110 VAC | **L6854810253** | **L6854910253** |
|  |  | 4-way, 3-position, all ports blocked | 4.8 | Double solenoid | 24 VDC | **L6954821149** | **L6954921149** |
| | | | | | 110 VAC | **L6954821153** | **L6954921153** |
| |  | 4-way, 3-position, center exhaust | 4.8 | Double solenoid | 24 VDC | **L6954822149** | **L6954922149** |
| | | | | | 110 VAC | **L6954822153** | **L6954922153** |
| |  | 4-way, 3-position, pressure center | 4.8 | Double solenoid | 24 VDC | **L6954823149** | **L6954923149** |
| | | | | | 110 VAC | **L6954823153** | **L6954923153** |

## 3/8" Basic direct pipe ported remote pilot valve only, 1/2" NPT ports

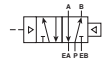
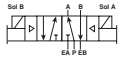
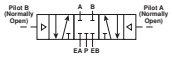
| | Symbol | Type | Cv | Operator | Part number |
|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 4.8 | Single remote | **L70441102** |
|  |  | 4-way, 2-position | 4.8 | Double remote | **L68441102** |
|  |  | 4-way, 3-position, all ports blocked | 4.8 | Double remote | **L69441211** |
| |  | 4-way, 3-position, center exhaust | 4.8 | Double remote | **L69441221** |
| |  | 4-way, 3-position, pressure center | 4.8 | Double remote | **L69441231** |

Most popular.

## 1" Basic direct pipe ported valve only. Solenoid junction box with light, 1" NPT ports

| | Symbol | Type | Cv | Operator | Voltage | Non-locking | Locking |
|---|---|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 11.3 | Single solenoid | 24 VDC | **L7058810249** | **L7058910249** |
| | | | | | 110 VAC | **L7058810253** | **L7058910253** |
|  |  | 4-way, 2-position | 11.3 | Double solenoid | 24 VDC | **L6858810249** | **L6858910249** |
| | | | | | 110 VAC | **L6858810253** | **L6858910253** |
| |  | 4-way, 3-position, all ports blocked | 11.3 | Double solenoid | 24 VDC | **L6958821149** | **L6958921149** |
| | | | | | 110 VAC | **L6958821153** | **L6958921153** |
|  |  | 4-way, 3-position, center exhaust | 11.3 | Double solenoid | 24 VDC | **L6958822149** | **L6958922149** |
| | | | | | 110 VAC | **L6958822153** | **L6958922153** |
| |  | 4-way, 3-position, pressure center | 11.3 | Double solenoid | 24 VDC | **L6958823149** | **L6958923149** |
| | | | | | 110 VAC | **L6958823153** | **L6958923153** |

## 1" Basic direct pipe ported remote pilot valve only. 1" NPT ports

| | Symbol | Type | Cv | Operator | Part number |
|---|---|---|---|---|---|
|  |  | 4-way, 2-position, spring return | 11.3 | Single remote | **L70481102** |
|  |  | 4-way, 2-position | 11.3 | Double remote | **L68481102** |
| |  | 4-way, 3-position, all ports blocked | 11.3 | Double remote | **L69481211** |
|  |  | 4-way, 3-position, center exhaust | 11.3 | Double remote | **L69481221** |
| |  | 4-way, 3-position, pressure center | 11.3 | Double remote | **L69481231** |

## Lubricated Non-Lubricated Service
## 2-position, Plug-In, 3/8" & 1" Basic Size

| L | 67 | 5 | 3 | 9 | 10 | 2 | 53 |
|---|---|---|---|---|---|---|---|

**Type**

| | |
|---|---|
| **Double** | **65** |
| **Single** | **67** |

**Operator**

| | |
|---|---|
| **Remote** | **4** |
| **Solenoid** | **5** |

**Size**

| | |
|---|---|
| **3/8" Basic** | **3** |
| **1" Basic** | **8** |

**Operator options**

| | |
|---|---|
| Solenoid (basic) or remote | 1 |
| Solenoid with locking override | 3 |
| **Solenoid w/light (120VAC, 24VDC) & non-locking override** | **8** |
| **Solenoid w/light (120VAC, 24VDC) & locking override** | **9** |

**Enclosure "Class"**

| | |
|---|---|
| **10** | **Standard (NEMA 1 & 12) or remote** |

**Duty Cycle**

| | |
|---|---|
| **2** | **Standard service, solenoid or remote** |
| 4 | Continuous service solenoid |

**Voltage & frequency**

| | 60Hz | 50Hz | DC |
|---|---|---|---|
| 45 | | | 12 |
| **49** | | | **24** |
| **53** | **120** | **110** | |
| 57 | 240 | 220 | |
| Blank | Remote | | |

## Lubricated or Non-Lubricated Service
## 3-position, Plug-In, 3/8" & 1" Basic Size

| L | 66 | 5 | 3 | 9 | 21 | 1 | 53 |
|---|---|---|---|---|---|---|---|

**Type**

| | |
|---|---|
| **Double** | **66** |

**Operator**

| | |
|---|---|
| **Remote** | **4** |
| **Solenoid** | **5** |

**Size**

| | |
|---|---|
| **3/8" Basic** | **3** |
| **1" Basic** | **8** |

**Operator options**

| | |
|---|---|
| Solenoid (basic) or remote | 1 |
| Solenoid with locking override | 3 |
| **Solenoid w/light (120VAC, 24VDC) & non-locking override** | **8** |
| **Solenoid w/light (120VAC, 24VDC) & locking override** | **9** |

**Enclosure "class"**

| | |
|---|---|
| **21** | **All ports blocked in neutral (NEMA 1 & 12 enclosure) or remote** |
| 22 | Cyl. Ports open to exhaust in neutral (NEMA 1 & 12 enclosure) or remote |
| 23 | Cyl. Ports open to inlet in neutral (NEMA 1 & 12 enclosure) or remote |

**Duty cycle**

| | |
|---|---|
| **1** | **Standard service, solenoid or remote** |
| 5 | Continuous service solenoid |

**Voltage & frequency**

| | 60Hz | 50Hz | DC |
|---|---|---|---|
| 45 | | | 12 |
| **49** | | | **24** |
| **53** | **120** | **110** | |
| 57 | 240 | 220 | |
| Blank | Remote | | |

☐ Most popular.

## Lubricated or Non-Lubricated Service
## 2-position, Direct Pipe Ported, 3/8" & 1" Basic Size

| L | 70 | 5 | 3 | 9 | 10 | 2 | 53 | — |
|---|---|---|---|---|---|---|---|---|

**Type**

| | |
|---|---|
| **Double** | **68** |
| **Single** | **70** |

**Operator**

| | |
|---|---|
| **Remote** | **4** |
| **Solenoid** | **5** |

**Size**

| | |
|---|---|
| 3/8" NPT inlet & cylinder 1/2" NPT exhaust | 3 |
| **1/2" NPT inlet, cylinder & exhaust** | **4** |
| **1" NPT inlet & cylinder 1-1/4" NPT exhaust** | **8** |
| 1-1/4" NPT inlet cylinder & exhaust | 9* |

* Not available operator option 4 - Remote pilot.

**Operator options**

| | |
|---|---|
| Solenoid (basic) or remote | 1 |
| Solenoid with locking override | 3 |
| Solenoid w/ junction box & locking override | 6 |
| **Solenoid w/ junction box & light (120VAC, 24VDC) & non-locking override** | **8** |
| **Solenoid w/ junction box & light (120VAC, 24VDC) & locking override** | **9** |

**Enclosure "Class"**

| | |
|---|---|
| **10** | **Standard (NEMA 1 & 12) or remote** |
| 60*† | Hazardous duty (NEMA 7 & 9) |
| 80† | NEMA 4 |

**Duty cycle**

| | |
|---|---|
| **2** | **Standard service, solenoid or remote** |
| 4 | Continuous service solenoid |

**Voltage & frequency**

| | 60Hz | 50Hz | DC |
|---|---|---|---|
| 45 | | | 12 |
| **49** | | | **24** |
| **53** | **120** | **110** | |
| 57 | 240 | 220 | |
| Blank | Remote | | |

**Lead length**

| | |
|---|---|
| **Blank** | **19" (Standard)** |

* Voltage 49 / 53 only.
† Use with operator options 1 & 3 only.

## Lubricated or Non-Lubricated Service
## 3-position, Direct Pipe Ported, 3/8" & 1" Basic Size

| L | 69 | 5 | 3 | 9 | 21 | 1 | 53 | — |
|---|---|---|---|---|---|---|---|---|

**Type**

| | |
|---|---|
| **Double** | **69** |

**Operator**

| | |
|---|---|
| **Remote** | **4** |
| **Solenoid** | **5** |

**Size**

| | |
|---|---|
| 3/8" NPT inlet & cylinder 1/2" NPT exhaust | 3 |
| **1/2" NPT inlet, cylinder & exhaust** | **4** |
| **1" NPT inlet & cylinder 1-1/4" NPT exhaust** | **8** |
| 1-1/4" NPT inlet cylinder & exhaust | 9* |

* Not available operator option 4 - Remote pilot.

**Operator options**

| | |
|---|---|
| Solenoid (basic) or remote | 1 |
| Solenoid with locking override | 3 |
| Solenoid w/ junction box & locking override | 6 |
| **Solenoid w/ junction box & light (120VAC, 24VDC) & non-locking override** | **8** |
| **Solenoid w/ junction box & light (120VAC, 24VDC) & locking override** | **9** |

**Enclosure "Class"**

| | |
|---|---|
| **All ports blocked in neutral** | |
| **21** | **Standard (NEMA 1 & 12) or remote** |
| 71*† | Hazardous duty (NEMA 7 & 9) |
| 91† | NEMA 4 |
| **Cylinder ports open to exhaust in neutral** | |
| 22 | Standard (NEMA 1 & 12) or remote |
| 72*† | Hazardous duty (NEMA 7 & 9) |
| 92† | NEMA 4 |
| **Cylinder ports open to inlet in neutral** | |
| 23 | Standard (NEMA 1 & 12) or remote |
| 73*† | Hazardous duty (NEMA 7 & 9) |
| 93† | NEMA 4 |

**Duty cycle**

| | |
|---|---|
| **1** | **Standard service, solenoid or remote** |
| 5 | Continuous service solenoid |

**Voltage & frequency**

| | 60Hz | 50Hz | DC |
|---|---|---|---|
| 45 | | | 12 |
| **49** | | | **24** |
| **53** | **120** | **110** | |
| 57 | 240 | 220 | |
| Blank | Remote | | |

**Lead length**

| | |
|---|---|
| **Blank** | **19" (Standard)** |

* Voltage 49 / 53 only.
† Use with operator options 1 & 3 only.

☐ Most popular.





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

## Modular Pneumatic Controls Plug-In Sandwich Block Design for Modular Port Regulation

These modular regulators assemble to any 3/8" basic valve interface pattern.

### Port Regulation Made Easy

Place the sandwich on the manifold or subbase, tighten the four securing screws, then plug the valve into the sandwich and tighten its securing screws to complete the assembly.

Within minutes, these modular components can be installed in new, or used to improve existing manifold systems, without disturbing wiring or air connections.

### 3-Configurations

1. **Common Port Regulation** - A common regulated pressure is selected to both cylinder ports.
2. **Single Port Regulation** - Line pressure is available to one cylinder port, while a single regulated pressure is selected to the other cylinder port.
3. **Independent Port Regulation** - Two independently regulated pressures selected to the cylinder ports.

**NOTE: When using single or independent port sandwich regulators, be aware that:**

1. Cylinder port outlets are reversed.
2. 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.

**Manual or Remote** secondary pressure adjustment.

**Three Pressure Ranges** are standard for manual units:

1-30 PSIG
1-60 PSIG
2-125 PSIG

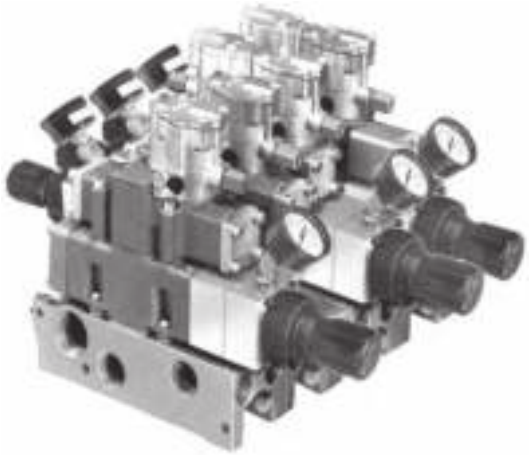
**Range for Remote:** 0-140 PSIG

**Gauges** are furnished standard; liquid filled gauges are optional.

**Solenoid Valve Assembly**

**Regulator Assembly**

**Manifold**



**Typical Assembly**

## Function - Common Port Regulations

This modular air pressure regulator assembly, installed between a 3/8" basic, 4-Way valve and subbase, supplies regulated pressures to both cylinder ports.

**Valve must be converted to external pilot supply.**

### Features

Regulated pressure output from the valve is adjusted by knob on the manually set model or by air pressure signal applied to the regulator pilot port on the remotely set model.

Furnished with pressure gauge as standard.

Assembly "A" (Shown at right) or Assembly "B" may be specified as a matter of convenience, or to satisfy space limitations.*

### Pressure Range Options

Maximum Supply Pressure ..... 140 PSIG

Output Pressure Range ..... 1 - 60 PSIG
2 - 125 PSIG

### Operating Temperature Range

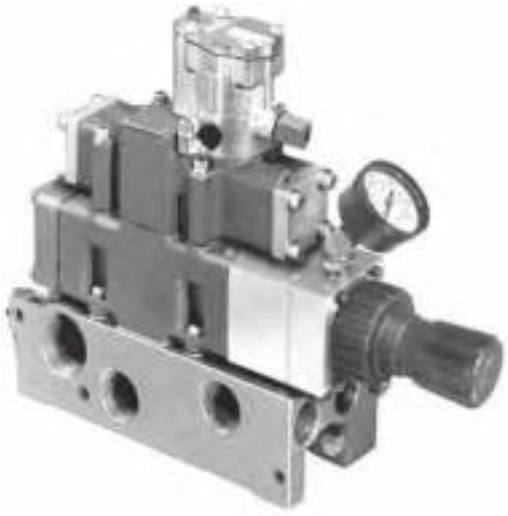
32°F (0°C) to 175°F (79°C)

### How To Order

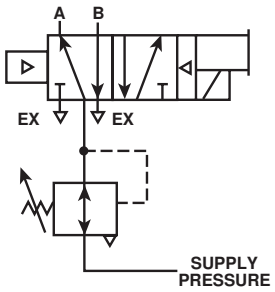
1. Select type of adjustment.
2. Select pressure range.
3. Select assembly style.

*Example:* Manual adjusted.
1-60 PSIG with regulator positioned over the junction box.

Model No. L55408302C

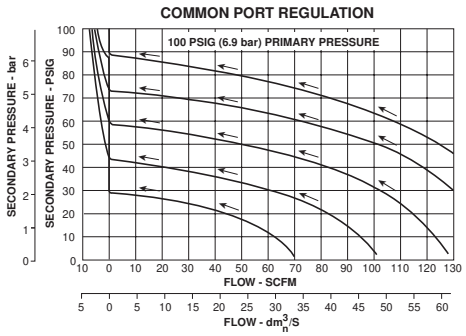


Assembly "A"




Regulated Pressure at Both "A" & "B"

## Relief and Flow Characteristics




The above curves illustrate flow characteristics through an assembled valve, air regulator, and base (or modular manifold) unit.

| Pressure adjustment | Pressure range PSIG | Model number | |
|---|---|---|---|
| | | Assembly "A" | Assembly "B" * |
| Manual | 1 - 60 | **L55402308C** | **L55408302C** |
| | 2 - 125 | **L55403308C** | **L55408303C** |
| Remote | 0 - 140 | **L55411308C** | **L55408311C** |

* Assembly "A" places the regulator on the end opposite the electrical junction box. Assembly "B" places the regulator over the electrical junction box.

See parts and accessories for gauges.

## Function - Single Port Regulation

This modular air pressure regulator assembly, when installed between a 3/8" basic, 4-Way valve and subbase or modular manifold, supplies one or more regulated pressures to one of the valve cylinder ports and supply pressure to the other cylinder port.

On Single Port Cylinder Port Regulation Units controlled by a single solenoid valve, cylinder port “B” is the normally open cylinder port. The solenoid is energized to open cylinder Port “A”. On double solenoid operated valves, energizing solenoid “B” opens cylinder port “A” and energizing solenoid “A” opens cylinder port “B”.

**Valve must be converted to external pilot supply.**

### Features

Regulated pressure output from the valve is adjusted by knob on the manually set model or by air pressure signal applied to the regulator pilot port on the remotely set model.

For reduced pressure at “A” cylinder port, the regulator is mounted per assembly “A” on end opposite the electrical junction box. For reduced pressure at “B” cylinder port the regulator is mounted per Assembly “B” which places the regulator over the electrical junction box.

Furnished with pressure gauge as standard.

### Pressure Range Options

Maximum Supply Pressure ..... 140 PSIG

Output Pressure Range ..... 1 - 30 PSIG
1 - 60 PSIG
2 - 125 PSIG

### Operating Temperature Range

32°F (0°C) to 175°F (79°C)

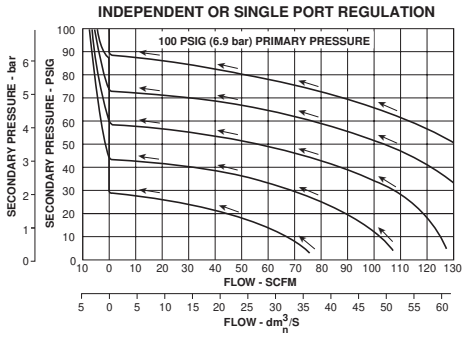
### How To Order

1. Select type of adjustment.
2. Select pressure range.
3. Select assembly style.

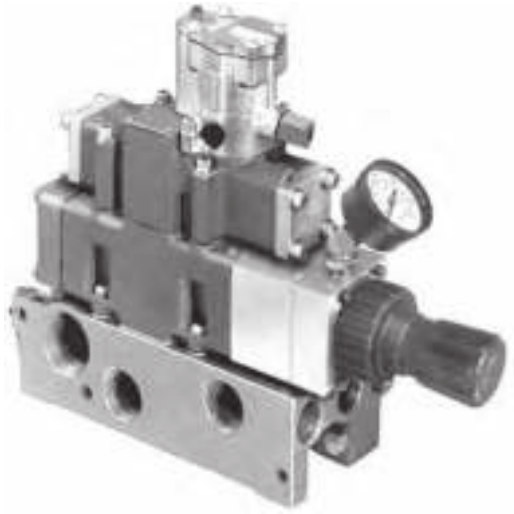
***Example:*** Manual adjustment.
5-60 PSIG, Port A reduced.

Model No. L55405307C

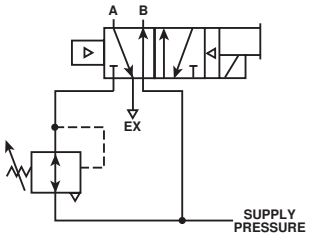
## Relief and Flow Characteristics



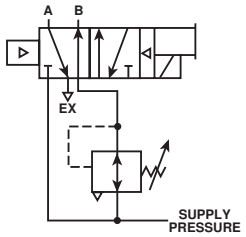

The above curves illustrate flow characteristics through an assembled valve, air regulator, and base (or modular manifold) unit.



Assembly “A”




Supply Pressure at “B”
& Regulated at “A”




Supply Pressure at “A”
& Regulated at “B”

| Pressure adjustment | Pressure range PSIG | Model number<br>Reduced pressure<br>Cyl. Port “A” | Cyl. Port “B” |
|---|---|---|---|
| Manual | 1 - 60 | **L55405307C** | **L55407305C** |
| | 2 - 125 | **L55406307C** | **L55407306C** |
| Remote | 0 - 140 | **L55414307C** | **L55407314C** |

**Note:** When using single or independent port sandwich regulators, be aware that:

1. Cylinder port outlets are reversed.
2. 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.

See parts and accessories for gauges.

## Function - Independent Port Regulation

This modular air pressure regulation assembly, when installed between a 3/8" basic, 4-Way valve and subbase or modular manifold, supplies one or more regulated pressures to each of the valve cylinder ports.

Regulated pressure to cylinder port “A”, and a second regulated pressure to cylinder port “B”; independently adjustable.

On Independent Cylinder Port Regulation Units controlled by a single solenoid valve, cylinder port “B” is the normally open cylinder port. The solenoid is energized to open cylinder port “A”. On double solenoid operated valves, energizing solenoid “B” opens cylinder port “A” and energizing solenoid “A” opens cylinder port “B”

**Valve must be converted to external pilot supply.**

### Features

Regulated pressure output from the valve is adjusted by knob on the manually set model or by air pressure signal applied to the regulator pilot port on the remotely set model.

Furnished with pressure gauge as standard.

The regulator controlling pressure to port “A” is mounted on the end opposite the electrical junction box (Assembly “A”). Regulated pressure from cylinder port “B” is controlled by the regulator installed over the electrical junction box (Assembly “B”).

### Pressure Range Options

Maximum Supply Pressure ..... 140 PSIG

Output Pressure Range ..... 1 - 60 PSIG
2 - 125 PSIG

### Operating Temperature Range

32°F (0°C) to 175°F (79°C)

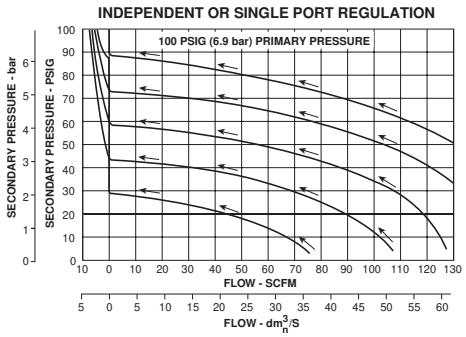
### How To Order

1. Select type of adjustment.
2. Select pressure range.
3. Select assembly style.

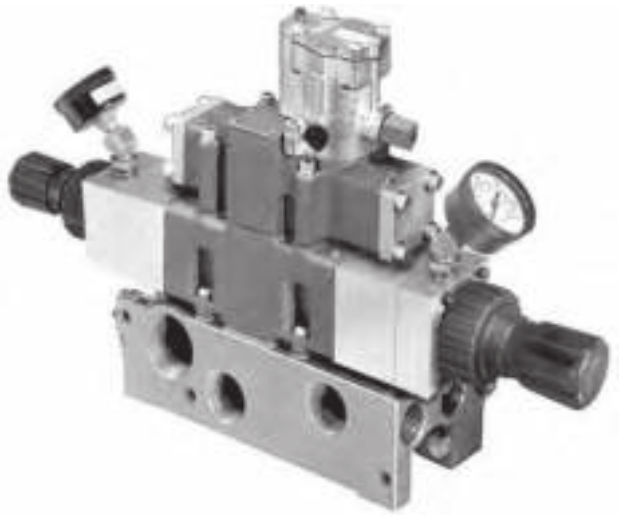
***Example:*** Manual adjustment.
5-60 PSIG range for cylinder port “A”
and 10-125 PSIG for cylinder port “B”.

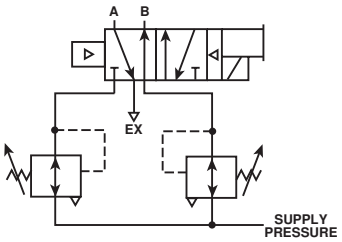
Model No. L55406305C

## Relief and Flow Characteristics




The above curves illustrate flow characteristics through an assembled valve, air regulator, and base (or modular manifold) unit.






**Independently Regulated Pressure at Both “A” & “B”**

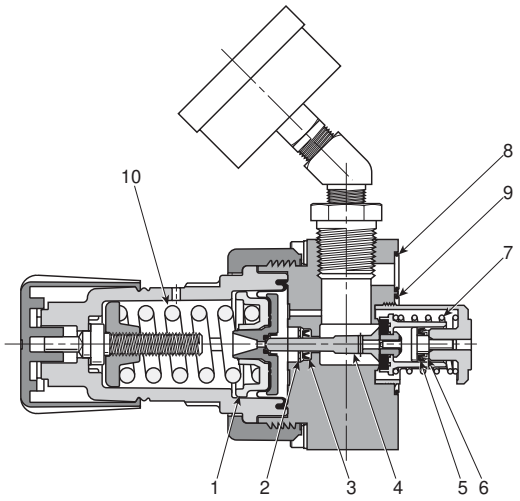
| Pressure adjustment | Cylinder port “A” PSIG | Model number<br>Cylinder port “B” 5 - 60 | Model number<br>Cylinder port “B” 10 - 125† |
|---|---|---|---|
| Manual | 1 - 60 | **L55405305C** | — |
| Remote | 0 - 140 | — | **L55414314C**† |

† Remote operator units 0-140 PSIG

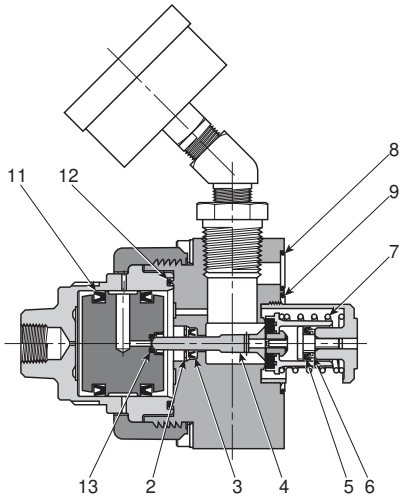
**NOTE:** When using single or independent port sandwich regulators, be aware that:

1. Cylinder port outlets are reversed.
2. 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.

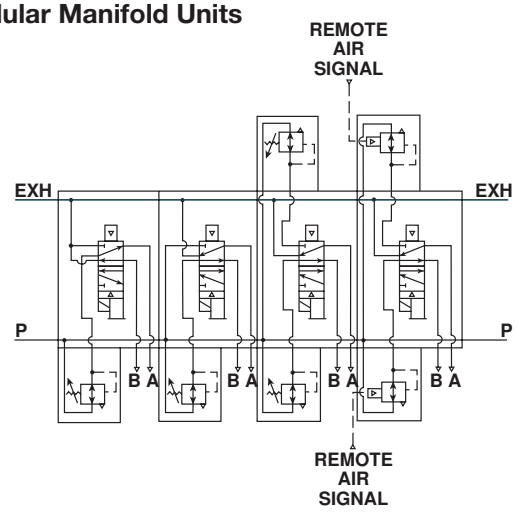
## Manual Adjusting




## Remote Operated




## Suggested Schematic of Assembled Valve, Air Regulation and Modular Manifold Units




## Replacement Parts

| Item no. | Part number | | Description |
|---|---|---|---|
| 1 | ○ | | Diaphragm Assembly |
| 2 | ○ | ● | Retaining Ring |
| 3 | ○ | ● | Vee Packing |
| 4 | ○ | ● | Poppet Assembly |
| 5 | ○ | ● | Vee Packing |
| 6 | ○ | ● | Backflow Retainer |
| 7 | ○ | ● | Poppet Spring |
| 8 | ○ | ● | .989 ID x .070 W O-Ring |
| 9 | ○ | ● | 1.301 ID x .070 W O-Ring |
| 10 | **P01698** | | 1-30 PSI Spring |
| | **P04062** | | 1-60 PSI Spring (Blue) |
| | **P04063** | | 2-125 PSI Spring |
| 11 | ● | | Vee Packing |
| 12 | ● | | 1.674 ID x .103 W O-Ring |
| 13 | ● | | Vent Seal |

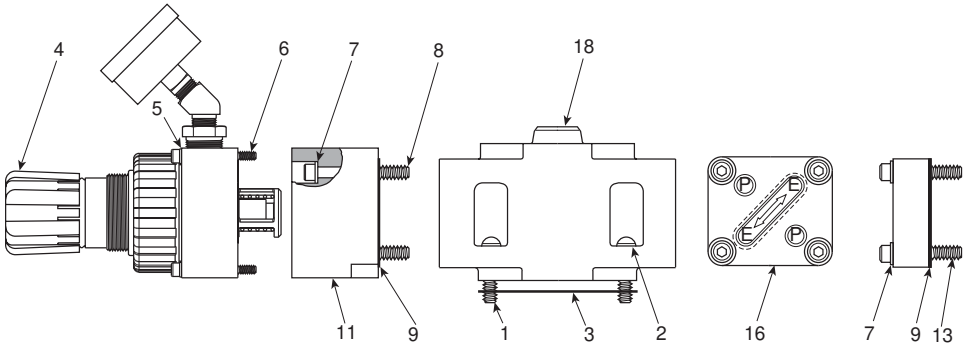
○ Parts included in K352409 service kit for manual operated modular regulators.

● Parts included in K352411 service kit for remote operated modular regulators.

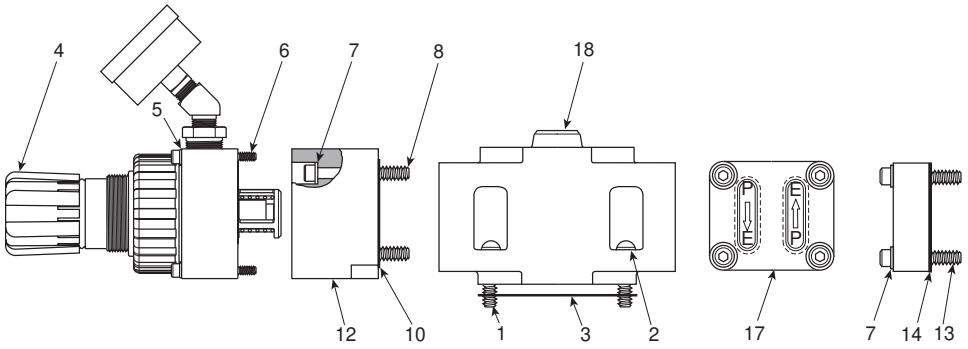
## Replacement Gauges

| PSIG | Standard |
|---|---|
| 0-60 | **K4520N14060** |
| 0-160 | **K4520N14160** |
| 0-300 | **K4520N14300** |

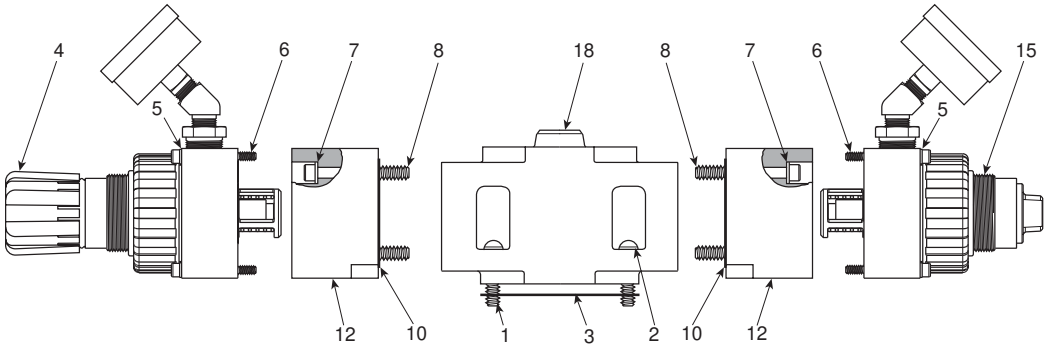
## Common Port Regulation




## Single Port Regulation




## Independent Port Regulation




## Table "E": Parts

| Item No. | Part number | Description |
|---|---|---|
| 1 | **H09815** | Screw (4) |
| 2 | **H17512** | Lockwasher (4) |
| 3 | **K183077** | Gasket |
| 4 | Standard | Manual Reg. Assy. (w/Gauge) |
| | **K472001C** | 1-30 PSIG |
| | **K472002C** | 1-60 PSIG |
| | **K472003C** | 2-125 PSIG |
| 5 | **H17509** | #10 Lockwasher |
| 6 | **H10032** | #10-32 x 1.75" Lg. SHCS |
| 7 | **H17511** | 1/4" Lockwasher |
| 8 | **H10069** | 1/4-20 x 2.25" Lg. SHCS |

| Item No. | Part number | Description |
|---|---|---|
| 9 | **K183082** | Gasket |
| 10 | **K183084** | Gasket |
| 11 | **K043012** | Function Block (P to P) |
| 12 | **K043011** | Function Block (P to E) |
| 13 | **H100107** | 1/4-20 x 1-1/2" Lg. SHCS |
| 14 | **K183083** | Gasket |
| 15 | Standard | Remote Reg. Assy. (w/Gauge) |
| | **K472009C** | 0-140 PSIG |
| 16 | **K362308** | Function Plate Assy. (Incl. 7, 9, 13) |
| 17 | **K362307** | Function Plate Assy. (Incl. 7, 13, 14) |
| 18 | **K032270** | Body Assy. (Incl. 1, 2, 3) |

## Plug-in Pilot

| | Description | Standard service | | Special service | |
|---|---|---|---|---|---|
| | **Override type** | **Locking** | **Non-locking** | **Locking** | **Non-locking** |
|  With indicator light | With override (120VAC) | **K175903553** | **K175803553** | **K185902553** | **K185802553** |
| | With override (Other than 120VAC) | **K1753035**** | — | **K1853025**** | — |

** Voltage code - (reference model index for availability)

## NEMA 1 & 12

| | Description | Standard service | | Special service | |
|---|---|---|---|---|---|
| | **Override type** | **Locking** | **Non-locking** | **Locking** | **Non-locking** |
|  Basic Pilot | Basic with override | **K0653035**** | — | **K0853025**** | — |
|  JIC Pilot | JIC with junction box & override | **K0656035**** | **K0655035**** | **K0856025**** | **K0855025**** |
| | JIC pilot with junction box & override & indicator lights (120VAC Only) | **K0659035**** | **K0658035**** | **K0859025**** | **K0858025**** |

** Voltage code - (reference model index for availability)

## NEMA 4, 7 & 9

| | Description | Standard service | | Special service | |
|---|---|---|---|---|---|
|  Hazardous Duty | Hazardous duty pilot - UL & CSA | **K0251035**†** | | **K0451025**†** | |
| | NEMA 4 pilot | **K2351035**†** | | — | |
| | **Override type** | **Locking** | **Non-locking** | **Locking** | **Non-locking** |
|  NEMA 4 Pilot | Hazardous duty with override | **K0253035**†** | **K0252035**†** | **K0453025**†** | **K0452025**†** |
| | NEMA 4 with override | — | **K2353035**†** | **K2352035**†** | — |

† 49 / 53 only ** Voltage code - (reference model index for availability)

## Replacement Solenoid Coil

L□□□ □□ □□□ **
Voltage Code

| Voltage code | Voltage | | | Coil number | |
|---|---|---|---|---|---|
| ** | 60 Hz | 50 Hz | DC | Plug-In | Flying lead (19") * |
| **49** | — | — | 24† | **K593060 K593274‡** | **K593014** |
| **53** | 120† | 110 | — | **K593071 K593125‡** | **K593025** |
| **57** | 240† | 220 | — | **K593081** | **K593035** |

**Notes: Bold Face** type indicated primary coil rating.
† Indicates voltages approved for solenoid operators designed for use in hazardous locations.
* 19" Coil lead length is standard. Other lead lengths may be available, consult supplier.
‡ Assembly includes indicator light socket, less light.

## Solenoid Characteristics Chart

### Voltage Range +10/-15% of Nominal

**3/8" & 3/4" Basic – L-Pilot**

| Voltage/ Cycles | Amps Inrush | Amps Holding | Resistance Ohms | Watts | Insulation Class |
|---|---|---|---|---|---|
| 120/60VAC | .29 | .18 | 122 | 12 | B |
| 110/50VAC | .21 | .14 | 122 | 12 | B |
| 240/60VAC | .18 | .12 | 610 | 12 | B |
| 24/60VAC | 1.6 | 1.0 | 4.5 | 9.5 | B |
| 24/50VAC | 1.2 | .75 | 6.4 | 9.5 | B |
| 6VDC | – | 1.4 | 4.5 | 7.6 | B |
| 12VDC | – | .66 | 17.7 | 9 | B |
| 24VDC | – | .32 | 71 | 9 | B |
| 48VDC | – | .22 | 216 | 11 | B |

## Service Kits

To use this chart you must know the basic valve series, quantity, and type of operators, or the first three characters of the valve model number.

| Basic valve | | Solenoid operated * | | | | | |
|---|---|---|---|---|---|---|---|
| | | Standard service (intermittent duty) | | Special service ** (continuous duty) | | Remote pilot operated | |
| Size | Series (prefix) | Single | Double 2 & 3-position | Single | Double 2 & 3-position | Single | Double 2 & 3-position |
| 3/8" | L65 | — | **K352126** | — | **K352127** | — | **K352355** |
| | L66 | — | **K352126** | — | **K352127** | — | **K352355** |
| | L67 | **K352124** | — | **K352125** | — | **K352362** | — |
| | L68 | — | **K352126** | — | **K352127** | — | **K352355** |
| | L69 | — | **K352126** | — | **K352127** | — | **K352355** |
| | L70 | **K352124** | — | **K352125** | — | **K352362** | — |
| 1" | L65 | — | **K352130** | — | **K352131** | — | **K352360** |
| | L66 | — | **K352130** | — | **K352131** | — | **K352360** |
| | L67 | **K352128** | — | **K352129** | — | **K352359** | — |
| | L68 | — | **K352130** | — | **K352131** | — | **K352360** |
| | L69 | — | **K352130** | — | **K352131** | — | **K352360** |
| | L70 | **K352128** | — | **K352129** | — | **K352359** | — |

Notes:
* Kits for solenoid operated valves include solenoid service kits.
** Special service (continuous duty) solenoids may be identified as having gold colored solenoid tops.

## Blank Plate Kit - 3/8" Basic

| Manifold assembly | Port size | Part number |
|---|---|---|
| **K142230** | 3/8" | **K06020003** |
| **K142231** | 1/2" | |
| **K142270** | 3/4" | |

Kit includes: Blank plate, gasket, mounting screws.

## Flush Type Hex Drive Pipe Plugs for Port Isolation

| Size (NPTF) | Part number |
|---|---|
| 1/8" | **K21R02012L** |
| 1/4" | **K21R02025L** |
| 3/8" | **K21R02037L** |
| 1/2" | **K21R02050L** |
| 3/4" | **K21R02075L** |

## Interchangeable Manual Override Assemblies for Solenoid Operators

| Non-locking type | Locking type |
|---|---|
| **K162001** | **K152003** |

To override valve, use a flat head screwdriver to press in and rotate plunger 90° until plunger locks in place. For proper valve operation, override should be in the out position.

## Conversion Kits: Lubricated to Non-Lubricated Operation

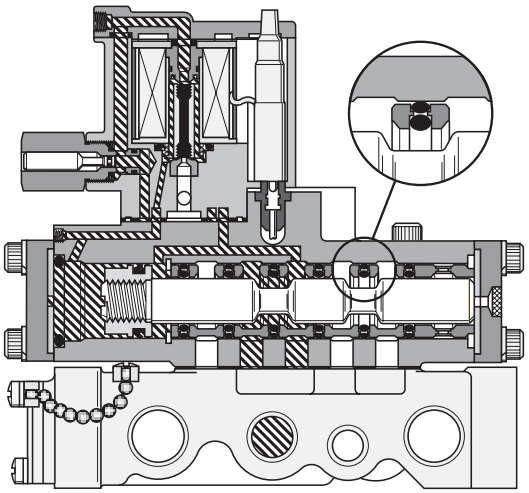
| Basic size | Operators (solenoid or remote pilot) | |
|---|---|---|
| | Single | Double (2-position) |
| 3/8" | **K322012** | **K322013** |

## Electrical Connectors Single or Double Solenoid Valves

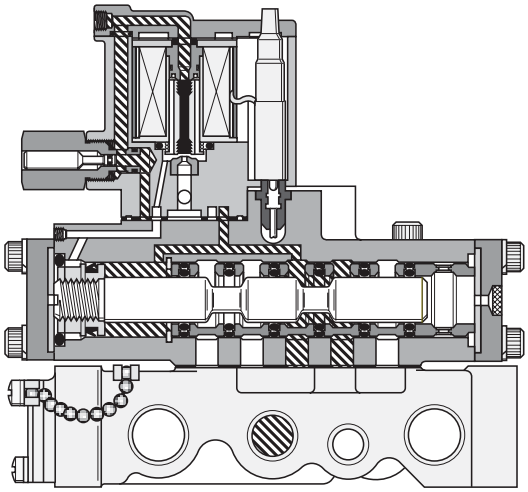
| Basic size | Valve body | | Subbase / manifold | |
|---|---|---|---|---|
| | Single solenoid | Double solenoid | 10" leads | 72" leads |
| 3/8" 1" | **H02723** | **H02722** | **H02713** | **H02789** |

## Plug-In

**De-Energized**

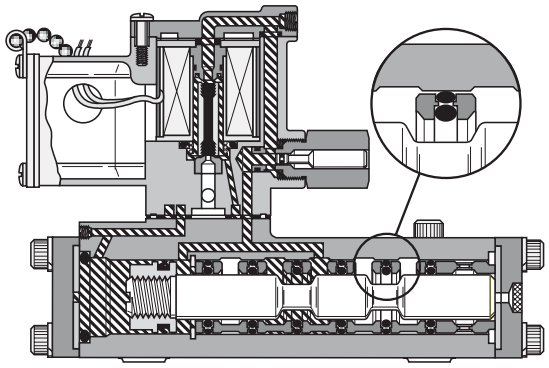


**Energized**

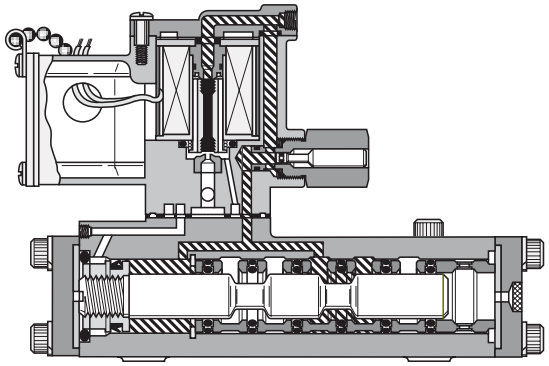


## Direct Pipe Ported

**De-Energized**



**Energized**



**Pressure** **Exhaust**

## Flow Capacities

| Valve Type | Cylinder Port Size (NPTF) | Mounting Style | Cv Flow Rating Inlet to Cylinder "A" |
|---|---|---|---|
| **3/8" Single** | 3/8" | Direct Pipe | 4.7 |
| | 1/2" | Direct Pipe | 5.3 |
| **3/8" Double** | 3/8" | Direct Pipe | 4.5 |
| | 1/2" | Direct Pipe | 5.5 |
| | 3/4" | Subbase | 5.0 |
| | 3/4" | Manifold | 4.9 |
| **3/8" Double 3-Position** | 3/8" | Direct Pipe | 4.1 |
| | 1/2" | Direct Pipe | 4.5 |
| | 3/4" | Subbase | 4.5 |
| | 3/4" | Manifold | 4.1 |
| **1" Single & Double** | 1" | Direct Pipe | 12.0 |
| | | Subbase | 11.3 |

## Recommended Filtration

Maintained 40 Micron Filtration

## Life Expectancy

Valves designed for non-lubricated service as well as those designed for lubricated service will provide millions of maintenance free cycles. Under laboratory conditions service life exceeds 25,000,000 cycles.

## Factory Pre-Lubrication

Valves are lubricated at assembly with Sunaplex 781 or equivalent. Valves specified for vacuum service are lubricated with Dow Corning Valve Seal A.

## Valves for Non-Lubricated Service

3/8" basic valve sizes are designed to operate in applications where in-service lubrication is not desirable. Valves are factory pre-lubed as noted above. These valves may be used for lubricated service as well.

## Lubrication

Air Line Lubricant (compatible with Nitrile & Polyurethane seals) must readily atomize and be of the medium analine type. Analine point range must be between 180° and 220°F. Viscosity @ 100°F: 140-170 SUS.

## Recommended Lubricant

If in-service lubrication is required, use F442 oil, or equivalent. F442 is specially formulated to provide peak performance and maximum service life for air operated equipment.

## Listing Agencies

**General Purpose Approvals**

CSA - Canadian Standards Association
File Number 42024

**Hazardous Duty Approvals**

UL - Underwriters Laboratories, Inc.
File Number E42542
Category Y107

CSA - Canadian Standards Association
File Number 24349

## Solenoid Enclosure Ratings

| Type | Listing agency | NEMA rating | Description |
|---|---|---|---|
| Plug-In | CSA | 1 & 12 | General purpose indoor only dust tight |
| Conduit / flying lead | CSA | 1 & 12 | General purpose indoor only dust tight |
| * Conduit (as specified) | UL & CSA | 7 & 9 | Hazardous location see chart below) |
| * Conduit (as specified) | CSA | 4 | General purpose indoor / outdoor |

* See ordering information on specific valve type. (Direct Pipe Ported Valves Only.)

## Hazardous Duty Solenoid Listing

**Valves with solenoid operators designated for hazardous locations are UL & CSA Approved as follows:**

| National electric code | Ambient conditions | NEMA Classification |
|---|---|---|
| Class I Div. 1 Group C | Ethyl, Ether, Etc., Gases & Vapors | VII (7) |
| Class I Div. 1 Group D | Gasoline, Etc., Gases & Vapors | VII (7) |
| Class I Div. 2 Group B | Butadiene, Etc., Liquid, Fluid or Vapor Normally Contained, or Atmosphere Ventilated | VII (7) |
| Class II Div. 1 Group E | Metal Dust | IX (9) |
| Class II Div. 1 Group F | Coal, Coke, Carbon Black Dust | IX (9) |
| Class II Div. 1 Group G | Flour, Starch, Grain Dust | IX (9) |

See Article 500 - Hazardous (Classified) Locations, National Electric Code.

## Installation

Valves should be installed with reasonable accessibility for service. Exercise care in keeping piping lengths to a minimum. Piping should be free of dirt, chips & scale. Pipe joint compound should be used sparingly applied only to the thread, never to the valve body. Avoid undue strain at piping joints. Protect the valve from exposure to extreme temperatures, dirt and moisture to maximize life.

**Note:** Valves equipped with locking manual overrides. Override(s) must be in the fully extended position for proper valve operation.

## Double Solenoid / Remote Caution

**Note:** It is recommended that double solenoid and double remote 2-Position valves be mounted with the main spool in the horizontal plane.

## Wiring Instructions for Base Mounted Valves

### Single Solenoid:

Use wires marked “2” & “3” for connection. Units with DC Solenoids and indicator lights are polarity sensitive. Wire marked “3” is positive (+).

### Double Solenoid:

Use wires marked “1” & “2” for Solenoid “A”. Use wires marked “3” & “4” for Solenoid “B”. Units with DC Solenoids and indicator lights are polarity sensitive. Wires marked “1” and “3” are positive.

⚠ **CAUTION:**
**DC Solenoids are polarity sensitive. Observe polarities indicated above.**

## Units with Flying Leads

Wires are not polarity sensitive.

⚠ **CAUTION:**
**DC solenoids with indicator lights and / or arc suppression coils are polarity sensitive. Use red wire as positive.**

## “Special Service” Solenoid (Continuous Duty)

Special Service Solenoids are designed for use when the solenoid duty cycle is greater that 70% or when energization times are for 10 minutes or longer.

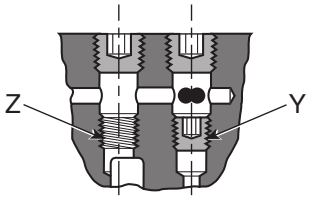
These solenoids should be used when valves are to be held energized for hours, days or weeks… or when extended ambient temperature operation is required. Apply the duty cycle formula to determine if this type of solenoid is required.

## Duty Cycle Formula

$$\frac{\text{Time Energized}}{\text{Time Energized + Time Off}} \text{ x 100 = \% Duty Cycle}$$

If Duty Cycle is 70% or greater, then Special Service (Continuous Duty) Solenoid should be used.

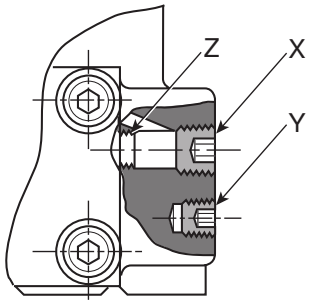
## Pilot Supply Conversion




### Base Mounted

For field conversion to external pilot supply, remove two 1/8" NPTF plugs from top of valve body and move bottom plug from “Y” to “Z”.

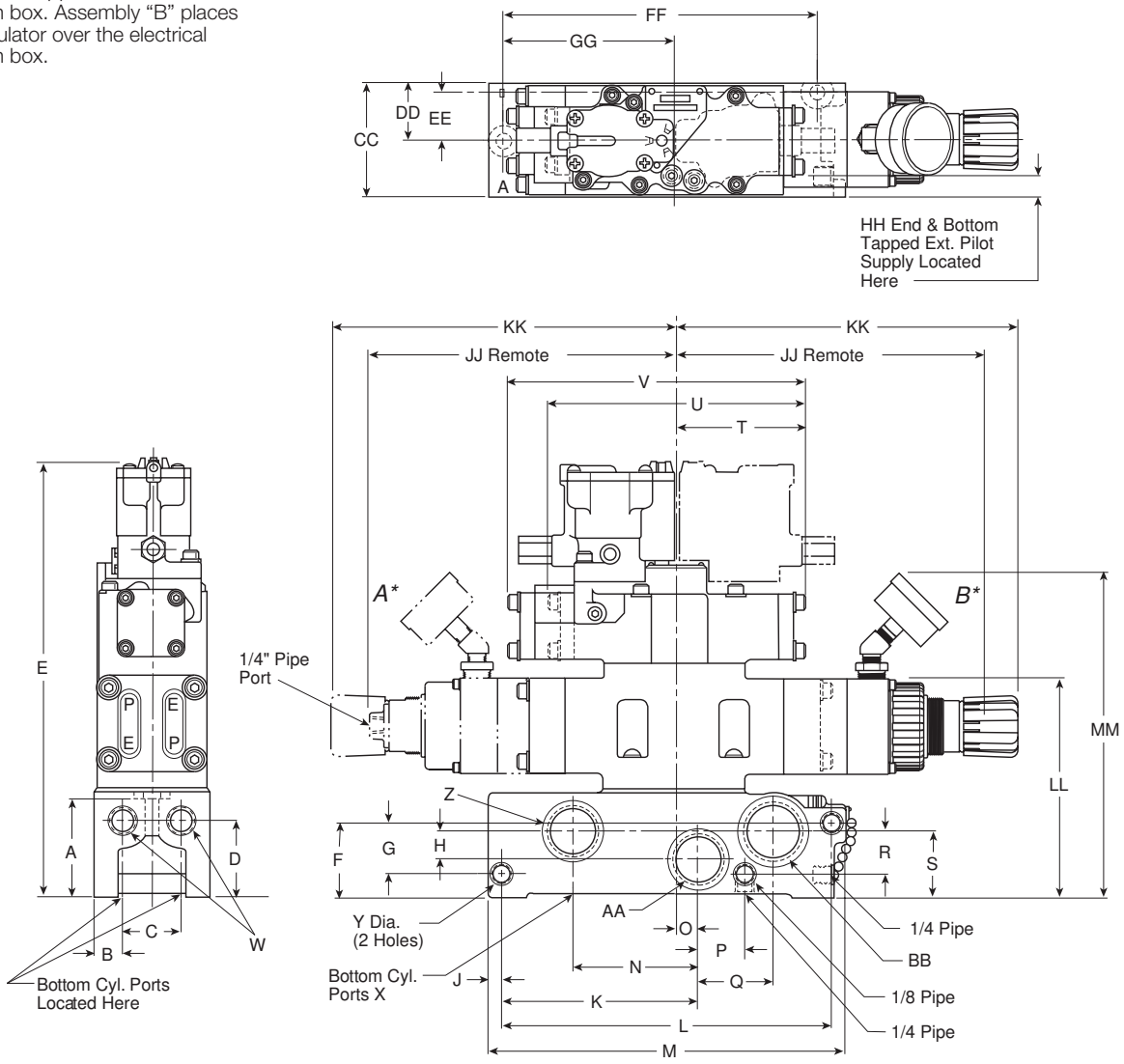
Replace 1/8" NPTF plugs and connect pilot pressure to the 1/4" NPTF external pilot supply port “X” in subbase.




### Direct Pipe Ported

For field conversion to external pilot supply, remove and discard 1/4" NPTF plug in external pilot supply port “X”. Move stored plug “Y” to location “Z” in bottom of pilot supply port “X”. Then connect pilot pressure to port “X” in valve body.

* Assembly "A" places the regulator on the end opposite the electrical junction box. Assembly "B" places the regulator over the electrical junction box.



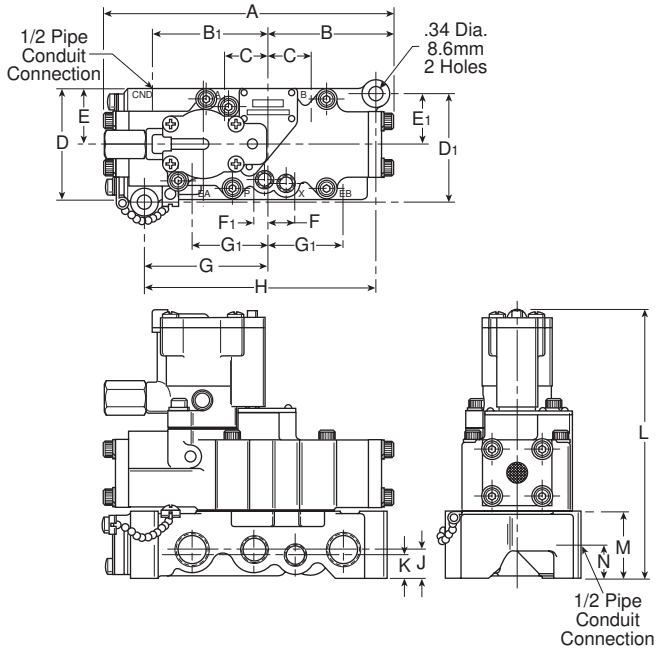

### Dimensions - 3/8" Basic Valve

| A | B | C | D | E | F | G | H | J | K | L | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.56 (65.0) | .75 (19.1) | 1.50 (38.1) | 2.09 (53.1) | 11.28 (286.5) | 2.06 (52.3) | 1.41 (35.8) | .75 (19.1) | .34 (8.64) | 5.00 (127.0) | 8.44 (214.4) | 9.09 (230.9) | 3.19 (81.0) | .61 (15.5) |

| P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.19 (30.2) | 1.91 (48.5) | 1.09 (27.7) | 1.81 (46.0) | 3.32 (84.3) | 6.64 (168.7) | 7.56 (192.0) | 3/8", 1/2" or 3/4" NPTF | | .39 (9.9) | 1" NPTF | 1" NPTF | 1-1/4" NPTF | 3.00 (76.2) |

| DD | EE | FF | GG | HH | JJ | KK | LL | MM |
|---|---|---|---|---|---|---|---|---|
| 1.50 (38.1) | 1.24 (31.5) | 7.97 (202.4) | 4.34 (110.2) | .40 (10.2) | 8.53 (216.6) | 10.15 (257.8) | 5.46 (138.6) | 8.80 (223.5) |

Inches (mm)

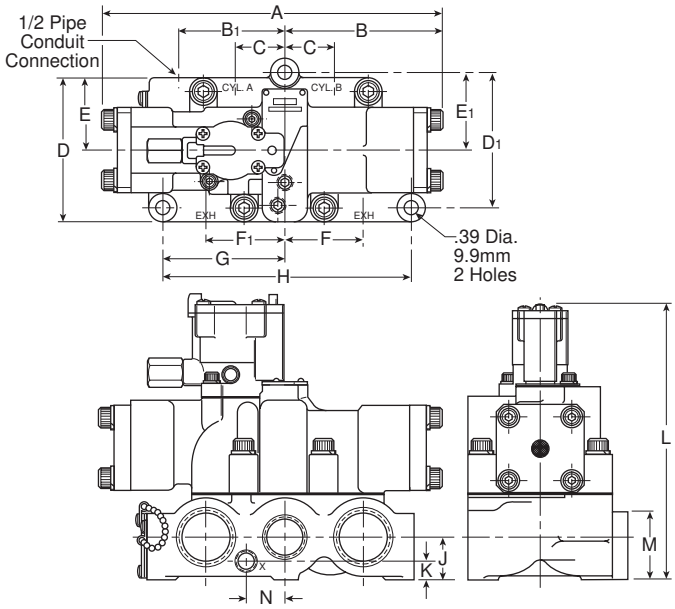



### L6753 3/8" Dimensions, Single Solenoid

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 7.56 (192) | 3.32 (84.3) | 2.94 (74.7) | 1.12 (28.4) | 2.88 (73.2) | 2.84 (72.1) | 1.44 (36.6) | 1.34 (34) | .75 (19.1) |

| F1 | G | G1 | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|
| .38 (9.7) | 3.16 (80.3) | 2.00 (50.8) | 6.03 (153.2) | .75 (19.1) | .62 (15.7) | 6.93 (176) | 1.75 (44.5) | 1.00 (25.4) |

Inches (mm)

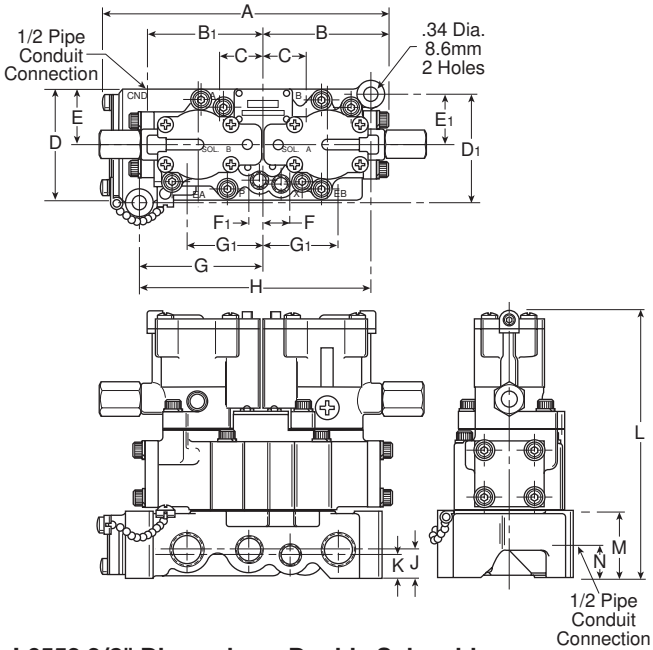



### L6758 1" Dimensions, Single Solenoid

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 10.46 (265.7) | 4.75 (120.6) | 2.94 (74.7) | 3.38 (85.8) | 4.56 (115.8) | 4.28 (108.7) | 2.28 (57.9) | 2.44 (62) | 2.45 (62.2) |

| F1 | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|
| 2.46 (62.5) | 3.81 (96.8) | 7.62 (193.5) | 1.31 (33.3) | .59 (15) | 8.74 (222) | 2.09 (53.1) | 1.22 (31) |

Inches (mm)

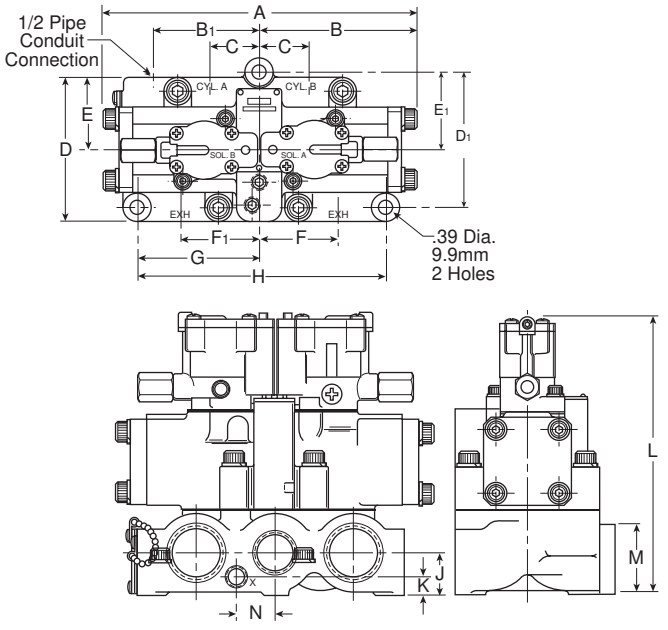



### L6553 3/8" Dimensions, Double Solenoid

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 7.38 (187.5) | 3.32 (84.3) | 2.94 (74.7) | 1.12 (28.4) | 2.88 (73.2) | 2.84 (72.1) | 1.44 (36.6) | 1.34 (34) | .75 (19.1) |

| F1 | G | G1 | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|
| .38 (9.7) | 3.16 (80.3) | 2.00 (50.8) | 6.03 (153.2) | .75 (19.1) | .62 (15.7) | 6.93 (176) | 1.75 (44.5) | 1.00 (25.4) |

Inches (mm)

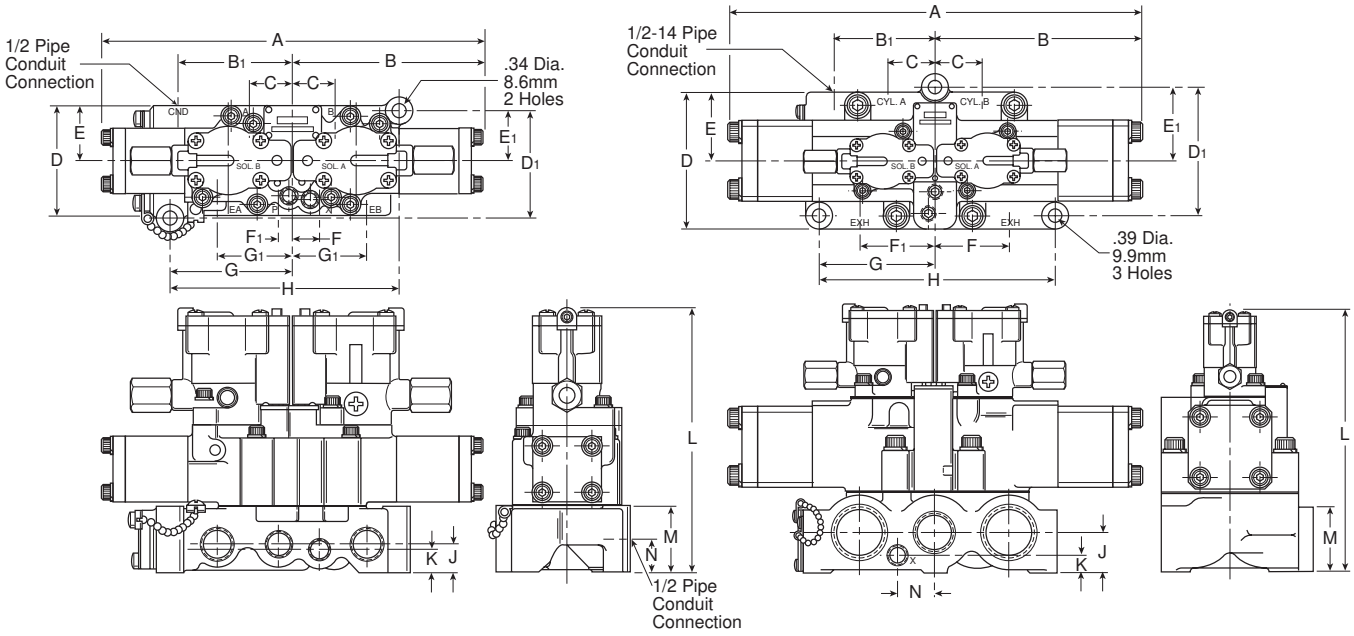



### L6558 1" Dimensions, Double Solenoid

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 9.50 (241.3) | 4.75 (120.6) | 3.38 (85.8) | 1.53 (38.9) | 4.56 (115.8) | 4.28 (108.7) | 2.28 (57.9) | 2.44 (62) | 2.45 (62.2) |

| F1 | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|
| 2.46 (62.5) | 3.81 (96.8) | 7.62 (193.5) | 1.31 (33.3) | .59 (15) | 8.74 (222) | 2.09 (53.1) | 1.22 (31) |

Inches (mm)




### L6653 3/8" Dimensions, 3-Position, Double Solenoid

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 9.64 (244.8) | 4.82 (122.4) | 2.94 (74.7) | 1.12 (28.4) | 2.88 (73.2) | 2.84 (72.1) | 1.44 (36.6) | 1.34 (34) | .75 (19.1) |

| F1 | G | G1 | H | J | K | L | M |
|---|---|---|---|---|---|---|---|
| .38 (9.7) | 3.16 (80.3) | 2.00 (50.8) | 6.03 (153.2) | .75 (19.1) | .62 (15.7) | 6.93 (176) | 1.00 (25.4) |

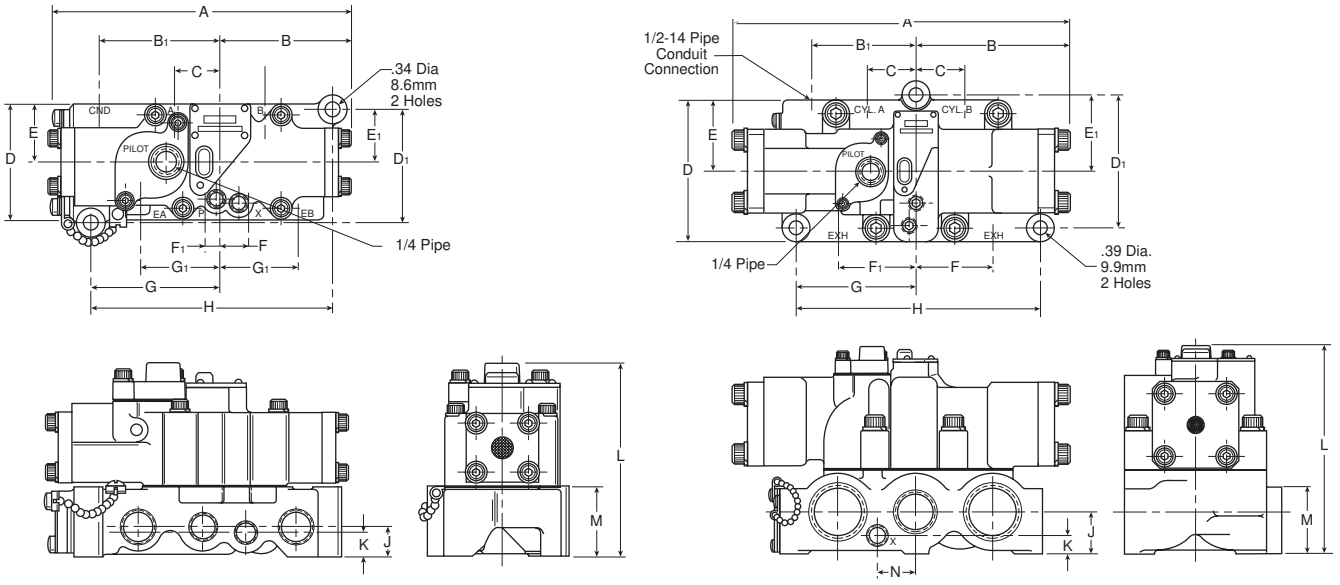
Inches (mm)

### L6658 1" Dimensions, 3-Position, Double Solenoid

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 13.62 (345.9) | 6.81 (173) | 3.38 (85.8) | 1.53 (38.9) | 4.56 (115.8) | 4.28 (108.7) | 2.28 (57.9) | 2.44 (62) | 2.45 (62.2) |

| F1 | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|
| 2.46 (62.5) | 3.81 (96.8) | 7.62 (193.5) | 1.31 (33.3) | .59 (15) | 8.74 (222) | 2.09 (53.1) | 1.22 (31) |

Inches (mm)




### L6743 3/8" Dimensions, Single Remote Pilot

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 7.56 (192) | 3.32 (84.3) | 2.94 (74.7) | 1.12 (28.4) | 2.88 (73.2) | 2.84 (72.1) | 1.44 (36.6) | 1.34 (34) | .75 (19.1) |

| F1 | G | G1 | H | J | K | L | M |
|---|---|---|---|---|---|---|---|
| .38 (9.7) | 3.16 (80.3) | 2.00 (50.8) | 6.03 (153.2) | .75 (19.1) | .62 (15.7) | 4.76 (120.9) | 1.75 (44.5) |

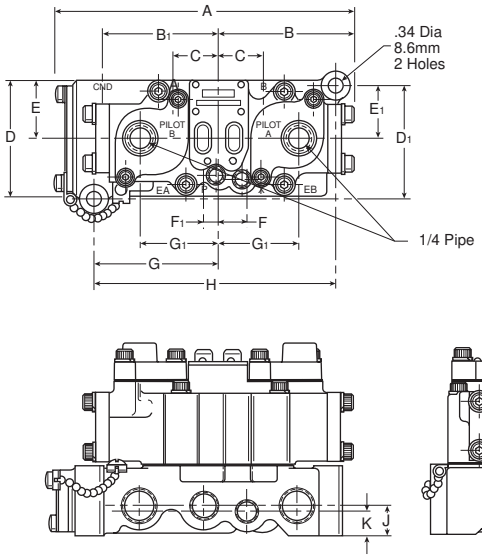
Inches (mm)

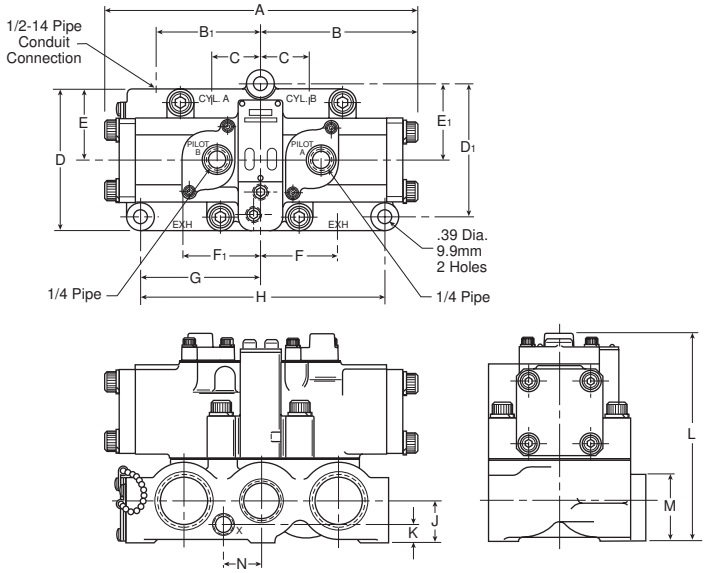
### L6748 1" Dimensions, Single Remote Pilot

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 10.46 (265.7) | 4.75 (120.6) | 3.38 (85.8) | 1.53 (38.9) | 4.56 (115.8) | 4.28 (108.7) | 2.28 (57.9) | 2.44 (62) | 2.45 (62.2) |

| F1 | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|
| 2.46 (62.5) | 3.81 (96.8) | 7.62 (193.5) | 1.31 (33.3) | .59 (15) | 6.57 (166.9) | 2.09 (53.1) | 1.22 (31) |

Inches (mm)




### L6543 3/8" Dimensions, Double Remote Pilot

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 7.56 | 3.32 | 2.94 | 1.12 | 2.88 | 2.84 | 1.44 | 1.34 | .75 |
| (192) | (84.3) | (74.7) | (28.4) | (73.2) | (72.1) | (36.6) | (34) | (19.1) |

| F1 | G | G1 | H | J | K | L | M |
|---|---|---|---|---|---|---|---|
| .38 | 3.16 | 2.00 | 6.03 | .75 | .62 | 4.76 | 1.75 |
| (9.7) | (80.3) | (50.8) | (153.2) | (19.1) | (15.7) | (120.9) | (44.5) |

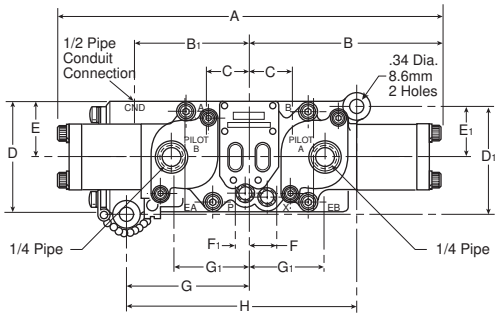
Inches (mm)

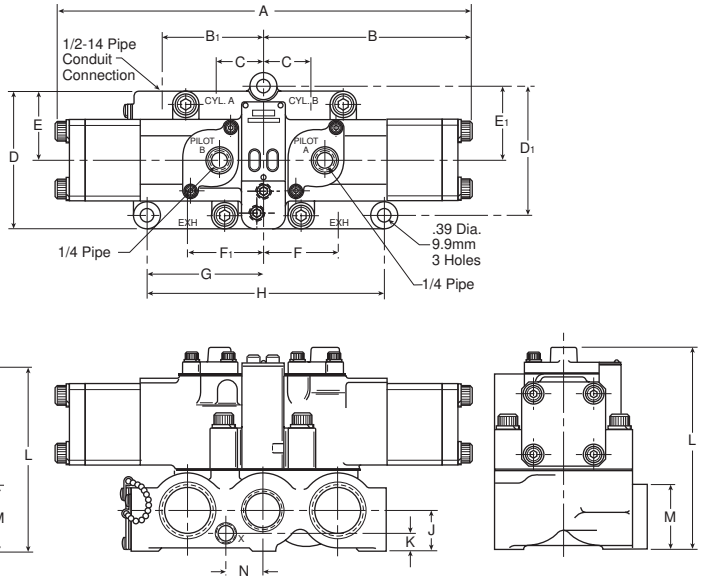
### L6548 1" Dimensions, Double Remote Pilot

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 9.50 | 4.75 | 3.38 | 1.53 | 4.56 | 4.28 | 2.28 | 2.44 | 2.45 |
| (241.3) | (120.6) | (85.8) | (38.9) | (115.8) | (108.7) | (57.9) | (62) | (62.2) |

| F1 | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|
| 2.46 | 3.81 | 7.62 | 1.31 | .59 | 6.57 | 2.09 | 1.22 |
| (62.5) | (96.8) | (193.5) | (33.3) | (15) | (166.9) | (53.1) | (31) |

Inches (mm)




### L6643 3/8" Dimensions, 3-Position, Remote Pilot

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 9.64 | 4.82 | 2.94 | 1.12 | 2.88 | 2.84 | 1.44 | 1.34 | .75 |
| (244.8) | (122.4) | (74.7) | (28.4) | (73.2) | (72.1) | (36.6) | (34) | (19.1) |

| F1 | G | G1 | H | J | K | L | M |
|---|---|---|---|---|---|---|---|
| .38 | 3.16 | 2.00 | 6.03 | .75 | .62 | 4.76 | 1.75 |
| (9.7) | (80.3) | (50.8) | (153.2) | (19.1) | (15.7) | (120.9) | (44.5) |

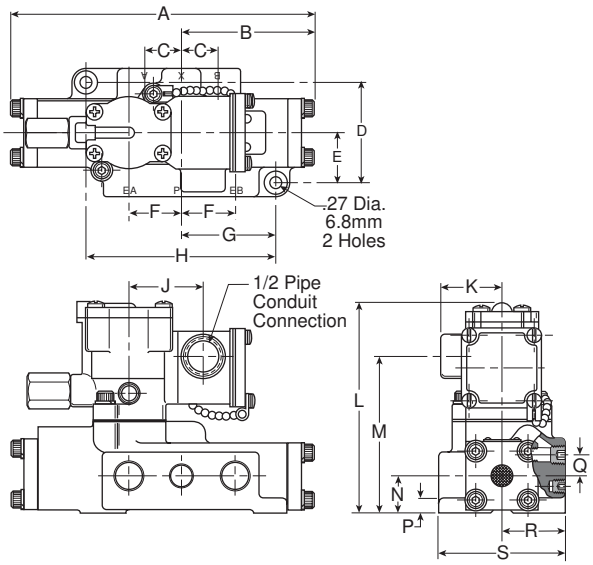
Inches (mm)

### L6648 1" Dimensions, 3-Position, Remote Pilot

| A | B | B1 | C | D | D1 | E | E1 | F |
|---|---|---|---|---|---|---|---|---|
| 13.62 | 6.81 | 3.38 | 1.53 | 4.56 | 4.28 | 2.28 | 2.44 | 2.45 |
| (345.9) | (173) | (85.8) | (38.9) | (115.8) | (108.7) | (57.9) | (62) | (62.2) |

| F1 | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|
| 2.46 | 3.81 | 7.62 | 1.31 | .59 | 6.57 | 2.09 | 1.22 |
| (62.5) | (96.8) | (193.5) | (33.3) | (15) | (166.8) | (53.1) | (31) |

Inches (mm)

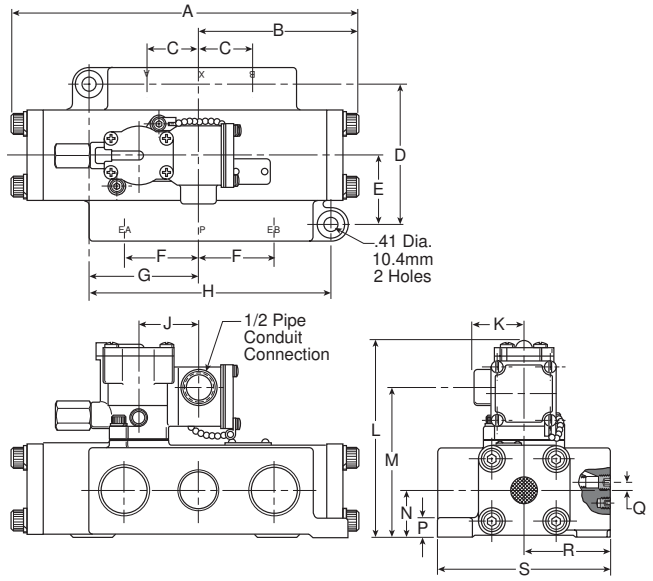



### L705 3/8" Dimensions, Single Solenoid

| A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|
| 7.56 | 3.32 | .90 | 2.56 | 1.28 | 1.33 | 2.34 | 4.69 | 1.82 |
| (192) | (84.3) | (22.9) | (65) | (32.5) | (33.8) | (59.4) | (119.1) | (46.2) |

| K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|
| 1.50 | 5.35 | 3.91 | .94 | .38 | .53 | 1.62 | 3.25 |
| (38.1) | (135.9) | (99.3) | (23.9) | (9.7) | (13.5) | (41.1) | (82.6) |

Inches (mm)

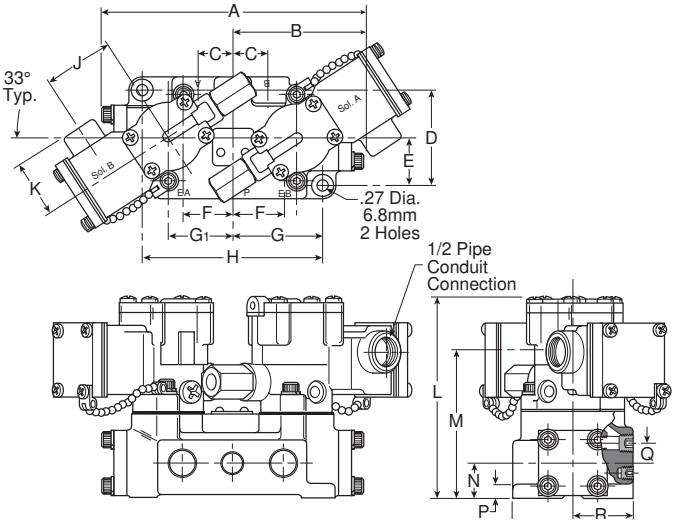



### L705 1" Dimensions, Single Solenoid

| A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|
| 10.46 | 4.75 | 1.62 | 4.25 | 2.12 | 2.19 | 3.44 | 7.44 | 1.82 |
| (265.7) | (120.6) | (41.1) | (108) | (53.8) | (55.6) | (87.4) | (189) | (46.2) |

| K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|
| 1.50 | 6.44 | 4.95 | 1.50 | .69 | .20 | 2.62 | 5.25 |
| (38.1) | (163.6) | (125.7) | (38.1) | (17.5) | (5.1) | (66.5) | (133.4) |

Inches (mm)

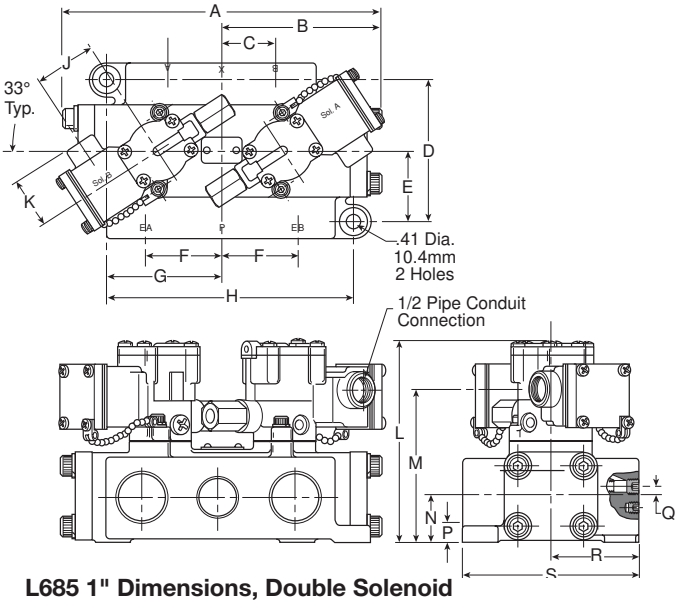



### L685 3/8" Dimensions, Double Solenoid

| A | B | C | D | E | F | G | G1 | H |
|---|---|---|---|---|---|---|---|---|
| 7.56 | 3.32 | .90 | 2.56 | 1.28 | 1.33 | 2.34 | 1.66 | 4.69 |
| (192) | (84.3) | (22.9) | (65) | (32.5) | (33.8) | (59.4) | (42.4) | (119.1) |

| J | K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|
| 1.82 | 1.50 | 5.35 | 3.91 | .94 | .38 | .53 | 1.62 | 3.25 |
| (46.2) | (38.1) | (135.9) | (99.3) | (23.9) | (9.7) | (13.5) | (41.1) | (82.6) |

Inches (mm)

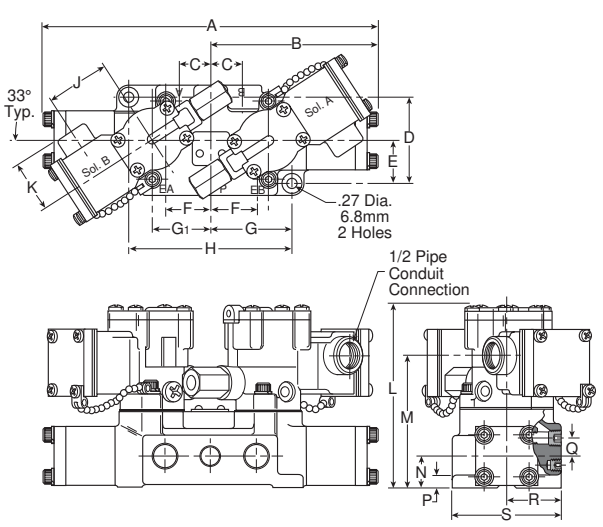


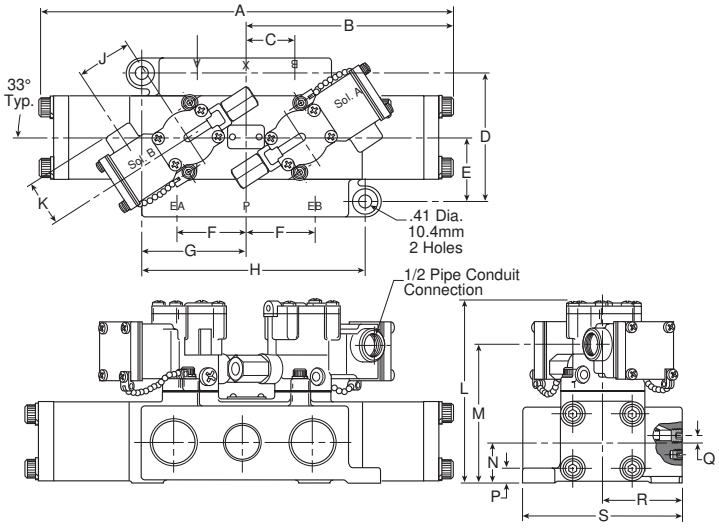

### L685 1" Dimensions, Double Solenoid

| A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|
| 9.50 | 4.75 | 1.62 | 4.25 | 2.12 | 2.19 | 3.44 | 7.44 | 1.82 |
| (241.3) | (120.6) | (41.1) | (108) | (53.8) | (55.6) | (87.4) | (189) | (46.2) |

| K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|
| 1.50 | 6.44 | 4.95 | 1.50 | .69 | .20 | 2.62 | 5.25 |
| (38.1) | (163.6) | (125.7) | (38.1) | (17.5) | (5.1) | (66.5) | (133.4) |

Inches (mm)




### L695 3/8" Dimensions, 3-Position Double Solenoid

| A | B | C | D | E | F | G | G1 | H |
|---|---|---|---|---|---|---|---|---|
| 9.64 | 4.82 | .90 | 2.56 | 1.28 | 1.33 | 2.34 | 1.66 | 4.69 |
| (244.8) | (122.4) | (22.9) | (65) | (32.5) | (33.8) | (59.4) | (42.4) | (119.1) |

| J | K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|
| 1.82 | 1.50 | 5.35 | 3.91 | .94 | .38 | .53 | 1.62 | 3.25 |
| (46.2) | (38.1) | (135.9) | (99.3) | (23.9) | (9.7) | (13.5) | (41.1) | (82.6) |

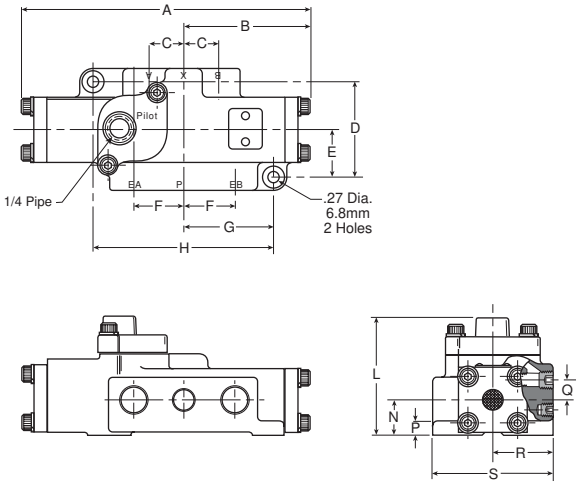
Inches (mm)

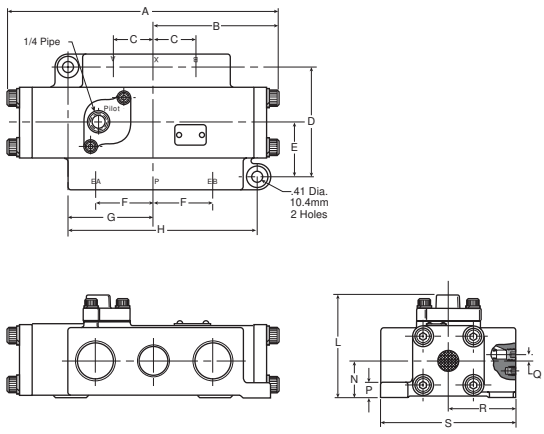
### L695 1" Dimensions, 3-Position, Double Solenoid

| A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|
| 13.63 | 6.81 | 1.62 | 4.25 | 2.12 | 2.19 | 3.44 | 7.44 | 1.82 |
| (346.2) | (173 ) | (41.1) | (108) | (53.8) | (55.6) | (87.4) | (189) | (46.2) |

| K | L | M | N | P | Q | R | S |
|---|---|---|---|---|---|---|---|
| 1.50 | 6.44 | 4.95 | 1.50 | .69 | .20 | 2.62 | 5.25 |
| (38.1) | (163.6) | (125.7) | (38.1) | (17.5) | (5.1) | (66.5) | (133.4) |

Inches (mm)




### L704 3/8" Dimensions, Single Remote Pilot

| A | B | C | D | E | F | G | H | L |
|---|---|---|---|---|---|---|---|---|
| 7.56 | 3.32 | .90 | 2.56 | 1.28 | 1.33 | 2.34 | 4.69 | 3.18 |
| (192) | (84.3) | (22.9) | (65) | (32.5) | (33.8) | (59.4) | (119.1) | (80.8) |

| N | P | Q | R | S |
|---|---|---|---|---|
| .94 | .38 | .53 | 1.62 | 3.25 |
| (23.9) | (9.7) | (13.5) | (41.1) | (82.6) |

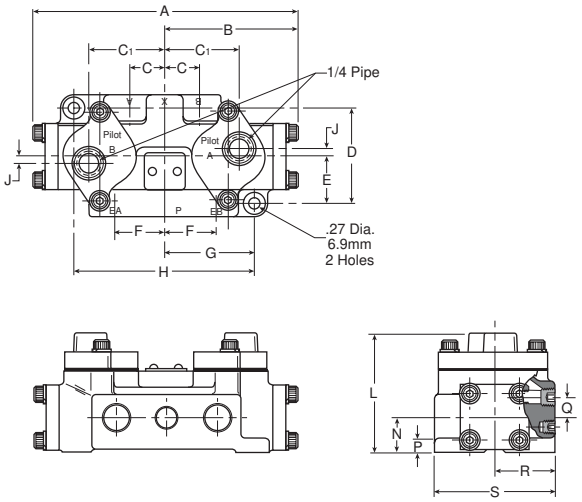
Inches (mm)

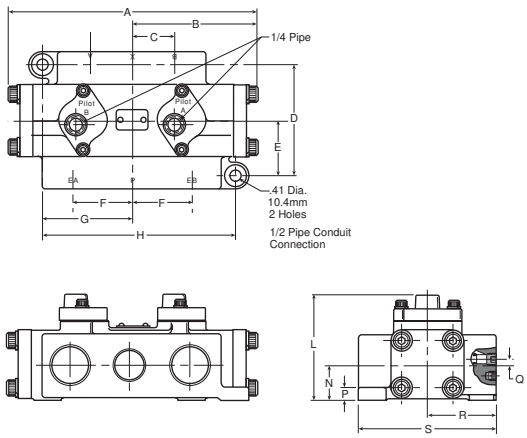
### L704 1" Dimensions, Single Remote Pilot

| A | B | C | D | E | F | G | H | L |
|---|---|---|---|---|---|---|---|---|
| 10.46 | 4.75 | 1.62 | 4.25 | 2.12 | 2.19 | 3.44 | 7.44 | 4.09 |
| (265.7) | (120.6) | (41.1) | (108) | (53.8) | (55.6) | (87.4) | (189) | (103.9) |

| N | P | Q | R | S |
|---|---|---|---|---|
| 1.50 | .69 | .20 | 2.62 | 5.25 |
| (38.1) | (17.5) | (5.1) | (66.5) | (133.4) |

Inches (mm)




### L684 3/8" Dimensions, Double Remote Pilot

| A | B | C | $C_1$ | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 6.64 | 3.32 | .90 | 1.98 | 2.56 | 1.28 | 1.33 | 2.34 | 4.69 |
| (168.7) | (84.3) | (22.9) | (50.3) | (65) | (32.5) | (33.8) | (59.4) | (119.1) |

| J | L | N | P | Q | R | S |
|---|---|---|---|---|---|---|
| .22 | 3.05 | .94 | .38 | .53 | 1.62 | 3.25 |
| (5.6) | (77.5) | (23.9) | (9.7) | (13.5) | (41.1) | (82.6) |

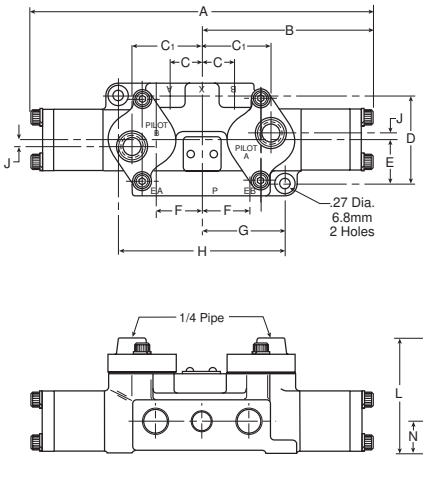
Inches (mm)

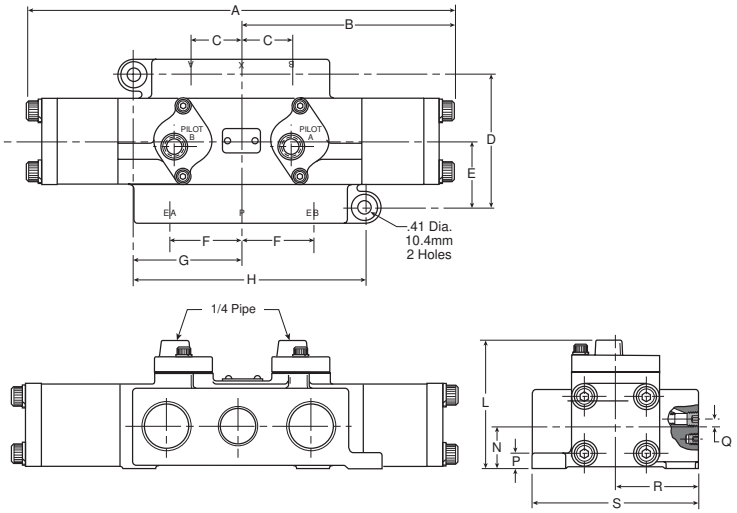
### L684 1" Dimensions, Double Remote Pilot

| A | B | C | D | E | F | G | H | L |
|---|---|---|---|---|---|---|---|---|
| 9.50 | 4.75 | 1.62 | 4.25 | 2.12 | 2.19 | 3.44 | 7.44 | 4.09 |
| (241.3) | (120.6) | (41.1) | (108) | (53.8) | (55.6) | (87.4) | (189) | (103.9) |

| N | P | Q | R | S |
|---|---|---|---|---|
| 1.50 | .69 | .20 | 2.62 | 5.25 |
| (38.1) | (17.5) | (5.1) | (66.5) | (133.4) |

Inches (mm)




### L694 3/8" Dimensions, 3-Position, Double Remote Pilot

| A | B | C | $C_1$ | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 9.64 | 4.82 | .90 | 1.98 | 2.56 | 1.28 | 1.33 | 2.34 | 4.69 |
| (244.8) | (122.4) | (22.9) | (50.3) | (65) | (32.5) | (33.8) | (59.4) | (119.1) |

| J | L | N | P | Q | R | S |
|---|---|---|---|---|---|---|
| .22 | 3.05 | .94 | .38 | .53 | 1.62 | 3.25 |
| (5.6) | (77.5) | (23.9) | (9.7) | (13.5) | (41.1) | (82.6) |

Inches (mm)

### L694 1" Dimensions, 3-Position, Double Remote Pilot

| A | B | C | D | E | F | G | H | L |
|---|---|---|---|---|---|---|---|---|
| 13.63 | 6.81 | 1.62 | 4.25 | 2.12 | 2.19 | 3.44 | 7.44 | 6.44 |
| (346.2) | (173 ) | (41.1) | (108) | (53.8) | (55.6) | (87.4) | (189) | (163.6) |

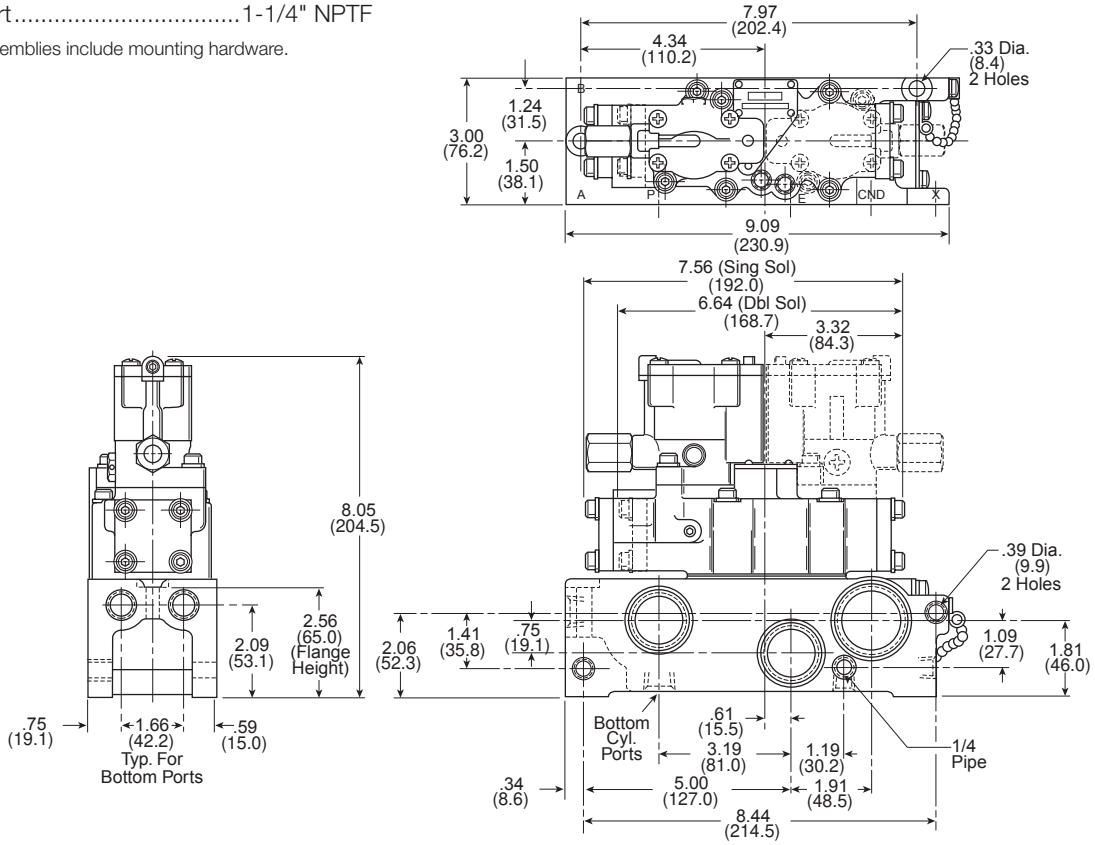
| N | P | Q | R | S |
|---|---|---|---|---|
| 1.50 | .69 | .20 | 2.62 | 5.25 |
| (38.1) | (17.5) | (5.1) | (66.5) | (133.4) |

Inches (mm)

## Plug-in Manifold, 3/8" Basic

K142230 .....Cylinder ports 3/8" NPTF
K142231 .....Cylinder ports 1/2" NPTF
K142270 .....Cylinder ports 3/4" NPTF
Exhaust port..... 1" NPTF
Inlet port..... 1" NPTF
Conduit port.....1-1/4" NPTF

**Note:** Manifold assemblies include mounting hardware.



# Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

## ⚠ WARNING:

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:**

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

### 1. GENERAL INSTRUCTIONS

**1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

**1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

**1.3 Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

**1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

**1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

**1.6. Safety Devices:** Safety devices should not be removed, or defeated.

**1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.

**1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

### 2. PRODUCT SELECTION INSTRUCTIONS

**2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

**2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

**2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

**2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

**2.5. Lubrication and Compressor Carryover:** Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

**2.6. Polycarbonate Bowls and Sight Glasses:** To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

**2.7. Chemical Compatibility:** For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

**2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.

- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

**3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS**

**3.1. Component Inspection:** Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

**3.2. Installation Instructions:** Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

**3.3. Air Supply:** The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

**4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS**

**4.1. Maintenance:** Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.9.

**4.2. Installation and Service Instructions:** Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

**4.3. Lockout / Tagout Procedures:** Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

**4.4. Visual Inspection:** Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:

- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

**Caution: Leak detection solutions should be rinsed off after use.**

**4.5. Routine Maintenance Issues:**

- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

**4.6. Functional Test:** Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

**4.7. Service or Replacement Intervals:** It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:

- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

**4.8. Servicing or Replacing of any Worn or Damaged Parts:** To avoid unpredictable system behavior that can cause death, personal injury and property damage:

- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

**4.9. Putting Serviced System Back into Operation:** Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

**PARKER-HANNIFIN CORPORATION**
**OFFER OF SALE**

**1. Definitions**. As used herein, the following terms have the meanings indicated.

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| Buyer: | means any customer receiving a Quote for Products from Seller. |
| Goods: | means any tangible part, system or component to be supplied by the Seller. |
| Products: | means the Goods, Services and/or Software as described in a Quote provided by the Seller. |
| Quote: | means the offer or proposal made by Seller to Buyer for the supply of Products. |
| Seller: | means Parker-Hannifin Corporation, including all divisions and businesses thereof. |
| Services: | means any services to be supplied by the Seller. |
| Software: | means any software related to the Products, whether embedded or separately downloaded. |
| Terms: | means the terms and conditions of this Offer of Sale or any newer version of the same as published by Seller electronically at www.parker.com/saleterms. |

**2. Terms.** All sales of Products by Seller are contingent upon, and will be governed by, these Terms and, these Terms are incorporated into any Quote provided by Seller to any Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic date interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms of purchase. No modification to these Terms will be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

**3. Price; Payment.** The Products set forth in Seller's Quote are offered for sale at the prices indicated in Seller's Quote. Unless otherwise specifically stated in Seller's Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices at any time to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). All sales are contingent upon credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

**4. Shipment; Delivery; Title and Risk of Loss.** All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the shipment carrier at Seller's facility. Unless otherwise agreed, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective indicated shipping date will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

**5. Warranty.** The warranty related to the Products is as follows: (i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the completion of the Services by Seller; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer:

**DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED. BUYER AGREES AND ACKNOWLEDGES THAT UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".**

**6. Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

**7. LIMITATION OF LIABILITY.** IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCT, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. **IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, NON-COMPLETION OF SERVICES, USE, LOSS OF USE OF, OR INABILITY TO USE THE PRODUCTS OR ANY PART THEREOF, LOSS OF DATA, IDENTITY, PRIVACY, OR CONFIDENTIALITY, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.**

**8. Loss to Buyer's Property.** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which are or become Buyer's property, will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

**9. Special Tooling.** Special Tooling includes but is not limited to tooling, jigs, fixtures and associated manufacturing equipment acquired or necessary to manufacture Products. A tooling charge may be imposed for any Special Tooling. Such Special Tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in Special Tooling belonging to Seller that is utilized in the manufacture of the Products, even if such Special Tooling has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property in its sole discretion at any time.

**10. Security Interest.** To secure payment of all sums due, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

**11. User Responsibility.** The Buyer through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. The Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and other technical information provided with the Product. If Seller provides Product options based upon data or specifications provided by the Buyer, the Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event the Buyer is not the end-user, Buyer will ensure such end-user complies with this paragraph.

**12. Use of Products, Indemnity by Buyer.** Buyer shall comply with all instructions, guides and specifications provided by Seller with the Products. **Unauthorized Uses**. If Buyer uses or resells the Products for any uses prohibited in Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products provided by Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, tooling, equipment, plans, drawings, designs or specifications or other information or things furnished by Buyer; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing or tampering with the Products for any reason; or (e) Buyer's failure to comply with these Terms. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

**13. Cancellations and Changes.** Buyer may not cancel or modify any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller, at any time, may change Product features, specifications, designs and availability.

**14. Limitation on Assignment.** Buyer may not assign its rights or obligations without the prior written consent of Seller.

**15. Force Majeure**. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control ("Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

**16. Waiver and Severability.** Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of these Terms by legislation or other rule of law shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

**17. Termination.** Seller may terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

**18. Ownership of Software.** Seller retains ownership of all Software supplied to Buyer hereunder. In no event shall Buyer obtain any greater right in and to the Software than a right in the nature of a license limited to the use thereof and subject to compliance with any other terms provided with the Software.

**19. Indemnity for Infringement of Intellectual Property Rights.** Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights ("Intellectual Property Rights") except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third party claim that one or more of the Products sold hereunder infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by the Seller to the Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products sold hereunder is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products so as to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer; or (ii) directed to any Products provided hereunder for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products provided hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for such claims of infringement of Intellectual Property Rights.

**20. Governing Law.** These Terms and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

**21. Entire Agreement.** These Terms, along with the terms set forth in the main body of any Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. In the event of a conflict between any term set forth in the main body of a Quote and these Terms, the terms set forth in the main body of the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. These Terms may not be modified unless in writing and signed by an authorized representative of Seller.

**22. Compliance with Laws**. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer acknowledges that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Product from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws.