

**isys H Series  
Maintenance / Installation / Service Instruction Sheets**

*Click on bulletin below to view instruction sheet in PDF format.*

<b>Document Number / Revision Number</b>	<b>Description</b>	<b>Issued Date</b>
V467P	<u><a href="#">isys H1 Sandwich Regulators</a></u>	August, 2005
V468P	<u><a href="#">isys H1, H2 &amp; H3 ISO 5599-1, 5599-2 Sandwich Flow Controls</a></u>	August, 2005
V469P / R4	<u><a href="#">isys H1, H2 &amp; H3 ISO 5599-1, 5599-2 Subbase &amp; Manifold Installation</a></u>	December, 2008
V470P / R3	<u><a href="#">isys H1, H2 &amp; H3 ISO 5599-1, 5599-2 Valve Service</a></u>	January, 2006
V471P/ R3	<u><a href="#">isys H2 &amp; H3 Sandwich Regulators</a></u>	November, 2009

Pneumatic Division, North America, Richland, MI 269-629-5000



**⚠ WARNING**

- To avoid unpredictable system behavior that can cause personal injury and property damage:
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

**⚠ WARNING**

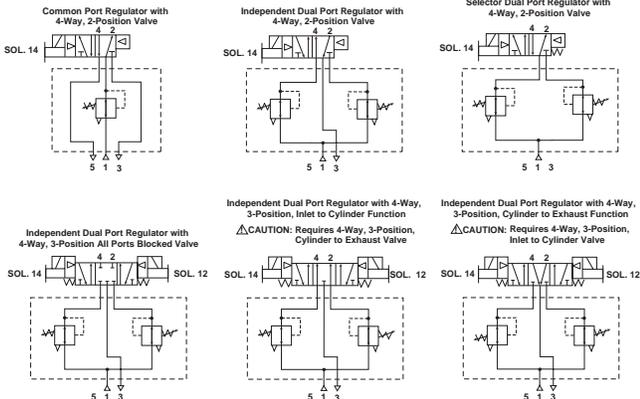
**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and / or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**Introduction**

Follow these instructions when installing, operating, or servicing the product.



**NOTE:** The Regulators shown on the 14 and 12 End of Independent Port and Selector Units may be replaced with a By-Pass Plate to provide unregulated pressure.

**⚠ CAUTION:** The reverse valve porting utilized with Independent Port will reverse the function of 4-Way, 3-Position cylinder to exhaust and 4-Way, 3-Position inlet to cylinder to valves. Utilize opposite function valve for normal operation.

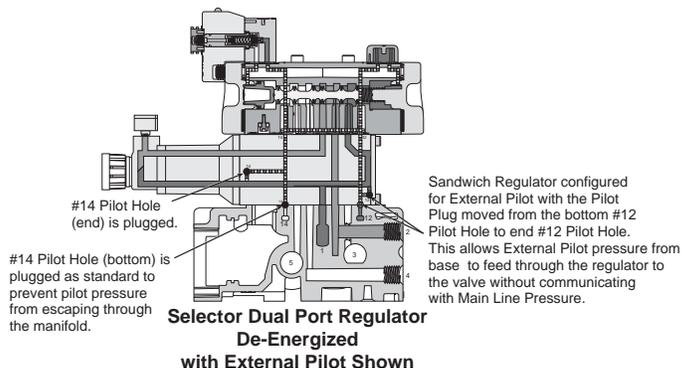
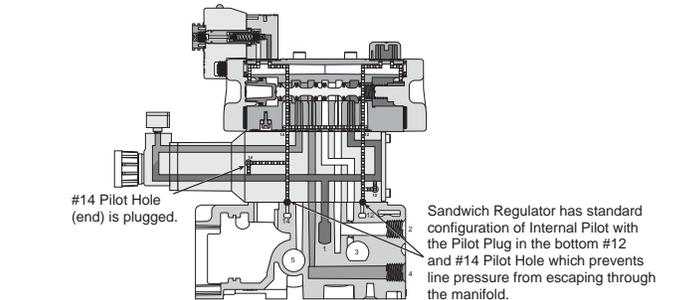
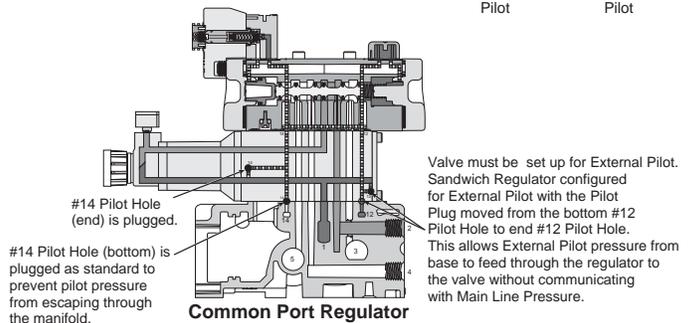
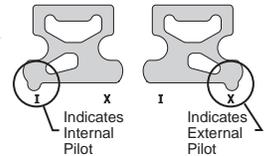
**Application Limits**

These products are intended for use in general purpose compressed air systems only.

**Operating Pressure Range:** Maximum 145 PSIG (1000 kPa)  
**Ambient Temperature Range:** -15°C to 49°C (5°F to 120°F)

**H1 Sandwich Regulator**

**NOTE:** For all regulator options, valve must be set up for external pilot by assembling the gasket under the solenoid operator as shown here.



### Installation

Remove pressure and electrical connections before installation.

1. After removing Valve from Base, install four Mounting Studs (24) from Regulator Kit to the Base, torque finger tight.
2. Place the Gasket (23) over the Studs and on the Base.
3. Install Regulator over Studs. Carefully engage the Electrical Plug (5599-2).
4. Install Valve onto Regulator. Carefully engage the Electrical Plug (5599-2).
5. Tighten Valve Bolts (19) from 2.8 to 3.9 Nm (25 to 35 - in-lbs).
6. Apply main pressure and check for leaks - repeat assembly if leaks are present.

**NOTE:** If both a sandwich flow control and sandwich regulator are to be installed, the flow control should be installed between the regulator and the base. Both sets of studs should be installed to base before installing the flow control.

### Lubrication

Factory pre-lubed. If lubricating in service, use Parker F442 oil or equivalent paraffin based mineral oil with 150 to 200 SSU viscosity @100°F.

**⚠ CAUTION: Do not use oils that are synthetic, reconstituted, have an alcohol content or a detergent additive.**

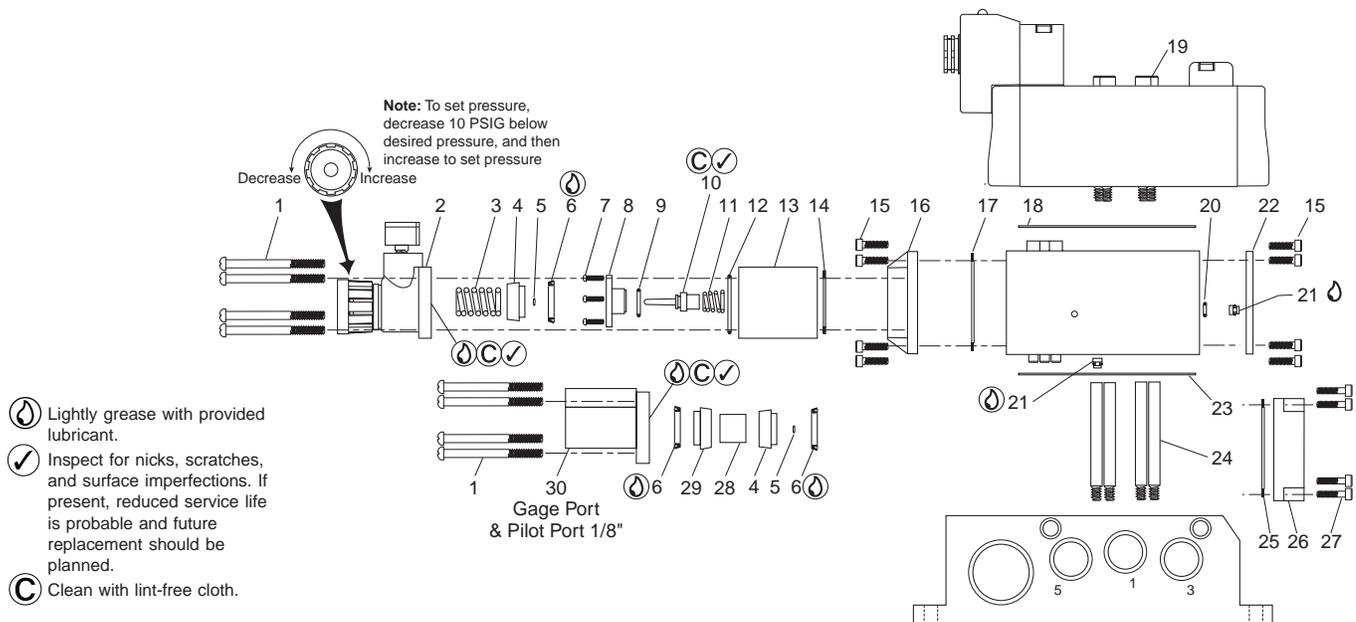
### Sandwich Regulator Kits

Kit Number	Description	Kit Includes Item# (Qty.)
PS4039P	Repair Kit	4, 5, 6, 9, 10,11, 12, 29
PS4050030P	Spring - 30 PSIG	3
PS4050060P	Spring - 60 PSIG	3
PS4050125P	Spring - 125 PSIG	3
PS4009P	Pilot Plug Kit	21 (20)
PS4040P	Mounting Studs	24 (12)
PS4048P	By-Pass Plate	25, 26, 27 (4)

### Component List

The components listed below are for identification purposes only, Some of these components are available in various Sandwich Regulator Kits, some are not available due to special factory assembly. Individual components are not sold separately since all kit components should be installed when serviced.

Item	Description	Torque Nm (In. / Lb.)
1	Screw, Regulator Block	0,9 to 1,4 (8 to 12)
2	Bonnet Assembly	
3	Spring, Control (30, 60 or 125 PSIG)	
4	Piston, Relieving (Includes vent hole)	
5	O-ring, Piston Vent	
6	Lip Seal, Piston	
7	Screw, Seat Plate	0,3 to 0,6 (3 to 5)
8	Seat Plate	
9	O-ring, Seat Plate	
10	Poppet Assembly	
11	Spring, Poppet Return	
12	O-ring, Bonnet / Body Seal	
13	Body, Regulator	
14	Gasket, Regulator Block	
15	Screw, End Plate	1,1 to 1,7 (10 to 15)
16	Adapter, Regulator	
17	Gasket, Regulator Block	
18	Gasket, Valve to Regulator Block	
19	Screw, Valve to Mtg. Stud	2,8 to 3,9 (25 to 35)
20	O-ring	
21	Plug, Pilot	
22	End Plate	
23	Gasket, Regulator Base	
24	Stud, Mounting	Finger Tight
25	Gasket, Bypass Plate	
26	Bypass Plate, Dual Pressure	
27	Screw, Bypass Plate	1,1 to 1,7 (10 to 15)
28	Spacer, Air Pilot	
29	Piston, Non-Relieving (No vent hole)	
30	Bonnet, Air Pilot	



**For all Instruction Sheets, go to [www.parker.com/pneumatic](http://www.parker.com/pneumatic)**

- V450P - isys HA 26mm & HB 18mm ISO 15407-2 Valve Service
- V452P - isys HA & HB ISO 15407-2 Sandwich Flow Controls
- V453P - isys HA & HB ISO 15407-2 Manifold Installation
- V454P - isys HA & HB Sandwich Regulators
- V467P - isys H1 Sandwich Regulators

- V468P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Sandwich Flow Controls
- V469P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Subbase & Manifold Installation
- V470P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Valve Service
- V471P - isys H2 & H3 Sandwich Regulators



**⚠ WARNING**

- To avoid unpredictable system behavior that can cause personal injury and property damage:
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

**⚠ WARNING**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and / or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**Introduction**

Follow these instructions when installing, operating, or servicing the product.

**Installation & Operating Instructions:**

A Flow Control "Sandwich" controls the flow of air from the valve exhaust ports to atmosphere.

The Flow Control "Sandwich" is intended for use with the respective subbase or manifold mounted valves. H1, H2, & H3 valves and flow controls are designed in conformance to ISO 5599/1, 5599/2, Sizes 1, 2, & 3.

H1, H2, & H3 Flow Control "Sandwiches" are only recommended for use with Common Port versions of Sandwich Regulators. The Flow Control is to be assembled between the regulator and the subbase or manifold.

If used with Single Port or Independent Port versions of Sandwich Regulators functionality is limited as follows:

**Flow Control "Sandwich" used in conjunction with Single or Independent Port versions of Sandwich Regulator** - Adjust speed with the adjusting screw labeled "3". It adjusts the speed of exhaust flow from cylinder ports "2" and "4". Independent speed adjustment is not possible. This could result in different exhaust speeds for cylinder ports "2" and "4" since line pressure is supplied to one cylinder port and a regulated pressure is supplied to the other. The other adjusting screw is non-functional.

**Lubrication**

Factory Pre-lubed. If lubricating in service, use Parker F442 oil or equivalent paraffin based mineral oil with 150 to 200 SSU viscosity @100°F.

**⚠ CAUTION: Do not use oils that are synthetic, reconstituted, have an alcohol content or a detergent additive.**

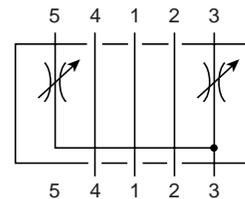
**Application Limits:**

These products are intended for use in general purpose compressed air systems only.

**Operating Pressure Range:** Maximum 145 PSIG, 1000kPa

**Ambient Temperature Range:** -18°C to 60°C (0°F to 140°F)

**ANSI Symbol:**



**Installation:**

1. Remove the valve from the subbase or manifold (if assembled) by removing and retaining the four mounting screws (A).
2. Clean all mating surfaces of valve, subbase or manifold and Flow Control "Sandwich" of dust and dirt.
3. Install male-female tie rods (C) to base. Tighten the tie rods using hex broached on the inside of the female end.

Internal Hex		
H1	H2	H3
M3	M4	M5

4. Slide gasket (D) over the male-female tie rods protruding from top of subbase or manifold, lining up electrical plug cavity.
5. Slide Flow Control "Sandwich" over the male-female tie rods (C) protruding from top of subbase or manifold and press down on flow control to seat electrical plug (if applicable).

6. Check to insure that the gasket (B) on the bottom of the valve body is still properly seated in its gasket track.
7. Place valve on top of Flow Control "Sandwich" lining up all mounting holes and press down on flow control to seat electrical plug (if applicable).
8. Assemble valve, flow control and subbase or manifold together with the valve mounting screws (A). Tighten as follows:

ISO Spec	Size	Sandwich Flow Control Model No.	Torque
5599/1	H1	PS4042P	3.4 to 4.0 Nm
5599/2	H1	PS4035P	(30 to 35 in-lb)
5599/1	H2	PS4142P	5.1 to 5.6 Nm
5599/2	H2	PS4135P	(45 to 50 in-lb)
5599/1	H3	PS4242P	9.0 to 11.3 Nm
5599/2	H3	PS4235P	(80 to 100 in-lb)

9. Apply inlet pressure and check for leaks. If any are present, do not operate the valve, repeat this assembly process until satisfactory.

**Adjustment Procedures:**

Both adjusting screws are located at the 12 End of the assembly. Adjustment screw labeled "5" controls the flow of air from cylinder Port 4 to exhaust Port 3. With a double solenoid valve this occurs when Operator #12 is actuated. With a single solenoid valve this occurs when Operator #14 is not actuated. Adjustment screw labeled "3" controls air from cylinder Port 2 to exhaust Port 3.

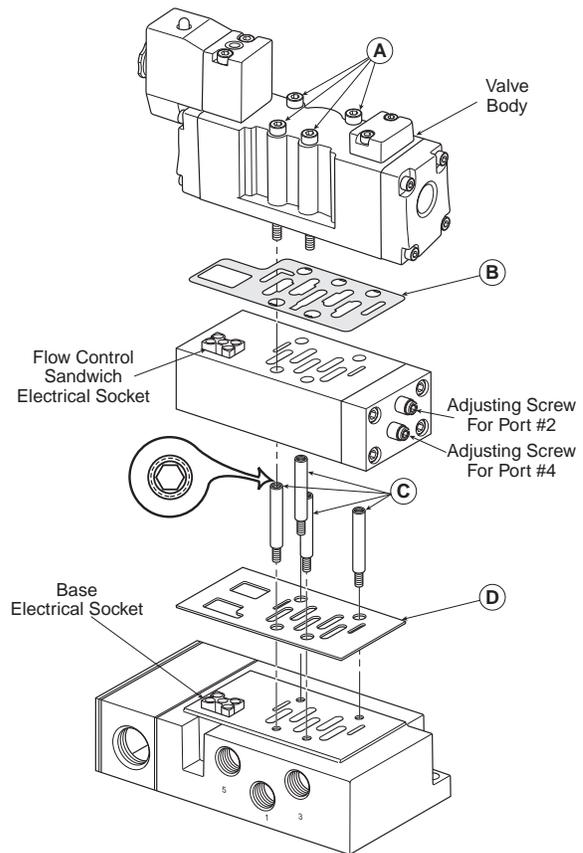
1. Turn both adjustment screws clockwise until fully closed and then counterclockwise slightly.
2. While cycling valve with cylinder adjust clockwise to decrease speed or counterclockwise to increase speed.

**Cv Values**

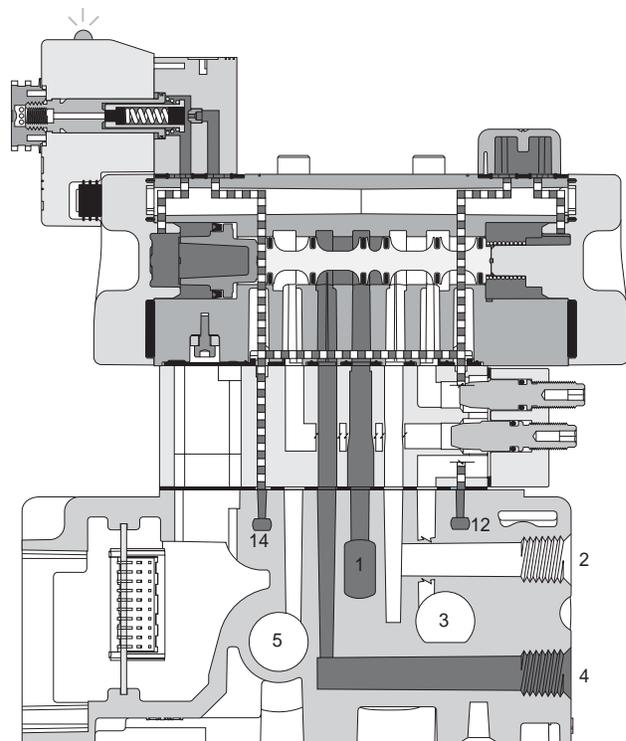
Size	Flow Control Part Number	Cv			
		1-2	1-4	2-3	4-3
H1	PS4042P	1.4	1.2	.09	.08
H2	PS4142P	2.2	2.2	1.5	1.6
H3	PS4242P	4.3	4.4	2.8	3.7

**Tie Rod Kits**

Valve	Qty.	Kit Number
H1	Tie Rods (12)	PS4036P
H2	Tie Rods (12)	PS4136P
H3	Tie Rods (12)	PS4236P



H1 Shown



H1 Shown

**For all Instruction Sheets, go to [www.parker.com/pneumatic](http://www.parker.com/pneumatic)**

V450P - isys HA 26mm & HB 18mm ISO 15407-2 Valve Service  
 V452P - isys HA & HB ISO 15407-2 Sandwich Flow Controls  
 V453P - isys HA & HB ISO 15407-2 Manifold Installation  
 V454P - isys HA & HB Sandwich Regulators  
 V467P - isys H1 Sandwich Regulators

V468P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Sandwich Flow Controls  
 V469P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Subbase & Manifold Installation  
 V470P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Valve Service  
 V471P - isys H2 & H3 Sandwich Regulators



**⚠ WARNING**

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

**⚠ WARNING**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.**

**⚠ WARNING**

Air exhausting from one valve into the exhaust gallery of the manifold assembly may momentarily pressurize other valve circuits open to the same gallery. Design the circuit such that there is no hazard or consequence of damage from this action.

**Safety Guide**

For more complete information on recommended application guidelines, see the Safety Guide section of Pneumatic Division catalogs or you can download the **Pneumatic Division Safety Guide** at: [www.parker.com/safety](http://www.parker.com/safety)

**Introduction**

Follow these instructions when installing, operating, or servicing the product.

**Application Limits**

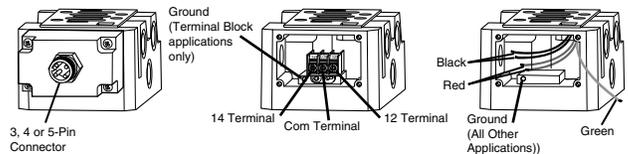
These products are intended for use in general purpose compressed air systems only. Compliance with the rated pressure, temperature, and voltage is necessary - see Installation & Service Instructions packed with valve.

**Wiring Instructions for Individual Base Wiring**

1. Follow all requirements for local and national electrical codes.
2. Remove end cover from base by backing out the two screws.
3. Connect wires as shown in chart.
4. An external ground connection must be attached to the green ground screw of every base in an assembly.
5. Disregard unused wires or terminals.
6. Reassemble cover to base by tightening screws from 0.8 to 1.0 Nm (7 to 9 in-lbs).

**Connections**

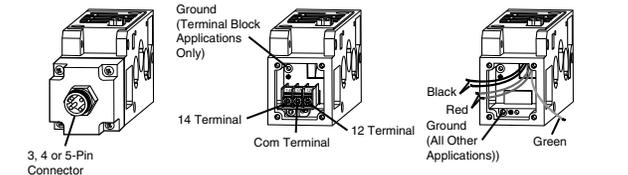
	14 Solenoid	12 Solenoid
Bases with Wires	Black Wires	Red Wires
Bases with Terminal Block (Will accept 18 to 24 Gauge Wires)	14 and Com Terminals	12 and Com Terminals



**Subbase With Auto C, F, G**

**Subbase With Terminal Block**

**Subbase With Wires**

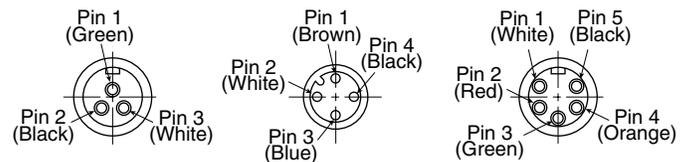


**Manifold With Auto C, F, G**

**Manifold With Terminal Block**

**Manifold With Wires**

**Wiring - Auto C, F, G**



**3-Pin Mini Enclosure "7"**

**4-Pin M12 Enclosure "8"**

**5-Pin Mini Enclosure "9"**

	3-Pin Mini Encl '7'	4-Pin M12 Encl '8'			5-Pin Mini Encl '9'		
Wiring Type	C, F, G	C	F	G	C	F	G
Pin #1	Gnd	14	N/A	12	12	14	12
Pin #2	14	Gnd	12	N/A	12	12	14
Pin #3	Com	Com	Com	Com	Gnd	Gnd	Gnd
Pin #4	N/A	12	14	14	14	12	14
Pin #5	N/A	N/A	N/A	N/A	14	14	12

### Wiring Instructions for Manifold Interconnect Wiring

**⚠ CAUTION: An interruption of 10 milliseconds or greater to the power supplied to the solenoid of a solenoid operated valve may cause the valve to shift. Provision must be made to prevent power interruption of this duration to avoid unintended, potentially hazardous, consequences.**

For connection simplicity, the Interconnect Wiring System has a single common lead with an amperage limit of 3 amps continuous service. The following chart indicates the upper limit of solenoids that can be energized simultaneously.

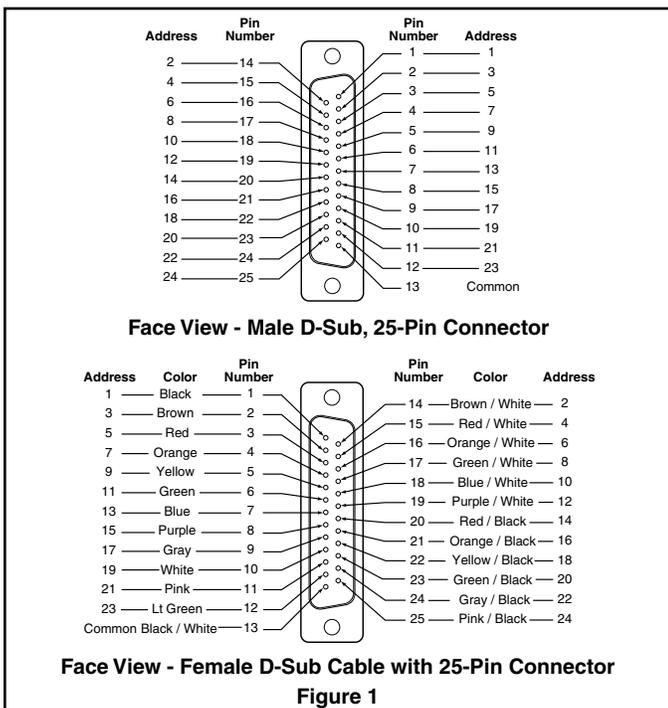
Voltage	25-Pin Code	19-Pin D-Sub	Single Round	12-Pin M23
12VDC	42	13	13	8
24VAC*	42	24	16	8
24VDC	B9	20	16	8
120VAC*	23	24	16	8

\* Not CSA certified for 25-Pin, D-Sub option.

The Interconnect Wiring System has great flexibility to meet user wiring needs. Each manifold base must be ordered with either a single or double address function. The single address circuit board works with single solenoid valves only. The double address circuit board works with both single and double solenoid valves. The end cover of each manifold base is labeled either "Single Address" or "Double Address". Power signals are connected at the 25-Pin D-Sub Collective Wiring Module / Plate (Figure 1), 19-Pin Round Collective Wiring Module / Plate (Figure 2), or 12 or 19-Pin Round Collective Wiring Module / Plate (Figure 3). A single address base uses one signal; a double address base uses two signals, the first to the 14 solenoid, the second to the 12 solenoid. Signal usage is sequential through the bases. Any combination of single or double addresses may be used.

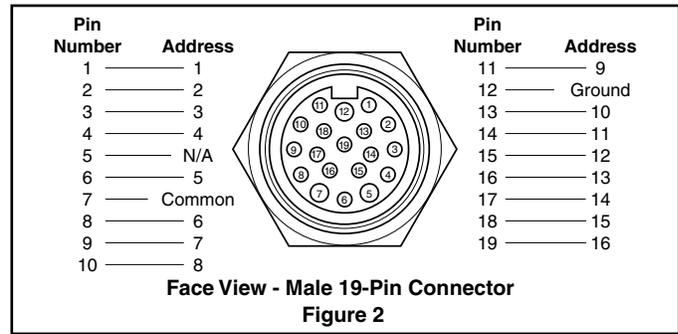
### 25-Pin D-Sub Collective Wiring Module

Common Pin "13" is rated for 3 amps. Common wire rating MUST be greater than total amperage of all solenoids on an Add-A-Fold assembly.



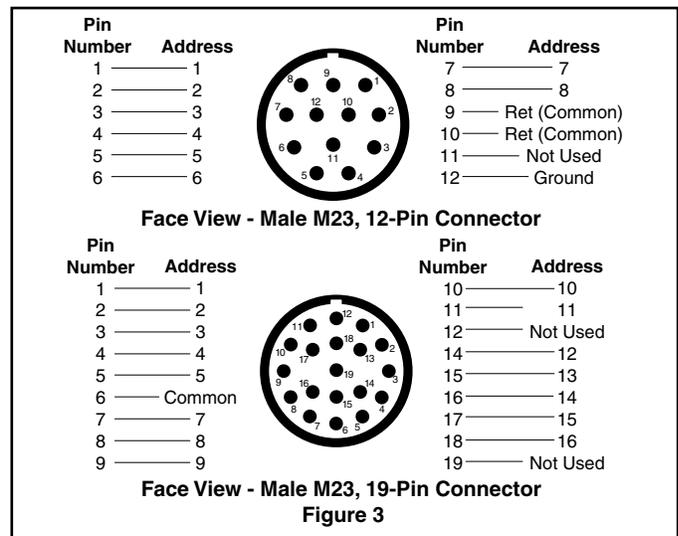
### 19-Pin Round Collective Wiring Module

Common Pin "7" is rated for 8 amps. Common wire rating MUST be greater than total amperage of all solenoids on a Add-A-Fold assembly.



### 12-Pin Round Collective Wiring Module

Common Pins "9" and "10" are rated for 8 amps. Common wire rating MUST be greater than total amperage of all solenoids on a Add-A-Fold assembly.



### Grounding Instructions

The Collective Wiring addressing system is grounded by connecting a **user supplied case wire** to the outside ground screw on the End Plate (H1) or the Interface Plate (H2 / H3). Use 18 gauge, or larger, case wire.

The Collective Wiring 25-Pin D-Sub internal ground is made by connecting the loose ring terminal to the ground screw provided at the internal wire passageway on the H1. The H2 / H3 internal ground connection is the ground screw on the Interface Plate located closer to the wire passageway.

The collective wiring 12-Pin or 19-Pin Round Connector internal ground is made by connecting the lead wire with a ring terminal (ground wire) to the ground screw provided at the internal wire passageway (H1) or at the Interface Plate ground screw located closer to the wire passageway.

An earth ground is recommended for all voltages. Follow standard electrical protocol.

### Air Piping Assembly

#### Port Connections:

Manifold stacks / subbases have three common air passage galleries. For Single pressure piping, connect the inlet supply to Port #1; Ports #3 and #5 are then the exhaust ports. For Dual pressure piping, connect the two inlet supplies to Port #3 and Port #5 (it is recommended that the higher pressure

be supplied to Port #3); Port #1 is then the exhaust port. See **Manifold Isolation**, if the application requires groups of valves with different pressure supplies. Connect the cylinder ports #2 and #4 to the cylinder or other device to be supplied with air from the valve. These ports are at the end (and bottom, if so ordered) of each base.

Note: If Pressure is supplied to one end of a manifold, the pressure port(s) on the opposite end must be plugged.

**External Pilot Connections:**

An external pilot supply is used when the main inlet pressure is below the minimum valve operating pressure or when the pilot pressure is different from the main inlet pressure. Supply pilot

air to either Port #14 or Port #12 and plug the one not being used.

**Remote Pilot Signal Connections:**

**Manifolds:**

For remote pilot signal valves, connect the pilot signal to the Remote Pilot Access Plate mounted directly under the valve body. NOTE: Signals into the remote pilot plate do not connect to the #12 or #14 galleries on the End Plates. See Remote Pilot Access Plate instructions.

**Subbases:**

Connect pilot signal to the #12 and #14 Ports.

**Manifold Assembly with Interconnect Wiring**

The Interconnect Wiring System (Figure 4 & 5) makes the electrical connection user friendly. Each individual manifold base carries its own connector circuit board which self aligns and plugs into the circuit board of the mating manifold base. The power is supplied at the left end of the stack (as you are viewing the cylinder ports) by means of a plug-in harness or serial module.

The stack assembly is built from left to right (viewing the cylinder ports). Start with the Interconnect Wiring Module Kit and add manifold bases as required. If the stack includes transitions from one valve size to another, the left most size is the smallest and then progressing to successively larger sizes. Follow the techniques described below for the easiest assembly. Consult the torque chart for screw tightening specifications.

the harness into the base connector circuit board. The connectors are keyed, there is only one assembly possible. Do not twist cables. Attach the Base to the Interconnect Wiring Plate by finger tightening the three Bolts (Item 4). Continue to mount each successive Gasket (Item 2) and Base (Item 3) to the previous Base. Lay the entire manifold on a flat surface, align for straightness and alternately tighten each screw incrementally to torque specifications in the torque chart. Place the right hand End Plate (Item 5) on last base and tighten screws (see torque chart).

3. **NOTE: Transition Plates or Isolation Plugs must be properly placed as the construction of the stack progresses. See individual sections of this bulletin.**

4. Add valves and accessories to the manifold (if not already attached). The final assembly should be leak and electrically tested before operation.

**For H1 Valves (See Figure 4)**

1. Lay Interconnect Wiring Plate (Item 1 / 7) port side down (when looking at Manifold Cylinder Ports) and expose the wiring harness. Locate Gasket (Item 2) in place on the Interconnect Wiring Plate (Item 1).
2. Bring the first station Manifold Base to the Interconnect Wiring Plate and plug in the two black connectors from

**Manifold / End Plate Assembly Torque Values**

Torque - in.lb. (Nm)	Item 4	40 to 50 (4.5 to 5.6)
-------------------------	--------	--------------------------

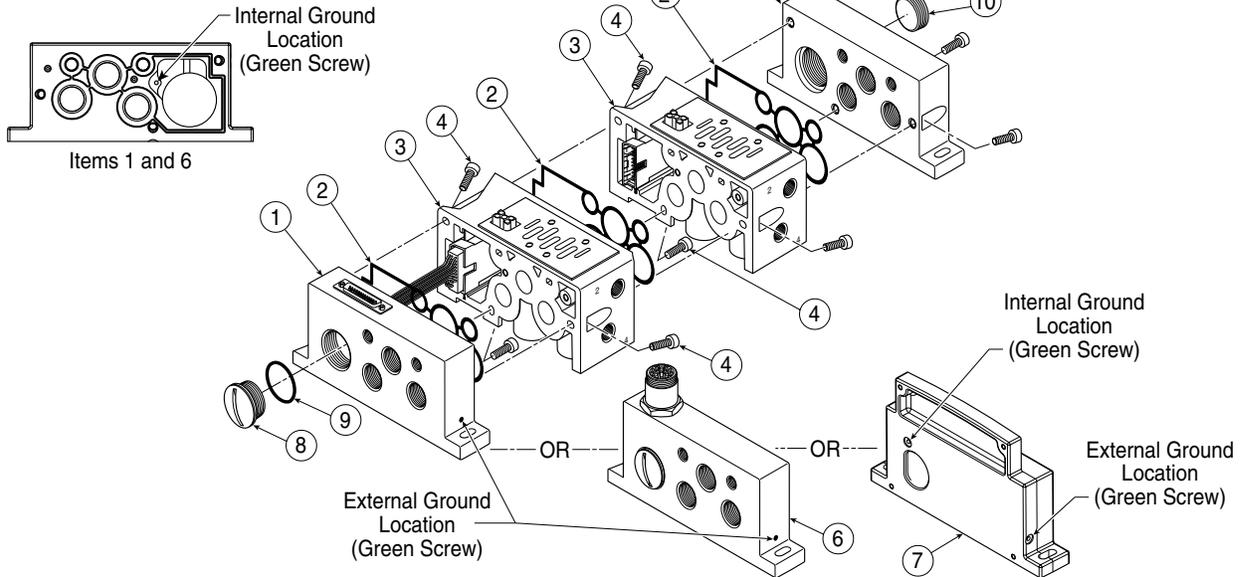


Figure 4 (H1 Valves Shown)

Item #	Description	Item #	Description
1	Interconnect Wiring Plate (25-Pin, D-Sub Connector)	6	Interconnect Wiring Plate (12 or 19-Pin Connector)
2	Molded Gasket	7	Interconnect Wiring Plate (Isysnet)
3	Manifold Base	8	Dome Plug
4	Mounting Screws	9	O-ring
5	Right Hand End Plate	10	Plastic Plug

**For H2 & H3 Valves (See Figure 5)**

1. Attach four Tie Rods (Item 5) to the Interface Plate (Item 7) then mount the Gasket (Item 4), Collective Wiring Module (Item 6), Gasket (Item 4) and Cover Item 3 over the Tie Rods. Attach these components with the four Screws (Item 1) and Washers (Item 2) provided.

**NOTE: The 25-Pin, D-Sub Collective Wiring Module has a ground wire with ring terminal which must be attached to the inner green screw on the Interface Plate before cover is attached.**

2. Lay the Collective Wiring Module port side down and expose the wiring harness. Feed wires into wiring gallery and assemble Collective Wiring Module to Interface Plate. Locate Gasket (Item 8) in place on the Interface Plate (Item 7).
3. Bring the first station Manifold Base (Item 9) to the Interface Plate (Item 7) and plug in the two black connectors from the harness into the base connector circuit board. The connectors are keyed, there is only one assembly possible.

Do not twist cables. Tighten the Base to the Interface Plate with the four Bolt / Washers (Item 10) provided with each Base to torque specifications shown in the torque chart. Continue to mount each Molded Track Seal (Item 12) and Base (Item 9) to the previous Base. Lay the entire manifold on a flat surface, align for straightness and alternately tighten each screw incrementally to torque specifications in the torque chart. Place the right hand End Plate (Item 13) on last base and tighten screws (see torque chart).

3. **NOTE: Transition Plates or Isolation Plugs must be properly placed as the construction of the stack progresses. See individual sections of this bulletin.**

4. Add valves and accessories to the manifold (if not already attached). The final assembly should be leak and electrically tested before operation.

**Manifold / End Plate Assembly Torque Values**

Torque - in.lb. (Nm)	Item 11	195 to 205 (22.0 to 23.2)
-------------------------	---------	------------------------------

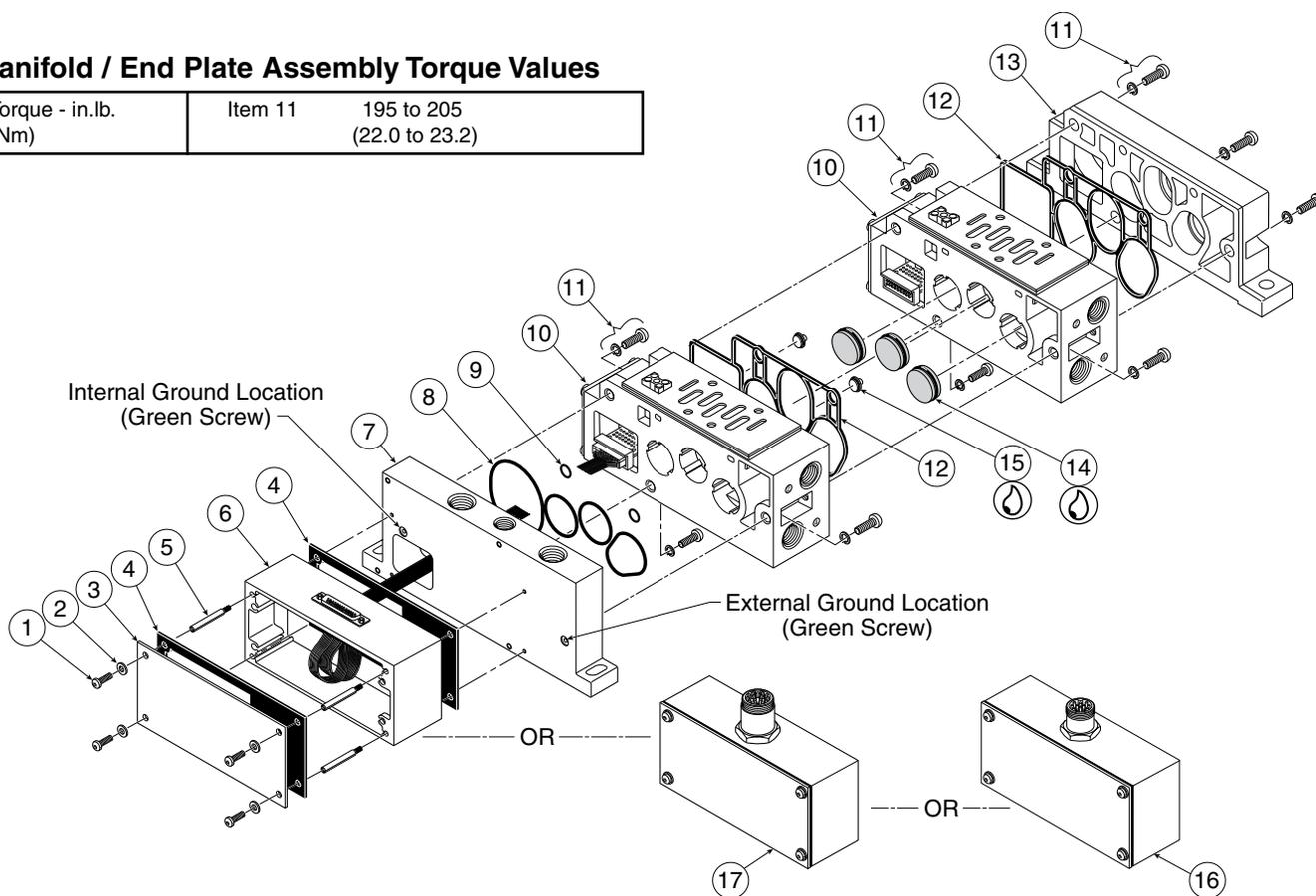


Figure 5 (H2 Manifold Assembly Shown)

Item #	Description
1	Cover Screw
2	Cover Washer
3	Collective Wiring Module Cover
4	Collective Wiring Module Gasket
5	Tie Rod
6	Collective Wiring Module (25-Pin, D-Sub)
7	Interface Plate (Top Ported)
8	O-Rings
9	Pilot Gallery O-Rings

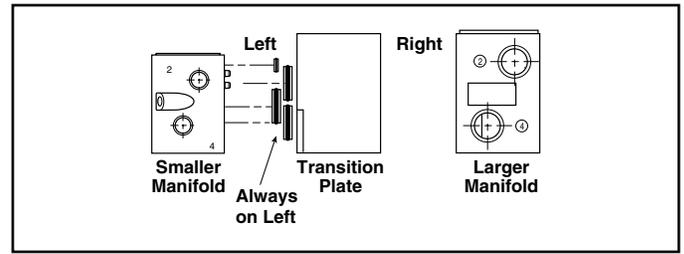
Item #	Description
10	Manifold Base (H2)
11	Mounting Screw & Lockwasher
12	Molded Gasket
13	Right Hand End Plate
14	Isolation Plugs
15	Pilot Isolation Plug
16	Collective Wiring Module (12-Pin, Round)
17	Collective Wiring Module (19-Pin, Round)

**H1 to H2 Manifold Assembly (See Figure 6)**

The smaller manifold must be on the left side of the Transition Plate. The Transition Plate (Item 6) acts as a combination right end plate for the smaller manifold and left end plate for the larger manifold.

1. Lay Left Hand End Plate (when looking at cylinder ports) port side down. Place Gasket in gasket track.
2. Add Station 1 Manifold and tighten all 3 bolts finger tight.
3. Build manifold vertically by adding Gaskets, Isolator Plugs, Transition Plate and remaining Manifolds.
4. Lay entire manifold on a flat surface and tighten screws to torque specification.
5. Place Right Hand End Plate and tighten screws to torque specifications in chart.
6. Add Valves and Accessories. All Manifold Assemblies should be leak tested before operation.

**Isolator Plug Locations with Transition Plates**



**Manifold / End Plate Assembly Torque Values**

Torque - in.lb. (Nm)	Item 4	40 to 50 (4.5 to 5.6)
Torque - in.lb. (Nm)	Item 10	195 to 205 (22.0 to 23.2)

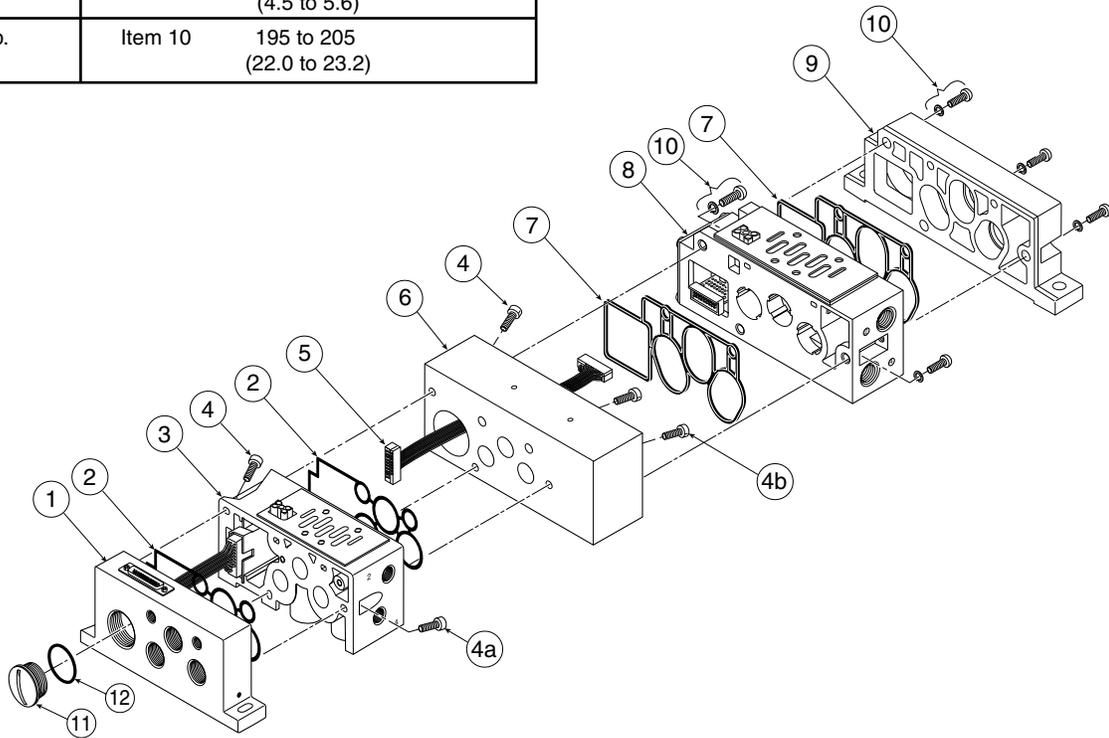


Figure 6 (H1 to H2 Transition Assembly)

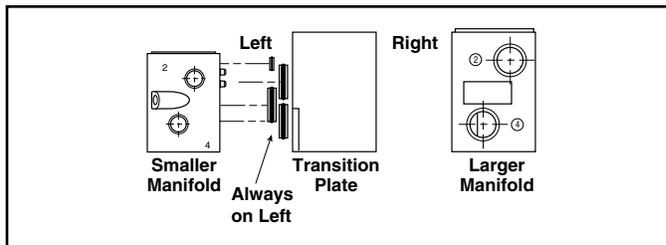
Item #	Description
1	Interconnect Wiring Plate (25-Pin, D-Sub Connector Shown) (H1)
2	Manifold Gasket (H1)
3	Manifold Base (H1)
4a	Mounting Screws (M6 x 16mm)
4b	Mounting Screws (M6 x 25mm)
5	Wire Harness
6	Transition Plate (H1 to H2)
7	Manifold Gasket (H2)
8	Manifold Base (H2)
9	Right End Plate (H2)
10	Mounting Screws & Lock Washers (H2)
11	Dome Plug
12	O-ring

**H1 to H3 Manifold Assembly (See Figure 7)**

The smaller manifold must be on the left side of the Transition Plate. The Transition Plate (Item 6) acts as a combination right end plate for the smaller manifold and left end plate for the larger manifold.

1. Lay Left Hand End Plate (when looking at cylinder ports) port side down. Place Gasket in gasket track.
2. Add Station 1 Manifold and tighten all 3 bolts finger tight.
3. Build manifold vertically by adding Gaskets, Isolator Plugs, Transition Plate and remaining Manifolds.
4. Lay entire manifold on a flat surface and tighten screws to torque specification.
5. Place Right Hand End Plate and tighten screws to torque specifications in chart.
6. Add Valves and Accessories. All Manifold Assemblies should be leak tested before operation.

**Isolator Plug Locations with Transition Plates**



**Manifold / End Plate Assembly Torque Values**

Torque - in.lb. (Nm)	Item 4	40 to 50 (4.5 to 5.6)
Torque - in.lb. (Nm)	Item 10	195 to 205 (22.0 to 23.2)

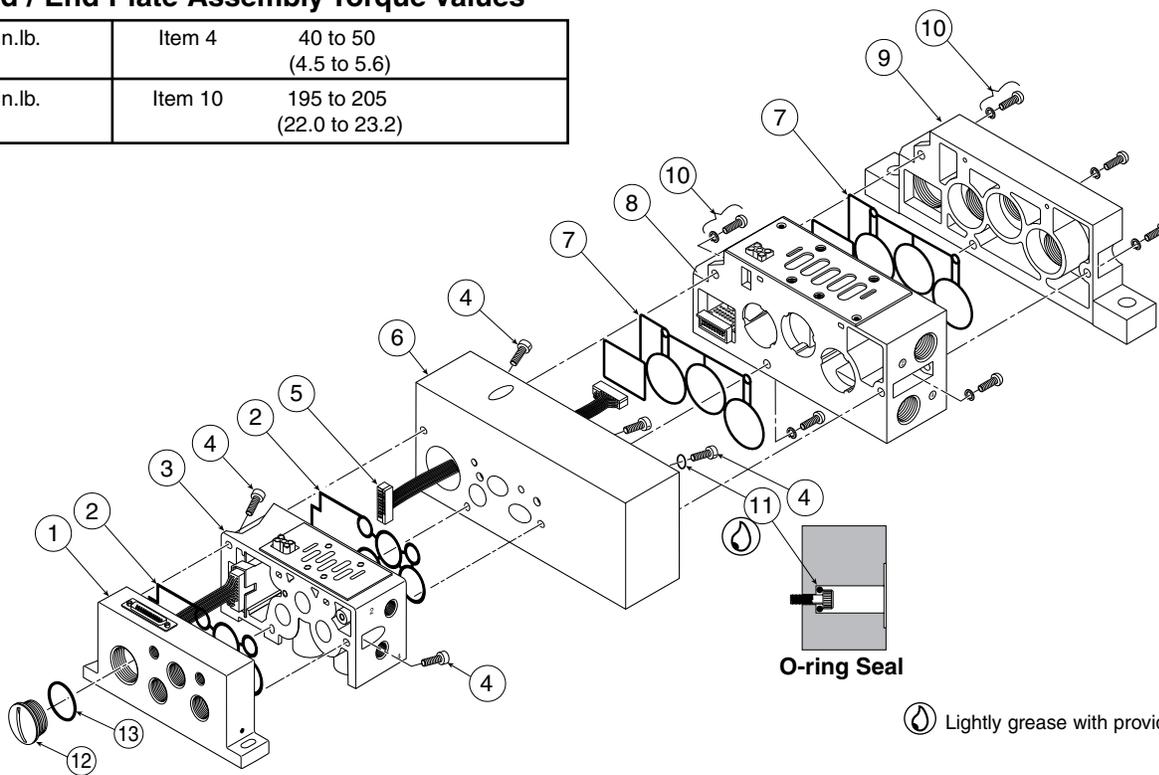


Figure 7 (H1 to H3 Transition Assembly)

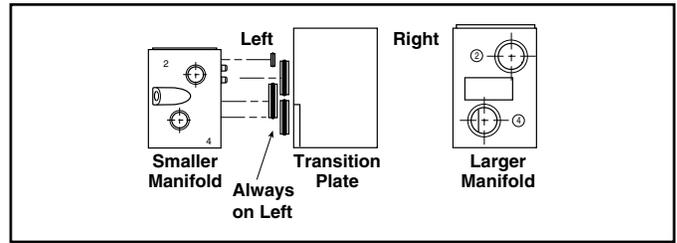
Item #	Description
1	Interconnect Wiring Plate (25-Pin, D-Sub Connector Shown) (H1)
2	Manifold Gasket (H1)
3	Manifold Base (H1)
4	Mounting Screws (H1)
5	Wire Harness
6	Transition Plate (H1 to H3)
7	Manifold Gasket (H3)
8	Manifold Base (H3)
9	Right End Plate (H3)
10	Mounting Screws & Lock Washers (H3)
11	O-ring Seal Washer
12	Dome Plug
13	O-Ring

**H2 to H3 Manifold Assembly (See Figure 8)**

The smaller manifold must be on the left side of the Transition Plate. The Transition Plate (Item 14) acts as a combination right end plate for the smaller manifold and left end plate for the larger manifold.

1. Lay Interface Plate (Item 7) with O-ring channels facing up. Place O-rings in correct channels.
2. Add Station 1 Manifold and tighten all 3 bolts finger tight.
3. Build manifold vertically by adding Gaskets, Isolator Plugs, Transition Plate and remaining Manifolds.
4. Lay entire manifold on a flat surface and tighten screws to torque specification.
5. Place Right Hand End Plate and tighten screws to torque specifications in chart.
6. Assemble Collective Wiring Module (Items 1 through 6) to Interface Plate (Item 7).
7. Add Valves and Accessories. All Manifold Assemblies should be leak tested before operation.

**Isolator Plug Locations with Transition Plates**



**Manifold / End Plate Assembly Torque Values**

Torque - in.lb. (Nm)	Item 12	195 to 205 (22.0 to 23.2)
-------------------------	---------	------------------------------

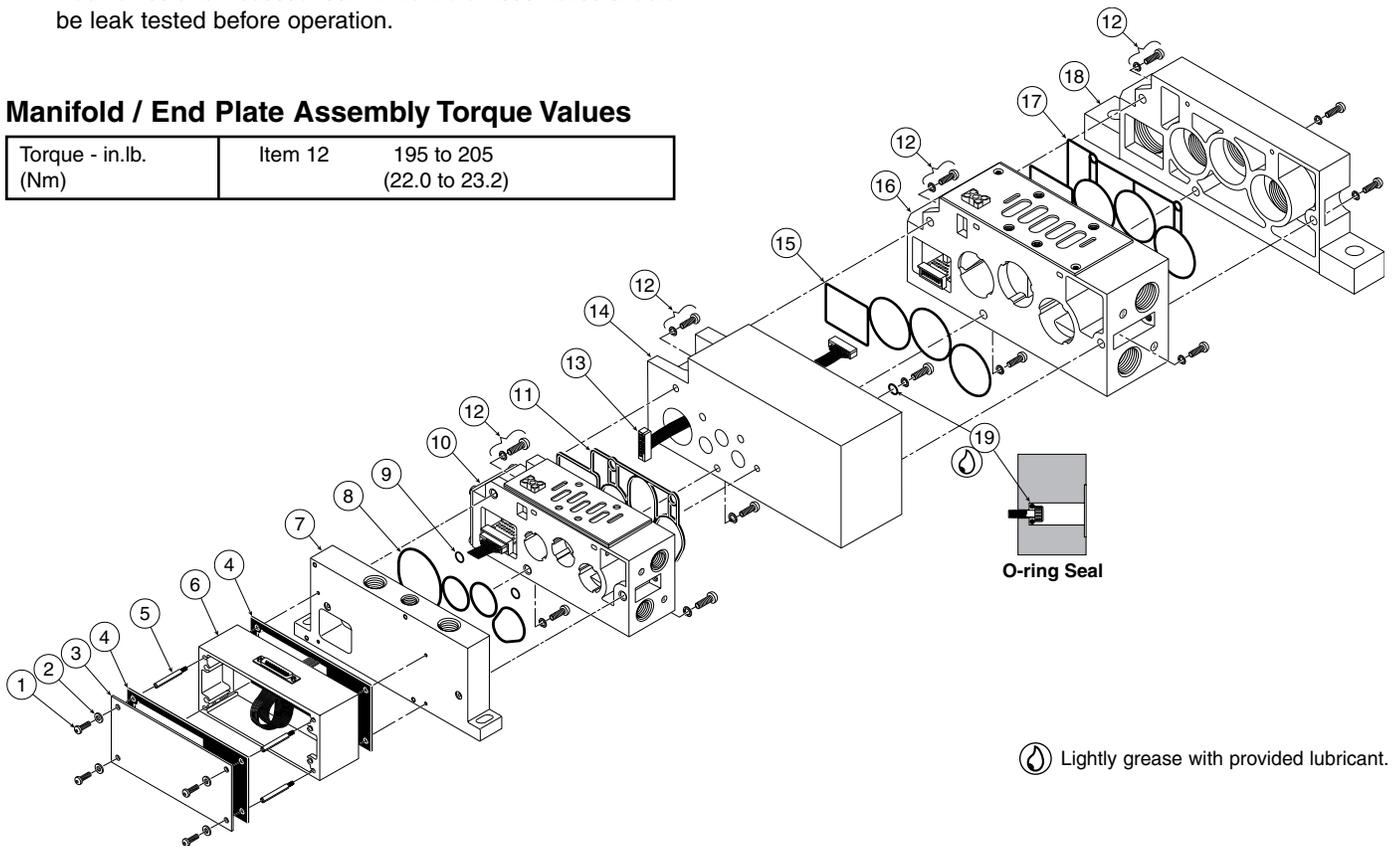


Figure 8 (H2 to H3 Transition Assembly)

Item #	Description	Item #	Description
1	Cover Screw	11	Manifold Base Gasket (H2)
2	Cover Washer	12	Mounting Screws & Lock Washers (H2 & H3)
3	Collective Wiring Module Cover	13	Wire Harness
4	Collective Wiring Module Gasket	14	Transition Plate (H2 to H3)
5	Tie Rod	15	Manifold to Transition Plate Gasket (H3)
6	Collective Wiring Module (25-Pin, D-Sub)	16	Manifold Base (H3)
7	Interface Plate (Top Ported)	17	Manifold to Transition Plate Gasket (H3)
8	O-Rings	18	Right End Plate (H3)
9	Pilot Gallery O-Rings	19	O-ring Seal Washer
10	Manifold Base (H2)		

**Manifold Isolation Assembly**

Inlet & exhaust galleries, and pilot supply / signal galleries may be isolated from those in adjacent manifolds through the use of isolation plugs. Note: air piloted valves, whether single or double, will need to be isolated at 14 and / or 12 galleries to prevent improper air pressure signals reaching adjacent valves. Figure 9 indicates typical assembly locations of the Main Gallery Plugs (Item 1) and the Pilot Gallery Plugs (Item 2).

The following describes how to install plugs:

1. Determine which gallery is to be isolated between two manifolds.
2. Use the large Plugs (Item 1) from the service kits to isolate manifolds from the main gallery(s).
3. Apply a light coating of grease to isolation plug and insert it into counterbore of left manifold base.
4. Apply a light coating of grease to Gasket (Item 3) and assemble in manifold groove.
5. Assemble plugged manifold into manifold bank in its proper position.
6. Apply main pressure and check for leaks. If any are present, do not operate the valve - repeat the reassembly process until satisfactory.

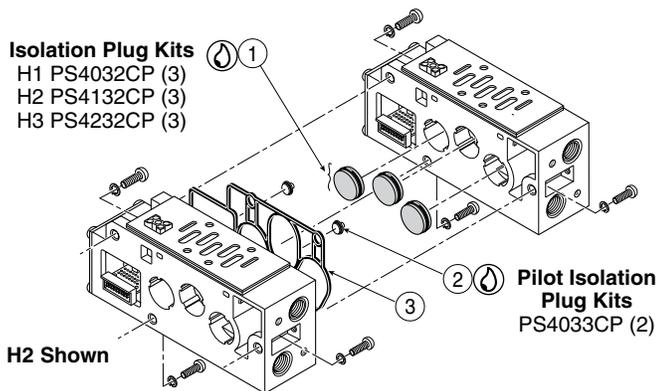
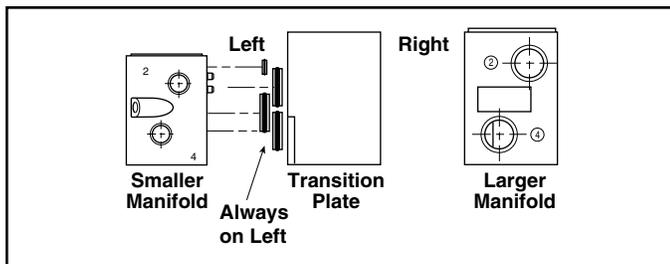


Figure 9

**Isolator Plug Locations with Transition Plates**



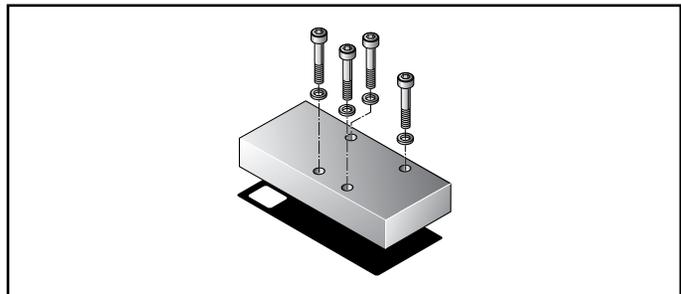
**Station Blanking Plate**

Use top Blanking Plate on a Manifold to reserve a place for a valve that will be added later to the manifold bank or to remove a valve from a manifold without having to remove the manifold block from the manifold bank.

Place Gasket and Blanking Plate on Manifold and assemble using Mounting Screws provided with kit. Tighten screws to torque specifications shown in the torque chart below.

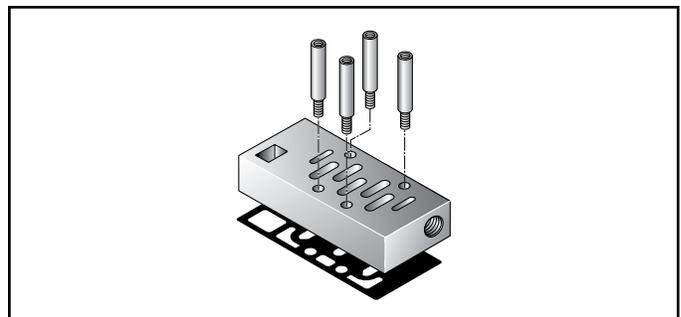
Apply main pressure and check for leaks. If any are present, do not operate valves on the manifold bank - repeat the assembly process until satisfactory.

Valve Series	H1	H2	H3
Torque - in. lb. (Nm)	25 to 35 (2.8 to 3.9)	115 to 130 (12.9 to 14.7)	120 to 140 (13.6 to 15.8)



**Remote Pilot Access Plate**

The Remote Pilot Access Plate provides access to the #12 and #14 valve pilot galleys for an H1, H2 & H3 manifold. It is required for Single or Double Remote Pilot Valves on a manifold. Hand tighten the tie rods into the base.



**Hi-Flow Manifold Repair Kits**

Kit Number	Description	Item Number
PS4012P	H1 Manifold to Manifold Screws (3)	3
PS4013P	H1 Manifold to Manifold Gasket (1)	2
PS4112P	H2 / H3 Manifold to Manifold Screws and Washers (12)	10
PS4113P	H2 Manifold to Manifold Gasket (1)	12
PS4213P	H3 Manifold to Manifold Gasket (1)	12

**For all Instruction Sheets, go to [www.parker.com/pneumatic](http://www.parker.com/pneumatic)**

- V450P - isys HA 26mm & HB 18mm ISO 15407-2 Valve Service
- V452P - isys HA & HB ISO 15407-2 Sandwich Flow Controls
- V453P - isys HA & HB ISO 15407-2 Manifold Installation
- V454P - isys HA & HB Sandwich Regulators
- V467P - isys H1 Sandwich Regulators
- V468P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Sandwich Flow Controls
- V469P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Subbase & Manifold Installation
- V470P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Valve Service
- V471P - isys H2 & H3 Sandwich Regulators



**⚠ WARNING**

- To avoid unpredictable system behavior that can cause personal injury and property damage:
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

**⚠ WARNING**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and / or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**⚠ WARNING**

This valve / base has a standard ISO 5599/2: 1990 mounting interface. Valve bodies labeled Parker Model 45, and bases marked ISO 2E, 3E, or 4E or simply O 2E, O 3E, or O 4 E (opposite the junction box under the valve body) - and without blue wires in the base - can be connected to this valve / base, but may have incompatible wiring. Base wiring may be reversed, resulting in unpredictable machine function that may cause injury, property damage, or death. Completely test the machine for correct function before using, and rewire if necessary. Call 1-800-272-7537 for special ISO Valve Service Bulletin No. VAL-SIF73.

**Introduction**

Follow these instructions when installing, operating, or servicing the product.

**⚠ CAUTION: It is recommended that double solenoid and double remote pilot operated 2-Position valves be mounted so that the axis of the valve spool is in the horizontal plane.**

**Lubrication**

Factory Pre-lubed. If lubricating in service, use Parker F442 oil or equivalent paraffin based mineral oil with 150 to 200 SSU viscosity @100°F.

**⚠ CAUTION: Do not use oils that are synthetic, reconstituted, have an alcohol content or a detergent additive.**

**Application Limits**

These products are intended for use in general purpose compressed air systems only. Compliance with the rated pressure, temperature, and voltage is necessary.

**Operating Pressure Range**

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

**Minimum:** See Chart Below

Operator / Function	Internal Pilot	Min. kPa (PSIG) H1	Min. kPa (PSIG) H2	Min. kPa (PSIG) H3
1	Single Solenoid - 2-Pos	173	173	241
2	Double Solenoid- 2-Pos	(25)	(25)	(35)
3	Single Remote Pilot - 2-Pos	Vacuum	Vacuum	Vacuum
4	Double Remote Pilot - 2-Pos	Vacuum	Vacuum	Vacuum
5, 6, 7	Double Solenoid - 3-Pos	241	345	345
	APB, CE, PC	(35)	(50)	(50)
8, 9, 0	Double Remote Pilot - 3-Pos	Vacuum	Vacuum	Vacuum
	APB, CE, PC			
E	Single Solenoid Pilot - 2-Pos			
	Air Return / Spring Assist	241	310	310
F	Single Remote Pilot - 2-Pos	(35)	(45)	(45)
	Air Return / Spring Assist			
	<b>External Pilot *</b>	*	*	*
All	isys	Vacuum	Vacuum	Vacuum

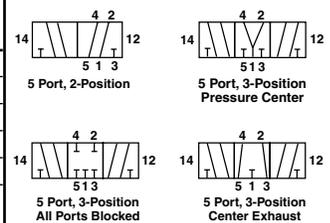
\*External Pilot Pressure / Remote Pilot Signal - 45-145 PSIG (310-1000 kPa).

**Ambient Temperature Range:** -15°C to 49°C (5°F to 120°F)

**Voltage Range:** Rated Voltage +10%, -15%

**Port Identification / Connections / Symbols**

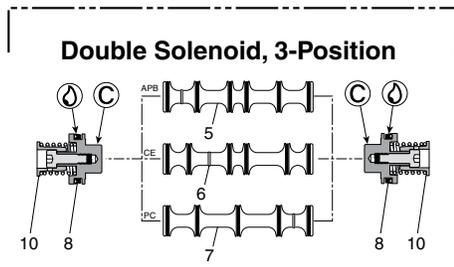
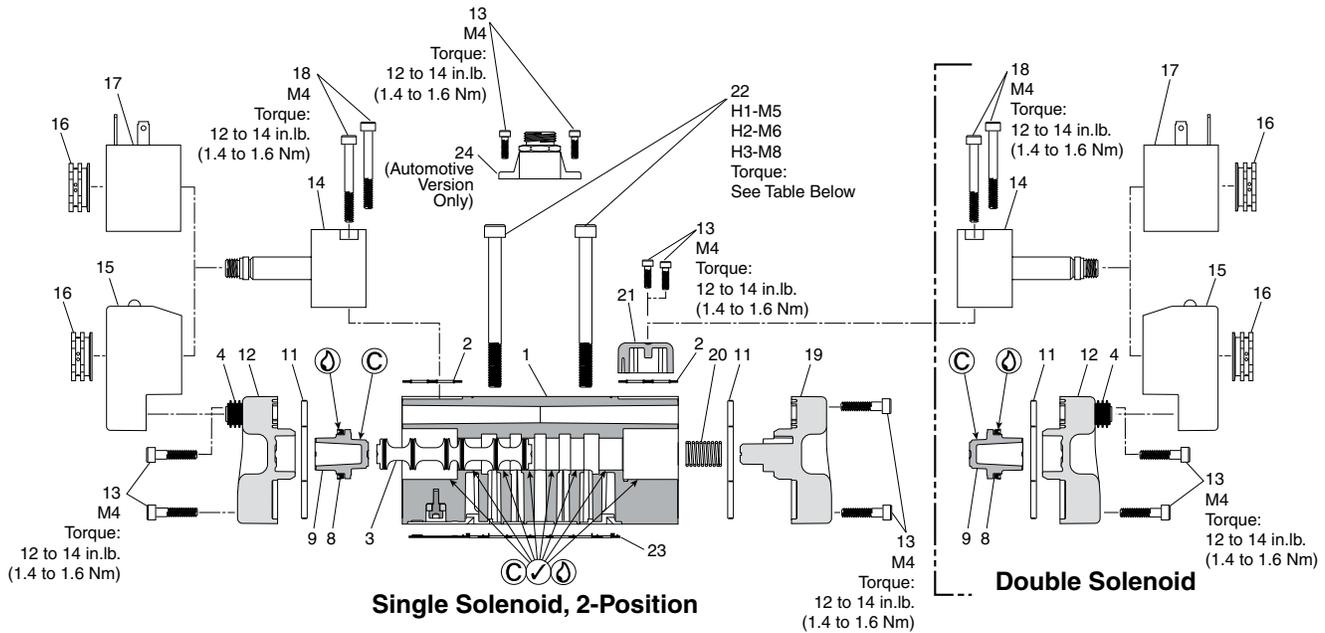
Port No.	Single Pressure	Dual Pressure
1	Inlet	Exhaust
2	Outlet	Outlet
3	Exhaust	Inlet
4	Outlet	Outlet
5	Exhaust	Inlet
12, 14	Pilot ports for External Pilot or Remote Pilot	



Valves may be used for single outlet (3-Way) by plugging an outlet Port.

**NOTE:** The operator identification describes the ports that are connected when the operator is energized: operator 12 connects Port 1 to Port 2; operator 14 connects Port 1 to Port 4. Other ports may also be connected, or blocked – see symbols on the valve.

**NOTE:** For dual pressure valves with internal piloting, it is recommended that the inlet port with the higher pressure be connected to Port #3 and be used for piloting.



- Lightly grease with provided lubricant.
- Inspect for nicks, scratches, and surface imperfections. If present, reduced service life is probable and future replacement should be planned.
- Clean with lint-free cloth.

**Valve to Base Torque Values (Item 22)**

	H1	H2 / H3
<b>Torque - in.lb. (Nm)</b>	25 to 35 (2.8 to 3.9)	50 to 70 (5.6 to 7.9)

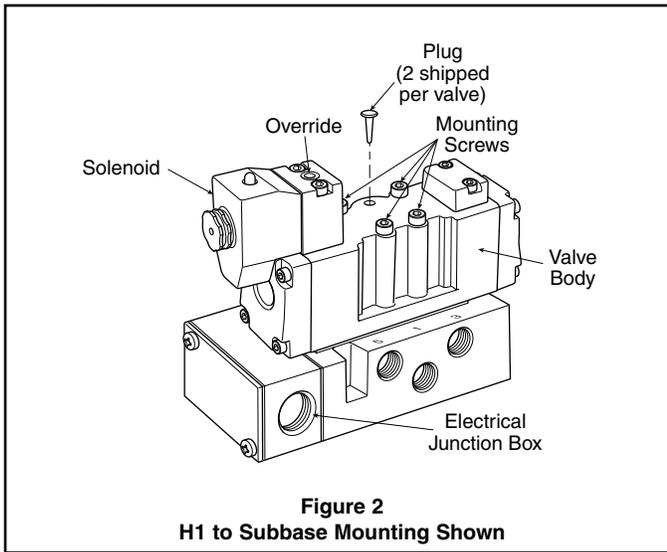
**Figure 1 (H1 Shown)**

Item	Description	Item	Description
1	Body	13	Screws
2	Pilot Select Gasket	14	Solenoid Pilot Operator
3	Spool, 2-Position	15	Coil, Plug-in
4	Gasket, Coil to End Cap	16	Coil Nut
5	Spool, 3-Position, APB	17	Coil, CNOMO
6	Spool, 3-Position, CE	18	Screw, Solenoid Pilot Operator to Body
7	Spool, 3-Position, PC	19	Return End Cap
8	Lip Seal, Piston	20	Spring, Return
9	Piston - 2-Position	21	Pilot Bypass Plate
10	Piston - 3-Position	22	Screw, Body to Base
11	Gasket - Body to End Cap	23	Gasket, Body to Base
12	Solenoid End Cap	24	Auto Plate & Connector (Automotive Version Only)

**Valve to Base Mounting Procedures**

Use the following procedure to mount valve to base:

1. Using a clean, lint free cloth, clean top surface of subbase and bottom surface of valve body.
2. Check to insure that gasket is properly seated in gasket track on valve body.
3. Place valve assembly on top of base. On electrically operated valves, line up plug with socket in base and gently press down on valve to seat plug properly.
4. Line up the mounting screws. Tighten using an allen wrench using progressive steps with a criss-cross pattern. See chart for torque specifications.
5. For new automotive valves with (5) five mounting holes in the valve body, plugs must be used to prevent foreign material from entering. For H1, H2, & H3 applications, the center hole is to be plugged with (1) one plug (See Figure 2). On applications with the valve mounted on the "F" series base, plug both outside holes.
6. Apply main pressure and check for leaks. If any are present, do not operate the valve - repeat the reassembly process until satisfactory.



**Figure 2**  
H1 to Subbase Mounting Shown

**Replacing Coil**

Refer to Figure 1 to aid with disassembly and reassembly.

1. Remove Coil Nut (16), Coil (15 / 17) and Coil to End Cap Gasket (4).
2. Replace Coil (15 / 17) and Coil to End Cap Gasket (4).
3. Reassemble / replace Coil Nut (16).

**Replacing Solenoid Pilot Operator H1, H2 & H3**

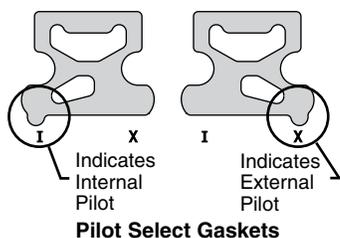
Refer to Figure 1 to aid with disassembly and reassembly.

1. Remove Valve from base by removing Body to Base Screws (22).
2. Remove Coil Nut (16), Coil (15 / 17) and Coil to End Cap Gasket (4).
3. Remove Solenoid Pilot Operator (14) by removing the two Screws (18).
4. Remove Pilot Select Gasket (2).
5. Using a clean, lint free cloth, clean pilot select gasket sealing surface.
6. Replace the Solenoid Pilot Operator (14) and reassemble valve in reverse order of disassembly.
7. Pressurize the valve and check for leaks. If any leak exists, repeat assembly process and retest until valve is leak free.

**Pilot Pressure Supply**

Conversion in the field from an internal pilot supply to an external pilot supply, or vice versa, is possible.

1. For Solenoid Operator, remove Coil Nut and Coil. Remove the two (2) Screws on the Pilot Operator. For Remote Pilot Operator or Return Operator, remove the two (2) Screws securing it to the Body.
2. Slip the Pilot Supply Gasket so that the small tab with the arrow points to either the "I" for internal supply, or "X" for external supply.



3. Reassemble and torque Screws to 1.4 to 1.6 Nm (12 to 14 in-lbs). Finger tighten Coil Nut.
4. Apply main pressure and check for leaks. If any are present, do not operate the valve - repeat the reassembly process until satisfactory.
5. Valve can be supplied with an external pilot supply pressure from either the #12 or #14 port on the base or end plate. The unused pilot port must be plugged.

**Servicing Valve Body**

Refer to Figure 1 to aid with disassembly and reassembly.

1. Remove Valve from base by removing Body to Base Screws (22).
2. Remove Coil Nut(s) (16), Coil(s) (15 / 17) and Coil to End Cap Gasket(s) (4).
3. Remove Solenoid Pilot Operator(s) (14), if applicable, by removing the two Screws (18).
4. Remove Pilot Bypass Plate (21), if applicable, by removing the two Screws (13).
5. Remove Pilot Select Gasket(s) (2).
6. Remove each End Cap (12 / 19) by removing the 4 Screws (13).
7. Remove the Pistons (9 or 10), Spool Return Spring (20), if applicable, and the Spool (3, 5, 6 or 7), being careful not to scratch the valve body bore.
8. Using a clean, lint free cloth, clean pilot select gasket sealing surface.
9. Apply a light coating of grease to each part noted in Figure 1 and the mating sealing surface of each of these parts.
10. Reassemble valve in reverse order of disassembly, replacing the necessary parts. Care must be taken when reassembling the End Caps so that the wires do not become pinched between the End Cap and the Body, if applicable.
11. Pressurize the valve and check for leaks. If any leak exists, repeat assembly process and retest until valve is leak free.

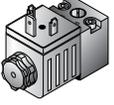
**Wiring - Auto C, F, G**

**5599-1 AUTO**

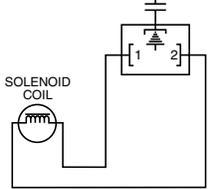
	3-Pin Mini Encl "1"	4-Pin M12 Encl "2"			5-Pin Mini Encl "3"		
Wiring Type	C, F, G	C	F	G	C	F	G
Pin #1	Gnd	14	N/A	12	12	14	12
Pin #2	14	Gnd	12	N/A	12	12	14
Pin #3	Com	Com	Com	Com	Gnd	Gnd	Gnd
Pin #4	N/A	12	14	14	14	12	14
Pin #5	N/A	N/A	N/A	N/A	14	14	12

Wiring - CNOMO

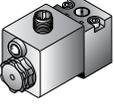
### 5599-1 CNOMO



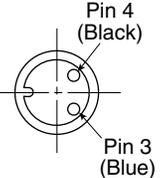
**30mm 3-Pin ISO 4400  
(DIN 43650A)  
Option 'L'**



**30mm DIN  
Option 'L'**



**2-Pin M12  
Euro  
Option '6'**



**M12 Micro  
Option '6'**

**⚠ CAUTION:** An interruption of 10 milliseconds or greater to the power supplied to the solenoid of a solenoid operated valve may cause the valve to shift. Provision must be made to prevent power interruption of this duration to avoid unintended, potentially hazardous, consequences.

**⚠ CAUTION:** Solenoid versions of this valve contain solid state components that can be damaged by transient voltage spikes, over-voltage or high temperature. To protect against premature solenoid failure, please read and adhere to the following:

If this solenoid operated valve is used in a circuit with other inductive loads. The solenoid should be electrically protected with a voltage suppression device (e.g. transient voltage suppressor or varistor) that has a minimum rating of 1.6 times the rated voltage of the solenoid valve and sufficient capacity to dissipate the energy of other inductive loads.

### 5599-2 & 5599-1 Auto Solenoid Kits

Kit Number	Voltage	Item* (Qty)
PS404123P	120/60VAC	15 (1)
PS404142P	24/60VAC	
PS404145P	12VDC	
PS404157P	240/60VAC	
PS4041B9P	24VDC	

\* See Figure 1

### 5599-1 CNOMO Solenoid Information and Kits

Code	Voltage			Coil Kits	
	AC		DC	3-Pin, 30mm	2-Pin, M12
	60Hz	50Hz		Enclosure 'L'	Enclosure '6'
19	—	—	24	—	PS2828619P
42	24	24	—	PS2828A42P	—
45	—	—	12	PS2828A45P	—
49	—	—	24	PS2828A49P	—
53	120	120	—	PS2828A53P	—
57	230	230	—	PS2828A57P	—

### Solenoid Pilot Operator Kits

Kit Number	Description	Item* (Qty)
PS4052CP	Solenoid Pilot Operator / LMOR	14 (1), 2 (2), 18 (2)
PS4053CP	Solenoid Pilot Operator / NLMOR	14 (1), 2 (2), 18 (2)
PS4056CP	Coil Nut / Vented	16 (10)

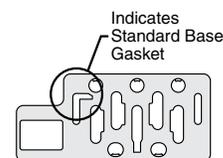
\* See Figure 1

### Accessory Kits

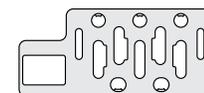
Kit Type	Qty	Kit Number		
		H1	H2	H3
Valve Bolt Kit	12	PS4087CP	PS4187CP	PS4287CP
Base Gasket Kit - Standard	5	PS4005CP	PS4105CP	PS4205CP
Base Gasket Kit - Remote Pilot	5	PS4006CP	PS4106CP	PS4206CP
Base Gasket Kit - Dual Pressure Port #3 Pilot	5	PS40D3CP	PS41D3CP	PS42D3CP
Base Gasket Kit - Dual Pressure Port #5 Pilot	5	PS40D5CP	PS41D5CP	PS42D5CP
Pilot Select Gasket Kit	10	PS4007CP	—	—

### Body Service Kits

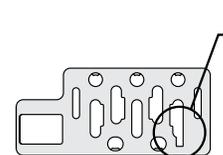
Valve	Kit Number	Description	Kit Includes (Qty.)
H1	PS4001P	2-Position Body Service Kit	All Parts Below Plus Return Spring (1)
H2	PS4101P		
H3	PS4201P		
H1	PS4002P	3-Position APB Body Service Kit	Spool (1) Piston Assembly (2) Pilot Select Gasket (2)
H2	PS4102P		
H3	PS4202P		
H1	PS4003P	3-Position CE Body Service Kit	Coil to End Cap Gasket (2) Coil Nut Vented (2) Coil Nut Tapped (2)
H2	PS4103P		
H3	PS4203P		
H1	PS4004P	3-Position PC Body Service Kit	Grease Tube (1)
H2	PS4104P		
H3	PS4204P		



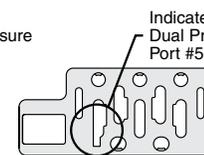
**Standard Base Gasket and Single Remote Pilot Gasket**



**Double Remote Pilot Base Gasket**  
(Pilot Select Gasket must be converted to External Pilot on Both 14 & 12 Ends)



**Dual Pressure Port #3 Pilot Base Gasket**



**Dual Pressure Port #5 Pilot Base Gasket**

#### H1 Base Gaskets

**Single Remote Pilot:** Use Standard Base Gasket, 14 End Pilot Select Gasket to be assembled in the external pilot position, 12 End Pilot Select Gasket to be assembled as internal pilot.

## For all Instruction Sheets, go to [www.parker.com/pneumatic](http://www.parker.com/pneumatic)

V450P - isys HA 26mm & HB 18mm ISO 15407-2 Valve Service  
 V452P - isys HA & HB ISO 15407-2 Sandwich Flow Controls  
 V453P - isys HA & HB ISO 15407-2 Manifold Installation  
 V454P - isys HA & HB Sandwich Regulators  
 V467P - isys H1 Sandwich Regulators

V468P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Sandwich Flow Controls  
 V469P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Subbase & Manifold Installation  
 V470P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Valve Service  
 V471P - isys H2 & H3 Sandwich Regulators

**⚠ WARNING**

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

**⚠ WARNING**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

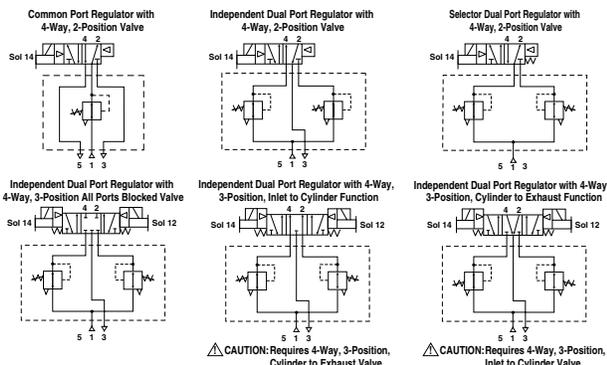
This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.**

**Introduction**

Follow these instructions when installing, operating, or servicing the product.



**NOTE:** The Regulators shown on the 14 and 12 End of Independent Port and Selector Units may be replaced with a By-Pass Plate to provide unregulated pressure.

**⚠ CAUTION:** The reverse valve porting utilized with Independent Port will reverse the function of 4-Way, 3-Position cylinder to exhaust and 4-Way, 3-Position inlet to cylinder to valves. Utilize opposite function valve for normal operation.

**Application Limits**

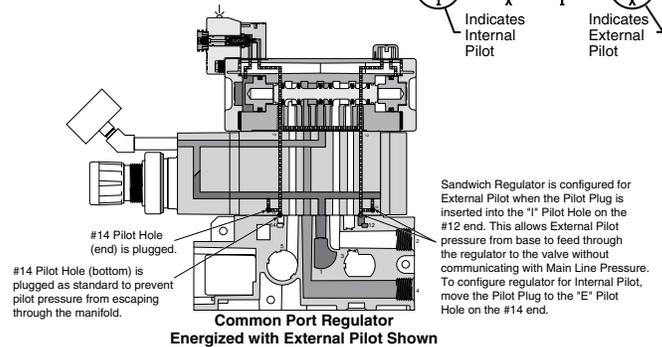
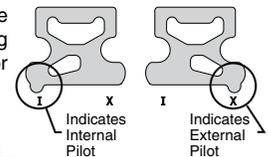
These products are intended for use in general purpose compressed air systems only.

**Operating Pressure Range:** Maximum 145 PSIG (1000 kPa)

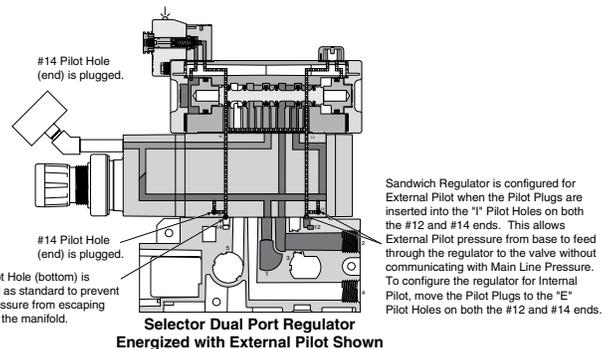
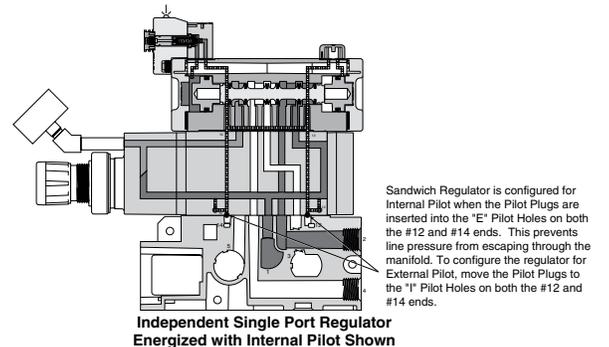
**Ambient Temperature Range:** -15°C to 49°C (5°F to 120°F)

**H2 Sandwich Regulator Shown**

**NOTE:** For all regulator options, valve must be set up for external pilot by assembling the gasket under the solenoid operator as shown here.



Sandwich Regulator is configured for External Pilot when the Pilot Plug is inserted into the "I" Pilot Hole on the #12 end. This allows External Pilot pressure from base to feed through the regulator to the valve without communicating with Main Line Pressure. To configure regulator for Internal Pilot, move the Pilot Plug to the "E" Pilot Hole on the #14 end.



Sandwich Regulator is configured for External Pilot when the Pilot Plugs are inserted into the "I" Pilot Holes on both the #12 and #14 ends. This allows External Pilot pressure from base to feed through the regulator to the valve without communicating with Main Line Pressure. To configure the regulator for Internal Pilot, move the Pilot Plugs to the "E" Pilot Holes on both the #12 and #14 ends.

**Safety Guide**

For more complete information on recommended application guidelines, see the Safety Guide section of Pneumatic Division catalogs or you can download the **Pneumatic Division Safety Guide** at: [www.parker.com/safety](http://www.parker.com/safety)

**Installation**

Remove pressure and electrical connections before installation.

1. After removing Valve from Base, install four (H2, H3) Mounting Studs (26) from Regulator Kit to the Base, torque finger tight.
2. **H2 Common & Independent Port Versions** – Place Interface Block Track Seal (29) into Interface Block Assembly (22).  
**H3 All Versions & H2B Selector Regulator Version-** Place the Gasket (29) over the Studs and on the Base.
3. Install Regulator over Studs. Carefully engage the Electrical Plug (H2 5599-2, H3 5599-2).
4. Install Valve onto Regulator. Carefully engage the Electrical Plug (H2 5599-2, H3 5599-2).
5. Tighten Valve Bolts (20) as follows:

Valve Type	No. of Bolts	Wrench Size	Torque Nm (In.-Lb.)
H2	3 / 4	M5	13 to 15 (115 to 130)
H3	3 / 4	M6	14 to 16 (120 to 140)

6. Apply main pressure and check for leaks – repeat assembly if leaks are present.

**NOTE:** If both a sandwich flow control and sandwich regulator are to be installed, the flow control should be installed between the regulator and the base. Both sets of studs should be installed to base before installing the flow control.

**Lubrication**

Factory pre-lubed. If lubricating in service, use Parker F442 oil or equivalent paraffin based mineral oil with 150 to 200 SSU viscosity @ 100°F.

**⚠ CAUTION:** Do not use oils that are synthetic, reconstituted, have an alcohol content or a detergent additive.

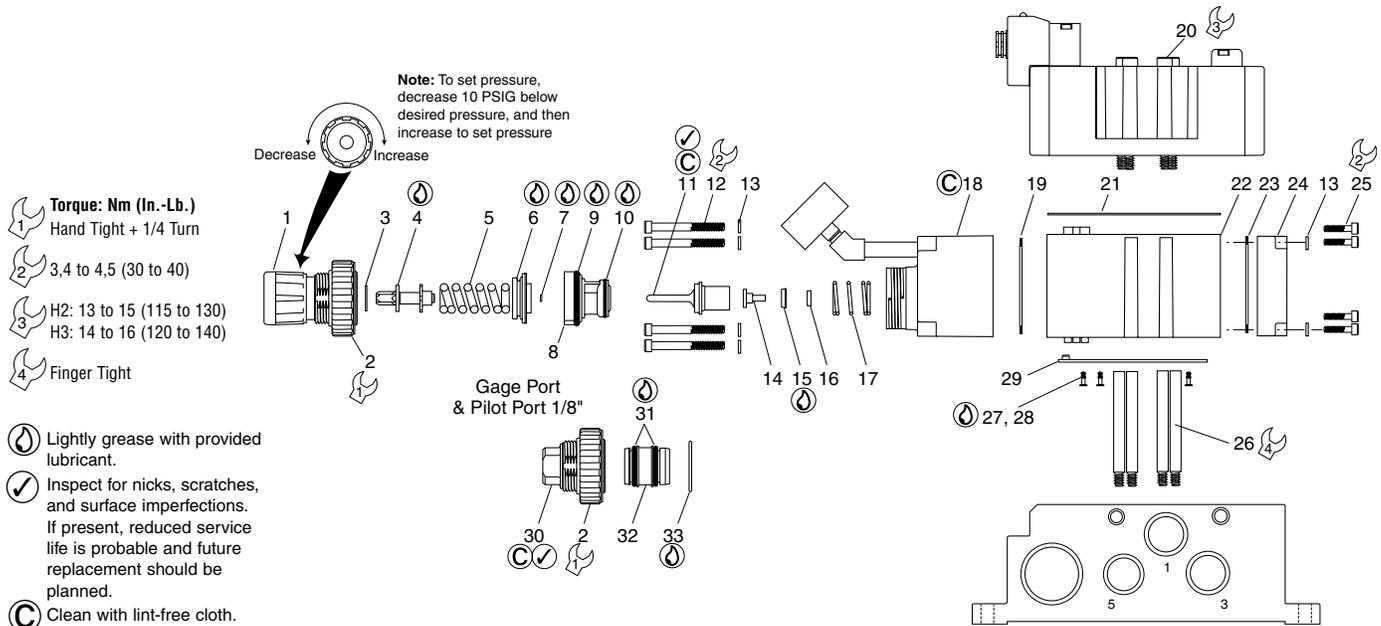
**Component List**

The components listed below are for identification purposes only. Some of these components are available in various Sandwich Regulator Kits, some are not available due to special factory assembly. Individual components are not sold separately since all kit components should be installed when serviced.

Item	Description	Item	Description
1	Bonnet Assembly	18	Housing, Regulator
2	Collar	19	Seal, Regulator Track
3	Thrust Washer	20	Screw, Valve Mounting - H2
4	Control Screw Assembly	21	Screw, Valve Mounting - H3
5	Spring, Control (30, 60 or 125 PSIG)	22	Gasket, Valve to Regulator Base
6	Diaphragm Assembly, Relieving (Includes vent hole)	23	Block Assembly, Interface
7	O-ring, Piston Vent	24	Seal, Bypass Cap Track
8	Seat Insert Assembly	25	Bypass Cap, Dual Pressure
9	O-ring, Upper Seat Insert	26	Screw, Bypass Cap
10	O-ring, Lower Seat Insert	27	Stud, Mounting
11	Poppet Assembly	28	Plug, Pilot (H2 Regulator)
12	Screw, Regulator Housing	29	Plug, Pilot (H3 Regulator, H2 Valves, H3 Valves)
13	M5 Lockwasher	30	Seal, Interface Block Track
14	Retainer, Seal	31	Bonnet, Air Pilot
15	Vee Packing	32	O-ring, Piston
16	Retainer, Backflow	33	Piston
17	Spring, Poppet Return		O-ring, Air Pilot Cap

**Sandwich Regulator Kits**

Kit Number	Description	Kit Includes Item# (Qty.)
PS4009P	Repair Kit (H2, HB)	6, 7, 8, 9, 10, 11, 17, 19 (2), 31, 33
PS4150030BP	Spring - 30 PSIG (H2, H3)	5
PS4150060BP	Spring - 60 PSIG (H2, H3)	5
PS4150125BP	Spring - 125 PSIG (H2, H3)	5
PS4109P	Pilot Plug Kit (H2)	27 (20)
PS4140P	Mounting Studs (H2)	26 (12)
PS4240P	Mounting Studs (H3)	26 (12)
PS4148BP	By-Pass Cap (H2, H3)	13 (4), 23, 24, 25 (4)
PS4154P	Regulator to Base Gasket Kit (H2 Common & Independent Port)	29 (5)
PS415401P	Regulator to Base Gasket (H2 Selector)	29 (5)
PS4254P	Regulator to Base Gasket Kit (H3)	29 (5)



**For all Instruction Sheets, go to [www.parker.com/pneumatics](http://www.parker.com/pneumatics)**

- V450P - isys HA 26mm & HB 18mm ISO 15407-2 Valve Service
- V452P - isys HA & HB ISO 15407-2 Sandwich Flow Controls
- V453P - isys HA & HB ISO 15407-2 Manifold Installation
- V454P - isys HA & HB Sandwich Regulators
- V467P - isys H1 Sandwich Regulators

- V468P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Sandwich Flow Controls
- V469P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Subbase & Manifold Installation
- V470P - isys H1, H2 & H3, ISO 5599-1, 5599-2 Valve Service
- V471P - isys H2 & H3 Sandwich Regulators