Title: S310/S410 Stacking Solenoid Vavles

ISO Date: April 10, 2006

Don't Take Chances
Compressed air is an extremely powerful medium. Always take maximum precautions when handling any component of a compressed air system. **Never** attempt to construct, replace, operate or service any component of a compressed air system unless you have been specifically and properly trained to do so. **Always** disconnect the supply air, and exhaust the air system before attempting to remove or service a component of that system. Failure to heed these warnings could result in SERIOUS, EVEN FATAL, PERSONAL INJURY.

Design And Specifications
The design and specifications and other product information contained in this catalog is for general reference purposes based upon customary and usual manufacturing standards and product applications. However, it is difficult to predict or to anticipate the functioning or suitability of the product for any particular application or use. Therefore, nothing herein shall be deemed a representation or warranty of the product design or specifications and Buyer shall have the responsibility for investigating and testing the product in any particular application or use and all risks attendant in such use.

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HUMPHREY S310/410 SERIES STACKING SOLENOID VALVES

TECHNICAL SECTION

Refer to page 4 for additional general product information.

GENERAL INFORMATION

DESCRIPTION

S310

A 3-way, single solenoid, 2-position/spring return, Normally Open or Normally Closed, general purpose air valve, with one 1/8-inch external body outlet port, marked OUT.

SMP310

Like S310, but has Multi-Pressure capability. Valve has three 1/8-inch external body ports, marked IN, EXH, and OUT. SMP310 is used to introduce an alternate pressure to a given assembly of valves operating at a different pressure. It is also used to supply air and/or exhaust capability to a stacking assembly of valves.

VS310

Same as 310 but specifically for vacuum service. See Media/ Pressure on page 4 for additional information.

S410

A 4-way Normally Open/Normally Closed, single solenoid, 2-position/spring return, general purpose air valve, with two 1/8-inch external body outlet ports marked 1 and 2.

SMP410

Like S410, but has Multi-Pressure capability. Valve has four 1/8-inch external body ports marked IN, EXH, 1 and 2. Model SMP410 is used to introduce an alternate pressure into a given assembly of valves operating at a different pressure. It is also used to supply additional air and/or exhaust capability to a stacking assembly of valves.

S410-70

Like S410, but offers the advantage of dual built-in flow controls.

SMP410-70

Like SMP410, but offers the advantage of dual built-in flow controls.

NOTE: Valves with #10-32 Delivery ports are also available. Consult factory.

PORT IDENTIFICATION

IN	Pressure Supply Port.
OUT	Delivery port for model S310.
1	Normally Open Delivery port for model S410/-70.
2	Normally Closed Delivery port for model S410/-70.
EXH	Exhaust port, vent to atmosphere.

INSTALLATION

CAUTION: Compressed air is powerful and may be dangerous. Before attempting to remove a component from an air line or system, **always** disconnect the supply air and thoroughly exhaust the line or system. **Never** attempt to construct, operate, or service anything using compressed air unless you have been properly trained to do so. Failure to heed this warning could result in SERIOUS, EVEN FATAL, PERSONAL INJURY.

Valves can be mounted in any position in most environments, in keeping with the specifications. All models feature a Class B insulation system and molded coil for ambient temperatures from 32° to 125° F (0° to 50° C).

The stacking assembly is mounted using the 0.22 slotted mounting lugs in the End Plates and #10 screws. Four mounting lugs provided for mounting the assembly in two different planes.

When using hardened steel bolts to mount the stacking assembly, it is recommended that a flat washer be used between the screw head and the mounting lug.

For simplicity, when mixing valves with different functions on the same stacking assembly, consider locating valves of one common function on one end of the assembly. Use a Port Isolator to separate the last valve of a common function from other valves in the stack, then mix/match valves of other functions at the opposite end of the assembly.

USE AS A 3-WAY

S310

Model S310 is a 2-position, 3-way valve and thus is ready for 3-way use. Use either Normally Open, Normally Closed, or as a Selector or Diverter.

SMP310

Model SMP310 is like S310 but has Multi-Pressure capability for using an alternative supply pressure via the valve IN port. It also provides an individual EXH (exhaust) port.

Normally Closed: Connect supply pressure to IN port of End Plate Assembly or valve.

Normally Open: Connect supply pressure to EXH port of End Plate Assembly or valve (IN becomes exhaust).

Selector: Connect pressure #1 to IN port of End Plate Assembly or valve. Connect pressure #2 to EXH port of End Plate Assembly or valve. OUT is common.

Diverter: Connect pressure to OUT port of valve. Diverter ports are IN and EXH ports in End Plate Assembly or valve.

S410/SMP410

These 2-position 4-way valves can be used as a 3-way by plugging one of the two Delivery ports. Such use of a 4-way valve as a 3-way can simplify porting/pressurizing the stack of valves when combinations of 3-way NC, 3-way NO, and 4-way valves are used.

The Humphrey 1/8-27 NPTF Port Plug #130-31 can be used to accomplish the following:

Normally Closed 3-way: Plug Delivery port 1.

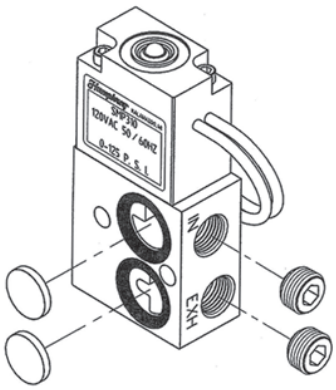
Normally Open 3-way: Plug Delivery port 2.

USE AS A 2-WAY

All of these valves can also be used as 2-way valves by isolating and/or plugging various ports.

S310

This 2-position, 3-way valve can be used either as a Normally Closed or Normally Open 2-way valve.



The Humphrey Port Isolator Kit #40-900A and the 1/8-27 NPTF Port Plug #130-31 can be used to accomplish the following:

Normally Closed 2-way: Isolate non-threaded port located furthest from the valve coil with one Port Isolator; connect supply pressure to IN in the End Plate Assembly.

Normally Open 2-way: Isolate non-threaded port located nearest the valve coil with one Port Isolator; connect supply pressure to EXH in the End Plate Assembly.

S410

This 2-position, 4-way valve can be used either as a Normally Closed or Normally Open 2-way valve.

Normally Closed 2-way: Isolate valve exhaust port (non-threaded port adjacent to Delivery port 2) with Port Isolator. Plug valve Delivery port 1.

Normally Open 2-way: Isolate valve exhaust port (non-threaded port adjacent to Delivery port 2) with Port Isolator. Plug valve Delivery port 2.

MULTI-PRESSURE

Valves with prefix letters SMP can be used to create multiple pressures on the same valve assembly.

SMP310

This 3-way valve can be used to introduce a separate pressure into a stack of valves. If the valve is not located adjacent to an End Plate Assembly, isolate the valve's non-threaded side ports with four Port Isolators. Connect the separate supply pressure to the valve IN port for Normally Closed use, or the valve EXH port for Normally Open use. Note that valve does not have common supply and exhaust with other valves in the same assembly, but is isolated.

SMP410

This 4-way valve can be used to introduce a separate pressure to a stack of valves. If the valve is not located adjacent to an End Plate Assembly, isolate the valve's non-threaded side ports with four Port Isolators. Connect the separate supply to valve IN port.

MULTI-PRESSURE, ALTERNATE METHOD

Locate valve(s) for separate pressure on one end of assembly, plugging the two side ports (those interfacing with the alternate pressure source) of the last valve to separate it from those operating at another pressure.

Connect separate pressure to End Plate Assembly. In this configuration, part of the assembly carries one pressure, the other part of the assembly carries another pressure.

S310/SMP310 SOLENOID VALVES

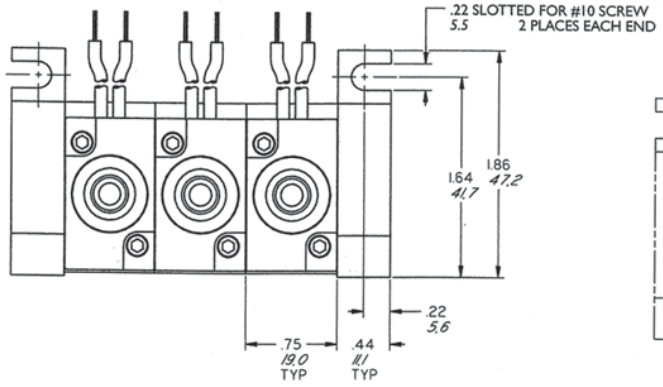
*U.L. recognized

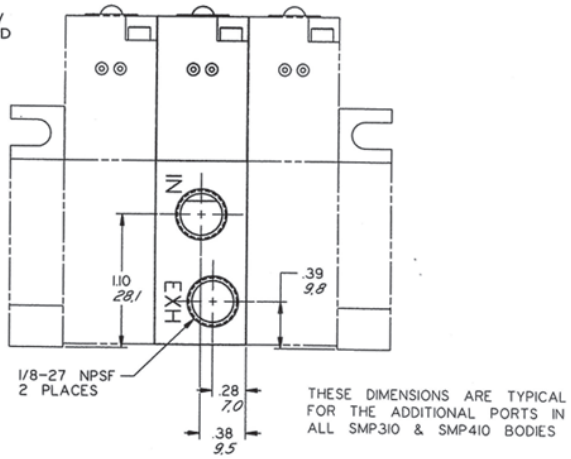
S310

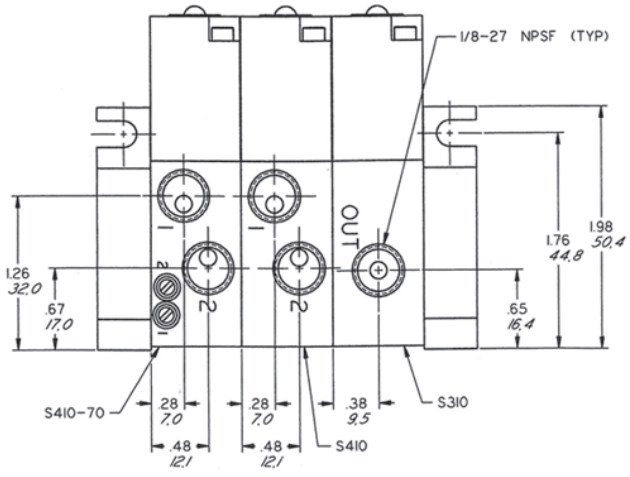
- 3-way
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Non-locking manual override
- 24-inch lead wires
- One 1/8-27 NPSF Delivery port (OUT)
- One 8-90A Mounting Kit, consisting of two threaded spacers and two o-rings, supplied per valve.
- Specify model VS310 for vacuum from 0" to 28" Hg.

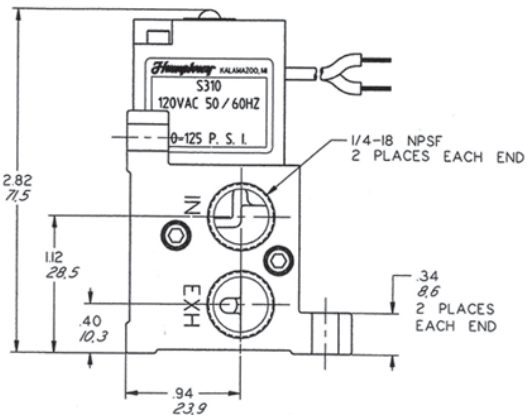
SMP310

- 3-way, Multi-Pressure capability (external body ports)
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Non-locking manual override
- 24-inch lead wires
- Three 1/8-27 NPSF ports (IN, OUT, EXH)
- One 8-90A Mounting Kit, consisting of two threaded spacers and two o-rings, supplied per valve
- Specify model VSMP310 for vacuum from 0" to 28" Hg.



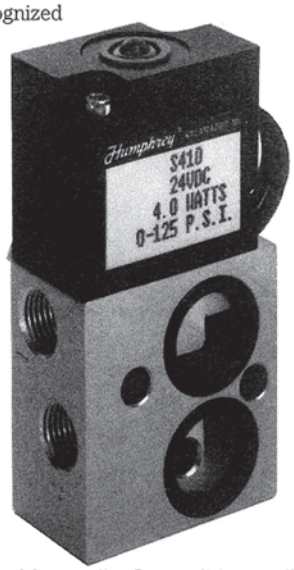






S410/SMP410 SOLENOID VALVES

*U.L. recognized

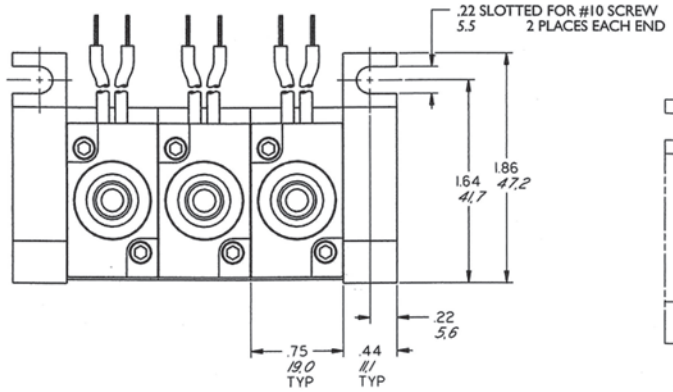


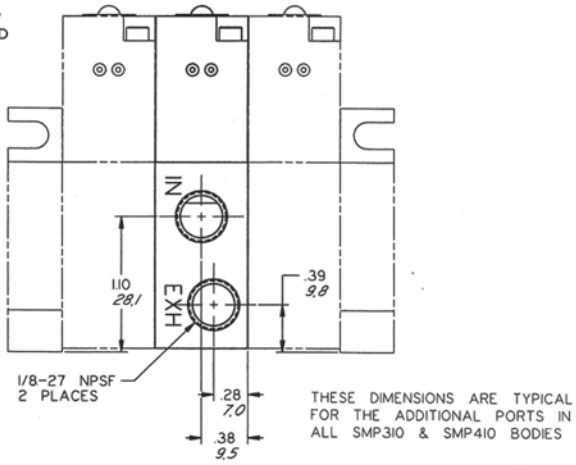
S410

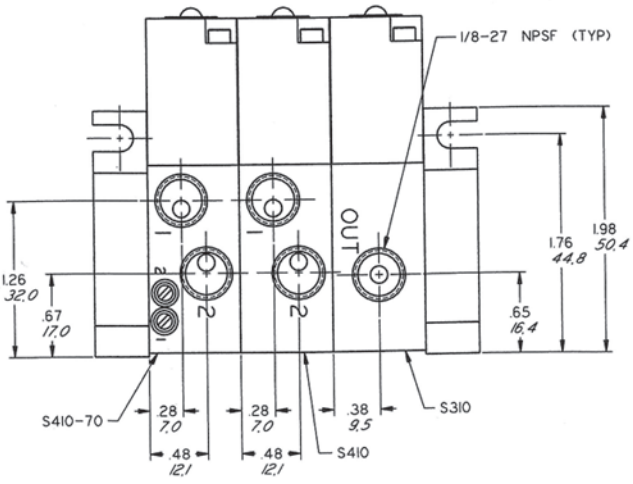
- 4-way, Normally Open/Normally Closed
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Non-locking manual override
- 24-inch lead wires
- Two 1/8-27 NPSF Delivery ports 1 and 2
- One 8-90A Mounting Kit, consisting of two threaded spacers and two o-rings, supplied per valve

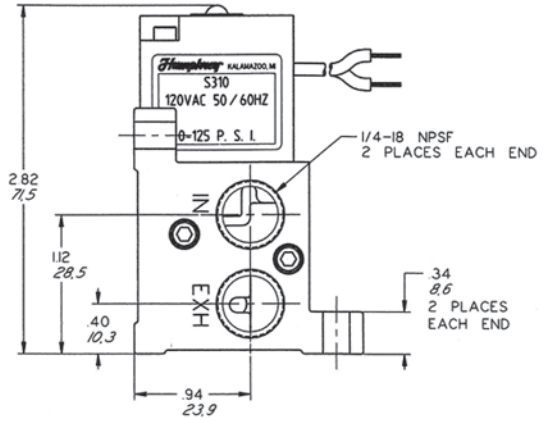
SMP410

- 4-way, Normally Open/Normally Closed
- Multi-Pressure capability (external body ports)
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Non-locking manual override
- 24-inch lead wires
- Four 1/8-27 NPSF ports (IN, Delivery ports 1 and 2, EXH)
- One 8-90A Mounting Kit, consisting of two threaded spacers and two o-rings, supplied per valve





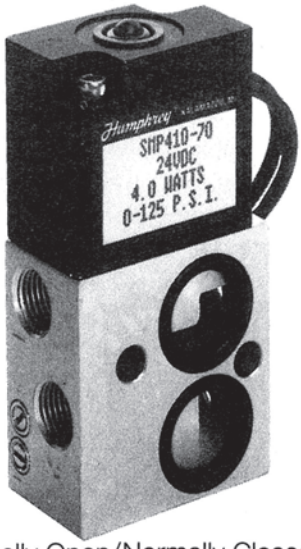




S410-70/SMP410-70 SOLENOID VALVES

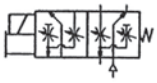
S410-70

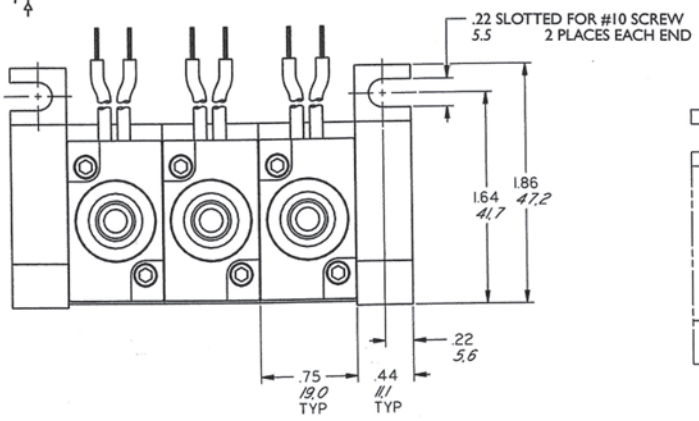
- 4-way, Normally Open/Normally Closed
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Individual flow controls for each Delivery port exhaust
- Non-locking manual override
- 24-inch lead wires
- Two 1/8-27 NPSF Delivery ports 1 and 2
- One 8-90A Mounting Kit, consisting of two threaded spacers and two o-rings, supplied per valve

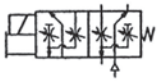


SMP410-70

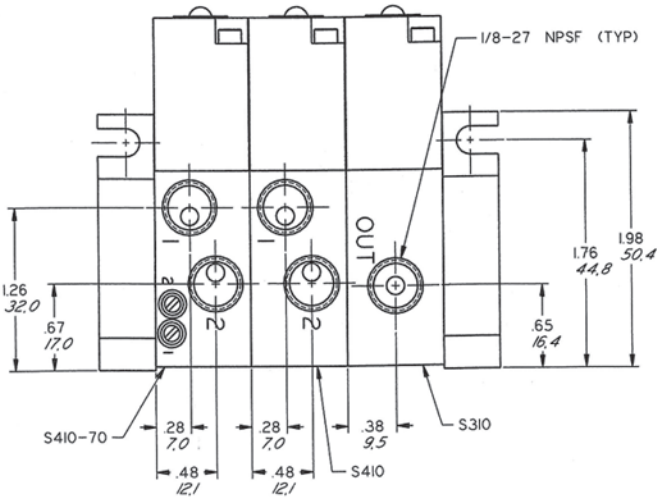
- 4-way, Normally Open/Normally Closed
- Multi-Pressure capability (external body ports)
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Individual flow controls for each Delivery port exhaust
- Non-locking manual override
- 24-inch lead wires
- Four 1/8-27 NPSF ports (IN, Delivery ports 1 and 2, EXH)
- One 8-90A Mounting Kit, consisting of two threaded spacers and two o-rings, supplied per valve

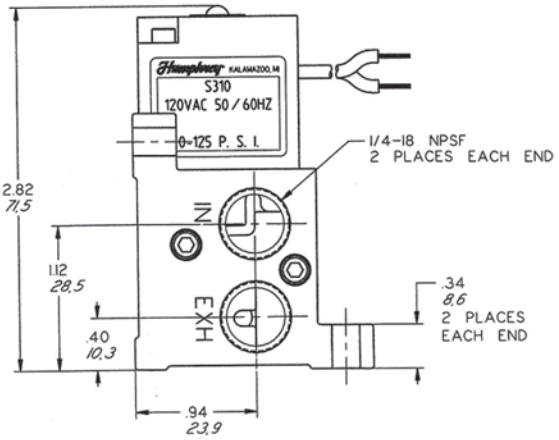






THESE DIMENSIONS ARE TYPICAL FOR THE ADDITIONAL PORTS IN ALL SMP310 & SMP410 BODIES

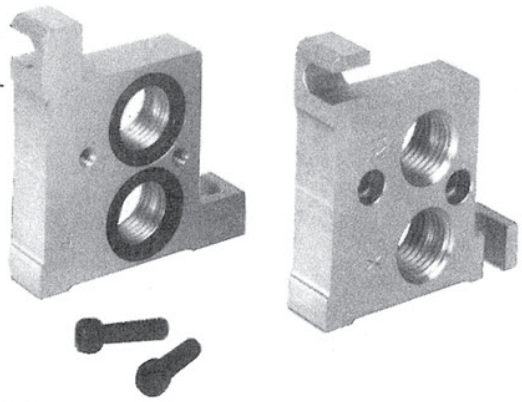




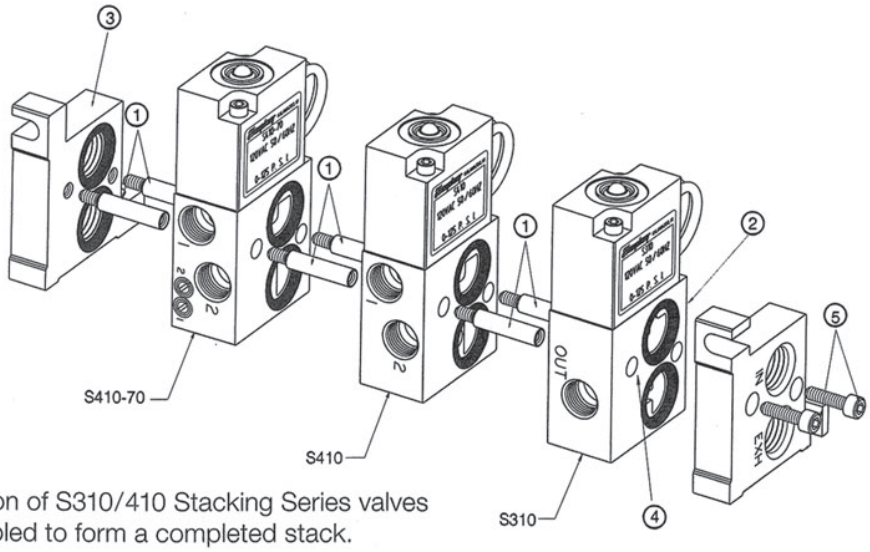
HUMPHREY VALVE END PLATE ASSEMBLIES

END PLATE ASSEMBLY FOR PREFIX "S" VALVES PART NUMBER 7-900A

The End Plate Assembly, which consists of two end plates and fastening accessories, is mounted on each end of a completed assembly of valves. It also provides a method of mounting an assembled stack of valves.



STACKING ASSEMBLY INSTRUCTIONS

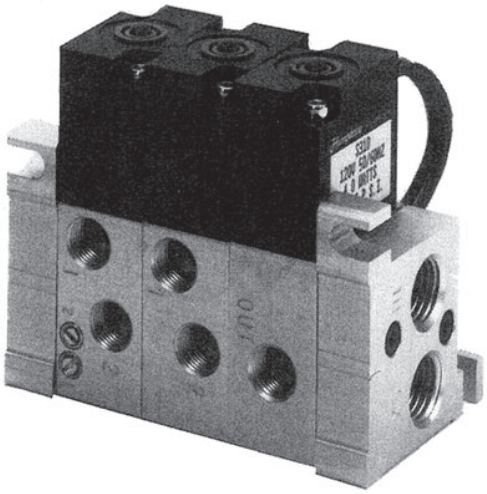


Any combination of S310/410 Stacking Series valves can be assembled to form a completed stack.

If stack consists of a large number of valves or if several valves are to be actuated simultaneously, SMP-type valves can be used to feed additional supply air to the stack, and to provide additional exhaust capacity.

S310/410 Series valves can be ordered completely factory-assembled, ready for installation in your equipment. Consult factory for details.

TO ASSEMBLE A STACK OF VALVES



1. Hand tighten each set of threaded spacers (two supplied per valve) into units of equal length.

2. Ensure that o-ring seals (supplied) are placed in valve ports having o-ring grooves.

3. Place o-ring seals (two supplied) into End Plate possessing o-ring grooves, and thread spacers into this End Plate.

4. Assemble valves onto spacers using valve through-holes.

5. Secure entire assembly with 1/2-inch screws (supplied with End Plate) and tighten to 8 lb.•in. with 7/64-inch hex drive wrench (not supplied).

ORDER INFORMATION

S310/410 Series Stackable Valves
1/8-inch ports, 3-way, 4-way

VALVES

Model	Option description								Voltage
	DIN-type connector	DC surge suppression	Flow controls	Locking manual override	No manual override	72" lead wires	Metal oxide varistor	Rotated coil (180°)	
Option code	39	50	70	81	87	LL	MOV	RC	
S310, SMP310 3-way, stackable	SP	SP	NA	SP	SP	SP	SP	SP	12 VDC, 24 VDC 24 VAC 50/60 100 VAC 50/60 120 VAC 50/60 200 VAC 50/60 240 VAC 50/60
VS310, VSMP310 vacuum 3-way, stackable									
S410, SMP410 4-way, stackable			SP						

NOTE: Standard valves are furnished with 24" flying lead wires and a non-locking manual override.

To specify metric ports, add an "E" prefix (i.e., ES310 or EVS310).

ACCESSORIES

Model	Description
7-900A	End plate assembly (two end plates, two screws, two o-rings).
8-90A	Mounting kit (two spacers, two o-rings).
40-900A	Port isolator kit (two port isolators).
130-31	1/8-inch pipe plug.
HS-2	DIN receptacle for use with code 39 connector.
HS-2L	Lighted DIN receptacle for use with code 39 connector.
HS2-LED	LED DIN receptacle for use with code 39 connector.

HOW TO ORDER

Starting with Model Number specify options in order from left to right.

Example: To order Model S310-LL 12VDC
Long Leads 72" (S310-LL)
Voltage 12VDC (S310-LL 12VDC)

To order Model S410-70-87 120VAC
Flow Controls (S410-70)
Without Manual Override (S410-70-87)
Voltage 120VAC (S410-70-87 120VAC)

Remember: Option Codes marked STD and NA are not used as part of the Model Number when ordering. N/C indicates no charge but Option Code must be included in the Model Number. SP indicates that Option must be specified when ordering. Specified Options become part of the Model Number.

N/C = No charge
NA = Not available
STD = Standard
SP = Specify; Additional charge for this option