HUMPHREY SELECTION GUIDE

Organized by Port Size

SOLENOID

2-, 3-way

M3	C_v	10-32	C_v	1/8"	C_v	1/4"	C_v	3/8"	C_v	1/2"	C_v	3/4"	C_v
H010E1	0.01	3E1	0.01	31E1	0.09	(V)062E1	0.12			(VA/VV)500(A)E1	2.16	(VA)590(A)E1	2.56
H041E1	0.08	M3E1	0.01	M31E1	0.06	T062E1	0.11			500E2	2.16	(VA)590(A)E2	2.56
H040 E1	0.08	M3E1-81-MTL	0.01	310	0.12	125E1	0.19			501E1	2.20		
		3E1-PCM	0.01	S310	0.15	T125E1	0.17			501E2	2.20		
		3E1-39-BOU	0.01	M310	0.12	(VA/VV)250(A)E	0.63						
		3E1-TSD	0.01	(VA)125(A)E1L	0.24	250E2	0.63						
		H(V)030E1	0.03	M125E1LW	0.17	320	1.00						
		H110E1	0.23	H181E1	0.57								
		H111E1	0.23										

4-way

M3	C_v	10-32	C_v	1/8"	C_v	1/4"	C_v	3/8"	C_v	1/2"	C_v	3/4"	C_v
H040 4E1	0.08	401	0.05	41E1	0.03	42E1	0.43			501-4E1	1.80		
H040 4E2	0.08	M401	0.05	M41E1	0.03	M42E1	0.39			501-4E2	1.80		
		402	0.04	MC41E1	0.03	42E2	0.43						
		M402	0.04	410	0.14	062-4E1	0.07						
		H030-4E1	0.03	410-70	0.14	125-4E1	0.11						
		H110-4E1	0.23	S410	0.13	T062-4E1	0.07						
		H110-4E2	0.23	S410-70	0.13	T125-4E1	0.11						
		H113-4E2	0.21	M410	0.13	M42E2	0.39						
				M410-70	0.13	250-4E1	0.58						
				H180-4E1	0.57	250-4E2	0.88						
				H180-4E2	0.57	H240-4E1	0.88						
				H183-4E2	0.50	H243-4E2	0.83						
						S420	1.00						
						M420	1.00						

AIR PILOTED

2-, 3-way

M3	C_v	10-32	C_v	1/8"	C_v	1/4"	C_v	3/8"	C_v	1/2"	C_v	3/4"	C_v
		2P	0.09	31P	0.29	(VA/VV)250A	0.63			(VA)500A	2.20	(VA)590A	3.73
		3P	0.09	(VA)125A	0.22	250AA	0.85			500AB	2.20	590AB	3.73
				125AA	0.23	250AL	0.65			500AG	2.20	590AG	3.73
				125LA	0.15	250AH	0.50			501A	2.41		
				125AH	0.17					501AA	2.49		

4-way

M3	C_v	10-32	C_v	1/8"	C_v	1/4"	C_v	3/8"	C_v	1/2"	C_v	3/4"	C_v
		4P	0.11	41P	0.29	42A	0.38			501-4A	1.89		
		4PP	0.11	41PP	0.28	42A2	0.35			501-4AA	1.89		
		110-4A	0.23	H180-4A	0.50	M42A2	0.32						
		110-4A2	0.23	H180-4A2	0.50	250-4A	0.49						
						250-4AA	0.75						

MANUAL/MECHANICAL

2-, 3-way

M3	C_v	10-32	C_v	1/8"	C_v	1/4"	C_v	3/8"	C_v	1/2"	C_v	3/4"	C_v
		2P	0.09	31P	0.29	250PL	0.83			501V	2.20	590C	3.85
		2V	0.09	31V	0.29	250P	0.84			(V)500C	2.20		
		3P	0.09	125PLG	0.22	250HO	0.83						
		3V	0.09	125P	0.22	250F	0.83						
				125HO	0.22	(V)250C	0.83						
				125B	0.23	250T	0.83						
				125MP	0.22	(V)250V	0.83						
				125MC	0.22								
				125MOC	0.22								
				125C	0.22								
				125T	0.22								
				(V)125V	0.22								

4-way

M3	C_v	10-32	C_v	1/8"	C_v	1/4"	C_v	3/8"	C_v	1/2"	C_v	3/4"	C_v
		4P	0.11	41P	0.29	42P	0.39						
		4PP	0.11	41PP	0.29	42PP	0.39						
		4PPX	0.29	41PPX	0.29	M42P	0.32						
		4PP/PPX	0.29	41PP/PPX	0.29	M42PP	0.29						
		4V	0.11	41V	0.29	M42PA	0.29						
				41T	0.09	250-4F	0.75						
				41R	0.09	250-4H	0.75						

Humphrey® General Guidelines

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.

Use the right valve

Humphrey valves are general purpose air valves designed for use in general industrial applications in accordance with the limitations described in this catalog for each valve. The specifications of individual products are subject to change without notice. Consult factory for specific information concerning valve/application compatibility

Each Humphrey valve is tested before it leaves our factory to assure the valve's conformance to catalog specifications.

Any use or application which deviates from the valve's specifications will void the warranty unless Humphrey has provided specific and written authorization beforehand.

Use the right lubrication

Except where model specifications state "No lubrication required," all Humphrey valves require appropriate lubrication. Humphrey recommends a non-detergent, 20w or 30w, mineral-based petroleum oil for most of its valves.

Some lubricants may cause swelling or deterioration of the valve's seals, therefore lubricant/seal compatibility must be confirmed. Read specifications carefully. If there is any doubt, consult factory.

Use the right air supply

The valved medium, including the lubricants and other substances it may contain, must be compatible with the materials of which the valve is constructed. Read the specifications carefully; if there is any doubt, consult factory.

Sone valve models are vulnerable to contaminated or moisture-laden compressed air. To promote proper functioning and long life in such instances, appropriate air treatment equipment should be installed. Consult your supplier of air filters, regulators, and lubricators.

Use proper service procedures

Never attempt to service a Humphrey valve or any system component unless you have been properly trained to do so. A properly trained person will never attempt to remove or service a component of a compressed air system unless the compressed air has been disconnected and the system thoroughly exhausted.

Some Humphrey valves can be repaired in the field. Humphrey makes available factory seal repair kits (SRKs) and individual valve components for this purpose. All repaired valves should be tested for conformance to specifications before they are returned to service. Field repairing of Humphrey valves voids their warranty.

Design a proper system

Always strive to design systems which are safe as well as efficient. Either eliminate potential hazards completely or install safety features which neutralize them.

Give special consideration to any potential for accidental actuation of a valve. Either select a model that resists accidental actuation or mount the valve to prevent unintended actuation.

Consider the adverse consequences of individual component failure and design to prevent or minimize these consequences. Design a system that will fail safe under conditions of pressure variation, pressure loss, or other system failures.

Read the component literature carefully. If a model is not completely understood, do not apply it without first consulting the factory.

Size valves properly. A model having a capacity insufficient to the system may cause the entire system to be inefficient. Always note the size of the valve orifice — this is often more important than the pipe connection.

The circuit drawings in this catalog are intended *only* as examples of circuits in which certain components might typically be used. They are not to be considered recommendations of specific applications. The proper, safe functioning of any system must be insured by the system's designer or user.

Specifications subject to change without notice.
All port connections are available in metric sizes. Specify metric port threads by using letter E as a model number prefix. The bottom number in all drawing dimensions is shown in millimeters.

MH6681 (N)

HUMPHREY PRODUCTS
CSA LR41336

KILGORE AND SPRINKLE ROADS P O BOX 2008, KALAMAZOO MI 49003

The following models are UL RECOGNIZED for component use.

Models 3E1, M3E1 valves; Models DMZ1, MZ1 manifolds.

Models 31E1, 41E1, M31E1, M41E1, MC41E1 valves; Models MM-2 through -7, MMC-2 through -7 manifolds.

Models 062-4E1, 062-4E2, 062E1, 062E2, VO62E1 valves, may be prefixed by T. Models TM-1R through -12R manifolds.

Models 125-4E1, 125E1, V125E1 valves, may be prefixed by T. Models TM-1R through -12R manifolds.

Model 310 may be prefixed by E, EM, ES, ESMP, EV, EVM, EVS, EVSMP, M, S, SMP, V, VM, VS, VSMP, may be suffixed by 2, 21, 39, 50, 81, 87, LL, MOV, RC, or SA, suffixed by UR.

Model 410 may be prefixed by E, EM, ES, ESMP, M, S, SMP, may be suffixed by 21, 39, 50, 70, 81, 87, LL, MOV, RC, or SA, suffixed by UR.

Models 250E1, 250E2.

The following models are UL LISTED for General use.

Model 062-4E1 with or without suffix 21, followed by 36, with or without suffixes 61 and/or 70.

Models 062E1, VO62E1 followed by 2 or 3, followed by 10 or 11, with or without suffix 20 or 21, followed by 36, with or without suffix 61.

Model 125-4E1 may be prefixed by T, with or without suffix 21, followed by 36, with or without suffix 60 or 70,

Model 125E1 may be prefixed by T, suffixed by 2 or 3, followed by 10 or 11, with or without suffix 20 or 21, followed by 36, may be followed by 60.

Model V125E1 followed by 2 or 3, followed by 10 or 11, with or without suffix 20 or 21, followed by 36, may be followed by 60.

Model V125E1 followed by 2 or 3, followed by 10 or 11, with or without suffix 20 or 21, followed by 36.

Models 250-4E1, 250-4E2 with or without suffix 21.

Model 250E1 followed by 2 or 3, followed by 10 or 11, followed by 20 or 21, followed by 36, with or without suffix 61.

Models TM-1L thru -12L manifolds.

HUMPHREY M420 SERIES

SUBBASE MANIFOLD MOUNTED SOLENOID VALVES

TECHNICAL SECTION GENERAL INFORMATION

DESCRIPTION

M420

A 4-way normally open/normally closed, single solenoid, 2-position/ spring return, general purpose air valve. Comes with two spacer screws and one gasket.

SB-2

Subbase with two 1/4-inch outlet ports, marked 1 and 2. Comes with two spacer screws and two o-rings.

SBMP-2

Subbase with multi-pressure capability. Model SBMP-2 has four 1/4-inch external body ports marked IN, EXH, 1 and 2. This subbase 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 subbase mounted assembly of valves. Comes with two spacer screws and two o-rings.

SB-2R

Subbase for Model MR420 regulator. Comes with four spacer screws and two o-rings.

SB-2H

Subbase for HA240 series single or double solenoid, 2- or 3-position valves. Subbase has two 1/4-inch outlet ports, marked 1 and 2. Comes with two spacer screws and two o-rings.

INSTALLATION

The assembled subbase manifold should be mounted using the slotted mounting hole in each End Cap and 1/4-inch or M6 socket head cap screws or fillister head screws. One threaded 5/16-18 mounting hole is provided in each End Cap for mounting the finished assembly.

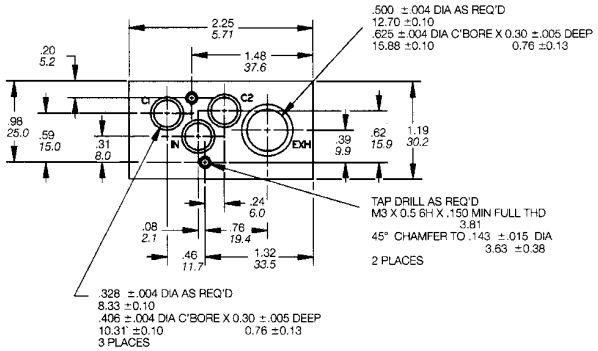
Valves can be mounted in any position in most environments, in keeping with the specifications. All models feature a Class B insulation system and molded coil for ambient temperatures from 32° to 125° F (0° to 50° C).

If manifold consists of a large number of valves or if several valves are to be actuated at the same time, Model SBMP-2 subbases can be used to feed additional supply air to the manifold and to provide additional exhaust capacity.

Humphrey M420 and HA240 Series valves and subbases (or subbases alone) can be ordered completely factory assembled, ready for installation in your equipment. Consult factory for details.

PORTING FOOTPRINT

Humphrey M420 valves can be mounted to your equipmen or to special manifolds using the dimensional data shown below.



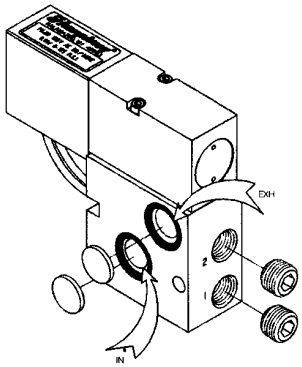
USE AS 3-WAY

The Humphrey 1/4-18 NPT Port Plug # 130-15 can be used to convert the M420 4-way valve to 3-way service:

Normally closed 3-way: Plug Delivery Port 1.
Normally open 3-way: Plug Delivery Port 2.

USE AS 2-WAY

The Humphrey #130-15 Port Plug can also be used to convert the M420 to 2-way service:



Normally Closed 2-way: Plug Delivery Port #1. Use a Port Isolator to plug internal subbase EXH port. (Internal EXH port corresponds with EXH port in End Cap.) Also plug external EXH port when using Model SBMP-2 subbase, and the appropriate End Cap EXH port. Connect supply pressure to IN.

Normally Open 2-way: Plug Delivery Port #2. Use a Port Isolator to plug internal subbase IN port. (Internal IN port corresponds with IN port in End Cap.) Also plug external IN port when using Model SBMP-2 subbase, and the appropriate End Cap EXH port. Connect Supply pressure to IN.

MULTI-PRESSURE

Model SBMP-2 subbases can be used to create multiple pressures on a common subbase assembly. Use Port Isolators to isolate the subbase to be used with a separate pressure. Isolate the subbase and connect Supply pressure to the IN port of the subbase.

For simplicity, when mixing valves with different pressures on the same subbase manifold, consider locating valves of one common pressure on one end of the assembly. Use Port Isolators (part number 40-800A) to separate the last valve of a common pressure from other valves in the assembly, then mix/match valves of other pressures at the opposite end of the assembly.

MULTI-PRESSURE, ALTERNATE METHOD

Locate subbase/s for separate pressure on one end of the assembly. Use Port Isolators to plug the internal side ports (those interfacing with the alternate pressure source) of the last subbase to separate it from those operating at another pressure.

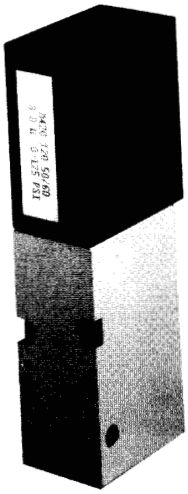
Connect separate pressure to End Cap. In this configuration, part of the assembly operates on one pressure, the other part operates on another pressure.

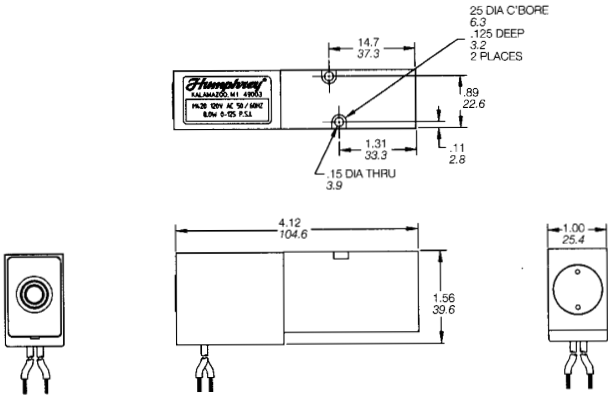
PLUMBING

M420 Series valves are direct acting. When used with vacuum or low pressure, use largest possible tubing size and minimum tubing length for optimum performance.

Before connecting fittings and tubing, blow all foreign material from these components. If a sealant is used, be sure the sealant does not enter the valve as it may cause malfunctions and/or leaks.

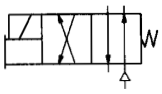
M420 SOLENOID VALVE

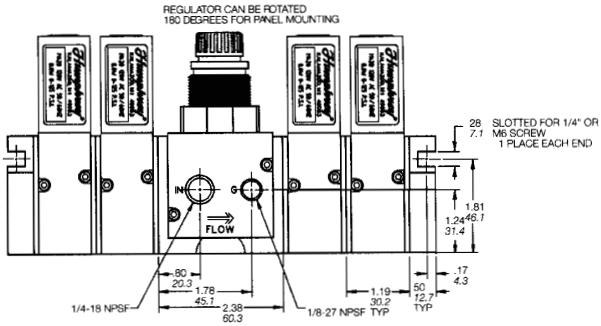


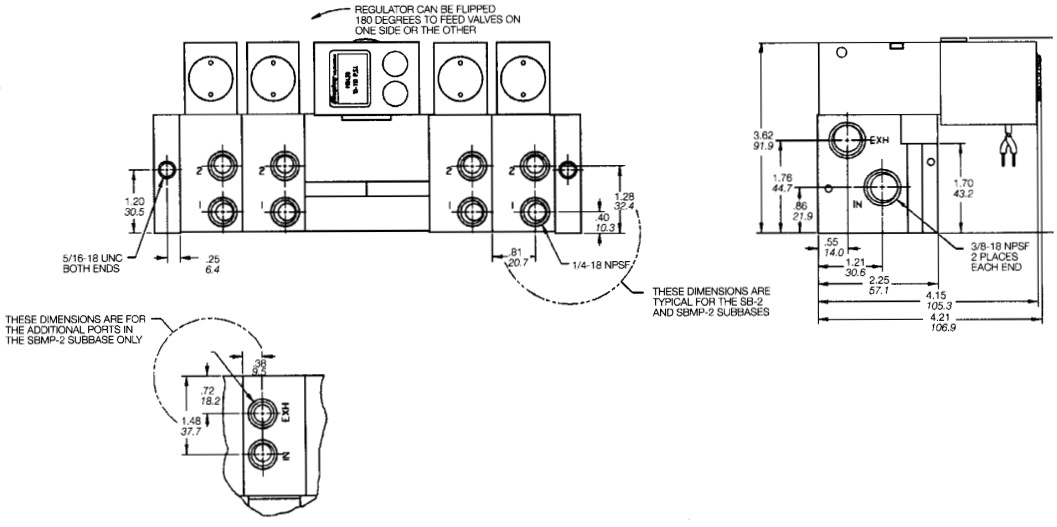


M420

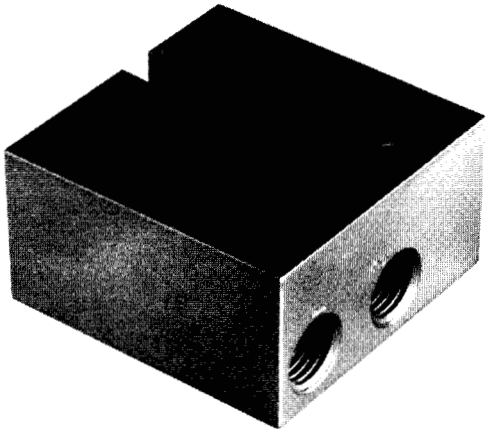
- 4-way, Normally Open/Normally Closed
- 2-position, spring return
- Direct acting, single solenoid
- Continuous duty coil
- Four internal ports: In, Delivery ports 1 & 2, Exhaust
- Non-locking manual override
- (Optional locking override, specify order code -81)
- Two spacer screws and one gasket





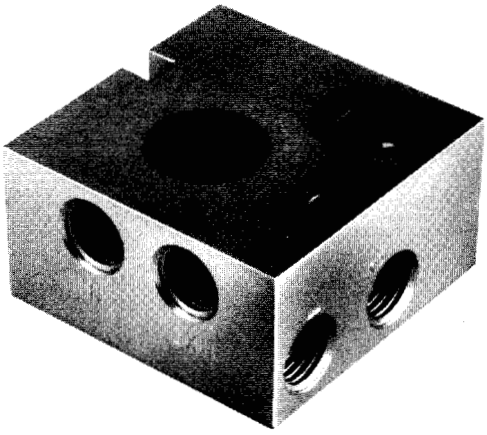


SUBBASES, MANIFOLD END PLATE ASSEMBLIES AND REGULATOR



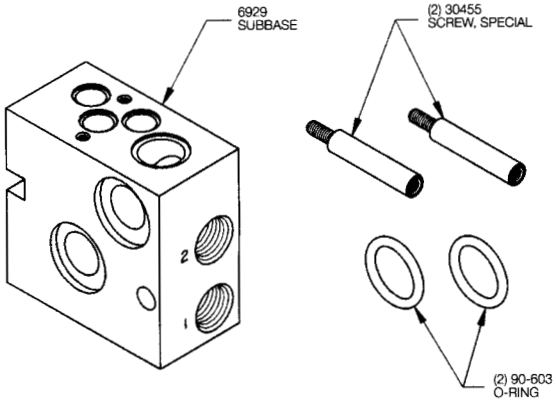
SB-2

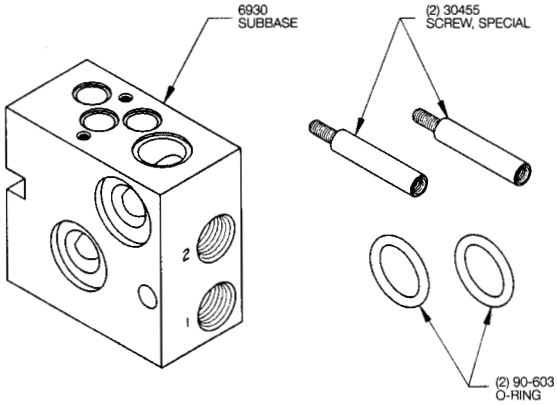
- Subbase for M420 valve
- Two delivery ports, marked 1 and 2
  Port 1 is normally open, Port 2 is normally closed
- Two spacer screws and two o-rings for inter-subbase seal

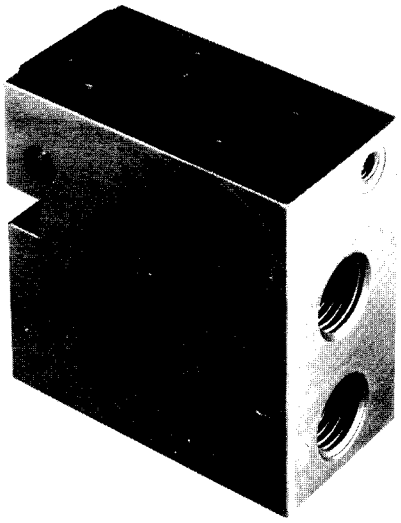


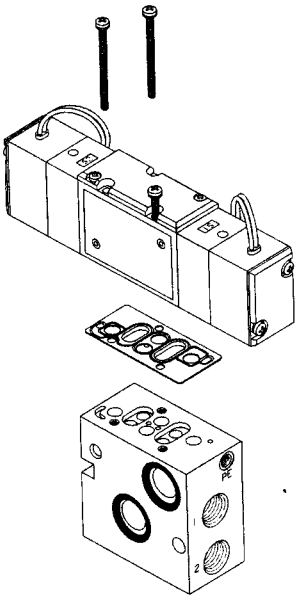
SBMP-2

- Subbase for M420 valve
- Four ports: Two delivery ports marked 1 and 2 (Port 1 is normally open, Port 2 is normally closed); plus one separate IN and one separate EXH port
- Two spacer screws, and two o-rings for inter-subbase seal



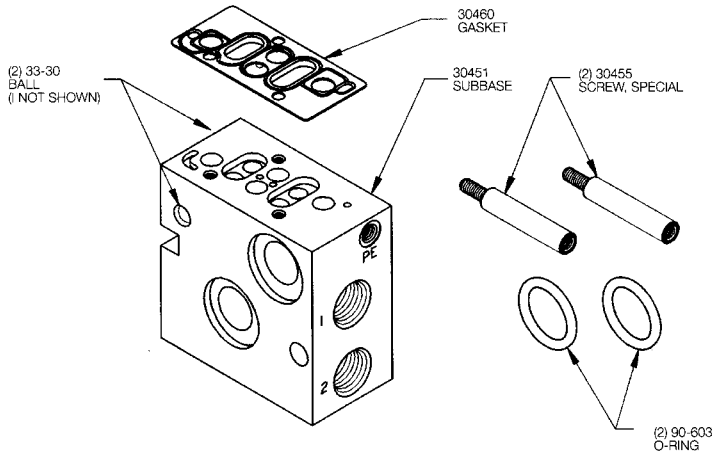


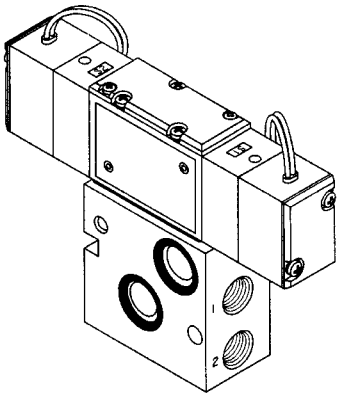


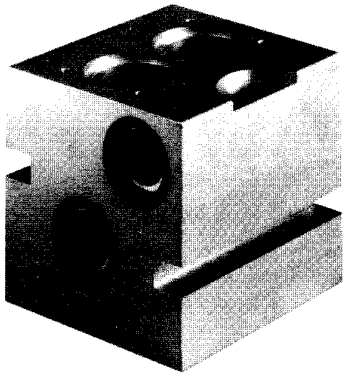


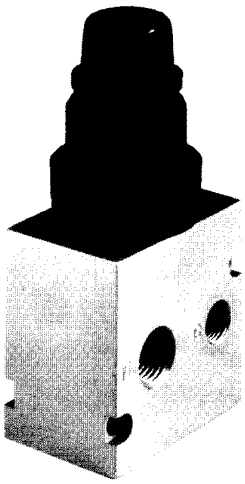
SB-2H

- Subbase for HA240 Series valves
- H240 valves are available as single or double solenoid. Double solenoid models are offered as either 2- or 3-position valves.
- Complete details on HA240 Series valves are given in the complete Humphrey valve catalog. This catalog is available from your Humphrey distributor or from the factory.
- Two spacer screws, gasket and two o-rings.



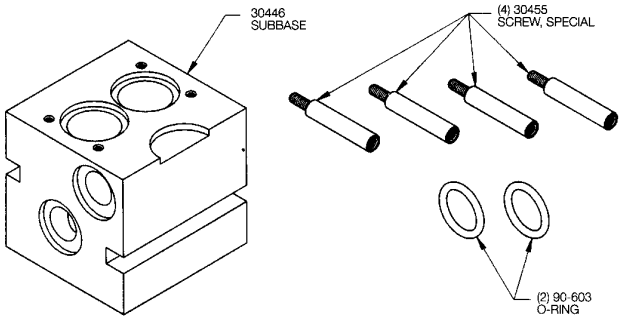




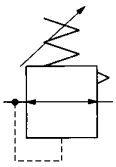


SB-2R

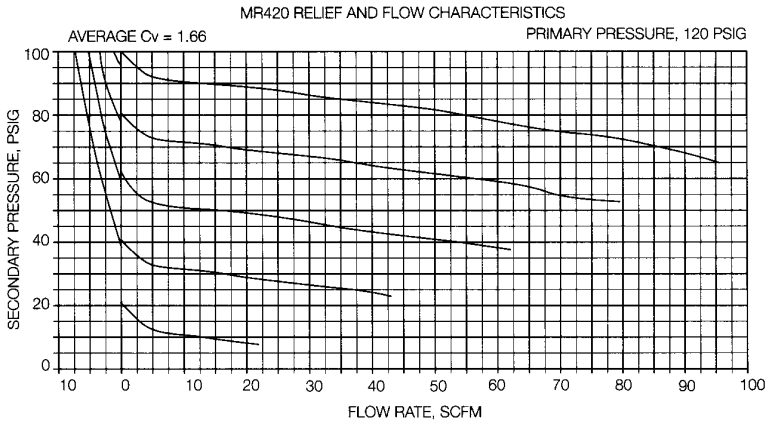
- Subbase for Model MR420 pressure regulator.
- Four spacer screws, two o-rings.

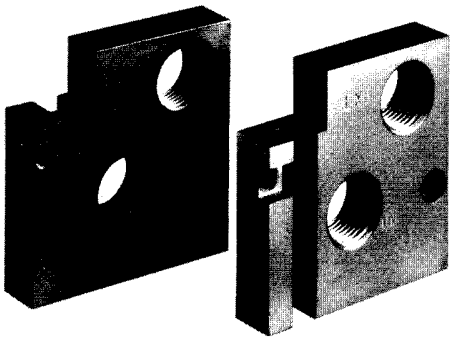


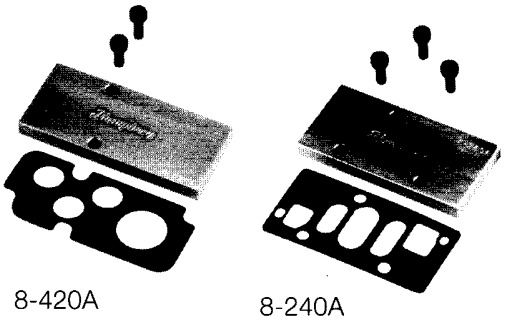
MR420



- Relieving type pressure regulator for manifold mounting alongside valves.
- Has a trim fingertip control knob (non- rising) and an adjustment locking ring.
- Can be rotated 180° in two different directions depending on application requirements.
- Eliminates need for piping between components.
- Makes systems more efficient and compact.
- Two mounting screws and two o-rings.
- One 130-15 and one 130-31 pipe plug; plug visible ports if not needed. (Has separate supply port and gauge port.)
- Whereas the MR420 regulator can regulate pressure to any number of valves, cycle rates and flow requirements are factors to be considered.

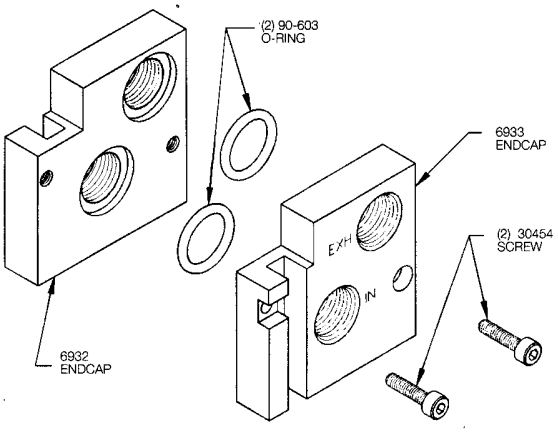






END PLATE ASSEMBLY
PART NUMBER 7-200A

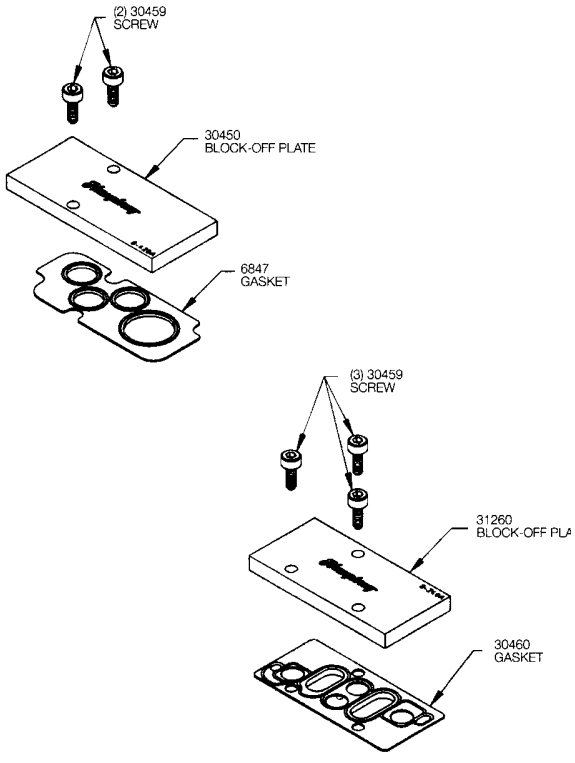
The End Plate Assembly consists of two subbase end caps and fastening accessories. One End Plate is mounted to each end of a completed subbase assembly. Tighten screws to 50 lb.·in. of torque, maximum. Two slotted holes provide a method of mounting a subbase assembly. Includes two o-rings to seal subbase to end cap, and two M4 socket head cap screws to secure tie rod spacers.



BLOCK-OFF PLATE

Model 8-420A anodized aluminum block-off plate is used to suspend the use of any SB-2 or SBMP-2 subbase. It can also be used to permit future valve additions related to machine options. Supplied with screws and o-rings to mate with subbase.

Model 8-240A accomplishes the same functions for HA240 series valves.



TO ASSEMBLE A VALVE MANIFOLD

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

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

3. Place o-ring seals (two supplied) into End Cap that has o-ring grooves and thread spacers into this End Cap.

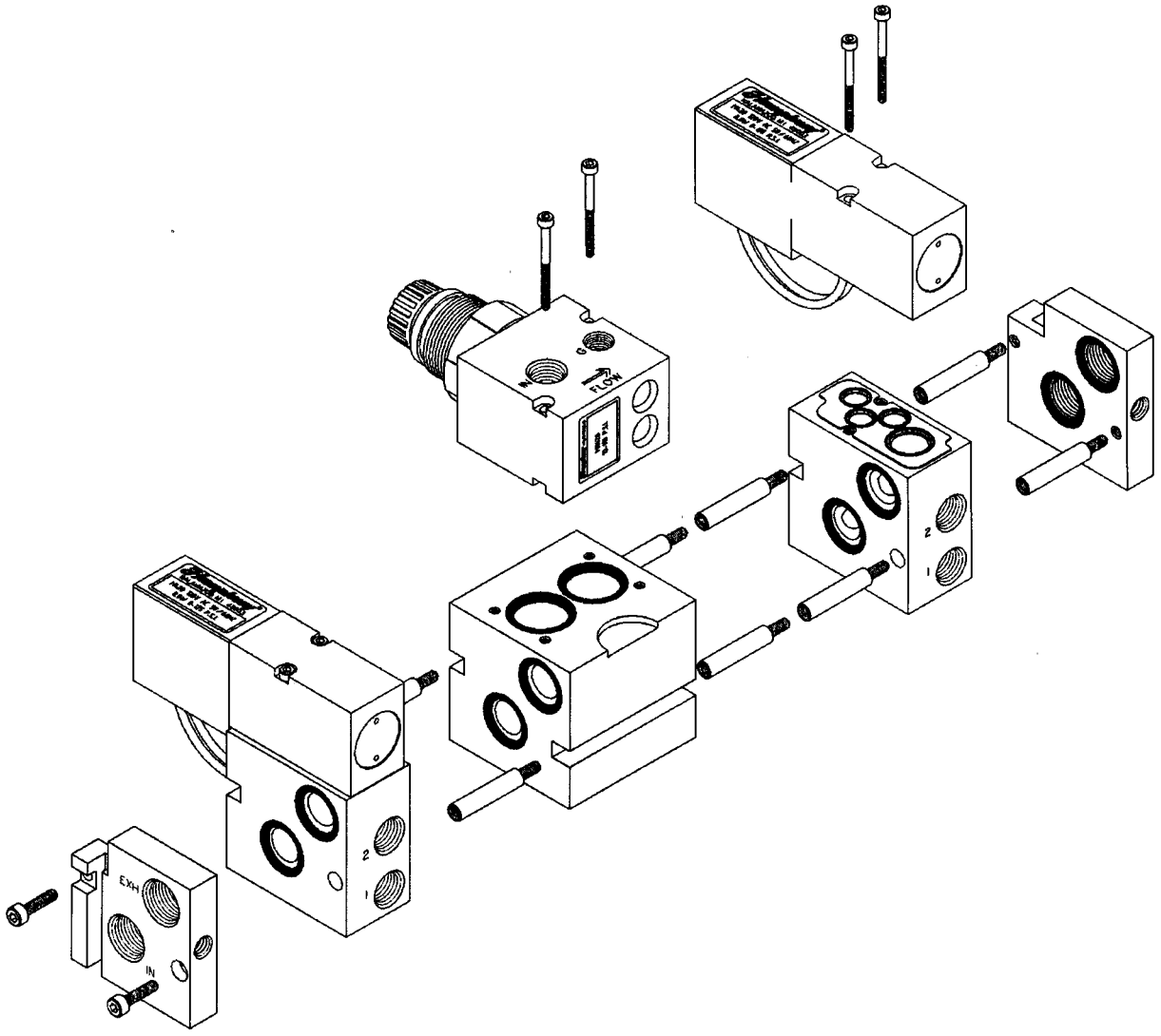
4. Assemble subbases onto spacers using subbase through-holes.

5. Secure entire assembly with M4 socket head screws (supplied with End Caps) and tighten with 3mm hex drive wrench (not supplied).

6. Place gasket (supplied with valve) onto the valve mounting surface on the subbase.

7. Mount valves to subbase assembly with M3 socket head cap screws (supplied with valve) and tighten with 2.5mm hex drive wrench (not supplied). Use 12 lb.·in. of torque, maximum.

NOTE: Coils face away from subbase Delivery ports.



ORDER INFORMATION

SUBBASES AND ACCESSORIES

Model	Description
SB-2	Subbase with two delivery ports.
SBMP-2	Subbase with two delivery ports, and one IN and one EXH port.
SB-2H	Subbase for HA240 series valves, gasket, two spacer screws, two o-rings.
SB-2R	Subbase for Model MR420 regulator, four spacer screws, two o-rings.
7-200A	End cap kit (two subbase End Caps, two o-rings, and two screws).
8-200A	Valve mounting kit (one gasket, two spacer screws).
8-200B	Subbase mounting kit (two spacer screws, two o-rings).
8-200C	Mounting kit (two spacer screws).
8-200D	Regulator mounting kit (two screws, two o-rings).
8-240A	Block-off plate for HA240 series valves, gasket, three screws.
8-420A	Block-off plate for M420 series valves, gasket, two screws.
40-800A	Port isolator kit (two port isolators).
130-15	Port plug.
SRK-MR	Seals repair kit for Model MR420 regulator.
HS-3	DIN receptacle for use with Code 39 connector.
HS-3L	Lighted DIN receptacle for use with Code 39 connector. Specify voltage: AC/DC 12V, 24V, 120V or 240V.