



			Page
Introduc	tion		3
Section	1	Direct solenoid and solenoid pilot operated valves	9
Section	5	Remote air valves	197
Section	3	Bases according to ISO 5599	223
Section	4	Pressure regulators	243
Section	5	Intrinsically safe valves	299
Section	6	Options	307
Section	7	Supplemental technical information	321



MAC VALVES INC. has earned a reputation as an innovator in solenoid air valve technology as is evidenced by our numerous global patents.

MAC's designs focus on offering customers the best performing products available on the market. Some of the key features MAC's products offer are:

- reliability

- speed

- repeatability

- non lube service

- ease of maintenance

- compact packaging

- modularity

- specific application modifications

- low wattage

- broad electrical options

Many of these performance advantages are based on MAC's high shifting forces. MAC's patended oval shaped armature solenoid and 4-way pilot technologies are two new concepts which result in extremely high shifting forces in small packages.

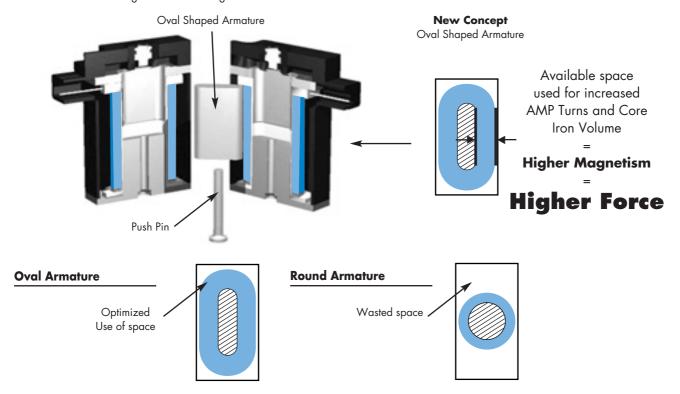
The patented Latching Solenoid is another new offering to the MAC product line. The latching solenoid provides the function of a double solenoid operated valve utilizing only one solenoid.

I. OVAL SHAPED ARMATURE SOLENOID - Maximized Shifting Forces

Compared with typical round armature solenoids, the oval shaped armature design results in much higher shifting forces due to the following:

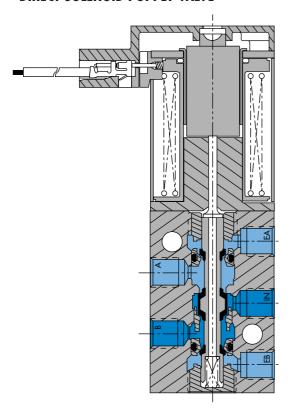
- Increased coil windings (amp turns)
- Increased core iron volume

With more amp turns and core iron than conventional round armature designs, more shifting force is available to shift through contaminated air resulting in reliable shifting valves.





DIRECT SOLENOID POPPET VALVE

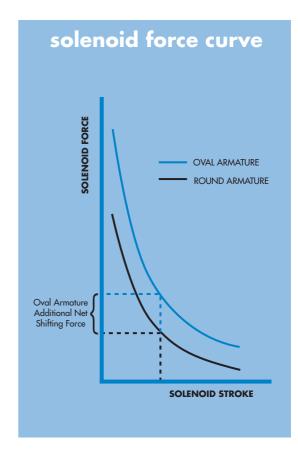




Short Stroke = High solenoid force
Short Stroke = High return spring force
Short Stroke = Low current to shift solenoid

DIRECT OPERATED 10 MM DESIGN WITH OVAL SHAPED ARMATURE

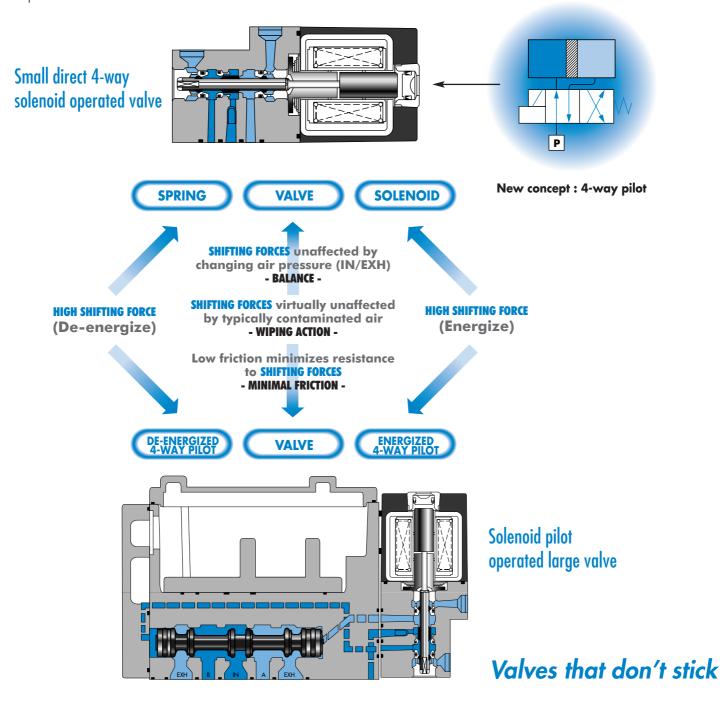
- Balanced poppet, with no seals of any kind in a bore no friction
- New patented MAC solenoid® with "oval" shaped armature provides high shifting force through more core iron and magnet wire
- Balanced poppet high shifting forces unaffected by fluctuations in air pressure
- Short stroke direct operated poppet valve (patented adjustable inlet seat controls stroke) - high shifting force - without small piston and no minimum operating pressure
- Large orifice "0.0024 in²" minimum resists clogging
- Strong return spring high shifting force even at low pressure
- Few parts simple design
- Patented conical shaped exhaust seats act as cushions
 eliminates cutting long life
- Every valve calibrated for flow for a given coil wattage consistent flow





II. MAC's 4-WAY PILOT SYSTEM - Maximized Shifting Forces

The balanced 4-way pilot valve provides maximum shifting forces in both directions by supplying air alternately to each end section of the spool, similar to double acting rodless cylinder. This system provides maximized shifting forces, equal forces at energization and de- energization, with no resistance to shifting at either end. The result is increased shifting reliability and faster, more consistent response times.







MAC DISTRIBUTORS NETWORK

- 30 years experience
- Local support
- Globally linked network
- Special solutions
- Global customer partnership



45 countries

○ 3500 employees

O 200 service centers

• \$ 50 million inventory

O 1000 factory certified application specialists

KEEPING YOUR MACHINES RUNNING AROUND THE CLOCK AROUND THE WORLD



Let us show you via high performance demonstration kits and animated software,

HOW MAC'S PERFORMANCE ADVANTAGES HELP MAKE YOUR EQUIPMENT MORE RELIABLE - FASTER - MORE REPEATABLE.



TLD

Traveling Lab Demonstration measures critical valve performance characteristics - *Shifting forces, Response Time, Speed, Repeatability and Flow.*



PLD

Proportional Lab Demonstration measures critical proportional regulation characteristics - *Response Time, Accuracy, Hysterisis, Repeatability and Flow.*



Animation

Animated Software shows inner workings of various Air Valves Designs - *Powerful educational tool for learning about how air valves function*.

Other MAC VALVE literature:

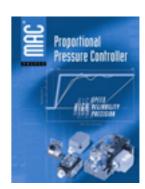
DESCRIPTION	CATALOG NUMBER
CURRENT TECHNOLOGY	999CTCB
BUILDING BLOCKS BROCHURE	999ADVB
CIRCUIT BAR CATALOG	999CBCA
PROPORTIONAL VALVE CATALOG	999PPCB
CATALOG CD	999CCDB
SERIAL INTERFACE PRODUCTS	9999SI
MACONNECT SYSTEM	CONSULT FACTORY



999CTCB 999ADVB



999CBCA



999PPCB







MAC Valves 18 month guarantee plus lifetime coil guarantee

The MAC Valves organization has established a reputation over many years for fulfilling the needs and requirements of the users of its products. All MAC Valves are quality products specifically designed and built for long and rugged service. Therefore, all valves appearing in this catalog are guaranteed for a period of eighteen months from the original date of shipment from our factory. In addition to this eighteen month Guarantee, MAC Valves, Inc. guarantees the electrical coils on every one of the valves listed in this catalog for life. LIMITATION OF GUARANTEE: This Guarantee is limited to the replacement or rebuilding of any valve which should fail to operate properly. Valves, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the Garantee period. They will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same guarantee as provided under the Flat Rate Rebuild Program. DISCLAIMER OF GUARANTEE: No claims for labor, material, time, damage or transportation are allowable nor will any valve be replaced or rebuilt under this guarantee which has been damaged by the purchaser not in the normal course of its use and maintenance during the warranty period. The guarantee does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc. MAC Valves, Inc. shall in no event be liable for remote, special or consequential damages under the MAC Guarantee, nor under any implied warranties, including the implied warranty of merchantability.

The above Guarantee is our manner of extending the engineering and service resources of the MAC Valves, Inc. organization to assure our customer long, and continued satisfaction

The flat rate rebuild program

Valves no longer covered by the MAC Guarantee can be rebuilt under the Flat Rate Rebuild program. Our constant research and testing program is dedicated to extending the life of our valves and making them even more reliable under the most adverse operating conditions. Valves returned under this program are completely disassembled, inspected, rebuilt to current operating standards wherever possible, tested and returned within a few weeks for a nominal flat rate charge. All rebuilt valves carry for 90 days from date of shipment from our factory the same guarantee as provided for new valves.

Pneumatic functions

All valves inside the MAC product range allow for multiple pneumatic functions. Direct solenoid and solenoid pilot operated valves could be used as 2 ways, 3 ways (NO, NC) or 4 ways. When plugging one orifice to achieve a 2 way function (or 3 way), it will not affect the valve operation.

- <u>Direct solenoid valves 3 ways :</u> universal The following functions are available
 - 3 ways NC
 - 3 ways NO
 - 2 ways NC
 - 2 ways NO
 - Selector
 - Divertor
- <u>Pilot operated valves 3 ways :</u> The following functions are available
 - 3 ways NC
 - 3 ways NO
 - 2 ways NC
 - 2 ways NO
 - Selector: the highest pressure is connected to the IN port; the lowest pressure is connected to the EXH port. (Use external pilot when the highest pressure is less than 25 PSI)
 - Divertor (consult factory)

- <u>Direct solenoid valves 4 ways :</u>
- The following functions are available
 - 4 ways
 - 3 ways NC
 - 3 ways NO
 - 2 ways NC
 - 2 ways NO
 - Divertor
- Pilot operated valves 4 & 5 ways :

The following functions are available

- 4 or 5 ways
- 3 ways NC
- 3 ways NO
- 2 ways NC
- 2 ways NO - Selector (except 3 positions)
- Divertor (consult factory).

EVERY VALVE FULLY TESTED PRIOR TO SHIPMENT



Section 1

Direct solenoid and solenoid pilot operated valves



3/2 - 2/2 M5 - #10-32 0.12 P. 19 3/2 1/8" - #10-32 0.3 3/2 1/8" - \$10-32 0.3 3/2 1/8" - \$10-32 0.3 3/2 1/8" - \$10-32 0.4 P. 23 3/2 #10-32 - 1/4" 0.5. hobe receptacts 3/2 1/8" - 1/4" 0.5. hobe receptacts 3/2 2/2 3/4" - 1" 20.0 P. 69 3/2 - 2/2 1/8" - 1/4" 20.0 P. 69 3/2 - 2/2 1/8" - #10-32 0.1 P. 77 4/2 1/8" - \$10-32 0.1 P. 77 4/2 1/8" - \$10-32 0.3 P. 81 4/2 1/8" - \$10-32 0.3 P. 81 4/2 1/8" - \$10-32 0.3 P. 81 4/2 1/8" - \$10-32 0.4 P. 9.5 5/2 5/3 #10-32 - 1/4" 0.5. hobe receptacts 0.4 P. 9.5 5/2 1/8" - 1/4" 0.5. hobe receptacts 0.4 P. 10 5/2 - 5/3 1/8" 1.0 P. 121 5/2 - 5/3 1/8" 1.1 P. 113 5/2 1/8" 1.1 P. 125 5/2 - 5/3 1/8" 1.4" 3/8" 1.2 5/2 - 5/3 1/8" - 1/4" 3/8" 1.2 5/2 - 5/3 1/8" - 1/4" 3/8" 1.2 5/2 - 5/3 1/8" - 1/4" 3/8" 1.2 5/2 - 5/3 1/4" - 3/8" 1.2	Function	Port size	Flow (Max) Cv	Individual m	ounting						
3/2 - 2/2 M5 - #10-32				Inline	Sub-base non "plug-in"		manifold base non "plug-in" with latching	manifold base "plug-in" with latching	No base non "plug-in" Conform to	No base "plug-in" Conform to	No base non "plug-in" Conform to
3/2	3/2	M3	0.082	P. 15							
3/2	3/2 - 2/2	M5 - #10-32	0.12	P. 19							
1/8" - 5/32 0.0.0. pressol-in 0.3 0.4 0.3 0.4 0.5 0.4 0.5 0.4 0.5 0.4 0.5	3/2	1/8"	0.3	P. 23							
3/2	3/2	1/8" - #10-32	0.3	-							·
3/2 #10-32 - 1/4" o.b. hebe receptrated 3/2 1/8" - 1/4" o.b. hebe receptrated 3/2 1/8" - 1/4" o.b. hebe receptrated 3/2 1/8" - 1/4" o.b. hebe receptrated 1.2 P. 53 P. 55 P. 59 P. 61 3/2 - 2/2 1/8" - 1/4" o.b. hebe receptrated 3/2 - 2/2 3/4" - 1"	3/2	1/8" - 5/32 O.D. pressed-in tube receptacle	0.3								
1/8" - 1/4"	3/2	1/8"	0.4		P. 33						·
1/8" - 1/4" o.b. tube receptate 1.2	3/2	#10-32 - 1/4" O.D. tube receptacle	0.4			P. 35	P. 41	P. 43			·
3/2 - 2/2	3/2	1/8" - 1/4"	0.5	P. 47	P. 49						
3/2 - 2/2 3/4" - 1" 20.0 P. 69 3/2 - 2/2 11/2" - 2" - 2 1/2" 60.0 P. 73 5/2 M5 - #10-32 0.1 P. 77 4/2 1/8" - #10-32 0.3 P. 81 4/2 1/8" - 5/32 O.D. pressed-in temperature of the companient of t	3/2	1/8" = 1/4" O.D. tube receptacle	1.2		P. 53	P. 55	P. 59	P. 61			
3/2 - 2/2	3/2 - 2/2	1/8" - 1/4"	1.5	P. 65							·
M5 - #10-32	3/2 - 2/2	3/4" - 1"	20.0	P. 69							·
1/8" - #10-32	3/2 - 2/2	1 1/2" - 2" - 2 1/2"	60.0	P. 73							·
4/2 1/8" - 5/32 °.D. pressed-in tube receptracic 0.3 5/2 - 5/3 #10-32 - 1/4" o.b. tube receptracic 0.4 P. 95 P. 97 5/2 #10-32 - 1/4" o.b. tube receptracic 0.4 P. 113 5/2 1/8" - 1/4" 0.5 P. 111 P. 113 5/2 - 5/3 1/8" 1.0 P. 121 5/2 - 5/3 1/8" 1.1 P. 125 P. 127 5/2 - 5/3 1/8" - 1/4" 1.0 P. 141 P. 143 5/2 - 5/3 1/4" - 3/8" 1.2 P. 147 P. 149 5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" 1.0 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" 1.0 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" 1.8 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" 1.8 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" 1.8 P. 161 P. 181 P. 185 5/2 - 5/3 3/8" - 1/2" 3.0 P. 181 P. 185 P. 189	5/2	M5 - #10-32	0.1	P. 77							·
5/2 - 5/3 #10-32 - 1/4" o.b. tube receptacle 0.4 P. 95 P. 97 5/2 #10-32 - 1/4" o.b. tube receptacle 0.4 P. 113 5/2 1/8" - 1/4" 0.5 P. 111 P. 113 5/2 - 5/3 1/8" 1.0 P. 121 5/2 - 5/3 1/8" 1.1 P. 125 P. 127 5/2 - 5/3 1/8" - 1/4" 1.0 P. 141 P. 143 5/2 - 5/3 1/8" - 1/4" - 3/8" 1.2 P. 147 P. 149 5/2 - 5/3 1/4" - 3/8" 1.2 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" - 3/8" - 1/2" 9. 181 P. 181 P. 185 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 185 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 185 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 185 <	4/2	1/8" - #10-32	0.3	P. 81							
#10-32 - 1/4" o.b. tube receptate 5/2	4/2	1/8" = 5/32 O.D. pressed-in tube receptacle	0.3								·
5/2 1/8" - 1/4" 0.5 P. 111 P. 113 5/2 1/8" 1.0 P. 121 5/2 - 5/3 1/8" 1.1 P. 125 P. 127 5/2 1/8" 1.1 P. 143 P. 133 P. 135 5/2 - 5/3 1/8" - 1/4" 1.0 P. 141 P. 143 P. 149 5/2 - 5/3 1/4" - 3/8" 1.2 P. 147 P. 149 P. 149 P. 147 P. 149 P. 147 P. 149 P. 147 P. 149	5/2 - 5/3	#10-32 - 1/4" O.D. tube receptacle	0.4	·	P. 95	P. 97					·
5/2 1/8" 1.0 P. 121 5/2 · 5/3 1/8" 1.1 P. 125 P. 127 5/2 1/8" 1.1 P. 143 P. 133 P. 135 5/2 · 5/3 1/8" · 1/4" · 3/8" 1.2 P. 147 P. 149 5/2 · 5/3 1/4" · 3/8" 1.2 P. 147 P. 149 5/2 · 5/3 3/8" · 1/2" 3.8 P. 159 5/2 · 5/3 1/4" · 3/8" · 1/2" 3.4 P. 161 P. 163 5/2 · 5/3 1/4" 1.0 P. 161 P. 163 5/2 · 5/3 1/8" 0.43 P. 161 P. 163 5/2 · 5/3 1/8" 0.43 P. 181 P. 181 P. 165 5/2 · 5/3 3/8" · 1/2" 3.0 P. 181 P. 181 P. 185	5/2	#10-32 - 1/4" O.D. tube receptacle	0.4				P. 103	P. 105			·
5/2 - 5/3 1/8" 1.1 P. 125 P. 127 5/2 1/8" 1.1 P. 133 P. 135 5/2 - 5/3 1/8" - 1/4" 1.0 P. 141 P. 143 5/2 - 5/3 1/8" - 1/4" - 3/8" 1.2 P. 147 P. 149 5/2 - 5/3 1/4" - 3/8" 1.2 5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 163 5/2 - 5/3 1/8" P. 173 5/2 - 5/3 1/4" - 3/8" 1.8 5/2 - 5/3 1/4" - 3/8" P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2	1/8" - 1/4"	0.5	P. 111	P. 113						·
5/2 1/8" 1.1 P. 133 P. 135 5/2 - 5/3 1/8" - 1/4" 1.0 P. 141 P. 143 5/2 - 5/3 1/8" - 1/4" - 3/8" 1.2 P. 147 P. 149 5/2 - 5/3 1/4" - 3/8" 1.2 5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2	1/8"	1.0	P. 121							
5/2 - 5/3 1/8" - 1/4" 1.0 P. 141 P. 143 5/2 - 5/3 1/8" - 1/4" - 3/8" 1.2 P. 147 P. 149 5/2 - 5/3 1/4" - 3/8" 1.2 5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	1/8"	1.1		P. 125	P. 127					
5/2 - 5/3 1/8" - 1/4" - 3/8" 1.2 P. 147 P. 149 5/2 - 5/3 1/4" - 3/8" 1.2 5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2	1/8"	1.1				P. 133	P. 135			
5/2 - 5/3 1/4" - 3/8" 1.2 5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	1/8" - 1/4"	1.0	P. 141	P. 143						
5/2 - 5/3 3/8" - 1/2" 3.8 P. 159 5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	1/8" - 1/4" - 3/8"	1.2		P. 147	P. 149					
5/2 - 5/3 1/4" - 3/8" - 1/2" 3.4 P. 161 P. 163 5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	1/4" - 3/8"	1.2								
5/2 - 5/3 1/4" 1.0 P. 173 5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	3/8" - 1/2"	3.8	P. 159							
5/2 - 5/3 1/8" 0.43 P. 177 5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	1/4" - 3/8" - 1/2"	3.4		P. 161	P. 163					
5/2 - 5/3 1/4" - 3/8" 1.8 P. 181 P. 165 5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189	5/2 - 5/3	1/4"	1.0								P. 173
5/2 - 5/3 3/8" - 1/2" 3.0 P. 187 P. 189		_	0.43								P. 177
	5/2 - 5/3	1/4" - 3/8"	1.8						P. 181	P. 165	
5/2 - 5/3 1/2" - 3/4" 6.1 P. 193 P. 195	5/2 - 5/3	3/8" - 1/2"	3.0						P. 187	P. 189	
	5/2 - 5/3	1/2" - 3/4"	6.1						P. 193	P. 195	

Manifold m	ounting											Series
stacking	Manifold base non "plug-in"	Manifold base "plug-in"	Manifold base "plug-in" with pressure regulators	Manifold base "plug-in" with flow controls	Manifold base "plug-in" with PR & FC	Sub-base/ manifold base non "plug-in" with latching solenoid	Sub-base/ manifold base "plug-in" with latching solenoid	Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2	Valve only – No base non "plug-in" Conform to ISO 15407/1		
												33
												34
P. 25												36
		P. 27	P. 29									
												32
	P. 37	P. 39				P. 41	P. 43					
	D 57	ם ככ				D 50	D /1					37
	P. 57	P. 55				P. 59	P. 61					38 52
												67
												69
												44
P. 83												
		P. 85	P. 87	P. 89	P. 91							46
	P. 99	P. 101										40
						P. 103	P. 105					42
P. 115		P. 117										47
												48P
	P. 129	P. 131				D 100	D 105					48
						P. 133	P. 135					
												400
	P. 151	P. 153										92
	P. 165	P. 167										
												93
										P.173		ISO 01
										P.177		ISO 02
								P. 181	P. 183			ISO 1
								P. 187	P. 189			ISO 2
								P. 193	P. 195			ISO 3



Individual mounting Series

33

36

32

37 38 52

67 69 44

46

42

47 48P

48

400

92

93

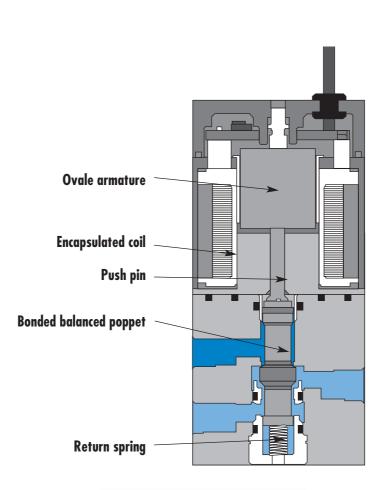
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- Low wattage DC solenoids-down to 0.5 W.
- 8 mm direct operated valve.
- Very fast response times.



Function		Flow (Ma	Flow (Max)			Individual mounting			
3/2 NC	3	МЗ	0.082	c _v		Inline			
OPERATIO	NAL BENEFITS					Patents and	patents	pending	33
 Balance Short str Patented Low way 	alve direct solenoid operated. ed poppet, immune to pressure roke with high flow. d solenoid develops high shifti attage solenoids. JI return spring.								34 36
	ely fast response times.								32
								WHE FE	37
						16	1000	0	38
						1,	00		52
HOW	TO ORDER								67
	-								69
	Port size		N.C.	Only			N.C	. Only **	44
				2 W				, , , , , , , , , , , , , , , , , , ,	46
	M3		33A-AAB	-R <i>xxx-xxx</i>			33A-B	AB-Rxxx-xxx	
	with solenoids above 4.0 W - OID OPERATOR ➤		R <u>xx</u>	X-XX	<u>x</u>				42 47 48P
XX	Voltage	X	Lead wire length	X	Manual op		XX	Electrical connection	
DA DB	24 VDC (0.5W) 24 VDC (1.0W)	<u> </u>	No Lead wire*	<u>0</u>	No manual ope Non-locking rec		BA BB	Flying leads Flying leads w/LED	48
DC	24 VDC (1.8W)	В	24"	3	Non-locking ext		ВС	Flying leads w/MOV	
DF DG	24 VDC (4.0W) 12 VDC (0.5W)	<u>C</u>	36" 48"				BD	Flying leads w/LED & MOV	400
DH DJ	12 VDC (1.0W) 12 VDC (1.8W)	E	72"				RA RB	Mini JAC Solenoid plug-in Mini JAC Solenoid plug-in	400
DM	12 VDC (1.6W)	_	* Not available for flying leads connectors					w/LED	92
			ledas connectors				RC	Mini JAC Solenoid plug-in w/MOV Mini JAC Solenoid plug-in	
Other o	options available, see page 32	1					RD		
	,,	1.						w/LED & MOV	0.2
Washdowi Consult fac	n capability is possible for the ctory for ordering information.	"B" and "R"	type electrical connectors.				TA TB	W/LED & MOV JST Solenoid plug-in	93
Washdowi Consult fac	n capability is possible for the	"B" and "R"	type electrical connectors.				TA TB TC	w/LED & MOV JST Solenoid plug-in JST Solenoid plug-in w/LED JST Solenoid plug-in w/MOV	ISO 01
Washdowi Consult fac	n capability is possible for the	"B" and "R"	type electrical connectors.				TA TB	JST Solenoid plug-in JST Solenoid plug-in w/LED	ISO 01 ISO 02
Washdowi Consult fac	n capability is possible for the	"B" and "R"	type electrical connectors.				TA TB TC	w/LED & MOV JST Solenoid plug-in JST Solenoid plug-in w/LED JST Solenoid plug-in w/MOV JST Solenoid plug-in w/LED &	ISO 01
Washdown Consult fac	n capability is possible for the	"B" and "R"	type electrical connectors.				TA TB TC	w/LED & MOV JST Solenoid plug-in JST Solenoid plug-in w/LED JST Solenoid plug-in w/MOV JST Solenoid plug-in w/LED &	ISO 01 ISO 02







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40µ

 0° F to 120° F (- 18° C to + 50° C)

Temperature range: Flow:

4W: (Cv .082) - 3W: (Cv .062) - 2.5W: (Cv .062) - 1.8W: (Cv .055) - 1.0W: (Cv .030) - 0.5W: (Cv .020)

Coil: Class A wire (#26 AWG x18), continuous duty

-15% to +10% of nominal voltage Voltage range:

4.0W - 3.0W - 2.5W - 1.8W - 1.0W - 0.5W Power:

DIMENSIONS

35,3 10,6 4,0 JHU 13,5 1,30 16,0 20,2 3,4 Ø 2,2 Thru Typ (2) 8,20 8,00 4,00

Dimensions shown are metric (mm)

Shown with JST Connector

_ 7,5



Individual mounting Series

Armature
Coil
Push pin
Poppet
"D" seal
Valve spring

SERIES FEATURES

- High force MACSOLENOID®.
- Universal porting.
- # 10-32 or M5 ports.
- Rated for lubricated or non-lubricated service.
- 10 mm direct operated.

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37 38

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69 44

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42



Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	M5, # 10-32	0.12 C _V	Inline	

OPERATIONAL BENEFITS

- 1. 10 mm valve, direct solenoid operated.
- 2. Balanced poppet, immune to variations of pressure.
- 3. Short stroke with high flow.
- 4. Patented solenoid develops high shifting forces.
- 5. Powerful return spring.
- 6. Manual operator standard on all valves.



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37 38 **52**

67 69 44

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47 **48P**

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400

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93

ISO 01 ISO 02 **ISO** 1

HOW TO ORDER

Port size	Universal valve	NC only valve
	2	2
	<u></u>	<u></u>
	1 3	1 3
M5	34C-ABA-G xxx-xxx	34C-ABB-G xxx-xxx
# 10-32	34C-AAA-G ****	34C-AAR-C YYY-YYY

SOLENG	OID OPERATOR >		G <u>x</u>	<u> </u>	7 *		
				<u>─</u> 」 ५ ⁻			
XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	Α	18"	1	Non-locking recessed	BA	Flying leads
DC	24 VDC (1.8W)	В	24"	3	Non-locking extended	ВТ	Flying leads with light
DD	24 VDC (2.5W)	С	36"		-	GA	MAC JAC Solenoid plug-in
DF	24 VDC (4.0W)					GB	MAC JAC Solenoid plug-in w/Diode
						GC	MAC JAC Solenoid plug-in

Note: AC voltage requires connector with rectifier.

* Other options available, see page 311.

Washdown capability is possible for the "G" type electrical connectors. Consult factory for ordering information.

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC Solenoid plug-in
GB	MAC JAC Solenoid plug-in w/Diode
GC	MAC JAC Solenoid plug-in w/MOV
GD	MAC JAC Solenoid plug-in w/LED
GE	MAC JAC Solenoid plug-in w/Diode & LED
GF	MAC JAC Solenoid plug-in w/MOV & LED
GG	MAC JAC Solenoid plug-in w/Rectifier
GH	MAC JAC Solenoid plug-in w/Rectifier & LED
KA	Plug-in wire assembly
КС	Plug-in wire assembly with rectifier and light
KT	Plug-in wire assembly with light

ISO 3

ISO 2







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $4 \text{ W}: (0.12 \text{ C}_{\text{v}}) - 2.5 \text{ W}: (0.10 \text{ C}_{\text{v}}) - 1.8 \text{ W}: (0.06 \text{ C}_{\text{v}})$

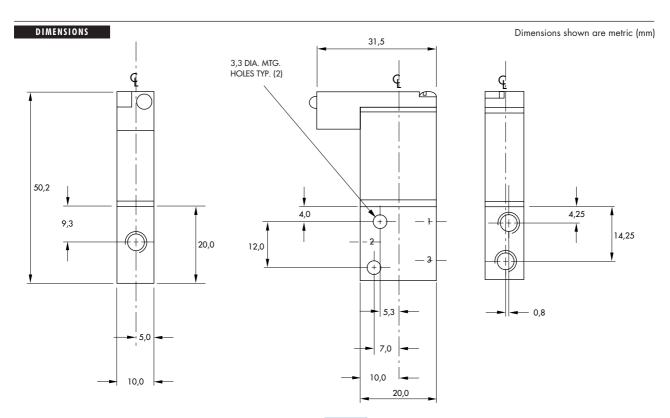
Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

Power: 4 W - 2.5 W - 1.8 W

Response times: Energize: 3.4 ms

(with 4 W coil) De-energize: 1.5 ms





Individual mounting Series Inline 33 34 Manifold mounting 36

32

69 44

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47 48P

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400

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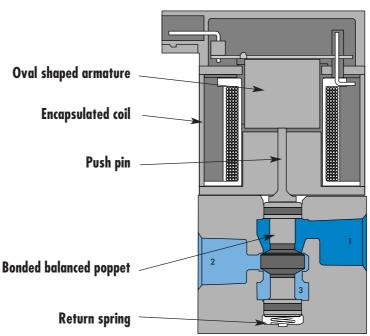
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum, divertor, or selector applications.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- Manual overrides as standard.
- Various solenoid enclosures and plug-in connectors.
- Optional surge suppression available.
- Low wattage DC solenoids down to 1.8 watts.
- Rectified AC voltage.

21



Function	Port size	Flow (Max)	Individual mounting	Series
3/2	1/8"	0.3 C _v	Inline	

OPERATIONAL BENEFITS

- 1. Balanced poppet, immune to variations of pressure.
- 2. Patented solenoid develops high shifting forces.
- 3. Short stroke with high flow.
- 4. Higher forces result in lower wattages for given flow.
- 5. Powerful return spring.



HOW TO ORDER

Port size	Universal valve	NC only valve	
	$rac{1}{\sqrt{1}} \int_{1}^{2} w$	$rac{2}{\sqrt{1}\sqrt{1}\sqrt{1}}$	
1/8" NPTF	36A-AAA-J xxx-xxx	36A-AAB-J xxx-xxx	

SOLENOID OPERATOR ➤

J <u>xxx</u>-<u>xxx</u> (-G) Add "G" for ground

				[」] ነ			
XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
AA	120 VAC (5.4W)	Α	18"	1	Non-locking recessed	BA	Flying leads
DA	24 VDC (5.4W)	В	24"	2	Locking recessed	GA	MAC JAC solenoid plug-in
DB	12 VDC (5.4W)	С	36"			GB	MAC JAC solenoid plug-in
DC	24 VDC (2.4W)						with diode
DD	12 VDC (2.4W)					GD	MAC JAC solenoid plug-in with light
						GG	MAC JAC solenoid plug-in with rectifier

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37 38 **52**

67 69 44

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47 **48P**

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400

ISO 01 ISO 02

ISO 1

ISO 2

ISO 3

^{*} Other options available, see page 317.

Note: - AC voltage requires connector with rectifier.
- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1.8 Watt: $(0.15 C_v)$, 2.4 Watt: $(0.15 C_v)$, 5.4 Watt: $(0.30 C_v)$

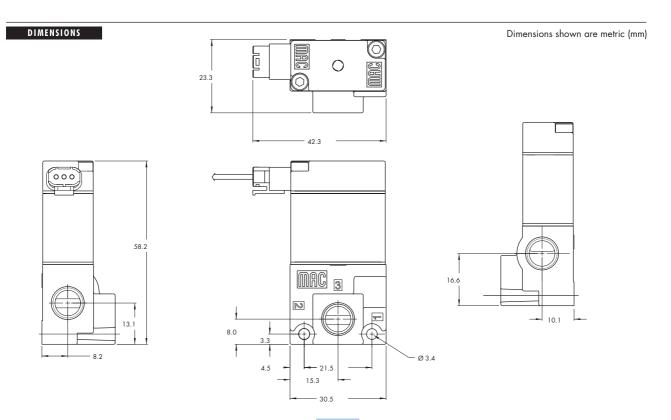
Coil: Class A wire (#22 AWG x 12), continuous duty

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: 5.4 W - 2.4 W - 1.8 W

Option : • BSPP threads





Function	Port size	Flow (Max)	Individual mounting	Series
3/2	1/8" - # 10-32	0.3 C _V	Stacking	

OPERATIONAL BENEFITS

- 1. Balanced poppet, immune to variations of pressure.
- 2. Patented solenoid develops high shifting forces.
- 3. Short stroke with high flow.
- 4. Higher forces result in lower wattages for given flow.
- 5. Powerful return spring.



HOW TO ORDER

Port size	NC only stacking	NC stacking Universal poppet	NO stacking Universal poppet
	CYL INEXH	WT T T	W T T T T IN EXH
1/8" NPTF	36A-SAB-J xxx-xxx	36A-SAC-J xxx-xxx	36A-SAD-J xxx-xxx
# 10-32	36A-SBB-J xxx-xxx	36A-SBC-J xxx-xxx	36A-SBD-J xxx-xxx

SOLENOID OPERATOR ➤

J xxx-xxx (-G) Add "G" for ground

				J ካ			
XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
AA	120 VAC (5.4W)	Α	18"	1	Non-locking recessed	BA	Flying leads
DA	24 VDC (5.4W)	В	24"	2	Locking recessed	GA	MAC JAC solenoid plug-in
DB	12 VDC (5.4W)	С	36"			GB	MAC JAC solenoid plug-in
DC	24 VDC (2.4W)						with diode
DD	12 VDC (2.4W)					GD	MAC JAC solenoid plug-in with light
* 0:1						GG	MAC JAC solenoid plug-in with rectifier

BODY TYPE OPTIONS

36A-SAB-Jxxx-xxx

Stacking body
T Stacking body with bottom inlet

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37 38 **52**

67 69 44

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47 48P

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400

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93

ISO 01

ISO 02

ISO 1

ISO 2 ISO 3

^{*} Other options available, see page 317.

Note: - AC voltage requires connector with rectifier.
- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.

End plate kit required (port size 1/4"): M-36001-01.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1.8 Watt: (0.15 C_v), 2.4 Watt: (0.15 C_v), 5.4 Watt: (0.30 C_v)

Class A wire (#22 AWG x 12), continuous duty

Voltage range: -15% to +10% of nominal voltage

Protection : Consult factory

Power: 5.4 W - 2.4 W - 1.8 W

Option: • BSPP threads

Spare parts: • Inlet & exhaust isolator plate: N-36001 • Inlet isolator: N-36002

• Exhaust isolator : N-36003 • Tie rod (x2) : 79411

DIMENSIONS

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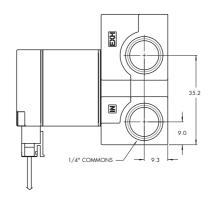
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MAC (C

Dimensions shown are metric (mm)

Note: Isolator adds 2.5 mm to length of stack.





Function	Port size	Flow (Max)	Individual mounting	Series
3/2	1/8" - 5/32 Pressed-in tube receptacle	0.3 C _V	Manifold base "plug-in"	

OPERATIONAL BENEFITS

- 1. Balanced poppet, immune to variations of pressure.
- 2. Patented solenoid develops high shifting forces.
- 3. Short stroke with high flow.
- 4. Higher forces result in lower wattages for given flow.
- 5. Powerful return spring.



HOW TO ORDER

Port size	Universal Valve Normally Closed	Universal Valve Normally Open	Normally Closed Only
		\square	2 1 3 1 3
Valve less base	36A-J00-00-J xx P- xxx	36A-K00-00-J xx P- xxx	36A-L00-00-J xxP-xxx
1/8" NPTF	36A-JSA-AE-J xxP-xxx	36A-KSA-AF-J xxP-xxx	36A-LSA-AE-J xxP-xxx
5/32 tube receptacle	36A-JSF-AE-J xxP-xxx	36A-KSF-AF-J xxP-xxx	36A-LSF-AE-J xxP-xxx

SOLENOID OPERATOR ➤

J <u>xx</u> P- <u>xxx</u> *	(-G) Add "G"	for ground
---	--------------	------------

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (5.4W)	1	Non-locking recessed	FA	Base plug-in
DA	24 VDC (5.4W)	2	Locking recessed	FB	Base plug-in with diode
DB	12 VDC (5.4W)			FG	Base plug-in with rectifier
DC	24 VDC (2.4W)				

¹² VDC (2.4W)

DD

* Other options available, see page 317. Note : AC voltage requires connector with rectifier.

Example: Manifold base only: 36A-0SA-AE (Normally closed manifold base).

End plate kit required (port size 1/4"): M-46003-01.

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67 69 44

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48P

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ISO 01 ISO 02 **ISO** 1 **ISO 2 ISO 3**







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Lubrication:

Filtration: 40 μ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C) Temperature range:

Flow:

 $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$

Coil: Class A continuous duty, #22 AWG x 12 base leads

-15% to +10% of nominal voltage Voltage range:

Protection: Consult Factory

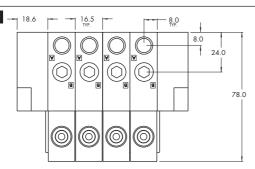
5.4 W - 2.4 W - 1.8 W Power:

Option: • BSPP threads

Spare parts: • Inlet isolator: 28501 • Exhaust isolator: 28502 • Valve cover plate: M-46002

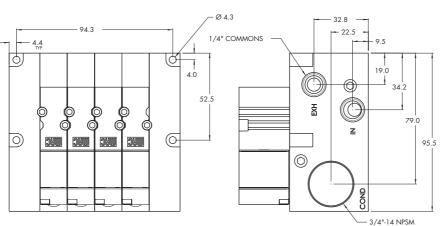
• Tie rod (x2): 79443

DIMENSIONS



Dimensions shown are metric (mm)

Note: For Normally closed manifold the "A" port is plugged. For Normally open manifold the "B" port is plugged.





Function	Port size	Flow (Max)	Individual mounting	Series
3/2	1/8" - 5/32 Pressed-in tube receptacle	0.3 C _v	Manifold base "plug-in" with pressure regulators	

OPERATIONAL BENEFITS

- 1. Balanced poppet, immune to variations of pressure.
- 2. Patented solenoid develops high shifting forces.
- 3. Short stroke with high flow.
- 4. Higher forces result in lower wattages for given flow.
- 5. Powerful return spring.



HOW TO ORDER

Port size	Universal Valve Normally Closed	Universal Valve Normally Open	Normally Closed Only
Valve less base	36A-J00-00-J xx P- xxx	36A-K00-00-J xx P- xxx	36A-L00-00-J xx P- xxx
1/8" NPTF	36A-JSA-AG-J xxP-xxx	36A-KSA-AH-J xx P- xxx	36A-LSA-AG-J xxP-xxx
5/32 tube receptacle	36A-JSF-AG-J xxP-xxx	36A-KSF-AH-J xxP-xxx	36A-LSF-AG-J xxP-xxx

SOLENOID OPERATOR ➤

J xx P-xxx (-G) Add "G" for ground

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (5.4W)	1	Non-locking recessed	FA	Base plug-in
DA	24 VDC (5.4W)	2	Locking recessed	FB	Base plug-in with diode
DB	12 VDC (5.4W)			FG	Base plug-in with rectifier
DC	24 VDC (2.4W)				
DD	12 VDC (2.4W)				

* Other options available, see page 317. Note : AC voltage requires connector with rectifier.

OPTIONS

36A-JSA-A**G**-Jxx P-xxx

G NC manifold & regulator with slotted stem adjustment
NC manifold & regulator with locking slotted stem adjustment
NC manifold & regulator with knob adjustment

36A-KSA-A**H**-J**xx** P-**xxx**

H NO manifold & regulator with slotted stem adjustment
 T NO manifold & regulator with locking slotted stem adjustment
 K NO manifold & regulator with knob adjustment

Note: All manifold bases are only available with a bottom cylinder port.

Example: Manifold base only: 36A-0SA-AJ (Normally closed manifold base & regulator with knob).

End plate kit required (port size 1/4"): M-46003-01.

ISO 02 **ISO** 1

ISO 01

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37 38 **52**

67 69 44

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48P

ISO 2

ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Lubrication:

Filtration: 40 μ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C) Temperature range:

Flow: $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$

Coil: Class A continuous duty, #22 AWG x 12 base leads

-15% to +10% of nominal voltage Voltage range:

Protection: Consult Factory

5.4 W - 2.4 W - 1.8 W Power:

Option: • BSPP threads

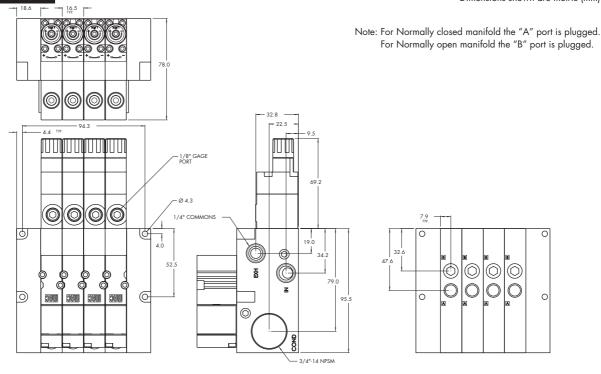
Spare parts: • Inlet isolator: 28501 • Exhaust isolator: 28502 • Valve cover plate: M-46002

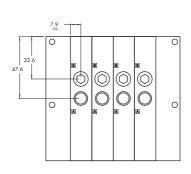
• Tie rod (x2): 79443

DIMENSIONS

Dimensions shown are metric (mm)

For Normally open manifold the "B" port is plugged.







Individual mounting Sub-base non "plug-in" Sub-base manifold base non "plug-in" Manifold mounting Manifold base non "plug-in" Wath tarking solenoid Sub-base/ Manifold base non "plug-in" Wath tarking solenoid Sub-base/ Manifold base non "plug-in" Wath tarking solenoid

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37 38 52

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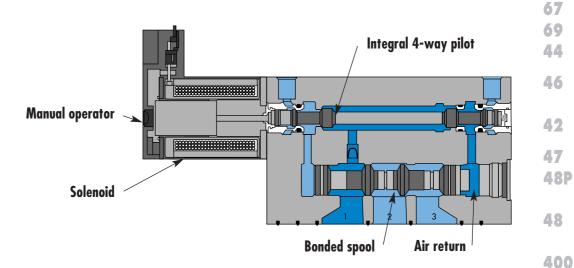
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot design.
- Internal or external pilot.
- Normally open or normally closed function.
- Universal function (external pilot).
- Rectified AC voltage.
- Latching solenoid technology.



Function	Port size	Floш (Max)	Individual mounting	Series
3/2 NO-NC	1/8"	0.4 C _v	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to $0.4 C_v$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
		10 2 12	10 2 12 10 4 12	10 2 12 10 321 12 321
Valve less base	Internal	32B-BMA-000-G xxx-xxx	32B-AMA-000-Gxxx-xxx	
	External	32B-BMB-000-G xxx-xxx	32B-AMB-000-G xxx-xxx	32B-GMB-000-G xxx-xxx
1/8" NPTF	Internal	32B-BMA-CAL-G <i>xxx-xxx</i>	32B-AMA-CAL-Gxxx-xxx	-
	External	32B-BMB-CAM-Gxxx-xxx	32B-AMB-CAM-Gxxx-xxx	32B-GMB-CAM-Gxxx-xxx

Note: Above codes are for side port.

STANDARD SOLENOID OPERATOR >

G	<u>X</u>	<u>(-)</u>	<u>(X</u>	X
		_		

			- 1 5		
XX Voltage	X	Wire length	X	Manual operator	
AA 120 VAC (2.5W)	Α	18"	1	Non-locking recessed	
DA 24 VDC (1.0W)	В	24"	2	Locking recessed	
DC 24 VDC (1.8W)	С	36"			
DD 24 VDC (2,5W)			<u>.</u>		
DF 24 VDC (4.0W)					
Note : AC voltage requires connector with rectifier. * Other options available, see page 311. Latching solenoid also available, see page 41. With MAC JAC electrical connector washdown capability is possible. — Consult factory for modification number.					

OPTIONS

Pilot/Base Configuration :

32B- xM	x-xAx-G	XXX-XXX

- A Individual base Side port B Individual base Bottom port

- M Pilot exhaust muffled
 P Pilot exhaust piped (# 10-32)
 U Pilot exhaust to main exhaust (not available with external pilot)



Electrical connection

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in w/Diode & LED

MAC JAC Solenoid plug-in w/MOV & LED

MAC JAC Solenoid plug-in

w/Rectifier
MAC JAC Solenoid plug-in
w/Rectifier & LED

Plug-in wire assy. with rectifier & light & ground

Plug-in wire assy. Plug-in wire assy. with light

Flying leads Flying leads with light

w/Diode

w/MOV

w/LED

XX BA

GA

GB

GC

GD

GE

GF

GG

GH

KA

KT

KD

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48P

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ISO 01 ISO 02

ISO 1

ISO 2

ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range : $0^{\circ}F$ to $120^{\circ}F$ (- $18^{\circ}C$ to $+50^{\circ}C$)

7/8": (0.40 C_v)

Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

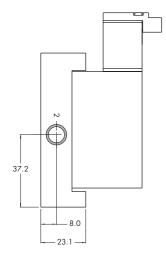
Power: 1.0 to 4.0 W

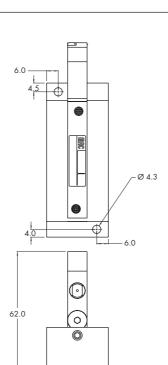
Response times : Energize : 5 ms

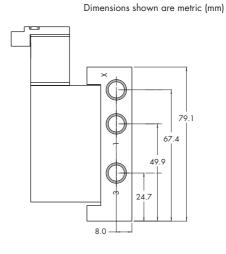
(with 4 W coil) De-energize: 5 ms

Options : • BSPP threads

DIMENSIONS







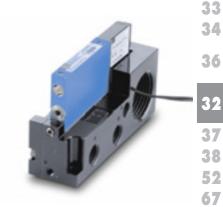
31.8



Function	Port size	Floш (Max)	Individual mounting	Series
3/2 NO-NC	# 10-32 - 1/4" O.D. tube receptacle	0.4 C _v	Sub-base "plug-in"	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to 0.4 $C_{\rm V}$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
		10 2 12		10 2 dZ
Valve less base	Internal	32B-BMA-000-G xx P- xxx	32B-AMA-000-G xx P- xxx	
	External	32B-BMB-000-G xx P- xxx	32B-AMB-000-G xx P- xxx	32B-GMB-000-G xx P- xxx
# 10-32	Internal	32B-BMA-AAA-G <i>xx</i> P- <i>xxx</i>	32B-AMA-AAA-G xx P- xxx	
	External	32B-BMB-AAB-G xx P- xxx	32B-AMB-AAB-G xx P- xxx	32B-GMB-AAB-GxxP-xxx
1/4" O.D.	Internal	32B-BMA-EAA-GxxP-xxx	32B-AMA-EAA-G xx P- xxx	
Tube receptacle	External	32B-BMB-EAB-GxxP-xxx	32B-AMB-EAB-GxxP-xxx	32B-GMB-EAB-GxxP-xxx

Note: Above codes are for side port.

STANDARD SOLENOID OPERATOR >

G	XX	P-XXX
		- $ -$

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	1	Non-locking recessed	SA	Base plug-in
DA	24 VDC (1.0W)	2	Locking recessed	SJ	Base plug-in with light
DC	24 VDC (1.8W)			55	Base plug-in with rectifier & light & ground
DD	24 VDC (2.5W)				
DF	24 VDC (4.0W)				

Note: AC voltage requires connector with rectifier.

* Other options available, see page 311.
Latching solenoid also available, see page 43.
Washdown capability is possible, consult factory for modification number.

OPTIONS

Pilot/Base Configuration :

32B-**xM***x*-**xA***x*-G*xx* P-*xxx*

A Individual base – Side port B Individual base – Bottom port

M Pilot exhaust muffled
 P Pilot exhaust piped (# 10-32)
 U Pilot exhaust to main exhaust (not available with external pilot)

48P 48

69 44

46

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400

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93

ISO 01 ISO 02

ISO 1

ISO 2

ISO 3







Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI 20 to 120 PSI Pilot pressure: **Lubrication:** Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: # 10-32 : $(0.35 C_v)$ - 1/4 tube receptacle : $(0.40 C_v)$ Coil: Class A continuous duty, #22 AWG x 12 base leads -15% to +10% of nominal voltage Voltage range:

 Power:
 1.0 to 4.0 W

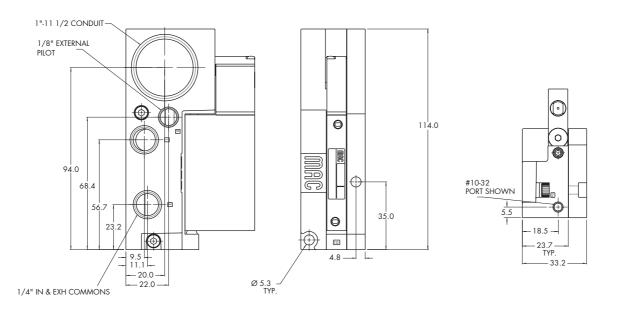
 Response times:
 Energize: 5 ms

 (with 4 W coil)
 De-energize: 5 ms

Options : • M5 port • M7 port • 6 mm O.D. tube receptacle

DIMENSIONS

Dimensions shown are metric (mm)





Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC	# 10-32 - 1/4" O.D. tube receptacle	0.4 C _v	Manifold base non "plug-in"	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to 0.4 $C_{\rm V}$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



69 44

46

42

47 **48P**

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400

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93

ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

Electrical connection

Flying leads with light
MAC JAC Solenoid plug-in
MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in w/MOV

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in w/Diode & LED

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in w/Rectifier
MAC JAC Solenoid plug-in

w/MOV & LED

w/Rectifier & LED

Plug-in wire assy. with rectifier & light & ground

Plug-in wire assy. Plug-in wire assy. with light

Flying leads

w/Diode

w/LED

XX

BA

BT

GA GB

GC

GD

GE

GF

GG

GH

KA

KD

HAW	TΛ	ORDER	
HUW	- 1 U	UKDEK	

Port size	Pilot air	NO valve	NC valve	Universal valve
				10 2 12 377 377 377 377 377 377 377 377 377 37
Valve less base	Internal	32B-BMA-000-G xxx-xxx	32B-AMA-000-G xxx-xxx	
	External	32B-BMB-000-G xxx-xxx	32B-AMB-000-G xxx-xxx	32B-GMB-000-G xxx-xxx
# 10-32	Internal	32B-BMA-AJL-G xxx-xxx	32B-AMA-AJL-G xxx-xxx	
	External	32B-BMB-AJM-G xxx-xxx	32B-AMB-AJM-Gxxx-xxx	32B-GMB-AJM-Gxxx-xxx
1/4" O.D.	Internal	32B-BMA-EJL-Gxxx-xxx	32B-AMA-EJL-G xxx-xxx	
Tube receptacle	External	32B-BMB-EJM-G xxx-xxx	32B-AMB-EJM-Gxxx-xxx	32B-FMB-EJM-Gxxx-xxx

Note: Above codes are for side port.

STANDARD SOLENOID OPERATOR >

G	XXX	-XXX
\sim	/////	

XX	Voltage	Х	Wire length	X	Manual operator
AA	120 VAC (2.5W)	Α	18"	1	Non-locking recessed
DA	24 VDC (1.0W)	В	24"	2	Locking recessed
DC	24 VDC (1.8W)	С	36"		
DD	24 VDC (2.5W)				•
DF	24 VDC (4.0W)	-			
Note : A	C voltage requires connector with options available, see page 311.	rectifier.			

Latching solenoid also available, see page 41.
With MAC JAC electrical connector washdown capability is possible.

Consult factory for modification number.

OPTIONS

32B-000-xxx (i.e. 32B-000-AJL)

Base/Pilot Configuration:

32B-	xMx-xJx-Gxxx-x	хх

J Manifold base – Side port K Manifold base – Bottom port

M Pilot exhaust muffled
 P Pilot exhaust piped (# 10-32)
 U Pilot exhaust to main exhaust (not available with external pilot)

M-32003-01-01 (Internal pilot) M-32003-02-01 (External pilot) Note : Manifold assemblies require an end plate kit :







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

... p

Temperature range : $0^{\circ}F$ to $120^{\circ}F$ (- $18^{\circ}C$ to $+50^{\circ}C$)

Flow: # 10-32 : (0.35 C_v) - 1/4 tube receptacle : (0.40 C_v)

Coil: Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

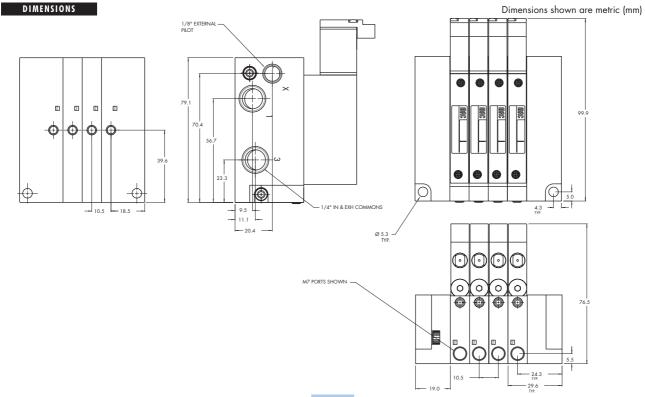
Power: 1.0 to 4.0 W

Response times : Energize : 5 ms

(with 4 W coil) De-energize: 5 ms

Options : • M5 port • M7 port • 6 mm O.D. tube receptacle

• Inlet/Exhaust Isolator : 28454





Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC	# 10-32 - 1/4" O.D. tube receptacle	0.4 C _V	Manifold base "plug-in"	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to 0.4 $\rm C_{V}$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



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47 **48P**

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ISO 01 ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
		10 2 12 377	10 2 12 D 7 7 47	10 2 12 10 3 17
Valve less base	Internal	32B-BMA-000-G xx P- xxx	32B-AMA-000-GxxP-xxx	
	External	32B-BMB-000-G xx P- xxx	32B-AMB-000-G xx P- xxx	32B-GMB-000-G xx P- xxx
# 10-32	Internal	32B-BMA-AJA-G xx P- xxx	32B-AMA-AJA-G xx P- xxx	
	External	32B-BMB-AJB-GxxP-xxx	32B-AMB-AJB-GxxP-xxx	32B-GMB-AJB-GxxP-xxx
1/4" O.D.	Internal	32B-BMA-EJA-G xx P- xxx	32B-AMA-EJA-GxxP-xxx	
Tube receptacle	External	32B-BMB-EJB-GxxP-xxx	32B-AMB-EJB-G xx P- xxx	32B-GMB-EJB-GxxP-xxx

Note: Above codes are for side port.

STANDARD SOLENOID OPERATOR >

G	XX	P-XXX
		- $ -$

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	1	Non-locking recessed	SA	Base plug-in
DA	24 VDC (1.0W)	2	Locking recessed	SJ	Base plug-in with light
DC	24 VDC (1.8W)			55	Base plug-in with rectifier & light & ground
DD	24 VDC (2.5W)				
DF	24 VDC (4.0W)				

OPTIONS

Base only:

32B-000-**xxx** (i.e. 32B-000-AJA)

Base Configuration:

32B-xxx-xJx-Gxx P-xxx

- J Manifold base Side port
 K Manifold base Bottom port
 L Left end manifold base Side port
 M Left end manifold base Bottom port
 N Right end manifold base Side port
 P Right end manifold base Bottom port

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold and middle station manifolds (options "J" or "K").

Note: AC voltage requires connector with rectifier.

* Other options available, see page 311.
Latching solenoid also available, see page 43.
Washdown capability is possible, consult factory for modification number.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range : 0°F to 120°F (-18°C to +50°C)

Flow: # 10-32 : (0.35 C_v) - 1/4 tube receptacle : (0.40 C_v)

Coil: Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

Power: 1.0 to 4.0 W

1.0 10 4.0 **

Response times: Energize: 5 ms (with 4 W coil) De-energize: 5 ms

Options : • M5 port • M7 port • 6 mm O.D. tube receptacle

• Inlet/Exhaust Isolator : 28454

Dimensions shown are metric (mm) 1/3º EDIENNAL PEOT 1/4" N & EDH COMMONS 1/4" N & EDH



Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC	# 10-32 - 1/4" O.D. tube receptacle	0.4 C _v	Sub-base/ manifold base non "plug-in" with latching	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to 0.4 $C_{\rm V}$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



69 44

46

42

47 **48P**

48

400

92

93

ISO 01

ISO 02

ISO 1 **ISO 2 ISO 3**

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve
		10 2 12 17/2	$\begin{array}{c c} 10 & 2 & 12 \\ 1/7D & 7 & 3/7 \\ \hline 73 & 51 \end{array}$
Valve less base	Internal	32A-BMA-000-L xxx-xxx	32A-AMA-000-L xxx-xxx
	External	32A-BMB-000-L xxx-xxx	32A-AMB-000-Lxxx-xxx
# 10-32	Internal	32A-BMA-AAL-L xxx-xxx	32A-AMA-AAL-L xxx-xxx
	External	32A-BMB-AAM-Lxxx-xxx	32A-AMB-AAM-Lxxx-xxx
1/4" O.D.	Internal	32A-BMA-EAL-L xxx-xxx	32A-AMA-EAL-Lxxx-xxx
Tube receptacle	External	32A-BMB-EAM-Lxxx-xxx	32A-AMB-EAM-Lxxx-xxx

Note: Above codes are for individual base and side port.

LATCHI	ng solenoid oper <i>a</i>	ATOR ➤	L	XXX-XXX	<u>*</u>		
XX	Voltage	У	Wire length		Manual operator	YY	Electrical connection**
		^		Α	manoar operator	AA	
DF	24 VDC (4.0W)	A	18"		No operator	BA	2 Wire Flying leads
HA	24 VDC (1.95W)	В	24"			BJ	4 Wire Flying leads
		С С	36"			KA	2 Wire Plug-in Assembly
						KE	4 Wire Plug-in Assembly
						LA	3 Wire plug-in assembly (Polarity Switching Cover)

OPTIONS

Pilot/Base Configuration:

32A- x	Λx-xΔ	x-Lxxx	·xxx
		В	Individual base – Side port Individual base – Bottom port Manifold base – Side port Manifoldl base – Bottom port
			Pilot exhaust muffled Pilot exhaust piped (# 10-32)

U Pilot exhaust to main exhaust (not available with external pilot)

Note : Manifold assemblies require an end plate kit: M-32003-01-01 (internal pilot) M-32003-02-01 (external pilot)

^{*} Other options available, see page 319.
** Latching 32 series with non plug-in base configuration must use "B", "K" or "L" type electrical connector.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot : Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range : $0^{\circ}F$ to $120^{\circ}F$ (- $18^{\circ}C$ to $+50^{\circ}C$)

Flow: # 10-32 : (0.35 C_v) - 1/4 tube receptacle : (0.40 C_v)

Class A wire (#22 AWG x 18), continuous duty

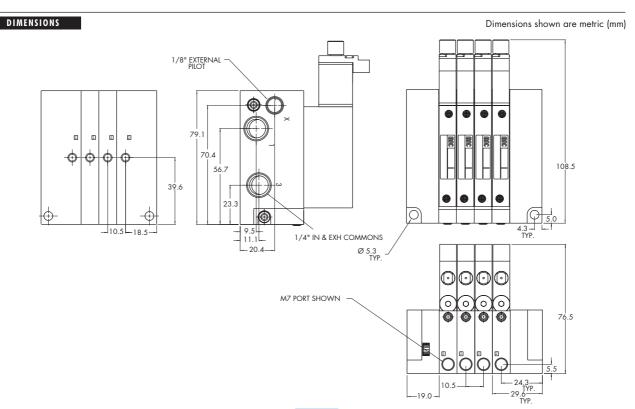
Voltage range: -15% to +10% of nominal voltage

Power: 1.95 to 4.0 W

Response times : Energize : 5 ms

(with 4 W coil) De-energize : 5 ms

Options : • M5 port • M7 port • 6 mm O.D. tube receptacle





unction	Port siz	e Floш (Max)	Individual/Manifold mounting	Series
3/2 NO-NC	1/4" O.D. tube receptacle		Sub-base/ manifold base "plug-in" with latching solenoid	
PERATIONAL BENEFITS				33
. 3-way valve with 4-wa				34
. 10 mm valve (stacks o			100	57
. High flow (up to 0.4 (. Fast, repeatable respo			2015	36
. Maximum shifting force	es in both directions.		5	
				32
				32
			0	37
			0.00	38
			(a) (b)	52
HOW TO ORDER				67
Port size Pilot air		NO valve	NC valve	69
		•	2	44
			10 12 4Z	
Valve less base Internal External		32A-BMA-000-LxxP-xxx	32A-AMA-000-LxxP-xxx	46
		32A-BMB-000-LxxP-xxx	32A-AMB-000-LXXP-XXX	
# 10-32	Internal	32A-BMA-AAA-LxxP-xxx	32A-AMA-AAA-LxxP-xxx	42
	External	32A-BMB-AAB-LxxP-xxx	32A-AMB-AAB-LxxP-xxx	
1/4" O.D.	Internal	32A-BMA-EAA-LxxP-xxx	32A-AMA-EAA-LxxP-xxx	47
Tube receptacle	External	32A-BMB-EAB-LxxP-xxx	32A-AMB-EAB-LxxP-xxx	48P
lote : Above codes are fo	r individual base and sid			
atching solenc	OID OPERATOR ➤	L xx P- xxx *		48
XX Voltage		X Manual operator	XX Electrical connection**	400
DF 24 VDC (4.0V	V)	0 No operator	DA Base/Manifold Plug-in	400
HA 24 VDC (1.95	iW)	<u> </u>	DB Base/Manifold Plug-in w/Ground DC Base/Manifold Plug-in w/ Light	92
			DD Base/Manifold Plug-in w/ Light and	
			EA Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)	- 02
Other options available	e, see page 319.	onnector, 3 wire base must use "EA" type electrical co		93
	use D Type electrical co	officerior, 5 wire base most use LA Type electrical co	miecior.	ISO (
OPTIONS				150 (
lot/Manifold/Base Co	0		ase Int./Ext. Pilot : (wire options)	150 (
32A-xMx-xAx-LxxP-x			-xxA-LxxP-xxx	150
		П	A Plug-In Int. Pilot (2 Wire)**	ISO 2
B Ir	ndividual base – Side po ndividual base – Bottom p	port	B Plug-In Ext. Pilot (2 Wire)**	
B Ir	ndividual base – Bottom _I Nanifold base – Side port	port	C Plug-In Int. Pilot (3 Wire)** D Plug-In Ext. Pilot (3 Wire)**	ISO 3
B Ir J A K A L Lo M Lo	ndividual base – Bottom į	oort t ort Side port 3ottom port	C Plug-In Int. Pilot (3 Wire)**	ISO

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (option J or K).

M Pilot exhaust muffled
 P Pilot exhaust piped (#10-32)
 U Pilot exhaust to main exhaust (not available with external pilot)







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

Pilot pressure: External Pilot : Vacuum to 120 PSI 20 to 120 PSI

Lubrication:

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

10-32 : (0.35 C_v) - 1/4 tube receptacle : (0.40 C_v)

Class A continuous duty, #22 AWG x 12 base leads

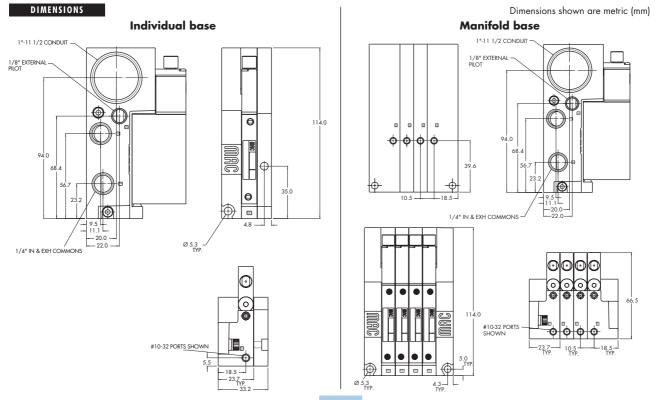
Voltage range: -15% to +10% of nominal voltage

Power: 1.95 to 4.0 W

Response times : Energize : 5 ms

(with 4 W coil) De-energize : 5 ms

Options : • M5 port • M7 port • 6 mm O.D. tube receptacle





Individual mounting Sub-base non plug-in Sub-base non plug-in

33 34

36

32

> 69 44

> 46

42

47

48P

48

400

92

93

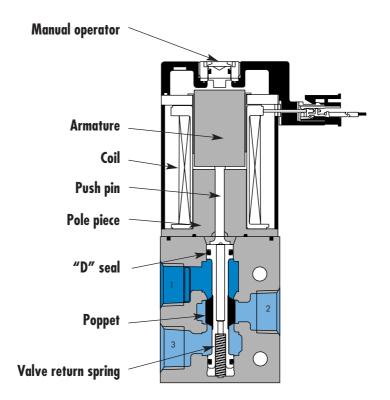
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Balanced poppet equals consistent high shifting forces.
- \bullet Valve shifting forces are consistent and independent of pressure fluctuations.
- High solenoid and return spring forces ensure high speed and precise repeatability.
- Built-in wear compensation valve stroke is shorter than solenoid stroke.
- Constant high flow maintained throughout the pressure range.
- Exhaust contaminants are isolated from the solenoid.
- Full flow exhaust.
- Universal porting 6 functions in one valve.



Function	Port size	Flow (M	ax]	Individual mounl	ing	Series
3/2 NO-NC	1/8" - 1	/4" 0.5 C	v	Inline		
OPERATIONAL BENEFITS 1. Balanced poppet equals forces.	s consistent high shifting				102-007	33 34
 Valve shifting forces are of pressure fluctuations. High solenoid and retur speed and precise reper 	n spring forces ensure hi				-	36
 Built-in wear compensat than solenoid stroke. Constant high flow mair 	ion – valve stroke is shor	ter		=06		32
pressure range. 5. Exhaust contaminants at 7. Full flow exhaust.	re isolated from the soler	oid.		a Co		38
8. Universal porting – 6 fu	nctions in one valve.					52 67
Port	size	Univer	sal valve		NC only valve	69
			2		2	44
			T T W		T T W	46
1/8"	NPTF	37A-AA()-H xxx-xxx	3	37A-BA0-H xxx-xxx	40
1/4"	NPTF)-H <i>xxx-xxx</i>		37A-BB0-H <i>xxx-xxx</i>	42
SOLENOID OPERATO	R >	H <u>xx</u>	<u>X-XXX</u> *			47
			<u> </u>			48P
XX Voltage	X	Wire length	X Manual o		XX Electrical connection**	
AA 120 VAC (6.7W) DA 24 VDC (5.2W)) <u>A</u> <u>B</u>	18"	Non-locking Locking reces		MA Plug-in wire assembly MC Plug-in wire assembly with	48
DB 24 VDC (2.4W) DC 24 VDC (1.8W)					BA Flying leads	
24 (1.00)					BC Flying leads with light MT Plug-in wire assembly with rectifier & light	400
Note : AC voltage requires co * Other options available, so	onnector with rectifier. ee page 315.					92
						93
						ISO 01
						ISO 02
						ISO 1
						ISO 2
						ISO 3







(with 5.2 W coil)

Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $5.2 \text{ W}: (0.5 \text{ C}_{\text{v}}) - 2.4 \text{ W}: (0.35 \text{ C}_{\text{v}})$

Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

70 wer: 5.2 W - 2.4 W

 Power:
 5.2 W - 2.4 W

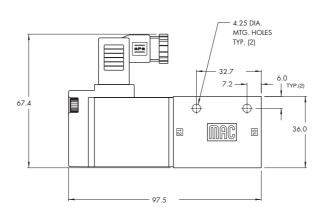
 Response times:
 Energize: 16.9 ms

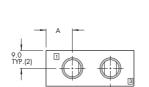
De-energize : 6.7 ms

Options : • BSPP ports

DIMENSIONS

Dimensions shown are metric (mm)





18.0

Shown with Mini Square Connector ("K" Type)

Dim	A	В
1/8"	13.3	32.45
1/4"	14.7	33.7



Function	Port size	Flow (Max	(]		Individual mounting		Series
3/2 NO-NC	1/8" - 1/	′4″ 0.5 C _v			Sub-base non plug-in		
Derivational Benefits Balanced poppet equal: Valve shifting forces are pressure fluctuations. High solenoid and return speed and precise reperion of the solenoid stroke. Constant high flow main range. Exhaust contaminants are full flow exhaust. Universal porting – 6 further thanks.	e consistent and independent on spring forces ensure high atability. Frion – valve stroke is shorten trained throughout the pre- re isolated from the solence	ent of h er than essure					33 34 36 32 37 38 52 67
Port	size	Universe	ıl valve		NC o	only valve	69 44
Valve le 1/8" 1/4"	NPTF	37A-C10-I 37A-CAA- 37A-CBA-I	H xxx-xx	Х	37A-D		46 42 47
SOLENOID OPERATO XX Voltage		H XXX	(- XX) -	Manual ope	erator XX	Electrical connection	48P
AA 120 VAC (6.7W DA 24 VDC (5.2W) DB 24 VDC (2.4W) DC 24 VDc (1.8W)) A B	18" 24"	1 2	Non-locking recessed	essed MA	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with rectifier & light	48 400 92
Note: AC voltage requires of Other options available, s	onnector with rectifier. ee page 31 <i>5</i> .						93
Base only : 37A-0AA (1/8") 37A-0BA (1/4")							ISO 01 ISO 02 ISO 1 ISO 2

ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $5.2 \text{ W}: (0.5 \text{ C}_{\text{v}}) - 2.4 \text{ W}: (0.35 \text{ C}_{\text{v}})$

Class A wire (#22 AWG x 18), continuous duty

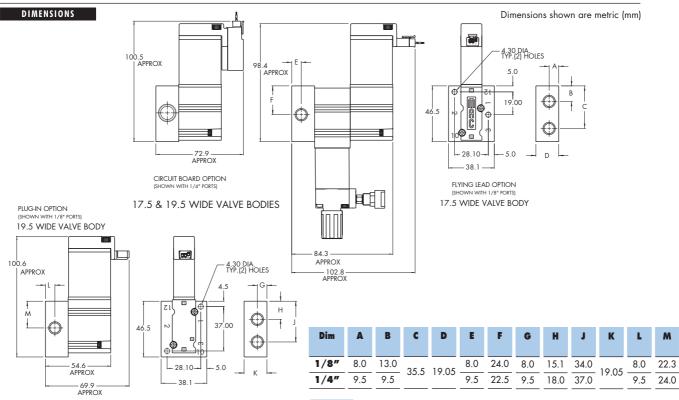
Voltage range: -15% to +10% of nominal voltage

Power: 5.2 W – 2.4 W

Response times : Energize : 16.9 ms

(with 5.2 W coil) De-energize : 6.7 ms

Options : • BSPP ports • Sandwich regulator - see "Regulator" Section





Sub-base non "plug-in" Sub-base "plug-in" Sub-base "plug-in" with larching solenoid Manifold mounting Sub-base/manifold base solenoid Sub-base/manifold base page "plug-in" with larching solenoid Sub-base/manifold base page "plug-in" with larching solenoid Sub-base/manifold base page "plug-in" with larching solenoid 334

32

37 38 52

92

93

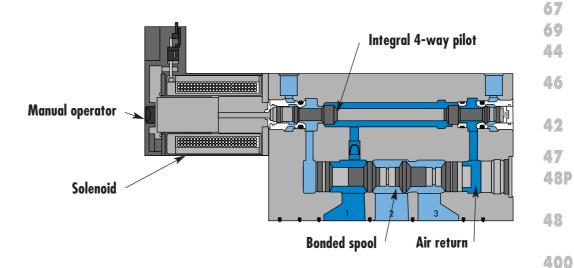
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot design.
- Internal or external pilot.
- Normally open or normally closed function.
- Universal function (external pilot).
- Rectified AC voltage.
- Latching solenoid technology.



Function	Port size	Floш (Max)	Individual mounting	Series
3/2 NO-NC	1/8"	1.2 C _V	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 16.5 mm centers).
- 3. High flow (up to 1.2 Cv).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



33

34

36

32

46

42

47

48P

48

400

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93

ISO 01

ISO 02 **ISO** 1 **ISO 2 ISO 3**

HAW	TΛ	ORDER	
HUW	- 1 U	UKDEK	

Port size	Pilot air	ot air NO valve NC valve		Universal valve	
Valve less base	Internal	38B-BMA-000-G xxx-xxx	38B-AMA-000-G xxx-xxx		
	External	38B-BMB-000-G xxx-xxx	38B-AMB-000-G xxx-xxx	38B-GMB-000-G xxx-xxx	
1/8" NPTF	Internal	38B-BMA-AAL-G xxx-xxx	38B-AMA-AAL-G xxx-xxx		
	External	38B-BMB-AAM-Gxxx-xxx	38B-AMB-AAM-Gxxx-xxx	38B-GMB-AAM-Gxxx-xxx	

Note: Above codes are for side port.

STANDARD SOLENOID OPERATOR >

				J 5	
XX	Voltage	X	Wire length	Х	Manual operator
AA	120 VAC (2.5W)	Α	18"	1	Non-locking recessed
DA	24 VDC (1.0W)	В	24"	2	Locking recessed
DC	24 VDC (1.8W)	С	36"		
DD	24 VDC (2.5W)			-	
DF	24 VDC (4.0W)				

Note: AC voltage requires connector with rectifier.

* Other options available, see page 311.
Latching solenoid also available, see page 59.
With MAC JAC electrical connector washdown capability is possible.
Consult factory for modification number.

OPTIONS

Pilot/Base	e Cor	ntiguratio	on:
38B- x N	X-X	x-Gxxx	-xxx
		A B	Individual base – Side port Individual base – Bottom port
		— Р	Pilot exhaust muffled Pilot exhaust piped (# 10-32)

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC Solenoid plug-in
GB	MAC JAC Solenoid plug-in w/Diode
GC	MAC JAC Solenoid plug-in w/MOV
GD	MAC JAC Solenoid plug-in w/LED
GE	MAC JAC Solenoid plug-in w/Diode & LED
GF	MAC JAC Solenoid plug-in w/MOV & LED
GG	MAC JAC Solenoid plug-in w/Rectifier
GH	MAC JAC Solenoid plug-in w/Rectifier & LED
KA	Plug-in wire assembly
KT	Plug-in wire assembly with light
KD	Plug-in wire assembly with rectifier & light & ground







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" bottom port: (1.2 C_v) - 1/8" side port: (1.0 C_v)

Coil: Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

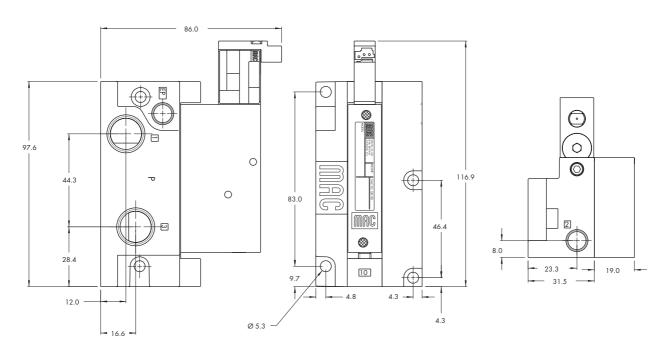
1.0 to 4.0 W Power:

Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

• BSPP threads Options :

DIMENSIONS

Dimensions shown are metric (mm)





Function	P	ort size	Flow (Max)		Individua	l mounting	Series
3/2 NO-NC		/8" - /4" O.D. tube receptacle	1.2 C _v		Sub-base "plug-in"		
OPERATIONAL BENEFITS							33
1. 3-way valve with 4-wa		1					34
 10 mm valve (stacks or High flow (up to 1.2 C Fast, repeatable responses Maximum shifting force 	nse times.						36
					4		32
						13 12	37
					- 4	100	38
							52
HOW TO ORDER							67
Port size	Pilot air	NO valve		NC valve		Universal valve	69
							44
					2	10 2 12 10 3 7 12	46
Valve less base	Internal	38B-BMA-000-G xx P- x	xx	38B-AMA-000-G x)	xP- <i>xxx</i>		
	External	38B-BMB-000-G xx P- x	xx	38B-AMB-000-GXX	rP- <i>xxx</i>	38B-GMB-000-G xx P- xxx	40
1/8" NPTF	Internal	38B-BMA-AAA-GxxP-x		38B-AMA-AAA-GX			42
1/4// O.D.	External -	38B-BMB-AAB-GxxP-x		38B-AMB-AAB-GXX		38B-GMB-BAB-GxxP-xxx	47
1/4" O.D. Tube receptacle	Internal	38B-BMA-EAA-GxxP-x 38B-BMB-EAB-GxxP-x		38B-AMA-EAA-GXX		38B-GMB-EAB-GxxP-xxx	48P
Note : Above codes are for STANDARD SOLENC		DR ➤ (• <u>xx</u> P-	<u>xxx</u> .			48
XX Voltage			ınual opera		XX	Electrical connection	400
AA 120 VAC (2.5) DA 24 VDC (1.0W			i-locking recesse ting recessed	d		Base plug-in Base plug-in with light	
DC 24 VDC (1.8W	·)		g rocosco		55	Base plug-in with rectifier & light & ground	92
DD 24 VDC (2.5W DF 24 VDC (4.0W							
Note: AC voltage requires	connector with re	ectifier.					93
 Other options available, Latching solenoid also avai 	lable, see page 6	51.					
							ISO 01
OPTIONS							ISO 02
Pilot/Base Configuration							ISO 1
38B- xM x- xA x-Gxx P-x							ISO 2
A Ind B Ind	dividual base – S dividual base – B	iide port Bottom port					ISO 3
P Pil	ot exhaust muffle ot exhaust piped ot exhaust to ma	l (# 10-32)					150

Washdown capability is possible, consult factory for modification number.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range : 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" bottom port: $(1.2 \, \text{C}_{\text{v}})$ - 1/8" side port: $(1.0 \, \text{C}_{\text{v}})$ - 1/4" tube receptacle: $(0.85 \, \text{C}_{\text{v}})$

Coil: Class A continuous duty, #22 AWG x 12 base leads

-15% to +10% of nominal voltage Voltage range:

Power: 1.0 to 4.0 W

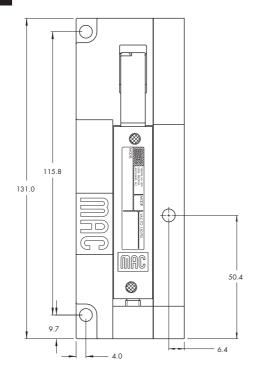
Response times: Energize : 6 ms (with 4 W coil)

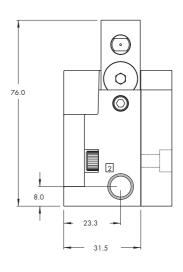
De-energize : 6 ms

• BSPP threads Options :

DIMENSIONS

Dimensions shown are metric (mm)







Function	Port size	Floш (Max)	Manifold mounting	Series
3/2 NO-NC	1/8" - 1/4" O.D. tube receptacle	1.2 C _V	Manifold base "plug-in"	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 16.5 mm centers).
- 3. High flow (up to 1.2 $C_{\rm V}$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



69 44

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47 48P

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93

ISO 01 ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

Port size	Pilot air NO valve		NC valve	Universal valve
		10 2 12	10 2 12 10 3 01	10 2 12 D 3 01
Valve less base	Internal	38B-BMA-000-G xx P- xxx	38B-AMA-000-G xx P- xxx	
	External	38B-BMB-000-G xx P- xxx	38B-AMB-000-G xx P- xxx	38B-GMB-000-G xx P- xxx
1/8" NPTF	Internal	38B-BMA-AJA-G xx P- xxx	38B-AMA-AJA-G xx P- xxx	
	External	38B-BMB-AJB-G xx P- xxx	38B-AMB-AJB-G xx P- xxx	38B-GMB-BJB-GxxP-xxx
1/4" O.D.	Internal	38B-BMA-EJA-G xx P- xxx	38B-AMA-EJA-GxxP-xxx	
Tube receptacle	External	38B-BMB-EJB-G xx P- xxx	38B-AMB-EJB-GxxP-xxx	38B-GMB-EJB-GxxP-xxx

Note: Above codes are for side port.

071110100	001511015	00504500
STANDARD	SOLENOID	OPFRATOR ➤

SOLENOID OPERATOR >	$G \xrightarrow{XX} P - \xrightarrow{XXX}$

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	1	Non-locking recessed	SA	Base plug-in
DA	24 VDC (1.0W)	2	Locking recessed	SJ	Base plug-in with light
DC	24 VDC (1.8W)			55	Base plug-in with rectifier & light & ground
DD	24 VDC (2.5W)				
DF	24 VDC (4.0W)				

OPTIONS

Base only:

38B-000-xxx (i.e. 38B-000-AJA)

Base Configuration:

38B-xxx-xJx-Gxx P-xxx

- J Manifold base Side port
 K Manifold base Bottom port
 L Left end manifold base Side port
 M Left end manifold base Bottom port
 N Right end manifold base Side port
 P Right end manifold base Bottom port

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold and middle station manifolds (options "J" or "K").

Note: AC voltage requires connector with rectifier.

* Other options available, see page 311.
Latching solenoid also available, see page 61.
Washdown capability is possible, consult factory for modification number.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

20 to 120 PSI Pilot pressure:

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

0°F to 120°F (-18°C to +50°C) Temperature range:

Flow: 1/8" bottom port: (1.2 C_v) - 1/8" side port: (1.0 C_v) - 1/4" tube receptacle: (0.85 C_v)

Coil: Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

Power: 1.0 to 4.0 W

Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

Options : • BSPP threads

DIMENSIONS Dimensions shown are metric (mm) 1/8" COMMON EXT. PILOT — 115.8 TYP. 131.0 0 \otimes ⊗ ⊗ 107.1 0 51.5 **①** 0 0 0 28.4 0 0 \circ)(o) 0 12.0 0 0 0 0 23.3 - 3/8" IN & EXH - 29.5 -**—** 33.5 **—** 1/8" TAPPED OR 1/4" O.D. TUBE FITTING 23.3 1/8" TAPPED OR 1/4" O.D. TUBE FITTING



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
3/2 NO-NC	1/8" - 1/4" O.D. tube receptacle	1.2 C _v	Sub-base/ manifold base non "plug-in" with latching solenoid	

OPERATIONAL BENEFITS

- 1. 3-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 16.5 mm centers).
- 3. High flow (up to 1.2 $C_{\rm V}$).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



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32

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42

47 48P

48

400

92

93

ISO 01

ISO 02

ISO 1

ISO 2 ISO 3

	ORDER

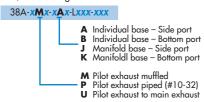
Port size	Port size Pilot air N		NC valve	Universal valve	
		10 12 421		10 2 12 12 12 12 12 12 13 14 15 16 17 17 17 17 17 17 17 17 17 17	
Valve less base	Internal	38A-BMA-000-L xxx-xxx	38A-AMA-000-L xxx-xxx		
	External	38A-BMB-000-L xxx-xxx	38A-AMB-000-L xxx-xxx	38A-GMB-000-Lxxx-xxx	
1/8" NPTF	Internal	38A-BMA-AAL-Lxxx-xxx	38A-AMA-AAL-Lxxx-xxx		
	External	38A-BMB-AAM-Lxxx-xxx	38A-AMB-AAM-Lxxx-xxx	38A-GMB-AAM-Lxxx-xxx	
1/4" O.D.	Internal	38A-BMA-EAL-Lxxx-xxx	38A-AMA-EAL-L xxx-xxx		
Tube receptacle	External	38A-BMB-EAM-Lxxx-xxx	38A-AMB-EAM-Lxxx-xxx	38A-GMB-EAM-Lxxx-xxx	

Note: Above codes are for individual base and side port.

LATCHIN	ng solenoid oper.	ATOR ➤	L	XXX-XXX	<u><</u> *		
XX	Voltage	X	Wire length		Manual operator	XX	Electrical connection**
DF	24 VDC (4.0W)	A	18"	0	No operator	BA	2 Wire Flying leads
HA	24 VDC (1.95W)	В	24"		'	ВЈ	4 Wire Flying leads
			36"			KA	2 Wire Plug-in Assembly
						KE	4 Wire Plug-in Assembly
						LA	3 Wire plug-in assembly (Polarity Switching Cover)

OPTIONS

Pilot/Base Configuration :



Note: Manifold assemblies require an end plate kit:

M-38003-01-01 (internal pilot) M-38003-02-01 (external pilot)

^{*} Other options available, see page 319.
** Latching 38 series with non plug-in base configuration must use "B", "K" or "L" type electrical connector.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" bottom port: $(1.2 \, \mathrm{C_v})$ - 1/8" side port: $(1.0 \, \mathrm{C_v})$ - 1/4" tube receptacle: $(0.85 \, \mathrm{C_v})$

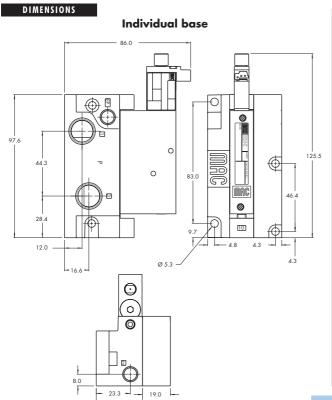
Coil: Class A wires (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

1.95 to 4.0 W Power:

Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

• BSPP threads Options :



Manifold base O O Ö 3/8" IN & EXH _ 1/8" TAPPED OR 1/4" O.D. TUBE FITTING 1/8" TAPPED OR 1/4" O.D. TUBE FITTING



Function	Po	rt size	Flow (Max)		Individua	/Manifold mounting	Series
3/2 NO-NC	,	/8" = /4" O.D. tube receptacle	1.2 C _V		Sub-base/ manifold ba "plug-in" with latchin solenoid		
OPERATIONAL BENEFITS						_	33
1. 3-way valve with 4-way		,				777	34
2. 10 mm valve (stacks or3. High flow (up to 1.2 Cot4. Fast, repeatable respor5. Maximum shifting force	v). nse times.						36
						996	32
						114	37
					- 4	20 19	38
						100	52
HOW TO ORDER							67
Port size	Pilot air	NO valve		NC valve		Universal valve	69
1 011 0120	1.1101.411	300 541150					44
		10 2 12 17D 7 3/1		10 2 17D 7 1 1	12 /	10 2 12 v ₃ b ₁ T	46
Valve less base	Internal	38A-BMA-000-LxxP-x		38A-AMA-000-Lxx		004 040 000 1 - 0	-
1/8" NPTF	External Internal	38A-BMB-000-L xx P- x 2 38A-BMA-AAA-L xx P- x		38A-AMB-000-L x x		38A-GMB-000-LxxP-xxx	42
.,	External	38A-BMB-AAB-LxxP-xx		38A-AMB-AAB-LXX		38A-GMB-AAB-LxxP-xxx	-
1/4" O.D.	Internal	38A-BMA-EAA-L xx P- x	xx —	38A-AMA-EAA-Lxx	xP-xxx	_	47
Tube receptacle	External	38A-BMB-EAB-LxxP-xx	KX	38A-AMB-EAB-LXX	rP- xxx	38A-GMB-EAB-LxxP-xxx	48P
Note : Above codes are for LATCHING SOLENO			L <u>xx</u> P-	<u>xxx</u> .			48
XX Voltage		X Ma	ınual opera	 ator	XX	Electrical connection**	400
DF 24 VDC (4.0W			operator		DA	Base/Manifold Plug-in	
HA 24 VDC (1.95V	V)				DB DC	Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Led	92
					DD EA	Base/Manifold Plug-in w/ Led and Ground Base/Manifold Plug-in 3 Pin	•
						(Polarity Switching Cover)	93
* Other options available, ** 2 and 4 wire bases must	use "D" type elect	trical connector.					160.01
3 wire base must t	use "EA" type elec	trical connector.					150 01
OPTIONS							ISO 02
Manifold/Base Configura				Manifold/Base Int./Ex		ire options)	ISO 1
38A- <i>xxx-x</i> A <i>x</i> -L <i>xx</i> P- <i>xx</i>				38A- <i>xxx</i> - <i>xx</i> A -L <i>xx</i> F			ISO 2
B Inc J Mc K Mc L Lef M Lef N Rig	Jividual base – Sid Jividual base – Bo anifold base – Sid anifold base – Bot ft end manifold ba ft end manifold ba ght end manifold k ght end manifold k	ttom port e port tom port sse – Side port sse – Bottom port			B Plug-In Ex C Plug-In In D Plug-In Ex E Plug-In In	. Pilot (2 Wire)** t. Pilot (2 Wire)** t. Pilot (3 Wire)** t. Pilot (3 Wire)** t. Pilot (4 Wire)** t. Pilot (4 Wire)**	ISO 3

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (option J or K).







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" bottom port: (1.2 C_v) - 1/8" side port: (1.0 C_v) - 1/4" tube receptacle: (0.85 C_v)

Coil: Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

1.95 to 4.0 W Power:

Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

• BSPP threads Options :

DIMENSIONS Dimensions shown are metric (mm) Individual base Manifold base OO 115.8 0 131.0 o Ø 5.3 1/8" TAPPED OR 1/4" O.D. TUBE FITTING

Series

ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



Inline 33 34 36 32 Manual operator 37 38 52 **Solenoid** 67 69 44 4-way pilot with balanced poppet 46 **Bonded spool** 42 Air return 47 **48P** 48 400 92 **SERIES FEATURES** 93

- Patented MACSOLENOID® for fastest possible response times and virtually burn-out proof AC solenoid operation.
- Optional low watt DC solenoids.
- Various manual operators.

Individual mounting

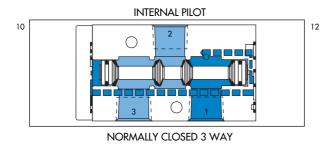
- Optional memory spring.
- Normally closed or normally open valve function.
- May be plugged for 2-way operation.
- Internal or external pilot.







SPOOL CONFIGURATIONS



INTERNAL PILOT

10

2

12

NORMALLY OPEN 3 WAY



52A-3<u>1</u>-A0A-XX-X-**xxx**-**xxx**

For memory spring, replace by **4** (single solenoid only)

Direct solenoid and solenoid pilot operated valves

Function		Port size	Flow (Max]	Individual m	ounting		Series
3/2 NO-N	C, 2/2 NO-NO	1/8" - 1/4"	1.5 C _v		Inline			
OPERATIONAL PROPERTY OF THE PR	L BENEFITS							33
	pilot develops mo	aximum shifting						34
B. Balanced pressure, o	pring available. spool, immune to v also provides high							36
. Bonded sp in a glass-	ke with high flow. bool with minimum like finished bore.				3	1		32
	balanced poppet, stent response time				1	De.		37
 Wiping ef Long servi 	ffect eliminates stic	king.			1997	THE REAL PROPERTY.		38
. Long servi	co mo.					-		52
HOW TO	ORDER							67
Port size	e Pilot air	Sin	gle Operator		D	ouble O	perator	69
		NO Valve	NC V	alve	NO Valve		NC Valve	44
		10 2 12	10 2 D / 1	12 471	10 2 7		10 17 17 17 12 12 12 12 12 12	46
1/8" NP		52A-31-A0A-XX-X-XXX-X			52A-41-A0A-XX-X-XX		52A-21-A0A-XX-X- XXX	
1/4" NP		52A-31-B0A-XX-X- xxx-x 52A-31-A0B-XX-X- xxx-x			52A-41-B0A-XX-X- xx		52A-21-B0A-XX-X- xxx - xxx 52A-21-A0B-XX-X- xxx - xxx	42
1/4" NP		52A-31-B0B-XX-X- xxx - x			52A-41-B0B-XX-X- xx		52A-21-B0B-XX-X- xxx - xxx	
OLENOID	OPERATOR >		DM-D XXX	<u> </u>				47 48P
XX V	/oltage	X Wire	length	X Mc	inual operator	XX	Electrical connection	48
	10/50, 120/60 (2.9 20/50, 240/60 (2.9		ring leads)		n-locking recessed	KA KD	Square connector Square connector with light	
JC 2	4/60 (2.9W)	J Connec		2 100	King recessed	JB	Rectangular connector	400
DA 2	4 VDC (1.8W) 4 VDC (5.4W)					JD	Rectangular connector with light	0.0
DF 2	4 VDC (12.7W)					BA	Flying leads	92
OLENOID	OPERATOR ➤		GM-G XX	(- <u>X</u> XX · ·				
				╴└──				93
XX V	/oltage	X Wire	length	X Mc	ınual operator	XX	Electrical connection	ISO 0
	4 VDC (1.8W) 4 VDC (2.5W)	A 18" B 24"			n-locking recessed	BA BT	Flying leads Flying leads with light	ISO O
	4 VDC (2.5W)	C 36"		∠ LOCI	mig recessed	KA	Plug-in wire assy.	
Other optio	ons available, see po ons available, see po	age 309. age 313				KT	Plug-in wire assy. with light	ISO 1
								ISO 2
OPTIC	JN2							ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot : Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

ion : 40 μ

Temperature range :

 0° F to 120°F (-18°C to +50°C)

Flow: $1/8": (1.2 C_v) - 1/4": (1.5 C_v)$

Coil: Class A continuous duty, #22 AWG x 18 lead wires

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~Inrush: 10.9 VA Holding: 7.7 VA

= 1.8 to 12.7 W

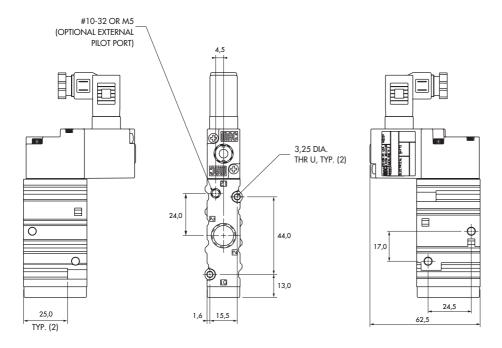
Response times: 24V=/5.4W Energize: 7.3 ms De-energize: 5.3 ms

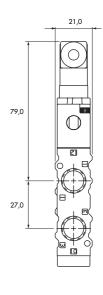
120/60 Energize: 8-12 ms De-energize: 7-11 ms

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)







Individual mounting Series Inline

33 34

36

32

37 38 52

69 44

46

42

47

48P

48

400

92

93

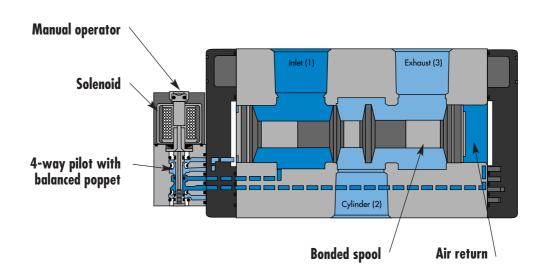
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Patented MACSOLENOID® for fastest possible response times and virtually burn-out proof AC solenoid operation.
- Optional low watt DC solenoids.
- Normally closed or normally open valve function.
- Optional universal spool.
- Internal or external pilot.
- Optional memory spring.
- Checked accumulator.
- Optional pilot exhaust to main valve exhaust.
- May be plugged for 2-way operation.



Mounting style :

67A-XX-AA**X**-DM-D**xxx-xxx**

G O-Ring mount

Direct solenoid and solenoid pilot operated valves

unction		Port size	Floш (Max)	Individual m	nounting		Series
3/2 NO-NC, 2	2/2 NO-NC	3/4" - 1"	20.0 C _V	Inline			
OPERATIONAL BEI	NEFITS						33
. The 4-way pilo		ximum shifting					34
2. Memory spring 3. Balanced spoo	g available. ol, immune to v provides high					4	36
. Bonded spool in a glass-like	with minimum finished bore.	-				30	32
 Pilot with bala and consistent 	nced poppet, h response times					6	37
. Wiping effect				5	Ano		38
				. 60	Show and	61	52
HOW TO ORD	ER						67
Port size	Pilot air	Single	Operator		ouble O	perator	69
		NO Valve	NC Valve	NO Valve		NC Valve	44
		10 2 12 D 7 3 01	10 2 12 10 471 \$\frac{1}{\psi_1} \frac{1}{\psi_2}\$		2 <u> </u>		46
3/4" NPTF	Internal	67A-Cx-AAA-DM-Dxxx-xxx	67A-Ax-AAA-DM-Dxxx-			67A-Bx-AAA-DM-Dxxx-xxx	
1" NPTF 3/4" NPTF	External	67A-Cx-BAA-DM-Dxxx-xxx 67A-Cx-AAB-DM-Dxxx-xxx	67A-Ax-BAA-DM-Dxxx-3			67A-B <i>x</i> -BAA-DM-D <i>xxx-xxx</i> 67A-B <i>x</i> -AAB-DM-D <i>xxx-xxx</i>	42
1" NPTF	- Exicitial	67A-Cx-BAB-DM-Dxxx-xxx	67A-Ax-BAB-DM-Dxxx-)			67A-Bx-BAB-DM-Dxxx-xxx	
							47
OLENOID OF	PERATOR >		M-D <u>xxx</u> - <u>xxx</u>	(*			48P
			╼═┵┸┞┺	-			
XX Volt	age	X Wire le	ngth X	Manual operator	XX	Electrical connection	48
	50, 120/60 (2.9° 50, 240/60 (2.9°		1 2	Non-locking recessed Locking recessed	KA KD	Square connector Square connector with light	
JC 24/60) (2.9W)	J Connector		Locking recessed	JB	Rectangular connector	400
FB 24 VD	OC (1.8W) OC (5.4W)				JD	Rectangular connector with light	0.0
	C /1 O 71 / /				BA	Flying leads	92
DA 24 VD DF 24 VD	OC (12.7W)						
DA 24 VD DF 24 VD Other options ar		ge 309.					
DA 24 VD DF 24 VD Other options ar		ge 309.					93
DA 24 VD DF 24 VD Other options are OPTIONS	vailable, see pa	ge 309.	Spool return :				93 ISO (
DA 24 VD DF 24 VD Other options or OPTIONS DOOL type:	vailable, see pag		67A-X X -AAA-DM-D X				93 ISO
DA 24 VD DF 24 VD Other options or OPTIONS cool type: 7A-XX-AAA-DA	vailable, see pa	niversal spool	67A-X X -AAA-DM-D <i>x</i> 1 Stanc 2 Stanc	lard return lard return with memory spring			93 ISO (
DA 24 VD DF 24 VD Other options or OPTIONS cool type : 7A-XX-AAA-DA H Do	A-Dxxx-xxx ngle operator u	niversal spool	67A-X X -AAA-DM-DX 1 Stanc 2 Stanc (for u	lard return			93 ISO (ISO (
DA 24 VD DF 24 VD Other options or OPTIONS cool type: 7A-XX-AAA-DA	A-Dxxx-xxx ngle operator u	niversal spool	67A-X X -AAA-DM-D <i>x</i> 1 Stanc 2 Stanc	lard return lard return with memory spring se with single operator only)			93 ISO (ISO (ISO (







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range : 0°F to 120°F (-18°C to +50°C)

Flow: $3/4": (14.5 C_v) - 1": (20.0 C_v)$

Class A continuous duty, #22 AWG x 18 lead wires

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~ Inrush: 7.6 VA Holding: 4.8 VA

= 12.7 to 1.0 W

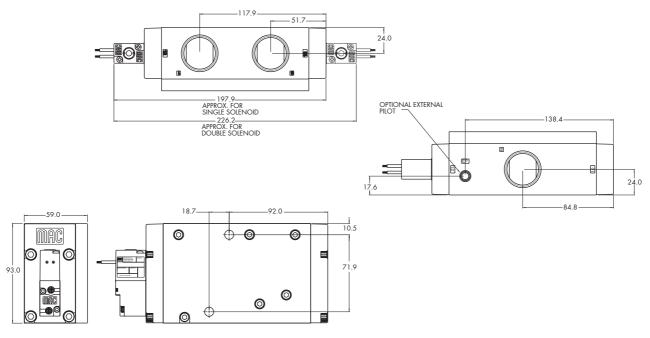
Response times: Energize: 29 ms

(with 5.4 W coil) De-energize : 21 ms

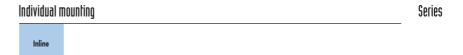
Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)







3334

36

32

37

38 52

67 69 44

46

42

47 48P

48

400

92

93

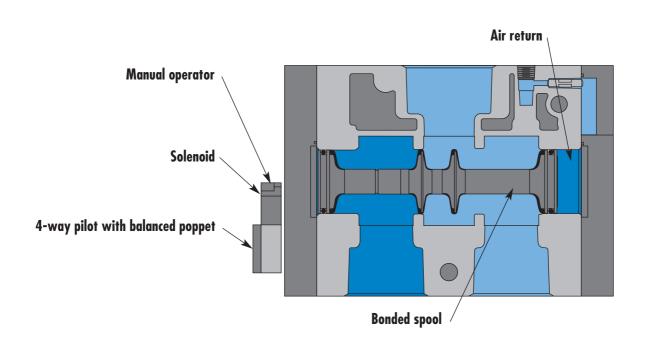
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- High force MACSOLENOID®.
- Optional low watt DC solenoids.
- Internal or external pilot.
- Normally open or normally closed function.
- Checked accumulator.
- May be plugged for 2-way operation.



Function	Port size	Floш (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	1 1/2" - 2" - 2 1	/2" 60.0 C _V	Inline	
PERATIONAL BENEFITS				33
. The 4-way pilot develops ma force both ways.	ximum shifting			34
 Balanced spool, immune to v pressure, also provides high Short stroke with high flow. 	flow.			36
. Bonded spool with minimum in a glass-like finished bore.				32
 Pilot with balanced poppet, I and consistent response time 	nigh flow, short s.			100
. Wiping effect eliminates stick contamination.				37
confamination.				38
				52
HOW TO ORDER				67
Port size Pil	ot air	Single Operator	Single Operator	69
		NC valve	NO valve	44
				46
1 1/2"	6	9A-A1-AAA-J xxx-xxx	69A-C1-AAA-J xxx-xxx	40
2" In	ternal 6	9A-A1-BAA-J xxx-xxx	69A-C1-BAA-J xxx-xxx	
2 1/2"	6	9A-A1-CAA-J xxx-xxx	69A-C1-CAA-J <i>xxx-xxx</i>	42
1 1/2"	6	9A-A1-AAB-J xxx-xxx	69A-C1-AAB-J xxx-xxx	

SOLENOID	OPERATOR	>
COLLINOID	OI LIV (I OI	_

External

2"

2 1/2"

J <u>xxx-xxx</u> (-G) Add "G" for ground

XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection*	
AA	120 VAC (5,4W)	0	No lead wire	1	Non-locking	BA	Flying leads	
DA	24 VDC (5,4W)	A	18"	2	Locking	GA	MAC JAC Solenoid Plug-in	
DB	12 VDC (5,4W)	В	24"			GG	MAC JAC Solenoid Plug-in	
DC	24 VDC (2,4W)	С	36"				with rectifier	
DD	12 VDC (2,4W)					JB	Rectangular connector	
		•				JD	Rectangular connector with light	
* Other	antions available see page 217					KA	Mini square connector	
 Other options available, see page 317. Note: use "0" No lead wire for "J", "K" and "L" type electrical connectors. AC voltage requires connector with rectifier. 						KD	Mini square connector with light	
AC	AC voltage requires connector with rectifier.							

69A-A1-BAB-Jxxx-xxx

69A-A1-CAB-Jxxx-xxx

OPTIONS

Pilot exhaust configuration:

A Standard pilot exhaust
B Pilot exhaust out main exhaust

M Manifold O'Ring Mount

69A-C1-BAB-Jxxx-xxx

47

48P

48

400

92

93

ISO 01

ISO 02

ISO 1

ISO 2

ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot : Vacuum to 120 PSI

Pilot Pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Temperature range : Flow:

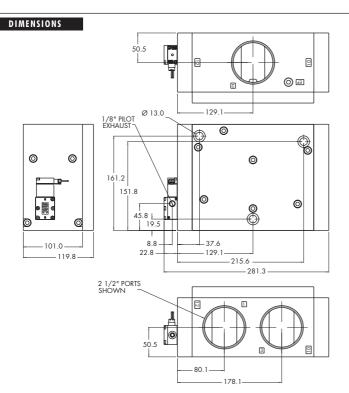
Cv 60.0

Coil: Class A wire, #22 AWG x 18, continuous duty

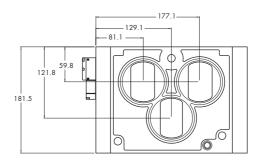
-15% to +10% of nominal voltage Voltage range:

Power: 5.4W - 2.4W - 1.8W

• BSPP threads Options :



Dimensions shown are metric (mm)





Individual mounting Series Inline 33

34

36

32

69

46

42

47 48P

48

400

92

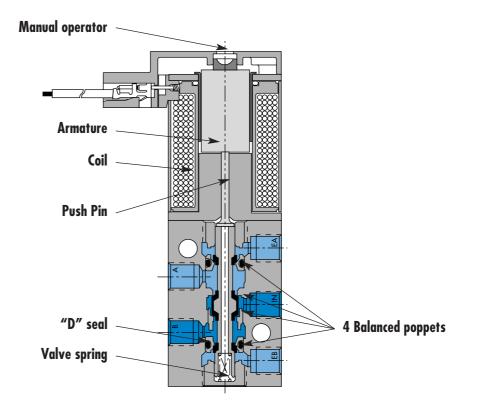
93

ISO 01

ISO 02

ISO 1

ISO 2 ISO 3



SERIES FEATURES

- High force MACSOLENOID®.
- 10mm direct operated.
- # 10-32 or M5 ports.
- Rated for lubricated or non-lubricated service.

75



unction	Port size Flow (Max) Individual Mounting			Series			
5/2	M5, # 1	10-32 0.1	I C _v				
PERATIONAL BENEFITS						_	33
10 mm valve, direct so Balanced poppet, imn							34
pressure. Short stroke with high The patented solenoid							36
	djusted on each valve.						32
Manual operator stan	dard on all valves.					0	37
						3	38
							52
HOW TO ORDER							67
DLENOID OPERAT	OR						69
	rt size	Uni	versal valve	For	use with e	cternal flow controls	44
		,			"		46
			EB V OVEA		EB V OVEA		
	M5 10-32		44C-ABA-G xxx-xxx 44C-AAA-G xxx-xxx		44C-BBA-G xxx-xxx 44C-BAA-G xxx-xxx		42
TCHING SOLENC							47
Port size		Uni	Universal valve		use with ex	cternal flow controls	48P
			ВА		ļ	3 A	
		•	W T W T T		W.	OVEA	48
M5		44B-	44B-ABA-L xxx-xxx			44B-BBA-L xxx-xxx	
# '	10-32	44B-	44B-AAA-L xxx-xxx		44B-B	AA-L xxx-xxx	400
DLENOID OPERAT	:OR >	G	XX-XXX*				92
SEET TO ID OT ERV (I							93
XX Voltage	X	Wire length	X Ma	nual operator	XX	Electrical connection	
AA 120 VAC (2.5 DC 24 VDC (1.8V		18" 24"		-locking recessed ing recessed	BA BT	Flying leads Flying leads with light	ISO
DD 24 VDC (2.5V	W)				GA KA	MAC JAC Solenoid Plug-in Plug-in wire assembly.	ISO
,					KC	Plug-in wire assembly with rectifier & light	ISO
te : AC voltage require	e, see page 311. s connector with rectifier				КТ	Plug-in wire assembly with light	ISO
tching solenc	DID ➤	L <u>2</u>	<u>(X</u> X- <u>X</u> XX*			ngiit	ISO
			╩┸╎┺═				
XX Voltage	Х	Wire length	X Ma	nual operator	ХХ	Electrical connection	
DF 24 VDC (4.0V HA 24 VDC (1.95		18" 24"	0 No	pperator	BA BJ	2 Wire flying leads 4 Wire flying leads	
11M 24 VDC (1.93	C E	36"	_		KA	2 Wire plug-in assembly	
			_		KE LA	4 Wire plug-in assembly 3 Wire plug-in assembly	
					LA	2 VVICE DIUG-IN ASSEMBLY	







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Ø 3.3 MTG. HOLES

Filtration: 40 µ

Temperature range : 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow: $4 \text{ W}: (0.10 \text{ C}_{\text{v}}) - 2.5 \text{ W}: (0.08 \text{ C}_{\text{v}}) - 1.8 \text{ W}: (0.06 \text{ C}_{\text{v}}) - 1.0 \text{W}: (0.05 \text{ C}_{\text{v}})$

Coil: Class A wire (#22 AWG x 18), continuous duty

-15% to +10% of nominal voltage Voltage range:

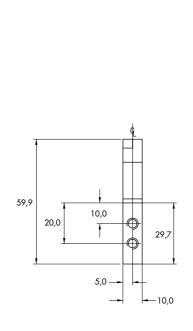
Power: 4 W - 2.5 W - 1.8 W - 1.0 W

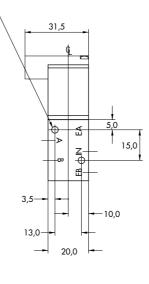
Response times: Energize: 3.4 ms (with 4 W coil) De-energize: 1.5 ms

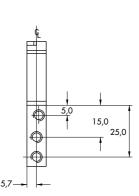
• Valve and coil are not interchangeable. Note:

DIMENSIONS

Dimensions shown are metric (mm)









Individual mounting Series Inline 33 Manifold mounting Series

Manifold base

36

32

69

44

46

42

47 48P

48

400

92

93

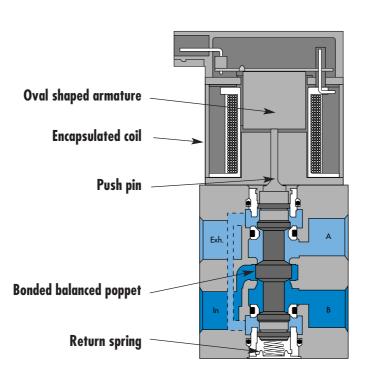
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- \bullet Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum, divertor, or selector applications.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- Manual overrides as standard.
- \bullet Various solenoid enclosures and plug-in connectors.
- Optional surge suppression available.
- Low wattage DC solenoids down to 1.3 watts.
- Rectified AC voltage.



Function	Port size	Flow (Max)	Individual m	ounting	Series		
4/2	1/8" - # 10-32	0.3 C _V	Inline				
DPERATIONAL BENEFITS					33		
. Balanced poppet, immune	e to variations of				34		
pressure. Patented solenoid develo	ps high shifting				0.7		
torces. Short stroke with high flow	w.				36		
 Higher forces result in lov given flow. 			- 6		G 00		
. Powerful return spring.				2	32		
				0	37		
			(0)		38		
					52		
HOW TO ORDER					67		
	Single O	perator	D	ouble Operator	69		
Port size	Without flow controls	With flow controls	Without flow cont	rols With flow co	ntrols 44		
	A B B	A B B A A B			<u>B</u> . 46		
	EXH V OIN	EXH V OIN	EXH V OIN	EXH V S	IN I		
1/8" NPTF	46A-AA1-J xxx-xxx	46A-AA2-J xxx-xxx	46A-GA1-J xxx-x	46A-GA2-J x	x-xxx 42		
# 10-32	46A-AB1-J xxx-xxx	46A-AB2-J xxx-xxx	46A-GB1-J xxx-x)	46A-GB2-J xx	<u>47</u>		
Solenoid operator		J <u>XX</u> X- <u>X</u> XX*	(-C)	for ground	48P		
DOLLINOID OF EKATOR			(-G) Add G	ior ground	401		
VV Voltano	V. Wire land			XX Electrical con	nection 48		
XX Voltage Single & double solenoid	X Wire leng ** O No leads		anual operator n-locking recessed	XX Electrical con BA Flying leads	nection		
AA 120 VAC (5.4W) DA 24 VDC (5.4W)	A 18" B 24"	2 Loc	king recessed	GA MAC JAC soleno			
DB 12 VDC (5.4W) Single solenoid only	C 36"			with rectifier Bectangular conn			
DC 24 VDC (2.4W) DD 12 VDC (2.4W)				JD Rectangular conn- light			
Other options available, see	nage 317			KA Mini square conne KD Mini square conne			
* Use with rectangular and m Note : - AC voltage requires c	nini connectors			light	93		
 With the MAC JAC, we be a solenoid require 	vashdown capability is possible. Consult	factory for washdown modification	on number.		ISO 01		
OPTIONS					ISO 02		
46A- AA 1-J <i>xxx-xxx</i>					ISO 1		
TT							
L G Use w	ith O ring mount (body option 'D' & 'H')				150 2		
A Single	e operator - 4 port body with side ports	to (No cido porto - ME #10 20	ONIV		130 3		
D Single	e operator - 4 port body with bottom por e operator - Bottom O ring mount – All p e operator - Bottom O ring mount – Cylir e operator - 4 Port body - With side por	orts (No side ports)					
		ider ports only – Side inlet & eynd	11151				

Examples : 46A-DG1-Jxxx-xxx (Bottom O ring mount – all ports) 46A-CB1-Jxxx-xxx (4 port body with bottom ports – no side ports)







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Orifice: 3,3 mm

Flow: $1.8W: (0.20 C_v) - 2.4W: (0.20 C_v) - 5.4W: (0.30 C_v)$

Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: 5.4W - 2.4W - 1.8W

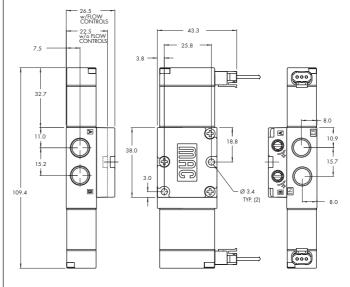
Options : • BSPP threads

DIMENSIONS

Single solenoid 43.3 43.3 70.9 43.3 15.7 11.8 7.5 18.8 25.8 32.5 32.5 32.5

Dimensions shown are metric (mm)

Double solenoid





Function		Port size Flow (Max)		(Max)	Manifold Mounting		Series
4/2		1/8" - #	# 10-32 0.3 C _v		Stacking		
	DNAL BENEFITS ned poppet, immune to vario	utions of					33 34
forces. 3. Short s	ed solenoid develops high sl troke with high flow. Forces result in lower watta	-					= 36
given f	flow. ful return spring.	ges ioi					32
							37
						C).	38 52
HOW	TO ORDER						67
	Port size		Withou	t flow controls	With	flow controls	69
				А В _		A B p	44
			Ē	EXH V IN	Ē	EXH V OIN	46
	1/8" NPTF		46A-SA1-J xxx-xxx		46A-SA2-J xxx-xxx		
	# 10-32		46A-S	SB1-J xxx-xxx	46A-	SB2-J xxx-xxx	42
SOLEN	OID OPERATOR >		J X	<u>x</u> x- <u>x</u> xx (-G) A	Add "G" for a	around	47
						9	48P
XX	Voltage	X	Wire length	X Manual op	erator XX	Electrical connection	
AA DA	120 VAC (5.4W) 24 VDC (5.4W)	A B	18" 24"	1 Non-locking red 2 Locking recesse		Flying leads MAC JAC solenoid plug-in	48
DB DC	12 VDC (5.4W) 24 VDC (2.4W)	<u> </u>	36"		GB GB	MAC JAC solenoid plug-in with diode	
DD	12 VDC (2.4W)	_			GG	MAC JAC solenoid plug-in with rectifier	400
* Other o	options available, see page 31 C voltage requires connector	17. with rectifier.					92
	/ith the MAC JAC, washdown kit required (port size 1/4") :		ossible. Consult factory for v	washdown modification number.			93
							ISO 01
							ISO 02
							ISO 1
							ISO 2
							ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 μ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C) Temperature range:

Flow: $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$

Coil: Class A wire (#22 AWG x 18), continuous duty

-15% to +10% of nominal voltage Voltage range:

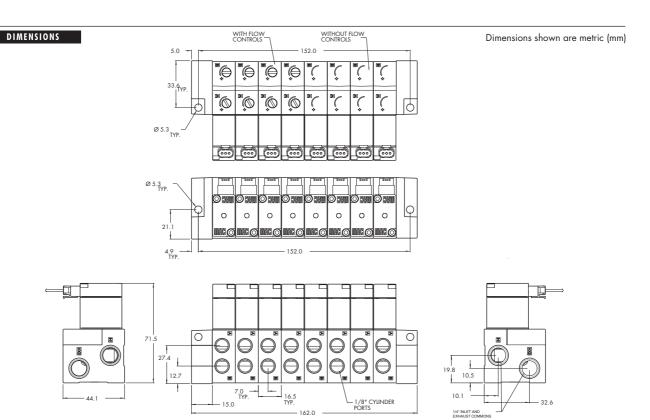
Protection: Consult factory

5.4W - 2.4W - 1.8W Power:

Energize : Response times: 7.20 ms (with 5.4 W coil) 4.20ms De-energize :

Options : • BSPP threads

Spare parts: • Inlet isolator : 28494 • Exhaust isolator : 28493 • Tie rod (x2) : 79411





## Description of the image of	33 34 36 32 37 38 52 67 69
1. Balanced poppet, immune to variations of pressure. 2. Patented solenoid develops high shifting forces. 3. Short stroke with high flow. 4. Higher forces result in lower wattages for given flow. 5. Powerful return spring.	34 36 32 37 38 52 67
pressure. 2. Patented solenoid develops high shifting forces. 3. Short stroke with high flow. 4. Higher forces result in lower wattages for given flow. 5. Powerful return spring.	34 36 32 37 38 52 67
2. Patented solenoid develops high shifting forces. 3. Short stroke with high flow. 4. Higher forces result in lower wattages for given flow. 5. Powerful return spring.	36 32 37 38 52 67
forces. 3. Short stroke with high flow. 4. Higher forces result in lower wattages for given flow. 5. Powerful return spring. HOW TO ORDER	32 37 38 52 67
4. Higher forces result in lower wattages for given flow. 5. Powerful return spring. HOW TO ORDER	37 38 52 67
Fowerful return spring. HOW TO ORDER	37 38 52 67
HOW TO ORDER	38 52 67
	38 52 67
	52 67
	67
	09
Port size Single solenoid Double solenoid	44
A B B A V A B B	
EXH V OIN EXH V OIN	46
Valve less base 46A-LO0-00-J xxP-xxx 46A-N00-00-J xxP-xxx 1/8" NPTF 46A-LSA-AC-J xxP-xxx 46A-NSA-BL-J xxP-xxx	
5/32 O.D. Pressed-in tube receptacles 46A-LSF-AC-J xxP-xxx 46A-NSF-BL-J xxP-xxx 46A-NSF-BL-J xxP-xxx	42
	
SOLENOID OPERATOR > I XX P-XXX* (-G) Add "G" for ground	47
SOLENOID OPERATOR > J <u>xx</u> P- <u>xxx</u> (-G) Add "G" for ground	48P
XX Voltage X Manual operator XX Electrical connection Single & double solenoid 1 Non-locking FA Base plug-in	48
AA 120 VAC (5,4W) 2 Locking FB Base plug-in with diode	
AC 24 VAC (5,4W) FG Base plug-in with rectifier DA 24 VDC (5,4W)	400
DB 12 VDC (5,4W)	700
Single solenoid only	92
DC 24 VDC (2,4W) DD 12 VDC (2,4W)	7.4
	93
Other options available, see page 317. Note : AC voltage requires connector with rectifier. Double solenoid requires minimum 5.4 watts.	73
OPTIONS	ISO 01
	160 02
46A-LSB-AC-JXXP-XXX	130 02
C Single solenoid - Side cylinder ports L Single & double solenoid - Bottom cylinder ports	ISO 1
■ Single & double solenoid - Bottom cylinder ports	ISO 2
O Base only - no valve L Single solenoid - Base mount body	160 2
M Single solenoid - Base mount body N Double solenoid - Base mount body P Double solenoid - Base mount body P Double solenoid - Base mount body P Double solenoid - Base mount body with gage port	150 3

Example : base only : 46A-0SA-AC. End plate kit required (port size 1/4") : M-46003-01.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 μ

0°F to 120°F (-18°C to +50°C) Temperature range:

Orific e 3.3 mm

Flow: $1.8W: (0.20 C_v) - 2.4W: (0.20 C_v) - 5.4W: (0.30 C_v)$

Coil: Epoxy encapsulated - Class A wires - 100% ED

-15% to +10% of nominal voltage

Voltage range:

Protection: IP54 (electrical connection)

5.4W - 2.4W - 1.8W

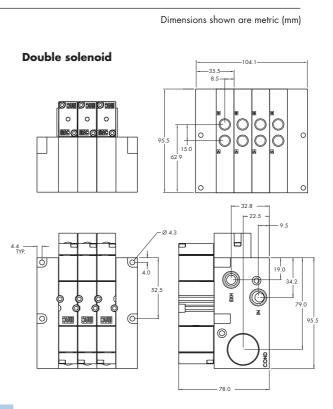
Response times: Energize: 7.20 ms De-energize : 4.20ms

• BSPP threads Options:

• Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 Spare parts:

• Tie rod (x2): 79443

DIMENSIONS -35.5— 8.5--- \bigcirc 0 품 0 0 0





Function	Port size	ļ	Flow (Max)	Manifold mounting	Series
4/2	1/8"	5/32 O.D. Pressed-in tube receptacles	0.3 C _v	Manifold base "plug-in" with pressure regulators	
OPERATIONAL BENEFITS	3				33
1. Balanced poppet, im pressure.	mune to variations of				34
2. Patented solenoid de forces.3. Short stroke with high	h flow.			00	36
4. Higher forces result in given flow.5. Powerful return spring	ŭ				32
					37
					38
	•			0	52
HOW TO ORDER	·				67
	Port size (Bottom ports on	ly)		Model number	69
				A B B	44
	v.l.l.l.			EXH V OIN	46
	Valve less base	e		46A-L00-00-J xxP-xxx 46A-LSA-AJ-J xxP-xxx	_
5/32	2 O.D. Pressed-in tube	e receptacles		46A-LSF-AJ-J xx P- xxx	42
SOLENOID OPERA	TOR ➤	l x	x P- xxx * <i>l</i> -	-G) Add "G" for ground	47
		<u> </u>	T	To ground	48P
XX Voltage		X Manual	operator	XX Electrical connecti	on
AA 120 VAC (5.		1 Non-lockin	g recessed	FA Base plug-in	48
DA 24 VDC (5.4 DB 12 VDC (5.4	W)	2 Locking red	cessed	FB Base plug-in with diode FG Base plug-in with rectifier	
DC 24 VDC (2.4					400
* Other options availabl Note : AC voltage require	le, see page 317. es connector with rectifier.				92
OPTIONS					92
46A-LSA-AJ-JxxP-x	Regulator with adjusting Regulator with slotted ste	knob m			93
G	Regulator with slotted ste	m with locknut			ISO 01
─── L Bas	se only – no valve se mount body se mount body with gage p	ort			ISO 02
Example : base only with		OI I			ISO 1
End plate kit required (po	ort size 1/4") : M-46003-0	1.			ISO 2
					ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $1.8W: (0.20 C_v) - 2.4W: (0.20 C_v) - 5.4W: (0.30 C_v)$

Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: 5.4W - 2.4W - 1.8W

 Response times :
 Energize :
 7.20 ms

 (with 5.4 W coil)
 De-energize :
 4.20ms

Options : • BSPP threads

Spare parts: • Inlet isolator: 28501 • Exhaust isolator: 28502 • Valve cover plate: M-46002 • Tie rod (x2): 79443

• Replacement regulators : PR46A-0AAA (slotted stem)

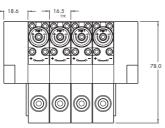
PR46A-OBAA (adjusting knob)

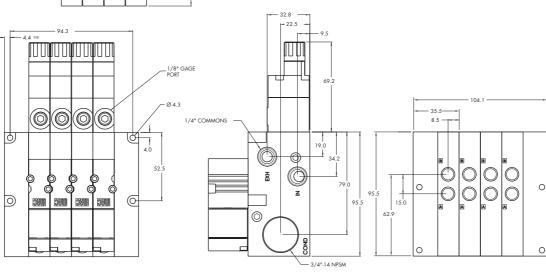
PR46A-OCAA (slotted stem with locknut)

Regulating range options : • PR46A-xxx

A 0 to 120 PSI B 0 to 80 PSI C 0 to 30 PSI

DIMENSIONS







4/2 1/8" - 5/32 0.D. Pressed-in vide receptedes O.3 C _V Indicated Seate Publish with the pressure of the pre	Function	Port size		Flow (Max)	Manifold mounting	Series
1. Balanced poppet, immune to variations of pressure. 2. Pentanted solenoid develops high shifting forces. 3. Short stocke with high flow. 4. Higher forces result in lower wattages for given flow. 5. Powerful return spring. 4. Higher forces result in lower wattages for given flow. 5. Powerful return spring. 4. How 10 orders Port size Adv. 100 to 0 pressure. 4. Adv. 100 to 0 pressure. 5. /32 0.D. Pressed-in tube receptacles 5. OLENOID OPERATOR > JXX P-XXXX (-G) Add "G" for ground 4. All 120 VAC (5 AVV) De 24 VDC (5 AVV) De 34 VDC (5 AVV) De 35 VDC (5 AVV) De 35 VDC (5 AVV) De 36 VDC (56 VDC (4/2	1/8" -		ed-in 0.3 C _V	"plug-in" with	
pressure. 2 Pentend soleonoid develops high shifting forces. 3 Short stroke with high flow. 4 Higher forces result in lower wattages for given flow. 5. Powerful return spring. 46NW 10 ORDIE Part size Model number 46NW 10 ORDIE Part size Model number 46NW 10 ORDIE Part size Model number 440 45NW 10 ORDIE Part size Model number 46NW 10 ORDIE 47NW 1/6" APPT 46NW 15NW 1/6" APPT 46NW 15NW 1/6" APPT 1/6" APPT 46NW 15NW 1/6" APPT 47NW 1/6" APPT 48P XX Voltage X Manual operator XX Electrical connection 48P XX Voltage APPT 48P APPT 48P APPT APPT APPT 48P APPT APPT APPT 48P APPT APP	OPERATIONAL BENEFIT	s				33
2. Potential solenoid develops high shifting forces. 3. Short stoke with high flow. 4. Higher forces result in lower wattoges for given flow. 5. Powerful return spring. Pert size Model number 46 47 48 Walve less base 46 46 46 46 46 46 46 46 46 4		nmune to variations of				34
Box Port size Model number	2. Patented solenoid de forces.3. Short stroke with hig	h flow.				36
Now to order Port size	given flow.	-			00	32
Port size Port size Model number 69 44 46 46 46 46 46 46						37
Port size					1910	38
Valve less base						52
Valve less base	HOW TO ORDER	ı				67
Valve less base Valve less base A6A-LOO-OU-J xxP-xxxx 1/8" NPTF A6A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 42 42 43 45 45 46A-LSA-AD-J xxP-xxxx 42 42 43 44 45 45 46A-LSA-AD-J xxP-xxxx 45 46A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 42 43 44 45 46A-LSA-AD-J xxP-xxxx 45 46A-LSA-AD-J xxP-xxxx 45 46A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 45 46A-LSA-AD-J xxP-xxxx 45 46A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 46A-LSA-AD-J xxP-xxxx 47 48 48 48 48 48 48 48 48 48		Port size			Model number	69
Valve less base ### A6A-LOO-OJ-XXP-XXX 1/8" NPTF ### A6A-LSA-AD-J-XXP-XXX ### Base plug-in in idode ### Base plug-in with diode ### B6 Base plug-in with rectifier ### A6A-LSA-AD-J-XXP-XXX ###					AA B B	44
Valve less base					└	46
SOLENOID OPERATOR > JXX P-XXX (-G) Add "G" for ground 47 48P XX Voltage X Manual operator XX Electrical connection AA 120 VAC (5.4W) J Non-locking recessed FA Base plug-in with diode BB 12 VDC (5.4W) 2 Locking recessed FB Base plug-in with rectifier DC 24 VDC (2.4W) Other options available, see page 317. Note: AC voltage requires connector with rectifier. PD Side cylinder ports M Bottom cylinder ports M Bostom only body with gage port Example: base only with flow controls: 46A-USA-AD. End plate kit required (port size 1/4"): M-46003-01.		Valve less base				
SOLENOID OPERATOR > JXX P-XXX (-G) Add "G" for ground 47 48P XX Voltage X Manual operator AA 120 VAC (5.4W) DA 24 VDC (5.4W) DB 12 VDC (5.4W) DC 24 VDC (2.4W) * Other options available, see page 317. Note: AC voltage requires connector with rectifier. OPTIONS 46A-LSA-AD-JXXP-XXX D Side cylinder ports M Bottom cylinder ports M Bose mount body M Bose mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4*): M-46003-01. SOLENOID OPERATOR XX Electrical connection FB Base plug-in with diode FB Base plug-in with diode FG Bose plug-in with rectifier 48 400 POTIONS 400 150 01 150 02 Example: base only no valve L Bose mount body with gage port 150 01 150 1 150 2						
XX Voltage AA 120 VAC (5.4W) DA 24 VDC (5.4W) DB 12 VDC (5.4W) DC 24 VDC (2.4W) Compared to the processed of the process	5/32	2 O.D. Pressed-in tube	receptacies			
XX Voltage AA 120 VAC (5.4W) DA 24 VDC (5.4W) DB 12 VDC (5.4W) DC 24 VDC (2.4W) Other options available, see page 317. Note: AC voltage requires connector with rectifier. OPTIONS 46A-LSA-AD-JXXP-XXX D Side cylinder ports M Bottom cylinder ports M Bottom cylinder ports M Bose only - no valve L Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	SOLENOID OPERA	TOR ➤		J <u>xx</u> P- <u>xxx</u> * (\cdot G) Add "G" for	ground 47
AA 120 VAC (5.4W) DA 24 VDC (5.4W) DB 12 VDC (5.4W) DC 24 VDC (2.4W) *Other options available, see page 317. Note: AC voltage requires connector with rectifier. OPTIONS 46A-LSA-AD-JxxP-xxx D Side cylinder ports M Bottom cylinder ports M Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.						48P
DA 24 VDC (5.4W) DB 12 VDC (5.4W) DC 24 VDC (2.4W) * Other options available, see page 317. Note: AC voltage requires connector with rectifier. OPTIONS 46A-LSA-AD-JxxP-xxx D Side cylinder ports M Bottom cylinder ports M Bottom cylinder ports M Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	XX Voltage		X M	anual operator	XX Electric	al connection
DB 12 VDC (5.4W) DC 24 VDC (2.4W) * Other options available, see page 317. Note: AC voltage requires connector with rectifier. OPTIONS 46A-LSA-AD-JXXP-XXX D Side cylinder ports M Bottom cylinder ports M Bottom cylinder ports L Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.						
* Other options available, see page 317. Note: AC voltage requires connector with rectifier. 92 46A-LSA-AD-JxxP-xxx D Side cylinder ports M Bottom cylinder ports I Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-OSA-AD. End plate kit required (port size 1/4"): M-46003-01.	DB 12 VDC (5.4	1W)		ing recessed		
*Other options available, see page 317. Note: AC voltage requires connector with rectifier. 92 46A-LSA-AD-JxxP-xxx D Side cylinder ports M Bottom cylinder ports M Bottom cylinder ports ISO 01 ISO 02 Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.			_			400
46A-LSA-AD-JxxP-xxx D Side cylinder ports M Bottom cylinder ports M Bottom cylinder ports ISO 01 L Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	* Other options availab Note : AC voltage requir	le, see page 317. es connector with rectifier.				
D Side cylinder ports M Bottom cylinder ports O Base only – no valve L Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	OPTIONS	1				92
D Side cylinder ports M Bottom cylinder ports O Base only – no valve L Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	46A-LSA-AD-IXXP-	KXX				
D Base only – no valve L Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	T I	Side cylinder ports				93
Base only – no valve L Base mount body M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	^	Bottom cylinder ports				150.01
M Base mount body with gage port Example: base only with flow controls: 46A-0SA-AD. End plate kit required (port size 1/4"): M-46003-01.	0 Ba	se only – no valve				150 01
End plate kit required (port size 1/4"): M-46003-01.			rt			150 02
150 2						150 1
ISO 3	and plate kil required (po	511 3126 174 J . M-40003-01	•			ISO 2
						ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 μ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C) Temperature range:

Flow: $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$

Coil: Class A continuous duty, #22 AWG x 12 base leads

-15% to +10% of nominal voltage Voltage range:

Protection: Consult factory

5.4W - 2.4W - 1.8W Power:

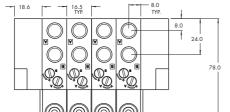
Energize : Response times: 7.20 ms 4.20ms De-energize :

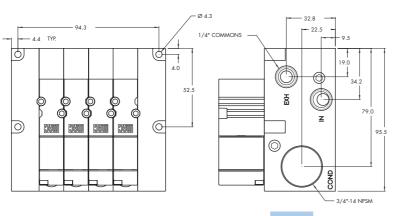
• BSPP threads Options :

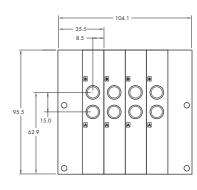
• Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 Spare parts:

• Tie rod (x2) : 79443

DIMENSIONS









Function	Port size		Floш (Max)	Manifold mounting	Series
4/2	1/8" - 5/32 O.D. Pressed-in 0.3 tube receptacles			Manifold base "plug-in" with PR & FC	
OPERATIO	DNAL BENEFITS				33
1. Balanc pressur	red poppet, immune to variations of				34
 Patente forces. Short si 	ed solenoid develops high shifting troke with high flow.				36
given f	forces result in lower wattages for flow. ful return spring.				32
					37
					38
				00	52
HOW	TO ORDER				67
	Port size			Model number	69
	(Bottom ports only	y)			44
					46
	Valve less base			EXH ♥ SIN 46A-L00-00-J XXP-XXX	46
	1/8" NPTF			46A-LSA-AK-J xxP-xxx	
	5/32 O.D. Pressed-in tube	receptacles		46A-LSF-AK-J xxP-xxx	42
SOLENG	OID OPERATOR >	J x x	x P- <i>xxx</i> * (-0	G) Add "G" for grou	nd 47
			T		48P
XX	Voltage	X Manual	operator	XX Electrical conn	ection
AA	120 VAC (5.4W)	1 Non-locking	recessed	FA Base plug-in	48
DA DB	24 VDC (5.4W) 12 VDC (5.4W)	2 Locking rece	essed	FB Base plug-in with did FG Base plug-in with red	de
DC	24 VDC (2.4W)				400
	options available, see page 317. Voltage requires connector with rectifier.				
	PTIONS				92
<i>1</i> 6Δ- I	.SA-A K -J <i>xx</i> P-xxx				
40/1	K Regulator with adjusting k	nob & flow controls			93
	F Regulator with slotted stem H Regulator with slotted stem	& flow controls			ISO 01
	O Base only – no valve L Base mount body				150 01
	M Base mount body with gage po	rt			130 02
	base only with regulator: 46A-0SA-AK. kit required (port size 1/4"): M-46003-01				150 1
piano	- 12 (FE 1) - 1				150 2
					ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $1.8W: (0.20 C_v) - 2.4W: (0.20 C_v) - 5.4W: (0.30 C_v)$

Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: 5.4W - 2.4W - 1.8W

Response times: Energize: 7.20 ms

De-energize : 4.20ms

Options : • BSPP threads

Spare parts: • Inlet isolator: 28501 • Exhaust isolator: 28502 • Valve cover plate: M-46002 • Tie rod (x2): 79443

• Replacement regulators : PR46A-0AAA (slotted stem)

PR46A-0BAA (adjusting knob)

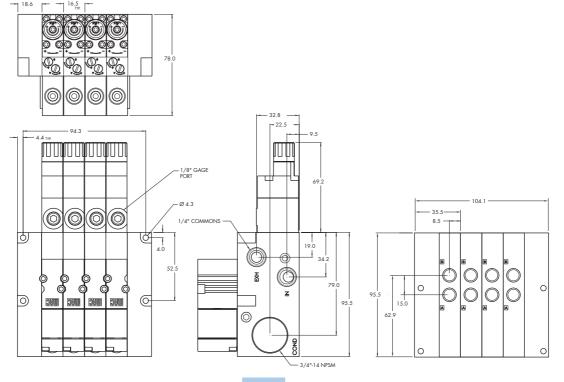
PR46A-OCAA (slotted stem with locknut)

Regulating range options : • PR46A-xxx

A 0 to 120 PSI **B** 0 to 80 PSI

C 0 to 30 PSI

DIMENSIONS





Individual mounting Sub-base non "plug-in" Sub-base manifold base non "plug-in" with latching solenoid Manifold mounting Sub-base/ manifold base "plug-in" with latching solenoid Sub-base/ manifold base "plug-in" with latching solenoid 33 Manifold mounting

36

32

69 44

46

42

47 48P

48

400

92

93

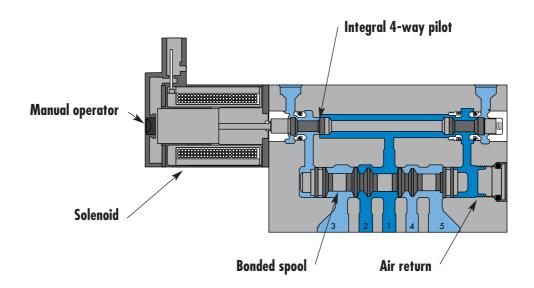
ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot design.
- Single or dual pressure.
- Internal or external pilot.
- Single or double solenoid.
- 2 or 3 position.
- Rectified AC voltage.
- Latching solenoid technology.



Function		Port size	Flow (Max)	Individual mountin	g Series
5/2, 5/3		# 10-32 - 1/4" O.D. tube rece	0.4 C _V	Sub-base non "plug-in"	
OPERATIONAL BEN	EFITS				33
I. 4-way valve wit					34
2. 10 mm valve (st		mm centers).			0-
3. High flow (up to 1. Fast repeatable		·S.			36
5. Maximum shiftir				4	
. Long life.				48	20
					32
				e di	37
				. 1	38
				-	52
HOW TO ORD	ER				67
SINGLE PRESSU	JRE MODEL	.S (VALVE WITH BASE C	ODED FOR SIDE PORTS)		69
Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center 44
		12 2 4 14	12 2 4 14	12 2 4 14 MMD \ 1 1 1 1 1 1 1	12 2 4 14
				3115	**************************************
Valve less	Internal	42B-AMA-000-G xxx-xxx	42B-BMA-000-G xxx-xxx	42B-EMA-000-G xxx-xxx	42B-FMA-000-G xxx-xxx
base	External	42B-AMD-000-G xxx-xxx	42B-BMD-000-G xxx-xxx	42B-EMD-000-G xxx-xxx	42B-FMD-000-Gxxx-xxx
# 10-32	Internal	42B-AMA-AAL-Gxxx-xxx	42B-BMA-AAL-G xxx-xxx	42B-EMA-AAL-Gxxx-xxx	42B-FMA-AAL-G xxx-xxx
	External	42B-AMD-AAM-G xxx-xxx	42B-BMD-AAM-Gxxx-xxx	42B-EMD-AAM-Gxxx-xxx	42B-FMD-AAM-GXXX-XXX
1/4" O.D.	Internal	42B-AMA-EAL-Gxxx-xxx	42B-BMA-EAL-Gxxx-xxx	42B-EMA-EAL-Gxxx-xxx	42B-FMA-EAL-GXXX-XXX
tube receptacles	External	42B-AMD-EAM-Gxxx-xxx	42B-BMD-EAM-Gxxx-xxx	42B-EMD-EAM-Gxxx-xxx	42B-FMD-EAM-Gxxx-xxx
UAL PRESSUR	E MODELS	(VALVE WITH BASE CO	DED FOR SIDE PORTS)		
Port size		Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center 48
			14 4 2 12	14 4 2 12 12 14 14 14 14 14 14 14 14 14 14 14 14 14	12 2 4 14 MMD \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
					70 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Valve less b	ase Int	ternal Supply #3 port	42B-CMB-000-G xxx-xxx	42B-DMB-000-G xxx-xxx	42B-HMB-000-G xxx-xxx
		Supply #5 port	42B-CMC-000-G xxx-xxx	42B-DMC-000-G xxx-xxx	42B-HMC-000-G <i>xxx-xxx</i>
		ternal	42B-CMD-000-G xxx-xxx	42B-DMD-000-G xxx-xxx	42B-HMD-000-Gxxx-xxx
# 10-32	Int	ternal Supply #3 port	42B-CMB-AAL-Gxxx-xxx	42B-DMB-AAL-Gxxx-xxx	42B-HMB-AAL-GXXX-XXX
		Supply #5 port	42B-CMC-AAL-GXXX-XXX	42B-DMC-AAL-GXXX-XXX	42B-HMC-AAL-Gxxx-xxx 42B-HMD-AAM-Gxxx-xxx
1/4" O.D		ternal Supply #3 port	42B-CMD-AAM-GXXX-XXX 42B-CMB-EAL-GXXX-XXX	42B-DMD-AAM-Gxxx-xxx 42B-DMB-EAL-Gxxx-xxx	- 42B-HMB-EAL-GXXX-XXX
tube receptac	· —	Supply #5 port	42B-CMC-EAL-GXXX-XXX	42B-DMC-EAL-GXXX-XXX	42B-HMC-EAL-GXXX-XXX
		ternal	42B-CMD-EAM-Gxxx-xxx	42B-DMD-EAM-Gxxx-xxx	42B-HMD-EAM-Gxxx-xxx
TANDADD CC	NENOID OI		C VVV VVV*		
STANDARD SC	PLEINOID OI	rekai∪k ►	G <u>xx</u> x- <u>xxx</u> *		ISO
					ISO
XX Volto	ıge 💮	X Wire le	ngth X M	anual operator	XX Electrical connection
	AC (2.5W)	A 18"		<u> </u>	BA Flying leads
	C (1.8W) C (2.5W)	B 24" C 36"	2 Lo		Flying leads with light MAC JAC solenoid Plug-in
	C (4.0W)				Plug-in wire assy.
DF 24 VDC Note : AC voltage r Other options av	· · ·	tor with rectifier.			Trigi-in wire assy. with light Description wire assy. with light Description wire assy. with rectifier & light & ground







Fluid:

Compressed air, vacuum, inert gases

Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI

External Pilot: vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI 3 position: 40 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: # 10-32 : $(0.35 \, \text{C}_{\text{v}}) - 1/4'' \, \text{O.D.}$ tube receptacle : $(0.4 \, \text{C}_{\text{v}})$

Coil: Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

Power: 1.0 to 4.0 W

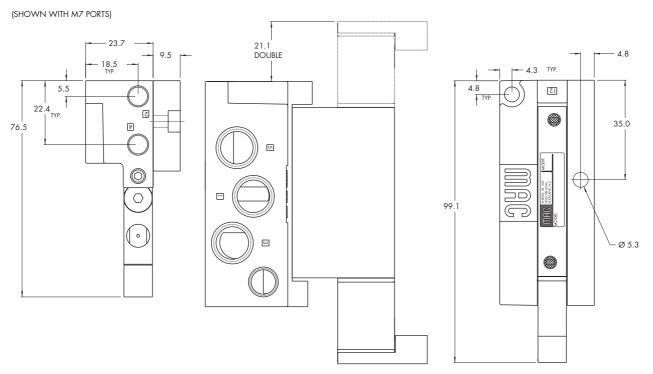
Response times: Energize: 5 ms (with 24V 4 W coil) De-energize: 5 ms

Options : • M5 ports, M7 ports, 6 mm O.D. tube receptacles

• Sandwich flow controls : FC42B-BB

• Sandwich regulator : see 'Regulator' section

DIMENSIONS





Function	Port size	Flow (Max)	Individual n	nounting	Series
5/2, 5/3	# 10-32 - 1/4" O.D. tube receptacle	0.4 C _v	Sub-base "plug-in"		

OPERATIONAL BENEFITS

- 1. 4-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to $0.4 C_v$).
- 4. Fast repeatable response times.
- 5. Maximum shifting forces in both directions.
- 6. Long life.



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47 48P

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ISO 01 ISO 02 **ISO** 1 **ISO 2 ISO 3**

HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS) - MODELS CODED FOR SIDE PORTS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
		12 2 4 14 17 14 315	12 2 4 14 17 14 14 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	12 2 4 14 14 17 17 17 17 17 17 17 17 17 17 17 17 17	12 2 4 14
Valve less	Internal	42B-AMA-000-G xx P- xxx	42B-BME-000-GxxP-xST	42B-EME-000-GxxP-xST	42B-FME-000-GxxP-xST
base	External	42B-AMD-000-GxxP-xxx	42B-BMH-000-G xx P- x ST	42B-EMH-000-G xx P- x ST	42B-FMH-000-GxxP-xST
# 10-32	Internal	42B-AMA-AAA-GxxP-xxx	42B-BME-AAC-GxxP-xST	42B-EME-AAC-GxxP-xST	42B-FME-AAC-GxxP-xST
	External	42B-AMD-AAB-GxxP-xxx	42B-BMH-AAD-G xx P- x ST	42B-EMH-AAD-GxxP-xST	42B-FMH-AAD-GxxP-xST
1/4" O.D.	Internal	42B-AMA-EAA-GxxP-xxx	42B-BME-EAC-GxxP-xST	42B-EME-EAC-GxxP-xST	42B-FME-EAC-GxxP-xST
tube receptacles	External	42B-AMD-EAB-GxxP-xxx	42B-BMH-EAD-GxxP-xST	42B-EMH-EAD-GxxP-xST	42B-FMH-EAD-GxxP-xST

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS) - MODELS CODED FOR SIDE PORTS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
		14 2 12 12 5 5 7 5 3		12 2 4 14 MD 14 3 15
Valve less base	Internal Supply #3 port	42B-CMB-000-GxxP-xxx	42B-DMF-000-G xx P- x ST	42B-HMF-000-G xx P- x ST
	Supply #5 port	42B-CMC-000-GxxP-xxx	42B-DMG-000-G xx P- x ST	42B-HMG-000-G xx P- x ST
	External	42B-CMD-000-G xx P- xxx	42B-DMH-000-G xx P- x ST	42B-HMH-000-G xx P- x ST
# 10-32	Internal Supply #3 port	42B-CMB-AAA-GxxP-xxx	42B-DMF-AAC-GxxP-xST	42B-HMF-AAC-GxxP-xST
	Supply #5 port	42B-CMC-AAA-GxxP-xxx	42B-DMG-AAC-GxxP-xST	42B-HMG-AAC-GxxP-xST
	External	42B-CMD-AAB-GxxP-xxx	42B-DMH-AAD-GxxP-xST	42B-HMH-AAD-GxxP-xST
1/4" O.D.	Internal Supply #3 port	42B-CMB-EAA-GxxP-xxx	42B-DMF-EAC-GxxP-xST	42B-HMF-EAC-GxxP-xST
tube receptacles	Supply #5 port	42B-CMC-EAA-GxxP-xxx	42B-DMG-EAC-GxxP-xST	42B-HMG-EAC-GxxP-xST
	External	42B-CMD-EAB-GxxP-xxx	42B-DMH-EAD-GxxP-xST	42B-HMH-EAD-GxxP-xST

STANDARD SOLENOID OPERATOR ➤

G	XX	P-XXX*

XX	Voltage	X Manual operator	XX Electrical connection
AA	120 VAC (2.5W)	 Non-locking recessed 	Double solenoid & 3 position models
DC	24 VDC (1.8W)	2 Locking recessed	ST Base plug-in
DD	24 VDC (2.5W)		Single solenoid models
DF	24 VDC (4.0W)		5A Base plug-in
		SJ Base plug-in with light	
Note : AC	voltage requires connector with rectifier (for do	55 Base plug-in with rectifier & light & ground	







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI

External Pilot: vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI 3 position: 40 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: # 10-32 : $(0.35 \, \text{C}_{\text{v}}) - 1/4'' \, \text{O.D.}$ tube receptacle : $(0.4 \, \text{C}_{\text{v}})$

Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

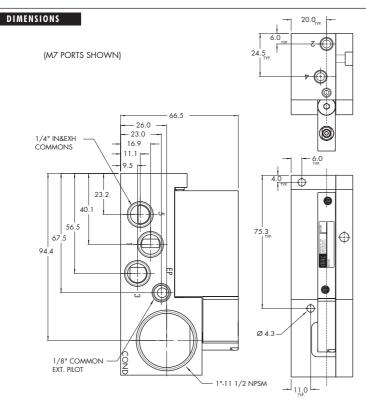
Power: 1.0 to 4.0 W

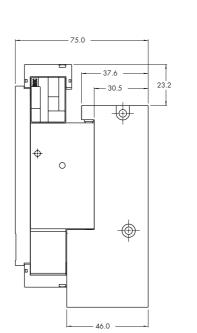
Response times: Energize: 5 ms (with 24V 4 W coil) De-energize: 5 ms

Options : • M5 ports, M7 ports, 6 mm O.D. tube receptacles

• Sandwich flow controls: FC42B-AB

• Sandwich regulator : see 'Regulator' section







Function	Port size	Flow (Max)	Manifold mounting		Series
5/2, 5/3	# 10-32 - 1/4" O.D. tube receptacle	0.4 C _v	Manifold base non "plug-in"		
OPERATIONAL BENEFITS				101	33

OPERATIONAL BENEFITS

- 1. 4-way valve with 4-way integral pilot.
- 2. 10 mm valve (stacks on 10.5 mm centers).
- 3. High flow (up to 0.4 $\rm C_V$).
- 4. Fast repeatable response times.
- 5. Maximum shifting forces in both directions.
- 6. Long life.



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37 38 **52**

67 69

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ISO 01 ISO 02 **ISO** 1 **ISO 2**

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
		12 2 4 14 14 3 15	12 2 4 14 170 14 315	12 2 4 14 MDM TO THE TOTAL TOT	12 2 4 14
Valve less	Internal	42B-AMA-000-G xxx-xxx	42B-BMA-000-G xxx-xxx	42B-EMA-000-G xxx-xxx	42B-FMA-000-G xxx-xxx
base	External	42B-AMD-000-G xxx-xxx	42B-BMD-000-G xxx-xxx	42B-EMD-000-Gxxx-xxx	42B-FMD-000-Gxxx-xxx
# 10-32	Internal	42B-AMA-AJL-Gxxx-xxx	42B-BMA-AJL-G xxx-xxx	42B-EMA-AJL-G xxx-xxx	42B-FMA-AJL-Gxxx-xxx
	External	42B-AMD-AJM-Gxxx-xxx	42B-BMD-AJM-Gxxx-xxx	42B-EMD-AJM-Gxxx-xxx	42B-FMD-AJM-Gxxx-xxx
1/4" O.D.	Internal	42B-AMA-EJL-G xxx-xxx	42B-BMA-EJL-Gxxx-xxx	42B-EMA-EJL-Gxxx-xxx	42B-FMA-EJL-Gxxx-xxx
tube receptacles	External	42B-AMD-EJM-Gxxx-xxx	42B-BMD-EJM-Gxxx-xxx	42B-EMD-EJM-Gxxx-xxx	42B-FMD-EJM-Gxxx-xxx

DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
		14 4 2 12 12 12 12 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	14 1/D 1/D 10 10 10 10 10 10 10 10 10 10 10 10 10	12 2 4 14 MD 14 14 15 15 14 16 17 17 17 17 17 17 17 17 17 17 17 17 17
Valve less base	Internal Supply #3 port	42B-CMB-000-G xxx-xxx	42B-DMB-000-G xxx-xxx	42B-HMB-000-G xxx-xxx
	Supply #5 port	42B-CMC-000-G xxx-xxx	42B-DMC-000-G xxx-xxx	42B-HMC-000-G xxx-xxx
	External	42B-CMD-000-G xxx-xxx	42B-DMD-000-Gxxx-xxx	42B-HMD-000-G xxx-xxx
# 10-32	Internal Supply #3 port	42B-CMB-AJL-G <i>xxx-xxx</i>	42B-DMB-AJL-Gxxx-xxx	42B-HMB-AJL-Gxxx-xxx
	Supply #5 port	42B-CMC-AJL-Gxxx-xxx	42B-DMC-AJL-Gxxx-xxx	42B-HMC-AJL-Gxxx-xxx
	External	42B-CMD-AJM-Gxxx-xxx	42B-DMD-AJM-Gxxx-xxx	42B-HMD-AJM-Gxxx-xxx
1/4" O.D.	Internal Supply #3 port	42B-CMB-EJL-Gxxx-xxx	42B-DMB-EJL-Gxxx-xxx	42B-HMB-EJL-Gxxx-xxx
tube receptacles	Supply #5 port	42B-CMC-EJL-GXXX-XXX	42B-DMC-EJL-Gxxx-xxx	42B-HMC-EJL-Gxxx-xxx
	External	42B-CMD-EJM-Gxxx-xxx	42B-DMD-EJM-Gxxx-xxx	42B-HMD-EJM-Gxxx-xxx

STANE

DARD SOLENOID OPERATOR ➤	G <u>xx</u> x- <u>x</u> xx
	─────────────────────────────────────

				ነ ነ			
XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	Α	18"	1	Non-locking recessed	BA	Flying leads
DC	24 VDC (1.8W)	В	24"	2	Locking recessed	ВТ	Flying leads with light
DD	24 VDC (2.5W)	С	36"			GA	MAC JAC solenoid plug-in
DF	24 VDC (4.0W)					KA	Plug-in wire assy.
Noto : - A	C voltage requires connector wit	h roctifior				KT	Plug-in wire assy. with light
* Other o	options available, see page 311.	ii recillel.				KD	Plug-in wire assy. with
Latching so	olenoid available for 5/2 valves.						rectifier & light & ground

Other options available, see page 311.

Latching solenoid available for 5/2 valves.

Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").

Other options available for the 42 series valves, see page 107.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI

External Pilot: vacuum to 120 PSI

Pilot pressure: 2 position : 20 to 120 PSI 3 position: 40 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow: # 10-32 : (0.35 C_v) – 1/4" O.D. tube receptacle : (0.4 C_v)

Coil: Class A wire (#22 AWG x 18), continuous duty

-15% to +10% of nominal voltage Voltage range:

Power: 1.0 to 4.0 W

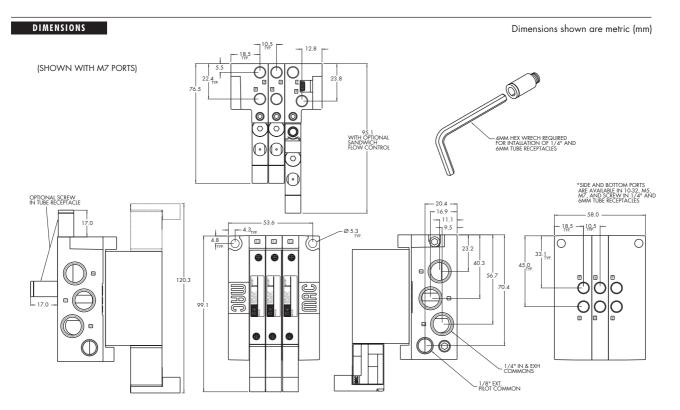
Response times:

Energize : 5 ms (with 24V 4 W coil) De-energize: 5 ms

Options: • M5 ports, M7 ports, 6 mm O.D. tube receptacles • Sandwich flow controls : FC42B-BB

• Sandwich regulator: see "regulators" section • Isolator disk for inlet or exhaust: 28454

• Valve blanking plate : M-42004





Function		Port size	Floш (Max)	Manifold mounting		Series
5/2, 5/3		# 10-32 - 1/4" O.D. tube recepta	0.4 C _V	Manifold base "plug-in"		
PERATIONAL BEN	EFITS					33
4-way valve wit					_	34
10 mm valve (st High flow (up to Fast repeatable Maximum shiftir	0.4 C _v). response time	s.				36
Long life.					0	32
				i i		37
					100	38
						52
HOW TO ORDI	E R					67
INGIF PRFSSL	JRF MODFI	S (LED STANDARD EXCEPT	FOR SINGLE SOLENOID	S)		69
Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center	44
		12 2 4 14 3 3 15 14	12 2 4 14 3 15 14 3 15	12 2 4 14 MD 1 1 1 3 MM 	12 2 4 14 MD 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	46
Valve less	Internal	42B-AMA-000-G xx P- xxx	42B-BME-000-G xx P- x ST	42B-EME-000-GxxP-xST	42B-FME-000-GxxP-xST	
base	External	42B-AMD-000-G xx P- xxx	42B-BMH-000-G xx P- x ST	42B-EMH-000-G xx P- x ST	42B-FMH-000-G xx P- x ST	42
# 10-32	Internal	42B-AMA-AJA-G xx P- xxx	42B-BME-AJC-GxxP-xST	42B-EME-AJC-GxxP-xST	42B-FME-AJC-GxxP-xST	7.2
- / / / / / /	External	42B-AMD-AJB-GxxP-xxx	42B-BMH-AJD-GxxP-xST	42B-EMH-AJD-GxxP-xST	42B-FMH-AJD-GxxP-xST	47
1/4" O.D.	Internal External	42B-AMA-EJA-GxxP-xxx 42B-AMD-EJB-GxxP-xxx	42B-BME-EJC-GxxP-xST 42B-BMH-EJD-GxxP-xST	42B-EME-EJC-GxxP-xST 42B-EMH-EJD-GxxP-xST	42B-FME-EJC-GxxP-xST 42B-FMH-EJD-GxxP-xST	48P
		(LED STANDARD EXCEPT F		425 EMIT 155 GAR AGT	420 1111 130 0331 301	
Port size		Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center	48
			14 4 2 12 5 0 0 0 3		12 2 4 14 MD T T T T T T T T T T T T T T T T T T T	400
Valve less b	ase Inte	ernal Supply #3 port	42B-CMB-000-G xx P- xxx	42B-DMF-000-G xx P- x ST	42B-HMF-000-G xx P- x ST	
		Supply #5 port	42B-CMC-000-GxxP-xxx	42B-DMG-000-G xx P- x ST	42B-HMG-000-G xx P- x ST	92
		ternal	42B-CMD-000-GxxP-xxx	42B-DMH-000-G xx P- x ST	42B-HMH-000-G xx P- x ST	
# 10-32	Int	ernal Supply #3 port	42B-CMB-AJA-GxxP-xxx	42B-DMF-AJC-GxxP-xST	42B-HMF-AJC-GxxP-xST	93
		Supply #5 port ternal	42B-CMC-AJA-GxxP-xxx 42B-CMD-AJB-GxxP-xxx	42B-DMG-AJC-GxxP-xST 42B-DMH-AJD-GxxP-xST	42B-HMG-AJC-GXXP-XST 42B-HMH-AJD-GXXP-XST	
1/4" O.D		ernal Supply #3 port	42B-CMB-EJA-GxxP-xxx	42B-DMF-EJC-GxxP-xST	42B-HMF-EJC-GxxP-xST	ISO C
tube receptac	les	Supply #5 port	42B-CMC-EJA-GxxP-xxx	42B-DMG-EJC-GxxP-xST	42B-HMG-EJC-G xx P- x ST	ISO C
	Ex	ternal	42B-CMD-EJB-GxxP-xxx	42B-DMH-EJD-G xx P- x ST	42B-HMH-EJD-G xx P- x ST	ISO 1
tandard sc	DLENOID OF	PERATOR >	G <u>xx</u> P-x <u>xx</u> *	Above numbers are middle st	ation manifolds with side ports	ISO 2
						ISO 3
XX Volto	ıge	X	Manual operator	XX Electric	al connection	
	AC (2.5W)	1	Non-locking recessed		& 3 position models	
	C (1.8W)		Locking recessed	ST Base plug		
DD 24 VD0	C (2.5W)			Single solenoid i	nodels	

Base plug-in with rectifier & light & ground

Base plug-in with light







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI

External Pilot: vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI 3 position: 40 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $# 10-32 : (0.35 C_v) - 1/4" O.D. tube receptacle : (0.4 C_v)$

Coil: Class A continuous duty, #22 AWG x 12 base leads

Class A commoods adily, 1122 ATTO X 12 base lear

Voltage range: -15% to +10% of nominal voltage

Power: 1.0 to 4.0 W

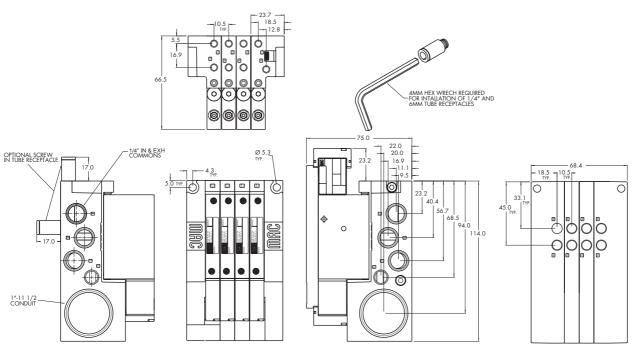
Response times: Energize: 5 ms (with 24V 4 W coil) De-energize: 5 ms

Options:

• M5 ports, M7 ports, 6 mm O.D. tube receptacles • Sandwich flow controls: FC42B-AB
• Sandwich regulator: see "regulators" section • Isolator disk for inlet or exhaust: 28454

• Valve blanking plate : M-42004 • Plug-in wire protector : 24180

DIMENSIONS





unction	Port size	Floш (Max)	Individual/Manifold mounting	Series
5/2	# 10-32 - 1/4" O.D. tube rece	0.4 C _V	Sub-base/ manifold base non "plug-in" with latching solenoid	
OPERATIONAL BENEFITS			550.000	33
. 4-way valve with 4-wa				34
2. 10 mm valve (stacks o 3. High flow (up to 0.4 C			15 6	1
 Fast repeatable respor 	nse times.			36
 Maximum shifting force Long life. 	es in both directions.			
J			63	32
			11 30	0.7
			. 15	37
				38
				anifold base
HOW TO ORDER			m	anifold base 67
INGLE PRESSURE A	MODELS (INDIVIDUAL BASE W	TH SIDE PORTS)		69
Port size	Pilot air	5/2 9	Single pressure	44
		12	2 4 14 37.	
		<u> </u>	<u></u>	46
Valve less base	Internal		MA-000-Lxxx-xxx	
# 10 20	- External		MD-000-Lxxx-xxx	42
# 10-32	Internal External		MA-AAL-Lxxx-xxx MD-AAM-Lxxxx-xxx	47
1/4" O.D.	Internal		MA-EAL-LXXX-XXX	
tube receptacles	External	42A-A/	MD-EAM-Lxxx-xxx	48P
DUAL PRESSURE MC	DDELS (INDIVIDUAL BASE WITH	H SIDE PORTS)		
Port size	Pilot air		5/2 Dual pressure	48
				400
Valve less base	Internal Supply #3 port		315 42A-CMB-000-Lxxx-xxx	
valve less base	Supply #5 port		42A-CMC-000-Lxxx-xxx	92
	External		42A-CMD-000-L xxx-xxx	
# 10-32	Internal Supply #3 port		42A-CMB-AAL-L xxx-xxx	93
	Supply #5 port		42A-CMC-AAL-LXXX-XXX	
1/4" O.D.	External Supply #3 port		42A-CMD-AAM-L xxx-xxx 42A-CMB-EAL-L xxx-xxx	ISO 0
tube receptacles	Supply #5 port		42A-CMC-EAL-LXXX-XXX	ISO 0
	External		42A-CMD-EAM-LXXX-XXX	ISO 1
ATCHING SOLENC	— ———————————————————————————————————	L XXX-XXX		ISO 2
3 13 0011110	TE GLEW HORF			ISO 3
XX Voltage	X Wire le	_	Nanual operator XX Electrical col	
XX Voltage DF 24 VDC (4.0 V HA 24 VDC (1.95	N) A 18"	_	tanual operator o operator BA 2 Wire Flying lea KA 2 Wire Plug-in A LA 3 wire plug-in as	ads ssembly

* Other options available, see page 319.

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").

Other options available for the 42 series valves, see page 107.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

10-32 : (0.35 C_v) – 1/4" O.D. tube receptacle : (0.4 C_v)

Coil: Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

Power: 1.95 to 4.0 W

Response times: Energize: 5 ms (with 24V 4 W coil) De-energize: 5 r

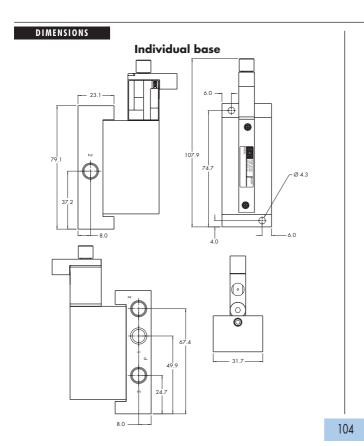
with 24V 4 W coil)

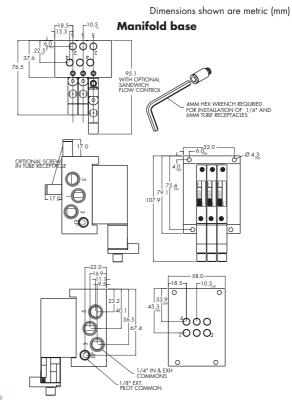
De-energize: 5 ms

Options : • M5 ports, M7 ports, 6 mm O.D. tube receptacles • Sandwich flow controls : FC42B-BB

• Sandwich regulator : see "regulators" section • Isolator disk for inlet or exhaust: 28454

• Valve blanking plate : M-42004





Consult "Precautions" page 327 before use, installation or service of MAC Valves...



unction	Port size	Floш (Max)	Individual/Manifold mounting	Series
5/2	# 10-32 - 1/4" O.D. tube re	0.4 C _V	Sub-base/ manifold base "plug-in" with latching solenoid	
OPERATIONAL BENEFITS			555000	33
. 4-way valve with 4-wa			0	34
2. 10 mm valve (stacks o 3. High flow (up to 0.4 (
l. Fast repeatable respo	nse times.			36
 Maximum shifting force Long life. 	es in both directions.			
J				32
			199	37
				38
				52
HOW TO ORDER				67
INGLE PRESSURE A	MODELS (2-WIRE INDIVIDUA	L BASE WITH SIDE PORTS)		69
Port size	Pilot air	5/2 9	Single pressure	44
1 011 3120	i iioi wii	12 [2 4	
		<u> </u>		46
Valve less base	Internal		MA-000-LxxP-xxx	_
	External	42A-A	MD-000-LxxP-xxx	42
# 10-32	Internal		MA-AAA-LxxP-xxx	
1/4// 0.5	External		MD-AAB-LxxP-xxx	47
1/4" O.D.	Internal	47A-AI	MA-EAA-LxxP-xxx	400
tuha racantacias	External		MD-FAR-Lyyp-yyy	—— 48P
tube receptacles	External DDELS 12-WIRE INDIVIDUAL E	42A-A	MD-EAB-LxxP-xxx	48P
DUAL PRESSURE MC	DDELS (2-WIRE INDIVIDUAL E	42A-A		489
		42A-A	5/2 Dual pressure	
DUAL PRESSURE MC	DDELS (2-WIRE INDIVIDUAL E	42A-A	5/2 Dual pressure	
UAL PRESSURE MC	DDELS (2-WIRE INDIVIDUAL E	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure	48
POPT SIZE	DDELS (2-WIRE INDIVIDUAL E	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure	48
Port size Valve less base	Pilot air Internal Supply #3 port Supply #5 port External	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 12 2 4 14 37 31 5 42A-CMB-000-LxxP-xxx	48
POPT SIZE	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port	42A-A BASE WITH SIDE PORTS)	5/2 Dual pressure 12 2 4 14 14 14 14 14 14 14 14 14 14 14 14 1	48 400 92
Port size Valve less base	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 12 2 4 14 13 1 5 42A-CMB-000-LxxP-xxx 42A-CMD-000-LxxP-xxx 42A-CMB-AAA-LxxP-xxx 42A-CMC-AAA-LxxP-xxx	48
Port size Valve less base # 10-32	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External External External External	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 1/2 2 4 14 14 3 1 5 42A-CMB-000-LxxP-xxx 42A-CMC-000-LxxP-xxx 42A-CMD-000-LxxP-xxx 42A-CMD-000-LxxP-xxx 42A-CMD-AAA-LxxP-xxx 42A-CMC-AAA-LxxP-xxx	48 400 92
Port size Valve less base # 10-32	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 12	48 400 92 93 ISO 01
Port size Valve less base # 10-32	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External External External External	42A-A	5/2 Dual pressure 1/2 2 4 14 14 3 1 5 42A-CMB-000-LxxP-xxx 42A-CMC-000-LxxP-xxx 42A-CMD-000-LxxP-xxx 42A-CMD-000-LxxP-xxx 42A-CMD-AAA-LxxP-xxx 42A-CMC-AAA-LxxP-xxx	48 400 92 93 ISO 01 ISO 02
Port size Valve less base # 10-32 1/4" O.D. tube receptacles	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port External Internal Supply #3 port Supply #5 port External	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 12	48 400 92 93 ISO 01
Port size Valve less base # 10-32	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port External Internal Supply #3 port Supply #5 port External	42A-A	5/2 Dual pressure 12	48 400 92 93 ISO 01 ISO 02 ISO 1 ISO 2
Port size Valve less base # 10-32 1/4" O.D. tube receptacles	Pilot air Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port Supply #5 port External Internal Supply #3 port External Internal Supply #3 port Supply #5 port External	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 12	48 400 92 93 ISO 01 ISO 02
Port size Valve less base # 10-32 1/4" O.D. tube receptacles	Pilot air Internal Supply #3 port Supply #5 port External DID OPERATOR >	42A-A. BASE WITH SIDE PORTS)	5/2 Dual pressure 12	48 400 92 93 ISO 01 ISO 02 ISO 1 ISO 2

^{*} Other options available, see page 319.
** For latching solenoid 2 and 4 wire, use electrical connector DA, DB, DC or DD. For 3 wire latching, use the "EA" connector.

Other options available for the 42 series valves, see page 108.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: vacuum to 120 PSI

Pilot pressure: 20 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: # 10-32 : $(0.35 \, C_v) - 1/4'' \, \text{O.D.}$ tube receptacle : $(0.4 \, C_v)$

Class A continuous duty, #22 AWG x 12 base leads

Class A commoous doly, #22 ATTO X 12 base

Voltage range: -15% to +10% of nominal voltage

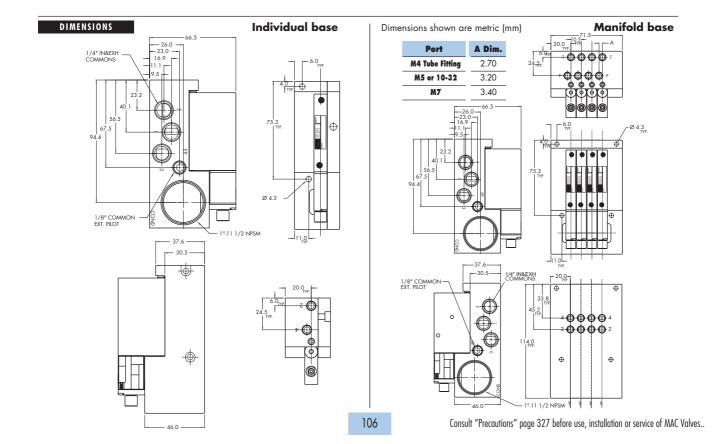
Power: 1.95 to 4.0 W

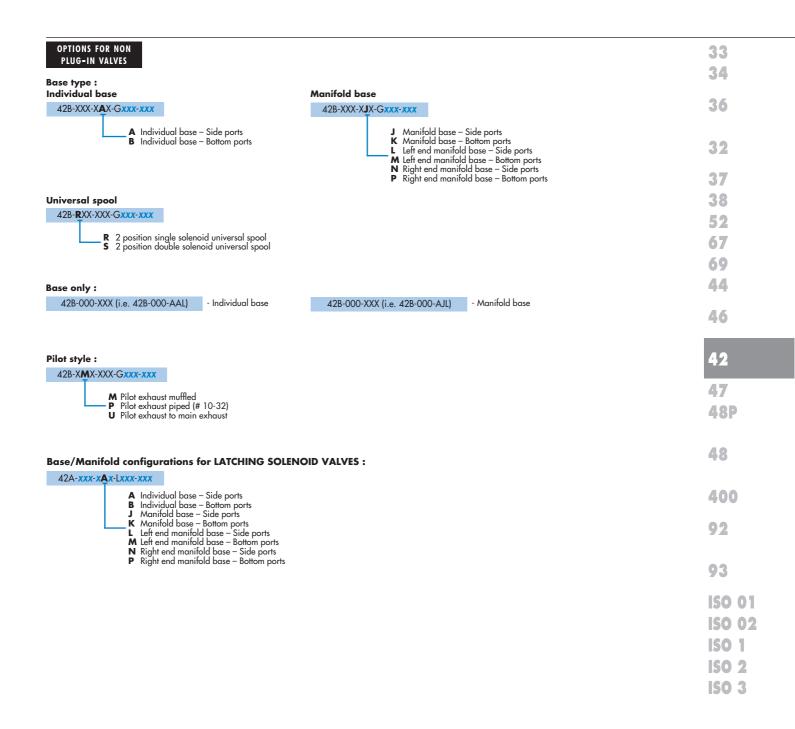
Response times: Energize: 5 ms (with 24V 4 W coil) De-energize: 5 ms

Options : • M5 ports, M7 ports, 6 mm O.D. tube receptacles • Sandwich flow controls : FC42B-AB

• Sandwich regulator: see "regulators" section • Isolator disk for inlet or exhaust: 28454

• Valve blanking plate : M-42004 • Plug-in wire protector : 24180





OPTIONS FOR PLUG-IN VALVES Base type: Individual base Manifold base 42B-XXX-XJX-GxxP-xxx 42B-XXX-XAX-GxxP-xxx J Manifold base – Side ports K Manifold base – Bottom ports L Left end manifold base – Side ports M Left end manifold base – Bottom ports N Right end manifold base – Side ports P Right end manifold base – Bottom ports A Individual base – Side ports B Individual base – Bottom ports **Universal spool** 42B-RXX-XXX-GxxP-xxx 2 position single solenoid universal spool 2 position double solenoid universal spool Base only: 42B-000-XXX (i.e. 42B-000-AAC) 42B-000-XXX (i.e. 42B-000-AJA) - Individual base wired for a double solenoid - Manifold base wired for a single solenoid

Base/Manifold configurations for LATCHING SOLENOID VALVES:

J Internal pilot single pressure
K Internal pilot dual pressure supply from #3 port
Internal pilot dual pressure supply from #5 port

42A-xxx-xAx-LxxP-xxx A Individual base – Side ports B Individual base – Bottom ports J Manifold base – Side ports K Manifold base – Bottom ports L Left end manifold base – Side ports M Left end manifold base – Bottom ports N Right end manifold base – Side ports P Right end manifold base – Bottom ports

M Pilot exhaust muffled
P Pilot exhaust piped (# 10-32)
U Pilot exhaust to main exhaust

For LED with diode (2 & 3 position double solenoid valves)

42B-XX**J**-XXX-G**xx**P-**x**ST

42B-XMX-XXX-GxxP-xxx

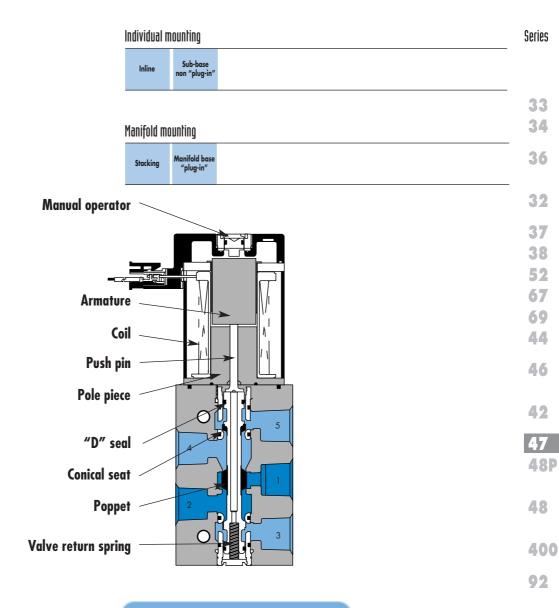
Pilot style:

M External pilot

Base/Manifold options for int./ext. pilot for LATCHING SOLENOID VALVES:

42A-xxx-xxA-LxxP-xxx A Plug-in Int. Pilot - 2 Wire Latching Plug-in Ext. Pilot – 2 Wire Latching Plug-in Ext. Pilot – 3 Wire Latching Plug-in Ext. Pilot – 3 Wire Latching Plug-in Int. Pilot – 4 Wire Latching Plug-in Ext. Pilot – 4 Wire Latching Plug-in Ext. Pilot – 4 Wire Latching





SERIES FEATURES

- Short stroke solenoid produces high energization shifting force.
- High force return spring due to high force solenoid maximizes both energization and de-energization shifting forces.
- Built-in wear compensation valve stroke is shorter than solenoid stroke.
- Four (4) bonded balanced poppets on a one-piece valve stem.
- End poppets seal first on conical seats and cushion inlet poppet, eliminating cutting.
- Exhaust seals are not under inlet pressure thus reducing friction.
- Short stroking balanced poppet allows for direct solenoid operation with high shifting forces, minimized friction, fast response and high flow in a small package.

93

ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



Function	Port size		Flow (Max)	Individual M	lounting		Series
5/2	1/8" -	1/4"	0.5 C _v	Inline			
OPERATIONAL BE	NEFITS						33
Short stroke so energization s	olenoid produces high hifting force.	 Integral non-risin inline models. 	g flow controls available	on			34
High force retusion solenoid maximum de-energization	urn spring due to high force mizes both energization and on shifting forces.	direct solenoid o	lanced poppet allows fo peration with high shiftin d friction, fast response o	g			36
shorter than so 4. Four bonded b	palanced poppets on a one-	nigh now in a sr	аш раскаде.		1	.10	32
	eal first on conical seats and						37
	oppet, eliminating cutting. are not under inlet pressure thus			2	5		38
reducing friction	on.				0	-	52
HOW TO ORI	DER						67
	Port size	Wi	thout flow controls		With fl	ow controls	69
		1	2 w T T 14		12 W	14	44 46
	1/8" NPTF		7A-AA0-H xxx-xxx		47A-BA	.0-Н <i>ххх-ххх</i>	40
	1/4" NPTF		7A-AB0-H xxx-xxx		47A-BB	0-H xxx-xxx	40
SOLENOID O	PERATOR ➤	Н	XXX-XXX				42
	_		╧╅				47 48P
XX Vol	tage X	Lead Wire leng	jth X Me	anual operator	ХХ	Electrical connection	701
	DC (5.2W) A DC (2.4W) B	18" 24"		n-locking recessed king recessed	MA MC	Plug-in wire assembly Plug-in wire assembly with	48
DC 24 VI	DC (1.8W) C	36"		<u> </u>	BA	light Flying leads	70
	VAC (6.7W)				BC MT	Flying leads with light Plug-in wire assembly with rectifier & light	400
	available, see page 315. requires connector with rectifier.					receiver of ngrie	92
LATCHING O	•	l	XXX-XXX*				0.2
			╜┰┖╼				93
XX Vol	tage X	Lead Wire leng	jth X Me	anual operator	ХХ	Electrical connection	ISO 01
	DC (5.2W) A DC (5.2W) B	18" 24"	0 No	operator	BA BJ	2 Wire Flying leads 4 Wire Flying leads	ISO 02
		36"			LA	3 Wire Plug-in (Polarity switching cover)	ISO 1
					MA ME	2 Wire Plug-in 4 Wire Plug-in	ISO 2
* Other options of	available, see page 319.						ISO 3

OPTIONS

Namur Mount Option (w/o flow controls)

47A-C**X**O-H**XXX-XXX**A 1/8" NPTF
B 1/4" NPTF







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $5.2W: (0.50 C_v) - 2.4W: (0.35 C_v) - 1.0W: (0.30 C_v)$

Class A wire (#22 AWG x 18), continuous duty

Class / Time (#22 / Time x 10), commoos do

Voltage range: -15% to +10% of nominal voltage

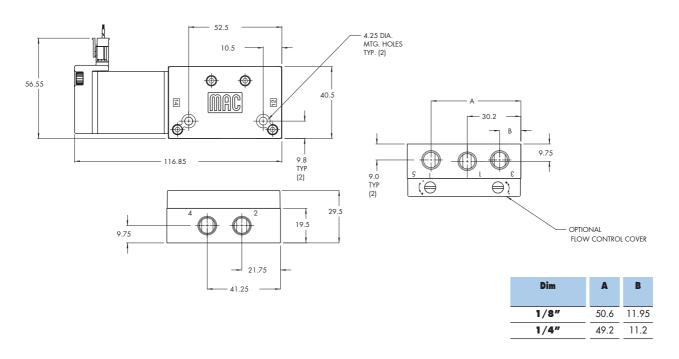
Power: 5.2W - 2.4W - 1.0W

Response times: Energize: 17.4 ms
(with 5.2 W coil) De-energize: 3.8 ms

Options : • BSPP threads

Spare parts : • Flow control assembly : N-47004

DIMENSIONS





Function	Port size	Flow (Mi	ax]	Individual Mounting	Series
5/2	1/8" -	1/4" 0.5 C	,	Sub-base non "plug-in"	
OPERATIONAL BENEFITS					33
 Short stroke solenoid energization shifting for 		Integral non-rising flow c inline models.	ontrols available on		34
High force return sprir solenoid maximizes be de-energization shiftin	ng due to high force oth energization and ng forces.	 Short stroking balanced direct solenoid operation forces, minimized friction 	n with high shifting n, fast response and		36
3. Built-in wear compenses shorter than solenoid s 4. Four bonded balanced in a complex to the second sec	stroke.	high flow in a small pacl	kage.		32
piece valve stem. 5. End poppets seal first				0	37
cushion inlet poppet, 6 6. Exhaust seals are not 1				2	38
reducing friction.					52
HOW TO ORDER					67
Por	rt size	Without fl	low controls	With flow contro	69
					44
		12 w	14	12 w 14	
Valve	less base	315 47A-110	-H xxx-xxx	47A-L10-H xxx-xx	46
	8" NPTF		-H xxx-xxx	47A-LAB-H xxx-xx	
1/4	" NPTF	47A-LBA	-H xxx-xxx	47A-LBB-H xxx-xx	42
SOLENOID OPERAT	OR >	Н <u>хх</u>	X- <u>XXX</u> *		47 48P
15 To 15		e land l d	٠ ٦		
XX Voltage DA 24 VDC (5.2V	X A	Lead Wire length	X Manual o		I connection 48
DB 24 VDC (2.4V	N) B	24"	2 Locking recess		e assembly with
DD 24 VDC (1.8V DD 24 VDC (1.0V	v)	36"	_	BA Flying lead	400
AA 120 VAC (6.7	7W)			BC Flying lead MT Plug-in wir	s with light e assembly with
	21.5			rectifier &	92
Other options available Note: AC voltage requires	connector with rectifier.				
LATCHING OPERAT	OR ➤	L XX	X- <u>XXX</u> *		93
			┰┖╼		ISO 01
XX Voltage	X	Lead Wire length	X Manual o	perator XX Electrica	I connection ISO 02
DA 24 VDC (5.2V	V) A	18"	No operator	BA 2 Wire Flyi	ng leads
DF 12 VDC (5.2V	<u>B</u> <u>C</u>	24" 36"	-	BJ 4 Wire Flyi LA 3 Wire Plug	g-in
			-	(Polarity sw MA 2 Wire Plu	itching cover)
				ME 4 Wire Plu	

^{*} Other options available, see page 319.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $5.2W: (0.50 C_v) - 2.4W: (0.35 C_v) - 1.0W: (0.30 C_v)$

Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

Power: 5.2W - 2.4W - 1.0W

Response times : Energize : 17.4 ms

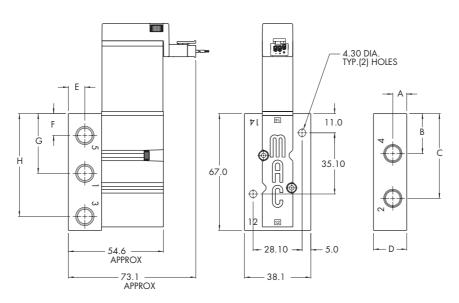
(with 5.2 W coil) De-energize: 3.8 ms

Options : • BSPP threads

Spare parts : • Pressure seal body to base: 16628 • Mounting screw (x2): 35043

• Flow control assembly (x2): N-04001

DIMENSIONS



DIM.	A	В	С	D	E	F	G	н
1/8"	8.0	22.9	48.6	19.05	9.5	12.5	34.2	59.0
1/4"	9.5	24.0	48.8	23.0	12.5	12.8	34.2	57.2



unction	Port size	Flow (Max]	Manifold Mounting		Series
5/2	1/8" -	1/4" 0.5	Ç _v	Stacking		
PERATIONAL BENEFITS						33
. Short stroke solenoid energization shifting		Integral non-rising flow inline models.	controls available on	_	_	34
. High force return spri solenoid maximizes k de-energization shifti	ing due to high force both energization and ng forces.	 Short stroking balanced direct solenoid operation forces, minimized friction 	on with high shifting on, fast response and	-		36
shorter than solenoid Four bonded balance		high flow in a small pa	ckage.	40	37	32
piece valve stem. End poppets seal first	t on conical seats and				200	37
cushion inlet poppet,	eliminating cutting.			- O		38
reducing friction.	under inlet pressure thus					52
HOW TO ORDER	l					67
Da	ort size	Without	flow controls	Wish	flow controls	69
-	711 3126	Williou	now connois		now connois	44
		12 w	1 	12 W	4	
		315	/ \\/_ 	<u></u>	♥ ♥ / ⊤	46
	B" NPTF 4" NPTF		.0-H <i>xxx-xxx</i> .0-H <i>xxx-xxx</i>		A0-H xxx-xxx B0-H xxx-xxx	
•/-	* WF11		0 11 222-222		DO IT AAA-AAA	42
OLENOID OPERAT	TOR ➤	H XX	XX-XXX [*]			
			<u> </u>			47
VV Waltana	Ţ	Land Mina Lands			Electrical connection	48P
XX Voltage DA 24 VDC (5.2)	X W) A	Lead Wire length	X Manual o Non-locking r	_	Plug-in wire assembly	
DB 24 VDC (2.4)	W) B	24"	2 Locking recess		Plug-in wire assembly with	48
DC 24 VDC (1.8°		36"	_	BA	light Flying leads	
AA 120 VAC (6.				BC MT	Flying leads with light Plug-in wire assembly with	400
					rectifier & light	700
Other options available	e, see page 315.					92
ote: AC voltage requires	s connector with rectifier.					
ATCHING OPERAT	TOR ➤	L <u>x</u>	KX-XXX			93
			T L —			73
XX Voltage	X	Lead Wire length	X Manual o	perator XX	Electrical connection	ISO 0
DA 24 VDC (5.2)	W) A	18"	0 No operator	BA	2 Wire Flying leads	ISO 0
DF 12 VDC (5.2)	W) B	24" 36"		BJ LA	4 Wire Flying leads 3 Wire Plug-in	
		50	_		(Polarity switching cover)	ISO 1
				MA ME	2 Wire Plug-in 4 Wire Plug-in	ISO 2
						ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Lubrication:

Filtration: 40 μ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C) Temperature range:

Flow: $5.2W: (0.50 C_v) - 2.4W: (0.35 C_v) - 1.0W: (0.30 C_v)$

Coil: Class A wires (#22 AWG x 18), continuous duty

-15% to +10% of nominal voltage

Voltage range:

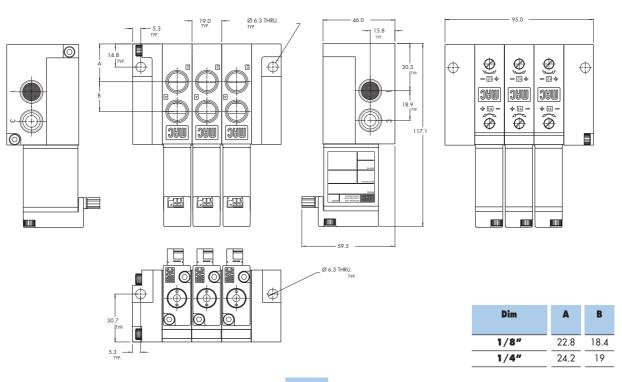
5.2W - 2.4W - 1.0W Power:

Response times: Energize: 17.4 ms (with 5.2 W coil) De-energize: 3.8 ms

• BSPP threads Options:

• Inlet isolator: 28451 • Exhaust isolator: N-47009 • Tie Rod (x2): 79057 Spare parts:

DIMENSIONS





unction	Port size		Flow (Max	J	Manifold	Tiobiliting	Series
5/2	1/8" -	1/4"	0.5 C _V		Manifold b "plug-in		
PERATIONAL BENEFITS						-	33
. Short stroke solenoid p				ntrols available on			34
energization shifting for . High force return spring		inline mo 8. Short stro	dels. oking balanced po	oppet allows for			
solenoid maximizes both de-energization shifting			enoid operation v	with high shifting fast response and			36
. Built-in wear compensat	ion – valve stroke is		in a small packa				
shorter than solenoid str . Four bonded balanced					_		32
piece valve stem. . End poppets seal first or	n conical seats and						37
cushion inlet poppet, eli	iminating cutting.						38
 Exhaust seals are not un reducing friction. 	nder inlet pressure thus					Photo: Middle statio	
HOW TO ORDER						manifold bas	e 67
	Port size				Mod	el number	69
							44
					12 W	14	
	Valve less base	•			47A-L	10-H xx P- xxx	_ 46
	1/8" NPTF		:-			AJ-H xxP-xxx	_
	1/4" NPTF				47A-L	BJ-H xxP-xxx	42
OLENOID OPERATO	ND ~		LIVVD) vvv*			47
OLLINOID OF LIKATO			H <u>XX</u> P	~ <u>^</u>			48P
VV Walana		v	M		VV	Electrical connection	
XX Voltage DA 24 VDC (5.2W)		X 1	Manual ope Non-locking rece		XX	Electrical connection	
DB 24 VDC (2.4W)					FA	Base plua-in	48
		2	Locking recessed		FA FB	Base plug-in Base plug-in w/ ground	48
DC 24 VDC (1.8W) DD 24 VDC (1.0W)		2	Locking recessed		FB FC	Base plug-in w/ ground Base plug-in w/ LED light	
		2	Locking recessed		FB	Base plug-in w/ ground	48
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, s	/) see page 315.	2	Locking recessed		FB FC FD	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground	
DD 24 VDC (1.0W) AA 120 VAC (6.7W) Other options available, s lote: AC voltage requires a	/) see page 315. connector with rectifier.			D- XXX .	FB FC FD	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground	400
DD 24 VDC (1.0W) AA 120 VAC (6.7W) Other options available, some AC voltage requires a	/) see page 315. connector with rectifier.			⁷ - ΧΧΧ ΄	FB FC FD	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground	400
DD 24 VDC (1.0W) AA 120 VAC (6.7W) Other options available, sote: AC voltage requires a	/) see page 315. connector with rectifier.			JT	FB FC FD	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground	400 92 93
DD 24 VDC (1.0W) AA 120 VAC (6.7W) Other options available, sote: AC voltage requires of ATCHING SOLENOIL XX Voltage DA 24 VDC (5.2W)	see page 315. connector with rectifier.		L <u>xx</u> P	JT	FB FC FD FT	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground	400
DD 24 VDC (1.0W) AA 120 VAC (6.7W) Other options available, sote: AC voltage requires of ATCHING SOLENOIL XX Voltage	see page 315. connector with rectifier.	X	L XX F	JT	FB FC FD FT XX FA FB	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	400 92 93
DD 24 VDC (1.0W) AA 120 VAC (6.7W) Other options available, sote: AC voltage requires of ATCHING SOLENOIL XX Voltage DA 24 VDC (5.2W)	see page 315. connector with rectifier.	X	L XX F	JT	FB FC FD FT	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground	400 92 93
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, solete: AC voltage requires of ATCHING SOLENOII XX Voltage DA 24 VDC (5.2W) DF 12 VDC (5.2W)	/) see page 315. connector with rectifier.	X	L XX F	JT	FB FC FD FT XXX FA FB FC	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	400 92 93
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, s lote: AC voltage requires of ATCHING SOLENOIL XX Voltage DA 24 VDC (5.2W) DF 12 VDC (5.2W) Other options available, s	/) see page 315. connector with rectifier.	X	L XX F	JT	FB FC FD FT XXX FA FB FC	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	92 93 ISO 0 ISO 0 ISO 1 ISO 2
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, s lote: AC voltage requires of ATCHING SOLENOII XX Voltage DA 24 VDC (5.2W) DF 12 VDC (5.2W)	/) see page 315. connector with rectifier.	X	L XX F	JT	FB FC FD FT XXX FA FB FC	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	400 92 93
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, s lote: AC voltage requires of ATCHING SOLENOIL XX Voltage DA 24 VDC (5.2W) DF 12 VDC (5.2W) Other options available, s OPTIONS	see page 315. connector with rectifier. D >	X 0	Manual ope No operator	JT	FB FC FD FT XXX FA FB FC	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	92 93 ISO 0 ISO 0 ISO 1 ISO 2
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, s lote: AC voltage requires of ATCHING SOLENOIL XX Voltage DA 24 VDC (5.2W) DF 12 VDC (5.2W) Other options available, s OPTIONS 47A-xxJ-xxxP-xxx J Mai	see page 315. connector with rectifier. D > see page 319.	X 0	Manual ope No operator	JT	FB FC FD FT XXX FA FB FC	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	92 93 ISO 0 ISO 0 ISO 1 ISO 2
DD 24 VDC (1.0W) AA 120 VAC (6.7W Other options available, sote : AC voltage requires of ATCHING SOLENOIL XX Voltage DA 24 VDC (5.2W) DF 12 VDC (5.2W) Other options available, so OPTIONS 47A-XXJ-XXXP-XXX J Mai L Rigl	see page 315. connector with rectifier. D >	X 0 ors (middle station and ders (middle station der sylinders	Manual ope No operator	JT	FB FC FD FT XXX FA FB FC	Base plug-in w/ ground Base plug-in w/ LED light Base plug-in w/ LED light w/ ground Base plug-in w/ rectifier and light Electrical connection Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground Base plug-in w/ ground	92 93 ISO 0 ISO 0 ISO 1 ISO 2

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow (at 6 bar, $\Delta P = 1$ bar): 5.2W: (0.50 C_v) - 2.4W: (0.35 C_v) - 1.0W: (0.30 C_v)

Coil: Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

5.2W - 2.4W - 1.0W

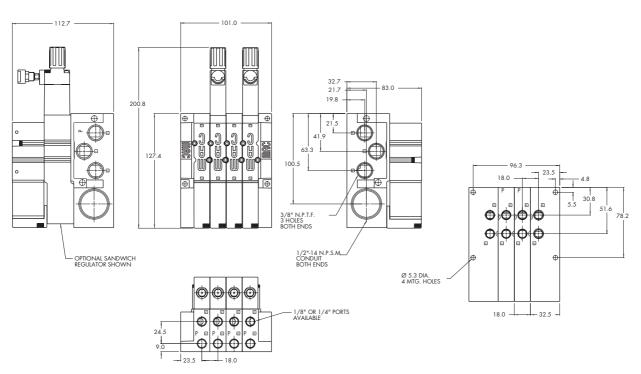
Response times : Energize : 17.4 ms

(with 5,2 W coil) De-energize: 3.8 ms

Options : • BSPP threads • Sandwich flow control: FC47A-AA • Sandwich regulator: see "Regulator" section

Spare parts : • Inlet/exhaust isolator: 28447 • Valve cover plate: M-47001

DIMENSIONS





Individual mounting Series Inline 33

34

36

32

37

48

400

92

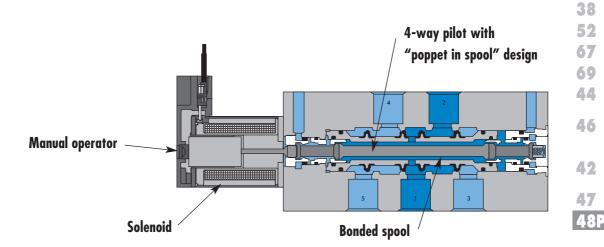
93

ISO 01

ISO 02

ISO 1

ISO 2



SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot with poppet inside the spool.
- Large flow in compact package.
- Single or dual pressure.
- Rectified AC voltage.

ISO 3



Function		Port size		Flow (Max)		ounting	Series
5/2		1/8"		1.0 C _v	Inline		
1. 4-way vo 2. Poppet in	alve with 4-way pilen spool design					W.	33 34
 High flow Fast repe Maximur 	3. 16 mm valve (stacks on 16.5 mm centers). 4. High flow (up to 1.0 Cv). 5. Fast repeatable response times. 6. Maximum shifting forces in both directions. 7. Long life. 8. Compact design.						
							37
					S		38
HOW TO ORDER							52
							67
Poi	rt size	Pilot		5/2 Single operator Single pressure		5/2 Single operator Dual pressure	69
						14 4 2 12 17D 3 0 0 0 0	44
		Internal		48PB-AAA-A00-G xxx-xxx		-	46
1	/8"	Internal from port 3		·		48PB-CAB-A00-G xxx-xxx	40
		Internal from port 5		·		48PB-CAC-A00-Gxxx-xxx	42
STANDARD SOLENOID OPERATOR ➤ G XXX-XXX*							47
				══┸┚┞╤╾			48P
XX	Voltage	X	Wire lengtl	h X	Manual operator	XX Electrical connection	
AA DC	120 VAC (2.5W) 24 VDC (1.8W)	A B	18" 24"		Non-locking Locking	BA Flying leads BT Flying leads with light	48
DD	24 VDC (2.5W)	C	36"		LOCKING	GA MAC JAC solenoid plug-in	
DF	24 VDC (4.0W)					KA Plug-in wire assy. KT Plug-in wire assy. with light KD Plug-in wire assy. with	400
* Other op Note : AC v	* Other options available, see page 311. Note: AC voltage requires connector with rectifier.						
	TONS						
48PB-X X X-X00-G <i>xx-xxx</i>							93
	A Pilot exhaust muffled C Pilot exhaust piped M5 D Pilot exhaust out main exhaust						
L							
							ISO 2
							ISO 3
							100 0







Fluid: Compressed air, vacuum, inert gases

Pressure range:

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range : 0°F to 120°F (18°C to +50°C)

Flow:

Cv 1,0

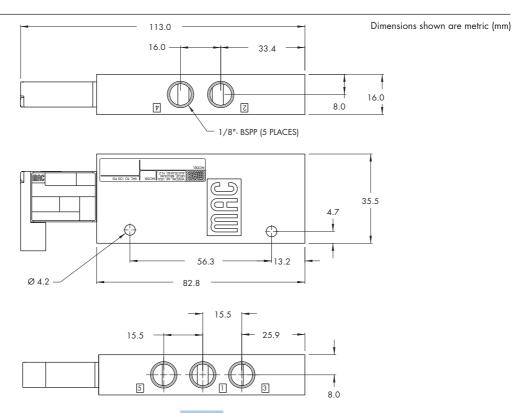
Coil: Class A wire continuous duty, #22 AWG x 18 leads

-15% to +10% of nominal voltage Voltage range:

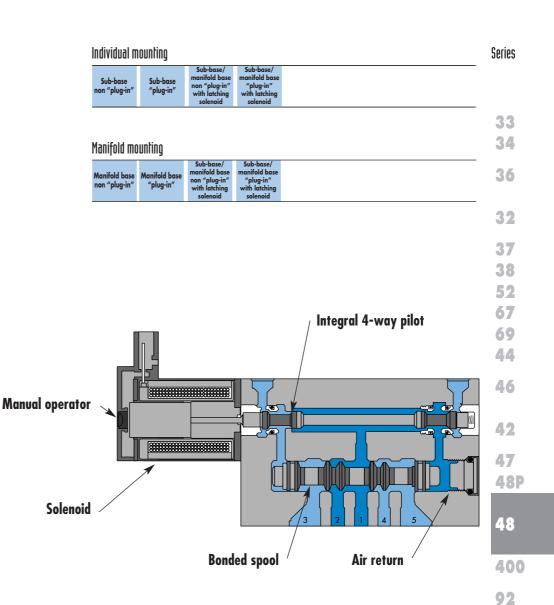
1.0 to 4.0 W Power:

• BSPP threads Options :

DIMENSIONS







SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot design.
- Single or dual pressure.
- Internal or external pilot.
- Single or double solenoid.
- 2 or 3 position.
- Rectified AC voltage.
- ullet Latching solenoid technology.

93

ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



nction		Port size	Floш (Max)	Individual mountin	19	Series
/2, 5/3		1/8"	1.1 C _v	Sub-base non "plug-in"		
PERATIONAL BENI	EFITS				3	33
4-way valve with						34
16 mm valve (sto High flow (up to		mm centers).			- A	
ast repeatable	response time				4	36
Naximum shiftin ong life.	g forces in bo	th directions.				
ong me.					A	32
					0.00	
					LINE ASS	37
						38
						52
HOW TO ORDE	R					67
JGIF PRESSI	IRE MODEL	S (VALVE WITH BASE CO	ODED FOR SIDE PORTSI			69
Port size	Pilot air	5/2	5/2	5/3	5/3	44
		Single solenoid	Double solenoid	Closed center	Open center	
				12 2 4 14 MDD 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		46
		☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	315	315	3 1 5	
Valve less	Internal	48B-AMA-000-G xxx-xxx	48B-BMA-000-Gxxx-xxx	48B-EMA-000-Gxxx-xxx	48B-FMA-000-Gxxx-xxx	42
base /8" NPTF	External Internal	48B-AMD-000-G xxx-xxx 48B-AMA-AAL-G xxx-xxx	48B-BMD-000-Gxxx-xxx 48B-BMA-AAL-Gxxx-xxx	48B-EMD-000-Gxxx-xxx 48B-EMA-AAL-Gxxx-xxx	48B-FMD-000-Gxxx-xxx 48B-FMA-AAL-Gxxx-xxx	7.4
I/O MPIF	memai				40D-170A-AAL-QAAA-AAA	
	External				48B-FMD-AAM-Gxxx-xxx	47
	External	48B-AMD-AAM-G xxx-xxx	48B-BMD-AAM-G xxx-xxx	48B-EMD-AAM-G xxx-xxx	48B-FMD-AAM-Gxxx-xxx	
		48B-AMD-AAM-GXXX-XXX (VALVE WITH BASE COD	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS)	48B-EMD-AAM-Gxxx-xxx		47 48P
IAL PRESSURE		48B-AMD-AAM-G xxx-xxx	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2		48B-FMD-AAM-Gxxx-xxx 5/3 Pressure center	48P
		48B-AMD-AAM-GXXX-XXX (VALVE WITH BASE COD	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS)	48B-EMD-AAM-Gxxx-xxx 5/2	5/3 Pressure center 12 2 4 14	
		48B-AMD-AAM-GXXX-XXX (VALVE WITH BASE COD	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2	48B-EMD-AAM-Gxxx-xxx 5/2	5/3	48P 48
Port size	E MODELS	48B-AMD-AAM-GXXX-XXX (VALVE WITH BASE COD	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2	48B-EMD-AAM-Gxxx-xxx 5/2	5/3 Pressure center 12 2 4 14	48P
	E MODELS	48B-AMD-AAM-GXXX-XXX (VALVE WITH BASE COD Pilot air	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14 17 12 12 12 12 12 48B-CMB-000-GXXX-XXX 48B-CMC-000-GXXX-XXX	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14 14 15 15 13 13 14 48B-DMB-000-GXXX-XXX 48B-DMC-000-GXXX-XXX	5/3 Pressure center 12 2 4 14 14 3 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx	48P 48 400
Port size Valve less be	E MODELS	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14 4-2 12 12 13 48B-CMB-000-GXXX-XXX 48B-CMC-000-GXXX-XXX 48B-CMD-000-GXXX-XXX	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	5/3 Pressure center 12 2 4 3 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMD-000-Gxxx-xxx	48P 48
Port size	E MODELS	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal Supply #3 port Supply #3 por	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	5/3 Pressure center 12 2 4 3 14 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMD-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx	48P 48 400 92
Port size Valve less be	E MODELS Interpretation of the second of th	48B-AMD-AAM-GXXX-XXX (VALVE WITH BASE COD Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #3 port Supply #3 port Supply #5 port	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	5/3 Pressure center 12 2 4 14 15 15 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx 48B-HMC-AAL-Gxxx-xxx	48P 48 400
Port size Valve less be	E MODELS Interpretation of the second of th	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #3 port Supply #5 port ternal	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14 12 12 12 12 12 12 12 12 12 12 12 12 12	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	5/3 Pressure center 12 2 4 3 14 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMD-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx	48P 48 400 92 93
Port size Valve less ba	E MODELS Interpretation of the second of th	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #3 port Supply #5 port ternal	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	5/3 Pressure center 12 2 4 14 15 15 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx 48B-HMC-AAL-Gxxx-xxx	48P 48 400 92 93
Port size Valve less ba	E MODELS Interpretation of the second of th	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #3 port Supply #5 port ternal	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14 12 12 12 12 12 12 12 12 12 12 12 12 12	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	5/3 Pressure center 12 2 4 14 15 15 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx 48B-HMC-AAL-Gxxx-xxx	48P 48 400 92 93
Port size Valve less ba	E MODELS Interpretation of the second of th	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #3 port Supply #5 port ternal	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 42/2 13/3 13/3 13/3 13/3 13/3 13/3 13/3 1	5/3 Pressure center 12 2 4 14 15 15 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx 48B-HMC-AAL-Gxxx-xxx	48P 48 400 92 93
Valve less be 1/8" NPTI ANDARD SO XX Volta AA 120 VA	E MODELS Into Ext Ext LENOID OF	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal Supply #3 port Supply #5 port ternal PERATOR > X Wire let A 18"	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	Pressure center 12 2 4 14 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMD-000-Gxxx-xxx 48B-HMB-AAL-Gxxx-xxx 48B-HMC-AAL-Gxxx-xxx 48B-HMD-AAM-Gxxx-xxx Flying leads	48P 48 400 92 93
Valve less be 1/8" NPTI ANDARD SO XX Volta AA 120 VA	E MODELS Exi Exi Exi Exi C(2.5W) C(1.8W)	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #3 port Supply #5 port ternal PERATOR >	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	Pressure center 12 2 4 14 14 3 15 48B-HMB-000-Gxxx-xxx 48B-HMC-000-Gxxx-xxx 48B-HMD-000-Gxxx-xxx 48B-HMC-AAL-Gxxx-xxx 48B-HMC-AAM-Gxxx-xxx 48B-HMD-AAM-Gxxx-xxx	48P 48 400 92 93 ISO 0 ISO 1 ISO 2
Valve less be 1/8" NPTI ANDARD SO XX Volta AA 120 VA DC 24 VDC	E MODELS Interest Extended	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal ernal Supply #5 port EVERATOR ► X Wire let A 18" B 24"	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX 5/2 Double solenoid 14	The state of the s	48P 48 400 92
Valve less be 1/8" NPTI ANDARD SO XX Volta AA 120 VA DC 24 VDC DD 24 VDC	E MODELS Into	48B-AMD-AAM-GXXX-XXX [VALVE WITH BASE CODE Pilot air ernal Supply #3 port Supply #5 port ternal Supply #5 port ternal PERATOR ➤ X Wire let A 18" B 24" C 36"	48B-BMD-AAM-GXXX-XXX DED FOR SIDE PORTS) 5/2 Single solenoid 14	48B-EMD-AAM-GXXX-XXX Double solenoid 48B-DMB-000-GXXX-XXX 48B-DMC-000-GXXX-XXX 48B-DMD-000-GXXX-XXX 48B-DMD-AAM-GXXX-XXX 48B-DMD-AAM-GXXX-XXX 48B-DMD-AAM-GXXX-XXX	### STATE ST	48P 48 400 92 93 ISO 0 ISO 1 ISO 2







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

External pilot: vacuum to 120 PSI

Pilot pressure: 2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" side ports: $(1.0 \text{ C}_{v}) - 1/8$ " bottom ports: (1.1 C_{v})

Coil: Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

Power: 1.0 to 4.0 W

Response times: Energize: 6 ms (with 4 W coil) De-energize: 6 ms

Options: • BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich Flow controls: FC48B-BB

• Sandwich regulator: see "regulators" section

DIMENSIONS Dimensions shown are metric (mm) 1/8" EXT. _ PILOT COMMON 29.5 21.5 16.7 12.0 15.3 24.9 \otimes 69.2 116.9 I APPROX <u>ك</u> 0 \oplus 0 1/8" PORTS MAC 2 50.4 \otimes 29.0 8.0 - 3/8" IN & EXH COMMONS 6.3 -23.3 13.9 Ø 5.3 86.00



Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/8"	1.1 C _V	Sub-base "plug-in"	
OPERATIONAL BENEFITS				33
1. 4-way valve with 4-way				34

- 2. 16 mm valve (stacks on 16.5 mm centers).
- 3. High flow (up to $1.1 C_V$).
- 4. Fast repeatable response times.
- 5. Maximum shifting forces in both directions.
- 6. Long life.



36

32

37 38 **52**

67 69

44

46

42

47 **48P**

48

400

92

93

ISO 01 ISO 02 **ISO** 1 **ISO 2 ISO 3**

HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS) - VALVE WITH BASE CODED FOR SIDE PORTS

Port size	Pilot air	5/2 Single solenoid	5/3 Double solenoid	5/3 Closed center	5/3 Open center
		12 2 4 14 17 1 4 3 15	12 2 4 14 12 7 7 3 15	12 2 4 14 M(D) 1 1 1 3 MM 17 1 1 1 3 MM 3 1 5	12 2 4 14 MD T T T T T T T T T T T T T T T T T T T
Valve less	Internal	48B-AMA-000-G xx P- xxx	48B-BME-000-G xx P- x ST	48B-EME-000-GxxP-xST	48B-FME-000-G xx P- x ST
base	External	48B-AMD-000-G xx P- xxx	48B-BMH-000-G xx P- x ST	48B-EMH-000-G xx P- x ST	48B-FMH-000-G xx P- x ST
1/8" NPTF	Internal	48B-AMA-AAA-GxxP-xxx	48B-BME-AAC-GxxP-xST	48B-EME-AAC-GxxP-xST	48B-FME-AAC-GxxP-xST
	External	48B-AMD-AAB-GxxP-xxx	48B-BMH-AAD-G xx P- x ST	48B-EMH-AAD-GxxP-xST	48B-FMH-AAD-GxxP-xST

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS) - VALVE WITH BASE CODED FOR SIDE PORTS

Port size		Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
			14 4 2 12 1/D 1 3 0 1 0 3		12 2 4 14 MDE TO
Valve less base	Internal	Supply #3 port	48B-CMB-000-G xx P- xxx	48B-DMF-000-G xx P- x ST	48B-HMF-000-G xx P- x ST
		Supply #5 port	48B-CMC-000-GxxP-xxx	48B-DMG-000-G xx P- x ST	48B-HMG-000-G xx P- x ST
	External		48B-CMD-000-GxxP-xxx	48B-DMH-000-G xx P- x ST	48B-HMH-000-G xx P- x ST
1/8" NPTF	Internal	Supply #3 port	48B-CMB-AAA-GxxP-xxx	48B-DMF-AAC-GxxP-xST	48B-HMF-AAC-GxxP-xST
		Supply #5 port	48B-CMC-AAA-GxxP-xxx	48B-DMG-AAC-GxxP-xST	48B-HMG-AAC-GxxP-xST
	External		48B-CMD-AAB-GxxP-xxx	48B-DMH-AAD-GxxP-xST	48B-HMH-AAD-GxxP-xST

CTVVIDVDD (COLENIOID	OPERATOR ➤

G	XX	P-XXX
	_	

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	1	Non-locking recessed	Doub	le solenoid & 3 position models
DC	24 VDC (1.8W)	2	Locking recessed	ST	Base plug-in
DD	24 VDC (2.5W)			Singl	e solenoid models
DF	24 VDC (4.0W)			5A	Base plug-in
				SJ	Base plug-in with LED light
				55	Base plug-in with rectifier & light & ground

* Other options available, see page 311.
Latching solenoid also available, see page 135.
Note: AC voltage requires connector with rectifier (For double solenoid consult factory).
Other options available for the 48 series valves, see page 138.







Compressed air, vacuum, inert gases Fluid:

Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

External pilot: vacuum to 120 PSI

Pilot pressure: 2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Temperature range: Flow:

1/8" side ports: (1.0 C_v) – 1/8" bottom ports: (1.1 C_v)

Coil: Class A continuous duty, #22 AWG x 12 base leads

-15% to +10% of nominal voltage Voltage range:

Power: 1.0 to 4.0 W

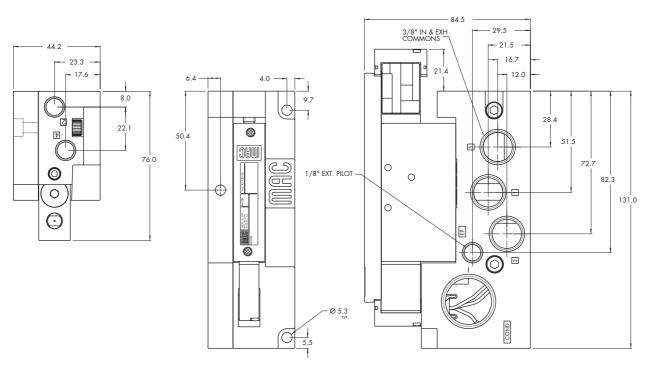
Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

Options: • BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich Flow controls: FC48B-AB

• Sandwich regulator: see "regulators" section

DIMENSIONS

Dimensions shown are metric (mm)





Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	1/8"	1.1 C _V	Manifold base non "plug-in"	

OPERATIONAL BENEFITS

- 1. 4-way valve with 4-way integral pilot.
- 2. 16 mm valve (stacks on 16.5 mm centers).
- 3. High flow (up to 1.1 $\rm C_{V}$).
- 4. Fast repeatable response times.
- 5. Maximum shifting forces in both directions.
- 6. Long life.



33

34

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32

37 38 **52**

67 69

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46

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47 **48P**

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400

92

93

ISO 01 ISO 02 **ISO** 1 **ISO 2 ISO 3**

HOW TO ORDER

SINGLE PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
		12 2 4 14 17 1 4 3 15	12 2 4 14 T 3 15	12 2 4 14 MD 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 14 17 17 17 17 17 17 17 17 17 17 17 17 17
Valve less	Internal	48B-AMA-000-G xxx-xxx	48B-BMA-000-G xxx-xxx	48B-EMA-000-G xxx-xxx	48B-FMA-000-G xxx-xxx
base	External	48B-AMD-000-G xxx-xxx	48B-BMD-000-G xxx-xxx	48B-EMD-000-G xxx-xxx	48B-FMD-000-G xxx-xxx
1/8" NPTF	Internal	48B-AMA-AJL-Gxxx-xxx	48B-BMA-AJL-Gxxx-xxx	48B-EMA-AJL-Gxxx-xxx	48B-FMA-AJL-Gxxx-xxx
	External	48B-AMD-AJM-G xxx-xxx	48B-BMD-AJM-Gxxx-xxx	48B-EMD-AJM-Gxxx-xxx	48B-FMD-AJM-G xxx-xxx

DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
		14 2 12 12 5 5 0 0 5 3		12 2 4 14 MMD 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Valve less base	Internal Supply #3 port	48B-CMB-000-Gxxx-xxx	48B-DMB-000-G xxx-xxx	48B-HMB-000-G xxx-xxx
	Supply #5 port	48B-CMC-000-G xxx-xxx	48B-DMC-000-G xxx-xxx	48B-HMC-000-G xxx-xxx
	External	48B-CMD-000-G xxx-xxx	48B-DMD-000-G xxx-xxx	48B-HMD-000-G xxx-xxx
1/8" NPTF	Internal Supply #3 port	48B-CMB-AJL-Gxxx-xxx	48B-DMB-AJL-Gxxx-xxx	48B-HMB-AJL-Gxxx-xxx
	Supply #5 port	48B-CMC-AJL-Gxxx-xxx	48B-DMC-AJL-Gxxx-xxx	48B-HMC-AJL-Gxxx-xxx
	External	48B-CMD-AJM-Gxxx-xxx	48B-DMD-AJM-G xxx-xxx	48B-HMD-AJM-Gxxx-xxx

CTALIDADD COLELIOID ODEDATOD		
STANDARD SOLFNOID OPFRATOR ➤	(-	XXX

XX	Voltage	X	Wire length	X	Manual operator	ХХ	Electrical connection
AA	120 VAC (2.5W)	Α	18"	1	Non-locking recessed	ВА	Flying leads
DC	24 VDC (1.8W)	В	24"	2	Locking recessed	ВТ	Flying leads with light
DD	24 VDC (2.5W)	С	36"			GA	MAC JAC solenoid plug-in
DF	24 VDC (4.0W)					KA	Plug-in wire assy.
						KT	Plug-in wire assy. with light
						KD	Plug-in wire assy. with
Other o	ptions available, see page 311.						rectifier & light & ground

^{*} Other options available, see page 311.
Latching solenoid also available, see page 133.
Note: - AC voltage requires connector with rectifier.
- Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").
Other options available for the 48 series valves, see page 137.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

External pilot: vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI - 3 position: 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" side ports: $(1.0 \text{ C}_{v}) - 1/8$ " bottom ports: (1.1 C_{v})

Coil: Class A wire (#22 AWG x 18), continuous duty

Voltage range: -15% to +10% of nominal voltage

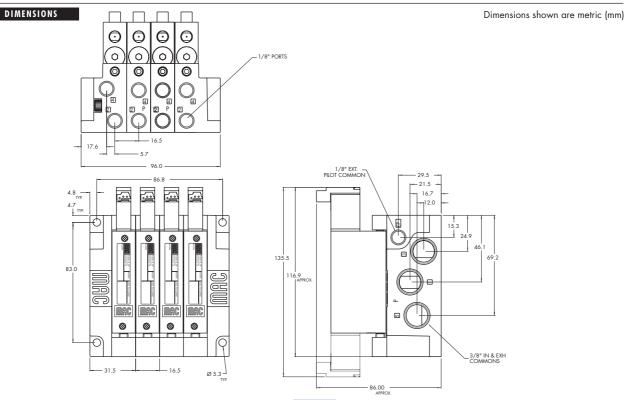
Power: 1.0 to 4.0 W

Response times: Energize: 6 ms (with 4 W coil) De-energize: 6 ms

Options: • BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich flow controls: FC48B-BB

• Sandwich regulator: see "regulators" section

• Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471





unction		Port size	Flow (Max)	Manifold mounting		Series
5/2, 5/3		1/8"	1.1 C _v	Manifold base "plug-in"		
OPERATIONAL BE	NEFITS					33
. 4-way valve wi . 16 mm valve (s					-	34
3. High flow (up t 4. Fast repeatable 5. Maximum shift 6. Long life.	to 1.1 C _v). e response time	s.		615	PP	36
o. Long lile.				2		32
				9 2 9	Ber 100	37
					0.55	38
					4	52
HOW TO ORD	DER					67
		C /IED CTANIDADD EVCED	T FOR SINGLE SOLENOIDS	1		69
Port size	Pilot gir	5/2	5/2	5/3	5/3	
PORT SIZE	Pilot dir	Single solenoid	Double solenoid	Closed center	Open center	44
		12 2 4 14 17 1 4 3 3 1 5	12 2 4 14 TD T T T	12 2 4 14 MD 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 14 17 17 17 17 17 17 17 17 17 17 17 17 17	46
Valve less	Internal	48B-AMA-000-G xx P- xxx	48B-BME-000-G xx P- x ST	48B-EME-000-G xx P- x ST	48B-FME-000-G xx P- x ST	4.0
base	External	48B-AMD-000-G xx P- xxx	48B-BMH-000-G xx P- x ST	48B-EMH-000-G xx P- x ST	48B-FMH-000-G xx P- x ST	42
1/8" NPTF	Internal	48B-AMA-AJA-G xx P- xxx	48B-BME-AJC-GxxP-xST	48B-EME-AJC-GxxP-xST	48B-FME-AJC-GxxP-xST	47
	External	48B-AMD-AJB-GxxP-xxx	48B-BMH-AJD-GxxP-xST	48B-EMH-AJD-GxxP-xST	48B-FMH-AJD-GxxP-xST	47
DUAL PRESSU	RE MODELS	(LED STANDARD EXCEPT F	OR SINGLE SOLENOIDS)			48
DUAL PRESSUI Port size		(LED STANDARD EXCEPT F Pilot air	OR SINGLE SOLENOIDS) 5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center	
			5/2		•	48

STANDARD SOLENOID OPERATOR >

Valve less base

1/8" NPTF

48B-CMB-000-GxxP-xxx

48B-CMC-000-GxxP-xxx

48B-CMD-000-GxxP-xxx

48B-CMB-AJA-GxxP-xxx

48B-CMC-AJA-GxxP-xxx

48B-CMD-AJB-GxxP-xxx

Above numbers are middle station manifolds with side ports

48B-HMF-000-GxxP-xST

48B-HMG-000-GxxP-xST

48B-HMH-000-GxxP-xST

48B-HMF-AJC-GxxP-xST

48B-HMG-AJC-GxxP-xST

48B-HMH-AJD-GxxP-xST

48B-DMF-000-GxxP-xST

48B-DMG-000-GxxP-xST

48B-DMH-000-GxxP-xST

48B-DMF-AJC-GxxP-xST

48B-DMG-AJC-GxxP-xST

48B-DMH-AJD-GxxP-xST

400

92

93

ISO 01

ISO 1 **ISO 2 ISO 3**

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 VAC (2.5W)	1	Non-locking recessed	Doub	le solenoid & 3 position models
DC	24 VDC (1.8W)	2	Locking recessed	ST	Base plug-in
DD	24 VDC (2.5W)		-	Single	e solenoid models
DF	24 VDC (4.0W)			SA	Base plug-in
				SJ	Base plug-in with LED light
				55	Base plug-in with rectifier & light & ground

Internal

External

Internal

External

Supply #3 port

Supply #5 port

Supply #3 port

Supply #5 port

Other options available, see page 311.
 Latching solenoid also available, see page 135.
 Note: - AC voltage requires connector with rectifier. (For double solenoid consult factory).

 Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").

 Other options available for the 48 series valves, see page 138.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

External pilot: vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI - 3 position: 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8" side ports: $(1.0 \text{ C}_{v}) - 1/8$ " bottom ports: (1.1 C_{v})

Coil: Class A wire (#22 AWG x 18), continuous duty

Class A Wile (#22 AVIO X 10), collilloods a

Voltage range: -15% to +10% of nominal voltage

Power: 1.0 to 4.0 W

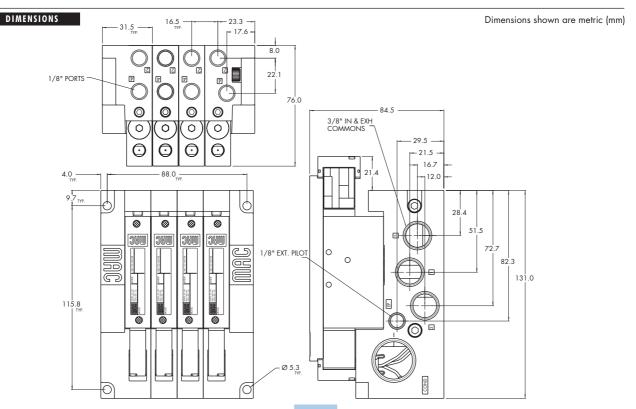
Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

Options: • BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich flow controls: FC48B-AB

• Sandwich regulator: see "regulators" section

• Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471

• Plug-in wire protector: 24180





Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2	1/8″	1.1 C _V	Sub-base/ manifold base non "plug-in" with latching solenoid	
OPERATIONAL BENEFITS				33
1. 4-way valve with 4-wa 2. 16 mm valve (stacks o	y integral pilot.			34
3. High flow (up to 1.1 C 4. Fast repeatable respor 5. Maximum shifting force 6. Long life.	Sy). nse times.		400	36
o. Long me.			9	32
				37
			6917.0	38
			ASM S	52
HOW TO ORDER				67
SINGLE PRESSURE A	MODELS (INDIVIDUAL BASE \	WITH SIDE PORTS)		69
Port size	Pilot air	Sin	5/2 gle pressure	44
		12	2 4 14	46
		<u> </u>		
Valve less base	Internal		MA-000-Lxxx-xxx	42
1/8" NPTF			MD-000-Lxxx-xxx MA-AAL-Lxxx-xxx	
1, 0 1 1.	External		MD-AAM-Lxxx-xxx	47
DUAL PRESSURE MC	DDELS (INDIVIDUAL BASE WI	TH SIDE PORTS)		48P
Port size	Pilot air		5/2 Dual pressure	48
			12 2 4 14	0
			315	400
Valve less base	Internal Supply #3 port		48A-CMB-000-L xxx-xxx	700
	Supply #5 port External		48A-CMC-000-Lxxx-xxx 48A-CMD-000-Lxxx-xxx	92
1/8" NPTF	Internal Supply #3 port		48A-CMB-AAL-L xxx-xxx	
.,	Supply #5 port		48A-CMC-AAL-LXXX-XXX	93
	External		48A-CMD-AAM-Lxxx-xxx	
LATCHING SOLENC	DID >	L <u>xxx-xxx</u> *		ISO 01
				ISO 02
VV 17 11	y yere			ISO 1
XX Voltage DF 24 VDC (4.0W			lanual operator XX Electrical co	nnection
HA 24 VDC (1.95)	W) B 24"		BJ 4 Wire flying lea	ads ICO
	C 36"		KA 2 Wire Plug-in o KE 4 Wire Plug-in o	assembly
			LA 3 Wire Plug-in a (Polarity Switch	assembly

* Other options available, see page 319.

Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").

Other options available for the 48 series valves, see page 137.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI

External pilot: vacuum to 120 PSI

20 to 120 PSI Pilot pressure:

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Options:

 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Temperature range:

Flow: 1/8" side ports: (1.0 C_v) – 1/8" bottom ports: (1.1 C_v)

Coil: Class A wire (#22 AWG x 18), continuous duty

-15% to +10% of nominal voltage Voltage range:

Power: 1.0 to 4.0 W

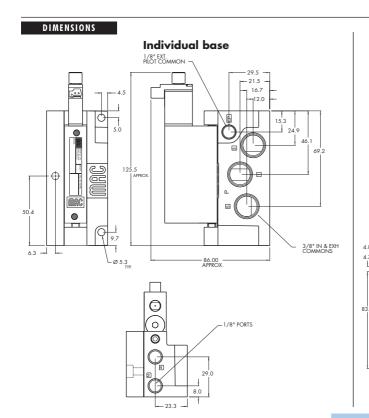
Response times: Energize : 6 ms

(with 4 W coil) De-energize : 6 ms

• BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich flow controls: FC48B-BB

• Sandwich regulator: see "regulators" section

• Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471



Manifold base 3/8" IN & EXI COMMONS

Dimensions shown are metric (mm)

LØ 5.3

- 86.00 -APPROX



Function		Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2		1/8"	1.1 C _v	Sub-base/ manifold base "plug-in" with latching solenoid	
OPERATIONAL BENEFITS					33
1. 4-way valve with 4-wa				-	34
 16 mm valve (stacks o High flow (up to 1.1 C Fast repeatable respor Maximum shifting forc Long life. 	C _V). nse times.			FFF	36
				9 6 6	32
				2 2 3 4 6 7 7 7	37
				4000000000	38
				00 8	52
HOW TO ORDER					67
SINGLE PRESSURE A	AODELS (2-)	WIRF INDIVIDUAL I	BASE WITH SIDE PORTS)		69
Port size	Pilot air	, yille ii (BiyiBoyie i	STILL THIN GIBE TO KITO	5/2	44
			Sir	gle pressure	
			12 12	2 4 14 27 315	46
Valve less base	Internal		48A-A	MA-000-LxxP-xxx	
	External	-		MD-000-LxxP-xxx	42
1/8" NPTF	Internal			MA-AAA-LxxP-xxx	
	External			MD-AAB-LxxP-xxx	48P
			ASE WITH SIDE PORTS)		401
Port size	1	Pilot air		5/2 Dual pressure	48
				12 24 14 14	40
				315	400
Valve less base	Internal	Supply #3 port		48A-CMB-000-L xx P- xxx	400
		Supply #5 port		48A-CMC-000-L xx P- xxx	92
	External			48A-CMD-000-L xx P- xxx	74
1/8" NPTF	Internal	Supply #3 port		48A-CMB-AAA-LxxP-xxx	
		Supply #5 port		48A-CMC-AAA-LxxP-xxx	93
	External			48A-CMD-AAB-LxxP-xxx	
LATCHING SOLENC)ID ➤		L XX P-XXX*		ISO 01
					ISO 02
VV 37 1				VV Plant 1	ISO 1
XX Voltage DF 24 VDC (4.0V	//	X 0	Manual operator No operator	XX Electrical connection** DA Plug-in	ISO 2
DN 12 VDC (4.0V	/)		140 operator	EA Plug-in 3 PIN (Polarity Switching Cover	1
HA 24 VDC (1.95 HE 12 VDC (1.95	W)				ISO 3
HE 12 VDC (1.95	**]				

Other options available, see page 319.

** For latching solenoid 2 and 4 wire, use electrical connector DA, DB, DC or DD. For 3 wire latching, use the "EA" connector.

Other options available for the 48 series valves, see page 138.







Compressed air, vacuum, inert gases Fluid:

Pressure range: Internal pilot: 20 to 120 PSI

External pilot: vacuum to 120 PSI

20 to 120 PSI Pilot pressure:

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow:

1/8" side ports: (1.0 C_v) – 1/8" bottom ports: (1.1 C_v)

Coil: Class A continuous duty, #22 AWG x 12 base leads

-15% to +10% of nominal voltage Voltage range:

Power: 1.0 to 4.0 W

Response times: Energize : 6 ms

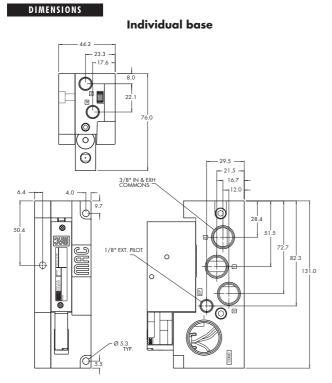
(with 4 W coil) De-energize: 6 ms

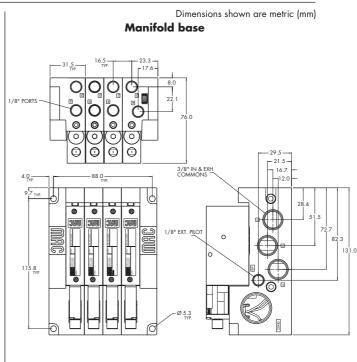
Options: • BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich flow controls: FC48B-AB

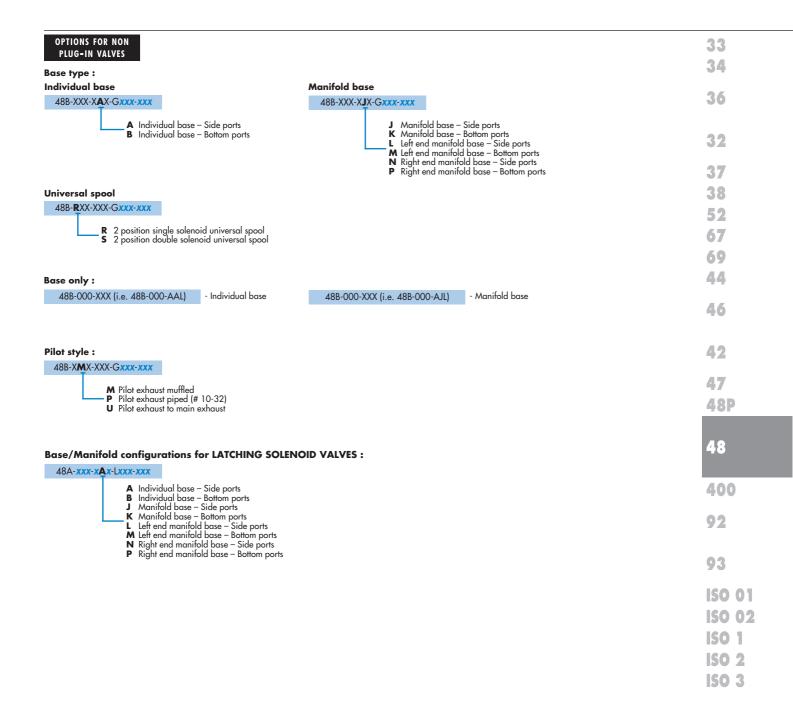
• Sandwich regulator: see "regulators" section

• Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471

• Plug-in wire protector: 24180







OPTIONS FOR PLUG-IN VALVES Base type: Individual base Manifold base 48B-XXX-X**A**X-G**xx**P-**xxx** 48B-XXX-XJX-GxxP-xxx J Manifold base – Side ports K Manifold base – Bottom ports L Left end manifold base – Side ports M Left end manifold base – Bottom ports N Right end manifold base – Side ports P Right end manifold base – Bottom ports A Individual base – Side ports B Individual base – Bottom ports **Universal** spool 48B-RXX-XXX-GxxP-xxx 2 position single solenoid universal spool 2 position double solenoid universal spool Base only: 48B-000-XXX (i.e. 48B-000-AAA) 48B-000-XXX (i.e. 48B-000-AJC) - Individual base wired for a single solenoid valve - Manifold base wired for a double solenoid valve For LED with diode (2 & 3 position double solenoid valves) 48B-XX**J**-XXX-G**xx**P-**x**ST J Internal pilot single pressure K Internal pilot dual pressure supply from #3 port Internal pilot dual pressure supply from #5 port M External pilot Pilot style: 48B-X**M**X-XXX-G**xx**P-**xxx** M Pilot exhaust muffled P Pilot exhaust piped (# 10-32) U Pilot exhaust to main exhaust **Base/Manifold configurations for LATCHING SOLENOID VALVES:** 48A-xxx-xAx-LxxP-xxx A Individual base – Side ports B Individual base – Bottom ports J Manifold base – Side ports K Manifold base – Bottom ports L Left end manifold base – Side ports M Left end manifold base – Bottom ports N Right end manifold base – Side ports P Right end manifold base – Bottom ports

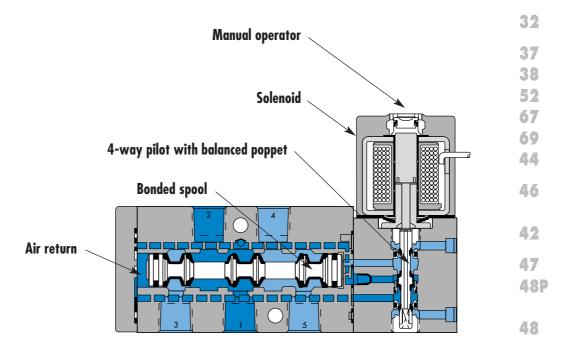
48A-xxx-xxA-LxxP-xxx

Base/Manifold options for int./ext. pilot for LATCHING SOLENOID VALVES:

- A Plug-in Int. Pilot 2 Wire Latching
 B Plug-in Ext. Pilot 2 Wire Latching
 C Plug-in Int. Pilot 3 Wire Latching
 D Plug-in Ext. Pilot 3 Wire Latching
 F Plug-in Int. Pilot 4 Wire Latching
 F Plug-in Ext. Pilot 4 Wire Latching



Individual mounting Sub-base non "plug-in" Sub-base non "plug-in"



SERIES FEATURES

- Patented MACSOLENOID® for fastest possible response times and virtually burn-out proof AC solenoid operation.
- Optional low watt DC solenoids.
- Various manual operators.
- Optional memory spring.
- 2 position or 3 position valve configurations.
- Internal or external pilot.

400

92

93

ISO 01

ISO 02

ISO 1

33 34

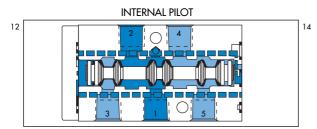
36







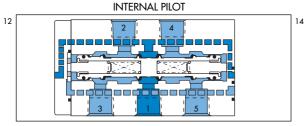
SPOOL CONFIGURATIONS



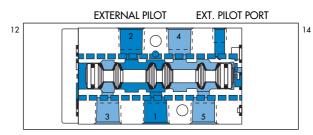
SINGLE OPERATOR - SINGLE INLET SHOWN WITH 12 OPERATOR ENERGIZED

INTERNAL PILOT (FROM #5 PORT) 12 14

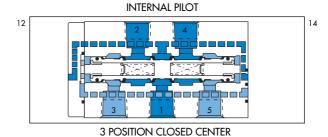
SINGLE OPERATOR - DUAL INLET SHOWN WITH 12 OPERATOR ENERGIZED

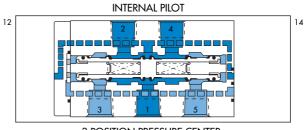


3 POSITION OPEN CENTER



SINGLE OPERATOR - SINGLE INLET SHOWN WITH 12 OPERATOR ENERGIZED





3 POSITION PRESSURE CENTER



		Port size	Flow (Max)		ndividual mounting		Series
5/2, 5/3		1/8" - 1/4"	1.0 C _v		Inline		
OPERATIONAL BEN	NEFITS						33
1. The 4-way pilo		aximum shifting					34
forces both wa 2. Memory spring 3. Balanced spoo pressure, also	g available. ol, immune to v provides high				6	271	36
1. Short stroke wi 5. Bonded spool in a glass-like	with minimum finished bore.						32
 Wiping effect Long service life 		king.			Ne.	12	37
Ü						1	38
					40		52
HOW TO ORD	ER						67
SINGLE PRESSI		ıc					
	Pilot air		= /a	= /0	= /o	= /0	69
Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center	44
		12 2 4 14 dZ)	12 2 4 14 AZI	12 2 4 14 MM 1 1 1 1 MM 14 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 M 14 14 14 14 14 14 14 14 14 14 14 14 14	46
1/8" NPTF	Internal	411A-A0A-XX-X xxx - xxx	421A-A0A-XX-X xxx-xxx	451A-A0A-XX-X xxx-xxx	461A-A0A-XX-X xxx-xxx	471A-A0A-XX-X xxx-xxx	4.0
1/4" NPTF		411A-B0A-XX-X xxx-xxx	421A-B0A-XX-X xxx-xxx	451A-B0A-XX-X XXX - XXX	461A-B0A-XX-X xxx-xxx	471A-B0A-XX-X xxx-xxx	42
1/8" NPTF	External	411A-A0B-XX-X XXX-XXX	421A-A0B-XX-XXXX-XXX	451A-A0B-XX-X XXX - XXX	461A-A0B-XX-XXXX-XXX	471 A-AOB-XX-XXXX	47
1/8" NPTF 1/4" NPTF	- 	411A-B0B-XX-X xxx-xxx	421A-B0B-XX-X xxx-xxx	451A-B0B-XX-X xxx-xxx	461A-A0B-XX-XXXX-XXX 461A-B0B-XX-XXXX-XXX	471A-B0B-XX-Xxxx-xxx 471A-B0B-XX-Xxxx-xxx	47 48P
1/8" NPTF 1/4" NPTF DUAL PRESSUR	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT — PI	421A-B0B-XX-X xxx-xxx	451A-B0B-XX-X xxx-xxx LY FROM #5 PORT)	461A-B0B-XX-X xxx-xxx	471 A-BOB-XX-X xxx-xxx	47 48P
1/8" NPTF 1/4" NPTF	RE MODELS	411A-B0B-XX-X xxx-xxx	421A-B0B-XX-XXXX-XXX ILOT PRESSURE SUPPL	451A-B0B-XX-X xxx-xxx	461A-BOB-XX-XXXX-XXX		48P
1/8" NPTF 1/4" NPTF DUAL PRESSUR	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT — PI	421A-B0B-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing	451A-B0B-XX-XXXX-XXX Y FROM #5 PORT) 5/2	461A-BOB-XX-XXXX-XXX	471A-B0B-XX-Xxxx-xxx	
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air	421A-BOB-XX-XXXX-XXX SLOT PRESSURE SUPPL Sing 12 12 13	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 ple operator 2 4 115	461A-BOB-XX-XXXX-XXX Double	471A-BOB-XX-Xxxx-xxx 5/2 e operator	48P
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT — PI	421A-B0B-XX-XXXX-XXX Sing 12 7 13 3 431A-A	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2/4 11/5 11/5 10A-XX-XXXX-XXX	461A-BOB-XX-XXXX-XXX Double 12 2 17 7 31 441A-AOA	471A-BOB-XX-Xxxx-xxx 5/2 e operator 4 14 14 15 14 15 14 15 15 15 15 15 15 15 15 15 15 15 15 15	48P 48
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal	421A-B0B-XX-XXXX-XXX Sing 12 7 431A-A 431A-B	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	461A-BOB-XX-XXXX-XXX Double 12 2 17/D 31 441A-AOA 441A-BOA	471A-BOB-XX-Xxxx-xxx 5/2	48P 48
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air	421A-B0B-XX-XXXX-XXX Sing 12 7 13 431A-A 431A-B 431A-B	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2/4 11/5 11/5 10A-XX-XXXX-XXX	461A-BOB-XX-XXXX-XXX Double 12 2 12 13 441A-AOA 441A-BOA 441A-AOB	471A-BOB-XX-Xxxx-xxx 5/2 e operator 4 14 14 15 14 15 14 15 15 15 15 15 15 15 15 15 15 15 15 15	48P 48 400
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal	421A-B0B-XX-XXXX-XXX Sing 12 7 431A-A 431A-B 431A-B	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2/4 11/2 11/5 11/5 11/5 11/5 11/5 11/5 11/5	461A-BOB-XX-XXXX-XXX Double 12 2 12 13 441A-AOA 441A-BOA 441A-AOB	471A-BOB-XX-Xxxx-xxx 5/2 • operator 4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	48P 48 400
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT	RE MODELS	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal	421A-B0B-XX-XXXX-XXX Sing 12 7 13 431A-A 431A-B 431A-B	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2/4 11/2 11/5 11/5 11/5 11/5 11/5 11/5 11/5	461A-BOB-XX-XXXX-XXX Double 12 2 12 13 441A-AOA 441A-BOA 441A-AOB	471A-BOB-XX-Xxxx-xxx 5/2 • operator 4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	48P 48 400 92 93
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/8" NPT 1/4" NPT 1/4" NPT	RE MODELS IF IF PERATOR >	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External	421A-B0B-XX-XXXX-XXX Sing 12 f 23 A 31A-A 431A-A 431A-B 431A-B DM-D XXX	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 yle operator 2/4 10A-XX-XXXX-XXX 00A-XX-XXXX-XXX 00B-XX-XXXX-XXX 00B-XX-XXXX-XX	461A-BOB-XX-XXXX-XXX Double 12 2 441A-BOA 441A-BOA 441A-BOB	471A-BOB-XX-Xxxx-xxx 5/2 e operator 4/1/A-BOB-XX-Xxx-xxx	48P 48 400 92 93 ISO 0
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 5OLENOID OF	RE MODELS FIF FIF PERATOR > Gge 50, 120/60 (2.5	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 431A-A 431A-A 431A-B DM-D XXX- Plying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2/4 11/2 11/5 11/5 11/5 11/5 11/5 11/5 11/5	461A-BOB-XX-XXXX-XXX Double 12 2 441A-BOA 441A-BOA 441A-BOB 441A-BOB	471A-BOB-XX-Xxxx-xxx 5/2 • operator 4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	48P 48 400 92 93 ISO 0 ISO 0
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 5OLENOID OF XX Volt JA 110/5 JB 220/5	RE MODELS FIF FIF PERATOR > Gge 50, 120/60 (2.5 50, 240/60 (2.5	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F B 24" (F	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 431A-A 431A-A 431A-B DM-D XXX- Plying leads) Hying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 yle operator 2/4 10A-XX-XXXX-XXX 00A-XX-XXXX-XXX 00B-XX-XXXX-XXX 00B-XX-XXXX-XX	461A-BOB-XX-XXXX-XXX Double 12 2 31 441A-AOA 441A-BOA 441A-BOB 441A-BOB 441A-BOB AATA-BOB	471A-BOB-XX-XXXX-XXX 5/2 c operator 4	48P 48 400 92 93 ISO 0 ISO 0
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT SOLENOID OF XX Volt JA 110/5 JB 220/5 JC 24/66 FB 24 VD	RE MODELS RE MODELS RE MODELS RE FIF REF REF REF REF REF REF REF	411A-BOB-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 431A-A 431A-A 431A-B DM-D XXX- Plying leads) Hying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 11 12 11 15	461A-BOB-XX-XXXX-XXX Double 12 2 31 441A-AOA 441A-BOA 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB	471A-BOB-XX-XXXX-XXX 5/2 • operator 4 14 15 -XX-XXX-XXX -XX-XXXX-XXX -XX-XXXX-XXX -XX-XX	48P 48 400 92 93 ISO 0 ISO 1
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 5OLENOID OF XX Voit JA 110/5 JB 220/5 JC 24/50 FB 24 VD DA 24 VD	RE MODELS RE MODELS	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F B 24" (F	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 431A-A 431A-A 431A-B DM-D XXX- Plying leads) Hying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 11 12 11 15	461A-BOB-XX-XXXX-XXX Double 12 2 441A-BOA 441A-BOA 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB	471A-BOB-XX-XXXX-XXX 5/2 • operator 4 14 37 5-XX-XXXX-XXX -XX-XXXX-XXX -XX-XXXX-XXX	48P 48 400 92 93 ISO 0 ISO 1 ISO 2
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT JA 110/5 JB 220/5 JC 24/60 FB 24 VD DF 24 VD	RE MODELS RE MODELS REFERENCE REFERENCE	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F B 24" (F	421A-B0B-XX-XXXX-XXX Sing 12 7 431A-A 431A-B DM-D XXX Plying leads) Flying leads) Flying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 115 10A-XX-XXXX-XXX 10A-XX-XXXX-XXX 10B-XX-XXXX-XXX 10B-XX-XXXX-XXX X Manual oper 1 Non-locking recessed	461A-BOB-XX-XXXX-XXX Double 12 2 441A-BOA 441A-BOA 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB	471A-BOB-XX-XXXX-XXX 5/2	48P 48 400 92 93 ISO 0 ISO 1 ISO 2
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT SOLENOID OF XX Voit JA 110/5 JB 220/5 JC 24/60 FB 24 VD DF 24 VD	RE MODELS RE MODELS REFERENCE REFERENCE	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F B 24" (F	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 431A-A 431A-A 431A-B DM-D XXX- Plying leads) Hying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 115 10A-XX-XXXX-XXX 10A-XX-XXXX-XXX 10B-XX-XXXX-XXX 10B-XX-XXXX-XXX X Manual oper 1 Non-locking recessed	461A-BOB-XX-XXXX-XXX Double 12 2 441A-BOA 441A-BOA 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB 441A-BOB	471A-BOB-XX-XXXX-XXX 5/2	48P 48 400 92 93 ISO 0 ISO 1 ISO 2
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 5OLENOID OF XX Volt JA 110/5 JB 220/5 JC 24/6C FB 24 VD DA 24 VD DF 24 VD SOLENOID OF	RE MODELS RE MODELS	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F DW) B 24" (F J Conne	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 13 431A-A 431A-A 431A-B DM-D XXX- Plying leads) Flying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 115 00A-XX-XXXX-XXX 00A-XX-XXXX-XXX 00B-XX-XXXX-XXX XXX XXX XXX XXX XXX XXX XX	### ACT Proceed ### ACT Proced ### ACT Pr	471A-BOB-XX-XXXX-XXX 5/2 • operator 4 14 37 5	48P 48 400 92 93 ISO 0 ISO 1 ISO 2
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 20/5 JA 110/5 JB 220/5 JC 24/60 JG 24 VD DA 24 VD DF 24 VD SOLENOID OF	RE MODELS RE MODELS	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F B 24" (F J Conne	421A-B0B-XX-XXXX-XXX Sing 12 7 431A-A 431A-B DM-D XXX Plying leads) Flying leads) Flying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 115 10A-XX-XXXX-XXX 00A-XX-XXXX-XXX 00B-XX-XXXX-XXX 00B-XX-XXXX-XX	### ### ### ### ### ### ### ### ### ##	471A-BOB-XX-XXXX-XXX 5/2 coperator 4 14 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	48P 48 400 92 93 ISO 0 ISO 1 ISO 2
1/8" NPTF 1/4" NPTF DUAL PRESSUR Port size 1/8" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 5OLENOID OF XX Voit JA 110/5 JB 220/5 JC 24/6C FB 24 VD DF 24 VD DF 24 VD SOLENOID OF	RE MODELS RE MODELS	A11A-B0B-XX-XXXX-XXX (INTERNAL PILOT – PI Pilot air Internal External X Wire PW) A 18" (F DW) B 24" (F J Conne	421A-BOB-XX-XXXX-XXX ILOT PRESSURE SUPPL Sing 12 7 13 431A-A 431A-A 431A-B DM-D XXX- Plying leads) Flying leads)	451A-BOB-XX-XXXX-XXX Y FROM #5 PORT) 5/2 gle operator 2 4 115 10A-XX-XXXX-XXX 00A-XX-XXXX-XXX 00B-XX-XXXX-XXX XXXX* X Manual oper 1 Non-locking recessed XXXX* X Manual oper 2 Locking recessed	### A61A-BOB-XX-XXXX-XXX Double	471A-BOB-XX-XXXX-XXX 5/2 • operator 4 14 37 5	48P 48 400 92 93 ISO 0 ISO 0







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot – 2 pos. : 20 to 120 PSI (with memory spring: 30 to 120 PSI) 3 pos.: 35 to 120 PSI

External pilot: vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI (with memory spring: 30 to 120 PSI) 3 position: 35 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1.0 C_v

1.0 C_V

Coil: Class A continuous duty, #22 AWG x 12 leads wires

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~Inrush: 10.9 VA Holding: 7.7 VA

= 1.8 to 12.7 W

Response times: 24 V=/5.4W Energize: 7.3 ms De-energize: 5.3 ms

120/60 Energize : 8-12 ms De-energize : 7-11 ms

Options:
• BSPP threads • Namur interface (specify mod. 1080 after model)

411A-A0**A**-XX-X**XXX-XXX**

Dual pressure models, replace by **C** for pilot supply from #3 port
For memory spring, replace by **4** (single operator models only)
Replace by **8** for 3 position dual pressure, pressure center

Spare parts: • DM pilot body pressure seal: 16542 • DM pilot spacer plate: 24168-01.

DIMENSIONS

3.25 DIA. MTG.
HOLES, TYP.(2)

96.0

SIMPLE
PILOT [DM]

92.0

52.0

PILOT W/ DM SOLENOID

15.5

7.8

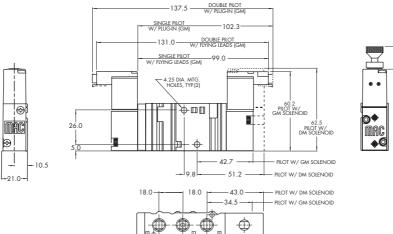
18.7

44.0

39.0

PILOT W/ DM SOLENOID

Dimensions shown are metric (mm)





24VDC (1.8W)

24VDC (2.5W)

24VDC (4.0W)

* Other options available, see page 309.
** Other options available, see page 313.

Direct solenoid and solenoid pilot operated valves

Function		Port size	Flow (Max)	ĺ	Individual mounting	Series
5/2, 5/3		1/8" - 1/4"	1.0 C _v		Sub-base non "plug-in"	
OPERATIONAL BEN	IEFITS					33
1. The 4-way pilo		aximum shifting				34
forces both wa 2. Memory spring 3. Balanced spoo pressure, also	g available. bl, immune to provides high					36
 Short stroke wi Bonded spool in a glass-like f 	with minimum finished bore.					32
 Wiping effect of the service life 		cking.				37
3						38
					CA CO	52
HOW TO ORD	ER					67
SINGLE PRESSI	URE MODE	ELS				69
Port size	Pilot air	5/2 Single operator	5/2 Double operator			essure center 44
		12 2 4 14 12 3 1 5	12 2 4 14 175 T 17 17 17 17 17 17 17 17 17 17 17 17 17	12 2 4 14 MM 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 12 12 12 13 15 15 15 15 15 15 15 15 15 15 15 15 15	315
Valve only	Internal External	413A-00A-XX-XXXX-XXX 413A-00D-XX-XXXXX-XXX	423A-00A-XX-X xxx - xxx 423A-00D-XX-X xxx - xxx	453A-00A-XX-X xxx-xxx 453A-00D-XX-X xxx-xxx		D-XX-X xxx-xxx
1/8" NPTF	Internal	413A-AAA-XX-X xxx-xxx	423A-AAA-XX-X xxx-xxx	453A-AAA-XX-X xxx-xxx	463A-AAA-XX-X xxx-xxx 473A-AA	A-XX-X xxx-xxx 42
1/4" NPTF 1/8" NPTF	External	413A-BAA-XX-X xxx-xxx 413A-AAD-XX-X xxx-xxx	423A-BAA-XX-X xxx-xxx 423A-AAD-XX-X xxx-xxx	453A-BAA-XX-XXXX-XXX 453A-AAD-XX-XXXXX-XXX		AD-XX-XXXX-XXX
1/4" NPTF		413A-BAD-XX-X xxx - xxx	423A-BAD-XX-XXXX-XXX	453A-BAD-XX-XXXX-XXX		D-XX-X xxx-xxx
DUAL PRESSUR	E MODELS	(INTERNAL PILOT – P	ILOT PRESSURE SUPPI	LY FROM #5 PORT)		48P
Port size		Pilot air		ingle operator	5/2 Double oper	utor
			12 2 D	2 4 14 37 37 37 37 37 37 37 37 37 37 37 37 37	12 2 4 14 JZ	48
Valve onl	у	Internal		OOD XX Xxxxxxxx	443A-00A-XX-X xxx -	
1/8" NPT	'F	External Internal		AAA-XX-XXXX	443A-00D-XX-X xxx -	XXX
1/4" NPT		r. I		BAA-XX-XXXX	443A-BAA-XX-X xxx -	
1/8" NPT 1/4" NPT		External		AAD-XX-XXXX-XXX BAD-XX-XXXXX-XXX	443A-AAD-XX-X xxx - 443A-BAD-XX-X xxx -	XXX
SOLENOID OF	PERATOR >		DM-D <u>xxx</u> -	XXX [*]		93
				4		ISO 01
XX Volte	_		e length	X Manual oper		connection ISO 02
JB 220/5	50, 120/60 (2.5 50, 240/60 (2.5	9W) B 24" (F	Flying leads) Flying leads)	 Non-locking recess Locking recessed 	KD Square conn	ector with light
	C (1.8W)	J Conne	ector			connector with
DA 24 VD	C (5.4W) C (12.7W)				light BA Flying leads	ISO 3
SOLENOID OF	•		GM-G <u>xxx</u> -	<u>xxx</u>		
XX Volte	nae	X Wire	e length	X Manual oper	rator XX Electrical	connection
VV A9110	uge	V WILE	e leligili	A manual oper	AA Electrical	Constitution

Non-locking recessed

Locking recessed

143

Flying leads

Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Flying leads with light

Plug-in wire assy.
Plug-in wire assy. with light







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot – 2 pos. : 20 to 120 PSI (with memory spring: 30 to 120 PSI) 3 pos.: 35 to 120 PSI

External pilot : vacuum to 120 PSI

Pilot pressure: 2 position: 20 to 120 PSI (with memory spring: 30 to 120 PSI) 3 position: 35 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1.0 C_v

Coil: Class A continuous duty, #22 AWG x 12 leads wires

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~Inrush: 10.9 VA Holding: 7.7 VA

= 1.8 to 12.7 W

Response times: 24 V=/5.4W Energize: 7.3 ms De-energize: 5.3 ms

120/60 Energize: 8-12 ms De-energize: 7-11 ms

Options : • BSPP threads

413A-AAA-XX-Xxxx-xxx

Dual pressure models, replace by **C** for pilot supply from #3 port
For flow control, replace by **B**For memory spring, replace by **6**

400A-XXX (i.e. 400A-AAA)

Base only:

Spare parts:
• Body to base seal: 16525 • Flow control assembly: N-04001 • Body mounting screws (x2): 35043.

DIMENSIONS

Dimensions shown are metric (mm)

Set 2 CACHNING
DISCONTINUE STOCK REF

SINGLE PILOT

DOUBLE PILOT

A 30 DIA (2)

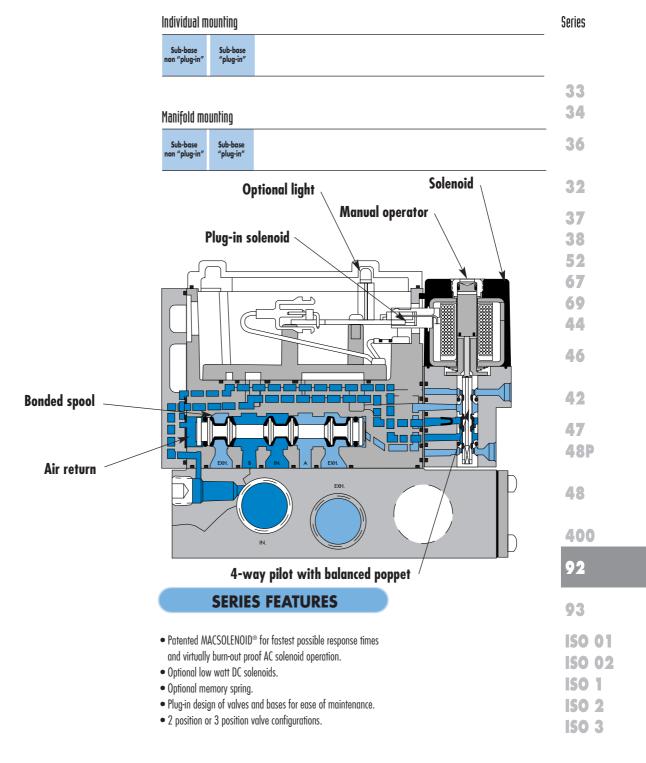
A 30 DIA (2)

A 30 DIA (2)

A 47.00

DIMENSIONS



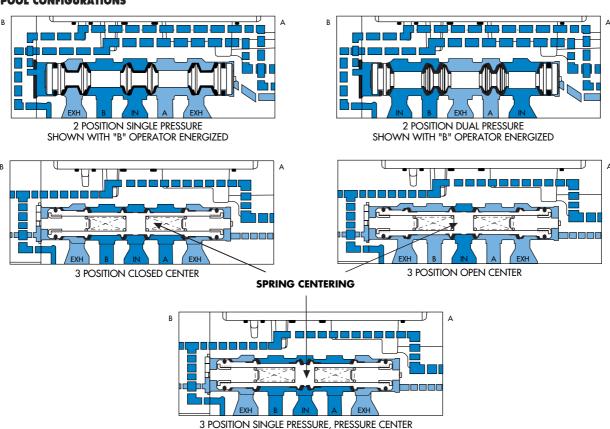




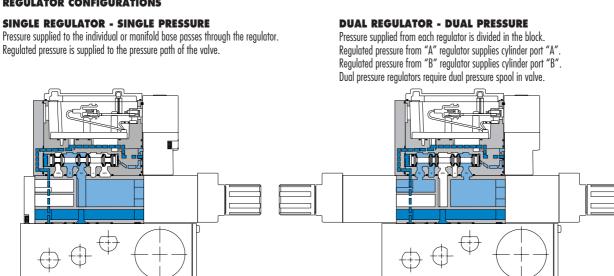




SPOOL CONFIGURATIONS



REGULATOR CONFIGURATIONS



MANIFOLD WITH REGULATOR - SINGLE PRESSURE

Note: For both single and dual pressure, air supply to the pilot system is never regulated.



5eries 92				
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/8" - 1/4" - 3/8"	1.2 C _v	Sub-base non "plug-in"	
OPERATIONAL BENEFITS				_ 33
 The 4-way pilot develor forces both ways. 	ps maximum shifting			34
Memory spring availal	ole.		9	117
3. Balanced spool, immu				36
pressure, also provides 4. Short stroke with high	•			
5. Bonded seal spool with	n minimum friction,			32
shifting in a glass-like f	inished bore.			

HOW TO ORDER

SINGLE PRESSURE MODELS

6. Pilot with balanced poppet, high flow; short

and consistent response times.

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center		
		B A A A A A A A A A A A A A A A A A A A	B B A A A A A A A A A A A A A A A A A A	B B A A A A A A A A A A A A A A A A A A	B B A A GIMM	B A A A A A A A A A A A A A A A A A A A		
Valve less base		92B-ABA-000-DM-D xxx-xxx	92B-BBA-000-DM-D xxx-xxx	92B-EBA-000-DM-D xxx-xxx	92B-FBA-000-DM-D xxx-xxx	92B-GBA-000-DM-D xxx-xxx		
1/8" NPTF		92B-ABA-AAG-DM-D xxx-xxx	92B-BBA-AAG-DM-Dxxx-xxx	92B-EBA-AAG-DM-D xxx-xxx	92B-FBA-AAG-DM-D xxx-xxx	92B-GBA-AAG-DM-Dxxx-xxx		
1/4" NPTF	Internal	92B-ABA-BAG-DM-Dxxx-xxx	92B-BBA-BAG-DM-Dxxx-xxx	92B-EBA-BAG-DM-D xxx-xxx	92B-FBA-BAG-DM-D xxx-xxx	92B-GBA-BAG-DM-Dxxx-xxx		
3/8" NPTF		92B-ABA-CAG-DM-Dxxx-xxx	92B-BBA-CAG-DM-Dxxx-xxx	92B-EBA-CAG-DM-Dxxx-xxx	92B-FBA-CAG-DM-Dxxx-xxx	92B-GBA-CAG-DM-Dxxx-xxx		
1/8" NPTF		92B-ABA-AAH-DM-D xxx-xxx	92B-BBA-AAH-DM-Dxxx-xxx	92B-EBA-AAH-DM-D xxx-xxx	92B-FBA-AAH-DM-D xxx-xxx	92B-GBA-AAH-DM-Dxxx-xxx		
1/4" NPTF	External	92B-ABA-BAH-DM-Dxxx-xxx	92B-BBA-BAH-DM-Dxxx-xxx	92B-EBA-BAH-DM-Dxxx-xxx	92B-FBA-BAH-DM-Dxxx-xxx	92B-GBA-BAH-DM-Dxxx-xxx		
3/8" NPTF		92B-ABA-CAH-DM-D xxx-xxx	92B-BBA-CAH-DM-Dxxx-xxx	92B-EBA-CAH-DM-Dxxx-xxx	92B-FBA-CAH-DM-Dxxx-xxx	92B-GBA-CAH-DM-Dxxx-xxx		

DUAL PRESSURE MODELS (REQUIRE SANDWICH REGULATOR - SEE "REGULATORS" SECTION)

Port size	Pilot air	5/2 Single operator	5/2 Double operator
		ING EXH INA	B B A A A A A A A A A A A A A A A A A A
Valve less base		92B-CBA-000-DM-D xxx-xxx	92B-DBA-000-DM-D xxx-xxx
1/8" NPTF		92B-CBA-AAG-DM-D xxx-xxx	92B-DBA-AAG-DM-Dxxx-xxx
1/4" NPTF	Internal	92B-CBA-BAG-DM-D xxx-xxx	92B-DBA-BAG-DM-D xxx-xxx
3/8" NPTF		92B-CBA-CAG-DM-D xxx-xxx	92B-DBA-CAG-DM-Dxxx-xxx
1/8" NPTF		92B-CBA-AAH-DM-D xxx-xxx	92B-DBA-AAH-DM-D xxx-xxx
1/4" NPTF	External	92B-CBA-BAH-DM-D xxx-xxx	92B-DBA-BAH-DM-D xxx-xxx
3/8" NPTF		92B-CBA-CAH-DM-D xxx-xxx	92B-DBA-CAH-DM-D xxx-xxx

S

DA

SOLENC	OID OPERATOR ➤		DM-D XX	X- <u>X</u> X)	<u>(</u> *		
				J կ՟	_		
XX	Voltage	X	Wire length	X	Manual operator	ХХ	Electrical connection
JA	110 /50, 120/60 (2.9W)	Α	18" (Flying leads)	1	Non-locking recessed	ВМ	Flying leads
JB	220/50, 240/60 (2.9W)	В	24" (Flying leads)	2	Locking recessed	BN	Flying leads with diode
JC	24/60 (2.9W)	J	Connector			BP	Flying leads with M.O.V.
FB	24 VDC (1.8W)					BG	Flying leads with ground

24 VDC (5.4W) 24 VDC (12.7W)

* Other options available, see page 309.

Other options available for the 92 series valves, see page 155.

Rectangular connector with light

Rectangular connector

Square connector

JD

Above models are shown with side ports.

37

38 **52**

67 69

44

46

42

47 48P

48

400

92

93

ISO 01 ISO 02 **ISO** 1

ISO 2

ISO 3







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI 3 position: 35 to 120 PSI

External pilot : vacuum to 120 PSI 3 position : 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/8": $(1.0 \text{ C}_{\text{v}}) - 1/4$ ": $(1.1 \text{ C}_{\text{v}}) - 3/8$ ": $(1.2 \text{ C}_{\text{v}})$

Class A continuous duty, #22 AWG x 18 lead wire

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~Inrush 7.6 VA Holding: 4.8 VA

= 1.8 to 12.7 W

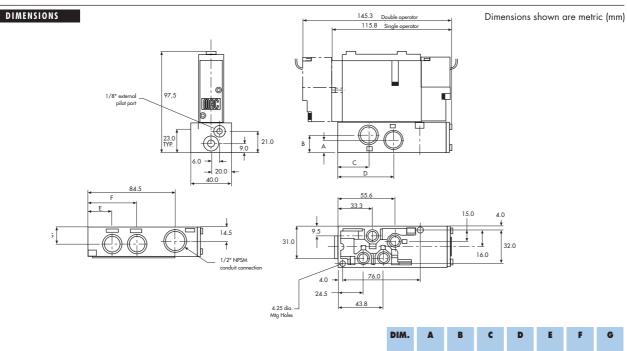
Response times : 24V=/5.4W Energize : 8 ms De-energize : 7 ms

120/60 Energize : 7-13 ms De-energize : 12-20 ms

Options: • BSPP threads • Sandwich flow control: FC92B-CA

Spare parts : • Pilot valve DM-Dxxx-xxx • Valve blanking plate: M-92002

• Pressure seal between valve and base: 16543. • Mounting screws valve to base (X2): 35050.





Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/8" - 1/4" - 3/8"	1.2 C _v	Sub-base "plug-in"	

OPERATIONAL BENEFITS

- The 4-way pilot develops maximum shifting forces both ways.
- 2. Memory spring available.
- 3. Balanced spool, immune to variations of pressure, also provides high flow.
- 4. Short stroke with high flow.
- 5. Bonded seal spool with minimum friction, shifting in a glass-like finished bore.
- 6. Pilot with balanced poppet, high flow; short and consistent response times.



33

34

36

32

37

38 52

67 69

44

46

42

47 48P

48

400

92

93

ISO 01 ISO 02 ISO 1

ISO 2

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center		
		B A A A A A A A A A A A A A A A A A A A	B B A A A A A A A A A A A A A A A A A A	B B A A A A A A A A A A A A A A A A A A	B B A A GIMM	B A A GOVERNMENT OF THE BEIN EA		
Valve less base		92B-AAA-000-DM-D xx P- xxx	92B-BAA-000-DM-D xx P- xxx	92B-EAA-000-DM-D xx P- xxx	92B-FAA-000-DM-D xx P- xxx	92B-GAA-000-DM-D xx P- xxx		
1/8"		92B-AAA-AAA-DM-D xx P- xxx	92B-BAA-AAA-DM-DxxP-xxx	92B-EAA-AAA-DM-D xx P- xxx	92B-FAA-AAA-DM-D xx P- xxx	92B-GAA-AAA-DM-D xx P- xxx		
1/4"	Internal	92B-AAA-BAA-DM-DxxP-xxx	92B-BAA-BAA-DM-DxxP-xxx	92B-EAA-BAA-DM-D xx P- xxx	92B-FAA-BAA-DM-D xx P- xxx	92B-GAA-BAA-DM-DxxP-xxx		
3/8"		92B-AAA-CAA-DM-DxxP-xxx	92B-BAA-CAA-DM-DxxP-xxx	92B-EAA-CAA-DM-DxxP-xxx	92B-FAA-CAA-DM-DxxP-xxx	92B-GAA-CAA-DM-DxxP-xxx		
1/8"		92B-AAA-AAD-DM-DxxP-xxx	92B-BAA-AAD-DM-DxxP-xxx	92B-EAA-AAD-DM-DxxP-xxx	92B-FAA-AAD-DM-DxxP-xxx	92B-GAA-AAD-DM-DxxP-xxx		
1/4"	External	92B-AAA-BAD-DM-DxxP-xxx	92B-BAA-BAD-DM-DxxP-xxx	92B-EAA-BAD-DM-DxxP-xxx	92B-FAA-BAD-DM-DxxP-xxx	92B-GAA-BAD-DM-DxxP-xxx		
3/8"		92B-AAA-CAD-DM-DxxP-xxx	92B-BAA-CAD-DM-DxxP-xxx	92B-EAA-CAD-DM-DxxP-xxx	92B-FAA-CAD-DM-DxxP-xxx	92B-GAA-CAD-DM-DxxP-xxx		

DUAL PRESSURE MODELS (REQUIRE SANDWICH REGULATOR - SEE "REGULATORS" SECTION)

Port size Pilot air		5/2 Single operator	5/2 Double operator	
		IN B EXH INA	INB EXH INA	
Valve less base		92B-CAA-000-DM-D <i>xx</i> P- <i>xxx</i>	92B-DAA-000-DM-DxxP-xxx	
1/8"		92B-CAA-AAA-DM-D xx P- xxx	92B-DAA-AAA-DM-D <i>xx</i> P- <i>xxx</i>	
1/4"	Internal	92B-CAA-BAA-DM-D xx P- xxx	92B-DAA-BAA-DM-D xxP-xxx	
3/8"		92B-CAA-CAA-DM-D xx P- xxx	92B-DAA-CAA-DM-D xx P- xxx	
1/8"		92B-CAA-AAD-DM-D xx P- xxx	92B-DAA-AAD-DM-D xx P- xxx	
1/4"	External	92B-CAA-BAD-DM-D xx P- xxx	92B-DAA-BAD-DM-D xxP-xxx	
3/8"		92B-CAA-CAD-DM-DxxP-xxx	92B-DAA-CAD-DM-DxxP-xxx	

SOLENOID OPERATOR ➤

XX	Voltage	X	Manual operator	XX	Electrical connection
JA	110 /50, 120/60 (2.9W)	1	Non-locking recessed	DM	Plug-in
JB	220/50, 240/60 (2.9W)	2	Locking recessed	DN	Plug-in with diode
JC	24/60 (2.9W)		-	DP	Plug-in with M.O.V.
FB	24 VDC (1.8W)			DG	Plug-in with ground
DA	24 VDC (5.4W)			DJ	Plug-in with M.O.V. & ground
DF	24 VDC (12.7W)			DH	Plug-in with diode & ground

DM-D XX P-XXX

Above models are shown with side ports.

^{*} Other options available, see page 309.
Note: Ground required for 30 Volts or higher.
Other options available for the 92 series valves, see page 156.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI 3 position: 35 to 120 PSI

External pilot : vacuum to 120 PSI 3 position: 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow:

1/8": $(1.0 C_v) - 1/4$ ": $(1.1 C_v) - 3/8$ ": $(1.2 C_v)$ Coil:

Class A continuous duty, #22 AWG x 18 lead wire -15% to +10% of nominal voltage Voltage range:

Consult factory Protection:

Power: ~Inrush 7.6 VA Holding: 4.8 VA

= 1.8 to 12.7 W

Response times: 24V=/5.4W Energize: 8 ms De-energize: 7 ms

120/60 Energize: 7-13 ms De-energize: 12-20 ms

• BSPP threads • Sandwich flow control: FC92B-AA (sgl. operator), FC92B-BA (dbl. operator) Options:

• Pilot valve DM-DxxP-xxx • Valve blanking plate: M-92002 Spare parts:

• Pressure seal between valve and base : 16543. • Mounting screws valve to base (X2) : 35050.

DIMENSIONS

Dimensions shown are metric (mm) 145.3 Double opera 115.3 Single opera 33.3 24.5 43.8 4.25 dia. Mtg Holes DIM. G 1/8" 12.5 18.0 31.0 54.0 23.5 46.5 18.0 1/4" 12.5 18.0 31.0 54.0 23.5 46.5 18.0 3/8" 12.0 17.0 30.0 54.0 23.5 17.0



Function

Direct solenoid and solenoid pilot operated valves

Manifold mounting

Series

	1/4" - 3/8"	1.2 C _v		Sub-base non "plug-in"	
FITS					33
	aximum shifting				34
					36
high flow. ol with mini s-like finishe	mum friction, ad bore.				32
esponse time	es.			30	37
	king.			4.9	38
•					52
R					67
RE MODEI	LS				69
Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
	B A A	B B A A	B B A A A A A A A A A A A A A A A A A A	B A 4 2 M	### 46
	92B-ABA-000-DM-D xxx-xxx	92B-BBA-000-DM-D xxx-xxx	EB IN EA	92B-FBA-000-DM-D XXX-XXX	92B-GBA-000-DM-D XXX-XXX
Internal	92B-ABA-BJG-DM-Dxxx-xxx				92B-GBA-BJG-DM-Dxxx-xxx 42
		/ ED DD/ (D/O D// D/DD(/DD)	720 LUA UJO DIN DAAA AAA	7 ZD T DA DJO DIN DANA AAA	. == 0 =
	92B-ABA-CJG-DM-D xxx-xxx	92B-BBA-CJG-DM-Dxxx-xxx	92B-EBA-CJG-DM-Dxxx-xxx	92B-FBA-CJG-DM-Dxxx-xxx	92B-GBA-CJG-DM-Dxxx-xxx
MODELS	92B-ABA-CJG-DM-D xxx-xxx	92B-BBA-CJG-DM-D xxx-xxx	92B-EBA-CJG-DM-D xxx-xxx	92B-FBA-CJG-DM-D xxx-xxx	92B-GBA-CJG-DM-Dxxx-xxx
MODELS		92B-BBA-CJG-DM-D xxx-xxx	92B-EBA-CJG-DM-D xxx-xxx	92B-FBA-CJG-DM-DXXX-XXX TION)	928-GBA-CJG-DM-Dxxx-xxx 47 48P
MODELS	92B-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR – SEE	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC	92B-FBA-CJG-DM-DXXX-XXX TION)	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 e operator
MODELS	92B-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A AZ	92B-FBA-CJG-DM-DXXX-XXX TION) Double	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 e operator 48
MODELS	92B-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator	92B-FBA-CJG-DM-DXXX-XXX TION) Double	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 e operator A H MA 10-DM-Dxxx-xxx
	92B-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing B D INE 928-CBA	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A A A A A A A A A A A A A A A	92B-FBA-CJG-DM-DXXX-XXX TION) Double ### Page 15	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 e operator 48
	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing B ID IN 928-CBA 928-CBA	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A A A A A A A A A A A A A A A	928-FBA-CJG-DM-DXXX-XXX TION) Pouble 928-BA-OC 928-DBA-OC 928-DBA-CJ 928-DBA-CJ	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 • operator
	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing B ID IN 928-CBA 928-CBA	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A A A A A A A A A A B JG-DM-DXXX-XXX A-CJG-DM-DXXX-XXX	928-FBA-CJG-DM-DXXX-XXX TION) Pouble 928-BA-OC 928-DBA-OC 928-DBA-CJ 928-DBA-CJ	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 • operator
se	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A A A A A A A A A A B JG-DM-DXXX-XXX A-CJG-DM-DXXX-XXX	928-FBA-CJG-DM-DXXX-XXX TION) Pouble 928-BA-OC 928-DBA-OC 928-DBA-CJ 928-DBA-CJ	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 • operator
se	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air Internal	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A A A A A A A A A A B JG-DM-DXXX-XXX A-CJG-DM-DXXX-XXX	92B-FBA-CJG-DM-DXXX-XXX TION) Pouble ### Property of the content	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 6 operator A 0-DM-Dxxx-xxx G-DM-Dxxx-xxx G-DM-Dxxx-xxx Shown with side ports. 93
RATOR > 120/60 (2.1	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air Internal X Wire 9W) A 18" (8	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing 928-CBA 928-CBA 928-CBA DM-D XXX Plength Bying leads)	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A B JG-DM-DXXX-XXX A-BJG-DM-DXXX-XXX A-CJG-DM-DXXX-XXX X Manual oper 1 Non-locking reces:	92B-FBA-CJG-DM-DXXX-XXX TION) Pouble 92B-DBA-O 92B-DBA-O 92B-DBA-O 92B-DBA-CJ Above models are seed XX E seed KA Si	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 9 operator 48 0-DM-Dxxx-xxx G-DM-Dxxx-xxx G-DM-Dxxx-xxx shown with side ports. 93 lectrical connection quare connector
RATOR > 120/60 (2.9 2.9W)	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air Internal X Wire 9W) A 18" (9	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing 928-CBA 928-CBA 928-CBA DM-D XXX Plength Bying leads)	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A A A A A A A A A A CJG-DM-DXXX-XXX A A A A A A A A A A A A A A A A A A	92B-FBA-CJG-DM-DXXX-XXX TION) Pouble 92B-DBA-O 92B-DBA-O 92B-DBA-O 92B-DBA-O Above models are: KD Sc JB Re	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 6 operator A 0-DM-Dxxx-xxx G-DM-Dxxx-xxx Shown with side ports. 93 lectrical connection quare connector quare connector with light ectangular connector
RATOR > ge , 120/60 (2.9 240/60 (2.9 (1.8W) (5.4W)	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air Internal X Wire 9W) A 18" (8	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing 928-CBA 928-CBA 928-CBA DM-D XXX Plength Bying leads)	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A B JG-DM-DXXX-XXX A-BJG-DM-DXXX-XXX A-CJG-DM-DXXX-XXX X Manual oper 1 Non-locking reces:	92B-FBA-CJG-DM-DXXX-XXX TION) Pouble 92B-DBA-O 92B-DBA-O 92B-DBA-O 92B-DBA-O Above models are: KA Si KD Sc JB R JD R	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 • operator A O-DM-Dxxx-xxx G-DM-Dxxx-xxx Shown with side ports. 93 lectrical connection guare connector guare connector guare connector with light
RATOR > ge , 120/60 (2.9 240/60 (2.9 2.9W) (1.8W)	928-ABA-CJG-DM-DXXX-XXX (REQUIRE SANDWIC Pilot air Internal X Wire 9W) A 18" (fi	928-BBA-CJG-DM-DXXX-XXX CH REGULATOR — SEE Sing 928-CBA 928-CBA 928-CBA DM-D XXX Plength Bying leads)	92B-EBA-CJG-DM-DXXX-XXX "REGULATORS" SEC 5/2 gle operator B A A A A B JG-DM-DXXX-XXX A-BJG-DM-DXXX-XXX A-CJG-DM-DXXX-XXX X Manual oper 1 Non-locking reces:	92B-FBA-CJG-DM-DXXX-XXX TION) Pouble ### Property of the company	928-GBA-CJG-DM-Dxxx-xxx 47 48P 5/2 • operator 48 0-DM-Dxxx-xxx G-DM-Dxxx-xxx shown with side ports. 93 lectrical connection quare connector quare connector with light actangular connector ect. connector with light
d a c c c c c c c c c c c c c c c c c c	develops models. Invallable. Immune to vovides high high flow. Invallable. Inva	develops maximum shifting variable. invaliable. immune to variations of ovides high flow. high flow. ol with minimum friction, shike finished bore. ed poppet, high flow; short sponse times. minates sticking. RE MODELS Pilot air 5/2 Single operator 928-ABA-000-DM-DXXX-XXX	develops maximum shifting variable. invariable. immune to variations of ovides high flow. high flow. ol with minimum friction, selike finished bore. ed poppet, high flow; short sponse times. minates sticking. RE MODELS Pilot air 5/2 Single operator B B A A A A A A A A A A A A A A A A A	develops maximum shifting vivaliable. invaliable. immune to variations of ovides high flow. high flow. ol with minimum friction, selike finished bore. ed popper, high flow; short sponse times. minates sticking. RE MODELS Pilot air Single operator Pilot air Pilot	develops maximum shifting Invalidable. Invalidable. Immune to variations of ovides high flow. In high flow. In high flow of the properties of the propertie

Flow (Max)

Port size







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI 3 position: 35 to 120 PSI

External pilot : vacuum to 120 PSI 3 position: 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/4": (1.1 C_v) – 3/8": (1.2 C_v)

Coil: Class A continuous duty, #22 AWG x 18 leads

-15% to +10% of nominal voltage Voltage range:

Protection: Consult factory

Power: ~Inrush 7.6 VA Holding: 4.8 VA

= 1.8 to 12.7 W

Response times: 24V=/5.4W Energize: 8 ms De-energize: 7 ms

120/60 Energize: 7-13 ms De-energize: 12-20 ms

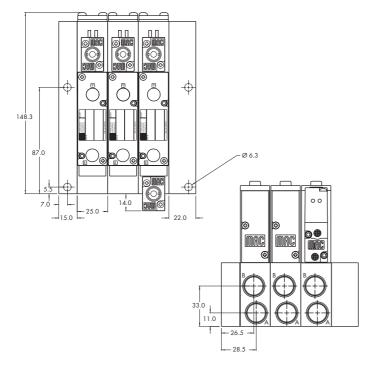
• BSPP threads • Sandwich flow controls: FC92B-CA Options:

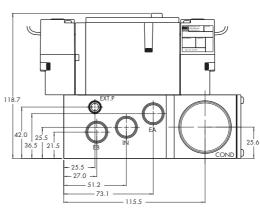
• Pilot valve: DM-Dxxx-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base 16543 Spare parts:

• Inlet/Exhaust isolator disc: N-92018.

DIMENSIONS

Dimensions shown are metric (mm)







Function		Port size	Flow (Max)		Manifold mounting	Series
5/2, 5/3		1/4" - 3/8"	1.2 C _v		Sub-base "plug-in"	
OPERATIONAL BEN	IEFITS					33
1. The 4-way pilo		aximum shifting			0	34
forces both wa 2. Memory spring 3. Balanced spoo pressure, also	g available. ol, immune to provides high					36
 Short stroke wi Bonded seal sp shifting in a glo 	oool with mini ass-like finishe	ed bore.				32
Pilot with balar and consistent					40	37
7. Wiping effect	eliminates stic				5 2	38
8. Long service lif	e.				~ /	52
HOW TO ORD	ER					67
SINGLE PRESSI	URE MODE	LS				69
Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 44 Pressure center
		B B A A A	B B A A A	B B A A A A A A A A A A A A A A A A A A	B A A A A A A A A A A A A A A A A A A A	B A A A A A A A A A A A A A A A A A A A
Valve less base		92B-AAA-000-DM-D xx P- xxx	92B-BAA-000-DM-D xx P- xxx	92B-EAA-000-DM-D xx P- xxx	92B-FAA-000-DM-D xx P- xxx	92B-GAA-000-DM-DxxP-xxx 92B-GAA-RIA-DM-DxxP-xxx
1/4" NPTF 3/8" NPTF	Internal	92B-AAA-BJA-DM-DxxP-xxx 92B-AAA-CJA-DM-DxxP-xxx	92B-BAA-BJA-DM-DxxP-xxx 92B-BAA-CJA-DM-DxxP-xxx	92B-EAA-BJA-DM-DxxP-xxx 92B-EAA-CJA-DM-DxxP-xxx	92B-FAA-BJA-DM-DxxP-xxx 92B-FAA-CJA-DM-DxxP-xxx	92B-GAA-BJA-DM-DxxP-xxx 92B-GAA-CJA-DM-DxxP-xxx
						47
		(REQUIRE SANDWIC	H REGULATOR – SEE			48P
Port size	•	Pilot air	Sing	5/2 gle operator		5/2 operator
			B ID	B A A GZI	B B INB EX	48
Valve less b				4-000-DM-D xx P- xxx		O-DM-DxxP-xxx
1/4" NPT 3/8" NPT		Internal		A-BJA-DM-DxxP-xxx A-CJA-DM-DxxP-xxx		A-DM-DxxP-xxx A-DM-DxxP-xxx
SOLENOID OF			DM-D XX P-	A b	e models are shown with	
				Ţ		93
XX Volt	age		X Manual opera	ator	XX Electrical co	nnection
	50, 120/60 (2.50, 240/60 (2.50)		Non-locking recessedLocking recessed	ed	DM Plug-in DN Plug-in with diod	ISO 01
JC 24/60	(2.9W)		_ Locking recessed		DP Plug-in with M.O	.v. ISO 02
	C (1.8W) C (5.4W)			_	DJ Plug-in with grou Plug-in with M.O	
	C (12.7W)			-	DH Plug-in with diod	. r . a g. cona
* Other options as						
Note: Ground requested plate kit require		blts or higher. /8"): M-92004-01-01 (inte	ernal pilot)			ISO 3
	•	M-92004-02-01 (exte	ernal pilot)			
orner options ave	unable for the	e 92 series valves, see pa	ge 130.			







Fluid: Compressed air, vacuum, inert gases

Pressure range : Internal pilot : 20 to 120 PSI 3 position : 35 to 120 PSI

External pilot: vacuum to 120 PSI 3 position: 35 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range : $0^{\circ}F$ to $120^{\circ}F$ (- $18^{\circ}C$ to $+50^{\circ}C$)

Flow: 1/4": $(1.1 C_v) - 3/8$ ": $(1.2 C_v)$

Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~Inrush 7.6 VA Holding : 4.8 VA

= 1.8 to 12.7 W

Response times : 24V=/5.4W Energize : 8 ms De-energize : 7 ms

120/60 Energize : 7-13 ms De-energize : 12-20 ms

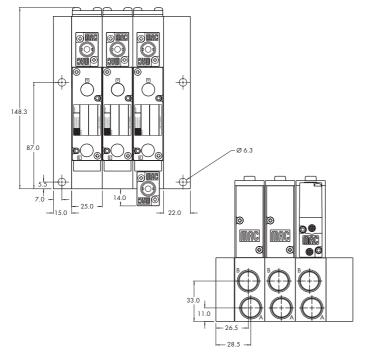
Options : • BSPP threads • Sandwich flow controls: FC92B-AA (sgl. operator), FC92B-BA (dbl. operator)

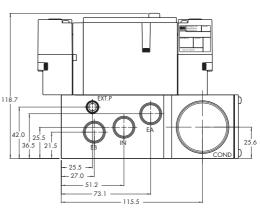
Spare parts : • Pilot valve: DM-DxxP-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base: 16543

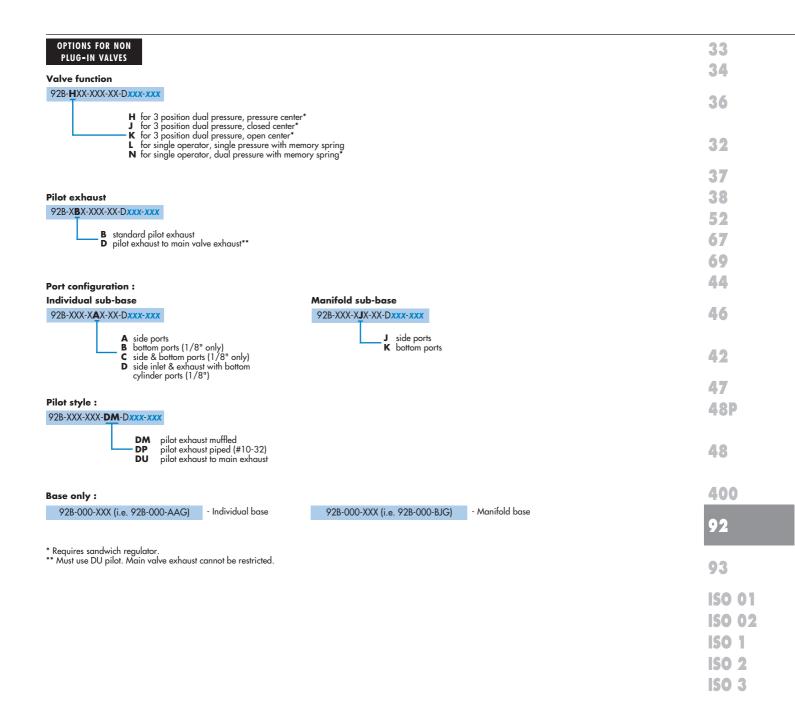
• Mounting screws valve to base (x2): 35050 • Inlet/Exhaust isolator disc: N-92018.

DIMENSIONS

Dimensions shown are metric (mm)





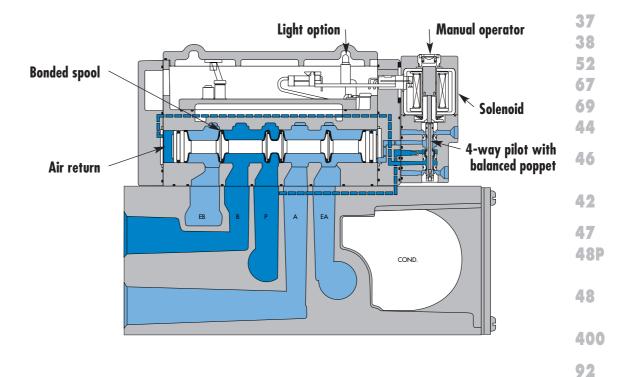


OPTIONS FOR PLUG-IN VALVES Valve function 92B-HXX-XXX-XX-DxxP-xxx H for 3 position dual pressure, pressure center* J for 3 position dual pressure, closed center* K for 3 position dual pressure, open center* L for single operator, single pressure with memory spring N for single operator, dual pressure with memory spring* Pilot exhaust 92B-XAX-XXX-XX-DxxP-xxx A standard pilot exhaust C pilot exhaust to main valve exhaust** **Body** electrical 92B-XXA-XXX-XX-DxxP-xxx A no light B light(s) F suppression and blocking diode with light(s) H M.O.V. with light(s) Port configuration: Individual sub-base Manifold sub-base 92B-XXX-X**J**X-XX-D**xx**P-**xxx** 92B-XXX-XAX-XX-DxxP-xxx A side ports B bottom ports (1/8" only) C side & bottom ports (1/8" only) D side inlet & exhaust with bottom cylinder ports (1/8") J side ports K bottom ports Individual & Manifold sub-base Int. pilot Individual sub-base Ext. pilot 92B-XXX-XXA-XX-DxxP-xxx 92B-XXX-XX**D**-XX-D**xx**P-**xxx** A internal pilot no light B internal pilot single light C internal pilot double light D external pilot no light E external pilot single light E external pilot double light Pilot style: 92B-XXX-XXX-DM-DxxP-xxx pilot exhaust muffled pilot exhaust piped (#10-32) pilot exhaust to main exhaust Lead Wire Lengths: (manifold sub-base only) 92B-XXX-XXX-DM-DxxP-xxx P 12" leads 1 18" leads 2 24" leads 3 36" leads 4 48" leads 5 72" leads Base only: 92B-000-XXX (i.e. 92B-000-AAA) - Individual base 92B-000-XXX (i.e. 92B-000-BJA) - Manifold base (Note: bases are wired for double solenoid valves)

* Requires sandwich regulator.
** Must use DU pilot. Main valve exhaust cannot be restricted.



Individual mounting Sub-base non "plug-in" Sub-base plug-in" Sub-base non "plug-in" Sub-base non "plug-in" Sub-base non "plug-in" Sub-base non "plug-in" Sub-base plug-in" Sub-base plug-in"



SERIES FEATURES

- Patented MACSOLENOID® for fastest possible response times and virtually burn-out proof AC solenoid operation.
- Optional low watt DC solenoids.
- Optional memory spring.
- Plug-in design of valves and bases for ease of maintenance.
- 2 position or 3 position valve configurations.

93 ISO 01 ISO 02 ISO 1

32

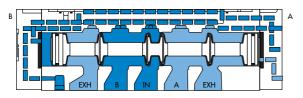
ISO 2 ISO 3



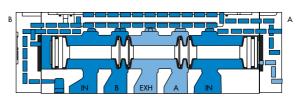




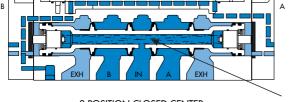
SPOOL CONFIGURATIONS



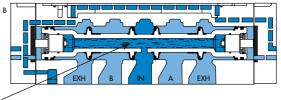
2 POSITION SINGLE PRESSURE SHOWN WITH "B" OPERATOR ENERGIZED



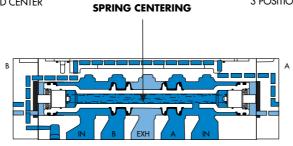
2 POSITION DUAL PRESSURE SHOWN WITH "B" OPERATOR ENERGIZED



3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER



3 POSITION DUAL PRESSURE, PRESSURE CENTER

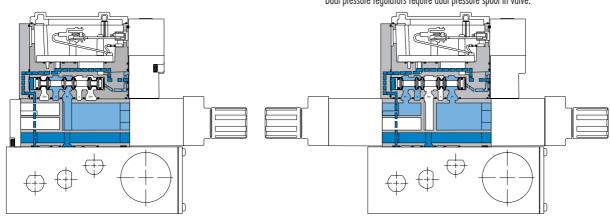
REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

Pressure supplied to the individual or manifold base passes through the regulator. Regulated pressure is supplied to the pressure path of the valve.

DUAL REGULATOR - DUAL PRESSURE

Pressure supplied from each regulator is divided in the block.
Regulated pressure from "A" regulator supplies cylinder port "A".
Regulated pressure from "B" regulator supplies cylinder port "B".
Dual pressure regulators require dual pressure spool in valve.



MANIFOLD WITH REGULATOR - SINGLE PRESSURE

 $\textbf{Note} \hbox{: For both single and dual pressure, air supply to the pilot system is never regulated}.$

MANIFOLD WITH REGULATOR - DUAL PRESSURE



Function Port size		Flow (Max)	Individual mounting	Seri	
/2, 5/3		3/8" - 1/2"	3.8 C _v	Inline	
PERATIONAL BEI	NEFITS				3
possible respo	ed Macsolenoid onse times and v	irtually			3
Balanced pop maximum shift	solenoid operations of the solenoid operations operations operations of the solenoid operations	valve provides ise			3
. Air only return also available	. Optional mem	ory spring is			3
Optional low v	wattage DC sole	enoid down to		0	3
	nd bore combine nation, eliminate				3
	on non-lube ser				5
HOW TO ORD	ER				6
INGLE PRESS	URE MODELS	5			6
Port size	Pilot air	5/2	5/2	5/3	5/3
		Single operator	Double operator	Closed center	Open center
		12 2 4 14 JT 3 1 5	12 2 4 14 3/1 7/P 7 1 14 3/1	12 24 14 IM	12 2 4 14 3 3 4 3 4 4 3 7 4 4 3 7 4 4 4 3 7 4 4 4 4
3/8" NPTF	Internal	93A-AJ0-B0J-DM-D xxx-xxx	93A-BJO-BOJ-DM-Dxxx-xxx	93A-EJO-BOJ-DM-D xxx-xxx	93A-FJO-BOJ-DM-Dxxx-xxx
1/2" NPTF		93A-AJ0-C0J-DM-Dxxx-xxx	93A-BJ0-C0J-DM-Dxxx-xxx	93A-EJ0-C0J-DM-Dxxx-xxx	93A-FJ0-C0J-DM-Dxxx-xxx
3/8" NPTF	External _	93A-AJ0-B0K-DM-D xxx-xxx	93A-BJO-BOK-DM-Dxxx-xxx	93A-EJO-BOK-DM-Dxxx-xxx	93A-FJO-BOK-DM-Dxxx-xxx

DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center	
		12 2 4 14 D 7 7 3 3 1 5	12 2 4 14 37 3 1 5 3 1 5		
3/8" NPTF Internal		93A-CJ0-B0J-DM-Dxxx-xxx	93A-DJ0-B0J-DM-D xxx-xxx	93A-HJ0-B0J-DM-Dxxx-xxx	
1/2" NPTF		93A-CJ0-C0J-DM-Dxxx-xxx	93A-DJ0-C0J-DM-Dxxx-xxx	93A-HJ0-C0J-DM-Dxxx-xxx	
3/8" NPTF External 93A-		93A-CJ0-B0K-DM-Dxxx-xxx	93A-DJ0-B0K-DM-Dxxx-xxx	93A-HJ0-B0K-DM-Dxxx-xxx	
1/2" NPTF		93A-CJ0-C0K-DM-Dxxx-xxx	93A-DJ0-C0K-DM-Dxxx-xxx	93A-HJ0-C0K-DM-Dxxx-xxx	

SOLENOID OPERATOR ➤

SOLENC	OID OPERATOR ➤		DM-D	<u> </u>	X *		
				<u></u>			
XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
JA	110/50, 120/60	Α	18" (Flying leads)	1	Non-locking recessed	KA	Square connector
JB	220/50, 240/60	В	24" (Flying leads)	2	Locking recessed	KD	Square connector with light
JC	24/50, 24/60	J	Connector			JB	Rectangular connector
FB	24 VDC (1.8W)					JD	Rectangular connector with light
DA	24 VDC (5.4W)					BA	Flying leads
DF	24 VDC (12.7W)						

^{*} Other options available, see page 309.

OPTIONS

Pilot exhaust : 93A-XJX-XXX-DM-Dxxx-xxx

J Standard pilot exhaustK Pilot exhaust to main exhaust (use DU pilot)

48P

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ISO 01 ISO 02 **ISO** 1 **ISO 2 ISO 3**







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 3.8 C_v

Coil: Class A continuous duty, #22 AWG x 18 leads

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

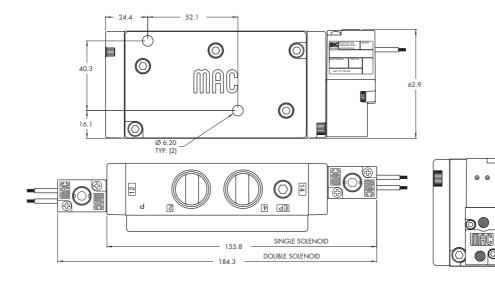
Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1.8 to 12.7 W

Response times: Energize: 13 ms (with 5.4 W coil) De-energize: 10 ms

Option : • BSPP threads

DIMENSIONS





Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/4" - 3/8" - 1/2"	3.4 C _v	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

- Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
- Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. Air only return. Optional memory spring is also available.
- 4. Optional low wattage DC solenoid down to 1 watt.
- MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.



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47 48P

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ISO 01 ISO 02 ISO 1 ISO 2

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS (1/4" MODELS ARE BOTTOM PORTED)

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
		B B A A A A A A B B IN EA	B B A A A A A A A A A A A A A A A A A A	B A A A A A A A A A A A A A A A A A A A	B B A A GMM TD T T T T T T T T T T T T T T T T T T
Valve less base		93A-ABA-000-DM-D xxx-xxx	93A-BBA-000-DM-D xxx-xxx	93A-EBA-000-DM-D xxx-xxx	93A-FBA-000-DM-D xxx-xxx
1/4" NPTF		93A-ABA-ABG-DM-Dxxx-xxx	93A-BBA-ABG-DM-Dxxx-xxx	93A-EBA-ABG-DM-Dxxx-xxx	93A-FBA-ABG-DM-Dxxx-xxx
3/8" NPTF	Internal	93A-ABA-BAG-DM-Dxxx-xxx	93A-BBA-BAG-DM-Dxxx-xxx	93A-EBA-BAG-DM-Dxxx-xxx	93A-FBA-BAG-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CAG-DM-Dxxx-xxx	93A-BBA-CAG-DM-Dxxx-xxx	93A-EBA-CAG-DM-D xxx-xxx	93A-FBA-CAG-DM-Dxxx-xxx
1/4" NPTF		93A-ABA-ABH-DM-D xxx-xxx	93A-BBA-ABH-DM-Dxxx-xxx	93A-EBA-ABH-DM-D xxx-xxx	93A-FBA-ABH-DM-Dxxx-xxx
3/8" NPTF	External	93A-ABA-BAH-DM-D xxx-xxx	93A-BBA-BAH-DM-Dxxx-xxx	93A-EBA-BAH-DM-D xxx-xxx	93A-FBA-BAH-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CAH-DM-D xxx-xxx	93A-BBA-CAH-DM-D xxx-xxx	93A-EBA-CAH-DM-D xxx-xxx	93A-FBA-CAH-DM-Dxxx-xxx

DUAL PRESSURE MODELS REQUIRE SANDWICH REGULATOR, SEE "REGULATORS" SECTION (1/4" MODELS ARE BOTTOM PORTED)

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
		B A A A A A A A A A A A A A A A A A A A	B B A A A A A A A A A A A A A A A A A A	B A A M
Valve less base		93A-CBA-000-DM-D xxx-xxx	93A-DBA-000-DM-D xxx-xxx	93A-HBA-000-DM-D xxx-xxx
1/4" NPTF		93A-CBA-ABG-DM-Dxxx-xxx	93A-DBA-ABG-DM-Dxxx-xxx	93A-HBA-ABG-DM-Dxxx-xxx
3/8" NPTF	Internal	93A-CBA-BAG-DM-D xxx-xxx	93A-DBA-BAG-DM-D xxx-xxx	93A-HBA-BAG-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CAG-DM-Dxxx-xxx	93A-DBA-CAG-DM-Dxxx-xxx	93A-HBA-CAG-DM-Dxxx-xxx
1/4" NPTF		93A-CBA-ABH-DM-D xxx-xxx	93A-DBA-ABH-DM-D xxx-xxx	93A-HBA-ABH-DM-D xxx-xxx
3/8" NPTF	External	93A-CBA-BAH-DM-D xxx-xxx	93A-DBA-BAH-DM-D xxx-xxx	93A-HBA-BAH-DM-D xxx-xxx
1/2" NPTF		93A-CBA-CAH-DM-Dxxx-xxx	93A-DBA-CAH-DM-D XXX-XXX	93A-HBA-CAH-DM-D xxx-xxx

				$_{ o}$ $_{ o}$			
				J ካ			
XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
JA	110/50, 120/60	Α	18" (Flying leads)	1	Non-locking recessed	ВМ	Flying leads
JB	220/50, 240/60	В	24" (Flying leads)	2	Locking recessed	BN	Flying leads with diode
JC	24/50, 24/60	J	Connector			BP	Flying leads with M.O.V.
FB	24 VDC (1.8W)			_		BG	Flying leads with ground
DA	24 VDC (5.4W)					JB	Rectangular connector
DF	24 VDC (12.7W)					JD	Rectangular connector with light

DM-D xxx-xxx

Other options available, see page 309.
 Other options available for the 93 series valves, see page 169.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/4", 3/8": (3.0 C_v) - 1/2": (3.4 C_v)

Class A continuous duty, #22 AWG x 18 leads

Class A continuous duly, #22 AVVO X 10 lea

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1 to 12.7 W

Response times: Energize: 13 ms (with 5.4 W coil) De-energize: 10 ms

Options : • BSPP thread • Sandwich regulator (see ,regulators' section)

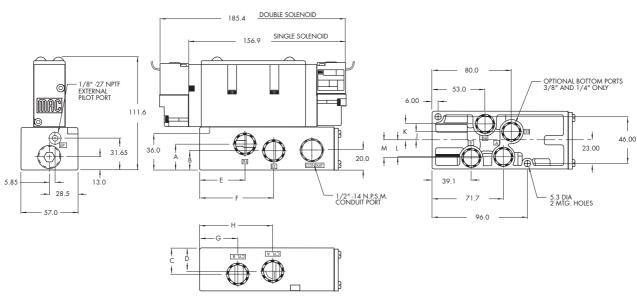
• Sandwich flow controls FC93A-BA (screwdriver slot adjustment) FC93A-BB (locking knob adjustment)

Spare parts : • Pilot valve: DM-Dxxx-xxx • Valve to base pressure seal: 16622

• Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249

• Pilot valve mounting screws (x2): 35069

DIMENSIONS



DIM.	A	В	C	D	E	F	G	н
3/8"	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5
1/2"	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5

DIM.	J	K	L	M
1/4"	7.0	14.7	15.0	16.5
3/8"	8.5	16.2	16.5	17.5



unction		Port size		Floш (Max)	Individua	l mounting	Series
5/2, 5/3		1/4" - 3/8	3" - 1/2"	3.4 C _V	Sub-base "plug-in'		
PERATIONAL BEN	IEFITS						33
. Unique patente							34
possible respondenced poor burn-out proof Balanced poor	solenoid opera	ation.					36
maximum shifti repeatability a	ing forces, pred nd consistent c	cise peration.					9
 Air only return also available. Optional low v 							32
1 watt. . MAC spool an	d bore combin	ation wipes				0	— 37
away contamir allows for use		tes sticking and					52
		· *105.					
HOW TO ORD							67
INGLE PRESSI	URE MODEL	S (1/4" MODEL	S ARE BOTTO	OM PORTED)			69
Port size	Pilot air	5/2 Single oper	ator	5/2 Double operator	5/3 Closed cen	5/3 Per Open cente	44 er
		B B A F	<u>A</u>	B B A A A A A A A A A A A A A A A A A A	B A B A B B A B B B B B B B B B B B B B	B B A FB IN EA	46 371
alve less base		93A-AAA-000-DM-[93A-BAA-000-DM-D xx P- xx			10
1/4" NPTF		93A-AAA-ABA-DM-I		93A-BAA-ABA-DM-DxxP-xx			
3/8" NPTF	Internal	93A-AAA-BAA-DM-I 93A-AAA-CAA-DM-I		93A-BAA-BAA-DM-DxxP-xx 93A-BAA-CAA-DM-DxxP-xx			17
1/2" NPTF 1/4" NPTF		93A-AAA-ABD-DM-I		93A-BAA-ABD-DM-DxxP-xx			
3/8" NPTF	External	93A-AAA-BAD-DM-I		93A-BAA-BAD-DM-DxxP-xx			
1/2" NPTF	. Exicition	93A-AAA-CAD-DM-I		93A-BAA-CAD-DM-DxxP-xx			
	RE MODELS					1" MODELS ARE BOTTOM P	
Port size		Pilot air		5/2 e operator	5/2 Double operator	5/3 Pressure Cente	400
			B		B A A		<u> </u>
Valve less b	ase			DOO-DM-DxxP-xxx	93A-DAA-000-DM-DxxP-xx	93A-HAA-000-DM-D xx	P-XXX
1/4" NP1	'F		93A-CAA-	ABA-DM-DxxP-xxx	93A-DAA-ABA-DM-D xx P- xx	x 93A-HAA-ABA-DM-Dxx	P-xxx 93
3/8" NPT	'F	Internal	93A-CAA-	BAA-DM-DxxP-xxx	93A-DAA-BAA-DM-D xx P- xx	x 93A-HAA-BAA-DM-Dxx	
1/2" NPI	'F		93A-CAA-0	CAA-DM-DxxP-xxx	93A-DAA-CAA-DM-D xx P- xx	x 93A-HAA-CAA-DM-Dxx	P-xxx ISO O
1/4" NPI	'F		93A-CAA-	ABD-DM-D xx P- xxx	93A-DAA-ABD-DM-D xx P- xx	x 93A-HAA-ABD-DM-Dxx	
3/8" NPTF External 93A-C		93A-CAA-	BAD-DM-DxxP-xxx	93A-DAA-BAD-DM-D xx P- xx	x 93A-HAA-BAD-DM-Dxx	r-XXX	
1/2" NP1	<u> </u>		93A-CAA-(CAD-DM-DxxP-xxx	93A-DAA-CAD-DM-D xx P- xx		
OLENOID OF	PERATOR >		DM	-D <u>xx</u> P- <u>xx</u>	<u>₹</u> * Al	oove models are shown with	130 4
							ISO 3
XX Volte	age		X	Nanual operator	XX	Electrical connection	
	50, 120/60 (2.9)	W)		lon-locking recessed	DM	Plug-in	
	0, 240/60 (2.9)		2 L	ocking recessed	DN	Plug-in with diode	
), 24/60 (2.9W)	•		9	DP	Plug-in with M.O.V.	

24 VDC (5.4W) 24 VDC (12.7W)

DA







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow: 1/4", 3/8": (3.0 C_v) - 1/2": (3.4 C_v)

Coil: Class A continuous duty, #22 AWG x 18 base leads

-15% to +10% of nominal voltage Voltage range:

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1 to 12.7 W

Response times: Energize: 13 ms (with 5.4 W coil) De-energize: 10 ms

Options: • BSPP thread • Sandwich regulator (see ,regulators' section)

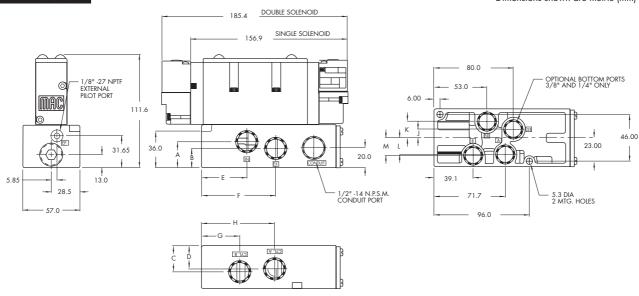
FC93A-AA (screwdriver slot adjustment) • Sandwich flow controls FC93A-AB (locking knob adjustment)

• Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622 Spare parts:

• Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249

• Pilot valve mounting screws (x2): 35069

DIMENSIONS



DIM	. А	В	C	D	E	F	G	н
	27.15							
1/2	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5



Function	Port size	Floш (Max)	Manifold mounting	Series
5/2, 5/3	3/8" - 1/2"	3.8 C _V	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

- 1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. Air only return. Optional memory spring is also available.
- 4. Optional low wattage DC solenoid down to 1 watt.
- 5. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.



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ISO 01

ISO 02 **ISO** 1 **ISO 2 ISO 3**

HOW TO ORDER

SINGLE PRESSURE MODELS

OII TOLL TREGOC	INL MODE	-0			
Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
		B A A A A A A A A A A A A A A A A A A A	B M A A A	B A A A A A A A A A A A A A A A A A A A	B A A B A B A B A B A B A B A B A B A B
Valve less base		93A-ABA-000-DM-D xxx-xxx	93A-BBA-000-DM-D xxx-xxx	93A-EBA-000-DM-D xxx-xxx	93A-FBA-000-DM-D xxx-xxx
3/8" NPTF	Internal	93A-ABA-BJG-DM-Dxxx-xxx	93A-BBA-BJG-DM-D xxx-xxx	93A-EBA-BJG-DM-D xxx-xxx	93A-FBA-BJG-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CJG-DM-D xxx-xxx	93A-BBA-CJG-DM-D xxx-xxx	93A-EBA-CJG-DM-D xxx-xxx	93A-FBA-CJG-DM-Dxxx-xxx
3/8" NPTF	External	93A-ABA-BJH-DM-Dxxx-xxx	93A-BBA-BJH-DM-D xxx-xxx	93A-EBA-BJH-DM-Dxxx-xxx	93A-FBA-BJH-DM-D xxx-xxx
1/2" NPTF		93A-ABA-CJH-DM-Dxxx-xxx	93A-BBA-CJH-DM-Dxxx-xxx	93A-EBA-CJH-DM-Dxxx-xxx	93A-FBA-CJH-DM-Dxxx-xxx

DUAL PRESSURE MODELS (REQUIRE SANDWICH REGULATOR, SEE "REGULATORS" SECTION)

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
		ING EXH INA	B B A ST	B A A M
Valve less base		93A-CBA-000-DM-D xxx-xxx	93A-DBA-000-DM-D xxx-xxx	93A-HBA-000-DM-D xxx-xxx
3/8" NPTF	Internal	93A-CBA-BJG-DM-D xxx-xxx	93A-DBA-BJG-DM-D <i>xxx-xxx</i>	93A-HBA-BJG-DM-D xxx-xxx
1/2" NPTF		93A-CBA-CJG-DM-Dxxx-xxx	93A-DBA-CJG-DM-D xxx-xxx	93A-HBA-CJG-DM-Dxxx-xxx
3/8" NPTF	External	93A-CBA-BJH-DM-D xxx-xxx	93A-DBA-BJH-DM-D xxx-xxx	93A-HBA-BJH-DM-D xxx-xxx
1/2" NPTF		93A-CBA-CJH-DM-Dxxx-xxx	93A-DBA-CJH-DM-D xxx-xxx	93A-HBA-CJH-DM-Dxxx-xxx

SOLENOID OPERATOR ➤			DM-D <u>xx</u>	X- <u>XX</u>	<u>(</u> *	models	ine shown with side poins.	
					ነ ५ 5			
7	XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
	JA	110/50, 120/60	A	18" (Flying leads)	1	Non-locking recessed	ВМ	Flying leads
	JB	220/50, 240/60	В	24" (Flying leads)	2	Locking recessed	BN	Flying leads with diode
	JC	24/50, 24/60	J	Connector			KA	Square connector
	FB	24 VDC (1.8W)					KD	Square connector with light

²⁴ VDC (5.4W) 24 VDC (12.7W)

DA

* Other options available, see page 309 End plate kit required (1/2" ports): M-M-93001-01-01 internal pilot. M-93001-02-01 external pilot.

Other options available for the 93 series valves, see page 169.

Above models are shown with side ports.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $3/8'' : (3.4 \, C_v) - 1/2'' : (3.8 \, C_v)$

Class A continuous duty, #22 AWG x 18 leads

Voltage range: -15% to +10% of nominal voltage

Tollage range:

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1 to 12.7 W

Response times: Energize: 13 ms (with 5.4 W coil) De-energize: 10 ms

Options:
• BSPP thread • Sandwich regulator (see ,regulators' section)

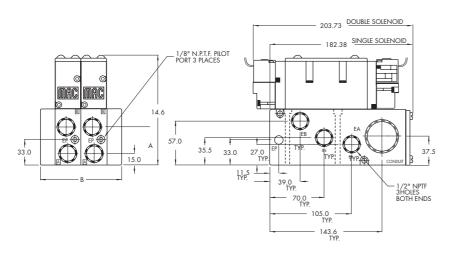
• Sandwich flow controls FC93A-BA (screwdriver slot adjustment), FC93A-BB (locking knob adjustment)

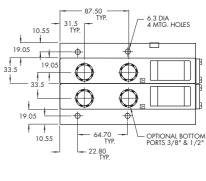
Spare parts : • Pilot valve: DM-Dxxx-xxx • Valve to base pressure seal: 16622

• Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249

• Inlet/exh. Isolator disc: N-93008 • Valve blanking plate: M-93002

DIMENSIONS





B 71.6 105.1 138	6 172.1	205.6	239.1	272.6	306.1	339.6	373.1



Function		Port size		Flow (Max)	Manifold mountin]	Series
5/2, 5/3		3/8" - 1,	/2 "	3.8 C _v Sub-b "plug		ub-base plug-in"	
OPERATIONAL BEI	NEFITS						33
1. Unique patent	ed Macsolenoi	d® for fastest				199	34
possible respo burn-out proof 2. Balanced pop	solenoid oper pet 4-way pilo	ation. t valve provides					36
maximum shift repeatability a 3. Air only return also available	and consistent of the consistency of the consis	operation. mory spring is					32
 Optional low v 1 watt. 	wattage DC so	lenoid down to			6	7000,	37
5. MAC spool an					0		38
away contami		ites sticking and					52
HOW TO ORD							67
		•					
SINGLE PRESS		•		- •		- •	69
Port size	Pilot air	5/2 Single oper	ator	5/2 Double operator	5/3 r Closed center	5/3 Open center	44
		B B A T	<u>A</u> <u>₫</u> <u>7</u> 1	B B A A	B B A B A B A B A B A B A B A B A B A B	B B A A A A A A A A A A A A A A A A A A	46
/alve less base		93A-AAA-000-DM-[)xxP-xxx	93A-BAA-000-DM-D xx P- x		93A-FAA-000-DM-D xx P- xxx	40
3/8" NPTF	Internal	93A-AAA-BJA-DM-E		93A-BAA-BJA-DM-DxxP-x		93A-FAA-BJA-DM-DxxP-xxx	42
1/2" NPTF		93A-AAA-CJA-DM-[93A-BAA-CJA-DM-DxxP-x		93A-FAA-CJA-DM-DXXP-XXX	47
3/8" NPTF 1/2" NPTF	External	93A-AAA-BJD-DM-E 93A-AAA-CJD-DM-E		93A-BAA-BJD-DM-DxxP-x 93A-BAA-CJD-DM-DxxP-x		93A-FAA-BJD-DM-DxxP-xxx 93A-FAA-CJD-DM-DxxP-xxx	48P
NIAI DDECCII	DE MODEIS	IDECLINE CANID	A/ICH DEC	CILIATOR SEE "DECL	II ATORS" SECTIONII		701
Port size		Pilot air	WICH REG	GULATOR, SEE "REGU 5/2	5/2	5/3	48
POTI 3126		riioi uir	Sin	gle operator	Double operator	Pressure Center	70
			<u> </u>	B A A AZI	B A A A A A A A A A A A A A A A A A A A	B A A MM	400
Valve less b	ase			AA-000-DM-DxxP-xxx	93A-DAA-000-DM-D xx P- xxx	93A-HAA-000-DM-D xx P- xxx	92
3/8" NP1		Internal	93A-CA	AA-BJA-DM-D xx P- xxx	93A-DAA-BJA-DM-D xx P- xxx	93A-HAA-BJA-DM-D xx P- xxx	72
1/2" NP1				AA-CJA-DM-DxxP-xxx	93A-DAA-CJA-DM-DxxP-xxx	93A-HAA-CJA-DM-DxxP-xxx	
3/8" NP1		External		AA-BJD-DM-D xx P- xxx AA-CJD-DM-D xx P- xxx	93A-DAA-BJD-DM-DxxP-xxx 93A-DAA-CJD-DM-DxxP-xxx	93A-HAA-BJD-DM-DxxP-xxx 93A-HAA-CJD-DM-DxxP-xxx	93
1/ 4 MP	··				Above model numbers are sho	own with side ports without light	ISO 01
SOLENOID OF	PERATOR >		D/	M-D <u>xx</u> P- <u>xx</u>	<u>X</u> *	,	130 01
							ISO 02
XX Volt	age		X	Manual operator	XX Elect	rical connection	ISO 1
JA 110/5	50, 120/60 (2.9		1	Non-locking recessed	DM Plug-in		ISO 2
	50, 240/60 (2.9), 24/60 (2.9W		2	Locking recessed		with diode with M.O.V.	ISO 3
Z4/ J(ı	-				-
	OC (1.8W) OC (5.4W)		_		DG Plug-in	with ground	_

* Other options available, see page 309.
End plate required (1/2" ports): M-93001-01-01 Internal pilot.
M-93001-02-01 External pilot.
Other options available for the 93 series valves, see page 170.







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot: 20 to 120 PSI

External Pilot: Vacuum to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: $3/8'' : (3.4 \, C_v) - 1/2'' : (3.8 \, C_v)$

Class A continuous duty, #22 AWG x 18 base leads

Voltage range: -15% to +10% of nominal voltage

Total of Trove of Holling

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1 to 12.7 W

Response times: Energize: 13 ms (with 5.4 W coil) De-energize: 10 ms

Options:
• BSPP thread • Sandwich regulator (see ,regulators' section)

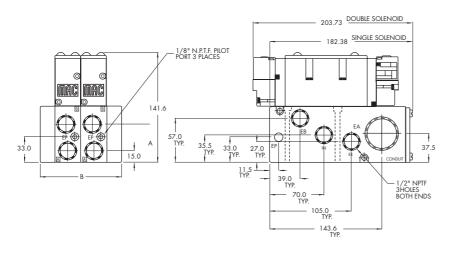
• Sandwich flow controls FC93A-AA (screwdriver slot adjustment), FC93A-AB (locking knob adjustment)

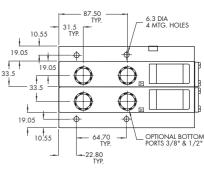
Spare parts : • Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622

• Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249

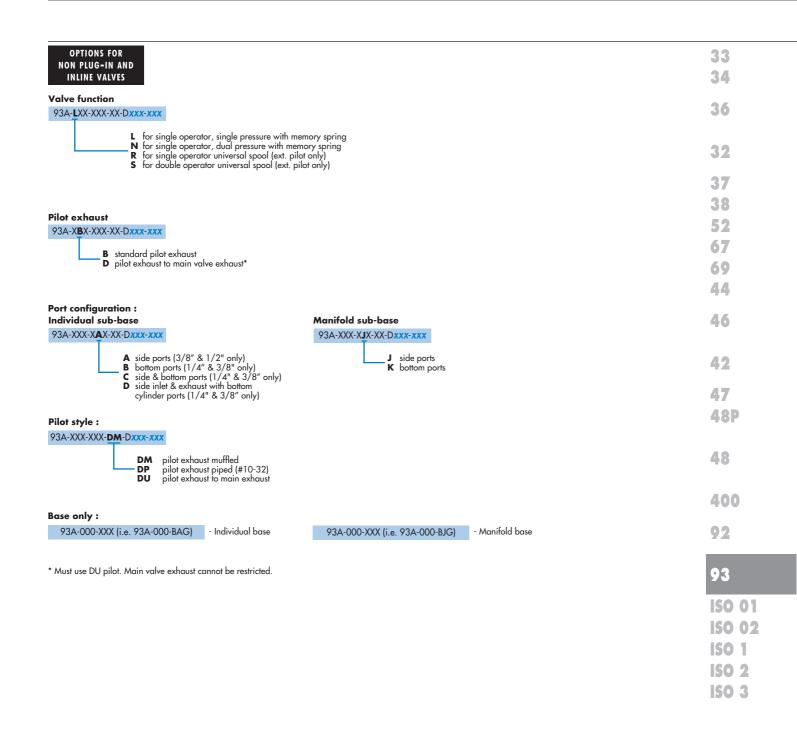
• Inlet/exh. Isolator disc: N-93008 • Valve blanking plate: M-93002

DIMENSIONS





#	1	2	3	4	5	6	7	8	9	10
В	71.6	105.1	138.6	172.1	205.6	239.1	272.6	306.1	339.6	373.1





Base only:

93A-000-XXX (i.e. 93A-000-BAA) - Individual base

(Note: bases are wired for double solenoid valves)

* Must use DU pilot. Main valve exhaust cannot be restricted.

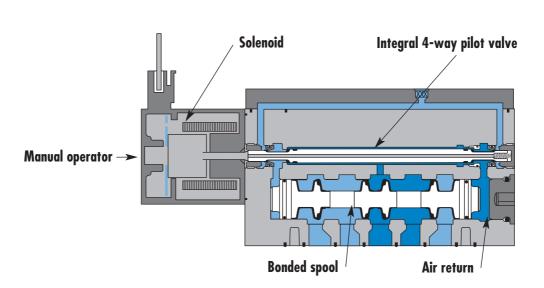
Direct solenoid and solenoid pilot operated valves

OPTIONS FOR PLUG-IN VALVES Valve function 93A-LXX-XXX-XX-DxxP-xxx L for single operator, single pressure with memory spring N for single operator, dual pressure with memory spring R for single operator universal spool (ext. pilot only) S for double operator universal spool (ext. pilot only) Pilot exhaust 93A-XAX-XXX-XX-DxxP-xxx A standard pilot exhaust C pilot exhaust to main valve exhaust* **Body** electrical 92B-XX**A**-XXX-XX-DxxP-xxx Port configuration: Individual sub-base Manifold sub-base 93A-XXX-XAX-XX-DxxP-xxx 93A-XXX-XJX-XX-DxxP-xxx A side ports (3/8" & 1/2" only) B bottom ports (1/4" & 3/8" only) C side & bottom ports (1/4" & 3/8" only) D side inlet & exhaust with bottom cylinder ports (1/4" & 3/8" only) J side ports K bottom ports Base/manifold int./ext. pilot 93A-XXX-XXA-XX-DxxP-xxx A internal pilot no light B internal pilot single light C internal pilot double light D external pilot no light E external pilot single light F external pilot double light Pilot style: 93A-XXX-XXX-**DM**-DxxP-xxx pilot exhaust muffled pilot exhaust piped (#10-32) pilot exhaust to main exhaust

93A-000-XXX (i.e. 93A-000-BJA) - Manifold base



Individual mounting Valve only - No base non "plug-in" Conform to ISO 15407/1 Manifold mounting Series



SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot design.
- 2-position, single or double operator.
- 3-position, double solenoid, open center, closed center and pressure center.
- Internal or external pilot.
- Single or dual pressure.

ISO 02 ISO 1 ISO 2 ISO 3

ISO 01

36

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44

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42

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48P

48

400

92

93



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/4"	1.0 C _V	Valve only - No base non "plug-in" Conform to	

OPERATIONAL BENEFITS

- 1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package. Pilot valve and main valve in the same body.

- 6. Internal or external pilot operation.
- 7. Air only return
- 8. Optional low wattage DC solenoid down to 1.0 Watt.



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48P

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400

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93

ISO 1

ISO 2

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 T T T T T T T T T T T T T T T T T T T	14 4 2 12 17	14 4 2 12 12 12 12 12 12 12 13 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	
Internal	MV-A01A-AAMA-Jxxx-xxx	MV-A01A-ABMA-Jxxx-xxx	MV-A01A-AEMA-Jxxx-xxx	MV-A01A-AFMA-J xxx-xxx
External "12" end	MV-A01A-AAMD-Jxxx-xxx	MV-A01A-ABMD-Jxxx-xxx	MV-A01A-AEMD-J xxx-xxx	MV-A01A-AFMD-J xxx-xxx
External "1.4" and	MV-A01A-AAMF-IXXX-XXX	MV-A01A-ARME-IVVV-VVV	MV-A01A-AEME-IVVV-VVV	MV-A01A-AFME-IXXX-XXX

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 		14 12 15 50 10 10 10 10 10 10 10 10 10 10 10 10 10
Internal from port #3	MV-A01A-ACMB-J xxx-xxx	MV-A01A-ADMB-J xxx-xxx	MV-A01A-AHMB-Jxxx-xxx
Internal from port #5	MV-A01A-ACMC-Jxxx-xxx	MV-A01A-ADMC-Jxxx-xxx	MV-A01A-AHMC-Jxxx-xxx
External from "12" end	MV-A01A-ACMD-Jxxx-xxx	MV-A01A-ADMD-Jxxx-xxx	MV-A01A-AHMD-Jxxx-xxx
External from "14" end	MV-A01A-ACME-Jxxx-xxx	MV-A01A-ADME-J xxx-xxx	MV-A01A-AHME-Jxxx-xxx

SOLENOID OPERATOR >

				-		_		
				'	٦ -			
XX	Voltage	X	Lead wire length		X	Manual operator	XX	Electrical connection
DA	24 VDC (5.4W)	0	No lead wire/ connector		1	Non-locking	BA	Flying leads
DB	12 VDC (5.4W)	Α	18"		2	Locking	JA	Square connector
DC	24 VDC (2.4W)	В	24"				JC	Square connector with light
DD	12 VDC (2.4W)	С	36"				JB	Rectangular connector
DE	24 VDC (1.8W)			_			JD	Rectangular connector with light
DU	24 VDC (1.0W)	- '					KA	Mini square connector
		_					KD	Mini square connector with light

J XXX-XXX

Other options available, see page 317.

ote: - ISO series, valve and base are ordered separately, see page 227 for base codes.

- If sandwich regulator is required, valve must be ordered as external pilot. For internal pilot regulator use valve with external pilot 12 end, - for external pilot regulator, use valve with external pilot 12 or 14 end.

Pilot exhaust:

MV-A01A-XX **X** X-J**xxx-xxx**

M Pilot exhaust muffled







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot - 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure : 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 2 pos.: Cv 1.0 – 3 pos.: Cv 0.8

Class A wires continuous duty, #22 AWG x 18

Voltage range: -15% to +10% of nominal voltage

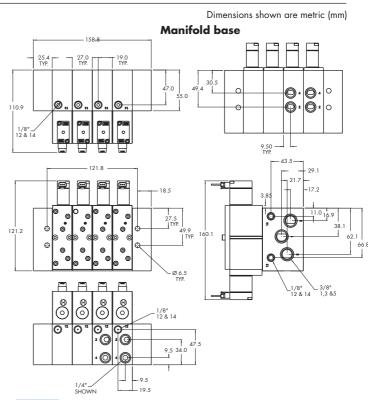
Power: 1,0 to 5,4 W

Options: • Sandwich flow controls: FCA01A-AA (screwdriver slot adjustment).

• Sandwich pressure regulator, see ,Regulators' section

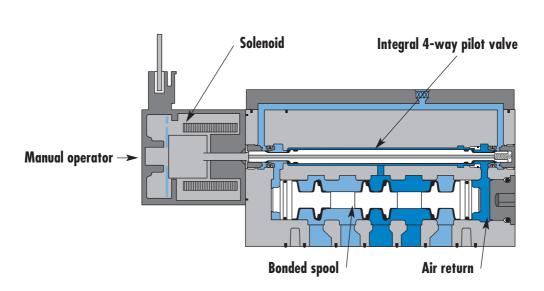
DIMENSIONS

Individual base





Individual mounting Valve only - No base non "plug-in" Conform to ISO 15407/1 Manifold mounting Series



SERIES FEATURES

- \bullet High force MACSOLENOID®.
- Integral 4-way pilot design.
- 2-position, single or double operator.
- 3-position, double solenoid, open center, closed center and pressure center.
- Internal or external pilot.
- Single or dual pressure.

ISO 1 ISO 2 ISO 3

ISO 01

ISO 02

36

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48P

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93



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/8"	0.43 C _v	Valve only – No base non "plug-in" Conform to	

OPERATIONAL BENEFITS

- 1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package. Pilot valve and main valve in the same body.

- 6. Internal or external pilot operation.
- 7. Air only return
- 8. Optional low wattage DC solenoid down to 1.0 Watt.



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48P

48

400

92

93

ISO 01

ISO 1

ISO 2

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	14 4 2 12 	14 4 2 12 30 12 5 \$\display{1}{\dinta\dioplay{1}{\display{1}{\dioplay{1}{\dioplay{1}{\dioplay{1}{\dioplay{1}{\diop	14 4 2 12 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Internal	MV-A02A-AAMA-J xxx-xxx	MV-A02A-ABMA-J xxx-xxx	MV-A02A-AEMA-J xxx-xxx	MV-A02A-AFMA-J xxx-xxx
External "12" end	MV-A02A-AAMD-J xxx-xxx	MV-A02A-ABMD-J xxx-xxx	MV-A02A-AEMD-J xxx-xxx	MV-A02A-AFMD-Jxxx-xxx
External "14" end	MV-A02A-AAME-J xxx - xxx	MV-A02A-ABME-J xxx-xxx	MV-A02A-AEME-J xxx-xxx	MV-A02A-AFME-J xxx-xxx

DUAL PRESSURE MODELS

SOLENOID OPERATOR ➤

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 14 1 12 12 12 12 12 12 12 12 12 12 12 12 1	14 4 2 12 5 6 0 1 6 3	
Internal from port #3	MV-A02A-ACMB-J xxx-xxx	MV-A02A-ADMB-J xxx-xxx	MV-A02A-AHMB-J xxx-xxx
Internal from port #5	MV-A02A-ACMC-J xxx-xxx	MV-A02A-ADMC-Jxxx-xxx	MV-A02A-AHMC-J xxx-xxx
External from "12" end	MV-A02A-ACMD-J xxx-xxx	MV-A02A-ADMD-Jxxx-xxx	MV-A02A-AHMD-J xxx-xxx
External from "14" end	MV-A02A-ACME-J xxx-xxx	MV-A02A-ADME-J xxx-xxx	MV-A02A-AHME-J xxx-xxx

	<u> </u>								
Г									
XX	Voltage	Х	Lead wire length	X	Manual operator	XX	Electrical connection		
DA	24V=/5,4W	0	No lead wire/ connector	1	Non-locking	BA	Flying leads		
DB	12V=/5,4W	A	45 cm	2	Locking	JA	Square connector		
DC	24V=/2,4W	В	60 cm			JC	Square connector with light		
DD	12V=/2,4W	С	90 cm			JB	Rectangular connector		

XXX-XXX*

24V=/1,8W

24V=/1,0W

Other options available, see page 317.

ote: - ISO series, valve and base are ordered separately, see page 229 for base codes.

- If sandwich regulator is required, valve must be ordered as external pilot. For internal pilot regulator use valve with external pilot 12 end, - for external pilot regulator, use valve with external pilot 12 or 14 end.

OPTIONS

Pilot exhaust:

DE

DU

MV-A02A-XX X X-Jxxx-xxx

M Pilot exhaust muffled
P Pilot exhaust piped #10-32

JD

KΔ

KD

Rectangular connector with light

Mini square connector with light

Mini square connector







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal Pilot - 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

External Pilot: Vacuum to 120 PSI

Pilot pressure : 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 2 pos.: Cv 0.43 – 3 pos.: Cv 0.28

Coil: Class A wires continuous duty, #22 AWG x 18

Voltage range: -15% to +10% of nominal voltage

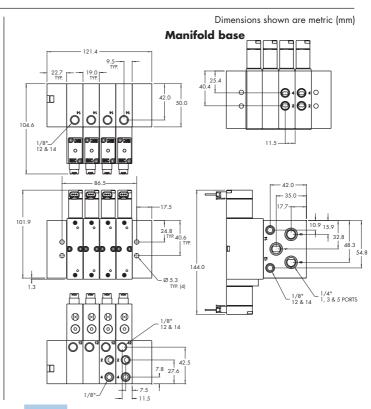
Power: 1,0 to 5,4 W

Options: • Sandwich flow controls: FCA02A-AA (screwdriver slot adjustment).

• Sandwich pressure regulator, see ,Regulators' section

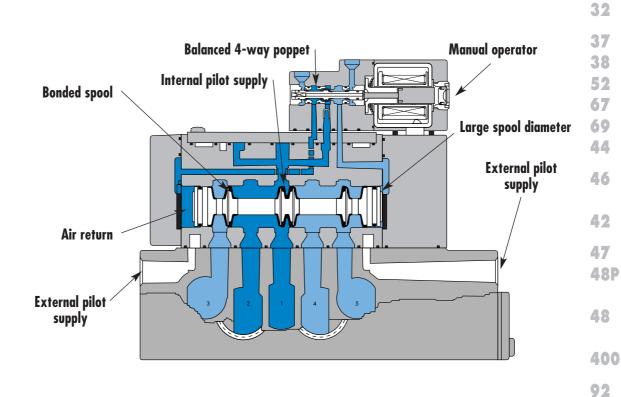
DIMENSIONS

Individual base





Individual mounting Valve onlyNo base non "plug-in" Conform to ISO 5599/1 Valve onlyNo base No b



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

ISO (

ISO 01

93

ISO 1

ISO 2

ISO 3



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/4" - 3/8"	1.8 C _V	Valve only – No base non "plug-in" Conform to ISO 55502/1	

OPERATIONAL BENEFITS

- 1. Unique patented Macsolenoid® for fastest possible response times and virtually burnout proof AC solenoid operation.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package.
- 6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
- 7. Internal or external pilot operation. Manifolds supplied with common external
- 8. Air only return. Optional memory spring is also available.
- 9. Optional low wattage DC solenoid down to 1.0 watt.



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48P

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400

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93

ISO 01

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 TD T W T W	14 4 2 12 T V V T Q Z	14 4 2 12 3 3 4 3 4 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	14 4 2 12 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Internal	MV-B1A-AAAA-DM-Dxxx-xxx	MV-B1A-ABAA-DM-Dxxx-xxx	MV-B1A-AEAA-DM-Dxxx-xxx	MV-B1A-AFAA-DM-Dxxx-xxx
External "12" end	MV-B1A-AAAB-DM-Dxxx-xxx	MV-B1A-ABAB-DM-Dxxx-xxx	MV-B1A-AEAB-DM-Dxxx-xxx	MV-B1A-AFAB-DM-Dxxx-xxx

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 14 3 12 12 12 12 13 13 13 13 13 13 13 13 13 13 13 13 13	14 4 2 12 5 8 10 6 3	14 12 5 0 7 0 3
Internal pilot From port #3	MV-B1A-ACAD-DM-Dxxx-xxx	MV-B1A-ADAD-DM-Dxxx-xxx	MV-B1A-AGAD-DM-Dxxx-xxx
Internal pilot From port #5	MV-B1A-ACAE-DM-Dxxx-xxx	MV-B1A-ADAE-DM-Dxxx-xxx	MV-B1A-AGAE-DM-Dxxx-xxx
External pilot From "12" end	MV-B1A-ACAB-DM-Dxxx-xxx	MV-B1A-ADAB-DM-Dxxx-xxx	MV-B1A-AGAB-DM-Dxxx-xxx

SOLFNOID OPERATOR ➤

SOLENG	OID OPERATOR >		DM-D XX	<u> </u>	Κ,		
				J ५ ፟			
XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
JA	110/50, 120/60	Α	18" (Flying leads)	1	Non-locking recessed	KA	Square connector
JB	220/50, 240/60	В	24" (Flying leads)	2	Locking recessed	KD	Square connector with light
JC	24/50, 24/60	J	Connector			JB	Rectangular connector
FB	24 VDC (1.8W)			_		JD	Rectangular connector with light
DA	24 VDC (5.4W)					BA	Flying leads
DF	24 VDC (12.7W)	_					

* Other options available, see page 309. Note: ISO series, valve and base are ordered separately, see page 231 for base code.

OPTIONS

Valve function:

MV-B1A-A**X**XX-XX-D**xxx-xxx**

J for single operator universal spool (ext. pilot only)
K for double operator universal spool (ext. pilot only)

Pilot style:

MV-B1A-AXXX-**DM**-Dxxx-xxx

DM Pilot exhaust muffled
Pilot exhaust piped (s Pilot exhaust piped (#10-32) Spool return:

MV-B1A-AXAX-XX-Dxxx-xxx

A Standard return
B Memory spring return







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI

External pilot : vacuum to 120 PSI

Pilot pressure: Single/double operator: 20 to 120 PSI, 3 positions: 30 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range:

 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow:

3/8": (1.8 C_v) - 1/4": (1.6 C_v)

Coil: Class A continuous duty, #22 AWG x 18 leads

-15% to +10% of nominal voltage Voltage range:

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1 to 12.7 W

Energize :11.3 ms Response times:

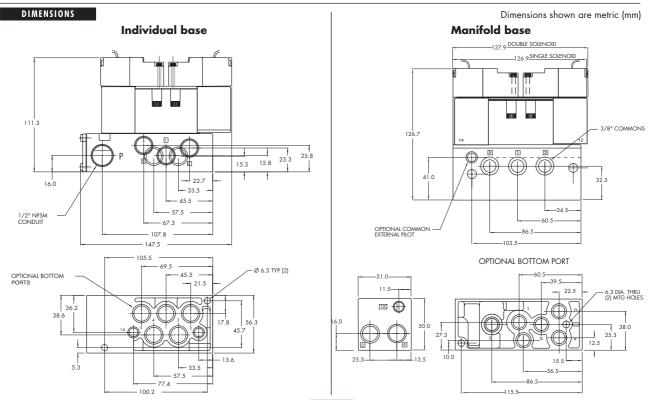
(with 5,4 W coil) De-energize: 7.8 ms

Options: • Sandwich flow controls: FCP1A-BA (screwdriver slot adjustment)

FCP1A-BB (locking knob adjustment)

• Sandwich regulator, see ,Regulators' section

Spare parts: • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16661





Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/4" - 3/8"	1.8 C _V	Valve only - No base "plug-in" Conform to ISO 5599/2	
OPERATIONAL BENEFITS				33

- 1. Unique patented Macsolenoid® for fastest possible response times and virtually burnout proof AC solenoid operation.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package.
- 6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
- 7. Internal or external pilot operation. Manifolds supplied with common external
- 8. Air only return. Optional memory spring is also available.
- 9. Optional low wattage DC solenoid down to 1.0 watt.



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48P

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ISO 01

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 TD T W T W	14 4 2 12 T V T T T T T T T T T T T T T T T T T T	14 4 2 12 30 12 12 12 12 12 12 12 12 12 12 12 12 12	14 4 2 12 12 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Internal	MV-P1A-AAAA-DM-DxxP-xxx	MV-P1A-ABAA-DM-DxxP-xxx	MV-P1A-AEAA-DM-DxxP-xxx	MV-P1A-AFAA-DM-DxxP-xxx
External "12" end	MV-P1A-AAAB-DM-DxxP-xxx	MV-P1A-ABAB-DM-DxxP-xxx	MV-P1A-AEAB-DM-DxxP-xxx	MV-P1A-AFAB-DM-DxxP-xxx

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12	14 4 2 12 	14 12 12 15 10 10 10 10 10 10 10 10 10 10 10 10 10
Internal pilot From port #3	MV-P1A-ACAD-DM-DxxP-xxx	MV-P1A-ADAD-DM-DxxP-xxx	MV-P1A-AGAD-DM-DxxP-xxx
Internal pilot From port #5	MV-P1A-ACAE-DM-DxxP-xxx	MV-P1A-ADAE-DM-DxxP-xxx	MV-P1A-AGAE-DM-DxxP-xxx
External pilot From "12" end	MV-P1A-ACAB-DM-DxxP-xxx	MV-P1A-ADAB-DM-DxxP-xxx	MV-P1A-AGAB-DM-DxxP-xxx

SOLENOID OPERATOR ➤

DM-D XX P-XXX XX Voltage **Manual operator Electrical connection** 110/50, 120/60 (2.9W) DM JA Non-locking recessed Plug-in 220/50, 240/60 (2.9W) Locking recessed DN Plug-in with diode 24/50, 24/60 (2.9W) DP Plug-in with M.O.V 24 VDC (1.8W) 24 VDC (5.4W) DG Plug-in with ground DA 24 VDC (12.7W)

Other options available, see page 309.
ote: - ISO series, valve and base are ordered separately, see page 233 for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function:

MV-P1A-A**X**XX-XX-D**xx**P-**xxx**

J for single operator universal spool (ext. pilot only)
 K for double operator universal spool (ext. pilot only)

Pilot style :

MV-P1A-AXXX-**DM**-DxxP-xxx

DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

Spool return:

MV-P1A-AXAX-XX-DxxP-xxx

A Standard return B Memory spring return
D Standard return with light

E Memory spring return with light







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI

External pilot : vacuum to 120 PSI

Pilot pressure : Single/double operator : 20 to 120 PSI, 3 positions : 30 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 3/8": $(1.8 C_v) - 1/4$ ": $(1.6 C_v)$

Coil: Class A continuous duty, #22 AWG x 12 base leads

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 1 to 12.7 W

Response times: Energize: 10 ms

(with 5,4 W coil) De-energize : 9 ms

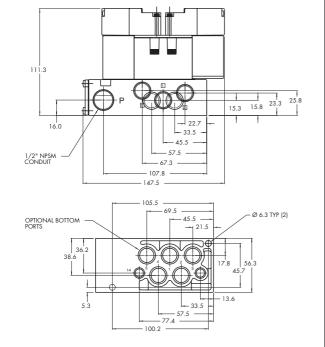
Options : • Sandwich flow controls: FCP1A-AA (screwdriver slot adjustment)

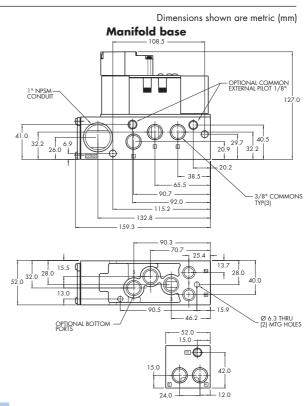
FCP1A-AB (locking knob adjustment)

• Sandwich regulator, see ,Regulators' section

Spare parts : • Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16661

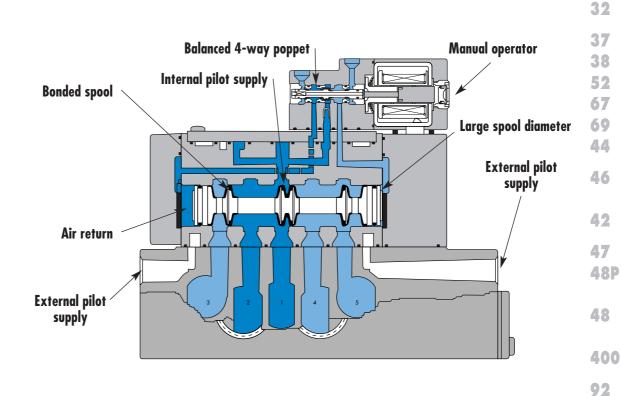
DIMENSIONS Individual base







Individual mounting Valve onlyNo base non "plug-in" Conform to ISO 5599/1 Valve onlyNo base non "plug-in" Conform to ISO 5599/2 Valve onlyNo base non "plug-in" Conform to ISO 5599/1 Valve onlyNo base non "plug-in" Conform to ISO 5599/1 Valve onlyNo base "plug-in" Conform to ISO 5599/1 Valve onlyNo base "plug-in" Conform to ISO 5599/1



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

93

ISO 01

ISO 02

ISO 1

ISO 2



Series ISO 2 Function	Port size		Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	3/8" -	1/2″	3.0 C _v	Valve only - No base non "plug-in" Conform to ISO 5599/1	
OPERATIONAL BENEFITS					33
 Unique patented Macs possible response time out proof AC solenoid 	es and virtually burn-	0	esign of valves, bases and s for modular assembly and ease of		34
 Balanced poppet 4-wo maximum shifting force repeatability and cons 	ny pilot valve provides es, precise	7. Internal c	or external pilot operation. s supplied with common external	4	36
 MAC spool and bore away contamination, e 	combination wipes eliminates sticking and	8. Air only i also avai		29	32
allows for use on non-l 4. Large spool area for m		9. Optional 1.0 watt.	low wattage DC solenoid down to		37
even at minimum oper 5. Very high flow in a co	• 1				38
5. Tory mgm now in a co	inpaci package.				52
HOW TO ORDER					67
SINGLE PRESSURE M	ODELS				69

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 14 7 12 5 00 1 0 3	14 4 2 12 T V V T Q Z	14 4 2 12 3 3 4 3 4 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	14 4 2 12 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Internal	MV-B2A-AAAA-DM-Dxxx-xxx	MV-B2A-ABAA-DM-Dxxx-xxx	MV-B2A-AEAA-DM-Dxxx-xxx	MV-B2A-AFAA-DM-Dxxx-xxx
External "12" end	MV-B2A-AAAB-DM-Dxxx-xxx	MV-B2A-ABAB-DM-Dxxx-xxx	MV-B2A-AEAB-DM-Dxxx-xxx	MV-B2A-AFAB-DM-Dxxx-xxx

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 15 0 1 5 3	14 4 2 12 14 7 3 3 12 12 12 15 5 5 1 5 3 1	14 12 12 50 1 0 3
Internal pilot From port #3	MV-B2A-ACAD-DM-Dxxx-xxx	MV-B2A-ADAD-DM-Dxxx-xxx	MV-B2A-AGAD-DM-Dxxx-xxx
Internal pilot From port #5	MV-B2A-ACAE-DM-Dxxx-xxx	MV-B2A-ADAE-DM-Dxxx-xxx	MV-B2A-AGAE-DM-D xxx-xxx
External pilot From "12" end	MV-B2A-ACAB-DM-Dxxx-xxx	MV-B2A-ADAB-DM-D <i>xxx-xxx</i>	MV-B2A-AGAB-DM-Dxxx-xxx

SOLEN	OID OPERATOR ➤		DM-D XX	X - <u>X</u> X	X .		
XX	Voltage	X	Lead wire length	X	Manual operator	ХХ	Electrical connection
JA	110/50, 120/60	A	18" (Flying leads)	1	Non-locking recessed	KA	Square connector
JB	220/50, 240/60	В	24" (Flying leads)	2	Locking recessed	KD	Square connector with light
JC	24/50, 24/60	J	Connector			JB	Rectangular connector
FB	24 VDC (1.8W)			_		JD	Rectangular connector with light
DA	24 VDC (5.4W)					BA	Flying leads
DF	24 VDC (12.7W)						_

* Other options available, see page 309. Note: ISO series, valve and base are ordered separately, see page 235 for base code.

OPTIONS

Valve function:

MV-B2A-AXXX-XX-Dxxx-xxx

J for single operator universal spool (ext. pilot only)
K for double operator universal spool (ext. pilot only)

Pilot style:

MV-B2A-AXXX-**DM**-Dxxx-xxx

DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

Spool return:

A Standard return
B Memory spring return

MV-B2A-AX**A**X-XX-D**xxx-xxx**

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47 **48P**

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ISO 01 ISO 02 **ISO** 1







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI

External pilot : vacuum to 120 PSI

Pilot pressure: Single/double operator: 20 to 120 PSI, 3 positions: 30 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

7/8": (2.8 C_v) - 1/2": (3.0 C_v)

Class A continuous duty, #22 AWG x 18 leads

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 12.7 to 1.0 W24 VDC 5.4w

120/60 Energize : 6-15 ms De-energize : 10-17 ms

De-energize: 9.6 ms

• Sandwich flow controls: FCP2A-BA (screwdriver slot adjustment) FCP2A-BB (locking knob adjustment)

Energize : 10 ms

• Sandwich regulator, see ,Regulators' section

Spare parts : • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16576

• Valve mounting screws (x4): 35413

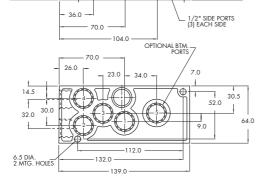
DIMENSIONS

Response times:

Options:

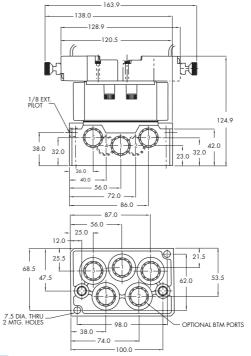
139.0 SINGLE & DOUBLE SOLENOID 1/8" EXT. PHOT 42.0 39.0 39.0

Individual base



Dimensions shown are metric (mm)

Manifold base





Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	3/8" - 1/2"	3.0 C _v	Valve only - No base "plug-in" Conform to ISO 5509/2	

OPERATIONAL BENEFITS

- 1. Unique patented Macsolenoid® for fastest possible response times and virtually burnout proof AC solenoid operation.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package.
- 6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance
- 7. Internal or external pilot operation. Manifolds supplied with common external
- 8. Air only return. Optional memory spring is also available.
- 9. Optional low wattage DC solenoid down to 1.0 watt.



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ISO 01

ISO 1

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 14 7 12 5 00 1 0 3	14 4 2 12 T V V T Q Z	14 4 2 12 34 12 12 12 12 12 12 12 12 12 12 12 12 12	14 4 2 12 12 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Internal	MV-P2A-AAAA-DM-DxxP-xxx	MV-P2A-ABAA-DM-DxxP-xxx	MV-P2A-AEAA-DM-DxxP-xxx	MV-P2A-AFAA-DM-DxxP-xxx
External "12" end	MV-P2A-AAAB-DM-DxxP-xxx	MV-P2A-ABAB-DM-DxxP-xxx	MV-P2A-AEAB-DM-DxxP-xxx	MV-P2A-AFAB-DM-DxxP-xxx

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 14 7 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	14 4 2 12 	14 12 12 5 ° † ° 3
Internal pilot From port #3	MV-P2A-ACAD-DM-DxxP-xxx	MV-P2A-ADAD-DM-DxxP-xxx	MV-P2A-AGAD-DM-DxxP-xxx
Internal pilot From port #5	MV-P2A-ACAE-DM-DxxP-xxx	MV-P2A-ADAE-DM-DxxP-xxx	MV-P2A-AGAE-DM-DxxP-xxx
External pilot From "12" end	MV-P2A-ACAB-DM-DxxP-xxx	MV-P2A-ADAB-DM-DxxP-xxx	MV-P2A-AGAB-DM-DxxP-xxx

SOLENOID OPERATOR >

DM-D XX P-XXX XX Voltage **Manual operator Electrical connection** 110/50, 120/60 DM JA Non-locking recessed Plug-in 220/50, 240/60 Locking recessed DN Plug-in with diode 24/50, 24/60 DP Plug-in with M.O.V 24 VDC (1.8W) DG Plug-in with ground DA 24 VDC (5.4W) 24 VDC (12.7W)

Other options available, see page 309.
ote: - ISO series, valve and base are ordered separately, see page 237 for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function:

MV-P2A-A**X**XX-XX-D**xx**P-**xxx**

J for single operator universal spool (ext. pilot only)
 K for double operator universal spool (ext. pilot only)

Pilot style :

MV-P2A-AXXX-**DM**-DxxP-xxx

DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

Spool return:

MV-P2A-AXAX-XX-DxxP-xxx

A Standard return B Memory spring return
D Standard return with light

E Memory spring return with light







Fluid:

Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI

External pilot: vacuum to 120 PSI

Pilot pressure: Single/double operator: 20 to 120 PSI, 3 positions: 30 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

7/8": (2.8 C_v) - 1/2": (3.0 C_v)

Class A continuous duty, #18 AWG x 12 base leads

Class A commodes doly, #10 ATTO X 12 base lee

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Response times:

Options:

Power: ~ Inrush 14.8 VA Holding: 10.9 VA

= 12.7 to 1.0 W24 VDC 5.4w

120/60 Energize : 6-15 ms De-energize : 10-17 ms

Energize: 10 ms

Sandwich flow controls: FCP2A-AA (screwdriver slot adjustment)
 FCP2A-AB (locking knob adjustment)

• Sandwich regulator, see ,Regulators' section

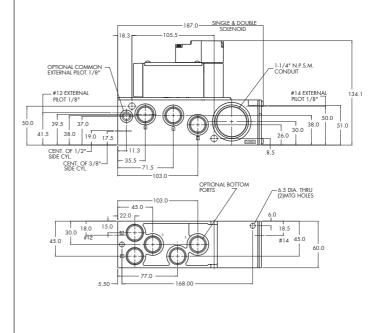
Spare parts : • Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16576

• Valve mounting screws (x4): 35413

DIMENSIONS Individual base - 156.1 DOUBLE SOLENOID 146.8 SINGLE SOLENOID – 1/2" N.P.S.M CONDUIT #14 EXTERNAL PILOT 1/8" #12 EXTERNAL PILOT 1/8" -125.0 54.50 OPTIONAL BOTTOM PORTS 51.0 3/8" 25.2 22.7 20.6 26.7 40.5 69.4 83.3 1/2" 24.0 21.0 19.0 25.5 40.0 70.0 84.5

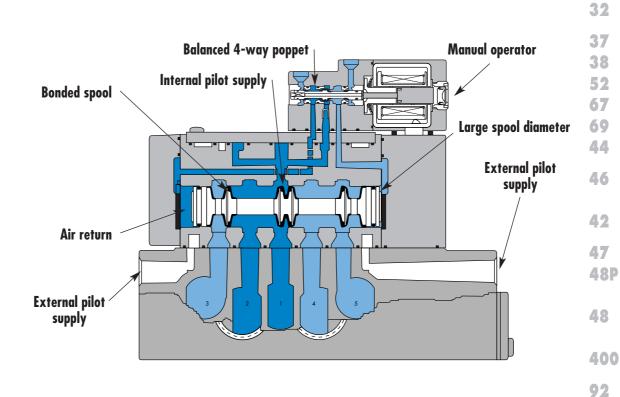
Manifold base

De-energize: 9.6 ms





Individual mounting Valve onlyNo base non "plug-in" Conform to ISO 5599/1 Valve onlyNo base No b



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

93

ISO 01

ISO 1

ISO 2



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/2" - 3/4"	6.1 C _v	Valve only – No base "non plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

- 1. Unique patented Macsolenoid® for fastest possible response times and virtually burnout proof AC solenoid operation.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package.
- 6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
- 7. Internal or external pilot operation. Manifolds supplied with common external
- 8. Air only return. Optional memory spring is also available.
- 9. Optional low wattage DC solenoid down to 1.0 watt.



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ISO 01

ISO 1

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 TD T W T W	14 4 2 12 T V T T T T T T T T T T T T T T T T T T	14 4 2 12 12 12 12 12 12 12 12 12 12 12 12 1	14 4 2 12 12 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Internal	MV-B3A-AAAA-DM-Dxxx-xxx	MV-B3A-ABAA-DM-Dxxx-xxx	MV-B3A-AEAA-DM-Dxxx-xxx	MV-B3A-AFAA-DM-D xxx-xxx
External "12" end	MV-B3A-AAAB-DM-Dxxx-xxx	MV-B3A-ABAB-DM-Dxxx-xxx	MV-B3A-AEAB-DM-Dxxx-xxx	MV-B3A-AFAB-DM-Dxxx-xxx

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 12 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		
Internal pilot From port #3	MV-B3A-ACAD-DM-Dxxx-xxx	MV-B3A-ADAD-DM-D xxx-xxx	MV-B3A-AGAD-DM-Dxxx-xxx
Internal pilot From port #5	MV-B3A-ACAE-DM-Dxxx-xxx	MV-B3A-ADAE-DM-D xxx-xxx	MV-B3A-AGAE-DM-Dxxx-xxx
External pilot From "12" end	MV-B3A-ACAB-DM-Dxxx-xxx	MV-B3A-ADAB-DM-Dxxx-xxx	MV-B3A-AGAB-DM-D <i>xxx-xxx</i>

SOLENOID OPERATOR ➤

•	DIVID AND AND AND AND AND AND AND AND AND AN							
					TLT	_		
	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
	JA	110/50, 120/60	A	18" (Flying leads)	1	Non-locking recessed	KA	Square connector
	JB	220/50, 240/60	В	24" (Flying leads)	2	Locking recessed	KD	Square connector with light
	JC	24/50, 24/60	J	Connector		-	JB	Rectangular connector
	FB	24 VDC (1.8W)					JD	Rectangular connector with light
	DA	24 VDC (5.4W)					BA	Flying leads
	DF	24 VDC (12.7W)						

DM-D XXX-XXX

* Other options available, see page 309. Note: ISO series, valve and base are ordered separately, see page 239 for base code.

OPTIONS

Valve function:

MV-B3A-A**X**XX-XX-D**xxx-xxx**

J for single operator universal spool (ext. pilot only)
K for double operator universal spool (ext. pilot only)

Pilot style:

MV-B3A-AXXX-**DM**-Dxxx-xxx

DM Pilot exhaust muffled
Pilot exhaust piped (s Pilot exhaust piped (#10-32)

Spool return:

MV-B3A-AXAX-XX-Dxxx-xxx

A Standard return
B Memory spring return







Fluid: Compressed air, vacuum, inert gases

Pressure range: Internal pilot: 20 to 120 PSI

External pilot : vacuum to 120 PSI

Pilot pressure: Single/double operator: 20 to 120 PSI, 3 positions: 30 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1/2": $(5.4 C_v) - 3/4$ ": $(6.1 C_v)$

Coil: Class A continuous duty, #22 AWG leads

elass A commodos adiy, #22 ATTO lead

Voltage range: -15% to +10% of nominal voltage

Protection: Consult factory

Power: ~ Inrush 7.6 VA Holding: 4.8 VA

= 12.7 to 1.0 W

Response times : Energize : 16.2 ms

(5.4 W coil) De-energize: 13.6 ms

Options : • Sandwich regulator, see ,Regulators' section

Spare parts : • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16614

DOUBLE SOLENOID V EXTENDED OVERRIDE

Φ ⊕

140.0

OPTIONAL BTM PORTS

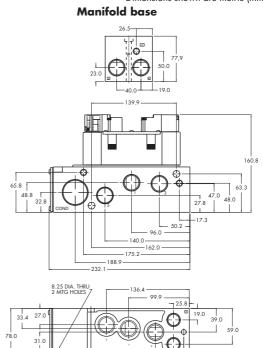
• Valve mounting screws (x4): 35451

DIMENSIONS

64.0

SINGLE SOLENOID W/ EXTENDED OVERRIDE 175.0 160.0 138.5 33.0 23.5 29.0 - 57.5 - 78.0 98.5 127.0 8.3 DIA. THRU 4 MTG. HOLES 28.0 18.5 24.5 66.5

Individual base





Function	Port size	Floш (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/2" - 3/4"	6.1 C _V	Valve only – No base "plug-in" Conform to	

OPERATIONAL BENEFITS

- 1. Unique patented Macsolenoid® for fastest possible response times and virtually burnout proof AC solenoid operation.
- 2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
- 3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
- 4. Large spool area for maximum shifting forces even at minimum operating pressure.
- 5. Very high flow in a compact package.
- 6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
- 7. Internal or external pilot operation. Manifolds supplied with common external
- 8. Air only return. Optional memory spring is also available.
- 9. Optional low wattage DC solenoid down to 1.0 watt.



33 34

36

32

37 38

52

69 44

46

42

47 **48P**

48

400

92

93

ISO 01

ISO 1

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	Pilot air 5/2 Single operator		5/3 Closed center	5/3 Open center
	14 4 2 12 14 7 12 5 00 1 7 3	14 4 2 12 T V T T T T T T T T T T T T T T T T T T	14 4 2 12 34 12 12 12 12 12 12 12 12 12 12 12 12 12	14 4 2 12 14
Internal	MV-P3A-AAAA-DM-DxxP-xxx	MV-P3A-ABAA-DM-DxxP-xxx	MV-P3A-AEAA-DM-DxxP-xxx	MV-P3A-AFAA-DM-DxxP-xxx
External "12" end	MV-P3A-AAAB-DM-DxxP-xxx	MV-P3A-ABAB-DM-DxxP-xxx	MV-P3A-AEAB-DM-DxxP-xxx	MV-P3A-AFAB-DM-DxxP-xxx

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 2 12 14 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		
Internal pilot From port #3	MV-P3A-ACAD-DM-DxxP-xxx	MV-P3A-ADAD-DM-DxxP-xxx	MV-P3A-AGAD-DM-DxxP-xxx
Internal pilot From port #5	MV-P3A-ACAE-DM-DxxP-xxx	MV-P3A-ADAE-DM-DxxP-xxx	MV-P3A-AGAE-DM-DxxP-xxx
External pilot From "12" end	MV-P3A-ACAB-DM-DxxP-xxx	MV-P3A-ADAB-DM-DxxP-xxx	MV-P3A-AGAB-DM-DxxP-xxx

SOLENOID OPERATOR ➤

XX	Voltage	Х	Manual operator	XX	Electrical connection
JA	110/50, 120/60 (2.9W)	1	Non-locking recessed	DM	Plug-in
JB	220/50, 240/60 (2.9W)	2	Locking recessed	DN	Plug-in with diode
JC	24/50, 24/60 (2.9W)			DP	Plug-in with M.O.V.
FB	24 VDC (1.8W)			DG	Plug-in with ground
DA	24 VDC (5.4W)				
DF	24 VDC (12.7W)				

DM-D xx P-xxx*

Other options available, see page 309.

ote: - ISO series, valve and base are ordered separately, see page 241 for base codes.

- Ground wire required for 30 volts or higher.

OPTIONS

Valve function:

MV-P3A-AXXX-XX-DxxP-xxx

J for single operator universal spool (ext. pilot only)
 K for double operator universal spool (ext. pilot only)

Pilot style :

MV-P3A-AXXX-**DM**-DxxP-xxx

DM Pilot exhaust muffled **DP** Pilot exhaust piped (#10-32)

Spool return:

MV-P3A-AX**A**X-XX-D**xx**P-**xxx**

A Standard return

B Memory spring return
D Standard return with light
E Memory spring return with light







Compressed air, vacuum, inert gases Fluid:

Pressure range: Internal pilot: 20 to 120 PSI

External pilot : vacuum to 120 PSI

Single/double operator: 20 to 120 PSI, 3 positions: 30 to 120 PSI Pilot pressure:

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

Flow: 1/2": (5.4 C_v) - 3/4": (6.1 C_v)

Coil: Class A continuous duty, #22 AWG leads

-15% to +10% of nominal voltage

Voltage range:

Protection: Consult factory

Holding: 4.8 VA Power: ~ Inrush 7.6 VA

= 12.7 to 1.0 W Energize: 16.2 ms

Response times:

(5.4 W coil) De-energize: 13.6 ms

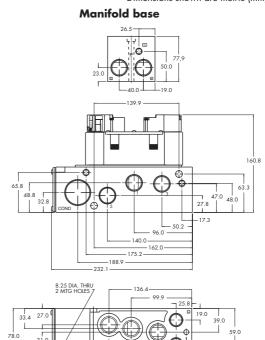
Options: • Sandwich regulator, see ,Regulators' section

• Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16614 Spare parts:

• Valve mounting screws (x4): 35451

DIMENSIONS

Individual base 139.4 28.5 23.5 48.5 106.5 - 142.0 193.0 8.25 DIA THRU 2 MTG HOLES 31.0 - 158.0 51.5 86.5





Section 2

Remote air valves



Function Port size Flow (Max) Cv Individual mounting Manifold mounting	g Series
Inline Sub-base non "plug-in" Valve only - no base valve only - no base	
5/2 - 5/3 1/8" - 1/4" 1.0 P. 203 P. 205	400
3/2 3/4" - 1" 20.0 P. 209	67
3/2 - 2/2 1 1/2" - 2" - 2 1/2" 60.0 P. 213	69
5/2 - 5/3 3/8" - 1/2" 3.1 P. 217	ISO 2
5/2 - 5/3 1/2" - 3/4" 6.2 P. 221	ISO 3



Remote air valves

Individual mounting
Sub-base non "plug-in"
Sub-base non "plug-in"

400

67

69

ISO 2

ISO 3

Function	Port size	Flow (Max)	Individual n	nounting	Series
5/2 - 5/3	1/8" - 1/4"	1.0 C _V	Inline		

OPERATIONAL BENEFITS

- 1. Balanced spool, immune to variations of pressure, also provides high flow.
- 2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
- 3. Wiping effect eliminates sticking.4. Long service life.
- 5. Short stroke with high flow.



400

67

69

ISO 2

ISO 3

HOW TO ORDER

SINGLE PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
	12 2 4 14 14 3 15 15 15 15 15 15 15 15 15 15 15 15 15	12 2 4 14 14 14 3 15	12 2 4 14 D		12 2 4 14 I
1/8" NPTF	411A-A0H-RA Mod 1493	421A-A0H-RA	451A-A0H-RA	461A-A0H-RA	471A-A0H-RA
1/4" NPTF	411A-BOH-RA Mod 1493	421A-BOH-RA	451A-BOH-RA	461A-BOH-RA	471 A-BOH-RA

DUAL PRESSURE VALVES

Port size	5/2 Double operator		
1/8" NPTF	441A-A0H-RA		
1/4" NPTF	441A-B0H-RA		







TECHNICAL DATA

Fluid: Compressed air, vacuum, inert gases

Single operator: vacuum to 100 PSI Double operator: vacuum to 150 PSI Pressure range:

Air signal pressure: Single oper.: 40 to 150 PSI Double oper., 2 pos.: 20 to 150 PSI, 3 pos.: 35 to 150 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

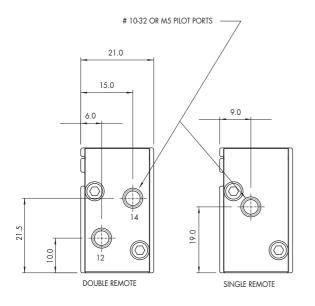
40_µ Filtration:

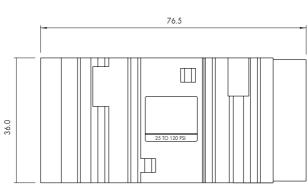
0°F to 120°F (-18°C to 50°C) Temperature range:

Note: Air signal must be ≥ main valve pressure

• BSPP threads Option:

DIMENSIONS





Function	Port size	Flow (Max)	Individual mounting	Series
5/2 - 5/3	1/8" - 1/4"	1.0 C _V	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure, also provides high flow.
- 2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
- 3. Wiping effect eliminates sticking.
- 4. Long service life.
- 5. Short stroke with high flow.



400

67

69

ISO 2

ISO 3

HOW TO ORDER

SINGLE PRESSURE VALVES

· · · · · · · · · · · · · · · · · · ·	,,,				
Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
	12 2 4 14 3 15 3 15	12 2 4 14 14 3 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	12 2 4 14 D T T T T T T T T T T T T T T T T T T T		12 2 4 14 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15
Valve less base	413A-00H-RA	423A-00H-RA	453A-00H-RA	463A-00H-RA	473A-00H-RA
1/8" NPTF	413A-AAH-RA Mod 1493	423A-AAH-RA	453A-AAH-RA	463A-AAH-RA	473A-AAH-RA
1/4" NPTF	413A-BAH-RA Mod 1493	423A-BAH-RA	453A-BAH-RA	463A-BAH-RA	473A-BAH-RA

DUAL PRESSURE VALVES

Port size	5/2 Double operator
1/8" NPTF	443A-AAH-RA
1/4" NPTF	443A-BAH-RA

OPTIONS

423A-A**A**H-RA

-B for base with flow controls







TECHNICAL DATA

DIMENSIONS

Fluid: Compressed air, vacuum, inert gases

Pressure range: Single operator: vacuum to 100 PSI Double operator: vacuum to 150 PSI

Air signal pressure: Single oper.: 40 to 150 PSI Double oper., 2 pos.: 20 to 150 PSI, 3 pos.: 35 to 150 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40µ

Temperature range: 0°F to 120°F (-18°C to 50°C)

1.0 C_v

Note: Air signal must be ≥ main valve pressure

Options : • BSPP threads

Spare parts : • Valve to base pressure seal: 16525 • Valve mounting screw (x2): 35043

• Flow control assembly (x2): N-04001

#10-32 pilot port 55.0 0 19.05 STOCK REF. DOUBLE REMOTE SINGLE REMOTE 1/8" - 27 N.P.T.F. 1/4" - 18 N.P.T.F. TYPICAL 31.0-OPTIONAL FLOW CONTROLS 82.5 Φ 9.5 REF. 28.10 33.1 38.1 **@** 4.30 DIA. (2) 5.0 53.00 MIG. HOLES

Individual mounting Series

Inline

400

67

69

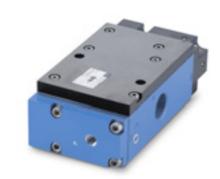
ISO 2

ISO 3

Function	Port size	Flow (Max)	Individual mounting	Series
3/2	3/4" - 1"	20.0 C _V	Inline	

OPERATIONAL BENEFITS

- 1. Balanced spool, immune to variations of pressure.
- Powerful return forces thanks to the combination of mechanical and air springs.
- 3. Bonded spool with minimum friction, shifting in a glass like finished bore.
- 4. Wiping effect eliminates sticking.
- 5. Long service life.



400

67

60

ISO 2

ISO 3

HOW TO ORDER

Port size	Pilot air	Single O	perator	Double C	perator
		NO Valve	NC Valve	NO Valve	NC Valve
		10 2 12 MD T 3 01	10 2 12 MMD 7 1 12	10 2 12 I2 V3 01	
3/4" NPTF	Internal	67A-C3-ARA-RA	67A-A3-ARA-RA	67A-D4-ARA-RA	67A-B4-ARA-RA
1" NPTF	-	67A-C3-BRA-RA	67A-A3-BRA-RA	67A-D4-BRA-RA	67A-B4-BRA-RA
3/4" NPTF	External	67A-C3-ARB-RE	67A-A3-ARB-RE	-	-
1" NPTF	-	67A-C3-BRB-RE	67A-A3-BRB-RE	-	-

Note : Designation 'RE' required on remote air models with main valve pressures of $\,$ vacuum to 20 PSI.

'RE' provides an external pilot and should have a pressure range of 20 - 75 PSI. Since the external pilot supplies the air spring, it must not exceed the remote air pilot pressure.







TECHNICAL DATA

Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 150 PSI

Air signal pressure : 20 to 150 PSI (must be ≥ main valve pressure)

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

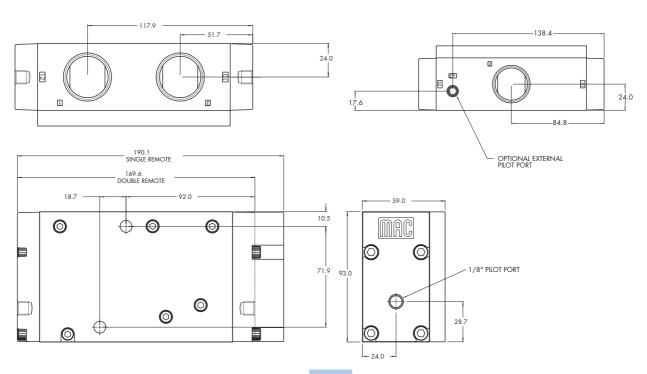
Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to 50°C)

Flow: $3/4": (14.5 \, C_v) - 1": (20.0 \, C_v)$

Options : • BSPP threads

DIMENSIONS





Remote air valves

Individual mounting Series

Inline

400

67

69

ISO 2

ISO 3



Remote air valves

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	1 1/2" - 2" - 2 1/2"	60.0 C _V	Inline	

OPERATIONAL BENEFITS

- 1. Balanced spool, immune to variations of pressure
- 2. Bonded spool with minimum friction, shifting in a glass like finished bore
- 3. Wiping effect eliminates sticking and contamination
- 4. Long service life



400

67

ISO 2

ISO 3

HOW TO ORDER

SINGLE OPERATOR

Port size	Air Spring	Single Operator NO valve	Single Operator NC valve
			10 2 12 D 7 T 3 61
1 1/2"		69A-C3-DRA-RA	69A-A3-DRA-RA
2"	Internal	69A-C3-ERA-RA	69A-A3-ERA-RA
2 1/2"	_	69A-C3-FRA-RA	69A-A3-FRA-RA
1 1/2"		69A-C3-DRB-RE	69A-A3-DRB-RE
2"	External	69A-C3-ERB-RE	69A-A3-ERB-RE
2 1/2"	_	69A-C3-FRB-RE	69A-A3-FRB-RE

DOUBLE OPERATOR

Port size	Double Operator NO valve	Double Operator NC valve
	$ \frac{10}{10} \underbrace{\begin{array}{c} 2 \\ 1 \\ \hline 1 \\ \hline 2 \\ \hline 3 \\ \hline 1 \\ \hline 3 \\ \hline \end{array}}_{12}$	$ \begin{array}{c c} & 2 \\ & 10 \\ & 7 \\ & 7 \\ & 3 \\ & 0 \\ & 0 \end{array} $
1 1/2"	69A-D4-DRB-RA	69A-B4-DRB-RA
2"	69A-D4-ERB-RA	69A-B4-ERB-RA
2 1/2"	69A-D4-FRB-RA	69A-B4-FRB-RA







TECHNICAL DATA

Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 150 PSI

Air signal pressure : 20 to 150 PSI (must be ≥ main valve pressure)

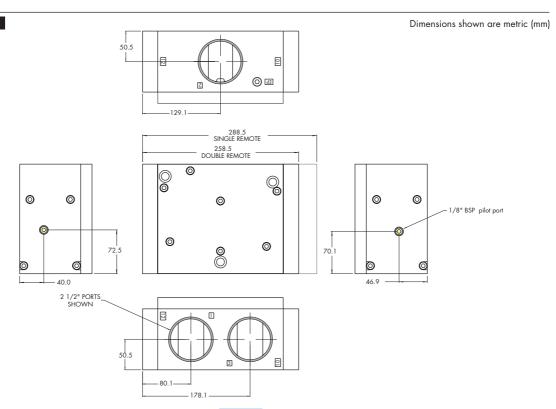
Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

DIMENSIONS

Temperature range: 0°F to 120°F (-18°C to 50°C)

Flow: Cv 60.0





Remote air valves

Individual mounting	Series
Valve only – no base	
	400
Manifold mounting	67
Valve only – no base	69
	ISO 2

ISO 3



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2 - 5/3	3/8" - 1/2"	3.1 C _V	Valve only - no base	

OPERATIONAL BENEFITS

- 1. Balanced spool, immune to variations of pressure.
- 2. Powerful return forces thanks to the combination of mechanical and air springs.
- 3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
- 4. Wiping effect eliminates sticking.
- 5. Long service life.



400

67

60

ISO 4

ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

SINOLL I KLOSOKL MIC	DLLS			
Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
	14 4 2 12 	14 4 2 12 	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	14 4 2 12 12 D T V V T V T 3
Internal	MV-R2A-BACF	AAV DOA DDAIV	ANY DOA DEAK	MANA DEAK
External	MV-R2A-BACG	- MV-R2A-BBAK	MV-R2A-BEAK	MV-R2A-BFAK

DUAL PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Open center	5/3 Pressure center
	14 4 2 12 	14 4 2 12 	14 4 2 12 	14 4 2 12
Internal port #3	MV-R2A-BCCH			
Internal port #5	MV-R2A-BCCJ	MV-R2A-BDAK	MV-R2A-BHAK	MV-R2A-BGAK
External	MV-R2A-BCCG			

Note: ISO series, valve and base are ordered separately, see page 235 for base code.







TECHNICAL DATA

Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 150 PSI

Air signal pressure: Single/double operator: 20 to 150 PSI 3 position: 30 to 150 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

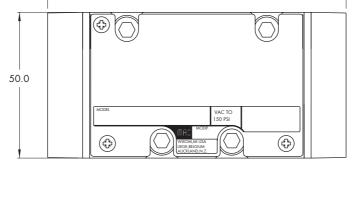
Temperature range : $0^{\circ}F$ to $120^{\circ}F$ (- $18^{\circ}C$ to $50^{\circ}C$)

3/8" : (2.8 Cv) - 1/2" : (3.1 Cv)

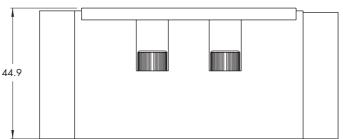
Spare parts : • Valve to base pressure seal: 16576 • Valve mounting screws (x4): 35413

DIMENSIONS

Dimensions shown are metric (mm)



102.4





Remote air valves

Individual mounting	Series Series
Valve only – no base	
	400
Manifold mounting	67
Valve only – no base	69
	ISO 2
	ICO 2

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2 - 5/3	1/2" - 3/4"	6.2 C _V	Valve only - no base	

OPERATIONAL BENEFITS

- 1. Balanced spool, immune to variations of pressure.
- 2. Powerful return forces thanks to the combination of mechanical and air springs.
- 3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
- 4. Wiping effect eliminates sticking.
- 5. Long service life.



400

67

69

ISO 2

ISO S

HOW TO ORDER

SINGLE PRESSURE MODELS

on tole theodoxe mobile						
Air spring		5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	
		14 4 2 12 	14 4 2 12 	14 4 2 12 12	14 4 2 12 12 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Internal		MV-R3A-BACF	MANA DOA NOAK	MANA DEAK	MV DOA DEAK	
External		MV-R3A-BACG	MV-R3A-BBAK	MV-R3A-BEAK	MV-R3A-BFAK	

DUAL PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 	$ \begin{array}{c c} 14 & 4 & 2 & 12 \\ - & \boxed{D} & \boxed{1} $	14 4 2 12
Internal port #3	MV-R3A-BCCH		·
Internal port #5	MV-R3A-BCCJ	MV-R3A-BDAK	MV-R3A-BGAK
External	MV-R3A-BCCG		

Note: ISO series, valve and base are ordered separately, see page 239 for base code.







TECHNICAL DATA

Fluid :

Compressed air, vacuum, inert gases

Pressure range:

Vacuum to 150 PSI

Air signal pressure :

Single/double operator: 20 to 150 PSI 3 position: 30 to 150 PSI

Lubrication:

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

40 µ

Temperature range :

0°F to 120°F (-18°C to 50°C)

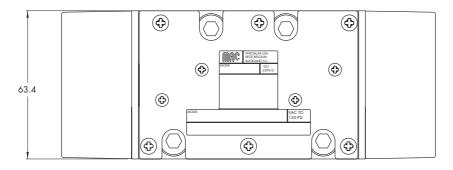
Flow:

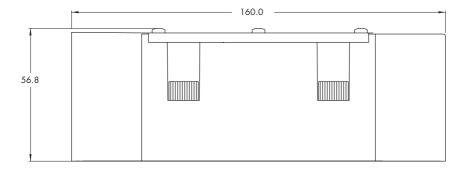
1/2": (5.4 C_v) - 3/4": (6.2 C_v)

Spare parts :

• Valve to base pressure seal: 16614 • Valve mounting screws (x4): 35451

DIMENSIONS







Section 3

Bases according to ISO standards

Bases according to ISO STANDARDS

			Series
Non plug-in individual / manifold base	Non plug-in base / manifold	Plug-in base / manifold	
P. 227			ISO 01
P. 229			ISO 02
	P. 231	P. 233	ISO 1
	P. 235	P. 237	ISO 2
	P. 239	P. 241	ISO 3



Non plug-in individual / manifold base



ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

INDIVIDUAL BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With all side ports
1/4" NPTF	Internal	MB-A01A-121	MB-A01A-122

MANIFOLD BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With side 1, 3 & 5 ports
1/4" NPTF	Internal	MM-A01A-121	MM-A01A-122

- For manifold bases external pilot is common

- A base is ordered as internal pilot and can be changed into external pilot by removing pipe plugs from the external pilot ports (individual base).

- Manifold base: same base for internal and external pilot, different end plate kits.

End plate kit: Internal pilot M-00017-01-01 External pilot M-00017-02-01

Inlet/exhaust isolator: 28413



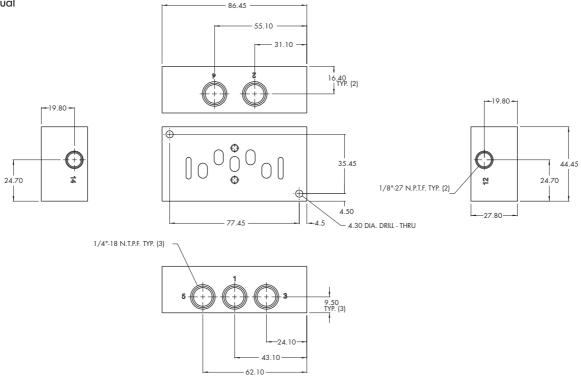




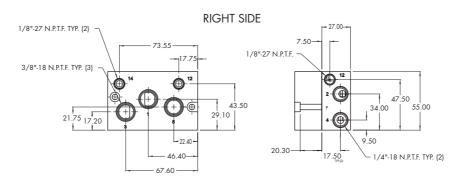
DIMENSIONS

Dimensions shown are metric (mm)





Manifold





Non plug-in individual / manifold base



ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

INDIVIDUAL BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With all side ports
1/8" NPTF	Internal	MB-A02A-111	MB-A02A-112

MANIFOLD BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With side 1, 3 & 5 ports
1/8" NPTF	Internal	MM-A02A-111	MM-A02A-112

- For manifold bases external pilot is common

- A base is ordered as internal pilot and can be changed into external pilot by removing pipe plugs from the external pilot ports (individual base).

- Manifold base: same base for internal and external pilot, different end plate kits.

End plate kit: Internal pilot M-00018-01-01 External pilot M-00018-02-01

Inlet/exhaust isolator: 28499







DIMENSIONS Dimensions shown are metric (mm) 43.00 Individual 42.00 -- 28.00 -- 27.00-1/8"-27 N.P.T.F. TYP. (7) PLACES 15.00 70.35 \mathbb{Z} 26.50 33.50 17.75 17.75 \oplus 3.50 15.00--15.00 - -61.35 · 4.25 DIA. DRILL - THRU L 20.45 -3 8.00 TYP. (3) Manifold LEFT SIDE -55.65 1/8"-27 N.P.T.F. TYP. (2) -33.75 1/8"-27 N.P.T.F. 11.75-1/4"-18 N.P.T.F. TYP. (3) 42.00 50.00 42.00 35.00 17.70 -18.30 -- 9.50 -50.65 19.00 **RIGHT SIDE** -55.65 1/8"-27 N.P.T.F TYP. (2) -12.80 -33.75 22.70 1/8"-27 N.P.T.F. 1/4"-18 N.P.T.F TYP. (3) -11.75 7.50-

17.50 TYP.(2)

35.00

18.30

-50.65

1 42.00 1 TYP.(2)

> 17.70 † TYP.(2)



Non plug-in base / manifold



ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports	Side & bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/4" NPTF	MB-A1C-221	MB-A1C-223	MB-A1C-222	MB-A1C-224
3/8" NPTF	MB-A1C-231	MB-A1C-233	MB-A1C-232	MB-A1C-234

MANIFOLD BASE

Port size	Side ports	Side & bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/4" NPTF	MM-A1C-221	MM-A1C-223	MM-A1C-222	MM-A1C-224
3/8" NPTF	MM-A1C-231	MM-A1C-233	MM-A1C-232	MM-A1C-234

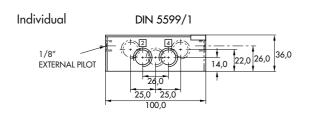
Manifold fastening kit: N-63002-01. Valve blanking plate: MA1003. Inlet/exhaust isolator plug: 32835.

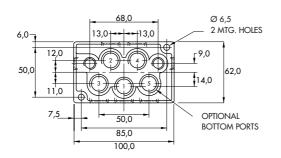


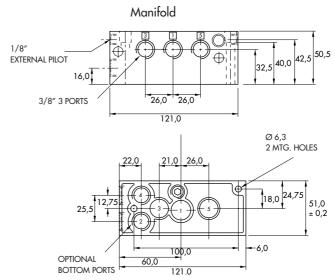




DIMENSIONS









Plug-in base / manifold



ISO 01

ISO 02

SO 1

ISO 2

ISO 3

HOW TO ORDER

INDIVIDUAL BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports
1/4" NPTF	Single solenoid	MB-P1A-221-A	MB-P1A-222-A	MB-P1A-223-A
1/ 4 NP1F	Double solenoid	MB-P1A-221-B	MB-P1A-222-B	MB-P1A-223-B
3/8" NPTF	Single solenoid	MB-P1A-231-A	MB-P1A-232-A	MB-P1A-233-A
3/8" NPIF	Double solenoid	MB-P1A-231-B	MB-P1A-232-B	MB-P1A-233-B

MANIFOLD BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports (see note)
1/4" NPTF	Single solenoid	MM-P1A-221-A	MM-P1A-222-A	MM-P1A-223-A
1/4 NPIF	Double solenoid	MM-P1A-221-B	MM-P1A-222-B	MM-P1A-223-B
2 /0// NRTF	Single solenoid	MM-P1A-231-A	MM-P1A-232-A	MM-P1A-233-A
3/8" NPTF	Double solenoid	MM-P1A-231-B	MM-P1A-232-B	MM-P1A-233-B

Note : Ports 1, 3 & 5 are always 3/8"

OPTIONS

Manifold options:

External pilot

MM-P1A-22x-x

25 for 1/4" port – common external pilot for 3/8" port – common external pilot

Terminal strip

MM-P1A-xxx-A

(N/A with light)

J wired for sgl solenoid wired for double solenoid

WX-P1A-xxx-xJA

JA 110/120 volt
JB 220/240 volt
DA 24 volt

Accessories: M-P1001

M-P1001 Valve blanking plate.
N-P1007-01 Manifold fastening kit.
32835 Inlet/exhaust isolator plug.



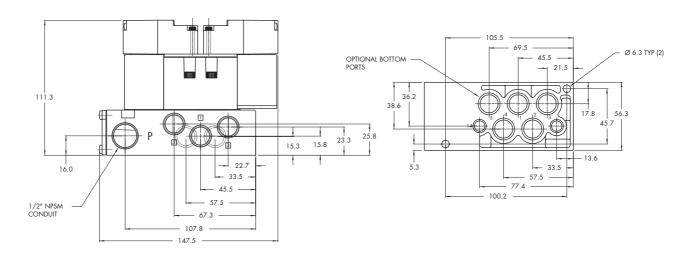


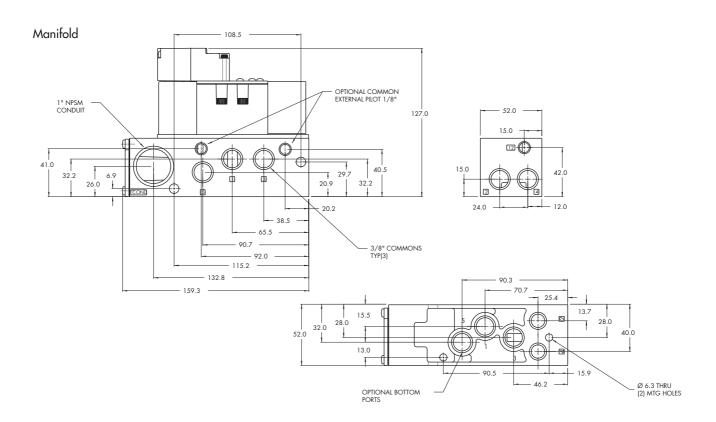


DIMENSIONS

Dimensions shown are metric (mm)

Individual







Non plug-in base / manifold



ISO 01

ISO 02

ISO 1

ISO 3

HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
3/8" NPTF	MB-A2B-221	MB-A2B-223	MB-A2B-222	MB-A2B-224
1/2" NPTF	MB-A2B-231	MB-A2B-233	MB-A2B-232	MB-A2B-234

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
3/8" NPTF	MM-A2B-221	MM-A2B-223	MM-A2B-222	MM-A2B-224
1/2" NPTF	MM-A2B-231	MM-A2B-233	MM-A2B-232	MM-A2B-234

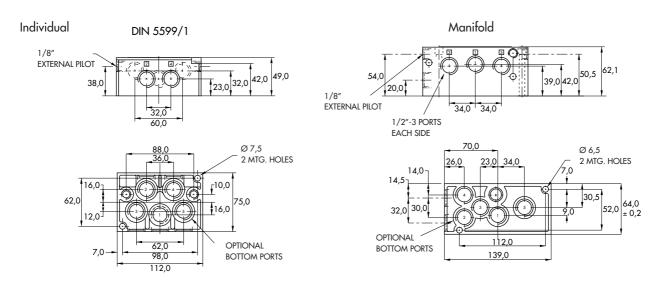
Manifold fastening kit: N-63002-01. Valve blanking plate: MA2003. Inlet/exhaust isolator plug: 32839.







DIMENSIONS





Plug-in base / manifold



ISO 01

ISO 02

ISO 1

ISO 3

HOW TO ORDER

INDIVIDUAL BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports
3/8" NPTF	Single solenoid	MB-P2A-221-A	MB-P2A-222-A	MB-P2A-223-A
3/6 NPIF	Double solenoid	MB-P2A-221-B	MB-P2A-222-B	MB-P2A-223-B
- /A// NIDEE	Single solenoid	MB-P2A-231-A	MB-P2A-232-A	MB-P2A-233-A
1/2" NPTF	Double solenoid	MB-P2A-231-B	MB-P2A-232-B	MB-P2A-233-B

MANIFOLD BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports (see note)
3/8" NPTF	Single solenoid	MM-P2A-221-A	MM-P2A-222-A	MM-P2A-223-A
3/6 NPIF	Double solenoid	MM-P2A-221-B	MM-P2A-222-B	MM-P2A-223-B
	Single solenoid	MM-P2A-231-A	MM-P2A-232-A	MM-P2A-233-A
1/2" NPTF	Double solenoid	MM-P2A-231-B	MM-P2A-232-B	MM-P2A-233-B

Note : Ports 1, 3 & 5 are always 1/2"

OPTIONS

Manifold options : External pilot MM-P2A-**22**x-x for 3/8" port – common external pilot for 1/2" port – common external pilot Terminal strip MM-P2A-xxx-A (N/A with light) wired for sgl solenoid wired for double solenoid Base / Manifold option: light(s) MX-P2A-xxx-xJA JA 110/120 volt JB 220/240 volt DA 24 volt

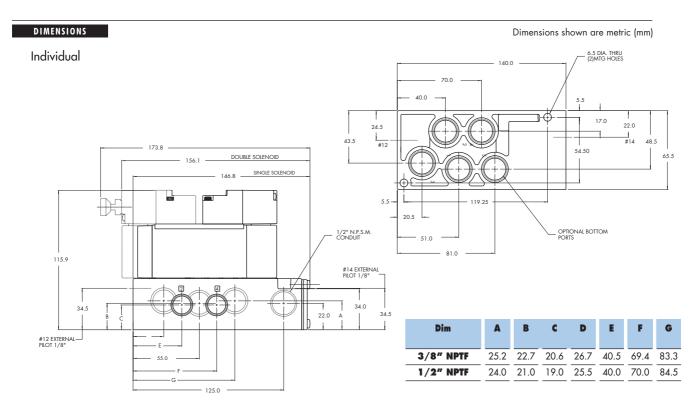
Accessories: M-P2001

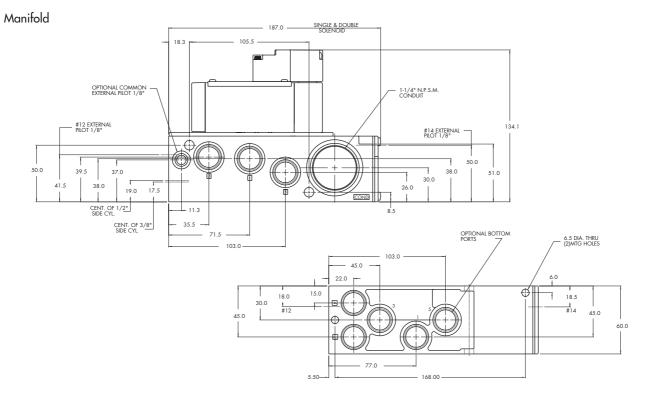
Valve blanking plate. N-P2004-01 Manifold fastening kit. 32839 Inlet/exhaust isolator plug.













Non plug-in base / manifold

ISO 01

ISO 02

ISO 1

ISO 2



HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/2" NPTF	MB-A3B-221	MB-A3B-223	MB-A3B-222	MB-A3B-224
3/4" NPTF	MB-A3B-231	MB-A3B-233	MB-A3B-232	MB-A3B-234

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/2" NPTF	MM-B3A-221-A	MM-B3A-223-A	MM-B3A-222-A	MM-B3A-224-A
3/4" NPTF	MM-B3A-231-A	MM-B3A-233-A	MM-B3A-232-A	MM-B3A-234-A

Manifold fastening kit: N-P3003-01. Valve blanking plate: M-P3001. Inlet/exhaust isolator plug: 32845.





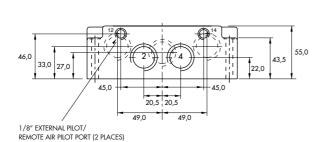


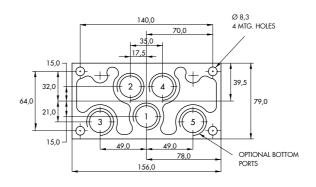
DIMENSIONS

Dimensions shown are metric (mm)

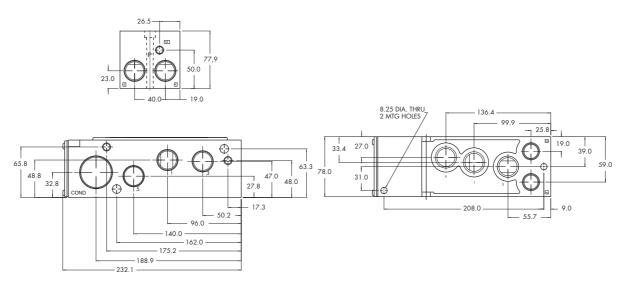
Individual

ISO DIN 5599/1





Manifold





Plug-in manifold



ISO 01

ISO 1

ISO 2

ISO 3

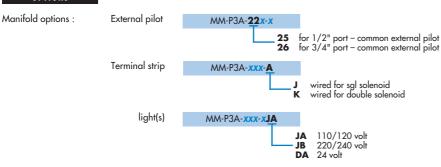
HOW TO ORDER

MANIFOLD BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports (see note)
1/2" NPTF	Single solenoid	MM-P3A-221-A	MM-P3A-222-A	MM-P3A-223-A
1/2 MPIF	Double solenoid	MM-P3A-221-B	MM-P3A-222-B	MM-P3A-223-B
2 /4// NIDTF	Single solenoid	MM-P3A-231-A	MM-P3A-232-A	MM-P3A-233-A
3/4" NPTF	Double solenoid	MM-P3A-231-B	MM-P3A-232-B	MM-P3A-233-B

Note : Ports 1, 3 & 5 are always $3/4^{\prime\prime}$

OPTIONS



Accessories: M-P3001 N-P3003-01 32845

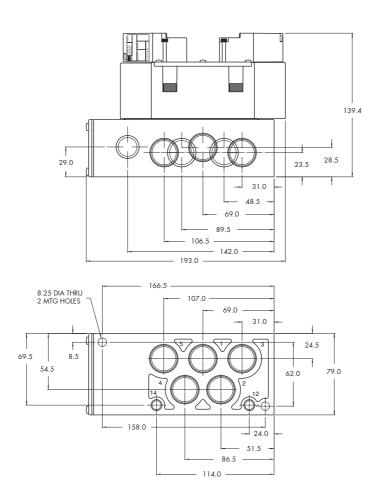
Valve blanking plate. Manifold fastening kit. Inlet/exhaust isolator plug.







DIMENSIONS





Section 4

Pressure regulators



Sandwich pressure regulator with manual adjust knob	P. 247
Sandwich pressure regulator with manual adjust knob	P. 249
Sandwich pressure regulator	P. 251
Sandwich pressure regulator with manual adjust knob	P. 253
Sandwich pressure regulator with manual adjust knob	P. 255
Sandwich pressure regulator with air pilot adjust	P. 257
Sandwich pressure regulator with manual adjust knob	P. 259
Sandwich pressure regulator with manual adjust knob	P. 261
Sandwich pressure regulator with air pilot adjust	P. 263
Sandwich pressure regulator with manual adjust knob	P. 265
Sandwich pressure regulator with manual adjust knob	P. 267
Non plug-in sandwich pressure regulator with manual adjust	P. 269
Plug-in sandwich pressure regulator with air pilot adjust	P. 271
Non plug-in sandwich pressure regulator with manual adjust	P. 273
Non plug-in sandwich pressure regulator with manual adjust knob	P. 275
Non plug-in sandwich pressure regulator with air pilot adjust	P. 277
Plug-in sandwich pressure regulator with manual adjust knob	P. 279
Plug-in sandwich pressure regulator with air pilot adjust	P. 281
Non plug-in sandwich pressure regulator with manual adjust knob	P. 283
Non plug-in sandwich pressure regulator with air pilot adjust	P. 285
Plug-in sandwich pressure regulator with manual adjust knob	P. 287
Plug-in sandwich pressure regulator with air pilot adjust	P. 289
Non plug-in sandwich pressure regulator with manual adjust knob	P. 291
Non plug-in sandwich pressure regulator with air pilot adjust	P. 293
Plug-in sandwich pressure regulator with manual adjust knob	P. 295
Plug-in sandwich pressure regulator with air pilot adjust	P. 297

PR37A

PR42B

PR46A

PR47A

PR48B

PR92C

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B

Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A

PR42B

PR46A

PR47A

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "NON PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure	
No gage port	PR37A-FAAA	P
With gage Port (plugged)	PR37A-FABA	

Note: Regulating pressure range for above models is 0 to 120 PSI

For other ranges, see below.

OPTIONS

Adjustment :

PR37A-Fxxx

B for slotted stem

K for slotted stem with locknut

Pressure range :

PR37A-XXXA

B for 0 to 80 PSI
C for 0 to 30 PSI

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

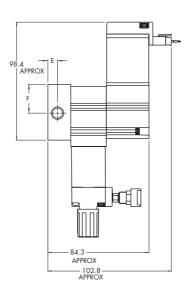
Flow: 0.4 C_v

Spare parts: • Pressure regulator (less sandwich block): PR37A-GOAA (knob), PR37A-COAA (slotted stem), PR37A-IOAA (slotted stem with locknut)

• Gages: 24177-160 (0 to 160 PSI, 23 mm) 24177-100 (0 to 100 PSI, 23 mm)

24177-060 (0 to 60 PSI, 23 mm)

DIMENSIONS



Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A

PR42B

PR46A

PR47A

PR48B

PR92C

HOW TO ORDER

NON PLUG-IN SANDWICH REGULATORS

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot
No gage port	PR42B-BAAA	PR42B-BBAA
With gage Port	PR42B-BABA	PR42B-BBBA

PLUG-IN SANDWICH REGULATORS

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot
No gage port	PR42B-AAAA	PR42B-ABAA
With gage Port	PR42B-AABA	PR42B-ABBA

Notes:

- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 42 series valve.
- When an internal pilot regulator is used with the 42 series valve, the valve should be ordered as external pilot and the base should be ordered as internal pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve and base are used with an internal pilot regulator, the pilot supply is regulated.

Example: Valve 42B-AM D -AA A -GxxP-xxx with PR42B-AAAA

Internal pilot option in base External pilot option in valve

OPTIONS



PRA01A

PR93A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid:

Compressed air, inert gases

Pressure range:

0 to 120 PSI 0 to 120 PSI

Regulating range:

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Lubrication: Filtration:

40 µ

Temperature range:

 0° F to 120° F (- 18° C to + 50° C)

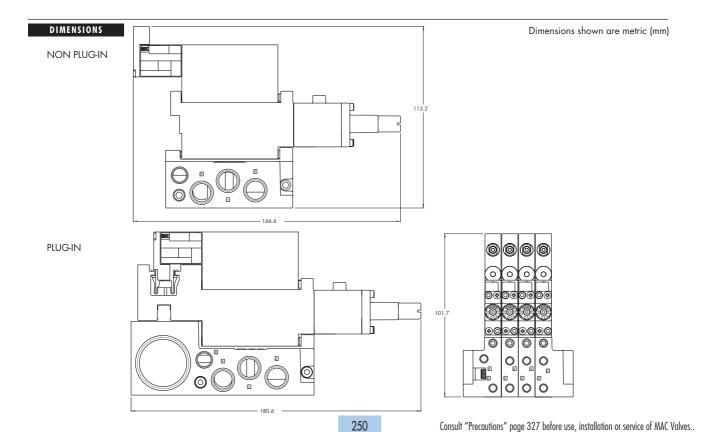
Flow:

 $0.25\,\mathrm{C_v}$

Spare parts :

• Pressure regulator (less sandwich block) : PR42B-C0xx • Gage port plug: N-PE003

• #10 -32 to 1/8" adapter : N-35005 • Gage: 24177-160 (0 to 160 PSI, 23 mm) 24177-060 (0 to 60 PSI, 23 mm)



Sandwich-pressure regulator

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.
- 6. Single pressure regulator.



PR37A

PR42B

PR46A

PR47A

PR48B

PR92C

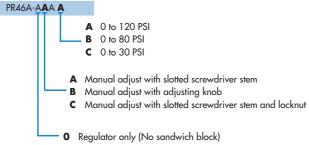
HOW TO ORDER

REGULATORS FOR "PLUG-IN" AND "NON PLUG-IN" VALVES

Gauge	For plug-in valves	For non plug-in valves	
Gauge port (plugged)	PR46A-AAAA	PR46A-BAAA	PR93A

OPTIONS

Pressure range :



Notes : gadges must be ordered separately, not included with regulator. Recommended gage : 24165-150 (15 mm) PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

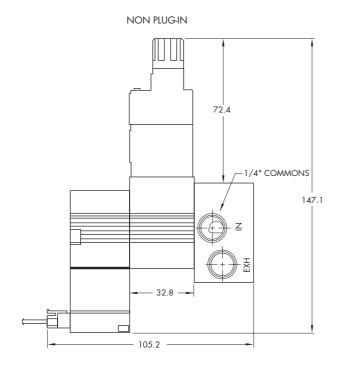
Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

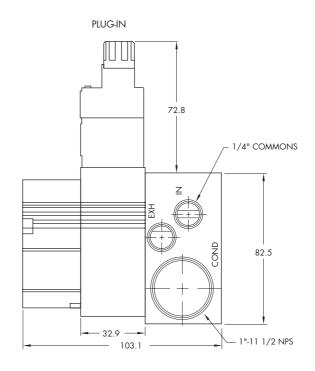
Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: Cv 0,21

DIMENSIONS





Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A

PR47A

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (KNOB ADJUSTMENT)

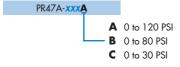
Gage	Single pressure
No gage port	PR47A-EAAA
With gage Port	PR47A-EABA

REGULATORS FOR "NON PLUG-IN" VALVES (KNOB ADJUSTMENT)

Gage	Single pressure
No Gage port	PR47A-FAAA
With Gage Port	PR47A-FABA

OPTIONS

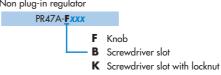








Non plug-in regulator



PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

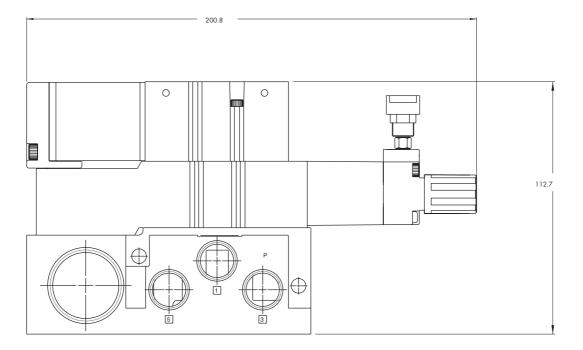
Temperature range: 0°F to 120°F (-18°C to +50°C)

w: 0.4 C_v

Spare parts: Pressure regulator (less sandwich block): PR47A-G0AA (knob), PR47A-C0AA (screwdriver slot), PR47A-L0AA (screwdr

• Gage: 24177-160 (0 to 160 PSI, 23 mm) 24177-100 (0 to 100 PSI, 23 mm) 24177-060 (0 to 60 PSI, 23 mm)

DIMENSIONS



Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A

PR47A

PR48B

PR92C

PRA01A

PRA02A

PRA 1 A

PRP1A

HOW TO ORDER

NON PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot	
Gage port	PR48B-BAAA	PR48B-BBAA	PR93A

PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

Gage	Regulator "12" end Internal pilot Regulator "12" end External pil		
Gage port	PR48B-AAAA	PR48B-ABAA	

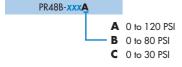
Notes:

- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 48 series valve.
- When an internal pilot regulator is used with the 48 series valve, the valve should be ordered as external pilot and the base should be ordered as internal pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve and base are used with an internal pilot regulator, the pilot supply is regulated.

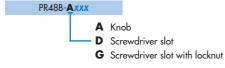




Pressure range :







PRA2D







Non plug-in regulator

PR48B-**B**xxx

B Knob

E Screwdriver slot







Fluid:

Pressure range: 0 to 120 PSI

Regulating range:

0 to 120 PSI

Lubrication :

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration:

40 µ

Temperature range:

 0° F to 120° F (- 18° C to + 50° C)

Compressed air, inert gases

Flow:

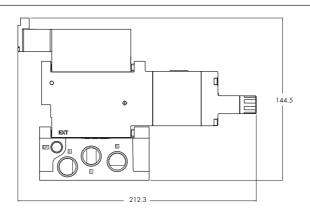
0.8 C_v

Spare parts :

- Pressure regulator (less sandwich block): PR48B-COAA (knob), PR48B-FOAA (screwdriver slot), PR48B-JOAA (screwdriver slot with locknut)
- Gage: 24177-160 (0 to 160 PSI, 23 mm)
 24177-100 (0 to 100 PSI, 23 mm)
 24177-060 (0 to 60 PSI, 23 mm)

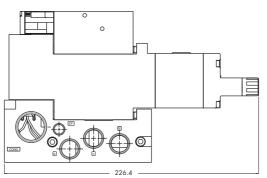
DIMENSIONS

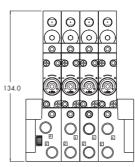
NON PLUG-IN



Dimensions shown are metric (mm)

PLUG-IN





Sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR46A PR47A

PR37A

PR42B

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR92C-EAAA	PR92C-EBAA	PR92C-ECAA	PR92C-EDAA	PR92C-EEAA
Gage with face perpendicular to manual operator	PR92C-EABA	PR92C-EBBA	PR92C-ECBA	PR92C-EDBA	PR92C-EEBA
Gage with face parallel to manual operator	PR92C-EACA	PR92C-EBCA	PR92C-ECCA	PR92C-EDCA	PR92C-EECA

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR92C-GAAA	PR92C-GBAA	PR92C-GCAA	PR92C-GDAA	PR92C-GEAA
Gage with face perpendicular to manual operator	PR92C-GABA	PR92C-GBBA	PR92C-GCBA	PR92C-GDBA	PR92C-GEBA
Gage with face parallel to manual operator	PR92C-GACA	PR92C-GBCA	PR92C-GCCA	PR92C-GDCA	PR92C-GECA

^{*} For use with dual pressure valves.

PLUG-IN OPTIONS

PR92C-EXXX

- F for double solenoid valve

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

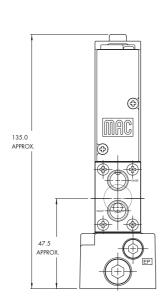
Flow: 0.8 C_v

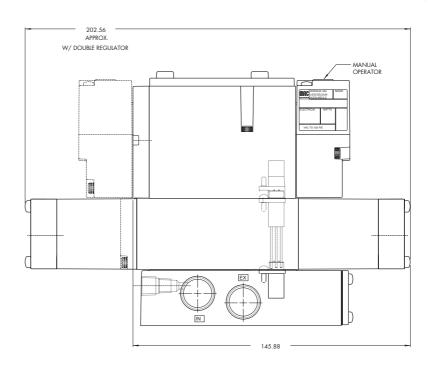
Spare parts : • R-92003 : regulator end plate kit • Gage kit 0 - 160 PSI: N-92006-01

• R-92003-01: regulator by-pass end plate kit

Pressure regulator (less sandwich block) : PR92C-H0AA

DIMENSIONS







Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B PR46A

PR47A

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
No Gage	PR92C-JAAA	PR92C-JBAA	PR92C-JCAA	PR92C-JDAA	PR92C-JEAA
Gage with face perpendicular to manual operator	PR92C-JABA	PR92C-JBBA	PR92C-JCBA	PR92C-JDBA	PR92C-JEBA
Gage with face parallel to manual operator	PR92C-JACA	PR92C-JBCA	PR92C-JCCA	PR92C-JDCA	PR92C-JECA

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
No Gage	PR92C-LAAA	PR92C-LBAA	PR92C-LCAA	PR92C-LDAA	PR92C-LEAA
Gage with face perpendicular to manual operator	PR92C-LABA	PR92C-LBBA	PR92C-LCBA	PR92C-LDBA	PR92C-LEBA
Gage with face parallel to manual operator	PR92C-LACA	PR92C-LBCA	PR92C-LCCA	PR92C-LDCA	PR92C-LECA

^{*} For use with dual pressure valves.

Notes: - Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page.

OPTIONS

Regulator less sandwich block

PR92C-x0xx

M Knob

Slotted stem

Slotted stem with locknut

Other adjustment

PR92C-XXXX

- Slotted stem, single solenoid
- Slotted stem, double solenoid В
- Slotted stem, non plug-in
- Knob, double solenoid
 Slotted stem w/ locknut, single solenoid
 Slotted stem w/ locknut, double solenoid Ν
- Slotted stem w/ locknut, non plug-in

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

0.8 C_v

Spare parts:

• R-92003 : end plate kit • R-92003-01: by-pass end plate kit • Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02

• Gage kit 0 – 60 PSI : N-92006-03

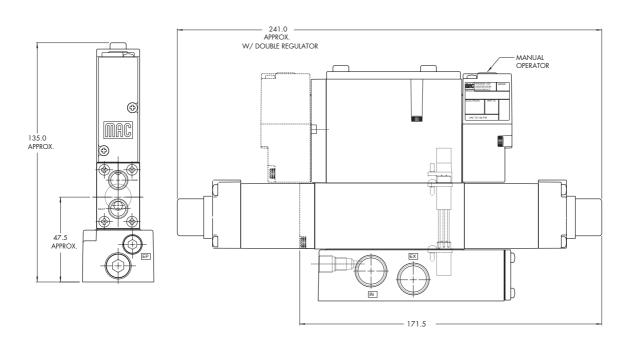
Options: • Pressure range: PR92C-xxxA (A 0 to 120 PSI)

B 0 to 80 PSI C 0 to 30 PSI

D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end
E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end
F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end

— G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end — H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end — J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS





Sandwich selector pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR42B PR46A

PR37A

PR47A PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Select to A port Regulator A end By-pass plate B end	Select to B port Regulator B end By-pass plate A end	Select to A port Reg. both ends A end low press. B end high press.	Select to B port Reg. both ends A end high press. B end low press.
No Gage	PR92C-JPAA	PR92C-JRAA	PR92C-JSAA	PR92C-JTAA
Gage with face perpendicular to manual operator	PR92C-JPBA	PR92C-JRBA	PR92C-JSBA	PR92C-JTBA
Gage with face parallel to manual operator	PR92C-JPCA	PR92C-JRCA	PR92C-JSCA	PR92C-JTCA

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Select to A port Regulator A end By-pass plate B end	Select to B port Regulator B end By-pass plate A end	Select to A port Reg. both ends A end low press. B end high press.	Select to B port Reg. both ends A end high press. B end low press.
No Gage	PR92C-LPAA	PR92C-LRAA	PR92C-LSAA	PR92C-LTAA
Gage with face perpendicular to manual operator	PR92C-LPBA	PR92C-LRBA	PR92C-LSBA	PR92C-LTBA
Gage with face parallel to manual operator	PR92C-LPCA	PR92C-LRCA	PR92C-LSCA	PR92C-LTCA

Notes: - Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page

- Use single pressure valve for all above models.

Regulator less sandwich block PR92C-x0xx

OPTIONS

M Knob

Slotted stem

S Slotted stem with locknut

Other adjustment PR92C-xxxx

Slotted stem, single solenoid Slotted stem, double solenoid

C Slotted stem, non plug-in K Knob, double solenoid

Slotted stem w/ locknut, single solenoid Slotted stem w/ locknut, double solenoid Slotted stem w/ locknut, non plug-in

PR93A

PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 0.8 C_v

Spare parts : • R-92003 : end plate kit • R-92003-01: by-pass end plate kit

• Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02

• Gage kit 0 - 60 PSI : N-92006-03

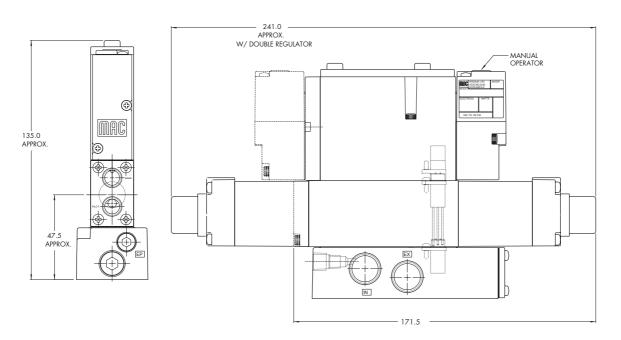
Options: • Pressure range: PR92C-xxxA (A 0 to 120 PSI)

B 0 to 80 PSI C 0 to 30 PSI

D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end
E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end
F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end
G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end

— H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end — J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS



Sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

Series **PR93**

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A PR47A

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR93A-DAAA	PR93A-DBAA	PR93A-DCAA	PR93A-DDAA	PR93A-DEAA
Gage with face perpendicular to manual operator	PR93A-DABA	PR93A-DBBA	PR93A-DCBA	PR93A-DDBA	PR93A-DEBA
Gage with face parallel to manual operator	PR93A-DACA	PR93A-DBCA	PR93A-DCCA	PR93A-DDCA	PR93A-DECA

PR93A

PRA01A

PRA02A

REGULATORS FOR "NON PLUG-IN" VALVES

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR93A-EAAA	PR93A-EBAA	PR93A-ECAA	PR93A-EDAA	PR93A-EEAA
Gage with face perpendicular to manual operator	PR93A-EABA	PR93A-EBBA	PR93A-ECBA	PR93A-EDBA	PR93A-EEBA
Gage with face parallel to manual operator	PR93A-EACA	PR93A-EBCA	PR93A-ECCA	PR93A-EDCA	PR93A-EECA

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B

Note: Above models may be used with either single or double solenoid valves.

* For use with dual pressure valves.







Fluid: Compressed air, inert gases

0 to 120 PSI Pressure range:

Regulating range: 0 to 120 PSI

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

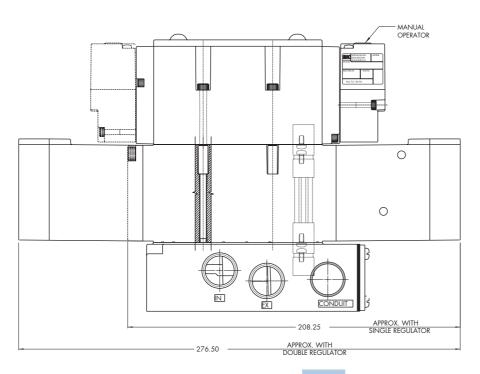
 0° F to 120° F (- 18° C to + 50° C) Temperature range:

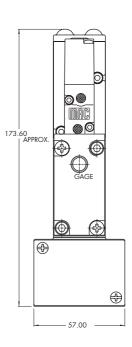
Flow: $2.4 \, C_{v}$

• Regulator end plate kit: R-93004 • Regulator by-pass end plate kit: R-93004-01 • Gage kit: N-92006-01 (0 to 160 PSI) Spare parts :

• Pressure regulator (less sandwich block): PR93A-F0AA

DIMENSIONS





Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR48B

PR37A

PR42B

PR46A

PR47A

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR93A-GAAA	PR93A-GBAA	PR93A-GCAA	PR93A-GDAA	PR93A-GEAA
Gage with face perpendicular to manual operator	PR93A-GABA	PR93A-GBBA	PR93A-GCBA	PR93A-GDBA	PR93A-GEBA
Gage with face parallel to manual operator	PR93A-GACA	PR93A-GBCA	PR93A-GCCA	PR93A-GDCA	PR93A-GECA

PR93A

PRA01A

PRA02A

REGULATORS FOR "NON PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR93A-HAAA	PR93A-HBAA	PR93A-HCAA	PR93A-HDAA	PR93A-HEAA
Gage with face perpendicular to manual operator	PR93A-HABA	PR93A-HBBA	PR93A-HCBA	PR93A-HDBA	PR93A-HEBA
Gage with face parallel to manual operator	PR93A-HACA	PR93A-HBCA	PR93A-HCCA	PR93A-HDCA	PR93A-HECA

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

* For use with dual pressure valves.

Note: Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page.

Regulator less sandwich block

PR93A-<u>x</u>0xx

Knob

C Slotted stem

M Slotted stem with locknut

Note: Above models may be used with either single or double solenoid valves.

Other adjustment PR93A-xxxx

В

Slotted stem, plug-in Slotted stem, non plug-in Slotted stem w/ locknut, plug-in Slotted stem w/ locknut, non plug-in







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

Regulating range: 0 to 120 PSI

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

2.4

Spare parts: • Regulator end plate kit: R-93004 • Regulator by-pass end plate kit: R-93004-01.

• Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02

• Gage kit 60 PSI : N-92006-03

Option: • Pressure range: PR93A-xxxA (A 0 to 120 PSI)

B 0 to 80 PSI

C 0 to 30 PSI

D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end

E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end

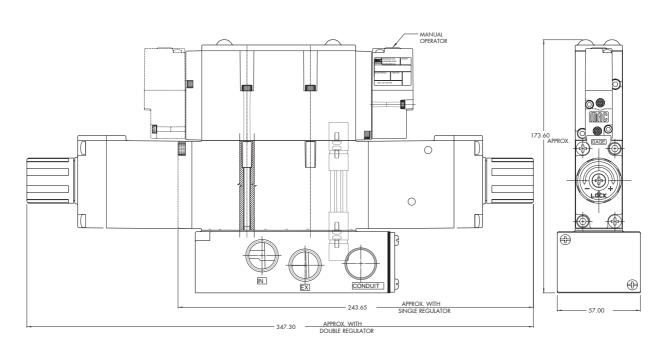
F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end

G 0 to 120 PSI "B" end, 0 to 30 PSI "B" end

H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end

J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS



Sandwich selector pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A PR47A

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Select to A port Regulator A end By-pass plate B end	Select to B port Regulator B end By-pass plate A end	Select to A port Reg. both ends A end low press. B end high press.	Select to B port Reg. both ends A end high press. B end low press.
Gage port only (plugged)	PR93A-GPAA	PR93A-GRAA	PR93A-GSAA	PR93A-GTAA
Gage with face perpendicular to manual operator	PR93A-GPBA	PR93A-GRBA	PR93A-GSBA	PR93A-GTBA
Gage with face parallel to manual operator	PR93A-GPCA	PR93A-GRCA	PR93A-GSCA	PR93A-GTCA

REGULATORS FOR "NON PLUG-IN" VALVES

Gage	Select to A port Regulator A end By-pass plate B end	Select to B port Regulator B end By-pass plate A end	Select to A port Reg. both ends A end low press. B end high press.	Select to B port Reg. both ends A end high press. B end low press.
Gage port only (plugged)	PR93A-HPAA	PR93A-HRAA	PR93A-HSAA	PR93A-HTAA
Gage with face perpendicular to manual operator	PR93A-HPBA	PR93A-HRBA	PR93A-HSBA	PR93A-HTBA
Gage with face parallel to manual operator	PR93A-HPCA	PR93A-HRCA	PR93A-HSCA	PR93A-HTCA

Notes: - Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page

OPTIONS

Regulator less sandwich block

PR93A-**x**0xx

Knob Slotted stem

M Slotted stem with locknut

Other adjustment

PR93A-xxxx

Slotted stem, plug-in Slotted stem, non plug-in Slotted stem w/ locknut, plug-in Slotted stem w/ locknut, non plug-in

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B

Note: Above models may be used with either single or double solenoid valves.

⁻ Use single pressure valve for all above models.







Fluid: Compressed air, inert gases

Pressure range: 0 to 120 PSI

0 to 120 PSI Regulating range:

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

• Regulator end plate kit: R-93004 • Regulator by-pass end plate kit: R-93004-01. Spare parts:

• Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02

• Gage kit 0 – 60 PSI : N-92006-03

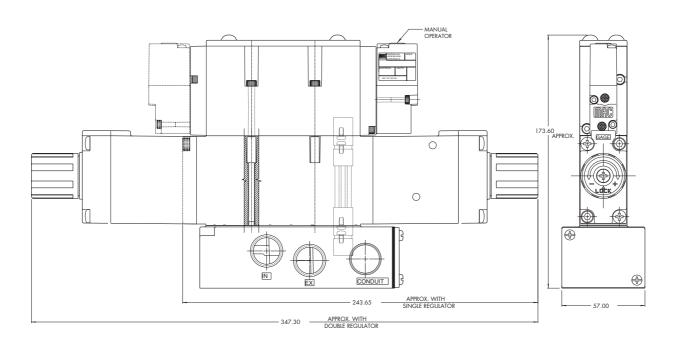
Option: • Pressure range: PR93A-xxxA (A 0 to 120 PSI)

> -B 0 to 80 PSI °C 0 to 30 PSI

D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end

⁻H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end -J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS



Non plug-in sandwich pressure regulator with manual adjust

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs and space in comparison with inline regulators
- 2. Compact all-included units
- 3. Large orifice provides high flow
- 4. Various functions available
- 5. Simple, reliable and solid design



PR37A PR42B

PR46A

PR47A

PR48B

PR92C

HOW TO ORDER

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end	Dual pressure Regulator 14 end with by-pass 12 end	Dual pressure Regulator both ends
Internal	PRA01A-AAAA	PRA01A-ABAA	PRA01A-ADAA	PRA01A-AEAA
External	PRA01A-BAAA	PRA01A-BBAA	PRA01A-BDAA	PRA01A-BEAA

PR93A

Above models are for manual adjust with knob

For other manual adjustments and pressure ranges, see Options.

Note: Add –9 after part number for regulator block assembled to valve.

^{*} To be used with dual pressure valves.

0121	ONS	

Adjustments:

PRAO1A - xxxx

A Manual adjust with knob - Internal pilot

Manual adjust with knob - External pilot В

G Manual adjust with screwdriver slot – Internal pilot

Manual adjust with screwdriver slot - External pilot

Manual adjust with screwdriver slot with locknut- Internal pilot

L Manual adjust with screwdriver slot with locknut - External pilot

Regulated Pressure range :

PRA01A - xxxx

0 to 120 PSI

В 0 to 80 PSI

0 to 30 PSI

0 to 120 PSI "14" end - 0 to 80 PSI "12" end 0 to 120 PSI "12" end - 0 to 80 PSI "14" end

0 to 120 PSI "14" end - 0 to 30 PSI "12" end 0 to 120 PSI "12" end - 0 to 30 PSI "14" end 0 to 120 PSI "12" end - 0 to 30 PSI "14" end 0 to 80 PSI "14" end - 0 to 30 PSI "12" end

0 to 80 PSI "12" end - 0 to 30 PSI "14" end

PRAO1A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure supply: Higher than maximum regulated pressure (max. 8,5 bar)

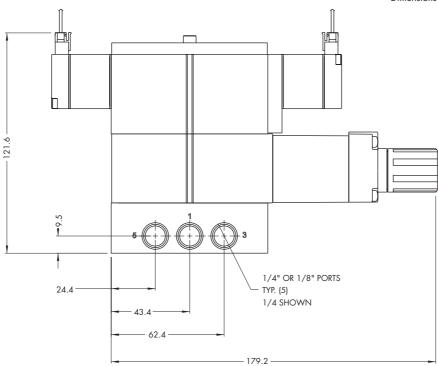
Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

DIMENSIONS



PR37A

PR42B

PR46A

PR47A

Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators
- 2. Compact all-included units
- 3. Large orifice provides high flow
- 4. Various functions available
- 5. Simple, reliable and solid design

PR48B

PR92C

PR93A

HOW TO ORDER

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end	Dual pressure Regulator 14 end with by-pass 12 end	Dual pressure Regulator both ends
Internal	PRA01A-DAAA	PRA01A-DBAA	PRA01A-DDAA	PRA01A-DEAA
External	PRA01A-EAAA	PRA01A-EBAA	PRA01A-EDAA	PRA01A-EEAA

Note : Only pressure range available for air adjust regulator is 0-120 PSI.

PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

PRA3C

^{*} To be used with dual pressure valves.







Temperature range:

Fluid: Compressed air, inert gases

Pressure range: Higher than maximum regulated pressure

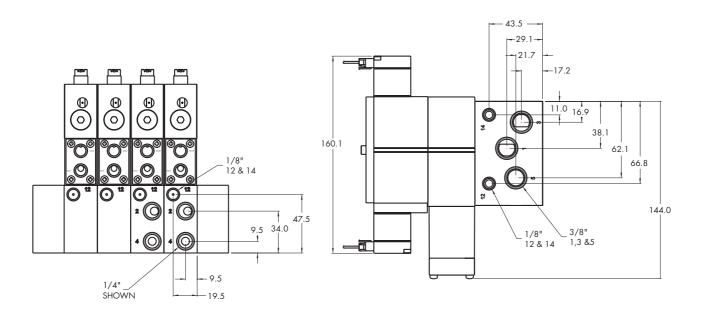
Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

0°F to 120°F (-18°C to +50°C)

DIMENSIONS



Non plug-in sandwich pressure regulator with manual adjust

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs and space in comparison with inline regulators
- 2. Compact all-included units
- 3. Large orifice provides high flow
- 4. Various functions available
- 5. Simple, reliable and solid design



PR37A PR42B

PR46A

PR47A

PR48B

PR92C

HOW TO ORDER

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end	Dual pressure Regulator 14 end with by-pass 12 end	Dual pressure Regulator both ends
Internal	PRA02A-AAAA	PRA02A-ABAA	PRA02A-ADAA	PRA02A-AEAA
External	PRA02A-BAAA	PRA02A-BBAA	PRA02A-BDAA	PRA02A-BEAA

Above models are for manual adjust with knob

For other manual adjustments and pressure ranges, see Options.

Note: Add –9 after part number for regulator block assembled to valve.

OPTIONS

Adjustments:

PRA02A - xxxx

A Manual adjust with knob - Internal pilot

Manual adjust with knob - External pilot

G Manual adjust with screwdriver slot – Internal pilot

Manual adjust with screwdriver slot - External pilot

Manual adjust with screwdriver slot with locknut- Internal pilot

L Manual adjust with screwdriver slot with locknut - External pilot

Regulated Pressure range :

PRA02A - xxxx

0 to 120 PSI

В 0 to 80 PSI

0 to 30 PSI

0 to 120 PSI "14" end - 0 to 80 PSI "12" end 0 to 120 PSI "12" end - 0 to 80 PSI "14" end

0 to 120 PSI "14" end - 0 to 30 PSI "12" end 0 to 120 PSI "12" end - 0 to 30 PSI "14" end 0 to 120 PSI "12" end - 0 to 30 PSI "14" end 0 to 80 PSI "14" end - 0 to 30 PSI "12" end

0 to 80 PSI "12" end - 0 to 30 PSI "14" end

PR93A

PRA01A

PRAO2A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

^{*} To be used with dual pressure valves.







Fluid: Compressed air, inert gases

Pressure supply: Higher than maximum regulated pressure

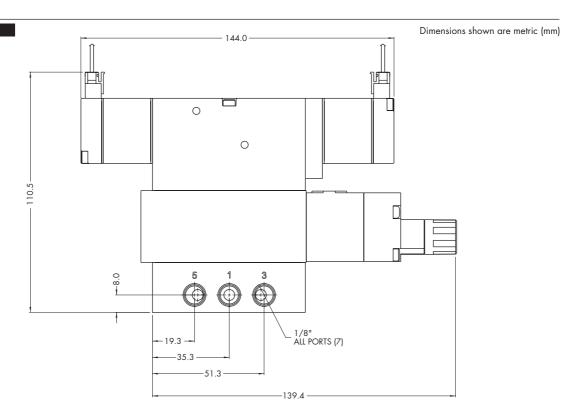
Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

Filtration:

Temperature range: 0°F to 120°F (-18°C to +50°C)

DIMENSIONS



Non plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Allows to have compact, all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A

PR47A

PR48B

PR92C

PR93A

PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 1 4 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA1A-GAAA	PRA1A-GCAA	PRA1A-GBAA	PRA1A-GDAA	PRA1A-GEAA
Gage perpendicular to regulator(s)	PRA1A-GABA	PRA1A-GCBA	PRA1A-GBBA	PRA1A-GDBA	PRA1A-GECA
Gage parallel to regulator(s)	PRA1A-GADA	PRA1A-GCDA	PRA1A-GBDA	PRA1A-GDDA	PRA1A-GEEA

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 1 2 end Same regulated pressure to ports 2 and 4	Dual pressure Regulator 1 4 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Pual regulator Two regulated pressures to ports 2 and 4
No gage	PRA1A-HAAA	PRA1A-HCAA	PRA1A-HBAA	PRA1A-HDAA	PRA1A-HEAA
Gage perpendicular to regulator(s)	PRA1A-HABA	PRA1A-HCBA	PRA1A-HBBA	PRA1A-HDBA	PRA1A-HECA
Gage parallel to regulator(s)	PRA1A-HADA	PRA1A-HCDA	PRA1A-HBDA	PRA1A-HDDA	PRA1A-HEEA

^{* -} To be used with dual pressure valves.

Note: regulating range for above models is 0-120 PSI. For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block.

Cannot field convert regulator block from Single Pressure to dual

ADJUSTMENT OPTIONS

PRA1A-xxxx

- A for slotted stem adjustment (internal pilot)
- for slotted stem adjustment (external/remote air)
- K for slotted stem with locknut (internal pilot)
- for slotted stem with locknut (external/remote air)

pressure. Body/Block to base mounting screw #35336.

PRA3C







Fluid:
Compressed air, inert gases

0 to 150 PSI

Regulating range:
0 to 120 PSI (other ranges see below)

Lubrication:
Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration:
40 µ

Temperature range:
0°F to 120°F (-18°C to +50°C)

Spare parts:

• Pressure regulator (less sandwich block): PRA1A-JOAA (KNOB), PRA1A-COAA (SLOTTED STEM), PRA1A-M0AA (SLOTTED STEM WITH LOCKNUT).

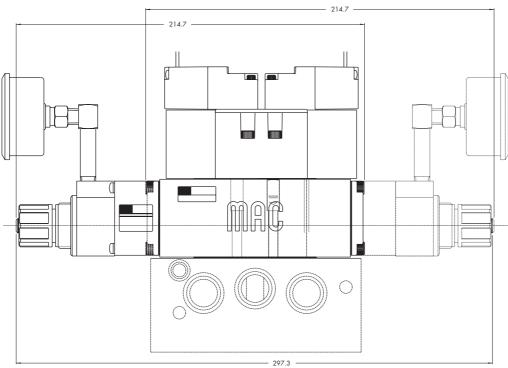
Gage: N-82016-01 (0-120 PSI perpendicular) N-82016-02 (0-120 PSI parallel) N-82016-03 (0-80 PSI perpendicular) N-82016-04 (0-80 PSI perpendicular) N-82016-04 (0-80 PSI parallel) N-82016-05 (0-30 PSI parallel) N-82016-06 (0-30 PSI parallel)

Regulating range options: PRA1A-XXXA

1.0 C_v

Replace by B - 0 to 80 PSI - 0 to 80 PSI on "14" end - 0 to 80 PSI on "12" end Replace by E - 0 to 120 PSI on "12" end - 0 to 80 PSI on "12" end Replace by F - 0 to 120 PSI on "12" end - 0 to 80 PSI on "14" end - Replace by F - 0 to 120 PSI on "14" end - 0 to 30 PSI on "12" end - Replace by G - 0 to 120 PSI on "12" end - 0 to 30 PSI on "14" end Replace by H - 0 to 80 PSI on "14" end - 0 to 30 PSI on "12" end - 0 to 80 PSI on "12" end - 0 to 30 PSI on "14" end - 0 to 80 PSI on "12" end - 0 to 80 PSI on "12" end - 0 to 80 PSI on "14" end - 0 to 80 PSI on "14"

DIMENSIONS



Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- Easy mounting : saves on installation costs in comparison with inline regulators.
- 2. Allows to have compact, all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A PR47A

PR48B

PR92C

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA1A-DAAA	PRA1A-DCAA	PRA1A-DBAA	PRA1A-DDAA	PRA1A-DEAA
Gage perpendicular to regulator(s)	PRA1A-DABA	PRA1A-DCBA	PRA1A-DBBA	PRA1A-DDBA	PRA1A-DECA
Gage parallel to regulator(s)	PRA1A-DADA	PRA1A-DCDA	PRA1A-DBDA	PRA1A-DDDA	PRA1A-DEEA

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA1A-EAAA	PRA1A-ECAA	PRA1A-EBAA	PRA1A-EDAA	PRA1A-EEAA
Gage perpendicular to regulator(s)	PRA1A-EABA	PRA1A-ECBA	PRA1A-EBBA	PRA1A-EDBA	PRA1A-EECA
Gage parallel to regulator(s)	PRA1A-EADA	PRA1A-ECDA	PRA1A-EBDA	PRA1A-EDDA	PRA1A-EEEA

 $[\]ensuremath{^*}$ - To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35336.

PR93A

PRAO 1 A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

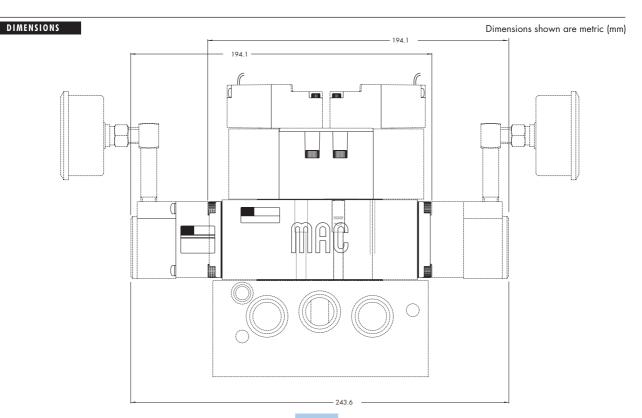
Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

v: 1.0 C_v

Spare parts : • Pressure regulator (less sandwich block) : PRA1A-FOAA.

• Gage : N-82016-01 (0-120 PSI perpendicular) N-82016-02 (0-120 PSI parallel)



Plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B PR46A

PR47A PR48B

PR92C

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
Gage port only	PRP1A-GAKA	PRP1A-GCKA	PRP1A-GBKA	PRP1A-GDKA	PRP1A-GEKA
Gage perpendicular to manual operator	PRP1A-GABA	PRP1A-GCBA	PRP1A-GBBA	PRP1A-GDBA	PRP1A-GECA
Gage parallel to manual operator	PRP1A-GADA	PRP1A-GCDA	PRP1A-GBDA	PRP1A-GDDA	PRP1A-GEEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP1A-HAKA	PRP1A-HCKA	PRP1A-HBKA	PRP1A-HDKA	PRP1A-HEKA
Gage perpendicular to manual operator	PRP1A-HABA	PRP1A-HCBA	PRP1A-HBBA	PRP1A-HDBA	PRP1A-HECA
Gage parallel to manual operator	PRP1A-HADA	PRP1A-HCDA	PRP1A-HBDA	PRP1A-HDDA	PRP1A-HEEA

^{*} For use with dual pressure valves.

Note: Regulating range for above models is 0 -120 PSI. For other ranges see technical data page.

ADJUSTMENT OPTIONS

PRP1A-xxxx

for slotted stem adjustment (internal pilot)
for slotted stem adjustment (external/remote air)
for slotted stem with locknut (internal pilot)
for slotted stem with locknut (external/remote air) B K

Notes:

- 1. Valves used with above models must be external pilot models.
- 2. Cannot field convert regulator block from single pressure to dual pressure.
- 3. Cannot field convert from internal pilot to external pilot.
- 4. Wired for double solenoid valves

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 120 PSI (other ranges see below)

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40μ

Temperature range: 0°F to 120°F (-18°C to +50°C)

w: 1.1 C_v

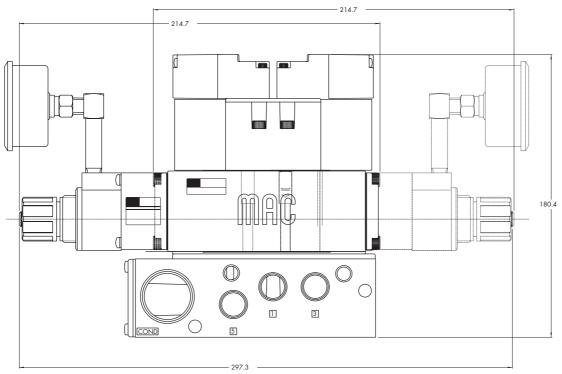
Spare parts : • Pressure regulator (less sandwich block) : PRP1A-JOKA (knob), PRP1A-COKA (slotted stem)

PRP1A-MOKA (slotted stem with locknut)

```
Regulating range options : PRP1A-XXXA

Replace by B -0 to 80 PSI
Replace by C -0 to 30 PSI
Replace by D -0 to 120 PSI on "14" end -0 to 80 PSI on "12" end
Replace by E -0 to 120 PSI on "12" end -0 to 80 PSI on "14" end
Replace by F -0 to 120 PSI on "14" end -0 to 30 PSI on "12" end
Replace by G -0 to 120 PSI on "12" end -0 to 30 PSI on "12" end
Replace by H -0 to 80 PSI on "12" end -0 to 30 PSI on "12" end
Replace by J -0 to 80 PSI on "12" end -0 to 30 PSI on "12" end
```

DIMENSIONS



Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B PR46A

PR47A PR48B

PR92C

PR93A

PRA01A

PRA02A

PRA1A

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

REGOD TO ROTOR II THERE WE THOT						
Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4	
Gage port only	PRP1A-DAKA	PRP1A-DCKA	PRP1A-DBKA	PRP1A-DDKA	PRP1A-DEKA	
Gage perpendicular to manual operator	PRP1A-DABA	PRP1 A-DCBA	PRP1A-DBBA	PRP1A-DDBA	PRP1A-DECA	
Gage parallel to manual operator	PRP1A-DADA	PRP1A-DCDA	PRP1A-DBDA	PRP1A-DDDA	PRP1A-DEEA	

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Dual regulator Two regulated pressures to ports 2 and 4
Gage port only	PRP1A-EAKA	PRP1A-ECKA	PRP1A-EBKA	PRP1A-EDKA	PRP1A-EEKA
Gage perpendicular to manual operator	PRP1A-EABA	PRP1A-ECBA	PRP1A-EBBA	PRP1A-EDBA	PRP1A-EECA
Gage parallel to manual operator	PRP1A-EADA	PRP1A-ECDA	PRP1A-EBDA	PRP1A-EDDA	PRP1A-EEEA

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B

Notes:

^{* -} To be used with dual pressure valves.

^{1.} Valves used with above models must be external pilot models.

^{2.} Cannot field convert regulator block from single pressure to dual pressure.

^{3.} Cannot field convert from internal pilot to external pilot.

^{4.} Wired for double solenoid valves.







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 120 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 1.1 C_v

Spare parts : • Pressure regulator (less sandwich block): PRP1A-F0KA

• Regulator block to base mounting tie rod: 19496

DIMENSIONS

APPROX. WITH DOUBLE REGULATOR
SINGLE AND DOUBLE SOLENOIDS
SINGLE REGULATOR 12 END

SINGLE REGULATOR 12 END

SINGLE REGULATOR 12 END

SINGLE REGULATOR 14 END
SINGLE RAND DOUBLE SOLENOIDS

Non plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Allows to have compact, all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A

PR47A

PR48B

PR92C

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-1AAA	PRA2D-1EAA	PRA2D-1BAA	PRA2D-1FAA	PRA2D-1JAA
Non-filled gage on regulator(s)	PRA2D-1ADA	PRA2D-1EDA	PRA2D-1BDA	PRA2D-1FDA	PRA2D-1JEA
Non-filled gage opposite to regulator	PRA2D-1CDA	PRA2D-1GDA	PRA2D-1DDA	PRA2D-1HDA	
Glycerine filled gage on regulator(s)	PRA2D-1ABA	PRA2D-1EBA	PRA2D-1BBA	PRA2D-1FBA	PRA2D-1JCA
Glycerine filled gage opposite to regulator	PRA2D-1CBA	PRA2D-1GBA	PRA2D-1DBA	PRA2D-1HBA	

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-2AAA	PRA2D-2EAA	PRA2D-2BAA	PRA2D-2FAA	PRA2D-2JAA
Non-filled gage on regulator(s)	PRA2D-2ADA	PRA2D-2EDA	PRA2D-2BDA	PRA2D-2FDA	PRA2D-2JEA
Non-filled gage opposite to regulator	PRA2D-2CDA	PRA2D-2GDA	PRA2D-2DDA	PRA2D-2HDA	
Glycerine filled gage on regulator(s)	PRA2D-2ABA	PRA2D-2EBA	PRA2D-2BBA	PRA2D-2FBA	PRA2D-2JCA
Glycerine filled gage opposite to regulator	PRA2D-2CBA	PRA2D-2GBA	PRA2D-2DBA	PRA2D-2HBA	

st - To be used with dual pressure valves.

Note: regulating range for above models is 0-150 PSI. For other ranges see technical data page.

ADJUSTMENT OPTIONS

PRA2D-**x**xxx

B D for slotted stem adjustment (internal pilot) for slotted stem adjustment (external pilot) for slotted stem with locknut (internal pilot) for slotted stem with locknut (external pilot) Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI (other ranges see below)

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

w: 2.3 C_v

Spare parts: • Pressure regulator (less sandwich block): PRA2D-30AA (KNOB), PRA2D-C0AA (SLOTTED STEM), PRA2D-F0AA (SLOTTED STEM WITH LOCKNUT).

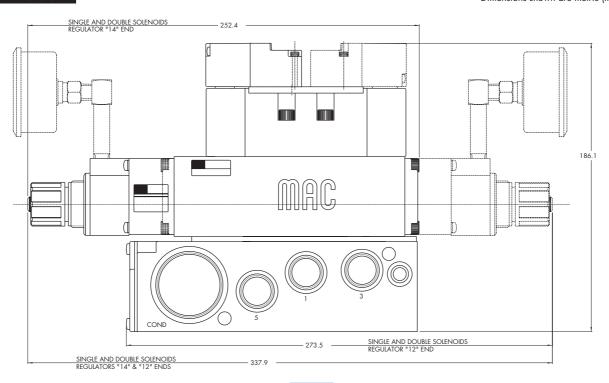
• Gage : • Glycerine filled : N-62015-01 • Non filled : N-62016-01

Regulating range options : PRA2D-XXXA

Replace by B - 0 to 100 PSI
Replace by C - 0 to 45 PSI

DIMENSIONS

Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- Easy mounting : saves on installation costs in comparison with inline regulators.
- 2. Allows to have compact, all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A PR47A

PR48B

PR92C

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-4AAA	PRA2D-4EAA	PRA2D-4BAA	PRA2D-4FAA	PRA2D-4JAA
Non-filled gage on regulator(s)	PRA2D-4ADA	PRA2D-4EDA	PRA2D-4BDA	PRA2D-4FDA	PRA2D-4JEA
Non-filled gage opposite to regulator	PRA2D-4CDA	PRA2D-4GDA	PRA2D-4DDA	PRA2D-4HDA	
Glycerine filled gage on regulator(s)	PRA2D-4ABA	PRA2D-4EBA	PRA2D-4BBA	PRA2D-4FBA	PRA2D-4JCA
Glycerine filled gage opposite to regulator	PRA2D-4CBA	PRA2D-4GBA	PRA2D-4DBA	PRA2D-4HBA	

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-5AAA	PRA2D-5EAA	PRA2D-5BAA	PRA2D-5FAA	PRA2D-5JAA
Non-filled gage on regulator(s)	PRA2D-5ADA	PRA2D-5EDA	PRA2D-5BDA	PRA2D-5FDA	PRA2D-5JEA
Non-filled gage opposite to regulator	PRA2D-5CDA	PRA2D-5GDA	PRA2D-5DDA	PRA2D-5HDA	
Glycerine filled gage on regulator(s)	PRA2D-5ABA	PRA2D-5EBA	PRA2D-5BBA	PRA2D-5FBA	PRA2D-5JCA
Glycerine filled gage opposite to regulator	PRA2D-5CBA	PRA2D-5GBA	PRA2D-5DBA	PRA2D-5HBA	

^{* -} To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

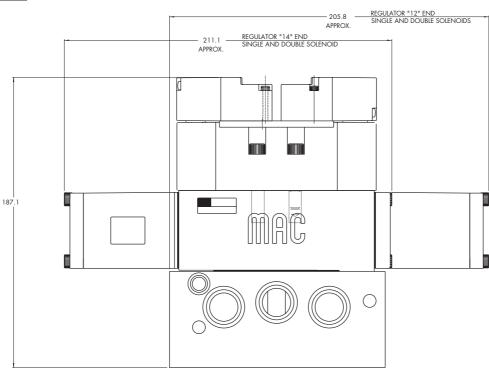
w: 2.3 C_v

Spare parts : • Pressure regulator (less sandwich block) : PRA2D-60AA.

• Gage : • Glycerine filled : N-62015-01 • Non filled : N-62016-01

DIMENSIONS

Dimensions shown are metric (mm)



Series

Plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B PR46A

PR47A PR48B

PR92C

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-AAAA	PRP2B-AEAA	PRP2B-ABAA	PRP2B-AFAA	PRP2B-AJAA
Glycerine gage	PRP2B-AABA	PRP2B-AEBA	PRP2B-ABBA	PRP2B-AFBA	PRP2B-AJCA
Non-filled gage	PRP2B-AADA	PRP2B-AEDA	PRP2B-ABDA	PRP2B-AFDA	PRP2B-AJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-BAAA	PRP2B-BEAA	PRP2B-BBAA	PRP2B-BFAA	PRP2B-BJAA
Glycerine gage	PRP2B-BABA	PRP2B-BEBA	PRP2B-BBBA	PRP2B-BFBA	PRP2B-BJCA
Non-filled gage	PRP2B-BADA	PRP2B-BEDA	PRP2B-BBDA	PRP2B-BFDA	PRP2B-BJEA

^{*} For use with dual pressure valves.

Note: Regulating range for above models is 0-150 PSI. For other ranges, see technical data page.

ADJUSTMENT OPTIONS

PRP2B-xxxx

G for slotted stem (internal pilot)

for slotted stem (external pilot)

Κ for slotted stem with locknut (internal pilot)

for slotted stem with locknut (external pilot)

Notes:

- 1. Valves used with above models must be external pilot models.
- 2. Cannot field convert regulator block from single pressure to dual pressure.
- 3. Cannot field convert from internal pilot to external pilot.
- 4. Wired for double solenoid valves.



PR93A

PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI (other ranges see below)

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration:

Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

 $3.1 \, \mathrm{C_v}$

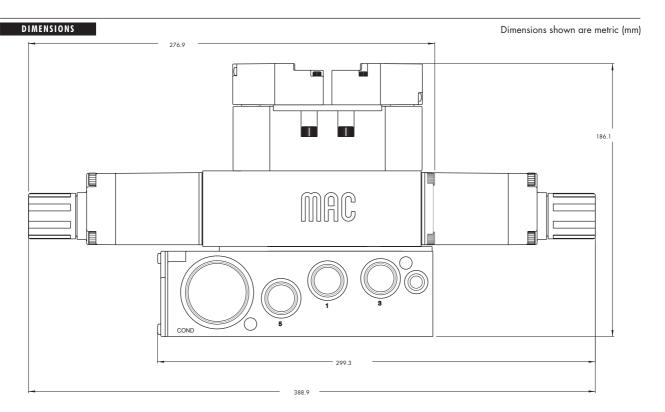
Pressure regulator (less sandwich block): PRP2B-COAA (knob), PRP2B-JOAA (slotted stem), PRP2B-MOAA (slotted stem with locknut)
Regulator block to base mounting screw: 19177
Regulating range option: PRP2B-xxxA

Regulating range option: PRP2B-xxxA

Regulating range option: PRP2B-xxA

Regulating range option: PRP2B-xxA Spare parts:

Replace by B for 0 to 100 PSI Replace by C for 0 to 45 PSI



Series

Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

Series PRP2

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A

PR47A PR48B

PR92C

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 1 4 end Regulated pressure to port 4	Dual pressure * Regulator 1 2 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-DAAA	PRP2B-DEAA	PRP2B-DBAA	PRP2B-DFAA	PRP2B-DJAA
Glycerine gage	PRP2B-DABA	PRP2B-DEBA	PRP2B-DBBA	PRP2B-DFBA	PRP2B-DJCA
Non-filled gage	PRP2B-DADA	PRP2B-DEDA	PRP2B-DBDA	PRP2B-DFDA	PRP2B-DJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-EAAA	PRP2B-EEAA	PRP2B-EBAA	PRP2B-EFAA	PRP2B-EJAA
Glycerine gage	PRP2B-EABA	PRP2B-EEBA	PRP2B-EBBA	PRP2B-EFBA	PRP2B-EJCA
Non-filled gage	PRP2B-EADA	PRP2B-EEDA	PRP2B-EBDA	PRP2B-EFDA	PRP2B-EJEA

^{* -} To be used with dual pressure valves.

Notes:

- 1. Valves used with above models must be external pilot models.
- 2. Cannot field convert regulator block from single pressure to dual pressure.
- 3. Cannot field convert from internal pilot to external pilot.
- 4. Wired for double solenoid valves.

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

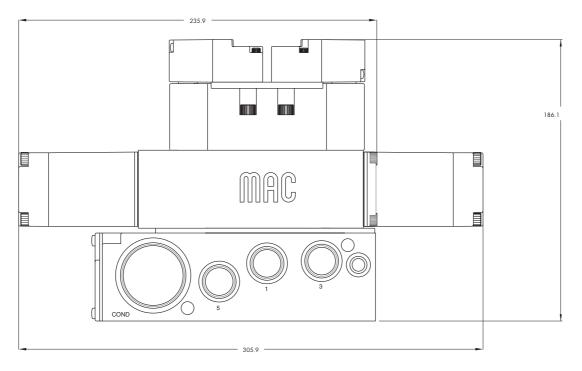
Flow: 3.1 C_v

Spare parts : • Pressure regulator (less sandwich block): PRP2B-F0AA

• Body/block to base mounting screw: 19177

DIMENSIONS

Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Allows to have compact, all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A PR47A

PR48B

PR92C

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-1AAA	PRA3C-1EAA	PRA3C-1BAA	PRA3C-1FAA	PRA3C-1JAA
Non-filled gage on regulator(s)	PRA3C-1ADA	PRA3C-1EDA	PRA3C-1BDA	PRA3C-1FDA	PRA3C-1JEA
Non-filled gage opposite to regulator	PRA3C-1CDA	PRA3C-1GDA	PRA3C-1DDA	PRA3C-1HDA	
Glycerine filled gage on regulator(s)	PRA3C-1ABA	PRA3C-1EBA	PRA3C-1BBA	PRA3C-1FBA	PRA3C-1JCA
Glycerine filled gage opposite to regulator	PRA3C-1CBA	PRA3C-1GBA	PRA3C-1DBA	PRA3C-1HBA	

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-2AAA	PRA3C-2EAA	PRA3C-2BAA	PRA3C-2FAA	PRA3C-2JAA
Non-filled gage on regulator(s)	PRA3C-2ADA	PRA3C-2EDA	PRA3C-2BDA	PRA3C-2FDA	PRA3C-2JEA
Non-filled gage opposite to regulator	PRA3C-2CDA	PRA3C-2GDA	PRA3C-2DDA	PRA3C-2HDA	
Glycerine filled gage on regulator(s)	PRA3C-2ABA	PRA3C-2EBA	PRA3C-2BBA	PRA3C-2FBA	PRA3C-2JCA
Glycerine filled gage opposite to regulator	PRA3C-2CBA	PRA3C-2GBA	PRA3C-2DBA	PRA3C-2HBA	

^{* -} To be used with dual pressure valves. Note : regulating range for above models is 0-150 PSI. For other ranges see technical data page.

Ε

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

PRA3C

ADJUSTMENT OPTIONS

PRA3C-xxxx

- A for slotted stem adjustment (internal pilot)

 B for slotted stem adjustment (external pilot)
- B for slotted stem adjustment (external pilot)
 D for slotted stem with locknut (internal pilot)
 - for slotted stem with locknut (external pilot)







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI (other ranges see below)

Lubrication : Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

5.4 C_v

Spare parts: • Pressure regulator (less sandwich block): PRA3C-30AA (KNOB), PRA3C-C0AA (SLOTTED STEM), PRA3C-F0AA (SLOTTED STEM WITH LOCKNUT).

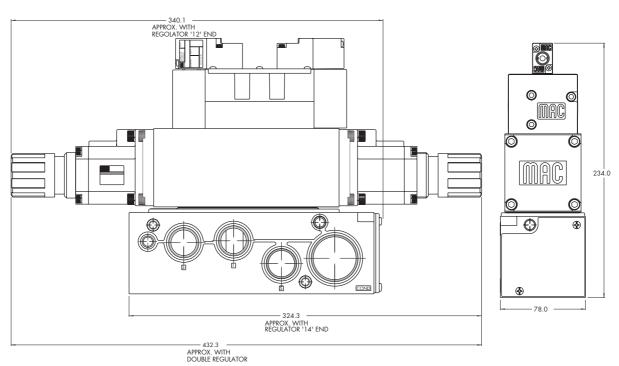
• Gage : • Glycerine filled : N-62015-01 • Non filled : N-62016-01

Regulating range options: PRA3C-XXXA

Replace by B - 0 to 100 PSIReplace by C - 0 to 45 PSI

DIMENSIONS

Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- Easy mounting : saves on installation costs in comparison with inline regulators.
- 2. Allows to have compact, all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available
- 5. Simple, reliable and solid design.



PR37A PR42B PR46A

PR47A PR48B

PR92C

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-4AAA	PRA3C-4EAA	PRA3C-4BAA	PRA3C-4FAA	PRA3C-4JAA
Non-filled gage on regulator(s)	PRA3C-4ADA	PRA3C-4EDA	PRA3C-4BDA	PRA3C-4FDA	PRA3C-4JEA
Non-filled gage opposite to regulator	PRA3C-4CDA	PRA3C-4GDA	PRA3C-4DDA	PRA3C-4HDA	
Glycerine filled gage on regulator(s)	PRA3C-4ABA	PRA3C-4EBA	PRA3C-4BBA	PRA3C-4FBA	PRA3C-4JCA
Glycerine filled gage opposite to regulator	PRA3C-4CBA	PRA3C-4GBA	PRA3C-4DBA	PRA3C-4HBA	

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-5AAA	PRA3C-5EAA	PRA3C-5BAA	PRA3C-5FAA	PRA3C-5JAA
Non-filled gage on regulator(s)	PRA3C-5ADA	PRA3C-5EDA	PRA3C-5BDA	PRA3C-5FDA	PRA3C-5JEA
Non-filled gage opposite to regulator	PRA3C-5CDA	PRA3C-5GDA	PRA3C-5DDA	PRA3C-5HDA	
Glycerine filled gage on regulator(s)	PRA3C-5ABA	PRA3C-5EBA	PRA3C-5BBA	PRA3C-5FBA	PRA3C-5JCA
Glycerine filled gage opposite to regulator	PRA3C-5CBA	PRA3C-5GBA	PRA3C-5DBA	PRA3C-5HBA	

^{* -} To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

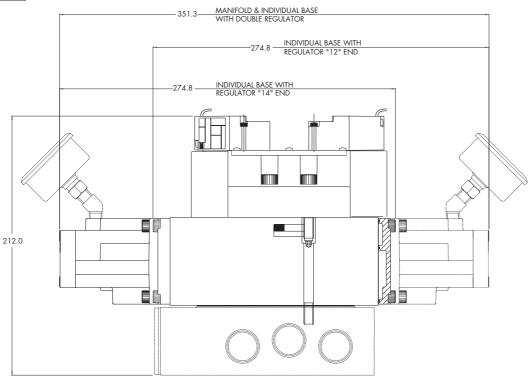
w: 5.4 C_v

Spare parts: • Pressure regulator (less sandwich block): PRA3C-60AA.

• Gage : • Glycerine filled : N-62015-01 • Non filled : N-62016-01

DIMENSIONS

Dimensions shown are metric (mm)



Series

Plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

- Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR37A PR42B

PR46A PR47A

PR48B

PR92C

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-AAAA	PRP3B-AEAA	PRP3B-ABAA	PRP3B-AFAA	PRP3B-AJAA
Glycerine gage	PRP3B-AABA	PRP3B-AEBA	PRP3B-ABBA	PRP3B-AFBA	PRP3B-AJCA
Non-filled gage	PRP3B-AADA	PRP3B-AEDA	PRP3B-ABDA	PRP3B-AFDA	PRP3B-AJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-BAAA	PRP3B-BEAA	PRP3B-BBAA	PRP3B-BFAA	PRP3B-BJAA
Glycerine gage	PRP3B-BABA	PRP3B-BEBA	PRP3B-BBBA	PRP3B-BFBA	PRP3B-BJCA
Non-filled gage	PRP3B-BADA	PRP3B-BEDA	PRP3B-BBDA	PRP3B-BFDA	PRP3B-BJEA

^{*} For use with dual pressure valves.

ADJUSTMENT OPTIONS

PRP3B-**x**xxx

- **G** for slotted stem (internal pilot)
- H for slotted stem (external pilot)
- K for slotted stem with locknut (internal pilot)
- L for slotted stem with locknut (external pilot)

Notes:

- Regulating range for above models is 0-150 PSI. For other ranges, see technical data page.
- 2. Valves used with above models must be external pilot models.
- $3. \ {\sf Cannot \ field \ convert \ regulator \ block \ from \ single \ pressure \ to \ dual \ pressure}.$
- 4. Cannot field convert from internal pilot to external pilot.
- 5. Wired for double solenoid valves.

PR93A

PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI (other ranges see below)

Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

Filtration: 40 µ

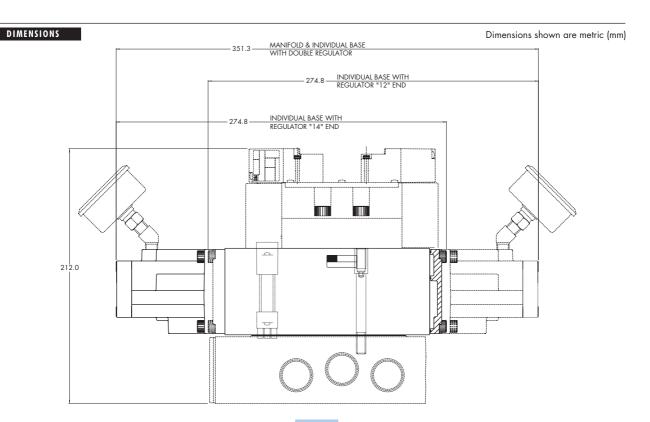
Temperature range: 0° F to 120° F (- 18° C to $+50^{\circ}$ C)

5.4 C_v

Pressure regulator (less sandwich block): PRP3B-COAA (knob), PRP3B-JOAA (slotted stem), PRP3B-MOAA (slotted stem with locknut)
Regulating block to base mounting screw: 19457
Regulating range options: PRP3B-xxxA

Part | Spare parts:

Replace by B for 0 to 100 PSI Replace by C for 0 to 45 PSI



Series

Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

- 1. Easy mounting: saves on installation costs in comparison with inline regulators.
- 2. Compact all-included units.
- 3. Large orifice provides high flow.
- 4. Various functions available.
- 5. Simple, reliable and solid design.



PR42B PR46A

PR37A

PR47A PR48B

PR92C

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-DAAA	PRP3B-DEAA	PRP3B-DBAA	PRP3B-DFAA	PRP3B-DJAA
Glycerine gage	PRP3B-DABA	PRP3B-DEBA	PRP3B-DBBA	PRP3B-DFBA	PRP3B-DJCA
Non-filled gage	PRP3B-DADA	PRP3B-DEDA	PRP3B-DBDA	PRP3B-DFDA	PRP3B-DJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-EAAA	PRP3B-EEAA	PRP3B-EBAA	PRP3B-EFAA	PRP3B-EJAA
Glycerine gage	PRP3B-EABA	PRP3B-EEBA	PRP3B-EBBA	PRP3B-EFBA	PRP3B-EJCA
Non-filled gage	PRP3B-EADA	PRP3B-EEDA	PRP3B-EBDA	PRP3B-EFDA	PRP3B-EJEA

^{* -} To be used with dual pressure valves.

Notes:

- 1. Valves used with above models must be external pilot models.
- 2. Cannot field convert regulator block from single pressure to dual pressure.
- 3. Cannot field convert from internal pilot to external pilot.
- 4. Wired for double solenoid valves.

PR93A

PRA01A

PRA02A

PRA 1 A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 150 PSI

Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

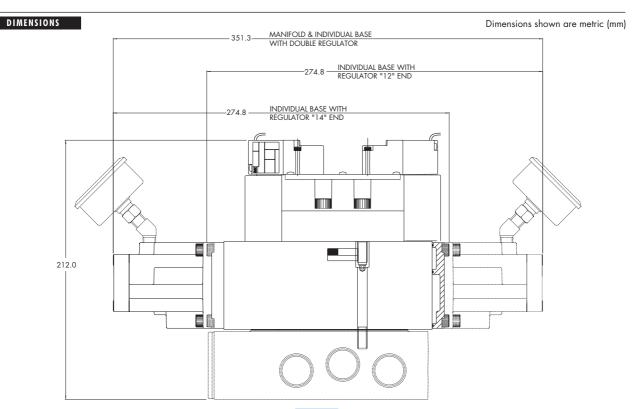
Filtration: 40 µ

Temperature range: 0°F to 120°F (-18°C to +50°C)

Flow: 5.4

Spare parts : • Pressure regulator (less sandwich block): PRP3B-F0AA

• Regulator block to base mounting screw: 19457





Section 5

Intrinsically Safe Valves

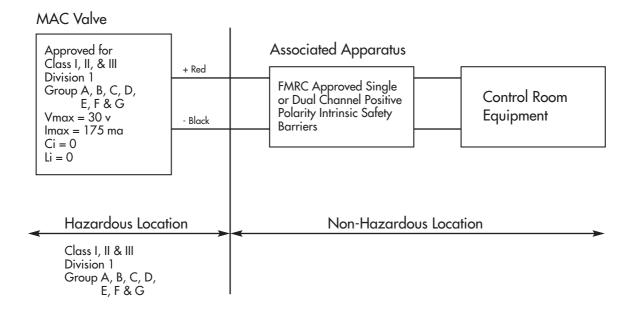


	Page
Specifications for Intrinsically Safe Valves	301
52 series	304
400 series	304
92 series	305



INTRINSICALLY SAFE CIRCUIT

In order to use an intrinsically safe valve in a hazardous location, the installation must be in accordance with the following installation diagram:



There are 3 basic parts to an intrinsically safe circuit:

1. FIELD DEVICE

This is defined as the device that will be used in the hazardous location. In this case, the field device will be the intrinsically safe valve.

2. ASSOCIATED APPARATUS

This will be an energy limiting device also known as a barrier.

3. FIELD WIRING

Wiring used to connect the two above devices.

When the MAC intrinsically safe valves were tested for approval, they were tested and approved for the following atmospheres.

Class I, II, III Division 1

Groups; A, B, C, D, E, F, G

under the following parameters:

Vmax : 30 VDC Imax : 175 ma Ci : 0 Li : 0

Intrinsically Safe Valves

What this means is that the intrinsically safe valves were tested against each atmosphere with up to 30 VDC and 175 ma of current across the solenoid and found to still be safe. The other two parameters are values to indicate how much energy can be stored or created by the valve:

Ci : Internal capacitance of the solenoid.

This indicates how much energy the solenoid is capable of storing.

Li: Internal inductance of the solenoid.

This indicates the solenoid's ability to create or increase energy beyond what is supplied.

When applying an intrinsically safe valve in a hazardous location, a proper barrier must first be selected. The barrier selection process must first take into account the parameters the valve was approved for and compared in the following way:

- Vmax must be greater than or equal to Voc of the barrier.
- Voc = Voltage open circuit or maximum allowed out of the barrier
- Imax must be greater than or equal to Isc of the barrier.
- Isc = Current short circuit or the maximum current allowed out of the barrier
- Ci plus field wiring must be less than Ca of the barrier.
- Ca = Allowed capacitance
- Li plus field wiring must be less than La of the barrier.
- La = Allowed inductance

When properly combined, the barrier will never allow more energy to the intrinsically safe valve than what it was tested and approved for.

The following page can be used as your guide to help ask the right questions when working with an intrinsically safe circuit. Also included is a partial list of intrinsically safe barriers that have been tested with the MAC intrinsically safe valves.





Approval : Factory Mutual Research 2X7A8.AX (3610)

Approved as intrinsically safe apparatus and associated apparatus for use in Class I, II, III - Division 1, Group: A, B, C, D, E, F & G.

Parameters: Vmax: 30 VDC

Imax : 175 ma Ci : 0 Li : 0

Operating voltage greater than 11.5 volts Coil resistance : Approximately 250 ohms

Current draw : 50 ma Wattage : 0.6 watts

Circuit Check Lists:

- Is Vmax greater than or equal to Voc ?
- Is Imax greater than or equal to Isc?
- \bullet Is Ci less than Ca ?
- Is Li less than La?
- Is the barrier capable of handing 50 ma draw ?
- Is the internal resistance of the barrier 250 ohms or less?

If all answers to the above questions are "yes" the barrier may be a good choice in combination with the MAC intrinsically safe valve.

To calculate voltage across the solenoid, plug values into the following equations:

Voltage at Solenoid = I_{TOTAL} x 250 ohms = _____ volts

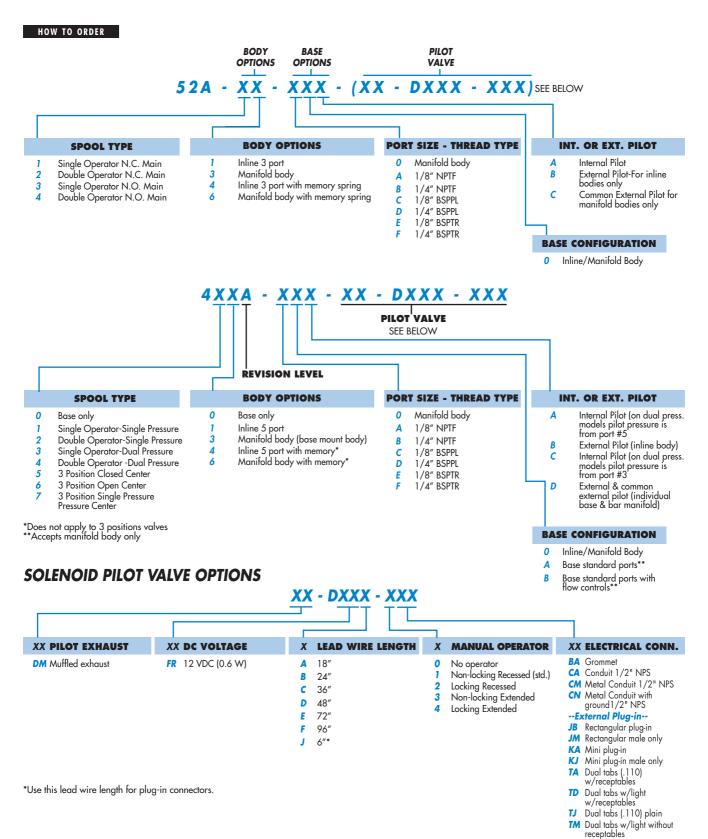
			Voltage	Voltage		
Manufacturer	Model #	Barrier Res.	w/o Light	w/Light	Groups	Туре
Turck	MK72-S01-EX		11.2 v	10.2 v*	A-G	T.I.B.
Crouse-Hinds	SB19140-M2410		13.2 v	12.6 v	C-G	Zener
IMO Industries (Gems Sensors)	114072	234 OHMS	12.0 v	11.4 v	C-G	Zener
Pepperl & Fuchs	KHZ-922/EX-1	270 OHMS	11.6 v	11.06 v	A-G	Zener
	KHZ-922/EX-2	270 OHMS	11.6 v	11.06 v	A-G	Zener
	KHZ-922/EX-3	270 OHMS	11.6 v	11.06 v	A-G	Zener
Stahl	9001/01-280-165-10		13.5 v	12.9 v	C-G	Zener
	9351/10-14-10	80 OHMS	13.7 v	13.4 v	A-G	T.I.B.
Ronan	X57-229P	200 OHMS	12.7 v	12.05 v	C-G	Zener
Measurement Technology	MTL728P+	250 OHMS	11.9 v	11.4 v	A-G	Zener
	MTL3022		15.0 v	14.5 v	C-G	T.I.B.

Above data is based on a 24 v DC supply voltage to the input of the barrier. A 12 v DC, 243 OHM, .6 watt intrinsically safe solenoid is used. The measurement with light is an LED with a current limiting resistor.

Groups indicate what atmosphere the barrier has been approved for. All MAC intrinsically safe valves have been approved for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G indoor hazardous locations.

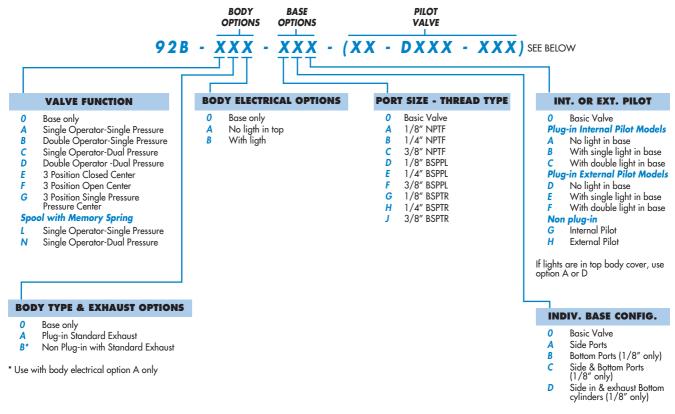
T.I.B. = Transformer Isolated Barrier



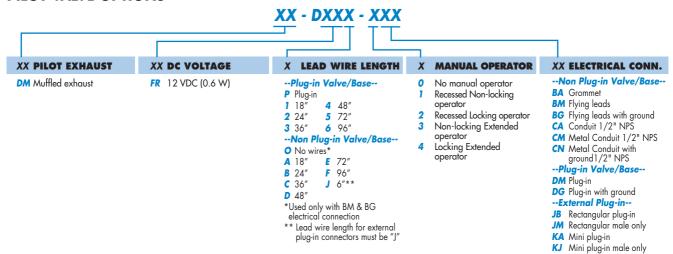




HOW TO ORDER



PILOT VALVE OPTIONS



HOW TO ORDER 92 SERIES FLOW CONTROL MODULE*

FC 92C-AA	Plug-in flow control assembly single solenoid
FC 92C-BA	Plug-in flow control assembly double solenoid
FC 92C-CA	Non plug-in flow control assembly

*If flow control module is to be installed between valve and base or valve and manifold at the factory, add -9 after the flow control model number, i.e., FC92C-AA-9. The flow control model number should follow the valve model number on which it is to be installed.

NOTE: If a flow control assembly is used with the dual pressure regulator option, only the flow control on the "B" end is functional. (Controls both cylinder ports.)
NOTE: Consult the general catalog for regulator and circuit bar ordering information.



Section 6 Options



VALVE CODE > -DM- D $\frac{XX}{1}$ $\frac{X-X}{2}$ $\frac{XX}{3}$

OPTIONS AVAILABLE FOR

- Pilot operated valves 52, 67, 92, 93, 400, ISO1, ISO2, ISO3 Series



	1. VOLTAGE		4. ELECTRICAL CONNECTION
D-XX X-X XX	VOLTAGE	D-XX X-X XX	ELECTRICAL CONNECTION
DA	24 VDC (5.4W)	BA*	Flying leads (grommet)
DB	12 VDC (5.4W)	BK*	BA with protection diode
DC	12 VDC (7.5W)	BL*	BA with protection varistor
DD	24 VDC (7.3W)	BM**	Flying leads (solenoid plug-in)
DE	12 VDC (12.7W)	BN**	BM with protection diode
DF	24 VDC (12.7W)	BP**	BM with protection varistor
DK	110 VDC (4.7W)	BG**	BM with ground
DJ	28 VDC (5.2W)	BH**	BM with protection diode & ground
DL	64 VDC (6.0W)	BJ**	BM with protection varistor & ground
DM	36 VDC (5.3W)	CA*	1/2" NPS conduit with flying leads
DN	6 VDC (6.0W)	CM*	1/2" NPS metal conduit with flying leads
DR	90 VDC (6.6W)	CN*	1/2" NPS metal conduit with flying leads & ground
DS	110 VDC (7.3W)	JB	Rectangular connector
DT	75 VDC (5.6W)	JD	JB with light
DP	48 VDC (5.8W)	JM	Rectangular connector (male only)
FA	12 VDC (1.8W)	KA	Mini square connector
FB	24 VDC (1.8W)	КВ	KA with protection diode
FE	12 VDC (2.4W)	KC	KA with protection varistor
FF	24 VDC (2.4W)	KD	KA with light
JA	120/60, 110/50 (2.9W)	KE	KA with light and protection diode
JB	240/60, 220/50 (2.9W)	KF	KA with light and protection varistor
JC	24/60, 24/50 (3.7W)	KG	KA with light & diode
JD	100/60, 100/50, 110/60 (3.9W)	KJ	Mini square connector (male only)
JE	220/60 (3.4W)	KK	KJ with protection diode (male only)
JF	240/50 (2.8W)	KL	KJ with protection varistor (male only)
JG	200/60, 200/50 (3.9W)	TA	Dual tabs with receptacles
		ТВ	TA with protection diode
	2. WIRE LENGTH	TD	TA with light
		TE	TA with light and protection diode
D-XX X-X XX	WIRE LENGTH	TJ	Dual tabs (male only)
0	No wires	TK	TJ with protection diode
A	18"	TM	TJ with light
В	24"	TN	TJ with light and protection diode
С	36"	* From Lead wire len	gth options choose A through F
D	48"	** From Lead wire leng	gth options choose 0 through F
E	72"	Note: When coil is ab	ove 30 volts, a ground wire is required. Applies to opti
F	96"	with flying leads.	

3. MANUAL OPERATOR

D-XX X-X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended



VALVE CODE > $G \underbrace{XX}_{1} \underbrace{X-X}_{2} \underbrace{XX}_{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 32, 34, 38, 42, 44 & 48 Series



	1. VOLTAGE		4. ELECTRICAL CONNECTION
G-XX X-X XX	VOLTAGE	G-XX X-X XX	ELECTRICAL CONNECTION
AA	120 VAC (2.5W) Requires electrical connector with rectifier	BA	Flying leads
AC	24 VAC (4.0W) Requires electrical connector with rectifier	ВВ	BA with ground wire
DA	24 VDC (1.0W)	ВС	BA with light
DC	24 VDC (1.8W)	BD	BA with light and ground wire
DD	24 VDC (2.5W)	BE	BA with suppression diode
DE	24 VDC (3.0W)	BF	BA with suppression diode and ground wire
DF	24 VDC (4.0W)	BG	BA with suppression diode and light
DG	12 VDC (1.0W)	ВН	BA with suppression diode, light and ground wire
DJ	12 VDC (1.8W)	BN	BA with suppression diode and blocking diode
DK	12 VDC (2.5W)	ВР	BA with suppression diode, blocking diode and ground wire
DM	12 VDC (3.0W)	BR	BA with suppresion diode, blocking diode and light
DN	12 VDC (4.0W)	BS	BA with suppression diode, blocking diode, light and ground
DR	6 VDC (1.8W)	-	wire
DS	6 VDC (3.0W)	GA	MAC JAC Solenoid plug-in
EB	48 VDC (1.8W)	GB	MAC JAC Solenoid plug-in w/Diode
EC	48 VDC (3.0W)	GC	MAC JAC Solenoid plug-in w/MOV
ED	120 VDC (2.5W)	GD	MAC JAC Solenoid plug-in w/LED
GD	12 VDC (0.5W) 34 series only	GE	MAC JAC Solenoid plug-in w/Diode & LED
GE	24 VDC (0.5W) 34 series only	GF	MAC JAC Solenoid plug-in w/MOV & LED
		GG	MAC JAC Solenoid plug-in w/Rectifier
	2. WIRE LENGTH	GH	MAC JAC Solenoid plug-in w/Rectifier & LED
A VV V V VV	WIDE 15116511	KA	Solenoid plug-in wire assembly
	WIRE LENGTH	КВ	KA with ground
0	No lead wires (used only with "KJ" & "KM" connectors)	KC	KA with rectifier and light
A	18" coil leads	KD	KA with rectifier, light and ground
B	24" coil leads	KE	KA with suppression diode
C	36" coil leads 48" coil leads	KF KJ	KA with suppression diode and ground
E	72" coil leads	KM	Solenoid plug-in housing without wire assembly Solenoid plug-in housing with ground pin without wire
F	96" coil leads	KWI	assembly
G	120" coil leads	KN	KA with suppression diode and blocking diode
Н	144" coil leads	KP	KA with suppression diode, blocking diode and ground
	18" base leads	KT	KA with light
2	24" base leads	KU	KA with light and ground
3	36" base leads	KV	KA with suppression diode and light
4	48" base leads	KW	KA with suppression diode, light and ground
5	72" base leads	KX	KA with suppression diode, blocking diode and light
6	96" base leads	KY	KA with suppression diode, blocking diode, light & ground
7	120" base leads		
		ELEC	TRICAL CONNECTION FOR PLUG-IN VALVES
	3. MANUAL OPERATOR	C	DI HE IN ARTIQUE
G-XX X-X XX	MANUAL OPERATOR	G-XX X-X XX	PLUG-IN OPTIONS Base plug-in with ground
1 2-VV V-V VY	Non-locking recessed	SC	Base plug-in with suppression and blocking diode
2	Locking recessed	SD	Base plug-in with suppression and blocking diode and ground
3	Non-locking extended	SE	Base plug-in with MOV
4	Locking extended	SF	Base plug-in with MOV and ground
	200g Onoridod	5G	Base plug-in with rectifier
		SH	Base plug-in with rectifier and ground
		SK	Base plug-in with light and ground
		SL SL	Base plug-in with suppression and blocking diode and light
		SM	Base plug-in with suppression and blocking diode with light
		5111	and ground
		- SN	Base plug-in with MOV and light
		SP	Base plug-in with MOV and light with ground
		SR	Base plug-in with rectifier and light
			2000 F.09 III WIIII FOOIIIOF GIRG IIGIII



OPTIONS AVAILABLE FOR

- Solenoid valves 52 & 400 Series



	1. VOLTAGE		4. ELECTRICAL CONNECTION
G-XX X-X XX	VOLTAGE	G-XX X-X XX	ELECTRICAL CONNECTION
DC	24 VDC (1.8 W)	BA	Flying leads
DD	24 VDC (2.5 W)	ВВ	BA with ground wire
DE	24 VDC (3.0 W)	ВС	BA with light parallel to leads
DF	24 VDC (4.0 W)	BD	BA with light parallel to leads & ground wire
DJ	12 VDC (1.8 W)	BE	BA with suppression diode
DK	12 VDC (2.5 W)	BF	BA with suppression diode & ground wire
DM	12 VDC (3.0 W)	BG	BA with suppression diode plus light parallel to leads
DN	12 VDC (4.0 W)	ВН	BA with suppression diode plus light parallel to leads & ground wire
	2. WIRE LENGTH	*BN	BA with suppression diode plus blocking diode
G-XX X-X XX	WIRE LENGTH	*BP	BA with suppression diode plus blocking diode & ground wire
0	No lead wire (use only with "KJ" & "KM" elecrical connectors)	*BR	BA with suppression diode plus blocking diode & light parallel to leads
A B	18" 24"	*BS	BA with suppression diode plus blocking diode & light parallel to leads & ground wire
С	36"	ВТ	BA with light on top
D	48"	BU	BA with light on top & ground wire
E	72"	BV	BA with suppression diode plus light on top
F	96"	BW	BA with suppression diode plus light on top & ground wi
G	120"	*BX	BA with suppression diode plus blocking diode & light on to
Н	144"	*BY	BA with suppression diode plus blocking diode & light or top & ground wire
G-XX X-X XX	MANUAL OPERATOR	G-XX X-X XX	SOLENOID PLUG-IN CONNECTOR WITH LEADS
1	Non-locking recessed	<u>GA</u>	MAC JAC Solenoid plug-in
2	Locking recessed	GB	MAC JAC Solenoid plug-in w/Diode
3	Non-locking extended	GC GC	MAC JAC Solenoid plug-in w/MOV
4	Locking extended	<u>GD</u>	MAC JAC Solenoid plug-in w/LED
		GE	MAC JAC Solenoid plug-in w/Diode & LED
		<u>GF</u>	MAC JAC Solenoid plug-in w/MOV & LED
		GG	MAC JAC Solenoid plug-in w/Rectifier
		GH	MAC JAC Solenoid plug-in w/Rectifier & LED
		KA	Plug-in wire assembly
		КВ	KA with ground wire
		KE	KA with suppression diode
		KF	KA with suppression diode & ground wire
		KJ	Plug-in housing without wire assembly ('KA' without wire assembly)
		КМ	Plug-in housing without wire assembly ('KB' without wire assembly)
		*KN	KA with suppression diode plus blocking diode
		*KP	KA with suppression diode plus blocking diode & ground wir
		КТ	KA with light on top
		KU	KA with light on top & ground wire
		KV	KA with suppression diode plus light on top
		KW	KA with suppression diode plus light & ground wire
		*KX	KA with suppression diode plus blocking diode & light on to
		*KY	KA with suppression diode plus blocking diode & light or top & ground wire
		Note: Blocking diode	is located in the lead wire



OPTIONS AVAILABLE FOR

- Solenoid valves 37 & 47 Series



	1. VOLTAGE	H-XX X-X XX	
		BL	BA with full wave rectifier & ground wire
H-XX X-X XX	VOLTAGE	ВТ	BA with full wave rectifier plus light
AA	120/50, 120/60 (6.7 W) (use connector with rectifier)	BU	BA with full wave rectifier plus light & ground wire
AB	220/50, 220/60 (5.6 W)	H-XX X-X XX	PLUG-IN CONNECTOR
	(use connector with rectifier)	FA	Base plug-in
AC	240/50, 240/60 (5.8 W) (use connector with rectifier)	FB	FA with ground wire
	<u> </u>	FC	FA with light
AD	24/50, 24/60 (7.8 W) (use connector with rectifier)	FD	FA with light & ground wire
	·	FE	FA with suppression diode
DA	24 VDC (5.2 W)	FF	FA with suppression diode & ground wire
DB	24 VDC (2.4 W)	FG	FA with suppression diode & light
DC	24 VDC (1.8 W)	FH	FA with suppression diode plus light & ground wire
DD	24 VDC (1.0 W)	FK	FA with full wave rectifier
DF	12 VDC (5.2 W)	FL	FA with full wave rectifier & ground wire
DG	12 VDC (2.4 W)	*FN	FA with suppression diode plus blocking diode
DH	12 VDC (1.8 W)	*FP	FA with suppression diode plus blocking diode & ground wire
DJ	12 VDC (1.0 W)	*FR	FA with suppression diode plus blocking diode plus light
DL	120 VDC (6.3 W)	*FS	FA with suppression diode plus blocking diode & light & ground wire
	2. WIRE LENGTH	FT	FA with full wave rectifier plus light
		FU	FA with full wave rectifier plus light & ground wire
H-XX X-X XX	WIRE LENGTH	MA	Solenoid plug-in wire assembly
0	No lead wire (use with "MJ, MM & K Type connectors)	МВ	MA with ground wire
A	18"	МС	MA with light
В	24"	MD	MA with light & ground wire
C	36"	ME	MA with suppression diode
D	48"	MF	MA with suppression diode & ground wire
E	72"	MG	MA with suppression diode plus light
F	96"	МН	MA with suppression diode plus light & ground wire
G	120"	MK	MA with full wave rectifier
Н	144"	ML	MA with full wave rectifier & ground wire
		*MN	MA with suppression diode plus blocking diode
	3. MANUAL OPERATOR	*MP	MA with suppression diode plus blocking diode & ground wire
		*MR	MA with suppression diode plus blocking diode & light
H-XX X-X XX	MANUAL OPERATOR	*MS	MA with suppression diode plus blocking diode & light & ground wire
1	No operator Non-locking recessed	MT	
2			MA with full wave rectifier plus light
3	Locking recessed	MU MJ	MA with full wave rectifier plus light & ground wire
4	Non-locking extended Locking extended	MIJ	Plug-in housing without wire assembly ('MA' option without wire assembly)
	Locking extended	MM	Plug-in housing without wire assembly ('MB' option
	4. ELECTRICAL CONNECTION	741741	without wire assembly)
	4. ELECTRICAL CONNECTION	- VA	, ·
ш. vv v.v vv	ELECTRICAL CONNECTION	KA	Mini square connector
H-XX X-X XX		KB KC	KA with suppression diode KA with M.O.V.
BA	Flying leads		
BB BC	BA with ground wire	KD	KA with light
BD	BA with light BA with light & ground wire	KE KF	KA with light & suppression diode
			KA with light & M.O.V.
BE	BA with suppression diada & ground wire	KJ	Mini square connector – male only
BF BG	BA with suppression diode & ground wire BA with suppression diode plus light	KK KL	KJ with suppression diode KJ with M.O.V.
	BA with suppression diode plus light & ground wire	KM	KA with full wave rectifier
BH *BN	11 1 0 0		
	BA with suppression diode plus blocking diode	KN	KA with full wave rectifier & M.O.V.
*BP	BA with suppression diode plus blocking diode & ground wire	KP	KA with full wave rectifier & light
*BR	BA with suppression diode plus blocking diode & light	KR	KA with full wave rectifier plus light & M.O.V.
*BS	BBA with suppression diode plus blocking diode & light & ground wire	* Blocking diode is loc	KJ with full wave rectifier cated in the lead wire
BK	BA with full wave rectifier		



VALVE CODE ➤

 $J \underbrace{XX}_{1} \underbrace{X-X}_{2} \underbrace{XX}_{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 36, 46, ISO 01 and ISO 02 Series



	1. VOLTAGE	J-XX X-X XX	
		*JL	Square Connector with Rectifier with light
J-XX X-X XX	VOLTAGE	*JJ	Square Connector Male only (Plain)
AA	120VAC (5.4W)	*JB	Rectangular Connector
AC	24VAC (5.4W)	*JD	Rectangular Connector with light
DE	24VDC (1.8W)	*JN	Rectangular Connector with diode
DF	12VDC (1.8W)	*JP	Rectangular Connector with MOV
DJ	24VDC (1.3W)	*JR	Rectangular Connector with diode/light
DL	12VDC (1.3W)	*J5	Rectangular Connector with MOV/light
DN	12VDC (0.5W)*	*JT	Rectangular Connector with Rectifier
DR	12VDC (1.0W)*	*JU	Rectangular Connector with Rectifier with light
DS	24VDC (0.5W)*	*JM	Rectangular Connector Male only (Plain)
DU	24VDC (1.0W)*	* Not available on ma	anifold or stacking valves
* Not available on 36	series universal valve		
			CONNECTORS FOR NON PLUG-IN VALVES
	2. WIRE LENGTH	J-XX X-X XX	MINI SQUARE PLUG-IN CONNECTORS 9.4 MM SPACING BETWEEN PINS
J-XX X-X XX	WIRE LENGTH	KA	Mini plug-in
A	18" coil leads	KB	Mini plug-in with diode
B	24" coil leads	KC	Mini plug-in with MOV
<u> </u>	36" coil leads	KD	Mini plug-in with light
D	48" coil leads	KE	Mini plug-in with diode and light
<u>B</u>	72" coil leads	KF	Mini plug-in with MOV and light
	96" coil leads	KG	Mini plug-in with rectifier
	Base plug-in	KH	Mini plug-in with rectifier and light
0	No leads (use with J, K & L type connectors)	KJ	Mini plug-in – Male only
	140 leads (use with 3, K & L type conflectors)	KK	Mini plug-in with diode - Male only
	3. MANUAL OPERATOR	KL	Mini plug-in with MOV - Male only
	3. MANUAL OPERATOR	КМ	Mini plug-in with light - Male only
1 VV V V VV	MANUAL OPERATOR	KN	Mini plug-in with diode and light – Male only
J-XX X-X XX	MANUAL OPERATOR	KP	Mini plug-in with MOV and light – Male only
0	No operator	KR	Mini plug-in with rectifier – Male only
1	Non-locking recessed	KS	Mini plug-in with rectifier and light – Male only
2	Locking recessed		Trini plog in trini reciner and light. Triale only
3	Non-locking extended		CONNECTORS FOR NON PLUG-IN VALVES
4	Locking extended	J-XX X-X XX	MINI SQUARE PLUG-IN CONNECTORS
	4 FIFATRICAL CONDITION		8.0 MM SPACING BETWEEN PINS
	4. ELECTRICAL CONNECTION		ISO SPECIFICATION 15217
	AANNEADAR BAR NAN BINA IN WALVE	LA	Mini plug-in
	CONNECTORS FOR NON PLUG-IN VALVES	LB	Mini plug-in with diode
J-XX X-X XX	ELECTRICAL CONNECTION	LC	Mini plug-in with MOV
BA	Flying leads	LD	Mini plug-in with light
GA	MAC JAC solenoid plug-in	LE	Mini plug-in with diode and light
GB	MAC JAC solenoid plug-in with diode	LF	Mini plug-in with MOV and light
GC	MAC JAC solenoid plug-in with MOV	LG	Mini plug-in with rectifier
GD	MAC JAC solenoid plug-in with light	LH	Mini plug-in with rectifier and light
GE	MAC JAC solenoid plug-in with diode and light MAC JAC solenoid plug-in with MOV and light	LJ	Mini plug-in – Male only
	MAN INC colonoid plug-in with MCVV and light	11/	Mini plug-in with diode - Male only
GF	MAC JAC solenoid plog-III will MOV drid light	LK	
GG	MAC JAC solenoid plug-in with rectifier	LL	Mini plug-in with MOV - Male only
GG GH	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light	LL LM	Mini plug-in with MOV - Male only Mini plug-in with light - Male only
GG GH GJ	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only	LL	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light – Male only
GG GH GJ GK	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only	LL LM	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only
GG GH GJ GK GL	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only	LL LM LN	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light – Male only
GG GH GJ GK GL GM	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only	LL LM LN LP	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only
GG GH GJ GK GL GM	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only	LL LM LN LP LR LS	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only
GG GH GJ GK GL GM GN GP	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only	LL LM LN LP LR LS J-XX X-X XX	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES
GG GH GJ GK GL GM GN GP	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only	LL LM LN LP LR LS J-XX X-X XX FA	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in
GG GH GJ GK GL GM GN GP GR GS	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier – Male only	LL LM LN LP LR LS J-XX X-X XX FA FB	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode
GG GH GJ GK GL GM GN GP GR GS *JA	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier and light – Male only Square Connector	LL LM LN LP LR LS J-XX X-X XX FA FB FC	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode Base plug-in with MOV
GG GH GJ GK GL GM GN GP GR GS *JA	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with MOV and light – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier – Male only Square Connector with light	LL LM LN LP LR LS J-XX X-X XX FA FB FC FD	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode Base plug-in with MOV Base plug-in with light
GG GH GJ GK GL GM GN GP GR GS *JA *JC *JE	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with wOV and light – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier and light – Male only Square Connector Square Connector with light Square Connector with diode	LL LM LN LP LR LS J-XX X-X XX FA FB FC FD FE	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode Base plug-in with MOV Base plug-in with light Base plug-in with diode and light
GG GH GJ GK GL GM GN GP GR GS *JA *JC *JF	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier – Male only Square Connector Square Connector with light Square Connector with diode Square Connector with MOV	LL LM LN LP LR LS J-XX X-X XX FA FB FC FD FE FF	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode Base plug-in with MOV Base plug-in with MOV Base plug-in with diode and light Base plug-in with diode and light Base plug-in with MOV and light
GG GH GJ GK GL GM GN GP GR GS *JA *JC *JF *JF	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in - Male only MAC JAC solenoid plug-in with diode - Male only MAC JAC solenoid plug-in with diode - Male only MAC JAC solenoid plug-in with MOV - Male only MAC JAC solenoid plug-in with light - Male only MAC JAC solenoid plug-in with diode and light - Male only MAC JAC solenoid plug-in with MOV and light - Male only MAC JAC solenoid plug-in with rectifier - Male only MAC JAC solenoid plug-in with rectifier and light - Male only Square Connector Square Connector with light Square Connector with diode Square Connector with diode Square Connector with diode/light	LL LM LN LP LR LS J-XX X-X XX FA FB FC FD FE FF FG	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode Base plug-in with MOV Base plug-in with light Base plug-in with diode and light Base plug-in with MOV and light Base plug-in with MOV and light Base plug-in with MOV and light
GG GH GJ GK GL GM GN GP GR GS *JA *JC *JE	MAC JAC solenoid plug-in with rectifier MAC JAC solenoid plug-in with rectifier and light MAC JAC solenoid plug-in – Male only MAC JAC solenoid plug-in with diode – Male only MAC JAC solenoid plug-in with MOV – Male only MAC JAC solenoid plug-in with light – Male only MAC JAC solenoid plug-in with diode and light – Male only MAC JAC solenoid plug-in with MOV and light – Male only MAC JAC solenoid plug-in with rectifier – Male only MAC JAC solenoid plug-in with rectifier – Male only Square Connector Square Connector with light Square Connector with diode Square Connector with MOV	LL LM LN LP LR LS J-XX X-X XX FA FB FC FD FE FF	Mini plug-in with MOV - Male only Mini plug-in with light - Male only Mini plug-in with diode and light - Male only Mini plug-in with MOV and light - Male only Mini plug-in with rectifier - Male only Mini plug-in with rectifier and light - Male only Mini plug-in with rectifier and light - Male only CONNECTORS FOR PLUG-IN VALVES Base plug-in Base plug-in with diode Base plug-in with MOV Base plug-in with MOV Base plug-in with diode and light Base plug-in with diode and light Base plug-in with MOV and light



VALVE CODE ➤

 $L \frac{XX}{1} \frac{X-X}{2} \frac{XX}{3} \frac{XX}{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 32, 38, 42, 44, 47 & 48 Series



1. VOLTAGE (32, 38, 42, 44, 48 SERIES)			1. VOLTAGE (47 SERIES)	
L- XX X-X XX	VOLTAGE	L- XX X-X XX	VOLTAGE	
DF	24VDC (4.0W)	DA	24VDC (5.2W)	
DN	12VDC (4.0W)	DF	12VDC (5.2W)	
НА	24VDC (1.95W)			
HE	12VDC (1.95W)			

2. WIRE LENGTH (all series)

L- XX X-X XX	WIRE LENGTH
0	No lead wire
A	18"
В	24"
С	36"
D	48"
E	72"
F	96"
G	120"
Н	144"

3. MANUAL OPERATOR (all series)

L- XX X-X XX	MANUAL OPERATOR
0	No operator

4. ELECTRIC	AL CONNECTOR (32, 38, 42, 44 & 48 series)	4. ELECTRICAL CONNECTOR (47 series)	
L-XX X-X XX	NON PLUG-IN	L- XX X-X XX	NON PLUG-IN
BA	2 wire flying leads	ВА	2 wire flying leads
ВВ	2 wire flying leads with ground wire	ВВ	2 wire flying leads with ground wire
ВС	2 wire flying leads with light	BC	2 wire flying leads with light
BD	2 wire flying leads with light & ground wire	BD	2 wire flying leads with light & ground wire
BJ	4 wire flying leads	BJ	4 wire flying leads
BK	4 wire flying leads with ground	ВК	4 wire flying leads with ground
BL	4 wire flying leads with light	BL	4 wire flying leads with light
BM	4 wire flying leads with light & ground wire	ВМ	4 wire flying leads with light & ground wire
KA	2 wire plug-in assembly	LA	3 wire plug-in assembly (Plarity switching cover)
KB	2 wire plug-in assembly with ground wire	MA	2 wire plug-in assembly
KC	2 wire plug-in assembly with light	МВ	2 wire plug-in assembly with ground wire
KD	2 wire plug-in assembly with light and ground wire	MC	2 wire plug-in assembly with light
KE	4 wire plug-in assembly	MD	2 wire plug-in assembly with light and ground wire
KF	4 wire plug-in assembly with ground wire	ME	4 wire plug-in assembly
KG	4 wire plug-in assembly with light	MF	4 wire plug-in assembly with ground wire
KH	4 wire plug-in assembly and ground wire	MG	4 wire plug-in assembly with light
LA	3 wire plug-in assembly (polarity switching cover)	МН	4 wire plug-in assembly with light and ground wire
		L- XX X-X XX	PLUG-IN
L-XX X-X XX	PLUG-IN	EA	Base plug-in 3 pin (Polarity switching cover)
*DA	Base plug-in	FA	Base plug-in with ground
*DB	Base plug-in with ground pin	FB	Base plug-in with ground & light
*DC	Base plug-in with light	FC	Base plug-in 4 wire with ground
*DD	Base plug-in with light & ground pin	FD	Base plug-in 4 wire with light & ground
**EA	Base plug-in 3 pin (Plarity switching cover)		

^{*} Use these options for plug-in base with 2 or 4 wire assemblies

** Use this option for plug-in bases with 3 wire assemblies



VALVE CODE ➤

 $R \frac{XX}{1} \frac{X - X}{2} \frac{XX}{3}$

OPTIONS AVAILABLE FOR

- Solenoid valves 33 Series



	1. VOLTAGE
R-XX X-X XX	VOLTAGE
DA	24 VDC (0.5W)
DB	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DE	24 VDC (3.0W)
DF	24 VDC (4.0W)
DG	12 VDC (0.5W)
DH	12 VDC (1.0W)
DJ	12 VDC (1.8W)
DK	12 VDC (2.5W)
DL	12 VDC (3.0W)
DM	12 VDC (4.0W)
EA*	24 VDC (60W)
EB*	24 VDC (90W)
EC*	24 VDC (230W)

2. WIRE LENGTH (all series)

R-XX X-X XX	WIRE LENGTH
0**	No lead wire
A	18"
В	24"
С	36"
D	48"
E	72"
F	96"
G	120"
Н	144"

3. MANUAL OPERATOR

R-XX X-X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
3	Non-locking extended

4. ELECTRICAL CONNECTOR

R-XX X-X XX	NON PLUG-IN
BA	Flying leads
ВВ	Flying leads with LED
ВС	Flying leads with MOV
BD	Flying leads with LED and MOV
RA	Mini JAC solenoid plug-in
RB	Mini JAC solenoid plug-in with LED
RC	Mini JAC solenoid plug-in with MOV
RD	Mini JAC solenoid plug-in with LED and MOV
TA	JST solenoid plug-in
ТВ	JST solenoid plug-in with LED
TC	JST solenoid plug-in with MOV
TD	JST solenoid plug-in with LED and MOV
*MOD numbers requ	ired for these voltages (consult factory) ** Not available for flying leads connector



Section 7

Supplemental technical information



MAC's PATENDED LATCHING SOLENOID - Eliminates one Solenoid, Simplifies Wiring, Reduces Package Size

MAC's latching solenoid technology provides the function of a double solenoid operated valve utilizing only one solenoid.

Typical 2 position direct operated double solenoid valves use two solenoids with spool/bore technology. When the power is removed from either solenoid, the spool position and valve function is maintained.

With direct acting solenoid valves, poppets with their inherent short strokes are not typically used as they cannot maintain sealing position when both solenoids are deenergized. As a consequence, longer stroking spool type solenoid valves are used which results in lower shifting forces. MAC's latching solenoid technology eliminates the sealing issue with poppets when no electrical signal is applied, by maintaining solenoid force, ensuring adequate sealing, while using short stroking poppets resulting in high shifting forces.

MAC's latching solenoid only requires one solenoid and correspondingly one plug-in and one conduit wireway verus two for conventional double solenoid valve, saving space, weight and cost. An added benefit of a latching solenoid valve when mounted on a circuit bar is the additional option of side cylinder ports.

HOW IT WORKS

Unlike a spool and bore valve, a poppet valve requires that a force be continuously applied to either end of the poppet to ensure that proper sealing occurs. If another solenoid was simply added to the valve to create a double solenoid valve, power would need to be constantly applied to either solenoid for the valve to function properly (see Figure 1). If the poppet valve is converted to a spool and bore type valve design, the longer stroke of the spool and solenoid would result in lower net shifting forces (see Figure 2), compromising the valves shifting reliability.

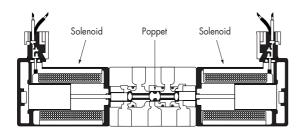


Figure 1 : Double Solenoid Poppet

The latching solenoid overcomes these problems by introducing a powerful permanent magnet armature assembly which magnetically latches itself to the pole piece and in turn keeps the poppet sealed against the conical seats when the power is removed from the solenoid. To shift the poppet in the opposite direction, the polarity of the voltage applied to the solenoid leads is reversed and the attractive force between the permanent magnet armature assembly and the pole piece is reduced. The return spring in the valve then shifts the poppet to its other sealing position and the permanent magnet armature assembly is then magnetically attracted to the upper latch. The upper latch prevents the permanent magnet armature assembly from attracting itself back to the pole piece when the voltage is removed. Reversing the polarity again to the solenoid lead wires will create a powerful attractive force between the permanent magnet armature assembly and the pole piece and away from the upper latch which will correspondingly move the poppet to the other shifted position.

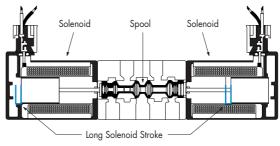


Figure 2 : Double Solenoid Spool Design

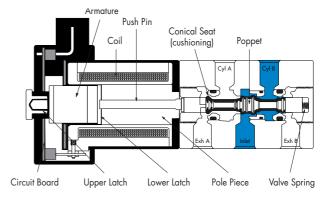
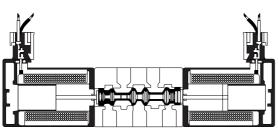


Figure 3 : Latching Solenoid Design



WIRING INSTRUCTIONS AND OPTIONS

As shown in Figure 4, a conventional double solenoid valve requires that the pair of lead wires from each solenoid be wired to an appropriate voltage source, MAC's latching solenoid technology has the option of being wired in one of the three (3) currently available methods.



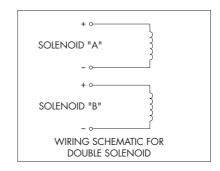
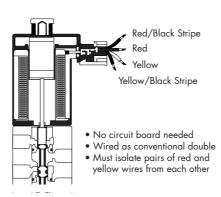
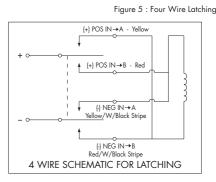


Figure 4: Conventional Double Solenoid

FOUR WIRE

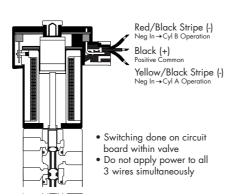
As shown in Figure 5, the four wire method enables the coil to be wired as if it were a conventional double solenoid. By connecting the yellow lead wire to positive voltage and the yellow lead wire with black stripe to negative, the valve will be open to cylinder port"A". When positive voltage is supplied to the red lead wire and negative to the red lead with a black stripe, the valve will now be open to cylinder port"B". Since the negative red and yellow lead wires are internally connected together, the supply voltage for each pair of yellow and red lead wires must be isolated from the other pair (see diagram). Also, power must not be applied to all four leads simultaneously or a short circuit condition will occur possibly damaging the voltage source.





THREE WIRE

Unlike the two wire method (see Figure 7) which requires the user to provide the polarity switching circuitry, the three wire method incorporates the polarity switching circuitry within the solenoid enclosure (see Figure 6). The black lead wire provided must be connected to positive and is used as a common. When negative voltage is supplied to the yellow lead wire with a black stripe the valve will be open to cylinder port "A". When the negative voltage is removed from the yellow lead wire with the black stripe and supplied to the red lead wire with a black stripe, the valve will now be open to cylinder port "B". Applying voltage to all three wires simultaneously or with the wrong polarity will cause permanent damage to the switching circuitry in the solenoid cover, and the valve won't work.



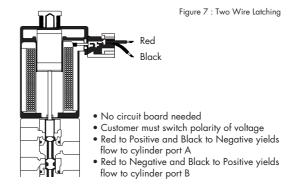
YFILOW W/BLACK STRIPE RED W/BLACK STRIPE (+) COMMON BLACK 3 WIRE SCHEMATIC FOR LATCHING

Figure 6 : Three Wire Latching



TWO WIRE

The two wire method shown in Figure 7, provides a black and red lead wire connected to the solenoid. The user must provide the polarity switching circuitry to these leads in order to shift the valve to its two positions. By applying positive DC voltage to the red lead wire and negative to the black, the valve will be open to cylinder port "A". When the polarity of the voltage is externally reversed to the lead wires the valve will now become open to cylinder port "B".



AVAILABLE OPTIONS

The 2 and 4 wire connections are available in both a flying lead and plug-in cover. The 3 wire connection is only available in the plug-in style cover. All 2 and 4 wire cover options are available with an LED indicator. The LED indicator on a 3 wire cover is standard. The LED will illuminate red for cylinder "A" operation and green for cylinder "B" operation.

The 3 wire connection must be used for valves connected to either a multi-pin connector or a serial manifold. Mixing single solenoids with latching solenoids on a circuit bar is possible since each station of the bar is wired for a latching coil. The circuit bar must be ordered with this wiring configuration. If required, a negative common 3 wire connection is also available, please consult factory.

HOW TO ORDER

The numbering system for a latching solenoid differs from the numbering system for a single solenoid valve. The letter "L" within the model number indicates a latching solenoid, while the letter "G" or "H" in the same position of the model number indicates a single solenoid valve.



PRECAUTIONS AND WARNINGS CONCERNING THE APPLICATION, INSTALLATION AND SERVICE OF MAC VALVES AND OTHER MAC VALVES PRODUCTS

The warnings and precautions below are important to be read and understood before designing into a system any MAC Valves products, and before installing or servicing any MAC Valves product. Improper use, installation or servicing of any MAC Valves product in some systems could create a hazard to personnel or equipment. No distinction in importance should be made between the terms warnings and precautions.

WARNING:

Under no circumstances are MAC Valves products to be used in any application or in any manner where failure of the MAC Valves product to operate as intended could in any way jeopardize the safety of the operator or any other person or property.

- Do not operate outside of pressure range listed on a valve label or outside of the designated temperature range.
- Air supply must be clean and dry. Moisture or contamination can affect proper operation of the valve.
- Before attempting to repair, adjust or clean a MAC Valves product, consult catalog, parts & operation sheet, or factory for proper maintenance procedures, lubrication and cleaning agents. Never attempt to repair or perform other maintenance with air pressure to the valve.
- If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

APPLICATION PRECAUTIONS:

INDUSTRIAL USE -

MAC Valve products are intended for general use in industrial pneumatic and/or vacuum systems.
They are general purpose industrial products with literally thousands of different applications in
industrial systems. These products are not inherently dangerous, but they are only a component of
an overall system. The system in which they are used must provide adequate safeguards to prevent
injury or damage in the event failure occurs, whether it be failure of switches, regulators, cylinders,
valves or any other component.

POWER PRESSES -

MAC Valve products are not designed nor intended to be used to operate and/or control the operation of clutch and/or brake systems on power presses. There are special products on the market for such use

2-POSITION VALVES -

Some MAC valves are 2-position, 4-way valves. When air is supplied to the inlet port(s) of these valves, there will always be a flow path from the inlet to one of the outlets regardless of which of the two positions the valve is situated. Therefore, if pressurized air retained in the system would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the trapped air.

3- POSITION VALVES-

Some MAC valves are 3-position, 4-way valves. These valves are either double solenoid or double remote air operated.

If either of the two operators is in control, air supplied to the inlet port(s) will pass through the valve to one of the outlets as on 2-position, 4-way valves. However, if neither operator is in control, the valve moves to a center position. Listed below are the various center position functions:

A. CLOSED CENTER-

With this type valve, when in the center position all ports are blocked (inlets and exhausts) meaning the air at both outlet ports is trapped. If trapping the air in both outlet ports would present a hazard in the application or servicing, a separate method in the system must be provided to remove the trapped air or this type valve should not be used.

B. OPEN CENTER-

With this type valve, when in the center position, the inlet port(s) is blocked and the two outlet ports are open to the exhaust port(s) of the valve. If having no air in either outlet port would present a hazard in the application or servicing, this type valve should not be used.

C. PRESSURE CENTER-

With this type valve, when in the center position, the inlet port(s) is connected to both outlet ports of the valve. If having pressurized air to either or both outlet ports would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the retained air or this type valve should not be used.

OPERATING SPECIFICATIONS -

MAC Valves products are to be installed only on applications that meet all operating specifications described in the MAC catalog for the MAC Valves product.

MANUAL OPERATORS-

Most MAC valves can be ordered with manual operators. Manual operators when depressed, are designed to shift the valve to the same position as would the corresponding solenoid or remote air pilot operator if it were activated. Care must be taken to order a type, if any, that will be safe for the physical location of the manual operator in the system. If intentional or accidental operation of a valve by a manual operator could cause personal injury or property damage, a manual operator should not be used.

REMOTE AIR OPERATED VALVES

Pilot valves supplying signal pressure to remote air operated valves should be 3-way valves with adequate supply and exhaust capacity to provide positive pressurizing and exhausting of the pilot supply line. Pilot lines should be open to exhaust when valves are deenergized.

INSTALLATION PRECAUTIONS:

- A. Do not install any MAC Valves product without first turning off air (bleed system completely) and electricity to the machine.
- B. MAC Valves products should only be installed by qualified, knowledgeable personnel who understand how the specific valve is to be pneumatically piped and electrically connected (where applicable). Flow paths through the valve are shown in the catalog and on the valve by use of ANSI or ISO type standard graphic symbols. Do not install unless these symbols and the valve functions and operations are thoroughly understood.
- C. If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

SERVICE PRECAUTIONS:

- A. Do not service or remove from service any MAC Valves product without first shutting off both the air and electricity to the valve and making certain no pressurized air which could present a hazard is retained in the system.
- B. MAC Valves products should only be serviced or removed from service by qualified, knowledgeable personnel who understand how the specific product is used and/or how the specific valve is piped and used and whether there is air retained in the connecting lines to the valve or electric power still connected to the valve.
- C. Before attempting to repair, adjust or clean a MAC Valves product, consult catalog, parts & operation sheet, or factory for proper maintenance procedures, lubrication and cleaning agents. Never attempt to repair or perform other maintenance with air pressure to the valve.
- D. MAC Valves products are never to be stepped on while working on a machine. Damage to a MAC valve, or other product or lines to the product (either air or electrical lines) or accidental activation of a manual operator on the valve could result in personal injury or property damage.

LIMITATION OF GUARANTEE

This Guarantee is limited to the replacement or rebuilding of any valve or other product which should fail to operate properly. Valves or other products, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the Guarantee period. They will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same guarantee as provided under the Flat Rate Rebuild Program.

DISCLAIMER OF GUARANTEE

No claims for labor, material, time, damage, or transportation are allowable nor will any valve or other product be replaced or rebuilt under this guarantee which has been damaged by the purchaser not in the normal course of its use and maintenance during the warranty period. The guarantee does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc. MAC Valves, Inc. shall in no event be liable for remote, special or consequential damages under the MAC Guarantee, nor under any implied warranties, including the implied warranty of merchantability.

The above Guarantee is our manner of extending the engineering and service resources of the MAC Valves, Inc. organization to assure our customer long, and continued satisfaction.



Notes



MAC VALVES, INC. P.O. BOX 111 30569 BECK ROAD WIXOM, MI 48393-7011

TEL: 1-800-MAC VLVS TEL: 1 (248) 624-7700 FAX: 1 (248) 624-0549 E-mail: Mac@macvalves.com Web Site: www.macvalves.com

MAC VALVES EUROPE, INC. RUE MARIE CURIE, 12 B-4431 ANS (LIEGE) BELGIUM

TEL: 32 (4) 239 68 68 FAX: 32 (4) 263 19 42 E-mail: Info@macvalves.be

MAC VALVES PACIFIC, INC. P.O. BOX 12221 PENROSE, AUCKLAND NEW ZEALAND

TEL: 64 (9) 634-9400 FAX: 64 (9) 634-9401 E-mail: Macvalves@xtra.co.nz

MAC VALVES, INC. 5555 ANN ARBOR ROAD DUNDEE, MICHIGAN (MI) 48131 U.S.A.

TEL: 1 (734) 529-5099 FAX: 1 (248) 863-2111

