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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 - compact packaging

- speed - modularity

- repeatability - specific application modifications

- non lube service - low wattage

- ease of maintenance - 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.

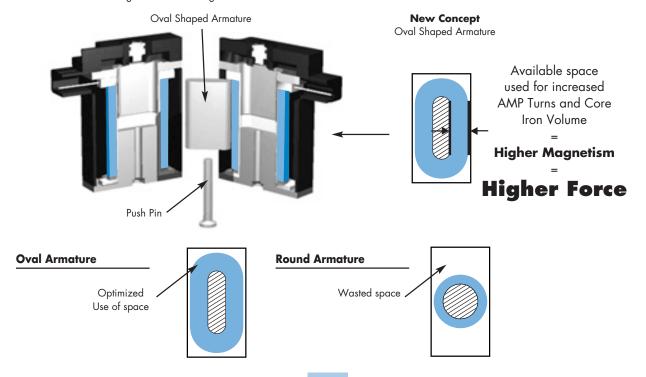
The patented Latching Solenoid is another new offering to the MAC product line. The latching solenoid provides the function of a double solenoid operated valve utilizing only one solenoid.

#### 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:

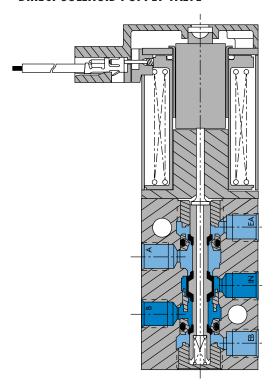
- Increased coil windings (amp turns)
- Increased core iron volume

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**





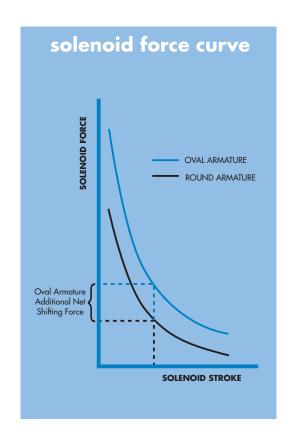
**Short Stroke = High solenoid force** 

**Short Stroke = High return spring force** 

Short Stroke = Low current to shift solenoid

# DIRECT OPERATED 10 MM DESIGN WITH OVAL SHAPED ARMATURE

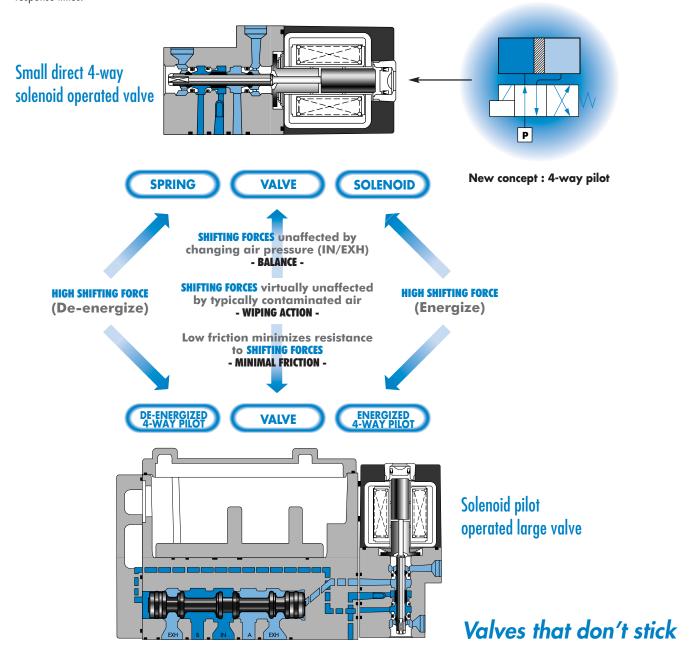
- Balanced poppet, with no seals of any kind in a bore no friction
- New patented MAC solenoid® with "oval" shaped armature provides high shifting force through more core iron and magnet wire
- Balanced poppet high shifting forces unaffected by fluctuations in air pressure
- Short stroke direct operated poppet valve (patented adjustable inlet seat controls stroke) - high shifting force - without small piston and no minimum operating pressure
- Large orifice "0.0024 in<sup>2</sup>"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

O 3500 employees

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



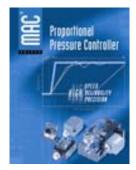
999CTCB



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
- Pilot operated valves 3 ways : 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)

- Direct solenoid valves 4 ways :
- 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



Function Port size Flow (Max) Cv Individual mounting

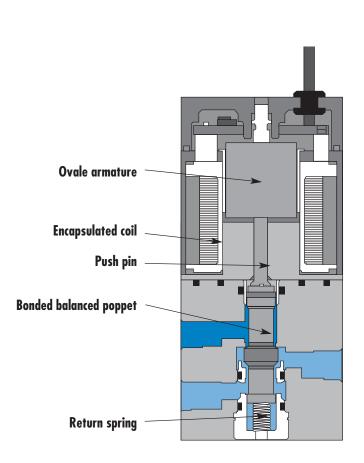
				Sub-base	Sub-base	Sub-base/ manifold base	Sub-base/ manifold base	Valve only - No base	Valve only - No base	Valve only - No base	
			Inline	non "plug-in"	"plug-in"	non "plug-in" with latching solenoid	"plug-in" with latching solenoid	non "plug-in" Conform to ISO 5599/1	"plug-in" Conform to ISO 5599/2	non "plug-in" Conform to ISO 15407/1	
3/2	M3	0.082	P. 15								
3/2 - 2/2	M5 - #10-32	0.12	P. 19								
3/2	1/8"	0.3	P. 23								
3/2	1/8" - #10-32	0.3									
3/2	1/8" - 5/32 O.D. pressed-in tube receptacle	0.3									
3/2	1/8"	0.4		P. 33							
3/2	#10-32 - 1/4" O.D. tube receptacle	0.4			P. 35	P. 41	P. 43				
3/2	1/8" - 1/4"	0.5	P. 47	P. 49							
3/2	1/8" - 1/4" O.D. tube receptacle	1.2		P. 53	P. 55	P. 59	P. 61				
3/2 - 2/2	1/8" - 1/4"	1.5	P. 65								
3/2 - 2/2	3/4" - 1"	20.0	P. 69								
3/2 - 2/2	1 1/2" - 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 tube receptacle	0.3									
5/2 - 5/3	#10-32 - 1/4" O.D. tube receptacle	0.4		P. 95	P. 97						
5/2	#10-32 - 1/4" O.D. tube receptacle	0.4				P. 103	P. 105				
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. 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 - 5/3	1/2" - 3/4"	6.1						P. 193	P. 195		

Manifold mo	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
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P. 25											26
P. 23		P. 27	P. 29								36
		., _,									20
	P. 37	P. 39				P. 41	P. 43				32
	D 57	D EE				D 50	D /1				37
	P. 57	P. 55				P. 59	P. 61				<b>38 52</b>
											67
											69
D 02											44
P. 83		P. 85	P. 87	P. 89	P. 91						46
	P. 99	P. 101	0.								40
						P. 103	P. 105				42
P. 115		P. 117									47
	P. 129	P. 131									48P
	1. 127	1. 101				P. 133	P. 135				48
											400
	P. 151	P. 153									92
	P. 165	P. 167									
											93
										P.173	ISO 01
								P. 181	P. 183	P.177	ISO 02
								P. 187	P. 183		ISO 1
								P. 193	P. 195		ISO 3



#### 8 mm valve

# Individual mounting Series



#### **SERIES FEATURES**

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

ISO 3

33 34

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37 38 52

67 69 44

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**ISO 01** 

ISO 02

**ISO** 1

**ISO 2** 



Function		Port size	Flow (Ma	χ]		Individual m	ounting		Series
3/2 NC		мз	0.082	0.082 C <sub>V</sub>			Inline		
PERATIONAL BEN	EFITS					Patents an	d patents	pending	33
	t solenoid operated. t, immune to pressure v	variations.						_	34
Short stroke with Patented solenoid Low wattage sole Powerful return s	high flow. d develops high shifting enoids. pring.								36
Extremely fast res	sponse times.					A			32
								Wight.	37
						11	1000	0	38
						1,			52
HOW TO ORDI	ER								67
	Port size		N.C.	Only			N.C	. Only **	69
				2				2	44
			<u> </u>	T w				T T W	46
	мз			1 3 -R <b>xxx-xx</b>	(		33A-B	AB-Rxxx-xxx	40
For use with soler	noids above 4.0 W - M	NOD numbe	r required. (Consult factory)						42
OLENOID OP	ERATOR ➤		R <u><b>xx</b></u>	X- <u>X</u> X	X				47
				Ϳʹͺ					48P
XX Volto	~	X	Lead wire length	X	Manual ope		XX	Electrical connection	
DA 24 VD0	C (0.5W) C (1.0W)	- <u>0</u>	No Lead wire*	0	No manual oper Non-locking rece		BA BB	Flying leads Flying leads w/LED	48
DC 24 VD0	C (1.8W)	В	24"	3	Non-locking exte		ВС	Flying leads w/MOV	
	C (4.0W) C (0.5W)	C	36" 48"				BD	Flying leads w/LED & MOV	
	C (1.0W)	E	72"				RA	Mini JAC Solenoid plug-in	400
	C (1.8W)		* Not available for flying				RB	Mini JAC Solenoid plug-in w/LED	
<b>DM</b> 12 VD0	C (4.0W)	-	leads connectors				RC	Mini JAC Solenoid plug-in	92
Oil ii	1111						RD	w/MOV	
Other options av	ailable, see page 321.							Mini JAC Solenoid plug-in w/LED & MOV	93
		B" and "R"	ype electrical connectors.				TA	JST Solenoid plug-in	7 4
onsult factory for a	ordering information.						ТВ	JST Solenoid plug-in w/LED	ISO 01
							TC TD	JST Solenoid plug-in w/MOV  JST Solenoid plug-in w/LED &	
								MOV Plog III W/ LED C	ISO 02
									ISO 1
									ISO 2
									<b>ISO 3</b>







Power:

 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

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

 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

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

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

#### DIMENSIONS

Dimensions shown are metric (mm)

Shown with JST Connector

10,6
4,5
4,6
4,0
20,2
Thru Typ (2)

8,00
4,00

7,5



#### Individual mounting Series Inline

33 34

ISO 02

**ISO** 1

**ISO 2 ISO 3** 

Manual operator Armature Coil Push pin Poppet "D" seal Valve spring

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



Function	Port size	Floш (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	M5, # 10-32	0.12 C <sub>V</sub>	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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ISO 01 ISO 02

ISO 1

ISO 2 ISO 3

#### HOW TO ORDER

Port size	Universal valve	NC only valve
	$\begin{array}{c} \begin{array}{c} 2 \\ \end{array}$	$\begin{array}{c} \begin{array}{c} 2 \\ \end{array}$
M5	34C-ABA-G xxx-xxx	34C-ABB-G xxx-xxx
# 10-32	34C-AAA-G xxx-xxx	34C-AAB-G xxx-xxx

SOLENC	OID OPERATOR >			G <u>xxx-x</u> x	<b>X</b> .		
XX	Voltage	X	Wire length		Manual operator	XX	Electrical connection
		^	-	^	•		
AA	120 VAC (2.5W)	A	18"	1	Non-locking recessed	BA	Flying leads
DC	24 VDC (1.8W)	B	24"	3	Non-locking extended	BT	Flying leads with light
DD	24 VDC (2.5W)	C	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 w/MOV
Note : AC	voltage requires connector wi	th rectifier.				GD	MAC JAC Solenoid plug-in w/LED
* Other o	ptions available, see page 31	1.				GE	MAC JAC Solenoid plug-in w/Diode & LED
Washdowi	capability is possible for the	"G" type elec	trical connectors.			GF	MAC JAC Solenoid plug-in w/MOV & LED
Consult fac	ctory for ordering information.	•				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
						147	N

Plug-in wire assembly with



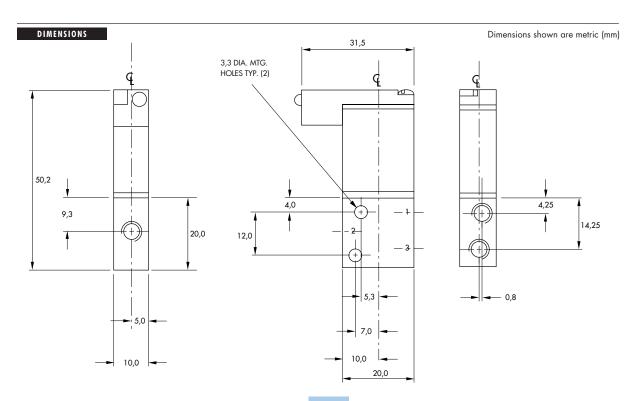




(with 4 W coil)

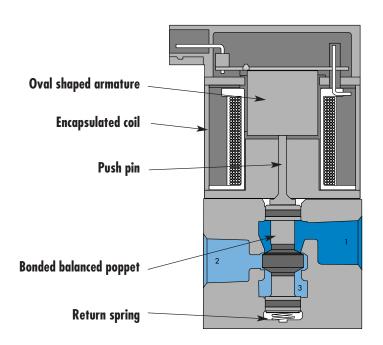
De-energize : 1.5 ms

Fluid: Compressed air, vacuum, inert gases Vacuum to 120 PSI Pressure range: Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range:  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow: 4 W: (0.12 C<sub>v</sub>) - 2.5 W: (0.10 C<sub>v</sub>) - 1.8 W: (0.06 C<sub>v</sub>) Coil: 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





# Individual mounting Inline Manifold mounting Stacking Manifold base "plug-in" with pressure regulators Manifold base "plug-in" with pressure regulators



#### **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.
- Various solenoid enclosures and plug-in connectors.
- Optional surge suppression available.
- Low wattage DC solenoids down to 1.8 watts.
- Rectified AC voltage.

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48P

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400

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ISO 01

ISO 02

ISO 1

ISO 2

**ISO 3** 



Function	Port size	Flow (Max)	Individual mou	unting	Series
3/2	1/8"	0.3 C <sub>v</sub>	Inline		

#### OPERATIONAL BENEFITS

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



33 34

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37 38

**52** 

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69 44

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**48P** 

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**ISO 01** 

ISO 02

**ISO** 1

**ISO 2 ISO 3** 

#### HOW TO ORDER

Port size	Universal valve	NC only valve
1/8" NPTF	36A-AAA-J xxx-xxx	36A-AAB-J <b>xxx-xxx</b>

#### SOLENOID OPERATOR ➤

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

				<sup>」</sup> ነ			
XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
AA	120 VAC (5.4W)	A	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

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.

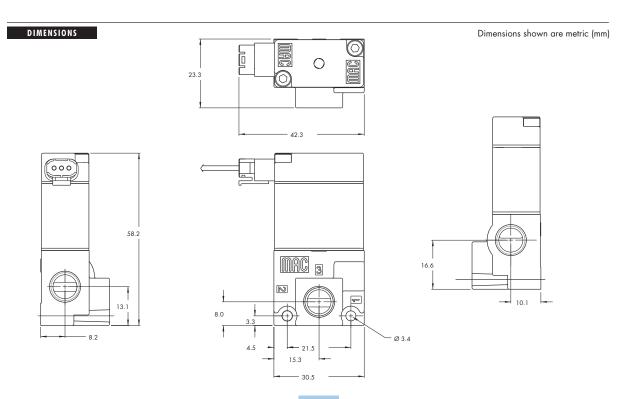






Fluid: Compressed air, vacuum, inert gases Pressure range: Vacuum to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range:  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow: 1.8 Watt: (0.15  $C_v$ ), 2.4 Watt: (0.15  $C_v$ ), 5.4 Watt: (0.30  $C_v$ ) Coil: Class A wire (#22 AWG x 12), continuous duty -15% to +10% of nominal voltage Voltage range: Protection: Consult factory 5.4 W - 2.4 W - 1.8 W Power:

Option : • BSPP threads





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

#### OPERATIONAL BENEFITS

- 1. Balanced poppet, immune to variations of pressure.
- 2. Patented solenoid develops high shifting
- 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
	W TNEXH	W NEXH	W T T T T T T T T T T T T T T T T T T T
1/8" NPTF	36A-SAB-J xxx-xxx	36A-SAC-J xxx-xxx	36A-SAD-J <b>xxx-xxx</b>
# 10-32	36A-SBB-J xxx-xxx	36A-SBC-J xxx-xxx	36A-SBD-J <b>xxx-xxx</b>

#### SOLENOID OPERATOR ➤

# 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)	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
O4	ntions available, see page 317					GG	MAC JAC solenoid plug-in with rectifier

#### **BODY TYPE OPTIONS**

36A-**S**AB-J**xxx-xxx** 

Stacking body
T Stacking body with bottom inlet

**ISO 3** 

33

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36

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37 38 **52** 

67 69 44

46

42

47 48P

48

400

92

93

**ISO 01** 

ISO 02

**ISO** 1

**ISO 2** 

<sup>\*</sup> 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.







Power:

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 Temperature range :  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-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

Option : • BSPP threads

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

5.4 W - 2.4 W - 1.8 W

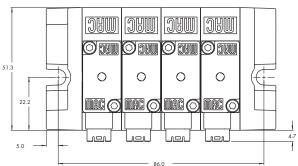
• Exhaust isolator : N-36003 • Tie rod (x2) : 79411

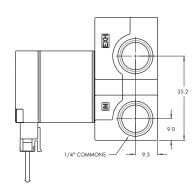
#### DIMENSIONS

15.0 — 16.5 — 8.3 — 15.0 — 15.0 — 14.1 — 15.0 — 14.1 — 15.0 — 15.0 — 16.5 — 16.

Dimensions shown are metric (mm)

Note: Isolator adds 2.5 mm to length of stack.







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

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

# Direct solenoid and solenoid pilot operated valves

Balanced poppet, immune to variations of pressure. Patented solenoid develops high shifting forces. Short stroke with high flow. Higher forces result in lower wattages for given flow. Powerful return spring.  Port size  Universal Valve Normally Closed Normally Open  Valve less base  36A-J00-00-J xxP-xxx  36A-KSA-AF-J xxP-xxx  36A-LSF-AE-J xxP-xxx  36	nction	Port size	Floш (Max)	Individual mounting	Series
Balanced poppet, immune to variations of pressure. Potented solenoid develops high shifting forces. Short stroke with high flow. Higher forces result in lower waitages for given flow. Powerful return spring.  Port size  Universal Valve Normally Closed Normally Open  Valve less base  36A-100-00-J xxP-xxx  36A-400-00-J xxP-xxx  36A-400-00-J xxP-xxx  36A-400-00-J xxP-xxx  36A-45A-AE-J xxP-xxx  36A-45A-AE-J xxP-xxx  36A-45A-AE-J xxP-xxx  36A-45F-AE-J xxP-xxx  36	/2	•	0.3 C <sub>v</sub>		
Balanced poppet, immune to variations of pressure. Potented solenoid develops high shifting forces. Short stroke with high flow. Higher forces result in lower wattages for given flow. Powerful return spring.  HOW TO ORDER  Port size  Universal Valve Normally Closed Normally Open  Valve less base  36A-100-00-J xRP-xxx  36A-K00-00-J xRP-xxxx  36A-K00-00-J xRP-xxxx  36A-L5-A-E-J xxRP-xxxx	PERATIONAL BENEFITS			2002	33
Pressure. Potented solenoid develops high shifting forces. Short stroke with high flow. Higher forces result in lower wattages for given flow. Powerful return spring.  Port size  Universal Valve Normally Closed Normally Open  Valve less base  36A-100-00-1 xxP-xxx  36A-100-00-1 xxP-xxx  36A-100-00-1 xxP-xxx  36A-100-00-1 xxP-xxx  36A-100-00-1 xxP-xxx  36A-15F-AE-1 xxP-xxx	Balanced poppet, immune to var	riations of			34
HOW TO ORDER  Port size  Universal Valve Normally Closed Normally Open  Valve less base  36A-J00-00-J xxP-xxx  1/8" NPTF  36A-JSA-AE-J xxP-xxx  36A-JSF-AE-J xxP-xxxx  36A-LSA-AE-J xx	Patented solenoid develops high forces. Short stroke with high flow.	•			36
Port size	given flow.	tages for		1	32
Port size  Universal Valve Normally Closed Normally Open  Valve less base  36A-J00-00-J xxP-xxx  1/8" NPTF  36A-JSA-AE-J xxP-xxx  36A-KSA-AF-J xxP-xxx  36A-LSA-AE-J xxP-xxx  36				100 We	37
Port size  Universal Valve Normally Closed  Normally Open  Valve less base  36A-J00-00-J xxP-xxx  1/8" NPTF  36A-JSA-AE-J xxP-xxx  36A-KSA-AF-J xxP-xxx  36A-KSF-AF-J xxP-xxx  36A-LSA-AE-J xxP-xxx  3				00	38
Port size  Universal Valve Normally Closed  Normally Open  Valve less base  36A-J00-00-J xxP-xxx  1/8" NPTF  36A-JSA-AE-J xxP-xxx  36A-KSA-AF-J xxP-xxx  36A-KSF-AF-J xxP-xxx  36A-LSA-AE-J xxP-xxx  3					52
Port size    Universal Valve   Normally Closed   Normally Closed Only	HOW TO ORDER				67
Normally Closed   Normally Open					
Valve less base       36A-J00-00-J xxP-xxx       36A-K00-00-J xxP-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         OLENOID OPERATOR ➤       J xx P-xxx					
Valve less base         36A-J00-00-J xxP-xxx         36A-J00-00-J xxP-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           OLENOID OPERATOR ➤         J xx P-xxx (-G) Add "G" for ground         XX Electrical connection           AA 120 VAC (5.4W)         1 Non-locking recessed         FA Base plug-in with diode           DB 12 VDC (5.4W)         2 Locking recessed         FB Base plug-in with rectifier           DC 24 VDC (2.4W)         FG Base plug-in with rectifier	Port size				Only 69
Valve less base         36A-J00-00-J xxP-xxx         36A-K00-00-J xxP-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 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           DB 12 VDC (5.4W)         2 Locking recessed         FB Base plug-in with diode           DC 24 VDC (2.4W)         FG Base plug-in with rectifier	Port size	Normally Closed		pen 2	
5/32 tube receptacle  36A-JSF-AE-J xxP-xxx  36A-KSF-AF-J xxP-xxx  36A-LSF-AE-J xxP-xxx  OLENOID 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  DB 12 VDC (5.4W)  2 Locking recessed  FB Base plug-in with diode  FG Base plug-in with rectifier	Port size	Normally Closed		pen 2	Only 69
OLENOID OPERATOR > JXX 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 with diode  DB 12 VDC (5.4W) 2 Locking recessed FG Base plug-in with diode  FG Base plug-in with rectifier		Normally Closed	Normally 0	2 w 1 1 3	0nly 69 44 46
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	Valve less base	Normally Closed	Normally 0		59 44 45 xxx
XX Voltage X Manual operator XX Electrical connection  AA 120 VAC (5.4W) 1 Non-locking recessed FA Base plug-in  BB 12 VDC (5.4W) 2 Locking recessed FB Base plug-in with diode  BB 12 VDC (5.4W) FG Base plug-in with rectifier	Valve less base 1/8" NPTF	Normally Closed  2 2 1 3 36A-J00-00-J xxP-xxx 36A-JSA-AE-J xxP-xxxx	Normally 0  2  36A-K00-00-J  36A-KSA-AF-J  36A-KSA-AF-J		0nly 69 44 46 xxx
XX         Voltage         X         Manual operator         XX         Electrical connection           AA         120 VAC (5.4W)         1         Non-locking recessed         FA         Base plug-in           DB         12 VDC (5.4W)         2         Locking recessed         FB         Base plug-in with diode           DB         12 VDC (5.4W)         FG         Base plug-in with rectifier	Valve less base 1/8" NPTF 5/32 tube receptacle	36A-JSF-AE-J xxP-xxx	Normally 0  36A-K00-00-J  36A-KSF-AF-J  36A-KSF-AF-J	XYP-XXX   36A-L00-00-J XXP-XXX   36A-LSF-AE-J XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   3	0nly 69 44 46 xxx
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	Valve less base 1/8" NPTF 5/32 tube receptacle	36A-JSF-AE-J xxP-xxx	Normally 0  36A-K00-00-J  36A-KSF-AF-J  36A-KSF-AF-J	XYP-XXX   36A-L00-00-J XXP-XXX   36A-LSF-AE-J XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   3	00 dy
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	Valve less base 1/8" NPTF 5/32 tube receptacle	36A-JSF-AE-J xxP-xxx	Normally 0  36A-K00-00-J  36A-KSF-AF-J  36A-KSF-AF-J	XYP-XXX   36A-L00-00-J XXP-XXX   36A-LSF-AE-J XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-AE-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   36A-LSF-XXX   3	0nly 69 44 46 xxx
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	Valve less base 1/8" NPTF 5/32 tube receptacle  OLENOID OPERATOR >	Normally Closed  2  W 36A-J00-00-J xxP-xxx  36A-JSA-AE-J xxP-xxx  36A-JSF-AE-J xxP-xxx	Normally 0  36A-K00-00-J  36A-KSA-AF-J  36A-KSF-AF-J  XX P-XXX (-G)	Add "G" for ground	00 dy
DB         12 VDC (5.4W)         FG         Base plug-in with rectifier           DC         24 VDC (2.4W)	Valve less base 1/8" NPTF 5/32 tube receptacle  OLENOID OPERATOR >  XX Voltage	Normally Closed  2  W 36A-J00-00-J xxP-xxx  36A-JSA-AE-J xxP-xxx  36A-JSF-AE-J xxP-xxx  J  Man	Normally 0  36A-K00-00-J  36A-KSA-AF-J  36A-KSF-AF-J  XXX P-XXX* (-G)	XXP-XXX   36A-L00-00-J xXP-XXX   36A-LSF-AE-J xXP-XXX   36A-LSF-AE-J xXP-XXX   36A-LSF-AE-J xXP-XXX   XXP-XXX   36A-LSF-AE-J xXP-XXX	0 d d d d d d d d d d d d d d d d d d d
DD 12 VDC (2.4W)	Valve less base  1/8" NPTF  5/32 tube receptacle  OLENOID OPERATOR ➤  XX Voltage  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)	Normally Closed	Normally 0  36A-K00-00-J  36A-KSA-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J	XX   Electrical connection   FA   Base plug-in	00 dy
DD 12 VDC (2.4W)	Valve less base  1/8" NPTF  5/32 tube receptacle  OLENOID OPERATOR ➤  XX Voltage  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)	Normally Closed	Normally 0  36A-K00-00-J  36A-KSA-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J	CXP-XXX  36A-L00-00-J XXP-XXP-XXX  36A-LSF-AE-J XXP-XXX  Add "G" for ground  XX Electrical connection  FA Base plug-in  FB Base plug-in with diode	0 d d d d d d d d d d d d d d d d d d d
	Valve less base  1/8" NPTF  5/32 tube receptacle  OLENOID OPERATOR ➤  XX Voltage  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  DC 24 VDC (2.4W)	Normally Closed	Normally 0  36A-K00-00-J  36A-KSA-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J	CXP-XXX  36A-L00-00-J XXP-XXP-XXX  36A-LSF-AE-J XXP-XXX  Add "G" for ground  XX Electrical connection  FA Base plug-in  FB Base plug-in with diode	0 hly 69 44 46 46 42 47 48 P 48
	Valve less base 1/8" NPTF 5/32 tube receptacle  NOID OPERATOR ➤  Voltage 120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W) 24 VDC (2.4W)	Normally Closed	Normally 0  36A-K00-00-J  36A-KSA-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J  36A-KSF-AF-J	CXP-XXX  36A-L00-00-J XXP-XXP-XXX  36A-LSF-AE-J XXP-XXX  Add "G" for ground  XX Electrical connection  FA Base plug-in  FB Base plug-in with diode	0 d d d d d d d d d d d d d d d d d d d

27

93

ISO 01 ISO 02 ISO 1 ISO 2 ISO 3







Protection:

DIMENSIONS

Power:

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 Temperature range :  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow:  $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$ Coil: Class A continuous duty, #22 AWG x 12 base leads Voltage range: -15% to +10% of nominal voltage

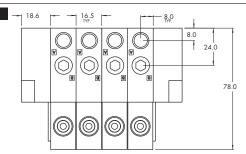
Option : • BSPP threads

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

• Tie rod (x2): 79443

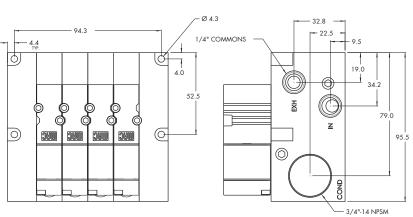
Consult Factory

5.4 W - 2.4 W - 1.8 W



Dimensions shown are metric (mm)

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





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

# Direct solenoid and solenoid pilot operated valves

Function	Port size	}	Flow (Max)	Individual n	nounting	Series
3/2	1/8"	- 5/32 Pressed-in tube receptacle	0.3 C <sub>v</sub>	Manifold base "plug-in" with pressure regulators		
PERATIONAL BENEFITS						33
. Balanced poppet, imm	une to variations of					34
pressure.  Patented solenoid deve forces.  Short stroke with high f						36
. Higher forces result in I given flow. . Powerful return spring.				J	والمحاد	32
						<b>37</b>
					0	38
				30		52
HOW TO ORDER						<b>67</b>
Port size		Universal Valve		Universal Valve	Normally Closed Only	69
		Normally Closed		Normally Open	2	44
				1 3 3 A 1 (20) A 1 (2		46
Valve less bo		36A-JSA-AG-J <b>xx</b> P- <b>xx</b>		36A-K00-00-J <b>xxP-xxx</b> 36A-KSA-AH-J <b>xxP-xxx</b>	36A-L00-00-J xxP-xxx 36A-LSA-AG-J xxP-xxx	
5/32 tube rece		36A-JSF-AG-J xxP-xx		36A-KSF-AH-J xxP-xxx	36A-LSF-AG-J xxP-xxx	42
SOLENOID OPERATO	OR ➤		J <u>xx</u> P- <u>y</u>	(XX) (-G) Add "G	for ground	47 48P
XX Voltage		X Ma	nual operat	J	Electrical connection	
AA 120 VAC (5.4V	W)		-locking recessed		Base plug-in	48
DA 24 VDC (5.4W DB 12 VDC (5.4W	)	2 Lock	ing recessed		Base plug-in with diode Base plug-in with rectifier	
DC 24 VDC (2.4W DD 12 VDC (2.4W	<i>;</i> )				sate plog in mini recinition	400
Other options available, s	see page 317.					
lote : AC voltage requires	connector with rectitier.					92
OPTIONS						0.2
36A-JSA-A <b>G</b> -Jxx P-xxx	x			36A-KSA-A <b>H</b> -J <b>xx</b> P- <b>xxx</b>		93
G NO 5 NO J NO	C manifold & regulator v C manifold & regulator v C manifold & regulator v	vith slotted stem adjustm vith locking slotted stem vith knob adjustment	ent adjustment	H NO manifold & r T NO manifold & r K NO manifold & r	regulator with slotted stem adjustment regulator with locking slotted stem adjustment regulator with knob adjustment	ISO 01
lote : All manifold bases a	ire only available with a	bottom cylinder port.				150 02
xample : Manifold base or	nly : 36A-0SA-AJ (Norn	nally closed manifold ba	se & regulator v	vith knob).		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

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

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

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

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

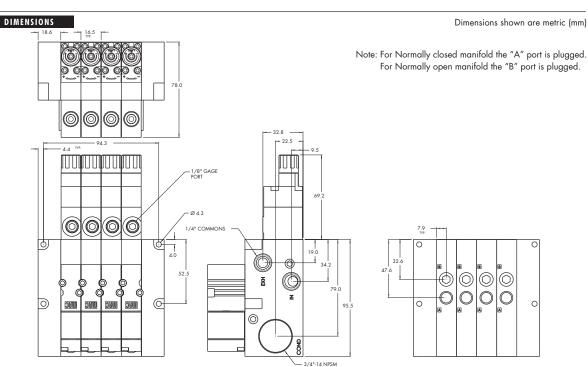
Protection: Consult Factory

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



0



## Individual mounting Series 33 34 Manifold mounting Manifold base non "plug-in" 36 32

**37** 38 **52** 

92

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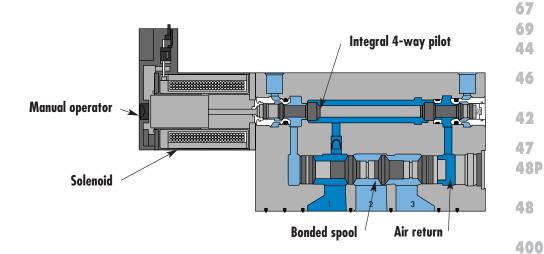
**ISO 01** 

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	Flow (Max)	Individual mounting	Series
3/2 NO-NC	1/8"	0.4 C <sub>V</sub>	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  $C_{\rm v}$ ).
- 4. Fast, repeatable response times.
- 5. Maximum shifting forces in both directions.



**Electrical connection** 

Flying leads with light
MAC JAC Solenoid plug-in

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

MAC JAC Solenoid plug-in w/LED

MAC JAC Solenoid plug-in

MAC JAC Solenoid plug-in

w/Rectifier

MAC JAC Solenoid plug-in

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

Flying leads

w/MOV

w/Diode & LED

MAC JAC Solenoid plug-in
w/MOV & LED

w/Rectifier & LED

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

BA

GA GB

GC

GD

GE

GF

GG

GH

KA

KT

KD

36

33

34

32

37 38 52

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69 44

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47 48P

48

400

92

93

ISO 01

ISO 1

ISO 2

**ISO** 3

#### HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
		10 12 JZ	10 2 12 12 12 12 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14	10 2 12 10 3 01
Valve less base	Internal	32B-BMA-000-G <b>xxx-xxx</b>	32B-AMA-000-G <b>xxx-xxx</b>	
	External	32B-BMB-000-G <b>xxx-xxx</b>	32B-AMB-000-G <b>xxx-xxx</b>	32B-GMB-000-G <i>xxx-xxx</i>
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 >

				<u> </u>	
XX	Voltage	Х	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)		36"		
DD	24 VDC (2,5W)				
DF	24 VDC (4.0W)				

Note: AC voltage requires connector with recitier.

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- <b>x</b> N	VX-X	x-Gxxx	-xxx
		A B	Individual base – Side port Individual base – Bottom po
		м	Pilot exhaust muffled

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



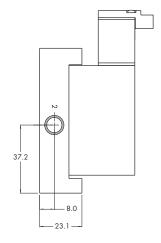


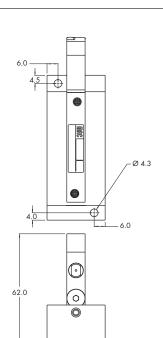


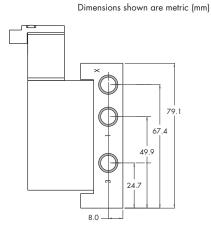
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot : Vacuum to 120 PSI 20 to 120 PSI Pilot pressure: Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: 1/8" : (0.40 C<sub>v</sub>) 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 : 5 ms (with 4 W coil) De-energize : 5 ms

Options : • BSPP threads

#### DIMENSIONS







31.8



# Direct solenoid and solenoid pilot operated valves

unction	P	ort size	Flow (Max)		Individua	mounting	Series
/2 NO-NC		10-32 - /4" O.D. tube receptacle	0.4 C <sub>V</sub>		Sub-base "plug-in"		
ERATIONAL BENEFITS							33
3-way valve with 4-way							34
10 mm valve (stacks or High flow (up to 0.4 C		ers).				6	
Fast, repeatable respor Maximum shifting force	nse times.	ions				4	36
waxiiiidiii siiiiilig lorce	s in boin directi	ions.					
							32
							37
							38
							52
HOW TO ORDER							67
	-W - 1						69
Port size	Pilot air	NO valve		NC valve		Universal valve	44
		10 2 12		10 2 12 D / \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<u>.</u>	10 2 12	44
		V3 01		<b>□</b>			46
Valve less base	Internal	32B-BMA-000-G <b>xx</b> P-)		32B-AMA-000-G <b>xx</b> F			
# 10-32	External —	32B-BMB-000-G <b>xx</b> P- <b>x</b> 32B-BMA-AAA-G <b>xx</b> P- <b>x</b>		32B-AMB-000-G <b>xx</b> F 32B-AMA-AAA-G <b>xx</b>		32B-GMB-000-GxxP-xxx	42
# 10-32	Internal	32B-BMB-AAB-GxxP-		32B-AMB-AAB-GXX		32B-GMB-AAB-GxxP-xxx	
1/4" O.D.	Internal	32B-BMA-EAA-GxxP-		32B-AMA-EAA-Gxx			47
Tube receptacle	External	32B-BMB-EAB-GxxP-x	xx	32B-AMB-EAB-G <b>xx</b> F	-xxx	32B-GMB-EAB-GxxP-xxx	48P
te : Above codes are for	side port.						
andard solenc	OID OPERATO	OR <b>&gt;</b> (	<u>د</u> -G <u>xx</u> P	<u>XX</u> *			48
XX Voltage		X Mo	anual operat	or	XX	Electrical connection	400
AA 120 VAC (2.5V DA 24 VDC (1.0W			n-locking recessed king recessed		SA SJ	Base plug-in Base plug-in with light	
DC 24 VDC (1.8W	)		king recessed		55	Base plug-in with rectifier & light & ground	92
DD 24 VDC (2.5W DF 24 VDC (4.0W							
te : AC voltage requires	connector with re	ectifier.					93
Other options available,	see page 311.	3. ctory for modification number.					
ishdown capability is po	ssible, consult tac	ctory tor modification number.					ISO 01
OPTIONS							ISO 02
ot/Base Configuration	:						ISO 1
2B- <b>xM</b> x- <b>xA</b> x-Gxx P-xx	XX						ISO 2
	dividual base – Si dividual base – Be						
	ot exhaust muffle						ISO 3
	ot exhaust piped						





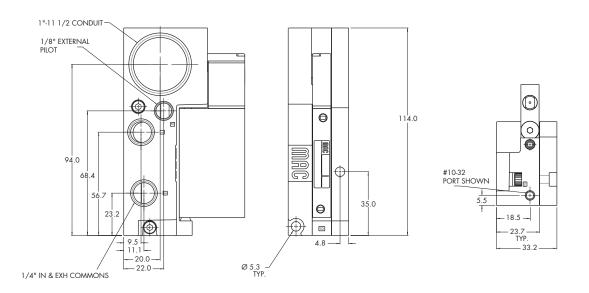


Fluid:	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI
	External Pilot : Vacuum to 120 PSI
Pilot pressure:	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration:	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow:	# 10-32 : (0.35 C <sub>V</sub> ) - 1/4 tube receptacle : (0.40 C <sub>V</sub> )
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 : 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 <sub>V</sub>	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.



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

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

Note: Above codes are for side port.

#### STANDARD SOLENOID OPERATOR ➤

G	XXX-XXX

				— ነ	
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)			_	
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

Base only:

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

Base/Pilot Configuration :

32B-**xM**x-**xJ**x-Gxxx-xxx

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)

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

ВА

BT

GA

GB

GC

GD

GE

GF

GG

KA

KD

**Electrical connection** 

Flying leads with light
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

Plug-in wire assy. with light

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

w/MOV & LED

w/Rectifier & LED

Plug-in wire assy.

Flying leads

w/Diode

w/MOV

w/LED



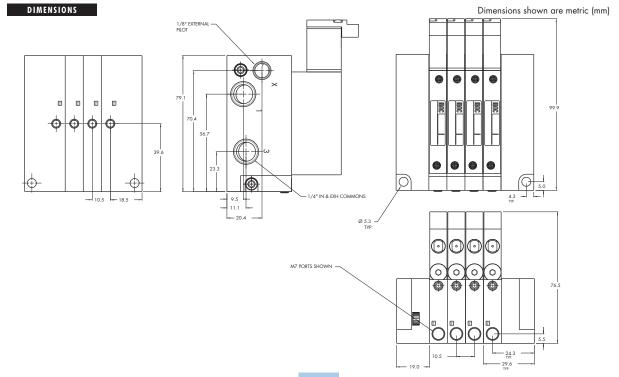




Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: #  $10-32 : (0.35 C_v) - 1/4$  tube receptacle :  $(0.40 C_v)$ Coil: Class A 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 : 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 <sub>v</sub>	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  $0.4 C_v$ ).
- 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 vo		NO valve	NC valve	Universal valve
			10 2 12 12 12 12 12 12 12 12 12 12 12 12 1	
Valve less base	Internal	32B-BMA-000-G <b>xx</b> P- <b>xxx</b>	32B-AMA-000-G <i>xx</i> P- <i>xxx</i>	
	External	32B-BMB-000-G <b>xx</b> P- <b>xxx</b>	32B-AMB-000-GxxP-xxx	32B-GMB-000-G <b>xx</b> P- <b>xxx</b>
# 10-32	Internal	32B-BMA-AJA-G <b>xx</b> P- <b>xxx</b>	32B-AMA-AJA-GxxP-xxx	
	External	32B-BMB-AJB-G <b>xx</b> P- <b>xxx</b>	32B-AMB-AJB-GxxP-xxx	32B-GMB-AJB-GxxP-xxx
1/4" O.D.	Internal	32B-BMA-EJA-G <b>xx</b> P- <b>xxx</b>	32B-AMA-EJA-GxxP-xxx	
Tube receptacle	External	32B-BMB-EJB-GxxP-xxx	32B-AMB-EJB-GxxP-xxx	32B-GMB-EJB-GxxP-xxx

Note: Above codes are for side port.

#### STANDARD SOLENOID OPERATOR ➤

G	XX	P-XXX
	$\neg$	$ \pm$ $\mp$

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

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").







Response times:

(with 4 W coil)

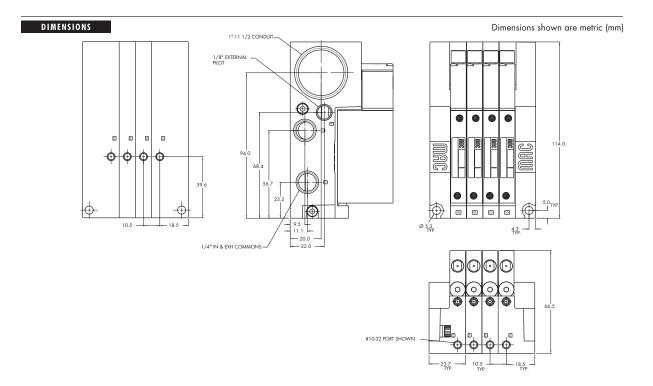
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-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 1.0 to 4.0 W Power:

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

Energize: 5 ms

De-energize : 5 ms

• 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 <sub>v</sub>	Sub-base/ manifold base non "fulug-in" with latching solenoid	
OPERATIONAL BENEFITS			220	33
1. 3-way valve with 4-way 2. 10 mm valve (stacks on 3. High flow (up to 0.4 C <sub>V</sub> ) 4. Fast, repeatable respons 5. Maximum shifting forces	10.5 mm centers) e times.		A STATE OF THE PARTY OF THE PAR	34 36

#### HOW TO ORDER

Port size	Pilot air	NO valve	NC valve
		10 2 12 172 471	10 2 12 47 12 47 1
Valve less base	Internal	32A-BMA-000-L <b>xxx-xxx</b>	32A-AMA-000-L <b>xxx-xxx</b>
	External	32A-BMB-000-L <b>xxx-xxx</b>	32A-AMB-000-Lxxx-xxx
# 10-32	Internal	32A-BMA-AAL-L <b>xxx-xxx</b>	32A-AMA-AAL-Lxxx-xxx
	External	32A-BMB-AAM-Lxxx-xxx	32A-AMB-AAM-L <b>xxx-xxx</b>
1/4" O.D.	Internal	32A-BMA-EAL-LXXX-XXX	32A-AMA-EAL-LXXX-XXX
Tube receptacle	External	32A-BMB-EAM-LXXX-XXX	32A-AMB-EAM-L <b>xxx-xxx</b>

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

LATCHI	ng solenoid oper	ATOR ➤	L	<u> </u>	<u> </u>		
XX	Voltage	X	Wire length		Manual operator	XX	Electrical connection**
DF	24 VDC (4.0W)	A	18"	0	No operator	ВА	2 Wire Flying leads
HA	24 VDC (1.95W)	В	24"			BJ	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)

<sup>\*</sup> Other options available, see page 319.
\*\* Latching 32 series with non plug-in base configuration must use "B", "K" or "L" type electrical connector.

OPTIONS	ISO 01
Pilot/Base Configuration :	ISO 02
32A-x <b>M</b> x-x <b>A</b> x-Lxxx-xxx	ISO 1
A Individual base – Side port B Individual base – Bottom port J Manifold base – Side port K Manifoldl base – Bottom port	ISO 2 ISO 3
M Pilot exhaust muffled P 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)

**48P** 

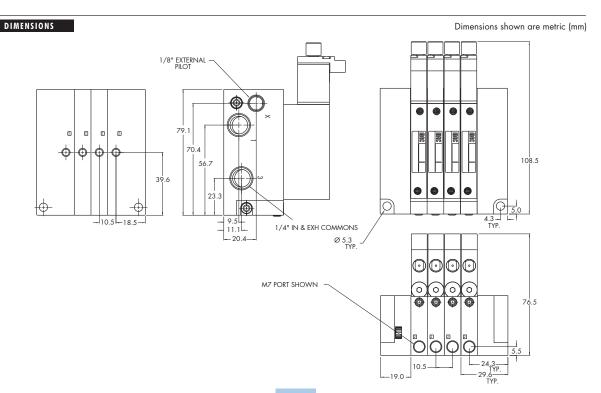






Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: #  $10-32 : (0.35 \, C_v) - 1/4$  tube receptacle :  $(0.40 \, C_v)$ Coil: Class A wire (#22 AWG x 18), continuous duty -15% to +10% of nominal voltage Voltage range: 1.95 to 4.0 W Power: Response times: Energize : 5 ms (with 4 W coil) De-energize : 5 ms

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



	Port siz	<u> </u>	Flow (Max)		I/Manifold mounting	Series	
3/2 NO-NC	Sub-base/ manifold base 'plug-in'  1/4" O.D. tube receptacle  Sub-base/ manifold base 'plug-in' with latching solenoid						
PERATIONAL BENEFITS					325	33	
3-way valve with 4-wa						34	
. 10 mm valve (stacks o . High flow (up to 0.4 C . Fast, repeatable respo . Maximum shifting forc	c <sub>v</sub> ). nse times.					36	
						32	
						37	
				-		38	
					24. 3		
						52	
HOW TO ORDER						67	
Port size	Pilot air	NO va	lve		NC valve	69	
		2			. 2	44	
			7 37 37			46	
Valve less base	Internal	<del>▼3 ◊1</del> 32A-BMA-000	)-LxxP-xxx		40		
	External	32A-BMB-000	)-LxxP-xxx				
# 10-32	Internal	32A-BMA-AAA	32A-BMA-AAA-L <b>xx</b> P- <b>xxx</b>		xP-xxx 32A-AMA-AAA-LxxP-xxx		
	External	32A-BMB-AAB		-	32A-AMB-AAB-LxxP-xxx	47	
1/4" O.D. Tube receptacle	Internal External		32A-BMA-EAA-LxxP-xxx 32A-BMB-EAB-LxxP-xxx		32A-AMA-EAA-LXXP-XXX 32A-AMB-EAB-LXXP-XXX		
Tobe Teceptacie		JZA DINID LAD	CAN AAA		JEA AIND LAD LAAI AAA		
Jote · Ahove codes are for	r individual base and sic	e port				48P	
			YY P-YYY*				
			<u>xx</u> P- <u>xxx</u> ·			48	
ATCHING SOLENC		L				48	
ATCHING SOLENC	OID OPERATOR ➤	X Man	ual operator	XX	Electrical connection**		
ATCHING SOLENC	OID OPERATOR ➤	L	ual operator	DA DB	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground	48	
XX Voltage DF 24 VDC (4.0W	OID OPERATOR ➤	X Man	ual operator	DA	Base/Manifold Plug-in	48	
XX Voltage DF 24 VDC (4.0W	OID OPERATOR ➤	X Man	ual operator	DA DB DC	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Ground Base/Manifold Plug-in 3 Pin	48 400 92	
XX Voltage DF 24 VDC (1.95)	OID OPERATOR >	X Man O No op	<b>ual operator</b> erator	DA DB DC DD EA	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light	48	
XX Voltage DF 24 VDC (4.0W HA 24 VDC (1.95	OID OPERATOR >	X Man O No op	ual operator	DA DB DC DD EA	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Ground Base/Manifold Plug-in 3 Pin	48 400 92	
XX Voltage DF 24 VDC (1.95)	OID OPERATOR >	X Man O No op	<b>ual operator</b> erator	DA DB DC DD EA	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Ground Base/Manifold Plug-in 3 Pin	48 400 92	
XX Voltage  DF 24 VDC (4.0W  HA 24 VDC (1.95)  Other options available 2 and 4 wire base must of the options of	OID OPERATOR >  (1)  (2)  (3)  (4)  (5)  (5)  (6)  (7)  (7)  (8)  (8)  (9)  (9)  (9)  (1)  (1)  (1)  (1)  (1	X Man O No op	ual operator erator  use "EA" type electrical conne	DA DB DC DD EA  ctor.	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Grou Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)	48 400 92	
ATCHING SOLENC  XX Voltage  DF 24 VDC (4.0W  HA 24 VDC (1.95)  Other options available '2 and 4 wire base must of  OPTIONS  ilot/Manifold/Base Con  32A-XMX-XAX-LXXP-X	OID OPERATOR >  // // // // // // // // // // // // /	X Man 0 No op	ual operator erator  use "EA" type electrical conne	DA DB DC DD EA  ctor.	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Ground Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)	48 400 92	
XX Voltage  DF 24 VDC (4.0W  HA 24 VDC (1.95)  Other options available 22 and 4 wire base must to  OPTIONS  Slot/Manifold/Base Con  32A-xMx-xAx-LxxP-xx  A In B In	old OPERATOR ➤  /)  w)  w)  see page 319.  use "D" type electrical co  figuration:  xx  dividual base – Side por dividual base – Bottom p	X Man 0 No op onnector, 3 wire base must	ual operator erator  use "EA" type electrical conne	DA DB DC DD EA  ctor.  Int./Ext. Pilot : (w A-LxxP-xxx A Plug-In Ir B Plug-In E	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Ground Base/Manifold Plug-in a? Pin (Polarity Switching Cover)  t. Pilot (2 Wire)**  tt. Pilot (2 Wire)**	48 400 92	
Other options available  24 VDC (1.95  Other options available  2 and 4 wire base must of the control of the co	old OPERATOR ➤  // // // // // // // // // // // // /	X Man O No op  onnector, 3 wire base must  ort ort ort ort ort ort ort ort ort o	ual operator erator  use "EA" type electrical conne	DA DB DC DD EA  ctor.  Int./Ext. Pilot : (w A-LxxP-xxx A Plug-in ir B Plug-in ir C Plug-in ir C Plug-in ir D Plug-in ir E Plug-in ir	Base/Manifold Plug-in Base/Manifold Plug-in w/Ground Base/Manifold Plug-in w/ Light Base/Manifold Plug-in w/ Light and Ground Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)	48 400 92	
ATCHING SOLENC  XX Voltage  DF 24 VDC (4.0W  HA 24 VDC (1.95)  Other options available, 2 and 4 wire base must to OPTIONS  Slot/Manifold/Base Con 32A-xMx-xAx-LxxP-x  A In B In J M In J M In In J M In	old OPERATOR ➤  // // // // // // // // // // // // /	X Man O No op  onnector, 3 wire base must  ort ort ort ort ort ort ort ort ort o	ual operator erator  use "EA" type electrical conne	DA DB DC DD EA  ctor.  Int./Ext. Pilot : (w A-LxxP-xxx A Plug-in ir B Plug-in ir C Plug-in ir C Plug-in ir D Plug-in ir E Plug-in ir	Base/Manifold Plug-in  Base/Manifold Plug-in w/Ground  Base/Manifold Plug-in w/ Light  Base/Manifold Plug-in w/ Light and Ground  Base/Manifold Plug-in a Pin  (Polarity Switching Cover)  t. Pilot (2 Wire)**  t. Pilot (2 Wire)**  t. Pilot (3 Wire)**  t. Pilot (3 Wire)**  t. Pilot (3 Wire)**  t. Pilot (3 Wire)**  t. Pilot (4 Wire)**	48 400 92	

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

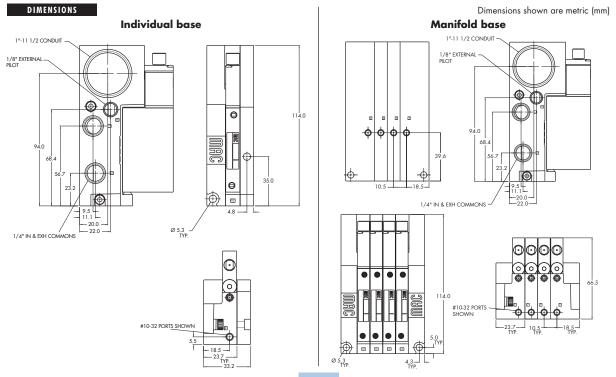






Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot : Vacuum to 120 PSI Pilot pressure : 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: #  $10-32 : (0.35 C_v) - 1/4$  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 1.95 to 4.0 W Power: Response times: Energize: 5 ms (with 4 W coil) De-energize : 5 ms

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





# Inline Sub-base non plug-in

Series

33 34

36

32

> 69 44

46

42

47

**48P** 

48

400

92

93

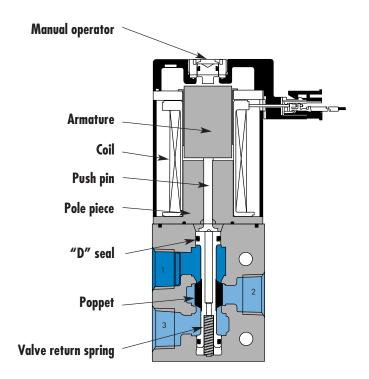
**ISO 01** 

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	(Max)	Individual m	ounting	Series
3/2 NO-NC	1/8" - 1	/4" 0.5	c^	Inline		
OPERATIONAL BENEFITS  1. Balanced poppet equals	s consistent high shifting					33 34
forces.  2. Valve shifting forces are of pressure fluctuations.  3. High solenoid and retur	n spring forces ensure h					36
speed and precise repe 4. Built-in wear compensat than solenoid stroke.	ion – valve stroke is sho	rter		=04		32
<ol> <li>Constant high flow mair pressure range.</li> <li>Exhaust contaminants ar</li> </ol>	· ·	noid.		G		<b>37</b>
7. Full flow exhaust. 8. Universal porting – 6 fu	nctions in one valve.				C)	52
HOW TO ORDER						67
Port	civa	llniv	ersal valve		NC only valve	69
Poli	3126	Olliv	ersur vurve		itt omy vaive	44
			, , , , , , , , , , , , , , , , , , ,			46
1/8"		_	A0-H <b>xxx-xxx</b>		37A-BA0-H <b>xxx-xxx</b>	70
1/4"	NPTF	37A-A	BO-H xxx-xxx		37A-BB0-H <b>xxx-xxx</b>	42
	_					
SOLENOID OPERATO	R ➤	H <u>X</u>	<u>xx-xxx</u> *			47
			<u>'</u>			48P
XX Voltage	X	Wire length		operator	XX Electrical connection**	
DA 120 VAC (6.7W)	) <u>A</u> <u>B</u>	18"	Non-lockir Locking red		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 VDC (1.6W)					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 01
						ISO 1
						<b>ISO 2</b>
						<b>ISO 3</b>





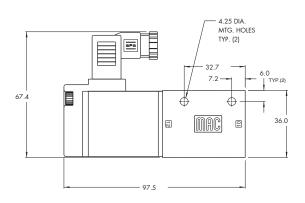


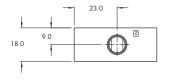
Fluid:	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration:	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow:	5.2 W : (0.5 C <sub>V</sub> ) – 2.4 W : (0.35 C <sub>V</sub> )
Coil:	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

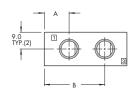
Options : • BSPP ports

DIMENSIONS

Dimensions shown are metric (mm)







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 <sub>v</sub>	Sub-base non plug-in		
Balanced poppet equals     Valve shifting forces are						33 34
pressure fluctuations.  3. High solenoid and return speed and precise reperture.  4. Built-in wear compensations solenoid stroke.	atability.				4	36
<ul><li>5. Constant high flow main range.</li><li>6. Exhaust contaminants at</li><li>7. Full flow exhaust.</li></ul>	re isolated from the solen					32 37 38
8. Universal porting – 6 ful  HOW TO ORDER	nctions in one valve.					52 67
Port :	size	Unive	ersal valve		NC only val	ve 69
Valve le		. <u>⊏</u>	10-H <b>XXX-XXX</b>		37A-D10-H XXX	
1/8"			AA-H <b>xxx-xxx</b> BA-H <b>xxx-xxx</b>		37A-DAA-H <b>xx</b> 37A-DBA-H <b>xx</b>	42
SOLENOID OPERATOR	R <b>≻</b>	H <u>X</u>	<u>xx-xxx</u> ·			47 48P
XX Voltage  AA 120 VAC (6.7W)  DA 24 VDC (5.2W)  DB 24 VDC (2.4W)  DC 24 VDc (1.8W)	X A B	Wire length 18" 24"	1 1	Aanual operator Ion-locking recessed ocking recessed	MA Plug-in  MC Plug-in  with lig  BA Flying  BC Flying  MT Plug-in	vical connection wire assembly wire assembly the eads eads eads with light wire assembly with & light 32
Note : AC voltage requires co • Other options available, se	onnector with rectifier. see page 315.					93
Base only : 37A-0AA (1/8") 37A-0BA (1/4")						ISO 01 ISO 02 ISO 1 ISO 2 ISO 3

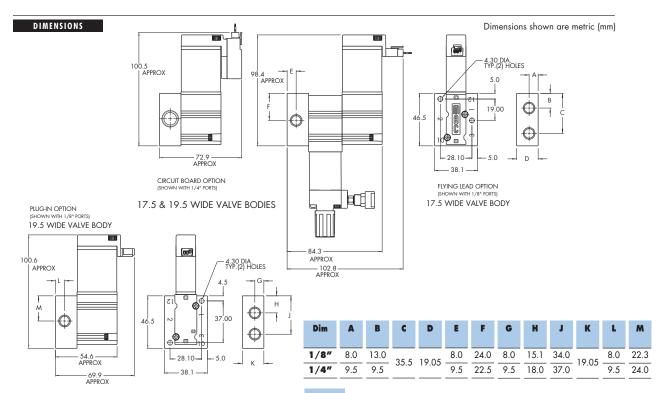






Compressed air, vacuum, inert gases Fluid: Pressure range: Vacuum to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 μ Temperature range :  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow: 5.2 W: (0.5 C<sub>v</sub>) - 2.4 W: (0.35 C<sub>v</sub>) Coil: Class A wire (#22 AWG x 18), continuous duty Voltage range: -15% to +10% of nominal voltage Power: 5.2 W - 2.4 W Energize: 16.9 ms Response times: (with 5.2 W coil) De-energize : 6.7 ms

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





## Individual mounting Series 33 34 Manifold mounting Manifold bas 36

32

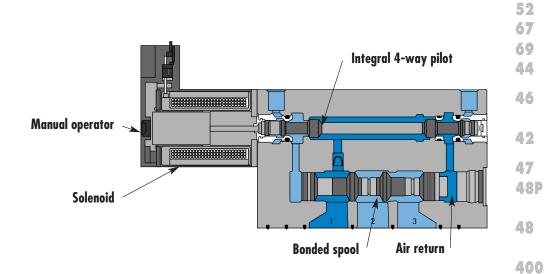
37 38

92

93

**ISO 01** 

ISO 02



## **SERIES FEATURES**

- High force MACSOLENOID®.
- Integral 4-way pilot design.
- Internal or external pilot.
- Normally open
- Universal funct
- Rectified AC vol
- Latching solenoid technology.

100 1
ISO 1
ISO 2
ISO 3



Function	]	Port size	Flow (M	ax]	l	ndividual mo	unting		Series
3/2 NO-NC		1/8"	1.2 C,	•		Sub-base non "plug-in"			
OPERATIONAL BENEFIT	'S							26	33
1. 3-way valve with 4-v									34
<ol> <li>10 mm valve (stacks</li> <li>High flow (up to 1.2</li> <li>Fast, repeatable responsibles</li> <li>Maximum shifting for</li> </ol>	2 Cv). ponse times.	·						1	36
								1	32
						- 1	-	-	37
						- 4			38
									52
HOW TO ORDER									67
	-				No. I				69
Port size	Pilot air	NO vo	ilve		NC valve			Universal valve	44
		10 2 D 2 V3 3 1	12 371		10 2 12 D 2 47			10 2 12 10 471 12 471	46
Valve less base	Internal	38B-BMA-000	)-G <b>xxx-xxx</b>	38	BB-AMA-000-Gxxx-	xxx			
	External	38B-BMB-000			8B-AMB-000-G <b>xxx</b> -x		38	BB-GMB-000-Gxxx-xxx	40
1/8" NPTF	Internal	38B-BMA-AAI			BB-AMA-AAL-Gxxx-			0.010.1111.0	42
	External	38B-BMB-AAA	N-GXXX-XXX		BB-AMB-AAM-Gxxx-	<del>xxx</del> -	38	B-GMB-AAM-G <b>xxx-xxx</b>	47
Note : Above codes are	tor side port.								48P
STANDARD SOLEN	NOID OPERATO	OR ➤	G XX	X-XX	K.				701
				┰┖┸	_				48
XX Voltage		X Wire le	angth	X	Manual oper	ator	XX	Electrical connection	40
AA 120 VAC (2		A 18"	ong	1	Non-locking recess		BA	Flying leads	
DA 24 VDC (1.0	0W)	B 24"		2	Locking recessed		BT	Flying leads with light	400
DC 24 VDC (1.8 DD 24 VDC (2.5		<b>C</b> 36"		_		-	GA GB	MAC JAC Solenoid plug-in MAC JAC Solenoid plug-in	
DF 24 VDC (4.0						_		w/Diode	92
Note : AC voltage requir	res connector with i	ectifier.					GC	MAC JAC Solenoid plug-in w/MOV	
* Other options availab Latching solenoid also av With MAC JAC electrica	ole, see page 311. vailable, see page	59.				_	GD	MAC JAC Solenoid plug-in	0.0
With MAC JAC electrica Consult factory for modif	ıl connector washdo fication number.	own capability is possi	ble.			-	GE	w/LED MAC JAC Solenoid plug-in	93
, , ,						-	GF	w/Diode & LED  MAC JAC Solenoid plug-in	ISO 01
OPTIONS						-	GG	w/MOV & LED MAC JAC Solenoid plug-in	ISO 01
Pilot/Base Configuration	on :					-		w/Rectifier	
38B- <b>xM</b> x- <b>xA</b> x-Gxxx						_	GH	MAC JAC Solenoid plug-in w/Rectifier & LED	<b>ISO</b> 1
A	Individual base -	Side port				-	KA KT	Plug-in wire assembly Plua-in wire assembly with	<b>ISO 2</b>
В	Individual base – I					-	KD	Plug-in wire assembly with light Plug-in wire assembly with	ISO 3

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

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 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: 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

 Power:
 1.0 to 4.0 W

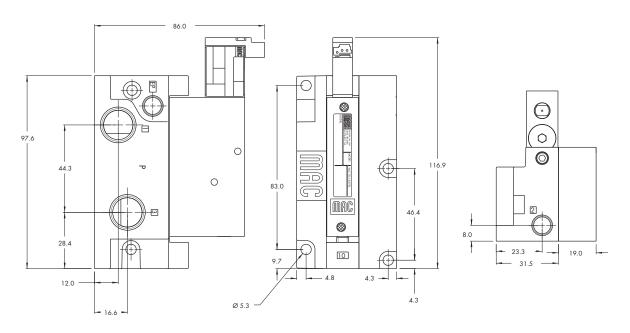
 Response times:
 Energize: 6 ms

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

Options : • BSPP threads

## DIMENSIONS

Dimensions shown are metric (mm)





Function		Port size	Flow (Max	X]	Individual m	ounting	Series
3/2 NO-NC		1/8" - 1/4" O.D. tube receptacle	1.2 C <sub>V</sub>		Sub-base "plug-in"		
OPERATIONAL BENEFITS							33
1. 3-way valve with 4-wa							34
2. 10 mm valve (stacks o 3. High flow (up to 1.2 C		nters).					
4. Fast, repeatable respo	nse times.						36
5. Maximum shifting forc	es in both dire	ctions.					
						No.	32
							S 07
							37
					-46		38
					-		52
HOW TO ORDER							67
Port size	Pilot air	NO valve		NC valve		Universal valve	69
							44
				10 2 12	2		
		7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		▼3 °1	· 	▼ T T T T T T T T T T T T T T T T T T T	_ 46
Valve less base	Internal External	38B-BMA-000-GxxP-x 38B-BMB-000-GxxP-x		38B-AMA-000-GXX		38B-GMB-000-G <i>xx</i> P- <i>xxx</i>	_
1/8" NPTF	Internal	38B-BMA-AAA-G <i>xx</i> P- <i>x</i>		38B-AMA-AAA-GXX		JOB-GIVID-000-GAAF-AAA	- 42
.,	External	38B-BMB-AAB-GxxP-x		38B-AMB-AAB-GXX		38B-GMB-BAB-GxxP-xxx	_
1/4" O.D.	Internal	38B-BMA-EAA-GxxP-x	XX	38B-AMA-EAA-GXX	rP-xxx		47
Tube receptacle	External	38B-BMB-EAB-G <b>xx</b> P- <b>x</b>	XX	38B-AMB-EAB-Gxx	P-xxx	38B-GMB-EAB-GxxP-xxx	48P
Note : Above codes are fo	r side port.						
STANDARD SOLENO	OID OPERAT	OR >	3 <b>XX</b> F	P- <b>XXX</b> *			48
				T——			
XX Voltage		X Ma	ınual ope	arator	XX I	Electrical connection	400
AA 120 VAC (2.5	W)		n-locking rece			Base plug-in	400
DA 24 VDC (1.0W DC 24 VDC (1.8W		2 Lock	king recessed			Base plug-in with light Base plug-in with rectifier & light & ground	92
DD 24 VDC (2.5W	/)					base plog-in with recliner & light & ground	
DF 24 VDC (4.0W							93
Note: AC voltage requires  * Other options available	, see page 311.	rectifier.					93
Latching solenoid also avai	liable, see page	01.					ISO 01
OPTIONS							ISO 02
Pilot/Base Configuration							
38B- <b>xM</b> x- <b>xA</b> x-Gxx P-x							ISO 1
A In	dividual base –						ISO 2
	dividual base –	·					<b>ISO 3</b>
<b>P</b> Pi	lot exhaust muff lot exhaust pipe lot exhaust to m	d (# 10-32)					

Washdown capability is possible, consult factory for modification number.





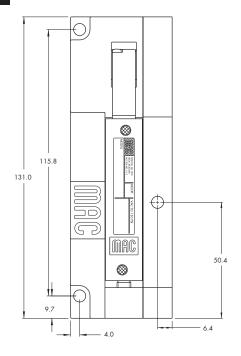


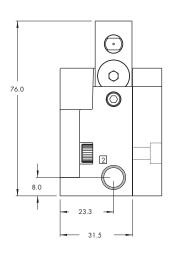
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: 1/8" bottom port: (1.2  $\rm C_v$ ) - 1/8" side port: (1.0  $\rm C_v$ ) - 1/4" tube receptacle: (0.85  $\rm C_v$ ) Coil: Class A continuous duty, #22 AWG x 12 base leads 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

Options : • BSPP threads

## DIMENSIONS

Dimensions shown are metric (mm)







ınction	Po	rt size	Flow (Max)		Manifold	mounting	Series
/2 NO-NC		/8″ = /4″ O.D. tube receptacle	1.2 C <sub>V</sub>		Manifold ba "plug-in"	se	
PERATIONAL BENEFITS						40-	33
. 3-way valve with 4-wo		rel				100	34
. High flow (up to 1.2 (	$\mathbb{C}_{V}$ ).	19.					36
. Fast, repeatable respo . Maximum shifting forc	es in both direction	ons.				9	
					- 4		32
					- 4	110	37
					•	000	38
HOW TO ORDER							52 67
	Pilot air	NO valve		NC valve		Universal valve	69
Port size	Pilot dir	NO valve		NC valve		Universal valve	44
		10 2 12 D \ / \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	! 	10 2 12		10 2 12	
Valve less base		38B-BMA-000-G <b>xx</b> P	-xxx	38B-AMA-000-G <b>xx</b> P	-xxx	<del>\(\frac{\psi}{3}\) \(\frac{\psi}{3}\)</del>	_ 46
14110 1055 1430	External	38B-BMB-000-G <b>xx</b> P		38B-AMB-000-G <b>xx</b> P-		38B-GMB-000-GxxP-xxx	_
1/8" NPTF	Internal	38B-BMA-AJA-G <b>xx</b> P	-xxx	38B-AMA-AJA-G <b>xx</b> P	-xxx		42
	External	38B-BMB-AJB-GxxP-		38B-AMB-AJB-GXXP-		38B-GMB-BJB-GxxP-xxx	- 47
1/4" O.D. Tube receptacle	Internal External	38B-BMA-EJA-G <b>xx</b> P 38B-BMB-EJB-G <b>xx</b> P-		38B-AMA-EJA-GXXP-		38B-GMB-EJB-GxxP-xxx	- 48P
lote : Above codes are fo	r side port.						
STANDARD SOLEN	OID OPERATO	R ➤	G XX P-X	XX <sup>*</sup>			48
XX Voltage		X A	Nanual operato	•	XX	Electrical connection	400
AA 120 VAC (2.5 DA 24 VDC (1.0V			lon-locking recessed ocking recessed		SA SJ	Base plug-in Base plug-in with light	- 00
DC 24 VDC (1.8V	V)		cking recessed	-	55	Base plug-in with rectifier & light & ground	_ 92
DD 24 VDC (2.5V DF 24 VDC (4.0V	V)						02
lote : AC voltage require Other options available	s connector with re- , see page 311.	ctifier.					93
atching solenoid also ava Vashdown capability is p	ilable, see page 61 ossible, consult fac	l . tory for modification numbe	r.				ISO O
OPTIONS							ISO O
ase only :							ISO 1
38B-000- <b>xxx</b>							ISO 2
(i.e. 38B-000-AJA)							150 2
							150 3
ase Configuration :							
Base Configuration : 38B-xxx-xJx-Gxx P-x	xx						
38B- <b>xxx-xJx</b> -G <b>xx</b> P- <b>x</b>	Nanifold base – Sid	e port					
38B-xxx-xJx-Gxx P-x  J M K M L L M Le		tom port se – Side port se – Bottom port					

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



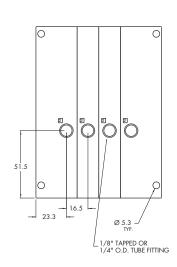


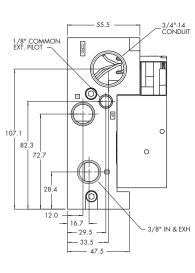


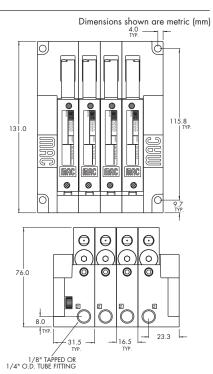
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: 1/8" bottom port: (1.2 C<sub>v</sub>) - 1/8" side port: (1.0 C<sub>v</sub>) - 1/4" tube receptacle: (0.85 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 12 base leads -15% to +10% of nominal voltage Voltage range: 1.0 to 4.0 W Power: Response times: Energize : 6 ms (with 4 W coil) De-energize : 6 ms

Options : • BSPP threads

## DIMENSIONS









Function		Port size	Flow (Max)		1anifold mounting	Series
2 NO-NC		1/8" - 1/4" O.D. tube receptacle	1.2 C <sub>v</sub>	Sub-base/ manifold base non "plug-in" with latching solenoid		
ERATIONAL BENEFITS						33
B-way valve with 4-wo	ay integral pilot					34
10 mm valve (stacks c High flow (up to 1.2 (		iters).				
ast, repeatable respo					15	36
Naximum shifting force	es in both direc	ctions.			1	
						32
					6	02
						<b>37</b>
						38
						52
HOW TO ORDER						67
HOW TO ORDER						
Port size	Pilot air	NO valve	N	C valve	Universal valve	69
		. 2		2	2	44
			ize ,			4.6
Valve less base	Internal	38A-BMA-000-L <b>xxx-xxx</b>	38A-AM/	3 6 1	<del>\displays</del>	46
14110 1033 1430	External	38A-BMB-000-Lxxx-xxx		3-000-Lxxx-xxx	38A-GMB-000-Lxxx-xxx	
1/8" NPTF	Internal	38A-BMA-AAL-L <b>xxx-xxx</b>		\-AAL-Lxxx-xxx		42
	External	38A-BMB-AAM-Lxxx-xxx	38A-AMB	-AAM-L <b>xxx-xxx</b>	38A-GMB-AAM-Lxxx-xxx	
1/4" O.D.	Internal	38A-BMA-EAL-Lxxx-xxx	38A-AM/	A-EAL-L <b>xxx</b> - <b>xxx</b>		47
Tube receptacle	External	38A-BMB-EAM-Lxxx-xxx	38A-AMB	-EAM-Lxxx-xxx	38A-GMB-EAM-Lxxx-xxx	48P
ote : Above codes are fo		•				40
atching solenc	JID OPERATO	JK >	<u> </u>			48
XX Voltage		X Wire length	X Mai	nual operator	XX Electrical connection**	400
<b>DF</b> 24 VDC (4.0V		<b>A</b> 18"		nual operator operator	BA 2 Wire Flying leads	
				-	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Plug-in Assembly	400 92
<b>DF</b> 24 VDC (4.0V		A 18" B 24"		-	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	
DF 24 VDC (4.0V HA 24 VDC (1.95	5W)	A 18" B 24" C 36"		-	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Plug-in Assembly KE 4 Wire Plug-in Assembly	
DF 24 VDC (4.0V HA 24 VDC (1.95	5W)	A 18" B 24" C 36"	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93
DF 24 VDC (4.0V HA 24 VDC (1.95 Other options available atching 38 series with	5W)	A 18" B 24" C 36"	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93
DF 24 VDC (4.0V HA 24 VDC (1.95 Other options available atching 38 series with	5W) s, see page 319. non plug-in base	A 18" B 24" C 36"	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93
DF 24 VDC (4.0V HA 24 VDC (1.95  Other options available atching 38 series with  OPTIONS  ot/Base Configuration	5W)  p, see page 319. non plug-in base	A 18" B 24" C 36"	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93
DF 24 VDC (4.0V HA 24 VDC (1.95  Other options available atching 38 series with  OPTIONS  obt/Base Configuration 88A-xMx-xAx-Lxxx-x	e, see page 319. non plug-in base	A 18" B 24" C 36"  c configuration must use "B", "K" o	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93 ISO 01 ISO 02
Other options available Latching 38 series with  OPTIONS  ot/Base Configuration 38A-xMx-xAx-Lxxx-x B Ir B Ir	s, see page 319. non plug-in base  1:  XXX  Individual base – Individual base – Individual base – Individual base –	A 18" B 24" C 36"  e configuration must use "B", "K" of Side port Bottom port	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93 ISO 01 ISO 1 ISO 2
Other options available Latching 38 series with  OPTIONS  ot/Base Configuration 38A-xMx-xAx-Lxxx-x  A Ir B Ir	e, see page 319. non plug-in base  1:  CXX  ndividual base –	A 18" B 24" C 36"  e configuration must use "B", "K" of Side port Bottom port bide port	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93 ISO 01 ISO 02
Other options available Latching 38 series with  OPTIONS  of/Base Configuration 38A-XMX-XAX-LXXX-X  A Ir  J K N  M P	e, see page 319. non plug-in base  1:  XXX  Individual base – Manifold base – Manifold base –	A 18" B 24" C 36"  e configuration must use "B", "K" of the port Bottom port Side port Bottom port Bot	0 No o	operator	BA 2 Wire Flying leads BJ 4 Wire Flying leads KA 2 Wire Flug-in Assembly KE 4 Wire Plug-in Assembly LA 3 Wire plug-in assembly	92 93 ISO 01 ISO 1 ISO 2

Note : Manifold assemblies require an end plate kit : M-38003-01-01 (internal pilot) M-38003-02-01 (external pilot)







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:  $(0.85 \, \text{C}_{\text{v}})$ 

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

Class A wiles (#22 AVVO X 10), collilloods a

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

**Power:** 1.95 to 4.0 W

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

Options : • BSPP threads

# Individual base 86.0 97.6 44.3 9.7 46.4 12.5 9.7 4.8 4.3 4.3

# Manifold base 1/8\* COMMON EXT. PILOT 47.5 125.5 1.6.5 1.72 27.7 28.4 27.3 1.6.5 1.78\* TAPPED OR 1/4\* O.D. TUBE HITING 1/8\* TAPPED OR 1/4\* O.D. TUBE HITING 1/8\* TAPPED OR 1/4\* O.D. TUBE HITING



nction	P	ort size	Flow (Max)			al/Manifold mounting	Series
2 NO-NC		/8" - /4" O.D. tube receptaci	1.2 C <sub>v</sub>		Sub-bas manifold b "plug-ir with latch solenoi	" ing	
RATIONAL BENEFITS					30101101		33
-way valve with 4-wa		1				1227	34
0 mm valve (stacks o ligh flow (up to 1.2 C	· <sub>v</sub> ).	ersj.				11/1/1/1	07
ast, repeatable respo Naximum shifting force		ions.					36
						202	32
					1		
						116	37
					- 4	200	38
							<b>52</b>
OW TO ORDER							67
Port size	Pilot air	NO valve		NC valv	е	Universal valve	69
		10 2 1	2	10 2	7 12	10 2 12	44
			<u> </u>	<u> </u>	471 471		46
alve less base	Internal	38A-BMA-000-L <b>xx</b> F		38A-AMA-000-			_
1/8" NPTF	_ External Internal	38A-BMB-000-L <b>xx</b> F 38A-BMA-AAA-L <b>xx</b>		38A-AMB-000-I 38A-AMA-AAA-		38A-GMB-000-LxxP-xxx	<b>-</b> 42
1/ <b>0</b> Mili	External	38A-BMB-AAB-Lxx		38A-AMB-AAB-		38A-GMB-AAB-LxxP-xxx	
1/4" O.D.	Internal	38A-BMA-EAA-L <b>xx</b>		38A-AMA-EAA-			47
'ube receptacle	External	38A-BMB-EAB-L <b>xx</b> F	D-XXX	38A-AMB-EAB-I	.xxP-xxx	38A-GMB-EAB-LxxP-xxx	48P
e : Above codes are for		·		*			4.0
CHING SOLENO	ID OPERATO	R <b>&gt;</b>	L <u>xx</u> P	XXX			48
			<del></del>				
Voltage	Λ.		Manual oper	ator	DA DA	Electrical connection**  Base/Manifold Plug-in	400
DF 24 VDC (4.0W HA 24 VDC (1.95)			No operator		DB	Base/Manifold Plug-in w/Ground	92
					DC DD	Base/Manifold Plug-in w/ Led Base/Manifold Plug-in w/ Led and Ground	
					EA	Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)	93
her options available and 4 wire bases mus	see page 319.					( )	_ 70
3 wire base must	use "EA" type ele	ectrical connector.					ISO 01
OPTIONS							ISO 02
fold/Base Configure	ition :			Manifold/Base Int.,	Ext. Pilot : (V	Vire options)	<b>ISO 1</b>
BA- <i>xxx-x<b>A</b>x-</i> LxxP-xx				38A- <b>xxx-xxA</b> -L			<b>ISO 2</b>
<b>B</b> In	dividual base – S dividual base – B	ottom port			B Plug-In F	nt. Pilot (2 Wire)** Ext. Pilot (2 Wire)**	ISO 3
J M	anifold base – Si anifold base – Bo ft end manifold b	de port			C Plug-In I	nt. Pilot (3 Wire)** Ext. Pilot (3 Wire)** nt. Pilot (4 Wire)**	-300
<b>M</b> Le	ft end manifold b	ase – Bottom port			E Plug-In I F Plug-In I	nt. Pilot (4 Wire)** Ext. Pilot (4 Wire)**	
N Ri	ght end manifold	hase - Side nort			-		

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







Power:
Response times:

(with 4 W coil)

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<sub>v</sub>) - 1/8" side port: (1.0 C<sub>v</sub>) - 1/4" tube receptacle: (0.85 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 12 base leads -15% to +10% of nominal voltage Voltage range:

Options : • BSPP threads

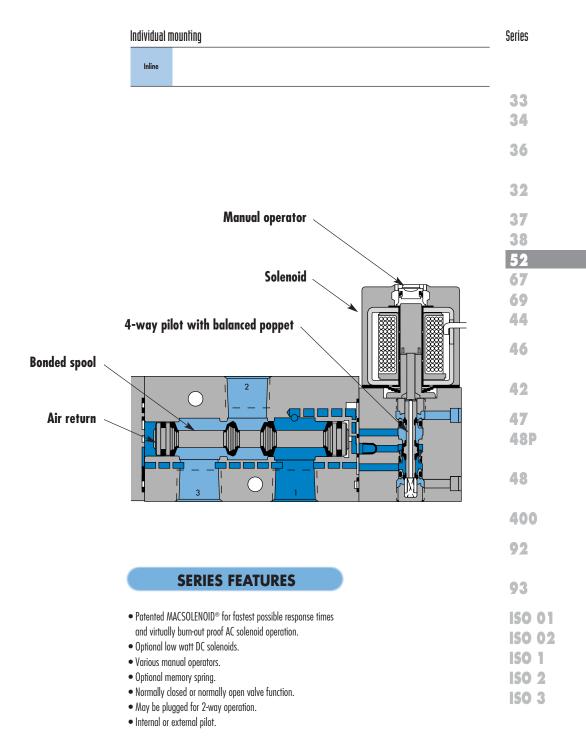
1.95 to 4.0 W

Energize : 6 ms

De-energize : 6 ms

# Individual base Manifold base Manifold base | 187 COMMON | 187 COM



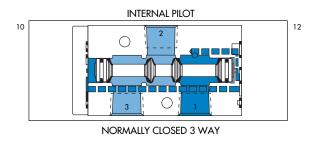


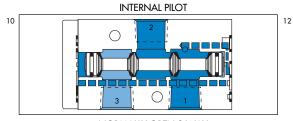






## **SPOOL CONFIGURATIONS**





NORMALLY OPEN 3 WAY



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

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

# Direct solenoid and solenoid pilot operated valves

Function		Port size	Flow (Max	]	Individual n	nounting		Series
3/2 NO-N	C, 2/2 NO-NO	1/8" - 1/4"	1.5 C <sub>v</sub>		Inline			
OPERATIONAL	BENEFITS							33
	pilot develops ma	ximum shifting						34
3. Balanced s	oring available. spool, immune to v also provides high							36
<ol><li>Bonded sp in a glass-l</li></ol>	e with high flow. bool with minimum like finished bore.				(8)	1		32
	palanced poppet, l stent response time	•			1	Ne.	30	37
7. Wiping eff 8. Long service	fect eliminates sticl	king.			1997	and it		38
o. Long solvin	co mo.					0		52
HOW TO	ORDER							67
Port size	Pilot air		le Operator			Double Op		69
		NO Valve	NC Vo	ılve	NO Valve		NC Valve	44
			10			12		46
1/8" NP1	<b>IF</b> Internal	52A-31-A0A-XX-X- <b>x</b>	52A-11-A0A-X	X-X- <b>xxx</b> - <b>xxx</b>	52A-41-A0A-XX-X-X	xx-xxx	52A-21-A0A-XX-X- <b>xxx</b> - <b>xxx</b>	40
1/4" NP1	TF .	52A-31-B0A-XX-X- <b>xxx-x</b>	52A-11-B0A-X	X-X- <b>xxx</b> -xxx	52A-41-B0A-XX-X-X	cx-xxx	52A-21-B0A-XX-X- <b>xxx-xxx</b>	4.0
1/8" NP1		52A-31-A0B-XX-X- <b>xxx-x</b>			52A-41-A0B-XX-X-XX		52A-21-A0B-XX-X- <b>xxx-xxx</b>	42
1/4" NP1	<u> </u>	52A-31-B0B-XX-X- <b>xxx-x</b>	52A-11-B0B-X	X-X- <i>XXX-XXX</i>	52A-41-B0B-XX-X- <b>xx</b>	XX-XXX	52A-21-B0B-XX-X- <b>xxx</b> - <b>xxx</b>	47
SOLENOID	OPERATOR ➤		DM-D <u>xxx</u>	- <u>XXX</u> *				48P
				' '				
XX V	oltage .	X Wire	length	X Mc	anual operator	ХХ	Electrical connection	48
	10/50, 120/60 (2.9 20/50, 240/60 (2.9		ing leads) ing leads)		n-locking recessed king recessed	KA KD	Square connector Square connector with light	
JC 24	4/60 (2.9W)	J Connect		Z LOCI	king recessed	JB	Rectangular connector	400
	4 VDC (1.8W) 4 VDC (5.4W)					JD	Rectangular connector with light	
	4 VDC (12.7W)					BA	Flying leads	92
SOLENOID	OPERATOR ➤		GM-G XXX	-XXX				
				Τ—				93
XX V	'oltage	X Wire	length	X Mc	anual operator	XX	Electrical connection	100.01
	4 VDC (1.8W)	A 18"	ienym		n-locking recessed	BA	Flying leads	ISO 01
DD 24	4 VDC (2.5W)	B 24" C 36"			king recessed	ВТ	Flying leads with light	ISO 02
	4 VDC (4.0W)					KA KT	Plug-in wire assy. Plug-in wire assy. with light	ISO 1
** Other option	ns available, see pa ns available, see pa	ge 313.						ISO 2
OPTIO	NS							ISO 3
								130 3





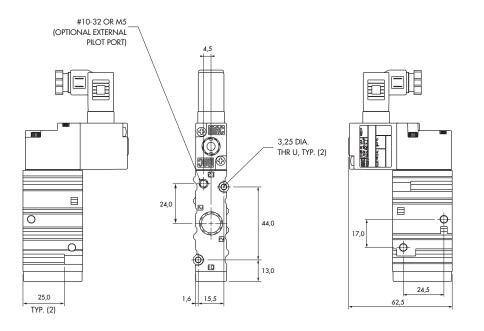


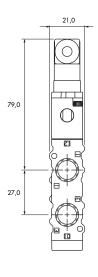
Fluid:	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI
	External Pilot : Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration:	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow:	$1/8":(1.2 C_V) - 1/4":(1.5 C_V)$
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

33 34

36

32

37 38 52

69

44

46

42

47

48

400

92

93

**ISO 01** 

ISO 02

**ISO** 1

**ISO 2** 

**ISO 3** 

48P

Solenoid

4-way pilot with balanced poppet

Bonded spool

Air return

## **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.



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

**G** O-Ring mount

# Direct solenoid and solenoid pilot operated valves

3/2 NO-NC, 2/2 NO-NC 3/4" - 1"  20.0 C <sub>V</sub> DESATIONAL BENEFIE  1. The 4-way pilot develops maximum shifting force both ways. 2. Memory spring available. 3. Belanced spool, immune to variations of pressure, also provides high flow. 4. Short stroke with high flow. 5. Bended spool with minimum friction, shifting in a glass-like finished bore. 6. Pilot with belanced poppet, high flow, short and consistent response times. 7. Wilping effect eliminates sticking.  HOW TO ORDER  Port size  Pilot air  NO Valve  At a 1" NPTF  67A-CR-BAA-DIM-DIXXX-XXX 67A-DIXXX-XXX 67A-DIXX-XXX 67A-DIXX-XXXX 67A-DIXX-XXX
1. The 4-way pilot develops maximum shifting force 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 spool with minimum friction, shifting in a glass-like finished bore. 6. Pilot with bolanced poppel, high flow, short and consistent response times. 7. Wiping effect eliminates sticking.  HOW TO ORDER  Port size Pilot air NO Valve NO
1. The 4-way pilot develops maximum shifting force 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 spool with minimum friction, shifting in a glass-like finished bore.  6. Pilot with balanced poppet, high flow, short and consistent response times.  7. Wiping effect eliminates sticking.  8. Rectangular connector with light light.  8. Rectangular connector with light.
2. Memory spring oxidiable. 3. Bolanced spool, immune to variations of pressure, also provides high flow. 4. Short stroke with high flow. 5. Bonded spool with minimum friction, shifting in a glass-like finished bore. 6. Pilot with balanced poppet, high flow, short and consistent response times. 7. Wiping effect eliminates sticking.    No Valve
5. Bonded spool with minimum friction, shifting in a glass-like finished bore. 6. Pilot with bolanced poppet, high flow, short and consistent response times. 7. Wiping effect eliminates sticking.    HOW TO ORDER
A
7. Wiping effect eliminates sticking.  38 52  HOW TO ORDER  Port size  Pilot dir  NO Valve  Add  3/4" NPTF Internal 67A-Cx-AAA-DM-Dxxx-xxx 67A-Ax-AAA-DM-Dxxx-xxx 67A-Dx-AAA-DM-Dxxx-xxx 67A-Bx-AAA-DM-Dxxx-xxx 67A-Bx-AAA-DM-Dxxx-xxx 67A-Bx-BAA-DM-Dxxx-xxx 67A-Bx-BAA-DM-Dxxx-xxx 67A-Bx-BAA-DM-Dxxx-xxx 67A-Bx-BAA-DM-Dxxx-xxx 67A-Bx-BAB-DM-Dxxx-xxx 67A-B
No Valve
Port size
NO Valve
3/4" NPTF Internal 67A-Cx-AAA-DM-Dxxx-xxx 67A-Ax-AAA-DM-Dxxx-xxx 67A-Dx-AAA-DM-Dxxx-xxx 67A-Ax-AAA-DM-Dxxx-xxx 67A-Bx-AAA-DM-Dxxx-xxx 67A-Dx-AAB-DM-Dxxx-xxx 67A-Dx-AAB-DM-Dxxx-xxx 67A-Dx-AAB-DM-Dxxx-xxx 67A-Dx-AAB-DM-Dxxx-xxx 67A-Dx-AAB-DM-Dxxx-xxx 67A-Dx-AAB-DM-Dxxx-xxx 67A-Dx-Dxxx-xxx 67A-Dx-Dxxx-xxx 67A-Dx-Dxxx-xxx 6
3/4" NPTF   Internal   67A-Cx-AAA-DM-Dxxx-xxx   67A-Ax-AAA-DM-Dxxx-xxx   67A-Dx-AAA-DM-Dxxx-xxx   67A-Bx-AAA-DM-Dxxx-xxx   67A-Bx-AAA-DM-Dxxx-xxx   67A-Bx-AAA-DM-Dxxx-xxx   67A-Bx-BAA-DM-Dxxx-xxx   67A-Bx-BAA-DM-Dxxx-xxx   67A-Bx-BAA-DM-Dxxx-xxx   67A-Bx-BAA-DM-Dxxx-xxx   67A-Bx-BAA-DM-Dxxx-xxx   67A-Bx-BAA-DM-Dxxx-xxx   67A-Bx-BAB-DM-Dxxx-xxx   67A-Bx-BAB-DM-Dxxx-xx
1" NPTF
3/4" NPTF
1" NPTF 67A-Cx-BAB-DM-Dxxx-xxx 67A-Ax-BAB-DM-Dxxx-xxx 67A-Dx-BAB-DM-Dxxx-xxx 67A-Bx-BAB-DM-Dxxx-xxx 47    A
XX   Voltage   X   Wire length   X   Manual operator   XX   Electrical connection
XX   Voltage   X   Wire length   X   Manual operator   XX   Electrical connection
XX   Voltage   X   Wire length   X   Manual operator   XX   Electrical connection
JA   110/50, 120/60 (2.9W)   A   18"   1   Non-locking recessed   KA   Square connector     JB   220/50, 240/60 (2.9W)   B   24"   2   Locking recessed   KD   Square connector with light     JC   24/60 (2.9W)   J   Connector     FB   24 VDC (1.8W)   J   Rectangular connector     DA   24 VDC (5.4W)   JD   Rectangular connector with light     Rectangular connector     Rectangular connect
JA         110/50, 120/60 (2.9W)         A         18"         1 Non-locking recessed         KA         Square connector           JB         220/50, 240/60 (2.9W)         B         24"         2 Locking recessed         KD         Square connector with light           JC         24/60 (2.9W)         J         Connector         JB         Rectangular connector           FB         24 VDC (1.8W)         JD         Rectangular connector with light           DA         24 VDC (5.4W)
JC         24/60 (2.9W)         J         Connector         400           FB         24 VDC (1.8W)         JD         Rectangular connector with light           DA         24 VDC (5.4W)         light
FB 24 VDC (1.8W)  DA 24 VDC (5.4W)  JD Rectangular connector with light
* Other options available, see page 309.
OPTIONS 93
Spool type : Spool return :
67A- <b>X</b> X-AAA-DM-Dxxx-xxx
G Single operator universal spool  H Double operator universal spool  2 Standard return  2 Standard return with memory spring
H Double operator universal spool  2 Standard return with memory spring (for use with single operator only)  Port configuration:  Pilot style:
67A-XX-A <b>X</b> A-DM-D <i>xxx-xxx</i> 67A-XX-AAA-D <b>M</b> -D <i>xxx-xxx</i>
A Standard pilot exhaust B Pilot exhaust to main exhaust* C Pilot exhaust out adapter*  M Pilot exhaust muffled P Pilot exhaust piped (#10-32) U Pilot exhaust to main exhaust
* Must use DU pilot. Replace DM with DU  Mounting style :







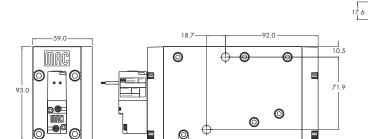
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot : Vacuum to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: Temperature range:  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow: 3/4": (14.5 C<sub>v</sub>) - 1": (20.0 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 18 lead wires -15% to +10% of nominal voltage Voltage range: Protection: Consult factory ~ Inrush : 7.6 VA Power: Holding: 4.8 VA = 12.7 to 1.0 WResponse times : Energize: 29 ms (with 5.4 W coil) De-energize: 21 ms

Options : • BSPP threads

DIMENSIONS

# 117.9

OPTIONAL EXTERNAL



APPROX. FOR SINGLE SOLENOID

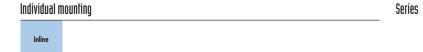
— 226.2— APPROX. FOR DOUBLE SOLENOID Dimensions shown are metric (mm)

-138.4

-84.8

24.0





33 34

36

32

92

93

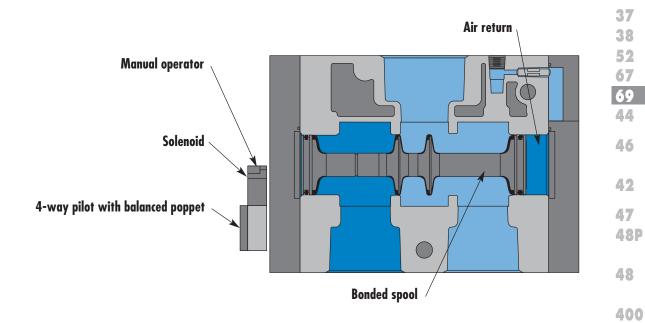
**ISO 01** 

ISO 02

**ISO** 1

**ISO 2** 

**ISO 3** 



## **SERIES FEATURES**

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

71



Function		Port size	Flow (Ma	[X	Individual mou	unting		Series
3/2 NO-NC, 2/2 NO	D-NC	1 1/2" - 2"	- 2 1/2" 60.0 (	v	Inline			
OPERATIONAL BENEFITS								33
The 4-way pilot develop force both ways.		· ·						34
Balanced spool, immune pressure, also provides l     Short stroke with high flat     Bonded spool with mining	high flow. ow.							36
in a glass-like finished b 5. Pilot with balanced pop	ore. pet, high flow	_						32
and consistent response  6. Wiping effect eliminates						-		37
contamination.								38
						_		52
HOW TO ORDER								67
Port size	Pilot air		Single Operator NC valve		S	ingle O NO v		<b>69</b>
						10 2 T 3 01	7 <u>371</u>	46
1 1/2"			69A-A1-AAA-J <b>xxx-xx</b>				A-Jxxx-xxx	
2" 2 1/2"	Internal		69A-A1-BAA-J <b>xxx-xx</b> 69A-A1-CAA-J <b>xxx-x</b> x				A-Jxxx-xxx A-Jxxx-xxx	42
1 1/2"			69A-A1-AAB-J <b>xxx-xx</b>				B-Jxxx-xxx	
2"	External		69A-A1-BAB-J <b>xxx-xx</b>	x	69,	A-C1-BAE	B-J <b>xxx-xxx</b>	47
2 1/2"			69A-A1-CAB-J <b>xxx-xx</b>	Х	69/	A-C1-CA	B-Jxxx-xxx	48P
SOLENOID OPERATO	R ➤		J <u><b>XX</b></u>	<b>x</b> - <u>xxx</u> * (-C	6) Add "G"	for g	round	48
				J 5				
XX Voltage AA 120 VAC (5,4W	Λ		ead wire length o lead wire	X Manu  Non-loc	al operator	XX BA	Electrical connection* Flying leads	400
DA 24 VDC (5,4W)	')		8"	2 Locking	king	GA	MAC JAC Solenoid Plug-in	
DB 12 VDC (5,4W)			4"			GG	MAC JAC Solenoid Plug-in	92
DD 24 VDC (2,4W) DD 12 VDC (2,4W)		<u> </u>	6"		_	JB	with rectifier  Rectangular connector	
					_	JD	Rectangular connector with light	93
* Other options available, s Note: use "0" No lead wire	see page 317.	nd "I" type elec	trical connectors		_	KA KD	Mini square connector  Mini square connector with light	70
AC voltage requires of	onnector with	rectifier.			_			ISO 01

- M Manifold O'Ring Mount

A Standard pilot exhaust
B Pilot exhaust out main exhaust

OPTIONS

Pilot exhaust configuration:

69A-xx-<u>xx</u> **X**-J*xxx-xxx* 

**ISO 02** 

**ISO** 1

**ISO 2** 

**ISO 3** 

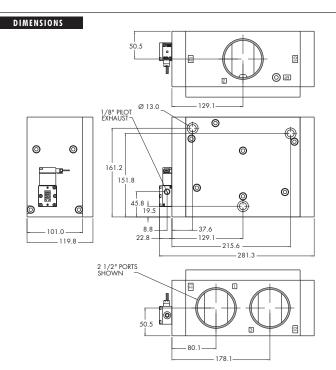




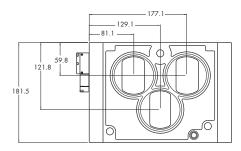


Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot Pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range : 0°F to 120°F (-18°C to +50°C) Cv 60.0 Flow: Coil: Class A wire, #22 AWG x 18, continuous duty Voltage range: -15% to +10% of nominal voltage 5.4W - 2.4W - 1.8W Power:

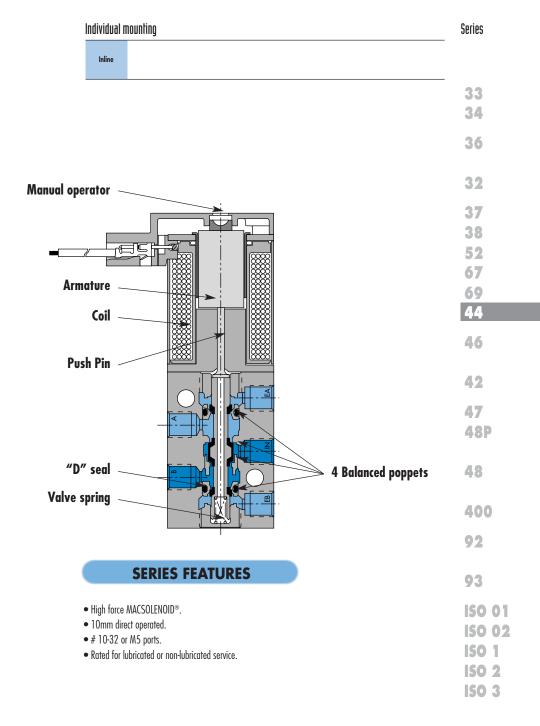
Options : • BSPP threads



Dimensions shown are metric (mm)









unction	Port size	Flow	(Max)	Individual	Mounting	Series
5/2	M5, # 10	0-32 0.1	c <sub>v</sub>	Inline		
PERATIONAL BENEFITS  10 mm valve, direct sol Balanced poppet, immu					1	33 34
pressure. Short stroke with high fl The patented solenoid of	low.					36
forces. Powerful return spring. Flow is specifically adj						32
Manual operator stando	ard on all valves.					37
						38
						52
HOW TO ORDER						67
LENOID OPERATO	)R					69
Port	size	Univ	ersal valve	For	use with external flow controls	44
		W	B A T		B A T	46
N	15	44C-A	BA-G xxx-xxx		44C-BBA-G xxx-xxx	42
# 10	0-32	44C-A	AA-G xxx-xxx		44C-BAA-G <b>xxx-xxx</b>	
tching solenoi	D					47
Port	size	Univ	ersal valve	For	use with external flow controls	48P
		W	B A T T T T T T T T T T T T T T T T T T		W 7 3 3 5 5 5 5	48
N	15	44B-A	ABA-L XXX-XXX		44B-BBA-L xxx-xxx	
# 10	0-32	44B-A	AA-L <b>xxx-xxx</b>		44B-BAA-L xxx-xxx	400
DLENOID OPERATO	DR ➤	G <u>x</u>	xx-xxx			92
			╵┚└┺─			93
XX Voltage	X	Wire length		nual operator	XX Electrical connect	
AA 120 VAC (2.5V DC 24 VDC (1.8W)		18"		locking recessed ng recessed	BA Flying leads BT Flying leads with light	ISO 01
DD 24 VDC (2.5W) DF 24 VDC (4.0W)					GA MAC JAC Solenoid Plug KA Plug-in wire assembly.	
Other options available,	see page 311.				KC Plug-in wire assembly v	
e : AC voltage requires o	connector with rectifier				KT Plug-in wire assembly v	
	<b>D</b>	L <u>x</u>	XX-XXX		igit	ISO 3
TCHING SOLENOI	D <b>≻</b>					
TCHING SOLENOI	υ <b>&gt;</b>		— ५—			
XX Voltage	X	Wire length		nual operator	XX Electrical connect	ion
XX Voltage DF 24 VDC (4.0W)	X	Wire length 18" 24"		<b>nual operator</b> perator	BA 2 Wire flying leads	tion
<b>DF</b> 24 VDC (4.0W)	X	18"		-	BA 2 Wire flying leads	

77

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







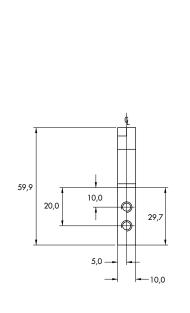
Fluid: Compressed air, vacuum, inert gases Pressure range: Vacuum to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) 40 µ Filtration: Temperature range :  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow: 4 W: (0.10 C<sub>v</sub>) - 2.5 W: (0.08 C<sub>v</sub>) - 1.8 W: (0.06 C<sub>v</sub>) - 1.0W: (0.05 C<sub>v</sub>) Coil: 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 - 1.0 W Response times: Energize: 3.4 ms (with 4 W coil) De-energize: 1.5 ms

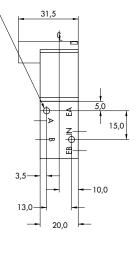
Note: • Valve and coil are not interchangeable.

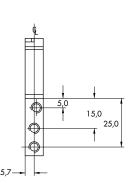
Ø 3.3 MTG. HOLES

## DIMENSIONS

Dimensions shown are metric (mm)







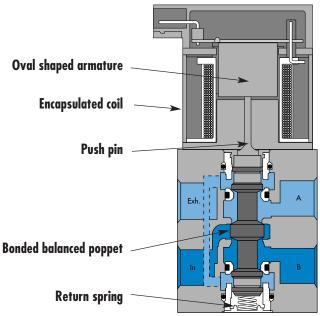


## Individual mounting Series Inline 33 34 Manifold mounting

Manifold base

"plug-in" with PR & FC

Manifold base "plug-in" with flow controls



## **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 1.3 watts.
- Rectified AC voltage.

36

32

69

44

46

42

47 48P

48

400

92

93

ISO 01

ISO 02

**ISO** 1

**ISO 2** 

**ISO 3** 

	Port size	Flow (Max)	Individual mounting		Series
/2	1/8" - # 10-32	0.3 C <sub>V</sub>	Inline		
ERATIONAL BENEFITS					33
Balanced poppet, immune to	variations of				34
oressure. Patented solenoid develops h	igh shifting				0.7
orces. Short stroke with high flow.					36
Higher forces result in lower value flow.	wattages for		5	The state of the s	
given now. Powerful return spring.				-	<b>32</b>
			A		37
					38
					52
HOW TO ORDER					67
	Single O	perator	Double (	Operator	69
Port size	Without flow controls	With flow controls	Without flow controls	With flow controls	44
		<u></u>	A P	A B	
					46
	EXH V IN	EXH V IN	EXH V IN	EXH V OIN	
1/8" NPTF	46A-AA1-J <b>xxx-xxx</b>	46A-AA2-J <b>xxx-xxx</b>	46A-GA1-J <b>xxx-xxx</b>	46A-GA2-J xxx-xxx	42
# 10-32	46A-AB1-J <b>xxx-xxx</b>	46A-AB2-J <b>xxx-xxx</b>	46A-GB1-J <b>xxx-xxx</b>	46A-GB2-J xxx-xxx	47
		1 2022 2022*	(	1	47 48P
DLENOID OPERATOR ➤		J <u>XX</u> X- <u>X</u> XX	(-G) Add "G" for	ground	40F
				•	
					40
XX Voltage	X Wire leng		unual operator XX	Electrical connection	48
XX Voltage Single & double solenoid AA 120 VAC (5.4W)	X   Wire leng 	1 Nor	inual operator XX n-locking recessed BA king recessed GA	Electrical connection Flying leads	
Single & double solenoid           AA         120 VAC (5.4W)           DA         24 VDC (5.4W)	** O No leads A 18" B 24"	1 Nor	n-locking recessed BA	Electrical connection Flying leads MAC JAC solenoid plug-in MAC JAC solenoid plug-in	48
Single & double solenoid  AA 120 VAC (5.4W)	** O No leads A 18"	1 Nor	n-locking recessed BA king recessed GA GG JB	Electrical connection  Flying leads  MAC JAC solenoid plug-in with rectifier  Rectangular connector	400
Single & double solenoid           AA         120 VAC (5.4W)           DA         24 VDC (5.4W)           DB         12 VDC (5.4W)           Single solenoid only           DC         24 VDC (2.4W)	** O No leads A 18" B 24"	1 Nor	n-locking recessed BA king recessed GA GG	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with	
Single & double solenoid   AA   120 VAC (5.4W)   DA   24 VDC (5.4W)   DB   12 VDC (5.4W)   Single solenoid only   DC   24 VDC (2.4W)   DD   12 VDC (2.4W)	**O No leads  A 18"  B 24"  C 36"	1 Nor	n-locking recessed BA king recessed GA GG JB JD KA	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with  light  Mini square connector	400
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  Single solenoid only  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  Wher options available, see page	***O No leads  A 18"  B 24"  C 36"	1 Nor	n-locking recessed BA king recessed GA GG JB JD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector	400 92
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  Single solenoid only  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  Other options available, see pag  Jse with rectangular and minic  t: - AC voltage requires conne	e 317. connectors actor with rectifier.	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with  light  Mini square connector	400
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  BB 12 VDC (5.4W)  Single solenoid only  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  ther options available, see pag Jse with rectangular and minic te: - AC voltage requires conne	e 317. connectors sector with rectifier. down capability is possible. Consult	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector	400 92
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  Single solenoid only  DC 24 VDC (2.4W)  Ther options available, see pag Jse with rectangular and mini cte: - AC voltage requires conne  - With the MAC JAC, wash Double solenoid requires m	e 317. connectors sector with rectifier. down capability is possible. Consult	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector	400 92
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  BB 12 VDC (5.4W)  Single solenoid only  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  ther options available, see pag Jse with rectangular and mini at the control of the control	e 317. connectors sector with rectifier. down capability is possible. Consult	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector with	400 92 93 ISO 01 ISO 02
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  Other options available, see pag  Use with rectangular and minic of e: - AC voltage requires conner  - With the MAC JAC, wash  Double solenoid requires m  OPTIONS	e 317. connectors schowling inimum 5.4 watts.	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector with	400 92 93 ISO 01 ISO 02 ISO 1
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  Other options available, see pag Use with rectangular and minic of the :- AC voltage requires conner  - With the MAC JAC, wash  Double solenoid requires m  OPTIONS	e 317. connectors sector with rectifier. down capability is possible. Consult	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector with	400 92 93 ISO 01 ISO 02 ISO 1 ISO 2
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  Other options available, see pag  Use with rectangular and minic of the company of the compan	e 317. connectors schor with rectifier. down capability is possible. Consult inimum 5.4 watts.	1 Not 2 Lock	n-locking recessed BA king recessed GA GG JB JD KA KD on number.	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector with	400 92 93 ISO 01 ISO 02 ISO 1
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  DB 12 VDC (5.4W)  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  Other options available, see pag  Use with rectangular and minic totle: - AC voltage requires conne-  With the MAC JAC, wash  Double solenoid requires m  OPTIONS  46A-AA1-JXXX-XXX  A Single ope  C Single ope  C Single ope	e 317. connectors actor with rectifier. down capability is possible. Consult inimum 5.4 watts.  Dring mount (body option 'D' & 'H') erator - 4 port body with side ports rator - 4 port body with bottom por	factory for washdown modification ts (No side ports – M5 or #10-32	n-locking recessed BA king recessed GA GG JB JD KA KD on number.	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector with	400 92 93 ISO 01 ISO 02 ISO 1 ISO 2
Single & double solenoid  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DB 12 VDC (5.4W)  DC 24 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  DD 12 VDC (2.4W)  Other options available, see pag Use with rectangular and minic of the company	e 317. connectors schor with rectifier. down capability is possible. Consult inimum 5.4 watts.	factory for washdown modification  ts (No side ports - M5 or #10-32 orts (No side ports)	n-locking recessed BA king recessed GA  JB JD  KA KD  ONLY)	Electrical connection  Flying leads  MAC JAC solenoid plug-in  MAC JAC solenoid plug-in  with rectifier  Rectangular connector  Rectangular connector with light  Mini square connector  Mini square connector with	400 92 93 ISO 01 ISO 02 ISO 1 ISO 2

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
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)
Orifice:	3,3 mm
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
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power:	5.4W – 2.4W – 1.8W

Options : • BSPP threads

# Single solenoid Double solenoid Double solenoid Double solenoid 7.5 2.2.5



		Port size		Flow (Max)	Manifold Mounting		Series
/2		1/8" -	# 10-32	0.3 C <sub>v</sub>	Stacking		
PERATIO	NAL BENEFITS						33
	ed poppet, immune to variatio	ons of					34
forces. Short sti	ed solenoid develops high shift troke with high flow.						= 36
given flo	forces result in lower wattage low. ul return spring.	es tor					32
					100		37
						10	38
							52
HOW_T	TO ORDER						67
				With out flow controls	347	th flow controls	69
	Port size			Without flow controls	VV	ith flow controls	44
				A B B		A B B	44
				EXH V OIN		EXH \$\display \in \text{IN}	46
	1/8" NPTF			46A-SA1-J <b>xxx-xxx</b>		SA-SA2-J <b>xxx-xxx</b>	
	# = A A A				4	/ A CDO I	
	# 10-32			46A-SB1-J <b>xxx-xxx</b>	4	6A-SB2-J <b>xxx-xxx</b>	
21516							42
OLENC	# 10-32 DID OPERATOR >			J <u><b>XXX</b></u> - <u><b>XXX</b>* (-C</u>			47
DLENC							
DLENC		X	Wire lengt	] <u>xx</u> x-xxx. (-C	6) Add "G" fo		47 48P
XX AA	OID OPERATOR ➤  Voltage  120 VAC (5.4W)	Α	18"	J XXX-XXX° (-C	6) Add "G" fo	r ground  KX Electrical connection  BA Flying leads	47 48P
XX	OID OPERATOR ➤			J <u>XX</u> X-XXX (-C	6) Add "G" fo	r ground	47 48P
XX AA DA DB DC	Voltage 120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W) 24 VDC (2.4W)	A B	18" 24"	J XXX-XXX° (-C	6) Add "G" fo	r ground  Electrical connection BA Flying leads GA MAC JAC solenoid plug-in with diode	47 48P 48
XX AA DA DB	Voltage 120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W)	A B	18" 24"	J XXX-XXX° (-C	6) Add "G" fo	r ground	47 48P
XX AA DA DB DC DD	Voltage 120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W) 24 VDC (2.4W) 12 VDC (2.4W)	A B C	18" 24"	J XXX-XXX° (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P = 48 = 400
XX AA DA DB DC DD Other opte : - AC	Voltage  120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W) 12 VDC (2.4W) 12 VDC (2.4W) 0ptions available, see page 317. C voltage requires connector with	A B C	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48
XX AA DA DB DC DD Other opte: - AC	Voltage  120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W) 12 VDC (2.4W) 12 VDC (2.4W) 0ptions available, see page 317. C voltage requires connector with	A B C	18" 24" 36"	J XXX-XXX° (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P = 48 = 400
XX AA DA DB DC DD Other op e: - AC - Wi	Voltage  120 VAC (5.4W) 24 VDC (5.4W) 12 VDC (5.4W) 12 VDC (2.4W) 12 VDC (2.4W) 0ptions available, see page 317. C voltage requires connector with	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P = 48 = 400
AA DA DB DC DD Other op te:-AC -Wi	Voltage  120 VAC (5.4W)  24 VDC (5.4W)  12 VDC (5.4W)  24 VDC (2.4W)  12 VDC (2.4W)  12 VDC (2.4W)  poptions available, see page 317.  C voltage requires connector with the MAC JAC, washdown contacts with the	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48 400 92 93
AA DA DB DC DD Other op te:-AC -Wi	Voltage  120 VAC (5.4W)  24 VDC (5.4W)  12 VDC (5.4W)  24 VDC (2.4W)  12 VDC (2.4W)  12 VDC (2.4W)  poptions available, see page 317.  C voltage requires connector with the MAC JAC, washdown contacts with the	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48 400 92 93 ISO 01
AA DA DB DC DD Other op te:-AC -Wi	Voltage  120 VAC (5.4W)  24 VDC (5.4W)  12 VDC (5.4W)  24 VDC (2.4W)  12 VDC (2.4W)  12 VDC (2.4W)  poptions available, see page 317.  C voltage requires connector with the MAC JAC, washdown contacts with the	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48 400 92 93
AA DA DB DC DD Other op e: - AC - Wi	Voltage  120 VAC (5.4W)  24 VDC (5.4W)  12 VDC (5.4W)  24 VDC (2.4W)  12 VDC (2.4W)  12 VDC (2.4W)  poptions available, see page 317.  C voltage requires connector with the MAC JAC, washdown contacts with the	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48 400 92 93 ISO 01
AA DA DB DC DD Other op te : - AC - Wi	Voltage  120 VAC (5.4W)  24 VDC (5.4W)  12 VDC (5.4W)  24 VDC (2.4W)  12 VDC (2.4W)  12 VDC (2.4W)  poptions available, see page 317.  C voltage requires connector with the MAC JAC, washdown contacts with the	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48 400 92 93 150 01 150 02 150 1
AA DA DB DC DD Other op te:-AC -Wi	Voltage  120 VAC (5.4W)  24 VDC (5.4W)  12 VDC (5.4W)  24 VDC (2.4W)  12 VDC (2.4W)  12 VDC (2.4W)  poptions available, see page 317.  C voltage requires connector with the MAC JAC, washdown contacts with the	A B C th rectifier.	18" 24" 36"	J XXX-XXX* (-C	6) Add "G" fo	r ground  Electrical connection Flying leads GA MAC JAC solenoid plug-in with diode MAC JAC solenoid plug-in AC JAC solenoid plug-in MAC JAC solenoid plug-in	47 48P 48 400 92 93 ISO 01 ISO 02







(with 5.4 W coil)

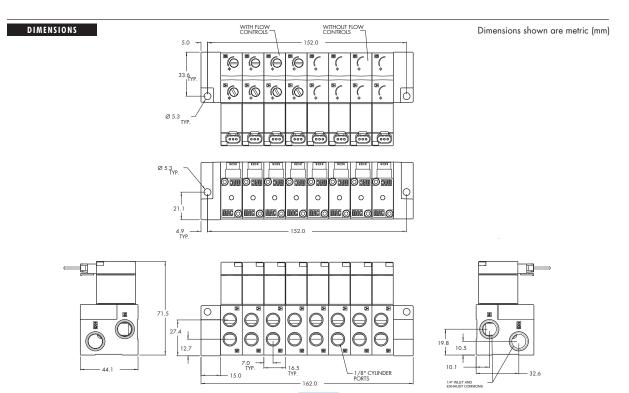
Fluid: Compressed air, vacuum, inert gases Pressure range: Vacuum to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 μ Temperature range:  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow:  $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$ 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: Response times: Energize: 7.20 ms

Options : • BSPP threads

De-energize :

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

4.20ms





Function	Port size		Flow (Max)	Manifold mounting	Series
4/2	1/8" -	5/32 O.D. Pressed-in tube receptacles	0.3 C <sub>v</sub>	Manifold base "plug-in"	
OPERATIONAL BENEFITS	5				33
1. Balanced poppet, im	mune to variations of				34
pressure.  2. Patented solenoid de forces.					36
<ol> <li>Short stroke with high</li> <li>Higher forces result in given flow.</li> <li>Powerful return spring</li> </ol>	n lower wattages for			60	32
	9.			26 50	37
					38
					52
HOW TO ORDER	1				67
Pe	ort size	Sin	gle solenoid	Double solenoid	69
		A	A B B	A B B	44
		<u> </u>	EXH V VIN	EXH V SIN	46
	e less base		00-00-J <b>xx</b> P <b>-xxx</b>	46A-N00-00-J <b>xx</b> P- <b>xx</b>	x
	8" NPTF		SA-AC-J xxP-xxx	46A-NSA-BL-J xxP-xx 46A-NSF-BL-J xxP-xx	
5/32 O.D. Fress	ed-in tube receptacles	40A-L	SF-AC-J <b>xx</b> P- <b>xxx</b>	40A-1101-01-3 AAT-AA3	
COLENIOID ODEDA	TOD >	L	w D www* / /	C)	47
SOLENOID OPERA	IOR ➤	J 🔀	X P-XXX (-0	G) Add "G" for ground	48P
XX Voltage			operator	XX Electrical connection	n 48
Single & double sole AA 120 VAC (5		1 Non-lockir 2 Locking	g	FA Base plug-in Base plug-in with diode	
AC 24 VAC (5,4	1W)			FG Base plug-in with rectifier	400
DA 24 VDC (5,4 DB 12 VDC (5,4					400
Single solenoid only	,				92
DC 24 VDC (2,4 DD 12 VDC (2,4	1W) 1W)	<u> </u>			7.4
					0.2
<ul> <li>Other options availab</li> <li>Note: AC voltage require</li> </ul>	le, see page 317. es connector with rectifier. [	Pouble solenoid requires min	mum 5.4 watts.		93
OPTIONS	1				ISO 01
46A-LSB-AC-JxxP-x					ISO 02
TI					150 02
;	Single solenoid - Side cyli Single & double solenoid	nder ports - Bottom cylinder ports			130 1
<b>0</b> Ba:	se only - no valve				150 2
<b>L</b> Sin	gle sólenoid - Base mount l gle solenoid - Base mount l uble solenoid - Base mount uble solenoid - Base mount	ody ody with gage port body body with gage port			ISO 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 Temperature range:  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ C to  $+50^{\circ}$ C) Orific e 3.3 mm  $1.8W : (0.20 C_v) - 2.4W : (0.20 C_v) - 5.4W : (0.30 C_v)$ Flow: Coil: Epoxy encapsulated – Class A wires – 100% ED Voltage range: -15% to +10% of nominal voltage Protection: IP54 (electrical connection)

 Power:
 5.4W - 2.4W - 1.8W

 Response times:
 Energize: 7.20

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

## DIMENSIONS Dimensions shown are metric (mm) **Double solenoid** -35.5— 8.5— 0 0 0 000 Ŏ T 22.5 -풆 0 9 3911 0 0



### Applications of the processes of the	Function	Port size		Floш (Max)	Manifold mounting	Series
1. Bolanced poppet, immune to variations of pressure.  2. Patented solenoid develops high shifting forces.  3. Sincet strote with high flow.  4. Higher forces result in lower variages for given flow.  5. Poverful return spring.  8. Port size (Bottom ports only)  Walve less base  4.6A-LOO-QUI XRP XXXX  5.732 Q.D. Pressed-in twbe receptacles  5. SOLENOID OPERATOR > JXX P-XXXX (-G) Add "G" for ground  XX Voltage  XX Voltage  XX Manual operator  AA 120-VAC (5.4M)  AB 12-VAC (5.4M)  BB 12-VAC (5.4M)  BB 12-VAC (5.4M)  Control of the first of the first only in received for both page page 317.  Note: AC voltage requires connector with restifier.  Portions  92  150 01  150 02  150 11  150 02  150 11  150 22	4/2	1/8" -		0.3 C <sub>v</sub>	"plug-in" with pressure	
pressure.  2 Pentende ablachmic develops high shifting forces. 3 Short stroke with high flow. 4 Higher forces result in lower vartages for given flow. 5. Powerful return spring.  8 Port size (Bottem ports only)  1 Valve less base 1 / 8" MPT 4 A6A-LOO-00-1 xxP-xxxx  1 / 8" MPT 4 A6A-LOO-00-1 xxP-xxxx  4 SOLENOID OPERATOR >  1 XX P-xxxx (-G) Add "G" for ground  4 X Voltage  XX Voltage XX Manual operator XX Electrical connection AA 120 VAC (5 AW) A 100 VAC (5 AW) C 24 VAC (2 AW) C 34 VAC (2 AW) C 4 VAC (2 AW) C 5 Vac (2 AW) C 6 Vac (2 AW) C 7 VAC (2 AW) C 7 VAC (2 AW) C 8 Vac (2 AW) C 8 Vac (2 AW) C 9 VAC (2 AW) C 1 Vac (2 AW) C 2 Vac (2 AW) C 1 Vac (2 AW) C	OPERATIONAL BI	ENEFITS				33
2. Patented solenoid develops high shifting forces.  3. Short stoke with high flow.  4. Highler forces result in lower wattages for given flow.  5. Powerful return spring.  80  100  100  100  100  100  100  100		pet, immune to variations of				
S. Powerful return spring.    Port size   Return spring.   Return spring.	<ul><li>2. Patented soler forces.</li><li>3. Short stroke w</li></ul>	vith high flow.			90	36
HOW TO ORDER   Port size (Bottom ports only)	given flow.	·				32
Port size (Bottom ports only)						37
Port size (Bottom ports only)   44						38
Port size (Bottom ports only)   44					0	52
Color of the options available, see page 317. Note: AC voltage requires connector with solited stem with locknut of Regulator with solited stem with locknut of Regulator with solited stem of Regulator with solited s	HOW TO OR	DER				67
Color of the options available, see page 317. Note: AC voltage requires connector with solited stem with locknut of Regulator with solited stem with locknut of Regulator with solited stem of Regulator with solited s		Port size			Model number	69
Valve less base  Valve less base  1/8" NPTF  46A-LSA-AJ-JXP-XXX  5/32 O.D. Pressed-in tube receptacles  46A-LSF-AJ-JXP-XXX  42  **SOLENOID OPERATOR > JXX P-XXX			y)			
Valve less base					A B B B B B B B B B B B B B B B B B B B	
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) 1 Non-locking recessed FA Base plug-in with diode  BB 12 VPC (5.4W) 2 Locking recessed FG Base plug-in with rectifier  Other options available, see page 317.  Note: AC voltage requires connector with rectifier.  92  OPTIONS  46A-LSA-AJ-JXXP-XXX  J Regulator with adjusting knob E Regulator with slotted stem with locknut O Base only -n o valve L Base mount body with gage port  Example: base only with regulator: 46A-OSA-AJ. End plate kit required (port size 1/4"): M-46003-01.				_		
SOLENOID OPERATOR > J XX P-XXX (-G) Add "G" for ground  47 48P  XX Voltage X Manual operator XX Electrical connection  AA 120 VAC (5.4W) 1 Non-locking recessed FA Bose plug-in  DB 12 VDC (5.4W) 2 Locking recessed FB Base plug-in with diode  DB 12 VDC (5.4W) FG Bose plug-in with rectifier  * Other options available, see page 317.  Note: AC voltage requires connector with rectifier.  92  OPTIONS  46A-LSA-AJ-JXXP-XXX  J Regulator with adjusting knob E Regulator with slotted stem with locknut  O Bose only — no valve L Bose mount body M Bose mount body M Bose mount body with gage port  Example: base only with regulator: 46A-OSA-AJ. End plate kit required (port size 1/4"): M-46003-01.		, ,				
XX Voltage  X Manual operator  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  BB 12 VDC (5.4W)  PC 24 VDC (2.4W)  * Other options available, see page 317. Note: AC voltage requires connector with rectifier.  OPTIONS  46A-LSA-AJ-JxxP-xxx  J Regulator with adjusting knob  E Regulator with slotted stem  G Regulator with slotted stem with locknut  O Base only – no valve  L Base mount body  M Base mount body  M Base mount body with gage port  Example: base only with regulator: 46A-OSA-AJ.  End plate kit required (port size 1/4"): M-46003-01.		5/32 O.D. Pressed-in tube	receptacles		46A-LSF-AJ-J XXP-XXX	<b></b>
XX Voltage  AA 120 VAC (5.4W)  DA 24 VDC (5.4W)  DC 24 VDC (5.4W)  Cother options available, see page 317.  Note: AC voltage requires connector with rectifier.  PTIONS  48  48  48  48  48  48  48  48  48  4	SOLENOID C	PERATOR ➤	J <u>X</u>	<u>x</u> P- <u>xxx</u> * (-C	G) Add "G" for ground	47
AA 120 VAC (5.4W) 1 Non-locking recessed FA Base plug-in with diode 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  **Other options available, see page 317.** Note: AC voltage requires connector with rectifier.  **OPTIONS**  46A-LSA-AJ-JxxP-xxx   J Regulator with adjusting knob E Regulator with slotted stem G Regulator with slotted stem with locknut  O Base only – no valve L Base mount body M Base mount body M Base mount body with gage port  Example: base only with regulator: 46A-OSA-AJ. End plate kit required (port size 1/4"): M-46003-01.  150 2						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-AJ-JxxP-xxx  J Regulator with adjusting knob E Regulator with slotted stem G Regulator with slotted stem with locknut  O Base only - no valve L Base mount body M Base mount body with gage port  Example: base only with regulator: 46A-OSA-AJ. End plate kit required (port size 1/4"): M-46003-01.  150 2						
* Other options available, see page 317. Note: AC voltage requires connector with rectifier.  92  OPTIONS  46A-LSA-AJ-JxxP-xxx  J Regulator with adjusting knob E Regulator with slotted stem G Regulator with slotted stem with locknut  150 01  O Base only – no valve L Base mount body M Base mount body with gage port  Example: base only with regulator: 46A-0SA-AJ. End plate kit required (port size 1/4"): M-46003-01.	DA 24 V DB 12 V	DC (5.4W) DC (5.4W)			FB Base plug-in with diode	48
OPTIONS  46A-LSA-AJ-JxxP-xxx  J Regulator with adjusting knob E Regulator with slotted stem G Regulator with slotted stem with locknut  O Base only – no valve L Base mount body M Base mount body with gage port  Example: base only with regulator: 46A-0SA-AJ. End plate kit required (port size 1/4"): M-46003-01.	* Other options	available, see page 317.				400
J Regulator with adjusting knob E Regulator with slotted stem G Regulator with slotted stem with locknut  O Base only – no valve L Base mount body M Base mount body with gage port  Example: base only with regulator: 46A-0SA-AJ. End plate kit required (port size 1/4"): M-46003-01.		<u> </u>				92
O Base only – no valve L Base mount body M Base mount body with gage port  Example: base only with regulator: 46A-OSA-AJ. End plate kit required (port size 1/4"): M-46003-01.	46A- <b>L</b> SA-A <b>J</b>		nob			
Example: base only with regulator: 46A-0SA-AJ. End plate kit required (port size 1/4"): M-46003-01.			N WITH IOCKHUT			150 01
Example: base only with regulator: 46A-0SA-AJ. End plate kit required (port size 1/4"): M-46003-01.		L Base mount body	ort			ISO 02
150 2	Example : base or	, , ,				ISO 1
ISO 3	End plate kit requ	ired (port size 1/4") : M-46003-01				ISO 2
						ISO 3







(with 5.4 W coil)

Compressed air, vacuum, inert gases Fluid: 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 Temperature range :  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ C to + $50^{\circ}$ C) 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 Voltage range: -15% to +10% of nominal voltage Protection: Consult factory 5.4W - 2.4W - 1.8W Power: Response times: Energize: 7.20 ms

Options : • BSPP threads

De-energize :

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

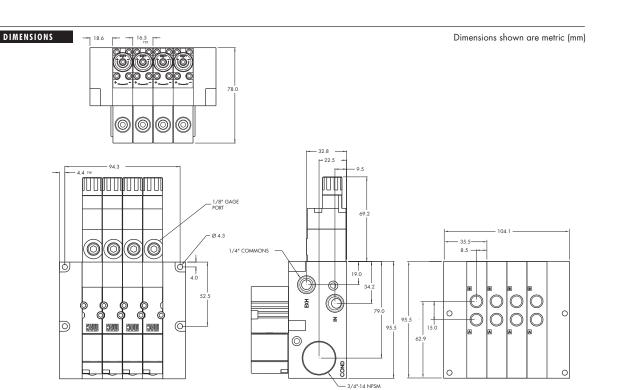
Replacement regulators: PR46A-OAAA (slotted stem)
 PR46A-OBAA (adjusting knob)

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

4.20ms





Function	Port size		Floш (Max)	Manifold mounting	Series
4/2	1/8" -	5/32 O.D. Pressed-in tube receptacles	0.3 C <sub>v</sub>	Manifold base "plug-in" with flow controls	
OPERATIONAL BENEFIT	rs				33
1. Balanced poppet, in	mmune to variations of				34
pressure. 2. Patented solenoid d forces. 3. Short stroke with high	gh flow.				36
4. Higher forces result given flow.	, and the second				32
5. Powerful return sprii	ng.			0.0	27
					37
					38
					52
HOW TO ORDER					67
	Port size			Model number	69
				A R	44
					4.6
	Valve less base			EXH ♥ SIN 46A-L00-00-J XXP-XXX	46
	1/8" NPTF			46A-LSA-AD-J <b>xx</b> P- <b>xxx</b>	
5/3	2 O.D. Pressed-in tube	receptacles		46A-LSF-AD-J <b>xx</b> P- <b>xxx</b>	42
SOLENOID OPERA	ATOR ➤	J <b>xx</b>	(P- <b>xxx</b> * (-G) A	dd "G" for ground	47
					48P
XX Voltage		X Manual o	perator	XX Electrical connection	
AA 120 VAC (5 DA 24 VDC (5.		1 Non-locking r 2 Locking recess		FA Base plug-in Base plug-in with diode	48
DB 12 VDC (5.	4W)	Locking recess	seu	FG Base plug-in with rectifier	
<b>DC</b> 24 VDC (2.	·				400
<ul> <li>Other options availal</li> <li>Note : AC voltage requi</li> </ul>	res connector with rectifier.				
OPTIONS					92
46A- <b>L</b> SA-A <b>D</b> -J <b>xx</b> P-	xxx				0.0
	Side cylinder ports     Bottom cylinder ports				93
	, ,				ISO 01
O Bo	ase only – no valve ase mount body ase mount body with gage po				ISO 02
					150 02
Example : base only with End plate kit required (p	h flow controls: 46A-0SA-AI port size 1/4") : M-46003-0	).  .			130 1
					150 2
					ISO 3







Response times:

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

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

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

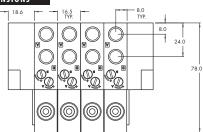
Energize: 7.20 ms
De-energize: 4.20ms

Options : • BSPP threads

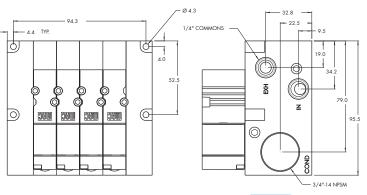
Spare parts: • Inlet isolator: 28501 • Exhaust isolator: 28502 • Valve cover plate: M-46002

• Tie rod (x2) : 79443

#### DIMENSIONS



Dimensions shown are metric (mm)





Function	Port size	F	loш (Max)	Manifold mounting	Series
4/2	1/8" -	5/32 O.D. Pressed-in (	).3 C <sub>v</sub>	Manifold base "plug-in" with PR & FC	
OPERATIONAL BENEFIT	s				∞= 33
1. Balanced poppet, in	nmune to variations of				34
pressure. 2. Patented solenoid deforces. 3. Short stroke with hig 4. Higher forces result	jh flow.				36
given flow.  5. Powerful return sprin				200	32
эт э	-9-				37
				100	38
				00	52
HOW TO ORDER					67
	Port size			Model number	69
	(Bottom ports only	1)		model number	44
				A B B	44
				EXH V OIN	46
	Valve less base			46A-L00-00-J xxP-xxx	
5/3:	1/8" NPTF 2 O.D. Pressed-in tube	receptacles		46A-LSA-AK-J xxP-xxx 46A-LSF-AK-J xxP-xxx	42
SOLENOID OPERA	TOR ➤	J <u>xx</u>	P- <b>xxx</b> (-G) A	dd "G" for groui	
					48P
XX Voltage		X Manual o	perator	XX Electrical conne	ection
DA 24 VDC (5.DB 12 VDC (5.DC 24 VDC (2.AC)	4W) 4W)	1 Non-locking re 2 Locking recess		FA Base plug-in  FB Base plug-in with diod  FG Base plug-in with rect	
* Other options availab					400
Note : AC voltage requir	res connector with rectifier.				92
46A-LSA-AK-JxxP-,	C Regulator with adjusting kinds Regulator with slotted stem Regulator with slotted stem	nob & flow controls & flow controls			93
	<ul> <li>Regulator with slotted stem</li> <li>use only – no valve</li> </ul>	with locknut & flow controls			ISO 01
<b>L</b> Ba	ise only – no valve ise mount body ise mount body with gage po	+			ISO 02
	,				ISO 1
End plate kit required (p	n regulator : 46A-0SA-AK. ort size 1/4") : M-46003-01				ISO 2
					ISO 3
					100







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

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)

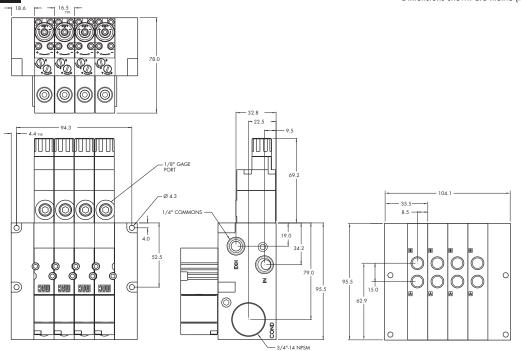
PR46A-OCAA (slotted stem with locknut)

Regulating range options : • PR46A-xxx

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

DIMENSIONS

Dimensions shown are metric (mm)





# Individual mounting Sub-base non "plug-in" Sub-base non "plug-in" Sub-base non "plug-in" with latching solenoid Manifold base non "plug-in" Manifold base non "plug-in" "plug-in" Manifold base non "plug-in" "plug-in" "plug-in" with latching solenoid Sub-base/ manifold base non "plug-in" with latching solenoid 33 34

32

69 44

46

42

47 48P

48

400

92

93

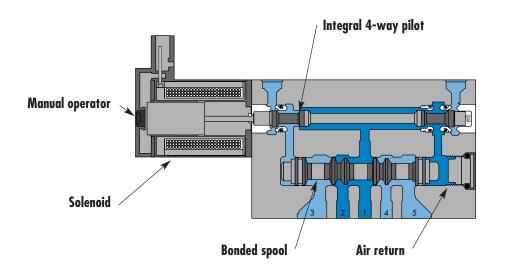
**ISO 01** 

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.
- $\bullet \ \text{Latching solenoid technology}.$



unction		Port size	Flow (Max)	Individual mounting		Series
5/2, 5/3		# 10-32 - 1/4" O.D. tube recepto	0.4 C <sub>V</sub>	Sub-base non "plug-in"		
PERATIONAL BEN	EFITS				_	33
. 4-way valve with . 10 mm valve (st						34
High flow (up to Fast repeatable Maximum shiftin	0.4 C <sub>v</sub> ). response time	· ·s.			50 B	36
Long life.	•			W.	1	32
				100	24	<b>37</b>
				311		38
				84		52
HOW TO ORDE	R			-		67
		.S (VALVE WITH BASE COD	DED EOD SIDE DODTSI			69
Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center	44
FOII 3126	riioi uii	12 2 4 14 14 14 14 14 14 14 14 14 14 14 14 1	12 2 4 14 14 II	12 2 4 14 14 15 MM	12 2 4 14 MM	
Valve less		42B-AMA-000-Gxxx-xxx	315 42B-BMA-000-G <b>xxx-xxx</b>	3 1 5 42B-EMA-000-Gxxx-xxx	315	46
base	Internal External	42B-AMD-000-GXXX-XXX	42B-BMD-000-GXXX-XXX	42B-EMA-000-GXXX-XXX	42B-FMA-000-Gxxx-xxx 42B-FMD-000-Gxxx-xxx	
# 10-32	Internal	42B-AMA-AAL-Gxxx-xxx	42B-BMA-AAL-Gxxx-xxx	42B-EMA-AAL-Gxxx-xxx	42B-FMA-AAL-Gxxx-xxx	42
	External	42B-AMD-AAM-Gxxx-xxx	42B-BMD-AAM-Gxxx-xxx	42B-EMD-AAM-Gxxx-xxx	42B-FMD-AAM-Gxxx-xxx	4.7
1/4" O.D.	Internal	42B-AMA-EAL-Gxxx-xxx	42B-BMA-EAL-G <b>xxx-xxx</b>	42B-EMA-EAL-Gxxx-xxx	42B-FMA-EAL-Gxxx-xxx	47
be receptacles	External	42B-AMD-EAM-Gxxx-xxx	42B-BMD-EAM-G <b>xxx-xxx</b>	42B-EMD-EAM-G <b>xxx-xxx</b>	42B-FMD-EAM-G <b>xxx-xxx</b>	48P
UAL PRESSUR	E MODELS	(VALVE WITH BASE CODE	D FOR SIDE PORTS)			4.0
Port size		Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center	48
				14 4 2 12 1/D 1 3	12 2 4 15 17 3 1 5	400
Valve less be	ise Int	ernal Supply #3 port	42B-CMB-000-G <b>xxx-xxx</b>	42B-DMB-000-Gxxx-xxx	42B-HMB-000-G <b>xxx-xxx</b>	
		Supply #5 port	42B-CMC-000-Gxxx-xxx	42B-DMC-000-G <b>xxx-xxx</b>	42B-HMC-000-G <b>xxx-xxx</b>	92
		ternal	42B-CMD-000-G <b>xxx-xxx</b>	42B-DMD-000-G <b>xxx-xxx</b>	42B-HMD-000-G <b>xxx-xxx</b>	
# 10-32	Int	ernal Supply #3 port	42B-CMB-AAL-Gxxx-xxx	42B-DMB-AAL-Gxxx-xxx	42B-HMB-AAL-Gxxx-xxx	93
		Supply #5 port	42B-CMC-AAL-GXXX-XXX	42B-DMC-AAL-Gxxx-xxx	42B-HMC-AAL-Gxxx-xxx	70
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-HMD-AAM-GXXX-XXX 42B-HMB-EAL-GXXX-XXX	ISO 0
tube receptaci		Supply #5 port	42B-CMC-EAL-GXXX-XXX	42B-DMC-EAL-GXXX-XXX	42B-HMC-EAL-GXXX-XXX	ISO O
ione receptati		ternal	42B-CMD-EAM-Gxxx-xxx	42B-DMD-EAM-Gxxx-xxx	42B-HMD-EAM-Gxxx-xxx	ISO 1
		DED 4 TOD -	C WWW WWW*			
tandard so	LENOID OF	PERATOR >	G <u>xxx-xxx</u>			ISO 2
						150 3
XX Volta	ge	X Wire leng	th X M	anual operator XX	Electrical connection	
	C (2.5W)	A 18"		n-locking recessed BA	Flying leads	
	C (1.8W) C (2.5W)	B 24" C 36"	<b>2</b> Loc	king recessed BT GA	Flying leads with light MAC JAC solenoid Plug-in	
DF 24 VDC	(4.0W)			KA	Plug-in wire assy.	
lote · AC voltage re	equires connec	tor with rectifier. ge 311. 2 valves. 4 <b>2 series valves, see page 107</b>		KT	Plug-in wire assy. with light	
Other anti	ailable ee-	ao 311		KD	Plug-in wire assy. with rectifier & light & ground	







Compressed air, vacuum, inert gases Fluid: 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 0°F to 120°F (-18°C to +50°C) Temperature range: 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 Voltage range: -15% to +10% of nominal voltage 1.0 to 4.0 W Power: Response times: Energize : 5 ms (with 24V 4 W coil) De-energize : 5 ms

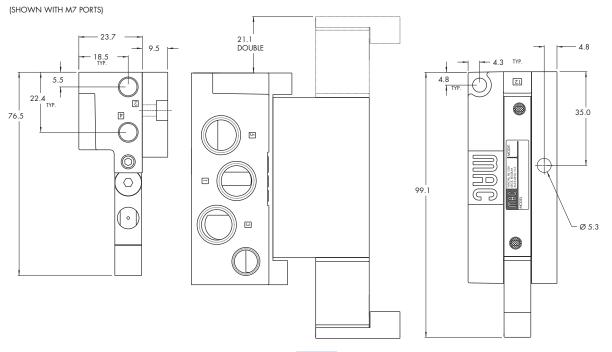
Options : • M5 ports, M7 ports, 6 mm O.D. tube receptacles

• Sandwich flow controls : FC42B-BB
• Sandwich regulator : see 'Pegulator' see

• Sandwich regulator : see 'Regulator' section

#### DIMENSIONS

Dimensions shown are metric (mm)





Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	# 10-32 - 1/4" O.D. tube receptacle	0.4 C <sub>v</sub>	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.



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) - 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 14 175 14 315		12 2 4 14 ME 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 ME TO
Valve less	Internal	42B-AMA-000-GxxP-xxx	42B-BME-000-G <b>xx</b> P- <b>x</b> ST	42B-EME-000-GxxP-xST	42B-FME-000-G <b>xx</b> P- <b>x</b> ST
base	External	42B-AMD-000-GxxP-xxx	42B-BMH-000-G <b>xx</b> P- <b>x</b> ST	42B-EMH-000-GxxP-xST	42B-FMH-000-G <b>xx</b> P- <b>x</b> ST
# 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-GxxP-xST	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 14 7 7 3 3	14 1/D 1/D 10 10 10 10 10 10 10 10 10 10 10 10 10	12 2 4 14 IMM IMM IMM IMM IMM IMM IMM IMM IMM IM
Valve less base	Internal Supply #3 port	42B-CMB-000-GxxP-xxx	42B-DMF-000-G <b>xx</b> P- <b>x</b> ST	42B-HMF-000-G <b>xx</b> P- <b>x</b> ST
	Supply #5 port	42B-CMC-000-GxxP-xxx	42B-DMG-000-G <b>xx</b> P- <b>x</b> ST	42B-HMG-000-GxxP-xST
	External	42B-CMD-000-GxxP-xxx	42B-DMH-000-GxxP-xST	42B-HMH-000-G <b>xx</b> P- <b>x</b> 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 ➤

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 light
Nata . AC	valence requires connectes with restifier they do	مملمه ملطيي	aid aggregate facetors (	55	Base plug-in with rectifier & light & ground

G xx P-xxx

Note: AC voltage requires connector with rectifier (for double solenoid consult factory).

Other options available, see page 311.

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





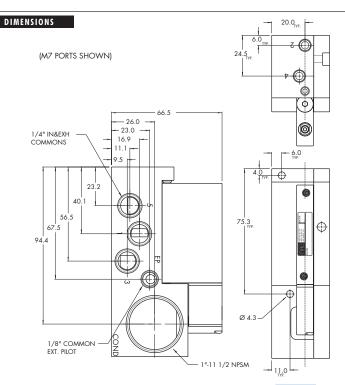


Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI Pilot pressure: 2 position : 20 to 120 PSI 3 position: 40 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (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<sub>v</sub>) - 1/4" O.D. tube receptacle : (0.4 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 12 base leads Voltage range: -15% to +10% of nominal voltage 1.0 to 4.0 W Power: 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

 $\bullet$  Sandwich regulator : see 'Regulator' section



75.0

Dimensions shown are metric (mm)

46.0



Function		Port size	Flow (Max)	Manifold mounting		Series
5/2, 5/3		# 10-32 - 1/4" O.D. tube receptor	0.4 C <sub>V</sub>	Manifold base non "plug-in"		
PERATIONAL BEN	EFITS				- 100	33
. 4-way valve with					-	34
. 10 mm valve (sto . High flow (up to		mm centers).		5		
. Fast repeatable . Maximum shiftin	response time			161	1	36
. Long life.				. 11	No.	32
						37
					4.700	38
				•	September 1	52
HOW TO ORDE	: p					67
		10 WHERE OF 1 = 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	IFO. D. O. V. W.T	2701		
		ls (MIDDLE STATION MAN				69
Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center	44
			12 14 14 315			46
Valve less	Internal	42B-AMA-000-G <b>xxx-xxx</b>	42B-BMA-000-G <b>xxx-xxx</b>	42B-EMA-000-G <b>xxx-xxx</b>	42B-FMA-000-G <b>xxx-xxx</b>	
base	External	42B-AMD-000-Gxxx-xxx	42B-BMD-000-G <b>xxx-xxx</b>		42B-FMD-000-Gxxx-xxx	42
# 10-32	Internal	42B-AMA-AJL-Gxxx-xxx	42B-BMA-AJL-Gxxx-xxx	42B-EMA-AJL-GXXX-XXX	42B-FMA-AJL-Gxxx-xxx	
1/4" O.D.	External	42B-AMD-AJM-GXXX-XXX 42B-AMA-EJL-GXXX-XXX	42B-BMD-AJM-GXXX-XXX 42B-BMA-EJL-GXXX-XXX	42B-EMD-AJM-Gxxx-xxx 42B-EMA-EJL-Gxxx-xxx	42B-FMD-AJM-GXXX-XXX 42B-FMA-EJL-GXXX-XXX	47
tube receptacles	Internal External	42B-AMD-EJM-GXXX-XXX	42B-BMD-EJM-GXXX-XXX		42B-FMD-EJM-GXXX-XXX	48P
		(MIDDLE STATION MANIFO				
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 2 4 14 MMD[\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
			1 2 4 3 4 1 3 4 1 3 1 4 1 3 1 4 1 3 1 4 1 3 1 3	50 V 03		400
Valve less bo	use Int	ternal Supply #3 port	42B-CMB-000-G <b>xxx-xxx</b>	42B-DMB-000-Gxxx-xxx	42B-HMB-000-Gxxx-xxx	- 0 0
		Supply #5 port	42B-CMC-000-Gxxx-xxx	42B-DMC-000-G <b>xxx-xxx</b>	42B-HMC-000-Gxxx-xxx	92
	Ex	ternal	42B-CMD-000-G <b>xxx-xxx</b>	42B-DMD-000-G <b>xxx-xxx</b>	42B-HMD-000-G <b>xxx-xxx</b>	
# 10-32	Int	ternal Supply #3 port	42B-CMB-AJL-Gxxx-xxx	42B-DMB-AJL-Gxxx-xxx	42B-HMB-AJL-G <b>xxx-xxx</b>	93
		Supply #5 port	42B-CMC-AJL-GXXX-XXX	42B-DMC-AJL-GXXX-XXX	42B-HMC-AJL-Gxxx-xxx	20
1/4// 0.0		ternal	42B-CMD-AJM-GXXX-XXX		42B-HMD-AJM-GXXX-XXX	ISO 01
1/4" O.D.	-	Supply #3 port Supply #5 port	42B-CMB-EJL-GXXX-XXX 42B-CMC-EJL-GXXX-XXX	42B-DMB-EJL-Gxxx-xxx 42B-DMC-EJL-Gxxx-xxx	42B-HMB-EJL-Gxxx-xxx 42B-HMC-EJL-Gxxx-xxx	ISO 02
1040 1444		tternal	42B-CMD-EJM-Gxxx-xxx		42B-HMD-EJM-GXXX-XXX	ISO 1
tandard so	LENOID O	PERATOR ➤	G <u>xx</u> x- <u>x</u> xx*			ISO 2
			<u>─</u> ──┴_Ţ └┌──			<b>ISO 3</b>
XX Volta	ıqe	X Wire leng	jth X	Manual operator X	X Electrical connection	
	C (2.5W)	<b>A</b> 18"		Non-locking recessed B		
	(1.8W)	B 24"	2	Locking recessed B	, 0	
	2 (2.5W) 2 (4.0W)	<b>C</b> 36"			MAC JAC solenoid plug-in Plug-in wire assy.	
				K		

Note: - AC voltage requires connector with rectifier.

\* 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.

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



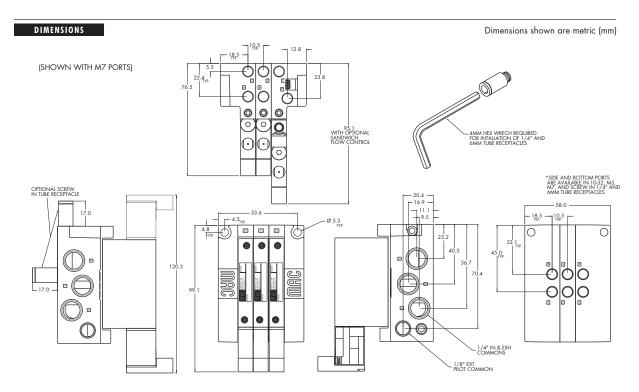




Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI Pilot pressure: 2 position : 20 to 120 PSI 3 position: 40 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) 40 µ Filtration: Temperature range :  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ C to + $50^{\circ}$ C) Flow: # 10-32 : (0.35 C<sub>v</sub>) - 1/4" O.D. tube receptacle : (0.4 C<sub>v</sub>) 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: 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	Flow (Max)	Manifold mounting		Series
5/2, 5/3		# 10-32 - 1/4" O.D. tube recepto	0.4 C <sub>V</sub>	Manifold base "plug-in"		
PERATIONAL BEN	EFITS					33
. 4-way valve with						34
. 10 mm valve (str. . High flow (up to . Fast repeatable . Maximum shiftin	0.4 C <sub>v</sub> ). response time	es.				36
. Long lite.				1	0	32
						37
						38
						52
HOW TO ORDE	R					67
		C /IED CTANIDADD EVOED	T EOD SINICIE SOLENIOUS	21		
		,	FOR SINGLE SOLENOIDS	r <del>i</del>	F/2 0	69
Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center	44
						46
Valve less	Internal	42B-AMA-000-G <b>xx</b> P- <b>xxx</b>	42B-BME-000-G <b>xx</b> P- <b>x</b> ST	42B-EME-000-G <b>xx</b> P- <b>x</b> ST	42B-FME-000-G <b>xx</b> P- <b>x</b> ST	_
base	External	42B-AMD-000-GxxP-xxx	42B-BMH-000-G <b>xx</b> P- <b>x</b> ST	42B-EMH-000-G <b>xx</b> P- <b>x</b> ST	42B-FMH-000-GxxP-xST	42
# 10-32	Internal	42B-AMA-AJA-GxxP-xxx	42B-BME-AJC-GxxP-xST	42B-EME-AJC-GxxP-xST	42B-FME-AJC-GxxP-xST	
1/4// 0.0	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
				425 EMIT EJO OANI ASI	420 TMIT LID OAAT AST	
Port size	L MODELS	(LED STANDARD EXCEPT F	5/2 Single solenoid	5/2 Double solenoid	E /2 Procesure contex	48
Port Size		Pilot dir	14 4 2 12	14 4 2 12	5/3 Pressure center 12 2 4 14	
					3 1 5	400
Valve less bo	ase Int	ernal Supply #3 port	42B-CMB-000-G <b>xx</b> P- <b>xxx</b>	42B-DMF-000-GxxP-xST	42B-HMF-000-GxxP-xST	
		Supply #5 port	42B-CMC-000-GxxP-xxx	42B-DMG-000-GxxP-xST	42B-HMG-000-GxxP-xST	92
ш = А А А		ternal	42B-CMD-000-GxxP-xxx	42B-DMH-000-GxxP-xST	42B-HMH-000-GxxP-xST	
# 10-32	Int	Supply #3 port	42B-CMB-AJA-GxxP-xxx 42B-CMC-AJA-GxxP-xxx	42B-DMF-AJC-GxxP-xST 42B-DMG-AJC-GxxP-xST	42B-HMF-AJC-GxxP-xST	93
	F_	Supply #5 port ternal	42B-CMC-AJA-GXXP-XXX	42B-DMH-AJD-GxxP-xST	42B-HMG-AJC-GxxP-xST 42B-HMH-AJD-GxxP-xST	
1/4" O.D.		rernal Supply #3 port	42B-CMB-EJA-GxxP-xxx	42B-DMF-EJC-GxxP-xST	42B-HMF-EJC-GxxP-xST	ISO 01
tube receptaci		Supply #5 port	42B-CMC-EJA-GxxP-xxx	42B-DMG-EJC-GxxP-xST	42B-HMG-EJC-GxxP-xST	ISO 02
•		ternal	42B-CMD-EJB-GxxP-xxx	42B-DMH-EJD-GxxP-xST	42B-HMH-EJD-GxxP-xST	ISO 1
tandard so	LENOID O	PERATOR ➤	G <u><b>xx</b></u> P- <u><b>xxx</b></u> .	Above numbers are middle st	ation manifolds with side ports	ISO 2
						ISO 3
XX Volta	ige	X	Manual operator	XX Electric	cal connection	
<b>AA</b> 120 VA	C (2.5W)	1	Non-locking recessed		& 3 position models	
	(1.8W) (2.5W)		Locking recessed	Single solenoid		
	(4.0W)			SA Base plug	-in	
Other	4.11	211		SJ Base plug	-in with light	

\* Other options available, see page 311.
\*\* Latching solenoid available for 5/2 valves.

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 42 series valves, see page 108.

Base plug-in with rectifier & light & ground

SJ 55 Base plug-in Base plug-in with light







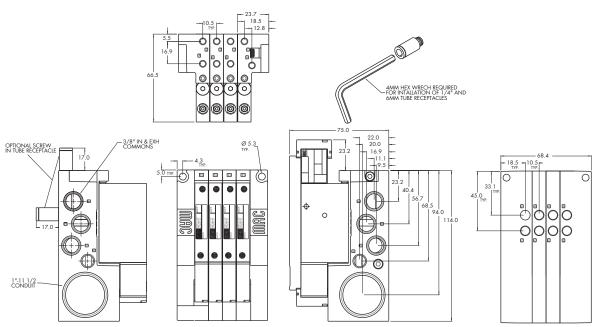
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI Pilot pressure: 2 position : 20 to 120 PSI 3 position: 40 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) 40 µ Filtration: Temperature range :  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ C to + $50^{\circ}$ C) Flow: # 10-32 : (0.35 C<sub>v</sub>) - 1/4" O.D. tube receptacle : (0.4 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 12 base leads Voltage range: -15% to +10% of nominal voltage 1.0 to 4.0 W Power: 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

Dimensions shown are metric (mm)



Function	Port size	Floш (Max)	Individual/Manifold mounting	Series
5/2	# 10-32 - 1/4" O.D. tube rece	0.4 C <sub>V</sub>	Sub-base/ manifold base non "plug-in" with latching solenoid	
PERATIONAL BENEFITS				33
2. 4-way valve with 4-w	on 10.5 mm centers).			34
<ol> <li>High flow (up to 0.4</li> <li>Fast repeatable responsible.</li> <li>Maximum shifting for b. Long life.</li> </ol>	onse times.			36
. Long IIIc.			3	32
				<b>37</b>
				38
			Photo: Midd	lle station 52
HOW TO ORDER			mani	fold base 67
SINGLE PRESSURE I	MODELS (INDIVIDUAL BASE W	ITH SIDE PORTS)		69
Port size	Pilot air	5/2 <b>S</b>	ingle pressure	44
		12	2 4 14 37 15 15 15 15 15 15 15 15 15 15 15 15 15	46
Valve less base	Internal		MA-000-L <b>xxx-xxx</b>	
	External	42A-A/	AD-000-Lxxx-xxx	42
# 10-32	Internal	42A-A/	AA-AAL-L <b>xxx-xxx</b>	
	External	42A-AN	ND-AAM-Lxxx-xxx	47
1/4" O.D.	Internal	42A-A/	MA-EAL-LXXX-XXX	48P
tube receptacles	External	42A-AA	ND-EAM-LXXX-XXX	
DUAL PRESSURE MO	ODELS (INDIVIDUAL BASE WITH	H SIDE PORTS)		48
Port size	Pilot air		5/2 Dual pressure	40
			12 2 4 14 7 37 3 1 5 T 3 1 5 T 3 1 5 T 3 T 3 T 3 T 3 T 3 T 3 T 3 T 3 T 3 T	400
Valve less base	Internal Supply #3 port		42A-CMB-000-L <b>xxx-xxx</b>	
	Supply #5 port		12A-CMC-000-Lxxx-xxx	92
	External		12A-CMD-000-LXXX-XXX	
# 10-32	Internal Supply #3 port		12A-CMB-AAL-LXXX-XXX	93
	Supply #5 port		12A-CMC-AAL-LXXX-XXX 2A-CMD-AAM-LXXX-XXX	
1/4" O.D.	External Internal Supply #3 port		ZA-CMD-AAM-LXXX-XXX 42A-CMB-EAL-LXXX-XXX	ISO 01
tube receptacles	Supply #5 port		42A-CMB-EAL-LXXX-XXX 42A-CMC-EAL-LXXX-XXX	ISO 02
ione recebiacies	External		12A-CMC-EAU-LXXX-XXX	ISO 1
ATCHING SOLEN	OID OPERATOR ➤	L <u>xx</u> x- <u>x</u> xx*		ISO 2
				ISO 3
XX Voltage	X Wire le	ength X M	anual operator XX Electrical conne	ection
DF 24 VDC (4.0			o operator  BA 2 Wire Flying leads	
HA 24 VDC (1.9	5 W) <b>B</b> 24"		KA 2 Wire Plug-in Asser	mbly
	<u> </u>		LA 3 wire plug-in assem (polarity switching co	nbly over)
			KE 4-wire plug-in assem	

\* 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

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

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

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

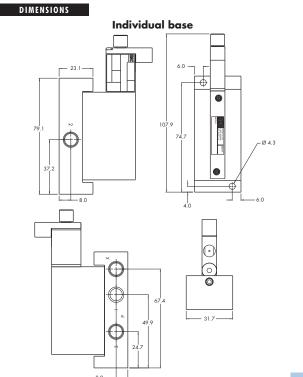
Power: 1.95 to 4.0 W

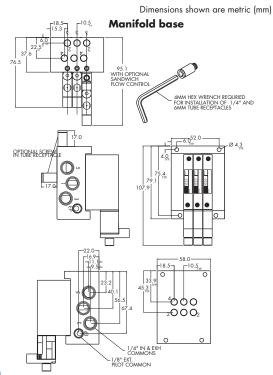
Response times: Energize: 5 ms (with 24V 4 W coil) De-energize: 5 ms

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





unction	Port size	Flow (Max)	Individual/Manifold mounting	Series
/2	# 10-32 - 1/4" o.d. tu	0.4 C <sub>V</sub> be receptacle	Sub-base/ manifold base "plug-in" with larkhing solenoid	
PERATIONAL BENEFITS	I		PSI N	33
4-way valve with 4-w				34
. 10 mm valve (stacks of High flow (up to 0.4 of Fast repeatable response). Maximum shifting for of Long life.	C <sub>V</sub> ). onse times.			36
. Long mo.				32
			000	37
				38
			. 10	52
HOW TO ORDER	1			67
	I	NILL D LOE NUTL 2:22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		
INGLE PRESSURE A	MODELS (2-WIRE INDIVID	DUAL BASE WITH SIDE PORTS)		69
Port size	Pilot air	5/2 5	Single pressure	44
		12 		46
Valve less base	Internal		MA-000-LxxP-xxx	
	External	42A-A	MD-000-LxxP-xxx	42
# 10-32	Internal	42A-A/	MA-AAA-LxxP-xxx	
	External		MD-AAB-LxxP-xxx	47
1/4" O.D.	Internal		MA-EAA-LxxP-xxx	48P
tube receptacles	External		MD-EAB-LxxP-xxx	
		AL BASE WITH SIDE PORTS)		48
Port size	Pilot air		5/2 Dual pressure	
				400
Valve less base	Internal Supply #3 port		315 42A-CMB-000-LxxP-xxx	
	Supply #5 port		42A-CMC-000-LxxP-xxx	92
	External		42A-CMD-000-L <b>xx</b> P- <b>xxx</b>	
# 10-32	Internal Supply #3 port		42A-CMB-AAA-L <b>xx</b> P- <b>xxx</b>	93
	Supply #5 port		42A-CMC-AAA-L <b>xx</b> P- <b>xxx</b>	73
	External		42A-CMD-AAB-L <b>xx</b> P- <b>xxx</b>	ISO 01
1/4" O.D.	Internal Supply #3 port		42A-CMB-EAA-LxxP-xxx	
tube receptacles	Supply #5 port		42A-CMC-EAA-L <b>xx</b> P- <b>xxx</b>	ISO 02
	External		42A-CMD-EAB-LxxP-xxx	ISO 1
		I vv D_vvv*		ISO 2
LATCHING SOLENG	OID OPERATOR ➤			
ATCHING SOLENG	OID OPERATOR ➤	L <u><b>xx</b></u> P- <u><b>xxx</b></u> ·		ISO 3
	OID OPERATOR ➤			ISO 3
XX Voltage DF 24 VDC (4.0)		X Manual operator  No operator	XX Electrical connection**  DA Plug-in	ISO 3

<sup>\*</sup> 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) 40 µ Filtration: Temperature range : 0°F to 120°F (-18°C to +50°C) Flow: # 10-32 : (0.35 C<sub>v</sub>) - 1/4" O.D. tube receptacle : (0.4 C<sub>v</sub>) 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:

Options :

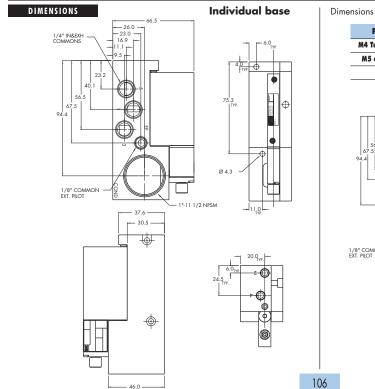
Response times:

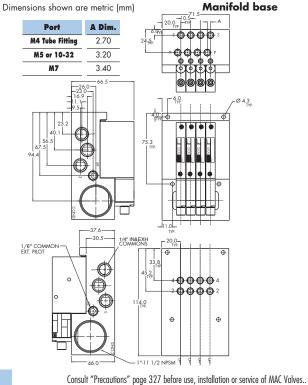
(with 24V 4 W coil)

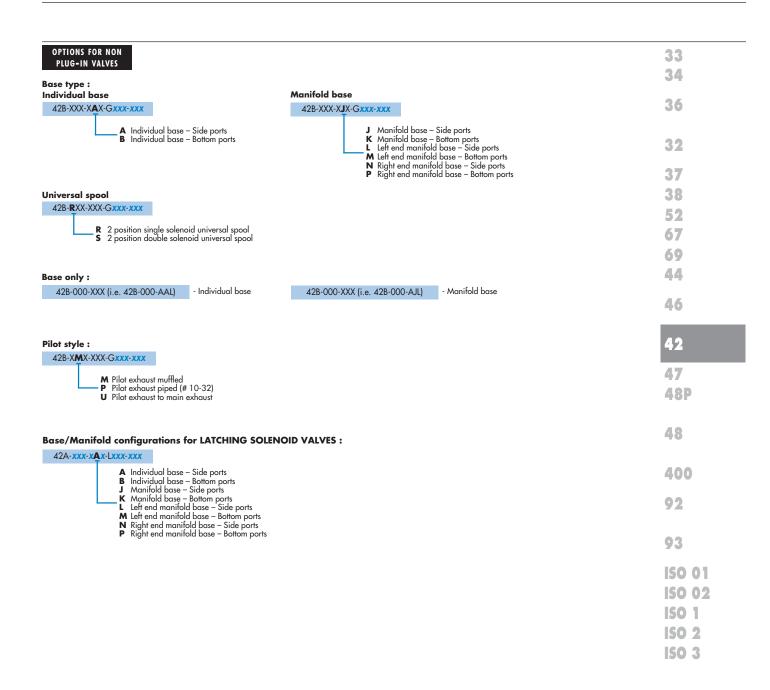
Energize: 5 ms

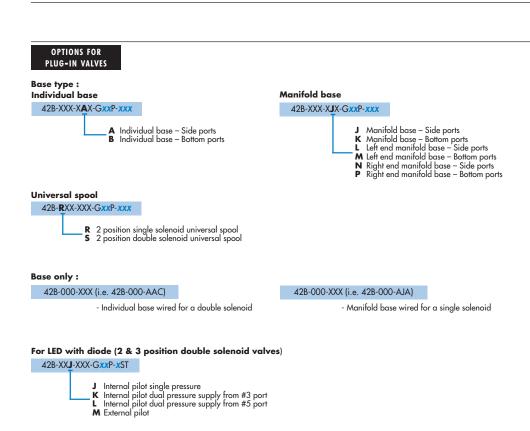
De-energize : 5 ms

- 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









#### **Base/Manifold configurations for LATCHING SOLENOID VALVES:**

# 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

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

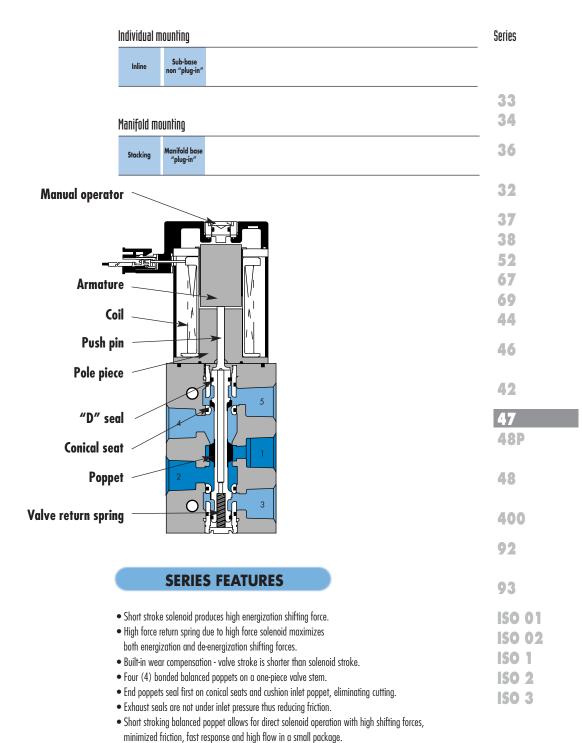
#### 42A-xxx-xxA-LxxP-xxx

Pilot style:

42B-XMX-XXX-GxxP-xxx

- 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
  Plug-in Ext. Pilot 4 Wire Latching





ction	Port size	Flow	(Max)	Individual M	lounting	Series
<b>'2</b>	1/8" -	1/4" 0.5	c <sub>v</sub>	Inline		
ERATIONAL BENEFITS						33
Short stroke solenoid p		<ol><li>Integral non-rising flow inline models.</li></ol>	w controls available	on		34
energization shifting for High force return spring solenoid maximizes bot de-energization shifting Built-in wear compensal	g due to high force th energization and proces.	8. Short stroking balance direct solenoid operat forces, minimized frict high flow in a small p	tion with high shifting tion, fast response ar	]		36
shorter than solenoid str our bonded balanced	roke.	ingii ilov iii a siiiaii p	ackago.		200	32
piece valve stem. End poppets seal first o	n conical seats and			4		37
ushion inlet poppet, el	iminating cutting. nder inlet pressure thus			2		38
educing friction.	nder inter pressure inus				0	52
HOW TO ORDER						67
Port	t size	Without	t flow controls		With flow controls	69
10	3120	Williou			Will 110W Collifor	44
		12 w	4		12 w 14	
					□ <sub>   </sub>	46
1/8" NPTF						
			A0-H xxx-xxx		47A-BAO-H xxx-xxx	
	' NPTF ' NPTF		A0-H <i>xxx-xxx</i> B0-H <i>xxx-xxx</i>		47A-BB0-H <b>xxx-xxx</b> 47A-BB0-H <b>xxx-xxx</b>	42
	' NPTF	47A-A				
1/4"	' NPTF	47A-A	.ВО-Н <b>ххх-ххх</b>			47
1/4"	' NPTF	47A-A	<b>XX-XXX</b> *	nual operator		47 48P
ENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)	Y NPTF  DR ➤  X  A	Lead Wire length	XX-XXX  X Ma  1 Non	-locking recessed	XX Electrical connecti	47 48P
1/4" LENOID OPERATO  XX Voltage	Y NPTF  DR ➤  X  A  B	47A-A H X Lead Wire length	XX-XXX  X Ma  1 Non	=	47A-BBO-H xxx-xxx     XX   Electrical connection	47 48P
1/4" LENOID OPERATO  XX Voltage DA 24 VDC (5.2W) DB 24 VDC (2.4W) DC 24 VDC (1.8W) DD 24 VDC (1.0W)	Y NPTF  OR ➤  X  A  B  C  O  C	Lead Wire length  18" 24"	XX-XXX  X Ma  1 Non	-locking recessed	XX Electrical connection  MA Plug-in wire assembly wilight  BA Flying leads	47 48P
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (2.4W)  DC 24 VDC (1.8W)	Y NPTF  OR ➤  X  A  B  C  O  C	Lead Wire length  18" 24"	XX-XXX  X Ma  1 Non	-locking recessed	XX Electrical connecti  MA Plug-in wire assembly wi light  BA Flying leads BC Flying leads with light  MT Plug-in wire assembly wi	47 48P •••••••••••••••••••••••••••••••••••
1/4" LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W) DB 24 VDC (1.8W) DD 24 VDC (1.0W) AA 120 VAC (6.7V)	Y NPTF  OR ➤  X  A  B  C  V)	Lead Wire length  18" 24"	XX-XXX  X Ma  1 Non	-locking recessed	XX Electrical connecti  MA Plug-in wire assembly wilight  BA Flying leads  BC Flying leads with light	47 48P th 48
1/4" LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W) DB 24 VDC (1.8W) DD 24 VDC (1.0W) AA 120 VAC (6.7V)	Y NPTF  OR ➤  X  A  B  C  V)	Lead Wire length  18" 24"	XX-XXX  X Ma  1 Non	-locking recessed	XX Electrical connecti  MA Plug-in wire assembly wi light  BA Flying leads BC Flying leads with light  MT Plug-in wire assembly wi	47 48P on th 48
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  AA 120 VAC (6.7W)  ther options available, and a continuous c	Y NPTF  OR >  X  A  B  C  Onnector with rectifier.	Lead Wire length 18" 24" 36"	XX-XXX  X Ma  1 Non 2 Lock	-locking recessed	XX Electrical connecti  MA Plug-in wire assembly wi light  BA Flying leads BC Flying leads with light  MT Plug-in wire assembly wi	47 48P th 48
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  AA 120 VAC (6.7W)  Wher options available, i: AC voltage requires continued to the continue of the continue	Y NPTF  OR >  X  A  B  C  Onnector with rectifier.	Lead Wire length 18" 24" 36"	XX-XXX  X Ma  1 Non	-locking recessed	XX Electrical connecti  MA Plug-in wire assembly wi light  BA Flying leads BC Flying leads with light  MT Plug-in wire assembly wi	47 48P th 48 400
1/4"  LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  DD 24 VDC (1.0W)  AA 120 VAC (6.7V)  ther options available, : AC voltage requires co	Y NPTF  OR >  X  A  B  C  Onnector with rectifier.	Lead Wire length 18" 24" 36"	XX-XXX  X Ma  1 Non 2 Lock	-locking recessed ing recessed	XX Electrical connection  MA Plug-in wire assembly with light  BA Flying leads with light  MT Plug-in wire assembly with light wire assembly with light wire assembly with light	47 48P th 48 400 92
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  DD 24 VDC (1.0W)  AA 120 VAC (6.7W)  Wher options available, it AC voltage requires of the control of th	Y NPTF  OR >  X  A  B  C  W)  see page 315. connector with rectifier.  OR >	Lead Wire length 18" 24" 38"  Lead Wire length	XX-XXX  X Ma  1 Non 2 Lock	-locking recessed ing recessed	XX Electrical connection  MA Plug-in wire assembly with light  BA Flying leads with light  MT Plug-in wire assembly with light wire assembly with light wi	47 48P th 48 400 92 93 150 01
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  DD 24 VDC (1.6.7W)  AA 120 VAC (6.7W)  Wher options available, it AC voltage requires of the company of	Y NPTF  OR >  X  A  B  C  ON  See page 315.  Connector with rectifier.  OR >  X  A	Lead Wire length 18" 24" 36"	XX-XXX  X Ma  1 Non 2 Lock	-locking recessed ing recessed	XX Electrical connecti  MA Plug-in wire assembly wilight  BA Flying leads  BC Flying leads with light  MT Plug-in wire assembly wirectifier & light  XX Electrical connections	47 48P th 48 400 92
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  AA 120 VAC (6.7W  Where options available, it: AC voltage requires of the control of the	Y NPTF  OR >  X  A  B  C  ON  See page 315.  Connector with rectifier.  OR >  X  A	Lead Wire length 18" 24" 36"  Lead Wire length 18"	XX-XXX  X Ma  1 Non 2 Lock	-locking recessed ing recessed	XX Electrical connection  MA Plug-in wire assembly with light BA Flying leads with light BI Plug-in wire assembly with rectifier & light BI Plug-in Wire Flying leads BI 4 Wire Flying leads BI 4 Wire Flying leads BI 3 Wire Flying leads	47 48P th 48 400 92 93 ISO 01 ISO 02
LENOID OPERATO  XX Voltage  DA 24 VDC (5.2W)  DB 24 VDC (1.8W)  DC 24 VDC (1.8W)  DD 24 VDC (1.6.7W)  AA 120 VAC (6.7W)  Wher options available, it AC voltage requires of the company of	Y NPTF  X  A  B  C  Y  See page 315. connector with rectifier.  C  X  A  B  A  B  A  B  A  B  A  B  A  B	Lead Wire length  18" 24" 36"  Lead Wire length  18" 24"	XX-XXX  X Ma  1 Non 2 Lock	-locking recessed ing recessed	XX Electrical connecti  MA Plug-in wire assembly wilight  BA Flying leads  BC Flying leads with light  MT Plug-in wire assembly wirectifier & light  XX Electrical connections	47 48P th 48 400 92 93 ISO 01 ISO 02

Namur Mount Option (w/o flow controls)









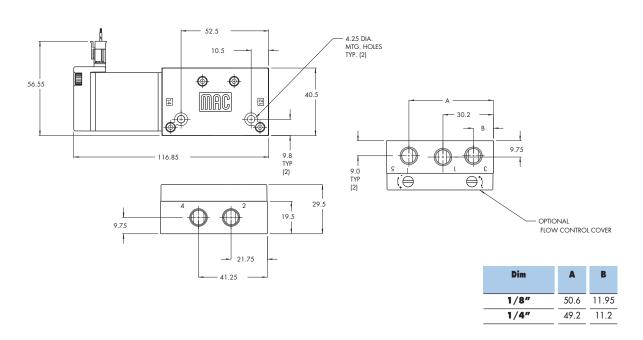
Fluid: Compressed air, vacuum, inert gases Pressure range: Vacuum to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) 40 µ Filtration: Temperature range:  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow:  $5.2W: (0.50 C_v) - 2.4W: (0.35 C_v) - 1.0W: (0.30 C_v)$ Coil: Class A wire (#22 AWG x 18), continuous duty Voltage range: -15% to +10% of nominal voltage Power: 5.2W - 2.4W - 1.0W Energize: 17.4 ms Response times: (with 5.2 W coil) De-energize : 3.8 ms

Options : • BSPP threads

Spare parts : • Flow control assembly : N-47004

#### DIMENSIONS

Dimensions shown are metric (mm)





Function	Port size	Flow (Ma	IX]	Individual	Mounting	Series
5/2	1/8" -	1/4" 0.5 C	,	Sub-base non "plug-in	u u	
OPERATIONAL BENEFITS						33
1. Short stroke solenoid product energization shifting force.	es high	<ol><li>Integral non-rising flow c inline models.</li></ol>	ontrols av	ailable on		34
High force return spring due solenoid maximizes both ene de-energization shifting force     Built-in wear compensation –	rgization and s.	8. Short stroking balanced particles direct solenoid operation forces, minimized friction high flow in a small pack	with high ı, fast resp	shifting		36
shorter than solenoid stroke.  4. Four bonded balanced popper		mgn novi in a sman paci	ago.		.1	32
piece valve stem.					0	37
<ol><li>End poppets seal first on concushion inlet poppet, eliminate</li></ol>				- 1	-	38
<ol> <li>Exhaust seals are not under in reducing friction.</li> </ol>				-		52
HOW TO ORDER						<u> </u>
						67
Port size		Without fl	ow contr	ols	With flow contro	<u> </u>
		2 4			2 4	44
		12 W T V X	14		12 W T 14	46
Valve less b			H xxx-xx		47A-L10-H <b>xxx-xx</b>	x
1/8" NPT			47A-LAA-H xxx-xxx 47A-LBA-H xxx-xxx		47A-LAB-H xxx-xx	
1/4" NPT	<u>r                                      </u>	4/A-LBA-	-		47A-LBB-H xxx-xx	<u> </u>
SOLENOID OPERATOR ➤		H <b>xx</b>	X- XX	<b>x</b> *		47
			ŤΤ̈			48P
XX Voltage	X	Lead Wire length	X	Manual operator	XX Electrica	l connection
DA 24 VDC (5.2W)	A	18"	1	Non-locking recessed	MA Plug-in wir	4.9
DB 24 VDC (2.4W)	B	24" 36"	2	Locking recessed		e assembly with
DD 24 VDC (1.0W)		30	-		BA Flying lead	
<b>AA</b> 120 VAC (6.7W)						s with light e assembly with
					rectifier &	
* Other options available, see pa	ige 315.					
Note: AC voltage requires connect	for with rectifier.					93
LATCHING OPERATOR >		L <u>xx</u>	<b>X-<u>X</u>X</b>	<b>X</b> *		70
			ፓ ኒግ	<del>_</del>		ISO 01
XX Voltage	X	Lead Wire length	Х	Manual operator	XX Electrica	I connection     SO 02
DA 24 VDC (5.2W)	Α	18"	0	No operator	BA 2 Wire Flyi	
<b>DF</b> 12 VDC (5.2W)	B C	24" 36"			BJ 4 Wire Fly LA 3 Wire Plu	
			-		(Polarity sw	vitching cover)
						g-in 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: Temperature range :  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow:  $5.2W: (0.50 C_v) - 2.4W: (0.35 C_v) - 1.0W: (0.30 C_v)$ Coil: 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

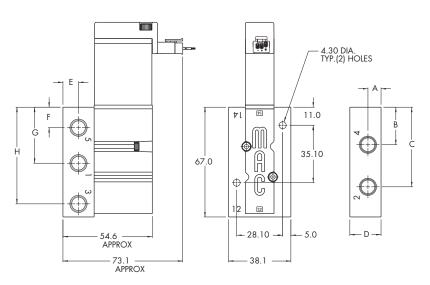
Options : • BSPP threads

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

• Flow control assembly (x2): N-04001

#### DIMENSIONS

Dimensions shown are metric (mm)



DIM.	A	В	C	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



\* Other options available, see page 319. End plate kit required: M-47013-01 (1/4" NPTF).

unction	Port size	Flow (Ma	[X]	Manifold M	ounting		Series
5/2	1/8" -	1/4" 0.5 C <sub>v</sub>	,	Stacking			
PERATIONAL BENEFITS							33
Short stroke solenoid penergization shifting for		<ol> <li>Integral non-rising flow continuing models.</li> </ol>	ontrols available o	n		_	34
High force return spring solenoid maximizes be de-energization shifting	g due to high force oth energization and g forces.	<ol> <li>Short stroking balanced p direct solenoid operation forces, minimized friction</li> </ol>	with high shifting , fast response an	d			36
Built-in wear compensor shorter than solenoid s Four bonded balanced	troke.	high flow in a small pack	age.	4	1	3:	32
piece valve stem. End poppets seal first o	on conical seats and						37
cushion inlet poppet, e	liminating cutting.			-	O		38
exnaust seals are not u reducing friction.	inder inlet pressure thus						52
HOW TO ORDER							67
Por	t size	Without fl	ow controls		With f	low controls	69
7.01					-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	33 31	44
		12 W T V V T V V T V V T V V T V V T V V T V V T V V T V T V V V T	14		12 W T	14	46
1/8" NPTF 1/4" NPTF		47A-SA0-H xxx-xxx 47A-SB0-H xxx-xxx				AO-H <b>xxx-xxx</b> BO-H <b>xxx-xxx</b>	
DLENOID OPERATO	OR ➤	H <u><b>xx</b></u>	<b>X-<i>XXX</i></b> *				47
			٦ ٦				48P
XX Voltage	X	Lead Wire length		ual operator	XX	Electrical connection	48P
XX Voltage  DA 24 VDC (5.2W  DB 24 VDC (2.4W	/) A /) B	18" 24"	1 Non-	ocking recessed	XX MA MC	Plug-in wire assembly Plug-in wire assembly with	48P 48
XX Voltage DA 24 VDC (5.2W	() A () B () C	18"	1 Non-	ocking recessed	MA MC BA	Plug-in wire assembly Plug-in wire assembly with light Flying leads	
XX Voltage  DA 24 VDC (5.2W  DB 24 VDC (2.4W  DC 24 VDC (1.8W	() A B C ()	18" 24"	1 Non-	ocking recessed	MA MC	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with	
XX Voltage  DA 24 VDC (5.2W  DB 24 VDC (2.4W  DC 24 VDC (1.8W  DD 24 VDC (1.0W  AA 120 VAC (6.7V  Other options available,	A B C C See page 315.	18" 24"	1 Non-	ocking recessed	MA MC BA BC	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light	48
XX   Voltage	A A B C O N See page 315. connector with rectifier.	18" 24" 36"	1 Non-	ocking recessed	MA MC BA BC	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with	48 400 92
XX   Voltage	A A B C O N See page 315. connector with rectifier.	18" 24" 36"	1 Non- 2 Lockii	ocking recessed	MA MC BA BC	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with	48
XX Voltage  DA 24 VDC (5.2W  DB 24 VDC (2.4W  DC 24 VDC (1.8W  DD 24 VDC (1.0W  AA 120 VAC (6.7V  Other options available, ote: AC voltage requires of the control of the c	A B B C C C C C C C C C C C C C C C C C	18" 24" 36"  Lead Wire length	7 Non- 2 Lockii X-XXX *	ocking recessed	MA MC BA BC MT	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
DA 24 VDC (5.2W DB 24 VDC (2.4W DC 24 VDC (1.8W DD 24 VDC (1.0W AA 120 VAC (6.7)  Other options available, the: AC voltage requires of the control of the co	A A B C O See page 315. connector with rectifier.  C X A	18" 24" 36"	X-XXX X Mar	ocking recessed ng recessed	MA MC BA BC MT	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with rectifier & light  Electrical connection 2 Wire Flying leads	48 400 92 93
DA 24 VDC (5.2W DB 24 VDC (2.4W DC 24 VDC (1.8W DD 24 VDC (1.0W AA 120 VAC (6.7)  Other options available, the: AC voltage requires of the control of the co	A A B C O See page 315. connector with rectifier.  C X A	18" 24" 36"  Lead Wire length 18"	X-XXX X Mar	ocking recessed ng recessed	MA MC BA BC MT	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with rectifier & light  Electrical connection 2 Wire Flying leads 4 Wire Flying leads 3 Wire Flyarin leads	48 400 92 93 ISO 01
DA 24 VDC (5.2W DB 24 VDC (2.4W DC 24 VDC (1.8W DD 24 VDC (1.0W AA 120 VAC (6.7)  Other options available, othe: AC voltage requires of the control of the c	A B C C C C C C C C C C C C C C C C C C	18" 24" 36"  Lead Wire length 18" 24"	X-XXX X Mar	ocking recessed ng recessed	MA MC BA BC MT	Plug-in wire assembly Plug-in wire assembly with light Flying leads Flying leads with light Plug-in wire assembly with rectifier & light  Electrical connection 2 Wire Flying leads 4 Wire Flying leads	48 400 92 93 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)

Not required, it used select a medium aniline point lubricant (between 180 F and 21)

Filtration: 40 µ

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

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

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

#### DIMENSIONS Dimensions shown are metric (mm) **⊕** -21 ÷ $\bigoplus$ $\oplus$ $\oplus$ OHW OHM **DHW** \* (A) **+** [4] -**+** 14 -**P P** Diw Dim DHW Ø 6.3 THRU. 0 1/8" 22.8 18.4 1/4" 19 24.2

	33 34 36 32 37 38 ddle station unifold base 52 67 69 44 46
. 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 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.  HOW TO ORDER  Port size  Model number  Valve less base  47A-LIO-H xxP-xxx  1/8" NPTF  47A-LBJ-H xxP-xxx	34 36 32 37 38 ddle station unifold base 67 69 44
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 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.  HOW TO ORDER  Port size  Model number  Valve less base  47A-LIJ-H XXP-XXX  1/4" NPTF  47A-LBJ-H XXP-XXX	34 36 32 37 38 ddle station unifold base 67 69 44
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 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.  Port size  Model number  Valve less base  1/8" NPTF  1/4" NPTF  47A-LBJ-H xxP-xxxx	32 37 38 ddle station unifold base 52 67 69
shorter than solenoid stroke. Four 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.  Photo: Min Model number  Valve less base  47A-L10-H xxP-xxx  1/8" NPTF  47A-LBJ-H xxP-xxxx	37 38 ddle station unifold base 52 67 69 44
End poppets seal first on conical seats and cushion inlet poppet, eliminating cutting.  Exhaust seals are not under inlet pressure thus reducing friction.  Photo: Min model number  Port size  Model number  12 12 14  3 15  14  Valve less base  47A-LIJ-H XXP-XXX  1/4" NPTF  47A-LBJ-H XXP-XXX	ddle station inifold base 67
cushion inlet poppet, eliminating cutting. Exhaust seals are not under inlet pressure thus reducing friction.  Photo: Microscope Model number  Port size  Model number  12 12 14 14  13 15 15 10-H XXP-XXX  1/8" NPTF  47A-LD-H XXP-XXX  1/4" NPTF  47A-LB-H XXP-XXX	ddle station spirited base 52 67 69 44
Photo: Min model number  Port size  Model number  12 w 14 14 14 14 15 15 15 15 16 15 16 16 16 16 16 16 16 16 16 16 16 16 16	67 69 44
Model number	67 69 44
Valve less base       47A-L10-H xxP-xxx         1/8" NPTF       47A-LAJ-H xxP-xxx         1/4" NPTF       47A-LBJ-H xxP-xxx	44
T <sub>1</sub> ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	
T <sub>1</sub>	46
1/8" NPTF 47A-LAJ-H xxP-xxx 1/4" NPTF 47A-LBJ-H xxP-xxx	
1/4" NPTF 47A-LBJ-H xxP-xxx	
<del></del>	
OLENOID OPERATOR > H XX P-XXX	42
	47 48P
XX Voltage X Manual operator XX Electrical connection	
DA         24 VDC (5.2W)         1         Non-locking recessed         FA         Base plug-in           DB         24 VDC (2.4W)         2         Locking recessed         FB         Base plug-in w/ ground	48
DC 24 VDC (1.8W)  FC Base plug-in w/ LED light	
DD         24 VDC (1.0W)         FD         Base plug-in w/ LED light w/ gra           AA         120 VAC (6.7W)         FT         Base plug-in w/ rectifier and light	
Other options available, see page 315. ote : AC voltage requires connector with rectifier.	92
ATCHING SOLENOID > L XX P-XXX	7.4
The social control of	93
XX Voltage X Manual operator XX Electrical connection	ISO 01
DA         24 VDC (5.2W)         0         No operator         FA         Base plug-in w/ ground           DF         12 VDC (5.2W)         FB         Base plug-in w/ ground & LED	150 01
FC Base plug-in 4 wire w/ ground	150 02
	ound 150 1
Other options available, see page 319.	150 2
OPTIONS	150 3
47A-xx <b>_1</b> -xxxP-xxx	
J Manifold base, side cylinders (middle station)  K Manifold base, bottom cylinders (middle station)	
■ Right end manifold base, side cylinders	
M Right end manifold base, bottom cylinders N Lett end manifold base, side cylinders P Lett end manifold base, bottom cylinders	







(with 5,2 W coil)

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

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

Flow (at 6 bar,  $\Delta P = 1$ bar): 5.2W: (0.50 C<sub>V</sub>) - 2.4W: (0.35 C<sub>V</sub>) - 1.0W: (0.30 C<sub>V</sub>)

De-energize : 3.8 ms

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

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

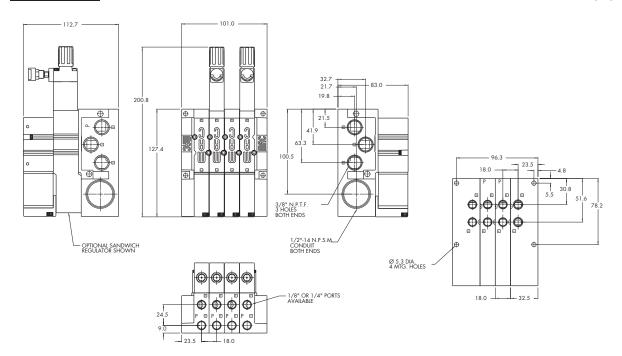
 Power:
 5.2W - 2.4W - 1.0W

 Response times:
 Energize: 17.4 ms

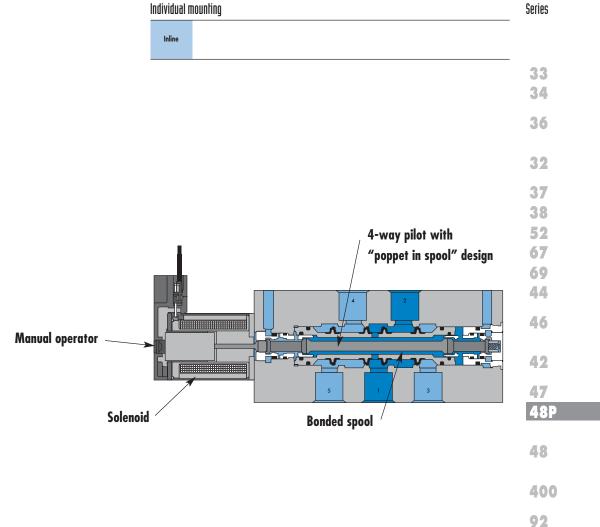
Options: 
• BSPP threads • Sandwich flow control: FC47A-AA • Sandwich regulator: see"Regulator" section

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

#### **DIMENSIONS**Dimensions shown are metric (mm)







#### **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.

119

93

**ISO 01** 

ISO 02

**ISO** 1

ISO 2 ISO 3



Function	Port size	Flow (Max)	Individual mounting	Series
5/2	1/8"	1.0 C <sub>V</sub>	Inline	
OPERATIONAL BENEFITS  1. 4-way valve with 4-way				33 34
<ul><li>2. Poppet in spool design</li><li>3. 16 mm valve (stacks o</li><li>4. High flow (up to 1.0 C</li><li>5. Fast repeatable responsance)</li></ul>	n 16.5 mm centers). Ev). nse times.			36
<ul><li>6. Maximum shifting force</li><li>7. Long life.</li><li>8. Compact design.</li></ul>	es in both directions.			32
				37
				38
				52
HOW TO ORDER				67
Port size	Pilot	5/2 Single operator	5/2 Single operator	69
		Single pressure	Dual pressure	44
				46
	Internal	48PB-AAA-A00-G <b>xxx-xxx</b>		40
1/8"	Internal from port 3	-	48PB-CAB-A00-G <b>xxx-xxx</b>	
	Internal from port 5	<u> </u>	48PB-CAC-A00-G <b>xxx-xxx</b>	42
STANDARD SOLENC	OID OPERATOR ➤	G xxx-xxx*		47
STATUDARD SOLETIC	OI ENATOR >			48P
XX Voltage	X Wire l	ength X Manual ope	erator XX Electrical connect	tion.
AA 120 VAC (2.5)		Non-locking	BA Flying leads	48
DC 24 VDC (1.8W DD 24 VDC (2.5W		2 Locking	BT Flying leads with light GA MAC JAC solenoid plu	a-in
DF 24 VDC (4.0W			KA Plug-in wire assy.	400
			KT Plug-in wire assy. with  KD Plug-in wire assy. with rectifier & light & grour	iigiii – – –
<ul> <li>Other options available</li> <li>Note: AC voltage requires</li> </ul>	, see page 311. connector with rectifier.		rectifier & light & groun	92
OPTIONS				
48PB-X <b>X</b> X-X00-G <b>xx-x</b>	xx			93
A Pilot C Pilot D Pilot	exhaust muffled exhaust piped M5 exhaust out main exhaust			ISO 01 ISO 02 ISO 1 ISO 2 ISO 3



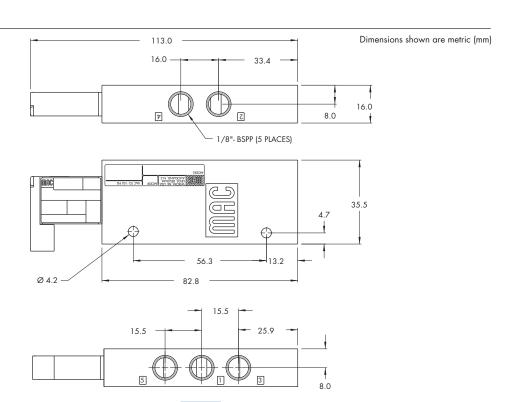




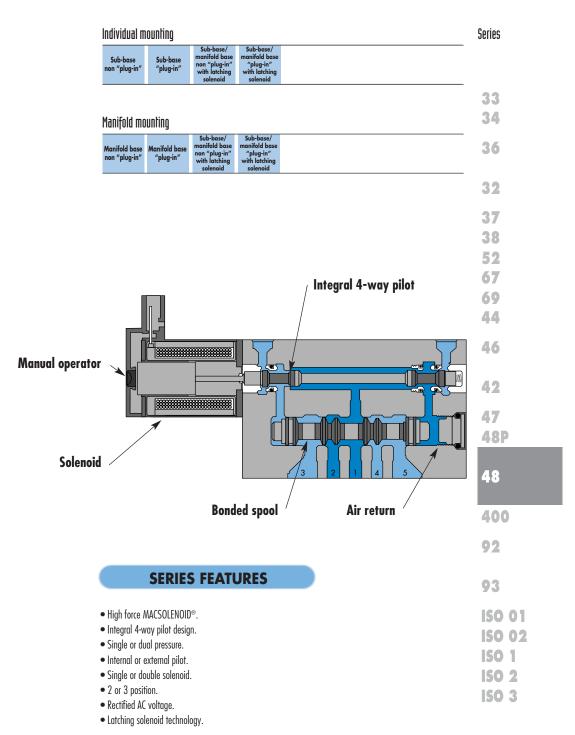
Fluid:	Compressed air, vacuum, inert gases
Pressure range :	25 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration:	40 µ
Temperature range :	0°F to 120°F (18°C to +50°C)
Flow:	Cv 1,0
Coil:	Class A wire continuous duty, #22 AWG x 18 leads
Voltage range :	-15% to +10% of nominal voltage
Power:	1.0 to 4.0 W

Options : • BSPP threads

DIMENSIONS









Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/8"	1.1 C <sub>v</sub>	Sub-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  $C_{\rm v}$ ).
- 4. Fast repeatable response times.
- 5. Maximum shifting forces in both directions.
- 6. Long life.



36

33

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38 **52** 

67 69

44 46

42

47 **48P** 

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**ISO 01** ISO 02

**ISO** 1

**ISO 2** 

**ISO 3** 

# HOW TO ORDER

SINGLE PRESSURE MODELS (VALVE WITH BASE 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 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 MMD 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Valve less	Internal	48B-AMA-000-G <b>xxx-xxx</b>	48B-BMA-000-G <b>xxx-xxx</b>	48B-EMA-000-G <b>xxx-xxx</b>	48B-FMA-000-Gxxx-xxx
base	External	48B-AMD-000-G <b>xxx-xxx</b>	48B-BMD-000-G <b>xxx-xxx</b>	48B-EMD-000-Gxxx-xxx	48B-FMD-000-Gxxx-xxx
1/8" NPTF	Internal	48B-AMA-AAL-Gxxx-xxx	48B-BMA-AAL-Gxxx-xxx	48B-EMA-AAL-Gxxx-xxx	48B-FMA-AAL-Gxxx-xxx
	External	48B-AMD-AAM-Gxxx-xxx	48B-BMD-AAM-Gxxx-xxx	48B-EMD-AAM-Gxxx-xxx	48B-FMD-AAM-Gxxx-xxx

#### DUAL PRESSURE MODELS (VALVE WITH BASE CODED FOR SIDE PORTS)

Port size	Pilot air		Pilot air		5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
					12 2 4 14   14   14   14   14   14   15   15   15		
Valve less base	Internal Su	pply #3 port	48B-CMB-000-G <b>xxx-xxx</b>	48B-DMB-000-Gxxx-xxx	48B-HMB-000-G <b>xxx-xxx</b>		
	Su	pply #5 port	48B-CMC-000-Gxxx-xxx	48B-DMC-000-G <b>xxx-xxx</b>	48B-HMC-000-Gxxx-xxx		
	External		48B-CMD-000-Gxxx-xxx	48B-DMD-000-G <b>xxx-xxx</b>	48B-HMD-000-Gxxx-xxx		
1/8" NPTF	Internal Su	pply #3 port	48B-CMB-AAL-Gxxx-xxx	48B-DMB-AAL-Gxxx-xxx	48B-HMB-AAL-Gxxx-xxx		
	Su	pply #5 port	48B-CMC-AAL-Gxxx-xxx	48B-DMC-AAL-Gxxx-xxx	48B-HMC-AAL-Gxxx-xxx		
	External		48B-CMD-AAM-Gxxx-xxx	48B-DMD-AAM-Gxxx-xxx	48B-HMD-AAM-Gxxx-xxx		

G XXX-XXX

STANDARD SOLENOID OPERATOR ➤

Wire length Voltage **Manual operator** 120 VAC (2.5W) 18" Non-locking recessed 24 VDC (1.8W) Locking recessed 24 VDC (2.5W) 24 VDC (4.0W)

\* Other options available, see page 311. Latching solenoid also available, see page 133. Note: AC voltage requires connector with rectifier. Other options available for the 48 series valves, see page 137.

Electrical connection

MAC JAC solenoid plug-in Plug-in wire assy.

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

Flying leads with light

Flying leads

GA

KT







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) 40 µ Filtration: Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: 1/8" side ports: (1.0 C<sub>v</sub>) – 1/8" bottom ports: (1.1 C<sub>v</sub>) 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

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 21.5 16.7 12.0 15.3 24.9 $\otimes$ 69.2 116.9 I APPROX. 0 $\oplus$ 1/8" PORTS MAC 2 50.4 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 <sub>V</sub>	Sub-base "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  $C_{\rm v}$ ).
- 4. Fast repeatable response times.
- 5. Maximum shifting forces in both directions.
- 6. Long life.



69

44

46

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47 **48P** 

48

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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) - 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 14 14 31 5	12 2 4 14 17 3 15	12 2 4 14 MMD 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 MID 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-GxxP-xxx	48B-BME-000-GxxP-xST	48B-EME-000-GxxP-xST	48B-FME-000-G <b>xx</b> P- <b>x</b> ST
base	External	48B-AMD-000-GxxP-xxx	48B-BMH-000-GxxP-xST	48B-EMH-000-G <b>xx</b> P- <b>x</b> ST	48B-FMH-000-GxxP-xST
1/8" NPTF	Internal	48B-AMA-AAA-G <b>xx</b> P- <b>xxx</b>	48B-BME-AAC-GxxP-xST	48B-EME-AAC-GxxP-xST	48B-FME-AAC-GxxP-xST
	External	48B-AMD-AAB-GxxP-xxx	48B-BMH-AAD-GxxP-xST	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 2 12 15 7 3 4 2 12	14 4 2 12 17D 7 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
Valve less base	Internal Supply #3 port	48B-CMB-000-G <b>xx</b> P- <b>xxx</b>	48B-DMF-000-G <b>xx</b> P- <b>x</b> ST	48B-HMF-000-G <b>xx</b> P- <b>x</b> ST
	Supply #5 port	48B-CMC-000-GxxP-xxx	48B-DMG-000-G <b>xx</b> P- <b>x</b> ST	48B-HMG-000-GxxP-xST
	External	48B-CMD-000-GxxP-xxx	48B-DMH-000-GxxP-xST	48B-HMH-000-G <b>xx</b> P- <b>x</b> 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-G <b>xx</b> P- <b>x</b> ST
STANDARD SOLENC	DID OPERATOR ➤	G <u>xx</u> P-x <u>xx</u> *		

Standard	SOLENOID	OPERATOR	>

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
				SS	Base plua-in with rectifier & light & ground

<sup>\*</sup> 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.







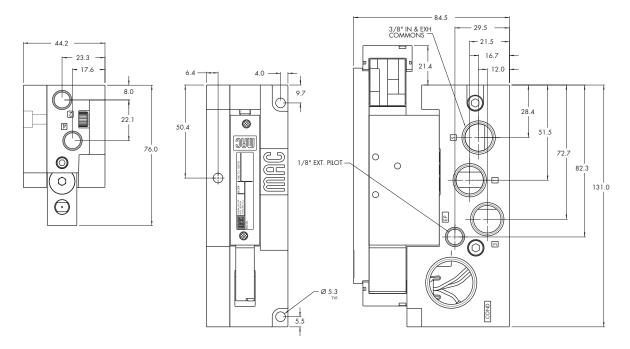
Compressed air, vacuum, inert gases Fluid: Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External pilot: vacuum to 120 PSI Pilot pressure: 2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) 40 µ Filtration: Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: 1/8" side ports: (1.0 C<sub>v</sub>) – 1/8" bottom ports: (1.1 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 12 base leads 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

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	Floш (Max)	Manifold mounting	Series
5/2, 5/3	1/8"	1.1 C <sub>v</sub>	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  $C_{\rm v}$ ).
- 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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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 14 175 14 315		12 2 4 14 MVD 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 DDW 31 5 3 1 5
Valve less	Internal	48B-AMA-000-G <b>xxx-xxx</b>	48B-BMA-000-G <b>xxx-xxx</b>	48B-EMA-000-G <b>xxx-xxx</b>	48B-FMA-000-G <b>xxx-xxx</b>
base	External	48B-AMD-000-G <b>xxx-xxx</b>	48B-BMD-000-G <b>xxx-xxx</b>	48B-EMD-000-G <b>xxx-xxx</b>	48B-FMD-000-G <b>xxx-xxx</b>
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 <b>xxx-xxx</b>	48B-BMD-AJM-Gxxx-xxx	48B-EMD-AJM-G <b>xxx-xxx</b>	48B-FMD-AJM-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 2 12 17D 7 3 0 0 3	14 2 12 17D 7 3 0 0 3	12 2 4 14 MDD 14 1 14 15 15 15 15 15 15 15 15 15 15 15 15 15 1
Valve less base	Internal Supply #3 port	48B-CMB-000-G <b>xxx-xxx</b>	48B-DMB-000-G <b>xxx-xxx</b>	48B-HMB-000-G <b>xxx-xxx</b>
	Supply #5 port	48B-CMC-000-G <b>xxx-xxx</b>	48B-DMC-000-G <b>xxx-xxx</b>	48B-HMC-000-G <b>xxx-xxx</b>
	External	48B-CMD-000-G <b>xxx-xxx</b>	48B-DMD-000-G <b>xxx-xxx</b>	48B-HMD-000-G <b>xxx-xxx</b>
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-G <b>xxx-xxx</b>	48B-DMD-AJM-G <b>xxx-xxx</b>	48B-HMD-AJM-G <b>xxx-xxx</b>

STANDARD SOLENOID OPERATOR ➤



				<b>— —</b>			
				፲ \־			
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.
						KT	Plug-in wire assy. with light
						KD	Plug-in wire assy. with
* Other o	ptions available, see page 311.						rectifier & light & ground

<sup>\*</sup> Other options available, see page 311.
Latching solencid 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.



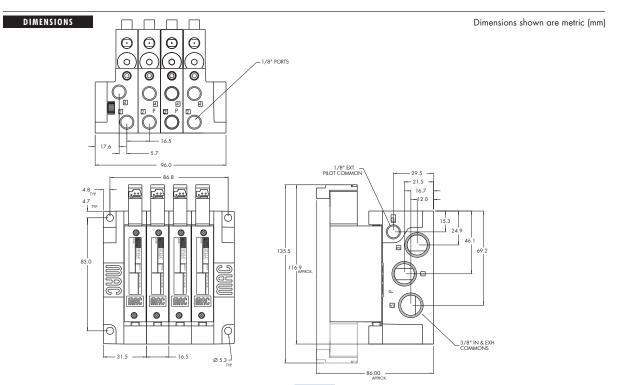




Fluid: Compressed air, vacuum, inert gases Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External pilot: vacuum to 120 PSI Pilot pressure: 2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) 40 µ Filtration: Temperature range : 0°F to 120°F (-18°C to +50°C) Flow: 1/8" side ports: (1.0 C<sub>v</sub>) – 1/8" bottom ports: (1.1 C<sub>v</sub>) 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

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 <sub>V</sub>	Manifold base "plug-in"		
PERATIONAL BEN	IEFITS					33
. 4-way valve wi . 16 mm valve (s	tacks on 16.5				220	34
. High flow (up to . Fast repeatable . Maximum shifti	response time				11	36
. Long life.						32
					800	37
					032	38
					10	52
HOW TO ORD	ER					67
		S IIED STANDADD EYCED	T FOR SINGLE SOLENOIDS	3)		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 14 175 14 3 15	12 2 4 14 3 15 3 15 T	12 2 4 14 MMD 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 2 4 14 SIMM G/T 3 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	46
Valve less	Internal	48B-AMA-000-G <b>xx</b> P- <b>xxx</b>	48B-BME-000-GxxP-xST	48B-EME-000-GxxP-xST	48B-FME-000-G <b>xx</b> P- <b>x</b> ST	4.0
base	External	48B-AMD-000-G <b>xx</b> P- <b>xxx</b>	48B-BMH-000-G <b>xx</b> P- <b>x</b> ST	48B-EMH-000-G <b>xx</b> P- <b>x</b> ST	48B-FMH-000-G <b>xx</b> P- <b>x</b> ST	42
1/8" NPTF	Internal	48B-AMA-AJA-G <b>xx</b> P- <b>xxx</b>	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	
OUAL PRESSUR	E MODELS	(LED STANDARD EXCEPT F	FOR SINGLE SOLENOIDS)			48P
Port size	•	Pilot air	5/2	5/2	5/3	
			Single solenoid	Double solenoid	Pressure center	48
			ZD 12 50 0 3	12 56 y 63		400
Valve less b	ase Int	ernal Supply #3 port	48B-CMB-000-GxxP-xxx	48B-DMF-000-G <b>xx</b> P- <b>x</b> ST	48B-HMF-000-G <b>xx</b> P- <b>x</b> ST	400
		Supply #5 port	48B-CMC-000-GxxP-xxx	48B-DMG-000-G <i>xx</i> P- <i>x</i> ST	48B-HMG-000-GxxP-xST	92
		ternal	48B-CMD-000-GxxP-xxx	48B-DMH-000-GxxP-xST	48B-HMH-000-G <b>xx</b> P- <b>x</b> ST	74
1/8" NP1	if Int	ernal Supply #3 port	48B-CMB-AJA-GxxP-xxx	48B-DMF-AJC-GxxP-xST	48B-HMF-AJC-GxxP-xST	
		Supply #5 port	48B-CMC-AJA-GxxP-xxx	48B-DMG-AJC-GxxP-xST	48B-HMG-AJC-GxxP-xST	93
	Ex	ternal	48B-CMD-AJB-GxxP-xxx	48B-DMH-AJD-GxxP-xST	48B-HMH-AJD-GxxP-xST	160.0-
TANDARD SC	DLENOID OI	PERATOR >	G <b>xx</b> P- <b>xxx</b> *	Above numbers are middle st	ation manifolds with side ports	ISO 01
						ISO 02
						<b>ISO</b> 1
XX Volt	_	X	Manual operator		al connection	ISO 2
	AC (2.5W) C (1.8W)		Non-locking recessed  Locking recessed	ST Base plug	& 3 position models in	ISO 3
DC 24 VD	C(1.044)					
DD 24 VD	C (2.5W) C (4.0W)			Single solenoid SA Base plug		130 3

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.

Base plug-in with rectifier & light & ground





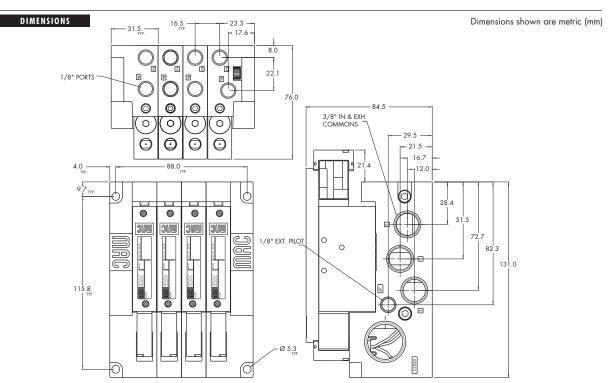


Fluid: Compressed air, vacuum, inert gases Pressure range: Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External pilot: vacuum to 120 PSI Pilot pressure: 2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (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 C<sub>v</sub>) – 1/8" bottom ports: (1.1 C<sub>v</sub>) 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)

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

De-energize : 6 ms



ınction	Port size	Flow (Max)	Individual/Manifold mounting	Series
/2	1/8"	1.1 C <sub>v</sub>	Sub-base/ manifold base non "plug-in" with latching solenoid	
PERATIONAL BENEFITS				33
4-way valve with 4-wa				34
16 mm valve (stacks of High flow (up to 1.1 C Fast repeatable respon Maximum shifting force	v). se times.		- A	36
Long life.			9	32
				37
			591 9	38
				52
HOW TO ORDER				
				67
	ODELS (INDIVIDUAL BASE	WITH SIDE PORTS)		69
Port size	Pilot air	Si	5/2 ngle pressure	44
		t t	2 2 4 14 ZD 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	46
Valve less base	Internal	48A-	AMA-000-Lxxx-xxx	
	External	48A-	AMD-000-Lxxx-xxx	42
1/8" NPTF	Internal		AMA-AAL-Lxxxx-xxx	47
	External		MD-AAM-Lxxx-xxx	48P
	DELS (INDIVIDUAL BASE V	VITH SIDE PORTS)		701
Port size	Pilot air		5/2 Dual pressure	48
			12 2 4 14	
Valve less base	Internal Supply #3 port	-	48A-CMB-000-Lxxx-xxx	400
	Supply #5 port		48A-CMC-000-L <b>xxx-xxx</b>	92
	External		48A-CMD-000-L <b>xxx-xxx</b>	72
1/8" NPTF	Internal Supply #3 port	_	48A-CMB-AAL-L <b>xxx-xxx</b>	
	Supply #5 port	_	48A-CMC-AAL-LXXX-XXX	93
	External	_	48A-CMD-AAM-LXXX-XXX	160.01
ATCHING SOLENO	ID <b>≻</b>	L <u>xx</u> x- <u>x</u> xx*		ISO 01
				ISO 02
XX Voltage	X Wire	e length X	Manual operator XX Electrical co	onnection ISO 1
XX Voltage DF 24 VDC (4.0W	') <b>A</b> 18"		Manual operator XX Electrical co	nnection
	/) A 18" M) B 24"		No operator  BA 2 Wire flying le BJ 4 Wire flying le	ods ISO 2
<b>DF</b> 24 VDC (4.0W	') <b>A</b> 18"		No operator BA 2 Wire flying le	ods ISO 2 ads ussembly ussembly

<sup>\*</sup> 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

Pilot pressure: 20 to 120 PSI

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

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

Flow: 1/8" side ports: (1.0 C<sub>v</sub>) – 1/8" bottom ports: (1.1 C<sub>v</sub>)

Coil:

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

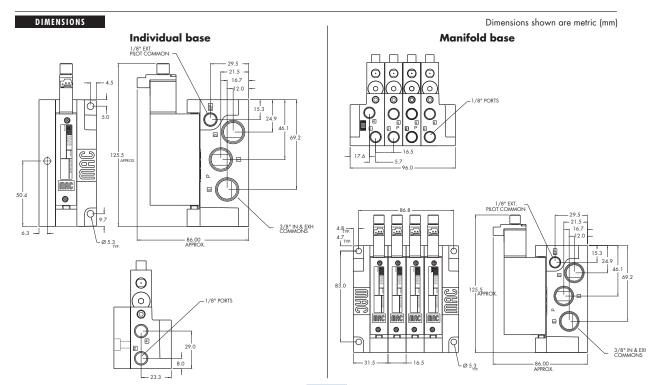
Voltage range: -15% to +10% of nominal voltage

1.0 to 4.0 W Power: Response times: Energize : 6 ms

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

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				Individual/Manifold mounting	Series
5/2		1/8"	1.1 C <sub>v</sub>	Sub-base/ manifold base "plug-in" with latching solenoid	
PERATIONAL BENEFITS					33
. 4-way valve with 4-wa				-	34
. 16 mm valve (stacks or High flow (up to 1.1 C Fast repeatable respon Maximum shifting force	y). ise times.			FFF	36
. Long life.					32
				* 1 - B	37
					38
				4 9 19	52
HOW TO ORDER					67
<u> </u>	MODELS 12 V	VIBE IVIDIVIDITAT	BASE WITH SIDE PORTS)		69
Port size	Pilot air	VINE INDIVIDUAL	•	5/2	44
FUI SIAG	FIIOI WIF			pressure	***
			12 17 17 17 17 17 17 17 17 17 17 17 17 17	14 137	46
Valve less base	Internal	48A-AMA-000-LXXP-XXX			
	External	48A-AMD-000-LxxP-xxx			
1/8" NPTF	Internal			-AAA-LxxP-xxx	47
	External		48A-AMD	-AAB-LxxP-xxx	48P
DUAL PRESSURE MC	DELS (2-W	ire individual b	ASE WITH SIDE PORTS)		407
Port size		Pilot air		40	
				Dual pressure	48
Valve less base	- Internal	Supply #3 port		48A-CMB-000-LxxP-xxx	400
		Supply #5 port		48A-CMC-000-LxxP-xxx	
	External			92	
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	
			L sere D serese*		ISO 01
ATCHING SOLENO	ID <b>≻</b>		L <i>XX</i> P- <i>XXX</i>		
ATCHING SOLENO	ID >		L <u>xx</u> P- <u>xxx</u> .		ISO 02
	ID >				
XX Voltage		X	Manual operator	XX Electrical connection**	ISO 1
XX Voltage  DF 24 VDC (4.0W DN 12 VDC (4.0W	7)	X   0		XX Electrical connection**  DA Plug-in  EA Plug-in 3 PlN (Polarity Switching Cov	ISO 1 ISO 2

<sup>\*</sup> 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.







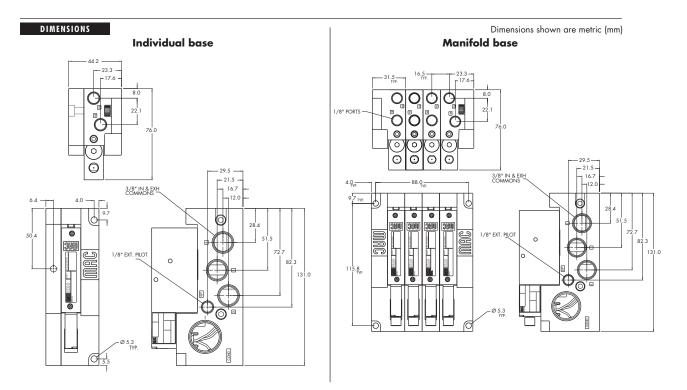
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal pilot: 20 to 120 PSI External pilot: vacuum to 120 PSI Pilot pressure: 20 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: 40 µ Temperature range: 0°F to 120°F (-18°C to +50°C) Flow: 1/8" side ports: (1.0 C<sub>v</sub>) – 1/8" bottom ports: (1.1 C<sub>v</sub>) Coil: Class A continuous duty, #22 AWG x 12 base leads Voltage range: -15% to +10% of nominal voltage 1.0 to 4.0 W Power: Response times: Energize : 6 ms

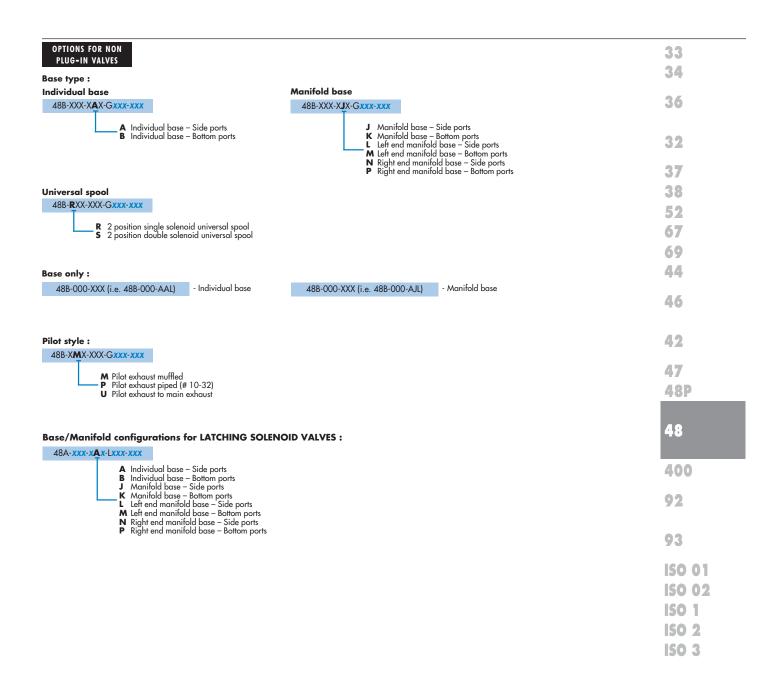
Options :

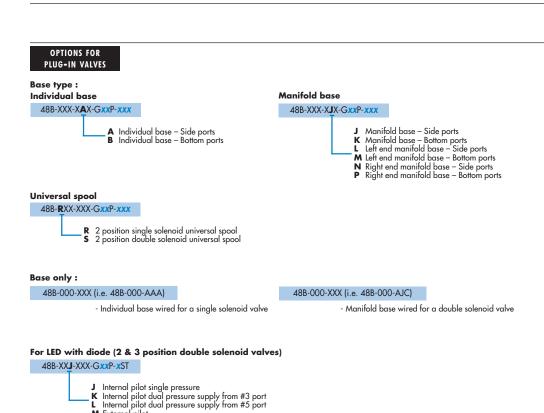
(with 4 W coil)

- 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

De-energize : 6 ms







#### **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 – Bottom 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

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

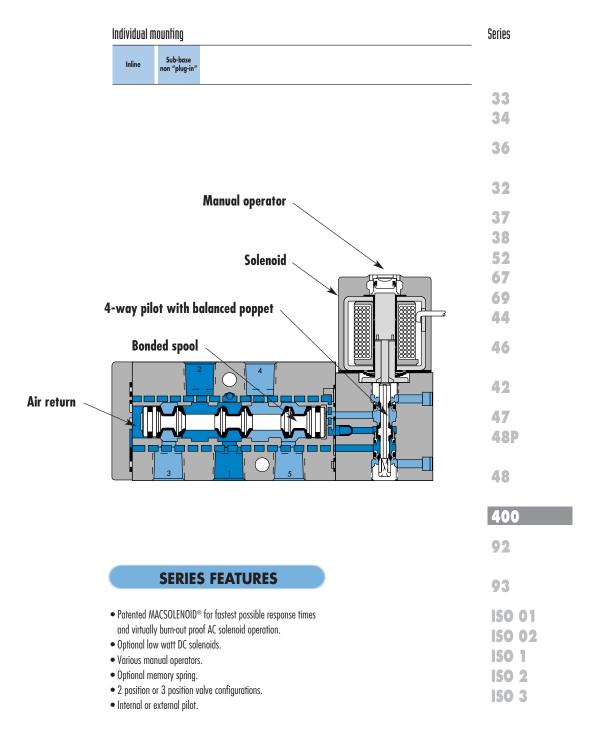
#### 48A-xxx-xxA-LxxP-xxx

Pilot style:

48B-XMX-XXX-GxxP-xxx

- 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
  Plug-in Ext. Pilot 4 Wire Latching



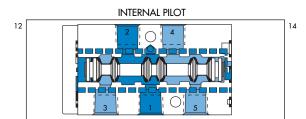




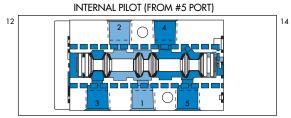




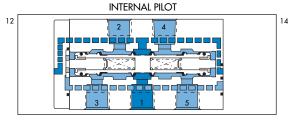
#### **SPOOL CONFIGURATIONS**



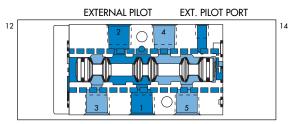
SINGLE OPERATOR - SINGLE INLET SHOWN WITH 12 OPERATOR ENERGIZED



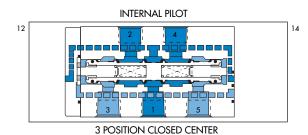
SINGLE OPERATOR - DUAL INLET SHOWN WITH 12 OPERATOR ENERGIZED



3 POSITION OPEN CENTER



SINGLE OPERATOR - SINGLE INLET SHOWN WITH 12 OPERATOR ENERGIZED



INTERNAL PILOT

12

3 POSITION PRESSURE CENTER



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

# Direct solenoid and solenoid pilot operated valves

Function		Port size	Floш (Max)		Individual mounting	!	Series
5/2, 5/3		1/8" - 1/4"	1.0 C <sub>V</sub>		Inline		
PERATIONAL BEN	NEFITS						33
. The 4-way pilo		iximum shifting					34
forces both wa . Memory spring . Balanced spoo pressure, also	g available. bl, immune to v provides high					- 1	36
I. Short stroke wi I. Bonded spool in a glass-like to	with minimum finished bore.				0		32
<ul> <li>Wiping effect</li> <li>Long service life</li> </ul>		king.			Se.		<b>37</b>
					PROFES OF THE PROPERTY OF THE	Limited	38
					96		<b>52</b>
HOW TO ORD	ER						67
SINGLE PRESSI	0112 7710 22						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 D 3 1 5	12 2 4 14 170 7 315	12 2 4 14 	12 2 4 14 7 3 1 5	12 2 4 14 	46
1/8" NPTF	Internal	411A-A0A-XX-X <b>XXX</b> - <b>XXX</b>	421A-A0A-XX-XXXX-XXX	451A-A0A-XX-XXXX-XXX	461A-A0A-XX-XXXX-XXX	471A-A0A-XX-X <b>xxx-xxx</b> 471A-B0A-XX-X <b>xxx-xxx</b>	42
1/4" NPTF 1/8" NPTF	External	411A-B0A-XX-XXXX-XXX 411A-A0B-XX-XXXX-XXX	421A-BOA-XX-X <b>xxx-xxx</b> 421A-AOB-XX-X <b>xxx-xxx</b>	451A-B0A-XX-XXXX-XXX 451A-A0B-XX-XXXX-XXX	461A-B0A-XX-XXXX-XXX 461A-A0B-XX-XXXX-XXX	471A-BUA-XX-XXXX-XXX 471A-A0B-XX-XXXX-XXX	
1/4" NPTF		411A-B0B-XX-X <b>xxx-xxx</b>	421A-B0B-XX-X <b>xxx-xxx</b>	451A-B0B-XX-X <b>xxx-xxx</b>	461A-B0B-XX-X <b>xxx-xxx</b>	471A-B0B-XX-X <b>xxx-xxx</b>	47
OUAL PRESSUR	E MODELS	(INTERNAL PILOT – PI	LOT PRESSURE SUPP	LY FROM #5 PORT)			48P
Port size		Pilot air		5/2 gle operator		5/2 operator	48
			12 [D	2 4 14 47 47 T	12 2	4 14 47	
1/8" NPT	F -	Internal	431A-	<b>315</b> 40A-XX-X <b>XXX-XXX</b>	<u>31</u> 441A-A0A	-XX-X <b>XXX-XXX</b>	400
1/4" NPT				BOA-XX-XXXX		-XX-X <b>xxx-xxx</b>	92
1/8" NPT 1/4" NPT		External		AOB-XX-X <i>xxx-xxx</i> BOB-XX-X <i>xxx-xxx</i>		-XX-Xxxx-xxx -XX-Xxxx-xxx	
						W MAN ANA	93
SOLENOID OF	EKATOK >		DM-D <u>XXX</u>	<u> </u>			
				ጎ			ISO 01
<b>XX Volt JA</b> 110/5	<b>age</b> 50, 120/60 (2.9		lying leads)	<ul><li>X Manual ope</li><li>1 Non-locking rece</li></ul>		lectrical connection quare connector	ISO 02
JB 220/5	50, 240/60 (2.9	PW) B 24" (F	lying leads)	2 Locking recessed	KD So	quare connector with light	<b>ISO</b> 1
	(2.9W) C (1.8W)	J Conne	ector			ectangular connector ectangular connector with	ISO 2
<b>DA</b> 24 VD	C (5.4W)				liç	ght "	ISO 3
	C (12.7W)		011 0	*	<u>BA</u> FI	ying leads	130 3
SOLENOID OF	′EKAIOR ➤		GM-G XXX-	<i>XXX</i>			
VV Velt	MMO	v \Artina	e length	X Manual ope	rator VV E	ectrical connection	
DC 24VD0	age C (1.8W)	<b>X</b> Wire <b>A</b> 18"	iengin -	Non-locking rece		ying leads	
	- (1.011)						
DD 24VD0	C (2.5W) C (4.0W)	B 24" C 36"		2 Locking recessed		ying leads with light ug-in wire assy.	

141

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







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 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: 1.0 C<sub>v</sub> 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 W24 V=/5.4W Response times: Energize: 7.3 ms De-energize: 5.3 ms

De-energize: 7-11 ms

Options:

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

Energize: 8-12 ms

4**11**A-A0**A**-XX-X**XXX-XXX** 

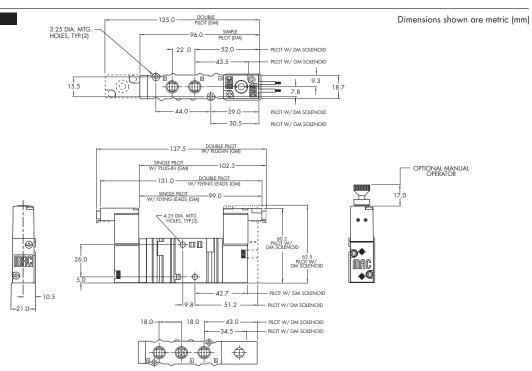
120/60

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





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

# Direct solenoid and solenoid pilot operated valves

unction		Port size	Flow (Max)		Individual mounting	Se
/2, 5/3		1/8" - 1/4"	1.0 C <sub>v</sub>		Sub-base non "plug-in"	
PERATIONAL BE	NEFITS					3223
The 4-way pilo		aximum shifting				
forces both wo Memory spring						
Balanced spoo	ol, immune to	variations of				1991年
	provides high	flow.			0.00	
Short stroke w Bonded spool		friction, shifting				
in a glass-like	finished bore.	_			New York	Aff .
Wiping effect Long service li		king.				
Long service in	iie.					
HOW TO ORD	DER					
INGLE PRESS	SURE MODE	LS				
Port size	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	12 2 4 14	12 2 4 14 W \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	12 2 4 14 	12 2 4 14
		315	315			
Valve only	Internal	413A-00A-XX-X <b>xxx-xxx</b>	423A-00A-XX-X <b>xxx-xxx</b>	453A-00A-XX-X <b>xxx-xxx</b>	463A-00A-XX-X <b>xxx-xxx</b>	473A-00A-XX-X <b>xxx-xxx</b>
- /0 =	External	413A-00D-XX-X <b>XXX-XXX</b>	423A-00D-XX-X <b>XXX-XXX</b>	453A-00D-XX-X <b>xxx-xxx</b>	463A-00D-XX-XXXX-XXX	473A-00D-XX-X <b>xxx-xxx</b>
1/8" NPTF 1/4" NPTF	_ Internal	413A-AAA-XX-X <b>XXX-XXX</b> 413A-BAA-XX-X <b>XXXX-XXX</b>	423A-AAA-XX-XXXX-XXX 423A-BAA-XX-XXXXXXXXXXXX	453A-AAA-XX-X <b>XXX-XXX</b> 453A-BAA-XX-X <b>XXXX-XXX</b>	463A-AAA-XX-X <b>XXX-XXX</b> 463A-BAA-XX-X <b>XXXX-XXX</b>	473A-AAA-XX-Xxxx-xxx 473A-BAA-XX-Xxxx-xxx
1/8" NPTF	External	413A-AAD-XX-XXXX	423A-AAD-XX-XXXX	453A-AAD-XX-XXXX	463A-AAD-XX-XXXX-XXX	473A-AAD-XX-XXXX
1/4" NPTF		413A-BAD-XX-XXXX-XXX	423A-BAD-XX-X <b>xxx-xxx</b>	453A-BAD-XX-XXXX-XXX	463A-BAD-XX-XXXX-XXX	473A-BAD-XX-XXXX-XXX
UAL PRESSU	re models	(INTERNAL PILOT – PI	LOT PRESSURE SUPPL	Y FROM #5 PORT)		
Port size		Pilot air		ingle operator	5/2 Dou	ble operator
			12 2	4 14	12 <sup>2</sup>	4 14
				15	31	
Valve on	ly	Internal		0A-XX-Xxxx		A-XX-Xxxx-xxx
1/8" NP	TE	External Internal		OD-XX-X <b>XXX-XXX</b> AA-XX-X <b>XXX</b> - <b>XXX</b>		A-XX-X <b>XXX-XXX</b>
1/4" NP		memai		AA-XX-XXXX-XXX		A-XX-Xxxx-xxx
1/8" NP		External		AD-XX-X <b>xxx-xxx</b>		)-XX-X <b>xxx-xxx</b>
1/4" NP	<u>TF</u>		433A-B	AD-XX-XXXX	443A-BAD	)-XX-X <b>XXX-XXX</b>
OLENOID OI	PERATOR >		DM-D XXX-	XXX <sup>*</sup>		4
				Ţ <del></del>		
VV V 1		y yart	Laureth	V 88		lectrical connection
	<b>tage</b> 50, 120/60 (2.º		e length lying leads)	<ul><li>X Manual oper</li><li>1 Non-locking reces</li></ul>		
JB 220/	50, 240/60 (2.9	9W) <b>B</b> 24" (F	lying leads)	2 Locking recessed	KD S	quare connector with light
	0 (2.9W) DC (1.8W)	J Conne	ector			lectangular connector
<b>DA</b> 24 VD	OC (5.4W)				li	ght ght
<b>DF</b> 24 VD	DC (12.7W)				BA F	lying leads
OLENOID OI	PERATOR ➤		GM-G XXX-	XXX"		
				Ţ <del>-</del>		
XX Volt	lage	X Wire	length	X Manual oper	rator XX E	lectrical connection
	C (1.8W)	A 18"		Non-locking reces		lying leads
	C (2.5W) C (4.0W)	B 24" C 36"		2 Locking recessed		lying leads with light lug-in wire assy.
Other options a		<del></del>				lug-in wire assy. with light

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







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

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

Filtration :  $40 \mu$ 

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

Flow: 1.0 C<sub>v</sub>

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-XXXX

Dual pressure models, replace by **C** for pilot supply from #3 port

For flow control, replace by **B** 

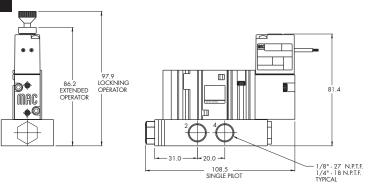
For memory spring, replace by 6

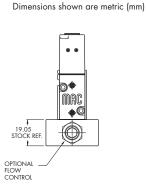
400A-XXX (i.e. 400A-AAA)

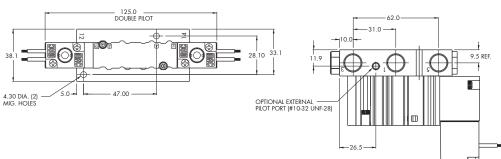
Base only :

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

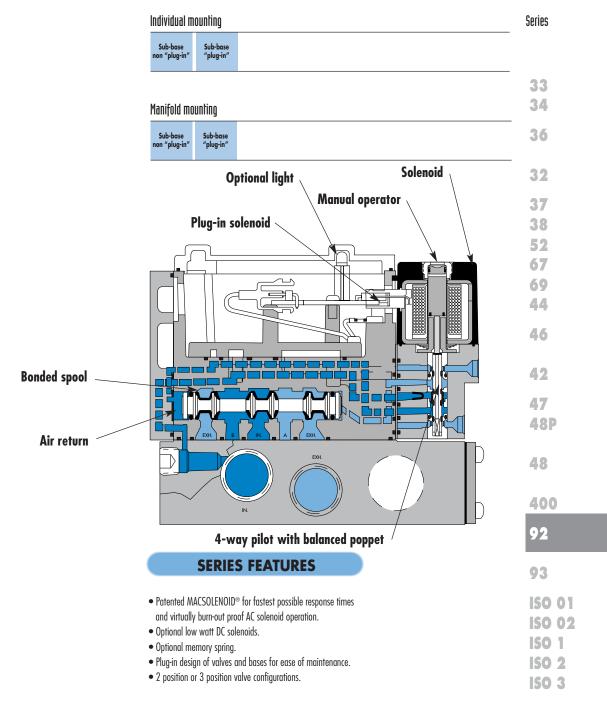
DIMENSIONS









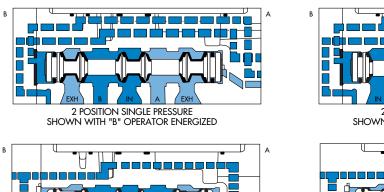


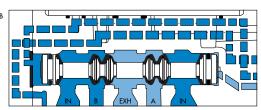




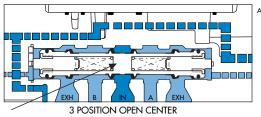


#### **SPOOL CONFIGURATIONS**

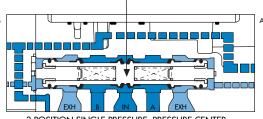




2 POSITION DUAL PRESSURE SHOWN WITH "B" OPERATOR ENERGIZED



SPRING CENTERING



3 POSITION SINGLE PRESSURE, PRESSURE CENTER

#### **REGULATOR CONFIGURATIONS**

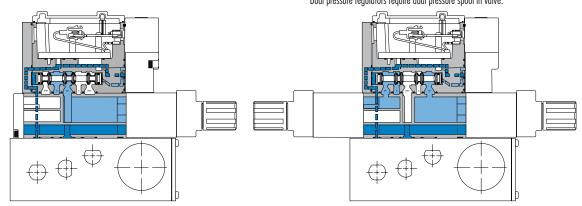
#### **SINGLE REGULATOR - SINGLE PRESSURE**

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

3 POSITION CLOSED CENTER

#### **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**

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

#### **MANIFOLD WITH REGULATOR - DUAL PRESSURE**



\* Other options available, see page 309.

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

# Direct solenoid and solenoid pilot operated valves

unction		Port size	Flow (Max)		Individual mounting	Seri	es
/2, 5/3		1/8" - 1/4" - 3	3/8" 1.2 C <sub>V</sub>		Sub-base non "plug-in"		
PERATIONAL BEI	NEFITS					3	3
The 4-way pilo	ot develops mo	aximum shifting				3	
forces both wo						463211	_
<ul> <li>Memory spring</li> <li>Balanced spoor</li> </ul>		variations of			100	3	6
pressure, also	provides high						
<ul> <li>Short stroke w</li> <li>Bonded seal s</li> </ul>		imum friation					
shifting in a gl	ass-like finishe	ed bore.			0.74	3	2
Pilot with bala	nced poppet,	high flow; short			100	31	7
and consistent	response time	es.			A		
					20	3	
					01	5	2
HOW TO ORD	ER					6	7
INGLE PRESS	URF MODE	TS.				6	0
Port size	Pilot air	5/2	5/2	5/3	5/3	5/3	
		Single operator	Double operator	Closed center	Open center	Pressure center	7
		B A A	B B A A AZI	B BA A	B A A A		6
		EB IN EA	EB IN EA	EB IN EA	EB IN EA	EB IN EA	
alve less base		92B-ABA-000-DM-D <b>xxx-xxx</b>	92B-BBA-000-DM-D <b>xxx-xxx</b>	92B-EBA-000-DM-D <b>xxx-xxx</b>	92B-FBA-000-DM-D <b>xxx-xxx</b>	92B-GBA-000-DM-Dxxx-xxx	
1/8" NPTF		92B-ABA-AAG-DM-Dxxx-xxx	92B-BBA-AAG-DM-Dxxx-xxx	92B-EBA-AAG-DM-D <b>xxx-xxx</b>	92B-FBA-AAG-DM-Dxxx-xxx	92B-GBA-AAG-DM-Dxxx-xxx	2
1/4" NPTF	Internal	92B-ABA-BAG-DM-Dxxx-xxx	92B-BBA-BAG-DM-Dxxx-xxx	92B-EBA-BAG-DM-Dxxx-xxx	92B-FBA-BAG-DM-Dxxx-xxx	92B-GBA-BAG-DM-Dxxx-xxx	7
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-Dxxx-xxx	92B-BBA-AAH-DM-Dxxx-xxx	92B-EBA-AAH-DM-Dxxx-xxx	92B-FBA-AAH-DM-Dxxx-xxx		8P
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-Dxxx-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	8
UAL PRESSU	RE MODELS	(REQUIRE SANDWIC	h regulator – See	"REGULATORS" SEC	TION)		
Port size	•	Pilot air	Sinc	5/2 gle operator		5/2 e operator	00
			2	B A	R .B	A	
			ID		<u> </u>	9)	2
Valve less b	ase			A-000-DM-DXXX-XXX		KH INA IO-DM-DXXX-XXX	
1/8" NP1				-AAG-DM-Dxxx-xxx		G-DM-Dxxx-xxx	2
1/4" NP1		Internal	92B-CBA	-BAG-DM-Dxxx-xxx		G-DM-Dxxx-xxx	3
3/8" NP1	TF.		92B-CBA-CAG-DM-DXXX-XXX		92B-DBA-CAG-DM-D <b>xxx-xxx</b>		0 0
1/8" NP	TF .		92B-CBA	-AAH-DM-D <b>xxx</b> - <b>xxx</b>	92B-DBA-AA	rH-DM-Dxxx-xxx	
1/4" NP	ſF	External	92B-CBA	A-BAH-DM-D <b>xxx-xxx</b>	92B-DBA-BA	H-DM-DXXX-XXX	0 0
3/8" NP	TF .		92B-CBA	-CAH-DM-D <b>xxx-xxx</b>	92B-DBA-CA		0 1
OLEVIOID OF	DED ATOR -			VVV*	Above models are	shown with side ports.	0 2
OLENOID OF	LKAIUK >		DM-D <u>xxx</u> -	<del>^</del>		IS	0 3
				4		10	-
XX Volt	age	X Wire	elength	X Manual oper	rator XX E	lectrical connection	
<b>JA</b> 110 /	50, 120/60 (2.	9W) <b>A</b> 18" (F	lying leads)	<ol> <li>Non-locking reces</li> </ol>	sed BM Fl	ying leads	
	50, 240/60 (2.9 0 (2.9W)	9W) <u>B</u> 24" (F J Conne	lying leads) ector	2 Locking recessed		ying leads with diode ying leads with M.O.V.	
<b>FB</b> 24 VD	C (1.8W)				<b>BG</b> FI	ying leads with ground	
	C (5.4W) C (12.7W)					ectangular connector ectangular connector with light	
24 40	~ (12./ YY)					quare connector with light	

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Rectangular connector with light Square connector

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





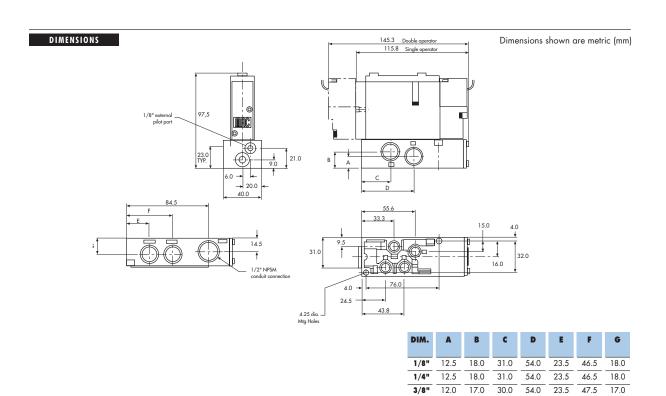


Compressed air, vacuum, inert gases Fluid: Pressure range: Internal pilot: 20 to 120 PSI 3 position: 35 to 120 PSI External pilot : vacuum to 120 PSI 3 position: 35 to 120 PSI Lubrication: Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Filtration: Temperature range:  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ 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 Voltage range: -15% to +10% of nominal voltage Protection: Consult factory ~Inrush 7.6 VA Power: Holding: 4.8 VA = 1.8 to 12.7 W24V=/5.4W Response times: 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.





5/2, 5/3		1/0// 1/0//				
		1/8" - 1/4" - 3	3/8" 1.2 C <sub>V</sub>		Sub-base "plug-in"	
OPERATIONAL BE	NEFITS				5.45	33
. The 4-way pil	ot develops mo	ximum shifting				34
	g available. ol, immune to provides high				A	36
<ul> <li>Short stroke w</li> <li>Bonded seal s</li> <li>shifting in a g</li> </ul>						32
. Pilot with bald		high flow; short				37
ana consision	r response mine				100	38
					0	52
					6)	
HOW TO ORI	DER					67
SINGLE PRESS	SURE MODE	LS				69
Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 5/3 Open center Pressure of	
		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 B A A A A A A A A A A A A A A A A A A	B B A B A B B A B B A B B B A B B B B A B	46
Valve less base	•	92B-AAA-000-DM-D <b>xx</b> P- <b>xxx</b>	92B-BAA-000-DM-D <b>xx</b> P- <b>xxx</b>	92B-EAA-000-DM-D <b>xx</b> P- <b>xxx</b>	92B-FAA-000-DM-D <i>xx</i> P- <i>xxx</i> 92B-GAA-000-DM	1-DxxP-xxx
1/8"	_	92B-AAA-AAA-DM-D <b>xx</b> P- <b>xxx</b>	92B-BAA-AAA-DM-D <i>xx</i> P- <i>xxx</i>	92B-EAA-AAA-DM-D <b>xx</b> P- <b>xxx</b>	92B-FAA-AAA-DM-D <b>xxP-xxx</b> 92B-GAA-AAA-DM	A-DxxP-xxx 42
1/4"	Internal	92B-AAA-BAA-DM-DxxP-xxx	92B-BAA-BAA-DM-DxxP-xxx	92B-EAA-BAA-DM-D <b>xx</b> P- <b>xxx</b>	92B-GAA-BAA-DM	
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	
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	
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	
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	48
DUAL PRESSU	re models	(REQUIRE SANDWIC	h regulator – See	"REGULATORS" SEC	TION)	
Port siz	е	Pilot air	e:	5/2	5/2	400
			Sing	gle operator	Double operator	700
			B □			92
Valve less	hase			4-000-DM-D <b>xx</b> P- <b>xxx</b>	92B-DAA-000-DM-D <b>xx</b> P- <b>xxx</b>	
1/8"				A-AAA-DM-DxxP-xxx	92B-DAA-AAA-DM-DxxP-xxx	
1/4"		Internal		A-BAA-DM-DxxP-xxx	92B-DAA-BAA-DM-DXXP-XXX	93
3/8"				A-CAA-DM-DxxP-xxx	92B-DAA-CAA-DM-D <b>xx</b> P- <b>xxx</b>	160.01
1/8"				A-AAD-DM-D <b>xx</b> P- <b>xxx</b>	92B-DAA-AAD-DM-D <b>xx</b> P- <b>xxx</b>	ISO 01
1/4"		External	92B-CAA	A-BAD-DM-D <b>xx</b> P- <b>xxx</b>	92B-DAA-BAD-DM-D <b>xx</b> P- <b>xxx</b>	——— ISO 02
3/8"			92B-CA/	A-CAD-DM-DxxP-xxx	92B-DAA-CAD-DM-D <b>xx</b> P- <b>xxx</b>	ISO 1
OLENOID O	PERATOR ➤		DM-D XX P	-XXX ·	Above models are shown with si	150 2
						ISO 3
XX Vol	tage		X Manual opera	ator	XX Electrical connection	
<b>JA</b> 110,	/50, 120/60 (2.		<ol> <li>Non-locking recess</li> </ol>		DM Plug-in	
	50, 240/60 (2.9 0 (2.9W)	PW)	2 Locking recessed		DN Plug-in with diode DP Plug-in with M.O.V.	
FB 24 VI	DC (1.8W)			-	DG Plug-in with ground	
	DC (5.4W) DC (12.7W)				DJ Plug-in with M.O.V. & ground DH Plug-in with diode & ground	

Plug-in with diode & ground







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:  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ 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 Voltage range: -15% to +10% of nominal voltage Protection: Consult factory ~Inrush 7.6 VA Power: Holding: 4.8 VA = 1.8 to 12.7 W24V=/5.4W Response times: 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-AA (sgl. operator), FC92B-BA (dbl. operator)

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

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

#### DIMENSIONS

Dimensions shown are metric (mm) 145.3 Double operator 115.3 Single operator 33.3 4.0 4.25 dia Mtg Holes DIM. G 1/8" 12.5 18.0 31.0 54.0 23.5 18.0 46.5 1/4" 12.5 18.0 31.0 54.0 23.5 18.0 46.5 3/8" 12.0 17.0 30.0 54.0 23.5 47.5 17.0



24 VDC (12.7W)

\* Other options available, see page 309. End plate kit required (port size 3/8"):

End plate kit required (port size 3/8"):

M-92004-01-01 (internal pilot)
M-92004-02-01 (External pilot)
Other options available for the 92 series valves, see page 155.

Dark sins

# Direct solenoid and solenoid pilot operated valves

0--:--

Function		Port size	Flow (Max)	N	Manifold mounting	Series
5/2, 5/3		1/4" - 3/8"	1.2 C <sub>V</sub>		Sub-base non "plug-in"	
OPERATIONAL BEN	NEFITS					33
1. The 4-way pilo		aximum shifting			-	34
forces both wo 2. Memory spring	,				400	
Balanced spoo						36
I. Short stroke wi	ith high flow.					
<ul> <li>Bonded seal sp shifting in a gl</li> </ul>						32
. Pilot with bala	nced poppet,	high flow; short				37
and consistent . Wiping effect					3.3	38
B. Long service li	fe.	-			- 3 5 V	
HOW TO ORD	ED					52
HOW TO ORD						67
SINGLE PRESS	ure mode	LS				69
Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 5/ Open center Pressure	
		B B A A	B B A A A	B BA A	B B A A B B B MANDE NOTE NOTE NOTE NOTE NOTE NOTE NOTE NOT	46
		EB IN EA	EB IN EA	B B A SIMM	B B A B B B B B B B B B B B B B B B B B	TIV /T
Valve less base		92B-ABA-000-DM-D <b>xxx-xxx</b>	92B-BBA-000-DM-D <b>xxx-xxx</b>	<del> </del>	92B-FBA-000-DM-D <b>xxx-xxx</b> 92B-GBA-000-I	
1/4" NPTF	Internal	92B-ABA-BJG-DM-Dxxx-xxx	92B-BBA-BJG-DM-Dxxx-xxx	<u> </u>	92B-FBA-BJG-DM-DXXX-XXX 92B-GBA-BJG-I	
3/8" NPTF		92B-ABA-CJG-DM-Dxxx-xxx	92B-BBA-CJG-DM-Dxxx-xxx	92B-EBA-CJG-DM-Dxxx-xxx	92B-FBA-CJG-DM-DXXX-XXX 92B-GBA-CJG-I	DM-DXXX-XXX 47
UAL PRESSUR	RE MODELS	(REQUIRE SANDWIC	h regulator – Se	e "regulators" sect	TION)	48P
Port size	•	Pilot air	e:-	5/2 ngle operator	5/2 Double operator	401
			Sir	B A .	Double operator	48
			B C			40
Valve less b	ase			NB EXH INA SA-000-DM-DXXX-XXX	92B-DBA-000-DM-D <i>xxx-xxx</i>	
1/4" NP1	rF	Internal	92B-CE	BA-BJG-DM-D <b>xxx-xxx</b>	92B-DBA-BJG-DM-Dxxx-xxx	400
3/8" NP1	TF.		92B-CE	A-CJG-DM-D <b>xxx-xxx</b>	92B-DBA-CJG-DM-Dxxx-xxx	side posts 92
OLENOID OF	PED ΔΤΩD ►		DM-D XXX	_vvv	Above models are shown with	side ports.
JOLLINOID OF	LKATOK			<u> </u>		
				<u>ነ</u>		93
XX Volte			length	X Manual oper		150.01
	50, 120/60 (2. 60, 240/60 (2.9		ying leads) ector	<ul><li>Non-locking recess</li><li>Locking recessed</li></ul>	ed KA Square connector KD Square connector	
JC 24/60	(2.9W)			<u> </u>	JB Rectangular conn	ector
	C (1.8W) C (5.4W)				BA Flying leads	with light ISO 1
	C (12 7W)	<del></del>			BK Flying leads with d	iode ISO 2

Cla... [Ma...]

Flying leads Flying leads with diode

**ISO 2** 

**ISO 3** 







Compressed air, vacuum, inert gases Fluid: 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:  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  (-18°C to +50°C) Flow: 1/4": (1.1 C<sub>v</sub>) - 3/8": (1.2 C<sub>v</sub>) 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 W24V=/5.4W Response times: Energize: 8 ms De-energize: 7 ms 120/60 Energize: 7-13 ms De-energize: 12-20 ms

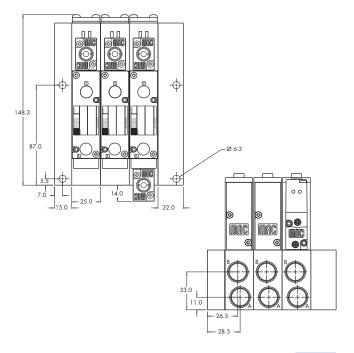
Options : • BSPP threads • Sandwich flow controls: FC92B-CA

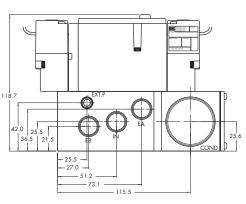
Spare parts : • Pilot valve: DM-Dxxx-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base 16543

• Inlet/Exhaust isolator disc: N-92018.

#### DIMENSIONS

Dimensions shown are metric (mm)







unction	Port size	Flow (Max)	Man	nifold mounting	Series
5/2, 5/3	1/4" - 3/8"	1.2 C <sub>v</sub>		iub-base plug-in"	
OPERATIONAL BENEFITS				250	33
. The 4-way pilot develo	ops maximum shifting			40	34
forces both ways. 2. Memory spring availa	ble			100	
3. Balanced spool, immu	ne to variations of			1000	36
pressure, also provide 4. Short stroke with high					4
5. Bonded seal spool wit	h minimum friction,				32
shifting in a glass-like 6. Pilot with balanced po					
and consistent respons	se times.			2	37
<ol> <li>Wiping effect eliminat</li> <li>Long service life.</li> </ol>	es sticking.			200	38
				-	52
HOW TO ORDER				-	67
SINGLE PRESSURE M	ODELS				69
Port size Pilot	t air 5/2	5/2	5/3	5/3	5/3 44
	Single operator	Double operator	Closed center	Open center	Pressure center
	B A A				## <b>46</b>
w	EB IN EA	EB IN EA	EB IN EA	EB IN EA	EB IN EA
Valve less base  1/4" NPTF Inter	92B-AAA-000-DM-DxxP-xxx 92B-AAA-BJA-DM-DxxP-xxx	92B-BAA-000-DM-DxxP-xxx 92B-BAA-BJA-DM-DxxP-xxx		2B-FAA-000-DM-DxxP-xxx 2B-FAA-BJA-DM-DxxP-xxx	92B-GAA-000-DM-DxxP-xxx 92B-GAA-BJA-DM-DxxP-xxx
				2B-FAA-CJA-DM-DXXP-XXX	
3/8" NPTF	92B-AAA-CJA-DM-DxxP-xxx	92B-BAA-CJA-DM-D <b>xx</b> P- <b>xxx</b>	92B-EAA-CJA-DM-DxxP-xxx 92	2B-FAA-CJA-DM-D <b>xx</b> P- <b>xxx</b>	92B-GAA-CJA-DM-DxxP-xxx
3/8" NPTF  DUAL PRESSURE MO	928-AAA-CJA-DM-DXXP-XXX DELS (REQUIRE SANDWIC	92B-BAA-CJA-DM-D <b>xx</b> P- <b>xxx</b>	928-EAA-CJA-DM-DXXP-XXX 92 "REGULATORS" SECTIO	2B-FAA-CJA-DM-D <b>xx</b> P- <b>xxx</b> DN)	92B-GAA-CJA-DM-DxxP-xxx 47
3/8" NPTF	92B-AAA-CJA-DM-DxxP-xxx	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE	92B-EAA-CJA-DM-DxxP-xxx 92	2B-FAA-CJA-DM-DxxP-xxx DN)	92B-GAA-CJA-DM-DxxP-xxx
3/8" NPTF  DUAL PRESSURE MO	928-AAA-CJA-DM-DXXP-XXX DELS (REQUIRE SANDWIC	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE	928-EAA-CJA-DM-DXXP-XXX 92 "REGULATORS" SECTION 5/2	2B-FAA-CJA-DM-DxxP-xxx DN)	92B-GAA-CJA-DM-DxxP-xxx 47 48P
3/8" NPTF  DUAL PRESSURE MO	928-AAA-CJA-DM-DXXP-XXX DELS (REQUIRE SANDWIC	92B-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE Sing	928-EAA-CJA-DM-DXXP-XXX 92 "REGULATORS" SECTION 5/2	2B-FAA-CJA-DM-DxxP-xxx DN)	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  48
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base	92B-AAA-CJA-DM-DXXP-XXX  DELS (REQUIRE SANDWIC  Pilot air	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR — SEE Sing BL INB 928-CAA	92B-EAA-CJA-DM-DxxP-xxx 92  "REGULATORS" SECTION  5/2  gle operator  8 A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  BBB B INB EX  92B-DAA-00	928-GAA-CJA-DM-DxxP-xxx  47  48P  5/2 operator A H MA 0-DM-DxxP-xxx  48
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base  1/4" NPTF	928-AAA-CJA-DM-DXXP-XXX DELS (REQUIRE SANDWIC	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR — SEE Sing BULL INB 928-CAA 928-CAA	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION 5/2 gle operator  8	2B-FAA-CJA-DM-DxxP-xxx  DN)    Double	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator A H NA H NA D-DM-DxxP-xxx  4-DM-DxxP-xxx  400
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base	92B-AAA-CJA-DM-DXXP-XXX  DELS (REQUIRE SANDWIC  Pilot air	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR — SEE Sing BULL INB 928-CAA 928-CAA	92B-EAA-CJA-DM-DXXP-XXX  "REGULATORS" SECTION  5/2  ple operator  BANGE AND	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  ### P2B-DAA-00  92B-DAA-BJ/ 92B-DAA-CJ/	928-GAA-CJA-DM-DxxP-xxx  47  48P  5/2 operator  A-DM-DxxP-xxx  4-DM-DxxP-xxx  4-DM-DxxP-xxx
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base  1/4" NPTF	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR — SEE Sing BULL INB 928-CAA 928-CAA	92B-EAA-CJA-DM-DXXP-XXX  92B-EAA-CJA-DM-DXXP-XXX  1 REGULATORS SECTION  5/2  1 le operator  2 A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  ### P2B-DAA-00  92B-DAA-BJ/ 92B-DAA-CJ/	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator A H NA H NA D-DM-DxxP-xxx  4-DM-DxxP-xxx  400
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE Sing BL INB 928-CAA 928-CAA	92B-EAA-CJA-DM-DXXP-XXX  92B-EAA-CJA-DM-DXXP-XXX  1 REGULATORS SECTION  5/2  1 le operator  2 A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  ### P2B-DAA-00  92B-DAA-BJ/ 92B-DAA-CJ/	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  48  H HA  0-DM-DxxP-xxx  A-DM-DxxP-xxx  A-DM-DxxP-xxx side ports and no lights.
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE Sing BL INB 928-CAA 928-CAA	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION  5/2 gle operator  EXH INA	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  ### P2B-DAA-00  92B-DAA-BJ/ 92B-DAA-CJ/	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  48 0-DM-DxxP-xxx A-DM-DxxP-xxx A-DM-DxxP-xxx side ports and no lights.  93 nnection
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF  SOLENOID OPERATO  XX Voltage JA 110/50, 120,	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal  OR >	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE  Sing  928-CAA  928-CAA  928-CAA  DM-D XX P-  X Manual opera 1 Non-locking recesse	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION 5/2 gle operator 8 A A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  PDouble  P2B-DAA-O0  92B-DAA-O0  92B-DAA-CJA  92B-DAA-CJA  92B-DAA-CJA  Plug-in	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  A D-DM-DxxP-xxx  A-DM-DxxP-xxx  A-DM-DxxP-xxx side ports and no lights.  93 nnection  ISO 01
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF  SOLENOID OPERATO  XX Voltage JA 110 /50, 120, JB 220/50, 240/	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal  OR >  /60 (2.9W) 60 (2.9W)	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE Sing 928-CAA 928-CAA 928-CAA 928-CAA PARCOLOMBER  Manual opera	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION 5/2 gle operator 8 A A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  PD0  P0B-DAA-CJ  P1B-EX  92B-DAA-CJ  92B-DAA-CJ  P1B-EX  P1B-EX  92B-DAA-CJ  P1B-EX  P1B-	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  A-DM-DxxP-xxx  4-DM-DxxP-xxx  A-DM-DxxP-xxx side ports and no lights.  93 Innection  ISO 01
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF  SOLENOID OPERATO  XX Voltage  JA 110 /50, 120, JB 220/50, 240/ JC 24/60 (2.9W) FB 24 VDC (1.8W	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal  OR >  /60 (2.9W) //)	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE  Sing  928-CAA  928-CAA  928-CAA  DM-D XX P-  X Manual opera 1 Non-locking recesse	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION 5/2 gle operator 8 A A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  B B B S PACE  92B-DAA-00  92B-DAA-BJ/  92B-DAA-CJ/  sodels are shown with  XXX Electrical column  DN Plug-in with diode  DP Plug-in with diode  DP Plug-in with diode  DP Plug-in with groun  DB Plug-in with groun  DB Plug-in with groun  DB Plug-in with groun	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  A H MA 0-DM-DxxP-xxx A-DM-DxxP-xxx A-DM-DxxP-xxx side ports and no lights.  93 nnection  ISO 01 ISO 02 ISO 02
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF  SOLENOID OPERATO  XX Voltage  JA 110 /50, 120, JB 220/50, 240/ JC 24/60 (2.9W)  JB 24 VDC (1.8W)  DA 24 VDC (5.4W)	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal  OR >  /60 (2.9W) /0 (2.9W)	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE  Sing  928-CAA  928-CAA  928-CAA  DM-D XX P-  X Manual opera 1 Non-locking recesse	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION 5/2 gle operator 8 A A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  Property of the property	928-GAA-CJA-DM-DxxP-xxx  47 48P  5/2 operator  A-DM-DxxP-xxx  A-DM-DxxP-xxx  A-DM-DxxP-xxx side ports and no lights.  93 nnection  SV. nd V. & ground V. & ground V. & ground
3/8" NPTF  DUAL PRESSURE MO  Port size  Valve less base 1/4" NPTF 3/8" NPTF  SOLENOID OPERATO  XX Voltage  JA 110 /50, 120, JB 220/50, 240/ JC 24/60 (2.9W) FB 24 VDC (1.8W	92B-AAA-CJA-DM-DxxP-xxx  DELS (REQUIRE SANDWIC  Pilot air  Internal  OR >  //60 (2.9W) // // // // // // // // // // // // //	928-BAA-CJA-DM-DXXP-XXX CH REGULATOR – SEE  Sing  928-CAA  928-CAA  928-CAA  DM-D XX P-  X Manual opera 1 Non-locking recesse	92B-EAA-CJA-DM-DxxP-xxx 92 "REGULATORS" SECTION 5/2 gle operator 8 A A A A A A A A A A A A A A A A A A A	2B-FAA-CJA-DM-DXXP-XXX  DN)  Double  B B B S PACE  92B-DAA-00  92B-DAA-BJ/  92B-DAA-CJ/  sodels are shown with  XXX Electrical column  DN Plug-in with diode  DP Plug-in with diode  DP Plug-in with diode  DP Plug-in with groun  DB Plug-in with groun  DB Plug-in with groun  DB Plug-in with groun	928-GAA-CJA-DM-DxxP-xxx  47 48P  6/2 operator  A-DM-DxxP-xxx  A-DM-DxxP-xxx  A-DM-DxxP-xxx  side ports and no lights.  93 nnection  ISO 01 ISO 02 ISO 02 ISO 1







Compressed air, vacuum, inert gases Fluid: 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: 0°F to 120°F (-18°C to +50°C) Temperature range : Flow: 1/4":  $(1.1 C_v) - 3/8$ ":  $(1.2 C_v)$ Coil: Class A continuous duty, #22 AWG x 12 base leads Voltage range: -15% to +10% of nominal voltage Protection: Consult factory ~Inrush 7.6 VA Power: Holding: 4.8 VA = 1.8 to 12.7 W24V=/5.4W Response times: Energize: 8 ms De-energize: 7 ms 120/60 Energize: 7-13 ms De-energize: 12-20 ms

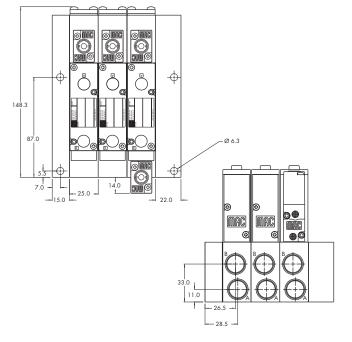
Options : • BSPP threads • Sandwich flow controls: FC92B-AA (sgl. operator), FC92B-BA (dbl. operator)

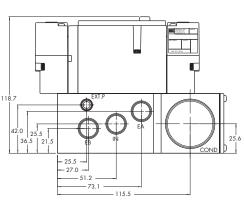
Spare parts : • Pilot valve: DM-DxxP-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base: 16543

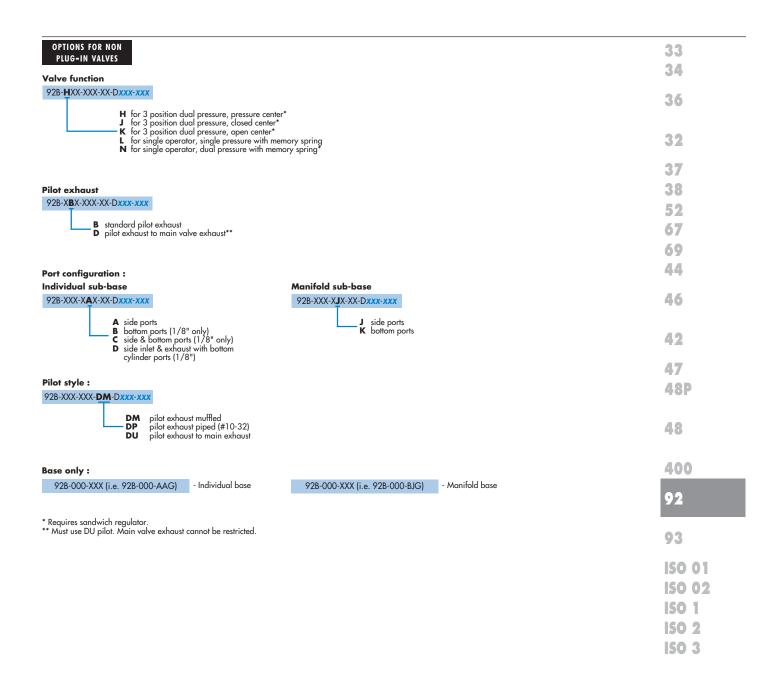
• Mounting screws valve to base (x2): 35050 • Inlet/Exhaust isolator disc: N-92018.

#### DIMENSIONS

Dimensions shown are metric (mm)







### OPTIONS FOR PLUG-IN VALVES Valve function 92B-**H**XX-XXX-XX-D**xx**P-**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 no light light(s) F suppression and blocking diode with light(s) H M.O.V. with light(s) Port configuration: Manifold sub-base Individual sub-base 92B-XXX-XAX-XX-DxxP-xxx 92B-XXX-XJX-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 external pilot no light external pilot single light 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-000-XXX (i.e. 92B-000-BJA) - Manifold base

(Note: bases are wired for double solenoid valves)

Base only:

92B-XXX-XXX-DM-DxxP-xxx

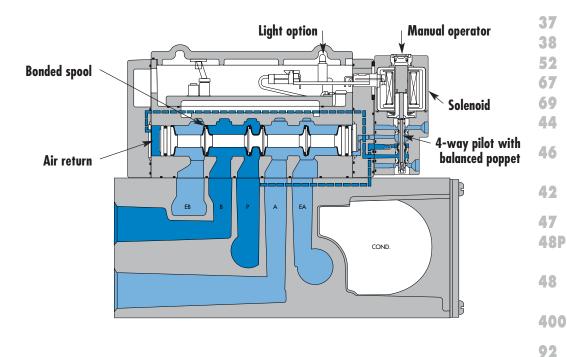
\* Requires sandwich regulator.
\*\* Must use DU pilot. Main valve exhaust cannot be restricted.

92B-000-XXX (i.e. 92B-000-AAA) - Individual base

P 12" leads
1 18" leads
2 24" leads
3 36" leads
4 48" leads
5 72" leads



# Inline Sub-base Sub-base "plug-in" Manifold mounting



#### **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.

Series

33 34

36

32

ISO 01

ISO 02

ISO 1

ISO 2

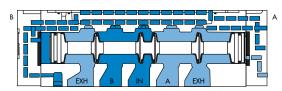
**ISO 3** 



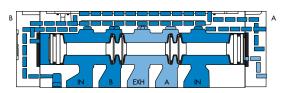




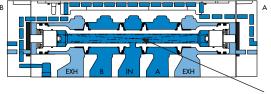
#### **SPOOL CONFIGURATIONS**



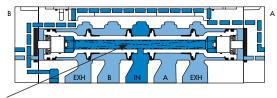
2 POSITION SINGLE PRESSURE SHOWN WITH "B" OPERATOR ENERGIZED



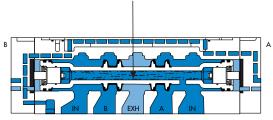
2 POSITION DUAL PRESSURE SHOWN WITH "B" OPERATOR ENERGIZED



3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER



**SPRING CENTERING** 

3 POSITION DUAL PRESSURE, PRESSURE CENTER

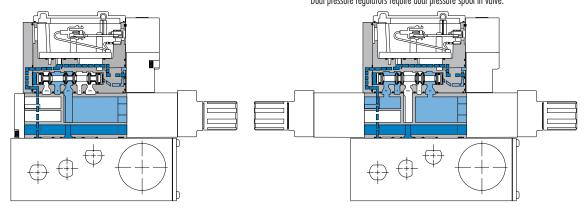
#### **REGULATOR CONFIGURATIONS**

#### 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**

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

#### **MANIFOLD WITH REGULATOR - DUAL PRESSURE**



Function		Port size		Flow (Max)	Individual moun	ting	Series
5/2, 5/3	3/8" - 1/2"		3.8 C <sub>V</sub>	Inline			
PERATIONAL BEN	IEFITS						33
. Unique patente						E .	34
burn-out proof  Balanced popp maximum shifti	solenoid opero pet 4-way pilot ng forces, pred	ation. valve provides cise					36
repeatability a . Air only return also available.	Optional men	nory spring is			-	40	32
<ul><li>Optional low v</li><li>1 watt.</li></ul>	vattage DC sol	enoid down to			6		37
<ol> <li>MAC spool an away contamination</li> </ol>		ation wipes tes sticking and					38
allows for use						0	<b>52</b>
HOW TO ORD	ER						67
SINGLE PRESSI	JRE MODEL	S					69
Port size	Pilot air	5/2 Single ope	rator	5/2 Double operator	5/3 Closed center	5/3 Open center	44
		12 2 4 D T V V T	14 471	12 2 4 14 3/1 315 T	12 24 14 MD 11 1 3 MM 17D T T T T T T T T T T T T T T T T T T T	12 4 14 307 315	46
3/8" NPTF	Internal	93A-AJ0-B0J-DM-I		93A-BJ0-B0J-DM-D <b>xxx-xxx</b>	93A-EJO-BOJ-DM-Dxxx-xxx	93A-FJO-BOJ-DM-D <b>xxx-xxx</b>	42
1/2" NPTF	External	93A-AJ0-C0J-DM- 93A-AJ0-B0K-DM-		93A-BJ0-C0J-DM-D <b>xxx-xxx</b> 93A-BJ0-B0K-DM-D <b>xxx-xxx</b>	93A-EJ0-C0J-DM-D <b>xxx-xxx</b> 93A-EJ0-B0K-DM-D <b>xxx-xxx</b>	93A-FJ0-C0J-DM-Dxxx-xxx 93A-FJ0-B0K-DM-Dxxx-xxx	7.4
3/8" NPTF 1/2" NPTF	External	93A-AJ0-C0K-DM-		93A-BJ0-COK-DM-DXXX-XXX	93A-EJO-COK-DM-DXXX-XXX	93A-FJ0-C0K-DM-D <i>xxx-xxx</i>	47
OUAL PRESSUR	E MODELS						48P
Port size		Pilot air	Sin	5/2 gle operator	5/2 Double operator	5/3 Pressure center	48
			12 D	315	12 4 14 JZ	12 2 4 14 14 MM / 1 T T T T T T T T T T T T T T T T T T	
3/8" NPT	F	Internal	93A-CJ	0-BOJ-DM-Dxxx-xxx	93A-DJ0-B0J-DM-D <b>xxx-xxx</b>	93A-HJO-BOJ-DM-D <b>xxx-xxx</b>	400
1/2" NPT		F. 1		O-COJ-DM-Dxxx-xxx	93A-DJ0-C0J-DM-Dxxx-xxx	93A-HJ0-C0J-DM-Dxxx-xxx	92
3/8" NPT 1/2" NPT		External		D-BOK-DM-DXXX-XXX D-COK-DM-DXXX-XXX	93A-DJ0-B0K-DM-Dxxx-xxx 93A-DJ0-C0K-DM-Dxxx-xxx	93A-HJ0-B0K-DM-Dxxx-xxx 93A-HJ0-C0K-DM-Dxxx-xxx	
SOLENOID OP				M-D <u><b>XXX</b>-<b>XXX</b></u>		, a cost on one of the	93
				══┸┹			ISO 01
XX Volte	age	Х	Wire leng	th X	Manual operator	XX Electrical connection	ISO 02
	0, 120/60	A	18" (Flying led		Non-locking recessed	KA Square connector	- ISO 1
JC 24/50	0, 240/60 , 24/60	B J	24" (Flying led Connector	nasj 2	Locking recessed	JB Square connector with light Rectangular connector	ISO 2
	C (1.8W) C (5.4W)					JD Rectangular connector with light BA Flying leads	ISO 3
	C (12.7W)				_	1 lyllig ledds	130 3

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

OPTIONS

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





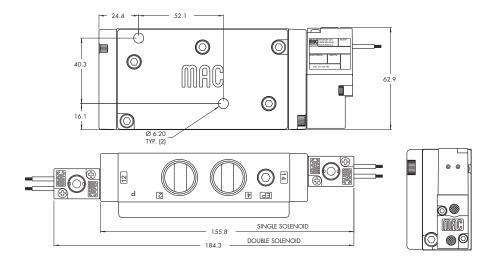


Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI
	External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration:	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow:	3.8 C <sub>v</sub>
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

Dimensions shown are metric (mm)





Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/4" - 3/8" - 1/2"	3.4 C <sub>v</sub>	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.



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 (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 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 B A B A B A B A B A B A B A B A B A B	B A A SIMM    T   T   T   T   T   T    EB IN EA
Valve less base		93A-ABA-000-DM-D <b>xxx-xxx</b>	93A-BBA-000-DM-D <b>xxx-xxx</b>	93A-EBA-000-DM-D <b>xxx-xxx</b>	93A-FBA-000-DM-D <b>xxx-xxx</b>
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-D <b>xxx-xxx</b>
1/2" NPTF		93A-ABA-CAG-DM-Dxxx-xxx	93A-BBA-CAG-DM-Dxxx-xxx	93A-EBA-CAG-DM-Dxxx-xxx	93A-FBA-CAG-DM-Dxxx-xxx
1/4" NPTF		93A-ABA-ABH-DM-Dxxx-xxx	93A-BBA-ABH-DM-Dxxx-xxx	93A-EBA-ABH-DM-Dxxx-xxx	93A-FBA-ABH-DM-Dxxx-xxx
3/8" NPTF	External	93A-ABA-BAH-DM-Dxxx-xxx	93A-BBA-BAH-DM-Dxxx-xxx	93A-EBA-BAH-DM-D <b>xxx-xxx</b>	93A-FBA-BAH-DM-D <b>xxx-xxx</b>
1/2" NPTF		93A-ABA-CAH-DM-Dxxx-xxx	93A-BBA-CAH-DM-Dxxx-xxx	93A-EBA-CAH-DM-Dxxx-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	B A A A A A A A A A A A A A A A A A A A
Valve less base		93A-CBA-000-DM-D <b>xxx-xxx</b>	93A-DBA-000-DM-D <b>xxx-xxx</b>	93A-HBA-000-DM-D <b>xxx-xxx</b>
1/4" NPTF		93A-CBA-ABG-DM-Dxxx-xxx	93A-DBA-ABG-DM-Dxxx-xxx	93A-HBA-ABG-DM-D <i>xxx-xxx</i>
3/8" NPTF	Internal	93A-CBA-BAG-DM-Dxxx-xxx	93A-DBA-BAG-DM-Dxxx-xxx	93A-HBA-BAG-DM-D <i>xxx-xxx</i>
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-Dxxx-xxx	93A-DBA-ABH-DM-Dxxx-xxx	93A-HBA-ABH-DM-Dxxx-xxx
3/8" NPTF	External	93A-CBA-BAH-DM-Dxxx-xxx	93A-DBA-BAH-DM-Dxxx-xxx	93A-HBA-BAH-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CAH-DM-Dxxx-xxx	93A-DBA-CAH-DM-Dxxx-xxx	93A-HBA-CAH-DM-Dxxx-xxx

SOLENOID OPERATOR >
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				<del></del>	•		
				<b>─</b> │ ┬ │ <del>┖</del>			
				\			
XX	Voltage	X	Wire length	Х	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			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\*

<sup>\*</sup> 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 µ

iliration: 40 p

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

Flow: 1/4", 3/8": (3.0 C<sub>V</sub>) - 1/2": (3.4 C<sub>V</sub>)

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 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)

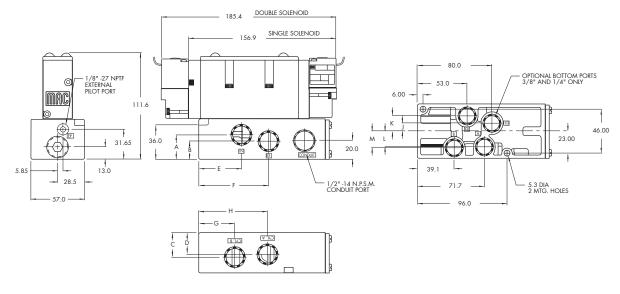
Spare parts : • Pilot valve: DM-Dxxx-xxx • Valve to base pressure seal: 16622

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

• Pilot valve mounting screws (x2): 35069

### DIMENSIONS

Dimensions shown are metric (mm)



7.0

8.5

147

16.2

16.5

15.0

16.5

unction		Port size		Flow (Max)	Individual mounting		Series
5/2, 5/3		1/4" - 3/8	3" - 1/2"	3.4 C <sub>v</sub>	Sub-base "plug-in"		
PERATIONAL BEN	IEFITS					an management	33
Unique patente	ed Macsolenoi	d® for fastest				1000	34
possible respor	nse times and	virtually			-		34
burn-out proof: Balanced popp					4		36
maximum shifti							
repeatability a		•				1	
Air only return. also available.		nory spring is					32
Optional low w		enoid down to					37
1 watt. MAC spool and	d boro combin	ation wines					
		tes sticking and				1	38
allows for use o							<b>52</b>
HOW TO ORD	ER						67
		S (1/4" MODELS	ADE DOT	TOM DODTED!			69
			AKE BUT	· · · · · · · · · · · · · · · · · · ·	= /0	E /0	
Port size	Pilot air	5/2 Single oper	ator	5/2 Double operator	5/3 Closed center	5/3 Open center	44
		B B A	<u>A</u>	B B A A	B BA A	B B A A	46
		EB IN EA	<u> </u>	ER IN EA			-10
alve less base		93A-AAA-000-DM-D.	xxP-xxx	93A-BAA-000-DM-DxxP-xxx	93A-EAA-000-DM-DxxP-xxx	93A-FAA-000-DM-DxxP-xxx	
1/4" NPTF		93A-AAA-ABA-DM-D	DxxP-xxx 93A-BAA-ABA-DM-DxxP-xxx		93A-EAA-ABA-DM-DxxP-xxx	93A-FAA-ABA-DM-DxxP-xxx	42
3/8" NPTF	Internal	93A-AAA-BAA-DM-D	xxP-xxx	93A-BAA-BAA-DM-DxxP-xxx	93A-EAA-BAA-DM-DxxP-xxx	93A-FAA-BAA-DM-DxxP-xxx	
1/2" NPTF		93A-AAA-CAA-DM-D	xxP-xxx	93A-BAA-CAA-DM-D <b>xx</b> P- <b>xx</b> )	93A-EAA-CAA-DM-D <b>xx</b> P- <b>xxx</b>	93A-FAA-CAA-DM-D <b>xx</b> P- <b>xxx</b>	47
1/4" NPTF		93A-AAA-ABD-DM-D	xxP-xxx	93A-BAA-ABD-DM-DxxP-xxx	93A-EAA-ABD-DM-D <b>xx</b> P- <b>xxx</b>	93A-FAA-ABD-DM-DxxP-xxx	48P
3/8" NPTF	External	93A-AAA-BAD-DM-D	xxP-xxx	93A-BAA-BAD-DM-DxxP-xxx	93A-EAA-BAD-DM-D <b>xx</b> P- <b>xxx</b>	93A-FAA-BAD-DM-DxxP-xxx	
1/2" NPTF		93A-AAA-CAD-DM-D	VVD. VVV	DON DAY CAD DIY DAND AND	001 511 015 5115 5		
			*******	93A-BAA-CAD-DM-DxxP-xxx	93A-EAA-CAD-DM-DxxP-xxx	93A-FAA-CAD-DM-DxxP-xxx	40
UAL PRESSUR	E MODELS	require sandw			TORS" SECTION (1/4" MODI		48
Port size		REQUIRE SANDW	VICH REGU	JLATOR, SEE "REGULA 5/2	TORS" SECTION (1/4" MODE	ELS ARE BOTTOM PORTED)  5/3	
			VICH REGU	JLATOR, SEE "REGULA	tors" section (1/4" mode	5/3 Pressure Center B BA A	48 400
			VICH REGU Sing	JLATOR, SEE "REGULA 5/2 gle operator	TORS" SECTION (1/4" MODI	5/3 Pressure Center	
			VICH REGU Sing	JLATOR, SEE "REGULA 5/2 gle operator  B A A A  RE EXH INA	TORS" SECTION (1/4" MODI	FLS ARE BOTTOM PORTED)  5/3  Pressure Center  B A A A A A A A A A A A A A A A A A A	400
Port size	ase		VICH REGU Sing B B B B B B B B B B B B B B B B B B B	JLATOR, SEE "REGULA 5/2 gle operator	TORS" SECTION (1/4" MODI	5/3 Pressure Center	400 92
Port size	ase F		Sing B B 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  B A A A A-000-DM-DXXP-XXX	TORS" SECTION (1/4" MODE  5/2  Double operator  B B A A A A A A A A A A A A A A A A A	FLS ARE BOTTOM PORTED)  5/3  Pressure Center  B A A A A A A A A A A A A A A A A A A	400
Port size  Valve less be 1/4" NPT	ase F	Pilot air	Sing B 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  B A A A A A A A A A A A A A A A A A A	TORS" SECTION (1/4" MODE  5/2  Double operator  BENTIAN  93A-DAA-000-DM-DXXP-XXX  93A-DAA-ABA-BM-DXXP-XXX	Pressure Center  B A A A A B A DM-D XXP-XXX  93A-HAA-ABA-DM-D XXP-XXX	400 92 93
Valve less be 1/4" NPT 3/8" NPT	ase F F	Pilot air	Sing \$ 19 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  RE EXH INA  A-000-DM-DXXP-XXX  A-BAA-DM-DXXP-XXX  A-BAA-DM-DXXP-XXX	TORS" SECTION (1/4" MODE  5/2  Double operator  B B A A A A A A A A A A A A A A A A A	Pressure Center  B B A M M M M M M M M M M M M M M M M M	400 92 93 ISO 01
Valve less bit 1/4" NPT 3/8" NPT 1/2" NPT	use F	Pilot air	Sing 8 B 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  RE EXH INA  A-000-DM-DxxP-xxx  A-ABA-DM-DxxP-xxx  A-BAA-DM-DxxP-xxx  A-CAA-DM-DxxP-xxx	TORS" SECTION (1/4" MODE  5/2  Double operator  B B A A A A A A A A A A A A A A A A A	Pressure Center  B B A M M M M M M M M M M M M M M M M M	400 92 93 ISO 01 ISO 02
Valve less be 1/4" NPT 3/8" NPT 1/2" NPT 1/4" NPT	ase FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Pilot air	\$ing \$3A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  B A J J J J J J J J J J J J J J J J J J	TORS" SECTION (1/4" MODE  5/2  Double operator  B B A A A A A A A A A A A A A A A A A	Pressure Center  B B A A A A ABA-DM-DXXP-XXX  93A-HAA-BAA-DM-DXXP-XXX  93A-HAA-BAB-DM-DXXP-XXX  93A-HAA-BAB-DM-DXXP-XXX  93A-HAA-BAB-DM-DXXP-XXX	400 92
Valve less bit 1/4" NPT 3/8" NPT 1/2" NPT 1/2" NPT 1/2" NPT	ase F F F F F	Pilot air	Sing 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  B A A A A A A A A A A A A A A A A A A	TORS" SECTION (1/4" MODE  5/2  Double operator  93A-DAA-000-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX	Pressure Center  BANAMAN  Pressure Center  BANAMAN  93A-HAA-000-DM-DxxP-xxx  93A-HAA-BA-DM-DxxP-xxx  93A-HAA-BA-DM-DxxP-xxx  93A-HAA-BA-DM-DxxP-xxx  93A-HAA-BA-DM-DxxP-xxx	400 92 93 ISO 01 ISO 02
Valve less be 1/4" NPT 3/8" NPT 1/2" NPT 1/4" NPT 3/8" NPT	ase F F F F F	Pilot air	Sing 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  B A J J J J J J J J J J J J J J J J J J	TORS" SECTION (1/4" MODE  5/2  Double operator  93A-DAA-000-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX	Pressure Center  B A A A A A A A A A A A A A A A A A A	92 93 ISO 01 ISO 02 ISO 1 ISO 2
Valve less bit 1/4" NPT 3/8" NPT 1/2" NPT 1/2" NPT 1/2" NPT	ase F F F F F	Pilot air	Sing 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  B A A A A A A A A A A A A A A A A A A	TORS" SECTION (1/4" MODE  5/2  Double operator  93A-DAA-000-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX	Pressure Center  B A A A A A A A A A A A A A A A A A A	400 92 93 ISO 01 ISO 02 ISO 1
Valve less b 1/4" NPT 3/8" NPT 1/2" NPT 1/4" NPT 3/8" NPT 1/2" NPT CLENOID OP	ase F F F F ERATOR >	Internal  External	93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  RE EXH INA  A-000-DM-DXXP-XXX  A-ABA-DM-DXXP-XXX  A-BAA-DM-DXXP-XXX  A-BAD-DM-DXXP-XXX  A-BAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX	TORS" SECTION (1/4" MODE  5/2  Double operator  93A-DAA-000-DM-DxxP-xxx  93A-DAA-ABA-DM-DxxP-xxx  93A-DAA-BAA-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-CAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx	Pressure Center  B A A A A A A A A A A A A A A A A A A	92 93 ISO 01 ISO 02 ISO 1 ISO 2
Valve less bi 1/4" NPT 3/8" NPT 1/2" NPT 1/4" NPT 3/8" NPT 1/2" NPT 6OLENOID OP	use  F F F F F ERATOR ➤	Internal  External	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	JLATOR, SEE "REGULA  5/2 gle operator  B A A A A A A A A A A A A A A A A A A	TORS" SECTION (1/4" MODE  5/2  Double operator  93A-DAA-000-DM-DxxP-xxx  93A-DAA-BAA-DM-DxxP-xxx  93A-DAA-BAA-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx  93A-DAA-CAD-DM-DxxP-xxx  93A-DAA-BAD-DM-DxxP-xxx	Pressure Center  B A A A A A A A A A A A A A A A A A A	92 93 ISO 01 ISO 02 ISO 1 ISO 2
Valve less be 1/4" NPT 3/8" NPT 1/2" NPT 1/4" NPT 1/2" NPT 5OLENOID OP  XX Volte JA 110/5 JB 220/5 JC 24/50	ase F F F F ERATOR >	Internal  External  W)	93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA 93A-CA	JLATOR, SEE "REGULA  5/2 gle operator  RE EXH INA  A-000-DM-DXXP-XXX  A-ABA-DM-DXXP-XXX  A-BAA-DM-DXXP-XXX  A-BAD-DM-DXXP-XXX  A-BAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX  A-CAD-DM-DXXP-XXX	TORS" SECTION (1/4" MODE  5/2  Double operator  93A-DAA-000-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAA-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-CAD-DM-DXXP-XXX  93A-DAA-CAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-BAD-DM-DXXP-XXX  93A-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-BAD-DM-DXXP-XXX  93A-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-BAD-DM-DXXP-XXX  Pâx-DAA-BAD-DM-DXXP-XXX  Pâx-DAA-BAD-DM-DXXP-XXX  Pâx-DAA-BAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX  Pâx-DAA-CAD-DM-DXXP-XXX	Pressure Center  B. B. A. M.	92 93 ISO 01 ISO 02 ISO 1 ISO 2

<sup>\*</sup> Other options available, see page 309. Note: Ground required for 30 Volts or higher. 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

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

Filtration:

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

Flow: 1/4", 3/8": (3.0 C<sub>v</sub>) - 1/2": (3.4 C<sub>v</sub>)

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

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

Protection: Consult factory

~ Inrush 7.6 VA Power: 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)

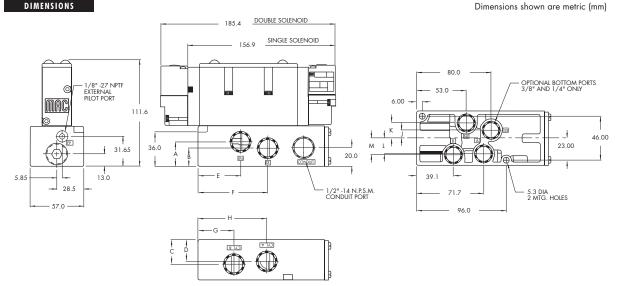
• Sandwich flow controls FC93A-AA (screwdriver slot adjustment) FC93A-AB (locking knob adjustment)

• 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



14.7

16.2

15.0

16.5

Function	Port size	Floш (Max)	Manifold mounting	Series
5/2, 5/3	3/8" - 1/2"	3.8 C <sub>V</sub>	Sub-base non "plug-in"	
OPERATIONAL BENEFITS				33
Unique patented Macs possible response time burn-out proof solenoic	s and virtually d operation.		- Fig.	34

- 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.

### HOW TO ORDER

### SINGLE PRESSURE MODELS

SINGLE FRESSO	JKL MODLI	٠			
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 B B IN EA	B B A A A A A EB 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
Valve less base		93A-ABA-000-DM-D <b>xxx-xxx</b>	93A-BBA-000-DM-D <b>xxx-xxx</b>	93A-EBA-000-DM-D <b>xxx-xxx</b>	93A-FBA-000-DM-D <b>xxx-xxx</b>
3/8" NPTF	Internal	93A-ABA-BJG-DM-Dxxx-xxx	93A-BBA-BJG-DM-Dxxx-xxx	93A-EBA-BJG-DM-D <b>xxx-xxx</b>	93A-FBA-BJG-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CJG-DM-Dxxx-xxx	93A-BBA-CJG-DM-Dxxx-xxx	93A-EBA-CJG-DM-Dxxx-xxx	93A-FBA-CJG-DM-Dxxx-xxx
3/8" NPTF	External	93A-ABA-BJH-DM-D <b>xxx-xxx</b>	93A-BBA-BJH-DM-D <b>xxx-xxx</b>	93A-EBA-BJH-DM-Dxxx-xxx	93A-FBA-BJH-DM-D <b>xxx-xxx</b>
1/2" NPTF		93A-ABA-CJH-DM-D <b>xxx-xxx</b>	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
		B A A AZZI	B B A ST	B A A M
Valve less base		93A-CBA-000-DM-D <b>xxx-xxx</b>	93A-DBA-000-DM-D <i>xxx-xxx</i>	93A-HBA-000-DM-D <b>xxx-xxx</b>
3/8" NPTF	Internal	93A-CBA-BJG-DM-D <b>xxx-xxx</b>	93A-DBA-BJG-DM-D <b>xxx-xxx</b>	93A-HBA-BJG-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CJG-DM-Dxxx-xxx	93A-DBA-CJG-DM-D <b>xxx-xxx</b>	93A-HBA-CJG-DM-Dxxx-xxx
3/8" NPTF	External	93A-CBA-BJH-DM-D <b>xxx-xxx</b>	93A-DBA-BJH-DM-D <b>xxx-xxx</b>	93A-HBA-BJH-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CJH-DM-D <b>xxx-xxx</b>	93A-DBA-CJH-DM-D <b>xxx-xxx</b>	93A-HBA-CJH-DM-Dxxx-xxx

DM-D XXX-XXX\* SOLENOID OPERATOR ➤

				$T \mid$	-	_		
				_ '	٦			
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				KA	Square connector
FB	24 VDC (1.8W)		-				KD	Square connector with light
DA	24 VDC (5.4W)							

<sup>24</sup> VDC (12.7W)

DF

\* Other options available, see page 309. End plate kit 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 169.

36

32

37

38 **52** 

67 69

44 46

42

47

48P

48

400

92

93

**ISO 01** 

ISO 02

**ISO** 1

**ISO 2** 







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

Flow: 3/8": (3.4 C<sub>v</sub>) - 1/2": (3.8 C<sub>v</sub>)

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

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

Protection: Consult factory

~ Inrush 7.6 VA Holding: 4.8 VA Power:

= 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)

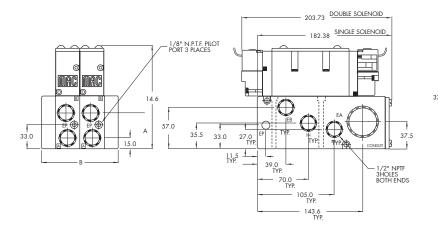
Spare parts : • Pilot valve: DM-Dxxx-xxx • Valve to base pressure seal: 16622

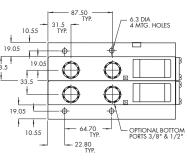
• Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249

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

DIMENSIONS

Dimensions shown are metric (mm)





Function		Port size		Flow (Max)	Manifold mount	ing	Series
5/2, 5/3		3/8" - 1	/ <b>2</b> "	3.8 C <sub>V</sub>	Sub-base "plug-in"		
OPERATIONAL BEN	IEFITS						33
I. Unique patente						100	34
possible responder burn-out proof  2. Balanced poppos maximum shifti repeatability and possible responder.	solenoid opera bet 4-way pilot ng forces, pre	ation. valve provides cise					36
<ol> <li>Air only return. also available.</li> </ol>	Optional mer						32
<ol> <li>Optional low v</li> <li>1 watt.</li> </ol>		lenoid down to				3000	37
5. MAC spool an	d bore combin	ation wipes			0	6	38
away contamir		tes sticking and					
		I VICE.					52
HOW TO ORD							67
SINGLE PRESSU		-					69
Port size	Pilot air	5/2 Single ope	rator	5/2 Double operator	5/3 Closed center	5/3 Open center	44
		B B A EB IN EA		B B A A A	B B A A GIVEN	B B A SIMA  EB IN EA	46
Valve less base		93A-AAA-000-DM-		93A-BAA-000-DM-D <b>xx</b> P- <b>xx</b>			42
3/8" NPTF	Internal	93A-AAA-CJA-DM-		93A-BAA-BJA-DM-DxxP-xxx 93A-BAA-CJA-DM-DxxP-xxx		93A-FAA-BJA-DM-DxxP-xxx 93A-FAA-CJA-DM-DxxP-xxx	74
1/2" NPTF 3/8" NPTF	External	93A-AAA-BJD-DM-		93A-BAA-BJD-DM-DXXP-XXX			47
1/2" NPTF	Exicitial	93A-AAA-CJD-DM-		93A-BAA-CJD-DM-DxxP-xxx			48P
DUAL PRESSUR	E MODELS	(require sand	WICH REC	GULATOR, SEE "REGULATOR"	ATORS" SECTION)		
Port size		Pilot air		5/2 igle operator	5/2 Double operator	5/3 Pressure Center	48
				B A A A A A A A A A A A A A A A A A A A	INB EXH INA	B A SZZ	400
Valve less b				AA-000-DM-DxxP-xxx	93A-DAA-000-DM-D <b>xx</b> P- <b>xxx</b>	93A-HAA-000-DM-DxxP-xxx	92
3/8" NPT		Internal		AA-BJA-DM-DxxP-xxx	93A-DAA-BJA-DM-DxxP-xxx	93A-HAA-BJA-DM-DxxP-xxx	
1/2" NPT 3/8" NPT		External		AA-CJA-DM-D <b>xx</b> P- <b>xxx</b> AA-BJD-DM-D <b>xx</b> P- <b>xxx</b>	93A-DAA-CJA-DM-DxxP-xxx 93A-DAA-BJD-DM-DxxP-xxx	93A-HAA-CJA-DM-DxxP-xxx 93A-HAA-BJD-DM-DxxP-xxx	00
1/2" NPT		LAIGHIUI		AA-CJD-DM-DxxP-xxx	93A-DAA-CJD-DM-DXXP-XXX	93A-HAA-CJD-DM-DXXP-XXX	93
					Ahove model numbers are s	hown with side ports without light.	ISO 01
SOLENOID OP	ERATOR >		Di	M-D <u><b>xx</b></u> P- <u>xx</u> x	*		ISO 01
XX Volte	nge		Х	Manual operator	XX Elec	trical connection	ISO 1
	0, 120/60 (2.9		1	Non-locking recessed	DM Plug-		<b>ISO 2</b>
	0, 240/60 (2.9° , 24/60 (2.9W)			Locking recessed		in with diode in with M.O.V.	<b>ISO 3</b>
JC 24/30							
FB 24 VD	C (1.8W) C (5.4W)	'	_			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

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

Filtration:

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

Flow: 3/8": (3.4 C<sub>v</sub>) - 1/2": (3.8 C<sub>v</sub>)

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

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

Protection: Consult factory

~ Inrush 7.6 VA Holding: 4.8 VA Power:

= 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)

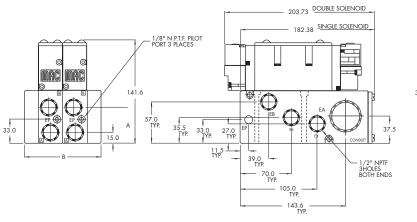
Spare parts : • Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622

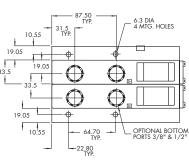
• Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249

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

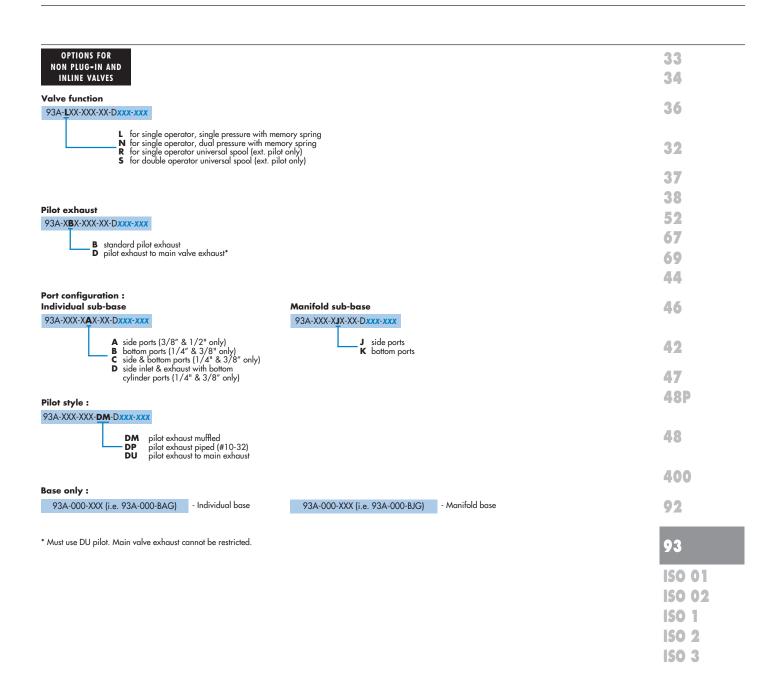
DIMENSIONS

Dimensions shown are metric (mm)





#	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





# 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-XXA-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 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

(Note: bases are wired for double solenoid valves)

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

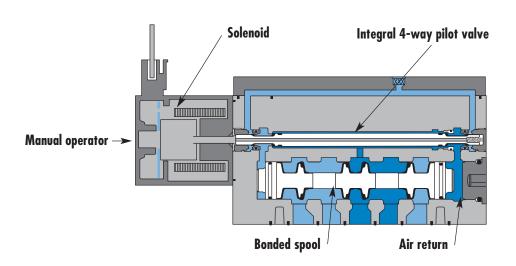
93A-000-XXX (i.e. 93A-000-BAA) - Individual base

Base only:

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



# Individual mounting Valve onlyNo base non "plug-in" Conform to 150 15407/1 Valve onlyNo base non "plug-in" Conform to 150 15407/1 33 Valve onlyNo base non "plug-in" Conform to 150 15407/1 33 34



## **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 01

44

46

42

47

**48P** 

48

400

92

93

**ISO 02** 

**ISO** 1

ISO 2



unction	Port size	Floш (Max)	Individual/Manifold	mounting	Series
5/2, 5/3	1/4"	1.0 C <sub>v</sub>	Valve only - No base non "plug-in" Conform to ISO 15407/1		
OPERATIONAL BENEFITS					33
. Unique patented MACsole shaped armature for faste	st possible response 7. Air o	nal or external pilot operation. nly return onal low wattage DC solenoid down t			34
times.  2. Balanced poppet 4-way p maximum shifting forces, and consistent operation.	ilot valve provides 1.0 \		io		36
away contamination, elim	inates sticking and				32
away contamination, elim allows for use on non-lube	inates sticking and e service.				32 37
allows for use on non-lube 1. Large spool area for maxi even at minimum operatin	inates sticking and e service. mum shifting forces g pressure.				37
away contamination, elim allows for use on non-lube Large spool area for maxi even at minimum operatin	inates sticking and e service. mum shifting forces g pressure. act package. Pilot		0		37 38
away contamination, elim allows for use on non-lube 4. Large spool area for maxi even at minimum operatin 5. Very high flow in a compo	inates sticking and e service. mum shifting forces g pressure. act package. Pilot		o s		37 38 52
away contamination, elim allows for use on non-lube 4. Large spool area for maxi even at minimum operatin 5. Very high flow in a compo valve and main valve in th HOW TO ORDER	inates sticking and e service. mum shifting forces g pressure. act package. Pilot ne same body.		0		37 38 52 67
away contamination, elim allows for use on non-lube 4. Large spool area for maxi even at minimum operatin 5. Very high flow in a compo valve and main valve in th HOW TO ORDER	inates sticking and e service. mum shifting forces g pressure. act package. Pilot tie same body.  DELS	5/2	5/3	5/3	37 38 52 67 69
away contamination, elim allows for use on non-lube 4. Large spool area for maxi even at minimum operatin 5. Very high flow in a compo valve and main valve in th HOW TO ORDER	inates sticking and e service. mum shifting forces g pressure. act package. Pilot ne same body.	5/2 Double operator	5/3 Closed center	5/3 Open center	37 38 52 67
away contamination, elim allows for use on non-lube I. Large spool area for maxi even at minimum operatin 5. Very high flow in a compo valve and main valve in th HOW TO ORDER	inates sticking and e service. mum shifting forces g pressure. act package. Pilot he same body.  DELS  5/2				37 38 52 67 69
away contamination, elim allows for use on non-lube 4. Large spool area for maxi even at minimum operatin 5. Very high flow in a compo valve and main valve in th HOW TO ORDER	inates sticking and e service.  mum shifting forces g pressure.  act package. Pilot le same body.  DELS  5/2  Single operator	Double operator	Closed center	Open center	37 38 52 67 69 44 46
away contamination, elim allows for use on non-lube 4. Large spool area for maxi even at minimum operatin 5. Very high flow in a compa valve and main valve in th HOW TO ORDER SINGLE PRESSURE MOI	inates sticking and e service.  mum shifting forces g pressure. act package. Pilot ne same body.  DELS  5/2  Single operator	Double operator	Closed center	Open center  14	37 38 52 67 69 44

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 		14 12 5 0 7 0 3
Internal from port #3	MV-A01A-ACMB-Jxxx-xxx	MV-A01A-ADMB-J <b>xxx-xxx</b>	MV-A01A-AHMB-J <b>xxx-xxx</b>
Internal from port #5	MV-A01A-ACMC-Jxxx-xxx	MV-A01A-ADMC-J <b>xxx-xxx</b>	MV-A01A-AHMC-Jxxx-xxx
External from "12" end	MV-A01A-ACMD-Jxxx-xxx	MV-A01A-ADMD-Jxxx-xxx	MV-A01A-AHMD-J <b>xxx-xxx</b>
External from "14" end	MV-A01A-ACME-Jxxx-xxx	MV-A01A-ADME-Jxxx-xxx	MV-A01A-AHME-J <b>xxx-xxx</b>

SOLENOID	OPERATOR >	٠
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				<sup>ያ</sup> ነ			
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

Other options available, see page 317.
 Note: - 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-Jxxxx-xxxx

- M Pilot exhaust muffled
  P Pilot exhaust piped #10-32
  U Pilot exhaust out main exhaust

48

400

92

93

ISO 01

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







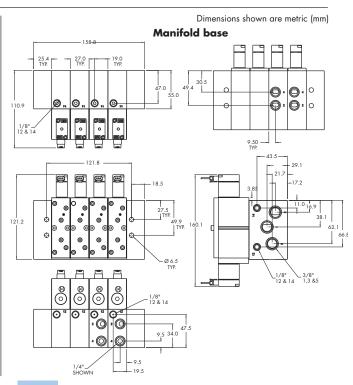
Fluid: Compressed air, vacuum, inert gases Pressure range: Internal Pilot - 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External Pilot: Vacuum to 120 PSI Pilot pressure: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI Not required, if used select a medium aniline point lubricant (between 180°F and 210°F) Lubrication: 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 Coil: Class A wires continuous duty, #22 AWG x 18 Voltage range: -15% to +10% of nominal voltage 1,0 to 5,4 W Power:

Options :

- Sandwich flow controls: FCA01A-AA (screwdriver slot adjustment).
- Sandwich pressure regulator, see ,Regulators' section

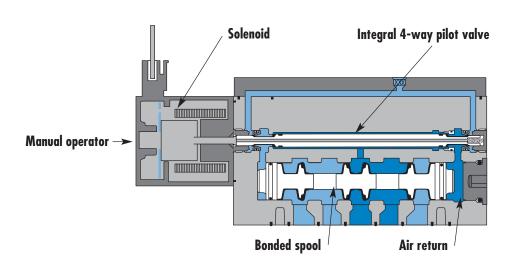
### DIMENSIONS

### Individual base





# Individual mounting Series Valve only – No base non "plug-in" Conform to ISO 15407/1 33 34 Manifold mounting 36 32



- 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.

# **SERIES FEATURES**

**ISO 01** ISO 02

44

46

42

47

**48P** 

48

400

92

93

**ISO** 1

**ISO 2** 

**ISO 3** 



Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	1/8"	0.43 C <sub>v</sub>	Valve only – No base non "plug-in" Conform to ISO 13407/1	

### OPERATIONAL BENEFITS

- 1. Unique patented MACsolenoid $^{\!\scriptscriptstyle \odot}$  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.



36 32

33

34

37 38

52 67

69

44

46

42 47

48P

48

400

92

93

ISO 01

**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 5 0 1 7 3	14 4 2 12 5 \(\vert_1\) \(\vert_2\) \(\vert_3\)	14 4 2 12 12 12 12 12 12 12 13 12 12 13 12 13 12 13 13 13 13 13 13 13 13 13 13 13 13 13	14 4 2 12 30 12 5 0 0 0 3
Internal	MV-A02A-AAMA-Jxxx-xxx	MV-A02A-ABMA-J <b>xxx-xxx</b>	MV-A02A-AEMA-Jxxx-xxx	MV-A02A-AFMA-Jxxx-xxx
External "12" end	MV-A02A-AAMD-Jxxx-xxx	MV-A02A-ABMD-J <b>xxx-xxx</b>	MV-A02A-AEMD-J <b>xxx-xxx</b>	MV-A02A-AFMD-Jxxx-xxx
External "14" end	MV-A02A-AAME-J <b>xxx-xxx</b>	MV-A02A-ABME-J <b>xxx</b> - <b>xxx</b>	MV-A02A-AEME-J <b>xxx-xxx</b>	MV-A02A-AFME-J <b>xxx-xxx</b>

### **DUAL PRESSURE MODELS**

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
	14 4 2 12 		
Internal from port #3	MV-A02A-ACMB-J <i>xxx-xxx</i>	MV-A02A-ADMB-Jxxx-xxx	MV-A02A-AHMB-Jxxx-xxx
Internal from port #5	MV-A02A-ACMC-Jxxx-xxx	MV-A02A-ADMC-Jxxx-xxx	MV-A02A-AHMC-J <b>xxx-xxx</b>
External from "12" end	MV-A02A-ACMD-J <b>xxx-xxx</b>	MV-A02A-ADMD-Jxxx-xxx	MV-A02A-AHMD-J <b>xxx-xxx</b>
External from "14" end	MV-A02A-ACME-Jxxx-xxx	MV-A02A-ADME-J <b>xxx</b> - <b>xxx</b>	MV-A02A-AHME-J <b>xxx-xxx</b>

### SOLENOID OPERATOR ➤

				1 4			
XX	Voltage	v	Lead wire length	-     v	Manual operator	XX	Electrical connection
		^		^	-		
DA	24V=/5,4W	0	No lead wire/ connector	1	Non-locking	BA	Flying leads
DB	12V=/5,4W	Α	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
DE	24V=/1,8W					JD	Rectangular connector with light
DU	24V=/1,0W					KA	Mini square connector
						KD	Mini square connector with light

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: MV-A02A-XX **X** X-J**xxx-xxx** 

M Pilot exhaust muffled
P Pilot exhaust piped #10-32
U Pilot exhaust out main exhaust







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) Lubrication: 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 1,0 to 5,4 W Power:

Options :

- Sandwich flow controls: FCA02A-AA (screwdriver slot adjustment).
- Sandwich pressure regulator, see ,Regulators' section

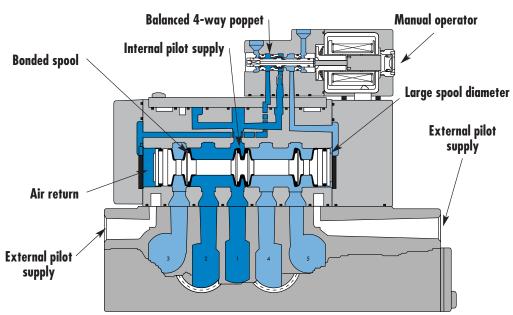
### DIMENSIONS

### Individual base

Dimensions shown are metric (mm) **Manifold base** 22.7 TYP. 19.0 TYP. ⊕∙⊜∙ ю **@**2**@**20 Ö Ö 17.5 1/4" 1, 3 & 5 PORTS 0 0 0 0 0 0 0 O<sup>t</sup> O' Ь







## **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 1 ISO 2 ISO 3

ISO 01

ISO 02

37

38

**52** 

67 69

44

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42

47 48P

48

400

92

93



Pilot style :

MV-B1A-AXXX-**DM**-Dxxx-xxx

DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (M	ax]	Individual/Man	fold mounting	Series
5/2, 5/3	1/4" - 3/	'8" 1.8 C,	,	Valve only – No base non "plug-in" Conform to ISO 5599/1		
OPERATIONAL BENEFITS					-	33
Unique patented Macs possible response time		<ol><li>Plug-in design of valves regulators for modular of</li></ol>		are of		34
out proof AC solenoid  Balanced poppet 4-wa maximum shifting force repeatability and cons	operation. yy pilot valve provides es, precise	maintenance.  7. Internal or external pilot Manifolds supplied with pilot.	operation.			36
3. MAC spool and bore		<ol> <li>Air only return. Options also available.</li> </ol>	l memory sprir	ng is	-	32
allows for use on non-l 4. Large spool area for m	ube service.	<ol> <li>Optional low wattage D</li> <li>1.0 watt.</li> </ol>	C solenoid do	wn to		37
even at minimum oper	ating pressure.	1.0 Wall.			9	38
5. Very high flow in a co	шраст раскаде.				0	52
HOW TO ORDER						67
SINGLE PRESSURE M	ODELS					69
Pilot air	5/2 Single oper		/2 operator	5/3 Closed center	5/3 Open center	44
	14 4 2 	12 14 17 14 17 14 17 14 17 14 17 17 17 17 17 17 17 17 17 17 17 17 17	4 2 12 5 vo 1 v 3	14 4 2 12 12 12 12 12 12 12 12 12 12 12 12 1	14 4 2 12 12 12 12 12 12 12 12 12 12 12 12 1	46
Internal	MV-B1A-AAAA-DM-E		A-DM-Dxxx-xxx	MV-B1A-AEAA-DM-Dxxx-xx		42
External "12" end	MV-B1A-AAAB-DM-D	MV-B1A-ABA	B-DM-D <b>xxx-xxx</b>	MV-B1A-AEAB-DM-Dxxx-xx	MV-B1A-AFAB-DM-Dxxx-xxx	- 74
DUAL PRESSURE MO		- •				47
Pilo	t air	5/2 Single operator		5/2 Double operator	5/3 Pressure center	48P
		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 17	14 12 17 15 15 15 15 15 15 15 15 15 15 15 15 15	48
Internal pilot	·	MV-B1A-ACAD-DM-DXXX- MV-B1A-ACAE-DM-DXXX-		MV-B1A-ADAD-DM-Dxxx-xxx MV-B1A-ADAE-DM-Dxxx-xxx	MV-B1A-AGAD-DM-DXXX-XXX  MV-B1A-AGAE-DM-DXXX-XXX	-
· · ·	From "12" end	MV-B1A-ACAB-DM-DXXX-		MV-B1A-ADAB-DM-Dxxx-xxx	MV-B1A-AGAB-DM-Dxxx-xxx	400
SOLENOID OPERATO	OR ➤	DM-D XX	X- <u>X</u> XX			92
			<u> </u>			93
XX Voltage  JA 110/50, 120/6		Lead wire length 18" (Flying leads)		Manual operator  Non-locking recessed	XX Electrical connection  KA Square connector	70
JB 220/50, 240/	60 <b>B</b>	24" (Flying leads)		ocking recessed	KD Square connector with light	ISO 01
JC 24/50, 24/60 FB 24 VDC (1.8W	1	Connector	-		JB Rectangular connector  JD Rectangular connector with light	ISO 02
DA 24 VDC (5.4W DF 24 VDC (12.7V				_	BA Flying leads	ISO 1
* Other options available, Note: ISO series, valve and	see page 309. base are ordered separately	, see page 231 for base code	e.			ISO 2
OPTIONS	January	,				<b>ISO 3</b>
Valve function :			Spoo	l return :		
MV-B1A-A <b>X</b> XX-XX-D <b>xxx-xx</b>	x			√-B1A-AX <b>A</b> X-XX-D <i>xxx-xxx</i>		







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)

40 µ

Filtration:

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

Flow: 3/8": (1.8 C<sub>v</sub>) - 1/4": (1.6 C<sub>v</sub>)

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

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

Protection: Consult factory

Holding: 4.8 VA Power: ~ Inrush 7.6 VA

= 1 to 12.7 W

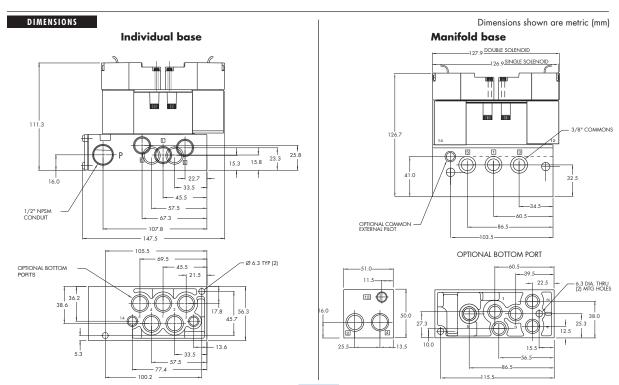
Response times: Energize:11.3 ms (with 5,4 W coil) De-energize: 7.8 ms

FCP1A-BA (screwdriver slot adjustment) Options : • Sandwich flow controls:

FCP1A-BB (locking knob adjustment)

• Sandwich regulator, see ,Regulators' section

Spare parts : • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16661





DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

# Direct solenoid and solenoid pilot operated valves

unction	Port size	Flow (Max	]		I/Manifold mounting	Series
5/2, 5/3	1/4" - 3/	3" 1.8 C <sub>v</sub>		Valve only No base "plug-in" Conform to ISO 5599/		
PERATIONAL BENEFITS					102.00	33
. Unique patented Macs		Plug-in design of valves, b		,		34
possible response times out proof AC solenoid 2. Balanced poppet 4-wa maximum shifting force repeatability and consi	operation. y pilot valve provides	regulators for modular ass maintenance. Internal or external pilot o Manifolds supplied with o pilot.	peration.			36
<ol> <li>MAC spool and bore c away contamination, e</li> </ol>	ombination wipes 8 liminates sticking and	Air only return. Optional also available.	, ,			32
allows for use on non-lu 4. Large spool area for m		Optional low wattage DC 1.0 watt.	solenoid dow	n to		37
even at minimum opera	ating pressure.	1.0 wall.			3 0	38
5. Very high flow in a cor	mpact package.					52
HOW TO ORDER						67
SINGLE PRESSURE MO	ODELS					69
Pilot air	5/2 Single opera	5/ tor Double o		5/3 Closed cent	5/3 er Open center	44
	14 4 2 5 \$\vert 1  \frac{4}{5}  \frac{2}{1}  \frac{4}{1}  \frac{2}{1}  \frac{1}{1}   \frac{1}{1}   \frac{1}{1}	12 14 17 14 17 15 17 17 15 17	1 2 12 1 4 7 1 1 1 7 3	14 2 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	14 4 2 12 14 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	46
Internal External "12" end	MV-P1A-AAAA-DM-D)	XP-XXX MV-P1A-ABAA-I	DM-D <b>xx</b> P- <b>xxx</b>	MV-P1A-AEAA-DM-D2 MV-P1A-AEAB-DM-D2		
DUAL PRESSURE MOD Pilot		5/2 Single operator		5/2 Double operator	5/3 Pressure center	47 48P
		14 4 2 12 75 T J J J J J J J J J J J J J J J J J J		14 4 2 12 	14 12 15 0 0 0 3	48
Internal pilot F		MV-P1A-ACAD-DM-DxxP-xx		MV-P1A-ADAD-DM-DxxP-xx		
Internal pilot F External pilot F	<u> </u>	MV-P1A-ACAE-DM-DxxP-xx MV-P1A-ACAB-DM-DxxP-xx		MV-P1A-ADAE-DM-DxxP-xxx MV-P1A-ADAB-DM-DxxP-xxx		400
SOLENOID OPERATO		DM-D XX		THE ADAL DIT DAM AND	MYTTA AOAU UITUAAT AAA	92
XX Voltage		X Manual ope	nates	XX	Electrical connection	93
JA 110/50, 120/6		<ol> <li>Non-locking rece</li> </ol>		DM	Plug-in	
JB 220/50, 240/6 JC 24/50, 24/60		2 Locking recessed		DN DP	Plug-in with diode Plug-in with M.O.V.	150 01
FB 24 VDC (1.8W) DA 24 VDC (5.4W)				DG	Plug-in with ground	150 02
<b>DF</b> 24 VDC (12.7W						150 1
Other options available, Note: - ISO series, valve a	see page 309. nd base are ordered separate	ly, see page 233 for base co	des.			150 2
- Ground wire requi	red for 30 volts or higher.	· · ·				<b>ISO 3</b>
OPTIONS			_			
Valve function :  MV-P1A-A <b>X</b> XXX-XX-D <b>xx</b> P- <b>xx</b> X			<u> </u>	return : -P1A-AX <b>A</b> X-XX-D <b>xx</b> P- <b>xxx</b>		
Т		ext. pilot only)	WIV	A Standar	rd return	
K for do  Pilot style :  MV-P1A-AXXX- <b>DM</b> -DxxP-xx	ngle operator universal spool ouble operator universal spool	(ext. pilot only)		<b>B</b> Memory <b>D</b> Standar	y spring return rd return with light y 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<sub>v</sub>) – 1/4": (1.6 C<sub>v</sub>)

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

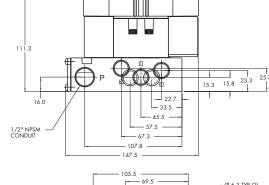
Options : • Sandwich flow controls: FCP1A-AA (screwdriver slot adjustment)

FCP1A-AB (locking knob adjustment)

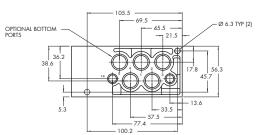
 $\bullet$  Sandwich regulator, see <code>,Regulators'</code> section

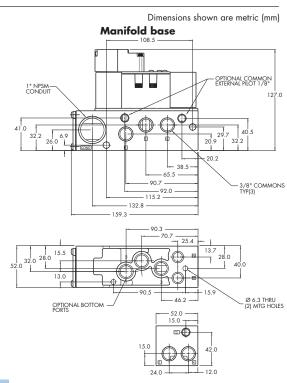
Spare parts : • Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16661

### DIMENSIONS

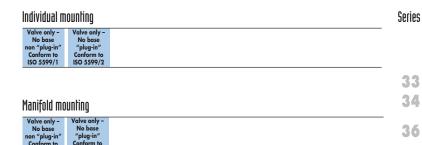


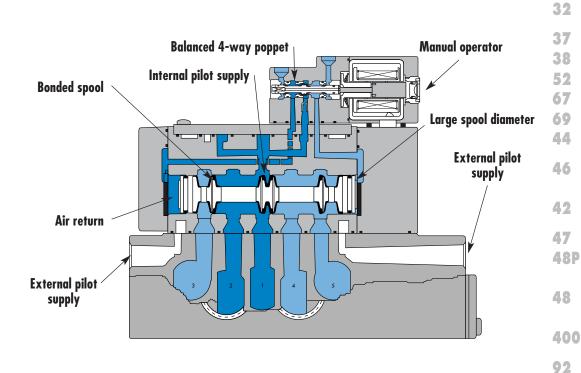
Individual base











## **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** 

**ISO 3** 



Pilot style :

MV-B2A-AXXX-**DM**-Dxxx-xxx

DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

# Direct solenoid and solenoid pilot operated valves

unction	Port size	Flow (Ma	IX]		nifold mounting	Series
5/2, 5/3	3/8" - 1	/2" 3.0 C <sub>v</sub>	,	Valve only – No base non "plug-in" Conform to ISO 5599/1		
PERATIONAL BENEFITS						33
. Unique patented Macs		6. Plug-in design of valves,		r	200	34
possible response times out proof AC solenoid Balanced poppet 4-war maximum shifting force	operation. y pilot valve provides s, precise	regulators for modular a maintenance. 7. Internal or external pilot Manifolds supplied with	operation.			36
repeatability and consi MAC spool and bore of away contamination, e	ombination wipes	<ul><li>pilot.</li><li>8. Air only return. Optiona also available.</li></ul>	,		25	32
allows for use on non-lu Large spool area for m		<ol><li>Optional low wattage D 1.0 watt.</li></ol>	C solenoid dow	n to		37
even at minimum opera	ating pressure.				elum d	38
Very high flow in a cor	прастраскаде.					52
HOW TO ORDER						67
NGLE PRESSURE MO	ODELS					69
Pilot air	5/2 Single ope		/2 operator	5/3 Closed center	5/3 Open center	44
	14 	12 14	4 2 12	14 4 2 3 3 W	14 4 2 12 1775 T V T V T T T T T T T T T T T T T T T	46
Internal	MV-B2A-AAAA-DM		A-DM-D <b>xxx-xxx</b>	MV-B2A-AEAA-DM-D <b>xxx-x</b>	XX MV-B2A-AFAA-DM-DXXX-XXX	40
External "12" end	MV-B2A-AAAB-DM-	Dxxx-xxx MV-B2A-ABAE	B-DM-Dxxx-xxx	MV-B2A-AEAB-DM-Dxxx-x	MV-B2A-AFAB-DM-Dxxx-xxx	42
Jal pressure moi	DELS					47
Pilot	air	5/2 Single operator		5/2 Double operator	5/3 Pressure center	48P
		14 4 2 12 12 TD T T T T T T T T T T T T T T T T T T		14 4 2 12 	14 175 18 18 18 18 18 18 18 18 18 18 18 18 18 1	48
Internal pilot f	From port #3	MV-B2A-ACAD-DM-Dxxx-	cxx /	MV-B2A-ADAD-DM-Dxxx-xxx	MV-B2A-AGAD-DM-Dxxx-xxx	- 0
Internal pilot f	<u>·</u>	MV-B2A-ACAE-DM-Dxxx-)		MV-B2A-ADAE-DM-Dxxx-xxx	MV-B2A-AGAE-DM-Dxxx-xxx	400
External pilot F	rom "12" end	MV-B2A-ACAB-DM-Dxxx-	<u> </u>	MV-B2A-ADAB-DM-D <b>xxx-xxx</b>	MV-B2A-AGAB-DM-Dxxx-xxx	
DLENOID OPERATO	DR ➤	DM-D XX	<b>X</b> - <u>XXX</u> *			92
VV Voltage		Land wine langth	յ <u>Է</u>	anual operator	XX Electrical connection	93
XX Voltage  JA 110/50, 120/6	<b>X</b> .0 <b>A</b>	Lead wire length 18" (Flying leads)		on-locking recessed	XX Electrical connection  KA Square connector	100.01
JB 220/50, 240/6 JC 24/50, 24/60	0 B J	24" (Flying leads) Connector	<b>2</b> Loo	cking recessed	KD Square connector with light  JB Rectangular connector	ISO 01
FB 24 VDC (1.8W)  DA 24 VDC (5.4W)			-	-	JD Rectangular connector with light BA Flying leads	ISO 02
<b>DF</b> 24 VDC (12.7W				-	Trying loads	150 1
Other options available, te: ISO series, valve and	see page 309. base are ordered separatel	y, see page 235 for base code	ı.			<b>ISO 2</b>
OPTIONS	·					ISO 3
lve function :			Spool	return :		
MV-B2A-A <b>X</b> XX-XX-D <b>xxx-xx</b>	C		MV-	B2A-AX <b>A</b> X-XX-D <i>xxx-xxx</i>		
J for sir	ngle operator universal spo puble operator universal spo	ol (ext. pilot only)		A Standard retu B Memory sprir		







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)

40 µ Filtration:

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

Flow: 3/8": (2.8 C<sub>v</sub>) - 1/2": (3.0 C<sub>v</sub>)

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

= 12.7 to 1.0 W

24 VDC 5.4w Response times: Energize: 10 ms De-energize: 9.6 ms

120/60 Energize : 6-15 ms De-energize: 10-17 ms

Options: • Sandwich flow controls: FCP2A-BA (screwdriver slot adjustment)

FCP2A-BB (locking knob adjustment)

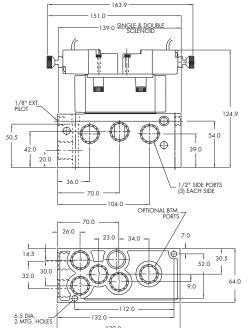
• Sandwich regulator, see ,Regulators' section

• Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16576 Spare parts:

• Valve mounting screws (x4): 35413

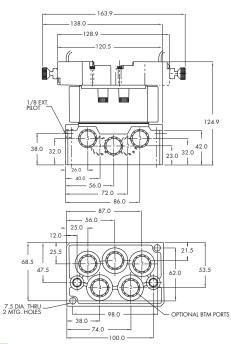
### DIMENSIONS

## Individual base



Dimensions shown are metric (mm)

### **Manifold base**





ınction	Port size	Flow (Max)	Individual/Manifo	ld mounting	Series		
/2, 5/3 3/8" - 1/2" 3.0 (		3.0 C <sub>v</sub>	Valve only – No base "plug-in" Conform to ISO 5599/2				
PERATIONAL BENEFITS					33		
Unique patented Macsolenoid possible response times and out proof AC solenoid operati	virtually burn- regulat	design of valves, bases and fors for modular assembly and e	ase of	A P	34		
Balanced poppet 4-way pilot maximum shifting forces, pre- repeatability and consistent of	valve provides 7. Interna cise Manifo	l or external pilot operation. olds supplied with common exter	nal	9	36		
MAC spool and bore combin away contamination, elimina	nation wipes 8. Air onl tes sticking and also av	y return. Optional memory sprin vailable.			32		
allows for use on non-lube se Large spool area for maximum		al low wattage DC solenoid do att.	wn to	Initial Control	<b>37</b>		
even at minimum operating p Very high flow in a compact			•		38		
very mgm now in a compact	package.			0)	<b>52</b>		
HOW TO ORDER					67		
INGLE PRESSURE MODEL	S				69		
Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	44		
	14 4 2 12 14 5 9 1 3	14 2 12 5 VOI V 3	14 4 2 12 12 12 12 12 12 12 12 12 12 12 12 1	14 4 2 12 12 37 5 \$\frac{1}{5}\fr	46		
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	42		
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			
UAL PRESSURE MODELS		T (0	- /o	<b>-</b> (0	47		
Pilot air	s	5/2 ingle operator	5/2 Double operator	5/3 Pressure center	48P		
	1	14 4 2 12 	14 4 2 12 75 7 47 5001 0 3	14 12 30W	48		
Internal pilot From p			MV-P2A-ADAD-DM-DxxP-xxx	MV-P2A-AGAD-DM-DxxP-xxx	•		
Internal pilot From port #5 External pilot From "12" end		'2A-ACAE-DM-DxxP-xxx '2A-ACAB-DM-DxxP-xxx	MV-P2A-ADAE-DM-DxxP-xxx  MV-P2A-ADAB-DM-DxxP-xxx	MV-P2A-AGAE-DM-DxxP-xxx MV-P2A-AGAB-DM-DxxP-xxx	400		
SOLENOID OPERATOR >		DM-D XX P-XXX*			92		
XX Voltage	X	Manual operator		rical connection	93		
JA 110/50, 120/60 JB 220/50, 240/60		Non-locking recessed Locking recessed	DM Plug-in DN Plug-in	with diode	ISO 01		
JC 24/50, 24/60 FB 24 VDC (1.8W)		2 Locking recessed DN Plug-in with diode DP Plug-in with M.O.V. DG Plug-in with ground					
DA 24 VDC (5.4W) DF 24 VDC (12.7W)				5	ISO 02		
, ,		ISO 2					
Other options available, see pa Note: - ISO series, valve and bas - Ground wire required for	se are ordered separately, see por r 30 volts or higher.	age 237 for base codes.			ISO 3		
OPTIONS	3 4 4				130 3		
/alve function :		Spo	ol return :				
		оро					

MV-P2A-AXXX-**DM**-D*xx*P-*xxx* 

MV-P2A-A**X**XX-XX-D**xx**P-**xxx** 

Pilot style :

DM Pilot exhaust muffled
DP Pilot exhaust piped (#10-32)

J for single operator universal spool (ext. pilot only)
K for double operator universal spool (ext. pilot only)

MV-P2A-AXAX-XX-DxxP-xxx

A Standard return
B Memory spring return
D Standard return with light
E Memory spring return with light







DIMENSIONS
Individual base

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)

3/8": (2.8 C<sub>v</sub>) - 1/2": (3.0 C<sub>v</sub>)

Class A continuous duty, #18 AWG x 12 base leads

Class A commodos doly, #10 AVVO X 12 base let

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

Protection: Consult factory

Power: ~ Inrush 14.8 VA Holding: 10.9 VA

= 12.7 to 1.0 W

Response times : 24 VDC 5.4w Energize : 10 ms De-energize : 9.6 ms

120/60 Energize : 6-15 ms De-energize : 10-17 ms

Options : • 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

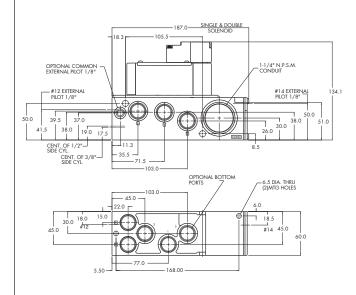
• Valve mounting screws (x4): 35413

# 173.8 156.1 DOUBLE SOLENOID 146.8 SINGLE SOLENOID 140.0

### OPTIONAL BOTTOM PORTS 3/8" 25.2 22.7 20.6 26.7 40.5 83.3 21.0 19.0 25.5 40.0 70.0 1/2" 24.0 84.5

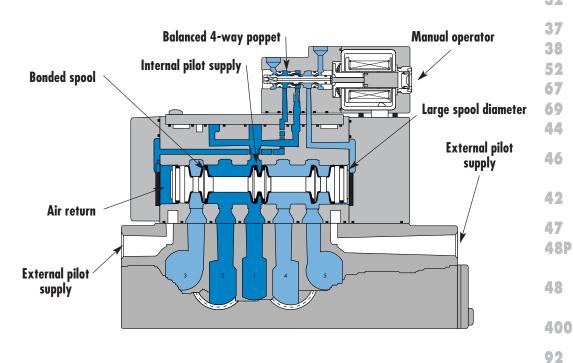
17.0 22.0

### Manifold base









## **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** 



unction	Port size	Floш (Max)		ifold mounting	Series
5/2, 5/3	1/2" - 3/4"	6.1 C <sub>v</sub>	Valve only – No base "non plug-in" Conform to ISO 5599/1		
PERATIONAL BENEFITS					33
. Unique patented Macsolenoi		design of valves, bases and			34
possible response times and out proof AC solenoid opera 2. Balanced poppet 4-way pilot maximum shifting forces, pre	tion. mainte t valve provides 7. Interna cise Manifo	ors for modular assembly a nance. I or external pilot operation Ids supplied with common			36
repeatability and consistent of B. MAC spool and bore combination, elimination, elimination,	nation wipes 8. Air onl	y return. Optional memory ailable.	spring is		32
allows for use on non-lube se Large spool area for maximu	ervice. 9. Option	al low wattage DC solenoid	d down to		37
even at minimum operating p	oressure.				38
5. Very high flow in a compact	раскаде.		100	· w	52
HOW TO ORDER					67
SINGLE PRESSURE MODEL	LS				69
Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	44
	14 4 2 12 17	14 4 2 12 	14 4 2 12 	14 4 2 3 3 12 12 5 \$\tilde{\pi}_{\tau}\tau_0\tau_1\tau	46
Internal	MV-B3A-AAAA-DM-Dxxx-xxx	MV-B3A-ABAA-DM-D <b>xxx</b>			42
External "12" end	MV-B3A-AAAB-DM-Dxxx-xxx	MV-B3A-ABAB-DM-Dxxx-	MV-B3A-AEAB-DM-D <i>xxx-xx</i>	MV-B3A-AFAB-DM-Dxxx-xxx	- 42
DUAL PRESSURE MODELS					47
Pilot air	s	5/2 ingle operator	5/2 Double operator	5/3 Pressure center	48P
	,	4 4 2 12	14 4 2 12	14 12 12 12 14 14 14 14 14 14 14 14 14 14 14 14 14	48
Internal pilot From p	port #3 MV-B	3A-ACAD-DM-Dxxx-xxx	MV-B3A-ADAD-DM-Dxxx-xxx	MV-B3A-AGAD-DM-Dxxx-xxx	_
Internal pilot From p		3A-ACAE-DM-D <b>xxx-xxx</b>	MV-B3A-ADAE-DM-D <b>xxx-xxx</b>	MV-B3A-AGAE-DM-Dxxx-xxx	400
External pilot From "	12" end MV-B	3A-ACAB-DM-D <b>xxx-xxx</b>	MV-B3A-ADAB-DM-Dxxx-xxx	MV-B3A-AGAB-DM-D <b>xxx-xxx</b>	-
SOLENOID OPERATOR >		M-D <u>xxx</u> - <u>xx</u>	<u>X</u> *		92
					93
XX Voltage JA 110/50, 120/60	10///[]:	re length X	Manual operator  Non-locking recessed	XX Electrical connection	70
JB 220/50, 240/60	B 24" (Flying		Locking recessed	KA Square connector  KD Square connector with light	ISO 01
JC 24/50, 24/60 FB 24 VDC (1.8W)	Connector		_	JB Rectangular connector JD Rectangular connector with ligh	iso 02
DA 24 VDC (5.4W) DF 24 VDC (12.7W)				BA Flying leads	- ISO 1
Other options available, see pa	ige 309.				ISO 2
Note: ISO series, valve and base of	are ordered separately, see page	239 for base code.			ISO 3
OPTIONS					190 3
Valve function :		5	Spool return :		
MV-B3A-A <b>X</b> XX-XX-D <b>xxx-xxx</b>			MV-B3A-AX <b>A</b> X-XX-D <b>xxx-xxx</b>		

J for single operator universal spool (ext. pilot only) K for double operator universal spool (ext. pilot only)

DM Pilot exhaust muffled Pilot exhaust piped (#10-32)

Pilot style :

MV-B3A-AXXX-**DM**-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°C)

Flow: 1/2": (5.4 C<sub>v</sub>) - 3/4": (6.1 C<sub>v</sub>)

Coil: Class A continuous duty, #22 AWG 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 W Energize : 16.2 ms

Response times: (5.4 W coil) De-energize: 13.6 ms

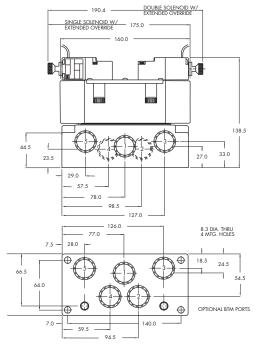
• Sandwich regulator, see ,Regulators' section Options:

• Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16614 Spare parts:

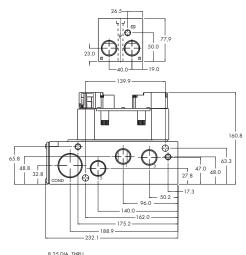
• Valve mounting screws (x4): 35451

### DIMENSIONS

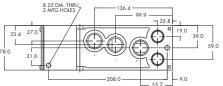
### Individual base



Dimensions shown are metric (mm)



**Manifold base** 





Function	Port size	Flow (Max)	Individual/Manifo	ld mounting	Series	
5/2, 5/3	1/2" - 3/4"	6.1 C <sub>v</sub>	Valve only – No base "plug-in" Conform to ISO 5599/2			
OPERATIONAL BENEFITS					33	
Unique patented Macsolenoi possible response times and	virtually burn- regula	design of valves, bases and tors for modular assembly and e	ase of		34	
out proof AC solenoid opera 2. Balanced poppet 4-way pilo maximum shifting forces, pre repeatability and consistent	t valve provides 7. Interno ecise Manife	enance. al or external pilot operation. olds supplied with common exter	nal	-	36	
<ol> <li>MAC spool and bore combin away contamination, elimina</li> </ol>	nation wipes 8. Air on ates sticking and also a	only return. Optional memory spring is o available.			32	
allows for use on non-lube se Large spool area for maximu		nal low wattage DC solenoid dov att.	wn to		37	
even at minimum operating p  5. Very high flow in a compact					38	
5. Yery mgm new in a compact	раскаде.			- v	52	
HOW TO ORDER					67	
SINGLE PRESSURE MODEI	LS				69	
Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	44	
	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 12 12 12 12 12 1	14 4 2 12 12 12 12 12 12 12 13 12 12 12 13 12 12 13 12 12 13 13 12	46	
Internal	MV-P3A-AAAA-DM-DxxP-xxx	MV-P3A-ABAA-DM-D <b>xx</b> P- <b>xxx</b>	MV-P3A-AEAA-DM-D <b>xx</b> P- <b>xxx</b>	MV-P3A-AFAA-DM-DxxP-xxx	42	
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	- 44	
DUAL PRESSURE MODELS					47	
Pilot air		5/2 Single operator	5/2 Double operator	5/3 Pressure center	48P	
		14 4 2 12	14 <u>4 2</u> 12	14 12 \( \text{MP} \) \( \text{A} \		
				50 7 03	48	
Internal pilot From p		P3A-ACAD-DM-DxxP-xxx	MV-P3A-ADAD-DM-DxxP-xxx	MV-P3A-AGAD-DM-DxxP-xxx	<del>-</del> -	
Internal pilot From port #5			MV-P3A-ADAE-DM-DxxP-xxx	MV-P3A-AGAE-DM-DxxP-xxx	400	
External pilot From "12" end		P3A-ACAB-DM-DxxP-xxx	MV-P3A-ADAB-DM-DxxP-xxx	MV-P3A-AGAB-DM-DxxP-xxx	-	
SOLENOID OPERATOR >		DM-D <u><b>xx</b></u> P- <u><b>xxx</b></u> .			92	
					93	
XX Voltage	X	Manual operator		rical connection	70	
JA 110/50, 120/60 (2.9W)  JB 220/50, 240/60 (2.9W)		Non-locking recessed Locking recessed				
JC 24/50, 24/60 (2.9W) FB 24 VDC (1.8W)				with M.O.V. with ground	ISO 02	
DA 24 VDC (5.4W)				min ground	160 1	
<b>DF</b> 24 VDC (12.7W)					130 1	
* Other options available, see po Note: - ISO series, valve and ba	age 309. Ise are ordered separately see p	age 241 for base codes			<b>ISO 2</b>	
- Ground wire required fo	or 30 volts or higher.	-9 10. 2000 00000.			<b>ISO 3</b>	
OPTIONS						
Valve function :		Spoo	ol return :			

DM Pilot exhaust muffled
DP Pilot exhaust piped (#10-32)

J for single operator universal spool (ext. pilot only)
K for double operator universal spool (ext. pilot only)

MV-P3A-A**X**XX-XX-D**xx**P-**xxx** 

MV-P3A-AXXX-**DM**-DxxP-xxx

Pilot style :

MV-P3A-AX**A**X-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: 1/2":  $(5.4 \, \text{C}_{\text{y}}) - 3/4$ ":  $(6.1 \, \text{C}_{\text{y}})$ 

Class A continuous duty, #22 AWG leads

Class A confinitions duty, #22 AVVG 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

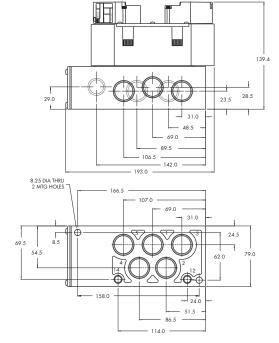
Options : • Sandwich regulator, see ,Regulators' section

Spare parts : • Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16614

• Valve mounting screws (x4): 35451

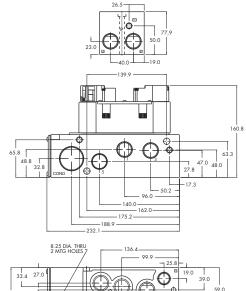
### DIMENSIONS

### Individual base



Dimensions shown are metric (mm)

### Manifold base





Section 2

Remote air valves



Function	Port size	Floш (Max) Cv	Individual mounting		Manifold n	nounting 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/	1 1/2" - 2" - 2 1/2"	60.0	P. 213				69
5/2 - 5/	3/8" - 1/2"	3.1			P. 217	P. 217	ISO 2
5/2 - 5/	3 1/2" - 3/4"	6.2			P. 221	P. 221	ISO 3

Series **400** 

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

**67** 

400

69

**ISO 2** 

**ISO 3** 

Function	Port size	Flow (Max)	Individual m	nounting	Series
5/2 - 5/3	1/8" - 1/4"	1.0 C <sub>v</sub>	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 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 14 15 15 15 15 15 15 15 15 15 15 15 15 15		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-B0H-RA Mod 1493	421 A-B0H-RA	451A-BOH-RA	461A-BOH-RA	471 A-B0H-RA

## **DUAL PRESSURE VALVES**

Port size	5/2 Double operator		
	$ \begin{array}{c c} 12 & 4 \\ \hline                                  $		
1/8" NPTF	441A-AOH-RA		
1/4" NPTF	441A-BOH-RA		







## TECHNICAL DATA

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

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

Filtration: 40

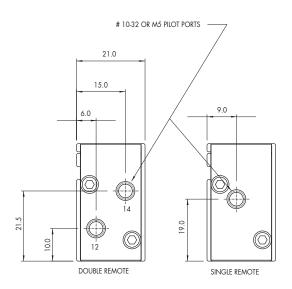
Temperature range: 0°F to 120°F (-18°C to 50°C)

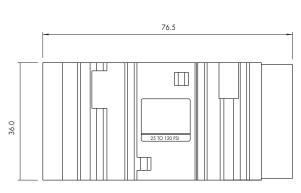
**Flow:** 1.0

Note: Air signal must be ≥ main valve pressure

Option : • BSPP threads

DIMENSIONS





Function	Port size	Flow (Max)	Individual mounting	Series
5/2 - 5/3	1/8" - 1/4"	1.0 C <sub>v</sub>	Sub-base non "plug-in"	

# 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

OII TOLL I KLOOC	THE TYTEFE				
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 14 3 15 15 15 15 15 15 15 15 15 15 15 15 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		12 2 4 14 D T T T T T T T
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
	$ \begin{array}{c c} 12 & 4 \\ \hline  & 7 & 7 \end{array} $
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

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  $180^{\circ}F$  and  $210^{\circ}F$ )

Filtration:

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

Flow:

Note: Air signal must be ≥ main valve pressure

• BSPP threads Options:

• Valve to base pressure seal: 16525 • Valve mounting screw (x2): 35043 Spare parts:

• Flow control assembly (x2): N-04001

# DIMENSIONS Dimensions shown are metric (mm) #10-32 pilot port 55.0 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 9.5 REF. 28.10 33.1 38.1 **(** 4.30 DIA. (2) MIG. HOLES 53.00

Individual mounting Series

400

67

69

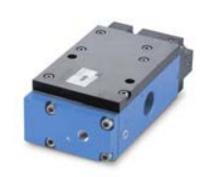
**ISO 2** 

**ISO** 3

Function	Port size	Flow (Max)	Individual m	ounting	Series
3/2	3/4" - 1"	20.0 C <sub>V</sub>	Inline		

# OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- 2. Powerful return forces thanks to the combination of mechanical and air springs.
- 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 3** 

## HOW TO ORDER

Port size	Pilot air	Single (	)perator	Double (	Operator
		NO Valve	NC Valve	NO Valve	NC Valve
		10 2 12 MD 73 01	10 2 12 MD 7 1 12 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)

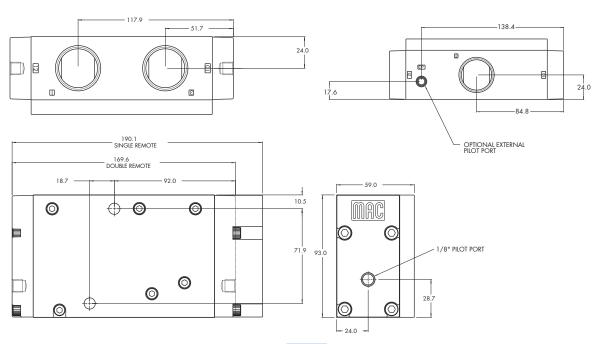
Filtration: 40

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

Flow: 3/4": (14.5 C<sub>v</sub>) - 1": (20.0 C<sub>v</sub>)

Options : • BSPP threads

#### DIMENSIONS





Remote air valves

Individual mounting Series

400

**67** 

69

**ISO 2** 

**ISO** 3

Function	Port size	Flow (Max)	Individual m	nounting	Series
3/2 NO-NC, 2/2 NO-NC	1 1/2" - 2" - 2 1/2"	60.0 C <sub>V</sub>	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 10 12 12 12 12 12 12 12 12 12 12 12 12 12	10 2 12 D 7 T 3
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
	$\frac{10}{10} \left[ \begin{array}{c} 2 \\ \hline \\$	
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

Temperature range :

Fluid: Compressed air, vacuum, inert gases

Pressure range: Vacuum to 150 PSI

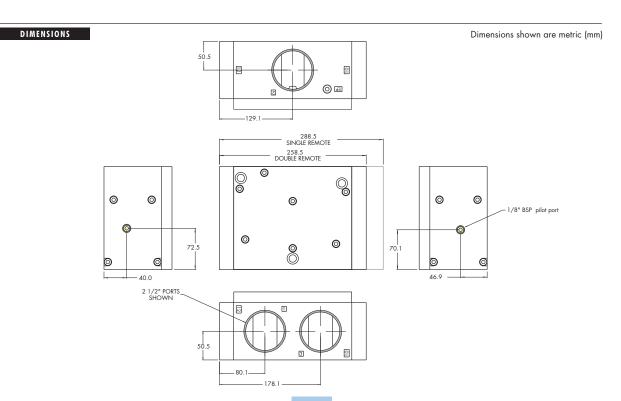
Air signal pressure: 20 to 150 PSI (must be ≥ main valve pressure)

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

Filtration: 40

0°F to 120°F (-18°C to 50°C)

Flow: Cv 60.0





Individual mounting	Series
Valve only – no base	
	400
Manifold mounting	67
Valve only – no base	69
	ISO 2

**ISO 3** 



# emote air valves

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2 - 5/3	3/8" - 1/2"	3.1 C <sub>V</sub>	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 3** 

#### HOW TO ORDER

## SINGLE PRESSURE MODELS

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 	14 4 2 12 
Internal	MV-R2A-BACF	LAV DOA DDAI	LAV DOA DEAK	MANA DEAL
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
Air spring	Single operator	•	· ·	•
Air spring	Single operator	14 12 12	Open center  14	Pressure center
	Single operator  14	14 12 12	Open center  14	Pressure center

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

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

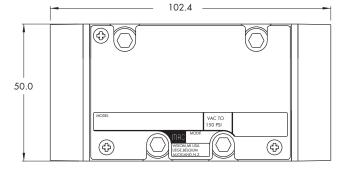
Filtration: 40

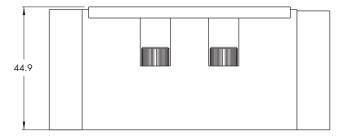
Temperature range: 0°F to 120°F (-18°C to 50°C)

Flow: 3/8": (2.8 Cv) - 1/2": (3.1 Cv)

Spare parts : • Valve to base pressure seal: 16576 • Valve mounting screws (x4): 35413

#### DIMENSIONS





Individual mounting	Series
Valve only – no base	
	400
Manifold mounting	67
Valve only – no base	69
	ISO 2

ISO 3

219



# emote air valves

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2 - 5/3	1/2" - 3/4"	6.2 C <sub>v</sub>	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.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- 4. Wiping effect eliminates sticking.5. Long service life.



400

**67** 

#### HOW TO ORDER

## SINGLE PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	
	14 4 2 12 12 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	14	14 4 2 12 D 3 4 3	14 4 2 12 12	
Internal	MV-R3A-BACF	AAA DOA DOAK	ANA DOA DEAK	LAV DOA DEAV	
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 & 2 & 12 \\ - & \boxed{} $	
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

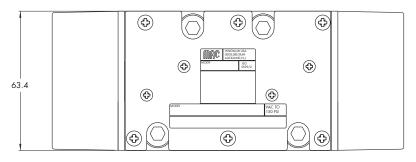
 Temperature range:
 0°F to 120°F (-18°C to 50°C)

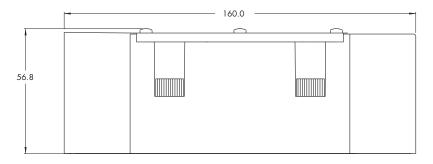
 Flow:
 1/2": (5.4 C<sub>V</sub>) - 3/4": (6.2 C<sub>V</sub>)

Spare parts :

• Valve to base pressure seal: 16614 • Valve mounting screws (x4): 35451

## DIMENSIONS







Section 3

Bases according to ISO standards



				Series
N ir mo	Non plug-in ndividual / anifold 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

#### Notes

- 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



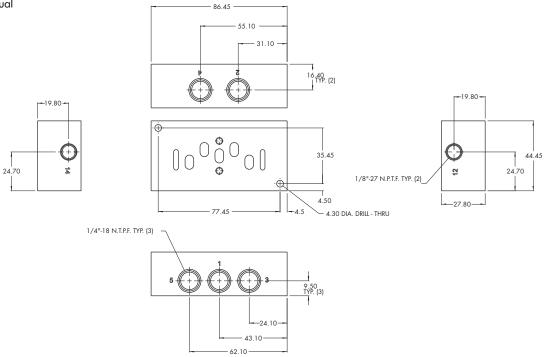




#### DIMENSIONS

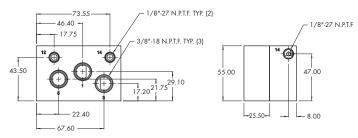
Dimensions shown are metric (mm)

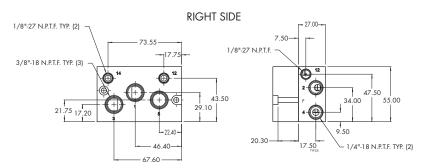
## Individual



## Manifold

## LEFT SIDE







#### 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

#### Notes

- 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) Individual 43.00-42.00 -- 28.00 -- 27.00-1/8"-27 N.P.T.F. TYP. (7) PLACES 15.00 26.50 33.50 17.75 17.75  $\oplus$ 3.50 15.00 -15.0<del>0 -</del> - 61.35 -– 4.25 DIA. DRILL - THRU L **—** 23.0<del>0</del>-- 20.45 -8.00 TYP. (3) Manifold LEFT SIDE 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) ٠ 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 7.50-42.00 TYP.(2) 35.00 17.70 27.60 18.30

-50.65



#### 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

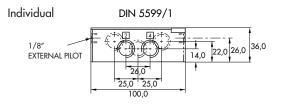
Manifold fastening kit: N-63002-01. Valve blanking plate: MA1003. Inlet/exhaust isolator plug: 32835.

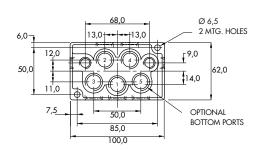


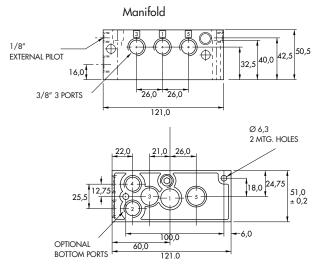




#### DIMENSIONS









#### Plug-in base / manifold



ISO 01

ISO 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
I/4" NPIF	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
	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
3/8" NPTF	Single solenoid	MM-P1A-231-A	MM-P1A-232-A	MM-P1A-233-A
	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 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 Valve blanking plate.

N-P1007-01 Manifold fastening kit. 32835 Inlet/exhaust isolator plug.



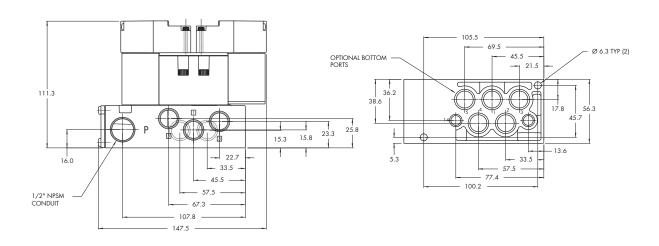


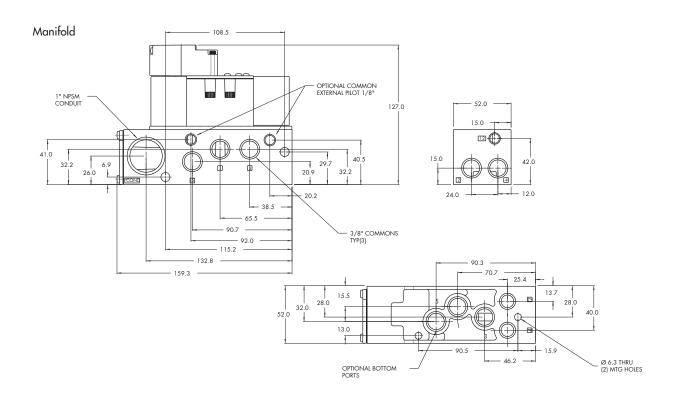


DIMENSIONS

Dimensions shown are metric (mm)

## Individual







#### Non plug-in base / manifold



ISO 01

ISO 02

**ISO** 1

**ISO 2** 

**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

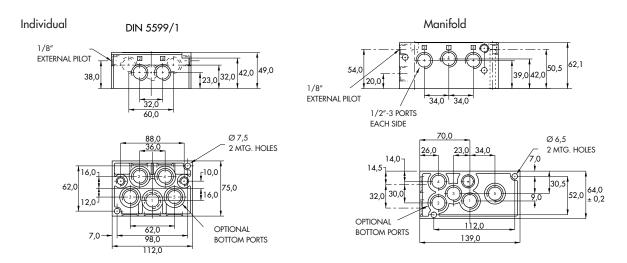
Manifold fastening kit: N-63002-01. Valve blanking plate: MA2003. Inlet/exhaust isolator plug: 32839.







#### DIMENSIONS





#### Plug-in base / manifold



ISO 01

ISO 02

**ISO** 1

**ISO 2** 

**ISO 3** 

#### HOW TO ORDER

#### INDIVIDUAL BASE

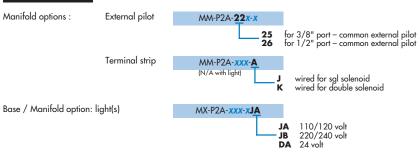
Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports
3/8" NPTF	Single solenoid	MB-P2A-221-A	MB-P2A-222-A	MB-P2A-223-A
3/6 HFIF	Double solenoid	MB-P2A-221-B	MB-P2A-222-B	MB-P2A-223-B
I /O// NIDER	Single solenoid	MB-P2A-231-A	MB-P2A-232-A	MB-P2A-233-A
1/2" NPTF	Double 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
3/0" NPIF	Double solenoid	MM-P2A-221-B	MM-P2A-222-B	MM-P2A-223-B
I /A// NIDEF	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



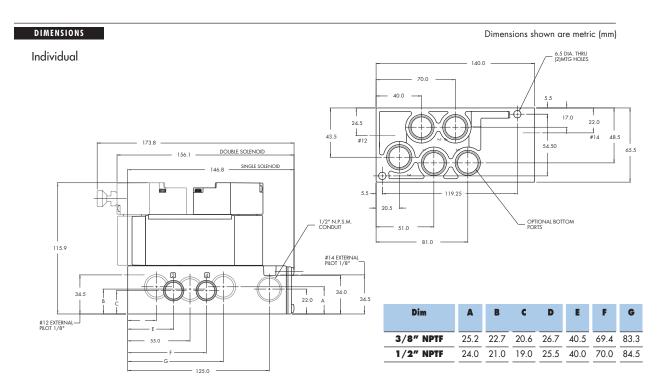
Accessories: M-P2001 Valve blanking plate.

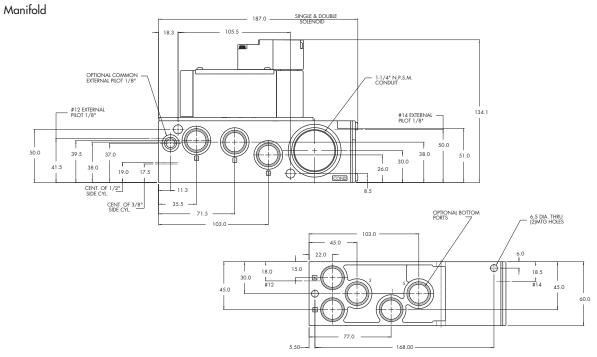
N-P2004-01 Manifold fastening kit. 32839 Inlet/exhaust isolator plug.













#### Non plug-in base / manifold

**ISO 01** 

ISO 02

**ISO** 1

**ISO 2** 

ISO 3



## 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.





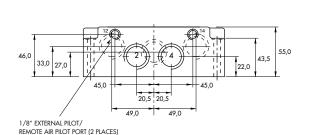


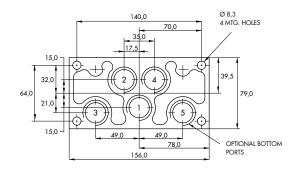
#### DIMENSIONS

Dimensions shown are metric (mm)

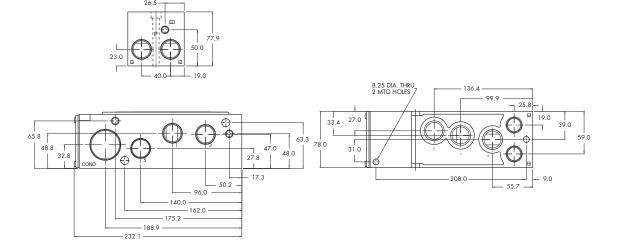
## Individual

ISO DIN 5599/1





## Manifold





#### Plug-in manifold



**ISO 01** 

ISO 02

**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
I/Z" NPIF	Double solenoid	MM-P3A-221-B	MM-P3A-222-B	MM-P3A-223-B
3/4" NPTF	Single solenoid	MM-P3A-231-A	MM-P3A-232-A	MM-P3A-233-A
	Double solenoid	MM-P3A-231-B	MM-P3A-232-B	MM-P3A-233-B

Note: Ports 1, 3 & 5 are always 3/4"

#### OPTIONS

Accessories: M-P3001

N-P3003-01

32845

Manifold options:

External pilot

MM-P3A-22x-x

25 for 1/2" port – common external pilot for 3/4" port – common external pilot for 3/4" port – common external pilot

Terminal strip

MM-P3A-xxx-A

J wired for sgl solenoid wired for double solenoid

light(s)

MM-P3A-xxx-JA

JA 110/120 volt
JB 220/240 volt
DA 24 volt

Valve blanking plate.

Manifold fastening kit.

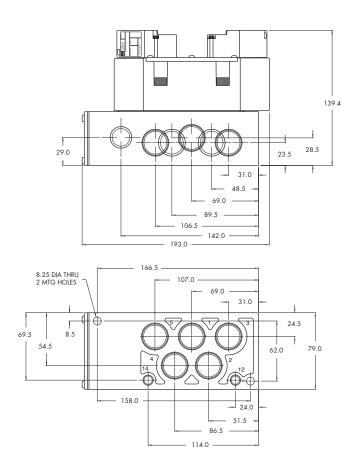
Inlet/exhaust isolator plug.







DIMENSIONS





Section 4

Pressure regulators



Sandwich pressure regulator with manual adjust knob	P. 247	PR37A
Sandwich pressure regulator with manual adjust knob	P. 249	PR42B
Sandwich pressure regulator	P. 251	PR46A
Sandwich pressure regulator with manual adjust knob	P. 253	PR47A
Sandwich pressure regulator with manual adjust knob	P. 255	PR48B
Sandwich pressure regulator with air pilot adjust	P. 257	-
Sandwich pressure regulator with manual adjust knob	P. 259	PR92C
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	PR93A
Sandwich pressure regulator with manual adjust knob	P. 267	
Non plug-in sandwich pressure regulator with manual adjust	P. 269	PRAO1A
Plug-in sandwich pressure regulator with air pilot adjust	P. 271	PRACIA
Non plug-in sandwich pressure regulator with manual adjust	P. 273	PRA02A
Non plug-in sandwich pressure regulator with manual adjust knob	P. 275	DDATA
Non plug-in sandwich pressure regulator with air pilot adjust	P. 277	PRA 1 A
Plug-in sandwich pressure regulator with manual adjust knob	P. 279	
Plug-in sandwich pressure regulator with air pilot adjust	P. 281	PRP1A
Non plug-in sandwich pressure regulator with manual adjust knob	P. 283	
Non plug-in sandwich pressure regulator with air pilot adjust	P. 285	PRA2D
Plug-in sandwich pressure regulator with manual adjust knob	P. 287	
Plug-in sandwich pressure regulator with air pilot adjust	P. 289	PRP2B
Non plug-in sandwich pressure regulator with manual adjust knob	P. 291	
Non plug-in sandwich pressure regulator with air pilot adjust	P. 293	PRA3C
Plug-in sandwich pressure regulator with manual adjust knob	P. 295	
Plug-in sandwich pressure regulator with air pilot adjust	P. 297	PRP3B

Series PR37

Series

# 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 "NON PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure
No gage port	PR37A-FAAA
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

PR93A

PRAO2A

PRA01A

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

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

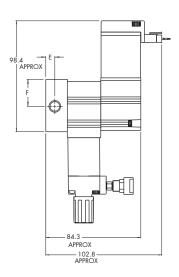
Flow: 0.4 C<sub>v</sub>

Spare parts: Pressure regulator (less sandwich block): PR37A-GOAA (knob), PR37A-COAA (slotted stem), PR37A-LOAA (slotted stem), P

• 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	With gage Port PR42B-AABA	

- 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

PRP1A

PRA01A

PRA02A

PRA1A

PRA2D

PRP2B

PRA3C

PRP3B

External pilot option in valve

# OPTIONS

Pressure range :

PR42B-AAAA A 0 to 120 PSI **B** 0 to 80 PSI C 0 to 40 PSI







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  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

Filtration:

Temperature range:

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

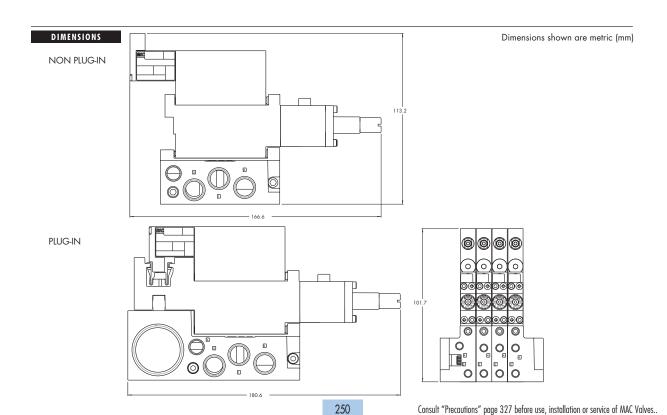
Flow:

 $0.25\,C_v$ 

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

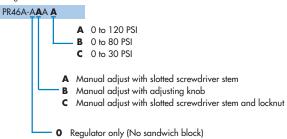
**PR92C** 

#### HOW TO ORDER

# REGULATORS FOR "PLUG-IN" AND "NON PLUG-IN" VALVES

# 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

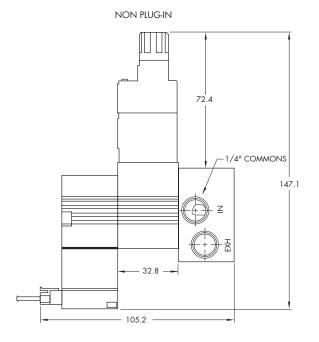
Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)

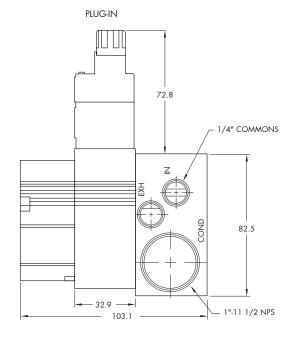
Filtration: 40

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)

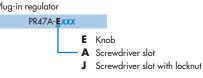
Gage	Single pressure
No Gage port	PR47A-FAAA
With Gage Port	PR47A-FABA

# OPTIONS













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

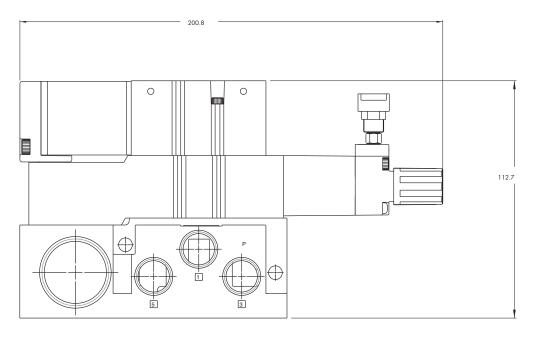
**Temperature range :**  $0^{\circ}F$  to  $120^{\circ}F$  (- $18^{\circ}C$  to  $+50^{\circ}C$ )

Flow: 0.4 C<sub>v</sub>

Spare parts: Pressure regulator (less sandwich block): PR47A-GOAA (knob), PR47A-COAA (screwdriver slot), PR47A-LOAA (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





# 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

NON PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot
Gage port	PR48B-BAAA	PR48B-BBAA

### PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot	PRAO
Gage port	PR/18R-AAAA	PR 18R-ΔBΔΔ	1 11110

#### 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.

**G** Screwdriver slot with locknut

Example: Valve 48B-AM D -AA A -GxxP-xxx with PR48B-AAAA

Internal pilot option in base
External pilot option in valve

PRP1A

PRA02A

PRA1A

PRA2D

PRP2B

**PRA3C** 

PRP3B

# OPTIONS

Pressure range :

PR48B-XXXA

A 0 to 120 PSI
B 0 to 80 PSI
C 0 to 30 PSI
Adjustment for: Plug-in regulator

Adjustment for : Plug-in regulator

PR48B-AXXX

A Knob
D Screwdriver slot

Non plug-in regulator PR48B-**B**xxx

B Knob
E Screwdriver slot
H Screwdriver slot with locknut







Fluid: Compressed air, inert gases

0 to 120 PSI Pressure range: 0 to 120 PSI Regulating range:

Lubrication: Not required, if used select a medium aniline point lubricant (between  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

Filtration: 40 µ

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

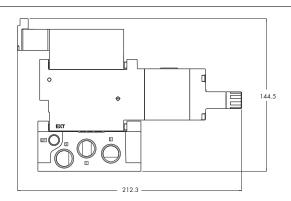
Flow:  $0.8 C_{v}$ 

• Pressure regulator (less sandwich block): PR48B-COAA (knob), PR48B-FOAA (screwdriver slot), PR48B-JOAA (screwdriver slot with locknut) Spare parts :

24177-160 (0 to 160 PSI, 23 mm) 24177-100 (0 to 100 PSI, 23 mm) 24177-060 (0 to 60 PSI, 23 mm)

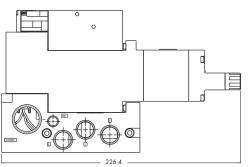
# DIMENSIONS

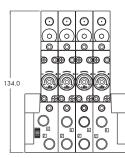
NON PLUG-IN



Dimensions shown are metric (mm)

PLUG-IN







# Sandwich pressure regulator with air pilot adjust

# OPERATIONAL BENEFITS

- 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

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

<sup>\*</sup> 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

0 to 120 PSI Pressure range:

0 to 120 PSI Regulating range:

Lubrication: Not required, if used select a medium aniline point lubricant (between  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

Filtration:

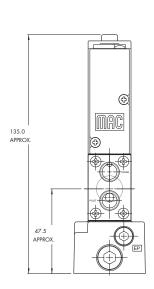
Temperature range:  $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ C to  $+50^{\circ}$ C)

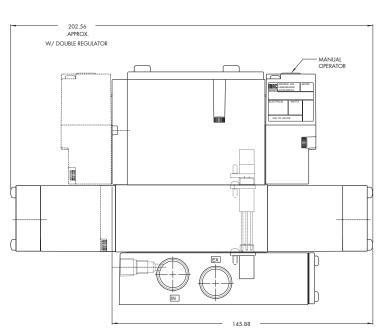
Flow:  $0.8 C_{v}$ 

• R-92003 : regulator end plate kit • Gage kit 0 - 160 PSI: N-92006-01 Spare parts :

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

<sup>\*</sup> 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

**D** Slotted stem

S Slotted stem with locknut

Other adjustment

PR92C-XXXX

Slotted stem, single solenoid Slotted stem, double solenoid

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

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<sub>v</sub>

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

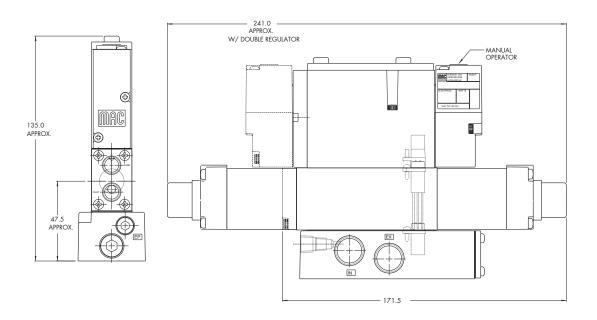
Options: • Pressure range: PR92C-xxxA (A 0 to 120 PSI)

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 "B" end

— H O to 80 PSI "A" end, O to 30 PSI "B" end — J O to 80 PSI "B" end, O 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.
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

> M Knob Slotted stem

Slotted stem with locknut

Other adjustment

PR92C-xxxx

Slotted stem, single solenoid Slotted stem, double solenoid Slotted stem, non plug-in 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

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

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

Flow: 0.8 C<sub>v</sub>

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

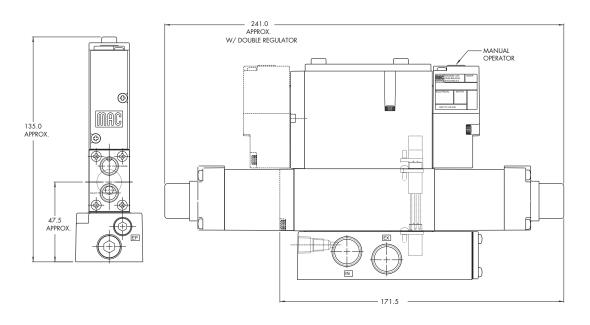
Options: • Pressure range: PR92C-xxxA (A 0 to 120 PSI)

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 80 PSI "A" end
G 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

- 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

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

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B

# 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

Note: Above models may be used with either single or double solenoid valves.

\* For use with dual pressure valves.







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)

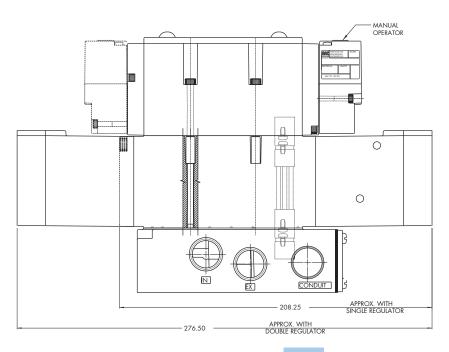
Flow: 2.4 C<sub>v</sub>

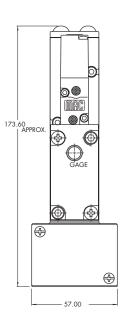
Spare parts : • Regulator end plate kit: R-93004 • Regulator by-pass end plate kit: R-93004-01

• Gage kit: N-92006-01 (0 to 160 PSI)

• 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.



PR37A PR42B PR46A PR47A PR48B

**PR92C** 

# HOW TO ORDER

\* For use with dual pressure valves.

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

PRP3B

Note: Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page.

Regulator less sandwich block Other adjustment PR93A-<u>x</u>0xx PR93A-xxxx Slotted stem, plug-in Slotted stem, non plug-in Slotted stem w/ locknut, plug-in Slotted stem w/ locknut, non plug-in Knob В Slotted stem M Slotted stem with locknut

Note: Above models may be used with either single or double solenoid valves.







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:

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

Flow: 2.4 C<sub>v</sub>

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

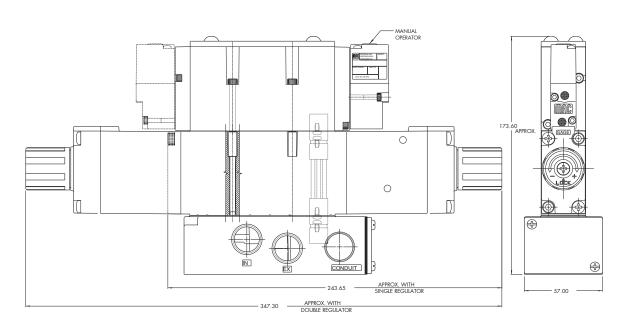
Option: • Pressure range: PR93A-xxxA (A 0 to 120 PSI)

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 "A" end, 0 to 30 PSI "B" end

— H O to 80 PSI "A" end, O to 30 PSI "B" end — J O to 80 PSI "B" end, O 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

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

### 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

- Use single pressure valve for all above models.

PRP2B

PRA3C

#### OPTIONS

Regulator less sandwich block

PR93A-<u>x</u>0xx **J** Knob

C 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

PRP3B

Note: Above models may be used with either single or double solenoid valves.







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

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

Flow: 2.4 C<sub>v</sub>

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 0 – 60 PSI : N-92006-03

Option: • Pressure range: PR93A-xxx<u>A</u> (A 0 to 120 PSI)

B 0 to 80 PSI C 0 to 30 PSI

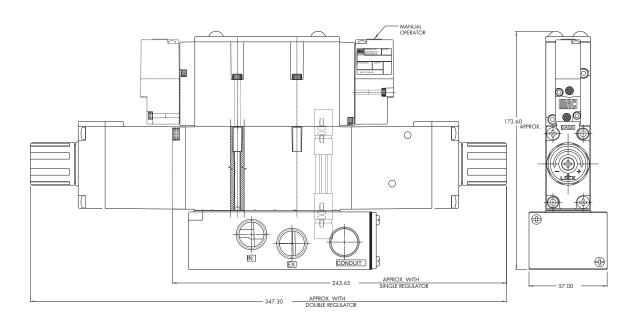
D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end

G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end

H 0 to 80 PSI "B" end, 0 to 30 PSI "A" 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

- 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	PRAO1A-BBAA	PRA01A-BDAA	PRA01A-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:

### PRA01A - xxxx

A Manual adjust with knob - Internal pilot

-B Manual adjust with knob - External pilot

G Manual adjust with screwdriver slot – Internal pilot

H Manual adjust with screwdriver slot – External pilot

K Manual adjust with screwdriver slot with locknut- Internal pilot

Manual adjust with screwdriver slot with locknut – External pilot

# Regulated Pressure range :

# PRA01A - xxxx

A 0 to 120 PSI
B 0 to 80 PSI
C 0 to 30 PSI
D 0 to 120 PSI "14" end - 0 to 80 PSI "12" end
E 0 to 120 PSI "14" end - 0 to 80 PSI "14" end
F 0 to 120 PSI "14" end - 0 to 30 PSI "12" end
G 0 to 120 PSI "12" end - 0 to 30 PSI "14" end
H 0 to 80 PSI "14" end - 0 to 30 PSI "12" end

0 to 80 PSI "12" end - 0 to 30 PSI "14" end

PRA01A

PRAO2A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

<sup>\*</sup> To be used with dual pressure valves.







Fluid: Compressed air, inert gases

Pressure supply:

Higher than maximum regulated pressure (max. 8,5 bar)

0 to 120 PSI

Regulating range:

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

Lubrication : Filtration :

Temperature range :

0°F to 120°F (-18°C to +50°C)

# DIMENSIONS

Dimensions shown are metric (mm)

1/4" OR 1/8" PORTS

179.2

# 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

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	PR93A
Internal	PRA01A-DAAA	PRA01A-DBAA	PRA01A-DDAA	PRA01A-DEAA	FRYUA
External	PRA01A-EAAA	PRA01A-EBAA	PRA01A-EDAA	PRA01A-EEAA	

Note: Only pressure range available for air adjust regulator is 0-120 PSI.

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

<sup>\*</sup> To be used with dual pressure valves.







Temperature range :

Fluid: Compressed air, inert gases

Pressure range: Higher than maximum regulated pressure

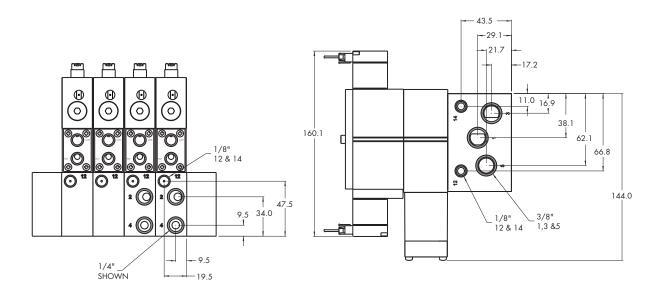
Regulating range: 0 to 120 PSI

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

Filtration: 40

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	PR93A
Internal	PRA02A-AAAA	PRA02A-ABAA	PRA02A-ADAA	PRA02A-AEAA	FRYUA
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	- <u>x</u> xx
--------	---------------

- A Manual adjust with knob Internal pilot
- Manual adjust with knob External pilot
- **G** Manual adjust with screwdriver slot Internal pilot
- H Manual adjust with screwdriver slot External pilot
- Manual adjust with screwdriver slot with locknut- Internal pilot
- Manual adjust with screwdriver slot with locknut External pilot

# Regulated Pressure range :

# PRA02A - xxxx

- **A** 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 "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 80 PSI "14" end 0 to 30 PSI "12" end
- 0 to 80 PSI "12" end 0 to 30 PSI "14" end

PRA01A

PRAO2A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

<sup>\*</sup> To be used with dual pressure valves.







Temperature range:

Fluid: Compressed air, inert gases

Pressure supply: Higher than maximum regulated pressure

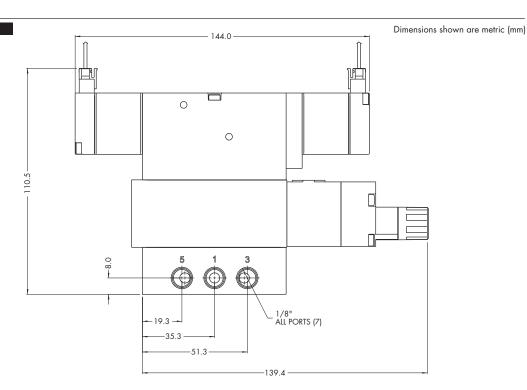
Regulating range: 0 to 120 PSI

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

Filtration: 40

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 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-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 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 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

<sup>\* -</sup> 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 pressure. Body/Block to base mounting screw #35336.

#### ADJUSTMENT OPTIONS

#### PRA1A-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)

PRP3B

PRA3C







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

Regulating range: 0 to 120 PSI (other ranges see below)

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

Filtration: 40 u

10 p

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

1.0 C<sub>v</sub>

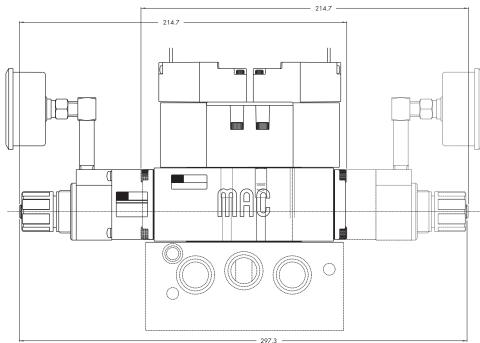
Spare parts: Pressure regulator (less sandwich block): PRA1A-JOAA (KNOB), PRA1A-COAA (SLOTTED STEM), PRA1A-MOAA (SLOTTED STEM WITH LOCKNUT).

Gage: N-82016-01 (0-120 PSI perpendicular) N-82016-02 (0-120 PSI perpendicular) N-82016-03 (0-80 PSI perpendicular) N-82016-04 (0-80 PSI perpendicular) N-82016-05 (0-30 PSI perpendicular) N-82016-06 (0-30 PSI perpendicular) N-82016-06 (0-30 PSI perpendicular)

Regulating range options: PRA1A-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 "14" end -0 to 30 PSI on "12" end
Replace by H -0 to 80 PSI on "14" end -0 to 30 PSI on "14" end
Replace by J -0 to 80 PSI on "12" end -0 to 30 PSI on "12" end

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

st - 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

PRA01A

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)

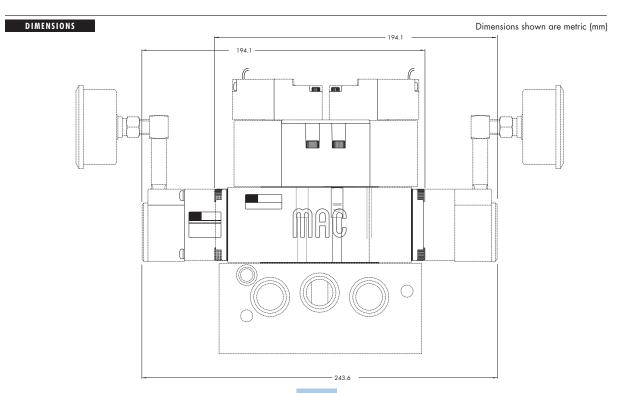
Filtration: 40

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

Flow: 1.0

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

Series **PRP** 1

- 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	PRP1 A-HADA	PRP1A-HCDA	PRP1A-HBDA	PRP1A-HDDA	PRP1A-HEEA

<sup>\*</sup> 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)

- 1. Valves used with above models must be external pilot models.
- $2. \ {\sf Cannot \ field \ convert \ regulator \ block \ from \ single \ pressure \ to \ dual \ pressure.}$
- 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: 40

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

Flow: 1.1 C<sub>v</sub>

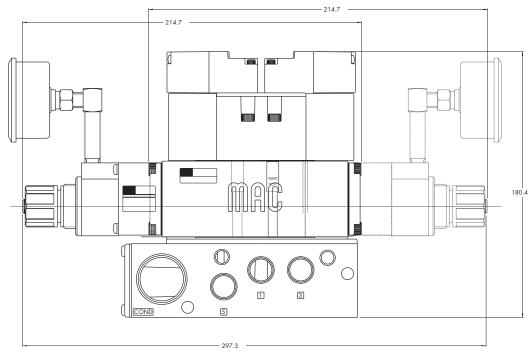
Spare parts : 
• Pressure regulator (less sandwich block) : PRP1A-JOKA (knob), PRP1A-COKA (slotted stem) PRP1A-MOKA (slotted stem with locknut)

Regulating range options : PRP1A-XXXA

- Replace by B -0 to 80 PSI -0 to 30 PSI -0 to 120 PSI on "12" end -0 to 80 PSI on "12" end -0 to 80 PSI on "14" end -0 to 80 PSI on "14" end -0 to 80 PSI on "14" end -0 to 30 PSI on "12" end -0 to 30 PSI on "14" end

Replace by 3 10 to 10 for 12 ella 10 to 30 for oil 14 ell

# DIMENSIONS





# 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.



PR37A PR42B PR46A PR47A PR48B

**PR92C** 

# HOW TO ORDER

# REGULATORS FOR INTERNAL PILOT

REGOLD TO TO THE TREE T						
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	PRP1A-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	PRP1 A-ECBA	PRP1A-EBBA	PRP1A-EDBA	PRP1A-EECA
Gage parallel to manual operator	PRP1A-EADA	PRP1A-ECDA	PRP1A-EBDA	PRP1A-EDDA	PRP1A-EEEA

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

<sup>\* -</sup> To be used with dual pressure valves.

<sup>1.</sup> Valves used with above models must be external pilot models.

<sup>2.</sup> Cannot field convert regulator block from single pressure to dual pressure.

<sup>3.</sup> 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

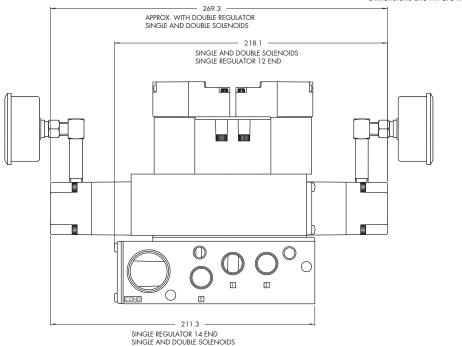
**Temperature range :**  $0^{\circ}F$  to  $120^{\circ}F$  (- $18^{\circ}C$  to  $+50^{\circ}C$ )

Flow: 1.1 C<sub>v</sub>

Spare parts : • Pressure regulator (less sandwich block): PRP1A-F0KA

• Regulator block to base mounting tie rod: 19496

# DIMENSIONS





Series

## 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

PRA1A

#### 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 Pual 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	

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. PRA2D

PRP1A

PRP2B

PRA3C

ADJUSTMENT OPTIONS

\* - To be used with dual pressure valves.

Note: regulating range for above models is 0-150 PSI. For other ranges see technical data page.

PRA2D-xxxx

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)

PRP3B







Fluid: Compressed air, inert gases

0 to 150 PSI Pressure range:

Regulating range: 0 to 150 PSI (other ranges see below)

Lubrication: Not required, if used select a medium aniline point lubricant (between  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

Filtration:

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

Flow:  $2.3 C_v$ 

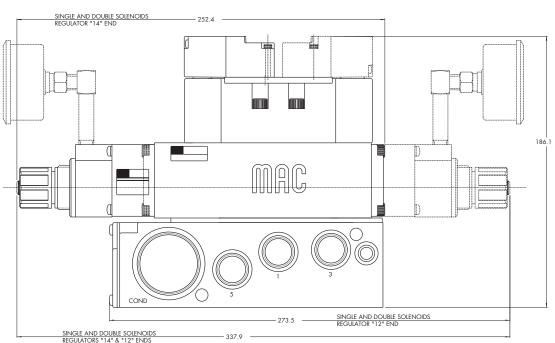
 Pressure regulator (less sandwich block): PRA2D-30AA (KNOB), PRA2D-C0AA (SLOTTED STEM), PRA2D-F0AA (SLOTTED STEM WITH LOCKNUT).
 Gage: Glycerine filled: N-62015-01
 Non filled: N-62016-01 Spare parts:

Regulating range options: PRA2D-XXXA

- Replace by B - Replace by C - 0 to 100 PSI - 0 to 45 PSI

DIMENSIONS

Dimensions shown are metric (mm)





Series

#### 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

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
PRA2D-4AAA	PRA2D-4EAA	PRA2D-4BAA	PRA2D-4FAA	PRA2D-4JAA
PRA2D-4ADA	PRA2D-4EDA	PRA2D-4BDA	PRA2D-4FDA	PRA2D-4JEA
PRA2D-4CDA	PRA2D-4GDA	PRA2D-4DDA	PRA2D-4HDA	
PRA2D-4ABA	PRA2D-4EBA	PRA2D-4BBA	PRA2D-4FBA	PRA2D-4JCA
PRA2D-4CBA	PRA2D-4GBA	PRA2D-4DBA	PRA2D-4HBA	
	Regulator 14 end Same regulated pressure to ports 2 and 4  PRA2D-4AAA  PRA2D-4ADA  PRA2D-4CDA  PRA2D-4ABA	Regulator 14 end           Same regulated pressure to ports 2 and 4         Regulator 12 end           PRA2D-4AAA         PRA2D-4EAA           PRA2D-4ADA         PRA2D-4EDA           PRA2D-4CDA         PRA2D-4GDA           PRA2D-4ABA         PRA2D-4EBA	Regulator 14 end Same regulated pressure to ports 2 and 4         Regulator 12 end Same regulated pressure to ports 2 and 4         Regulated pressure to ports 2 and 4         Regulated pressure to ports 2 and 4           PRA2D-4AAA         PRA2D-4EAA         PRA2D-4BAA           PRA2D-4ADA         PRA2D-4EDA         PRA2D-4BDA           PRA2D-4CDA         PRA2D-4GDA         PRA2D-4DDA           PRA2D-4ABA         PRA2D-4EBA         PRA2D-4BBA	Regulator 14 end Same regulated pressure to ports 2 and 4       Regulator 12 end Same regulated pressure to ports 2 and 4       Regulated pressure to ports 2 and 4       Regulated pressure to port 4       Regulated pressure to port 2         PRA2D-4AAA       PRA2D-4EAA       PRA2D-4BAA       PRA2D-4FAA         PRA2D-4ADA       PRA2D-4EDA       PRA2D-4BDA       PRA2D-4FDA         PRA2D-4CDA       PRA2D-4GDA       PRA2D-4DDA       PRA2D-4HDA         PRA2D-4ABA       PRA2D-4EBA       PRA2D-4BBA       PRA2D-4FBA

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	

st - 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

PRAO1A

PRAO2A

PRA1A

PRP1A

PRA2D

PRP2B

**PRA3C** 

PRP3B







Flow:

Fluid: Compressed air, inert gases Pressure range: 0 to 150 PSI 0 to 150 PSI Regulating range: Lubrication: Not required, if used select a medium aniline point lubricant (between  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ ) Filtration: Temperature range : 0°F to 120°F (-18°C to +50°C)

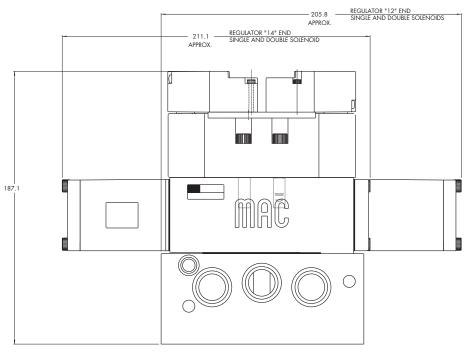
Spare parts :

 $2.3 \, \mathrm{C_v}$ 

Pressure regulator (less sandwich block): PRA2D-60AA.
Gage: Glycerine filled: N-62015-01
Non filled: N-62016-01

#### DIMENSIONS

Dimensions shown are metric (mm)



#### 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** 

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRA3C

PRP3B

#### HOW TO ORDER

# REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADILISTMENT)

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

PRP2B

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)
- K for slotted stem with locknut (internal pilot)
- L 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.

<sup>\*</sup> For use with dual pressure valves.







Temperature range :

Spare parts:

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  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

Filtration:

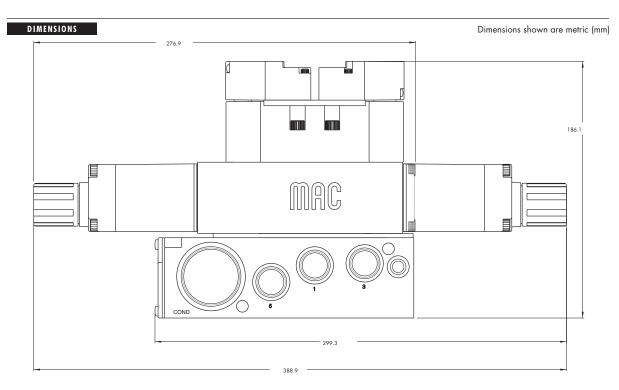
 $0^{\circ}$ F to  $120^{\circ}$ F (- $18^{\circ}$ C to + $50^{\circ}$ C)

Flow:

 $3.1 C_v$ 

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

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.



PR37A PR42B PR46A PR47A PR48B

PR92C

#### HOW TO ORDER

# REGULATORS FOR INTERNAL PILOT

	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-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

PR93A

PRA01A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

PRA3C

PRP3B

<sup>\* -</sup> To be used with dual pressure valves.

<sup>1.</sup> Valves used with above models must be external pilot models.

<sup>2.</sup> Cannot field convert regulator block from single pressure to dual pressure.

<sup>3.</sup> 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 150 PSI

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

Filtration: 40

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

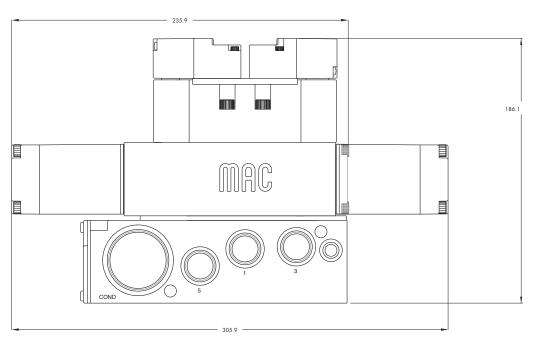
Flow: 3.1 C<sub>v</sub>

Spare parts : • Pressure regulator (less sandwich block): PRP2B-F0AA

• Body/block to base mounting screw: 19177

# DIMENSIONS

Dimensions shown are metric (mm)





Series

#### 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 1 2 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	

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-**x**xxx

st - To be used with dual pressure valves.

For other ranges see technical data page.

Note: regulating range for above models is 0-150 PSI.

- A for slotted stem adjustment (internal pilot)
  - **B** for slotted stem adjustment (external pilot)
- **D** for slotted stem with locknut (internal pilot)
  - for slotted stem with locknut (external pilot)

PRP3B







Fluid: Compressed air, inert gases

Pressure range: 0 to 150 PSI

**Regulating range:** 0 to 150 PSI (other ranges see below)

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

Filtration: 40 µ

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

Flow: 5.4 C<sub>v</sub>

Spare parts: Pressure regulator (less sandwich block): PRA3C-30AA (KNOB), PRA3C-C0AA (SLOTTED STEM), PRA3C-F0AA (SLOTTED STEM WITH LOCKNUT).

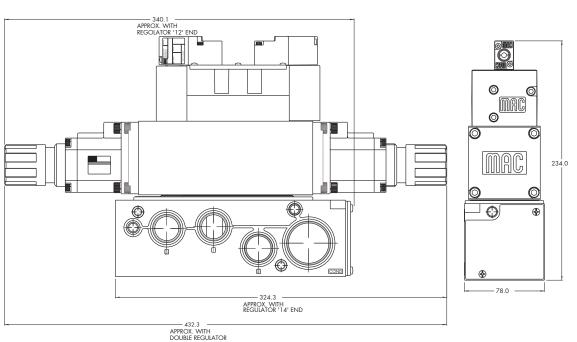
• Gage : • Glycerine filled : N-62015-01 • Non filled : N-62016-01

Regulating range options: PRA3C-XXXA

Replace by B - 0 to 100 PSI
Replace by C - 0 to 45 PSI

# DIMENSIONS

Dimensions shown are metric (mm)





Series

u lators

## 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	

 $<sup>\</sup>ensuremath{^*}$  - 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 #35418.

PRAO1A

PR93A

PRA02A

PRA1A

PRP1A

PRA2D

PRP2B

**PRA3C** 

PRP3B







Fluid: Compressed air, inert gases

0 to 150 PSI Pressure range:

0 to 150 PSI Regulating range:

Lubrication: Not required, if used select a medium aniline point lubricant (between  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

Filtration:

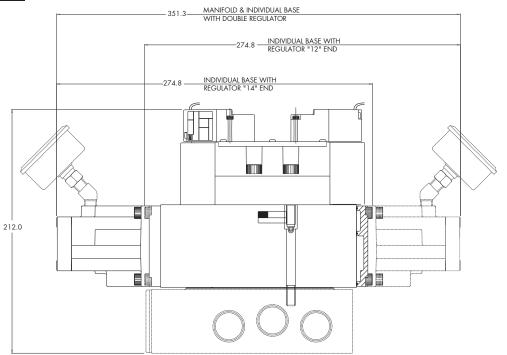
Temperature range : 0°F to 120°F (-18°C to +50°C)

Flow:  $5.4\,\mathrm{C_v}$ 

 Pressure regulator (less sandwich block) : PRA3C-60AA.
 Gage : • Glycerine filled : N-62015-01
 Non filled : N-62016-01 Spare parts :

#### 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	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

<sup>\*</sup> For use with dual pressure valves.

## ADJUSTMENT OPTIONS

PRP3B-xxxx

- **G** for slotted stem (internal pilot)
- **H** for slotted stem (external pilot)
- for slotted stem with locknut (internal pilot)
- L for slotted stem with locknut (external pilot)

# Notes:

- 1. 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. 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  $180^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

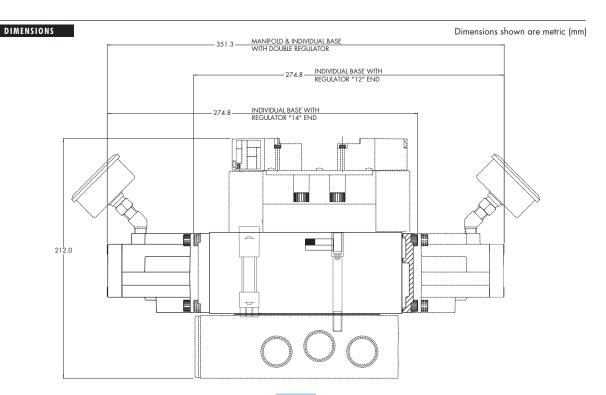
Filtration:

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

Flow:  $5.4 \, C_{\rm v}$ 

 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 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.



PR37A PR42B PR46A PR47A PR48B

**PR92C** 

#### HOW TO ORDER

#### REGULATORS FOR INTERNIAL 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 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  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

<sup>\* -</sup> 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.

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)

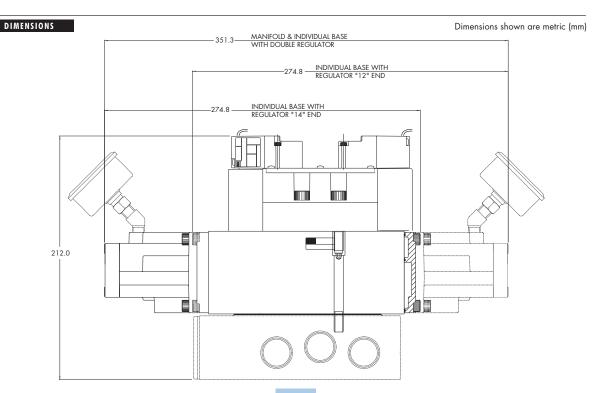
Filtration: 40 µ

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

Flow: 5.4 C<sub>v</sub>

Spare parts : • Pressure regulator (less sandwich block): PRP3B-F0AA

• Regulator block to base mounting screw: 19457





Section 5

Intrinsically Safe Valves

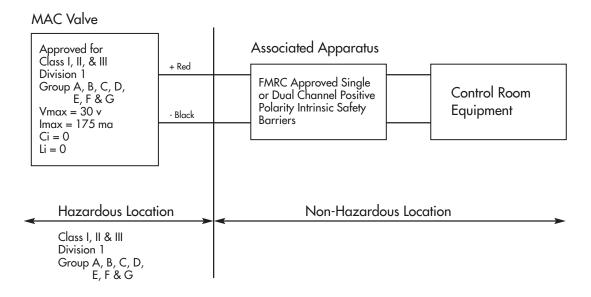


	Page
Specifications for Intrinsically Safe Valves	301
52 series	304
400 series	304
92 series	305



#### 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.
- lsc = 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 ?
- 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:

 $Voltage \ at \ Solenoid = I_{TOTAL} \ x \ 250 \ ohms = \underline{\hspace{1cm}} volts$ 

			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.

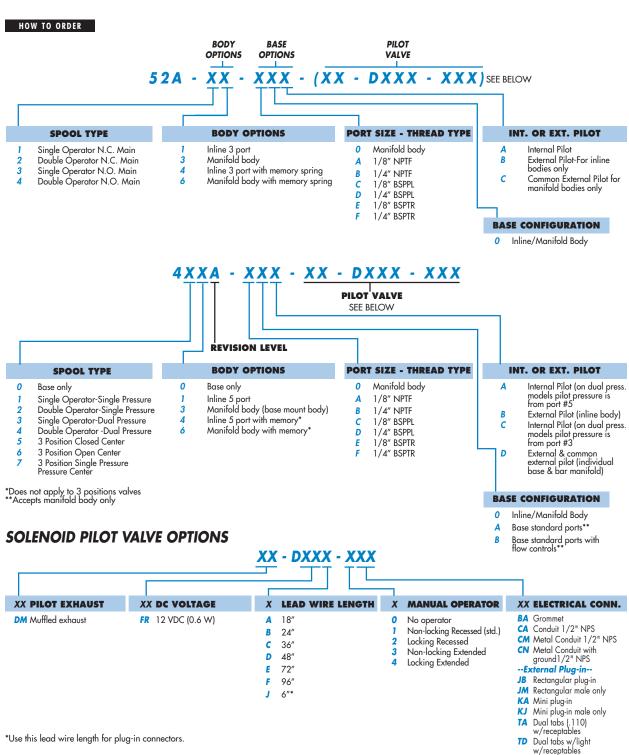
Above data is based on a 24 v DC supply voltage to the input of the barrier. A 12 v DC, 243 OHM, .6 watt intrinsically safe solenoid is used. The measurement with light is an LED with a current limiting resistor.

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

<sup>\* =</sup> Not a recommended combination

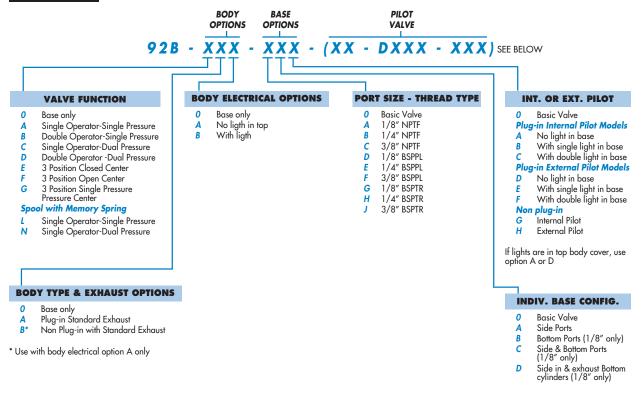




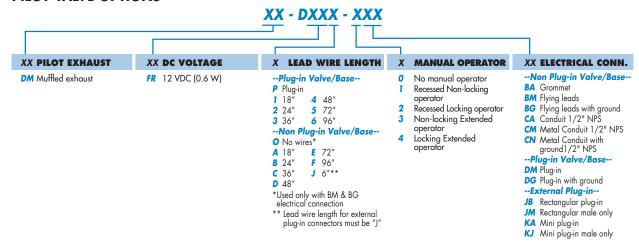
TJ Dual tabs (.110) plainTM Dual tabs w/light without receptables



#### 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



# OPTIONS AVAILABLE FOR

- Pilot operated valves 52, 67, 92, 93, 400, ISO1, ISO2, ISO3 Series



1

2

3 4 Non-locking recessed Locking recessed

Non-locking extended Locking extended

	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)	КС	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 len	gth options choose 0 through F
E	72"	Note: When coil is ab	ove 30 volts, a ground wire is required. Applies to option
F	96"	with flying leads.	
	3. MANUAL OPERATOR		
D-XX X-X XX	MANUAL OPERATOR		
0	No operator	<del></del>	



VALVE CODE ➤

 $G \frac{XX}{1} \frac{X-X}{2} \frac{XX}{3}$ 

#### 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)	BP	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 groun
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
	<del></del>	KA	Solenoid plug-in wire assembly
G-XX X-X XX	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
В	24" coil leads	KE	KA with suppression diode
<u> </u>	36" coil leads	KF	KA with suppression diode and ground
D	48" coil leads	KJ	Solenoid plug-in housing without wire assembly
E	72" coil leads	KM	Solenoid plug-in housing with ground pin without wire
F	96" coil leads		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
1	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		15 t mini soppi essien aleae, ziesning aleae, ligin al giesnia
-		ELEC	TRICAL CONNECTION FOR PLUG-IN VALVES
	3. MANUAL OPERATOR	G-XX X-X XX	PLUG-IN OPTIONS
G-XX X-X XX	MANUAL OPERATOR	SB	Base plug-in with ground
1	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 grou
3	Non-locking extended	SE	Base plug-in with MOV
4	Locking extended	SF	Base plug-in with MOV and ground
-	200g Onoridod	SG	Base plug-in with rectifier
		SH	Base plug-in with rectifier and ground
		SK	Base plug-in with light and ground
		SL	Base plug-in with suppression and blocking diode and light
		SM	Base plug-in with suppression and blocking diode and light
		3/11	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



#### **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" electical 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 w
G	120"	*BX	BA with suppression diode plus blocking diode & light on to
Н	144"	*BY	BA with suppression diode plus blocking diode & light of top & ground wire
G-XX X-X XX	3. MANUAL OPERATOR  MANUAL OPERATOR	G-XX X-X XX	SOLENOID PLUG-IN CONNECTOR WITH LEADS
G-XX X-X XX		G-XX X-X XX GA	SOLENOID PLUG-IN CONNECTOR WITH LEADS  MAC JAC Solenoid plug-in
G-XX X-X XX 1 2	MANUAL OPERATOR		
1	MANUAL OPERATOR  Non-locking recessed	GA	MAC JAC Solenoid plug-in
1 2	MANUAL OPERATOR  Non-locking recessed  Locking recessed	GA GB	MAC JAC Solenoid plug-in MAC JAC Solenoid plug-in w/Diode
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC	MAC JAC Solenoid plug-in MAC JAC Solenoid plug-in w/Diode MAC JAC Solenoid plug-in w/MOV
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD	MAC JAC Solenoid plug-in MAC JAC Solenoid plug-in w/Diode MAC JAC Solenoid plug-in w/MOV MAC JAC Solenoid plug-in w/LED
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  MAC JAC Solenoid plug-in w/Diode & LED  MAC JAC Solenoid plug-in w/MOV & LED  MAC JAC Solenoid plug-in w/MOV & LED  MAC JAC Solenoid plug-in w/Rectifier
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  MAC JAC Solenoid plug-in w/Diode & LED  MAC JAC Solenoid plug-in w/MOV & LED
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  MAC JAC Solenoid plug-in w/Diode & LED  MAC JAC Solenoid plug-in w/MOV & LED  MAC JAC Solenoid plug-in w/MOV & LED  MAC JAC Solenoid plug-in w/Rectifier
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  MAC JAC Solenoid plug-in w/Diode & LED  MAC JAC Solenoid plug-in w/MOV & LED  MAC JAC Solenoid plug-in w/MOV & LED  MAC JAC Solenoid plug-in w/Rectifier  MAC JAC Solenoid plug-in w/Rectifier & LED
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH KA	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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 assembly
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH KA KB	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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 assembly  KA with ground wire
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH KA KB	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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 assembly  KA with ground wire  KA with suppression diode
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH KA KB	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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 assembly  KA with ground wire  KA with suppression diode & ground wire  Plug-in housing without wire assembly
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH KA KB KE	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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  MAC JAC Solenoid plug-in w/Rectifier  MAC JAC Solenoid plug-in w/Rectifier & LED  Plug-in wire assembly  KA with ground wire  KA with suppression diode  KA with suppression diode & ground wire  Plug-in housing without wire assembly  Plug-in housing without wire assembly
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GD GE GF GG GH KA KB KE KF	MAC JAC Solenoid plug-in MAC JAC Solenoid plug-in w/Diode MAC JAC Solenoid plug-in w/MOV MAC JAC Solenoid plug-in w/LED 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 MAC JAC Solenoid plug-in w/Rectifier & LED Plug-in wire assembly KA with ground wire KA with suppression diode KA with suppression diode & ground wire Plug-in housing without wire assembly ('KA' without wire assembly) Plug-in housing without wire assembly ('KB' without wire assembly)
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GC GD GE GF GG GH KA KB KE KF	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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  MAC JAC Solenoid plug-in w/Rectifier & LED  Plug-in wire assembly  KA with ground wire  KA with suppression diode  KA with suppression diode & ground wire  Plug-in housing without wire assembly  ('KA' without wire assembly)  Plug-in housing without wire assembly  ('KB' without wire assembly)  KA with suppression diode plus blocking diode
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GC GD GE GF GG GH KA KB KE KF KJ	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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  MAC JAC Solenoid plug-in w/Rectifier & LED  Plug-in wire assembly  KA with ground wire  KA with suppression diode  KA with suppression diode & ground wire  Plug-in housing without wire assembly  ('KA' without wire assembly)  Plug-in housing without wire assembly  ('KB' without wire assembly)  KA with suppression diode plus blocking diode  KA with suppression diode plus blocking diode  KA with light on top
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GC GD GE GF GG GH KA KB KE KF KJ	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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  MAC JAC Solenoid plug-in w/Rectifier & LED  Plug-in wire assembly  KA with ground wire  KA with suppression diode & ground wire  Plug-in housing without wire assembly  ('KA' without wire assembly)  Plug-in housing without wire assembly  ('KB' without wire assembly)  KA with suppression diode plus blocking diode  KA with suppression diode plus blocking diode & ground wire
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GB GC GC GD GE GF GG GH KA KB KE KF KJ KM	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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  MAC JAC Solenoid plug-in w/Rectifier & LED  Plug-in wire assembly  KA with ground wire  KA with suppression diode  KA with suppression diode & ground wire  Plug-in housing without wire assembly  ('KA' without wire assembly)  Plug-in housing without wire assembly  ('KB' without wire assembly)  KA with suppression diode plus blocking diode  KA with suppression diode plus blocking diode  KA with light on top  KA with light on top
1 2 3	MANUAL OPERATOR  Non-locking recessed  Locking recessed  Non-locking extended	GA GB GC GC GD GE GF GG GH KA KB KE KF KJ KM	MAC JAC Solenoid plug-in  MAC JAC Solenoid plug-in w/Diode  MAC JAC Solenoid plug-in w/MOV  MAC JAC Solenoid plug-in w/LED  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  MAC JAC Solenoid plug-in w/Rectifier & LED  Plug-in wire assembly  KA with ground wire  KA with suppression diode  KA with suppression diode & ground wire  Plug-in housing without wire assembly  ('KA' without wire assembly)  Plug-in housing without wire assembly  ('KB' without wire assembly)  KA with suppression diode plus blocking diode  KA with suppression diode plus blocking diode  KA with light on top  KA with light on top



VALVE CODE ➤

 $H \frac{XX}{1} \frac{X-X}{2} \frac{XX}{3}$ 

#### **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 rectitier)	FA	Base plug-in
AC	240/50, 240/60 (5.8 W)	FB	FA with ground wire
	(use connector with rectifier)	FC	FA with light
AD	24/50, 24/60 (7.8 W)	FD	FA with light & ground wire
	(use connector with rectifier)	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 wi
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)	MB	MA with ground wire
A	18"	МС	MA with light
В	24"	MD	MA with light & ground wire
С	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 wir
		*MR	MA with suppression diode plus blocking diode & light
H-XX X-X XX 0	MANUAL OPERATOR  No operator	*MS	MA with suppression diode plus blocking diode & light & ground wire
1	Non-locking recessed	MT	MA with full wave rectifier plus light
2	Locking recessed	MU	MA with full wave rectifier plus light & ground wire
3	Non-locking extended	MJ	Plug-in housing without wire assembly ('MA' option
4	Locking extended	MJ	without wire assembly)
	Locking extended	MM	Plug-in housing without wire assembly ('MB' option
	4. ELECTRICAL CONNECTION	WilWi	without wire assembly)
	4. Elleridat Connection	KA	Mini square connector
H-XX X-X XX	ELECTRICAL CONNECTION	KB	KA with suppression diode
BA	Flying leads	KC	KA with M.O.V.
BB	BA with ground wire	KD	KA with light
BC	BA with light	KE	KA with light & suppression diode
BD	BA with light & ground wire	KF	KA with light & M.O.V.
BE	BA with suppression diode	KJ	Mini square connector – male only
BF	BA with suppression diode & ground wire	KK	KJ with suppression diode
BG	BA with suppression diode & ground wire  BA with suppression diode plus light	KL	KJ with M.O.V.
ВН	BA with suppression diode plus light & ground wire	KM	KA with full wave rectifier
*BN	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 & M.O.V.
*BR	BA with suppression diode plus blocking diode & ground wire	KR	KA with full wave rectifier plus light & M.O.V.
*BS	BBA with suppression diode plus blocking diode & light &	KS	KJ with full wave rectifier
93	ground wire	* Blocking diode is loc	
		Proceeding aloue is 100	



VALVE CODE ➤

 $J \frac{XX}{1} \frac{X-X}{2} \frac{XX}{3}$ 

#### **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		* Not available on m	anifold or stacking valves
Not available on 3	6 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
I-XX X-X XX	WIRE LENGTH	KA	Mini plug-in
A	18" coil leads	КВ	Mini plug-in with diode
	24" coil leads	КС	Mini plug-in with MOV
<u>В</u>		KD	Mini plug-in with light
	36" coil leads	KE	Mini plug-in with diode and light
D	48" coil leads	KF	Mini plug-in with MOV and light
E	72" coil leads	KG	Mini plug-in with rectifier
<u> </u>	96" coil leads	KH	Mini plug-in with rectifier and light
P	Base plug-in	KJ	Mini plug-in - Male only
0	No leads (use with J, K & L type connectors)	KK	Mini plug-in with diode - Male only
	3. MANUAL OPERATOR	KL	Mini plug-in with MOV - Male only
		KM	Mini plug-in with light - Male only
I-XX X-X XX	MANUAL OPERATOR	KN	Mini plug-in with diode and light – Male only
0	No operator	KP	Mini plug-in with MOV and light – Male only
1	Non-locking recessed	KR	Mini plug-in with rectifier – Male only
2	Locking recessed	KS	Mini plug-in with rectifier and light – Male only
3	Non-locking extended		CONNECTORS FOR NON DUILS IN VALVES
4	Locking extended		CONNECTORS FOR NON PLUG-IN VALVES
-	LOCKING EXIGNACA	J-XX X-X XX	MINI SQUARE PLUG-IN CONNECTORS
	4. ELECTRICAL CONNECTION		8.0 MM SPACING BETWEEN PINS
	7. ELECTRICAL CONNECTION		ISO SPECIFICATION 15217
	CONNECTORS FOR NON BLUG IN VALVES	LA	Mini plug-in
IVVVVVV	CONNECTORS FOR NON PLUG-IN VALVES	LB	Mini plug-in with diode
I-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	LJ	Mini plug-in – Male only
GF	MAC JAC solenoid plug-in with MOV and light	LK	Mini plug-in with diode - Male only
GG	MAC JAC solenoid plug-in with rectifier	— LL	Mini plug-in with MOV - Male only
GH	MAC JAC solenoid plug-in with rectifier and light	LM	Mini plug-in with light - Male only
GJ	MAC JAC solenoid plug-in – Male only	LN	Mini plug-in with diode and light – Male only
GK	MAC JAC solenoid plug-in with diode – Male only	LIN LP	Mini plug-in with MOV and light – Male only
GL	MAC JAC solenoid plug-in with MOV – Male only		
GM	MAC JAC solenoid plug-in with light – Male only	LR	Mini plug-in with rectifier – Male only
GN	MAC JAC solenoid plug-in with diode and light – Male only	LS	Mini plug-in with rectifier and light – Male only
GP	MAC JAC solenoid plug-in with MOV and light – Male only	J-XX X-X XX	CONNECTORS FOR PLUG-IN VALVES
		FA	Base plug-in
GR	MAC JAC solenoid plug-in with rectifier – Male only	FB	
G5	MAC JAC solenoid plug-in with rectifier and light – Male only		Base plug-in with diode
*JA	Square Connector	FC FD	Base plug-in with MOV
*JC	Square Connector with light	FD	Base plug-in with light
	Square Connector with diode	FE	Base plug-in with diode and light
*JE			D   : ::  140\/
*JE *JF	Square Connector with MOV	FF	Base plug-in with MOV and light
	Square Connector with MOV Square Connector with diode/light	FF FG	Base plug-in with MOV and light Base plug-in with rectifier
*JF			



VALVE CODE ➤

 $\begin{array}{c|c} L & \underline{XX} & \underline{X-X} & \underline{XX} \\ \hline 1 & \underline{2} & \underline{3} & \underline{4} \end{array}$ 

#### **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

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	ВС	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
ВМ	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)
КВ	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	МС	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
** <b>EA</b> Use these options fo	Base plug-in 3 pin (Plarity switching cover)		



VALVE CODE ➤

 $R \frac{XX}{1} \frac{X-X}{2} \frac{XX}{3}$ 

#### **OPTIONS AVAILABLE FOR**

- Solenoid valves 33 Series



JST solenoid plug-in with LED and MOV
\*MOD numbers required for these voltages (consult factory) \*\* Not available for flying leads connector

	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)
	24 VDC (230VV)
	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
	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 RD	Mini JAC solenoid plug-in with MOV 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



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.

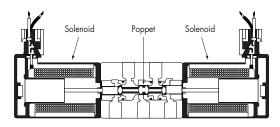


Figure 1 : Double Solenoid Poppet

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.

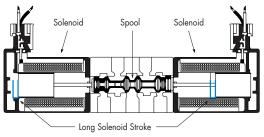


Figure 2 : Double Solenoid Spool Design

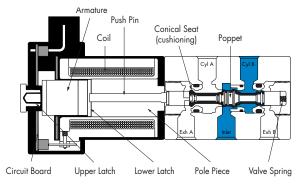


Figure 3 : Latching Solenoid Design



#### 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.

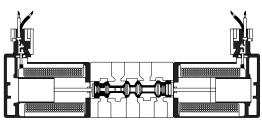


Figure 4: Conventional Double Solenoid

SOLENOID "A" SOLENOID "B" WIRING SCHEMATIC FOR 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.

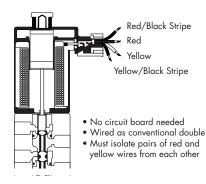


Figure 5: Four Wire Latching (+) POS IN→A - Yellov (+) POS IN→B - Rec (-) NEG IN→A low/W/Black Strip (-) NEG IN→B Red/W/Black Stripe 4 WIRE SCHEMATIC FOR LATCHING

#### 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.

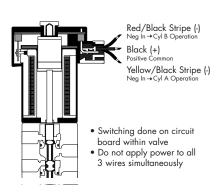
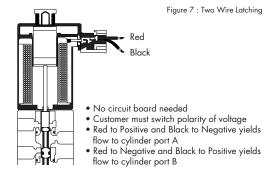


Figure 6: Three Wire Latching YFLLOW W/BLACK STRIPE RED W/BLACK STRIPE (+) COMMON BLACK 3 WIRE SCHEMATIC FOR LATCHING



#### 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



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