MAC®

VALVES

NEW Technology

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

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

- reliability
- speed
- repeatability
- non lube service
- ease of maintenance
- compact packaging
- modularity
- specific application modifications
- low wattage
- broad electrical options

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

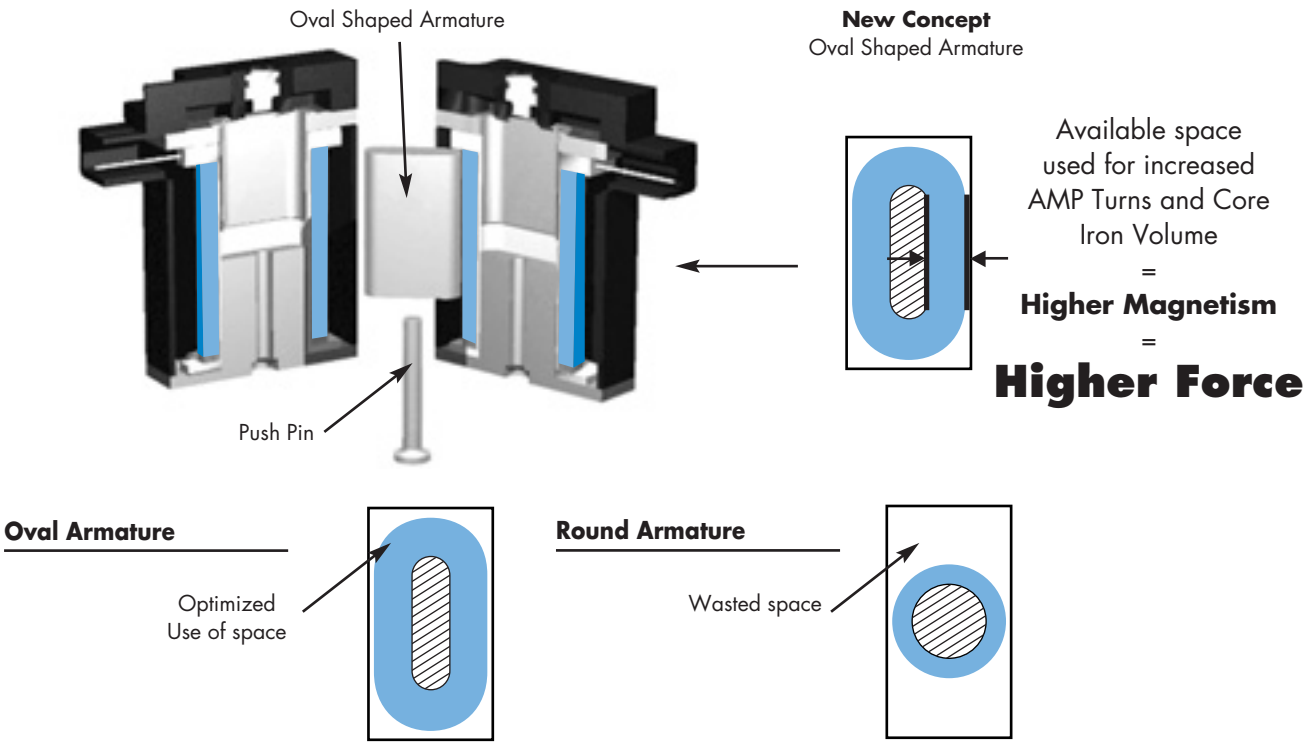
The patented Latching Solenoid is another new offering to the MAC product line. The latching solenoid provides the function of a double solenoid operated valve utilizing only one solenoid.

I. OVAL SHAPED ARMATURE SOLENOID – Maximized Shifting Forces

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

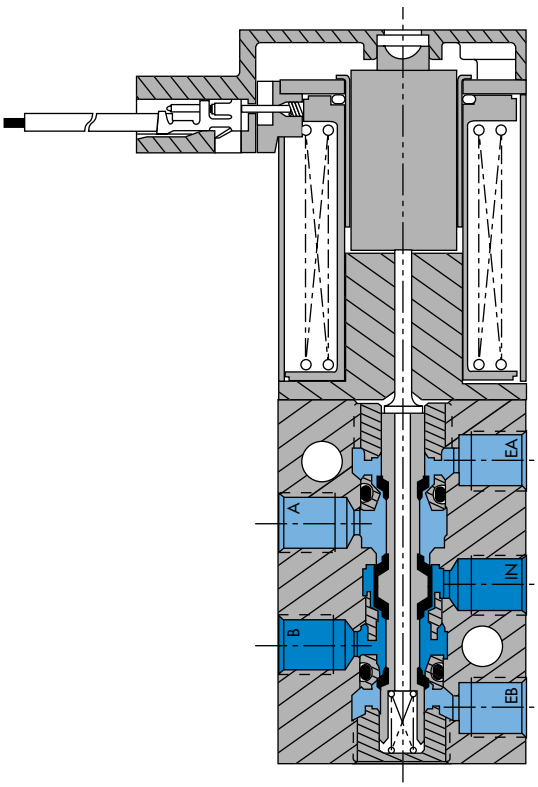
- Increased coil windings (amp turns)
- Increased core iron volume

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



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

DIRECT SOLENOID POPPET VALVE



SHORT STROKE

Short Stroke = High solenoid force

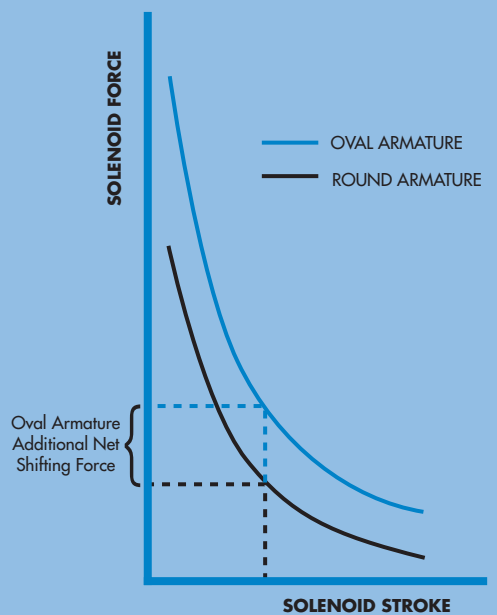
Short Stroke = High return spring force

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^2" 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

solenoid force curve

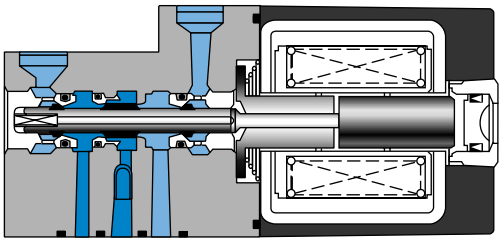


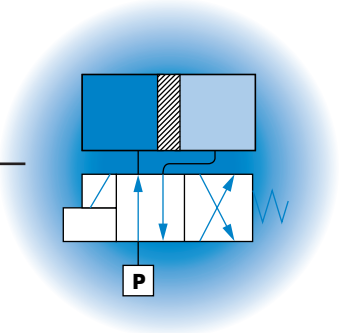
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

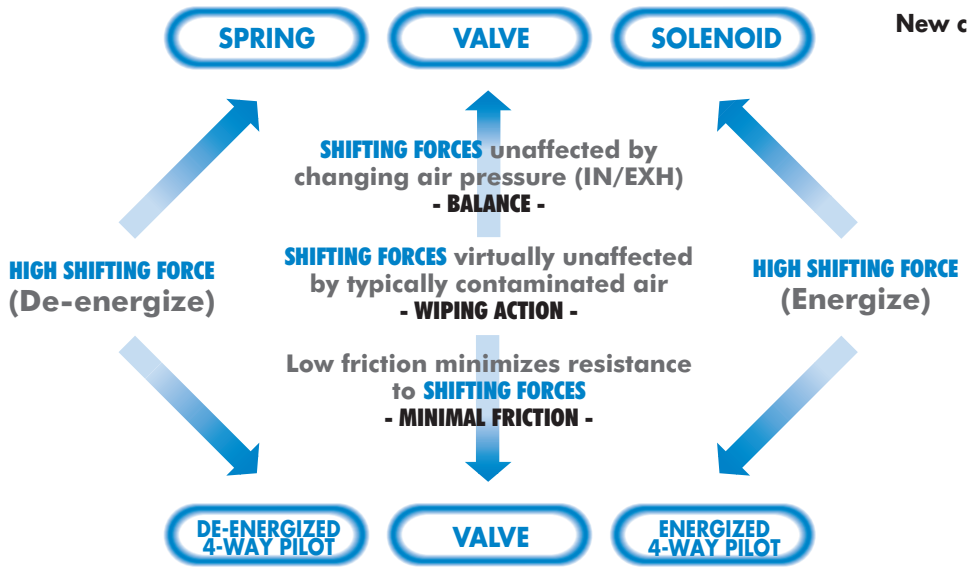
The balanced 4-way pilot valve provides maximum shifting forces in both directions by supplying air alternately to each end section of the spool, similar to double acting rodless cylinder. This system provides maximized shifting forces, equal forces at energization and de- energization, with no resistance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

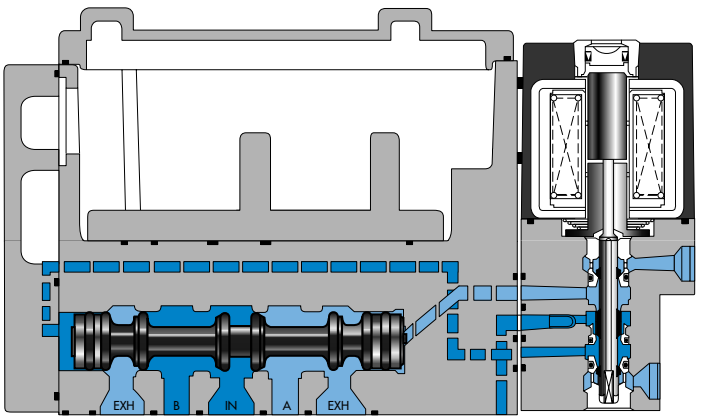
Small direct 4-way solenoid operated valve





New concept : 4-way pilot





Solenoid pilot operated large valve

Valves that don't stick

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

ACT LOCAL

MAC DISTRIBUTORS NETWORK

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

- ***45 countries***
- ***3500 employees***
- ***200 service centers***
- ***$ 50 million inventory***
- ***1000 factory certified application specialists***

KEEPING YOUR MACHINES RUNNING AROUND THE CLOCK AROUND THE WORLD

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

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.*

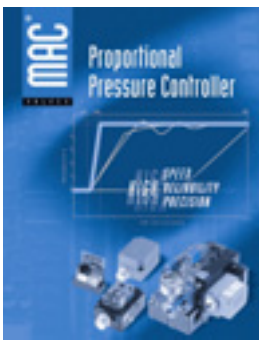
Other MAC VALVE literature:

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

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

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

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.

- Direct solenoid valves 3 ways : universal
  The following functions are available

  - 3 ways NC
  - 3 ways NO
  - 2 ways NC
  - 2 ways NO
  - Selector
  - Divertor

- 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 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)

- 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

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

Section 1 Direct solenoid and solenoid pilot operated valves

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

Function	Port size	Flow (Max) Cv	Individual mounting							
			Inline	Sub-base non "plug-in"	Sub-base "plug-in"	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
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	

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

Manifold mounting

Series

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

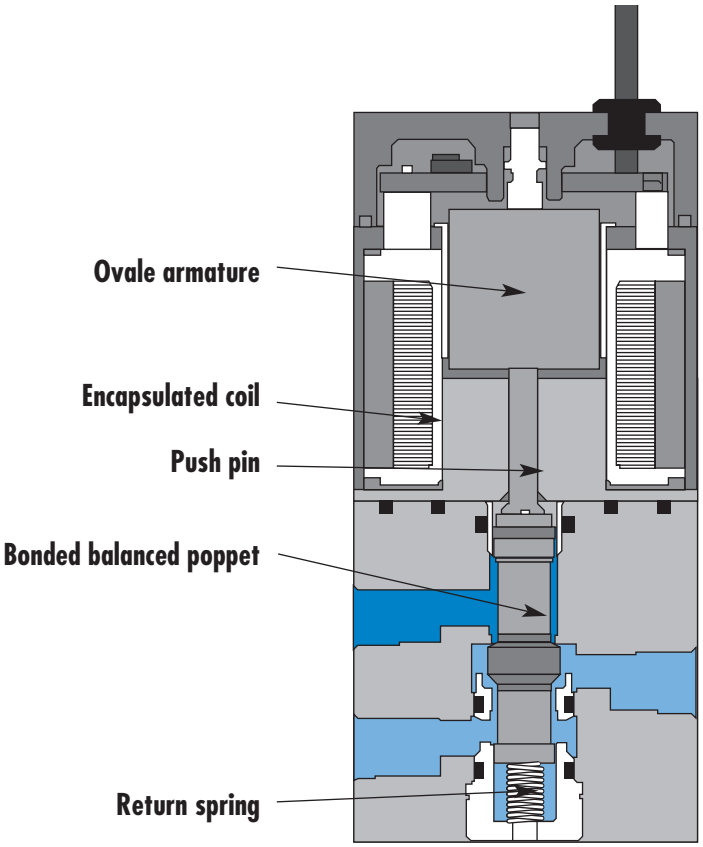
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Direct solenoid and solenoid pilot operated valves

8 mm valve

Individual mounting

Inline



SERIES FEATURES

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

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

MAC®

Series 33

Direct solenoid and solenoid pilot operated valves

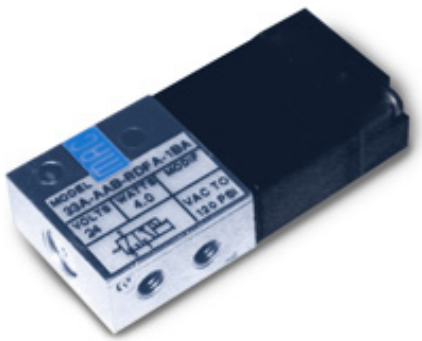
8mm valve

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NC	**M3**	**0.082 C_v**	Inline	

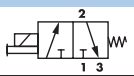
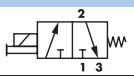
OPERATIONAL BENEFITS

1. 8mm valve direct solenoid operated.
2. Balanced poppet, immune to pressure variations.
3. Short stroke with high flow.
4. Patented solenoid develops high shifting forces.
5. Low wattage solenoids.
6. Powerful return spring.
7. Extremely fast response times.

Patents and patents pending



HOW TO ORDER

Port size	N.C. Only	N.C. Only **
		
M3	33A-AAB-R***XXX-XXX***	33A-BAB-R***XXX-XXX***

** For use with solenoids above 4.0 W - MOD number required. (Consult factory)

SOLENOID OPERATOR ➤ R ***XXX-XXX***

XX	Voltage
DA	24 VDC (0.5W)
DB	24 VDC (1.0W)
DC	24 VDC (1.8W)
DF	24 VDC (4.0W)
DG	12 VDC (0.5W)
DH	12 VDC (1.0W)
DJ	12 VDC (1.8W)
DM	12 VDC (4.0W)

X	Lead wire length
0	No Lead wire*
A	18″
B	24″
C	36″
D	48″
E	72″

* Not available for flying leads connectors

X	Manual operator
0	No manual operator
1	Non-locking recessed
3	Non-locking extended

XX	Electrical connection
BA	Flying leads
BB	Flying leads w/LED
BC	Flying leads w/MOV
BD	Flying leads w/LED & MOV
RA	Mini JAC Solenoid plug-in
RB	Mini JAC Solenoid plug-in w/LED
RC	Mini JAC Solenoid plug-in w/MOV
RD	Mini JAC Solenoid plug-in w/LED & MOV
TA	JST Solenoid plug-in
TB	JST Solenoid plug-in w/LED
TC	JST Solenoid plug-in w/MOV
TD	JST Solenoid plug-in w/LED & MOV

* Other options available, see page 321.

Washdown capability is possible for the "B" and "R" type electrical connectors. Consult factory for ordering information.

MAC

Series 33

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

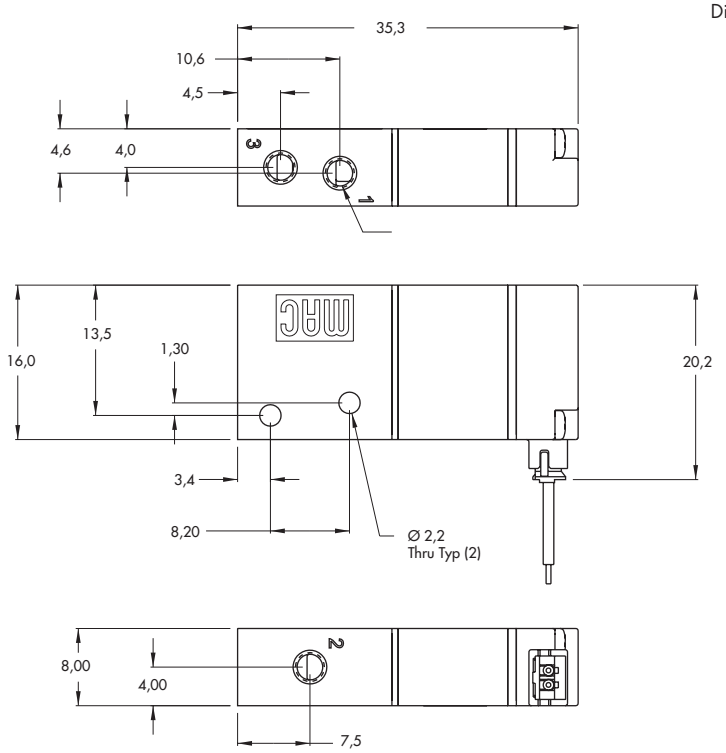
TECHNICAL DATA

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

DIMENSIONS

Dimensions shown are metric (mm)

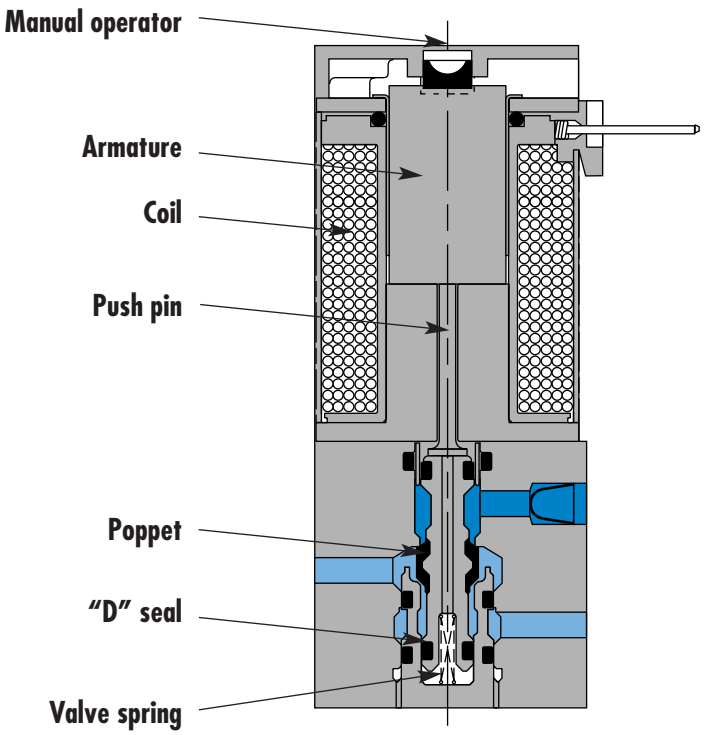
Shown with JST Connector



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

Individual mounting

Inline



SERIES FEATURES

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

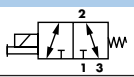
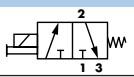
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Universal valve	NC only valve
		
M5	34C-ABA-G ***XXX-XXX***	34C-ABB-G ***XXX-XXX***
# 10-32	34C-AAA-G ***XXX-XXX***	34C-AAB-G ***XXX-XXX***

SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18″
B	24″
C	36″

X	Manual operator
1	Non-locking recessed
3	Non-locking extended

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

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.

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

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

MAC

Series 34

100% OF PRODUCTION TESTED 100%

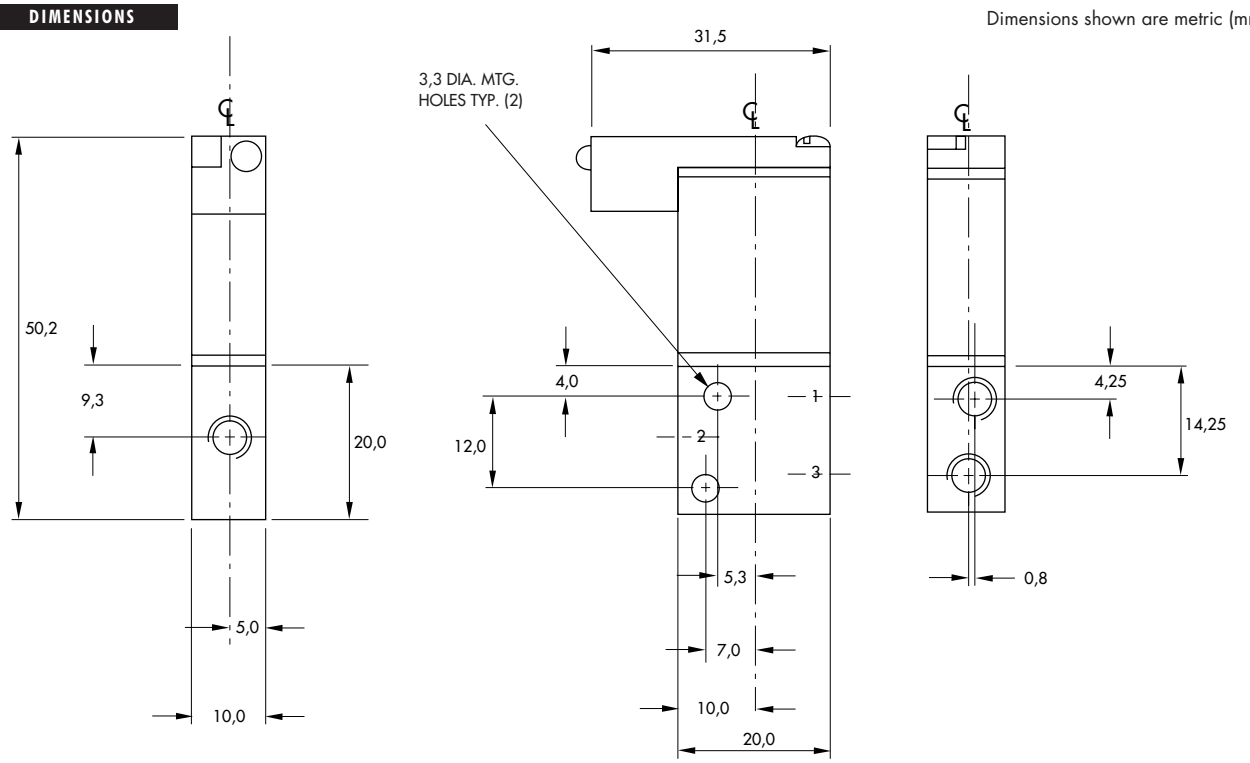
WARRANTY 18 MONTHS

TECHNICAL DATA

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 :	4 W : (0.12 C_V) – 2.5 W : (0.10 C_V) – 1.8 W : (0.06 C_V)
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 : (with 4 W coil)	Energize : 3.4 ms De-energize : 1.5 ms

DIMENSIONS

Dimensions shown are metric (mm)



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

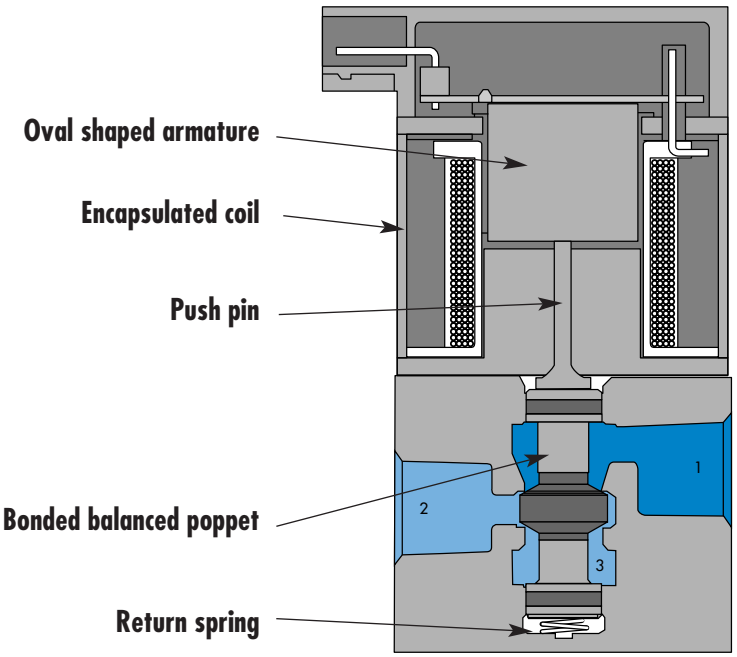
Individual mounting

Inline

Manifold mounting

Stacking	Manifold base "plug-in"	Manifold base "plug-in" with pressure regulators

Series



SERIES FEATURES

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

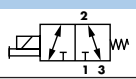
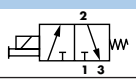
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Universal valve	NC only valve
		
1/8" NPTF	36A-AAA-J ***XXX-XXX***	36A-AAB-J ***XXX-XXX***

SOLENOID OPERATOR ➤

J ***XXX***-***XXX**** (-G) Add "G" for ground

XX	Voltage
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)

X	Lead wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
GA	MAC JAC solenoid plug-in
GB	MAC JAC solenoid plug-in with diode
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.

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

MAC

Series 36

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

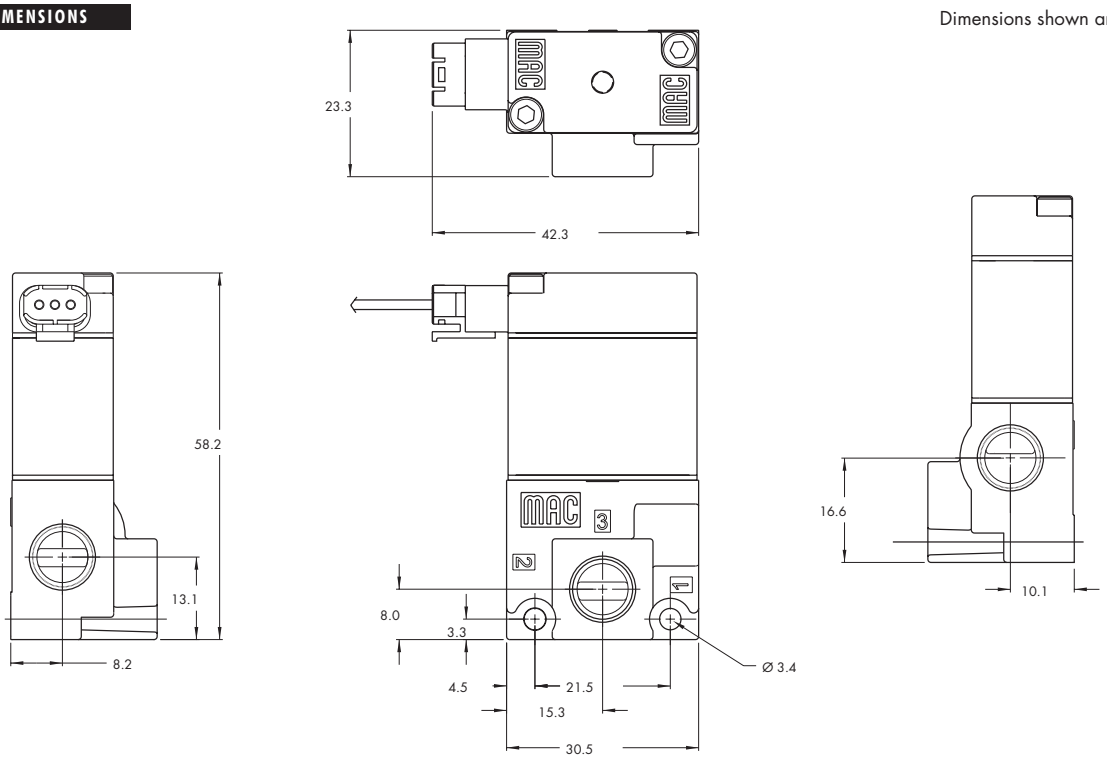
TECHNICAL DATA

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 :	1.8 Watt: (0.15 C_V), 2.4 Watt: (0.15 C_V), 5.4 Watt: (0.30 C_V)
Coil :	Class A wire (#22 AWG x 12), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4 W – 2.4 W – 1.8 W

Option : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



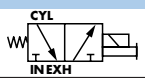
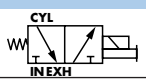
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	NC only stacking	NC stacking Universal poppet	NO stacking Universal poppet
			
1/8" NPTF	36A-SAB-J ***XXX-XXX***	36A-SAC-J ***XXX-XXX***	36A-SAD-J ***XXX-XXX***
# 10-32	36A-SBB-J ***XXX-XXX***	36A-SBC-J ***XXX-XXX***	36A-SBD-J ***XXX-XXX***

SOLENOID OPERATOR ➤ J ***XXX-XXX**** (-G) Add "G" for ground

XX	Voltage
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)

X	Lead wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
GA	MAC JAC solenoid plug-in
GB	MAC JAC solenoid plug-in with diode
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.
End plate kit required (port size 1/4") : M-36001-01.

BODY TYPE OPTIONS

36A-**S**AB-J***XXX-XXX***

S Stacking body
T Stacking body with bottom inlet

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

MAC

Series **36**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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 :	1.8 Watt: (0.15 C_V), 2.4 Watt: (0.15 C_V), 5.4 Watt: (0.30 C_V)
Coil :	Class A wire (#22 AWG x 12), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4 W – 2.4 W – 1.8 W

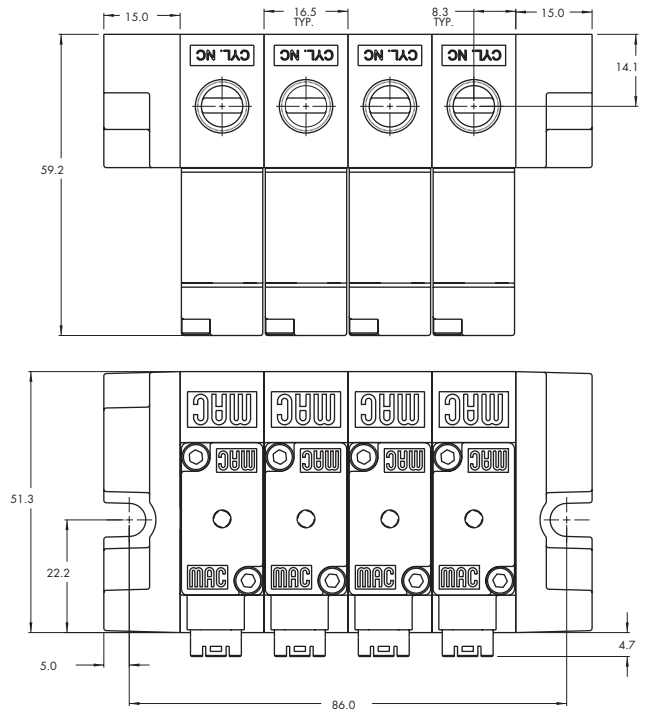
Option : • BSPP threads

Spare parts : • Inlet & exhaust isolator plate : N-36001 • Inlet isolator : N-36002
• Exhaust isolator : N-36003 • Tie rod (x2) : 79411

DIMENSIONS

Dimensions shown are metric (mm)

Note: Isolator adds 2.5 mm to length of stack.



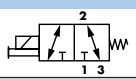
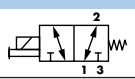
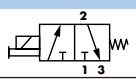
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

SOLENOID OPERATOR ➤ J ***XX*** P-***XXX**** (-G) Add "G" for ground

XX	**Voltage**
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)

X	**Manual operator**
1	Non-locking recessed
2	Locking recessed

XX	**Electrical connection**
FA	Base plug-in
FB	Base plug-in with diode
FG	Base plug-in with rectifier

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

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

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

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

MAC

Series 36

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult Factory
Power :	5.4 W – 2.4 W – 1.8 W

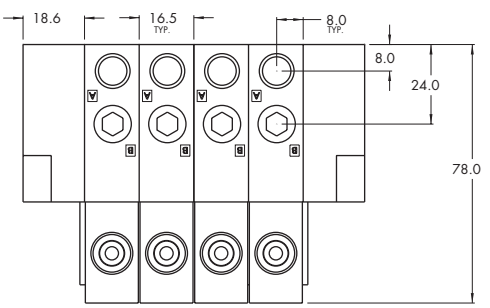
Option : • BSPP threads

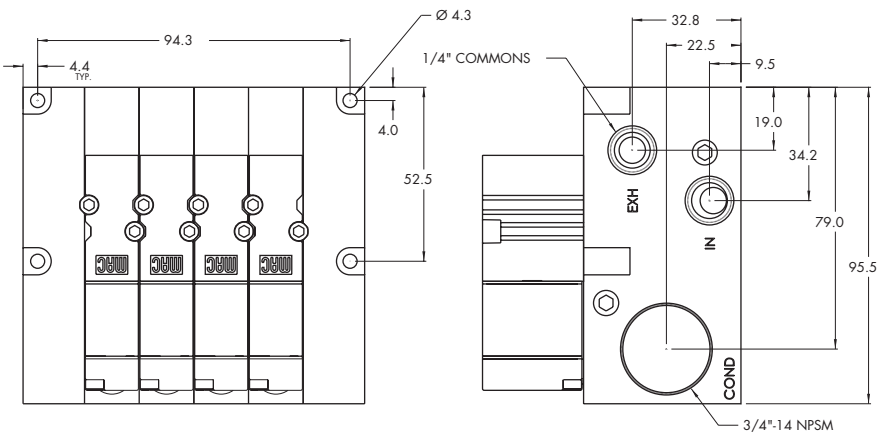
Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002
• Tie rod (x2) : 79443

DIMENSIONS

Dimensions shown are metric (mm)

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





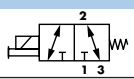
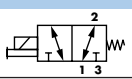
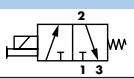
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

SOLENOID OPERATOR ➤ J ***XX*** P-***XXX**** (-G) Add "G" for ground

XX	**Voltage**
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)

X	**Manual operator**
1	Non-locking recessed
2	Locking recessed

XX	**Electrical connection**
FA	Base plug-in
FB	Base plug-in with diode
FG	Base plug-in with rectifier

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

OPTIONS

36A-JSA-A**G**-J***xx*** P-***xxx***

- **G** NC manifold & regulator with slotted stem adjustment
- **S** NC manifold & regulator with locking slotted stem adjustment
- **J** NC manifold & regulator with knob adjustment

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

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

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

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

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

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

MAC

Series 36

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

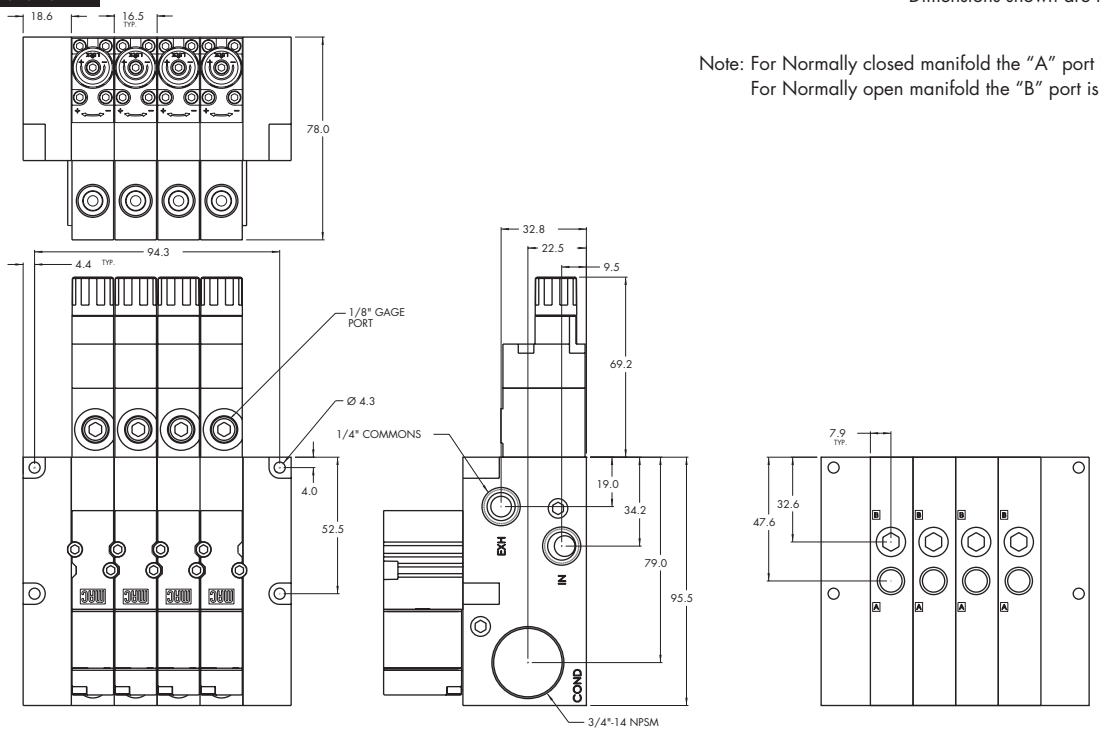
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C_v) – 2.4W : (0.20 C_v) – 5.4W : (0.30 C_v)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult Factory
Power :	5.4 W – 2.4 W – 1.8 W

Option : • BSPP threads

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

DIMENSIONS

Dimensions shown are metric (mm)



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

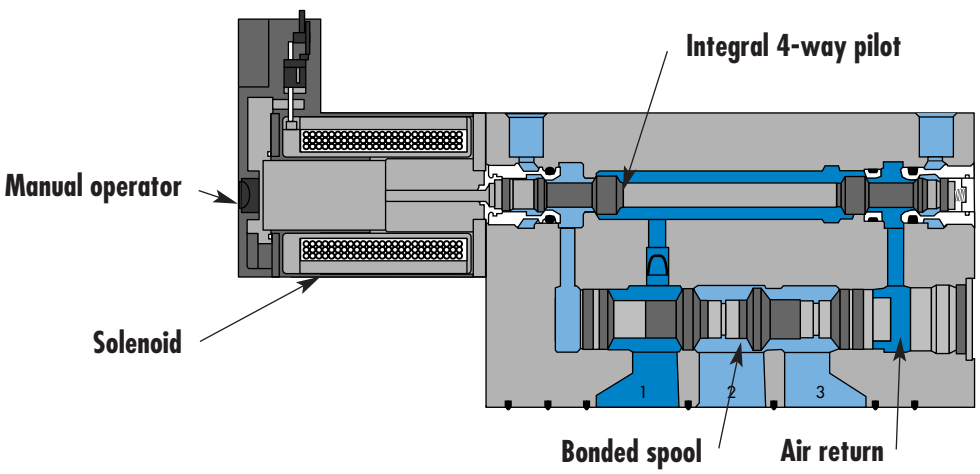
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Sub-base non "plug-in"	Sub-base "plug-in"	Sub-base/ manifold base non "plug-in" with latching solenoid	Sub-base/ manifold base "plug-in" with latching solenoid

Manifold mounting

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



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.

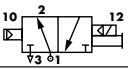
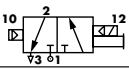
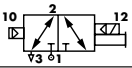
Series
33
34
36
32
37
38
52
67
69
44
46
42
47
48P
48
400
92
93
ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
				
Valve less base	Internal	32B-BMA-000-G***xxx-xxx***	32B-AMA-000-G***xxx-xxx***	
	External	32B-BMB-000-G***xxx-xxx***	32B-AMB-000-G***xxx-xxx***	32B-GMB-000-G***xxx-xxx***
1/8" NPTF	Internal	32B-BMA-CAL-G***xxx-xxx***	32B-AMA-CAL-G***xxx-xxx***	
	External	32B-BMB-CAM-G***xxx-xxx***	32B-AMB-CAM-G***xxx-xxx***	32B-GMB-CAM-G***xxx-xxx***

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2,5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

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

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.
Latching solenoid also available, see page 41.
With MAC JAC electrical connector washdown capability is possible.
Consult factory for modification number.

OPTIONS

Pilot/Base Configuration :

32B-x**M**x-x**A**x-G***xxx-xxx***

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

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

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

MAC

Series 32

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

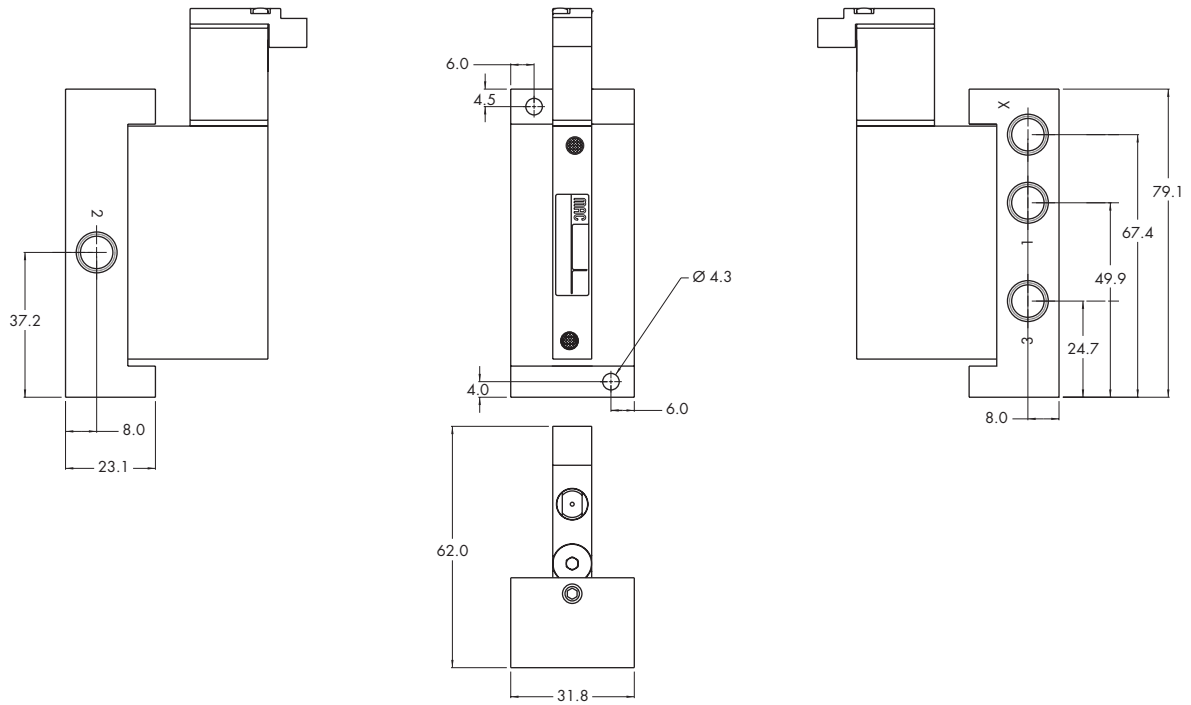
TECHNICAL DATA

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" : (0.40 C_v)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 5 ms De-energize : 5 ms

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



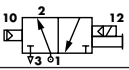
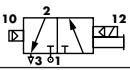
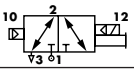
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
SA	Base plug-in
SJ	Base plug-in with light
SS	Base plug-in with rectifier & light & ground

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.
Latching solenoid also available, see page 43.
Washdown capability is possible, consult factory for modification number.

OPTIONS

Pilot/Base Configuration :

32B-*x***M***x*-*x***A***x*-G*xx* P-*xxx*

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

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

MAC

Series 32

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

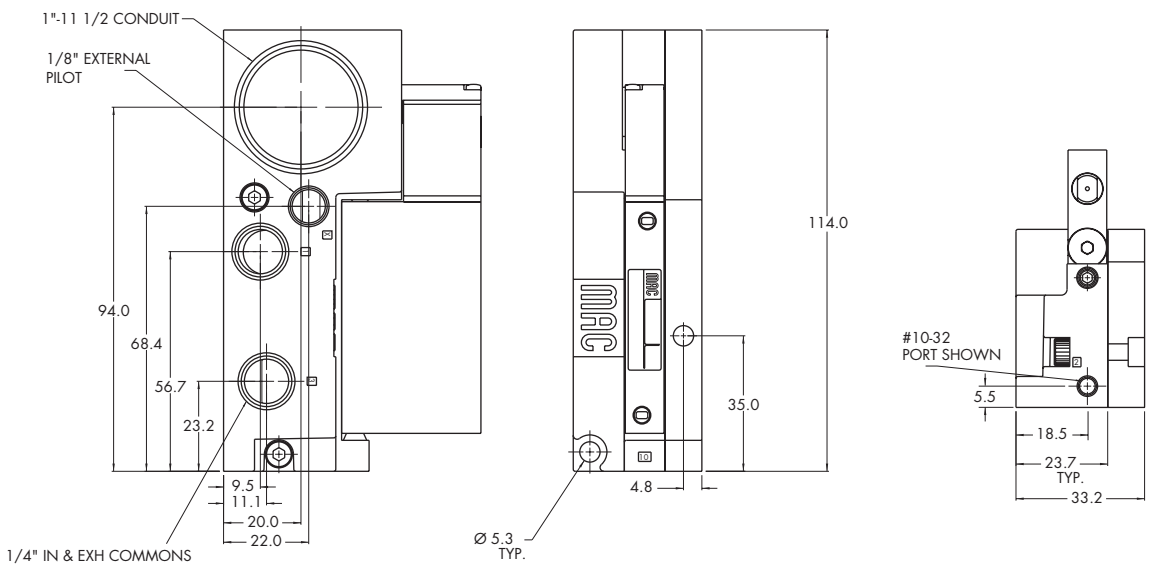
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) - 1/4 tube receptacle : (0.40 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 5 ms De-energize : 5 ms

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

DIMENSIONS

Dimensions shown are metric (mm)



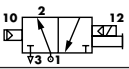
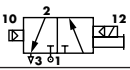
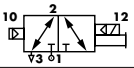
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

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

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-*x***M***x*-*x***J***x*-G*xxx-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)

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

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

MAC®

Series 32

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

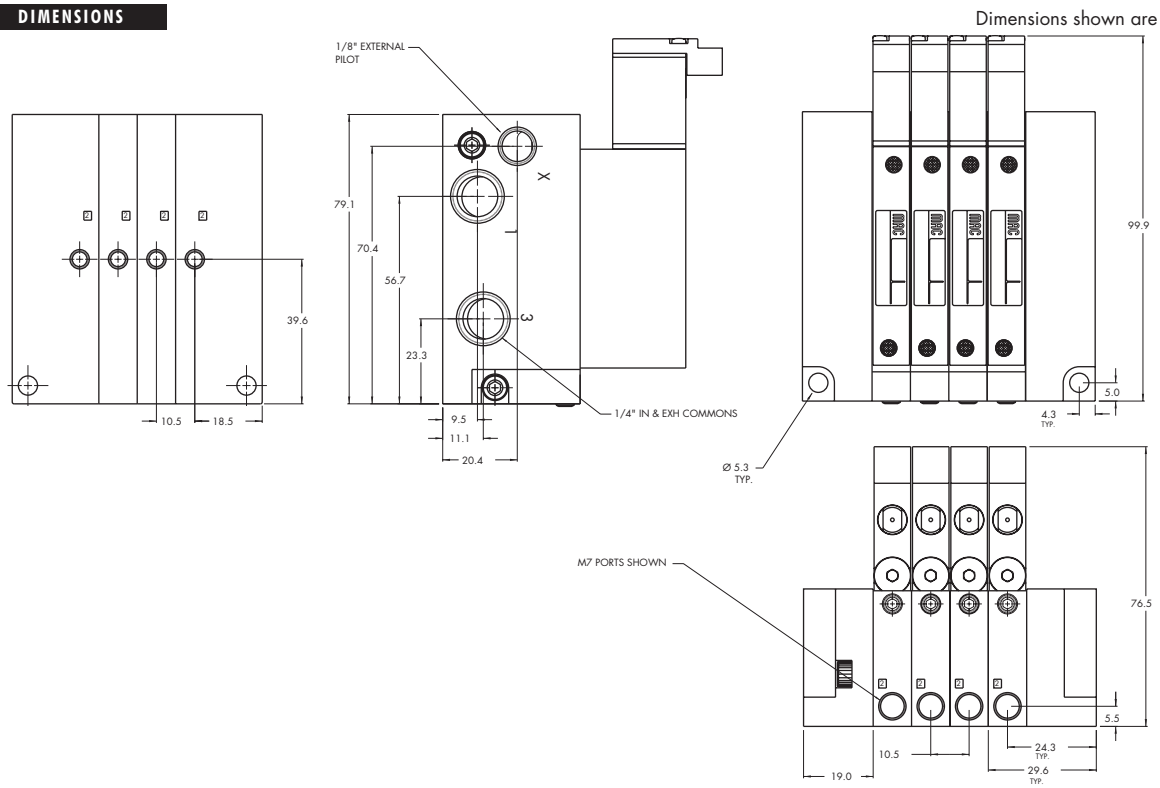
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F 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
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 5 ms De-energize : 5 ms

Options :

- M5 port • M7 port • 6 mm O.D. tube receptacle
- Inlet/Exhaust Isolator : 28454

DIMENSIONS

Dimensions shown are metric (mm)



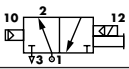
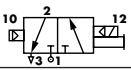
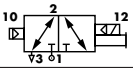
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
SA	Base plug-in
SJ	Base plug-in with light
SS	Base plug-in with rectifier & light & ground

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*-x**J**x-G*xx* 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").

MAC

Series 32

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

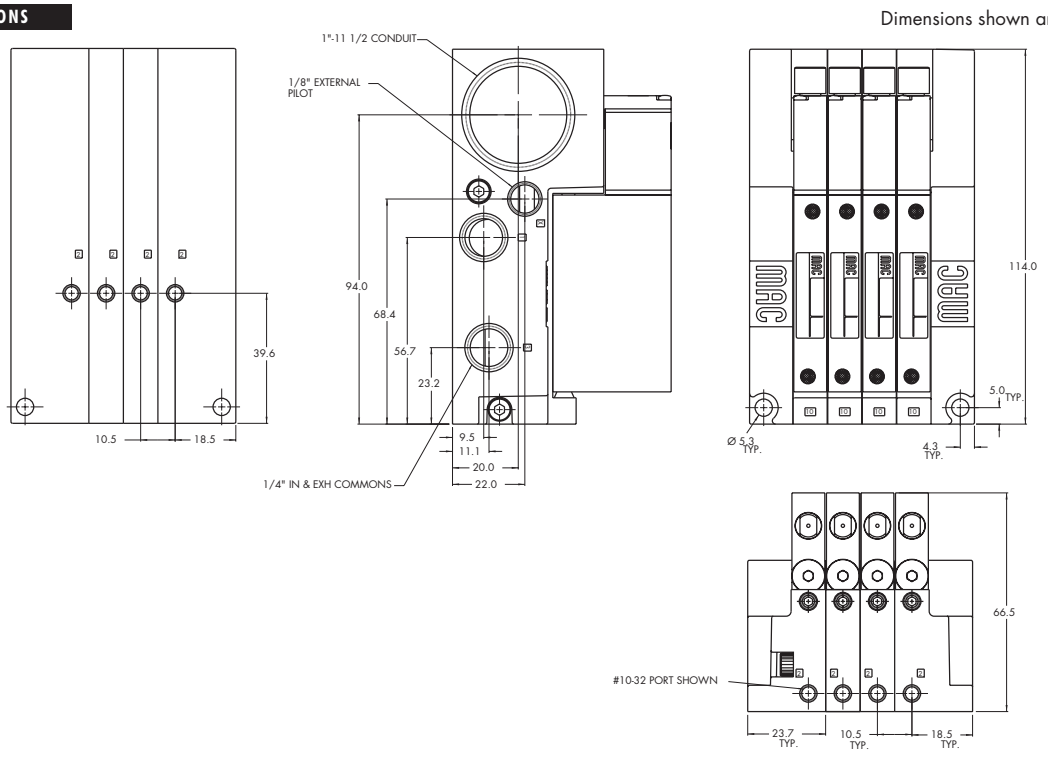
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) - 1/4 tube receptacle : (0.40 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 5 ms De-energize : 5 ms

Options : • M5 port • M7 port • 6 mm O.D. tube receptacle
• Inlet/Exhaust Isolator : 28454

DIMENSIONS

Dimensions shown are metric (mm)



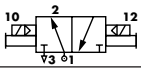
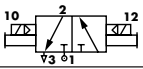
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve
			
Valve less base	Internal	32A-BMA-000-L*xxx-xxx*	32A-AMA-000-L*xxx-xxx*
	External	32A-BMB-000-L*xxx-xxx*	32A-AMB-000-L*xxx-xxx*
# 10-32	Internal	32A-BMA-AAL-L*xxx-xxx*	32A-AMA-AAL-L*xxx-xxx*
	External	32A-BMB-AAM-L*xxx-xxx*	32A-AMB-AAM-L*xxx-xxx*
1/4" O.D.	Internal	32A-BMA-EAL-L*xxx-xxx*	32A-AMA-EAL-L*xxx-xxx*
Tube receptacle	External	32A-BMB-EAM-L*xxx-xxx*	32A-AMB-EAM-L*xxx-xxx*

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

LATCHING SOLENOID OPERATOR ➤ L ***XXX-XXX****

XX	Voltage
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection**
BA	2 Wire Flying leads
BJ	4 Wire Flying leads
KA	2 Wire Plug-in Assembly
KE	4 Wire Plug-in Assembly
LA	3 Wire plug-in assembly (Polarity Switching Cover)

* 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

Pilot/Base Configuration :

32A-x**M**x-x**A**x-L*xxx-xxx*

A Individual base – Side port
B Individual base – Bottom port
J Manifold base – Side port
K Manifoldl 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)

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

MAC

Series 32

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

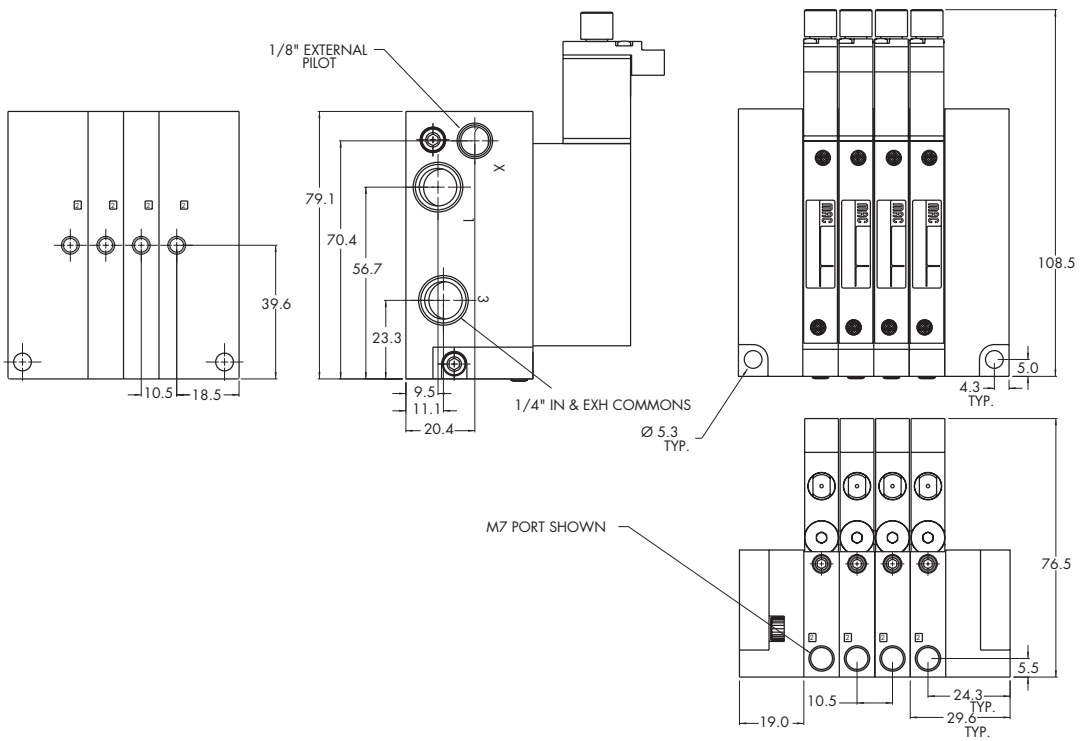
TECHNICAL DATA

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
Power :	1.95 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 5 ms De-energize : 5 ms

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

DIMENSIONS

Dimensions shown are metric (mm)



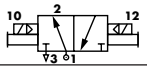
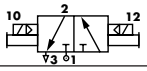
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve
			
Valve less base	Internal	32A-BMA-000-L*xx*P-*xxx*	32A-AMA-000-L*xx*P-*xxx*
	External	32A-BMB-000-L*xx*P-*xxx*	32A-AMB-000-L*xx*P-*xxx*
# 10-32	Internal	32A-BMA-AAA-L*xx*P-*xxx*	32A-AMA-AAA-L*xx*P-*xxx*
	External	32A-BMB-AAB-L*xx*P-*xxx*	32A-AMB-AAB-L*xx*P-*xxx*
1/4" O.D.	Internal	32A-BMA-EAA-L*xx*P-*xxx*	32A-AMA-EAA-L*xx*P-*xxx*
Tube receptacle	External	32A-BMB-EAB-L*xx*P-*xxx*	32A-AMB-EAB-L*xx*P-*xxx*

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

LATCHING SOLENOID OPERATOR ➤ L *XX* P-*XXX**

XX	Voltage
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	Manual operator
0	No operator

XX	Electrical connection**
DA	Base/Manifold Plug-in
DB	Base/Manifold Plug-in w/Ground
DC	Base/Manifold Plug-in w/ Light
DD	Base/Manifold Plug-in w/ Light and Ground
EA	Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)

* Other options available, see page 319.
**2 and 4 wire base must use "D" type electrical connector, 3 wire base must use "EA" type electrical connector.

OPTIONS

Pilot/Manifold/Base Configuration :

32A-x**M**x-x**A**x-L*xx*P-*xxx*

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

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

Manifold/Base Int./Ext. Pilot : (wire options)

32A-x**M**x-xx**A**-L*xx*P-*xxx*

- **A** Plug-In Int. Pilot (2 Wire)**
- **B** Plug-In Ext. Pilot (2 Wire)**
- **C** Plug-In Int. Pilot (3 Wire)**
- **D** Plug-In Ext. Pilot (3 Wire)**
- **E** Plug-In Int. Pilot (4 Wire)**
- **F** Plug-In Ext. Pilot (4 Wire)**

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

MAC®

Series 32

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

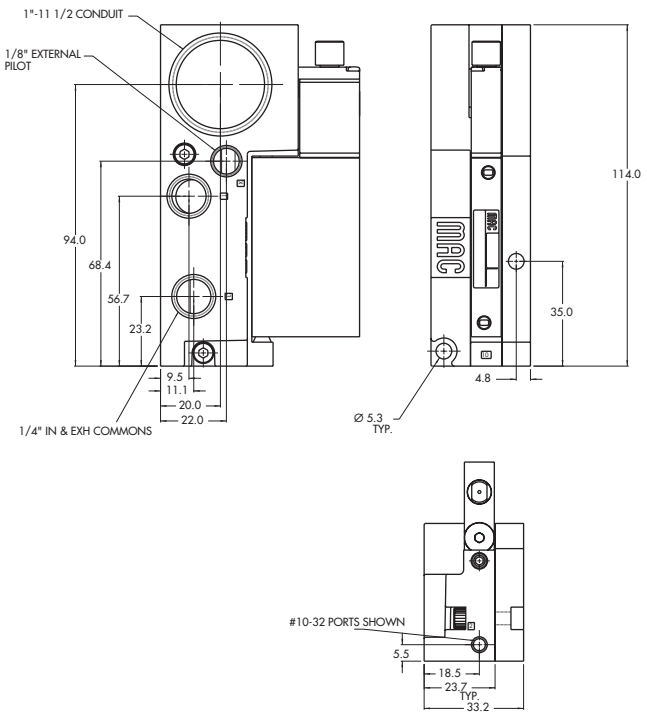
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) - 1/4 tube receptacle : (0.40 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.95 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 5 ms De-energize : 5 ms

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

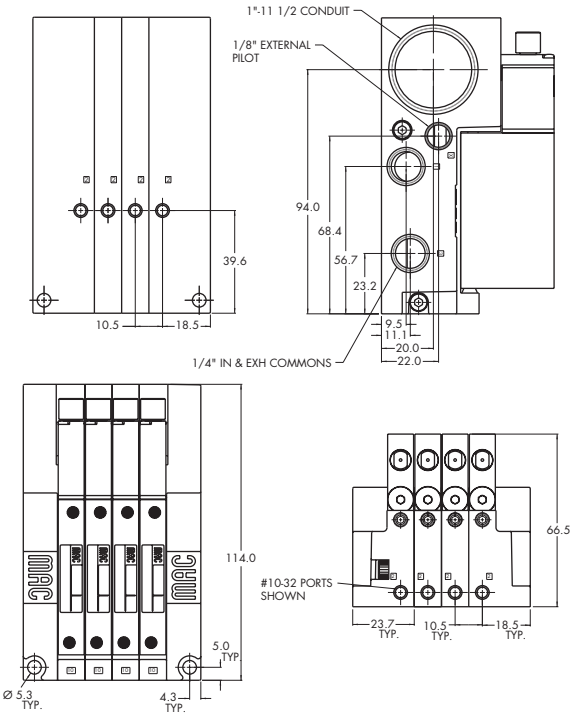
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base

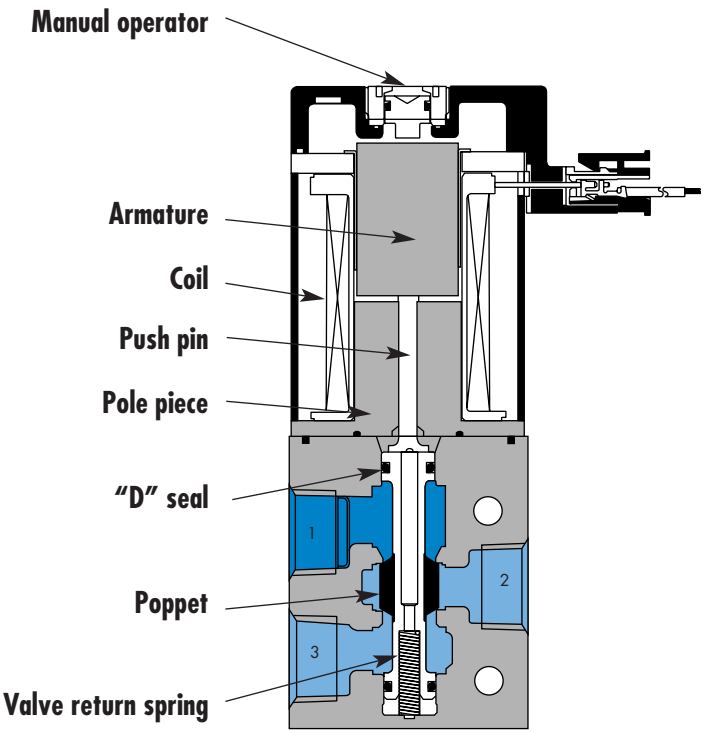


Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Inline	Sub-base non plug-in

Series



SERIES FEATURES

- Balanced poppet equals consistent high shifting forces.
- 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.

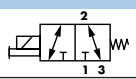
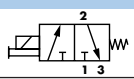
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC	**1/8" - 1/4"**	**0.5 C_v**	Inline	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Universal valve	NC only valve
		
1/8" NPTF	37A-AA0-H ***XXX-XXX***	37A-BA0-H ***XXX-XXX***
1/4" NPTF	37A-AB0-H ***XXX-XXX***	37A-BB0-H ***XXX-XXX***

SOLENOID OPERATOR ➤ H ***XXX-XXX****

XX	Voltage
AA	120 VAC (6.7W)
DA	24 VDC (5.2W)
DB	24 VDC (2.4W)
DC	24 VDC (1.8W)

X	Wire length
A	18"
B	24"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection**
MA	Plug-in wire assembly
MC	Plug-in wire assembly with light
BA	Flying leads
BC	Flying leads with light
MT	Plug-in wire assembly with rectifier & light

Note : AC voltage requires connector with rectifier.
* Other options available, see page 315.

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

MAC

Series 37

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

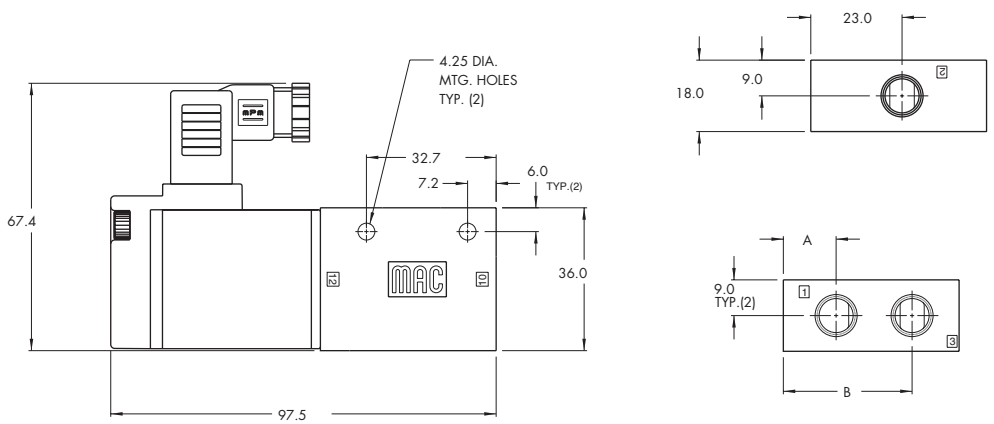
TECHNICAL DATA

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_v) – 2.4 W : (0.35 C_v)
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 : (with 5.2 W coil)	Energize : 16.9 ms De-energize : 6.7 ms

Options : • BSPP ports

DIMENSIONS

Dimensions shown are metric (mm)



Shown with Mini Square Connector ("K" Type)

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

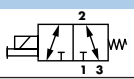
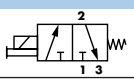
Consult "Precautions" page 327 before use, installa ion or serv ce of MAC Valves..

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC	**1/8" - 1/4"**	**0.5 C_v**	Sub-base non plug-in	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Universal valve	NC only valve
		
Valve less base	37A-C10-H ***xxx-xxx***	37A-D10-H ***xxx-xxx***
1/8" NPTF	37A-CAA-H ***xxx-xxx***	37A-DAA-H ***xxx-xxx***
1/4" NPTF	37A-CBA-H ***xxx-xxx***	37A-DBA-H ***xxx-xxx***

SOLENOID OPERATOR ➤ H ***XXX-XXX****

XX	Voltage
AA	120 VAC (6.7W)
DA	24 VDC (5.2W)
DB	24 VDC (2.4W)
DC	24 VDc (1.8W)

X	Wire length
A	18"
B	24"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
MA	Plug-in wire assembly
MC	Plug-in wire assembly with light
BA	Flying leads
BC	Flying leads with light
MT	Plug-in wire assembly with rectifier & light

Note : AC voltage requires connector with rectifier.
* Other options available, see page 315.

OPTIONS

Base only :

37A-0AA (1/8")

37A-0BA (1/4")

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

MAC

Series 37

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

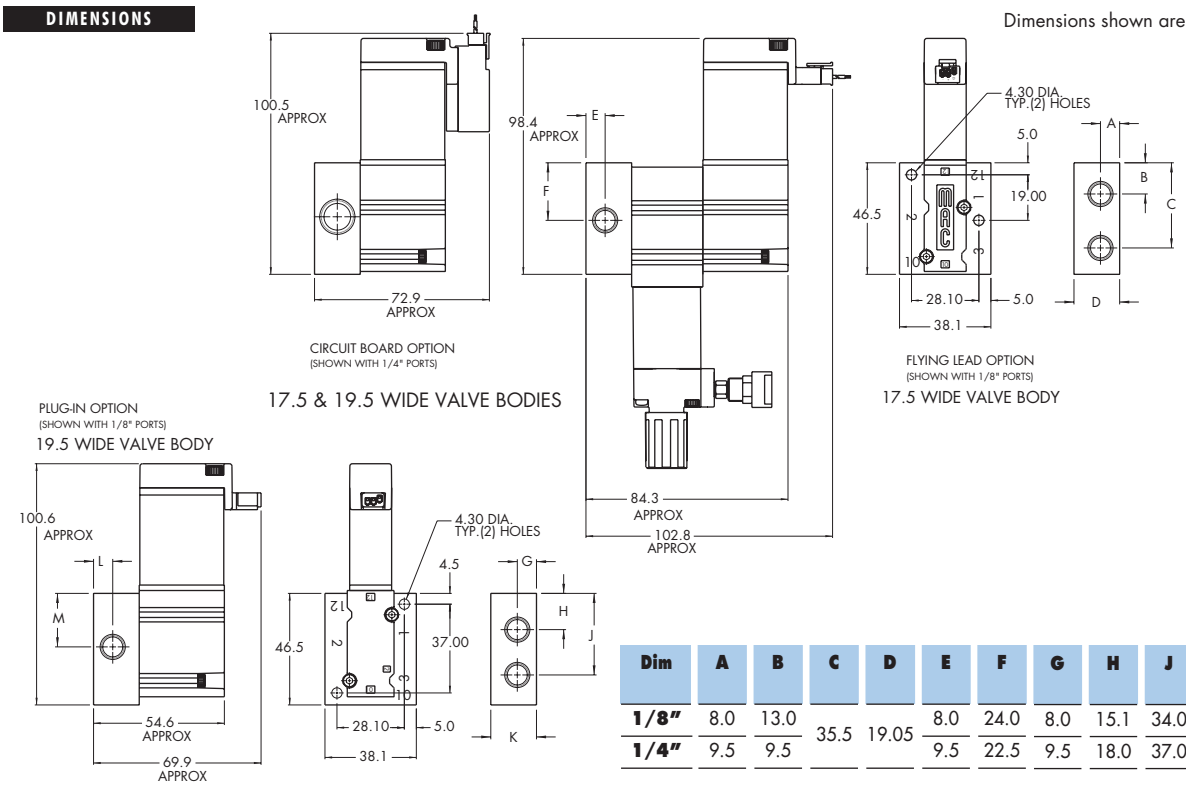
TECHNICAL DATA

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_v) – 2.4 W : (0.35 C_v)
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 : (with 5.2 W coil)	Energize : 16.9 ms De-energize : 6.7 ms

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

DIMENSIONS

Dimensions shown are metric (mm)



Dim	A	B	C	D	E	F	G	H	J	K	L	M
1/8"	8.0	13.0	35.5	19.05	8.0	24.0	8.0	15.1	34.0	19.05	8.0	22.3
1/4"	9.5	9.5			9.5	22.5	9.5	18.0	37.0		9.5	24.0

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

Individual mounting

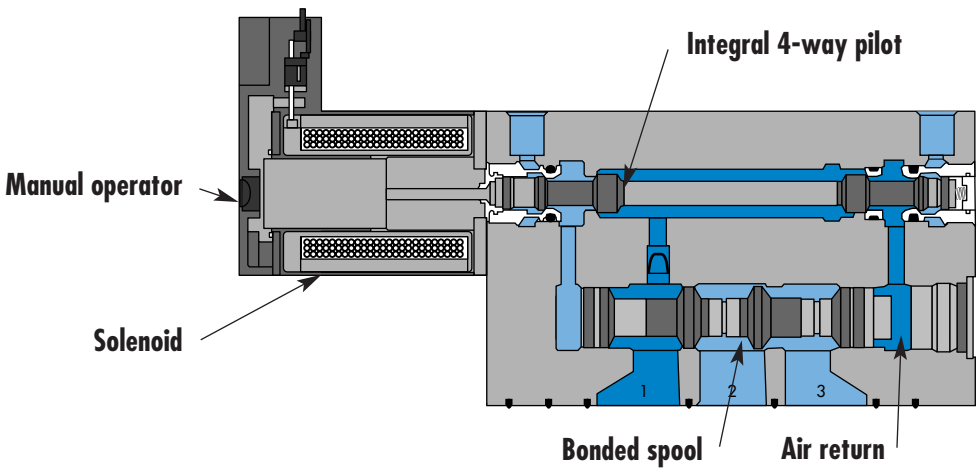
Sub-base non "plug-in"	Sub-base "plug-in"	Sub-base/ manifold base non "plug-in" with latching solenoid	Sub-base/ manifold base "plug-in" with latching solenoid

Manifold mounting

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

Series

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



SERIES FEATURES

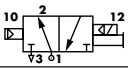
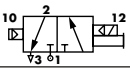
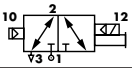
- High force MACSOLENOID®.
- Integral 4-way pilot design.
- Internal or external pilot.
- Normally open or normally closed function.
- Universal function (external pilot).
- Rectified AC voltage.
- Latching solenoid technology.

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

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

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.
Latching solenoid also available, see page 59.
With MAC JAC electrical connector washdown capability is possible.
Consult factory for modification number.

OPTIONS

Pilot/Base Configuration :

38B-x**M**x-x**A**x-G***xxx-xxx***

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

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

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

MAC

Series 38

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

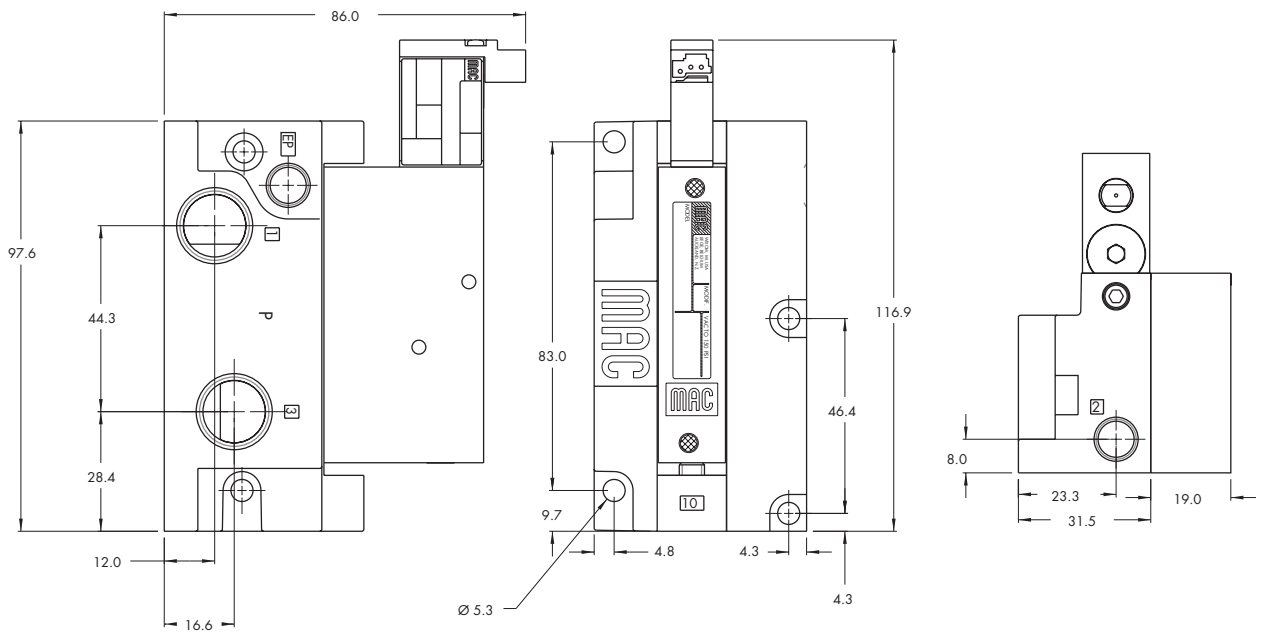
TECHNICAL DATA

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

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



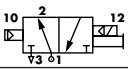
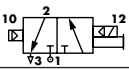
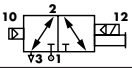
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC	**1/8" - 1/4" O.D. tube receptacle**	**1.2 C_v**	Sub-base "plug-in"	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
				
Valve less base	Internal	38B-BMA-000-G*xx*P-*xxx*	38B-AMA-000-G*xx*P-*xxx*	
	External	38B-BMB-000-G*xx*P-*xxx*	38B-AMB-000-G*xx*P-*xxx*	38B-GMB-000-G*xx*P-*xxx*
1/8" NPTF	Internal	38B-BMA-AAA-G*xx*P-*xxx*	38B-AMA-AAA-G*xx*P-*xxx*	
	External	38B-BMB-AAB-G*xx*P-*xxx*	38B-AMB-AAB-G*xx*P-*xxx*	38B-GMB-BAB-G*xx*P-*xxx*
1/4" O.D.	Internal	38B-BMA-EAA-G*xx*P-*xxx*	38B-AMA-EAA-G*xx*P-*xxx*	
Tube receptacle	External	38B-BMB-EAB-G*xx*P-*xxx*	38B-AMB-EAB-G*xx*P-*xxx*	38B-GMB-EAB-G*xx*P-*xxx*

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
SA	Base plug-in
SJ	Base plug-in with light
SS	Base plug-in with rectifier & light & ground

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.
Latching solenoid also available, see page 61.

OPTIONS

Pilot/Base Configuration :

38B-x**M**x-x**A**x-G*xx* P-*xxx*

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

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

Washdown capability is possible, consult factory for modification number.

MAC®

Series 38

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

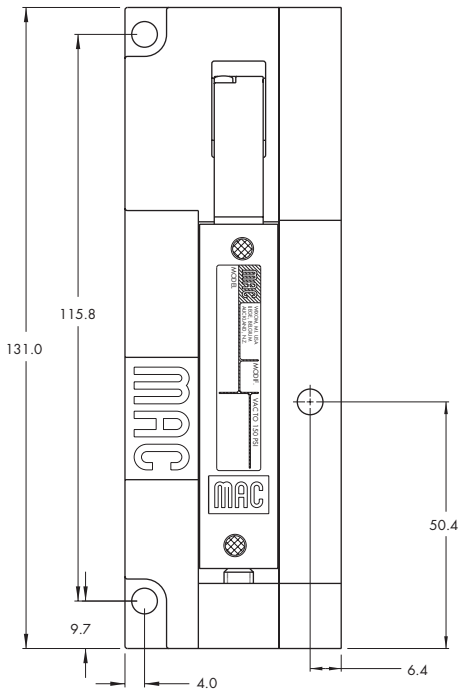
TECHNICAL DATA

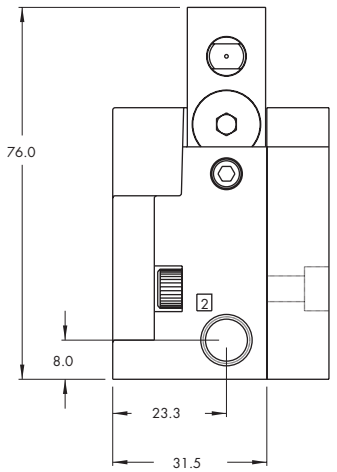
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F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

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)





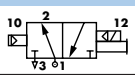
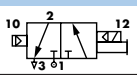
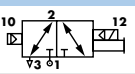
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

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

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DA	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
SA	Base plug-in
SJ	Base plug-in with light
SS	Base plug-in with rectifier & light & ground

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.
Latching solenoid also available, see page 61.
Washdown capability is possible, consult factory for modification number.

OPTIONS

Base only :

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

Base Configuration :

38B-*xxx*-x**J***x*-G*xx* 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").

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

MAC

Series 38

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

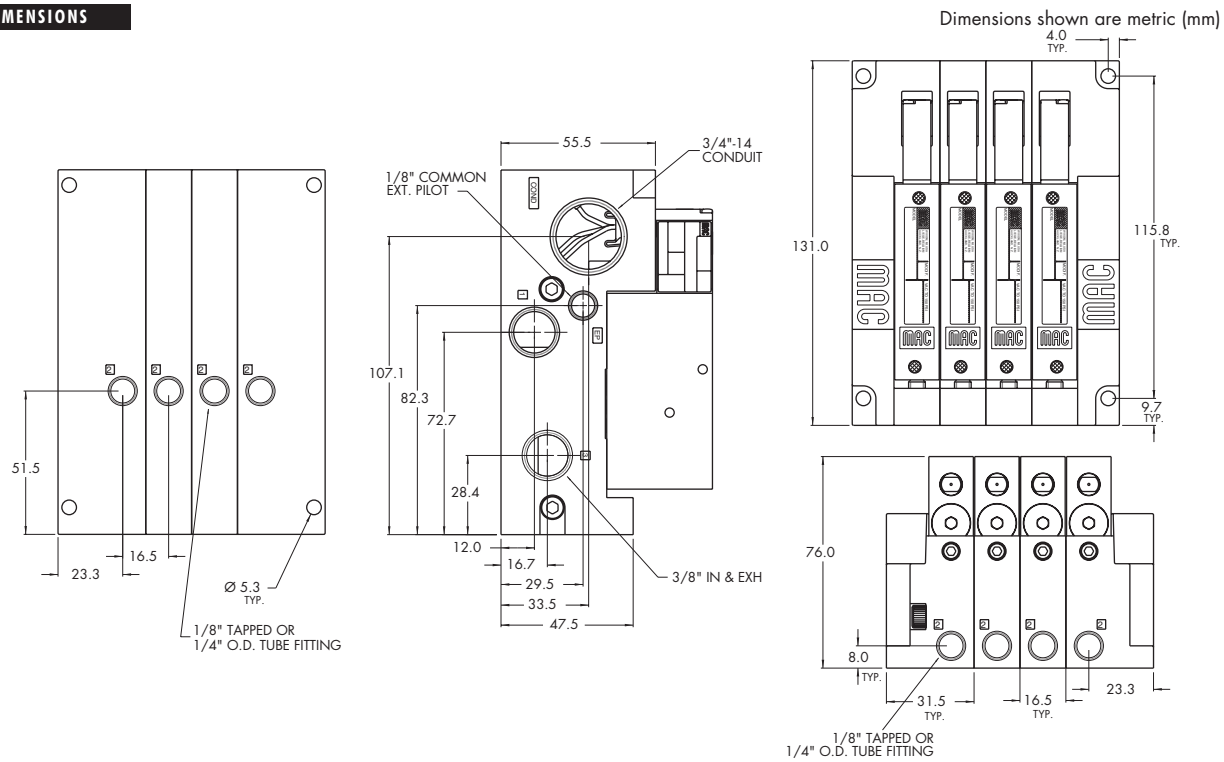
TECHNICAL DATA

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

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



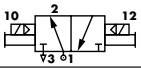
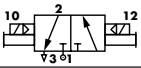
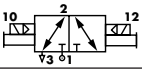
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
				
Valve less base	Internal	38A-BMA-000-L*xxx-xxx*	38A-AMA-000-L*xxx-xxx*	
	External	38A-BMB-000-L*xxx-xxx*	38A-AMB-000-L*xxx-xxx*	38A-GMB-000-L*xxx-xxx*
1/8" NPTF	Internal	38A-BMA-AAL-L*xxx-xxx*	38A-AMA-AAL-L*xxx-xxx*	
	External	38A-BMB-AAM-L*xxx-xxx*	38A-AMB-AAM-L*xxx-xxx*	38A-GMB-AAM-L*xxx-xxx*
1/4" O.D.	Internal	38A-BMA-EAL-L*xxx-xxx*	38A-AMA-EAL-L*xxx-xxx*	
Tube receptacle	External	38A-BMB-EAM-L*xxx-xxx*	38A-AMB-EAM-L*xxx-xxx*	38A-GMB-EAM-L*xxx-xxx*

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

LATCHING SOLENOID OPERATOR ➤ L ***XXX-XXX****

XX	Voltage
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection**
BA	2 Wire Flying leads
BJ	4 Wire Flying leads
KA	2 Wire Plug-in Assembly
KE	4 Wire Plug-in Assembly
LA	3 Wire plug-in assembly (Polarity Switching Cover)

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

OPTIONS

Pilot/Base Configuration :

38A-x**M**x-x**A**x-L*xxx-xxx*

A Individual base – Side port
B Individual base – Bottom port
J Manifold base – Side port
K Manifoldl base – Bottom port

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

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

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

MAC

Series **38**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

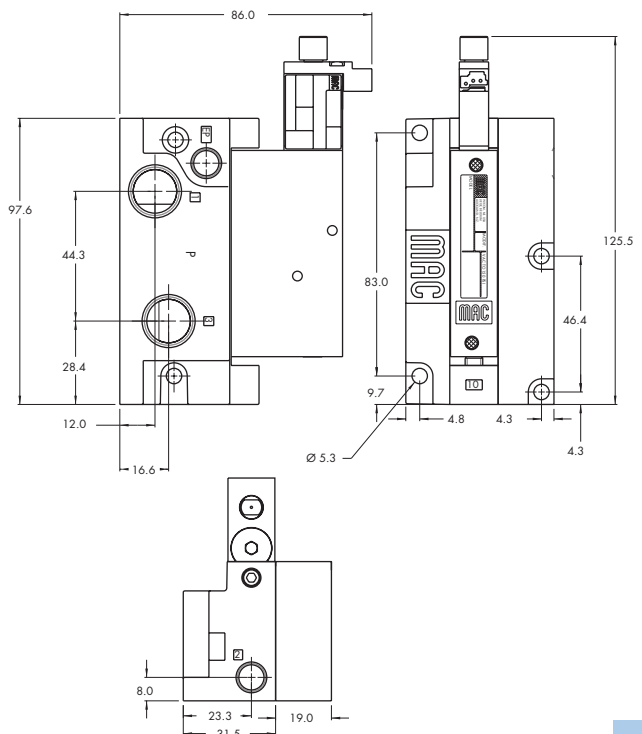
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/8" bottom port: (1.2 C_V) - 1/8" side port: (1.0 C_V) - 1/4" tube receptacle: (0.85 C_V)
Coil :	Class A wires (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.95 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms De-energize : 6 ms

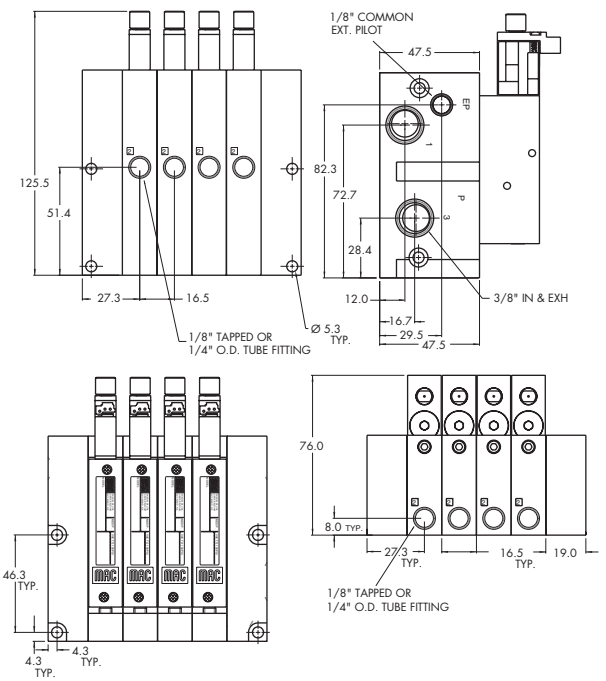
Options : • BSPP threads

DIMENSIONS

Individual base



Manifold base



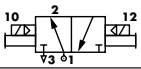
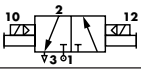
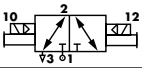
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Pilot air	NO valve	NC valve	Universal valve
				
Valve less base	Internal	38A-BMA-000-L*xx*P-*xxx*	38A-AMA-000-L*xx*P-*xxx*	
	External	38A-BMB-000-L*xx*P-*xxx*	38A-AMB-000-L*xx*P-*xxx*	38A-GMB-000-L*xx*P-*xxx*
1/8" NPTF	Internal	38A-BMA-AAA-L*xx*P-*xxx*	38A-AMA-AAA-L*xx*P-*xxx*	
	External	38A-BMB-AAB-L*xx*P-*xxx*	38A-AMB-AAB-L*xx*P-*xxx*	38A-GMB-AAB-L*xx*P-*xxx*
1/4" O.D.	Internal	38A-BMA-EAA-L*xx*P-*xxx*	38A-AMA-EAA-L*xx*P-*xxx*	
Tube receptacle	External	38A-BMB-EAB-L*xx*P-*xxx*	38A-AMB-EAB-L*xx*P-*xxx*	38A-GMB-EAB-L*xx*P-*xxx*

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

LATCHING SOLENOID OPERATOR ➤ L ***XX*** P-***XXX****

XX	Voltage
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	Manual operator
0	No operator

XX	Electrical connection**
DA	Base/Manifold Plug-in
DB	Base/Manifold Plug-in w/Ground
DC	Base/Manifold Plug-in w/ Led
DD	Base/Manifold Plug-in w/ Led and Ground
EA	Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)

* Other options available, see page 319.
** 2 and 4 wire bases must use "D" type electrical connector.
3 wire base must use "EA" type electrical connector.

OPTIONS

Manifold/Base Configuration :

38A-*xxx*-*x***A***x*-L*xx*P-*xxx*

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

Manifold/Base Int./Ext. Pilot : (Wire options)

38A-*xxx*-*xx***A**-L*xx*P-*xxx*

- **A** Plug-In Int. Pilot (2 Wire)**
- **B** Plug-In Ext. Pilot (2 Wire)**
- **C** Plug-In Int. Pilot (3 Wire)**
- **D** Plug-In Ext. Pilot (3 Wire)**
- **E** Plug-In Int. Pilot (4 Wire)**
- **F** Plug-In Ext. Pilot (4 Wire)**

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

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

MAC

Series 38

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

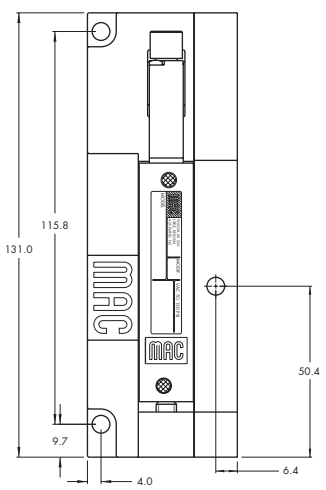
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/8" bottom port: (1.2 C_V) - 1/8" side port: (1.0 C_V) - 1/4" tube receptacle: (0.85 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.95 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms De-energize : 6 ms

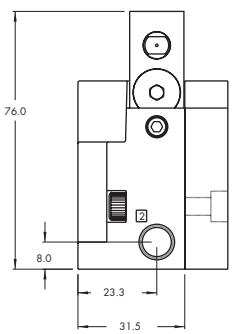
Options : • BSPP threads

DIMENSIONS

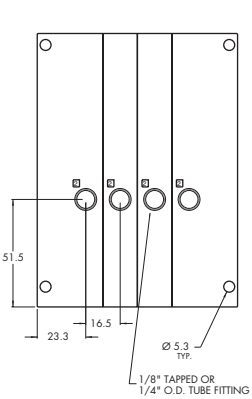
Dimensions shown are metric (mm)

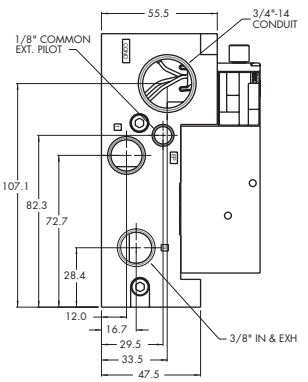
Individual base

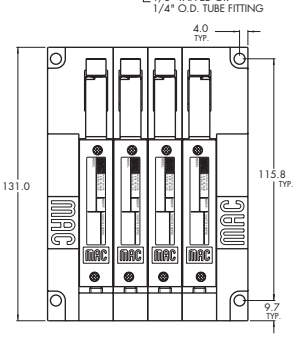


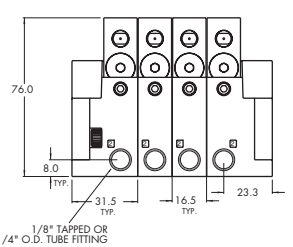


Manifold base





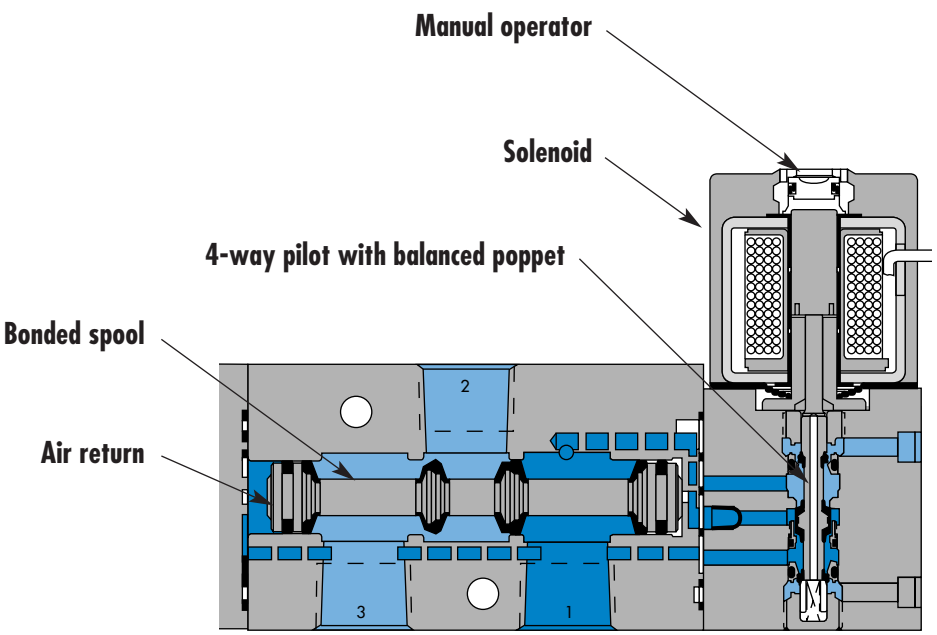




Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Inline



SERIES FEATURES

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

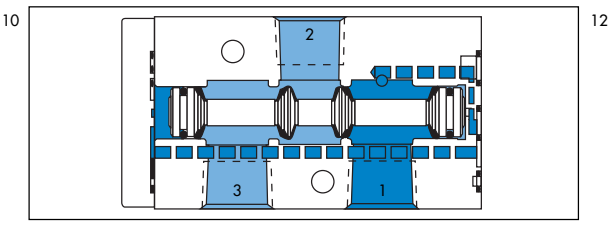
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

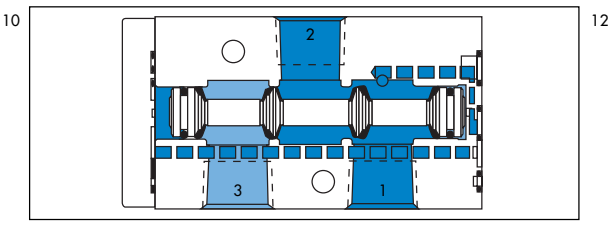
SPOOL CONFIGURATIONS

INTERNAL PILOT



NORMALLY CLOSED 3 WAY

INTERNAL PILOT



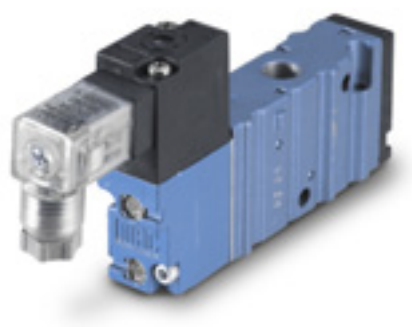
NORMALLY OPEN 3 WAY

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

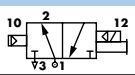
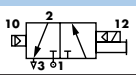
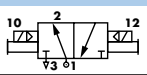
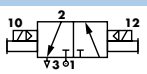
Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	**1/8" - 1/4"**	**1.5 C_v**	Inline	

OPERATIONAL BENEFITS

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. Long service life.



HOW TO ORDER

Port size	Pilot air	Single Operator NO Valve	Single Operator NC Valve	Double Operator NO Valve	Double Operator NC Valve
					
1/8" NPTF	Internal	52A-31-A0A-XX-X-***XXX-XXX***	52A-11-A0A-XX-X-***XXX-XXX***	52A-41-A0A-XX-X-***XXX-XXX***	52A-21-A0A-XX-X-***XXX-XXX***
1/4" NPTF		52A-31-B0A-XX-X-***XXX-XXX***	52A-11-B0A-XX-X-***XXX-XXX***	52A-41-B0A-XX-X-***XXX-XXX***	52A-21-B0A-XX-X-***XXX-XXX***
1/8" NPTF	External	52A-31-A0B-XX-X-***XXX-XXX***	52A-11-A0B-XX-X-***XXX-XXX***	52A-41-A0B-XX-X-***XXX-XXX***	52A-21-A0B-XX-X-***XXX-XXX***
1/4" NPTF		52A-31-B0B-XX-X-***XXX-XXX***	52A-11-B0B-XX-X-***XXX-XXX***	52A-41-B0B-XX-X-***XXX-XXX***	52A-21-B0B-XX-X-***XXX-XXX***

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

SOLENOID OPERATOR ➤ GM-G ***XXX-XXX*****

XX	Voltage
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light

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

OPTIONS

52A-3**1**-A0A-XX-X-***XXX-XXX***

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

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

MAC

Series 52

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

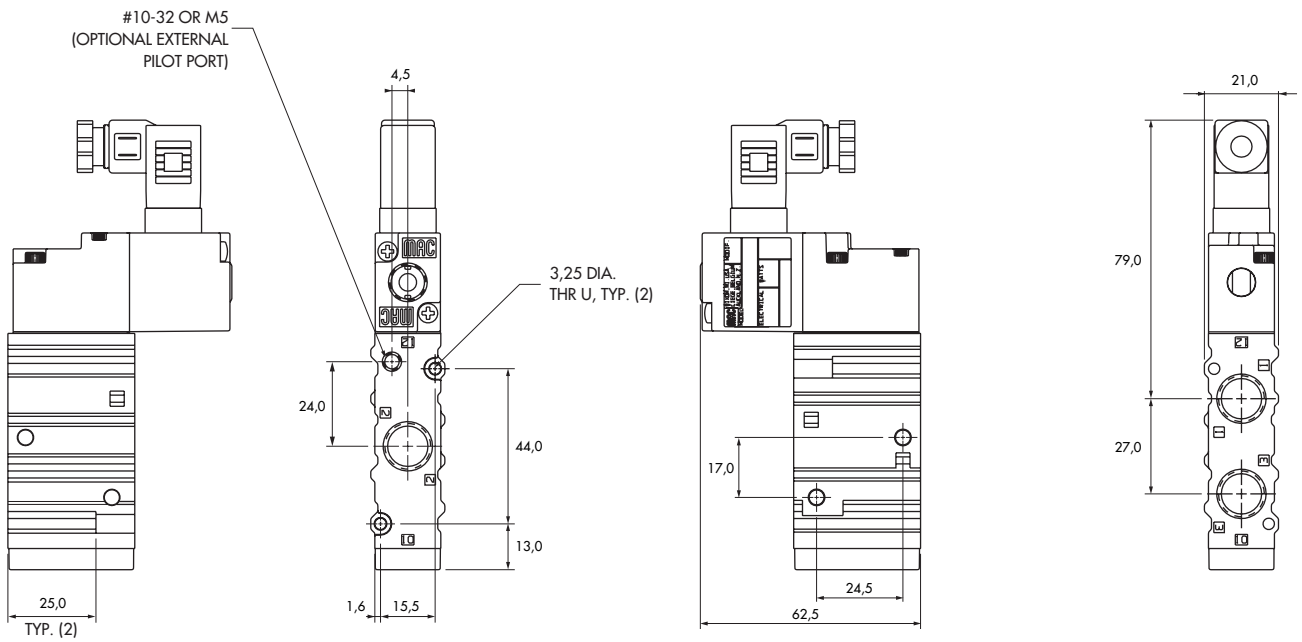
TECHNICAL DATA

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 = 1.8 to 12.7 W	Holding: 7.7 VA	
Response times :	24V=/5.4W 120/60	Energize: 7.3 ms Energize: 8-12 ms	De-energize: 5.3 ms De-energize: 7-11 ms

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)

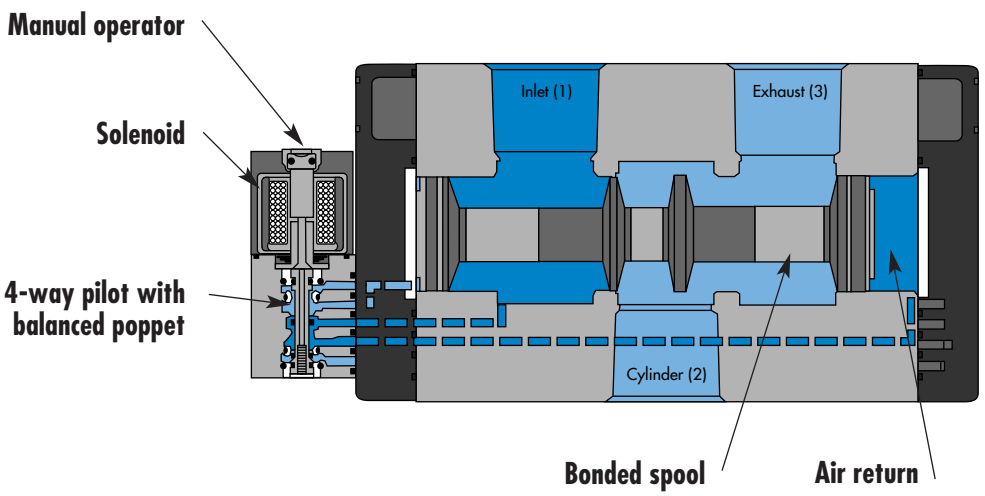


Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Inline

Series



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.

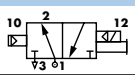
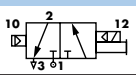
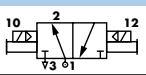
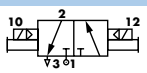
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	**3/4" - 1"**	**20.0 C_v**	Inline	

OPERATIONAL BENEFITS

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.

HOW TO ORDER

Port size	Pilot air	Single Operator NO Valve	Single Operator NC Valve	Double Operator NO Valve	Double Operator NC Valve
					
3/4" NPTF	Internal	67A-C*x*-AAA-DM-D*xxx-xxx*	67A-A*x*-AAA-DM-D*xxx-xxx*	67A-D*x*-AAA-DM-D*xxx-xxx*	67A-B*x*-AAA-DM-D*xxx-xxx*
1" NPTF		67A-C*x*-BAA-DM-D*xxx-xxx*	67A-A*x*-BAA-DM-D*xxx-xxx*	67A-D*x*-BAA-DM-D*xxx-xxx*	67A-B*x*-BAA-DM-D*xxx-xxx*
3/4" NPTF	External	67A-C*x*-AAB-DM-D*xxx-xxx*	67A-A*x*-AAB-DM-D*xxx-xxx*	67A-D*x*-AAB-DM-D*xxx-xxx*	67A-B*x*-AAB-DM-D*xxx-xxx*
1" NPTF		67A-C*x*-BAB-DM-D*xxx-xxx*	67A-A*x*-BAB-DM-D*xxx-xxx*	67A-D*x*-BAB-DM-D*xxx-xxx*	67A-B*x*-BAB-DM-D*xxx-xxx*

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18"
B	24"
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

* Other options available, see page 309.

OPTIONS

Spool type :

67A-**X**X-AAA-DM-D*xxx-xxx*

G Single operator universal spool
H Double operator universal spool

Spool return :

67A-X**X**-AAA-DM-D*xxx-xxx*

1 Standard return
2 Standard return with memory spring (for use with single operator only)

Port configuration :

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

A Standard pilot exhaust
B Pilot exhaust to main exhaust*
C Pilot exhaust out adapter*
* Must use DU pilot. Replace DM with DU

Pilot style :

67A-XX-AAA-D**M**-D*xxx-xxx*

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

Mounting style :

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

G O-Ring mount

MAC

Series 67

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

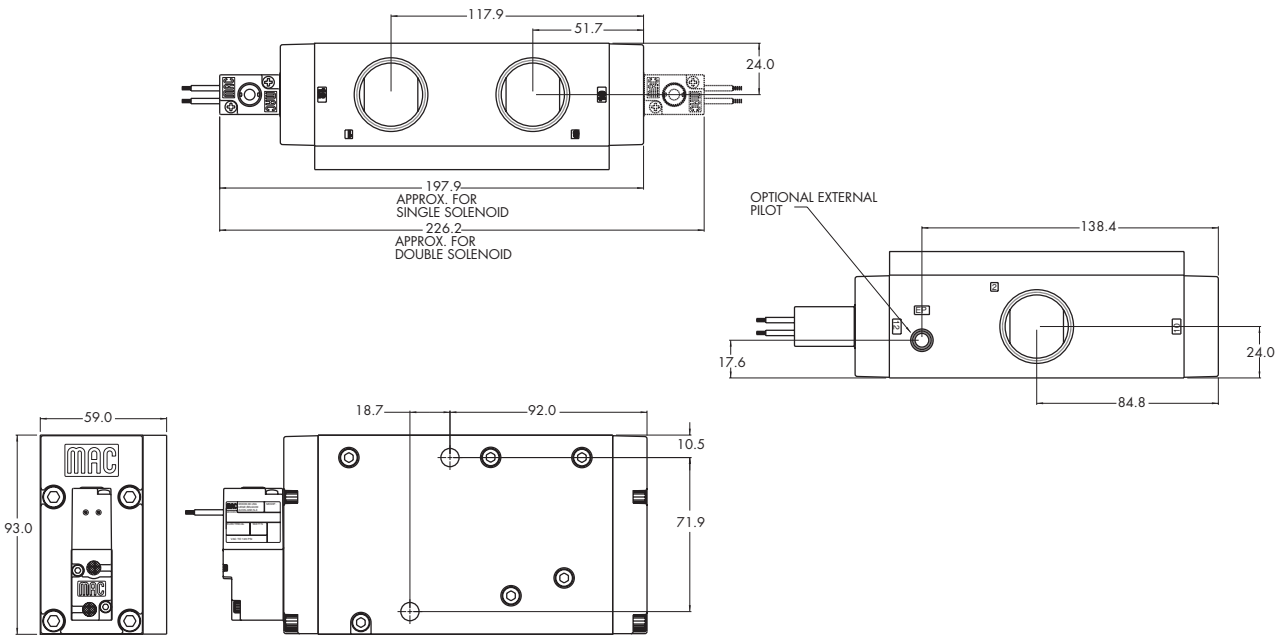
TECHNICAL DATA

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 :	3/4" : (14.5 C_v) – 1" : (20.0 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 : 7.6 VA Holding : 4.8 VA = 12.7 to 1.0 W
Response times : (with 5.4 W coil)	Energize : 29 ms De-energize : 21 ms

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



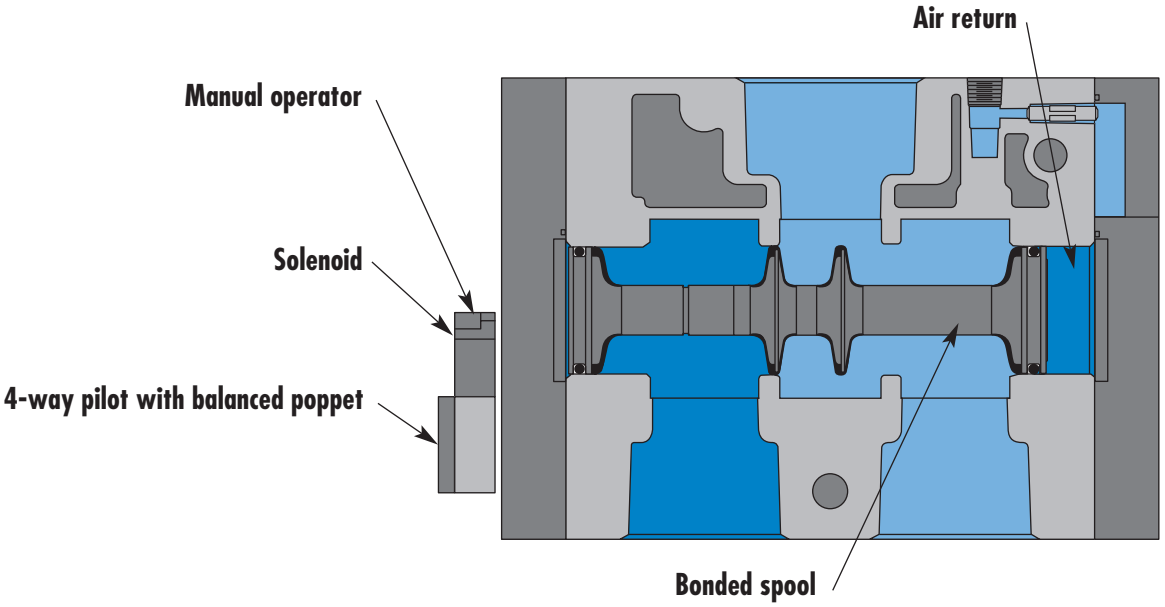
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Series 69

Individual mounting

Inline

Series



SERIES FEATURES

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

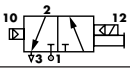
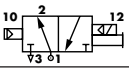
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	**1 1/2" - 2" - 2 1/2"**	**60.0 C_v**	Inline	

OPERATIONAL BENEFITS

1. The 4-way pilot develops maximum shifting force both ways.
2. Balanced spool, immune to variations of pressure, also provides high flow.
3. Short stroke with high flow.
4. Bonded spool with minimum friction, shifting in a glass-like finished bore.
5. Pilot with balanced poppet, high flow, short and consistent response times.
6. Wiping effect eliminates sticking and contamination.

HOW TO ORDER

Port size	Pilot air	Single Operator NC valve	Single Operator NO valve
			
1 1/2"	Internal	69A-A1-AAA-J*xxx-xxx*	69A-C1-AAA-J*xxx-xxx*
2"		69A-A1-BAA-J*xxx-xxx*	69A-C1-BAA-J*xxx-xxx*
2 1/2"		69A-A1-CAA-J*xxx-xxx*	69A-C1-CAA-J*xxx-xxx*
1 1/2"	External	69A-A1-AAB-J*xxx-xxx*	69A-C1-AAB-J*xxx-xxx*
2"		69A-A1-BAB-J*xxx-xxx*	69A-C1-BAB-J*xxx-xxx*
2 1/2"		69A-A1-CAB-J*xxx-xxx*	69A-C1-CAB-J*xxx-xxx*

SOLENOID OPERATOR ➤ J ***XXX-XXX**** (-G) Add "G" for ground

XX	Voltage
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)

X	Lead wire length
0	No lead wire
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection*
BA	Flying leads
GA	MAC JAC Solenoid Plug-in
GG	MAC JAC Solenoid Plug-in with rectifier
JB	Rectangular connector
JD	Rectangular connector with light
KA	Mini square connector
KD	Mini square connector with light

* Other options available, see page 317.
Note : use "0" No lead wire for "J", "K" and "L" type electrical connectors.
AC voltage requires connector with rectifier.

OPTIONS

Pilot exhaust configuration:

69A-xx-xx **X**-J*xxx-xxx*

A Standard pilot exhaust
B Pilot exhaust out main exhaust

M Manifold O'Ring Mount

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

MAC

Series 69

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

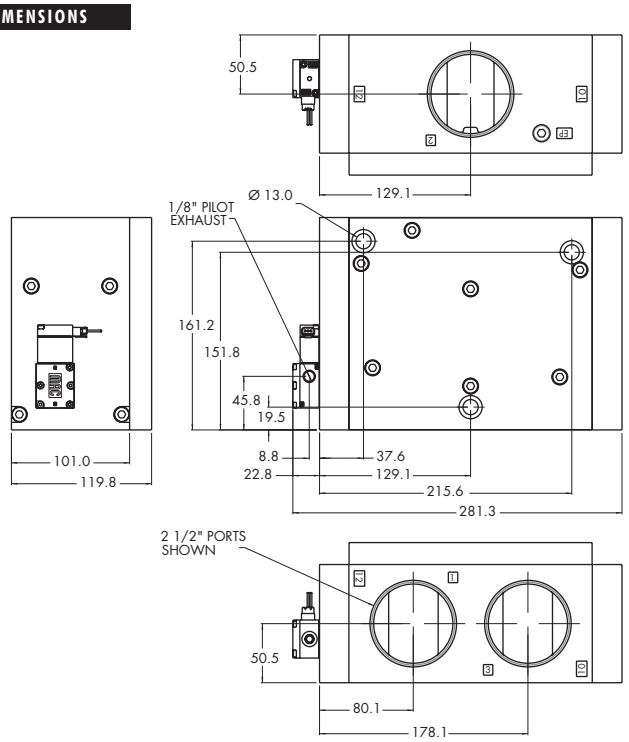
TECHNICAL DATA

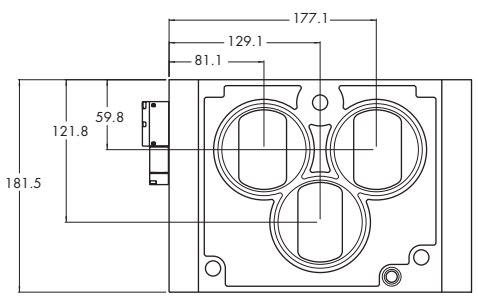
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : Vacuum to 120 PSI
Pilot Pressure:	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F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

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)

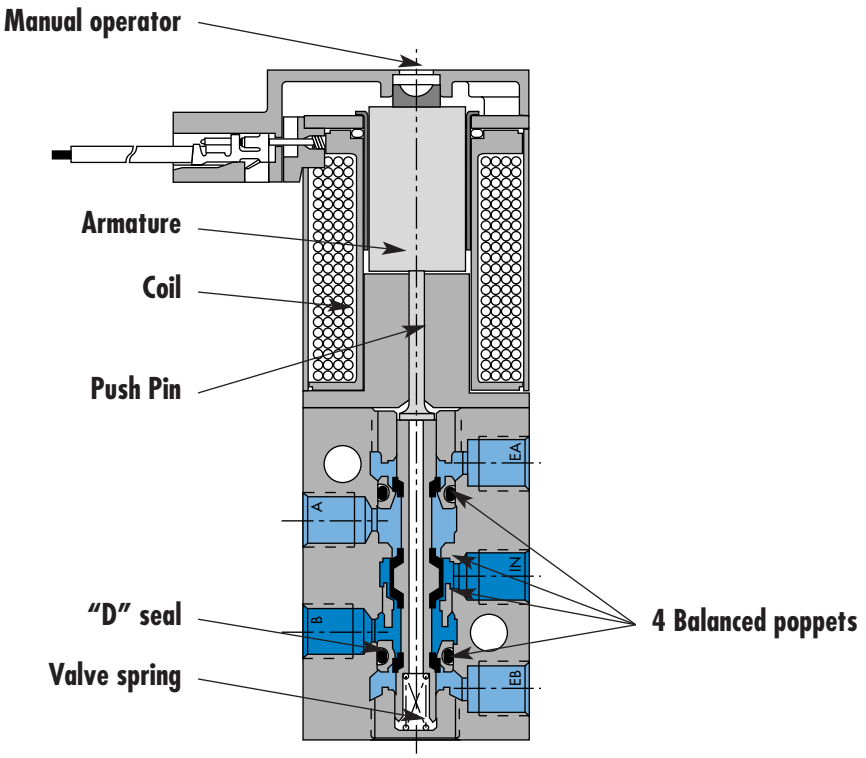




Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Inline



SERIES FEATURES

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

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

Function	Port size	Flow (Max)	Individual Mounting	Series
5/2	**M5, # 10-32**	**0.1 C_v**	Inline	

OPERATIONAL BENEFITS

1. 10 mm valve, direct solenoid operated.
2. Balanced poppet, immune to variations of pressure.
3. Short stroke with high flow.
4. The patented solenoid develops high shifting forces.
5. Powerful return spring.
6. Flow is specifically adjusted on each valve.
7. Manual operator standard on all valves.

HOW TO ORDER

SOLENOID OPERATOR

Port size	Universal valve	For use with external flow controls
		
M5	44C-ABA-G ***XXX-XXX***	44C-BBA-G ***XXX-XXX***
# 10-32	44C-AAA-G ***XXX-XXX***	44C-BAA-G ***XXX-XXX***

LATCHING SOLENOID

Port size	Universal valve	For use with external flow controls
		
M5	44B-ABA-L ***XXX-XXX***	44B-BBA-L ***XXX-XXX***
# 10-32	44B-AAA-L ***XXX-XXX***	44B-BAA-L ***XXX-XXX***

SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18″
B	24″

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC Solenoid Plug-in
KA	Plug-in wire assembly.
KC	Plug-in wire assembly with rectifier & light
KT	Plug-in wire assembly with light

* Other options available, see page 311.
Note : AC voltage requires connector with rectifier

LATCHING SOLENOID ➤ L ***XXX-XXX****

XX	Voltage
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	Wire length
A	18″
B	24″
C	36″

X	Manual operator
0	No operator

XX	Electrical connection
BA	2 Wire flying leads
BJ	4 Wire flying leads
KA	2 Wire plug-in assembly
KE	4 Wire plug-in assembly
LA	3 Wire plug-in assembly (Polarity switching cover)

* Other options available, see page 319.

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

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

MAC

Series **44**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

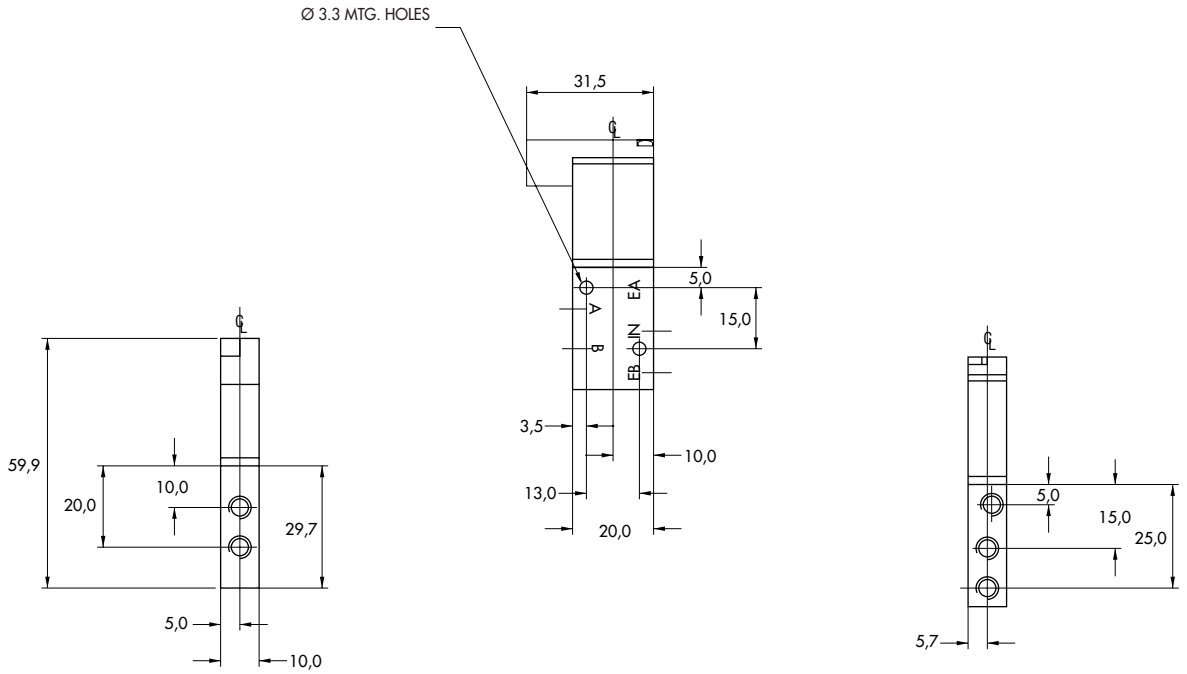
TECHNICAL DATA

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 :	4 W : (0.10 C_v) – 2.5 W : (0.08 C_v) – 1.8 W : (0.06 C_v) – 1.0W : (0.05 C_v)
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 : (with 4 W coil)	Energize : 3.4 ms De-energize : 1.5 ms

Note : • Valve and coil are not interchangeable.

DIMENSIONS

Dimensions shown are metric (mm)



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

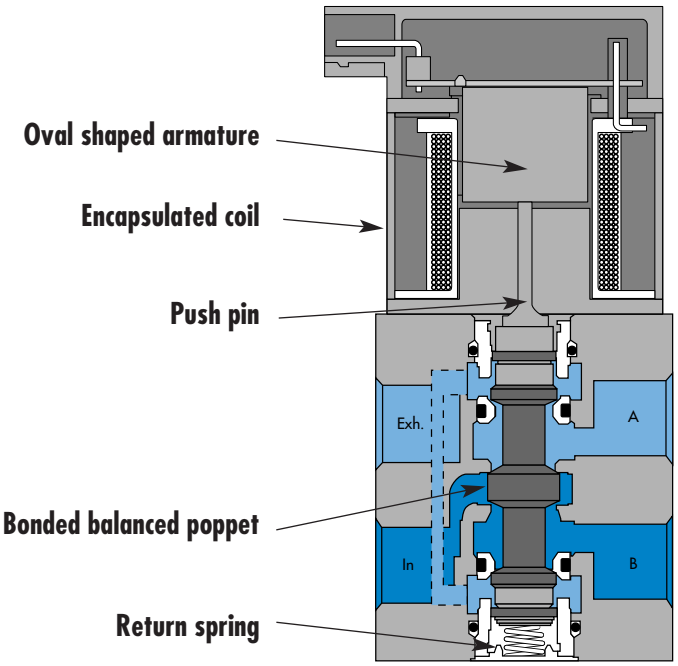
Individual mounting

Inline

Manifold mounting

Stacking	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

Series
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



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.

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

MAC®

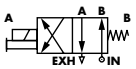
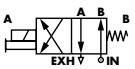
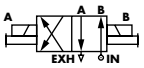
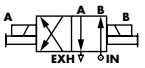
Series **46**

Function	Port size	Flow (Max)	Individual mounting	Series
4/2	**1/8" - # 10-32**	**0.3 C_v**	Inline	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Single Operator		Double Operator	
	Without flow controls	With flow controls	Without flow controls	With flow controls
				
1/8" NPTF	46A-AA1-J ***XXX-XXX***	46A-AA2-J ***XXX-XXX***	46A-GA1-J ***XXX-XXX***	46A-GA2-J ***XXX-XXX***
# 10-32	46A-AB1-J ***XXX-XXX***	46A-AB2-J ***XXX-XXX***	46A-GB1-J ***XXX-XXX***	46A-GB2-J ***XXX-XXX***

SOLENOID OPERATOR ➤ J ***XXX-XXX**** (-G) Add "G" for ground

XX	Voltage
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)

X	Wire length
*****O***	No leads
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
GA	MAC JAC solenoid plug-in
GG	MAC JAC solenoid plug-in with rectifier
JB	Rectangular connector
JD	Rectangular connector with light
KA	Mini square connector
KD	Mini square connector with light

* Other options available, see page 317.
** Use with rectangular and mini connectors
Note : - AC voltage requires connector with rectifier.
- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.
Double solenoid requires minimum 5.4 watts.

OPTIONS

46A-**AA**1-J***XXX-XXX***

G Use with O ring mount (body option 'D' & 'H')

A Single operator - 4 port body with side ports
C Single operator - 4 port body with bottom ports (No side ports – M5 or #10-32 ONLY)
D Single operator - Bottom O ring mount – All ports (No side ports)
F Single operator - Bottom O ring mount – Cylinder ports only – Side inlet & exhaust
G Double operator - 4 Port body - With side ports
H Double operator - Bottom O ring mount - All ports (No side ports)

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

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

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

MAC

Series **46**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

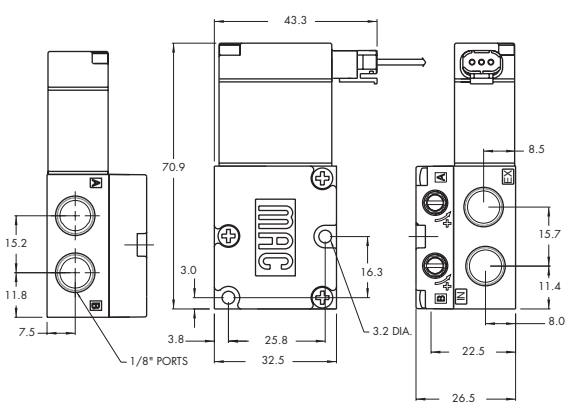
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Orifice :	3,3 mm
Flow :	1.8W : (0.20 C_V) – 2.4W : (0.20 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

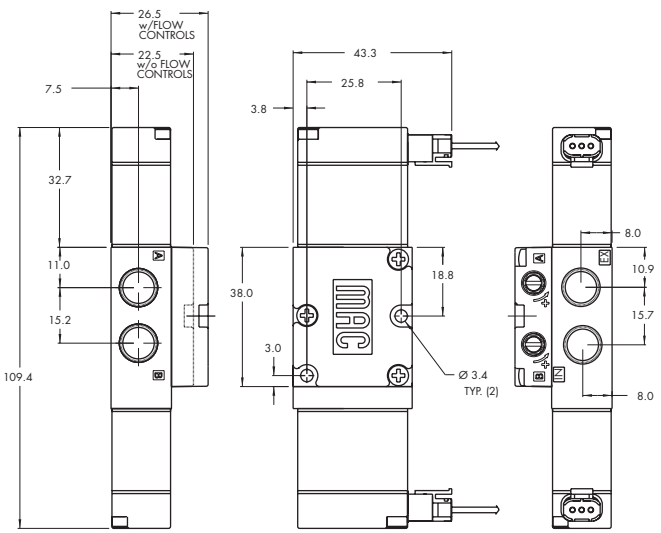
DIMENSIONS

Dimensions shown are metric (mm)

Single solenoid



Double solenoid



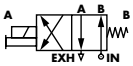
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Manifold Mounting	Series
4/2	**1/8" - # 10-32**	**0.3 C_v**	Stacking	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Without flow controls	With flow controls
		
1/8" NPTF	46A-SA1-J ***XXX-XXX***	46A-SA2-J ***XXX-XXX***
# 10-32	46A-SB1-J ***XXX-XXX***	46A-SB2-J ***XXX-XXX***

SOLENOID OPERATOR ➤ J ***XXX-XXX**** (-G) Add "G" for ground

XX	Voltage
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)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
GA	MAC JAC solenoid plug-in
GB	MAC JAC solenoid plug-in with diode
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.

End plate kit required (port size 1/4") : M-46001-01.

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

MAC

Series **46**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

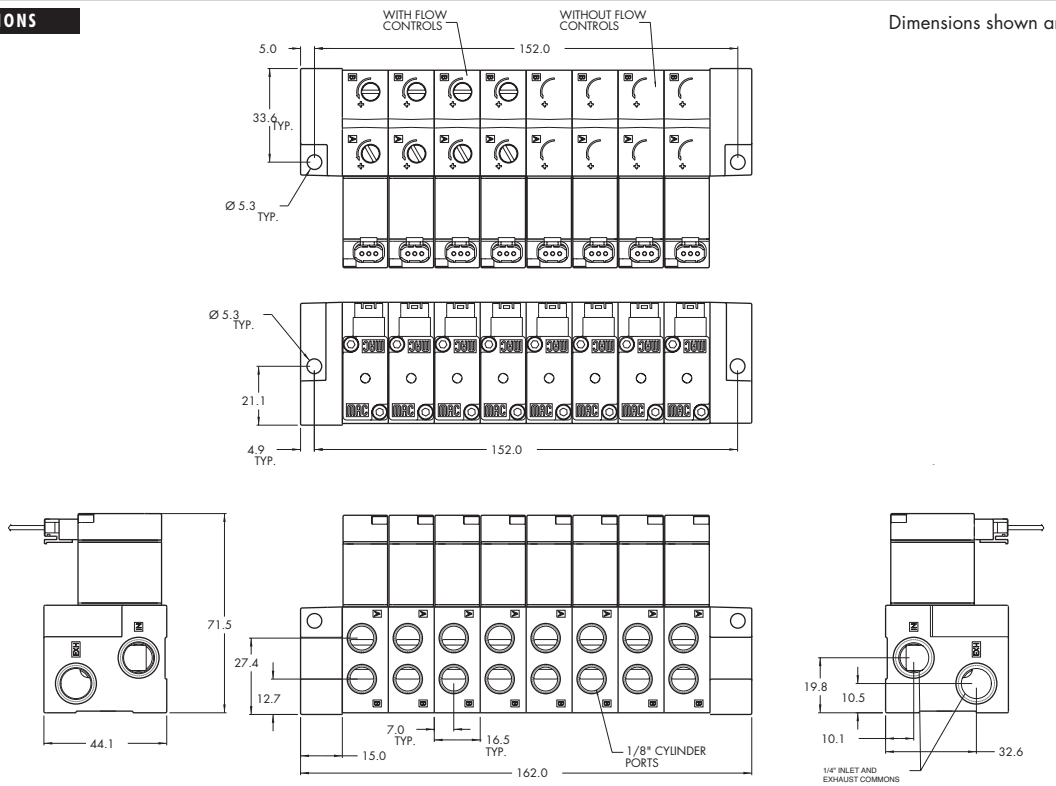
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C_v) – 2.4W : (0.20 C_v) – 5.4W : (0.30 C_v)
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
Response times : (with 5.4 W coil)	Energize : 7.20 ms De-energize : 4.20ms

Options : • BSPP threads

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

DIMENSIONS

Dimensions shown are metric (mm)



MAC®

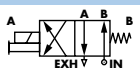
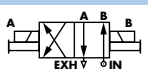
Series **46**

Function	Port size	Flow (Max)	Manifold mounting	Series
4/2	**1/8" - 5/32 O.D. Pressed-in tube receptacles**	**0.3 C_V**	Manifold base "plug-in"	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Single solenoid	Double solenoid
		
Valve less base	46A-L00-00-J ***xx*P-*xxx***	46A-N00-00-J ***xx*P-*xxx***
1/8" NPTF	46A-LSA-AC-J ***xx*P-*xxx***	46A-NSA-BL-J ***xx*P-*xxx***
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AC-J ***xx*P-*xxx***	46A-NSF-BL-J ***xx*P-*xxx***

SOLENOID OPERATOR ➤ J ***XX*** P-***XXX**** (-G) Add "G" for ground

XX	Voltage
Single & double solenoid	
AA	120 VAC (5,4W)
AC	24 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)

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
FA	Base plug-in
FB	Base plug-in with diode
FG	Base plug-in with rectifier

* Other options available, see page 317.
Note : AC voltage requires connector with rectifier. Double solenoid requires minimum 5.4 watts.

OPTIONS

46A-**L**SB-A**C**-J***xx*P-*xxx***

C Single solenoid - Side cylinder ports
L Single & double solenoid - Bottom cylinder ports

0 Base only - no valve
L Single solenoid - Base mount body
M Single solenoid - Base mount body with gage port
N Double solenoid - Base mount body
P Double solenoid - Base mount body with gage port

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

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

MAC

Series **46**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

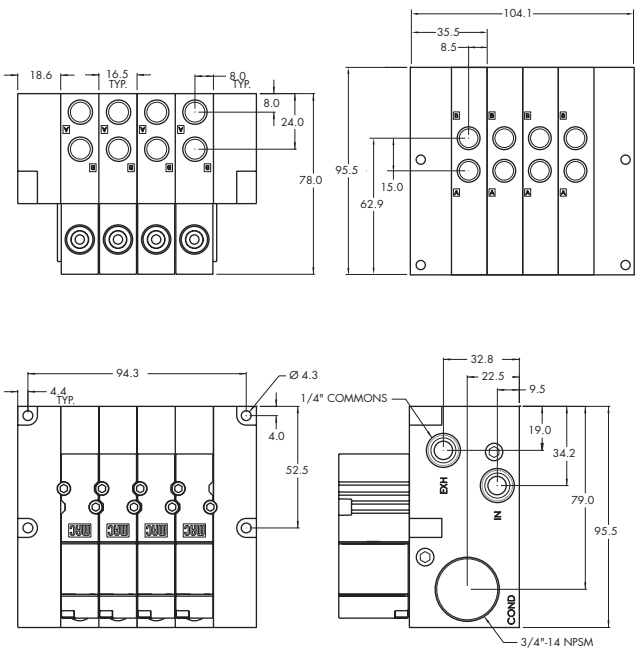
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Orific e	3.3 mm
Flow :	1.8W : (0.20 C_V) – 2.4W : (0.20 C_V) – 5.4W : (0.30 C_V)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5.4W – 2.4W – 1.8W
Response times :	Energize : 7.20 ms De-energize : 4.20ms

Options : • BSPP threads

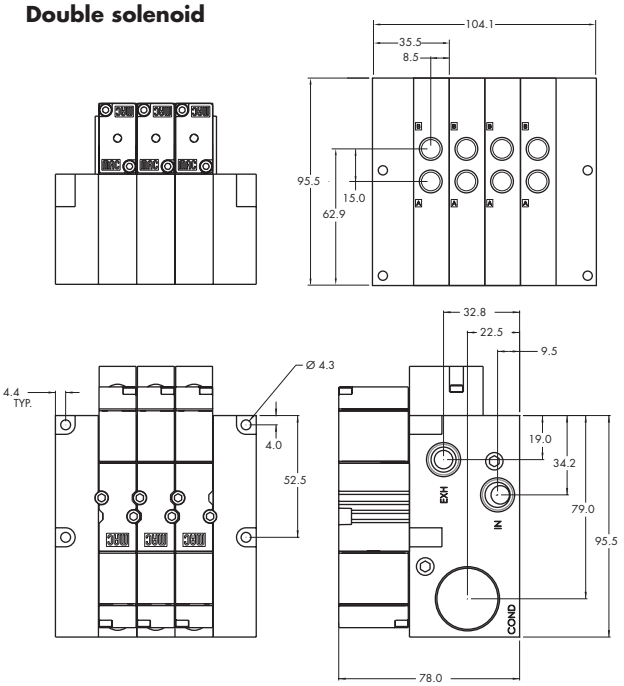
Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002
• Tie rod (x2) : 79443

DIMENSIONS

Dimensions shown are metric (mm)



Double solenoid



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

MAC®

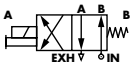
Series **46**

Function	Port size	Flow (Max)	Manifold mounting	Series
4/2	**1/8" - 5/32 O.D. Pressed-in tube receptacles**	**0.3 C_V**	**Manifold base "plug-in" with pressure regulators**	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size (Bottom ports only)	Model number
	
Valve less base	46A-L00-00-J ***XX***P-***XXX***
1/8" NPTF	46A-LSA-AJ-J ***XX***P-***XXX***
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AJ-J ***XX***P-***XXX***

SOLENOID OPERATOR ➤ J ***XX*** P-***XXX**** (-G) Add "G" for ground

XX	**Voltage**
AA	120 VAC (5.4W)
DA	24 VDC (5.4W)
DB	12 VDC (5.4W)
DC	24 VDC (2.4W)

X	**Manual operator**
1	Non-locking recessed
2	Locking recessed

XX	**Electrical connection**
FA	Base plug-in
FB	Base plug-in with diode
FG	Base plug-in with rectifier

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

OPTIONS

46A-**L**SA-A**J**-J***XX***P-***XXX***

- **J** Regulator with adjusting knob
- **E** Regulator with slotted stem
- **G** Regulator with slotted stem with locknut

- **0** 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.

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

MAC

Series **46**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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)
Coil :	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 : (with 5.4 W coil)	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

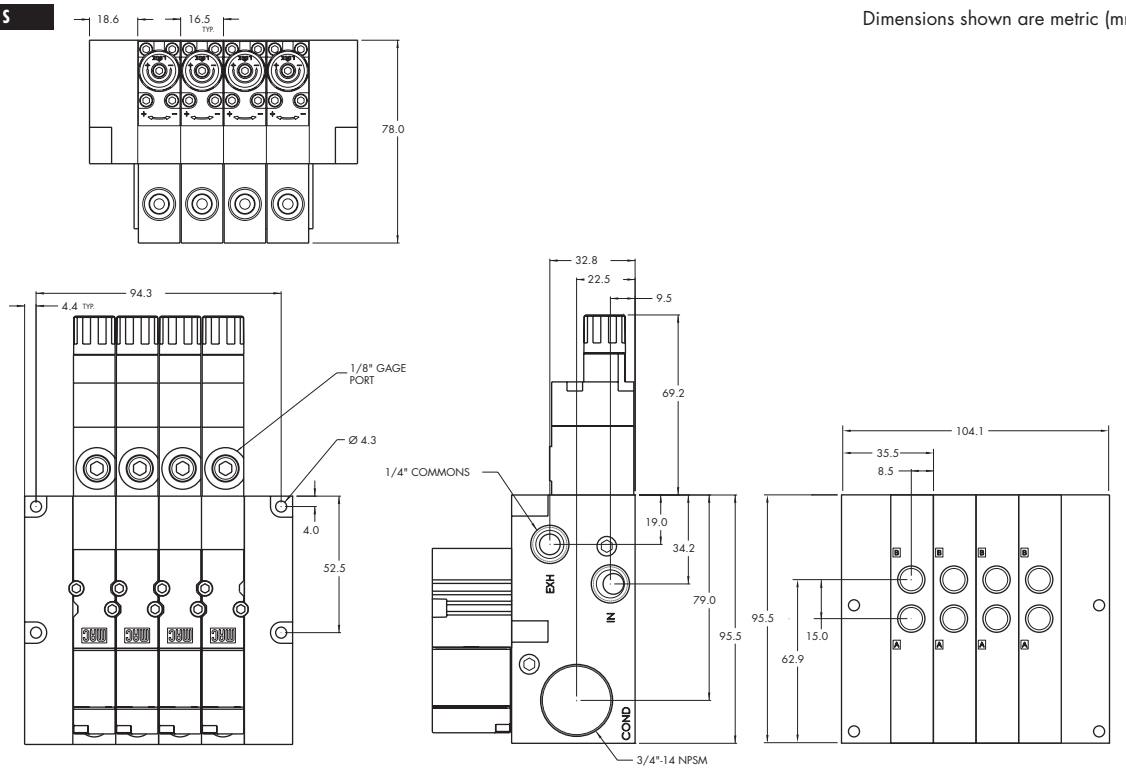
• Replacement regulators : PR46A-0AAA (slotted stem)
PR46A-0BAA (adjusting knob)
PR46A-0CAA (slotted stem with locknut)

Regulating range options : • PR46A-xxx**A**

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

DIMENSIONS

Dimensions shown are metric (mm)

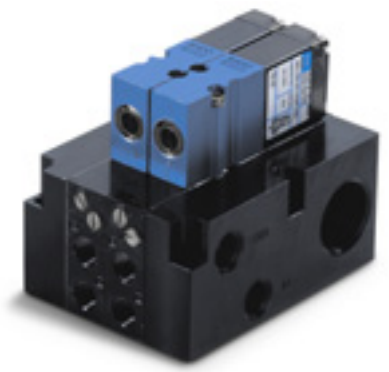


Consult "Precautions" page 327 before use, installation or service of MAC Valves..

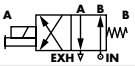
Function	Port size	Flow (Max)	Manifold mounting	Series
4/2	**1/8" - 5/32 O.D. Pressed-in tube receptacles**	**0.3 C_V**	Manifold base "plug-in" with flow controls	

OPERATIONAL BENEFITS

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



HOW TO ORDER

Port size	Model number
	
Valve less base	46A-L00-00-J *xx*P-*xxx*
1/8" NPTF	46A-LSA-AD-J *xx*P-*xxx*
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AD-J *xx*P-*xxx*

SOLENOID OPERATOR ➤ J ***XX*** P-***XXX**** (-G) Add "G" for ground

XX	Voltage
AA	120 VAC (5.4W)
DA	24 VDC (5.4W)
DB	12 VDC (5.4W)
DC	24 VDC (2.4W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
FA	Base plug-in
FB	Base plug-in with diode
FG	Base plug-in with rectifier

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

OPTIONS

46A-**L**SA-A**D**-J*xx*P-*xxx*

D Side cylinder ports
M Bottom cylinder ports

0 Base only – no valve
L Base mount body
M Base mount body with gage port

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

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

MAC

Series **46**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

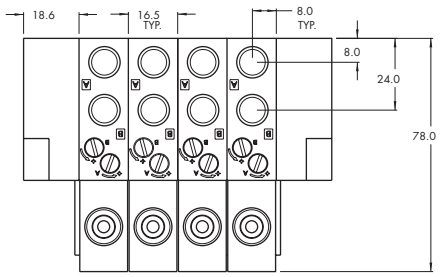
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C_v) – 2.4W : (0.20 C_v) – 5.4W : (0.30 C_v)
Coil :	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

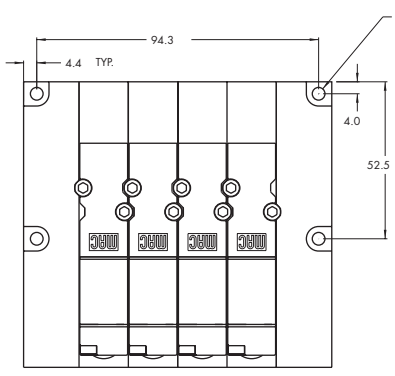
Options : • BSPP threads

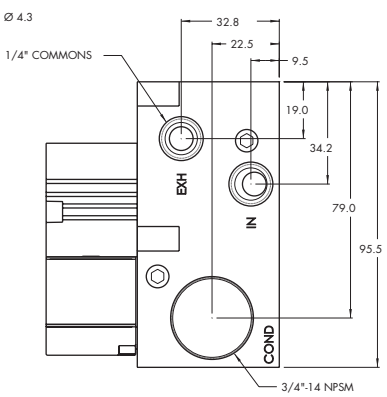
Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002
• Tie rod (x2) : 79443

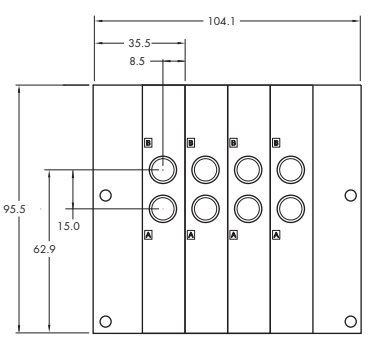
DIMENSIONS

Dimensions shown are metric (mm)









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

MAC®

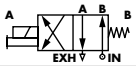
Series **46**

Function	Port size	Flow (Max)	Manifold mounting	Series
4/2	**1/8" - 5/32 O.D. Pressed-in tube receptacles**	**0.3 C_V**	**Manifold base "plug-in" with PR & FC**	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size (Bottom ports only)	Model number
	
Valve less base	46A-L00-00-J ***xx*P-*xxx***
1/8" NPTF	46A-LSA-AK-J ***xx*P-*xxx***
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AK-J ***xx*P-*xxx***

SOLENOID OPERATOR ➤ J ***XX*** P-***XXX**** (-G) Add "G" for ground

XX	Voltage
AA	120 VAC (5.4W)
DA	24 VDC (5.4W)
DB	12 VDC (5.4W)
DC	24 VDC (2.4W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
FA	Base plug-in
FB	Base plug-in with diode
FG	Base plug-in with rectifier

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

OPTIONS

46A-L**S**A-A**K**-J*xx*P-*xxx*

- **K** Regulator with adjusting knob & flow controls
- **F** Regulator with slotted stem & flow controls
- **H** Regulator with slotted stem with locknut & flow controls

- **0** Base only – no valve
- **L** Base mount body
- **M** Base mount body with gage port

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

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

MAC

Series **46**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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)
Coil :	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

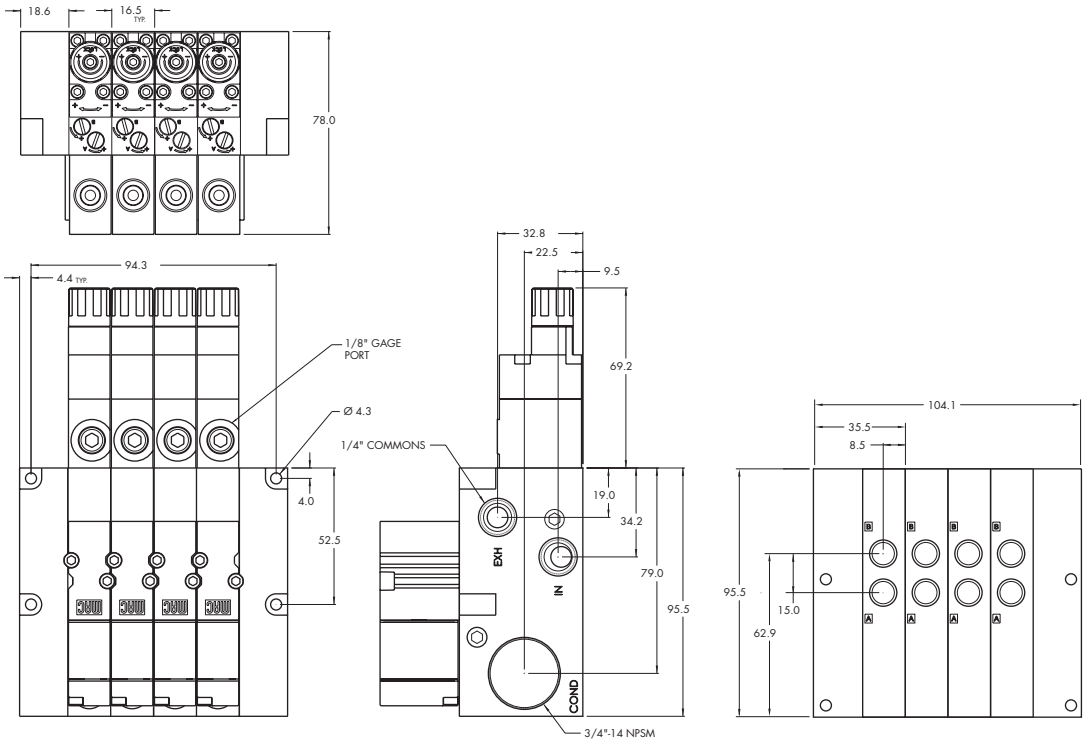
Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
• Replacement regulators : PR46A-0AAA (slotted stem)
PR46A-0BAA (adjusting knob)
PR46A-0CAA (slotted stem with locknut)

Regulating range options : • PR46A-xxx**A**

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

DIMENSIONS

Dimensions shown are metric (mm)



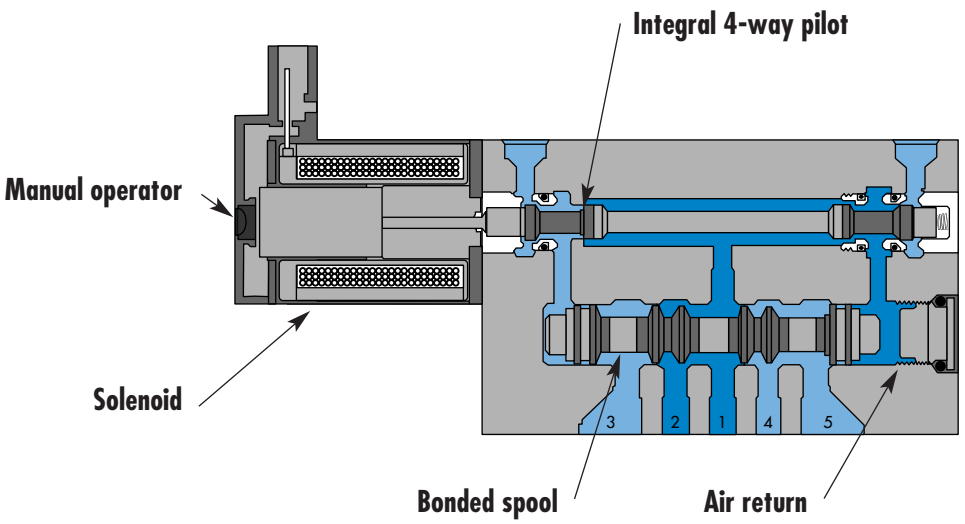
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Sub-base non "plug-in"	Sub-base "plug-in"	Sub-base/ manifold base non "plug-in" with latching solenoid	Sub-base/ manifold base "plug-in" with latching solenoid

Manifold mounting

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



SERIES FEATURES

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

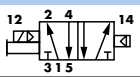
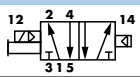
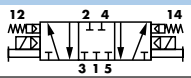
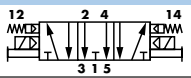
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**# 10-32 -** **1/4" O.D. tube receptacle**	**0.4 C_v**	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

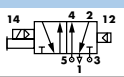
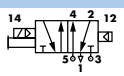
1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centers).
3. High flow (up to 0.4 C_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

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
					
Valve less base	Internal	42B-AMA-000-G***XXX-XXX***	42B-BMA-000-G***XXX-XXX***	42B-EMA-000-G***XXX-XXX***	42B-FMA-000-G***XXX-XXX***
	External	42B-AMD-000-G***XXX-XXX***	42B-BMD-000-G***XXX-XXX***	42B-EMD-000-G***XXX-XXX***	42B-FMD-000-G***XXX-XXX***
# 10-32	Internal	42B-AMA-AAL-G***XXX-XXX***	42B-BMA-AAL-G***XXX-XXX***	42B-EMA-AAL-G***XXX-XXX***	42B-FMA-AAL-G***XXX-XXX***
	External	42B-AMD-AAM-G***XXX-XXX***	42B-BMD-AAM-G***XXX-XXX***	42B-EMD-AAM-G***XXX-XXX***	42B-FMD-AAM-G***XXX-XXX***
1/4" O.D.	Internal	42B-AMA-EAL-G***XXX-XXX***	42B-BMA-EAL-G***XXX-XXX***	42B-EMA-EAL-G***XXX-XXX***	42B-FMA-EAL-G***XXX-XXX***
tube receptacles	External	42B-AMD-EAM-G***XXX-XXX***	42B-BMD-EAM-G***XXX-XXX***	42B-EMD-EAM-G***XXX-XXX***	42B-FMD-EAM-G***XXX-XXX***

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

Port size	Pilot air		5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
					
Valve less base	Internal	Supply #3 port	42B-CMB-000-G***XXX-XXX***	42B-DMB-000-G***XXX-XXX***	42B-HMB-000-G***XXX-XXX***
		Supply #5 port	42B-CMC-000-G***XXX-XXX***	42B-DMC-000-G***XXX-XXX***	42B-HMC-000-G***XXX-XXX***
	External		42B-CMD-000-G***XXX-XXX***	42B-DMD-000-G***XXX-XXX***	42B-HMD-000-G***XXX-XXX***
# 10-32	Internal	Supply #3 port	42B-CMB-AAL-G***XXX-XXX***	42B-DMB-AAL-G***XXX-XXX***	42B-HMB-AAL-G***XXX-XXX***
		Supply #5 port	42B-CMC-AAL-G***XXX-XXX***	42B-DMC-AAL-G***XXX-XXX***	42B-HMC-AAL-G***XXX-XXX***
	External		42B-CMD-AAM-G***XXX-XXX***	42B-DMD-AAM-G***XXX-XXX***	42B-HMD-AAM-G***XXX-XXX***
1/4" O.D.	Internal	Supply #3 port	42B-CMB-EAL-G***XXX-XXX***	42B-DMB-EAL-G***XXX-XXX***	42B-HMB-EAL-G***XXX-XXX***
tube receptacles		Supply #5 port	42B-CMC-EAL-G***XXX-XXX***	42B-DMC-EAL-G***XXX-XXX***	42B-HMC-EAL-G***XXX-XXX***
	External		42B-CMD-EAM-G***XXX-XXX***	42B-DMD-EAM-G***XXX-XXX***	42B-HMD-EAM-G***XXX-XXX***

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC solenoid Plug-in
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light
KD	Plug-in wire assy. with rectifier & light & ground

Note : AC voltage requires connector with rectifier.
* Other options available, see page 311.
Latching solenoid available for 5/2 valves.
Other options available for the 42 series valves, see page 107.

MAC

Series 42

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI
Pilot pressure :	2 position : 20 to 120 PSI 3 position : 40 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) – 1/4" O.D. tube receptacle : (0.4 C_V)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 24V 4 W coil)**	Energize : 5 ms De-energize : 5 ms

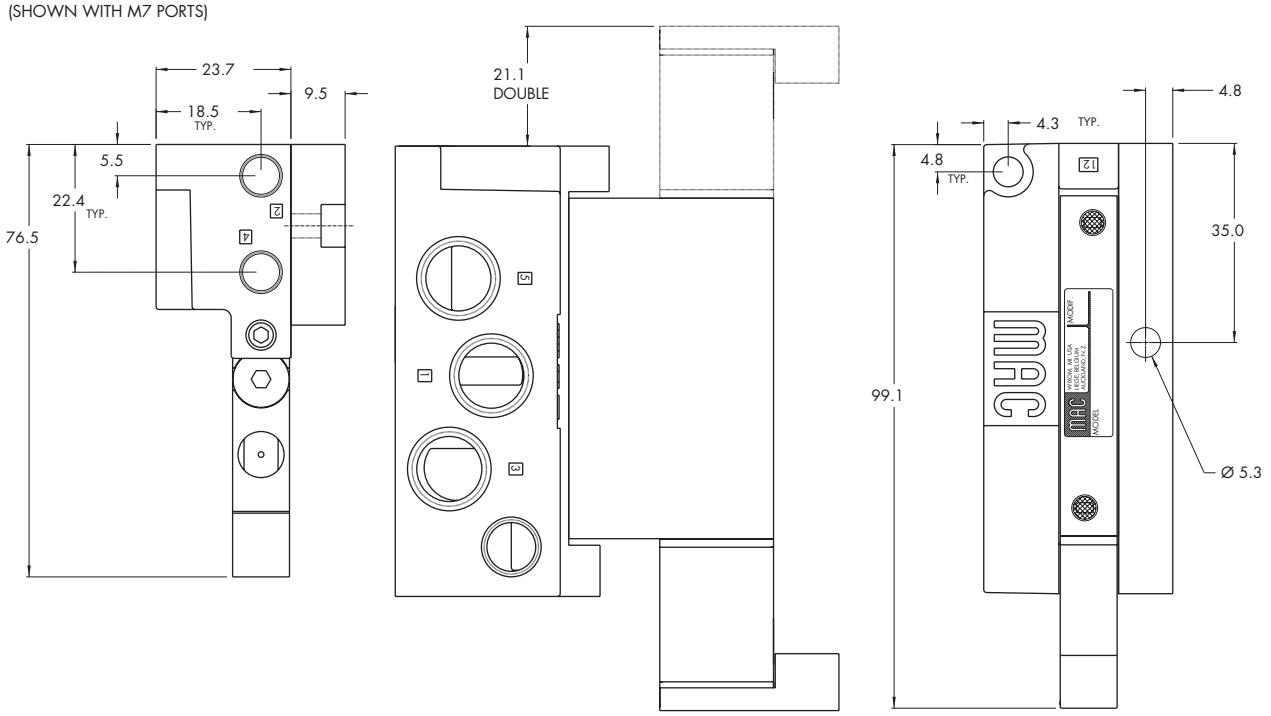
Options :

- M5 ports, M7 ports, 6 mm O.D. tube receptacles
- Sandwich flow controls : FC42B-BB
- Sandwich regulator : see 'Regulator' section

DIMENSIONS

Dimensions shown are metric (mm)

(SHOWN WITH M7 PORTS)



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

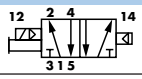
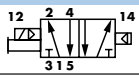
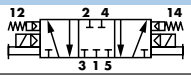
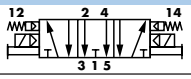
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**# 10-32 -** **1/4" O.D. tube receptacle**	**0.4 C_v**	Sub-base "plug-in"	

OPERATIONAL BENEFITS

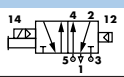
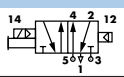
1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centers).
3. High flow (up to 0.4 C_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

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
					
Valve less base	Internal	42B-AMA-000-G*xx*P-*xxx*	42B-BME-000-G*xx*P-*x*ST	42B-EME-000-G*xx*P-*x*ST	42B-FME-000-G*xx*P-*x*ST
	External	42B-AMD-000-G*xx*P-*xxx*	42B-BMH-000-G*xx*P-*x*ST	42B-EMH-000-G*xx*P-*x*ST	42B-FMH-000-G*xx*P-*x*ST
# 10-32	Internal	42B-AMA-AAA-G*xx*P-*xxx*	42B-BME-AAC-G*xx*P-*x*ST	42B-EME-AAC-G*xx*P-*x*ST	42B-FME-AAC-G*xx*P-*x*ST
	External	42B-AMD-AAB-G*xx*P-*xxx*	42B-BMH-AAD-G*xx*P-*x*ST	42B-EMH-AAD-G*xx*P-*x*ST	42B-FMH-AAD-G*xx*P-*x*ST
1/4" O.D.	Internal	42B-AMA-EAA-G*xx*P-*xxx*	42B-BME-EAC-G*xx*P-*x*ST	42B-EME-EAC-G*xx*P-*x*ST	42B-FME-EAC-G*xx*P-*x*ST
tube receptacles	External	42B-AMD-EAB-G*xx*P-*xxx*	42B-BMH-EAD-G*xx*P-*x*ST	42B-EMH-EAD-G*xx*P-*x*ST	42B-FMH-EAD-G*xx*P-*x*ST

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
					
Valve less base	Internal	Supply #3 port	42B-CMB-000-G*xx*P-*xxx*	42B-DMF-000-G*xx*P-*x*ST	42B-HMF-000-G*xx*P-*x*ST
		Supply #5 port	42B-CMC-000-G*xx*P-*xxx*	42B-DMG-000-G*xx*P-*x*ST	42B-HMG-000-G*xx*P-*x*ST
	External		42B-CMD-000-G*xx*P-*xxx*	42B-DMH-000-G*xx*P-*x*ST	42B-HMH-000-G*xx*P-*x*ST
# 10-32	Internal	Supply #3 port	42B-CMB-AAA-G*xx*P-*xxx*	42B-DMF-AAC-G*xx*P-*x*ST	42B-HMF-AAC-G*xx*P-*x*ST
		Supply #5 port	42B-CMC-AAA-G*xx*P-*xxx*	42B-DMG-AAC-G*xx*P-*x*ST	42B-HMG-AAC-G*xx*P-*x*ST
	External		42B-CMD-AAB-G*xx*P-*xxx*	42B-DMH-AAD-G*xx*P-*x*ST	42B-HMH-AAD-G*xx*P-*x*ST
1/4" O.D.	Internal	Supply #3 port	42B-CMB-EAA-G*xx*P-*xxx*	42B-DMF-EAC-G*xx*P-*x*ST	42B-HMF-EAC-G*xx*P-*x*ST
tube receptacles		Supply #5 port	42B-CMC-EAA-G*xx*P-*xxx*	42B-DMG-EAC-G*xx*P-*x*ST	42B-HMG-EAC-G*xx*P-*x*ST
	External		42B-CMD-EAB-G*xx*P-*xxx*	42B-DMH-EAD-G*xx*P-*x*ST	42B-HMH-EAD-G*xx*P-*x*ST

STANDARD SOLENOID OPERATOR ➤ G ***XX*** P-***XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
	Double solenoid & 3 position models
ST	Base plug-in
	Single solenoid models
SA	Base plug-in
SJ	Base plug-in with light
SS	Base plug-in with rectifier & light & ground

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.

MAC

Series 42

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI
Pilot pressure :	2 position : 20 to 120 PSI 3 position : 40 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) – 1/4" O.D. tube receptacle : (0.4 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 24V 4 W coil)**	Energize : 5 ms De-energize : 5 ms

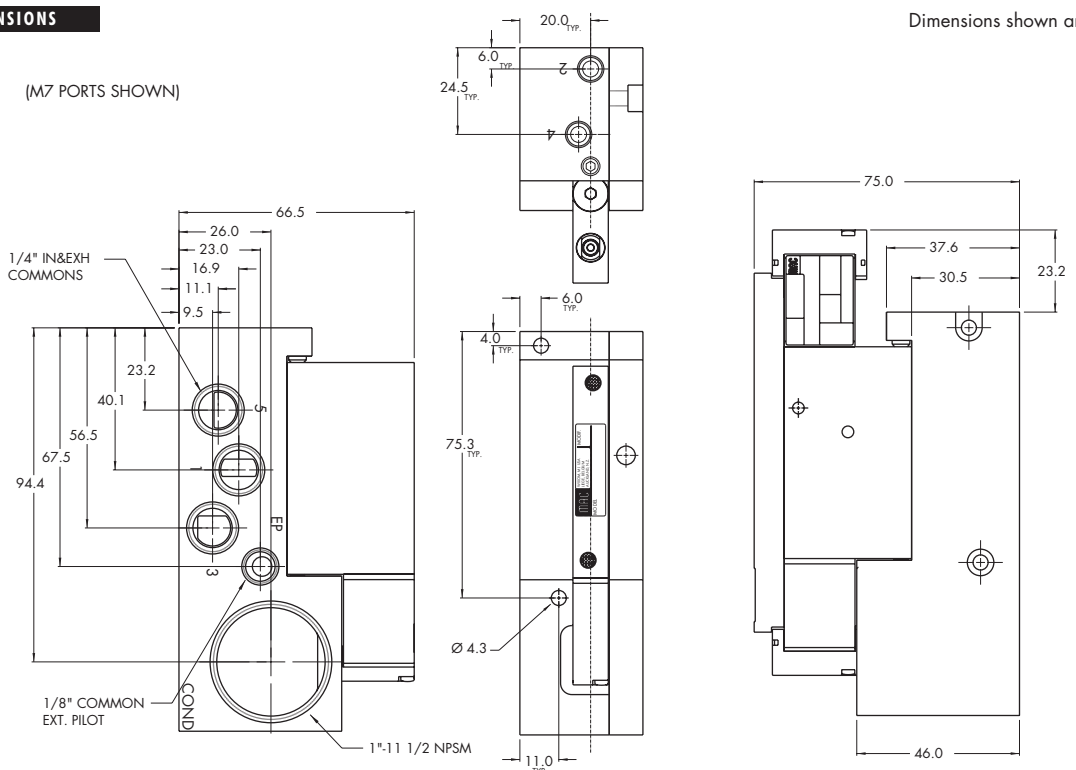
Options :

- M5 ports, M7 ports, 6 mm O.D. tube receptacles
- Sandwich flow controls : FC42B-AB
- Sandwich regulator : see 'Regulator' section

DIMENSIONS

Dimensions shown are metric (mm)

(M7 PORTS SHOWN)

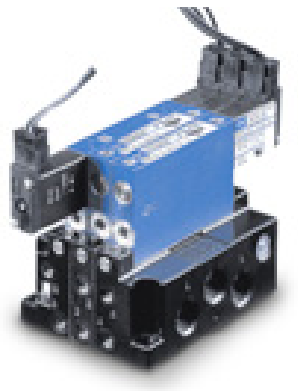


Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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

OPERATIONAL BENEFITS

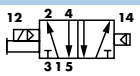
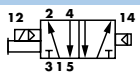
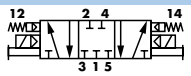
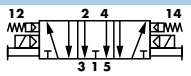
1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centers).
3. High flow (up to 0.4 C_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



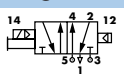
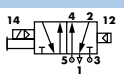
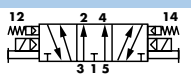
33
34
36
32
37
38
52
67
69
44
46
42
47
48P
48
400
92
93
ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS (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
					
Valve less base	Internal	42B-AMA-000-G***xxx-xxx***	42B-BMA-000-G***xxx-xxx***	42B-EMA-000-G***xxx-xxx***	42B-FMA-000-G***xxx-xxx***
	External	42B-AMD-000-G***xxx-xxx***	42B-BMD-000-G***xxx-xxx***	42B-EMD-000-G***xxx-xxx***	42B-FMD-000-G***xxx-xxx***
# 10-32	Internal	42B-AMA-AJL-G***xxx-xxx***	42B-BMA-AJL-G***xxx-xxx***	42B-EMA-AJL-G***xxx-xxx***	42B-FMA-AJL-G***xxx-xxx***
	External	42B-AMD-AJM-G***xxx-xxx***	42B-BMD-AJM-G***xxx-xxx***	42B-EMD-AJM-G***xxx-xxx***	42B-FMD-AJM-G***xxx-xxx***
1/4" O.D.	Internal	42B-AMA-EJL-G***xxx-xxx***	42B-BMA-EJL-G***xxx-xxx***	42B-EMA-EJL-G***xxx-xxx***	42B-FMA-EJL-G***xxx-xxx***
tube receptacles	External	42B-AMD-EJM-G***xxx-xxx***	42B-BMD-EJM-G***xxx-xxx***	42B-EMD-EJM-G***xxx-xxx***	42B-FMD-EJM-G***xxx-xxx***

DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air		5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
					
Valve less base	Internal	Supply #3 port	42B-CMB-000-G***xxx-xxx***	42B-DMB-000-G***xxx-xxx***	42B-HMB-000-G***xxx-xxx***
		Supply #5 port	42B-CMC-000-G***xxx-xxx***	42B-DMC-000-G***xxx-xxx***	42B-HMC-000-G***xxx-xxx***
	External		42B-CMD-000-G***xxx-xxx***	42B-DMD-000-G***xxx-xxx***	42B-HMD-000-G***xxx-xxx***
# 10-32	Internal	Supply #3 port	42B-CMB-AJL-G***xxx-xxx***	42B-DMB-AJL-G***xxx-xxx***	42B-HMB-AJL-G***xxx-xxx***
		Supply #5 port	42B-CMC-AJL-G***xxx-xxx***	42B-DMC-AJL-G***xxx-xxx***	42B-HMC-AJL-G***xxx-xxx***
	External		42B-CMD-AJM-G***xxx-xxx***	42B-DMD-AJM-G***xxx-xxx***	42B-HMD-AJM-G***xxx-xxx***
1/4" O.D.	Internal	Supply #3 port	42B-CMB-EJL-G***xxx-xxx***	42B-DMB-EJL-G***xxx-xxx***	42B-HMB-EJL-G***xxx-xxx***
tube receptacles		Supply #5 port	42B-CMC-EJL-G***xxx-xxx***	42B-DMC-EJL-G***xxx-xxx***	42B-HMC-EJL-G***xxx-xxx***
	External		42B-CMD-EJM-G***xxx-xxx***	42B-DMD-EJM-G***xxx-xxx***	42B-HMD-EJM-G***xxx-xxx***

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC solenoid plug-in
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light
KD	Plug-in wire assy. with rectifier & light & ground

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.

MAC

Series 42

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI
Pilot pressure :	2 position : 20 to 120 PSI 3 position : 40 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_v) – 1/4" O.D. tube receptacle : (0.4 C_v)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 24V 4 W coil)**	Energize : 5 ms De-energize : 5 ms

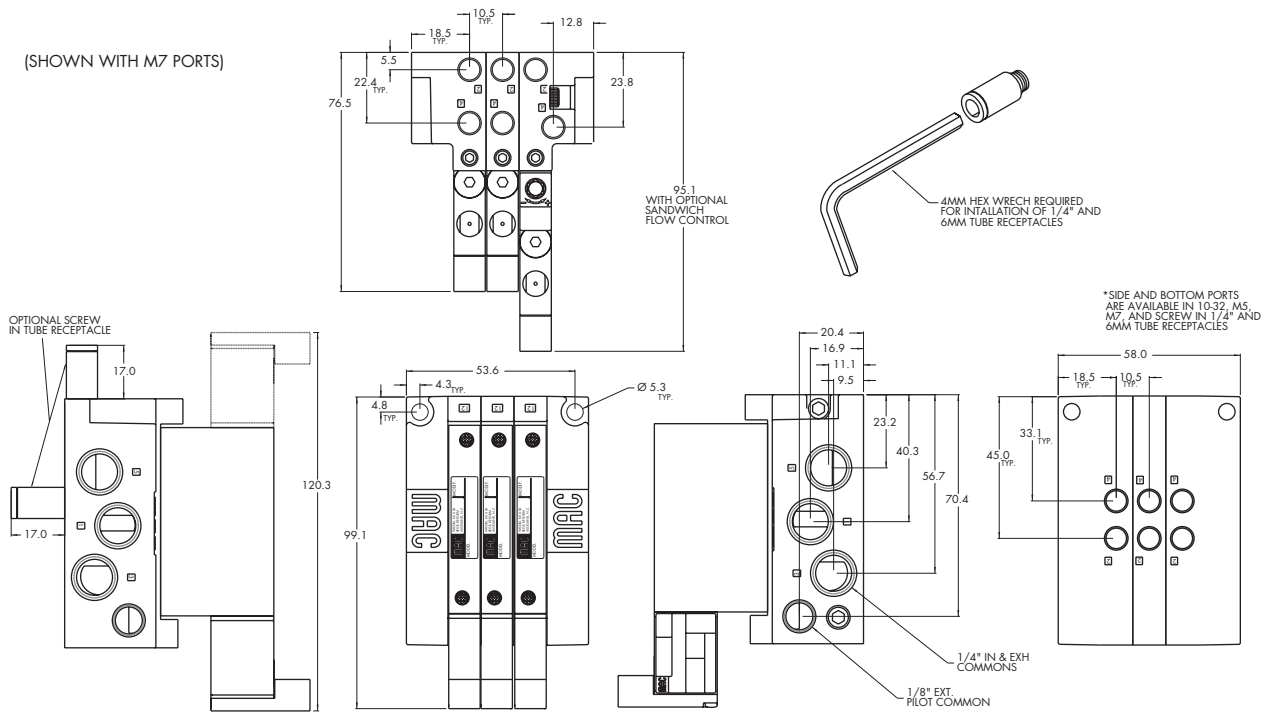
Options :

- 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

DIMENSIONS

Dimensions shown are metric (mm)

(SHOWN WITH M7 PORTS)



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

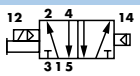
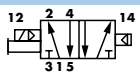
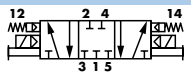
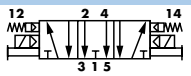
Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	**# 10-32 -** **1/4" O.D. tube receptacle**	**0.4 C_v**	Manifold base "plug-in"	

OPERATIONAL BENEFITS

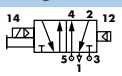
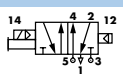
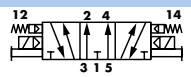
1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centers).
3. High flow (up to 0.4 C_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
					
Valve less base	Internal	42B-AMA-000-G*xx*P-*xxx*	42B-BME-000-G*xx*P-*x*ST	42B-EME-000-G*xx*P-*x*ST	42B-FME-000-G*xx*P-*x*ST
	External	42B-AMD-000-G*xx*P-*xxx*	42B-BMH-000-G*xx*P-*x*ST	42B-EMH-000-G*xx*P-*x*ST	42B-FMH-000-G*xx*P-*x*ST
# 10-32	Internal	42B-AMA-AJA-G*xx*P-*xxx*	42B-BME-AJC-G*xx*P-*x*ST	42B-EME-AJC-G*xx*P-*x*ST	42B-FME-AJC-G*xx*P-*x*ST
	External	42B-AMD-AJB-G*xx*P-*xxx*	42B-BMH-AJD-G*xx*P-*x*ST	42B-EMH-AJD-G*xx*P-*x*ST	42B-FMH-AJD-G*xx*P-*x*ST
1/4" O.D.	Internal	42B-AMA-EJA-G*xx*P-*xxx*	42B-BME-EJC-G*xx*P-*x*ST	42B-EME-EJC-G*xx*P-*x*ST	42B-FME-EJC-G*xx*P-*x*ST
tube receptacles	External	42B-AMD-EJB-G*xx*P-*xxx*	42B-BMH-EJD-G*xx*P-*x*ST	42B-EMH-EJD-G*xx*P-*x*ST	42B-FMH-EJD-G*xx*P-*x*ST

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air		5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
					
Valve less base	Internal	Supply #3 port	42B-CMB-000-G*xx*P-*xxx*	42B-DMF-000-G*xx*P-*x*ST	42B-HMF-000-G*xx*P-*x*ST
		Supply #5 port	42B-CMC-000-G*xx*P-*xxx*	42B-DMG-000-G*xx*P-*x*ST	42B-HMG-000-G*xx*P-*x*ST
	External		42B-CMD-000-G*xx*P-*xxx*	42B-DMH-000-G*xx*P-*x*ST	42B-HMH-000-G*xx*P-*x*ST
# 10-32	Internal	Supply #3 port	42B-CMB-AJA-G*xx*P-*xxx*	42B-DMF-AJC-G*xx*P-*x*ST	42B-HMF-AJC-G*xx*P-*x*ST
		Supply #5 port	42B-CMC-AJA-G*xx*P-*xxx*	42B-DMG-AJC-G*xx*P-*x*ST	42B-HMG-AJC-G*xx*P-*x*ST
	External		42B-CMD-AJB-G*xx*P-*xxx*	42B-DMH-AJD-G*xx*P-*x*ST	42B-HMH-AJD-G*xx*P-*x*ST
1/4" O.D.	Internal	Supply #3 port	42B-CMB-EJA-G*xx*P-*xxx*	42B-DMF-EJC-G*xx*P-*x*ST	42B-HMF-EJC-G*xx*P-*x*ST
tube receptacles		Supply #5 port	42B-CMC-EJA-G*xx*P-*xxx*	42B-DMG-EJC-G*xx*P-*x*ST	42B-HMG-EJC-G*xx*P-*x*ST
	External		42B-CMD-EJB-G*xx*P-*xxx*	42B-DMH-EJD-G*xx*P-*x*ST	42B-HMH-EJD-G*xx*P-*x*ST

Above numbers are middle station manifolds with side ports

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
	Double solenoid & 3 position models
ST	Base plug-in
	Single solenoid models
SA	Base plug-in
SJ	Base plug-in with light
SS	Base plug-in with rectifier & light & ground

* 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.

MAC

Series 42

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

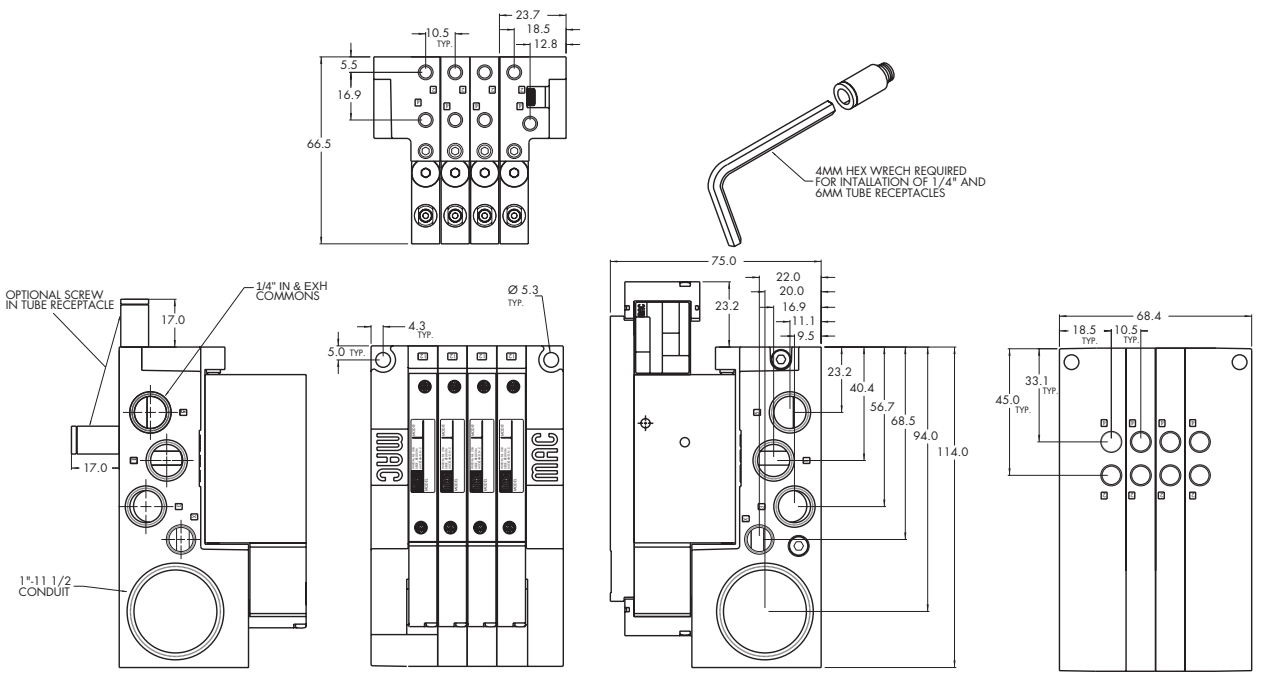
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 20 to 120 PSI 3 pos. : 40 to 120 PSI External Pilot : vacuum to 120 PSI
Pilot pressure :	2 position : 20 to 120 PSI 3 position : 40 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) – 1/4" O.D. tube receptacle : (0.4 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 24V 4 W coil)**	Energize : 5 ms 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)



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

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2	**# 10-32 - 1/4" O.D. tube receptacle**	**0.4 C_v**	Sub-base/ manifold base non "plug-in" with latching solenoid	

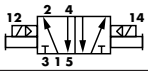
OPERATIONAL BENEFITS

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.

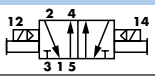
Photo: Middle station manifold base

HOW TO ORDER

SINGLE PRESSURE MODELS (INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air	5/2 Single pressure
		
Valve less base	Internal	42A-AMA-000-L***XXX-XXX***
	External	42A-AMD-000-L***XXX-XXX***
# 10-32	Internal	42A-AMA-AAL-L***XXX-XXX***
	External	42A-AMD-AAM-L***XXX-XXX***
1/4" O.D.	Internal	42A-AMA-EAL-L***XXX-XXX***
tube receptacles	External	42A-AMD-EAM-L***XXX-XXX***

DUAL PRESSURE MODELS (INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air		5/2 Dual pressure
			
Valve less base	Internal	Supply #3 port	42A-CMB-000-L***XXX-XXX***
		Supply #5 port	42A-CMC-000-L***XXX-XXX***
	External		42A-CMD-000-L***XXX-XXX***
# 10-32	Internal	Supply #3 port	42A-CMB-AAL-L***XXX-XXX***
		Supply #5 port	42A-CMC-AAL-L***XXX-XXX***
	External		42A-CMD-AAM-L***XXX-XXX***
1/4" O.D.	Internal	Supply #3 port	42A-CMB-EAL-L***XXX-XXX***
tube receptacles		Supply #5 port	42A-CMC-EAL-L***XXX-XXX***
	External		42A-CMD-EAM-L***XXX-XXX***

LATCHING SOLENOID OPERATOR ➤ L ***XXX-XXX****

XX	Voltage
DF	24 VDC (4.0 W)
HA	24 VDC (1.95 W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection
BA	2 Wire Flying leads
KA	2 Wire Plug-in Assembly
LA	3 wire plug-in assembly (polarity switching cover)
KE	4-wire plug-in assembly

* Other options available, see page 319.
Note : Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").
Other options available for the 42 series valves, see page 107.

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

MAC

Series 42

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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" O.D. tube receptacle : (0.4 C_V)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.95 to 4.0 W
Response times : **(with 24V 4 W coil)**	Energize : 5 ms De-energize : 5 ms

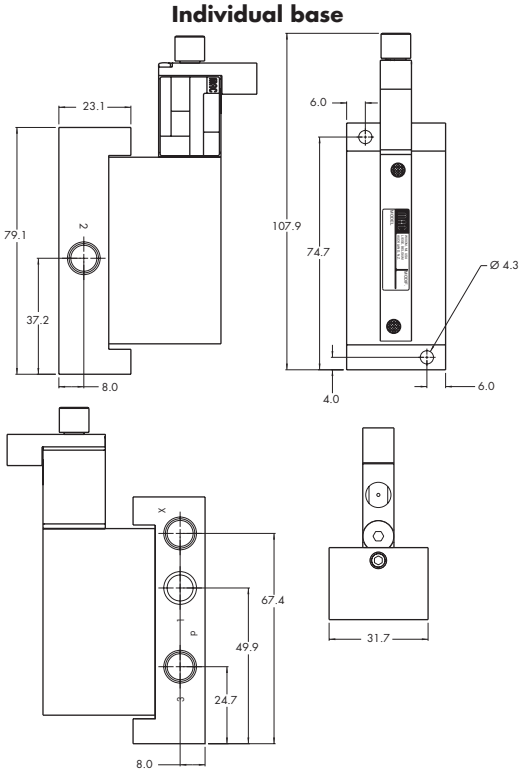
Options :

- 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

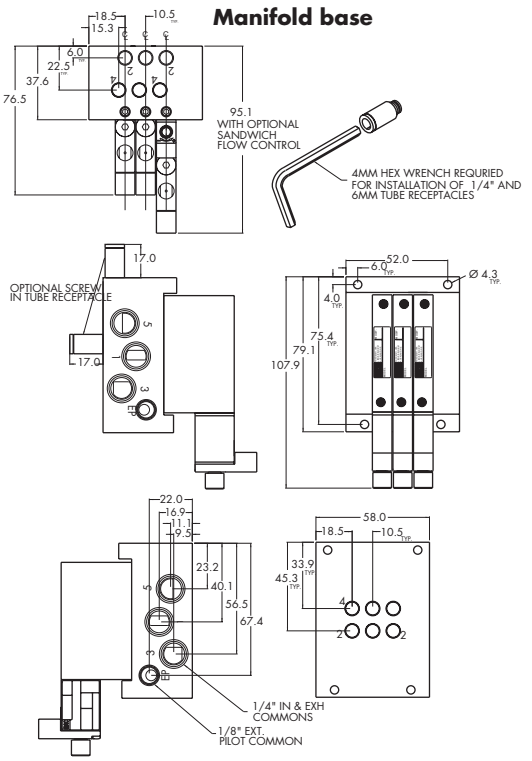
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

MAC®

Series **42**

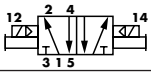
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2	**# 10-32 - 1/4" O.D. tube receptacle**	**0.4 C_V**	Sub-base/ manifold base "plug-in" with latching solenoid	

OPERATIONAL BENEFITS

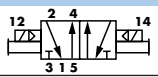
1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centers).
3. High flow (up to 0.4 C_V).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

HOW TO ORDER

SINGLE PRESSURE MODELS (2-WIRE INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air	5/2 Single pressure
		
Valve less base	Internal	42A-AMA-000-L***xx***P-***xxx***
	External	42A-AMD-000-L***xx***P-***xxx***
# 10-32	Internal	42A-AMA-AAA-L***xx***P-***xxx***
	External	42A-AMD-AAB-L***xx***P-***xxx***
1/4" O.D.	Internal	42A-AMA-EAA-L***xx***P-***xxx***
tube receptacles	External	42A-AMD-EAB-L***xx***P-***xxx***

DUAL PRESSURE MODELS (2-WIRE INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air		5/2 Dual pressure
			
Valve less base	Internal	Supply #3 port	42A-CMB-000-L***xx***P-***xxx***
		Supply #5 port	42A-CMC-000-L***xx***P-***xxx***
	External		42A-CMD-000-L***xx***P-***xxx***
# 10-32	Internal	Supply #3 port	42A-CMB-AAA-L***xx***P-***xxx***
		Supply #5 port	42A-CMC-AAA-L***xx***P-***xxx***
	External		42A-CMD-AAB-L***xx***P-***xxx***
1/4" O.D.	Internal	Supply #3 port	42A-CMB-EAA-L***xx***P-***xxx***
tube receptacles		Supply #5 port	42A-CMC-EAA-L***xx***P-***xxx***
	External		42A-CMD-EAB-L***xx***P-***xxx***

LATCHING SOLENOID OPERATOR ➤ L ***XX*** P-***XXX****

XX	**Voltage**
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	**Manual operator**
0	No operator

XX	**Electrical connection****
DA	Plug-in
EA	Plug-in 3 pin (polarity switching cover)

* 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.

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

MAC

Series 42

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

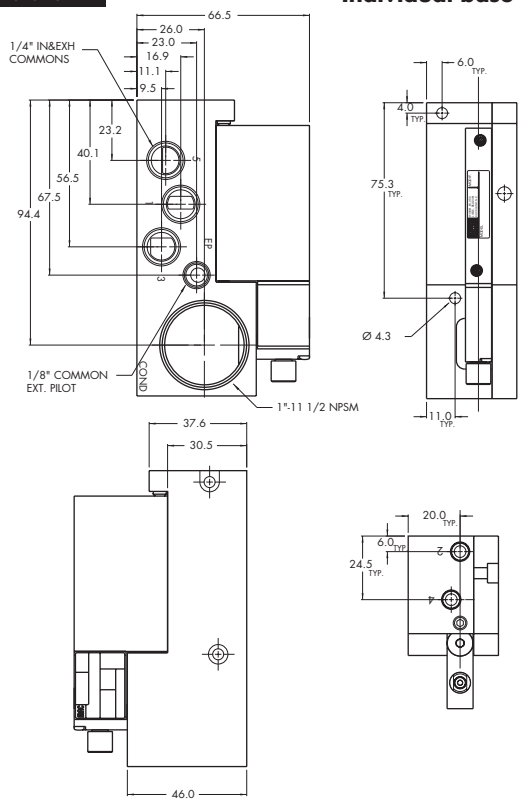
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 20 to 120 PSI External Pilot : vacuum to 120 PSI
Pilot pressure :	20 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	# 10-32 : (0.35 C_V) – 1/4" O.D. tube receptacle : (0.4 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.95 to 4.0 W
Response times : **(with 24V 4 W coil)**	Energize : 5 ms 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

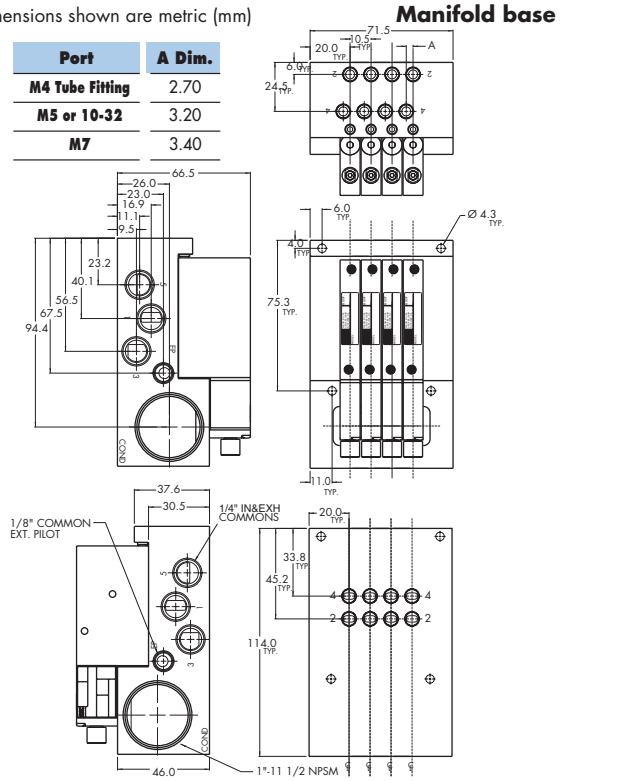
Individual base



Dimensions shown are metric (mm)

Port	A Dim.
M4 Tube Fitting	2.70
M5 or 10-32	3.20
M7	3.40

Manifold base



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

OPTIONS FOR NON PLUG-IN VALVES

Base type :

Individual base

42B-XXX-X**A**X-G*xxx-xxx*

- **A** Individual base – Side ports
- **B** Individual base – Bottom ports

Manifold base

42B-XXX-X**J**X-G*xxx-xxx*

- **J** Manifold base – Side ports
- **K** Manifold base – Bottom ports
- **L** Left end manifold base – Side ports
- **M** Left end manifold base – Bottom ports
- **N** Right end manifold base – Side ports
- **P** Right end manifold base – Bottom ports

Universal spool

42B-**R**XX-XXX-G*xxx-xxx*

- **R** 2 position single solenoid universal spool
- **S** 2 position double solenoid universal spool

Base only :

42B-000-XXX (i.e. 42B-000-AAL) - Individual base

42B-000-XXX (i.e. 42B-000-AJL) - Manifold base

Pilot style :

42B-X**M**X-XXX-G*xxx-xxx*

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

Base/Manifold configurations for LATCHING SOLENOID VALVES :

42A-*xxx-x***A***x-Lxxx-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

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

OPTIONS FOR PLUG-IN VALVES

Base type :

Individual base

42B-XXX-X**A**X-G*xx*P-*xxx*

- **A** Individual base – Side ports
- **B** Individual base – Bottom ports

Manifold base

42B-XXX-X**J**X-G*xx*P-*xxx*

- **J** Manifold base – Side ports
- **K** Manifold base – Bottom ports
- **L** Left end manifold base – Side ports
- **M** Left end manifold base – Bottom ports
- **N** Right end manifold base – Side ports
- **P** Right end manifold base – Bottom ports

Universal spool

42B-**R**XX-XXX-G*xx*P-*xxx*

- **R** 2 position single solenoid universal spool
- **S** 2 position double solenoid universal spool

Base only :

42B-000-XXX (i.e. 42B-000-AAC)

- Individual base wired for a double solenoid

42B-000-XXX (i.e. 42B-000-AJA)

- Manifold base wired for a single solenoid

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

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

- **J** Internal pilot single pressure
- **K** Internal pilot dual pressure supply from #3 port
- **L** Internal pilot dual pressure supply from #5 port
- **M** External pilot

Pilot style :

42B-X**M**X-XXX-G*xx*P-*xxx*

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

Base/Manifold configurations for LATCHING SOLENOID VALVES :

42A-*xxx*-*x***A***x*-L*xx*P-*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

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

42A-*xxx*-*xx***A**-L*xx*P-*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
- **E** Plug-in Int. Pilot – 4 Wire Latching
- **F** Plug-in Ext. Pilot – 4 Wire Latching

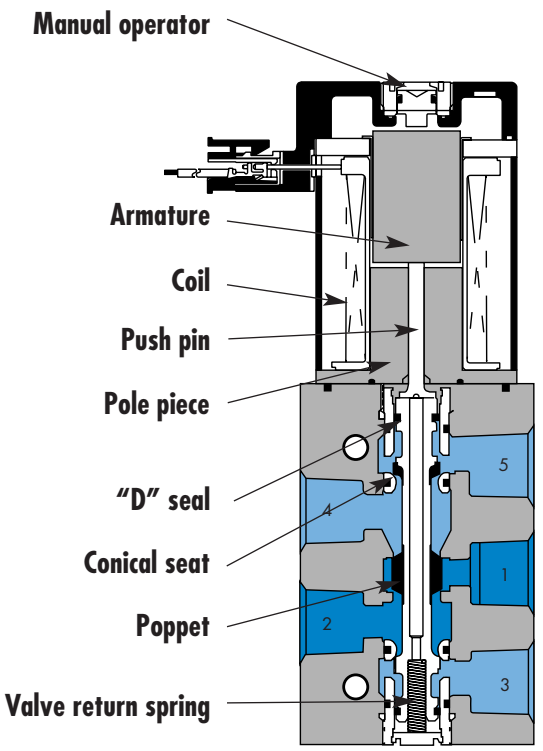
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Inline	Sub-base non "plug-in"

Manifold mounting

Stacking	Manifold base "plug-in"



SERIES FEATURES

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

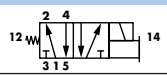
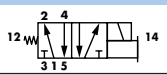
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual Mounting	Series
5/2	**1/8" - 1/4"**	**0.5 C_v**	Inline	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Without flow controls	With flow controls
		
1/8" NPTF	47A-AA0-H ***xxx-xxx***	47A-BA0-H ***xxx-xxx***
1/4" NPTF	47A-AB0-H ***xxx-xxx***	47A-BB0-H ***xxx-xxx***

SOLENOID OPERATOR ➤ H ***XXX-XXX****

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 (6.7W)

X	Lead Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
MA	Plug-in wire assembly
MC	Plug-in wire assembly with light
BA	Flying leads
BC	Flying leads with light
MT	Plug-in wire assembly with rectifier & light

* Other options available, see page 315.
Note: AC voltage requires connector with rectifier.

LATCHING OPERATOR ➤ L ***XXX-XXX****

XX	Voltage
DA	24 VDC (5.2W)
DF	12 VDC (5.2W)

X	Lead Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection
BA	2 Wire Flying leads
BJ	4 Wire Flying leads
LA	3 Wire Plug-in (Polarity switching cover)
MA	2 Wire Plug-in
ME	4 Wire Plug-in

* Other options available, see page 319.

OPTIONS

Namur Mount Option (w/o flow controls)

47A-C**X**O-H***xxx-xxx***

A 1/8" NPTF
B 1/4" NPTF

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

MAC

Series **47**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

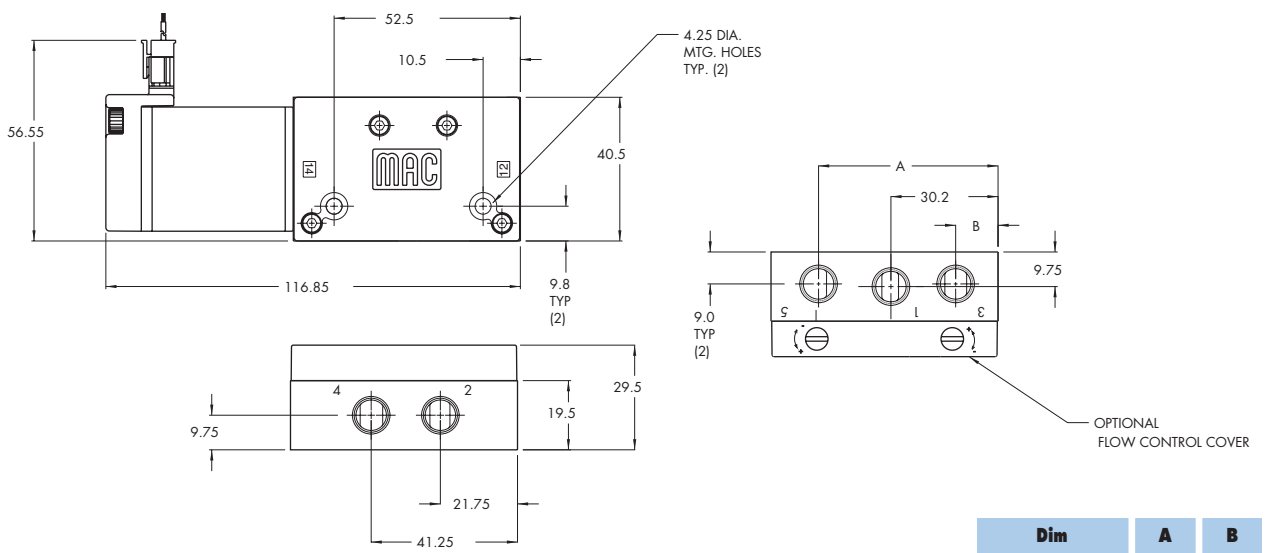
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.2W : (0.50 C_v) – 2.4W : (0.35 C_v) – 1.0W : (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 : (with 5.2 W coil)	Energize : 17.4 ms De-energize : 3.8 ms

Options : • BSPP threads

Spare parts : • Flow control assembly : N-47004

DIMENSIONS

Dimensions shown are metric (mm)



Dim	A	B
1/8"	50.6	11.95
1/4"	49.2	11.2

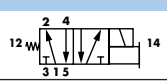
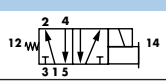
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual Mounting	Series
5/2	**1/8" - 1/4"**	**0.5 C_v**	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Without flow controls	With flow controls
		
Valve less base	47A-L10-H ***XXX-XXX***	47A-L10-H ***XXX-XXX***
1/8" NPTF	47A-LAA-H ***XXX-XXX***	47A-LAB-H ***XXX-XXX***
1/4" NPTF	47A-LBA-H ***XXX-XXX***	47A-LBB-H ***XXX-XXX***

SOLENOID OPERATOR ➤ H ***XXX-XXX****

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 (6.7W)

X	Lead Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
MA	Plug-in wire assembly
MC	Plug-in wire assembly with light
BA	Flying leads
BC	Flying leads with light
MT	Plug-in wire assembly with rectifier & light

* Other options available, see page 315.
Note: AC voltage requires connector with rectifier.

LATCHING OPERATOR ➤ L ***XXX-XXX****

XX	Voltage
DA	24 VDC (5.2W)
DF	12 VDC (5.2W)

X	Lead Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection
BA	2 Wire Flying leads
BJ	4 Wire Flying leads
LA	3 Wire Plug-in (Polarity switching cover)
MA	2 Wire Plug-in
ME	4 Wire Plug-in

* Other options available, see page 319.

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

MAC

Series 47

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

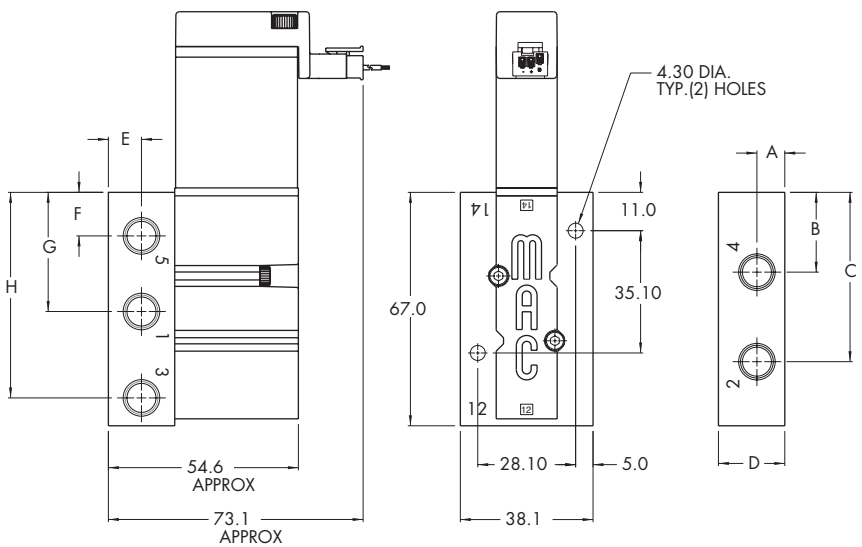
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.2W : (0.50 C_v) – 2.4W : (0.35 C_v) – 1.0W : (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 : (with 5.2 W coil)	Energize : 17.4 ms 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	B	C	D	E	F	G	H
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

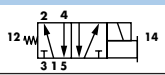
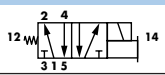
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Manifold Mounting	Series
5/2	**1/8" - 1/4"**	**0.5 C_v**	Stacking	

OPERATIONAL BENEFITS

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

HOW TO ORDER

Port size	Without flow controls	With flow controls
		
1/8" NPTF	47A-SA0-H ***XXX-XXX***	47A-TA0-H ***XXX-XXX***
1/4" NPTF	47A-SB0-H ***XXX-XXX***	47A-TB0-H ***XXX-XXX***

SOLENOID OPERATOR ➤ H ***XXX-XXX****

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 (6.7W)

X	Lead Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
MA	Plug-in wire assembly
MC	Plug-in wire assembly with light
BA	Flying leads
BC	Flying leads with light
MT	Plug-in wire assembly with rectifier & light

* Other options available, see page 315.
Note: AC voltage requires connector with rectifier.

LATCHING OPERATOR ➤ L ***XXX-XXX****

XX	Voltage
DA	24 VDC (5.2W)
DF	12 VDC (5.2W)

X	Lead Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection
BA	2 Wire Flying leads
BJ	4 Wire Flying leads
LA	3 Wire Plug-in (Polarity switching cover)
MA	2 Wire Plug-in
ME	4 Wire Plug-in

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

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

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

MAC

Series **47**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

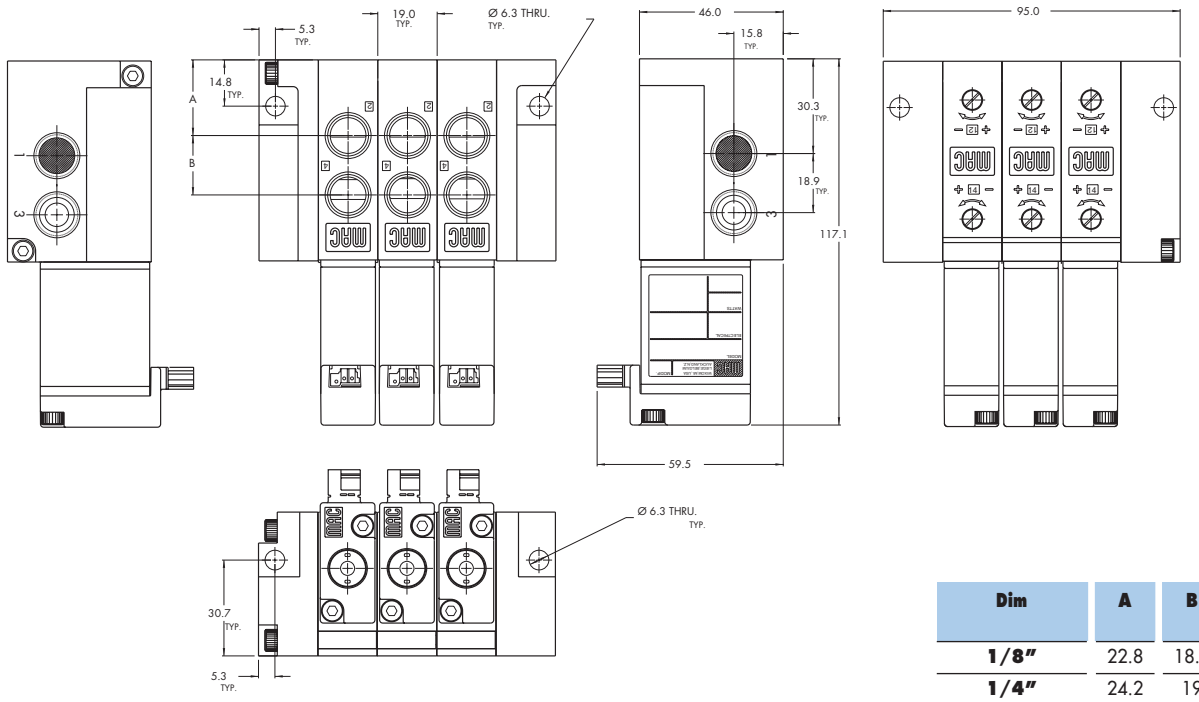
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.2W : (0.50 C_v) – 2.4W : (0.35 C_v) – 1.0W : (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 : (with 5.2 W coil)	Energize : 17.4 ms 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)



Dim	A	B
1/8"	22.8	18.4
1/4"	24.2	19

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

Function	Port size	Flow (Max)	Manifold Mounting	Series
5/2	**1/8" - 1/4"**	**0.5 C_v**	Manifold base "plug-in"	

OPERATIONAL BENEFITS

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

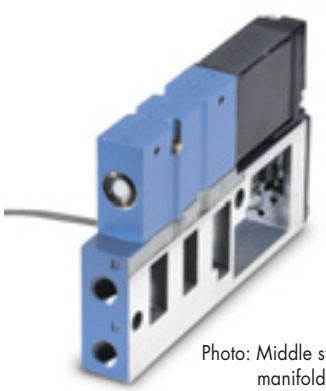
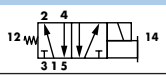


Photo: Middle station manifold base

HOW TO ORDER

Port size	Model number
	
Valve less base	47A-L10-H *xx*P-*xxx*
1/8" NPTF	47A-LAJ-H *xx*P-*xxx*
1/4" NPTF	47A-LBJ-H *xx*P-*xxx*

SOLENOID OPERATOR ➤ H *XX* P-*XXX**

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 (6.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
FA	Base plug-in
FB	Base plug-in w/ ground
FC	Base plug-in w/ LED light
FD	Base plug-in w/ LED light w/ ground
FT	Base plug-in w/ rectifier and light

* Other options available, see page 315.
Note : AC voltage requires connector with rectifier.

LATCHING SOLENOID ➤ L *XX* P-*XXX**

XX	Voltage
DA	24 VDC (5.2W)
DF	12 VDC (5.2W)

X	Manual operator
0	No operator

XX	Electrical connection
FA	Base plug-in w/ ground
FB	Base plug-in w/ ground & LED
FC	Base plug-in 4 wire w/ ground
FD	Base Plug-in 4 wire w/ LED & ground

* Other options available, see page 319.

OPTIONS

47A-*xx***J**-*xxx*P-*xxx*

J Manifold base, side cylinders (middle station)
K Manifold base, bottom cylinders (middle station)
L Right end manifold base, side cylinders
M Right end manifold base, bottom cylinders
N Left end manifold base, side cylinders
P Left end manifold base, bottom cylinders

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

MAC

Series **47**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

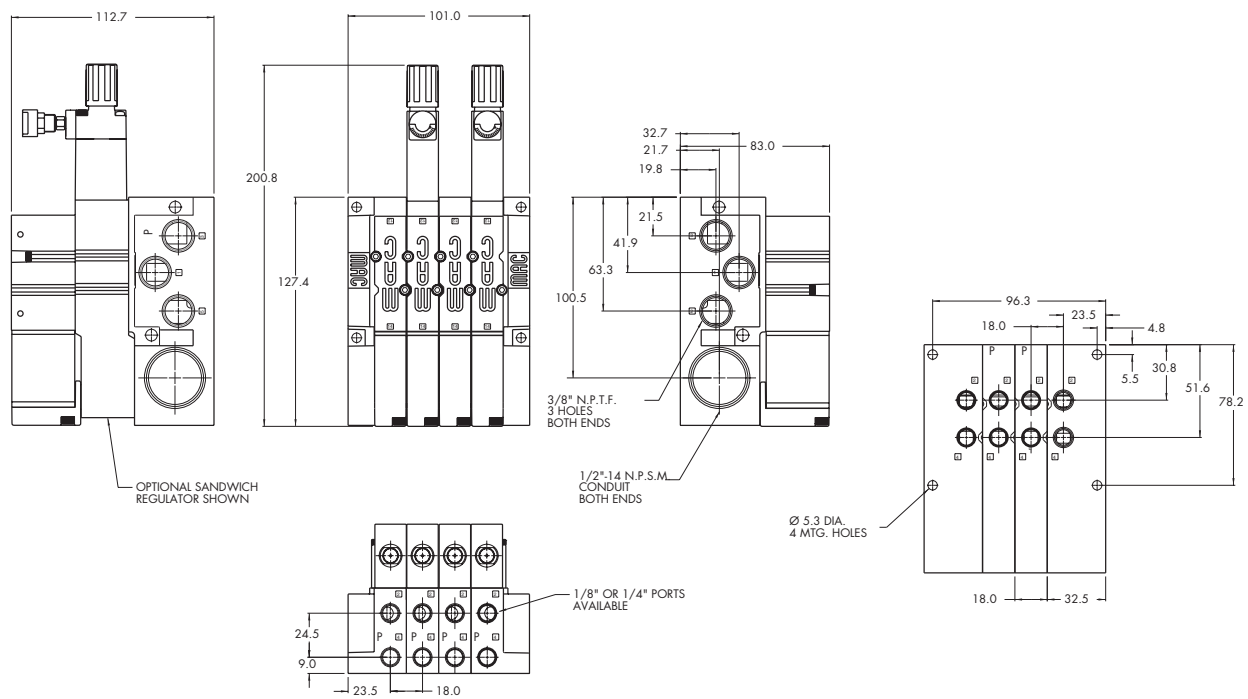
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow (at 6 bar, ΔP=1bar) :	5.2W : (0.50 C_v) – 2.4W : (0.35 C_v) – 1.0W : (0.30 C_v)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	5.2W – 2.4W – 1.0W
Response times : (with 5,2 W coil)	Energize : 17.4 ms De-energize : 3.8 ms

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

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

DIMENSIONS

Dimensions shown are metric (mm)

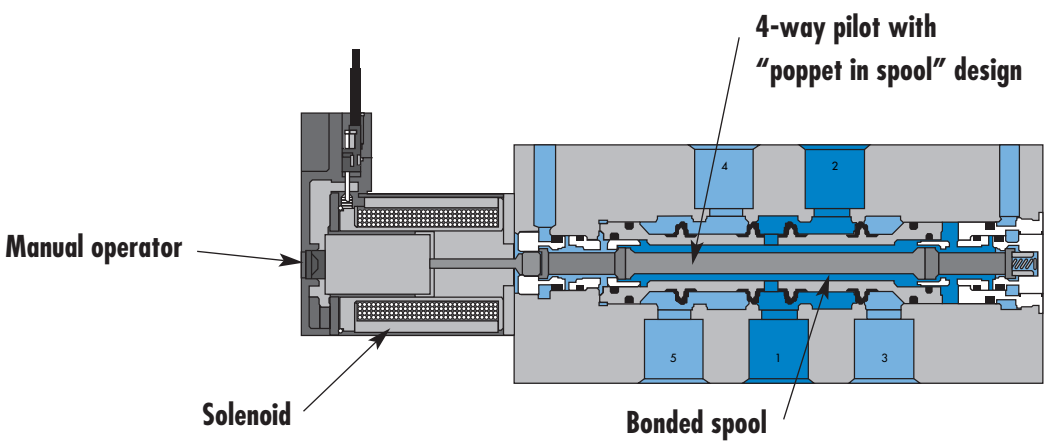


Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Inline

Series



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.

MAC®

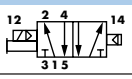
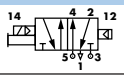
Series **48P**

Function	Port size	Flow (Max)	Individual mounting	Series
5/2	**1/8"**	**1.0 C_v**	Inline	

OPERATIONAL BENEFITS

1. 4-way valve with 4-way pilot.
2. Poppet in spool design
3. 16 mm valve (stacks on 16.5 mm centers).
4. High flow (up to 1.0 Cv).
5. Fast repeatable response times.
6. Maximum shifting forces in both directions.
7. Long life.
8. Compact design.

HOW TO ORDER

Port size	Pilot	5/2 Single operator Single pressure	5/2 Single operator Dual pressure
			
1/8"	Internal	48PB-AAA-A00-G*XXX-XXX*	-
	Internal from port 3	-	48PB-CAB-A00-G*XXX-XXX*
	Internal from port 5	-	48PB-CAC-A00-G*XXX-XXX*

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC solenoid plug-in
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light
KD	Plug-in wire assy. with rectifier & light & ground

* Other options available, see page 311.
Note : AC voltage requires connector with rectifier.

OPTIONS

48PB-X **X** X-X00-G*XX-XXX*

A Pilot exhaust muffled
C Pilot exhaust piped M5
D Pilot exhaust out main exhaust

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

MAC

Series **48P**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

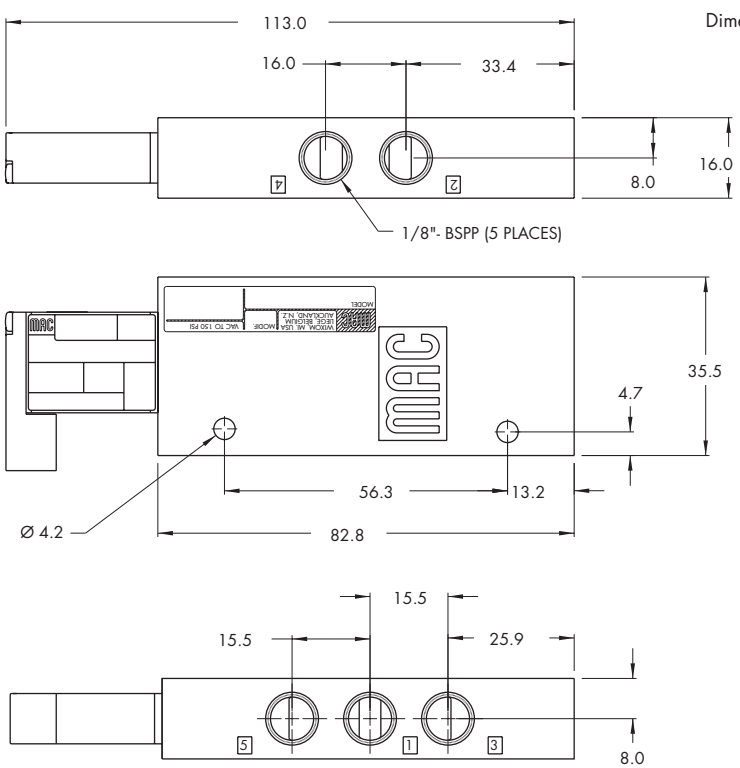
TECHNICAL DATA

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

Dimensions shown are metric (mm)



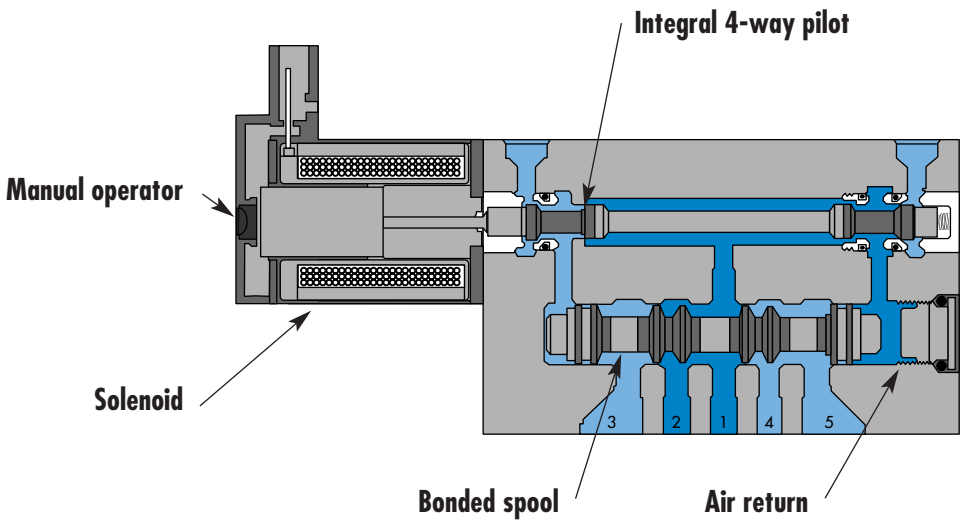
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Sub-base non "plug-in"	Sub-base "plug-in"	Sub-base/ manifold base non "plug-in" with latching solenoid	Sub-base/ manifold base "plug-in" with latching solenoid

Manifold mounting

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



SERIES FEATURES

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

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

Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/8"**	**1.1 C_v**	Sub-base non "plug-in"	

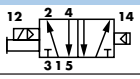
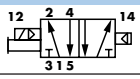
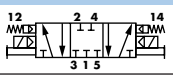
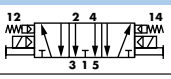
OPERATIONAL BENEFITS

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_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

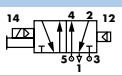
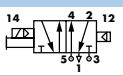
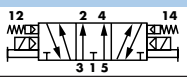
33
34
36
32
37
38
52
67
69
44
46
42
47
48P
48
400
92
93
ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS (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
					
Valve less base	Internal	48B-AMA-000-G*XXX-XXX*	48B-BMA-000-G*XXX-XXX*	48B-EMA-000-G*XXX-XXX*	48B-FMA-000-G*XXX-XXX*
	External	48B-AMD-000-G*XXX-XXX*	48B-BMD-000-G*XXX-XXX*	48B-EMD-000-G*XXX-XXX*	48B-FMD-000-G*XXX-XXX*
1/8" NPTF	Internal	48B-AMA-AAL-G*XXX-XXX*	48B-BMA-AAL-G*XXX-XXX*	48B-EMA-AAL-G*XXX-XXX*	48B-FMA-AAL-G*XXX-XXX*
	External	48B-AMD-AAM-G*XXX-XXX*	48B-BMD-AAM-G*XXX-XXX*	48B-EMD-AAM-G*XXX-XXX*	48B-FMD-AAM-G*XXX-XXX*

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

Port size	Pilot air		5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
					
Valve less base	Internal	Supply #3 port	48B-CMB-000-G*XXX-XXX*	48B-DMB-000-G*XXX-XXX*	48B-HMB-000-G*XXX-XXX*
		Supply #5 port	48B-CMC-000-G*XXX-XXX*	48B-DMC-000-G*XXX-XXX*	48B-HMC-000-G*XXX-XXX*
	External		48B-CMD-000-G*XXX-XXX*	48B-DMD-000-G*XXX-XXX*	48B-HMD-000-G*XXX-XXX*
1/8" NPTF	Internal	Supply #3 port	48B-CMB-AAL-G*XXX-XXX*	48B-DMB-AAL-G*XXX-XXX*	48B-HMB-AAL-G*XXX-XXX*
		Supply #5 port	48B-CMC-AAL-G*XXX-XXX*	48B-DMC-AAL-G*XXX-XXX*	48B-HMC-AAL-G*XXX-XXX*
	External		48B-CMD-AAM-G*XXX-XXX*	48B-DMD-AAM-G*XXX-XXX*	48B-HMD-AAM-G*XXX-XXX*

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC solenoid plug-in
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light
KD	Plug-in wire assy. with rectifier & light & ground

* 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.

MAC

Series **48**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

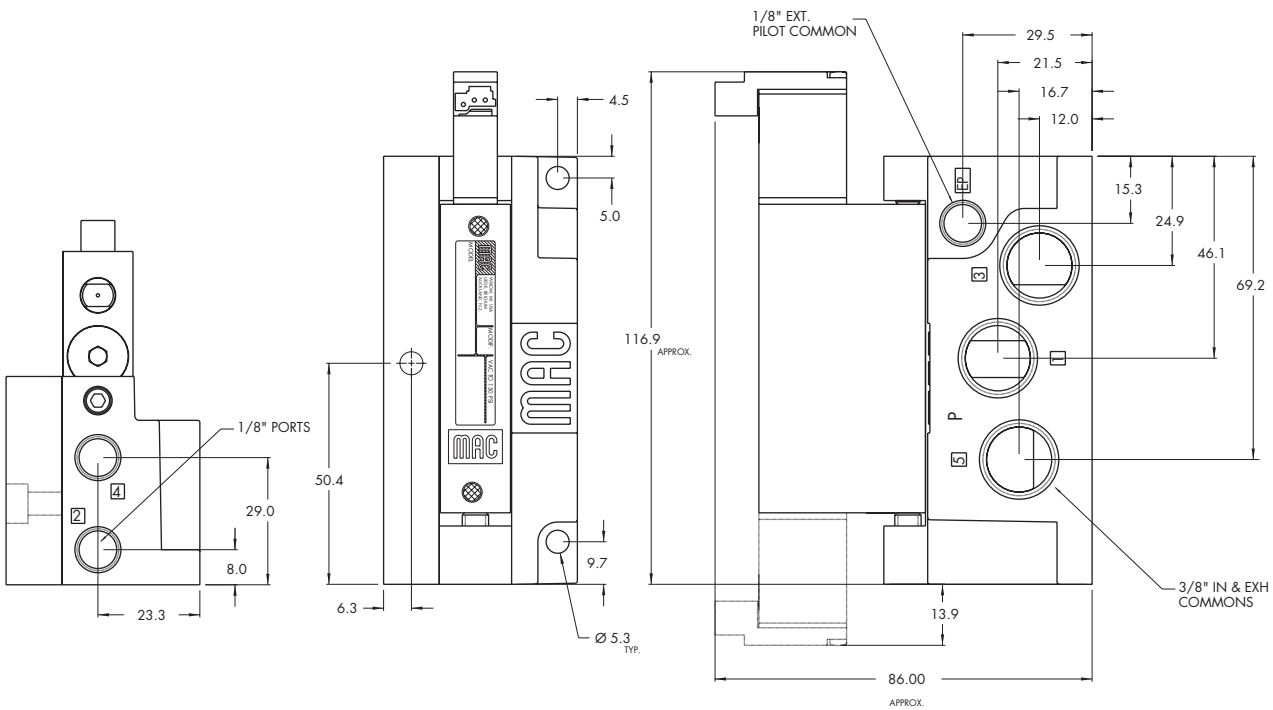
TECHNICAL DATA

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_V) – 1/8" bottom ports : (1.1 C_V)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms 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)



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

Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/8"**	**1.1 C_v**	Sub-base "plug-in"	

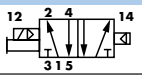
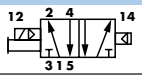
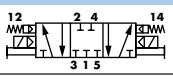
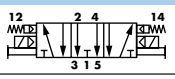
OPERATIONAL BENEFITS

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_V).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

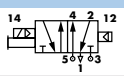
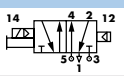
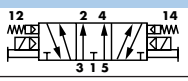
33
34
36
32
37
38
52
67
69
44
46
42
47
48P
48
400
92
93
ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS (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
					
Valve less base	Internal	48B-AMA-000-G*xx*P-*xxx*	48B-BME-000-G*xx*P-*x*ST	48B-EME-000-G*xx*P-*x*ST	48B-FME-000-G*xx*P-*x*ST
	External	48B-AMD-000-G*xx*P-*xxx*	48B-BMH-000-G*xx*P-*x*ST	48B-EMH-000-G*xx*P-*x*ST	48B-FMH-000-G*xx*P-*x*ST
1/8" NPTF	Internal	48B-AMA-AAA-G*xx*P-*xxx*	48B-BME-AAC-G*xx*P-*x*ST	48B-EME-AAC-G*xx*P-*x*ST	48B-FME-AAC-G*xx*P-*x*ST
	External	48B-AMD-AAB-G*xx*P-*xxx*	48B-BMH-AAD-G*xx*P-*x*ST	48B-EMH-AAD-G*xx*P-*x*ST	48B-FMH-AAD-G*xx*P-*x*ST

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
					
Valve less base	Internal	Supply #3 port	48B-CMB-000-G*xx*P-*xxx*	48B-DMF-000-G*xx*P-*x*ST	48B-HMF-000-G*xx*P-*x*ST
		Supply #5 port	48B-CMC-000-G*xx*P-*xxx*	48B-DMG-000-G*xx*P-*x*ST	48B-HMG-000-G*xx*P-*x*ST
	External		48B-CMD-000-G*xx*P-*xxx*	48B-DMH-000-G*xx*P-*x*ST	48B-HMH-000-G*xx*P-*x*ST
1/8" NPTF	Internal	Supply #3 port	48B-CMB-AAA-G*xx*P-*xxx*	48B-DMF-AAC-G*xx*P-*x*ST	48B-HMF-AAC-G*xx*P-*x*ST
		Supply #5 port	48B-CMC-AAA-G*xx*P-*xxx*	48B-DMG-AAC-G*xx*P-*x*ST	48B-HMG-AAC-G*xx*P-*x*ST
	External		48B-CMD-AAB-G*xx*P-*xxx*	48B-DMH-AAD-G*xx*P-*x*ST	48B-HMH-AAD-G*xx*P-*x*ST

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
	Double solenoid & 3 position models
ST	Base plug-in
	Single solenoid models
SA	Base plug-in
SJ	Base plug-in with LED light
SS	Base plug-in with rectifier & light & ground

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

MAC

Series **48**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

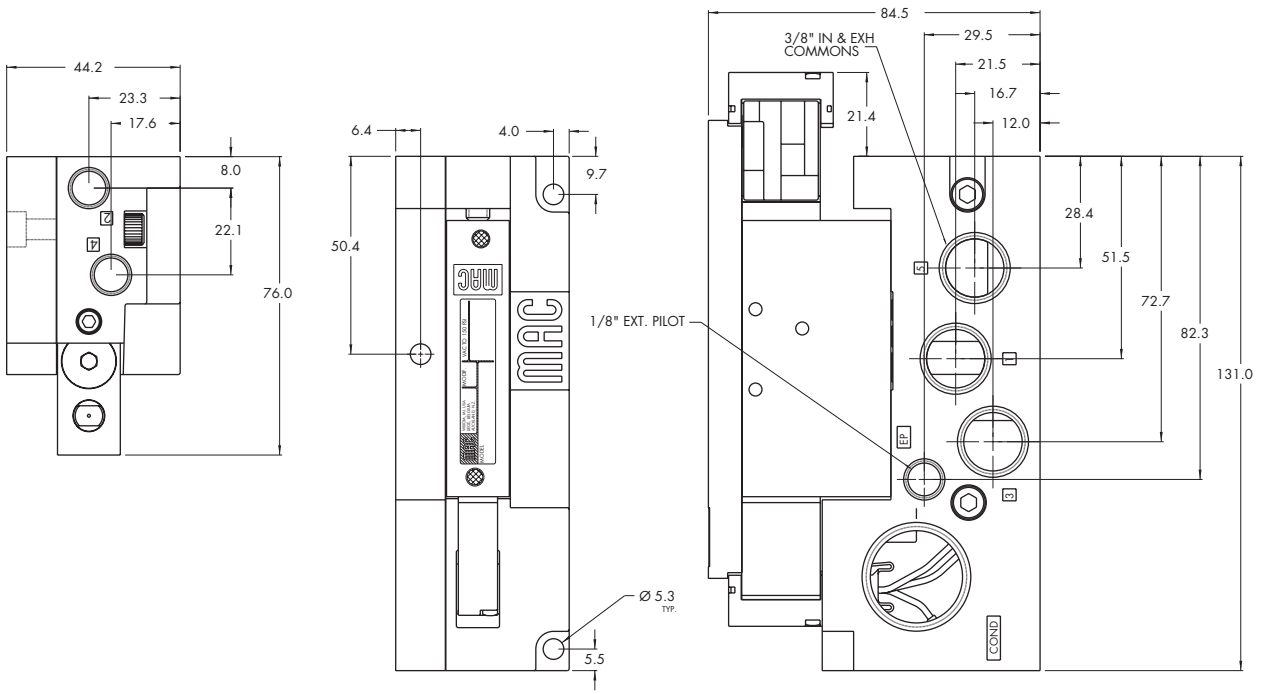
TECHNICAL DATA

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_V) – 1/8" bottom ports : (1.1 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms 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)



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

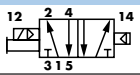
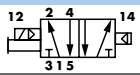
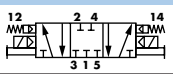
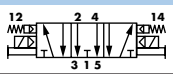
Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	**1/8"**	**1.1 C_v**	Manifold base non "plug-in"	

OPERATIONAL BENEFITS

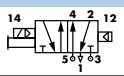
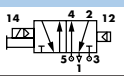
1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1.1 C_V).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

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
					
Valve less base	Internal	48B-AMA-000-G*xxx-xxx*	48B-BMA-000-G*xxx-xxx*	48B-EMA-000-G*xxx-xxx*	48B-FMA-000-G*xxx-xxx*
	External	48B-AMD-000-G*xxx-xxx*	48B-BMD-000-G*xxx-xxx*	48B-EMD-000-G*xxx-xxx*	48B-FMD-000-G*xxx-xxx*
1/8" NPTF	Internal	48B-AMA-AJL-G*xxx-xxx*	48B-BMA-AJL-G*xxx-xxx*	48B-EMA-AJL-G*xxx-xxx*	48B-FMA-AJL-G*xxx-xxx*
	External	48B-AMD-AJM-G*xxx-xxx*	48B-BMD-AJM-G*xxx-xxx*	48B-EMD-AJM-G*xxx-xxx*	48B-FMD-AJM-G*xxx-xxx*

DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

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

STANDARD SOLENOID OPERATOR ➤ G ***XXX-XXX****

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
GA	MAC JAC solenoid plug-in
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light
KD	Plug-in wire assy. with rectifier & light & ground

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

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

MAC

Series **48**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

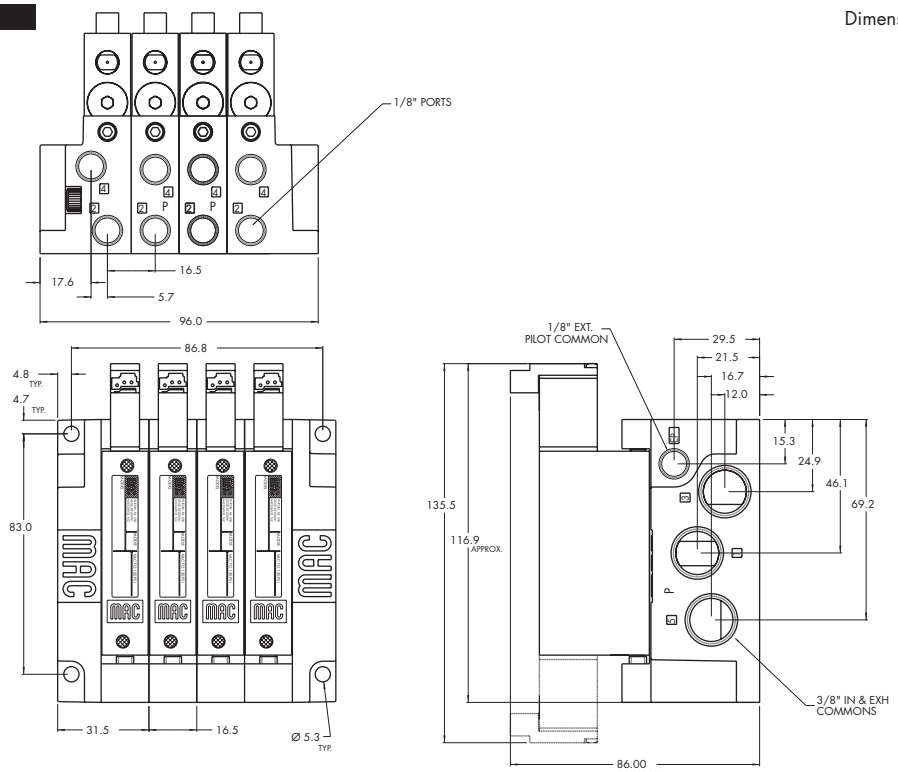
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External pilot: vacuum to 120 PSI
Pilot pressure :	2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (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_V) – 1/8" bottom ports : (1.1 C_V)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms 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

DIMENSIONS

Dimensions shown are metric (mm)



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

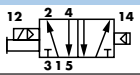
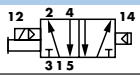
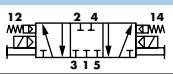
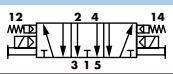
Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	**1/8"**	**1.1 C_v**	Manifold base "plug-in"	

OPERATIONAL BENEFITS

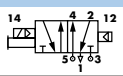
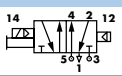
1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1.1 C_V).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
					
Valve less base	Internal	48B-AMA-000-G*xx*P-*xxx*	48B-BME-000-G*xx*P-*x*ST	48B-EME-000-G*xx*P-*x*ST	48B-FME-000-G*xx*P-*x*ST
	External	48B-AMD-000-G*xx*P-*xxx*	48B-BMH-000-G*xx*P-*x*ST	48B-EMH-000-G*xx*P-*x*ST	48B-FMH-000-G*xx*P-*x*ST
1/8" NPTF	Internal	48B-AMA-AJA-G*xx*P-*xxx*	48B-BME-AJC-G*xx*P-*x*ST	48B-EME-AJC-G*xx*P-*x*ST	48B-FME-AJC-G*xx*P-*x*ST
	External	48B-AMD-AJB-G*xx*P-*xxx*	48B-BMH-AJD-G*xx*P-*x*ST	48B-EMH-AJD-G*xx*P-*x*ST	48B-FMH-AJD-G*xx*P-*x*ST

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air		5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
					
Valve less base	Internal	Supply #3 port	48B-CMB-000-G*xx*P-*xxx*	48B-DMF-000-G*xx*P-*x*ST	48B-HMF-000-G*xx*P-*x*ST
		Supply #5 port	48B-CMC-000-G*xx*P-*xxx*	48B-DMG-000-G*xx*P-*x*ST	48B-HMG-000-G*xx*P-*x*ST
	External		48B-CMD-000-G*xx*P-*xxx*	48B-DMH-000-G*xx*P-*x*ST	48B-HMH-000-G*xx*P-*x*ST
1/8" NPTF	Internal	Supply #3 port	48B-CMB-AJA-G*xx*P-*xxx*	48B-DMF-AJC-G*xx*P-*x*ST	48B-HMF-AJC-G*xx*P-*x*ST
		Supply #5 port	48B-CMC-AJA-G*xx*P-*xxx*	48B-DMG-AJC-G*xx*P-*x*ST	48B-HMG-AJC-G*xx*P-*x*ST
	External		48B-CMD-AJB-G*xx*P-*xxx*	48B-DMH-AJD-G*xx*P-*x*ST	48B-HMH-AJD-G*xx*P-*x*ST

Above numbers are middle station manifolds with side ports

STANDARD SOLENOID OPERATOR ➤ G *XX* P-*XXX**

XX	Voltage
AA	120 VAC (2.5W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DF	24 VDC (4.0W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
	Double solenoid & 3 position models
ST	Base plug-in
	Single solenoid models
SA	Base plug-in
SJ	Base plug-in with LED light
SS	Base plug-in with rectifier & light & ground

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

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

MAC

Series **48**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

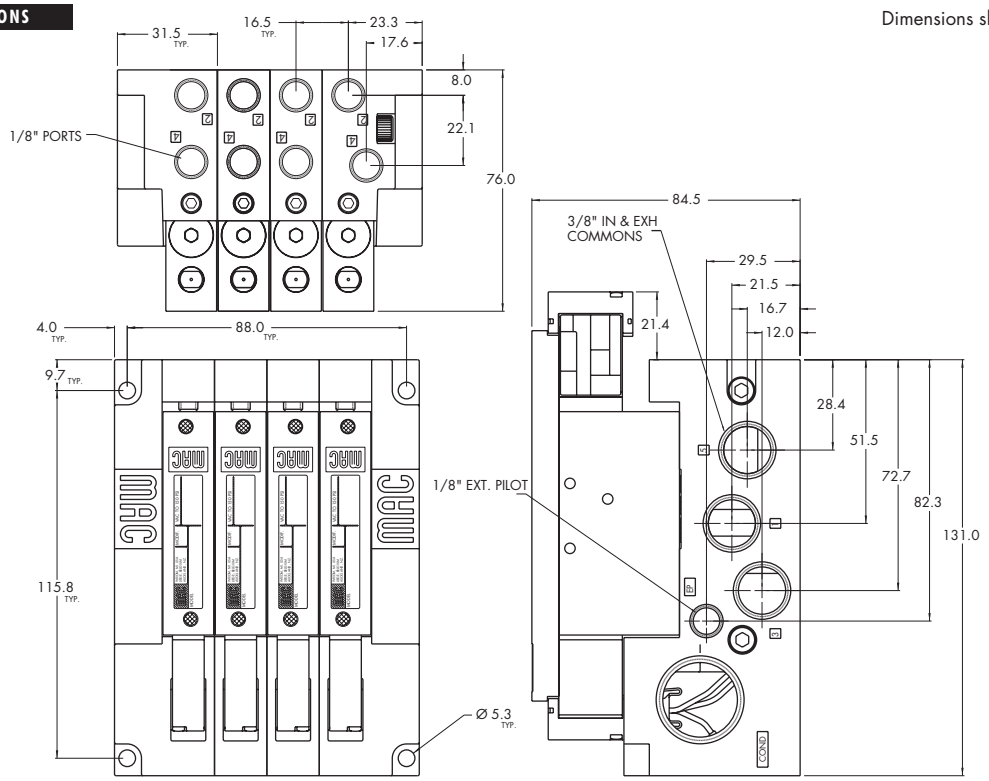
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External pilot: vacuum to 120 PSI
Pilot pressure :	2 position : 20 to 120 PSI - 3 position : 35 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (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_V) – 1/8" bottom ports : (1.1 C_V)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms De-energize : 6 ms

Options :

- BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich flow controls: FC48B-AB
- Sandwich regulator: see "regulators" section
- Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471
- Plug-in wire protector: 24180

DIMENSIONS

Dimensions shown are metric (mm)



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

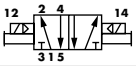
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2	**1/8"**	**1.1 C_v**	Sub-base/ manifold base non "plug-in" with latching solenoid	

OPERATIONAL BENEFITS

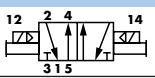
1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1.1 C_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

HOW TO ORDER

SINGLE PRESSURE MODELS (INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air	5/2 Single pressure
		
Valve less base	Internal	48A-AMA-000-L*xxx-xxx*
	External	48A-AMD-000-L*xxx-xxx*
1/8" NPTF	Internal	48A-AMA-AAL-L*xxx-xxx*
	External	48A-AMD-AAM-L*xxx-xxx*

DUAL PRESSURE MODELS (INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air		5/2 Dual pressure
			
Valve less base	Internal	Supply #3 port	48A-CMB-000-L*xxx-xxx*
		Supply #5 port	48A-CMC-000-L*xxx-xxx*
	External		48A-CMD-000-L*xxx-xxx*
1/8" NPTF	Internal	Supply #3 port	48A-CMB-AAL-L*xxx-xxx*
		Supply #5 port	48A-CMC-AAL-L*xxx-xxx*
	External		48A-CMD-AAM-L*xxx-xxx*

LATCHING SOLENOID ➤ L ***XXX-XXX****

XX	Voltage
DF	24 VDC (4.0W)
HA	24 VDC (1.95W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
0	No operator

XX	Electrical connection
BA	2 Wire flying leads
BJ	4 Wire flying leads
KA	2 Wire Plug-in assembly
KE	4 Wire Plug-in assembly
LA	3 Wire Plug-in assembly (Polarity Switching Cover)

* 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.

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

MAC

Series **48**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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_V) – 1/8" bottom ports : (1.1 C_V)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms De-energize : 6 ms

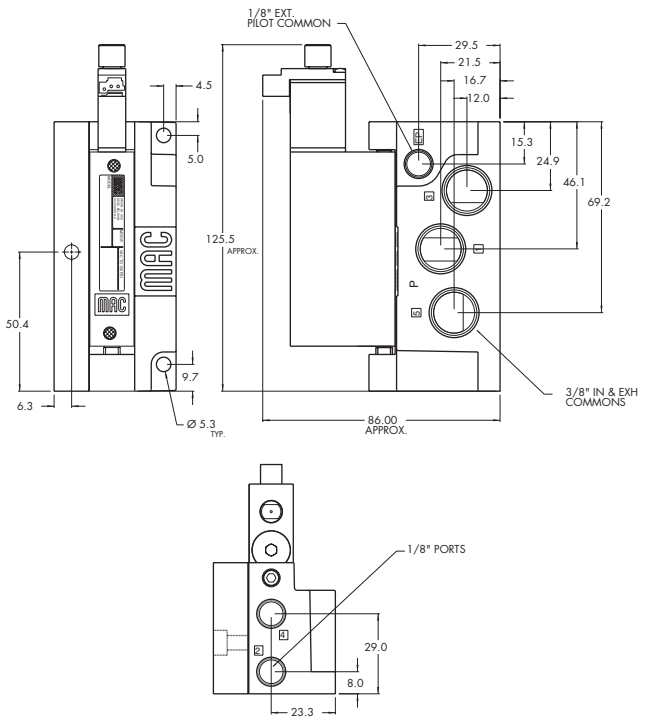
Options :

- 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

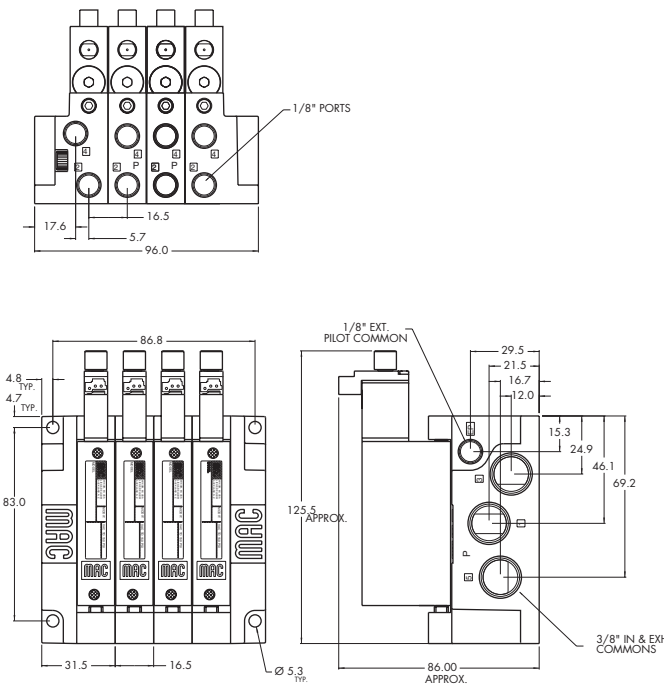
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

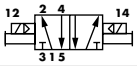
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2	**1/8"**	**1.1 C_v**	Sub-base/ manifold base "plug-in" with latching solenoid	

OPERATIONAL BENEFITS

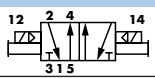
1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1.1 C_v).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

HOW TO ORDER

SINGLE PRESSURE MODELS (2-WIRE INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air	5/2 Single pressure
		
Valve less base	Internal	48A-AMA-000-L*xx*P-*xxx*
	External	48A-AMD-000-L*xx*P-*xxx*
1/8" NPTF	Internal	48A-AMA-AAA-L*xx*P-*xxx*
	External	48A-AMD-AAB-L*xx*P-*xxx*

DUAL PRESSURE MODELS (2-WIRE INDIVIDUAL BASE WITH SIDE PORTS)

Port size	Pilot air		5/2 Dual pressure
			
Valve less base	Internal	Supply #3 port	48A-CMB-000-L*xx*P-*xxx*
		Supply #5 port	48A-CMC-000-L*xx*P-*xxx*
	External		48A-CMD-000-L*xx*P-*xxx*
1/8" NPTF	Internal	Supply #3 port	48A-CMB-AAA-L*xx*P-*xxx*
		Supply #5 port	48A-CMC-AAA-L*xx*P-*xxx*
	External		48A-CMD-AAB-L*xx*P-*xxx*

LATCHING SOLENOID ➤ L *XX* P-*XXX**

XX	Voltage
DF	24 VDC (4.0W)
DN	12 VDC (4.0W)
HA	24 VDC (1.95W)
HE	12 VDC (1.95W)

X	Manual operator
0	No operator

XX	Electrical connection**
DA	Plug-in
EA	Plug-in 3 PIN (Polarity Switching Cover)

* 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.

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

MAC

Series **48**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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_V) – 1/8" bottom ports : (1.1 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W
Response times : **(with 4 W coil)**	Energize : 6 ms De-energize : 6 ms

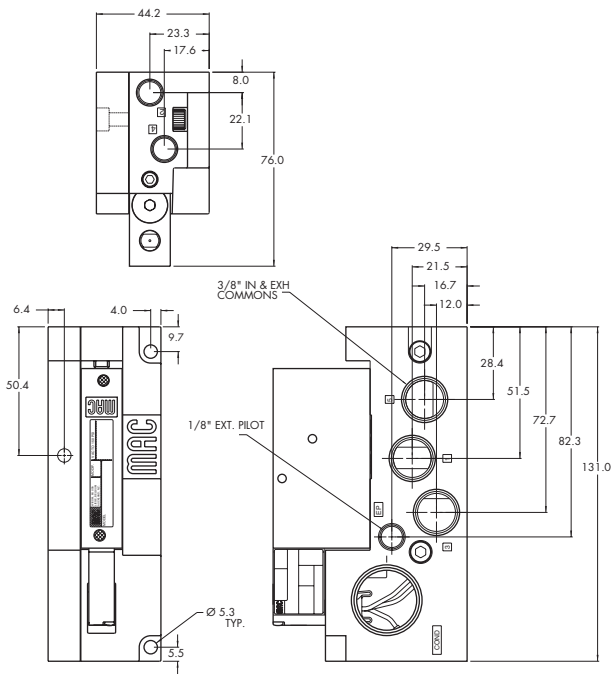
Options :

- BSPP threads • 1/4" O.D. pressed in tube receptacles • Sandwich flow controls: FC48B-AB
- Sandwich regulator: see "regulators" section
- Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471
- Plug-in wire protector : 24180

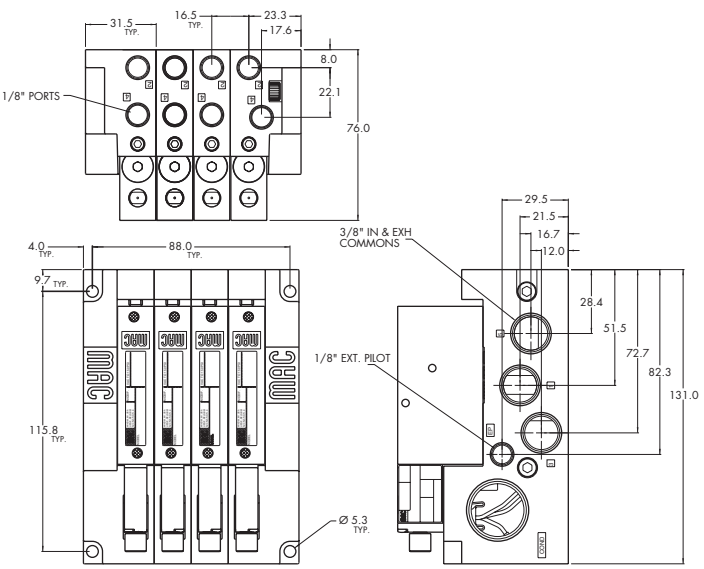
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

OPTIONS FOR NON PLUG-IN VALVES

Base type :

Individual base

48B-XXX-X**A**X-G*xxx-xxx*

- **A** Individual base – Side ports
- **B** Individual base – Bottom ports

Manifold base

48B-XXX-X**J**X-G*xxx-xxx*

- **J** Manifold base – Side ports
- **K** Manifold base – Bottom ports
- **L** Left end manifold base – Side ports
- **M** Left end manifold base – Bottom ports
- **N** Right end manifold base – Side ports
- **P** Right end manifold base – Bottom ports

Universal spool

48B-**R**XX-XXX-G*xxx-xxx*

- **R** 2 position single solenoid universal spool
- **S** 2 position double solenoid universal spool

Base only :

48B-000-XXX (i.e. 48B-000-AAL) - Individual base

48B-000-XXX (i.e. 48B-000-AJL) - Manifold base

Pilot style :

48B-X**M**X-XXX-G*xxx-xxx*

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

Base/Manifold configurations for LATCHING SOLENOID VALVES :

48A-*xxx*-x**A**x-L*xxx-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

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

OPTIONS FOR PLUG-IN VALVES

Base type :

Individual base

48B-XXX-X**A**X-G*xx*P-*xxx*

- **A** Individual base – Side ports
- **B** Individual base – Bottom ports

Manifold base

48B-XXX-X**J**X-G*xx*P-*xxx*

- **J** Manifold base – Side ports
- **K** Manifold base – Bottom ports
- **L** Left end manifold base – Side ports
- **M** Left end manifold base – Bottom ports
- **N** Right end manifold base – Side ports
- **P** Right end manifold base – Bottom ports

Universal spool

48B-**R**XX-XXX-G*xx*P-*xxx*

- **R** 2 position single solenoid universal spool
- **S** 2 position double solenoid universal spool

Base only :

48B-000-XXX (i.e. 48B-000-AAA)

- Individual base wired for a single solenoid valve

48B-000-XXX (i.e. 48B-000-AJC)

- Manifold base wired for a double solenoid valve

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

48B-XX**J**-XXX-G*xx*P-*x*ST

- **J** Internal pilot single pressure
- **K** Internal pilot dual pressure supply from #3 port
- **L** Internal pilot dual pressure supply from #5 port
- **M** External pilot

Pilot style :

48B-X**M**X-XXX-G*xx*P-*xxx*

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

Base/Manifold configurations for LATCHING SOLENOID VALVES :

48A-*xxx*-*x***A***x*-L*xx*P-*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

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

48A-*xxx*-*xx***A**-L*xx*P-*xxx*

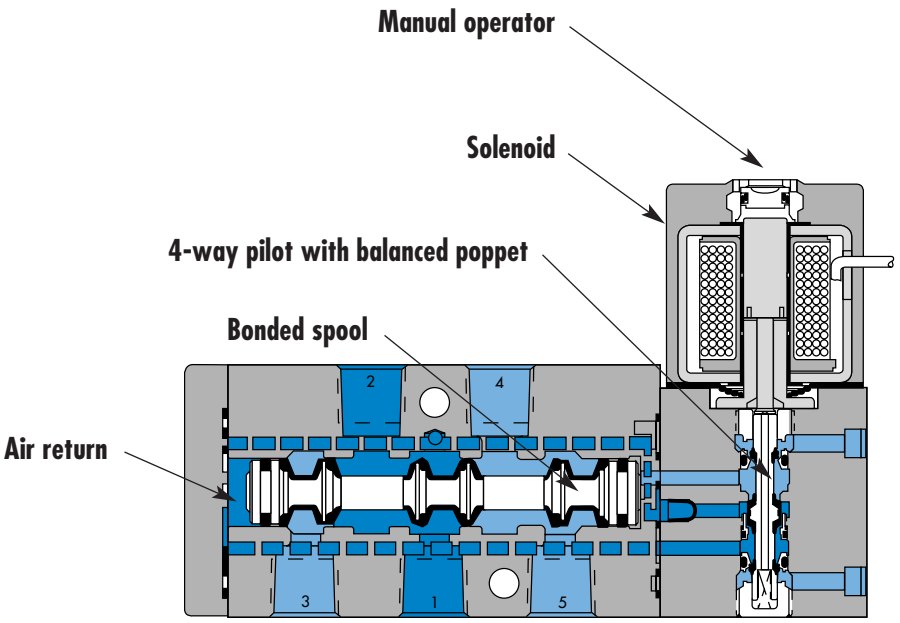
- **A** Plug-in Int. Pilot – 2 Wire Latching
- **B** Plug-in Ext. Pilot – 2 Wire Latching
- **C** Plug-in Int. Pilot – 3 Wire Latching
- **D** Plug-in Ext. Pilot – 3 Wire Latching
- **E** Plug-in Int. Pilot – 4 Wire Latching
- **F** Plug-in Ext. Pilot – 4 Wire Latching

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

Individual mounting

Inline	Sub-base non "plug-in"

Series



SERIES FEATURES

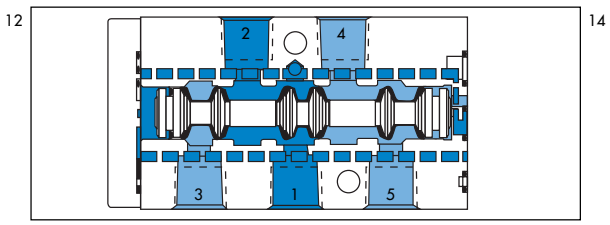
- Patented MACSOLENOID® for fastest possible response times and virtually burn-out proof AC solenoid operation.
- Optional low watt DC solenoids.
- Various manual operators.
- Optional memory spring.
- 2 position or 3 position valve configurations.
- Internal or external pilot.

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

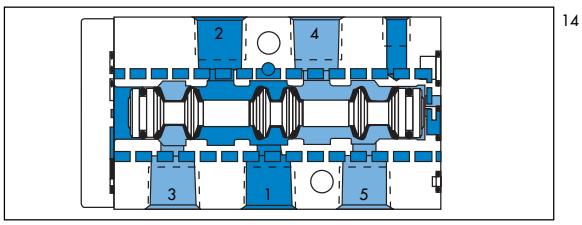
SPOOL CONFIGURATIONS

INTERNAL PILOT



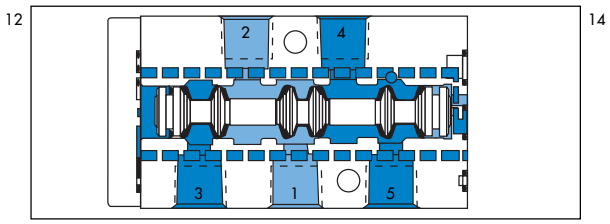
SINGLE OPERATOR - SINGLE INLET
SHOWN WITH 12 OPERATOR ENERGIZED

EXTERNAL PILOT EXT. PILOT PORT



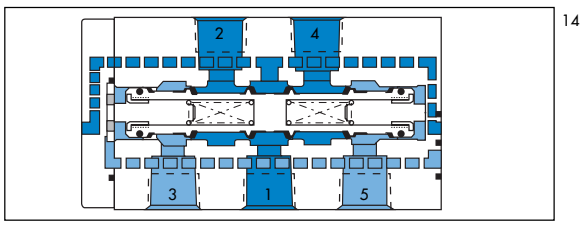
SINGLE OPERATOR - SINGLE INLET
SHOWN WITH 12 OPERATOR ENERGIZED

INTERNAL PILOT (FROM #5 PORT)



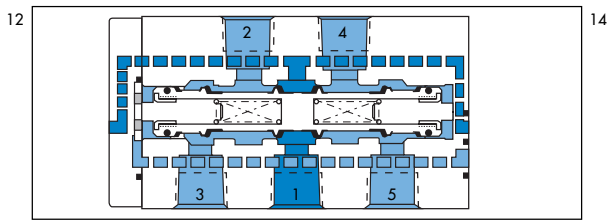
SINGLE OPERATOR - DUAL INLET
SHOWN WITH 12 OPERATOR ENERGIZED

INTERNAL PILOT



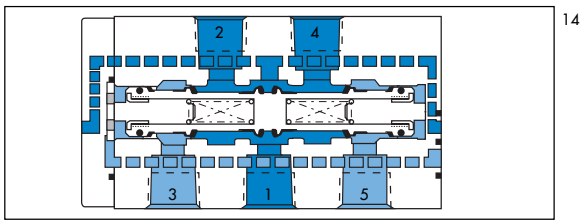
3 POSITION CLOSED CENTER

INTERNAL PILOT



3 POSITION OPEN CENTER

INTERNAL PILOT



3 POSITION PRESSURE CENTER

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

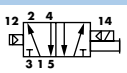
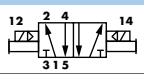
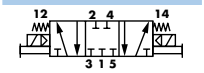
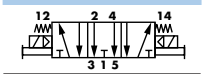
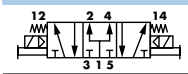
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/8" - 1/4"**	**1.0 C_v**	Inline	

OPERATIONAL BENEFITS

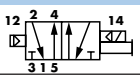
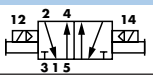
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Long service life.

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
						
1/8" NPTF	Internal	411A-A0A-XX-X*xxx-xxx*	421A-A0A-XX-X*xxx-xxx*	451A-A0A-XX-X*xxx-xxx*	461A-A0A-XX-X*xxx-xxx*	471A-A0A-XX-X*xxx-xxx*
1/4" NPTF		411A-B0A-XX-X*xxx-xxx*	421A-B0A-XX-X*xxx-xxx*	451A-B0A-XX-X*xxx-xxx*	461A-B0A-XX-X*xxx-xxx*	471A-B0A-XX-X*xxx-xxx*
1/8" NPTF	External	411A-A0B-XX-X*xxx-xxx*	421A-A0B-XX-X*xxx-xxx*	451A-A0B-XX-X*xxx-xxx*	461A-A0B-XX-X*xxx-xxx*	471A-A0B-XX-X*xxx-xxx*
1/4" NPTF		411A-B0B-XX-X*xxx-xxx*	421A-B0B-XX-X*xxx-xxx*	451A-B0B-XX-X*xxx-xxx*	461A-B0B-XX-X*xxx-xxx*	471A-B0B-XX-X*xxx-xxx*

DUAL PRESSURE MODELS (INTERNAL PILOT – PILOT PRESSURE SUPPLY FROM #5 PORT)

Port size	Pilot air	5/2 Single operator	5/2 Double operator
			
1/8" NPTF	Internal	431A-A0A-XX-X*xxx-xxx*	441A-A0A-XX-X*xxx-xxx*
1/4" NPTF		431A-B0A-XX-X*xxx-xxx*	441A-B0A-XX-X*xxx-xxx*
1/8" NPTF	External	431A-A0B-XX-X*xxx-xxx*	441A-A0B-XX-X*xxx-xxx*
1/4" NPTF		431A-B0B-XX-X*xxx-xxx*	441A-B0B-XX-X*xxx-xxx*

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

SOLENOID OPERATOR ➤ GM-G ***XXX-XXX*****

XX	Voltage
DC	24VDC (1.8W)
DD	24VDC (2.5W)
DF	24VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light

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

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

MAC

Series **400**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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°F to 120°F (-18°C to +50°C)		
Flow :	1.0 C_V		
Coil :	Class A continuous duty, #22 AWG x 12 leads wires		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 V=/5.4W	Energize : 7.3 ms	De-energize : 5.3 ms
	120/60	Energize : 8-12 ms	De-energize : 7-11 ms

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

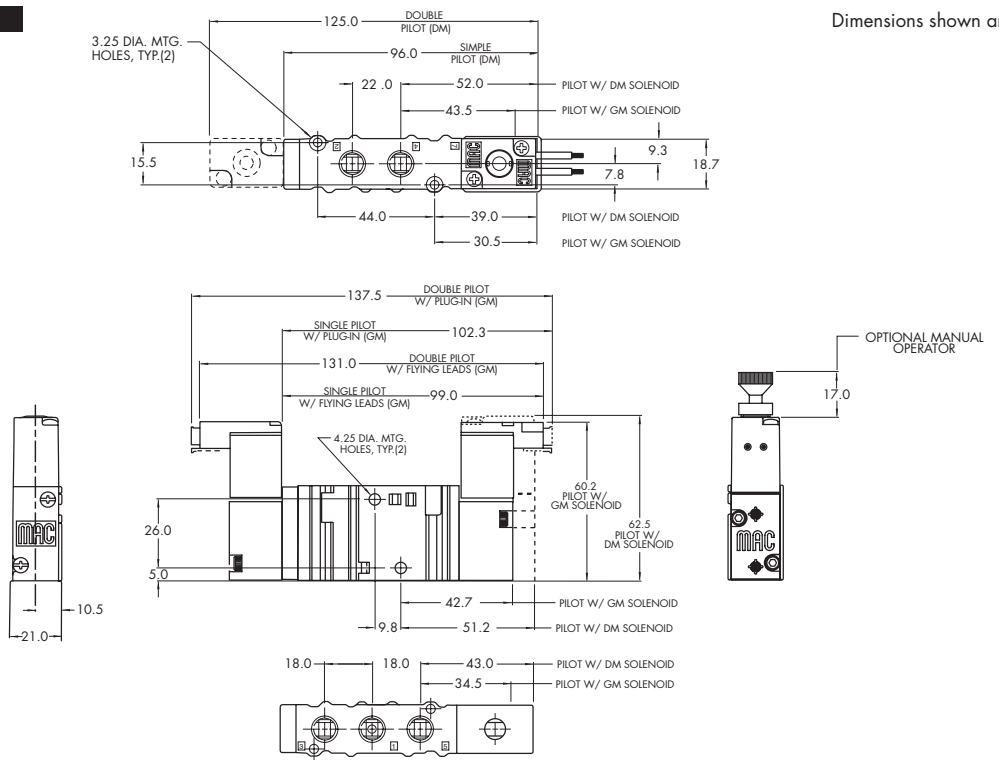
4**11**A-A0**A**-XX-X*xxx-xxx*

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

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

DIMENSIONS

Dimensions shown are metric (mm)



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

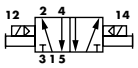
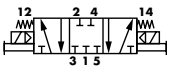
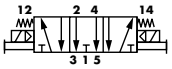
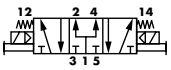
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/8" - 1/4"**	**1.0 C_v**	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

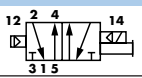
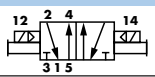
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Long service life.

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
						
Valve only	Internal	413A-00A-XX-X***xxx-xxx***	423A-00A-XX-X***xxx-xxx***	453A-00A-XX-X***xxx-xxx***	463A-00A-XX-X***xxx-xxx***	473A-00A-XX-X***xxx-xxx***
	External	413A-00D-XX-X***xxx-xxx***	423A-00D-XX-X***xxx-xxx***	453A-00D-XX-X***xxx-xxx***	463A-00D-XX-X***xxx-xxx***	473A-00D-XX-X***xxx-xxx***
1/8" NPTF	Internal	413A-AAA-XX-X***xxx-xxx***	423A-AAA-XX-X***xxx-xxx***	453A-AAA-XX-X***xxx-xxx***	463A-AAA-XX-X***xxx-xxx***	473A-AAA-XX-X***xxx-xxx***
1/4" NPTF		413A-BAA-XX-X***xxx-xxx***	423A-BAA-XX-X***xxx-xxx***	453A-BAA-XX-X***xxx-xxx***	463A-BAA-XX-X***xxx-xxx***	473A-BAA-XX-X***xxx-xxx***
1/8" NPTF	External	413A-AAD-XX-X***xxx-xxx***	423A-AAD-XX-X***xxx-xxx***	453A-AAD-XX-X***xxx-xxx***	463A-AAD-XX-X***xxx-xxx***	473A-AAD-XX-X***xxx-xxx***
1/4" NPTF		413A-BAD-XX-X***xxx-xxx***	423A-BAD-XX-X***xxx-xxx***	453A-BAD-XX-X***xxx-xxx***	463A-BAD-XX-X***xxx-xxx***	473A-BAD-XX-X***xxx-xxx***

DUAL PRESSURE MODELS (INTERNAL PILOT – PILOT PRESSURE SUPPLY FROM #5 PORT)

Port size	Pilot air	5/2 Single operator	5/2 Double operator
			
Valve only	Internal	433A-00A-XX-X***xxx-xxx***	443A-00A-XX-X***xxx-xxx***
	External	433A-00D-XX-X***xxx-xxx***	443A-00D-XX-X***xxx-xxx***
1/8" NPTF	Internal	433A-AAA-XX-X***xxx-xxx***	443A-AAA-XX-X***xxx-xxx***
1/4" NPTF		433A-BAA-XX-X***xxx-xxx***	443A-BAA-XX-X***xxx-xxx***
1/8" NPTF	External	433A-AAD-XX-X***xxx-xxx***	443A-AAD-XX-X***xxx-xxx***
1/4" NPTF		433A-BAD-XX-X***xxx-xxx***	443A-BAD-XX-X***xxx-xxx***

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

SOLENOID OPERATOR ➤ GM-G ***XXX-XXX*****

XX	Voltage
DC	24VDC (1.8W)
DD	24VDC (2.5W)
DF	24VDC (4.0W)

X	Wire length
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BA	Flying leads
BT	Flying leads with light
KA	Plug-in wire assy.
KT	Plug-in wire assy. with light

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

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

MAC

Series **400**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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°F to 120°F (-18°C to +50°C)
Flow :	1.0 C_V
Coil :	Class A continuous duty, #22 AWG x 12 leads wires
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W
Response times :	24 V=/5.4W Energize : 7.3 ms De-energize : 5.3 ms 120/60 Energize : 8-12 ms De-energize : 7-11 ms

Options :

• BSPP threads

413A-AAA-XX-X*xxx-xxx*

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

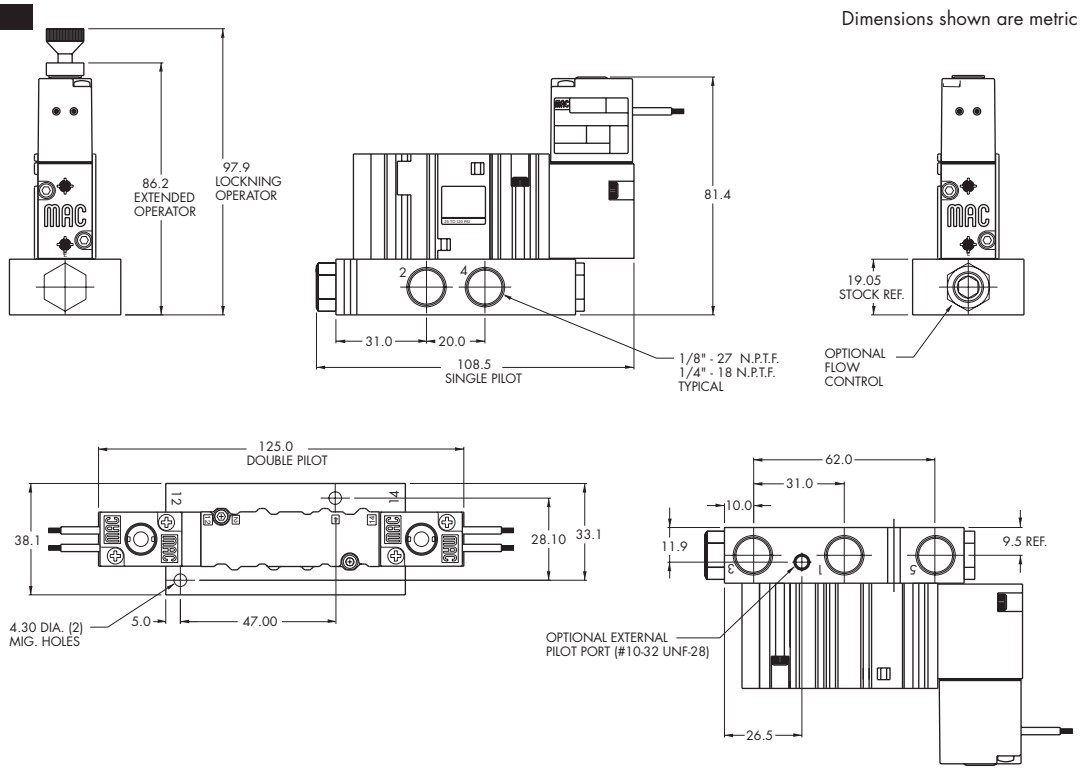
Base only :

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

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

DIMENSIONS

Dimensions shown are metric (mm)



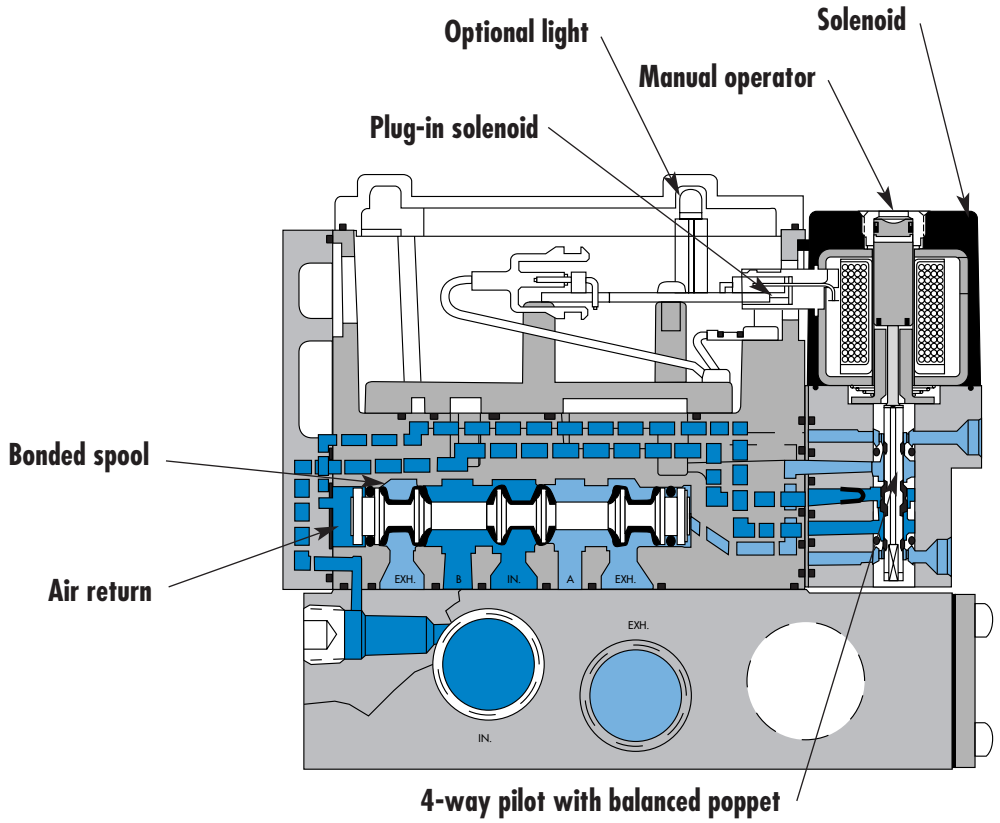
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Sub-base non "plug-in"	Sub-base "plug-in"

Manifold mounting

Sub-base non "plug-in"	Sub-base "plug-in"



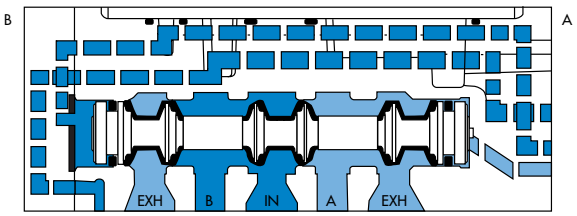
SERIES FEATURES

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

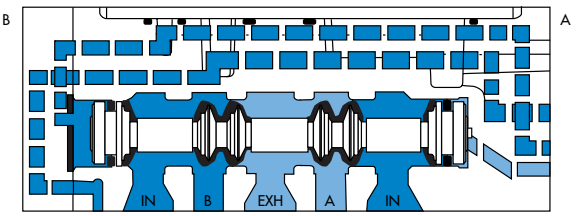
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

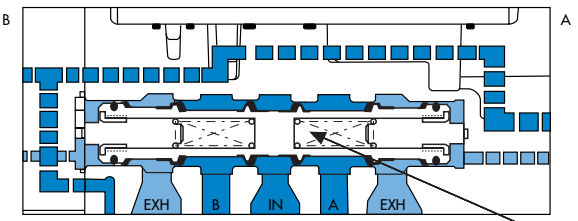
SPOOL CONFIGURATIONS



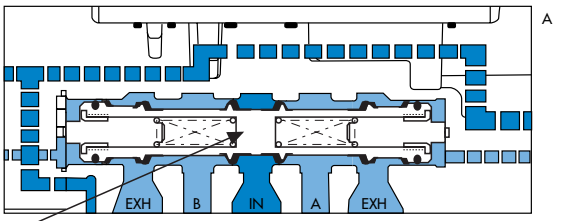
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

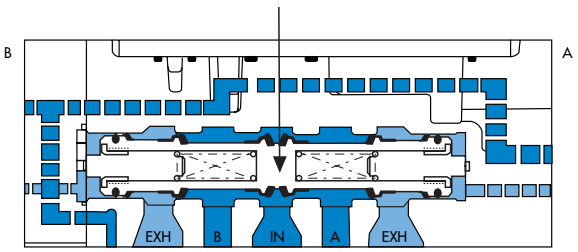


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

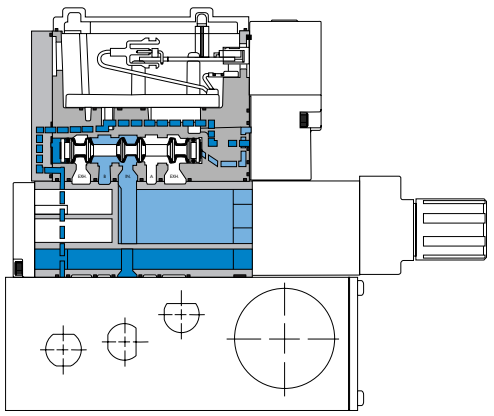


3 POSITION SINGLE PRESSURE, PRESSURE CENTER

REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

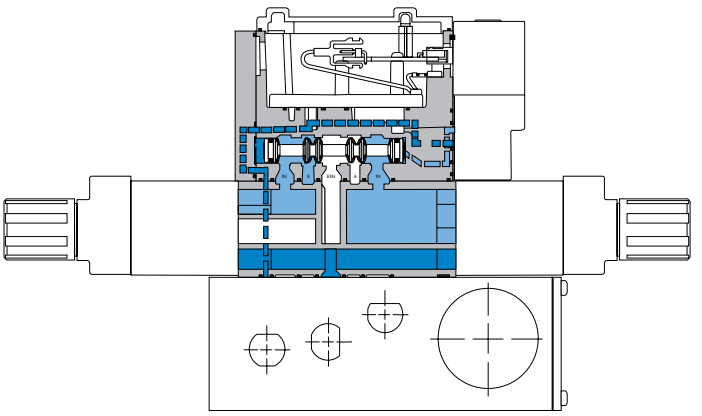
Pressure supplied to the individual or manifold base passes through the regulator.
Regulated pressure is supplied to the pressure path of the valve.



MANIFOLD WITH REGULATOR - SINGLE PRESSURE

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 - DUAL PRESSURE

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

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

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

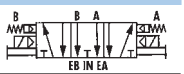
OPERATIONAL BENEFITS

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

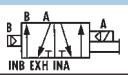
33
34
36
32
37
38
52
67
69
44
46
42
47
48P
48
400
92
93
ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

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

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

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

Above models are shown with side ports.

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110 /50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BM	Flying leads
BN	Flying leads with diode
BP	Flying leads with M.O.V.
BG	Flying leads with ground
JB	Rectangular connector
JD	Rectangular connector with light
KA	Square connector

* Other options available, see page 309.

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

MAC

Series 92

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

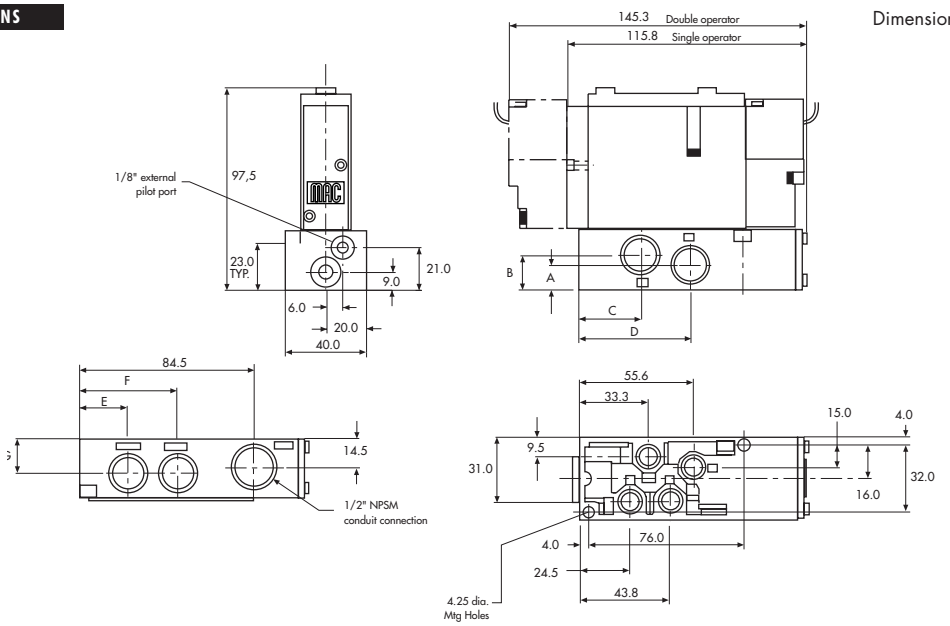
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 20 to 120 PSI	3 position : 35 to 120 PSI	
	External pilot : vacuum to 120 PSI	3 position : 35 to 120 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to +50°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		
Power :	~Inrush 7.6 VA	Holding : 4.8 VA	
	= 1.8 to 12.7 W		
Response times :	24V=/5.4W	Energize : 8 ms	De-energize : 7 ms
	120/60	Energize : 7-13 ms	De-energize : 12-20 ms

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

Spare parts : • Pilot valve DM-Dxxx-xxx • Valve blanking plate: M-92002
• Pressure seal between valve and base : 16543. • Mounting screws valve to base (X2) : 35050.

DIMENSIONS

Dimensions shown are metric (mm)



DIM.	A	B	C	D	E	F	G
1/8"	12.5	18.0	31.0	54.0	23.5	46.5	18.0
1/4"	12.5	18.0	31.0	54.0	23.5	46.5	18.0
3/8"	12.0	17.0	30.0	54.0	23.5	47.5	17.0

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

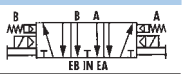
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/8" - 1/4" - 3/8"**	**1.2 C_v**	Sub-base "plug-in"	

OPERATIONAL BENEFITS

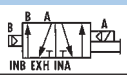
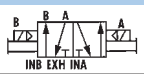
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded seal spool with minimum friction, shifting in a glass-like finished bore.
6. Pilot with balanced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

HOW TO ORDER

SINGLE PRESSURE MODELS

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

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
			
Valve less base		92B-CAA-000-DM-D*xx*P-*xxx*	92B-DAA-000-DM-D*xx*P-*xxx*
1/8"	Internal	92B-CAA-AAA-DM-D*xx*P-*xxx*	92B-DAA-AAA-DM-D*xx*P-*xxx*
1/4"	Internal	92B-CAA-BAA-DM-D*xx*P-*xxx*	92B-DAA-BAA-DM-D*xx*P-*xxx*
3/8"	Internal	92B-CAA-CAA-DM-D*xx*P-*xxx*	92B-DAA-CAA-DM-D*xx*P-*xxx*
1/8"	External	92B-CAA-AAD-DM-D*xx*P-*xxx*	92B-DAA-AAD-DM-D*xx*P-*xxx*
1/4"	External	92B-CAA-BAD-DM-D*xx*P-*xxx*	92B-DAA-BAD-DM-D*xx*P-*xxx*
3/8"	External	92B-CAA-CAD-DM-D*xx*P-*xxx*	92B-DAA-CAD-DM-D*xx*P-*xxx*

Above models are shown with side ports.

SOLENOID OPERATOR ➤ DM-D ***XX*** P-***XXX****

XX	Voltage
JA	110 /50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground
DJ	Plug-in with M.O.V. & ground
DH	Plug-in with diode & ground

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

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

MAC

Series 92

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

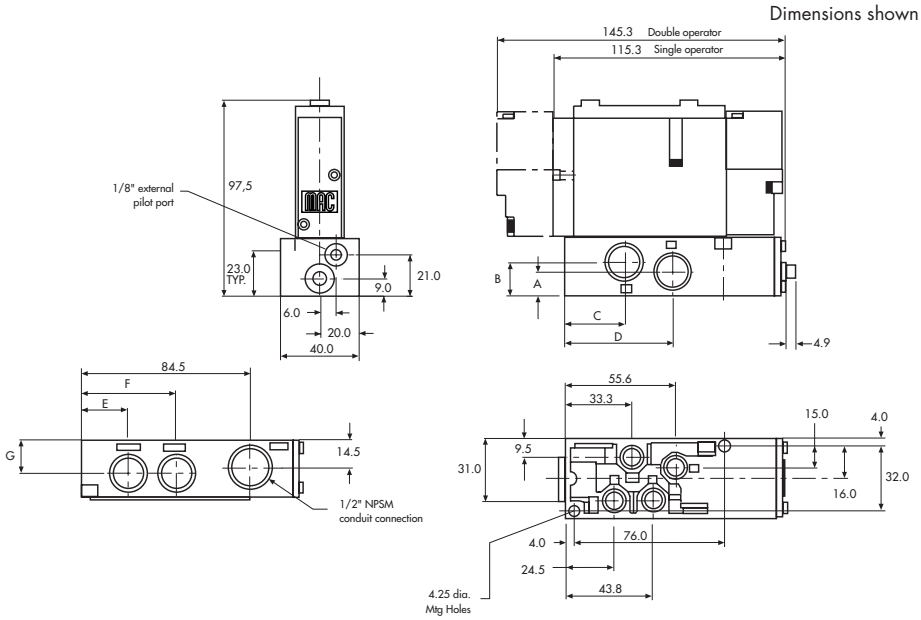
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 20 to 120 PSI	3 position : 35 to 120 PSI	
	External pilot : vacuum to 120 PSI	3 position : 35 to 120 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to +50°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		
Power :	~Inrush 7.6 VA	Holding : 4.8 VA	
	= 1.8 to 12.7 W		
Response times :	24V=/5.4W	Energize : 8 ms	De-energize : 7 ms
	120/60	Energize : 7-13 ms	De-energize : 12-20 ms

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



DIM.	A	B	C	D	E	F	G
1/8"	12.5	18.0	31.0	54.0	23.5	46.5	18.0
1/4"	12.5	18.0	31.0	54.0	23.5	46.5	18.0
3/8"	12.0	17.0	30.0	54.0	23.5	47.5	17.0

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

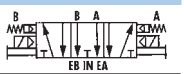
Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	**1/4" - 3/8"**	**1.2 C_v**	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

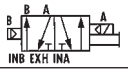
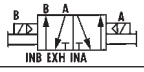
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded seal spool with minimum friction, shifting in a glass-like finished bore.
6. Pilot with balanced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

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
						
Valve less base	Internal	92B-ABA-000-DM-D*XXX-XXX*	92B-BBA-000-DM-D*XXX-XXX*	92B-EBA-000-DM-D*XXX-XXX*	92B-FBA-000-DM-D*XXX-XXX*	92B-GBA-000-DM-D*XXX-XXX*
1/4" NPTF		92B-ABA-BJG-DM-D*XXX-XXX*	92B-BBA-BJG-DM-D*XXX-XXX*	92B-EBA-BJG-DM-D*XXX-XXX*	92B-FBA-BJG-DM-D*XXX-XXX*	92B-GBA-BJG-DM-D*XXX-XXX*
3/8" NPTF		92B-ABA-CJG-DM-D*XXX-XXX*	92B-BBA-CJG-DM-D*XXX-XXX*	92B-EBA-CJG-DM-D*XXX-XXX*	92B-FBA-CJG-DM-D*XXX-XXX*	92B-GBA-CJG-DM-D*XXX-XXX*

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
			
Valve less base	Internal	92B-CBA-000-DM-D*XXX-XXX*	92B-DBA-000-DM-D*XXX-XXX*
1/4" NPTF		92B-CBA-BJG-DM-D*XXX-XXX*	92B-DBA-BJG-DM-D*XXX-XXX*
3/8" NPTF		92B-CBA-CJG-DM-D*XXX-XXX*	92B-DBA-CJG-DM-D*XXX-XXX*

Above models are shown with side ports.

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110 /50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rect. connector with light
BA	Flying leads
BK	Flying leads with diode

* Other options available, see page 309.
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.

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

MAC

Series 92

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

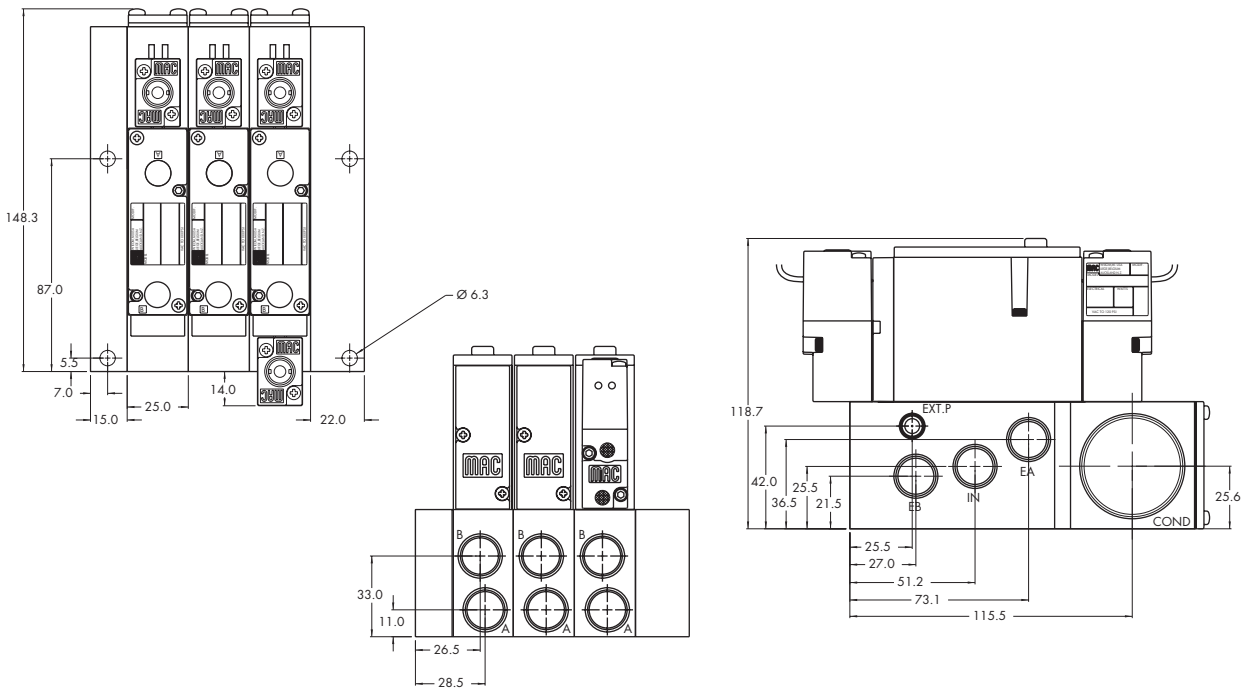
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 20 to 120 PSI	3 position : 35 to 120 PSI	
	External pilot : vacuum to 120 PSI	3 position : 35 to 120 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to +50°C)		
Flow :	1/4": (1.1 C_v) – 3/8": (1.2 C_v)		
Coil :	Class A continuous duty, #22 AWG x 18 leads		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~Inrush 7.6 VA	Holding : 4.8 VA	
	= 1.8 to 12.7 W		
Response times :	24V=/5.4W	Energize : 8 ms	De-energize : 7 ms
	120/60	Energize : 7-13 ms	De-energize : 12-20 ms

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



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

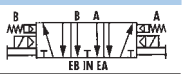
Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	**1/4" - 3/8"**	**1.2 C_v**	Sub-base "plug-in"	

OPERATIONAL BENEFITS

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

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
						
Valve less base	Internal	92B-AAA-000-DM-D*xx*P-*xxx*	92B-BAA-000-DM-D*xx*P-*xxx*	92B-EAA-000-DM-D*xx*P-*xxx*	92B-FAA-000-DM-D*xx*P-*xxx*	92B-GAA-000-DM-D*xx*P-*xxx*
1/4" NPTF		92B-AAA-BJA-DM-D*xx*P-*xxx*	92B-BAA-BJA-DM-D*xx*P-*xxx*	92B-EAA-BJA-DM-D*xx*P-*xxx*	92B-FAA-BJA-DM-D*xx*P-*xxx*	92B-GAA-BJA-DM-D*xx*P-*xxx*
3/8" NPTF		92B-AAA-CJA-DM-D*xx*P-*xxx*	92B-BAA-CJA-DM-D*xx*P-*xxx*	92B-EAA-CJA-DM-D*xx*P-*xxx*	92B-FAA-CJA-DM-D*xx*P-*xxx*	92B-GAA-CJA-DM-D*xx*P-*xxx*

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
			
Valve less base	Internal	92B-CAA-000-DM-D*xx*P-*xxx*	92B-DAA-000-DM-D*xx*P-*xxx*
1/4" NPTF		92B-CAA-BJA-DM-D*xx*P-*xxx*	92B-DAA-BJA-DM-D*xx*P-*xxx*
3/8" NPTF		92B-CAA-CJA-DM-D*xx*P-*xxx*	92B-DAA-CJA-DM-D*xx*P-*xxx*

Above models are shown with side ports and no lights.

SOLENOID OPERATOR ➤ DM-D ***XX*** P-***XXX****

XX	Voltage
JA	110 /50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground
DJ	Plug-in with M.O.V. & ground
DH	Plug-in with diode & ground

* Other options available, see page 309.
Note: Ground required for 30 Volts or higher.
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 156.

MAC

Series 92

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

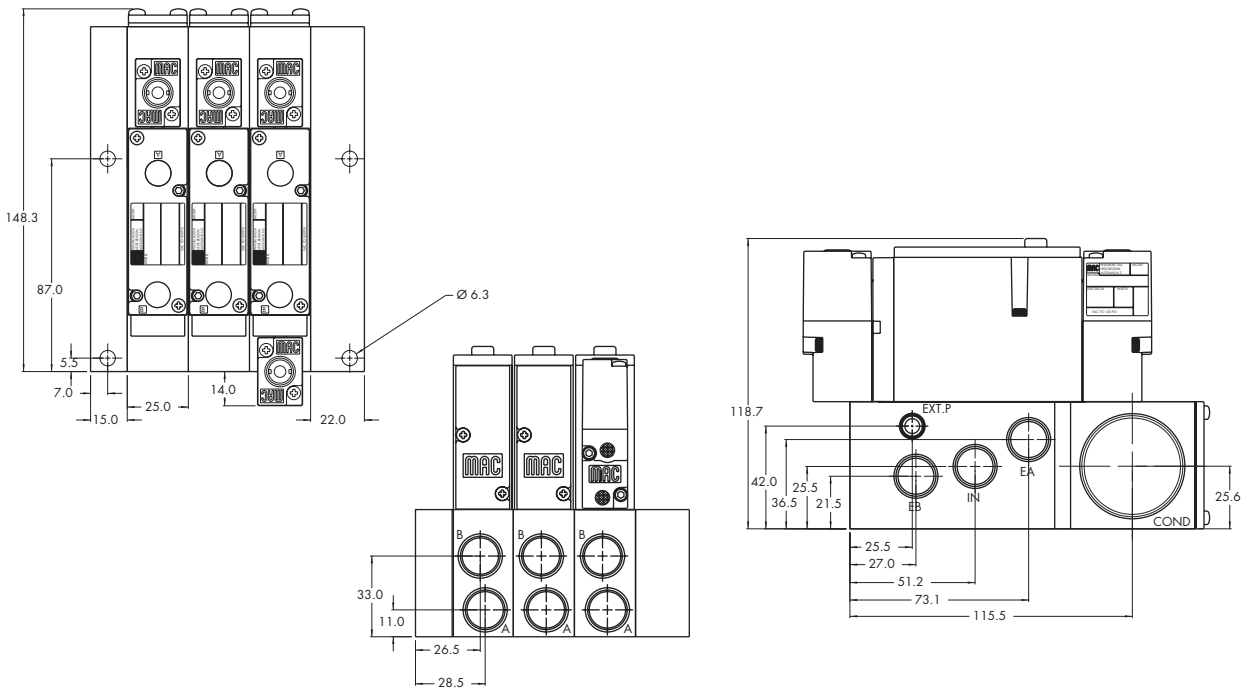
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 20 to 120 PSI	3 position : 35 to 120 PSI	
	External pilot : vacuum to 120 PSI	3 position : 35 to 120 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to +50°C)		
Flow :	1/4": (1.1 C_v) – 3/8": (1.2 C_v)		
Coil :	Class A continuous duty, #22 AWG x 12 base leads		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~Inrush 7.6 VA	Holding : 4.8 VA	
	= 1.8 to 12.7 W		
Response times :	24V=/5.4W	Energize : 8 ms	De-energize : 7 ms
	120/60	Energize : 7-13 ms	De-energize : 12-20 ms

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

Spare parts : • Pilot valve: DM-DxxP-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base: 16543
• Mounting screws valve to base (x2): 35050 • Inlet/Exhaust isolator disc: N-92018.

DIMENSIONS

Dimensions shown are metric (mm)



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

OPTIONS FOR NON PLUG-IN VALVES

Valve function

92B-**H**XX-XXX-XX-D*xxx-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-X**B**X-XXX-XX-D*xxx-xxx*

- **B** standard pilot exhaust
- **D** pilot exhaust to main valve exhaust**

Port configuration :

Individual sub-base

92B-XXX-X**A**X-XX-D*xxx-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")

Manifold sub-base

92B-XXX-X**J**X-XX-D*xxx-xxx*

- **J** side ports
- **K** bottom ports

Pilot style :

92B-XXX-XXX-**DM**-D*xxx-xxx*

- **DM** pilot exhaust muffled
- **DP** pilot exhaust piped (#10-32)
- **DU** pilot exhaust to main exhaust

Base only :

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

92B-000-XXX (i.e. 92B-000-BJG) - Manifold base

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

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

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-X**A**X-XXX-XX-D*xx*P-*xxx*

- **A** standard pilot exhaust
- **C** pilot exhaust to main valve exhaust**

Body electrical

92B-XX**A**-XXX-XX-D*xx*P-*xxx*

- **A** no light
- **B** light(s)
- **F** suppression and blocking diode with light(s)
- **H** M.O.V. with light(s)

Port configuration :

Individual sub-base

92B-XXX-X**A**X-XX-D*xx*P-*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")

Manifold sub-base

92B-XXX-X**J**X-XX-D*xx*P-*xxx*

- **J** side ports
- **K** bottom ports

Individual & Manifold sub-base Int. pilot

92B-XXX-XX**A**-XX-D*xx*P-*xxx*

- **A** internal pilot no light
- **B** internal pilot single light
- **C** internal pilot double light

Individual sub-base Ext. pilot

92B-XXX-XX**D**-XX-D*xx*P-*xxx*

- **D** external pilot no light
- **E** external pilot single light
- **F** external pilot double light

Pilot style :

92B-XXX-XXX-**DM**-D*xx*P-*xxx*

- **DM** pilot exhaust muffled
- **DP** pilot exhaust piped (#10-32)
- **DU** pilot exhaust to main exhaust

Lead Wire Lengths : (manifold sub-base only)

92B-XXX-XXX-DM-D*xx***P**-*xxx*

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

Base only :

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

(Note: bases are wired for double solenoid valves)

92B-000-XXX (i.e. 92B-000-BJA) - Manifold base

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

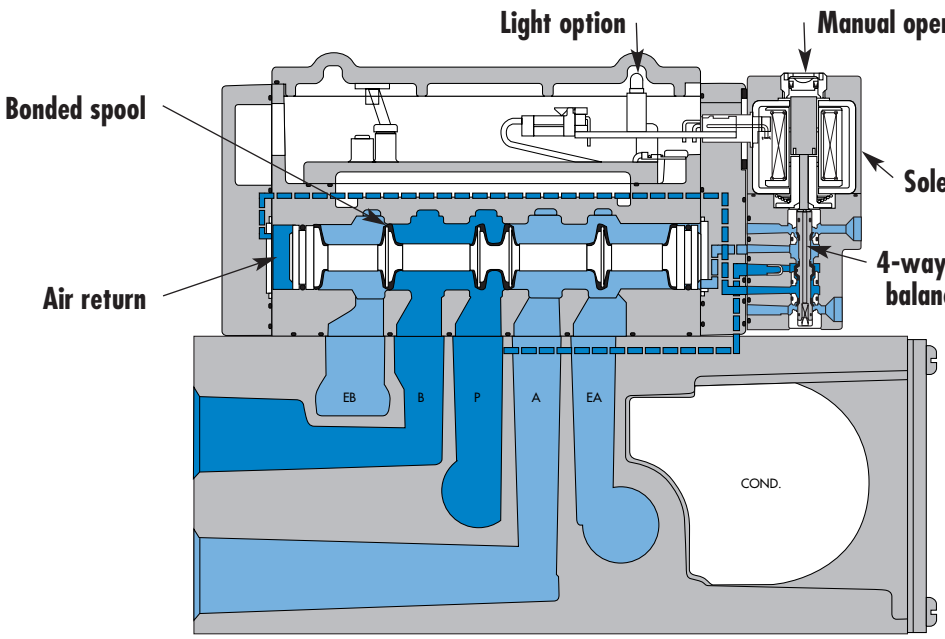
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

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

Manifold mounting

Sub-base non "plug-in"	Sub-base "plug-in"



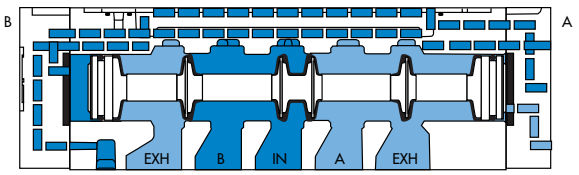
SERIES FEATURES

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

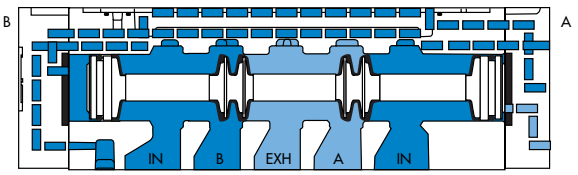
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

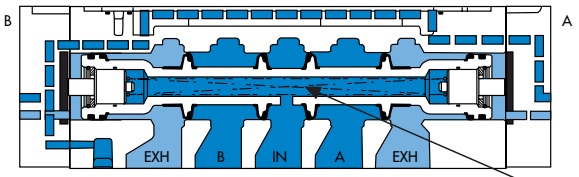
SPOOL CONFIGURATIONS



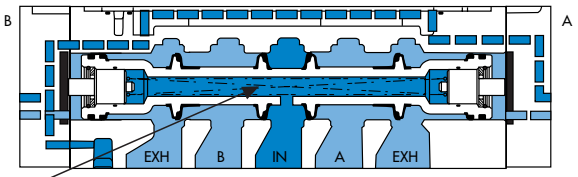
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

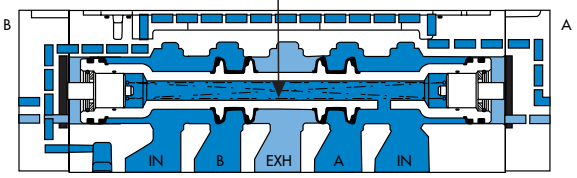


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING



3 POSITION DUAL PRESSURE, PRESSURE CENTER

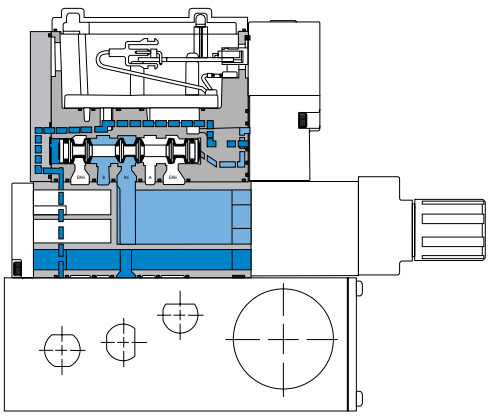
REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

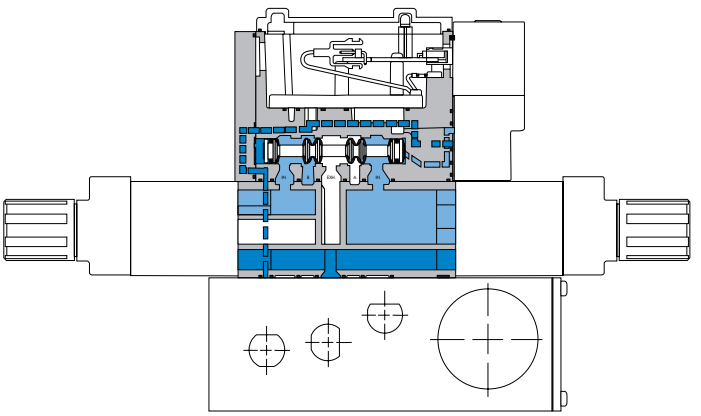
Pressure supplied to the individual or manifold base passes through the regulator.
Regulated pressure is supplied to the pressure path of the valve.

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



MANIFOLD WITH REGULATOR - DUAL PRESSURE

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

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

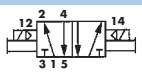
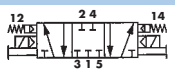
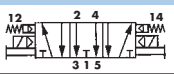
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**3/8" - 1/2"**	**3.8 C_v**	Inline	

OPERATIONAL BENEFITS

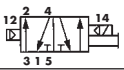
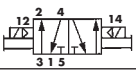
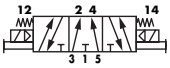
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4.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

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
					
3/8" NPTF	Internal	93A-AJ0-B0J-DM-D*xxx-xxx*	93A-BJ0-B0J-DM-D*xxx-xxx*	93A-EJ0-B0J-DM-D*xxx-xxx*	93A-FJ0-B0J-DM-D*xxx-xxx*
1/2" NPTF		93A-AJ0-C0J-DM-D*xxx-xxx*	93A-BJ0-C0J-DM-D*xxx-xxx*	93A-EJ0-C0J-DM-D*xxx-xxx*	93A-FJ0-C0J-DM-D*xxx-xxx*
3/8" NPTF	External	93A-AJ0-B0K-DM-D*xxx-xxx*	93A-BJ0-B0K-DM-D*xxx-xxx*	93A-EJ0-B0K-DM-D*xxx-xxx*	93A-FJ0-B0K-DM-D*xxx-xxx*
1/2" NPTF		93A-AJ0-C0K-DM-D*xxx-xxx*	93A-BJ0-C0K-DM-D*xxx-xxx*	93A-EJ0-C0K-DM-D*xxx-xxx*	93A-FJ0-C0K-DM-D*xxx-xxx*

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

* Other options available, see page 309.

OPTIONS

Pilot exhaust : 93A-X**J**X-XXX-DM-D*xxx-xxx*

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

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

MAC

Series 93

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

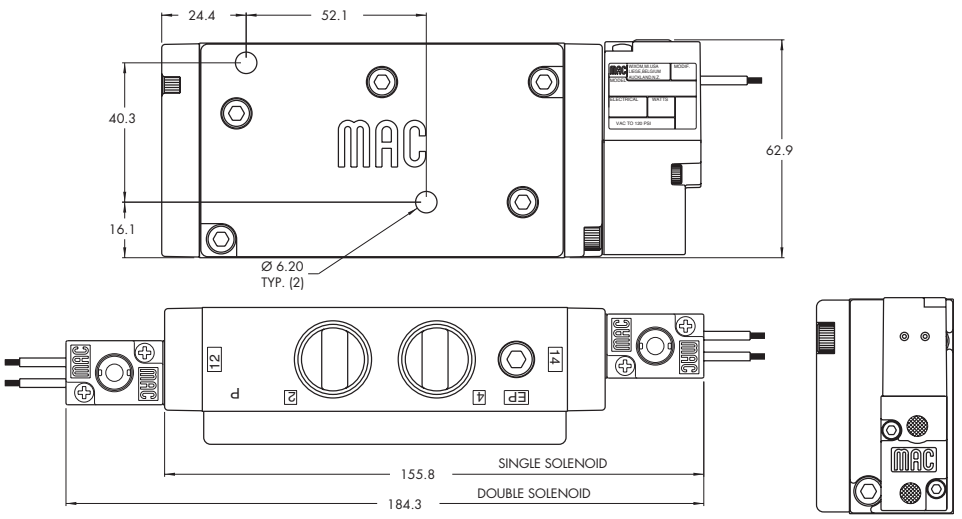
TECHNICAL DATA

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_v
Coil :	Class A continuous duty, #22 AWG x 18 leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 1.8 to 12.7 W
Response times : **(with 5.4 W coil)**	Energize : 13 ms De-energize : 10 ms

Option : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



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

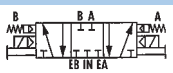
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/4" - 3/8" - 1/2"**	**3.4 C_v**	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

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

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
					
Valve less base		93A-ABA-000-DM-D*xxx-xxx*	93A-BBA-000-DM-D*xxx-xxx*	93A-EBA-000-DM-D*xxx-xxx*	93A-FBA-000-DM-D*xxx-xxx*
1/4" NPTF	Internal	93A-ABA-ABG-DM-D*xxx-xxx*	93A-BBA-ABG-DM-D*xxx-xxx*	93A-EBA-ABG-DM-D*xxx-xxx*	93A-FBA-ABG-DM-D*xxx-xxx*
3/8" NPTF	Internal	93A-ABA-BAG-DM-D*xxx-xxx*	93A-BBA-BAG-DM-D*xxx-xxx*	93A-EBA-BAG-DM-D*xxx-xxx*	93A-FBA-BAG-DM-D*xxx-xxx*
1/2" NPTF	Internal	93A-ABA-CAG-DM-D*xxx-xxx*	93A-BBA-CAG-DM-D*xxx-xxx*	93A-EBA-CAG-DM-D*xxx-xxx*	93A-FBA-CAG-DM-D*xxx-xxx*
1/4" NPTF	External	93A-ABA-ABH-DM-D*xxx-xxx*	93A-BBA-ABH-DM-D*xxx-xxx*	93A-EBA-ABH-DM-D*xxx-xxx*	93A-FBA-ABH-DM-D*xxx-xxx*
3/8" NPTF	External	93A-ABA-BAH-DM-D*xxx-xxx*	93A-BBA-BAH-DM-D*xxx-xxx*	93A-EBA-BAH-DM-D*xxx-xxx*	93A-FBA-BAH-DM-D*xxx-xxx*
1/2" NPTF	External	93A-ABA-CAH-DM-D*xxx-xxx*	93A-BBA-CAH-DM-D*xxx-xxx*	93A-EBA-CAH-DM-D*xxx-xxx*	93A-FBA-CAH-DM-D*xxx-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
				
Valve less base		93A-CBA-000-DM-D*xxx-xxx*	93A-DBA-000-DM-D*xxx-xxx*	93A-HBA-000-DM-D*xxx-xxx*
1/4" NPTF	Internal	93A-CBA-ABG-DM-D*xxx-xxx*	93A-DBA-ABG-DM-D*xxx-xxx*	93A-HBA-ABG-DM-D*xxx-xxx*
3/8" NPTF	Internal	93A-CBA-BAG-DM-D*xxx-xxx*	93A-DBA-BAG-DM-D*xxx-xxx*	93A-HBA-BAG-DM-D*xxx-xxx*
1/2" NPTF	Internal	93A-CBA-CAG-DM-D*xxx-xxx*	93A-DBA-CAG-DM-D*xxx-xxx*	93A-HBA-CAG-DM-D*xxx-xxx*
1/4" NPTF	External	93A-CBA-ABH-DM-D*xxx-xxx*	93A-DBA-ABH-DM-D*xxx-xxx*	93A-HBA-ABH-DM-D*xxx-xxx*
3/8" NPTF	External	93A-CBA-BAH-DM-D*xxx-xxx*	93A-DBA-BAH-DM-D*xxx-xxx*	93A-HBA-BAH-DM-D*xxx-xxx*
1/2" NPTF	External	93A-CBA-CAH-DM-D*xxx-xxx*	93A-DBA-CAH-DM-D*xxx-xxx*	93A-HBA-CAH-DM-D*xxx-xxx*

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BM	Flying leads
BN	Flying leads with diode
BP	Flying leads with M.O.V.
BG	Flying leads with ground
JB	Rectangular connector
JD	Rectangular connector with light

* Other options available, see page 309.

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

MAC

Series 93

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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 :	1/4", 3/8" : (3.0 C_V) - 1/2" : (3.4 C_V)
Coil :	Class A continuous duty, #22 AWG x 18 leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 1 to 12.7 W
Response times : **(with 5.4 W coil)**	Energize : 13 ms De-energize : 10 ms

Options :

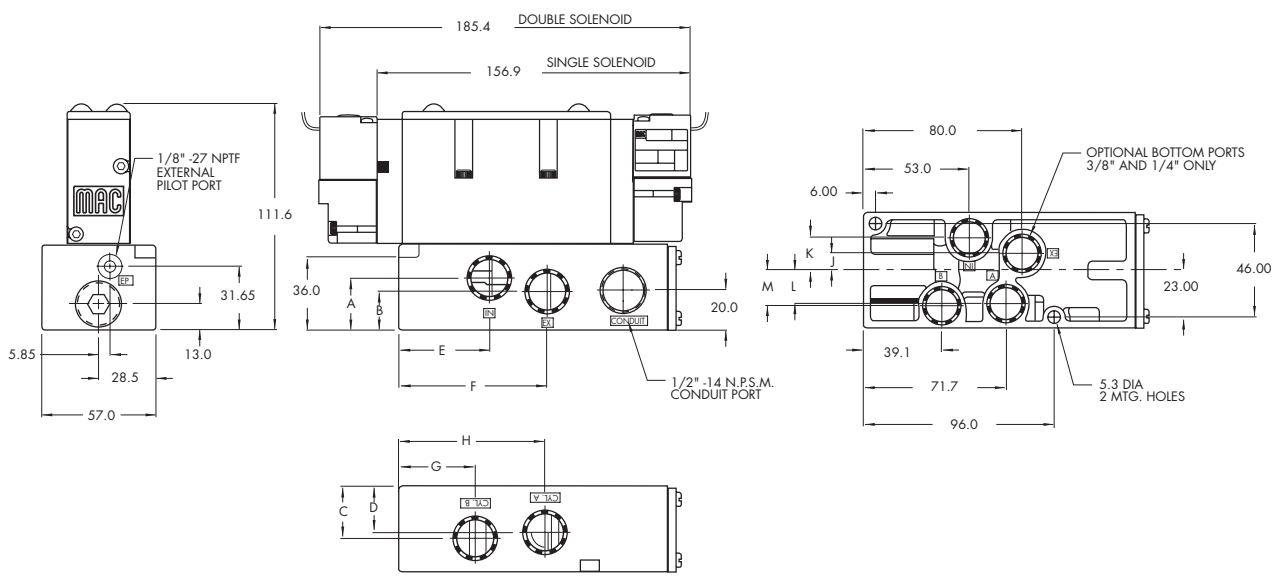
- BSPP thread • Sandwich regulator (see ‚regulators' section)
- Sandwich flow controls FC93A-BA (screwdriver slot adjustment)
  FC93A-BB (locking knob adjustment)

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)



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

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

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

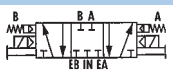
Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	**1/4" - 3/8" - 1/2"**	**3.4 C_v**	Sub-base "plug-in"	

OPERATIONAL BENEFITS

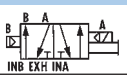
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4.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

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
					
Valve less base		93A-AAA-000-DM-D*xx*P-*xxx*	93A-BAA-000-DM-D*xx*P-*xxx*	93A-EAA-000-DM-D*xx*P-*xxx*	93A-FAA-000-DM-D*xx*P-*xxx*
1/4" NPTF	Internal	93A-AAA-ABA-DM-D*xx*P-*xxx*	93A-BAA-ABA-DM-D*xx*P-*xxx*	93A-EAA-ABA-DM-D*xx*P-*xxx*	93A-FAA-ABA-DM-D*xx*P-*xxx*
3/8" NPTF	Internal	93A-AAA-BAA-DM-D*xx*P-*xxx*	93A-BAA-BAA-DM-D*xx*P-*xxx*	93A-EAA-BAA-DM-D*xx*P-*xxx*	93A-FAA-BAA-DM-D*xx*P-*xxx*
1/2" NPTF	Internal	93A-AAA-CAA-DM-D*xx*P-*xxx*	93A-BAA-CAA-DM-D*xx*P-*xxx*	93A-EAA-CAA-DM-D*xx*P-*xxx*	93A-FAA-CAA-DM-D*xx*P-*xxx*
1/4" NPTF	External	93A-AAA-ABD-DM-D*xx*P-*xxx*	93A-BAA-ABD-DM-D*xx*P-*xxx*	93A-EAA-ABD-DM-D*xx*P-*xxx*	93A-FAA-ABD-DM-D*xx*P-*xxx*
3/8" NPTF	External	93A-AAA-BAD-DM-D*xx*P-*xxx*	93A-BAA-BAD-DM-D*xx*P-*xxx*	93A-EAA-BAD-DM-D*xx*P-*xxx*	93A-FAA-BAD-DM-D*xx*P-*xxx*
1/2" NPTF	External	93A-AAA-CAD-DM-D*xx*P-*xxx*	93A-BAA-CAD-DM-D*xx*P-*xxx*	93A-EAA-CAD-DM-D*xx*P-*xxx*	93A-FAA-CAD-DM-D*xx*P-*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
				
Valve less base		93A-CAA-000-DM-D*xx*P-*xxx*	93A-DAA-000-DM-D*xx*P-*xxx*	93A-HAA-000-DM-D*xx*P-*xxx*
1/4" NPTF	Internal	93A-CAA-ABA-DM-D*xx*P-*xxx*	93A-DAA-ABA-DM-D*xx*P-*xxx*	93A-HAA-ABA-DM-D*xx*P-*xxx*
3/8" NPTF	Internal	93A-CAA-BAA-DM-D*xx*P-*xxx*	93A-DAA-BAA-DM-D*xx*P-*xxx*	93A-HAA-BAA-DM-D*xx*P-*xxx*
1/2" NPTF	Internal	93A-CAA-CAA-DM-D*xx*P-*xxx*	93A-DAA-CAA-DM-D*xx*P-*xxx*	93A-HAA-CAA-DM-D*xx*P-*xxx*
1/4" NPTF	External	93A-CAA-ABD-DM-D*xx*P-*xxx*	93A-DAA-ABD-DM-D*xx*P-*xxx*	93A-HAA-ABD-DM-D*xx*P-*xxx*
3/8" NPTF	External	93A-CAA-BAD-DM-D*xx*P-*xxx*	93A-DAA-BAD-DM-D*xx*P-*xxx*	93A-HAA-BAD-DM-D*xx*P-*xxx*
1/2" NPTF	External	93A-CAA-CAD-DM-D*xx*P-*xxx*	93A-DAA-CAD-DM-D*xx*P-*xxx*	93A-HAA-CAD-DM-D*xx*P-*xxx*

Above models are shown without light.

SOLENOID OPERATOR ➤ DM-D ***XX*** P-***XXX****

XX	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/50, 24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground

* 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.

MAC

Series 93

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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 :	1/4", 3/8" : (3.0 C_V) - 1/2" : (3.4 C_V)
Coil :	Class A continuous duty, #22 AWG x 18 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 : **(with 5.4 W coil)**	Energize : 13 ms De-energize : 10 ms

Options :

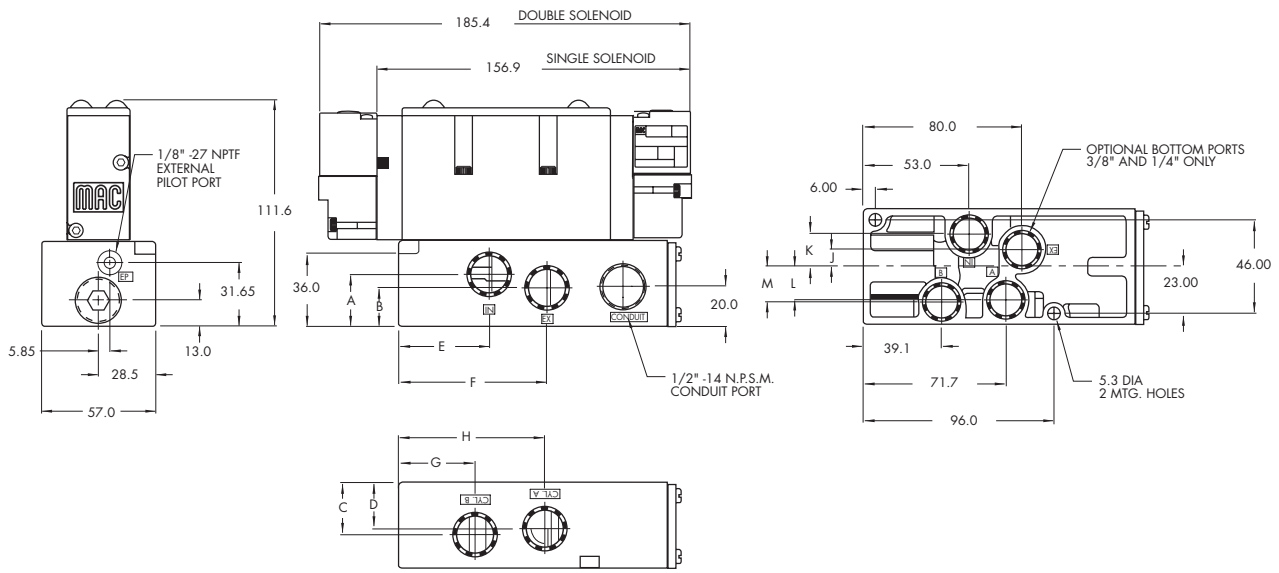
- BSPP thread • Sandwich regulator (see ‚regulators' section)
- Sandwich flow controls FC93A-AA (screwdriver slot adjustment)
  FC93A-AB (locking knob adjustment)

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
- Pilot valve mounting screws (x2): 35069

DIMENSIONS

Dimensions shown are metric (mm)



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

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

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

Function	Port size	Flow [Max]	Manifold mounting	Series
5/2, 5/3	**3/8" - 1/2"**	**3.8 C_v**	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

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

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
					
		EB IN EA	EB IN EA	EB IN EA	EB IN EA
Valve less base		93A-ABA-000-DM-D*xxx-xxx*	93A-BBA-000-DM-D*xxx-xxx*	93A-EBA-000-DM-D*xxx-xxx*	93A-FBA-000-DM-D*xxx-xxx*
3/8" NPTF	Internal	93A-ABA-BJG-DM-D*xxx-xxx*	93A-BBA-BJG-DM-D*xxx-xxx*	93A-EBA-BJG-DM-D*xxx-xxx*	93A-FBA-BJG-DM-D*xxx-xxx*
1/2" NPTF		93A-ABA-CJG-DM-D*xxx-xxx*	93A-BBA-CJG-DM-D*xxx-xxx*	93A-EBA-CJG-DM-D*xxx-xxx*	93A-FBA-CJG-DM-D*xxx-xxx*
3/8" NPTF	External	93A-ABA-BJH-DM-D*xxx-xxx*	93A-BBA-BJH-DM-D*xxx-xxx*	93A-EBA-BJH-DM-D*xxx-xxx*	93A-FBA-BJH-DM-D*xxx-xxx*
1/2" NPTF		93A-ABA-CJH-DM-D*xxx-xxx*	93A-BBA-CJH-DM-D*xxx-xxx*	93A-EBA-CJH-DM-D*xxx-xxx*	93A-FBA-CJH-DM-D*xxx-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
				
		INB EXH INA	INB EXH INA	EB IN EA
Valve less base		93A-CBA-000-DM-D*xxx-xxx*	93A-DBA-000-DM-D*xxx-xxx*	93A-HBA-000-DM-D*xxx-xxx*
3/8" NPTF	Internal	93A-CBA-BJG-DM-D*xxx-xxx*	93A-DBA-BJG-DM-D*xxx-xxx*	93A-HBA-BJG-DM-D*xxx-xxx*
1/2" NPTF		93A-CBA-CJG-DM-D*xxx-xxx*	93A-DBA-CJG-DM-D*xxx-xxx*	93A-HBA-CJG-DM-D*xxx-xxx*
3/8" NPTF	External	93A-CBA-BJH-DM-D*xxx-xxx*	93A-DBA-BJH-DM-D*xxx-xxx*	93A-HBA-BJH-DM-D*xxx-xxx*
1/2" NPTF		93A-CBA-CJH-DM-D*xxx-xxx*	93A-DBA-CJH-DM-D*xxx-xxx*	93A-HBA-CJH-DM-D*xxx-xxx*

Above models are shown with side ports.

SOLENOID OPERATOR ➤ DM-D ***XXX-XXX****

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
BM	Flying leads
BN	Flying leads with diode
KA	Square connector
KD	Square connector with light

* 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.

MAC

Series 93

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

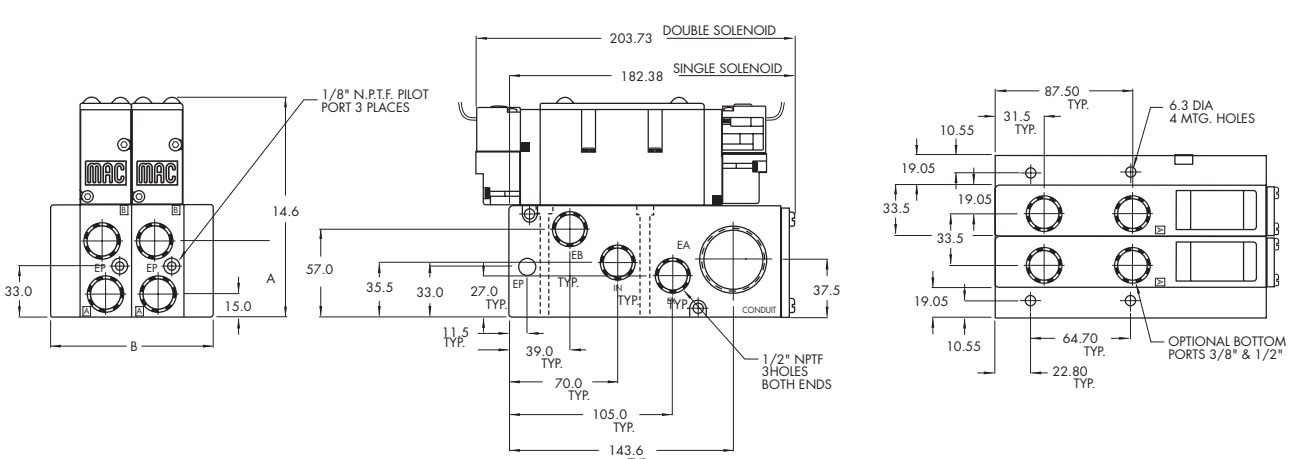
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3/8" : (3.4 C_v) - 1/2" : (3.8 C_v)
Coil :	Class A continuous duty, #22 AWG x 18 leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 1 to 12.7 W
Response times : **(with 5.4 W coil)**	Energize : 13 ms 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)



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

DIM.	A
3/8"	47.66
1/2"	49.32

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

Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	**3/8" - 1/2"**	**3.8 C_v**	Sub-base "plug-in"	

OPERATIONAL BENEFITS

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

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
					
Valve less base		93A-AAA-000-DM-D*xx*P-*xxx*	93A-BAA-000-DM-D*xx*P-*xxx*	93A-EAA-000-DM-D*xx*P-*xxx*	93A-FAA-000-DM-D*xx*P-*xxx*
3/8" NPTF	Internal	93A-AAA-BJA-DM-D*xx*P-*xxx*	93A-BAA-BJA-DM-D*xx*P-*xxx*	93A-EAA-BJA-DM-D*xx*P-*xxx*	93A-FAA-BJA-DM-D*xx*P-*xxx*
1/2" NPTF		93A-AAA-CJA-DM-D*xx*P-*xxx*	93A-BAA-CJA-DM-D*xx*P-*xxx*	93A-EAA-CJA-DM-D*xx*P-*xxx*	93A-FAA-CJA-DM-D*xx*P-*xxx*
3/8" NPTF	External	93A-AAA-BJD-DM-D*xx*P-*xxx*	93A-BAA-BJD-DM-D*xx*P-*xxx*	93A-EAA-BJD-DM-D*xx*P-*xxx*	93A-FAA-BJD-DM-D*xx*P-*xxx*
1/2" NPTF		93A-AAA-CJD-DM-D*xx*P-*xxx*	93A-BAA-CJD-DM-D*xx*P-*xxx*	93A-EAA-CJD-DM-D*xx*P-*xxx*	93A-FAA-CJD-DM-D*xx*P-*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
				
Valve less base		93A-CAA-000-DM-D*xx*P-*xxx*	93A-DAA-000-DM-D*xx*P-*xxx*	93A-HAA-000-DM-D*xx*P-*xxx*
3/8" NPTF	Internal	93A-CAA-BJA-DM-D*xx*P-*xxx*	93A-DAA-BJA-DM-D*xx*P-*xxx*	93A-HAA-BJA-DM-D*xx*P-*xxx*
1/2" NPTF		93A-CAA-CJA-DM-D*xx*P-*xxx*	93A-DAA-CJA-DM-D*xx*P-*xxx*	93A-HAA-CJA-DM-D*xx*P-*xxx*
3/8" NPTF	External	93A-CAA-BJD-DM-D*xx*P-*xxx*	93A-DAA-BJD-DM-D*xx*P-*xxx*	93A-HAA-BJD-DM-D*xx*P-*xxx*
1/2" NPTF		93A-CAA-CJD-DM-D*xx*P-*xxx*	93A-DAA-CJD-DM-D*xx*P-*xxx*	93A-HAA-CJD-DM-D*xx*P-*xxx*

Above model numbers are shown with side ports without light.

SOLENOID OPERATOR ➤ DM-D ***XX*** P-***XXX***[*]

XX	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/50, 24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground

[*] Other options available, see page 309.
End plate required (1/2" ports): M-93001-01-01 Internal pilot.
M-93001-02-01 External pilot.

Other options available for the 93 series valves, see page 170.

MAC

Series 93

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

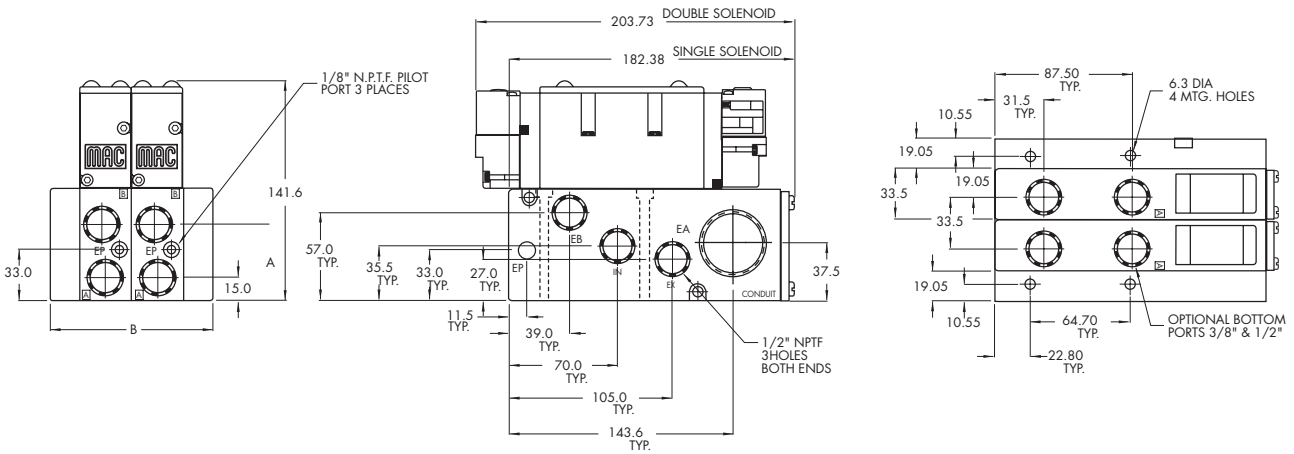
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3/8" : (3.4 C_v) - 1/2" : (3.8 C_v)
Coil :	Class A continuous duty, #22 AWG x 18 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 : **(with 5.4 W coil)**	Energize : 13 ms 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
B	71.6	105.1	138.6	172.1	205.6	239.1	272.6	306.1	339.6	373.1

DIM.	A
3/8"	47.66
1/2"	49.32

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

OPTIONS FOR NON PLUG-IN AND INLINE VALVES

Valve function

93A-**L**XX-XXX-XX-D*xxx-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-X**B**X-XXX-XX-D*xxx-xxx*

- **B** standard pilot exhaust
- **D** pilot exhaust to main valve exhaust*

Port configuration :

Individual sub-base

93A-XXX-X**A**X-XX-D*xxx-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)

Manifold sub-base

93A-XXX-X**J**X-XX-D*xxx-xxx*

- **J** side ports
- **K** bottom ports

Pilot style :

93A-XXX-XXX-**DM**-D*xxx-xxx*

- **DM** pilot exhaust muffled
- **DP** pilot exhaust piped (#10-32)
- **DU** pilot exhaust to main exhaust

Base only :

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

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

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

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

OPTIONS FOR PLUG-IN VALVES

Valve function

93A-**L**XX-XXX-XX-D*xx*P-*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-X**A**X-XXX-XX-D*xx*P-*xxx*

- **A** standard pilot exhaust
- **C** pilot exhaust to main valve exhaust*

Body electrical

92B-XX**A**-XXX-XX-D*xx*P-*xxx*

- **A** no light
- **B** light(s)

Port configuration :

Individual sub-base

93A-XXX-X**A**X-XX-D*xx*P-*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)

Manifold sub-base

93A-XXX-X**J**X-XX-D*xx*P-*xxx*

- **J** side ports
- **K** bottom ports

Base/manifold int./ext. pilot

93A-XXX-XX**A**-XX-D*xx*P-*xxx*

- **A** internal pilot no light
- **B** internal pilot single light
- **C** internal pilot double light
- **D** external pilot no light
- **E** external pilot single light
- **F** external pilot double light

Pilot style :

93A-XXX-XXX-**DM**-D*xx*P-*xxx*

- **DM** pilot exhaust muffled
- **DP** pilot exhaust piped (#10-32)
- **DU** pilot exhaust to main exhaust

Base only :

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

(Note: bases are wired for double solenoid valves)

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

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

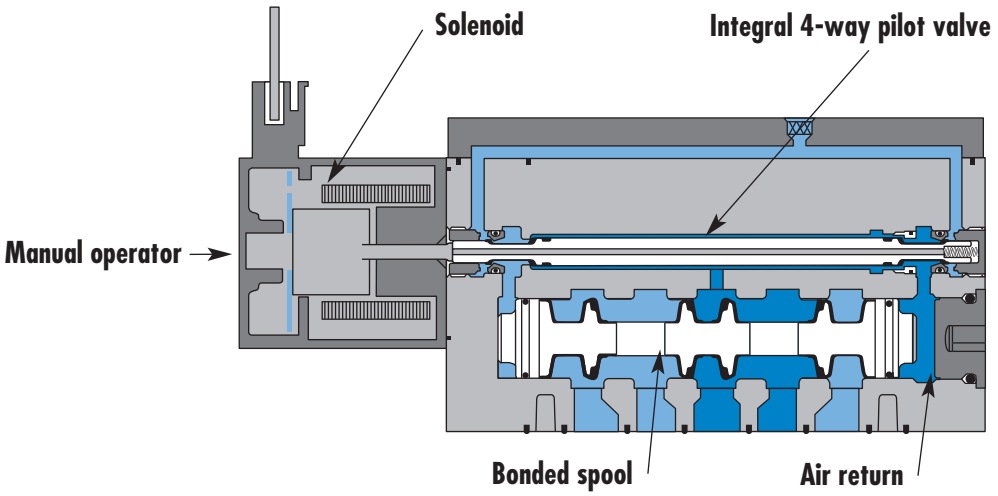
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Valve only – No base non "plug-in" Conform to ISO 15407/1	

Manifold mounting

Valve only – No base non "plug-in" Conform to ISO 15407/1	



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.

MAC®

Series ISO 01
SIZE 26 mm

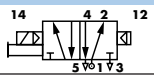
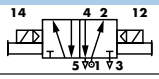
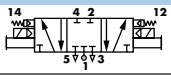
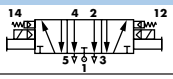
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	**1/4"**	**1.0 C_v**	Valve only – No base non "plug-in" Conform to ISO 15407/1	

OPERATIONAL BENEFITS

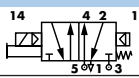
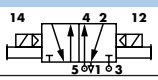
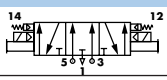
1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package. Pilot valve and main valve in the same body.
6. Internal or external pilot operation.
7. Air only return
8. Optional low wattage DC solenoid down to 1.0 Watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-A01A-AAMA-J*XXX-XXX*	MV-A01A-ABMA-J*XXX-XXX*	MV-A01A-AEMA-J*XXX-XXX*	MV-A01A-AFMA-J*XXX-XXX*
External "12" end	MV-A01A-AAMD-J*XXX-XXX*	MV-A01A-ABMD-J*XXX-XXX*	MV-A01A-AEMD-J*XXX-XXX*	MV-A01A-AFMD-J*XXX-XXX*
External "14" end	MV-A01A-AAME-J*XXX-XXX*	MV-A01A-ABME-J*XXX-XXX*	MV-A01A-AEME-J*XXX-XXX*	MV-A01A-AFME-J*XXX-XXX*

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤ J *XXX-XXX**

XX	Voltage
DA	24 VDC (5.4W)
DB	12 VDC (5.4W)
DC	24 VDC (2.4W)
DD	12 VDC (2.4W)
DE	24 VDC (1.8W)
DU	24 VDC (1.0W)

X	Lead wire length
0	No lead wire/ connector
A	18"
B	24"
C	36"

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
BA	Flying leads
JA	Square connector
JC	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
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.

OPTIONS

Pilot exhaust: MV-A01A-XX **X** X-J*XXX-XXX*

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

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

MAC

Series ISO 01
SIZE 26 mm

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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
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 :	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
Power :	1,0 to 5,4 W

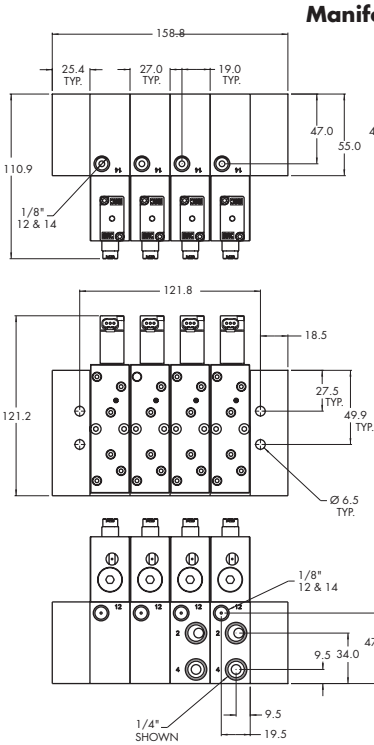
Options :

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

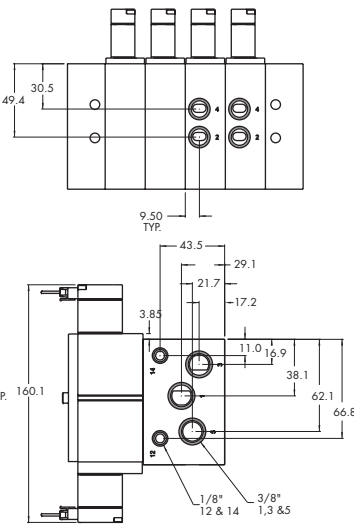
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



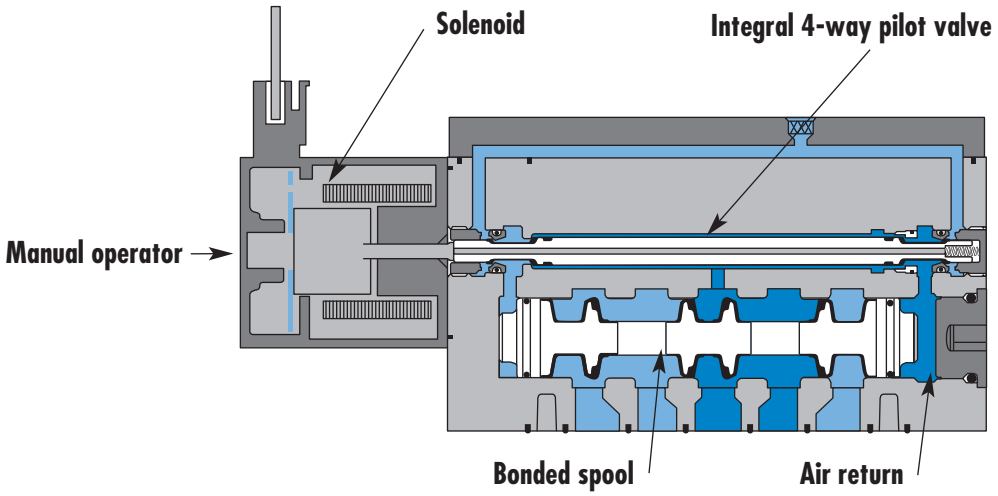
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Valve only – No base non "plug-in" Conform to ISO 15407/1	

Manifold mounting

Valve only – No base non "plug-in" Conform to ISO 15407/1	



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.

MAC®

Series ISO 02
SIZE 18 mm

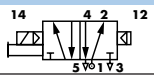
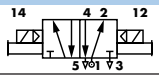
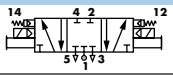
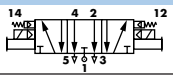
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	**1/8"**	**0.43 C_v**	Valve only – No base non "plug-in" Conform to ISO 15407/1	

OPERATIONAL BENEFITS

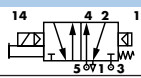
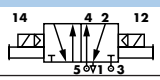
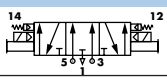
1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package. Pilot valve and main valve in the same body.
6. Internal or external pilot operation.
7. Air only return
8. Optional low wattage DC solenoid down to 1.0 Watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-A02A-AAMA-J*XXX-XXX*	MV-A02A-ABMA-J*XXX-XXX*	MV-A02A-AEMA-J*XXX-XXX*	MV-A02A-AFMA-J*XXX-XXX*
External "12" end	MV-A02A-AAMD-J*XXX-XXX*	MV-A02A-ABMD-J*XXX-XXX*	MV-A02A-AEMD-J*XXX-XXX*	MV-A02A-AFMD-J*XXX-XXX*
External "14" end	MV-A02A-AAME-J*XXX-XXX*	MV-A02A-ABME-J*XXX-XXX*	MV-A02A-AEME-J*XXX-XXX*	MV-A02A-AFME-J*XXX-XXX*

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤ J ***XXX-XXX****

XX	Voltage
DA	24V=/5,4W
DB	12V=/5,4W
DC	24V=/2,4W
DD	12V=/2,4W
DE	24V=/1,8W
DU	24V=/1,0W

X	Lead wire length
0	No lead wire/ connector
A	45 cm
B	60 cm
C	90 cm

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
BA	Flying leads
JA	Square connector
JC	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
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 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

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

MAC

Series ISO 02
SIZE 18 mm

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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
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 :	2 pos.: Cv 0.43 – 3 pos.: Cv 0.28
Coil :	Class A wires continuous duty, #22 AWG x 18
Voltage range :	-15% to +10% of nominal voltage
Power :	1,0 to 5,4 W

Options :

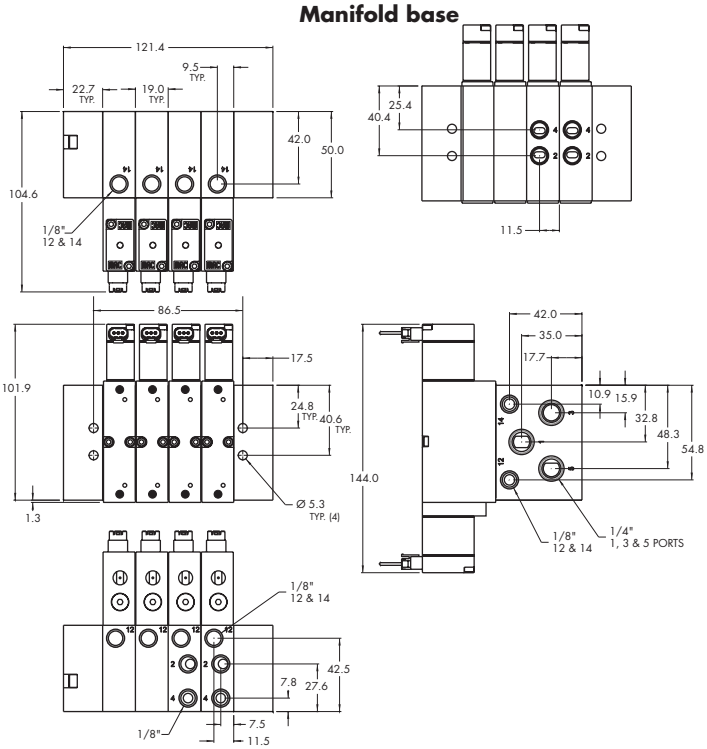
- Sandwich flow controls: FCA02A-AA (screwdriver slot adjustment).
- Sandwich pressure regulator, see ‚Regulators' section

DIMENSIONS

Dimensions shown are metric (mm)

Individual base

Manifold base



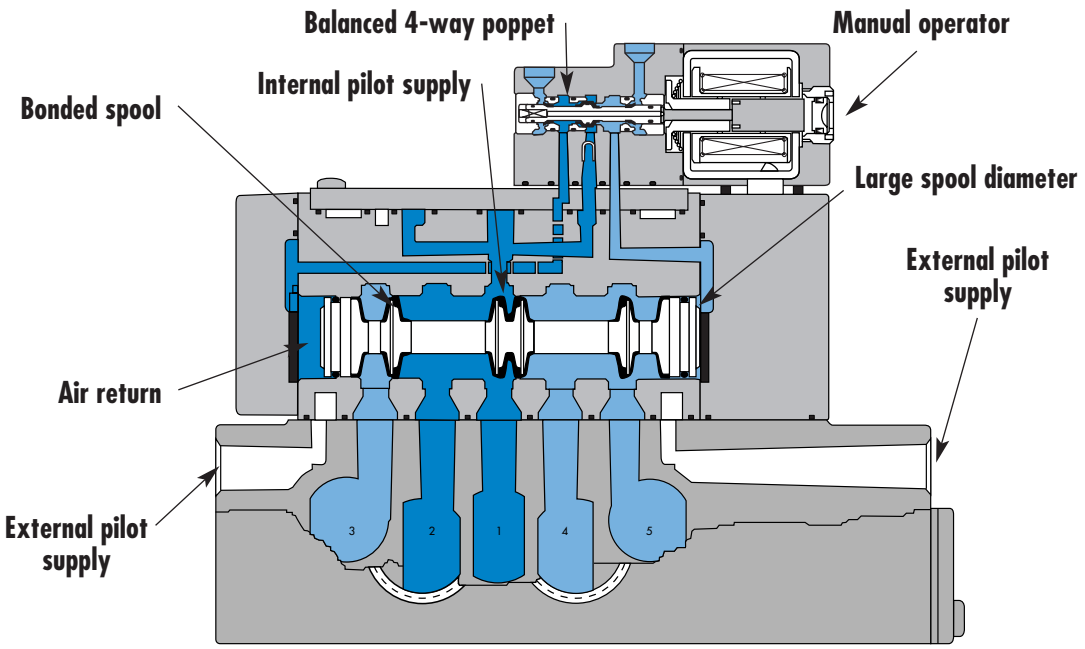
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2

Manifold mounting

Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2



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.

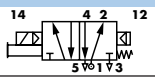
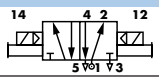
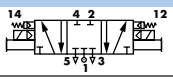
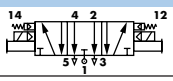
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	**1/4" - 3/8"**	**1.8 C_v**	Valve only – No base non "plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

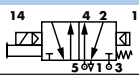
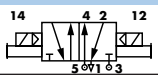
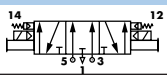
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-B1A-AAAA-DM-D*XXX-XXX*	MV-B1A-ABAA-DM-D*XXX-XXX*	MV-B1A-AEAA-DM-D*XXX-XXX*	MV-B1A-AFAA-DM-D*XXX-XXX*
External "12" end	MV-B1A-AAAB-DM-D*XXX-XXX*	MV-B1A-ABAB-DM-D*XXX-XXX*	MV-B1A-AEAB-DM-D*XXX-XXX*	MV-B1A-AFAB-DM-D*XXX-XXX*

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal pilot From port #3	MV-B1A-ACAD-DM-D*XXX-XXX*	MV-B1A-ADAD-DM-D*XXX-XXX*	MV-B1A-AGAD-DM-D*XXX-XXX*
Internal pilot From port #5	MV-B1A-ACAE-DM-D*XXX-XXX*	MV-B1A-ADAE-DM-D*XXX-XXX*	MV-B1A-AGAE-DM-D*XXX-XXX*
External pilot From "12" end	MV-B1A-ACAB-DM-D*XXX-XXX*	MV-B1A-ADAB-DM-D*XXX-XXX*	MV-B1A-AGAB-DM-D*XXX-XXX*

SOLENOID OPERATOR ➤ DM-D *XXX-XXX**

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Lead wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

* Other options available, see page 309.
Note: ISO series, valve and base are ordered separately, see page 231 for base code.

OPTIONS

Valve function :

MV-B1A-A**X**XX-XX-D*XXX-XXX*

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

Spool return :

MV-B1A-AX**A**X-XX-D*XXX-XXX*

A Standard return
B Memory spring return

Pilot style :

MV-B1A-AXXX-**DM**-D*XXX-XXX*

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

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

MAC

Series ISO 1

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 20 to 120 PSI External pilot : vacuum to 120 PSI
Pilot pressure :	Single/double operator : 20 to 120 PSI, 3 positions : 30 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3/8": (1.8 C_v) – 1/4": (1.6 C_v)
Coil :	Class A continuous duty, #22 AWG x 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 : **(with 5,4 W coil)**	Energize :11.3 ms De-energize : 7.8 ms

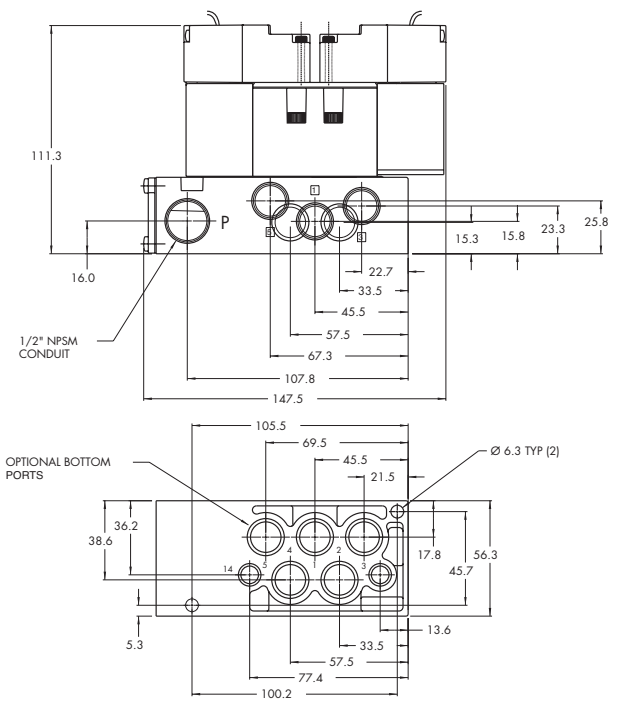
Options :
- Sandwich flow controls: FCP1A-BA (screwdriver slot adjustment)
  FCP1A-BB (locking knob adjustment)
- Sandwich regulator, see ‚Regulators' section

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

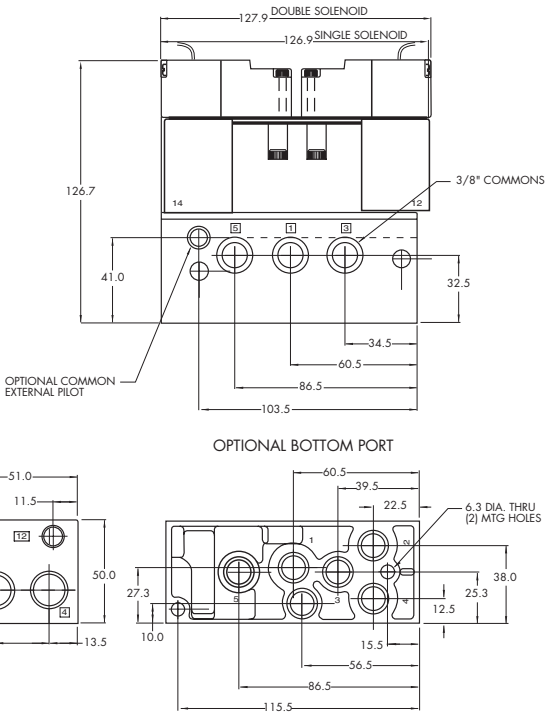
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

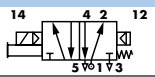
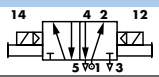
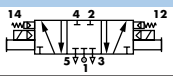
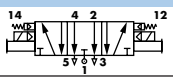
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	**1/4" - 3/8"**	**1.8 C_v**	Valve only - No base "plug-in" Conform to ISO 5599/2	

OPERATIONAL BENEFITS

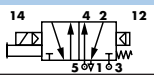
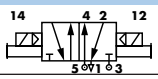
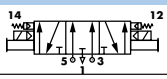
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-P1A-AAAA-DM-D*xx*P-*xxx*	MV-P1A-ABAA-DM-D*xx*P-*xxx*	MV-P1A-AEAA-DM-D*xx*P-*xxx*	MV-P1A-AFAA-DM-D*xx*P-*xxx*
External "12" end	MV-P1A-AAAB-DM-D*xx*P-*xxx*	MV-P1A-ABAB-DM-D*xx*P-*xxx*	MV-P1A-AEAB-DM-D*xx*P-*xxx*	MV-P1A-AFAB-DM-D*xx*P-*xxx*

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal pilot From port #3	MV-P1A-ACAD-DM-D*xx*P-*xxx*	MV-P1A-ADAD-DM-D*xx*P-*xxx*	MV-P1A-AGAD-DM-D*xx*P-*xxx*
Internal pilot From port #5	MV-P1A-ACAE-DM-D*xx*P-*xxx*	MV-P1A-ADAE-DM-D*xx*P-*xxx*	MV-P1A-AGAE-DM-D*xx*P-*xxx*
External pilot From "12" end	MV-P1A-ACAB-DM-D*xx*P-*xxx*	MV-P1A-ADAB-DM-D*xx*P-*xxx*	MV-P1A-AGAB-DM-D*xx*P-*xxx*

SOLENOID OPERATOR ➤ DM-D *xx* P-*xxx**

xx	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/50, 24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

xx	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground

* Other options available, see page 309.
Note: - ISO series, valve and base are ordered separately, see page 233 for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function :

MV-P1A-A**X**XX-XX-D*xx*P-*xxx*

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

Pilot style :

MV-P1A-AXXX-**DM**-D*xx*P-*xxx*

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

Spool return :

MV-P1A-AX**A**X-XX-D*xx*P-*xxx*

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

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

MAC

Series ISO 1

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 20 to 120 PSI External pilot : vacuum to 120 PSI
Pilot pressure :	Single/double operator : 20 to 120 PSI, 3 positions : 30 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3/8": (1.8 C_V) – 1/4": (1.6 C_V)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 1 to 12.7 W
Response times : **(with 5,4 W coil)**	Energize :10 ms De-energize : 9 ms

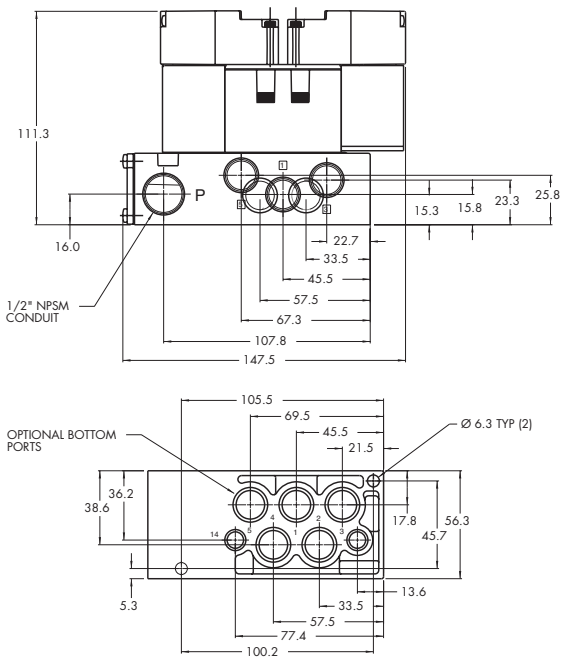
Options :
- Sandwich flow controls: FCP1A-AA (screwdriver slot adjustment)
  FCP1A-AB (locking knob adjustment)
- Sandwich regulator, see ‚Regulators' section

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

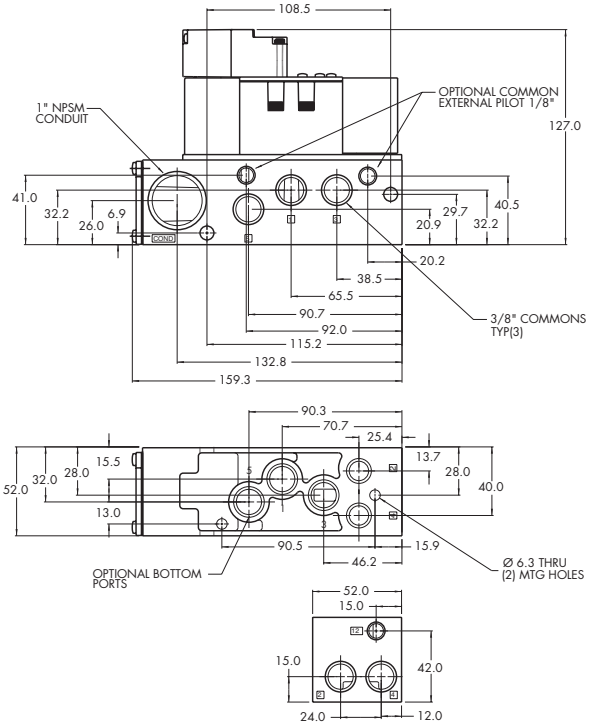
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



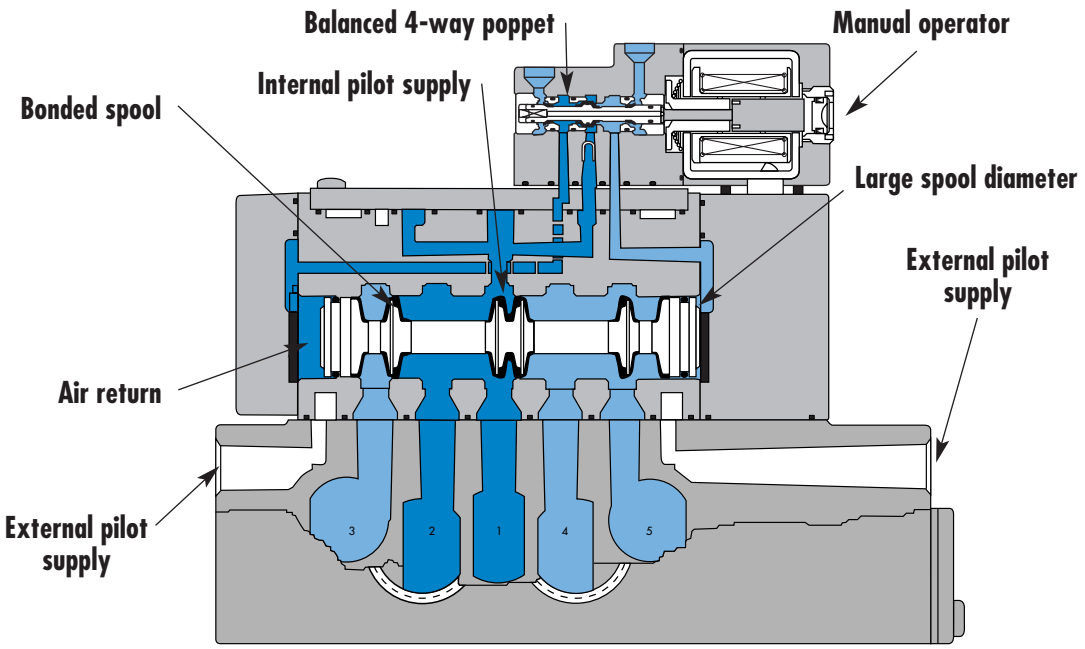
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2

Manifold mounting

Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2



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.

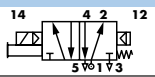
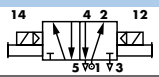
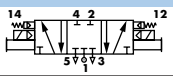
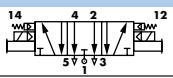
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	**3/8" - 1/2"**	**3.0 C_v**	Valve only – No base non "plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

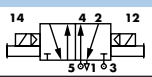
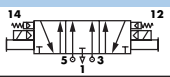
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-B2A-AAAA-DM-D*XXX-XXX*	MV-B2A-ABAA-DM-D*XXX-XXX*	MV-B2A-AEAA-DM-D*XXX-XXX*	MV-B2A-AFAA-DM-D*XXX-XXX*
External "12" end	MV-B2A-AAAB-DM-D*XXX-XXX*	MV-B2A-ABAB-DM-D*XXX-XXX*	MV-B2A-AEAB-DM-D*XXX-XXX*	MV-B2A-AFAB-DM-D*XXX-XXX*

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal pilot From port #3	MV-B2A-ACAD-DM-D*XXX-XXX*	MV-B2A-ADAD-DM-D*XXX-XXX*	MV-B2A-AGAD-DM-D*XXX-XXX*
Internal pilot From port #5	MV-B2A-ACAE-DM-D*XXX-XXX*	MV-B2A-ADAE-DM-D*XXX-XXX*	MV-B2A-AGAE-DM-D*XXX-XXX*
External pilot From "12" end	MV-B2A-ACAB-DM-D*XXX-XXX*	MV-B2A-ADAB-DM-D*XXX-XXX*	MV-B2A-AGAB-DM-D*XXX-XXX*

SOLENOID OPERATOR ➤ DM-D *XXX-XXX**

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Lead wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

* Other options available, see page 309.
Note: ISO series, valve and base are ordered separately, see page 235 for base code.

OPTIONS

Valve function :

MV-B2A-A**X**XX-XX-D*XXX-XXX*

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

Spool return :

MV-B2A-AX**A**X-XX-D*XXX-XXX*

A Standard return
B Memory spring return

Pilot style :

MV-B2A-AXXX-**DM**-D*XXX-XXX*

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

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

MAC

Series ISO 2

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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": (2.8 C_v) - 1/2": (3.0 C_v)
Coil :	Class A continuous duty, #22 AWG x 18 leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 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-BA (screwdriver slot adjustment)
  FCP2A-BB (locking knob adjustment)
- Sandwich regulator, see ‚Regulators' section

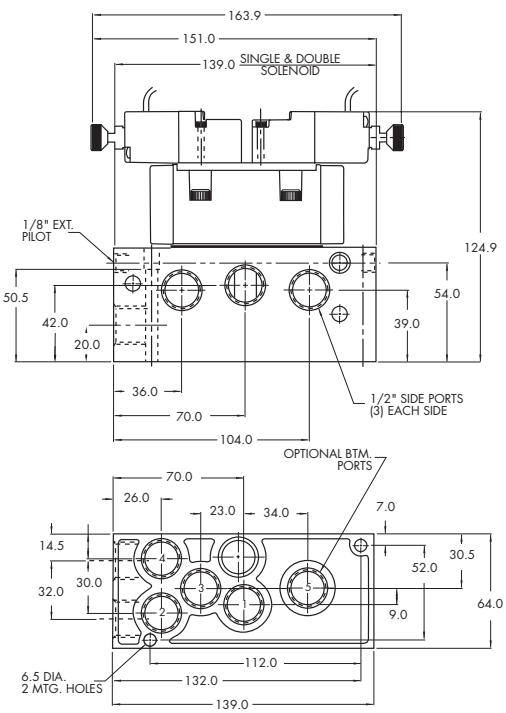
Spare parts :

- Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16576
- Valve mounting screws (x4): 35413

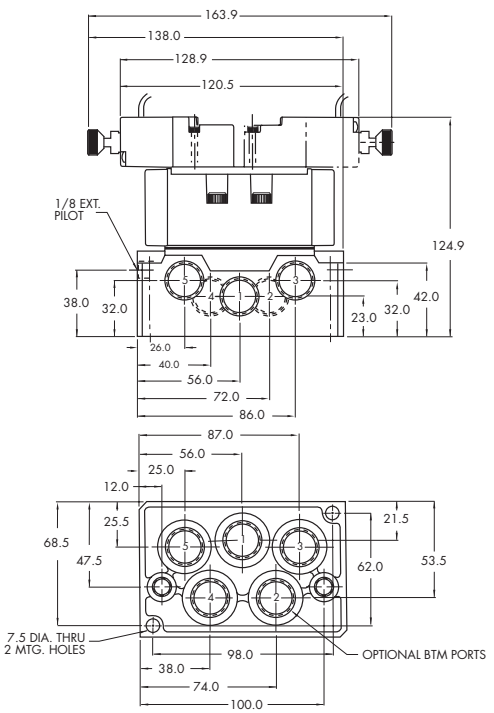
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

Series ISO 2

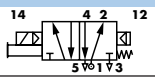
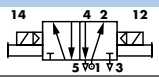
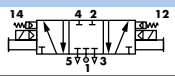
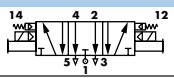
Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2, 5/3	**3/8" - 1/2"**	**3.0 C_v**	Valve only - No base "plug-in" Conform to ISO 5599/2	

OPERATIONAL BENEFITS

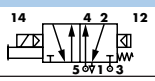
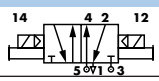
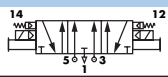
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-P2A-AAAA-DM-D*xx*P-*xxx*	MV-P2A-ABAA-DM-D*xx*P-*xxx*	MV-P2A-AEAA-DM-D*xx*P-*xxx*	MV-P2A-AFAA-DM-D*xx*P-*xxx*
External "12" end	MV-P2A-AAAB-DM-D*xx*P-*xxx*	MV-P2A-ABAB-DM-D*xx*P-*xxx*	MV-P2A-AEAB-DM-D*xx*P-*xxx*	MV-P2A-AFAB-DM-D*xx*P-*xxx*

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal pilot From port #3	MV-P2A-ACAD-DM-D*xx*P-*xxx*	MV-P2A-ADAD-DM-D*xx*P-*xxx*	MV-P2A-AGAD-DM-D*xx*P-*xxx*
Internal pilot From port #5	MV-P2A-ACAE-DM-D*xx*P-*xxx*	MV-P2A-ADAE-DM-D*xx*P-*xxx*	MV-P2A-AGAE-DM-D*xx*P-*xxx*
External pilot From "12" end	MV-P2A-ACAB-DM-D*xx*P-*xxx*	MV-P2A-ADAB-DM-D*xx*P-*xxx*	MV-P2A-AGAB-DM-D*xx*P-*xxx*

SOLENOID OPERATOR ➤ DM-D ***XX*** P-***XXX****

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground

* Other options available, see page 309.
Note: - ISO series, valve and base are ordered separately, see page 237 for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function :

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

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

Pilot style :

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

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

Spool return :

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

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

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

MAC

Series ISO 2

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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": (2.8 C_v) - 1/2": (3.0 C_v)
Coil :	Class A continuous duty, #18 AWG x 12 base leads
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 :

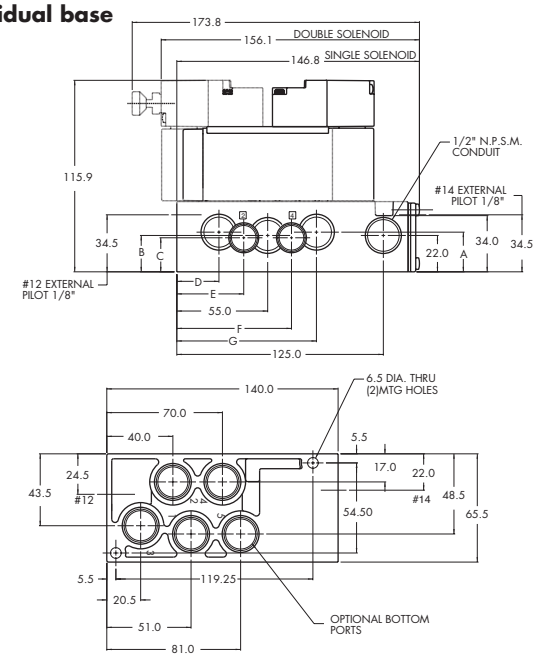
- Sandwich flow controls: FCP2A-AA (screwdriver slot adjustment)
  FCP2A-AB (locking knob adjustment)
- Sandwich regulator, see ‚Regulators' section

Spare parts :

- Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16576
- Valve mounting screws (x4): 35413

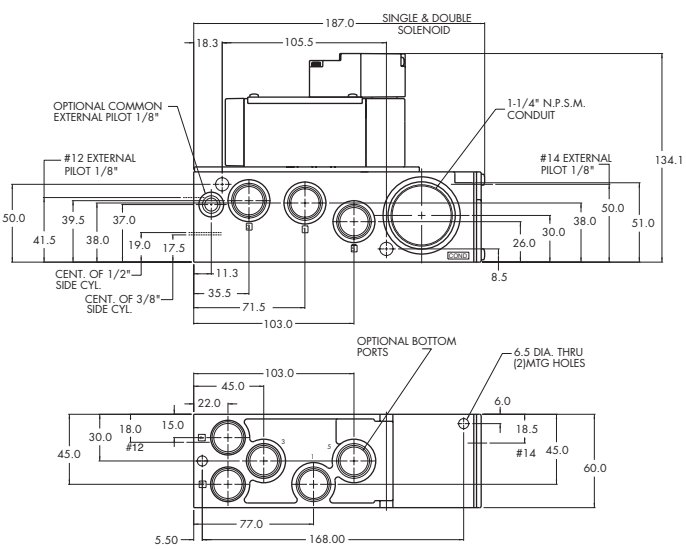
DIMENSIONS

Individual base



DIM.	A	B	C	D	E	F	G
3/8"	25.2	22.7	20.6	26.7	40.5	69.4	83.3
1/2"	24.0	21.0	19.0	25.5	40.0	70.0	84.5

Manifold base



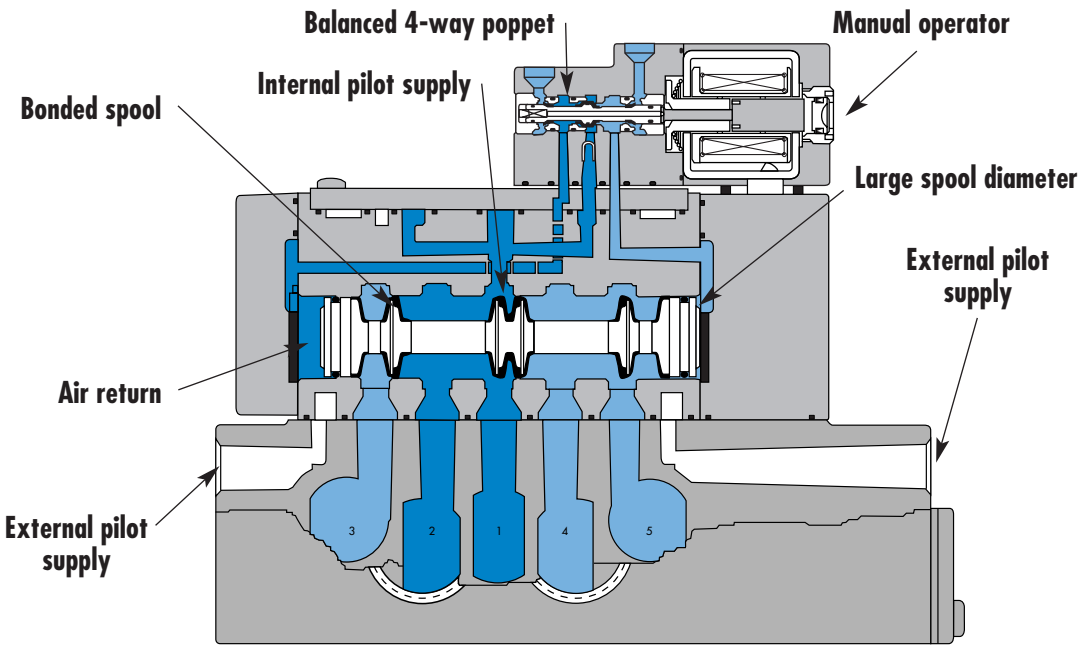
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Individual mounting

Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2

Manifold mounting

Valve only – No base non "plug-in" Conform to ISO 5599/1	Valve only – No base "plug-in" Conform to ISO 5599/2



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.

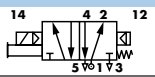
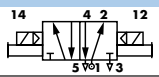
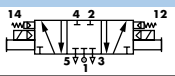
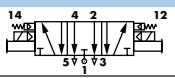
Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
5/2, 5/3	**1/2" - 3/4"**	**6.1 C_v**	Valve only – No base "non plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

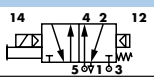
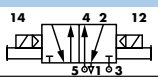
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-B3A-AAAA-DM-D*XXX-XXX*	MV-B3A-ABAA-DM-D*XXX-XXX*	MV-B3A-AEAA-DM-D*XXX-XXX*	MV-B3A-AFAA-DM-D*XXX-XXX*
External "12" end	MV-B3A-AAAB-DM-D*XXX-XXX*	MV-B3A-ABAB-DM-D*XXX-XXX*	MV-B3A-AEAB-DM-D*XXX-XXX*	MV-B3A-AFAB-DM-D*XXX-XXX*

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal pilot From port #3	MV-B3A-ACAD-DM-D*XXX-XXX*	MV-B3A-ADAD-DM-D*XXX-XXX*	MV-B3A-AGAD-DM-D*XXX-XXX*
Internal pilot From port #5	MV-B3A-ACAE-DM-D*XXX-XXX*	MV-B3A-ADAE-DM-D*XXX-XXX*	MV-B3A-AGAE-DM-D*XXX-XXX*
External pilot From "12" end	MV-B3A-ACAB-DM-D*XXX-XXX*	MV-B3A-ADAB-DM-D*XXX-XXX*	MV-B3A-AGAB-DM-D*XXX-XXX*

SOLENOID OPERATOR ➤ DM-D *XXX-XXX**

XX	Voltage
JA	110/50, 120/60
JB	220/50, 240/60
JC	24/50, 24/60
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Lead wire length
A	18" (Flying leads)
B	24" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking recessed
2	Locking recessed

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

* Other options available, see page 309.
Note: ISO series, valve and base are ordered separately, see page 239 for base code.

OPTIONS

Valve function :

MV-B3A-A**X**XX-XX-D*XXX-XXX*

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

Spool return :

MV-B3A-AX**A**X-XX-D*XXX-XXX*

A Standard return
B Memory spring return

Pilot style :

MV-B3A-AXXX-**DM**-D*XXX-XXX*

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

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

MAC

Series ISO 3

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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_V) – 3/4": (6.1 C_V)
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
Response times : **(5.4 W coil)**	Energize : 16.2 ms De-energize : 13.6 ms

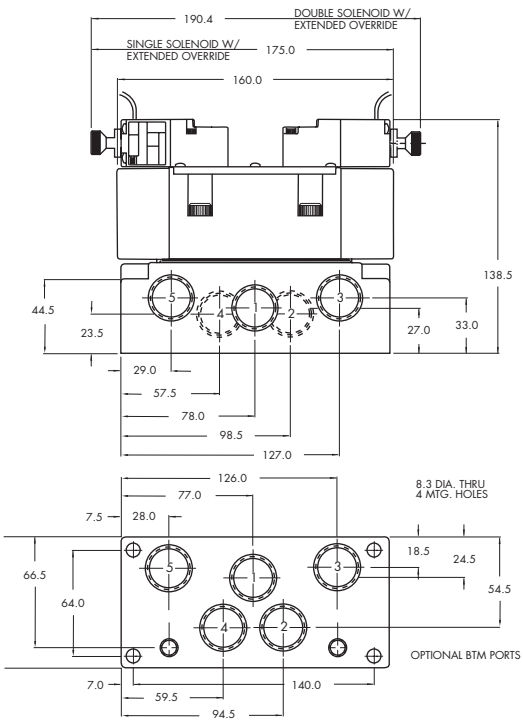
Options : • Sandwich regulator, see ‚Regulators' section

Spare parts : • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16614
• Valve mounting screws (x4): 35451

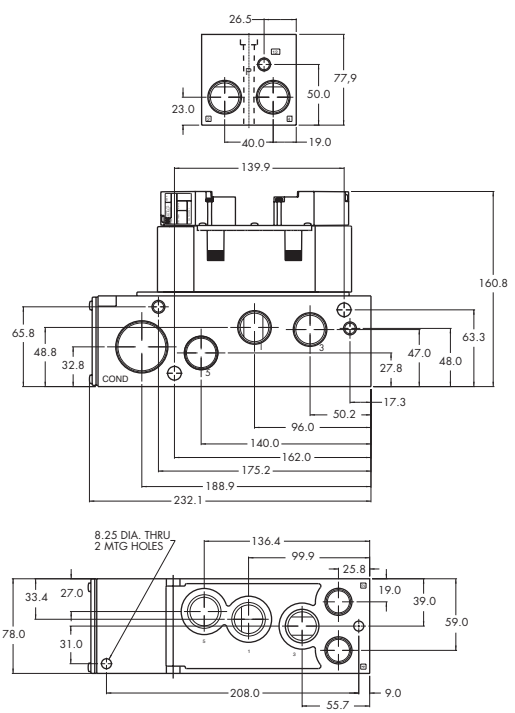
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

MAC®

Series ISO 3

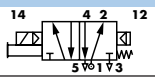
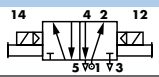
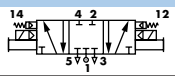
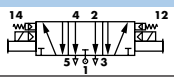
Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
5/2, 5/3	**1/2" - 3/4"**	**6.1 C_v**	Valve only - No base "plug-in" Conform to ISO 5599/2	

OPERATIONAL BENEFITS

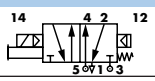
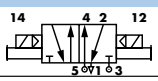
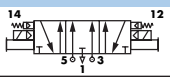
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.

HOW TO ORDER

SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-P3A-AAAA-DM-D*xx*P-*xxx*	MV-P3A-ABAA-DM-D*xx*P-*xxx*	MV-P3A-AEAA-DM-D*xx*P-*xxx*	MV-P3A-AFAA-DM-D*xx*P-*xxx*
External "12" end	MV-P3A-AAAB-DM-D*xx*P-*xxx*	MV-P3A-ABAB-DM-D*xx*P-*xxx*	MV-P3A-AEAB-DM-D*xx*P-*xxx*	MV-P3A-AFAB-DM-D*xx*P-*xxx*

DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal pilot From port #3	MV-P3A-ACAD-DM-D*xx*P-*xxx*	MV-P3A-ADAD-DM-D*xx*P-*xxx*	MV-P3A-AGAD-DM-D*xx*P-*xxx*
Internal pilot From port #5	MV-P3A-ACAE-DM-D*xx*P-*xxx*	MV-P3A-ADAE-DM-D*xx*P-*xxx*	MV-P3A-AGAE-DM-D*xx*P-*xxx*
External pilot From "12" end	MV-P3A-ACAB-DM-D*xx*P-*xxx*	MV-P3A-ADAB-DM-D*xx*P-*xxx*	MV-P3A-AGAB-DM-D*xx*P-*xxx*

SOLENOID OPERATOR ➤ DM-D *xx* P-*xxx**

xx	Voltage
JA	110/50, 120/60 (2.9W)
JB	220/50, 240/60 (2.9W)
JC	24/50, 24/60 (2.9W)
FB	24 VDC (1.8W)
DA	24 VDC (5.4W)
DF	24 VDC (12.7W)

X	Manual operator
1	Non-locking recessed
2	Locking recessed

xx	Electrical connection
DM	Plug-in
DN	Plug-in with diode
DP	Plug-in with M.O.V.
DG	Plug-in with ground

* Other options available, see page 309.

Note: - ISO series, valve and base are ordered separately, see page 241 for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function :

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

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

Pilot style :

MV-P3A-AXXX-**DM**-D*xx*P-*xxx*

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

Spool return :

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

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

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

MAC

Series ISO 3

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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_V) – 3/4": (6.1 C_V)
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
Response times : **(5.4 W coil)**	Energize : 16.2 ms De-energize : 13.6 ms

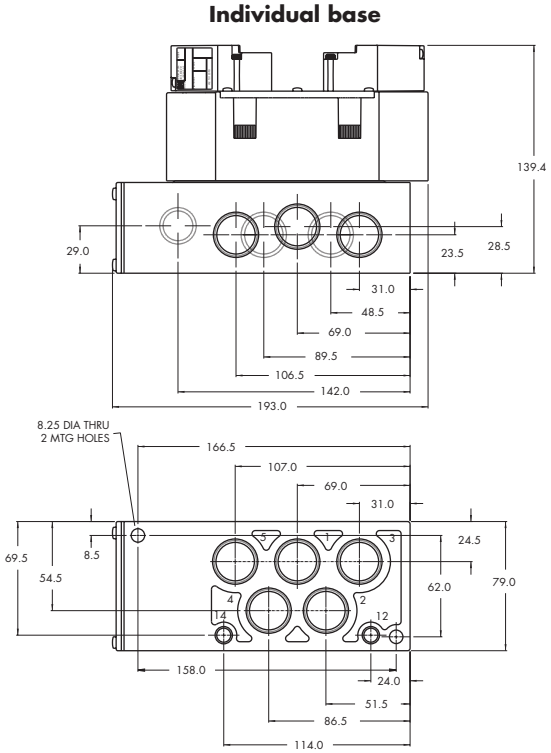
Options : • Sandwich regulator, see ‚Regulators' section

Spare parts : • Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16614
• Valve mounting screws (x4): 35451

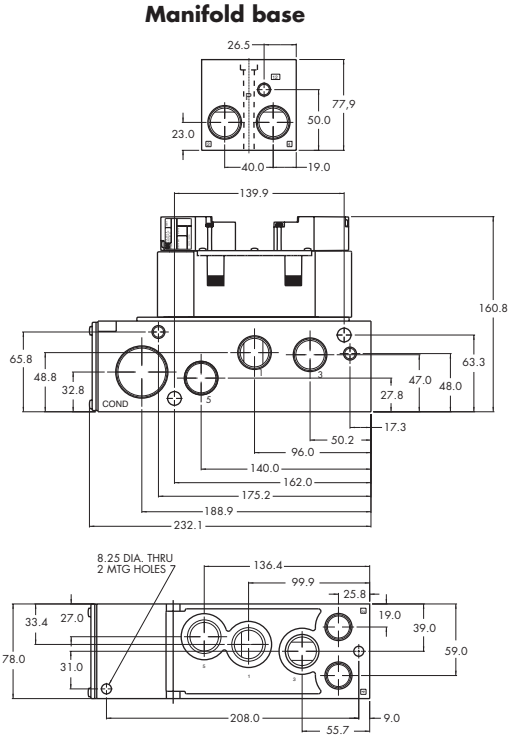
DIMENSIONS

Dimensions shown are metric (mm)

Individual base



Manifold base



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

Section 2 Remote air valves

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

Function	Port size	Flow (Max) Cv	Individual mounting			Manifold mounting	Series
			Inline	Sub-base non "plug-in"	Valve only - no base	Valve only - no base	
5/2 - 5/3	**1/8" - 1/4"**	**1.0**	P. 203	P. 205			**400**
3/2	**3/4" - 1"**	**20.0**	P. 209				**67**
3/2 - 2/2	**1 1/2" - 2" - 2 1/2"**	**60.0**	P. 213				**69**
5/2 - 5/3	**3/8" - 1/2"**	**3.1**			P. 217	P. 217	**ISO 2**
5/2 - 5/3	**1/2" - 3/4"**	**6.2**			P. 221	P. 221	**ISO 3**

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

Individual mounting

Inline	Sub-base non "plug-in"

Series

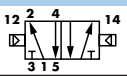
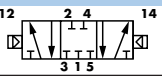
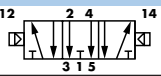
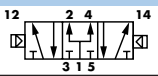
Function	Port size	Flow (Max)	Individual mounting	Series
5/2 - 5/3	**1/8" - 1/4"**	**1.0 C_v**	Inline	

OPERATIONAL BENEFITS

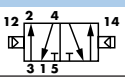
1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking.
4. Long service life.
5. Short stroke with high flow.

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
					
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	421A-B0H-RA	451A-B0H-RA	461A-B0H-RA	471A-B0H-RA

DUAL PRESSURE VALVES

Port size	5/2 Double operator
	
1/8" NPTF	441A-A0H-RA
1/4" NPTF	441A-B0H-RA

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

MAC®

Series **400**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

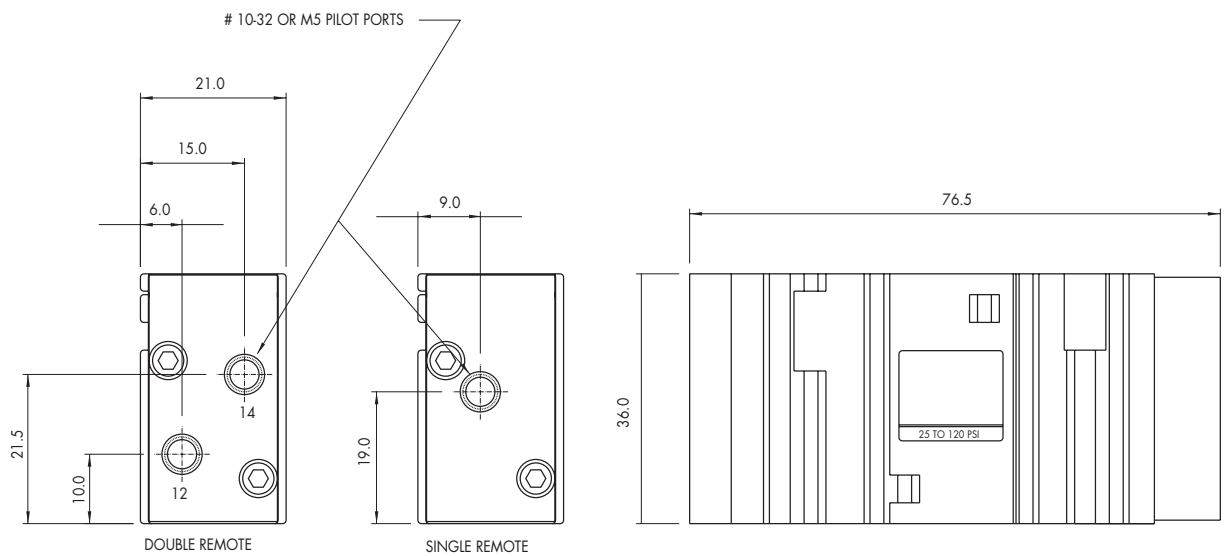
TECHNICAL DATA

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°F and 210°F)
Filtration :	40µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	1.0 C_v
Note :	Air signal must be ≥ main valve pressure

Option : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



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

Function	Port size	Flow (Max)	Individual mounting	Series
5/2 - 5/3	**1/8" - 1/4"**	**1.0 C_v**	Sub-base non "plug-in"	

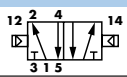
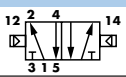
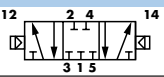
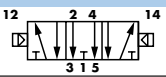
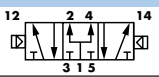
OPERATIONAL BENEFITS

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.

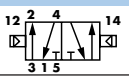
400
67
69
ISO 2
ISO 3

HOW TO ORDER

SINGLE PRESSURE VALVES

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
					
Valve less base	413A-00H-RA	423A-00H-RA	453A-00H-RA	463A-00H-RA	473A-00H-RA
1/8" NPTF	413A-AAH-RA Mod 1493	423A-AAH-RA	453A-AAH-RA	463A-AAH-RA	473A-AAH-RA
1/4" NPTF	413A-BAH-RA Mod 1493	423A-BAH-RA	453A-BAH-RA	463A-BAH-RA	473A-BAH-RA

DUAL PRESSURE VALVES

Port size	5/2 Double operator
	
1/8" NPTF	443A-AAH-RA
1/4" NPTF	443A-BAH-RA

OPTIONS

423A-A**A**H-RA

B for base with flow controls

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

MAC

Series **400**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

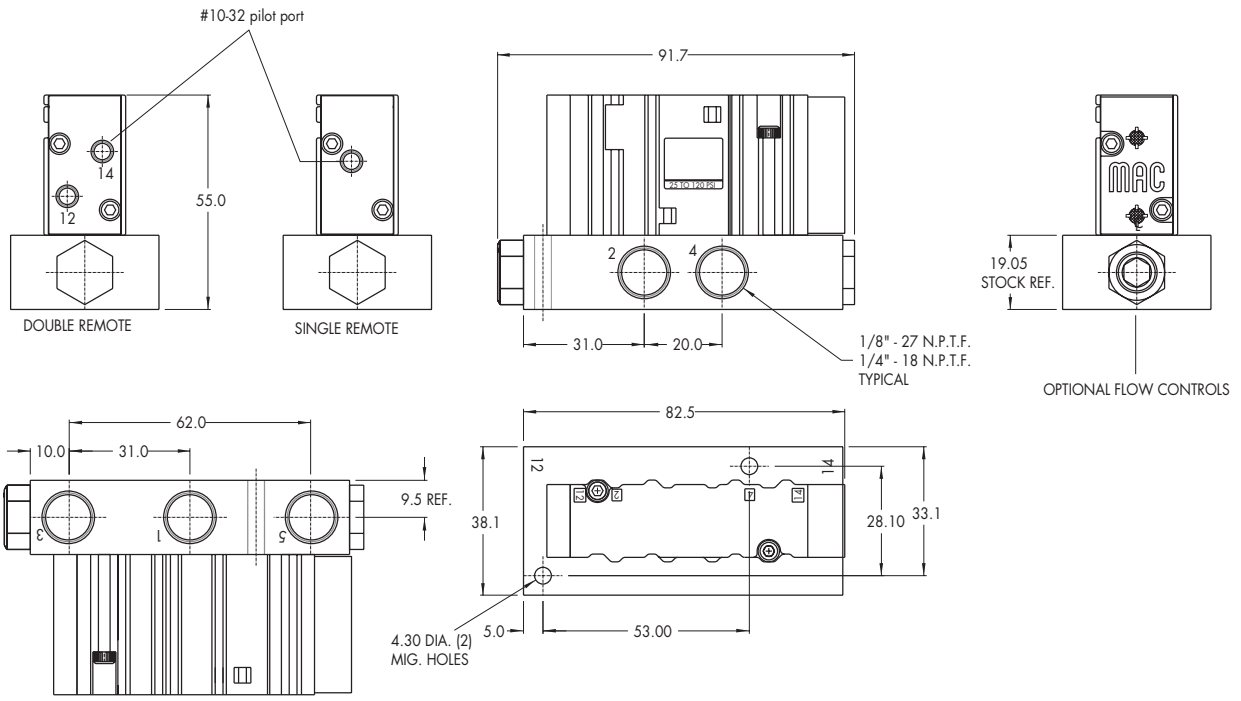
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Single operator: vacuum to 100 PSI Double operator: vacuum to 150 PSI
Air signal pressure :	Single oper.: 40 to 150 PSI Double oper., 2 pos.: 20 to 150 PSI, 3 pos.: 35 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	1.0 C_v
Note :	Air signal must be ≥ main valve pressure

Options : • BSPP threads

Spare parts : • Valve to base pressure seal: 16525 • Valve mounting screw (x2): 35043
• Flow control assembly (x2): N-04001

DIMENSIONS

Dimensions shown are metric (mm)



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

Individual mounting

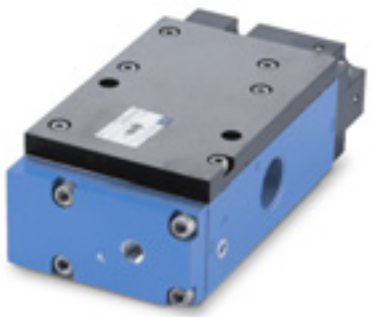
Inline

Series

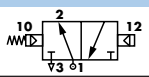
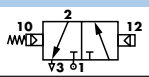
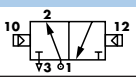
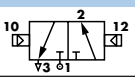
Function	Port size	Flow (Max)	Individual mounting	Series
3/2	**3/4" - 1"**	**20.0 C_v**	Inline	

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
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.



HOW TO ORDER

Port size	Pilot air	Single Operator		Double Operator	
		NO Valve	NC Valve	NO Valve	NC Valve
					
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.

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

MAC

Series **67**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

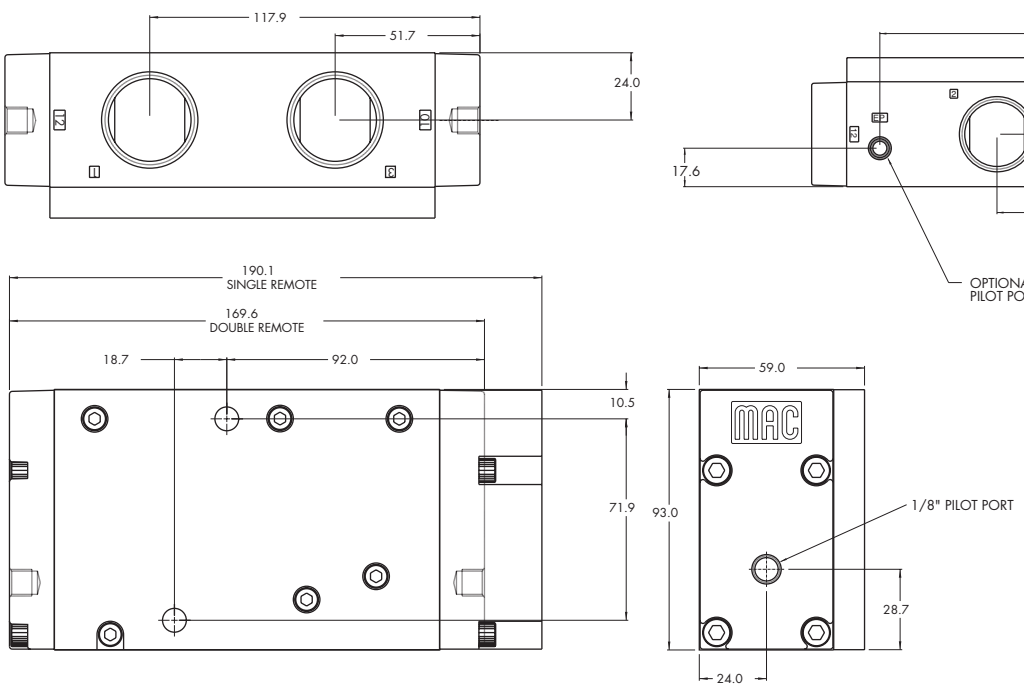
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	20 to 150 PSI (must be ≥ main valve pressure)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	3/4" : (14.5 C_V) - 1" : (20.0 C_V)

Options : • BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



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

Individual mounting

Inline

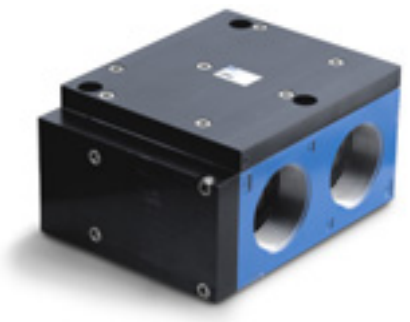
Series

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	**1 1/2" - 2" - 2 1/2"**	**60.0 C_v**	Inline	

400
67
69
ISO 2
ISO 3

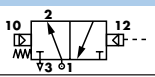
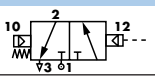
OPERATIONAL BENEFITS

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

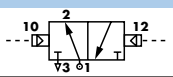
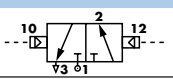


HOW TO ORDER

SINGLE OPERATOR

Port size	Air Spring	Single Operator NO valve	Single Operator NC valve
			
1 1/2"	Internal	69A-C3-DRA-RA	69A-A3-DRA-RA
2"		69A-C3-ERA-RA	69A-A3-ERA-RA
2 1/2"		69A-C3-FRA-RA	69A-A3-FRA-RA
1 1/2"	External	69A-C3-DRB-RE	69A-A3-DRB-RE
2"		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
		
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

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

MAC

Series 69

100% OF PRODUCTION TESTED 100%

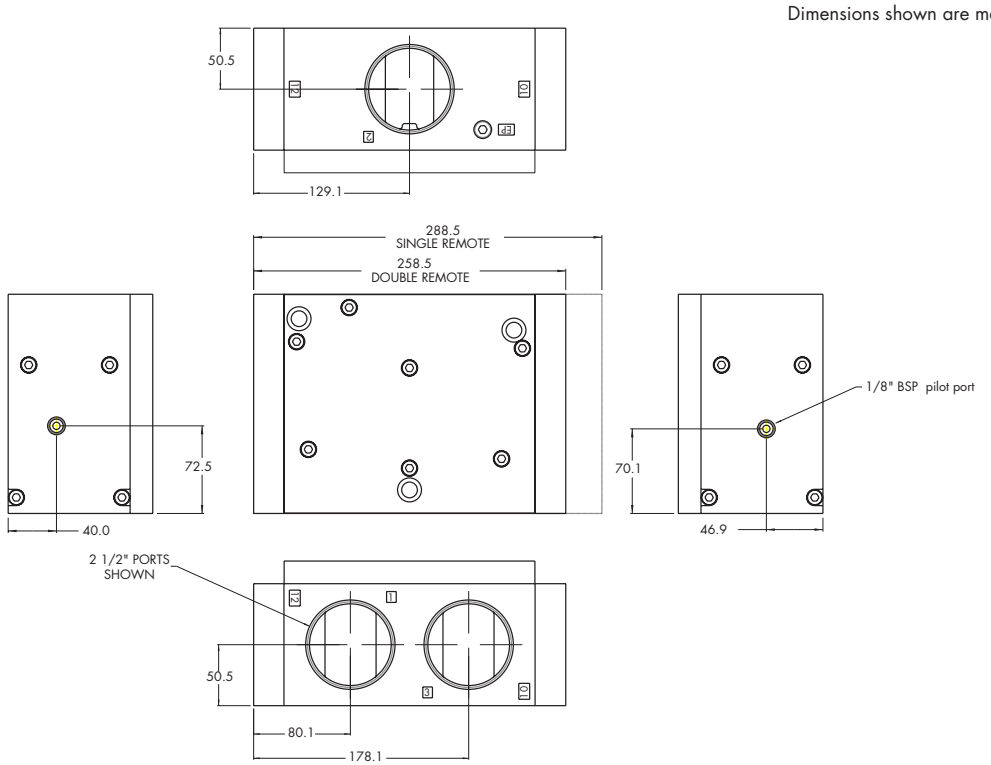
WARRANTY 18 MONTHS

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)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	Cv 60.0

DIMENSIONS

Dimensions shown are metric (mm)



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

Individual mounting

Valve only – no base	

Manifold mounting

Valve only – no base	

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

Series ISO 2

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2 - 5/3	**3/8" - 1/2"**	**3.1 C_v**	Valve only - no base	

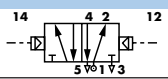
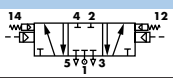
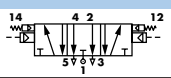
400
67
69
ISO 2
ISO 3

OPERATIONAL BENEFITS

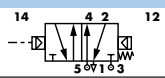
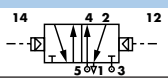
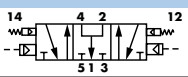
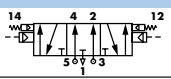
1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.

HOW TO ORDER

SINGLE PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-R2A-BACF	MV-R2A-BBAK	MV-R2A-BEAK	MV-R2A-BFAK
External	MV-R2A-BACG			

DUAL PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Open center	5/3 Pressure center
				
Internal port #3	MV-R2A-BCCH	MV-R2A-BDAK	MV-R2A-BHAK	MV-R2A-BGAK
Internal port #5	MV-R2A-BCCJ			
External	MV-R2A-BCCG			

Note: ISO series, valve and base are ordered separately, see page 235 for base code.

MAC

Series ISO 2

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

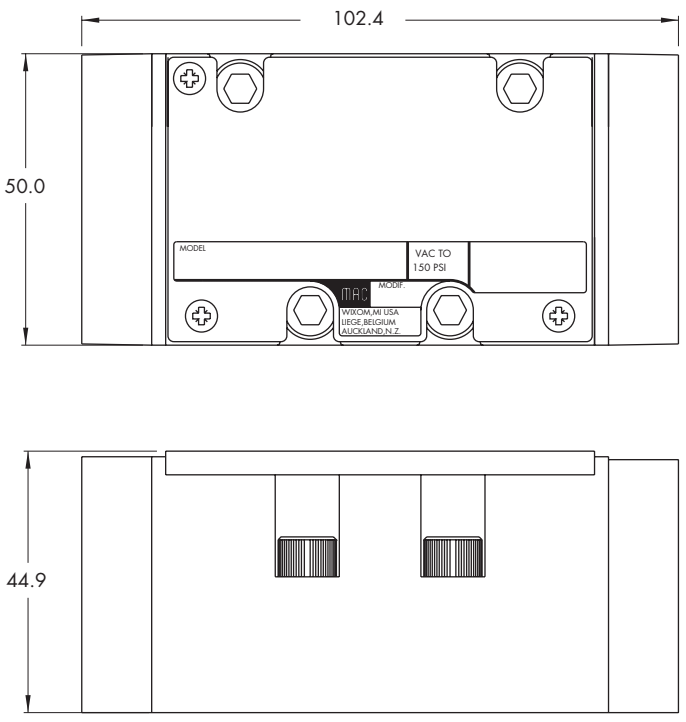
TECHNICAL DATA

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

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

DIMENSIONS

Dimensions shown are metric (mm)



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

Individual mounting

Valve only – no base	

Manifold mounting

Valve only – no base	

Series ISO 3

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5/2 - 5/3	**1/2" - 3/4"**	**6.2 C_v**	Valve only - no base	

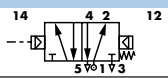
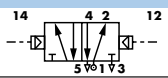
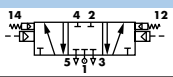
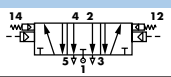
400
67
69
ISO 2
ISO 3

OPERATIONAL BENEFITS

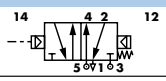
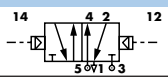
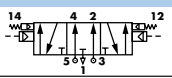
1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.

HOW TO ORDER

SINGLE PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-R3A-BACF	MV-R3A-BBAK	MV-R3A-BEAK	MV-R3A-BFAK
External	MV-R3A-BACG			

DUAL PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal port #3	MV-R3A-BCCH	MV-R3A-BDAK	MV-R3A-BGAK
Internal port #5	MV-R3A-BCCJ		
External	MV-R3A-BCCG		

Note: ISO series, valve and base are ordered separately, see page 239 for base code.

MAC

Series ISO 3

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

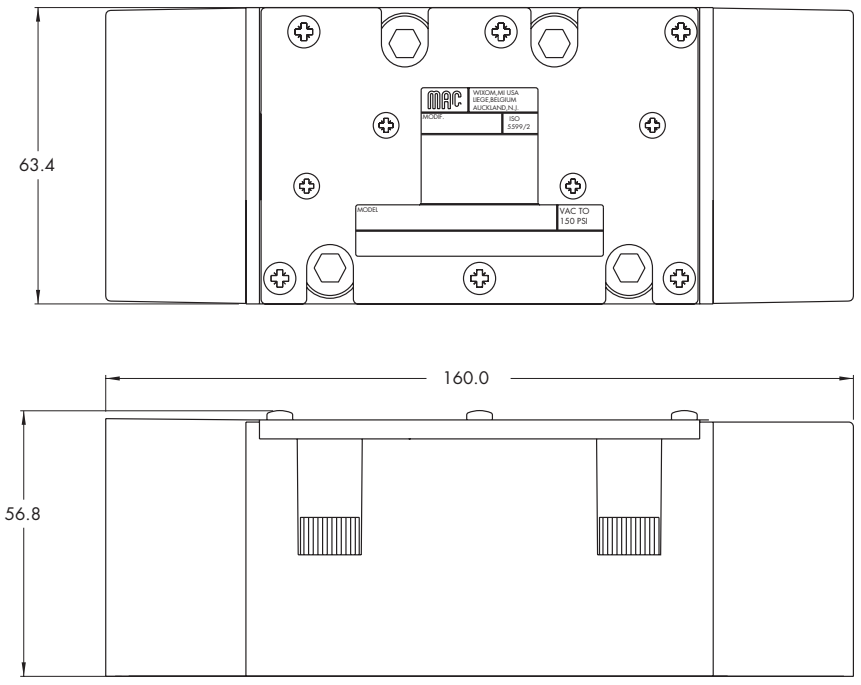
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single/double operator: 20 to 150 PSI 3 position: 30 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	1/2" : (5.4 C_v) - 3/4" : (6.2 C_v)

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

DIMENSIONS

Dimensions shown are metric (mm)



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

Section 3 Bases according to ISO standards

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

	Non plug-in individual / manifold base	Non plug-in base / manifold	Plug-in base / manifold	Series
	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

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

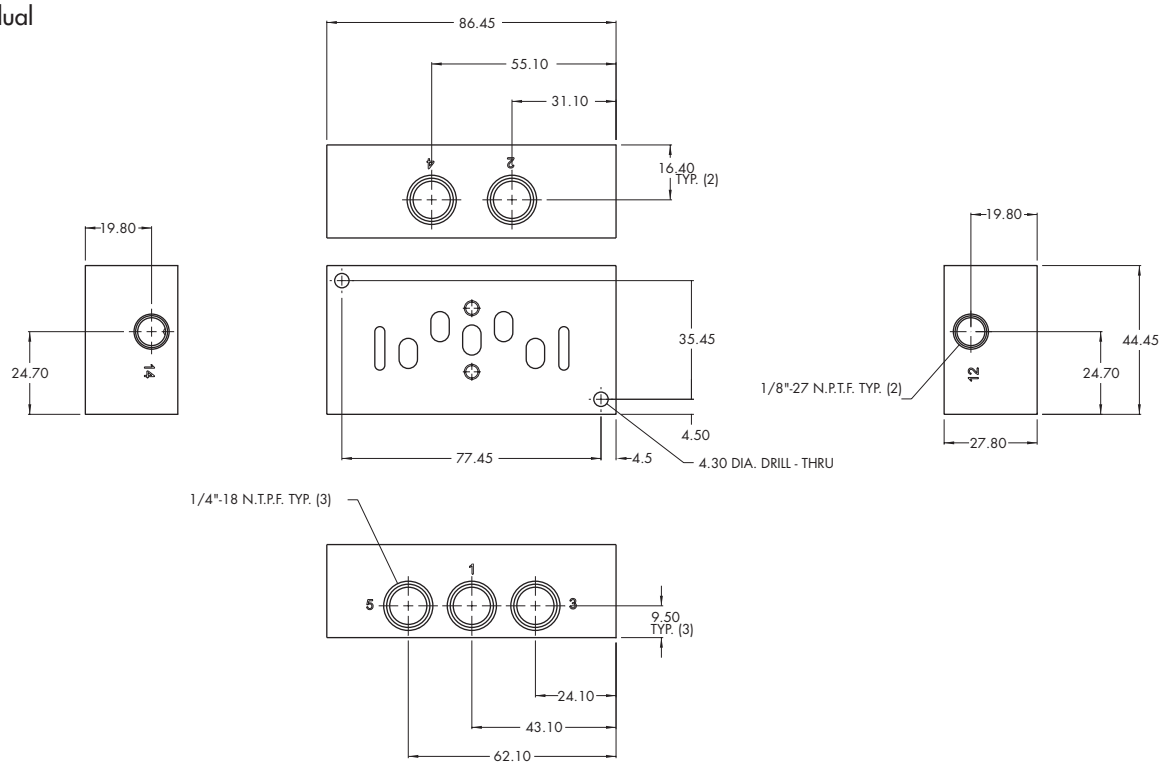
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

DIMENSIONS

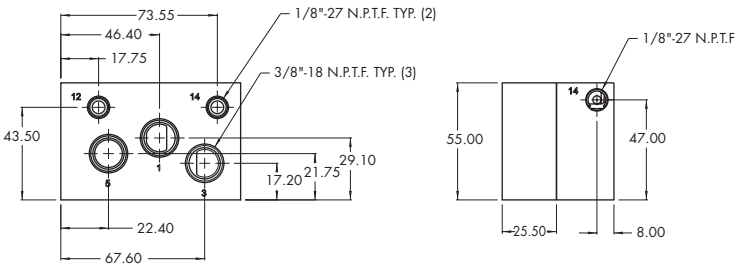
Dimensions shown are metric (mm)

Individual

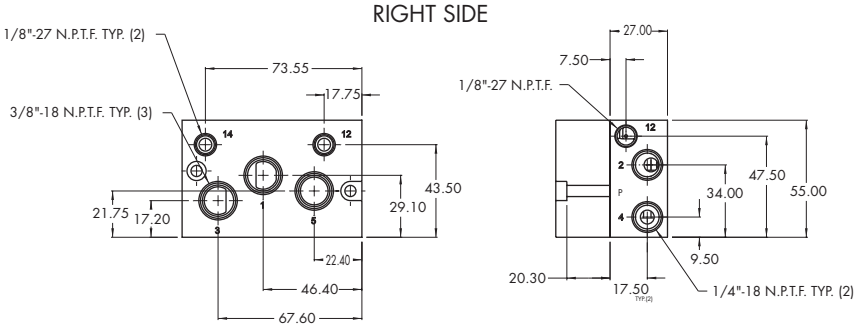


Manifold

LEFT SIDE



RIGHT SIDE



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

Non plug-in individual / manifold base

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

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

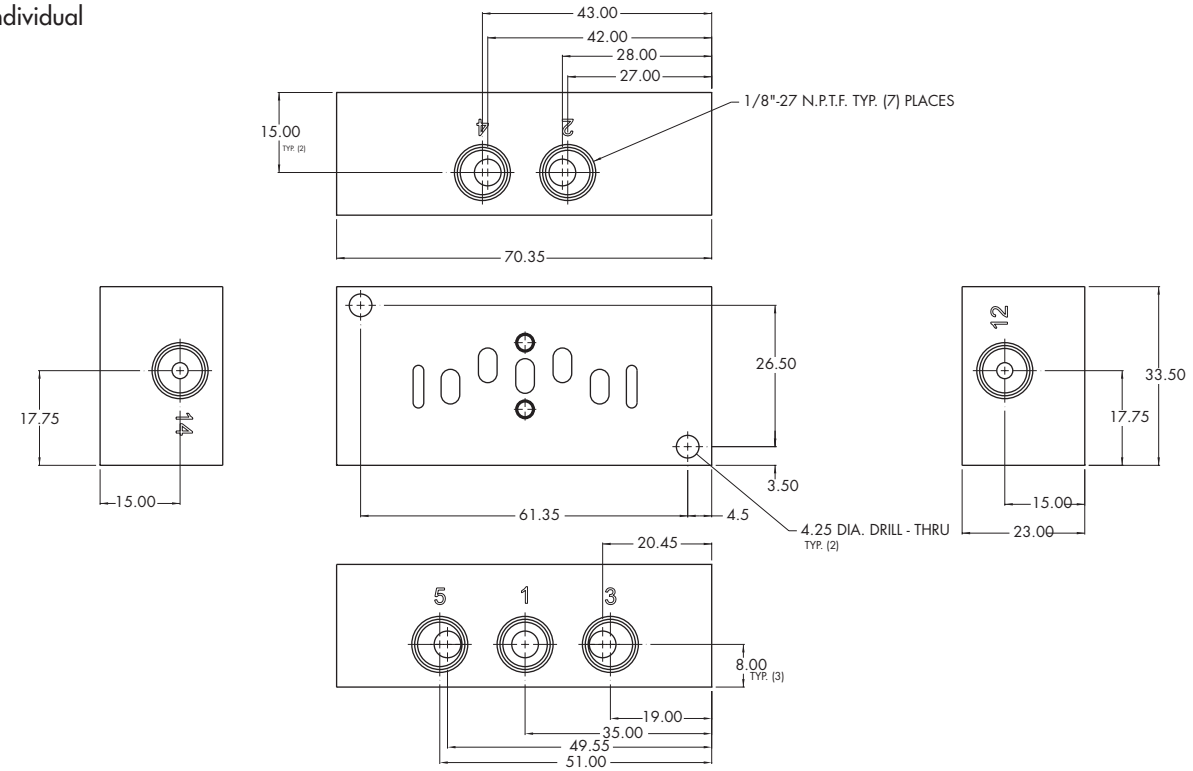
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

DIMENSIONS

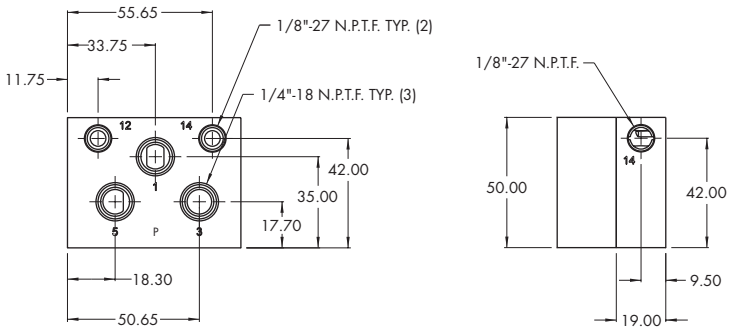
Dimensions shown are metric (mm)

Individual

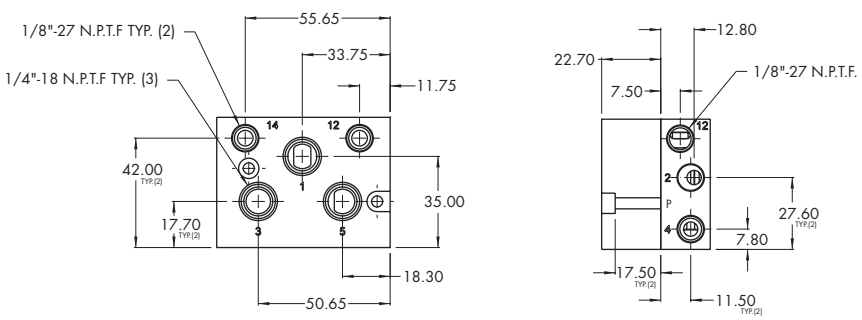


Manifold

LEFT SIDE



RIGHT SIDE



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

Non plug-in base / manifold

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.

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

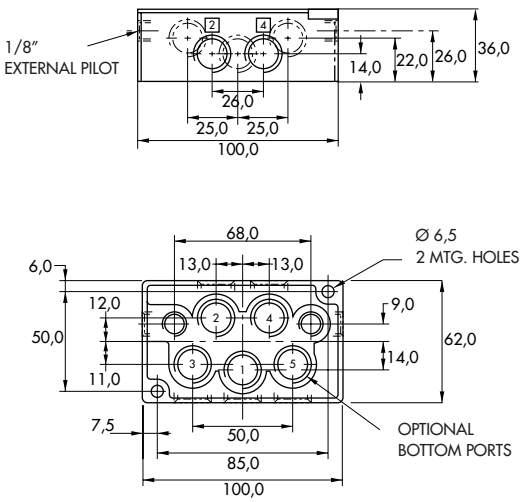
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

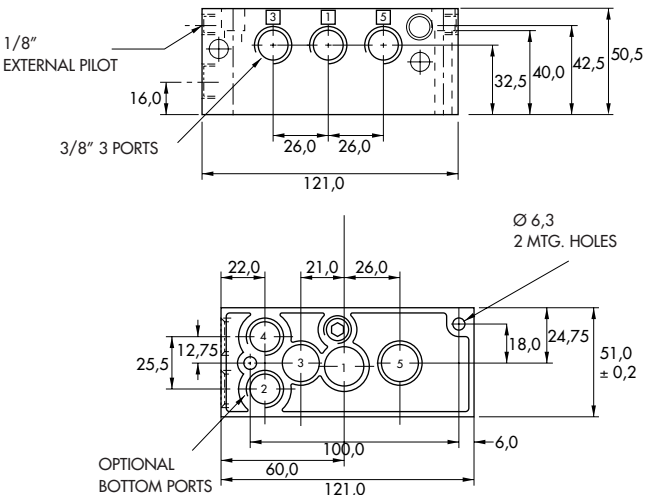
DIMENSIONS

Dimensions shown are metric (mm)

Individual DIN 5599/1



Manifold



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

Plug-in base / manifold

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
	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
	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-**22***x-x*

25 for 1/4" port – common external pilot
26 for 3/8" port – common external pilot

Terminal strip

MM-P1A-*xxx*-**A**
(N/A with light)

J wired for sgl solenoid
K wired for double solenoid

Base / Manifold option: light(s)

MX-P1A-*xxx-x***JA**

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.

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

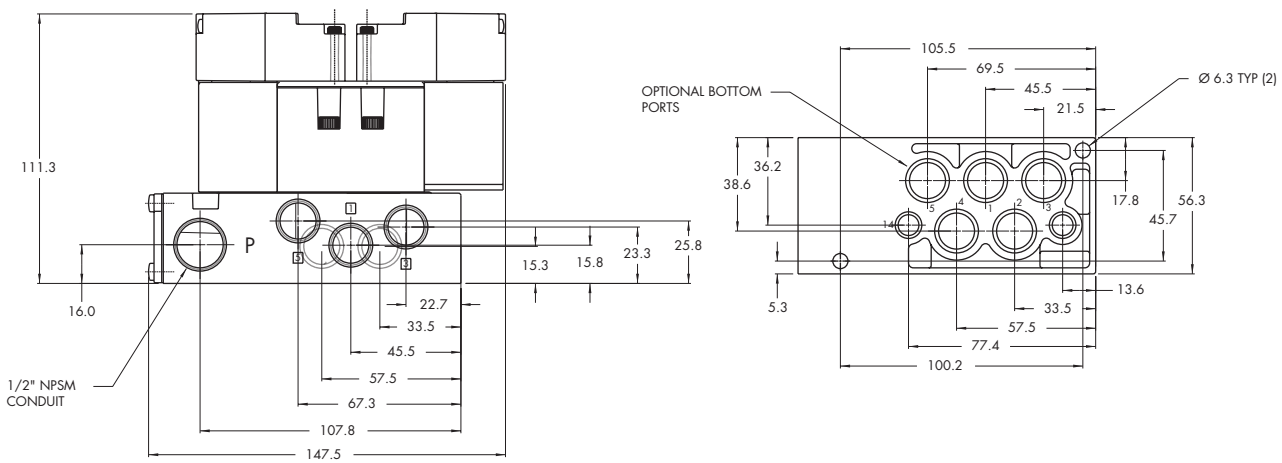
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

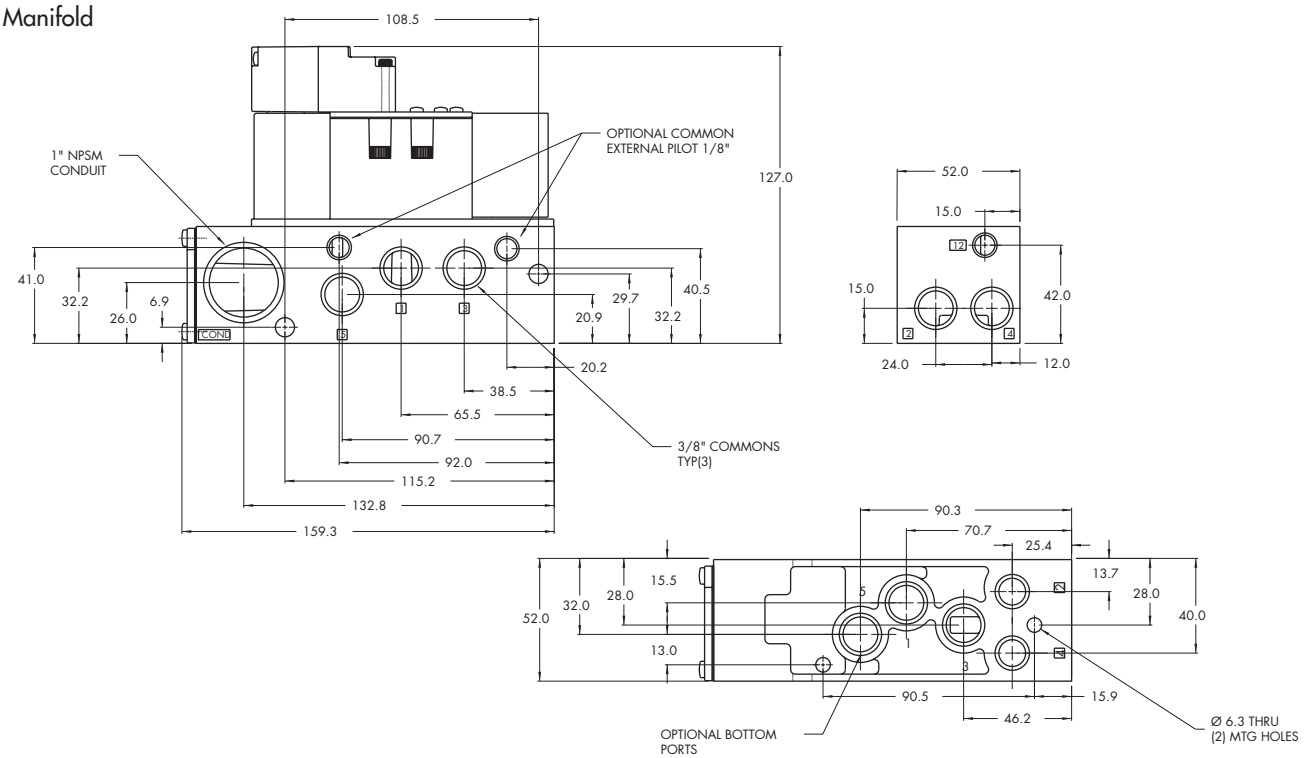
DIMENSIONS

Dimensions shown are metric (mm)

Individual



Manifold



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

Non plug-in base / manifold

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.

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

100% OF PRODUCTION TESTED 100%

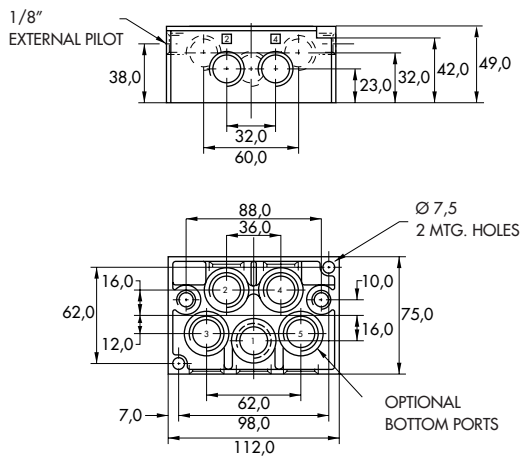
WARRANTY 18 MONTHS

DIMENSIONS

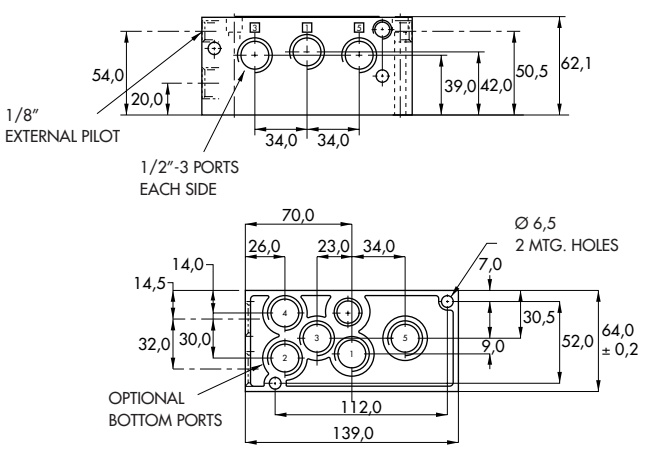
Dimensions shown are metric (mm)

Individual

DIN 5599/1



Manifold



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

Plug-in base / manifold

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
	Double solenoid	MB-P2A-221-B	MB-P2A-222-B	MB-P2A-223-B
1/2" NPTF	Single solenoid	MB-P2A-231-A	MB-P2A-232-A	MB-P2A-233-A
	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
	Double solenoid	MM-P2A-221-B	MM-P2A-222-B	MM-P2A-223-B
1/2" NPTF	Single solenoid	MM-P2A-231-A	MM-P2A-232-A	MM-P2A-233-A
	Double solenoid	MM-P2A-231-B	MM-P2A-232-B	MM-P2A-233-B

Note : Ports 1, 3 & 5 are always 1/2"

OPTIONS

Manifold options : External pilot

MM-P2A-**22***x-x*

- **25** for 3/8" port – common external pilot
- **26** for 1/2" port – common external pilot

Terminal strip

MM-P2A-*xxx*-**A**
(N/A with light)

- **J** wired for sgl solenoid
- **K** wired for double solenoid

Base / Manifold option: light(s)

MX-P2A-*xxx-x***JA**

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

Accessories:

M-P2001	Valve blanking plate.
N-P2004-01	Manifold fastening kit.
32839	Inlet/exhaust isolator plug.

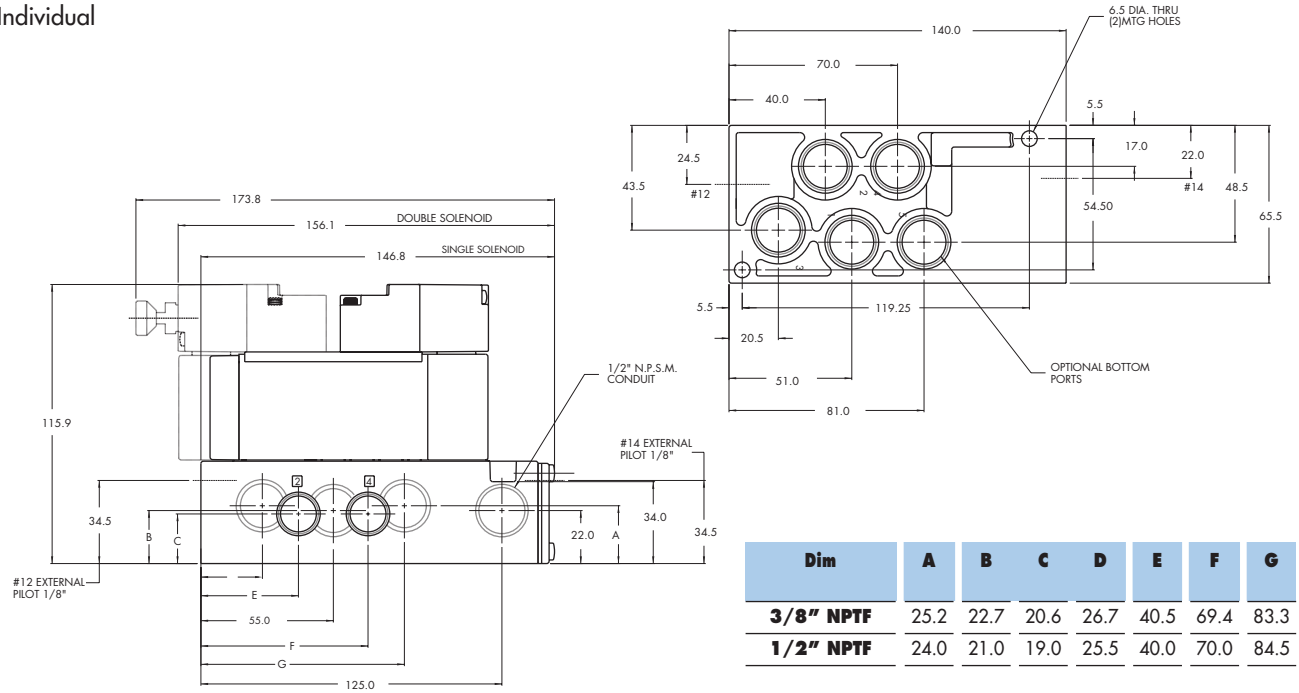
100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

DIMENSIONS

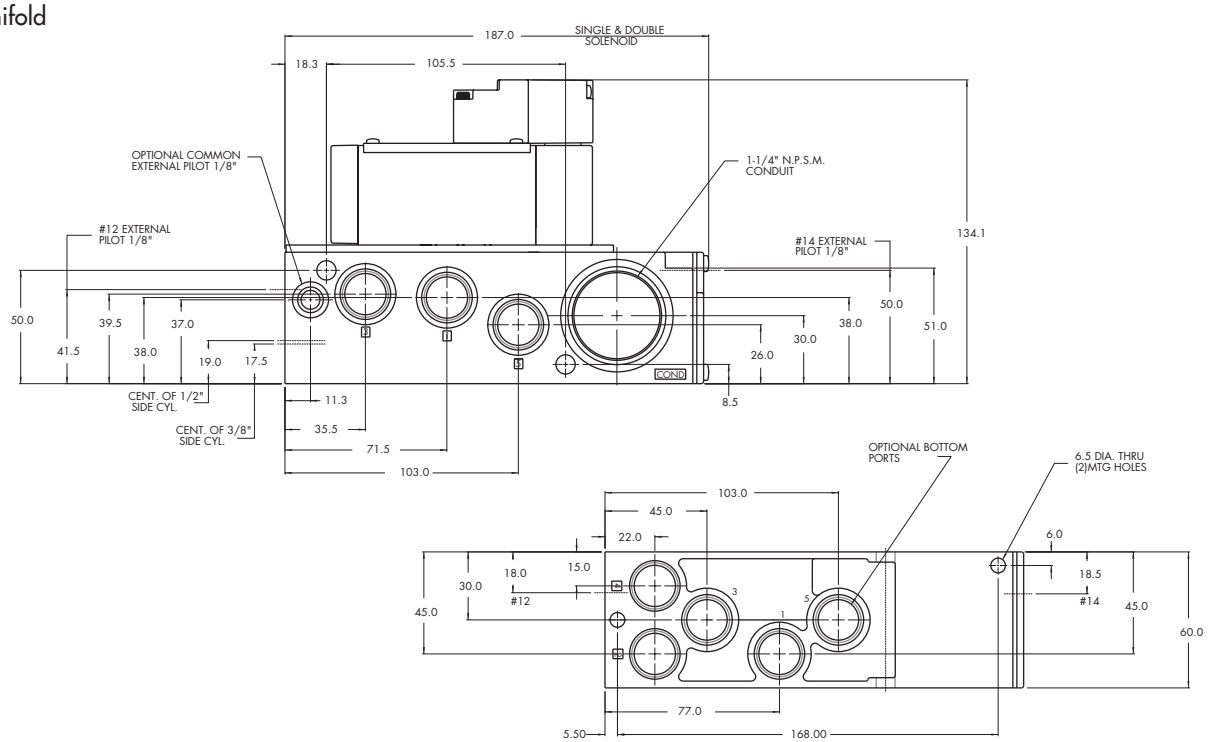
Dimensions shown are metric (mm)

Individual



Dim	A	B	C	D	E	F	G
3/8" NPTF	25.2	22.7	20.6	26.7	40.5	69.4	83.3
1/2" NPTF	24.0	21.0	19.0	25.5	40.0	70.0	84.5

Manifold



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

Non plug-in base / manifold

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.

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

100% OF PRODUCTION TESTED 100%

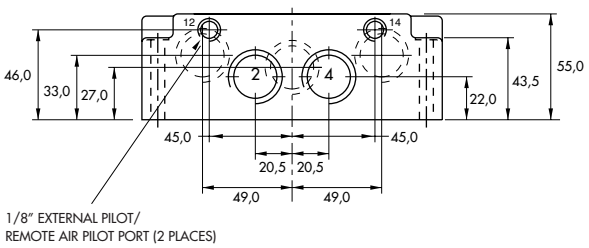
WARRANTY 18 MONTHS

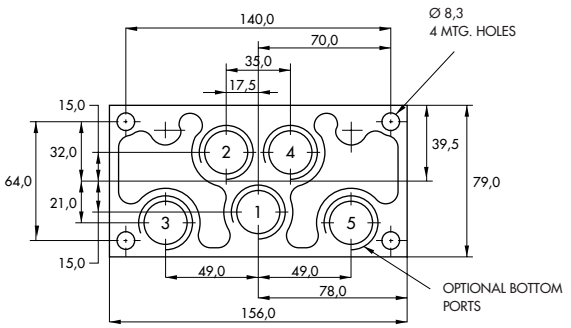
DIMENSIONS

Dimensions shown are metric (mm)

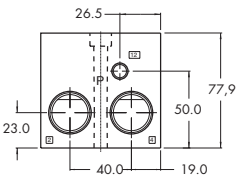
Individual

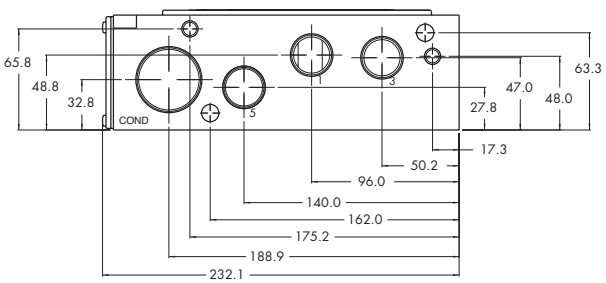
ISO DIN 5599/1

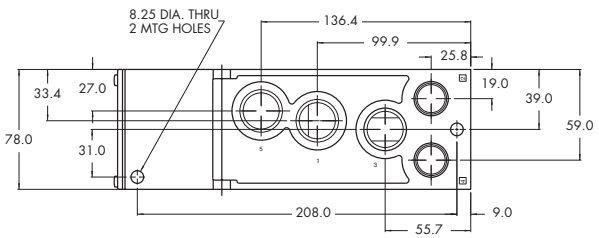




Manifold







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

Plug-in manifold

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
	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

Manifold options :

External pilot — MM-P3A-**22***x-x*

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

Terminal strip — MM-P3A-*xxx*-**A**

- **J** wired for sgl solenoid
- **K** wired for double solenoid

light(s) — MM-P3A-*xxx-x***JA**

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

Accessories:

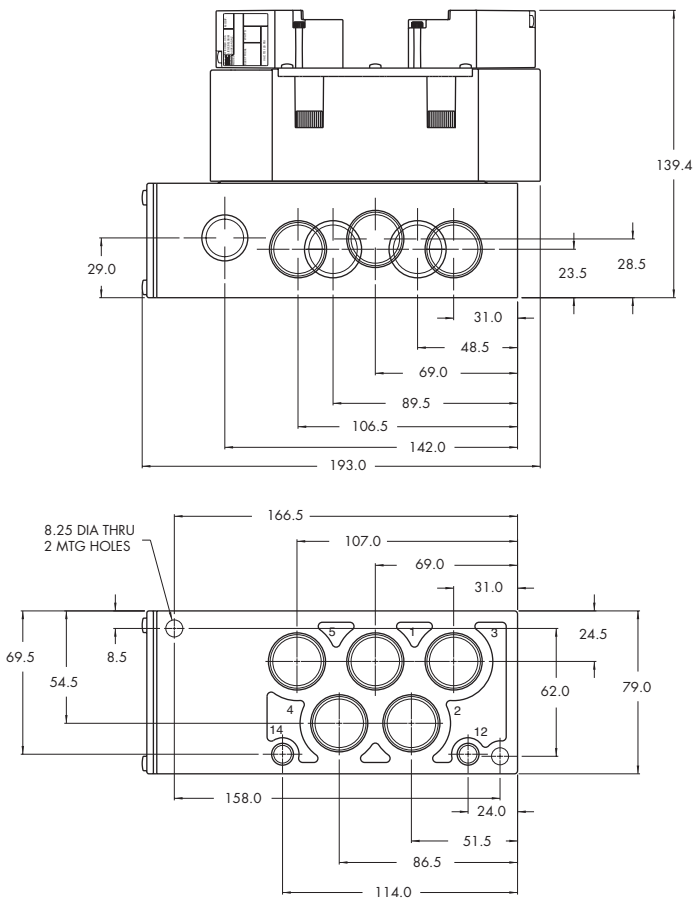
M-P3001	Valve blanking plate.
N-P3003-01	Manifold fastening kit.
32845	Inlet/exhaust isolator plug.

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

DIMENSIONS

Dimensions shown are metric (mm)



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

Section 4 Pressure regulators

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

Series

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

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.

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-F*xxx*

- **B** for slotted stem
- **K** for slotted stem with locknut

Pressure range :

PR37A-*xxx***A**

- **B** for 0 to 80 PSI
- **C** for 0 to 30 PSI

Series **PR37A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

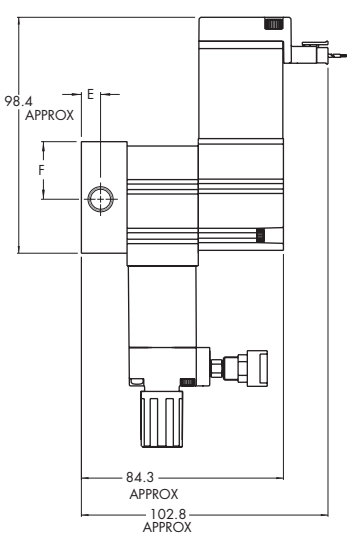
Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.4 C_v

Spare parts :

- Pressure regulator (less sandwich block) : PR37A-G0AA (knob), PR37A-C0AA (slotted stem), PR37A-L0AA (slotted stem with locknut)
- Gages : 24177-160 (0 to 160 PSI, 23 mm)
  24177-100 (0 to 100 PSI, 23 mm)
  24177-060 (0 to 60 PSI, 23 mm)

DIMENSIONS

Dimensions shown are metric (mm)



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

Series PR42B

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.

HOW TO ORDER

NON PLUG-IN SANDWICH REGULATORS

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot
No gage port	PR42B-BAAA	PR42B-BBAA
With gage Port	PR42B-BABA	PR42B-BBBA

PLUG-IN SANDWICH REGULATORS

Gage	Regulator "12" end Internal pilot	Regulator "12" end External pilot
No gage port	PR42B-AAAA	PR42B-ABAA
With gage Port	PR42B-AABA	PR42B-ABBA

Notes:
- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 42 series valve.
- When an internal pilot regulator is used with the 42 series valve, the valve should be ordered as external pilot and the base should be ordered as internal pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve and base are used with an internal pilot regulator, the pilot supply is regulated.

Example: Valve 42B-AM D -AA A -GxxP-xxx with PR42B-AAAA

- A: Internal pilot option in base
- D: External pilot option in valve

OPTIONS

Pressure range :

PR42B-AAA**A**

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

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

Series **PR42B**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.25 C_v

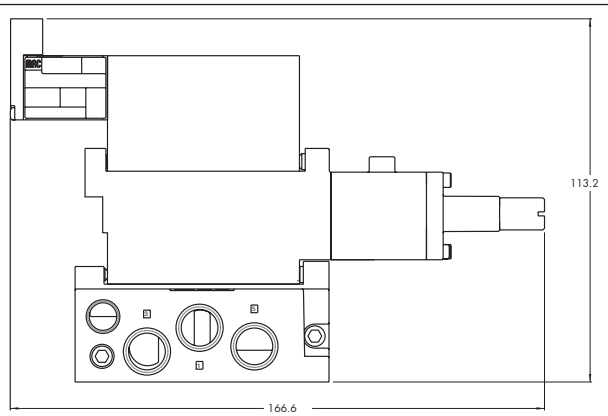
Spare parts :

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

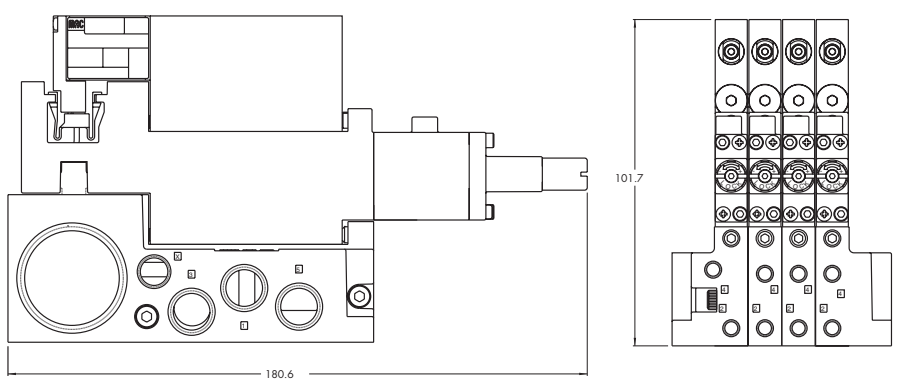
DIMENSIONS

Dimensions shown are metric (mm)

NON PLUG-IN



PLUG-IN



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

Sandwich-pressure regulator

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.
6. Single pressure regulator.

HOW TO ORDER

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

Gauge	For plug-in valves	For non plug-in valves
Gauge port (plugged)	PR46A-AAAA	PR46A-BAAA

OPTIONS

Pressure range :

PR46A-A**A**A **A**

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

- **A** Manual adjust with slotted screwdriver stem
- **B** Manual adjust with adjusting knob
- **C** Manual adjust with slotted screwdriver stem and locknut

- **0** Regulator only (No sandwich block)

Notes : gadges must be ordered separately, not included with regulator.
Recommended gage : 24165-150 (15 mm)

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PR46A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

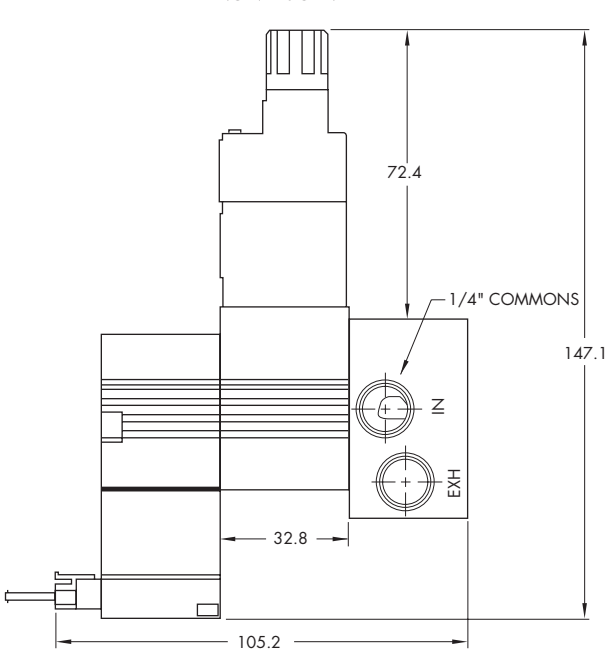
TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	Cv 0,21

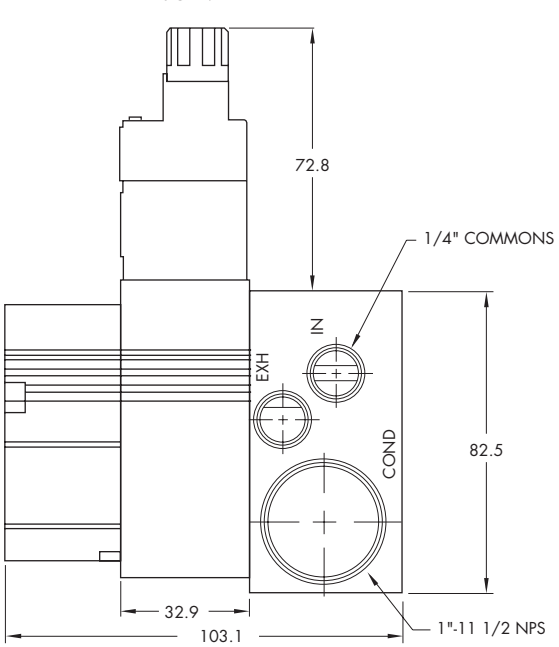
DIMENSIONS

Dimensions shown are metric (mm)

NON PLUG-IN



PLUG-IN



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

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.

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

Pressure range :

PR47A-*xxx***A**

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

Adjustment for : Plug-in regulator

PR47A-**E***xxx*

- **E** Knob
- **A** Screwdriver slot
- **J** Screwdriver slot with locknut

Non plug-in regulator

PR47A-**F***xxx*

- **F** Knob
- **B** Screwdriver slot
- **K** Screwdriver slot with locknut

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

MAC

Series **PR47A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

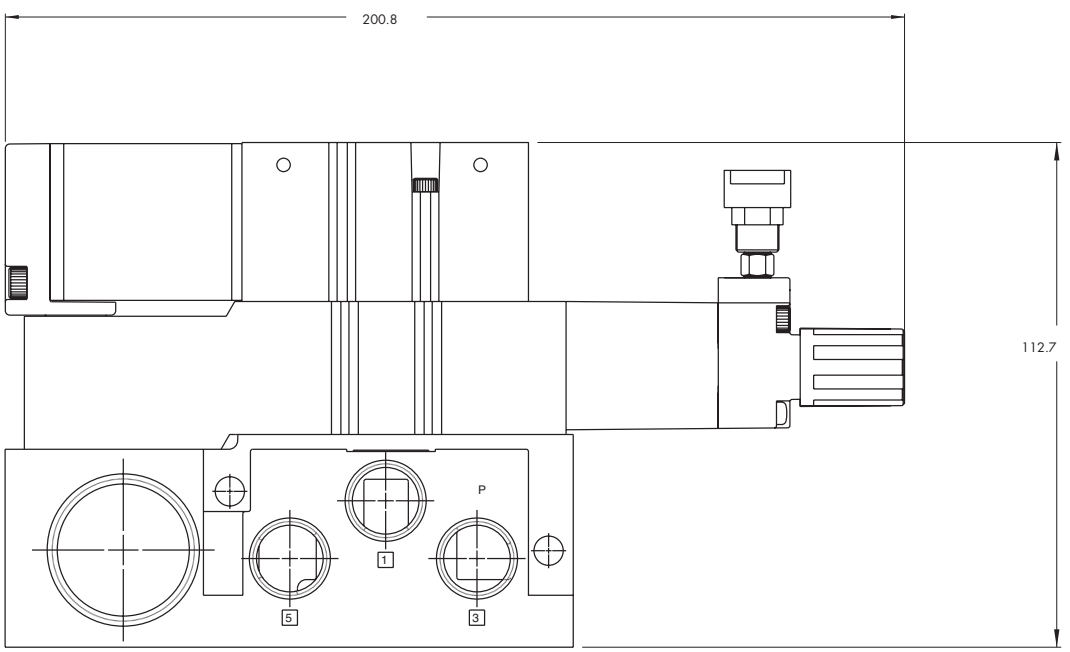
Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.4 C_v

Spare parts :

- Pressure regulator (less sandwich block) : PR47A-G0AA (knob), PR47A-C0AA (screwdriver slot), PR47A-L0AA (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

Dimensions shown are metric (mm)



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

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
PRP2B
PRA3C
PRP3B

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
Gage port	PR48B-AAAA	PR48B-ABAA

Notes:
- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 48 series valve.
- When an internal pilot regulator is used with the 48 series valve, the valve should be ordered as external pilot and the base should be ordered as internal pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve and base are used with an internal pilot regulator, the pilot supply is regulated.

Example: Valve 48B-AM D -AA A -GxxP-xxx with PR48B-AAAA
- A: Internal pilot option in base
- D: External pilot option in valve

OPTIONS

Pressure range :

PR48B-*xxx***A**

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

Adjustment for : Plug-in regulator

PR48B-**A***xxx*

- **A** Knob
- **D** Screwdriver slot
- **G** Screwdriver slot with locknut

Non plug-in regulator

PR48B-**B***xxx*

- **B** Knob
- **E** Screwdriver slot
- **H** Screwdriver slot with locknut

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

Series **PR48B**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.8 C_v

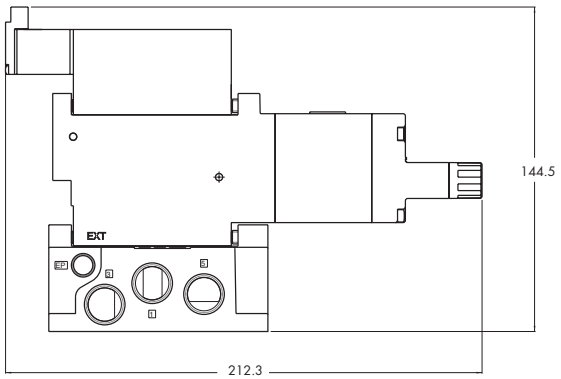
Spare parts :

- Pressure regulator (less sandwich block) : PR48B-C0AA (knob), PR48B-F0AA (screwdriver slot), PR48B-J0AA (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)

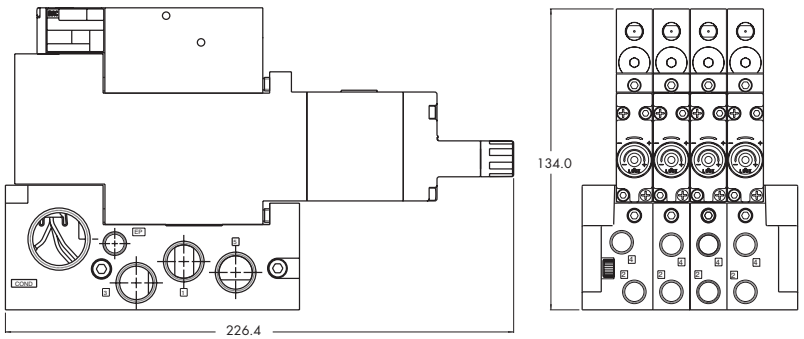
DIMENSIONS

Dimensions shown are metric (mm)

NON PLUG-IN



PLUG-IN



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

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.

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR92C-EAAA	PR92C-EBAA	PR92C-ECAA	PR92C-EDAA	PR92C-EEAA
Gage with face perpendicular to manual operator	PR92C-EABA	PR92C-EBBA	PR92C-ECBA	PR92C-EDBA	PR92C-EEBA
Gage with face parallel to manual operator	PR92C-EACA	PR92C-EBCA	PR92C-ECCA	PR92C-EDCA	PR92C-EECA

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR92C-GAAA	PR92C-GBAA	PR92C-GCAA	PR92C-GDAA	PR92C-GEAA
Gage with face perpendicular to manual operator	PR92C-GABA	PR92C-GBBA	PR92C-GCBA	PR92C-GDBA	PR92C-GEBA
Gage with face parallel to manual operator	PR92C-GACA	PR92C-GBCA	PR92C-GCCA	PR92C-GDCA	PR92C-GECA

* For use with dual pressure valves.

PLUG-IN OPTIONS

PR92C-E*xxx*

F for double solenoid valve

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PR92C**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

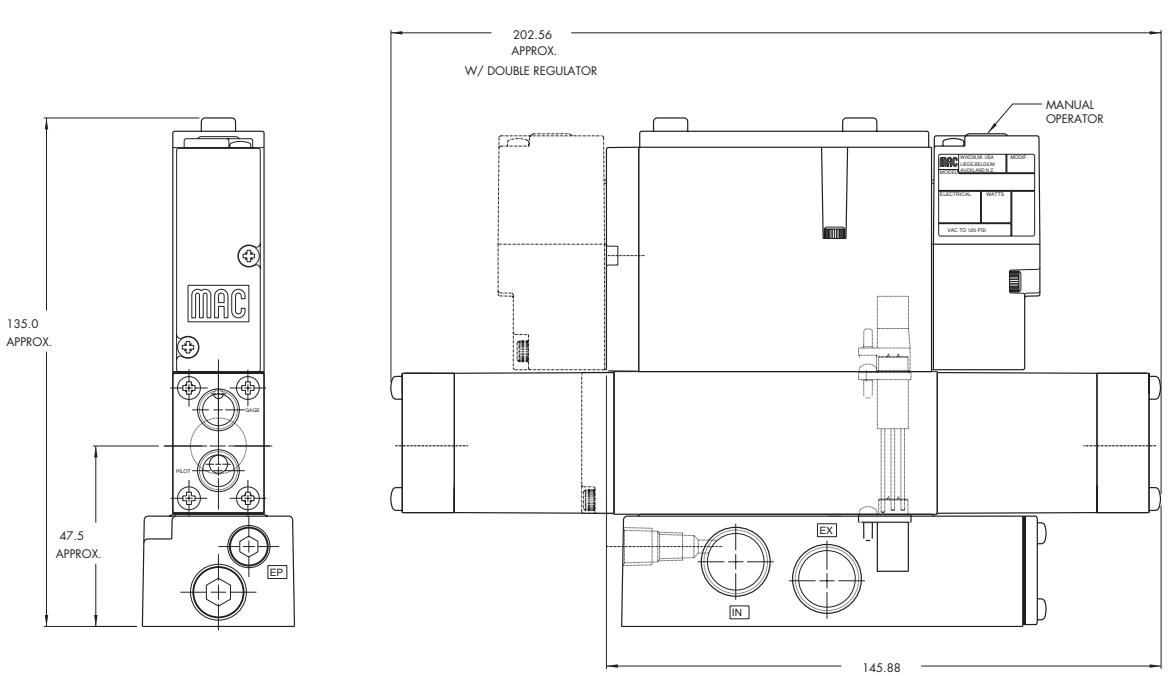
Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.8 C_v

Spare parts :

- R-92003 : regulator end plate kit • Gage kit 0 - 160 PSI: N-92006-01
- R-92003-01: regulator by-pass end plate kit
- Pressure regulator (less sandwich block) : PR92C-H0AA

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
No Gage	PR92C-JAAA	PR92C-JBAA	PR92C-JCAA	PR92C-JDAA	PR92C-JEAA
Gage with face perpendicular to manual operator	PR92C-JABA	PR92C-JBBA	PR92C-JCBA	PR92C-JDBA	PR92C-JEBA
Gage with face parallel to manual operator	PR92C-JACA	PR92C-JBCA	PR92C-JCCA	PR92C-JDCA	PR92C-JECA

Note: above models are coded for use with single solenoid valves

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

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
No Gage	PR92C-LAAA	PR92C-LBAA	PR92C-LCAA	PR92C-LDAA	PR92C-LEAA
Gage with face perpendicular to manual operator	PR92C-LABA	PR92C-LBBA	PR92C-LCBA	PR92C-LDBA	PR92C-LEBA
Gage with face parallel to manual operator	PR92C-LACA	PR92C-LBCA	PR92C-LCCA	PR92C-LDCA	PR92C-LECA

***** For use with dual pressure valves.

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

OPTIONS

Regulator less sandwich block

PR92C-x0xx

- **M** Knob
- **D** Slotted stem
- **S** Slotted stem with locknut

Other adjustment

PR92C-xxxx

- **A** Slotted stem, single solenoid
- **B** Slotted stem, double solenoid
- **C** Slotted stem, non plug-in
- **K** Knob, double solenoid
- **N** Slotted stem w/ locknut, single solenoid
- **P** Slotted stem w/ locknut, double solenoid
- **R** Slotted stem w/ locknut, non plug-in

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PR92C**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.8 C_v

Spare parts :

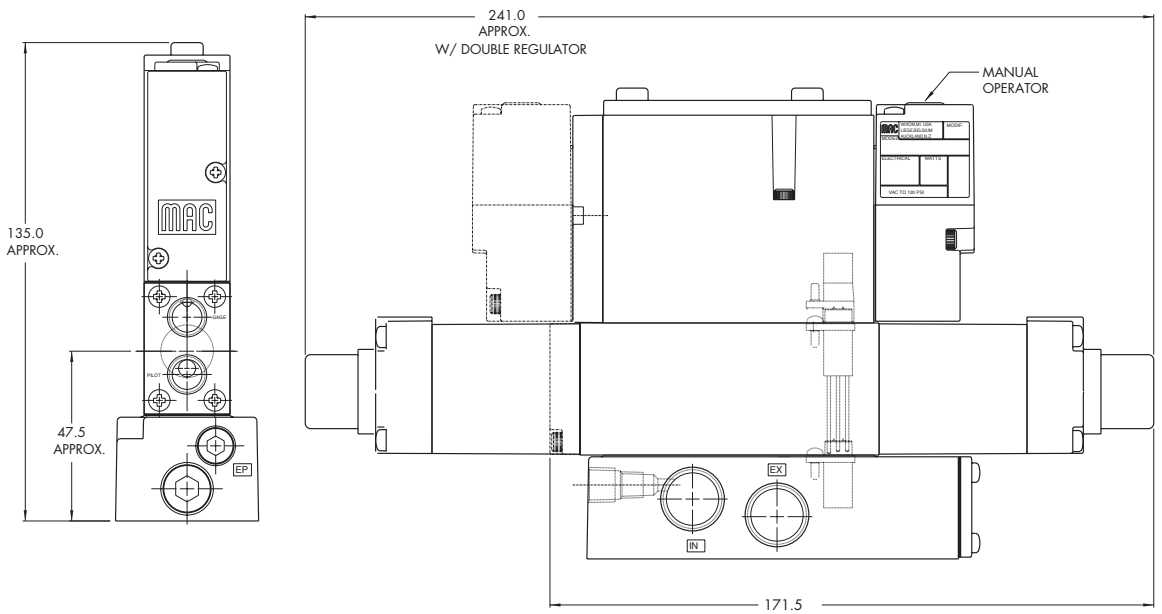
- R-92003 : end plate kit • R-92003-01: by-pass end plate kit
- Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02
- Gage kit 0 – 60 PSI : N-92006-03

Options:

- Pressure range: PR92C-xxxA (A 0 to 120 PSI)
  - B 0 to 80 PSI
  - C 0 to 30 PSI
  - D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end
  - E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end
  - F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end
  - G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end
  - H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end
  - J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

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.

OPTIONS

Regulator less sandwich block

PR92C-x0xx

- **M** Knob
- **D** Slotted stem
- **S** Slotted stem with locknut

Other adjustment

PR92C-xxxx

- **A** Slotted stem, single solenoid
- **B** Slotted stem, double solenoid
- **C** Slotted stem, non plug-in
- **K** Knob, double solenoid
- **N** Slotted stem w/ locknut, single solenoid
- **P** Slotted stem w/ locknut, double solenoid
- **R** Slotted stem w/ locknut, non plug-in

MAC

Series PR92C

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	0.8 C_v

Spare parts :

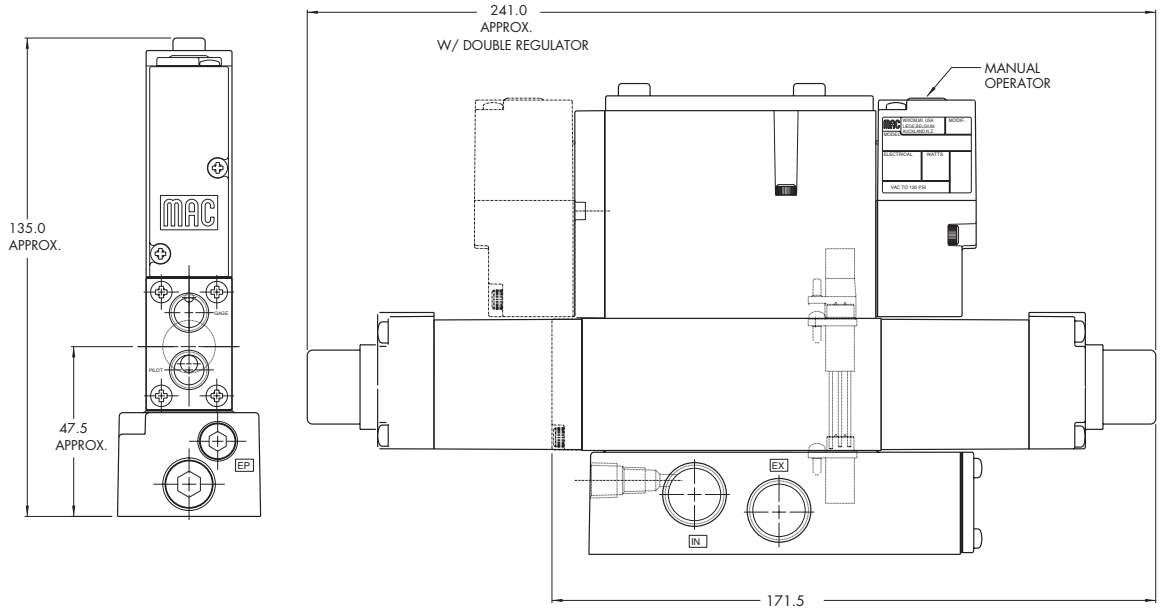
- R-92003 : end plate kit • R-92003-01: by-pass end plate kit
- Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02
- Gage kit 0 – 60 PSI : N-92006-03

Options :

- Pressure range: PR92C-xxxA (A 0 to 120 PSI)
  - B 0 to 80 PSI
  - C 0 to 30 PSI
  - D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end
  - E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end
  - F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end
  - G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end
  - H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end
  - J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS

Dimensions shown are metric (mm)



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

Series PR93A

Series

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.

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

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.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

Series **PR93A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

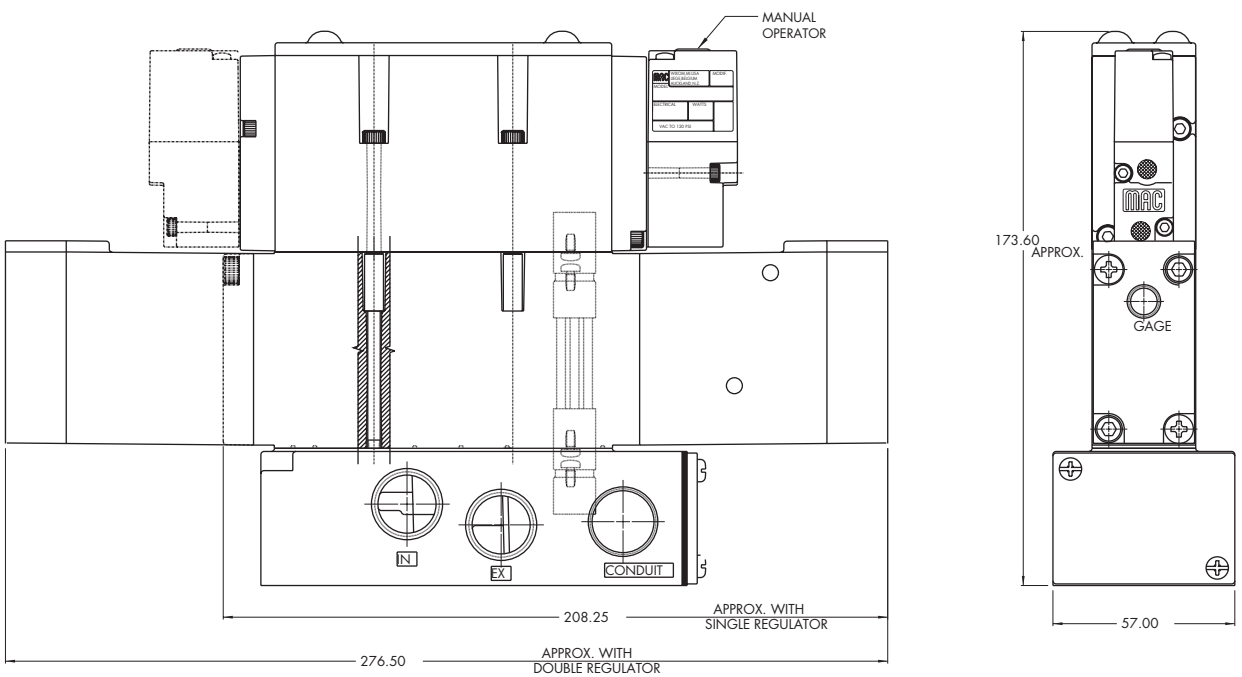
Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	2.4 C_v

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

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Regulator A end Single pressure	Regulator B end Single pressure	Regulator A * end with by-pass end plate B end	Regulator B * end with by-pass end plate A end	Regulator * both ends
Gage port only (plugged)	PR93A-GAAA	PR93A-GBAA	PR93A-GCAA	PR93A-GDAA	PR93A-GEAA
Gage with face perpendicular to manual operator	PR93A-GABA	PR93A-GBBA	PR93A-GCBA	PR93A-GDBA	PR93A-GEBA
Gage with face parallel to manual operator	PR93A-GACA	PR93A-GBCA	PR93A-GCCA	PR93A-GDCA	PR93A-GECA

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

* For use with dual pressure valves.
Note: Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page.

OPTIONS

Regulator less sandwich block

PR93A-*x*0*xx*

- **J** Knob
- **C** Slotted stem
- **M** Slotted stem with locknut

Other adjustment

PR93A-*xxxx*

- **A** Slotted stem, plug-in
- **B** Slotted stem, non plug-in
- **K** Slotted stem w/ locknut, plug-in
- **L** Slotted stem w/ locknut, non plug-in

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

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

MAC

Series **PR93A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	2.4 C_v

Spare parts :

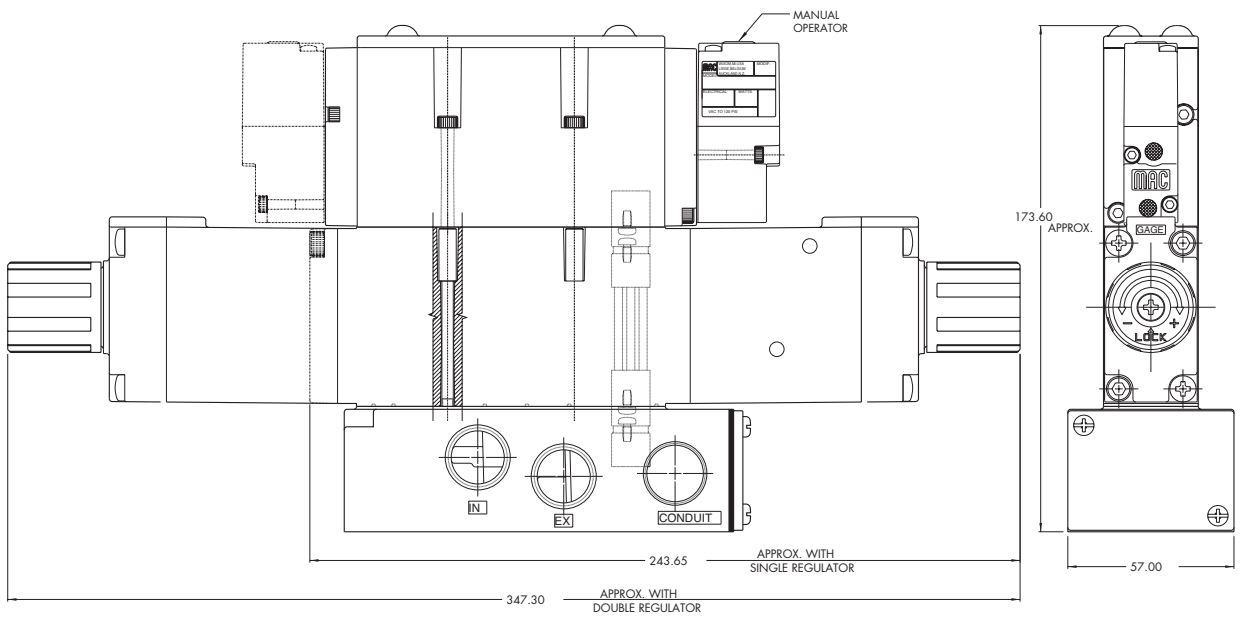
- Regulator end plate kit :R-93004 • Regulator by-pass end plate kit : R-93004-01.
- Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02
- Gage kit 60 PSI : N-92006-03

Option:

- Pressure range: PR93A-xxxA (A 0 to 120 PSI)
  - B 0 to 80 PSI
  - C 0 to 30 PSI
  - D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end
  - E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end
  - F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end
  - G 0 to 120 PSI "B" end, 0 to 30 PSI "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

Dimensions shown are metric (mm)



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

Series PR93A

Series

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.

HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gage	Select to A port Regulator A end By-pass plate B end	Select to B port Regulator B end By-pass plate A end	Select to A port Reg. both ends A end low press. B end high press.	Select to B port Reg. both ends A end high press. B end low press.
Gage port only (plugged)	PR93A-GPAA	PR93A-GRAA	PR93A-GSAA	PR93A-GTAA
Gage with face perpendicular to manual operator	PR93A-GPBA	PR93A-GRBA	PR93A-GSBA	PR93A-GTBA
Gage with face parallel to manual operator	PR93A-GPCA	PR93A-GRCA	PR93A-GSCA	PR93A-GTCA

REGULATORS FOR "NON PLUG-IN" VALVES

Gage	Select to A port Regulator A end By-pass plate B end	Select to B port Regulator B end By-pass plate A end	Select to A port Reg. both ends A end low press. B end high press.	Select to B port Reg. both ends A end high press. B end low press.
Gage port only (plugged)	PR93A-HPAA	PR93A-HRAA	PR93A-HSAA	PR93A-HTAA
Gage with face perpendicular to manual operator	PR93A-HPBA	PR93A-HRBA	PR93A-HSBA	PR93A-HTBA
Gage with face parallel to manual operator	PR93A-HPCA	PR93A-HRCA	PR93A-HSCA	PR93A-HTCA

Notes: - Regulating range for above models is 0 to 120 PSI. For other ranges, see technical data page
- Use single pressure valve for all above models.

OPTIONS

Regulator less sandwich block

PR93A-x0xx

- **J** Knob
- **C** Slotted stem
- **M** Slotted stem with locknut

Other adjustment

PR93A-xxxx

- **A** Slotted stem, plug-in
- **B** Slotted stem, non plug-in
- **K** Slotted stem w/ locknut, plug-in
- **L** Slotted stem w/ locknut, non plug-in

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

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

MAC

Series **PR93A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 120 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	2.4 C_v

Spare parts :

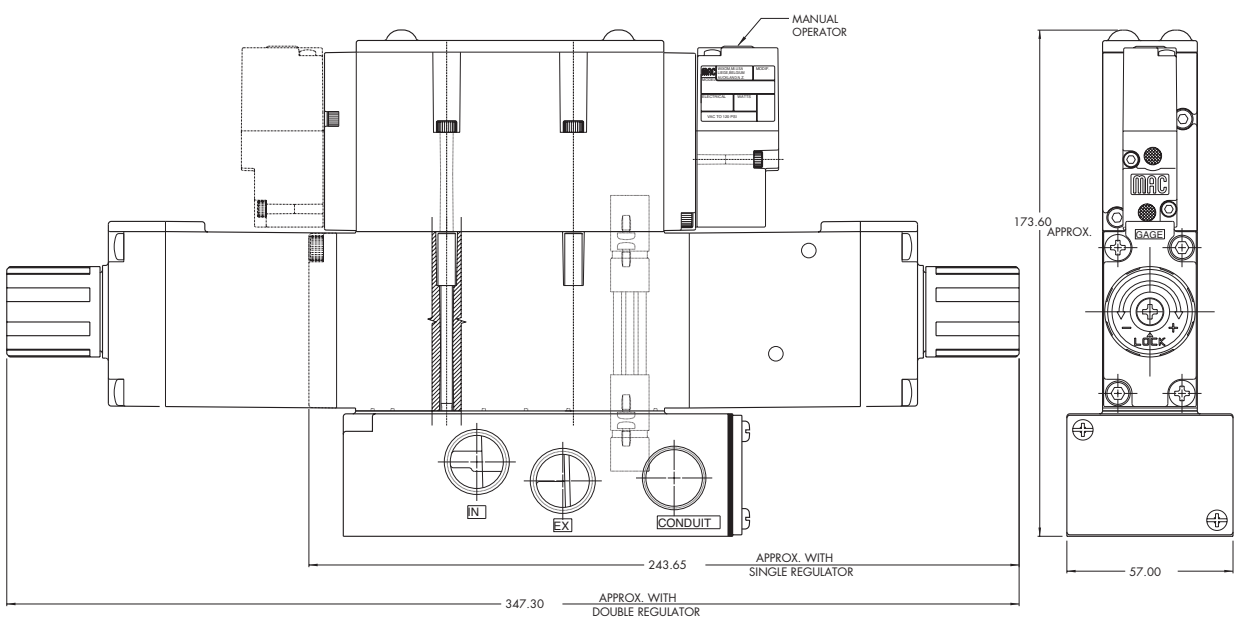
- Regulator end plate kit :R-93004 • Regulator by-pass end plate kit : R-93004-01.
- Gage kit 0 – 160 PSI : N-92006-01 • Gage kit 0 – 100 PSI : N-92006-02
- Gage kit 0 – 60 PSI : N-92006-03

Option:

- Pressure range: PR93A-xxxA (A 0 to 120 PSI)
  - B 0 to 80 PSI
  - C 0 to 30 PSI
  - D 0 to 120 PSI "A" end, 0 to 80 PSI "B" end
  - E 0 to 120 PSI "B" end, 0 to 80 PSI "A" end
  - F 0 to 120 PSI "A" end, 0 to 30 PSI "B" end
  - G 0 to 120 PSI "B" end, 0 to 30 PSI "A" end
  - H 0 to 80 PSI "A" end, 0 to 30 PSI "B" end
  - J 0 to 80 PSI "B" end, 0 to 30 PSI "A" end

DIMENSIONS

Dimensions shown are metric (mm)



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

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

HOW TO ORDER

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end *	Dual pressure Regulator 14 end with by-pass 12 end *	Dual pressure Regulator both ends *
Internal	PRA01A-AAAA	PRA01A-ABAA	PRA01A-ADAA	PRA01A-AEAA
External	PRA01A-BAAA	PRA01A-BBAA	PRA01A-BDAA	PRA01A-BEAA

Above models are for manual adjust with knob
For other manual adjustments and pressure ranges, see Options.

Note: Add –9 after part number for regulator block assembled to valve.
* To be used with dual pressure valves.

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
- **L** 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 "12" 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
- **J** 0 to 80 PSI "12" end - 0 to 30 PSI "14" end

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PRA01A**

100% OF PRODUCTION TESTED 100%

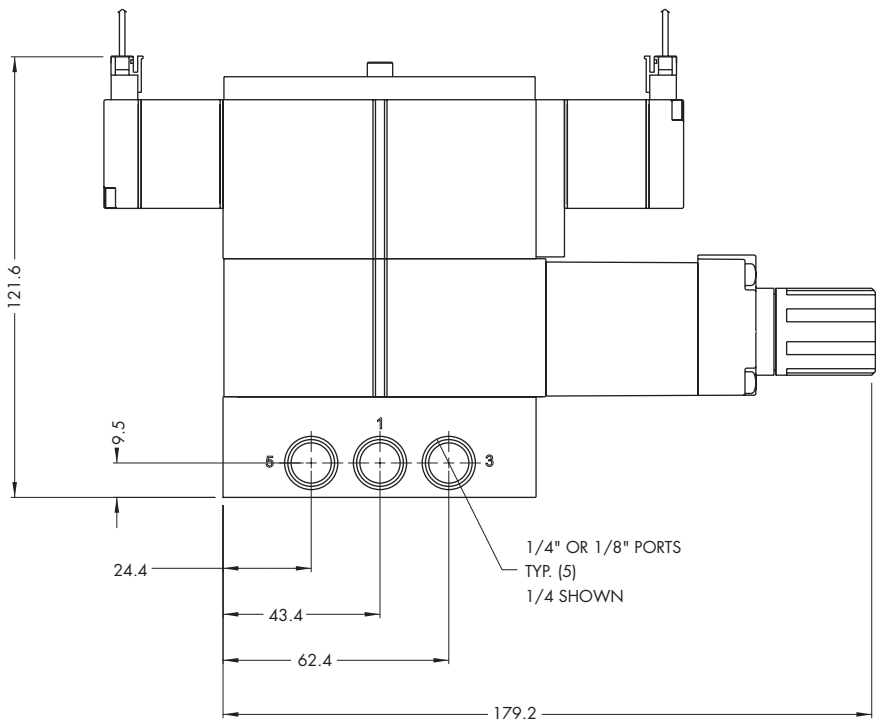
WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure supply :	Higher than maximum regulated pressure (max. 8,5 bar)
Regulating range :	0 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)

DIMENSIONS

Dimensions shown are metric (mm)



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

Non 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

HOW TO ORDER

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end *	Dual pressure Regulator 14 end with by-pass 12 end *	Dual pressure Regulator both ends *
Internal	PRA01A-DAAA	PRA01A-DBAA	PRA01A-DDAA	PRA01A-DEAA
External	PRA01A-EAAA	PRA01A-EBAA	PRA01A-EDAA	PRA01A-EEAA

Note : Only pressure range available for air adjust regulator is 0-120 PSI.
* To be used with dual pressure valves.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

MAC

Series **PRA01A**

100% OF PRODUCTION TESTED 100%

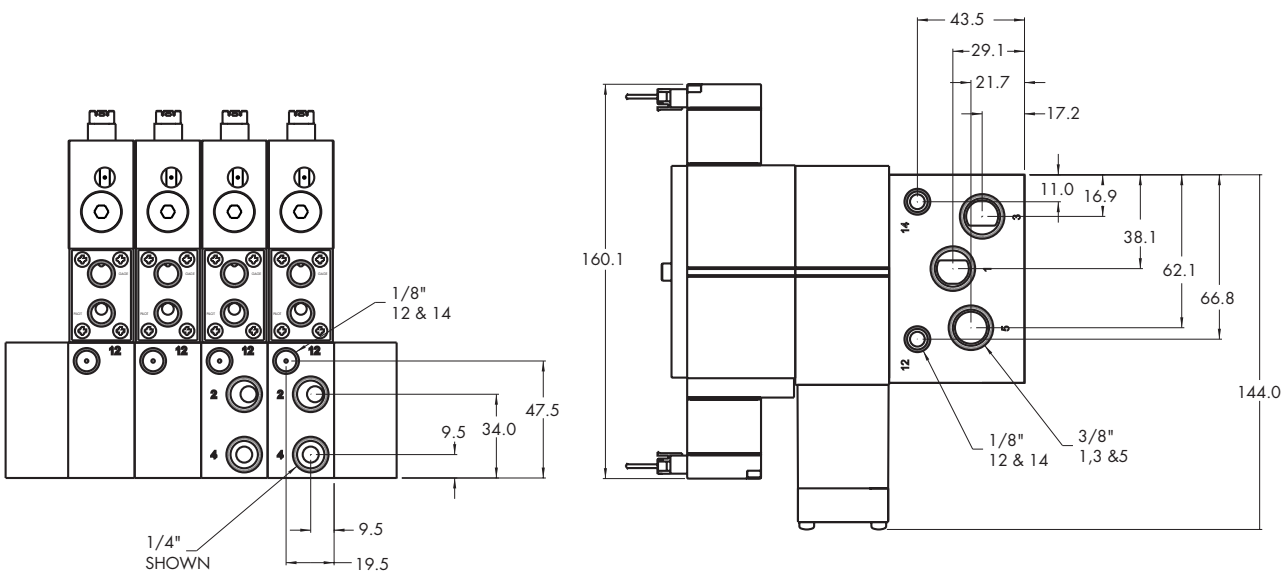
WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	Higher than maximum regulated pressure
Regulating range :	0 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)

DIMENSIONS

Dimensions shown are metric (mm)



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

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

HOW TO ORDER

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end *	Dual pressure Regulator 14 end with by-pass 12 end *	Dual pressure Regulator both ends *
Internal	PRA02A-AAAA	PRA02A-ABAA	PRA02A-ADAA	PRA02A-AEAA
External	PRA02A-BAAA	PRA02A-BBAA	PRA02A-BDAA	PRA02A-BEAA

Above models are for manual adjust with knob
For other manual adjustments and pressure ranges, see Options.

Note: Add –9 after part number for regulator block assembled to valve.
* To be used with dual pressure valves.

OPTIONS

Adjustments :

PRA02A – ***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
- **L** Manual adjust with screwdriver slot with locknut – External pilot

Regulated Pressure range :

PRA02A – ***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 "12" 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
- **J** 0 to 80 PSI "12" end - 0 to 30 PSI "14" end

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

MAC

Series **PRA02A**

100% OF PRODUCTION TESTED 100%

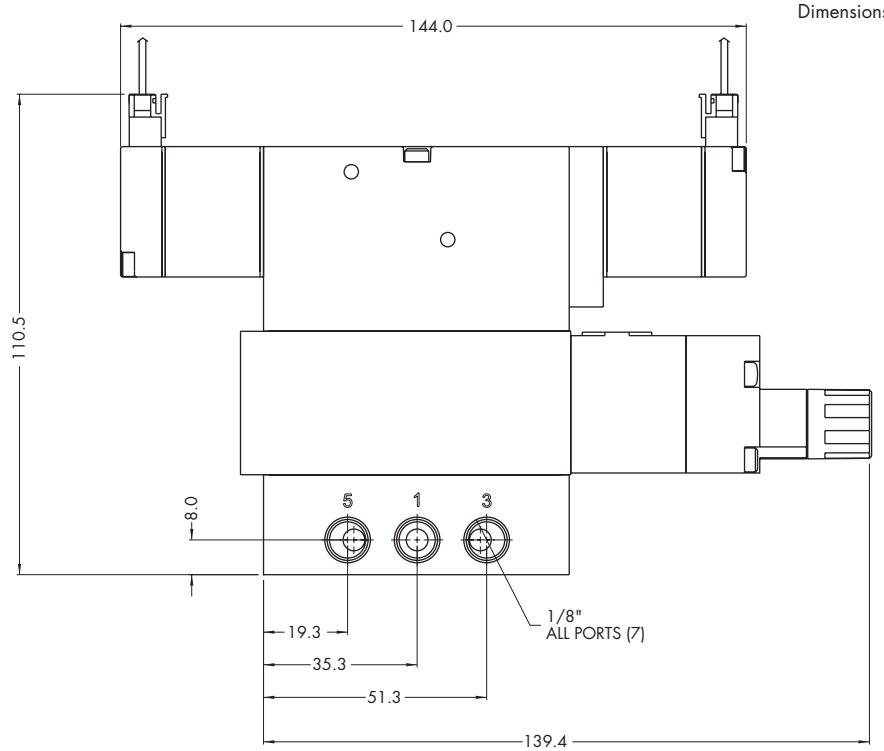
WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure supply :	Higher than maximum regulated pressure
Regulating range :	0 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)

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

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 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-HAAA	PRA1A-HCAA	PRA1A-HBAA	PRA1A-HDAA	PRA1A-HEAA
Gage perpendicular to regulator(s)	PRA1A-HABA	PRA1A-HCBA	PRA1A-HBBA	PRA1A-HDBA	PRA1A-HECA
Gage parallel to regulator(s)	PRA1A-HADA	PRA1A-HCDA	PRA1A-HBDA	PRA1A-HDDA	PRA1A-HEEA

* - To be used with dual pressure valves.
Note : regulating range for above models is 0-120 PSI. For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35336.

ADJUSTMENT OPTIONS

PRA1A-***xxxx***

- **A** for slotted stem adjustment (internal pilot)
- **B** for slotted stem adjustment (external/remote air)
- **K** for slotted stem with locknut (internal pilot)
- **L** for slotted stem with locknut (external/remote air)

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

MAC

Series **PRA1A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.0 C_v

Spare parts :

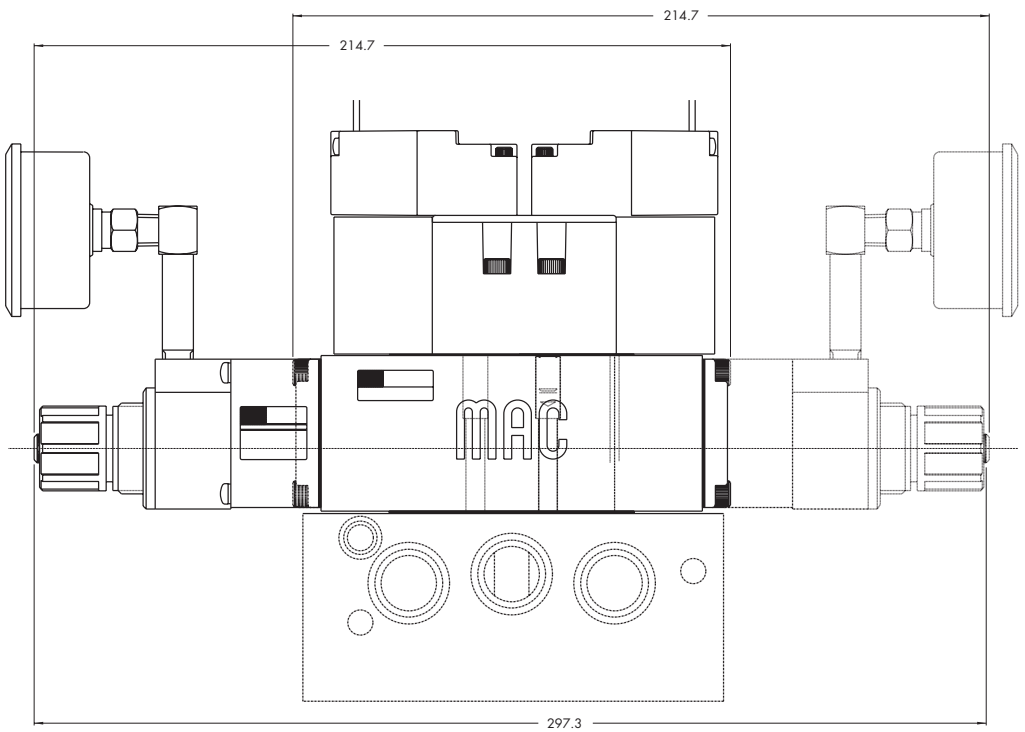
- Pressure regulator (less sandwich block) : PRA1A-J0AA (KNOB), PRA1A-C0AA (SLOTTED STEM), PRA1A-M0AA (SLOTTED STEM WITH LOCKNUT).
- Gage : N-82016-01 (0-120 PSI perpendicular)
  N-82016-02 (0-120 PSI parallel)
  N-82016-03 (0-80 PSI perpendicular)
  N-82016-04 (0-80 PSI parallel)
  N-82016-05 (0-30 PSI perpendicular)
  N-82016-06 (0-30 PSI parallel)

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 "12" end - 0 to 30 PSI on "14" end
Replace by H	- 0 to 80 PSI on "14" end - 0 to 30 PSI on "12" end
Replace by J	- 0 to 80 PSI on "12" end - 0 to 30 PSI on "14" end

DIMENSIONS

Dimensions shown are metric (mm)



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

Series PRA1A

Series

Non plug-in sandwich pressure regulator with air pilot adjust

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.

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

* - 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.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

Series **PRA1A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

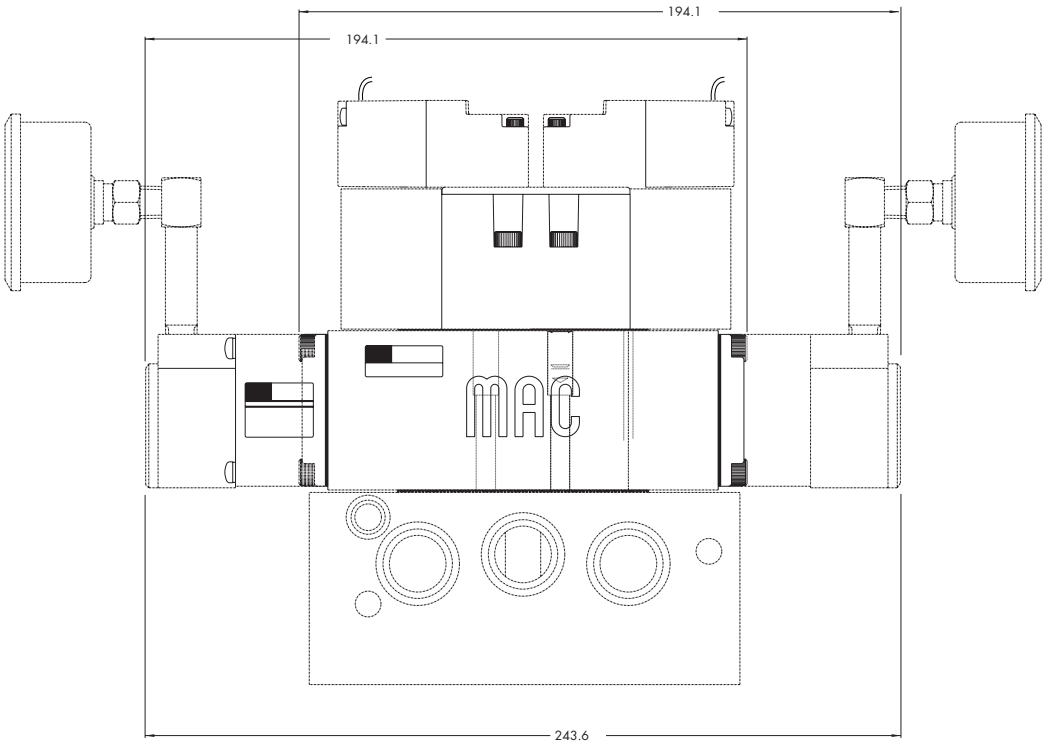
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.0 C_v

Spare parts :

- Pressure regulator (less sandwich block) : PRA1A-F0AA.
- Gage : N-82016-01 (0-120 PSI perpendicular)
  N-82016-02 (0-120 PSI parallel)

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
Gage port only	PRP1A-GAKA	PRP1A-GCKA	PRP1A-GBKA	PRP1A-GDKA	PRP1A-GEKA
Gage perpendicular to manual operator	PRP1A-GABA	PRP1A-GCBA	PRP1A-GBBA	PRP1A-GDBA	PRP1A-GECA
Gage parallel to manual operator	PRP1A-GADA	PRP1A-GCDA	PRP1A-GBDA	PRP1A-GDDA	PRP1A-GEEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP1A-HAKA	PRP1A-HCKA	PRP1A-HBKA	PRP1A-HDKA	PRP1A-HEKA
Gage perpendicular to manual operator	PRP1A-HABA	PRP1A-HCBA	PRP1A-HBBA	PRP1A-HDBA	PRP1A-HECA
Gage parallel to manual operator	PRP1A-HADA	PRP1A-HCDA	PRP1A-HBDA	PRP1A-HDDA	PRP1A-HEEA

* For use with dual pressure valves.
Note: Regulating range for above models is 0 -120 PSI. For other ranges see technical data page.

ADJUSTMENT OPTIONS

PRP1A-*XXXX*

- **A** for slotted stem adjustment (internal pilot)
- **B** for slotted stem adjustment (external/remote air)
- **K** for slotted stem with locknut (internal pilot)
- **L** for slotted stem with locknut (external/remote air)

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.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

MAC

Series **PRP1A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

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 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.1 C_v

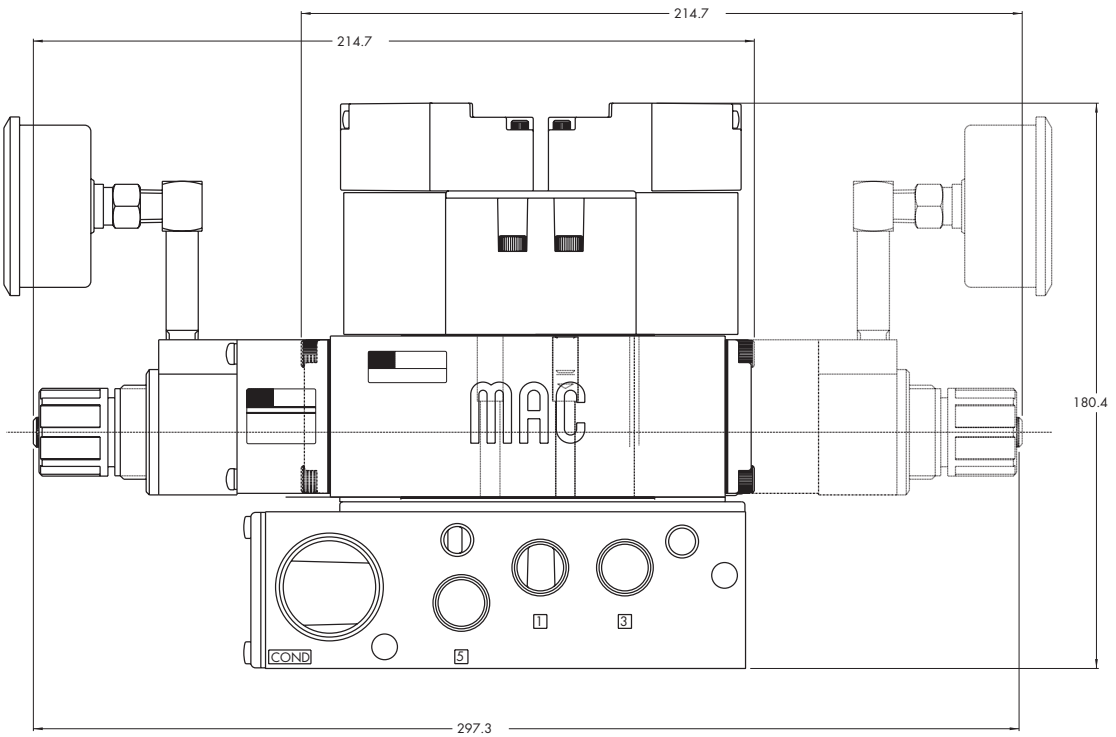
Spare parts : • Pressure regulator (less sandwich block) : PRP1A-J0KA (knob), PRP1A-C0KA (slotted stem)
PRP1A-M0KA (slotted stem with locknut)

Regulating range options : PRP1A-XXXA

- Replace by B - 0 to 80 PSI
- Replace by C - 0 to 30 PSI
- Replace by D - 0 to 120 PSI on "14" end - 0 to 80 PSI on "12" end
- Replace by E - 0 to 120 PSI on "12" end - 0 to 80 PSI on "14" end
- Replace by F - 0 to 120 PSI on "14" end - 0 to 30 PSI on "12" end
- Replace by G - 0 to 120 PSI on "12" end - 0 to 30 PSI on "14" end
- Replace by H - 0 to 80 PSI on "14" end - 0 to 30 PSI on "12" end
- Replace by J - 0 to 80 PSI on "12" end - 0 to 30 PSI on "14" end

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
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	PRP1A-ECBA	PRP1A-EBBA	PRP1A-EDBA	PRP1A-EECA
Gage parallel to manual operator	PRP1A-EADA	PRP1A-ECDA	PRP1A-EBDA	PRP1A-EDDA	PRP1A-EEEA

* - To be used with dual pressure valves.

Notes:
1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PRP1A**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

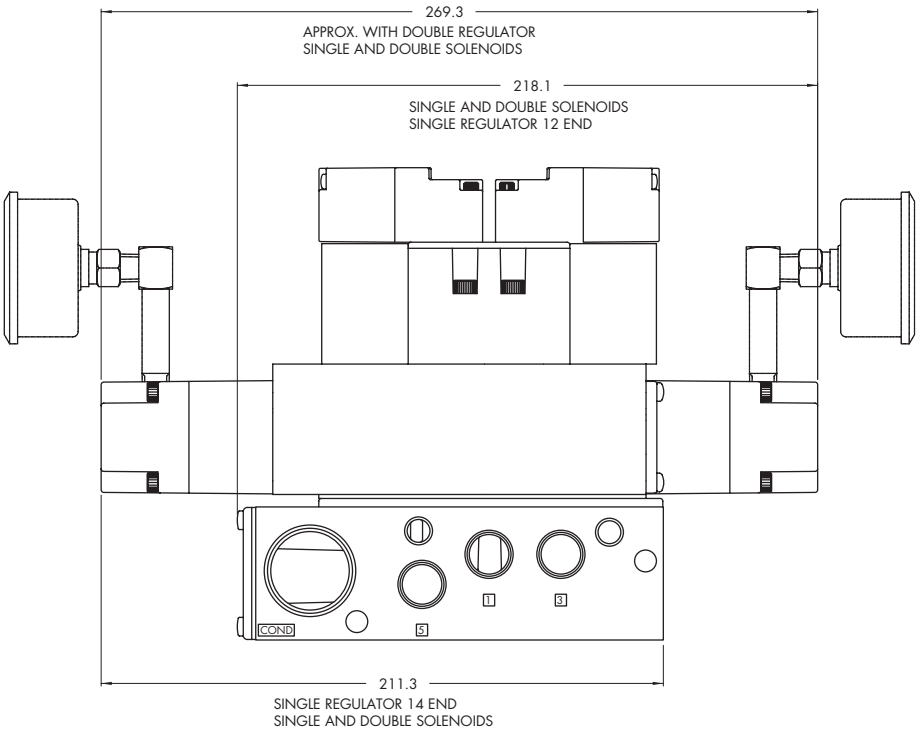
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.1 C_v

Spare parts :

- Pressure regulator (less sandwich block): PRP1A-F0KA
- Regulator block to base mounting tie rod: 19496

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-1AAA	PRA2D-1EAA	PRA2D-1BAA	PRA2D-1FAA	PRA2D-1JAA
Non-filled gage on regulator(s)	PRA2D-1ADA	PRA2D-1EDA	PRA2D-1BDA	PRA2D-1FDA	PRA2D-1JEA
Non-filled gage opposite to regulator	PRA2D-1CDA	PRA2D-1GDA	PRA2D-1DDA	PRA2D-1HDA	-----
Glycerine filled gage on regulator(s)	PRA2D-1ABA	PRA2D-1EBA	PRA2D-1BBA	PRA2D-1FBA	PRA2D-1JCA
Glycerine filled gage opposite to regulator	PRA2D-1CBA	PRA2D-1GBA	PRA2D-1DBA	PRA2D-1HBA	-----

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-2AAA	PRA2D-2EAA	PRA2D-2BAA	PRA2D-2FAA	PRA2D-2JAA
Non-filled gage on regulator(s)	PRA2D-2ADA	PRA2D-2EDA	PRA2D-2BDA	PRA2D-2FDA	PRA2D-2JEA
Non-filled gage opposite to regulator	PRA2D-2CDA	PRA2D-2GDA	PRA2D-2DDA	PRA2D-2HDA	-----
Glycerine filled gage on regulator(s)	PRA2D-2ABA	PRA2D-2EBA	PRA2D-2BBA	PRA2D-2FBA	PRA2D-2JCA
Glycerine filled gage opposite to regulator	PRA2D-2CBA	PRA2D-2GBA	PRA2D-2DBA	PRA2D-2HBA	-----

* - To be used with dual pressure valves.
Note : regulating range for above models is 0-150 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 #19177.

ADJUSTMENT OPTIONS

PRA2D-*xxxx*

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

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PRA2D**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	2.3 C_v

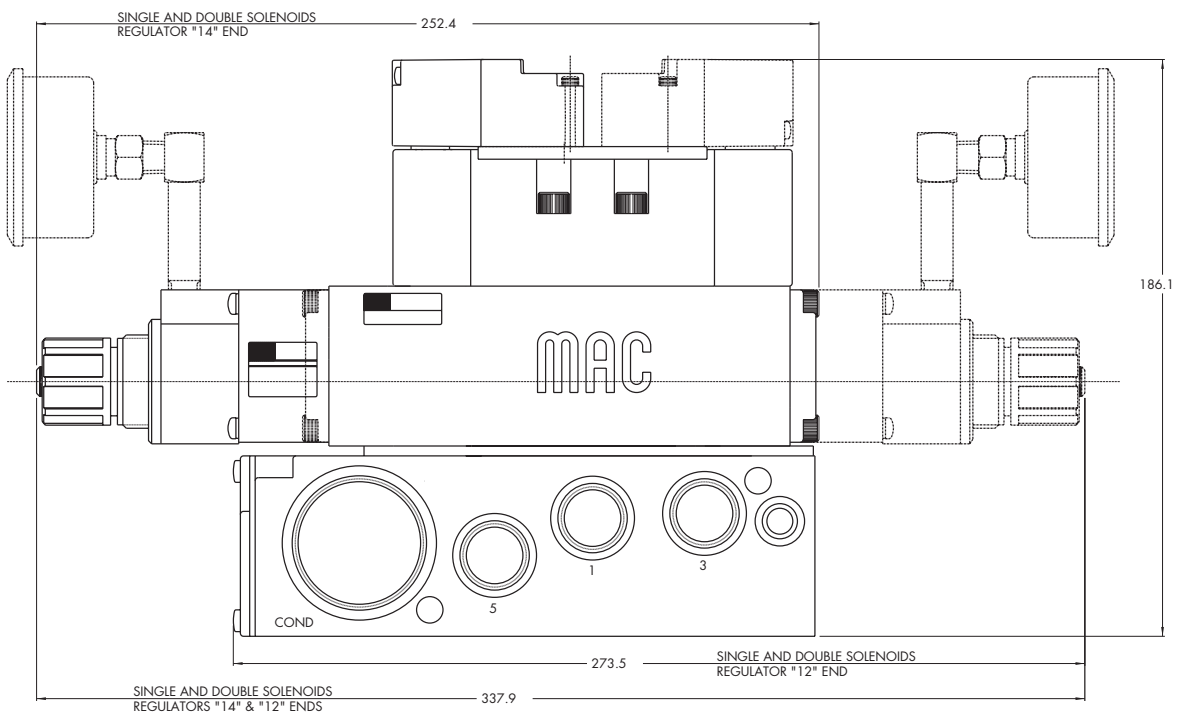
Spare parts :

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

Regulating range options : PRA2D-XXXA
- Replace by B - 0 to 100 PSI
- Replace by C - 0 to 45 PSI

DIMENSIONS

Dimensions shown are metric (mm)



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

Series PRA2D

Series

Non plug-in sandwich pressure regulator with air pilot adjust

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.

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-4AAA	PRA2D-4EAA	PRA2D-4BAA	PRA2D-4FAA	PRA2D-4JAA
Non-filled gage on regulator(s)	PRA2D-4ADA	PRA2D-4EDA	PRA2D-4BDA	PRA2D-4FDA	PRA2D-4JEA
Non-filled gage opposite to regulator	PRA2D-4CDA	PRA2D-4GDA	PRA2D-4DDA	PRA2D-4HDA	-----
Glycerine filled gage on regulator(s)	PRA2D-4ABA	PRA2D-4EBA	PRA2D-4BBA	PRA2D-4FBA	PRA2D-4JCA
Glycerine filled gage opposite to regulator	PRA2D-4CBA	PRA2D-4GBA	PRA2D-4DBA	PRA2D-4HBA	-----

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA2D-5AAA	PRA2D-5EAA	PRA2D-5BAA	PRA2D-5FAA	PRA2D-5JAA
Non-filled gage on regulator(s)	PRA2D-5ADA	PRA2D-5EDA	PRA2D-5BDA	PRA2D-5FDA	PRA2D-5JEA
Non-filled gage opposite to regulator	PRA2D-5CDA	PRA2D-5GDA	PRA2D-5DDA	PRA2D-5HDA	-----
Glycerine filled gage on regulator(s)	PRA2D-5ABA	PRA2D-5EBA	PRA2D-5BBA	PRA2D-5FBA	PRA2D-5JCA
Glycerine filled gage opposite to regulator	PRA2D-5CBA	PRA2D-5GBA	PRA2D-5DBA	PRA2D-5HBA	-----

* - To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

Series **PRA2D**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

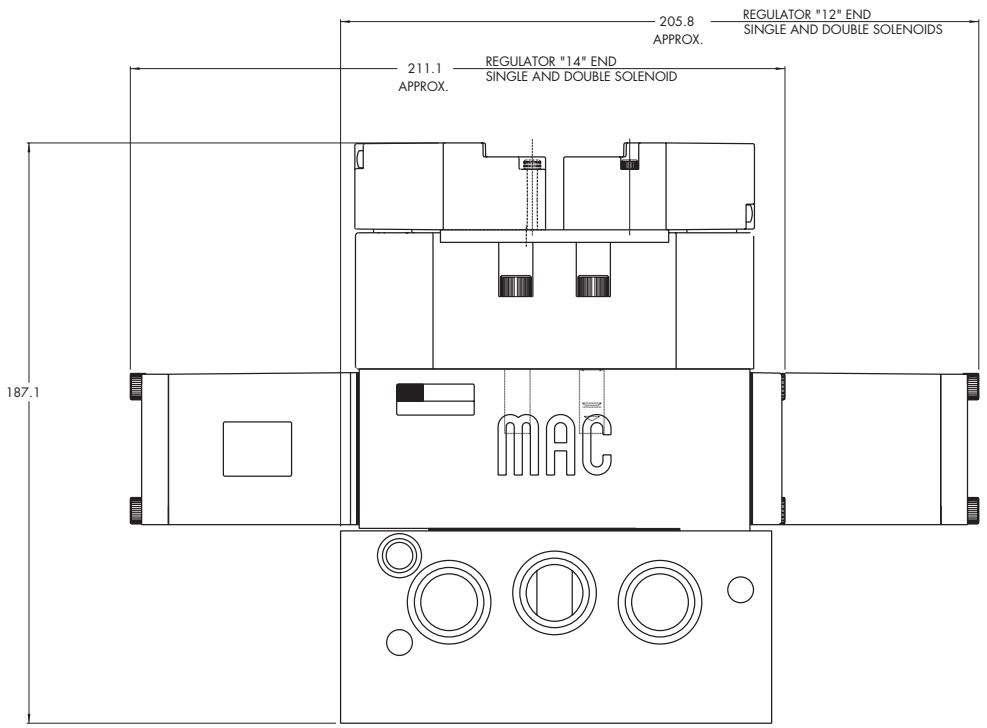
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	2.3 C_v

Spare parts :

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

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-AAAA	PRP2B-AEAA	PRP2B-ABAA	PRP2B-AFAA	PRP2B-AJAA
Glycerine gage	PRP2B-AABA	PRP2B-AEBA	PRP2B-ABBA	PRP2B-AFBA	PRP2B-AJCA
Non-filled gage	PRP2B-AADA	PRP2B-AEDA	PRP2B-ABDA	PRP2B-AFDA	PRP2B-AJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-BAAA	PRP2B-BEAA	PRP2B-BBAA	PRP2B-BFAA	PRP2B-BJAA
Glycerine gage	PRP2B-BABA	PRP2B-BEBA	PRP2B-BBBA	PRP2B-BFBA	PRP2B-BJCA
Non-filled gage	PRP2B-BADA	PRP2B-BEDA	PRP2B-BBDA	PRP2B-BFDA	PRP2B-BJEA

* For use with dual pressure valves.
Note: Regulating range for above models is 0-150 PSI. For other ranges, see technical data page.

ADJUSTMENT OPTIONS

PRP2B-*XXXX*

- **G** for slotted stem (internal pilot)
- **H** 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.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PRP2B**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

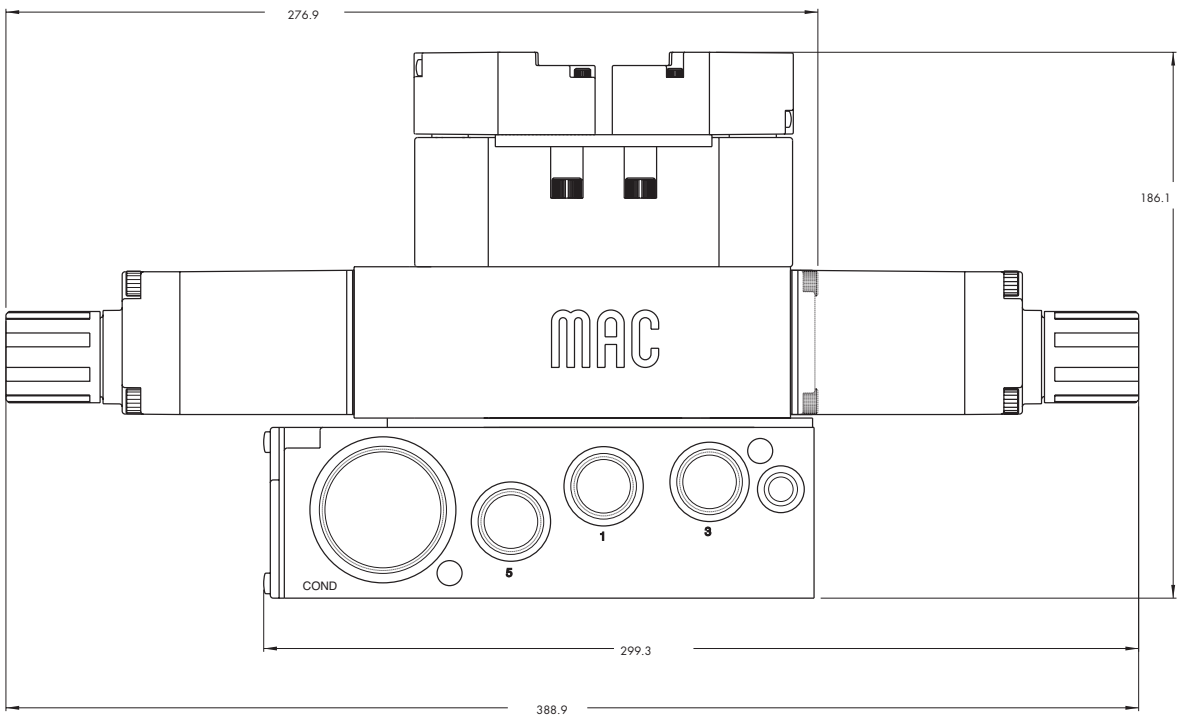
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3.1 C_v

Spare parts :

- Pressure regulator (less sandwich block) : PRP2B-C0AA (knob), PRP2B-J0AA (slotted stem), PRP2B-M0AA (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

DIMENSIONS

Dimensions shown are metric (mm)

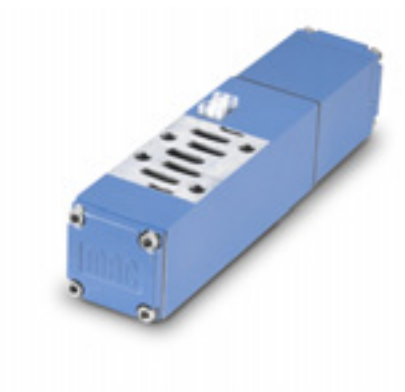


Consult "Precautions" page 327 before use, installation or service of MAC Valves..

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.



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-DAAA	PRP2B-DEAA	PRP2B-DBAA	PRP2B-DFAA	PRP2B-DJAA
Glycerine gage	PRP2B-DABA	PRP2B-DEBA	PRP2B-DBBA	PRP2B-DFBA	PRP2B-DJCA
Non-filled gage	PRP2B-DADA	PRP2B-DEDA	PRP2B-DBDA	PRP2B-DFDA	PRP2B-DJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP2B-EAAA	PRP2B-EEAA	PRP2B-EBAA	PRP2B-EFAA	PRP2B-EJAA
Glycerine gage	PRP2B-EABA	PRP2B-EEBA	PRP2B-EBBA	PRP2B-EFBA	PRP2B-EJCA
Non-filled gage	PRP2B-EADA	PRP2B-EEDA	PRP2B-EBDA	PRP2B-EFDA	PRP2B-EJEA

* - To be used with dual pressure valves.

Notes:
1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PRP2B**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

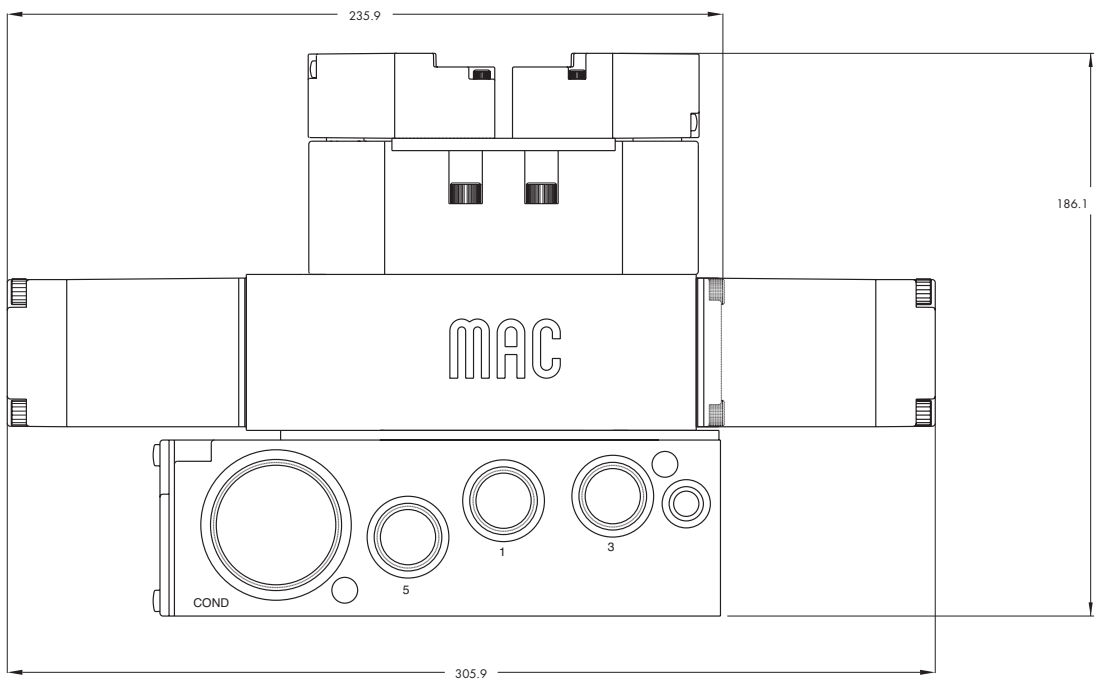
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3.1 C_v

Spare parts :

- Pressure regulator (less sandwich block): PRP2B-F0AA
- Body/block to base mounting screw: 19177

DIMENSIONS

Dimensions shown are metric (mm)



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

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.

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-1AAA	PRA3C-1EAA	PRA3C-1BAA	PRA3C-1FAA	PRA3C-1JAA
Non-filled gage on regulator(s)	PRA3C-1ADA	PRA3C-1EDA	PRA3C-1BDA	PRA3C-1FDA	PRA3C-1JEA
Non-filled gage opposite to regulator	PRA3C-1CDA	PRA3C-1GDA	PRA3C-1DDA	PRA3C-1HDA	-----
Glycerine filled gage on regulator(s)	PRA3C-1ABA	PRA3C-1EBA	PRA3C-1BBA	PRA3C-1FBA	PRA3C-1JCA
Glycerine filled gage opposite to regulator	PRA3C-1CBA	PRA3C-1GBA	PRA3C-1DBA	PRA3C-1HBA	-----

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-2AAA	PRA3C-2EAA	PRA3C-2BAA	PRA3C-2FAA	PRA3C-2JAA
Non-filled gage on regulator(s)	PRA3C-2ADA	PRA3C-2EDA	PRA3C-2BDA	PRA3C-2FDA	PRA3C-2JEA
Non-filled gage opposite to regulator	PRA3C-2CDA	PRA3C-2GDA	PRA3C-2DDA	PRA3C-2HDA	-----
Glycerine filled gage on regulator(s)	PRA3C-2ABA	PRA3C-2EBA	PRA3C-2BBA	PRA3C-2FBA	PRA3C-2JCA
Glycerine filled gage opposite to regulator	PRA3C-2CBA	PRA3C-2GBA	PRA3C-2DBA	PRA3C-2HBA	-----

* - To be used with dual pressure valves.
Note : regulating range for above models is 0-150 PSI.
For other ranges see technical data page.

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.

ADJUSTMENT OPTIONS

PRA3C-***xxxx***

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

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

Series **PRA3C**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.4 C_v

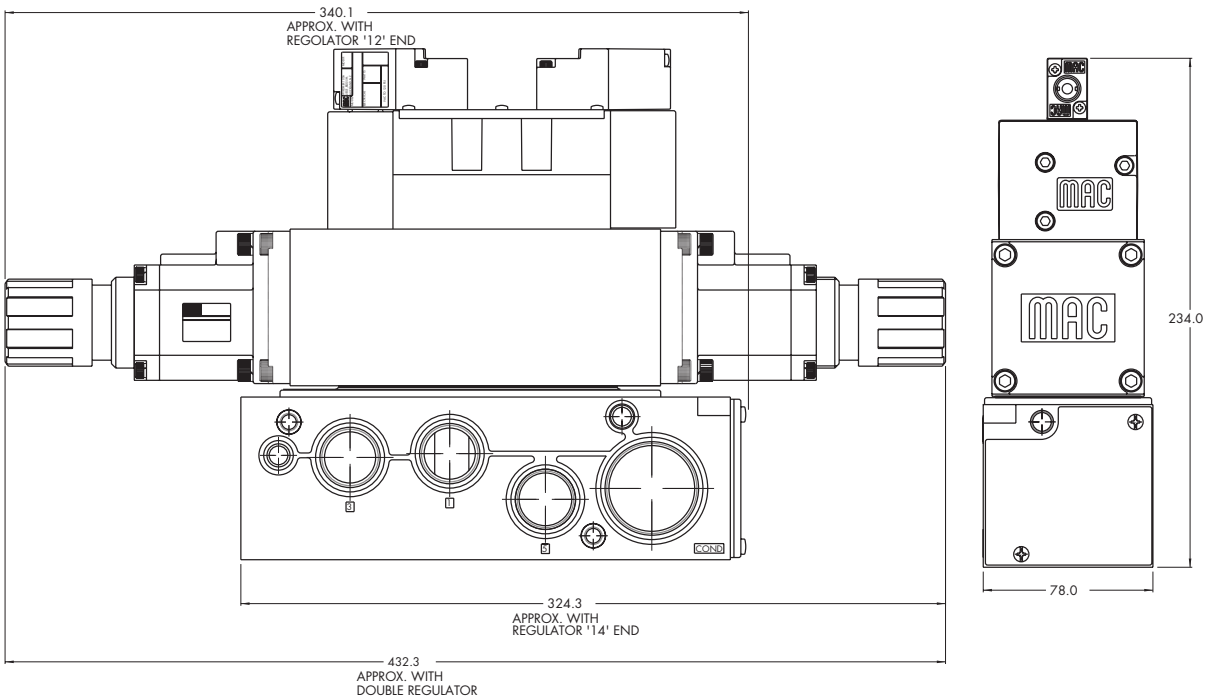
Spare parts :

- Pressure regulator (less sandwich block) : PRA3C-30AA (KNOB), PRA3C-C0AA (SLOTTED STEM), PRA3C-F0AA (SLOTTED STEM WITH LOCKNUT).
- Gage : • Glycerine filled : N-62015-01
  • Non filled : N-62016-01

Regulating range options : PRA3C-XXXA
- Replace by B - 0 to 100 PSI
- Replace by C - 0 to 45 PSI

DIMENSIONS

Dimensions shown are metric (mm)



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

Series PRA3C

Series

Non plug-in sandwich pressure regulator with air pilot adjust

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.

HOW TO ORDER

INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-4AAA	PRA3C-4EAA	PRA3C-4BAA	PRA3C-4FAA	PRA3C-4JAA
Non-filled gage on regulator(s)	PRA3C-4ADA	PRA3C-4EDA	PRA3C-4BDA	PRA3C-4FDA	PRA3C-4JEA
Non-filled gage opposite to regulator	PRA3C-4CDA	PRA3C-4GDA	PRA3C-4DDA	PRA3C-4HDA	-----
Glycerine filled gage on regulator(s)	PRA3C-4ABA	PRA3C-4EBA	PRA3C-4BBA	PRA3C-4FBA	PRA3C-4JCA
Glycerine filled gage opposite to regulator	PRA3C-4CBA	PRA3C-4GBA	PRA3C-4DBA	PRA3C-4HBA	-----

EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRA3C-5AAA	PRA3C-5EAA	PRA3C-5BAA	PRA3C-5FAA	PRA3C-5JAA
Non-filled gage on regulator(s)	PRA3C-5ADA	PRA3C-5EDA	PRA3C-5BDA	PRA3C-5FDA	PRA3C-5JEA
Non-filled gage opposite to regulator	PRA3C-5CDA	PRA3C-5GDA	PRA3C-5DDA	PRA3C-5HDA	-----
Glycerine filled gage on regulator(s)	PRA3C-5ABA	PRA3C-5EBA	PRA3C-5BBA	PRA3C-5FBA	PRA3C-5JCA
Glycerine filled gage opposite to regulator	PRA3C-5CBA	PRA3C-5GBA	PRA3C-5DBA	PRA3C-5HBA	-----

* - To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

MAC

Series **PRA3C**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

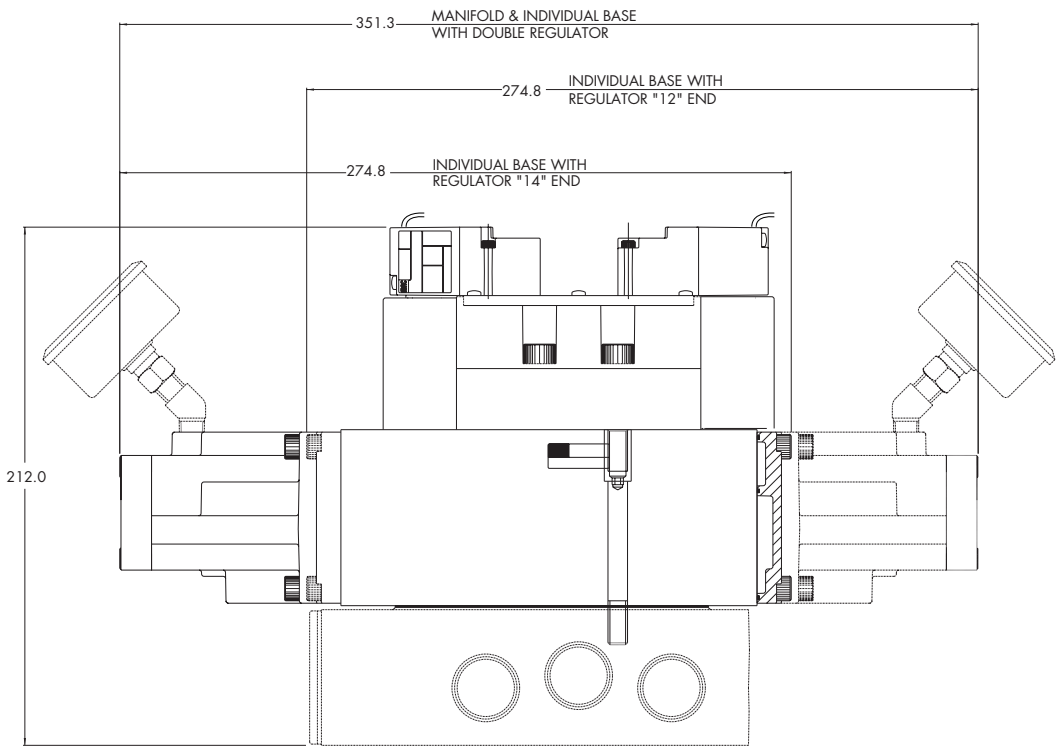
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.4 C_v

Spare parts :

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

DIMENSIONS

Dimensions shown are metric (mm)



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

MAC®

Series PRP3B

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.

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-AAAA	PRP3B-AEAA	PRP3B-ABAA	PRP3B-AFAA	PRP3B-AJAA
Glycerine gage	PRP3B-AABA	PRP3B-AEBA	PRP3B-ABBA	PRP3B-AFBA	PRP3B-AJCA
Non-filled gage	PRP3B-AADA	PRP3B-AEDA	PRP3B-ABDA	PRP3B-AFDA	PRP3B-AJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-BAAA	PRP3B-BEAA	PRP3B-BBAA	PRP3B-BFAA	PRP3B-BJAA
Glycerine gage	PRP3B-BABA	PRP3B-BEBA	PRP3B-BBBA	PRP3B-BFBA	PRP3B-BJCA
Non-filled gage	PRP3B-BADA	PRP3B-BEDA	PRP3B-BBDA	PRP3B-BFDA	PRP3B-BJEA

* For use with dual pressure valves.

ADJUSTMENT OPTIONS

PRP3B-*xxxx*

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

Notes:
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.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

MAC

Series **PRP3B**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

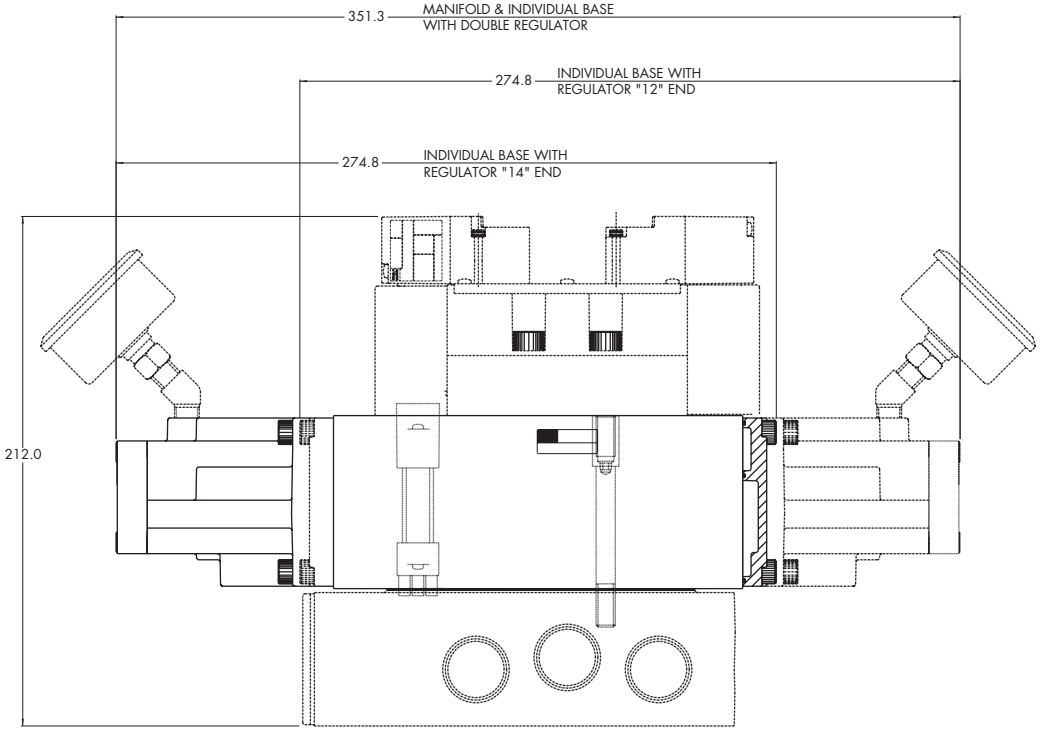
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.4 C_v

Spare parts :

- Pressure regulator (less sandwich block): PRP3B-C0AA (knob), PRP3B-J0AA (slotted stem), PRP3B-M0AA (slotted stem with locknut)
- Regulating block to base mounting screw: 19457
- Regulating range options: PRP3B-xxxA
  - Replace by B for 0 to 100 PSI
  - Replace by C for 0 to 45 PSI

DIMENSIONS

Dimensions shown are metric (mm)



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

Series PRP3B

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.

HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-DAAA	PRP3B-DEAA	PRP3B-DBAA	PRP3B-DFAA	PRP3B-DJAA
Glycerine gage	PRP3B-DABA	PRP3B-DEBA	PRP3B-DBBA	PRP3B-DFBA	PRP3B-DJCA
Non-filled gage	PRP3B-DADA	PRP3B-DEDA	PRP3B-DBDA	PRP3B-DFDA	PRP3B-DJEA

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gage	Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4	Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4	Dual pressure * Regulator 14 end Regulated pressure to port 4	Dual pressure * Regulator 12 end Regulated pressure to port 2	Dual pressure * Dual regulator Two regulated pressures to ports 2 and 4
No gage	PRP3B-EAAA	PRP3B-EEAA	PRP3B-EBAA	PRP3B-EFAA	PRP3B-EJAA
Glycerine gage	PRP3B-EABA	PRP3B-EEBA	PRP3B-EBBA	PRP3B-EFBA	PRP3B-EJCA
Non-filled gage	PRP3B-EADA	PRP3B-EEDA	PRP3B-EBDA	PRP3B-EFDA	PRP3B-EJEA

* - To be used with dual pressure valves.

Notes:
1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

PR37A
PR42B
PR46A
PR47A
PR48B
PR92C
PR93A
PRA01A
PRA02A
PRA1A
PRP1A
PRA2D
PRP2B
PRA3C
PRP3B

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

MAC

Series **PRP3B**

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

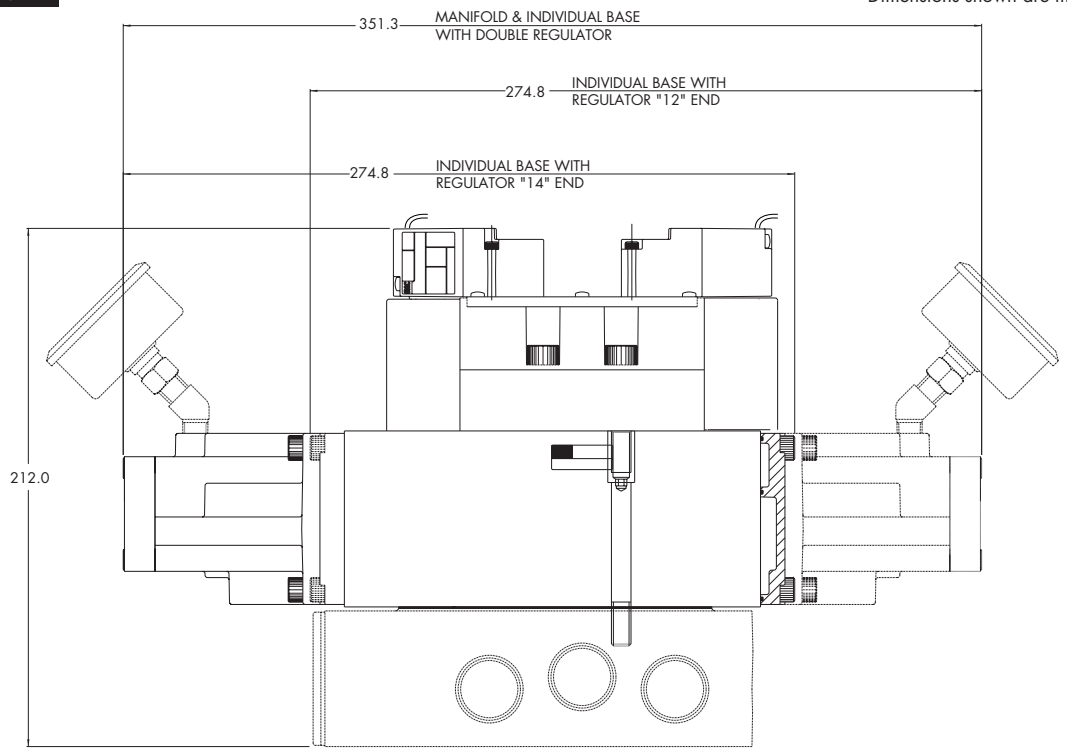
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	5.4 C_v

Spare parts :

- Pressure regulator (less sandwich block): PRP3B-F0AA
- Regulator block to base mounting screw: 19457

DIMENSIONS

Dimensions shown are metric (mm)



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

Section 5 Intrinsically Safe Valves

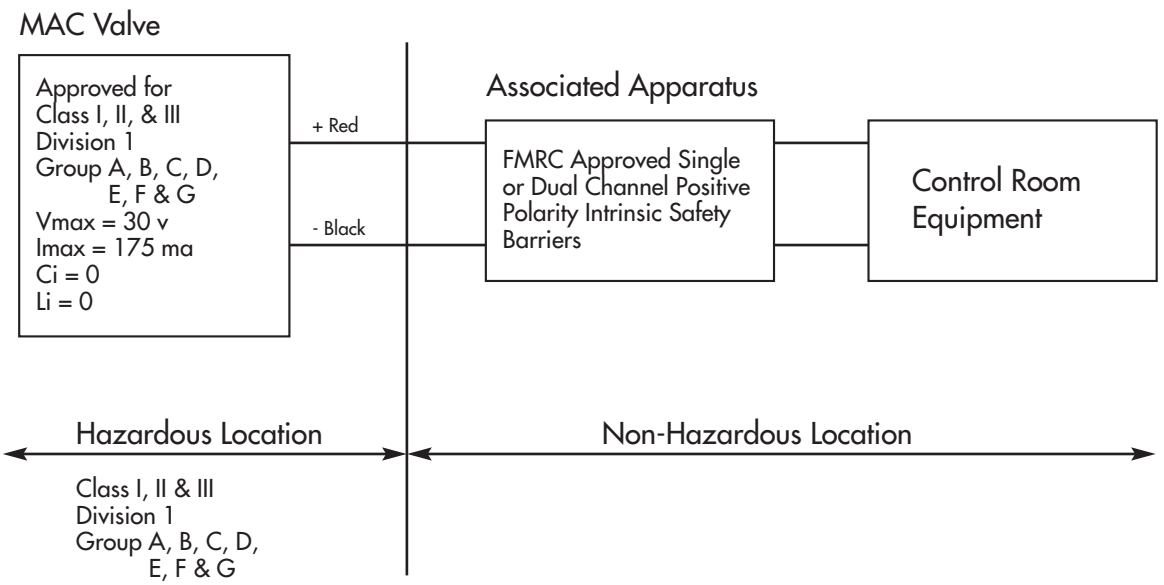
Consult "Precautions" page 327 before use, installation or service of MAC Valves..

Page

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

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

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

What this means is that the intrinsically safe valves were tested against each atmosphere with up to 30 VDC and 175 ma of current across the solenoid and found to still be safe. The other two parameters are values to indicate how much energy can be stored or created by the valve :

Ci : Internal capacitance of the solenoid.
This indicates how much energy the solenoid is capable of storing.

Li : Internal inductance of the solenoid.
This indicates the solenoid's ability to create or increase energy beyond what is supplied.

When applying an intrinsically safe valve in a hazardous location, a proper barrier must first be selected. The barrier selection process must first take into account the parameters the valve was approved for and compared in the following way :

- Vmax must be greater than or equal to Voc of the barrier.
  Voc = Voltage open circuit or maximum allowed out of the barrier
- Imax must be greater than or equal to Isc of the barrier.
  Isc = Current short circuit or the maximum current allowed out of the barrier
- Ci plus field wiring must be less than Ca of the barrier.
  Ca = Allowed capacitance
- Li plus field wiring must be less than La of the barrier.
  La = Allowed inductance

When properly combined, the barrier will never allow more energy to the intrinsically safe valve than what it was tested and approved for.

The following page can be used as your guide to help ask the right questions when working with an intrinsically safe circuit. Also included is a partial list of intrinsically safe barriers that have been tested with the MAC intrinsically safe valves.

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

$$\text{Plug } I_{TOTAL\ in\ below} = \frac{\text{SUPPLY VOLTAGE}}{250 + \text{BARRIER RESISTANCE}} = \underline{\qquad} \leftarrow \text{Plug ITOTAL in below}$$

Voltage at Solenoid = I_{TOTAL} x 250 ohms = _____ volts

Manufacturer	Model #	Barrier Res.	Voltage w/o Light	Voltage w/Light	Groups	Type
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
* = Not a recommended combination

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

HOW TO ORDER

BODY OPTIONS | **BASE OPTIONS** | **PILOT VALVE**

52A - XX - XXX - (XX - DXXX - XXX) SEE BELOW

SPOOL TYPE
1	Single Operator N.C. Main
2	Double Operator N.C. Main
3	Single Operator N.O. Main
4	Double Operator N.O. Main

BODY OPTIONS
1	Inline 3 port
3	Manifold body
4	Inline 3 port with memory spring
6	Manifold body with memory spring

PORT SIZE - THREAD TYPE
0	Manifold body
A	1/8" NPTF
B	1/4" NPTF
C	1/8" BSPPL
D	1/4" BSPPL
E	1/8" BSPTR
F	1/4" BSPTR

INT. OR EXT. PILOT
A	Internal Pilot
B	External Pilot-For inline bodies only
C	Common External Pilot for manifold bodies only

BASE CONFIGURATION
0	Inline/Manifold Body

4XXA - XXX - XX - DXXX - XXX

PILOT VALVE
SEE BELOW

REVISION LEVEL

SPOOL TYPE
0	Base only
1	Single Operator-Single Pressure
2	Double Operator-Single Pressure
3	Single Operator-Dual Pressure
4	Double Operator -Dual Pressure
5	3 Position Closed Center
6	3 Position Open Center
7	3 Position Single Pressure Pressure Center

BODY OPTIONS
0	Base only
1	Inline 5 port
3	Manifold body (base mount body)
4	Inline 5 port with memory*
6	Manifold body with memory*

PORT SIZE - THREAD TYPE
0	Manifold body
A	1/8" NPTF
B	1/4" NPTF
C	1/8" BSPPL
D	1/4" BSPPL
E	1/8" BSPTR
F	1/4" BSPTR

INT. OR EXT. PILOT
A	Internal Pilot (on dual press. models pilot pressure is from port #5
B	External Pilot (inline body)
C	Internal Pilot (on dual press. models pilot pressure is from port #3
D	External & common external pilot (individual base & bar manifold)

BASE CONFIGURATION
0	Inline/Manifold Body
A	Base standard ports**
B	Base standard ports with flow controls**

*Does not apply to 3 positions valves
**Accepts manifold body only

SOLENOID PILOT VALVE OPTIONS

XX - DXXX - XXX

XX PILOT EXHAUST
DM	Muffled exhaust

XX DC VOLTAGE
FR	12 VDC (0.6 W)

X LEAD WIRE LENGTH
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
J	6"*

X MANUAL OPERATOR
0	No operator
1	Non-locking Recessed (std.)
2	Locking Recessed
3	Non-locking Extended
4	Locking Extended

XX ELECTRICAL CONN.
BA	Grommet
CA	Conduit 1/2" NPS
CM	Metal Conduit 1/2" NPS
CN	Metal Conduit with ground1/2" NPS
	--External Plug-in--
JB	Rectangular plug-in
JM	Rectangular male only
KA	Mini plug-in
KJ	Mini plug-in male only
TA	Dual tabs (.110) w/receptables
TD	Dual tabs w/light w/receptables
TJ	Dual tabs (.110) plain
TM	Dual tabs w/light without receptables

*Use this lead wire length for plug-in connectors.

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

HOW TO ORDER

92B - XXX - XXX - (XX - DXXX - XXX) SEE BELOW

BODY OPTIONS | BASE OPTIONS | PILOT VALVE

VALVE FUNCTION

- 0 Base only
- A Single Operator-Single Pressure
- B Double Operator-Single Pressure
- C Single Operator-Dual Pressure
- D Double Operator -Dual Pressure
- E 3 Position Closed Center
- F 3 Position Open Center
- G 3 Position Single Pressure Pressure Center

Spool with Memory Spring

- L Single Operator-Single Pressure
- N Single Operator-Dual Pressure

BODY ELECTRICAL OPTIONS

- 0 Base only
- A No ligth in top
- B With ligth

PORT SIZE - THREAD TYPE

- 0 Basic Valve
- A 1/8" NPTF
- B 1/4" NPTF
- C 3/8" NPTF
- D 1/8" BSPPL
- E 1/4" BSPPL
- F 3/8" BSPPL
- G 1/8" BSPTR
- H 1/4" BSPTR
- J 3/8" BSPTR

INT. OR EXT. PILOT

- 0 Basic Valve

Plug-in Internal Pilot Models

- A No light in base
- B With single light in base
- C With double light in base

Plug-in External Pilot Models

- D No light in base
- E With single light in base
- F With double light in base

Non plug-in

- G Internal Pilot
- H External Pilot

If lights are in top body cover, use option A or D

BODY TYPE & EXHAUST OPTIONS

- 0 Base only
- A Plug-in Standard Exhaust
- B* Non Plug-in with Standard Exhaust

* Use with body electrical option A only

INDIV. BASE CONFIG.

- 0 Basic Valve
- A Side Ports
- B Bottom Ports (1/8" only)
- C Side & Bottom Ports (1/8" only)
- D Side in & exhaust Bottom cylinders (1/8" only)

PILOT VALVE OPTIONS

XX - DXXX - XXX

XX PILOT EXHAUST

- DM Muffled exhaust

XX DC VOLTAGE

- FR 12 VDC (0.6 W)

X LEAD WIRE LENGTH

--Plug-in Valve/Base--

- P Plug-in
- 1 18" 4 48"
- 2 24" 5 72"
- 3 36" 6 96"

--Non Plug-in Valve/Base--

- O No wires*
- A 18" E 72"
- B 24" F 96"
- C 36" J 6"**
- D 48"

*Used only with BM & BG electrical connection

** Lead wire length for external plug-in connectors must be "J"

X MANUAL OPERATOR

- 0 No manual operator
- 1 Recessed Non-locking operator
- 2 Recessed Locking operator
- 3 Non-locking Extended operator
- 4 Locking Extended operator

XX ELECTRICAL CONN.

--Non Plug-in Valve/Base--

- BA Grommet
- BM Flying leads
- BG Flying leads with ground
- CA Conduit 1/2" NPS
- CM Metal Conduit 1/2" NPS
- CN Metal Conduit with ground1/2" NPS

--Plug-in Valve/Base--

- DM Plug-in
- DG Plug-in with ground

--External Plug-in--

- JB Rectangular plug-in
- JM Rectangular male only
- KA Mini plug-in
- KJ Mini plug-in male only

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.

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

Section 6 Options

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

OPTIONS

Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤ **-DM- D XX X-X XX**
1 2 3 4

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

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

MAC

OPTIONS

1. VOLTAGE

D-XX X-X XX	VOLTAGE
DA	24 VDC (5.4W)
DB	12 VDC (5.4W)
DC	12 VDC (7.5W)
DD	24 VDC (7.3W)
DE	12 VDC (12.7W)
DF	24 VDC (12.7W)
DK	110 VDC (4.7W)
DJ	28 VDC (5.2W)
DL	64 VDC (6.0W)
DM	36 VDC (5.3W)
DN	6 VDC (6.0W)
DR	90 VDC (6.6W)
DS	110 VDC (7.3W)
DT	75 VDC (5.6W)
DP	48 VDC (5.8W)
FA	12 VDC (1.8W)
FB	24 VDC (1.8W)
FE	12 VDC (2.4W)
FF	24 VDC (2.4W)
JA	120/60, 110/50 (2.9W)
JB	240/60, 220/50 (2.9W)
JC	24/60, 24/50 (3.7W)
JD	100/60, 100/50, 110/60 (3.9W)
JE	220/60 (3.4W)
JF	240/50 (2.8W)
JG	200/60, 200/50 (3.9W)

2. WIRE LENGTH

D-XX X-X XX	WIRE LENGTH
0	No wires
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"

3. MANUAL OPERATOR

D-XX X-X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

D-XX X-X XX	ELECTRICAL CONNECTION
BA*	Flying leads (grommet)
BK*	BA with protection diode
BL*	BA with protection varistor
BM**	Flying leads (solenoid plug-in)
BN**	BM with protection diode
BP**	BM with protection varistor
BG**	BM with ground
BH**	BM with protection diode & ground
BJ**	BM with protection varistor & ground
CA*	1/2" NPS conduit with flying leads
CM*	1/2" NPS metal conduit with flying leads
CN*	1/2" NPS metal conduit with flying leads & ground
JB	Rectangular connector
JD	JB with light
JM	Rectangular connector (male only)
KA	Mini square connector
KB	KA with protection diode
KC	KA with protection varistor
KD	KA with light
KE	KA with light and protection diode
KF	KA with light and protection varistor
KG	KA with light & diode
KJ	Mini square connector (male only)
KK	KJ with protection diode (male only)
KL	KJ with protection varistor (male only)
TA	Dual tabs with receptacles
TB	TA with protection diode
TD	TA with light
TE	TA with light and protection diode
TJ	Dual tabs (male only)
TK	TJ with protection diode
TM	TJ with light
TN	TJ with light and protection diode

* From Lead wire length options choose A through F

** From Lead wire length options choose 0 through F

Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads.

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

OPTIONS

Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤ $\frac{G\ XX}{1}\ \frac{X}{2}\text{-}\frac{X}{3}\ \frac{XX}{4}$

OPTIONS AVAILABLE FOR
- Solenoid valves 32, 34, 38, 42, 44 & 48 Series

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

MAC®

OPTIONS

1. VOLTAGE

G-XX X-X XX	VOLTAGE
AA	120 VAC (2.5W) Requires electrical connector with rectifier
AC	24 VAC (4.0W) Requires electrical connector with rectifier
DA	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 (1.0W)
DJ	12 VDC (1.8W)
DK	12 VDC (2.5W)
DM	12 VDC (3.0W)
DN	12 VDC (4.0W)
DR	6 VDC (1.8W)
DS	6 VDC (3.0W)
EB	48 VDC (1.8W)
EC	48 VDC (3.0W)
ED	120 VDC (2.5W)
GD	12 VDC (0.5W) 34 series only
GE	24 VDC (0.5W) 34 series only

2. WIRE LENGTH

G-XX X-X XX	WIRE LENGTH
0	No lead wires (used only with "KJ" & "KM" connectors)
A	18" coil leads
B	24" coil leads
C	36" coil leads
D	48" coil leads
E	72" coil leads
F	96" coil leads
G	120" coil leads
H	144" coil leads
1	18" base leads
2	24" base leads
3	36" base leads
4	48" base leads
5	72" base leads
6	96" base leads
7	120" base leads

3. MANUAL OPERATOR

G-XX X-X XX	MANUAL OPERATOR
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

G-XX X-X XX	ELECTRICAL CONNECTION
BA	Flying leads
BB	BA with ground wire
BC	BA with light
BD	BA with light and ground wire
BE	BA with suppression diode
BF	BA with suppression diode and ground wire
BG	BA with suppression diode and light
BH	BA with suppression diode, light and ground wire
BN	BA with suppression diode and blocking diode
BP	BA with suppression diode, blocking diode and ground wire
BR	BA with suppresion diode, blocking diode and light
BS	BA with suppression diode, blocking diode, light and ground wire
GA	MAC JAC Solenoid plug-in
GB	MAC JAC Solenoid plug-in w/Diode
GC	MAC JAC Solenoid plug-in w/MOV
GD	MAC JAC Solenoid plug-in w/LED
GE	MAC JAC Solenoid plug-in w/Diode & LED
GF	MAC JAC Solenoid plug-in w/MOV & LED
GG	MAC JAC Solenoid plug-in w/Rectifier
GH	MAC JAC Solenoid plug-in w/Rectifier & LED
KA	Solenoid plug-in wire assembly
KB	KA with ground
KC	KA with rectifier and light
KD	KA with rectifier, light and ground
KE	KA with suppression diode
KF	KA with suppression diode and ground
KJ	Solenoid plug-in housing without wire assembly
KM	Solenoid plug-in housing with ground pin without wire assembly
KN	KA with suppression diode and blocking diode
KP	KA with suppression diode, blocking diode and ground
KT	KA with light
KU	KA with light and ground
KV	KA with suppression diode and light
KW	KA with suppression diode, light and ground
KX	KA with suppression diode, blocking diode and light
KY	KA with suppression diode, blocking diode, light & ground

ELECTRICAL CONNECTION FOR PLUG-IN VALVES

G-XX X-X XX	PLUG-IN OPTIONS
SB	Base plug-in with ground
SC	Base plug-in with suppression and blocking diode
SD	Base plug-in with suppression and blocking diode and ground
SE	Base plug-in with MOV
SF	Base plug-in with MOV and ground
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 with light 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

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

OPTIONS

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **-GM- G XX X-X XX**
1 2 3 4

OPTIONS AVAILABLE FOR
- Solenoid valves 52 & 400 Series

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

MAC

OPTIONS

1. VOLTAGE

G-XX X-X XX	VOLTAGE
DC	24 VDC (1.8 W)
DD	24 VDC (2.5 W)
DE	24 VDC (3.0 W)
DF	24 VDC (4.0 W)
DJ	12 VDC (1.8 W)
DK	12 VDC (2.5 W)
DM	12 VDC (3.0 W)
DN	12 VDC (4.0 W)

2. WIRE LENGTH

G-XX X-X XX	WIRE LENGTH
0	No lead wire (use only with "KJ" & "KM" elecrical connectors)
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
G	120"
H	144"

3. MANUAL OPERATOR

G-XX X-X XX	MANUAL OPERATOR
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

G-XX X-X XX	ELECTRICAL CONNECTION
BA	Flying leads
BB	BA with ground wire
BC	BA with light parallel to leads
BD	BA with light parallel to leads & ground wire
BE	BA with suppression diode
BF	BA with suppression diode & ground wire
BG	BA with suppression diode plus light parallel to leads
BH	BA with suppression diode plus light parallel to leads & ground wire
*BN	BA with suppression diode plus blocking diode
*BP	BA with suppression diode plus blocking diode & ground wire
*BR	BA with suppression diode plus blocking diode & light parallel to leads
*BS	BA with suppression diode plus blocking diode & light parallel to leads & ground wire
BT	BA with light on top
BU	BA with light on top & ground wire
BV	BA with suppression diode plus light on top
BW	BA with suppression diode plus light on top & ground wire
*BX	BA with suppression diode plus blocking diode & light on top
*BY	BA with suppression diode plus blocking diode & light on top & ground wire

G-XX X-X XX	SOLENOID PLUG-IN CONNECTOR WITH LEADS
GA	MAC JAC Solenoid plug-in
GB	MAC JAC Solenoid plug-in w/Diode
GC	MAC JAC Solenoid plug-in w/MOV
GD	MAC JAC Solenoid plug-in w/LED
GE	MAC JAC Solenoid plug-in w/Diode & LED
GF	MAC JAC Solenoid plug-in w/MOV & LED
GG	MAC JAC Solenoid plug-in w/Rectifier
GH	MAC JAC Solenoid plug-in w/Rectifier & LED
KA	Plug-in wire assembly
KB	KA with ground wire
KE	KA with suppression diode
KF	KA with suppression diode & ground wire
KJ	Plug-in housing without wire assembly ('KA' without wire assembly)
KM	Plug-in housing without wire assembly ('KB' without wire assembly)
*KN	KA with suppression diode plus blocking diode
*KP	KA with suppression diode plus blocking diode & ground wire
KT	KA with light on top
KU	KA with light on top & ground wire
KV	KA with suppression diode plus light on top
KW	KA with suppression diode plus light & ground wire
*KX	KA with suppression diode plus blocking diode & light on top
*KY	KA with suppression diode plus blocking diode & light on top & ground wire

Note: Blocking diode is located in the lead wire

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

OPTIONS

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **H XX X-X XX**
1 2 3 4

OPTIONS AVAILABLE FOR
- Solenoid valves 37 & 47 Series

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

MAC®

OPTIONS

1. VOLTAGE

H-XX X-X XX	VOLTAGE
AA	120/50, 120/60 (6.7 W) (use connector with rectifier)
AB	220/50, 220/60 (5.6 W) (use connector with rectifier)
AC	240/50, 240/60 (5.8 W) (use connector with rectifier)
AD	24/50, 24/60 (7.8 W) (use connector with rectifier)
DA	24 VDC (5.2 W)
DB	24 VDC (2.4 W)
DC	24 VDC (1.8 W)
DD	24 VDC (1.0 W)
DF	12 VDC (5.2 W)
DG	12 VDC (2.4 W)
DH	12 VDC (1.8 W)
DJ	12 VDC (1.0 W)
DL	120 VDC (6.3 W)

2. WIRE LENGTH

H-XX X-X XX	WIRE LENGTH
0	No lead wire (use with "MJ, MM & K Type connectors)
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
G	120"
H	144"

3. MANUAL OPERATOR

H-XX X-X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

H-XX X-X XX	ELECTRICAL CONNECTION
BA	Flying leads
BB	BA with ground wire
BC	BA with light
BD	BA with light & ground wire
BE	BA with suppression diode
BF	BA with suppression diode & ground wire
BG	BA with suppression diode plus light
BH	BA with suppression diode plus light & ground wire
*BN	BA with suppression diode plus blocking diode
*BP	BA with suppression diode plus blocking diode & ground wire
*BR	BA with suppression diode plus blocking diode & light
*BS	BBA with suppression diode plus blocking diode & light & ground wire
BK	BA with full wave rectifier
BL	BA with full wave rectifier & ground wire
BT	BA with full wave rectifier plus light
BU	BA with full wave rectifier plus light & ground wire

H-XX X-X XX	PLUG-IN CONNECTOR
FA	Base plug-in
FB	FA with ground wire
FC	FA with light
FD	FA with light & ground wire
FE	FA with suppression diode
FF	FA with suppression diode & ground wire
FG	FA with suppression diode & light
FH	FA with suppression diode plus light & ground wire
FK	FA with full wave rectifier
FL	FA with full wave rectifier & ground wire
*FN	FA with suppression diode plus blocking diode
*FP	FA with suppression diode plus blocking diode & ground wire
*FR	FA with suppression diode plus blocking diode plus light
*FS	FA with suppression diode plus blocking diode & light & ground wire
FT	FA with full wave rectifier plus light
FU	FA with full wave rectifier plus light & ground wire
MA	Solenoid plug-in wire assembly
MB	MA with ground wire
MC	MA with light
MD	MA with light & ground wire
ME	MA with suppression diode
MF	MA with suppression diode & ground wire
MG	MA with suppression diode plus light
MH	MA with suppression diode plus light & ground wire
MK	MA with full wave rectifier
ML	MA with full wave rectifier & ground wire
*MN	MA with suppression diode plus blocking diode
*MP	MA with suppression diode plus blocking diode & ground wire
*MR	MA with suppression diode plus blocking diode & light
*MS	MA with suppression diode plus blocking diode & light & ground wire
MT	MA with full wave rectifier plus light
MU	MA with full wave rectifier plus light & ground wire
MJ	Plug-in housing without wire assembly ('MA' option without wire assembly)
MM	Plug-in housing without wire assembly ('MB' option without wire assembly)
KA	Mini square connector
KB	KA with suppression diode
KC	KA with M.O.V.
KD	KA with light
KE	KA with light & suppression diode
KF	KA with light & M.O.V.
KJ	Mini square connector – male only
KK	KJ with suppression diode
KL	KJ with M.O.V.
KM	KA with full wave rectifier
KN	KA with full wave rectifier & M.O.V.
KP	KA with full wave rectifier & light
KR	KA with full wave rectifier plus light & M.O.V.
KS	KJ with full wave rectifier

* Blocking diode is located in the lead wire

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

OPTIONS

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **J XX X-X XX**
1 2 3 4

OPTIONS AVAILABLE FOR
- Solenoid valves 36, 46, ISO 01 and ISO 02 Series

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

MAC®

OPTIONS

1. VOLTAGE

J-XX X-X XX	VOLTAGE
AA	120VAC (5.4W)
AC	24VAC (5.4W)
DE	24VDC (1.8W)
DF	12VDC (1.8W)
DJ	24VDC (1.3W)
DL	12VDC (1.3W)
DN	12VDC (0.5W)*
DR	12VDC (1.0W)*
DS	24VDC (0.5W)*
DU	24VDC (1.0W)*

* Not available on 36 series universal valve

2. WIRE LENGTH

J-XX X-X XX	WIRE LENGTH
A	18" coil leads
B	24" coil leads
C	36" coil leads
D	48" coil leads
E	72" coil leads
F	96" coil leads
P	Base plug-in
O	No leads (use with J, K & L type connectors)

3. MANUAL OPERATOR

J-XX X-X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

	CONNECTORS FOR NON PLUG-IN VALVES
J-XX X-X XX	ELECTRICAL CONNECTION
BA	Flying leads
GA	MAC JAC solenoid plug-in
GB	MAC JAC solenoid plug-in with diode
GC	MAC JAC solenoid plug-in with MOV
GD	MAC JAC solenoid plug-in with light
GE	MAC JAC solenoid plug-in with diode and light
GF	MAC JAC solenoid plug-in with MOV and light
GG	MAC JAC solenoid plug-in with rectifier
GH	MAC JAC solenoid plug-in with rectifier and light
GJ	MAC JAC solenoid plug-in – Male only
GK	MAC JAC solenoid plug-in with diode – Male only
GL	MAC JAC solenoid plug-in with MOV – Male only
GM	MAC JAC solenoid plug-in with light – Male only
GN	MAC JAC solenoid plug-in with diode and light – Male only
GP	MAC JAC solenoid plug-in with MOV and light – Male only
GR	MAC JAC solenoid plug-in with rectifier – Male only
GS	MAC JAC solenoid plug-in with rectifier and light – Male only
*JA	Square Connector
*JC	Square Connector with light
*JE	Square Connector with diode
*JF	Square Connector with MOV
*JG	Square Connector with diode/light
*JH	Square Connector with MOV/light
*JK	Square Connector with Rectifier

J-XX X-X XX	
*JL	Square Connector with Rectifier with light
*JJ	Square Connector Male only (Plain)
*JB	Rectangular Connector
*JD	Rectangular Connector with light
*JN	Rectangular Connector with diode
*JP	Rectangular Connector with MOV
*JR	Rectangular Connector with diode/light
*JS	Rectangular Connector with MOV/light
*JT	Rectangular Connector with Rectifier
*JU	Rectangular Connector with Rectifier with light
*JM	Rectangular Connector Male only (Plain)

* Not available on manifold or stacking valves

	CONNECTORS FOR NON PLUG-IN VALVES
J-XX X-X XX	MINI SQUARE PLUG-IN CONNECTORS 9.4 MM SPACING BETWEEN PINS
KA	Mini plug-in
KB	Mini plug-in with diode
KC	Mini plug-in with MOV
KD	Mini plug-in with light
KE	Mini plug-in with diode and light
KF	Mini plug-in with MOV and light
KG	Mini plug-in with rectifier
KH	Mini plug-in with rectifier and light
KJ	Mini plug-in – Male only
KK	Mini plug-in with diode - Male only
KL	Mini plug-in with MOV - Male only
KM	Mini plug-in with light - Male only
KN	Mini plug-in with diode and light – Male only
KP	Mini plug-in with MOV and light – Male only
KR	Mini plug-in with rectifier – Male only
KS	Mini plug-in with rectifier and light – Male only

	CONNECTORS FOR NON PLUG-IN VALVES
J-XX X-X XX	MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217
LA	Mini plug-in
LB	Mini plug-in with diode
LC	Mini plug-in with MOV
LD	Mini plug-in with light
LE	Mini plug-in with diode and light
LF	Mini plug-in with MOV and light
LG	Mini plug-in with rectifier
LH	Mini plug-in with rectifier and light
LJ	Mini plug-in – Male only
LK	Mini plug-in with diode - Male only
LL	Mini plug-in with MOV - Male only
LM	Mini plug-in with light - Male only
LN	Mini plug-in with diode and light – Male only
LP	Mini plug-in with MOV and light – Male only
LR	Mini plug-in with rectifier – Male only
LS	Mini plug-in with rectifier and light – Male only

J-XX X-X XX	CONNECTORS FOR PLUG-IN VALVES
FA	Base plug-in
FB	Base plug-in with diode
FC	Base plug-in with MOV
FD	Base plug-in with light
FE	Base plug-in with diode and light
FF	Base plug-in with MOV and light
FG	Base plug-in with rectifier
FH	Base plug-in with rectifier and light

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

OPTIONS

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **L XX X-X XX**
1 2 3 4

OPTIONS AVAILABLE FOR
- Solenoid valves 32, 38, 42, 44, 47 & 48 Series

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

MAC

OPTIONS

1. VOLTAGE (32, 38, 42, 44, 48 SERIES)

L- XX X-X XX	VOLTAGE
DF	24VDC (4.0W)
DN	12VDC (4.0W)
HA	24VDC (1.95W)
HE	12VDC (1.95W)

1. VOLTAGE (47 SERIES)

L- XX X-X XX	VOLTAGE
DA	24VDC (5.2W)
DF	12VDC (5.2W)

2. WIRE LENGTH (all series)

L- XX X-X XX	WIRE LENGTH
0	No lead wire
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
G	120"
H	144"

3. MANUAL OPERATOR (all series)

L- XX X-X XX	MANUAL OPERATOR
0	No operator

4. ELECTRICAL CONNECTOR (32, 38, 42, 44 & 48 series)

L-XX X-X XX	NON PLUG-IN
BA	2 wire flying leads
BB	2 wire flying leads with ground wire
BC	2 wire flying leads with light
BD	2 wire flying leads with light & ground wire
BJ	4 wire flying leads
BK	4 wire flying leads with ground
BL	4 wire flying leads with light
BM	4 wire flying leads with light & ground wire
KA	2 wire plug-in assembly
KB	2 wire plug-in assembly with ground wire
KC	2 wire plug-in assembly with light
KD	2 wire plug-in assembly with light and ground wire
KE	4 wire plug-in assembly
KF	4 wire plug-in assembly with ground wire
KG	4 wire plug-in assembly with light
KH	4 wire plug-in assembly and ground wire
LA	3 wire plug-in assembly (polarity switching cover)
L-XX X-X XX	**PLUG-IN**
*DA	Base plug-in
*DB	Base plug-in with ground pin
*DC	Base plug-in with light
*DD	Base plug-in with light & ground pin
**EA	Base plug-in 3 pin (Plarity switching cover)

* Use these options for plug-in base with 2 or 4 wire assemblies

** Use this option for plug-in bases with 3 wire assemblies

4. ELECTRICAL CONNECTOR (47 series)

L- XX X-X XX	NON PLUG-IN
BA	2 wire flying leads
BB	2 wire flying leads with ground wire
BC	2 wire flying leads with light
BD	2 wire flying leads with light & ground wire
BJ	4 wire flying leads
BK	4 wire flying leads with ground
BL	4 wire flying leads with light
BM	4 wire flying leads with light & ground wire
LA	3 wire plug-in assembly (Plarity switching cover)
MA	2 wire plug-in assembly
MB	2 wire plug-in assembly with ground wire
MC	2 wire plug-in assembly with light
MD	2 wire plug-in assembly with light and ground wire
ME	4 wire plug-in assembly
MF	4 wire plug-in assembly with ground wire
MG	4 wire plug-in assembly with light
MH	4 wire plug-in assembly with light and ground wire
L- XX X-X XX	**PLUG-IN**
EA	Base plug-in 3 pin (Polarity switching cover)
FA	Base plug-in with ground
FB	Base plug-in with ground & light
FC	Base plug-in 4 wire with ground
FD	Base plug-in 4 wire with light & ground

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

OPTIONS

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **R XX X-X XX**
1 2 3 4

OPTIONS AVAILABLE FOR
- Solenoid valves 33 Series

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

MAC

OPTIONS

1. VOLTAGE

R-XX X-X XX	VOLTAGE
DA	24 VDC (0.5W)
DB	24 VDC (1.0W)
DC	24 VDC (1.8W)
DD	24 VDC (2.5W)
DE	24 VDC (3.0W)
DF	24 VDC (4.0W)
DG	12 VDC (0.5W)
DH	12 VDC (1.0W)
DJ	12 VDC (1.8W)
DK	12 VDC (2.5W)
DL	12 VDC (3.0W)
DM	12 VDC (4.0W)
EA*	24 VDC (60W)
EB*	24 VDC (90W)
EC*	24 VDC (230W)

2. WIRE LENGTH (all series)

R-XX X-X XX	WIRE LENGTH
0**	No lead wire
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
G	120"
H	144"

3. MANUAL OPERATOR

R-XX X-X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
3	Non-locking extended

4. ELECTRICAL CONNECTOR

R-XX X-X XX	NON PLUG-IN
BA	Flying leads
BB	Flying leads with LED
BC	Flying leads with MOV
BD	Flying leads with LED and MOV
RA	Mini JAC solenoid plug-in
RB	Mini JAC solenoid plug-in with LED
RC	Mini JAC solenoid plug-in with MOV
RD	Mini JAC solenoid plug-in with LED and MOV
TA	JST solenoid plug-in
TB	JST solenoid plug-in with LED
TC	JST solenoid plug-in with MOV
TD	JST solenoid plug-in with LED and MOV

*MOD numbers required for these voltages (consult factory) ** Not available for flying leads connector

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

Section 7 Supplemental technical information

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

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.

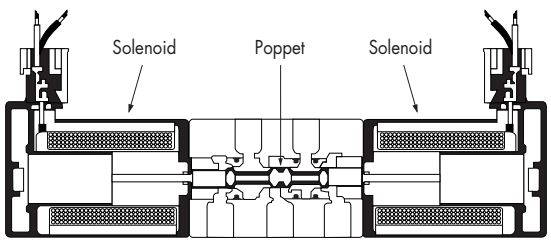


Figure 1 : Double Solenoid Poppet

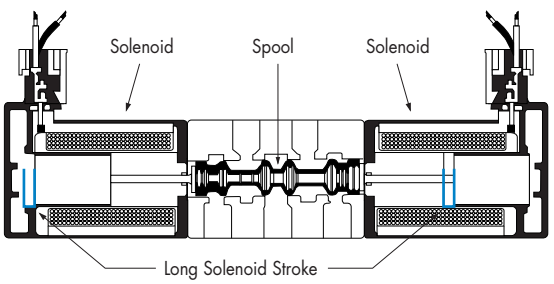


Figure 2 : Double Solenoid Spool Design

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.

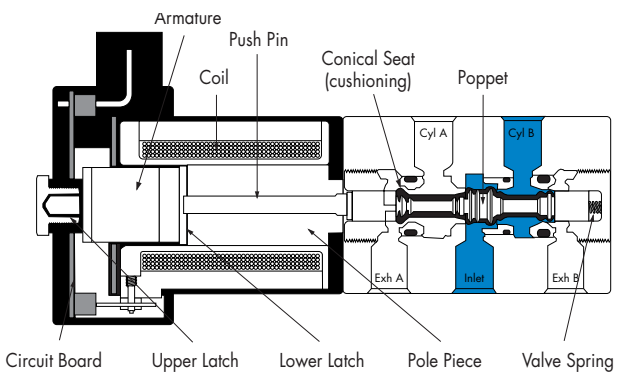


Figure 3 : Latching Solenoid Design

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

WIRING INSTRUCTIONS AND OPTIONS

As shown in Figure 4, a conventional double solenoid valve requires that the pair of lead wires from each solenoid be wired to an appropriate voltage source, MAC's latching solenoid technology has the option of being wired in one of the three (3) currently available methods.

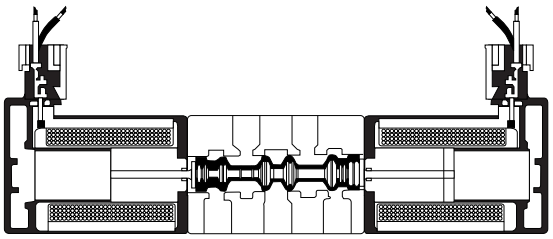
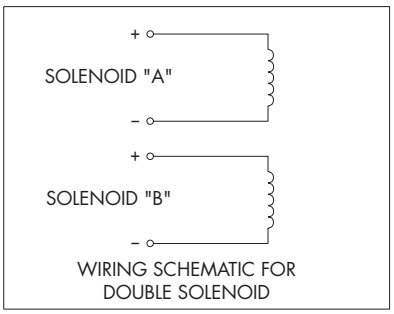
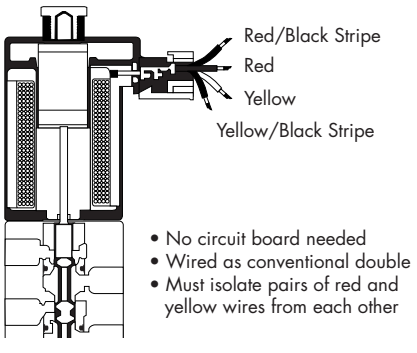


Figure 4 : Conventional Double Solenoid



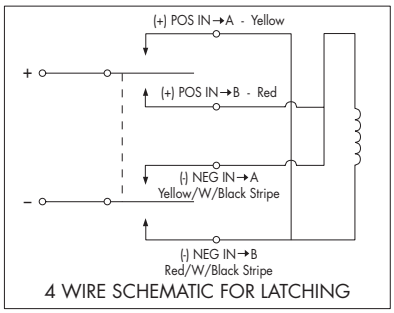
FOUR WIRE

As shown in Figure 5, the four wire method enables the coil to be wired as if it were a conventional double solenoid. By connecting the yellow lead wire to positive voltage and the yellow lead wire with black stripe to negative, the valve will be open to cylinder port"A". When positive voltage is supplied to the red lead wire and negative to the red lead with a black stripe, the valve will now be open to cylinder port"B". Since the negative red and yellow lead wires are internally connected together, the supply voltage for each pair of yellow and red lead wires must be isolated from the other pair (see diagram). Also, power must not be applied to all four leads simultaneously or a short circuit condition will occur possibly damaging the voltage source.



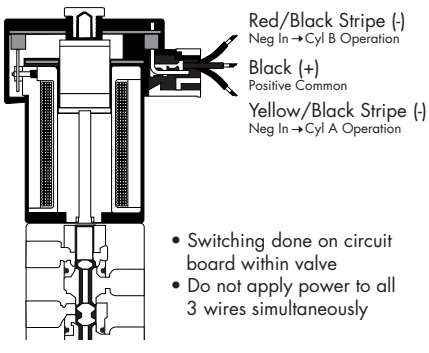
- No circuit board needed
- Wired as conventional double
- Must isolate pairs of red and yellow wires from each other

Figure 5 : Four Wire Latching



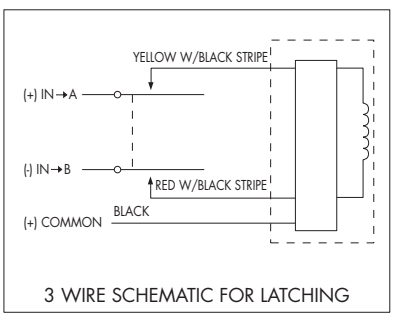
THREE WIRE

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.



- Switching done on circuit board within valve
- Do not apply power to all 3 wires simultaneously

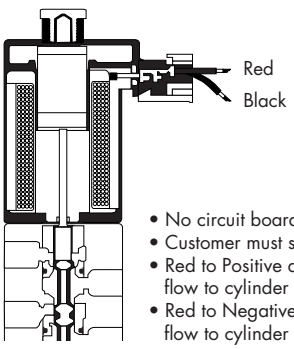
Figure 6 : Three Wire Latching



TWO WIRE

The two wire method shown in Figure 7, provides a black and red lead wire connected to the solenoid. The user must provide the polarity switching circuitry to these leads in order to shift the valve to its two positions. By applying positive DC voltage to the red lead wire and negative to the black, the valve will be open to cylinder port "A". When the polarity of the voltage is externally reversed to the lead wires the valve will now become open to cylinder port "B".

Figure 7 : Two Wire Latching



- No circuit board needed
- Customer must switch polarity of voltage
- Red to Positive and Black to Negative yields flow to cylinder port A
- Red to Negative and Black to Positive yields flow 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.

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

PRECAUTIONS AND WARNINGS
CONCERNING THE APPLICATION, INSTALLATION AND SERVICE OF MAC VALVES AND OTHER MAC VALVES PRODUCTS

The warnings and precautions below are important to be read and understood before designing into a system any MAC Valves products, and before installing or servicing any MAC Valves product. Improper use, installation or servicing of any MAC Valves product in some systems could create a hazard to personnel or equipment. No distinction in importance should be made between the terms warnings and precautions.

WARNING :

Under no circumstances are MAC Valves products to be used in any application or in any manner where failure of the MAC Valves product to operate as intended could in any way jeopardize the safety of the operator or any other person or property.

- Do not operate outside of pressure range listed on a valve label or outside of the designated temperature range.
- Air supply must be clean and dry. Moisture or contamination can affect proper operation of the valve.
- Before attempting to repair, adjust or clean a MAC Valves product, consult catalog, parts & operation sheet, or factory for proper maintenance procedures, lubrication and cleaning agents. Never attempt to repair or perform other maintenance with air pressure to the valve.
- If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

APPLICATION PRECAUTIONS :

INDUSTRIAL USE -

- MAC Valve products are intended for general use in industrial pneumatic and/or vacuum systems. They are general purpose industrial products with literally thousands of different applications in industrial systems. These products are not inherently dangerous, but they are only a component of an overall system. The system in which they are used must provide adequate safeguards to prevent injury or damage in the event failure occurs, whether it be failure of switches, regulators, cylinders, valves or any other component.

POWER PRESSES -

MAC Valve products are not designed nor intended to be used to operate and/or control the operation of clutch and/or brake systems on power presses. There are special products on the market for such use.

2-POSITION VALVES -

Some MAC valves are 2-position, 4-way valves. When air is supplied to the inlet port(s) of these valves, there will always be a flow path from the inlet to one of the outlets regardless of which of the two positions the valve is situated. Therefore, if pressurized air retained in the system would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the trapped air.

3- POSITION VALVES-

Some MAC valves are 3-position, 4-way valves. These valves are either double solenoid or double remote air operated.

If either of the two operators is in control, air supplied to the inlet port(s) will pass through the valve to one of the outlets as on 2-position, 4-way valves. However, if neither operator is in control, the valve moves to a center position. Listed below are the various center position functions :

A. CLOSED CENTER-

With this type valve, when in the center position all ports are blocked (inlets and exhausts) meaning the air at both outlet ports is trapped. If trapping the air in both outlet ports would present a hazard in the application or servicing, a separate method in the system must be provided to remove the trapped air or this type valve should not be used.

B. OPEN CENTER-

With this type valve, when in the center position, the inlet port(s) is blocked and the two outlet ports are open to the exhaust port(s) of the valve. If having no air in either outlet port would present a hazard in the application or servicing, this type valve should not be used.

C. PRESSURE CENTER-

With this type valve, when in the center position, the inlet port(s) is connected to both outlet ports of the valve. If having pressurized air to either or both outlet ports would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the retained air or this type valve should not be used.

OPERATING SPECIFICATIONS -

MAC Valves products are to be installed only on applications that meet all operating specifications described in the MAC catalog for the MAC Valves product.

MANUAL OPERATORS-

Most MAC valves can be ordered with manual operators. Manual operators when depressed, are designed to shift the valve to the same position as would the corresponding solenoid or remote air pilot operator if it were activated. Care must be taken to order a type, if any, that will be safe for the physical location of the manual operator in the system. If intentional or accidental operation of a valve by a manual operator could cause personal injury or property damage, a manual operator should not be used.

REMOTE AIR OPERATED VALVES

Pilot valves supplying signal pressure to remote air operated valves should be 3-way valves with adequate supply and exhaust capacity to provide positive pressurizing and exhausting of the pilot supply line. Pilot lines should be open to exhaust when valves are deenergized.

INSTALLATION PRECAUTIONS :

A. Do not install any MAC Valves product without first turning off air (bleed system completely) and electricity to the machine.
B. MAC Valves products should only be installed by qualified, knowledgeable personnel who understand how the specific valve is to be pneumatically piped and electrically connected (where applicable). Flow paths through the valve are shown in the catalog and on the valve by use of ANSI or ISO type standard graphic symbols. Do not install unless these symbols and the valve functions and operations are thoroughly understood.
C. If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

SERVICE PRECAUTIONS :

A. Do not service or remove from service any MAC Valves product without first shutting off both the air and electricity to the valve and making certain no pressurized air which could present a hazard is retained in the system.
B. MAC Valves products should only be serviced or removed from service by qualified, knowledgeable personnel who understand how the specific product is used and/or how the specific valve is piped and used and whether there is air retained in the connecting lines to the valve or electric power still connected to the valve.
C. Before attempting to repair, adjust or clean a MAC Valves product, consult catalog, parts & operation sheet, or factory for proper maintenance procedures, lubrication and cleaning agents. Never attempt to repair or perform other maintenance with air pressure to the valve.
D. MAC Valves products are never to be stepped on while working on a machine. Damage to a MAC valve, or other product or lines to the product (either air or electrical lines) or accidental activation of a manual operator on the valve could result in personal injury or property damage.

LIMITATION OF GUARANTEE

This Guarantee is limited to the replacement or rebuilding of any valve or other product which should fail to operate properly. Valves or other products, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the Guarantee period. They will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same guarantee as provided under the Flat Rate Rebuild Program.

DISCLAIMER OF GUARANTEE

No claims for labor, material, time, damage, or transportation are allowable nor will any valve or other product be replaced or rebuilt under this guarantee which has been damaged by the purchaser not in the normal course of its use and maintenance during the warranty period. The guarantee does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves,Inc. MAC Valves, Inc. shall in no event be liable for remote, special or consequential damages under the MAC Guarantee, nor under any implied warranties, including the implied warranty of merchantability.

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

Notes

MAC®
VALVES

MAC VALVES, INC.
P.O. BOX 111
30569 BECK ROAD
WIXOM, MI 48393-7011

TEL: 1-800-MAC VLVS
TEL: 1 (248) 624-7700
FAX: 1 (248) 624-0549
E-mail: Mac@macvalves.com
Web Site: www.macvalves.com

MAC VALVES EUROPE, INC.
RUE MARIE CURIE, 12
B-4431 ANS (LIEGE)
BELGIUM

TEL: 32 (4) 239 68 68
FAX: 32 (4) 263 19 42
E-mail: Info@macvalves.be

MAC VALVES PACIFIC, INC.
P.O. BOX 12221
PENROSE, AUCKLAND
NEW ZEALAND

TEL: 64 (9) 634-9400
FAX: 64 (9) 634-9401
E-mail: Macvalves@xtra.co.nz

MAC VALVES, INC.
5555 ANN ARBOR ROAD
DUNDEE, MICHIGAN (MI) 48131
U.S.A.

TEL: 1 (734) 529-5099
FAX: 1 (248) 863-2111

999CTCB - 04/03
B stratégie