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

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

- reliability
- 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 patented oval shaped armature solenoid and 4-way pilot technologies are two new concepts which result in extremely high shifting forces in small packages.

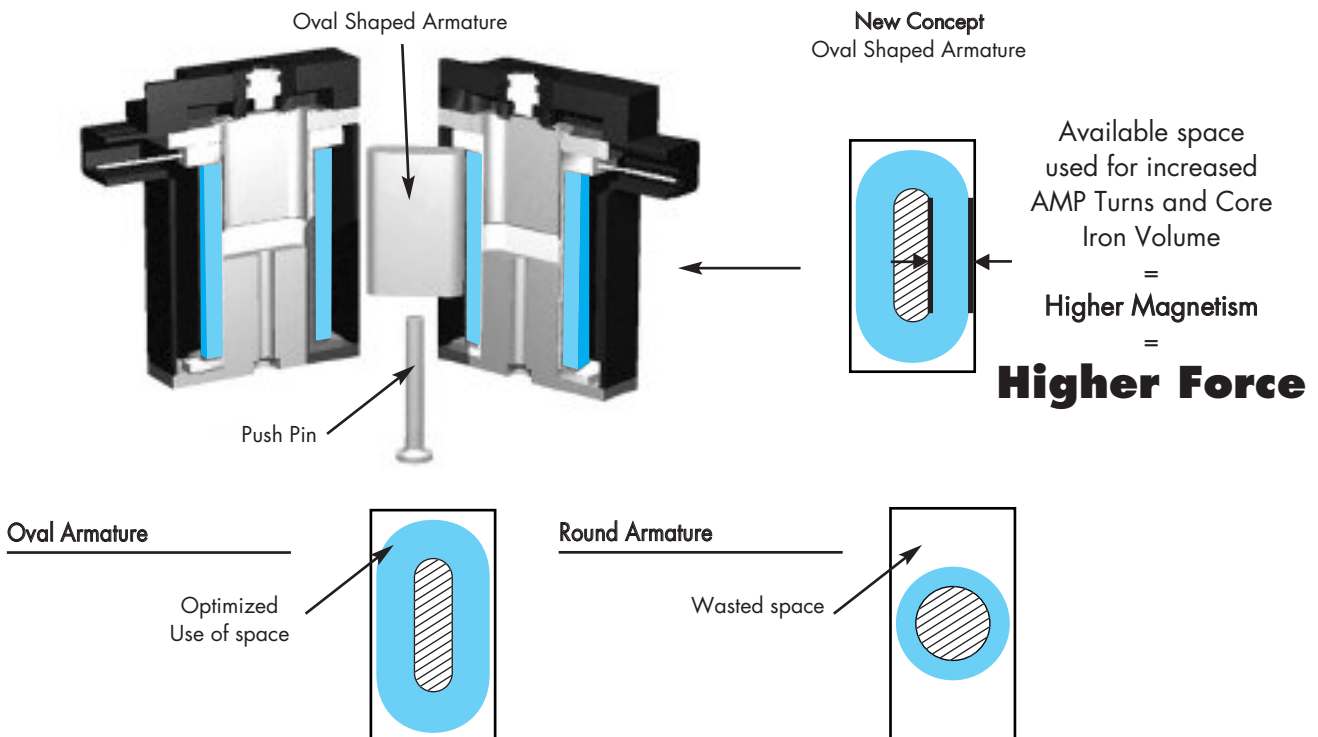
The patented Latching Solenoid is another new offering to the MAC product line. The latching solenoid provides the function of a double solenoid operated valve utilizing only one solenoid.

### 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:

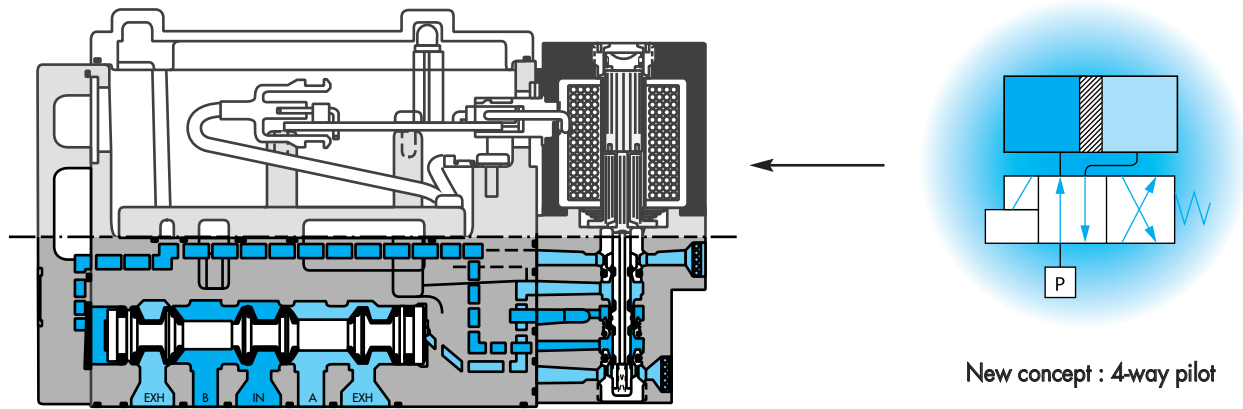
- Increased coil windings ( amp turns)
- Increased core iron volume

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.



## 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 a 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.

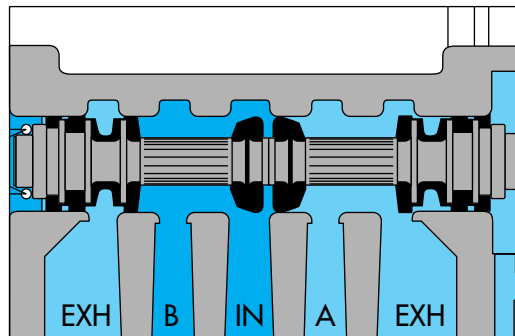


## III. MAC'S PATENTED BONDED SPOOL AND BORE – Balanced, Wiping Action, Minimized Friction

MAC invented the bonded spool and bore combination ensuring balanced operation, built in wiping action to contend with air line contaminants with minimal friction. Precision ground and chemically hardened bonded seals control compression and eliminates creep leading to optimum sealing with minimum resistance to shifting. Built in lubricants in the rubber compound enhances non lube service and extends seal life.

A precision machined bore, roller burnished and polished, results in hard smooth surfaces with a glasslike finish to help minimize friction and wear. The end result is exceptionally long seal life.

MAC's short stroking, lightweight aluminum spools produce fast, repeatable response times.



### MAC's Bonded Spool and Bore

- Balance
- Wiping Action
- Minimized Friction
- Long Life

## IV. MAC's PATENTED 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 versus 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.

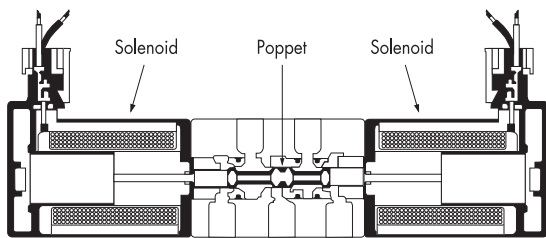


Figure 1 : Double Solenoid Poppet

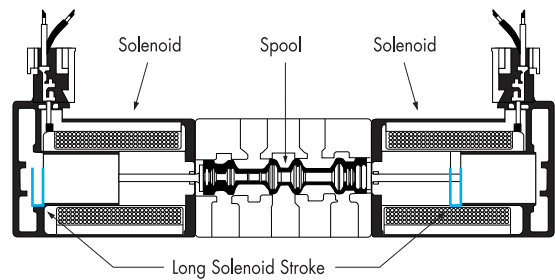


Figure 2 : Double Solenoid Spool Design

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.

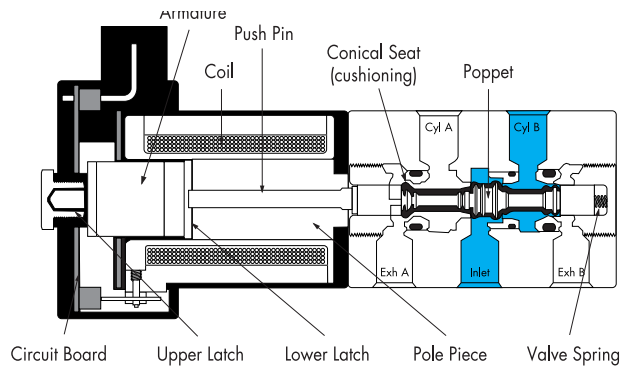


Figure 3 : Latching Solenoid Design

**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.

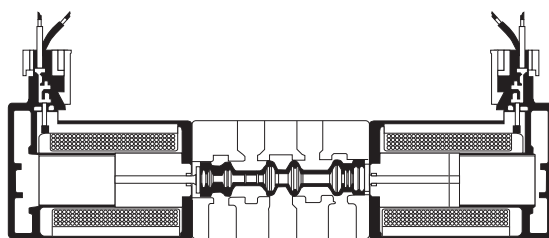
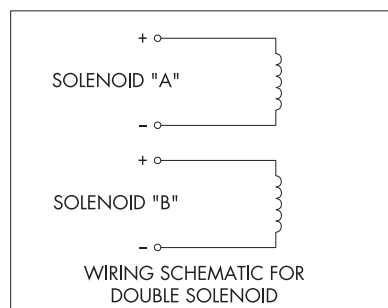


Figure 4 : Conventional Double Solenoid



#### 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.

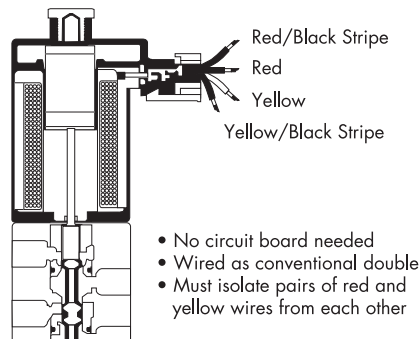
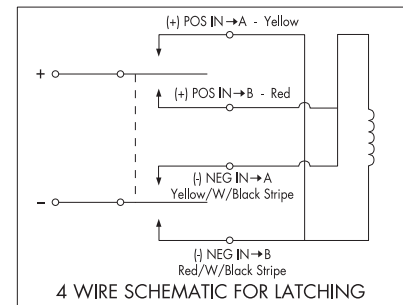


Figure 5 : Four Wire Latching



#### 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.

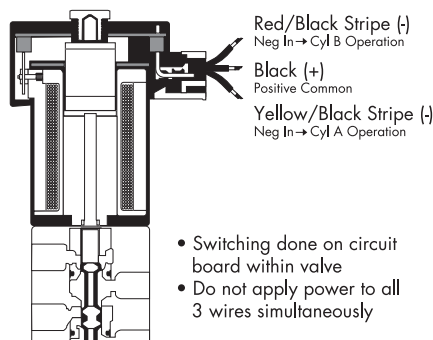
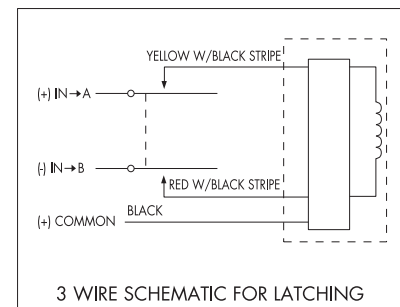


Figure 6 : Three Wire Latching



#### 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".

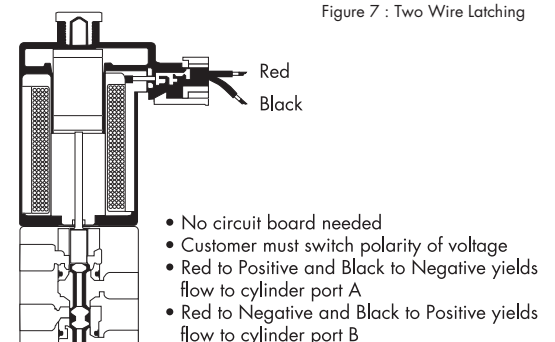


Figure 7 : Two Wire Latching

### 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.

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, Hysteresis, Repeatability and Flow.



### **Animation**

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

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**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 2 bar)
- 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**





## Section 1

## Direct solenoid and solenoid pilot operated valves



# D i r e c t s o l e n o i d a n d

Function	Port size	Flow [Max] NI/min	Individual mounting												
			Inline	Inline Single operator	Inline Double operator	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 15407/1	Valve only - No base "plug-in" Conform to ISO 15407/2	Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2		
3/2	M3	20 to 50	P. 15												
3/2	M3	82	P. 19												
3/2 - 2/2	M5	120	P. 23												
3/2	G1/8"	300	P. 27												
3/2	G1/8" - M5	300													
3/2	G1/8"	400				P. 37									
3/2	M5 - M7	400					P. 39	P. 45	P. 47						
3/2	G1/8" - G1/4"	500	P. 51			P. 53									
3/2	G1/8"	1200				P. 57	P. 59	P. 63	P. 65						
3/2 - 2/2	G1/8" - G1/4"	1500	P. 69												
3/2	G1/4" - G3/8"	2000	P. 73												
3/2 - 2/2	G3/8" - G1/2" - G3/4"	5100				P. 77	P. 79								
3/2 - 2/2	G3/4" - G1"	20000	P. 83												
3/2 - 2/2	G1" - G1 1/4" - G1 1/2"	31000	P. 87												
3/2 - 2/2	G1 1/2" - G2" - G2 1/2"	60000	P. 91												
5/2	M3	22 to 35	P. 95												
5/2	M3	70	P. 99												
5/2	M5	100	P. 103												
5/2	M3 - M5	230	P. 107			P. 109									
5/2 - 5/3	M5	250	P. 115												
5/2 - 5/3	M5 - M7	370				P. 117	P. 119								
5/2 - 5/3	M5 - M7	400													
4/2	G1/8" - M5	300	P. 127												
4/2	G1/8"	300													
5/2 - 5/3	M5 - M7	400				P. 141	P. 143								
5/2	M5 - M7	400						P. 149	P. 151						
5/2	G1/8" - G1/4"	500	P. 157			P. 159									
5/2	G1/8"	1000	P. 167												
5/2 - 5/3	G1/8"	1100				P. 171	P. 173								
5/2	G1/8"	1100						P. 179							
5/2	G1/8"	1000							P. 181						
5/2 - 5/3	G1/8" - G1/4"	1000	P. 187			P. 189									
5/2 - 5/3	G1/8" - G1/4" - G3/8"	1200				P. 193	P. 195								
5/2 - 5/3	G1/4" - G3/8"	1200													
5/2 - 5/3	G1/4" - G3/8"	1500		P. 205	P. 207										
5/2 - 5/3	G3/8" - G1/2"	3800	P. 211												
5/2 - 5/3	G1/4" - G3/8" - G1/2"	3400				P. 213	P. 215								
5/2 - 5/3	G1/4"	1000							P. 225	P. 227					
5/2 - 5/3	G1/8"	430							P. 231						
5/2 - 5/3	G1/8"	510								P. 233					
5/2 - 5/3	G1/4" - G3/8"	1800										P. 237	P. 239		
5/2 - 5/3	G3/8" - G1/2"	3000										P. 243	P. 245		
5/2 - 5/3	G1/2" - G3/4"	6100										P. 249	P. 251		

# s o l e n o i d   p i l o t   o p e r a t e d   v a l v e s

## 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 15407/1	Valve only - No base "plug-in" Conform to ISO 15407/2	Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2	
												31
												33
												34
		P. 31	P. 33									36
P. 29												32
	P. 41	P. 43				P. 45	P. 47					37
		P. 61				P. 63	P. 65					38
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	P. 111											23
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	P. 121	P. 123										46
P. 129												42
		P. 131	P. 133	P. 135	P. 137							47
	P. 145	P. 147										48P
						P. 149	P. 151					48
P. 161		P. 163										400
	P. 175	P. 177										92
						P. 179						83
							P. 181					93
												ISO 01
								P. 225	P. 227			ISO 02
								P. 231				ISO 1
									P. 233			ISO 2
										P. 237	P. 239	ISO 3
										P. 243	P. 245	
										P. 249	P. 251	

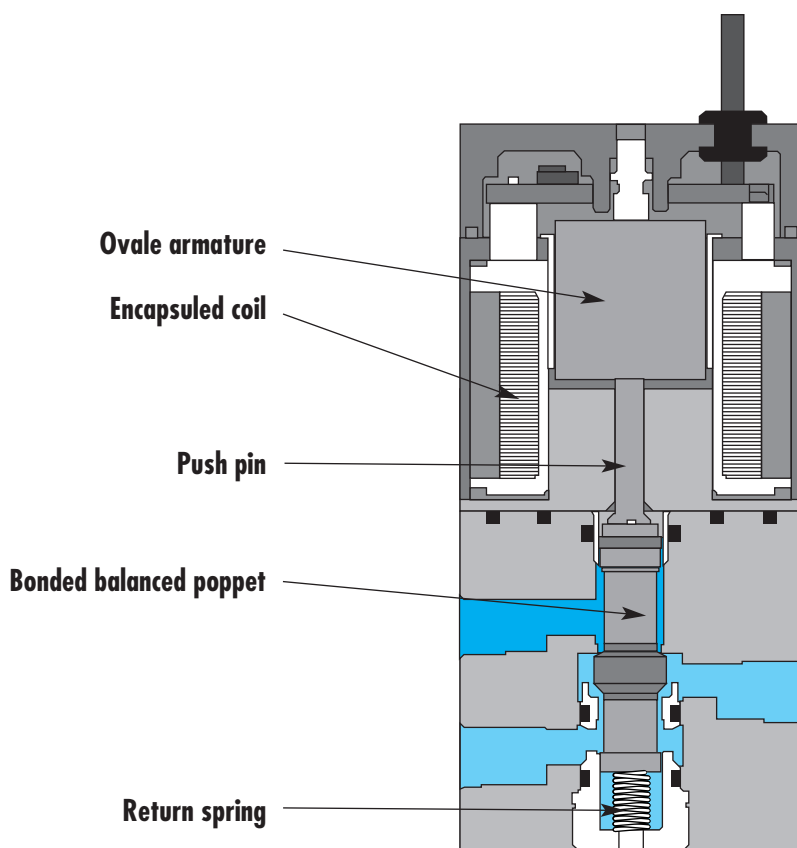


# Direct solenoid and solenoid pilot operated valves 6 mm valve

Individual mounting

Série

inline	
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## 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.
- 6 mm direct operated valve.
- Very fast response times.

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ISO 01
ISO 02
ISO 1
ISO 2
ISO 3





# Direct solenoid and solenoid pilot operated valves 6 mm valve

Function	Port size	Flow [Max]	Mounting	Series
<b>3/2 NC</b>	<b>M 3</b>	<b>20 to 50 NI/min</b>	Individual inline	

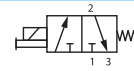
### OPERATIONAL BENEFITS

1. 6mm 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
8. Universal valve



### HOW TO ORDER

Port size	NC only valve
<b>M3</b>	31A-AAB-T <b>xxx-xxx</b>



### SOLENOID OPERATOR >

T **XXX-XXX** \*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
DC	24V=/1.8W	A	45 cm	0	No operator*	BA	Flying leads
DD	24V=/2.5W	B	60 cm	1	Non-locking		
DE	24V=/3.0W	C	90 cm				
DF	24V=/4.0W						
DJ	12V=/1.8W						
DK	12V=/2.5W						
DL	12V=/3.0W						
DM	12V=/4.0W						

\*Use this option only for high-speed models with differential air assist

### For high-speed differential air assist models only

FA	24V=/60W
FB	24V=/90W
FC	24V=/230W

Mod number required for high speed models with differential air assist – consult factory

\* Other options available, see page 405

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100%  
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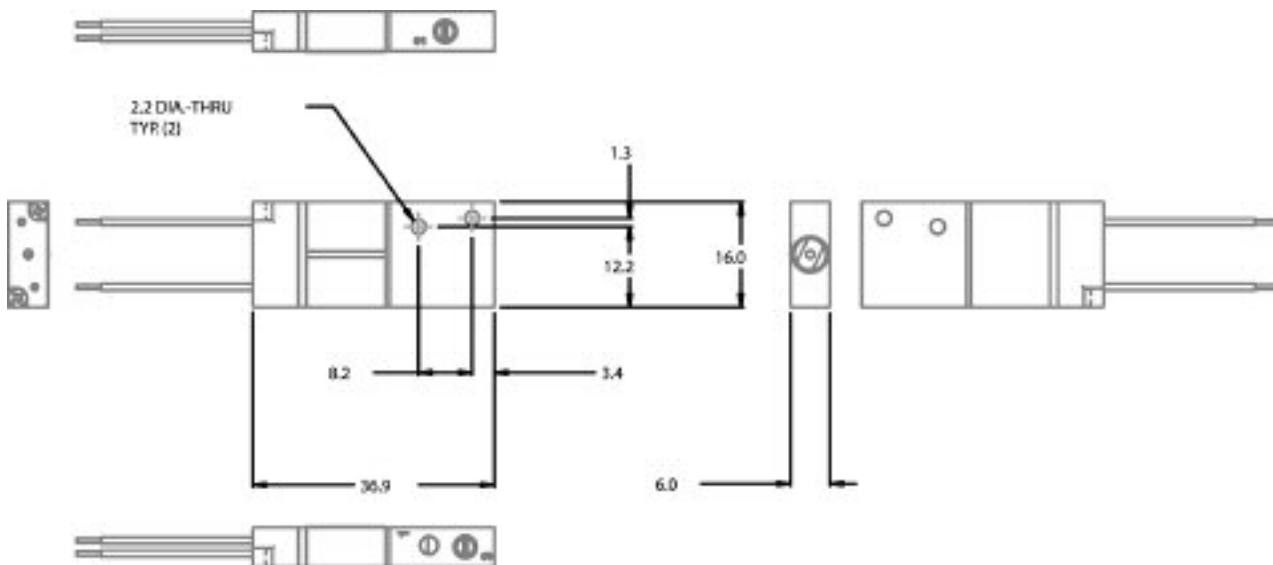
WARRANTY  
18  
MONTHS

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Flow :	20 to 50 NI/min (Cv 0,02 to 0,05)
Coil :	Class A wires – continuous duty
Voltage range :	-15% to +10%
Power :	1.8W, 2.5W, 3.0W, 4.0W - High wattages available, consult factory
Response times :	Energize: 1,8 ms      De-energize: 0,8 ms

**DIMENSIONS**

Dimensions shown are metric (mm)



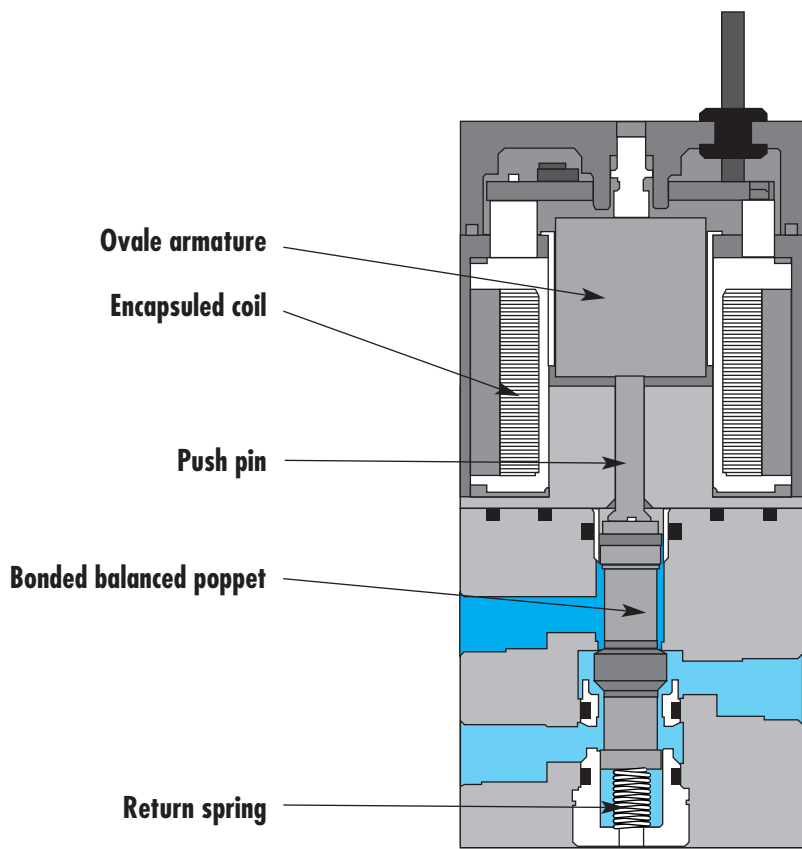


# Direct solenoid and solenoid pilot operated valves 8 mm valve

## Individual mounting

inline

Série



### 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.

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ISO 3



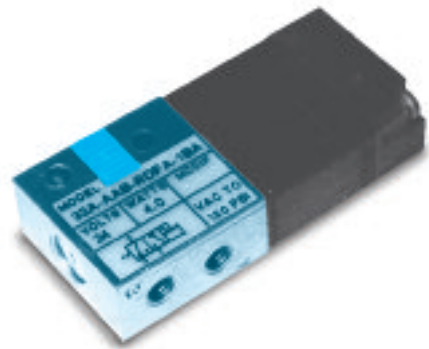


# Direct solenoid and solenoid pilot operated valves 8 mm valve

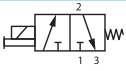
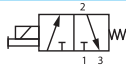
Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NC</b>	<b>M 3</b>	<b>82 NI/min</b>	<b>Inline</b>	

### 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



### HOW TO ORDER

Port size	NC only valve	NC only valve**
<b>M3</b>	 33A-AAB-R <b>xxx-xxx</b>	 33A-BAB-R <b>xxx-xxx</b>

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

### SOLENOID OPERATOR ▶

**Rxxx-xxx\***

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
<b>DB</b>	24V=/1.0W	<b>0</b>	No lead wire*	<b>0</b>	No manual operator	<b>BA</b>	Flying leads
<b>DC</b>	24V=/1.8W	<b>A</b>	45 cm	<b>1</b>	Non-locking recessed	<b>BB</b>	Flying leads w/LED
<b>DF</b>	24V=/4.0W	<b>B</b>	60 cm	<b>3</b>	Non-locking extended	<b>BC</b>	Flying leads w/MOV
<b>DH</b>	12V=/1.0W	<b>C</b>	90 cm			<b>BD</b>	Flying leads w/LED & MOV
<b>DJ</b>	12V=/1.8W	<b>D</b>	120 cm			<b>RA</b>	Mini JAC solenoid plug-in
<b>DM</b>	12V=/4.0W	<b>E</b>	180 cm			<b>RB</b>	Mini JAC solenoid plug-in w/LED
						<b>RC</b>	Mini JAC solenoid plug-in w/MOV
						<b>RD</b>	Mini JAC solenoid plug-in w/LED & MOV
						<b>TA</b>	JST Solenoid plug-in
						<b>TB</b>	JST Solenoid plug-in w/LED
						<b>TC</b>	JST Solenoid plug-in w/MOV
						<b>TD</b>	JST Solenoid plug-in w/LED & MOV

\* Not available for flying leads connectors

\* Other options available, see page 401  
Washdown capability is possible for the "B" and "R" type electrical connectors. Consult factory for ordering information.

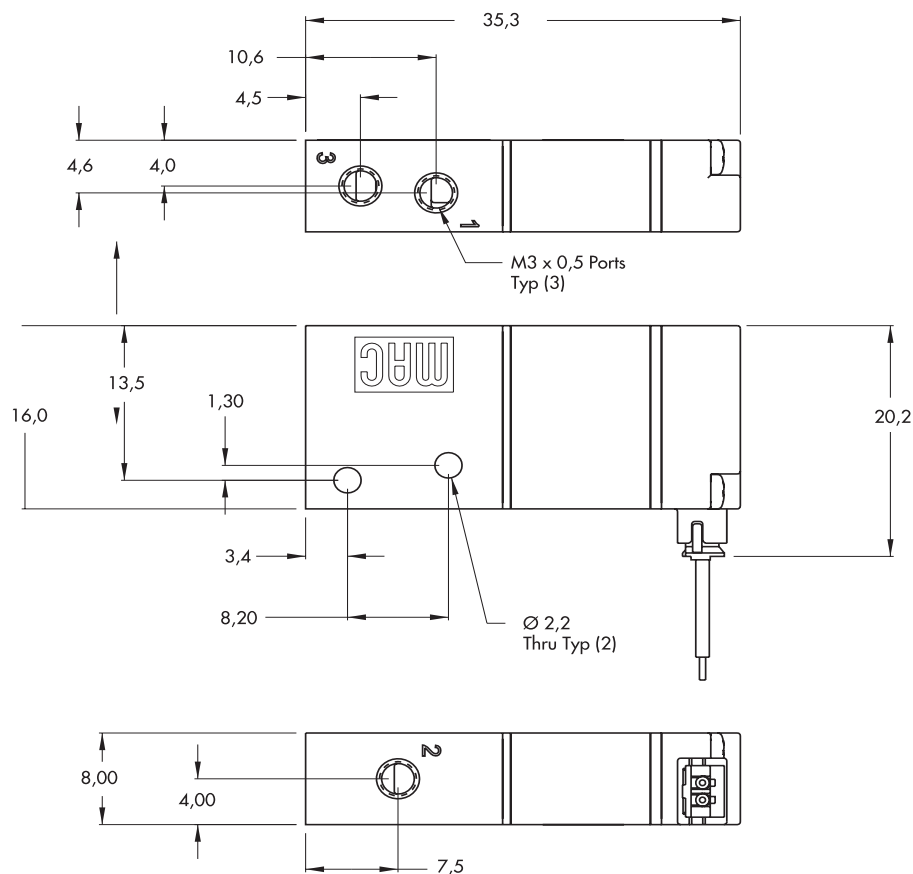
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 $\mu$
Temperature range :	-18°C to +50°C
Flow :	4W: 82 NI/min - 3W: 62 NI/min - 2.5W: 62 NI/min - 1.8W: 55 NI/min - 1.0W: 30 NI/min - 0.5W: 20 NI/min
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**

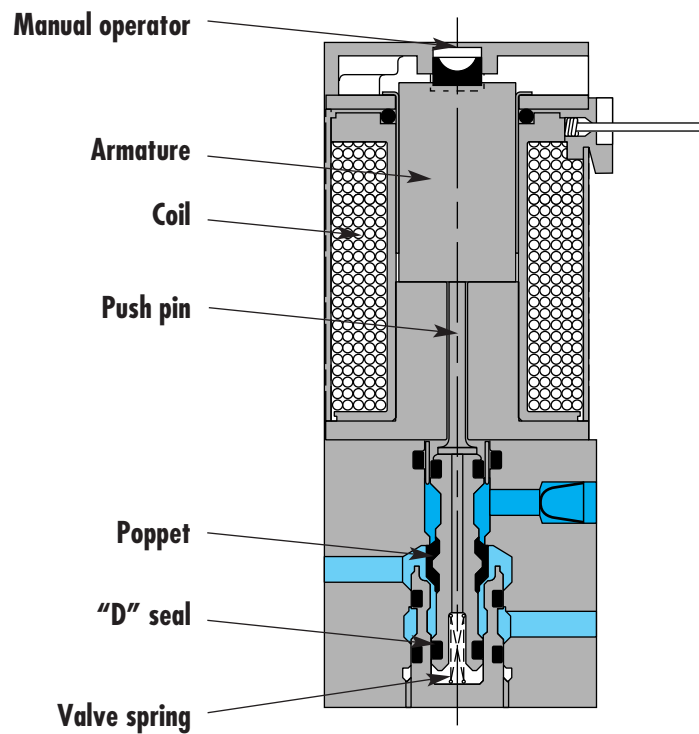
Dimensions shown are metric (mm)



Individual mounting

Series

Inline
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**SERIES FEATURES**

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

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# Direct solenoid and solenoid pilot operated valves

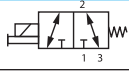
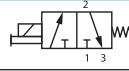
Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>M5</b>	<b>120 NI/min</b>	Inline	

### 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
<b>M5</b>	 34C-ABA-G XXX-XXX	 34C-ABB-G XXX-XXX

### SOLENOID OPERATOR ►

G **XXX-XXX**\*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 V~/2,5W	A	45 cm	1	Non-locking	BA	Flying leads
DC	24 V~/1,8W	B	60 cm			BT	Flying leads with light
DD	24 V~/2,5W	C	90 cm			GA	MAC JAC Solenoid plug-in
DF	24 V~/4,0W					GB	MAC JAC Solenoid plug-in with diode
						GC	MAC JAC Solenoid plug-in with MOV
						GD	MAC JAC Solenoid plug-in with LED
						GE	MAC JAC Solenoid plug-in with diode and LED
						GF	MAC JAC Solenoid plug-in with MOV and LED
						GG	MAC JAC Solenoid plug-in with rectifier
						GH	MAC JAC Solenoid plug-in with rectifier and LED
						KA	Mini connector
						KC	Mini connector with rectifier and light
						KT	Mini connector with light

Note : AC voltage requires connector with rectifier.  
 \* Other options available, see page 387.

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

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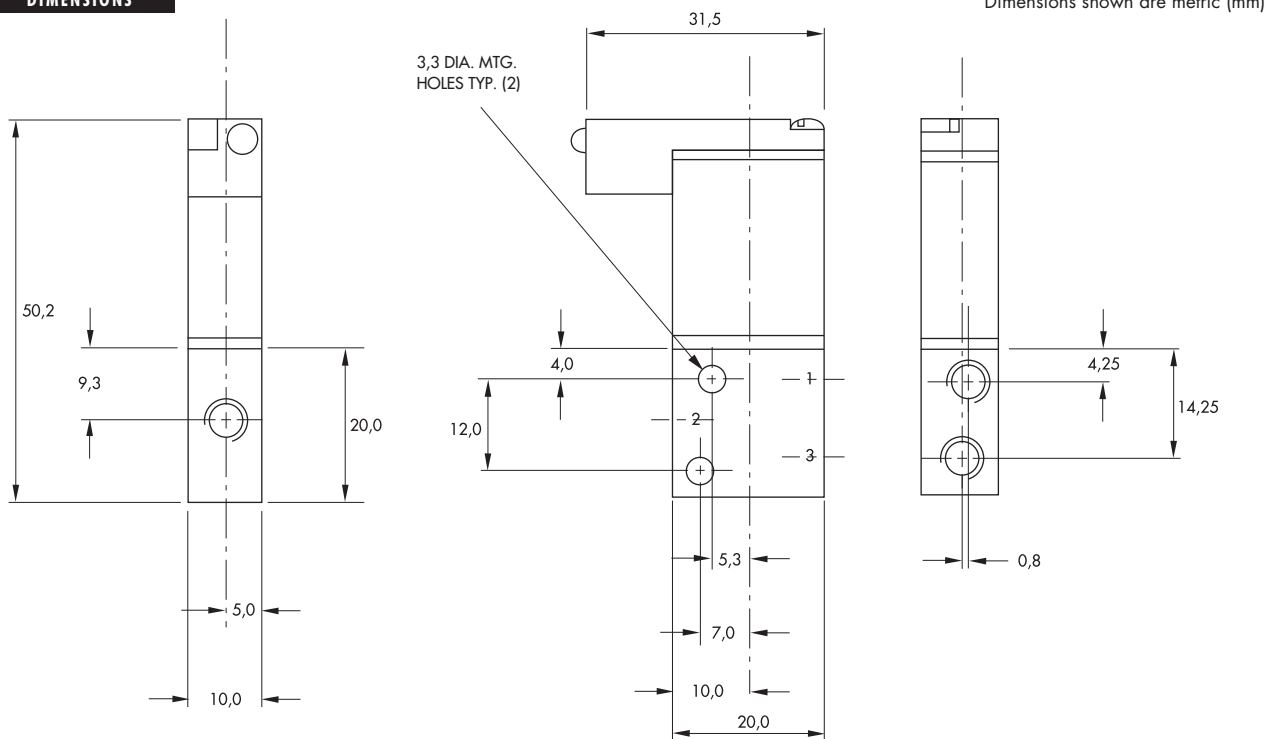
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	1,8 mm
Flow :	4 W : 120 NI/min (Cv 0,12) – 2,5 W : 100 NI/min (Cv 0,10) – 1,8 W : 60 NI/min (Cv 0,06)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
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**





Individual mounting

Inline	
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Manifold mounting

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

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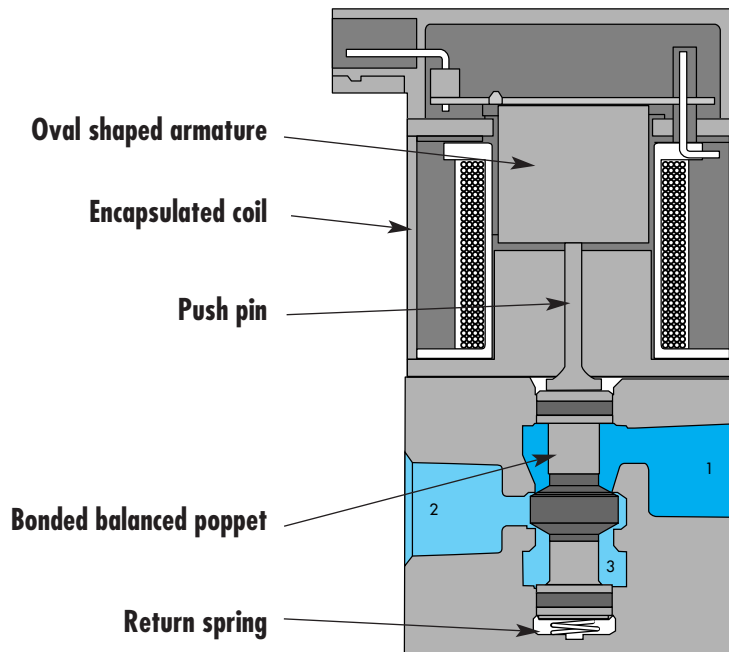
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**SERIES FEATURES**

- 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.





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	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
<b>G1/8"</b>	36A-ACA-J xxx-xxx	36A-ACB-J xxx-xxx

### SOLENOID OPERATOR >

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

XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
AA	120V~/5,4W	A	45 cm	1	Non-locking	BA	Flying leads
DA	24V~/5,4W	B	60 cm	2	Locking	GA	MAC JAC solenoid plug-in
DB	12V~/5,4W	C	90 cm			GB	MAC JAC solenoid plug-in with diode
DC	24V~/2,4W					GD	MAC JAC solenoid plug-in with light
DD	12V~/2,4W					GG	MAC JAC solenoid plug-in with rectifier

\* Other options available, see page 393.

Note : - AC voltage requires connector with rectifier.

- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.

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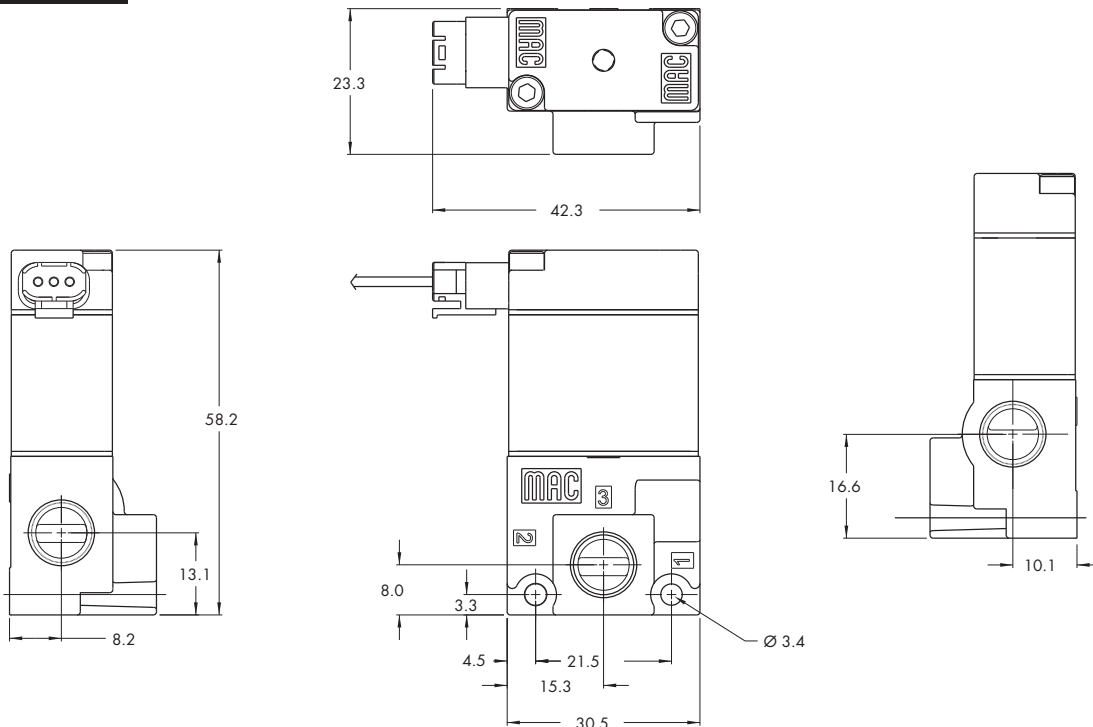
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	G1/8" : 300 NI/min (Cv 0,3)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,4 W – 2,4 W – 1,0 W

Option : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>3/2</b>	<b>G1/8" - M5</b>	<b>300 NI/min</b>	Stacking	

### OPERATIONAL BENEFITS

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



### HOW TO ORDER

Port size	NC only stacking	NC stacking Universal poppet	NO stacking Universal poppet
<b>G1/8"</b>	36A-SCB-J xxx-xxx	36A-SCC-J xxx-xxx	36A-SCD-J xxx-xxx
<b>M5</b>	36A-SDB-J xxx-xxx	36A-SDC-J xxx-xxx	36A-SDD-J xxx-xxx

### SOLENOID OPERATOR >

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

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120V~/5,4W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DA</b> 24V~/5,4W	<b>B</b> 60 cm	<b>2</b> Locking	<b>GA</b> MAC JAC solenoid plug-in
<b>DB</b> 12V~/5,4W	<b>C</b> 90 cm		<b>GB</b> MAC JAC solenoid plug-in with diode
<b>DC</b> 24V~/2,4W			<b>GD</b> MAC JAC solenoid plug-in with light
<b>DD</b> 12V~/2,4W			<b>GG</b> MAC JAC solenoid plug-in with rectifier

\* Other options available, see page 393.  
 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 G1/4") : M-36001-01P.

### BODY TYPE OPTIONS

36A-SCB-Jxxx-xxx	S Stacking body
	T Stacking body with bottom inlet

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100%  
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PRODUCTION  
TESTED  
100%

WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

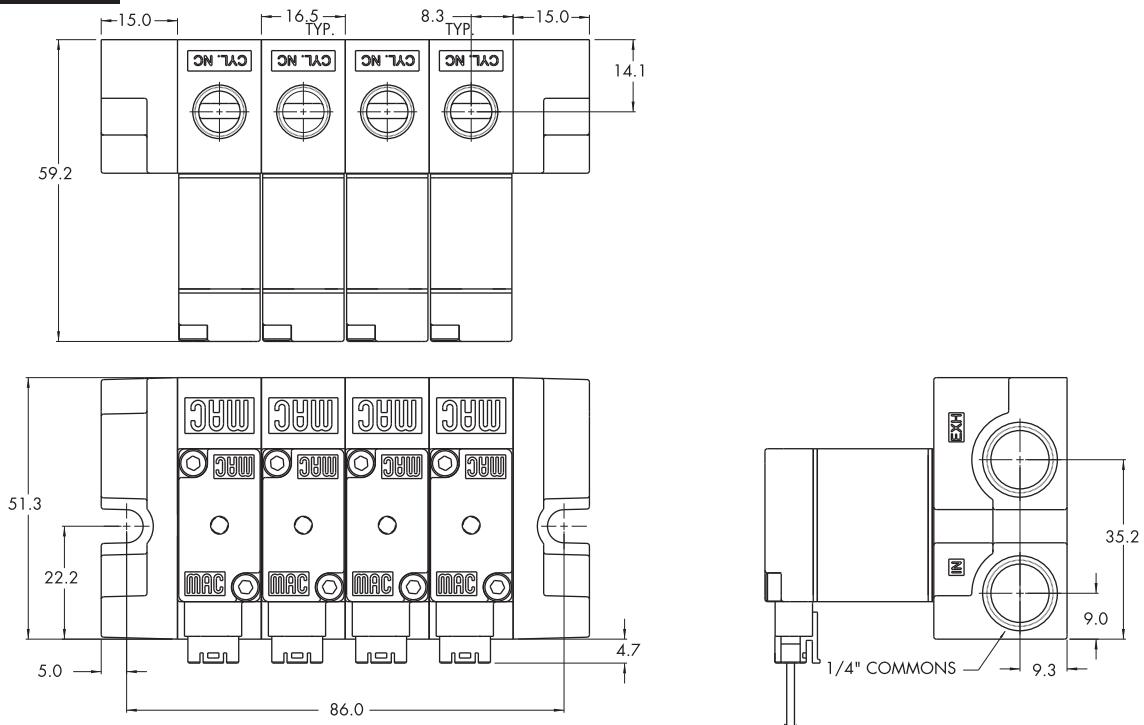
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	G1/8" : 300 NI/min (Cv 0,3) – M5 : 300 NI/min (Cv 0,3)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,4 W – 2,4 W – 1,0 W

Option : • NPTF 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)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>3/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	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
<b>Valve less base</b>	36A-J00-00-J <b>XX</b> P- <b>XXX</b>	36A-K00-00-J <b>XX</b> P- <b>XXX</b>	36A-L00-00-J <b>XX</b> P- <b>XXX</b>
<b>G1/8"</b>	36A-JSC-AE-J <b>XX</b> P- <b>XXX</b>	36A-KSC-AF-J <b>XX</b> P- <b>XXX</b>	36A-LSC-AE-J <b>XX</b> P- <b>XXX</b>

### SOLENOID OPERATOR >

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

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120V~/5,4W	<b>1</b> Non-locking	<b>FA</b> Base plug-in
<b>DA</b> 24V=/5,4W	<b>2</b> Locking	<b>FB</b> Base plug-in with diode
<b>DB</b> 12V=/5,4W		<b>FG</b> Base plug-in with rectifier
<b>DC</b> 24V=/2,4W		
<b>DD</b> 12V=/2,4W		

\* Other options available, see page 393.  
Note : AC voltage requires connector with rectifier.

Example : Manifold base only : 36A-0SC-AC (Normally closed manifold base).

End plate quit required (port size G1/4") : M-46003-01P.

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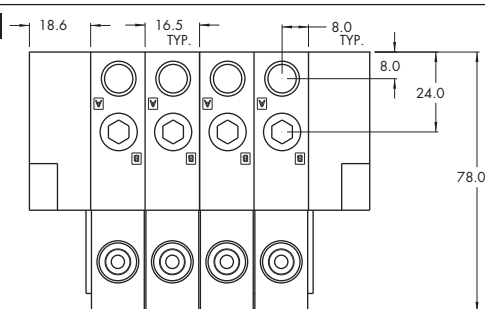
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,4 W – 2,4 W – 1,8 W

Option : • NPTF threads

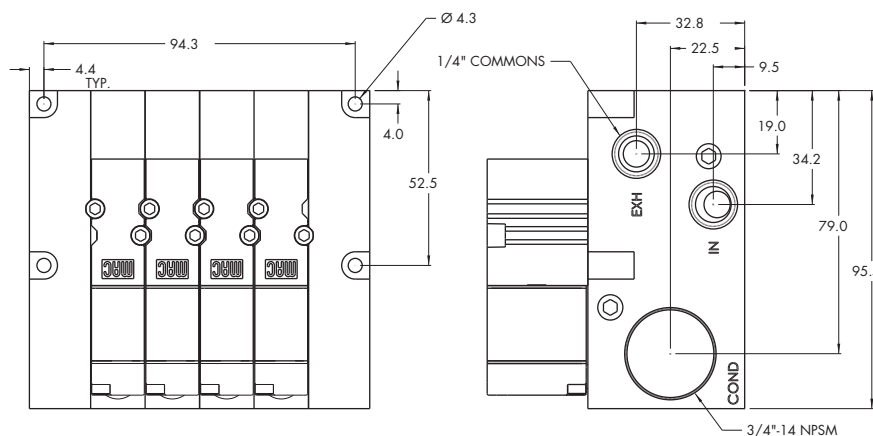
Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002  
• Tie rod (x2) : 79443

**DIMENSIONS**



Dimensions shown are metric (mm)

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







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>3/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	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
<b>Valve less base</b>	36A-J00-00-J xxP-xxx	36A-K00-00-J xxP-xxx	36A-L00-00-J xxP-xxx
<b>G1/8"</b>	36A-JSC-AG-J xxP-xxx	36A-KSC-AH-J xxP-xxx	36A-LSC-AG-J xxP-xxx

### SOLENOID OPERATOR >

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

XX Voltage	X Manual operator	XX Electrical connection
AA 120V~/5,4W	1 Non-locking	FA Base plug-in
DA 24V~/5,4W	2 Locking	FB Base plug-in with diode
DB 12V~/5,4W		FG Base plug-in with rectifier
DC 24V~/2,4W		
DD 12V~/2,4W		

\* Other options available, see page 393.  
Note : AC voltage requires connector with rectifier.

### OPTIONS

36A-JSC-AG-Jxx 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
- 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-0SC-AJ (Normally closed manifold base & regulator with knob).

End plate quit required (port size G1/4") : M-46003-01P.

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**TECHNICAL DATA**

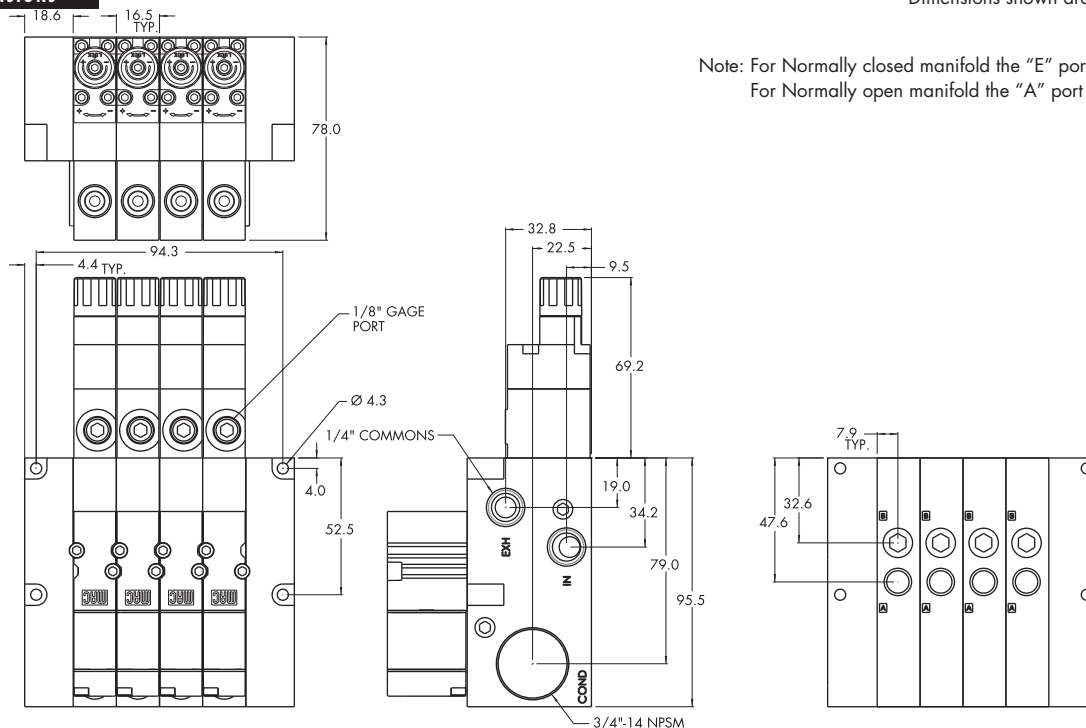
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,4 W – 2,4 W – 1,8 W

Option : • NPTF 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 "E" port is plugged.  
For Normally open manifold the "A" port is plugged.

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
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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
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Series

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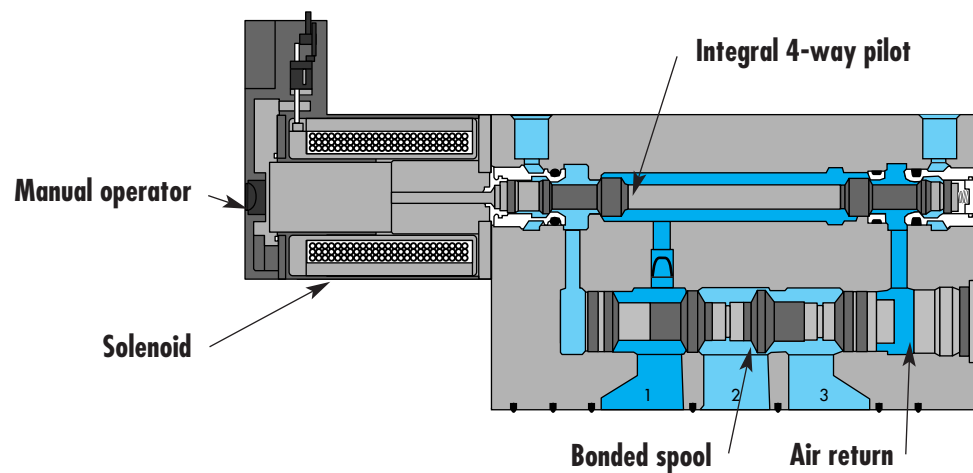
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**SERIES FEATURES**

- 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.





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8"</b>	<b>400 NI/min</b>	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 centres).
3. High flow (up to 400 NI/min).
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
<b>Valve less base</b>	Internal	32B-BMA-000-Gxxx-xxx	32B-AMA-000-Gxxx-xxx	
	External	32B-BMB-000-Gxxx-xxx	32B-AMB-000-Gxxx-xxx	32B-GMB-000-Gxxx-xxx
<b>G1/8"</b>	Internal	32B-BMA-HAL-Gxxx-xxx	32B-AMA-HAL-Gxxx-xxx	
	External	32B-BMB-HAM-Gxxx-xxx	32B-AMB-HAM-Gxxx-xxx	32B-GMB-HAM-Gxxx-xxx

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
AA 120 V~/2,5W	A 45 cm	1 Non-locking	BA Flying leads
DA 24 V~/1,0W	B 60 cm	2 Locking	BT Flying leads with light
DC 24 V~/1,8W	C 90 cm		GA MAC JAC Solenoid plug-in
DD 24 V~/2,5W			GB MAC JAC Solenoid plug-in with diode
DF 24 V~/4,0W			GC MAC JAC Solenoid plug-in with MOV
			GD MAC JAC Solenoid plug-in with LED
			GE MAC JAC Solenoid plug-in with diode and LED
			GF MAC JAC Solenoid plug-in with MOV and LED
			GG MAC JAC Solenoid plug-in with rectifier
			GH MAC JAC Solenoid plug-in with rectifier and LED
			KA Mini connector
			KD Mini connector with rectifier light and ground
			KT Mini connector with light

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

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

Latching solenoid also available, see page 45.

### OPTIONS

Pilot/Base Configuration :

32B-xMx-xAx-Gxxx-xxx

- A Individual base – Side port
- B Individual base – Bottom port
- M Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust to main exhaust (not available with external pilot)

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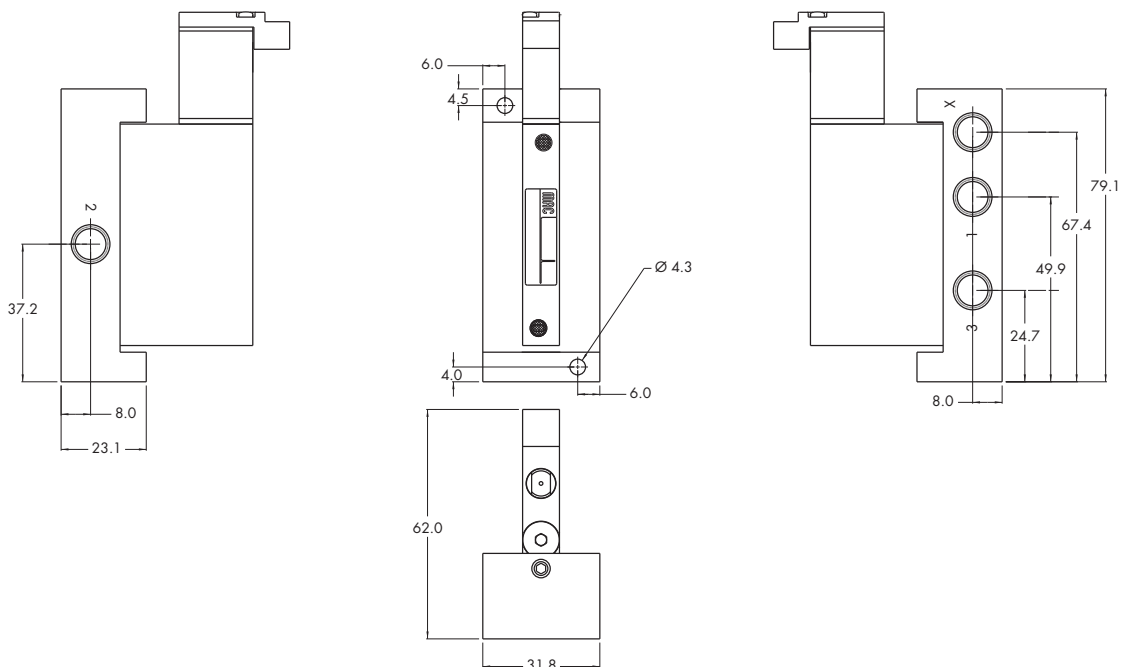
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1 bar) :	G1/8" : 400 NI/min (Cv 0,40)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Sub-base "plug-in"	

### OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centres).
3. High flow (up to 400 NI/min).
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
<b>Valve less base</b>	Internal	32B-BMA-000-GxxP-xxx	32B-AMA-000-GxxP-xxx	
	External	32B-BMB-000-GxxP-xxx	32B-AMB-000-GxxP-xxx	32B-GMB-000-GxxP-xxx
<b>M5</b>	Internal	32B-BMA-GAA-GxxP-xxx	32B-AMA-GAA-GxxP-xxx	
	External	32B-BMB-GAB-GxxP-xxx	32B-AMB-GAB-GxxP-xxx	32B-GMB-GAB-GxxP-xxx
<b>M7</b>	Internal	32B-BMA-LAA-GxxP-xxx	32B-AMA-LAA-GxxP-xxx	
	External	32B-BMB-LAB-GxxP-xxx	32B-AMB-LAB-GxxP-xxx	32B-GMB-LAB-GxxP-xxx

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/2,5W	<b>1</b> Non-locking	<b>SA</b> Base plug-in
<b>DA</b> 24 V~/1,0W	<b>2</b> Locking	<b>SJ</b> Base plug-in with light
<b>DC</b> 24 V~/1,8W		<b>SS</b> Base plug-in with rectifier & light & ground
<b>DD</b> 24 V~/2,5W		
<b>DF</b> 24 V~/4,0W		

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

Washdown capability is possible for the "G" type electrical connector. Consult factory for ordering information. Latching solenoid also available, see page 47.

### OPTIONS

Pilot/Base Configuration :

32B-**xMx-xAx-GxxP-xxx**

- A** Individual base – Side port
- B** Individual base – Bottom port
- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust to main exhaust (not available with external pilot)

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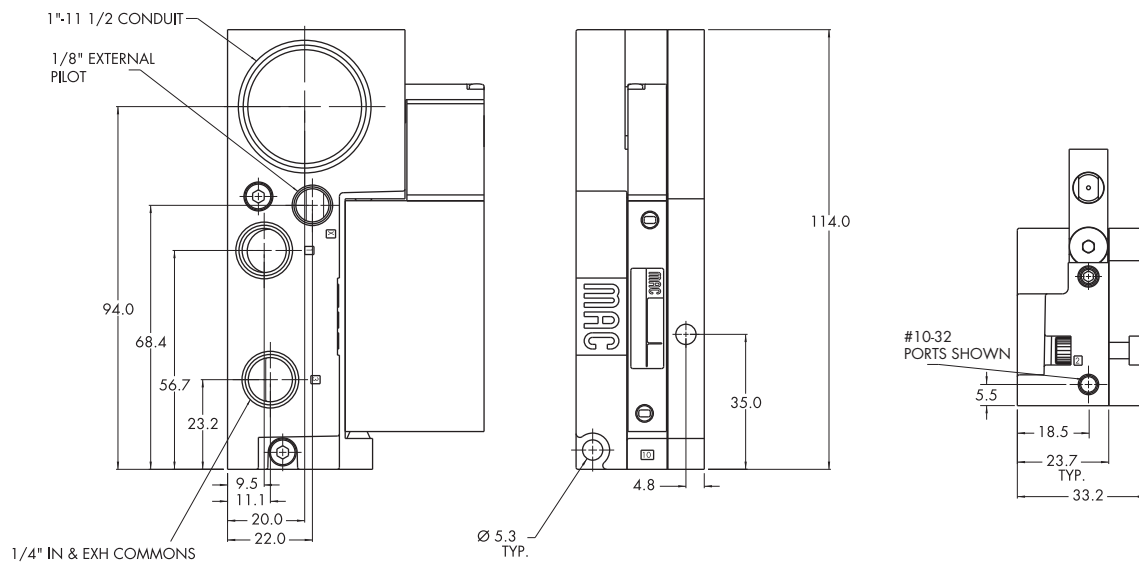
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M5 : 350 NI/min (Cv 0,35) - M7 : 400 NI/min (Cv 0,40)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>M5, M7</b>	<b>400 NI/min</b>	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 centres).
3. High flow (up to 400 NI/min).
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
<b>Valve less base</b>	Internal	32B-BMA-000-GXXX-XXX	32B-AMA-000-GXXX-XXX	
	External	32B-BMB-000-GXXX-XXX	32B-AMB-000-GXXX-XXX	32B-GMB-000-GXXX-XXX
<b>M5</b>	Internal	32B-BMA-GJL-GXXX-XXX	32B-AMA-GJL-GXXX-XXX	
	External	32B-BMB-GJM-GXXX-XXX	32B-AMB-GJM-GXXX-XXX	32B-GMB-GJM-GXXX-XXX
<b>M7</b>	Internal	32B-BMA-LJL-GXXX-XXX	32B-AMA-LJL-GXXX-XXX	
	External	32B-BMB-LJM-GXXX-XXX	32B-AMB-LJM-GXXX-XXX	32B-GMB-LJM-GXXX-XXX

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G XXX-XXX \*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
AA 120 V~/2,5W	A 45 cm	1 Non-locking	BA Flying leads
DA 24 V~/1,0W	B 60 cm	2 Locking	BT Flying leads with light
DC 24 V~/1,8W	C 90 cm		GA MAC JAC Solenoid plug-in
DD 24 V~/2,5W			GB MAC JAC Solenoid plug-in with diode
DF 24 V~/4,0W			GC MAC JAC Solenoid plug-in with MOV
			GD MAC JAC Solenoid plug-in with LED
			GE MAC JAC Solenoid plug-in with diode and LED
			GF MAC JAC Solenoid plug-in with MOV and LED
			GG MAC JAC Solenoid plug-in with rectifier
			GH MAC JAC Solenoid plug-in with rectifier and LED
			KA Mini connector
			KD Mini connector with rectifier light and ground
			KT Mini connector with light

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

Washdown capability is possible for the "G" type electrical connector. Consult factory for ordering information. Latching solenoid also available, see page 45.

### OPTIONS

Base only :

32B-000-XXX (i.e. 32B-000-GJL)

Base Configuration :

32B-xM-xJL-GXXX-XXX

- J Manifold base – Side port
- K Manifold base – Bottom port
- M Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust to main exhaust (not available with external pilot)

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

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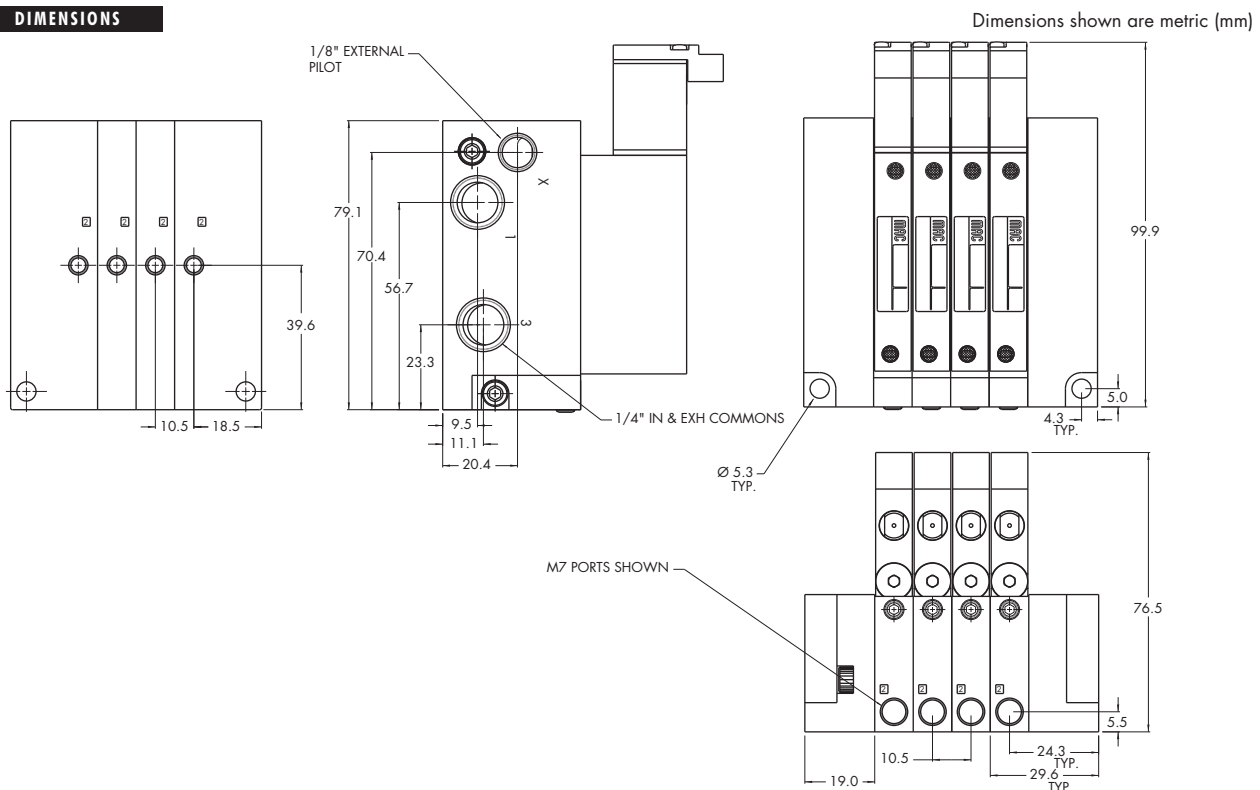
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M5 : 350 NI/min (Cv 0,35) - M7 : 400 NI/min (Cv 0,40)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options : • NPTF threads

**DIMENSIONS**



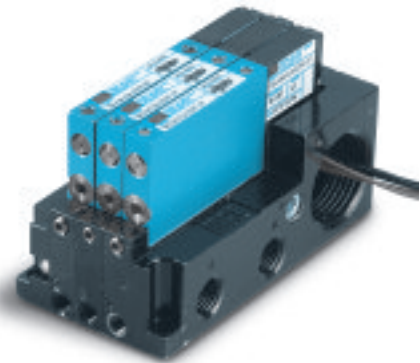


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Manifold base "plug-in"	

### OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centres).
3. High flow (up to 400 NI/min).
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
<b>Valve less base</b>	Internal	32B-BMA-000-GxxP-xxx	32B-AMA-000-GxxP-xxx	
	External	32B-BMB-000-GxxP-xxx	32B-AMB-000-GxxP-xxx	32B-GMB-000-GxxP-xxx
<b>M5</b>	Internal	32B-BMA-GJA-GxxP-xxx	32B-AMA-GJA-GxxP-xxx	
	External	32B-BMB-GJB-GxxP-xxx	32B-AMB-GJB-GxxP-xxx	32B-GMB-GJB-GxxP-xxx
<b>M7</b>	Internal	32B-BMA-LJA-GxxP-xxx	32B-AMA-LJA-GxxP-xxx	
	External	32B-BMB-LJB-GxxP-xxx	32B-AMB-LJB-GxxP-xxx	32B-GMB-LJB-GxxP-xxx

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/2,5W	<b>1</b> Non-locking	<b>SA</b> Base plug-in
<b>DA</b> 24 V~/1,0W	<b>2</b> Locking	<b>SJ</b> Base plug-in with light
<b>DC</b> 24 V=/1,8W		<b>SS</b> Base plug-in with rectifier & light & ground
<b>DD</b> 24 V=/2,5W		
<b>DF</b> 24 V=/4,0W		

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

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

Latching solenoid also available, see page 47.

### OPTIONS

Base only :

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

Base Configuration :

32B-xxx-Jx-GxxP-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").

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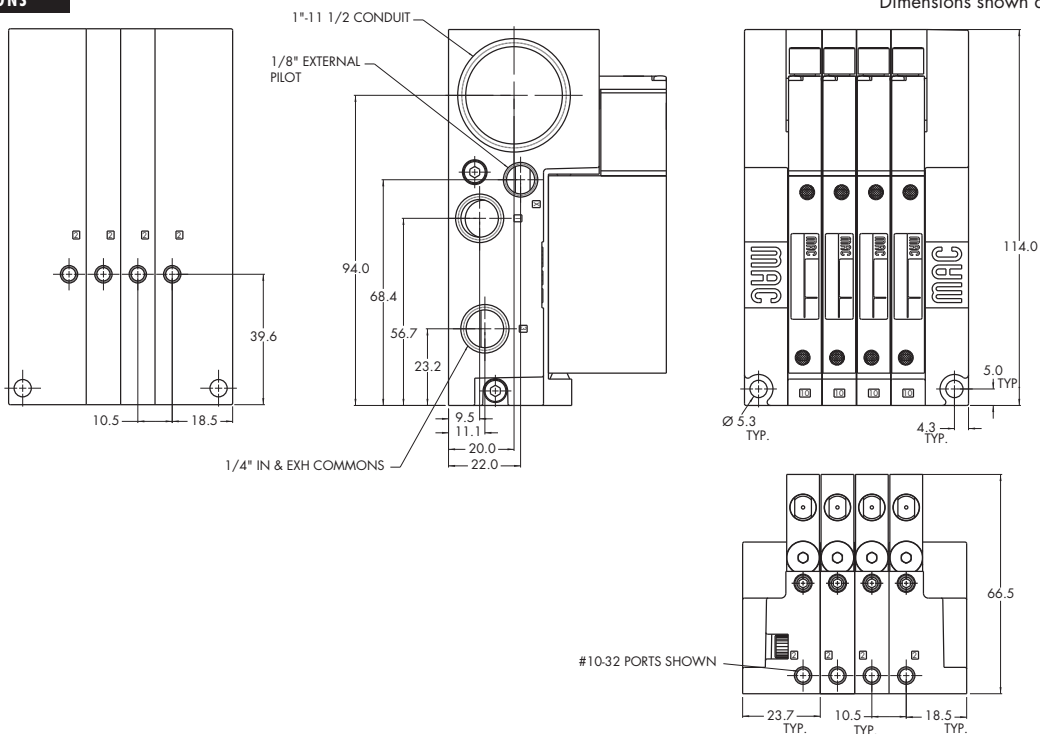
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M5 : 350 NI/min (Cv 0,35) - M7 : 400 NI/min (Cv 0,40)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Subbase/ 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 centres).
3. High flow (up to 400 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



### HOW TO ORDER

Port size	Pilot air	NO valve	NC valve
<b>Valve less base</b>	Internal	32B-BMA-000-Lxxx-xxx	32B-AMA-000-Lxxx-xxx
	External	32B-BMB-000-Lxxx-xxx	32B-AMB-000-Lxxx-xxx
<b>M5</b>	Internal	32B-BMA-GAL-Lxxx-xxx	32B-AMA-GAL-Lxxx-xxx
	External	32B-BMB-GAM-Lxxx-xxx	32B-AMB-GAM-Lxxx-xxx
<b>M7</b>	Internal	32B-BMA-LAL-Lxxx-xxx	32B-AMA-LAL-Lxxx-xxx
	External	32B-BMB-LAM-Lxxx-xxx	32B-AMB-LAM-Lxxx-xxx

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

### LATCHING SOLENOID OPERATOR >

XX Voltage	X Wire length	X Manual operator	XX Electrical connection**
DF 24 V=/4,0W	A 45 cm	0 No operator	BA 2 Wire Flying leads
HA 24 V=/1,95W	B 60 cm		BJ 4 Wire Flying leads
	C 90 cm		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 395.

\*\* Latching 32 series with non plug-in base configuration must use "B", "K" or "L" type electrical connector.

### OPTIONS

Pilot/Base Configuration :

32B-xMx-xAx-Lxxx-xxx

- A Individual base – Side port
- B Individual base – Bottom port
- J Manifold base – Side port
- K Manifold base – Bottom port
- M Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust to main exhaust (not available with external pilot)

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

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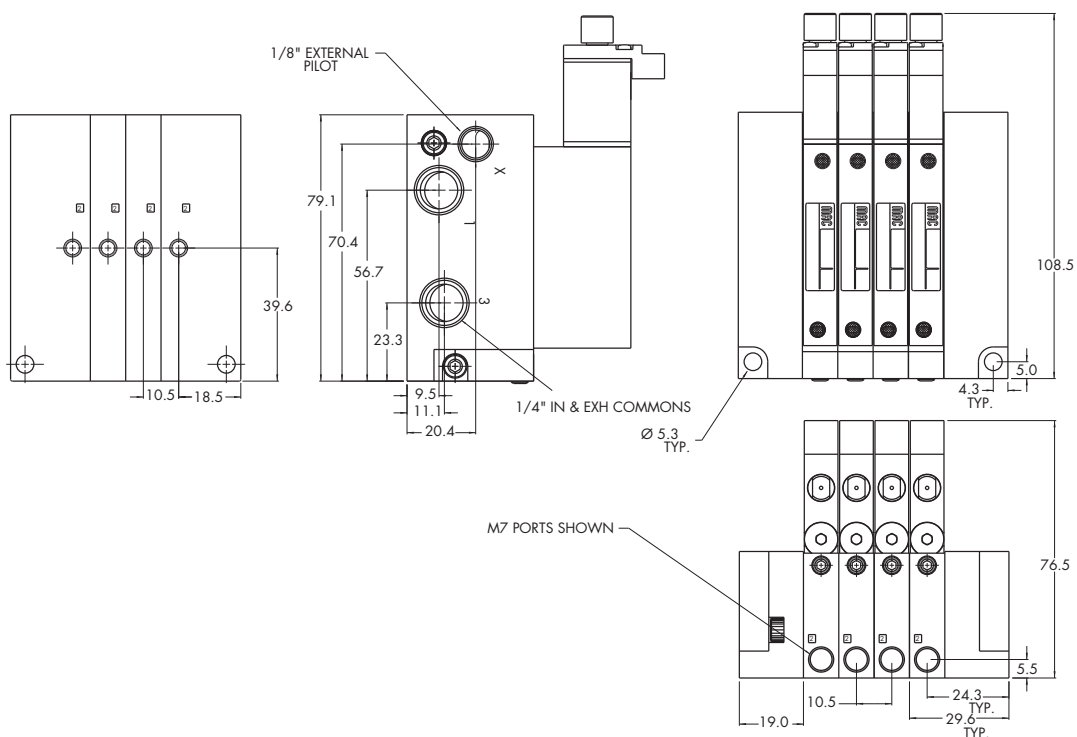
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1 bar) :	M5 : 350 NI/min (Cv 0,35) - M7 : 400 NI/min (Cv 0,40)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.95 to 4.0 W
Response times : (with 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>M5, M7</b>	<b>400 NI/min</b>	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 centres).
3. High flow (up to 400 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



### HOW TO ORDER

Port size	Pilot air	NO valve	NC valve
<b>Valve less base</b>	Internal	32B-BMA-000-LxxP-xxx	32B-AMA-000-LxxP-xxx
	External	32B-BMB-000-LxxP-xxx	32B-AMB-000-LxxP-xxx
<b>M5</b>	Internal	32B-BMA-GAA-LxxP-xxx	32B-AMA-GAA-LxxP-xxx
	External	32B-BMB-GAB-LxxP-xxx	32B-AMB-GAB-LxxP-xxx
<b>M7</b>	Internal	32B-BMA-LAA-LxxP-xxx	32B-AMA-LAA-LxxP-xxx
	External	32B-BMB-LAB-LxxP-xxx	32B-AMB-LAB-LxxP-xxx

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

### LATCHING SOLENOID OPERATOR >

**L XX P-XXX \***

XX Voltage	X Manual operator	XX Electrical connection**
<b>DF</b> 24 V= /4,0W	<b>0</b> No operator	<b>DA</b> Base/Manifold Plug-in
<b>HA</b> 24 V= /1,95W		<b>DB</b> Base/Manifold Plug-in w/ Ground
		<b>DC</b> Base/Manifold Plug-in w/ Light
		<b>DD</b> Base/Manifold Plug-in w/ Light and Ground
		<b>EA</b> Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)

\* Other options available, see page 395.

\*\*2 and 4 wire base must use "D" type electrical connector, 3 wire base must use "EA" type electrical connector.

### OPTIONS

Manifold/Base Configuration :

32B-xMx-xA-LxxP-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
- R Pilot exhaust piped M5
- U Pilot exhaust to main exhaust (not available with external pilot)

Base Int./Ext. Pilot :

32B-xxx-xxA-LxxP-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).

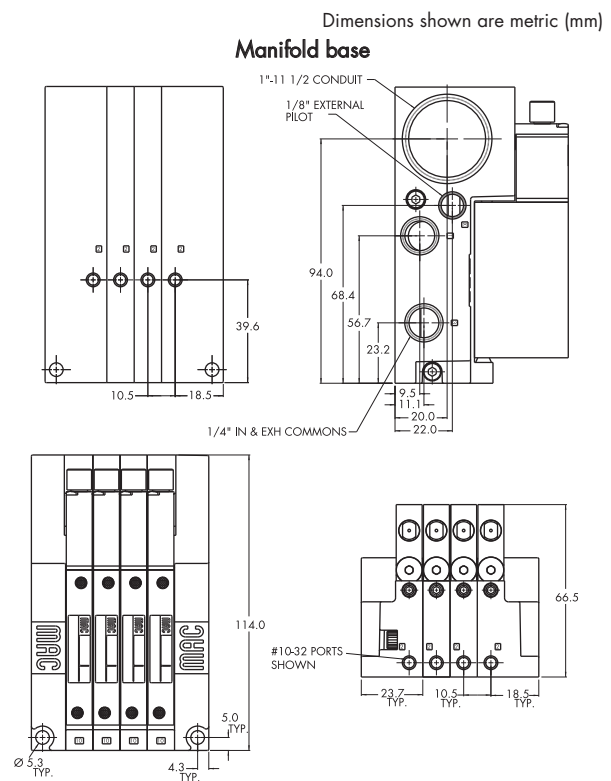
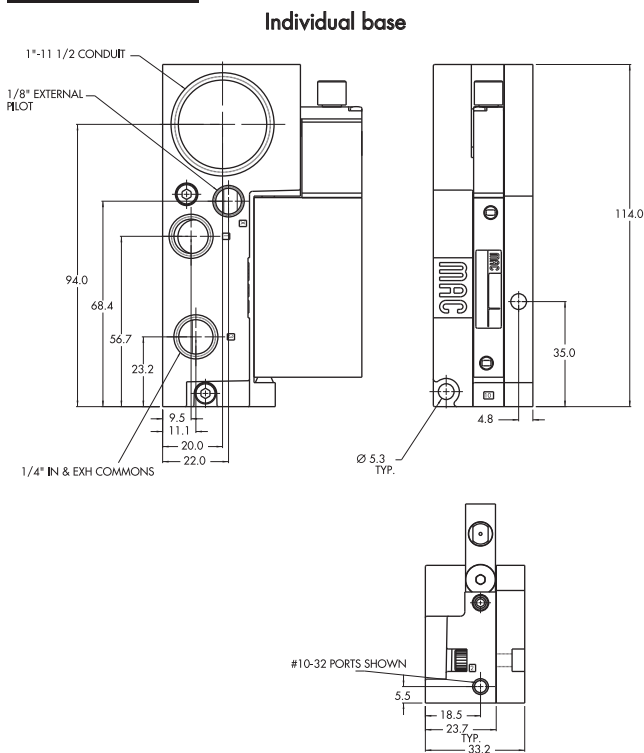
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M5 : 350 NI/min (Cv 0,35) - M7 : 400 NI/min (Cv 0,40)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options : • NPTF threads

**DIMENSIONS**

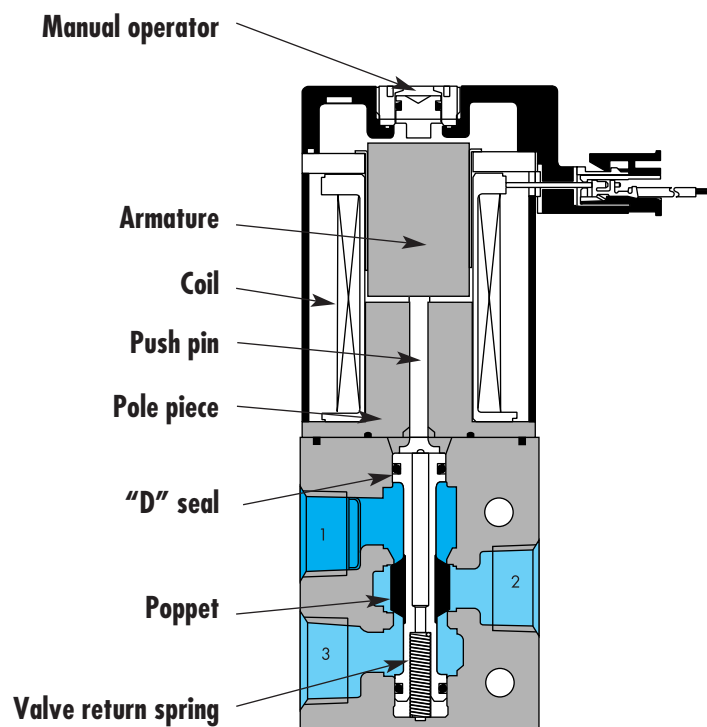




Individual mounting

Series

Inline	Sub-base non plug-in
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**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.

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8" - G1/4"</b>	<b>500 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

- 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.



### HOW TO ORDER

Port size	Universal valve	NC only valve
<b>G1/8"</b>	37A-AC0-H xxx-xxx	37A-BC0-H xxx-xxx
<b>G1/4"</b>	37A-AD0-H xxx-xxx	37A-BD0-H xxx-xxx

### SOLENOID OPERATOR >

H **XXX-XXX**\*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 V~/6,7W	A	45 cm	1	Non-locking	MA	Mini connector
DA	24 V~/5,2W	B	60 cm	2	Locking	MC	Mini connector with light
DB	24 V~/2,4W					BA	Flying leads
DC	24 V~/1,8W					BC	Flying leads with light
						MT	Plug-in wire assembly with rectifier and light

Note : AC voltage requires connector with rectifier.  
\* Other options available, see page 391.

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WARRANTY  
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MONTHS

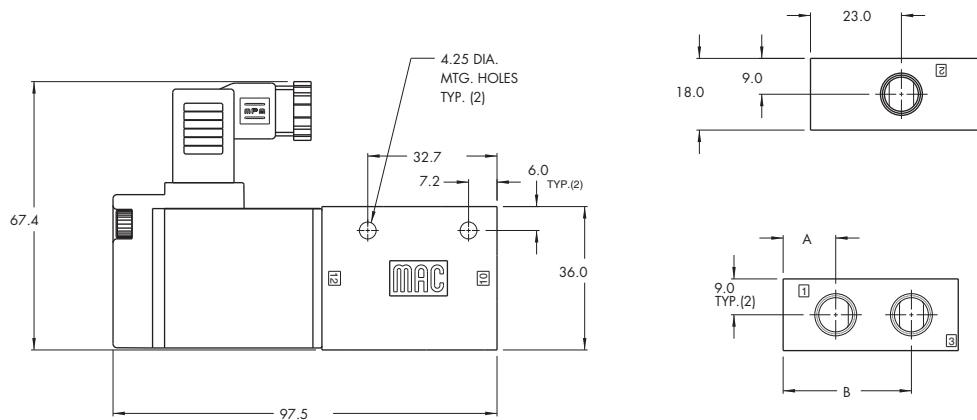
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4,3 mm
Flow :	5,2 W : 500 Nl/min (Cv 0,5) – 2,4 W : 350 Nl/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,2 W – 2,4 W
Response times : (with 5,2 W coil)	Energize : 16,9 ms De-energize : 6,7 ms

Options : • NPTF ports

**DIMENSIONS**

Dimensions shown are metric (mm)



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



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8" - G1/4"</b>	<b>500 NI/min</b>	Subbase non plug-in	

### OPERATIONAL BENEFITS

- 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.



### HOW TO ORDER

Port size	Universal valve	NC only valve
<b>Valve less base</b>	37A-C10-H xxx-xxx	37A-D10-H xxx-xxx
<b>G1/8"</b>	37A-CCA-H xxx-xxx	37A-DCA-H xxx-xxx
<b>G1/4"</b>	37A-CDA-H xxx-xxx	37A-DDA-H xxx-xxx

### SOLENOID OPERATOR >

H **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/6,7W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>MA</b> Plug-in wire assembly
<b>DA</b> 24 V~/5,2W	<b>B</b> 60 cm	<b>2</b> Locking	<b>MC</b> Plug-in wire assembly with light
<b>DB</b> 24 V~/2,4W			<b>BA</b> Flying leads
<b>DC</b> 24 V~/1,8W			<b>BC</b> Flying leads with light
			<b>HA</b> Plug-in wire assembly with rectifier & light

Note : AC voltage requires connector with rectifier.  
\* Other options available, see page 391.

### OPTIONS

Base only :

- 37A-OCA (1/8")
- 37A-ODA (1/4")

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MONTHS

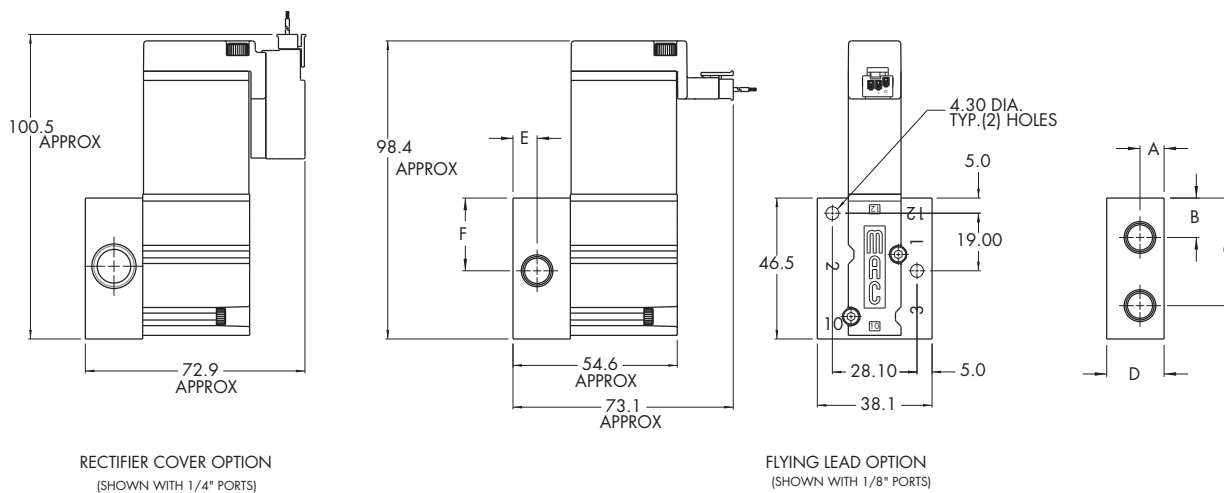
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4,3 mm
Flow :	5,2 W : 500 Nl/min (Cv 0,5) – 2,4 W : 350 Nl/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,2 W – 2,4 W
Response times : (with 5,2 W coil)	Energize : 16,9 ms De-energize : 6,7 ms

Options : • NPTF ports

**DIMENSIONS**

Dimensions shown are metric (mm)



RECTIFIER COVER OPTION  
(SHOWN WITH 1/4" PORTS)

FLYING LEAD OPTION  
(SHOWN WITH 1/8" PORTS)

Dim	A	B	C	D	E	F
<b>1/8"</b>	8.0	13.0	35.5	19.05	8.0	24.0
<b>1/4"</b>	9.5	9.5			9.5	22.5

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
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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
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Series

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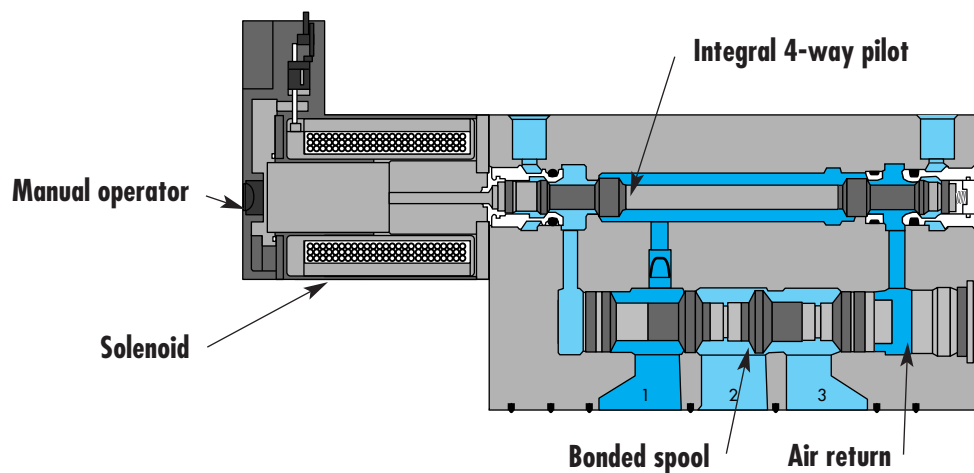
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**SERIES FEATURES**

- 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.







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8"</b>	<b>1200 NI/min</b>	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 1200 NI/min).
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
<b>Valve less base</b>	Internal	38B-BMA-000-Gxxx-xxx	38B-AMA-000-Gxxx-xxx	
	External	38B-BMB-000-Gxxx-xxx	38B-AMB-000-Gxxx-xxx	38B-GMB-000-Gxxx-xxx
<b>G1/8"</b>	Internal	38B-BMA-BAL-Gxxx-xxx	38B-AMA-BAL-Gxxx-xxx	
	External	38B-BMB-BAM-Gxxx-xxx	38B-AMB-BAM-Gxxx-xxx	38B-GMB-BAM-Gxxx-xxx

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
AA 120 V~/2,5W	A 45 cm	1 Non-locking	BA Flying leads
DA 24 V~/1,0W	B 60 cm	2 Locking	BT Flying leads with light
DC 24 V~/1,8W	C 90 cm		GA MAC JAC Solenoid plug-in
DD 24 V~/2,5W			GB MAC JAC Solenoid plug-in with diode
DF 24 V~/4,0W			GC MAC JAC Solenoid plug-in with MOV
			GD MAC JAC Solenoid plug-in with LED
			GE MAC JAC Solenoid plug-in with diode and LED
			GF MAC JAC Solenoid plug-in with MOV and LED
			GG MAC JAC Solenoid plug-in with rectifier
			GH MAC JAC Solenoid plug-in with rectifier and LED
			KA Mini connector
			KD Mini connector with rectifier light and ground
			KT Mini connector with light

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

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

Latching solenoid also available, see page 63.

### OPTIONS

Pilot/Base Configuration :

38B-xMx-xAx-Gxxx-xxx

- A Individual base – Side port
- B Individual base – Bottom port
- M Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust to main exhaust

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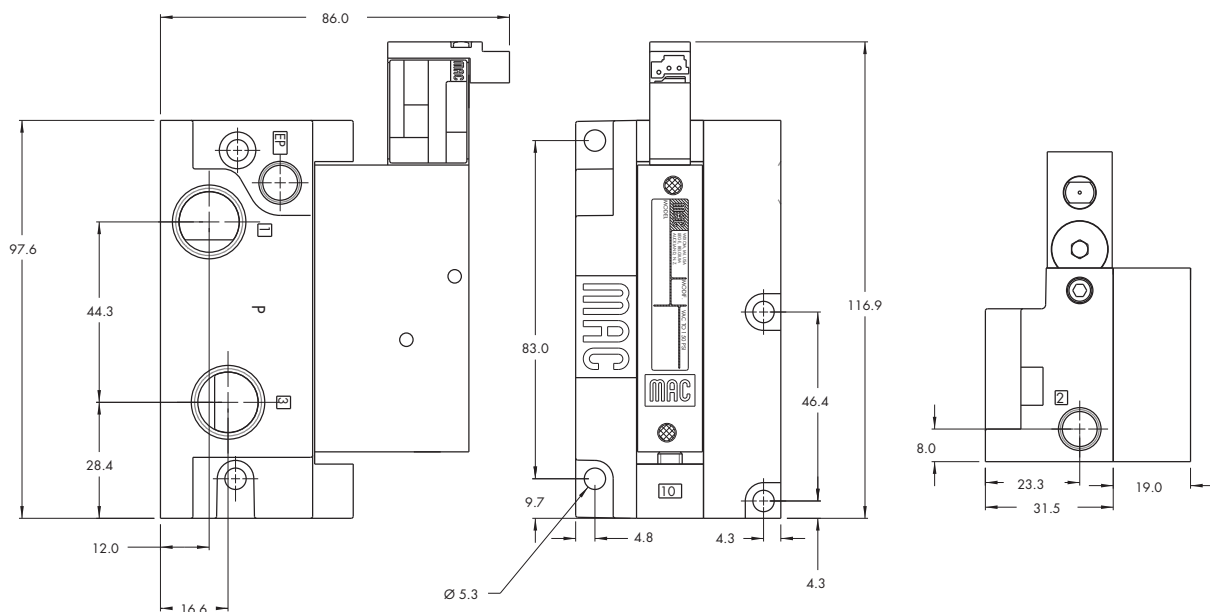
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1 bar) :	G1/8" bottom port: 1200 NI/min (Cv 1,2) - G1/8" side port: 1000 NI/min (Cv 1,0)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8"</b>	<b>1200 NI/min</b>	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 1200 NI/min).
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
<b>Valve less base</b>	Internal	38B-BMA-000-GxxP-xxx	38B-AMA-000-GxxP-xxx	
	External	38B-BMB-000-GxxP-xxx	38B-AMB-000-GxxP-xxx	38B-GMB-000-GxxP-xxx
<b>G1/8"</b>	Internal	38B-BMA-BAA-GxxP-xxx	38B-AMA-BAA-GxxP-xxx	
	External	38B-BMB-BAB-GxxP-xxx	38B-AMB-BAB-GxxP-xxx	38B-GMB-BAB-GxxP-xxx

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/2,5W	<b>1</b> Non-locking	<b>SA</b> Base plug-in
<b>DA</b> 24 V~/1,0W	<b>2</b> Locking	<b>SJ</b> Base plug-in with light
<b>DC</b> 24 V~/1,8W		<b>SS</b> Base plug-in with rectifier & light & ground
<b>DD</b> 24 V~/2,5W		
<b>DF</b> 24 V~/4,0W		

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

Washdown capability is possible for the "G" type electrical connector. Consult factory for ordering information. Latching solenoid also available, see page 65.

### OPTIONS

Pilot/Base Configuration :

38B-xMx-xAx-GxxP-xxx

- A** Individual base – Side port
- B** Individual base – Bottom port
- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust to main exhaust

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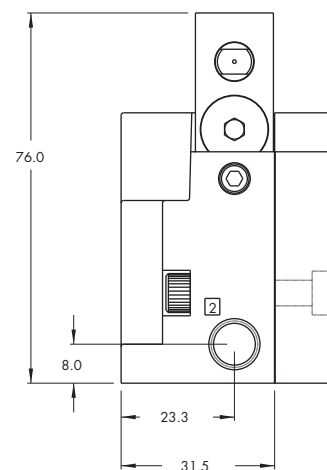
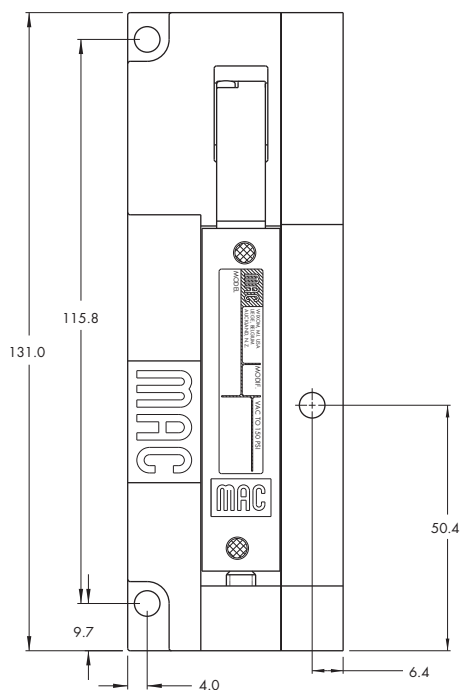
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1bar) :	G1/8" bottom port: 1200 NI/min (Cv 1,2) - G1/8" side port : 1000 NI/min (Cv 1,0)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8"</b>	<b>1200 NI/min</b>	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 1200 NI/min).
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
<b>Valve less base</b>	Internal	38B-BMA-000-GxxP-xxx	38B-AMA-000-GxxP-xxx	
	External	38B-BMB-000-GxxP-xxx	38B-AMB-000-GxxP-xxx	38B-GMB-000-GxxP-xxx
<b>G1/8"</b>	Internal	38B-BMA-BJA-GxxP-xxx	38B-AMA-BJA-GxxP-xxx	
	External	38B-BMB-BJB-GxxP-xxx	38B-AMB-BJB-GxxP-xxx	38B-GMB-BJB-GxxP-xxx

Note : Above codes are for side port.

### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

Voltage		Manual operator		Electrical connection	
<b>AA</b>	120 V~/2,5W	<b>1</b>	Non-locking	<b>SA</b>	Base plug-in
<b>DA</b>	24 V~/1,0W	<b>2</b>	Locking	<b>SJ</b>	Base plug-in with light
<b>DC</b>	24 V=/1,8W			<b>SS</b>	Base plug-in with rectifier & light & ground
<b>DD</b>	24 V=/2,5W				
<b>DF</b>	24 V=/4,0W				

Note : AC voltage requires connector with rectifier.

\* Other options available, see page 387.

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

Latching solenoid also available, see page 65.

### OPTIONS

Base only :

38B-000-xxx (i.e. 38A-000-BJA)

Base Configuration :

38B-xxx-Jx-GxxP-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").

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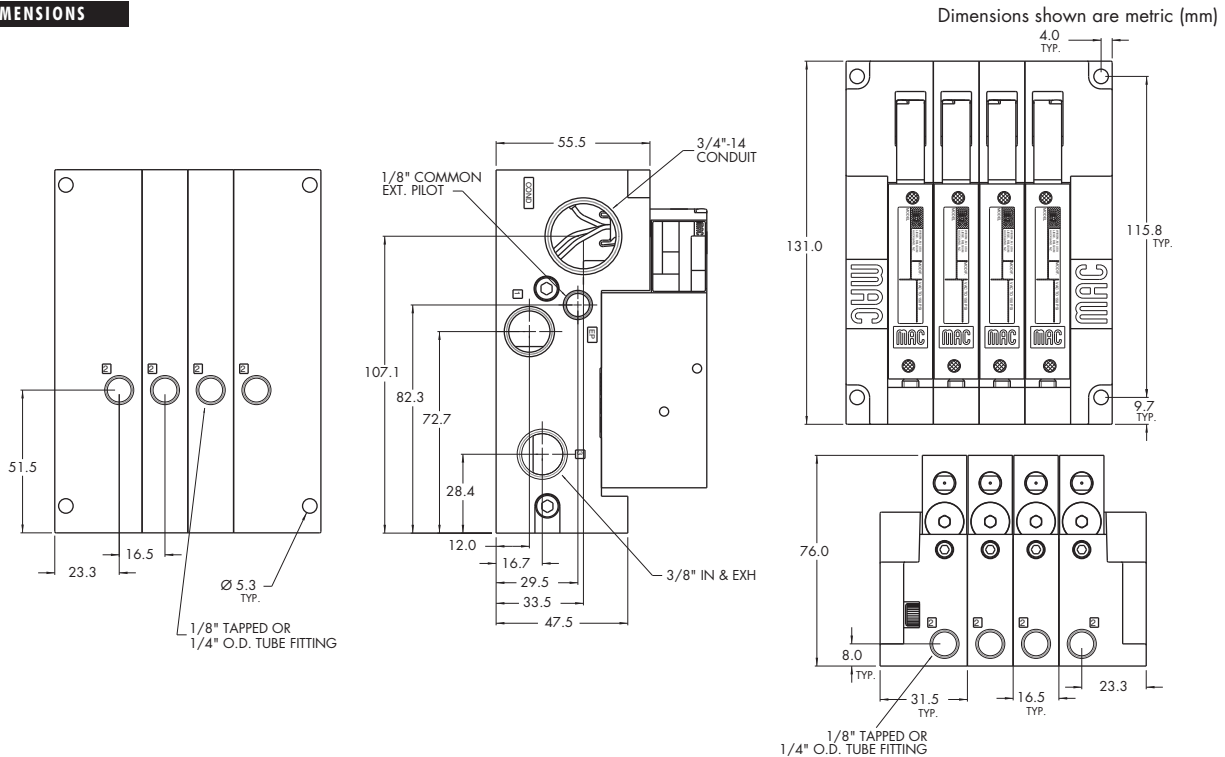
WARRANTY  
**18**  
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1 bar) :	G1/8" bottom port : 1200 NI/min (Cv 1,2) - G1/8" side port : 1000 NI/min (Cv 1,0)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options : • NPTF threads

**DIMENSIONS**





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8"</b>	<b>1200 NI/min</b>	Subbase/ 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 1200 NI/min).
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
<b>Valve less base</b>	Internal	38B-BMA-000-Lxxx-xxx	38B-AMA-000-Lxxx-xxx	
	External	38B-BMB-000-Lxxx-xxx	38B-AMB-000-Lxxx-xxx	38B-GMB-000-Lxxx-xxx
<b>G1/8"</b>	Internal	38B-BMA-BAL-Lxxx-xxx	38B-AMA-BAL-Lxxx-xxx	
	External	38B-BMB-BAM-Lxxx-xxx	38B-AMB-BAM-Lxxx-xxx	38B-GMB-BAM-Lxxx-xxx

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

### LATCHING SOLENOID OPERATOR >

L XXX-XXX *		L XXX-XXX *		L XXX-XXX *	
XX Voltage	X Wire length	X Manual operator	XX Electrical connection**		
DF 24 V=/4,0W	A 45 cm	0 No operator	BA 2 Wire Flying leads		
HA 24 V=/1,95W	B 60 cm		BJ 4 Wire Flying leads		
	C 90 cm		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 395.

\*\* Latching 38 series with non plug-in base configuration must use "B", "K" or "L" type electrical connector.

### OPTIONS

Pilot/Base Configuration :

38B-xMx-xAx-Lxxx-xxx
A Individual base – Side port
B Individual base – Bottom port
J Manifold base – Side port
K Manifold base – Bottom port
M Pilot exhaust muffled
R Pilot exhaust piped M5
U Pilot exhaust to main exhaust

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

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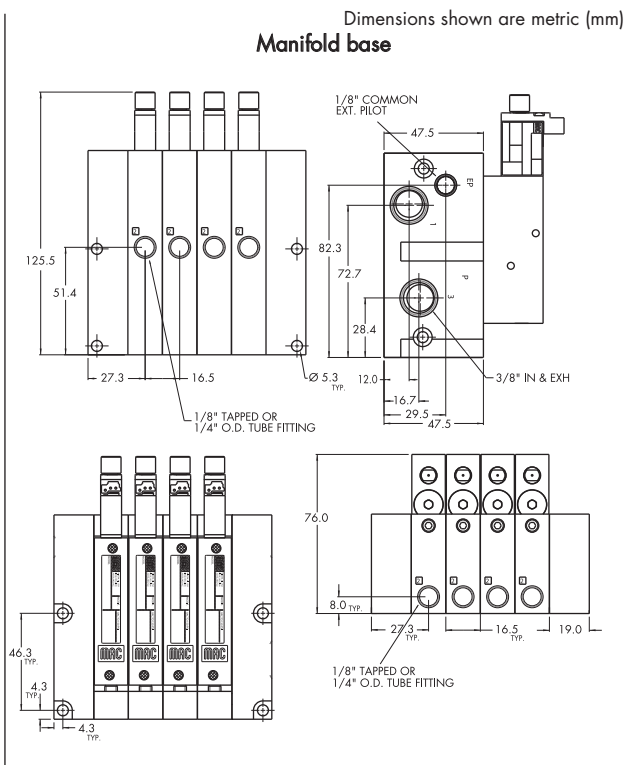
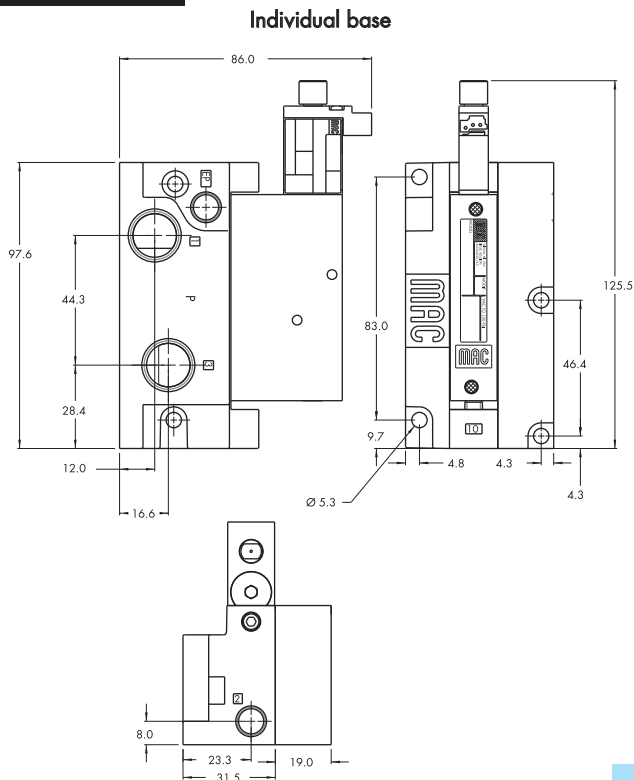
WARRANTY  
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1 bar) :	G1/8" bottom port : 1200 NI/min (Cv 1,2) - G1/8" side port : 1000 NI/min (Cv 1,0)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.95 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options : • NPTF threads

**DIMENSIONS**







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>3/2 NO-NC</b>	<b>G1/8"</b>	<b>1200 NI/min</b>	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 1200 NI/min).
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
<b>Valve less base</b>	Internal	38B-BMA-000-LxxP-xxx	38B-AMA-000-LxxP-xxx	
	External	38B-BMB-000-LxxP-xxx	38B-AMB-000-LxxP-xxx	38B-GMB-000-LxxP-xxx
<b>G1/8"</b>	Internal	38B-BMA-BAA-LxxP-xxx	38B-AMA-BAA-LxxP-xxx	
	External	38B-BMB-BAB-LxxP-xxx	38B-AMB-BAB-LxxP-xxx	38B-GMB-BAB-LxxP-xxx

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

### LATCHING SOLENOID OPERATOR >

L **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection**
<b>DF</b> 24 V=/4,0W	<b>0</b> No operator	<b>DA</b> Base/Manifold Plug-in
<b>HA</b> 24 V=/1,95W		<b>DB</b> Base/Manifold Plug-in w/ Ground
		<b>DC</b> Base/Manifold Plug-in w/ Led
		<b>DD</b> Base/Manifold Plug-in w/ Led and Ground
		<b>EA</b> Base/Manifold Plug-in 3 Pin (Polarity Switching Cover)

\* Other options available, see page 395.  
 \*\* 2 and 4 wire bases must use "D" type electrical connector.  
 3 wire bases must use "EA" type electrical connector.

### OPTIONS

Manifold/Base Configuration :

38B-xxx-x**A**x-LxxP-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)

38B-xxx-xx**A**-LxxP-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).

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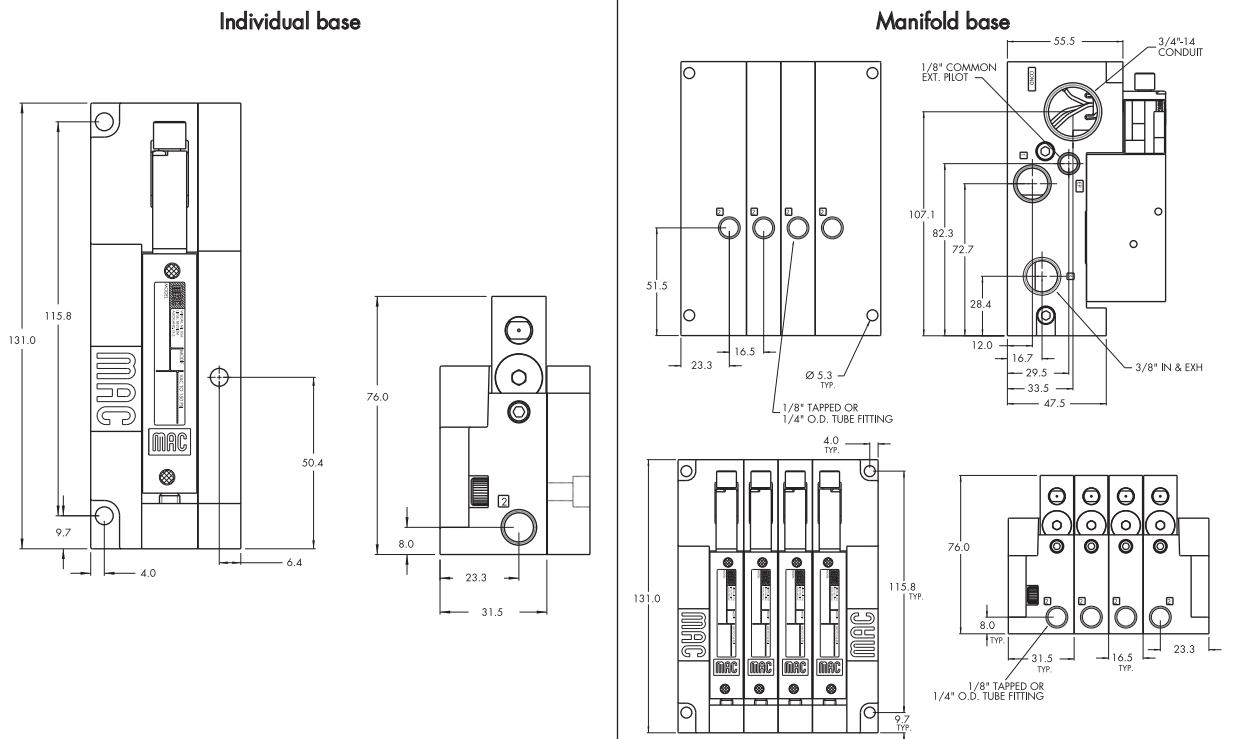
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1 bar) :	G1/8" bottom port: 1200 NI/min (Cv 1,2) - G1/8" side port: 1000 NI/min (Cv 1,0)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.95 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options : • NPTF threads

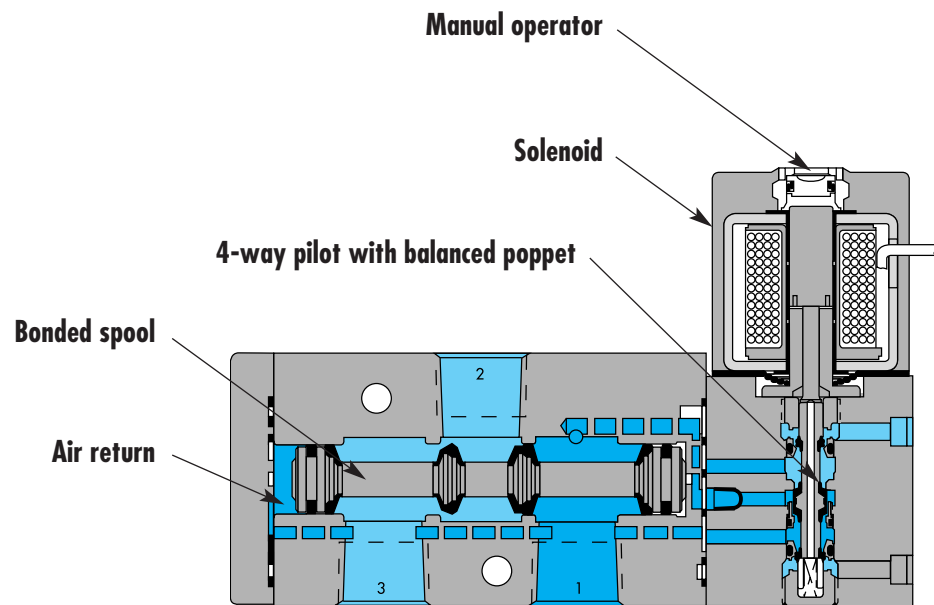
**DIMENSIONS**



Individual mounting

Series

Inline
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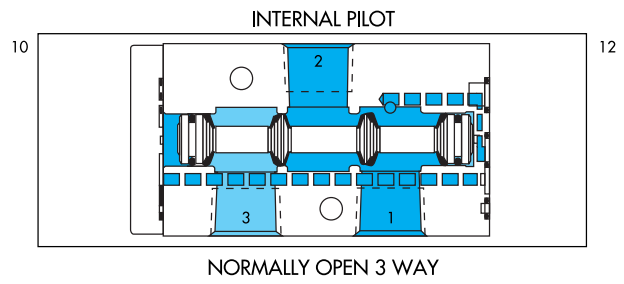
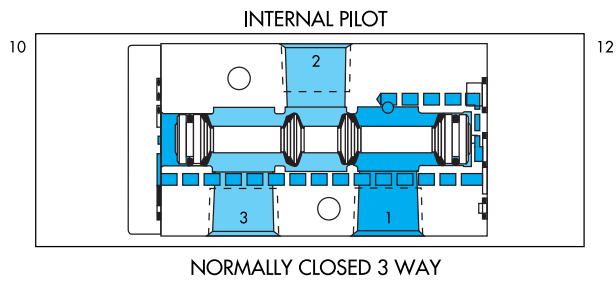


**SERIES FEATURES**

- Patented MACSOLENOID<sup>®</sup> 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.

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**SPOOL CONFIGURATIONS**





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>G1/8" - G1/4"</b>	<b>1500 NI/min</b>	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		Double Operator	
		NO Valve	NC Valve	NO Valve	NC Valve
<b>G1/8"</b>	Internal	52A-31-C0A-XX-X-xxx-xxx	52A-11-C0A-XX-X-xxx-xxx	52A-41-C0A-XX-X-xxx-xxx	52A-21-C0A-XX-X-xxx-xxx
<b>G1/4"</b>	Internal	52A-31-D0A-XX-X-xxx-xxx	52A-11-D0A-XX-X-xxx-xxx	52A-41-D0A-XX-X-xxx-xxx	52A-21-D0A-XX-X-xxx-xxx
<b>G1/8"</b>	External	52A-31-C0B-XX-X-xxx-xxx	52A-11-C0B-XX-X-xxx-xxx	52A-41-C0B-XX-X-xxx-xxx	52A-21-C0B-XX-X-xxx-xxx
<b>G1/4"</b>	External	52A-31-D0B-XX-X-xxx-xxx	52A-11-D0B-XX-X-xxx-xxx	52A-41-D0B-XX-X-xxx-xxx	52A-21-D0B-XX-X-xxx-xxx

### SOLENOID OPERATOR >

#### DM-D XXX-XXX\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm (Flying leads)	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm (Flying leads)	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>JB</b> Rectangular connector
<b>FB</b> 24 V~/1,8W			<b>JD</b> Rectangular connector with light
<b>DA</b> 24 V~/5,4W			<b>BA</b> Flying leads
<b>DF</b> 24 V~/12,7W			

### SOLENOID OPERATOR >

#### GM-G XXX-XXX\*\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>DC</b> 24 V~/1,8W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DD</b> 24 V~/2,5W	<b>B</b> 60 cm	<b>2</b> Locking	<b>BT</b> Flying leads with light
<b>DF</b> 24 V~/4W	<b>C</b> 90 cm		<b>KA</b> Mini connector
			<b>KT</b> Mini connector with light

\* Other options available, see page 385.

\*\* Other options available, see page 389.

### OPTIONS

52A-31-C0A-XX-X-xxx-xxx

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

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100%  
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MONTHS

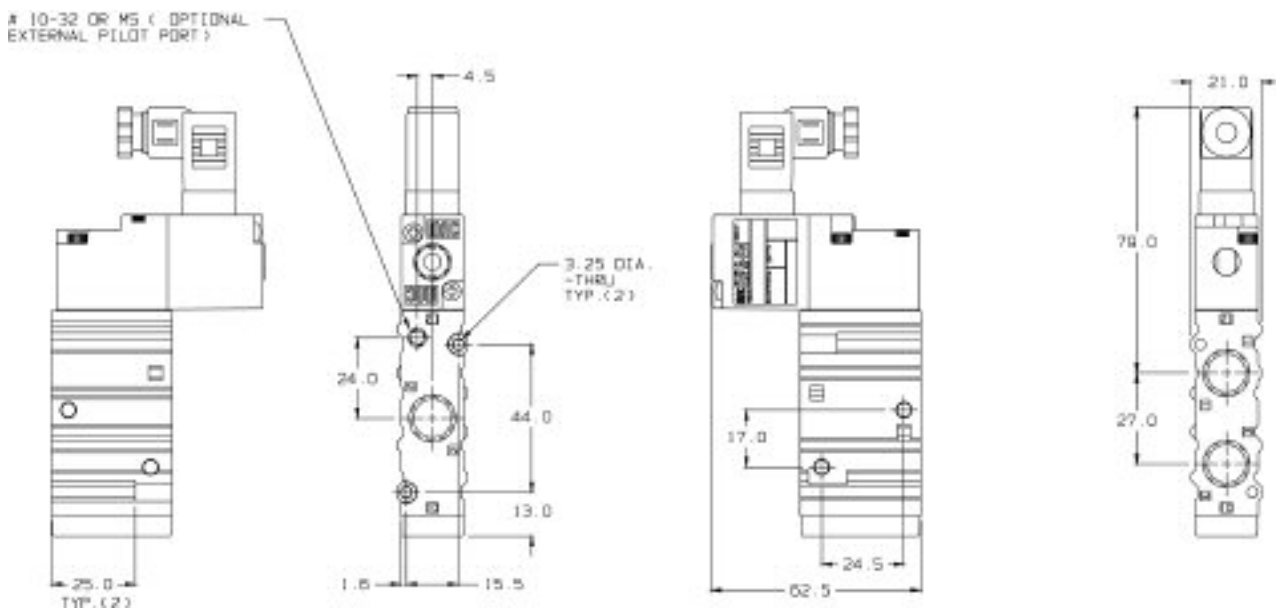
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	7,3 mm
Flow (at 6 bar, ΔP=1bar) :	G1/8" : 1200 NI/min (Cv 1,2) – G1/4" : 1500 NI/min (Cv 1,5)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (GM pilot) – IP64 (DM pilot) (electrical connection)
Power :	~Inrush: 10,9 VA      Holding: 7,7 VA = 1,8 to 12,7 W
Response times :	24V~/5,4W      Energize: 7,3 ms      De-energize: 5,3 ms 110V~/50Hz      Energize: 8-12 ms      De-energize: 7-11 ms

Options :                      • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)

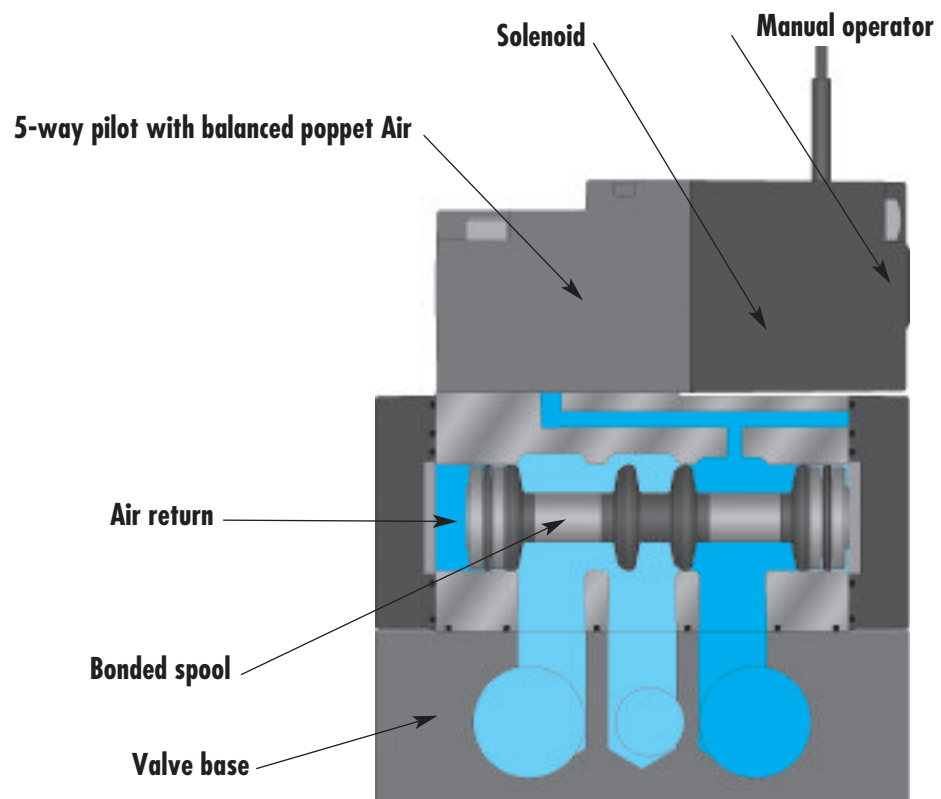


# Direct solenoid and solenoid pilot operated valves 8 mm valve

## Individual mounting

Inline

## Series



### SERIES FEATURES

- The 4-way pilot develops maximum shifting force both ways
- Memory spring available
- Balanced spool, immune to variations of pressure
- Short stroke with high flow
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Pilot with balanced poppet, high flow, short and consistent response times.
- Wiping effect eliminates sticking
- Long life service.

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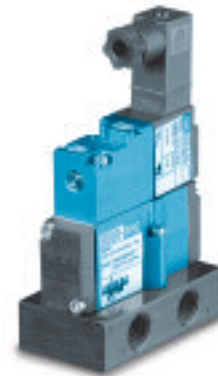


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/4" - G3/8"</b>	<b>2000 NI/min</b>	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. 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	NC Valve	NO Valve
<b>G1/4"</b>	Internal	53A-1AC-XX-X-XXX-XXX	53A-2AC-XX-X-XXX-XXX
<b>G3/8"</b>	Internal	53A-1AD-XX-X-XXX-XXX	53A-2AD-XX-X-XXX-XXX
<b>G1/4"</b>	External from 10 end	53A-1BC-XX-X-XXX-XXX	53A-2BC-XX-X-XXX-XXX
	External from 12 end	53A-1CC-XX-X-XXX-XXX	53A-2CC-XX-X-XXX-XXX
<b>G3/8"</b>	External from 10 end	53A-1BD-XX-X-XXX-XXX	53A-2BD-XX-X-XXX-XXX
	External from 12 end	53A-1CD-XX-X-XXX-XXX	53A-2CD-XX-X-XXX-XXX

### SOLENOID OPERATOR >

#### DM-D XXX-XXX \*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm	<b>2</b> Locking	<b>KA</b> Mini square connector
<b>JC</b> 24 V~/50Hz	<b>J*</b> 15 cm		<b>KD</b> Mini square connector with light
<b>FB</b> 24 V=/1,8W	*For use with "J" & "K" type connectors		<b>JB</b> Rectangular connector
<b>DA</b> 24 V=/5,4W			<b>JD</b> Rectangular connector with light
<b>DF</b> 24 V=/12,7W			

### SOLENOID OPERATOR >

#### GM-G XXX-XXX\*\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>DC</b> 24 V=/1,8W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DD</b> 24 V=/2,5W	<b>B</b> 60 cm	<b>2</b> Locking	<b>BT</b> Flying leads with light
<b>DF</b> 24 V=/4W	<b>C</b> 90 cm		<b>KA</b> Mini connector
			<b>KT</b> Mini connector with light
			<b>GA</b> MAC JAC solenoid plug-in wire assembly

\* Other options available, see page 385.  
 \*\* Other options available, see page 389.

### OPTIONS

53A-X-AC-xx-xxxx-xxx  
 For Memory spring  
 Replace by 5 (Normally closed)  
 Replace by 6 (Normally open)

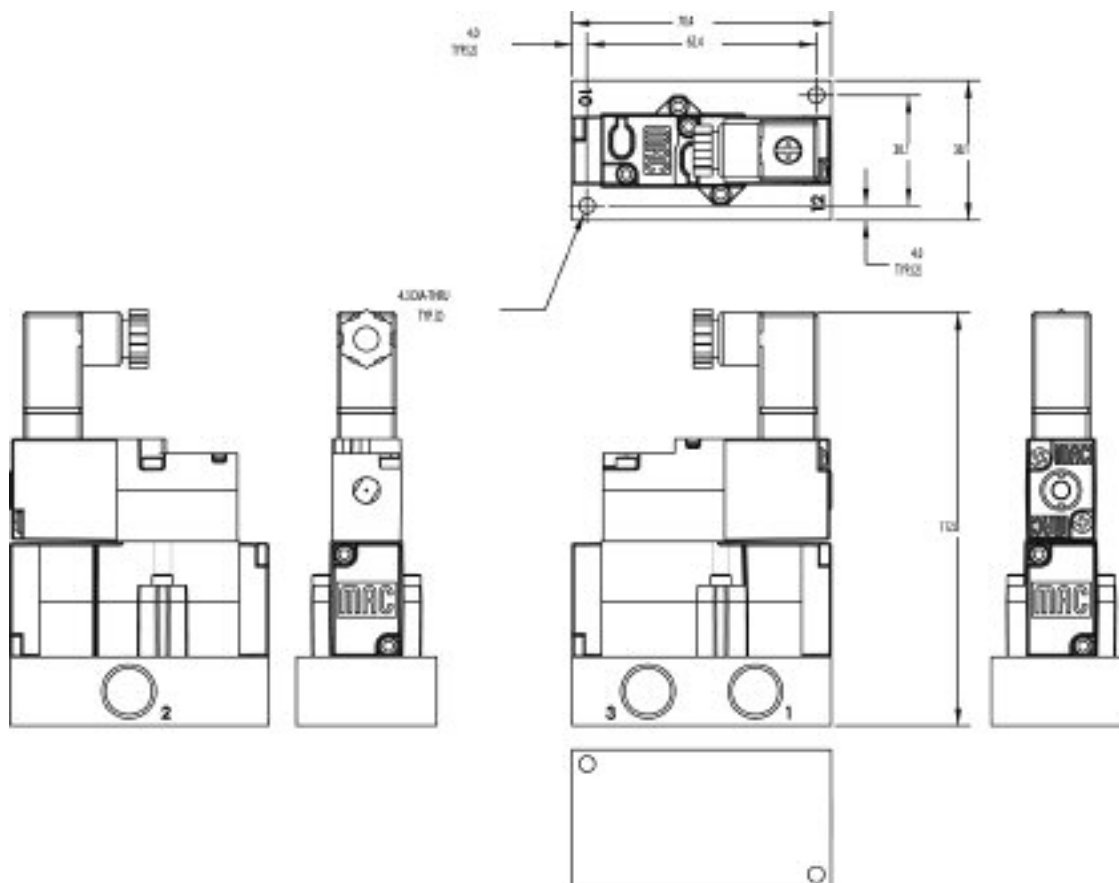
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	8,5 mm
Flow :	G1/4" : 1700 Nl/min (Cv 1.7) – G3/8" : 2000 Nl/min (Cv 2.0)
Coil :	Epoxy encapsulated - Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	1,0 to 5,4W (Higher wattages available)
Options :	• NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)

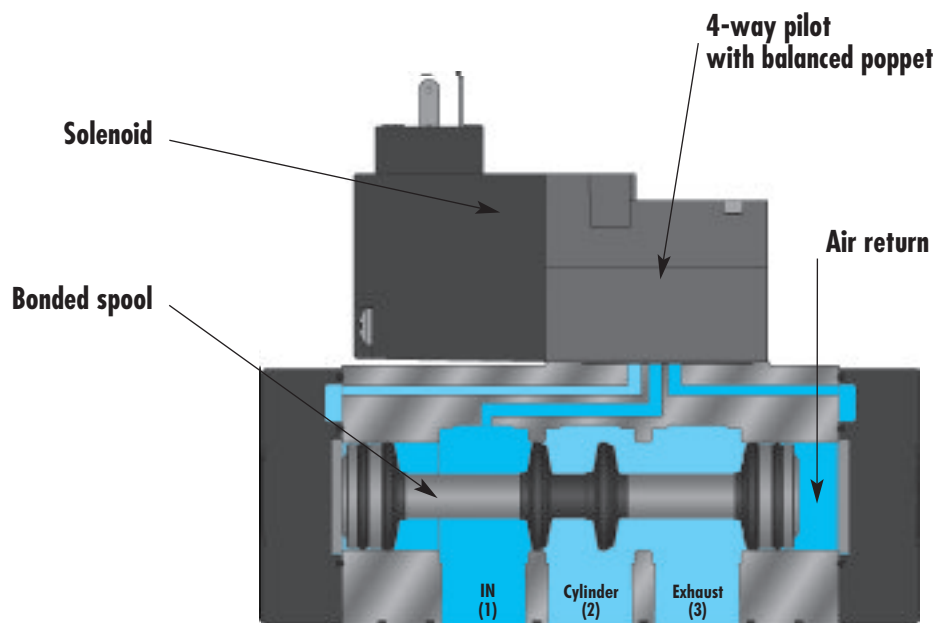


# Direct solenoid and solenoid pilot operated valves 8 mm valve

## Individual mounting

Series

Subbase 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.
- Various manual operators.
- Normally closed or normally open valve function.
- May be plugged for 2-way operation.
- Internal or external pilot.

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G3/8" - G1/2" - G3/4"</b>	<b>5100 NI/min</b>	Subbase Non plugin	

### OPERATIONAL BENEFITS

1. The 4-way pilot develops maximum shifting forces 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
7. Long service life

### HOW TO ORDER



Port size	Pilot air	NC Valve	NO Valve
<b>Valve less base</b>	Internal	54A-AA-000-DM-xxxx-xxx	54A-BA-000-DM-xxxx-xxx
	External from 10 end	54A-AC-000-DM-xxxx-xxx	54A-BC-000-DM-xxxx-xxx
	External from 12 end	54A-AB-000-DM-xxxx-xxx	54A-BB-000-DM-xxxx-xxx
<b>G3/8"</b>	Internal	54A-AA-D1A-DM-xxxx-xxx	54A-BA-D1A-DM-xxxx-xxx
	External from 10 end	54A-AC-D1A-DM-xxxx-xxx	54A-BC-D1A-DM-xxxx-xxx
	External from 12 end	54A-AB-D1A-DM-xxxx-xxx	54A-BB-D1A-DM-xxxx-xxx
<b>G1/2"</b>	Internal	54A-AA-E1A-DM-xxxx-xxx	54A-BA-E1A-DM-xxxx-xxx
	External from 10 end	54A-AC-E1A-DM-xxxx-xxx	54A-BC-E1A-DM-xxxx-xxx
	External from 12 end	54A-AB-E1A-DM-xxxx-xxx	54A-BB-E1A-DM-xxxx-xxx
<b>G3/4"</b>	Internal	54A-AA-F1A-DM-xxxx-xxx	54A-BA-F1A-DM-xxxx-xxx
	External from 10 end	54A-AC-F1A-DM-xxxx-xxx	54A-BC-F1A-DM-xxxx-xxx
	External from 12 end	54A-AB-F1A-DM-xxxx-xxx	54A-BB-F1A-DM-xxxx-xxx

### SOLENOID OPERATOR >

### DM-D XXX-XXX\*

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
DM	Muffled exhaust	DA	24V~/5,4W	A	45 cm	0	No operator	BA	Flying leads
DP	Piped exhaust	DF	24V~/12,7W	B	60 cm	1	Non locking	JB	Rectangular connector
DU	Universal pilot - Pilot exhaust out main exhaust	FB	24V~/1,8W	J*	15 cm	2	Locking	JD	Rectangular connector with light
		JA	110V~/50Hz					KA	Mini square connector
		JB	220V~/50Hz					KD	Mini square connector with light
		JC	24V~/50Hz						

\* Lead wire length for external plug-in connectors must be "J"

\* Other options available, see page 385.

### OPTIONS

54A-Xx-XxX-DM-xxxx-xxx

- 1 Individual base - Side ports
- 2 Individual Base - Bottom Cylinder ports (No side cylinder port)
- 0 Base only
- A Base Mount Body - Internal pilot
- B Base Mount Body - External pilot (12 end)
- C Base Mount Body - External pilot (10 end)
- E Base Mount Body - Internal pilot - Pilot exhaust out main exhaust (with DU pilot)
- F Base Mount Body - External pilot (12 end) - Pilot exhaust out main exhaust (with DU pilot)
- G Base Mount Body - External pilot (10 end) - Pilot exhaust out main exhaust (with DU pilot)

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100%  
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**18**  
MONTHS

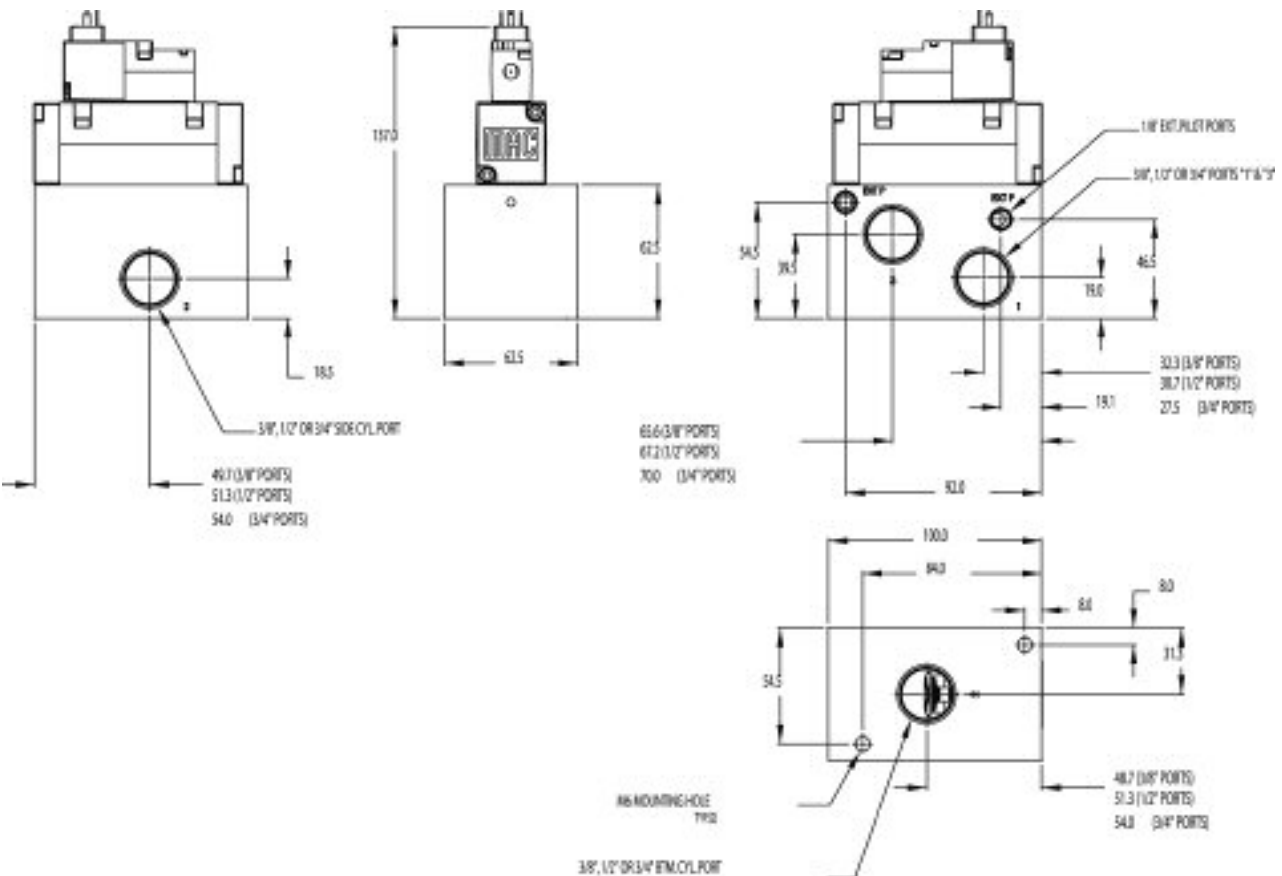
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Main valve: External pilot : Vacuum to 8 bar Internal pilot: 1,3 to 8 bar External pilot: 1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	13,5 mm
Flow :	Up to 5100 NI/min (Cv 5.1)
Coil :	Epoxy encapsulated - Class A wires - 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	1,8 to 5,4W (Higher wattages available)

Options: NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G3/8" - G1/2" - G3/4"</b>	<b>5100 NI/min</b>	Subbase plug-in	

### OPERATIONAL BENEFITS

1. The 4-way pilot develops maximum shifting forces 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
7. Long service life

### HOW TO ORDER



Port size	Pilot air	NC Valve	NO Valve
<b>Valve less base</b>	Internal	54A-AA-000-DM-xxxx-xxx	54A-BA-000-DM-xxxx-xxx
	External from 10 end	54A-AC-000-DM-xxxx-xxx	54A-BC-000-DM-xxxx-xxx
	External from 12 end	54A-AB-000-DM-xxxx-xxx	54A-BB-000-DM-xxxx-xxx
<b>G3/8"</b>	Internal	54A-AA-D1B-DM-xxxx-xxx	54A-BA-D1B-DM-xxxx-xxx
	External from 10 end	54A-AC-D1B-DM-xxxx-xxx	54A-BC-D1B-DM-xxxx-xxx
	External from 12 end	54A-AB-D1B-DM-xxxx-xxx	54A-BB-D1B-DM-xxxx-xxx
<b>G1/2"</b>	Internal	54A-AA-E1B-DM-xxxx-xxx	54A-BA-E1B-DM-xxxx-xxx
	External from 10 end	54A-AC-E1B-DM-xxxx-xxx	54A-BC-E1B-DM-xxxx-xxx
	External from 12 end	54A-AB-E1B-DM-xxxx-xxx	54A-BB-E1B-DM-xxxx-xxx
<b>G3/4"</b>	Internal	54A-AA-F1B-DM-xxxx-xxx	54A-BA-F1B-DM-xxxx-xxx
	External from 10 end	54A-AC-F1B-DM-xxxx-xxx	54A-BC-F1B-DM-xxxx-xxx
	External from 12 end	54A-AB-F1B-DM-xxxx-xxx	54A-BB-F1B-DM-xxxx-xxx

### SOLENOID OPERATOR ►

**DM-D XXX-XXX\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
DM	Muffled exhaust	DA	24V~/5,4W	A	45 cm	0	No operator	BA	Flying leads
DP	Piped exhaust	DF	24V~/12,7W	B	60 cm	1	Non locking	JB	Rectangular connector
DU	Universal pilot - Pilot exhaust out main exhaust	FB	24V~/1,8W	J*	15 cm	2	Locking	JD	Rectangular connector with light
		JA	110V~/50Hz					KA	Mini square connector
		JB	220V~/50Hz					KD	Mini square connector with light
		JC	24V~/50Hz						

\* Lead wire length for external plug-in connectors must be "J"

\* Other options available, see page 385.

### OPTIONS

54A-Xx-XxX-DM-xxxx-xxx

- 1 Individual base - Side ports
- 2 Individual Base - Bottom Cylinder ports (No side cylinder port)
- 0 Base only
- A Base Mount Body - Internal pilot
- B Base Mount Body - External pilot (12 end)
- C Base Mount Body - External pilot (10 end)
- E Base Mount Body - Internal pilot - Pilot exhaust out main exhaust (with DU pilot)
- F Base Mount Body - External pilot (12 end) - Pilot exhaust out main exhaust (with DU pilot)
- G Base Mount Body - External pilot (10 end) - Pilot exhaust out main exhaust (with DU pilot)

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100%  
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WARRANTY  
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MONTHS

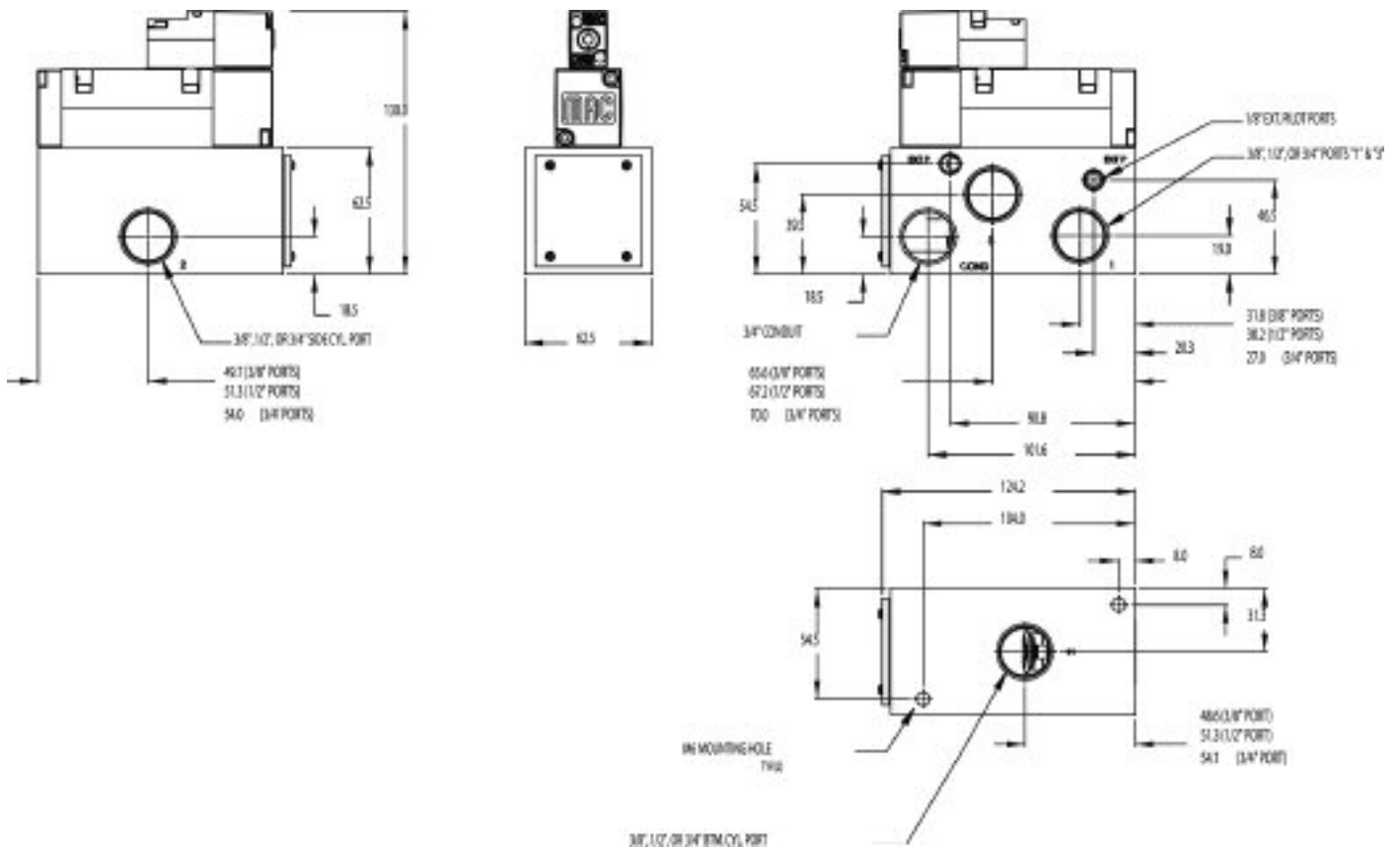
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Main valve: External pilot :Vacuum to 8 bar Internal pilot: 1,3 to 8 bar External pilot: 1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	13,5 mm
Flow :	Up to 5100 NI/min (Cv 5.1)
Coil :	Epoxy encapsulated - Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	1,8 to 5,4W (Higher wattages available)

Options: NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)

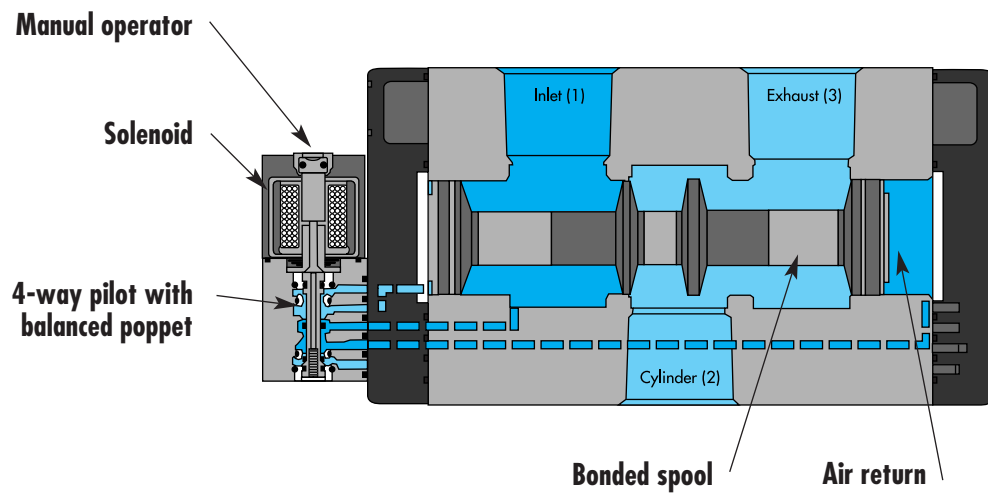




Individual mounting

Series

Inline	
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**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.

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>G3/4" - G1"</b>	<b>20000 NI/min</b>	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		Double Operator	
		NO Valve	NC Valve	NO Valve	NC Valve
<b>G3/4"</b>	Internal	67A-CX-CAA-DM-Dxxx-xxx	67A-AX-CAA-DM-Dxxx-xxx	67A-DX-CAA-DM-Dxxx-xxx	67A-BX-CAA-DM-Dxxx-xxx
<b>G1"</b>	Internal	67A-CX-DAA-DM-Dxxx-xxx	67A-AX-DAA-DM-Dxxx-xxx	67A-DX-DAA-DM-Dxxx-xxx	67A-BX-DAA-DM-Dxxx-xxx
<b>G3/4"</b>	External	67A-CX-CAB-DM-Dxxx-xxx	67A-AX-CAB-DM-Dxxx-xxx	67A-DX-CAB-DM-Dxxx-xxx	67A-BX-CAB-DM-Dxxx-xxx
<b>G1"</b>	External	67A-CX-DAB-DM-Dxxx-xxx	67A-AX-DAB-DM-Dxxx-xxx	67A-DX-DAB-DM-Dxxx-xxx	67A-BX-DAB-DM-Dxxx-xxx

### SOLENOID OPERATOR >

### DM-D xxx-xxx \*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>JB</b> Rectangular connector
<b>FB</b> 24 V~/1,8W			<b>JD</b> Rectangular connector with light
<b>DA</b> 24 V~/5,4W			<b>BA</b> Flying leads
<b>DF</b> 24 V~/12,7W			

\* Other options available, see page 385.

### OPTIONS

Spool type :

67A-XX-CAA-DM-Dxxx-yzz

- G** Single operator universal spool
- H** Double operator universal spool

Spool return :

67A-CX-CAA-DM-Dxxx-yzz

- 1** Standard return
- 2** Standard return with memory spring

Port configuration :

67A-XX-CXA-DM-Dxxx-xxx

- A** Standard pilot exhaust
  - B** Pilot exhaust to main exhaust\*
  - C** Pilot exhaust out adapter\*
- \* Must use DU pilot

Pilot style :

67A-XX-CAA-DM-Dxxx-xxx

- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust to main exhaust

Mounting style :

67A-XX-XAX-DM-Dxxx-xxx

- G** O-Ring mount

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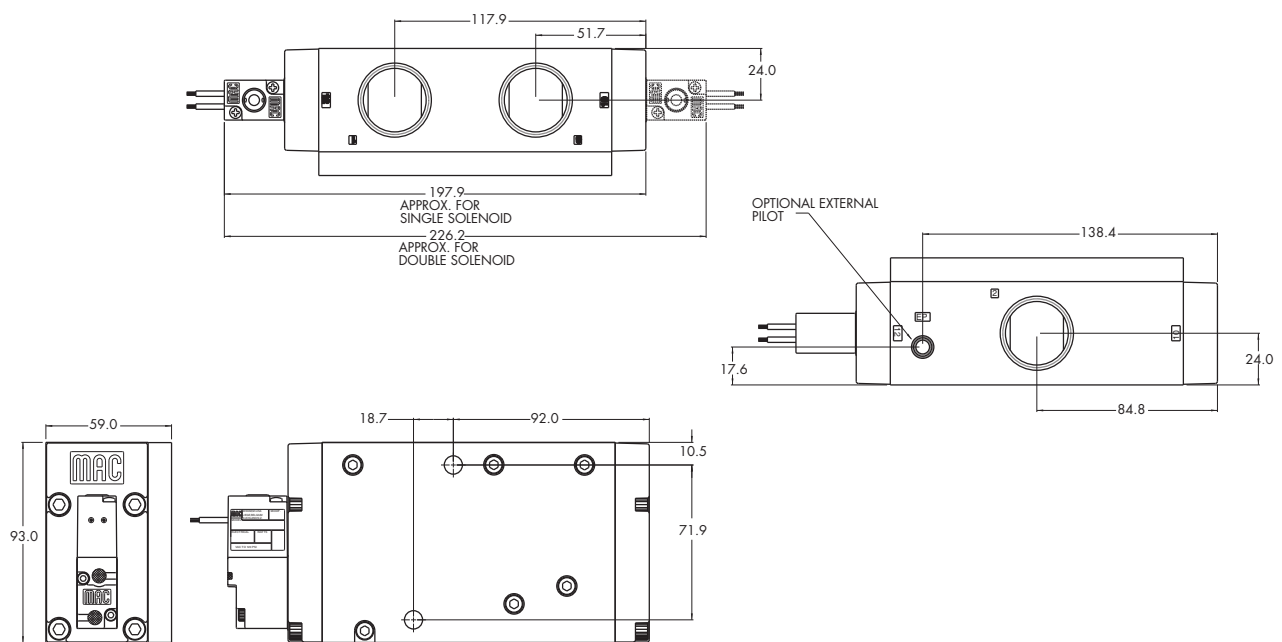
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	26,8 mm
Flow (at 6 bar, ΔP=1bar) :	3/4" : 14500 NI/min (Cv 14,5) – 1" : 20000 (Cv 20,0)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
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 :                    • NPTF threads

**DIMENSIONS**

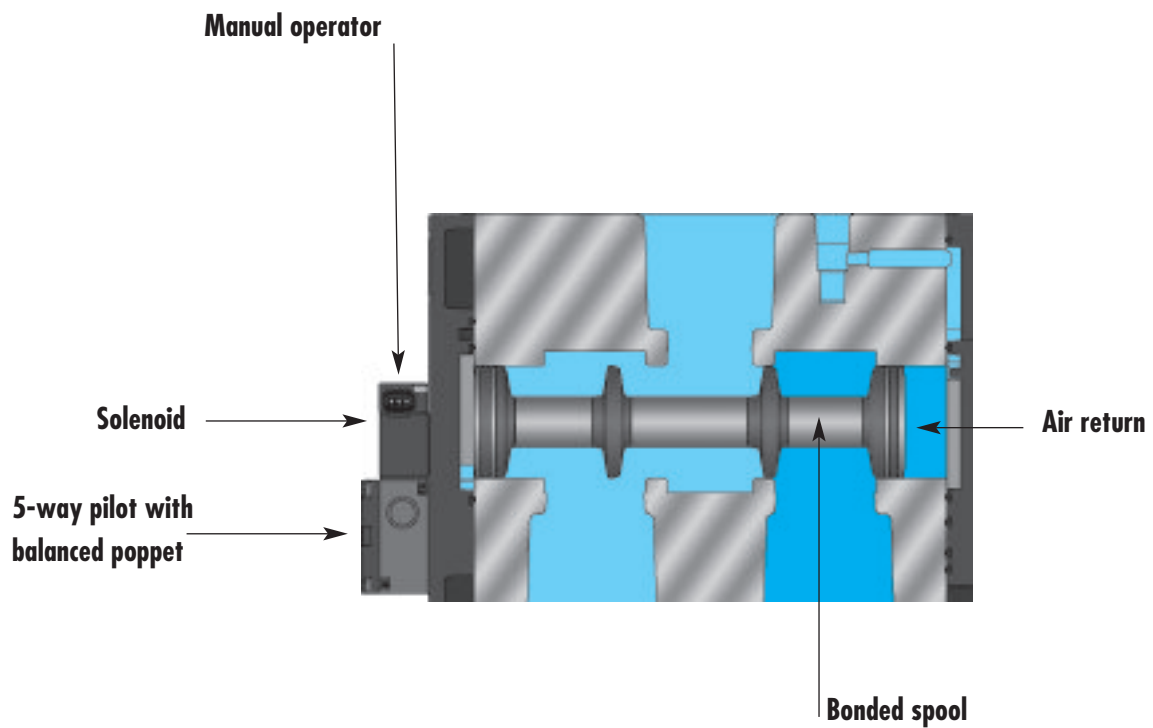
Dimensions shown are metric (mm)



Individual mounting

Series

Inline	
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**SERIES FEATURES**

- The 4-way pilot develops maximum shifting forces both ways.
- Balanced spool, immune to variations of pressure.
- Bonded spool with minimum frictions, shifting in a glass-like finished bore.
- Pilot with balanced poppet, high flow, short and consistent response times.
- Memory spring available.

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2, 2/2</b>	<b>G1"-G1 1/4"-G1 1/2"</b>	<b>31000 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

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



### HOW TO ORDER

Port size	Pilot air	Single operator NC	Single operator NO	Single operator Universal valve
<b>G1"</b>	Internal	68A-A1-DAA-JXXX-XXX	68A-C1-DAA-JXXX-XXX	-
	External	68A-A1-DAB-JXXX-XXX	68A-C1-DAB-JXXX-XXX	68A-G1-DAB-JXXX-XXX
<b>G1 1/4"</b>	Internal	68A-A1-EAA-JXXX-XXX	68A-C1-EAA-JXXX-XXX	-
	External	68A-A1-EAB-JXXX-XXX	68A-C1-EAB-JXXX-XXX	68A-G1-EAB-JXXX-XXX
<b>G1 1/2"</b>	Internal	68A-A1-FAA-JXXX-XXX	68A-C1-FAA-JXXX-XXX	-
	External	68A-A1-FAB-JXXX-XXX	68A-C1-FAB-JXXX-XXX	68A-G1-FAB-JXXX-XXX

### SOLENOID OPERATOR >

J **XXX-XXX\*\***

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA*</b> 120V~/5.4W	<b>0</b> No lead wire	<b>0</b> No operator	<b>BA</b> Flying leads
<b>AC*</b> 24V~/5.4W	<b>A</b> 45 cm	<b>1</b> Recessed - Non locking	<b>GA</b> MAC JAC Solenoid plug-in
<b>DA</b> 24V~/5.4W	<b>B</b> 60 cm	<b>2</b> Recessed - Locking	<b>GB</b> MAC JAC Solenoid plug-in with diode
<b>DB</b> 12V~/5.4W	<b>C</b> 90 cm	<b>3</b> Extended - Non locking	<b>GH</b> MAC JAC Solenoid plug-in with rectifier and LED
<b>DC</b> 24V~/2.4W	<b>D</b> 120 cm	<b>4</b> Extended - Locking	<b>JB</b> Rectangular connector
<b>DD</b> 12V~/2.4W	<b>E</b> 180 cm		<b>JD</b> Rectangular connector with light
<b>DE</b> 24V~/1.8W	<b>F</b> 240 cm		<b>KA</b> Mini square plug-in
<b>DF</b> 12V~/1.8W			<b>KB</b> Mini square plug-in with diode
			<b>KH</b> Mini square plug-in with rectifier & light

\* Note: AC voltage requires connector with rectifier

\*\* Other options available, see page 393.

### OPTIONS

Pilot exhaust: 68A-xx-x-**Xx**-Jxxx-xxx (G)

- G** Ground wire / pin
- A** Standard Pilot exhaust
- B** Pilot exhaust out main exhaust

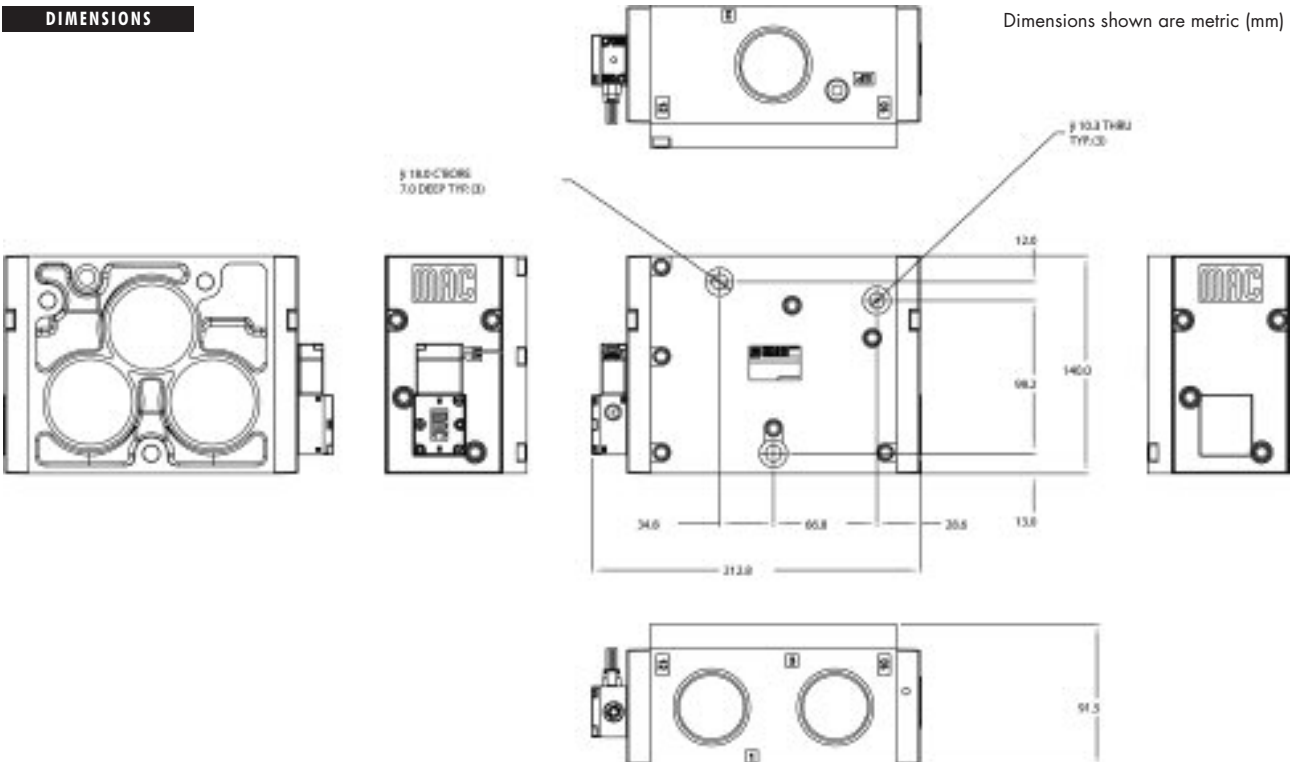
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 8 bar External pilot: Vacuum to 8 bar
Pilot pressure :	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Flow :	31000 NI/min (Cv 31.0)
Power :	5.4 to 1.8 W
Voltage range:	-15% to +10% of nominal voltage

Options :  
• NPTF threads

**DIMENSIONS**

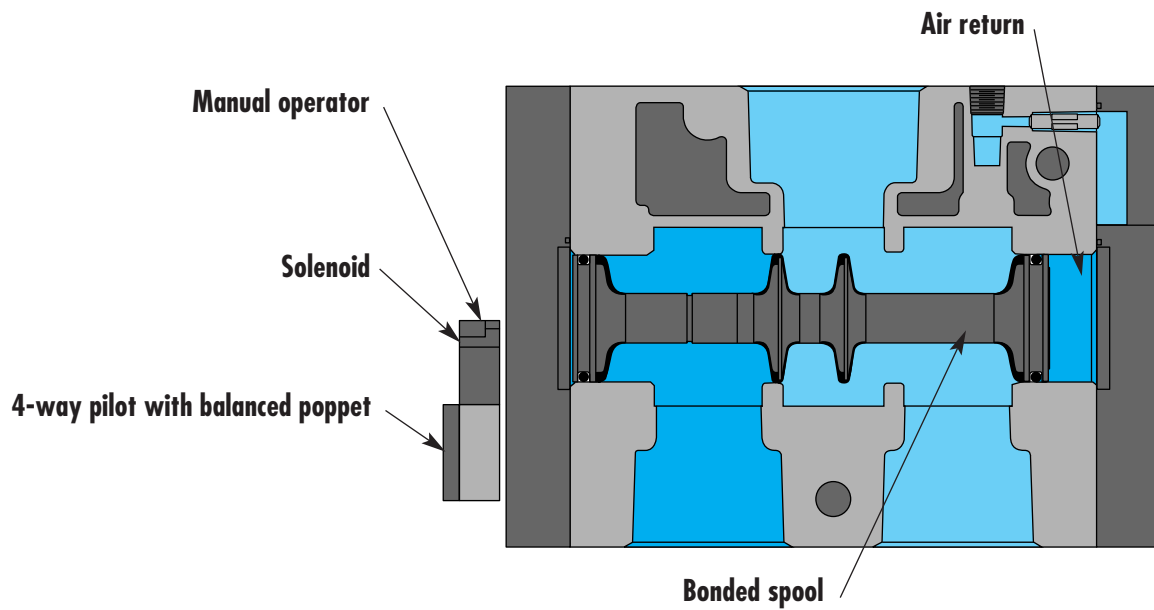




Individual mounting

Series

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**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.





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>G1 1/2" - G2" - G2 1/2"</b>	<b>60000 NI/min</b>	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
<b>G 1 1/2"</b>	Internal	69A-A1-DAA-JXXX-XXX	69A-C1-DAA-JXXX-XXX
<b>G 2"</b>		69A-A1-EAA-JXXX-XXX	69A-C1-EAA-JXXX-XXX
<b>G 2 1/2"</b>		69A-A1-FAA-JXXX-XXX	69A-C1-FAA-JXXX-XXX
<b>G 1 1/2"</b>	External	69A-A1-DAB-JXXX-XXX	69A-C1-DAB-JXXX-XXX
<b>G 2"</b>		69A-A1-EAB-JXXX-XXX	69A-C1-EAB-JXXX-XXX
<b>G 2 1/2"</b>		69A-A1-FAB-JXXX-XXX	69A-C1-FAB-JXXX-XXX

### SOLENOID OPERATOR >

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

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection*
<b>AA</b> 120V~/5,4W	<b>0</b> No lead wire	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DA</b> 24V~/5,4W	<b>A</b> 45 cm	<b>2</b> Locking	<b>GA</b> MAC JAC Solenoid plug-in
<b>DB</b> 12V~/5,4W	<b>B</b> 60 cm		<b>GG</b> MAC JAC Solenoid plug-in with rectifier
<b>DC</b> 24V~/2,4W	<b>C</b> 90 cm		<b>JB</b> Rectangular connector
<b>DD</b> 12V~/2,4W			<b>JD</b> Rectangular connector with light
			<b>KA</b> Mini square connector
			<b>KD</b> Mini square connector with light

\* Other options available, see page 393.

Note : - Use "O" no lead wire for "J", "K" and "L" type electrical connector.  
 - AC voltage requires connector with rectifier.

### OPTIONS

Pilot exhaust configuration:

69A-xx-XXx-DM-DXXX-XXX

- A** Standard pilot exhaust
- B** Pilot exhaust out main exhaust
- M** Manifold O-Ring mount

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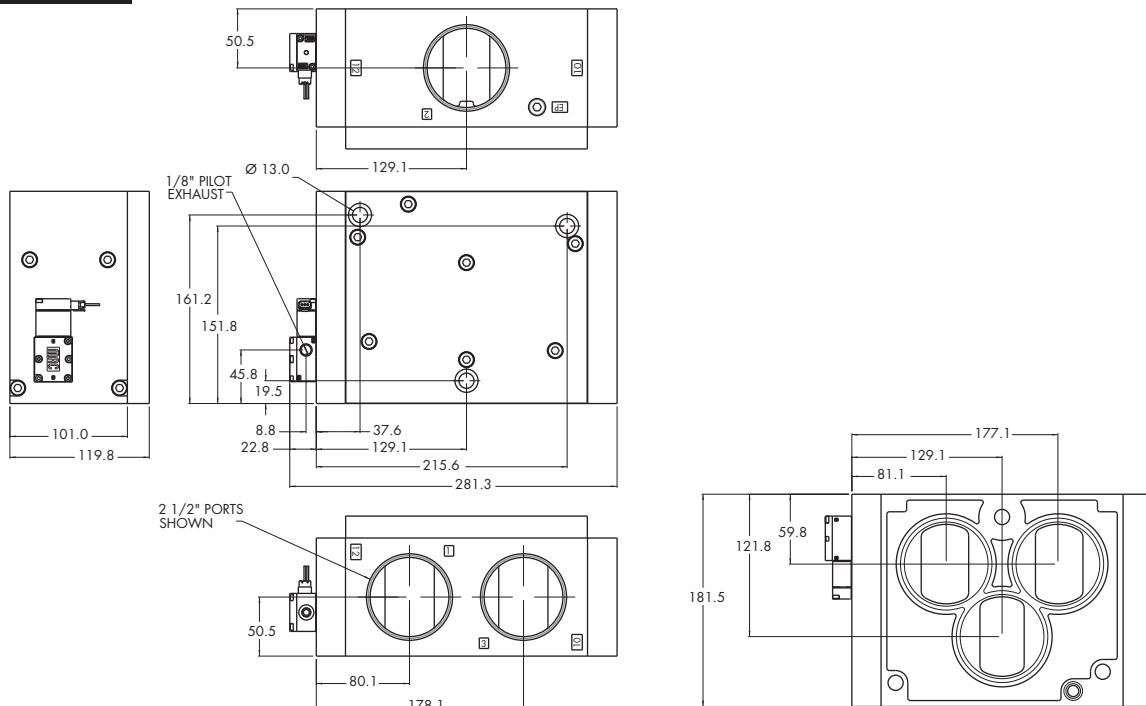
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar
Pilot Pressure:	1,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	46,5 mm
Flow (at 6 bar, ΔP=1bar) :	60000 NI/min (Cv 60.0)
Coil :	Epoxy encapsulated – class A wire – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Power :	5,4W – 2,4W – 1,8W

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)

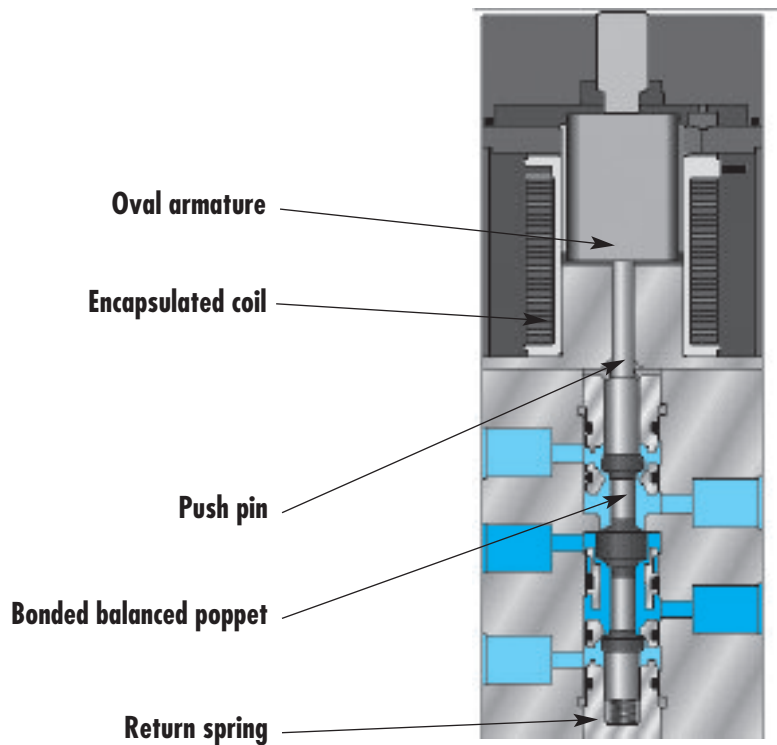


# Direct solenoid and solenoid pilot operated valves 6 mm valve

## Individual mounting

## Series

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### 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.
- 6 mm direct operating valve.
- Very fast response times.





# Direct solenoid and solenoid pilot operated valves 6 mm valve

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2</b>	<b>M3</b>	<b>22 to 35 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. 6mm 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 (consult factory)



### HOW TO ORDER

Port size	Valve
<b>M3</b>	41A-AAA-Txxx-xxx



### SOLENOID OPERATOR >

T **XXX-XXX\***

XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
DC	24V=/1.8W	A	45 cm	0	No operator	BA	Flying leads
DD	24V=/2.5W	B	60 cm	1	Non locking recessed		
DE	24V=/3.0W	C	90 cm	3	Non locking extended		
DF	24V=/4.0W						
DJ	12V=/1.8W						
DK	12V=/2.5W						
DL	12V=/3.0W						
DM	12V=/4.0W						

\* Other options available, see page 405.

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100%  
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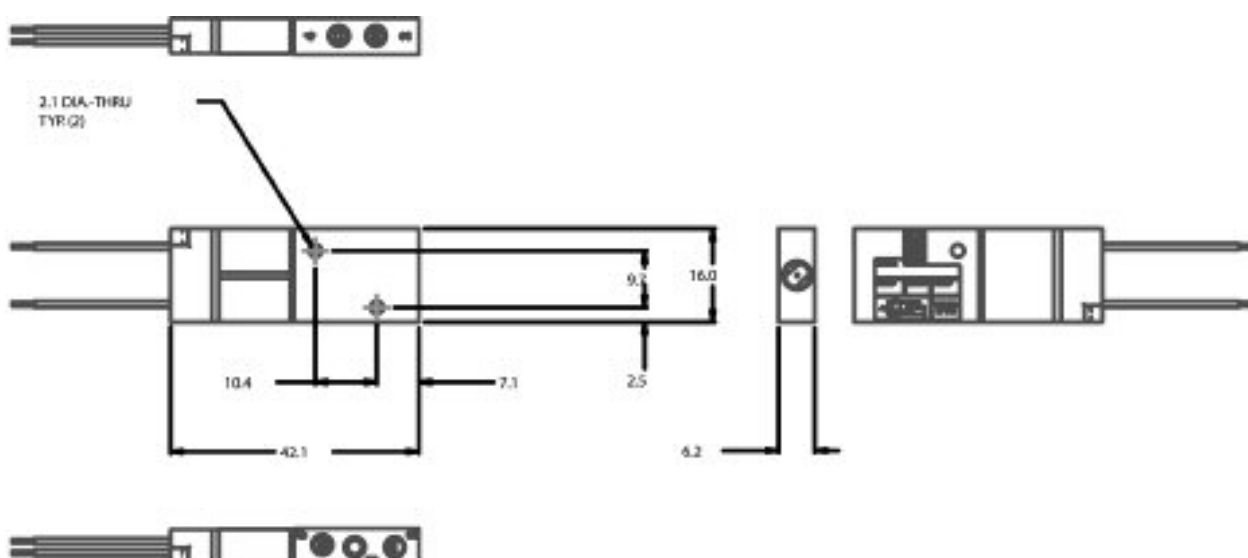
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Flow :	Up to 35 NI/min (Cv 0.035)
Coil :	Class A wires – continuous duty
Voltage range :	15% to +10%
Power :	4.0W, 3.0W, 2.5W, 1.8W

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)

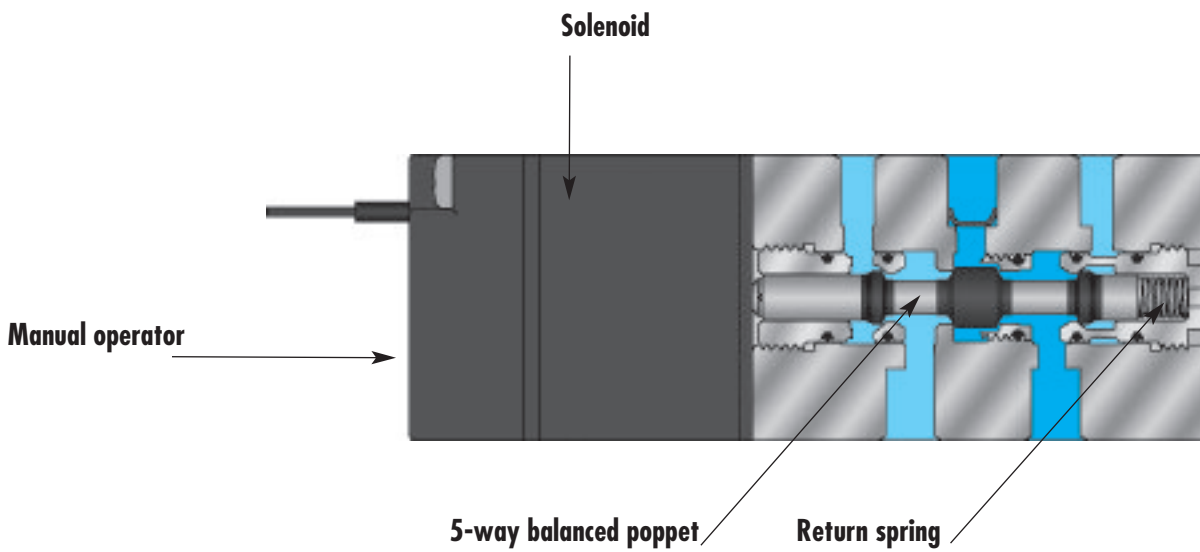




Individual mounting

Series

Inline
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**SERIES FEATURES**

- 8mm valve, direct solenoid operated.
- Balanced poppet, immune to variations of pressure.
- Short stroke with high flow.
- Patented solenoid, for fastest possible response times.
- Powerful return spring.
- Flow is specially adapted on each valve.
- Manual operator standard on all valves.

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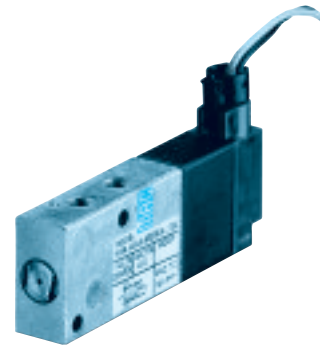


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2</b>	<b>M3</b>	<b>70 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. 8mm direct solenoid operated valve
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 each valve



### HOW TO ORDER

Port size	Valve
<b>M3</b>	 43A-AAA-Rxxx-xxx

### SOLENOID OPERATOR >

R **xxx-xxx\***

XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
DC	24V=/1.8W	0*	No lead wire	0	No operator	BA	Flying leads
DD	24V=/2.5W	A	45 cm	1	Non locking recessed	BB	Flying leads with LED
DF	24V=/4.0W	B	60 cm	3	Non locking extended	RA	Mini JAC solenoid plug-in
DJ	12V=/1.8W	C	90 cm			RB	Mini JAC solenoid plug-in with LED
DK	12V=/2.5W					TA	JST solenoid plug-in
DM	12V=/4.0W					TB	JST solenoid plug-in with LED

\* Not available for flying leads connectors

\* Other options available, see page 401.

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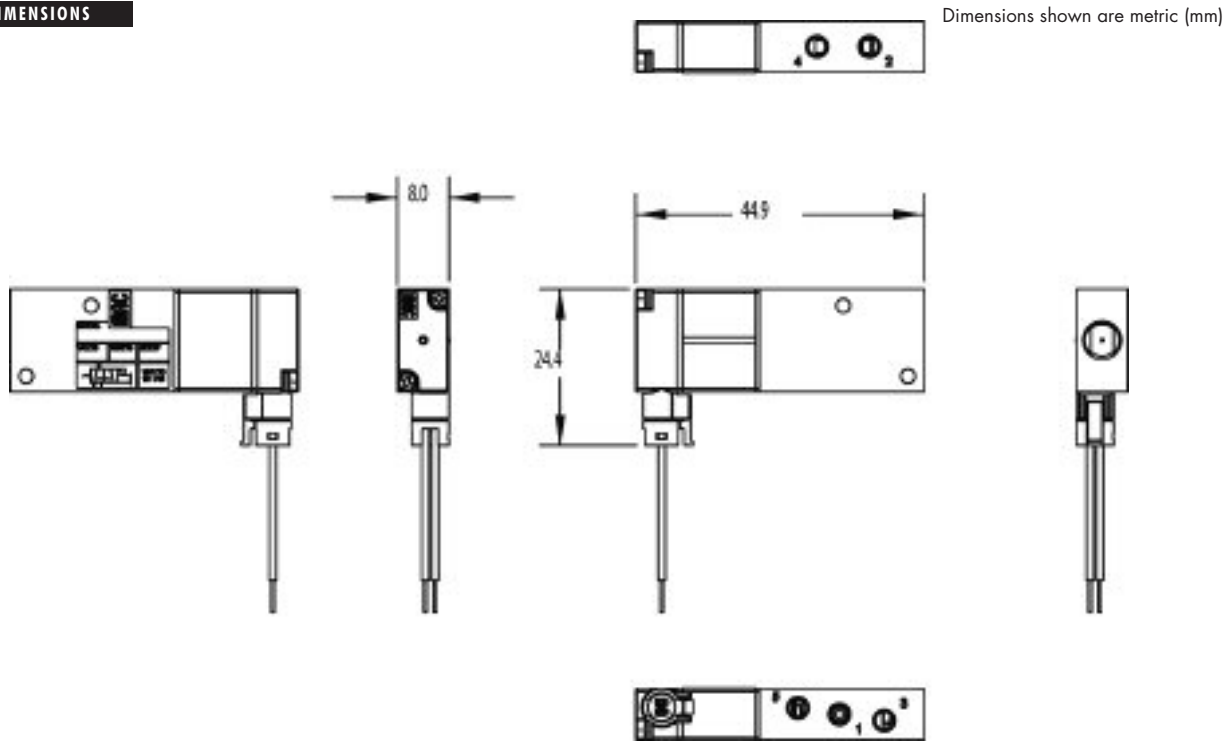
WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	1,6 mm
Flow (at 6 bar, ΔP=1bar) :	4,0 W: 70 NI/min – 3,0 W: 50 NI/min – 2,5 W: 40 NI/min – 1,8 W: 30 NI/min
Voltage range :	-15% to +10% of nominal voltage
Power :	4,0 W – 3,0 W – 2,5 W – 1,8 W

Options : • NPTF threads

**DIMENSIONS**

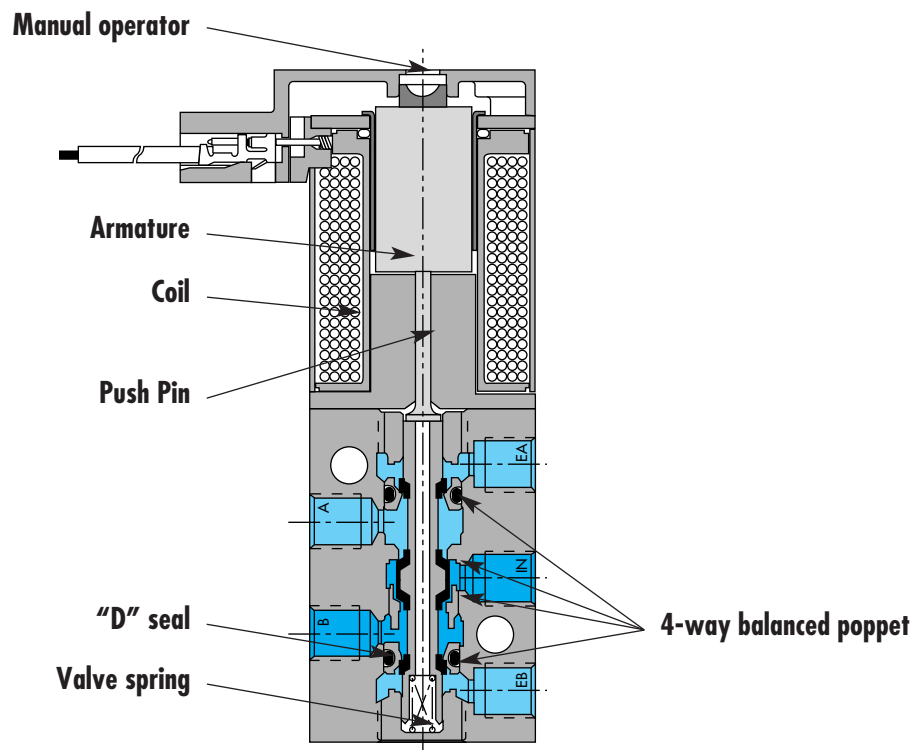


Individual mounting

Series

Inline
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**SERIES FEATURES**

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





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual Mounting	Series
<b>5/2</b>	<b>M5</b>	<b>100 NI/min</b>	<b>Inline</b>	

### 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

Port size	Model number	Model number For use with external flow controls
<b>M5</b>	44C-ABA-G XXX-XXX	44C-BBA-G XXX-XXX

### LATCHING SOLENOID

Port size	Model number	Model number For use with external flow controls
<b>M5</b>	44B-ABA-L XXX-XXX	44B-BBA-L XXX-XXX

### SOLENOID OPERATOR >

G **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DA 24 V=/1W	A 45 cm	1 Non-locking	BA Flying leads
DC 24 V=/1,8W	B 60 cm	2 Locking	BT Flying leads with light
DD 24 V=/2,5W			GA MAC JAC Solenoid plug-in
DF 24 V=/4,0W			KA Mini connector
			KT Mini connector with light

\* Other options available, see page 387.

### LATCHING SOLENOID >

L **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DF 24 V=/4,0W	A 45 cm	0 No operator	BA 2 Wire flying leads
HA 24 V=/1,95W	B 60 cm		BJ 4 Wire flying leads
	C 90 cm		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 395.

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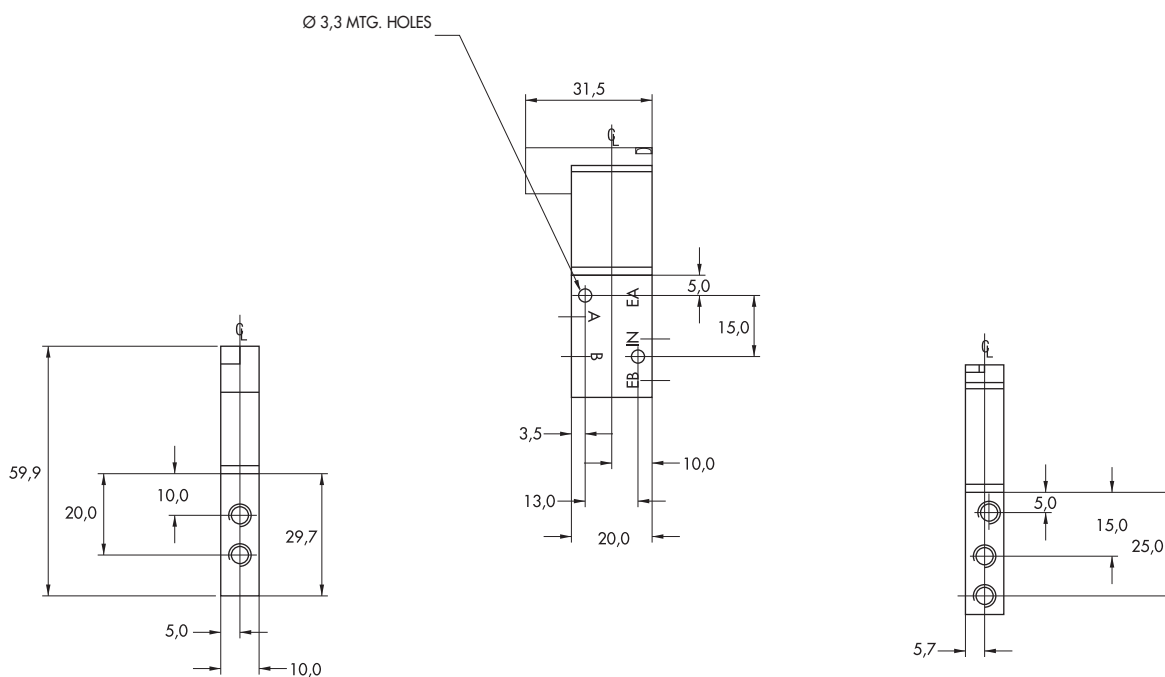
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	1,8 mm
Flow (at 6 bar, ΔP=1bar) :	4 W : 100 NI/min (Cv 0,10) – 2,5 W : 80 NI/min (Cv 0,08) – 1,8 W : 60 NI/min (Cv 0,06) – 1,0W : 50 NI/min (Cv 0,05)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
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)





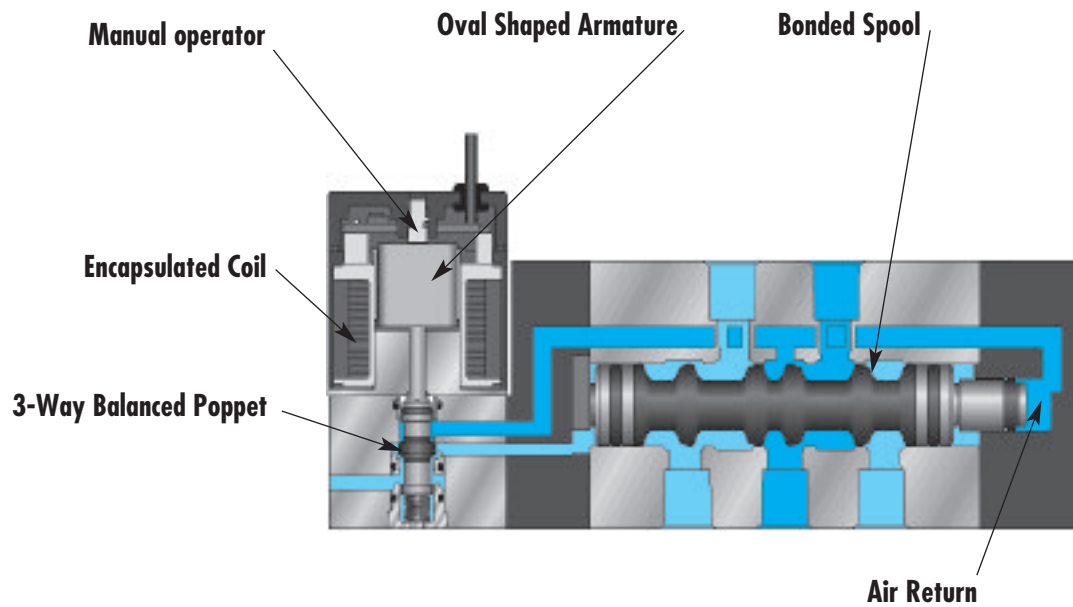
# Direct solenoid and solenoid pilot operated valves 8 mm valve

## Individual mounting

Inline	Sub-base Non plug-in
--------	-------------------------

## Manifold mounting

Manifold-base Non plug-in
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## SERIES FEATURES

- Patented high force MACSOLENOID<sup>®</sup> 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.
- 8 mm solenoid pilot operated valve.
- Very fast and repeatable response times.

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ISO 02

ISO 1

ISO 2

ISO 3





# Direct solenoid and solenoid pilot operated valves 8 mm valve

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2</b>	<b>M3,M5</b>	<b>230 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. 8 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	Single solenoid	Double solenoid
<b>M3</b>	Internal	23A-A1-C00-Exx-Rxxx-xxx	23A-B1-C00-Exx-Rxxx-xxx
	External	23A-A4-C00-Exx-Rxxx-xxx	23A-B4-C00-Exx-Rxxx-xxx
<b>M5</b>	Internal	23A-A1-B00-Exx-Rxxx-xxx	23A-B1-B00-Exx-Rxxx-xxx
	External	23A-A4-B00-Exx-Rxxx-xxx	23A-B4-B00-Exx-Rxxx-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

Port size	Pilot air	Single solenoid	Double solenoid
<b>M3</b>	Internal from port #3	23A-C2-C00-Exx-Rxxx-xxx	23A-D2-C00-Exx-Rxxx-xxx
	Internal from port #5	23A-C3-C00-Exx-Rxxx-xxx	23A-D3-C00-Exx-Rxxx-xxx
<b>M5</b>	Internal from port #3	23A-C2-B00-Exx-Rxxx-xxx	23A-D2-B00-Exx-Rxxx-xxx
	Internal from port #5	23A-C3-B00-Exx-Rxxx-xxx	23A-D3-B00-Exx-Rxxx-xxx

#### SOLENOID OPERATOR >

E **XX-RXXX-XXX\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
<b>M2</b>	Muffled exhaust	<b>DB</b>	24VDC (1.0W)	<b>0*</b>	No lead wire	<b>0</b>	No manual operator	<b>BA</b>	Flying leads
<b>P2</b>	Piped exhaust (M3)	<b>DC</b>	24VDC (1.8W)	<b>A</b>	45 cm	<b>1</b>	Recessed non locking	<b>BB</b>	Flying leads w/ LED
		<b>DD</b>	24VDC (2.5W)	<b>B</b>	60 cm	<b>3</b>	Extended non locking	<b>RA</b>	Mini JAC solenoid plug-in
		<b>DE</b>	24VDC (3.0W)					<b>RB</b>	Mini JAC sol. plug-in w/ LED
		<b>DF</b>	24VDC (4.0W)					<b>TA</b>	JST solenoid plug-in
		<b>DH</b>	12VDC (1.0W)					<b>TB</b>	JST sol. plug-in w/ LED
		<b>DJ</b>	12VDC (1.8W)						
		<b>DK</b>	12VDC (2.5W)						
		<b>DL</b>	12VDC (3.0W)						
		<b>DM</b>	12VDC (4.0W)						

\* Not available for flying lead connectors.

Note: For pilot exhaust out main exhaust, Mod. 0353 is required

\* Other options available, see page 397.

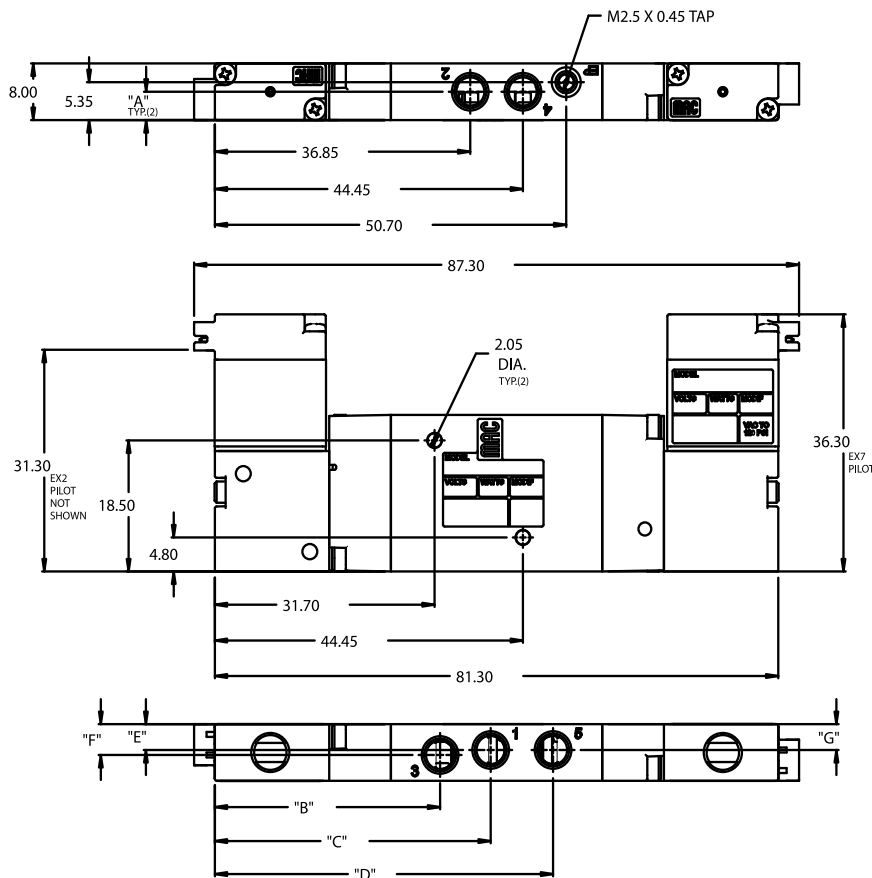
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: Single solenoid air return: 2 to 8 bar Single solenoid spring return: 2,7 to 8 bar Double solenoid: 1,3 to 8 bar External pilot: vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	230 NI/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

**DIMENSIONS**

Dimensions shown are metric (mm)



DIM	M3 X 0.5 PORT OPTION	#10-32 OR M5 PORT OPTION
A	3.20	4.00
B	33.00	32.50
C	40.60	39.80
D	48.20	48.80
E	4.00	3.65
F	4.00	4.35
G	4.00	3.65



# Direct solenoid and solenoid pilot operated valves 8 mm valve

Function	Port size	Flow [Max]	Individual mounting	Series
5/2	M3,M5	230 NI/min	Subbase non plug-in	

### OPERATIONAL BENEFITS

1. 8 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times

### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	Single solenoid	Double solenoid
<b>Valve less base</b>	Internal	23A-AD-000-Exx-Rxxx-xxx	23A-BD-000-Exx-Rxxx-xxx
	External	23A-AE-000-Exx-Rxxx-xxx	23A-BE-000-Exx-Rxxx-xxx
<b>M3</b>	Internal	23A-AD-C1B-Exx-Rxxx-xxx	23A-BD-C1B-Exx-Rxxx-xxx
	External	23A-AE-C1B-Exx-Rxxx-xxx	23A-BE-C1B-Exx-Rxxx-xxx
<b>M5</b>	Internal	23A-AD-B1B-Exx-Rxxx-xxx	23A-BD-B1B-Exx-Rxxx-xxx
	External	23A-AE-B1B-Exx-Rxxx-xxx	23A-BE-B1B-Exx-Rxxx-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

Port size	Pilot air	Single solenoid	Double solenoid
<b>Valve less base</b>	Internal from port #3	23A-CJ-000-Exx-Rxxx-xxx	23A-DJ-000-Exx-Rxxx-xxx
	Internal from port #5	23A-CK-000-Exx-Rxxx-xxx	23A-DK-000-Exx-Rxxx-xxx
<b>M3</b>	Internal from port #3	23A-CJ-C1B-Exx-Rxxx-xxx	23A-DJ-C1B-Exx-Rxxx-xxx
	Internal from port #5	23A-CK-C1B-Exx-Rxxx-xxx	23A-DK-C1B-Exx-Rxxx-xxx
<b>M5</b>	Internal from port #3	23A-CJ-B1B-Exx-Rxxx-xxx	23A-DJ-B1B-Exx-Rxxx-xxx
	Internal from port #5	23A-CK-B1B-Exx-Rxxx-xxx	23A-DK-B1B-Exx-Rxxx-xxx

#### SOLENOID OPERATOR >

### E XX-RXXX-XXX\*\*

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24VDC (1.0W)	0*	No lead wire	0	No manual operator	BA	Flying leads
P2	Piped exhaust (M3)	DC	24VDC (1.8W)	A	45 cm	1	Recessed non locking	BB	Flying leads w/ LED
		DD	24VDC (2.5W)	B	60 cm	3	Extended non locking	RA	Mini JAC solenoid plug-in
		DE	24VDC (3.0W)	C	90 cm			RB	Mini JAC sol. plug-in w/ LED
		DF	24VDC (4.0W)					TA	JST solenoid plug-in
		DH	12VDC (1.0W)					TB	JST sol. plug-in w/ LED
		DJ	12VDC (1.8W)						
		DK	12VDC (2.5W)						
		DL	12VDC (3.0W)						
		DM	12VDC (4.0W)						

\* Not available for flying lead connectors.  
Note: For pilot exhaust out main exhaust, Mod. 0353 is required.  
Must use M7 or P7 pilot type.

\*\* Other options available, see page 397.

### OPTIONS

23A-XX-XxX-Exx-Rxxx-xxx

- 1 Individual base – Side ports
- 2 Individual base – Bottom ports (no side ports)

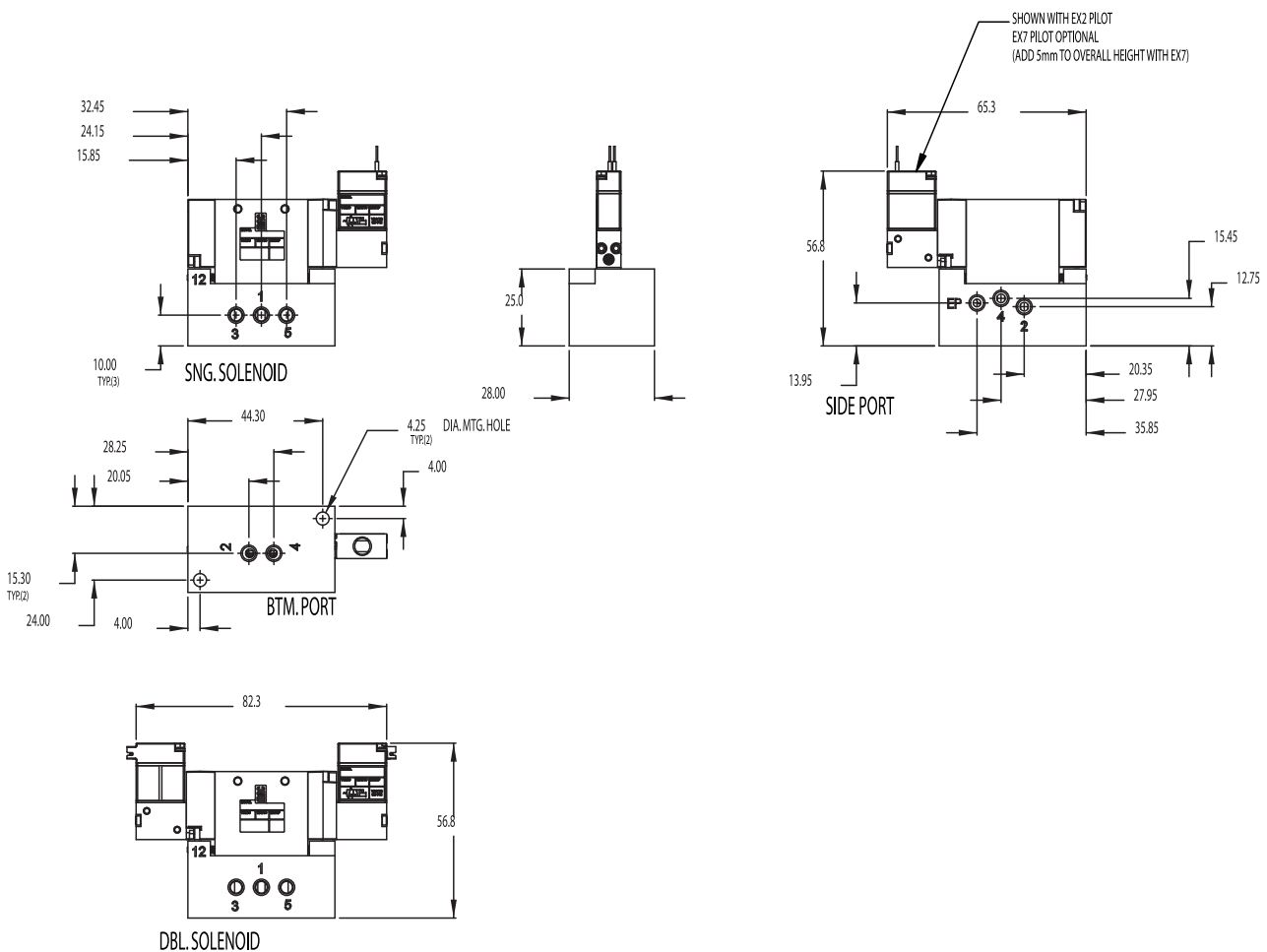
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**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Internal pilot: Single solenoid air return: 2 to 8 bar Single solenoid spring return: 2,7 to 8 bar Double solenoid: 1,3 to 8 bar External pilot: vacuum to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Flow :</b>	230 NI/min
<b>Coil :</b>	Class A (#26 AWG x 18), continuous duty
<b>Voltage range :</b>	-15% to +10% of nominal voltage
<b>Power :</b>	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves 8 mm valve

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2</b>	<b>M3,M5</b>	<b>230 NI/min</b>	Manifold base non plug-in	

### OPERATIONAL BENEFITS

1. 8 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	Single solenoid	Double solenoid
<b>Valve only</b>	Internal	23A-AD-000-Exx-Rxxx-xxx	23A-BD-000-Exx-Rxxx-xxx
	External	23A-AE-000-Exx-Rxxx-xxx	23A-BE-000-Exx-Rxxx-xxx
<b>M3</b>	Internal	23A-AD-CAB-Exx-Rxxx-xxx	23A-BD-CAB-Exx-Rxxx-xxx
	External	23A-AE-CAB-Exx-Rxxx-xxx	23A-BE-CAB-Exx-Rxxx-xxx
<b>M5</b>	Internal	23A-AD-BAB-Exx-Rxxx-xxx	23A-BD-BAB-Exx-Rxxx-xxx
	External	23A-AE-BAB-Exx-Rxxx-xxx	23A-BE-BAB-Exx-Rxxx-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

Port size	Pilot air	Single solenoid	Double solenoid
<b>Valve only</b>	Internal from port #3	23A-CJ-000-Exx-Rxxx-xxx	23A-DJ-000-Exx-Rxxx-xxx
	Internal from port #5	23A-CK-000-Exx-Rxxx-xxx	23A-DK-000-Exx-Rxxx-xxx
<b>M3</b>	Internal from port #3	23A-CJ-CAB-Exx-Rxxx-xxx	23A-DJ-CAB-Exx-Rxxx-xxx
	Internal from port #5	23A-CK-CAB-Exx-Rxxx-xxx	23A-DK-CAB-Exx-Rxxx-xxx
<b>M5</b>	Internal from port #3	23A-CJ-BAB-Exx-Rxxx-xxx	23A-DJ-BAB-Exx-Rxxx-xxx
	Internal from port #5	23A-CK-BAB-Exx-Rxxx-xxx	23A-DK-BAB-Exx-Rxxx-xxx

#### SOLENOID OPERATOR ➤

E **XX-RXXX-XXX** \*\*

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24VDC (1.0W)	0*	No lead wire	0	No manual operator	BA	Flying leads
P2	Piped exhaust (M3)	DC	24VDC (1.8W)	A	45 cm	1	Recessed non locking	BB	Flying leads w/ LED
		DD	24VDC (2.5W)	B	60 cm	3	Extended non locking	RA	Mini JAC solenoid plug-in
		DE	24VDC (3.0W)	C	90 cm			RB	Mini JAC sol. plug-in w/ LED
		DF	24VDC (4.0W)					TA	JST solenoid plug-in
		DH	12VDC (1.0W)					TB	JST sol. plug-in w/ LED
		DJ	12VDC (1.8W)						
		DK	12VDC (2.5W)						
		DL	12VDC (3.0W)						
		DM	12VDC (4.0W)						

\* Not available for flying lead connectors.  
Note: For pilot exhaust out main exhaust, Mod. 0353 is required.  
Must use M7 or P7 pilot type.

\*\* Other options available, see page 397.

### OPTIONS

23A-XX-X<sub>A</sub>X-Exx-Rxxx-xxx

- A Manifold base – Side cylinder ports
- B Manifold base – Bottom cylinder ports (no side cylinder ports)

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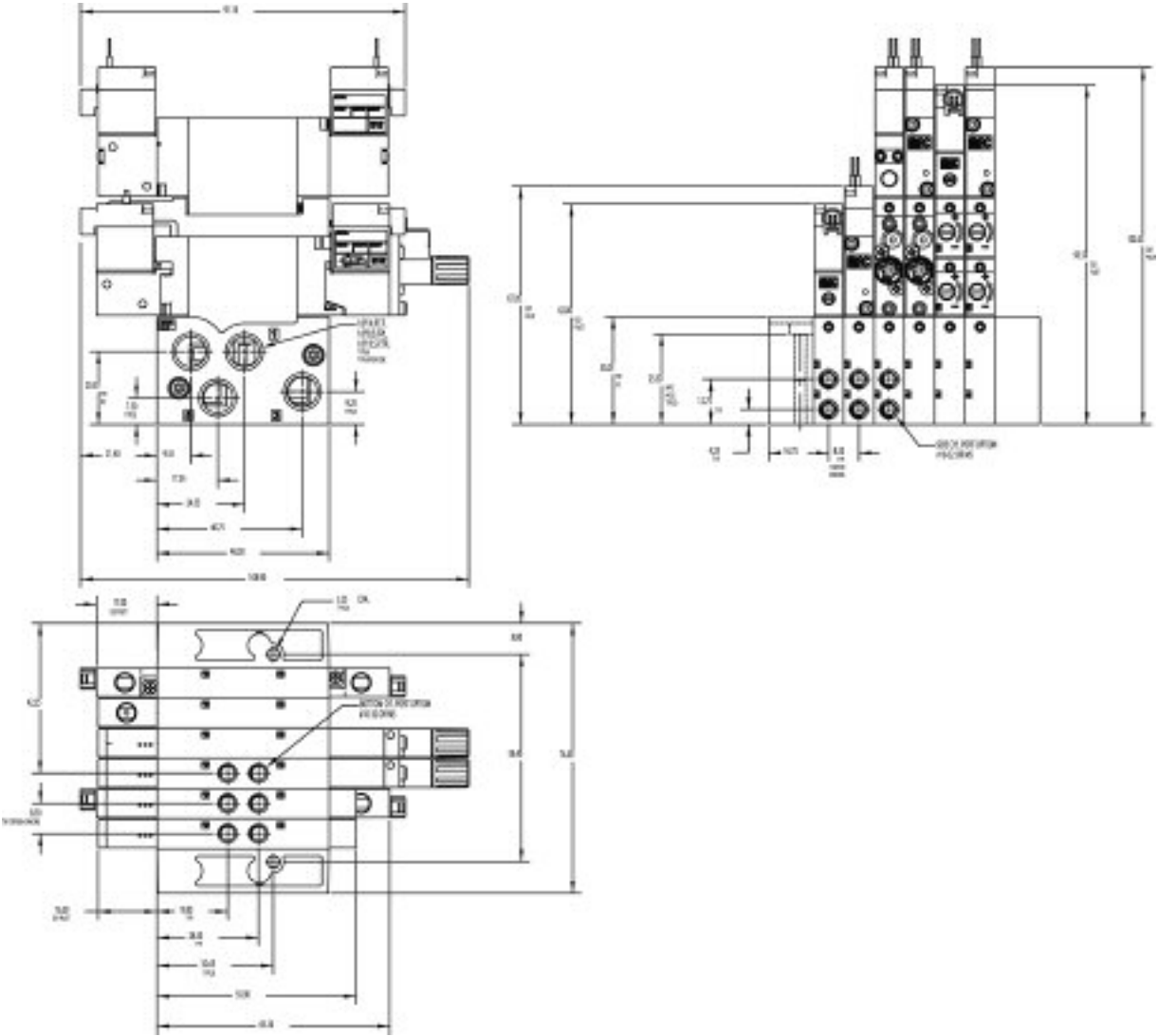
WARRANTY  
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: Single solenoid air return: 2 to 8 bar Single solenoid spring return: 2,7 to 8 bar Double solenoid: 1,3 to 8 bar External pilot: vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	230 Nl/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

**DIMENSIONS**

Dimensions shown are metric (mm)





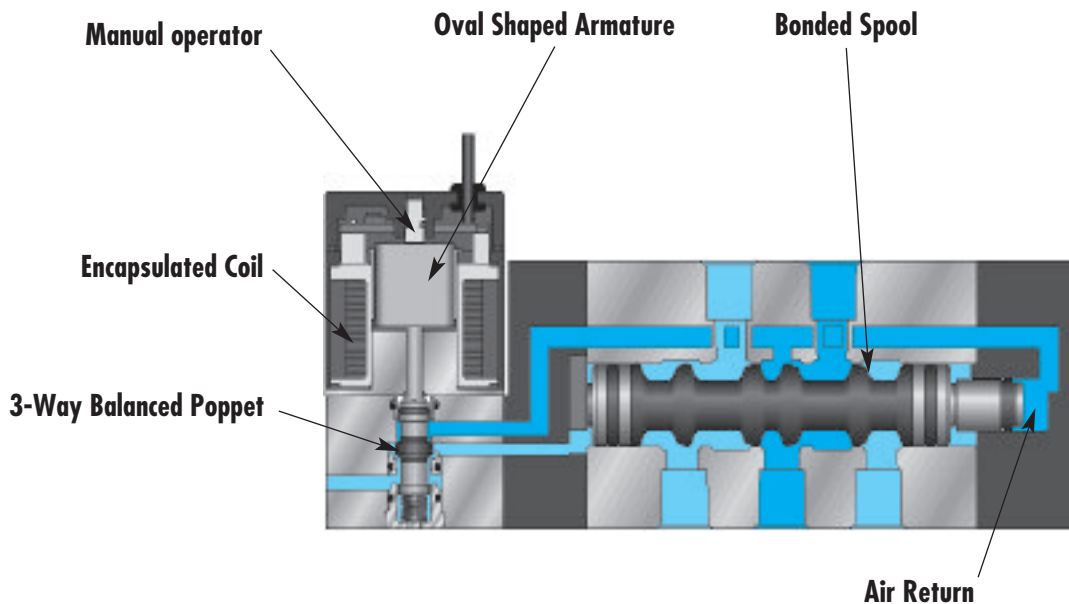
# Direct solenoid and solenoid pilot operated valves 10 mm valve

## Individual mounting

Inline	Sub-base Non plug-in	Sub-base Plug-in
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## Manifold mounting

Manifold-base Non plug-in	Manifold-base Plug-in
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## 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.
- 10 mm solenoid pilot operated valve.
- Very fast and repeatable response times.

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ISO 01

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# Direct solenoid and solenoid pilot operated valves 10 mm valve

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>M5</b>	<b>250 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. 10 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response time



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
<b>M5</b>	Internal	24A-A1-B00-E $xx$ -R $xxx$ - $xxx$	24A-B1-B00-E $xx$ -R $xxx$ - $xxx$	24A-E1-B00-E $xx$ -R $xxx$ - $xxx$	24A-F1-B00-E $xx$ -R $xxx$ - $xxx$
	External	24A-A4-B00-E $xx$ -R $xxx$ - $xxx$	24A-B4-B00-E $xx$ -R $xxx$ - $xxx$	24A-E4-B00-E $xx$ -R $xxx$ - $xxx$	24A-F4-B00-E $xx$ -R $xxx$ - $xxx$

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
<b>M5</b>	Internal from port #3	24A-C2-B00-E $xx$ -R $xxx$ - $xxx$	24A-D2-B00-E $xx$ -R $xxx$ - $xxx$	24A-G2-B00-E $xx$ -R $xxx$ - $xxx$
	Internal from port #5	24A-C3-B00-E $xx$ -R $xxx$ - $xxx$	24A-D3-B00-E $xx$ -R $xxx$ - $xxx$	24A-G3-B00-E $xx$ -R $xxx$ - $xxx$

#### SOLENOID OPERATOR ►

E **XX-RXXX-XXX\*\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24V=/1.0W	0*	No lead wire	0	No manual operator	BA	Flying leads
P2	Piped exhaust (M3)	DC	24V=/1.8W	A	45 cm	1	Recessed non locking	BB	Flying leads w/ LED
		DD	24V=/2.5W	B	60 cm	3	Extended non locking	RA	Mini JAC solenoid plug-in
		DF	24V=/4.0W	C	90 cm			RB	Mini JAC sol. plug-in w/ LED
		DH	12V=/1.0W					TA	JST solenoid plug-in
		DJ	12V=/1.8W					TB	JST sol. plug-in w/ LED
		DK	12V=/2.5W						
		DM	12V=/4.0W						

\* Not available for flying lead connectors

\*\* Other options available, see page 397.

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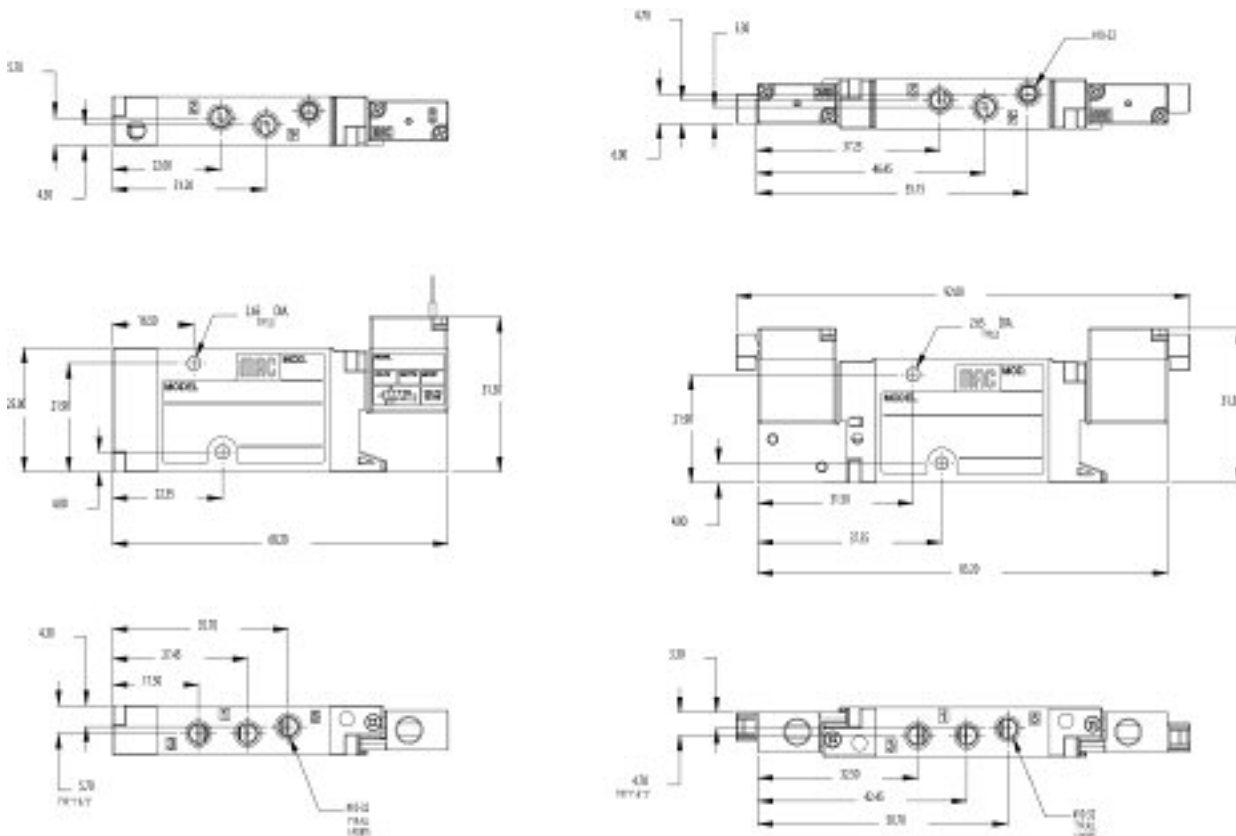
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	2 position internal pilot: Single solenoid: 2 to 8 bar Double solenoid: 1.3 to 8 bar 2/3 position external pilot: vacuum to 8 bar 3 position internal pilot: 2.7 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	0.25 Cv / 250 NI/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 2.5W, 1.8W, 1.0W

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves 10 mm valve

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>370 NI/min</b>	Sub-base non plugin	

### OPERATIONAL BENEFITS

1. 10 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times



### HOW TO ORDER

#### SINGLE PRESSURE MODELS (SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
<b>Valve only</b>	Internal	24A-AD-000-Exx-Rxxx-xxx	24A-B1-B00-Exx-Rxxx-xxx	24A-ED-000-Exx-Rxxx-xxx	24A-FD-000-Exx-Rxxx-xxx
	External	24A-AE-000-Exx-Rxxx-xxx	24A-BE-000-Exx-Rxxx-xxx	24A-EE-000-Exx-Rxxx-xxx	24A-FE-000-Exx-Rxxx-xxx
<b>M5</b>	Internal	24A-AD-B1B-Exx-Rxxx-xxx	24A-BD-B1B-Exx-Rxxx-xxx	24A-ED-B1B-Exx-Rxxx-xxx	24A-FD-B1B-Exx-Rxxx-xxx
	External	24A-AE-B1B-Exx-Rxxx-xxx	24A-BE-B1B-Exx-Rxxx-xxx	24A-EE-B1B-Exx-Rxxx-xxx	24A-FE-B1B-Exx-Rxxx-xxx
<b>M7</b>	Internal	24A-AD-C1B-Exx-Rxxx-xxx	24A-BD-C1B-Exx-Rxxx-xxx	24A-ED-C1B-Exx-Rxxx-xxx	24A-FD-C1B-Exx-Rxxx-xxx
	External	24A-AE-C1B-Exx-Rxxx-xxx	24A-BE-C1B-Exx-Rxxx-xxx	24A-EE-C1B-Exx-Rxxx-xxx	24A-FE-C1B-Exx-Rxxx-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
<b>Valve only</b>	Internal from port #3	24A-CJ-000-Exx-Rxxx-xxx	24A-DJ-000-Exx-Rxxx-xxx	24A-GJ-000-Exx-Rxxx-xxx
	Internal from port #5	24A-CK-000-Exx-Rxxx-xxx	24A-DK-000-Exx-Rxxx-xxx	24A-GK-000-Exx-Rxxx-xxx
<b>M5</b>	Internal from port #3	24A-CJ-B1B-Exx-Rxxx-xxx	24A-DJ-B1B-Exx-Rxxx-xxx	24A-GJ-B1B-Exx-Rxxx-xxx
	Internal from port #5	24A-CK-B1B-Exx-Rxxx-xxx	24A-DK-B1B-Exx-Rxxx-xxx	24A-GK-B1B-Exx-Rxxx-xxx
<b>M7</b>	Internal from port #3	24A-CJ-C1B-Exx-Rxxx-xxx	24A-DJ-C1B-Exx-Rxxx-xxx	24A-GJ-C1B-Exx-Rxxx-xxx
	Internal from port #5	24A-CK-C1B-Exx-Rxxx-xxx	24A-DK-C1B-Exx-Rxxx-xxx	24A-GK-C1B-Exx-Rxxx-xxx

#### SOLENOID OPERATOR >

**E XX-RXXX-XXX\*\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24V=/1.0W	0*	No lead wire	0	No manual operator	BA	Flying leads
P2	Piped exhaust (M3)	DC	24V=/1.8W	A	45 cm	1	Recessed non locking	BB	Flying leads w/ LED
		DD	24V=/2.5W	B	60 cm	3	Extended non locking	RA	Mini JAC solenoid plug-in
		DF	24V=/4.0W	C	90 cm			RB	Mini JAC sol. plug-in w/ LED
		DH	12V=/1.0W					TA	JST solenoid plug-in
		DJ	12V=/1.8W					TB	JST sol. plug-in w/ LED
		DK	12V=/2.5W						
		DM	12V=/4.0W						

\* Not available for flying lead connectors

\*\* Other options available, see page 397.

### OPTIONS

24A-XX -XxX-Exx-Rxxx-xxx

- 1 Individual base – Side ports
- 2 Individual base – Bottom ports (no side ports)

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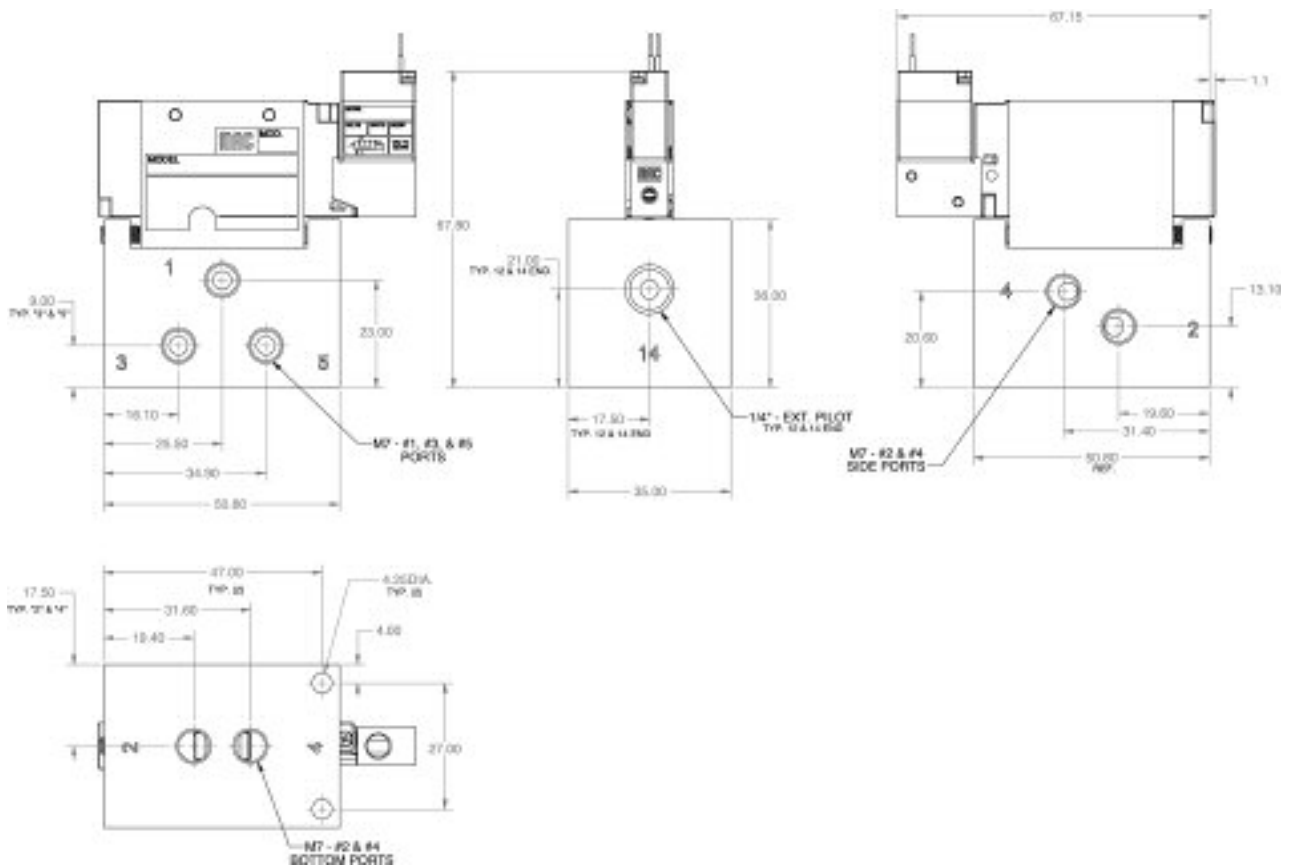
WARRANTY  
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	2 position internal pilot: Single solenoid: 2 to 8 bar Double solenoid: 1.3 to 8 bar 2/3 position external pilot: vacuum to 8 bar 3 position internal pilot: 2.7 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	0.37 Cv / 370 NL/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves 10 mm valve

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>370 NI/min</b>	Sub-base plug-in	

### OPERATIONAL BENEFITS

1. 10 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times



### HOW TO ORDER

#### SINGLE PRESSURE MODELS (SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
<b>Valve only</b>	Internal	24A-AA-000-Exx-RxxP-xxx	24A-BA-000-Exx-RxxP-xxx	24A-EA-000-Exx-RxxP-xxx	24A-FA-000-Exx-RxxP-xxx
	External	24A-AB-000-Exx-RxxP-xxx	24A-BB-000-Exx-RxxP-xxx	24A-EB-000-Exx-RxxP-xxx	24A-FB-000-Exx-RxxP-xxx
<b>M5</b>	Internal	24A-AA-B1A-Exx-RxxP-xxx	24A-BA-B1A-Exx-RxxP-xxx	24A-EA-B1A-Exx-RxxP-xxx	24A-FA-B1A-Exx-RxxP-xxx
	External	24A-AB-B1A-Exx-RxxP-xxx	24A-BB-B1A-Exx-RxxP-xxx	24A-EB-B1A-Exx-RxxP-xxx	24A-FB-B1A-Exx-RxxP-xxx
<b>M7</b>	Internal	24A-AA-C1A-Exx-RxxP-xxx	24A-BA-C1A-Exx-RxxP-xxx	24A-EA-C1A-Exx-RxxP-xxx	24A-FA-C1A-Exx-RxxP-xxx
	External	24A-AB-C1A-Exx-RxxP-xxx	24A-BB-C1A-Exx-RxxP-xxx	24A-EB-C1A-Exx-RxxP-xxx	24A-FB-C1A-Exx-RxxP-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
<b>Valve only</b>	Internal from port #3	24A-CG-000-Exx-RxxP-xxx	24A-DG-000-Exx-RxxP-xxx	24A-GG-000-Exx-RxxP-xxx
	Internal from port #5	24A-CK-000-Exx-RxxP-xxx	24A-DH-000-Exx-RxxP-xxx	24A-GH-000-Exx-RxxP-xxx
<b>M5</b>	Internal from port #3	24A-CG-B1A-Exx-RxxP-xxx	24A-DG-B1A-Exx-RxxP-xxx	24A-GG-B1A-Exx-RxxP-xxx
	Internal from port #5	24A-CH-B1A-Exx-RxxP-xxx	24A-DH-B1A-Exx-RxxP-xxx	24A-GH-B1A-Exx-RxxP-xxx
<b>M7</b>	Internal from port #3	24A-CG-C1A-Exx-RxxP-xxx	24A-DG-C1A-Exx-RxxP-xxx	24A-GG-C1A-Exx-RxxP-xxx
	Internal from port #5	24A-CH-C1A-Exx-RxxP-xxx	24A-DH-C1A-Exx-RxxP-xxx	24A-GH-C1A-Exx-RxxP-xxx

#### SOLENOID OPERATOR >

**E XX-RXXX-XXX\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24V=/1.0W	P	Base plug-in	0	No manual operator	FA	Base plug-in
P2	Piped exhaust (M3)	DC	24V=/1.8W			1	Recessed non locking	FB	Base plug-in w/ LED
		DD	24V=/2.5W			3	Extended non locking	FC	Base plug-in w/MOV
		DF	24V=/4.0W					FD	Base plug-in w/MOV and LED
		DH	12V=/1.0W						
		DJ	12V=/1.8W						
		DK	12V=/2.5W						
		DM	12V=/4.0W						

\* Other options available, see page 397.

### OPTIONS

24A-XX -XxX-Exx-Rxxx-xxx

- 1 Individual base – Side ports
- 2 Individual base – Bottom ports (no side ports)

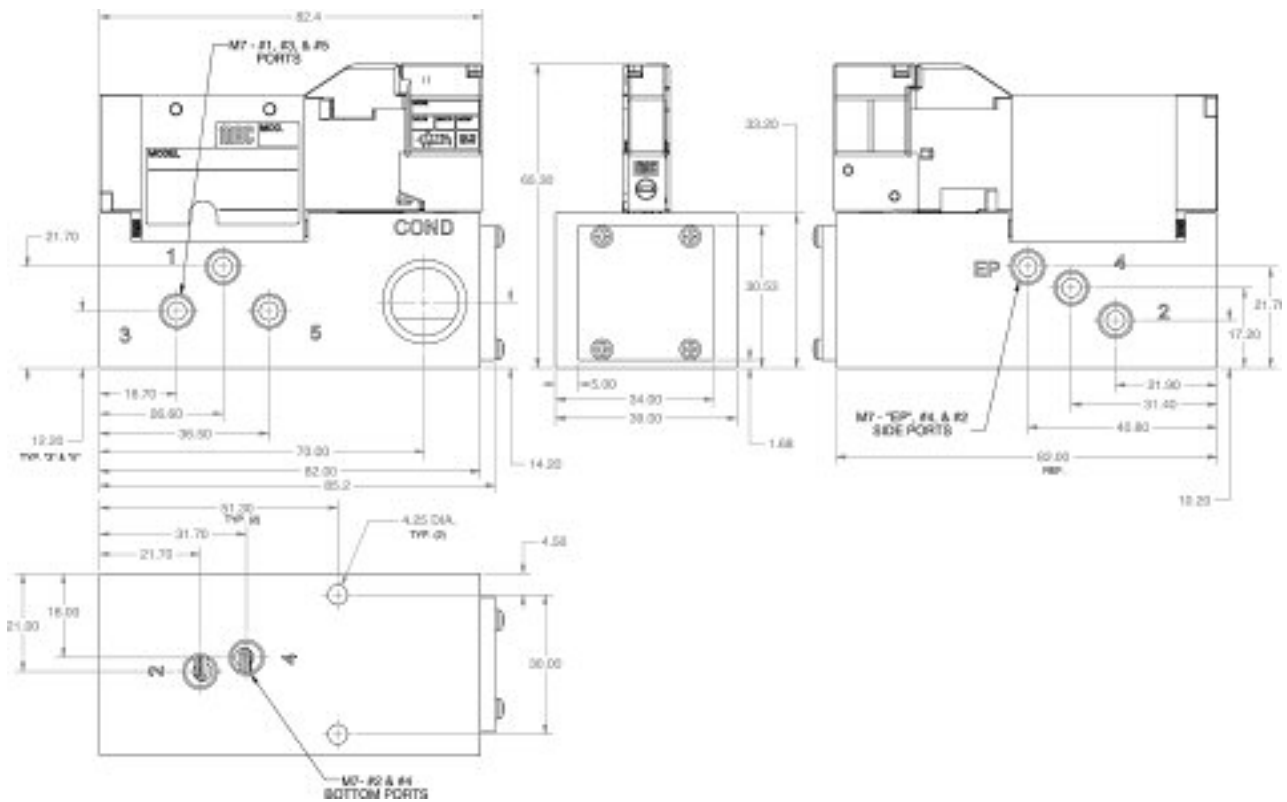
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	2 position internal pilot: Single solenoid: 2 to 8 bar Double solenoid: 1.3 to 8 bar 2/3 position external pilot: vacuum to 8 bar 3 position internal pilot: 2.7 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	0.37 Cv / 370 Nl/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

**DIMENSIONS**

Dimensions shown are metric (mm)





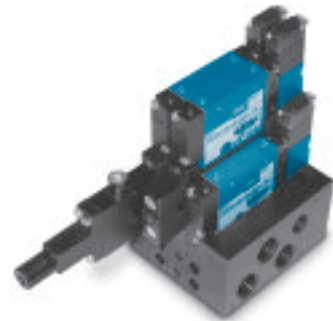


# Direct solenoid and solenoid pilot operated valves 10 mm valve

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Manifold base non plugin	

### OPERATIONAL BENEFITS

1. 10 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times



### HOW TO ORDER

#### SINGLE PRESSURE MODELS (SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
<b>Valve only</b>	Internal	24A-AD-000-Exx-Rxxx-xxx	24A-B1-B00-Exx-Rxxx-xxx	24A-ED-000-Exx-Rxxx-xxx	24A-FD-000-Exx-Rxxx-xxx
	External	24A-AE-000-Exx-Rxxx-xxx	24A-BE-000-Exx-Rxxx-xxx	24A-EE-000-Exx-Rxxx-xxx	24A-FE-000-Exx-Rxxx-xxx
<b>M5</b>	Internal	24A-AD-BAB-Exx-Rxxx-xxx	24A-BD-BAB-Exx-Rxxx-xxx	24A-ED-BAB-Exx-Rxxx-xxx	24A-FD-BAB-Exx-Rxxx-xxx
	External	24A-AE-BAB-Exx-Rxxx-xxx	24A-BE-BAB-Exx-Rxxx-xxx	24A-EE-BAB-Exx-Rxxx-xxx	24A-FE-BAB-Exx-Rxxx-xxx
<b>M7</b>	Internal	24A-AD-CAB-Exx-Rxxx-xxx	24A-BD-CAB-Exx-Rxxx-xxx	24A-ED-CAB-Exx-Rxxx-xxx	24A-FD-CAB-Exx-Rxxx-xxx
	External	24A-AE-CAB-Exx-Rxxx-xxx	24A-BE-CAB-Exx-Rxxx-xxx	24A-EE-CAB-Exx-Rxxx-xxx	24A-FE-CAB-Exx-Rxxx-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
<b>Valve only</b>	Internal from port #3	24A-CJ-000-Exx-Rxxx-xxx	24A-DJ-000-Exx-Rxxx-xxx	24A-GJ-000-Exx-Rxxx-xxx
	Internal from port #5	24A-CK-000-Exx-Rxxx-xxx	24A-DK-000-Exx-Rxxx-xxx	24A-GK-000-Exx-Rxxx-xxx
<b>M5</b>	Internal from port #3	24A-CJ-BAB-Exx-Rxxx-xxx	24A-DJ-BAB-Exx-Rxxx-xxx	24A-GJ-BAB-Exx-Rxxx-xxx
	Internal from port #5	24A-CK-BAB-Exx-Rxxx-xxx	24A-DK-BAB-Exx-Rxxx-xxx	24A-GK-BAB-Exx-Rxxx-xxx
<b>M7</b>	Internal from port #3	24A-CJ-CAB-Exx-Rxxx-xxx	24A-DJ-CAB-Exx-Rxxx-xxx	24A-GJ-CAB-Exx-Rxxx-xxx
	Internal from port #5	24A-CK-CAB-Exx-Rxxx-xxx	24A-DK-CAB-Exx-Rxxx-xxx	24A-GK-CAB-Exx-Rxxx-xxx

#### SOLENOID OPERATOR >

E **XX-RXXX-XXX\*\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24V=/1.0W	0*	No lead wire	0	No manual operator	BA	Flying leads
P2	Piped exhaust (M3)	DC	24V=/1.8W	A	45 cm	1	Recessed non locking	BB	Flying leads w/ LED
		DD	24V=/2.5W	B	60 cm	3	Extended non locking	RA	Mini JAC solenoid plug-in
		DF	24V=/4.0W	C	90 cm			RB	Mini JAC sol. plug-in w/ LED
		DH	12V=/1.0W					TA	JST solenoid plug-in
		DJ	12V=/1.8W					TB	JST sol. plug-in w/ LED
		DK	12V=/2.5W						
		DM	12V=/4.0W						

\*\* Other options available, see page 397.

### OPTIONS

End plate kit required (Port size 1/4"): M-24002-01-01P (internal pilot) – M-24002-02-01P (external pilot)  
Note : For pilot exhaust out main exhaust mod. 0353 is required

24A-XX -XxX-Exx-Rxxx-xxx

- A Manifold base – Side cylinder ports
- B Manifold base – Bottom cylinder ports (no side cylinder ports)

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100%  
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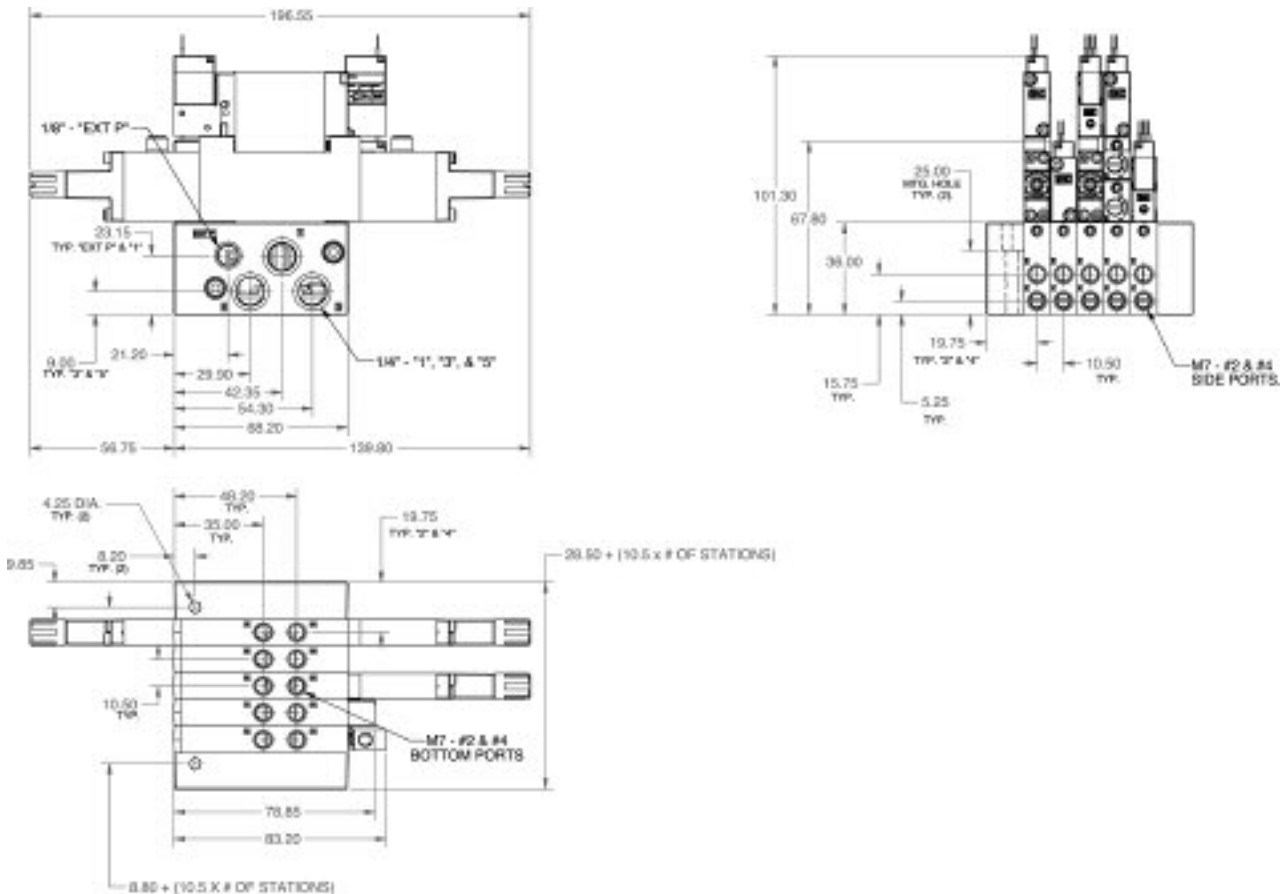
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	2 position internal pilot: Single solenoid: 2 to 8 bar Double solenoid: 1.3 to 8 bar 2/3 position external pilot: vacuum to 8 bar 3 position internal pilot: 2.7 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	0.4 Cv / 400 NI/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

Spare parts: • Blank station cover plate: M-24004 • Inlet isolator: 28568  
• Exhaust isolator (Port #5): 28569 • Exhaust isolator (Port #3): 28570

**DIMENSIONS**

Dimensions shown are metric (mm)



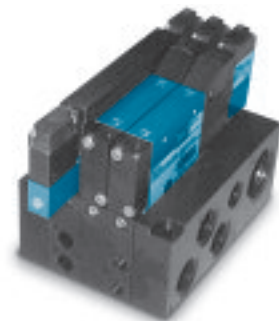


# Direct solenoid and solenoid pilot operated valves 10 mm valve

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Manifold base plug-in	

### OPERATIONAL BENEFITS

1. 10 mm valve – solenoid pilot operated.
2. Balanced spool, immune to variations of pressure.
3. Bonded spool with minimum friction.
4. Wiping effect, eliminates sticking.
5. Pilot valve with balanced poppet, high flow, short and consistent response times



### HOW TO ORDER

#### SINGLE PRESSURE MODELS (SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed center	5/3 Open center
<b>Valve only</b>	Internal	24A-AA-000-Exx-RxxP-xxx	24A-BA-000-Exx-RxxP-xxx	24A-EA-000-Exx-RxxP-xxx	24A-FA-000-Exx-RxxP-xxx
	External	24A-AB-000-Exx-RxxP-xxx	24A-BB-000-Exx-RxxP-xxx	24A-EB-000-Exx-RxxP-xxx	24A-FB-000-Exx-RxxP-xxx
<b>M5</b>	Internal	24A-AA-BAA-Exx-RxxP-xxx	24A-BA-BAA-Exx-RxxP-xxx	24A-EA-BAA-Exx-RxxP-xxx	24A-FA-BAA-Exx-RxxP-xxx
	External	24A-AB-BAA-Exx-RxxP-xxx	24A-BB-BAA-Exx-RxxP-xxx	24A-EB-BAA-Exx-RxxP-xxx	24A-FB-BAA-Exx-RxxP-xxx
<b>M7</b>	Internal	24A-AA-CAA-Exx-RxxP-xxx	24A-BA-CAA-Exx-RxxP-xxx	24A-EA-CAA-Exx-RxxP-xxx	24A-FA-CAA-Exx-RxxP-xxx
	External	24A-AB-CAA-Exx-RxxP-xxx	24A-BB-CAA-Exx-RxxP-xxx	24A-EB-CAA-Exx-RxxP-xxx	24A-FB-CAA-Exx-RxxP-xxx

#### DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure center
<b>Valve only</b>	Internal from port #3	24A-CG-000-Exx-RxxP-xxx	24A-DG-000-Exx-RxxP-xxx	24A-GG-000-Exx-RxxP-xxx
	Internal from port #5	24A-CK-000-Exx-RxxP-xxx	24A-DH-000-Exx-RxxP-xxx	24A-GH-000-Exx-RxxP-xxx
<b>M5</b>	Internal from port #3	24A-CG-BAA-Exx-RxxP-xxx	24A-DG-BAA-Exx-RxxP-xxx	24A-GG-BAA-Exx-RxxP-xxx
	Internal from port #5	24A-CH-BAA-Exx-RxxP-xxx	24A-DH-BAA-Exx-RxxP-xxx	24A-GH-BAA-Exx-RxxP-xxx
<b>M7</b>	Internal from port #3	24A-CG-CAA-Exx-RxxP-xxx	24A-DG-CAA-Exx-RxxP-xxx	24A-GG-CAA-Exx-RxxP-xxx
	Internal from port #5	24A-CH-CAA-Exx-RxxP-xxx	24A-DH-CAA-Exx-RxxP-xxx	24A-GH-CAA-Exx-RxxP-xxx

#### SOLENOID OPERATOR >

E **XX-RXXX-XXX\***

XX	Pilot type	XX	Voltage	X	Lead wire length	X	Manual operator	XX	Electrical connection
M2	Muffled exhaust	DB	24V=/1.0W	P	Base plug-in	0	No manual operator	FA	Base plug-in
P2	Piped exhaust (M3)	DC	24V=/1.8W			1	Recessed non locking	FB	Base plug-in w/ LED
		DD	24V=/2.5W			3	Extended non locking	FC	Base plug-in w/MOV
		DF	24V=/4.0W					FD	Base plug-in w/MOV and LED
		DH	12V=/1.0W						
		DJ	12V=/1.8W						
		DK	12V=/2.5W						
		DM	12V=/4.0W						

\* Other options available, see page 397.

### OPTIONS

24A-XX-XxX-Exx-Rxxx-xxx

End plate kit required (Port size 1/4"): M-24005-01-01P (internal pilot) – M-24005-02-01P (external pilot)

- A Manifold base – Side cylinder ports
- B Manifold base – Bottom cylinder ports (no side cylinder ports)

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100%  
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MONTHS

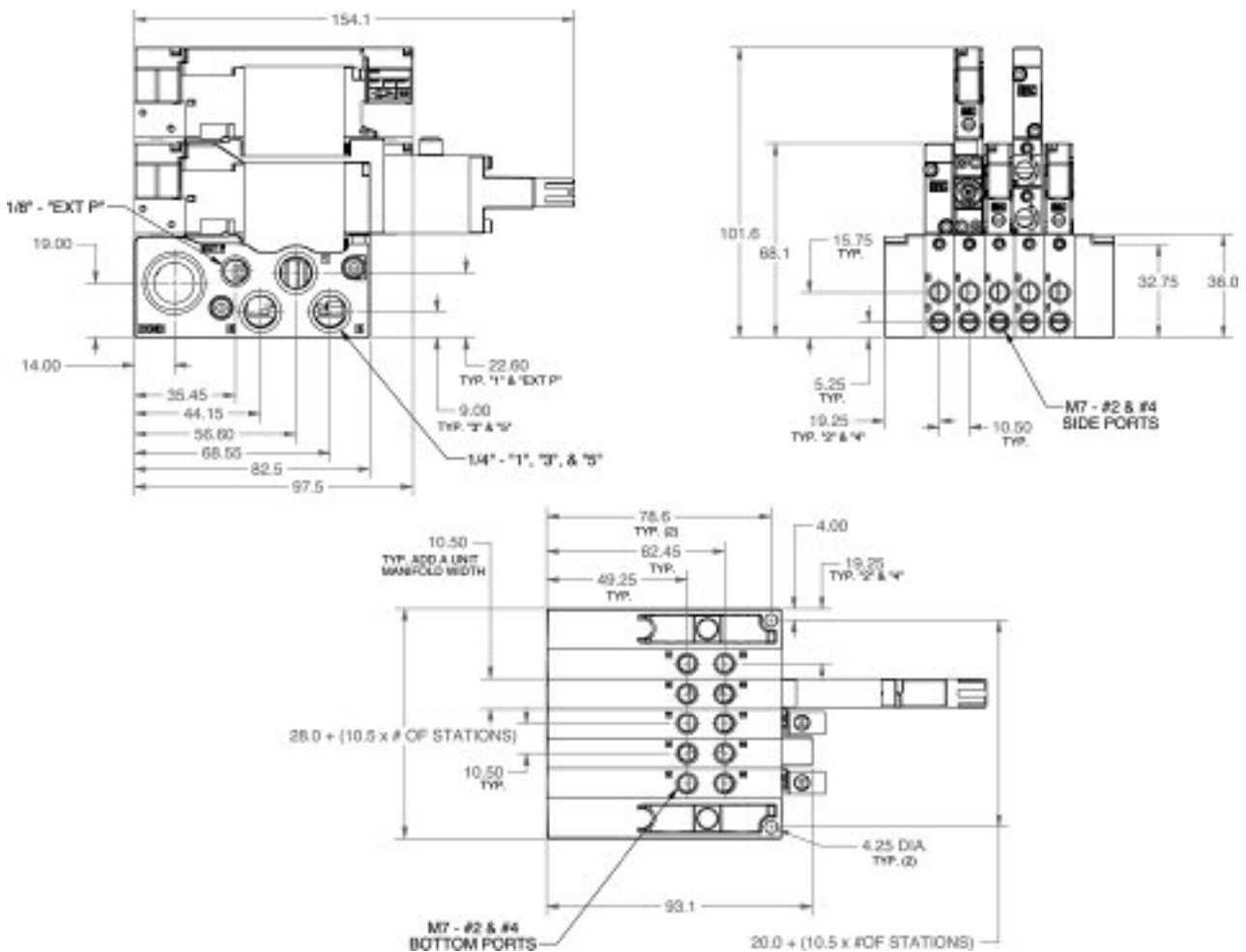
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	2 position internal pilot: Single solenoid: 2 to 8 bar Double solenoid: 1.3 to 8 bar 2/3 position external pilot: vacuum to 8 bar 3 position internal pilot: 2.7 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Flow :	0.4 Cv / 400 NI/min
Coil :	Class A (#26 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Power :	4.0W, 3.0W, 2.5W, 1.8W, 1.0W

Spare parts: • Blank station cover plate: M-24004 • Inlet isolator: 28568  
• Exhaust isolator (Port #5): 28569 • Exhaust isolator (Port #3): 28570

**DIMENSIONS**

Dimensions shown are metric (mm)

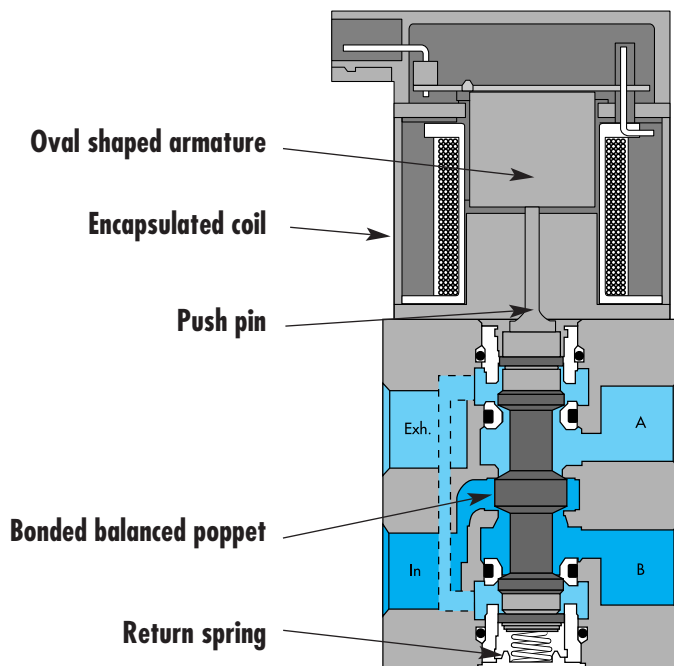


Individual mounting

Inline
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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
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**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.

Series

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**46**

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48P

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400

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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>4/2</b>	<b>G1/8" - M5</b>	<b>300 NI/min</b>	<b>Inline</b>	

### 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
<b>G1/8"</b>	46A-AC1-J xxx-xxx	46A-AC2-J xxx-xxx	46A-GC1-J xxx-xxx	46A-GC2-J xxx-xxx
<b>M5</b>	46A-AD1-J xxx-xxx	46A-AD2-J xxx-xxx	46A-GD1-J xxx-xxx	46A-GD2-J xxx-xxx

### SOLENOID OPERATOR >

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

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
<b>Single &amp; double solenoid</b>			
<b>AA</b> 120 V~/5,4W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>AC</b> 24 V~/5,4W	<b>B</b> 60 cm	<b>2</b> Locking	<b>GA</b> MAC JAC Solenoid plug-in
<b>DA</b> 24 V=/5,4W	<b>C</b> 90 cm		<b>GG</b> MAC JAC Solenoid plug-in with rectifier
<b>DB</b> 12 V~/5,4W	<b>**O</b> No lead wire		<b>JB</b> Rectangular connector
<b>Single solenoid only</b>			<b>JD</b> Rectangular connector with light
<b>DC</b> 24 V=/2,4W			<b>KA</b> Mini square connector
<b>DD</b> 12 V=/2,4W			<b>KD</b> Mini square connector with light

\* Other options available, see page 393.  
 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-AC1-Jxxx-xxx**

- G** Use with O ring mount (body option D and "H")
- A** Single operator - 4 port body with side ports
- C** Single operator - 4 port body with bottom ports (No side ports)
- D** Single operator - Bottom O ring mount - All ports (No side ports)
- F** Single operator - Bottom O ring mount - Cylinder ports only - Side inlet and 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-CD1-Jxxx-xxx (4 port body with bottom ports – no side ports)

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ISO 3



100%  
OF  
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100%

WARRANTY  
**18**  
MONTHS

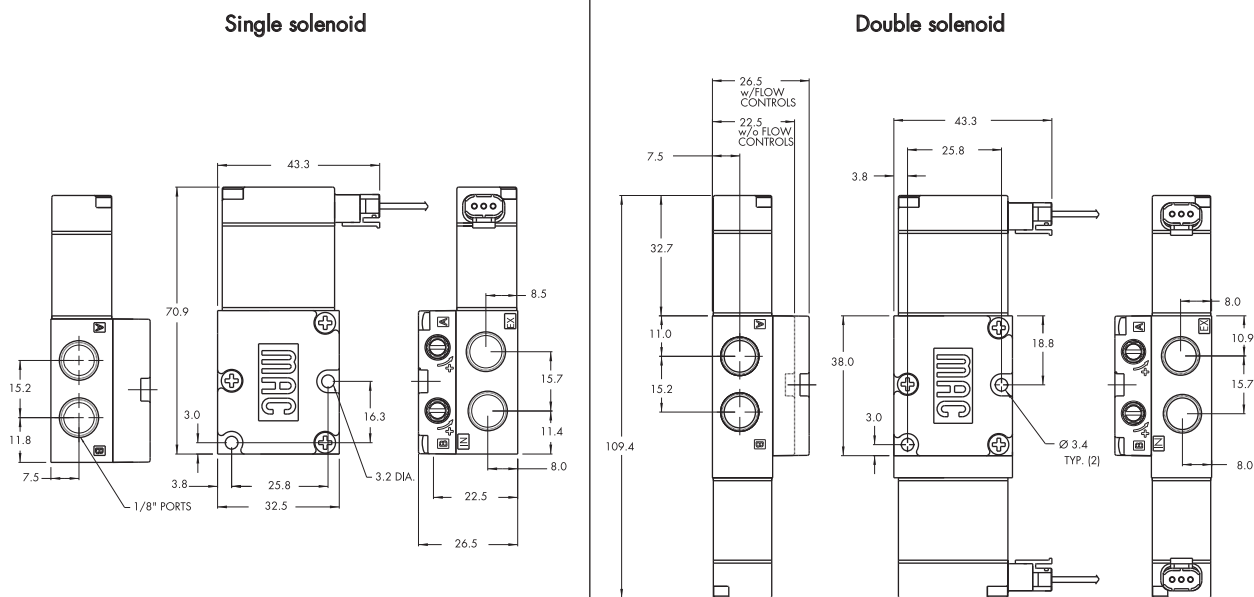
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
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 – 1,0W

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





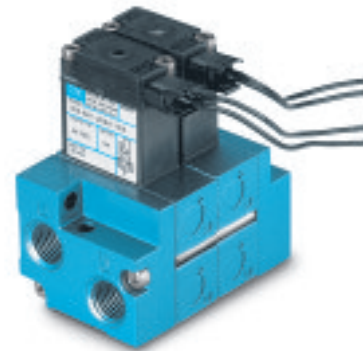


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold Mounting	Series
<b>4/2</b>	<b>G1/8" - M5</b>	<b>300 NI/min</b>	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
<b>G1/8"</b>	46A-SC1-J xxx-xxx	46A-SC2-J xxx-xxx
<b>M5</b>	46A-SD1-J xxx-xxx	46A-SD2-J xxx-xxx

### SOLENOID OPERATOR >

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/5,4W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DA</b> 24 V~/5,4W	<b>B</b> 60 cm	<b>2</b> Locking	<b>JA</b> Square connector
<b>DB</b> 12 V~/5,4W	<b>C</b> 90 cm		<b>JC</b> Square connector with light
<b>DC</b> 24 V~/2,4W			<b>JB</b> Rectangular connector
<b>DD</b> 12 V~/2,4W			<b>JD</b> Rectangular connector with light
			<b>KA</b> Mini square connector
			<b>KD</b> Mini square connector with light

\* Other options available, see page 393.  
 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-46001-01P.

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ISO 3

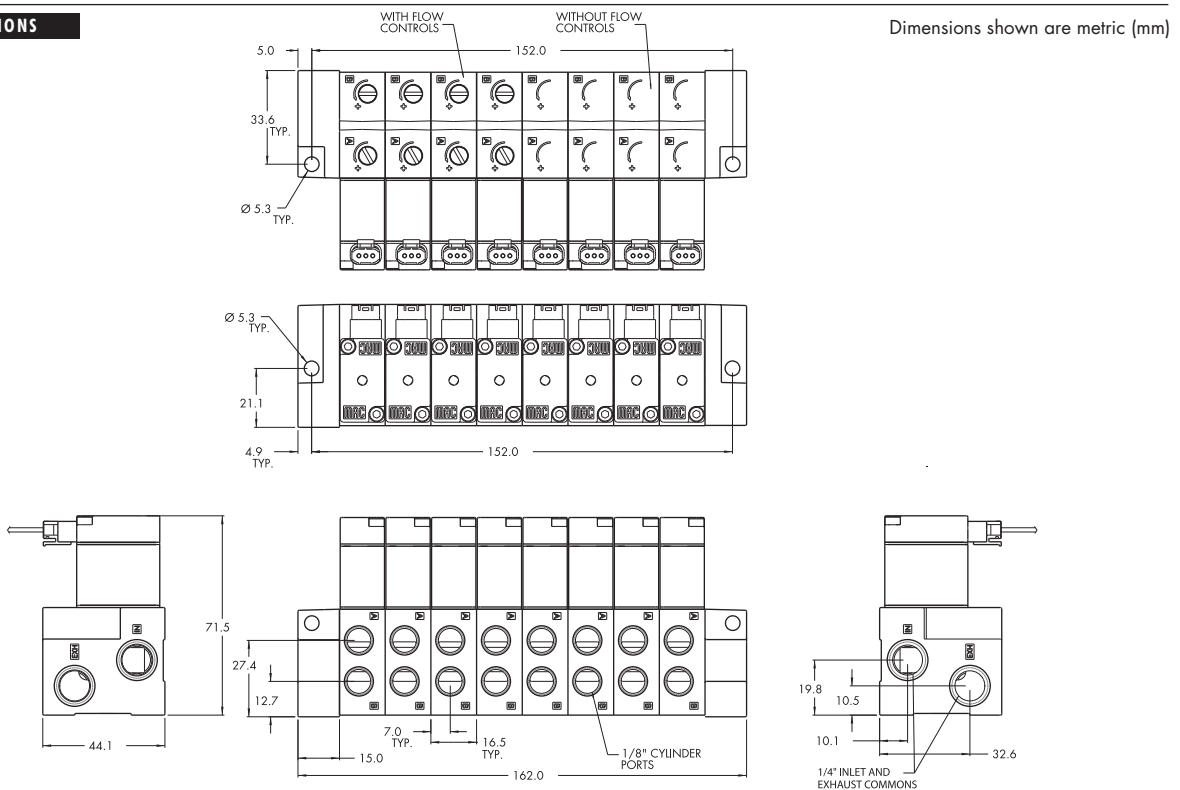
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
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 – 1,0W
Response times :	Energize : 7,20 ms De-energize : 4,20ms

Options : • NPTF threads

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

**DIMENSIONS**



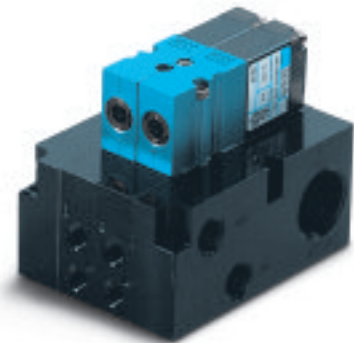


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>4/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	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
<b>Valve less base</b>	46A-L00-00-J <b>xxP-xxx</b>	46A-N00-00-J <b>xxP-xxx</b>
<b>G1/8"</b>	46A-LSB-AC-J <b>xxP-xxx</b>	46A-NSB-BL-J <b>xxP-xxx</b>

### SOLENOID OPERATOR >

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

<b>xx Voltage</b>	<b>X Manual operator</b>	<b>xx Electrical connection</b>
<b>Single &amp; double solenoid</b>		
<b>AA</b> 120 V~/5,4W	<b>1</b> Non-locking	<b>FA</b> Base plug-in
<b>AC</b> 24 V~/5,4W	<b>2</b> Locking	<b>FB</b> Base plug-in with diode
<b>DA</b> 24 V~/5,4W		<b>FG</b> Base plug-in with rectifier
<b>DB</b> 12 V~/5,4W		
<b>Single solenoid only</b>		
<b>DC</b> 24 V~/2,4W		
<b>DD</b> 12 V~/2,4W		

\* Other options available, see page 393.  
 Notes : - AC voltage requires connector with rectifier.  
 - Double solenoid requires minimum 5,4 watts.

### OPTIONS

**46A-LSB-AC-JxxP-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-0SB-AC.  
 End plate kit required (port size G1/4") : M-46003-01P.

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**TECHNICAL DATA**

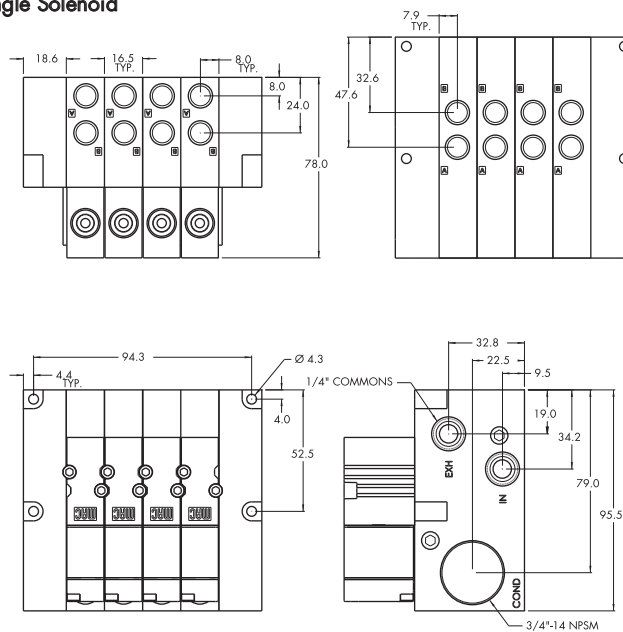
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
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 – 1,0W
Response times :	Energize : 7,20 ms De-energize : 4,20ms

Options : • NPTF threads

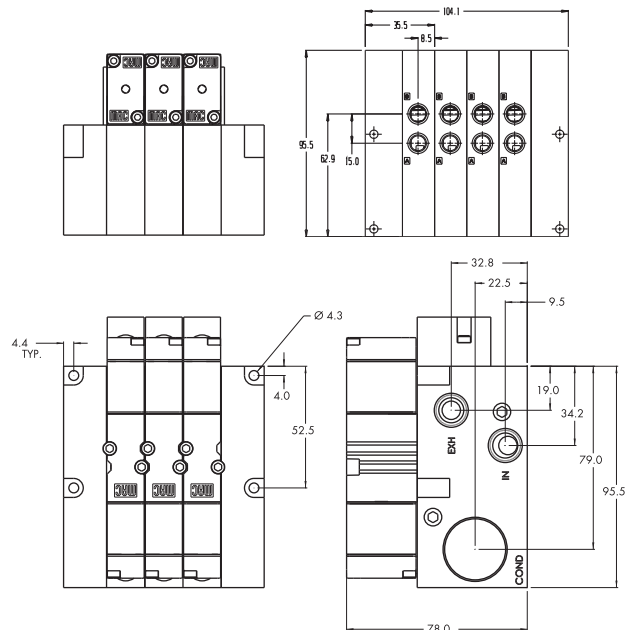
Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002  
• Tie rod (x2) : 79443

**DIMENSIONS**

**Single Solenoid**



**Double solenoid**



Dimensions shown are metric (mm)



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>4/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	Manifold base "plug-in" with pressure regulators	

### OPERATIONAL BENEFITS

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



### HOW TO ORDER

Port size	Model number
Valve less base	46A-L00-00-J XX P-XXX
<b>G1/8"</b>	46A-LSB-AJ-J XX P-XXX



### SOLENOID OPERATOR >

J **XX** P-**XXX**\* (-G) Add "G" for ground

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120V~/5,4W	<b>1</b> Non-locking	<b>FA</b> Base plug-in
<b>DA</b> 24V~/5,4W	<b>2</b> Locking	<b>FB</b> Base plug-in with diode
<b>DB</b> 12V~/5,4W		<b>FG</b> Base plug-in with rectifier
<b>DC</b> 24V~/2,4W		

\* Other options available, see page 393.  
Note : AC voltage requires connector with rectifier.

### OPTIONS

46A-LSB-AJ-JXX P-XXX	
J	Regulator with adjusting knob
E	Regulator with slotted stem
G	Regulator with slotted stem with locknut
O	Base only – no valve
L	Base mount body
M	Base mount body with gage port

Example : base only with regulator : 46A-0SB-AJ.  
End plate kit required (port size G1/4") : M-46003-01P.

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- ISO 01
- ISO 02
- ISO 1
- ISO 2
- ISO 3

**TECHNICAL DATA**

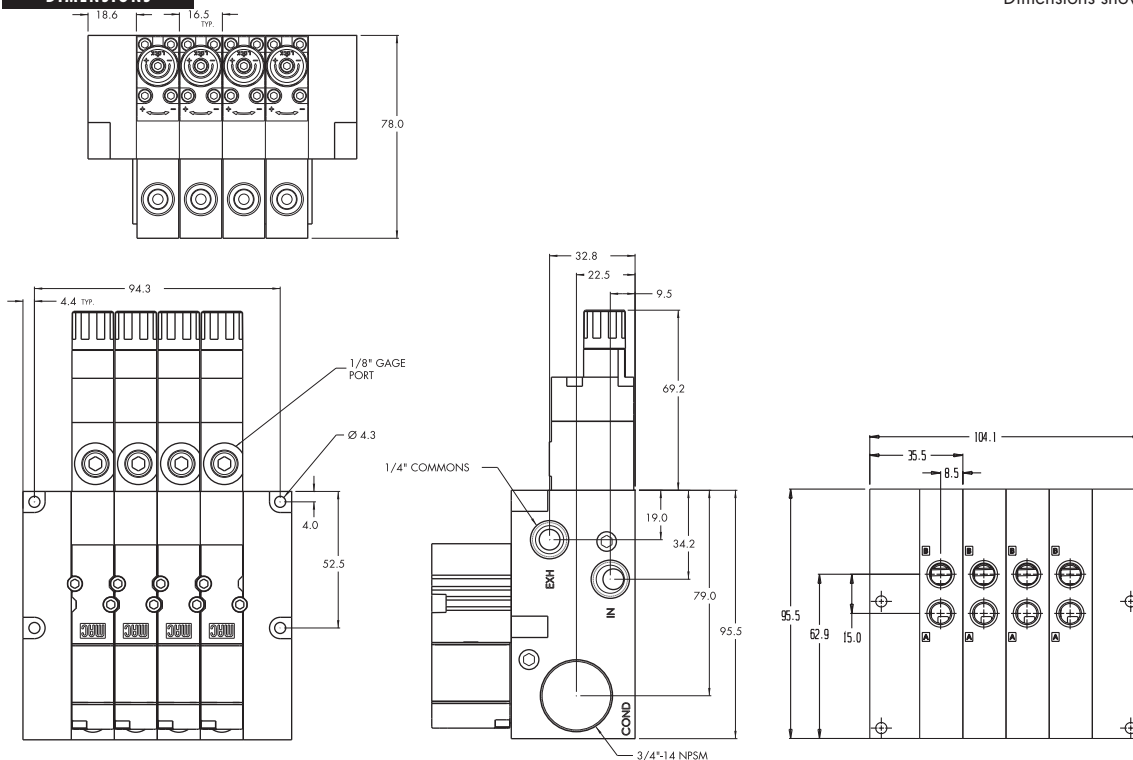
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
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 – 1,0W
Response times :	Energize : 7,20 ms De-energize : 4,20ms

- Options :
- NPTF threads
  - Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
  - Replacement regulators : PR46A-OAAA (slotted stem)  
PR46A-OBAA (adjusting knob)  
PR46A-OC AA (slotted stem with locknut)

- Regulating range options :
- PR46A-xxx**A**
    - A 0 to 8 bar
    - B 0 to 5,3 bar
    - C 0 to 2 bar

**DIMENSIONS**

Dimensions shown are metric (mm)



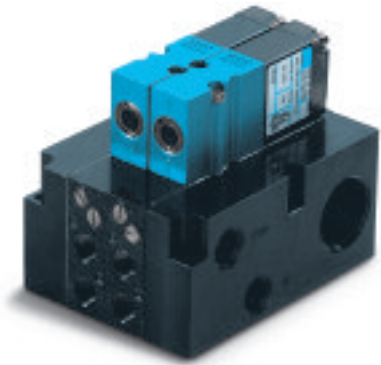


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>4/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	Manifold base "plug-in" with flow controls	

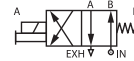
### OPERATIONAL BENEFITS

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
<b>Valve less base</b>	46A-L00-00-J <b>XX</b> P- <b>XXX</b>
<b>G1/8"</b>	46A-LSB-AD-J <b>XX</b> P- <b>XXX</b>



### SOLENOID OPERATOR >

J **XX** P-**XXX**\* (-G) Add "G" for ground

<b>XX</b> Voltage	<b>X</b> Manual operator	<b>XX</b> Electrical connection
<b>AA</b> 120V~/5,4W	<b>1</b> Non-locking	<b>FA</b> Base plug-in
<b>DA</b> 24V~/5,4W	<b>2</b> Locking	<b>FB</b> Base plug-in with diode
<b>DB</b> 12V~/5,4W		<b>FG</b> Base plug-in with rectifier
<b>DC</b> 24V~/2,4W		

\* Other options available, see page 393.  
Note : AC voltage requires connector with rectifier.

### OPTIONS

**46A-LSB-AJ-JXXP-XXX**

- D** Side cylinder ports
- M** Bottom cylinder ports
- O** Base only – no valve
- L** Base mount body
- M** Base mount body with gage port

Example : base only with regulator: 46A-OSB-AD.  
End plate kit required (port size G1/4") : M-46003-01P.

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- ISO 01
- ISO 02
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- ISO 3



100%  
OF  
PRODUCTION  
TESTED  
100%

WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

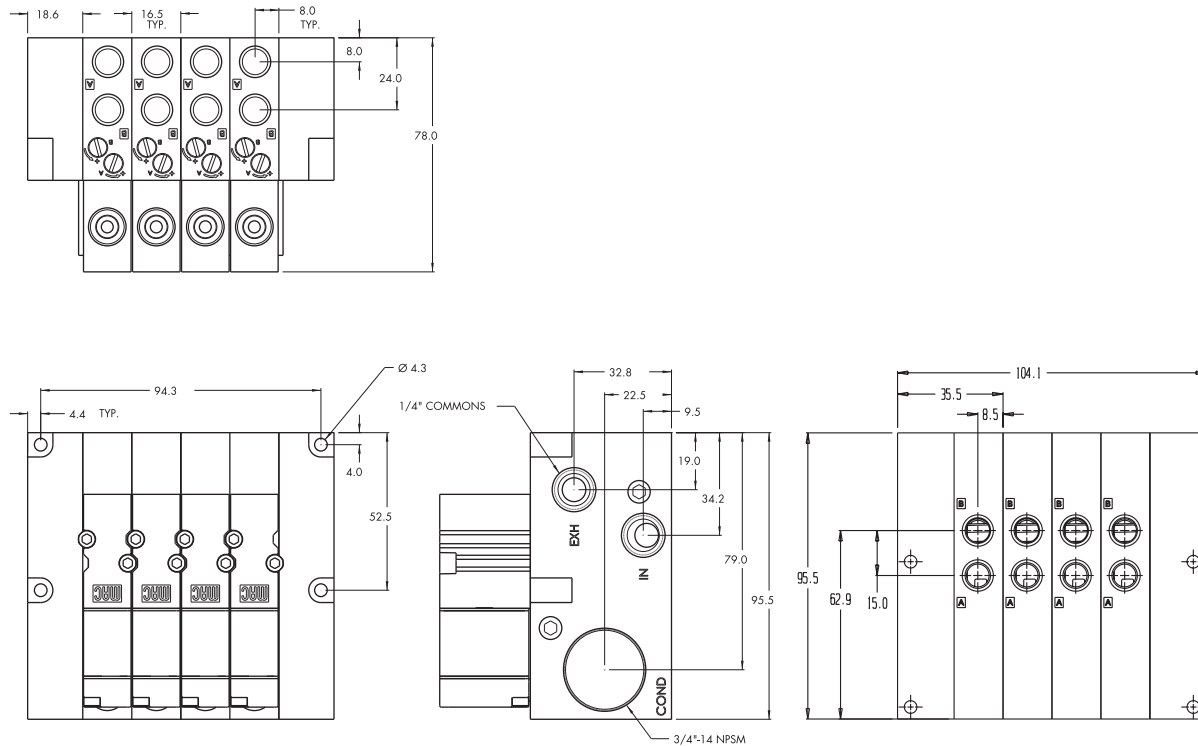
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
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 – 1,0W
Response times :	Energize : 7,20 ms De-energize : 4,20ms

Options : • NPTF threads

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

**DIMENSIONS**

Dimensions shown are metric (mm)







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>4/2</b>	<b>G1/8"</b>	<b>300 NI/min</b>	Manifold base "plug-in" with PR & FC	

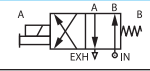
### OPERATIONAL BENEFITS

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	Model number
Valve less base	46A-L00-00-J xxP-xxx
<b>G1/8"</b>	46A-LSB-AK-J xxP-xxx



### SOLENOID OPERATOR >

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

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120V~/5,4W	<b>1</b> Non-locking	<b>FA</b> Base plug-in
<b>DA</b> 24V~/5,4W	<b>2</b> Locking	<b>FB</b> Base plug-in with diode
<b>DB</b> 12V~/5,4W		<b>FG</b> Base plug-in with rectifier
<b>DC</b> 24V~/2,4W		

\* Other options available, see page 393.  
Note : AC voltage requires connector with rectifier.

### OPTIONS

46A-LSB-AJ-JxxP-xxx	Options
<b>K</b>	Regulator with adjusting knob & flow controls
<b>F</b>	Regulator with slotted stem & flow controls
<b>H</b>	Regulator with slotted stem with locknut & flow controls
<b>O</b>	Base only – no valve
<b>L</b>	Base mount body
<b>M</b>	Base mount body with gage port

Example : base only with regulator : 46A-0SB-AK.  
End plate kit required (port size G1/4") : M-46003-01P.

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- ISO 01
- ISO 02
- ISO 1
- ISO 2
- ISO 3



100%  
OF  
PRODUCTION  
TESTED  
100%

WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

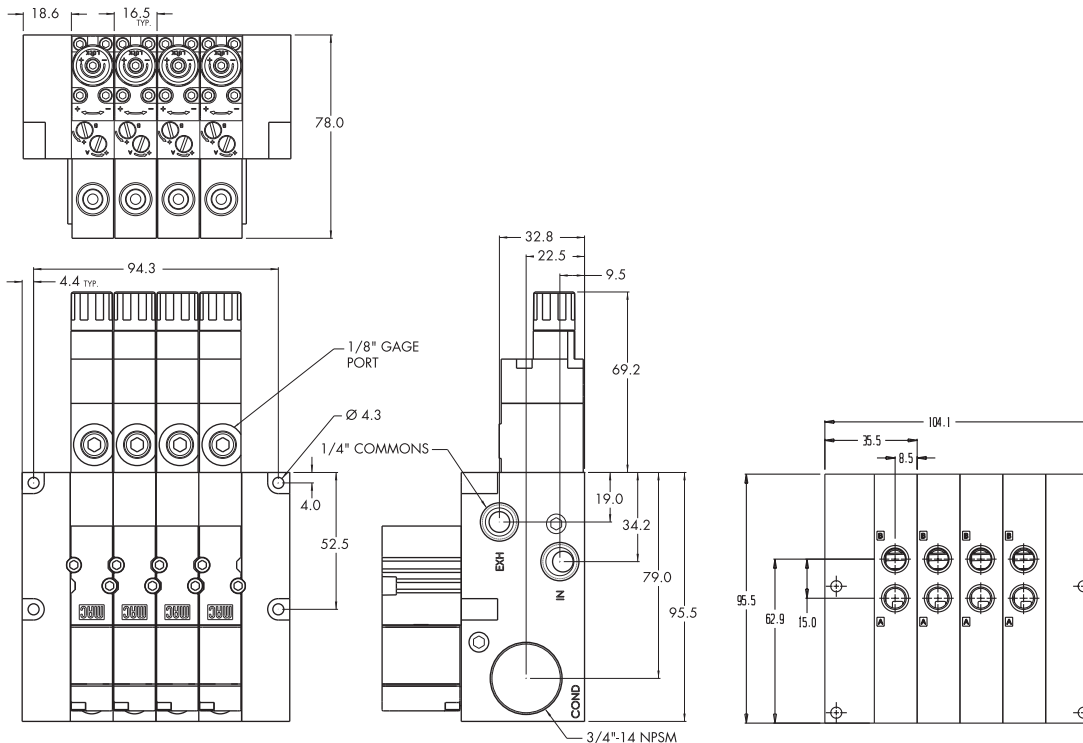
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,3 mm
Flow (at 6 bar, ΔP=1bar) :	1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30)
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 – 1,0W
Response times :	Energize : 7,20 ms De-energize : 4,20ms

- Options :
- NPTF threads
- Spare parts :
- Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
  - Replacement regulators : PR46A-OAAA (slotted stem)  
PR46A-OBAA (adjusting knob)  
PR46A-OCBA (slotted stem with locknut)

- Regulating range options :
- PR46A-xxx**A**
    - A 0 to 8 bar
    - B 0 to 5,3 bar
    - C 0 to 2 bar

**DIMENSIONS**

Dimensions shown are metric (mm)

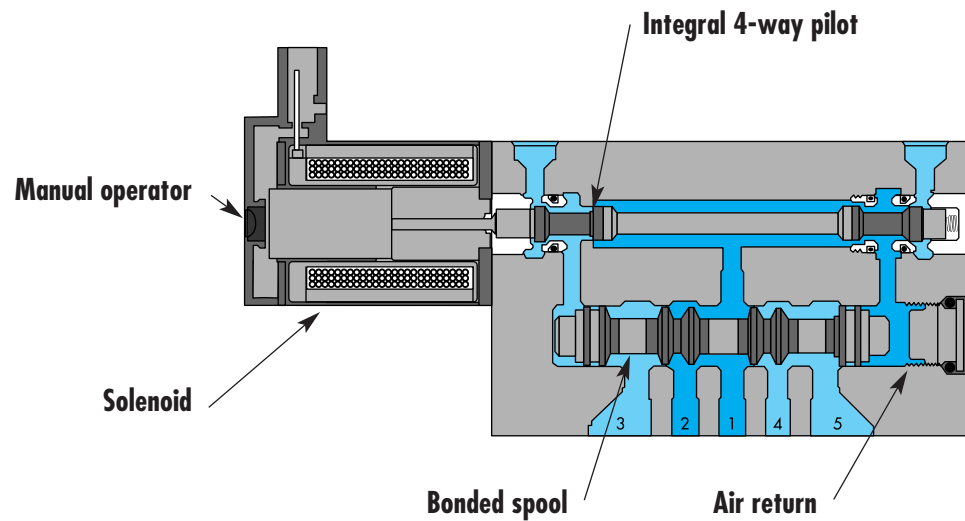


Individual mounting

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
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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
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**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.

Series

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>400 NI/min</b>	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 centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed centre	5/3 Open centre
<b>Valve less base</b>	Internal	42B-AMA-000-Gxxx-xxx	42B-BMA-000-Gxxx-xxx	42B-EMA-000-Gxxx-xxx	42B-FMA-000-Gxxx-xxx
	External	42B-AMD-000-Gxxx-xxx	42B-BMD-000-Gxxx-xxx	42B-EMD-000-Gxxx-xxx	42B-FMD-000-Gxxx-xxx
<b>M5</b>	Internal	42B-AMA-GAL-Gxxx-xxx	42B-BMA-GAL-Gxxx-xxx	42B-EMA-GAL-Gxxx-xxx	42B-FMA-GAL-Gxxx-xxx
	External	42B-AMD-GAM-Gxxx-xxx	42B-BMD-GAM-Gxxx-xxx	42B-EMD-GAM-Gxxx-xxx	42B-FMD-GAM-Gxxx-xxx
<b>M7</b>	Internal	42B-AMA-LAL-Gxxx-xxx	42B-BMA-LAL-Gxxx-xxx	42B-EMA-LAL-Gxxx-xxx	42B-FMA-LAL-Gxxx-xxx
	External	42B-AMD-LAM-Gxxx-xxx	42B-BMD-LAM-Gxxx-xxx	42B-EMD-LAM-Gxxx-xxx	42B-FMD-LAM-Gxxx-xxx

#### DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	42B-CMB-000-Gxxx-xxx	42B-DMB-000-Gxxx-xxx
		Supply #5 port	42B-CMC-000-Gxxx-xxx	42B-DMC-000-Gxxx-xxx
	External	42B-CMD-000-Gxxx-xxx	42B-DMD-000-Gxxx-xxx	
<b>M5</b>	Internal	Supply #3 port	42B-CMB-GAL-Gxxx-xxx	42B-DMB-GAL-Gxxx-xxx
		Supply #5 port	42B-CMC-GAL-Gxxx-xxx	42B-DMC-GAL-Gxxx-xxx
	External	42B-CMD-GAM-Gxxx-xxx	42B-DMD-GAM-Gxxx-xxx	
<b>M7</b>	Internal	Supply #3 port	42B-CMB-LAL-Gxxx-xxx	42B-DMB-LAL-Gxxx-xxx
		Supply #5 port	42B-CMC-LAL-Gxxx-xxx	42B-DMC-LAL-Gxxx-xxx
	External	42B-CMD-LAM-Gxxx-xxx	42B-DMD-LAM-Gxxx-xxx	

#### STANDARD SOLENOID OPERATOR >

G **XXX-XXX**\*

XX	Voltage	X	Wire length	X	Manual operator		Electrical connection
AA	120 V~/2,5W	A	45 cm	1	Non-locking	BA	Flying leads
DC	24 V~/1,8W	B	60 cm	2	Locking	BT	Flying leads with light
DD	24 V~/2,5W	C	90 cm			GA	MAC JAC Solenoid plug-in
DF	24 V~/4,0W					KA	Mini connector
						KT	Mini connector with light
						KD	Mini connector with rectifier & light & ground

Note : AC voltage requires connector with rectifier.  
 \* Other options available, see page 387.  
 Latching solenoid available for 5/2 valves.  
 Other options available for the 42 series valves, see page 153.

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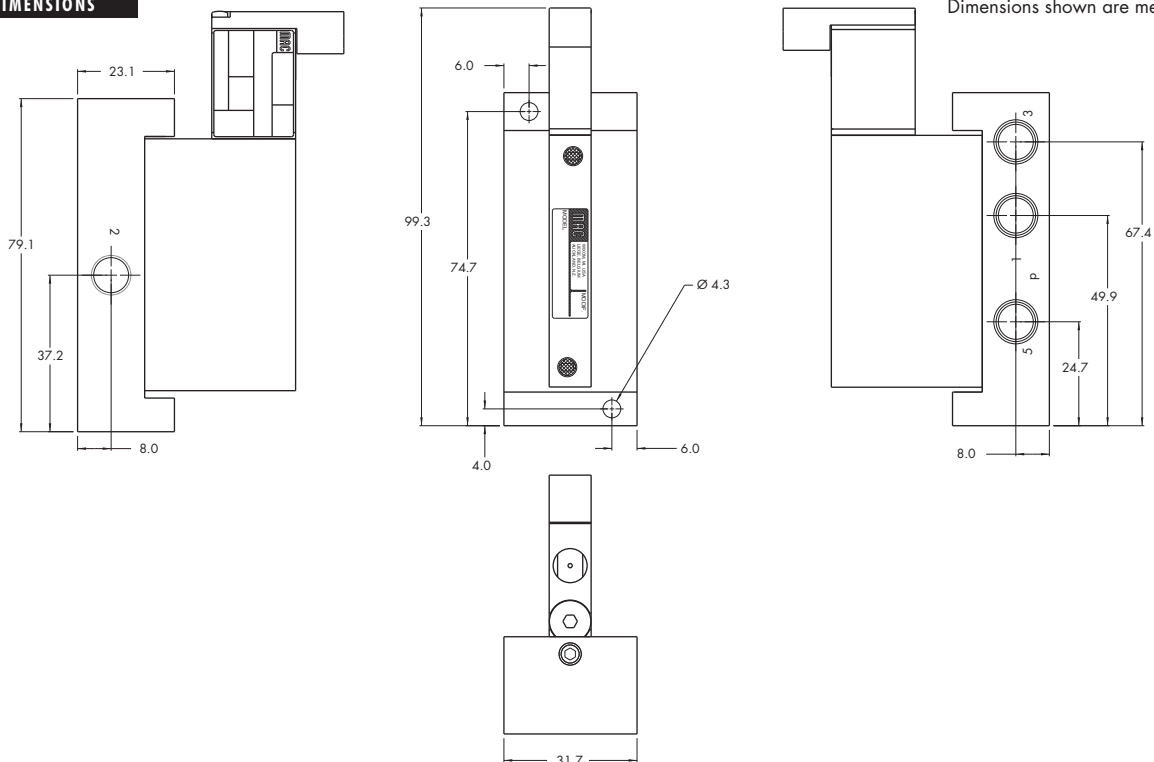
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 1,3 to 8 bar      3 pos. : 2,3 to 8 bar External Pilot : vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar      3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M7: 400 NI/min (Cv 0,4) – M5: 350 NI/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 24V 4 W coil)	Energize : 5 ms De-energize : 5 ms

Options :

- NPTF threads
- Sandwich flow controls : FC42B-BB
- Sandwich regulator : see 'Regulator' section

**DIMENSIONS**



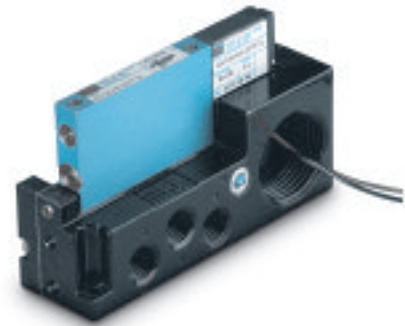


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Subbase "plug-in"	

### OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10,5 mm centres).
3. High flow (up to 400 NI/min).
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 centre	5/3 Open centre
<b>Valve less base</b>	Internal	42B-AMA-000-GXXP-XXX	42B-BME-000-GXXP-XST	42B-EME-000-GXXP-XST	42B-FME-000-GXXP-XST
	External	42B-AMD-000-GXXP-XXX	42B-BMH-000-GXXP-XST	42B-EMH-000-GXXP-XST	42B-FMH-000-GXXP-XST
<b>M5</b>	Internal	42B-AMA-GAA-GXXP-XXX	42B-BME-GAC-GXXP-XST	42B-EME-GAC-GXXP-XST	42B-FME-GAC-GXXP-XST
	External	42B-AMD-GAB-GXXP-XXX	42B-BMH-GAD-GXXP-XST	42B-EMH-GAD-GXXP-XST	42B-FMH-GAD-GXXP-XST
<b>M7</b>	Internal	42B-AMA-LAA-GXXP-XXX	42B-BME-LAC-GXXP-XST	42B-EME-LAC-GXXP-XST	42B-FME-LAC-GXXP-XST
	External	42B-AMD-LAB-GXXP-XXX	42B-BMH-LAD-GXXP-XST	42B-EMH-LAD-GXXP-XST	42B-FMH-LAD-GXXP-XST

#### DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	42B-CMB-000-GXXP-XXX	42B-HMF-000-GXXP-XST
	Internal	Supply #5 port	42B-CMC-000-GXXP-XXX	42B-HMG-000-GXXP-XST
	External		42B-CMD-000-GXXP-XXX	42B-HMH-000-GXXP-XST
<b>M5</b>	Internal	Supply #3 port	42B-CMB-GAA-GXXP-XXX	42B-HMF-GAC-GXXP-XST
	Internal	Supply #5 port	42B-CMC-GAA-GXXP-XXX	42B-HMG-GAC-GXXP-XST
	External		42B-CMD-GAB-GXXP-XXX	42B-HMH-GAD-GXXP-XST
<b>M7</b>	Internal	Supply #3 port	42B-CMB-LAA-GXXP-XXX	42B-HMF-LAC-GXXP-XST
	Internal	Supply #5 port	42B-CMC-LAA-GXXP-XXX	42B-HMG-LAC-GXXP-XST
	External		42B-CMD-LAB-GXXP-XXX	42B-HMH-LAD-GXXP-XST

#### STANDARD SOLENOID OPERATOR >

### G XX P-XXX\*

XX Voltage	X Manual operator	XX Electrical connection
AA 120 V~/2,5W	1 Non-locking	Double solenoid & 3 position models
DC 24 V=/1,8W	2 Locking	ST Base plug-in
DD 24 V=/2,5W		Single solenoid models
DF 24 V=/4,0W		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 387.  
 Other options available for the 42 series valves, see page 154.

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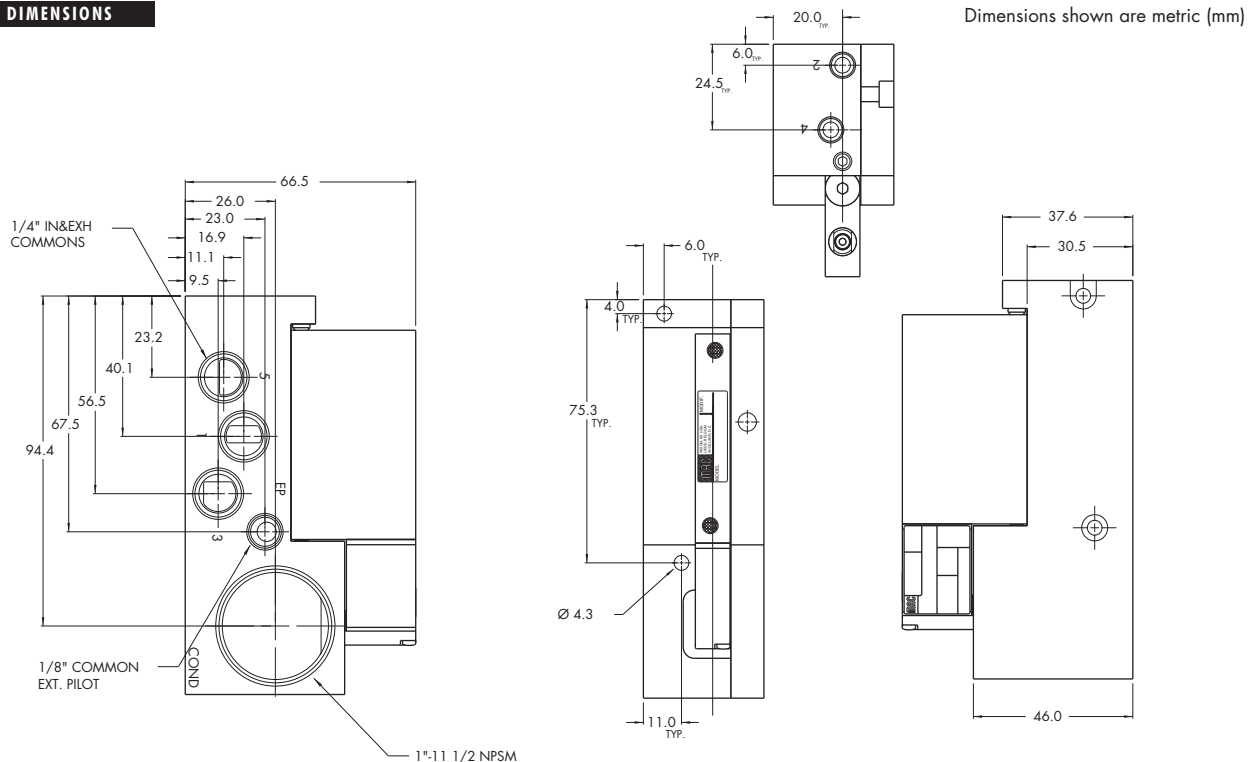
WARRANTY  
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MONTHS

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 1,3 to 8 bar      3 pos. : 2,3 to 8 bar External Pilot : vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar      3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M7: 400 NI/min (Cv 0,4) – M5: 350 NI/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 24V 4 W coil)	Energize : 5 ms De-energize : 5 ms

- Options :
- NPTF ports
  - Sandwich flow controls : FC42B-AB
  - Sandwich regulator : see 'Regulator' section

**DIMENSIONS**





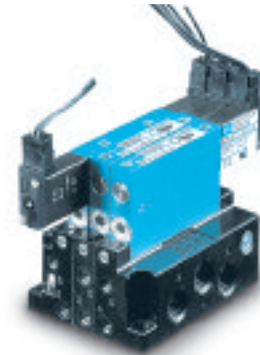


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>400 NI/min</b>	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 centres).
3. High flow (up to 400 NI/min).
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 centre	5/3 Open centre
<b>Valve less base</b>	Internal	42B-AMA-000-Gxxx-xxx	42B-BMA-000-Gxxx-xxx	42B-EMA-000-Gxxx-xxx	42B-FMA-000-Gxxx-xxx
	External	42B-AMD-000-Gxxx-xxx	42B-BMD-000-Gxxx-xxx	42B-EMD-000-Gxxx-xxx	42B-FMD-000-Gxxx-xxx
<b>M5</b>	Internal	42B-AMA-GJL-Gxxx-xxx	42B-BMA-GJL-Gxxx-xxx	42B-EMA-GJL-Gxxx-xxx	42B-FMA-GJL-Gxxx-xxx
	External	42B-AMD-GJM-Gxxx-xxx	42B-BMD-GJM-Gxxx-xxx	42B-EMD-GJM-Gxxx-xxx	42B-FMD-GJM-Gxxx-xxx
<b>M7</b>	Internal	42B-AMA-LJL-Gxxx-xxx	42B-BMA-LJL-Gxxx-xxx	42B-EMA-LJL-Gxxx-xxx	42B-FMA-LJL-Gxxx-xxx
	External	42B-AMD-LJM-Gxxx-xxx	42B-BMD-LJM-Gxxx-xxx	42B-EMD-LJM-Gxxx-xxx	42B-FMD-LJM-Gxxx-xxx

#### DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	42B-CMB-000-Gxxx-xxx	42B-DMB-000-Gxxx-xxx
		Supply #5 port	42B-CMC-000-Gxxx-xxx	42B-DMC-000-Gxxx-xxx
	External		42B-CMD-000-Gxxx-xxx	42B-DMD-000-Gxxx-xxx
<b>M5</b>	Internal	Supply #3 port	42B-CMB-GJL-Gxxx-xxx	42B-DMB-GJL-Gxxx-xxx
		Supply #5 port	42B-CMC-GJL-Gxxx-xxx	42B-DMC-GJL-Gxxx-xxx
	External		42B-CMD-GJM-Gxxx-xxx	42B-DMD-GJM-Gxxx-xxx
<b>M7</b>	Internal	Supply #3 port	42B-CMB-LJL-Gxxx-xxx	42B-DMB-LJL-Gxxx-xxx
		Supply #5 port	42B-CMC-LJL-Gxxx-xxx	42B-DMC-LJL-Gxxx-xxx
	External		42B-CMD-LJM-Gxxx-xxx	42B-DMD-LJM-Gxxx-xxx

#### STANDARD SOLENOID OPERATOR >

G **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/2,5W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DC</b> 24 V~/1,8W	<b>B</b> 60 cm	<b>2</b> Locking	<b>BT</b> Flying leads with light
<b>DD</b> 24 V~/2,5W	<b>C</b> 90 cm		<b>GA</b> MAC JAC Solenoid plug-in
<b>DF</b> 24 V~/4,0W			<b>KA</b> Mini connector
			<b>KT</b> Mini connector with light
			<b>KD</b> Mini connector with rectifier & light & ground

Note : - AC voltage requires connector with rectifier.

\* Other options available, see page 387.

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 153.

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100%  
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**TECHNICAL DATA**

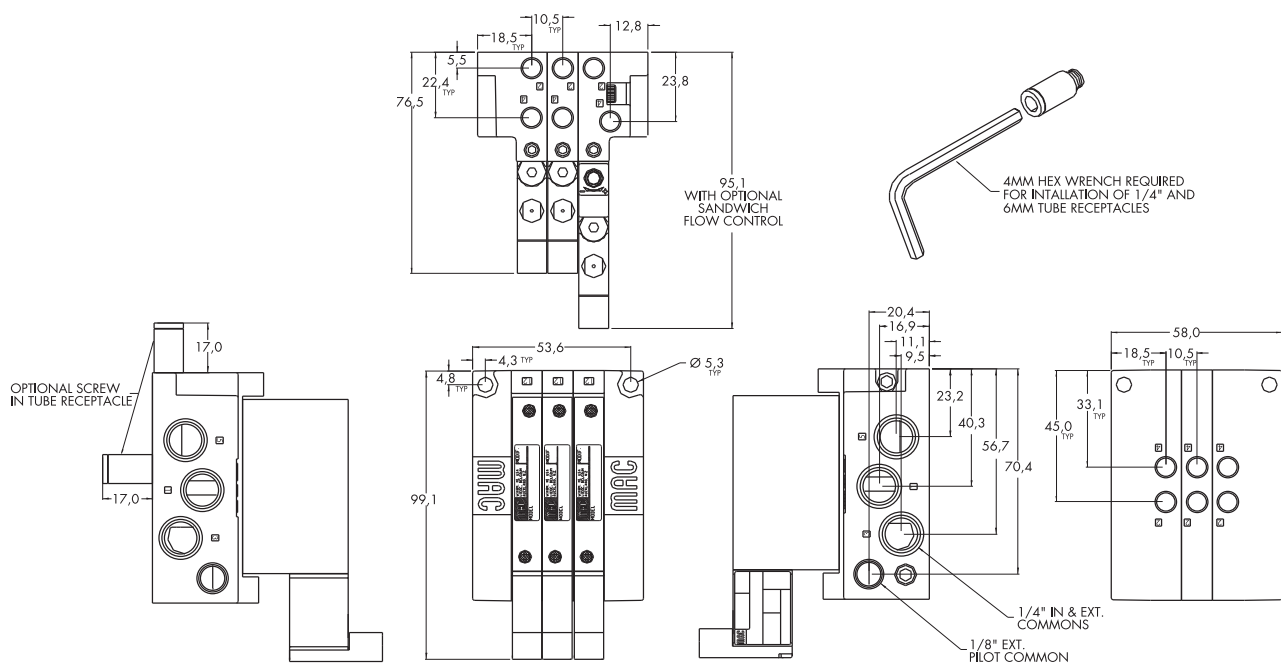
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 1,3 to 8 bar      3 pos. : 2,3 to 8 bar External Pilot : vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar      3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M7: 400 NI/min (Cv 0,4) – M5: 350 NI/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times :	Energize : 5 ms De-energize : 5 ms

Options :

- NPTF threads • Sandwich flow controls : FC42B-BB
- Sandwich regulator : see "regulators" section • Isolator disk for inlet and exhaust: 28454
- Valve blanking plate : M-42004

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Manifold base "plug-in"	

### OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10,5 mm centres).
3. High flow (up to 400 NI/min).
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 centre	5/3 Open centre
<b>Valve less base</b>	Internal	42B-AMA-000-GxxP-xxx	42B-BME-000-GxxP-xST	42B-EME-000-GxxP-xST	42B-FME-000-GxxP-xST
	External	42B-AMD-000-GxxP-xxx	42B-BMH-000-GxxP-xST	42B-EMH-000-GxxP-xST	42B-FMH-000-GxxP-xST
<b>M5</b>	Internal	42B-AMA-GJA-GxxP-xxx	42B-BME-GJC-GxxP-xST	42B-EME-GJC-GxxP-xST	42B-FME-GJC-GxxP-xST
	External	42B-AMD-GJB-GxxP-xxx	42B-BMH-GJD-GxxP-xST	42B-EMH-GJD-GxxP-xST	42B-FMH-GJD-GxxP-xST
<b>M7</b>	Internal	42B-AMA-LJA-GxxP-xxx	42B-BME-LJC-GxxP-xST	42B-EME-LJC-GxxP-xST	42B-FME-LJC-GxxP-xST
	External	42B-AMD-LJB-GxxP-xxx	42B-BMH-LJD-GxxP-xST	42B-EMH-LJD-GxxP-xST	42B-FMH-LJD-GxxP-xST

#### DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	42B-CMB-000-GxxP-xxx	42B-DMF-000-GxxP-xST
		Supply #5 port	42B-CMC-000-GxxP-xxx	42B-DMG-000-GxxP-xST
	External		42B-CMD-000-GxxP-xxx	42B-DMH-000-GxxP-xST
<b>M5</b>	Internal	Supply #3 port	42B-CMB-GJA-GxxP-xxx	42B-DMF-GJC-GxxP-xST
		Supply #5 port	42B-CMC-GJA-GxxP-xxx	42B-DMG-GJC-GxxP-xST
	External		42B-CMD-GJB-GxxP-xxx	42B-DMH-GJD-GxxP-xST
<b>M7</b>	Internal	Supply #3 port	42B-CMB-LJA-GxxP-xxx	42B-DMF-LJC-GxxP-xST
		Supply #5 port	42B-CMC-LJA-GxxP-xxx	42B-DMG-LJC-GxxP-xST
	External		42B-CMD-LJB-GxxP-xxx	42B-DMH-LJD-GxxP-xST

#### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/2,5W	<b>1</b> Non-locking	<b>ST</b> Base plug-in
<b>DC</b> 24 V~/1,8W	<b>2</b> Locking	<b>SA</b> Base plug-in
<b>DD</b> 24 V~/2,5W		<b>SJ</b> Base plug-in with light
<b>DF</b> 24 V~/4,0W		<b>SS</b> Base plug-in with rectifier & light & ground

\* Other options available, see page 387.

\*\* 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 154.

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MONTHS

**TECHNICAL DATA**

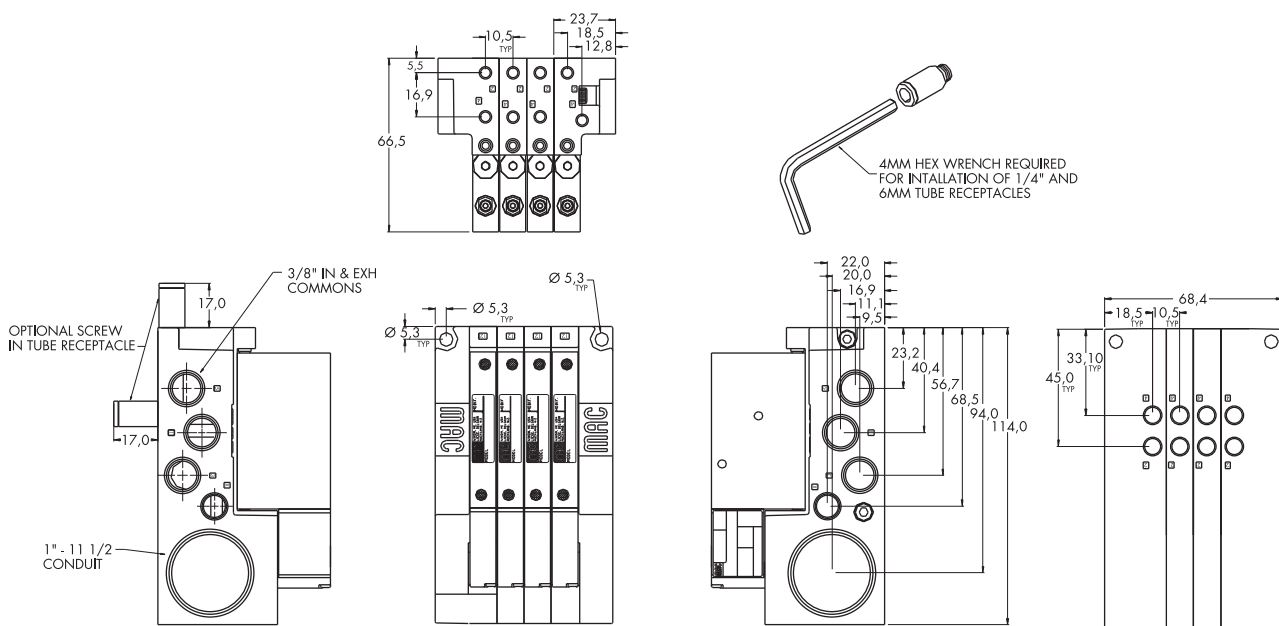
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 1,3 to 8 bar      3 pos. : 2,3 to 8 bar External Pilot : vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar      3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M7: 400 NI/min (Cv 0,4) – M5: 350 NI/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times :	Energize : 5 ms (with 24V 4 W coil) De-energize : 5 ms

Options :

- NPTF threads • Sandwich flow controls : FC42B-AB
- Sandwich regulator : see "regulators" section • Isolator disk for inlet and exhaust: 28454
- Valve blanking plate : M-42004 • Plug-in wire protector : 24180

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2</b>	<b>M5, M7</b>	<b>400 NI/min</b>	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 centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single pressure	
<b>Valve less base</b>	Internal	42B-AMA-000-LXXX-XXX	
	External	42B-AMD-000-LXXX-XXX	
<b>M5</b>	Internal	42B-AMA-GAL-LXXX-XXX	
	External	42B-AMD-GAM-LXXX-XXX	
<b>M7</b>	Internal	42B-AMA-LAL-LXXX-XXX	
	External	42B-AMD-LAM-LXXX-XXX	

#### DUAL PRESSURE MODELS

Port size	Pilot air		5/2 Dual pressure	
<b>Valve less base</b>	Internal	Supply #3 port	42B-CMB-000-LXXX-XXX	
		Supply #5 port	42B-CMC-000-LXXX-XXX	
	External		42B-CMD-000-LXXX-XXX	
<b>M5</b>	Internal	Supply #3 port	42B-CMB-GAL-LXXX-XXX	
		Supply #5 port	42B-CMC-GAL-LXXX-XXX	
	External		42B-CMD-GAM-LXXX-XXX	
<b>M7</b>	Internal	Supply #3 port	42B-CMB-LAL-LXXX-XXX	
		Supply #5 port	42B-CMC-LAL-LXXX-XXX	
	External		42B-CMD-LAM-LXXX-XXX	

#### LATCHING SOLENOID OPERATOR >

XX Voltage		X Wire length		X Manual operator		XX Electrical connection	
DF	24 VDC (4,0 W)	A	45 cm	0	No operator	BA	2 Wire Flying leads
HA	24 VDC (1,95 W)	B	60 cm			KA	2 Wire Plug-in Assembly
		C	90 cm			LA	3 wire plug-in assembly (polarity switching cover)
						KE	4-wire plug-in assembly

\* Other options available, see page 395.

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 153.

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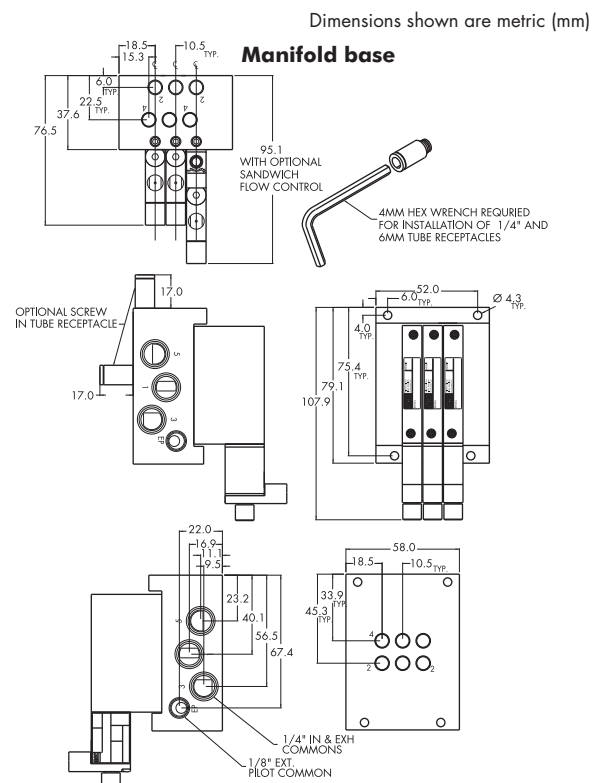
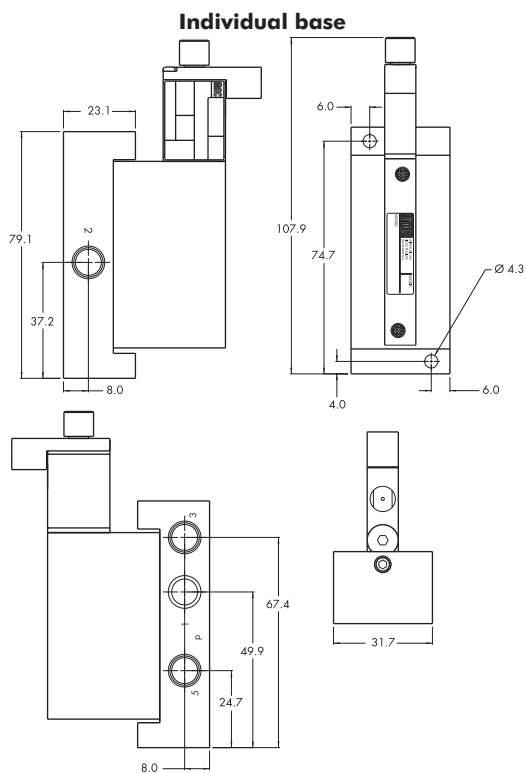
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot - 2 pos. : 1,3 to 8 bar      3 pos. : 2,3 to 8 bar External Pilot : vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar      3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	3,8 mm
Flow (at 6 bar, ΔP=1bar) :	M7: 400 NI/min (Cv 0,4) – M5: 350 NI/min (Cv 0,35)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.95 to 4.0 W
Response times :	Energize : 5 ms De-energize : 5 ms

Options :

- NPTF threads • Sandwich flow controls : FC42B-BB
- Sandwich regulator : see "regulators" section • Isolator disk for inlet and exhaust: 28454
- Valve blanking plate : M-42004

**DIMENSIONS**



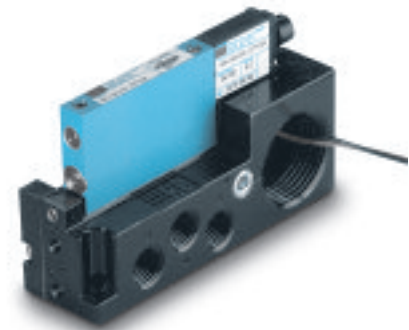


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2</b>	<b>M5, M7</b>	<b>400 NI/min</b>	Subbase/ 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 centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single pressure	
<b>Valve less base</b>	Internal	42B-AMA-000-LxxP-xxx	
	External	42B-AMD-000-LxxP-xxx	
<b>M5</b>	Internal	42B-AMA-GAA-LxxP-xxx	
	External	42B-AMD-GAB-LxxP-xxx	
<b>M7</b>	Internal	42B-AMA-LAA-LxxP-xxx	
	External	42B-AMD-LAB-LxxP-xxx	

#### DUAL PRESSURE MODELS

Port size	Pilot air		5/2 Dual pressure	
<b>Valve less base</b>	Internal	Supply #3 port	42B-CMB-000-LxxP-xxx	
		Supply #5 port	42B-CMC-000-LxxP-xxx	
	External		42B-CMD-000-LxxP-xxx	
<b>M5</b>	Internal	Supply #3 port	42B-CMB-GAA-LxxP-xxx	
		Supply #5 port	42B-CMC-GAA-LxxP-xxx	
	External		42B-CMD-GAB-LxxP-xxx	
<b>M7</b>	Internal	Supply #3 port	42B-CMB-LAA-LxxP-xxx	
		Supply #5 port	42B-CMC-LAA-LxxP-xxx	
	External		42B-CMD-LAB-LxxP-xxx	

#### LATCHING SOLENOID OPERATOR >

L <b>XX</b> P- <b>XXX</b> *		
<b>XX</b> Voltage	<b>X</b> Manual operator	<b>XX</b> Electrical connection**
<b>DF</b> 24 VDC/4,0W	<b>0</b> No operator	<b>DA</b> Plug-in
<b>HA</b> 24 VDC/1,95W		<b>EA</b> Plug-in 3 pin (polarity switching cover)

\* Other options available, see page 395.

\*\* 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 154.

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- ISO 02
- ISO 1
- ISO 2
- ISO 3

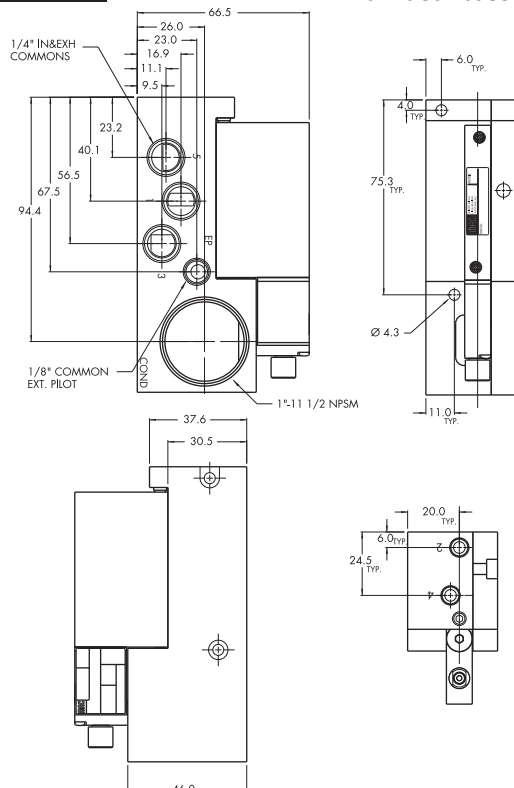
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Internal Pilot - 2 pos. : 1,3 to 8 bar      3 pos. : 2,3 to 8 bar External Pilot : vacuum to 8 bar
<b>Pilot pressure :</b>	2 position : 1,3 to 8 bar      3 position : 2,3 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	3,8 mm
<b>Flow (at 6 bar, ΔP=1bar) :</b>	M7: 400 NI/min (Cv 0,4) – M5: 350 NI/min (Cv 0,35)
<b>Coil :</b>	Epoxy encapsulated – 100% ED – Class A wire
<b>Voltage range :</b>	-15% to +10% of nominal voltage
<b>Protection :</b>	IP54 (electrical connection)
<b>Power :</b>	1.95 to 4.0 W
<b>Response times :</b>	Energize : 5 ms De-energize : 5 ms

Options :

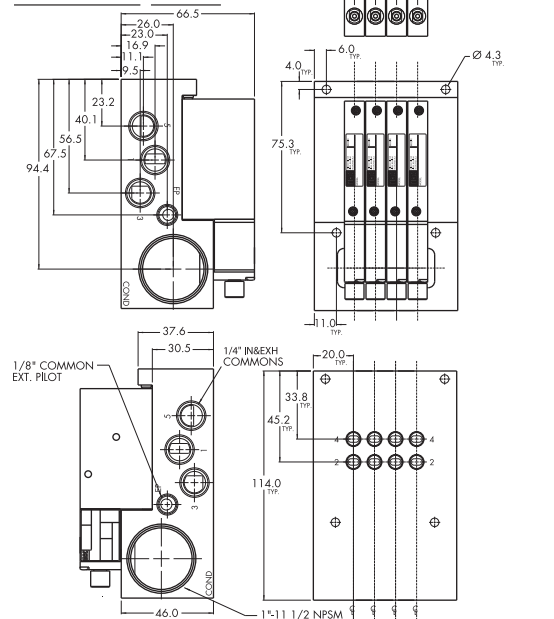
- NPTF threads • Sandwich flow controls : FC42B-AB
- Sandwich regulator : see "regulators" section • Isolator disk for inlet and exhaust: 28454
- Valve blanking plate : M-42004 • Plug-in wire protector : 24180

**DIMENSIONS**



Dimensions shown are metric (mm)

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





**OPTIONS FOR NON PLUG-IN VALVES**

Base type :

Individual base

42B-XXX-XAX-Gxxx-xxx

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

Manifold base

42B-XXX-XJX-Gxxx-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-RXX-XXX-Gxxx-xxx

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

Base only :

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

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

Pilot style :

42B-XXM-XXX-Gxxx-xxx

- M Pilot exhaust muffled
- R Pilot exhaust piped (M5)
- U Pilot exhaust to main exhaust

Base/Manifold configurations for LATCHING SOLENOID VALVES :

42A-xxx-xAx-Lxxx-xxx

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

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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3



# Direct solenoid and solenoid pilot operated valves

## OPTIONS FOR PLUG-IN VALVES

Base type :

Individual base

42B-XXX-XAX-GxxP-xxx

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

Manifold base

42B-XXX-XJX-GxxP-xxx

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

Universal spool

42B-RXX-XXX-GxxP-xxx

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

Base only :

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

- Individual base wired for a double solenoid

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

- Manifold base wired for a single solenoid

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

42B-XXJ-XXX-GxxP-xGA

- 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-XXM-XXX-GxxP-xxx

- M Pilot exhaust muffled
- R Pilot exhaust piped (M5)
- U Pilot exhaust to main exhaust

Base/Manifold configurations for LATCHING SOLENOID VALVES :

42A-xxx-xAx-LxxP-xxx

- A Individual base – Side port
- B Individual base – Bottom port
- 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-xxA-LxxP-xxx

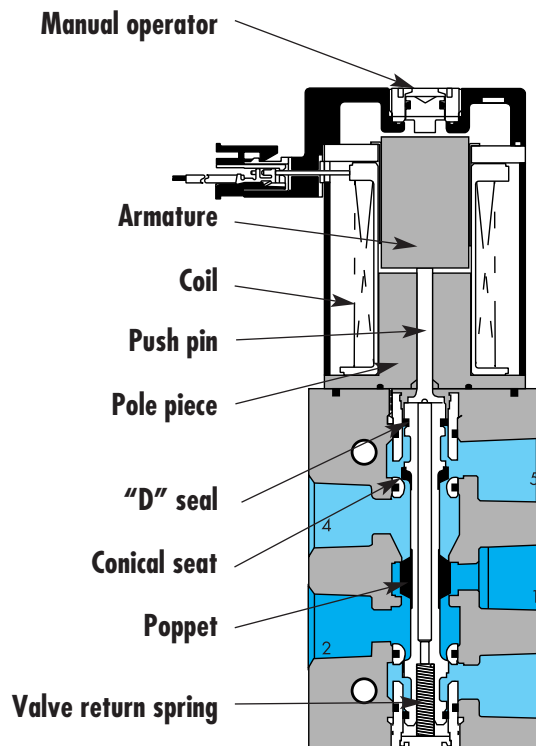
- A Plug-in Int. Pilot – 2 Wire Latching
- B Plug-in Ext. Pilot – 2 Wire Latching
- C Plug-in Int. Pilot – 3 Wire Latching
- D Plug-in Ext. Pilot – 3 Wire Latching
- E Plug-in Int. Pilot – 4 Wire Latching
- F Plug-in Ext. Pilot – 4 Wire Latching

Individual mounting

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

Manifold mounting

Stacking	Manifold base "plug-in"
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**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.

Series

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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual Mounting	Series
<b>5/2</b>	<b>G1/8" - G1/4"</b>	<b>500 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

- Short stroke solenoid produces high energization shifting force.
- High force return spring due to high force solenoid maximizes both energization and de-energization shifting forces.
- Built-in wear compensation – valve stroke is shorter than solenoid stroke.
- Four bonded balanced poppets on a one-piece valve stem.
- End poppets seal first on conical seats and cushion inlet poppet, eliminating cutting.
- Exhaust seals are not under inlet pressure thus reducing friction.
- Integral non-rising flow controls available on inline models.
- 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
<b>G1/8"</b>	47A-ACO-H XXX-XXX	47A-BCO-H XXX-XXX
<b>G1/4"</b>	47A-ADO-H XXX-XXX	47A-BDO-H XXX-XXX

### SOLENOID OPERATOR >

H XXX-XXX \*

XX Voltage	X Lead Wire length	X Manual operator	XX Electrical connection
DA 24V=/5,2W	A 45 cm	1 Non-locking	MA Plug-in wire assembly
DB 24V=/2,4W	B 60 cm	2 Locking	MC Plug-in wire assembly with light
DC 24V=/1,8W	C 90 cm		BA Flying leads
DD 24V=/1,0W			BC Flying leads with light
AA 120V~/6,7W			MT Plug-in wire assembly with rectifier & light

\* Other options available, see page 391.  
Note: AC voltage requires connector with rectifier.

### LATCHING OPERATOR >

L XXX-XXX \*

XX Voltage	X Lead Wire length	X Manual operator	XX Electrical connection
DA 24V=/5,2W	A 45 cm	0 No operator	BA 2 Wire Flying leads
DF 12V~/5,2W	B 60 cm		BJ 4 Wire Flying leads
	C 90 cm		LA 3 Wire Plug-in (Polarity switching cover)
			MA 2 Wire Plug-in
			ME 4 Wire Plug-in

\* Other options available, see page 395.

Options :  
Mani Mount Option (w/o flow controls)

47A-CXO-HXXX-XXX	C 1/8" BSPP
	D 1/4" BSPP

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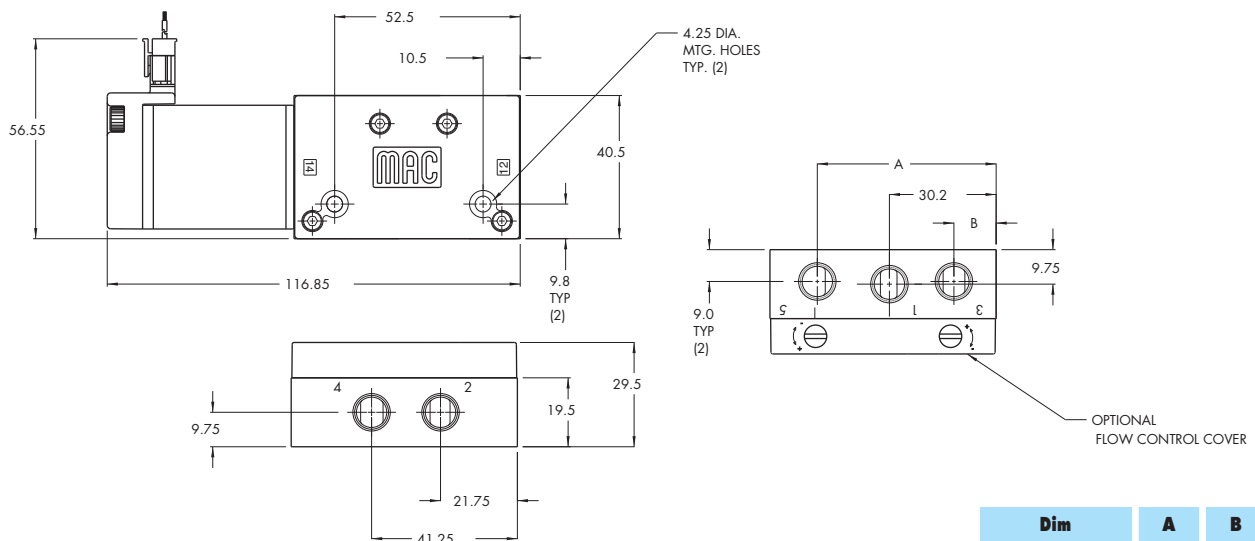
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4,3 mm
Flow (at 6 bar, ΔP=1bar) :	5,2W : 500 NI/min (Cv 0,50) – 2,4W : 350NI/min (Cv 0,35) – 1,0W : 300 NI/min (Cv 0,30)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,2W – 2,4W – 1,0W
Response times : (with 5,2 W coil)	Energize : 17,4 ms De-energise : 3,8 ms

- Options :
- NPTF threads
- Spare parts :
- Flow control assembly : N-47004

**DIMENSIONS**

Dimensions shown are metric (mm)



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



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual Mounting	Series
<b>5/2</b>	<b>G1/8" - G1/4"</b>	<b>500 NI/min</b>	Subbase non "plug-in"	

### OPERATIONAL BENEFITS

- Short stroke solenoid produces high energization shifting force.
- High force return spring due to high force solenoid maximizes both energization and de-energization shifting forces.
- Built-in wear compensation – valve stroke is shorter than solenoid stroke.
- Four bonded balanced poppets on a one-piece valve stem.
- End poppets seal first on conical seats and cushion inlet poppet, eliminating cutting.
- Exhaust seals are not under inlet pressure thus reducing friction.
- Integral non-rising flow controls available on inline models.
- 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
<b>Valve less base</b>	47A-L10-H xxx-xxx	47A-L10-H xxx-xxx
<b>G1/8"</b>	47A-LCA-H xxx-xxx	47A-LCB-H xxx-xxx
<b>G1/4"</b>	47A-LDA-H xxx-xxx	47A-LDB-H xxx-xxx

### SOLENOID OPERATOR >

#### H XXX-XXX \*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DA 24V=/5,2W	A 45 cm	1 Non-locking	MA Plug-in wire assembly
DB 24V=/2,4W	B 60 cm	2 Locking	MC Plug-in wire assembly with light
DC 24V=/1,8W	C 90 cm		BA Flying leads
DD 24V=/1,0W			BC Flying leads with light
AA 120V-/6,7W			MT Plug-in wire assembly with rectifier & light

\* Other options available, see page 391.  
Note: AC voltage requires connector with rectifier.

### LATCHING OPERATOR >

#### L XXX-XXX \*

XX Voltage	X Lead Wire length	X Manual operator	XX Electrical connection
DA 24V=/5,2W	A 45 cm	0 No operator	BA 2 Wire Flying leads
DF 12V=/5,2W	B 60 cm		BJ 4 Wire Flying leads
	C 90 cm		LA 3 Wire Plug-in (Polarity switching cover)
			MA 2 Wire Plug-in
			ME 4 Wire Plug-in

\* Other options available, see page 395.

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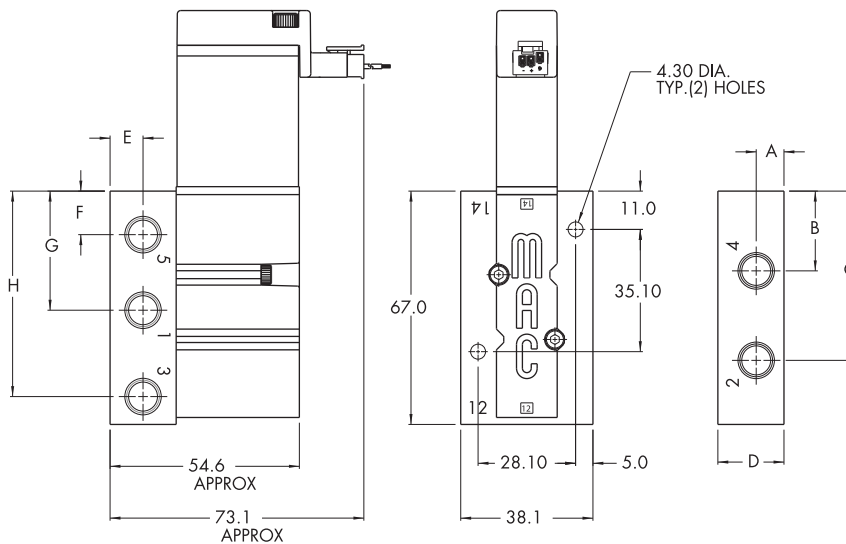
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4,3 mm
Flow (at 6 bar, ΔP=1bar) :	5,2W : 500 NI/min (Cv 0,50) – 2,4W : 350NI/min (Cv 0,35) – 1,0W : 300 NI/min (Cv 0,30)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,2W – 2,4W – 1,0W
Response times : (with 5,2 W coil)	Energize : 17,4 ms De-energise : 3,8 ms

- Options :
- NPTF 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)







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold Mounting	Series
<b>5/2</b>	<b>G1/8" - G1/4"</b>	<b>500 NI/min</b>	Stacking	

### OPERATIONAL BENEFITS

- Short stroke solenoid produces high energization shifting force.
- High force return spring due to high force solenoid maximizes both energization and de-energization shifting forces.
- Built-in wear compensation – valve stroke is shorter than solenoid stroke.
- Four bonded balanced poppets on a one-piece valve stem.
- End poppets seal first on conical seats and cushion inlet poppet, eliminating cutting.
- Exhaust seals are not under inlet pressure thus reducing friction.
- Integral non-rising flow controls available on inline models.
- 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
<b>G1/8"</b>	47A-SCO-H xxx-xxx	47A-TCO-H xxx-xxx
<b>G1/4"</b>	47A-SDO-H xxx-xxx	47A-TDO-H xxx-xxx

### SOLENOID OPERATOR >

H **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DA 24V=/5,2W	A 45 cm	1 Non-locking	MA Plug-in wire assembly
DB 24V=/2,4W	B 60 cm	2 Locking	MC Plug-in wire assembly with light
DC 24V=/1,8W	C 90 cm		BA Flying leads
DD 24V=/1,0W			BC Flying leads with light
AA 120V~/6,7W			MT Plug-in wire assembly with rectifier & light

\* Other options available, see page 391.  
Note: AC voltage requires connector with rectifier.

### LATCHING OPERATOR >

L **XXX-XXX**\*

XX Voltage	X Lead Wire length	X Manual operator	XX Electrical connection
DA 24V=/5,2W	A 45 cm	0 No operator	BA 2 Wire Flying leads
DF 12V=/5,2W	B 60 cm		BJ 4 Wire Flying leads
	C 90 cm		LA 3 Wire Plug-in (Polarity switching cover)
			MA 2 Wire Plug-in
			ME 4 Wire Plug-in

\* Other options available, see page 395.  
End plate kit required: M-47013-01P (1/4" BSPP).

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100%  
OF  
PRODUCTION  
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WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

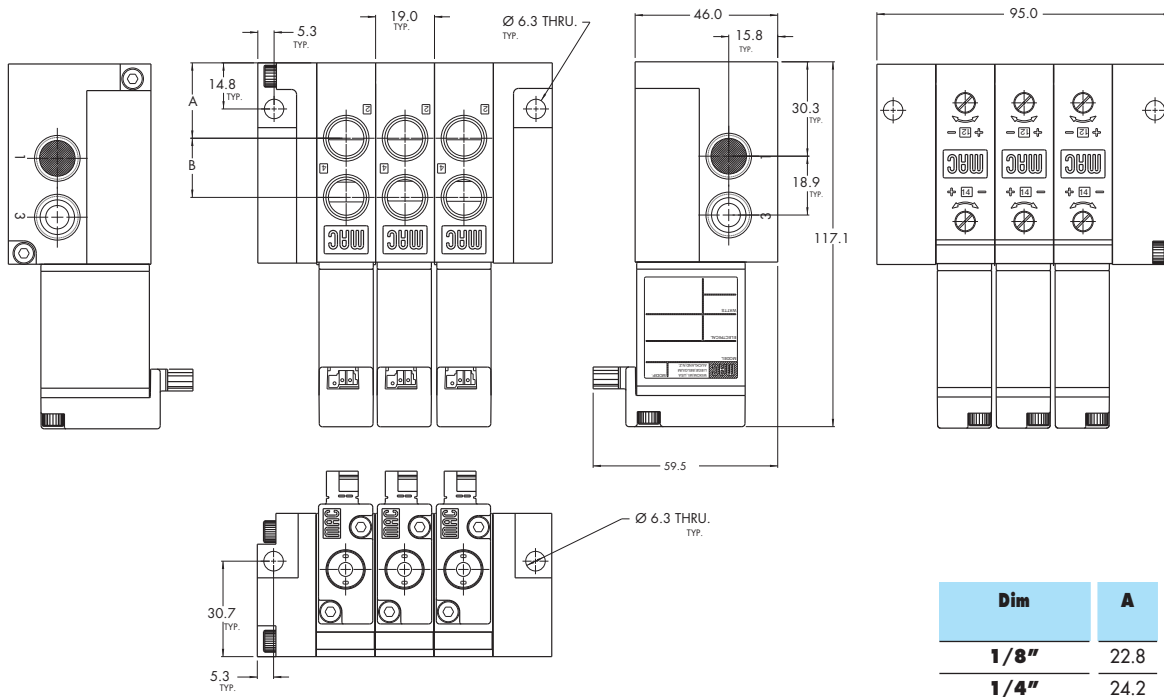
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4,3 mm
Flow (at 6 bar, ΔP=1bar) :	5,2W : 500 NI/min (Cv 0,50) – 2,4W : 350NI/min (Cv 0,35) – 1,0W : 300 NI/min (Cv 0,30)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,2W – 2,4W – 1,0W
Response times : (with 5,2 W coil)	Energize : 17,4 ms De-energise : 3,8 ms

Options : • NPTF threads

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

**DIMENSIONS**

Dimensions shown are metric (mm)



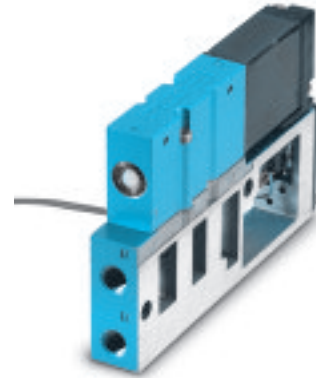


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold Mounting	Series
<b>5/2</b>	<b>G1/8" - G1/4"</b>	<b>500 NI/min</b>	Manifold base "plug-in"	

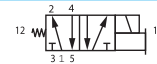
### OPERATIONAL BENEFITS

- Short stroke solenoid produces high energization shifting force.
- High force return spring due to high force solenoid maximizes both energization and de-energization shifting forces.
- Built-in wear compensation – valve stroke is shorter than solenoid stroke.
- Four bonded balanced poppets on a one-piece valve stem.
- End poppets seal first on conical seats and cushion inlet poppet, eliminating cutting.
- Exhaust seals are not under inlet pressure thus reducing friction.
- Integral non-rising flow controls available on inline models.
- 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	Model number
<b>Valve less base</b>	
<b>G1/8"</b>	47A-L10-H <b>xxP-xxx</b>
<b>G1/4"</b>	47A-LCJ-H <b>xxP-xxx</b>
	47A-LDJ-H <b>xxP-xxx</b>



### SOLENOID OPERATOR >

H **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>DA</b> 24 V= / 5,2W	<b>1</b> Non-locking	<b>FA</b> Base plug-in
<b>DB</b> 24 V= / 2,4W	<b>2</b> Locking	<b>FB</b> Base plug-in w/ ground
<b>DC</b> 24 V= / 1,8W		<b>FC</b> Base plug-in w/ LED light
<b>DD</b> 24 V= / 1,0W		<b>FD</b> Base plug-in w/ LED light w/ ground
<b>AA</b> 120 V- / 6,7W		<b>FT</b> Base plug-in w/ rectifier and light

\* Other options available, see page 391.  
Note : AC voltage requires connector with rectifier.

### LATCHING SOLENOID >

L **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>DA</b> 24 V= / 5,2W	<b>0</b> No operator	<b>FA</b> Base plug-in w/ ground
<b>DF</b> 12 V= / 5,2W		<b>FB</b> Base plug-in w/ ground & LED
		<b>FC</b> Base plug-in 4 wire w/ ground
		<b>FD</b> Base Plug-in 4 wire w/ LED & ground

\* Other options available, see page 395.

### OPTIONS

47A-**xxJ**-H**xxx**-**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

Fastening kit required: N-47005-01.

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

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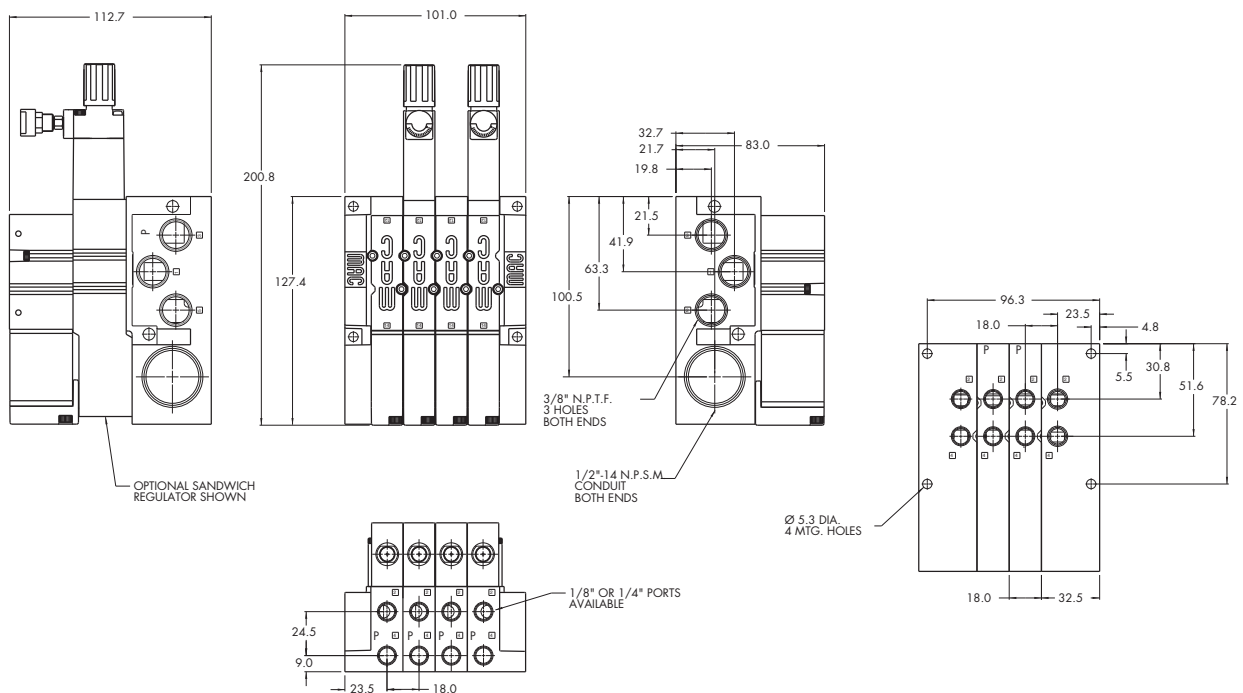
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4,3 mm
Flow (at 6 bar, ΔP=1bar) :	5,2W : 500 NI/min (Cv 0,50) – 2,4W : 350NI/min (Cv 0,35) – 1,0W : 300 NI/min (Cv 0,30)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5,2W – 2,4W – 1,0W
Response times : (with 5,2 W coil)	Energize : 17,4 ms De-energise : 3,8 ms

- Options : • NPTF threads • Sandwich flow control: FC47A-AA
- Spare parts : • Inlet/exhaust isolator: 28447 • Valve cover plate: M-47001

**DIMENSIONS**

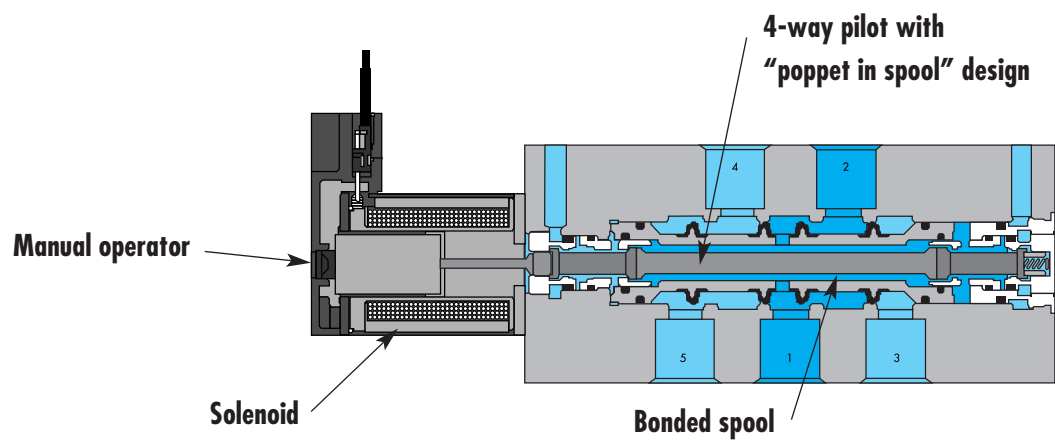
Dimensions shown are metric (mm)



Individual mounting

Inline
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Series



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**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.





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2</b>	<b>G1/8"</b>	<b>1000 NI/min</b>	Inline	

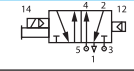
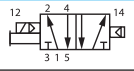
### OPERATIONAL BENEFITS

1. 5-way valve with 5-way pilot.
2. Poppet in spool design
3. 16 mm valve (stacks on 16.5 mm centers).
4. High flow (up to 1000 NI/min).
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
<b>G1/8"</b>	Internal	48PB-AAA-B00-GXXX-XXX	-
	Internal from port 3	-	48PB-CAB-B00-GXXX-XXX
	Internal from port 5	-	48PB-CAC-B00-GXXX-XXX



### STANDARD SOLENOID OPERATOR >

G **XXX-XXX**\*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 V~/2,5W	A	45 cm	1	Non-locking	BA	Flying leads
DC	24 V~/1,8W	B	60 cm	2	Locking	BT	Flying leads with light
DD	24 V~/2,5W	C	90 cm			GA	MAC JAC Solenoid plug-in
DF	24 V~/4,0W					KA	Plug-in wire assy
						KT	Plug-in wire assy with light
						KD	Plug-in wire assy rectifier & light & ground

\* Other options available, see page 387.  
Note : AC voltage requires connector with rectifier.

### OPTIONS

48PB-X X X-X00-Gxx-xxx

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

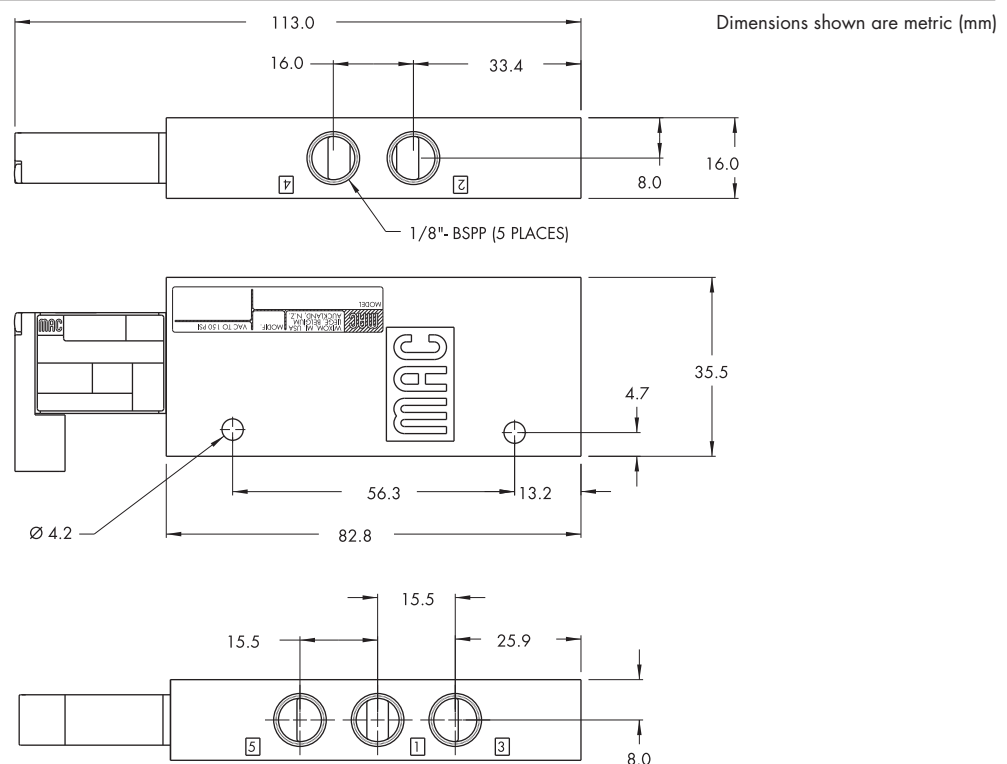
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	1,7 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow :	1000 NI/min (Cv 1,0)
Coil :	Epoxy encapsulated – Class A wire - 100% E.D.
Voltage range :	-15% to +10% of nominal voltage
Power :	1.0 to 4.0 W

Options : NPTF Threads

**DIMENSIONS**





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
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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
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Series

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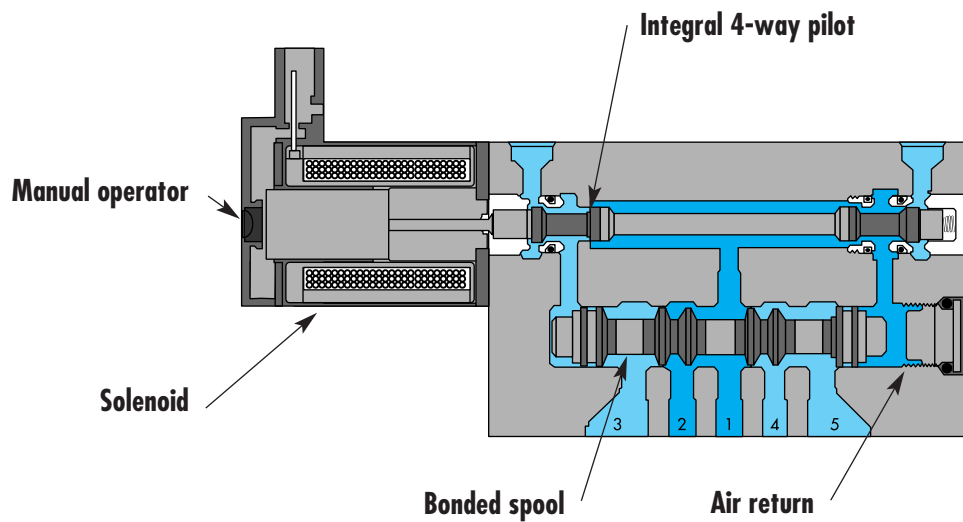
ISO 01

ISO 02

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ISO 2

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**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.





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/8"</b>	<b>1100 NI/min</b>	Subbase 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 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Closed centre	5/3 Open centre
<b>Valve less base</b>	Internal	48B-AMA-000-GXXX-XXX	48B-BMA-000-GXXX-XXX	48B-EMA-000-GXXX-XXX	48B-FMA-000-GXXX-XXX
	External	48B-AMD-000-GXXX-XXX	48B-BMD-000-GXXX-XXX	48B-EMD-000-GXXX-XXX	48B-FMD-000-GXXX-XXX
<b>G1/8"</b>	Internal	48B-AMA-BAL-GXXX-XXX	48B-BMA-BAL-GXXX-XXX	48B-EMA-BAL-GXXX-XXX	48B-FMA-BAL-GXXX-XXX
	External	48B-AMD-BAM-GXXX-XXX	48B-BMD-BAM-GXXX-XXX	48B-EMD-BAM-GXXX-XXX	48B-FMD-BAM-GXXX-XXX

#### DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	48B-CMB-000-GXXX-XXX	48B-DMB-000-GXXX-XXX
	Internal	Supply #5 port	48B-CMC-000-GXXX-XXX	48B-DMC-000-GXXX-XXX
<b>G1/8"</b>	External		48B-CMD-000-GXXX-XXX	48B-DMD-000-GXXX-XXX
	Internal	Supply #3 port	48B-CMB-BAL-GXXX-XXX	48B-DMB-BAL-GXXX-XXX
	Internal	Supply #5 port	48B-CMC-BAL-GXXX-XXX	48B-DMC-BAL-GXXX-XXX
	External		48B-CMD-BAM-GXXX-XXX	48B-DMD-BAM-GXXX-XXX

#### STANDARD SOLENOID OPERATOR >

G XXX-XXX \*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 V~/2,5W	A	45 cm	1	Non-locking	BA	Flying leads
DC	24 V=/1,8W	B	60 cm	2	Locking	BT	Flying leads with light
DD	24 V=/2,5W	C	90 cm			GA	MAC JAC Solenoid plug-in
DF	24 V=/4,0W					KA	Mini connector
						KT	Mini connector with light
						KD	Mini connector with rectifier & light & ground

\* Other options available, see page 387.  
Latching solenoid also available, see page 179.  
Note : AC voltage requires connector with rectifier.  
Other options available for the 48 series valves, see page 183.

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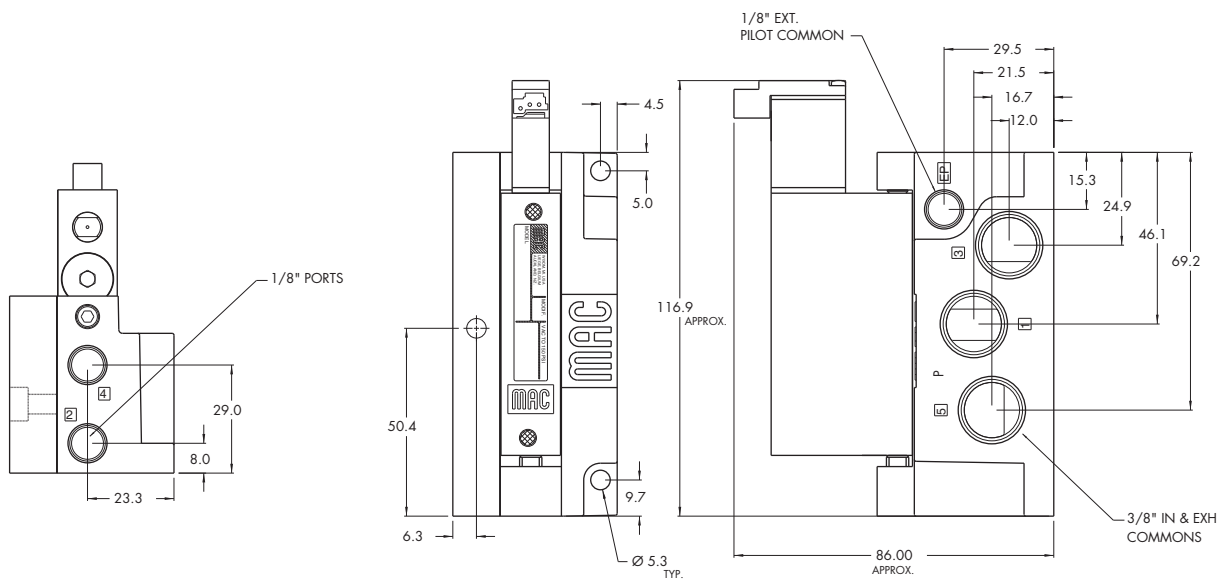
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1bar) :	1/8" side ports: 1000 NI/min (Cv 1,0) – 1/8" bottom ports : 1100 NI/min (Cv 1.1)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

- Options :
- NPTF threads • Sandwich Flow controls: FC48B-BB
  - Sandwich regulator: see "regulators" section

**DIMENSIONS**

Dimensions shown are metric (mm)



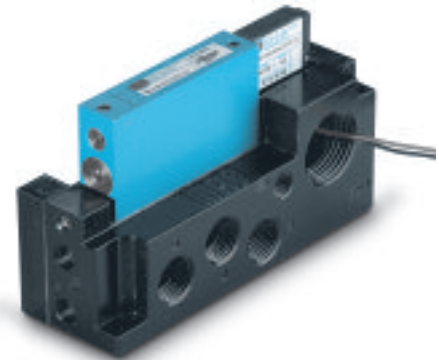


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/8"</b>	<b>1100 NI/min</b>	Subbase "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 1100 NI/min).
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	5/3 Double solenoid	5/3 Closed centre	5/3 Open centre
<b>Valve less base</b>	Internal	48B-AMA-000-GXXP-XXX	48B-BME-000-GXXP-XST	48B-EME-000-GXXP-XST	48B-FME-000-GXXP-XST
	External	48B-AMD-000-GXXP-XXX	48B-BMH-000-GXXP-XST	48B-EMH-000-GXXP-XST	48B-FMH-000-GXXP-XST
<b>G1/8"</b>	Internal	48B-AMA-BAA-GXXP-XXX	48B-BME-BAC-GXXP-XST	48B-EME-BAC-GXXP-XST	48B-FME-BAC-GXXP-XST
	External	48B-AMD-BAB-GXXP-XXX	48B-BMH-BAD-GXXP-XST	48B-EMH-BAD-GXXP-XST	48B-FMH-BAD-GXXP-XST

#### DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	48B-CMB-000-GXXP-XXX	48B-DMF-000-GXXP-XST
	External	Supply #5 port	48B-CMC-000-GXXP-XXX	48B-DMG-000-GXXP-XST
<b>G1/8"</b>	Internal	Supply #3 port	48B-CMB-BAA-GXXP-XXX	48B-DMF-BAC-GXXP-XST
	Internal	Supply #5 port	48B-CMC-BAA-GXXP-XXX	48B-DMG-BAC-GXXP-XST
	External	Supply #3 port	48B-CMB-BAB-GXXP-XXX	48B-DMH-BAD-GXXP-XST
	External	Supply #5 port	48B-CMD-BAB-GXXP-XXX	48B-DMH-BAD-GXXP-XST

#### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

XX	Voltage	X	Manual operator	XX	Electrical connection
AA	120 V~/2,5W	1	Non-locking	ST	Double solenoid & 3 position models Base plug-in
DC	24 V~/1,8W	2	Locking	SA	Single solenoid models Base plug-in
DD	24 V~/2,5W			SJ	Base plug-in with LED light
DF	24 V~/4,0W			SS	Base plug-in with rectifier & light & ground

\* Other options available, see page 387.  
Latching solenoid also available, see page 181.  
Note : AC voltage requires connector with rectifier (for double solenoid consult factory).  
Other options available for the 48 series valves, see page 184.

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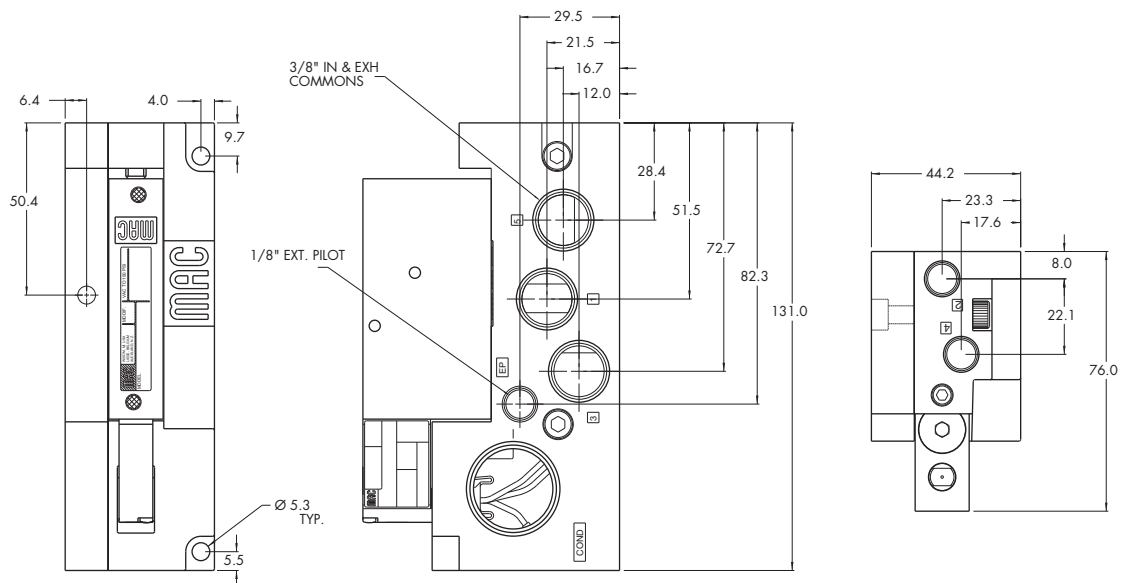
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1bar) :	1/8" side ports: 1000 NI/min (Cv 1,0) – 1/8" bottom ports : 1100 NI/min (Cv 1.1)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

- Options :
- NPTF threads
  - Sandwich Flow controls: FC48B-AB
  - Sandwich regulator: see "regulators" section

**DIMENSIONS**

Dimensions shown are metric (mm)



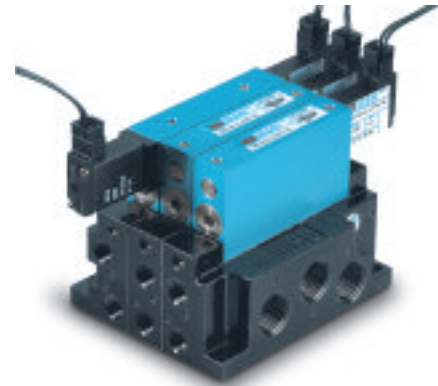


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/8"</b>	<b>1100 NI/min</b>	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 1100 NI/min).
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 centre	5/3 Open centre
<b>Valve less base</b>	Internal	48B-AMA-000-GXXX-XXX	48B-BMA-000-GXXX-XXX	48B-EMA-000-GXXX-XXX	48B-FMA-000-GXXX-XXX
	External	48B-AMD-000-GXXX-XXX	48B-BMD-000-GXXX-XXX	48B-EMD-000-GXXX-XXX	48B-FMD-000-GXXX-XXX
<b>G1/8"</b>	Internal	48B-AMA-BJL-GXXX-XXX	48B-BMA-BJL-GXXX-XXX	48B-EMA-BJL-GXXX-XXX	48B-FMA-BJL-GXXX-XXX
	External	48B-AMD-BJM-GXXX-XXX	48B-BMD-BJM-GXXX-XXX	48B-EMD-BJM-GXXX-XXX	48B-FMD-BJM-GXXX-XXX

#### DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	48B-CMB-000-GXXX-XXX	48B-DMB-000-GXXX-XXX
		Supply #5 port	48B-CMC-000-GXXX-XXX	48B-DMC-000-GXXX-XXX
	External		48B-CMD-000-GXXX-XXX	48B-DMD-000-GXXX-XXX
<b>G1/8"</b>	Internal	Supply #3 port	48B-CMB-BJL-GXXX-XXX	48B-DMB-BJL-GXXX-XXX
		Supply #5 port	48B-CMC-BJL-GXXX-XXX	48B-DMC-BJL-GXXX-XXX
	External		48B-CMD-BJM-GXXX-XXX	48B-DMD-BJM-GXXX-XXX

#### STANDARD SOLENOID OPERATOR >

G **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120 V~/2,5W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DC</b> 24 V=/1,8W	<b>B</b> 60 cm	<b>2</b> Locking	<b>BT</b> Flying leads with light
<b>DD</b> 24 V=/2,5W	<b>C</b> 90 cm		<b>GA</b> MAC JAC Solenoid plug-in
<b>DF</b> 24 V=/4,0W			<b>KA</b> Mini connector
			<b>KT</b> Mini connector with light
			<b>KD</b> Mini connector with rectifier & light & ground

\* Other options available, see page 387.  
 Latching solenoid also available, see page 179.  
 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 183.

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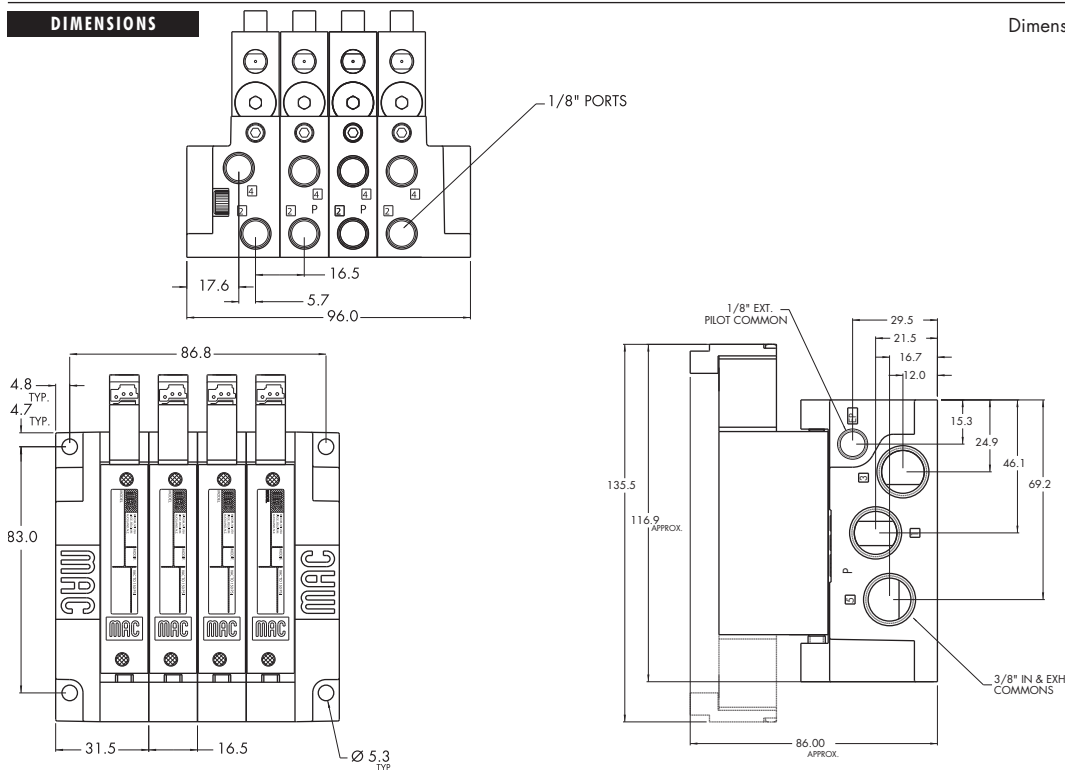
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1bar) :	1/8" side ports: 1000 NI/min (Cv 1,0) – 1/8" bottom ports : 1100 NI/min (Cv 1.1)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

- Options :
- NPTF threads • 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)







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/8"</b>	<b>1100 NI/min</b>	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 1100 NI/min).
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 centre	5/3 Open centre
<b>Valve less base</b>	Internal	48B-AMA-000-GXXP-XXX	48B-BME-000-GXXP-XST	48B-EME-000-GXXP-XST	48B-FME-000-GXXP-XST
	External	48B-AMD-000-GXXP-XXX	48B-BMH-000-GXXP-XST	48B-EMH-000-GXXP-XST	48B-FMH-000-GXXP-XST
<b>G1/8"</b>	Internal	48B-AMA-BJA-GXXP-XXX	48B-BME-BJC-GXXP-XST	48B-EME-BJC-GXXP-XST	48B-FME-BJC-GXXP-XST
	External	48B-AMD-BJB-GXXP-XXX	48B-BMH-BJD-GXXP-XST	48B-EMH-BJD-GXXP-XST	48B-FMH-BJD-GXXP-XST

#### DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

Port size	Pilot air	5/2 Single solenoid	5/2 Double solenoid	5/3 Pressure centre
<b>Valve less base</b>	Internal	Supply #3 port	48B-CMB-000-GXXP-XXX	48B-DMF-000-GXXP-XST
	Internal	Supply #5 port	48B-CMC-000-GXXP-XXX	48B-DMG-000-GXXP-XST
<b>G1/8"</b>	External		48B-CMD-000-GXXP-XXX	48B-DMH-000-GXXP-XST
	Internal	Supply #3 port	48B-CMB-BJC-GXXP-XXX	48B-DMF-BJC-GXXP-XST
	Internal	Supply #5 port	48B-CMC-BJC-GXXP-XXX	48B-DMG-BJC-GXXP-XST
	External		48B-CMD-BJD-GXXP-XXX	48B-DMH-BJD-GXXP-XST

#### STANDARD SOLENOID OPERATOR >

G **XX** P-**XXX**\*

Voltage	Manual operator	Electrical connection
<b>AA</b> 120 V~/2,5W	<b>1</b> Non-locking	<b>Double solenoid &amp; 3 position models</b>
<b>DC</b> 24 V~/1,8W	<b>2</b> Locking	<b>ST</b> Base plug-in
<b>DD</b> 24 V~/2,5W		<b>Single solenoid models</b>
<b>DF</b> 24 V~/4,0W		<b>SA</b> Base plug-in
		<b>SJ</b> Base plug-in with LED light
		<b>SS</b> Base plug-in with rectifier & light & ground

\* Other options available, see page 387.  
 Latching solenoid also available, see page 181.  
 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 184.

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100%  
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100%

WARRANTY  
**18**  
MONTHS

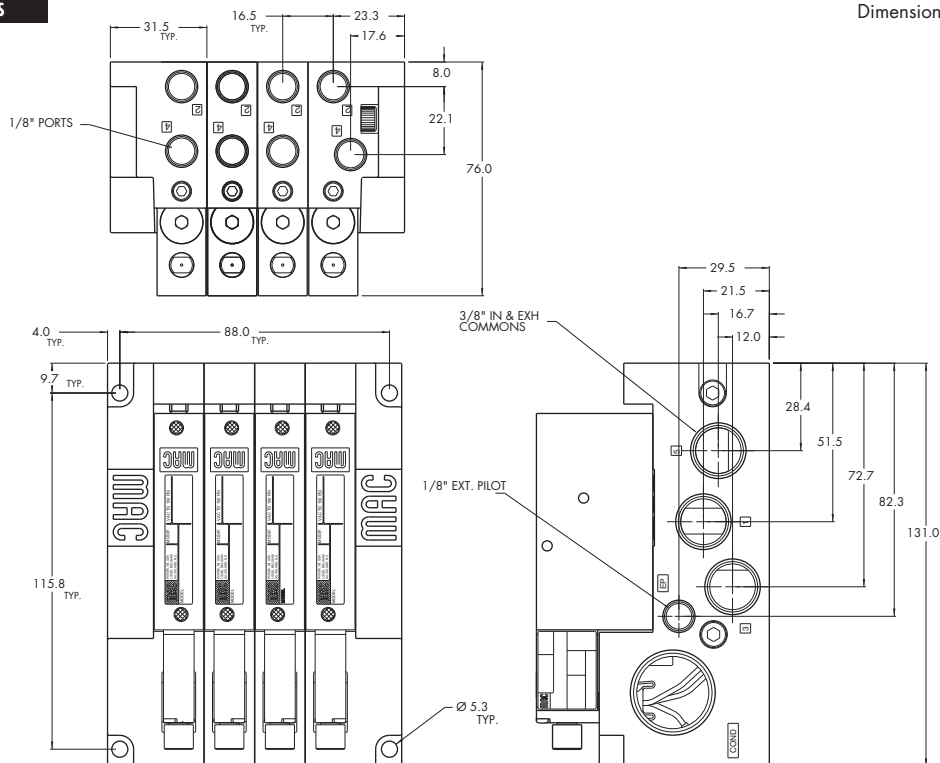
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1bar) :	1/8" side ports: 1000 NI/min (Cv 1,0) – 1/8" bottom ports : 1100 NI/min (Cv 1.1)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

- Options :
- NPTF threads • 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)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2</b>	<b>G1/8"</b>	<b>1100 NI/min</b>	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 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single pressure
<b>Valve less base</b>	Internal	48B-AMA-000-LXXX-XXX
	External	48B-AMD-000-LXXX-XXX
<b>G1/8"</b>	Internal	48B-AMA-BAL-LXXX-XXX
	External	48B-AMD-BAM-LXXX-XXX

#### DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Dual pressure	
<b>Valve less base</b>	Internal	Supply #3 port	48B-CMB-000-LXXX-XXX
		Supply #5 port	48B-CMC-000-LXXX-XXX
	External		48B-CMD-000-LXXX-XXX
<b>G1/8"</b>	Internal	Supply #3 port	48B-CMB-BAL-LXXX-XXX
		Supply #5 port	48B-CMC-BAL-LXXX-XXX
	External		48B-CMD-BAM-LXXX-XXX

#### LATCHING SOLENOID ▶

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
DF	24 VDC/4,0W	A	45 cm	0	No operator	BA	2 Wire flying leads
HA	24 VDC/1,95W	B	60 cm			BJ	4 Wire flying leads
		C	90 cm			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 395.

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 183.

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100%  
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MONTHS

**TECHNICAL DATA**

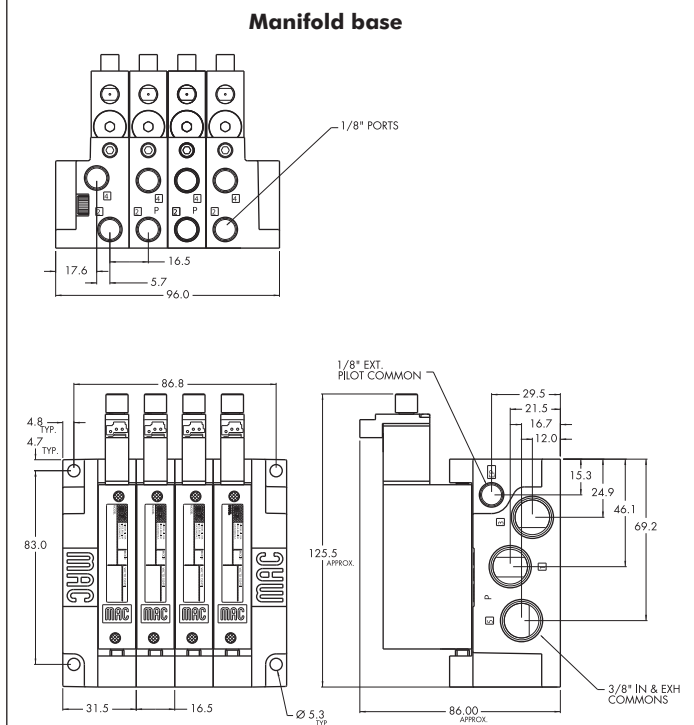
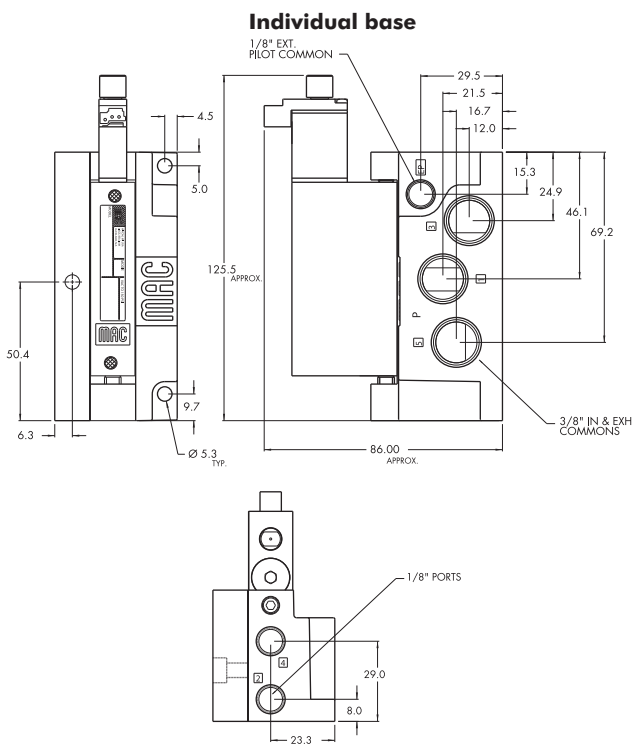
<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
<b>Pilot pressure :</b>	2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	6,0 mm
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1/8" side ports: 1000 NI/min (Cv 1,0) – 1/8" bottom ports : 1100 NI/min (Cv 1.1)
<b>Coil :</b>	Epoxy encapsulated – 100% ED – Class A wire
<b>Voltage range :</b>	-15% to +10% of nominal voltage
<b>Protection :</b>	IP54 (electrical connection)
<b>Power :</b>	1.0 to 4.0 W
<b>Response times :</b> (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options :

- NPTF threads • 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)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2</b>	<b>G1/8"</b>	<b>1000 NI/min</b>	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 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single pressure
<b>Valve less base</b>	Internal	48B-AMA-000-LxxP-xxx
	External	48B-AMD-000-LxxP-xxx
<b>G1/8"</b>	Internal	48B-AMA-BAA-LxxP-xxx
	External	48B-AMD-BAB-LxxP-xxx

#### DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Dual pressure	
<b>Valve less base</b>	Internal	Supply #3 port	48B-CMB-000-LxxP-xxx
		Supply #5 port	48B-CMC-000-LxxP-xxx
	External		48B-CMD-000-LxxP-xxx
<b>G1/8"</b>	Internal	Supply #3 port	48B-CMB-BAA-LxxP-xxx
		Supply #5 port	48B-CMC-BAA-LxxP-xxx
	External		48B-CMD-BAB-LxxP-xxx

#### LATCHING SOLENOID >

L **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection**
<b>DF</b> 24 VDC/4,0W	<b>0</b> No operator	<b>DA</b> Plug-in
<b>DN</b> 12 VDC/4,0W		<b>EA</b> Plug-in 3 PIN (Polarity Switching Cover)
<b>HA</b> 24 VDC/1,95W		
<b>HE</b> 12 VDC/1,95W		

\* Other options available, see page 395.

\*\* 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 184.

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100%  
OF  
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**18**  
MONTHS

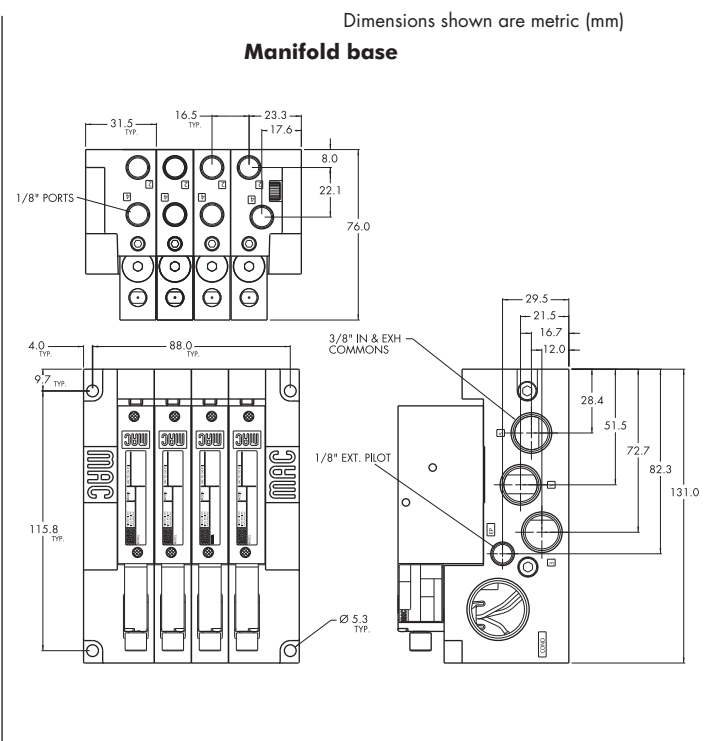
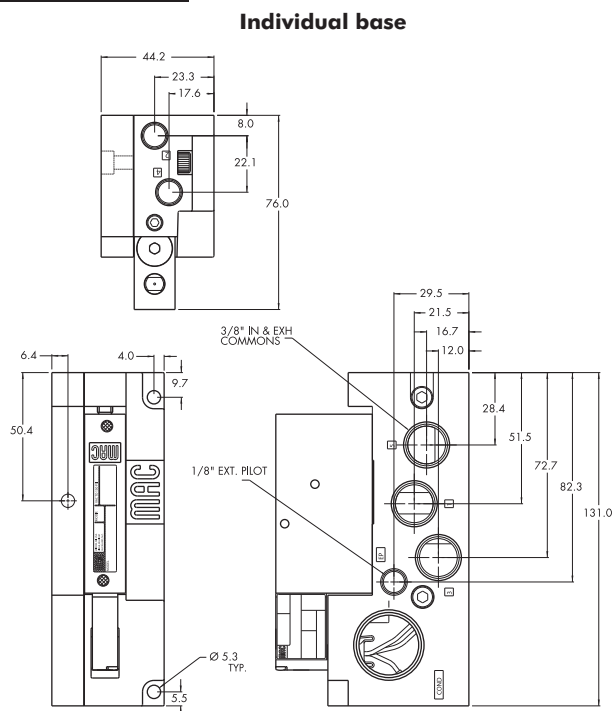
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,0 mm
Flow (at 6 bar, ΔP=1bar) :	1/8" side ports: 1000 NI/min (Cv 1,0) – 1/8" bottom ports : 1100 NI/min (Cv 1.1)
Coil :	Epoxy encapsulated – 100% ED – Class A wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	1.0 to 4.0 W
Response times : (with 4 W coil)	Energize : 6 ms De-energize : 6 ms

Options :

- NPTF threads • 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**



**OPTIONS FOR NON PLUG-IN VALVES**

Base type :

Individual base

48B-XXX-XAX-Gxxx-xxx

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

Manifold base

48B-XXX-XJX-Gxxx-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-RXX-XXX-Gxxx-xxx

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

Base only :

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

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

Pilot style :

48B-XMX-XXX-Gxxx-xxx

- M** Pilot exhaust muffled
- R** Pilot exhaust piped (M5)
- U** Pilot exhaust to main exhaust

Base/Manifold configurations for LATCHING SOLENOID VALVES :

48A-xxx-xAX-Lxxx-xxx

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

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# Direct solenoid and solenoid pilot operated valves

## OPTIONS FOR PLUG-IN VALVES

Base type :

Individual base

48B-XXX-**XAX**-GxxP-xxx

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

Manifold base

48B-XXX-**XJX**-GxxP-xxx

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

Universal spool

48B-**RXX**-XXX-GxxP-xxx

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

Base only :

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

- Individual base wired for a single solenoid valve

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

- Manifold base wired for a double solenoid valve

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

48B-**XXJ**-XXX-GxxP-**XGA**

- 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-**XXM**-XXX-GxxP-xxx

- M** Pilot exhaust muffled
- R** Pilot exhaust piped (M5)
- U** Pilot exhaust to main exhaust

Base/Manifold configurations for LATCHING SOLENOID VALVES :

48A-xxx-**XAX**-LxxP-xxx

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

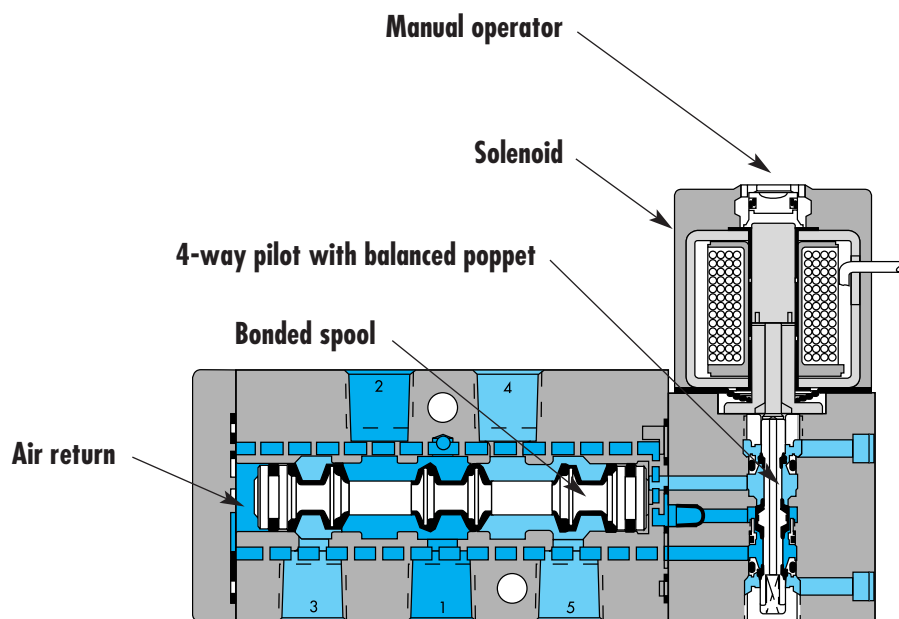
- A** Plug-in Int. Pilot – 2 Wire Latching
- B** Plug-in Ext. Pilot – 2 Wire Latching
- C** Plug-in Int. Pilot – 3 Wire Latching
- D** Plug-in Ext. Pilot – 3 Wire Latching
- E** Plug-in Int. Pilot – 4 Wire Latching
- F** Plug-in Ext. Pilot – 4 Wire Latching



Individual mounting

Series

Inline	Sub-base non "plug-in"
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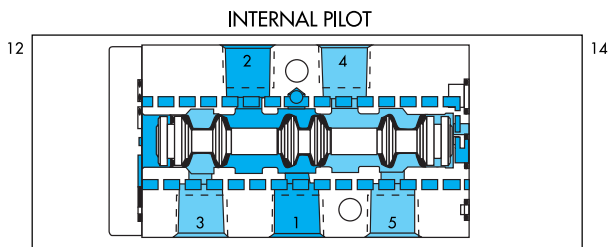


**SERIES FEATURES**

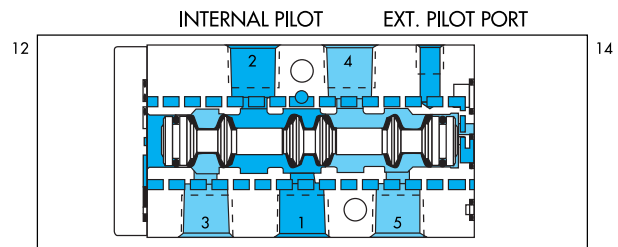
- Patented MACSOLENOID® for fastest possible response times and virtually burn-out proof AC solenoid operation.
- Optional low watt DC solenoids.
- Various manual operators.
- Optional memory spring.
- 2 position or 3 position valve configurations.
- Internal or external pilot.

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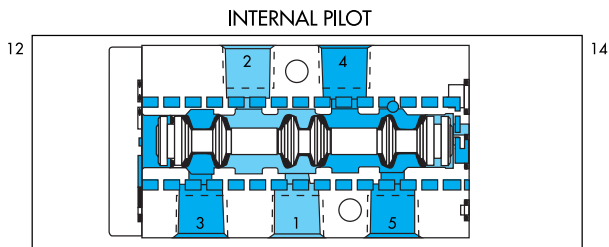
**SPOOL CONFIGURATIONS**



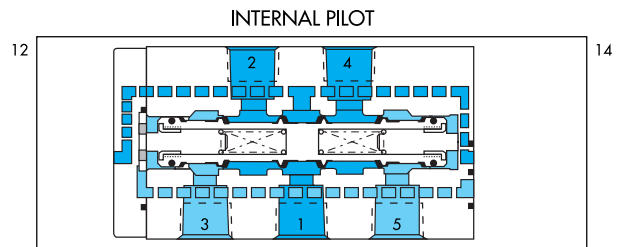
SINGLE OPERATOR - SINGLE INLET  
 SHOWN WITH 12 OPERATOR ENERGIZED



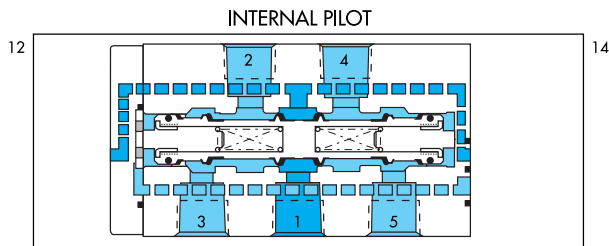
SINGLE OPERATOR - SINGLE INLET  
 SHOWN WITH 12 OPERATOR ENERGIZED



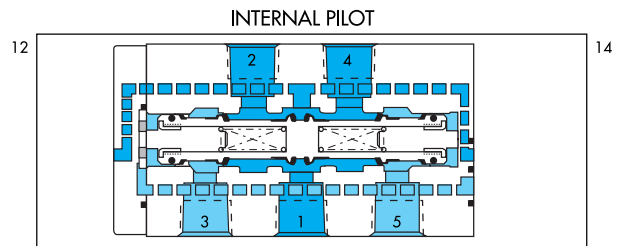
SINGLE OPERATOR - DUAL INLET  
 SHOWN WITH 12 OPERATOR ENERGIZED



3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER



3 POSITION PRESSURE CENTER

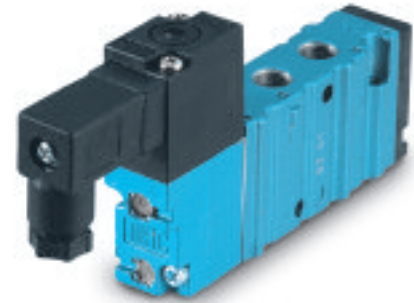


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/8" - G1/4"</b>	<b>1000 NI/min</b>	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 centre	5/3 Open centre	5/3 Pressure centre
<b>G1/8"</b>	Internal	411A-C0A-XX-XXXX-XXX	421A-C0A-XX-XXXX-XXX	451A-C0A-XX-XXXX-XXX	461A-C0A-XX-XXXX-XXX	471A-C0A-XX-XXXX-XXX
<b>G1/4"</b>	Internal	411A-D0A-XX-XXXX-XXX	421A-D0A-XX-XXXX-XXX	451A-D0A-XX-XXXX-XXX	461A-D0A-XX-XXXX-XXX	471A-D0A-XX-XXXX-XXX
<b>G1/8"</b>	External	411A-C0B-XX-XXXX-XXX	421A-C0B-XX-XXXX-XXX	451A-C0B-XX-XXXX-XXX	461A-C0B-XX-XXXX-XXX	471A-C0B-XX-XXXX-XXX
<b>G1/4"</b>	External	411A-D0B-XX-XXXX-XXX	421A-D0B-XX-XXXX-XXX	451A-D0B-XX-XXXX-XXX	461A-D0B-XX-XXXX-XXX	471A-D0B-XX-XXXX-XXX

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
<b>G1/8"</b>	Internal	431A-C0A-XX-XXXX-XXX	441A-C0A-XX-XXXX-XXX
<b>G1/4"</b>	Internal	431A-D0A-XX-XXXX-XXX	441A-D0A-XX-XXXX-XXX
<b>G1/8"</b>	External	431A-C0B-XX-XXXX-XXX	441A-C0B-XX-XXXX-XXX
<b>G1/4"</b>	External	431A-D0B-XX-XXXX-XXX	441A-D0B-XX-XXXX-XXX

#### SOLENOID OPERATOR >

### DM-D XXX-XXX\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>JB</b> Rectangular connector
<b>FB</b> 24 V~/1,8W			<b>JD</b> Rectangular connector with light
<b>DA</b> 24 V~/5,4W			<b>BA</b> Flying leads
<b>DF</b> 24 V~/12,7W			

#### SOLENOID OPERATOR >

### GM-G XXX-XXX\*\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>DC</b> 24V~/1,8W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DD</b> 24V~/2,5W	<b>B</b> 60 cm	<b>2</b> Locking	<b>BT</b> Flying leads with light
<b>DF</b> 24V~/4,0W	<b>C</b> 90 cm		<b>KA</b> Mini connector
			<b>KT</b> Mini connector with light

\* Other options available, see page 385.

\*\* Other options available, see page 389.

Note : For 400 Series exhaust ports are always 1/8"

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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot – 2 pos. : 1,3 to 8 bar (with memory spring: 2 to 8 bar) 3 pos.: 2,3 to 8 bar External pilot : vacuum to 8 bar
Pilot pressure :	2 position: 1,3 to 8 bar (with memory spring: 2 to 8 bar) 3 position: 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,2 mm
Flow (at 6 bar, ΔP=1bar) :	1000 NI/min (Cv 1.0)
Coil :	Epoxy encapsulated – class A wire – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (GM pilot) – IP65 (DM pilot) (Electrical connection)
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 110V~/50Hz Energize : 8-12 ms De-energize : 7-11 ms

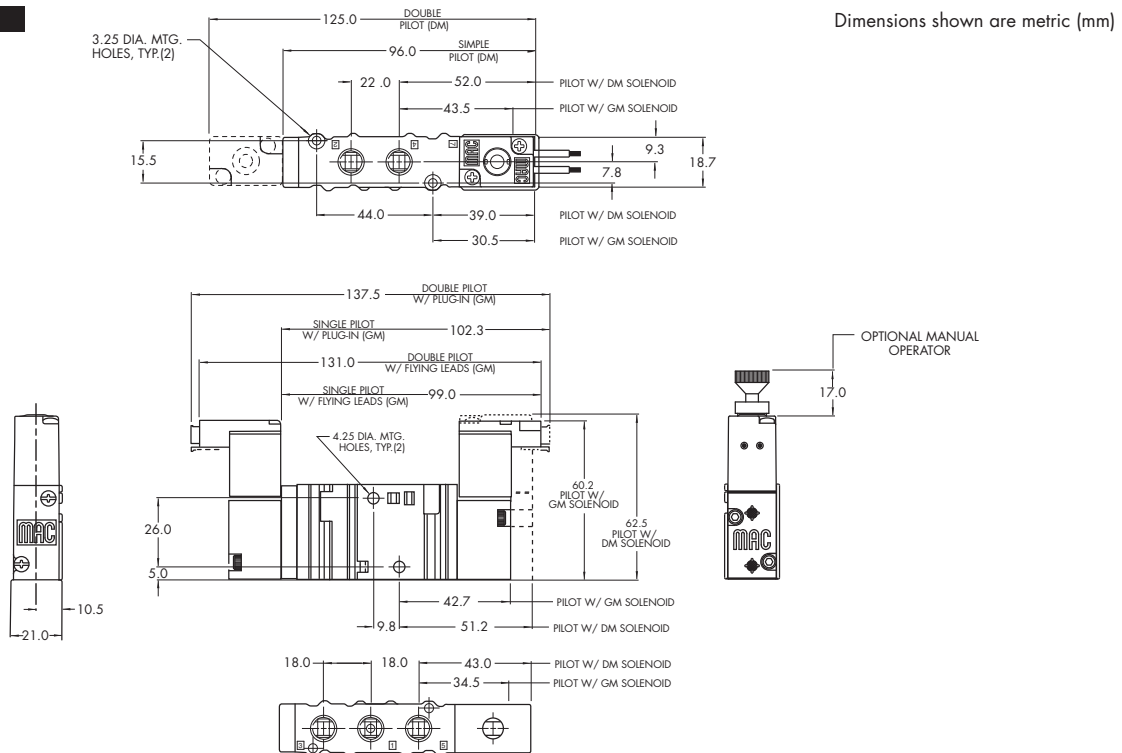
Options : • NPTF threads • Namur interface (specify mod. 1080 after model)

**411A-C0A-XX-XXXX-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 centre

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

**DIMENSIONS**





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/8" - G1/4"</b>	<b>1000 NI/min</b>	Subbase 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 centre	5/3 Open centre	5/3 Pressure centre
<b>Valve only</b>	Internal	413A-00A-XX-Xxxx-xxx	423A-00A-XX-Xxxx-xxx	453A-00A-XX-Xxxx-xxx	463A-00A-XX-Xxxx-xxx	473A-00A-XX-Xxxx-xxx
	External	413A-00D-XX-Xxxx-xxx	423A-00D-XX-Xxxx-xxx	453A-00D-XX-Xxxx-xxx	463A-00D-XX-Xxxx-xxx	473A-00D-XX-Xxxx-xxx
<b>G1/8"</b>	Internal	413A-CAA-XX-Xxxx-xxx	423A-CAA-XX-Xxxx-xxx	453A-CAA-XX-Xxxx-xxx	463A-CAA-XX-Xxxx-xxx	473A-CAA-XX-Xxxx-xxx
<b>G1/4"</b>	Internal	413A-DAA-XX-Xxxx-xxx	423A-DAA-XX-Xxxx-xxx	453A-DAA-XX-Xxxx-xxx	463A-DAA-XX-Xxxx-xxx	473A-DAA-XX-Xxxx-xxx
<b>G1/8"</b>	External	413A-CAD-XX-Xxxx-xxx	423A-CAD-XX-Xxxx-xxx	453A-CAD-XX-Xxxx-xxx	463A-CAD-XX-Xxxx-xxx	473A-CAD-XX-Xxxx-xxx
<b>G1/4"</b>		413A-DAD-XX-Xxxx-xxx	423A-DAD-XX-Xxxx-xxx	453A-DAD-XX-Xxxx-xxx	463A-DAD-XX-Xxxx-xxx	473A-DAD-XX-Xxxx-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
<b>Valve only</b>	Internal	433A-00A-XX-Xxxx-xxx	443A-00A-XX-Xxxx-xxx
	External	433A-00D-XX-Xxxx-xxx	443A-00D-XX-Xxxx-xxx
<b>G1/8"</b>	Internal	433A-CAA-XX-Xxxx-xxx	443A-CAA-XX-Xxxx-xxx
<b>G1/4"</b>	Internal	433A-DAA-XX-Xxxx-xxx	443A-DAA-XX-Xxxx-xxx
<b>G1/8"</b>	External	433A-CAD-XX-Xxxx-xxx	443A-CAD-XX-Xxxx-xxx
<b>G1/4"</b>		433A-DAD-XX-Xxxx-xxx	443A-DAD-XX-Xxxx-xxx

#### SOLENOID OPERATOR >

### DM-D XXX-XXX\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>JB</b> Rectangular connector
<b>FB</b> 24 V~/1,8W			<b>JD</b> Rectangular connector with light
<b>DA</b> 24 V~/5,4W			<b>BA</b> Flying leads
<b>DF</b> 24 V~/12,7W			

#### SOLENOID OPERATOR >

### GM-G XXX-XXX\*\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>DC</b> 24V~/1,8W	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DD</b> 24V~/2,5W	<b>B</b> 60 cm	<b>2</b> Locking	<b>BT</b> Flying leads with light
<b>DF</b> 24V~/4,0W	<b>C</b> 90 cm		<b>KA</b> Mini connector
			<b>KT</b> Mini connector with light

\* Other options available, see page 385.

\*\* Other options available, see page 389.

Note : For 400 Series exhaust ports are always 1/8"

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ISO 3

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot – 2 pos. : 1,3 to 8 bar (with memory spring: 2 to 8 bar) 3 pos.: 2,3 to 8 bar External pilot : vacuum to 8 bar
Pilot pressure :	2 position: 1,3 to 8 bar (with memory spring: 2 to 8 bar) 3 position: 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,2 mm
Flow (at 6 bar, ΔP=1bar) :	1000 NI/min (Cv 1.0)
Coil :	Epoxy encapsulated – class A wire – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (GM pilot) – IP65 (DM pilot) (Electrical connection)
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 110V~/50Hz Energize : 8-12 ms De-energize : 7-11 ms

Options :

- NPTF threads

413A-CAA-XX-Xxxx-xxx

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

Base only :

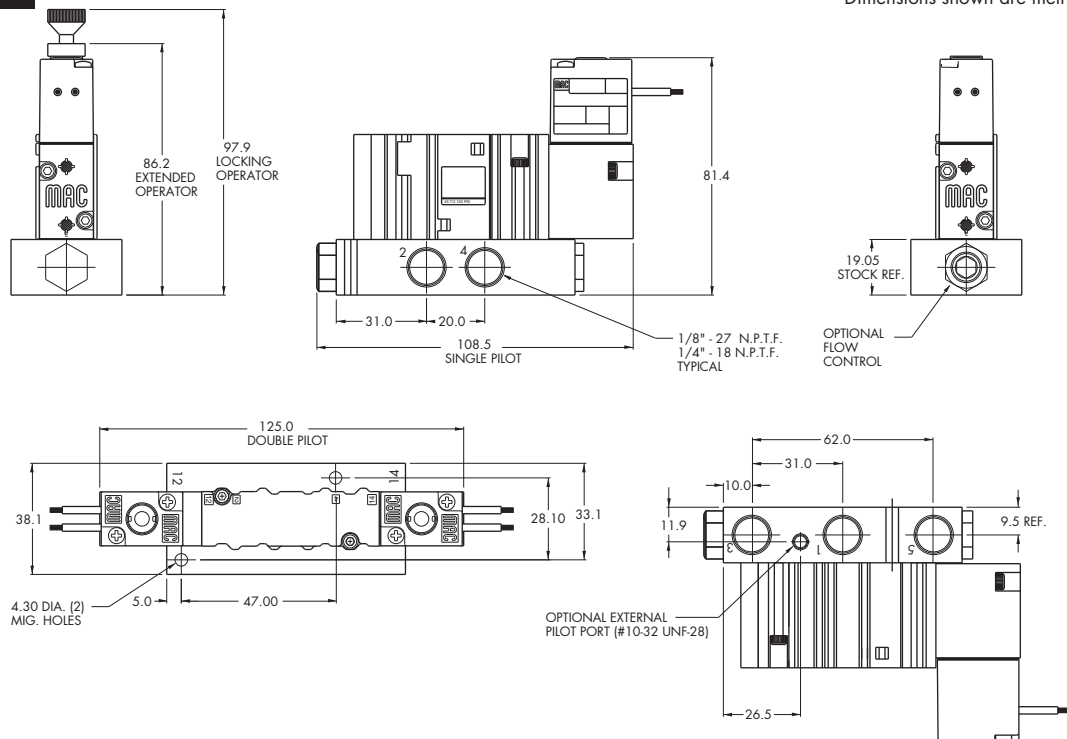
400A-XXX (i.e. 400A-CAA)

Spare parts :

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

**DIMENSIONS**

Dimensions shown are metric (mm)

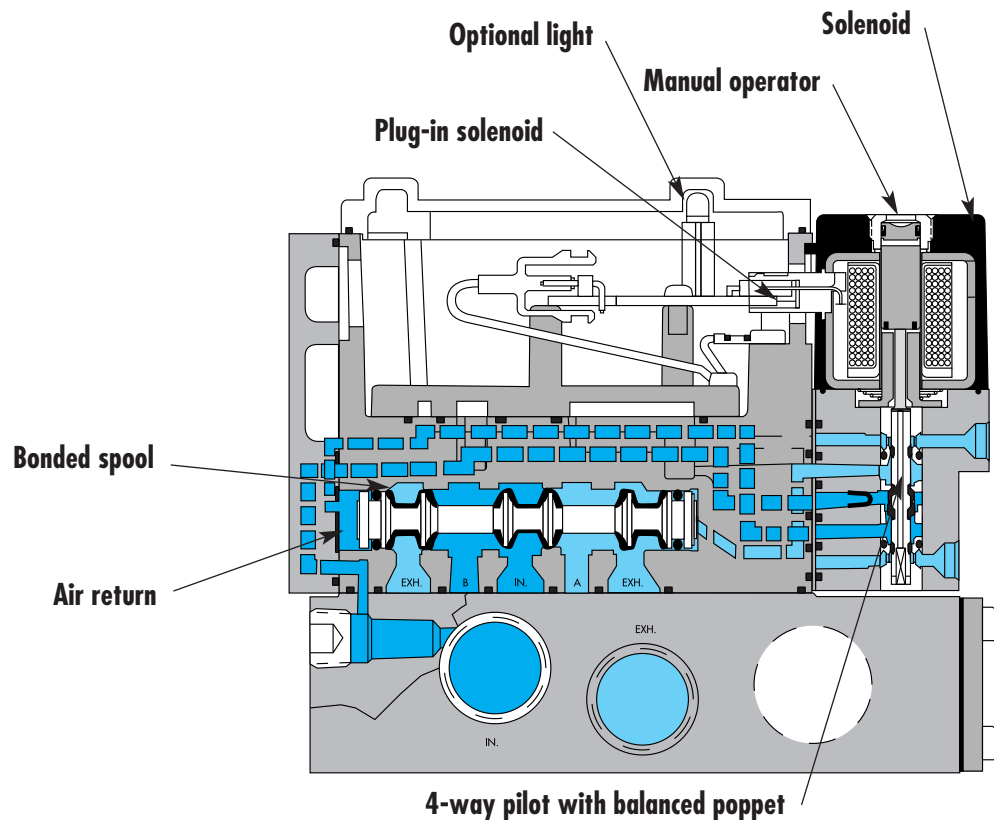


Individual mounting

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

Manifold mounting

Manifold base non "plug-in"	Manifold base "plug-in"
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**SERIES FEATURES**

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

Series

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ISO 01

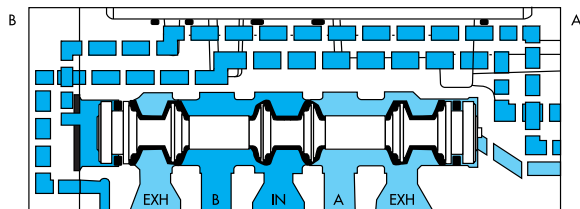
ISO 02

ISO 1

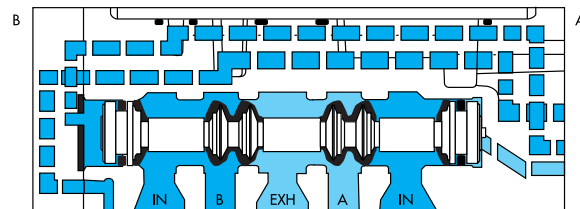
ISO 2

ISO 3

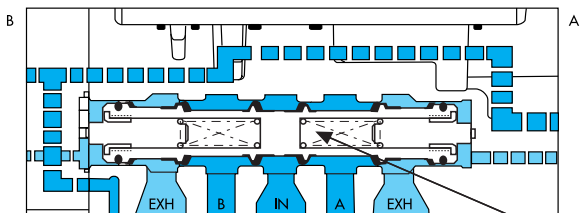
**SPOOL CONFIGURATIONS**



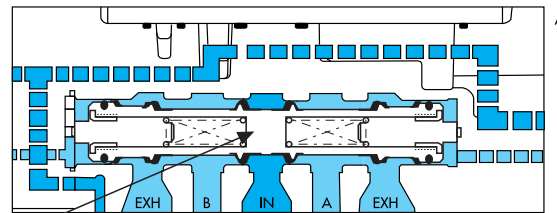
2 POSITION SINGLE PRESSURE  
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE  
SHOWN WITH "B" OPERATOR ENERGIZED

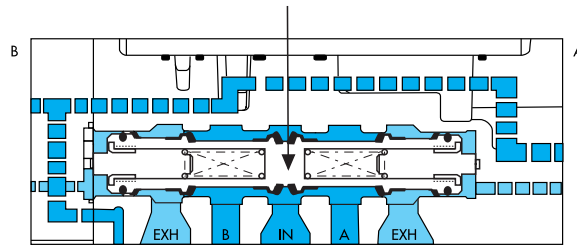


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

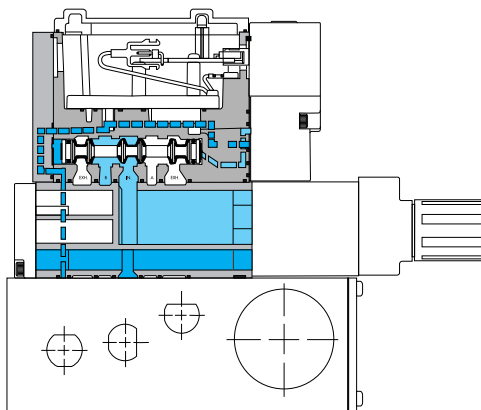


3 POSITION SINGLE PRESSURE, PRESSURE CENTER

**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.

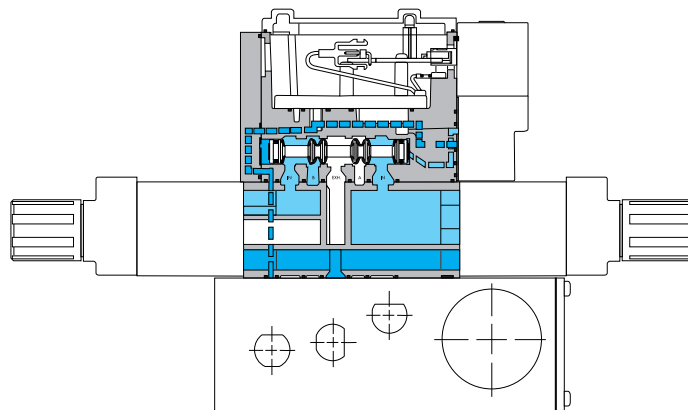


**MANIFOLD WITH REGULATOR - SINGLE PRESSURE**

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

**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**





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/8" - G1/4" - G3/8"</b>	<b>1200 NI/min</b>	Subbase 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.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre	5/3 Pressure centre
<b>Valve less base</b>						
<b>G1/8"</b>		92B-ABA-000-DM-Dxxx-xxx	92B-BBA-000-DM-Dxxx-xxx	92B-EBA-000-DM-Dxxx-xxx	92B-FBA-000-DM-Dxxx-xxx	92B-GBA-000-DM-Dxxx-xxx
<b>G1/4"</b>	Internal	92B-ABA-DAG-DM-Dxxx-xxx	92B-BBA-DAG-DM-Dxxx-xxx	92B-EBA-DAG-DM-Dxxx-xxx	92B-FBA-DAG-DM-Dxxx-xxx	92B-GBA-DAG-DM-Dxxx-xxx
<b>G3/8"</b>		92B-ABA-EAG-DM-Dxxx-xxx	92B-BBA-EAG-DM-Dxxx-xxx	92B-EBA-EAG-DM-Dxxx-xxx	92B-FBA-EAG-DM-Dxxx-xxx	92B-GBA-EAG-DM-Dxxx-xxx
<b>G1/8"</b>	External	92B-ABA-FAG-DM-Dxxx-xxx	92B-BBA-FAG-DM-Dxxx-xxx	92B-EBA-FAG-DM-Dxxx-xxx	92B-FBA-FAG-DM-Dxxx-xxx	92B-GBA-FAG-DM-Dxxx-xxx
<b>G1/4"</b>		92B-ABA-DAH-DM-Dxxx-xxx	92B-BBA-DAH-DM-Dxxx-xxx	92B-EBA-DAH-DM-Dxxx-xxx	92B-FBA-DAH-DM-Dxxx-xxx	92B-GBA-DAH-DM-Dxxx-xxx
<b>G3/8"</b>		92B-ABA-EAH-DM-Dxxx-xxx	92B-BBA-EAH-DM-Dxxx-xxx	92B-EBA-EAH-DM-Dxxx-xxx	92B-FBA-EAH-DM-Dxxx-xxx	92B-GBA-EAH-DM-Dxxx-xxx
<b>G3/8"</b>		92B-ABA-FAH-DM-Dxxx-xxx	92B-BBA-FAH-DM-Dxxx-xxx	92B-EBA-FAH-DM-Dxxx-xxx	92B-FBA-FAH-DM-Dxxx-xxx	92B-GBA-FAH-DM-Dxxx-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
<b>Valve less base</b>			
<b>G1/8"</b>		92B-CBA-000-DM-Dxxx-xxx	92B-DBA-000-DM-Dxxx-xxx
<b>G1/4"</b>	Internal	92B-CBA-DAG-DM-Dxxx-xxx	92B-DBA-DAG-DM-Dxxx-xxx
<b>G3/8"</b>		92B-CBA-EAG-DM-Dxxx-xxx	92B-DBA-EAG-DM-Dxxx-xxx
<b>G1/8"</b>	External	92B-CBA-FAG-DM-Dxxx-xxx	92B-DBA-FAG-DM-Dxxx-xxx
<b>G1/4"</b>		92B-CBA-DAH-DM-Dxxx-xxx	92B-DBA-DAH-DM-Dxxx-xxx
<b>G3/8"</b>		92B-CBA-EAH-DM-Dxxx-xxx	92B-DBA-EAH-DM-Dxxx-xxx
<b>G3/8"</b>		92B-CBA-FAH-DM-Dxxx-xxx	92B-DBA-FAH-DM-Dxxx-xxx

#### SOLENOID OPERATOR >

DM-D **XXX-XXX**\*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
JA	110 V~/50Hz	A	45 cm (Flying leads)	1	Non-locking	BM	Flying leads
JB	220 V~/50Hz	B	60 cm (Flying leads)	2	Locking	BN	Flying leads with diode
JC	24 V~/50Hz	J	Connector			BP	Flying leads with M.O.V.
FB	24 V~/1,8W					BG	Flying leads with ground
DA	24 V~/5,4W					JB	Rectangular connector
DF	24 V~/12,7W					JD	Rectangular connector with light
						KA	Square connector

\* Other options available, see page 385.  
Other options available for the 92 series valves, see page 201.

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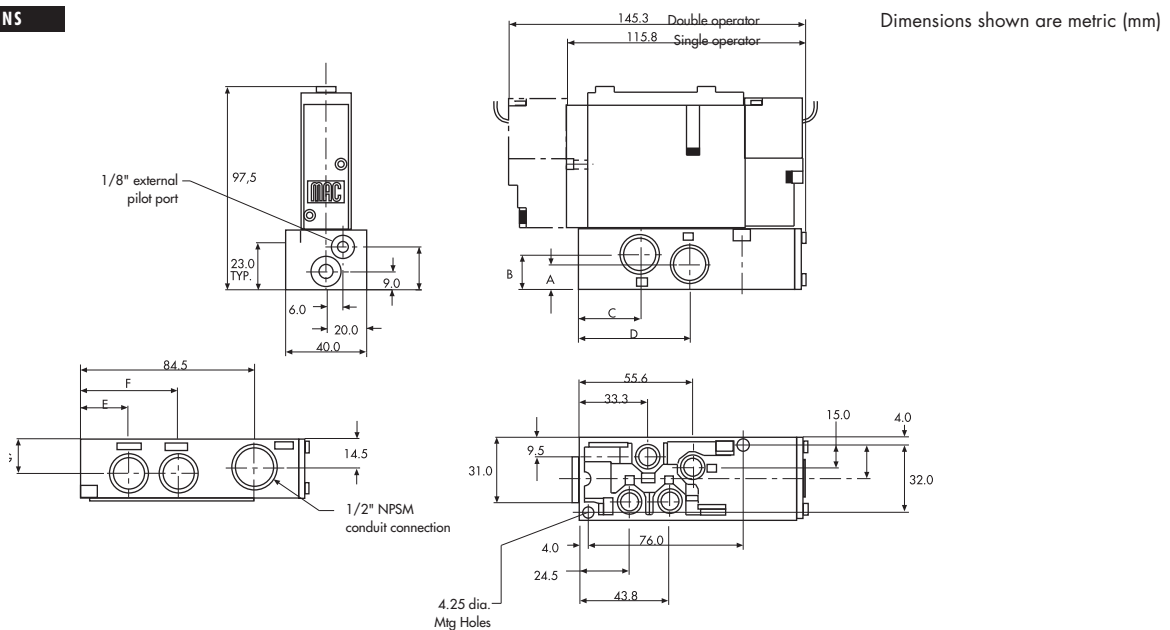
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 1,3 to 8 bar	3 position : 2,3 to 8 bar	
	External pilot : vacuum to 8 bar	3 position : 2,3 to 8 bar	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
Filtration :	40 µ		
Temperature range :	-18°C to +50°C		
Orifice :	6,2 mm		
Flow (at 6 bar, ΔP=1bar) :	1/8": 1000NI/min (Cv 1.0) – 1/4": 1100 NI/min (Cv 1.1) – 3/8": 1200 NI/min (Cv 1.2)		
Coil :	Epoxy encapsulated – class A – 100%ED (specify mod 0449)		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	IP65 (electrical connection)		
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
	120V~/60Hz	Energize : 7-13 ms	De-energize : 12-20 ms

Options : • NPTF thread. • 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**



DIM.	A	B	C	D	E	F	G
<b>61/8"</b>	12.5	18.0	31.0	54.0	23.5	46.5	18.0
<b>61/4"</b>	12.5	18.0	31.0	54.0	23.5	46.5	18.0
<b>63/8"</b>	12.0	17.0	30.0	54.0	23.5	47.5	17.0

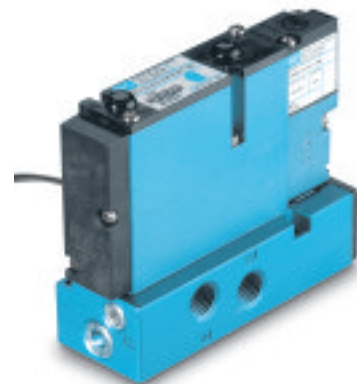


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/8" - G1/4" - G3/8"</b>	<b>1200 NI/min</b>	Subbase "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 centre	5/3 Open centre	5/3 Pressure centre
<b>Valve less base</b>		92B-AAA-000-DM-DxxP-xxx	92B-BAA-000-DM-DxxP-xxx	92B-EAA-000-DM-DxxP-xxx	92B-FAA-000-DM-DxxP-xxx	92B-GAA-000-DM-DxxP-xxx
<b>G1/8"</b>		92B-AAA-DAA-DM-DxxP-xxx	92B-BAA-DAA-DM-DxxP-xxx	92B-EAA-DAA-DM-DxxP-xxx	92B-FAA-DAA-DM-DxxP-xxx	92B-GAA-DAA-DM-DxxP-xxx
<b>G1/4"</b>	Internal	92B-AAA-EAA-DM-DxxP-xxx	92B-BAA-EAA-DM-DxxP-xxx	92B-EAA-EAA-DM-DxxP-xxx	92B-FAA-EAA-DM-DxxP-xxx	92B-GAA-EAA-DM-DxxP-xxx
<b>G3/8"</b>		92B-AAA-FAA-DM-DxxP-xxx	92B-BAA-FAA-DM-DxxP-xxx	92B-EAA-FAA-DM-DxxP-xxx	92B-FAA-FAA-DM-DxxP-xxx	92B-GAA-FAA-DM-DxxP-xxx
<b>G1/8"</b>		92B-AAA-DAD-DM-DxxP-xxx	92B-BAA-DAD-DM-DxxP-xxx	92B-EAA-DAD-DM-DxxP-xxx	92B-FAA-DAD-DM-DxxP-xxx	92B-GAA-DAD-DM-DxxP-xxx
<b>G1/4"</b>	External	92B-AAA-EAD-DM-DxxP-xxx	92B-BAA-EAD-DM-DxxP-xxx	92B-EAA-EAD-DM-DxxP-xxx	92B-FAA-EAD-DM-DxxP-xxx	92B-GAA-EAD-DM-DxxP-xxx
<b>G3/8"</b>		92B-AAA-FAD-DM-DxxP-xxx	92B-BAA-FAD-DM-DxxP-xxx	92B-EAA-FAD-DM-DxxP-xxx	92B-FAA-FAD-DM-DxxP-xxx	92B-GAA-FAD-DM-DxxP-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
<b>Valve less base</b>		92B-CAA-000-DM-DxxP-xxx	92B-DAA-000-DM-DxxP-xxx
<b>G1/8"</b>		92B-CAA-DAA-DM-DxxP-xxx	92B-DAA-DAA-DM-DxxP-xxx
<b>G1/4"</b>	Internal	92B-CAA-EAA-DM-DxxP-xxx	92B-DAA-EAA-DM-DxxP-xxx
<b>G3/8"</b>		92B-CAA-FAA-DM-DxxP-xxx	92B-DAA-FAA-DM-DxxP-xxx
<b>G1/8"</b>		92B-CAA-DAD-DM-DxxP-xxx	92B-DAA-DAD-DM-DxxP-xxx
<b>G1/4"</b>	External	92B-CAA-EAD-DM-DxxP-xxx	92B-DAA-EAD-DM-DxxP-xxx
<b>G3/8"</b>		92B-CAA-FAD-DM-DxxP-xxx	92B-DAA-FAD-DM-DxxP-xxx

#### SOLENOID OPERATOR ▶

DM-D **XX** P-**XXX**\*

Above models are shown with side ports.

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V~/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V~/5,4W		<b>DJ</b> Plug-in with M.O.V. & ground
<b>DF</b> 24 V~/12,7W		<b>DH</b> Plug-in with diode & ground

\* Other options available, see page 385.  
 Note: Ground required for 30 Volts or higher.  
 Other options available for the 92 series valves, see page 202.

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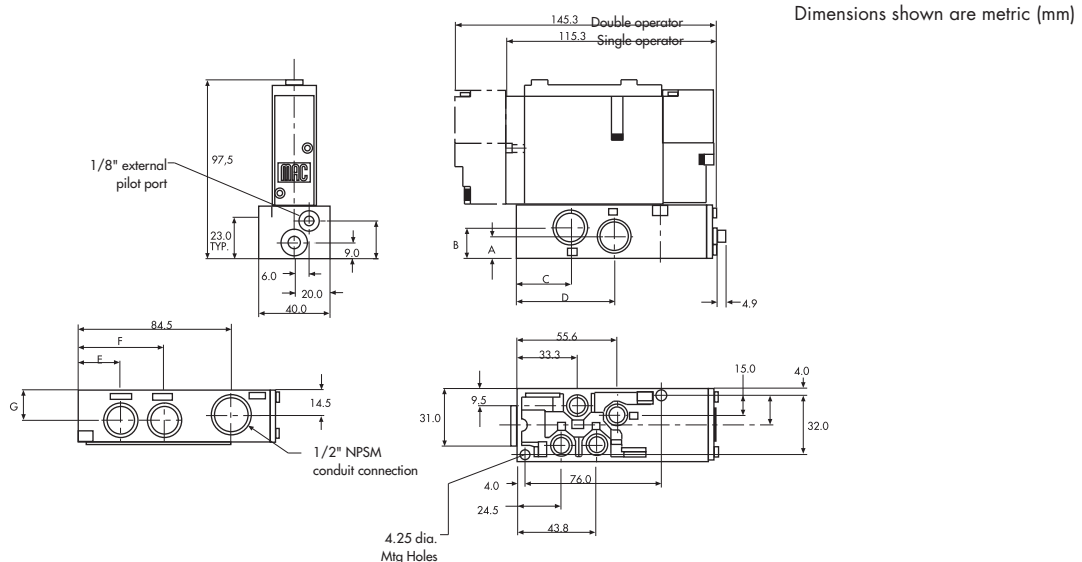
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 1,3 to 8 bar      3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar      3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,2 mm
Flow (at 6 bar, ΔP=1bar) :	1/8": 1000NI/min (Cv 1.0) – 1/4": 1100 NI/min (Cv 1.1) – 3/8": 1200 NI/min (Cv 1.2)
Coil :	Epoxy encapsulated – class A – 100%ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
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 120V~/50Hz      Energize : 7-13 ms      De-energize : 12-20 ms

Options : • NPTF 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**



DIM.	A	B	C	D	E	F	G
<b>G1/8"</b>	12.5	18.0	31.0	54.0	23.5	46.5	18.0
<b>G1/4"</b>	12.5	18.0	31.0	54.0	23.5	46.5	18.0
<b>G3/8"</b>	12.0	17.0	30.0	54.0	23.5	47.5	17.0



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8"</b>	<b>1200 NI/min</b>	Manifold 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 centre	5/3 Open centre	5/3 Pressure centre
<b>Valve less base</b>		92B-ABA-000-DM-Dxxx-xxx	92B-BBA-000-DM-Dxxx-xxx	92B-EBA-000-DM-Dxxx-xxx	92B-FBA-000-DM-Dxxx-xxx	92B-GBA-000-DM-Dxxx-xxx
<b>G1/4"</b>	Internal	92B-ABA-EJG-DM-Dxxx-xxx	92B-BBA-EJG-DM-Dxxx-xxx	92B-EBA-EJG-DM-Dxxx-xxx	92B-FBA-EJG-DM-Dxxx-xxx	92B-GBA-EJG-DM-Dxxx-xxx
<b>G3/8"</b>		92B-ABA-FJG-DM-Dxxx-xxx	92B-BBA-FJG-DM-Dxxx-xxx	92B-EBA-FJG-DM-Dxxx-xxx	92B-FBA-FJG-DM-Dxxx-xxx	92B-GBA-FJG-DM-Dxxx-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
<b>Valve less base</b>		92B-CBA-000-DM-Dxxx-xxx	92B-DBA-000-DM-Dxxx-xxx
<b>G1/4"</b>	Internal	92B-CBA-EJG-DM-Dxxx-xxx	92B-DBA-EJG-DM-Dxxx-xxx
<b>G3/8"</b>		92B-CBA-FJG-DM-Dxxx-xxx	92B-DBA-FJG-DM-Dxxx-xxx

Above models are shown with side ports.

#### SOLENOID OPERATOR >

DM-D **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>JB</b> 220 V~/50Hz	<b>J</b> Connector	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>JC</b> 24 V~/50Hz			<b>JB</b> Rectangular connector
<b>FB</b> 24 V= /1,8W			<b>JD</b> Rect. connector with light
<b>DA</b> 24 V= /5,4W			<b>BA</b> Flying leads
<b>DF</b> 24 V= /12,7W			<b>BK</b> Flying leads with diode

\* Other options available, see page 385.

End plate kit required (port size 3/8"): M-92004-01-01P (internal pilot)  
M-92004-02-01P (External pilot)

Inlet/exhaust Isolator disc: N-92018.

Other options available for the 92 series valves, see page 201.

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**TECHNICAL DATA**

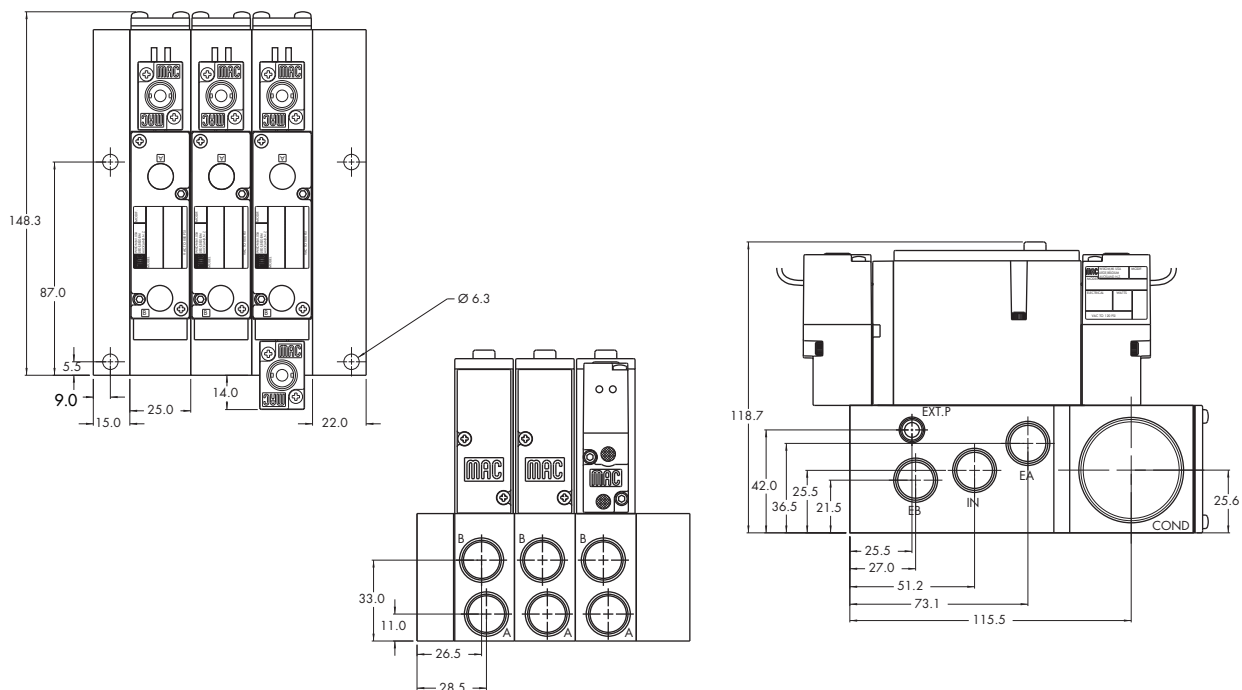
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 1,3 to 8 bar	3 position : 2,3 to 8 bar	
	External pilot : vacuum to 8 bar	3 position : 2,3 to 8 bar	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
Filtration :	40 µ		
Temperature range :	-18°C to +50°C		
Orifice :	6,2 mm		
Flow (at 6 bar, ΔP=1bar) :	1/4": 1100 NI/min (Cv1.1) – 3/8": 1200 NI/min (Cv 1.2)		
Coil :	Epoxy encapsulated – class A – 100%ED (specify mod 0449)		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	IP65 (electrical connection)		
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
	120V~/50Hz	Energize : 7-13 ms	De-energize : 12-20 ms

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

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

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8"</b>	<b>1200 NI/min</b>	Manifold 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 centre	5/3 Open centre	5/3 Pressure centre
<b>Valve less base</b>		92B-AAA-000-DM-DxxP-xxx	92B-BAA-000-DM-DxxP-xxx	92B-EAA-000-DM-DxxP-xxx	92B-FAA-000-DM-DxxP-xxx	92B-GAA-000-DM-DxxP-xxx
<b>G1/4"</b>	Internal	92B-AAA-EJA-DM-DxxP-xxx	92B-BAA-EJA-DM-DxxP-xxx	92B-EAA-EJA-DM-DxxP-xxx	92B-FAA-EJA-DM-DxxP-xxx	92B-GAA-EJA-DM-DxxP-xxx
<b>G3/8"</b>		92B-AAA-FJA-DM-DxxP-xxx	92B-BAA-FJA-DM-DxxP-xxx	92B-EAA-FJA-DM-DxxP-xxx	92B-FAA-FJA-DM-DxxP-xxx	92B-GAA-FJA-DM-DxxP-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
<b>Valve less base</b>		92B-CAA-000-DM-DxxP-xxx	92B-DAA-000-DM-DxxP-xxx
<b>G1/4"</b>	Internal	92B-CAA-EJA-DM-DxxP-xxx	92B-DAA-EJA-DM-DxxP-xxx
<b>G3/8"</b>		92B-CAA-FJA-DM-DxxP-xxx	92B-DAA-FJA-DM-DxxP-xxx

#### SOLENOID OPERATOR ▶

DM-D **XX** P-**XXX**\*

Above models are shown with side ports and no lights.

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V=/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V=/5,4W		<b>DJ</b> Plug-in with M.O.V. & ground
<b>DF</b> 24 V=/12,7W		<b>DH</b> Plug-in with diode & ground

\* Other options available, see page 385.  
 Note: Ground required for 30 Volts or higher.  
 End plate required (port size 3/8"): M-92004-01-01P (internal pilot)  
 M-92004-02-01P (external pilot)  
 Inlet / exhaust isolator disc: N-92018.  
 Other options available for the 92 series valves, see page 202.

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**TECHNICAL DATA**

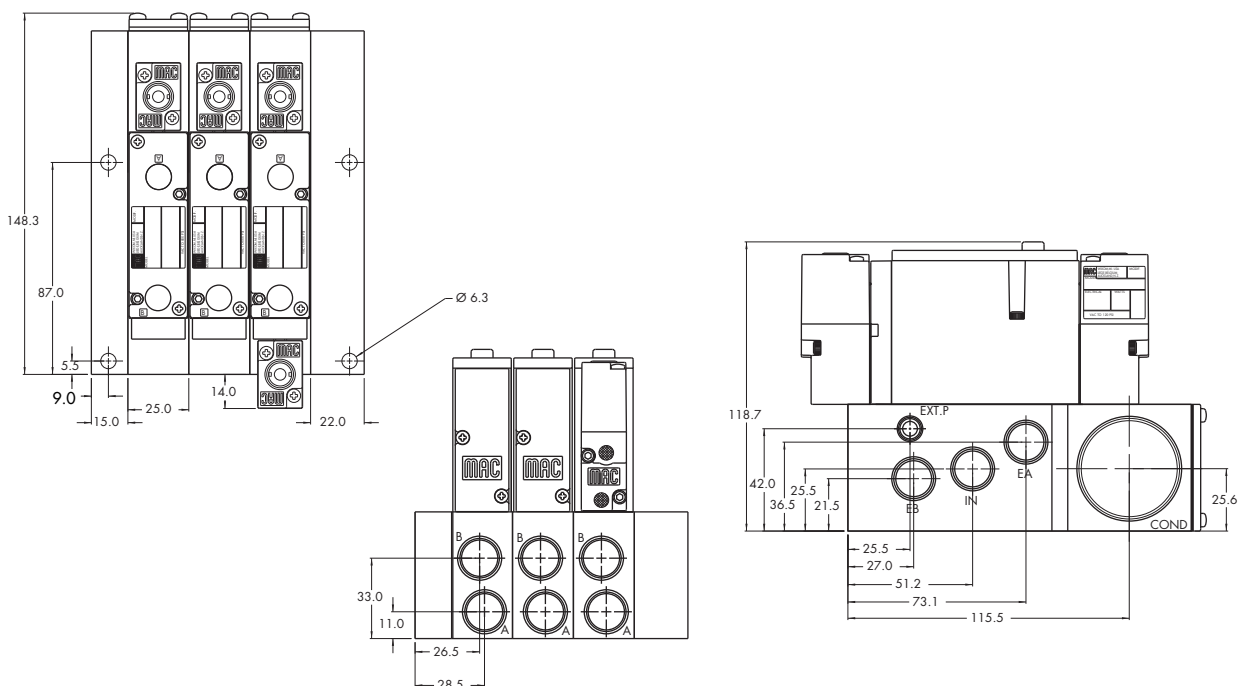
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 1,3 to 8 bar      3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar      3 position : 2,3 to 8 bar
Pilot pressure:	1,3 to 8 bar      3 positions 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6,2 mm
Flow (at 6 bar, ΔP=1bar) :	1/4": 1100 NI/min (Cv1.1) – 3/8": 1200 NI/min (Cv 1.2)
Coil :	Epoxy encapsulated – class A – 100%ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
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 120V~/50Hz      Energize : 7-13 ms      De-energize : 12-20 ms

Options : • NPTF 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

**DIMENSIONS**

Dimensions shown are metric (mm)







# Direct solenoid and solenoid pilot operated valves

## OPTIONS FOR NON PLUG-IN VALVES

Valve function

92B-**HXX**-XXX-XX-D**xxx-xxx**

- H** for 3 position dual pressure, pressure centre\*
- J** for 3 position dual pressure, closed centre\*
- K** for 3 position dual pressure, open centre\*
- L** for single operator, single pressure with memory spring
- N** for single operator, dual pressure with memory spring

Pilot exhaust

92B-**XB**X-XXX-XX-D**xxx-xxx**

- B** standard pilot exhaust
- D** pilot exhaust to main valve exhaust\*\*

Port configuration :

Individual sub-base

92B-XXX-**XAX**-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-**XJX**-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-DAG) - Individual base

92B-000-XXX (i.e. 92B-000-EJG) - Manifold base

\* Requires sandwich regulator.

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

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# Direct solenoid and solenoid pilot operated valves

## OPTIONS FOR PLUG-IN VALVES

Valve function

92B-**HXX**-XXX-XX-D**xxP**-xxx

- H** for 3 position dual pressure, pressure centre\*
- J** for 3 position dual pressure, closed centre\*
- K** for 3 position dual pressure, open centre\*
- L** for single operator, single pressure with memory spring
- N** for single operator, dual pressure with memory spring\*

Pilot exhaust

92B-**XAX**-XXX-XX-D**xxP**-xxx

- A** standard pilot exhaust
- C** pilot exhaust to main valve exhaust\*\*

Body electrical

92B-**XXA**-XXX-XX-D**xxP**-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-**XAX**-XX-D**xxP**-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-**XJX**-XX-D**xxP**-xxx

- J** side ports
- K** bottom ports

Base/manifold int./ext. pilot

92B-XXX-**XXA**-XX-D**xxP**-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 :

92B-XXX-XXX-**DM**-D**xxP**-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**xxP**-xxx

- P** option - 30 cm leads
- 1** option - 45 cm leads
- 2** option - 60 cm leads
- 3** option - 90 cm leads
- 4** option - 120 cm leads
- 5** option - 180 cm leads

Base only :

92B-000-XXX (i.e. 92B-000-DAA) - Individual base  
(Note: bases are wired for double solenoid valves)

92B-000-XXX (i.e. 92B-000-EJA) - Manifold base

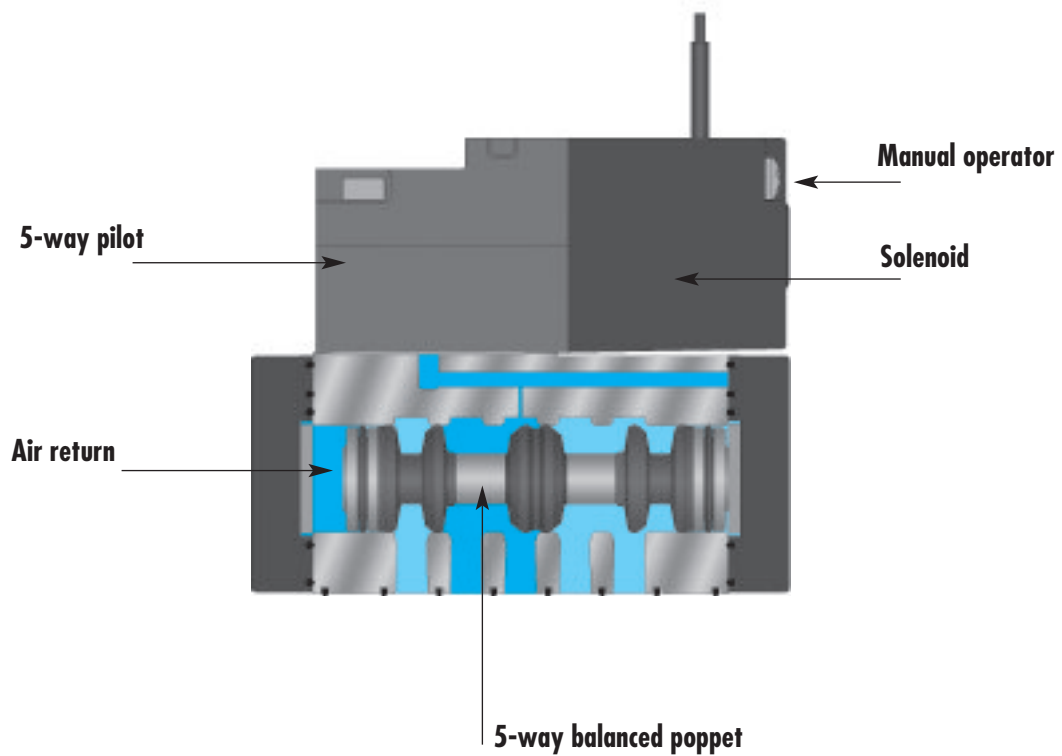
\* Requires sandwich regulator.

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

Individual Mounting

Inline Single operator	Inline Double operator
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**SERIES FEATURES**

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

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2</b>	<b>G1/4" - G3/8"</b>	<b>1500 NI/min</b>	Individual base Non plug-in Single operator	

### 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. 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 pressure	Dual pressure
<b>G1/4"</b>	Internal	83A-AAC-XX-XXXX-XXX	* 83A-CBC-XX-XXXX-XXX
	External 14 End	83A-ADC-XX-XXXX-XXX	83A-CDC-XX-XXXX-XXX
	External 12 End	83A-AEC-XX-XXXX-XXX	83A-CEC-XX-XXXX-XXX
<b>G3/8"</b>	Internal	83A-AAD-XX-XXXX-XXX	* 83A-CBD-XX-XXXX-XXX
	External 14 End	83A-ADD-XX-XXXX-XXX	83A-CDD-XX-XXXX-XXX
	External 12 End	83A-AED-XX-XXXX-XXX	83A-CED-XX-XXXX-XXX

\* Pilot supply from port #5

### SOLENOID OPERATOR >

#### DM-D XXX-XXX\*\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
JA 110V~/50Hz (2.9W)	A 45 cm	1 Recessed non locking	BA Flying leads
FB 24V~/1.8W	B 60 cm	2 Recessed locking	KA Square connector
DA 24V~/5.4W	J* 15 cm		KD Square connector with light
			JB Rectangular connector
			JD Rectangular connector with light

\* For use with "J" & "K" type connectors

\*\* Other options available, see page 385.

#### GM-G XXX-XXX\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DC 24V~/1.8W	A 45 cm	1 Recessed non locking	BA Flying leads
DD 24V~/2.5W	B 60 cm	2 Recessed locking	KA Solenoid plug-in wire assy
DF 24V~/4.0W	C 90 cm		GA MAC JAC solenoid plug-in wire assembly

\* Other options available, see page 389.

#### RM-R XXX-XXX\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DC 24V~/1.8W	A 45 cm	1 Recessed non locking	BA Flying leads
DD 24V~/2.5W	B 60 cm	3 Extended non locking	RA Mini JAC solenoid plug-in
DF 24V~/4.0W	C 90 cm		RB Mini JAC solenoid plug-in with LED
DJ 12V~/1.8W			TA JST solenoid plug-in

\* Other options available, see page 399.

### OPTIONS

Spool type: **83-XX-XX-XXXX-XXX**

- M** Single operator – single pressure with memory spring
- N** Single operator – dual pressure with memory spring

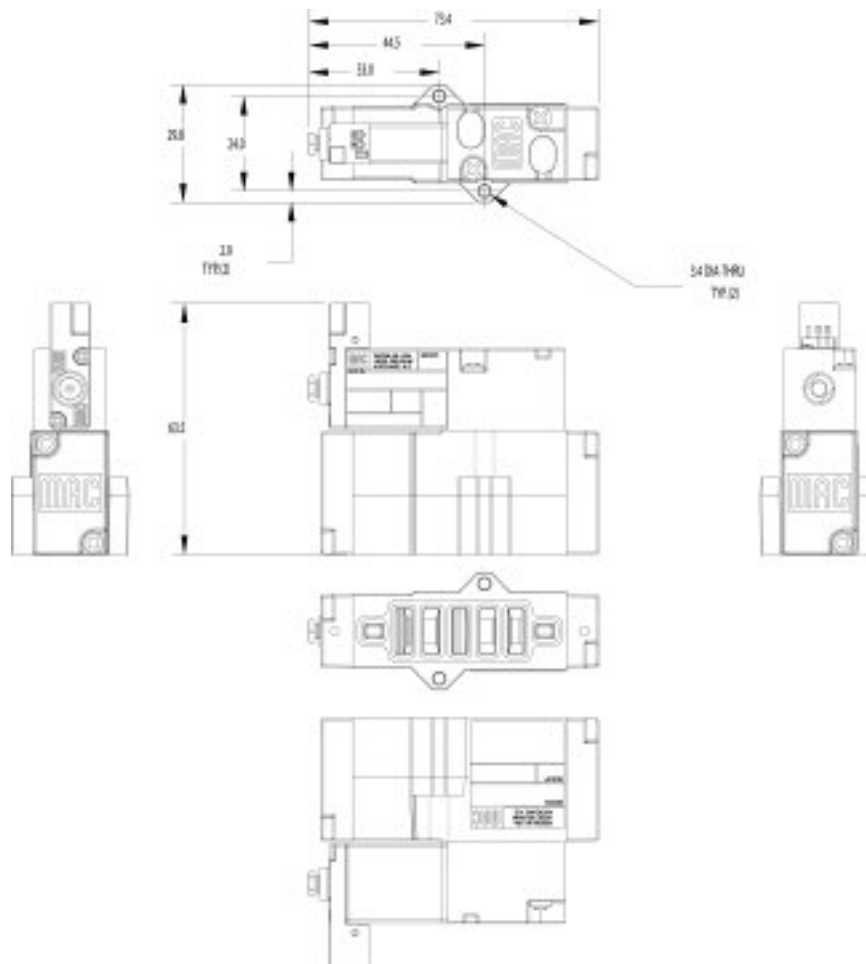
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 8 bar External Pilot: Vacuum to 8 bar
Pilot signal:	1,3 to 8 bar 2,3 to 8 bar for memory spring
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Flow :	1500 NI/min (Cv 1.5)
Coil :	Epoxy encapsulated - Class A wires - 100% ED
Voltage range :	-15% à +10%
Power :	5.4 W - 4.0 W - 2.5 W - 1.8 W
Option :	• NPTF thread

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8"</b>	<b>1500 NI/min</b>	Individual base Non plug-in Double operator	

### 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. 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 Double operator	5/3 Closed center	5/3 open center
<b>G1/4"</b>	Internal	83A-BAC-xx-xxxx-xxx	83A-EAC-xx-xxxx-xxx	83A-FAC-xx-xxxx-xxx
	External 14 End	83A-BDC-xx-xxxx-xxx	83A-EDC-xx-xxxx-xxx	83A-FDC-xx-xxxx-xxx
	External 12 End	83A-BEC-xx-xxxx-xxx	83A-EEC-xx-xxxx-xxx	83A-FEC-xx-xxxx-xxx
<b>G3/8"</b>	Internal	83A-BAD-xx-xxxx-xxx	83A-EAD-xx-xxxx-xxx	83A-FAD-xx-xxxx-xxx
	External 14 End	83A-BDD-xx-xxxx-xxx	83A-EDD-xx-xxxx-xxx	83A-FDD-xx-xxxx-xxx
	External 12 End	83A-BED-xx-xxxx-xxx	83A-EED-xx-xxxx-xxx	83A-FED-xx-xxxx-xxx

#### SINGLE PRESSURE MODELS

Port size	Pilot air	5/2 Double operator	5/3 Closed center
<b>G1/4"</b>	Internal from Port 5	83A-DBC-xx-xxxx-xxx	83A-GBC-xx-xxxx-xxx
	External 14 End	83A-DDC-xx-xxxx-xxx	83A-GDC-xx-xxxx-xxx
	External 12 End	83A-DEC-xx-xxxx-xxx	83A-GEC-xx-xxxx-xxx
<b>G3/8"</b>	Internal from Port 5	83A-DBD-xx-xxxx-xxx	83A-GBD-xx-xxxx-xxx
	External 14 End	83A-DDD-xx-xxxx-xxx	83A-GDD-xx-xxxx-xxx
	External 12 End	83A-DED-xx-xxxx-xxx	83A-GED-xx-xxxx-xxx

#### SOLENOID OPERATOR >

### TM-D XXX-XXX\*\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
AA 110V~/50Hz	A 45 cm	1 Recessed non locking	BA Flying leads
FB 24 V~/1.8W	B 60 cm	2 Recessed locking	KA Square connector
DA 24 V~/5.4W	J* 15 cm		KD Square connector with light
			JB Rectangular connector
			JD Rectangular connector with light

\*\* Other options available, see page 403.

\* For use with "J" & "K" type connectors

### RM-R XXX-XXX\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
DB 24V~/1.0W	A 45 cm	0 No operator	BA Flying leads
DC 24V~/1.8W	B 60 cm	1 Recessed non locking	RA Mini JAC solenoid plug-in
DH 12V~/1.0W	C 90 cm	3 Extended non locking	RB Mini JAC solenoid plug-in with LED
DJ 12V~/1.8W			TA JST solenoid plug-in
			TB JST solenoid plug-in with LED

\* Other options available, see page 399.

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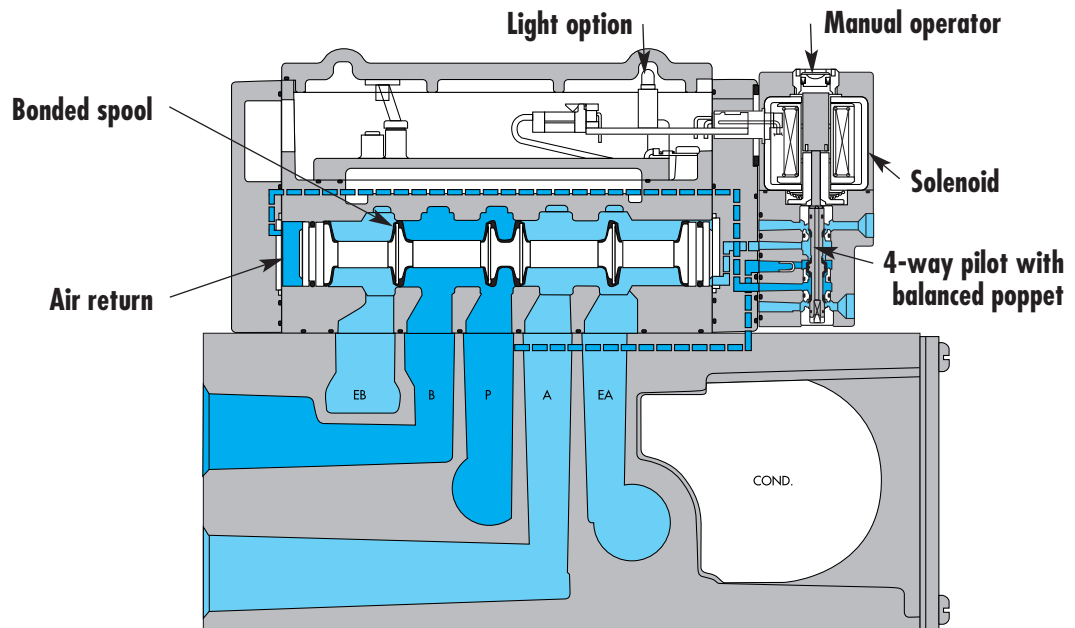


Individual mounting

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

Manifold mounting

Manifold base non "plug-in"	Manifold base "plug-in"
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**SERIES FEATURES**

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

Series

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**93**

ISO 01

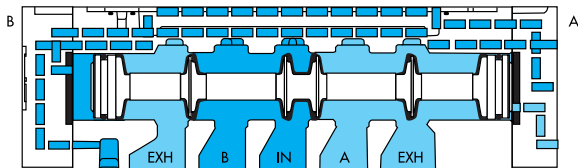
ISO 02

ISO 1

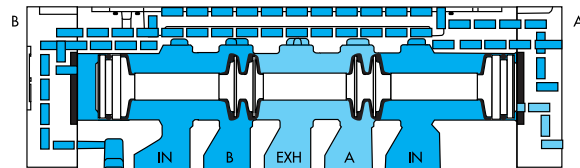
ISO 2

ISO 3

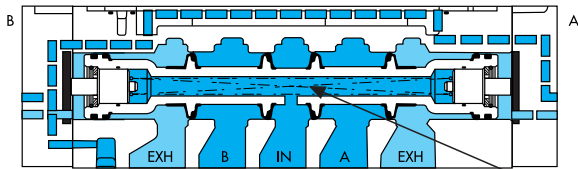
**SPOOL CONFIGURATIONS**



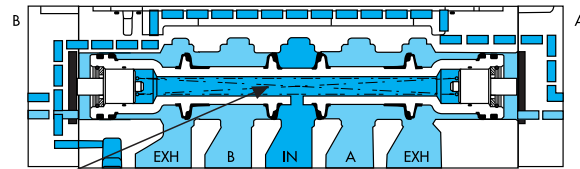
2 POSITION SINGLE PRESSURE  
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE  
SHOWN WITH "B" OPERATOR ENERGIZED

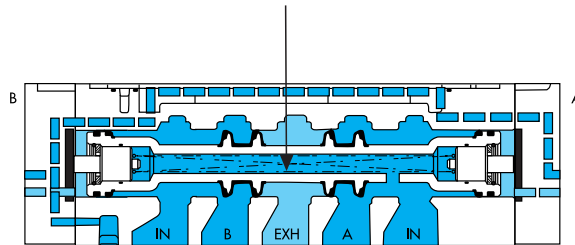


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

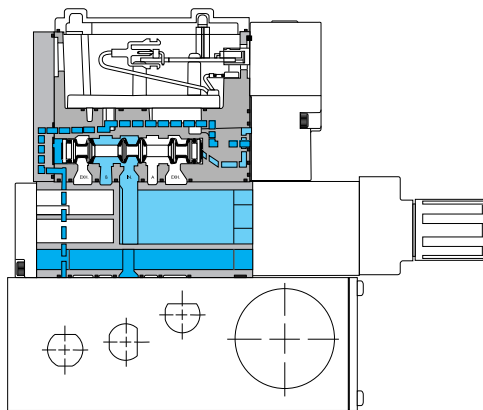


3 POSITION DUAL PRESSURE, PRESSURE CENTER

**REGULATOR CONFIGURATIONS**

**SINGLE REGULATOR - SINGLE PRESSURE**

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

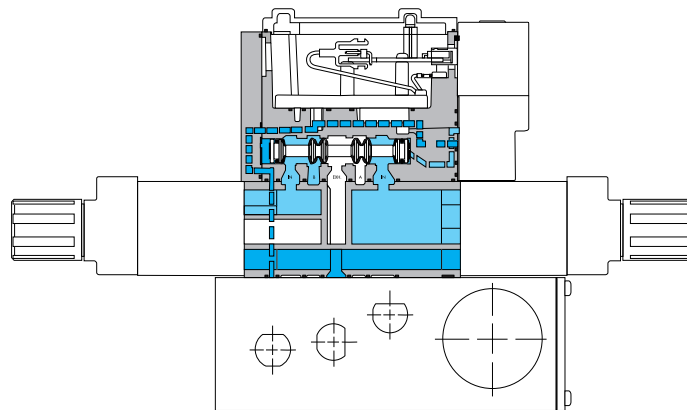


**MANIFOLD WITH REGULATOR - SINGLE PRESSURE**

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

**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**





Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3800 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

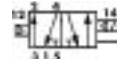

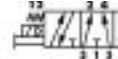
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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 centre	5/3 Open centre
					
<b>G3/8"</b>	Internal	93A-AJO-E0J-DM-Dxxx-xxx	93A-BJO-E0J-DM-Dxxx-xxx	93A-EJO-E0J-DM-Dxxx-xxx	93A-FJO-E0J-DM-Dxxx-xxx
<b>G1/2"</b>	Internal	93A-AJO-F0J-DM-Dxxx-xxx	93A-BJO-F0J-DM-Dxxx-xxx	93A-EJO-F0J-DM-Dxxx-xxx	93A-FJO-F0J-DM-Dxxx-xxx
<b>G3/8"</b>	External	93A-AJO-E0K-DM-Dxxx-xxx	93A-BJO-E0K-DM-Dxxx-xxx	93A-EJO-E0K-DM-Dxxx-xxx	93A-FJO-E0K-DM-Dxxx-xxx
<b>G1/2"</b>	External	93A-AJO-F0K-DM-Dxxx-xxx	93A-BJO-F0K-DM-Dxxx-xxx	93A-EJO-F0K-DM-Dxxx-xxx	93A-FJO-F0K-DM-Dxxx-xxx

#### DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
				
<b>G3/8"</b>	Internal	93A-CJO-E0J-DM-Dxxx-xxx	93A-DJO-E0J-DM-Dxxx-xxx	93A-HJO-E0J-DM-Dxxx-xxx
<b>G1/2"</b>	Internal	93A-CJO-F0J-DM-Dxxx-xxx	93A-DJO-F0J-DM-Dxxx-xxx	93A-HJO-F0J-DM-Dxxx-xxx
<b>G3/8"</b>	External	93A-CJO-E0K-DM-Dxxx-xxx	93A-DJO-E0K-DM-Dxxx-xxx	93A-HJO-E0K-DM-Dxxx-xxx
<b>G1/2"</b>	External	93A-CJO-F0K-DM-Dxxx-xxx	93A-DJO-F0K-DM-Dxxx-xxx	93A-HJO-F0K-DM-Dxxx-xxx

#### SOLENOID OPERATOR >

### DM-D XXX-XXX\*

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
JA	110 V~/50Hz	A	45 cm (Flying leads)	1	Non-locking	KA	Square connector
JB	220 V~/50Hz	B	60 cm (Flying leads)	2	Locking	KD	Square connector with light
JC	24 V~/50Hz	J	Connector			JB	Rectangular connector
FB	24 V=/1,8W					JD	Rectangular connector with light
DA	24 V=/5,4W					BA	Flying leads
DF	24 V=/12,7W						

\* Other options available, see page 385.

### OPTIONS

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

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

Other options available for the 93 series valves, see page 221.



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- ISO 02
- ISO 1
- ISO 2
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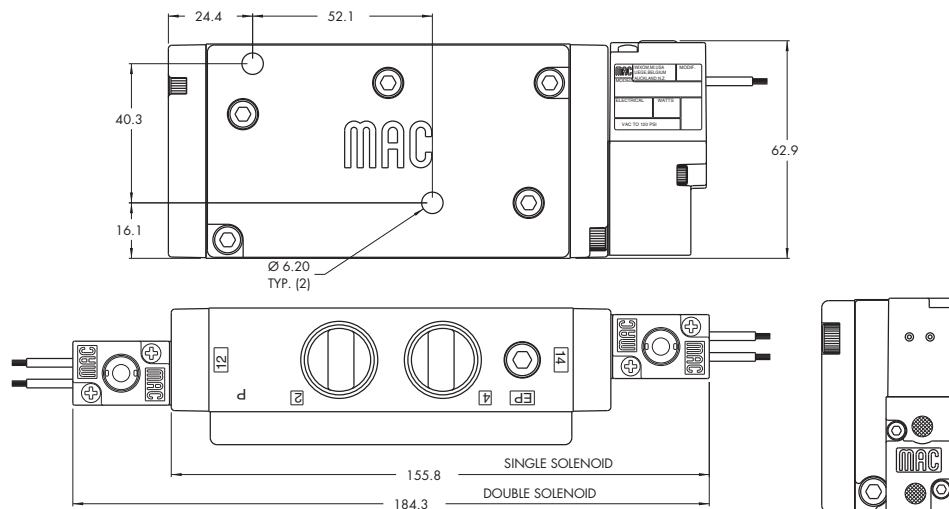
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 8 bar External Pilot: Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow (at 6 bar, ΔP=1bar) :	3800 NI/min (Cv 3,8)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 1.8 to 12.7 W
Response times : (with 4 W coil)	Energize : 13 ms De-energize : 10 ms

Option :                    • NPTF thread

**DIMENSIONS**

Dimensions shown are metric (mm)



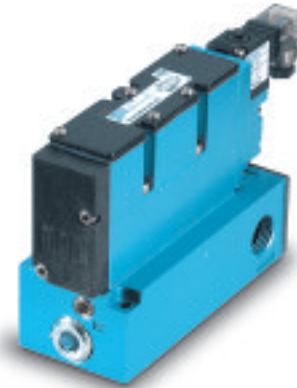


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8" - G1/2"</b>	<b>3400 NI/min</b>	Subbase 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 centre	5/3 Open centre
<b>Valve less base</b>		93A-ABA-000-DM-Dxxx-xxx	93A-BBA-000-DM-Dxxx-xxx	93A-EBA-000-DM-Dxxx-xxx	93A-FBA-000-DM-Dxxx-xxx
<b>G1/4"</b>		93A-ABA-DBG-DM-Dxxx-xxx	93A-BBA-DBG-DM-Dxxx-xxx	93A-EBA-DBG-DM-Dxxx-xxx	93A-FBA-DBG-DM-Dxxx-xxx
<b>G3/8"</b>	Internal	93A-ABA-EAG-DM-Dxxx-xxx	93A-BBA-EAG-DM-Dxxx-xxx	93A-EBA-EAG-DM-Dxxx-xxx	93A-FBA-EAG-DM-Dxxx-xxx
<b>G1/2"</b>		93A-ABA-FAG-DM-Dxxx-xxx	93A-BBA-FAG-DM-Dxxx-xxx	93A-EBA-FAG-DM-Dxxx-xxx	93A-FBA-FAG-DM-Dxxx-xxx
<b>G1/4"</b>		93A-ABA-DBH-DM-Dxxx-xxx	93A-BBA-DBH-DM-Dxxx-xxx	93A-EBA-DBH-DM-Dxxx-xxx	93A-FBA-DBH-DM-Dxxx-xxx
<b>G3/8"</b>	External	93A-ABA-EAH-DM-Dxxx-xxx	93A-BBA-EAH-DM-Dxxx-xxx	93A-EBA-EAH-DM-Dxxx-xxx	93A-FBA-EAH-DM-Dxxx-xxx
<b>G1/2"</b>		93A-ABA-FAH-DM-Dxxx-xxx	93A-BBA-FAH-DM-Dxxx-xxx	93A-EBA-FAH-DM-Dxxx-xxx	93A-FBA-FAH-DM-Dxxx-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
<b>Valve less base</b>		93A-CBA-000-DM-Dxxx-xxx	93A-DBA-000-DM-Dxxx-xxx	93A-HBA-000-DM-Dxxx-xxx
<b>G1/4"</b>		93A-CBA-DBG-DM-Dxxx-xxx	93A-DBA-DBG-DM-Dxxx-xxx	93A-HBA-DBG-DM-Dxxx-xxx
<b>G3/8"</b>	Internal	93A-CBA-EAG-DM-Dxxx-xxx	93A-DBA-EAG-DM-Dxxx-xxx	93A-HBA-EAG-DM-Dxxx-xxx
<b>G1/2"</b>		93A-CBA-FAG-DM-Dxxx-xxx	93A-DBA-FAG-DM-Dxxx-xxx	93A-HBA-FAG-DM-Dxxx-xxx
<b>G1/4"</b>		93A-CBA-DBH-DM-Dxxx-xxx	93A-DBA-DBH-DM-Dxxx-xxx	93A-HBA-DBH-DM-Dxxx-xxx
<b>G3/8"</b>	External	93A-CBA-EAH-DM-Dxxx-xxx	93A-DBA-EAH-DM-Dxxx-xxx	93A-HBA-EAH-DM-Dxxx-xxx
<b>G1/2"</b>		93A-CBA-FAH-DM-Dxxx-xxx	93A-DBA-FAH-DM-Dxxx-xxx	93A-HBA-FAH-DM-Dxxx-xxx

### SOLENOID OPERATOR >

DM-D **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>BM</b> Flying leads
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm	<b>2</b> Locking	<b>BN</b> Flying leads with diode
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>BP</b> Flying leads with M.O.V.
<b>FB</b> 24 V=/1,8W			<b>BG</b> Flying leads with ground
<b>DA</b> 24 V=/5,4W			<b>JB</b> Rectangular connector
<b>DF</b> 24 V=/12,7W			<b>JD</b> Rectangular connector with light

\* Other options available, see page 385.  
Other options available for the 93 series valves, see page 221.

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ISO 01  
ISO 02  
ISO 1  
ISO 2  
ISO 3

**TECHNICAL DATA**

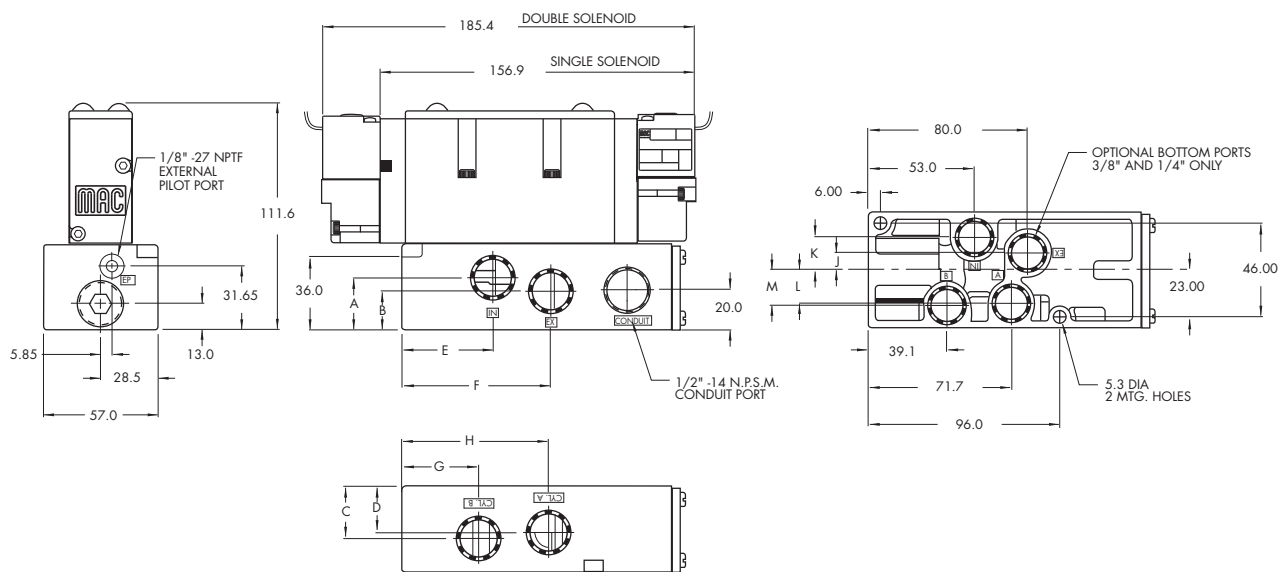
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 8 bar External Pilot: Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow (at 6 bar, ΔP=1bar) :	1/4", 3/8": 3000 NI/min (Cv3.0) – 1/2": 3400 NI/min (Cv 3,4)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 1 to 12.7 W
Response times : (with 4 W coil)	Energize : 13 ms De-energize : 10 ms

- Options :
- NPTF 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	DIM.	J	K	L	M
<b>63/8"</b>	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5	<b>61/4"</b>	7.0	14.7	15.0	16.5
<b>61/2"</b>	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5	<b>63/8"</b>	8.5	16.2	16.5	17.5



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8" - G1/2"</b>	<b>3400 NI/min</b>	Subbase "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 centre	5/3 Open centre
<b>Valve less base</b>		93A-AAA-000-DM-DxxP-xxx	93A-BAA-000-DM-DxxP-xxx	93A-EAA-000-DM-DxxP-xxx	93A-FAA-000-DM-DxxP-xxx
<b>G1/4"</b>		93A-AAA-DBA-DM-DxxP-xxx	93A-BAA-DBA-DM-DxxP-xxx	93A-EAA-DBA-DM-DxxP-xxx	93A-FAA-DBA-DM-DxxP-xxx
<b>G3/8"</b>	Internal	93A-AAA-EAA-DM-DxxP-xxx	93A-BAA-EAA-DM-DxxP-xxx	93A-EAA-EAA-DM-DxxP-xxx	93A-FAA-EAA-DM-DxxP-xxx
<b>G1/2"</b>		93A-AAA-FAA-DM-DxxP-xxx	93A-BAA-FAA-DM-DxxP-xxx	93A-EAA-FAA-DM-DxxP-xxx	93A-FAA-FAA-DM-DxxP-xxx
<b>G1/4"</b>		93A-AAA-DBD-DM-DxxP-xxx	93A-BAA-DBD-DM-DxxP-xxx	93A-EAA-DBD-DM-DxxP-xxx	93A-FAA-DBD-DM-DxxP-xxx
<b>G3/8"</b>	External	93A-AAA-EAD-DM-DxxP-xxx	93A-BAA-EAD-DM-DxxP-xxx	93A-EAA-EAD-DM-DxxP-xxx	93A-FAA-EAD-DM-DxxP-xxx
<b>G1/2"</b>		93A-AAA-FAD-DM-DxxP-xxx	93A-BAA-FAD-DM-DxxP-xxx	93A-EAA-FAD-DM-DxxP-xxx	93A-FAA-FAD-DM-DxxP-xxx

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure Centre
<b>Valve less base</b>		93A-CAA-000-DM-DxxP-xxx	93A-DAA-000-DM-DxxP-xxx	93A-HAA-000-DM-DxxP-xxx
<b>G1/4"</b>		93A-CAA-DBA-DM-DxxP-xxx	93A-DAA-DBA-DM-DxxP-xxx	93A-HAA-DBA-DM-DxxP-xxx
<b>G3/8"</b>	Internal	93A-CAA-EAA-DM-DxxP-xxx	93A-DAA-EAA-DM-DxxP-xxx	93A-HAA-EAA-DM-DxxP-xxx
<b>G1/2"</b>		93A-CAA-FAA-DM-DxxP-xxx	93A-DAA-FAA-DM-DxxP-xxx	93A-HAA-FAA-DM-DxxP-xxx
<b>G1/4"</b>		93A-CAA-DBD-DM-DxxP-xxx	93A-DAA-DBD-DM-DxxP-xxx	93A-HAA-DBD-DM-DxxP-xxx
<b>G3/8"</b>	External	93A-CAA-EAD-DM-DxxP-xxx	93A-DAA-EAD-DM-DxxP-xxx	93A-HAA-EAD-DM-DxxP-xxx
<b>G1/2"</b>		93A-CAA-FAD-DM-DxxP-xxx	93A-DAA-FAD-DM-DxxP-xxx	93A-HAA-FAD-DM-DxxP-xxx

### SOLENOID OPERATOR ▶

DM-D **XX** P-**XXX**\*

Above models are shown without light.

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V=/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V=/5,4W		
<b>DF</b> 24 V=/12,7W		

\* Other options available, see page 385.  
Note: Ground required for 30 Volts or higher.  
Other options available for the 93 series valves, see page 222

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ISO 01  
ISO 02  
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ISO 3

**TECHNICAL DATA**

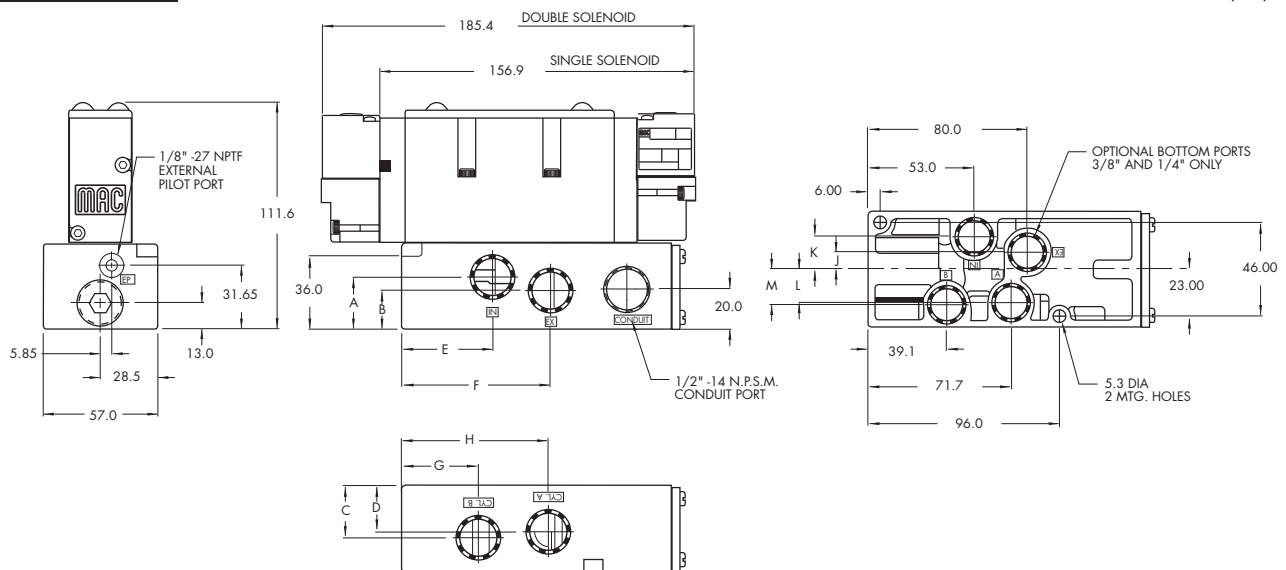
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 8 bar External Pilot: Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow (at 6 bar, ΔP=1bar) :	1/4", 3/8": 3000 NI/min (Cv3.0) – 1/2": 3400 NI/min (Cv 3,4)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 1 to 12.7 W
Response times : (with 4 W coil)	Energize : 13 ms De-energize : 10 ms

- Options :
- NPTF 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	DIM.	J	K	L	M
<b>63/8"</b>	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5	<b>61/4"</b>	7.0	14.7	15.0	16.5
<b>61/2"</b>	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5	<b>63/8"</b>	8.5	16.2	16.5	17.5





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3800 NI/min</b>	Manifold 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 centre	5/3 Open centre
<b>Valve less base</b>		93A-ABA-000-DM-Dxxx-xxx	93A-BBA-000-DM-Dxxx-xxx	93A-EBA-000-DM-Dxxx-xxx	93A-FBA-000-DM-Dxxx-xxx
<b>G3/8"</b>	Internal	93A-ABA-EJG-DM-Dxxx-xxx	93A-BBA-EJG-DM-Dxxx-xxx	93A-EBA-EJG-DM-Dxxx-xxx	93A-FBA-EJG-DM-Dxxx-xxx
<b>G1/2"</b>		93A-ABA-FJG-DM-Dxxx-xxx	93A-BBA-FJG-DM-Dxxx-xxx	93A-EBA-FJG-DM-Dxxx-xxx	93A-FBA-FJG-DM-Dxxx-xxx
<b>G3/8"</b>	External	93A-ABA-EJH-DM-Dxxx-xxx	93A-BBA-EJH-DM-Dxxx-xxx	93A-EBA-EJH-DM-Dxxx-xxx	93A-FBA-EJH-DM-Dxxx-xxx
<b>G1/2"</b>		93A-ABA-FJH-DM-Dxxx-xxx	93A-BBA-FJH-DM-Dxxx-xxx	93A-EBA-FJH-DM-Dxxx-xxx	93A-FBA-FJH-DM-Dxxx-xxx

#### DUAL PRESSURE MODELS (REQUIRE SANDWICH REGULATOR, SEE „REGULATORS“ SECTION)

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
<b>Valve less base</b>		93A-CBA-000-DM-Dxxx-xxx	93A-DBA-000-DM-Dxxx-xxx	93A-HBA-000-DM-Dxxx-xxx
<b>G3/8"</b>	Internal	93A-CBA-EJG-DM-Dxxx-xxx	93A-DBA-EJG-DM-Dxxx-xxx	93A-HBA-EJG-DM-Dxxx-xxx
<b>G1/2"</b>		93A-CBA-FJG-DM-Dxxx-xxx	93A-DBA-FJG-DM-Dxxx-xxx	93A-HBA-FJG-DM-Dxxx-xxx
<b>G3/8"</b>	External	93A-CBA-EJH-DM-Dxxx-xxx	93A-DBA-EJH-DM-Dxxx-xxx	93A-HBA-EJH-DM-Dxxx-xxx
<b>G1/2"</b>		93A-CBA-FJH-DM-Dxxx-xxx	93A-DBA-FJH-DM-Dxxx-xxx	93A-HBA-FJH-DM-Dxxx-xxx

#### SOLENOID OPERATOR >

DM-D **XXX-XXX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm (Flying leads)	<b>1</b> Non-locking	<b>BM</b> Flying leads
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm (Flying leads)	<b>2</b> Locking	<b>BN</b> Flying leads with diode
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>KA</b> Square connector
<b>FB</b> 24 V=/1,8W			<b>KD</b> Square connector with light
<b>DA</b> 24 V=/5,4W			
<b>DF</b> 24 V=/12,7W			

\* Other options available, see page 385.  
 End plate kit required (1/2" ports): M-93001-01-01P internal pilot.  
 M-93001-02-01P external pilot.  
 Other options available for the 93 series valves, see page 221.

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100%  
OF  
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WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 8 bar External Pilot: Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow (at 6 bar, ΔP=1bar) :	3/8": 3400 NI/min (Cv 3,4) – 1/2": 3800 NI/min (Cv 3.8)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 1 to 12.7 W
Response times : (with 4 W coil)	Energize : 13 ms De-energize : 10 ms

Options :  

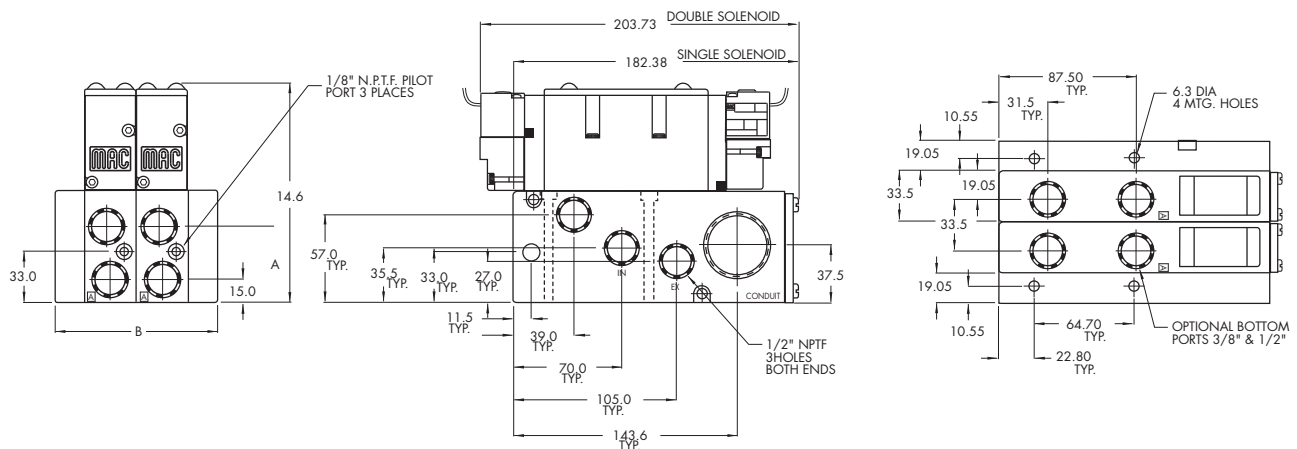
- NPTF thread • Sandwich regulator (see ,regulators' section)
- Sandwich flow controls FC93A-BA (screwdriver slot adjustment), FC93A-BB (locking knob adjustment)

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
63/8"	47.66
61/2"	49.32



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3800 NI/min</b>	Manifold 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 centre	5/3 Open centre
<b>Valve less base</b>		93A-AAA-000-DM-DxxP-xxx	93A-BAA-000-DM-DxxP-xxx	93A-EAA-000-DM-DxxP-xxx	93A-FAA-000-DM-DxxP-xxx
<b>G3/8"</b>	Internal	93A-AAA-EJA-DM-DxxP-xxx	93A-BAA-EJA-DM-DxxP-xxx	93A-EAA-EJA-DM-DxxP-xxx	93A-FAA-EJA-DM-DxxP-xxx
<b>G1/2"</b>		93A-AAA-FJA-DM-DxxP-xxx	93A-BAA-FJA-DM-DxxP-xxx	93A-EAA-FJA-DM-DxxP-xxx	93A-FAA-FJA-DM-DxxP-xxx
<b>G3/8"</b>	External	93A-AAA-EJD-DM-DxxP-xxx	93A-BAA-EJD-DM-DxxP-xxx	93A-EAA-EJD-DM-DxxP-xxx	93A-FAA-EJD-DM-DxxP-xxx
<b>G1/2"</b>		93A-AAA-FJD-DM-DxxP-xxx	93A-BAA-FJD-DM-DxxP-xxx	93A-EAA-FJD-DM-DxxP-xxx	93A-FAA-FJD-DM-DxxP-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 Centre
<b>Valve less base</b>		93A-CAA-000-DM-DxxP-xxx	93A-DAA-000-DM-DxxP-xxx	93A-HAA-000-DM-DxxP-xxx
<b>G3/8"</b>	Internal	93A-CAA-EJA-DM-DxxP-xxx	93A-DAA-EJA-DM-DxxP-xxx	93A-HAA-EJA-DM-DxxP-xxx
<b>G1/2"</b>		93A-CAA-FJA-DM-DxxP-xxx	93A-DAA-FJA-DM-DxxP-xxx	93A-HAA-FJA-DM-DxxP-xxx
<b>G3/8"</b>	External	93A-CAA-EJD-DM-DxxP-xxx	93A-DAA-EJD-DM-DxxP-xxx	93A-HAA-EJD-DM-DxxP-xxx
<b>G1/2"</b>		93A-CAA-FJD-DM-DxxP-xxx	93A-DAA-FJD-DM-DxxP-xxx	93A-HAA-FJD-DM-DxxP-xxx

#### SOLENOID OPERATOR >

DM-D **XX** P-**XXX**\*

Above model numbers are shown with side ports without light.

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz (2,9W)	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz (2,9W)	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz (3,7W)		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V=/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V=/5,4W		
<b>DF</b> 24 V=/12,7W		

\* Other options available, see page 385.  
 End plate required (1/2" ports): M-93001-01-01P Internal pilot.  
 M-93001-02-01P External pilot.  
 Other options available for the 93 series valves, see page 222



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ISO 2  
ISO 3



100%  
OF  
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100%

WARRANTY  
**18**  
MONTHS

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 8 bar External Pilot: Vacuum to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow (at 6 bar, ΔP=1bar) :	3/8": 3400 NI/min (Cv 3,4) – 1/2": 3800 NI/min (Cv 3.8)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 1 to 12.7 W
Response times : (with 4 W coil)	Energize : 13 ms De-energize : 10 ms

Options :  

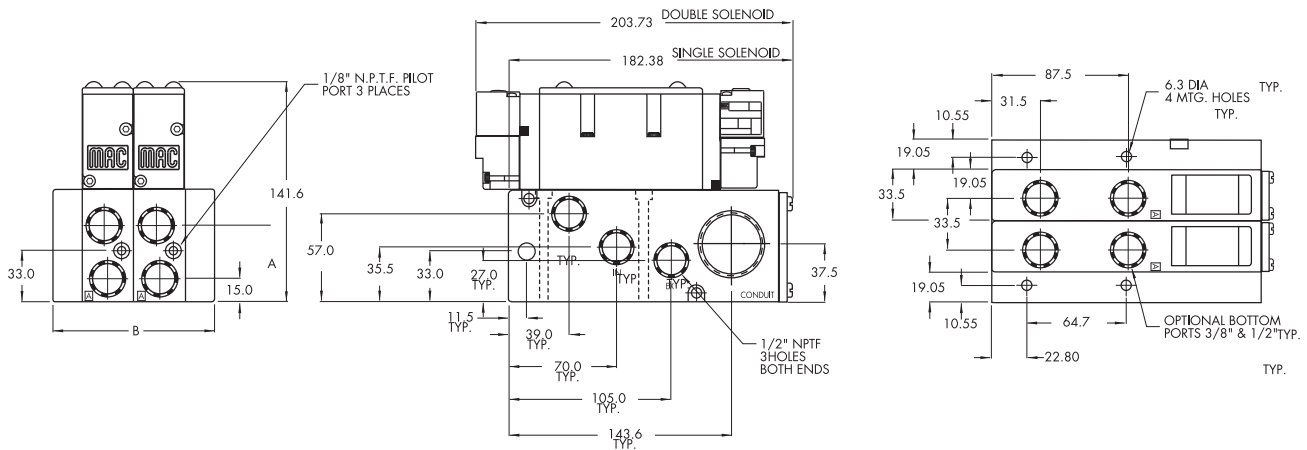
- NPTF thread • Sandwich regulator (see ,regulators' section)
- Sandwich flow controls FC93A-AA (screwdriver slot adjustment), FC93A-AB (locking knob adjustment)

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
63/8"	47.66
61/2"	49.32



# Direct solenoid and solenoid pilot operated valves

## OPTIONS FOR NON PLUG-IN VALVES

Valve function

93A-**LXX**-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**BX**-XXX-XX-D**xxx-xxx**

- B** standard pilot exhaust
- D** pilot exhaust to main valve exhaust\*

Port configuration :

Individual sub-base

93A-XXX-X**AX**-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**JX**-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-DBG) - Individual base

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

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

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# Direct solenoid and solenoid pilot operated valves

## OPTIONS FOR PLUG-IN VALVES

Valve function

93A-**LXX**-XXX-XX-DxxP-xxx

- L** for single operator, single pressure with memory spring
- N** for single operator, dual pressure with memory spring
- R** for single operator universal spool (ext. pilot only)
- S** for double operator universal spool (ext. pilot only)

Pilot exhaust

93A-**XAX**-XXX-XX-DxxP-xxx

- A** standard pilot exhaust
- C** pilot exhaust to main valve exhaust\*

Body electrical

92B-**XXA**-XXX-XX-DxxP-xxx

- A** no light
- B** light(s)

Port configuration :

Individual sub-base

93A-XXX-**XAX**-XX-DxxP-xxx

- A** side ports (3/8" & 1/2" only)
- B** bottom ports (1/4" & 3/8" only)
- C** side & bottom ports (1/4" & 3/8" only)
- D** side inlet & exhaust with bottom cylinder ports (1/4" & 3/8" only)

Manifold sub-base

93A-XXX-**XJX**-XX-DxxP-xxx

- J** side ports
- K** bottom ports

Base/manifold int./ext. pilot

93A-XXX-**XXA**-XX-DxxP-xxx

- A** internal pilot no light
- B** internal pilot single light
- C** internal pilot double light
- D** external pilot no light
- E** external pilot single light
- F** external pilot double light

Pilot style :

93A-XXX-XXX-**DM**-DxxP-xxx

- 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-DBA) - Individual base  
(Note: bases are wired for double solenoid valves)

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

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

Individual mounting

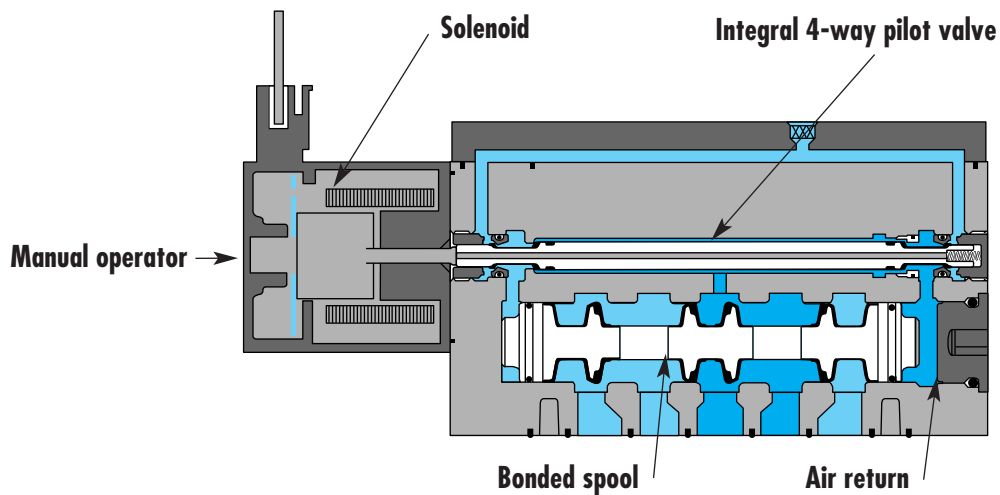
Valve only – No base not “plug-in” Conform to ISO 15407/1	Valve only – No base plug-in Conform to ISO 15407/2
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Manifold mounting

Valve only – No base not “plug-in” Conform to ISO 15407/1	Valve only – No base plug-in Conform to ISO 15407/2
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Series

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**SERIES FEATURES**

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





Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/4"</b>	<b>1000 NI/min</b>	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 5-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 centre	5/3 Open centre
Internal	MV-A01A-AAAMA-Jxxx-xxx	MV-A01A-ABMA-Jxxx-xxx	MV-A01A-AEMA-Jxxx-xxx	MV-A01A-AFMA-Jxxx-xxx
External "12" end	MV-A01A-AAAMD-Jxxx-xxx	MV-A01A-ABMD-Jxxx-xxx	MV-A01A-AEMD-Jxxx-xxx	MV-A01A-AFMD-Jxxx-xxx
External "14" end	MV-A01A-AAAME-Jxxx-xxx	MV-A01A-ABME-Jxxx-xxx	MV-A01A-AEME-Jxxx-xxx	MV-A01A-AFME-Jxxx-xxx

#### DUAL PRESSURE MODELS

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

#### SOLENOID OPERATOR >

**J XXX-XXX\***

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
<b>DA</b> 24V=/5,4W	<b>0</b> No lead wire/ connector	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DB</b> 12V=/5,4W	<b>A</b> 45 cm	<b>2</b> Locking	<b>JA</b> Square connector
<b>DC</b> 24V=/2,4W	<b>B</b> 60 cm		<b>JC</b> Square connector with light
<b>DD</b> 12V=/2,4W	<b>C</b> 90 cm		<b>JB</b> Rectangular connector
<b>DE</b> 24V=/1,8W			<b>JD</b> Rectangular connector with light
<b>DU</b> 24V=/1,0W			<b>KA</b> Mini square connector
			<b>KD</b> Mini square connector with light

\* Other options available, see page 393.

Note: - ISO series, valve and base are ordered separately, see page 299 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 valve - for external pilot regulator, use valve with external pilot 12 or 14 end.

### OPTIONS

Pilot exhaust: MV-A01A-XX X X-Jxxx-xxx

- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust out main exhaust

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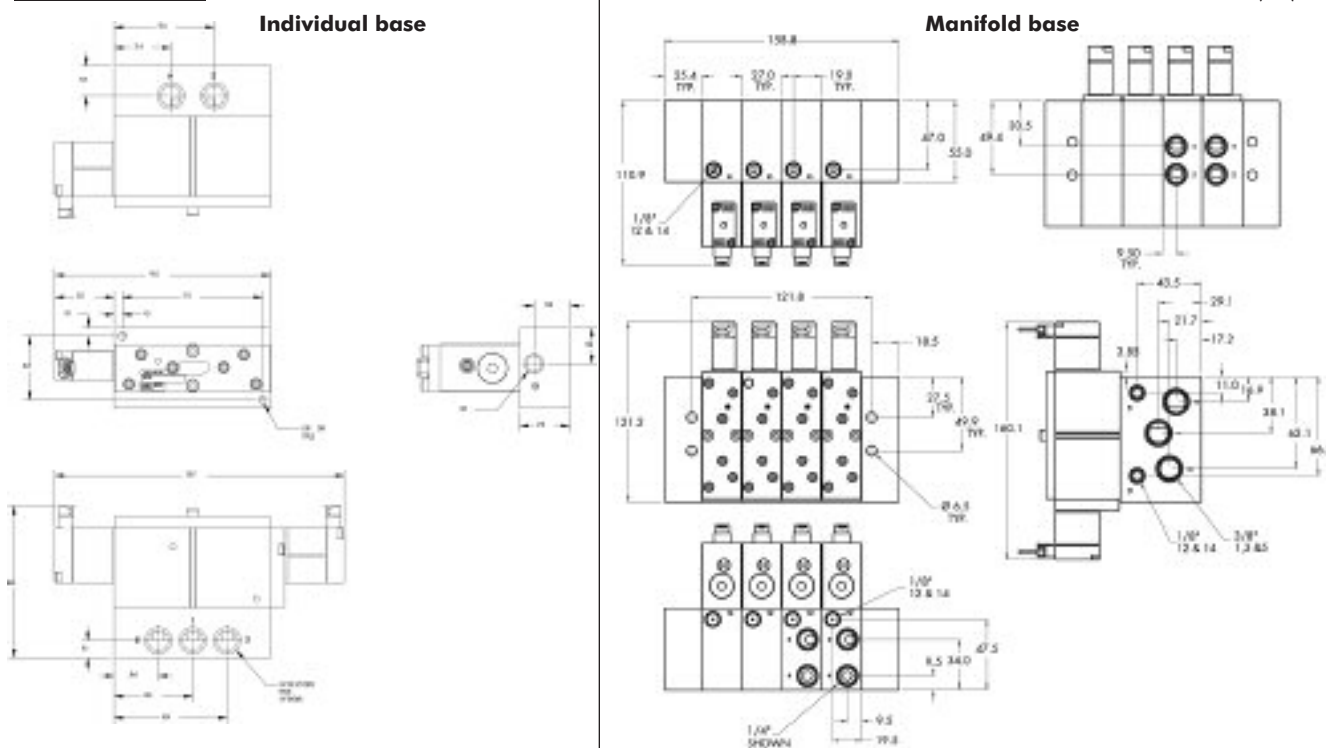
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot – 2 pos.: 1,4 to 8 bar    3 pos.: 2,3 to 8 bar External pilot – Vacuum to 8 bar
Pilot pressure :	2 pos.: 1,4 to 8 bar – 3 pos.: 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	6 mm
Flow (at 6 bar, ΔP=1bar) :	2 pos.: 1000 NI/min (Cv 1.0) – 3 pos.: 800 NI/min (Cv 0.8)
Coil :	Epoxy encapsulated – Class F wires - 100% ED
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)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/4"</b>	<b>1000 NI/min</b>	Valve only No base Plug-in Conform to ISO 15407/2	

## OPERATIONAL BENEFITS

1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 5-way pilot 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. Valve width: 26 mm.



## HOW TO ORDER

### SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre
Internal	MV-P01A-AAAC-RxxP-xxx	MV-P01A-ABCA-RxxP-xxx	MV-P01A-AECA-RxxP-xxx	MV-P01A-AFCA-RxxP-xxx
External "12" end	MV-P01A-AAACD-RxxP-xxx	MV-P01A-ABCD-RxxP-xxx	MV-P01A-AECD-RxxP-xxx	MV-P01A-AFCD-RxxP-xxx
External "14" end	MV-P01A-AAACE-RxxP-xxx	MV-P01A-ABCE-RxxP-xxx	MV-P01A-AECE-RxxP-xxx	MV-P01A-AFCE-RxxP-xxx

### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal from port #3	MV-P01A-ACCB-RxxP-xxx	MV-P01A-ADCB-RxxP-xxx	MV-P01A-AHCB-RxxP-xxx
Internal from port #5	MV-P01A-ACCC-RxxP-xxx	MV-P01A-ADCC-RxxP-xxx	MV-P01A-AHCC-RxxP-xxx
External from "12" end	MV-P01A-ACCD-RxxP-xxx	MV-P01A-ADCD-RxxP-xxx	MV-P01A-AHCD-RxxP-xxx
External from "14" end	MV-P01A-ACCE-RxxP-xxx	MV-P01A-ADCE-RxxP-xxx	MV-P01A-AHCE-RxxP-xxx

### SOLENOID OPERATOR >

R **XX**P-**XXX**\*\*

XX Voltage	X Manual operator	XX Electrical connection
AA* 120 VAC	0 Non operator	PA Base plug-in
AC* 24 VAC	1 Recessed non locking	PB Base plug-in with light
DC 24V=/1.8W	3 Extended non locking	PC Base plug-in with MOV
DD 24V=/2.5W		PD Base plug-in with light & MOV
DE 24V=/3.0W		
DF 24V=/4.0W		
DJ 12V=/1.8W		
DK 12V=/2.5W		
DL 12V=/3.0W		
DM 12V=/4.0W		

\* Use either PA or PB connector  
Note: ISO series, valve and base are ordered separately, see page 301 for base codes.  
\*\* Other options available, see page 401.

## OPTIONS

Pilot exhaust: MV-P01A-XX-**U**MVx-RxxP-xxx

- C** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust out main exhaust

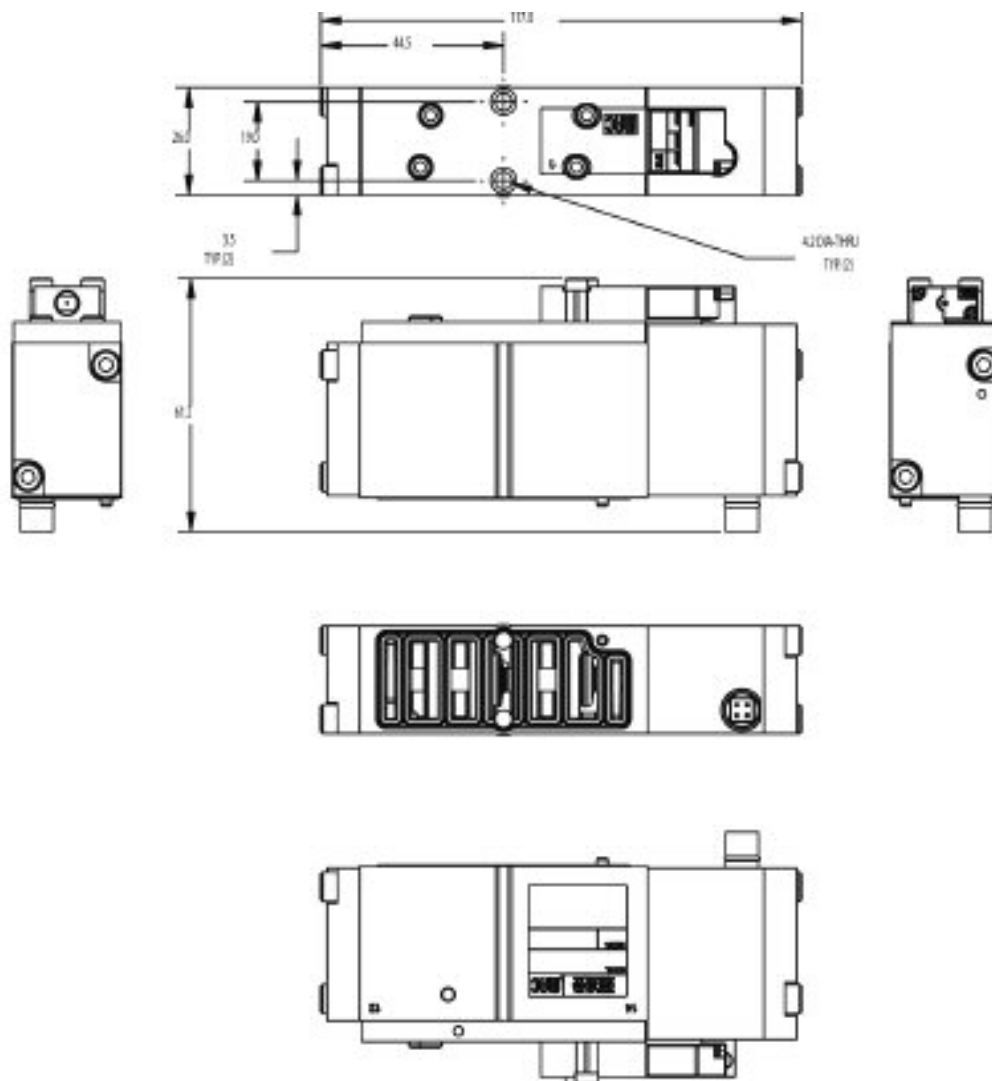
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot – 2 pos.: 1,3 to 8 bar                      3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 pos.: 1,3 to 8 bar – 3 pos.: 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Flow (at 6 bar, ΔP=1bar) :	2 pos.: 1000 Nl/min (Cv 1.0) – 3 pos.: 800 Nl/min (Cv.8)
Coil :	Epoxy encapsulated - Class A wires - 100% ED
Voltage range :	-15% to +10%
Power :	1,8 to 5,4 W

**DIMENSIONS**

Dimensions shown are metric (mm)



Individual mounting

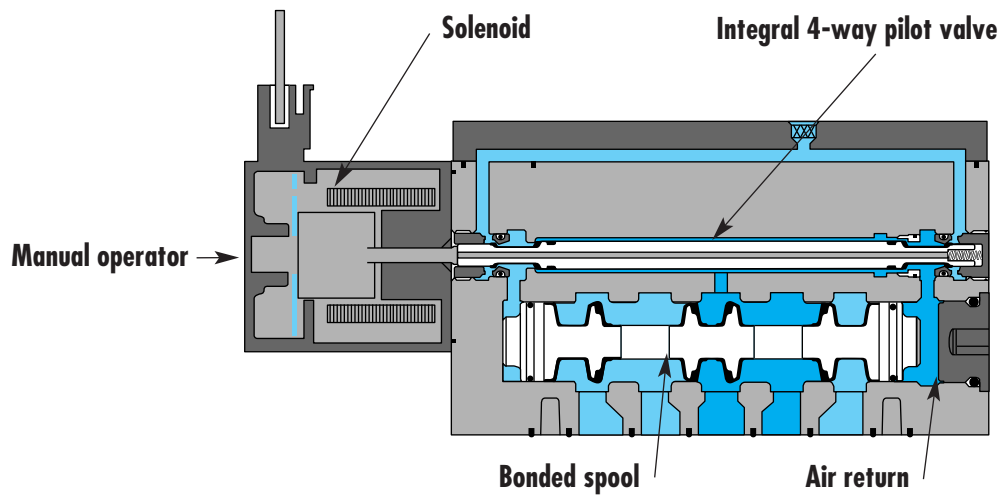
Valve only – No base not “plug-in” Conform to ISO 15407/1	Valve only – No base plug-in Conform to ISO 15407/2
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Manifold mounting

Valve only – No base not “plug-in” Conform to ISO 15407/1	Valve only – No base plug-in Conform to ISO 15407/2
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Series

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**SERIES FEATURES**

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



Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/8"</b>	<b>430 NI/min</b>	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 5-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.
9. Valve width: 18 mm.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre
Internal	MV-A02A-AAAMA-Jxxx-xxx	MV-A02A-ABMA-Jxxx-xxx	MV-A02A-AEMA-Jxxx-xxx	MV-A02A-AFMA-Jxxx-xxx
External "12" end	MV-A02A-AAAMD-Jxxx-xxx	MV-A02A-ABMD-Jxxx-xxx	MV-A02A-AEMD-Jxxx-xxx	MV-A02A-AFMD-Jxxx-xxx
External "14" end	MV-A02A-AAAME-Jxxx-xxx	MV-A02A-ABME-Jxxx-xxx	MV-A02A-AEME-Jxxx-xxx	MV-A02A-AFME-Jxxx-xxx

#### DUAL PRESSURE MODELS

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

#### SOLENOID OPERATOR

**J XXX-XXX\***

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
<b>DA</b> 24V=/5,4W	<b>0</b> No lead wire/ connector	<b>1</b> Non-locking	<b>BA</b> Flying leads
<b>DB</b> 12V=/5,4W	<b>A</b> 45 cm	<b>2</b> Locking	<b>JA</b> Square connector
<b>DC</b> 24V=/2,4W	<b>B</b> 60 cm		<b>JC</b> Square connector with light
<b>DD</b> 12V=/2,4W	<b>C</b> 90 cm		<b>JB</b> Rectangular connector
<b>DE</b> 24V=/1,8W			<b>JD</b> Rectangular connector with light
<b>DU</b> 24V=/1,0W			<b>KA</b> Mini square connector
			<b>KD</b> Mini square connector with light

\* Other options available, see page 393.

Note: - ISO series, valve and base are ordered separately, see page 303 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 valve - for external pilot regulator, use valve with external pilot 12 or 14 end.

### OPTIONS

Pilot exhaust: MV-A02A-XX X X-Jxxx-xxx

- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust out main exhaust

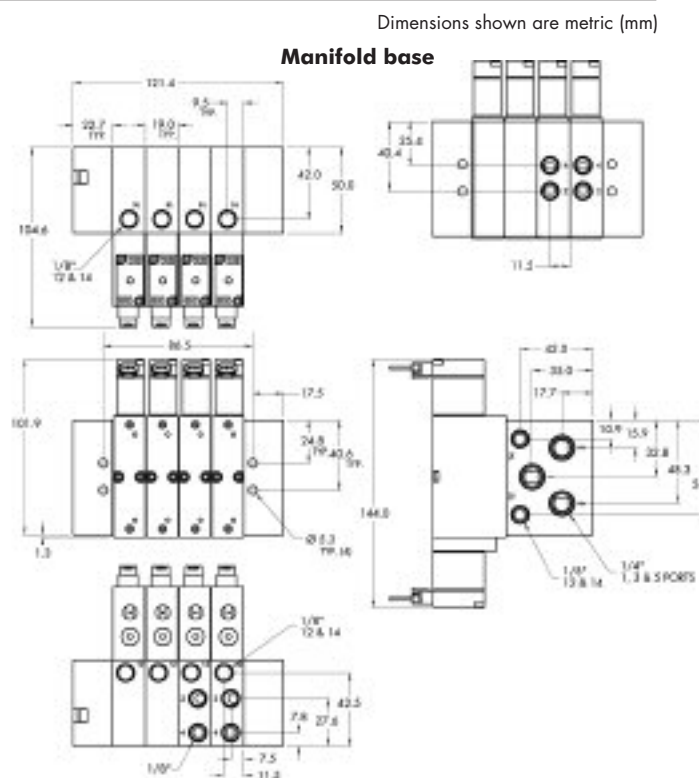
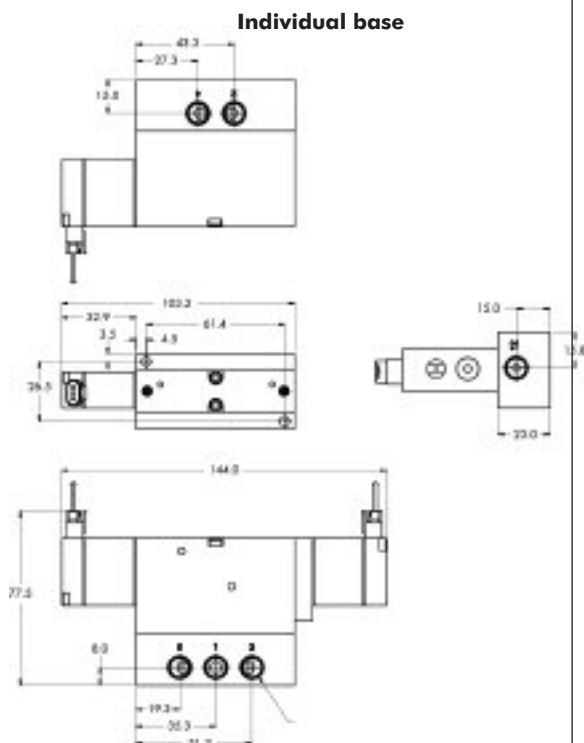
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot – 2 pos.: 1,4 to 8 bar    3 pos.: 2,3 to 8 bar External pilot – Vacuum to 8 bar
Pilot pressure :	2 pos.: 1,4 to 8 bar – 3 pos.: 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	4 mm
Flow (at 6 bar, ΔP=1bar) :	2 pos.: 430 NI/min (Cv 0.43) – 3 pos.: 280 NI/min (Cv 0.28)
Coil :	Epoxy encapsulated – Class A wires - 100% ED
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**





Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/8"</b>	<b>510 NI/min</b>	Valve only - No base *plug-in* Conform to ISO 15407/2	

### OPERATIONAL BENEFITS

1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 5-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. Valve width: 18 mm.



### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre
Internal	MV-P02A-AAAC-RxxP-xxx	MV-P02A-ABCA-RxxP-xxx	MV-P02A-AECA-RxxP-xxx	MV-P02A-AFCA-RxxP-xxx
External "12" end	MV-P02A-AAACD-RxxP-xxx	MV-P02A-ABCD-RxxP-xxx	MV-P02A-AECD-RxxP-xxx	MV-P02A-AFCD-RxxP-xxx
External "14" end	MV-P02A-AAACE-RxxP-xxx	MV-P02A-ABCE-RxxP-xxx	MV-P02A-AECE-RxxP-xxx	MV-P02A-AFCE-RxxP-xxx

#### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal from port #3	MV-P02A-ACCB-RxxP-xxx	MV-P02A-ADCB-RxxP-xxx	MV-P02A-AHCB-RxxP-xxx
Internal from port #5	MV-P02A-ACCC-RxxP-xxx	MV-P02A-ADCC-RxxP-xxx	MV-P02A-AHCC-RxxP-xxx
External from "12" end	MV-P02A-ACCD-RxxP-xxx	MV-P02A-ADCD-RxxP-xxx	MV-P02A-AHCD-RxxP-xxx
External from "14" end	MV-P02A-ACCCE-RxxP-xxx	MV-P02A-ADCE-RxxP-xxx	MV-P02A-AHCE-RxxP-xxx

#### SOLENOID OPERATOR >

R xxP-xxx \*\*

XX Voltage	X Manual operator	XX Electrical connection
AA* 120 VAC	0 Non operator	PA Base plug-in
AC* 24 VAC	1 Recessed non locking	PB Base plug-in with light
DC 24V=/1.8W	3 Extended non locking	PC Base plug-in with MOV
DD 24V=/2.5W		PD Base plug-in with light & MOV
DE 24V=/3.0W		
DF 24V=/4.0W		
DJ 12V=/1.8W		
DK 12V=/2.5W		
DL 12V=/3.0W		
DM 12V=/4.0W		

\* Use either PA or PB connector  
 Note: ISO series, valve and base are ordered separately, see page 305 for base codes.  
 \*\* Other options available, see page 401.

### OPTIONS

Pilot exhaust: MV-P02A-XXxMVx-RxxP-xxx

- C Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust out main exhaust

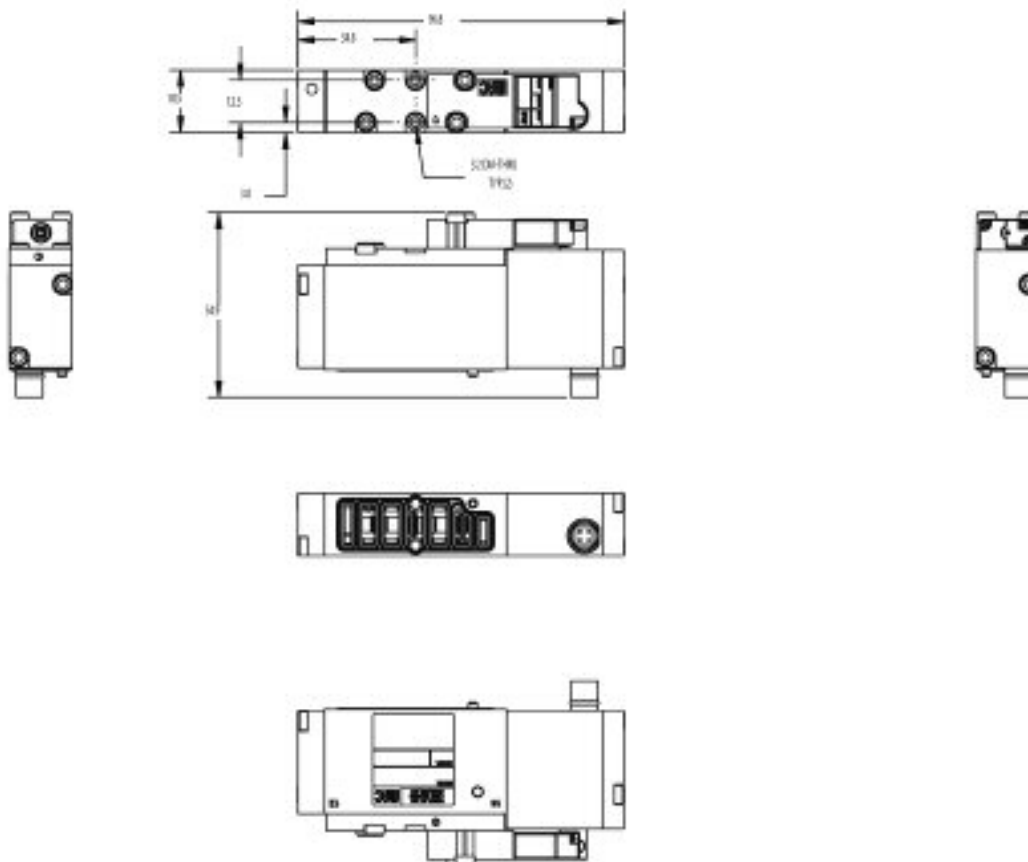
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**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot – 2 pos.: 1,3 to 8 bar                      3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure :	2 pos.: 1,3 to 8 bar – 3 pos.:2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Flow (at 6 bar, ΔP=1bar) :	2 pos.: 510 NI/min (Cv .51) – 3 pos.: 350 NI/min (Cv .35)
Coil :	Epoxy encapsulated - Class A wires - 100% ED
Voltage range :	-15% to +10%
Power :	1,8 to 5,4 W

**DIMENSIONS**

Dimensions shown are metric (mm)



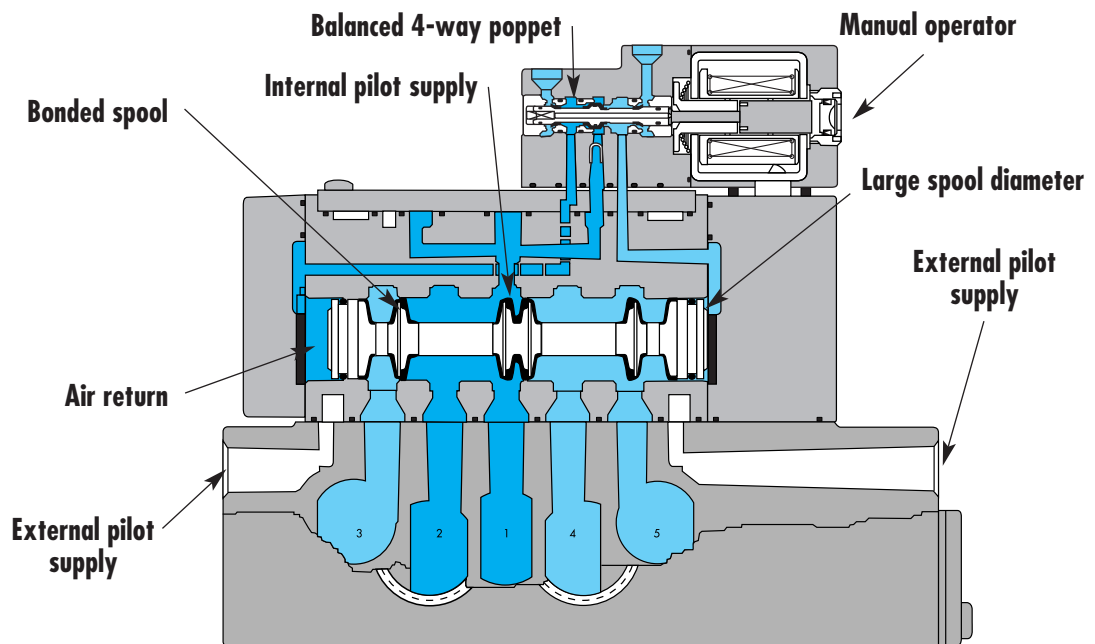
Individual mounting

Valve only – No base non “plug-in” Conform to ISO 5599/1	Valve only – No base “plug-in” Conform to ISO 5599/2
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Series

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
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**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.

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# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8"</b>	<b>1800 NI/min</b>	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 centre	5/3 Open centre
Internal	MV-B1A-AAAA-DM-Dxxx-xxx	MV-B1A-ABAA-DM-Dxxx-xxx	MV-B1A-AEAA-DM-Dxxx-xxx	MV-B1A-AFAA-DM-Dxxx-xxx
External "12" end	MV-B1A-AAAB-DM-Dxxx-xxx	MV-B1A-ABAB-DM-Dxxx-xxx	MV-B1A-AEAB-DM-Dxxx-xxx	MV-B1A-AFAB-DM-Dxxx-xxx

#### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal From port #3	MV-B1A-ACAD-DM-Dxxx-xxx	MV-B1A-ADAD-DM-Dxxx-xxx	MV-B1A-AGAD-DM-Dxxx-xxx
Internal From port #5	MV-B1A-ACAE-DM-Dxxx-xxx	MV-B1A-ADAE-DM-Dxxx-xxx	MV-B1A-AGAE-DM-Dxxx-xxx
External From "12" end	MV-B1A-ACAB-DM-Dxxx-xxx	MV-B1A-ADAB-DM-Dxxx-xxx	MV-B1A-AGAB-DM-Dxxx-xxx

#### SOLENOID OPERATOR >

DM-D **XXX-XXX**\*

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
JA 110 V~/50Hz	A 45 cm	1 Non-locking	KA Square connector
JB 220 V~/50Hz	B 60 cm	2 Locking	KD Square connector with light
JC 24 V~/50Hz	J Connector		JB Rectangular connector
FB 24 V~/1,8W			JD Rectangular connector with light
DA 24 V~/5,4W			BA Flying leads
DF 24 V~/12,7W			

\* Other options available, see page 385.  
Note: ISO series, valve and base are ordered separately, see page 307 for base code.

### OPTIONS

Valve function :

MV-B1A-**A**XXX-**XX**-Dxxx-xxx

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

Pilot style :

MV-B1A-**A**XXX-**DM**-Dxxx-xxx

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

Spool return :

MV-B1A-**AX**A-**XX**-Dxxx-xxx

- A** Standard return
- B** Memory spring return
- C** Standard return with light
- D** Memory spring return with light

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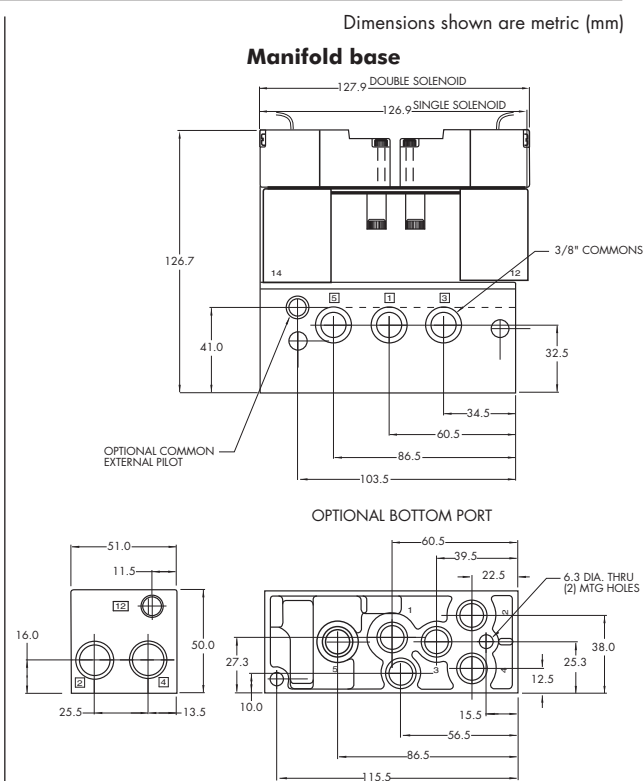
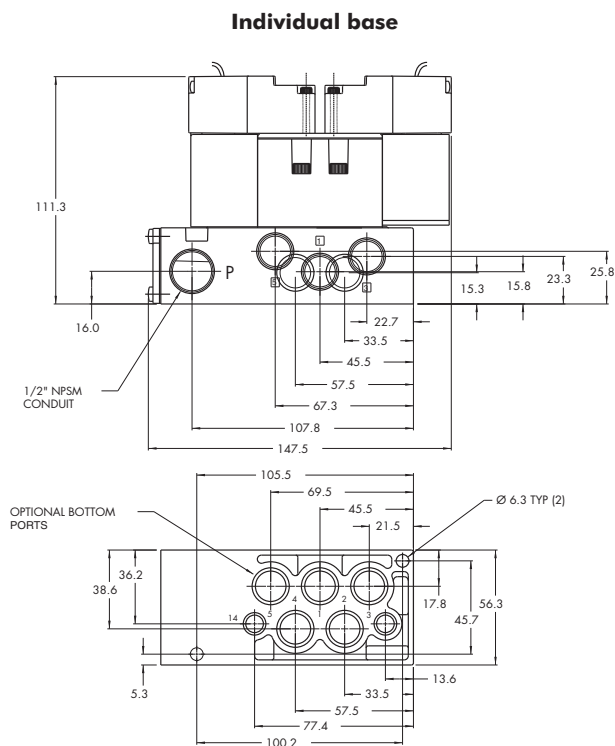
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Pilot pressure :	Single / double operator : 1,3 to 8 bar 3 positions : 2 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	7.8 mm
Flow (at 6 bar, ΔP=1bar) :	3/8": 1800 NI/min (Cv 1.8) – 1/4": 1600 NI/min (Cv 1.6)
Coil :	Epoxy encapsulated – Class A wires - 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
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**



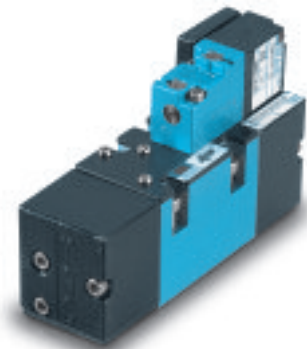


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/4" - G3/8"</b>	<b>1800 NI/min</b>	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 centre	5/3 Open centre
Internal	MV-P1A-AAAA-DM-DxxP-xxx	MV-P1A-ABAA-DM-DxxP-xxx	MV-P1A-AEAA-DM-DxxP-xxx	MV-P1A-AFAA-DM-DxxP-xxx
External "12" end	MV-P1A-AAAB-DM-DxxP-xxx	MV-P1A-ABAB-DM-DxxP-xxx	MV-P1A-AEAB-DM-DxxP-xxx	MV-P1A-AFAB-DM-DxxP-xxx

#### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal From port #3	MV-P1A-ACAD-DM-DxxP-xxx	MV-P1A-ADAD-DM-DxxP-xxx	MV-P1A-AGAD-DM-DxxP-xxx
Internal From port #5	MV-P1A-ACAE-DM-DxxP-xxx	MV-P1A-ADAE-DM-DxxP-xxx	MV-P1A-AGAE-DM-DxxP-xxx
External From "12" end	MV-P1A-ACAB-DM-DxxP-xxx	MV-P1A-ADAB-DM-DxxP-xxx	MV-P1A-AGAB-DM-DxxP-xxx

#### SOLENOID OPERATOR >

DM-D **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V=/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V=/5,4W		
<b>DF</b> 24 V=/12,7W		

\* Other options available, see page 385.  
 Note: - ISO series, valve and base are ordered separately, see page 309 for base codes.  
 - Ground wire required for 30 volts or higher.

### OPTIONS

Valve function :

MV-P1A-**A**XX-**XX**-DxxP-xxx

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

Pilot style :

MV-P1A-**A**XX-**DM**-DxxP-xxx

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

Spool return :

MV-P1A-**A**XX-**A**X-**XX**-DxxP-xxx

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

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**TECHNICAL DATA**

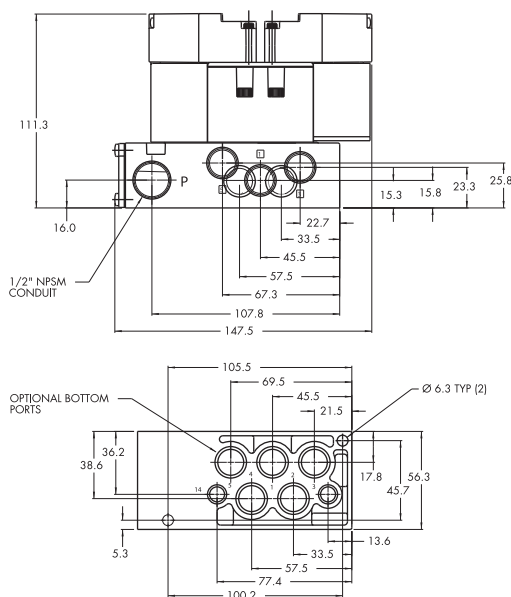
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Pilot pressure :	Single / double operator : 1,3 to 8 bar 3 positions : 2 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	7.8 mm
Flow (at 6 bar, ΔP=1bar) :	3/8": 1800 NI/min (Cv 1.8) – 1/4": 1600 NI/min (Cv 1.6)
Coil :	Epoxy encapsulated – Class A wires - 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
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

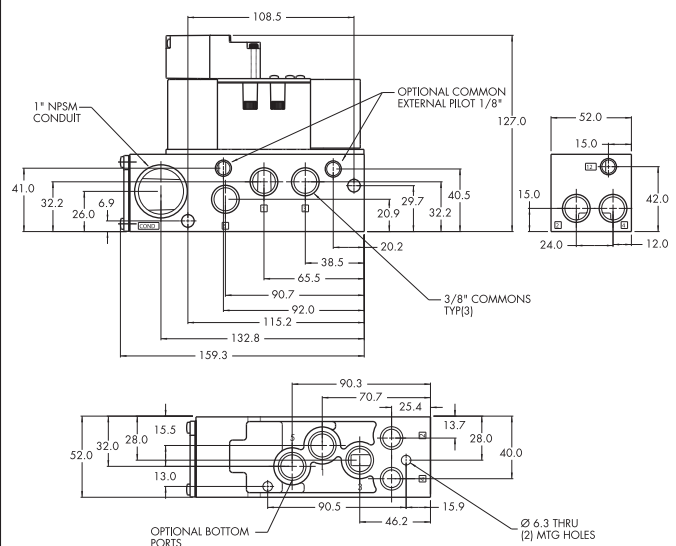
**DIMENSIONS**

**Individual base**



Dimensions shown are metric (mm)

**Manifold base**





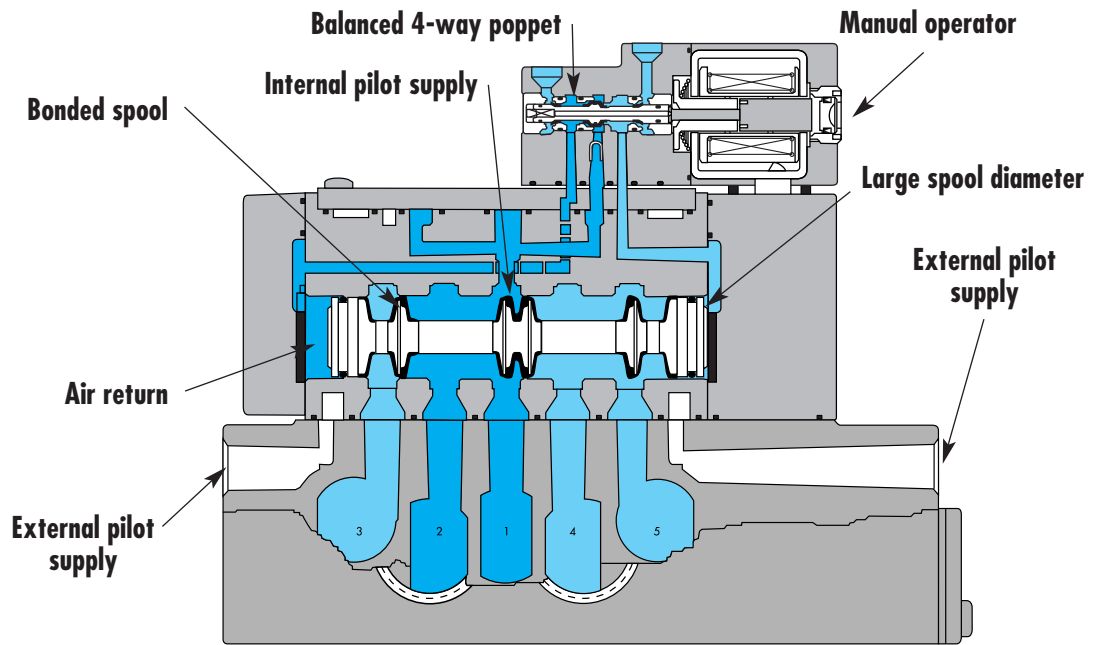
Individual mounting

Valve only – No base non “plug-in” Conform to ISO 5599/1	Valve only – No base “plug-in” Conform to ISO 5599/2
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Series

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
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**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.

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ISO 3





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3000 NI/minn</b>	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 centre	5/3 Open centre
Internal	MV-B2A-AAAA-DM-Dxxx-xxx	MV-B2A-ABAA-DM-Dxxx-xxx	MV-B2A-AEAA-DM-Dxxx-xxx	MV-B2A-AFAA-DM-Dxxx-xxx
External "12" end	MV-B2A-AAAB-DM-Dxxx-xxx	MV-B2A-ABAB-DM-Dxxx-xxx	MV-B2A-AEAB-DM-Dxxx-xxx	MV-B2A-AFAB-DM-Dxxx-xxx

#### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal From port #3	MV-B2A-ACAD-DM-Dxxx-xxx	MV-B2A-ADAD-DM-Dxxx-xxx	MV-B2A-AGAD-DM-Dxxx-xxx
Internal From port #5	MV-B2A-ACAE-DM-Dxxx-xxx	MV-B2A-ADAE-DM-Dxxx-xxx	MV-B2A-AGAE-DM-Dxxx-xxx
External From "12" end	MV-B2A-ACAB-DM-Dxxx-xxx	MV-B2A-ADAB-DM-Dxxx-xxx	MV-B2A-AGAB-DM-Dxxx-xxx

#### SOLENOID OPERATOR ➤

DM-D **XXX-XXX**\*

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>A</b> 45 cm	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>JB</b> 220 V~/50Hz	<b>B</b> 60 cm	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>JC</b> 24 V~/50Hz	<b>J</b> Connector		<b>JB</b> Rectangular connector
<b>FB</b> 24 V~/1,8W			<b>JD</b> Rectangular connector with light
<b>DA</b> 24 V~/5,4W			<b>BA</b> Flying leads
<b>DF</b> 24 V~/12,7W			

\* Other options available, see page 385.  
Note: ISO series, valve and base are ordered separately, see page 311 for base code.

### OPTIONS

Valve function :

MV-B2A-**AXX**-XX-Dxxx-xxx

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

Pilot style :

MV-B2A-AXX-**DM**-Dxxx-xxx

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

Spool return :

MV-B2A-AX**AX**-XX-Dxxx-xxx

- A** Standard return
- B** Memory spring return

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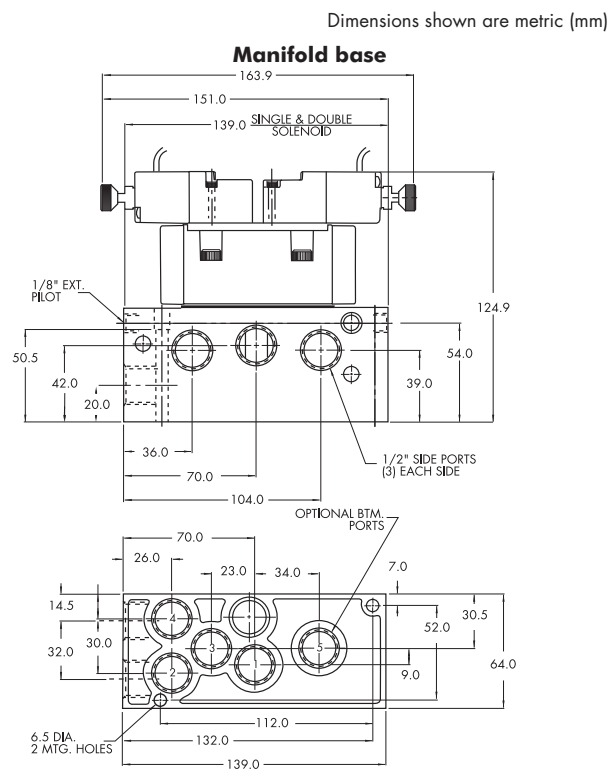
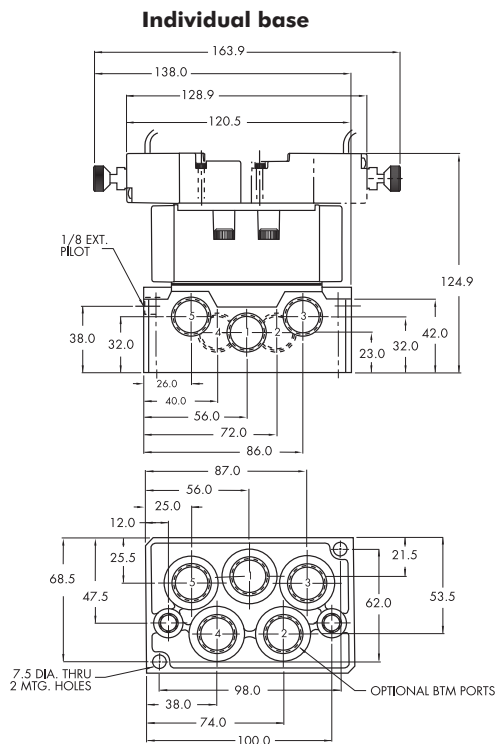
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 8 bar    double operator : 2 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	10.5 mm
Flow (at 6 bar, ΔP=1bar) :	G3/8": 2800 NI/min (Cv 2.8) - G1/2": 3000 NI/min (Cv 3,0)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 12.7 to 1,0 W
Response times :	24 V=/5,4w    Energize : 10 ms    De-energize : 9.6 ms 110V~/50Hz    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

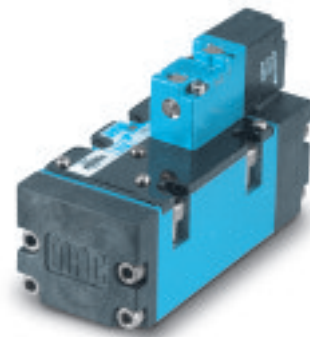
**DIMENSIONS**



Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3000 NI/min</b>	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 centre	5/3 Open centre
Internal	MV-P2A-AAAA-DM-DxxP-xxx	MV-P2A-ABAA-DM-DxxP-xxx	MV-P2A-AEAA-DM-DxxP-xxx	MV-P2A-AFAA-DM-DxxP-xxx
External "1/2" end	MV-P2A-AAAB-DM-DxxP-xxx	MV-P2A-ABAB-DM-DxxP-xxx	MV-P2A-AEAB-DM-DxxP-xxx	MV-P2A-AFAB-DM-DxxP-xxx

#### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal From port #3	MV-P2A-ACAD-DM-DxxP-xxx	MV-P2A-ADAD-DM-DxxP-xxx	MV-P2A-AGAD-DM-DxxP-xxx
Internal From port #5	MV-P2A-ACAE-DM-DxxP-xxx	MV-P2A-ADAE-DM-DxxP-xxx	MV-P2A-AGAE-DM-DxxP-xxx
External From "1/2" end	MV-P2A-ACAB-DM-DxxP-xxx	MV-P2A-ADAB-DM-DxxP-xxx	MV-P2A-AGAB-DM-DxxP-xxx

#### SOLENOID OPERATOR >

### DM-D XX P-XXX\*

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V=/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V=/5,4W		
<b>DF</b> 24 V=/12,7W		

\* Other options available, see page 385.  
 Note: - ISO series, valve and base are ordered separately, see page 313 for base codes.  
 - Ground wire required for 30 volts or higher.

### OPTIONS

Valve function :

MV-P2A-**A**XX-XX-DxxP-xxx

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

Pilot style :

MV-P2A-AXX-**DM**-DxxP-xxx

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

Spool return :

MV-P2A-AX**A**X-XX-DxxP-xxx

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

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**TECHNICAL DATA**

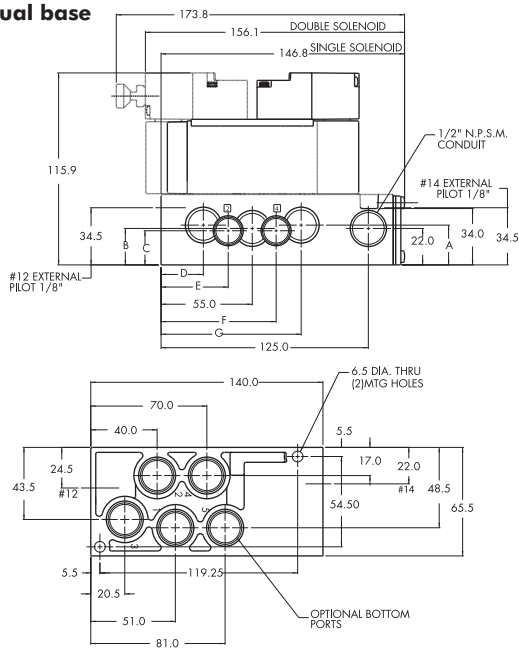
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 8 bar    double operator : 2 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	10.5 mm
Flow (at 6 bar, ΔP=1bar) :	G3/8": 2800 NI/min (Cv 2.8) - G1/2": 3000 NI/min (Cv 3,0)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 14,8 VA    Holding: 4,8 VA = 12.7 to 1,0 W
Response times :	24 V=5,4w    Energize : 10 ms    De-energize : 9.6 ms 110V~/50Hz    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**

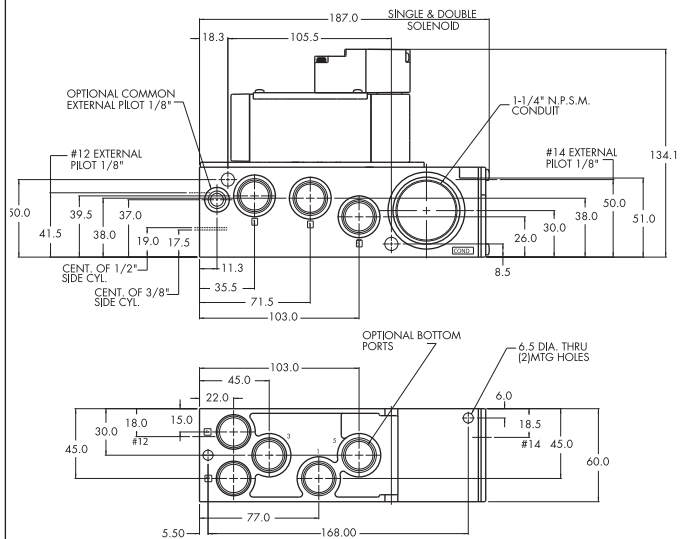
**Individual base**



DIM.	A	B	C	D	E	F	G
G3/8"	25.2	22.7	20.6	26.7	40.5	69.4	83.3
G1/2"	24.0	21.0	19.0	25.5	40.0	70.0	84.5

Dimensions shown are metric (mm)

**Manifold base**



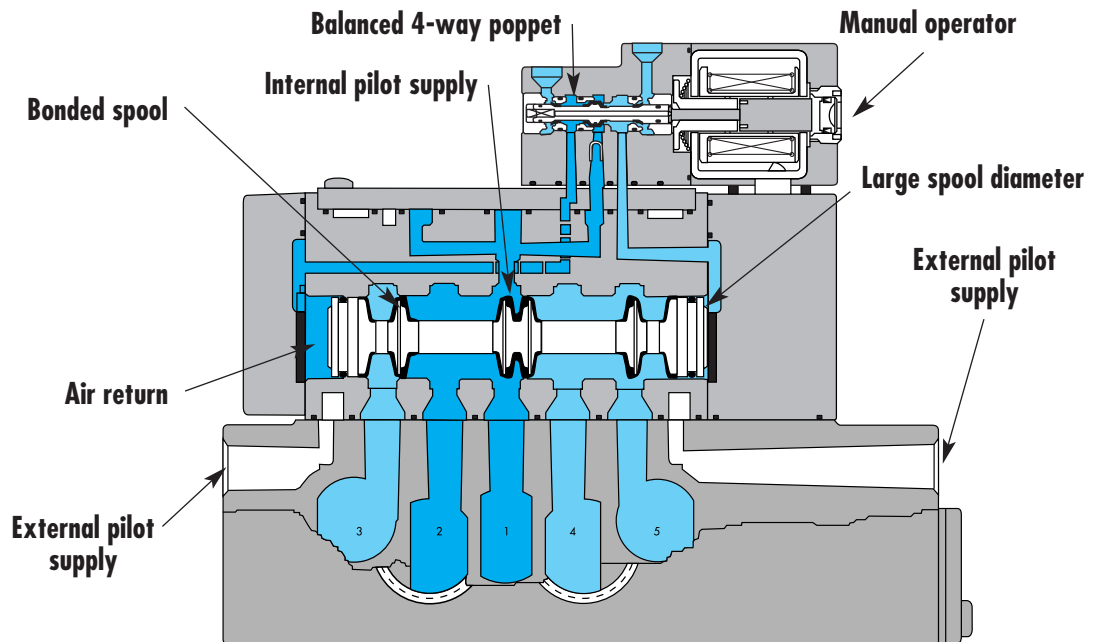
Individual mounting

Valve only – No base non “plug-in” Conform to ISO 5599/1	Valve only – No base “plug-in” Conform to ISO 5599/2
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Series

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
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**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.

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**ISO 3**







# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/2" - G3/4"</b>	<b>6100 NI/min</b>	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 centre	5/3 Open centre
Internal	MV-B3A-AAAA-DM-Dxxx-xxx	MV-B3A-ABAA-DM-Dxxx-xxx	MV-B3A-AEAA-DM-Dxxx-xxx	MV-B3A-AFAA-DM-Dxxx-xxx
External "12" end	MV-B3A-AAAB-DM-Dxxx-xxx	MV-B3A-ABAB-DM-Dxxx-xxx	MV-B3A-AEAB-DM-Dxxx-xxx	MV-B3A-AFAB-DM-Dxxx-xxx

#### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal From port #3	MV-B3A-ACAD-DM-Dxxx-xxx	MV-B3A-ADAD-DM-Dxxx-xxx	MV-B3A-AGAD-DM-Dxxx-xxx
Internal From port #5	MV-B3A-ACAE-DM-Dxxx-xxx	MV-B3A-ADAE-DM-Dxxx-xxx	MV-B3A-AGAE-DM-Dxxx-xxx
External From "12" end	MV-B3A-ACAB-DM-Dxxx-xxx	MV-B3A-ADAB-DM-Dxxx-xxx	MV-B3A-AGAB-DM-Dxxx-xxx

#### SOLENOID OPERATOR >

DM-D **XXX-XXX**\*

XX Voltage	X Lead wire length	X Manual operator	XX Electrical connection
JA 110 V~/50Hz	A 45 cm	1 Non-locking	KA Square connector
JB 220 V~/50Hz	B 60 cm	2 Locking	KD Square connector with light
JC 24 V~/50Hz	J Connector		JB Rectangular connector
FB 24 V~/1,8W			JD Rectangular connector with light
DA 24 V~/5,4W			BA Flying leads
DF 24 V~/12,7W			

\* Other options available, see page 385.  
Note: ISO series, valve and base are ordered separately, see page 315 for base code.

### OPTIONS

Valve function :

MV-B3A-**AXXX-XX-Dxxx-xxx**

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

Pilot style :

MV-B3A-**AXXX-DM-Dxxx-xxx**

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

Spool return :

MV-B3A-**AXAX-XX-Dxxx-xxx**

- A** Standard return
- B** Memory spring return

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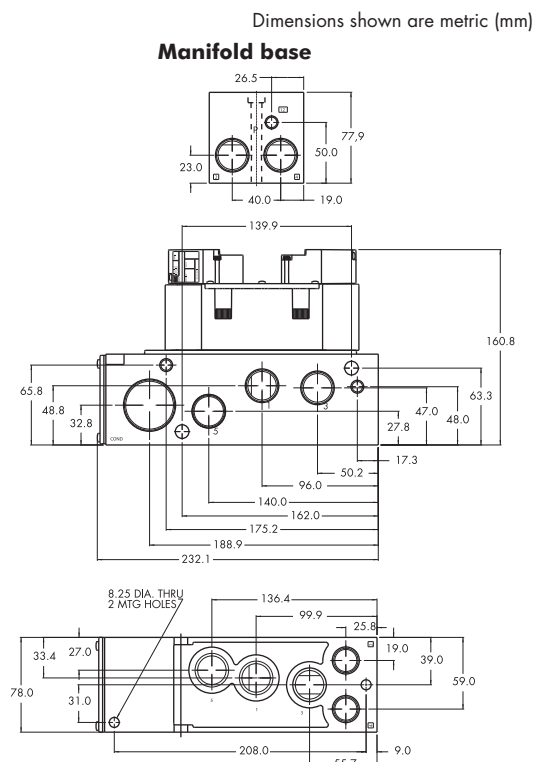
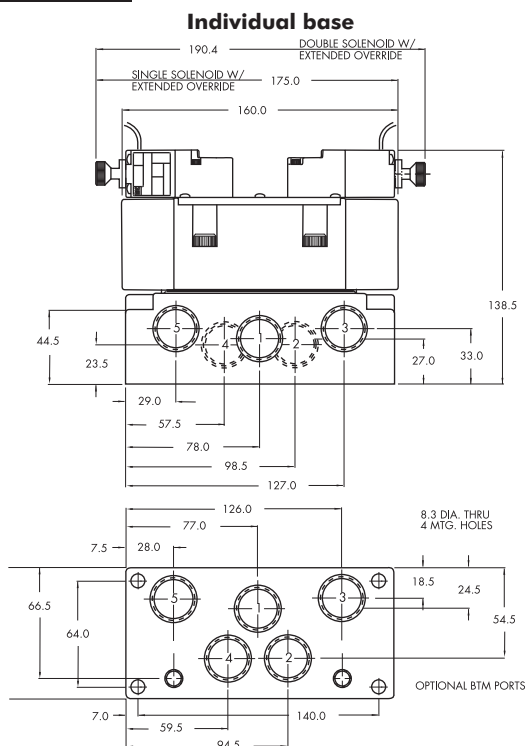
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 8 bar    double operator : 2 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	14.9 mm
Flow (at 6 bar, ΔP=1bar) :	G1/2": 5400 NI/min (Cv 5,4) – G3/4": 6100 NI/min (Cv 6,1)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
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**





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>G1/2" - G3/4"</b>	<b>6100 NI/min</b>	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 centre	5/3 Open centre
Internal	MV-P3A-AAAA-DM-DxxP-xxx	MV-P3A-ABAA-DM-DxxP-xxx	MV-P3A-AEAA-DM-DxxP-xxx	MV-P3A-AFAA-DM-DxxP-xxx
External "1/2" end	MV-P3A-AAAB-DM-DxxP-xxx	MV-P3A-ABAB-DM-DxxP-xxx	MV-P3A-AEAB-DM-DxxP-xxx	MV-P3A-AFAB-DM-DxxP-xxx

### DUAL PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure centre
Internal From port #3	MV-P3A-ACAD-DM-DxxP-xxx	MV-P3A-ADAD-DM-DxxP-xxx	MV-P3A-AGAD-DM-DxxP-xxx
Internal From port #5	MV-P3A-ACAE-DM-DxxP-xxx	MV-P3A-ADAE-DM-DxxP-xxx	MV-P3A-AGAE-DM-DxxP-xxx
External From "1/2" end	MV-P3A-ACAB-DM-DxxP-xxx	MV-P3A-ADAB-DM-DxxP-xxx	MV-P3A-AGAB-DM-DxxP-xxx

### SOLENOID OPERATOR >

DM-D **XX** P-**XXX**\*

XX Voltage	X Manual operator	XX Electrical connection
<b>JA</b> 110 V~/50Hz	<b>1</b> Non-locking	<b>DM</b> Plug-in
<b>JB</b> 220 V~/50Hz	<b>2</b> Locking	<b>DN</b> Plug-in with diode
<b>JC</b> 24 V~/50Hz		<b>DP</b> Plug-in with M.O.V.
<b>FB</b> 24 V=/1,8W		<b>DG</b> Plug-in with ground
<b>DA</b> 24 V=/5,4W		
<b>DF</b> 24 V=/12,7W		

\* Other options available, see page 385.  
 Note: - ISO series, valve and base are ordered separately, see page 317 for base codes.  
 - Ground wire required for 30 volts or higher.

## OPTIONS

Valve function :

MV-P3A-**A**XX-**XX**-DxxP-xxx

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

Pilot style :

MV-P3A-**A**XX-**DM**-DxxP-xxx

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

Spool return :

MV-P3A-**A**XX-**A**X-**XX**-DxxP-xxx

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

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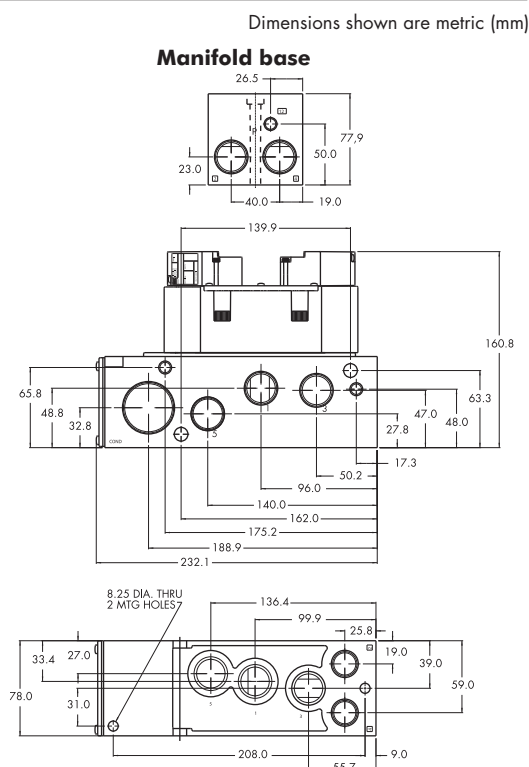
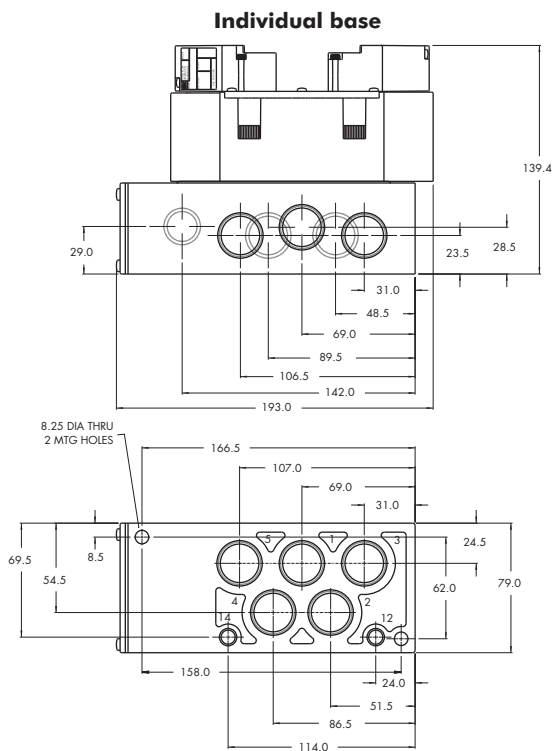
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 8 bar    double operator : 2 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	14.9 mm
Flow (at 6 bar, ΔP=1bar) :	G1/2": 5400 NI/min (Cv 5,4) – G3/4": 6100 NI/min (Cv 6,1)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA    Holding: 4,8 VA = 12.7 to 1,0 W
Response times :	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**





## Section 2

## Remote air valves

---





# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max] NI/min	Individual mounting			Manifold mounting	Series
			Inline	Sub-base non "plug-in"	Valve only - no base	Valve only - no base	
<b>5/2 - 5/3</b>	<b>G1/8" - G1/4"</b>	<b>1000</b>	P. 259	P. 261			<b>400</b>
<b>3/2</b>	<b>G1/4" - G3/8"</b>	<b>2000</b>	P. 265				<b>53</b>
<b>3/2</b>	<b>G3/8" - G1/2" - G3/4"</b>	<b>5100</b>	P. 269				<b>54</b>
<b>3/2</b>	<b>G3/4" - G1"</b>	<b>20000</b>	P. 273				<b>67</b>
<b>3/2</b>	<b>G1" - G1 1/4" - G1 1/2"</b>	<b>31000</b>	P. 277				<b>68</b>
<b>3/2 - 2/2</b>	<b>G1 1/2" - G2" - G2 1/2"</b>	<b>60000</b>	P. 281				<b>69</b>
<b>5/2</b>	<b>G1/4" - G3/8"</b>	<b>1500</b>	P. 285				<b>83</b>
<b>5/2 - 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3100</b>			P. 289	P. 289	<b>ISO 2</b>
<b>5/2 - 5/3</b>	<b>G1/2" - G3/4"</b>	<b>6200</b>			P. 293	P. 293	<b>ISO 3</b>







# R e m o t e   a i r   v a l v e s

## Individual mounting

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

## Series

**400**

**53**

**54**

**67**

**68**

**69**

**83**

**ISO 2**

**ISO 3**



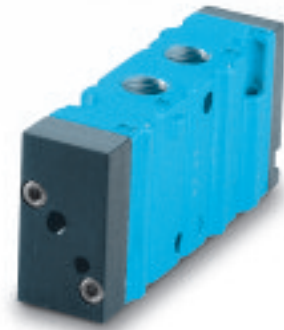


# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2 - 5/3</b>	<b>G1/8" - G1/4"</b>	<b>1000 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking.
4. Long service life.
5. Short stroke with high flow.



- 400**
- 53**
- 54**
- 67**
- 68**
- 69**
- 83**
- ISO 2**
- ISO 3**

### HOW TO ORDER

#### SINGLE PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre	5/3 Pressure centre
<b>G1/8"</b>	411A-COJ-RA Mod 1493	421A-COJ-RA	451A-COJ-RA	461A-COJ-RA	471A-COJ-RA
<b>G1/4"</b>	411A-DOJ-RA Mod 1493	421A-DOJ-RA	451A-DOJ-RA	461A-DOJ-RA	471A-DOJ-RA

#### DUAL PRESSURE VALVES

Port size	5/2 Double operator
<b>G1/8"</b>	441A-COJ-RA
<b>G1/4"</b>	441A-DOJ-RA

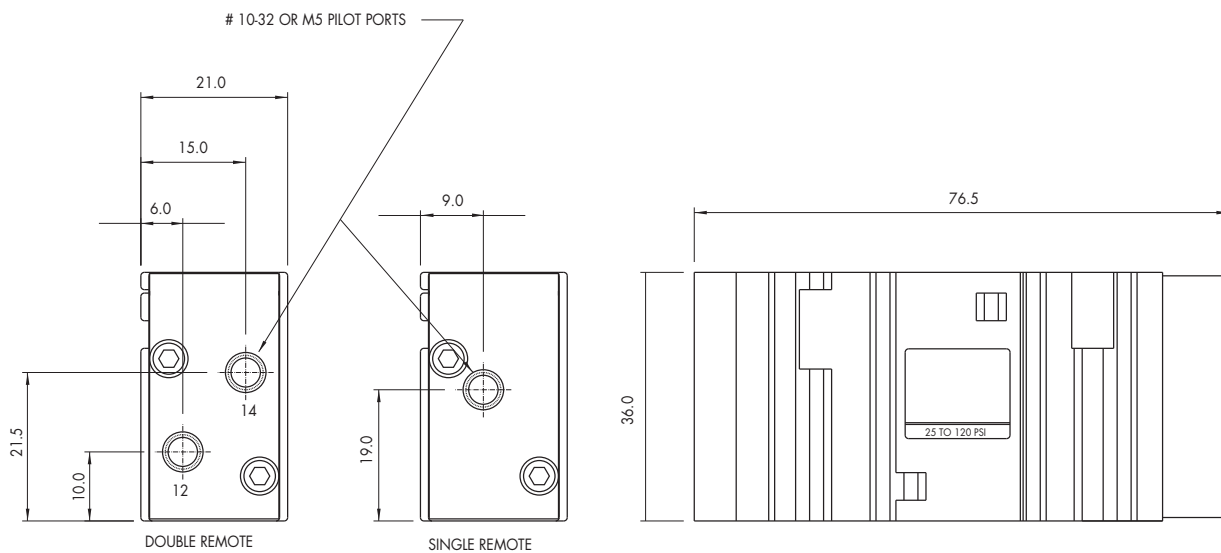
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Single operator: vacuum to 6,7 bar Double operator: vacuum to 10 bar
<b>Air signal pressure :</b>	Single oper.: 2.7 to 10 bar Double oper., 2 pos.: 1,3 to 10 bar, 3 pos.: 2,3 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Orifice :</b>	6.2 mm
<b>Flow :</b>	1000 NI/min (Cv 1.0)
<b>Note :</b>	Air signal must be $\geq$ main valve pressure

Option : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)



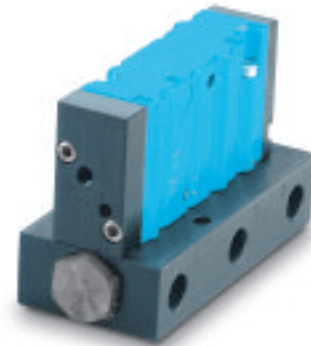


# Remote air valves

Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2 - 5/3</b>	<b>G1/8" - G1/4"</b>	<b>1000 NI/min</b>	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**  
53  
54  
67  
68  
69  
83  
ISO 2  
ISO 3

### HOW TO ORDER

#### SINGLE PRESSURE VALVES

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre	5/3 Pressure centre
<b>Valve less base</b>	413A-00J-RA	423A-00J-RA	453A-00J-RA	463A-00J-RA	473A-00J-RA
<b>G1/8"</b>	413A-CAJ-RA Mod 1493	423A-CAJ-RA	453A-CAJ-RA	463A-CAJ-RA	473A-CAJ-RA
<b>G1/4"</b>	413A-DAJ-RA Mod 1493	423A-DAJ-RA	453A-DAJ-RA	463A-DAJ-RA	473A-DAJ-RA

#### DUAL PRESSURE VALVES

Port size	5/2 Double operator
<b>G1/8"</b>	443A-CAJ-RA
<b>G1/4"</b>	443A-DAJ-RA

### OPTIONS

423A-CAJ-RA  
**B** for base with flow controls

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Single operator: vacuum to 6,7 bar      Double operator: vacuum to 10 bar
<b>Air signal pressure :</b>	Single oper.: 2.7 to 10 bar    Double oper., 2 pos.: 1,3 to 10 bar, 3 pos.: 2,3 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Orifice :</b>	6.2 mm
<b>Flow :</b>	1000 NI/min (Cv 1.0)
<b>Note :</b>	Air signal must be $\geq$ main valve pressure

Options :

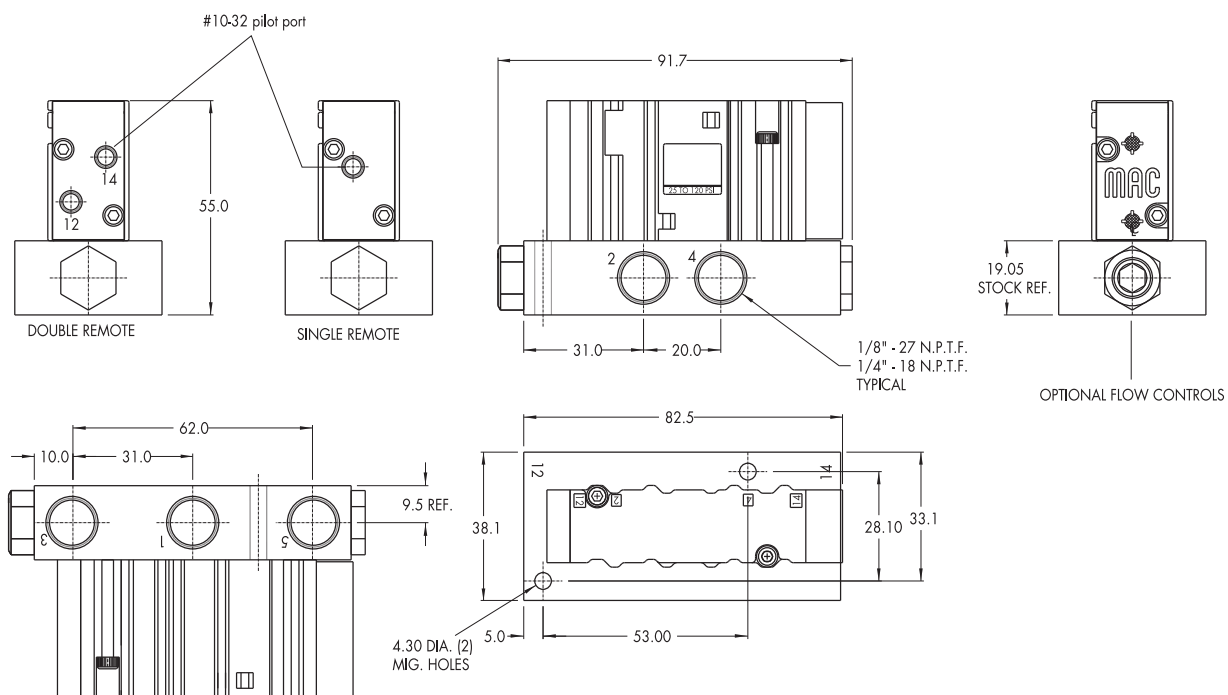
- NPTF threads

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)





R e m o t e   a i r   v a l v e

Individual mounting

Inline
--------

Series

400

**53**

54

67

68

69

83

ISO 2

ISO 3







# R e m o t e a i r v a l v e

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC</b>	<b>G1/4" - G3/8"</b>	<b>2000 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking
4. Long service life
5. Short stroke with high flow



- 400
- 53**
- 54
- 67
- 68
- 69
- 83
- ISO 2
- ISO 3

### HOW TO ORDER

#### SINGLE OPERATOR

Port size	Pilot air	Single operator NC Valve	Single operator NO Valve
<b>G1/4"</b>	Internal	53A-1AC-DM-RA14	53A-2AC-DM-RA14
<b>G3/8"</b>		53A-1AD-DM-RA14	53A-2AD-DM-RA14
<b>G1/4"</b>	External from 10 end	53A-1BC-DM-RA14	53A-2BC-DM-RA14
	External from 12 end	53A-1CC-DM-RA14	53A-2CC-DM-RA14
<b>G3/8"</b>	External from 10 end	53A-1BD-DM-RA14	53A-2BD-DM-RA14
	External from 12 end	53A-1CD-DM-RA14	53A-2CD-DM-RA14

#### DOUBLE OPERATOR

Port size	Double operator NC Valve	Double operator NO Valve
<b>G1/4"</b>	53A-3DC-RA	53A-4DC-RA
<b>G3/8"</b>	53A-3DD-RA	53A-4DD-RA

### OPTIONS

53A-X xx-DM-RA14

- Replace by 5 for N.C. valve with memory spring
- Replace by 6 for N.O. valve with memory spring

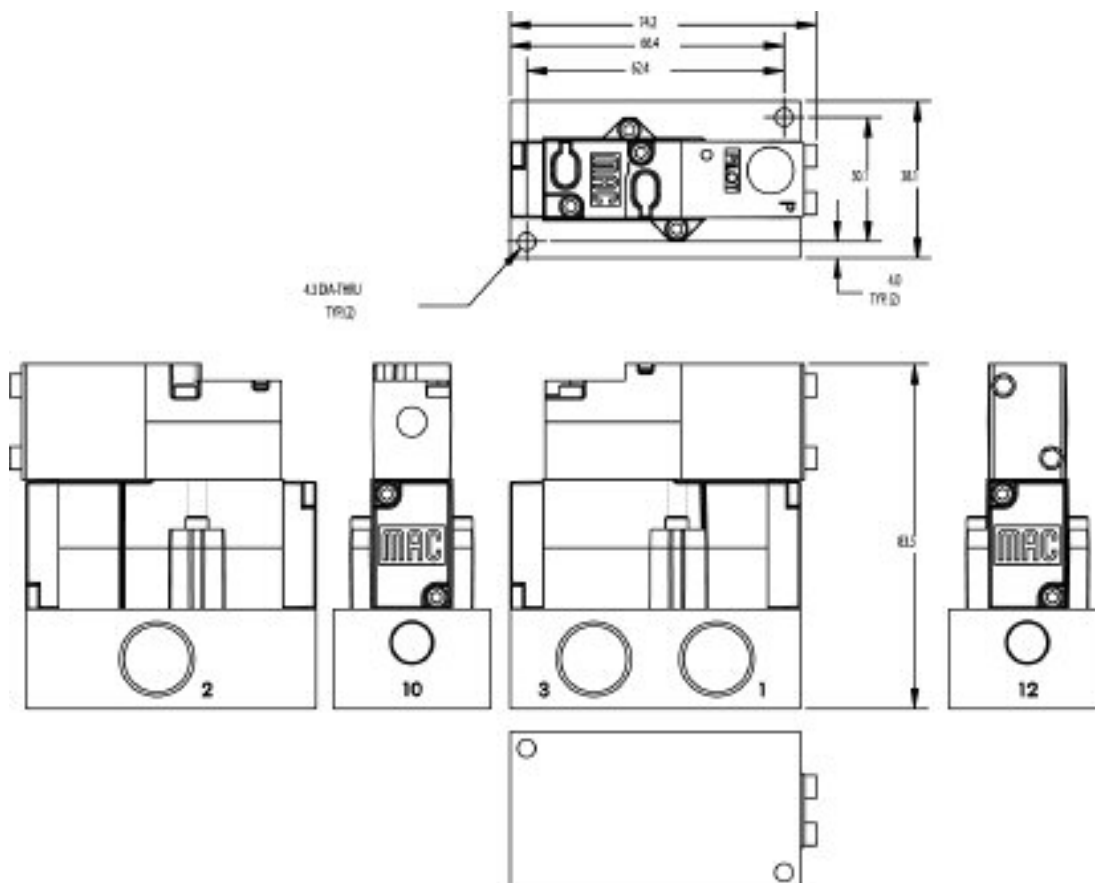
**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Int. pilot & double remote: 1,3 to 8 bar                      Internal pilot with memory spring: 2,3 to 8 bar External pilot: Vacuum to 8 bar
Air signal pressure :	Single operator: 2,3 to 4 bar - Double operator: 1,3 to 8 bar*
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	8,5 mm
Flow :	2000 NI/min (Cv 2.0)
* Note :	Air signal pressure must be $\geq$ main valve pressure

Options :                      • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





R e m o t e   a i r   v a l v e

Individual mounting

Individual base
-----------------

Series

400

53

**54**

67

68

69

83

ISO 2

ISO 3





# R e m o t e a i r v a l v e

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2</b>	<b>G3/8" - G1/2" - G3/4"</b>	<b>5100 NI/min</b>	Individual base	

### 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 OPERATOR

Port size	Pilot air	NC Valve	NO Valve
<b>Valve less base</b>	Internal	54A-AA-000-DM-RA14	54A-BA-000-DM-RA14
	External from 10 end	54A-AC-000-DM-RA14	54A-BC-000-DM-RA14
	External from 12 end	54A-AB-000-DM-RA14	54A-BB-000-DM-RA14
<b>G3/8"</b>	Internal	54A-AA-D1A-DM-RA14	54A-BA-D1A-DM-RA14
	External from 10 end	54A-AC-D1A-DM-RA14	54A-BC-D1A-DM-RA14
	External from 12 end	54A-AB-D1A-DM-RA14	54A-BB-D1A-DM-RA14
<b>G1/2"</b>	Internal	54A-AA-E1A-DM-RA14	54A-BA-E1A-DM-RA14
	External from 10 end	54A-AC-E1A-DM-RA14	54A-BC-E1A-DM-RA14
	External from 12 end	54A-AB-E1A-DM-RA14	54A-BB-E1A-DM-RA14
<b>G3/4"</b>	Internal	54A-AA-F1A-DM-RA14	54A-BA-F1A-DM-RA14
	External from 10 end	54A-AC-F1A-DM-RA14	54A-BC-F1A-DM-RA14
	External from 12 end	54A-AB-F1A-DM-RA14	54A-BB-F1A-DM-RA14

#### DOUBLE OPERATOR

Port size	Double operator NC Valve	Double operator NO Valve
<b>Valve less base</b>	54A-ED-000-RA	54A-FD-000-RA
<b>G3/8"</b>	54A-ED-D1C-RA	54A-FD-D1C-RA
<b>G1/2"</b>	54A-ED-E1C-RA	54A-FD-E1C-RA
<b>G3/4"</b>	54A-ED-F1C-RA	54A-FD-F1C-RA

### OPTIONS

#### SINGLE OPERATOR MODELS

54A-xX-xXx-DM-RA14

- 1 Individual Base – Side ports
- 2 Individual Base – Bottom Cylinder ports (No side cyl. port)
- 0 Base only
- E Base Mount Body – Internal pilot - Pilot exhaust out main exhaust (with DU pilot)
- F Base Mount Body – External pilot (12 end) – Pilot exhaust out main exhaust (with DU pilot)
- G Base Mount Body – External pilot (10 end) – Pilot exhaust out main exhaust (with DU pilot)

#### DUAL OPERATOR MODELS

54A-xx-xXx-RA

- 1 Individual Base – Side ports
- 2 Individual Base – Bottom Cylinder ports (No side cyl. port)

400

53

54

67

68

69

83

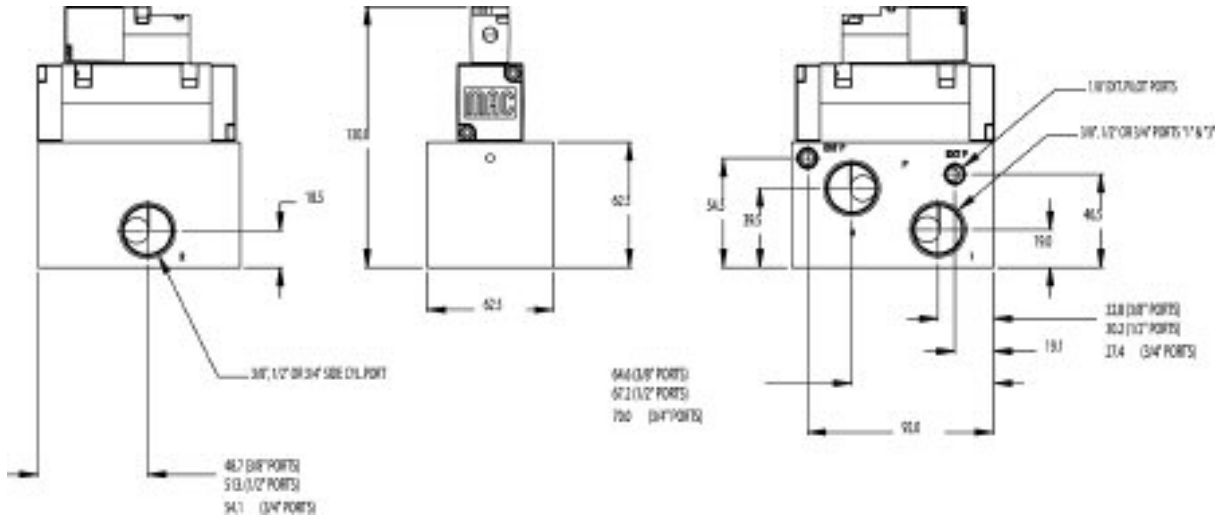
ISO 2

ISO 3

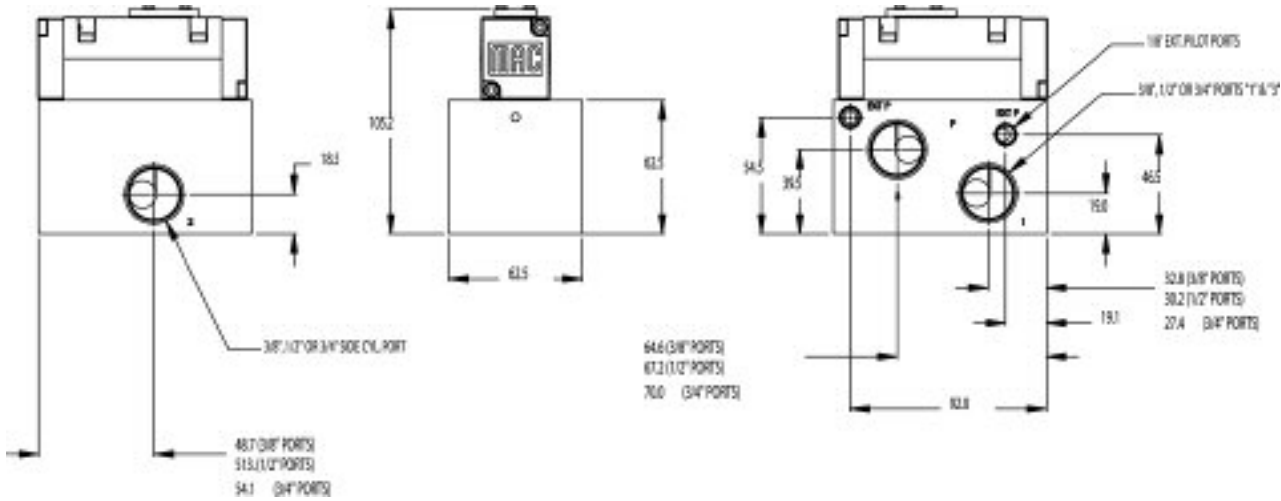
TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Int. pilot & double remote: 1,3 to 8 bar External pilot: Vacuum to 8 bar
Air signal pressure :	Single operator: 2,3 to 4 bar - Double operator: 1,3 to 8 bar*
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	13,5 mm
Flow :	5100 NI/min (Cv 5.1)
* Note :	For external pilot and double remote, air signal pressure must be ≥ main valve pressure
Options :	• NPTF threads

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

SINGLE REMOTE



DOUBLE REMOTE





# R e m o t e   a i r   v a l v e s

## Individual mounting

Inline
--------

## Series

400

53

54

**67**

68

69

83

ISO 2

ISO 3





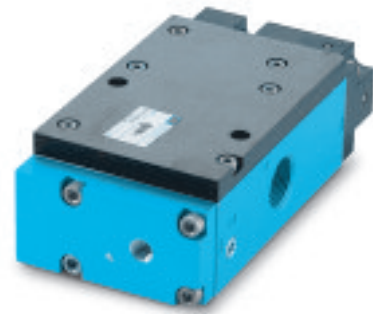


# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2</b>	<b>G3/4" - G1"</b>	<b>20000 NI/min</b>	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.



- 400
- 53
- 54
- 67**
- 68
- 69
- 83
- ISO 2
- ISO 3

### HOW TO ORDER

Port size	Pilot air	Single Operator		Double Operator	
		NO Valve	NC Valve	NO Valve	NC Valve
<b>G3/4"</b>	Internal	67A-C3-CRA-RA	67A-A3-CRA-RA	67A-D4-CRA-RA	67A-B4-CRA-RA
<b>G1"</b>		67A-C3-DRA-RA	67A-A3-DRA-RA	67A-D4-DRA-RA	67A-B4-DRA-RA
<b>G3/4"</b>	External	67A-C3-CRB-RE	67A-A3-CRB-RE	-	-
<b>G1"</b>		67A-C3-DRB-RE	67A-A3-DRB-RE	-	-

Note : Designation 'RE' required on remote air models with main valve pressures of vacuum to 1,3 bar.  
 'RE' provides an external pilot and should have a pressure range of 1,3 - 5 bar. Since the external pilot supplies the air spring, it must not exceed the remote air pilot pressure.



100%  
OF  
PRODUCTION  
TESTED  
100%

WARRANTY  
**18**  
MONTHS

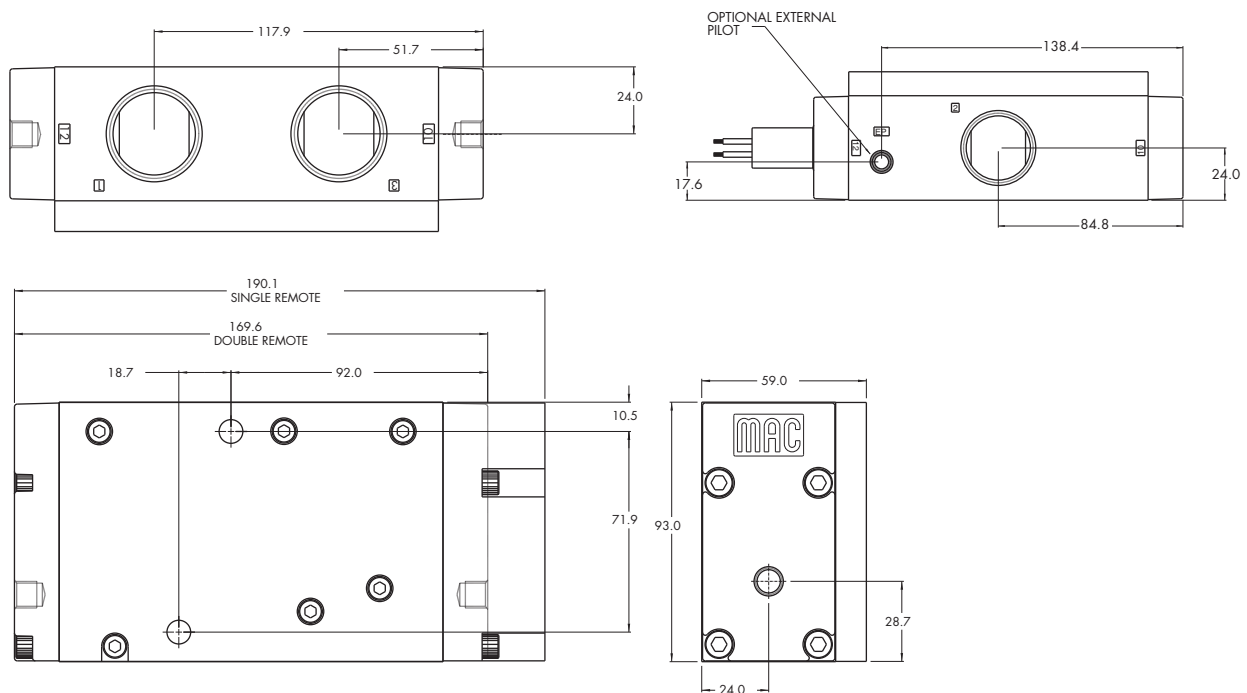
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Vacuum to 10 bar
<b>Air signal pressure :</b>	1.3 to 10 bar (must be $\geq$ main valve pressure)
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 $\mu$
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	26.8 mm
<b>Flow :</b>	3/4" : 14500 Nl/min (Cv 14.5) - 1" : 20000 Nl/min (Cv 20.0)

Options : • NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





R e m o t e   a i r   v a l v e s

Individual mounting

Inline
--------

Series

- 400
- 53
- 54
- 67
- 68**
- 69
- 83
- ISO 2
- ISO 3



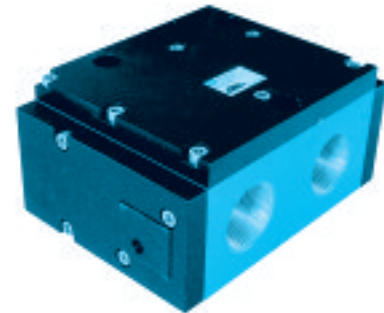


# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2, 2/2</b>	<b>G1", G1 1/4", G1 1/2"</b>	<b>31000 NI/min</b>	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



- 400
- 53
- 54
- 67
- 68**
- 69
- 83
- ISO 2
- ISO 3

### HOW TO ORDER

#### SINGLE OPERATOR

Port size	Air Spring	Single Operator NO valve	Single Operator NC valve
<b>G 1</b>	Internal	68A-C3-DRA-RA	68A-A3-DRA-RA
<b>G 1 1/4"</b>		68A-C3-ERA-RA	68A-A3-ERA-RA
<b>G 1 1/2"</b>		68A-C3-FRA-RA	68A-A3-FRA-RA
<b>G 1</b>	External	68A-C3-DRB-RE	68A-A3-DRB-RE
<b>G 1 1/4"</b>		68A-C3-ERB-RE	68A-A3-ERB-RE
<b>G 1 1/2"</b>		68A-C3-FRB-RE	68A-A3-FRB-RE

#### DOUBLE OPERATOR

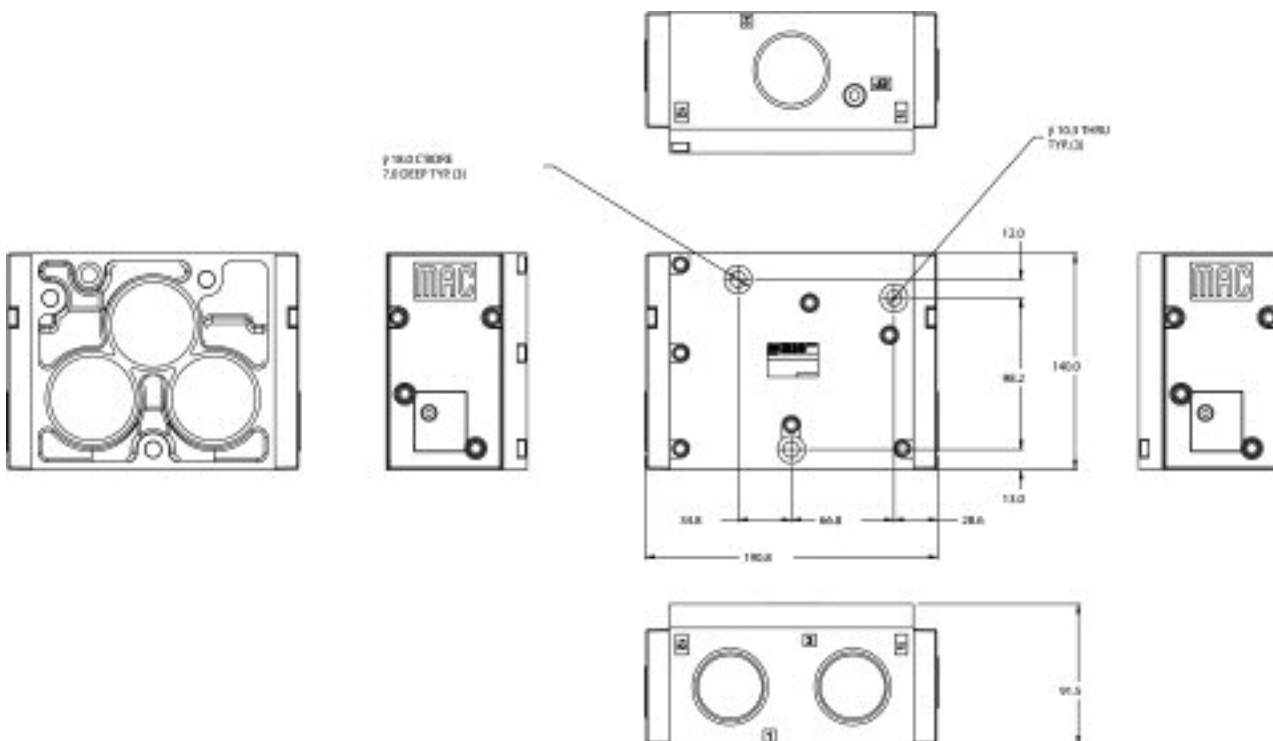
Port size	Double Operator NO valve	Double Operator NC valve
<b>G 1</b>	68A-D4-DRB-RA	68A-B4-DRB-RA
<b>G 1 1/4"</b>	68A-D4-ERB-RA	68A-B4-ERB-RA
<b>G 1 1/2"</b>	68A-D4-FRB-RA	68A-B4-FRB-RA

**TECHNICAL DATA**

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 8 bar
Air signal pressure :	1,3 to 8 bar (Must be $\geq$ main valve pressure)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 $\mu$
Temperature range :	-18°C to +50°C
Orifice :	33,4 mm
Flow :	31000 NI/min (Cv 31.0)

**DIMENSIONS**

Dimensions shown are metric (mm)





R e m o t e   a i r   v a l v e s

Individual mounting

Inline
--------

Series

- 400
- 53
- 54
- 67
- 68
- 69**
- 83
- ISO 2
- ISO 3





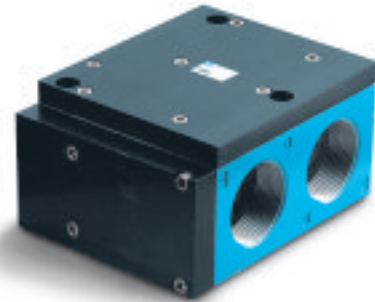


# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max]	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>G1 1/2" - G2" - G2 1/2"</b>	<b>60000 NI/min</b>	Inline	

### OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure
2. Bonded spool with minimum friction, shifting in a glass like finished bore
3. Wiping effect eliminates sticking and contamination
4. Long service life



- 400
- 53
- 54
- 67
- 68
- 69**
- 83
- ISO 2
- ISO 3

### HOW TO ORDER

#### SINGLE OPERATOR

Port size	Air Spring	Single Operator NO valve	Single Operator NC valve
<b>G 1 1/2"</b>	Internal	69A-C3-DRA-RA	69A-A3-DRA-RA
<b>G 2"</b>		69A-C3-ERA-RA	69A-A3-ERA-RA
<b>G 2 1/2"</b>		69A-C3-FRA-RA	69A-A3-FRA-RA
<b>G 1 1/2"</b>	External	69A-C3-DRB-RE	69A-A3-DRB-RE
<b>G 2"</b>		69A-C3-ERB-RE	69A-A3-ERB-RE
<b>G 2 1/2"</b>		69A-C3-FRB-RE	69A-A3-FRB-RE

#### DOUBLE OPERATOR

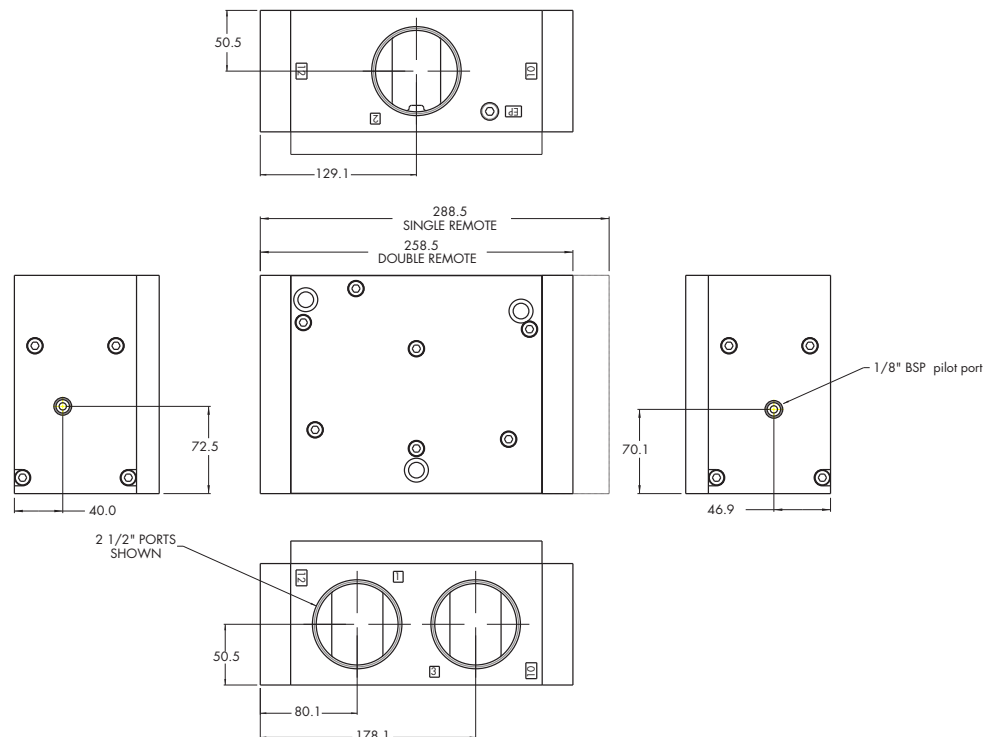
Port size	Double Operator NO valve	Double Operator NC valve
<b>G 1 1/2"</b>	69A-D4-DRB-RA	69A-B4-DRB-RA
<b>G 2"</b>	69A-D4-ERB-RA	69A-B4-ERB-RA
<b>G 2 1/2"</b>	69A-D4-FRB-RA	69A-B4-FRB-RA

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Supply pressure:</b>	Internal pilot: 1,3 to 10 bar External pilot: Vacuum to 10 bar
<b>Air signal pressure :</b>	1,3 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	46,5 mm
<b>Flow :</b>	60000 NI/min (Cv 60.0)

**DIMENSIONS**

Dimensions shown are metric (mm)





# R e m o t e   a i r   v a l v e s

## Individual Mounting

Inline
--------

## Série

400

53

54

67

68

69

**83**

ISO 2

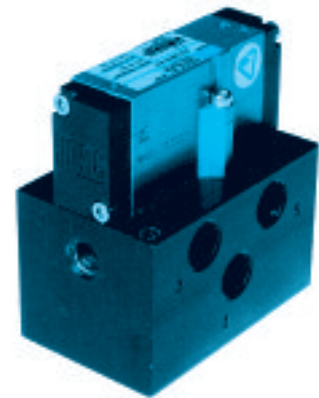
ISO 3



Function	Port size	Flow [Max]	Individual mounting	Series
<b>5/2 - 5/3</b>	<b>G 1/4" - G 3/8"</b>	<b>3100 NI/min</b>	Inline	

**OPERATIONAL BENEFITS**

1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking.
4. Long service life.
5. Short stroke with high flow.



400  
53  
54  
67  
68  
69  
**83**

**HOW TO ORDER**

**SINGLE OPERATOR**

Port size	Port size	5/2 Single operator	5/2 Dual pressure
<b>G 1/4"</b>	Internal	83A-AAC-DM-RA14	83A-CBC-DM-RA14
	External 14 end	83A-ADC-DM-RA14	83A-CDC-DM-RA14
	External 12 end	83A-AEC-DM-RA14	83A-CEC-DM-RA14
<b>G 3/8"</b>	Internal	83A-AAD-DM-RA14	83A-CBD-DM-RA14
	External 14 end	83A-ADD-DM-RA14	83A-CDD-DM-RA14
	External 12 end	83A-AED-DM-RA14	83A-CED-DM-RA14

ISO 2  
ISO 3

**DOUBLE OPERATOR**

Port size	5/2 Single pressure	5/2 Dual pressure	5/3 Closed centre	5/3 Open centre	5/3 Dual pressure Pressure centre
<b>G 1/4"</b>	83A-BFC-RA	83A-DFC-RA	83A-EFC-RA	83A-FFC-RA	83A-GFC-RA
<b>G 3/8"</b>	83A-BFD-RA	83A-DFD-RA	83A-EFD-RA	83A-FFD-RA	83A-GFD-RA

Note: Above models are for side cylinder ports

**OPTIONS**

Single operator

83A-xxx-DM-RA14

Replace by **M** for single pressure with memory spring  
Replace by **N** for dual pressure with memory spring

Double operator

83A-xxX-RA

Replace by **H** for bottom cylinder ports (1/4" BSPP)

83A-xxx-DM-RA14

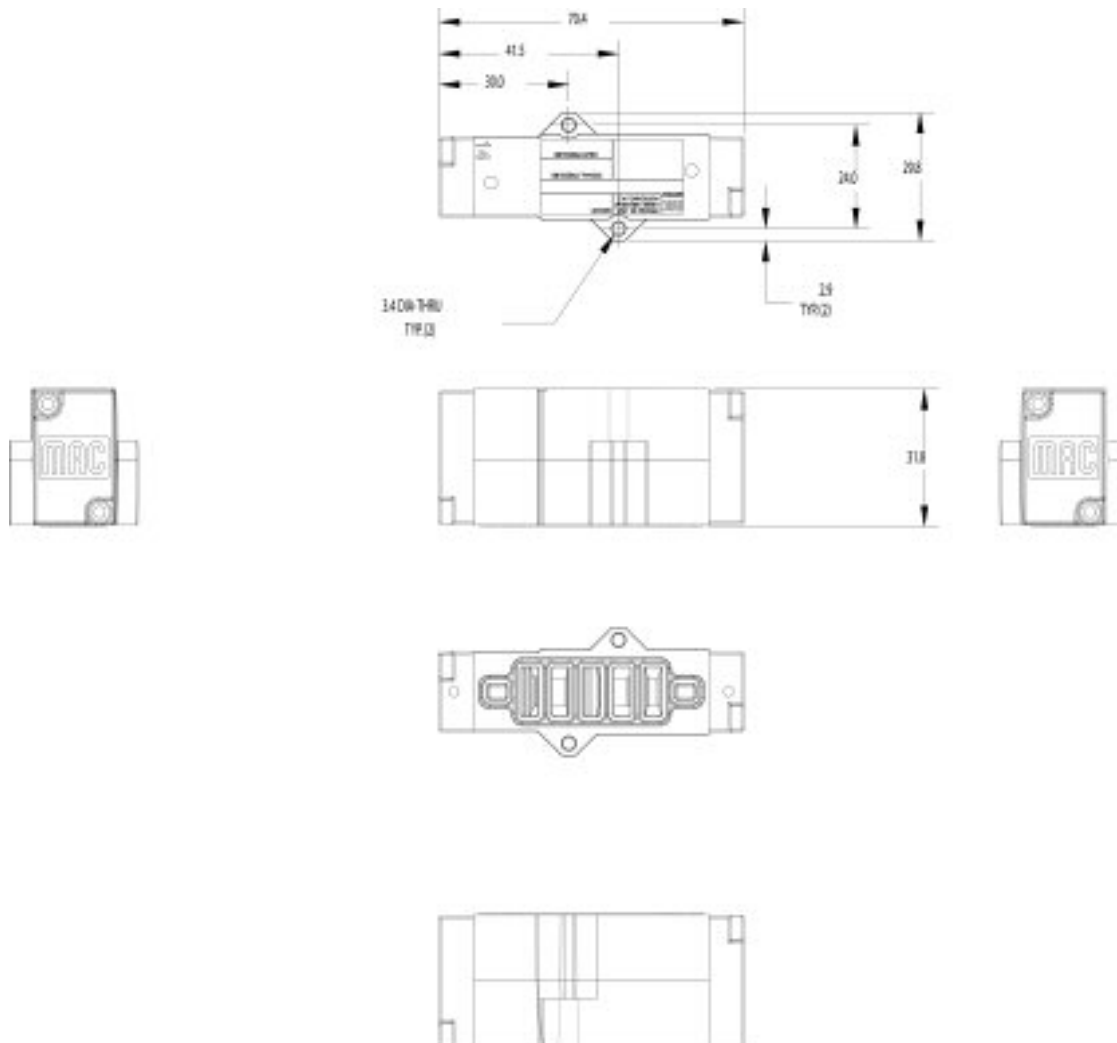
Replace by **H** for bottom cylinder ports (1/4" BSPP)

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Sgl. operator : vacuum to 8 bar (external pilot) 1,3 to 8 bar (internal pilot) 2,3 to 8 bar (internal pilot with memory spring) Dbl. operator : 1,3 to 8 bar
<b>Air signal pressure :</b>	Sgl. operator: 2,3 to 4 bar – Dbl. operator: 1,3 to 8 bar (must be $\geq$ main valve pressure)
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 $\mu$
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	8,5 mm
<b>Flow :</b>	1500 NI/min (2 pos.) – 1100 NI/min (3 pos.)
<b>Option :</b>	• NPTF threads

**DIMENSIONS**

Dimensions shown are metric (mm)





# R e m o t e   a i r   v a l v e s

## Individual mounting

Valve only  
no base

Series

## Manifold mounting

Valve only  
no base

**400**

**53**

**54**

**67**

**68**

**69**

**83**

**ISO 2**

**ISO 3**







# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2 - 5/3</b>	<b>G3/8" - G1/2"</b>	<b>3100 NI/min</b>	Valve only no base	

### OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.



400  
53  
54  
67  
68  
69  
83

### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre
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 centre	5/3 Pressure centre
Internal port #3	MV-R2A-BCCH			
Internal port #5	MV-R2A-BCCJ	MV-R2A-BDAK	MV-R2A-BHAK	MV-R2A-BGAK
External	MV-R2A-BCCG			

Note: ISO series, valve and base are ordered separately, see page 311 for base code.

ISO 2  
ISO 3

**TECHNICAL DATA**

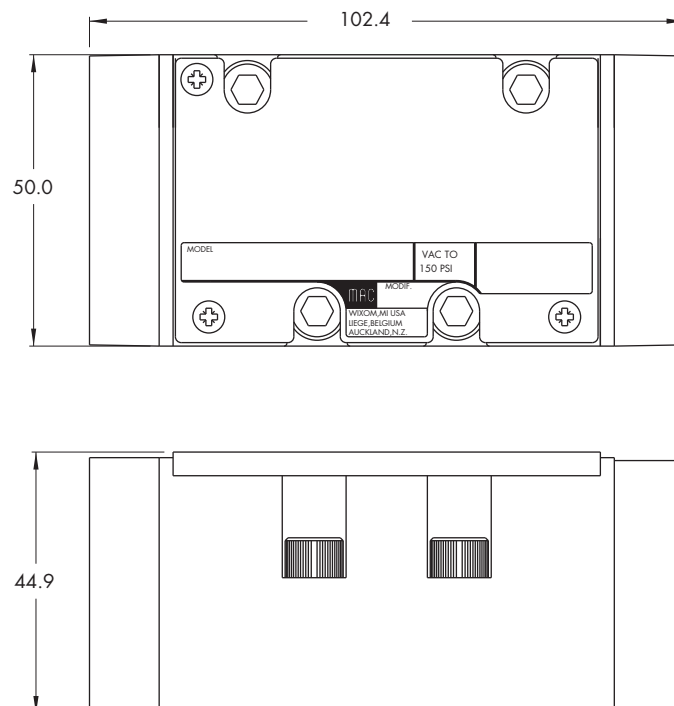
<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Vacuum to 10 bar
<b>Air signal pressure :</b>	Single/double operator: 1,3 to 10 bar 3 position: 2 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	10,6 mm
<b>Flow (at 6 bar, ΔP=1bar) :</b>	G3/8": 2800 NI/min – G1/2" : 3100 NI/min (Cv 3,1)

Spare parts :

- Valve to base pressure seal: 16576
- Valve mounting screws (x4): 35413

**DIMENSIONS**

Dimensions shown are metric (mm)





# R e m o t e   a i r   v a l v e s

## Individual mounting

Valve only  
no base

Series

## Manifold mounting

Valve only  
no base

**400**

**53**

**54**

**67**

**68**

**69**

**83**

**ISO 2**

**ISO 3**



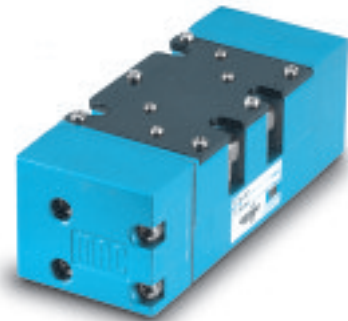


# R e m o t e a i r v a l v e s

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2 - 5/3</b>	<b>G1/2" - G3/4"</b>	<b>6200 NI/min</b>	Valve only no base	

### OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.



400  
53  
54  
67  
68  
69  
83  
ISO 2  
ISO 3

### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed centre	5/3 Open centre
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 centre
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 313 for base code.

**TECHNICAL DATA**

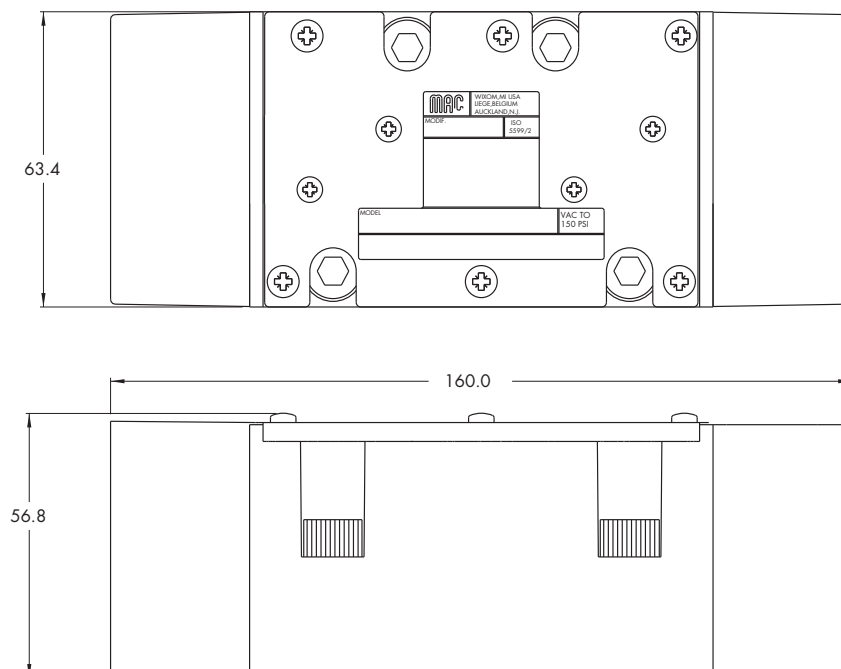
<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Vacuum to 10 bar
<b>Air signal pressure :</b>	Single/double operator: 1,3 to 10 bar 3 position: 2 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Orifice :</b>	24 mm
<b>Flow :</b>	G1/2": 5400 NI/min (Cv 5,4) – G3/4" : 6200 NI/min (Cv 6,2)

Spare parts :

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

**DIMENSIONS**

Dimensions shown are metric (mm)





## Section 3

## Bases according to ISO standards

---







## Bases according to ISO standards

		Series	
	Non plug-in Base/manifold	Plug-in Base/manifold	
	P. 299	P. 301	<b>ISO 01</b>
	P. 303	P. 305	<b>ISO 02</b>
	P. 307	P. 309	<b>ISO 1</b>
	P. 311	P. 313	<b>ISO 2</b>
	P. 315	P. 317	<b>ISO 3</b>





Series

**Non plug-in individual / manifold base**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With all side ports
<b>G1/4"</b>	Internal	MB-A01A-221	MB-A01A-222

MANIFOLD BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With side 1, 3 & 5 ports
<b>G1/4"</b>	Internal	MM-A01A-221	MM-A01A-222

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.

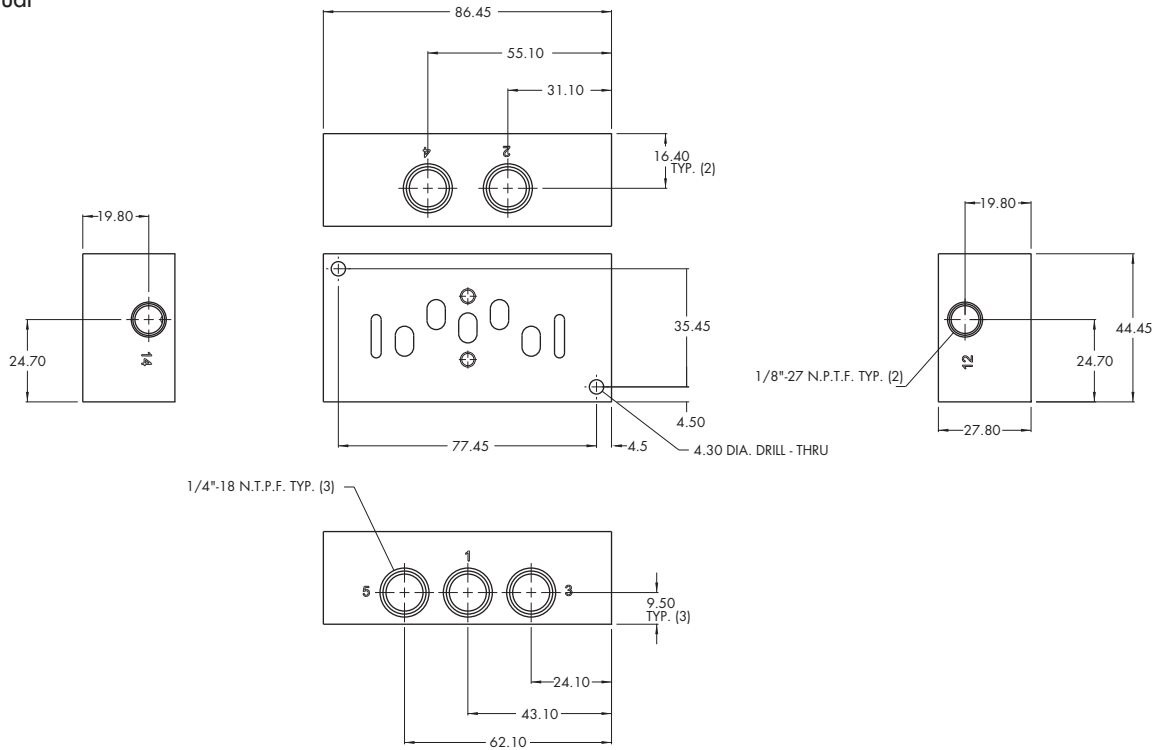
End plate kit: Internal pilot M-00017-01-01P  
 External pilot M-00017-02-01P

Inlet/exhaust isolator: 28413

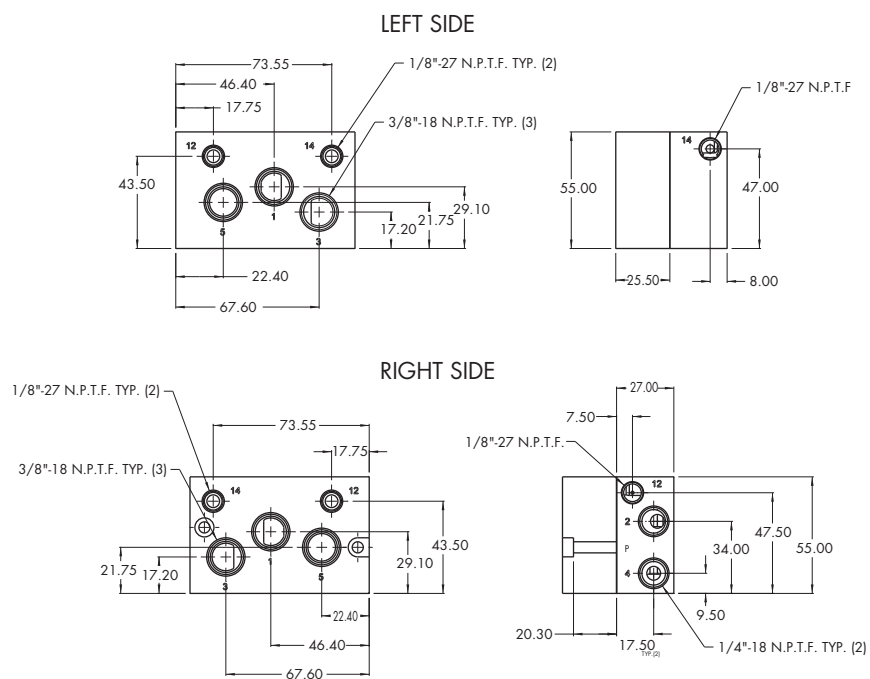
**DIMENSIONS**

Dimensions shown are metric (mm)

Individual



Manifold



**Plug-in individual / manifold base**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Pilot air	Side ports with all side ports	Bottom 2 & 4 ports
<b>G1/4"</b>	Internal	MB-P01A-221	MB-P01A-222

MANIFOLD BASE

Port size	Pilot air	Side ports With side 1, 3 & 5 ports	Bottom 2 & 4 ports
<b>G1/4"</b>	Internal	MM-P01A-221	MM-P01A-222

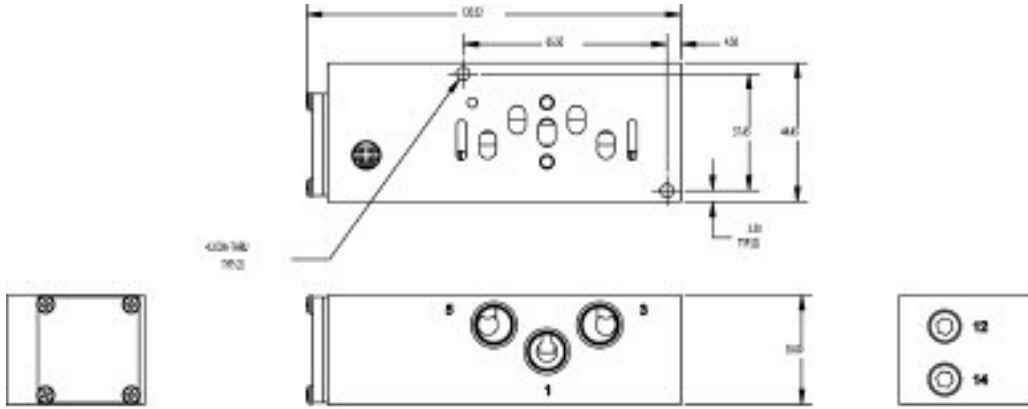
Notes:

- For manifold bases external pilot is common
- End plate kit: Internal pilot M-00020-01-01P  
External pilot M-00020-02-01P

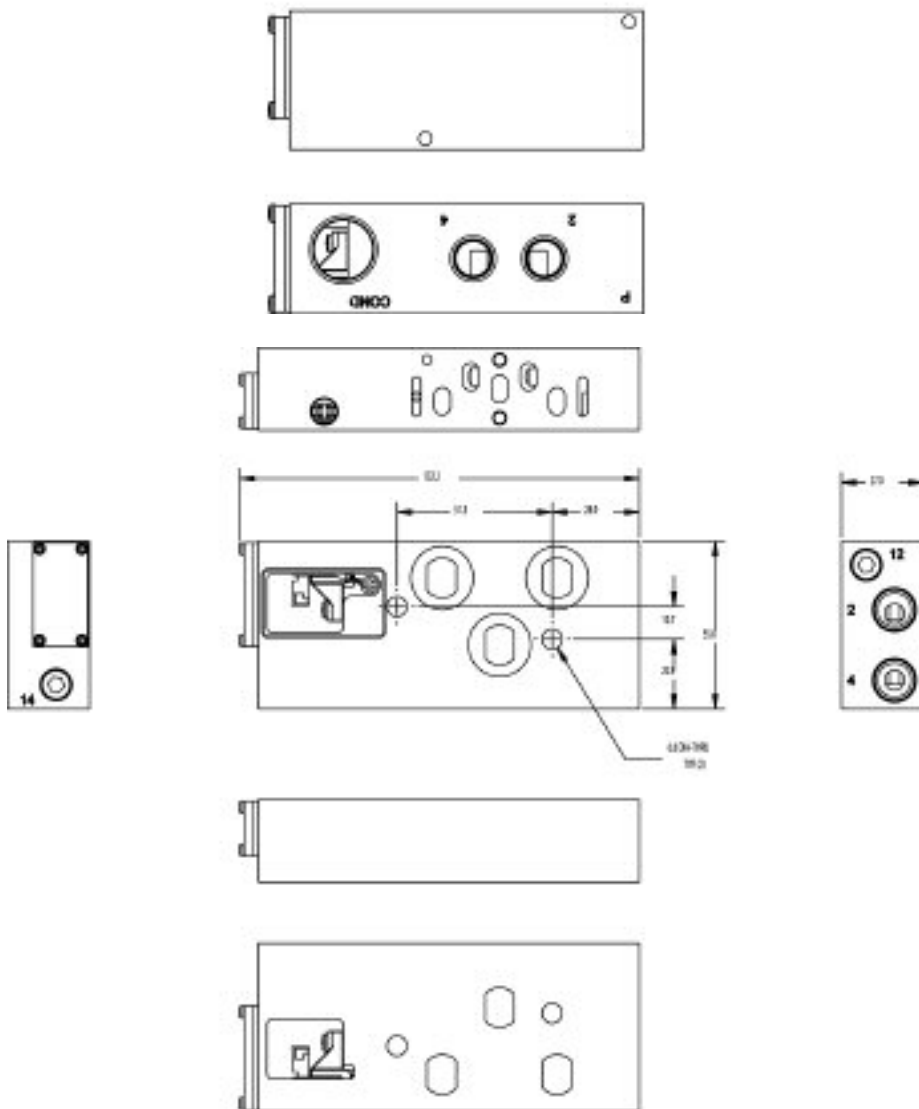
**DIMENSIONS**

Dimensions shown are metric (mm)

Individual



Manifold



**Non plug-in individual / manifold base**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With all side ports
G1/8"	Internal	MB-A02A-211	MB-A02A-212

MANIFOLD BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With side 1, 3 & 5 ports
G1/8"	Internal	MM-A02A-211	MM-A02A-212

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.

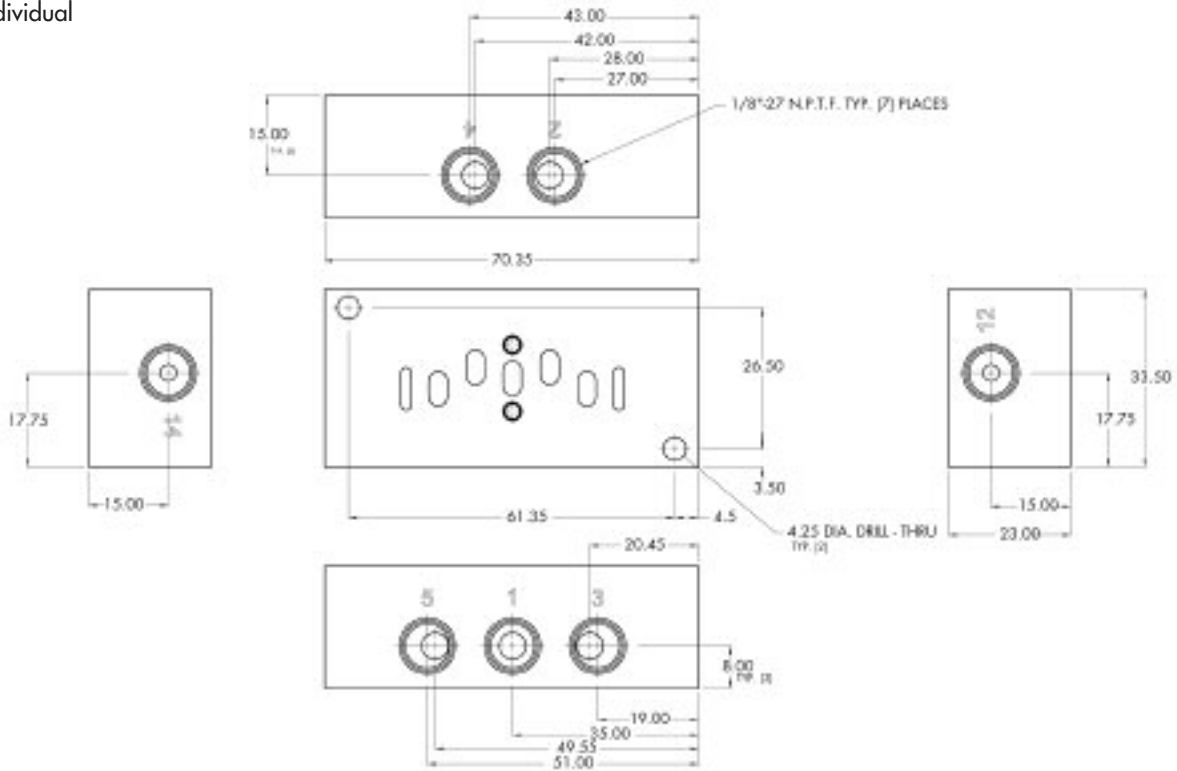
End plate kit: Internal pilot M-00018-01-01P  
 External pilot M-00018-02-01P

Inlet/exhaust isolator: 28499

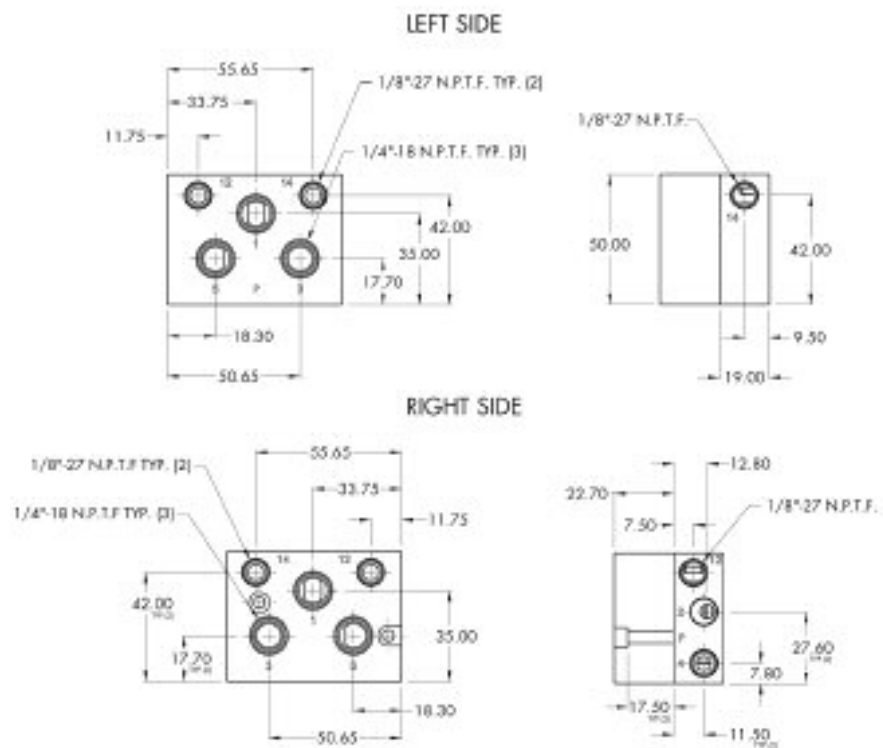
**DIMENSIONS**

Dimensions shown are metric (mm)

Individual



Manifold





**Plug-in individual / manifold base**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Pilot air	Side ports with all side ports	Bottom 2 & 4 ports
<b>G1/8"</b>	Internal	MB-P02A-211	MB-P02A-212

MANIFOLD BASE

Port size	Pilot air	Side ports With side 1, 3 & 5 ports	Bottom 2 & 4 ports
<b>G1/8"</b>	Internal	MM-P02A-211	MM-P02A-212

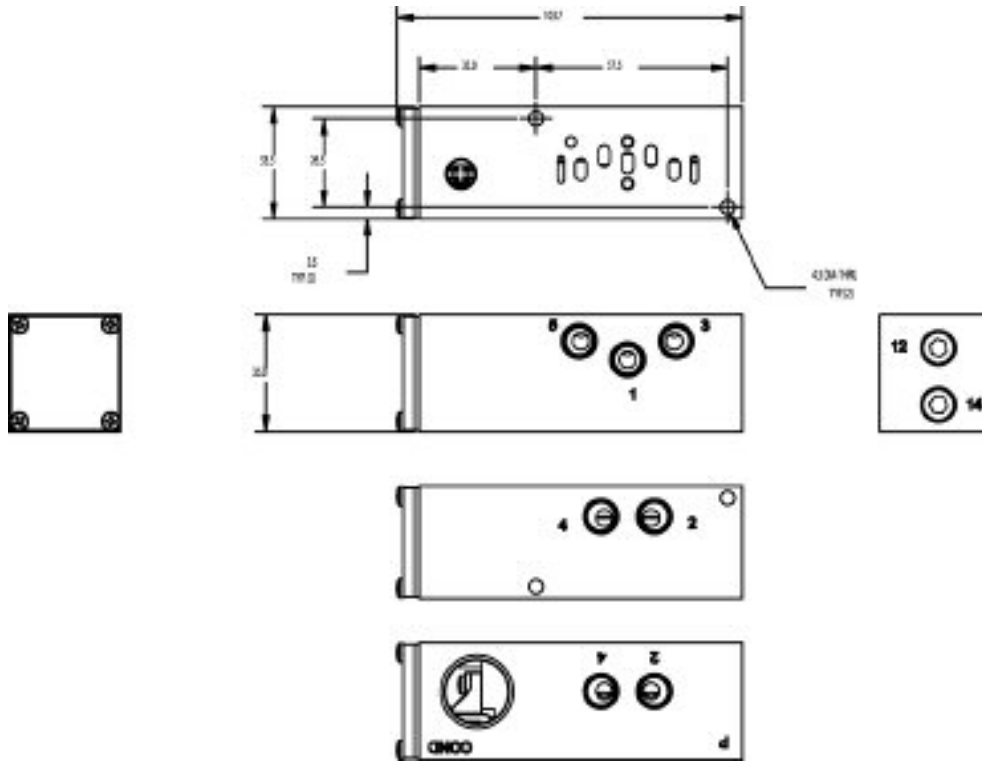
Notes:

- For manifold bases external pilot is common
- End plate kit: Internal pilot M-00021-01-01P  
 External pilot M-00021-02-01P

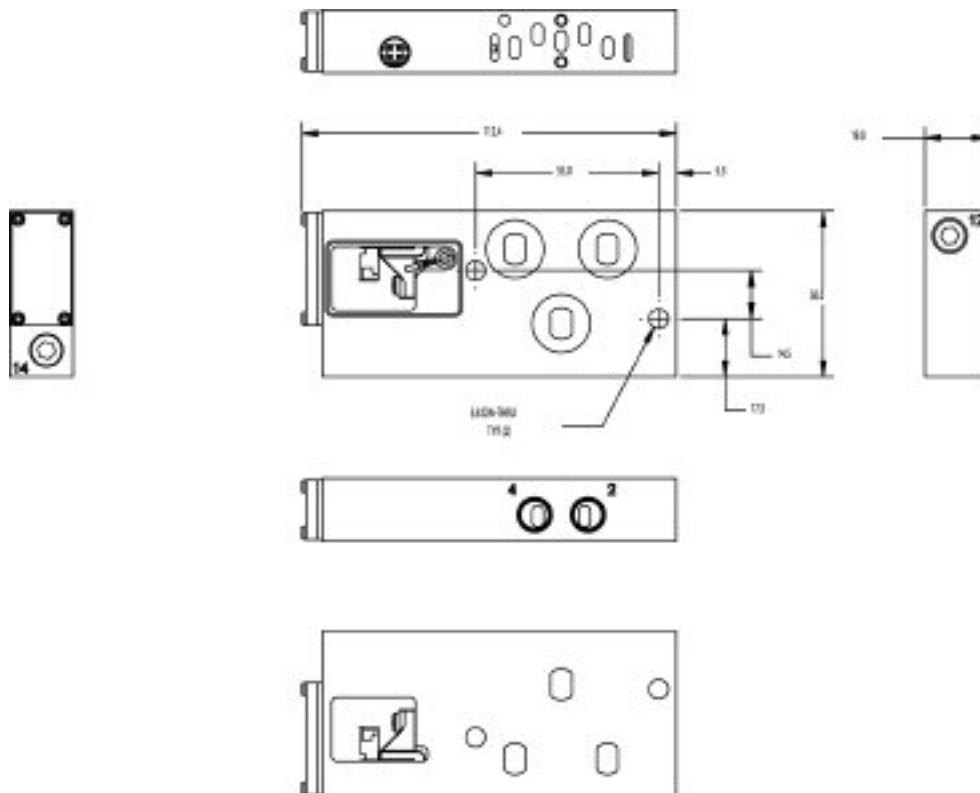
**DIMENSIONS**

Dimensions shown are metric (mm)

Individual



Manifold



**Non plug-in base / manifold**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom port 1
<b>G1/4"</b>	MB-A1C-121	MB-A1C-123	MB-A1C-122	MB-A1C-124
<b>G3/8"</b>	MB-A1C-131	MB-A1C-133	MB-A1C-132	MB-A1C-134

INDIVIDUAL BASE ACCORDING TO VDMA 24345

Port size	Side ports	Bottom ports
<b>G1/4"</b>	HB-A1A-A	HB-A1A-B

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom port 1
<b>G1/4"</b>	MM-A1C-121	MM-A1C-123	MM-A1C-122	MM-A1C-124
<b>G3/8"</b>	MM-A1C-131	MM-A1C-133	MM-A1C-132	MM-A1C-134

Manifold fastening kit : N-63002-01.

MANIFOLD BASE ACCORDING TO VDMA 24345

Port size	Side ports
<b>G1/4"</b>	HM-A1A-C

End plate kit: HM-A1A-D.

Valve blanking plate: MA1003.  
Inlet/exhaust isolator plug: 32835.





Series

Plug-in base / manifold

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



HOW TO ORDER

INDIVIDUAL BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports
<b>G1/4"</b>	Single solenoid	MB-P1A-121-A	MB-P1A-122-A	MB-P1A-123-A
	Double solenoid	MB-P1A-121-B	MB-P1A-122-B	MB-P1A-123-B
<b>G3/8"</b>	Single solenoid	MB-P1A-131-A	MB-P1A-132-A	MB-P1A-133-A
	Double solenoid	MB-P1A-131-B	MB-P1A-132-B	MB-P1A-133-B

MANIFOLD BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports (see note)
<b>G1/4"</b>	Single solenoid	MM-P1A-121-A	MM-P1A-122-A	MM-P1A-123-A
	Double solenoid	MM-P1A-121-B	MM-P1A-122-B	MM-P1A-123-B
<b>G3/8"</b>	Single solenoid	MM-P1A-131-A	MM-P1A-132-A	MM-P1A-133-A
	Double solenoid	MM-P1A-131-B	MM-P1A-132-B	MM-P1A-133-B

Note : Ports 1,3, and 5 are always 3/8".

OPTIONS

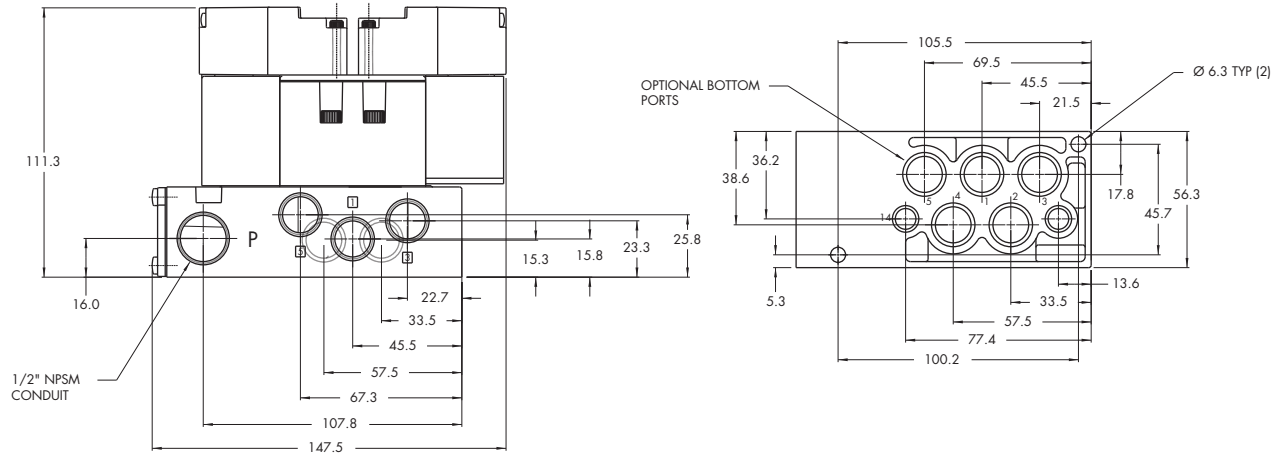
- Manifold options :
- External pilot **MM-P1A-12x-xx**
    - 32** for 1/4" port – common external pilot
    - 33** for 3/8" port – common external pilot
  - Terminal strip **MM-P1A-xxx-A** (N/A with light)
    - J** wired for sgl solenoid
    - K** wired for double solenoid
  - Base / Manifold option: light(s) **MX-P1A-xxx-xJA**
    - JA** 110/120 volt
    - JB** 220/240 volt
    - DA** 24 volt

- Accessories: M-P1001 Valve blanking plate.  
 N-P1007-01 Manifold fastening kit.  
 32835 Inlet/exhaust isolator plug.

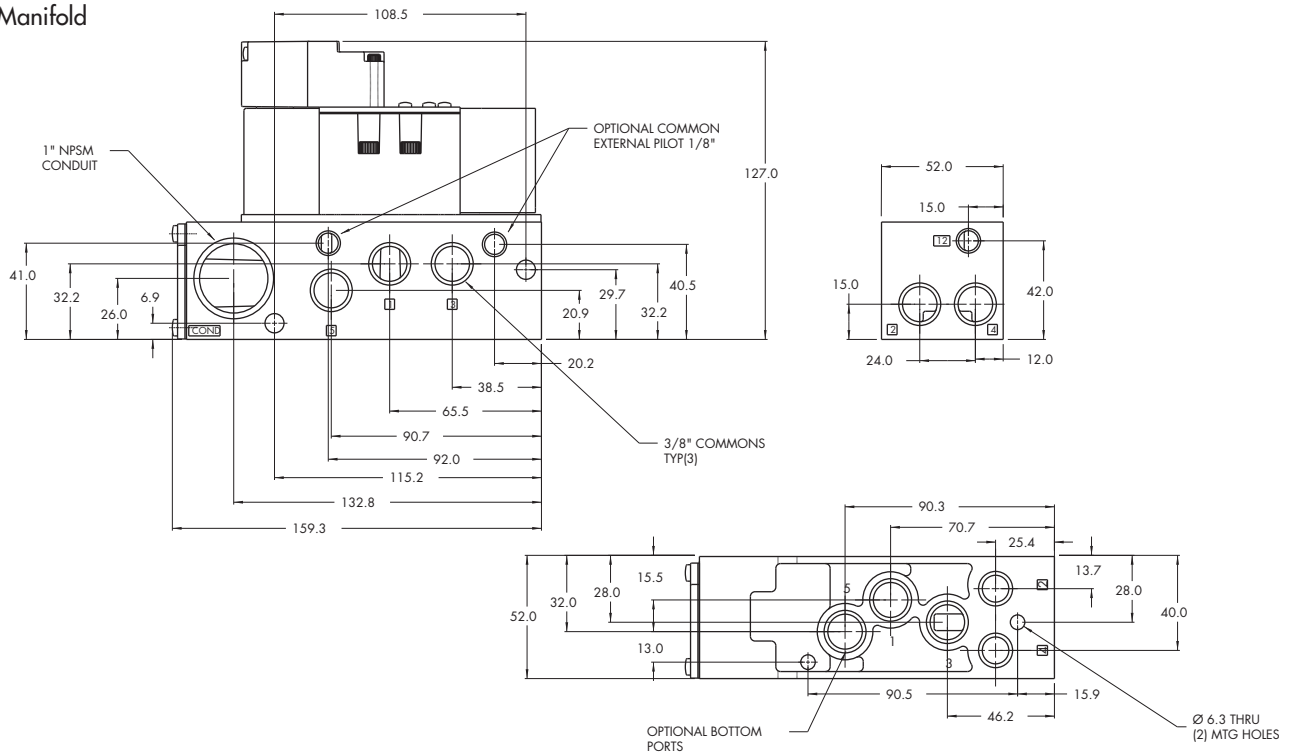
**DIMENSIONS**

Dimensions shown are metric (mm)

Individual



Manifold



**Non plug-in base / manifold**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom port 1
<b>G3/8"</b>	MB-A2B-121	MB-A2B-123	MB-A2B-122	MB-A2B-124
<b>G1/2"</b>	MB-A2B-131	MB-A2B-133	MB-A2B-132	MB-A2B-134

INDIVIDUAL BASE ACCORDING TO VDMA 24345

Port size	Side ports	Bottom ports
<b>G3/8"</b>	HB-A2B-A	HB-A2B-B

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom port 1
<b>G3/8"</b>	MM-A2B-121	MM-A2B-123	MM-A2B-122	MM-A2B-124
<b>G1/2"</b>	MM-A2B-131	MM-A2B-133	MM-A2B-132	MM-A2B-134

Manifold fastening kit : N-63002-01.

MANIFOLD BASE ACCORDING TO VDMA 24345

Port size	Side ports
<b>G3/8"</b>	HM-A2B-C

End plate kit: HM-A2B-D.

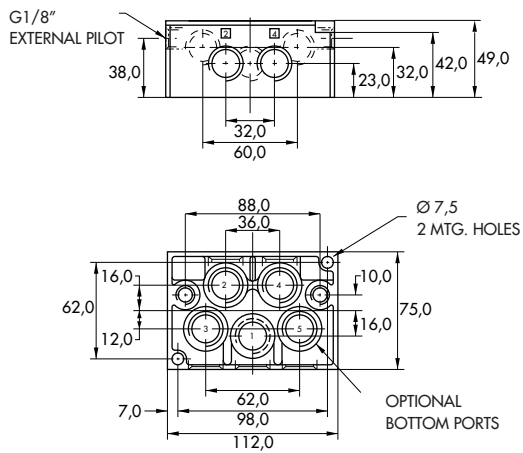
Valve blanking plate: MA2003.  
Inlet/exhaust isolator plug: 32839.

**DIMENSIONS**

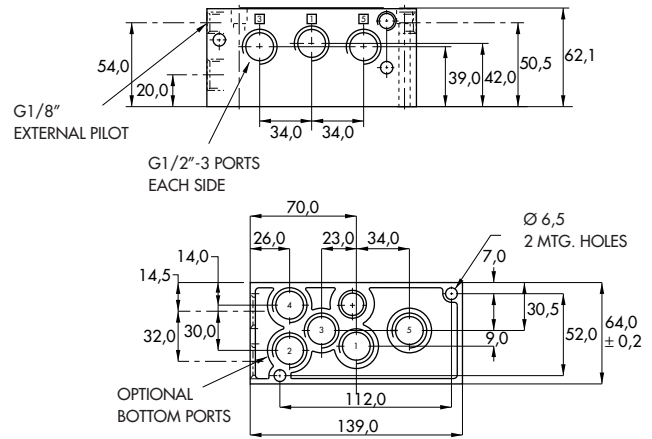
Dimensions shown are metric (mm)

Individual

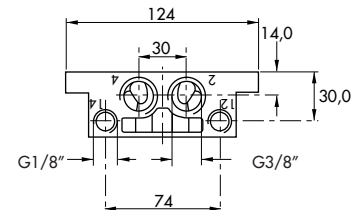
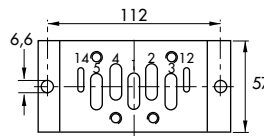
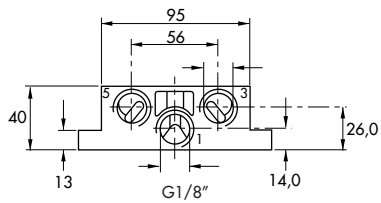
DIN 5599/1



Manifold



VDMA





Plug-in base / manifold



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

HOW TO ORDER

INDIVIDUAL BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports
G3/8"	Single solenoid	MB-P2A-121-A	MB-P2A-122-A	MB-P2A-123-A
	Double solenoid	MB-P2A-121-B	MB-P2A-122-B	MB-P2A-123-B
G1/2"	Single solenoid	MB-P2A-131-A	MB-P2A-132-A	MB-P2A-133-A
	Double solenoid	MB-P2A-131-B	MB-P2A-132-B	MB-P2A-133-B

MANIFOLD BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports (see note)
G3/8"	Single solenoid	MM-P2A-121-A	MM-P2A-122-A	MM-P2A-123-A
	Double solenoid	MM-P2A-121-B	MM-P2A-122-B	MM-P2A-123-B
G1/2"	Single solenoid	MM-P2A-131-A	MM-P2A-132-A	MM-P2A-133-A
	Double solenoid	MM-P2A-131-B	MM-P2A-132-B	MM-P2A-133-B

Note : Ports 1,3, and 5 are always 1/2".

OPTIONS

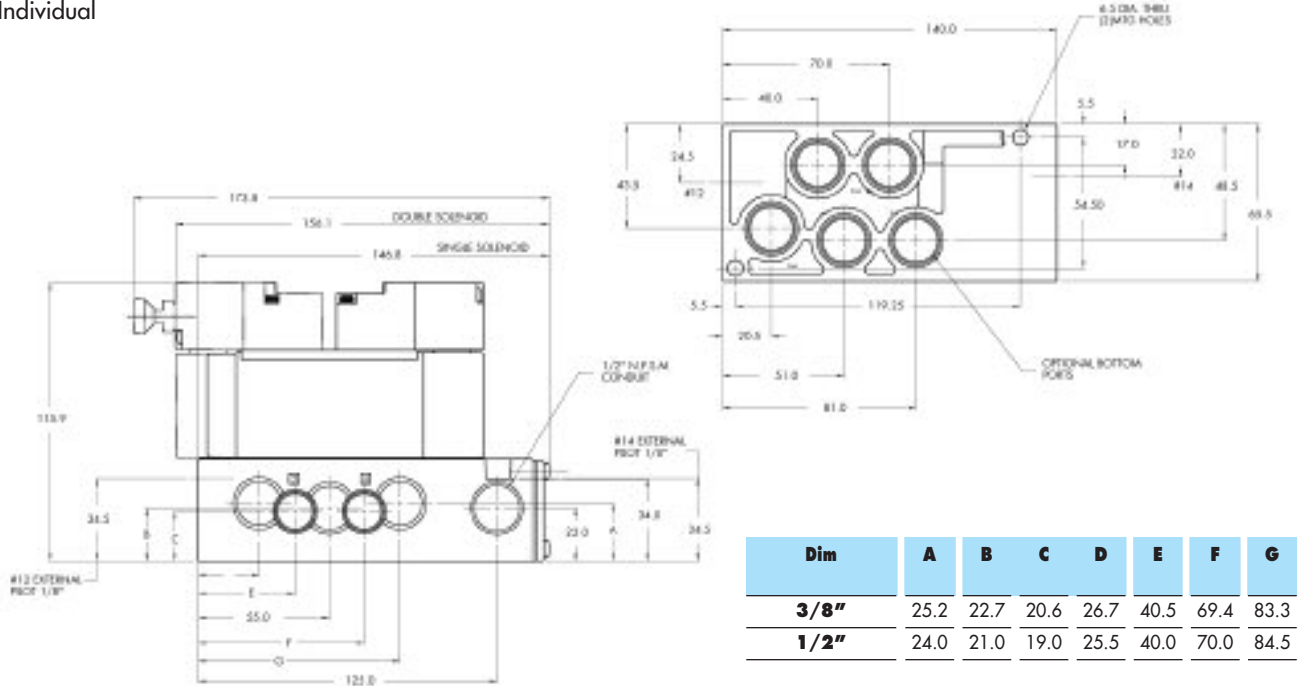
- Manifold options :
- External pilot **MM-P2A-12x-xx**
    - 32 for 3/8" port – common external pilot
    - 33 for 1/2" port – common external pilot
  - Terminal strip **MM-P2A-xxx-A** (N/A with light)
    - J wired for sgl solenoid
    - K wired for double solenoid
  - Base / Manifold option: light(s) **MX-P2A-xxx-xJA**
    - JA 110/120 volt
    - JB 220/240 volt
    - DA 24 volt

- Accessories: M-P2001 Valve blanking plate.  
N-P2004-01 Manifold fastening kit.  
32839 Inlet/exhaust isolator plug.

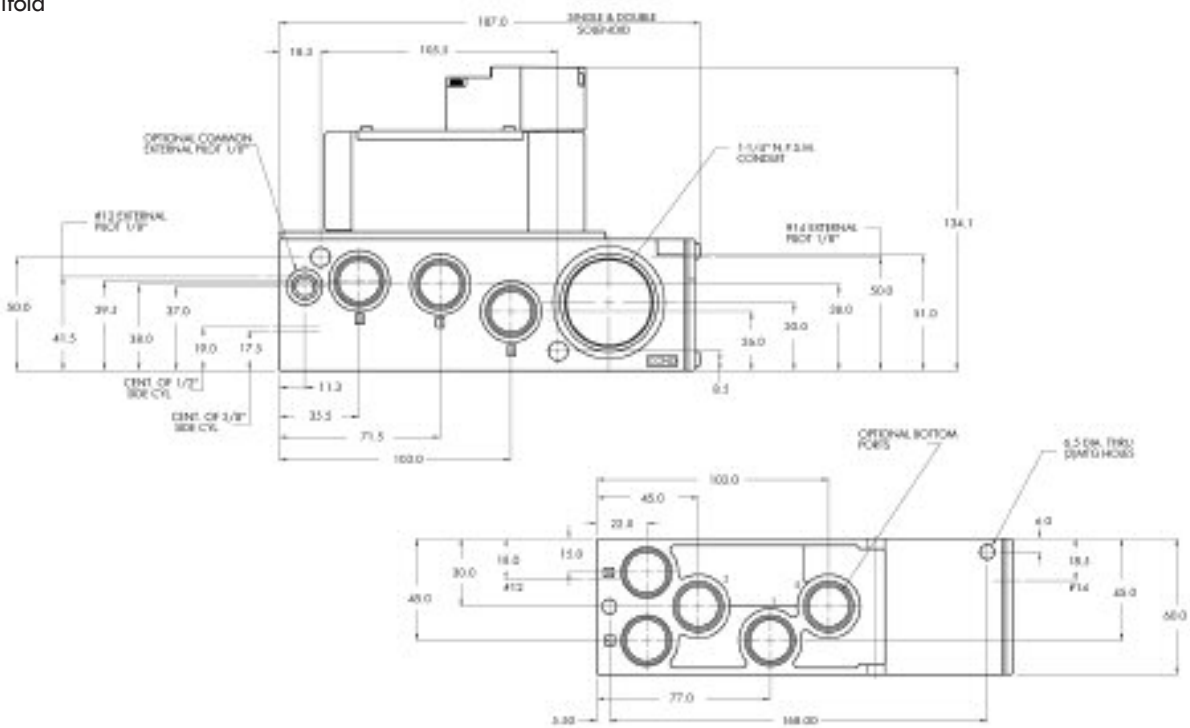
**DIMENSIONS**

Dimensions shown are metric (mm)

Individual



Manifold



**Non plug-in base / manifold**

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



**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom port 1
<b>G1/2"</b>	MB-B3A-121-A	MB-B3A-123-A	MB-B3A-122-A	MB-B3A-124-A
<b>G3/4"</b>	MB-B3A-131-A	MB-B3A-133-A	MB-B3A-132-A	MB-B3A-134-A

INDIVIDUAL BASE ACCORDING TO VDMA 24345

Port size	Side ports	Bottom ports
<b>G1/2"</b>	HB-B3A-A	HB-B3A-B

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom port 1
<b>G1/2"</b>	MM-B3A-121-A	MM-B3A-123-A	MM-B3A-122-A	MM-B3A-124-A
<b>G3/4"</b>	MM-B3A-131-A	MM-B3A-133-A	MM-B3A-132-A	MM-B3A-134-A

MANIFOLD BASE ACCORDING TO VDMA 24345

Port size	Side ports
<b>G1/2"</b>	HM-B3A-C

End plate kit: HM-B3A-D.

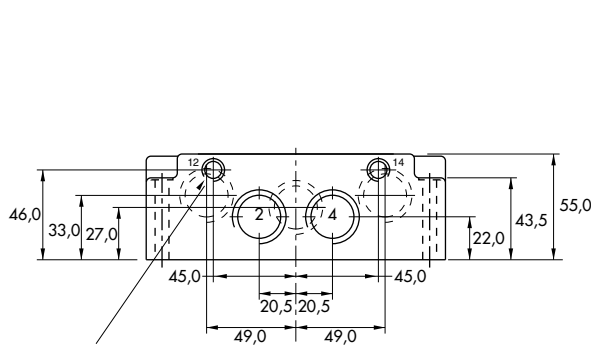
Manifold fastening kit: N-P3003-01.  
 Valve blanking plate: M-P3001.  
 Inlet/exhaust isolator plug: 32845.

**DIMENSIONS**

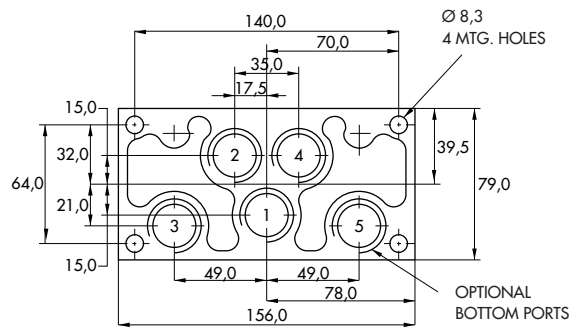
Dimensions shown are metric (mm)

Individual

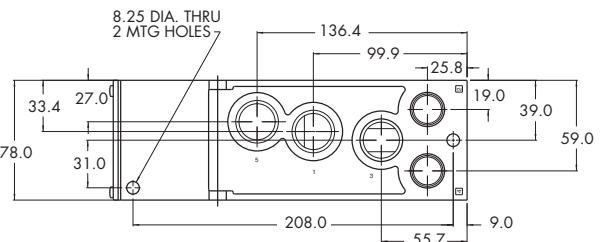
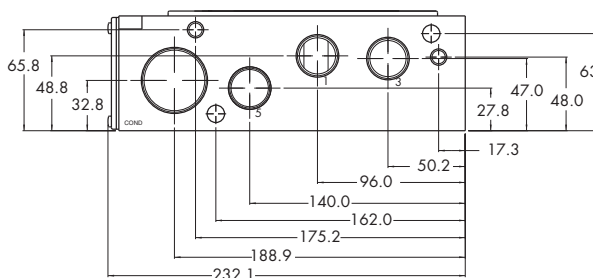
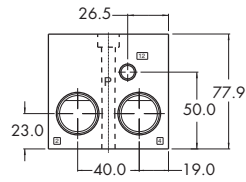
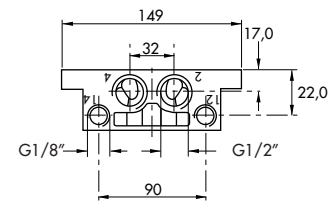
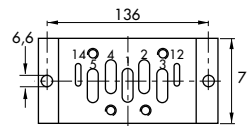
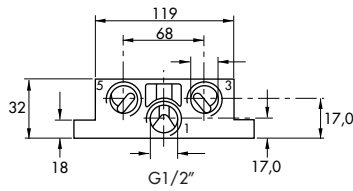
ISO DIN 5599/1



G1/8" EXTERNAL PILOT/  
REMOTE AIR PILOT PORT (2 PLACES)



Manifold





Plug-in base / manifold



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

HOW TO ORDER

INDIVIDUAL BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports
<b>G1/2"</b>	Single solenoid	MB-P3A-121-A	MB-P3A-122-A	MB-P3A-123-A
	Double solenoid	MB-P3A-121-B	MB-P3A-122-B	MB-P3A-123-B
<b>G3/4"</b>	Single solenoid	MB-P3A-131-A	MB-P3A-132-A	MB-P3A-133-A
	Double solenoid	MB-P3A-131-B	MB-P3A-132-B	MB-P3A-133-B

MANIFOLD BASE

Port size	Wired for	Side ports	Side ports w/ bottom 2 & 4 ports	All side & bottom ports (see note)
<b>G1/2"</b>	Single solenoid	MM-P3A-121-A	MM-P3A-122-A	MM-P3A-123-A
	Double solenoid	MM-P3A-121-B	MM-P3A-122-B	MM-P3A-123-B
<b>G3/4"</b>	Single solenoid	MM-P3A-131-A	MM-P3A-132-A	MM-P3A-133-A
	Double solenoid	MM-P3A-131-B	MM-P3A-132-B	MM-P3A-133-B

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

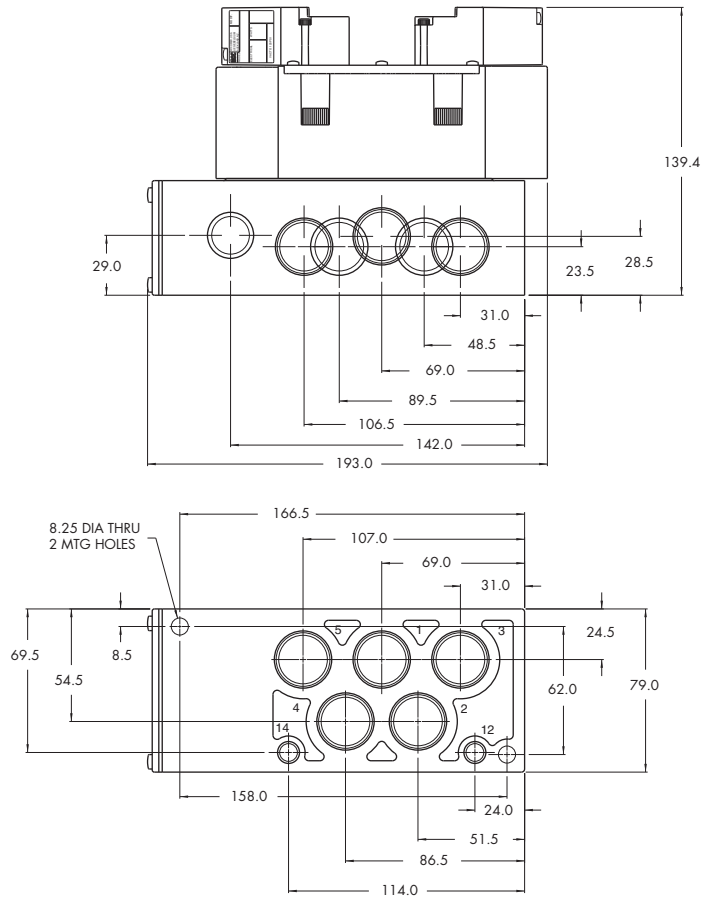
OPTIONS

- Manifold options :
- External pilot **MM-P3A-12x-xx**
    - 32 for 1/2" port – common external pilot
    - 33 for 3/4" port – common external pilot
  - Terminal strip **MM-P3A-xxx-A**
    - J wired for sgl solenoid
    - K wired for double solenoid
  - Base / Manifold option: light(s) **MX-P3A-xxx-xJA**
    - 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.

**DIMENSIONS**

Dimensions shown are metric (mm)





## Section 4

## Pressure regulators

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<b>Sandwich pressure regulators with manual adjust knob</b>	P. 323
<b>Sandwich pressure regulator with manual adjust knob</b>	P. 325
<b>Sandwich pressure regulator with manual adjust knob</b>	P. 327
<b>Sandwich pressure regulator</b>	P. 329
<b>Sandwich pressure regulator with manual adjust knob</b>	P. 331
<b>Sandwich pressure regulator with manual adjust knob</b>	P. 333
<b>Sandwich pressure regulator with air pilot adjust</b>	P. 335
<b>Sandwich selector pressure regulator with manual adjust knob</b>	P. 337
<b>Sandwich pressure regulator with manual adjust knob</b>	P. 339
<b>Sandwich pressure regulator with air pilot adjust</b>	P. 341
<b>Sandwich selector pressure regulator with manual adjust knob</b>	P. 343
<b>Sandwich pressure regulator with manual adjust knob</b>	P. 345
<b>Non plug-in sandwich pressure regulator with manual adjust</b>	P. 347
<b>Non plug-in sandwich pressure regulator with air pilot adjust</b>	P. 349
<b>Plug-in sandwich pressure regulator with manual adjust</b>	P. 351
<b>Plug-in sandwich pressure regulator with air pilot adjust</b>	P. 353
<b>Non plug-in sandwich pressure regulator with manual adjust</b>	P. 355
<b>Plug-in sandwich pressure regulator with manual adjust</b>	P. 357
<b>Non plug-in sandwich pressure regulator with manual adjust knob</b>	P. 359
<b>Non plug-in sandwich pressure regulator with air pilot adjust</b>	P. 361
<b>Plug-in sandwich pressure regulator with manual adjust knob</b>	P. 363
<b>Plug-in sandwich pressure regulator with air pilot adjust</b>	P. 365
<b>Non plug-in sandwich pressure regulator with manual adjust knob</b>	P. 367
<b>Non plug-in sandwich pressure regulator with air pilot adjust</b>	P. 369
<b>Plug-in sandwich pressure regulator with manual adjust knob</b>	P. 371
<b>Plug-in sandwich pressure regulator with air pilot adjust</b>	P. 373
<b>Non plug-in sandwich pressure regulator with manual adjust knob</b>	P. 375
<b>Non plug-in sandwich pressure regulator with air pilot adjust</b>	P. 377
<b>Plug-in sandwich pressure regulator with manual adjust knob</b>	P. 379
<b>Plug-in sandwich pressure regulator with air pilot adjust</b>	P. 381

**PR24A**

**PR37A**

**PR42B**

**PR46A**

**PR47A**

**PR48B**

**PR92C**

**PR93A**

**PRA01A**

**PRP01A**

**PRA02A**

**PRP02A**

**PRA1A**

**PRP1A**

**PRA2D**

**PRA2B**

**PRA3C**

**PRP3B**



**Sandwich pressure regulators 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



**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**  
  
**PR92C**

**HOW TO ORDER**

NON PLUG-IN SANDWICH REGULATORS

Gauge	Single pressure - Regulator "12" end	Dual pressure* - Regulator both ends
<b>No gauge port</b>	PR42B-BAAA	PR42B-BCAA
<b>With gauge Port</b>	PR42B-BBAA	PR42B-BDAA

**PR93A**

PLUG-IN SANDWICH REGULATORS (WITH GAGE PORT)

Single pressure Regulator "12" end Internal pilot	Single pressure Regulator "12" end External pilot
PR24A-AAAA	PR24A-ABAA

**PRA01A**

**PRP01A**

\* For use with dual pressure valves.

**PRA02A**

**PRP02A**

**OPTIONS**

Pressure range :



**PRA1A**

**PRP1A**

**PRA2D**

**PRA2B**

**PRA3C**

**PRP3B**

Notes:

- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 24 series valve.
- When an internal pilot regulator is used with the 24 series valve, the valve should be ordered as external pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve is used with an internal pilot regulator, the pilot supply is regulated.

**TECHNICAL DATA**

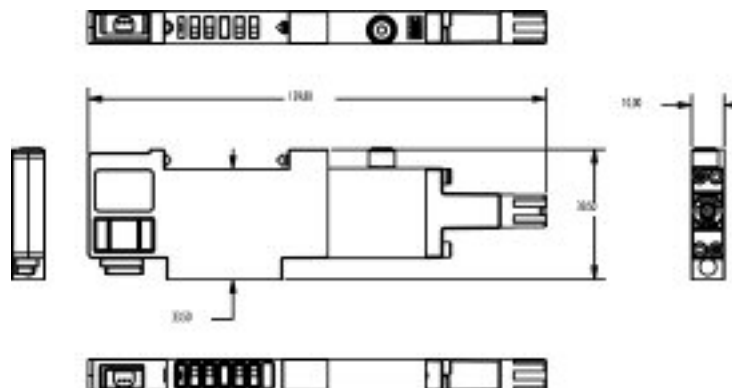
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 μ
<b>Coil :</b>	Class A (#26 AWG x 18), continuous duty
<b>Temperature range :</b>	0°F to 120°F / -18°C to +50°C

- Spare parts :
- Gage Kit No coupling: N-42004-01  
 With short coupling: N-42004-02 (required with double solenoid valve)  
 With long coupling: N-42004-03 (required with double solenoid valve)
  - Sandwich flow control Plug-in with flow control on same end: FC24A-AB  
 Non plug-in with flow control on same end: FC24A-BB  
 Non plug-in with flow control on each end: FC24A-CA

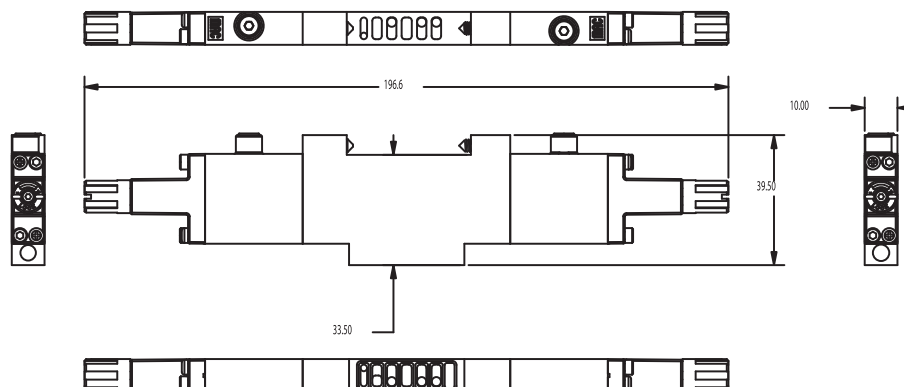
**DIMENSIONS**

Dimensions shown are metric (mm)

Single regulator



Double regulator



**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.



**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**

**HOW TO ORDER**

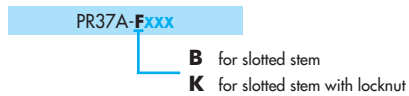
REGULATORS FOR "NON PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gauge	Single pressure
<b>No gauge port</b>	PR37A-FAAA
<b>With gauge Port (plugged)</b>	PR37A-FABA

Note: Regulating pressure range for above models is 0 to 8 bar  
 For other ranges, see technical data page.

**OPTIONS**

Adjustment :



Pressure range :



**PR92C**

**PR93A**

**PRA01A**

**PRP01A**

**PRA02A**

**PRP02A**

**PRA1A**

**PRP1A**

**PRA2D**

**PRA2B**

**PRA3C**

**PRP3B**

**TECHNICAL DATA**

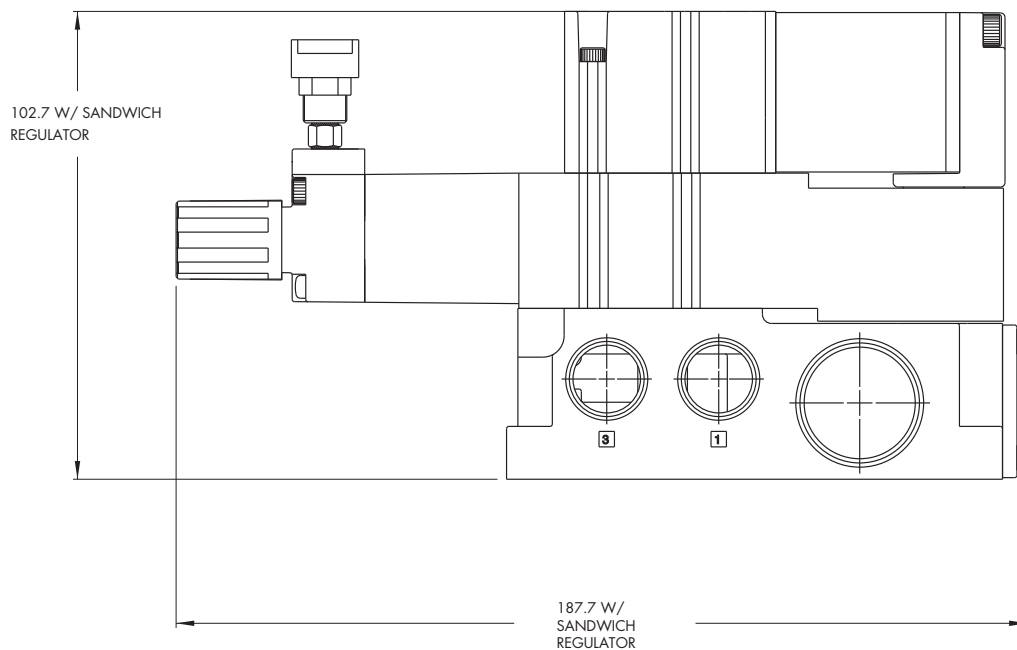
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar)</b>	400 NI/min (Cv 0.4)

Spare parts :

- Pressure regulator (less sandwich block) : PR37A-G0AA (knob), PR37A-C0AA (slotted stem), PR37A-L0AA (slotted stem with locknut)
- Gauges : 24177-160 (0 to 10,7 bar, 23 mm)  
24177-100 (0 to 6,7 bar, 23 mm)  
24177-060 (0 to 4 bar, 23 mm)

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
**PR42B**  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

NON PLUG-IN SANDWICH REGULATORS

Gauge	Regulator "12" end Internal pilot	Regulator "12" end External pilot
No gauge port	PR42B-BAAA	PR42B-BBAA
With gauge Port	PR42B-BABA	PR42B-BBBA

PR93A

PLUG-IN SANDWICH REGULATORS

Gauge	Regulator "12" end Internal pilot	Regulator "12" end External pilot
No gauge port	PR42B-AAAA	PR42B-ABAA
With gauge Port	PR42B-AAABA	PR42B-ABBA

PRA01A

PRP01A

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

PRA2B

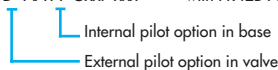
PRA3C

PRP3B

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



**OPTIONS**

Pressure range :

<b>PR42B-AAAA</b>
<b>A</b> 0 to 8 bar
<b>B</b> 0 to 5,3 bar
<b>C</b> 0 to 2,7 bar

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	250 NI/min (Cv 0,25)

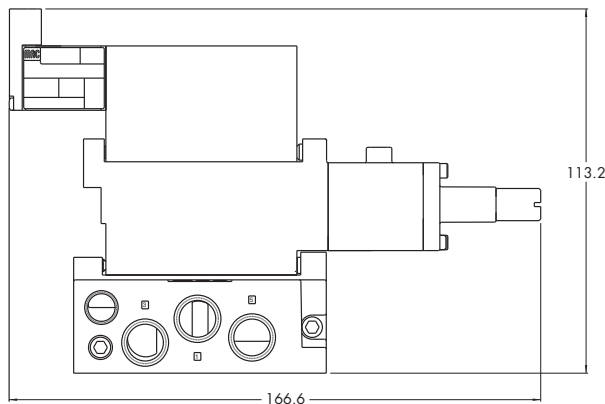
Spare parts :

- Pressure regulator (less sandwich block) : PR42B-C0xx • Gauge port plug: N-PE003
- M5 to 1/8" adapter : N-35005 • Gauge: 24177-160 (0 to 10,7 bar, 23 mm)  
24177-100 (0 to 6,7 bar, 23 mm)  
24177-060 (0 to 4 bar, 23 mm)

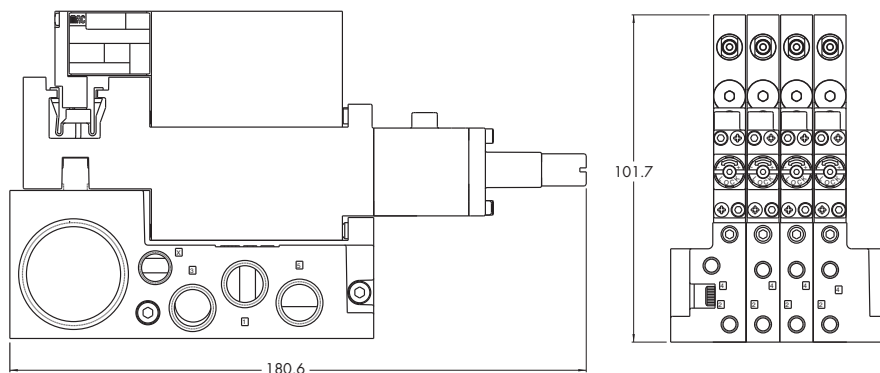
**DIMENSIONS**

Dimensions shown are metric (mm)

NON PLUG-IN



PLUG-IN





**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.



PR24A  
PR37A  
PR42B  
**PR46A**  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

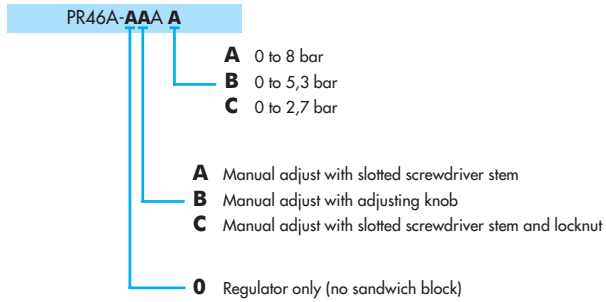
REGULATORS FOR "PLUG-IN" AND "NON PLUG-IN" VALVES

Gauge	For plug-in valves	For non plug-in valves
Gauge port (plugged)	PR46A-AAAA	PR46A-BAAA

PR93A

**OPTIONS**

Pressure range :



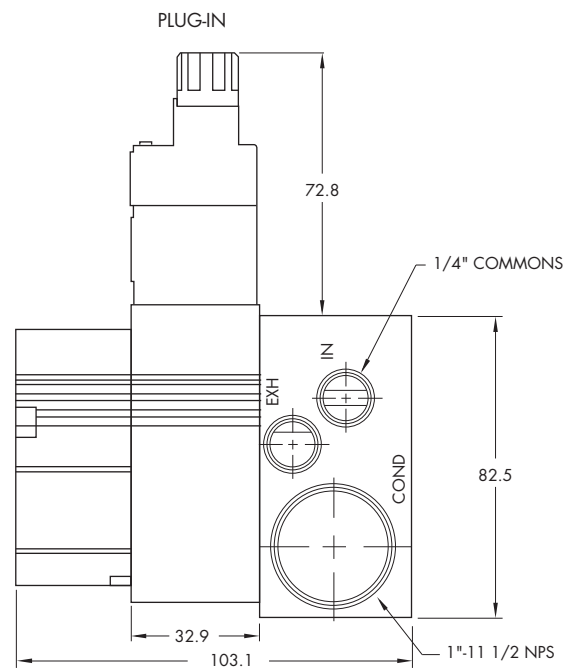
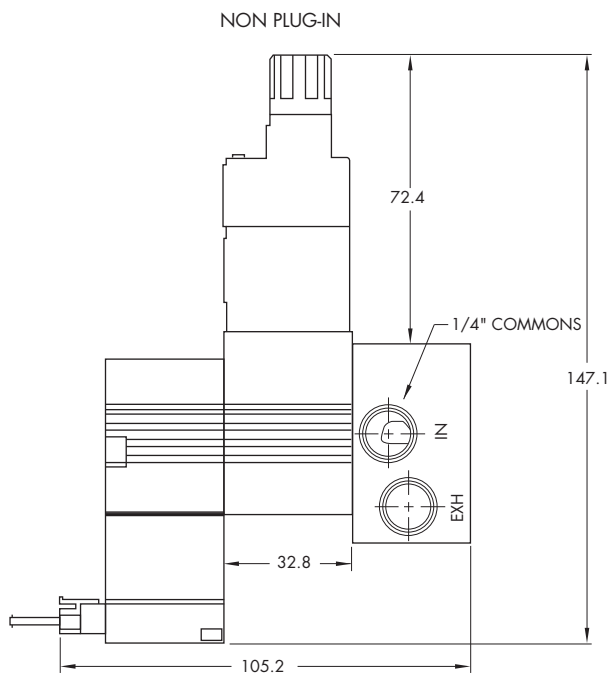
PRA01A  
  
PRP01A  
PRA02A  
PRP02A  
  
PRA1A  
  
PRP1A  
  
PRA2D  
  
PRA2B  
  
PRA3C  
  
PRP3B

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow :</b>	210 NL/min (Cv 0,21)

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
PR42B  
PR46A  
**PR47A**  
PR48B

PR92C

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES (KNOB ADJUSTMENT)

Gauge	Single pressure
No gauge port	PR47A-EAAA
With gauge Port	PR47A-EABA

PR93A

REGULATORS FOR "NON PLUG-IN" VALVES (KNOB ADJUSTMENT)

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

PRA01A

PRP01A

**OPTIONS**

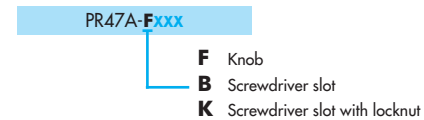
Pressure range :



Adjustment for : Plug-in regulator



Non plug-in regulator



PRA1A

PRP1A

PRA2D

PRA2B

PRA3C

PRP3B

**TECHNICAL DATA**

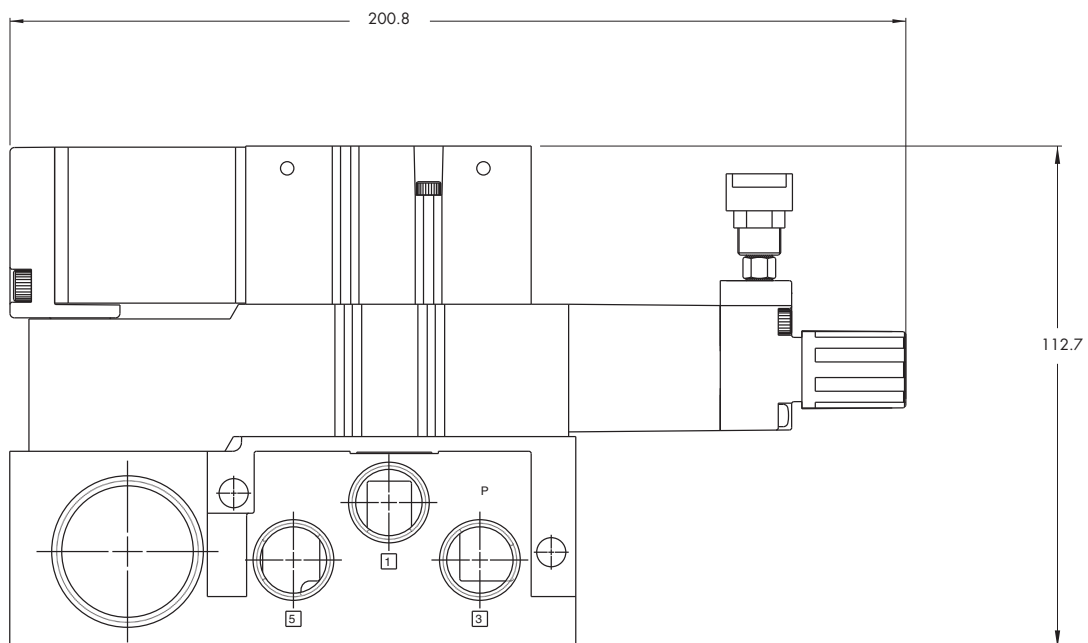
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar):</b>	400 Nl/min (Cv 0.4)

Spare parts :

- Pressure regulator (less sandwich block) : PR47A-G0xx (knob), PR47A-C0xx (screwdriver slot), PR47A-L0xx (screwdriver slot with locknut)
- Gauge: 24177-160 (0 to 10,7 bar, 23 mm)  
24177-100 (0 to 6,7 bar, 23 mm)  
24177-060 (0 to 4 bar, 23 mm)

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
**PR48B**

PR92C

**HOW TO ORDER**

NON PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

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

PR93A

PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

Gauge	Regulator "12" end Internal pilot	Regulator "12" end External pilot
Gauge port	PR48B-AAAA	PR48B-ABAA

PRA01A

PRP01A

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

PRA2B

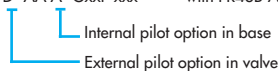
PRA3C

PRP3B

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

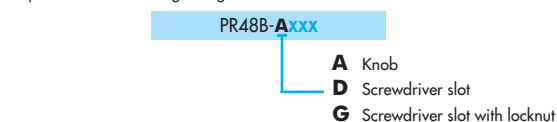


**OPTIONS**

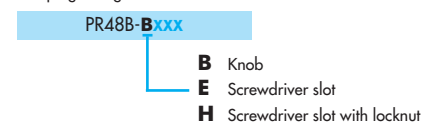
Pressure range :



Adjustment for : Plug-in regulator



Non plug-in regulator



**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	800 NI/min (Cv 0,8)

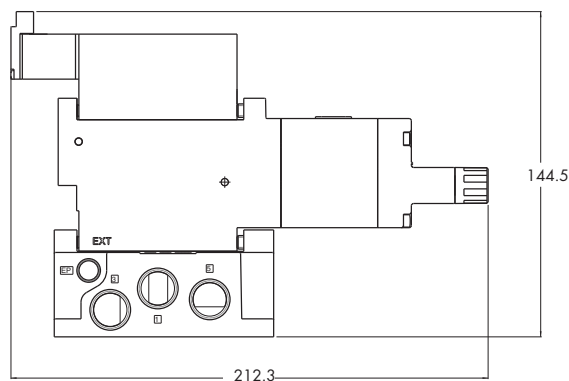
Spare parts :

- Pressure regulator (less sandwich block) : PR48B-C0xx (knob), PR48B-F0xx (screwdriver slot), PR48B-J0xx (screwdriver slot with locknut)
- Gauge: 24177-160 (0 to 10,7 bar, 23 mm)  
24177-100 (0 to 6,7 bar, 23 mm)  
24177-060 (0 to 4 bar, 23 mm)

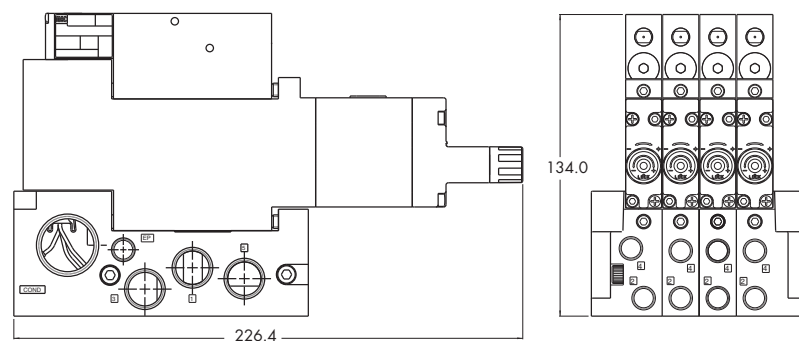
**DIMENSIONS**

Dimensions shown are metric (mm)

NON PLUG-IN



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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B

**PR92C**

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES

Gauge	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
<b>Gauge port only (plugged)</b>	PR92C-EAAA	PR92C-EBAA	PR92C-ECAA	PR92C-EDAA	PR92C-EEAA
<b>Gauge with face perpendicular to manual operator</b>	PR92C-EABA	PR92C-EBBA	PR92C-ECBA	PR92C-EDBA	PR92C-EEBA
<b>Gauge with face parallel to manual operator</b>	PR92C-EACA	PR92C-EBCA	PR92C-ECCA	PR92C-EDCA	PR92C-EECA

PR93A

PRA01A

PRP01A

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES

Gauge	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
<b>Gauge port only (plugged)</b>	PR92C-GAAA	PR92C-GBAA	PR92C-GCAA	PR92C-GDAA	PR92C-GEAA
<b>Gauge with face perpendicular to manual operator</b>	PR92C-GABA	PR92C-GBBA	PR92C-GCBA	PR92C-GDBA	PR92C-GEBA
<b>Gauge with face parallel to manual operator</b>	PR92C-GACA	PR92C-GBCA	PR92C-GCCA	PR92C-GDCA	PR92C-GECA

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

\* For use with dual pressure valves.

**PLUG-IN OPTIONS**

PR92C-E<sup>xxx</sup>

— **F** for double solenoid valve

PRA2B

PRA3C

PRP3B

**TECHNICAL DATA**

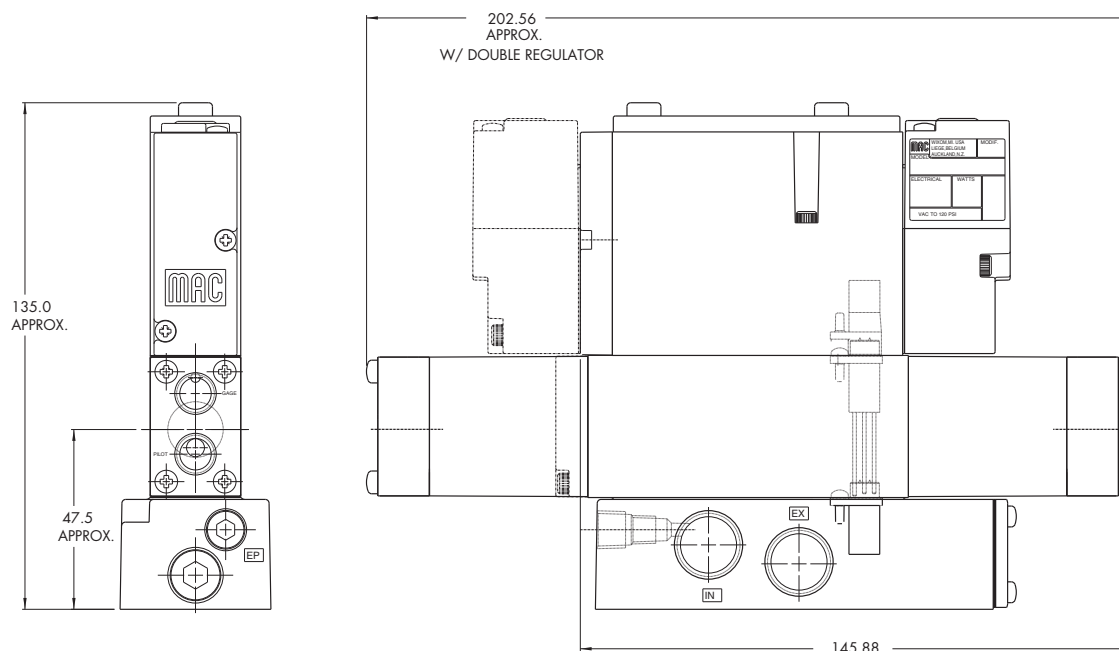
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	800 NI/min (Cv 0.8)

Spare parts :

- R-92003 : regulator end plate kit • Gauge kit 0 - 10,7 bar: 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)





**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B

**PR92C**

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gauge	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.
<b>No Gauge</b>	PR92C-JPAA	PR92C-JRAA	PR92C-JSAA	PR92C-JTAA
<b>Gauge with face perpendicular to manual operator</b>	PR92C-JPBA	PR92C-JRBA	PR92C-JSBA	PR92C-JTBA
<b>Gauge with face parallel to manual operator</b>	PR92C-JPCA	PR92C-JRCA	PR92C-JSCA	PR92C-JTCA

PR93A

PRA01A

PRP01A

Note: above models are coded for use with single solenoid valves

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

Gauge	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.
<b>No Gauge</b>	PR92C-LPAA	PR92C-LRAA	PR92C-LSAA	PR92C-LTAA
<b>Gauge with face perpendicular to manual operator</b>	PR92C-LPBA	PR92C-LRBA	PR92C-LSBA	PR92C-LTBA
<b>Gauge with face parallel to manual operator</b>	PR92C-LPCA	PR92C-LRCA	PR92C-LSCA	PR92C-LTCA

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

Notes: - Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page  
- Use single pressure valve for all above models.

PRA2B

**OPTIONS**

Regulator less sandwich block

PR92C-**X**0xx

- 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

PRA3C

PRP3B

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar):</b>	800 NI/min (Cv 0.8)

Spare parts :

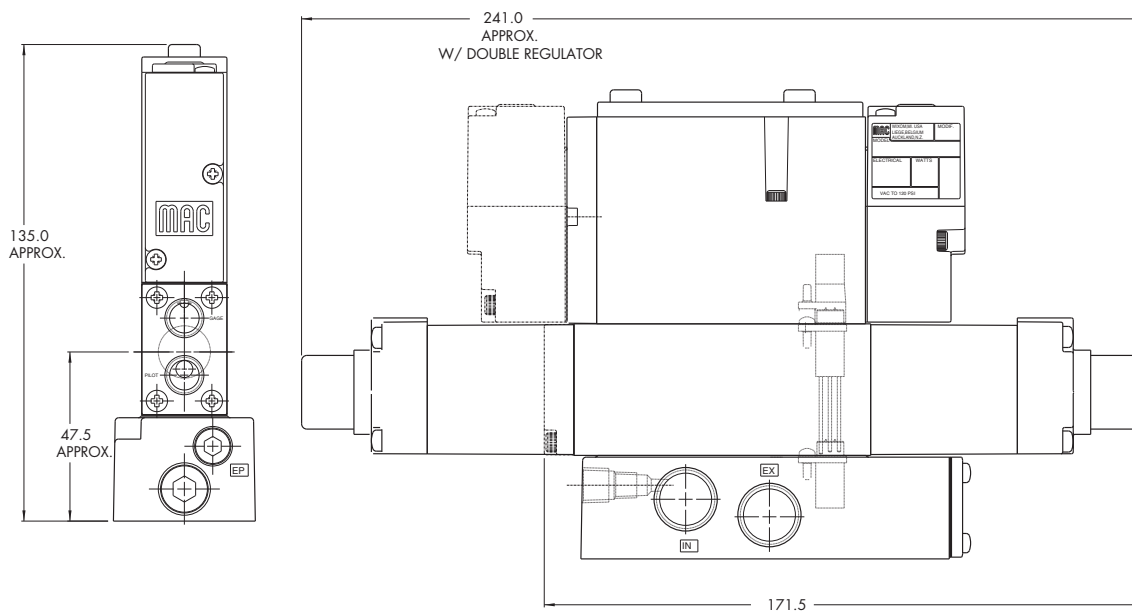
- R-92003 : end plate kit • R-92003-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

Options:

- Pressure range: PR92C-xxxA (A 0 to 8 bar)
  - B 0 to 5,3 bar
  - C 0 to 2 bar
  - D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
  - E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
  - F 0 to 8 bar "A" end, 0 to 2 bar "B" end
  - G 0 to 8 bar "B" end, 0 to 2 bar "A" end
  - H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
  - J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B

**PR92C**

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES

Gauge	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
<b>No Gauge</b>	PR92C-JAAA	PR92C-JBAA	PR92C-JCAA	PR92C-JDAA	PR92C-JEAA
<b>Gauge with face perpendicular to manual operator</b>	PR92C-JABA	PR92C-JBBA	PR92C-JCBA	PR92C-JDBA	PR92C-JEBA
<b>Gauge with face parallel to manual operator</b>	PR92C-JACA	PR92C-JBCA	PR92C-JCCA	PR92C-JDCA	PR92C-JECA

PR93A

PRA01A

PRP01A

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES

Gauge	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
<b>Gauge port only (plugged)</b>	PR92C-LAAA	PR92C-LBAA	PR92C-LCAA	PR92C-LDAA	PR92C-LEAA
<b>Gauge with face perpendicular to manual operator</b>	PR92C-LABA	PR92C-LBBA	PR92C-LCBA	PR92C-LDBA	PR92C-LEBA
<b>Gauge with face parallel to manual operator</b>	PR92C-LACA	PR92C-LBCA	PR92C-LCCA	PR92C-LDCA	PR92C-LECA

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

\* For use with dual pressure valves.

Note: Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page.

PRA2B

PRA3C

PRP3B

**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

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar):</b>	800 Nl/min (Cv 0.8)

Spare parts :

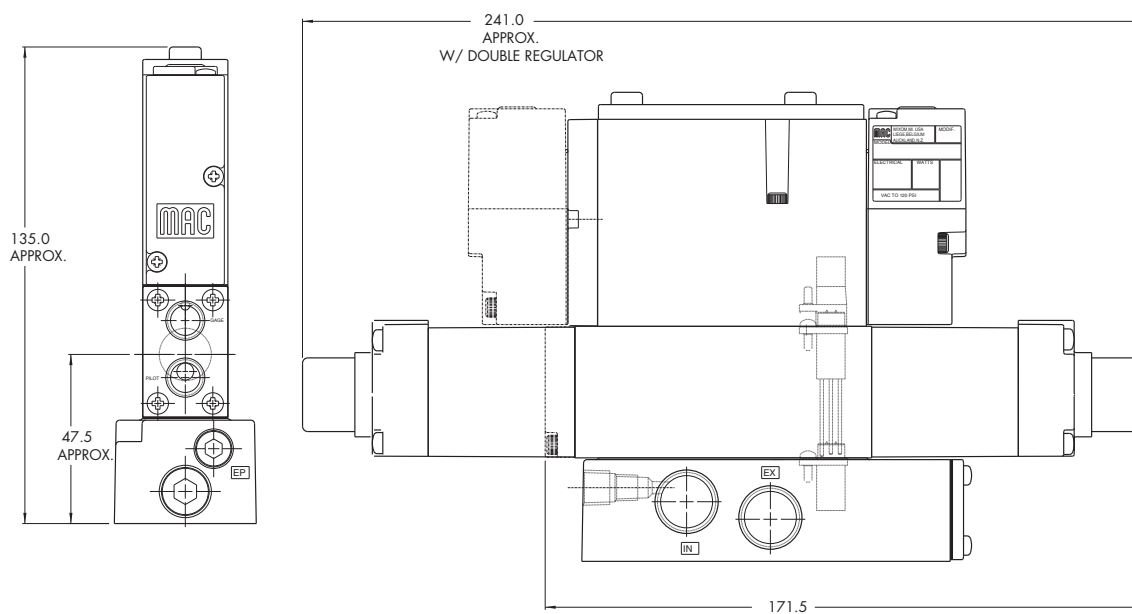
- R-92003 : end plate kit • R-92003-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

Options :

- Pressure range: PR92C-xxxA (A 0 to 8 bar)
  - B 0 to 5,3 bar
  - C 0 to 2 bar
  - D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
  - E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
  - F 0 to 8 bar "A" end, 0 to 2 bar "B" end
  - G 0 to 8 bar "B" end, 0 to 2 bar "A" end
  - H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
  - J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

**DIMENSIONS**

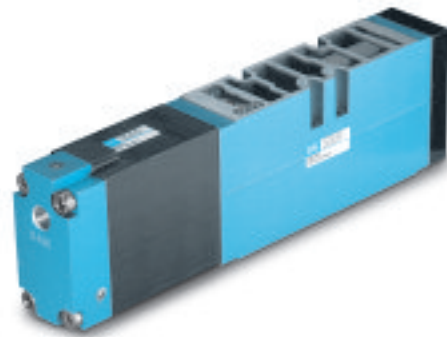
Dimensions shown are metric (mm)



**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.



**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**

**PR92C**

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES

Gauge	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
<b>Gauge port only (plugged)</b>	PR93A-DAAA	PR93A-DBAA	PR93A-DCAA	PR93A-DDAA	PR93A-DEAA
<b>Gauge with face perpendicular to manual operator</b>	PR93A-DABA	PR93A-DBBA	PR93A-DCBA	PR93A-DDBA	PR93A-DEBA
<b>Gauge with face parallel to manual operator</b>	PR93A-DACA	PR93A-DBCA	PR93A-DCCA	PR93A-DDCA	PR93A-DECA

**PR93A**

**PRA01A**

**PRP01A**

Note: above models are coded for use with single solenoid valves.

REGULATORS FOR "NON PLUG-IN" VALVES

Gauge	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
<b>Gauge port only (plugged)</b>	PR93A-EAAA	PR93A-EBAA	PR93A-ECAA	PR93A-EDAA	PR93A-EEAA
<b>Gauge with face perpendicular to manual operator</b>	PR93A-EABA	PR93A-EBBA	PR93A-ECBA	PR93A-EDBA	PR93A-EEBA
<b>Gauge with face parallel to manual operator</b>	PR93A-EACA	PR93A-EBCA	PR93A-ECCA	PR93A-EDCA	PR93A-EECA

**PRA02A**

**PRP02A**

**PRA1A**

**PRP1A**

**PRA2D**

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

\* For use with dual pressure valves.

**PRA2B**

**PRA3C**

**PRP3B**

**TECHNICAL DATA**

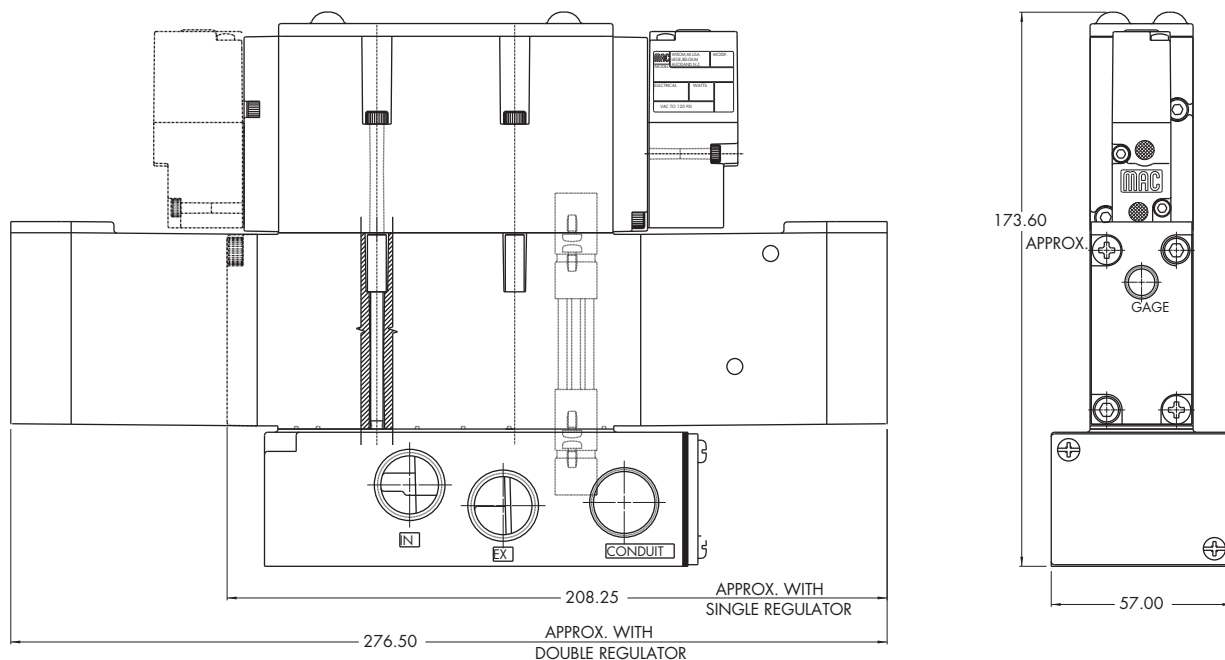
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	2400 NI/min (Cv 2.4)

Spare parts :

- Regulator end plate kit: R-93004 • Regulator by-pass end plate kit: R-93004-01
- Gauge kit: N-92006-01 (0 to 10,7 bar)
- Pressure regulator (less sandwich block): PR93A.FOAA

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gauge	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.
Gauge port only (plugged)	PR93A-GPAA	PR93A-GRAA	PR93A-GSAA	PR93A-GTAA
Gauge with face perpendicular to manual operator	PR93A-GPBA	PR93A-GRBA	PR93A-GSBA	PR93A-GTBA
Gauge with face parallel to manual operator	PR93A-GPCA	PR93A-GRCA	PR93A-GSCA	PR93A-GTCA

PR93A

PRA01A

PRP01A

REGULATORS FOR "NON PLUG-IN" VALVES

Gauge	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.
Gauge port only (plugged)	PR93A-HPAA	PR93A-HRAA	PR93A-HSAA	PR93A-HTAA
Gauge with face perpendicular to manual operator	PR93A-HPBA	PR93A-HRBA	PR93A-HSBA	PR93A-HTBA
Gauge with face parallel to manual operator	PR93A-HPCA	PR93A-HRCA	PR93A-HSCA	PR93A-HTCA

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

Notes: - Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page  
- Use single pressure valve for all above models.

PRA2B

**OPTIONS**

Regulator less sandwich block

PR93A- <del>x</del> 0xx	
J	Knob
C	Slotted stem
M	Slotted stem with locknut

Other adjustment

PR93A- <del>xxxx</del>	
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

PRA3C

PRP3B

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

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar):</b>	2400 NI/min (Cv 2.4)

Spare parts :

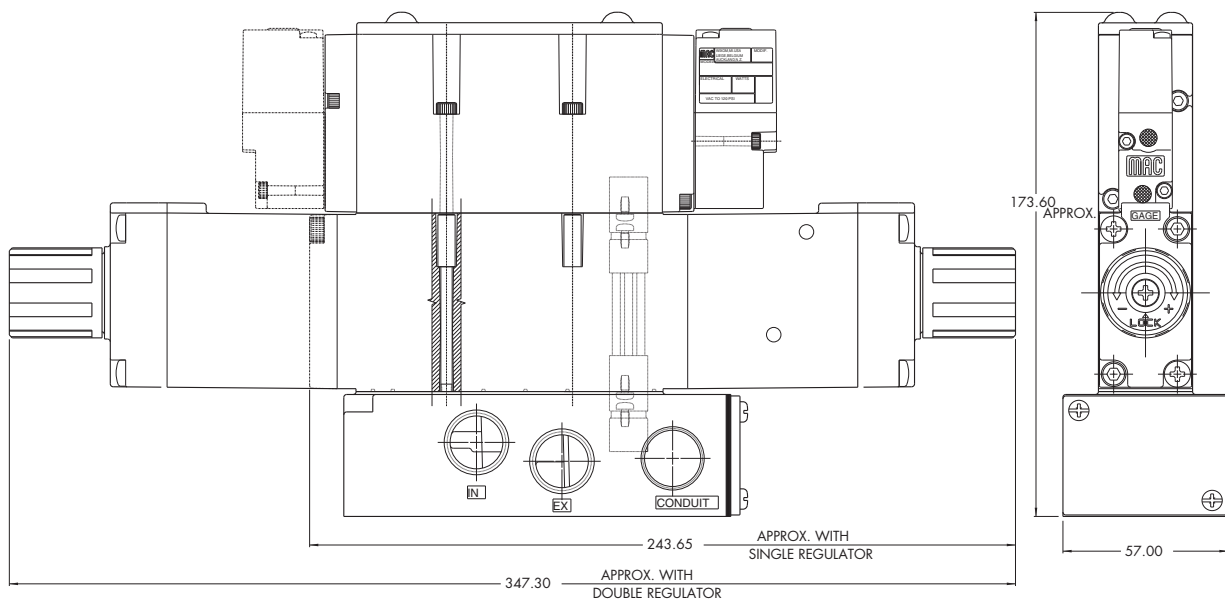
- R-93004 : end plate kit • R-93004-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

Option:

- Pressure range: PR93A-xxxA (A 0 to 8 bar)
  - B 0 to 5,3 bar
  - C 0 to 2 bar
  - D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
  - E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
  - F 0 to 8 bar "A" end, 0 to 2 bar "B" end
  - G 0 to 8 bar "B" end, 0 to 2 bar "A" end
  - H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
  - J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

**DIMENSIONS**

Dimensions shown are metric (mm)





**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

Gauge	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
Gauge port only (plugged)	PR93A-GAAA	PR93A-GBAA	PR93A-GCAA	PR93A-GDAA	PR93A-GEAA
Gauge with face perpendicular to manual operator	PR93A-GABA	PR93A-GBBA	PR93A-GCBA	PR93A-GDBA	PR93A-GEBA
Gauge with face parallel to manual operator	PR93A-GACA	PR93A-GBCA	PR93A-GCCA	PR93A-GDCA	PR93A-GECA

PR93A

PRA01A

PRP01A

Note: above models are coded for use with single solenoid valves.

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

Gauge	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
Gauge port only (plugged)	PR93A-HAAA	PR93A-HBAA	PR93A-HCAA	PR93A-HDAA	PR93A-HEAA
Gauge with face perpendicular to manual operator	PR93A-HABA	PR93A-HBBA	PR93A-HCBA	PR93A-HDBA	PR93A-HEBA
Gauge with face parallel to manual operator	PR93A-HACA	PR93A-HBCA	PR93A-HCCA	PR93A-HDCA	PR93A-HECA

PRA02A  
PRP02A

PRA1A

PRP1A

PRA2D

\* For use with dual pressure valves.

Note: Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page.

**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

PRA2B

PRA3C

PRP3B

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

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 8 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar):</b>	2400 NI/min (Cv 2.4)

Spare parts :

- R-93004 : end plate kit • R-93004-01 : by-pass end plate kit
- Gauge kit 0 - 10,7 bar: N-92006-01 • Gauge kit 0 - 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

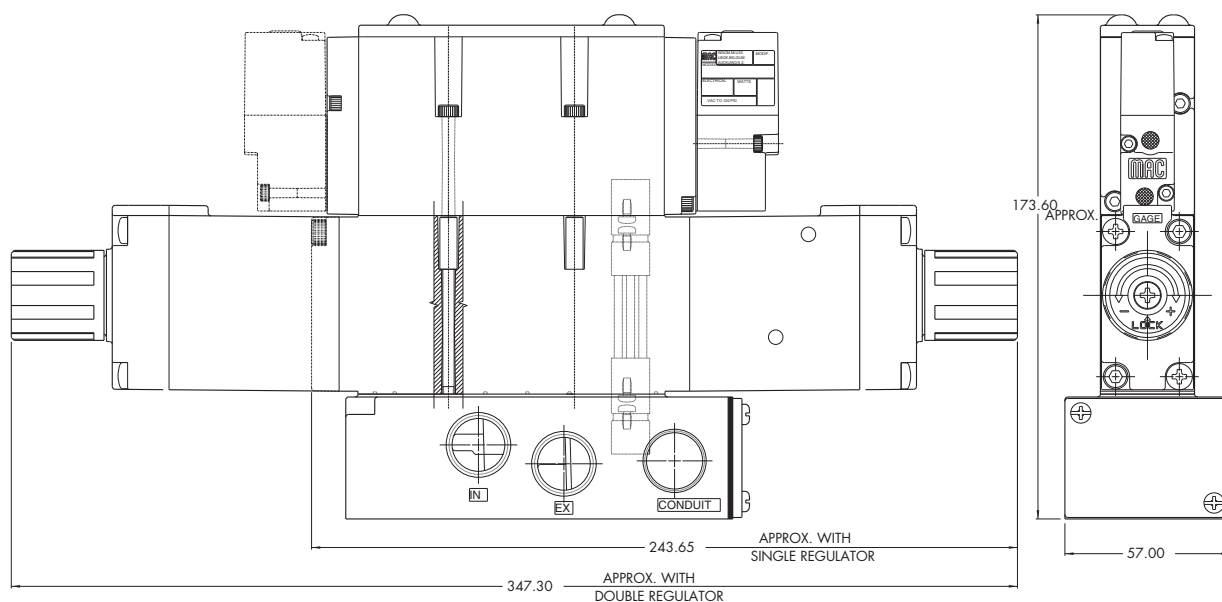
Option:

- Pressure range: PR93A-xxxA (A 0 to 8 bar)

- B 0 to 5,3 bar
- C 0 to 2 bar
- D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
- E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
- F 0 to 8 bar "A" end, 0 to 2 bar "B" end
- G 0 to 8 bar "B" end, 0 to 2 bar "A" end
- H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
- J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

**DIMENSIONS**

Dimensions shown are metric (mm)



**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



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end *	Dual pressure Regulator 14 end with by-pass 12 end *	Dual pressure Regulator both ends *
<b>Internal</b>	PRA01A-AAAA	PRA01A-ABAA	PRA01A-ADAA	PRA01A-AEAA
<b>External</b>	PRA01A-BAAA	PRA01A-BBAA	PRA01A-BDAA	PRA01A-BEAA

PR93A

**PRA01A**

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.

PRP01A

**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

PRA02A

PRP02A

PRA1A

PRP1A

Regulated Pressure range :

- PRA01A - xxxx
- A** 0 to 8 bar
  - B** 0 to 5,3 bar
  - C** 0 to 2 bar
  - D** 0 to 8 bar "14" end – 0 to 5,3 bar "12" end
  - E** 0 to 8 bar "12" end – 0 to 5,3 bar "14" end
  - F** 0 to 8 bar "14" end – 0 to 2 bar "12" end
  - G** 0 to 8 bar "12" end – 0 to 2 bar "14" end
  - H** 0 to 5,3 bar "14" end – 0 to 2 bar "12" end
  - J** 0 to 5,3 bar "12" end – 0 to 2 bar "14" end

PRA2D

PRA2B

PRA3C

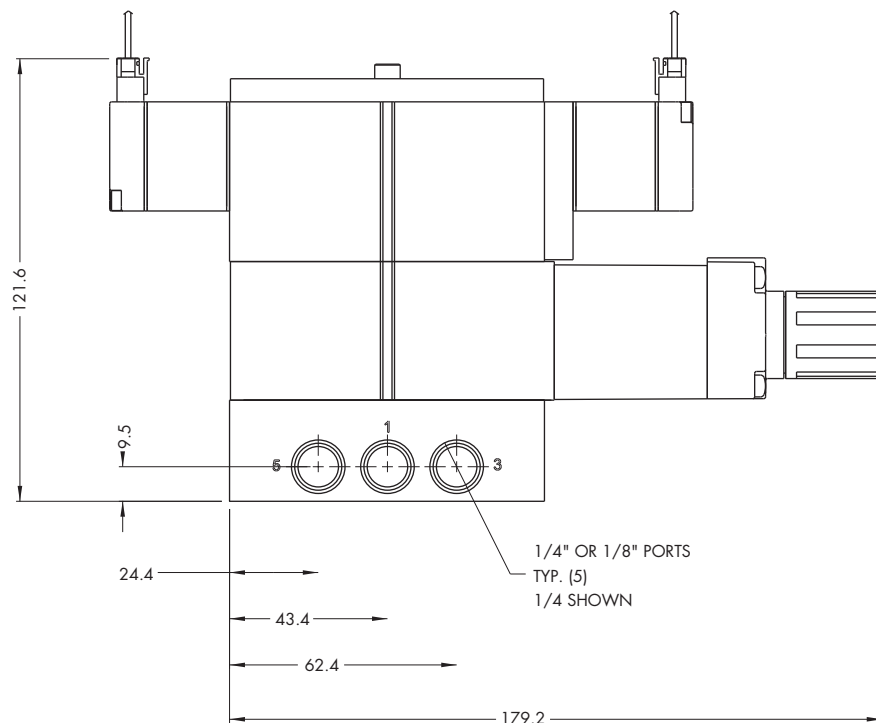
PRP3B

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure supply :</b>	Higher than maximum regulated pressure (max. 8,5 bar)
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C

**DIMENSIONS**

Dimensions shown are metric (mm)





**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

**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**

**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 *
<b>Internal</b>	PRA01A-DAAA	PRA01A-DBAA	PRA01A-DDAA	PRA01A-DEAA
<b>External</b>	PRA01A-EAAA	PRA01A-EBAA	PRA01A-EDAA	PRA01A-EEAA

**PR92C**

**PR93A**

Note : Only pressure range available for air adjust regulator is 0-8 bar.  
 \* To be used with dual pressure valves.

**PRA01A**

**PRP01A**

**PRA02A**  
**PRP02A**

**PRA1A**

**PRP1A**

**PRA2D**

**PRA2B**

**PRA3C**

**PRP3B**



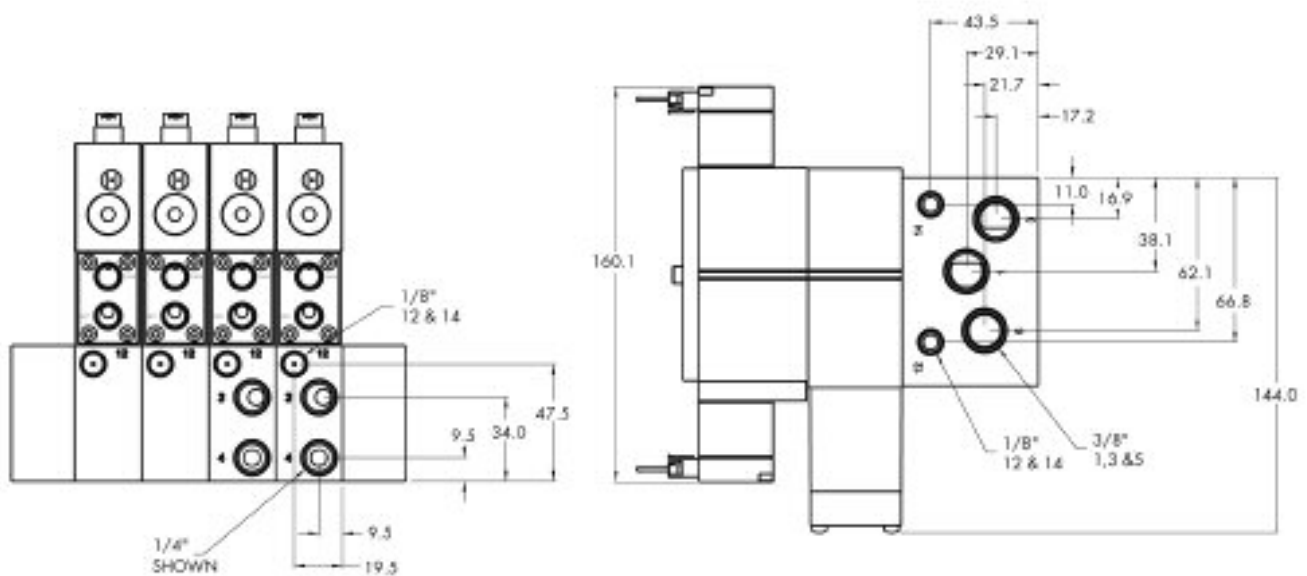
100%  
OF  
PRODUCTION  
TESTED  
100%

WARRANTY  
18  
MONTHS

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	Higher than maximum regulated pressure (max. 8,5 bar)
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C

Dimensions shown are metric (mm)





**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.

**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**

**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 *
<b>Internal</b>	PRP01A-AAAA	PRP01A-ABAA	PRP01A-ADAA	PRP01A-AEAA
<b>External</b>	PRP01A-BAAA	PRP01A-BBAA	PRP01A-BDAA	PRP01A-BEAA

**PR92C**

**PR93A**

Above models are for manual adjust with knob  
 For other adjustments and pressure ranges, see Options.

\* To be used with dual pressure valves.

**PRA01A**

**OPTIONS**

Adjustments :

PRP01A - **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

**PRP01A**

**PRA02A**

**PRP02A**

**PRA1A**

**PRP1A**

Regulated Pressure range :

PRP01A - **xxxx**

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar
- D** 0 to 8 bar "14" end – 0 to 5,3 bar "12" end
- E** 0 to 8 bar "12" end – 0 to 5,3 bar "14" end
- F** 0 to 8 bar "14" end – 0 to 2 bar "12" end
- G** 0 to 8 bar "12" end – 0 to 2 bar "14" end
- H** 0 to 5,3 bar "14" end – 0 to 2 bar "12" end
- J** 0 to 5,3 bar "12" end – 0 to 2 bar "14" end

**PRA2D**

**PRA2B**

**PRA3C**

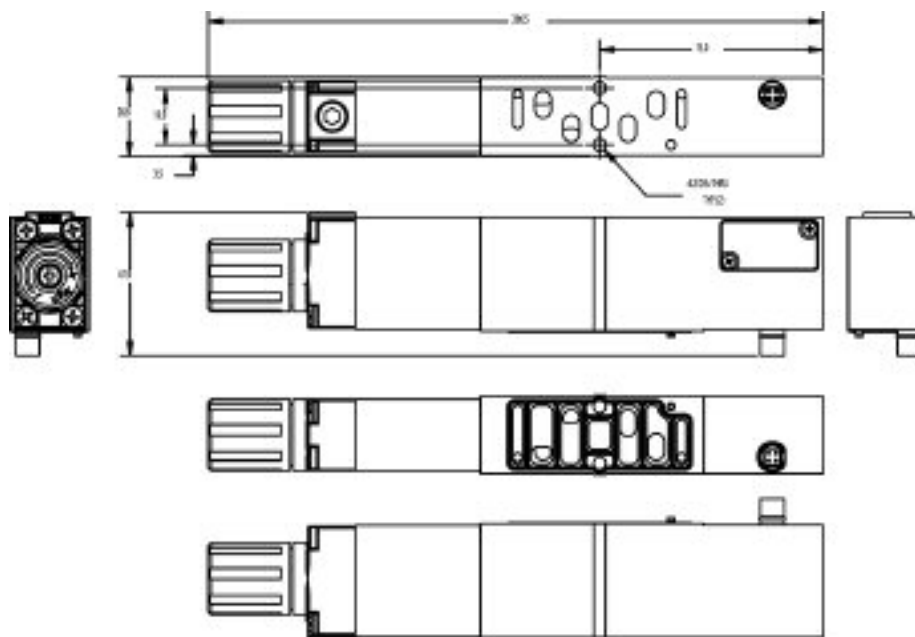
**PRP3B**

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure supply :</b>	Higher than maximum regulated pressure (max. 8,5 bar)
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C

**DIMENSIONS**

Dimensions shown are metric (mm)







Series

**Plug-in sandwich pressure regulator with air pilot 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

**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**

**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 *
<b>Internal</b>	PRP01A-DAAA	PRP01A-DBAA	PRP01A-DDAA	PRP01A-DEAA
<b>External</b>	PRP01A-EAAA	PRP01A-EBAA	PRP01A-EDAA	PRP01A-EEAA

**PR92C**

**PR93A**

Note: Only pressure range available for air adjust is 0-8 bar  
 \* To be used with dual pressure valves.

**PRA01A**

**PRP01A**

**PRA02A**  
**PRP02A**

**PRA1A**

**PRP1A**

**PRA2D**

**PRA2B**

**PRA3C**

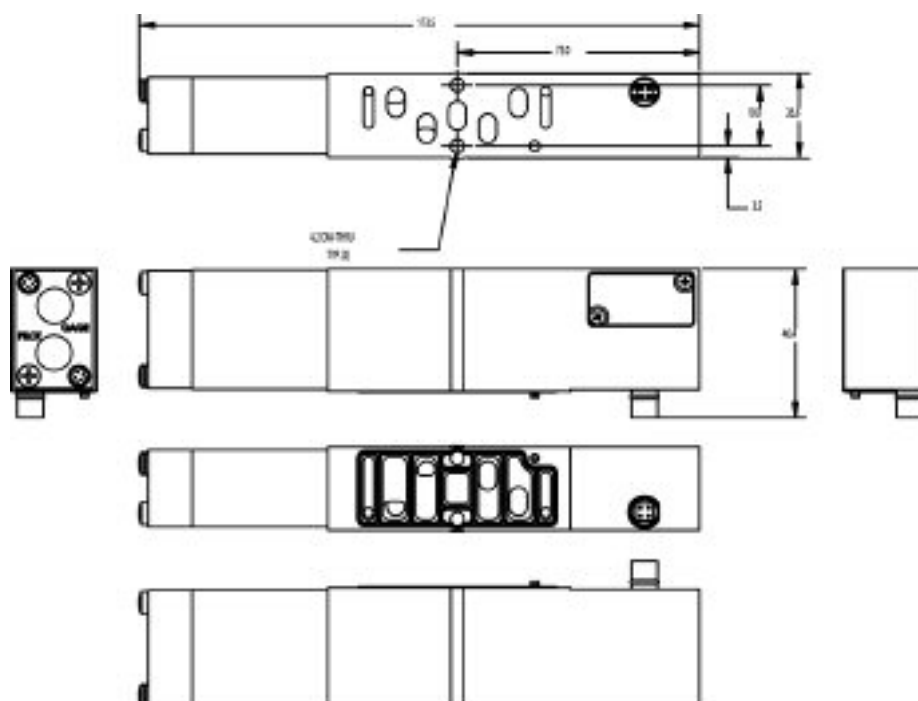
**PRP3B**

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure supply :</b>	Higher than maximum regulated pressure (max. 8,5 bar)
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C

**DIMENSIONS**

Dimensions shown are metric (mm)



**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



**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**  
  
**PR92C**

**HOW TO ORDER**

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end *	Dual pressure Regulator 14 end with by-pass 12 end *	Dual pressure Regulator both ends *
<b>Internal</b>	PRA02A-AAAA	PRA02A-ABAA	PRA02A-ADAA	PRA02A-AEAA
<b>External</b>	PRA02A-BAAA	PRA02A-BBAA	PRA02A-BDAA	PRA02A-BEAA

**PR93A**

Above models are for manual adjust with knob  
 For other manual adjustments and pressure ranges, see Options.

Note: Add -9 after part number for regulator block assembled to valve.  
 \* To be used with dual pressure valves.

**PRA01A**

**PRP01A**

**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

**PRA02A**

**PRP02A**

**PRA1A**

**PRP1A**

Regulated Pressure range :

PRA02A - **xxxx**

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar
- D** 0 to 8 bar "14" end – 0 to 5,3 bar "12" end
- E** 0 to 8 bar "12" end – 0 to 5,3 bar "14" end
- F** 0 to 8 bar "14" end – 0 to 2 bar "12" end
- G** 0 to 8 bar "12" end – 0 to 2 bar "14" end
- H** 0 to 5,3 bar "14" end – 0 to 2 bar "12" end
- J** 0 to 5,3 bar "12" end – 0 to 2 bar "14" end

**PRA2D**

**PRA2B**

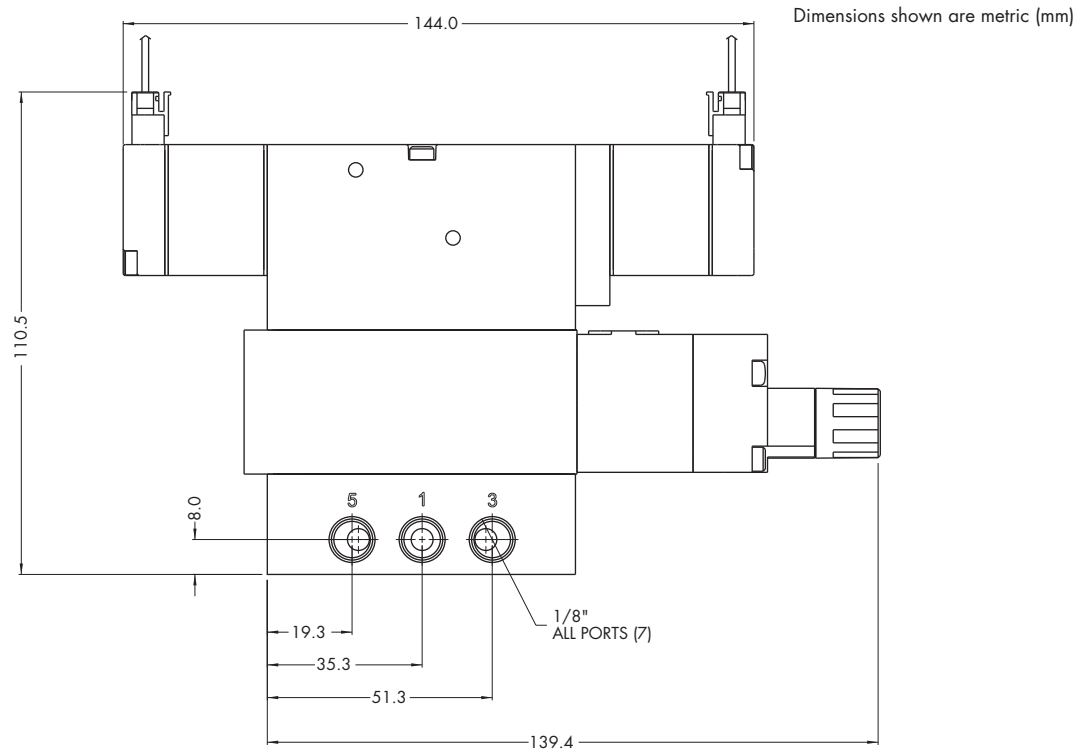
**PRA3C**

**PRP3B**

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure supply :</b>	Higher than maximum regulated pressure (max. 8,5 bar)
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C

**DIMENSIONS**





**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.

**PR24A**  
**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**

**HOW TO ORDER**

Pilot	Single pressure Regulator 12 end
<b>Internal</b>	PRP02A-AAAA
<b>External</b>	PRP02A-BAAA

**PR92C**

**PR93A**

Above models are for manual adjust with knob  
 For other manual adjustments and pressure ranges, see Options.

**PRA01A**

Note: Add -9 after part number for regulator block assembled to valve.

**PRP01A**

**OPTIONS**

Adjustments :

- PRP02A - **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

**PRA02A**  
**PRP02A**

**PRA1A**

**PRP1A**

Regulated Pressure range :

- PRP02A - **xxx**
- A** 0 to 8 bar
  - B** 0 to 5,3 bar
  - C** 0 to 2 bar

**PRA2D**

**PRA2B**

**PRA3C**

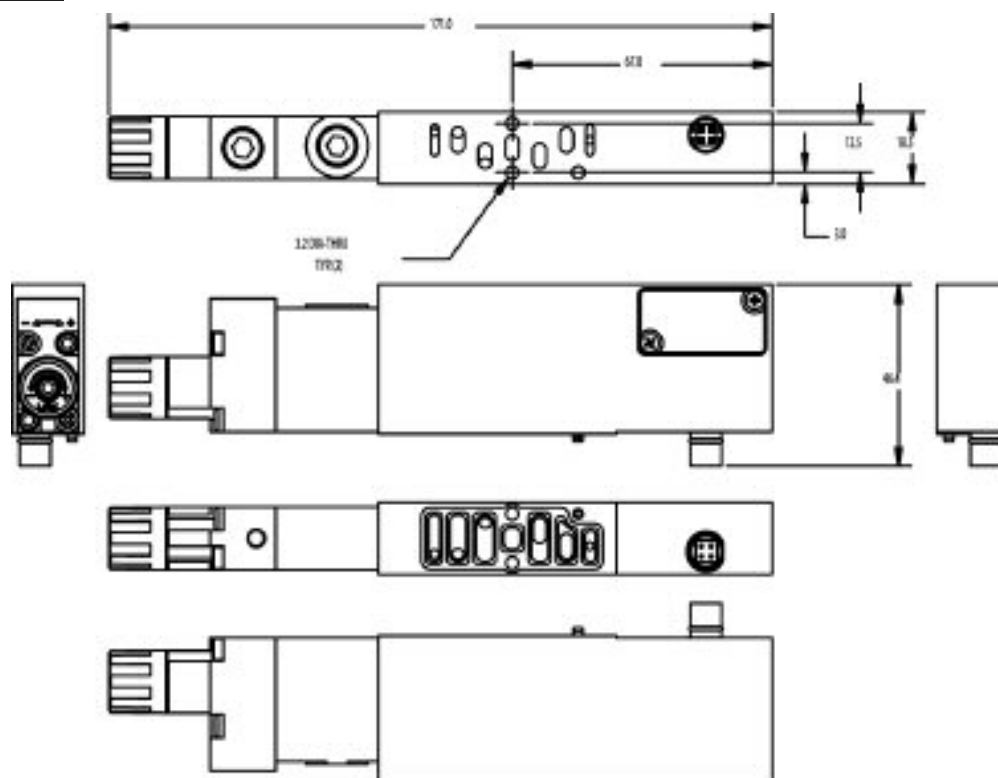
**PRP3B**

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure supply :</b>	Higher than maximum regulated pressure (max. 8,5 bar)
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
<b>Filtration :</b>	40 μ
<b>Temperature range :</b>	-18°C to +50°C

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

INTERNAL PILOT

Gauge	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 gauge	PRA1A-GAAA	PRA1A-GCAA	PRA1A-GBAA	PRA1A-GDAA	PRA1A-GEAA
Gauge perpendicular to regulator(s)	PRA1A-GABA	PRA1A-GCBA	PRA1A-GBBA	PRA1A-GDBA	PRA1A-GECA
Gauge parallel to regulator(s)	PRA1A-GADA	PRA1A-GCDA	PRA1A-GBDA	PRA1A-GDDA	PRA1A-GEEA

PR93A

PRA01A

PRP01A

EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRA1A-HAAA	PRA1A-HCAA	PRA1A-HBAA	PRA1A-HDAA	PRA1A-HEAA
Gauge perpendicular to regulator(s)	PRA1A-HABA	PRA1A-HCBA	PRA1A-HBBA	PRA1A-HDBA	PRA1A-HECA
Gauge parallel to regulator(s)	PRA1A-HADA	PRA1A-HCDA	PRA1A-HBDA	PRA1A-HDDA	PRA1A-HEEA

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

\* - To be used with dual pressure valves.

Note : regulating range for above models is 0-8 bar. 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.

PRA2B

PRA3C

PRP3B

**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)

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 8 bar (other ranges see below)
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C to 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Flow :</b>	1000 NI/min (Cv 1.0)

Spare parts :

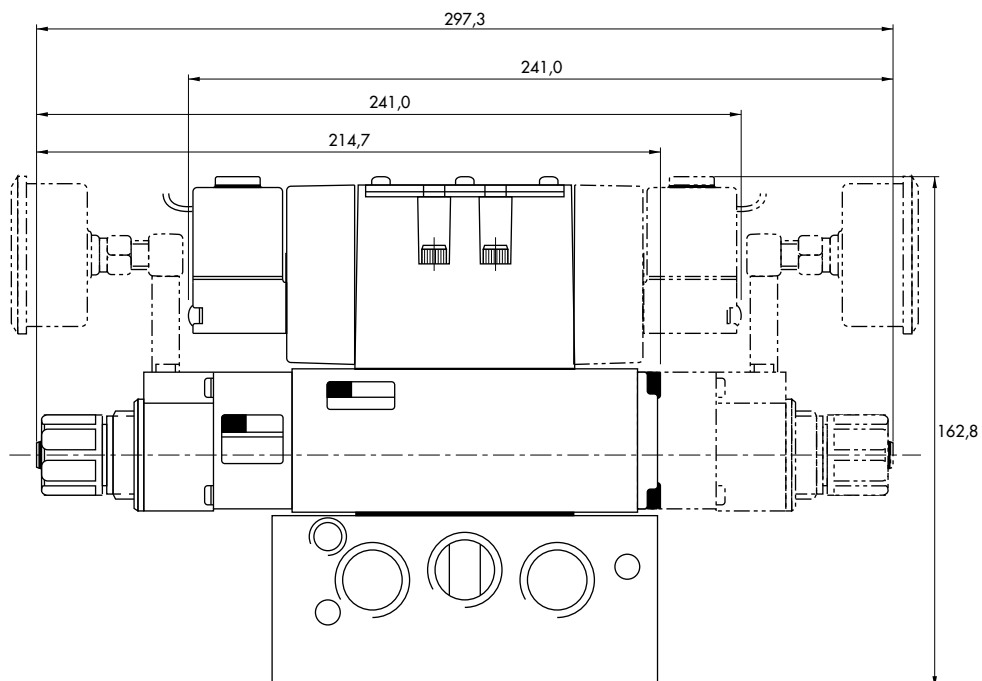
- Pressure regulator (less sandwich block) : PRA1A-JOAA (KNOB), PRA1A-COAA (SLOTTED STEM), PRA1A-MOAA (SLOTTED STEM WITH LOCKNUT).
- Gauge : N-82016-01 (0-8 bar perpendicular)  
 N-82016-02 (0-8 bar parallel)  
 N-82016-03 (0-5,3 bar perpendicular)  
 N-82016-04 (0-5,3 bar parallel)  
 N-82016-05 (0-2 bar perpendicular)  
 N-82016-06 (0-2 bar parallel)

Regulating range options : PRA1A-XXXX

- Replace by B - 0 to 5,3 bar
- Replace by C - 0 to 2 bar
- Replace by D - 0 to 8 bar on "14" end - 0 to 5,3 bar on "12" end
- Replace by E - 0 to 8 bar on "12" end - 0 to 5,3 bar on "14" end
- Replace by F - 0 to 8 bar on "14" end - 0 to 2 bar on "12" end
- Replace by G - 0 to 8 bar on "12" end - 0 to 2 bar on "14" end
- Replace by H - 0 to 5,3 bar on "14" end - 0 to 2 bar on "12" end
- Replace by J - 0 to 5,3 bar on "12" end - 0 to 2 bar on "14" end

**DIMENSIONS**

Dimensions shown are metric (mm)





**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

INTERNAL PILOT

Gauge	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 gauge	PRA1A-DAAA	PRA1A-DCAA	PRA1A-DBAA	PRA1A-DDAA	PRA1A-DEAA
Gauge perpendicular to regulator(s)	PRA1A-DABA	PRA1A-DCBA	PRA1A-DBBA	PRA1A-DDBA	PRA1A-DECA
Gauge parallel to regulator(s)	PRA1A-DADA	PRA1A-DCDA	PRA1A-DBDA	PRA1A-DDDA	PRA1A-DEEA

PR93A  
  
PRA01A

EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRA1A-EAAA	PRA1A-ECAA	PRA1A-EBAA	PRA1A-EDAA	PRA1A-EEAA
Gauge perpendicular to regulator(s)	PRA1A-EABA	PRA1A-ECBA	PRA1A-EBBA	PRA1A-EDBA	PRA1A-EECA
Gauge parallel to regulator(s)	PRA1A-EADA	PRA1A-ECDA	PRA1A-EBDA	PRA1A-EDDA	PRA1A-EEEA

PRP01A  
PRA02A  
PRP02A

**PRA1A**  
  
PRP1A

PRA2D

PRA2B

PRA3C

PRP3B

\* - 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.

**TECHNICAL DATA**

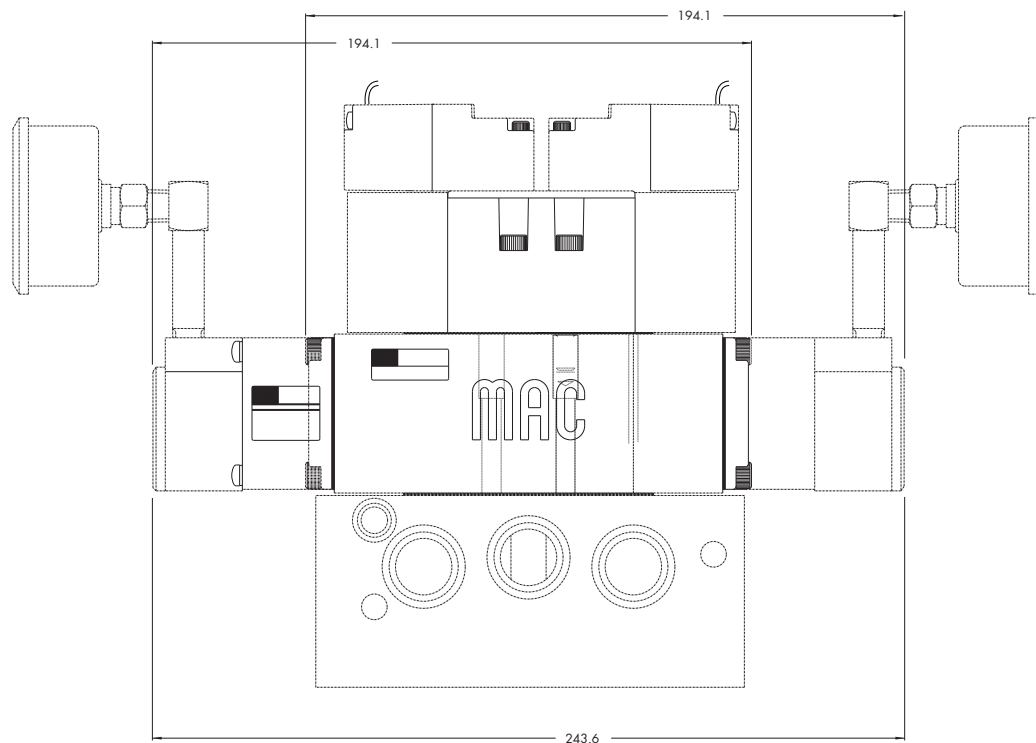
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C to 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Flow :</b>	1000 NI/min (Cv 1.0)

Spare parts :

- Pressure regulator (less sandwich block) : PRA1A-F0AA.
- Gauge : N-82016-01 (0-8 bar perpendicular)  
N-82016-02 (0-8 bar parallel)

**DIMENSIONS**

Dimensions shown are metric (mm)



**Plug-in sandwich pressure regulator with manual adjust knob**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs in comparison with inline regulators.
2. Compact all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gauge	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 *
<b>Gauge port only</b>	PRP1A-GAKA	PRP1A-GCKA	PRP1A-GBKA	PRP1A-GDKA	PRP1A-GEKA
<b>Gauge perpendicular to manual operator</b>	PRP1A-GABA	PRP1A-GCBA	PRP1A-GBBA	PRP1A-GDBA	PRP1A-GECA
<b>Gauge parallel to manual operator</b>	PRP1A-GADA	PRP1A-GCDA	PRP1A-GBDA	PRP1A-GDDA	PRP1A-GEEA

PR93A  
  
PRA01A  
  
PRP01A

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gauge	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 *
<b>No gauge</b>	PRP1A-HAKA	PRP1A-HCKA	PRP1A-HBKA	PRP1A-HDKA	PRP1A-HEKA
<b>Gauge perpendicular to manual operator</b>	PRP1A-HABA	PRP1A-HCBA	PRP1A-HBBA	PRP1A-HDBA	PRP1A-HECA
<b>Gauge parallel to manual operator</b>	PRP1A-HADA	PRP1A-HCDA	PRP1A-HBDA	PRP1A-HDDA	PRP1A-HEEA

PRA02A  
PRP02A  
  
PRA1A

**PRP1A**

PRA2D

PRA2B

PRA3C

PRP3B

\* For use with dual pressure valves.

Note: Regulating range for above models is 0-8 bar. 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.

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant ( between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1100 NI/min (Cv 1.1)

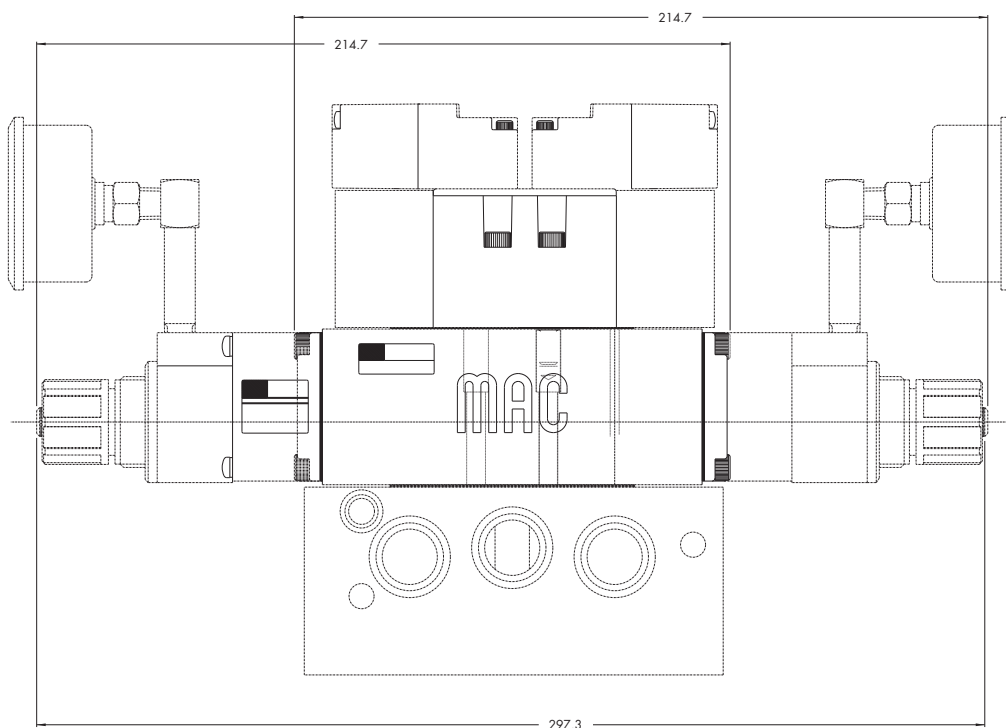
Spare parts : • Pressure regulator (less sandwich block) : PRP1A-JOKA (knob), PRP1A-COKA (slotted stem)  
PRP1A-MOKA (slotted stem with locknut)

Regulating range options : PRP1A-XXXX

- Replace by B - 0 to 5,3 bar
- Replace by C - 0 to 2 bar
- Replace by D - 0 to 8 bar on "14" end - 0 to 5,3 bar on "12" end
- Replace by E - 0 to 8 bar on "12" end - 0 to 5,3 bar on "14" end
- Replace by F - 0 to 8 bar on "14" end - 0 to 2 bar on "12" end
- Replace by G - 0 to 8 bar on "12" end - 0 to 2 bar on "14" end
- Replace by H - 0 to 5,3 bar on "14" end - 0 to 2 bar on "12" end
- Replace by J - 0 to 5,3 bar on "12" end - 0 to 2 bar on "14" end

**DIMENSIONS**

Dimensions shown are metric (mm)



**Plug-in sandwich pressure regulator with air pilot adjust**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs in comparison with inline regulators.
2. Compact all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR INTERNAL PILOT

Gauge	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 *
Gauge port only	PRP1A-DAKA	PRP1A-DCKA	PRP1A-DBKA	PRP1A-DDKA	PRP1A-DEKA
Gauge perpendicular to manual operator	PRP1A-DABA	PRP1A-DCBA	PRP1A-DBBA	PRP1A-DDBA	PRP1A-DECA
Gauge parallel to manual operator	PRP1A-DADA	PRP1A-DCDA	PRP1A-DBDA	PRP1A-DDDA	PRP1A-DEEA

PR93A

PRA01A

PRP01A

PRA02A

PRP02A

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gauge	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 *
Gauge port only	PRP1A-EAKA	PRP1A-ECKA	PRP1A-EBKA	PRP1A-EDKA	PRP1A-EEKA
Gauge perpendicular to manual operator	PRP1A-EABA	PRP1A-ECBA	PRP1A-EBBA	PRP1A-EDBA	PRP1A-EECA
Gauge parallel to manual operator	PRP1A-EADA	PRP1A-ECDA	PRP1A-EBDA	PRP1A-EDDA	PRP1A-EEEA

PRA1A

PRP1A

PRA2D

PRA2B

PRA3C

PRP3B

\* - 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.

**TECHNICAL DATA**

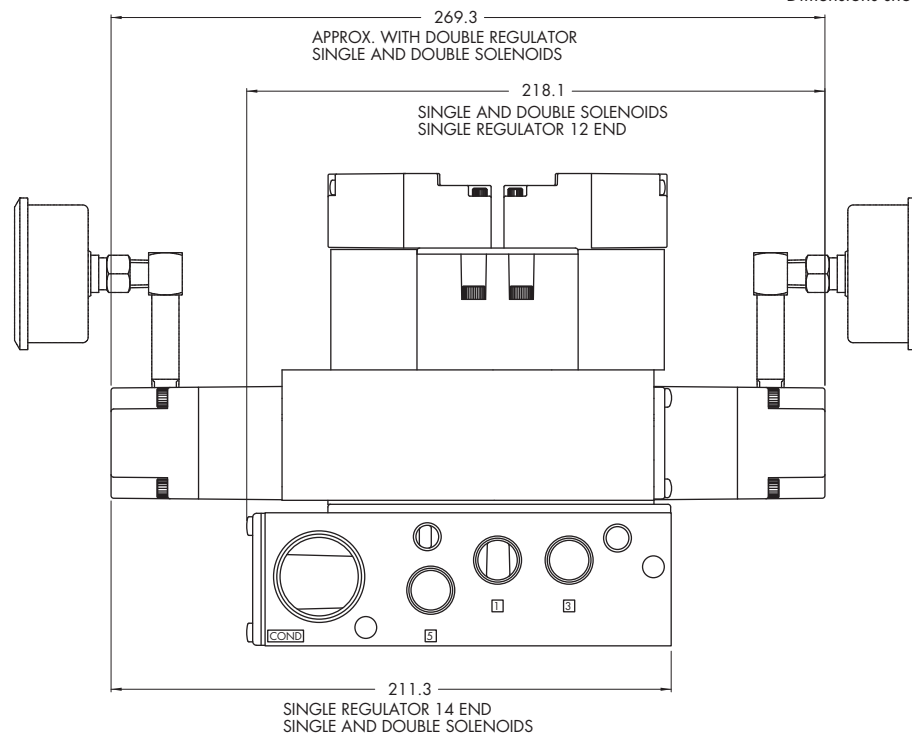
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 8 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant ( between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1100 NI/min (Cv 1.1)

Spare parts :

- Pressure regulator (less sandwich block): PRP1A-FOKA
- Regulator block to base mounting tie rod: 19496

**DIMENSIONS**

Dimensions shown are metric (mm)



**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B

PR92C

**HOW TO ORDER**

INTERNAL PILOT

Gauge	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 gauge	PRA2D-1AAA	PRA2D-1EAA	PRA2D-1BAA	PRA2D-1FAA	PRA2D-1JAA
Non-filled gauge on regulator(s)	PRA2D-1ADA	PRA2D-1EDA	PRA2D-1BDA	PRA2D-1FDA	PRA2D-1JEA
Non-filled gauge opposite to regulator	PRA2D-1CDA	PRA2D-1GDA	PRA2D-1DDA	PRA2D-1HDA	-----
Glycerine filled gauge on regulator(s)	PRA2D-1ABA	PRA2D-1EBA	PRA2D-1BBA	PRA2D-1FBA	PRA2D-1JCA
Glycerine filled gauge opposite to regulator	PRA2D-1CBA	PRA2D-1GBA	PRA2D-1DBA	PRA2D-1HBA	-----

PR93A

PRA01A

PRP01A

PRA02A

PRP02A

EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRA2D-2AAA	PRA2D-2EAA	PRA2D-2BAA	PRA2D-2FAA	PRA2D-2JAA
Non-filled gauge on regulator(s)	PRA2D-2ADA	PRA2D-2EDA	PRA2D-2BDA	PRA2D-2FDA	PRA2D-2JEA
Non-filled gauge opposite to regulator	PRA2D-2CDA	PRA2D-2GDA	PRA2D-2DDA	PRA2D-2HDA	-----
Glycerine filled gauge on regulator(s)	PRA2D-2ABA	PRA2D-2EBA	PRA2D-2BBA	PRA2D-2FBA	PRA2D-2JCA
Glycerine filled gauge opposite to regulator	PRA2D-2CBA	PRA2D-2GBA	PRA2D-2DBA	PRA2D-2HBA	-----

PRA1A

PRP1A

PRA2D

PRA2B

PRA3C

PRP3B

\* - To be used with dual pressure valves.  
Note : regulating range for above models is 0-10 bar.  
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)

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar (other ranges see below)
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C to 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Flow :</b>	2300 NI/min (Cv 2.3)

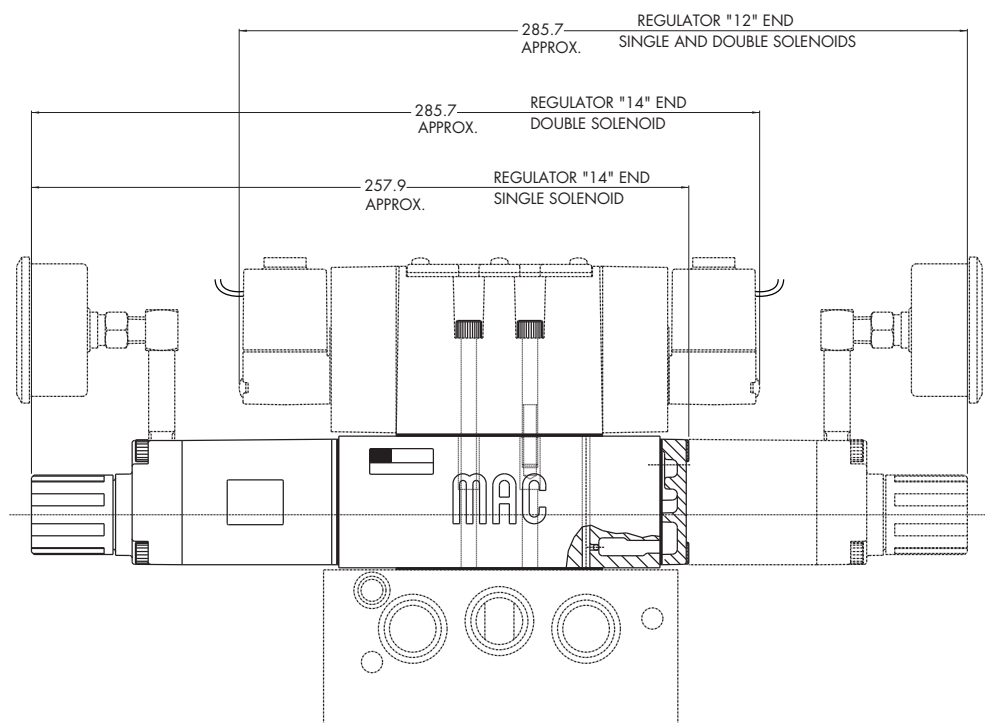
- Spare parts :
- Pressure regulator (less sandwich block) : PRA2D-30AA (KNOB), PRA2D-C0AA (SLOTTED STEM), PRA2D-F0AA (SLOTTED STEM WITH LOCKNUT).
  - Gauge : • Glycerine filled : N-62015-01  
• Non filled : N-62016-01

Regulating range options : PRA2D-XXXA

- Replace by B - 0 to 6,7 bar
- Replace by C - 0 to 3 bar

**DIMENSIONS**

Dimensions shown are metric (mm)

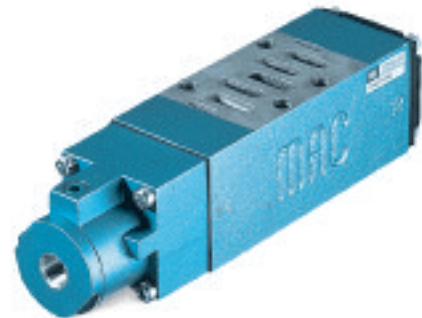




**Non plug-in sandwich pressure regulator with air pilot adjust**

**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

INTERNAL PILOT

Gauge	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 gauge	PRA2D-4AAA	PRA2D-4EAA	PRA2D-4BAA	PRA2D-4FAA	PRA2D-4JAA
Non-filled gauge on regulator(s)	PRA2D-4ADA	PRA2D-4EDA	PRA2D-4BDA	PRA2D-4FDA	PRA2D-4JEA
Non-filled gauge opposite to regulator	PRA2D-4CDA	PRA2D-4GDA	PRA2D-4DDA	PRA2D-4HDA	----
Glycerine filled gauge on regulator(s)	PRA2D-4ABA	PRA2D-4EBA	PRA2D-4BBA	PRA2D-4FBA	PRA2D-4JCA
Glycerine filled gauge opposite to regulator	PRA2D-4CBA	PRA2D-4GBA	PRA2D-4DBA	PRA2D-4HBA	----

PR93A  
  
PRA01A  
  
PRP01A  
  
PRA02A  
PRP02A

EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRA2D-5AAA	PRA2D-5EAA	PRA2D-5BAA	PRA2D-5FAA	PRA2D-5JAA
Non-filled gauge on regulator(s)	PRA2D-5ADA	PRA2D-5EDA	PRA2D-5BDA	PRA2D-5FDA	PRA2D-5JEA
Non-filled gauge opposite to regulator	PRA2D-5CDA	PRA2D-5GDA	PRA2D-5DDA	PRA2D-5HDA	----
Glycerine filled gauge on regulator(s)	PRA2D-5ABA	PRA2D-5EBA	PRA2D-5BBA	PRA2D-5FBA	PRA2D-5JCA
Glycerine filled gauge opposite to regulator	PRA2D-5CBA	PRA2D-5GBA	PRA2D-5DBA	PRA2D-5HBA	----

PRA1A  
  
PRP1A  
  
PRA2D  
  
PRA2B  
  
PRA3C  
  
PRP3B

\* - 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.

**TECHNICAL DATA**

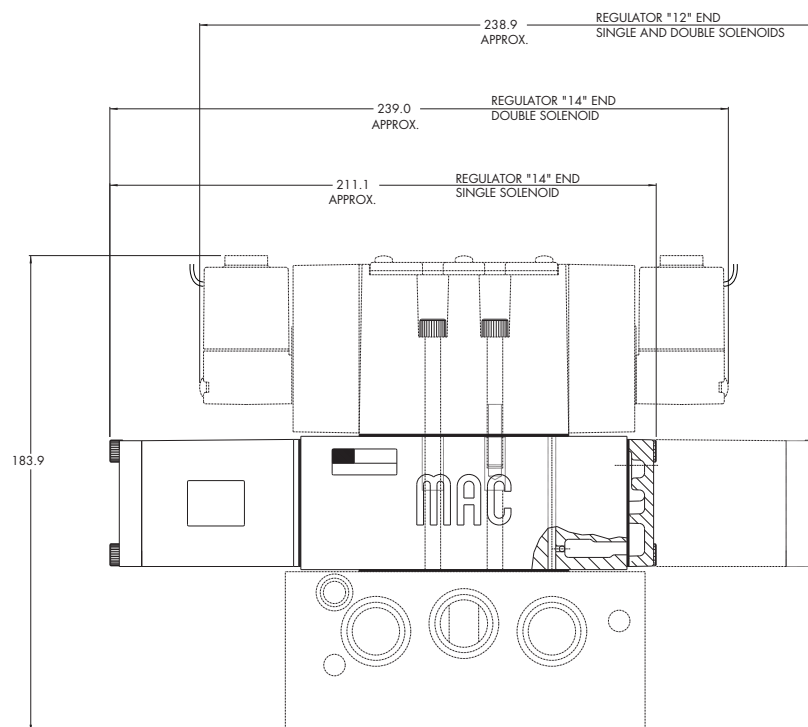
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C to 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Flow :</b>	2300 NI/min (Cv 2.3)

Spare parts :

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

**DIMENSIONS**

Dimensions shown are metric (mm)



**Plug-in sandwich pressure regulator with manual adjust knob**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs in comparison with inline regulators.
2. Compact all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gauge	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 gauge	PRP2B-AAAA	PRP2B-AEAA	PRP2B-ABAA	PRP2B-AFAA	PRP2B-AJAA
Glycerine gauge	PRP2B-AABA	PRP2B-AEBA	PRP2B-ABBA	PRP2B-AFBA	PRP2B-AJCA
Non-filled gauge	PRP2B-AADA	PRP2B-AEDA	PRP2B-ABDA	PRP2B-AFDA	PRP2B-AJEA

PR93A

PRA01A

PRP01A

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gauge	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 gauge	PRP2B-BAAA	PRP2B-BEAA	PRP2B-BBAA	PRP2B-BFAA	PRP2B-BJAA
Glycerine gauge	PRP2B-BABA	PRP2B-BEBA	PRP2B-BBBA	PRP2B-BFBA	PRP2B-BJCA
Non-filled gauge	PRP2B-BADA	PRP2B-BEDA	PRP2B-BBDA	PRP2B-BFDA	PRP2B-BJEA

PRA2B

PRA3C

PRP3B

\* For use with dual pressure valves.

Note: Regulating range for above models is 0-10 bar. 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.

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant ( between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar)</b>	3100 NI/min (Cv 3.1)

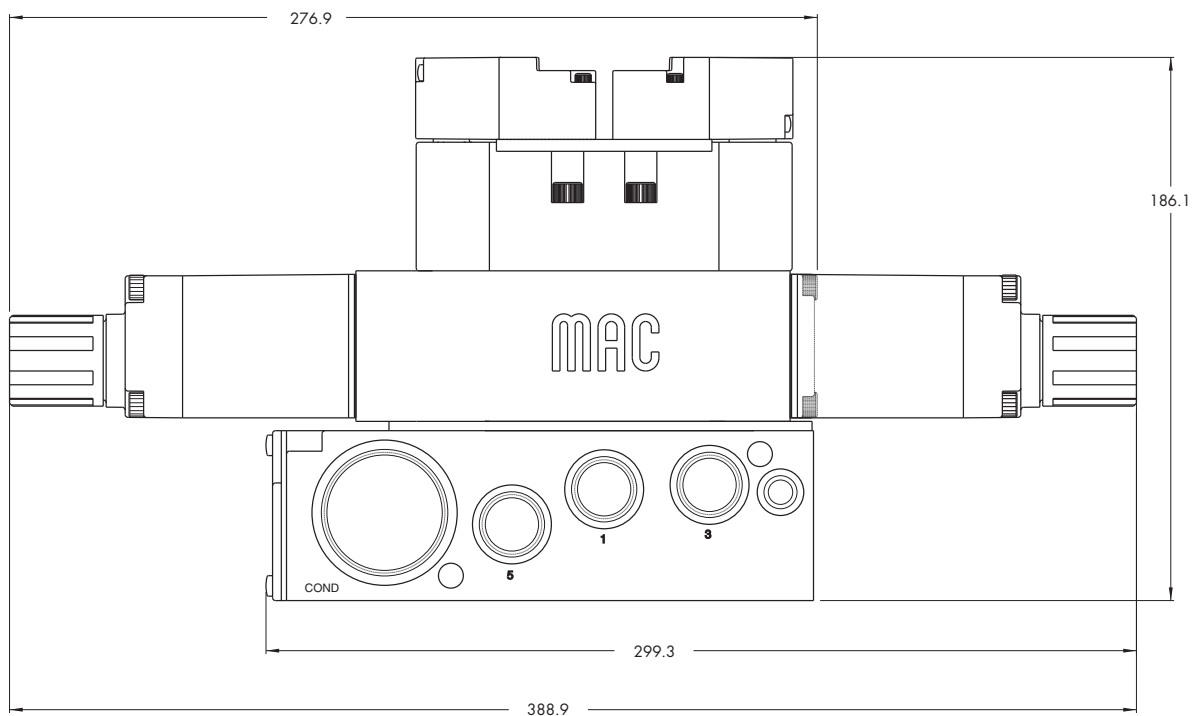
Spare parts :

- Pressure regulator (less sandwich block) PRP2B-COAA (knob), PRP2B-JOAA (slotted stem), PRP2B-MOAA (slotted stem with locknut)
- Regulator block to base mounting screw: 19177
- Regulating range option: PRP2B-xxxA

— Replace by B for 0 to 6,7 bar  
— Replace by C for 0 to 3 bar

**DIMENSIONS**

Dimensions shown are metric (mm)



**Plug-in sandwich pressure regulator with air pilot adjust**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs in comparison with inline regulators.
2. Compact all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR INTERNAL PILOT

Gauge	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 gauge	PRP2B-DAAA	PRP2B-DEAA	PRP2B-DBAA	PRP2B-DFAA	PRP2B-DJAA
Glycerine gauge	PRP2B-DABA	PRP2B-DEBA	PRP2B-DBBA	PRP2B-DFBA	PRP2B-DJCA
Non-filled gauge	PRP2B-DADA	PRP2B-DEDA	PRP2B-DBDA	PRP2B-DFDA	PRP2B-DJEA

PR93A  
  
PRA01A  
  
PRP01A

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRP2B-EAAA	PRP2B-EEAA	PRP2B-EBAA	PRP2B-EFAA	PRP2B-EJAA
Glycerine gauge	PRP2B-EABA	PRP2B-EEBA	PRP2B-EBBA	PRP2B-EFBA	PRP2B-EJCA
Non-filled gauge	PRP2B-EADA	PRP2B-EEDA	PRP2B-EBDA	PRP2B-EFDA	PRP2B-EJEA

PRA02A  
PRP02A  
  
PRA1A  
  
PRP1A  
  
PRA2D

\* - 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.

PRA2B  
  
PRA3C  
  
PRP3B

**TECHNICAL DATA**

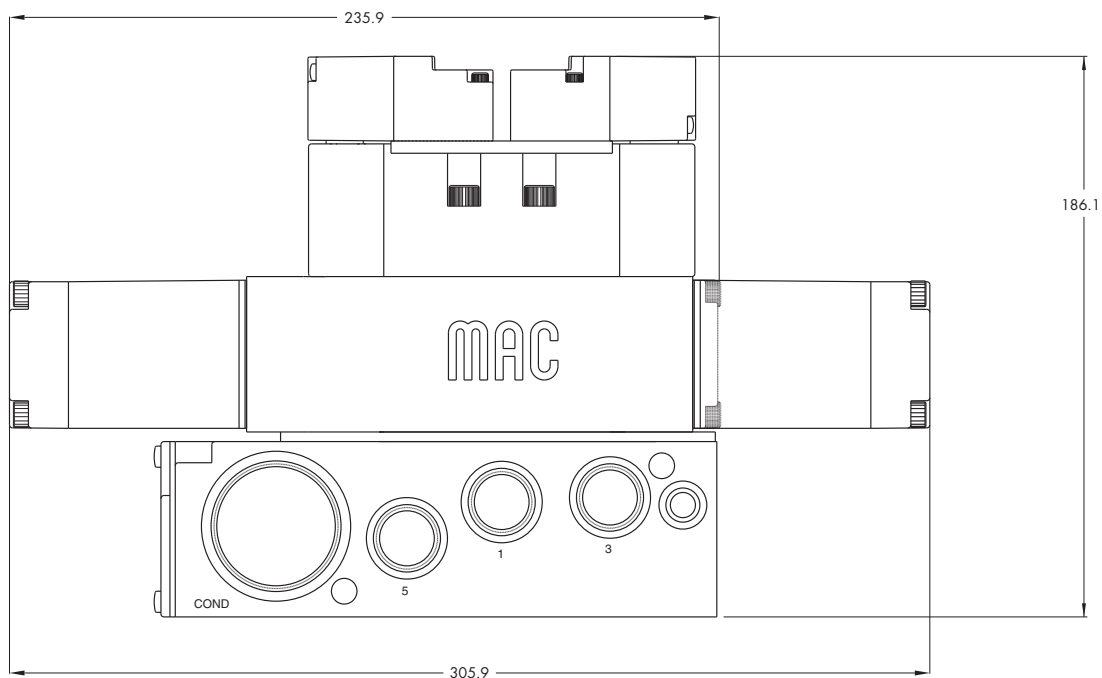
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant ( between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	3100 NI/min (Cv 3.1)

Spare parts :

- Pressure regulator (less sandwich block): PRP2B-F0AA
- Body/block to base mounting screw: 19177

**DIMENSIONS**

Dimensions shown are metric (mm)



**Non plug-in sandwich pressure regulator with manual adjust knob**

**OPERATIONAL BENEFITS**

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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

INTERNAL PILOT

Gauge	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 gauge	PRA3C-1AAA	PRA3C-1EAA	PRA3C-1BAA	PRA3C-1FAA	PRA3C-1JAA
Non-filled gauge on regulator(s)	PRA3C-1ADA	PRA3C-1EDA	PRA3C-1BDA	PRA3C-1FDA	PRA3C-1JEA
Non-filled gauge opposite to regulator	PRA3C-1CDA	PRA3C-1GDA	PRA3C-1DDA	PRA3C-1HDA	----
Glycerine filled gauge on regulator(s)	PRA3C-1ABA	PRA3C-1EBA	PRA3C-1BBA	PRA3C-1FBA	PRA3C-1JCA
Glycerine filled gauge opposite to regulator	PRA3C-1CBA	PRA3C-1GBA	PRA3C-1DBA	PRA3C-1HBA	----

PR93A  
  
PRA01A  
  
PRP01A  
  
PRA02A  
PRP02A

EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRA3C-2AAA	PRA3C-2EAA	PRA3C-2BAA	PRA3C-2FAA	PRA3C-2JAA
Non-filled gauge on regulator(s)	PRA3C-2ADA	PRA3C-2EDA	PRA3C-2BDA	PRA3C-2FDA	PRA3C-2JEA
Non-filled gauge opposite to regulator	PRA3C-2CDA	PRA3C-2GDA	PRA3C-2DDA	PRA3C-2HDA	----
Glycerine filled gauge on regulator(s)	PRA3C-2ABA	PRA3C-2EBA	PRA3C-2BBA	PRA3C-2FBA	PRA3C-2JCA
Glycerine filled gauge opposite to regulator	PRA3C-2CBA	PRA3C-2GBA	PRA3C-2DBA	PRA3C-2HBA	----

PRA1A  
  
PRP1A  
  
PRA2D  
  
PRA2B

\* - To be used with dual pressure valves.  
Note : regulating range for above models is 0-10 bar.  
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)

**TECHNICAL DATA**

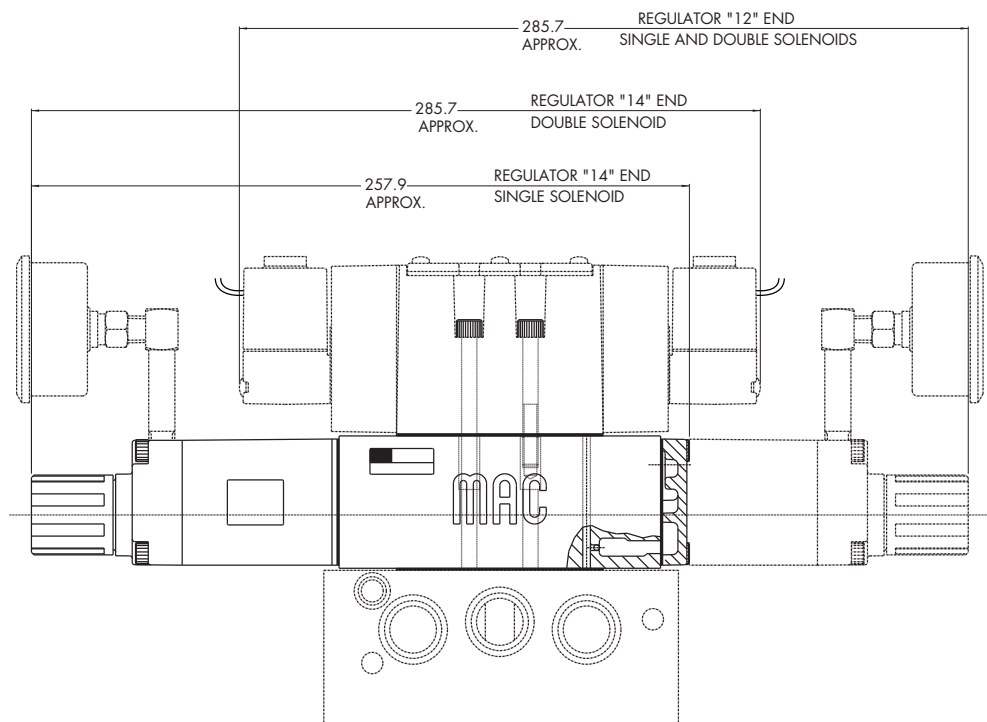
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar (other ranges see below)
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C to 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Flow :</b>	5400 NI/min (Cv 5.4)

- Spare parts :
- Pressure regulator (less sandwich block) : PRA3C-30AA (KNOB), PRA3C-C0AA (SLOTTED STEM), PRA3C-F0AA (SLOTTED STEM WITH LOCKNUT).
  - Gauge : • Glycerine filled : N-62015-01  
• Non filled : N-62016-01

- Regulating range options : PRA3C-XXXA
- Replace by B - 0 to 6,7 bar
  - Replace by C - 0 to 3 bar

**DIMENSIONS**

Dimensions shown are metric (mm)





**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.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

INTERNAL PILOT

Gauge	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 gauge	PRA3C-4AAA	PRA3C-4EAA	PRA3C-4BAA	PRA3C-4FAA	PRA3C-4JAA
Non-filled gauge on regulator(s)	PRA3C-4ADA	PRA3C-4EDA	PRA3C-4BDA	PRA3C-4FDA	PRA3C-4JEA
Non-filled gauge opposite to regulator	PRA3C-4CDA	PRA3C-4GDA	PRA3C-4DDA	PRA3C-4HDA	----
Glycerine filled gauge on regulator(s)	PRA3C-4ABA	PRA3C-4EBA	PRA3C-4BBA	PRA3C-4FBA	PRA3C-4JCA
Glycerine filled gauge opposite to regulator	PRA3C-4CBA	PRA3C-4GBA	PRA3C-4DBA	PRA3C-4HBA	----

PR93A

PRA01A

PRP01A

PRA02A

PRP02A

EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRA3C-5AAA	PRA3C-5EAA	PRA3C-5BAA	PRA3C-5FAA	PRA3C-5JAA
Non-filled gauge on regulator(s)	PRA3C-5ADA	PRA3C-5EDA	PRA3C-5BDA	PRA3C-5FDA	PRA3C-5JEA
Non-filled gauge opposite to regulator	PRA3C-5CDA	PRA3C-5GDA	PRA3C-5DDA	PRA3C-5HDA	----
Glycerine filled gauge on regulator(s)	PRA3C-5ABA	PRA3C-5EBA	PRA3C-5BBA	PRA3C-5FBA	PRA3C-5JCA
Glycerine filled gauge opposite to regulator	PRA3C-5CBA	PRA3C-5GBA	PRA3C-5DBA	PRA3C-5HBA	----

PRA1A

PRP1A

PRA2D

PRA2B

PRA3C

PRP3B

\* - 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.

**TECHNICAL DATA**

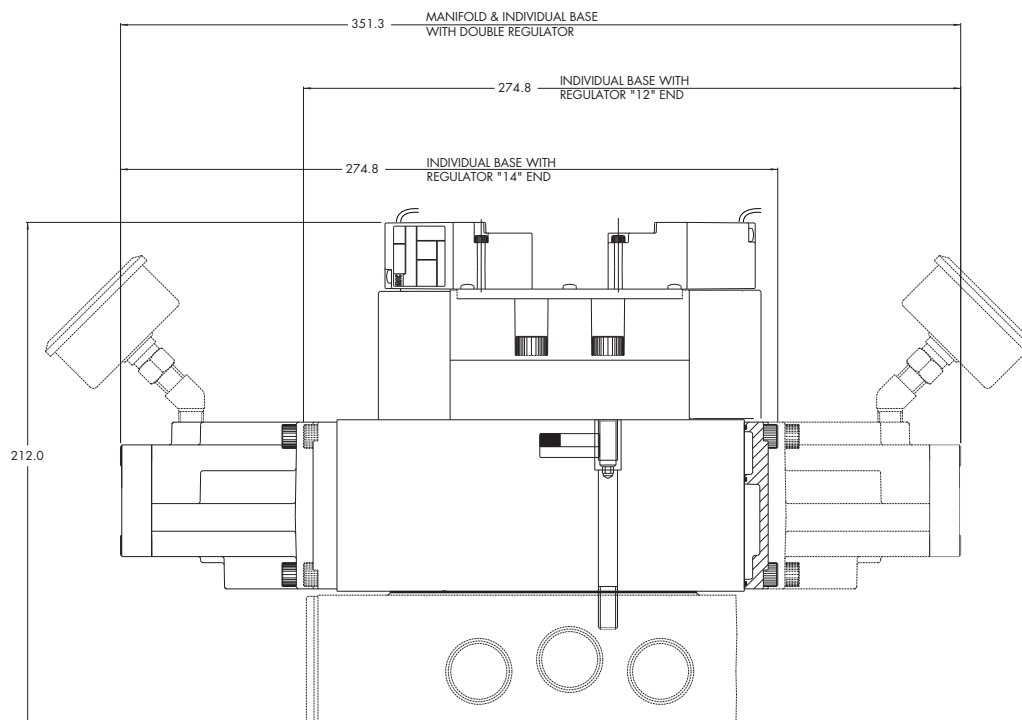
<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C to 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to 50°C
<b>Flow :</b>	5400 NI/min (Cv 5.4)

Spare parts :

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

**DIMENSIONS**

Dimensions shown are metric (mm)



**Plug-in sandwich pressure regulator with manual adjust knob**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs in comparison with inline regulators.
2. Compact all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

Gauge	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 gauge	PRP3B-AAAA	PRP3B-AEAA	PRP3B-ABAA	PRP3B-AFAA	PRP3B-AJAA
Glycerine gauge	PRP3B-AABA	PRP3B-AEBA	PRP3B-ABBA	PRP3B-AFBA	PRP3B-AJCA
Non-filled gauge	PRP3B-AADA	PRP3B-AEDA	PRP3B-ABDA	PRP3B-AFDA	PRP3B-AJEA

PR93A

PRA01A

PRP01A

PRA02A

PRP02A

PRA1A

PRP1A

PRA2D

PRA2B

PRA3C

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

Gauge	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 gauge	PRP3B-BAAA	PRP3B-BEAA	PRP3B-BBAA	PRP3B-BFAA	PRP3B-BJAA
Glycerine gauge	PRP3B-BABA	PRP3B-BEBA	PRP3B-BBBA	PRP3B-BFBA	PRP3B-BJCA
Non-filled gauge	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 0-10 bar. 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.


**PRP3B**

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant ( between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar)</b>	5400 NI/min (Cv 5.4)

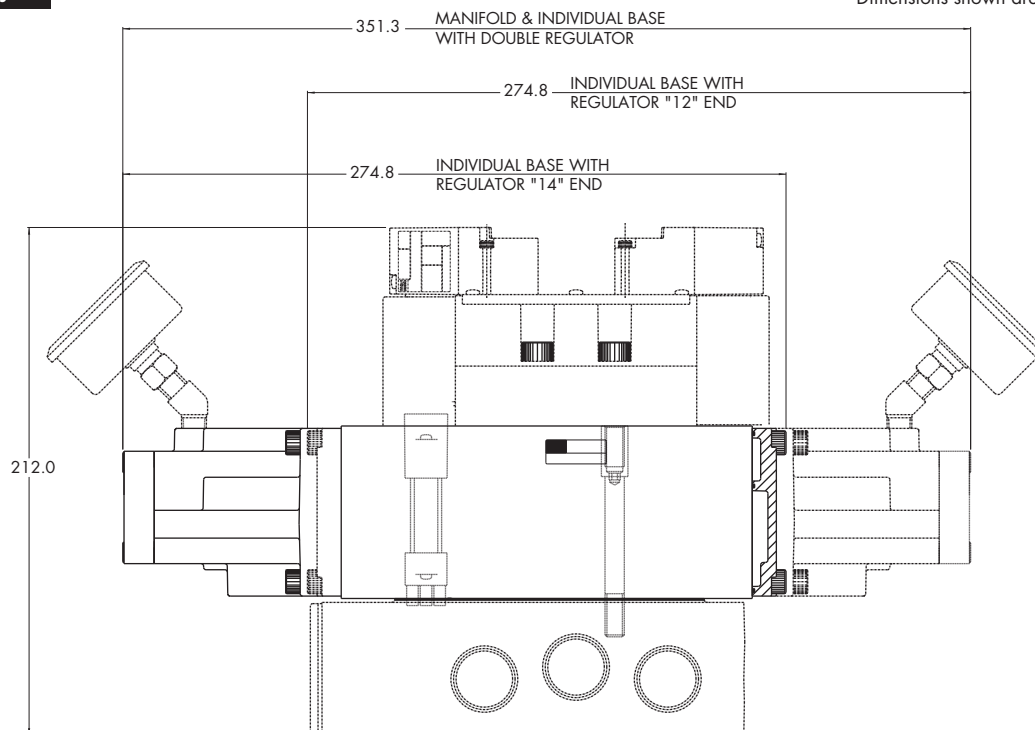
Spare parts :

- Pressure regulator (less sandwich block): PRP3B-COAA (knob), PRP3B-JOAA (slotted stem), PRP3B-MOAA (slotted stem with locknut)
- Regulating block to base mounting screw: 19457
- Regulating range options: PRP3B-xxxA


 Replace by B for 0 to 6,7 bar  
 Replace by C for 0 to 3 bar

**DIMENSIONS**

Dimensions shown are metric (mm)



**Plug-in sandwich pressure regulator with air pilot adjust**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs in comparison with inline regulators.
2. Compact all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



PR24A  
PR37A  
PR42B  
PR46A  
PR47A  
PR48B  
  
PR92C

**HOW TO ORDER**

REGULATORS FOR INTERNAL PILOT

Gauge	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 gauge	PRP3B-DAAA	PRP3B-DEAA	PRP3B-DBAA	PRP3B-DFAA	PRP3B-DJAA
Glycerine gauge	PRP3B-DABA	PRP3B-DEBA	PRP3B-DBBA	PRP3B-DFBA	PRP3B-DJCA
Non-filled gauge	PRP3B-DADA	PRP3B-DEDA	PRP3B-DBDA	PRP3B-DFDA	PRP3B-DJEA

PR93A  
  
PRA01A  
  
PRP01A

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

Gauge	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 gauge	PRP3B-EAAA	PRP3B-EEAA	PRP3B-EBAA	PRP3B-EFAA	PRP3B-EJAA
Glycerine gauge	PRP3B-EABA	PRP3B-EEBA	PRP3B-EBBA	PRP3B-EFBA	PRP3B-EJCA
Non-filled gauge	PRP3B-EADA	PRP3B-EEDA	PRP3B-EBDA	PRP3B-EFDA	PRP3B-EJEA

PRA02A  
PRP02A  
  
PRA1A  
  
PRP1A  
  
PRA2D  
  
PRA2B  
  
PRA3C

\* - 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.

**PRP3B**

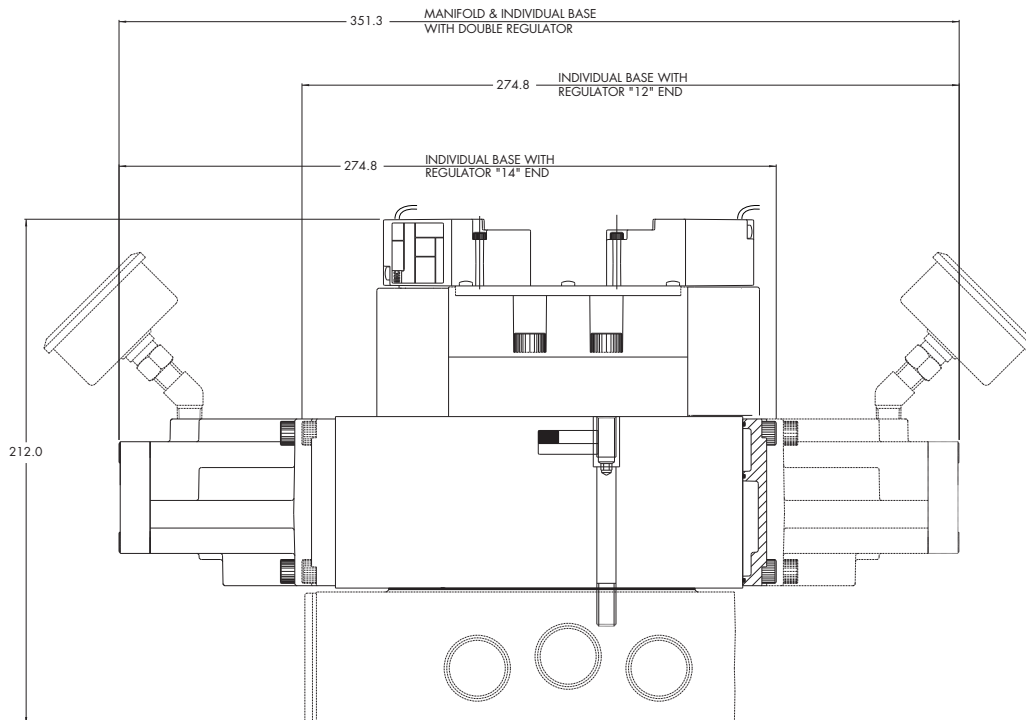
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure range :</b>	0 to 10 bar
<b>Regulating range :</b>	0 to 10 bar
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant ( between 80°C and 100°C)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	-18°C to +50°C
<b>Flow (at 6 bar, ΔP=1bar) :</b>	5400 NI/min (Cv 5.4)

- Spare parts :
- Pressure regulator (less sandwich block): PRP3B-F0AA
  - Regulator block to base mounting screw: 19457

**DIMENSIONS**

Dimensions shown are metric (mm)





## Section 5

## Options

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0 p t i o n s

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**Codification table for voltages / Manual operator / Electrical connection**

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VALVE CODE > **-DM- D XX X-X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Pilot operated valves 52, 53, 67, 83, 92, 93, 400, ISO1, ISO2, ISO3 Series

---

1. VOLTAGE		4. ELECTRICAL CONNECTION	
D-XX X-X XX	VOLTAGE	D-XX X-X XX	ELECTRICAL CONNECTION
DA	24V=/5,4W	BA*	Flying leads
DB	12V=/5,4W	BK*	BA with protection diode
DC	12V=/7,5W	BL*	BA with protection varistor
DD	24V=/7,3W	BM**	Flying leads (solenoid plug-in)
DE	12V=/12,7W	BN**	BM with protection diode
DF	24V=/12,7W	BP**	BM with protection varistor
DK	110V=/4,7W	BG**	BM with ground
DJ	28V=/5,2W	BH**	BM with protection diode & ground
DL	64V=/6W	BJ**	BM with protection varistor & ground
DM	36V=/5,3W	CA*	1/2" NPS conduit with flying leads
DN	6V=/6W	CM*	1/2" NPS metal conduit with flying leads
DR	90V=/6,6W	CN*	1/2" NPS metal conduit with flying leads & ground
DS	110V=/7,3W	DG	Plug-in with ground
DT	75V=/5,6W	DH	Plug-in with diode & ground
DP	48V=/5,8W	DJ	Plug-in with M.O.V. & ground
FA	12V=/1,8W	DM	Plug-in
FB	24V=/1,8W	DN	Plug-in with diode
FE	12V=/2,4W	DP	Plug-in with M.O.V.
FF	24V=/2,4W	JB	Rectangular connector
JA	120V~/60Hz, 110V~/50Hz (2,9W)	JD	Rectangular connector with light
JB	240V~/60Hz, 220V~/50Hz (2,9W)	JM	Rectangular connector, male only
JC	24V~/60Hz, 24V~/50Hz (3,7W)	KA	Square connector
JD	100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W)	KB	Square connector with protection diode
JE	220V~/60Hz (3,4W)	KC	Square connector with protection varistor
JF	240V~/50Hz (2,8W)	KD	Square connector with light
JG	200V~/60Hz, 200V~/50Hz (3,9W)	KE	Square connector with light and protection diode
		KF	Square connector with light and protection varistor
		KG	Square connector with light & diode
		KJ	Square connector (male only)
		KK	Square connector with protection diode (male only)
		KL	Square connector 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

2. WIRE LENGTH	
D-XX X-X XX	WIRE LENGTH
0	No wires
A	45 cm – 18"
B	60 cm – 24"
C	90 cm – 36"
D	120 cm – 48"
E	180 cm – 72"
F	240 cm – 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

\* 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.



0 p t i o n s

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**Codification table for voltages / Manual operator / Electrical connection**

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VALVE CODE > **G XX X-X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 32, 34, 38, 42, 44, 48 & 48P Series

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1. VOLTAGE			4. ELECTRICAL CONNECTION	
G-XX X-X XX	VOLTAGE		G-XX X-X XX	ELECTRICAL CONNECTION
AA	120V~/2,5W	Requires electrical connector with rectifier	BA	Flying leads
AC	24V~/4,0W	Requires electrical connector with rectifier	BB	BA with ground wire
DA	24V~/1,0W		BC	BA with light
DC	24V~/1,8W		BD	BA with light and ground wire
DD	24V~/2,5W		BE	BA with suppression diode
DE	24V~/3,0W		BF	BA with suppression diode and ground wire
DF	24V~/4,0W		BG	BA with suppression diode and light
DG	12V~/1,0W		BH	BA with suppression diode, light and ground wire
DJ	12V~/1,8W		BN	BA with suppression diode and blocking diode
DK	12V~/2,5W		BP	BA with suppression diode, blocking diode and ground wire
DM	12V~/3,0W		BR	BA with suppression diode, blocking diode and light
DN	12V~/4,0W		BS	BA with suppression diode, blocking diode, light and ground wire
DR	6V~/1,8W		GA	MAC JAC Solenoid plug-in
DS	6V~/3,0W		GB	MAC JAC Solenoid plug-in with diode
EB	48V~/1,8W		GC	MAC JAC Solenoid plug-in with MOV
EC	48V~/3,0W		GD	MAC JAC Solenoid plug-in with LED
ED	120V~/2,5W		GE	MAC JAC Solenoid plug-in with diode and LED
GD	12V~/0,5W	34 series only	GF	MAC JAC Solenoid plug-in with MOV and LED
GE	24V~/0,5W	34 series only	GG	MAC JAC Solenoid plug-in with rectifier
			GH	MAC JAC Solenoid plug-in with rectifier and LED
			KA	Mini connector
			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
2. WIRE LENGTH			ELECTRICAL CONNECTION FOR PLUG-IN VALVES	
G-XX X-X XX	WIRE LENGTH		G-XX X-X XX	PLUG-IN OPTIONS
0	No lead wires (used only with "KJ" & "KM" connectors)		SB	Base plug-in with ground
A	45 cm - 18" coil leads		SC	Base plug-in with suppression & blocking diode
B	60 cm - 24" coil leads		SD	Base plug-in with suppression & blocking diode & ground
C	90 cm - 36" coil leads		SE	Base plug-in with MOV
D	120 cm - 48" coil leads		SF	Base plug-in with MOV & ground
E	180 cm - 72" coil leads		SG	Base plug-in with rectifier
F	240 cm - 96" coil leads		SH	Base plug-in with rectifier & ground
G	305 cm - 120" coil leads		SK	Base plug-in with light & ground
H	366 cm - 144" coil leads		SL	Base plug-in with suppression & blocking diode & light
1	45 cm - 18" base leads		SM	Base plug-in with suppression & blocking diode with light & ground
2	60 cm - 24" base leads		SN	Base plug-in with MOV & light
3	90 cm - 36" base leads		SP	Base plug-in with MOV & light with ground
4	120 cm - 48" base leads		SR	Base plug-in with rectifier & light
5	180 cm - 72" base leads			
6	240 cm - 96" base leads			
7	305 cm - 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			



0 p t i o n s

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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **-GM- G XX X-X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 52, 83 & 400 Series

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1. VOLTAGE		4. ELECTRICAL CONNECTION	
<b>G-XX X-X XX</b>	<b>VOLTAGE</b>	<b>G-XX X-X XX</b>	<b>ELECTRICAL CONNECTION</b>
<b>DC</b>	24 V=/1,8 W	<b>BA</b>	Flying leads
<b>DD</b>	24 V=/2,5 W	<b>BB</b>	BA with ground wire
<b>DE</b>	24 V=/3,0 W	<b>BC</b>	BA with light parallel to leads
<b>DF</b>	24 V=/4,0 W	<b>BD</b>	BA with light parallel to leads & ground wire
<b>DJ</b>	12 V=/1,8 W	<b>BE</b>	BA with suppression diode
<b>DK</b>	12 V=/2,5 W	<b>BF</b>	BA with suppression diode & ground wire
<b>DM</b>	12 V=/3,0 W	<b>BG</b>	BA with suppression diode plus light parallel to leads
<b>DN</b>	12 V=/4,0 W	<b>BH</b>	BA with suppression diode plus light parallel to leads & ground wire
2. WIRE LENGTH		<b>*BN</b>	BA with suppression diode plus blocking diode
<b>G-XX X-X XX</b>	<b>WIRE LENGTH</b>	<b>*BP</b>	BA with suppression diode plus blocking diode & ground wire
<b>0</b>	No lead wire (use only with "KJ" & "KM" electrical connectors)	<b>*BR</b>	BA with suppression diode plus blocking diode & light parallel to leads
<b>A</b>	45 cm = 18"	<b>*BS</b>	BA with suppression diode plus blocking diode & light parallel to leads & ground wire
<b>B</b>	60 cm = 24"	<b>BT</b>	BA with light on top
<b>C</b>	90 cm = 36"	<b>BU</b>	BA with light on top & ground wire
<b>D</b>	120 cm = 48"	<b>BV</b>	BA with suppression diode plus light on top
<b>E</b>	180 cm = 72"	<b>BW</b>	BA with suppression diode plus light on top & ground wire
<b>F</b>	240 cm = 96"	<b>*BX</b>	BA with suppression diode plus blocking diode & light on top
<b>G</b>	305 cm = 120"	<b>*BY</b>	BA with suppression diode plus blocking diode & light on top & ground wire
<b>H</b>	366 cm = 144"		
3. MANUAL OPERATOR		<b>G-XX X-X XX</b>	<b>SOLENOID PLUG-IN CONNECTOR WITH LEADS</b>
<b>G-XX X-X XX</b>	<b>MANUAL OPERATOR</b>	<b>GA</b>	MAC JAC Solenoid plug-in
<b>1</b>	Non-locking recessed	<b>GB</b>	MAC JAC Solenoid plug-in with diode
<b>2</b>	Locking recessed	<b>GC</b>	MAC JAC Solenoid plug-in with MOV
<b>3</b>	Non-locking extended	<b>GD</b>	MAC JAC Solenoid plug-in with LED
<b>4</b>	Locking extended	<b>GE</b>	MAC JAC Solenoid plug-in with diode and LED
		<b>GF</b>	MAC JAC Solenoid plug-in with MOV and LED
		<b>GG</b>	MAC JAC Solenoid plug-in with rectifier
		<b>GH</b>	MAC JAC Solenoid plug-in with rectifier and LED
		<b>KA</b>	Plug-in wire assembly
		<b>KB</b>	KA with ground wire
		<b>KE</b>	KA with suppression diode
		<b>KF</b>	KA with suppression diode & ground wire
		<b>KJ</b>	Plug-in housing without wire assembly ('KA' without wire assembly)
		<b>KM</b>	Plug-in housing without wire assembly ('KB' without wire assembly)
		<b>*KN</b>	KA with suppression diode plus blocking diode
		<b>*KP</b>	KA with suppression diode plus blocking diode & ground wire
		<b>KT</b>	KA with light on top
		<b>KU</b>	KA with light on top & ground wire
		<b>KV</b>	KA with suppression diode plus light on top
		<b>KW</b>	KA with suppression diode plus light & ground wire
		<b>*KX</b>	KA with suppression diode plus blocking diode & light on top
		<b>*KY</b>	KA with suppression diode plus blocking diode & light on top & ground wire

Note: Blocking diode is located in the lead wire



0 p t i o n s

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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **H XX X-X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 37 & 47 Series

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1. VOLTAGE		H-XX X-X XX	ELECTRICAL CONNECTION
<b>H-XX X-X XX</b>	<b>VOLTAGE</b>	<b>BL</b>	BA with full wave rectifier & ground wire
<b>AA</b>	120 V~/ 50Hz, 120 V~/ 60Hz (6,7 W) (use connector with rectifier)	<b>BT</b>	BA with full wave rectifier plus light
<b>AB</b>	220 V~/ 50Hz, 220 V~/ 60Hz (5,6 W) (use connector with rectifier)	<b>BU</b>	BA with full wave rectifier plus light & ground wire
<b>AC</b>	240 V~/ 50Hz, 240 V~/ 60Hz (5,8 W) (use connector with rectifier)	<b>H-XX X-X XX</b>	<b>PLUG-IN CONNECTOR</b>
<b>AD</b>	24 V~/ 50Hz, 24 V~/ 60Hz (7,8 W) (use connector with rectifier)	<b>FA</b>	Base plug-in
<b>DA</b>	24 V=/5,2 W	<b>FB</b>	FA with ground wire
<b>DB</b>	24 V=/2,4 W	<b>FC</b>	FA with light
<b>DC</b>	24 V=/1,8 W	<b>FD</b>	FA with light & ground wire
<b>DD</b>	24 V=/1,0 W	<b>FE</b>	FA with suppression diode
<b>DF</b>	12 V=/5,2 W	<b>FF</b>	FA with suppression diode & ground wire
<b>DG</b>	12 V=/2,4 W	<b>FG</b>	FA with suppression diode & light
<b>DH</b>	12 V=/1,8 W	<b>FH</b>	FA with suppression diode plus light & ground wire
<b>DJ</b>	12 V=/1,0 W	<b>FK</b>	FA with full wave rectifier
<b>DL</b>	120 V=/6,3 W	<b>FL</b>	FA with full wave rectifier & ground wire
		<b>*FN</b>	FA with suppression diode plus blocking diode
		<b>*FP</b>	FA with suppression diode plus blocking diode & ground wire
		<b>*FR</b>	FA with suppression diode plus blocking diode plus light
		<b>*FS</b>	FA with suppression diode plus blocking diode & light & ground wire
		<b>FT</b>	FA with full wave rectifier plus light
		<b>FU</b>	FA with full wave rectifier plus light & ground wire
		<b>MA</b>	Solenoid plug-in wire assembly
		<b>MB</b>	MA with ground wire
		<b>MC</b>	MA with light
		<b>MD</b>	MA with light & ground wire
		<b>ME</b>	MA with suppression diode
		<b>MF</b>	MA with suppression diode & ground wire
		<b>MG</b>	MA with suppression diode plus light
		<b>MH</b>	MA with suppression diode plus light & ground wire
		<b>MK</b>	MA with full wave rectifier
		<b>ML</b>	MA with full wave rectifier & ground wire
		<b>*MN</b>	MA with suppression diode plus blocking diode
		<b>*MP</b>	MA with suppression diode plus blocking diode & ground wire
		<b>*MR</b>	MA with suppression diode plus blocking diode & light
		<b>*MS</b>	MA with suppression diode plus blocking diode & light & ground wire
		<b>MT</b>	MA with full wave rectifier plus light
		<b>MU</b>	MA with full wave rectifier plus light & ground wire
		<b>MJ</b>	Plug-in housing without wire assembly ('MA' option without wire assembly)
		<b>MM</b>	Plug-in housing without wire assembly ('MB' option without wire assembly)
		<b>KA</b>	Mini square connector
		<b>KB</b>	KA with suppression diode
		<b>KC</b>	KA with M.O.V.
		<b>KD</b>	KA with light
		<b>KE</b>	KA with light & suppression diode
		<b>KF</b>	KA with light & M.O.V.
		<b>KJ</b>	Mini square connector – male only
		<b>KK</b>	KJ with suppression diode
		<b>KL</b>	KJ with M.O.V.
		<b>KM</b>	KA with full wave rectifier
		<b>KN</b>	KA with full wave rectifier & M.O.V.
		<b>KP</b>	KA with full wave rectifier & light
		<b>KR</b>	KA with full wave rectifier plus light & M.O.V.
		<b>KS</b>	KJ with full wave rectifier
		Note: Blocking diode is located in the lead wire	

2. WIRE LENGTH	
<b>H-XX X-X XX</b>	<b>WIRE LENGTH</b>
<b>0</b>	No lead wire (use with "MJ", "MM" & "K" style connectors)
<b>A</b>	45 cm = 18"
<b>B</b>	60 cm = 24"
<b>C</b>	90 cm = 36"
<b>D</b>	120 cm = 48"
<b>E</b>	180 cm = 72"
<b>F</b>	240 cm = 96"
<b>G</b>	305 cm = 120"
<b>H</b>	366 cm = 144"

3. MANUAL OPERATOR	
<b>H-XX X-X XX</b>	<b>MANUAL OPERATOR</b>
<b>0</b>	No operator
<b>1</b>	Non-locking recessed
<b>2</b>	Locking recessed
<b>3</b>	Non-locking extended
<b>4</b>	Locking extended

4. ELECTRICAL CONNECTION	
<b>H-XX X-X XX</b>	<b>ELECTRICAL CONNECTION</b>
<b>BA</b>	Flying leads
<b>BB</b>	BA with ground wire
<b>BC</b>	BA with light
<b>BD</b>	BA with light & ground wire
<b>BE</b>	BA with suppression diode
<b>BF</b>	BA with suppression diode & ground wire
<b>BG</b>	BA with suppression diode plus light
<b>BH</b>	BA with suppression diode plus light & ground wire
<b>*BN</b>	BA with suppression diode plus blocking diode
<b>*BP</b>	BA with suppression diode plus blocking diode & ground wire
<b>*BR</b>	BA with suppression diode plus blocking diode & light
<b>*BS</b>	BA with suppression diode plus blocking diode & light & ground wire
<b>BK</b>	BA with full wave rectifier





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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE >

**J** **XX** **X-X** **XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 36, 46, 68, 69, ISO 01 and ISO 02 (non plug-in) Series.

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**1. VOLTAGE**

J-XX X-X XX	VOLTAGE
AA	120V~/5,4W
AC	24V~/5,4W
DE	24V~/1,8W
DF	12V~/1,8W
DJ	24V~/1,3W
DL	12V~/1,3W
DN	12V~/0,5W*
DR	12V~/1,0W*
DS	24V~/0,5W*
DU	24V~/1,0W*

\* Not available on 36 series universal valves

**2. WIRE LENGHT**

J-XX X-X XX	WIRE LENGHT
A	45 cm - 18" coil leads
B	60 cm - 24" coil leads
C	90 cm - 36" coil leads
D	120 cm - 48" coil leads
E	180 cm - 72" coil leads
F	240 cm - 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**

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
*JB	Rectangular connector
*JC	Square connector with light
*JD	Rectangular 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

**J-XX X-X XX ELECTRICAL CONNECTION**

*JJ	Square connector Male only (Plain)
*JK	Square connector with rectifier
*JL	Square connector with rectifier with light
*JM	Rectangular connector Male only (Plain)
*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

\* Not available on manifold or stacking 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

\* Not available on manifold or stacking valves

**J-XX X-X XX CONNECTORS FOR NON PLUG-IN VALVES 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



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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE >

**L** **XX** **X-X** **XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 32, 38, 42, 44, 47 & 48 Series

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1. VOLTAGE (32, 38, 42, 44, 48 SERIES)		1. VOLTAGE (47 SERIES)	
<b>L-XX X-X XX</b>	<b>VOLTAGE</b>	<b>L-XX X-X XX</b>	<b>VOLTAGE</b>
DF	24V=/4,0W	DA	24V=/5,2W
DN	12V=/4,0W	DF	12V=/5,2W
HA	24V=/1,95W		
HE	12V=/1,95W		
2. WIRE LENGTH			
<b>L-XX X-X XX</b>	<b>WIRE LENGTH</b>		
O	No lead wire		
A	45 cm – 18"		
B	60 cm – 24"		
C	90 cm – 36"		
D	120 cm – 48"		
E	180 cm – 72"		
F	240 cm – 96"		
G	300 cm – 120"		
H	365 cm – 144"		
3. MANUAL OPERATOR (all series)			
<b>L-XX X-X XX</b>	<b>MANUAL OPERATOR</b>		
O	No operator		
4. ELECTRICAL CONNECTOR (32, 38, 42, 44 & 48 series)		4. ELECTRICAL CONNECTOR (47 series)	
<b>L-XX X-X XX</b>	<b>NON PLUG-IN</b>	<b>L-XX X-X XX</b>	<b>NON PLUG-IN</b>
BA	2 wire flying leads	BA	2 wire flying leads
BB	2 wire flying leads with ground wire	BB	2 wire flying leads with ground wire
BC	2 wire flying leads with light	BC	2 wire flying leads with light
BD	2 wire flying leads with light & ground wire	BD	2 wire flying leads with light & ground wire
BJ	4 wire flying leads	BJ	4 wire flying leads
BK	4 wire flying leads with ground	BK	4 wire flying leads with ground
BL	4 wire flying leads with light	BL	4 wire flying leads with light
BM	4 wire flying leads with light & ground wire	BM	4 wire flying leads with light & ground wire
KA	2 wire plug-in assembly	EA	Base plug-in 3 pin (Polarity switching cover)
KB	2 wire plug-in assembly with ground wire	LA	3 wire plug-in assembly (Polarity switching cover)
KC	2 wire plug-in assembly with light	MA	2 wire plug-in assembly
KD	2 wire plug-in assembly with light and ground wire	MB	2 wire plug-in assembly with ground wire
KE	4 wire plug-in assembly	MC	2 wire plug-in assembly with light
KF	4 wire plug-in assembly with ground wire	MD	2 wire plug-in assembly with light and ground wire
KG	4 wire plug-in assembly with light	ME	4 wire plug-in assembly
KH	4 wire plug-in assembly with ground wire with light	MF	4 wire plug-in assembly with ground wire
LA	3 wire plug-in assembly (polarity switching cover)	MG	4 wire plug-in assembly with light
		MH	4 wire plug-in assembly with light and ground wire
<b>L-XX X-X XX</b>	<b>PLUG-IN</b>	<b>L-XX X-X XX</b>	<b>PLUG-IN</b>
*DA	Base plug-in	EA	Base plug-in 3 pin (Polarity switching cover)
*DB	Base plug-in with ground pin	FA	Base plug-in with ground
*DC	Base plug-in with light	FB	Base plug-in with ground & light
*DD	Base plug-in with light & ground pin	FC	Base plug-in 4 wire with ground
**EA	Base plug-in 3 pin (Polarity switching cover)	FD	Base plug-in 4 wire with light & ground

\* Use these options for plug-in base with 2 or 4 wire assemblies

\*\* Use this option for plug-in bases with 3 wire assemblies

Note: FA through FD options are for use with plug-in manifold bases.



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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **EXX-R XX X - X XX**  
**1 2 3 4 5**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 24 & 23 series

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**1. PILOT OPTION**

<b>E XX - RXX X- X XX VOLTAGE</b>	
<b>M2</b>	12mm – muffled exhaust
<b>P2</b>	12mm – piped exhaust (M3)
<b>M7</b>	17mm – muffled exhaust
<b>P7</b>	17mm – piped exhaust (M3)

**2. VOLTAGE**

<b>E XX - RXX X- X XX VOLTAGE</b>	
<b>DB</b>	24 VDC (1.0W)
<b>DC</b>	24 VDC (1.8W)
<b>DD</b>	24 VDC (2.5W)
<b>DE</b>	24 VDC (3.0W)
<b>DF</b>	24 VDC (4.0W)
<b>DH</b>	12 VDC (1.0W)
<b>DJ</b>	12 VDC (1.8W)
<b>DK</b>	12 VDC (2.5W)
<b>DL</b>	12 VDC (3.0W)
<b>DM</b>	12 VDC (4.0W)

**3. WIRE LENGHT**

<b>E XX - RXX X- X XX WIRE LENGHT</b>	
<b>0*</b>	No lead wire
<b>A</b>	45 cm - 18"
<b>B</b>	60 cm - 24"
<b>C</b>	90 cm - 36"
<b>D</b>	120 cm - 48"
<b>E</b>	180 cm - 72"
<b>F</b>	240 cm - 96"
<b>G</b>	300 cm - 120"
<b>H</b>	365 cm - 144"
<b>P</b>	Base plug-in (24 Series plug-in)

\* Not available for flying leads connector

**4. MANUAL OPERATOR**

<b>E XX - RXX X- X XX MANUAL OPERATOR</b>	
<b>0</b>	No operator
<b>1</b>	Non-locking recessed
<b>3</b>	Non-locking extended

**5. ELECTRICAL CONNECTION**

**ELECTRICAL CONNECTIONS FOR NON PLUG-IN VALVES**  
**E XX - RXX X- X XX**

<b>BA</b>	Flying leads
<b>BB</b>	Flying leads with LED
<b>BC</b>	Flying leads with MOV
<b>BD</b>	Flying leads with LED and MOV
<b>RA</b>	Mini JAC solenoid plug-in
<b>RB</b>	Mini JAC solenoid plug-in with LED
<b>RC</b>	Mini JAC solenoid plug-in with MOV
<b>RD</b>	Mini JAC solenoid plug-in with LED and MOV
<b>TA</b>	JST solenoid plug-in
<b>TB</b>	JST solenoid plug-in with LED
<b>TC</b>	JST solenoid plug-in with MOV
<b>TD</b>	JST solenoid plug-in with LED and MOV

**ELECTRICAL CONNECTIONS FOR PLUG-IN VALVES**  
**E XX - RXX X- X XX**

<b>FA</b>	Base plug-in
<b>FB</b>	Base plug-in with LED
<b>FC</b>	Base plug-in with MOV
<b>FD</b>	Base plug-in with LED and MOV



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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **RM-R XX X - X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 83 series

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1. VOLTAGE		3. MANUAL OPERATOR	
<b>R XX X - XXX</b>	<b>VOLTAGE</b>	<b>R XX X - XXX</b>	<b>MANUAL OPERATOR</b>
<b>DB</b>	24 VDC (1.0W)	<b>0</b>	No operator
<b>DC</b>	24 VDC (1.8W)	<b>1</b>	Non-locking recessed
<b>DD</b>	24 VDC (2.5W)	<b>3</b>	Non-locking extended
<b>DE</b>	24 VDC (3.0W)		
<b>DF</b>	24 VDC (4.0W)		
<b>DH</b>	12 VDC (1.0W)		
<b>DJ</b>	12 VDC (1.8W)		
<b>DK</b>	12 VDC (2.5W)		
<b>DL</b>	12 VDC (3.0W)		
<b>DM</b>	12 VDC (4.0W)		
2. WIRE LENGHT		4. ELECTRICAL CONNECTION	
<b>R XX X - XXX</b>	<b>WIRE LENGHT</b>	<b>R XX X - XXX</b>	<b>ELECTRICAL CONNECTION</b>
<b>0</b>	No lead wire	<b>BA</b>	Flying leads
<b>A</b>	45 cm - 18"	<b>BB</b>	Flying leads with LED
<b>B</b>	60 cm - 24"	<b>BC</b>	Flying leads with MOV
<b>C</b>	90 cm - 36"	<b>BD</b>	Flying leads with LED and MOV
<b>D</b>	120 cm - 48"	<b>RA</b>	Mini JAC solenoid plug-in
<b>E</b>	180 cm - 72"	<b>RB</b>	Mini JAC solenoid plug-in with LED
<b>F</b>	240 cm - 96"	<b>RC</b>	Mini JAC solenoid plug-in with MOV
<b>G</b>	300 cm - 120"	<b>RD</b>	Mini JAC solenoid plug-in with LED and MOV
<b>H</b>	365 cm - 144"	<b>TA</b>	JST solenoid plug-in
		<b>TB</b>	JST solenoid plug-in with LED
		<b>TC</b>	JST solenoid plug-in with MOV
		<b>TD</b>	JST solenoid plug-in with LED and MOV





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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **R XX X - X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 33 , 43, Iso 01 plug-in, Iso 02 plug-in Series

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**1. VOLTAGE**

R XX X - XXX	VOLTAGE
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)
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)

\* MOD numbers required for these voltages (consult factory)

**2. WIRE LENGHT**

R XX X - XXX	WIRE LENGHT
O*	No lead wire
A	45 cm - 18"
B	60 cm - 24"
C	90 cm - 36"
D	120 cm - 48"
E	180 cm - 72"
F	240 cm - 96"
G	300 cm - 120"
H	365 cm - 144"
P	Base plug-in

\* Not available for flying leads connector

**3. MANUAL OPERATOR**

R XX X - XXX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
3	Non-locking extended

**4. ELECTRICAL CONNECTION**

**ELECTRICAL CONNECTION FOR NON PLUG-IN VALVES**

R XX X - XXX	
BA	Flying leads
BB	Flying leads with LED
BC	Flying leads with MOV
BD	Flying leads with LED and MOV
DA	Base plug-in
DB	Base plug-in with LED
DC	Base plug-in with MOV
DD	Base plug-in with LED and MOV
RA	Mini JAC solenoid
RB	Mini JAC solenoid with LED
RC	Mini JAC solenoid with MOV
RD	Mini JAC solenoid 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

**ELECTRICAL CONNECTION FOR PLUG-IN VALVES**

R XX X - XXX	
PA	Base plug-in
PB	Base plug-in with light
PC	Base plug-in with MOV
PD	Base plug-in with light and MOV



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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **TM-D** XX X - X XX  
                                  **1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 83 series (double operator)

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**1. VOLTAGE**

D XX X - XXX	VOLTAGE
AA	120 V~/60 Hz, 110V~/50Hz
AB	240 V~/60 Hz, 220V~/50Hz
AC	24 V~/60 Hz, 24V~/50Hz
AD	24 V~/60 Hz
AE	200 V~/60 Hz
AF	240 V~/50 Hz
AG	100 V~/50 Hz, 100V~/60Hz, 110 V~/ 60 Hz
DA	24V=/5.4W
DB	12V=/5.4W
DC	12V=/7.5W
DD	24V=/7.3W
DE	12V=/12.7W CLSF only
DF	24V=/12.7W CLSF only
DK	110V=/4.7W
DL	64V=/6W
DM	36V=/5.3W
DN	6V=/6W
DP	18V=/5.8W
DU	24V=/6W
EA	12V=/6W
FA	12V=/1.8W
FB	24V=/1.8W
FE	12V=/2.4W
FF	24V=/2.4W

**2. WIRE LENGHT**

D XX X - XXX	WIRE LENGHT
A	45 cm - 18"
B	60 cm - 24"
C	90 cm - 36"
D	120 cm - 48"
E	180 cm - 72"
F	240 cm - 96"
J	For external plug-in connectors ("J", "K", and "T" type electrical connection)

**3. MANUAL OPERATOR**

D XX X - XXX	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 - XXX	ELECTRICAL CONNECTION
BA	Flying leads
BK	BA with protection diode
BL	BA with protection variator (MOV)
JB	Rectangular connector
JD	Rectangular connector with light
JM	Rectangular connector, male only
KA	Square connector
KB	Square connector with protection diode
KC	Square connector with protection variator (MOV)
KD	Square connector with light
KE	Square connector with light and protection diode
KF	Square connector with light and protection variator (MOV)
KG	Square connector with light and diode
KJ	Square connector, male only
KK	Square connector with protection diode (male only)
KL	Square connector with protection variator (male only) (MOV)
TA	Dual tabs
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



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**Codification table for voltages / Manual operators / Electrical connections**

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VALVE CODE > **T XX X - X XX**  
**1 2 3 4**

**OPTIONS AVAILABLE FOR**

- Solenoid valves 31 and 41 Series

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1. VOLTAGE		3. MANUAL OPERATOR	
<b>T XX X - XXX</b>	<b>VOLTAGE</b>	<b>T XX X - XXX</b>	<b>MANUAL OPERATOR</b>
<b>DC</b>	24 VDC (1.8W)	<b>0</b>	No operator
<b>DD</b>	24 VDC (2.5W)	<b>1</b>	Recessed non-locking
<b>DE</b>	24 VDC (3.0W)	<b>3</b>	Extended non-locking
<b>DF</b>	24 VDC (4.0W)		
<b>DJ</b>	12 VDC (1.8W)		
<b>DK</b>	12 VDC (2.5W)		
<b>DL</b>	12 VDC (3.0W)		
<b>DM</b>	12 VDC (4.0W)		
<b>FA*</b>	24 VDC (60W)		
<b>FB*</b>	24 VDC (90W)		
<b>FC*</b>	24 VDC (230W)		
* MOD numbers required for these voltages (consult factory)			
2. WIRE LENGHT		4. ELECTRICAL CONNECTION	
<b>T XX X - XXX</b>	<b>WIRE LENGHT</b>	<b>T XX X - XXX</b>	<b>ELECTRICAL CONNECTION</b>
<b>A</b>	45 cm - 18"	<b>BA</b>	Flying leads
<b>B</b>	60 cm - 24"		
<b>C</b>	90 cm - 36"		
<b>D</b>	120 cm - 48"		
<b>E</b>	180 cm - 72"		
<b>F</b>	240 cm - 96"		
<b>G</b>	300 cm - 120"		
<b>H</b>	365 cm - 144"		



## PRECAUTIONS CONCERNING THE APPLICATION, INSTALLATION AND SERVICE OF MAC VALVES

The precautions below are important to be read and understood before designing into a system any MAC valve, and before installing or servicing any MAC valve. Improper use, installation or servicing of any MAC valve in some systems could create a hazard to personnel or equipment.

### APPLICATION PRECAUTIONS :

#### INDUSTRIAL USE -

MAC valves are intended for general use in industrial pneumatic and/or vacuum systems. They are general purpose industrial valves 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 valves 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.

#### OPERATING SPECIFICATIONS -

MAC valves are to be installed only on applications that meet all operating specifications described in the MAC catalog for the valve.

#### 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. Accidental activation of a manual operator could create a dangerous situation. If intentional or accidental operation of a valve by a manual operator could create a dangerous situation then the "no operator" option should 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 MAC valves on a machine without first turning off air (bleed system completely) and electricity to the machine.
- B. MAC valves 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.

### SERVICE PRECAUTIONS :

- A. Do not service or remove from service any MAC valve 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 should only be serviced or removed from service by qualified, knowledgeable personnel who understand 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. MAC valves are never to be stepped on while working on a machine. Damage to the valve, or lines to the valve (either air or electrical lines) or accidental activating of a manual operator on the valve could result in a dangerous situation.

### WARNING:

Under no circumstances are Mac valves to be used on power presses for air clutch and/or brake operations where failure of the valve to operate as intended could in any way jeopardize the safety of the operator or any other person. Under no circumstances are Mac valves to be used in any circuit or in any manner intended to prevent unintended operation of any machinery or other equipment where failure of the valve to operate as intended could jeopardize the safety of the operator or any other person. Air valves are not safety devices nor should they be used in safety systems of any type.



# MAC Valves Product Warranty Information

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## MAC VALVES Warranty, Warranty Limitations, Flat Rate Rebuild Program

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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. For this reason, MAC Valves is able to provide the Buyer a limited warranty.

### WARRANTY:

MAC Valves, Inc. hereby warrants to Buyer that, for a period of 18 months from the original date of shipment of each valve from our factory ("Warranty Period"), such valve will be free from significant defects in material and workmanship and will conform to all specifications agreed to by MAC Valves, Inc.. In addition, MAC Valves, Inc. warrants that the electrical coils on such valves will be free from significant defects in material and workmanship for their normal useful life. EXCEPT FOR THESE LIMITED WARRANTIES, MAC VALVES, INC. EXPRESSLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES OF ANY KIND (WHETHER EXPRESS, IMPLIED OR ARISING BY OPERATION OF LAW) WITH RESPECT TO THE VALVES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER. THIS SECTION SURVIVES THE EXPIRATION, TERMINATION OR CANCELLATION OF ANY AGREEMENTS BETWEEN THE PARTIES RELATING TO THE PURCHASE OF THE VALVES.

### WARRANTY LIMITATIONS:

This Warranty does not apply where the valves have been (i) subjected to abuse, misuse, damage, neglect, negligence, accident, improper testing, improper installation, improper storage, improper handling, abnormal physical stress, abnormal environmental condition, or use contrary to any instructions issued by MAC Valves, Inc.; (ii) modified, reconstructed, repaired, or altered by persons other than MAC Valves, Inc. or its authorized representative; or (iii) used with any third-party product, hardware, software or other product that has not been previously approved in writing by MAC Valves, Inc. Additionally, this Warranty does not cover claims for labor, material, time or transportation, and 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.

### EXCLUSIVE REMEDY:

The Buyer's sole remedy under this Warranty is limited to the replacement or rebuilding of any valve which does not conform to the warranties provided herein or, in MAC Valves, Inc.'s sole discretion, refund of the purchase price for the non-conforming valve. Buyer's remedy is conditioned on Buyer's compliance with its obligations under this Warranty. Valves that Buyer believes do not conform to this Warranty must be returned (with or without bases) transportation prepaid and received at our factory within the Warranty Period. If MAC Valves, Inc. determines that the valve is non-conforming and is otherwise covered by this Warranty, the rebuilt or replaced valve will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same warranties as provided under the Flat Rate Rebuild Program described below. MAC VALVES, INC. WILL NOT BE RESPONSIBLE FOR ANY INCIDENTAL, SPECIAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION DIRECT AND INDIRECT LOST PROFITS, REGARDLESS OF WHETHER THOSE DAMAGES WERE FORESEEABLE.

### THE FLAT REBUILD PROGRAM:

Valves no longer covered by the MAC Warranty may be eligible for a one-time rebuild under the MAC Valves, Inc. Flat Rate Rebuild Program. Our constant research and testing program is dedicated to extending the life of our valves and maximizing their reliability under the most adverse conditions. Valves returned under this limited program are completely disassembled, inspected, rebuilt to current operating standards whenever possible, tested and returned within a few weeks for a nominal flat rate charge. All rebuilt valves carry the same warranty described (in our MAC Warranty) for new valves for a warranty period of 90 days from the date of shipment from our factory.

Valves that have gone through the one-time rebuild will have been marked with a letter "R" as part of the date stamp (This is an example of a rebuild date stamp from this month E(May)17(Year)Tester Symbol R(Indicates Rebuild)).



Please note that any valves sent back for subsequent rebuild that have already been through the program previously (indicated by the "R") will not be eligible for additional rebuild.