

®
MAC

V A L V E S

A I R V A L V E S

CURRENT TECHNOLOGY





Introduction

Section 1	Direct solenoid and solenoid pilot operated valves
Section 2	Remote air valves
Section 3	Mechanically and manually operated valves
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Welcome to your brand new MAC VALVES catalog.

Inside you will find more than 25 different valve series to meet the majority of industrial requirements.

They have been sorted and classified in such a way that you may easily find the required valve series.

For more than 50 years, MAC has based all new valve developments upon the specifications received from customers, both users and OEM's.

A lot of different modifications have been released for all fields of industry (automotive, aluminium, packaging, food, sorting, ...). Although they are not listed in this catalog, our technical sales staff will be pleased to provide all necessary information.

All our representatives have a "traveling lab demonstration" kit (TLD) to show you the specific design features of MAC Valves in terms of :

- speed
- reliability
- consistency
- repeatability

Feel free to ask for a personal demonstration, our team is at your disposal.

MAC Valves,
Your Partner

MAC Valves warranty of 18 months

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

The flat rate rebuild program

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

Pneumatic functions

All valves inside the MAC product range allow for multiple pneumatic functions. Direct solenoid and solenoid pilot operated valves could be used as 2 ways, 3 ways (NO, NC) or 4 ways. When plugging one orifice to achieve a 2 ways function (or 3 ways), 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

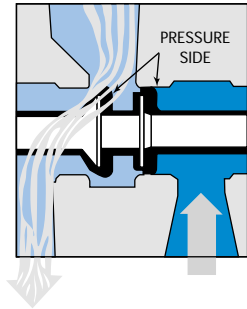
SPOOLS/BODIES

MAC flow seals are bonded to an aluminum spool, machine ground to a very close tolerance, and chemically surface hardened. The bore of the bodies is finished to a close tolerance, work hardened and polished. The result of these processes on the spool and bore keeps friction to a minimum and provides wiping action thus assuring long, stick-free consistent operation and making the spools relatively unaffected by air line contaminants.

MAC spools are of a balanced design; therefore they are not affected by back pressure or restrictions in the exhaust, permitting 3-ways to be plugged for 2-way operation and 4-ways to be plugged for 3-way or 2-way operation.

Further, the use of two seals, as illustrated, one for the exhaust and one for inlet, provides for a short stroke and high flow in a small envelope size.

All valves utilize one piece aluminum bodies. On almost all Series valves, the bodies are die cast. The die casting technique used provides large, smooth and direct flow paths for low pressure drop.

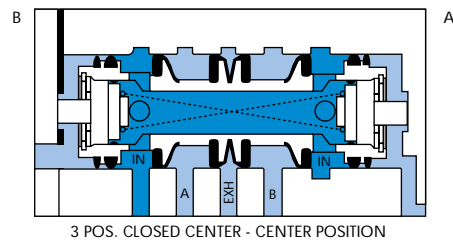


PILOT SYSTEM

On most pilot operated valves a large checked accumulator, housed in the main valve body, supplies both pilots on double solenoid valves as well as the air/spring return on single solenoid pilot or single remote air pilot valves. The checked accumulator assures positive, consistent shifting in both directions even with inlet pressure fluctuations and/or restrictions, and even at very low minimum pilot pressures. On internal pilot models the accumulator is supplied from the main valve inlet and protected from inlet pressure fluctuations by a check valve. The check valve is designed to bleed off the accumulator when the main supply pressure is removed. On external pilot models, the accumulator is supplied from an external pilot port. Pilot operation ensures maximum energization shifting force. An air spring ensures maximum deenergization shifting force.

3-POSITION CENTERING

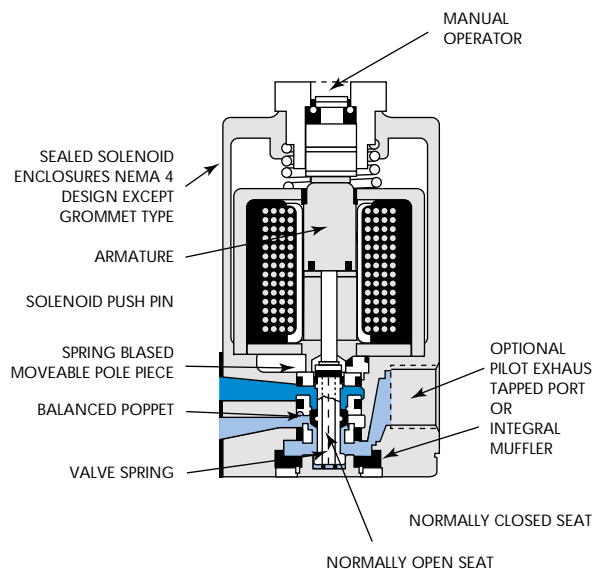
MAC 3-position solenoid and remote air pilot valves are centered by a patented spring centering device or patented combination spring and pressure assisted spool design which reduces side load potential and resultant wear, and assures fast, positive return of the main spool when the pilots are de-energized due to a high shifting force.



SOLENOID PILOT VALVES

Most MAC valves in this catalog are pilot operated by a patented high flow, fast response Normally Closed Only version of the compact MAC 100 Series solenoid valve (shown below). Similarly on solenoid pilot 3-way valves, another version of the 100 or 200 series is used as the pilot. These patented burnout proof solenoid pilots provide extremely fast response times to an extent not equaled in other valves

Because air pressure does the work in shifting the main spool, minimal energy is consumed by the solenoid with no limitation in size of the main valve. On 120/60 AC service the inrush current is down to .12 Amps. On DC service wattages are available down to 1.0 Watts across almost the entire product line. (The 82 Series is piloted by a version of the 35 Series. On DC service, wattages are available down to 1.8 watts.) Inherently safe valves are available for most series listed in this catalog. This option is for DC service only at 0.6 Watts.

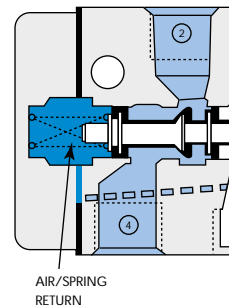


VIRTUALLY—BURN-OUT PROOF MACSOLENOID®

The patented spring biased floating pole piece MACSOLENOID® used on all 3-ways and 4-ways in this catalog is independent and isolated from the valve body (100 Series shown above). When voltage is applied to the coil, the pole piece is held down by the bias spring so that the magnetic attraction between the pole piece and armature results in the armature moving down against the push pin, moving the poppet from the Normally Closed (N.C.) seat to the Normally Open (N.O.) seat. After the poppet has shifted completely, the pole piece then moves upward, compressing the bias spring, until the pole piece magnetically seals with the armature. If the poppet sticks and fails to move initially, preventing the armature from moving down, the pole piece is magnetically drawn upward, compressing the bias spring, allowing the pole piece and armature to magnetically seal and subjecting the valve to maximum shifting forces. Thus the two most common causes of solenoid valve failure—failure to shift when energized, and coil burnout on AC service—are practically eliminated. The bias spring also reduces de-energized response time since it is exerting a separation force (downward force on the pole piece) between the armature and pole piece.

AIR /SPRING RETURN

Single solenoid pilot or single remote air pilot models contain a unique combination spring and air assisted differential return. Supplied from the accumulator, inlet or external pilot; it maximizes and balances the shifting forces for consistent operation and positive spool return.



NON-LUBE SERVICE

All valves in this catalog can be operated with or without air line lubrication. This is made possible through the use of the unique solenoid pilot operator, the pilot system, the spool and bore design, close tolerances and MAC's prelubrication procedures. In either case, air line filters are recommended and will extend cycle life of the valves.

COILS

MAC makes its own coils permitting flexibility in voltage requirements. If the voltage required is not listed with the valve Series desired or in the "options" section, consult the factory, we may be able to produce it. Two types of special coils are described below.

LOW WATTAGE DC—MAC provides optional low wattage DC solenoids for all the valves of this catalog down to 1.0 watts, (except for the 1300 Series which is 6.0 watts, and the 35 & 45 Series which is 1.8 watts). These low wattage options can significantly reduce power consumption, power supply capacity, control amplifier capacity and cost of all the above.

CLASS F—High temperature AC and DC coil option. Available on all AC and DC coils. On some high wattage coils listed in the catalog, Class F is required and is so noted. These higher wattage coils are specified as MOD CLSF (Class F Option). Higher wattage coils will provide extremely fast response times.

ADD-A-UNIT MANIFOLDS

Pioneered by MAC, Add-A-Unit die cast manifold bodies and bases are available. The common inlet, exhaust, and on many models the electrical conduit channel, enables bodies and bases to be added as desired. A valve gang can contain both 2- and 3- position valves, as well as solenoid, remote air pilot and manual or mechanical valves. Sections of a gang or individual valves in a gang may be isolated permitting different pressures to be fed to either end of the gang.

ELECTRICAL PLUG-IN CONNECTIONS

4-way plug-in models incorporate recessed, shrouded connectors in both body and base with an integral ground pin that makes connection first and breaks last. Plug-ins permit easy and fast replacement of the valve without disturbing either the electrical wiring or air plumbing.

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.*

Other MAC VALVE literature:

DESCRIPTION	CATALOG NUMBER
CIRCUIT BAR CATALOG	999CBCA
PROPORTIONAL VALVE CATALOG	999PPCA
CATALOG CD	999CCDA
SERIAL INTERFACE PRODUCTS	9999SI
10MM DIRECT SOLENOID AND 4-WAY PILOTED VALVES	CONSULT FACTORY
MACONNECT SYSTEM	CONSULT FACTORY



Section 1

Direct solenoid and solenoid pilot operated valves



Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Individual mounting					Series
			inline	inline hazardous location	sub-base non "plug-in"	sub-base "plug-in"	valve only	
3/2 - 2/2	1/8"	0.17 C _v						35
3/2 - 2/2	# 10-32 - 1/8"	0.16 C _v						
3/2 - 2/2	# 10-32 - 1/8"	0.10 C _v						
3/2 - 2/2	1/8" - 1/4"	0.18 C _v						100
3/2 - 2/2	1/8"	0.14 C _v						
3/2 - 2/2	1/8" - 1/4"	0.5 C _v						200
3/2 - 2/2	1/4"	0.4 C _v						
3/2 - 2/2	1/4" - 3/8"	2.2 C _v						55
3/2 - 2/2	3/8" - 1/2" - 3/4"	5.7 C _v						56
3/2 - 2/2	1/2" - 3/4" - 1"	17.4 C _v						57
3/2 - 2/2	1" - 1 1/4" - 1 1/2"	26.0 C _v						58
3/2 - 2/2	2" - 2 1/2"	60.0 C _v						59
4/2	# 10-32 - 1/8"	0.15 C _v						45
4/2	# 10-32 - 1/8"	0.13 C _v						
4/2	# 10-32 - 1/8"	0.20 C _v						
4/2	# 10-32 - 1/8"	0.11 C _v						
4/2	1/8" - 1/4"	0.7 C _v						
4/2	1/8" - 1/4"	0.8 C _v						700
4/2	1/8" - 1/4"	1.2 C _v						900
4/2	1/8" - 1/4" - 3/8"	1.4 C _v						
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v						82
4/2 - 4/3	1/4" - 3/8"	1.35 C _v						
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v						6300
4/2 - 4/3	3/8" - 1/2"	3.0 C _v						
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v						6500
4/2 - 4/3	3/4" - 1"	9.6 C _v						6600
4/2 - 4/3	3/4" - 1" - 1 1/4"	9.6 C _v						1300
4/2 - 4/3	3/4" - 1" - 1 1/4" - 1 1/2"	15.9 C _v						
5/2 - 5/3	1/4"	1.4 C _v						800
5/2 - 5/3	1/4" - 3/8"	1.4 C _v						
5/2 - 5/3	1/4" - 3/8"	1.6 C _v						ISO 1
5/2 - 5/3	3/8" - 1/2"	3.0 C _v						ISO 2
5/2 - 5/3	1/2" - 3/4"	6.3 C _v						ISO 3
5/2 - 5/3	1/4" - 3/8"	2.5 C _v						MAC 125A
5/2 - 5/3	1/2" - 3/4" - 1"	7.0 C _v						MAC 250A
5/2 - 5/3	1" - 1 1/4"	11.2 C _v						MAC 500A



Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting						Series
			stacking	sub-base non "plug-in"	sub-base with pressure regulators	sub-base hazardous location	sub-base with pressure regulators and flow controls	sub-base "plug-in"	
3/2 - 2/2	1/8"	0.17 C _v							
3/2 - 2/2	# 10-32 - 1/8"	0.16 C _v	■						35
3/2 - 2/2	# 10-32 - 1/8"	0.10 C _v		■	■				
3/2 - 2/2	1/8" - 1/4"	0.18 C _v	■						100
3/2 - 2/2	1/8"	0.14 C _v		■					
3/2 - 2/2	1/8" - 1/4"	0.5 C _v		■		■			200
3/2 - 2/2	1/4"	0.4 C _v			■				
3/2 - 2/2	1/4" - 3/8"	2.2 C _v							55
3/2 - 2/2	3/8" - 1/2" - 3/4"	5.7 C _v							56
3/2 - 2/2	1/2" - 3/4" - 1"	17.4 C _v							57
3/2 - 2/2	1" - 1 1/4" - 1 1/2"	26.0 C _v							58
3/2 - 2/2	2" - 2 1/2"	60.0 C _v							59
4/2	# 10-32 - 1/8"	0.15 C _v							
4/2	# 10-32 - 1/8"	0.13 C _v							
4/2	# 10-32 - 1/8"	0.20 C _v	■						45
4/2	# 10-32 - 1/8"	0.11 C _v		■	■		■		
4/2	1/8" - 1/4"	0.7 C _v							
4/2	1/8" - 1/4"	0.8 C _v	■						700
4/2	1/8" - 1/4"	1.2 C _v							
4/2	1/8" - 1/4" - 3/8"	1.4 C _v	■						900
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v							
4/2 - 4/3	1/4" - 3/8"	1.35 C _v		■				■	82
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v							
4/2 - 4/3	3/8" - 1/2"	3.0 C _v		■				■	6300
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v		■				■	6500
4/2 - 4/3	3/4" - 1"	9.6 C _v							
4/2 - 4/3	3/4" - 1" - 1 1/4"	9.6 C _v		■				■	6600
4/2 - 4/3	3/4" - 1" - 1 1/4" - 1 1/2"	15.9 C _v							1300
5/2 - 5/3	1/4"	1.4 C _v							800
5/2 - 5/3	1/4" - 3/8"	1.4 C _v							
5/2 - 5/3	1/4" - 3/8"	1.6 C _v							ISO 1
5/2 - 5/3	3/8" - 1/2"	3.0 C _v							ISO 2
5/2 - 5/3	1/2" - 3/4"	6.3 C _v							ISO 3
5/2 - 5/3	1/4" - 3/8"	2.5 C _v							MAC 125A
5/2 - 5/3	1/2" - 3/4" - 1"	7.0 C _v							MAC 250A
5/2 - 5/3	1" - 1 1/4"	11.2 C _v							MAC 500A



Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting					Series
			stacking body with 1 common port (inlet)	stacking body with 3 common ports (inlet & exhausts)	stacking body with 3 common ports and integral F.C.	stacking body with 3 common ports with common conduit	stacking body with 3 common ports with C. C. & integral exh. F. C.	
3/2 - 2/2	1/8"	0.17 C _v						
3/2 - 2/2	# 10-32 - 1/8"	0.16 C _v						35
3/2 - 2/2	# 10-32 - 1/8"	0.10 C _v						
3/2 - 2/2	1/8" - 1/4"	0.18 C _v						100
3/2 - 2/2	1/8"	0.14 C _v						
3/2 - 2/2	1/8" - 1/4"	0.5 C _v						200
3/2 - 2/2	1/4"	0.4 C _v						
3/2 - 2/2	1/4" - 3/8"	2.2 C _v						55
3/2 - 2/2	3/8" - 1/2" - 3/4"	5.7 C _v						56
3/2 - 2/2	1/2" - 3/4" - 1"	17.4 C _v						57
3/2 - 2/2	1" - 1 1/4" - 1 1/2"	26.0 C _v						58
3/2 - 2/2	2" - 2 1/2"	60.0 C _v						59
4/2	# 10-32 - 1/8"	0.15 C _v						
4/2	# 10-32 - 1/8"	0.13 C _v						45
4/2	# 10-32 - 1/8"	0.20 C _v						
4/2	# 10-32 - 1/8"	0.11 C _v						
4/2	1/8" - 1/4"	0.7 C _v						700
4/2	1/8" - 1/4"	0.8 C _v						
4/2	1/8" - 1/4"	1.2 C _v						900
4/2	1/8" - 1/4" - 3/8"	1.4 C _v						
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v						82
4/2 - 4/3	1/4" - 3/8"	1.35 C _v						
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v						6300
4/2 - 4/3	3/8" - 1/2"	3.0 C _v						
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v						6500
4/2 - 4/3	3/4" - 1"	9.6 C _v						
4/2 - 4/3	3/4" - 1" - 1 1/4"	9.6 C _v						6600
4/2 - 4/3	3/4" - 1" - 1 1/4" - 1 1/2"	15.9 C _v						1300
5/2 - 5/3	1/4"	1.4 C _v						
5/2 - 5/3	1/4" - 3/8"	1.4 C _v						800
5/2 - 5/3	1/4" - 3/8"	1.6 C _v						
5/2 - 5/3	3/8" - 1/2"	3.0 C _v						ISO 1
5/2 - 5/3	1/2" - 3/4"	6.3 C _v						ISO 2
5/2 - 5/3	1/4" - 3/8"	2.5 C _v						ISO 3
5/2 - 5/3	1/2" - 3/4" - 1"	7.0 C _v						MAC 125A
5/2 - 5/3	1" - 1 1/4"	11.2 C _v						MAC 250A
								MAC 500A

Individual mounting

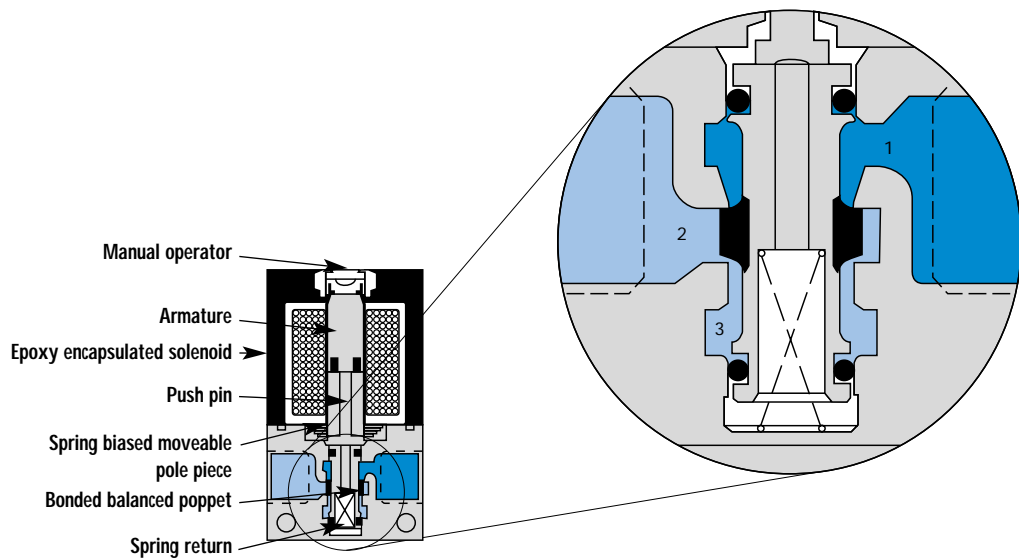
inline

Manifold mounting

stacking

sub-base non "plug-in"

sub-base with pressure regulators



SERIES FEATURES

- Patented 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 (M.O.V. or Diode) available.
- Low wattage DC solenoids — down to 1.8 watts.
- Patented MACSOLENOID® — virtually burn-out proof on AC service.

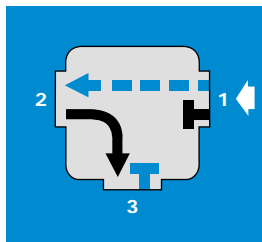
VALVE CONFIGURATIONS AVAILABLE :

The 35 Series is a miniature 3 way or 2 way valve.

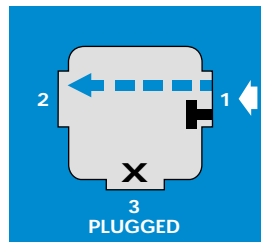
This valve provides extremely fast response, long life and high flow in a surprisingly small package.

- Individual, stacking body or manifold base.
- 3 way—Normally Open or Normally Closed.
- 2 way—Normally Open or Normally Closed.
- Optional Normally Closed Only Models.
- Selectors & Divertors.

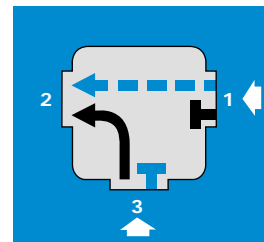
PIPING CHART FOR INDIVIDUAL MODELS



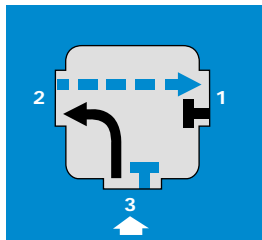
3 Way
Normally Closed



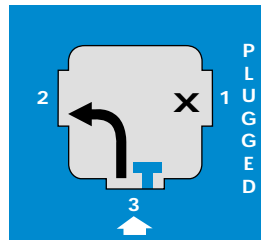
2 Way
Normally Closed



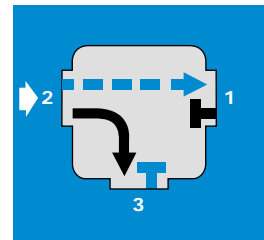
Selector



3 Way
Normally Open



2 Way
Normally Open



Divertor



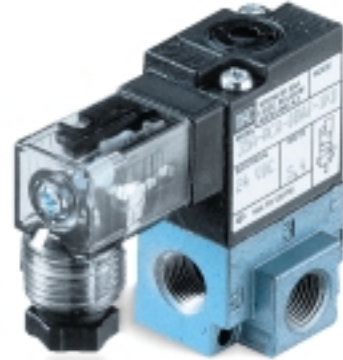


Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/8"	0.17 C _v	inline

OPERATIONAL BENEFITS

- Balanced poppet, immune to variations of pressure.
- Short stroke with high flow.
- The patented solenoid develops high shifting forces.
- Powerful return spring.
- Manual operator standard on all valves.
- Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
1/8" NPTF	35A-AAA-Dxxx-xxx	35A-AAB-Dxxx-xxx

SOLENOID OPERATOR >

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					JB	Rectangular connector
FB	24 VDC (1.8 W)					JD	Rectangular connector with light
DA	24 VDC (5.4 W)					BA	Flying leads
DF	24 VDC (12.7 W)						

OPTIONS

35A-CAX-Dxxx-xxx

- with (2) # 10-32 ports in backside of valve

TECHNICAL DATA

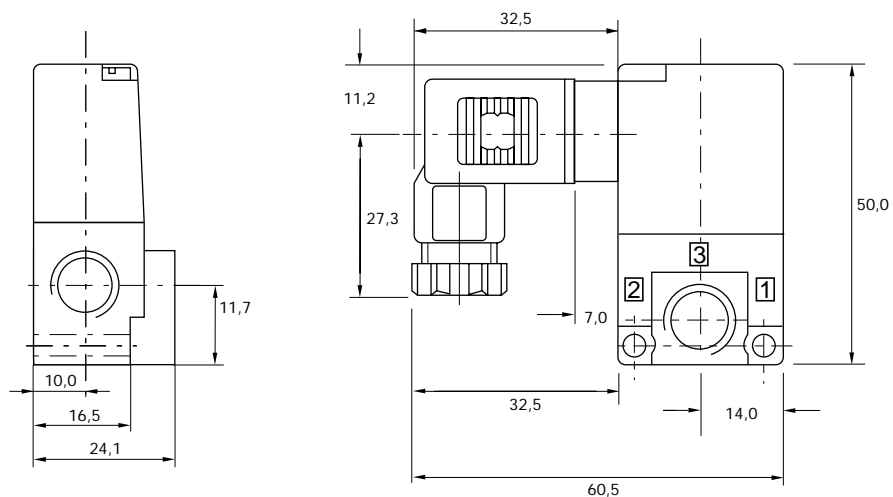
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.08 C _v , 5.4 W : 0.15 C _v		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts : • Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
 • Seal (between solenoid and valve body) : 16402.

Options : • BSPP threads. • High flow up to 0.25 C_v, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)



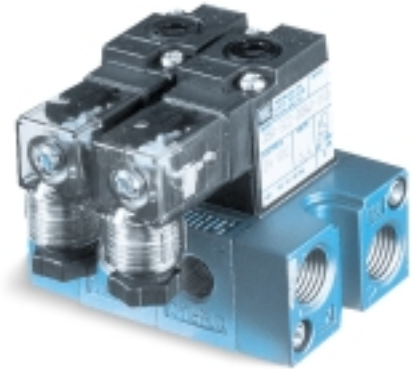


Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	# 10-32, 1/8"	0.16 C _v	stacking

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	NC only valve	NO only valve
1/8" NPTF	35A-SAC-Dxxx-xxx	35A-SAD-Dxxx-xxx
# 10-32 UNF	35A-SBC-Dxxx-xxx	35A-SBD-Dxxx-xxx

SOLENOID OPERATOR ▶

D **XX X- X XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size : 1/4") : M-35001-01
 Note : upon request, manifolds are mounted at the factory.

OPTIONS

35A-TXX-Dxxx-xxx
 - Bottom Inlet

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.12 C _V , 5.4 to 12.7 W : 0.16 C _V		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

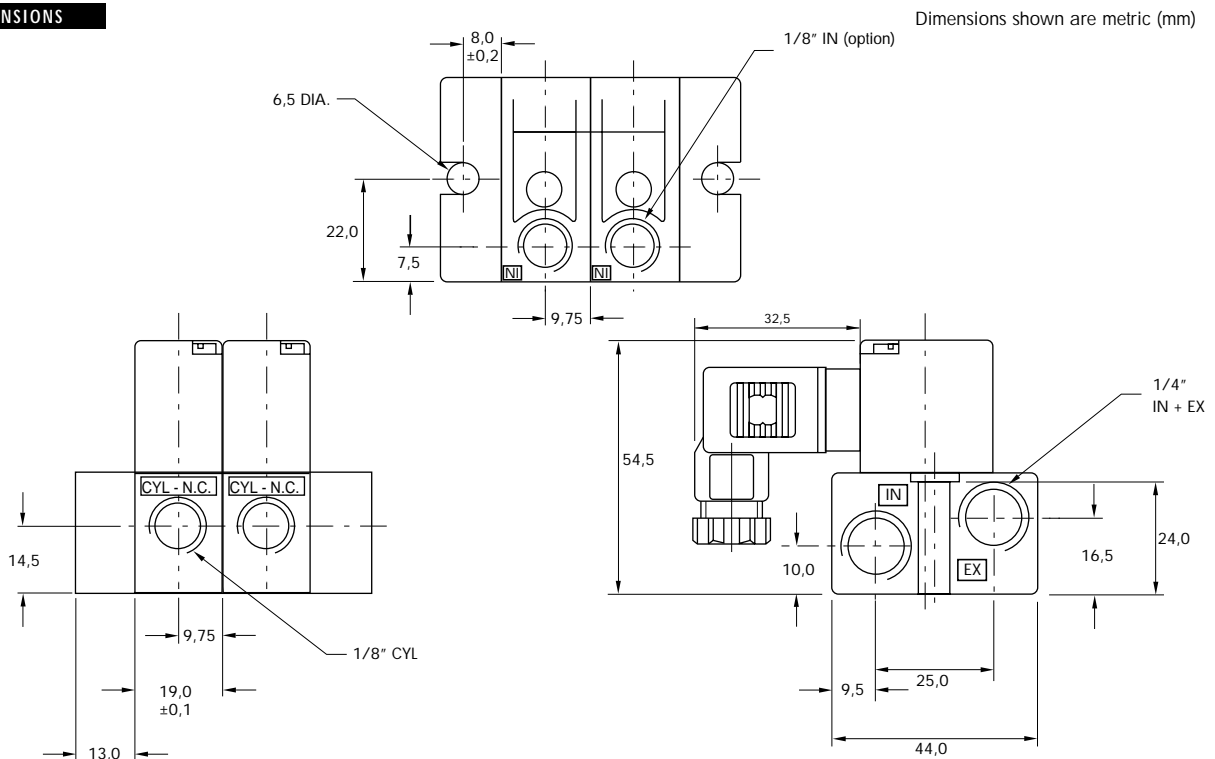
Spare parts :

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valves) : 16433.
- Tie-rod (x2) : 19813. • Inlet isolator : N-35002. • Exhaust isolator : N-35003. • Inlet & Exhaust isolator : N-35001.

Options :

- BSPP threads. • High flow up to 0.25 C_V, according to wattage and high flow mod.

DIMENSIONS



Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	# 10-32, 1/8"	0.10 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

SIDE CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
Valve less base (universal)	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
# 10-32 UNF base	35A-BBE-Dxxx-xxx	35A-BBF-Dxxx-xxx
1/8" NPTF base	35A-BAE-Dxxx-xxx	35A-BAF-Dxxx-xxx

BOTTOM CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
Valve less base (universal)	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
# 10-32 UNF base	35A-BGE-Dxxx-xxx	35A-BGF-Dxxx-xxx
1/8" NPTF base	35A-BFE-Dxxx-xxx	35A-BFF-Dxxx-xxx

SOLENOID OPERATOR ▶

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size : 1/4") : M-35003-01
 Note : upon request, manifolds are mounted at the factory.

OPTIONS

35A-EXX-Dxxx-xxx	35A-FXX-Dxxx-xxx	35A-OXX
- N.C. only valve	- universal w/gage port	- no valve body (base only)

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.09 C _v , 5.4 to 12.7 W : 0.1 C _v		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

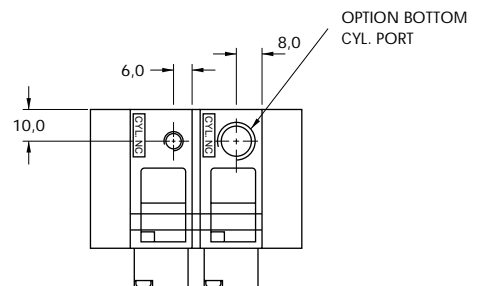
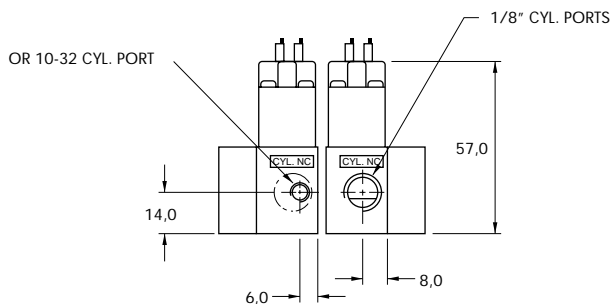
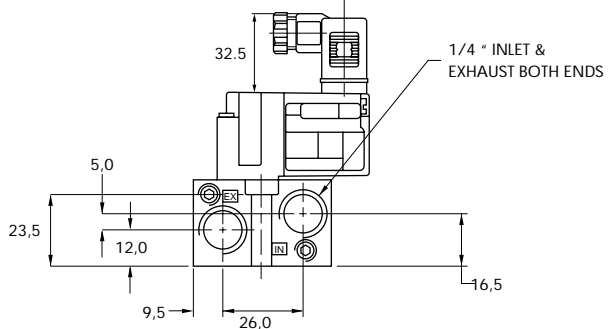
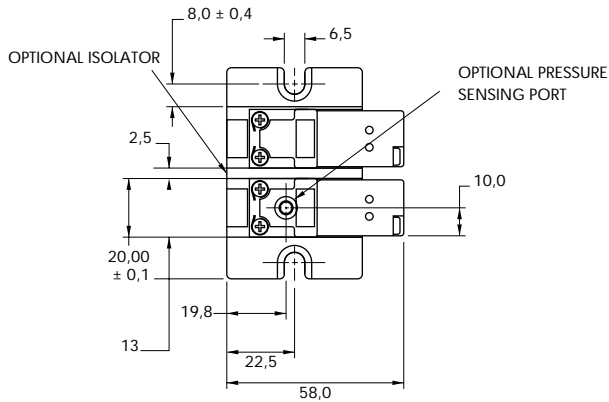
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
- Pressure seal (between bases) : 16461. • Tie-rod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.
- Inlet & Exhaust isolator : N-35006.

Options :

- BSPP threads. • High flow up to 0.18 C_v, according to wattage and high flow mod.

DIMENSIONS

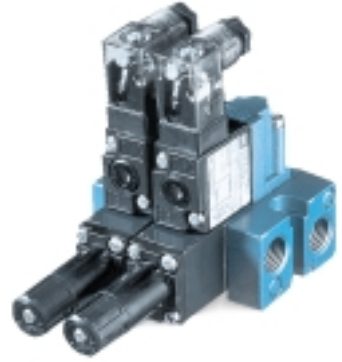
Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	# 10-32, 1/8"	0.10 C _v	sub-base with pressure regulators

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

SIDE CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
Valve less base (universal)	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
# 10-32 UNF base	35A-BBJ-Dxxx-xxx	35A-BBK-Dxxx-xxx
1/8" NPTF base	35A-BAJ-Dxxx-xxx	35A-BAK-Dxxx-xxx

BOTTOM CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
Valve less base (universal)	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
# 10-32 UNF base	35A-BGJ-Dxxx-xxx	35A-BGK-Dxxx-xxx
1/8" NPTF base	35A-BFJ-Dxxx-xxx	35A-BFK-Dxxx-xxx

SOLENOID OPERATOR ▶

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size : 1/4") : M-35003-01
 Note : upon request, manifolds are mounted at the factory.

OPTIONS

35A-EXX-Dxxx-xxx	35A-FXX-Dxxx-xxx	35A-OXX
- N.C. only valve	- universal w/gage port	- no valve body (base w/regulator)

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.09 C _v , 5.4 to 12.7 W : 0.1 C _v		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

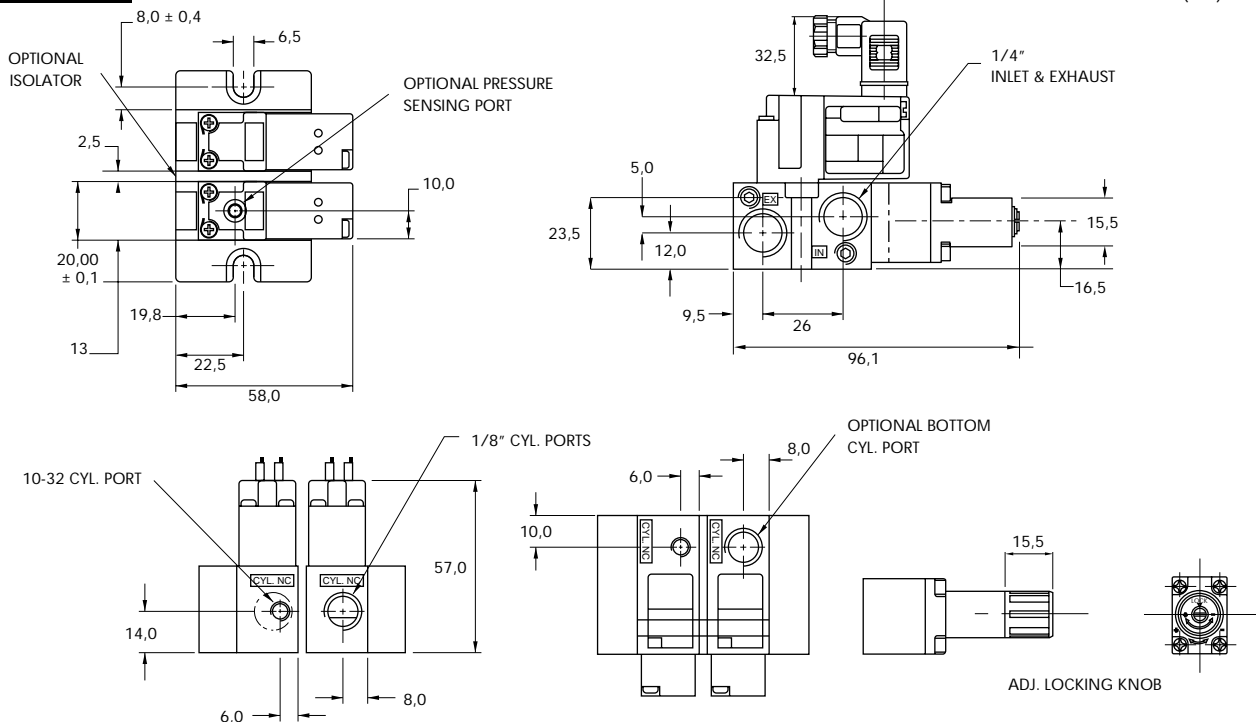
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
- Pressure seal (between bases) : 16461. • Tie-rod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.
- Inlet & Exhaust isolator : N-35006. • Pressure regulator : 35A-00M (ADJ, KNOB) - 35A-00L (SLOTTED STEM).

Options :

- BSPP threads. • High flow up to 0.18 C_v, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)



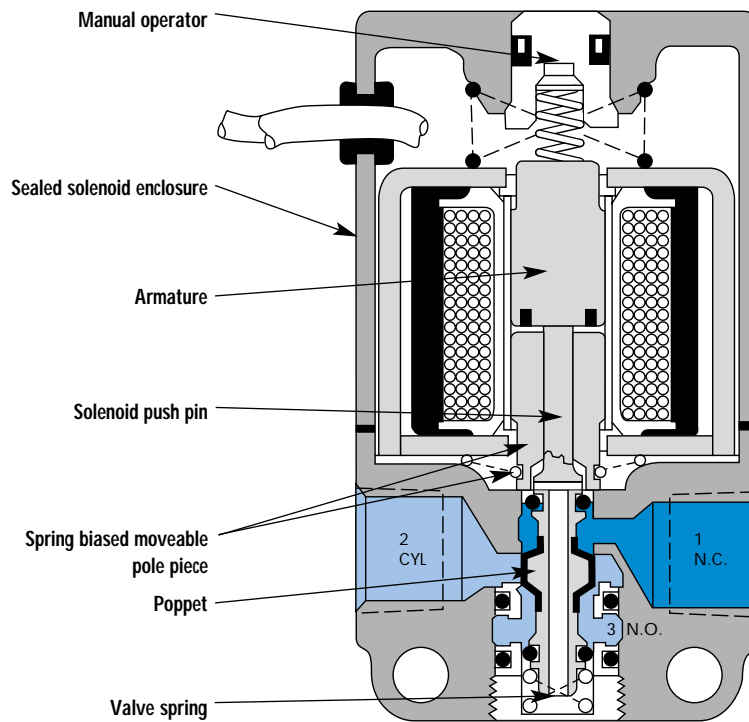
Individual mounting

inline

Manifold mounting

stacking

sub-base
non "plug-in"



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Six valve functions with one individual valve.
- Individual, stacking body & add-a-unit manifold base capability.
- Use on lube or non-lube service.
- Extremely rapid response and cycle rate.
- Various types of manual operators and electrical enclosures.
- Extremely long service life.
- Optional low wattage DC solenoids down to 1 watt.

APPLICATION CONVERSION PROCEDURE:

INDIVIDUAL MODELS

The balanced poppet design facilitates using the same valve for 6 functions with any port being connected to vacuum, pressure or plugged. Piping is shown in the chart below.

STACKING BODY MODELS

The interchangeable function plate between the valve bodies permits selection of either 3-way Normally Closed or 3-way Normally Open operation.

MANIFOLD BASE MODELS

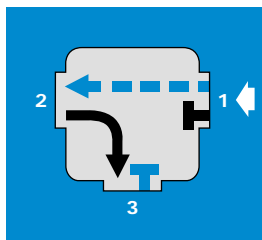
The interchangeable function plate between the valve bodies and base permits selection for 2- or 3-way, Normally Closed or Normally Open operation. On 3-way applications,

one function plate is used for both N.C. and N.O. When "3-NC" is visible on the plate, the function will be N.C. When "3-NO" is visible, the function is N.O. On 2-way applications, two separate plates are used—one for N.C., marked "2-NC"; the other for N.O., marked "2-NO". The 2-way plates block the exhaust at the valve, permitting the mixing in a stack of 3-ways and 2-ways. Changes within a stack from one function to another can be made without disturbing the plumbing.

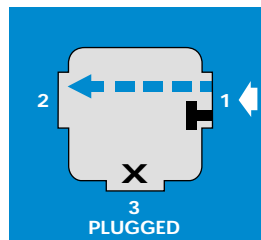
N.C. ONLY MODELS

A single purpose Normally Closed Only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired.

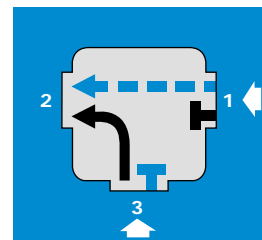
PIPING CHART FOR INDIVIDUAL MODELS



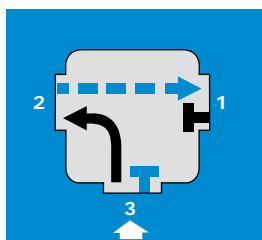
3 Way
Normally Closed



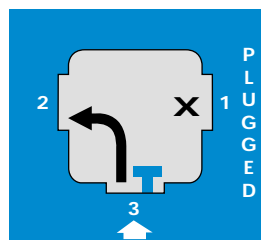
2 Way
Normally Closed



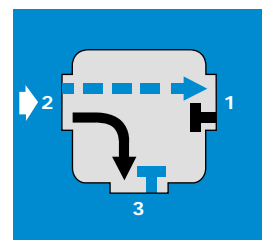
Selector



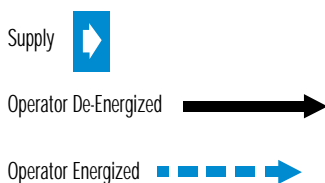
3 Way
Normally Open



2 Way
Normally Open



Divertor





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.18 C _v	inline

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
1/8" NPTF	111B- XXYZZ	161B- XXYZZ
1/4" NPTF	113B- XXYZZ	163B- XXYZZ

SOLENOID OPERATOR >

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)			CA	Conduit 1/2" NPS

Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

Individual inline valves can be changed from normally closed to normally open by connecting the inlet to port 3 instead of port 1.

NORMALLY CLOSED ONLY MODELS

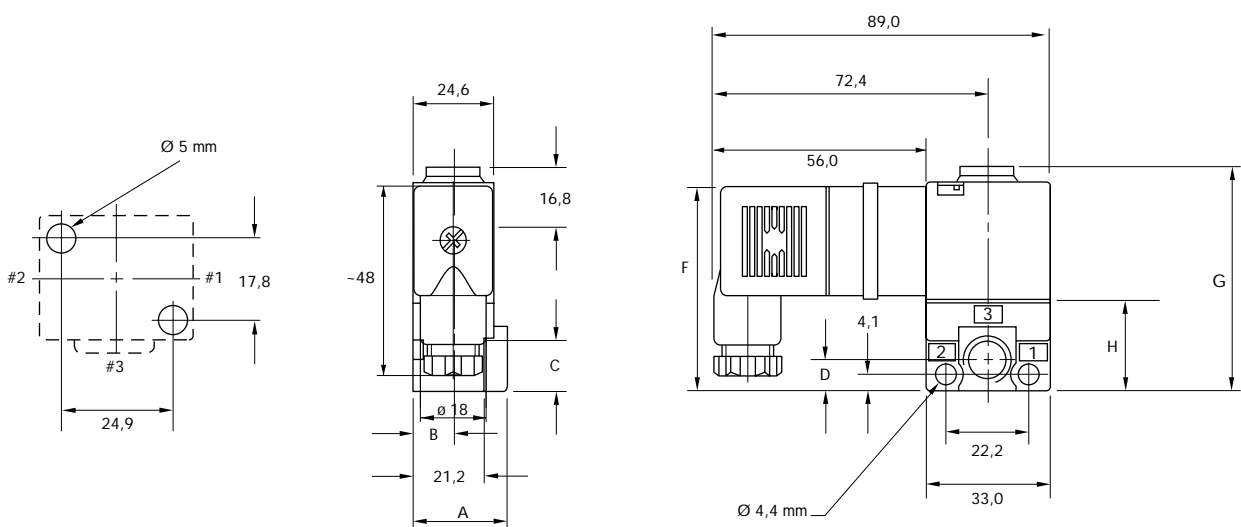
A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 μ
Temperature range :	0°F to 140°F (-18°C to 60°C)
Flow (at 6 bar, ΔP=1bar) :	0.18 C _v
Leak rate :	50 cm ³ /min
Coil :	General purpose class A, continuous duty, encapsulated
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17 W
Response times :	24 VDC (8.5 W) Energize : 7 ms De-energize : 2 ms
	120/60 Energize : 3-8 ms De-energize : 2-7 ms

Spare parts : • Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 32184 and seal 16234.

Options : • BSPP threads.

DIMENSIONS Dimensions shown are metric (mm)



PORT SIZE	A	B	C	D	E	F	G	H
1/8"	28.4	12.7	14.0	8.0	40.1	64.9	60.1	23.2
1/4"	29.8	13.3	12.7	9.9	40.9	65.8	60.9	24.1



Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.18 C _v	stacking

OPERATIONAL BENEFITS

- Balanced poppet, immune to variations of pressure.
- Short stroke with high flow.
- The patented solenoid develops high shifting forces.
- Powerful return spring.
- Manual operator standard on all valves.
- Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
1/8" NPTF	181B- XXYZZ	184B- XXYZZ
1/4" NPTF	183B- XXYZZ	185B- XXYZZ

SOLENOID OPERATOR >

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			BA	Flying leads (18")
59	24 VDC (2.5 W)			MB	Common conduit 1" NPS
87	24 VDC (17.1 W)				
61	24 VDC (8.5 W)				

End plate kit required (Port size 1/4") : M-01001-01
 "MB" option also requires end plate kit: M-01002-01

Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

In the case of stacking valves a reversible plate, complete with indicator, is placed between each valve body assembly. This determines whether the valve is N.C. or N.O.

NORMALLY CLOSED ONLY MODELS

A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 140°F (-18°C to 60°C)		
Flow (at 6 bar, ΔP=1bar) :	0.18 C _V		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush 14.8 VA	Holding : 10.9 VA	
	DC : 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 7 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

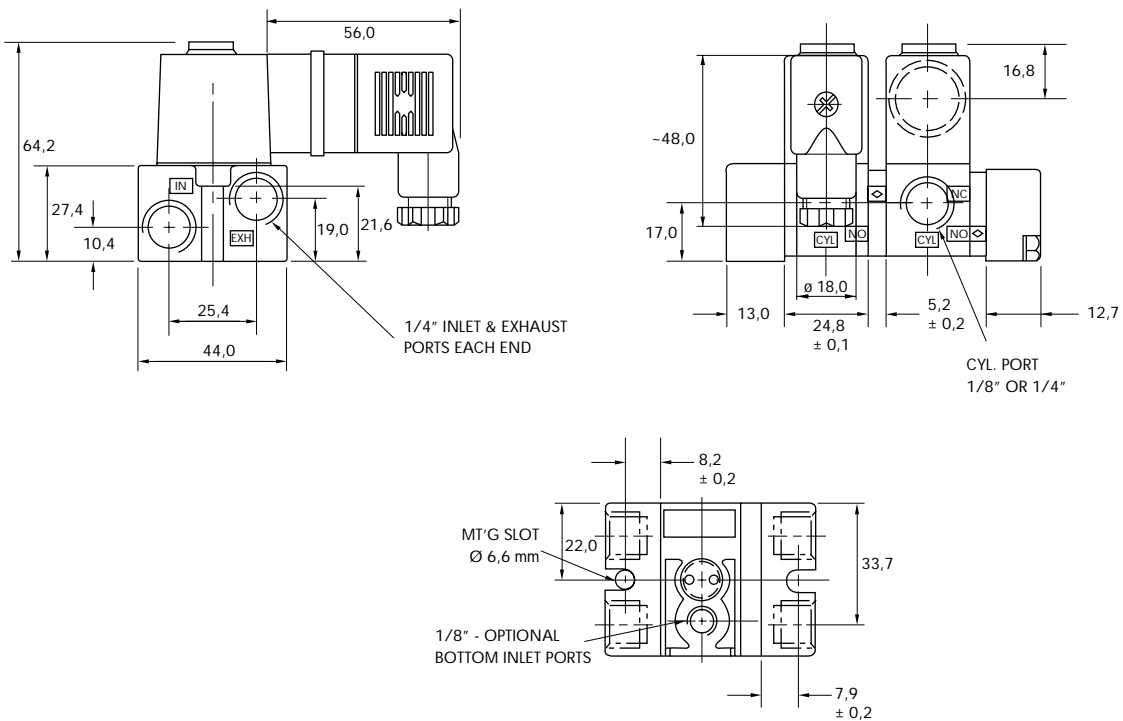
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Function plate : N-01002. • Tie-rod (x2) : 19674. • Inlet isolator plate : N01003. • Exhaust isolator plate : N01004.

Options :

- BSPP threads. • Bottom inlet (Mod. 0210).

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/8"	0.14 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced poppet, immune to variations of pressure.
- Short stroke with high flow.
- The patented solenoid develops high shifting forces.
- Powerful return spring.
- Manual operator standard on all valves.
- Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
Valve less base	130B- XXYZZ	170B- XXYZZ
1/8" base NPTF	132B- XXYZZ	172B- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			BA	Flying leads (18")
59	24 VDC (2.5 W)			MA	Common conduit 1" NPS
87	24 VDC (17.1 W)			RA	Conduit 3/8" NPS
61	24 VDC (8.5 W)				

End plate kit required (Port size : 1/4") : A2-5004-01

"MA" option also requires end plate kit : M-01002-01

OPTIONS

12XB- XXYZZ	2-way N.C.
14XB- XXYZZ	2-way N.O.
102	(Base only)

Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

For manifold base mounted valves a plate is provided between the valve and the base. Three plates are available; a reversible plate for 3 Way valves (N.C. & N.O.), one plate for 2 Way N.C. and one for 2 Way N.O. Appropriate plates, determined by the valve model number, are supplied automatically with the valve.

NORMALLY CLOSED ONLY MODELS

A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 140°F (-18°C to 60°C)		
Flow (at 6 bar, ΔP=1bar) :	0.14 C _V		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA	Holding : 10.9 VA	
	= 1 to 17 W		
Response times :	24 VDC (8.5 W)	Energize : 7 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 32184 and seal 16234.
- Function plate : A2-7009. • Seal between manifold bases : 16226. • Tie-rod (x2) : 19546.

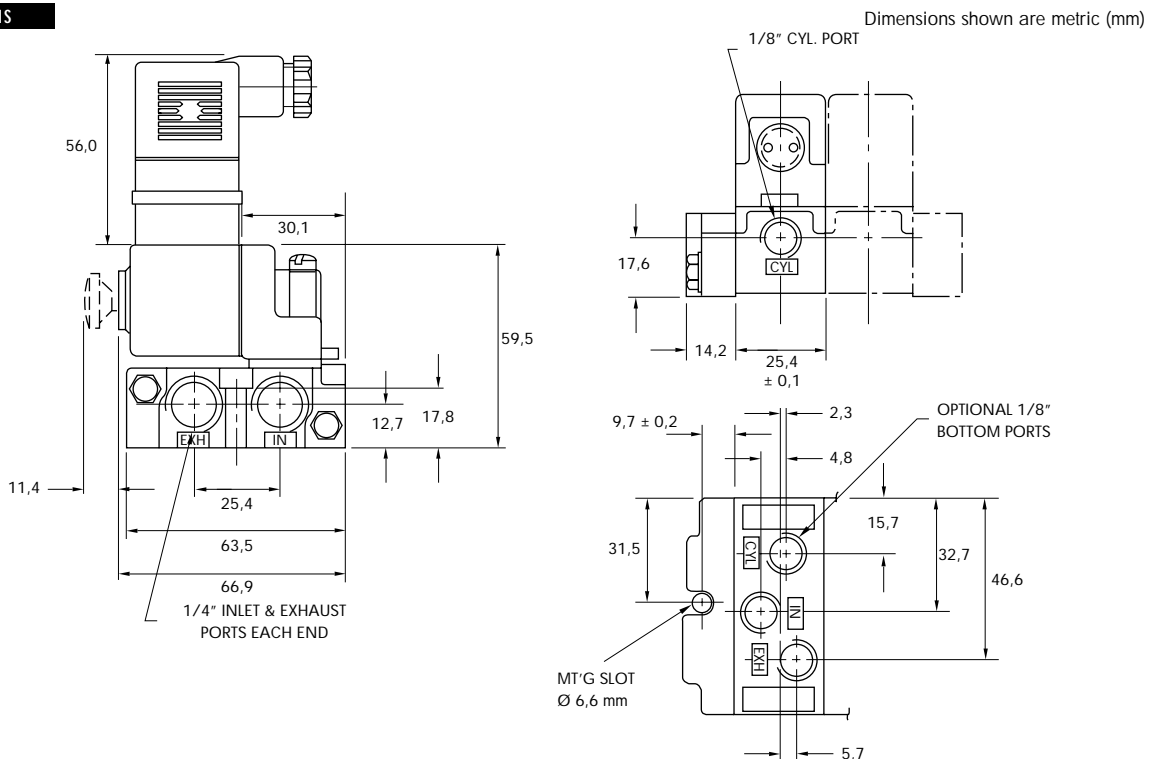
Options :

- BSPP threads. • Isolation of inlet : Mod. 313P. • Isolation of exhaust : Mod. 313E. • Additional bottom inlet : Mod. 0210.
- Bottom cyl. port : Mod. 0009. • All bottom & side ports : Mod. 0004.

Note :

- Specify mod. number after valve model number (i.e. 132B-111BA Mod. 0210)

DIMENSIONS

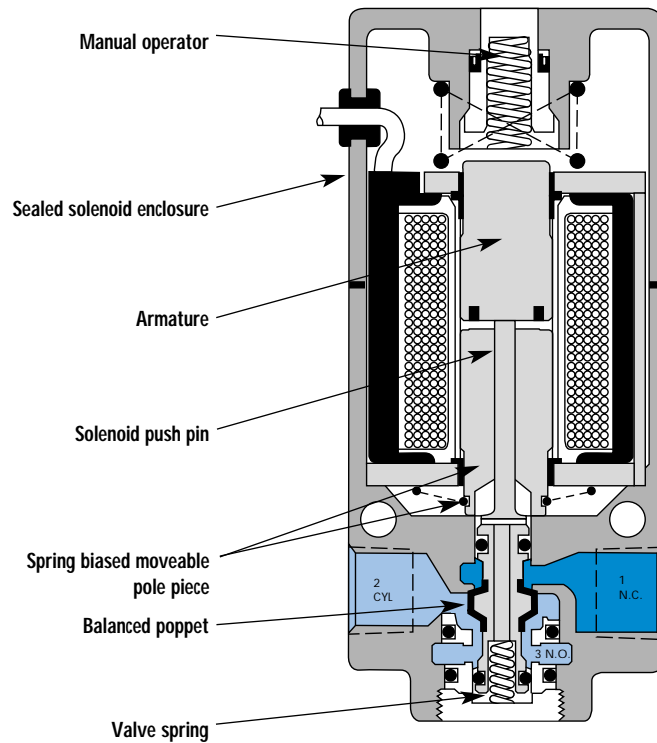


Individual mounting

inline	inline hazardous location
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Manifold mounting

sub-base non "plug-in"	sub-base with pressure regulators	sub-base hazardous location
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SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Six valve functions with one Inline valve and four valve functions with one Manifold valve.
- A triple rated coil for 120/60, 110/50 or 24 VDC (6 Watt).
- Inline & add-a-unit manifold capability.
- Use on lube or non-lube service.
- Extremely rapid response and cycle rate.
- Various types of manual operators and electrical enclosures.
- Extremely long service life.
- Optional low wattage DC solenoids down to 1 watt.

APPLICATION CONVERSION PROCEDURE:

INDIVIDUAL MODELS

The balanced poppet design facilitates using the same valve for 6 functions with any port being connected to vacuum, pressure or plugged. Piping is shown in the chart below.

MANIFOLD MODELS

The interchangeable function plate between the valve body and base permits selection for 2- or 3-way, Normally Closed or Normally Open operation, instead of through piping as shown below in the Inlines. On 3-way applications, one function plate is used for both N.C. and N.O. When "3-C" is visible on the plate, the function will be N.C. When "3-O" is visible, the function is N.O. On 2-way applications, a separate plate is used and like the 3-way plate is marked "2-C" for N.C. and "2-O" on the other side for N.O. The 2-way plates block the exhaust at the valve, permitting the mixing in a stack of

3-ways and 2-ways. Changes within a stack from one function to another can be made without disturbing the plumbing.

SPECIAL APPLICATIONS:

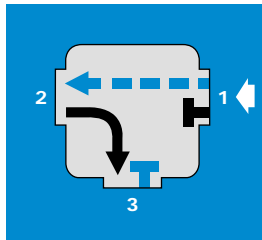
N.C. ONLY MODELS

A single purpose Normally Closed Only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired.

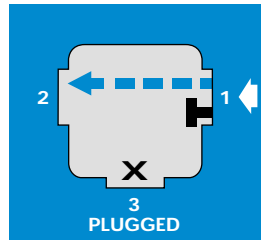
EXPLOSION PROOF MODELS

These models are designed to meet U.L. and C.S.A. standards for Division 1, Class I, Groups B, C, D and Class II, Groups E, F and G (NEMA equivalent to Class I is NEMA 7; Class II is NEMA 9). Explosion proof models are available in either inline or manifold versions but only with the no operator ("O") manual operator.

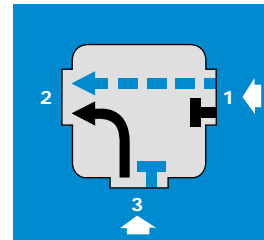
PIPING CHART FOR INDIVIDUAL MODELS



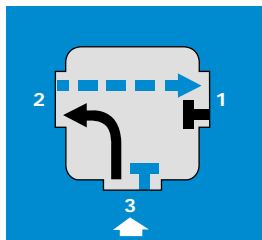
3 Way
Normally Closed



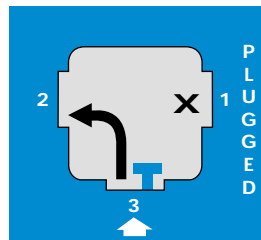
2 Way
Normally Closed



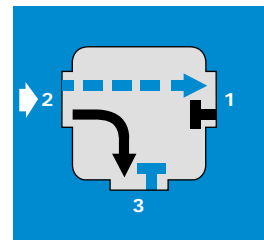
Selector



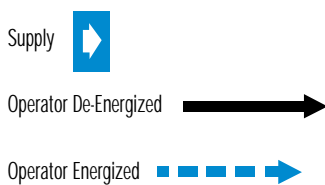
3 Way
Normally Open



2 Way
Normally Open



Divertor





Direct solenoid and solenoid pilot operated valves

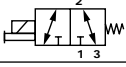
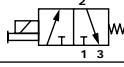
Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.5 C _v	inline

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
		
1/8" NPTF	224B- XXYZZ	274B- XXYZZ
1/4" NPTF	225B- XXYZZ	275B- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	1	Non-locking	JA	Square connector
12	240/60, 220/50	2	Locking	JC	Square connector with light
22	24/60, 24/50			BA	Flying leads (18")
52	24 VDC (2.5 W)			CA	Conduit 1/2" NPS
78	24 VDC (24.0 W)				
61	24 VDC (8.5 W)				

Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

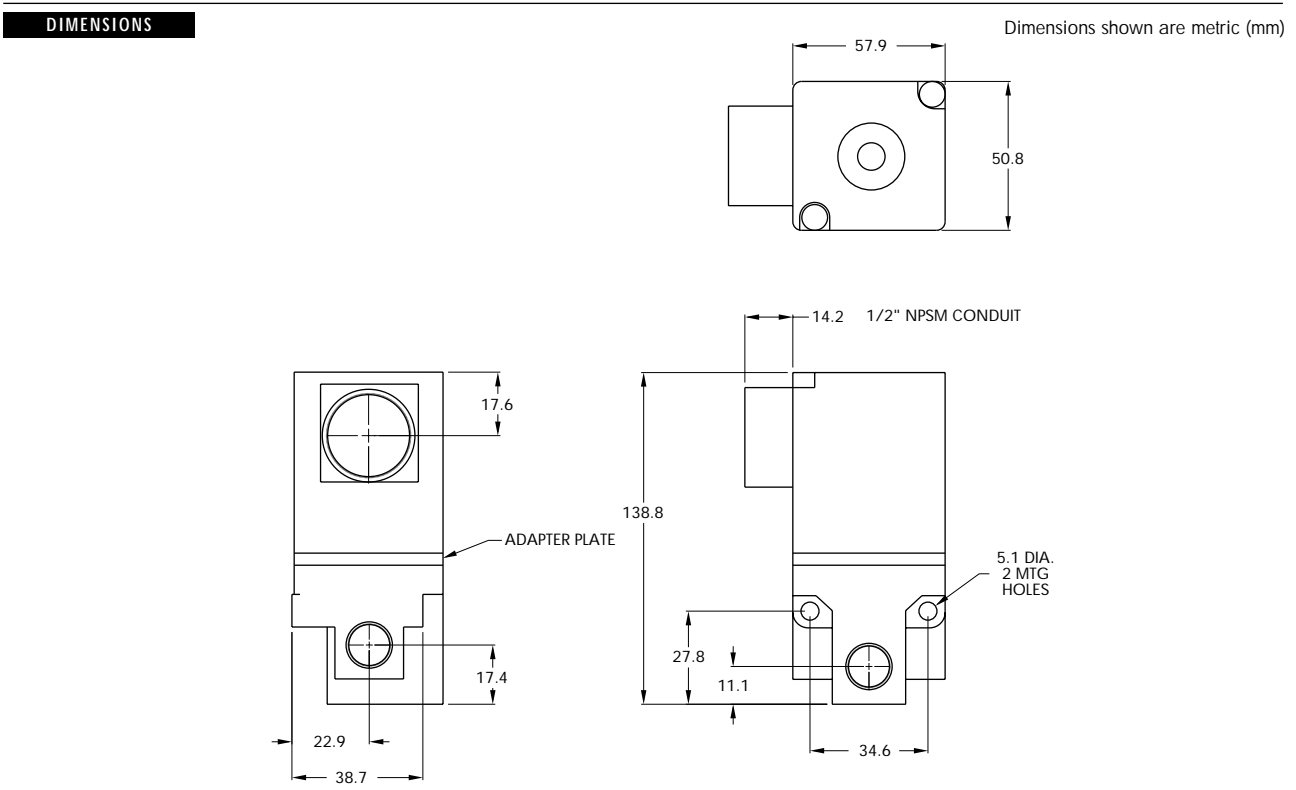
Individual inline valves can be changed from normally closed to normally open by connecting the inlet to port 3 instead of port 1.

NORMALLY CLOSED ONLY MODELS

A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 μ
Temperature range :	0°F to 140°F (-18°C to 60°C)
Flow (at 6 bar, ΔP=1bar) :	0.5 C _v
Leak rate :	50 cm ³ /min
Coil :	General purpose class A, continuous duty, encapsulated
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 33 VA Holding : 19.7 VA = 1 to 24 W
Response times :	24 VDC (8.5 W) Energize : 15 ms De-energize : 5 ms
	120/60 Energize : 3-8 ms De-energize : 3-13 ms

- Spare parts : • Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
- Options : • BSPP threads.





Direct solenoid and solenoid pilot operated valves

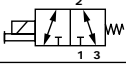
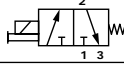
Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.5 C _v	inline hazardous location

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
		
1/8" NPTF	224B-XX0EA	274B-XX0EA
1/4" NPTF	225B-XX0EA	275B-XX0EA

SOLENOID OPERATOR ►

XX

XX	Voltage
11	120/60, 110/50, 24 VDC (6.0 W)
12	240/60, 220/50
22	24/60, 24/50
50	24 VDC (6.0 W)
55	12 VDC (6.0 W)
60	12 VDC (9.5 W)
61	24 VDC (8.5 W)

Notes:

The special version of the 200 Series designed for hazardous locations has been approved by CSA for Class I, Groups B, C & D; Class II, Groups E, F & G. Maximum rated fluid and ambient temperature is 40°C; maximum pressure is 150 p.s.i.

Approval is limited to certain common AC & DC voltages which are those designated in the table above.

These valves are supplied without manual operators. This version of the 200 Series can be supplied on the standard individual inline or the manifold valve body assemblies. It can also be supplied as a pilot for the 57, 58 and 59 Series (with special adapter plate # M-00012).

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

Individual inline valves can be changed from normally closed to normally open by connecting the inlet to port 3 instead of port 1.

NORMALLY CLOSED ONLY MODELS

A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA

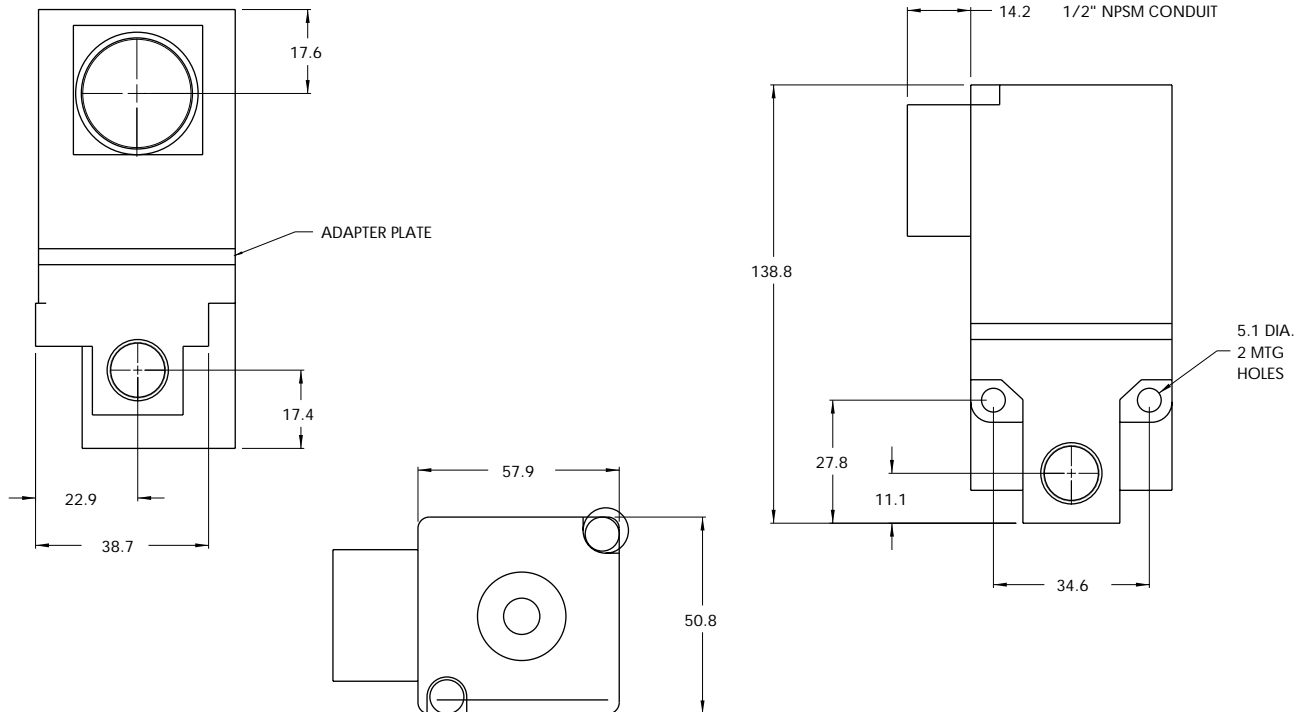
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 104°F (-18°C to 40°C)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	NEMA 7, NEMA 9; Class I Groups B, C & D; Class II Groups E, F & G.		
Power :	~ Inrush : 33 VA	Holding : 19.7 VA	
	= 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 15 ms	De-energize : 5 ms
	120/60	Energize : 3-8 ms	De-energize : 3-13 ms

Spare parts : • Solenoid operator (power ≥ 6 W) : D4-XXAAB. • Adapter plate ass'y. : A3-0506.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



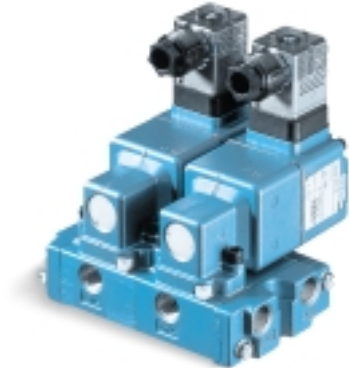


Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.5 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
Valve less base	250B- XXYZZ	280B- XXYZZ
1/8" base NPTF	256B- XXYZZ	286B- XXYZZ
1/4" base NPTF	257B- XXYZZ	287B- XXYZZ

SOLENOID OPERATOR ▶

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	1	Non-locking	JC	Square connector with light
12	240/60, 220/50	2	Locking	JA	Square connector
22	24/60, 24/50			BA	Flying leads (18")
52	24 VDC (2.5 W)			CA	Conduit 1/2" NPS
78	24 VDC (24.0 W)				
61	24 VDC (8.5 W)				

End plate kit required (Port size : 1/4") : A2-5003-01.

OPTIONS

26XB- XXYZZ	206	207
- universal 2-way	(Base only - 1/8")	(Base only - 1/4")

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

For manifold base mounted valves a plate is provided between the valve and the base. Three plates are available; a reversible plate for 3 Way valves (N.C. & N.O.), one plate for 2 Way N.C. and one for 2 Way N.O. Appropriate plates, determined by the valve model number, are supplied automatically with the valve.

NORMALLY CLOSED ONLY MODELS

A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 140°F (-18°C to 60°C)		
Flow (at 6 bar, ΔP=1bar) :	0.5 C _V		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA	Holding : 19.7 VA	
	= 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 15 ms	De-energize : 5 ms
	120/60	Energize : 3-8 ms	De-energize : 3-13 ms

Spare parts :

- Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
- Function plate : A2-7005. • Seal between bases : B5-5010. • Tie-rod (x2) : B4-9004.

Options :

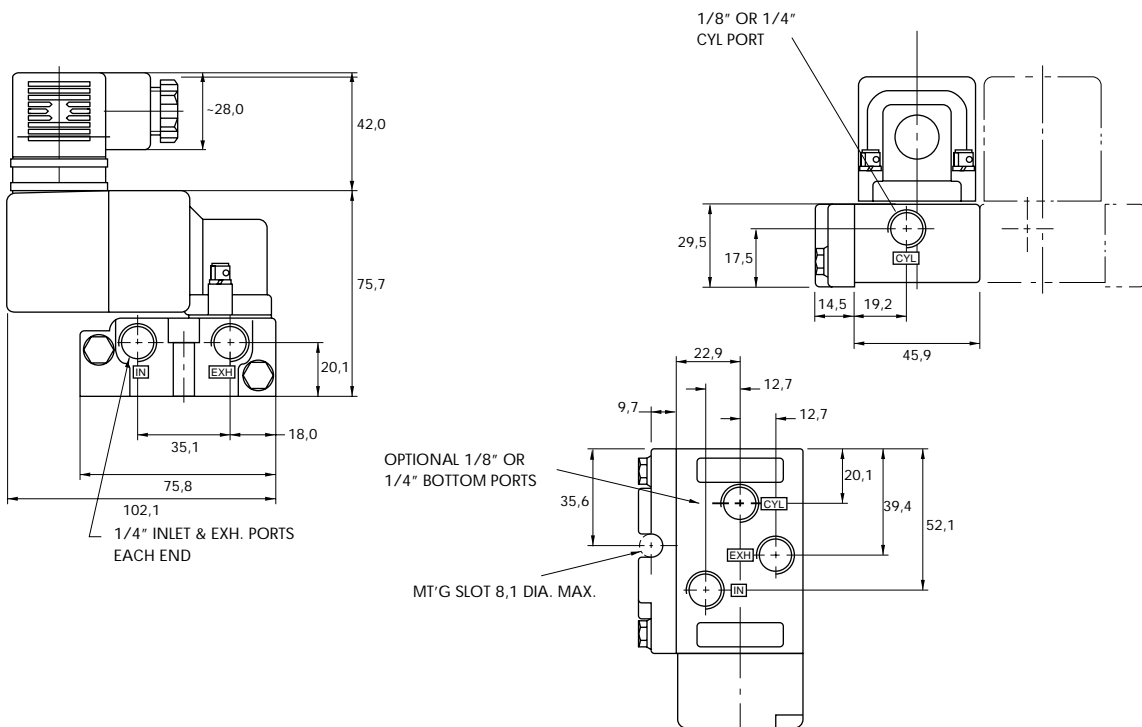
- BSPP threads. • Explosion-proof model. • Isolation of inlet : Mod. 313P. • Isolation of exhaust : Mod. 313E.
- Additional bottom inlet : Mod. 0210. • Bottom cyl. port : Mod. 0009. • All bottom & side ports : Mod. 0004.

Note :

- Specify Mod. number after valve model number (i.e. 257B-111BA Mod. 0210)

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/4"	0.4 C _v	sub-base with pressure regulators

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.
7. Individual pressure control to each cylinder port.



HOW TO ORDER

Port size	Universal valve	NC only valve
Valve less base	250B- XXYZZ	280B- XXYZZ
1/4" base NPTF	252B- XXYZZ	282B- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	1	Non-locking	JA	Square connector
12	240/60, 220/50	2	Locking	JC	Square connector with light
22	24/60, 24/50			BA	Flying leads (18")
52	24 VDC (2.5 W)			CA	Conduit 1/2" NPS
78	24 VDC (24.0 W)				
61	24 VDC (8.5 W)				

Manifold fastening kit required : N-02003

MODEL

- 252B-** 3-Way N.C. or N.O.
- 262B-** 2-Way N.C. or N.O.
- 282B-** 3-Way N.C. only

INDIVIDUAL PRESSURE CONTROL TO EACH CYLINDER PORT

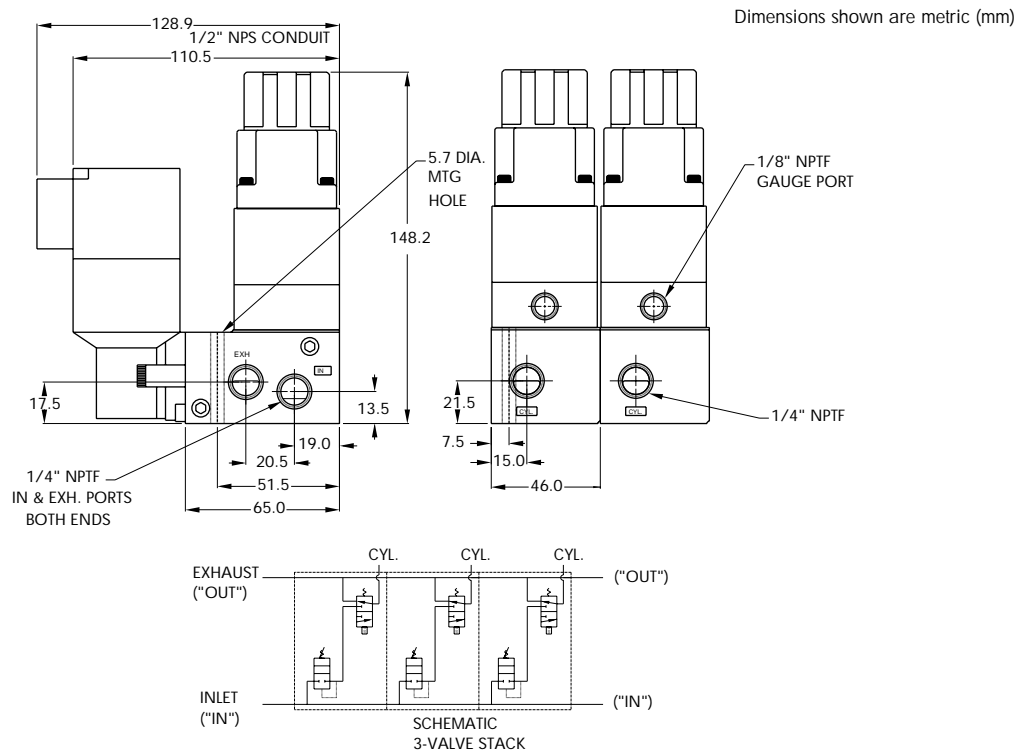
In this version the common inlet pressure supplies each individual valve in the stack. This common pressure passes through a relieving type regulator mounted on the same base as the valve and is supplied through the function plate to the Normally Closed or Normally Open poppet position. Through use of the appropriate function plate on the 200 Series basic valve, the operation can be Normally Closed Or Normally Open, 3-way or 2-way except for 282B models which are Normally Closed only. The exhaust ("out") port is common. Operation of the valves then opens or closes the cylinder port (See schematic diagram next page).

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 140°F (-18°C to 60°C)		
Flow (at 6 bar, ΔP=1bar) :	0.4 C _v		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA	Holding : 19.7 VA	
	= 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 15 ms	De-energize : 5 ms
	120/60	Energize : 3-8 ms	De-energize : 3-13 ms

- Spare parts :
- Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
 - Function plate : A2-7005. • Seal between bases (x2) : 17016-01. • Tie-rod (x2) : B4-9004. • Pressure regulator : PR82A-JOAA.
- Options :
- BSPP threads. • Explosion-proof model. • Isolation of inlet and/or exhaust.
 - Mod. PR80 (0-80 pressure range), Mod PR30 (0-30 pressure range)

DIMENSIONS





Direct solenoid and solenoid pilot operated valves


Function	Inlet & outlet port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/4"	0.4 C _v	sub-base with pressure regulators

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.
7. Selected pressure control to a single outlet.



HOW TO ORDER

Port size	NC only valve
Valve	 251B- XXYZZ

SOLENOID OPERATOR ►

XX Voltage		Y Manual operator	ZZ Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	1 Non-locking	JA Square connector
12	240/60, 220/50	2 Locking	JC Square connector with light
22	24/60, 24/50		BA Flying leads (18")
52	24 VDC (2.5 W)		CA Conduit 1/2" NPS
78	24 VDC (24.0 W)		
61	24 VDC (8.5 W)		

Manifold fastening kit required : N-02003

MODEL

251B-
3-Way Normally Closed

SELECTED PRESSURE CONTROL TO A SINGLE OUTLET

This version permits the alternate selection of any of the regulated pressures in the stack to one common outlet. With all valves de-energized the regulated pressure supplied to the Normally Open pressure port passes through the valves and out the corresponding port at the other end of the stack (Common Outlet Port). Pressure supplied to the common inlet port is regulated at each valve and blocked by the poppet of each valve. When a valve is shifted in the stack the Normally Open pressure is blocked and the regulated normally closed pressure of that valve is open to the common outlet. If two valves are energized at the same time the pressure at the common outlet would be that of the energized valve nearest the outlet. If the normally open pressure port is not used it is open to exhaust from the common outlet. The individual cylinder port in each base is non-operative. (See schematic diagram next page).

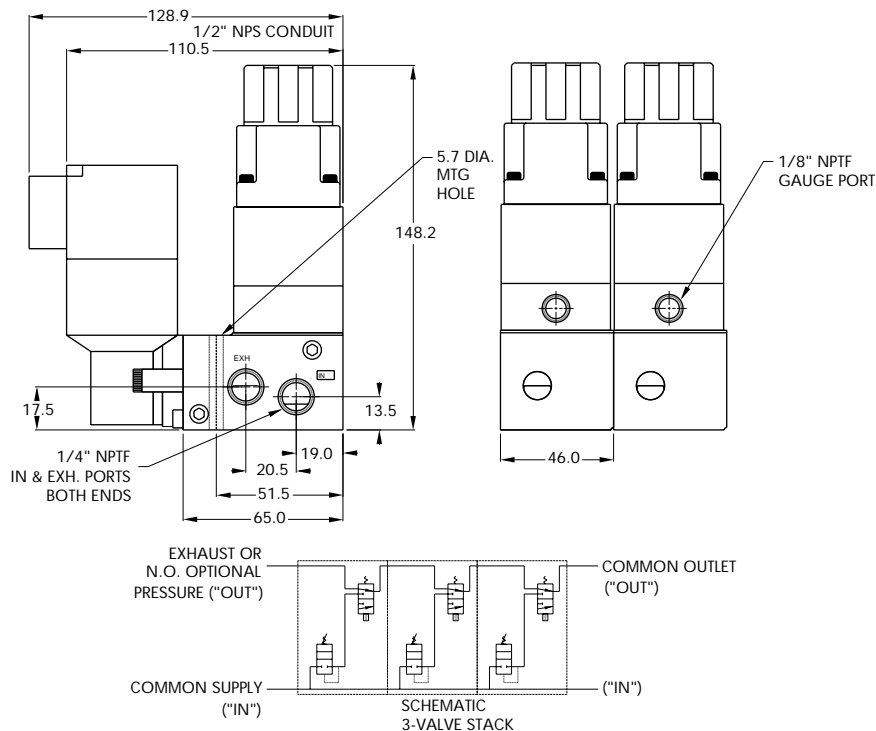
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 140°F (-18°C to 60°C)		
Flow (at 6 bar, ΔP=1bar) :	0.4 C _v		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA Holding : 19.7 VA = 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 15 ms	De-energize : 5 ms
	120/60	Energize : 3-8 ms	De-energize : 3-13 ms

- Spare parts :
- Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
 - Function plate : A2-7005. • Seal between bases (x2) : 17016-01. • Tie-rod (x2) : B4-9004. • Pressure regulator : PR82A-JOAA.
- Options :
- BSPP threads. • Explosion-proof model. • Isolation of inlet and/or exhaust.
 - Mod. PR80 (0-80 pressure range), Mod PR30 (0-30 pressure range)

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.5 C _v	sub-base hazardous location

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Universal valve	NC only valve
Valve less base	250B-XX0EA	280B-XX0EA
1/8" base NPTF	258B-XX0EA	288B-XX0EA
1/4" base NPTF	259B-XX0EA	289B-XX0EA

SOLENOID OPERATOR ▶

XX

XX	Voltage
11	120/60, 110/50, 24 VDC (6.0 W)
12	240/60, 220/50
22	24/60, 24/50
50	24 VDC (6.0 W)
55	12 VDC (6.0 W)
60	12 VDC (9.5 W)
61	24 VDC (8.5 W)

End plate kit required (Port size : 1/4") : A2-5003-01.

OPTIONS

26XB-XX0EA	208	209
- universal 2-way	(Base only - 1/8")	(Base only - 1/4")

Notes:

The special version of the 200 Series designed for hazardous locations has been approved by CSA for Class I, Groups B, C & D; Class II, Groups E, F & G. Maximum rated fluid and ambient temperature is 40°C; maximum pressure is 150 p.s.i.

Approval is limited to certain common AC & DC voltages which are those designated in the table above.

These valves are supplied without manual operators. This version of the 200 Series can be supplied on the standard individual inline or the manifold valve body assemblies. It can also be supplied as a pilot for the 57, 58 and 59 Series (with special adapter plate # M-00012).

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

For manifold base mounted valves a plate is provided between the valve and the base. Three plates are available; a reversible plate for 3 Way valves (N.C. & N.O.), one plate for 2 Way N.C and one for 2 Way N.O. Appropriate plates, determined by the valve model number, are supplied automatically with the valve. NORMALLY CLOSED ONLY MODELS

A single purpose Normally Closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired. Model numbers are indicated above.

TECHNICAL DATA

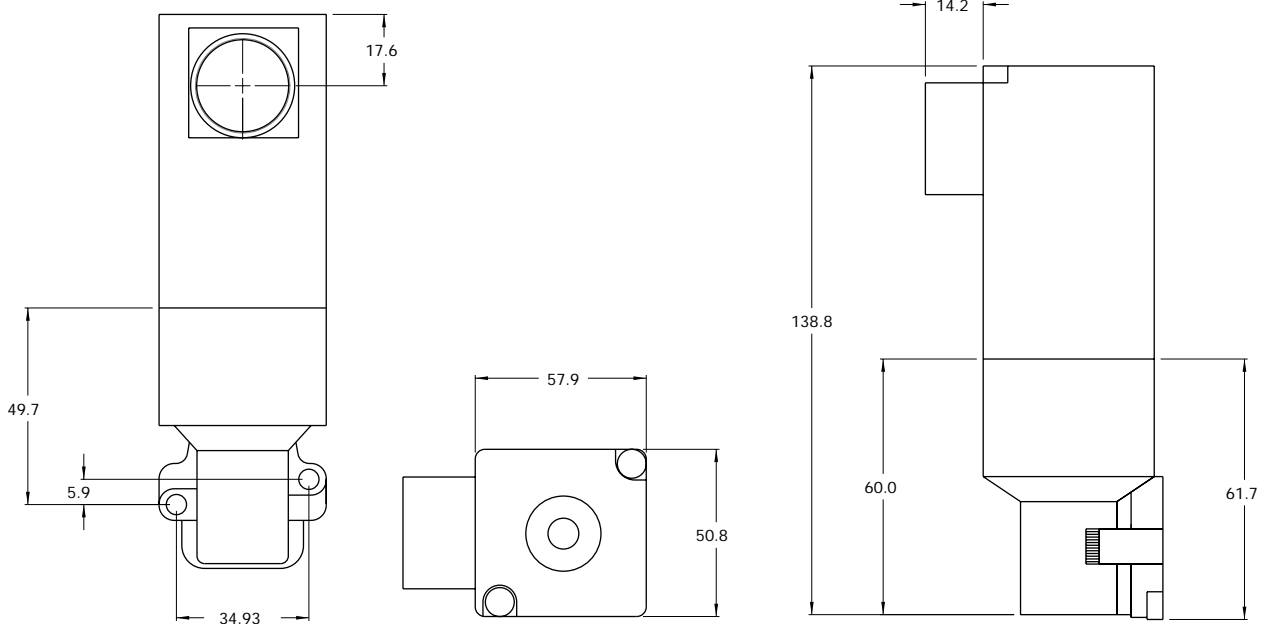
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 140°F (-18°C to 60°C)		
Flow (at 6 bar, ΔP=1bar) :	0.5 C _v		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA	Holding : 19.7 VA	
	= 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 15 ms	De-energize : 5 ms
	120/60	Energize : 3-8 ms	De-energize : 3-13 ms

Spare parts : • Solenoid operator (power ≥ 6 W) : D4-XXAAC-0EA. • Function plate : A2-7005. • Seal between bases : B5-5010. • Tie-rod (x2) : 19598.

Options : • BSPP threads. • Isolation of inlet : Mod. 313P. • Isolation of exhaust : Mod. 313E. • Additional bottom inlet : Mod 0210.

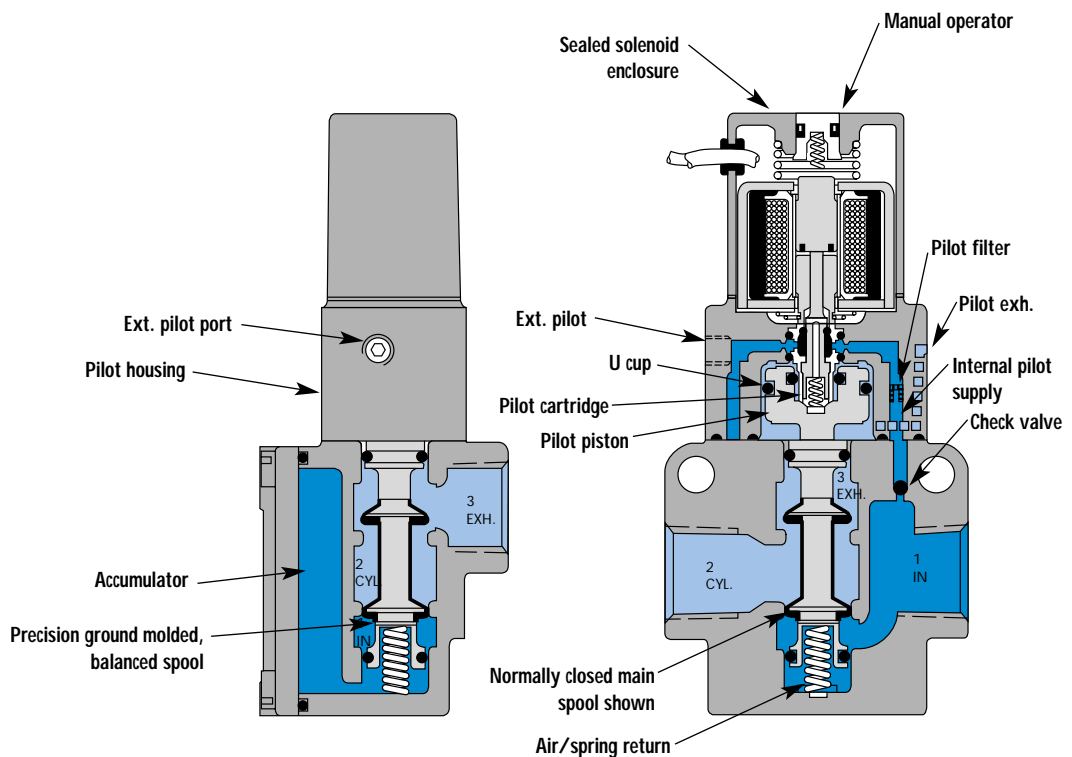
DIMENSIONS

Dimensions shown are metric (mm)



Individual mounting

inline



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Balanced spool unaffected by back pressure in the exhaust or by inlet restrictions.
May be plugged for 2-way operation.
- A large checked accumulator which supplies the pilot and air/spring return for consistent shifting.
- Use on lube or non-lube service.
- Extremely rapid response and cycle rate.
- Various types of manual operators and solenoid enclosures.
- Optional low wattage DC solenoids down to 1 watt.



Series 55

100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

VALVE CONFIGURATIONS AVAILABLE

- 3-Way Normally Open or Normally Closed (solenoid or remote air).
- 2-Way (by plugging a port) Normally Open or Normally Closed (solenoid or remote air).
- Internal pilot or External pilot for vacuum to 30 PSI main valve pressures on solenoid or 25 on remote air operated models. Manual and mechanical operators available.

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

These air versions feature:

- A large checked accumulator for air/spring return.
- Balanced spool unaffected by back pressure in the exhaust or by inlet restrictions. May be plugged for 2-way operation.
- Use on lube or non-lube service.

SERIES FEATURES-REMOTE AIR PILOT, PILOT OPERATED VALVES

These special air versions have the same features as the remote air pilot operated models, but additionally feature:

- Ability to use a pilot signal pressure different from the main valve pressure. Pilot signal can be from 30 to 150 PSI, regardless of main valve pressure.
- A manual operator and position indicator standard.

SPECIAL APPLICATIONS:

- VACUUM APPLICATIONS: Connect the vacuum source to port #3 with port #1 open to atmosphere, and use external pilot on solenoid pilot operated models. On remote air pilot models, use **RE**.
- SELECTOR APPLICATIONS: Pipe higher pressure to port #1 and lower pressure to port #3.
- INTERNAL PILOT: Use for main valve pressure of 30 to 150 PSI on all models. Includes ball check in the body and an M5x0.8 plug installed in the external pilot port.
- EXTERNAL PILOT: An external pilot supply is required when main valve pressures are lower than 30 psi on solenoid pilot or 25 psi on remote air pilot operated models. To convert from internal to external pilot on solenoid models simply rotate pilot housing 180 degrees and connect external pilot source. (Use either M5 or #10-32 fitting.) On remote air pilot models, specify **RE**.

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/4" - 3/8"	2.2 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	NC valve	NO valve
1/4" NPTF	Internal	55B-11-PI- XXYZZ	55B-21-PI- XXYZZ
3/8" NPTF	Internal	55B-12-PI- XXYZZ	55B-22-PI- XXYZZ
1/4" NPTF	External	55B-11-PE- XXYZZ	55B-21-PE- XXYZZ
3/8" NPTF	External	55B-12-PE- XXYZZ	55B-22-PE- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)			CA	Conduit 1/2" NPS

TECHNICAL DATA

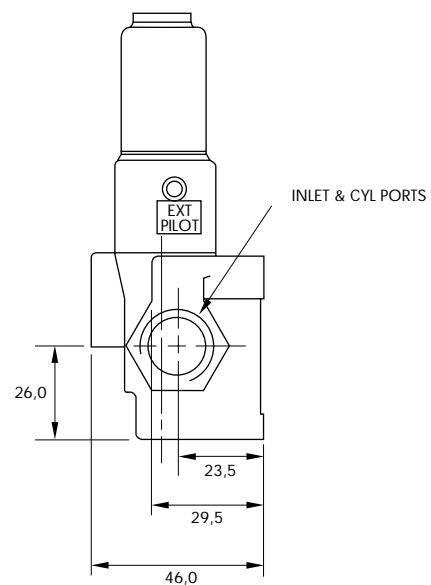
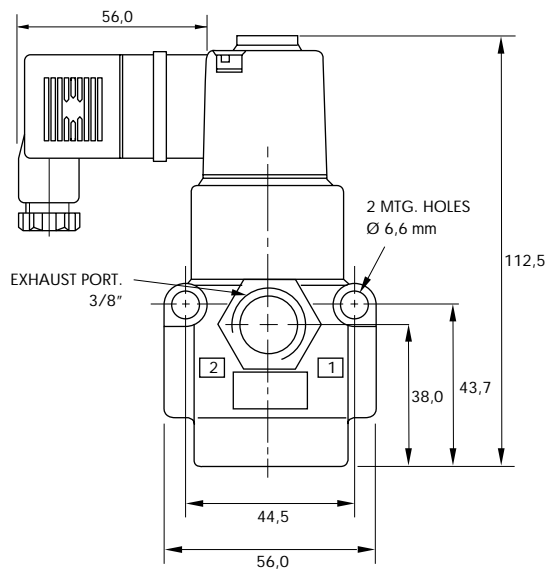
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 30 to 150 PSI External pilot : vacuum to 150 PSI		
Pilot pressure :	30 to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	Norm. Closed : 1/4" (1.4 C _v), 3/8" (1.6 C _v), Norm. Open : 1/4" (1.8 C _v), 3/8" (2.2 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17 W		
Response times :	24 VDC (8.5 W)	Energize : 9 ms	De-energize : 4.8 ms
	120/60	Energize : 5-11 ms	De-energize : 5-11 ms

Spare parts : • Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 • Pilot valve : PID-XYZZ, including mounting screws 35214 and seal 16363. • Check valve : 70061.

Options : • BSPP threads.

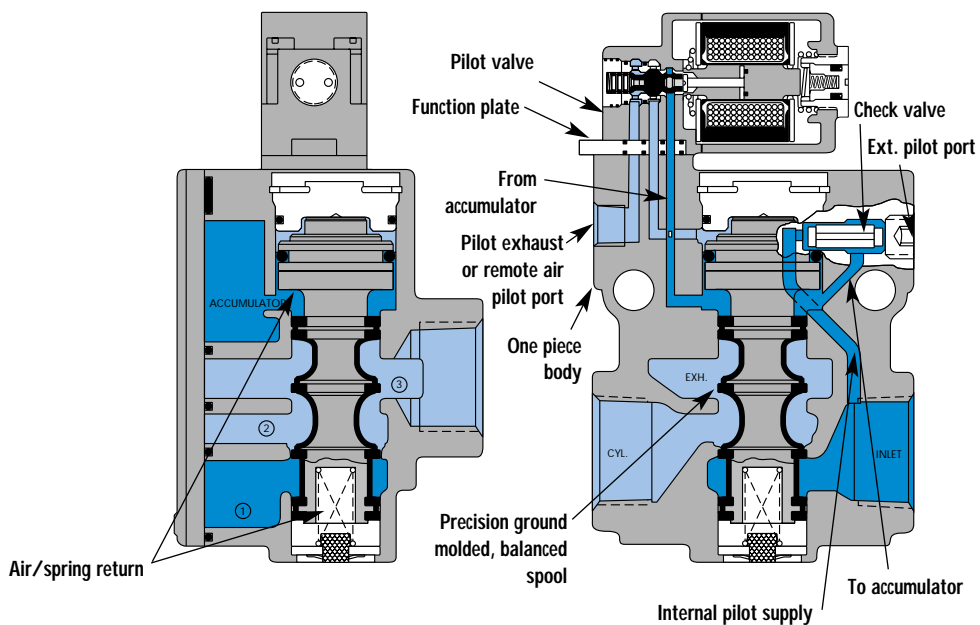
DIMENSIONS

Dimensions shown are metric (mm)



Individual mounting

inline



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Seven valve functions in one valve.
- Balanced spool unaffected by back pressure in the exhaust or by inlet restrictions.
May be plugged for 2-way operation.
- A large checked accumulator which supplies the pilot and air/spring return for consistent shifting.
- Use on lube or non-lube service.
- Various types of manual operators and solenoid enclosures.
- Optional low wattage DC solenoids down to 1 watt.

VALVE CONFIGURATIONS AVAILABLE

- 3-Way Normally Open or Normally Closed (solenoid or remote air).
- 2-Way (by plugging a port) Normally Open or Normally Closed (solenoid or remote air).
- Internal pilot or External pilot for vacuum to 25 PSI main valve pressures on solenoid or remote air models.
- Manual and mechanical operators available.

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

These remote air versions feature:

- A large checked accumulator for air/spring return.
- Balanced spool unaffected by back pressure in the exhaust or by inlet restrictions. May be plugged for 2-way operation.
- Use on lube or non-lube service.
- Optional remote air pilot, pilot operated models available when application requires a pilot signal below the main valve pressure.

APPLICATION CONVERSION PROCEDURE

The balanced spool design and the unique N.C. and N.O. pilot valve function plate on solenoid models facilitate using the same valve for 7 different functions.

The 7 functions are as follows:

- 3-way Normally Closed-All 3 main valve ports utilized and function plate placed with "3N.C." (3-way N.C.) visible.
- 3-way Normally Open-All 3 main valve ports utilized and function plate placed with "3N.O." (3-way N.O.) visible.

- 2-way Normally Closed-Same as 3-way N.C. but also plug port #3.
- 2-way Normally Open-Same as 3-way N.O. but also plug port #3.
- Selector-Pipe higher pressure to port #1 and lower pressure port #3.
- Internal Pilot-Utilized for main valve pressures of 25-150 PSI. Includes a check rod in the body and a 1/8" pipe plug installed in the External Pilot port.
- External Pilot-An External Pilot supply is required when main valve pressures are lower than 25 PSI. If converting from an Internal Pilot model, remove the 1/8" pipe plug and check rod from the External Pilot port and install a 1/16" pipe plug in the check rod hole and pipe an external supply greater than 25 PSI to the External Pilot port. For vacuum service, make the vacuum connection to the port #3 and leave port #1 open to atmosphere or pressure port #1 for vacuum/pressure selector applications.

N.C. -N.O. OPERATIONS:

SOLENOID MODELS:

With the pilot valve available either N.C. or N.O., simply by inverting the function plate, maximum flexibility is available in solenoid pilot operated models by using the N.C. main spool and installing the function plate for either N.C. or N.O. operation. Where an N.C. pilot function is desired with a N.O. main valve operation, a N.O. main spool option is available.

REMOTE AIR MODELS:

On remote air pilot operated models, N.C. and N.O. main spools are both available so that a N.C. pilot signal can always be used.

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	3/8" - 1/2" - 3/4"	5.7 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- Large spool area provides maximum shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	NO only valve	
		NC pilot - NC spool	NC pilot - NO spool
3/8" NPTF	Internal	56C-12- XXYZZ	56C-22- XXYZZ
1/2" NPTF		56C-13- XXYZZ	56C-23- XXYZZ
3/4" NPTF		56C-17- XXYZZ	56C-27- XXYZZ
3/8" NPTF	External	56C-32- XXYZZ	56C-42- XXYZZ
1/2" NPTF		56C-33- XXYZZ	56C-43- XXYZZ
3/4" NPTF		56C-37- XXYZZ	56C-47- XXYZZ

SOLENOID OPERATOR ▶

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)			CA	Conduit 1/2" NPS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 25 to 150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	25 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	Norm. Closed : 3/8" (4.4 C _v), 1/2" (5.0 C _v), 3/4" (5.4 C _v), Norm. Open : 3/8" (4.6 C _v), 1/2" (5.1 C _v), 3/4" (5.7 C _v)
Leak rate :	70 cm ³ /min
Coil :	General purpose class A, continuous duty, encapsulated
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17 W
Response times :	24 VDC (8.5 W) Energize : 11 ms De-energize : 10,8ms 120/60 Energize : 7-12 ms De-energize : 9-14 ms

Spare parts :

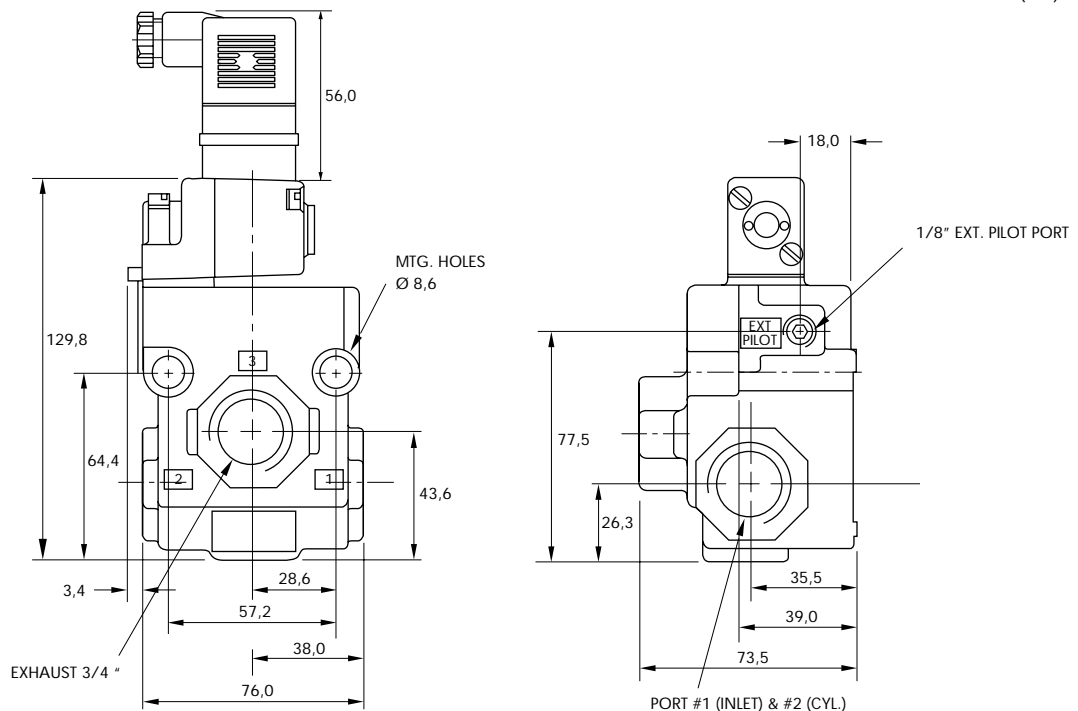
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 32184 and seal 16234.
- Pilot valve : 130B-XXYZZ, including function plate A2-7009. • Pilot mounting screws kit : N-56002.
- Check valve : 70063.

Options :

- BSPP threads.

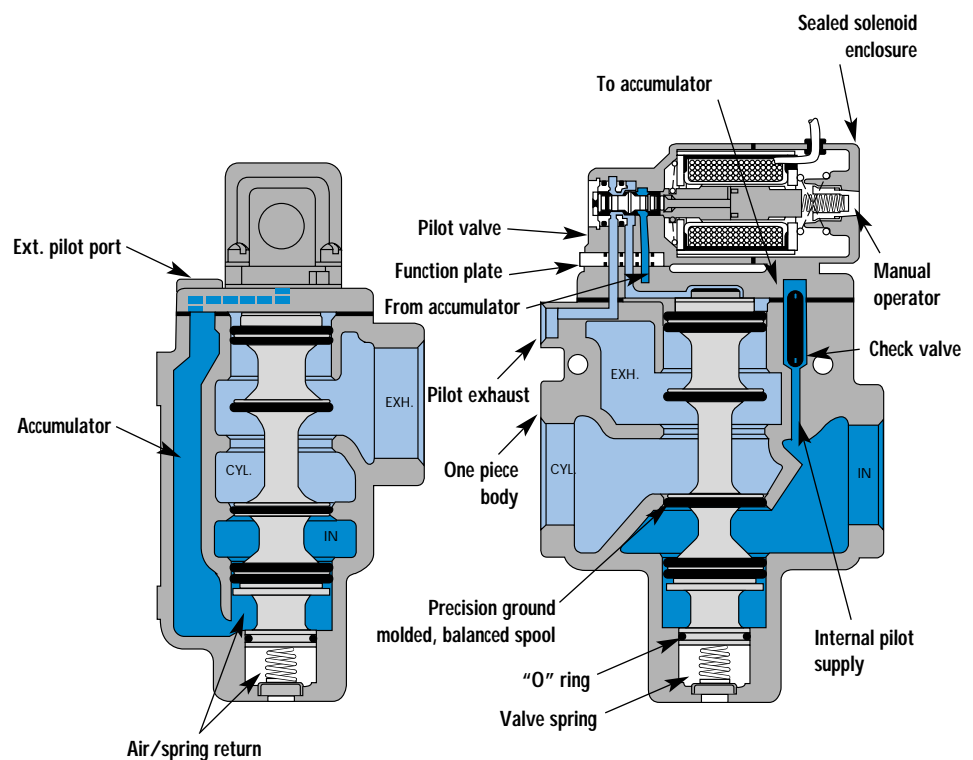
DIMENSIONS

Dimensions shown are metric (mm)



Individual mounting

inline



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Seven valve functions in one valve.
- Balanced spool unaffected by back pressure in the exhaust.
- A large checked accumulator which supplies the pilot and air/spring return for consistent shifting.
- A triple rated coil for 120/60, 110/50 or 24 VDC (6 Watt).
- Use on lube or non-lube service.
- Various types of manual operators and solenoid enclosures.
- Optional low wattage DC coils down to 1 watt.
- Optional explosion proof models designed to meet UL & CSA standards for Class I, Groups B, C, D and Class II, Groups E, F and G. (NEMA equivalent of Class I is NEMA 7; Class II is NEMA 9).



Series 57

100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

VALVE CONFIGURATIONS AVAILABLE

- 3-Way Normally Open or Normally Closed (solenoid or remote air).
- 2-Way (by plugging Exhaust port), Normally Open or Normally Closed (solenoid or remote air).
- Internal pilot or External pilot for vacuum to 25 PSI main valve pressures on solenoid models.
- Manual and mechanical operators available.

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

The remote air versions feature:

- A large checked accumulator for air/spring return.
- Balanced spool unaffected by back pressure in the exhaust and may be plugged for 2-way operation.
- Use on lube or non-lube service.

APPLICATION CONVERSION PROCEDURE

The balanced spool design and the unique N.C. and N.O. pilot valve function plate on solenoid models facilitate using the same valve for 7 different functions.

The 7 functions are as follows:

- 3-way Normally Closed-All 3 main valve ports utilized and function plate placed with "3-C" (3-way N.C.) visible.
- 3-way Normally Open-All 3 main valve ports utilized and function plate placed with "3-O" (3-way N.O.) visible.

- 2-way Normally Closed-Same as 3-way N.C. but also plug the Exhaust port.
- 2-way Normally Open-Same as 3-way N.O. but also plug the Exhaust port.
- Selector-Pipe higher pressure to the Inlet port and lower pressure to the Exhaust port.
- Internal Pilot-Utilized for main valve pressures of 25-150 PSI. Includes a check rod in the body and a 1/4" pipe plug installed in the External Pilot port.
- External Pilot-An External Pilot supply is required when main valve pressures are lower than 25 PSI. If converting from an Internal Pilot model, remove the 1/4" pipe plug and check rod from the External Pilot port and install a 1/8" pipe plug in the check rod hole and pipe an external supply greater than 25 PSI to the External Pilot port. For vacuum service, make the vacuum connection to the Exhaust port and leave the Inlet port open to atmosphere.

N.C. -N.O. OPERATIONS:

SOLENOID MODELS:

With the pilot valve available either N.C. or N.O., simply by inverting the function plate, maximum flexibility is available in solenoid pilot operated models by using the N.C. main spool and installing the function plate for either N.C. or N.O. operation. Where an N.C. pilot function is desired with a N.O. main valve operation, a N.O. main spool option is available.

REMOTE AIR MODELS:

On remote air pilot operated models, N.C. and N.O. main spools are both available so that a N.C. pilot signal can always be used.

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/2" - 3/4" - 1"	17.4 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- Large spool area provides maximum shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	NO only valve	
		NC pilot - NC spool	NC pilot - NO spool
1/2" NPTF	Internal	57C-11- XXYZZ	57C-21- XXYZZ
3/4" NPTF		57C-12- XXYZZ	57C-22- XXYZZ
1" NPTF		57C-13- XXYZZ	57C-23- XXYZZ
1/2" NPTF	External	57C-31- XXYZZ	57C-41- XXYZZ
3/4" NPTF		57C-32- XXYZZ	57C-42- XXYZZ
1" NPTF		57C-33- XXYZZ	57C-43- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	0	No operator	JA	Square connector
12	240/60, 220/50	1	Non-locking	JC	Square connector with light
22	24/60, 24/50	2	Locking	BA	Flying leads (18")
52	24 VDC (2.5 W)			CA	Conduit 1/2" NPS
78	24 VDC (24.0 W)			EA	Hazardous location
61	24 VDC (8.5 W)				

Note : Hazardous location option supplied with no manual operator ("0"). DC voltage not available below 6 Watts.

TECHNICAL DATA

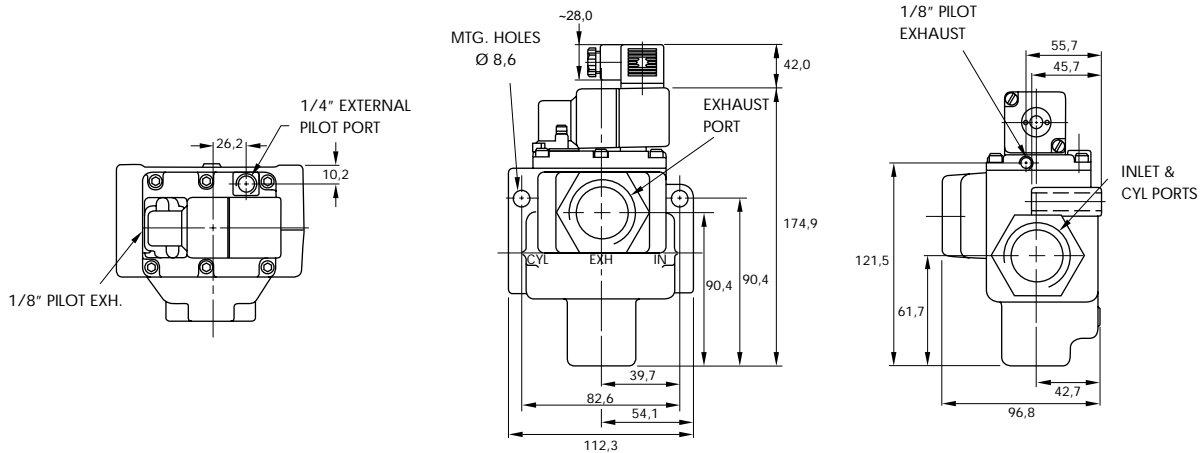
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 25 to 150 PSI External pilot : vacuum to 150 PSI		
Pilot pressure :	25 to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	Norm. Closed : 1/2" (9.0 C _v), 3/4" (12.7 C _v), 1" (15.9 C _v), Norm. Open : 1/2" (10.0 C _v), 3/4" (13.7 C _v), 1" (17.4 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA Holding : 19.7 VA = 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 23 ms	De-energize : 13ms
	120/60	Energize : 9-16 ms	De-energize : 11-22 ms

Spare parts : • Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
 • Pilot valve : 250B-XXYZZ, including mounting screws 32203 and function plate A2-7005. • Check valve : 70019.

Options : • BSPP threads.

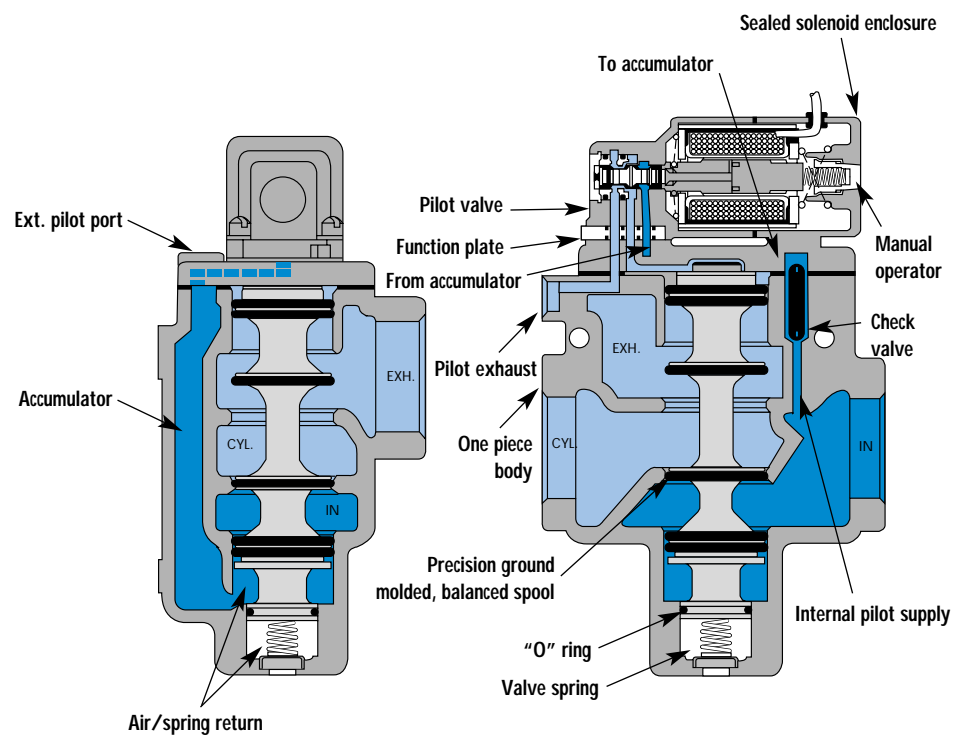
DIMENSIONS

Dimensions shown are metric (mm)



Individual mounting

inline



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Seven valve functions in one valve.
- Balanced spool unaffected by back pressure in the exhaust.
- A large checked accumulator which supplies the pilot and air/spring return for consistent shifting.
- A triple rated coil for 120/60, 110/50 or 24 VDC (6 Watt).
- Use on lube or non-lube service.
- Various types of manual operators and solenoid enclosures.
- Optional low wattage DC coils down to 1 watt.
- Optional explosion proof models designed to meet UL & CSA standards for Class I, Groups B, C, D and Class II, Groups E, F and G. (NEMA equivalent of Class I is NEMA 7; Class II is NEMA 9).

VALVE CONFIGURATIONS AVAILABLE

- 3-Way Normally Open or Normally Closed (solenoid or remote air).
- 2-Way (by plugging Exhaust port), Normally Open & Normally Closed (solenoid or remote air).
- Internal pilot or External pilot for vacuum to 25 PSI main valve pressures on solenoid models.

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

The remote air versions feature:

- A large checked accumulator for air/spring return.
- Balanced spool unaffected by back pressure in the exhaust and may be plugged for 2-way operation.
- Use on lube or non-lube service.

APPLICATION CONVERSION PROCEDURE

The balanced spool design and the unique N.C. and N.O. pilot valve function plate on solenoid models facilitate using the same valve for 7 different functions.

The 7 functions are as follows:

- 3-way Normally Closed-All 3 main valve ports utilized and function plate placed with "3-C" (3-way N.C.) visible.
- 3-way Normally Open-All 3 main valve ports utilized and function plate placed with "3-O" (3-way N.O.) visible.
- 2-way Normally Closed-Same as 3-way N.C. but also plug the Exhaust port.

- 2-way Normally Open-Same as 3-way N.O. but also plug the Exhaust port.
- Selector-Pipe higher pressure to the Inlet port and lower pressure to the Exhaust port.
- Internal Pilot-Utilized for main valve pressures of 25-150 PSI. Includes a check rod in the body and a 1/4" pipe plug installed in the External Pilot port.
- External Pilot-An External Pilot supply is required when main valve pressures are lower than 25 PSI. If converting from an Internal Pilot model, remove the 1/4" pipe plug and check rod from the External Pilot port and install a 1/8" pipe plug in the check rod hole and pipe an external supply greater than 25 PSI to the External Pilot port. For vacuum service, make the vacuum connection to the Exhaust port and leave the Inlet port open to atmosphere.

N.C. -N.O. OPERATIONS:

SOLENOID MODELS:

With the pilot valve available either N.C. or N.O., simply by inverting the function plate, maximum flexibility is available in solenoid pilot operated models by using the N.C. main spool and installing the function plate for either N.C. or N.O. operation. Where an N.C. pilot function is desired with a N.O. main valve operation, a N.O. main spool option is available.

REMOTE AIR MODELS:

On remote air pilot operated models, N.C. and N.O. main spools are both available so that a N.C. pilot signal can always be used.

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1" - 1 1/4" - 1 1/2"	26.0 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- Large spool area provides maximum shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	NO only valve	
		NC pilot - NC spool	NC pilot - NO spool
1" NPTF	Internal	58C-11- XXYZZ	58C-21- XXYZZ
1 1/4" NPTF		58C-12- XXYZZ	58C-22- XXYZZ
1 1/2" NPTF		58C-13- XXYZZ	58C-23- XXYZZ
1" NPTF	External	58C-31- XXYZZ	58C-41- XXYZZ
1 1/4" NPTF		58C-32- XXYZZ	58C-42- XXYZZ
1 1/2" NPTF		58C-33- XXYZZ	58C-43- XXYZZ

SOLENOID OPERATOR ▶

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	0	No operator	JA	Square connector
12	240/60, 220/50	1	Non-locking	JC	Square connector with light
22	24/60, 24/50	2	Locking	BA	Flying leads (18")
52	24 VDC (2.5 W)			CA	Conduit 1/2" NPS
78	24 VDC (24.0 W)			EA	Hazardous location
61	24 VDC (8.5 W)				

Note : Hazardous location option supplied with no manual operator ("0"). DC voltage not available below 6 Watts.

TECHNICAL DATA

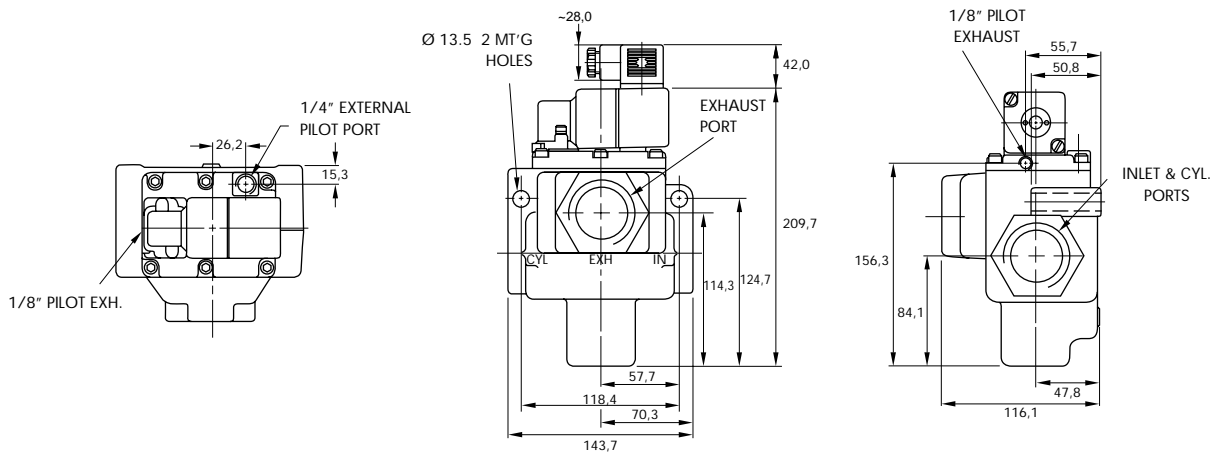
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 25 to 150 PSI External pilot : vacuum to 150 PSI		
Pilot pressure :	25 to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	Norm. Closed : 1" (18.7 C _v), 1 1/4" (23.0 C _v), 1 1/2" (24.9 C _v), Norm. Open : 1" (20.8C _v), 1 1/4" (23.8 C _v), 1 1/2" (26.0 C _v)		
Leak rate :	125 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA Holding : 19.7 VA = 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 25 ms	De-energize : 18ms
	120/60	Energize : 10-17 ms	De-energize : 17-22 ms

Spare parts : • Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
 • Pilot valve : 250B-XXYZZ, including mounting screws 32203 and function plate A2-7005. • Check valve : 70019.

Options : • BSPP threads.

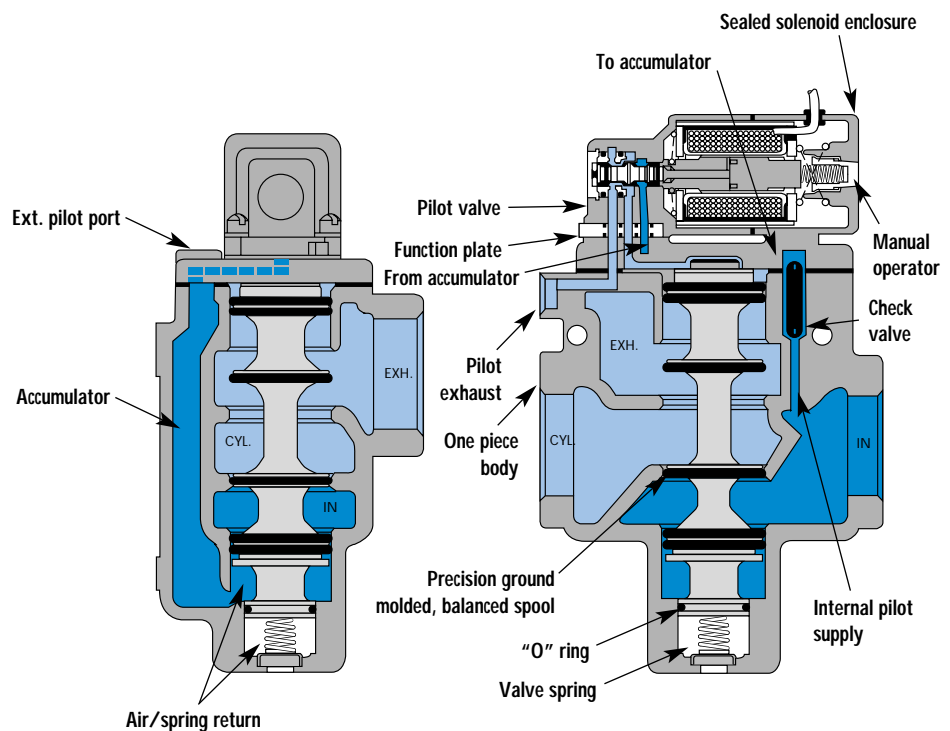
DIMENSIONS

Dimensions shown are metric (mm)



Individual mounting

inline



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Seven valve functions in one valve.
- Balanced spool unaffected by back pressure in the exhaust.
- A large checked accumulator which supplies the pilot and air/spring return for consistent shifting.
- A triple rated coil for 120/60, 110/50 or 24 VDC (6 Watt).
- Use on lube or non-lube service.
- Various types of manual operators and solenoid enclosures.
- Optional low wattage DC coils down to 1 watt.
- Optional explosion proof models designed to meet UL & CSA standards for Class I, Groups B, C, D and Class II, Groups E, F and G. (NEMA equivalent of Class I is NEMA 7; Class II is NEMA 9).

VALVE CONFIGURATIONS AVAILABLE

- 3-Way Normally Open (solenoid) or Normally Closed (solenoid or remote air).
- 2-Way (by plugging Exhaust port), Normally Open (solenoid) & Normally Closed (solenoid or remote air).
- Internal pilot or External pilot for vacuum to 25 PSI main valve pressures on solenoid models.

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

The remote air versions feature:

- A large checked accumulator for air/spring return.
- Balanced spool unaffected by back pressure in the exhaust and may be plugged for 2-way operation.
- Use on lube or non-lube service.

APPLICATION CONVERSION PROCEDURE

The balanced spool design and the unique N.C. and N.O. pilot valve function plate on solenoid models facilitate using the same valve for 7 different functions.

The 7 functions are as follows:

- 3-way Normally Closed-All 3 main valve ports utilized and function plate placed with "3-C" (3-way N.C.) visible.
- 3-way Normally Open-All 3 main valve ports utilized and function plate placed with "3-O" (3-way N.O.) visible.

- 2-way Normally Closed-Same as 3-way N.C. but also plug the Exhaust port.
- 2-way Normally Open-Same as 3-way N.O. but also plug the Exhaust port.
- Selector-Pipe higher pressure to the Inlet port and lower pressure to the Exhaust port.
- Internal Pilot-Utilized for main valve pressures of 25-150 PSI. Includes a check rod in the body and a 1/8" pipe plug installed in the External Pilot port.
- External Pilot-An External Pilot supply is required when main valve pressures are lower than 25 PSI. If converting from an Internal Pilot model, remove the 1/8" pipe plug from the External Pilot and remove adapter plate. Remove check rod from the body and install an 1/8" pipe plug in the check rod hole and pipe an external supply greater than 25 PSI to the External Pilot port. For vacuum service, make the vacuum connection to the Exhaust port and leave the Inlet port open to atmosphere.

N.C. -N.O. OPERATIONS:

SOLENOID MODELS:

With the pilot valve available either N.C. or N.O., simply by inverting the function plate, and using the N.C. main spool, N.C or NO main valve functions are achieved.

REMOTE AIR MODELS:

On remote air pilot operated models, N.O. pilot signal must be used for a N.C. main valve function.

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	2" - 2 1/2"	60.0 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- Large spool area provides maximum shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	NC only valve NC pilot - NC spool	NO only valve NO pilot - NC spool
2" NPTF	Internal	59B-12- XXYZZ	59B-22- XXYZZ
2 1/2" NPTF	Internal	59B-13- XXYZZ	59B-23- XXYZZ
2" NPTF	External	59B-32- XXYZZ	59B-42- XXYZZ
2 1/2" NPTF	External	59B-33- XXYZZ	59B-43- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50, 24 VDC (6.0 W)	0	No operator	JA	Square connector
12	240/60, 220/50	1	Non-locking	JC	Square connector with light
22	24/60, 24/50	2	Locking	BA	Flying leads (18")
52	24 VDC (2.5 W)			CA	Conduit 1/2" NPS
78	24 VDC (24.0 W)			EA	Hazardous location
61	24 VDC (8.5 W)				

Note : Hazardous location option supplied with no manual operator ("0"). DC voltage not available below 6 Watts.

TECHNICAL DATA

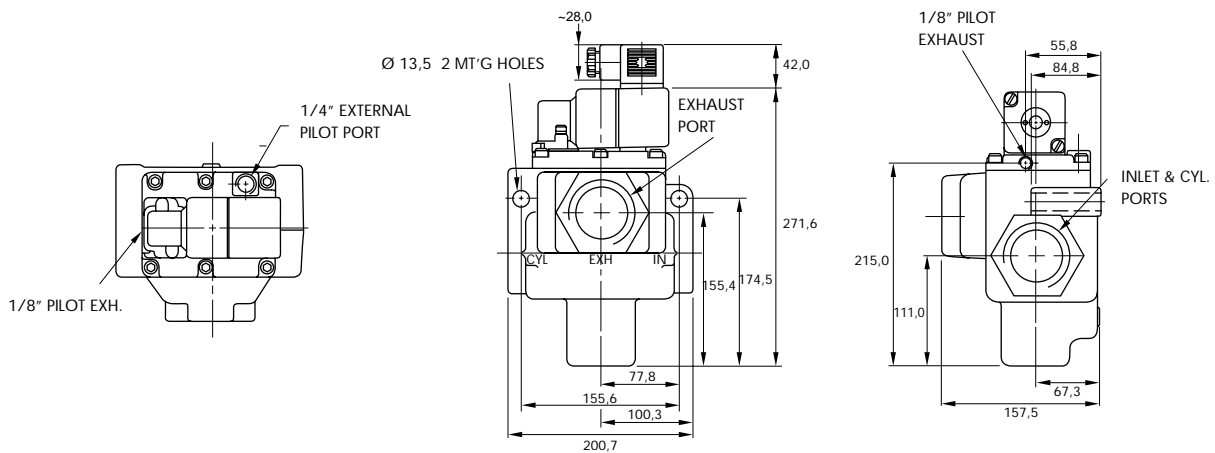
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 25 to 150 PSI External pilot : vacuum to 150 PSI		
Pilot pressure :	25 to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	2" (55.0 C _v), 2 1/2" C _v (60.0 C _v)		
Leak rate :	150 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 33 VA Holding : 19.7 VA = 1 to 24 W		
Response times :	24 VDC (8.5 W)	Energize : 38 ms	De-energize : 25ms
	120/60	Energize : 35-45 ms	De-energize : 25-34 ms

Spare parts : • Solenoid operator (power ≥ 6 W) : D4-XXAAB, cover mounting screws 32222 and seal B5-6001.
 • Pilot valve : 250B-XXYZZ, including mounting screws 32203 and function plate A2-7005. • Check valve : 70019.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)

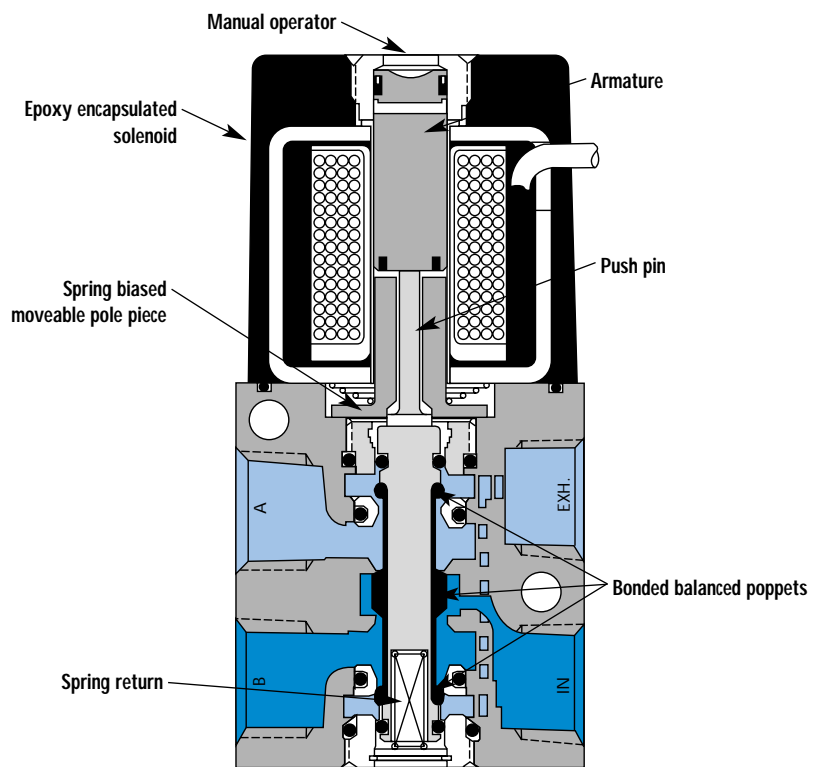


Individual mounting

inline	sub-base non"plug-in"
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Manifold mounting

stacking	sub-base non"plug-in"	sub-base with pressure regulators	sub-base with pressure regulators and flow controls
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SERIES FEATURES

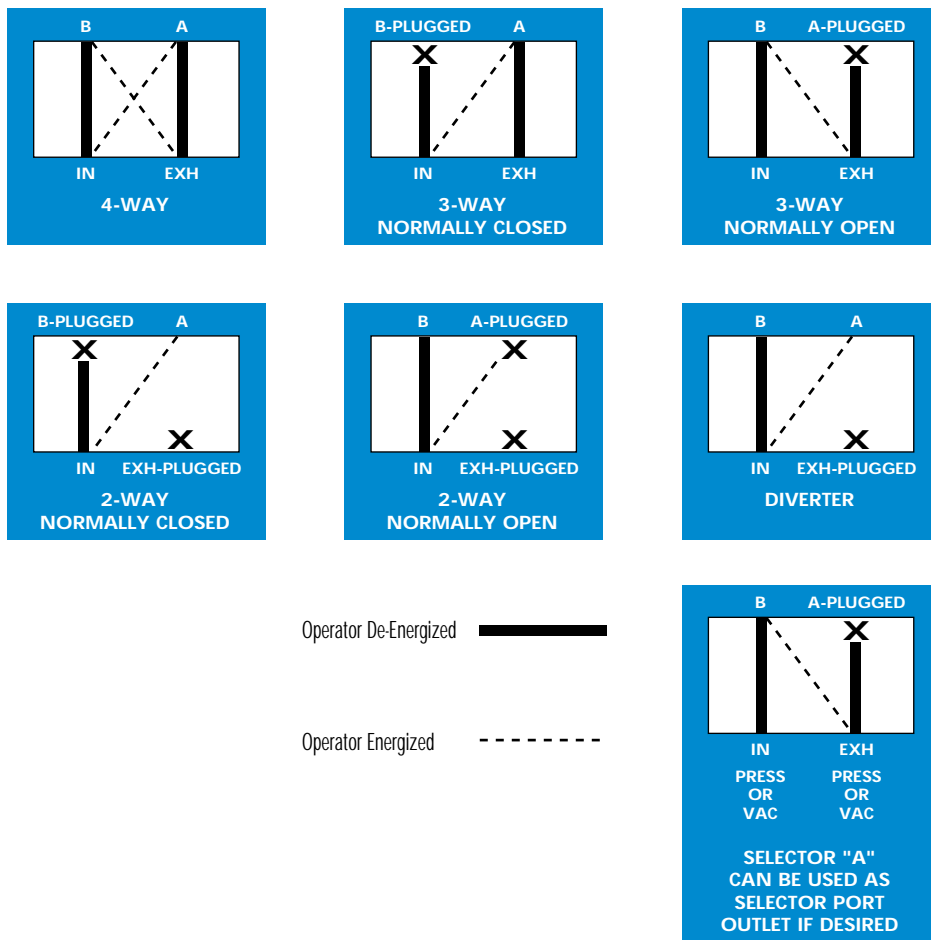
- Single and double solenoid or remote air.
- The patented MACSOLENOID® for fastest possible response times.
- Bonded balanced poppets for high flow, precise repeatability, and consistent operation.
- Balanced poppet design permits versatility in pipping. Valves can be piped as 4-way, 3-way or 2-way, normally closed or normally open or can be used for vacuum, diverter or selector applications.
- Use on lube or non-lube service.
- Extremely high cycle rates.
- Extremely long service life due to unique poppet cushions.
- Manual overrides as standard.
- Various solenoid enclosures and plug-in connectors
- Optional surge suppression available.
- Low wattage DC solenoids — down to 1.8 watts.
- Patented MACSOLENOID® — virtually burn-out proof on AC service.

VALVE CONFIGURATIONS AVAILABLE

- 2-position single and double solenoid or remote air.
- Single pressure (4 or 5 ports)
- Individual, stacking and manifold base mounted models.
- Integral individual exhaust flow controls with common exhaust port.
- Integral regulators and flow controls on manifolds.

SPECIAL APPLICATIONS :

The balanced poppet design facilitates using the same valve for many functions and can be used for pressure, vacuum or plugged without the necessity of changing any parts. Piping suggestions are shown in the chart below.



Function	Port size	Flow (Max)	Individual mounting
4/2	#10-32 - 1/8"	0.15 C _v	inline

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Single operator	Double operator (Minimum DC wattage 5.4W)
1/8" NPTF	45A-AA1-Dxxx-xxx	45A-GA1-Dxxx-xxx
# 10-32 UNF	45A-AB1-Dxxx-xxx	45A-GB1-Dxxx-xxx

WITH INTEGRATED FLOW CONTROLS

Port size	Single operator	Double operator (Minimum DC wattage 5.4W)
1/8" NPTF	45A-AA2-Dxxx-xxx	45A-GA2-Dxxx-xxx
# 10-32 UNF	45A-AB2-Dxxx-xxx	45A-GB2-Dxxx-xxx

SOLENOID OPERATOR ►

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					JB	Rectangular connector
FB	24 VDC (1.8 W)					JD	Rectangular connector with light
DA	24 VDC (5.4 W)					BA	Flying leads
DF	24 VDC (12.7 W)						

BOTTOM PORT OPTIONS (O'RING MOUNT)

45A-XXX-D xxx-xxx

- D-Sgl. oper. - All ports
- F-Sgl. oper. - "A" & "B" ports
- H-DbL. oper. - All ports
- J-DbL. oper. - "A" & "B" ports

TECHNICAL DATA

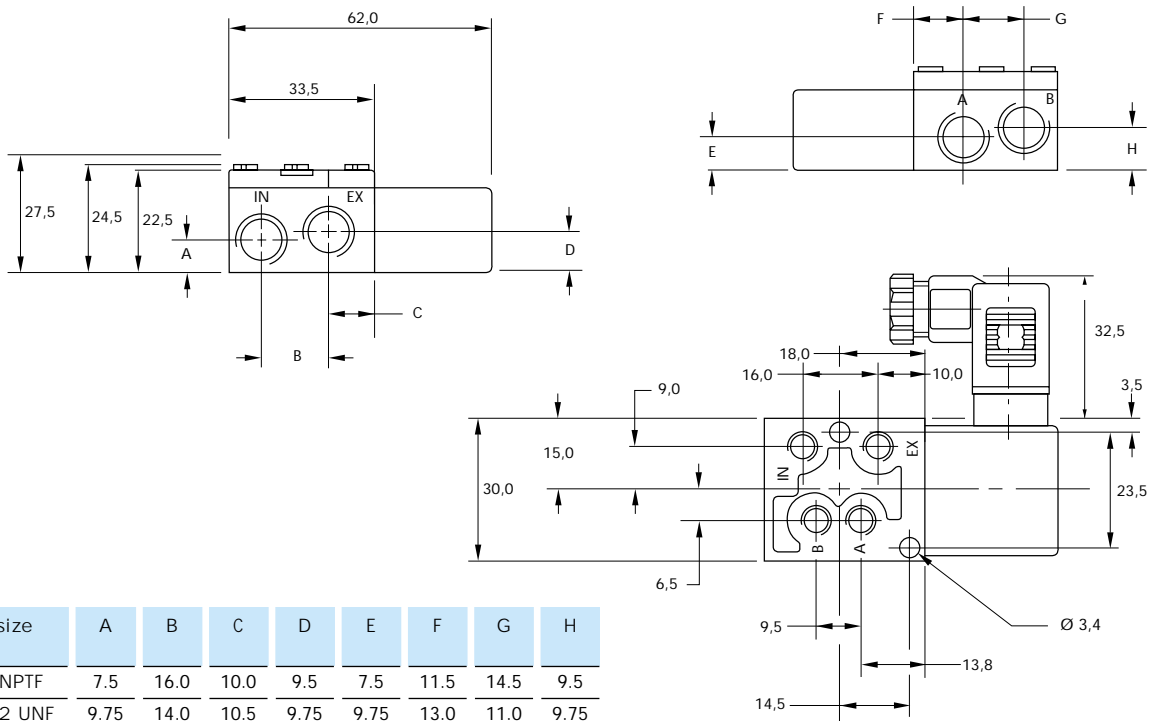
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : (0.1 C _v), 5.4 W : (0.15 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts : • Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
 • Seal (between solenoid and valve body) : 16402. • Valve cover plate with flow controls : N-45002.

Options : • BSPP threads. • High flow up to 0.23 C_v, according to wattage and high flow Mod. • NAMUR interface - 45A-FA1DXXX-XXX and required NAMUR adapter kit: N-45028-03 (for 3-way operation) - N-45028-04 (for 4-way operation).

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Individual mounting
4/2	#10-32 - 1/8"	0.13 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Single operator	Double operator (Minimum DC wattage 5,4W)
Valve less base	45A-L00-Dxxx-xxx	45A-N00-Dxxx-xxx
1/8" NPTF base	45A-LAA-Dxxx-xxx	45A-NAA-Dxxx-xxx
#10-32 UNF base	45A-LBA-Dxxx-xxx	45A-NBA-Dxxx-xxx

WITH INTEGRATED FLOW CONTROLS

Port size	Single operator	Double operator (Minimum DC wattage 5,4W)
Valve less base	45A-L00-Dxxx-xxx	45A-N00-Dxxx-xxx
1/8" NPTF base	45A-LAB-Dxxx-xxx	45A-NAB-Dxxx-xxx
#10-32 UNF base	45A-LBB-Dxxx-xxx	45A-NBB-Dxxx-xxx

SOLENOID OPERATOR ►

D **XX X- X XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

OPTIONS

45A-LAA-D xxx-xxx
 └─ Substitute "J" for 1/8" bottom cylinder ports

TECHNICAL DATA

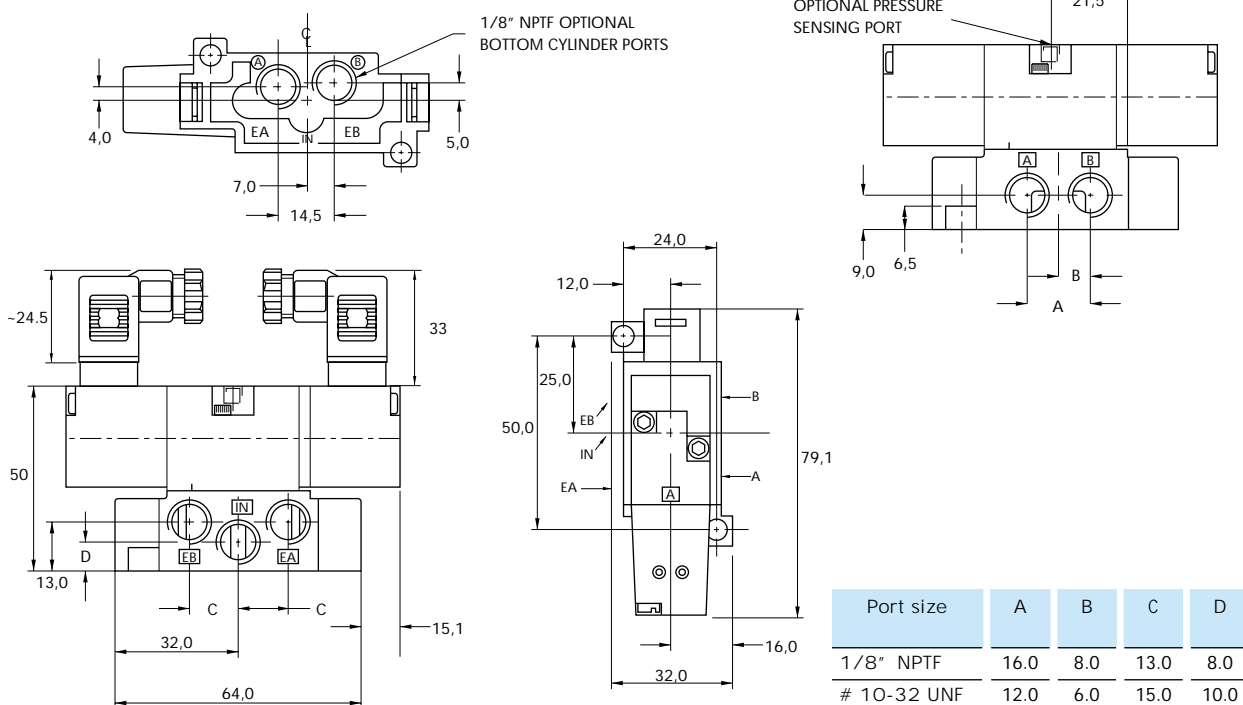
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : (0.11 C _v), 5.4 W : (0.13 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts : • Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
 • Seal (between solenoid and valve body) : 16402. • Seal between base and valve : 16453. • Flow control : N-45018.

Options : • BSPP threads. • High flow up to 0.20 C_v, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

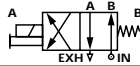

Function	Port size	Flow (Max)	Manifold mounting
4/2	# 10-32 - 1/8"	0.20 C _v	stacking

OPERATIONAL BENEFITS

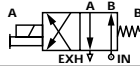

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Single operator	Double operator (Minimum DC wattage 5.4W)
1/8" NPTF	 45A-SA1-Dxxx-xxx	 45A-TA1-Dxxx-xxx
# 10-32 UNF	45A-SB1-Dxxx-xxx	45A-TB1-Dxxx-xxx

WITH INTEGRATED FLOW CONTROLS

Port size	Single operator	Double operator
1/8" NPTF	 45A-SA2-Dxxx-xxx	 45A-TA2-Dxxx-xxx
# 10-32 UNF	45A-SB2-Dxxx-xxx	45A-TB2-Dxxx-xxx

SOLENOID OPERATOR ▶

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size 1/4" NPTF) : M-45001-01.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : (0.14 C _v), 5.4 W : (0.2 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

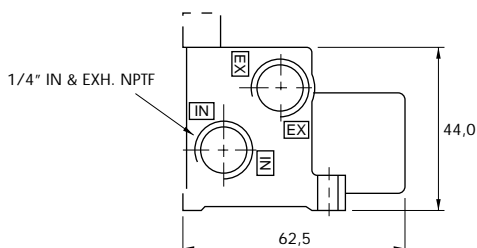
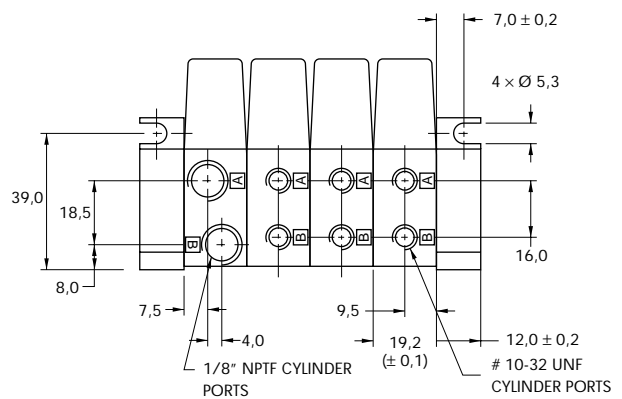
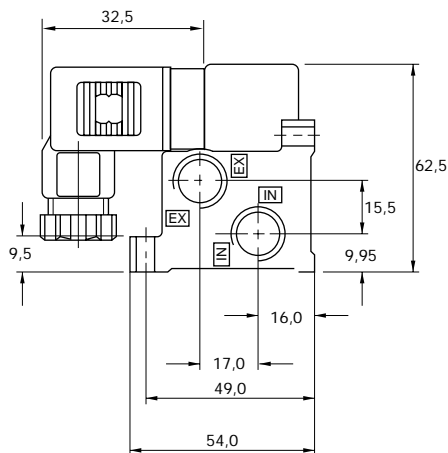
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Seal between valves : 16422. • Tie-rod (x2) : 19813.
- Valve cover plate with flow controls : N-45004.
- Inlet & exhaust isolator : N-45005. Inlet isolator : N-45006. Exhaust isolator : N-45007

Options :

- BSPP threads. • High flow up to 0.3 C_v, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Manifold mounting
4/2	# 10-32 - 1/8"	0.11 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Single operator	Double operator (Minimum DC wattage 5.4W)
Valve less base	45A-L00-Dxxx-xxx	45A-N00-Dxxx-xxx
1/8" NPTF base	45A-LAC-Dxxx-xxx	45A-NAC-Dxxx-xxx
# 10-32 UNF base	45A-LBC-Dxxx-xxx	45A-NBC-Dxxx-xxx

WITH INTEGRATED FLOW REGULATORS

Port size	Single operator	Double operator (Minimum DC wattage 5.4W)
Valve less base	45A-L00-Dxxx-xxx	45A-N00-Dxxx-xxx
1/8" NPTF base	45A-LAD-Dxxx-xxx	45A-NAD-Dxxx-xxx
# 10-32 UNF base	45A-LBD-Dxxx-xxx	45A-NBD-Dxxx-xxx

SOLENOID OPERATOR ►

D **XX X- X XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size 1/4" NPTF) : M-45008-01

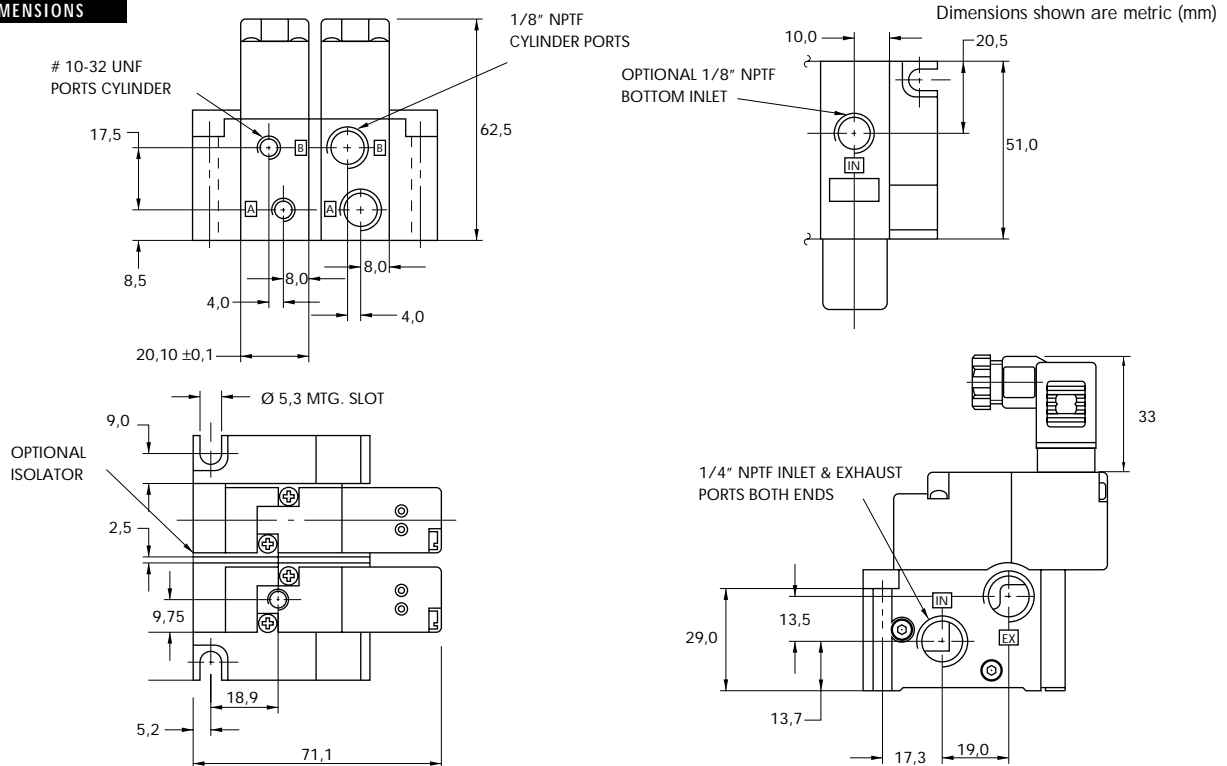
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : (0.09 C _v), 5.4 W : (0.11 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

- Spare parts :
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
 - Seal (between solenoid and valve body) : 16402. • Seal between base and valve : 16453. • Seal between bases : 16455.
 - Tie-rod (x2) : 19753. • Side cover plate with flow controls : N-45016.
 - Inlet & exhaust isolator : N-45008. • Inlet isolator : N-45009. • Exhaust isolator : N-45010.

- Options :
- BSPP threads. • High flow up to 0.18 C_v, according to wattage and high flow Mod. • Bottom inlet : specify Mod. 0210.

DIMENSIONS



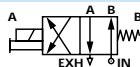

Function	Port size	Flow (Max)	Manifold mounting
4/2	# 10-32 - 1/8"	0.11 C _v	sub-base with pressure regulators

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Single operator	Double operator (Minimum DC wattage 5,4W)
		
Valve less base	45A-L00-Dxxx-xxx	45A-N00-Dxxx-xxx
1/8" NPTF base	45A-LAJ-Dxxx-xxx	45A-NAJ-Dxxx-xxx
# 10-32 UNF base	45A-LBJ-Dxxx-xxx	45A-NBJ-Dxxx-xxx

SOLENOID OPERATOR ▶

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size 1/4" NPTF) : M-45008-01.
 Options (with gauge port) : Single operator : replace L by M.
 Double operator : replace N by P.

REGULATOR OPTIONS

45A-XXJ-D xxx-xxx ("J" is for Adj. knob)
 — Replace with "E" for slotted stem
 — Replace with "G" for locking slotted stem

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : (0.09 C _v), 5.4 W : (0.11 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

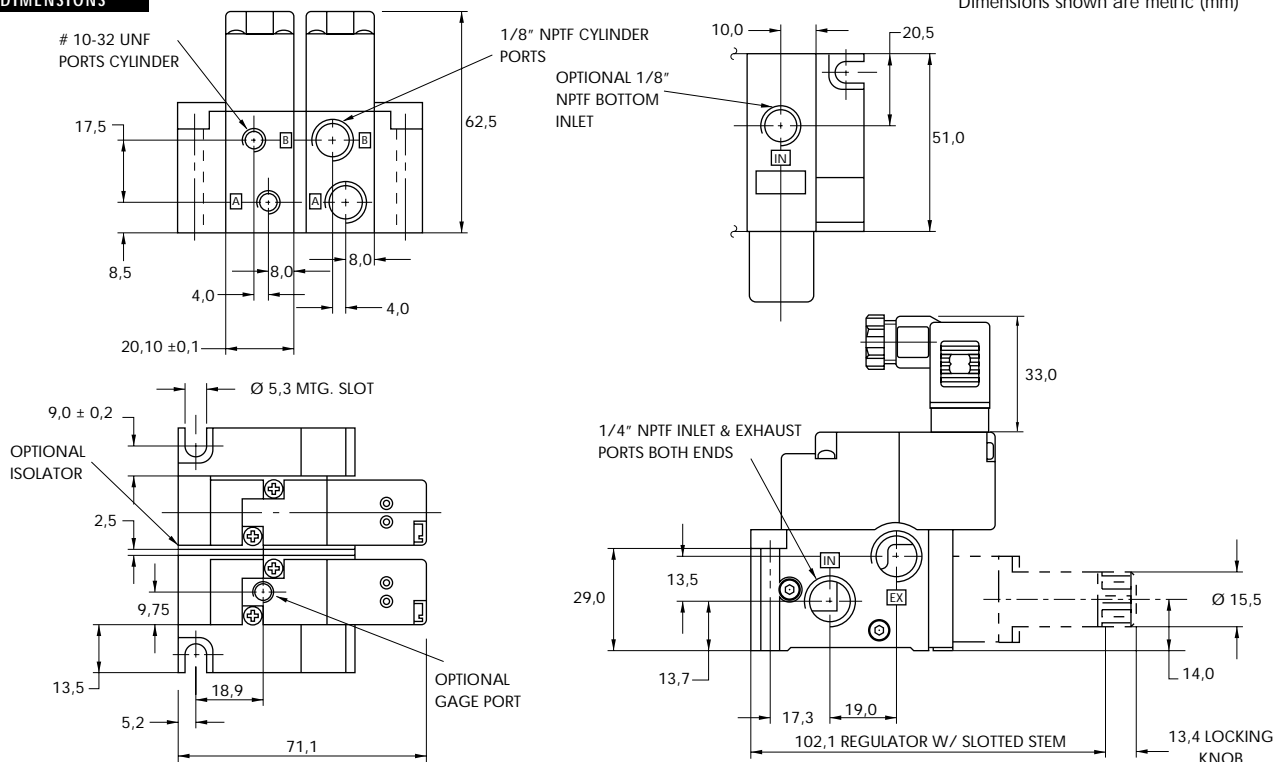
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Seal between base and valve : 16453. • Seal between bases : 16455.
- Tie-rod (x2) : 19753. • Pressure regulator : 45A-00R (Adj. Knob), 45A-00L (Slotted Stem), 45A-00M (Locking Slotted Stem).
- Inlet & exhaust isolator : N-45008. • Inlet isolator : N-45009. • Exhaust isolator : N-45010.

Options :

- BSPP threads. • High flow up to 0.18 C_v, according to wattage and high flow mod. • Bottom inlet : specify Mod. 0210.

DIMENSIONS

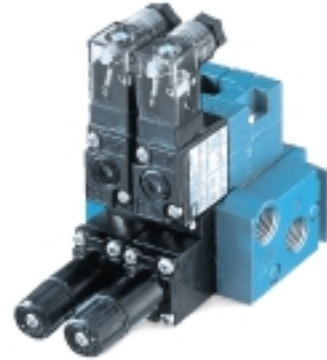
Dimensions shown are metric (mm)



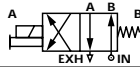

Function	Port size	Flow (Max)	Manifold mounting
4/2	# 10-32 - 1/8"	0.11 C _v	sub-base with pressure regulators and flow controls

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



HOW TO ORDER

Port size	Single operator	Double operator (Minimum DC wattage 5,4W)
		
Valve less base	45A-L00-Dxxx-xxx	45A-N00-Dxxx-xxx
1/8" NPTF base	45A-LAK-Dxxx-xxx	45A-NAK-Dxxx-xxx
# 10-32 UNF base	45A-LBK-Dxxx-xxx	45A-NBK-Dxxx-xxx

SOLENOID OPERATOR ►

D **XX** X- X **XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24 VDC (1.8 W)						
DA	24 VDC (5.4 W)						
DF	24 VDC (12.7 W)						

End plate kit required (Port size 1/4" NPTF) : M-45008-01.
 Options (with gauge port) : Single operator : replace L by M
 Double operator : replace N by P.

REGULATOR AND F.C. OPTIONS

45A-XXK-D xxx-xxx ("K" option is for Adj. knob and F.C.)
 — Replace with "F" for slotted stem and F.C.
 — Replace with "H" for locking slotted stem and F.C.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : (0.09 C _v), 5.4 W : (0.11 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

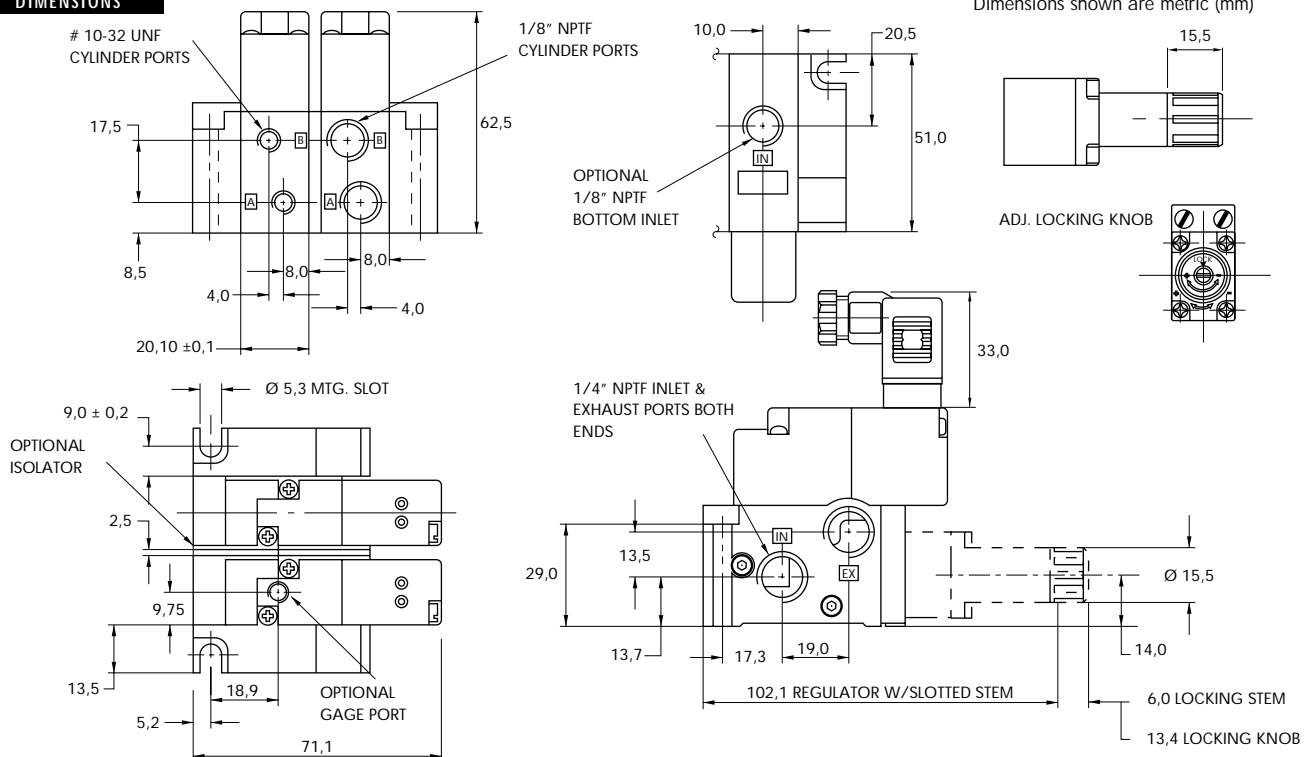
Spare parts :

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Seal between base and valve : 16453. • Seal between bases : 16455.
- Tie-rod (x2) : 19753. • Pressure regulator with flow controls : 45A-00N (Slotted Stem), 45A-00P (Locking Slotted Stem), 45A-00S (Adj. Knob). • Inlet & exhaust isolator : N-45008. • Inlet isolator : N-45009. • Exhaust isolator : N-45010.

Options :

- BSPP threads. • High flow up to 0.18 C_v, according to wattage and high flow Mod. • Bottom inlet : specify Mod. 0210.

DIMENSIONS

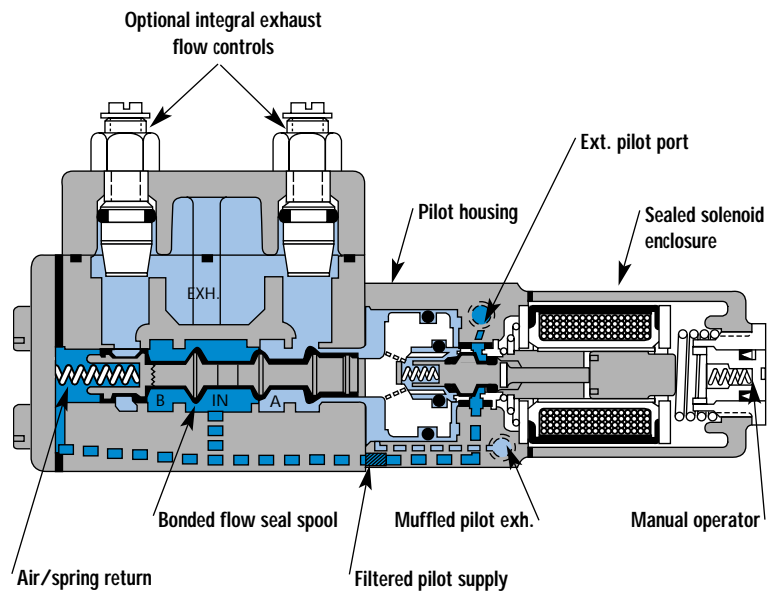


Individual mounting

inline

Manifold mounting

stacking



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Air/spring return for consistent shifting on single solenoid internal pilot valves.
- Use on lube or non-lube service.
- Optional integral adjustable exhaust flow controls with a single common exhaust port.
- Optional low wattage DC solenoids down to 1 watt.
- Various types of manual operators and solenoid enclosures.

The logo for MAC valves, featuring the letters "MAC" in a bold, white, sans-serif font on a blue rectangular background. A small registered trademark symbol (®) is located at the top left of the blue box.

Series 700

A graphic consisting of three stacked rectangular boxes. The top box contains "100%", the middle box contains "OF PRODUCTION TESTED", and the bottom box contains "100%".A graphic consisting of three stacked rectangular boxes. The top box contains "WARRANTY", the middle box contains a large "18", and the bottom box contains "MONTHS".

VALVE CONFIGURATIONS AVAILABLE

The 700Series is a compact 4-way valve with a Cv of up to .8. This series provides fast response, long life and high flow not commonly found in this size valve.

- 2-Pos., single or double operator (solenoid or remote air).
- Individual body or stacking body (2 common ports).
- Integral adjustable exhaust flow control models.
- Internal pilot or external pilot for vacuum to 20 psi main valve pressures.
- Manual and mechanical operators available.

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

The remote air versions feature:

- Air/spring return for consistent shifting on single remote air valves for main valve pressures of 20 psi or more.
- Optional integral adjustable exhaust flow controls.

SERIES FEATURES-REMOTE AIR PILOT, PILOT OPERATED VALVES

These special air versions have the same features as the remote air pilot operated models, but additionally feature:

- Ability to use a pilot signal pressure different from the main valve pressure. Pilot signal can be from 20-150 PSI, regardless of main valve pressure.
- A manual operator/position indicator.

SPECIAL APPLICATIONS:

On all models, energizing the operator nearest the "A" port supplies pressure to cylinder port "A" and energizing the operator nearest the "B" port supplies pressure to cylinder port "B". For the following special applications additional considerations are required.

- **INTERNAL PILOT**-Utilized for main valve pressures equal to or greater than minimum pilot pressures. Pilot supply is fed to both the pilot valves and the air/spring return from the inlet.
- **EXTERNAL PILOT**-Required for all solenoid pilot operated models when main valve pressures are below 20 PSI on single operator or 10 PSI on double operator models. Single operators require MOD 158-heavy duty spring. Pipe using either an M5x0.8 or a #10-32 UNF fitting to the external pilot port. To convert from internal to external pilot, simply rotate pilot housing 180° and install heavy duty spring.
- **VACUUM APPLICATIONS**-Use external pilot models only, without flow controls and connect vacuum source to the exhaust port and leave the inlet open to atmosphere.
- **SELECTOR APPLICATIONS**-Use models without flow controls, connect the higher pressure to the inlet port and lower pressure to the exhaust port.



Section 8

Options



0 p t i o n s

Codification table for voltages / Manual operator / Electrical connection / Wire length

VALVE CODE > **-XX Y ZZ (-VV)**
1 2 3 4

OPTIONS AVAILABLE FOR	OPTIONS AVAILABLE FOR
<ul style="list-style-type: none">- valves type 100 Series- pilot valves "CNOMO"	<ul style="list-style-type: none">- valves type 200 Series
<ul style="list-style-type: none">- Pilot operated valves with pilots type 100 Series Series : 55 - 56 - 700 - 800 - 900 <ul style="list-style-type: none">- 6300 - 6500 - 6600 - 1300- ISO 1 - ISO 2 - ISO 3.- MAC 125 - MAC 250 - MAC 500	<ul style="list-style-type: none">- pilot operated valves with pilots type 200 Series Series : 200 - 57 - 58 - 59.
<ul style="list-style-type: none">- Pilot operated valves with pilots "CNOMO" Series : ISO1 - ISO2 - ISO3	

Used on valve series: 100, 55, 56, 700, 800, 900, 6300, 6500, 6600, 1300, MVA1C, MVA2B, MVA3B, MAC125, MAC250, MAC500.

Used on valve series: 200, 57, 58, 59.

1. VOLTAGE (100 Serie type coil)	
- XX Y ZZ	VOLTAGE
11	120/60, 110/50
12	240/60, 220/50
13	100/60, 100/50
15	200/60, 200 /50
16	10/60
20	6/60
21	12/50, 12/60
22	24/60, 24/50
23	32/60, 32/50
24	48/60, 42/50
26*	380/50, 440/50, 440/60, 480/60
29	220/60
34	127/50, 120/50
35	48/50
36	16/60
B1	24/50
50	24 VDC (6 W)
51	24 VDC (4 W)
54	12 VDC (4 W)
55	12 VDC (6 W)
57	12 VDC (2.5 W)
59	24 VDC (2.5 W)
60	12 VDC (8.5 W)
61	24 VDC (8.5 W)
64	6 VDC (6 W)
65	32 VDC (7 W)
66	48 VDC (5.8 W)
67	64 VDC (7.5 W)
68	120 VDC (6.4 W)
69*	220 VDC (8.7 W), 250 VDC (11.2 W)
75	90 VDC (8.8 W)
76*	100 VDC (6.9 W)
84*	125 VDC (10.9 W)
87*	24 VDC (17.1 W)
88*	12 VDC (17.4 W)
89*	36 VDC (18.8 W)
90	28 VDC (8.2 W)
91*	6 VDC (10.6 W)
92	190 VDC (6.5 W)
94	3 VDC (7 W)
95	38 VDC (6.4 W)
A1	24 VDC (1 W)
A2	12 VDC (1 W)
A3	9 VDC (1 W)

MOD. DD01 : Protection diode (DC) - MAX. 8.5W

MOD. MOV1 : Protection varistor (AC) - MAX. 8.5W

* Voltages are CLSF only

1. VOLTAGE (200 Serie type coil)	
- XX Y ZZ	VOLTAGE
11	120/60, 110/50, 24 VDC (6 W)
12	240/60, 220/50
13	100/60, 100/50
14	200/60, 200/50
20	6/60
21	12/60
22	24/60, 24/50
23	32/60, 32/50
24	48/60, 42/50
25	240/50
26	480/60, 440/50
27	127/60
28	415/50
29	220/60
30	380/50
31	550/60, 550/50
32	120/60, 110/50
33	600/60
34	127/50
35	48/50
50	24 VDC (6 W)
51	24 VDC (4.5 W)
52	24 VDC (2.5 W)
53	24 VDC (1.0 W)
55	12 VDC (6 W)
57	12 VDC (2.5 W)
58	48 VDC (2.5 W)
60	12 VDC (9.5 W)
61	24 VDC (8.5 W)
64	6 VDC (8.5 W)
65	32 VDC (10 W)
66	48 VDC (11.5 W)
67	64 VDC (10.5 W)
68	120 VDC (12.3 W)
69	250 VDC (9.2 W)
71	8 VDC (8.2 W)
72	24 VDC (12 W)
73	198 VDC (10 W)
74	72 VDC (11.3 W)
75	90 VDC (11.3 W)
76	100 VDC (9 W)
77	220 VDC (10 W), 230 VDC (11.6 W)
78*	24 VDC (24 W)
80	55 VDC (10.6 W)
82	170 VDC (11.1 W)
83	15 VDC (8.1 W)
84	125 VDC (10 W)
86	36 VDC (11 W)
93*	12 VDC (24 W)

2. MANUAL OPERATOR (Common options for 100 & 200 Series type coils)

- XX	Y	ZZ	MANUAL OPERATOR
	0		No operator
	1		Non-locking recessed
	2		Locking recessed
	3		Non-locking extended
	4		Locking extended
		5*	No Operator with Light
		6*	Non-Locking Recessed with Light
		7*	Locking Recessed with Light
		8*	Non-Locking Extended with Light
		9*	Locking Extended with Light

* Lights used with "AA" electrical connection

3. ELECTRICAL CONNECTION (100 Serie type coil)

- XX	Y	ZZ	ELECTRICAL CONNECTION
		AA	Wiring box with 1/2" NPS conduit
		BA	Flying leads
		CA	1/2" NPS conduit
		CC	1/2" NPT conduit
		FA	Military type 2 PIN
		GA	Military type 3 PIN
		HA	AA with ground wire
		JA*	Square connector
		JB	Rectangular connector
		JC*	Square connector with light
		JD	Rectangular connector with light
		JE	Square connector on top (ISO2, ISO3)
		JF	Rectangular connector on top (ISO1, ISO2, ISO3)
		JG	JE with light
		JH	JF with light
		JJ	Square connector, male only
		JM	Rectangular connector, male only
		MA	Electrical common conduit (100 Series-Manifold/900 Series)
		MB	Electrical common conduit (100 Series-Stacking/700 Series)
		NA	CA with ground wire
		NC	CC with ground wire
		RA	3/8" NPS conduit

* Not to be used with 100, 800 and 900 Series manifold mounting

3. ELECTRICAL CONNECTION (200 Serie type coil)

- XX	Y	ZZ	ELECTRICAL CONNECTION
		AA	Wiring box with 1/2" NPS conduit
		BA	Flying leads
		CA	1/2" NPS conduit
		CC	1/2" NPT conduit
		EA	Explosion proof (200 Series)
		EA	Explosion proof (57, 58 & 59 Series)
		FA	Military type 2 PIN
		GA	Military type 3 PIN
		HA	AA with ground wire
		JA*	Square connector
		JC	Square connector with light
		JJ	Square connector, male only
		NA	CA with ground wire
		NC	CC with ground wire

4. COIL WIRE LENGTH (Common options for 100 & 200 Serie type coils)

- XX Y ZZ (-VV)	WIRE LENGTH
AA	18"
AB	24"
AD	36"
AE	48"
AF	72"
AG	6"
AR	12"
AU	120"
BA	60"
BB	144"
Series 6000 : wire length, from the base	
MOD L024	24"
MOD L036	36"
MOD L048	48"
MOD L060	60"
MOD L072	72"
MOD L120	120"



0 p t i o n s

Codification table for voltages / Wire length / Manual operators / Electrical connections

VALVE CODE ► $-D \frac{XX}{1} \frac{X}{2} - \frac{X}{3} \frac{XX}{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 35, 45 and 82 Series

1. VOLTAGE

- D XX X - X XX	VOLTAGE
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
AD	24/60
AE	200/60
AF	240/50
AG	100/50, 100/60, 110/60
DA	24 VDC (5.4 W)
DB	12 VDC (5.4 W)
DC	12 VDC (7.5 W)
DD	24 VDC (7.3 W)
DE	12 VDC (12.7 W) - CLSFonly
DF	24 VDC (12.7 W) - CLSF only
DK	110 VDC (4.7 W)
DL	64 VDC (6 W)
DM	36 VDC (5.3 W)
DN	6 VDC (6 W)
DP	48 VDC (5.8 W)
DU	24 VDC (6 W)
EA	12 VDC (6 W)
FA	12 VDC (1.8 W)
FB	24 VDC (1.8 W)
FE	12 VDC (2.4 W)
FF	24 VDC (2.4 W)

2. WIRE LENGTH

- D XX X - X XX	WIRE LENGTH
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
J	For external plug-in connector ("J", "K" & "T" type electrical connection)
P	For plug-in valves (82 Series only)

3. MANUAL OPERATOR

- D XX X - X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

- D XX X - X XX	ELECTRICAL CONNECTION
BA	Flying leads
BK	BA with protection diode
BL	BA with protection varistor (M.O.V.)
** CA	1/2" NPS conduit
** CM	1/2" NPS metal conduit
** CN	1/2" NPS metal conduit w/ground
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 varistor (M.O.V.)
KD	Square connector with light
KE	Square connector with light and protection diode
KF	Square connector with light and protection varistor (M.O.V.)
KJ	Square connector (male only)
KK	Square connector with protection diode (male only)
KL	Square connector with protection varistor (male only) (M.O.V.)
*** MA	Electrical common conduit
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
DA*	Plug-in connector
DK*	DA with protection diode
DL*	DA with protection varistor (M.O.V.)

* To be used with 82 Series only

** Inline valves only for 35 & 45 series. No restrictions for 82 series.

*** Stacking valves only for 35 & 45 series. Conduit end plate kit required, one per stack.

35 series : M-35002-01

45 series : M-45005-01



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 use in industrial pneumatic and/or vacuum systems. They are not intended for consumer use or service. 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.

LIMITATION OF GUARANTEE

This Guarantee is limited to the replacement or rebuilding of any valve which should fail to operate properly. Valves, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the Guarantee period. They will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same guarantee as provided under the Flat Rate Rebuild Program.

DISCLAIMER OF GUARANTEE

No claims for labor, material, time, damage, or transportation are allowable nor will any valve be replaced or rebuilt under this guarantee which has been damaged by the purchaser not in the normal course of its use and maintenance during the warranty period. The guarantee does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc. MAC Valves, Inc. shall in no event be liable for remote, special or consequential damages under the MAC Guarantee, nor under any implied warranties, including the implied warranty of merchantability.

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

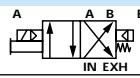
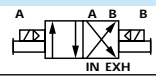
Function	Port size	Flow (Max)	Individual mounting
4/2	1/8" - 1/4"	0.7 C _v	inline

OPERATIONAL BENEFITS

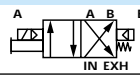
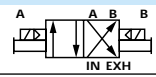
- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	Single operator	Double operator
			
1/8" NPTF	Internal	711C-11-PI- XXYZ	721C-11-PI- XXYZ
1/4" NPTF	Internal	711C-12-PI- XXYZ	721C-12-PI- XXYZ
1/8" NPTF	External	711C-11-PE- XXYZ	721C-11-PE- XXYZ
1/4" NPTF	External	711C-12-PE- XXYZ	721C-12-PE- XXYZ

HOW TO ORDER VALVE WITH FLOW CONTROLS

Port size	Pilot air	Single operator	Double operator
			
1/8" NPTF	Internal	712C-11-PI- XXYZ	722C-11-PI- XXYZ
1/4" NPTF	Internal	712C-12-PI- XXYZ	722C-12-PI- XXYZ
1/8" NPTF	External	712C-11-PE- XXYZ	722C-11-PE- XXYZ
1/4" NPTF	External	712C-12-PE- XXYZ	722C-12-PE- XXYZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/50, 24/60			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)			CA	Conduit 1/2" NPS

OPTIONS

7XXC-XX-PX-[XXYZ](#)

- For bottom ports (1/8" only) replace by 2.

TECHNICAL DATA

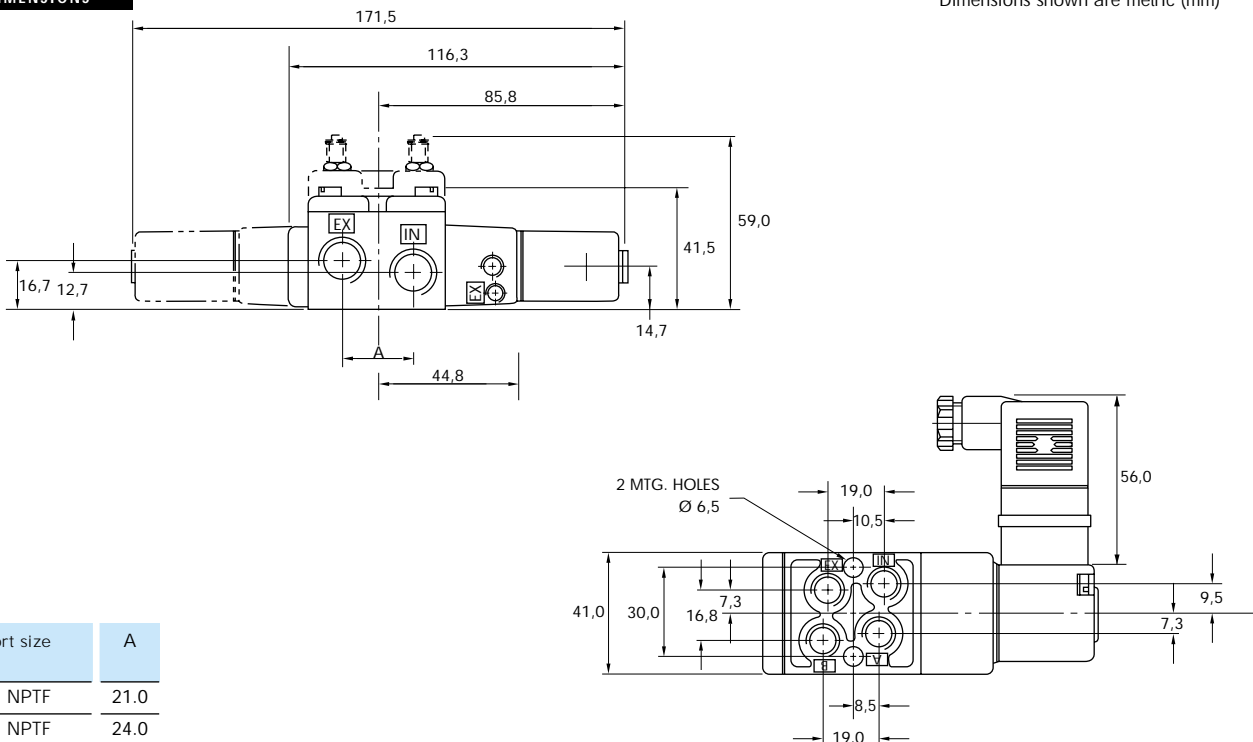
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator : 20 to 150 PSI double operator : 10 to 150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator : 20 to 150 PSI Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.6 C _v), 1/4" : (0.7 C _v)
Leak rate :	50 cm ³ /min
Coil :	General purpose class A, continuous duty, encapsulated
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 6.4 ms De-energize : 8.5 ms 120/60 Energize : 4-10 ms De-energize : 7-13 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PID-XYZZ, including mounting screws 35214 and seal 16363.
 - Valve cover plate with integral flow controls : N-07002.

- Options :
- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



Port size	A
1/8" NPTF	21.0
1/4" NPTF	24.0

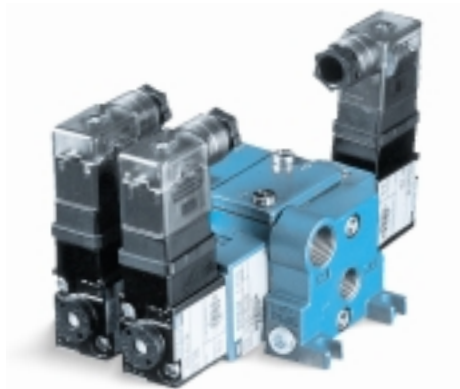


Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
4/2	1/8" - 1/4"	0.8 C _v	stacking

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	Single operator	Double operator
1/8" NPTF	Internal		
1/4" NPTF		713C-11-PI- XXYZZ	723C-11-PI- XXYZZ
		713C-12-PI- XXYZZ	723C-12-PI- XXYZZ

HOW TO ORDER VALVE WITH FLOW CONTROLS

Port size	Pilot air	Single operator	Double operator
1/8" NPTF	Internal		
1/4" NPTF		714C-11-PI- XXYZZ	724C-11-PI- XXYZZ
		714C-12-PI- XXYZZ	724C-12-PI- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/50, 24/60			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)			CA	Conduit 1/2" NPS

End plate kit required (Port size 1/4") : M-07001-01-01 (internal pilot).
M-07001-02-01 (external pilot).

TECHNICAL DATA

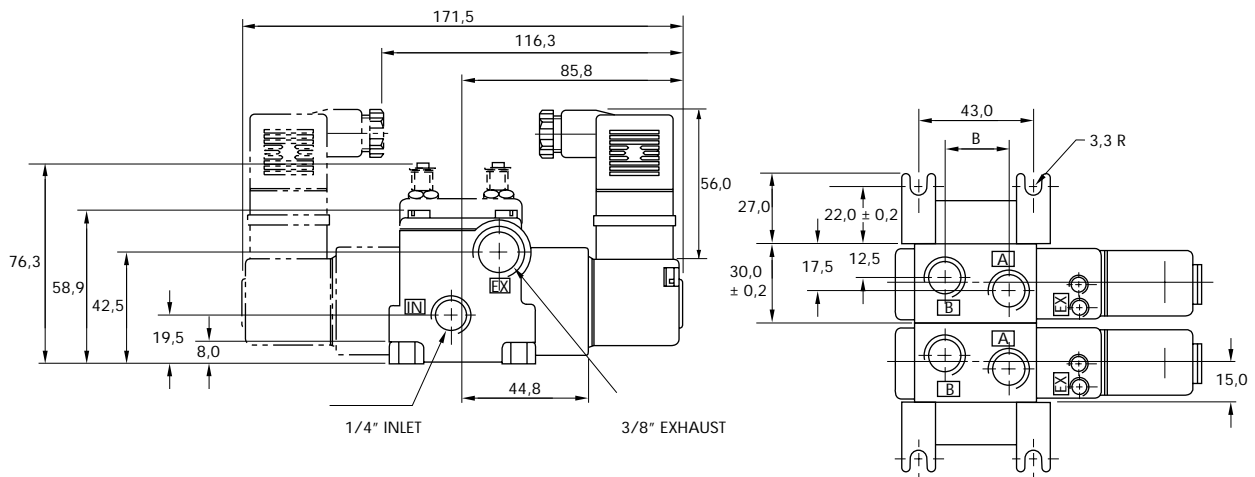
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator : 20 to 150 PSI double operator : 10 to 150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator : 20 to 150 PSI Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.7 C _v), 1/4" : (0.8 C _v)
Leak rate :	50 cm ³ /min
Coil :	General purpose class A, continuous duty, encapsulated
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 6.4 ms De-energize : 8.5 ms 120/60 Energize : 4-10 ms De-energize : 7-13 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PID-XYZZ, including mounting screws 35214 and seal 16363.
 - Valve cover plate with integral flow controls : N-07004. • Inlet & exhaust isolator : N-07005. • Inlet isolator : N-07006.
 - Exhaust isolator : N-07007.

- Options :
- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



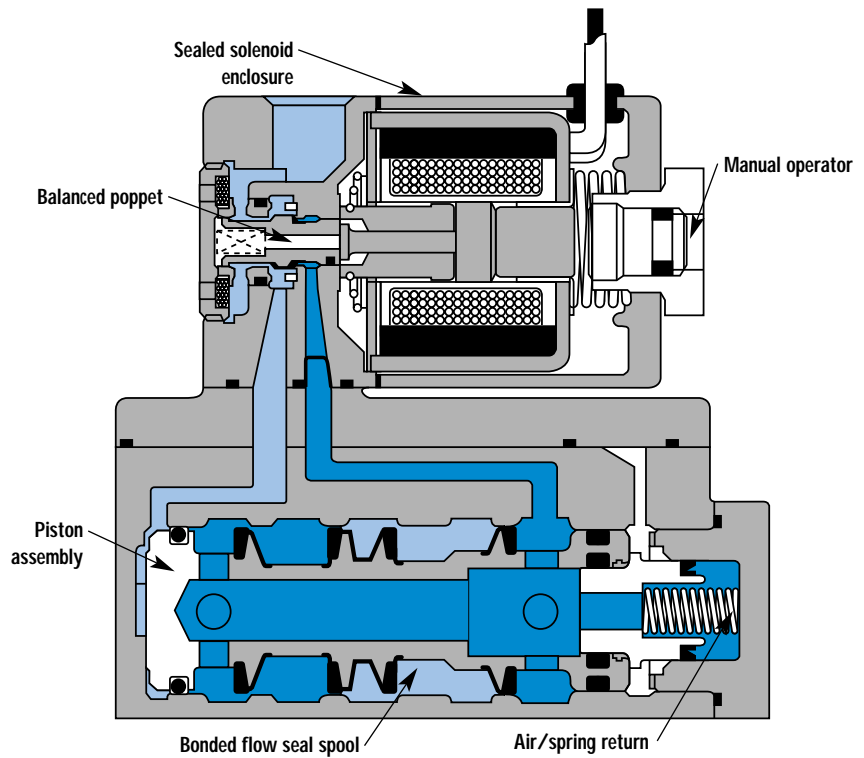
Port size	B
1/8" NPTF	21.0
1/4" NPTF	24.0

Individual mounting

inline

Manifold mounting

stacking



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Air/spring return on single solenoid valves.
- Use for lube or non-lube service.
- Optional low wattage DC solenoids down to 1 watt.
- Various types of manual operators and electrical enclosures.



VALVE CONFIGURATIONS AVAILABLE

The 900 Series is a small Inline 4-way valve with a Cv of up to 1.4. This series provides fast response, long life and high flow not commonly found in this size valve.

- 2-Pos., single or double operator (solenoid or remote air).
- Individual body or stacking body models.
- Manual and mechanical operators available

SERIES FEATURES-REMOTE AIR PILOT OPERATED VALVES

The remote air versions feature:

- Air/spring return on single remote air valves
- Use for lube or non-lube service.
- Optional remote air pilot, pilot operated models available when application requires a pilot signal below the main valve pressure.

SPECIAL APPLICATIONS:

On all models, energizing the "A" operator (solenoid or remote air) supplies pressure to cylinder port "A" and energizing the "B" operator supplies pressure to cylinder port "B". For the following special applications, additional piping considerations are required.

VACUUM APPLICATIONS (remote Air Models Only)-Connect the vacuum source to the Exhaust port and leave the Inlet open to atmosphere. Also specify MOD 158 which provides a heavy duty spring in lieu of air/spring.

SELECTOR APPLICATIONS-When using as a selector valve, connect the higher pressure to the Inlet port and the lower pressure to the Exhaust port. On solenoid models, the Inlet pressure must be a minimum of 25 PSI on singles or 10 PSI on doubles.



Direct solenoid and solenoid pilot operated valves

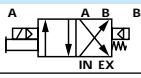
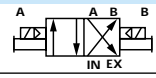
Function	Port size	Flow (Max)	Individual mounting
4/2	1/8" - 1/4"	1.2 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- Large spool area provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Single operator	Double operator
		
1/8" NPTF	911B-PM- XXYZZ	921B-PM- XXYZZ
1/4" NPTF	912B-PM- XXYZZ	922B-PM- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ*

XX Voltage	Y Manual operator	ZZ Electrical connection
11 120/60, 110/50	1 Non-locking	JB Rectangular connector
12 240/60, 220/50	2 Locking	JD Rectangular connector with light
22 24/50, 24/60		JA Square connector
59 24 VDC (2.5 W)		JC Square connector with light
87 24 VDC (17.1 W)		BA Flying leads (18")
61 24 VDC (8.5 W)		CA Conduit 1/2" NPS

TECHNICAL DATA

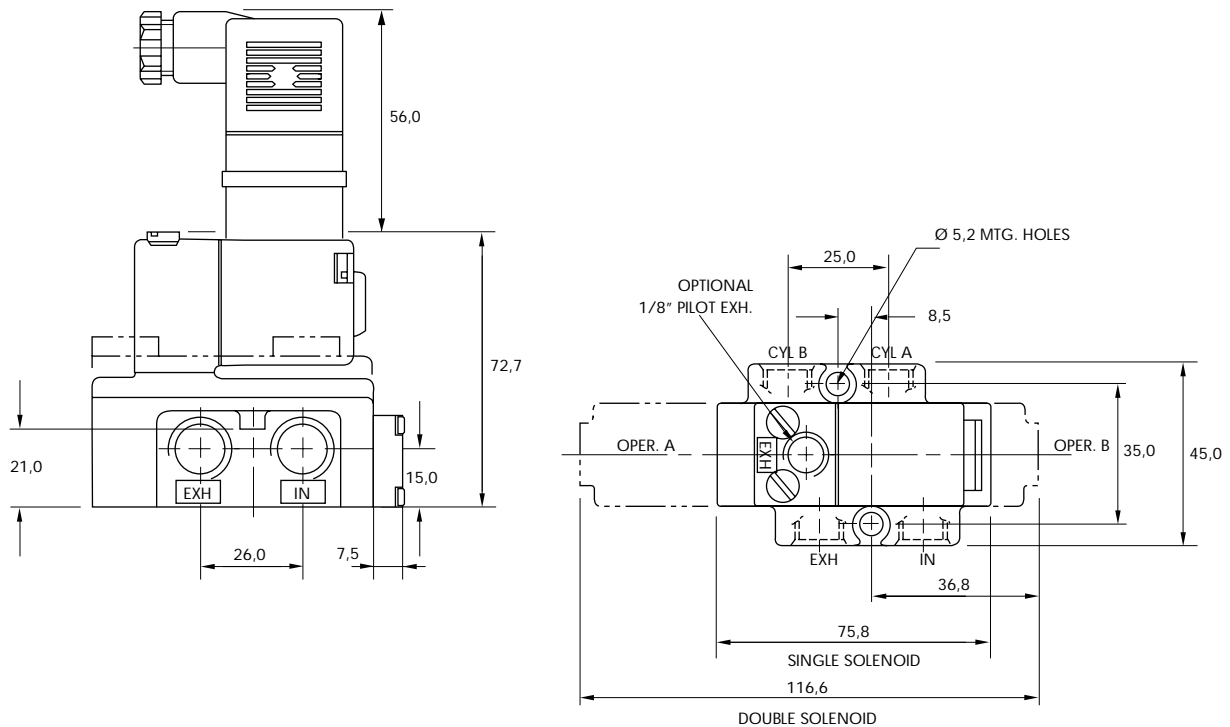
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Single operator : 25 to 150 PSI Double operator : 10 to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.8 C _V), 1/4" : (1.2 C _V)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 8 ms	De-energize : 10 ms
	120/60	Energize : 5-10 ms	De-energize : 8-15 ms

Spare parts : • Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 • Pilot valve : PME-XXYZZ, including seal 16337. • Mounting screw pilot to main valve : 35219.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
4/2	1/8" - 1/4" - 3/8"	1.4 C _v	stacking

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- Large spool area provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Single operator	Double operator
1/8" NPTF	913B-PM- XXYZZ	923B-PM- XXYZZ
1/4" NPTF	914B-PM- XXYZZ	924B-PM- XXYZZ
3/8" NPTF	919B-PM- XXYZZ	N/A

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/50, 24/60			BA	Flying leads (18")
59	24 VDC (2.5 W)			MA	Common conduit 1" NPS
87	24 VDC (17.1 W)			RA	Conduit 3/8" NPS
61	24 VDC (8.5 W)				

End plate kit required (Port size : 3/8") : M-09001-01.
 "MA" option also requires end plate kit : M-01002-01.

TECHNICAL DATA

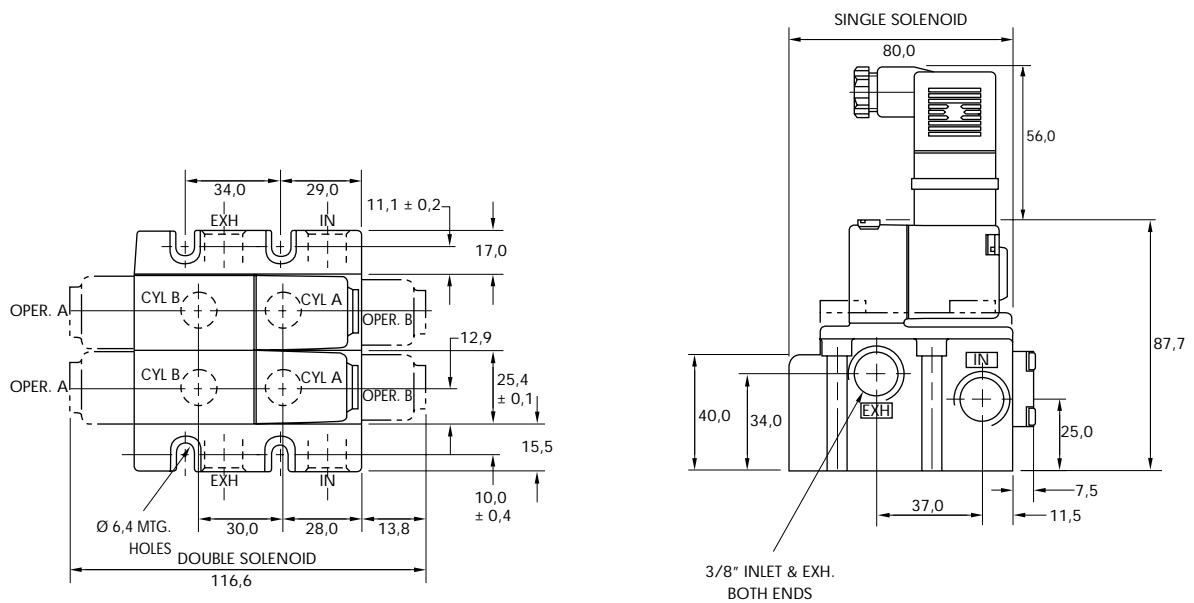
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Single operator : 25 to 150 PSI Double operator : 10 to 150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/8" : (1.2 C _v), 1/4" : (1.4 C _v), 3/8" : (1.4 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 8 ms	De-energize : 10 ms
	120/60	Energize : 5-10 ms	De-energize : 8-15 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYZZ, including seal 16367. • Mounting screw pilot to main valve : 35208.
 - Pressure seal between valves : 16358. • Tie-rod (x2) : 19615. • Inlet & exhaust isolator : N-09002. • Inlet isolator : N-09004.A.
 - Exhaust isolator : N-09003.

- Options :
- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)

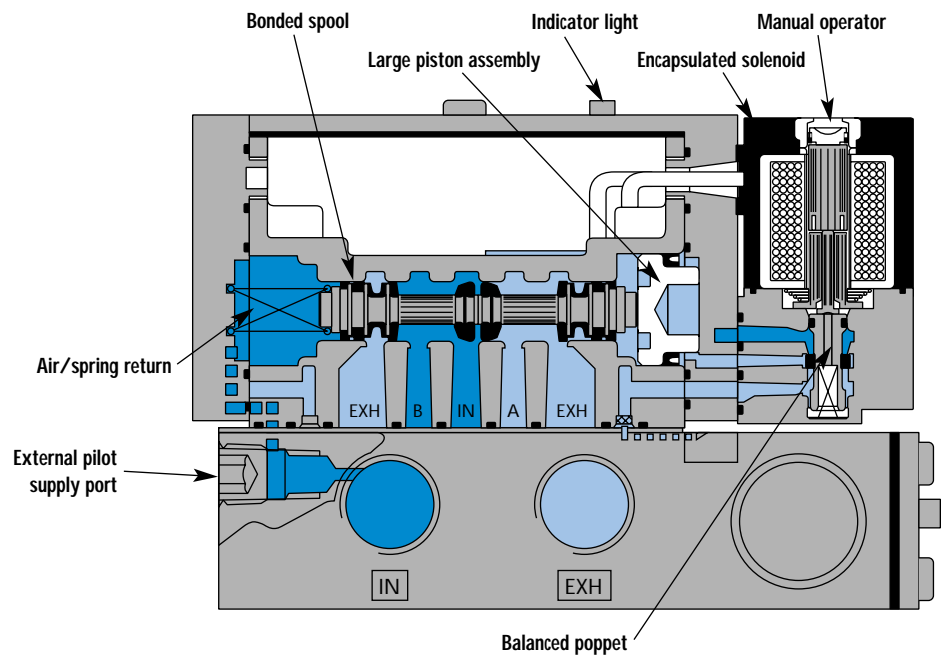


Individual mounting

sub-base non "plug-in"	sub-base "plug-in"
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Manifold mounting

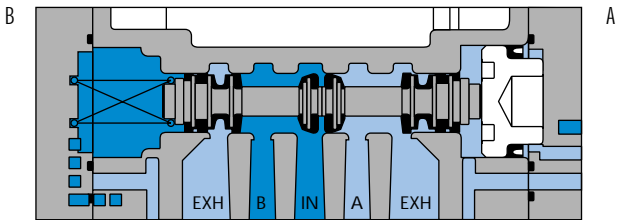
sub-base non "plug-in"	sub-base "plug-in"
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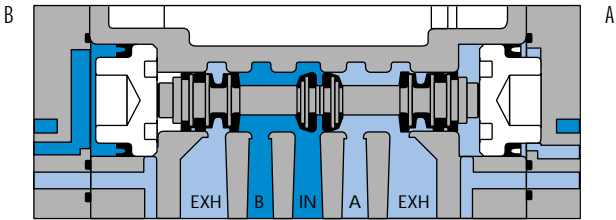
SERIES FEATURES

- Unique patented MACSOLENOID® for fastest possible response times.
- Balanced poppet pilot valve for high flow, precise repeatability, and consistent operation.
- Large spool piston for maximum shifting force even at minimum operating pressure.
- Air/spring return for consistent shifting on single solenoid models.
- MAC spool and bore combination for wiping away contamination, eliminating sticking, and use on non-lube service.
- Patented virtually burn-out proof AC solenoid.
- Plug-in design of valves, bases, flow controls, and regulators for modular assembly and ease of maintenance.
- Optional low wattage DC solenoids down to 1.8 watts.
- Indicator lights in valve body or base and non-plug-in models available.
- Very high flow in a very compact package.

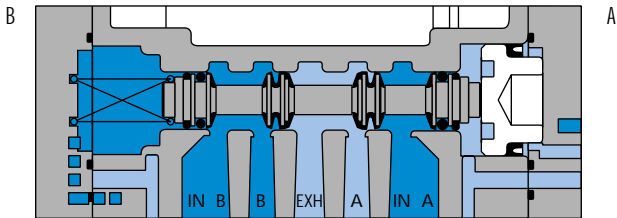
SPOOL CONFIGURATIONS



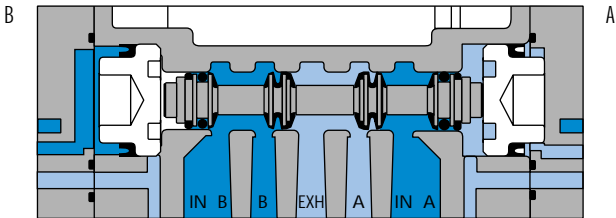
SINGLE OPERATOR
SINGLE INLET - DUAL EXHAUST
SHOWN WITH "B" OPERATOR ENERGIZED



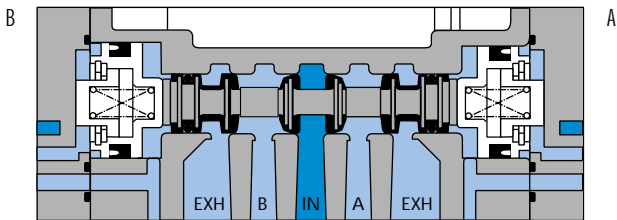
DOUBLE OPERATOR
SINGLE INLET - DUAL EXHAUST
SHOWN WITH "B" OPERATOR ENERGIZED



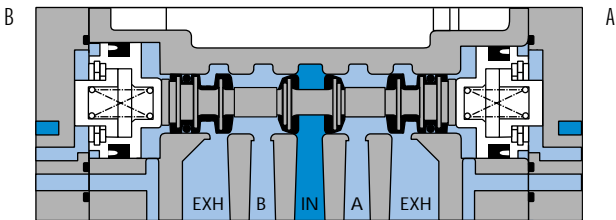
SINGLE OPERATOR
DUAL INLET - SINGLE EXHAUST
SHOWN WITH "B" OPERATOR ENERGIZED



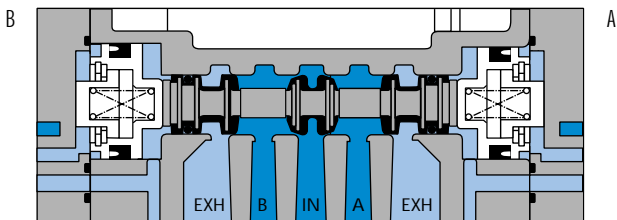
DOUBLE OPERATOR
DUAL INLET - SINGLE EXHAUST
SHOWN WITH "B" OPERATOR ENERGIZED



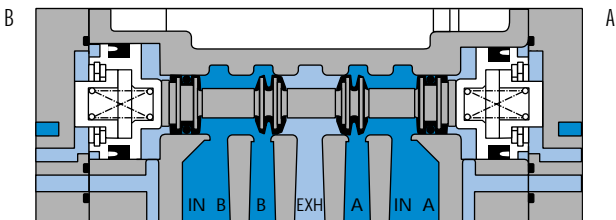
3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER



3 POSITION SINGLE PRESSURE
PRESSURE CENTER



3 POSITION DUAL PRESSURE
PRESSURE CENTER

Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
Valve less base		82A-AB-000-TM-Dxxx-xxx	82A-BB-000-TM-Dxxx-xxx	82A-EB-000-TM-Dxxx-xxx	82A-FB-000-TM-Dxxx-xxx	82A-GB-000-TM-Dxxx-xxx
sub-base	Internal	82A-AB-AAA-TM-Dxxx-xxx	82A-BB-AAA-TM-Dxxx-xxx	82A-EB-AAA-TM-Dxxx-xxx	82A-FB-AAA-TM-Dxxx-xxx	82A-GB-AAA-TM-Dxxx-xxx
1/8" NPTF	External	82A-AB-AAD-TM-Dxxx-xxx	82A-BB-AAD-TM-Dxxx-xxx	82A-EB-AAD-TM-Dxxx-xxx	82A-FB-AAD-TM-Dxxx-xxx	82A-GB-AAD-TM-Dxxx-xxx
sub-base	Internal	82A-AB-BAA-TM-Dxxx-xxx	82A-BB-BAA-TM-Dxxx-xxx	82A-EB-BAA-TM-Dxxx-xxx	82A-FB-BAA-TM-Dxxx-xxx	82A-GB-BAA-TM-Dxxx-xxx
1/4" NPTF	External	82A-AB-BAD-TM-Dxxx-xxx	82A-BB-BAD-TM-Dxxx-xxx	82A-EB-BAD-TM-Dxxx-xxx	82A-FB-BAD-TM-Dxxx-xxx	82A-GB-BAD-TM-Dxxx-xxx
sub-base	Internal	82A-AB-CAA-TM-Dxxx-xxx	82A-BB-CAA-TM-Dxxx-xxx	82A-EB-CAA-TM-Dxxx-xxx	82A-FB-CAA-TM-Dxxx-xxx	82A-GB-CAA-TM-Dxxx-xxx
3/8" NPTF	External	82A-AB-CAD-TM-Dxxx-xxx	82A-BB-CAD-TM-Dxxx-xxx	82A-EB-CAD-TM-Dxxx-xxx	82A-FB-CAD-TM-Dxxx-xxx	82A-GB-CAD-TM-Dxxx-xxx

SOLENOID OPERATOR ▶

D XX X- X XX

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					JB	Rectangular connector
FB	24 VDC (1.8 W)					JD	Rectangular connector with light
DA	24 VDC (5.4 W)					BA	Flying leads
DF	24 VDC (12.7 W)						

Note : KD connector shown in photo.

OPTIONS

82A-AB-000-TM-Dxxx-xxx

- For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H.
(Requires sandwich regulator, see pressure regulator section.)

82A-AB-000-TM-Dxxx-xxx

- TP (Piped pilot exhaust)
- For pilot exhaust out main exhaust, replace B by E. Also, TM pilot body is replaced by TU pilot body.
- Main exhaust cannot be restricted. Available only on single pressure valves.

82A-XX-BAA-TM-Dxxx-xxx

- Replace A by B for bottom ports (1/8" or 1/4" only)
- Replace A by C for side and bottom ports (1/8" or 1/4" only)

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 150 PSI	
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.9 C _v), 1/4" : (1.3 C _v), 3/8" : (1.35 C _v)	
Leak rate :	100 cm ³ /min	
Coil :	Epoxy encapsulated - class A wires - Continuous duty.	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W	
Response times :	24 VDC (5.4 W)	Energize : 9 ms De-energize : 6 ms
	120/60	Energize : 5-12 ms De-energize : 6-13 ms

Spare parts :

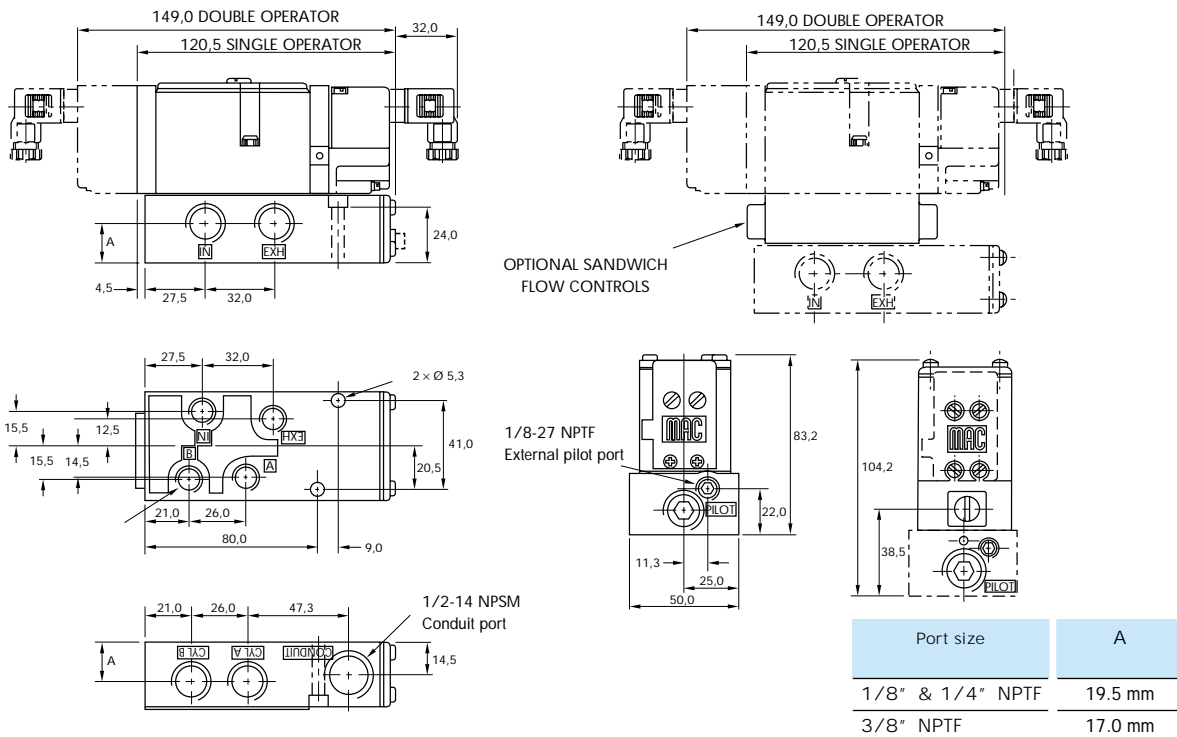
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and pilot body : 16402. • Pilot valve : TM-DXXX-XXX, including seal 16447.
- Mounting screw pilot to main valve : 35023. • Pressure seal between valve and base : 16446.
- Mounting screw valve to base (x2) : 35211.

Options :

- BSPP threads. • Flow controls (Part N° FC82A-BA) • Explosion-proof model.

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
Valve less base		82A-AA-000-TM-DxxP-xDA	82A-BA-000-TM-DxxP-xDA	82A-EA-000-TM-DxxP-xDA	82A-FA-000-TM-DxxP-xDA	82A-GA-000-TM-DxxP-xDA
sub-base	Internal	82A-AA-AAA-TM-DxxP-xDA	82A-BA-AAA-TM-DxxP-xDA	82A-EA-AAA-TM-DxxP-xDA	82A-FA-AAA-TM-DxxP-xDA	82A-GA-AAA-TM-DxxP-xDA
1/8" NPTF	External	82A-AA-AAD-TM-DxxP-xDA	82A-BA-AAD-TM-DxxP-xDA	82A-EA-AAD-TM-DxxP-xDA	82A-FA-AAD-TM-DxxP-xDA	82A-GA-AAD-TM-DxxP-xDA
sub-base	Internal	82A-AA-BAA-TM-DxxP-xDA	82A-BA-BAA-TM-DxxP-xDA	82A-EA-BAA-TM-DxxP-xDA	82A-FA-BAA-TM-DxxP-xDA	82A-GA-BAA-TM-DxxP-xDA
1/4" NPTF	External	82A-AA-BAD-TM-DxxP-xDA	82A-BA-BAD-TM-DxxP-xDA	82A-EA-BAD-TM-DxxP-xDA	82A-FA-BAD-TM-DxxP-xDA	82A-GA-BAD-TM-DxxP-xDA
sub-base	Internal	82A-AA-CAA-TM-DxxP-xDA	82A-BA-CAA-TM-DxxP-xDA	82A-EA-CAA-TM-DxxP-xDA	82A-FA-CAA-TM-DxxP-xDA	82A-GA-CAA-TM-DxxP-xDA
3/8" NPTF	External	82A-AA-CAD-TM-DxxP-xDA	82A-BA-CAD-TM-DxxP-xDA	82A-EA-CAD-TM-DxxP-xDA	82A-FA-CAD-TM-DxxP-xDA	82A-GA-CAD-TM-DxxP-xDA

SOLENOID OPERATOR ▶

D xx P- x DA

XX	Voltage
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
FB	24 VDC (1.8 W)
DA	24 VDC (5.4 W)
DF	24 VDC (12.7 W)

X	Manual operator
1	Non-locking
2	Locking

OPTIONS

82A-AA-000-TM-DxxP-xDA

- For light in body replace A by C.
- For pilot exhaust out main exhaust replace A by D. For light replace A by F. Use TU pilot body for pilot exhaust to main exhaust, main exhaust cannot be restricted (NO flow controls) available with single pressure valve only. TU replaces TM.
- For piped pilot exhaust replace TM by TP.
- For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H. (Requires sandwich regulator - see pressure regulator section)

82A-AA-BAA-TM-DxxP-xDA

- Replace A by B for bottom ports (1/8" or 1/4" only)
- Replace A by C for side and bottom ports (1/8" or 1/4" only)

TECHNICAL DATA

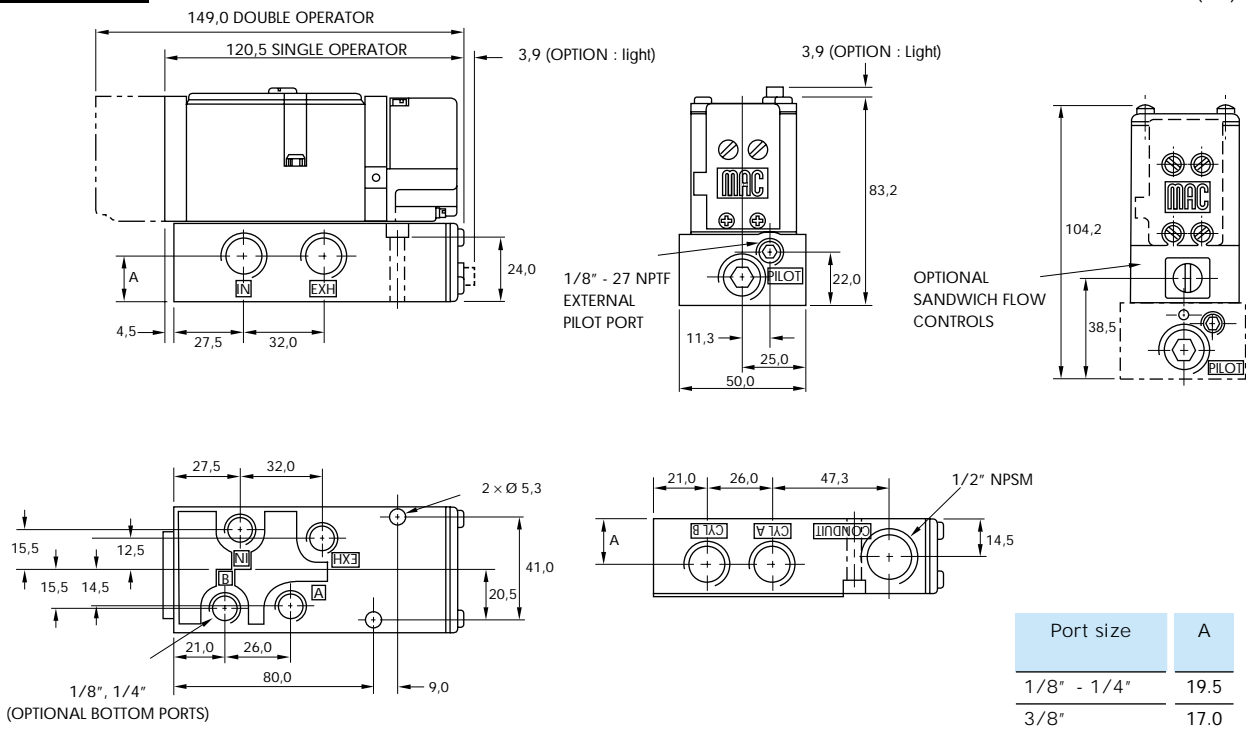
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.9 C _v), 1/4" (1.3 C _v), 3/8" : (1.35 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty.		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 9 ms	De-energize : 6 ms
	120/60	Energize : 5-12 ms	De-energize : 6-13 ms

Spare parts : • Solenoid operator (power ≥ 5.4 W) : DXXP-XDA, including mounting screws 35013. • Seal between solenoid and pilot body : 16402.
 • Pilot valve : TM-DXXP-XDA, including seal 16447. • Mounting screw pilot to main valve : 35023. • Pressure seal between valve and base : 16446.
 • Mounting screw valve to base (x2) : 35211.

Options : • BSPP threads. • Flow controls (Part N°. FC82A-AA) • Explosion-proof model. • Lights in base.

DIMENSIONS

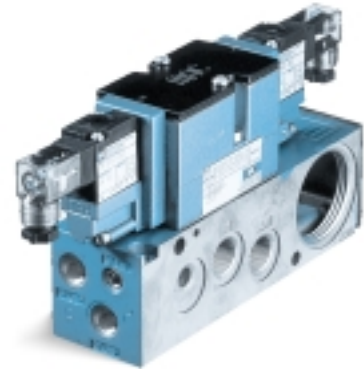
Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	1/4" - 3/8"	1.35 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
Valve less base		82A-AB-000-TM-Dxxx-xxx	82A-BB-000-TM-Dxxx-xxx	82A-EB-000-TM-Dxxx-xxx	82A-FB-000-TM-Dxxx-xxx	82A-GB-000-TM-Dxxx-xxx
sub-base	Internal	82A-AB-BKA-TM-Dxxx-xxx	82A-BB-BKA-TM-Dxxx-xxx	82A-EB-BKA-TM-Dxxx-xxx	82A-FB-BKA-TM-Dxxx-xxx	82A-GB-BKA-TM-Dxxx-xxx
1/4" NPTF	External	82A-AB-BKD-TM-Dxxx-xxx	82A-BB-BKD-TM-Dxxx-xxx	82A-EB-BKD-TM-Dxxx-xxx	82A-FB-BKD-TM-Dxxx-xxx	82A-GB-BKD-TM-Dxxx-xxx
sub-base	Internal	82A-AB-CKA-TM-Dxxx-xxx	82A-BB-CKA-TM-Dxxx-xxx	82A-EB-CKA-TM-Dxxx-xxx	82A-FB-CKA-TM-Dxxx-xxx	82A-GB-CKA-TM-Dxxx-xxx
3/8" NPTF	External	82A-AB-CKD-TM-Dxxx-xxx	82A-BB-CKD-TM-Dxxx-xxx	82A-EB-CKD-TM-Dxxx-xxx	82A-FB-CKD-TM-Dxxx-xxx	82A-GB-CKD-TM-Dxxx-xxx

SOLENOID OPERATOR

D **XX X** - **X XX**

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120/60, 110/50	A	18" (Flying leads)	1	Non-locking	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking	KD	Square connector with light
AC	24/60, 24/50					JB	Rectangular connector
FB	24 VDC (1.8 W)					JD	Rectangular connector with light
DA	24 VDC (5.4 W)					BA	Flying leads
DF	24 VDC (12.7 W)						

Note : KD connector shown in photo.

OPTIONS

82A-AB-000-TM-Dxxx-xxx

- For pilot exhaust out main exhaust replace B by E. Also, TM pilot body is replaced by TU pilot body. Main exhaust cannot be restricted (No flow controls) available with single pressure valve only.
- For piped pilot exhaust replace TM by TP.
- For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H. (Requires sandwich regulator - see pressure regulator section)

82A-XX-BKA-TM-Dxxx-xxx

- Replace K by L for bottom cyl. ports
- Replace K by M for bottom inlet port
- Replace K by N for bottom inlet and cyl. ports
- Replace K by P for bottom and end cyl. ports
- Replace K by R for bottom and end cyl. ports w/bottom inlet
- Replace K by S for selector base with side ports

TECHNICAL DATA

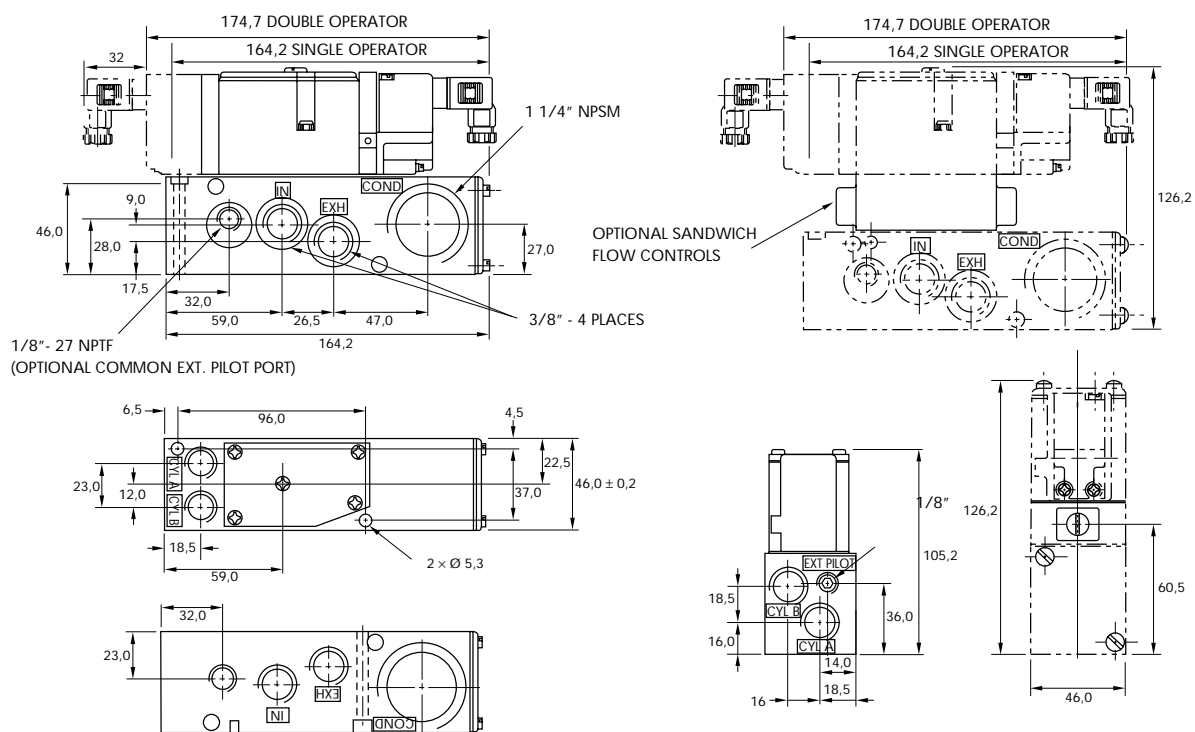
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/4" (1.3 C _v), 3/8" : (1.35 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty.		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 9 ms	De-energize : 6 ms
	120/60	Energize : 5-12 ms	De-energize : 6-13 ms

- Spare parts :
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
 - Seal between solenoid and pilot body : 16402. • Pilot valve : TM-DXXX-XXX, including seal 16447.
 - Mounting screw pilot to main valve : 35023. • Pressure seal between valve and base : 16446.
 - Mounting screw valve to base (x2) : 35211. • Tie-rod (x2) : 19731. • Fastening kit : N-82005-01.

- Options :
- BSPP threads. • Flow controls (Part N° FC82A-BA) • Explosion-proof model.

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	1/4" - 3/8"	1.35 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
Valve less base		82A-AA-000-TM-DxxP-xDA	82A-BA-000-TM-DxxP-xDA	82A-EA-000-TM-DxxP-xDA	82A-FA-000-TM-DxxP-xDA	82A-GA-000-TM-DxxP-xDA
sub-base	Internal	82A-AA-BKA-TM-DxxP-xDA	82A-BA-BKA-TM-DxxP-xDA	82A-EA-BKA-TM-DxxP-xDA	82A-FA-BKA-TM-DxxP-xDA	82A-GA-BKA-TM-DxxP-xDA
1/4" NPTF	External	82A-AA-BKD-TM-DxxP-xDA	82A-BA-BKD-TM-DxxP-xDA	82A-EA-BKD-TM-DxxP-xDA	82A-FA-BKD-TM-DxxP-xDA	82A-GA-BKD-TM-DxxP-xDA
sub-base	Internal	82A-AA-CKA-TM-DxxP-xDA	82A-BA-CKA-TM-DxxP-xDA	82A-EA-CKA-TM-DxxP-xDA	82A-FA-CKA-TM-DxxP-xDA	82A-GA-CKA-TM-DxxP-xDA
3/8" NPTF	External	82A-AA-CKD-TM-DxxP-xDA	82A-BA-CKD-TM-DxxP-xDA	82A-EA-CKD-TM-DxxP-xDA	82A-FA-CKD-TM-DxxP-xDA	82A-GA-CKD-TM-DxxP-xDA

SOLENOID OPERATOR

D XX P- X DA

XX	Voltage
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
FB	24 VDC (1.8 W)
DA	24 VDC (5.4 W)
DF	24 VDC (12.7 W)

X	Manual operator
1	Non-locking
2	Locking

OPTIONS

82A-AA-000-TM-DxxP-xDA

- For light in body replace A by C.
- For pilot exhaust out main exhaust replace A by D. For light replace A by F. Use TU pilot body for pilot exhaust to main exhaust, main exhaust cannot be restricted (No flow controls) available with single pressure valve only. TU replaces TM.
- For piped pilot exhaust replace TM by TP.
- For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H. (Requires sandwich regulator - see pressure regulator section)

82A-XX-BKA-TM-DxxP-xDA

- Replace K by L for bottom cyl. ports
- Replace K by M for bottom inlet port
- Replace K by N for bottom inlet and cyl. ports
- Replace K by P for bottom and end cyl. ports
- Replace K by R for bottom and end cyl. ports w/bottom inlet
- Replace K by S for selector base with side ports

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/4" (1.3 C _v), 3/8" : (1.35 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty.		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA Holding : 7.7 VA = 1.8 to 12.7 W		
Response times :	24 VDC (5.4 W)	Energize : 9 ms	De-energize : 6 ms
	120/60	Energize : 5-12 ms	De-energize : 6-13 ms

Spare parts :

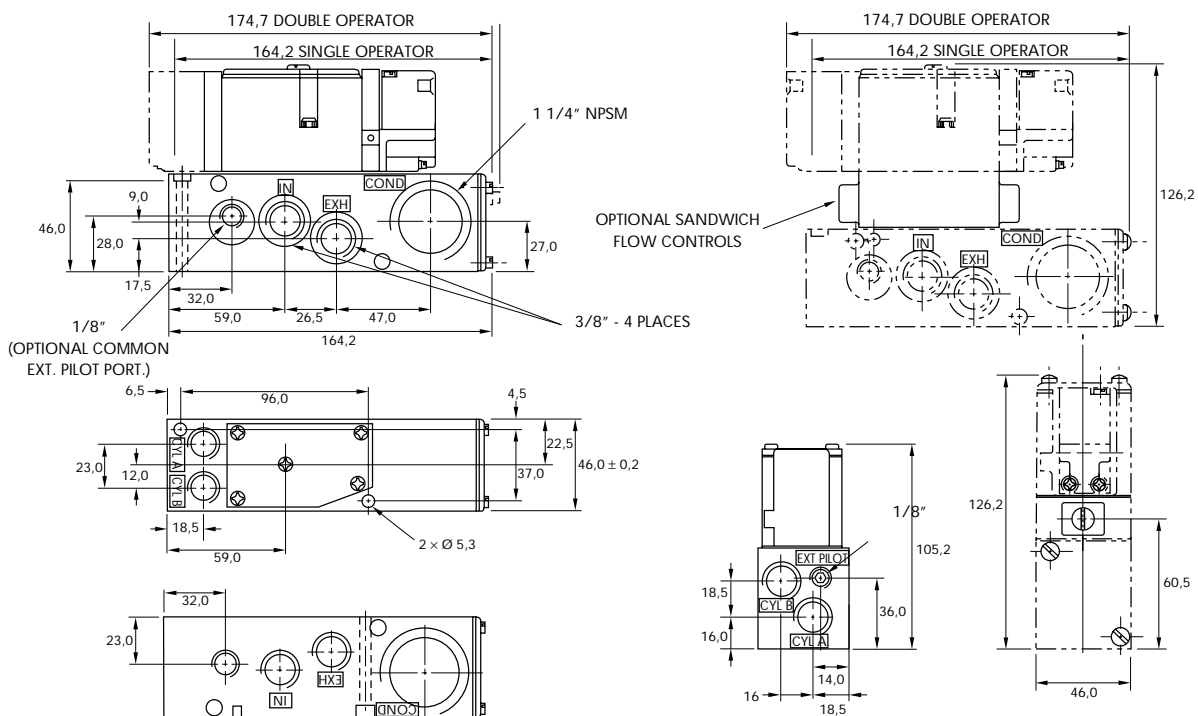
- Solenoid operator (power ≥ 5.4 W) : DXXP-XDA, including mounting screws 35013.
- Seal between solenoid and pilot body : 16402. • Pilot valve : TM-DXXP-XDA, including seal 16447.
- Mounting screw pilot to main valve : 35023. • Pressure seal between valve and base : 16446.
- Mounting screw valve to base (x2) : 35211. • Tie-rod (x2) : 19731. • Fastening kit : N-82005-01.

Options :

- BSPP threads. • Flow controls (Part N°. FC82A-AA) • Explosion-proof model. • Lights in base.

DIMENSIONS

Dimensions shown are metric (mm)

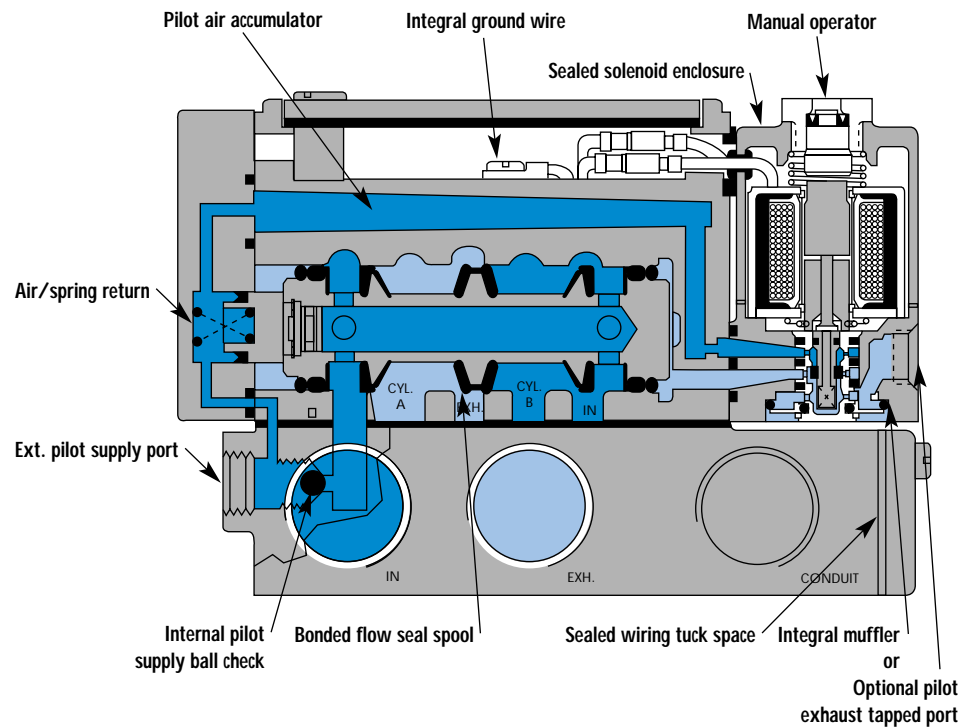


Individual mounting

sub-base non "plug-in"	sub-base "plug-in"
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Manifold mounting

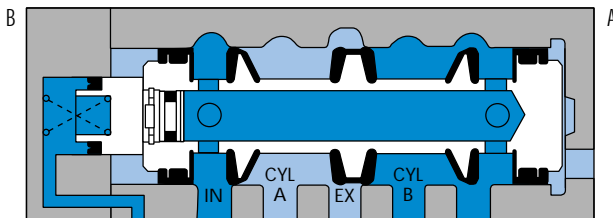
sub-base non "plug-in"	sub-base "plug-in"
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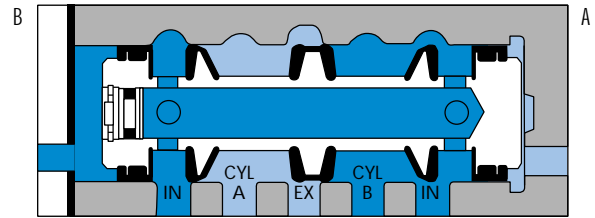
SERIES FEATURES

- The patented MACSOLENOID[®] with its non-burn out feature on AC service.
- A large checked accumulator for consistent shifting on single and double solenoid models.
- A plug-in design that provides for internal or external pilot with or without lights and all electrical and air plumbing in the base — the valve portion is the same.
- Non-lubricated or lubricated service.
- Optional low wattage DC solenoids down to 1 watt.
- Optional indicator lights, and various types of manual operators.
- Non plug-in or external plug-in models are available.

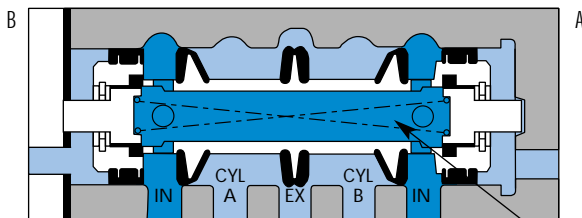
SPOOL CONFIGURATIONS



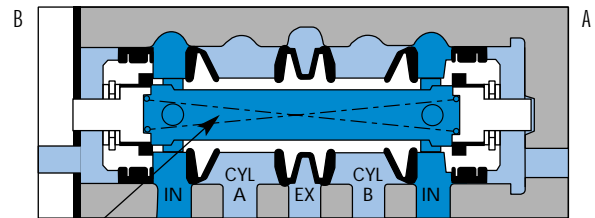
2 POS. SINGLE OPERATOR SPRING RETURN
B ACTUATED SHOWN



2 POS. DOUBLE OPERATOR
B ACTUATED SHOWN



3 POS. OPEN CENTER
CENTER POSITION SHOWN



3 POS. CLOSED CENTER
CENTER POSITION SHOWN

AIR/SPRING
CENTERING

VALVE CONFIGURATIONS AVAILABLE

The versatile 6300 Series provides high flow, extremely fast response, and long life in a compact package and is available in the following configurations:

- 2-Pos., single or double operators (solenoid or remote air).
- 3-Pos., double operator-Closed Center, Open Center or Pressure Center (solenoid or remote air).
- Single pressure.
- Dual pressure on manifolds with sandwich regulators.
- Individual base or add-a-unit manifold base.
- Internal pilot or for Vacuum to 25 PSI main valve pressures, external pilot.
- Manual and mechanical operators available.
- All models available with sandwich regulators.

REMOTE AIR PILOT OPERATED VALVES

These remote air versions feature:

- A large checked accumulator for air/spring return on single remote air models.
- Non-lubricated or lubricated service.
- All piping connections, including the remote air pilot supply, in the base.

REMOTE AIR PILOT, PILOT OPERATED VALVES

These special air versions have the same features as the remote air pilot operated models, but additionally feature:

- A manual operator and indicator.
- Remote air signal plug-in with optional integral air junctions in the base.
- Ability to use a pilot signal pressure different from the main valve pressure. Pilot signal can be from 20 to 150 PSIG, regardless of main valve pressure.

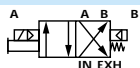
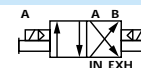
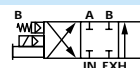
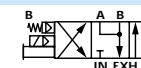
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center
					
Valve less base		6312D-000-PM- XXYZZ	6322D-000-PM- XXYZZ	6332D-000-PM- XXYZZ	6342D-000-PM- XXYZZ
sub-base	Internal	6312D-131-PM- XXYZZ	6322D-131-PM- XXYZZ	6332D-131-PM- XXYZZ	6342D-131-PM- XXYZZ
1/4" NPTF	External	6312D-141-PM- XXYZZ	6322D-141-PM- XXYZZ	6332D-141-PM- XXYZZ	6342D-141-PM- XXYZZ
sub-base	Internal	6312D-231-PM- XXYZZ	6322D-231-PM- XXYZZ	6332D-231-PM- XXYZZ	6342D-231-PM- XXYZZ
3/8" NPTF	External	6312D-241-PM- XXYZZ	6322D-241-PM- XXYZZ	6332D-241-PM- XXYZZ	6342D-241-PM- XXYZZ
sub-base	Internal	6312D-331-PM- XXYZZ	6322D-331-PM- XXYZZ	6332D-331-PM- XXYZZ	6342D-331-PM- XXYZZ
1/2" NPTF	External	6312D-341-PM- XXYZZ	6322D-341-PM- XXYZZ	6332D-341-PM- XXYZZ	6342D-341-PM- XXYZZ

Note : Above codes shown are for side ports.

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

OPTIONS

6312D-XXX-PM-**XXYZZ**

- For piped pilot exhaust replace M by P.
- For bottom cylinder ports (excluding 1/2"), replace by 4.
- For dual pressure valves (see section 6 for use with sandwich regulators), replace by 5.

Note : 1. The valve less base is always the same for internal or external pilot. These options are effected in the base.

2. To order bases without the valve, choose the base from the above table, then add 6300D as a prefix. Example 6300D-131.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 150 PSI	
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	1/4" (2.0 C _v), 3/8" : (2.6 C _v), 1/2" (3.0 C _v)	
Leak rate :	100 cm ³ /min	
Coil :	Epoxy encapsulated - class A wires - Continuous duty.	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W)	Energize : 10 ms De-energize : 11 ms
	120/60	Energize : 4-13 ms De-energize : 10-17 ms

Spare parts :

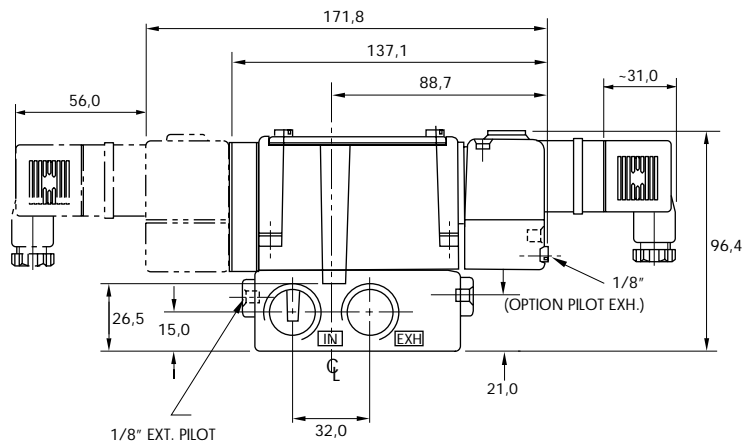
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16298.
- Mounting screw valve to base (x4) : 35303.

Options :

- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



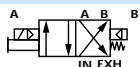
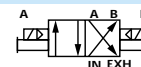
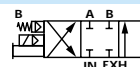
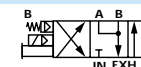
Function	Port size	Flow (Max)	Individual mounting	S
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v	sub-base "plug-in"	

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center
					
Valve less base		6311D-000-PM- XXYDA	6321D-000-PM- XXYDA	6331D-000-PM- XXYDA	6341D-000-PM- XXYDA
sub-base	Internal	6311D-111-PM- XXYDA	6321D-111-PM- XXYDA	6331D-111-PM- XXYDA	6341D-111-PM- XXYDA
1/4" NPTF	External	6311D-121-PM- XXYDA	6321D-121-PM- XXYDA	6331D-121-PM- XXYDA	6341D-121-PM- XXYDA
sub-base	Internal	6311D-211-PM- XXYDA	6321D-211-PM- XXYDA	6331D-211-PM- XXYDA	6341D-211-PM- XXYDA
3/8" NPTF	External	6311D-221-PM- XXYDA	6321D-221-PM- XXYDA	6331D-221-PM- XXYDA	6341D-221-PM- XXYDA
sub-base	Internal	6311D-311-PM- XXYDA	6321D-311-PM- XXYDA	6331D-311-PM- XXYDA	6341D-311-PM- XXYDA
1/2" NPTF	External	6311D-321-PM- XXYDA	6321D-321-PM- XXYDA	6331D-321-PM- XXYDA	6341D-321-PM- XXYDA

Note : Above codes shown are for side ports without lights.

SOLENOID OPERATOR ►

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

OPTIONS

6311D-XXX-PM- XXYDA	
	- For piped pilot exhaust replace M by P.
	- For bottom ports (excluding 1/2"), replace by 4 (no light), by 5 (sgl. light), by 6 (dbl. light).
	- For side ports with lights on base, replace by 2 (sgl. light), by 3 (dbl. light).
	- For lights on valve body, replace by 3.
	- For dual pressure valves with lights on valve body (see section 6 for use with sandwich regulators), replace by 6.

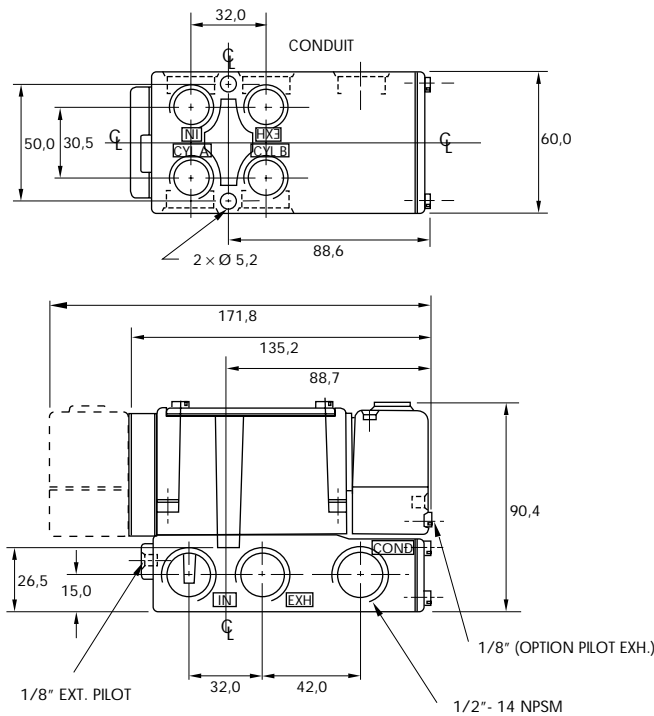
Note : 1. The valve less base is always the same for internal or external pilot. These options are effected in the base.
 2. To order bases without the valve, choose the base from the above table, then add 6300D as a prefix. Example 6300D-111.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/4" (2.0 C _v), 3/8" : (2.6 C _v), 1/2" (3.0 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty.
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 10 ms De-energize : 11 ms 120/60 Energize : 4-13 ms De-energize : 10-17 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXBE, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYDA-BE, including seal 16337. • Pressure seal between valve and base : 16298.
 - Mounting screw valve to base (x4) : 35303.

- Options :
- BSPP threads.

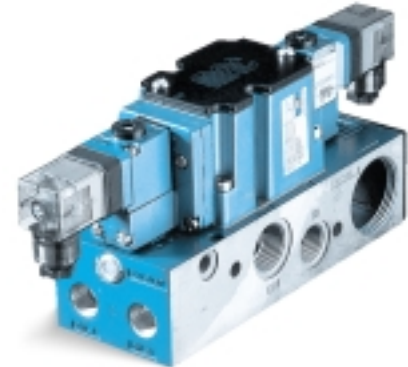
DIMENSIONS Dimensions shown are metric (mm)



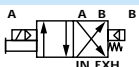
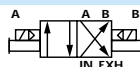


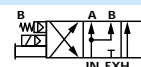
Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/8" - 1/2"	3.0 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6312D-000-PM- XXYZ	6322D-000-PM- XXYZ	6332D-000-PM- XXYZ	6342D-000-PM- XXYZ	6352D-000-PM- XXYZ
sub-base	Internal	6312D-531-PM- XXYZ	6322D-531-PM- XXYZ	6332D-531-PM- XXYZ	6342D-531-PM- XXYZ	6352D-531-PM- XXYZ
3/8" NPTF	External	6312D-541-PM- XXYZ	6322D-541-PM- XXYZ	6332D-541-PM- XXYZ	6342D-541-PM- XXYZ	6352D-541-PM- XXYZ
sub-base	Internal	6312D-631-PM- XXYZ	6322D-631-PM- XXYZ	6332D-631-PM- XXYZ	6342D-631-PM- XXYZ	6352D-631-PM- XXYZ
1/2" NPTF	External	6312D-641-PM- XXYZ	6322D-641-PM- XXYZ	6332D-641-PM- XXYZ	6342D-641-PM- XXYZ	6352D-641-PM- XXYZ

Note : Above codes shown are for side cylinder ports.

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18')
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

OPTIONS

6312D-XXX-PM-**XXYZ**

- For piped pilot exhaust replace M by P.
- For bottom cylinder ports, replace by 4.
- For bottom and side cylinder ports, replace by 7.
- For dual pressure valves (see section 6 for use with sandwich regulators), replace by 5.

MODIFICATIONS - MOD 0210 Bottom inlet port in addition to side inlet port - TO ORDER : 6312D-531-PM-111JA MOD 0210

- Note :
- The valve less base is always the same for internal or external pilot. These options are effected in the manifold.
 - To order manifolds without the valve, choose the manifold from the above table, then add 6300D as a prefix. Example 6300D-631.
 - When ordering an external pilot connection for manifold bases, a common external pilot port is standard. One connection only is required for all the valves in the manifold whether single or double solenoid.
 - Manifolds for solenoid and remote air operated valves must be ganged separately.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 150 PSI	
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	3/8" : (2.6 C _v), 1/2" (3.0 C _v)	
Leak rate :	100 cm ³ /min	
Coil :	Epoxy encapsulated - class A wires - Continuous duty.	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W)	Energize : 10 ms De-energize : 11 ms
	120/60	Energize : 4-13 ms De-energize : 10-17 ms

Spare parts :

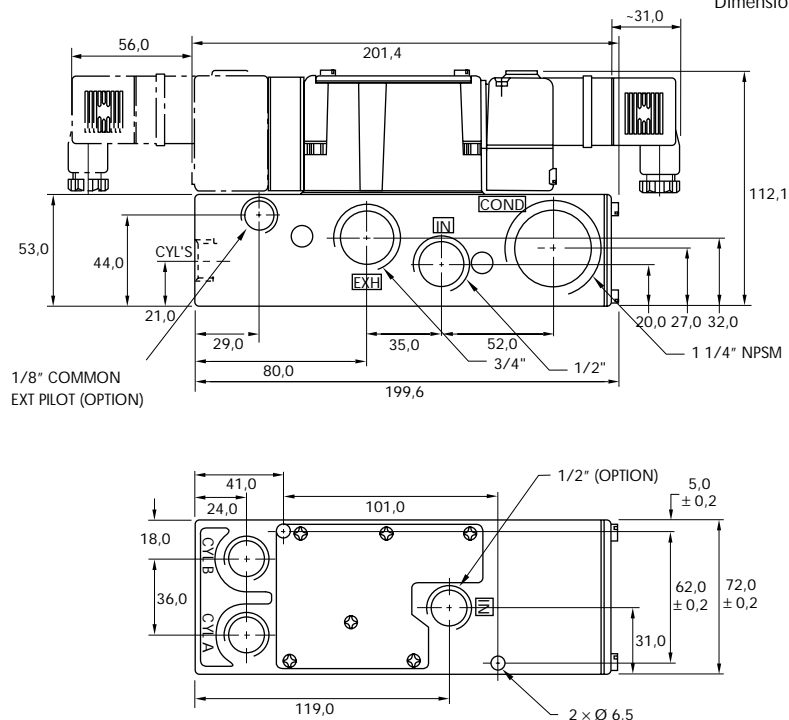
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16396.
- Mounting screw valve to base (x4) : 35303. • Tie-rod (x2) : 19624. • Fastening kit : N-63002-01
- Inlet isolator : 32839. • Exhaust isolator : 28309. • Blank station cover plate : M-63014.

Options :

- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



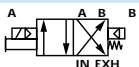
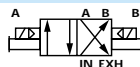
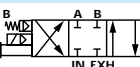

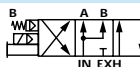
Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/8" - 1/2"	3.0 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6311D-000-PM- xx YDA	6321D-000-PM- xx YDA	6331D-000-PM- xx YDA	6341D-000-PM- xx YDA	6351D-000-PM- xx YDA
sub-base	Internal	6311D-511-PM- xx YDA	6321D-511-PM- xx YDA	6331D-511-PM- xx YDA	6341D-511-PM- xx YDA	6351D-511-PM- xx YDA
3/8" NPTF	External	6311D-521-PM- xx YDA	6321D-521-PM- xx YDA	6331D-521-PM- xx YDA	6341D-521-PM- xx YDA	6351D-521-PM- xx YDA
sub-base	Internal	6311D-611-PM- xx YDA	6321D-611-PM- xx YDA	6331D-611-PM- xx YDA	6341D-611-PM- xx YDA	6351D-611-PM- xx YDA
1/2" NPTF	External	6311D-621-PM- xx YDA	6321D-621-PM- xx YDA	6331D-621-PM- xx YDA	6341D-621-PM- xx YDA	6351D-621-PM- xx YDA

Note : Above codes shown are for side cylinder ports without lights.

SOLENOID OPERATOR ➤

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

OPTIONS

6311D-XXX-PM- xx YDA	Options
	- For piped pilot exhaust replace M by P.
	- For bottom cylinder ports, replace by 4 (no light), by 5 (sgl. light), by 6 (dbl. light).
	- For side cylinder ports with light, replace by 2 (sgl. light), by 3 (dbl. light).
	- For bottom and side cylinder ports, replace by 7 (no light), by 8 (sgl. light), by 9 (dbl. light).
	- For lights on valve body, replace by 3.
	- For dual pressure valves with lights on valve body (see section 6 for use with sandwich regulators), replace by 6.

MODIFICATIONS - MOD 0210 Bottom inlet port in addition to side inlet port - TO ORDER : 6311D-511-PM-111DA MOD 0210

- Note :
- The valve less base is always the same for internal or external pilot. These options are effected in the manifold.
 - To order manifolds without the valve, choose the manifold from the above table, then add 6300D as a prefix. Example 6300D-511.
 - When ordering an external pilot connection for manifold bases, a common external pilot port is standard. One connection only is required for all the valves in the manifold whether single or double solenoid.
 - Manifolds for solenoid and remote air operated valves must be ganged separately.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	3/8" : (2.6 C _v), 1/2" (3.0 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty.		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA	Holding : 10.9 VA	
	= 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 10 ms	De-energize : 11 ms
	120/60	Energize : 4-13 ms	De-energize : 10-17 ms

Spare parts :

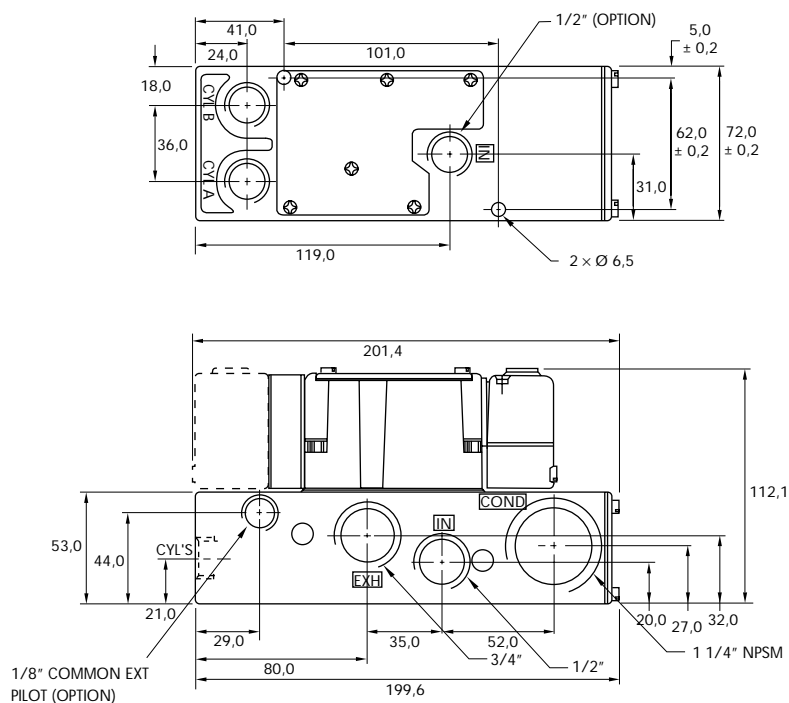
- Solenoid operator (power ≥ 4 W) : D1-XXBE, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYDA-BE, including seal 16337. • Pressure seal between valve and base : 16396.
- Mounting screw valve to base (x4) : 35303. • Tie-rod (x2) : 19624. • Fastening kit : N-63002-01
- Inlet isolator : 32839. • Exhaust isolator : 28309. • Blank station cover plate : M-63014.

Options :

- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)

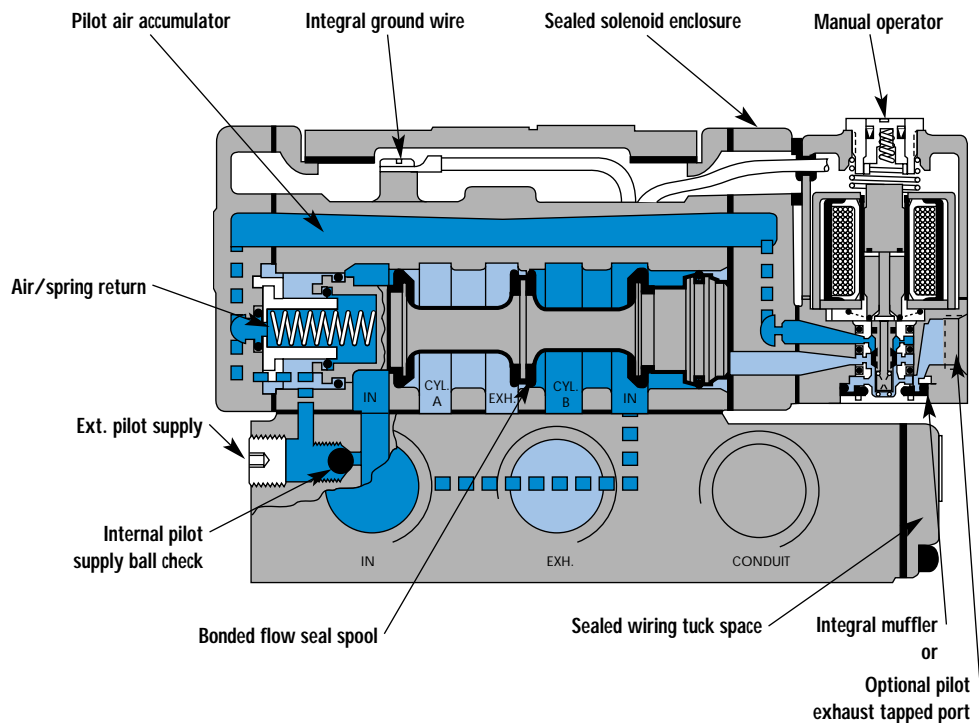


Individual mounting

sub-base non "plug-in"	sub-base "plug-in"
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Manifold mounting

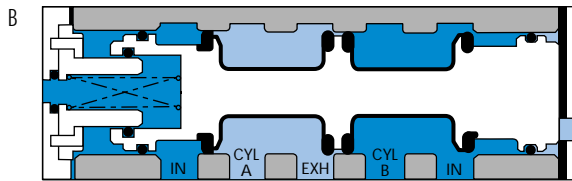
sub-base non "plug-in"	sub-base "plug-in"
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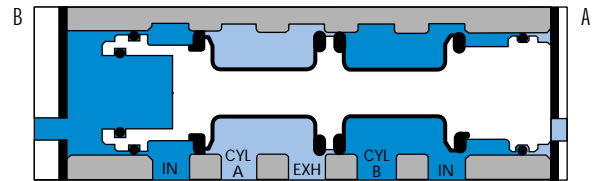
SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- A large checked accumulator for consistent shifting on single and double solenoid models.
- A plug-in design that provides for internal or external pilot with or without lights and all electrical and air plumbing in the base — the valve portion is the same.
- Non-lubricated or lubricated service.
- Optional low wattage DC solenoids down to 1 watt.
- Optional indicator lights, and various types of manual operators.
- Non plug-in or external plug-in models are available.

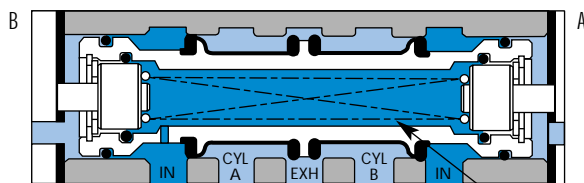
SPOOL CONFIGURATIONS



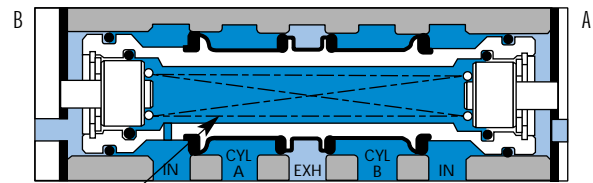
2 POS. SINGLE OPERATOR SPRING RETURN
B ACTUATED SHOWN



2 POS. DOUBLE OPERATOR
B ACTUATED SHOWN

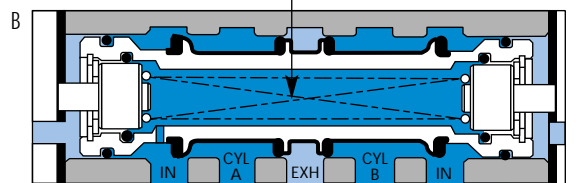


3 POS. OPEN CENTER
CENTER POSITION SHOWN



3 POS. CLOSED CENTER
CENTER POSITION SHOWN

AIR/SPRING
CENTERING



3 POS. PRESSURE CENTER
CENTER POSITION SHOWN

VALVE CONFIGURATIONS AVAILABLE

The versatile 6500 Series provides high flow, extremely fast response, and long life in a compact package and is available in the following configurations:

- 2-Pos., single or double operators (solenoid or remote air).
- 3-Pos., double operator-Closed Center, Open Center or Pressure Center (solenoid or remote air).
- Single pressure or dual pressure.
- Individual base or add-a-unit manifold base.
- Internal pilot or for Vacuum to 25 PSI main valve pressures, external pilot.
- Manual and mechanical operators available.

REMOTE AIR PILOT OPERATED VALVES

- A large checked accumulator for air/spring return on single remote air models.
- All piping connections, including the remote air pilot supply, in the base.
- Non-lubricated or lubricated service.

REMOTE AIR PILOT, PILOT OPERATED VALVES

These special air versions have the same features as the remote air pilot operated models, but additionally feature:

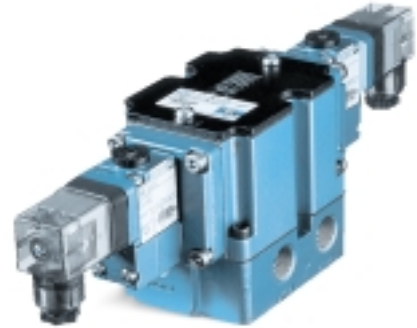
- A manual operator and indicator.
- Remote air signal plug-in with optional integral air junctions in the base.
- Ability to use a pilot signal pressure different from the main valve pressure. Pilot signal can be from 20 to 150 PSIG, regardless of main valve pressure.

ALL MODELS AVAILABLE WITH SANDWICH TYPE REGULATORS

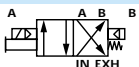
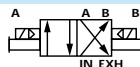
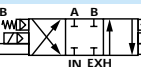
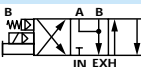

Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6512B-000-PM- XXYZZ	6522B-000-PM- XXYZZ	6532B-000-PM- XXYZZ	6542B-000-PM- XXYZZ	6552B-000-PM- XXYZZ
sub-base	Internal	6512B-131-PM- XXYZZ	6522B-131-PM- XXYZZ	6532B-131-PM- XXYZZ	6542B-131-PM- XXYZZ	6552B-131-PM- XXYZZ
3/8" NPTF	External	6512B-141-PM- XXYZZ	6522B-141-PM- XXYZZ	6532B-141-PM- XXYZZ	6542B-141-PM- XXYZZ	6552B-141-PM- XXYZZ
sub-base	Internal	6512B-231-PM- XXYZZ	6522B-231-PM- XXYZZ	6532B-231-PM- XXYZZ	6542B-231-PM- XXYZZ	6552B-231-PM- XXYZZ
1/2" NPTF	External	6512B-241-PM- XXYZZ	6522B-241-PM- XXYZZ	6532B-241-PM- XXYZZ	6542B-241-PM- XXYZZ	6552B-241-PM- XXYZZ
sub-base	Internal	6512B-331-PM- XXYZZ	6522B-331-PM- XXYZZ	6532B-331-PM- XXYZZ	6542B-331-PM- XXYZZ	6552B-331-PM- XXYZZ
3/4" NPTF	External	6512B-341-PM- XXYZZ	6522B-341-PM- XXYZZ	6532B-341-PM- XXYZZ	6542B-341-PM- XXYZZ	6552B-341-PM- XXYZZ

Note : Above codes shown are for side ports.

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

OPTIONS

6512B-XXX-PM-**XXYZZ**

- For piped pilot exhaust replace M by P.
- For dual pressure valve, replace by 4.

MODIFICATIONS

MOD. N°	DESCRIPTION	MODEL AVAILABILITY
0002	Bottom inlet, exh. & cyl. ports (no side ports)	Available on individual base 3/8" & 1/2" only
0004	Full side porting and additional bottom inlet, exh. & cyl. ports	Available on individual base 3/8" only

- Note :
- The valve less base is always the same for internal or external pilot. These options are effected in the base.
 - Bottom ports : Refer to modification table.
 - To order bases without the valve, choose the base from the above table, then add 6500B as a prefix. Example 6500B-131.

TECHNICAL DATA

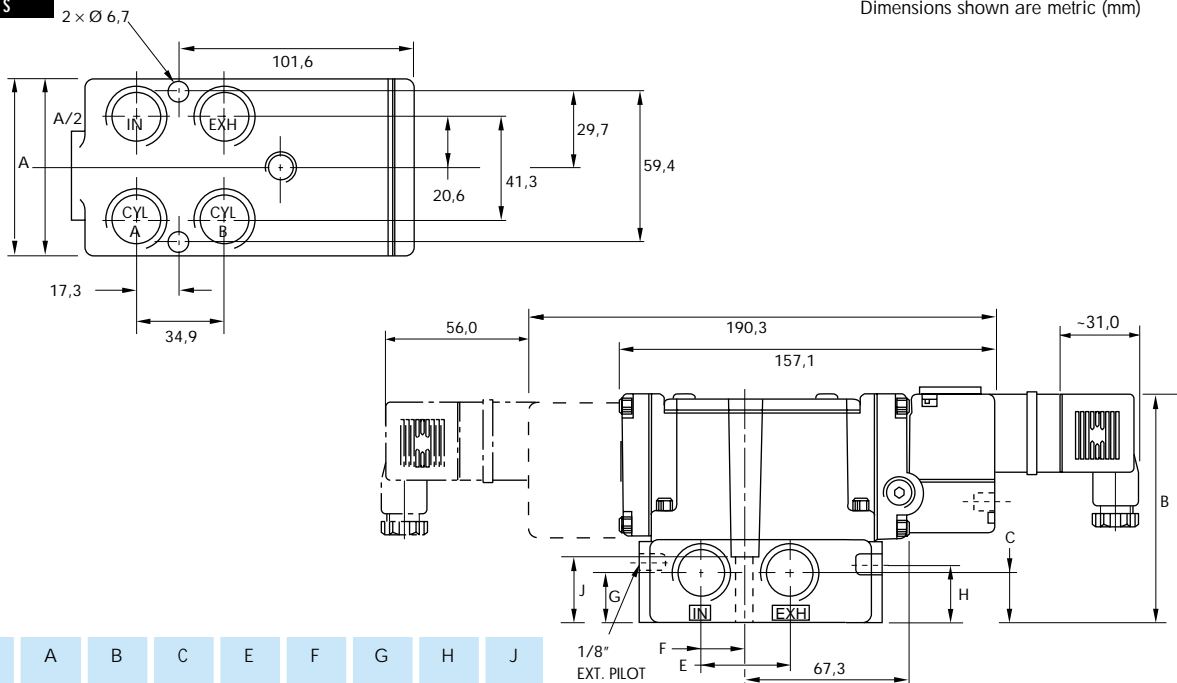
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°C)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	3/8" : (4.5 C _v), 1/2" : (5.0 C _v), 3/4" : (5.1 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA	Holding : 10.9 VA	
	= 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 12 ms	De-energize : 12 ms
	120/60	Energize : 9-14 ms	De-energize : 11-18 ms

Spare parts : Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 • Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16246.
 • Mounting screw valve to base (x4) : 32201.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



Port size	A	B	C	E	F	G	H	J
3/8" - 1/2"	69.6	97.4	18.3	36.0	17.9	19.0	23.6	25.4
3/4"	94.5	109.3	17.3	40.1	19.2	20.8	35.9	36.6

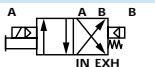
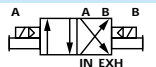
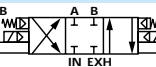
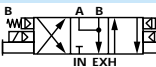
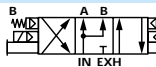
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6511B-000-PM-xxYDA	6521B-000-PM-xxYDA	6531B-000-PM-xxYDA	6541B-000-PM-xxYDA	6551B-000-PM-xxYDA
sub-base	Internal	6511B-111-PM-xxYDA	6521B-111-PM-xxYDA	6531B-111-PM-xxYDA	6541B-111-PM-xxYDA	6551B-111-PM-xxYDA
3/8" NPTF	External	6511B-121-PM-xxYDA	6521B-121-PM-xxYDA	6531B-121-PM-xxYDA	6541B-121-PM-xxYDA	6551B-121-PM-xxYDA
sub-base	Internal	6511B-211-PM-xxYDA	6521B-211-PM-xxYDA	6531B-211-PM-xxYDA	6541B-211-PM-xxYDA	6551B-211-PM-xxYDA
1/2" NPTF	External	6511B-221-PM-xxYDA	6521B-221-PM-xxYDA	6531B-221-PM-xxYDA	6541B-221-PM-xxYDA	6551B-221-PM-xxYDA
sub-base	Internal	6511B-311-PM-xxYDA	6521B-311-PM-xxYDA	6531B-311-PM-xxYDA	6541B-311-PM-xxYDA	6551B-311-PM-xxYDA
3/4" NPTF	External	6511B-321-PM-xxYDA	6521B-321-PM-xxYDA	6531B-321-PM-xxYDA	6541B-321-PM-xxYDA	6551B-321-PM-xxYDA

Note : Above codes shown are for side ports without lights.

SOLENOID OPERATOR ➤

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

OPTIONS

6511B-XXX-PM-xxYDA	
	- For piped pilot exhaust replace M by P.
	- For dual pressure valve replace by 4 (no light), by 5 (sgl. light), by 6 (dbl. light).
	- For lights on base, replace by 2 (sgl. light), by 3 (dbl. light).
	- For lights on valve body, replace by 3.

MODIFICATIONS		
MOD. N°	DESCRIPTION	MODEL AVAILABILITY
0002	Bottom inlet, exh. & cyl. ports (no side ports)	Available on individual base 3/8" & 1/2" only
0004	Full side porting and additional bottom inlet, exh. & cyl. ports	Available on individual base 3/8" only

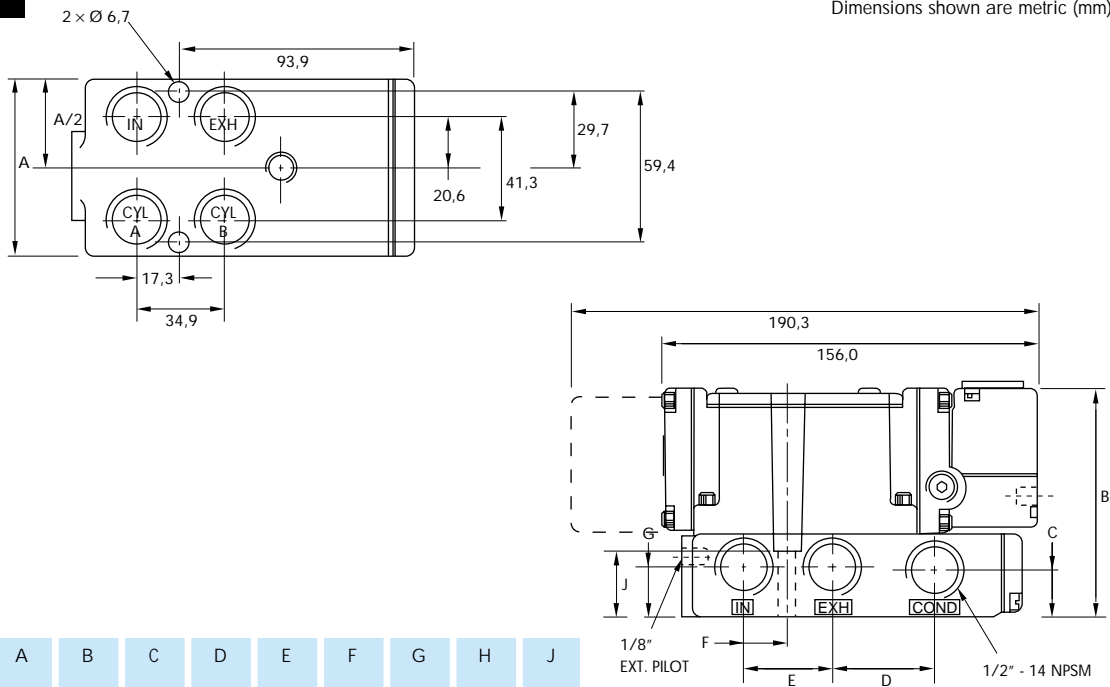
- Note :
- The valve less base is always the same for internal or external pilot. These options are effected in the base.
 - Bottom ports : Refer to modification table.
 - To order bases without the valve, choose the base from the above table, then add 6500B as a prefix. Example 6500B-111.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	3/8" : (4.5 C _v), 1/2" : (5.0 C _v), 3/4" : (5.1 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 12 ms De-energize : 12 ms 120/60 Energize : 9-14 ms De-energize : 11-18 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXBE, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYDA-BE, including seal 16337. • Pressure seal between valve and base : 16246.
 - Mounting screw valve to base (x4) : 32201.

- Options :
- BSPP threads.

DIMENSIONS Dimensions shown are metric (mm)

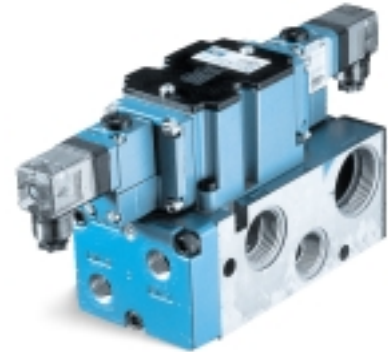


Port size	A	B	C	D	E	F	G	H	J
3/8" - 1/2"	69.6	97.4	18.3	40.6	36.0	17.9	19.0	23.6	25.4
3/4"	94.5	109.3	17.3	46.7	40.1	19.2	20.8	35.9	36.6

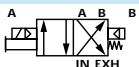
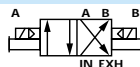
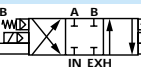
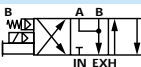

Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6512B-000-PM- XXYZZ	6522B-000-PM- XXYZZ	6532B-000-PM- XXYZZ	6542B-000-PM- XXYZZ	6552B-000-PM- XXYZZ
sub-base	Internal	6512B-431-PM- XXYZZ	6522B-431-PM- XXYZZ	6532B-431-PM- XXYZZ	6542B-431-PM- XXYZZ	6552B-431-PM- XXYZZ
3/8" NPTF	External	6512B-441-PM- XXYZZ	6522B-441-PM- XXYZZ	6532B-441-PM- XXYZZ	6542B-441-PM- XXYZZ	6552B-441-PM- XXYZZ
sub-base	Internal	6512B-531-PM- XXYZZ	6522B-531-PM- XXYZZ	6532B-531-PM- XXYZZ	6542B-531-PM- XXYZZ	6552B-531-PM- XXYZZ
1/2" NPTF	External	6512B-541-PM- XXYZZ	6522B-541-PM- XXYZZ	6532B-541-PM- XXYZZ	6542B-541-PM- XXYZZ	6552B-541-PM- XXYZZ
sub-base	Internal	6512B-631-PM- XXYZZ	6522B-631-PM- XXYZZ	6532B-631-PM- XXYZZ	6542B-631-PM- XXYZZ	6552B-631-PM- XXYZZ
3/4" NPTF	External	6512B-641-PM- XXYZZ	6522B-641-PM- XXYZZ	6532B-641-PM- XXYZZ	6542B-641-PM- XXYZZ	6552B-641-PM- XXYZZ

Note : Above codes shown are for side cylinder ports.

SOLENOID OPERATOR ▶

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

OPTIONS

6512B-XXX-PM-**XXYZZ**

- For piped pilot exhaust replace M by P.
- For dual pressure valve, replace by 4.

MODIFICATIONS

MOD. N°	DESCRIPTION	MODEL AVAILABILITY
O112	Side inlet & exhaust with bottom cyl. ports (No end cyl. ports)	Available on all manifold models
O210	Porting as ordered in model number plus an additional bottom inlet	Available on all manifold models
O364	Sgl. pressure — side inlet & exh. and additional bottom inlet with bottom cyl. ports (No end cyl. ports) DUAL PRESSURE — Same as sgl. pressure except with two bottom inlets.	Available on all manifold models

- Note :
- The valve less base is always the same for internal or external pilot. These options are effected in the manifold.
 - Bottom ports : Refer to modification table.
 - To order manifolds without the valve, choose the manifold from the above table, then add 6500B as a prefix. Example 6500B-431.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 150 PSI	
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	3/8" : (4.5 C _v), 1/2" : (5.0 C _v), 3/4" : (5.1 C _v)	
Leak rate :	100 cm ³ /min	
Coil :	Epoxy encapsulated - class A wires - Continuous duty	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W)	Energize : 12 ms De-energize : 12 ms
	120/60	Energize : 9-14 ms De-energize : 11-18 ms

Spare parts :

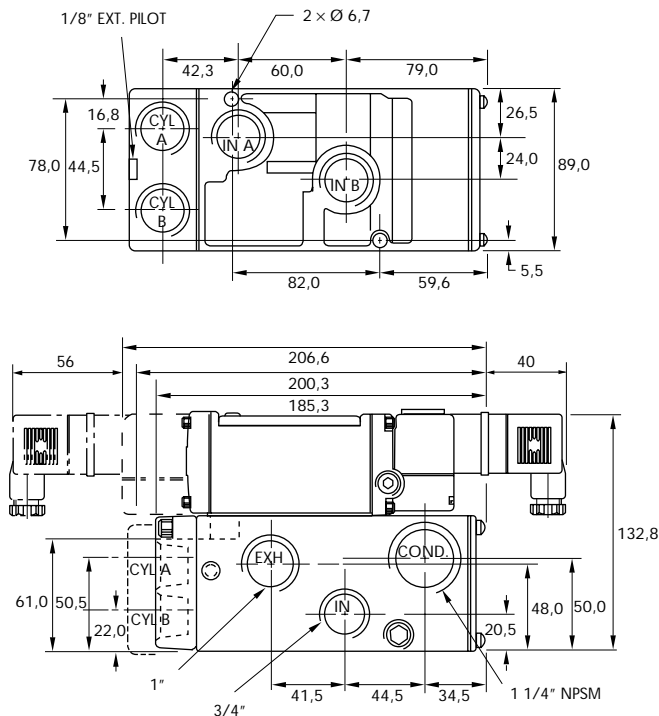
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16246.
- Mounting screw valve to base (x4) : 32201. • Tie-rod (x2) : 19540. • Fastening kit : N-65002-01
- Inlet isolator : 28309. • Exhaust isolator : 28310. • Blank station cover plate : N-65009.

Options :

- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)

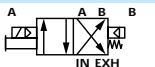
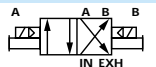

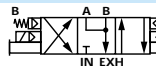



Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.

HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6511B-000-PM- xx yDA	6521B-000-PM- xx yDA	6531B-000-PM- xx yDA	6541B-000-PM- xx yDA	6551B-000-PM- xx yDA
sub-base	Internal	6511B-411-PM- xx yDA	6521B-411-PM- xx yDA	6531B-411-PM- xx yDA	6541B-411-PM- xx yDA	6551B-411-PM- xx yDA
3/8" NPTF	External	6511B-421-PM- xx yDA	6521B-421-PM- xx yDA	6531B-421-PM- xx yDA	6541B-421-PM- xx yDA	6551B-421-PM- xx yDA
sub-base	Internal	6511B-511-PM- xx yDA	6521B-511-PM- xx yDA	6531B-511-PM- xx yDA	6541B-511-PM- xx yDA	6551B-511-PM- xx yDA
1/2" NPTF	External	6511B-521-PM- xx yDA	6521B-521-PM- xx yDA	6531B-521-PM- xx yDA	6541B-521-PM- xx yDA	6551B-521-PM- xx yDA
sub-base	Internal	6511B-611-PM- xx yDA	6521B-611-PM- xx yDA	6531B-611-PM- xx yDA	6541B-611-PM- xx yDA	6551B-611-PM- xx yDA
3/4" NPTF	External	6511B-621-PM- xx yDA	6521B-621-PM- xx yDA	6531B-621-PM- xx yDA	6541B-621-PM- xx yDA	6551B-621-PM- xx yDA



Note : Above codes shown are for side cylinder ports without lights.

SOLENOID OPERATOR ►

xx y DA

xx	Voltage	y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

OPTIONS

6511B-XXX-PM- xx yDA	
M	- For piped pilot exhaust replace M by P.
3	- For lights on valve body, replace by 3.
2	- For lights on manifold, replace by 2 (sgl. light), by 3 (dbl. light).
4	- For dual pressure valve replace by 4 (no light), by 5 (sgl. light), by 6 (dbl. light).

MODIFICATIONS		
MOD. N°	DESCRIPTION	MODEL AVAILABILITY
O112	Side inlet & exhaust with bottom cyl. ports (No end cyl. ports)	Available on all manifold models
O210	Porting as ordered in model number plus an additional bottom inlet	Available on all manifold models
O364	Sgl. pressure — side inlet & exh. and additional bottom inlet with bottom cyl. ports (No end cyl. ports) DUAL PRESSURE — Same as sgl. pressure except with two bottom inlets.	Available on all manifold models

Note : 1. The valve less base is always the same for internal or external pilot. These options are effected in the manifold.
2. Bottom ports : Refer to modification table.
3. To order manifolds without the valve, choose the manifold from the above table, then add 6500B as a prefix. Example 6500B-411.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 150 PSI	
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	3/8" : (4.5 C _v), 1/2" : (5.0 C _v), 3/4" : (5.1 C _v)	
Leak rate :	100 cm ³ /min	
Coil :	Epoxy encapsulated - class A wires - Continuous duty	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W)	Energize : 12 ms De-energize : 12 ms
	120/60	Energize : 9-14 ms De-energize : 11-18 ms

Spare parts :

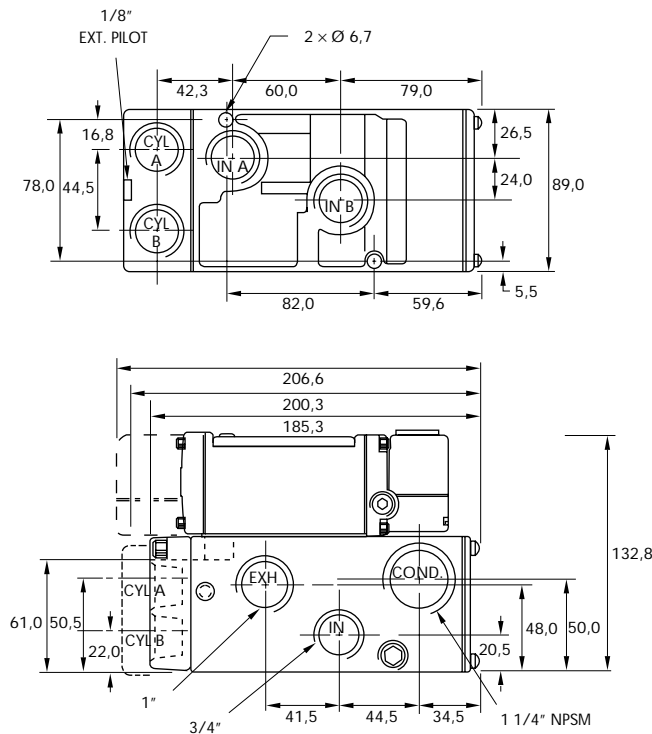
- Solenoid operator (power ≥ 4 W) : D1-XXBE, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYDA-BE, including seal 16337. • Pressure seal between valve and base : 16246.
- Mounting screw valve to base (x4) : 32201. • Tie-rod (x2) : 19540. • Fastening kit : N-65002-01
- Inlet isolator : 28309. • Exhaust isolator : 28310. • Blank station cover plate : N-65009.

Options :

- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)

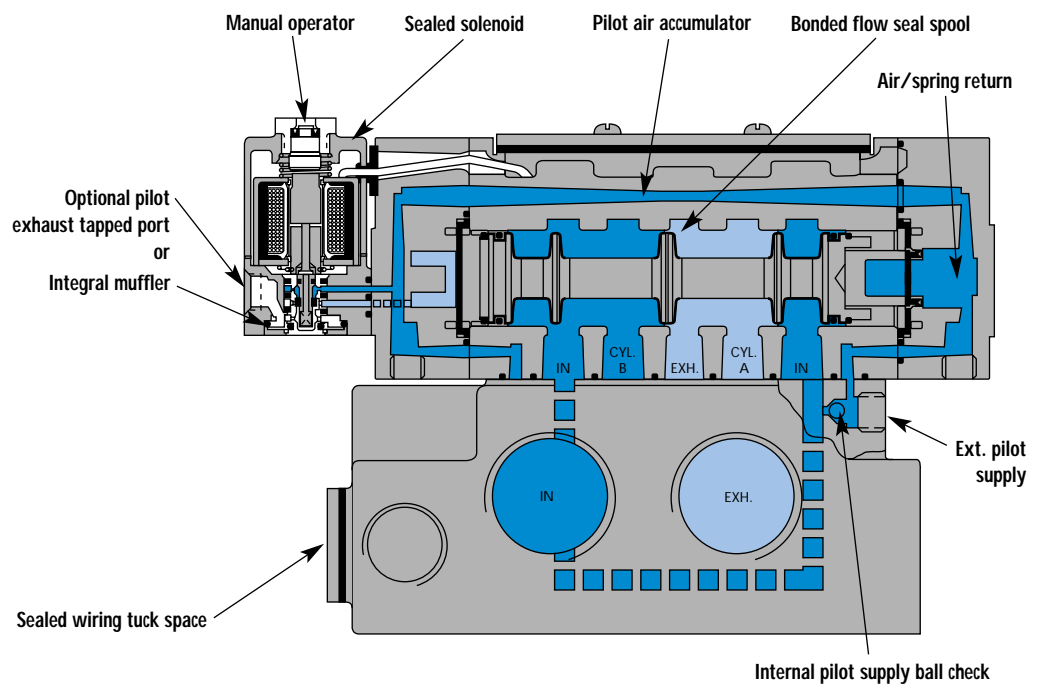


Individual mounting

sub-base non "plug-in"	sub-base "plug-in"
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Manifold mounting

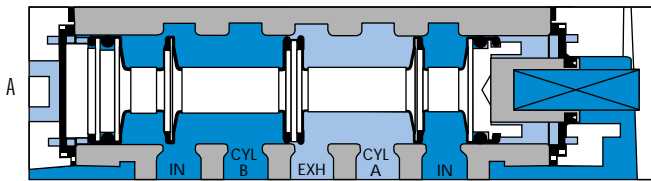
sub-base non "plug-in"	sub-base "plug-in"
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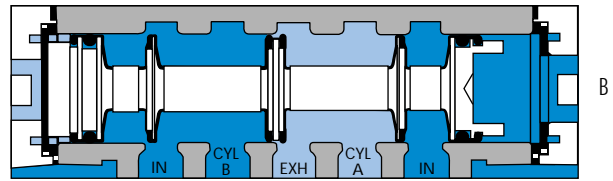
SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- A large checked accumulator for consistent shifting on single and double solenoid models.
- A plug-in design that provides for internal or external pilot with or without lights and all electrical and air plumbing in the base.
- Non-lubricated or lubricated service.
- Optional low wattage DC solenoids down to 1 watt.
- Optional indicator lights, and various types of manual operators.
- Non plug-in or external plug-in models are available.

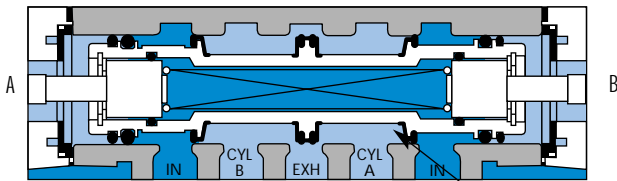
SPOOL CONFIGURATIONS



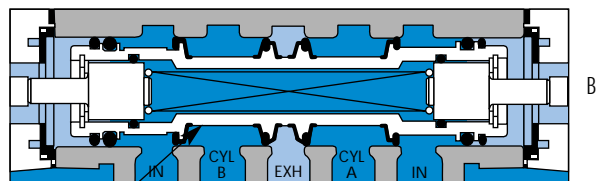
2 POS. SINGLE OPERATOR SPRING RETURN
B ACTUATED SHOWN



2 POS. DOUBLE OPERATOR
B ACTUATED SHOWN

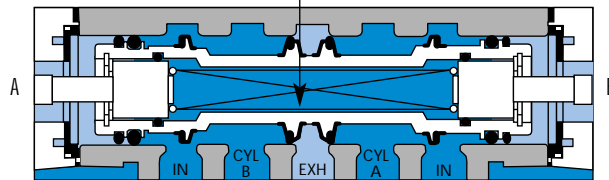


3 POS. OPEN CENTER
CENTER POSITION SHOWN



3 POS. CLOSED CENTER
CENTER POSITION SHOWN

PATENTED
AIR/SPRING
CENTERING



3 POS. PRESSURE CENTER
CENTER POSITION SHOWN

VALVE CONFIGURATIONS AVAILABLE

The versatile 6600 Series provides high flow, extremely fast response, and long life in a compact package and is available in the following configurations:

- 2-Pos., single or double operators (solenoid or remote air).
- 3-Pos., double operator-Closed Center, Open Center or Pressure Center (solenoid or remote air).
- Single pressure or dual pressure.
- Individual base.
- Internal pilot or for Vacuum to 25 PSI main valve pressures, external pilot.
- Manual and mechanical operators available.

REMOTE AIR PILOT OPERATED VALVES

These remote air versions feature:

- A large checked accumulator for air/spring return on single remote air models.
- All piping connections, including the remote air pilot supply, in the base.
- Non-lubricated or lubricated service.

REMOTE AIR PILOT, PILOT OPERATED VALVES

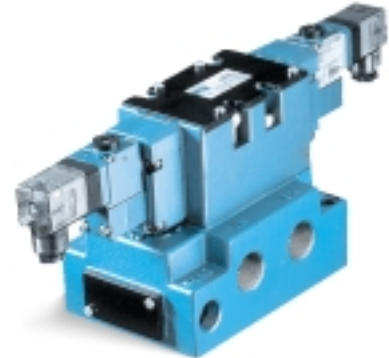
These special air versions have the same features as the remote air pilot operated models, but additionally feature:

- A manual operator and indicator.
- Ability to use a pilot signal pressure different from the main valve pressure. Pilot signal can be from 20 to 150 PSIG, regardless of main valve pressure.

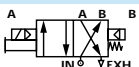
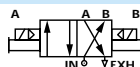
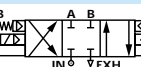
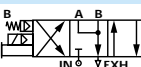
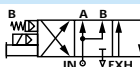
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/4" - 1"	9.6 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6612A-000-PM- XXVZZ	6622A-000-PM- XXVZZ	6632A-000-PM- XXVZZ	6642A-000-PM- XXVZZ	6652A-000-PM- XXVZZ
sub-base	Internal	6612A-231-PM- XXVZZ	6622A-231-PM- XXVZZ	6632A-231-PM- XXVZZ	6642A-231-PM- XXVZZ	6652A-231-PM- XXVZZ
3/4" NPTF	External	6612A-241-PM- XXVZZ	6622A-241-PM- XXVZZ	6632A-241-PM- XXVZZ	6642A-241-PM- XXVZZ	6652A-241-PM- XXVZZ
sub-base	Internal	6612A-331-PM- XXVZZ	6622A-331-PM- XXVZZ	6632A-331-PM- XXVZZ	6642A-331-PM- XXVZZ	6652A-331-PM- XXVZZ
1" NPTF	External	6612A-341-PM- XXVZZ	6622A-341-PM- XXVZZ	6632A-341-PM- XXVZZ	6642A-341-PM- XXVZZ	6652A-341-PM- XXVZZ

Note : Above codes shown are for side ports.

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

OPTIONS

6612A-XXX-PM-**XXYDA**

- For piped pilot exhaust replace M by P.
- For dual pressure valve, replace by 4.

MODIFICATIONS

MOD. N°	DESCRIPTION	MODEL AVAILABILITY
0002	Bottom inlet, exh. & cyl ports (side ports plugged)	3/4" individual base
0004	Full side porting and additional. Bottom inlet, exh. & cyl ports	3/4" individual base
O112	Side inlet & exhaust with bottom cyl. ports (side cyl.ports plugged)	3/4" individual base

Note : 1. The valve less base is always the same for internal or external pilot. These options are effected in the base.

- Bottom ports : Refer to modification table.
- To order bases without the valve, choose the base from the above table, then add 6600A as a prefix. Example 6600A-231.
- 2 position and 3 position valve bodies are not interchangeable.

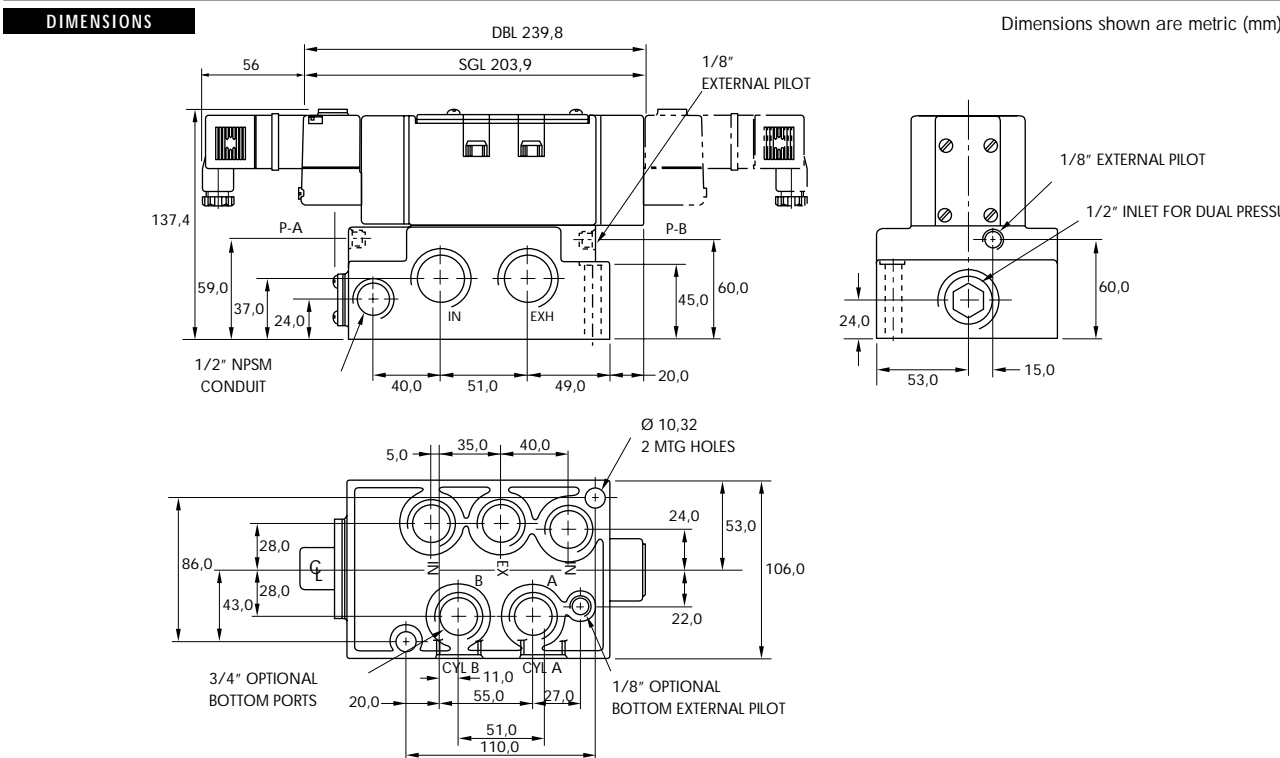
TO ORDER - Add the appropriate modification number after the valve number;

EXAMPLE : 6612A-231-PM-111JA **MOD 0002**

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	3/4" : (9.0 C _v), 1" : (9.6 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 18 ms De-energize : 20 ms 120/60 Energize : 15-25 ms De-energize : 19-28 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16436.
 - Mounting screw valve to base (x4) : 35416.

- Options :
- BSPP threads.



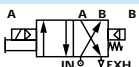
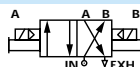
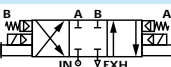
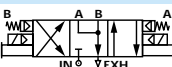
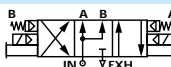
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/4" - 1"	9.6 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6611A-000-PM- xx yDA	6621A-000-PM- xx yDA	6631A-000-PM- xx yDA	6641A-000-PM- xx yDA	6651A-000-PM- xx yDA
sub-base	Internal	6611A-211-PM- xx yDA	6621A-211-PM- xx yDA	6631A-211-PM- xx yDA	6641A-211-PM- xx yDA	6651A-211-PM- xx yDA
3/4" NPTF	External	6611A-221-PM- xx yDA	6621A-221-PM- xx yDA	6631A-221-PM- xx yDA	6641A-221-PM- xx yDA	6651A-221-PM- xx yDA
sub-base	Internal	6611A-311-PM- xx yDA	6621A-311-PM- xx yDA	6631A-311-PM- xx yDA	6641A-311-PM- xx yDA	6651A-311-PM- xx yDA
1" NPTF	External	6611A-321-PM- xx yDA	6621A-321-PM- xx yDA	6631A-321-PM- xx yDA	6641A-321-PM- xx yDA	6651A-321-PM- xx yDA

Note : Above codes shown are for side ports without lights.

SOLENOID OPERATOR ►

XX Y DA

XX Voltage	Y Manual operator
11 120/60, 110/50	1 Non-locking
12 240/60, 220/50	2 Locking
22 24/60, 24/50	
59 24 VDC (2.5 W)	
87 24 VDC (17.1 W)	
61 24 VDC (8.5 W)	

OPTIONS

6611A-XXX-PM-**xx**yDA

- For piped pilot exhaust replace M by P.
- For dual pressure valve replace by 4 (no light), by 5 (sgl. light), by 6 (dbl. light).
- For lights on base, replace by 2 (sgl. light), by 3 (dbl. light).
- For lights on valve body, replace by 3.

MODIFICATIONS		
MOD. N°	DESCRIPTION	MODEL AVAILABILITY
0002	Bottom inlet, exh. & cyl ports (side ports plugged)	3/4" individual base
0004	Full side porting and additional bottom inlet, exh. & cyl ports	3/4" individual base
0112	Side inlet & exhaust with bottom cyl. ports (side cyl.ports plugged)	3/4" individual base

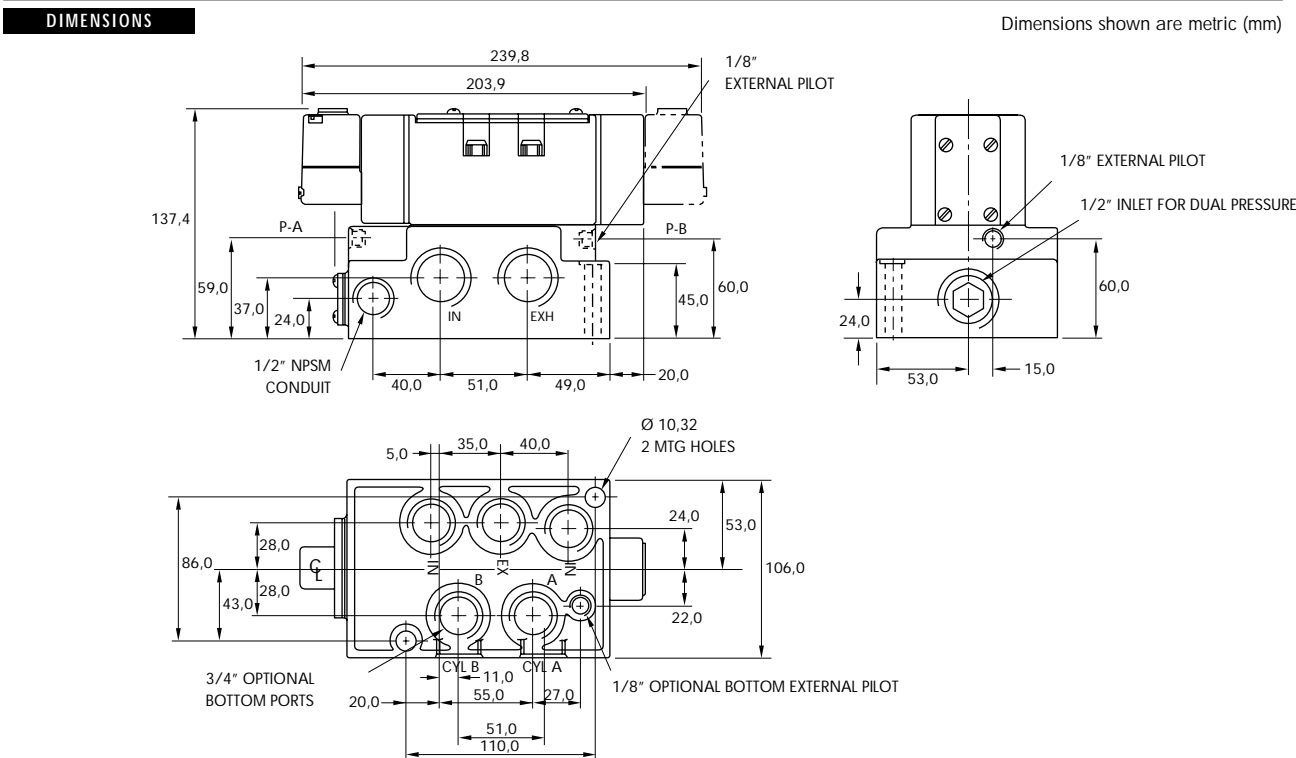
- Note : 1. The valve less base is always the same for internal or external pilot. These options are effected in the base.
 2. Bottom ports : Refer to modification table.
 3. To order bases without the valve, choose the base from the above table, then add 6600A as a prefix. Example 6600A-211.
 4. 2 position and 3 position valve bodies are not interchangeable.

TO ORDER - Add the appropriate modification number after the valve number;
EXAMPLE : 6611A-211-PM-111DA **MOD 0002**

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	3/4" : (9.0 C _v), 1" : (9.6 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 18 ms De-energize : 20 ms 120/60 Energize : 15-25 ms De-energize : 19-28 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXBE, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYDA-BE, including seal 16337. • Pressure seal between valve and base : 16436.
 - Mounting screw valve to base (x4) : 35416.

- Options :
- BSPP threads.



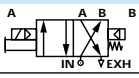
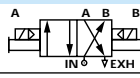
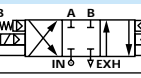
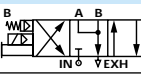
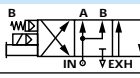
Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/4" - 1" - 1 1/4"	9.6 C _v	sub-base non "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6612A-000-PM- XXYZZ	6622A-000-PM- XXYZZ	6632A-000-PM- XXYZZ	6642A-000-PM- XXYZZ	6652A-000-PM- XXYZZ
sub-base	Internal	6612A-431-PM- XXYZZ	6622A-431-PM- XXYZZ	6632A-431-PM- XXYZZ	6642A-431-PM- XXYZZ	6652A-431-PM- XXYZZ
3/4" NPTF	External	6612A-441-PM- XXYZZ	6622A-441-PM- XXYZZ	6632A-441-PM- XXYZZ	6642A-441-PM- XXYZZ	6652A-441-PM- XXYZZ
sub-base	Internal	6612A-531-PM- XXYZZ	6622A-531-PM- XXYZZ	6632A-531-PM- XXYZZ	6642A-531-PM- XXYZZ	6652A-531-PM- XXYZZ
1" NPTF	External	6612A-541-PM- XXYZZ	6622A-541-PM- XXYZZ	6632A-541-PM- XXYZZ	6642A-541-PM- XXYZZ	6652A-541-PM- XXYZZ
sub-base	Internal	6612A-631-PM- XXYZZ	6622A-631-PM- XXYZZ	6632A-631-PM- XXYZZ	6642A-631-PM- XXYZZ	6652A-631-PM- XXYZZ
1 1/4" NPTF	External	6612A-641-PM- XXYZZ	6622A-641-PM- XXYZZ	6632A-641-PM- XXYZZ	6642A-641-PM- XXYZZ	6652A-641-PM- XXYZZ

Note : Above codes shown are for side ports.

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

OPTIONS

6612A-XXX-PM-**XXYDA**

- For piped pilot exhaust replace M by P.
- For dual pressure valve, replace by 4.

MODIFICATIONS

MOD. N°	DESCRIPTION	MODEL AVAILABILITY
O210	1 1/4" Bottom inlet	Manifold base
O364	1 1/4" Bottom inlet, 3/4" or 1" Bottom cyl.	Manifold base
O112	Side inlet & exhaust with bottom cyl. ports (side cyl.ports plugged)	1" Manifold base

TO ORDER - Add the appropriate modification number after the valve number;

EXAMPLE : 6612A-431-PM-111JA **MOD O364**

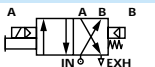

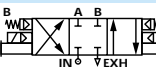
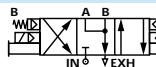
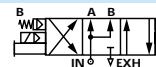
- The valve less base is always the same for internal or external pilot. These options are effected in the manifold.
- Bottom ports : Refer to modification table.
- To order manifolds without the valve, choose the manifold from the above table, then add 6600A as a prefix. Example 6600A-431.
- When ordering an external pilot connection for manifold bases, a common external pilot port is standard. One connection only is required for all the valves in the manifold whether single or double solenoid.
- 2 position and 3 position valve bodies are not interchangeable.

Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/4" - 1" - 1 1/4"	9.6 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.

HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
						
Valve less base		6611A-000-PM- xx YDA	6621A-000-PM- xx YDA	6631A-000-PM- xx YDA	6641A-000-PM- xx YDA	6651A-000-PM- xx YDA
sub-base	Internal	6611A-411-PM- xx YDA	6621A-411-PM- xx YDA	6631A-411-PM- xx YDA	6641A-411-PM- xx YDA	6651A-411-PM- xx YDA
3/4" NPTF	External	6611A-421-PM- xx YDA	6621A-421-PM- xx YDA	6631A-421-PM- xx YDA	6641A-421-PM- xx YDA	6651A-421-PM- xx YDA
sub-base	Internal	6611A-511-PM- xx YDA	6621A-511-PM- xx YDA	6631A-511-PM- xx YDA	6641A-511-PM- xx YDA	6651A-511-PM- xx YDA
1" NPTF	External	6611A-521-PM- xx YDA	6621A-521-PM- xx YDA	6631A-521-PM- xx YDA	6641A-521-PM- xx YDA	6651A-521-PM- xx YDA
sub-base	Internal	6611A-611-PM- xx YDA	6621A-611-PM- xx YDA	6631A-611-PM- xx YDA	6641A-611-PM- xx YDA	6651A-611-PM- xx YDA
1 1/4" NPTF	External	6611A-621-PM- xx YDA	6621A-621-PM- xx YDA	6631A-621-PM- xx YDA	6641A-621-PM- xx YDA	6651A-621-PM- xx YDA

Note : Above codes shown are for side cylinder ports without lights.

SOLENOID OPERATOR ➤

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

OPTIONS

6611A-XXX-PM- xx YDA	
	- For piped pilot exhaust replace M by P.
	- For dual pressure valve replace by 4 (no light), by 5 (sgl. light), by 6 (dbl. light).
	- For lights on manifold, replace by 2 (sgl. light), by 3 (dbl. light).
	- For lights on valve body, replace by 3.

MODIFICATIONS		
MOD. N°	DESCRIPTION	MODEL AVAILABILITY
O210	1 1/4" Bottom inlet	Manifold base
O364	1 1/4" Bottom inlet, 3/4" or 1" Bottom cyl.	Manifold base
O112	Side inlet & exhaust with bottom cyl. ports (side cyl.ports plugged)	1" Manifold base

TO ORDER - Add the appropriate modification number after the valve number;
EXAMPLE : 6611A-411-PM-111DA **MOD 0364**

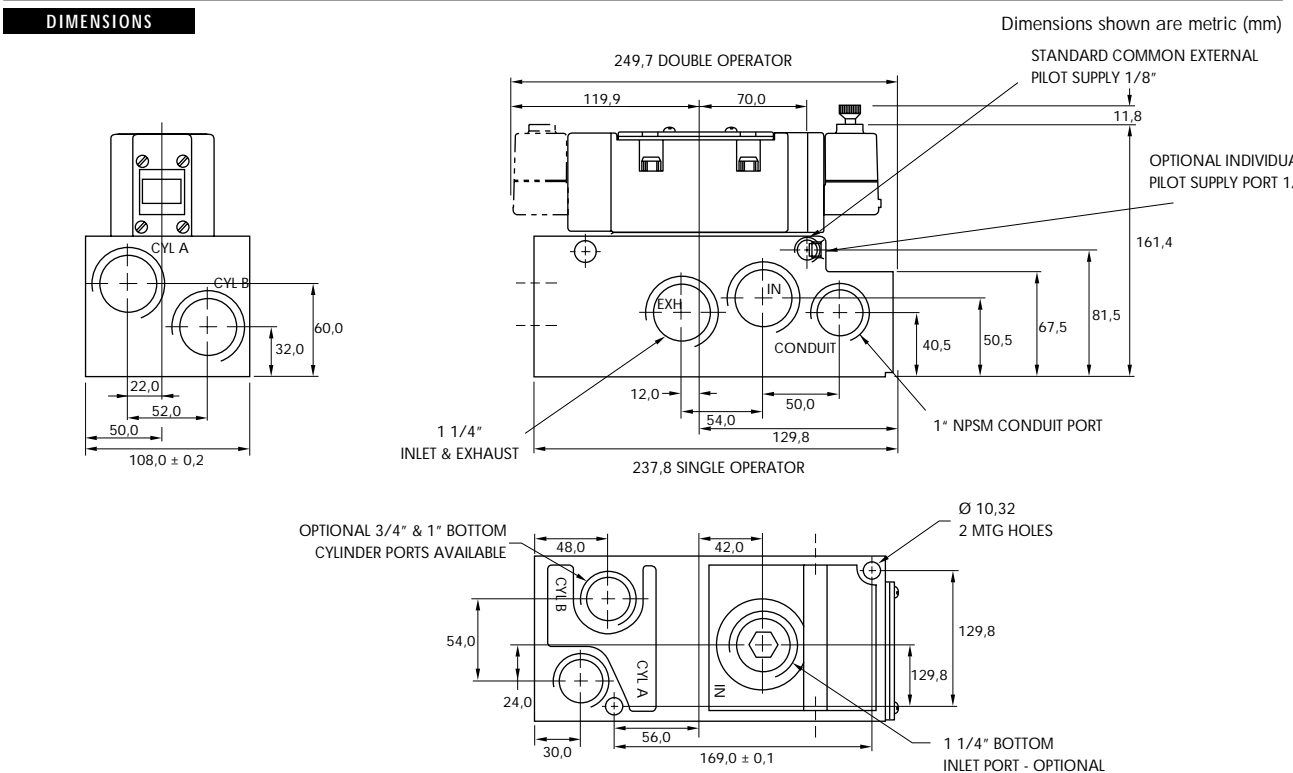
- Note :
- The valve less base is always the same for internal or external pilot. These options are effected in the manifold.
 - Bottom ports : Refer to modification table.
 - To order manifolds without the valve, choose the manifold from the above table, then add 6600A as a prefix. Example 6600A-411.
 - When ordering an external pilot connection for manifold bases, a common external pilot port is standard. One connection only is required for all the valves in the manifold whether single or double solenoid.
 - 2 position and 3 position valve bodies are not interchangeable.



TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	3/4" : (9.0 C _v), 1" : (9.6 C _v), 1 1/4" : (9.6 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 18 ms De-energize : 20 ms 120/60 Energize : 15-25 ms De-energize : 19-28 ms

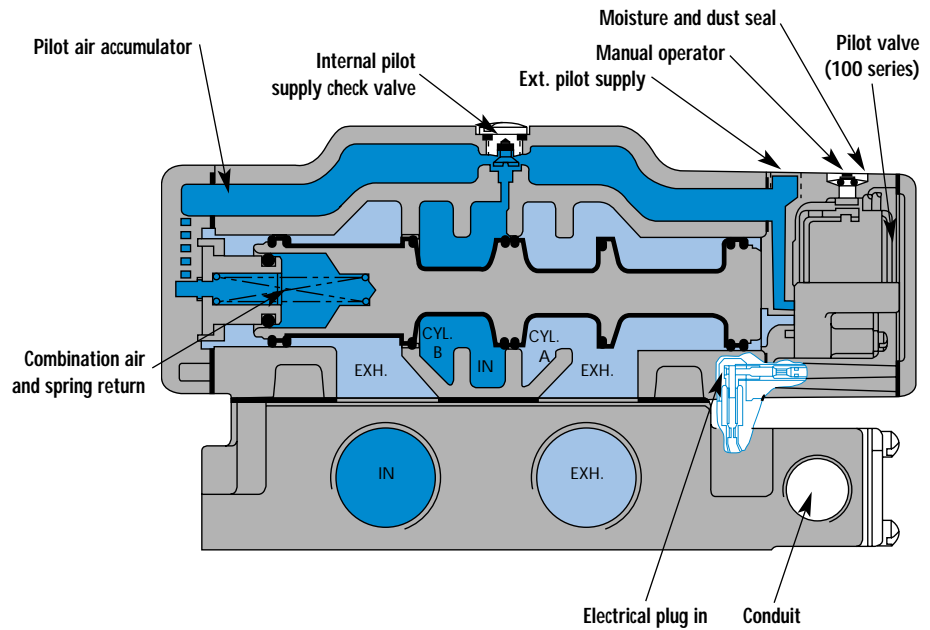
- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXBE, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYDA-BE, including seal 16337. • Pressure seal between valve and base : 16436.
 - Mounting screw valve to base (x4) : 35416. • Tie-rod (x2) : 19789. • Fastening kit : N-66002-01.
 - Inlet & exhaust isolator : 28367.

- Options :
- BSPP threads.



Individual mounting

sub-base
"plug-in"



SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- A large checked accumulator for consistent shifting on single and double solenoid models.
- A plug-in design that provides for internal or external pilot with or without lights and all electrical in the base.
- Non-lubricated or lubricated service.
- Optional indicator lights, and various types of manual operators.

SOLENOID PILOT

The solenoid pilot utilized on the 1300 Series is the extremely fast and reliable, spring biased MAC 100 Series three-way manifold valve which features a high flow balanced poppet. The patented spring biased floating pole piece MACSOLENOID® of the 100 Series practically eliminates the two most common causes of solenoid valve failures: coil burnout on AC service and failure to shift. The versatility of the 100 Series permits either internal or external pilot supply. The solenoid housing incorporates a 1/8" NPTF pilot exhaust connection which can be either muffled or piped away and the external pilot supply connection.

MAIN VALVE

The main valve contains a MAC all bonded, lightweight one-piece aluminium spool. All spool seals are permanently bonded, precision ground and chemically surface hardened to provide long, stick-free operation. These valves with their pressure balanced design are not affected by restrictions or back pressure in the exhaust and can be plugged for use as three-way valves. The one-piece silicon aluminium body used with any of these valves incorporates an integral accumulator.

ACCUMULATOR

A large accumulator housed in the main valve body supplies both pilots on double solenoid valves as well as the air assisted spring return on single solenoid pilot or single

remote air pilot operated valves. Internally piloted, the accumulator is protected from inlet pressure fluctuations in the main valve by a check valve. The check valve is designed to bleed off the accumulator when the main supply pressure is removed. For external pilot supply operations, the check valve is reversed, blocking the internal pilot supply to the accumulator. The accumulator is then supplied through the external supply connection.

DIFFERENTIAL RETURN

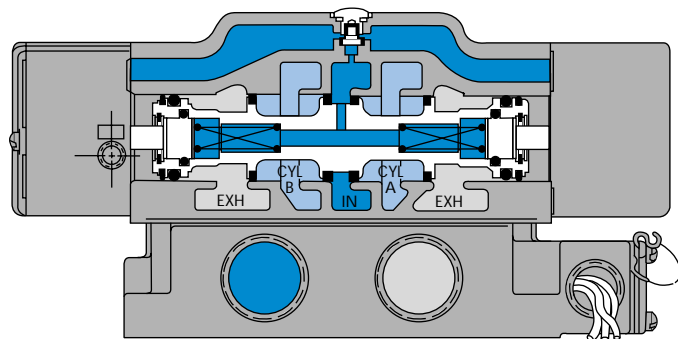
Single solenoid pilot or single air pilot operated models contain a combination spring and air assisted differential return. Supplied from the accumulator it balances the shifting forces for consistent operation and positive spool return.

BASES

The 4-port aluminium base design simplifies piping and enables the use of a single muffler or piped exhaust. They are provided with an integral electrical wiring space, sealed with a convenient access cover. The access cover also houses the optional indicator lights, available in voltages of 120/60, 110/50 or 240/60, 220/50 or 24 VDC in either single or double lights.

3-POSITION VALVES

The 1300 Series solenoid pilot 3-position valves, are centered by MAC's exclusive combination spring and pressure assisted spool design. The combination spring and air assist assures fast, positive return of the main spool when the pilots are de-energized. Available in external or internal pilot supply models, with either a closed center spool (all ports blocked) or open center spool (inlet blocked, cylinder ports open to exhaust).



3-POSITION DOUBLE
SOLENOID CLOSED CENTER

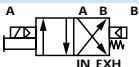
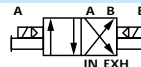
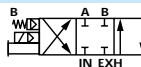

Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/4" - 1" - 1 1/4" - 1 1/2"	15.9 C _v	sub-base "plug-in"

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center
				
Valve less base	1301G-xxYD-xx	1303G-xxYD-xx	1307G-xxYD-xx	1308G-xxYD-xx
Sub base 3/4" NPTF	1321G-xxYD-xx	1323G-xxYD-xx	1327G-xxYD-xx	1328G-xxYD-xx
Sub base 1" NPTF	1331G-xxYD-xx	1333G-xxYD-xx	1337G-xxYD-xx	1338G-xxYD-xx
Sub base 1 1/4" NPTF	1351G-xxYD-xx	1353G-xxYD-xx	1357G-xxYD-xx	1358G-xxYD-xx
Sub base 1 1/2" NPTF	1361G-xxYD-xx	1363G-xxYD-xx	1367G-xxYD-xx	1368G-xxYD-xx

SOLENOID OPERATOR ►

XX Y D- X X

XX	Voltage	Y	Manual operator	X	Pilot air	X	Indicator light
11	120/60, 110/50	1	Non-locking	1	Internal	5	With light in base
12	240/60, 220/50	2	Locking	2	External		
22	24/60, 24/50						
59	24 VDC (2.5 W)						
87	24 VDC (17.1 W)						
61	24 VDC (8.5 W)						

Bases	
10952	3/4" NPTF
10953	1" NPTF
10954	1-1/4" NPTF
10955	1-1/2" NPTF

BOTTOM PORTS available only on 3/4" valves

For bottom ports only specify **MOD 0002**

For side and bottom ports specify **MOD 0004**

EXAMPLE : 1321G-111D-1 **MOD 0002**

TECHNICAL DATA

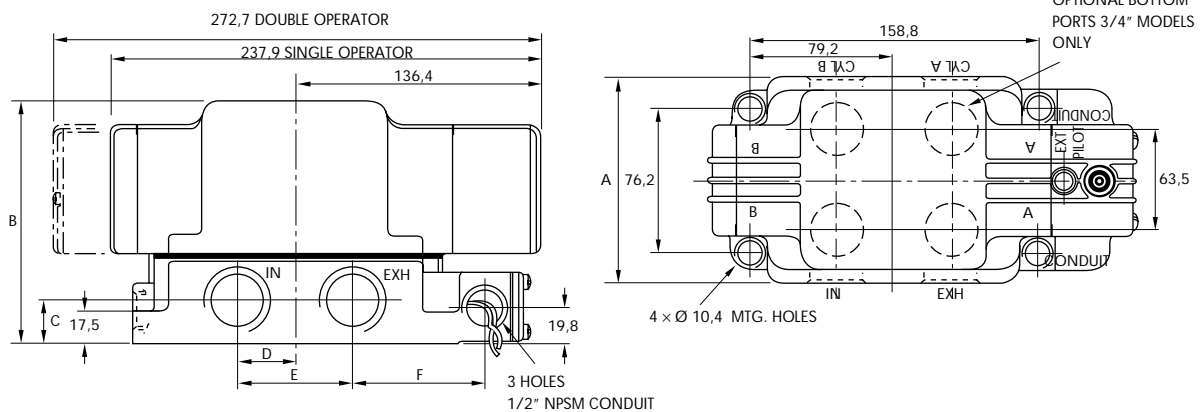
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	3/4" : (11.5 C _v), 1" : (13.7 C _v), 1 1/4" : (15.4 C _v), 1 1/2" : (15.9 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 20 ms	De-energize : 28 ms
	120/60	Energize : 17-23 ms	De-energize : 29-35 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXBD. • Pressure seal between valve and base : 16083.
 - Pilot valve : 150B-XXBD, including mounting screws 32180 and adaptor plate N-03001.
 - Mounting screw valve to base (x4) : 32396.

- Options :
- BSPP threads. • Lights in base.

DIMENSIONS

Dimensions shown are metric (mm)



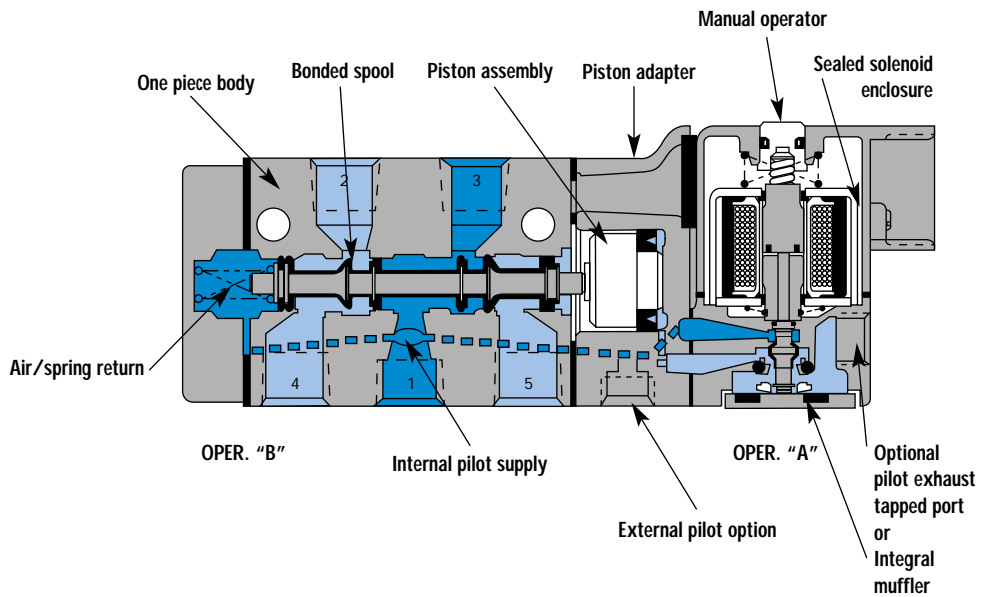
Port size	A	B	C	D	E	F
3/4", 1" NPTF	111.3	132.4	23.8	31.7	63.5	71.4
1 1/4" NPTF	114.3	148.3	30.2	38.1	76.2	65.0
1 1/2" NPTF				35.0	69.9	68.0

Individual mounting

inline	
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Manifold mounting

stacking body with 1 common port (inlet)	stacking body with 3 common ports (inlet & exhausts)	stacking body with 3 common ports and integral F.C.	stacking body with 3 common ports with common conduit	stacking body with 3 common ports with C. C. & integral exh. F. C.
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SERIES FEATURES

- The patented MACSOLENOID® with its non-burn out feature on AC service.
- Air/spring return on single solenoid valves.
- Use for lube or non-lube service.
- Optional common conduit stacking valve with integral wiring space and indicator lights
- Optional integral individual exhaust flow controls.
- Optional low wattage DC solenoids down to 1 watt.
- Various types of manual operators and solenoid enclosures.

SPECIAL APPLICATIONS :

On all single pressure models, energizing the operator closest to port #5 supplies pressure to cylinder port "2" and energizing the operator closest to port #4 supplies pressure to cylinder port "3". For the following special applications, additional piping considerations are required.

EXTERNAL PILOT APPLICATIONS :

An External Pilot is only required when the main valve pressure is less than 20 PSIG on single solenoid or 10 PSIG on double solenoid valves in 2-position models, or less than 20 PSIG on 3-position double solenoid models. Also an External Pilot is required when main valve pressure is in excess of 150 PSIG.

INDIVIDUAL VALVES: The External Pilot supply is connected to the External Pilot port in the piston adapter. The valve must be an External Pilot model.

STACKING VALVES: The External Pilot supply is connected to the External Pilot ports in the end plates. The valve is the same valve for either Internal or External Pilot. The end plate must be the external pilot type.

DUAL PRESSURE (TWO INLET) APPLICATIONS :

When two pressures are required within a valve, a Dual Pressure (Inlet) model must be used. Additionally the following must be adhered to:

INDIVIDUAL VALVES: If both pressures are below the minimum, use an External Pilot supply as described above for Individual valves and connect the two pressures to ports #4 and #5. Otherwise, use an Internal Pilot model and connect the higher pressure to port #5 and the lower pressure to port #4.

STACKING VALVES: Use an External Pilot Manifold End Plate Kit, as described above for Stacking Valves and connect the two pressures to the Exhaust ports in the end plate.

MULTIPLE PRESSURES TO A STACK :

By isolating, different pressures can be supplied to each end of a stack to provide two pressures. If more than two pressures are required, a Dual Inlet Pressure Block can be installed providing 2 more inlet pressures to a stack. With the use of 1 or more of these Pressure Blocks, a stack can have virtually unlimited inlet pressures.

VACUUM APPLICATIONS :

Use an External Pilot model as described under "External Pilot Applications", (Individual valve or Stacking).

For single pressure, dual exhaust type valve ports #4 & #5 (Exhausts) should be connected to the vacuum supply and port #1 (Inlet) to atmosphere.

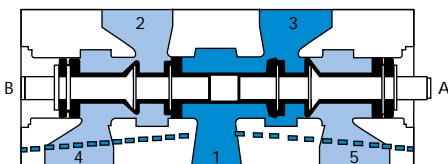
For dual pressure, single exhaust type valves, vacuum should be connected to port #1 (Inlet) and ports #4 & #5 (Exhausts) to atmosphere.

SELECTOR APPLICATIONS :

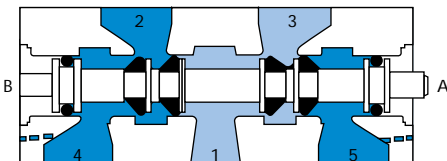
Use an External Pilot model as described above, if both pressures are below the minimum pilot pressure; otherwise use an Internal Pilot model. In either case, use a single pressure model and connect the higher pressure to port #1 (Inlet) and the lower pressure to port #4 (Exhaust) if using cylinder port #2 or to port #5 (Exhaust) if using cylinder port #3.

SPOOL CONFIGURATIONS

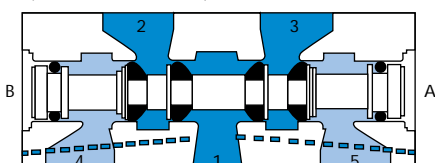
2-POSITION SGL. PRESSURE (SPOOL #12184)
B ACTUATED SHOWN



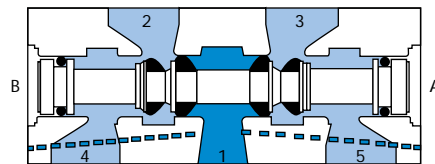
2-POSITION DUAL PRESSURE
(SPOOL ASSY.#10266) B ACTUATED SHOWN



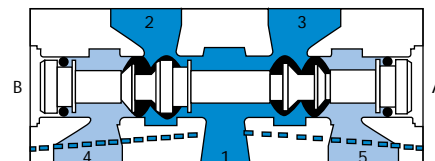
3-POSITION SGL. PRESS. CLOSED CENTER
(SPOOL ASSY. #S-00004) CENTER POSITION SHOWN



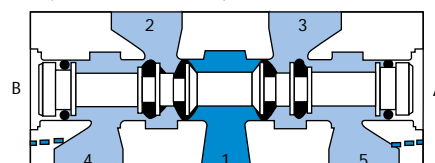
3-POSITION SGL. PRESS. OPEN CENTER
(SPOOL ASSY.#S-00003) CENTER POSITION SHOWN



3-POSITION SGL. PRESS. PRESSURE CENTER
(SPOOL ASSY. #S-08003) CENTER POSITION SHOWN



3-POSITION DUAL PRESS. PRESSURE CENTER
(SPOOL ASSY. #S-08002) CENTER POSITION SHOWN



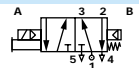
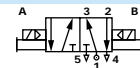
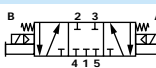
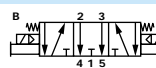
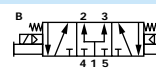
Function	Port size	Flow (Max)	Individual mounting
5/2 - 5/3	1/4"	1.4 C _v	inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
						
1/4" NPTF	Internal	811C-PM- XXYZZ -152	821C-PM- XXYZZ -152	825C-PM- XXYZZ -552	825C-PM- XXYZZ -652	825C-PM- XXYZZ -852
	External	812C-PM- XXYZZ -112	822C-PM- XXYZZ -112	826C-PM- XXYZZ -512	826C-PM- XXYZZ -612	826C-PM- XXYZZ -812

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)			CA	Conduit 1/2" NPS

MODIFICATIONS - N° 0358 - 3/8" inlet and cylinder ports, exhaust ports 1/4"

MODIFICATIONS - N° 1080 - NAMUR interface.

Add mod. N° after valve part n°. - **EXAMPLE** : 811C-PM-111CA-152 Mod. 0358.

OPTIONS

811C-PM-111CA-152	- For 2 position dual pressure : replace by 2.
825C-PM-111CA-852	- For 3 position dual pressure, pressure center : replace by 7.

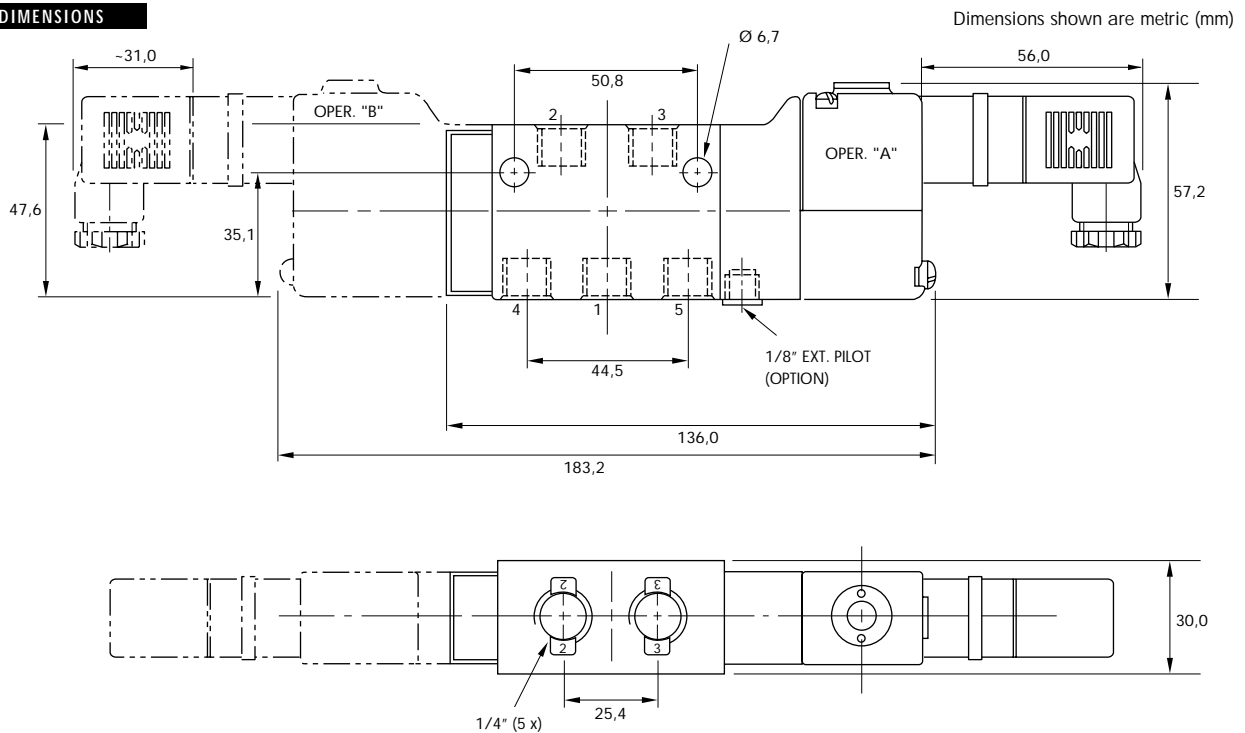
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 20-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 200 PSI	
Pilot pressure :	Single operator and 3 positions : 20-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 C _v)	
Leak rate :	50 cm ³ /min	
Coil :	General purpose - class A wires - Continuous duty - Encapsulated	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W)	Energize : 8 ms De-energize : 10 ms
	120/60	Energize : 5-11 ms De-energize : 9-16 ms

Spare parts : • Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
• Pilot valve : PME-XYZZ, including seal 16337. • Mounting screw kit for pilot : N-08003.

Options : • BSPP threads. • NAMUR interface. • Explosion-proof model. • Flow control/muffler (1/4") : 10951

DIMENSIONS





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold Mounting
5/2 - 5/3	1/4"	1.4 C _v	stacking body with 1 common port (inlet)

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
1/4" NPTF	811C-PM- XXYZZ -132	821C-PM- XXYZZ -132	825C-PM- XXYZZ -532	825C-PM- XXYZZ -632	825C-PM- XXYZZ -832

SOLENOID OPERATOR ►

XX Y ZZ

XX Voltage	Y Manual operator	ZZ Electrical connection
11 120/60, 110/50	1 Non-locking	JB Rectangular connector
12 240/60, 220/50	2 Locking	JD Rectangular connector with light
22 24/60, 24/50		RA Conduit 3/8" NPS
59 24 VDC (2.5 W)		BA Flying leads (18")
87 24 VDC (17.1 W)		
61 24 VDC (8.5 W)		

MANIFOLD END PLATE KITS (NPTF)*

INT. PILOT - PART N°.	EXT. PILOT - PART N°.	MODELS USED WITH
M-08001-01-01	M-08001-02-01	3 com. port or 1 com. port models, stacks of 1 thru 16 valves
M-00005-01-01	M-00005-02-01	3 com. port or 1 com. port models, stacks of 17 or more valves

* Add letter **P** at end of part N°. for BSPP threads; **EXAMPLE** : M-08001-01-01**P**

Note : (1) end plate kit required per stack.

OPTIONS

- 811C-PM-111BA-132 - For 2 position dual pressure : replace by 2.
- 825C-PM-111BA-832 - For 3 position dual pressure, pressure center : replace by 7.

TECHNICAL DATA

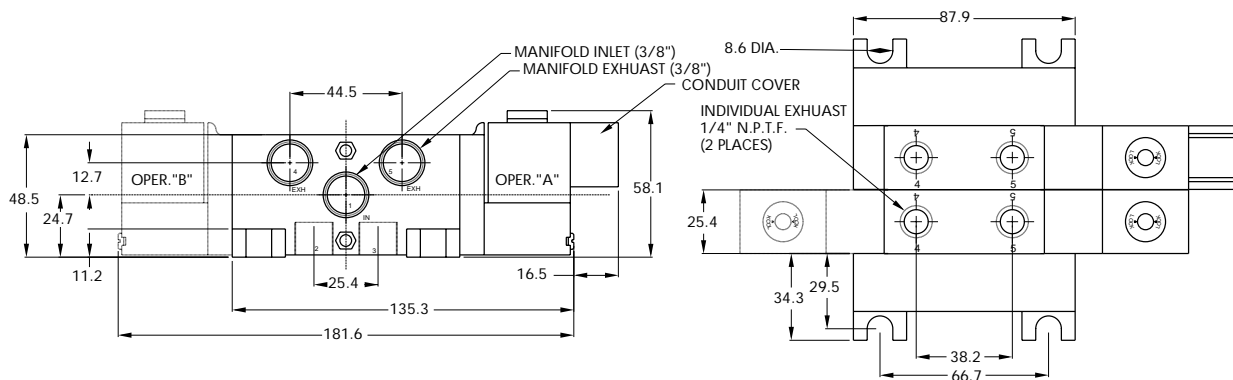
Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 20-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 200 PSI	
Pilot pressure :	Single operator and 3 positions : 20-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 C _v)	
Leak rate :	50 cm ³ /min	
Coil :	General purpose - class A wires - Continuous duty - Encapsulated	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W) Energize : 8 ms De-energize : 10 ms	120/60 Energize : 5-11 ms De-energize : 9-16 ms

Spare parts :
 • Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 • Pilot valve : PME-XXYZZ, including seal 16337. • Mounting screw kit for pilot : N-08003.
 • Inlet isolator : N-08001 • Exhaust isolator (x2) : N-08002

Options :
 • BSPP threads. • Dual inlet block: M-08003 • Flow control/muffler (1/4") : 10951

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting
5/2 - 5/3	1/4" - 3/8"	1.4 C _v	stacking body with 3 common ports (inlet & exhausts)

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
1/4" NPTF	811C-PM- XXYZZ -122	821C-PM- XXYZZ -122	825C-PM- XXYZZ -522	825C-PM- XXYZZ -622	825C-PM- XXYZZ -822
3/8" NPTF	811C-PM- XXYZZ -123	821C-PM- XXYZZ -123	825C-PM- XXYZZ -523	825C-PM- XXYZZ -623	825C-PM- XXYZZ -823

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			RA	Conduit 3/8" NPS
59	24 VDC (2.5 W)			BA	Flying leads (18")
87	24 VDC (17.1 W)				
61	24 VDC (8.5 W)				

MANIFOLD END PLATE KITS (NPTF)*

INT. PILOT - PART N°.	EXT. PILOT - PART N°.	MODELS USED WITH
M-08001-01-01	M-08001-02-01	3 com. port or 1 com. port models, stacks of 1 thru 16 valves
M-00005-01-01	M-00005-02-01	3 com. port or 1 com. port models, stacks of 17 or more valves

* Add letter **P** at end of part N°. for BSPP threads; **EXAMPLE** : M-08001-01-01P
 Note : (1) end plate kit required per stack.

OPTIONS

- 811C-PM-111RA-122 - For 2 position dual pressure : replace by 2.
- 825C-PM-111RA-822 - For 3 position dual pressure, pressure center: replace by 7.

TECHNICAL DATA

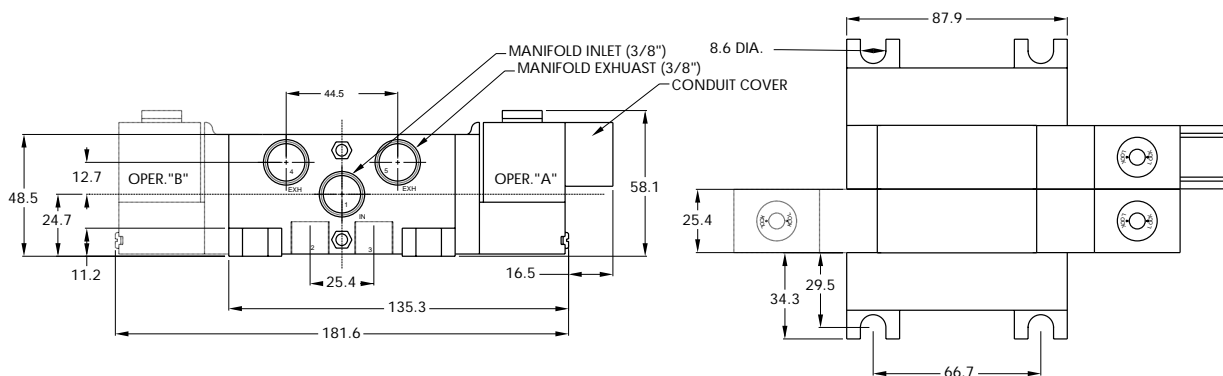
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 20-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 200 PSI		
Pilot pressure :	Single operator and 3 positions : 20-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 C _v), 3/8" : (1.4 C _v)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose - class A wires - Continuous duty - Encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA	Holding : 10.9 VA	
	= 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 8 ms	De-energize : 10 ms
	120/60	Energize : 5-11 ms	De-energize : 9-16 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XYZZ, including seal 16337. • Mounting screw kit for pilot : N-08003.
 - Inlet isolator : N-08001 • Exhaust isolator (x2) : N-08002.

- Options :
- BSPP threads. • Dual inlet block: M-08003.

DIMENSIONS

Dimensions shown are metric (mm)




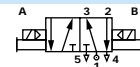
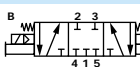
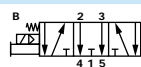
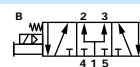
Function	Port size	Flow (Max)	Manifold mounting
5/2 - 5/3	1/4" - 3/8"	1.4 C _v	stacking body with 3 common ports and integral F.C.

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
					
1/4" NPTF	811C-PM- XXYZZ -192	821C-PM- XXYZZ -192	825C-PM- XXYZZ -592	825C-PM- XXYZZ -692	825C-PM- XXYZZ -892
3/8" NPTF	811C-PM- XXYZZ -193	821C-PM- XXYZZ -193	825C-PM- XXYZZ -593	825C-PM- XXYZZ -693	825C-PM- XXYZZ -893

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			RA	Conduit 3/8" NPS
59	24 VDC (2.5 W)			BA	Flying leads (18")
87	24 VDC (17.1 W)				
61	24 VDC (8.5 W)				

MANIFOLD END PLATE KITS (NPTF)*

INT. PILOT - PART N°.	EXT. PILOT - PART N°.	MODELS USED WITH
M-08001-01-01	M-08001-02-01	3 com. port or 1 com. port models, stacks of 1 thru 16 valves
M-00005-01-01	M-00005-02-01	3 com. port or 1 com. port models, stacks of 17 or more valves

* Add letter **P** at end of part N°. for BSPP threads; **EXAMPLE** : M-08001-01-01**P**

Note : (1) end plate kit required per stack.

OPTIONS

811C-PM-111RA-192

- For 2 position dual pressure : replace by 2.

825C-PM-111RA-892

- For 3 position dual pressure, pressure center: replace by 7.

TECHNICAL DATA

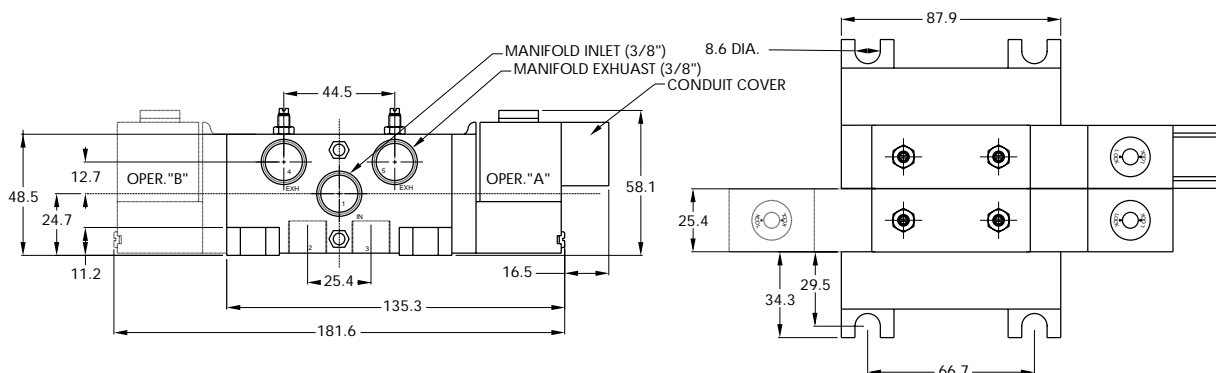
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 20-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 200 PSI		
Pilot pressure :	Single operator and 3 positions : 20-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 Cv), 3/8" : (1.4 Cv)		
Leak rate :	50 cm ³ /min		
Coil :	General purpose - class A wires - Continuous duty - Encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 8 ms	De-energize : 10 ms
	120/60	Energize : 5-11 ms	De-energize : 9-16 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XYZZ, including seal 16337. • Mounting screw kit for pilot : N-08003.
 - Inlet isolator : N-08001 • Exhaust isolator (x2) : N-08002.

- Options :
- BSPP threads. • Dual inlet block: M-08003.

DIMENSIONS

Dimensions shown are metric (mm)



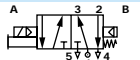
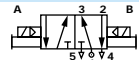
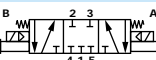
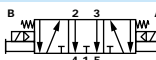

Function	Port size	Flow (Max)	Manifold mounting
5/2 - 5/3	1/4" - 3/8"	1.4 C _v	stacking body with 3 common ports with common conduit

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
					
1/4" NPTF	811C-PM- XXYZZ -142	821C-PM- XXYZZ -142	825C-PM- XXYZZ -542	825C-PM- XXYZZ -642	825C-PM- XXYZZ -842
3/8" NPTF	811C-PM- XXYZZ -143	821C-PM- XXYZZ -143	825C-PM- XXYZZ -543	825C-PM- XXYZZ -643	825C-PM- XXYZZ -843

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	DA	Common conduit
12	240/60, 220/50	2	Locking		
22	24/60, 24/50				
59	24 VDC (2.5 W)				
87	24 VDC (17.1 W)				
61	24 VDC (8.5 W)				

MODIFICATIONS

MOD. N°	DESCRIPTION	MODEL AVAILABILITY
O387	Indicator light 24 VDC	
O295	Indicator light 120 V/60/50	Single & double solenoid
O296	Indicator light 240 V/60/50	

TO ORDER - Add the appropriate modification number after the valve number; **EXAMPLE** : 811C-PM-111DA-142 **MOD O295**

MANIFOLD END PLATE KITS (NPTF)*

INT. PILOT - PART N°.	EXT. PILOT - PART N°.	MODELS USED WITH
M-08002-01-01	M-08002-02-01	Com. conduit models, stacks of 1 thru 16 valves
M-00007-01-01	M-00007-02-01	Com. conduit models, stacks of 17 or more valves

* Add letter **P** at end of part N°. for BSPP threads; **EXAMPLE** : M-08002-01-01P

Note : (1) end plate kit required per stack.

OPTIONS

811C-PM-111DA-142

- For 2 position dual pressure : replace by 2.

825C-PM-111DA-842

- For 3 position dual pressure, pressure center : replace by 7.

TECHNICAL DATA

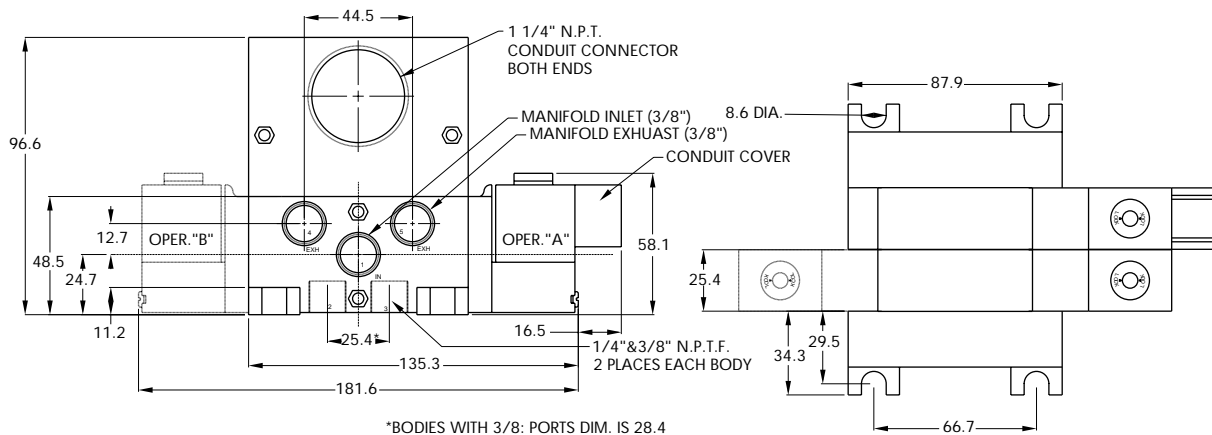
Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 20-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 200 PSI	
Pilot pressure :	Single operator and 3 positions : 20-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 μ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 C _v), 3/8" : (1.4 C _v)	
Leak rate :	50 cm ³ /min	
Coil :	General purpose - class A wires - Continuous duty - Encapsulated	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W) Energize : 8 ms De-energize : 10 ms	120/60 Energize : 5-11 ms De-energize : 9-16 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYZZ, including seal 16337. • Mounting screw kit for pilot : N-08003.
 - Inlet isolator : N-08001 • Exhaust isolator (x2) : N-08002.

- Options :
- BSPP threads. • Dual inlet block: M-00014.

DIMENSIONS

Dimensions shown are metric (mm)



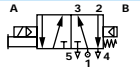
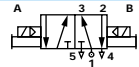
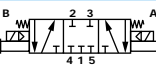
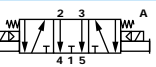
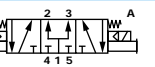
Function	Port size	Flow (Max)	Manifold mounting
5/2 - 5/3	1/4" - 3/8"	1.4 C _v	stacking body with 3 common ports with C. C. & integral exh. F. C.

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
					
1/4" NPTF	811C-PM- XXYZZ -162	821C-PM- XXYZZ -162	825C-PM- XXYZZ -562	825C-PM- XXYZZ -662	825C-PM- XXYZZ -862
3/8" NPTF	811C-PM- XXYZZ -163	821C-PM- XXYZZ -163	825C-PM- XXYZZ -563	825C-PM- XXYZZ -663	825C-PM- XXYZZ -863

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	DA	Common conduit
12	240/60, 220/50	2	Locking		
22	24/60, 24/50				
59	24 VDC (2.5 W)				
87	24 VDC (17.1 W)				
61	24 VDC (8.5 W)				

MODIFICATIONS

MOD. N°	DESCRIPTION	MODEL AVAILABILITY
O387	Indicator light 24 VDC	
O295	Indicator light 120 V/60/50	Single & double solenoid
O296	Indicator light 240 V/60/50	

TO ORDER - Add the appropriate modification number after the valve number; **EXAMPLE** : 811C-PM-111DA-162 **MOD O295**

MANIFOLD END PLATE KITS (NPTF)*

INT. PILOT - PART N°.	EXT. PILOT - PART N°.	MODELS USED WITH
M-08002-01-01	M-08002-02-01	Com. conduit models, stacks of 1 thru 16 valves
M-00007-01-01	M-00007-02-01	Com. conduit models, stacks of 17 or more valves

* Add letter **P** at end of part N°. for BSPP threads; **EXAMPLE** : M-08002-01-01P

Note : (1) end plate kit required per stack.

OPTIONS

811C-PM-111DA-162

- For 2 position dual pressure : replace by 2.

825C-PM-111DA-862

- For 3 position dual pressure, pressure center : replace by 7.

TECHNICAL DATA

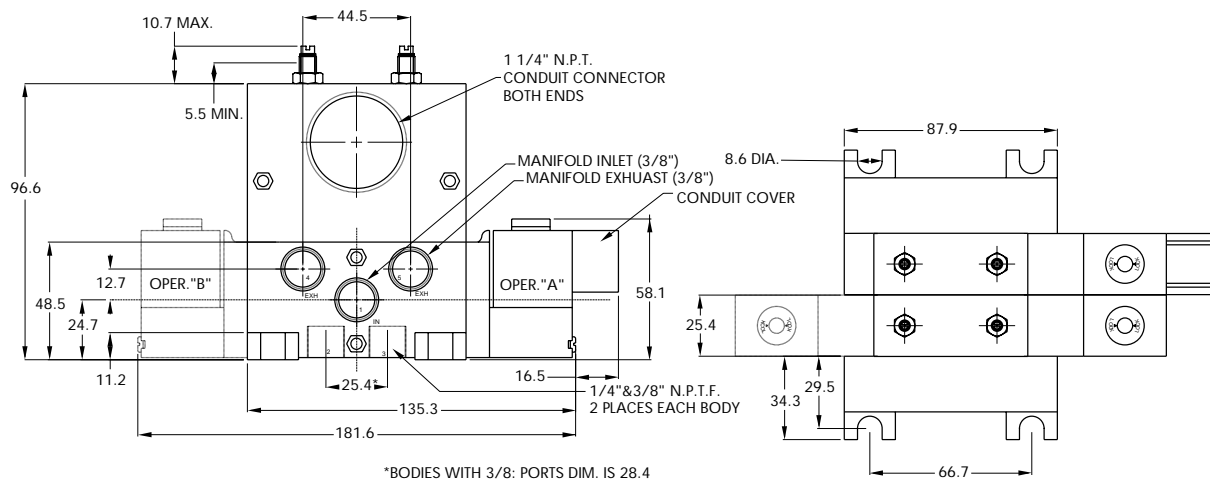
Fluid :	Compressed air, vacuum, inert gases	
Pressure range :	Internal pilot : single operator and 3 positions : 20-150 PSI	double operator : 10-150 PSI
	External pilot : vacuum to 200 PSI	
Pilot pressure :	Single operator and 3 positions : 20-150 PSI Double operator : 10-150 PSI	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)	
Filtration :	40 µ	
Temperature range :	0°F to 120°F (-18°C to 50°C)	
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 C _v), 3/8" : (1.4 C _v)	
Leak rate :	50 cm ³ /min	
Coil :	General purpose - class A wires - Continuous duty - Encapsulated	
Voltage range :	-15% to +10% of nominal voltage	
Protection :	Consult factory	
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W	
Response times :	24 VDC (8.5 W)	Energize : 8 ms De-energize : 10 ms
	120/60	Energize : 5-11 ms De-energize : 9-16 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XYZZ, including seal 16337. • Mounting screw kit for pilot : N-08003.
 - Inlet isolator : N-08001 • Exhaust isolator (x2) : N-08002.

- Options :
- BSPP threads. • Dual inlet block: M-00014.

DIMENSIONS

Dimensions shown are metric (mm)

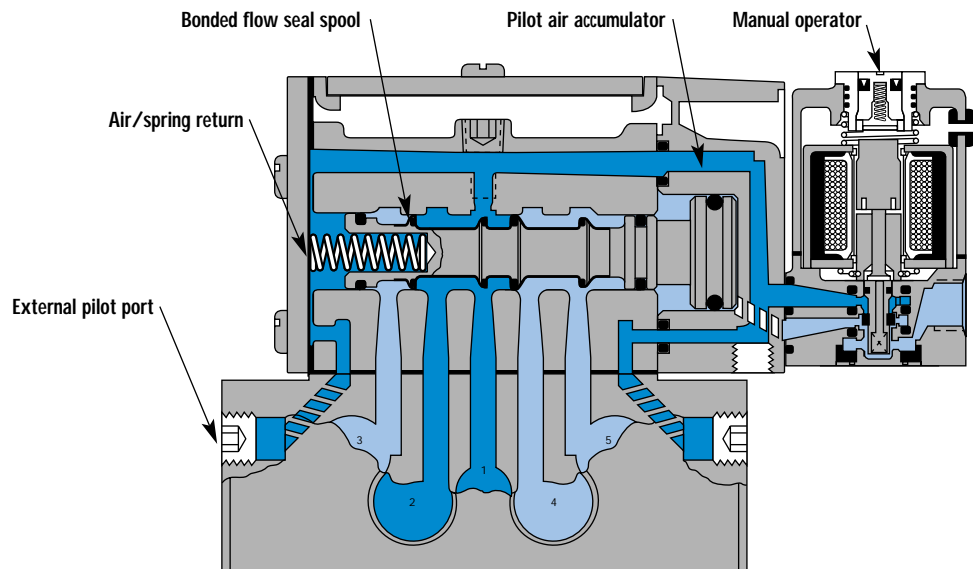


Individual mounting

valve only

Manifold mounting

valve only



SERIES FEATURES

- Fastest available response time with patented MACSOLENOID®.
- No-stick operation is ensured by wiping action of unique MAC spool/bore combination.
- Balanced poppet pilot valve for high flow, precise repeatability, and consistent operation.
- Large spool piston for high shifting force even at minimum operating pressure
- Air/spring return for consistent shifting on single solenoid models.
- Patented virtually burn-out proof AC solenoid.
- Optional low wattage DC solenoids down to 1.0 watt.
- Various manual operators & electrical connectors are available.
- Muffled or threaded pilot exhaust ports.
- Internal or external pilot models available.



100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

VALVE CONFIGURATIONS AVAILABLE

- 2-Pos., single or double operators (solenoid or remote air).
- Single or dual pressure.
- 3-Pos., double operator-closed center, open center or pressure center (solenoid or remote air).
- Individual base or add-a-unit manifold base.
- Internal pilot or external pilot (including a common external pilot or manifold models).
- Side porting and bottom porting options.

*International Standards Organization ISO Common Base Interface (ISO Std. 5599/1)

SPECIAL APPLICATION INSTRUCTIONS :

On all models, energizing the "14" operator (solenoid or remote air) connects Port #1 to Cylinder Port #4 and energizing the "12" operator connects Port #1 to Cylinder Port #2. For the following special applications, additional piping considerations are required.

EXTERNAL PILOT APPLICATIONS* - An External Pilot Supply is only required when the main valve pressure is less than 1.8 BARS on single operators (solenoid or remote air) or 0.7 BARS on double solenoid valves only. In these cases, use an External Pilot

model and supply a minimum of 1.8 BARS for single operators or a minimum of 0.7 BARS for double solenoid valves to either the "14" or "12" External Pilot Port of the valve base.

VACUUM APPLICATIONS - Use an External Pilot model as described above and also connect the vacuum source to Port #3 & 5 and leave Port#1 open to atmosphere on single pressure models. On two pressure models, reverse the single pressure piping.

SELECTOR APPLICATIONS - Use an External Pilot Model as described above if both pressures are below the minimum, otherwise use an Internal Pilot model and connect the higher pressure to Port #1 and the lower pressure to either Port #3 or 5 depending on which Cylinder Port is to be active.

TWO PRESSURE APPLICATIONS - For Internal Pilot models specify the model number for connecting either port #3 or 5, whichever is to be the higher pressure, to the Internal Pilot supply. For external Pilot models, pipe as described above for "External Pilot Application."

*Note: 1Bar = 14.5 PSIG

Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	1/4" - 3/8"	1.6 C _v	valve only

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

SINGLE PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
Internal	MV-A1C-A111-PM- XXYZ	MV-A1C-A211-PM- XXYZ	MV-A1C-A312-PM- XXYZ	MV-A1C-A311-PM- XXYZ
External	MV-A1C-A121-PM- XXYZ	MV-A1C-A221-PM- XXYZ	MV-A1C-A322-PM- XXYZ	MV-A1C-A321-PM- XXYZ

DUAL PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
Internal port 3	MV-A1C-A131-PM- XXYZ	MV-A1C-A231-PM- XXYZ	MV-A1C-A331-PM- XXYZ
Internal port 5	MV-A1C-A135-PM- XXYZ	MV-A1C-A232-PM- XXYZ	MV-A1C-A332-PM- XXYZ
External	MV-A1C-A141-PM- XXYZ	MV-A1C-A241-PM- XXYZ	MV-A1C-A341-PM- XXYZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

Note : ISO valves are delivered w/o base. For base code see section 4.

OPTIONS

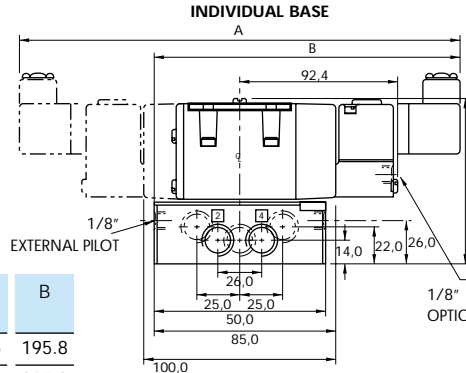
MV-A1C-A111-PM- XXYZ	
	- For CNOMO pilot, replace by CM.
	- For universal spool replace by 6 (2 position, sgl. pressure valves only)
	- For use with single pressure sandwich regulator, replace by 5.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.6 C _v), 3/8" : (1.6 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 10 ms De-energize : 11 ms 120/60 Energize : 7-13 ms De-energize : 10-17 ms

- Spare parts :
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
 - Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16344.
 - Mounting screw valve to base (x4) : 35304.

Dimensions shown are metric (mm)

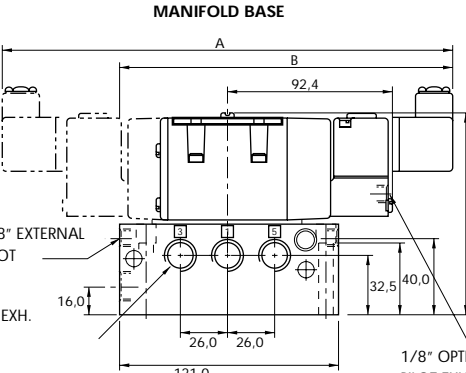
INDIVIDUAL BASE



ISO 1 Manifold mounting

TYPE	A	B
JA & JC	271.6	195.8
JB & JD	294.6	207.3

MANIFOLD BASE



ISO 1 Individual mounting

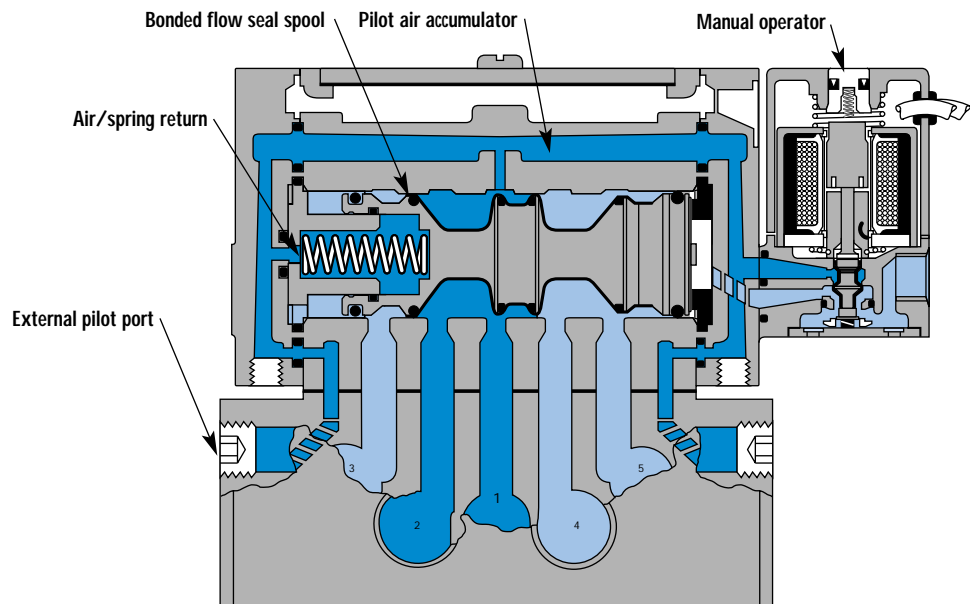
TYPE	A	B
JA & JC	271.6	185.8
JB & JD	294.6	197.3

Individual mounting

valve only

Manifold mounting

valve only



SERIES FEATURES

- Fastest available response time with patented MACSOLENOID®.
- No-stick operation is ensured by wiping action of unique MAC spool/bore combination.
- Balanced poppet pilot valve for high flow, precise repeatability, and consistent operation.
- Large spool piston for high shifting force even at minimum operating pressure
- Air /spring return for consistent shifting on single solenoid models.
- Patented virtually burn-out proof AC solenoid.
- Optional low wattage DC solenoids down to 1.0 watt.
- Various manual operators & electrical connectors are available.
- Muffled or threaded pilot exhaust ports.
- Internal or external pilot models available.



VALVE CONFIGURATIONS AVAILABLE

- 2-Pos., single or double operators (solenoid or remote air).
- Single or dual pressure.
- 3-Pos., double operator-closed center, open center or pressure center (solenoid or remote air).
- Individual base or add-a-unit manifold base.
- Internal pilot or external pilot (including a common external pilot or manifold models).
- Side porting and bottom porting options.

*International Standards Organization ISO Common Base Interface (ISO Std. 5599/1)

SPECIAL APPLICATION INSTRUCTIONS :

On all models, energizing the "14" operator (solenoid or remote air) connects Port #1 to Cylinder Port #4 and energizing the "12" operator connects Port #1 to Cylinder Port #2. For the following special applications, additional piping considerations are required.

EXTERNAL PILOT APPLICATIONS* - An External Pilot Supply is only required when the main valve pressure is less than 1.8 BARS on single operators (solenoid or remote air) or 0.7 BARS on double solenoid valves only. In these cases, use an External Pilot

model and supply a minimum of 1.8 BARS for single operators or a minimum of 0.7 BARS for double solenoid valves to either the "14" or "12" External Pilot Port of the valve base.

VACUUM APPLICATIONS - Use an External Pilot model as described above and also connect the vacuum source to Port #3 & 5 and leave Port#1 open to atmosphere on single pressure models. On two pressure models, reverse the single pressure piping.

SELECTOR APPLICATIONS - Use an External Pilot Model as described above if both pressures are below the minimum, otherwise use an Internal Pilot model and connect the higher pressure to Port #1 and the lower pressure to either Port #3 or 5 depending on which Cylinder Port is to be active.

TWO PRESSURE APPLICATIONS - For Internal Pilot models specify the model number for connecting either port #3 or 5, whichever is to be the higher pressure, to the Internal Pilot supply. For external Pilot models, pipe as described above for "External Pilot Application."

*Note: 1Bar = 14.5 PSIG

Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	3/8" - 1/2"	3.0 C _v	valve only

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

SINGLE PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
Internal	MV-A2B-A111-PM- XXYZZ	MV-A2B-A211-PM- XXYZZ	MV-A2B-A312-PM- XXYZZ	MV-A2B-A311-PM- XXYZZ
External	MV-A2B-A121-PM- XXYZZ	MV-A2B-A221-PM- XXYZZ	MV-A2B-A322-PM- XXYZZ	MV-A2B-A321-PM- XXYZZ

DUAL PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
Internal port 3	MV-A2B-A131-PM- XXYZZ	MV-A2B-A231-PM- XXYZZ	MV-A2B-A331-PM- XXYZZ
Internal port 5	MV-A2B-A135-PM- XXYZZ	MV-A2B-A232-PM- XXYZZ	MV-A2B-A332-PM- XXYZZ
External	MV-A2B-A141-PM- XXYZZ	MV-A2B-A241-PM- XXYZZ	MV-A2B-A341-PM- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

Note : ISO valves are delivered w/o base. For base code see section 4.

OPTIONS

MV-A2B-A111-PM-**XXYZZ**

- For CNOMO pilot, replace by CM.
- For universal spool replace by 6 (2 position, sgl. pressure valves only)
- For use with single pressure sandwich regulator, replace by 5.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	3/8" : (3.0 C _v), 1/2" : (3.0 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W
Response times :	24 VDC (8.5 W) Energize : 10 ms De-energize : 15 ms 120/60 Energize : 6-15 ms De-energize : 10-17 ms

Spare parts :

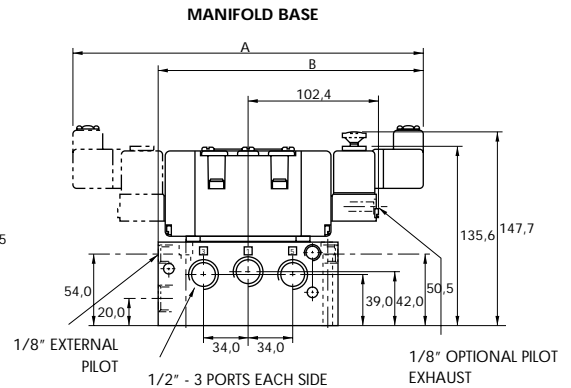
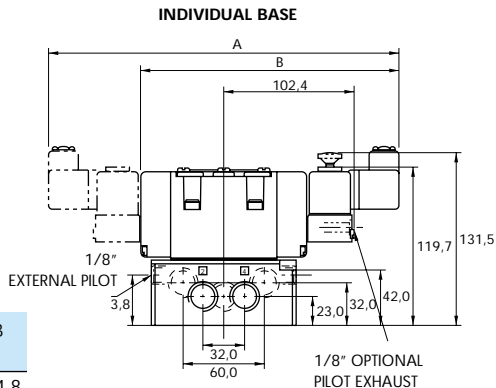
- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16351.
- Mounting screw valve to base (x4) : 35412.

DIMENSIONS

Dimensions shown are metric (mm)

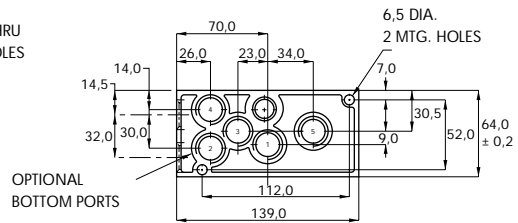
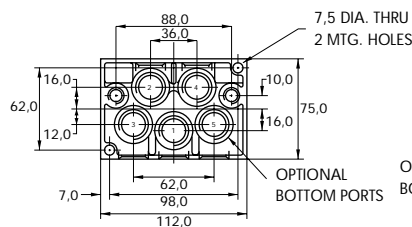
ISO 2 Manifold mounting

TYPE	A	B
JA & JC	291.6	214.8
JB & JD	314.6	226.3



ISO 2 Individual mounting

TYPE	A	B
JA & JC	291.6	212.3
JB & JD	314.6	223.8

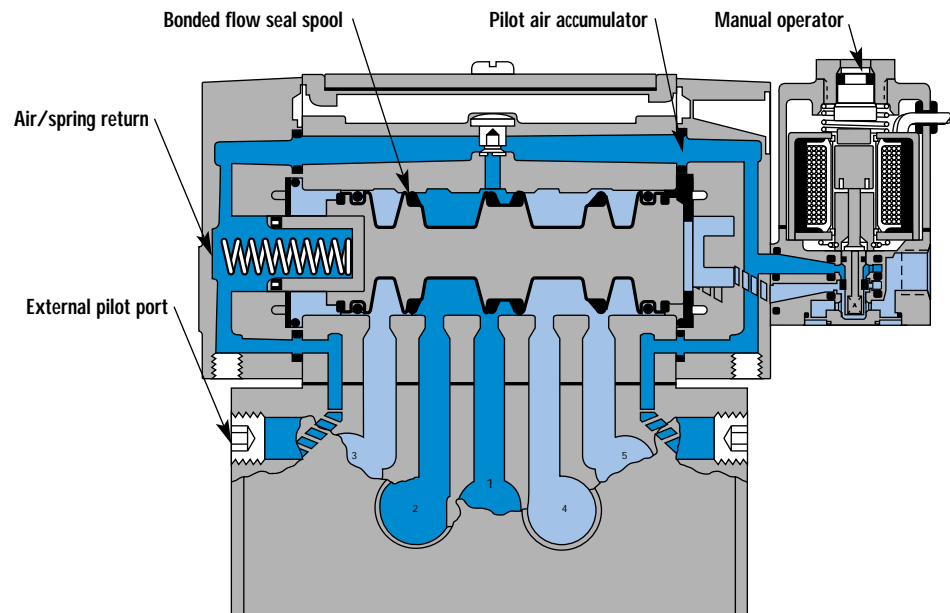


Individual mounting

valve only

Manifold mounting

valve only



SERIES FEATURES

- Fastest available response time with patented MACSOLENOID®.
- No-stick operation is ensured by wiping action of unique MAC spool/bore combination.
- Balanced poppet pilot valve for high flow, precise repeatability, and consistent operation.
- Large spool piston for high shifting force even at minimum operating pressure.
- Air/spring return for consistent shifting on single solenoid models.
- Patented virtually burn-out proof AC solenoid.
- Optional low wattage DC solenoids down to 1.0 watt.
- Various manual operators & electrical connectors are available.
- Muffled or threaded pilot exhaust ports.
- Internal or external pilot models available.



VALVE CONFIGURATIONS AVAILABLE

- 2-Pos., single or double operators (solenoid or remote air).
- Single or dual pressure.
- 3-Pos., double operator-closed center, open center or pressure center (solenoid or remote air).
- Individual base.
- Internal pilot or external pilot (including a common external pilot or manifold models).
- Side porting and bottom porting options.

*International Standards Organization ISO Common Base Interface (ISO Std. 5599/1)

SPECIAL APPLICATION INSTRUCTIONS :

On all models, energizing the "14" operator (solenoid or remote air) connects Port #1 to Cylinder Port #4 and energizing the "12" operator connects Port #1 to Cylinder Port #2. For the following special applications, additional piping considerations are required.

EXTERNAL PILOT APPLICATIONS* - An External Pilot Supply is only required when the main valve pressure is less than 1.8 BARS on single operators (solenoid or remote air) or 0.7 BARS on double solenoid valves only. In these cases, use an External Pilot

model and supply a minimum of 1.8 BARS for single operators or a minimum of 0.7 BARS for double solenoid valves to either the "14" or "12" External Pilot Port of the valve base.

VACUUM APPLICATIONS - Use an External Pilot model as described above and also connect the vacuum source to Port #3 & 5 and leave Port#1 open to atmosphere on single pressure models. On two pressure models, reverse the single pressure piping.

SELECTOR APPLICATIONS - Use an External Pilot Model as described above if both pressures are below the minimum, otherwise use an Internal Pilot model and connect the higher pressure to Port #1 and the lower pressure to either Port #3 or 5 depending on which Cylinder Port is to be active.

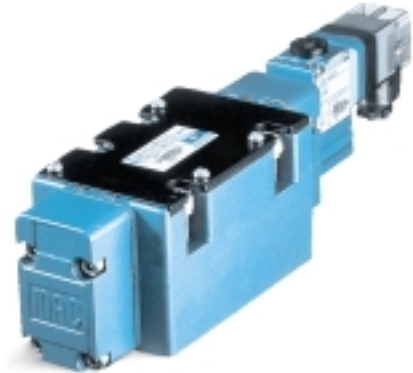
TWO PRESSURE APPLICATIONS - For Internal Pilot models specify the model number for connecting either port #3 or 5, whichever is to be the higher pressure, to the Internal Pilot supply. For external Pilot models, pipe as described above for "External Pilot Application."

*Note: 1Bar = 14.5 PSIG

Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	1/2" - 3/4"	6.3 C _v	valve only

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.
- Long service life.



HOW TO ORDER

SINGLE PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
Internal	MV-A3B-A111-PM- XXYZZ	MV-A3B-A211-PM- XXYZZ	MV-A3B-A312-PM- XXYZZ	MV-A3B-A311-PM- XXYZZ
External	MV-A3B-A121-PM- XXYZZ	MV-A3B-A221-PM- XXYZZ	MV-A3B-A322-PM- XXYZZ	MV-A3B-A321-PM- XXYZZ

DUAL PRESSURE VALVES

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
Internal port 3	MV-A3B-A131-PM- XXYZZ	MV-A3B-A231-PM- XXYZZ	MV-A3B-A331-PM- XXYZZ
Internal port 5	MV-A3B-A135-PM- XXYZZ	MV-A3B-A232-PM- XXYZZ	MV-A3B-A332-PM- XXYZZ
External	MV-A3B-A141-PM- XXYZZ	MV-A3B-A241-PM- XXYZZ	MV-A3B-A341-PM- XXYZZ

SOLENOID OPERATOR ►

XX Y ZZ

XX	Voltage	Y	Manual operator	ZZ	Electrical connection
11	120/60, 110/50	1	Non-locking	JB	Rectangular connector
12	240/60, 220/50	2	Locking	JD	Rectangular connector with light
22	24/60, 24/50			JA	Square connector
59	24 VDC (2.5 W)			JC	Square connector with light
87	24 VDC (17.1 W)			BA	Flying leads (18")
61	24 VDC (8.5 W)				

Note : Photo shown with JC connector.

Note : ISO valves are delivered w/o base. For base code see section 4.

OPTIONS

Option Code	Description
MV-A3B-A111-PM- XXYZZ	
-	For CNOMO pilot, replace by CM.
-	For universal spool replace by 6 (2 position, sgl. pressure valves only)
-	For use with single pressure sandwich regulator, replace by 5.

TECHNICAL DATA

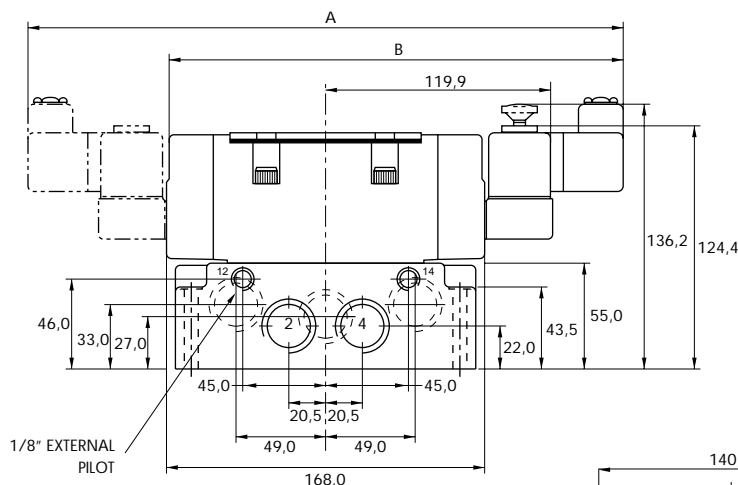
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI	double operator : 10-150 PSI	
	External pilot : vacuum to 150 PSI		
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)		
Filtration :	40 μ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1/2" : (6.3 C _v), 3/4" : (6.3 C _v)		
Leak rate :	100 cm ³ /min		
Coil :	Epoxy encapsulated - class A wires - Continuous duty		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W		
Response times :	24 VDC (8.5 W)	Energize : 18 ms	De-energize : 20 ms
	120/60	Energize : 15-25 ms	De-energize : 19-28 ms

Spare parts :

- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16436.
- Mounting screw valve to base (x4) : 35416. • Check valve : 70002 (+M-00011).

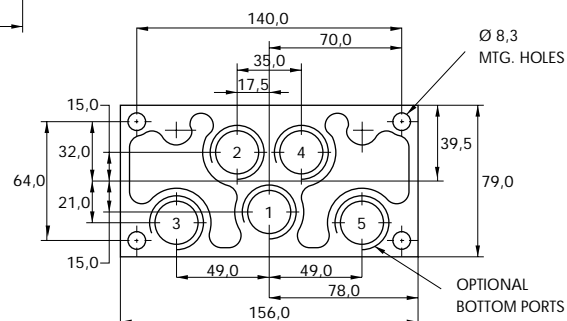
DIMENSIONS

Dimensions shown are metric (mm)



ISO 3 Individual mounting

TYPE	A	B
JA & JC	326.6	247.3
JB & JD	349.6	258.8





Direct solenoid and solenoid pilot operated valves

Individual mounting

valve only	
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Manifold mounting

valve only	
------------	--

The MAC 125 series is designed to interface with the Ford/Chrysler standard base. This series is available in the following configurations:

- single or double solenoid
- 2 or 3 position
- single or dual pressure
- with or without indicator lights
- various electrical connections and manual operations

Valves and bases must be ordered separately. These may be assembled prior to shipping by adding the suffix -9 after the valve code.

EXAMPLE: MAC 125A-V1B1-PM-111DA-9
MAC 125A-B21A-9

SPECIAL APPLICATION INSTRUCTIONS

The 'A' cylinder port is normally open. On a spring return valve, the spring is the 'A' operator, the solenoid the 'B' operator. Energizing the 'B' operator pressurizes the 'B' port; energizing the 'A' operator pressurizes the 'A' port.

EXTERNAL PILOT APPLICATIONS

An external pilot supply is only required when the main valve pressure is less than 25 psi on single solenoid or 3 position valves and less than 10 psi on double solenoid 2 position valves. Pipe the external pilot supply to the External Pilot Port supplied in the valve base or manifold.

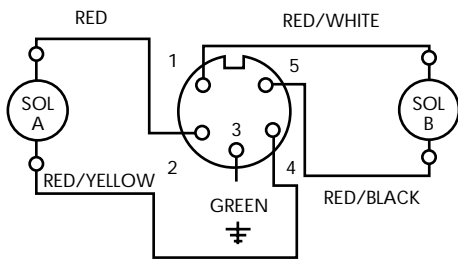
VACUUM APPLICATIONS

(2-Pos. Valves Only) - Use an External Pilot model as described above and also connect the vacuum source to the Exhaust Port and leave the Inlet Port open to atmosphere. The Inlet port may be connected to a pressure source to provide a selector application (vacuum/pressure).

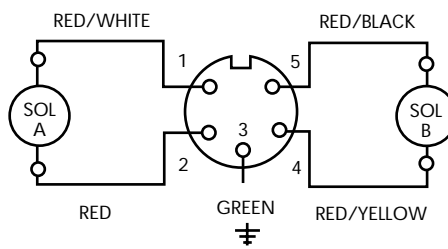
SELECTOR APPLICATIONS

Use an External Pilot Model as described above if both pressures are below the minimum, otherwise use an Internal Pilot Model and connect the higher pressure to the Inlet Port and the lower to Port EA or EB depending on which cylinder port is to be active.

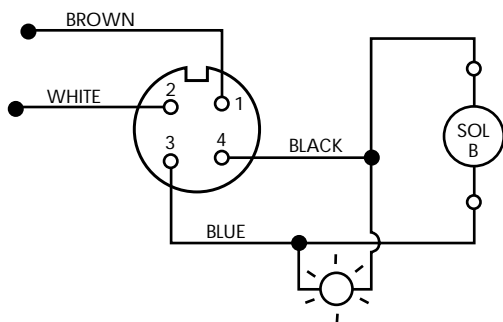
FORD



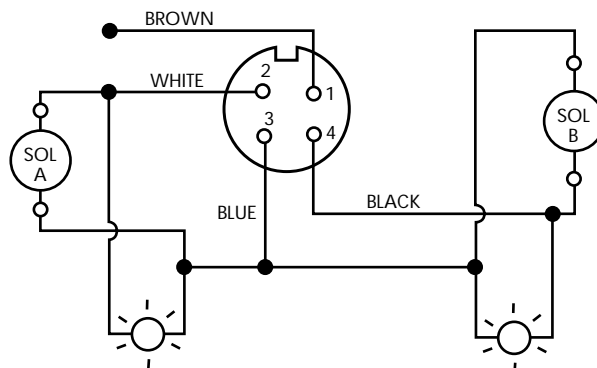
CHRYSLER



4 PIN CONNECTOR : SINGLE



4 PIN CONNECTOR : DOUBLE



Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	1/4" - 3/8"	2.5 C _v	valve only

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

SINGLE PRESSURE VALVES (WITH LIGHTS)

Electrical connector	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
5 PIN (Ford wired)	Internal	MAC125A-V1A2-PM- XXY -DA	MAC125A-V2A2-PM- XXY -DA	MAC125A-V5A2-PM- XXY -DA	MAC125A-V6A2-PM- XXY -DA
	External	MAC125A-V1A4-PM- XXY -DA	MAC125A-V2A4-PM- XXY -DA	MAC125A-V5A4-PM- XXY -DA	MAC125A-V6A4-PM- XXY -DA
5 PIN (Chrysler wired)	Internal	MAC125A-V1B2-PM- XXY -DA	MAC125A-V2B2-PM- XXY -DA	MAC125A-V5B2-PM- XXY -DA	MAC125A-V6B2-PM- XXY -DA
	External	MAC125A-V1B4-PM- XXY -DA	MAC125A-V2B4-PM- XXY -DA	MAC125A-V5B4-PM- XXY -DA	MAC125A-V6B4-PM- XXY -DA
4 PIN MICRO	Internal	MAC125A-V1G2-PM- XXY -DA	MAC125A-V2G2-PM- XXY -DA	MAC125A-V5G2-PM- XXY -DA	MAC125A-V6G2-PM- XXY -DA
	External	MAC125A-V1G4-PM- XXY -DA	MAC125A-V2G4-PM- XXY -DA	MAC125A-V5G4-PM- XXY -DA	MAC125A-V6G4-PM- XXY -DA
3 PIN (Ford wired)	Internal	MAC125A-V1E2-PM- XXY -DA	MAC125A-V2E2-PM- XXY -DA	MAC125A-V5E2-PM- XXY -DA	MAC125A-V6E2-PM- XXY -DA
	External	MAC125A-V1E4-PM- XXY -DA	MAC125A-V2E4-PM- XXY -DA	MAC125A-V5E4-PM- XXY -DA	MAC125A-V6E4-PM- XXY -DA
5 PIN MICRO (Chrysler wired)	Internal	MAC125A-V1F2-PM- XXY -DA	MAC125A-V2F2-PM- XXY -DA	MAC125A-V5F2-PM- XXY -DA	MAC125A-V6F2-PM- XXY -DA
	External	MAC125A-V1F4-PM- XXY -DA	MAC125A-V2F4-PM- XXY -DA	MAC125A-V5F4-PM- XXY -DA	MAC125A-V6F4-PM- XXY -DA

DUAL PRESSURE VALVES (WITH LIGHTS)

Electrical connector	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
5 PIN (Ford wired)	External	MAC125A-V3A4-PM- XXY -DA	MAC125A-V4A4-PM- XXY -DA	MAC125A-V7A4-PM- XXY -DA
5 PIN (Chrysler wired)	External	MAC125A-V3B4-PM- XXY -DA	MAC125A-V4B4-PM- XXY -DA	MAC125A-V7B4-PM- XXY -DA
4 PIN MICRO	External	MAC125A-V3G4-PM- XXY -DA	MAC125A-V4G4-PM- XXY -DA	MAC125A-V7G4-PM- XXY -DA
3 PIN (Ford wired)	External	MAC125A-V3E4-PM- XXY -DA	MAC125A-V4E4-PM- XXY -DA	MAC125A-V7E4-PM- XXY -DA
5 PIN MICRO (Chrysler wired)	External	MAC125A-V3F4-PM- XXY -DA	MAC125A-V4F4-PM- XXY -DA	MAC125A-V7F4-PM- XXY -DA

SOLENOID OPERATOR ▶

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

Note : Valves are supplied without base. For base code see section 4.

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

TECHNICAL DATA

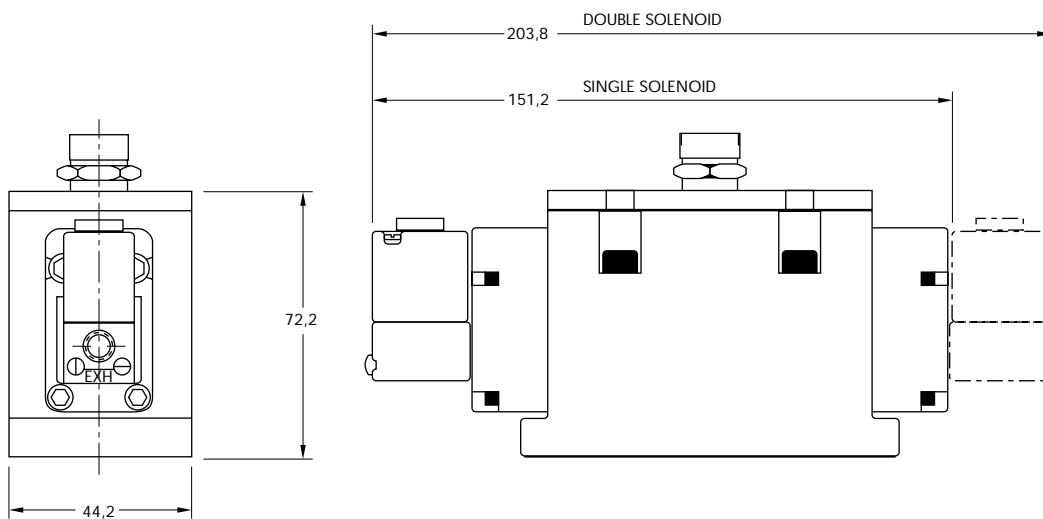
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/4" : (2.2 C _v), 3/8" : (2.5 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W

Spare parts :

- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16485
- Mounting screw valve to base (x3) : 32296.

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Individual mounting

valve only	
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Manifold mounting

valve only	
------------	--

The MAC 250 series is designed to interface with the Ford/Chrysler standard base. This series is available in the following configurations:

- single or double solenoid
- 2 or 3 position
- single or dual pressure
- with or without indicator lights
- various electrical connections and manual operations

Valves and bases must be ordered separately. These may be assembled prior to shipping by adding the suffix -9 after the valve code.

EXAMPLE: MAC 250A-V1B1-PM-111DA-9
MAC 250A-B21A-9

SPECIAL APPLICATION INSTRUCTIONS

The 'A' cylinder port is normally open. On a spring return valve, the spring is the 'A' operator, the solenoid the 'B' operator. Energizing the 'B' operator pressurizes the 'B' port; energizing the 'A' operator pressurizes the 'A' port.

EXTERNAL PILOT APPLICATIONS

An external pilot supply is only required when the main valve pressure is less than 25 psi on single solenoid or 3 position valves and less than 10 psi on double solenoid 2 position valves. Pipe the external pilot supply to the External Pilot Port supplied in the valve base or manifold.

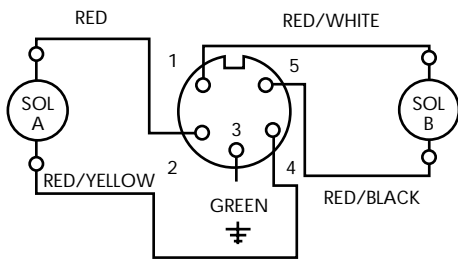
VACUUM APPLICATIONS

(2-Pos. Valves Only) - Use an External Pilot model as described above and also connect the vacuum source to the Exhaust Port and leave the Inlet Port open to atmosphere. The Inlet port may be connected to a pressure source to provide a selector application (vacuum/pressure).

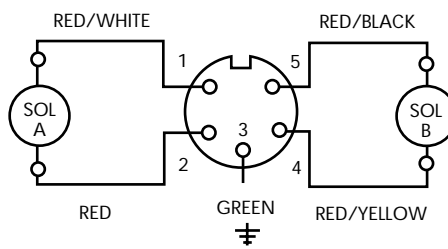
SELECTOR APPLICATIONS

Use an External Pilot Model as described above if both pressures are below the minimum, otherwise use an Internal Pilot Model and connect the higher pressure to the Inlet Port and the lower to Port EA or EB depending on which cylinder port is to be active.

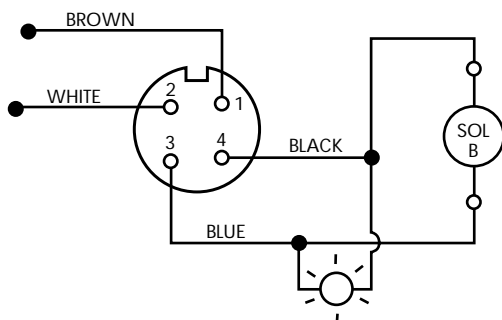
FORD



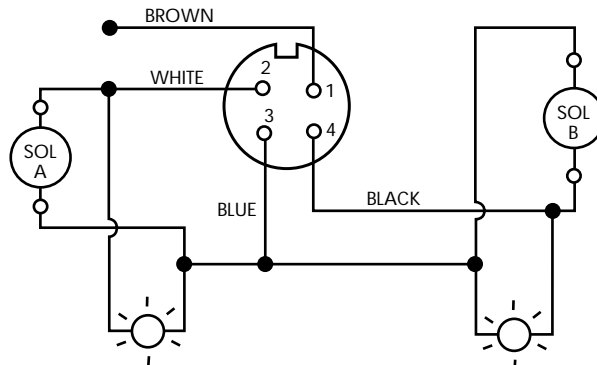
CHRYSLER



4 PIN CONNECTOR : SINGLE



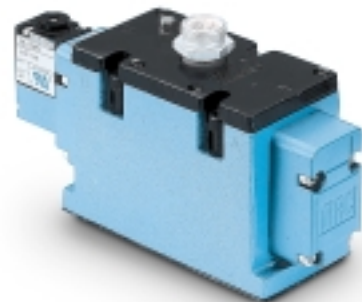
4 PIN CONNECTOR : DOUBLE



Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	1/2" - 3/4" - 1"	7.0 C _v	valve only

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

SINGLE PRESSURE VALVES (WITH LIGHTS)

Electrical connector	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
5 PIN (Ford wired)	Internal	MAC250A-V1A2-PM- xy -DA	MAC250A-V2A2-PM- xy -DA	MAC250A-V5A2-PM- xy -DA	MAC250A-V6A2-PM- xy -DA
	External	MAC250A-V1A4-PM- xy -DA	MAC250A-V2A4-PM- xy -DA	MAC250A-V5A4-PM- xy -DA	MAC250A-V6A4-PM- xy -DA
5 PIN (Chrysler wired)	Internal	MAC250A-V1B2-PM- xy -DA	MAC250A-V2B2-PM- xy -DA	MAC250A-V5B2-PM- xy -DA	MAC250A-V6B2-PM- xy -DA
	External	MAC250A-V1B4-PM- xy -DA	MAC250A-V2B4-PM- xy -DA	MAC250A-V5B4-PM- xy -DA	MAC250A-V6B4-PM- xy -DA
4 PIN MICRO	Internal	MAC250A-V1G2-PM- xy -DA	MAC250A-V2G2-PM- xy -DA	MAC250A-V5G2-PM- xy -DA	MAC250A-V6G2-PM- xy -DA
	External	MAC250A-V1G4-PM- xy -DA	MAC250A-V2G4-PM- xy -DA	MAC250A-V5G4-PM- xy -DA	MAC250A-V6G4-PM- xy -DA
3 PIN (Ford wired)	Internal	MAC250A-V1E2-PM- xy -DA	MAC250A-V2E2-PM- xy -DA	MAC250A-V5E2-PM- xy -DA	MAC250A-V6E2-PM- xy -DA
	External	MAC250A-V1E4-PM- xy -DA	MAC250A-V2E4-PM- xy -DA	MAC250A-V5E4-PM- xy -DA	MAC250A-V6E4-PM- xy -DA
5 PIN MICRO (Chrysler wired)	Internal	MAC250A-V1F2-PM- xy -DA	MAC250A-V2F2-PM- xy -DA	MAC250A-V5F2-PM- xy -DA	MAC250A-V6F2-PM- xy -DA
	External	MAC250A-V1F4-PM- xy -DA	MAC250A-V2F4-PM- xy -DA	MAC250A-V5F4-PM- xy -DA	MAC250A-V6F4-PM- xy -DA

DUAL PRESSURE VALVES (WITH LIGHTS)

Electrical connector	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
5 PIN (Ford wired)	External	MAC250A-V3A4-PM- xy -DA	MAC250A-V4A4-PM- xy -DA	MAC250A-V7A4-PM- xy -DA
5 PIN (Chrysler wired)	External	MAC250A-V3B4-PM- xy -DA	MAC250A-V4B4-PM- xy -DA	MAC250A-V7B4-PM- xy -DA
4 PIN MICRO	External	MAC250A-V3G4-PM- xy -DA	MAC250A-V4G4-PM- xy -DA	MAC250A-V7G4-PM- xy -DA
3 PIN (Ford wired)	External	MAC250A-V3E4-PM- xy -DA	MAC250A-V4E4-PM- xy -DA	MAC250A-V7E4-PM- xy -DA
5 PIN MICRO (Chrysler wired)	External	MAC250A-V3F4-PM- xy -DA	MAC250A-V4F4-PM- xy -DA	MAC250A-V7F4-PM- xy -DA

SOLENOID OPERATOR ►

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

Note : Valves are supplied without base. For base code see section 4.

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

TECHNICAL DATA

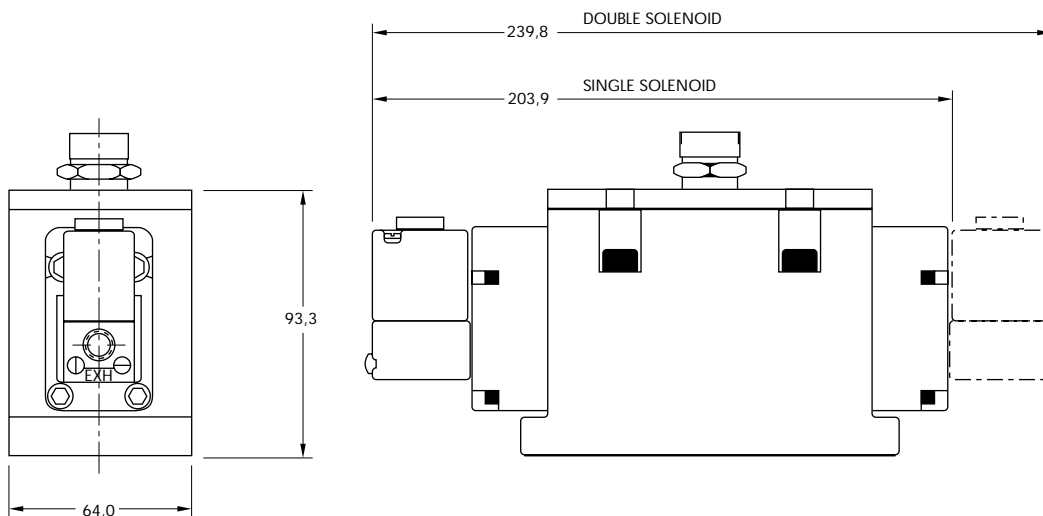
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/2" : (6.3 C _v), 3/4" : (6.4 C _v), 1" : (7.0 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W

Spare parts :

- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16487
- Mounting screw valve to base (x3) : 32346.

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Individual mounting

valve only	
------------	--

The MAC 500 series is designed to interface with the Ford/Chrysler standard base. This series is available in the following configurations:

- single or double solenoid
- 2 or 3 position
- single or dual pressure
- with or without indicator lights
- various electrical connections and manual operations

Valves and bases must be ordered separately. These may be assembled prior to shipping by adding the suffix -9 after the valve code.

EXAMPLE: MAC 500A-V1B1-PM-111DA-9
MAC 500A-B21A-9

SPECIAL APPLICATION INSTRUCTIONS

The 'A' cylinder port is normally open. On a spring return valve, the spring is the 'A' operator, the solenoid the 'B' operator. Energizing the 'B' operator pressurizes the 'B' port; energizing the 'A' operator pressurizes the 'A' port.

EXTERNAL PILOT APPLICATIONS

An external pilot supply is only required when the main valve pressure is less than 25 psi on single solenoid or 3 position valves and less than 10 psi on double solenoid 2 position valves. Pipe the external pilot supply to the External Pilot Port supplied in the valve base or manifold.

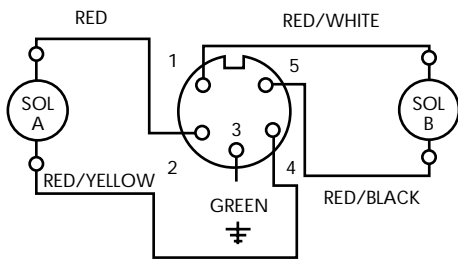
VACUUM APPLICATIONS

(2-Pos. Valves Only) - Use an External Pilot model as described above and also connect the vacuum source to the Exhaust Port and leave the Inlet Port open to atmosphere. The Inlet port may be connected to a pressure source to provide a selector application (vacuum/pressure).

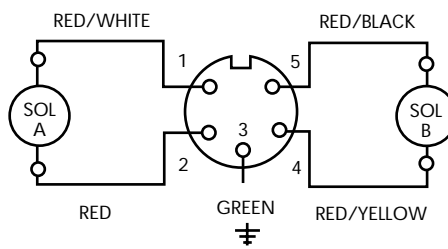
SELECTOR APPLICATIONS

Use an External Pilot Model as described above if both pressures are below the minimum, otherwise use an Internal Pilot Model and connect the higher pressure to the Inlet Port and the lower to Port EA or EB depending on which cylinder port is to be active.

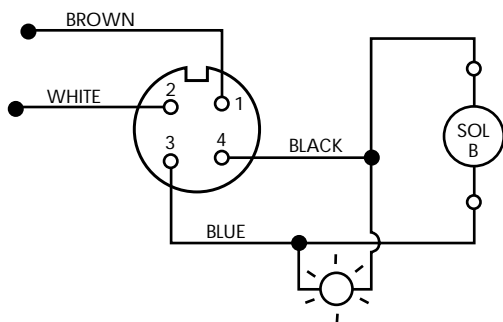
FORD



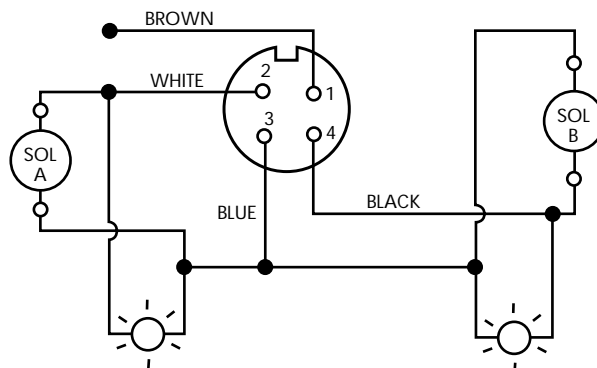
CHRYSLER



4 PIN CONNECTOR : SINGLE



4 PIN CONNECTOR : DOUBLE



Function	Port size	Flow (Max)	Individual mounting
5/2 - 5/3	1" - 1 1/4"	11.2 C _v	valve only

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- High shifting forces.
- Checked accumulator guarantees maximum pilot pressure
- Powerful return force thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Pilot valve with balanced poppet, high flow, short and consistent response times.



HOW TO ORDER

SINGLE PRESSURE VALVES (WITH LIGHTS)

Electrical connector	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
5 PIN (Ford wired)	Internal	MAC500A-V1A2-PM- xx -DA	MAC500A-V2A2-PM- xx -DA	MAC500A-V5A2-PM- xx -DA	MAC500A-V6A2-PM- xx -DA
	External	MAC500A-V1A4-PM- xx -DA	MAC500A-V2A4-PM- xx -DA	MAC500A-V5A4-PM- xx -DA	MAC500A-V6A4-PM- xx -DA
5 PIN (Chrysler wired)	Internal	MAC500A-V1B2-PM- xx -DA	MAC500A-V2B2-PM- xx -DA	MAC500A-V5B2-PM- xx -DA	MAC500A-V6B2-PM- xx -DA
	External	MAC500A-V1B4-PM- xx -DA	MAC500A-V2B4-PM- xx -DA	MAC500A-V5B4-PM- xx -DA	MAC500A-V6B4-PM- xx -DA
4 PIN MICRO	Internal	MAC500A-V1G2-PM- xx -DA	MAC500A-V2G2-PM- xx -DA	MAC500A-V5G2-PM- xx -DA	MAC500A-V6G2-PM- xx -DA
	External	MAC500A-V1G4-PM- xx -DA	MAC500A-V2G4-PM- xx -DA	MAC500A-V5G4-PM- xx -DA	MAC500A-V6G4-PM- xx -DA
3 PIN (Ford wired)	Internal	MAC500A-V1E2-PM- xx -DA	MAC500A-V2E2-PM- xx -DA	MAC500A-V5E2-PM- xx -DA	MAC500A-V6E2-PM- xx -DA
	External	MAC500A-V1E4-PM- xx -DA	MAC500A-V2E4-PM- xx -DA	MAC500A-V5E4-PM- xx -DA	MAC500A-V6E4-PM- xx -DA
5 PIN MICRO (Chrysler wired)	Internal	MAC500A-V1F2-PM- xx -DA	MAC500A-V2F2-PM- xx -DA	MAC500A-V5F2-PM- xx -DA	MAC500A-V6F2-PM- xx -DA
	External	MAC500A-V1F4-PM- xx -DA	MAC500A-V2F4-PM- xx -DA	MAC500A-V5F4-PM- xx -DA	MAC500A-V6F4-PM- xx -DA

DUAL PRESSURE VALVES (WITH LIGHTS)

Electrical connector	Pilot air	5/2 Single operator	5/2 Double operator
5 PIN (Ford wired)	External	MAC500A-V3A4-PM- xx -DA	MAC500A-V4A4-PM- xx -DA
5 PIN (Chrysler wired)	External	MAC500A-V3B4-PM- xx -DA	MAC500A-V4B4-PM- xx -DA
4 PIN MICRO	External	MAC500A-V3G4-PM- xx -DA	MAC500A-V4G4-PM- xx -DA
3 PIN (Ford wired)	External	MAC500A-V3E4-PM- xx -DA	MAC500A-V4E4-PM- xx -DA
5 PIN MICRO (Chrysler wired)	External	MAC500A-V3F4-PM- xx -DA	MAC500A-V4F4-PM- xx -DA

SOLENOID OPERATOR ►

XX Y DA

XX	Voltage	Y	Manual operator
11	120/60, 110/50	1	Non-locking
12	240/60, 220/50	2	Locking
22	24/60, 24/50		
59	24 VDC (2.5 W)		
87	24 VDC (17.1 W)		
61	24 VDC (8.5 W)		

Note : Valves are supplied without base. For base code see section 4.

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

TECHNICAL DATA

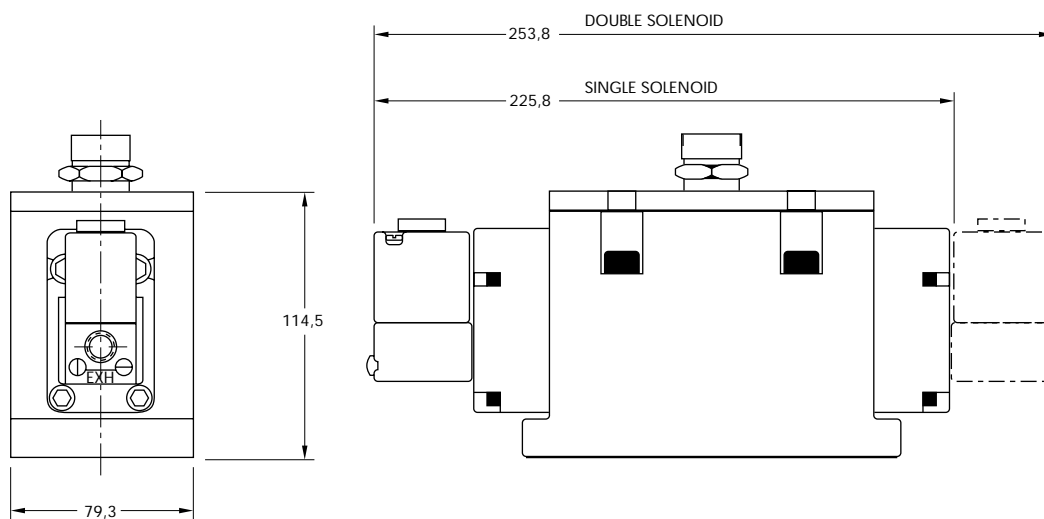
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : single operator and 3 positions : 25-150 PSI double operator : 10-150 PSI External pilot : vacuum to 150 PSI
Pilot pressure :	Single operator and 3 positions : 25-150 PSI Double operator : 10-150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1" : (11.0 C _v), 1 1/4" : (11.2 C _v)
Leak rate :	100 cm ³ /min
Coil :	Epoxy encapsulated - class A wires - Continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush : 14.8 VA Holding : 10.9 VA = 1 to 17.1 W

Spare parts :

- Solenoid operator (power ≥ 4 W) : D1-XXAA, cover mounting screws 35206 and seal 16234.
- Pilot valve : PME-XXYZZ, including seal 16337. • Pressure seal between valve and base : 16535
- Mounting screw valve to base (x3) : 32434.

DIMENSIONS

Dimensions shown are metric (mm)





Section 8

Options



Codification table for voltages / Manual operator / Electrical connection / Wire length

VALVE CODE > **-XX Y ZZ (-VV)**
1 2 3 4

OPTIONS AVAILABLE FOR	OPTIONS AVAILABLE FOR
<ul style="list-style-type: none"> - valves type 100 Series - pilot valves "CNOMO" 	<ul style="list-style-type: none"> - valves type 200 Series
<ul style="list-style-type: none"> - Pilot operated valves with pilots type 100 Series Series : 55 - 56 - 700 - 800 - 900 <li style="padding-left: 20px;">- 6300 - 6500 - 6600 - 1300 <li style="padding-left: 20px;">- ISO 1 - ISO 2 - ISO 3. <li style="padding-left: 20px;">- MAC 125 - MAC 250 - MAC 500 	<ul style="list-style-type: none"> - pilot operated valves with pilots type 200 Series Series : 200 - 57 - 58 - 59.
<ul style="list-style-type: none"> - Pilot operated valves with pilots "CNOMO" Series : ISO1 - ISO2 - ISO3 	

Used on valve series: 100, 55, 56, 700, 800, 900, 6300, 6500, 6600, 1300, MVA1C, MVA2B, MVA3B, MAC125, MAC250, MAC500.

Used on valve series: 200, 57, 58, 59.

1. VOLTAGE (100 Serie type coil)	
- XX Y ZZ	VOLTAGE
11	120/60, 110/50
12	240/60, 220/50
13	100/60, 100/50
15	200/60, 200 /50
16	10/60
20	6/60
21	12/50, 12/60
22	24/60, 24/50
23	32/60, 32/50
24	48/60, 42/50
26*	380/50, 440/50, 440/60, 480/60
29	220/60
34	127/50, 120/50
35	48/50
36	16/60
B1	24/50
50	24 VDC (6 W)
51	24 VDC (4 W)
54	12 VDC (4 W)
55	12 VDC (6 W)
57	12 VDC (2.5 W)
59	24 VDC (2.5 W)
60	12 VDC (8.5 W)
61	24 VDC (8.5 W)
64	6 VDC (6 W)
65	32 VDC (7 W)
66	48 VDC (5.8 W)
67	64 VDC (7.5 W)
68	120 VDC (6.4 W)
69*	220 VDC (8.7 W), 250 VDC (11.2 W)
75	90 VDC (8.8 W)
76*	100 VDC (6.9 W)
84*	125 VDC (10.9 W)
87*	24 VDC (17.1 W)
88*	12 VDC (17.4 W)
89*	36 VDC (18.8 W)
90	28 VDC (8.2 W)
91*	6 VDC (10.6 W)
92	190 VDC (6.5 W)
94	3 VDC (7 W)
95	38 VDC (6.4 W)
A1	24 VDC (1 W)
A2	12 VDC (1 W)
A3	9 VDC (1 W)

MOD. DD01 : Protection diode (DC) - MAX. 8.5W

MOD. MOV1 : Protection varistor (AC) - MAX. 8.5W

* Voltages are CLSF only

1. VOLTAGE (200 Serie type coil)	
- XX Y ZZ	VOLTAGE
11	120/60, 110/50, 24 VDC (6 W)
12	240/60, 220/50
13	100/60, 100/50
14	200/60, 200/50
20	6/60
21	12/60
22	24/60, 24/50
23	32/60, 32/50
24	48/60, 42/50
25	240/50
26	480/60, 440/50
27	127/60
28	415/50
29	220/60
30	380/50
31	550/60, 550/50
32	120/60, 110/50
33	600/60
34	127/50
35	48/50
50	24 VDC (6 W)
51	24 VDC (4.5 W)
52	24 VDC (2.5 W)
53	24 VDC (1.0 W)
55	12 VDC (6 W)
57	12 VDC (2.5 W)
58	48 VDC (2.5 W)
60	12 VDC (9.5 W)
61	24 VDC (8.5 W)
64	6 VDC (8.5 W)
65	32 VDC (10 W)
66	48 VDC (11.5 W)
67	64 VDC (10.5 W)
68	120 VDC (12.3 W)
69	250 VDC (9.2 W)
71	8 VDC (8.2 W)
72	24 VDC (12 W)
73	198 VDC (10 W)
74	72 VDC (11.3 W)
75	90 VDC (11.3 W)
76	100 VDC (9 W)
77	220 VDC (10 W), 230 VDC (11.6 W)
78*	24 VDC (24 W)
80	55 VDC (10.6 W)
82	170 VDC (11.1 W)
83	15 VDC (8.1 W)
84	125 VDC (10 W)
86	36 VDC (11 W)
93*	12 VDC (24 W)

2. MANUAL OPERATOR (Common options for 100 & 200 Series type coils)

- XX	Y	ZZ	MANUAL OPERATOR
	0		No operator
	1		Non-locking recessed
	2		Locking recessed
	3		Non-locking extended
	4		Locking extended
		5*	No Operator with Light
		6*	Non-Locking Recessed with Light
		7*	Locking Recessed with Light
		8*	Non-Locking Extended with Light
		9*	Locking Extended with Light

* Lights used with "AA" electrical connection

3. ELECTRICAL CONNECTION (100 Serie type coil)

- XX	Y	ZZ	ELECTRICAL CONNECTION
		AA	Wiring box with 1/2" NPS conduit
		BA	Flying leads
		CA	1/2" NPS conduit
		CC	1/2" NPT conduit
		FA	Military type 2 PIN
		GA	Military type 3 PIN
		HA	AA with ground wire
		JA*	Square connector
		JB	Rectangular connector
		JC*	Square connector with light
		JD	Rectangular connector with light
		JE	Square connector on top (ISO2, ISO3)
		JF	Rectangular connector on top (ISO1, ISO2, ISO3)
		JG	JE with light
		JH	JF with light
		JJ	Square connector, male only
		JM	Rectangular connector, male only
		MA	Electrical common conduit (100 Series-Manifold/900 Series)
		MB	Electrical common conduit (100 Series-Stacking/700 Series)
		NA	CA with ground wire
		NC	CC with ground wire
		RA	3/8" NPS conduit

* Not to be used with 100, 800 and 900 Series manifold mounting

3. ELECTRICAL CONNECTION (200 Serie type coil)

- XX	Y	ZZ	ELECTRICAL CONNECTION
		AA	Wiring box with 1/2" NPS conduit
		BA	Flying leads
		CA	1/2" NPS conduit
		CC	1/2" NPT conduit
		EA	Explosion proof (200 Series)
		EA	Explosion proof (57, 58 & 59 Series)
		FA	Military type 2 PIN
		GA	Military type 3 PIN
		HA	AA with ground wire
		JA*	Square connector
		JC	Square connector with light
		JJ	Square connector, male only
		NA	CA with ground wire
		NC	CC with ground wire

4. COIL WIRE LENGTH (Common options for 100 & 200 Serie type coils)

- XX Y ZZ (-VV)	WIRE LENGTH
AA	18"
AB	24"
AD	36"
AE	48"
AF	72"
AG	6"
AR	12"
AU	120"
BA	60"
BB	144"
Series 6000 : wire length, from the base	
MOD L024	24"
MOD L036	36"
MOD L048	48"
MOD L060	60"
MOD L072	72"
MOD L120	120"



0 p t i o n s

Codification table for voltages / Wire length / Manual operators / Electrical connections

VALVE CODE ► $-D \frac{XX}{1} \frac{X}{2} - \frac{X}{3} \frac{XX}{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 35, 45 and 82 Series

1. VOLTAGE

- D XX X - X XX	VOLTAGE
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
AD	24/60
AE	200/60
AF	240/50
AG	100/50, 100/60, 110/60
DA	24 VDC (5.4 W)
DB	12 VDC (5.4 W)
DC	12 VDC (7.5 W)
DD	24 VDC (7.3 W)
DE	12 VDC (12.7 W) - CLSFonly
DF	24 VDC (12.7 W) - CLSF only
DK	110 VDC (4.7 W)
DL	64 VDC (6 W)
DM	36 VDC (5.3 W)
DN	6 VDC (6 W)
DP	48 VDC (5.8 W)
DU	24 VDC (6 W)
EA	12 VDC (6 W)
FA	12 VDC (1.8 W)
FB	24 VDC (1.8 W)
FE	12 VDC (2.4 W)
FF	24 VDC (2.4 W)

2. WIRE LENGTH

- D XX X - X XX	WIRE LENGTH
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
J	For external plug-in connector ("J", "K" & "T" type electrical connection)
P	For plug-in valves (82 Series only)

3. MANUAL OPERATOR

- D XX X - X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

- D XX X - X XX	ELECTRICAL CONNECTION
BA	Flying leads
BK	BA with protection diode
BL	BA with protection varistor (M.O.V.)
** CA	1/2" NPS conduit
** CM	1/2" NPS metal conduit
** CN	1/2" NPS metal conduit w/ground
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 varistor (M.O.V.)
KD	Square connector with light
KE	Square connector with light and protection diode
KF	Square connector with light and protection varistor (M.O.V.)
KJ	Square connector (male only)
KK	Square connector with protection diode (male only)
KL	Square connector with protection varistor (male only) (M.O.V.)
*** MA	Electrical common conduit
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
DA*	Plug-in connector
DK*	DA with protection diode
DL*	DA with protection varistor (M.O.V.)

* To be used with 82 Series only

** Inline valves only for 35 & 45 series. No restrictions for 82 series.

*** Stacking valves only for 35 & 45 series. Conduit end plate kit required, one per stack.

35 series : M-35002-01

45 series : M-45005-01



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 use in industrial pneumatic and/or vacuum systems. They are not intended for consumer use or service. 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 :

- Do not install MAC valves on a machine without first turning off air (bleed system completely) and electricity to the machine.
- 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 :

- 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.
- 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.
- 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.

LIMITATION OF GUARANTEE

This Guarantee is limited to the replacement or rebuilding of any valve which should fail to operate properly. Valves, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the Guarantee period. They will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same guarantee as provided under the Flat Rate Rebuild Program.

DISCLAIMER OF GUARANTEE

No claims for labor, material, time, damage, or transportation are allowable nor will any valve be replaced or rebuilt under this guarantee which has been damaged by the purchaser not in the normal course of its use and maintenance during the warranty period. The guarantee does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc. MAC Valves, Inc. shall in no event be liable for remote, special or consequential damages under the MAC Guarantee, nor under any implied warranties, including the implied warranty of merchantability.

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



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)	Individual mounting			Manifold mounting			Series	
			inline	sub-base	valve only	stacking	sub-base	valve only		
3/2 - 2/2	1/8" - 1/4"	0.18 C _v	■						1100	
3/2 - 2/2	1/8"	0.18 C _v					■			
3/2 - 2/2	1/4" - 3/8"	2.5 C _v	■							
3/2 - 2/2	3/8" - 1/2" - 3/4"	6.2 C _v	■							
3/2 - 2/2	1/2" - 3/4" - 1"	17.4 C _v	■							
3/2 - 2/2	1" - 1 1/4" - 1 1/2"	33.5 C _v	■							
3/2 - 2/2	2" - 2 1/2"	65.0 C _v	■							
4/2	1/8" - 1/4"	0.7 C _v	■							700
4/2	1/8" - 1/4"	0.8 C _v				■				
4/2	1/8" - 1/4"	1.4 C _v	■			■			900	
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v		■					82	
4/2 - 4/3	1/4" - 3/8"	1.35 C _v					■			
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v		■			■		6300	
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v		■			■		6500	
4/2 - 4/3	3/4" - 1"	9.6 C _v		■			■		6600	
4/2 - 4/3	3/4" - 1" - 1 1/4" - 1 1/2"	15.9 C _v		■					2700	
5/2 - 5/3	1/4"	1.4 C _v	■						1800	
5/2 - 5/3	1/4" - 3/8"	1.6 C _v			■			■	ISO 1	
5/2 - 5/3	3/8" - 1/2"	3.0 C _v			■			■	ISO 2	
5/2 - 5/3	1/2" - 3/4"	6.3 C _v			■				ISO 3	



R e m o t e a i r v a l v e s

Individual mounting

Inline	
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Manifold mounting

sub-base	
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R e m o t e a i r v a l v e s

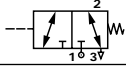
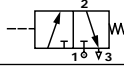
Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.18 C _v	Inline

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. Powerful return spring.
4. Maximum shifting forces.



HOW TO ORDER

Port size	Universal valve	NC only valve
		
1/8" NPTF	1111A-111	1161A-111
1/4" NPTF	1113A-111	1163A-111

Air pilot port : 1/8" NPTF.

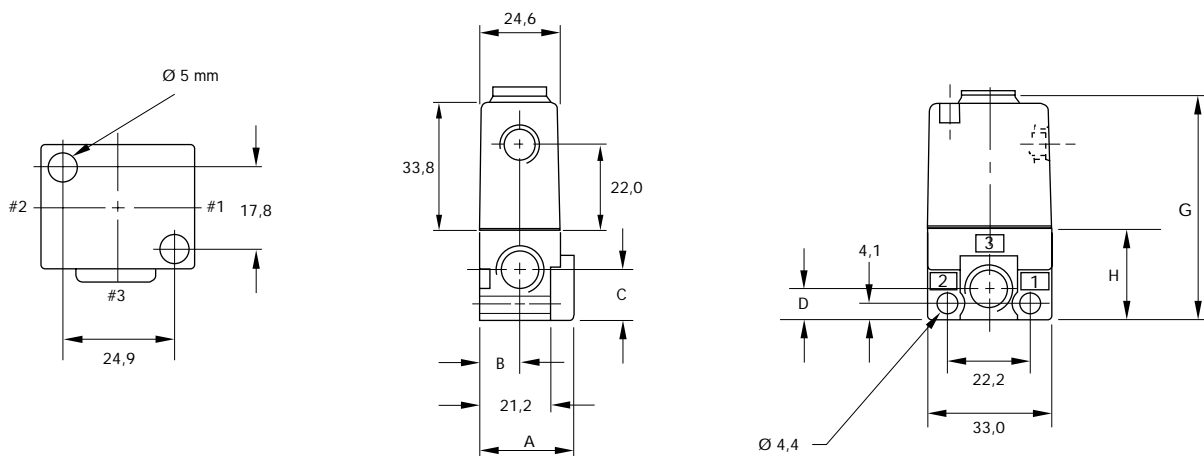
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	20 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 140°F (-18°C to 60°C)
Flow (at 6 bar, ΔP=1bar) :	0.18 C _v
Leak rate :	50 cm ³ /min

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



Port size	A	B	C	D	G	H
1/8"	28.4	12.7	14.0	8.0	60.1	23.2
1/4"	29.8	13.3	12.7	9.9	60.9	24.1

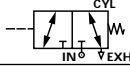
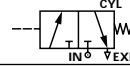
Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/8"	0.18 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. Powerful return spring.
4. Maximum shifting forces.



HOW TO ORDER

Port size	Universal valve	NC only valve
		
Valve less base	1130A-111	1170A-111
Sub-base 1/8" NPTF	1132A-111	1172A-111

Air pilot port : 1/8" NPTF.
End plate kit (1/4" ports) : A2-5004-01.

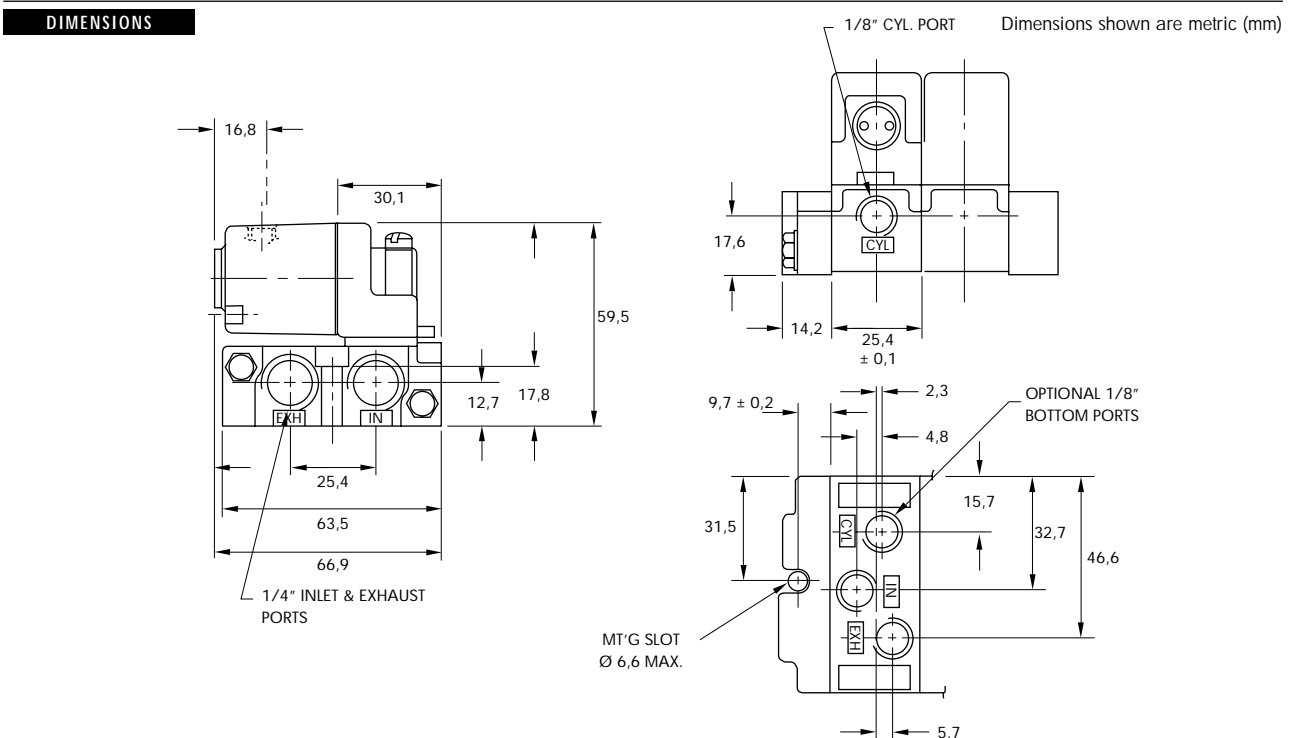
OPTIONS

- 11X2A-111
- Replace by 2 for 2-way normally closed.
 - Replace by 4 for 2-way normally open.

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	20 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 140°F (-18°C to 60°C)
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.18 C _v)
Leak rate :	50 cm ³ /min

Spare parts : • Function plate : A2-7009. • Pressure seal between bases : 16226. • Tie-rod (x2) : 19546.

Options : • BSPP threads.





R e m o t e a i r v a l v e s

Individual mounting

Inline	
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R e m o t e a i r v a l v e s

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/4" - 3/8"	2.5 C _v	Inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.



HOW TO ORDER

Port size	Air spring	NC valve	NO valve
1/4" NPTF	Internal	55B-11-RA	55B-21-RA
3/8" NPTF		55B-12-RA	55B-22-RA
1/4" NPTF	External	55B-11-RE	55B-21-RE
3/8" NPTF		55B-12-RE	55B-22-RE

Air pilot port : 1/8" NPTF.

Note: Designation "RE" required on remote air pilot models with main valve pressures of vacuum to 25 PSI. "RE" provides an external pilot port and should have a pressure range of 25-100 PSI. Since the external pilot supplies the air spring, it must not exceed the remote air pilot signal pressure.

TECHNICAL DATA

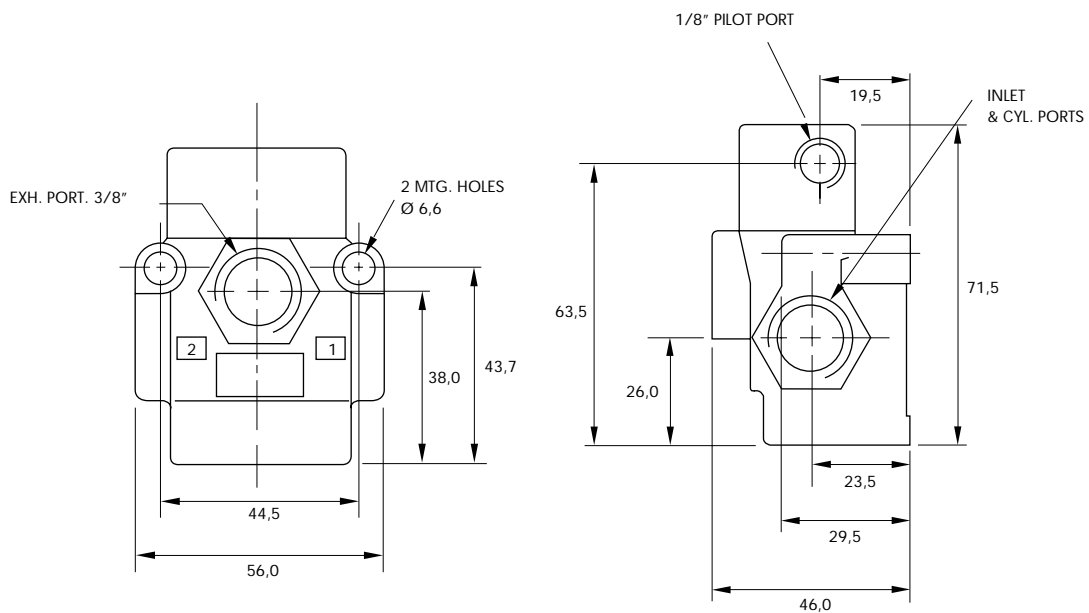
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	25 - 150 PSI \geq main valve pressure
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/4" : (2.5 C _v), 3/8" : (2.5 C _v)
Leak rate :	50 cm ³ /min

Spare parts : • Remote air operator : R-55001-01. • Check valve : 70061.

Options : • BSPP 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	
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Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	3/8" - 1/2" - 3/4"	6.2 C _v	Inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.



HOW TO ORDER

Port size	Air spring	NC valve	NO valve
3/8" NPTF	Internal	56C-52-RA	56C-82-RA
1/2" NPTF		56C-53-RA	56C-83-RA
3/4" NPTF		56C-57-RA	56C-87-RA
3/8" NPTF	External	56C-52-RE	56C-82-RE
1/2" NPTF		56C-53-RE	56C-83-RE
3/4" NPTF		56C-57-RE	56C-87-RE

Air pilot port : 1/8" NPTF.

Note: Designation "RE" required on remote air pilot models with main valve pressures of vacuum to 25 PSI. "RE" provides an external pilot port and should have a pressure range of 25-100 PSI. Since the external pilot supplies the air spring, it must not exceed the remote air pilot signal pressure.

TECHNICAL DATA

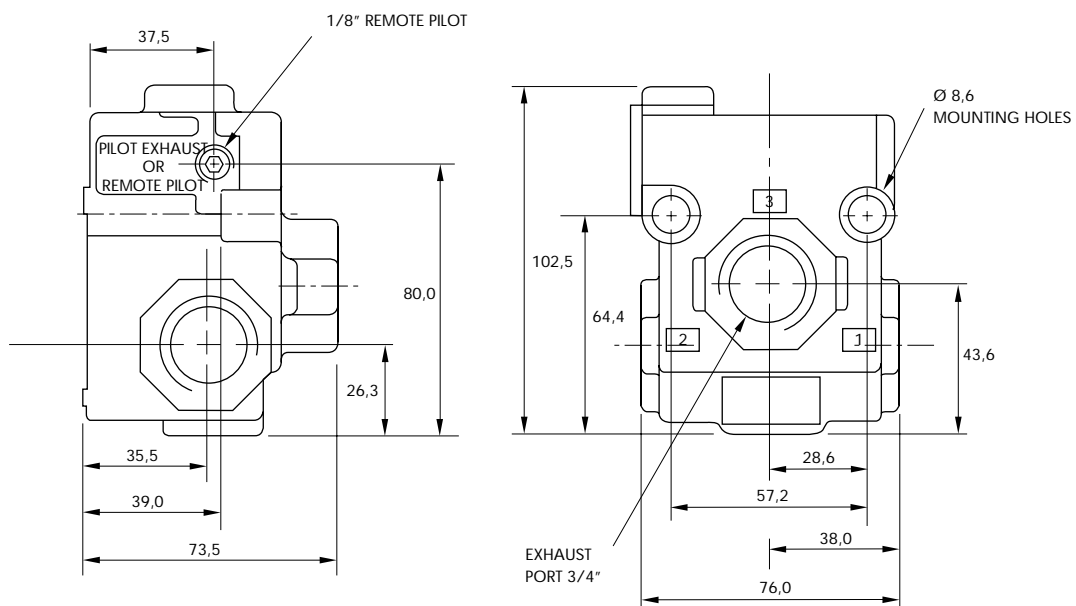
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	25 - 150 PSI \geq main valve pressure
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/8" : (6.0 C _v), 1/2" : (6.1 C _v), 3/4" : (6.2 C _v)
Leak rate :	70 cm ³ /min

Spare parts : • Remote air operator : R-56001. • Check valve : 70063.

Options : • BSPP 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	
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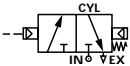
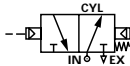
Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/2" - 3/4" - 1"	17.4 C _v	Inline

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	Air spring	NC valve	NO valve
			
1/2" NPTF	Internal	57C-51-RA	57C-81-RA
3/4" NPTF		57C-52-RA	57C-82-RA
1" NPTF		57C-53-RA	57C-83-RA
1/2" NPTF	External	57C-51-RE	57C-81-RE
3/4" NPTF		57C-52-RE	57C-82-RE
1" NPTF		57C-53-RE	57C-83-RE

Air pilot port : 1/8" NPTF.

Note: Designation "RE" required on remote air pilot models with main valve pressures of vacuum to 25 PSI. "RE" provides an external pilot port and should have a pressure range of 25-75 PSI. Since the external pilot supplies the air spring, it must not exceed the remote air pilot signal pressure.

TECHNICAL DATA

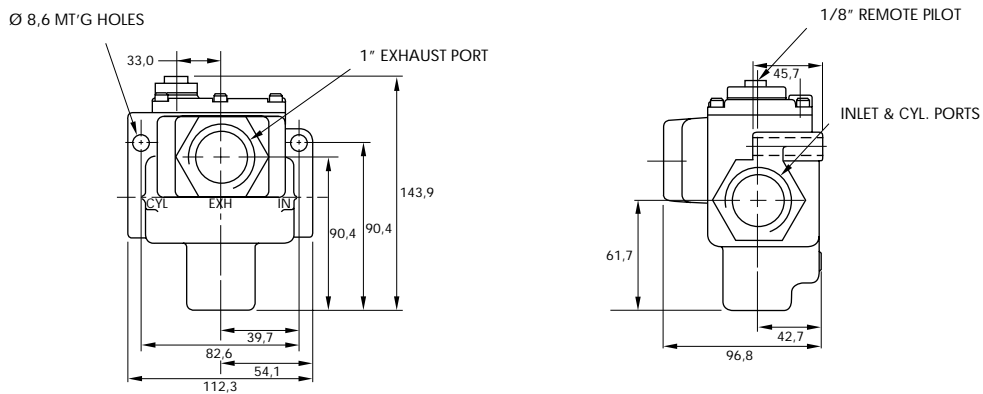
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	25 - 150 PSI \geq main valve pressure
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/2" : (11.0 C _v), 3/4" : (15.3 C _v), 1" : (17.4 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air pilot block : R-59003. • Check valve : 70019.

Options : • BSPP 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	
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R e m o t e a i r v a l v e s

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1" - 1 1/4" - 1 1/2"	33.5 C _v	Inline

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.



HOW TO ORDER

Port size	Air spring	NC valve	NO valve
1" NPTF	Internal	58C-51-RA	58C-81-RA
1 1/4" NPTF		58C-52-RA	58C-82-RA
1 1/2" NPTF		58C-53-RA	58C-83-RA
1" NPTF	External	58C-51-RE	58C-81-RE
1 1/4" NPTF		58C-52-RE	58C-82-RE
1 1/2" NPTF		58C-53-RE	58C-83-RE

Air pilot port : 1/8" NPTF.

Note: Designation "RE" required on remote air pilot models with main valve pressures of vacuum to 25 PSI. "RE" provides an external pilot port and should have a pressure range of 25-75 PSI. Since the external pilot supplies the air spring, it must not exceed the remote air pilot signal pressure.

TECHNICAL DATA

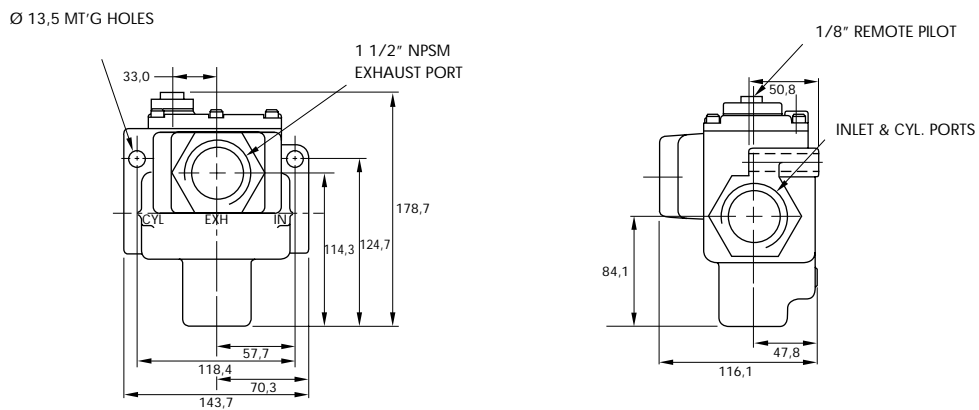
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	25 - 150 PSI \geq main valve pressure
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1bar$) :	1" : (31.2 C _v), 1 1/4" : (32.5 C _v), 1 1/2" : (33.5 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air pilot block : R-59003. • Check valve : 70019.

Options : • BSPP 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	
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R e m o t e a i r v a l v e s

Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	2" - 2 1/2"	65.0 C _v	Inline

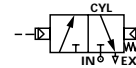
OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.



HOW TO ORDER

Port size	Air spring	NC valve
2" NPTF	Internal	59B-52-RA
2 1/2" NPTF	Internal	59B-53-RA
2" NPTF	External	59B-52-RE
2 1/2" NPTF	External	59B-53-RE



Air pilot port : 1/8" NPTF.

Note: Designation "RE" required on remote air pilot models with main valve pressures of vacuum to 25 PSI. "RE" provides an external pilot port and should have a pressure range of 25-75 PSI. Since the external pilot supplies the air spring, it must not exceed the remote air pilot signal pressure.

TECHNICAL DATA

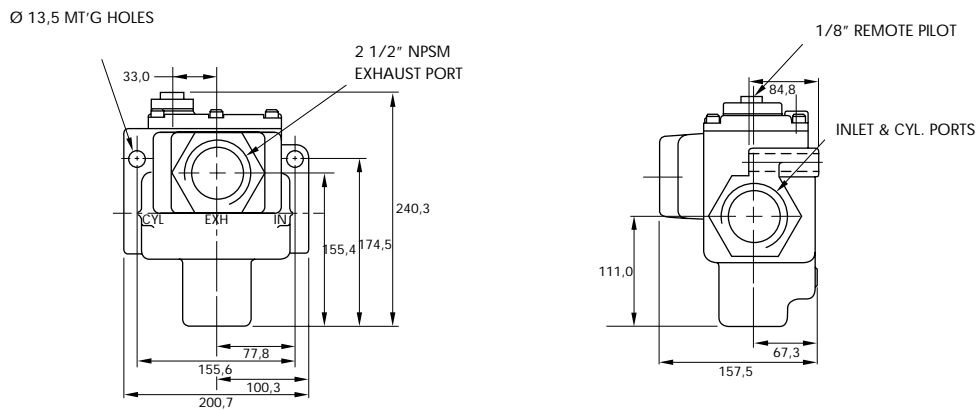
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	25 - 150 PSI \geq main valve pressure
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1bar$) :	2" : (60.0 C _v), 2 1/2" : (65.0 C _v)
Leak rate :	150 cm ³ /min

Spare parts : • Remote air pilot block : R-59003. • Check valve : 70019.

Options : • BSPP 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	
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Manifold mounting

stacking	
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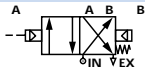
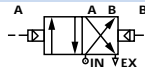
Function	Port size	Flow (Max)	Individual mounting
4/2	1/8" - 1/4"	0.7 C _v	Inline

OPERATIONAL BENEFITS

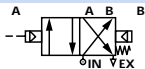
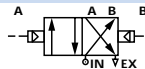
1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	Single operator	Double operator
		
1/8" NPTF	711C-11-RA	721C-11-RA
1/4" NPTF	711C-12-RA	721C-12-RA

HOW TO ORDER VALVE WITH FLOW CONTROLS

Port size	Single operator	Double operator
		
1/8" NPTF	712C-11-RA	722C-11-RA
1/4" NPTF	712C-12-RA	722C-12-RA

Air pilot port : 1/8" NPTF.

TECHNICAL DATA

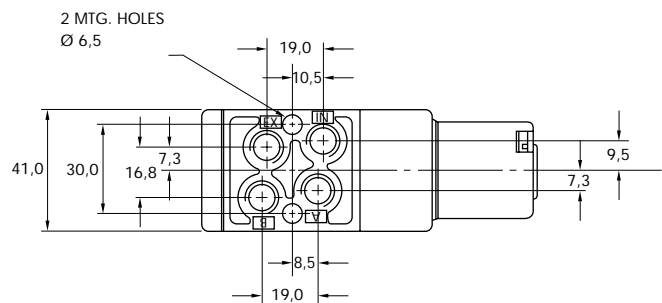
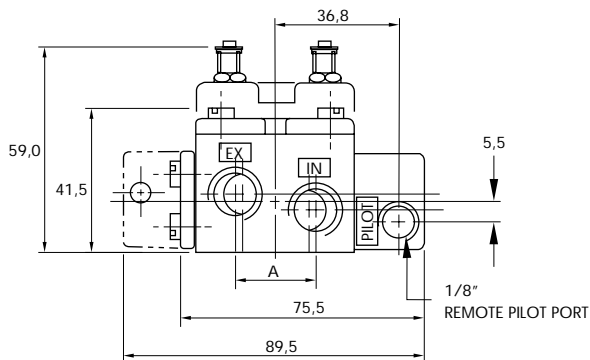
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator : 20 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/8" : (0.6 C _v), 1/4" : (0.7 C _v)
Leak rate :	50 cm ³ /min

Spare parts : • Remote air operator : R-07002. • Valve cover plate with integral flow controls : N-07002.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)

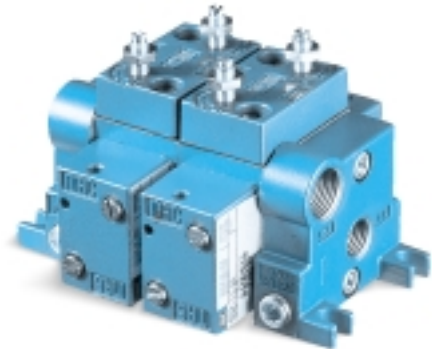


PORT SIZE	A
1/8"	21.0
1/4"	24.0

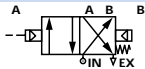
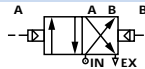
Function	Port size	Flow (Max)	Manifold mounting
4/2	1/8" - 1/4"	0.8 C _v	stacking

OPERATIONAL BENEFITS

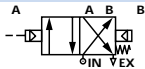
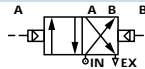
1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	Single operator	Double operator
		
1/8" NPTF	713C-11-RA	723C-11-RA
1/4" NPTF	713C-12-RA	723C-12-RA

HOW TO ORDER VALVE WITH FLOW CONTROLS

Port size	Single operator	Double operator
		
1/8" NPTF	714C-11-RA	724C-11-RA
1/4" NPTF	714C-12-RA	724C-12-RA

End plate kit (Port size 1/4") : M-07001-01-01, internal pilot.
M-07001-02-01, external pilot.

Air pilot port : 1/8" NPTF.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator : 20 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/8" : (0.7 C _v), 1/4" : (0.8 C _v)
Leak rate :	50 cm ³ /min

Spare parts :

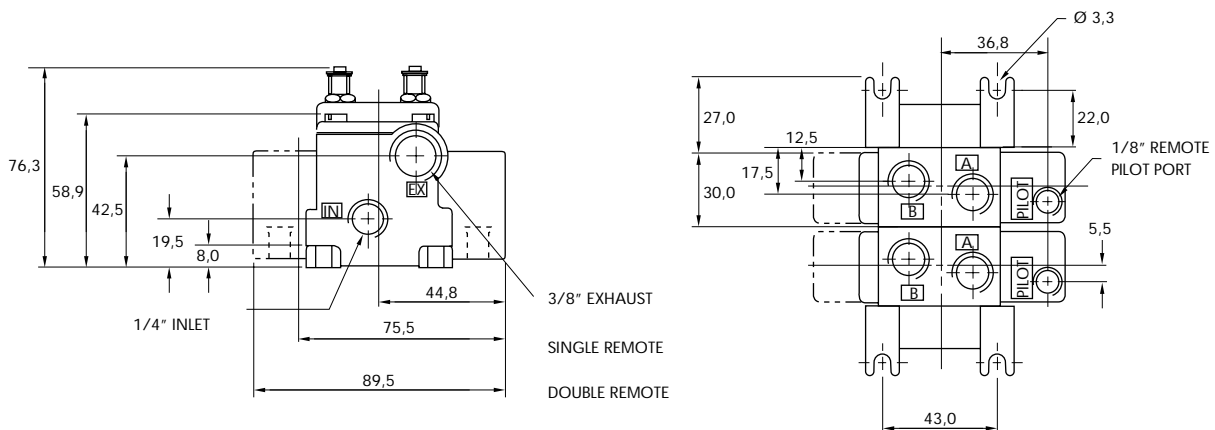
- Remote air operator : R-07002. • Valve cover plate with integral flow controls : N-07004. • Pressure seal between valves : 16368. • Tie-rod (x2) : 19674.

Options :

- BSPP 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	
--------	--

Manifold mounting

stacking	
----------	--



R e m o t e a i r v a l v e s

Function	Port size	Flow (Max)	Individual mounting
4/2	1/8" - 1/4"	1.4 C _v	Inline

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	Single operator	Double operator
1/8" NPTF	911B-RA	921B-RA
1/4" NPTF	912B-RA	922B-RA

Air pilot port : 1/8" NPTF.

TECHNICAL DATA

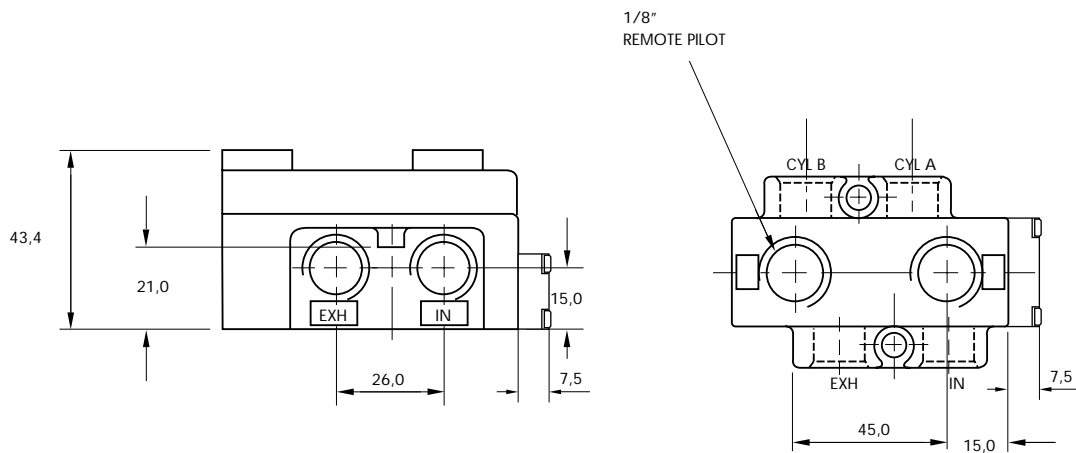
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/8" : (0.8 C _v), 1/4" : (1.2 C _v)
Leak rate :	50 cm ³ /min

Spare parts : • Remote air operator (single operator) : R-09002-01. • Remote air operator (double operator) : R-09002-02.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





R e m o t e a i r v a l v e s

Function	Port size	Flow (Max)	Manifold mounting
4/2	1/8" - 1/4"	1.4 C _v	stacking

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	Single operator	Double operator
1/8" NPTF	913B-RA	923B-RA
1/4" NPTF	914B-RA	924B-RA

Air pilot port : 1/8" NPTF.

Manifold fastening kit (3/8" NPTF) : M-09001-01.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/8" : (0.8 C _v), 1/4" : (1.2 C _v)
Leak rate :	50 cm ³ /min

Spare parts :

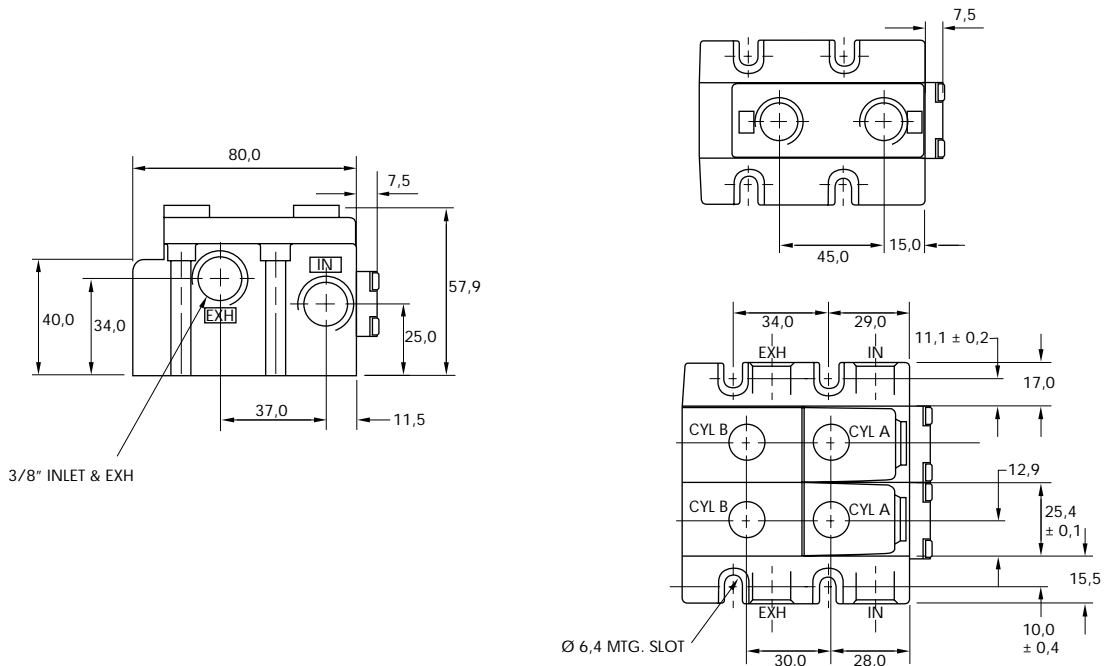
- Remote air operator (single operator) : R-09002-01. • Remote air operator (double operator) : R-09002-02.
- Pressure seal between valves : 16358. • Tie-rod (x2) : 19615.

Options :

- BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





R e m o t e a i r v a l v e s

Individual mounting



Manifold mounting



Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	1/8" - 1/4" - 3/8"	1.35 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
Valve less base	82A-AB-000-RA	82A-BB-000-RA	82A-EB-000-RA	82A-FB-000-RA	82A-GB-000-RA
Sub-base 1/8" NPTF	82A-AB-AAA-RA	82A-BB-AAD-RA	82A-EB-AAD-RA	82A-FB-AAD-RA	82A-GB-AAD-RA
Sub-base 1/4" NPTF	82A-AB-BAA-RA	82A-BB-BAD-RA	82A-EB-BAD-RA	82A-FB-BAD-RA	82A-GB-BAD-RA
Sub-base 3/8" NPTF	82A-AB-CAA-RA	82A-BB-CAD-RA	82A-EB-CAD-RA	82A-FB-CAD-RA	82A-GB-CAD-RA

OPTIONS

82A-AB-000-RA

└ - For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H.

TECHNICAL DATA

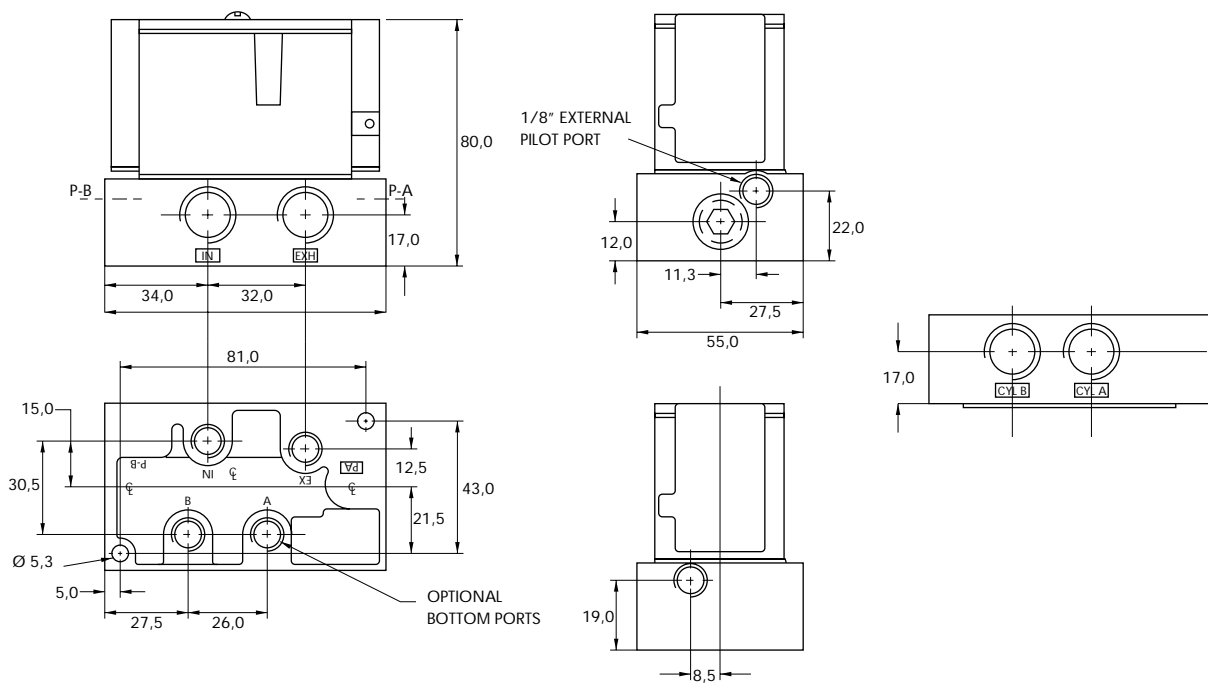
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/8" : (0.9 C _v), 1/4" : (1.3 C _v), 3/8" : (1.35 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air adapter assy.: R-82003.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	1/4" - 3/8"	1.35 C _v	sub-base

OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
Valve less base	Internal only	82A-AB-000-TM-RA11	82A-BB-000-TM-RA11	82A-EB-000-TM-RA11	82A-FB-000-TM-RA11	82A-GB-000-TM-RA11
Sub-base	Internal	82A-AB-BKA-TM-RA11	82A-BB-BKA-TM-RA11	82A-EB-BKA-TM-RA11	82A-FB-BKA-TM-RA11	82A-GB-BKA-TM-RA11
1/4" NPTF	External	82A-AB-BKD-TM-RA11	82A-BB-BKD-TM-RA11	82A-EB-BKD-TM-RA11	82A-FB-BKD-TM-RA11	82A-GB-BKD-TM-RA11
Sub-base	Internal	82A-AB-CKA-TM-RA11	82A-BB-CKA-TM-RA11	82A-EB-CKA-TM-RA11	82A-FB-CKA-TM-RA11	82A-GB-CKA-TM-RA11
3/8" NPTF	External	82A-AB-CKD-TM-RA11	82A-BB-CKD-TM-RA11	82A-EB-CKD-TM-RA11	82A-FB-CKD-TM-RA11	82A-GB-CKD-TM-RA11

OPTIONS

82A-AB-000-TM-RA11

- For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H.

Manifold fastening kit : N-82005-01.

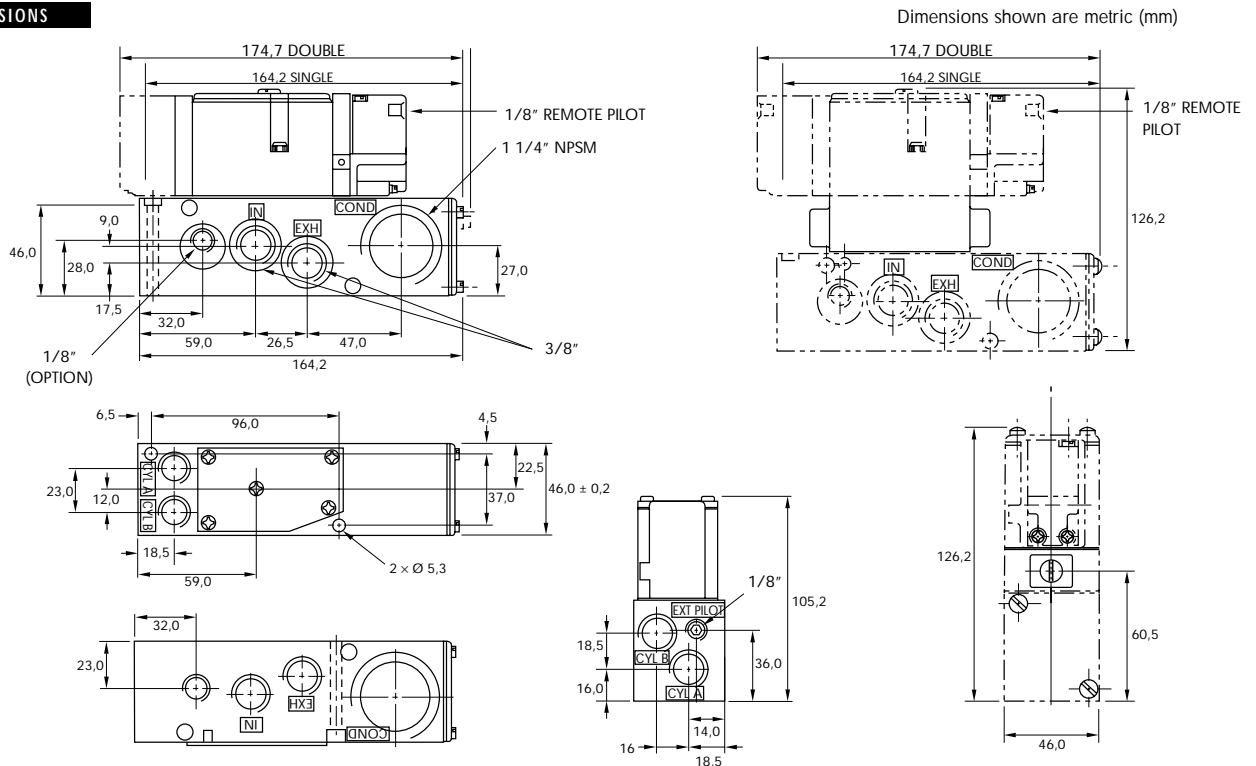
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/4" : (1.3 C _v), 3/8" : (1.35 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operated pilot : TM-RA11.

Options : • BSPP threads.

DIMENSIONS





R e m o t e a i r v a l v e s

Individual mounting



Manifold mounting



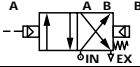
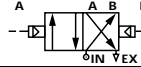
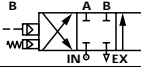
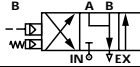
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center
				
Valve less base	6312D-000-RA	6322D-000-RA	6332D-000-RA	6342D-000-RA
Sub-base 1/4" NPTF	6312D-131-RA	6322D-141-RA	6332D-141-RA	6342D-141-RA
Sub-base 3/8" NPTF	6312D-231-RA	6322D-241-RA	6332D-241-RA	6342D-241-RA
Sub-base 1/2" NPTF	6312D-331-RA	6322D-341-RA	6332D-341-RA	6342D-341-RA

OPTIONS

- 6312D-131-RA
- For bottom ports (excluding 1/2"), replace by 4.
 - For dual pressure valves (see section 6 for use with sandwich regulators), replace by 5.

TECHNICAL DATA

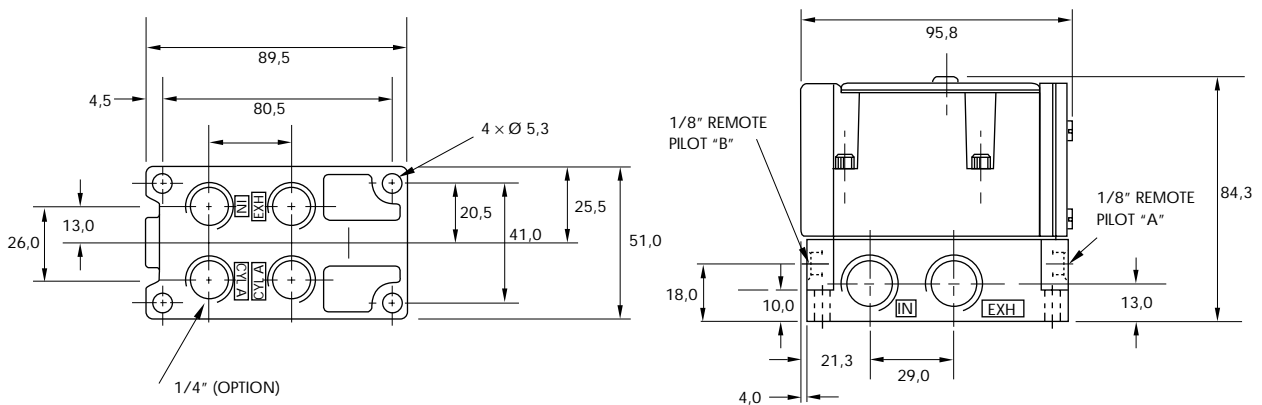
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/4" : (2.0 C _v), 3/8" : (2.6 C _v), 1/2" : (3.0 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator (A side) : R-63004A. • Remote air operator (B side) : R-63005A.
 • Seal between valve and base : 16298. • Mounting screw valve to base (x4) : 35303.

Options : • BSPP threads.

DIMENSIONS

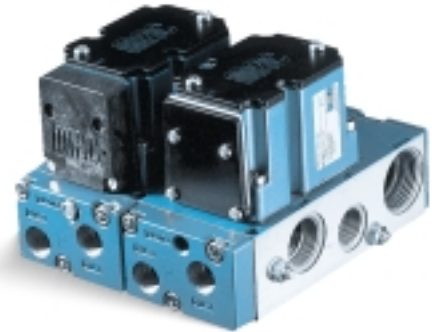
Dimensions shown are metric (mm)



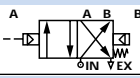
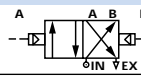
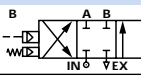
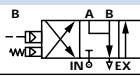
Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	1/4" - 3/8" - 1/2"	3.0 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center
				
Valve less base	6312D-000-RA	6322D-000-RA	6332D-000-RA	6342D-000-RA
Sub-base 1/4" NPTF	6312D-431-RA	6322D-441-RA	6332D-441-RA	6342D-441-RA
Sub-base 3/8" NPTF	6312D-531-RA	6322D-541-RA	6332D-541-RA	6342D-541-RA
Sub-base 1/2" NPTF	6312D-631-RA	6322D-641-RA	6332D-641-RA	6342D-641-RA

OPTIONS

- 6312D-431-RA
 - For bottom cylinder ports, replace by 4.
 - For dual pressure valves (see section 6 for use with sandwich regulators), replace by 5.

Fastening kit : N-63002-01

TECHNICAL DATA

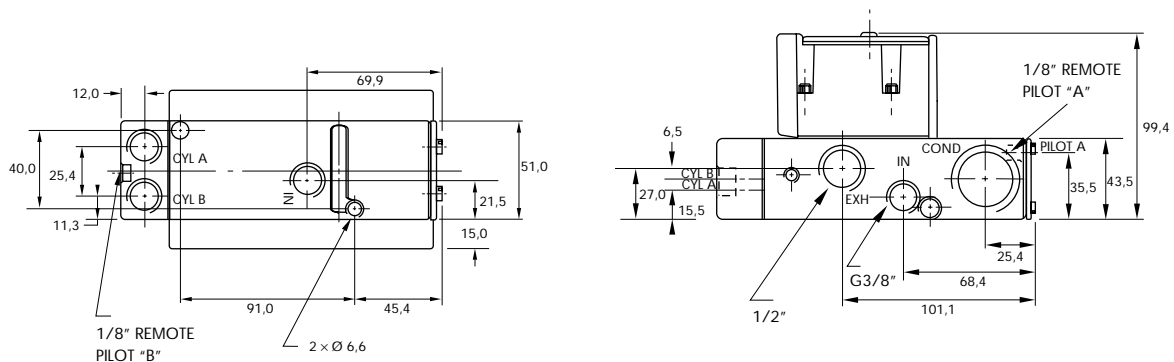
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/4" : (2.0 C _v), 3/8" : (2.6 C _v), 1/2" : (3.0 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator (A side) : R-63004A. • Remote air operator (B side) : R-63005A. • Seal between valve and base : 16298.
 • Mounting screw valve to base (x4) : 35303. • Tie-rod (x2) : 19624.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





R e m o t e a i r v a l v e s

Individual mounting



Manifold mounting



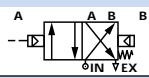
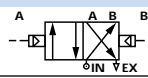
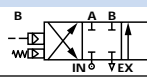
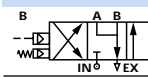
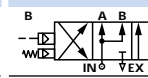
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v	sub-base

OPERATIONAL BENEFITS


1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
					
Valve less base	6512B-000-RA	6522B-000-RA	6532B-000-RA	6542B-000-RA	6552B-000-RA
Sub-base 3/8" NPTF	6512B-131-RA	6522B-141-RA	6532B-141-RA	6542B-141-RA	6552B-141-RA
Sub-base 1/2" NPTF	6512B-231-RA	6522B-241-RA	6532B-241-RA	6542B-241-RA	6552B-241-RA
Sub-base 3/4" NPTF	6512B-331-RA	6522B-341-RA	6532B-341-RA	6542B-341-RA	6552B-341-RA

OPTIONS

6512B-131-RA
 Dual pressure valves : replace by 4. (excluding 3/4" base)

TECHNICAL DATA

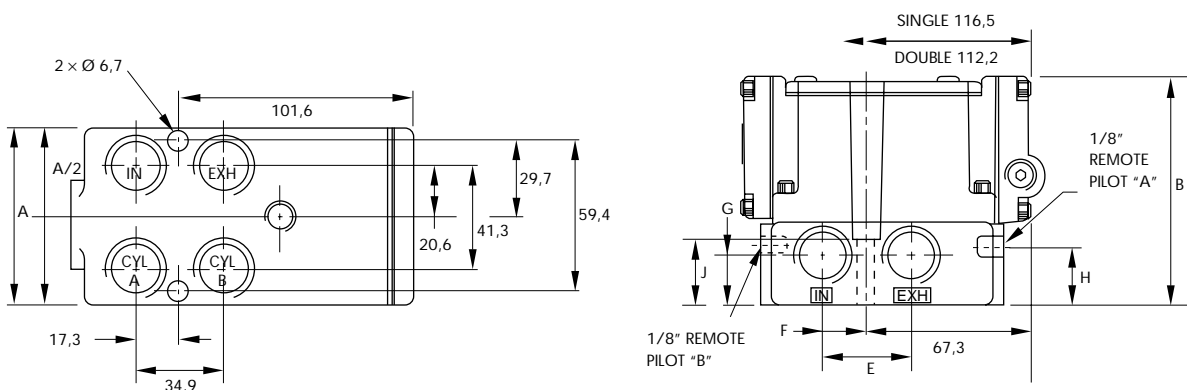
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/8" : (4.5 C _v), 1/2" : (5.0 C _v), 3/4" : (5.1 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator : R-00008. • Seal between valve and base : 16246. • Mounting screw valve to base (x4) : 32201.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



PORT SIZE	A	B	E	F	G	H	J
3/8" & 1/2"	69.6	97.4	36.0	17.9	19.0	23.6	25.4
3/4"	94.5	109.3	40.1	19.2	20.8	35.9	36.6

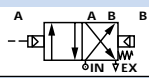
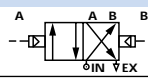
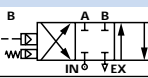
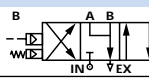
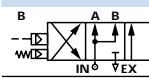
Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/8" - 1/2" - 3/4"	5.1 C _v	sub-base

OPERATIONAL BENEFITS


- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
					
Valve less base	6512B-000-RA	6522B-000-RA	6532B-000-RA	6542B-000-RA	6552B-000-RA
Sub-base 3/8" NPTF	6512B-431-RA	6522B-441-RA	6532B-441-RA	6542B-441-RA	6552B-441-RA
Sub-base 1/2" NPTF	6512B-531-RA	6522B-541-RA	6532B-541-RA	6542B-541-RA	6552B-541-RA
Sub-base 3/4" NPTF	6512B-631-RA	6522B-641-RA	6532B-641-RA	6542B-641-RA	6552B-641-RA

OPTIONS

6512B-431-RA
 For dual pressure valves, replace by 4.

Fastening kit : N-65002-01.

TECHNICAL DATA

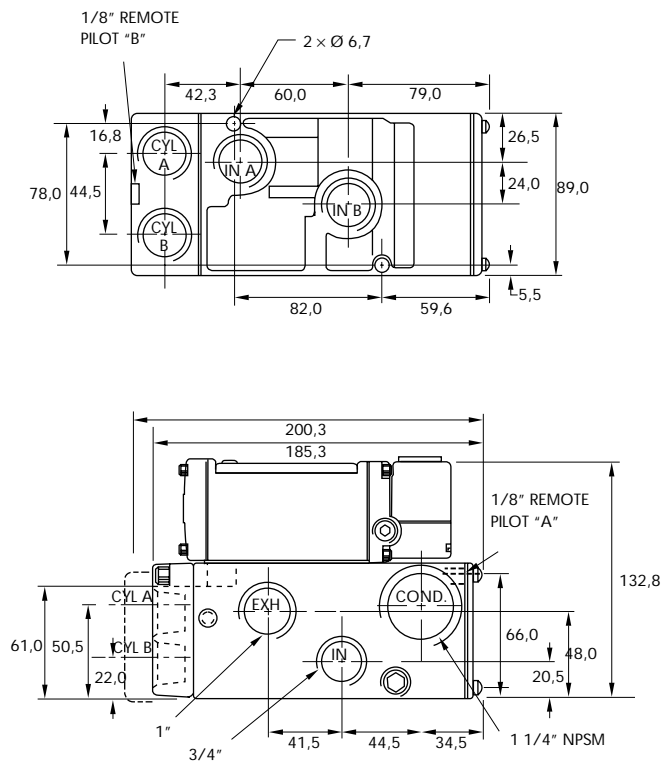
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/8" : (4.5 C _v), 1/2" : (5.0 C _v), 3/4" : (5.1 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator : R-00008. • Seal between valve and base : 16246.
 • Mounting screw valve to base (x4) : 32201. • Tie-rod (x2) : 19540.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





R e m o t e a i r v a l v e s

Individual mounting



Manifold mounting



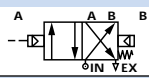
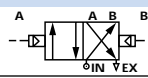
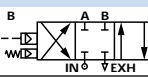
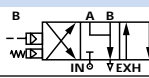
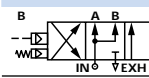
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/4" - 1"	9.6 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
					
Valve less base	6612A-000-RA	6622A-000-RA	6632A-000-RA	6642A-000-RA	6652A-000-RA
Sub-base 3/4" NPTF	6612A-231-RA	6622A-241-RA	6632A-241-RA	6642A-241-RA	6652A-241-RA
Sub-base 1" NPTF	6612A-331-RA	6622A-341-RA	6632A-341-RA	6642A-341-RA	6652A-341-RA

OPTIONS

6612A-231-RA
 Dual pressure valves : replace by 4.

TECHNICAL DATA

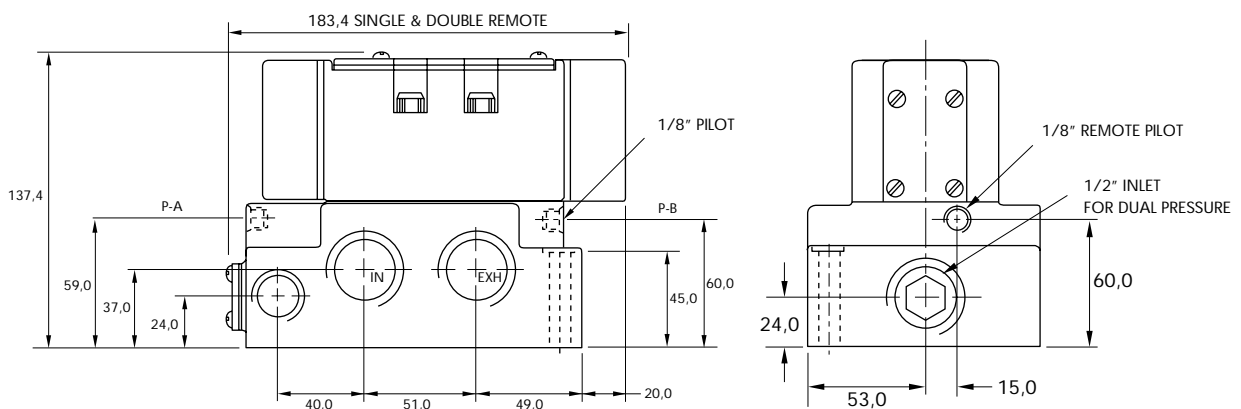
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/4" : (9.0 C _v), 1" : (9.6 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator : R-A3004. • Pressure seal between valve and base : 16436. • Mounting screw valve to base (x4) : 35416.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



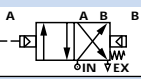
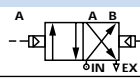
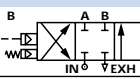
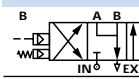
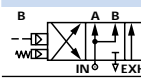
Function	Port size	Flow (Max)	Manifold mounting
4/2 - 4/3	3/4" - 1"	9.6 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center	4/3 Pressure center
					
Valve less base	6612A-000-PM-RA11	6622A-000-PM-RA11	6632A-000-PM-RA11	6642A-000-PM-RA11	6652A-000-PM-RA11
Sub-base 3/4" NPTF	6612A-431-PM-RA11	6622A-441-PM-RA11	6632A-441-PM-RA11	6642A-441-PM-RA11	6652A-441-PM-RA11
Sub-base 1" NPTF	6612A-531-PM-RA11	6622A-541-PM-RA11	6632A-541-PM-RA11	6642A-541-PM-RA11	6652A-541-PM-RA11

OPTIONS

6612A-XXX-PM-RA11
 For dual pressure valves, replace by 4.

Fastening kit : N-66002-01.

TECHNICAL DATA

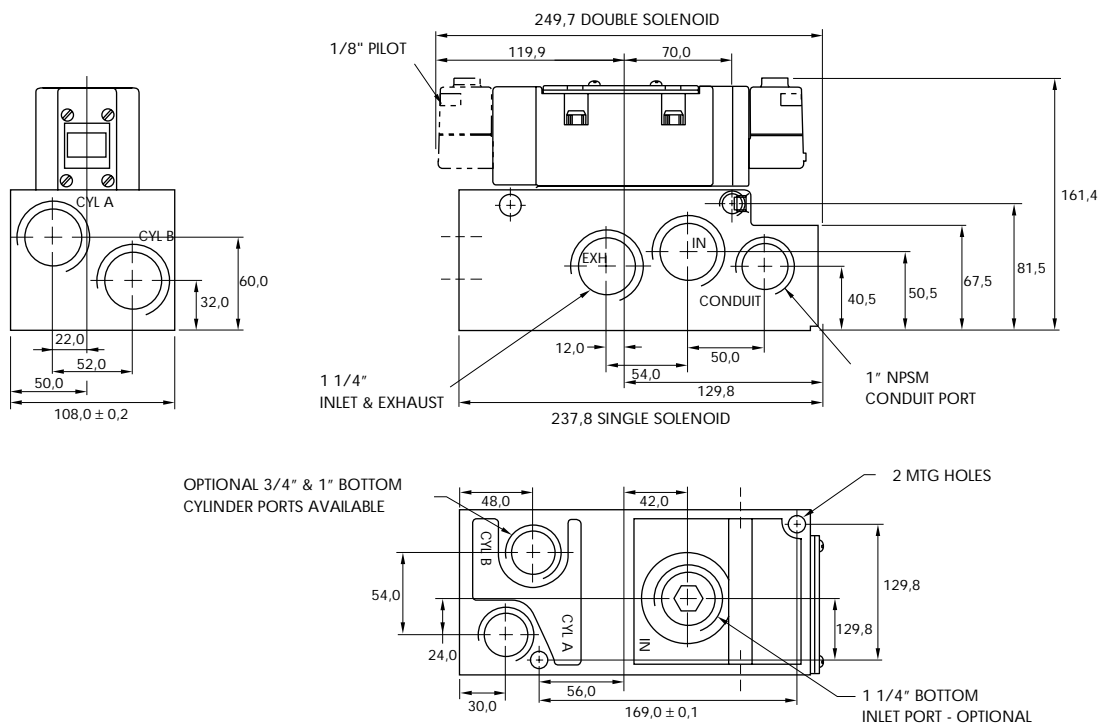
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/4" : (9.0 C _v), 1" : (9.6 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator : R-A3004. • Pressure seal between valve and base : 16436. • Mounting screw valve to base (x4) : 35416.
 • Tie-rod (x2) : 19789. • Remote air pilot : PME-RA11.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





R e m o t e a i r v a l v e s

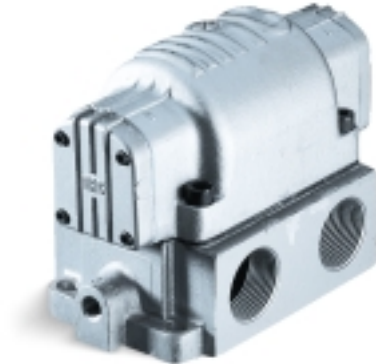
Individual mounting

sub-base	
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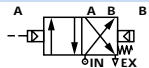
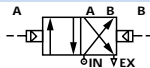
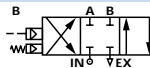
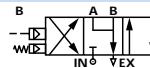
Function	Port size	Flow (Max)	Individual mounting
4/2 - 4/3	3/4" - 1" - 1 1/4" - 1 1/2"	15.9 C _v	sub-base

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	Pilot air	4/2 Single operator	4/2 Double operator	4/3 Closed center	4/3 Open center
					
Valve less base		2701G-1	2703G-2	2707G-2	2708G-2
Sub-base 3/4" NPTF		2721G-1	2723G-2	2727G-2	2728G-2
Sub-base 1" NPTF	Internal	2731G-1	2733G-2	2737G-2	2738G-2
Sub-base 1 1/4" NPTF		2751G-1	2753G-2	2757G-2	2758G-2
Sub-base 1 1/2" NPTF		2761G-1	2763G-2	2767G-2	2768G-2
Valve less base		2701G-2	2703G-2	2707G-2	2708G-2
Sub-base 3/4" NPTF		2721G-2	2723G-2	2727G-2	2728G-2
Sub-base 1" NPTF	External	2731G-2	2733G-2	2737G-2	2738G-2
Sub-base 1 1/4" NPTF		2751G-2	2753G-2	2757G-2	2758G-2
Sub-base 1 1/2" NPTF		2761G-2	2763G-2	2767G-2	2768G-2

TECHNICAL DATA

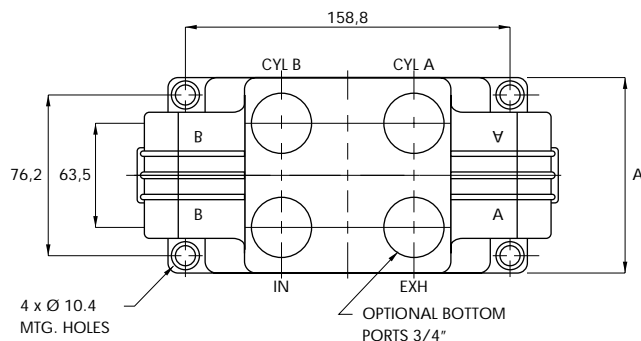
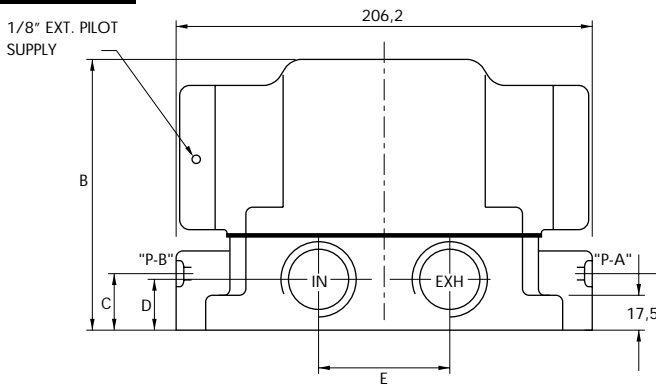
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/4" : (11.5 C _v), 1" : (13.4 C _v), 1 1/4" : (15.4 C _v), 1 1/2" : (15.9 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air end plate : R-00016B. • Pressure seal between valve and base : 16083. • Mounting screw valve to base (x4) : 32214.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)



PORT SIZE	A	B	C	D	E
3/4" NPTF	95.3	132.3	28.4	25.4	63.5
1" NPTF					
1 1/4" NPTF	114.3	148.3	23.9	30.2	76.2
1 1/2" NPTF					69.9



R e m o t e a i r v a l v e s

Individual mounting

Inline	
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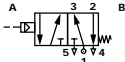
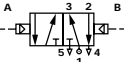
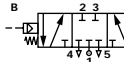
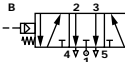
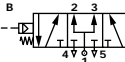
Function	Port size	Flow (Max)	Individual mounting
5/2 - 5/3	1/4"	1.4 C _v	Inline

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

Port size	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center	5/3 Pressure center
					
1/4" NPTF	180001-112-0003	180003-112-0003	180304-512-0304	180304-612-0304	180304-812-0304

Air pilot port : 1/8" NPTF.

Options : Side pilot port : replace code 0003 by 0010 (2 positions valves only).

TECHNICAL DATA

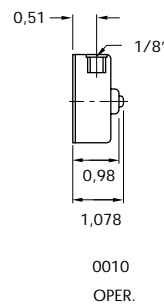
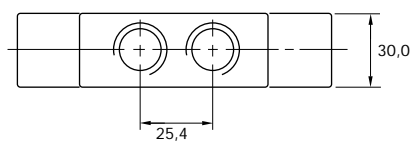
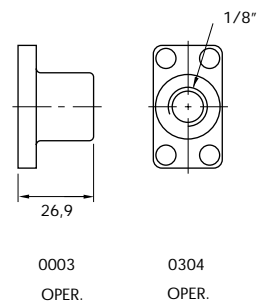
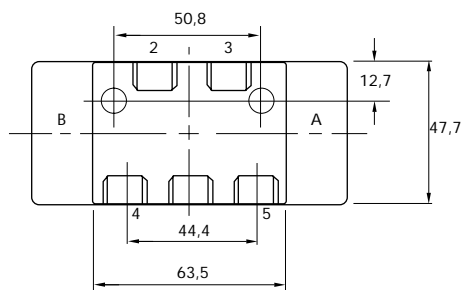
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 200 PSI
Air signal pressure :	Single operator and 3 positions : 20 to 150 PSI Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/4" - 3/8" : (1.4 C _v)
Leak rate :	50 cm ³ /min

Spare parts : • Remote air operator (2 positions) : 180003. • Remote air operator (3 positions) : 180304.

Options : • BSPP threads. • 3/8" ports (ports 1, 2 & 3 - MOD. 0358 required).

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	
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Manifold mounting

sub-base	
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Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	1/4" - 3/8"	1.6 C _v	valve only

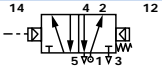
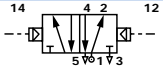
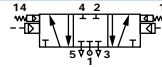
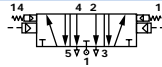
OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.

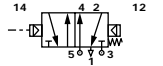
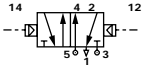
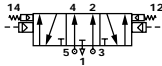


HOW TO ORDER

SINGLE PRESSURE VALVES

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-A1C-B111	-----	-----	-----
External	MV-A1C-B121	MV-A1C-B221	MV-A1C-B322	MV-A1C-B321

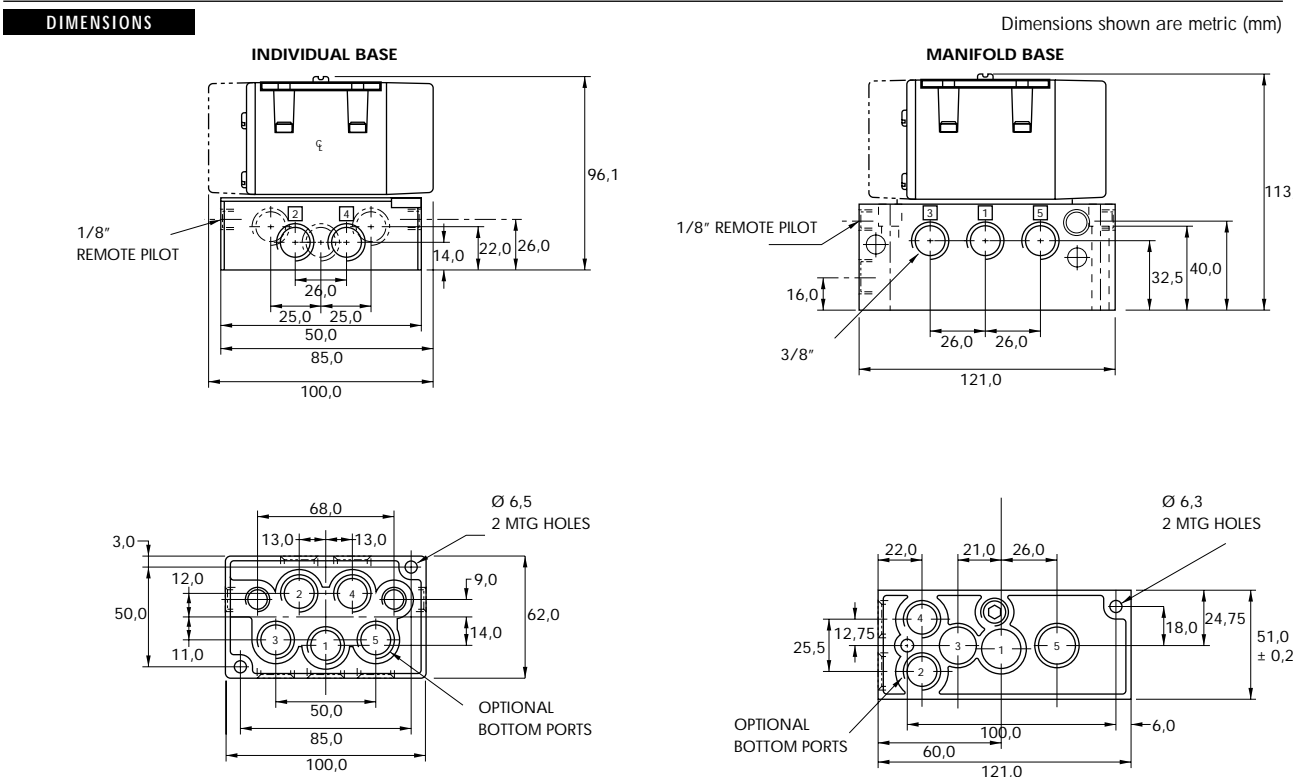
DUAL PRESSURE VALVES

Air spring	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal port 3	MV-A1C-B131	-----	-----
Internal port 5	MV-A1C-B135	-----	-----
External	MV-A1C-B141	MV-A1C-B241	MV-A1C-B341

Note : ISO valves are delivered w/o base. See section 4 for base code

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 20 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/4" - 3/8" : (1.6 C _v)
Leak rate :	100 cm ³ /min

- Spare parts :
- Remote air operator 2 positions : R-A1010. • Remote air operator 3 positions : R-A1005B.
 - Pressure seal between valve and base : 16344. • Mounting screw body to base (x4) : 35304.





R e m o t e a i r v a l v e s

Individual mounting

valve only	
------------	--

Manifold mounting

sub-base	
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Function	Port size	Flow (Max)	Individual mounting & Manifold mounting
5/2 - 5/3	3/8" - 1/2"	3.0 C _v	valve only

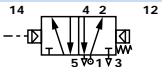
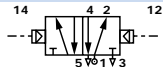
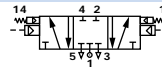
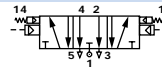
OPERATIONAL BENEFITS

- Balanced spool, immune to variations of pressure.
- Short stroke with high flow.
- The piston (booster) provides maximum shifting forces.
- Powerful return thanks to the combination of mechanical and air springs.
- Bonded spool with minimum friction, shifting in a glass-like finished bore.
- Wiping effect eliminates sticking.
- Low leakage rate.

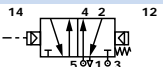
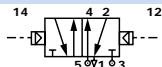
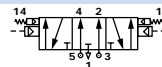


HOW TO ORDER

SINGLE PRESSURE VALVES

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
				
Internal	MV-A2B-B111	-----	-----	-----
External	MV-A2B-B121	MV-A2B-B221	MV-A2B-B322	MV-A2B-B321

DUAL PRESSURE VALVES

Air spring	5/2 Single operator	5/2 Double operator	5/3 Pressure center
			
Internal port 3	MV-A2B-B131	-----	-----
Internal port 5	MV-A2B-B135	-----	-----
External	MV-A2B-B141	MV-A2B-B241	MV-A2B-B341

Note : ISO valves are delivered w/o base. See section 4 for base code.

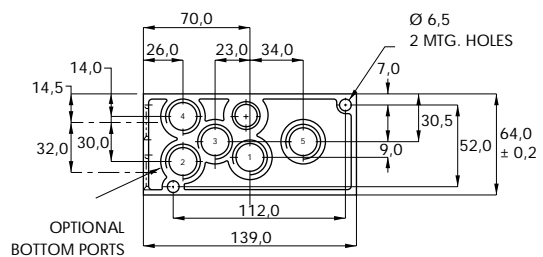
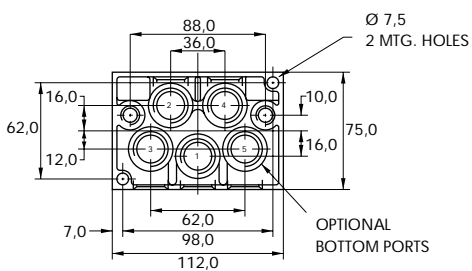
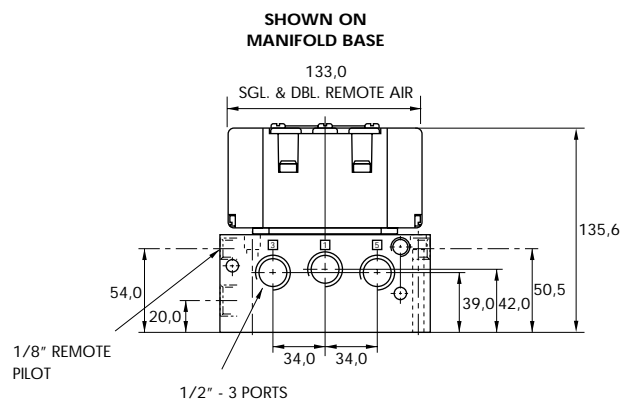
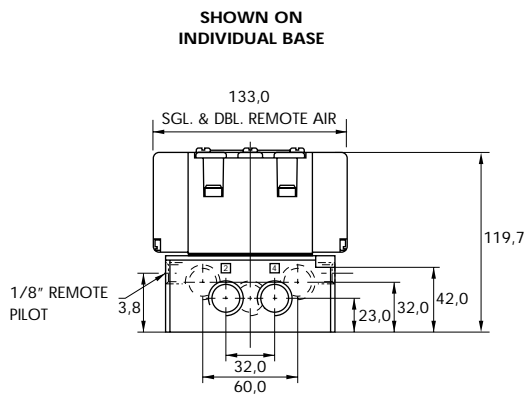
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	3/8" - 1/2" : (3.0 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator : R-A3004. • Pressure seal between valve and base : 16351. • Mounting screw body to base (x4) : 35412.

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

Function	Port size	Flow (Max)	Individual mounting
5/2 - 5/3	1/2" - 3/4"	6.3 C _v	valve only

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates sticking.
7. Low leakage rate.



HOW TO ORDER

SINGLE PRESSURE VALVES

Air spring	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
Internal	MV-A3B-B111	-----	-----	-----
External	MV-A3B-B121	MV-A3B-B221	MV-A3B-B322	MV-A3B-B321

DUAL PRESSURE VALVES

Air spring	5/2 Single operator	5/2 Double operator	5/3 Pressure center
Internal port 3	MV-A3B-B131	-----	-----
Internal port 5	MV-A3B-B135	-----	-----
External	MV-A3B-B141	MV-A3B-B241	MV-A3B-B341

Note : ISO valves are delivered w/o base. See section 4 for base code.

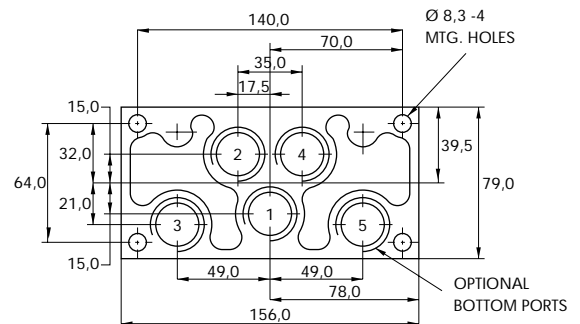
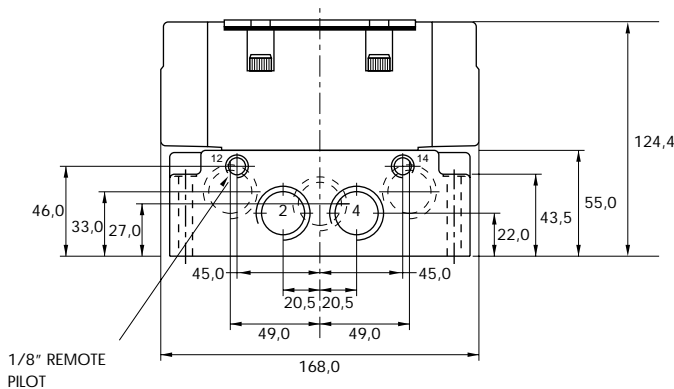
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Air signal pressure :	Single operator and 3 positions : 25 to 150 PSI \geq main valve pressure Double operator : 10 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, $\Delta P=1\text{bar}$) :	1/2" - 3/4" : (6.3 C _v)
Leak rate :	100 cm ³ /min

Spare parts : • Remote air operator : R-A3004. • Pressure seal between valve and base : 16436. • Mounting screw body to base (x4) : 35416.

DIMENSIONS

Dimensions shown are metric (mm)





Section 3

Mechanically and manually operated valves



Mechanically and manually operated valves

Function	Port size	Flow (Max)	Individual mounting		Manifold mounting		Series
			Inline		sub-base		
3/2 - 2/2	1/8" - 1/4"	0.18 C _v					1100
3/2 - 2/2	1/8" - 1/4"	0.14 C _v					
5/2 - 5/3	1/4"	1.35 C _v					1800



Mechanically and manually operated valves

Individual mounting

Inline	
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Manifold mounting

sub-base	
----------	--



Function	Port size	Flow (Max)	Individual mounting
3/2 NO-NC, 2/2 NO-NC	1/8" - 1/4"	0.18 C _v	Inline

OPERATIONAL BENEFITS

1. Short stroke with high flow.
2. Powerful return spring.





















HOW TO ORDER

Port size	Universal valve	NC only valve
		
1/8" NPTF	1111A-xxx	1161A-xxx
1/4" NPTF	1113A-xxx	1163A-xxx

MECHANICAL OPERATOR ►

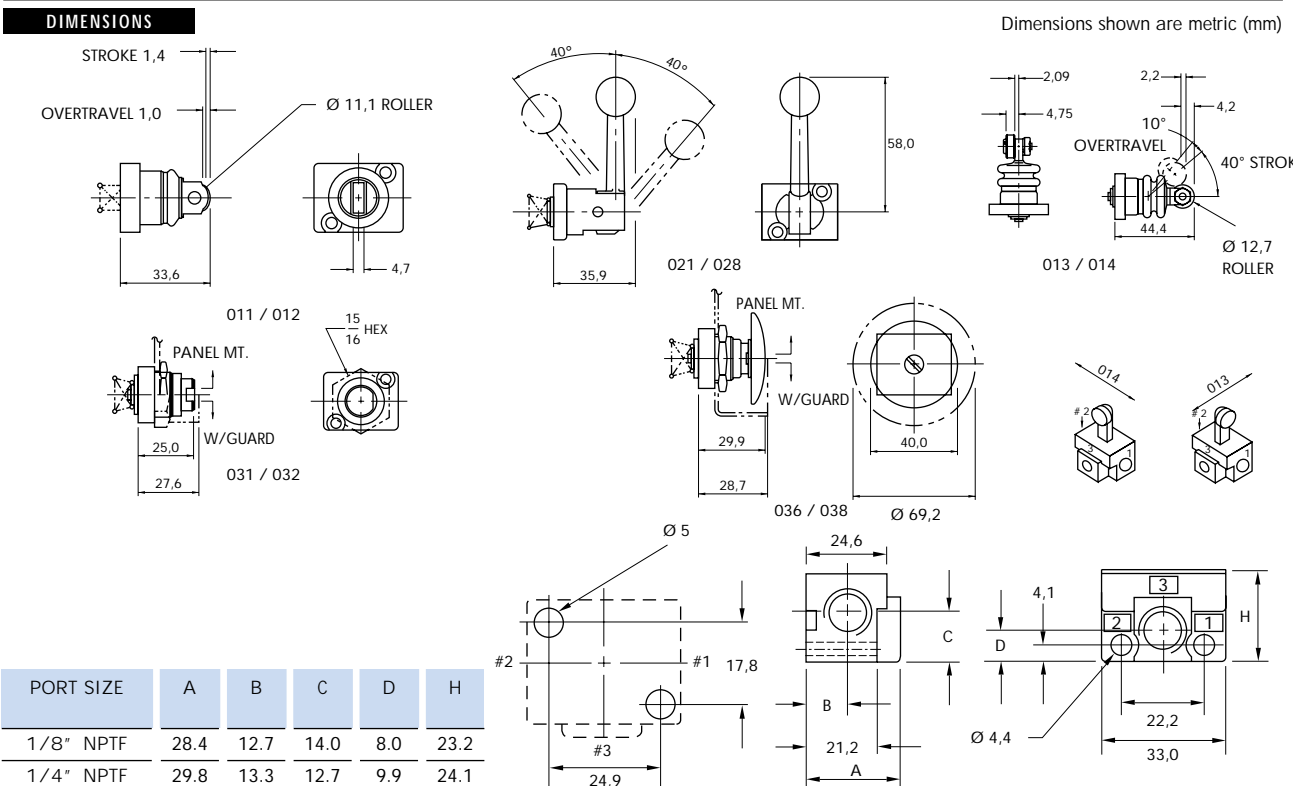
xxx

Code	Description	Code	Description	Code	Description
 O11	Cam roller parallel to ports 1 & 2	 O23	Lever locking pull perpendicular to ports 1 & 2	 O31	Push button
 O12	Cam roller perpendicular to ports 1 & 2	 O24	Lever non-locking pull perpendicular to ports 1 & 2	 O32	Push button (panel mounting)
 O13	Lever cam parallel to ports 1 & 2	 O25	Lever locking push parallel to ports 1 & 2	 O33	Push button with guard
 O14	Lever cam perpendicular to ports 1 & 2	 O26	Lever non-locking push parallel to ports 1 & 2	 O36	Palm button
 O21	Lever locking push perpendicular to ports 1 & 2	 O27	Lever locking pull parallel to ports 1 & 2	 O37	Palm button (panel mounting)
 O22	Lever non-locking push perpendicular to ports 1 & 2	 O28	Lever non-locking pull parallel to ports 1 & 2	 O38	Palm button with guard

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/8" - 1/4" : (0.18 C _v)
Leak rate :	50 cm ³ /min

Spare parts : • Operator : 1100A-XXX (see codification).

Options : • BSPP threads.





Function	Port size	Flow (Max)	Manifold mounting
3/2 NO-NC, 2/2 NO-NC	1/8"	0.14 C _v	sub-base

OPERATIONAL BENEFITS

1. Short stroke with high flow.
2. Powerful return spring.








HOW TO ORDER

Port size	Universal valve	NC only valve
		
Valve less base	1130A-xxx	1170A-xxx
Sub-base 1/8" NPTF	1132A-xxx	1172A-xxx

MECHANICAL OPERATOR >

xxx

Code	Description	Code	Description
 025	Lever locking push parallel to ports 1 & 2	 031	Push button
 026	Lever non-locking push parallel to ports 1 & 2	 028	Lever non-locking pull parallel to ports 1 & 2
 027	Lever locking pull parallel to ports 1 & 2		

End plate kit (Port size 1/4" NPTF) : A2-5004-01.

TECHNICAL DATA

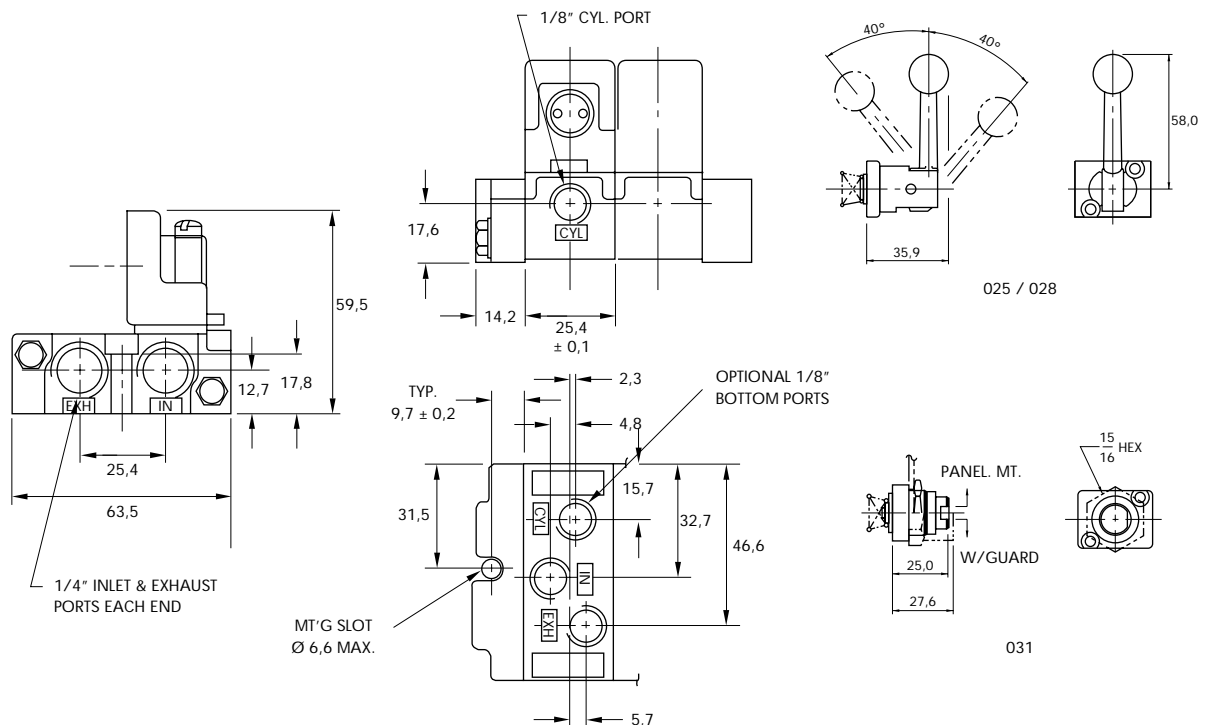
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/8" : (0.14 C _V)
Leak rate :	50 cm ³ /min

Spare parts : • Operator : 1100A-XXX (see codification). • Function plate : A2-7009. • Pressure seal between bases : 16226.
• Tie-rod (x2) : 19546.

Options : • BSPP threads.

DIMENSIONS

Dimensions shown are metric (mm)





Mechanically and manually operated valves

Individual mounting

Inline

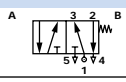
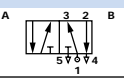
Function	Port size	Flow (Max)	Individual mounting
5/2	1/4"	1.4 C _v	Inline

OPERATIONAL BENEFITS

1. Short stroke with high flow.
2. Powerful return force.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.



HOW TO ORDER

Port size	Single operator	Double operator
1/4" NPTF	 180001-112-xxxx	 18xxxx-112-xxxx

MECHANICAL OPERATOR ►

XXXX

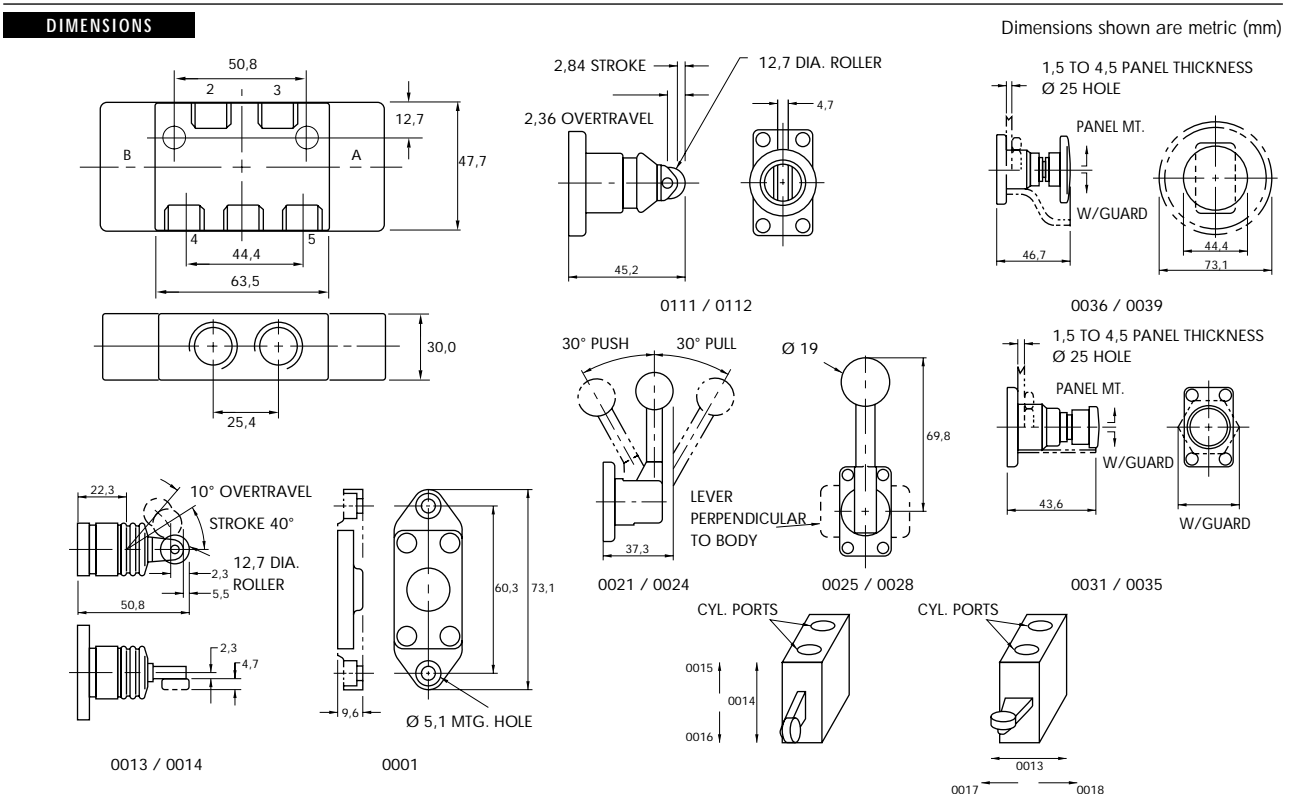
Code	Description	Code	Description	Code	Description
0111	Cam roller parallel to ports 2 & 3	0024	Lever non-locking pull perpendicular to body	0033	Push button with guard
0112	Cam roller perpendicular to ports 2 & 3	0025	Lever locking push parallel to body	0034	Push Pull
0013	Lever cam perpendicular to ports 2 & 3	0026	Lever non-locking push parallel to body	0035	Push Pull (panel mounting)
0014	Lever cam parallel to ports 2 & 3	0027	Lever locking pull parallel to body	0036	Palm button
0021	Lever locking push perpendicular to body	0028	Lever non-locking pull parallel to body	0037	Palm button (panel mounting)
0022	Lever non-locking push perpendicular to body	0031	Push button	0038	Palm button with guard
0023	Lever locking pull perpendicular to body	0032	Push button (panel mounting)	0039	Push Pull palm button

OPTIONS

002X
 Replace 0 by 2 for lever operator with boot (see photo)

TECHNICAL DATA	
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 200 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	1/4" : (1.4 C _V)
Leak rate :	50 cm ³ /min

- Spare parts : • Operator : 18XXXX (see codification).
- Options : • BSPP threads. • 3/8" ports (ports 1,2 & 3 - MOD. 0358 required).





Section 4

Bases according to ISO 5599



Bases according to ISO 5599

Series

ISO 1

ISO 2

ISO 3

ISO 1

ISO 2

ISO 3



HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports	Side & bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/4" NPTF	MB-A1C-221	MB-A1C-223	MB-A1C-222	MB-A1C-224
3/8" NPTF	MB-A1C-231	MB-A1C-233	MB-A1C-232	MB-A1C-234

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/4" NPTF	MM-A1C-221	MM-A1C-223	MM-A1C-222	MM-A1C-224
3/8" NPTF	MM-A1C-231	MM-A1C-233	MM-A1C-232	MM-A1C-234

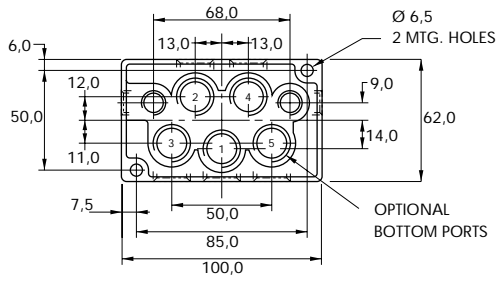
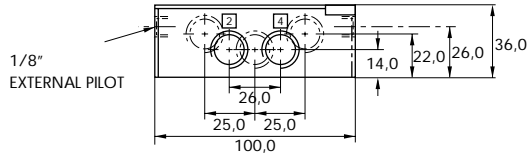
Manifold fastening kit : N-63002-01.

DIMENSIONS

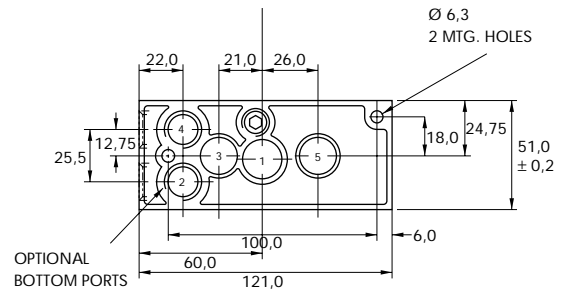
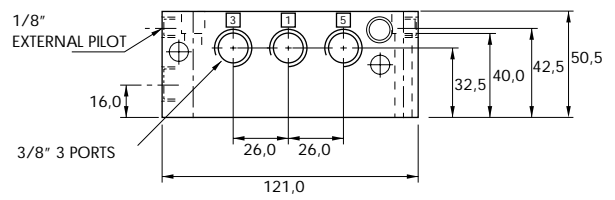
Dimensions shown are metric (mm)

Individual

DIN 5599/1



Manifold





HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports	Side & bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
3/8" NPTF	MB-A2B-221	MB-A2B-223	MB-A2B-222	MB-A2B-224
1/2" NPTF	MB-A2B-231	MB-A2B-233	MB-A2B-232	MB-A2B-234

MANIFOLD BASE

Port size	Side ports	Bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
3/8" NPTF	MM-A2B-221	MM-A2B-223	MM-A2B-222	MM-A2B-224
1/2" NPTF	MM-A2B-231	MM-A2B-233	MM-A2B-232	MM-A2B-234

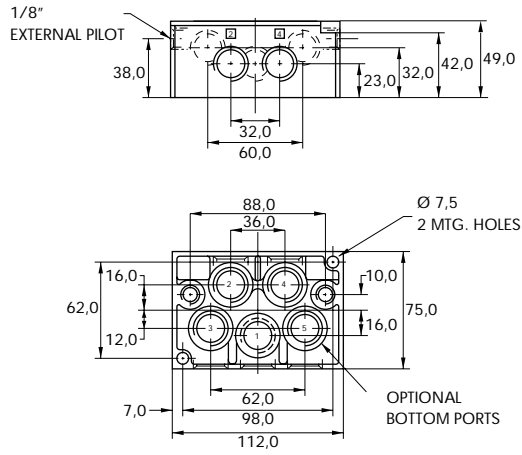
Manifold fastening kit : N-63002-01.

DIMENSIONS

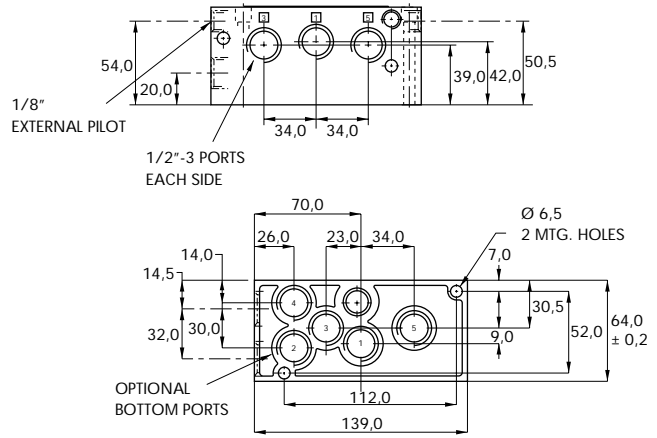
Dimensions shown are metric (mm)

Individual

DIN 5599/1



Manifold





HOW TO ORDER

INDIVIDUAL BASE

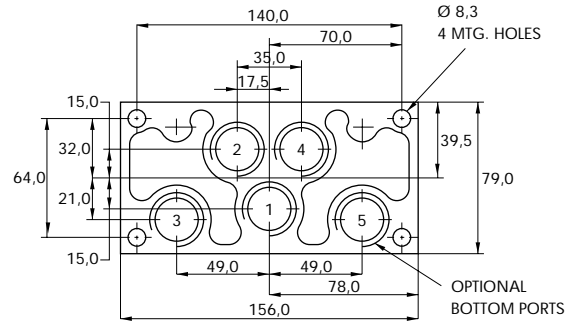
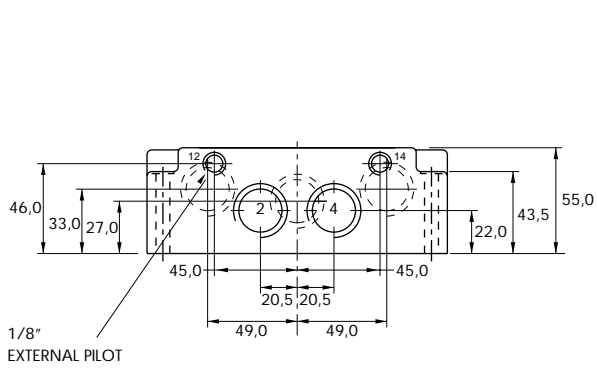
Port size	Side ports	Side & bottom ports	Bottom cylinder ports 2 and 4.	Bottom inlet port 1
1/2" NPTF	MB-A3B-221	MB-A3B-223	MB-A3B-222	MB-A3B-224
3/4" NPTF	MB-A3B-231	MB-A3B-233	MB-A3B-232	MB-A3B-234

DIMENSIONS

Dimensions shown are metric (mm)

Individual

ISO DIN 5599/1





Section 5

Interchangable sub-bases and manifolds



Interchangeable sub-bases and manifolds

Series

MAC 125

MAC 250

MAC 500



MAC 125

MAC 250

MAC 500



HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports
1/4" NPTF	MAC125A-B21A
3/8" NPTF	MAC125A-B31A

MANIFOLD BASE

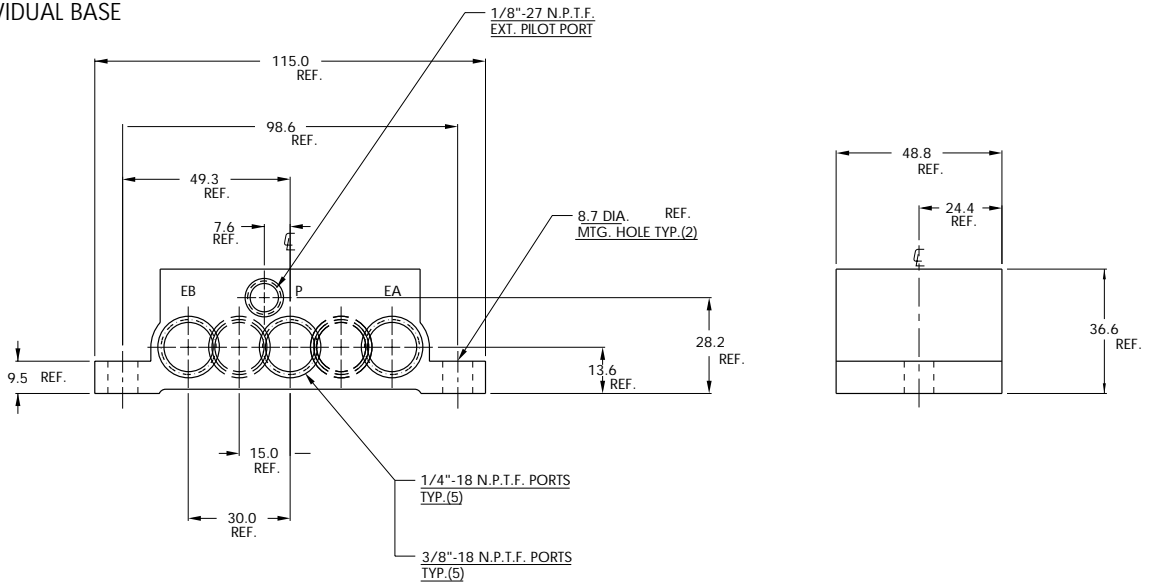
Port size	Bottom cylinder ports	Side & bottom cylinder ports
1/4" NPTF	MAC125A-M21B	MAC125A-M21C
3/8" NPTF	MAC125A-M31B	MAC125A-M31C

Manifold fastening kit : M-12001-01 (3/8" NPTF)

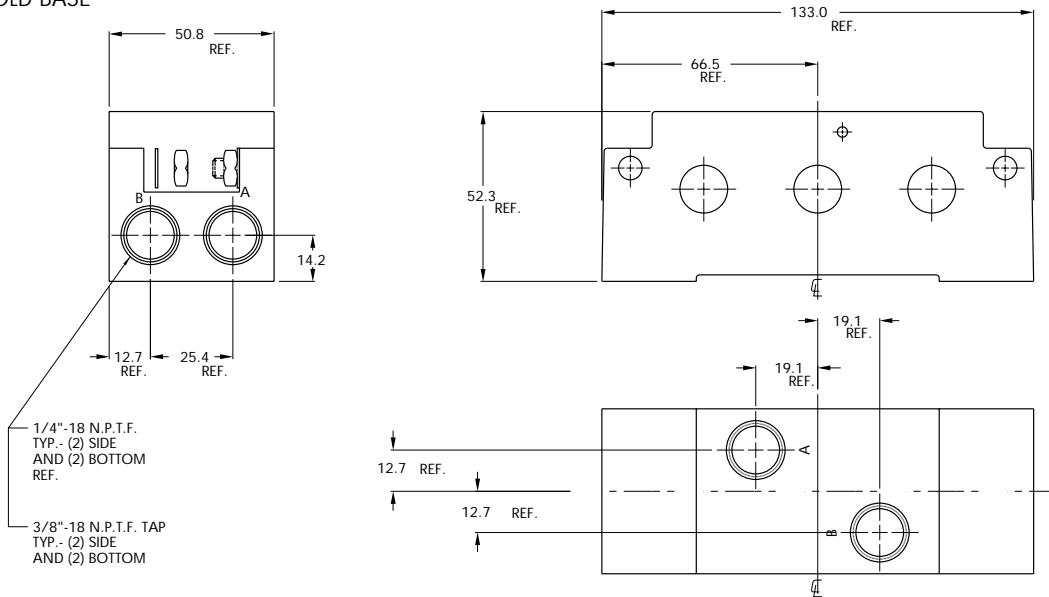
DIMENSIONS

Dimensions shown are metric (mm)

INDIVIDUAL BASE



MANIFOLD BASE





HOW TO ORDER

INDIVIDUAL BASE

Port size	Side ports
1/2" NPTF	MAC250A-B21A
3/4" NPTF	MAC250A-B31A
1" NPTF	MAC250A-B41A

MANIFOLD BASE

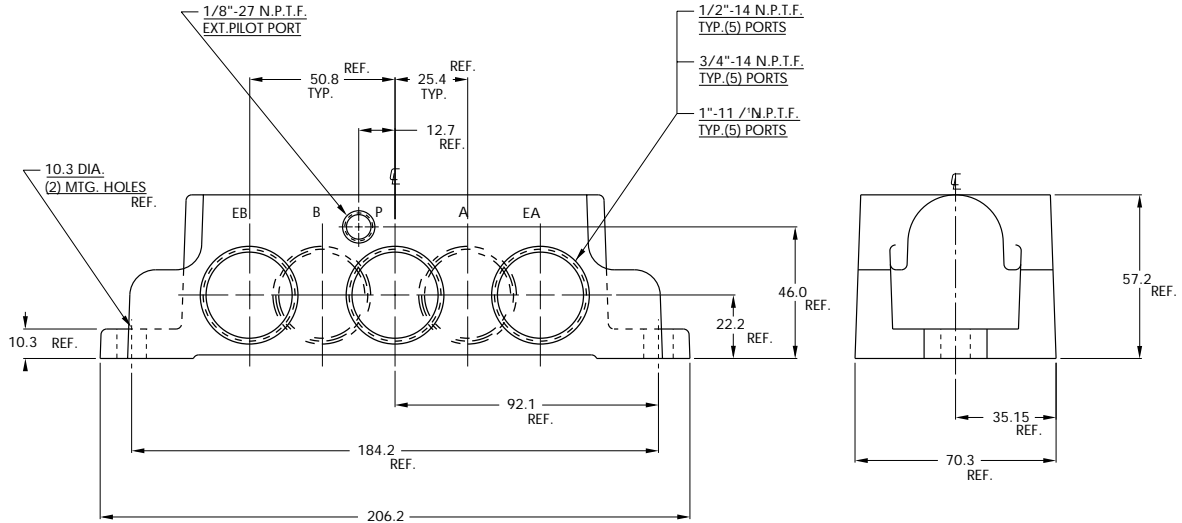
Port size	Bottom cylinder ports	Side & bottom cylinder ports
1/2" NPTF	MAC250A-M21B	MAC250A-M21C
3/4" NPTF	MAC250A-M31B	MAC250A-M31C

Manifold fastening kit : M-25001-01 (only required for manifolds with side & bottom cylinder ports)

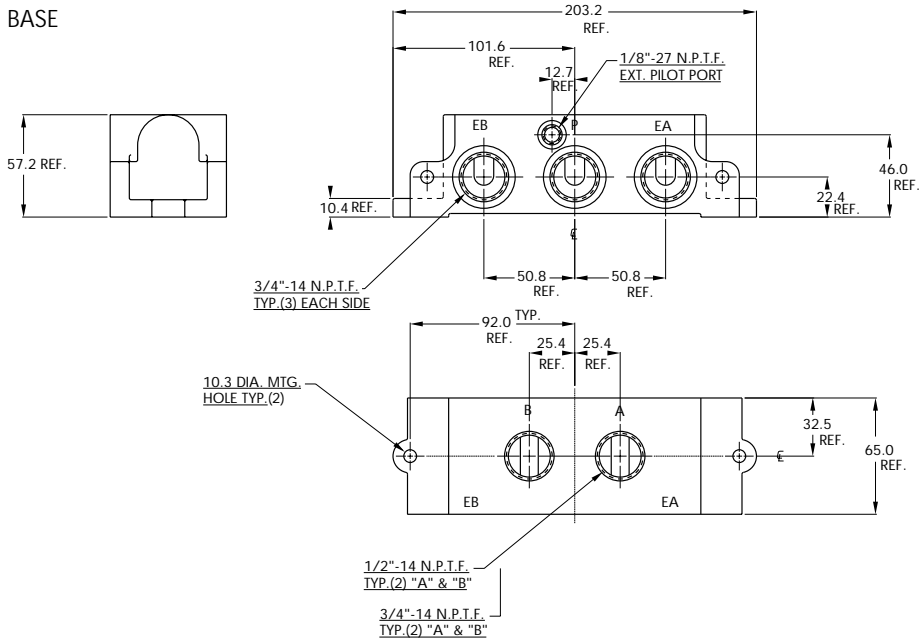
DIMENSIONS

Dimensions shown are metric (mm)

INDIVIDUAL BASE



MANIFOLD BASE





Interchangeable sub-bases and manifolds



HOW TO ORDER

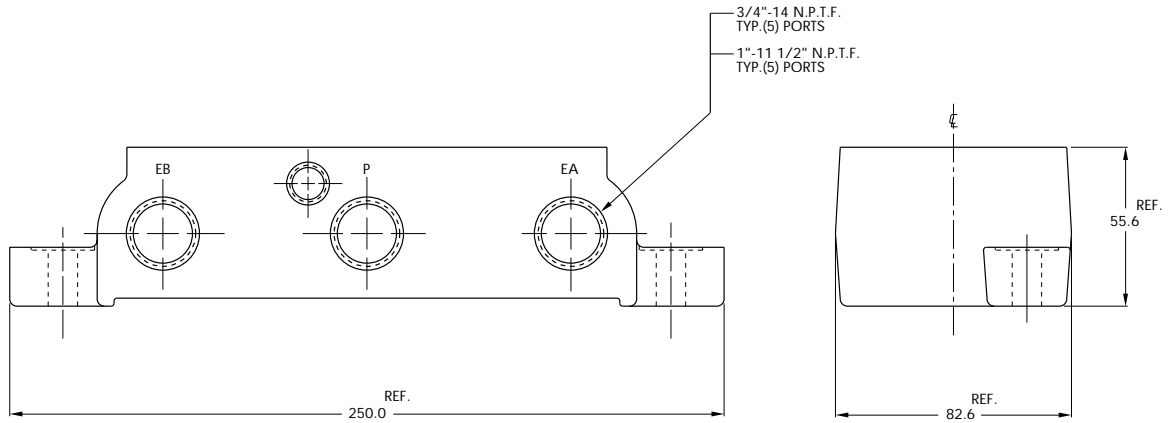
INDIVIDUAL BASE

Port size	Side ports
1" NPTF	MAC500A-B21A
1 1/4" NPTF	MAC500A-B31A

DIMENSIONS

Dimensions shown are metric (mm)

INDIVIDUAL BASE





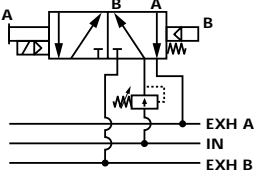
Section 6

Pressure regulators

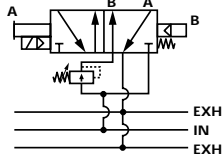
Manual adjust

Series

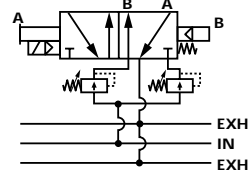
Single regulator
Single pressure



Single regulator
Dual pressure



Dual regulator
Dual pressure

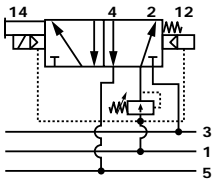


PR82A

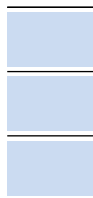
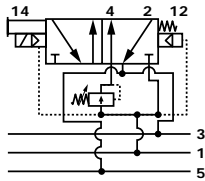
PR63D

PR65C

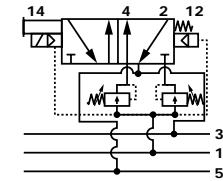
Single regulator
Single pressure



Single regulator
Dual pressure



Dual regulator
Dual pressure

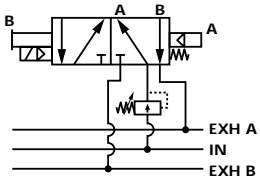


PRA1A

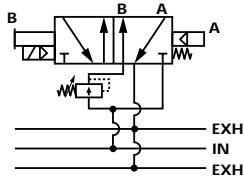
PRA2D

PRA3C

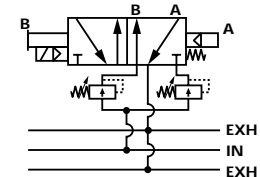
Single regulator
Single pressure



Single regulator
Dual pressure



Dual regulator
Dual pressure



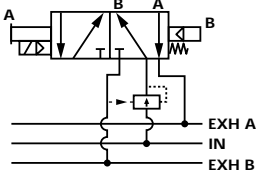
PR125A

PR250B

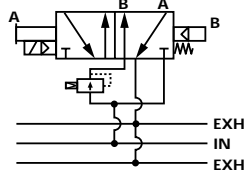
Air adjust

Series

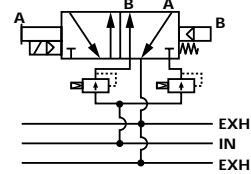
Single regulator
Single pressure



Single regulator
Dual pressure



Dual regulator
Dual pressure

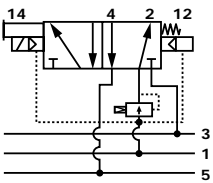


PR82A

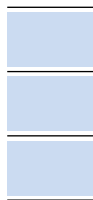
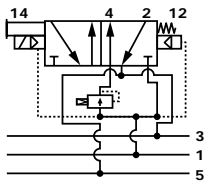
PR63D

PR65C

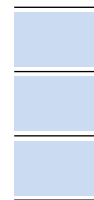
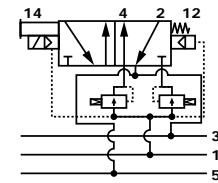
Single regulator
Single pressure



Single regulator
Dual pressure



Dual regulator
Dual pressure

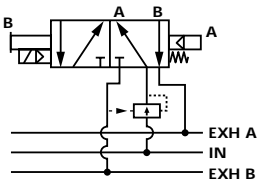


PRA1A

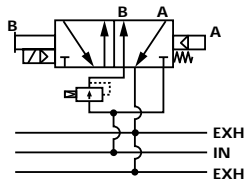
PRA2D

PRA3C

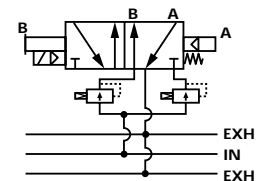
Single regulator
Single pressure



Single regulator
Dual pressure



Dual regulator
Dual pressure



PR125A

PR250B

Sandwich pressure regulator with manual adjust locking knob.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR82A-GADA	PR82A-GCDA	PR82A-GBDA	PR82A-GDDA
Gauge parallel to regulator	PR82A-GACA	PR82A-GCCA	PR82A-GBCA	PR82A-GDCA
Gauge perpendicular to regulator	PR82A-GABA	PR82A-GCBA	PR82A-GBBA	PR82A-GDBA

REGULATORS FOR "NON PLUG-IN" AND REMOTE AIR VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR82A-HADA	PR82A-HCDA	PR82A-HBDA	PR82A-HDDA
Gauge parallel to regulator	PR82A-HACA	PR82A-HCCA	PR82A-HBCA	PR82A-HDCA
Gauge perpendicular to regulator	PR82A-HABA	PR82A-HCBA	PR82A-HBBA	PR82A-HDBA

Note : regulating range for above models is 0-120 PSI. For other ranges see technical data page.

* To be used with dual pressure valves.

ADJUSTMENT OPTIONS

- PR82A-xxxx
- Replace by A for "plug-in" with slotted stem adjustment.
 - Replace by B for "non plug-in" with slotted stem adjustment.
 - Replace by K for "plug-in" with locking slotted stem adjustment.
 - Replace by L for "non plug-in" with locking slotted stem adjustment.

****SELECTOR OPTIONS** selects pressure to inlet of adjacent valve.

- PR82A-xxxx
- Replace by S for dual regulators.
 - Replace by T for regulator on "B" end with by-pass on "A" end.

** This option must be used with a single pressure valve and selector manifold base.

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(1.08 C _v)

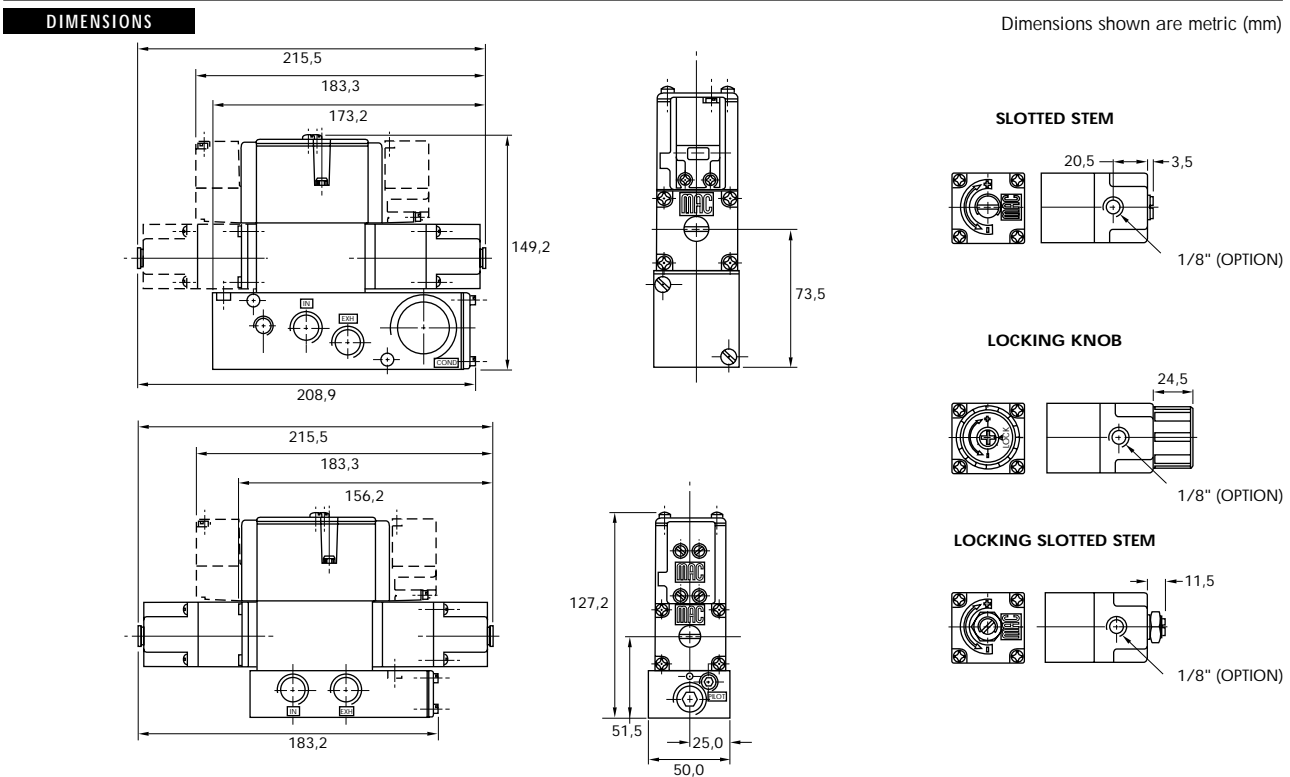
- Spare parts :
- Pressure regulator (less sandwich block) : PR82A-JOAA (KNOB), PR82A-COAA (SLOTTED STEM), PR82A-MOAA (LOCKING SLOTTED STEM).
 - Gauges : N-82016-01 (0-120 PSI perpendicular)
 N-82016-02 (0-120 PSI parallel)
 N-82016-03 (0-80 PSI perpendicular)
 N-82016-04 (0-80 PSI parallel)
 N-82016-05 (0-30 PSI perpendicular)
 N-82016-06 (0-30 PSI parallel)

Regulating range options : PR82A-XXXA

- Replace by B - 0 to 80 PSI
- Replace by C - 0 to 30 PSI
- Replace by D - 0 to 120 PSI on "A" end
 - 0 to 80 PSI on "B" end
- Replace by E - 0 to 120 PSI on "B" end
 - 0 to 80 PSI on "A" end
- Replace by F - 0 to 120 PSI on "A" end
 - 0 to 30 PSI on "B" end
- Replace by G - 0 to 120 PSI on "B" end
 - 0 to 30 PSI on "A" end
- Replace by H - 0 to 80 PSI on "A" end
 - 0 to 30 PSI on "B" end
- Replace by J - 0 to 80 PSI on "B" end
 - 0 to 30 PSI on "A" end

DIMENSIONS

Dimensions shown are metric (mm)



SLOTTED STEM

20.5 3.5
1/8" (OPTION)

LOCKING KNOB

24.5
1/8" (OPTION)

LOCKING SLOTTED STEM

11.5
1/8" (OPTION)

Sandwich pressure regulator with air pilot adjust.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR82A-DADA	PR82A-DCDA	PR82A-DBDA	PR82A-DDDA
Gauge parallel to regulator	PR82A-DACA	PR82A-DCCA	PR82A-DBCA	PR82A-DDCA
Gauge perpendicular to regulator	PR82A-DABA	PR82A-DCBA	PR82A-DBBA	PR82A-DDBA

REGULATORS FOR "NON PLUG-IN" AND REMOTE AIR VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR82A-EADA	PR82A-ECDA	PR82A-EBDA	PR82A-EDDA
Gauge parallel to regulator	PR82A-EACA	PR82A-ECCA	PR82A-EBCA	PR82A-EDCA
Gauge perpendicular to regulator	PR82A-EABA	PR82A-ECBA	PR82A-EBBA	PR82A-EDBA

* To be used with dual pressure valves.

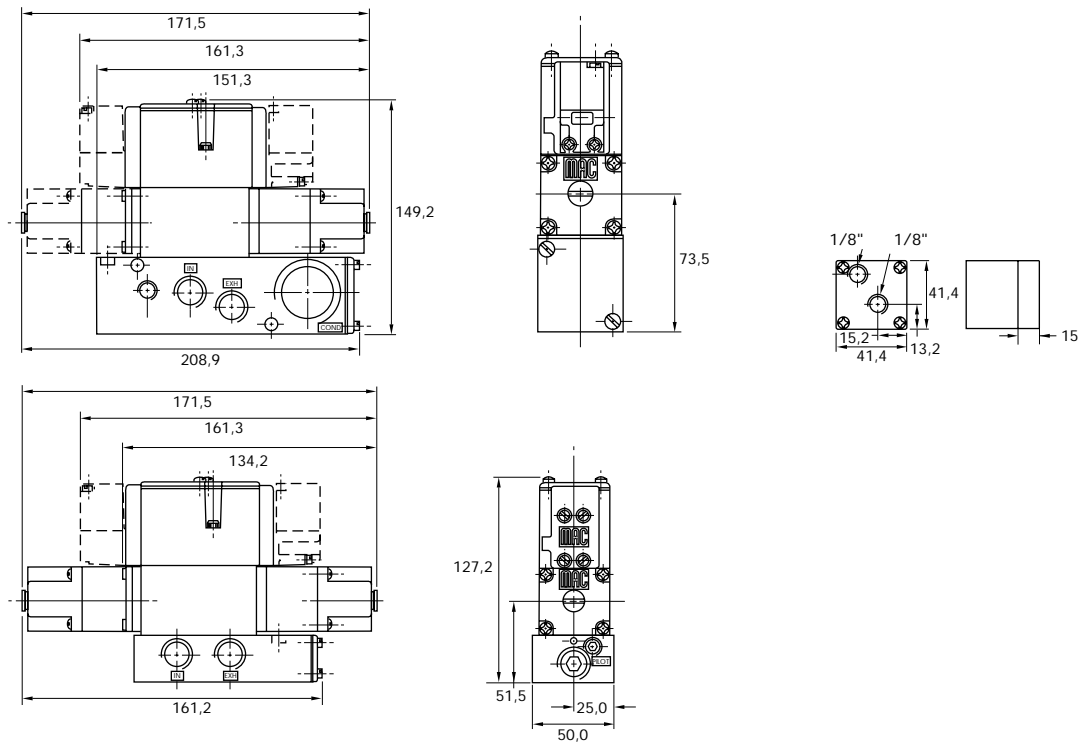
TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(1.08 C _v)

- Spare parts :
- Pressure regulator (less sandwich block) : PR82A-FOAA.
 - Gauges : N-82016-01 (0-120 PSI perpendicular)
N-82016-02 (0-120 PSI parallel)

DIMENSIONS

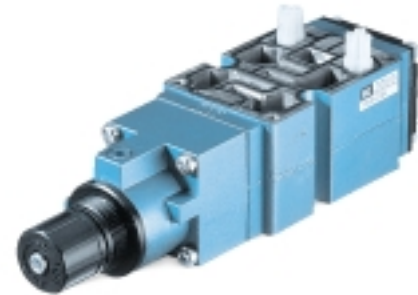
Dimensions shown are metric (mm)



Sandwich pressure regulator with manual adjust knob.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B *	Dual pressure Regulator B end Regulated pressure to port A *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR63D-22AA	PR63D-21AA	PR63D-24AA	PR63D-23AA	PR63D-25AA
Glycerine filled gauge on regulator(s)	PR63D-22BA	PR63D-21BA	PR63D-24BA	PR63D-23BA	PR63D-25DA
Glycerine filled gauge opposite to regulator	PR63D-22CA	PR63D-21CA	PR63D-24CA	PR63D-23CA	-----
Non-filled gauge on regulator(s)	PR63D-22FA	PR63D-21FA	PR63D-24FA	PR63D-23FA	PR63D-25HA
Non-filled gauge opposite to regulator	PR63D-22GA	PR63D-21GA	PR63D-24GA	PR63D-23GA	-----

Note : above models are coded for use with double solenoid plug-in valves.

REGULATORS FOR "NON PLUG-IN" AND REMOTE AIR VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B *	Dual pressure Regulator B end Regulated pressure to port A *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR63D-32AA	PR63D-31AA	PR63D-34AA	PR63D-33AA	PR63D-35AA
Glycerine filled gauge on regulator(s)	PR63D-32BA	PR63D-31BA	PR63D-34BA	PR63D-33BA	PR63D-35DA
Glycerine filled gauge opposite to regulator	PR63D-32CA	PR63D-31CA	PR63D-34CA	PR63D-33CA	-----
Non-filled gauge on regulator(s)	PR63D-32FA	PR63D-31FA	PR63D-34FA	PR63D-33FA	PR63D-35HA
Non-filled gauge opposite to regulator	PR63D-32GA	PR63D-31GA	PR63D-34GA	PR63D-33GA	-----

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

* To be used with dual pressure valves (manifolds only).

PLUG-IN OPTIONS

PR63D-xxxx
 ↳ - Replace by 1 for single solenoid plug-in with knob adjustment.

ADJUSTMENT OPTIONS

PR63D-xxxx
 ↳ - Replace by A for slotted stem adjustment for single solenoid plug-in.
 ↳ - Replace by B for slotted stem adjustment for double solenoid plug-in.
 ↳ - Replace by C for slotted stem adjustment for non plug-in valves.
 ↳ - Replace by E for slotted stem with locknut for single solenoid plug-in.
 ↳ - Replace by F for slotted stem with locknut for double solenoid plug-in.
 ↳ - Replace by G for slotted stem with locknut for non plug-in valves.

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(2.4 C _v)

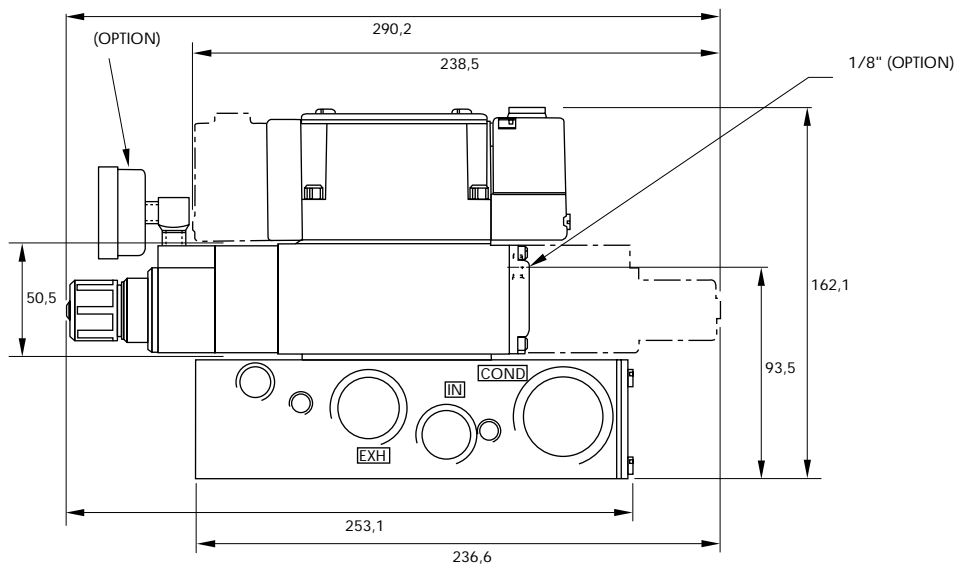
- Spare parts :
- Pressure regulator (less sandwich block) : PR63D-41AA (KNOB), PR63D-D1AA (SLOTTED STEM), PR63D-H1AA (SLOTTED STEM WITH LOCKNUT).
 - Gauges : • Glycerine filled : N-62015-01
• Non filled : N-62016-01

Regulating range options : PR63D-XXXA

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

DIMENSIONS

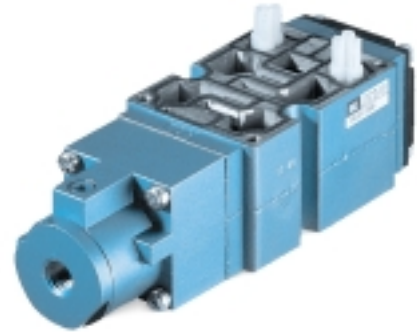
Dimensions shown are metric (mm)



Sandwich pressure regulator with air pilot adjust.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B *	Dual pressure Regulator B end Regulated pressure to port A *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR63D-2BAA	PR63D-2AAA	PR63D-2DAA	PR63D-2CAA	PR63D-2EAA
Glycerine filled gauge on regulator(s)	PR63D-2BBA	PR63D-2ABA	PR63D-2DBA	PR63D-2CBA	PR63D-2EDA
Glycerine filled gauge opposite to regulator	PR63D-2BCA	PR63D-2ACA	PR63D-2DCA	PR63D-2CCA	-----
Non-filled gauge on regulator(s)	PR63D-2BFA	PR63D-2AFA	PR63D-2DFA	PR63D-2CFA	PR63D-2EHA
Non-filled gauge opposite to regulator	PR63D-2BGA	PR63D-2AGA	PR63D-2DGA	PR63D-2CGA	-----

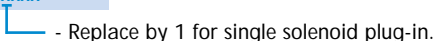
Note : above models are coded for use with double solenoid plug-in valves.

REGULATORS FOR "NON PLUG-IN" AND REMOTE AIR VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B *	Dual pressure Regulator B end Regulated pressure to port A *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR63D-3BAA	PR63D-3AAA	PR63D-3DAA	PR63D-3CAA	PR63D-3EAA
Glycerine filled gauge on regulator(s)	PR63D-3BBA	PR63D-3ABA	PR63D-3DBA	PR63D-3CBA	PR63D-3EDA
Glycerine filled gauge opposite to regulator	PR63D-3BCA	PR63D-3ACA	PR63D-3DCA	PR63D-3CCA	-----
Non-filled gauge on regulator(s)	PR63D-3BFA	PR63D-3AFA	PR63D-3DFA	PR63D-3CFA	PR63D-3EHA
Non-filled gauge opposite to regulator	PR63D-3BGA	PR63D-3AGA	PR63D-3DGA	PR63D-3CGA	-----

* To be used with dual pressure valves (available only on manifolds).

PLUG-IN OPTIONS

PR63D-xxxx

 - Replace by 1 for single solenoid plug-in.

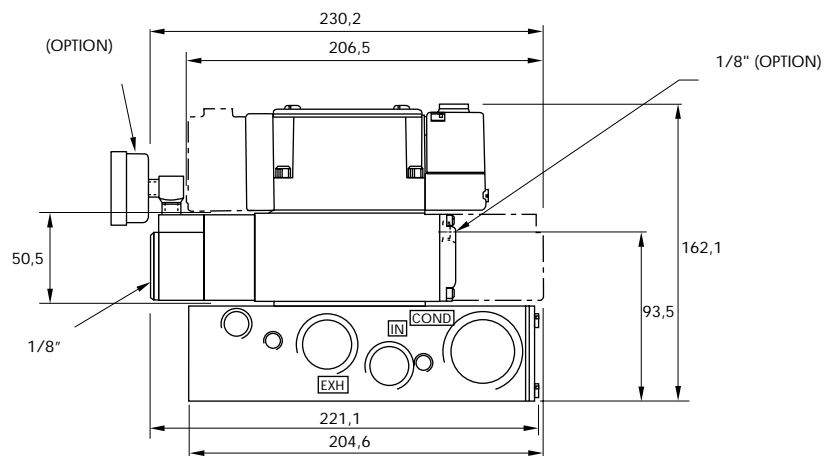
TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	(2.4 C _v)

- Spare parts :
- Pressure regulator (less sandwich block) : PR63D-4AAA.
 - Gauges : • Glycerine filled : N-62015-01
• Non filled : N-62016-01

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B	Dual pressure Regulator B end Regulated pressure to port A	Dual pressure Dual regulator Two regulated pressures to ports A and B
No gauge	PR65C-22AA	PR65C-21AA	PR65C-24AA	PR65C-23AA	PR65C-25AA
Glycerine filled gauge on regulator(s)	PR65C-22BA	PR65C-21BA	PR65C-24BA	PR65C-23BA	PR65C-25DA
Glycerine filled gauge opposite to regulator	PR65C-22CA	PR65C-21CA	PR65C-24CA	PR65C-23CA	-----
Non-filled gauge on regulator(s)	PR65C-22FA	PR65C-21FA	PR65C-24FA	PR65C-23FA	PR65C-25HA
Non-filled gauge opposite to regulator	PR65C-22GA	PR65C-21GA	PR65C-24GA	PR65C-23GA	-----

Note : above models are coded for use with double solenoid plug-in valves.

REGULATORS FOR "NON PLUG-IN" AND REMOTE AIR VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B	Dual pressure Regulator B end Regulated pressure to port A	Dual pressure Dual regulator Two regulated pressures to ports A and B
No gauge	PR65C-32AA	PR65C-31AA	PR65C-34AA	PR65C-33AA	PR65C-35AA
Glycerine filled gauge on regulator(s)	PR65C-32BA	PR65C-31BA	PR65C-34BA	PR65C-33BA	PR65C-35DA
Glycerine filled gauge opposite to regulator	PR65C-32CA	PR65C-31CA	PR65C-34CA	PR65C-33CA	-----
Non-filled gauge on regulator(s)	PR65C-32FA	PR65C-31FA	PR65C-34FA	PR65C-33FA	PR65C-35HA
Non-filled gauge opposite to regulator	PR65C-32GA	PR65C-31GA	PR65C-34GA	PR65C-33GA	-----

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

ADJUSTMENT OPTIONS

PLUG-IN OPTIONS

PR65C-xxxx
- Replace by 1 for single solenoid plug-in with knob adjustment.

PR65C-xxxx
- Replace by A for slotted stem adjustment for single solenoid plug-in.
- Replace by B for slotted stem adjustment for double solenoid plug-in.
- Replace by C for slotted stem adjustment for non plug-in valves.
- Replace by E for slotted stem with locknut for single solenoid plug-in.
- Replace by F for slotted stem with locknut for double solenoid plug-in.
- Replace by G for slotted stem with locknut for non plug-in valves.

TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	(4.0 C _v)

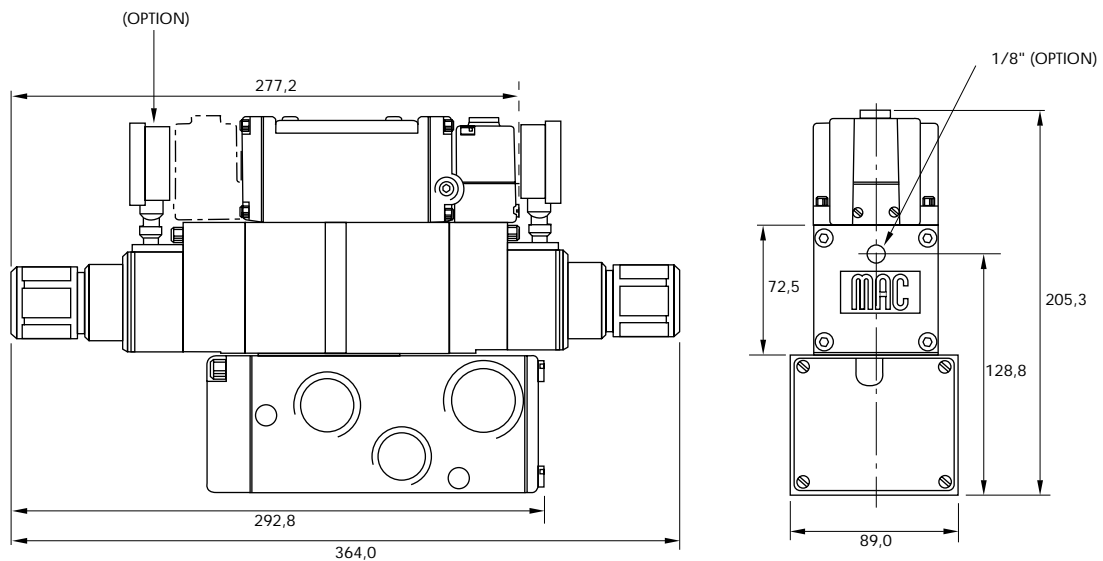
- Spare parts :
- Pressure regulator (less sandwich block) : PR65C-41AA (KNOB), PR65C-D1AA (SLOTTED STEM), PR65C-H1AA (SLOTTED STEM WITH LOCKNUT).
 - Gauges : • Glycerine filled : N-62015-01
• Non filled : N-62016-01

Regulating range options : PR65C-XXXA

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

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES


Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B	Dual pressure Regulator B end Regulated pressure to port A	Dual pressure Dual regulator Two regulated pressures to ports A and B
No gauge	PR65C-2BAA	PR65C-2AAA	PR65C-2DAA	PR65C-2CAA	PR65C-2EAA
Glycerine filled gauge on regulator(s)	PR65C-2BBA	PR65C-2ABA	PR65C-2DBA	PR65C-2CBA	PR65C-2EDA
Glycerine filled gauge opposite to regulator	PR65C-2BCA	PR65C-2ACA	PR65C-2DCA	PR65C-2CCA	-----
Non-filled gauge on regulator(s)	PR65C-2BFA	PR65C-2AFA	PR65C-2DFA	PR65C-2CFA	PR65C-2EHA
Non-filled gauge opposite to regulator	PR65C-2BGA	PR65C-2AGA	PR65C-2DGA	PR65C-2CGA	-----

Note : above models are coded for use with double solenoid plug-in valves.

REGULATORS FOR "NON PLUG-IN" AND REMOTE AIR VALVES

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port B	Dual pressure Regulator B end Regulated pressure to port A	Dual pressure Dual regulator Two regulated pressures to ports A and B
No gauge	PR65C-3BAA	PR65C-3AAA	PR65C-3DAA	PR65C-3CAA	PR65C-3EAA
Glycerine filled gauge on regulator(s)	PR65C-3BBA	PR65C-3ABA	PR65C-3DBA	PR65C-3CBA	PR65C-3EDA
Glycerine filled gauge opposite to regulator	PR65C-3BCA	PR65C-3ACA	PR65C-3DCA	PR65C-3CCA	-----
Non-filled gauge on regulator(s)	PR65C-3BFA	PR65C-3AFA	PR65C-3DFA	PR65C-3CFA	PR65C-3EHA
Non-filled gauge opposite to regulator	PR65C-3BGA	PR65C-3AGA	PR65C-3DGA	PR65C-3CGA	-----

PLUG-IN OPTIONS

PR65C-xxxx

 - Replace by 1 for single solenoid plug-in.

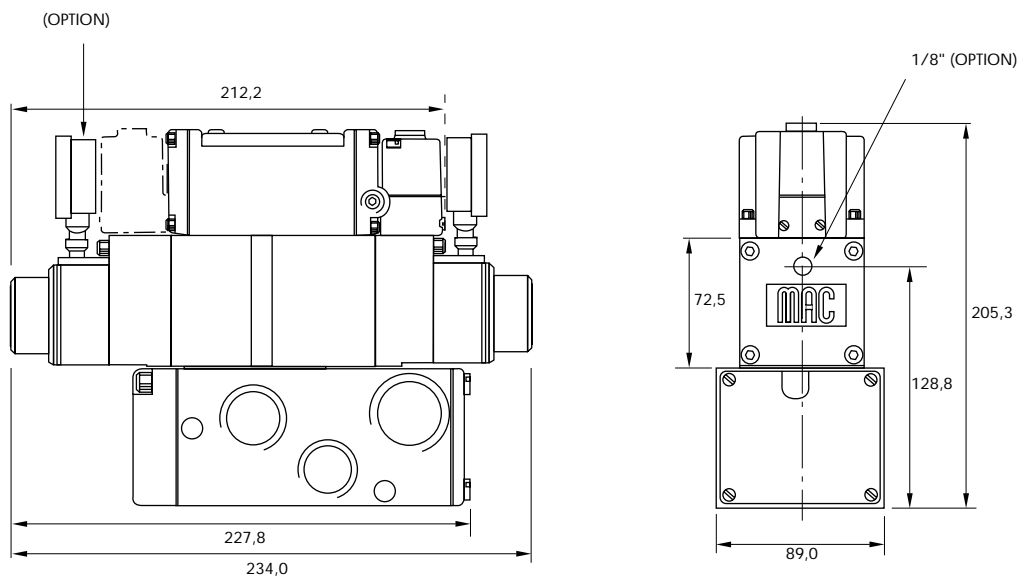
TECHNICAL DATA

Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow (at 6 bar, ΔP=1bar) :	(4.0 C _v)

- Spare parts :
- Pressure regulator (less sandwich block) : PR65C-4AAA.
 - Gauges : • Glycerine filled : N-62015-01
• Non filled : N-62016-01

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT

Gauges	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 parallel to regulator(s)	PRA1A-GADA	PRA1A-GCDA	PRA1A-GBDA	PRA1A-GDDA	PRA1A-GEEA
Gauge perpendicular to regulator(s)	PRA1A-GABA	PRA1A-GCBA	PRA1A-GBBA	PRA1A-GDBA	PRA1A-GECA

EXTERNAL PILOT AND REMOTE AIR

Gauges	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 parallel to regulator(s)	PRA1A-HADA	PRA1A-HCDA	PRA1A-HBDA	PRA1A-HDDA	PRA1A-HEEA
Gauge perpendicular to regulator(s)	PRA1A-HABA	PRA1A-HCBA	PRA1A-HBBA	PRA1A-HDBA	PRA1A-HECA

* - To be used with dual pressure valves.

Valve code is : MV-A1C-AX5X-PM-XYZZ (sgl. pressure ext. pilot)

Valve code is : MV-A1C-AX4X-PM-XYZZ (dual pressure ext. pilot)

Note : regulating range for above models is 0-120 PSI. For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35336.

ADJUSTMENT OPTIONS

PRA1A-xxxx

- Replace by A for slotted stem adjustment (internal pilot)
- Replace by B for slotted stem adjustment (external/remote air)
- Replace by K for slotted stem with locknut (internal pilot)
- Replace by L for slotted stem with locknut (external/remote air)

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(1.0 C _v)

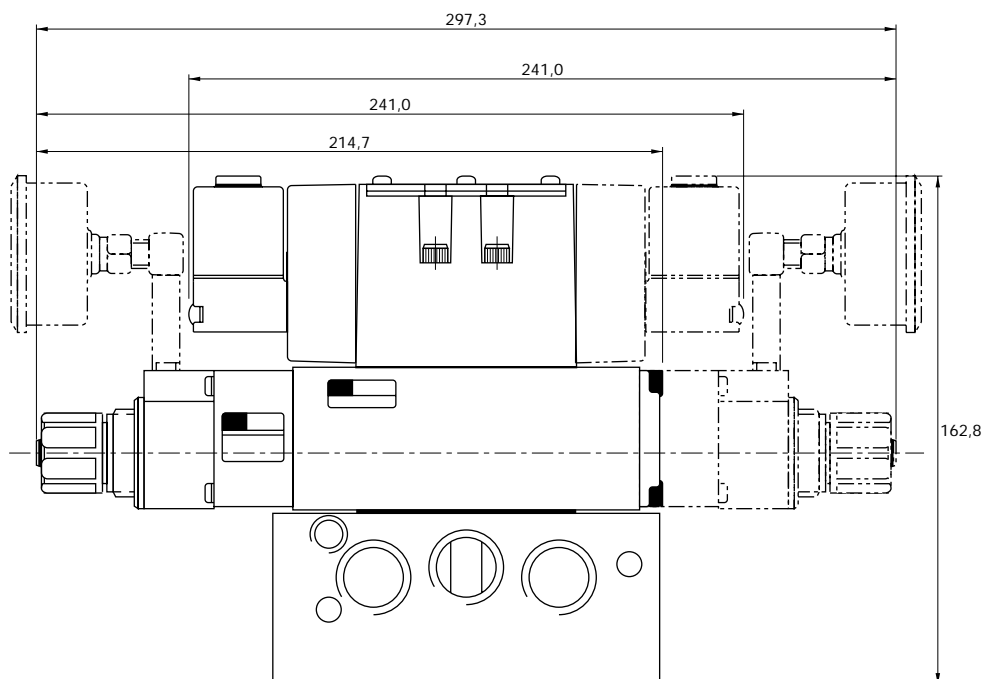
Spare parts :

- Pressure regulator (less sandwich block) : PRA1A-J0AA (KNOB), PRA1A-C0AA (SLOTTED STEM), PRA1A-M0AA (SLOTTED STEM WITH LOCKNUT).
- Gauges : N-82016-01 (0-120 PSI perpendicular)
 N-82016-02 (0-120 PSI parallel)
 N-82016-03 (0-80 PSI perpendicular)
 N-82016-04 (0-80 PSI parallel)
 N-82016-05 (0-30 PSI perpendicular)
 N-82016-06 (0-30 PSI parallel)

Regulating range options : PRA1A-XXXA

- Replace by B - 0 to 80 PSI
- Replace by C - 0 to 30 PSI
- Replace by D - 0 to 120 PSI on "14" end
 - 0 to 80 PSI on "12" end
- Replace by E - 0 to 120 PSI on "12" end
 - 0 to 80 PSI on "14" end
- Replace by F - 0 to 120 PSI on "14" end
 - 0 to 30 PSI on "12" end
- Replace by G - 0 to 120 PSI on "12" end
 - 0 to 30 PSI on "14" end
- Replace by H - 0 to 80 PSI on "14" end
 - 0 to 30 PSI on "12" end
- Replace by J - 0 to 80 PSI on "12" end
 - 0 to 30 PSI on "14" end

DIMENSIONS Dimensions shown are metric (mm)



Sandwich pressure regulator with air pilot adjust.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT

Gauges	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 parallel to regulator(s)	PRA1A-DADA	PRA1A-DCDA	PRA1A-DBDA	PRA1A-DDDA	PRA1A-DEEA
Gauge perpendicular to regulator(s)	PRA1A-DABA	PRA1A-DCBA	PRA1A-DBBA	PRA1A-DDBA	PRA1A-DECA

EXTERNAL PILOT AND REMOTE AIR

Gauges	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 parallel to regulator(s)	PRA1A-EADA	PRA1A-ECDA	PRA1A-EBDA	PRA1A-EDDA	PRA1A-EEEA
Gauge perpendicular to regulator(s)	PRA1A-EABA	PRA1A-ECBA	PRA1A-EBBA	PRA1A-EDBA	PRA1A-EECA

* - To be used with dual pressure valves.
 Valve code is : MV-A1C-AX5X-PM-XXYYZ (sgl. pressure ext. pilot)
 Valve code is : MV-A1C-AX4X-PM-XXYYZ (dual pressure ext. pilot)

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35336.

TECHNICAL DATA

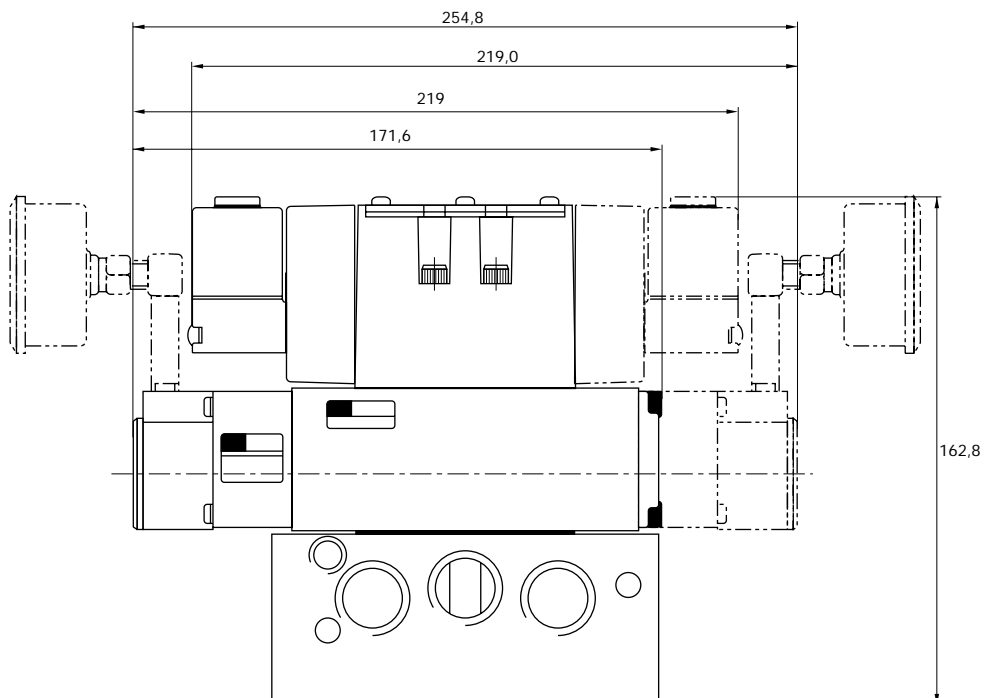
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(1.0 C _v)

Spare parts :

- Pressure regulator (less sandwich block) : PRA1A-FOAA.
- Gauges : N-82016-01 (0-120 PSI perpendicular)
N-82016-02 (0-120 PSI parallel)

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT

Gauges	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	-----

EXTERNAL PILOT AND REMOTE AIR

Gauges	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	-----

* - To be used with dual pressure valves.

Valve code is : MV-A2B-AX5X-PM-XXYZZ (sgl. pressure ext. pilot)

Valve code is : MV-A2B-AX4X-PM-XXYZZ (dual pressure ext. pilot)

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

For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

ADJUSTMENT OPTIONS

PRA2D-xxxx

- Replace by A for slotted stem adjustment (internal pilot)
- Replace by B for slotted stem adjustment (external pilot)
- Replace by D for slotted stem with locknut (internal pilot)
- Replace by E for slotted stem with locknut (external pilot)

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(2.3 C _v)

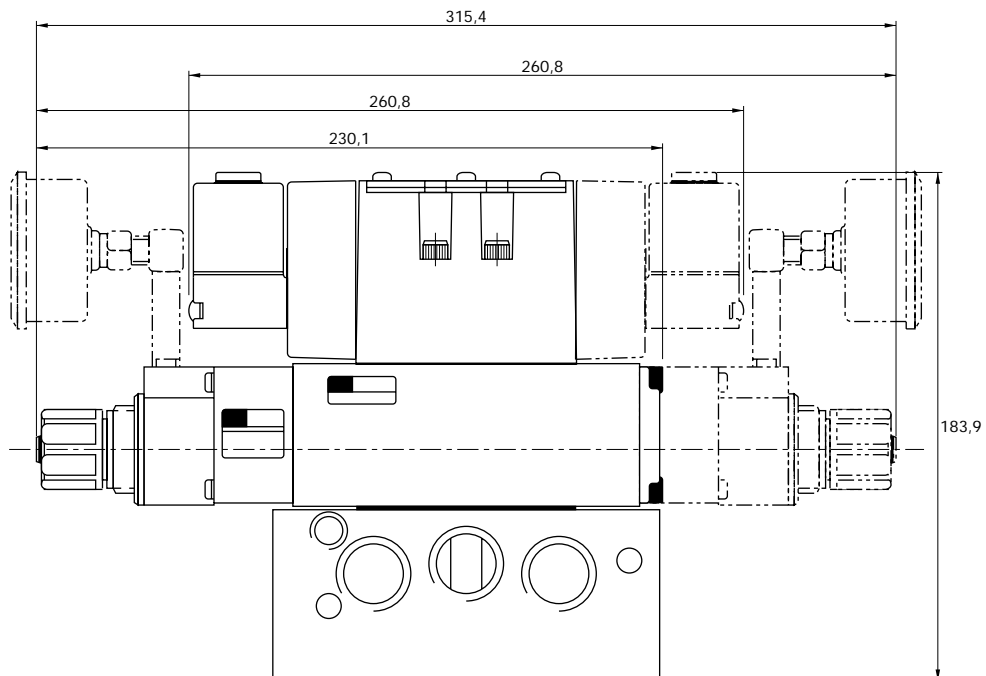
Spare parts :

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

Regulating range options : PRA2D-XXXA

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

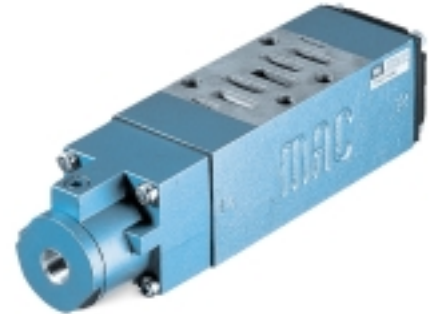
DIMENSIONS Dimensions shown are metric (mm)



Sandwich pressure regulator with air pilot adjust.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT

Gauges	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	-----

EXTERNAL PILOT AND REMOTE AIR

Gauges	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	-----

* - To be used with dual pressure valves.

Valve code is : MV-A2B-AX5X-PM-XXYZZ (sgl. pressure ext. pilot)

Valve code is : MV-A2B-AX4X-PM-XXYZZ (dual pressure ext. pilot)

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

TECHNICAL DATA

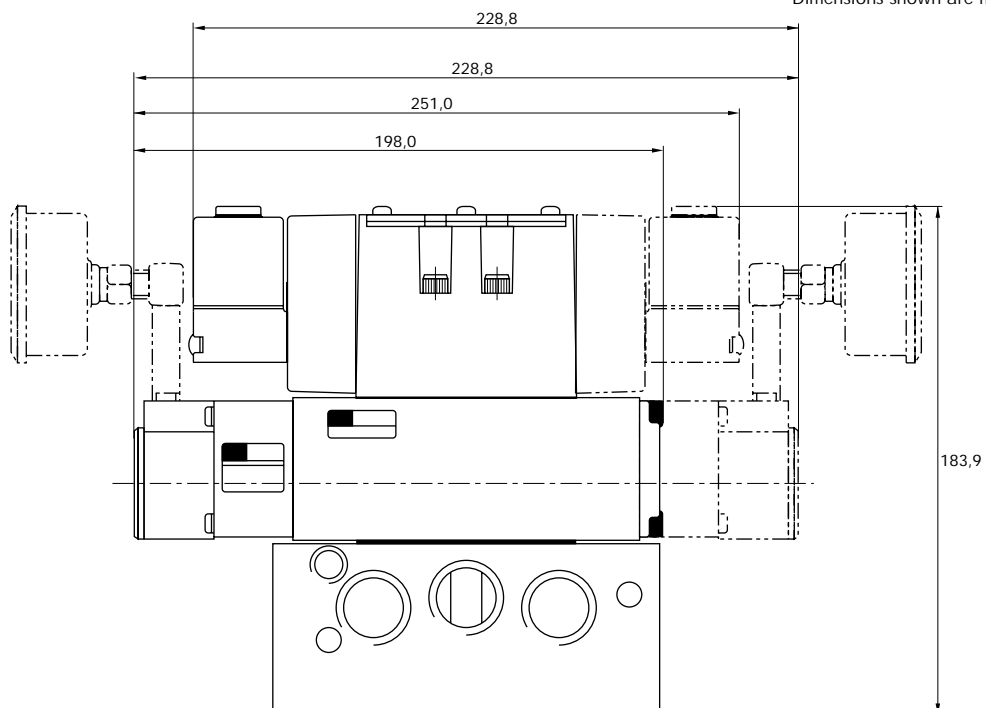
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(2.3 C _v)

Spare parts :

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

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT

Gauges	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	-----

EXTERNAL PILOT AND REMOTE AIR

Gauges	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	-----

* - To be used with dual pressure valves.

Valve code is : MV-A3B-AX5X-PM-XXYZZ (sgl. pressure ext. pilot)

Valve code is : MV-A3B-AX4X-PM-XXYZZ (dual pressure ext. pilot)

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

For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

ADJUSTMENT OPTIONS

PRA3C-xxxx

- Replace by A for slotted stem adjustment (internal pilot)
- Replace by B for slotted stem adjustment (external pilot)
- Replace by D for slotted stem with locknut (internal pilot)
- Replace by E for slotted stem with locknut (external pilot)

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(5.4 C _v)

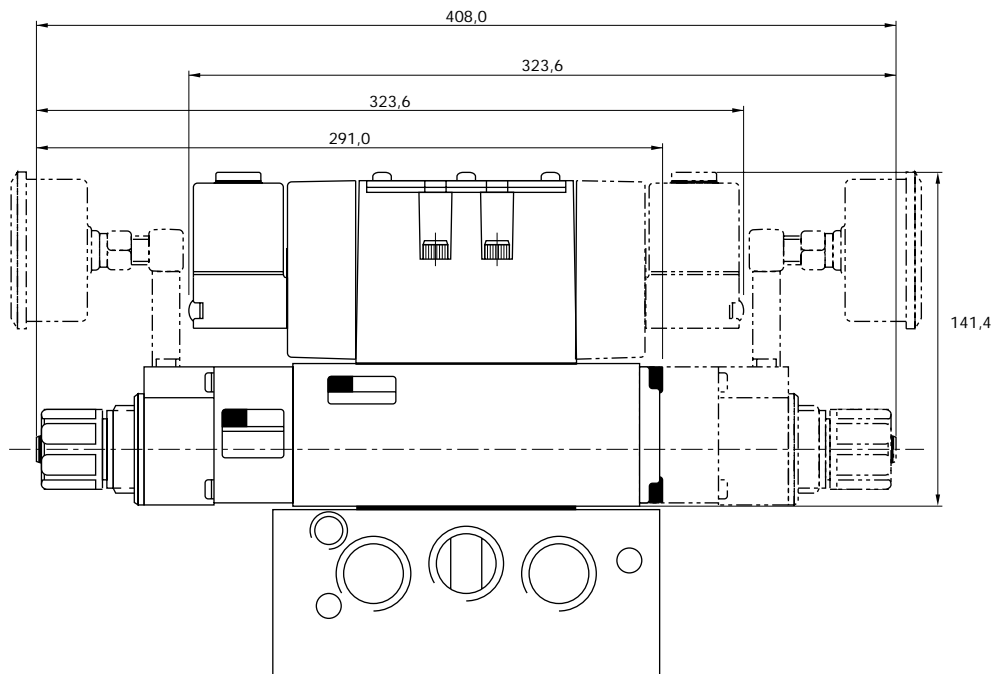
Spare parts :

- Pressure regulator (less sandwich block) : PRA3C-30AA (KNOB), PRA3C-C0AA (SLOTTED STEM), PRA3C-F0AA (SLOTTED STEM WITH LOCKNUT).
- Gauges : • Glycerine filled : N-62015-01
• Non filled : N-62016-01

Regulating pressure options :

- PRA3C-XXXX
- Replace by B - 0 to 100 PSI
 - Replace by C - 0 to 45 PSI

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT

Gauges	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	-----

EXTERNAL PILOT AND REMOTE AIR

Gauges	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	-----

* - To be used with dual pressure valves.

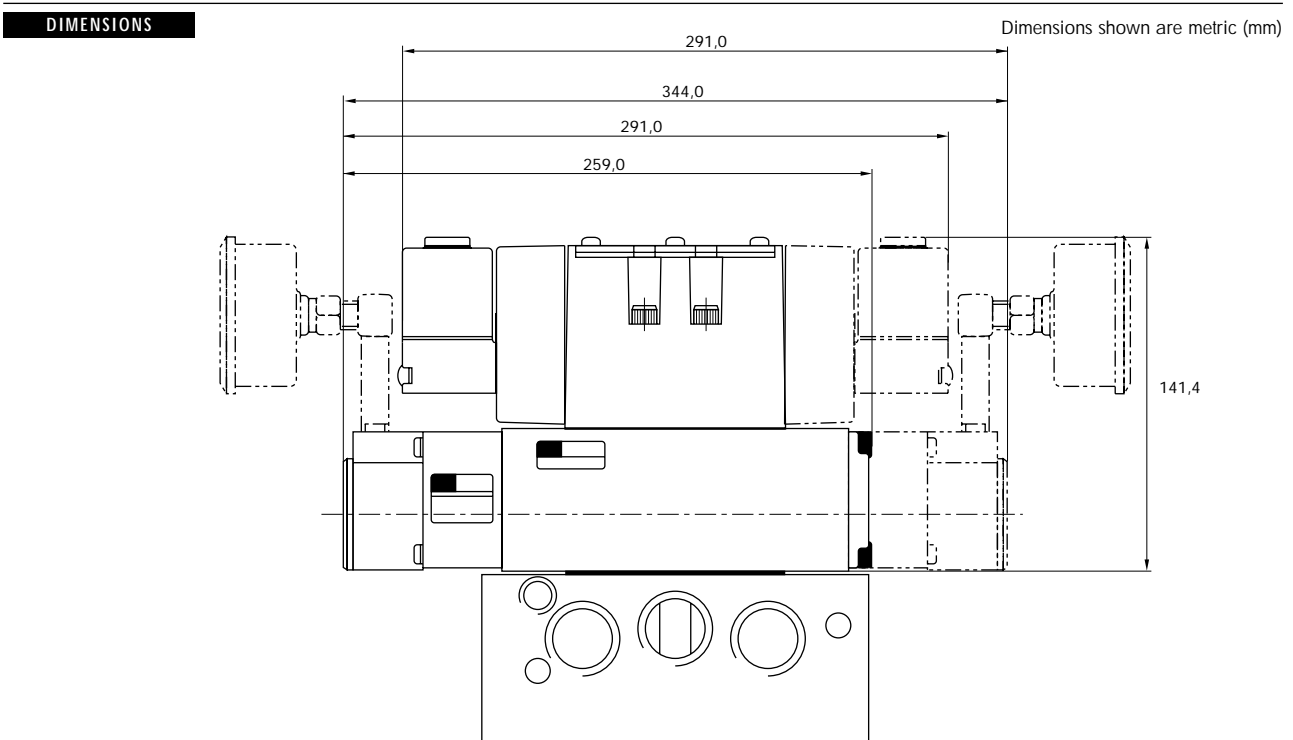
Valve code is : MV-A3B-AX5X-PM-XXYZZ (sgl. pressure ext. pilot)

Valve code is : MV-A3B-AX4X-PM-XXYZZ (dual pressure ext. pilot)

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 150 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(5.4 C _v)

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



Sandwich pressure regulator with manual adjust knob.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR125A-GCAA	PR125A-GAAA	PR125A-GDAA	PR125A-GBAA	PR125A-GEAA
Gauge parallel to regulator(s)	PR125A-GCDA	PR125A-GADA	PR125A-GDDA	PR125A-GBDA	PR125A-GEEA
Gauge perpendicular to regulator(s)	PR125A-GCBA	PR125A-GABA	PR125A-GDBA	PR125A-GBBA	PR125A-GECA

EXTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR125A-HCAA	PR125A-HAAA	PR125A-HDAA	PR125A-HBAA	PR125A-HEAA
Gauge parallel to regulator(s)	PR125A-HCDA	PR125A-HADA	PR125A-HDDA	PR125A-HBDA	PR125A-HEEA
Gauge perpendicular to regulator(s)	PR125A-HCBA	PR125A-HABA	PR125A-HDBA	PR125A-HBBA	PR125A-HECA

* - To be used with dual pressure valves.

Valve code is : MAC125A-VXX4-PM-XXYZZ (valves must be external pilot models for either single or dual pressure valves)

Note : regulating range for above models is 0-120 PSI. For other ranges see technical data page. Photo shown with slotted stem.

ADJUSTMENT OPTIONS

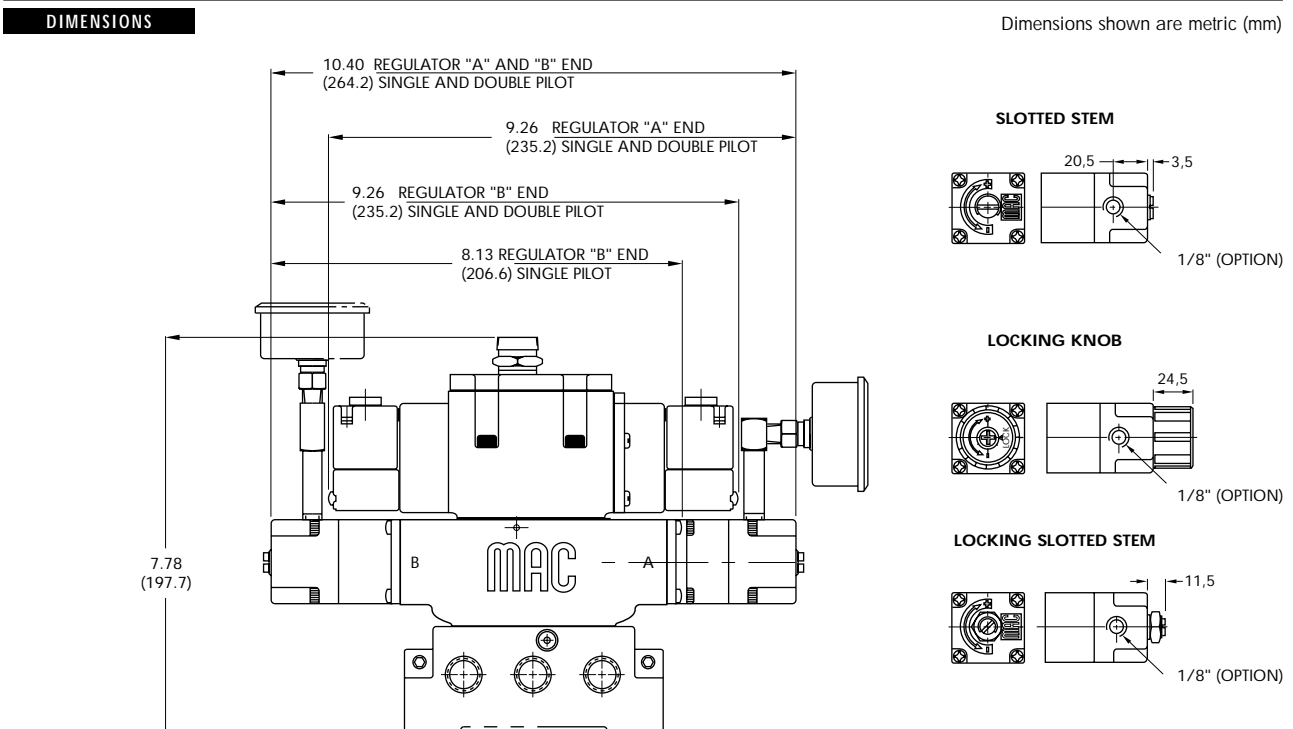
- PR125A-xxxx
- Replace by A for internal pilot with slotted stem
 - Replace by B for external pilot with slotted stem
 - Replace by K for internal pilot with locking slotted stem
 - Replace by L for external pilot with locking slotted stem

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(1.8 C _v)

- Spare parts :
- Pressure regulator (less sandwich block) : PR125A-J0AA (KNOB), PR125A-C0AA (SLOTTED STEM), PR125A-M0AA (LOCKING SLOTTED STEM).
 - Gauges : N-82016-01 (0-120 PSI perpendicular)
 N-82016-02 (0-120 PSI parallel)
 N-82016-03 (0-80 PSI perpendicular)
 N-82016-04 (0-80 PSI parallel)
 N-82016-05 (0-30 PSI perpendicular)
 N-82016-06 (0-30 PSI parallel)

Regulating range options : PR125A-XXXX

- Replace by B - 0 to 80 PSI
- Replace by C - 0 to 30 PSI
- Replace by D - 0 to 120 PSI on "A" end
 - 0 to 80 PSI on "B" end
- Replace by E - 0 to 120 PSI on "B" end
 - 0 to 80 PSI on "A" end
- Replace by F - 0 to 120 PSI on "A" end
 - 0 to 30 PSI on "B" end
- Replace by G - 0 to 120 PSI on "B" end
 - 0 to 30 PSI on "A" end
- Replace by H - 0 to 80 PSI on "A" end
 - 0 to 30 PSI on "B" end
- Replace by J - 0 to 80 PSI on "B" end
 - 0 to 30 PSI on "A" end



Sandwich pressure regulator with air pilot adjust.

OPERATIONAL BENEFITS

1. Easy mounting : saves on installation costs in comparison with inline regulators.
2. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR125A-DCAA	PR125A-DAAA	PR125A-DDAA	PR125A-DBAA	PR125A-DEAA
Gauge parallel to regulator(s)	PR125A-DCDA	PR125A-DADA	PR125A-DDDA	PR125A-DBDA	PR125A-DEEA
Gauge perpendicular to regulator(s)	PR125A-DCBA	PR125A-DABA	PR125A-DDBA	PR125A-DBBA	PR125A-DECA

EXTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR125A-ECAA	PR125A-EAAA	PR125A-EDAA	PR125A-EBAA	PR125A-EEAA
Gauge parallel to regulator(s)	PR125A-ECDA	PR125A-EADA	PR125A-EDDA	PR125A-EBDA	PR125A-EEEA
Gauge perpendicular to regulator(s)	PR125A-ECBA	PR125A-EABA	PR125A-EDBA	PR125A-EBBA	PR125A-EECA

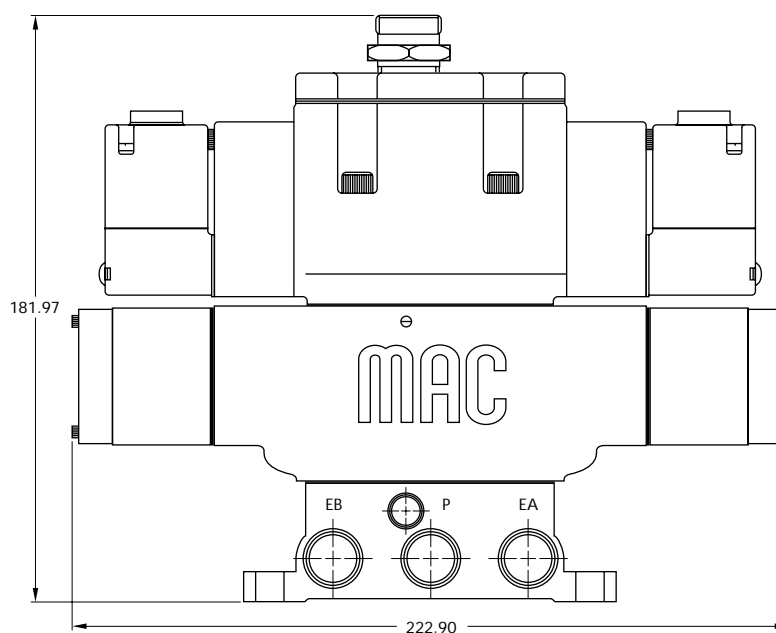
* - To be used with dual pressure valves.

Valve code is : MAC125A-VXX4-PM-XXYZZ (valves must be external pilot models for either single or dual pressure valves)

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(1.8 C _v)

- Spare parts :
- Pressure regulator (less sandwich block) : PR125A-F0AA
 - Gauges : N-82016-01 (0-120 PSI perpendicular)
N-82016-02 (0-120 PSI parallel)

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR250B-ACAA	PR250B-AAAA	PR250B-ADAA	PR250B-ABAA	PR250B-AEAA
Gauge parallel to regulator(s)	PR250B-ACDA	PR250B-ADAD	PR250B-ADDA	PR250B-ABDA	PR250B-AEEA
Gauge perpendicular to regulator(s)	PR250B-ACBA	PR250B-AABA	PR250B-ADBA	PR250B-ABBA	PR250B-AECA

EXTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR250B-BCAA	PR250B-BAAA	PR250B-BDAA	PR250B-BBAA	PR250B-BEAA
Gauge parallel to regulator(s)	PR250B-BCDA	PR250B-BADA	PR250B-BDDA	PR250B-BBDA	PR250B-BEEA
Gauge perpendicular to regulator(s)	PR250B-BCBA	PR250B-BABA	PR250B-BDBA	PR250B-BBBA	PR250B-BECA

* - To be used with dual pressure valves.

Valve code is : MAC250A-VXX4-PM-XYZZ (valves must be external pilot models for either single or dual pressure valves)

Note : regulating pressure range for above models is 0-120 PSI. For other ranges see technical data page.

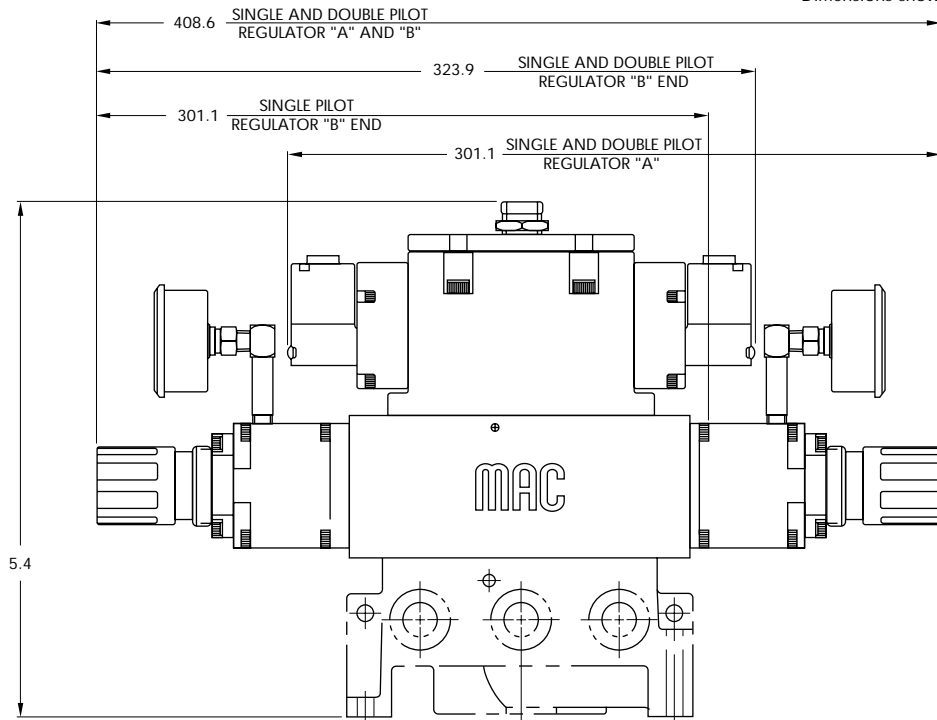
TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI (other ranges see below)
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(4.7 C _v)

- Spare parts :
- Pressure regulator (less sandwich block) : PR250B-C0AA (KNOB)
 - Gauges : • N-82016-01 (perpendicular)
• N-82016-02 (parallel)

Regulating range options : PR250B-XXXX

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

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. Allows to have compact, all-included units.
3. Large orifice provides high flow.
4. Various functions available.
5. Simple, reliable and solid design.



HOW TO ORDER

INTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR250B-DCAA	PR250B-DAAA	PR250B-DDAA	PR250B-DBAA	PR250B-DEAA
Gauge parallel to regulator(s)	PR250B-DCDA	PR250B-DDAD	PR250B-DDDA	PR250B-DBDA	PR250B-DEEA
Gauge perpendicular to regulator(s)	PR250B-DCBA	PR250B-DABA	PR250B-DDBA	PR250B-DBBA	PR250B-DECA

EXTERNAL PILOT REGULATORS

Gauges	Single pressure Regulator A end Same regulated pressure to ports A and B	Single pressure Regulator B end Same regulated pressure to ports A and B	Dual pressure Regulator A end Regulated pressure to port A *	Dual pressure Regulator B end Regulated pressure to port B *	Dual pressure Dual regulator Two regulated pressures to ports A and B *
No gauge	PR250B-ECAA	PR250B-EAAA	PR250B-EDAA	PR250B-EBAA	PR250B-EEAA
Gauge parallel to regulator(s)	PR250B-ECDA	PR250B-EADA	PR250B-EDDA	PR250B-EBDA	PR250B-EEEA
Gauge perpendicular to regulator(s)	PR250B-ECBA	PR250B-EABA	PR250B-EDBA	PR250B-EBBA	PR250B-EECA

* - To be used with dual pressure valves.

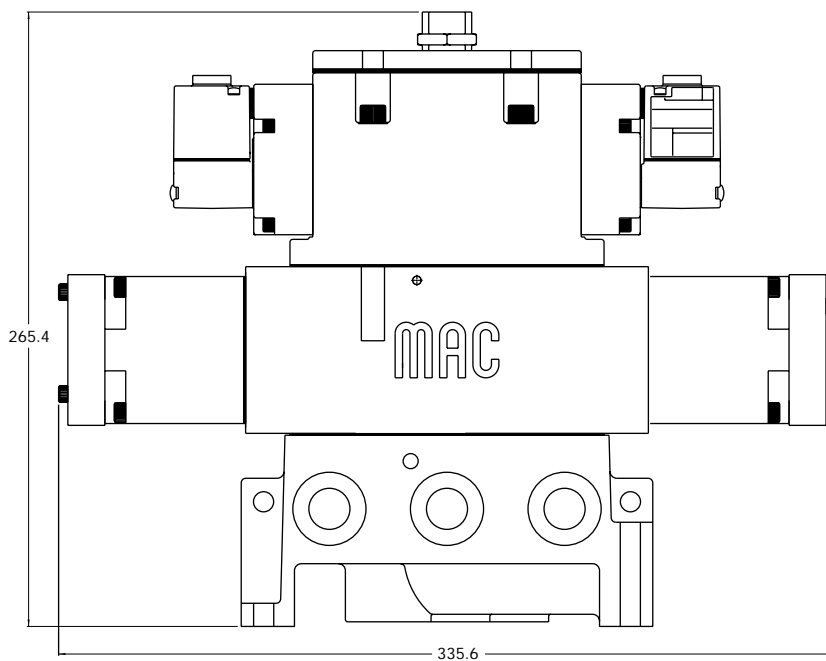
Valve code is : MAC250A-VXX4-PM-XXYZZ (valves must be external pilot models for both single or dual pressure valves)

TECHNICAL DATA	
Fluid :	Compressed air, inert gases
Pressure range :	0 to 150 PSI
Regulating range :	0 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to 50°C)
Flow :	(4.7 C _v)

Spare parts :

- Pressure regulator (less sandwich block) : PR250B-FOAA
- Gauges : N-82016-01 (0-120 PSI perpendicular)
N-82016-02 (0-120 PSI parallel)

DIMENSIONS Dimensions shown are metric (mm)






Section 7

Intrinsically Safe Valves



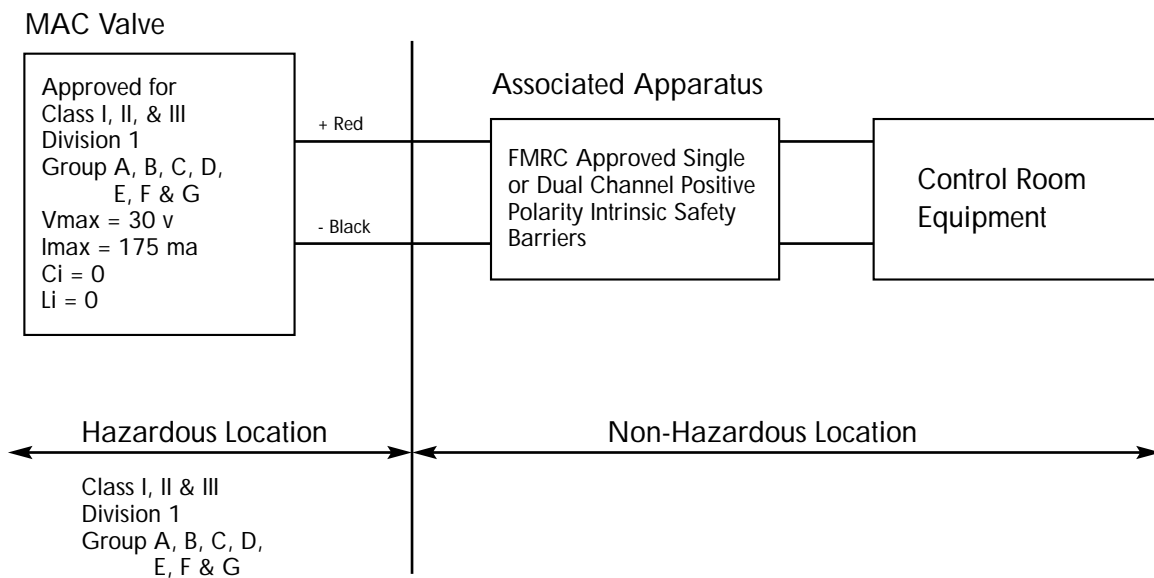
Specifications for Intrinsically Safe Valves

	35 series
	45 series
	100 series
	56 series
	57 series
	58 series
	800 series
	900 series
	82 series
	6300 series
	6500 series
	6600 series
	ISO 1, 2 & 3
	MAC 125 & MAC 250
	*Dimensional information (35, 57, & 58 series)

*Dimensional information differs from "Standard Valve" dimensions.

INTRINSICALLY SAFE CIRCUIT

In order to use an intrinsically safe valve in a hazardous location, the installation must be in accordance with the following installation diagram :



There are 3 basic parts to an intrinsically safe circuit :

1. FIELD DEVICE

This is defined as the device that will be used in the hazardous location. In this case, the field device will be the intrinsically safe valve.

2. ASSOCIATED APPARATUS

This will be an energy limiting device also known as a barrier.

3. FIELD WIRING

Wiring used to connect the two above devices.

When the MAC intrinsically safe valves were tested for approval, they were tested and approved for the following atmospheres.

Class I, II, III
Division 1
Groups ; A, B, C, D, E, F, G

under the following parameters :

Vmax : 30 VDC
Imax : 175 ma
Ci : 0
Li : 0



What this means is that the intrinsically safe valves were tested against each atmosphere with up to 30 VDC and 175 ma of current across the solenoid and found to still be safe. The other two parameters are values to indicate how much energy can be stored or created by the valve :

Ci : Internal capacitance of the solenoid.

This indicates how much energy the solenoid is capable of storing.

Li : Internal inductance of the solenoid.

This indicates the solenoid's ability to create or increase energy beyond what is supplied.

When applying an intrinsically safe valve in a hazardous location, a proper barrier must first be selected. The barrier selection process must first take into account the parameters the valve was approved for and compared in the following way :

- Vmax must be greater than or equal to Voc of the barrier.
Voc = Voltage open circuit or maximum allowed out of the barrier
- Imax must be greater than or equal to Isc of the barrier.
Isc = Current short circuit or the maximum current allowed out of the barrier
- Ci plus field wiring must be less than Ca of the barrier.
Ca = Allowed capacitance
- Li plus field wiring must be less than La of the barrier.
La = Allowed inductance

When properly combined, the barrier will never allow more energy to the intrinsically safe valve than what it was tested and approved for.

The following page can be used as your guide to help ask the right questions when working with an intrinsically safe circuit. Also included is a partial list of intrinsically safe barriers that have been tested with the MAC intrinsically safe valves.



Intrinsically Safe Valves

Approval : Factory Mutual Research 2X7A8.AX (3610)

Approved as intrinsically safe apparatus and associated apparatus for use in Class I, II, III - Division 1, Group : A, B, C, D, E, F & G.

Parameters : Vmax : 30 VDC

I_{max} : 175 ma

C_i : 0

L_i : 0

Operating voltage greater than 11.5 volts

Coil resistance : Approximately 250 ohms

Current draw : 50 ma

Wattage : 0.6 watts

Circuit Check Lists :

- Is Vmax greater than or equal to Voc ?
- Is I_{max} greater than or equal to I_{sc} ?
- Is C_i less than C_a ?
- Is L_i less than L_a ?
- Is the barrier capable of handling 50 ma draw ?
- Is the internal resistance of the barrier 250 ohms or less ?

If all answers to the above questions are “yes” the barrier may be a good choice in combination with the MAC intrinsically safe valve.

To calculate voltage across the solenoid, plug values into the following equations :

$$\text{Plug } I_{\text{TOTAL}} \text{ in below } I_{\text{TOTAL}} = \frac{\text{SUPPLY VOLTAGE}}{250 + \text{BARRIER RESISTANCE}} = \text{_____} \leftarrow \text{Plug } I_{\text{TOTAL}} \text{ in below _____}$$

$$\text{Voltage at Solenoid} = I_{\text{TOTAL}} \times 250 \text{ ohms} = \text{_____} \text{ volts}$$

Manufacturer	Model #	Barrier Res.	Voltage w/o Light	Voltage w/Light	Groups	Type
Turck	MK72-S01-EX		11.2 v	10.2 v*	A-G	T.I.B.
Crouse-Hinds	SB19140-M2410		13.2 v	12.6 v	C-G	Zener
IMO Industries (Gems Sensors)	114072	234 OHMS	12.0 v	11.4 v	C-G	Zener
Pepperl & Fuchs	KHZ-922/EX-1	270 OHMS	11.6 v	11.06 v	A-G	Zener
	KHZ-922/EX-2	270 OHMS	11.6 v	11.06 v	A-G	Zener
	KHZ-922/EX-3	270 OHMS	11.6 v	11.06 v	A-G	Zener
Stahl	9001/01-280-165-10		13.5 v	12.9 v	C-G	Zener
	9351/10-14-10	80 OHMS	13.7 v	13.4 v	A-G	T.I.B.
Ronan	X57-229P	200 OHMS	12.7 v	12.05 v	C-G	Zener
Measurement Technology	MTL728P+	250 OHMS	11.9 v	11.4 v	A-G	Zener
	MTL3022		15.0 v	14.5 v	C-G	T.I.B.

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

Groups indicate what atmosphere the barrier has been approved for. All MAC intrinsically safe valves have been approved for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G indoor hazardous locations.

T.I.B. = Transformer Isolated Barrier

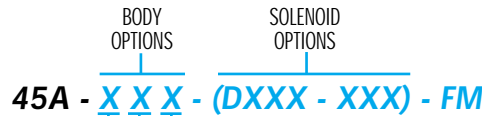
* = Not a recommended combination

HOW TO ORDER



BODY TYPE	PORT SIZE	VALVE FUNCTION/MANIFOLD TYPE
Inline	O Manifold Body Only	O Manifold Body Only
A Individual Inline	B #10-32 UNF (Inline Only)	B 3 way N.C. Only (Inline)
D Indiv. Inline w/2 Manifold Mount Ports	D M5 (Inline Only)	
Manifold		
E Manifold Body (N.C. Only)		
G Manifold Body w/Gage Port (N.C. Only)		

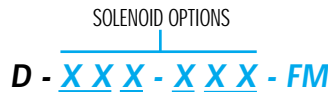
Note : there is no manifold base for the 35 series.
The manifold valve can only mount to a circuit bar, see note below



BODY TYPE	PORT SIZE	VALVE FUNCTION/MANIFOLD TYPE
Inline	O Manifold Body Only	Inline
A 4 Port Body	A 1/8" NPT	1 No Flow Controls
B 5 Port Body	B #10-32 UNF	Bases - Regulators
D 4 Port Body "O" Ring Mount -All Bottom Ports	C 1/8" BSPPL	O Valve Only - No Base
E 5 Port Body "O" Ring Mount -3 Bottom Ports Inlet and Cylinders	D M5 (Metric)	A Individual Base
F 4 Port Body "O" Ring Mount-Bottom Cylinder Ports Only	F #10-32 UNF Bottom Ports	C Manifold Base
	G M5 Bottom Ports	E Manifold w/Regulator w/Slotted Stem
	H "O" Ring Mount Ports	G Manifold w/Regulator w/Locking Slotted Stem
	J 1/8" NPT Bottom Ports	J Manifold w/Regulator w/Locking Knob
	K 1/8" BSPPL Bottom Ports	
Base Mount		
O For Base Only - No Valve		
L Base Mount Body		
M Base Mount Body with Gage Port		

MANIFOLD MOUNT ACCESSORIES

- M-45008-01** End Plate Kit
- 16455** Pressure Seal Between Manifold
- 19753** Tie Rod
- N-45008** Isolator Kit - Inlet and Exhaust
- N-45009** Isolator Kit - Inlet only
- N-45010** Isolator Kit - Exhaust only
- N-45015** End Cover Plate - Plain
- N-45016** End Cover Plate w/Flow Controls
- N-45017** Flow Control Needle Assembly



VOLTAGE	LEAD LENGTH	MANUAL OPERATOR	ELECTRICAL CONNECTION
FR 12VDC (0.6 W)	A 18" Leads	0 No operator	BA Grommet
FS 24VDC (0.6 W)	B 24" Leads	1 Non-locking Recessed	CA Conduit 1/2" NPS†
	C 36" Leads	2 Locking Recessed	CM Metal Conduit 1/2" NPS†
	D 48" Leads	3 Non-locking Extended	CN Metal Conduit w/grd. 1/2" NPS†
	E 72" Leads	4 Locking Extended	External Plug-in
	J* 6" Leads		FM Plug-in (For ECD & ECE Bar)
			JB Rectangular Plug-in†
			JM Rectangular Male only†
			KA Mini Plug-in
			KJ Mini Plug-in Male only
			TA Dual Tabs (.110) Plain
			TJ Dual Tabs (.110) Plain

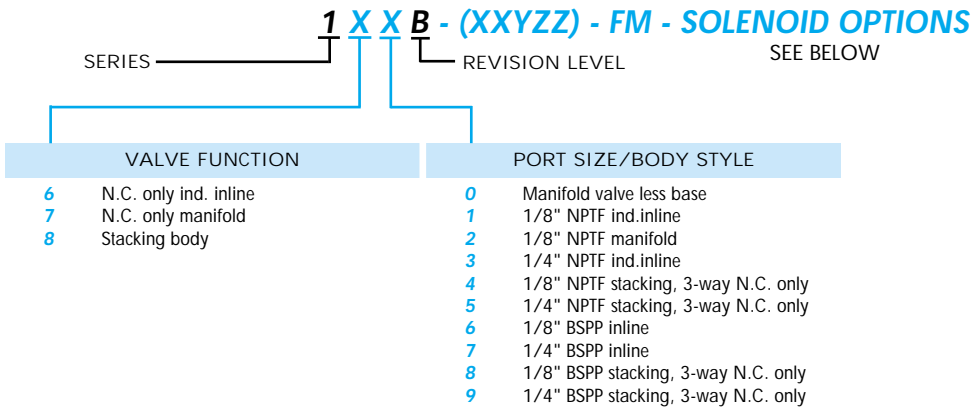
*Use "J" for external plug-in connectors

NOTE : For valves mounted to a circuit bar reference MAC circuit bar Catalog for ordering info.
For the 35 series circuit bar, use MOD FM01 after circuit bar part number.

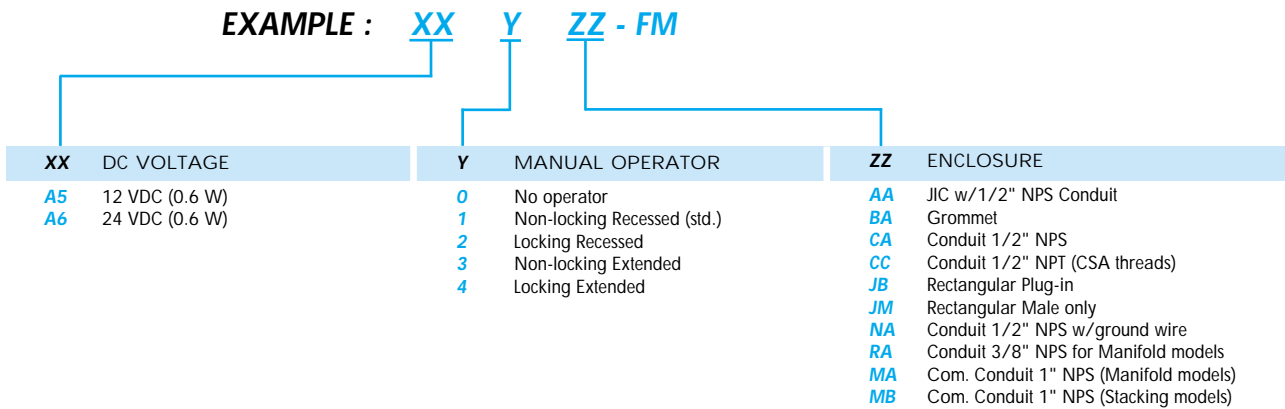
† Available on individual valves and circuit bars.

HOW TO ORDER

BODY OPTIONS



SOLENOID OPTIONS



(MA & MB common conduit covers require 1#M-01002-01 conduit end plate kit per stack)

100 SERIES-SUPPLEMENTAL TECHNICAL DATA

MOD. NO.	DESCRIPTION	MODEL AVAILABILITY
0004	All bottom and side ports	Manifold models only
0009	Bottom and side cylinder ports with side only inlet and exhaust ports	Manifold models only
0210	Additional bottom inlet	Manifold & stacking models
313P	For isolating the common inlet passage between manifold bases	Manifold models only
313E	For isolating the common exhaust passage between manifold bases	Manifold models only

STACKING BODY ACCESSORIES : STACKING END PLATE KIT-
For each gang one kit is required.

TO ORDER- Specify number M-01001-01 (1/4" NPTF) or M-01001-01P (1/4" BSPP).
INLET ISOLATOR PLATE N-01003
EXHAUST ISOLATOR PLATE N-01004

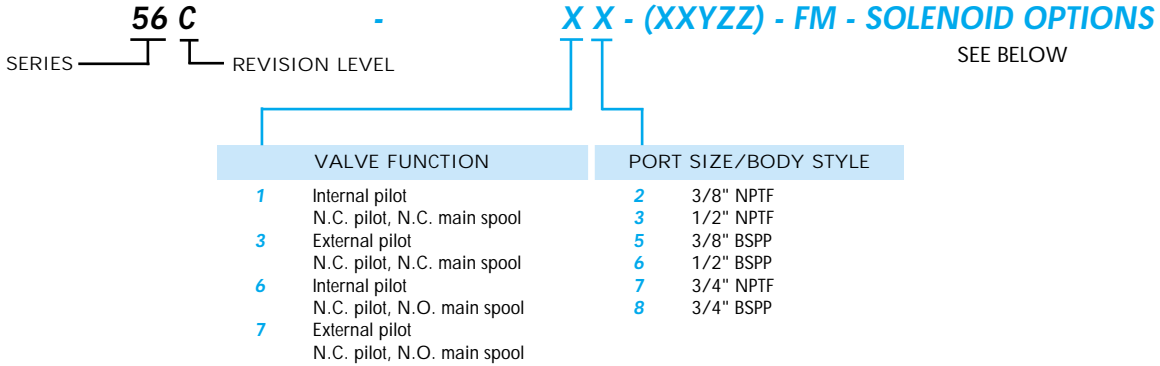
MANIFOLD ACCESSORIES : MANIFOLD END PLATE KIT-
For each gang one kit is required.

TO ORDER- Specify number A2-5004-01 (1/4" NPTF) or A2-5004-01P (1/4" BSPP).

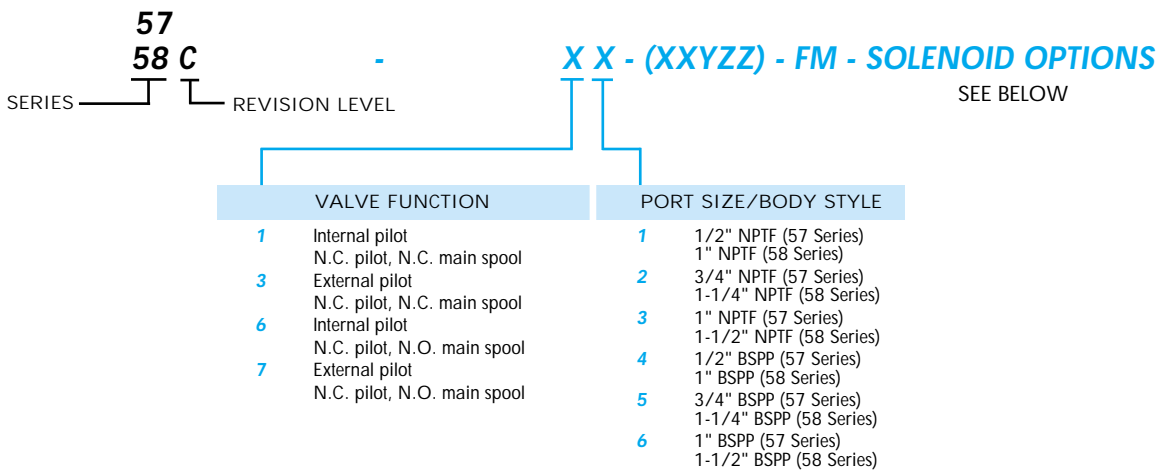
TO ORDER Add the appropriate modification number from the table above after the valve number,
EXAMPLE : 172B-A51BA-FM MOD 0004.

HOW TO ORDER

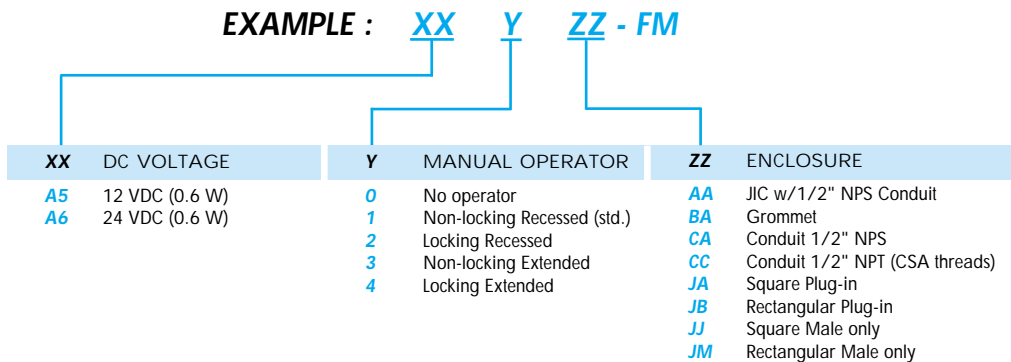
VALVE BODY ASSEMBLY



VALVE BODY ASSEMBLY

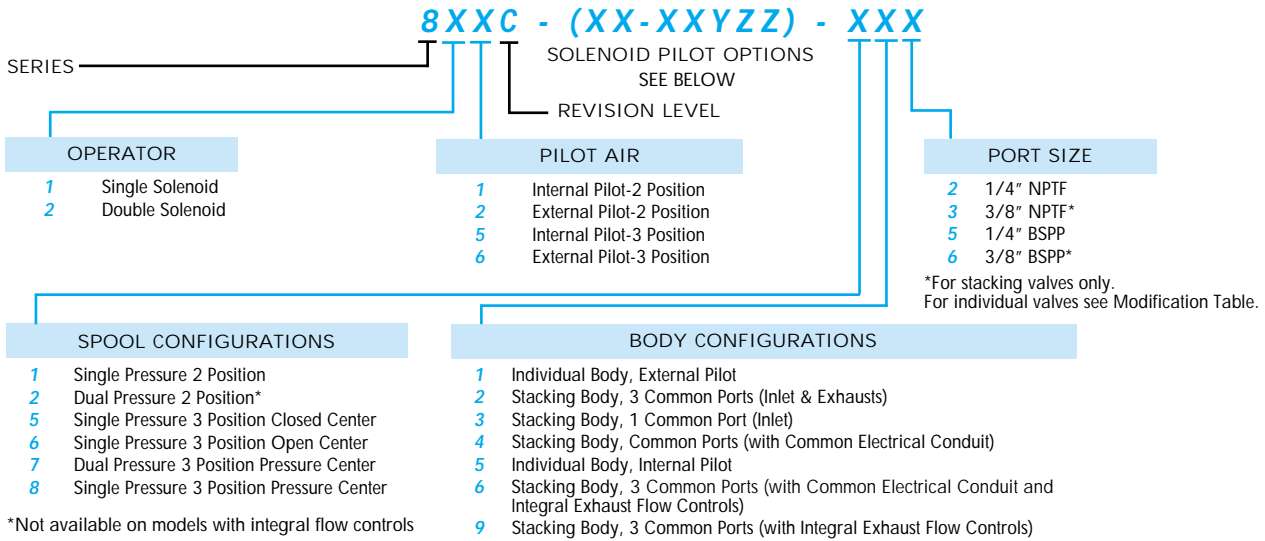


SOLENOID OPTIONS

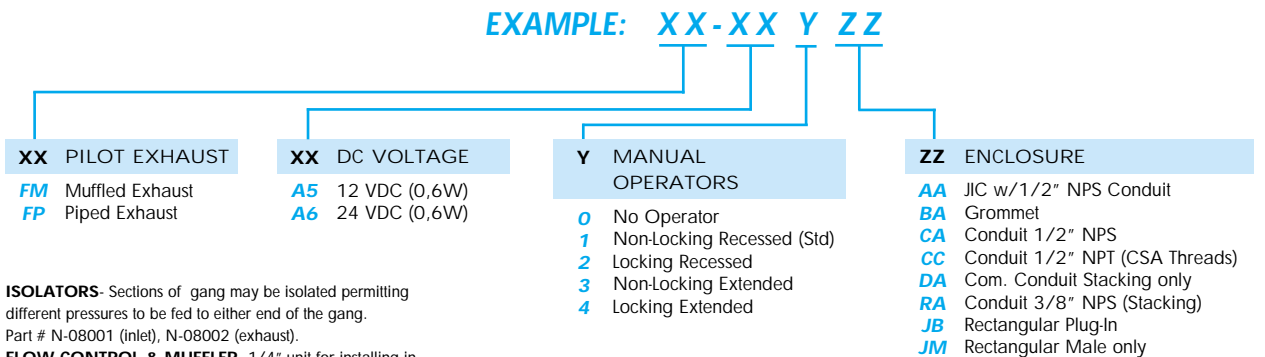


HOW TO ORDER

BODY OPTIONS



SOLENOID PILOT OPTIONS



ISOLATORS: Sections of gang may be isolated permitting different pressures to be fed to either end of the gang. Part # N-08001 (inlet), N-08002 (exhaust).

FLOW CONTROL & MUFFLER: 1/4" unit for installing in individual exhaust ports. Part #10951.

DUAL INLET PRESSURE BLOCK: For 3 common ports or 1 common port stacking valves. Provides 2 additional inlet pressure ports to a stack. Part #M-08003. For Common Conduit Valves. Part #M-00014.

ACCESSORIES

MANIFOLD END PLATE KITS (NPTF)*		
INT. PILOT PART NO.	EXT. PILOT PART NO.	MODELS USED WITH
M-08001-01-01	M-08001-02-01	3 com. port or 1 com. port models, stacks of 1 thru 16 valves.
M-08002-01-01	M-08002-02-01	Com. conduit models, stacks of 1 thru 16 valves.
M-00005-01-01	M-00005-02-01	3 com. port or 1 com. port models, stacks of 17 or more valves.
M-00007-01-01	M-00007-02-01	Com. conduit models, stacks of 17 or more valves.

*Add letter P at end of part number for BSPP threads;
EXAMPLE: M-08001-01-01P

MODIFICATIONS

MOD. NO.	DESCRIPTION	MODEL AVAILABILITY
0358	3/8" Inlet & Cylinder Ports	Individual Valves

HOW TO ORDER

BODY OPTIONS

9XXB - (XX-XXYZZ) - SOLENOID OPTIONS - SEE BELOW

SERIES ——— REVISION LEVEL

OPERATOR		BODY STYLE/PORTS	
1	Single Solenoid	1	Individual Inline 1/8" NPTF
2	Double Solenoid	2	Individual Inline 1/4" NPTF
		3	Stacking Valve 1/8" NPTF
		4	Stacking Valve 1/4" NPTF
		5	Individual Inline 1/8" BSPP
		6	Individual Inline 1/4" BSPP
		7	Stacking Valve 1/8" BSPP
		8	Stacking Valve 1/4" BSPP
		9	Stacking Valve 3/8" NPTF

For stacking valve 3/8"BSPP ports, use MOD 0005 after complete valve code 919B-FM-A51BA MOD 0005.

SOLENOID PILOT OPTIONS

EXAMPLE: XX-XX Y ZZ

XX PILOT EXHAUST	XX DC VOLTAGE	Y MANUAL OPERATOR	ZZ ENCLOSURE
FM Muffled Exhaust FP Piped Exhaust	A5 12 VDC (0,6W) A6 24 VDC (0,6W)	0 No Operator 1 Non-Locking Recessed (Std) 2 Locking Recessed 3 Non-Locking Extended 4 Locking Extended	AA JIC w/1/2" NPS Conduit BA Grommet CA Conduit 1/2" NPS CC Conduit 1/2" NPT (CSA Threads) RA Conduit 3/8" NPS (Stacking) MA Com. Conduit 1" NPS Requires (1) M-0100201 Conduit End Plate Kit per Stack JB Rectangular Plug-In JM Rectangular Male only

MODIFICATIONS

PART. NO.	DESCRIPTION
M-09001-01	Manifold End Plate Kit (3/8" NPTF)
M-09001-01P	Manifold End Plate Kit (3/8" BSPP)
N-09002	Isolator Plate Kit - Inlet & Exhaust
N-09003	Isolator Plate Kit - Exhaust only
N-09004A	Isolator Plate Kit - Inlet only

MANIFOLD ACCESSORIES:

MANIFOLD END PLATE KIT: For each stack one kit is required.

ISOLATORS: Sections of a stack may be isolated permitting different pressures to be fed to either end of the stack.

TO ORDER: Select the appropriate part number from the adjacent table.

HOW TO ORDER

82A - XX - XXX - (XX - DXXX - XXX)

SPOOL TYPE - VALVE FUNCTION

- O** Individual base or manifold only
- A** Single Operator - single pressure
- B** Double operator - single pressure
- C** Single operator - dual pressure
- D** Double operator - dual pressure
- E** 3-position closed center
- F** 3-position open center
- G** 3-position single pressure, pressure center
- H** 3-position dual pressure,* pressure center
- J** Single solenoid single pressure solenoid on B end
- K** Single solenoid dual pressure solenoid on B end
- L** 3-position dual pressure,* open center
- M** 3-position dual pressure,* closed center

* Note: For dual pressure w/o regulators consult factory.

BODY TYPE

- A** Plug-in body
- B** Non Plug-in body

PORT SIZE - THREAD TYPE

- O** Valve only - no base
- A** 1/8" NPTF
- B** 1/4" NPTF
- C** 3/8" NPTF
- D** 1/8" BSPPL
- E** 1/4" BSPPL
- F** 3/8" BSPPL

BODY OPTIONS

BASE OPTIONS

PILOT VALVE

IND. & MANIFOLD BASE PORT CONFIG.

--Individual Base--

- O** Valve only - no base
- A** Standard side ports (1/8", 1/4", or 3/8")
- B** Bottom ports only*
- C** Side and bottom ports*
- D** Side inlet, side exhaust, bottom cylinder ports*

* Bottom ports available in 1/8" & 1/4" only in individual base

--Manifold Base--

- K** Standard ports (1/4" or 3/8" only)
- L** Bottom cylinder ports*
- M** Bottom inlet port
- N** Bottom inlet and cylinder ports*
- P** Bottom and end cylinder ports*
- R** Bottom cylinder & end cylinder ports w/bottom inlet port*
- S** Selector base - standard side ports

* Bottom parts available in 1/4" & 3/8" only on manifold. Bottom inlet available 1/4" only. For bottom O-ring ports, consult factory.

INT. OR EXT. PILOT*

--Internal Pilot--

- O** Valve only - no base
 - A** No light in base
- External Pilot--**
- O** Valve only - no base
 - D** No light in base

* Use internal for main valve pressures of 25-150 PSIG. Use external for main valve pressures of 28" Hg vacuum - 25 PSIG

PILOT VALVE OPTIONS - (XX - DXXX - XXX)

PILOT EXHAUST

- FA** Muffled exhaust

VOLTAGE

- FR** 12VDC (0.6w)
- FS** 24VDC (0.6w)

LEAD WIRE LENGTH

--Plug-in Valve/Base--

- P** Plug-in 8" - standard
- 1** 18" **4** 48"
- 2** 24" **5** 72"
- 3** 36" **6** 96"

--Non Plug-in Valve/Base--

- A** 18" **E** 72"
- B** 24" **F** 96"
- C** 36" **J** 6**
- D** 48"

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

ELECTRICAL CONN.

--Plug-in Valve/Base--

- DA** Plug-in (standard)
- CA** Conduit 1/2" NPS
- CM** Metal conduit 1/2" NPS
- CN** Metal conduit w/grd. 1/2" NPS

--External Plug-in--

- JB** Rectangular plug-in
- JM** Rectangular male only
- KA** Mini plug-in
- KJ** Mini plug-in male only
- TA** Dual tabs (.110) w/receptables
- TJ** Dual tabs (.110) w/o receptables

MANUAL OPERATOR

- O** No manual operator
- 1** Nonlocking operator
- 2** Locking operator
- 3** Nonlocking extended operator
- 4** Locking extended operator

HOW TO ORDER 82 SERIES FLOW CONTROL MODULE*

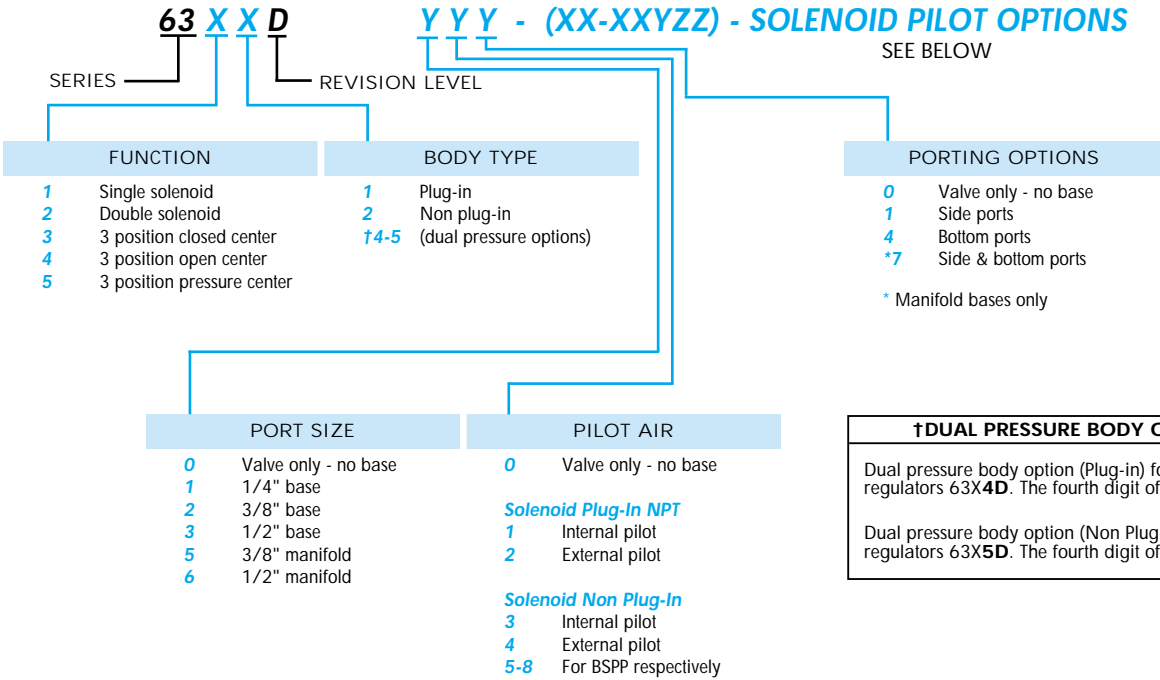
FC 82A-AA	Plug-in flow control assembly
FC 82A-BA	Non plug-in flow control assembly

*If flow control module is to be installed between valve and base or valve and manifold at the factory, add -9 after the flow control model number, i.e., FC82A-AA-9. The flow control model number should follow the valve model number on which it is to be installed.

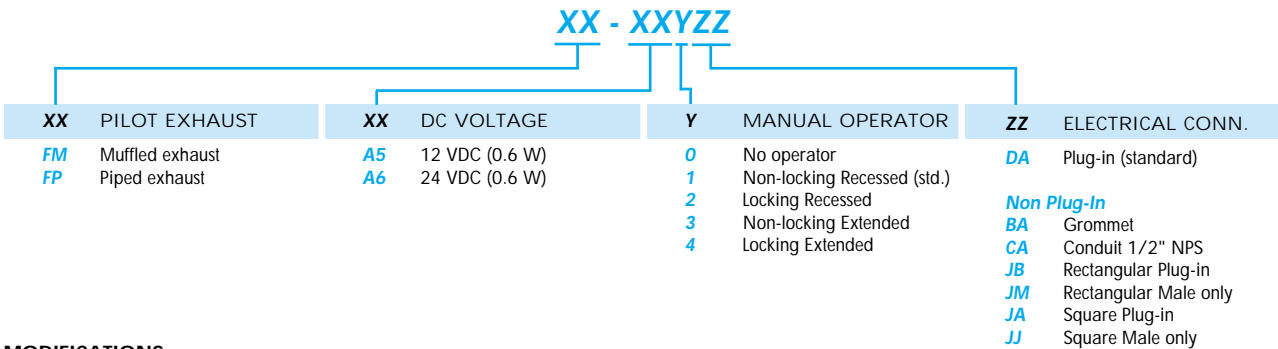
NOTE: Reference regulator ordering section if a sandwich regulator is required.
NOTE: If a flow control assembly is used with the dual pressure regulator option, only the flow control on the "A" end is functional. (Controls both cylinder ports.)

HOW TO ORDER

BODY/BASE OPTIONS



PILOT VALVE OPTIONS



MODIFICATIONS

MOD 0210 Bottom inlet port in addition to side inlet port (manifolds only)

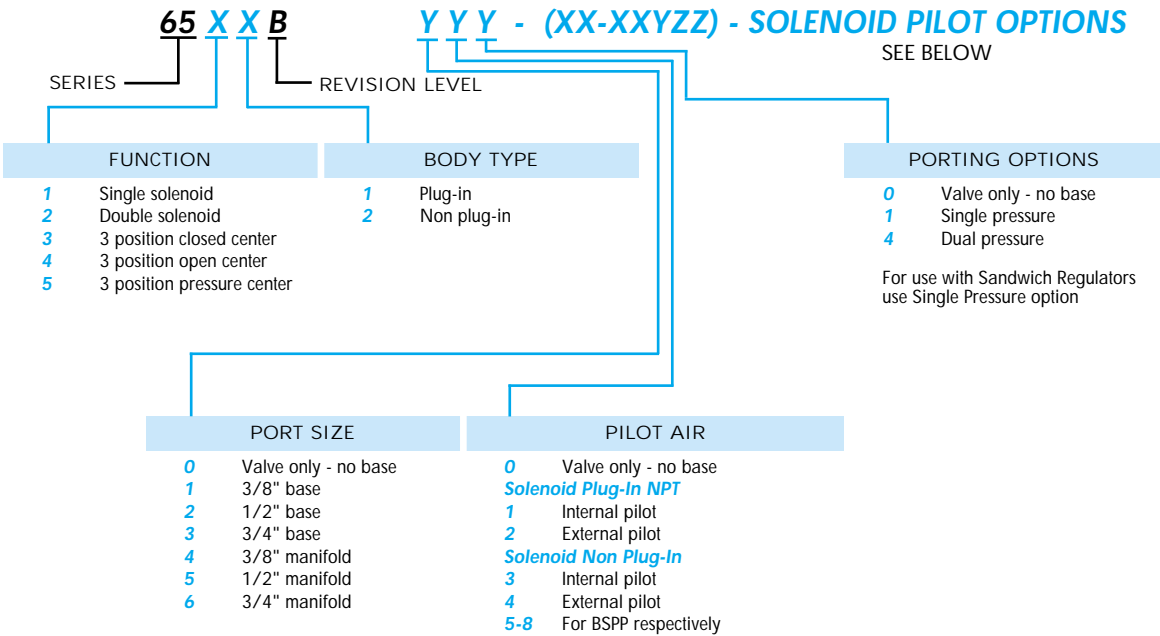
TO ORDER: 6311D-511-FM-A51DA MOD 0210

Manifold Accessories: Inlet Isolators #32839. Exhaust Isolator #28309.

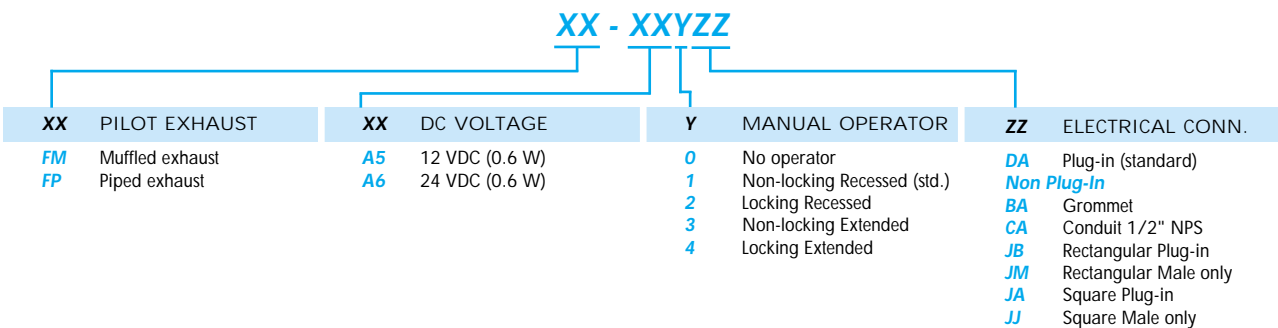
- NOTE:**
- The valve less base is always the same for internal or external pilot. These options are effected in the base or manifold.
 - When ordering an external pilot connection for manifold bases, a common external pilot is standard. One connection only is required for all the valves in the manifold whether single or double solenoid.

HOW TO ORDER

BODY/BASE OPTIONS



PILOT VALVE OPTIONS



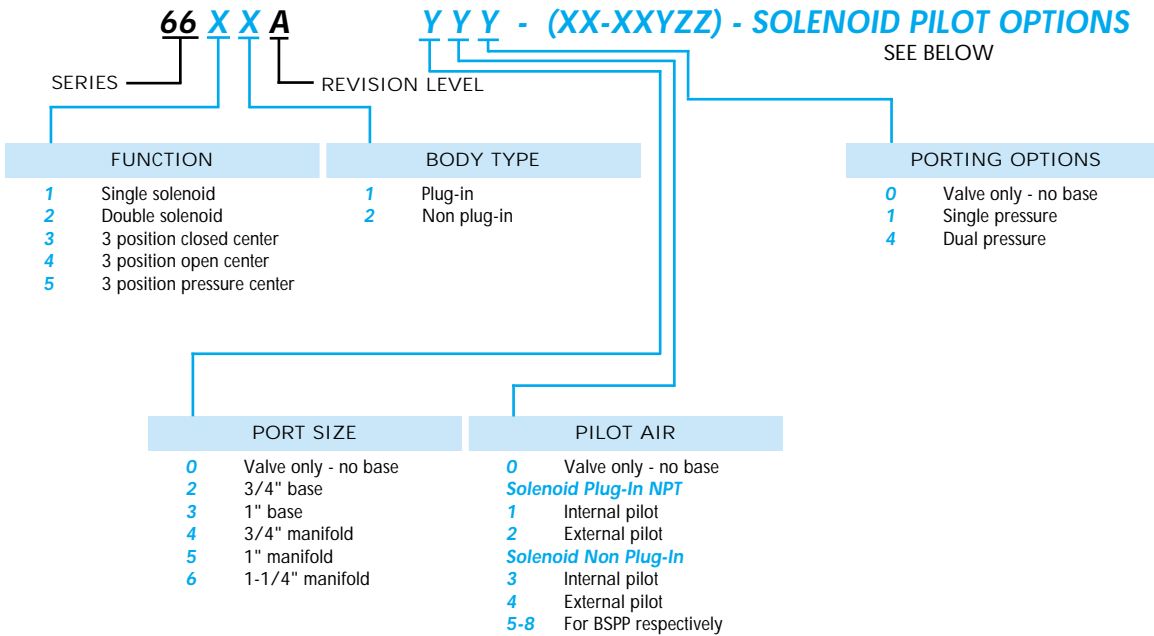
NOTE: 1. The valve less base is always the same for internal or external pilot. These options are effected in the base or manifold.
 2. Bottom ports: Refer to modification table below.
 3. Manifold Accessories: Inlet Isolator #28309. Exhaust Isolator #28310.

MODIFICATIONS

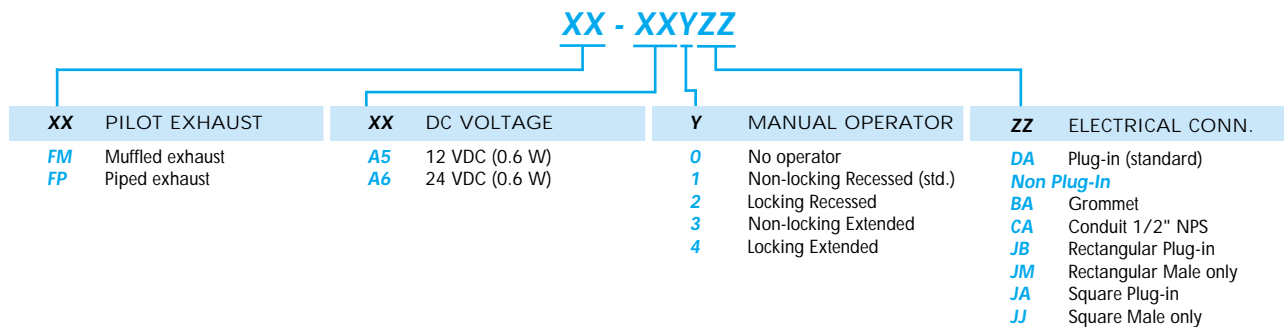
MOD. NO.	DESCRIPTION	MODEL AVAILABILITY
0002	Bottom inlet, exhaust, & cylinder ports (no side ports)	Available on individual base 3/8" & 1/2" only
0004	Full side porting and additional bottom inlet, exhausts, and cylinder ports	Available on individual base 3/8" only
0112	Side inlet & exhaust with bottom cylinder ports (no end cylinder ports)	Available on all manifold models
0210	Porting as ordered in model number plus an additional bottom inlet	Available on all manifold models
0364	Single Pressure - Side inlet & exhaust and additional bottom inlet with bottom cylinder ports (no end cylinder ports) Dual Pressure - Same as single pressure except with two bottom inlets	Available on all manifold models

HOW TO ORDER

BODY/BASE OPTIONS



PILOT VALVE OPTIONS



- NOTE:**
- The valve less base is always the same for internal or external pilot. These options are effected in the base or manifold.
 - Bottom ports: Refer to modification table below.
 - When ordering an external pilot connection for manifold bases, a common external pilot port is standard. One connection only is required for all the valves in the manifold whether single or double solenoid.
 - Manifold Accessories: Inlet & Exhaust Isolator #28367.

MODIFICATIONS

MOD. NO.	DESCRIPTION	MODEL AVAILABILITY
0002	Bottom inlet, exhaust, & cylinder ports (no side ports)	Available on individual base 3/4" only
0004	Full side porting and additional bottom inlet, exhausts, and cylinder ports	Available on individual base 3/4" only
0112	Side inlet & exhaust with bottom cylinder ports (no end cylinder ports)	3/4" individual base & 3/4" & 1" manifold base
0210	1-1/4" bottom inlet	Manifold base
0364	1-1/4" bottom inlet & 3/4" or 1" bottom cyl.	Manifold base

TO ORDER Add the appropriate modification number after the valve number, **EXAMPLE** : 6611A-211-FM451DA MOD 0002.



Intrinsically Safe Valves

MV-A1C ISO 1 MAC ISO valves are built to International Standards Organization (ISO) Std. 5599/1. They are available in 3 sizes; ISO 1, 2 & 3. To select the ISO size required, insert the appropriate ISO number in the 5th position of the model code; EXAMPLE MV-A1C for ISO 1, MV-A2B for ISO 2, or MV-A3B for ISO 3.
MV-A2B ISO 2
MV-A3B ISO 3 Bases and manifolds must be ordered separately from the table below.

HOW TO ORDER

SOLENOID PILOT OPERATED VALVES LESS BASE SINGLE PRESSURE VALVES

SGL. OPERATOR AIR/SPRING RETURN	DBL. OPERATOR 2-POSITION	PILOT SUPPLY	DBL. OPER. 3-POS. CLOSED CENTER	DBL. OPER. 3-POS. OPEN CENTER
MV-AXB-A111-FM-A51JA MV-AXB-A121-FM-A51JA MV-AXB-A151-FM-A51JA	MV-AXB-A211-FM-A51JA MV-AXB-A221-FM-A51JA MV-AXB-A251-FM-A51JA	Internal Pilot External Pilot External Pilot for use with Regulator	MV-AXB-A312-FM-A51JA MV-AXB-A322-FM-A51JA MV-AXB-A352-FM-A51JA	MV-AXB-A311-FM-A51JA MV-AXB-A321-FM-A51JA MV-AXB-A351-FM-A51JA

DUAL PRESSURE VALVES

SGL. OPERATOR AIR/SPRING RETURN	DBL. OPERATOR 2-POSITION	PILOT SUPPLY	DBL. OPER. 3-POS. PRESSURE CENTER
MV-AXB-A131-FM-A51JA MV-AXB-A135-FM-A51JA MV-AXB-A141-FM-A51JA	MV-AXB-A231-FM-A51JA MV-AXB-A232-FM-A51JA MV-AXB-A241-FM-A51JA	Int. Pilot-From Port 3 Int. Pilot-From Port 5 External Pilot	MV-AXB-A331-FM-A51JA MV-AXB-A332-FM-A51JA MV-AXB-A341-FM-A51JA

SOLENOID PILOT VALVE OPTIONS

XX - XXYZZ

XX PILOT EXHAUST	XX DC VOLTAGE	Y MANUAL OPERATOR	ZZ EXTERNAL PLUG-IN	ZZ ENCLOSURE
FM Muffled exhaust FP Piped exhaust FC CNOMO Muffled FD CNOMO Piped	A5 12 VDC (0.6 W) A6 24 VDC (0.6 W)	0 No operator 1 Non-locking Recessed (std.) 2 Locking Recessed 3 Non-locking Extended 4 Locking Extended	JA Square without light (on solenoid) JB Rectangular without light (on solenoid) JE Square without light (on body) JF Rectangular without light (on body)	AA JIC w/1/2" NPS Conduit BA Grommet CA Conduit 1/2" NPS CC Conduit 1/2" NPT (CSA Threads)

BASE TABLE

ISO TYPE	PORT SIZE	INDIVIDUAL BASE		MANIFOLD BASE	
		BSPP	NPTF	BSPP	NPTF
ISO 1	1/4"	MB-A1C-121	MB-A1C-221	MM-A1C-121	MM-A1C-221
	3/8"	MB-A1C-131	MB-A1C-231	MM-A1C-131	MM-A1C-231
ISO 2	3/8"	MB-A2B-121	MB-A2B-221	MM-A2B-121	MM-A2B-221
	1/2"	MB-A2B-131	MB-A2B-231	MM-A2B-131	MM-A2B-231
ISO 3	1/2"	MB-A3B-121	MB-A3B-221	MM-A3B-121	N/A
	3/4"	MB-A3B-131	MB-A3B-231	MM-A3B-131	N/A

For manifold bases a common external pilot port is available. One connection only is required for all valves in the manifold whether single or double solenoid. Bottom ports are also available; consult factory for ordering information for these options.

MANIFOLD FASTENING KIT — For each gang, one kit is required. To order specify par number **N-63002-01**.

HOW TO ORDER

VALVE OPTIONS

MAC125A - VXXX - XX - XXYDA - 9 VALVE ASSEMBLED TO BASE
MAC250A

SERIES
 REVISION LEVEL

SEE BELOW

FUNCTION	ELECTRICAL CONN. IN TOP PLATE	PILOT
1 Single Operator, 2 Position, Single Pressure	A 5 Pin (Ford Wiring)	1 Internal Pilot
2 Double Operator, 2 Position, Single Pressure	B 5 Pin (Chrysler Wiring)	3 External Pilot
3 Single Operator, 2 Position, Dual Pressure	G 4 Pin Micro	
4 Double Operator, 2 Position, Dual Pressure	E 3 Pin (Ford Wiring)	
5 3 Position, Closed Center	F 5 Pin Micro (Chrysler Wiring)	
6 3 Position, Open Center		
7 3 Position, Dual Pressure, Pressure Center		

SOLENOID PILOT OPTIONS

XX - XX - YDA

XX	PILOT EXHAUST	XX	DC VOLTAGE	Y	MANUAL OPERATOR
FM	Muffled exhaust	A5	12 VDC (0.6 W)	0	No operator
FP	Piped exhaust	A6	24 VDC (0.6 W)	1	Non-locking Recessed (std.)
				2	Locking Recessed
				3	Non-locking Extended
				4	Locking Extended

ORDERING EXAMPLE: MAC125A-V1A1-FM-A51DA

BASE/MANIFOLD TABLE

TYPE	PORT SIZE	INDIVIDUAL BASE	MANIFOLD BASE (btm. cyl. ports)	MANIFOLD BASE** (side & btm. cyl. ports)
MAC125	1/4"	MAC125A-B21A	MAC125A-M21B	MAC125A-M21C
	3/8"	MAC125A-B31A	MAC125A-M31B	MAC125A-M31C
MAC250	1/2"	MAC250A-B21A	MAC250A-M21B	MAC250A-M21C
	3/4"	MAC250A-B31A	MAC250A-M31B	MAC250A-M31C
	1"	MAC250A-B41A	N/A	N/A

Individual base available with side ports only.

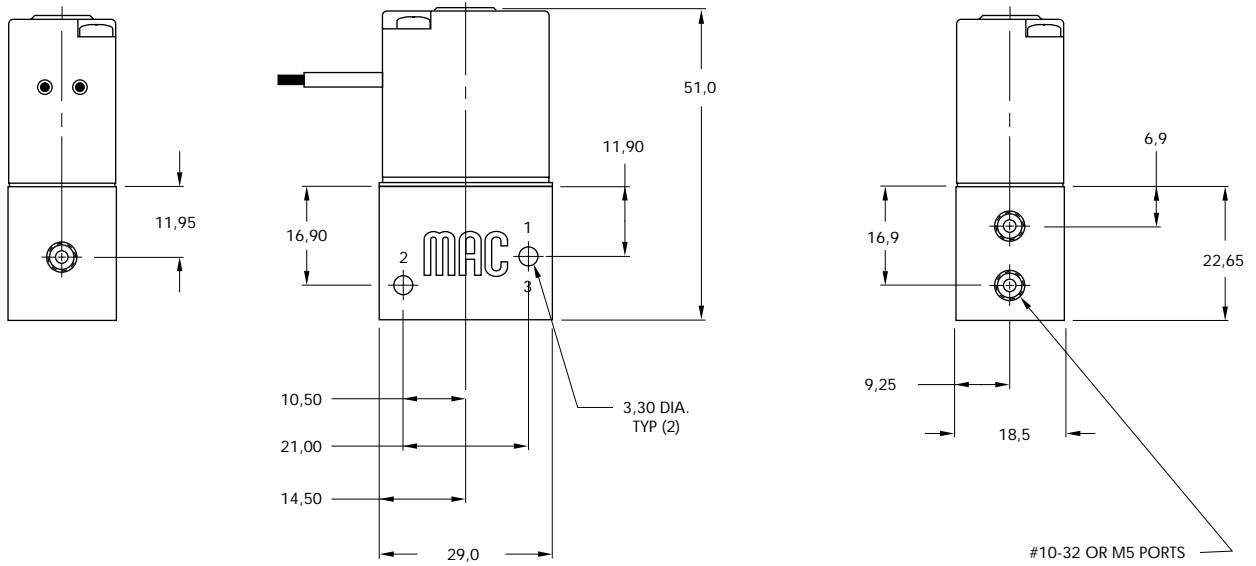
**Requires End Plate Kit M-12002-01 (125 Series), M-25002-01 (250 Series)

Bases & manifolds coded for internal pilot. For external pilot, last number of code is 2. ORDERING EXAMPLE: MAC125A-B22A.

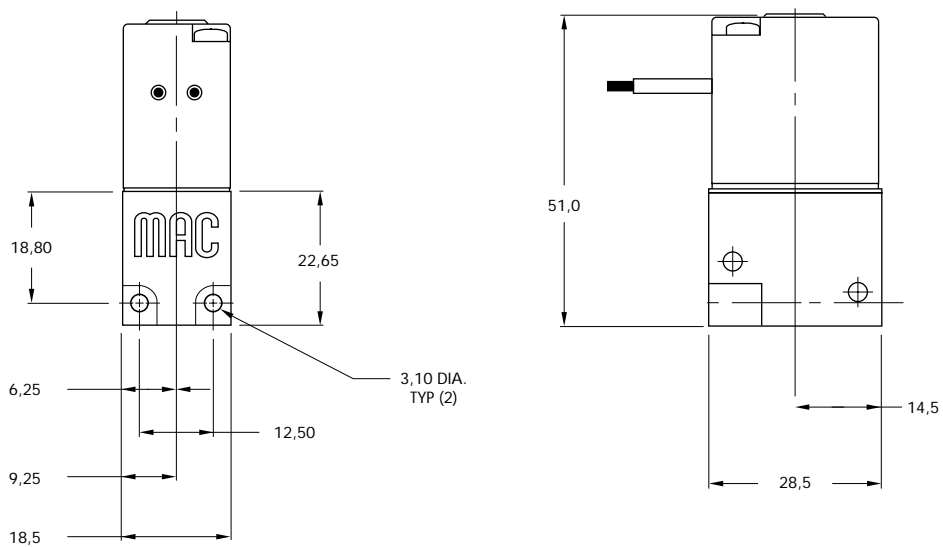


Intrinsically Safe Valves

35 Series Inline



35 Series Manifold

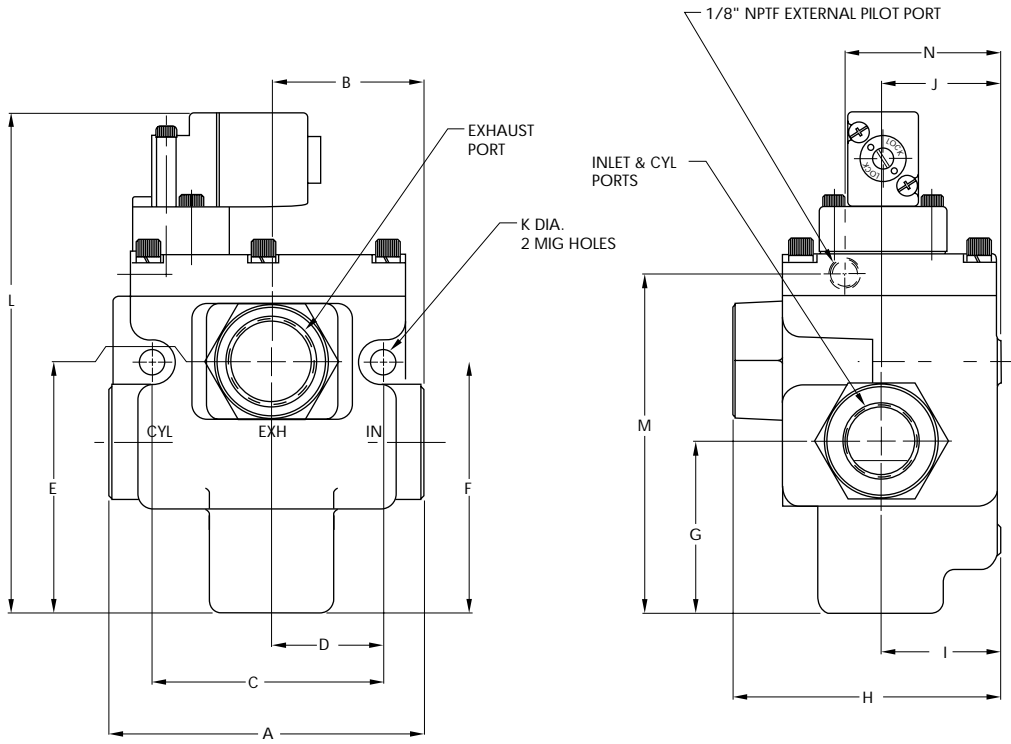




Intrinsically Safe Valves

57 & 58 Intrinsically Safe

Dimensions shown are metric (mm)



DIMENSIONS		A	B	C	D	E	F	G	H	I	J	K	L	M	N
57	Inches	4.42	2.13	3.25	1.56	3.56	3.56	2.43	3.18	1.68	1.80	.34	7.04	4.78	2.19
Series	MM	112.3	54.1	82.6	39.7	90.4	90.4	61.7	96.8	42.7	45.7	8.6	78.9	121.5	55.7
58	Inches	5.66	2.77	4.66	2.27	4.5	4.91	3.31	4.57	1.88	2.00	.53	8.41	6.15	2.39
Series	MM	143.7	70.3	118.4	57.7	114.3	124.7	84.1	116.1	47.8	50.8	13.5	213.6	156.3	60.8



Section 8

Options



Codification table for voltages / Manual operator / Electrical connection / Wire length

VALVE CODE > **-XX Y ZZ (-VV)**
1 2 3 4

OPTIONS AVAILABLE FOR	OPTIONS AVAILABLE FOR
<ul style="list-style-type: none"> - valves type 100 Series - pilot valves "CNOMO" 	<ul style="list-style-type: none"> - valves type 200 Series
<ul style="list-style-type: none"> - Pilot operated valves with pilots type 100 Series Series : 55 - 56 - 700 - 800 - 900 <li style="padding-left: 20px;">- 6300 - 6500 - 6600 - 1300 <li style="padding-left: 20px;">- ISO 1 - ISO 2 - ISO 3. <li style="padding-left: 20px;">- MAC 125 - MAC 250 - MAC 500 	<ul style="list-style-type: none"> - pilot operated valves with pilots type 200 Series Series : 200 - 57 - 58 - 59.
<ul style="list-style-type: none"> - Pilot operated valves with pilots "CNOMO" Series : ISO1 - ISO2 - ISO3 	

Used on valve series: 100, 55, 56, 700, 800, 900, 6300, 6500, 6600, 1300, MVA1C, MVA2B, MVA3B, MAC125, MAC250, MAC500.

Used on valve series: 200, 57, 58, 59.

1. VOLTAGE (100 Serie type coil)	
- XX Y ZZ	VOLTAGE
11	120/60, 110/50
12	240/60, 220/50
13	100/60, 100/50
15	200/60, 200 /50
16	10/60
20	6/60
21	12/50, 12/60
22	24/60, 24/50
23	32/60, 32/50
24	48/60, 42/50
26*	380/50, 440/50, 440/60, 480/60
29	220/60
34	127/50, 120/50
35	48/50
36	16/60
B1	24/50
50	24 VDC (6 W)
51	24 VDC (4 W)
54	12 VDC (4 W)
55	12 VDC (6 W)
57	12 VDC (2.5 W)
59	24 VDC (2.5 W)
60	12 VDC (8.5 W)
61	24 VDC (8.5 W)
64	6 VDC (6 W)
65	32 VDC (7 W)
66	48 VDC (5.8 W)
67	64 VDC (7.5 W)
68	120 VDC (6.4 W)
69*	220 VDC (8.7 W), 250 VDC (11.2 W)
75	90 VDC (8.8 W)
76*	100 VDC (6.9 W)
84*	125 VDC (10.9 W)
87*	24 VDC (17.1 W)
88*	12 VDC (17.4 W)
89*	36 VDC (18.8 W)
90	28 VDC (8.2 W)
91*	6 VDC (10.6 W)
92	190 VDC (6.5 W)
94	3 VDC (7 W)
95	38 VDC (6.4 W)
A1	24 VDC (1 W)
A2	12 VDC (1 W)
A3	9 VDC (1 W)

MOD. DD01 : Protection diode (DC) - MAX. 8.5W

MOD. MOV1 : Protection varistor (AC) - MAX. 8.5W

* Voltages are CLSF only

1. VOLTAGE (200 Serie type coil)	
- XX Y ZZ	VOLTAGE
11	120/60, 110/50, 24 VDC (6 W)
12	240/60, 220/50
13	100/60, 100/50
14	200/60, 200/50
20	6/60
21	12/60
22	24/60, 24/50
23	32/60, 32/50
24	48/60, 42/50
25	240/50
26	480/60, 440/50
27	127/60
28	415/50
29	220/60
30	380/50
31	550/60, 550/50
32	120/60, 110/50
33	600/60
34	127/50
35	48/50
50	24 VDC (6 W)
51	24 VDC (4.5 W)
52	24 VDC (2.5 W)
53	24 VDC (1.0 W)
55	12 VDC (6 W)
57	12 VDC (2.5 W)
58	48 VDC (2.5 W)
60	12 VDC (9.5 W)
61	24 VDC (8.5 W)
64	6 VDC (8.5 W)
65	32 VDC (10 W)
66	48 VDC (11.5 W)
67	64 VDC (10.5 W)
68	120 VDC (12.3 W)
69	250 VDC (9.2 W)
71	8 VDC (8.2 W)
72	24 VDC (12 W)
73	198 VDC (10 W)
74	72 VDC (11.3 W)
75	90 VDC (11.3 W)
76	100 VDC (9 W)
77	220 VDC (10 W), 230 VDC (11.6 W)
78*	24 VDC (24 W)
80	55 VDC (10.6 W)
82	170 VDC (11.1 W)
83	15 VDC (8.1 W)
84	125 VDC (10 W)
86	36 VDC (11 W)
93*	12 VDC (24 W)

2. MANUAL OPERATOR (Common options for 100 & 200 Series type coils)

- XX	Y	ZZ	MANUAL OPERATOR
	0		No operator
	1		Non-locking recessed
	2		Locking recessed
	3		Non-locking extended
	4		Locking extended
		5*	No Operator with Light
		6*	Non-Locking Recessed with Light
		7*	Locking Recessed with Light
		8*	Non-Locking Extended with Light
		9*	Locking Extended with Light

* Lights used with "AA" electrical connection

3. ELECTRICAL CONNECTION (100 Serie type coil)

- XX	Y	ZZ	ELECTRICAL CONNECTION
		AA	Wiring box with 1/2" NPS conduit
		BA	Flying leads
		CA	1/2" NPS conduit
		CC	1/2" NPT conduit
		FA	Military type 2 PIN
		GA	Military type 3 PIN
		HA	AA with ground wire
		JA*	Square connector
		JB	Rectangular connector
		JC*	Square connector with light
		JD	Rectangular connector with light
		JE	Square connector on top (ISO2, ISO3)
		JF	Rectangular connector on top (ISO1, ISO2, ISO3)
		JG	JE with light
		JH	JF with light
		JJ	Square connector, male only
		JM	Rectangular connector, male only
		MA	Electrical common conduit (100 Series-Manifold/900 Series)
		MB	Electrical common conduit (100 Series-Stacking/700 Series)
		NA	CA with ground wire
		NC	CC with ground wire
		RA	3/8" NPS conduit

* Not to be used with 100, 800 and 900 Series manifold mounting

3. ELECTRICAL CONNECTION (200 Serie type coil)

- XX	Y	ZZ	ELECTRICAL CONNECTION
		AA	Wiring box with 1/2" NPS conduit
		BA	Flying leads
		CA	1/2" NPS conduit
		CC	1/2" NPT conduit
		EA	Explosion proof (200 Series)
		EA	Explosion proof (57, 58 & 59 Series)
		FA	Military type 2 PIN
		GA	Military type 3 PIN
		HA	AA with ground wire
		JA*	Square connector
		JC	Square connector with light
		JJ	Square connector, male only
		NA	CA with ground wire
		NC	CC with ground wire

4. COIL WIRE LENGTH (Common options for 100 & 200 Serie type coils)

- XX Y ZZ (-VV)	WIRE LENGTH
AA	18"
AB	24"
AD	36"
AE	48"
AF	72"
AG	6"
AR	12"
AU	120"
BA	60"
BB	144"
Series 6000 : wire length, from the base	
MOD L024	24"
MOD L036	36"
MOD L048	48"
MOD L060	60"
MOD L072	72"
MOD L120	120"



0 p t i o n s

Codification table for voltages / Wire length / Manual operators / Electrical connections

VALVE CODE ► $-D \frac{XX}{1} \frac{X}{2} - \frac{X}{3} \frac{XX}{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 35, 45 and 82 Series

1. VOLTAGE

- D XX X - X XX	VOLTAGE
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
AD	24/60
AE	200/60
AF	240/50
AG	100/50, 100/60, 110/60
DA	24 VDC (5.4 W)
DB	12 VDC (5.4 W)
DC	12 VDC (7.5 W)
DD	24 VDC (7.3 W)
DE	12 VDC (12.7 W) - CLSFonly
DF	24 VDC (12.7 W) - CLSF only
DK	110 VDC (4.7 W)
DL	64 VDC (6 W)
DM	36 VDC (5.3 W)
DN	6 VDC (6 W)
DP	48 VDC (5.8 W)
DU	24 VDC (6 W)
EA	12 VDC (6 W)
FA	12 VDC (1.8 W)
FB	24 VDC (1.8 W)
FE	12 VDC (2.4 W)
FF	24 VDC (2.4 W)

2. WIRE LENGTH

- D XX X - X XX	WIRE LENGTH
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"
J	For external plug-in connector ("J", "K" & "T" type electrical connection)
P	For plug-in valves (82 Series only)

3. MANUAL OPERATOR

- D XX X - X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

- D XX X - X XX	ELECTRICAL CONNECTION
BA	Flying leads
BK	BA with protection diode
BL	BA with protection varistor (M.O.V.)
** CA	1/2" NPS conduit
** CM	1/2" NPS metal conduit
** CN	1/2" NPS metal conduit w/ground
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 varistor (M.O.V.)
KD	Square connector with light
KE	Square connector with light and protection diode
KF	Square connector with light and protection varistor (M.O.V.)
KJ	Square connector (male only)
KK	Square connector with protection diode (male only)
KL	Square connector with protection varistor (male only) (M.O.V.)
*** MA	Electrical common conduit
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
DA*	Plug-in connector
DK*	DA with protection diode
DL*	DA with protection varistor (M.O.V.)

* To be used with 82 Series only

** Inline valves only for 35 & 45 series. No restrictions for 82 series.

*** Stacking valves only for 35 & 45 series. Conduit end plate kit required, one per stack.

35 series : M-35002-01

45 series : M-45005-01



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 use in industrial pneumatic and/or vacuum systems. They are not intended for consumer use or service. 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.

LIMITATION OF GUARANTEE

This Guarantee is limited to the replacement or rebuilding of any valve which should fail to operate properly. Valves, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the Guarantee period. They will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same guarantee as provided under the Flat Rate Rebuild Program.

DISCLAIMER OF GUARANTEE

No claims for labor, material, time, damage, or transportation are allowable nor will any valve be replaced or rebuilt under this guarantee which has been damaged by the purchaser not in the normal course of its use and maintenance during the warranty period. The guarantee does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc. MAC Valves, Inc. shall in no event be liable for remote, special or consequential damages under the MAC Guarantee, nor under any implied warranties, including the implied warranty of merchantability.

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