

Individual mounting

Valve only -  
 No base  
 non "plug-in"  
 Conform to  
 ISO 15407/1

Series

Manifold mounting

Valve only -  
 No base  
 non "plug-in"  
 Conform to  
 ISO 15407/1

33

34

36

32

37

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48P

48

400

92

93

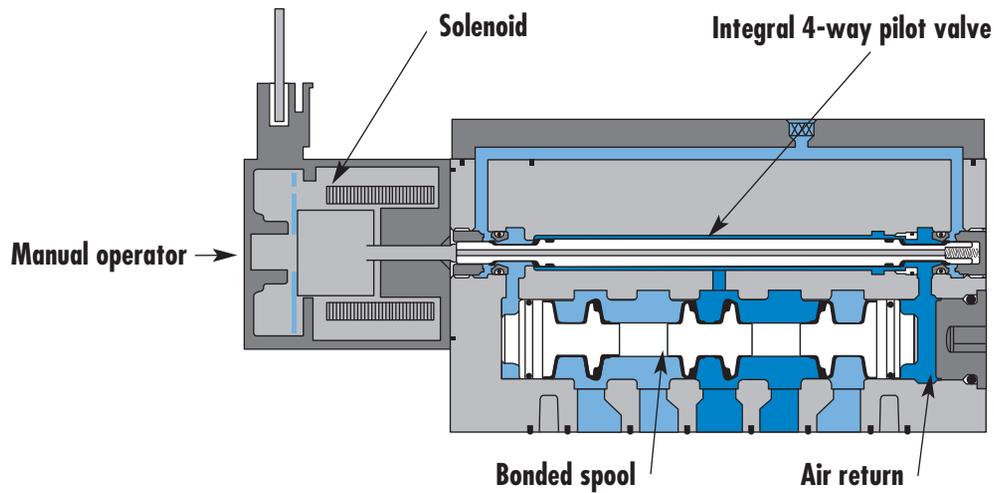
ISO 01

**ISO 02**

ISO 1

ISO 2

ISO 3



**SERIES FEATURES**

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

Function	Port size	Flow [Max]	Individual/Manifold mounting	Series
<b>5/2, 5/3</b>	<b>1/8"</b>	<b>0.43 C<sub>v</sub></b>	Valve only - No base non "plug-in" Conform to ISO 15407/1	

### OPERATIONAL BENEFITS

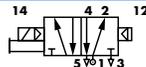
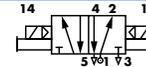
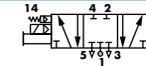
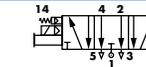
1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package. Pilot valve and main valve in the same body.
6. Internal or external pilot operation.
7. Air only return
8. Optional low wattage DC solenoid down to 1.0 Watt.



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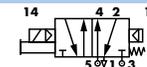
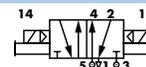
### HOW TO ORDER

#### SINGLE PRESSURE MODELS

Pilot air	5/2 Single operator	5/2 Double operator	5/3 Closed center	5/3 Open center
Internal	 MV-A02A-AAMA-Jxxx-xxx	 MV-A02A-ABMA-Jxxx-xxx	 MV-A02A-AEMA-Jxxx-xxx	 MV-A02A-AFMA-Jxxx-xxx
External "12" end	MV-A02A-AAMD-Jxxx-xxx	MV-A02A-ABMD-Jxxx-xxx	MV-A02A-AEMD-Jxxx-xxx	MV-A02A-AFMD-Jxxx-xxx
External "14" end	MV-A02A-AAME-Jxxx-xxx	MV-A02A-ABME-Jxxx-xxx	MV-A02A-AEME-Jxxx-xxx	MV-A02A-AFME-Jxxx-xxx

46  
42  
47  
48P

#### DUAL PRESSURE MODELS

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

48  
400  
92

#### SOLENOID OPERATOR >

**J XXX-XXX\***

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

93

ISO 01  
ISO 02

ISO 1  
ISO 2  
ISO 3

\* Other options available, see page 317.

Note: - ISO series, valve and base are ordered separately, see page 229 for base codes.

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

### OPTIONS

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

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

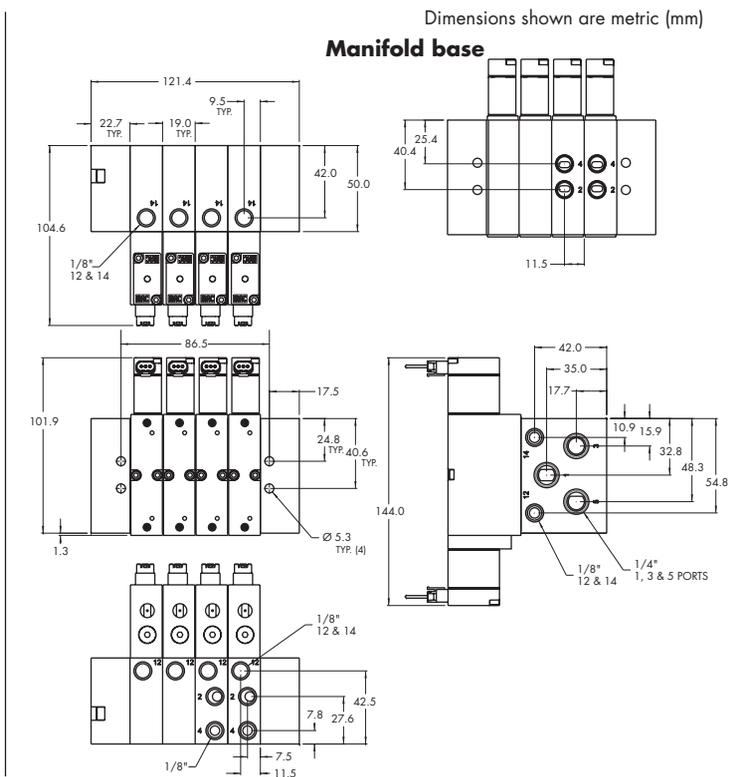
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Internal Pilot - 2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI External Pilot: Vacuum to 120 PSI
<b>Pilot pressure :</b>	2 pos.: 20 to 120 PSI - 3 pos.: 35 to 120 PSI
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	0°F to 120°F (-18°C to +50°C)
<b>Flow :</b>	2 pos.: Cv 0.43 – 3 pos.: Cv 0.28
<b>Coil :</b>	Class A wires continuous duty, #22 AWG x 18
<b>Voltage range :</b>	-15% to +10% of nominal voltage
<b>Power :</b>	1,0 to 5,4 W

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

**DIMENSIONS**

**Individual base**



**Non plug-in individual / manifold base**



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

**HOW TO ORDER**

INDIVIDUAL BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With all side ports
1/8" NPTF	Internal	MB-A02A-111	MB-A02A-112

MANIFOLD BASE

Port size	Pilot air	Side ports	Bottom 2 & 4 ports With side 1, 3 & 5 ports
1/8" NPTF	Internal	MM-A02A-111	MM-A02A-112

Notes:

- For manifold bases external pilot is common
- A base is ordered as internal pilot and can be changed into external pilot by removing pipe plugs from the external pilot ports (individual base).
- Manifold base: same base for internal and external pilot, different end plate kits.

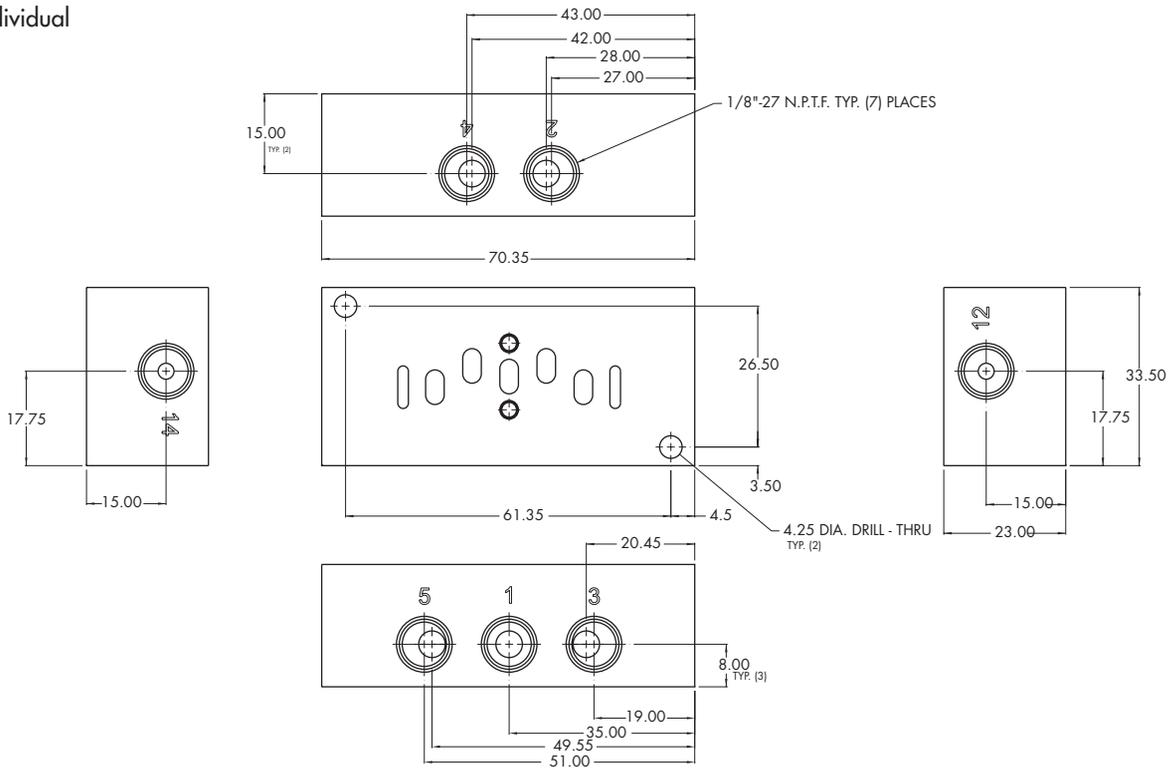
End plate kit: Internal pilot M-00018-01-01  
 External pilot M-00018-02-01

Inlet/exhaust isolator: 28499

**DIMENSIONS**

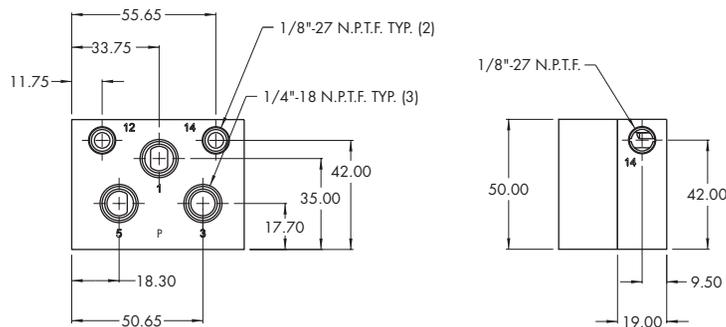
Dimensions shown are metric (mm)

Individual

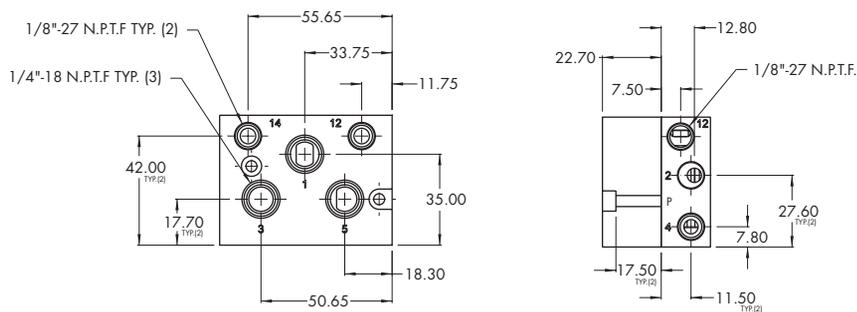


Manifold

LEFT SIDE



RIGHT SIDE



**Non plug-in sandwich pressure regulator with manual adjust**

**OPERATIONAL BENEFITS**

1. Easy mounting: saves on installation costs and space in comparison with inline regulators
2. Compact all-included units
3. Large orifice provides high flow
4. Various functions available
5. Simple, reliable and solid design



**PR37A**  
**PR42B**  
**PR46A**  
**PR47A**  
**PR48B**  
  
**PR92C**

**HOW TO ORDER**

Pilot	Single pressure Regulator 12 end	Dual pressure Regulator 12 end with by-pass 14 end *	Dual pressure Regulator 14 end with by-pass 12 end *	Dual pressure Regulator both ends *
<b>Internal</b>	PRA02A-AAAA	PRA02A-ABAA	PRA02A-ADAA	PRA02A-AEAA
<b>External</b>	PRA02A-BAAA	PRA02A-BBAA	PRA02A-BDAA	PRA02A-BEAA

**PR93A**

Above models are for manual adjust with knob  
 For other manual adjustments and pressure ranges, see Options.

Note: Add -9 after part number for regulator block assembled to valve.  
 \* To be used with dual pressure valves.

**PRA01A**

**PRA02A**

**OPTIONS**

Adjustments :

- PRA02A - **XXXX**
- A** Manual adjust with knob – Internal pilot
  - B** Manual adjust with knob – External pilot
  - G** Manual adjust with screwdriver slot – Internal pilot
  - H** Manual adjust with screwdriver slot – External pilot
  - K** Manual adjust with screwdriver slot with locknut– Internal pilot
  - L** Manual adjust with screwdriver slot with locknut – External pilot

**PRA1A**

**PRP1A**

Regulated Pressure range :

- PRA02A - **xxxx**
- A** 0 to 120 PSI
  - B** 0 to 80 PSI
  - C** 0 to 30 PSI
  - D** 0 to 120 PSI "14" end - 0 to 80 PSI "12" end
  - E** 0 to 120 PSI "12" end - 0 to 80 PSI "14" end
  - F** 0 to 120 PSI "14" end - 0 to 30 PSI "12" end
  - G** 0 to 120 PSI "12" end - 0 to 30 PSI "14" end
  - H** 0 to 80 PSI "14" end - 0 to 30 PSI "12" end
  - J** 0 to 80 PSI "12" end - 0 to 30 PSI "14" end

**PRA2D**

**PRP2B**

**PRA3C**

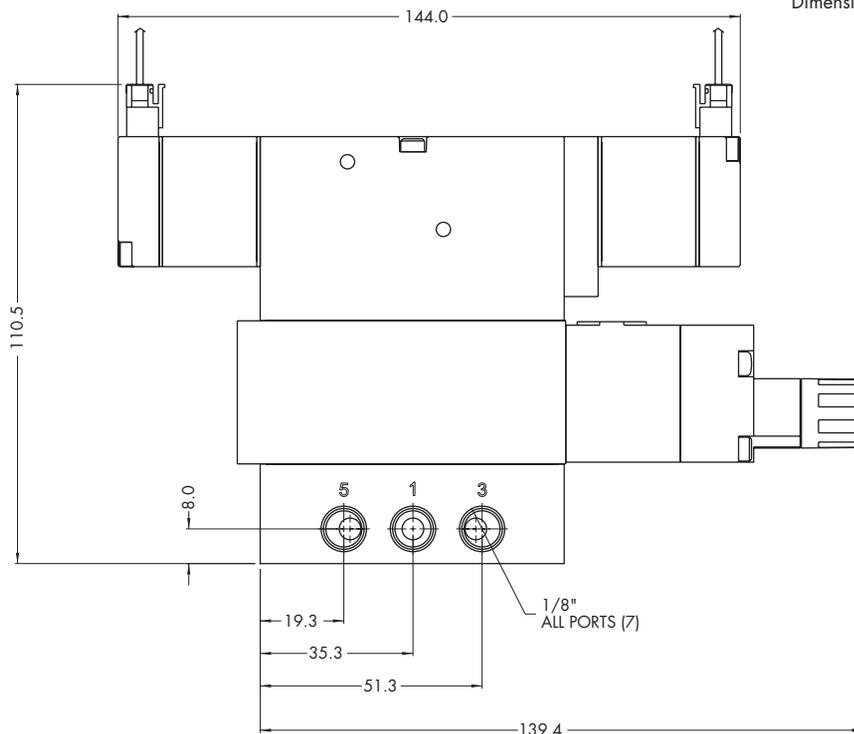
**PRP3B**

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, inert gases
<b>Pressure supply :</b>	Higher than maximum regulated pressure
<b>Regulating range :</b>	0 to 120 PSI
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
<b>Filtration :</b>	40 μ
<b>Temperature range :</b>	0°F to 120°F (-18°C to +50°C)

**DIMENSIONS**

Dimensions shown are metric (mm)





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**Codification table for voltages / Manual operators / Electrical connections**

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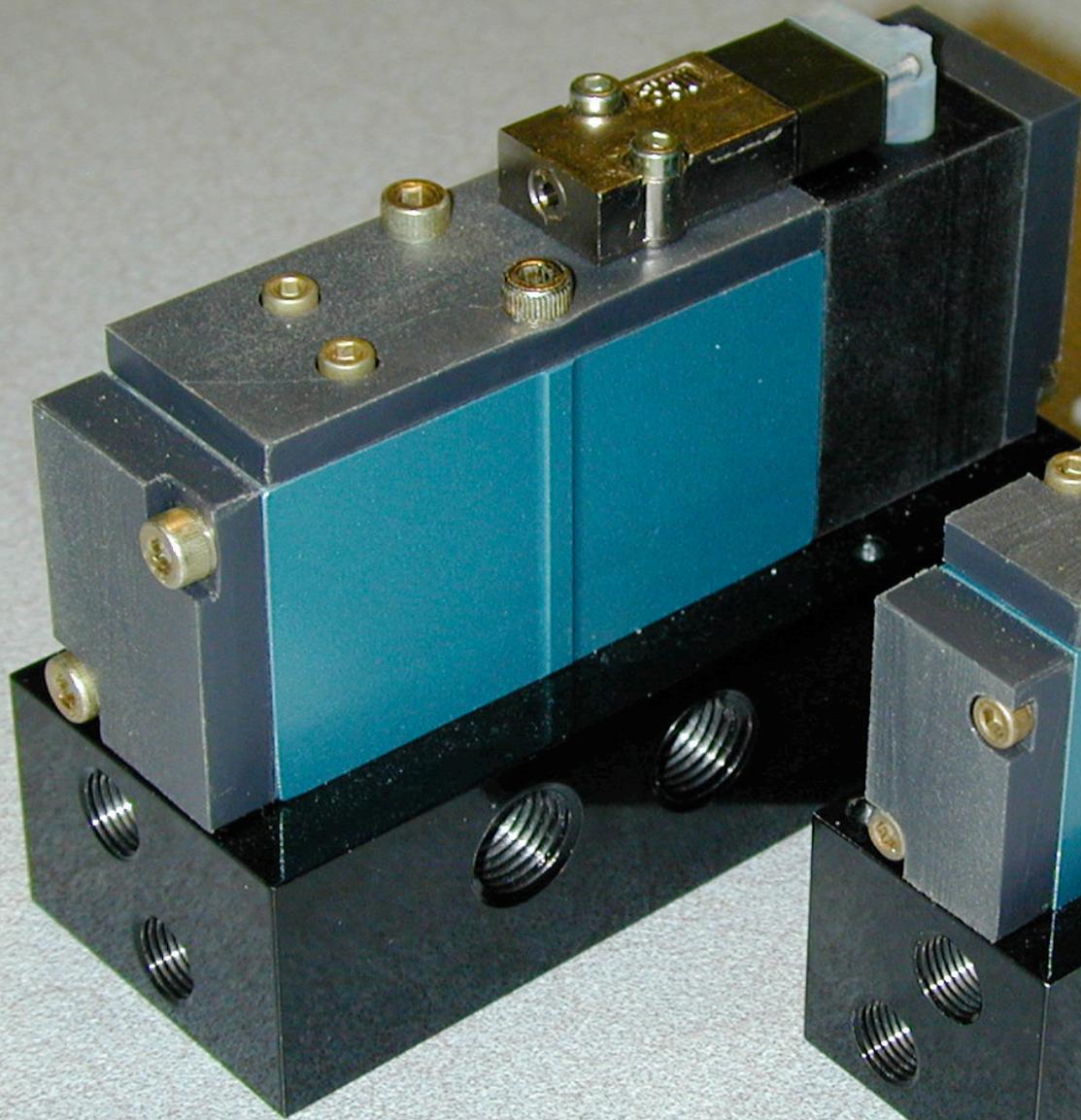
VALVE CODE >

**J XX X-X XX**  
**1 2 3 4**

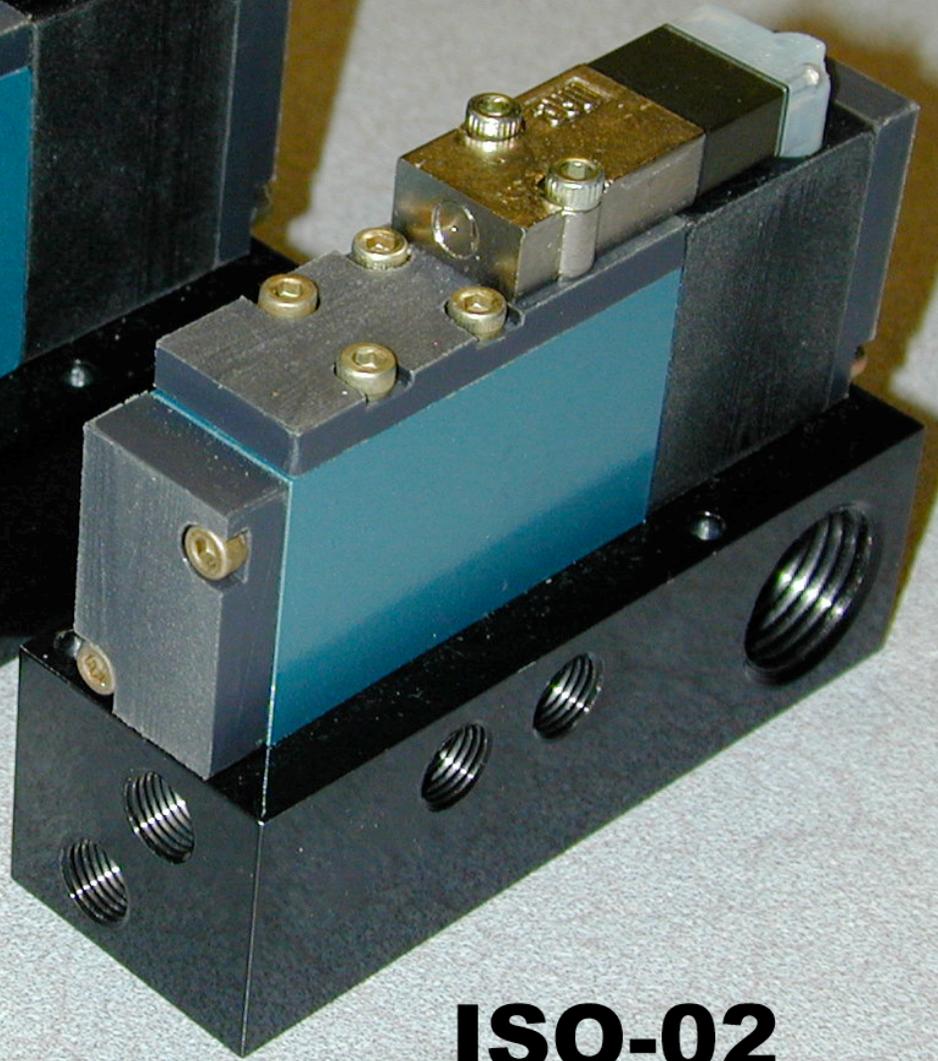
**OPTIONS AVAILABLE FOR**

- Solenoid valves 36, 46, ISO 01 and ISO 02 Series

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**ISO-01**



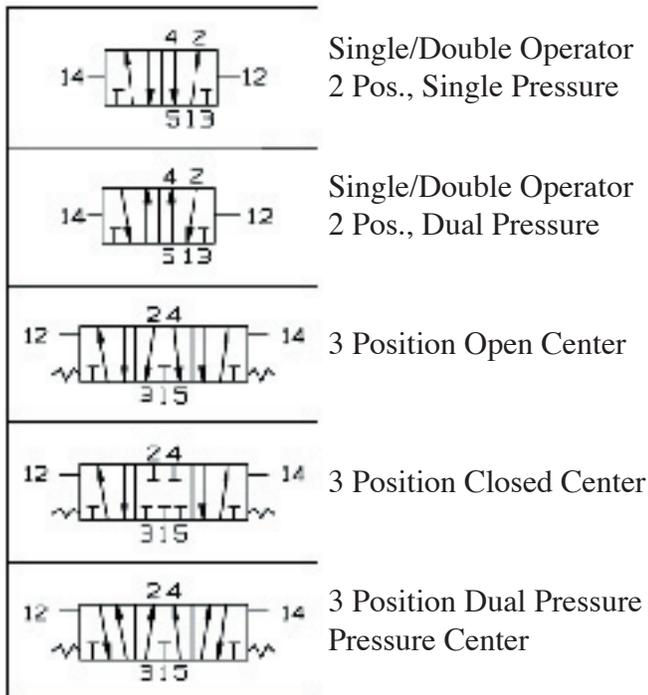
**ISO-02**

# Specifications

## ISO 01 and ISO 02 Series

### Operating Data

- Fluids: Air or Inert Gas
- Lubrication: Not Required. But if used, a medium aniline range oil is recommended.
- Safe Operating Temperature Range: 0° to 120°F (-18° to 50°C)
- Pressure Range: Vacuum to 120 PSI (Ext. pilot supply provided for vacuum and low pressure)  
 20 PSI minimum operating pressure on internal pilot. (2 position valves)  
 35 PSI minimum operating pressure on internal pilot (3 position valves)
- Electrical: 24V, 120V: AC Voltage available by rectified DC supply.  
 12V and 24V: DC Voltage (1.8 to 5.4 Watts)
- Above Coils: General Purpose Class A, Continuous duty.
- Coil Leads: #22 AWG x 18"



### Pressure Range (PSI)

Description		Main Valve	Pilot
2 Position Single Sol.	Internal Pilot Models	20-120	N/A
2 Position Double Sol.		20-120	N/A
2 Position Single Sol.	External Pilot Models	VAC-120	20-120
2 Position Double Sol.		VAC-120	20-120
3 Position	Internal Pilot Models	35-120	N/A
3 Position	External Pilot Models	VAC-120	35-120

### Flows (Cv)

ISO 01	ISO 02
2 Position : 1.0 Cv	2 Position : 0.51 Cv
3 Position : 0.8 Cv	3 Position : 0.35 Cv

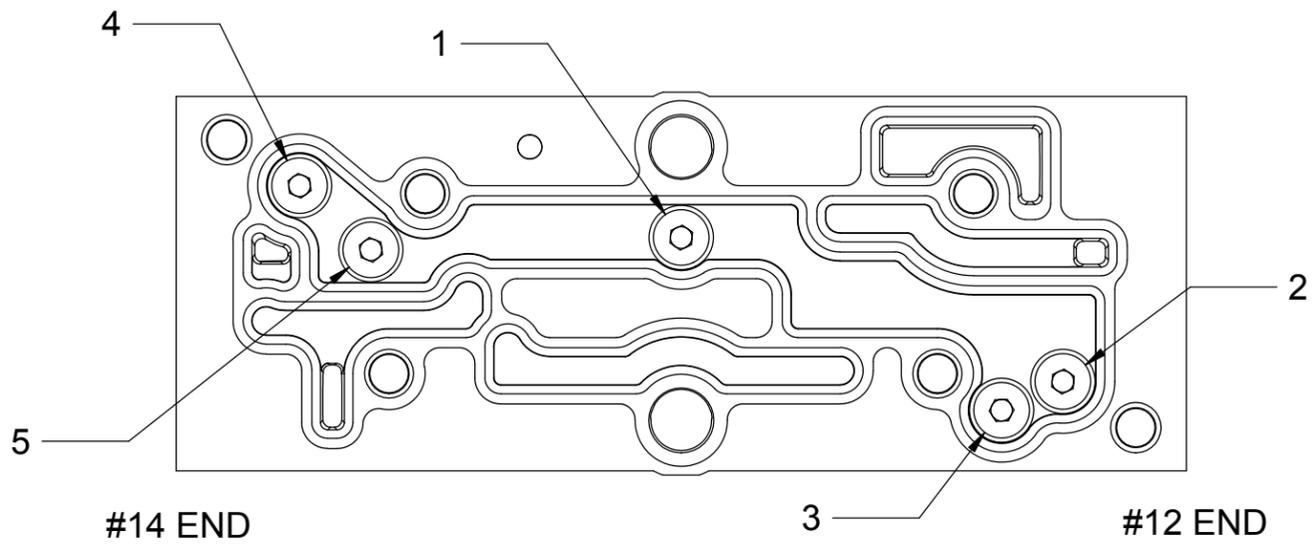
### Vacuum Applications

Use external pilot models only and connect the vacuum source to ports "3" and "5" and leave Port "1" open to atmosphere on single pressure models. On dual pressure models, reverse the single pressure piping.

### Selector Applications (Without Regulators)

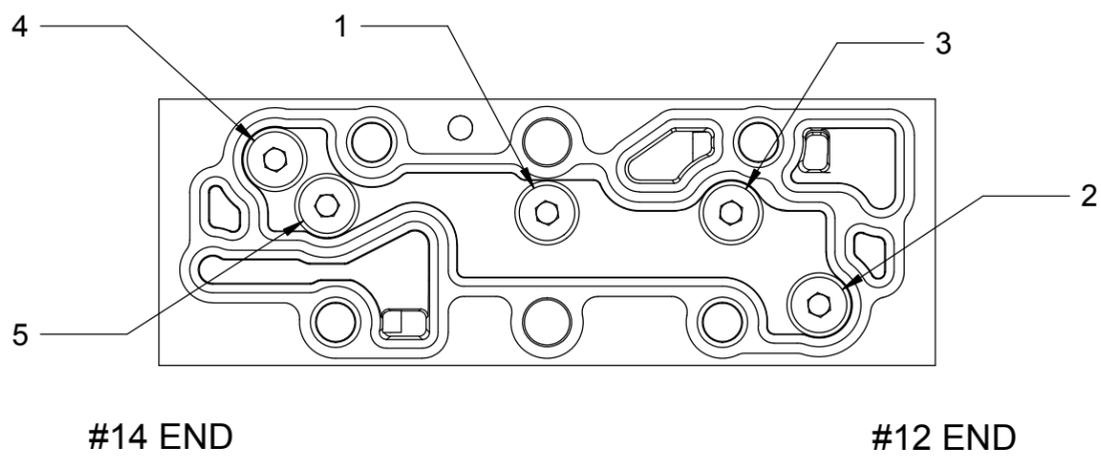
Connect the higher pressure to Port "1" and the lower pressure to either Port "3" or "5". If both pressures are below the minimum operating pressure, use an external pilot.

**ISO #01 PLUG-IN (TOP VIEW)**  
**CHART FOR LOCATION OF PASSAGE PLUGS**  
**TO DETERMINE PILOT SUPPLY TO VALVE**



PILOT SUPPLY	PLUG LOCATION
SINGLE PRESSURE (INTERNAL)	2 , 3 , 4 , 5
SINGLE PRESSURE (EXTERNAL #12)	1 , 3 , 4 , 5
SINGLE PRESSURE (EXTERNAL #14)	1 , 2 , 3 , 5
DUAL PRESSURE(#3 PORT)	1 , 2 , 4 , 5
DUAL PRESSURE(#5 PORT)	1 , 2 , 3 , 4

**ISO #02 PLUG-IN (TOP VIEW)**  
**CHART FOR LOCATION OF PASSAGE PLUGS**  
**TO DETERMINE PILOT SUPPLY TO VALVE**

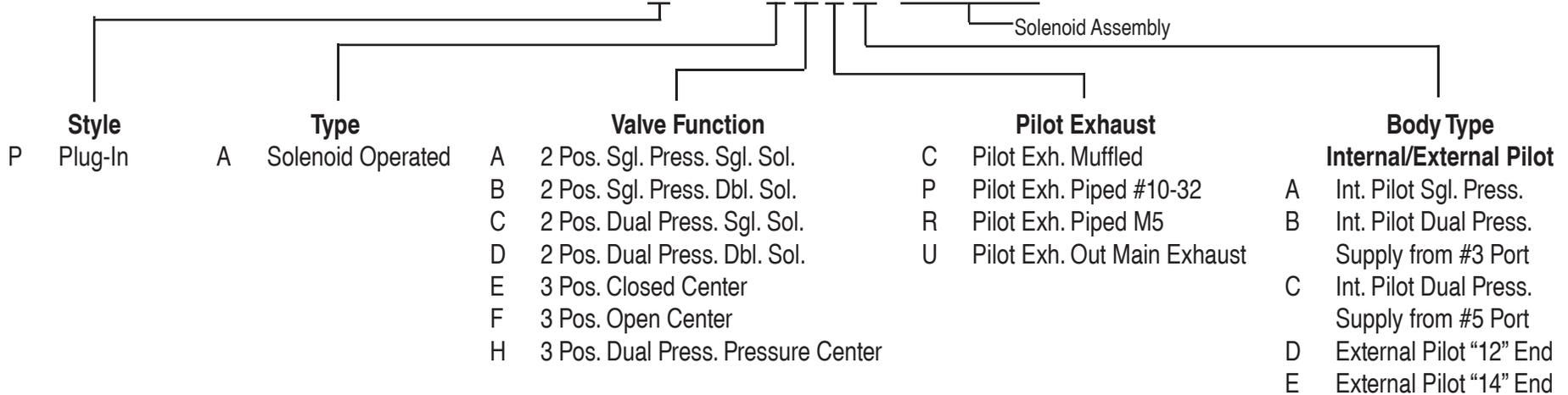


PILOT SUPPLY	PLUG LOCATION
SINGLE PRESSURE (INTERNAL)	2 , 3 , 4 , 5
SINGLE PRESSURE (EXTERNAL #12)	1 , 3 , 4 , 5
SINGLE PRESSURE (EXTERNAL #14)	1 , 2 , 3 , 5
DUAL PRESSURE(#3 PORT)	1 , 2 , 4 , 5
DUAL PRESSURE(#5 PORT)	1 , 2 , 3 , 4

# How To Order ISO-02 Plug-in Valve

## (ISO Standard 15407-2 Size 18)

MV - X 02A - X X X X - RXXX-XXX



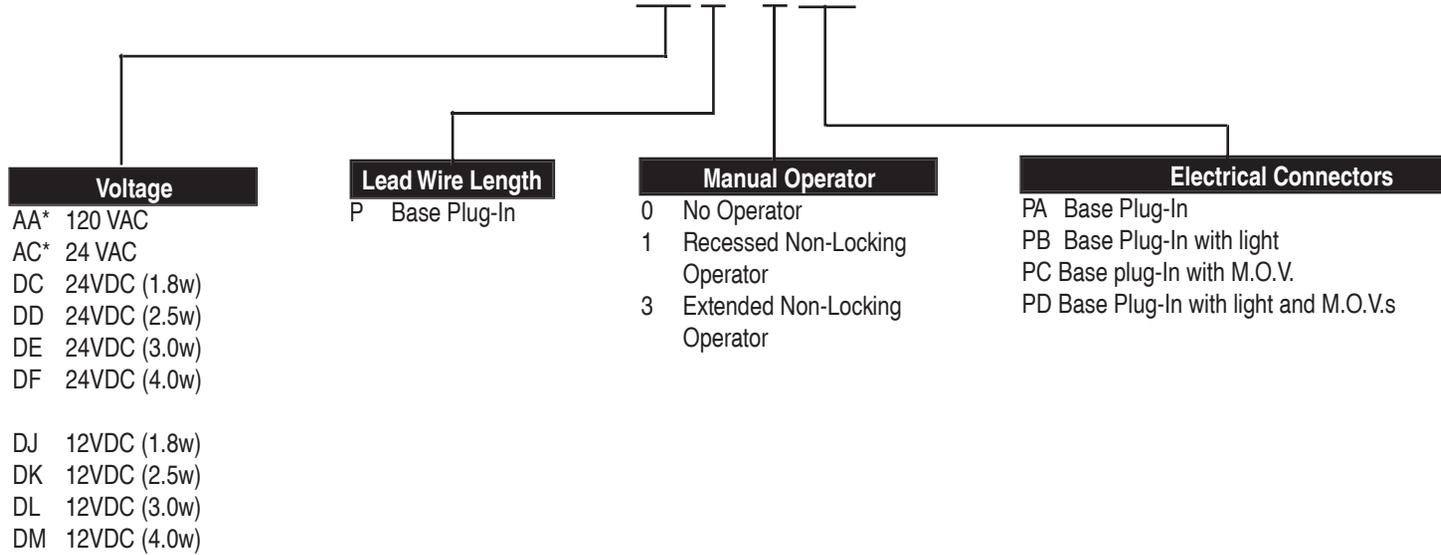
Note: If sandwich regulator is required valve must be ordered as external pilot. For internal pilot regulator use option "D". For external pilot regulator use option "D" or "E".

Note: External pilot regulator is only required when the primary pressure is below the minimum operating pressure of the valve.

# How to Order

## Solenoid Assembly (For ISO 01 and 02 Plug-In Valves)

**R XX X - X XX**



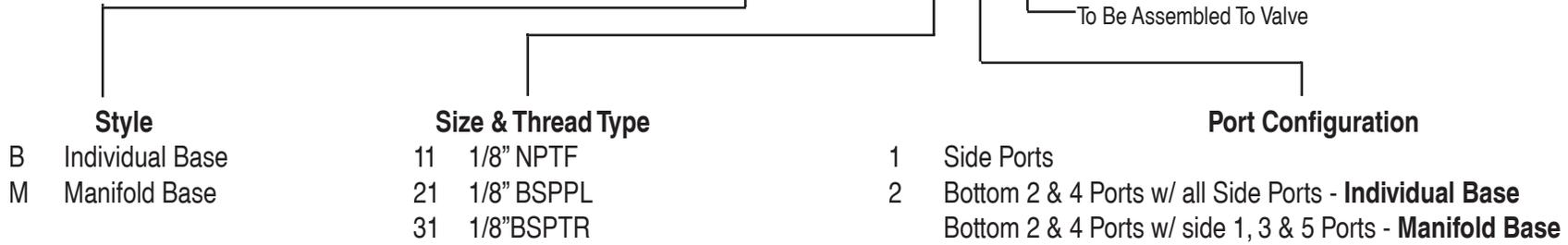
\* Use either PA or PB Connector only

# How To Order ISO-02 Plug-in Base/Manifold

## (ISO Standard 15407-2 Size 18)

**M X - P02 A - XX X (-9)**

To Be Assembled To Valve



Note: For Manifold Bases External Pilot is Common

### Parts

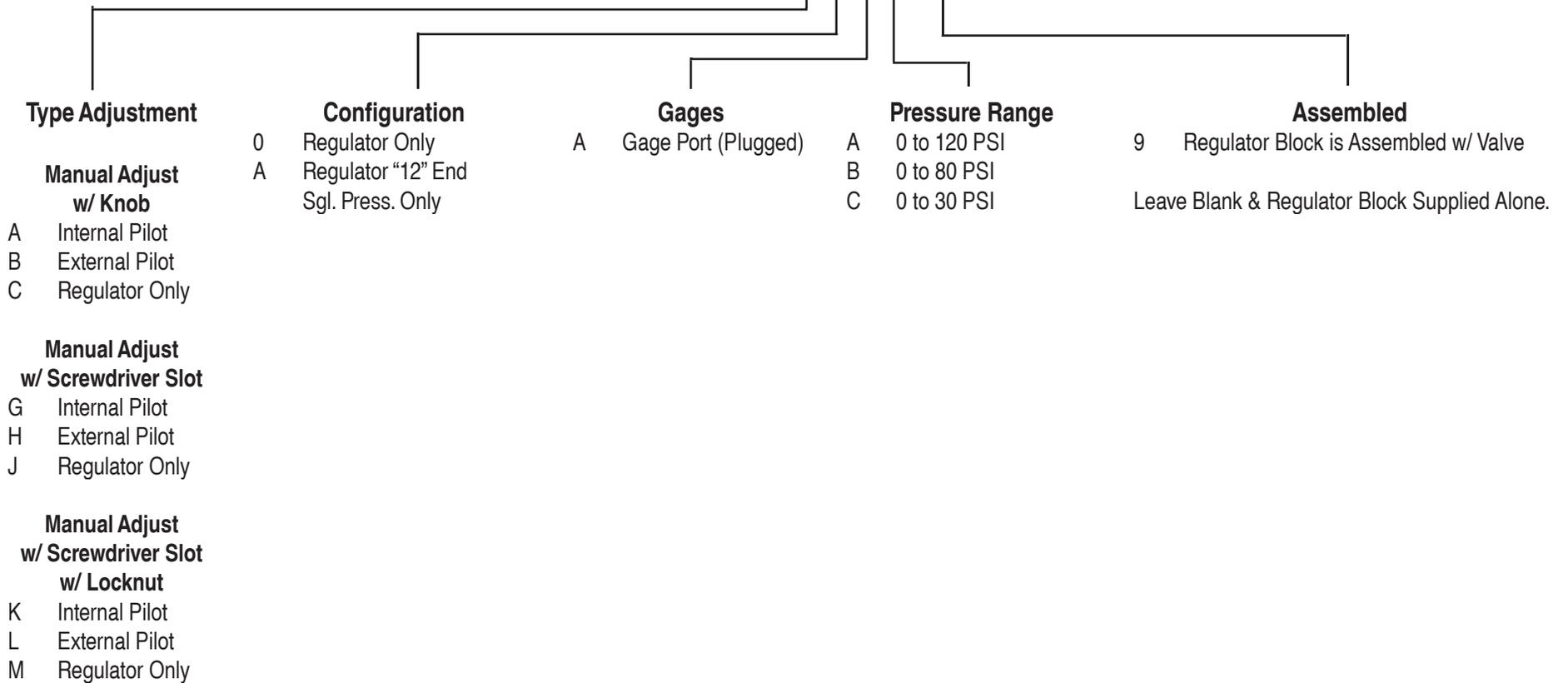
M-00021-01-01\* Internal Pilot End Plate Kit  
M-00021-02-01\* External Pilot End Plate Kit

\* Leave blank for NPTF threads, add "P" for BSPPL threads, add "T" for BSPTR threads.

# How To Order ISO-02 Plug-in Regulator

## (ISO Standard 15407-2 Size 18)

PRP02A - X X X X - X



## PRECAUTIONS AND WARNINGS CONCERNING THE APPLICATION, INSTALLATION AND SERVICE OF MAC VALVES AND OTHER MAC VALVES PRODUCTS

The warnings and precautions below are important to be read and understood before designing into a system any MAC Valves products, and before installing or servicing any MAC Valves product. Improper use, installation or servicing of any MAC Valves product in some systems could create a hazard to personnel or equipment. No distinction in importance should be made between the terms warnings and precautions.

### WARNING :

Under no circumstances are MAC Valves products to be used in any application or in any manner where failure of the MAC Valves product to operate as intended could in any way jeopardize the safety of the operator or any other person or property.

- Do not operate outside of pressure range listed on a valve label or outside of the designated temperature range.
- Air supply must be clean and dry. Moisture or contamination can affect proper operation of the valve.
- Before attempting to repair, adjust or clean a MAC Valves product, consult catalog, parts & operation sheet, or factory for proper maintenance procedures, lubrication and cleaning agents. Never attempt to repair or perform other maintenance with air pressure to the valve.
- If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

### APPLICATION PRECAUTIONS :

#### INDUSTRIAL USE -

- MAC Valve products are intended for general use in industrial pneumatic and/or vacuum systems. They are general purpose industrial products with literally thousands of different applications in industrial systems. These products are not inherently dangerous, but they are only a component of an overall system. The system in which they are used must provide adequate safeguards to prevent injury or damage in the event failure occurs, whether it be failure of switches, regulators, cylinders, valves or any other component.

#### POWER PRESSES -

MAC Valve products are not designed nor intended to be used to operate and/or control the operation of clutch and/or brake systems on power presses. There are special products on the market for such use.

#### 2-POSITION VALVES -

Some MAC valves are 2-position, 4-way valves. When air is supplied to the inlet port(s) of these valves, there will always be a flow path from the inlet to one of the outlets regardless of which of the two positions the valve is situated. Therefore, if pressurized air retained in the system would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the trapped air.

#### 3- POSITION VALVES-

Some MAC valves are 3-position, 4-way valves. These valves are either double solenoid or double remote air operated.

If either of the two operators is in control, air supplied to the inlet port(s) will pass through the valve to one of the outlets as on 2-position, 4-way valves. However, if neither operator is in control, the valve moves to a center position. Listed below are the various center position functions :

#### A. CLOSED CENTER-

With this type valve, when in the center position all ports are blocked (inlets and exhausts) meaning the air at both outlet ports is trapped. If trapping the air in both outlet ports would present a hazard in the application or servicing, a separate method in the system must be provided to remove the trapped air or this type valve should not be used.

#### B. OPEN CENTER-

With this type valve, when in the center position, the inlet port(s) is blocked and the two outlet ports are open to the exhaust port(s) of the valve. If having no air in either outlet port would present a hazard in the application or servicing, this type valve should not be used.

#### C. PRESSURE CENTER-

With this type valve, when in the center position, the inlet port(s) is connected to both outlet ports of the valve. If having pressurized air to either or both outlet ports would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the retained air or this type valve should not be used.

#### OPERATING SPECIFICATIONS -

MAC Valves products are to be installed only on applications that meet all operating specifications described in the MAC catalog for the MAC Valves product.

#### MANUAL OPERATORS-

Most MAC valves can be ordered with manual operators. Manual operators when depressed, are designed to shift the valve to the same position as would the corresponding solenoid or remote air pilot operator if it were activated. Care must be taken to order a type, if any, that will be safe for the physical location of the manual operator in the system. If intentional or accidental operation of a valve by a manual operator could cause personal injury or property damage, a manual operator should not be used.

#### REMOTE AIR OPERATED VALVES

Pilot valves supplying signal pressure to remote air operated valves should be 3-way valves with adequate supply and exhaust capacity to provide positive pressurizing and exhausting of the pilot supply line. Pilot lines should be open to exhaust when valves are deenergized.

#### INSTALLATION PRECAUTIONS :

- A. Do not install any MAC Valves product without first turning off air (bleed system completely) and electricity to the machine.
- B. MAC Valves products should only be installed by qualified, knowledgeable personnel who understand how the specific valve is to be pneumatically piped and electrically connected (where applicable). Flow paths through the valve are shown in the catalog and on the valve by use of ANSI or ISO type standard graphic symbols. Do not install unless these symbols and the valve functions and operations are thoroughly understood.
- C. If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

#### SERVICE PRECAUTIONS :

- A. Do not service or remove from service any MAC Valves product without first shutting off both the air and electricity to the valve and making certain no pressurized air which could present a hazard is retained in the system.
- B. MAC Valves products should only be serviced or removed from service by qualified, knowledgeable personnel who understand how the specific product is used and/or how the specific valve is piped and used and whether there is air retained in the connecting lines to the valve or electric power still connected to the valve.
- C. Before attempting to repair, adjust or clean a MAC Valves product, consult catalog, parts & operation sheet, or factory for proper maintenance procedures, lubrication and cleaning agents. Never attempt to repair or perform other maintenance with air pressure to the valve.
- D. MAC Valves products are never to be stepped on while working on a machine. Damage to a MAC valve, or other product or lines to the product (either air or electrical lines) or accidental activation of a manual operator on the valve could result in personal injury or property damage.



# MAC Valves Product Warranty Information

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## MAC VALVES Warranty, Warranty Limitations, Flat Rate Rebuild Program

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The MAC Valves organization has established a reputation over many years for fulfilling the needs and requirements of the users of its products. All MAC Valves are quality products specifically designed and built for long and rugged service. For this reason, MAC Valves is able to provide the Buyer a limited warranty.

### WARRANTY:

MAC Valves, Inc. hereby warrants to Buyer that, for a period of 18 months from the original date of shipment of each valve from our factory ("Warranty Period"), such valve will be free from significant defects in material and workmanship and will conform to all specifications agreed to by MAC Valves, Inc.. In addition, MAC Valves, Inc. warrants that the electrical coils on such valves will be free from significant defects in material and workmanship for their normal useful life. EXCEPT FOR THESE LIMITED WARRANTIES, MAC VALVES, INC. EXPRESSLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES OF ANY KIND (WHETHER EXPRESS, IMPLIED OR ARISING BY OPERATION OF LAW) WITH RESPECT TO THE VALVES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER. THIS SECTION SURVIVES THE EXPIRATION, TERMINATION OR CANCELLATION OF ANY AGREEMENTS BETWEEN THE PARTIES RELATING TO THE PURCHASE OF THE VALVES.

### WARRANTY LIMITATIONS:

This Warranty does not apply where the valves have been (i) subjected to abuse, misuse, damage, neglect, negligence, accident, improper testing, improper installation, improper storage, improper handling, abnormal physical stress, abnormal environmental condition, or use contrary to any instructions issued by MAC Valves, Inc.; (ii) modified, reconstructed, repaired, or altered by persons other than MAC Valves, Inc. or its authorized representative; or (iii) used with any third-party product, hardware, software or other product that has not been previously approved in writing by MAC Valves, Inc. Additionally, this Warranty does not cover claims for labor, material, time or transportation, and does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc.

### EXCLUSIVE REMEDY:

The Buyer's sole remedy under this Warranty is limited to the replacement or rebuilding of any valve which does not conform to the warranties provided herein or, in MAC Valves, Inc.'s sole discretion, refund of the purchase price for the non-conforming valve. Buyer's remedy is conditioned on Buyer's compliance with its obligations under this Warranty. Valves that Buyer believes do not conform to this Warranty must be returned (with or without bases) transportation prepaid and received at our factory within the Warranty Period. If MAC Valves, Inc. determines that the valve is non-conforming and is otherwise covered by this Warranty, the rebuilt or replaced valve will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same warranties as provided under the Flat Rate Rebuild Program described below. MAC VALVES, INC. WILL NOT BE RESPONSIBLE FOR ANY INCIDENTAL, SPECIAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION DIRECT AND INDIRECT LOST PROFITS, REGARDLESS OF WHETHER THOSE DAMAGES WERE FORESEEABLE.

### THE FLAT REBUILD PROGRAM:

Valves no longer covered by the MAC Warranty may be eligible for a one-time rebuild under the MAC Valves, Inc. Flat Rate Rebuild Program. Our constant research and testing program is dedicated to extending the life of our valves and maximizing their reliability under the most adverse conditions. Valves returned under this limited program are completely disassembled, inspected, rebuilt to current operating standards whenever possible, tested and returned within a few weeks for a nominal flat rate charge. All rebuilt valves carry the same warranty described (in our MAC Warranty) for new valves for a warranty period of 90 days from the date of shipment from our factory.

Valves that have gone through the one-time rebuild will have been marked with a letter "R" as part of the date stamp (This is an example of a rebuild date stamp from this month E(May)17(Year)Tester Symbol R(Indicates Rebuild)).



Please note that any valves sent back for subsequent rebuild that have already been through the program previously (indicated by the "R") will not be eligible for additional rebuild.