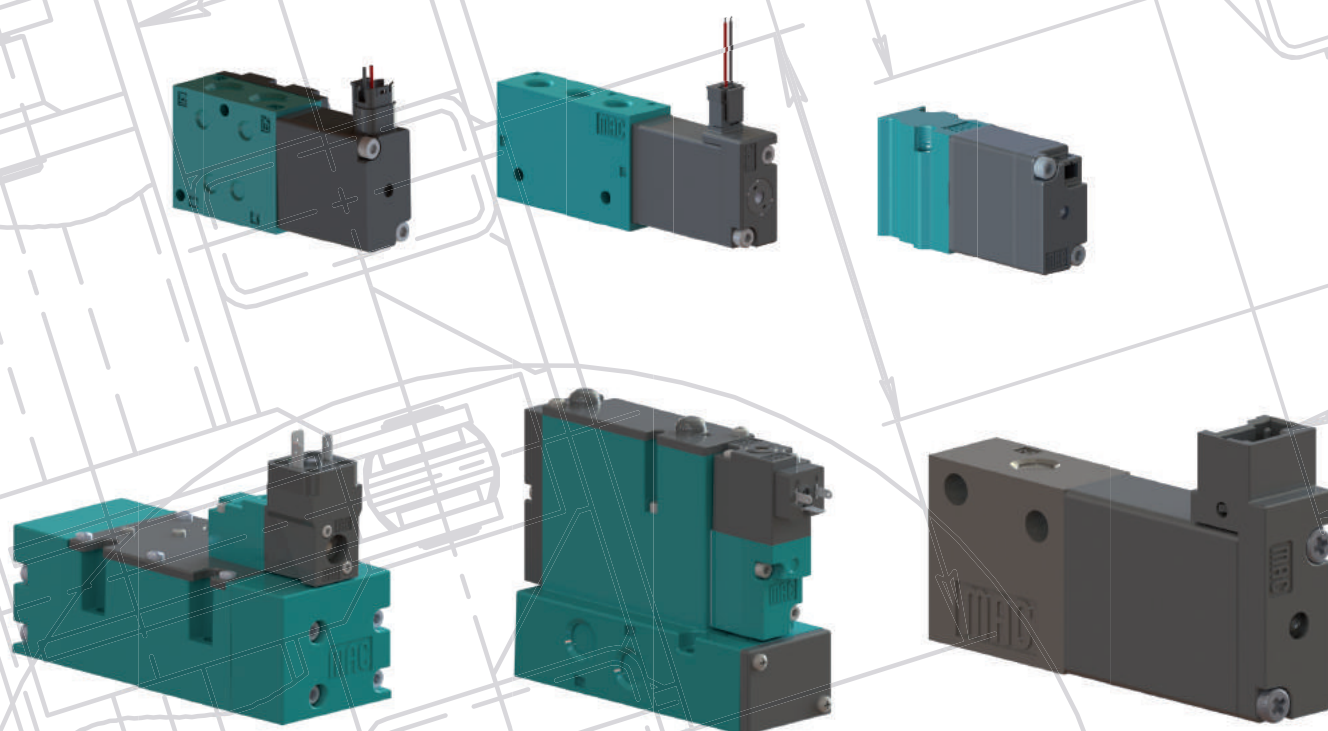




MAC

New Technology Catalog



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

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

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

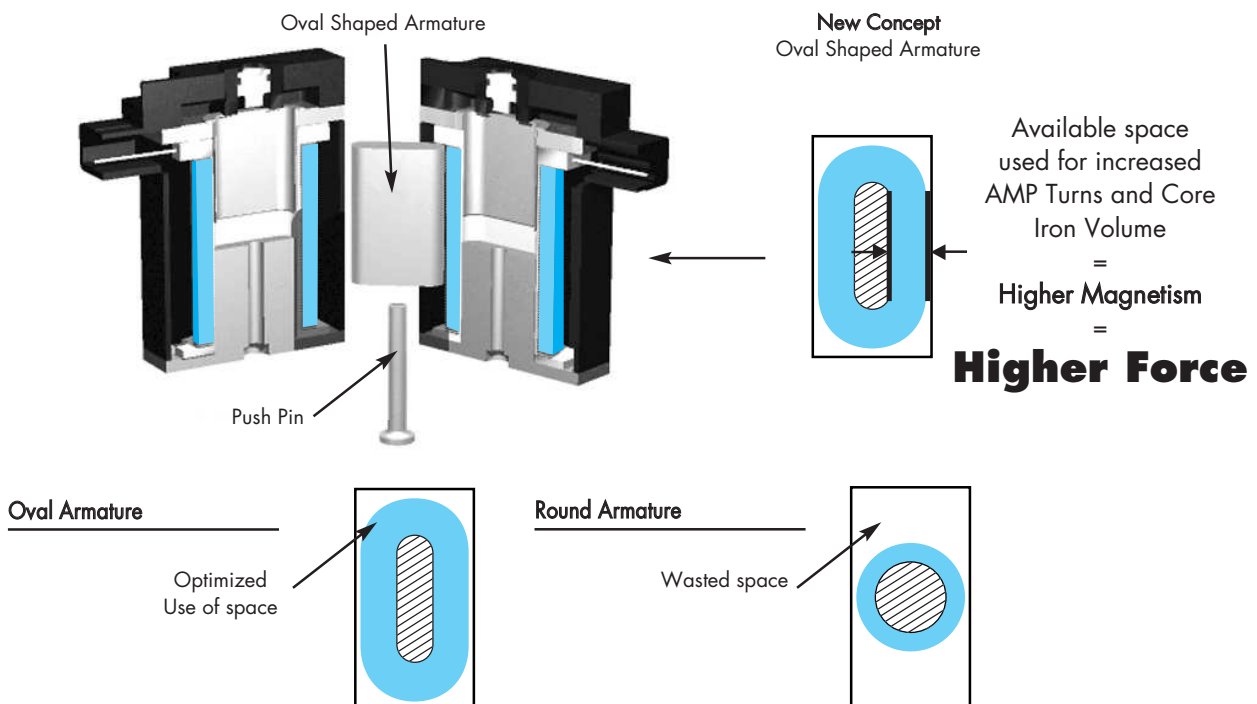
Many of these performance advantages are based on MAC's high shifting forces. MAC's patented oval shaped armature solenoid and 4-way pilot technologies are two new concepts which result in extremely high shifting forces in small packages.

I. OVAL SHAPED ARMATURE SOLENOID —Maximized Shifting Forces

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

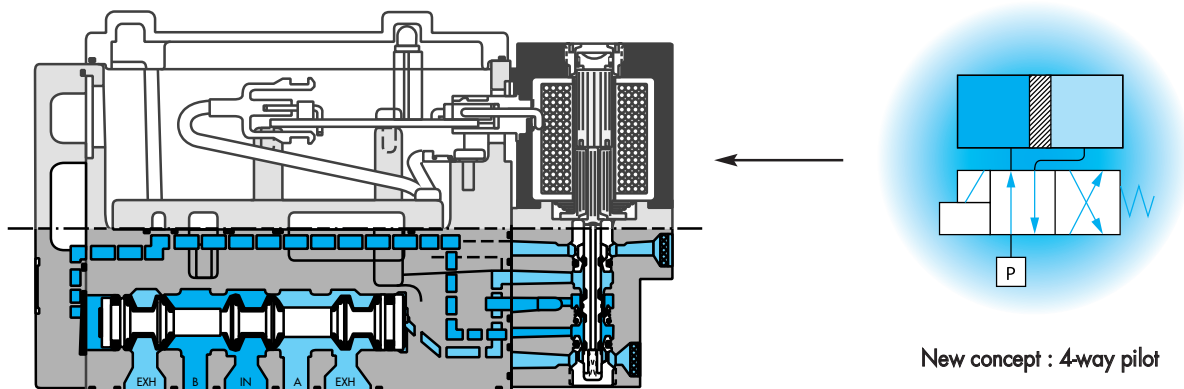
- Increased coil windings (amp turns)
- Increased core iron volume

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



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

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

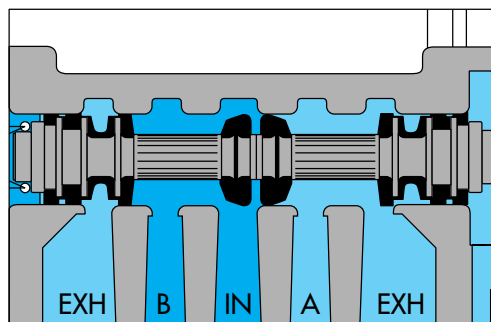


III. MAC'SPATENDED BONDED SPOOL AND BORE – Balanced, Wiping Action, Minimized Friction

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

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

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



MAC's Bonded Spool and Bore

- Balance
- Wiping Action
- Minimized Friction
- Long Life

TLD 5

Traveling Lab Demonstration measures critical valve performance characteristics - Response time, repeatability and flow.



Powerful tool that includes all necessary components to:

- ✓ *Make on-site measurements*
- ✓ *Show the benefits of the MAC valves*
- ✓ *Illustrate high shifting forces and balanced design*
- ✓ *Compare MAC valves with competition products*
- ✓ *In a compact and easy to transport package*



MAC Valves 18 month guarantee plus lifetime coil guarantee

The MAC Valves organization has established a reputation over many years for fulfilling the needs and requirements of the users of its products. All MAC Valves are quality products specifically designed and built for long and rugged service. Therefore, all valves appearing in this catalog are guaranteed for a period of eighteen months from the original date of shipment from our factory. In addition to this eighteen month Guarantee, MAC Valves, Inc. guarantees the electrical coils on every one of the valves listed in this catalog for life. **LIMITATION OF GUARANTEE:** This Guarantee is limited to the replacement or rebuilding of any valve which should fail to operate properly. Valves, under the MAC Guarantee, must be returned (with or without bases) transportation prepaid and received at our factory within the 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 way function (or 3 way), it will not affect the valve operation.

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

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

- 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)

- Direct solenoid valves 4 ways :
The following functions are available

- 4 ways
- 3 ways NC
- 3 ways NO
- 2 ways NC
- 2 ways NO
- Divertor

- Pilot operated valves 4 & 5 ways :
The following functions are available

- 4 or 5 ways
- 3 ways NC
- 3 ways NO
- 2 ways NC
- 2 ways NO
- Selector (except 3 positions)
- Divertor (consult factory).

EVERY VALVE FULLY TESTED PRIOR TO SHIPMENT

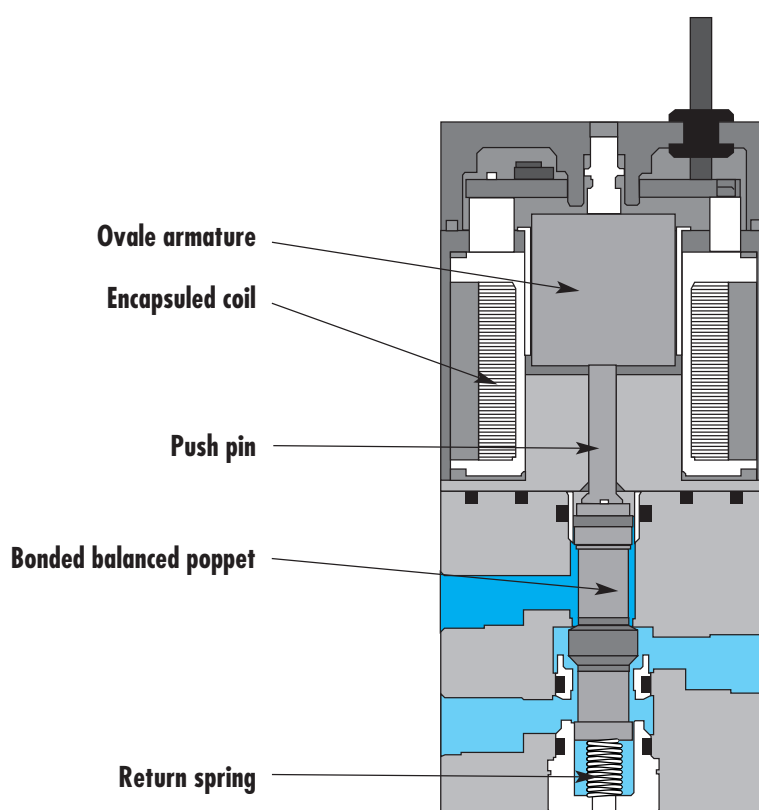
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| Series 31 | 3/2 - 20 to 50 NI/min | 8 |
| Series 33 | 3/2 - 82 NI/min | 12 |
| Series 34 | 3/2 or 2/2 - 120 NI/min | 16 |
| Series 36 | 3/2 - 300 NI/min | 37 |
| Series 32 | 3/2 - 500 NI/min | 47 |
| Series 37 | 3/2 - 500 NI/min | 57 |
| Series 38 | 3/2 - 1200 NI/min | 65 |
| Series 52 | 3/2 or 2/2 - 1500 NI/min | 73 |
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| Series 92 | 5/2 or 5/3 - 1200 NI/min | 235 |
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| Series 93 | 5/2 or 5/3 - 1500 NI/min | 265 |
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| Series ISO 2 | 5/2 or 5/3 - 3000 NI/min | 338 |
| Series ISO 3 | 5/2 or 5/3 - 6100 NI/min | 358 |

Direct solenoid and solenoid pilot operated valves 6 mm valve

Individual mounting

| | |
|--------|--|
| inline | |
|--------|--|



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- 6 mm direct operated valve.
- Very fast response times.

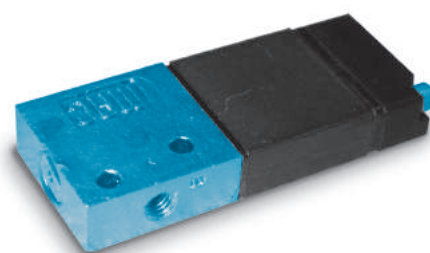


Direct solenoid and solenoid pilot operated valves 6 mm valve

| Function | Port size | Flow [Max] | Mounting |
|---------------|------------|-----------------------|-------------------|
| 3/2 NC | M 3 | 20 to 50 l/min | Individual inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | NC only valve |
|-----------|---|
| M3 |  31A-AAB-T XXX-XXX |

SOLENOID OPERATOR ➤

T **XXX-XXX ***

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

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

For high-speed differential air assist models only

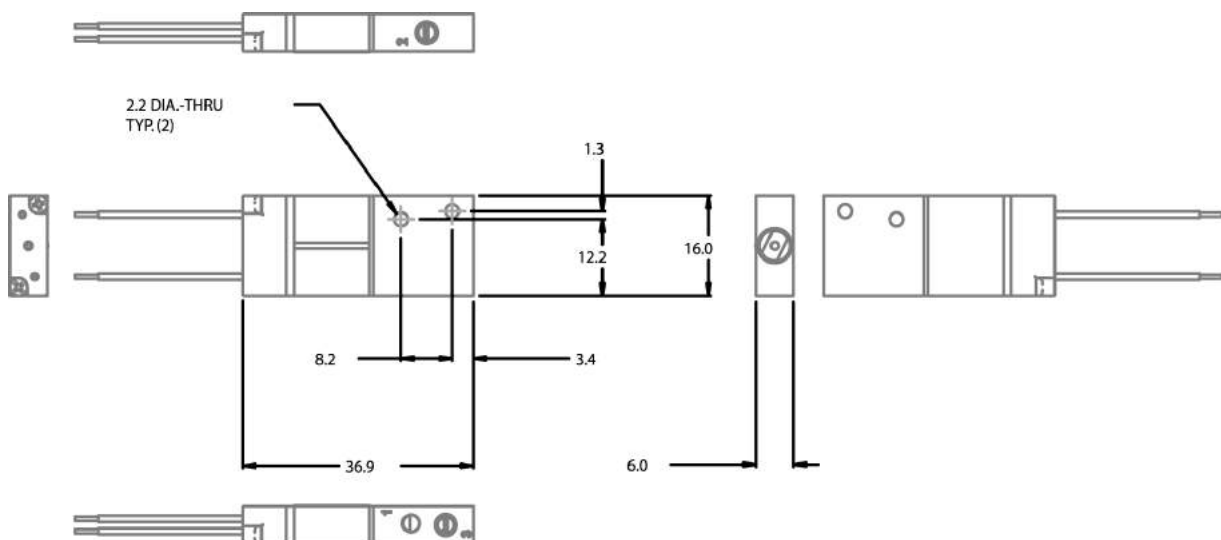
| |
|---------------------|
| FA 24V=/60W |
| FB 24V=/90W |
| FC 24V=/230W |

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

* Other options available, see page options

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

DIMENSIONS Dimensions shown are metric (mm)





0 p t i o n s

Codification table for voltages / Manual operators / Electrical connections

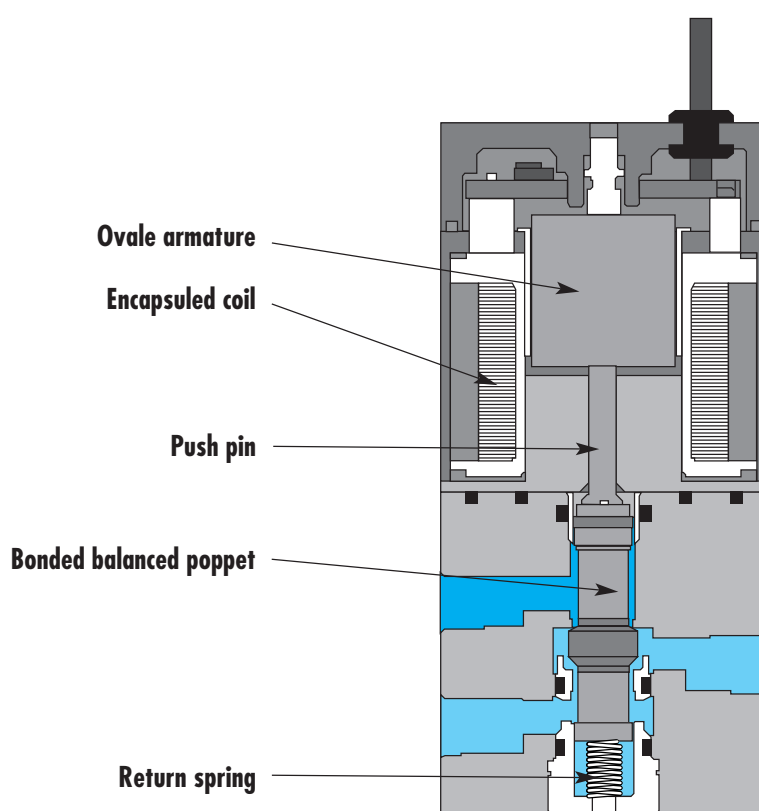
VALVE CODE ► **T XX X - X XX**
1 2 3 4

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|---|---------------|--------------------------|-----------------------|
| T XX X - XXX | VOLTAGE | T XX X - XXX | MANUAL OPERATOR |
| DC | 24 VDC (1.8W) | 0 | No operator |
| DD | 24 VDC (2.5W) | 1 | Recessed non-locking |
| DE | 24 VDC (3.0W) | 3 | Extended non-locking |
| DF | 24 VDC (4.0W) | | |
| DJ | 12 VDC (1.8W) | 4. ELECTRICAL CONNECTION | |
| DK | 12 VDC (2.5W) | T XX X - XXX | ELECTRICAL CONNECTION |
| DL | 12 VDC (3.0W) | BA | Flying leads |
| DM | 12 VDC (4.0W) | | |
| FA* | 24 VDC (60W) | | |
| FB* | 24 VDC (90W) | | |
| FC* | 24 VDC (230W) | | |
| * MOD numbers required for these voltages (consult factory) | | | |
| 2. WIRE LENGHT | | | |
| T XX X - XXX | WIRE LENGHT | | |
| A | 45 cm - 18" | | |
| B | 60 cm - 24" | | |
| C | 90 cm - 36" | | |
| D | 120 cm - 48" | | |
| E | 180 cm - 72" | | |
| F | 240 cm - 96" | | |
| G | 300 cm - 120" | | |
| H | 365 cm - 144" | | |

Direct solenoid and solenoid pilot operated valves 8 mm valve

Individual mounting

inline



SERIES FEATURES

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

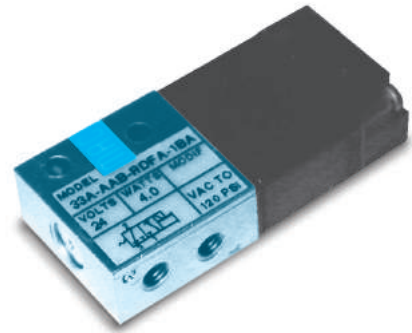


Direct solenoid and solenoid pilot operated valves 8 mm valve

| Function | Port size | Flow [Max] | Individual mounting |
|---------------|------------|------------------|---------------------|
| 3/2 NC | M 3 | 82 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | NC only valve | NC only valve** |
|-----------|--------------------------|--------------------------|
| | | |
| M3 | 33A-AAB-R xxx-xxx | 33A-BAB-R xxx-xxx |

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

SOLENOID OPERATOR ➤

Rxxx-xxx*

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

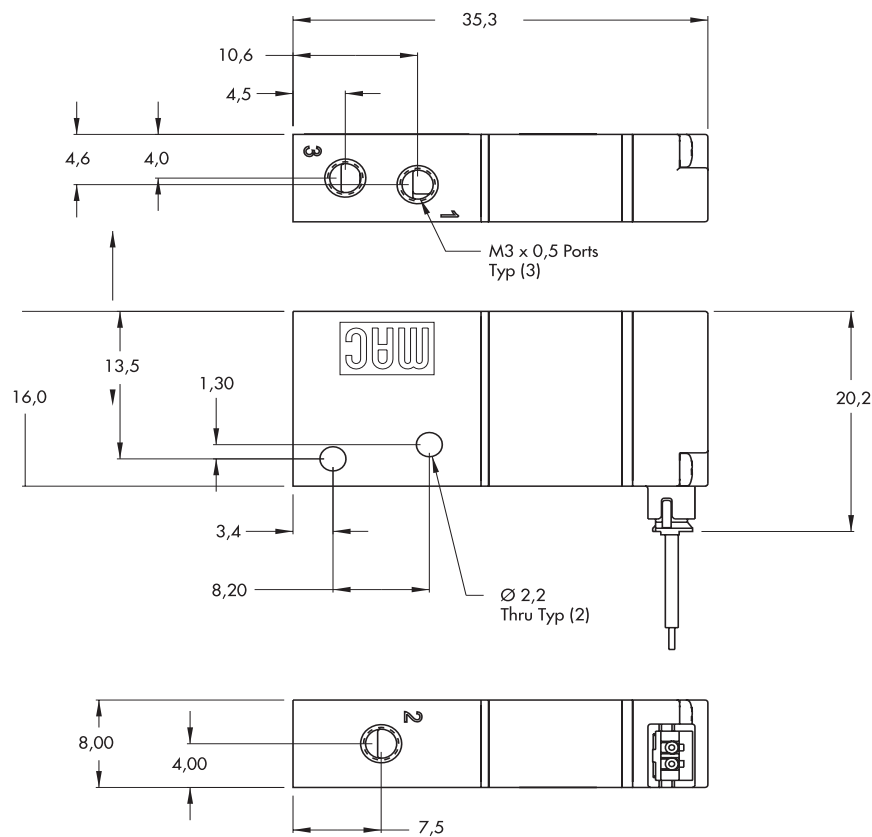
* Not available for flying leads connectors

* Other options available, see page **options**

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

| TECHNICAL DATA | |
|---------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow : | 4W: 82 NL/min (0.82 Cv) - 3W: 62 NL/min (0.62 Cv) - 2.5W: 62 NL/min (0.62 Cv) - 1.8W: 55 NL/min (0.55 Cv) - 1.0W: 30 NL/min (0.3 Cv) - 0.5W: 20 NL/min (0.2 Cv) |
| Coil : | Class A wire (#26 AWG x18), continuous duty |
| Voltage range : | -15% to +10% of nominal voltage |
| Power : | 4.0W - 3.0W - 2.5W - 1.8W - 1.0W - 0.5W |

| DIMENSIONS | Dimensions shown are metric (mm) |
|------------|----------------------------------|
|------------|----------------------------------|



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ► **R XX X - X XX**
1 2 3 4

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|---|---------------|--|---------------------------------------|
| R XX X - XXX | VOLTAGE | R XX X - XXX | MANUAL OPERATOR |
| DB | 24 VDC (1.0W) | 0 | No operator |
| DC | 24 VDC (1.8W) | 1 | Non-locking recessed |
| DD | 24 VDC (2.5W) | 3 | Non-locking extended |
| DE | 24 VDC (3.0W) | | |
| DF | 24 VDC (4.0W) | | |
| DH | 12 VDC (1.0W) | | |
| DJ | 12 VDC (1.8W) | | |
| DK | 12 VDC (2.5W) | | |
| DL | 12 VDC (3.0W) | | |
| DM | 12 VDC (4.0W) | | |
| EA* | 24 VDC (60W) | | |
| EB* | 24 VDC (90W) | | |
| EC* | 24 VDC (230W) | | |
| * MOD numbers required for these voltages (consult factory) | | | |
| 2. WIRE LENGHT | | 4. ELECTRICAL CONNECTION | |
| R XX X - XXX | WIRE LENGHT | ELECTRICAL CONNECTION FOR NON PLUG-IN VALVES | |
| 0* | No lead wire | R XX X - XXX | |
| A | 45 cm - 18" | BA | Flying leads |
| B | 60 cm - 24" | BB | Flying leads with LED |
| C | 90 cm - 36" | BC | Flying leads with MOV |
| D | 120 cm - 48" | BD | Flying leads with LED and MOV |
| E | 180 cm - 72" | DA | Base plug-in |
| F | 240 cm - 96" | DB | Base plug-in with LED |
| G | 300 cm - 120" | DC | Base plug-in with MOV |
| H | 365 cm - 144" | DD | Base plug-in with LED and MOV |
| P | Base plug-in | RA | Mini JAC solenoid |
| * Not available for flying leads connector | | RB | Mini JAC solenoid with LED |
| | | RC | Mini JAC solenoid with MOV |
| | | RD | Mini JAC solenoid with LED and MOV |
| | | TA | JST solenoid plug-in |
| | | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |
| | | ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| | | R XX X - XXX | |
| | | PA | Base plug-in |
| | | PB | Base plug-in with light |
| | | PC | Base plug-in with MOV |
| | | PD | Base plug-in with light and MOV |

MAC 34 Series

MAC

34 Series

2/2-way & 3/2-way direct solenoid operated

| | |
|---------------------------|--|
| Available configurations: | Individual inline, individual base mounted and manifold base mounted |
| Port sizes: | M5, 10-32 UNC ports |
| Flow: | Up to 120 NI/min (0.12 Cv) |
| Pressure range: | Vacuum to 8 bar |
| Function: | 3/2 normally closed, 3/2 universal |
| Operation: | Electrical |



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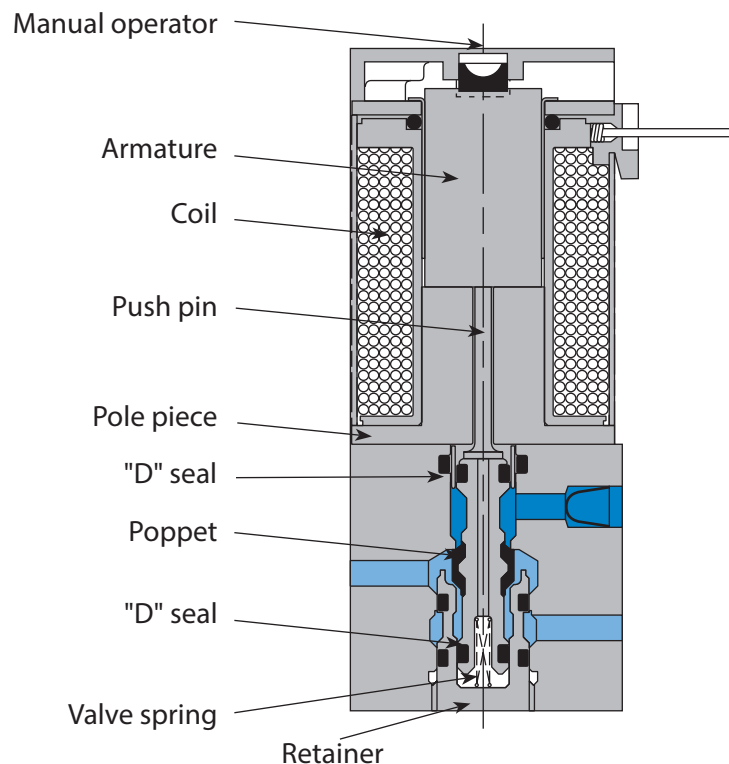
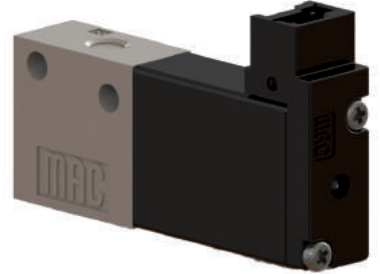
- *MAC 34 Series - Inline valve*
- *MAC 34 Series - Manifold non plug-in valve*
- *MAC 34 Series - Manifold plug-in valve*
- *MAC 34 Series - Universal 3/2 & 2/2*
- *MAC 34 Series - How to order*
- *MAC 34 Series - Solenoid options*
- *MAC 34 Series - Codification of valve (connectors)*

MAC 34 Series - Inline valve

3-way, 2 position, poppet

Flow up to 120 NI/min (0.12 Cv)

- ◇ Short stroke with high flow
- ◇ Balanced poppet, immune to variations of pressure allowing pressure and vacuum operation
- ◇ Bonded poppet with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect, valve immune to contamination
- ◇ Long service life
- ◇ Direct operated valve
- ◇ 2/2-way function available
- ◇ Short stroke for high energization shifting force
- ◇ Strong return spring for high de-energization shifting force
- ◇ Universal poppet allowing normally closed & normally open operation



MAC 34 Series - Inline valve

Technical data

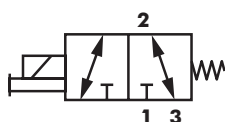
| | |
|---------------------------|--|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Vacuum to 8 bar |
| Lubrication: | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to 50°C |
| Flow (at 6 bar, ΔP=1bar): | 120 NI/min (0.12 Cv) |
| Coil: | Epoxy encapsulated - Class H wires |
| Voltage range: | -15% to +10% of nominal voltage |
| Power: | 1.0 to 4.0 W |
| Response times: | 24 V= /4 W Energize: 4.5 ms De-energize: 1.5 ms |

Solenoid direct operated valve

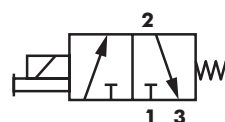
Single pressure models

3/2

Universal valve



Normally closed only valve



Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

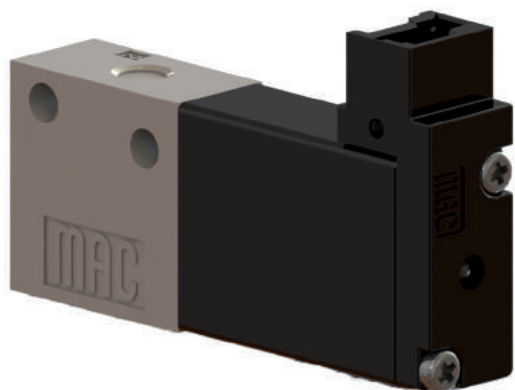
Individual inline valve can be changed from normally closed to normally open by connecting the inlet to port 3 instead of port 1 (universal only).

NORMALLY CLOSED ONLY MODELS

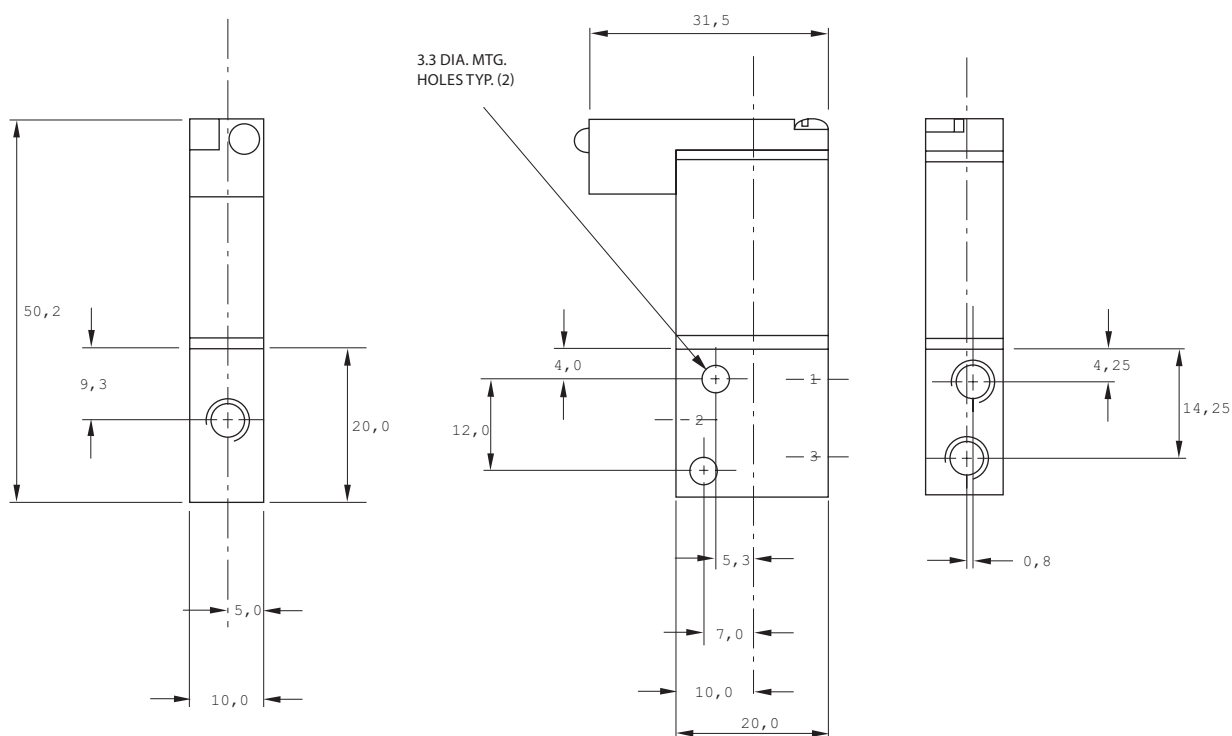
A single purpose normally closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired.

MAC 34 Series - Inline valve

Dimensions



All dimensions are in mm



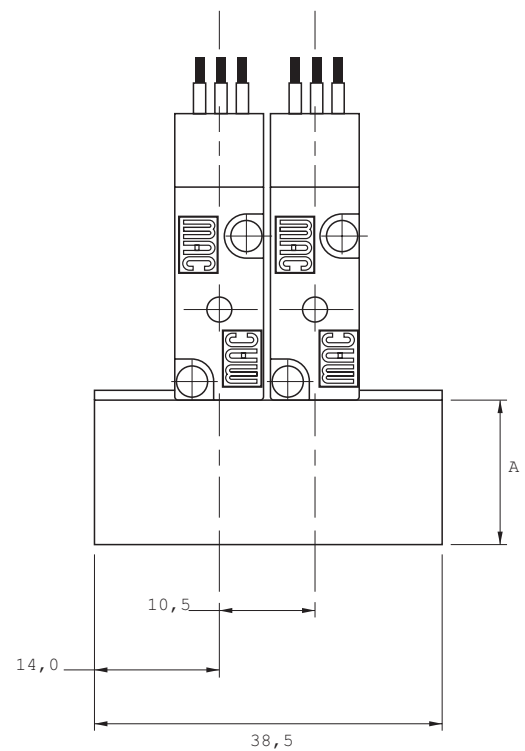
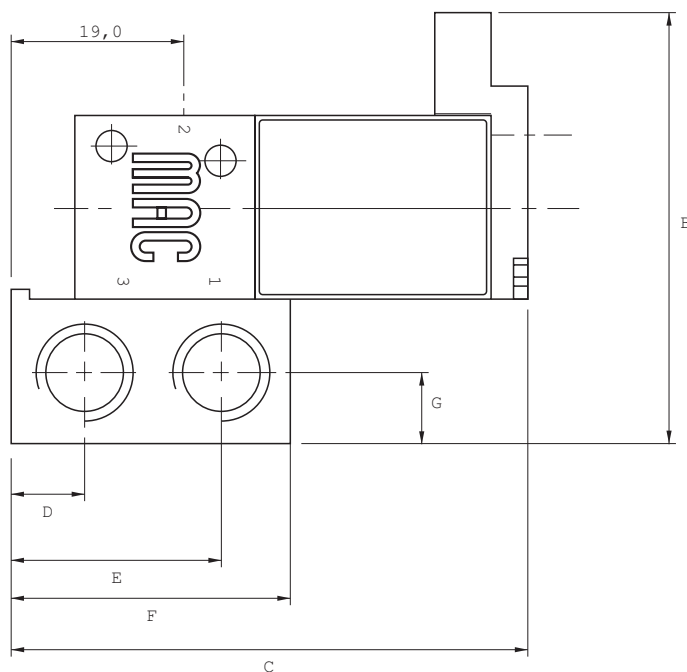
MAC 34 Series - Inline valve

Options

Cylinder ports in valve / manifold inline valve



All dimensions are in mm

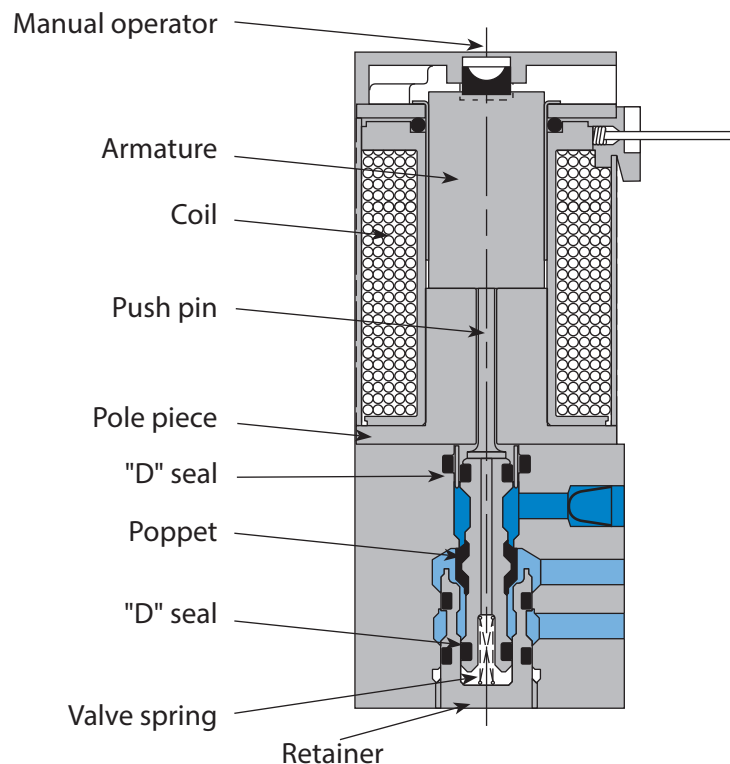
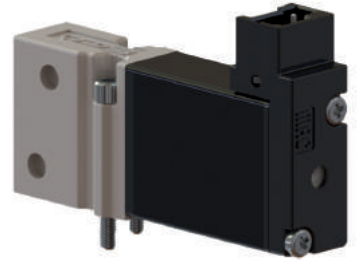


MAC 34 Series - Manifold non plug-in valve

3-way, 2 position, poppet

Flow up to 120 NI/min (0.12 Cv)

- ◇ Short stroke with high flow
- ◇ Balanced poppet, immune to variations of pressure allowing pressure and vacuum operation
- ◇ Bonded poppet with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect, valve immune to contamination
- ◇ Long service life
- ◇ Direct operated valve
- ◇ 2/2-way function available
- ◇ Short stroke for high energization shifting force
- ◇ Strong return spring for high de-energization shifting force
- ◇ Universal poppet allowing normally closed & normally open operation



MAC 34 Series - Manifold non plug-in valve

Technical data

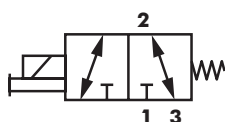
| | |
|----------------------------------|--|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Vacuum to 8 bar |
| Lubrication: | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to 50°C |
| Flow (at 6 bar, ΔP=1bar): | 120 NI/min (0.12 Cv) |
| Coil: | Epoxy encapsulated - Class H wires |
| Voltage range: | -15% to +10% of nominal voltage |
| Power: | 1.0 to 4.0 W |
| Response times: | 24 V= /4 W Energize: 4.5 ms De-energize: 1.5 ms |

Solenoid direct operated valve

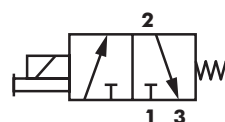
Single pressure models

3/2

Universal valve



Normally closed only valve



Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

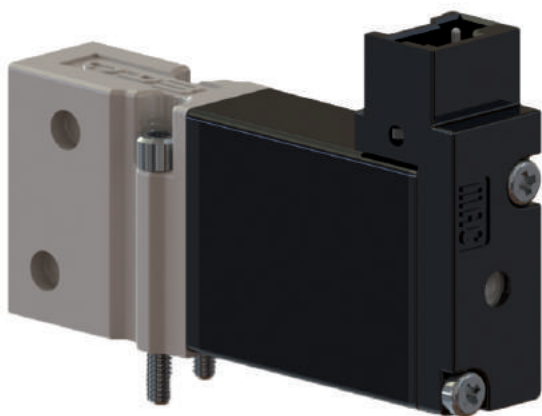
Manifold valve can be changed from normally closed to normally open by connecting the inlet to port 3 instead of port 1 (universal only).

NORMALLY CLOSED ONLY MODELS

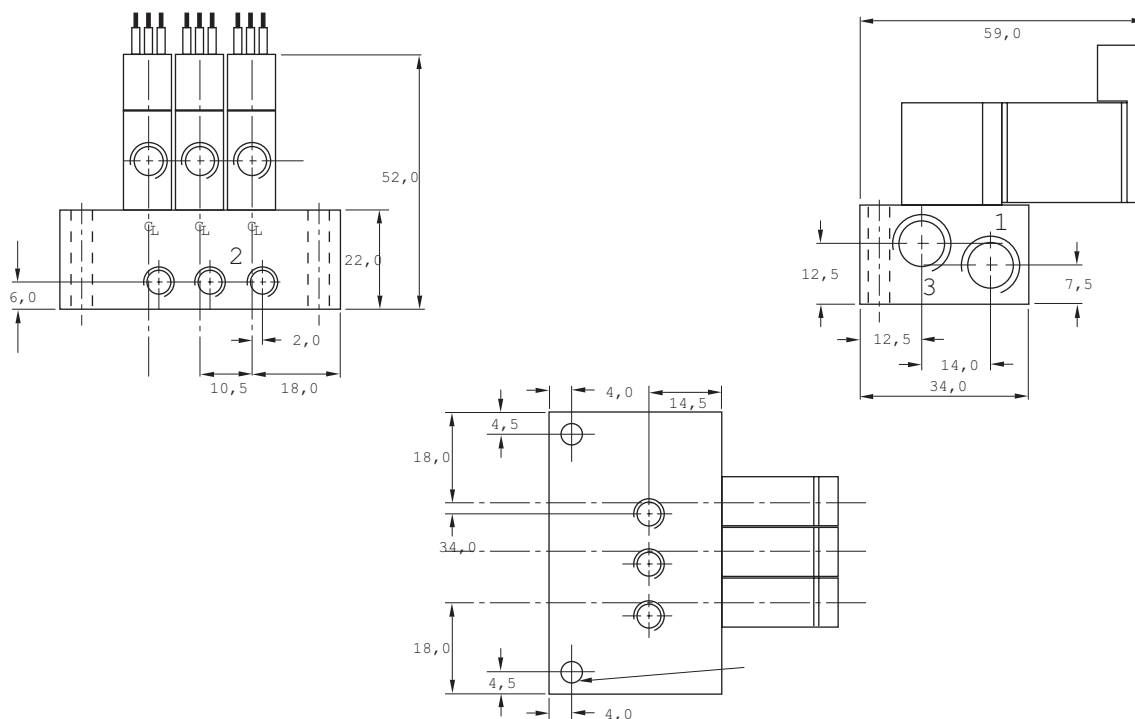
A single purpose normally closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired.

MAC 34 Series - Manifold non plug-in valve

Dimensions



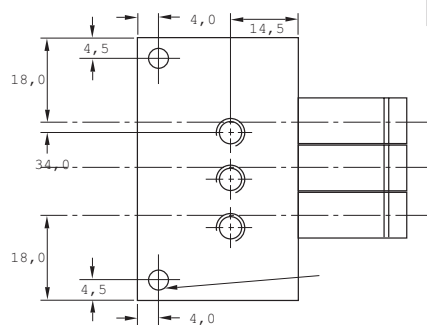
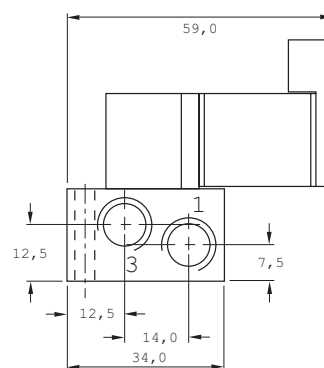
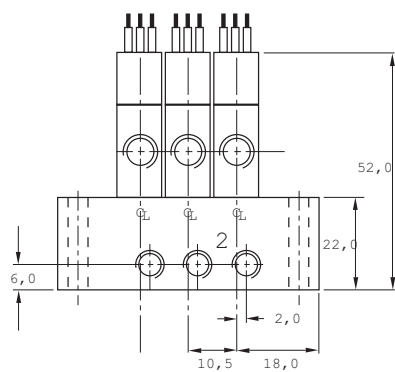
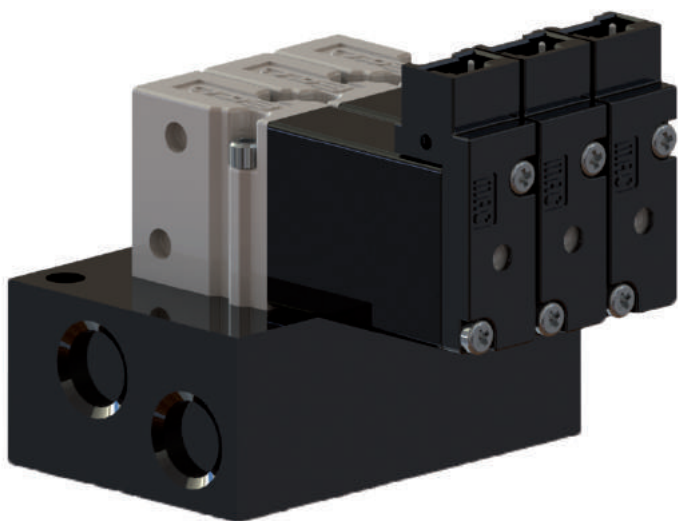
All dimensions are in mm



MAC 34 Series - Manifold non plug-in valve

Options

Cylinder ports in base / manifold non plug-in valve



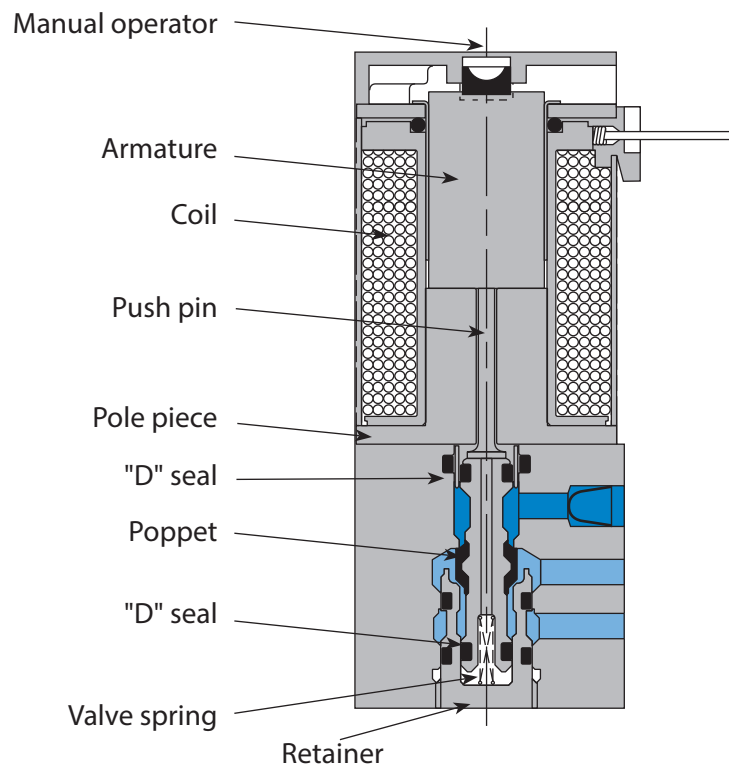
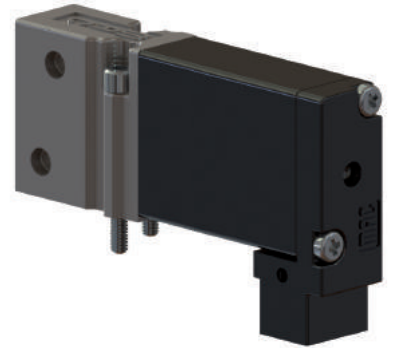
All dimensions are in mm

MAC 34 Series - Manifold plug-in valve

3-way, 2 position, poppet

Flow up to 120 NI/min (0.12 Cv)

- ◇ Short stroke with high flow
- ◇ Balanced poppet, immune to variations of pressure allowing pressure and vacuum operation
- ◇ Bonded poppet with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect, valve immune to contamination
- ◇ Long service life
- ◇ Direct operated valve
- ◇ 2/2-way function available
- ◇ Short stroke for high energization shifting force
- ◇ Strong return spring for high de-energization shifting force
- ◇ Universal poppet allowing normally closed & normally open operation



MAC 34 Series - Manifold plug-in valve

Technical data

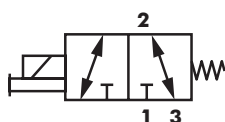
| | |
|---------------------------|--|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Vacuum to 8 bar |
| Lubrication: | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to 50°C |
| Flow (at 6 bar, ΔP=1bar): | 120 NI/min (0.12 Cv) |
| Coil: | Epoxy encapsulated - Class H wires |
| Voltage range: | -15% to +10% of nominal voltage |
| Power: | 1.0 to 4.0 W |
| Response times: | 24 V= /4 W Energize: 4.5 ms De-energize: 1.5 ms |

Solenoid direct operated valve

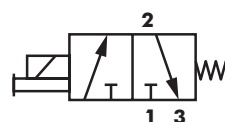
Single pressure models

3/2

Universal valve



Normally closed only valve



Notes:

CHANGING FROM NORMALLY CLOSED TO NORMALLY OPEN

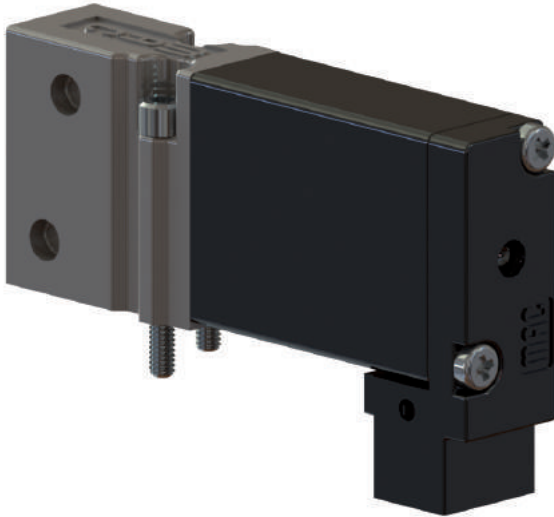
Manifold valve can be changed from normally closed to normally open by connecting the inlet to port 3 instead of port 1 (universal only).

NORMALLY CLOSED ONLY MODELS

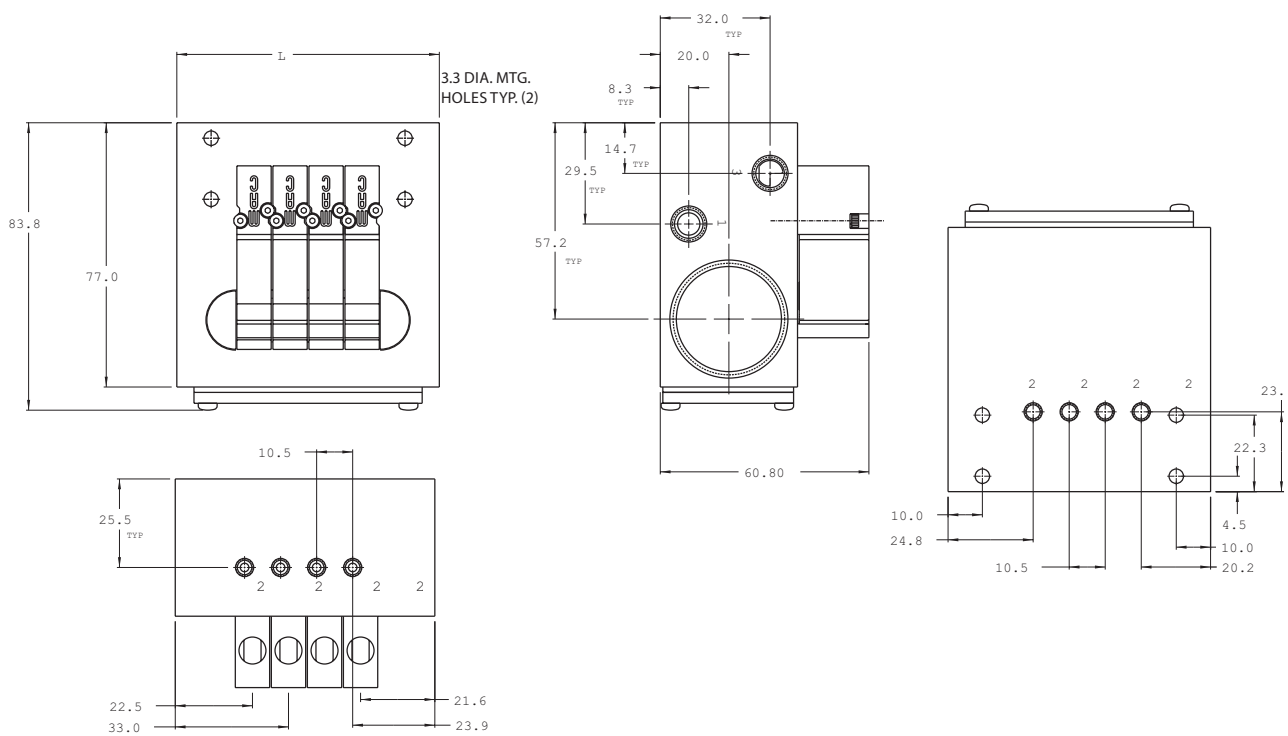
A single purpose normally closed only model is available for those applications where a greater tolerance for heavy concentrations of water, compressor products and other air line contaminants is desired.

MAC 34 Series - Manifold plug-in valve

Dimensions



All dimensions are in mm

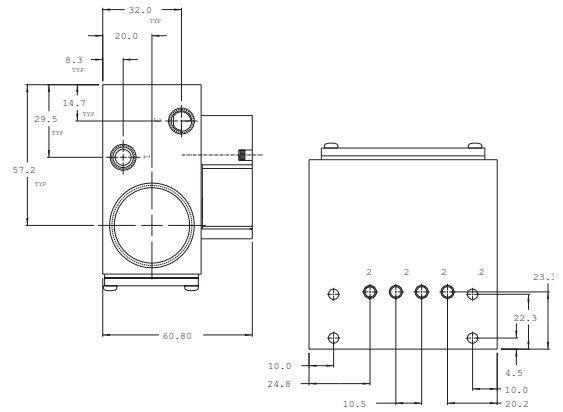
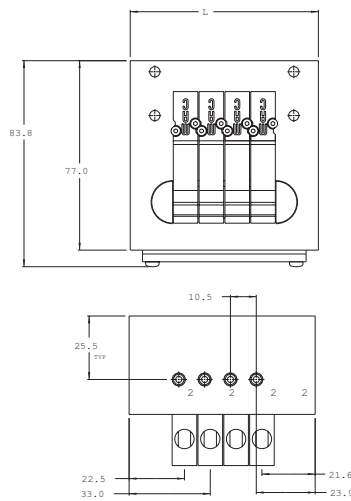
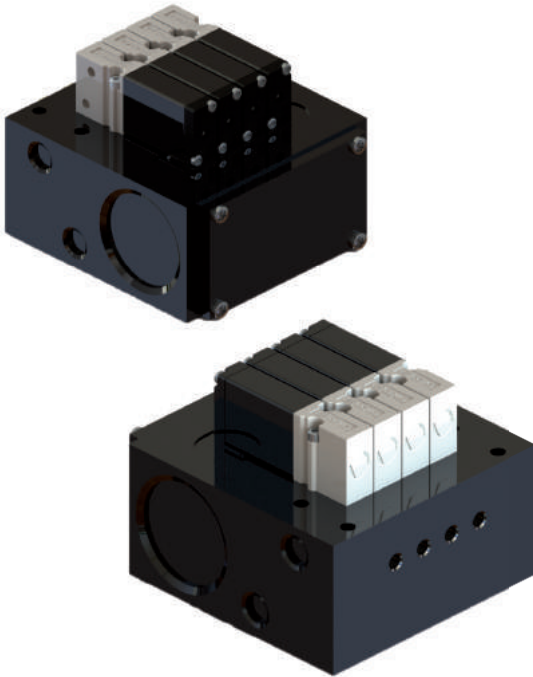


MAC 34 Series

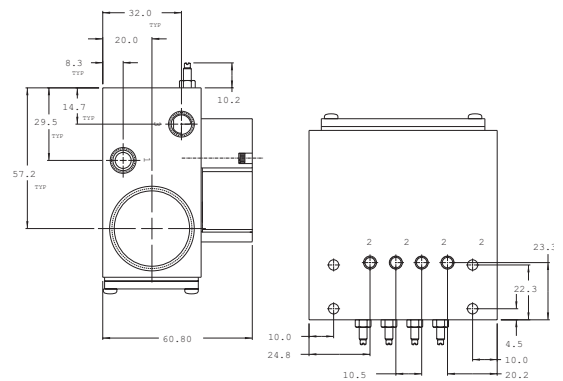
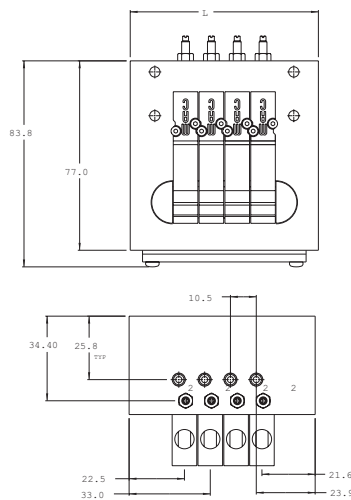
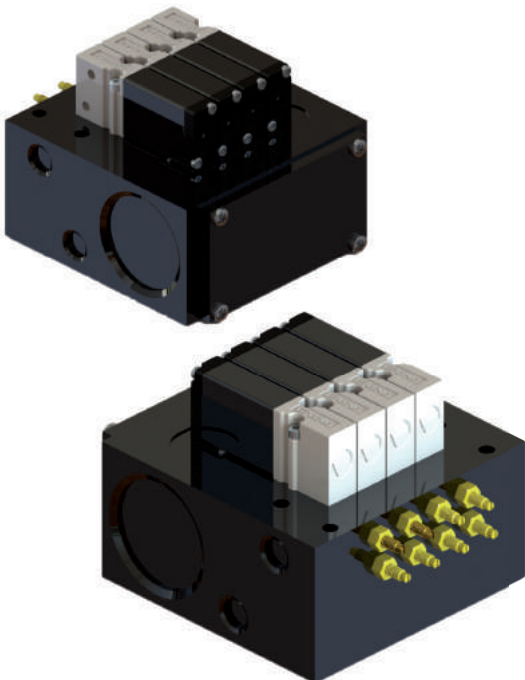
MAC 34 Series - Manifold plug-in valve

Options

Manifold without flow control and pressure regulator



Manifold with flow control



MAC Valves - Highly engineered solutions for the highest performing applications since 1948

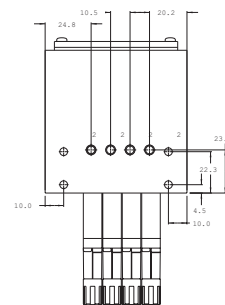
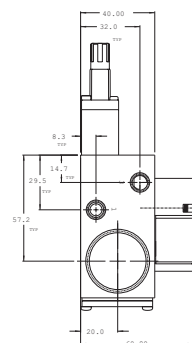
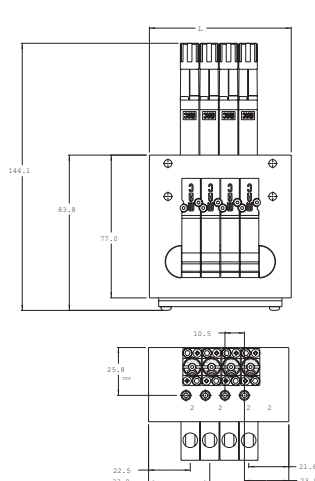
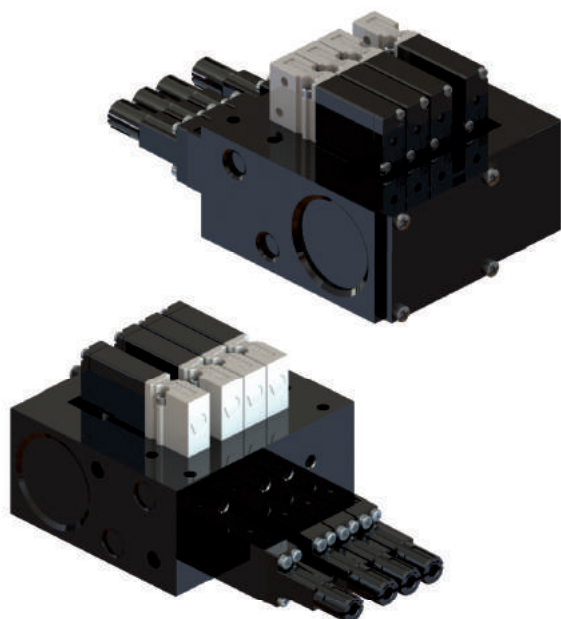
MAC Valves, Inc. Wixom, Michigan - MAC Valves, Inc. Dundee, Michigan - MAC Valves Europe, Inc. Liège, Belgium MAC Valves Asia, Inc. Taiwan

To find your **local** distributor, visit www.macvalves.com

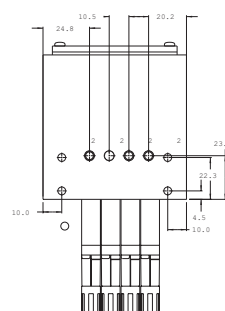
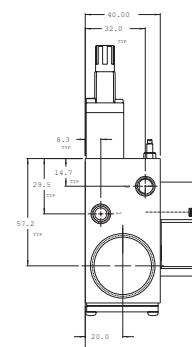
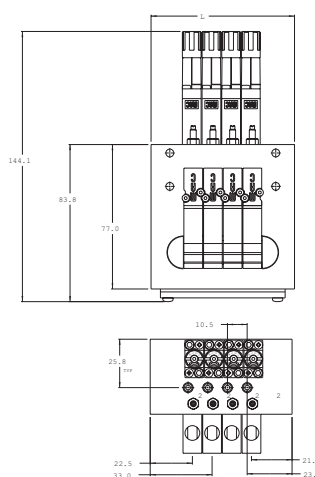
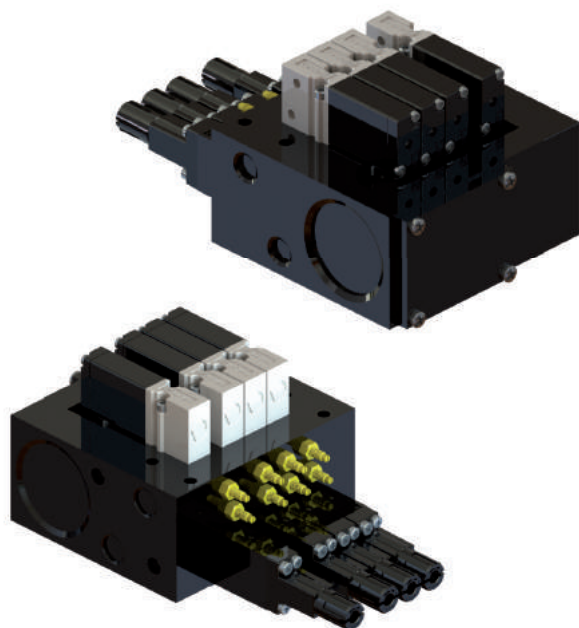
MAC 34 Series - Manifold plug-in valve

Options

Manifold with pressure regulator



Manifold with flow control and pressure regulator



MAC 34 Series - Universal 3/2 & 2/2

APPLICATION CONVERSION PROCEDURE:

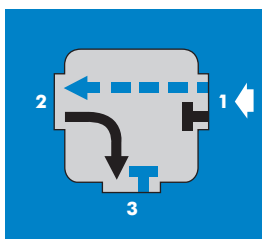
UNIVERSAL MODELS

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.

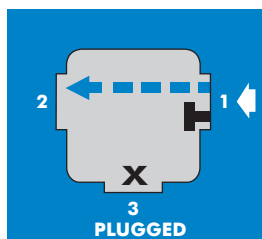
N.C. ONLY MODELS

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.

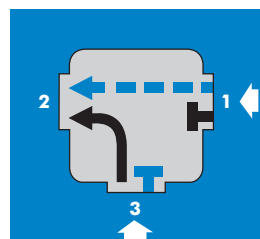
PIPING CHART FOR UNIVERSAL MODELS



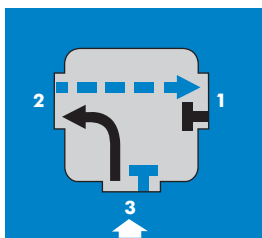
3-Way Normally Closed



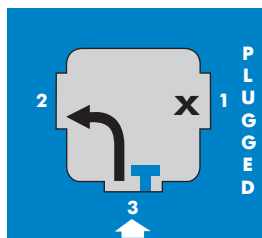
2-Way Normally Closed



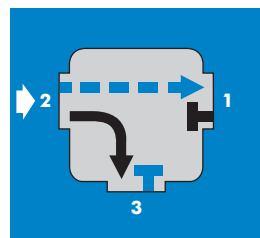
Selector



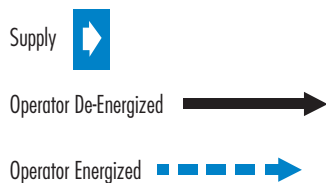
3-Way Normally Open



2-Way Normally Open



Divertor



MAC 34 Series - How to order

Valve assembly

Inline valve

34B-XXX - G XX X - X XX

| BODY TYPE (STYLE) | PORT SIZE | FUNCTION TYPE | VOLTAGE VDC | LEAD WIRE LENGTH | MANUAL OPERATOR | SOLENOID OPTIONS |
|----------------------------|---|---|--|--|---|--|
| A Individual inline | A #10-32 UNF B M5 (Metric) | A Universal 3-way inline B 3-way normally closed only inline | DC 24 =/ 1.8W DD 24 =/ 2.5W DE 24 =/ 3.0W DF 24 =/ 4.0W DJ 12 =/ 1.8W DK 12 =/ 2.5W DM 12 =/ 3.0W DN 12 =/ 4.0W | O No lead wire A 18" / 45 cm B 24" / 60 cm C 36" / 90 cm D 48" / 120 cm E 72" / 180 cm F 96" / 240 cm G 120" / 305 cm H 144" / 366 cm | 1 Recessed non locking operator 3 Non locking extended | BA Flying leads BT Flying leads with light KA Plug-in wire assembly KC Plug-in wire assembly with rectifier and light KT Plug-in wire assembly with light |

* Connectors available with AC voltages require modification

*Other options: see page 20

Circuit bar®

EBM34A - XX X X - XX

| SPACING | CONFIGURATION | PORT SIZE & THREAD TYPE | NUMBER OF STATIONS |
|------------------|---|---|---|
| 00 10.5mm | 1 Common inlet & exhaust (12mm profile) Use with B & D port options 2 Common inlet & exhaust (16mm profile) Use with A, C & E port options | A 1/8" NPTF B #10-32 UNF C 1/8" BSPPL D M5 Metric E 1/8" BSPTR | 02 Two stations 03 Three stations Etc. ... |

* Connectors available with AC voltages require modification

MAC 34 Series

MAC 34 Series - How to order

Valve assembly

Manifold non plug-in valve

34B - X XX - G XX X - X XX

| BODY TYPE (STYLE) | PORT SIZE | VOLTAGE VDC | LEAD WIRE LENGTH | MANUAL OPERATOR | SOLENOID OPTIONS |
|---|--------------------------------|----------------------|------------------------|--|--|
| L Base mount body | 00 Base mount body only | DC 24 =/ 1.8W | O No lead wire | 1 Recessed non locking operator | BA Flying leads |
| N Base mount body normally closed only | | DD 24 =/ 2.5W | A 18" / 45 cm | | BT Flying leads with light |
| | | DE 24 =/ 3.0W | B 24" / 60 cm | 3 Non locking extended | KA Plug-in wire assembly |
| | | DF 24 =/ 4.0W | C 36" / 90 cm | | KC Plug-in wire assembly with rectifier and light |
| | | DJ 12 =/ 1.8W | D 48" / 120 cm | | KT Plug-in wire assembly with light |
| | | DK 12 =/ 2.5W | E 72" / 180 cm | | |
| | | DM 12 =/ 3.0W | F 96" / 240 cm | | |
| | | DN 12 =/ 4.0W | G 120" / 305 cm | | |
| | | | H 144" / 366 cm | | |

* Connectors available with AC voltages require modification

*Other options: see page 20

Circuit bar®

EBP34B - XX X X - XX

| SPACING | CONFIGURATION | PORT SIZE & THREAD TYPE | NUMBER OF STATIONS |
|------------------|--------------------------|----------------------------------|--------------------------|
| 00 10.5mm | 1 Side cylinder | B #10-32 UNF | 02 Two stations |
| | 2 Bottom cylinder | D M5 Metric | 03 Three stations |
| | | F 1/8" O.D. tube fitting | Etc. ... |
| | | G 3/32" O.D. tube fitting | |

* Connectors available with AC voltages require modification

MAC 34 Series

MAC 34 Series - How to order

Valve assembly

Manifold plug-in valve

34B - X XX - G XX X - X XX - 9

| BODY TYPE (STYLE) | PORT SIZE | VOLTAGE VDC | LEAD WIRE LENGTH | MANUAL OPERATOR | SOLENOID OPTIONS |
|---|--------------------------------|--|-----------------------|---|--|
| L Base mount body N Base mount body normally closed only | 00 Base mount body only | DC 24 =/ 1.8W DD 24 =/ 2.5W DE 24 =/ 3.0W DF 24 =/ 4.0W DJ 12 =/ 1.8W DK 12 =/ 2.5W DM 12 =/ 3.0W DN 12 =/ 4.0W | 0 No lead wire | 1 Recessed non locking operator 3 Non locking extended | DC* Base/Manifold plug-in with rectifier & LED DD* Base/Manifold plug-in with rectifier & LED with ground DE* Plug-in with suppression diode DF* Plug-in with suppression diode with ground pin DJ* Plug-in DM* Plug-in with ground pin DT* Plug-in with LED light DU* Plug-in with LED light with ground pin DV* Plug-in with suppression diode with LED light DW* Plug-in with suppression diode with LED light with ground pin |

* Connectors available with AC voltages require modification

Circuit bar®

ECDO34B - XX X X X - XX XX

| SPACING | CONFIGURATION | STYLE | CYLINDER PORT SIZE | BASE ELECTRICAL | NUMBER OF STATIONS |
|--|---|---|---|-------------------------------|---|
| 00 10.5mm * Standard spacing is 10.5mm except for single station add-a-units which are 15mm wide | 1 Side cylinder 2 Bottom cylinder 3 Side cylinder with regulator* 4 Bottom cylinder with regulator* 5 Side cylinder with flow control 6 Bottom cylinder port with flow control 7 Bottom cylinder with regulator and flow control* 8 Side cylinder with regulator and flow control* | A Standard bar B Add-on-style bar ¹ C Add-a-unit station ² ¹ Right-hand end plate kit included with bar assembly on "B" add-on style bar ² Add-a-units available in 1, 2, 3 & 4 stations lengths | B #10-32 UNF D M5 Metric | A0 Standard (no light) | 02 Two stations 03 Three stations Etc. ... |

Replacement parts & accessories

| | | | |
|---------------|-------------------------------|----------|---|
| M-34004-01(*) | Right hand end plate kit | 19412-01 | Tie rod (10.5mm) |
| M-34005 | Blank station cover plate kit | 28415 | Isolator disc, inlet & exhaust, installed between add-a-unit stations |
| N-44002 | Flow control needle assembly | 24180 | Base wire plug-in protector |
| N44003 | Regulator blank plate kit | 35048 | End plate mounting screw |
| 17012-01-1 | O-ring port seal | | |

*Regulator to be ordered separately

Regulator

PR44A - X X X X - 9 (Assembled to bar)

| ADJUSTMENT METHOD | CONFIGURATION | GAGE PORT OPTIONS | PRESSURE RANGE |
|----------------------------------|--------------------|--|--|
| A Manual adjust with knob | 0 Regulator | A Standard (no gage port) B Gage port (plugged)* * Option not available with flow controls on circuit bar (gage port not accessible) | A 0 to 6.7 bar B 0 to 4 bar C 0 to 2.7 bar D 0 to 1 bar |

MAC 34 Series - Solenoid options

Codification table for voltages / Manual override / Electrical connection

VALVE CODE

G XX X-X XX
1 2 3 4

1. VOLTAGE

| G-XX X-X XX | VOLTAGE |
|-------------|---|
| AA | 120V~/2,5W (requires electrical connector with rectifier) |
| AC | 24V~/4,0W (requires electrical connector with rectifier) |
| DA | 24V=/1,0W |
| DC | 24V=/1,8W |
| DD | 24V=/2,5W |
| DE | 24V=/3,0W |
| DF | 24V=/4,0W |
| DG | 12V=/1,0W |
| DJ | 12V=/1,8W |
| DK | 12V=/2,5W |
| DM | 12V=/3,0W |
| DN | 12V=/4,0W |
| DR | 6V=/1,8W |
| DS | 6V=/3,0W |
| EB | 48V=/1,8W |
| EC | 48V=/3,0W |
| ED | 120V=/2,5W |
| GD | 12V=/0,5W |
| GE | 24V=/0,5W |

2. WIRE LENGTH

| G-XX X-X XX | WIRE LENGTH |
|-------------|--------------------------|
| 0 | No lead wires |
| A | 18" coil leads - 45 cm |
| B | 24" coil leads - 60 cm |
| C | 36" coil leads - 90 cm |
| D | 48" coil leads - 120 cm |
| E | 72" coil leads - 180 cm |
| F | 96" coil leads - 240 cm |
| G | 120" coil leads - 305 cm |
| H | 144" coil leads - 366 cm |
| 1 | 18" base leads - 45 cm |
| 2 | 24" base leads - 60 cm |
| 3 | 36" base leads - 90 cm |
| 4 | 48" base leads - 120 cm |
| 5 | 72" base leads - 180 cm |
| 6 | 96" base leads - 240 cm |
| 7 | 120" base leads - 305 cm |

3. MANUAL OPERATOR

| G-XX X-X XX | MANUAL OPERATOR |
|-------------|-------------------------------|
| 1 | Encastrée – non verrouillable |
| 2 | Encastrée – verrouillable |
| 3 | Saillante – non verrouillable |
| 4 | Saillante – verrouillable |

4. ELECTRICAL CONNECTOR FOR INLINE AND NON PLUG-IN VALVES

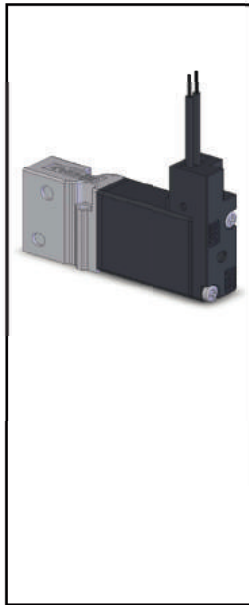
| G-XX X-X XX | ELECTRICAL CONNECTION FOR INLINE AND NON PLUG-IN VALVES |
|-------------|--|
| BA | Flying leads |
| BB | Flying leads with ground wire |
| BC | Flying leads with light |
| BD | Flying leads with light and ground wire |
| BE | Flying leads with suppression diode |
| BF | Flying leads with suppression diode and ground wire |
| BG | Flying leads with suppression diode and light |
| BH | Flying leads with suppression diode, light and ground wire |
| BN | Flying leads with suppression diode and blocking diode |
| BP | Flying leads with suppr. diode, blocking diode and ground wire |
| BR | Flying leads with suppression diode, blocking diode and light |
| BS | Flying leads w/ suppr. diode, blocking diode, light and ground wire |
| BT | Flying leads w/ LED light on top |
| BU | Flying leads w/ LED light on top & ground wire |
| BV | Flying leads w/ suppression diode plus LED light on top |
| BW | Flying leads w/ suppr. diode plus LED light on top & ground wire |
| BX | Flying leads w/ suppr. diode plus blocking diode LED light on top |
| BY | Flying leads w/ suppr. diode plus blocking diode LED light on top & ground wire |
| HA | Circuit board plug-in with full wave rectifier & LED (with ground wire) |
| HD | Circuit board plug-in with full wave rectifier & LED without lead wire assembly (with ground wire) |
| KA | Solenoid plug-in wire assembly |
| KB | Solenoid plug-in wire assembly with ground |
| KC | Solenoid plug-in wire assembly with rectifier and light |
| KD | Solenoid plug-in wire assembly with rectifier, light and ground |
| KE | Solenoid plug-in wire assembly with suppression diode |
| KF | Solenoid plug-in wire assembly with suppr. diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | Sol. plug-in wire assembly with suppr. diode and blocking diode |
| KP | Sol. plug-in wire assy w/ suppr. diode, blocking diode and ground |
| KT | Solenoid plug-in wire assembly with light |
| KU | Solenoid plug-in wire assembly with light and ground |
| KV | Solenoid plug-in wire assembly with suppression diode and light |
| KW | Sol. plug-in wire assembly with suppr. diode, light and ground |
| KX | Sol. plug-in wire assy with suppr. diode, blocking diode and light |
| KY | Solenoid plug-in wire assembly with suppression diode, blocking diode, light and ground |
| PA | Pico |
| TJ | Dual Tabs - Mini Plug-in |

4. ELECTRICAL CONNECTOR FOR PLUG-IN VALVES

| G-XX X-X XX | ELECTRICAL CONNECTION FOR PLUG-IN (PLUG-IN OPTIONS) |
|-------------|---|
| DC* | Base/Manifold plug-in with rectifier & LED |
| DD* | Base/Manifold plug-in with rectifier & LED with ground |
| DE* | Plug-in with suppression diode |
| DF* | Plug-in with suppression diode with ground pin |
| DJ* | Plug-in |
| DM* | Plug-in with ground pin |
| DT* | Plug-in with LED light |
| DU* | Plug-in with LED light with ground pin |
| DV* | Plug-in with suppression diode with LED light |
| DW* | Plug-in with suppression diode with LED light with ground pin |

MAC 34 Series

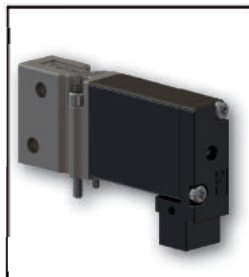
MAC 34 Series - Codification of valve connectors



| | |
|-----------|---|
| BA | Flying leads |
| BB | Flying leads with ground wire |
| BC | Flying leads with light |
| BD | Flying leads with light and ground wire |
| BE | Flying leads with suppression diode |
| BF | Flying leads with suppression diode and ground wire |
| BG | Flying leads with suppression diode and light |
| BH | Flying leads with suppression diode, light and ground wire |
| BN | Flying leads with suppression diode and blocking diode |
| BP | Flying leads with suppr. diode, blocking diode and ground wire |
| BR | Flying leads with suppression diode, blocking diode and light |
| BS | Flying leads w/ suppr. diode, blocking diode, light and ground wire |
| BT | Flying leads w/ LED light on top |
| BU | Flying leads w/ LED light on top & ground wire |
| BV | Flying leads w/ suppression diode plus LED light on top |
| BW | Flying leads w/ suppr. diode plus LED light on top & ground wire |
| BX | Flying leads w/ suppr. diode plus blocking diode LED light on top |
| BY | Flying leads w/ suppr. diode plus blocking diode LED light on top & ground wire |



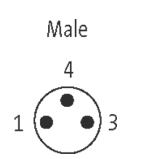
| | |
|-----------|--|
| KA | Solenoid plug-in wire assembly |
| KB | Solenoid plug-in wire assembly with ground |
| KC | Solenoid plug-in wire assembly with rectifier and light |
| KD | Solenoid plug-in wire assembly with rectifier, light and ground |
| KE | Solenoid plug-in wire assembly with suppression diode |
| KF | Solenoid plug-in wire assembly with suppr. diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | Solenoid plug-in wire assembly with suppr. diode and blocking diode |
| KP | Solenoid plug-in wire assy w/ suppr. diode, blocking diode and ground |
| KT | Solenoid plug-in wire assembly with light |
| KU | Solenoid plug-in wire assembly with light and ground |
| KV | Solenoid plug-in wire assembly with suppression diode and light |
| KW | Solenoid plug-in wire assembly with suppr. diode, light and ground |
| KX | Solenoid plug-in wire assy with suppr. diode, blocking diode and light |



| | |
|------------|---|
| DC* | Base/Manifold plug-in with rectifier & LED |
| DD* | Base/Manifold plug-in with rectifier & LED with ground |
| DE* | Plug-in with suppression diode |
| DF* | Plug-in with suppression diode with ground pin |
| DJ* | Plug-in |
| DM* | Plug-in with ground pin |
| DT* | Plug-in with LED light |
| DU* | Plug-in with LED light with ground pin |
| DV* | Plug-in with suppression diode with LED light |
| DW* | Plug-in with suppression diode with LED light with ground pin |



| | |
|-----------|------|
| PA | Pico |
|-----------|------|

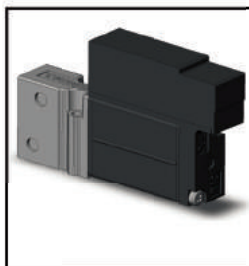


Male

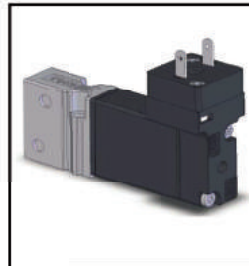
1 4 3 2

1 brown (+)
4 black (N/O)
3 blue (-)

Connect Female connector to pins 1 and 4.
Use brown and black wires

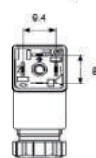


| | |
|-----------|--|
| HA | Circuit board plug-in with full wave rectifier & LED (with ground wire) |
| HD | Circuit board plug-in with full wave rectifier & LED without lead wire assembly (with ground wire) |



| | |
|-----------|--------------------------|
| TJ | Dual Tabs - Mini Plug-in |
|-----------|--------------------------|

MICRO DIN 43650-Industrial Standard C
9.4mm Pin Spacing



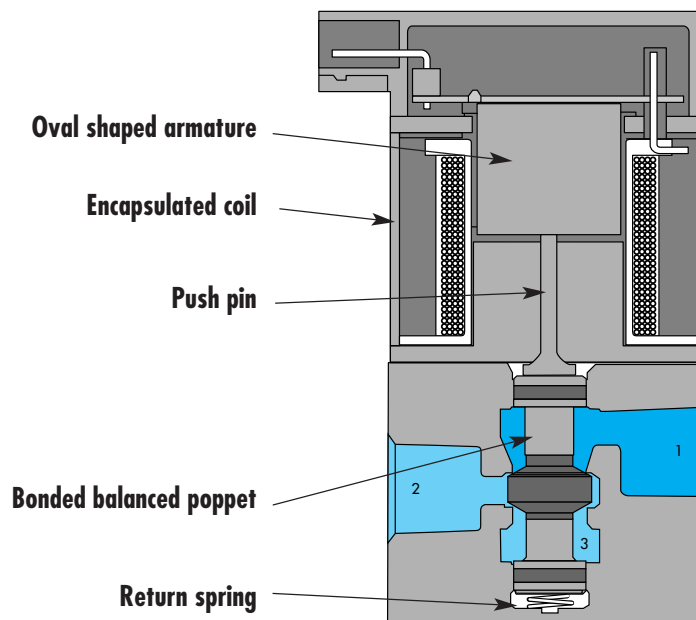
Direct solenoid and solenoid pilot operated valves

Individual mounting

| | |
|--------|--|
| Inline | |
|--------|--|

Manifold mounting

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



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual mounting |
|------------|--------------|-------------------|---------------------|
| 3/2 | G1/8" | 300 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Universal valve | NC only valve |
|--------------|--------------------------|--------------------------|
| | | |
| G1/8" | 36A-ACA-J xxx-xxx | 36A-ACB-J xxx-xxx |

SOLENOID OPERATOR ➤

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

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

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

Note : - AC voltage requires connector with rectifier.

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

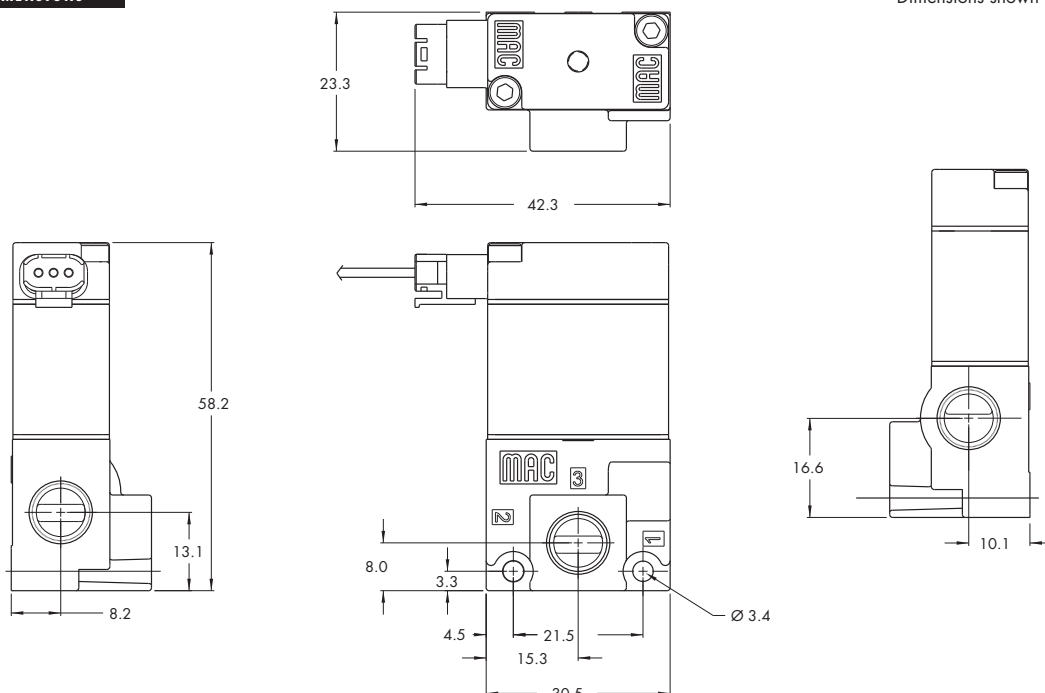
TECHNICAL DATA

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

Option : • NPTF threads

DIMENSIONS

Dimensions shown are metric (mm)



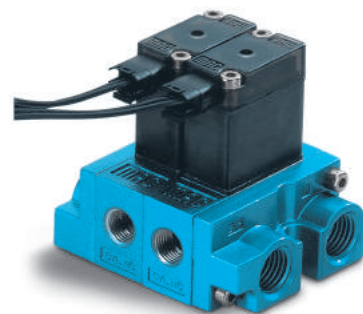


Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

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

SOLENOID OPERATOR ➤

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

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

* Other options available, see page options.

Note : - AC voltage requires connector with rectifier.

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

End plate kit required (port size G1/4") : M-36001-01P.

BODY TYPE OPTIONS

36A-SCB-Jxxx-xxx

- S** Stacking body
- T** Stacking body with bottom inlet

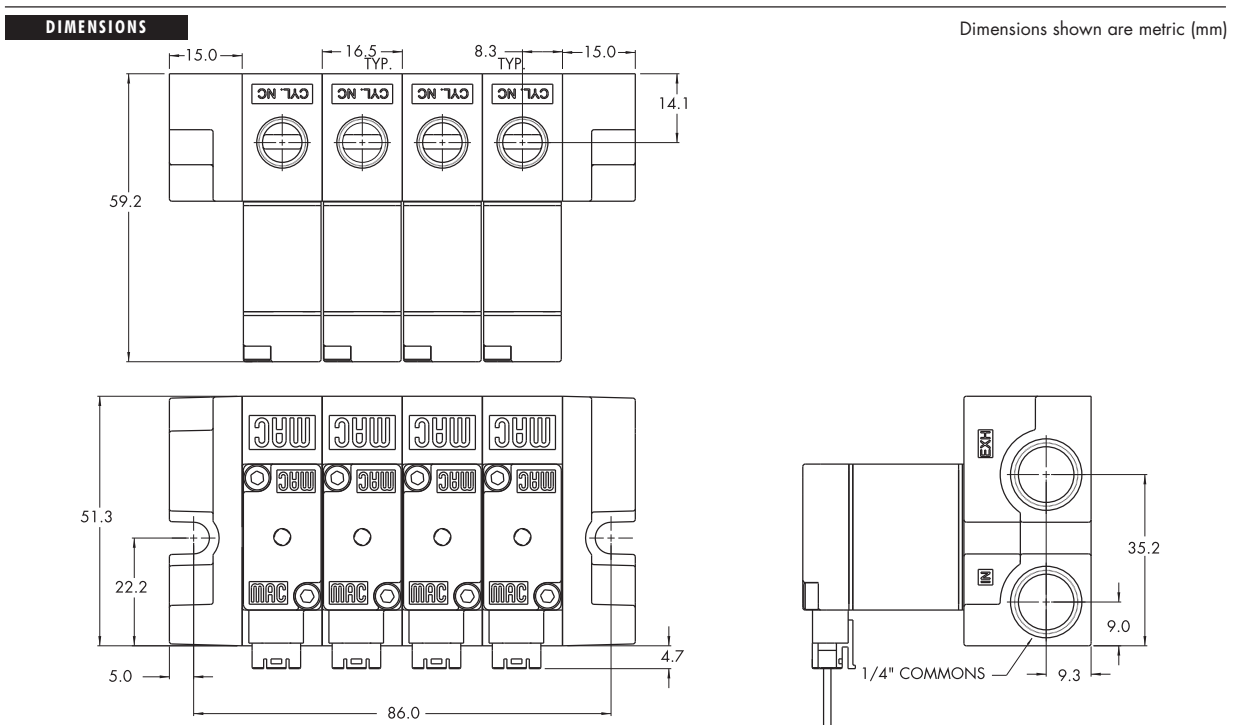


100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

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

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



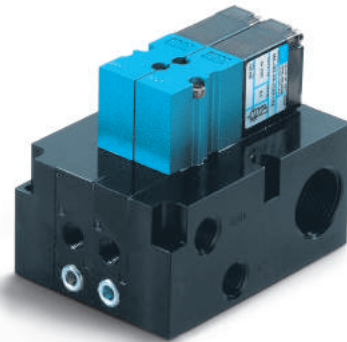


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold mounting |
|------------|--------------|-------------------|-------------------------|
| 3/2 | G1/8" | 300 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Universal Valve Normally Closed | Universal Valve Normally Open | Normally Closed Only |
|------------------------|---------------------------------|-------------------------------|-----------------------------|
| | | | |
| Valve less base | 36A-J00-00-J xxP-xxx | 36A-K00-00-J xxP-xxx | 36A-L00-00-J xxP-xxx |
| G1/8" | 36A-JSC-AE-J xxP-xxx | 36A-KSC-AF-J xxP-xxx | 36A-LSC-AE-J xxP-xxx |

SOLENOID OPERATOR >

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

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

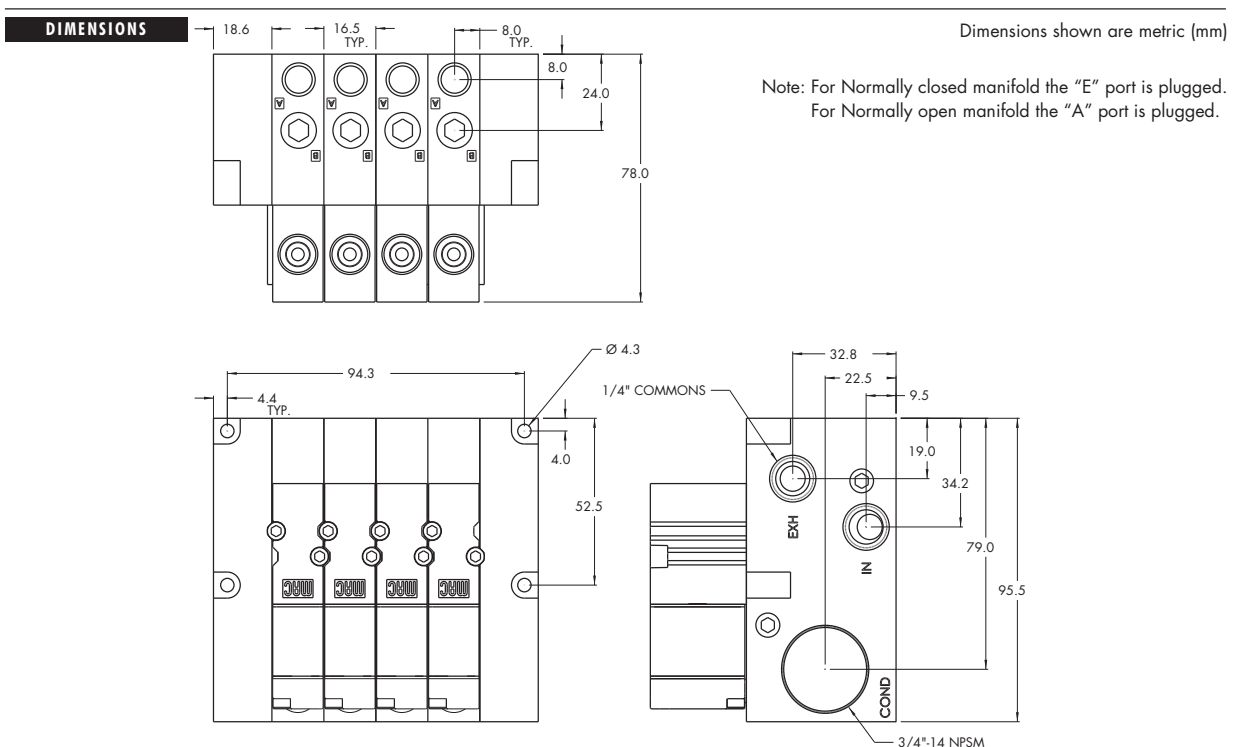
* Other options available, see page **options**.
Note : AC voltage requires connector with rectifier.

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

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

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

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



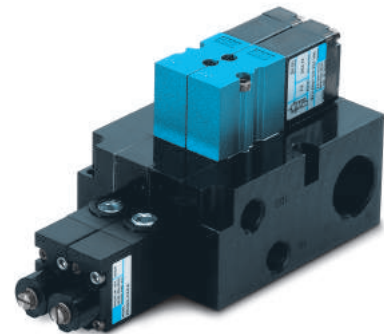


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold mounting |
|------------|--------------|-------------------|--|
| 3/2 | G1/8" | 300 NI/min | Manifold base "plug-in" with pressure regulators |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Universal Valve Normally Closed | Universal Valve Normally Open | Normally Closed Only |
|------------------------|---------------------------------|-------------------------------|-----------------------------|
| | | | |
| Valve less base | 36A-J00-00-J xxP-xxx | 36A-K00-00-J xxP-xxx | 36A-L00-00-J xxP-xxx |
| G1/8" | 36A-JSC-AG-J xxP-xxx | 36A-KSC-AH-J xxP-xxx | 36A-LSC-AG-J xxP-xxx |

SOLENOID OPERATOR >

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

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

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

OPTIONS

36A-JSC-AG-Jxx P-xxx

- G** NC manifold & regulator with slotted stem adjustment
- S** NC manifold & regulator with locking slotted stem adjustment
- J** NC manifold & regulator with knob adjustment
- H** NO manifold & regulator with slotted stem adjustment
- T** NO manifold & regulator with locking slotted stem adjustment
- K** NO manifold & regulator with knob adjustment

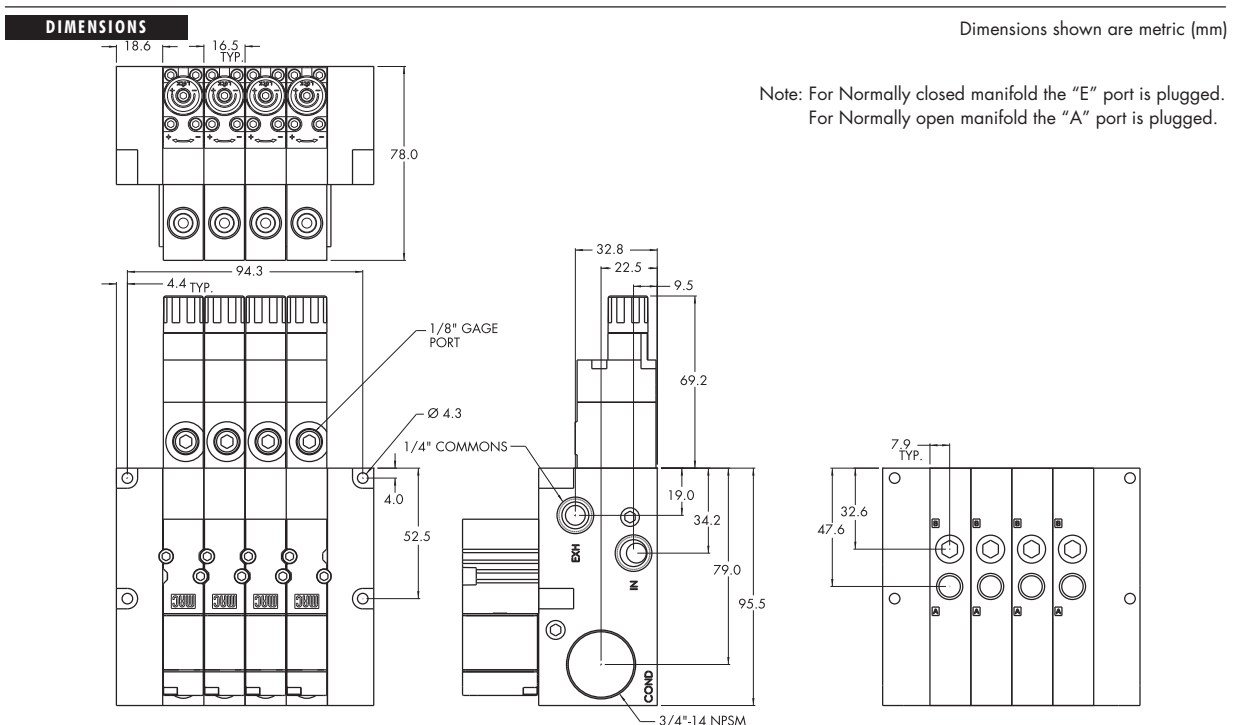
Note : All manifold bases are only available with a bottom cylinder port.

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

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

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

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



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

J XX X-X XX
1 2 3 4

(Non Plug-in series)

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

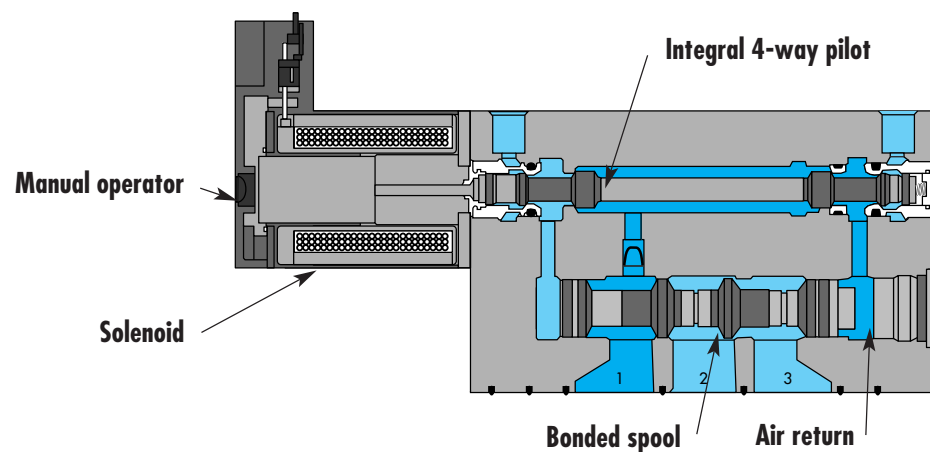
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

| Manifold base non "plug-in" | Manifold base "plug-in" | |
|--------------------------------|----------------------------|--|
| | | |



SERIES FEATURES

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

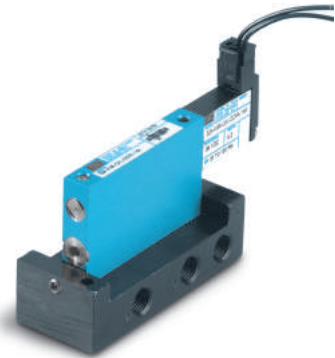


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual mounting |
|------------------|--------------|-------------------|------------------------|
| 3/2 NO-NC | G1/8" | 400 NI/min | Sub-base non "plug-in" |

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|------------------------|-----------|----------------------|----------------------|----------------------|
| | | | | |
| Valve less base | Internal | 32B-BMA-000-Gxxx-xxx | 32B-AMA-000-Gxxx-xxx | |
| | External | 32B-BMB-000-Gxxx-xxx | 32B-AMB-000-Gxxx-xxx | 32B-GMB-000-Gxxx-xxx |
| G1/8" | Internal | 32B-BMA-HAL-Gxxx-xxx | 32B-AMA-HAL-Gxxx-xxx | |
| | External | 32B-BMB-HAM-Gxxx-xxx | 32B-AMB-HAM-Gxxx-xxx | 32B-GMB-HAM-Gxxx-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR >

G **XXX-XXX***

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

Note : AC voltage requires connector with rectifier.

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

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

OPTIONS

Pilot/Base Configuration :

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

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

- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust to main exhaust (not available with external pilot)

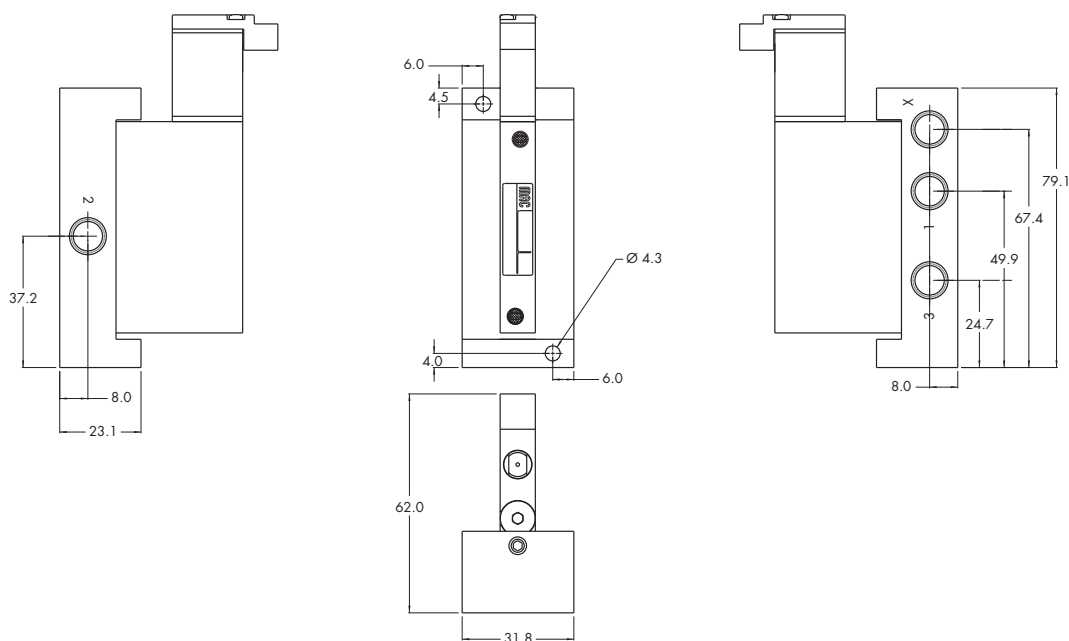
TECHNICAL DATA

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

Options : • NPTF threads

DIMENSIONS

Dimensions shown are metric (mm)



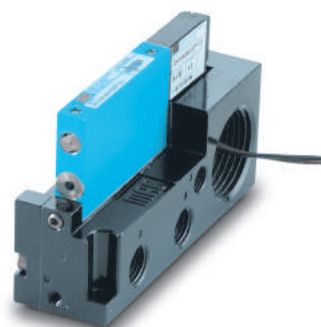


Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|------------------------|-----------|----------------------|----------------------|----------------------|
| | | | | |
| Valve less base | Internal | 32B-BMA-000-GxxP-xxx | 32B-AMA-000-GxxP-xxx | |
| | External | 32B-BMB-000-GxxP-xxx | 32B-AMB-000-GxxP-xxx | 32B-GMB-000-GxxP-xxx |
| M5 | Internal | 32B-BMA-GAA-GxxP-xxx | 32B-AMA-GAA-GxxP-xxx | |
| | External | 32B-BMB-GAB-GxxP-xxx | 32B-AMB-GAB-GxxP-xxx | 32B-GMB-GAB-GxxP-xxx |
| M7 | Internal | 32B-BMA-LAA-GxxP-xxx | 32B-AMA-LAA-GxxP-xxx | |
| | External | 32B-BMB-LAB-GxxP-xxx | 32B-AMB-LAB-GxxP-xxx | 32B-GMB-LAB-GxxP-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ►

G **XX** P-**xxx***

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

Note : AC voltage requires connector with rectifier.

* Other options available, see page options.

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

OPTIONS

Pilot/Base Configuration :

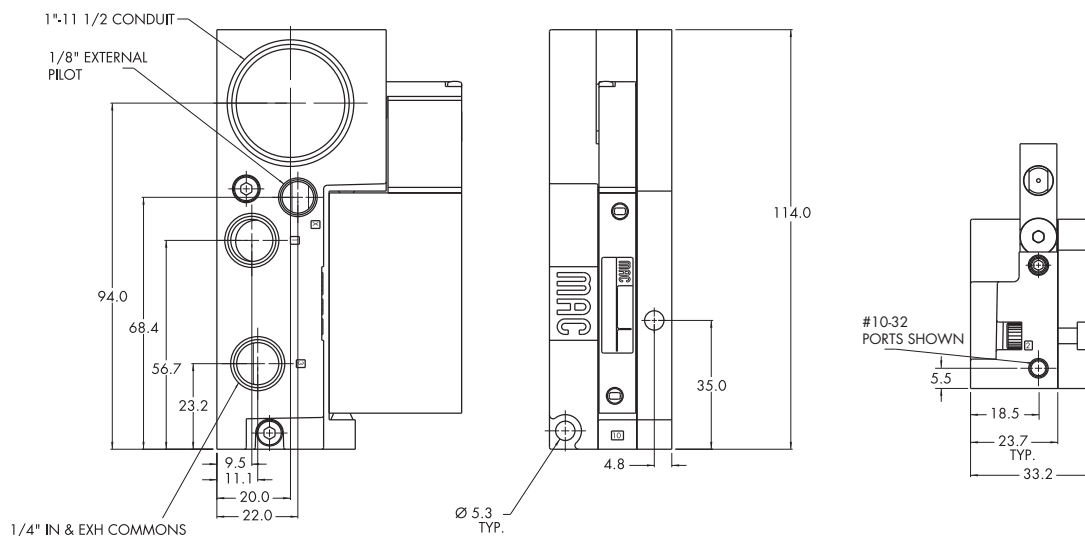
32B-x**M**-x**A**-x**G**xx P-xxx

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

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

Options : • NPTF threads

DIMENSIONS Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|------------------------|-----------|----------------------|----------------------|----------------------|
| | | | | |
| Valve less base | Internal | 32B-BMA-000-Gxxx-xxx | 32B-AMA-000-Gxxx-xxx | |
| | External | 32B-BMB-000-Gxxx-xxx | 32B-AMB-000-Gxxx-xxx | 32B-GMB-000-Gxxx-xxx |
| M5 | Internal | 32B-BMA-GJL-Gxxx-xxx | 32B-AMA-GJL-Gxxx-xxx | |
| | External | 32B-BMB-GJM-Gxxx-xxx | 32B-AMB-GJM-Gxxx-xxx | 32B-GMB-GJM-Gxxx-xxx |
| M7 | Internal | 32B-BMA-LJL-Gxxx-xxx | 32B-AMA-LJL-Gxxx-xxx | |
| | External | 32B-BMB-LJM-Gxxx-xxx | 32B-AMB-LJM-Gxxx-xxx | 32B-GMB-LJM-Gxxx-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ►

G **XXX-XXX***

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

Note : AC voltage requires connector with rectifier.

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

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

OPTIONS

Base only :

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

Base Configuration :

32B-xM-x-Jx-Gxxx-xxx

- J** Manifold base – Side port
- K** Manifold base – Bottom port

- M** Pilot exhaust muffled
- R** Pilot exhaust piped M5
- U** Pilot exhaust to main exhaust (not available with external pilot)

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

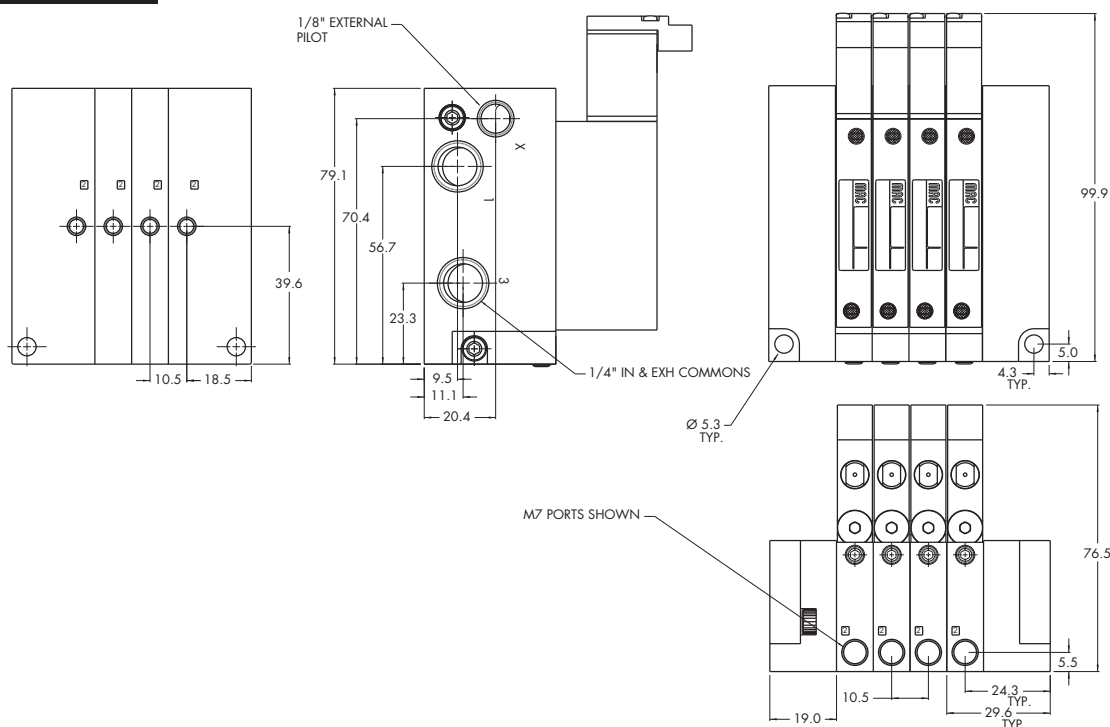
TECHNICAL DATA

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

Options : • NPTF threads

DIMENSIONS

Dimensions shown are metric (mm)



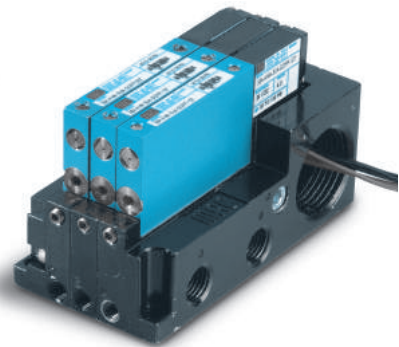


Direct solenoid and solenoid pilot operated valves

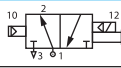
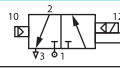
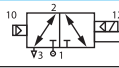
| Function | Port size | Flow [Max] | Manifold mounting |
|------------------|---------------|-------------------|-------------------------|
| 3/2 NO-NC | M5, M7 | 400 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10.5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|------------------------|-----------|---|---|---|
| | |  |  |  |
| Valve less base | Internal | 32B-BMA-000-GxxP-xxx | 32B-AMA-000-GxxP-xxx | |
| | External | 32B-BMB-000-GxxP-xxx | 32B-AMB-000-GxxP-xxx | 32B-GMB-000-GxxP-xxx |
| M5 | Internal | 32B-BMA-GJA-GxxP-xxx | 32B-AMA-GJA-GxxP-xxx | |
| | External | 32B-BMB-GJB-GxxP-xxx | 32B-AMB-GJB-GxxP-xxx | 32B-GMB-GJB-GxxP-xxx |
| M7 | Internal | 32B-BMA-LJA-GxxP-xxx | 32B-AMA-LJA-GxxP-xxx | |
| | External | 32B-BMB-LJB-GxxP-xxx | 32B-AMB-LJB-GxxP-xxx | 32B-GMB-LJB-GxxP-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ►

G **XX** P-**xxx***

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

Note : AC voltage requires connector with rectifier.

* Other options available, see page options.

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

OPTIONS

Base only :

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

Base Configuration :

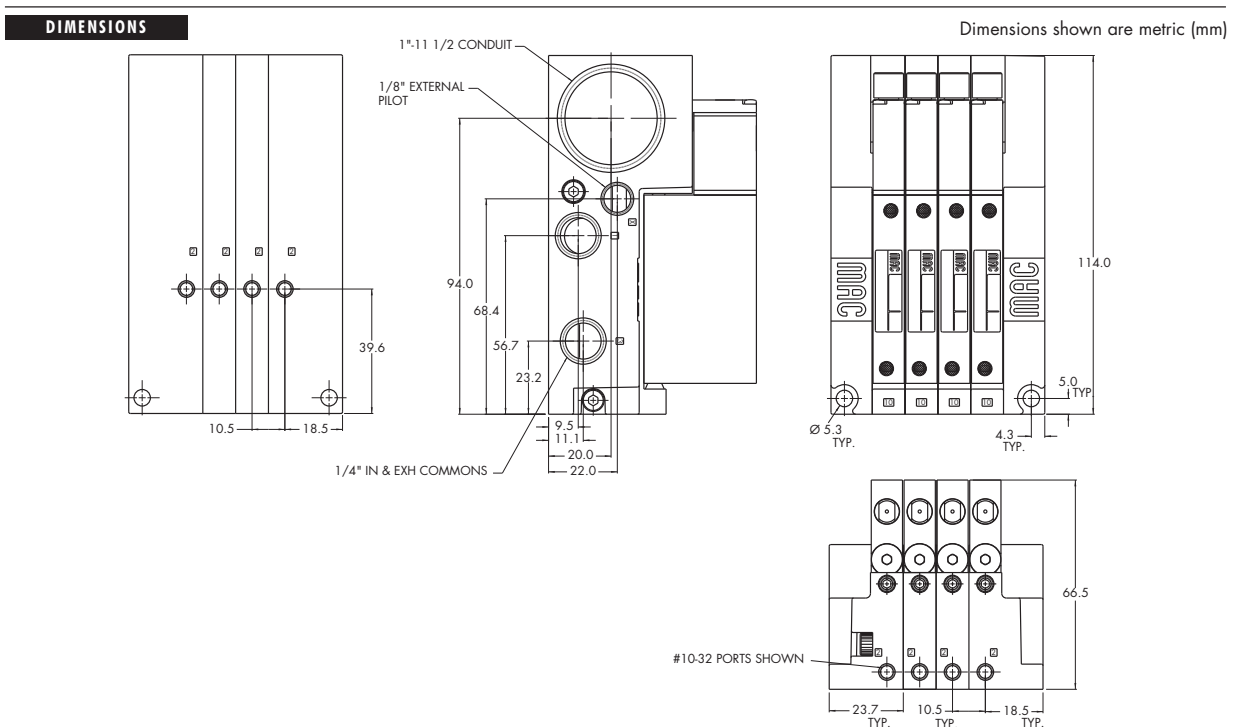
32B-**xxx**-**J**-G**xx** P-**xxx**

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

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

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

Options : • NPTF threads



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ►

G XX X-X XX
1 2 3 4

| 1. VOLTAGE | | |
|-------------|------------|--|
| G-XX X-X XX | VOLTAGE | |
| AA | 120V~/2,5W | Requires electrical connector with rectifier |
| AC | 24V~/4,0W | Requires electrical connector with rectifier |
| DA | 24V~/1,0W | |
| DC | 24V~/1,8W | |
| DD | 24V~/2,5W | |
| DE | 24V~/3,0W | |
| DF | 24V~/4,0W | |
| DG | 12V~/1,0W | |
| DJ | 12V~/1,8W | |
| DK | 12V~/2,5W | |
| DM | 12V~/3,0W | |
| DN | 12V~/4,0W | |
| DR | 6V~/1,8W | |
| DS | 6V~/3,0W | |
| EB | 48V~/1,8W | |
| EC | 48V~/3,0W | |
| ED | 120V~/2,5W | |
| GD | 12V~/0,5W | 34 series only |
| GE | 24V~/0,5W | 34 series only |

| 2. WIRE LENGTH | |
|----------------|---|
| G-XX X-X XX | WIRE LENGTH |
| 0 | No lead wires (used only with "KJ" & "KM" connectors) |
| A | 45 cm – 18" coil leads |
| B | 60 cm – 24" coil leads |
| C | 90 cm – 36" coil leads |
| D | 120 cm – 48" coil leads |
| E | 180 cm – 72" coil leads |
| F | 240 cm – 96" coil leads |
| G | 305 cm – 120" coil leads |
| H | 366 cm – 144" coil leads |
| 1 | 45 cm – 18" base leads |
| 2 | 60 cm – 24" base leads |
| 3 | 90 cm – 36" base leads |
| 4 | 120 cm – 48" base leads |
| 5 | 180 cm – 72" base leads |
| 6 | 240 cm – 96" base leads |
| 7 | 305 cm – 120" base leads |

| 3. MANUAL OPERATOR | |
|--------------------|----------------------|
| G-XX X-X XX | MANUAL OPERATOR |
| 1 | Non-locking recessed |
| 2 | Locking recessed |
| 3 | Non-locking extended |
| 4 | Locking extended |

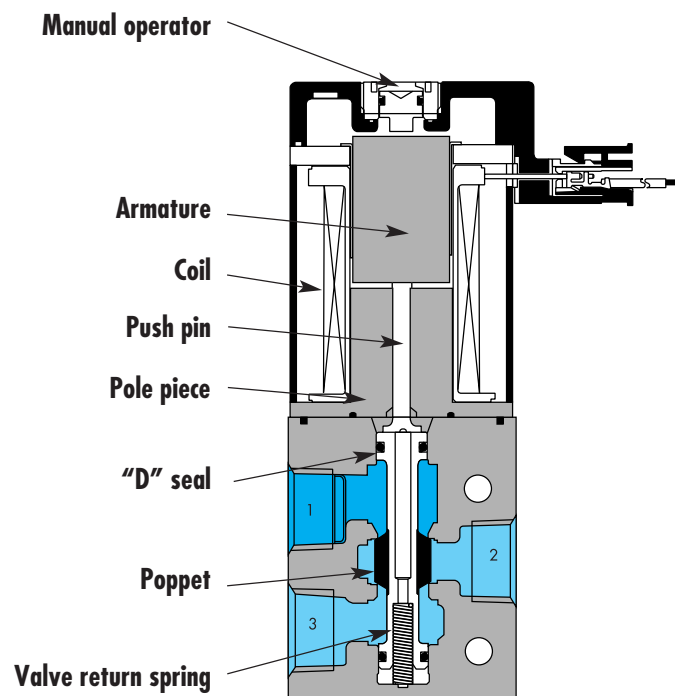
| 4. ELECTRICAL CONNECTION | |
|--------------------------|--|
| G-XX X-X XX | ELECTRICAL CONNECTION |
| BA | Flying leads |
| BB | BA with ground wire |
| BC | BA with light |
| BD | BA with light and ground wire |
| BE | BA with suppression diode |
| BF | BA with suppression diode and ground wire |
| BG | BA with suppression diode and light |
| BH | BA with suppression diode, light and ground wire |
| BN | BA with suppression diode and blocking diode |
| BP | BA with suppression diode, blocking diode and ground wire |
| BR | BA with suppression diode, blocking diode and light |
| BS | BA with suppression diode, blocking diode, light and ground wire |
| GA | MAC JAC Solenoid plug-in |
| GB | MAC JAC Solenoid plug-in with diode |
| GC | MAC JAC Solenoid plug-in with MOV |
| GD | MAC JAC Solenoid plug-in with LED |
| GE | MAC JAC Solenoid plug-in with diode and LED |
| GF | MAC JAC Solenoid plug-in with MOV and LED |
| GG | MAC JAC Solenoid plug-in with rectifier |
| GH | MAC JAC Solenoid plug-in with rectifier and LED |
| KA | Mini connector |
| KB | KA with ground |
| KC | KA with rectifier and light |
| KD | KA with rectifier, light and ground |
| KE | KA with suppression diode |
| KF | KA with suppression diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | KA with suppression diode and blocking diode |
| KP | KA with suppression diode, blocking diode and ground |
| KT | KA with light |
| KU | KA with light and ground |
| KV | KA with suppression diode and light |
| KW | KA with suppression diode, light and ground |
| KX | KA with suppression diode, blocking diode and light |
| KY | KA with suppression diode, blocking diode, light & ground |

| ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
|--|--|
| G-XX X-X XX | PLUG-IN OPTIONS |
| SB | Base plug-in with ground |
| SC | Base plug-in with suppression & blocking diode |
| SD | Base plug-in with suppression & blocking diode & ground |
| SE | Base plug-in with MOV |
| SF | Base plug-in with MOV & ground |
| SG | Base plug-in with rectifier |
| SH | Base plug-in with rectifier & ground |
| SK | Base plug-in with light & ground |
| SL | Base plug-in with suppression & blocking diode & light |
| SM | Base plug-in with suppression & blocking diode with light & ground |
| SN | Base plug-in with MOV & light |
| SP | Base plug-in with MOV & light with ground |
| SR | Base plug-in with rectifier & light |

Direct solenoid and solenoid pilot operated valves

Individual mounting

| | |
|--------|----------------------|
| Inline | Sub-base non plug-in |
|--------|----------------------|



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves


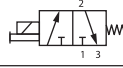
| Function | Port size | Flow [Max] | Individual mounting |
|------------------|----------------------|-------------------|---------------------|
| 3/2 NO-NC | G1/8" - G1/4" | 500 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

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

SOLENOID OPERATOR ➤

H **xxx-xxx***

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

Note : AC voltage requires connector with rectifier.

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



100%
OF
PRODUCTION
TESTED
100%

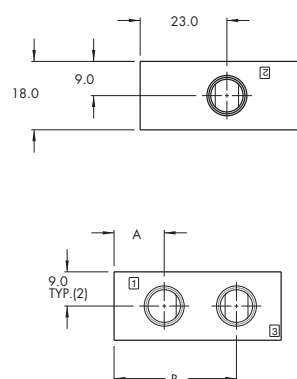
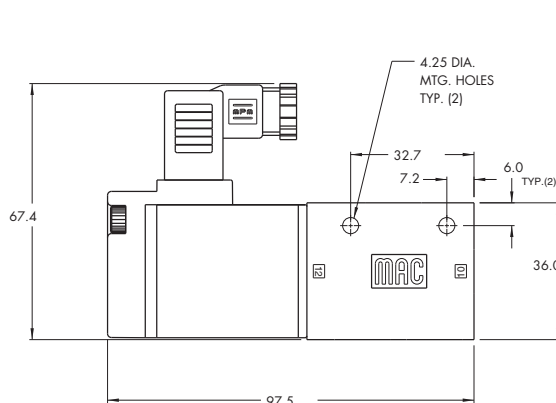
WARRANTY
18
MONTHS

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

Options : • NPTF ports

DIMENSIONS

Dimensions shown are metric (mm)



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

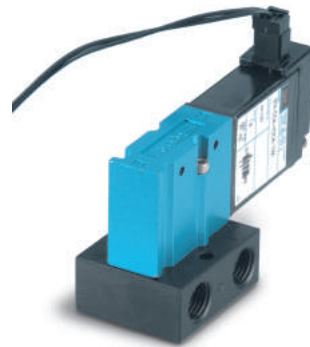


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual mounting |
|------------------|----------------------|-------------------|-------------------------|
| 3/2 NO-NC | G1/8" - G1/4" | 500 NI/min | Sub-base non plug-in |

OPERATIONAL BENEFITS

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



HOW TO ORDER

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

SOLENOID OPERATOR ►

H **xxx-xxx***

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

Note : AC voltage requires connector with rectifier.

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

OPTIONS

Base only :

37A-0CA (1/8")

37A-0DA (1/4")



100%
OF
PRODUCTION
TESTED
100%

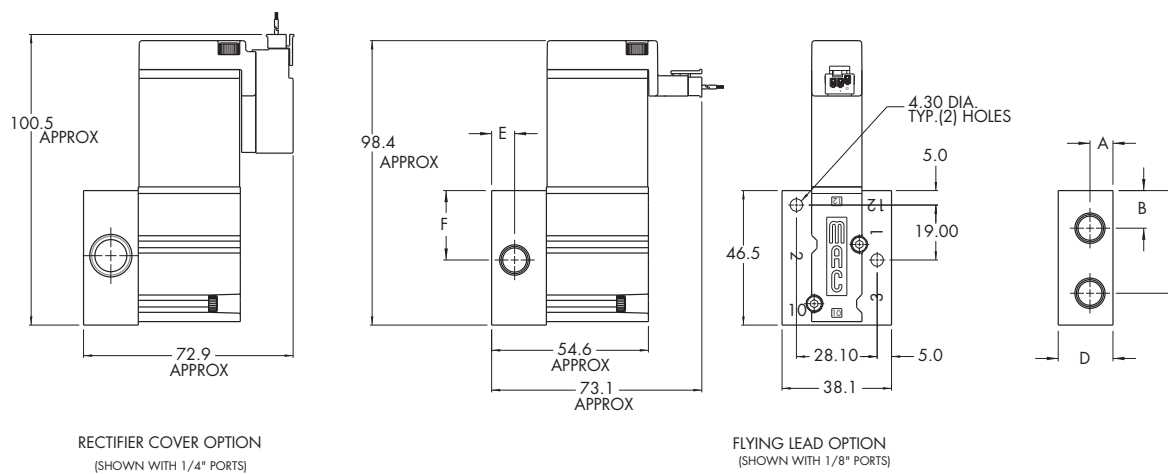
WARRANTY
18
MONTHS

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

Options : • NPTF ports

DIMENSIONS

Dimensions shown are metric (mm)



| Dim | A | B | C | D | E | F |
|------|-----|------|------|-------|-----|------|
| 1/8" | 8.0 | 13.0 | 35.5 | 19.05 | 8.0 | 24.0 |
| 1/4" | 9.5 | 9.5 | 35.5 | 19.05 | 9.5 | 22.5 |

Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

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

| Gauge | Single pressure |
|---------------------------|-----------------|
| No gauge port | PR37A-FAAA |
| With gauge Port (plugged) | PR37A-FABA |

Note: Regulating pressure range for above models is 0 to 8 bar
For other ranges, see technical data page.

OPTIONS

Adjustment :

PR37A-**Fxxx**

B for slotted stem

K for slotted stem with locknut

Pressure range :

PR37A-**xxxA**

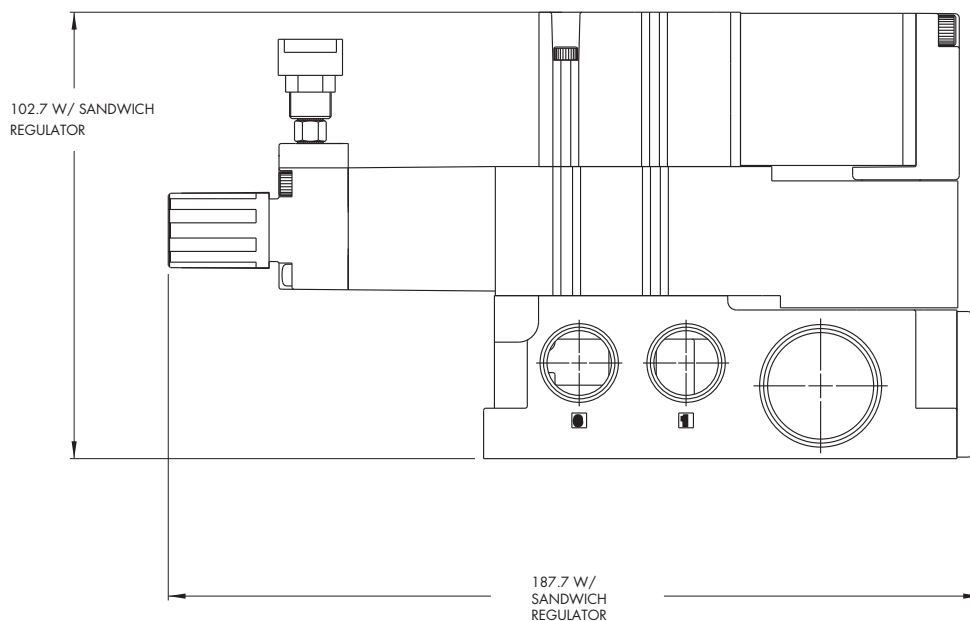
B for 0 to 5,3 bar

C for 0 to 2 bar

| TECHNICAL DATA | |
|-----------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) | 400 NL/min (Cv 0.4) |

- Spare parts :
- Pressure regulator (less sandwich block) : PR37A-G0AA (knob), PR37A-C0AA (slotted stem), PR37A-L0AA (slotted stem with locknut)
 - Gauges : 24177-160 (0 to 10,7 bar, 23 mm)
24177-100 (0 to 6,7 bar, 23 mm)
24177-060 (0 to 4 bar, 23 mm)

DIMENSIONS Dimensions shown are metric (mm)



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

H XX X-X XX
1 2 3 4

| 1. VOLTAGE | | H-XX X-X XX | ELECTRICAL CONNECTION |
|--------------------------|--|-------------------|---|
| H-XX X-X XX | VOLTAGE | BL | BA with full wave rectifier & ground wire |
| AA | 120 V~/ 50Hz, 120 V~/ 60Hz (6,7 W) (use connector with rectifier) | BT | BA with full wave rectifier plus light |
| AB | 220 V~/ 50Hz, 220 V~/ 60Hz (5,6 W) (use connector with rectifier) | BU | BA with full wave rectifier plus light & ground wire |
| AC | 240 V~/ 50Hz, 240 V~/ 60Hz (5,8 W) (use connector with rectifier) | PLUG-IN CONNECTOR | |
| AD | 24 V~/ 50Hz, 24 V~/ 60Hz (7,8 W) (use connector with rectifier) | FA | Base plug-in |
| DA | 24 V=/5,2 W | FB | FA with ground wire |
| DB | 24 V=/2,4 W | FC | FA with light |
| DC | 24 V=/1,8 W | FD | FA with light & ground wire |
| DD | 24 V=/1,0 W | FE | FA with suppression diode |
| DF | 12 V=/5,2 W | FF | FA with suppression diode & ground wire |
| DG | 12 V=/2,4 W | FG | FA with suppression diode & light |
| DH | 12 V=/1,8 W | FH | FA with suppression diode plus light & ground wire |
| DJ | 12 V=/1,0 W | FK | FA with full wave rectifier |
| DL | 120 V=/6,3 W | FL | FA with full wave rectifier & ground wire |
| 2. WIRE LENGTH | | *FN | FA with suppression diode plus blocking diode |
| H-XX X-X XX | WIRE LENGTH | *FP | FA with suppression diode plus blocking diode & ground wire |
| 0 | No lead wire (use with "MJ", "MM" & "K" style connectors) | *FR | FA with suppression diode plus blocking diode plus light |
| A | 45 cm = 18" | *FS | FA with suppression diode plus blocking diode & light & ground wire |
| B | 60 cm = 24" | FT | FA with full wave rectifier plus light |
| C | 90 cm = 36" | FU | FA with full wave rectifier plus light & ground wire |
| D | 120 cm = 48" | MA | Solenoid plug-in wire assembly |
| E | 180 cm = 72" | MB | MA with ground wire |
| F | 240 cm = 96" | MC | MA with light |
| G | 305 cm = 120" | MD | MA with light & ground wire |
| H | 366 cm = 144" | ME | MA with suppression diode |
| 3. MANUAL OPERATOR | | MF | MA with suppression diode & ground wire |
| H-XX X-X XX | MANUAL OPERATOR | MG | MA with suppression diode plus light |
| 0 | No operator | MH | MA with suppression diode plus light & ground wire |
| 1 | Non-locking recessed | MK | MA with full wave rectifier |
| 2 | Locking recessed | ML | MA with full wave rectifier & ground wire |
| 3 | Non-locking extended | *MN | MA with suppression diode plus blocking diode |
| 4 | Locking extended | *MP | MA with suppression diode plus blocking diode & ground wire |
| 4. ELECTRICAL CONNECTION | | *MR | MA with suppression diode plus blocking diode & light |
| H-XX X-X XX | ELECTRICAL CONNECTION | *MS | MA with suppression diode plus blocking diode & light & ground wire |
| BA | Flying leads | MT | MA with full wave rectifier plus light |
| BB | BA with ground wire | MU | MA with full wave rectifier plus light & ground wire |
| BC | BA with light | MJ | Plug-in housing without wire assembly ('MA' option without wire assembly) |
| BD | BA with light & ground wire | MM | Plug-in housing without wire assembly ('MB' option without wire assembly) |
| BE | BA with suppression diode | KA | Mini square connector |
| BF | BA with suppression diode & ground wire | KB | KA with suppression diode |
| BG | BA with suppression diode plus light | KC | KA with M.O.V. |
| BH | BA with suppression diode plus light & ground wire | KD | KA with light |
| *BN | BA with suppression diode plus blocking diode | KE | KA with light & suppression diode |
| *BP | BA with suppression diode plus blocking diode & ground wire | KF | KA with light & M.O.V. |
| *BR | BA with suppression diode plus blocking diode & light | KJ | Mini square connector – male only |
| *BS | BA with suppression diode plus blocking diode & light & ground wire | KK | KJ with suppression diode |
| BK | BA with full wave rectifier | KL | KJ with M.O.V. |
| | | KM | KA with full wave rectifier |
| | | KN | KA with full wave rectifier & M.O.V. |
| | | KP | KA with full wave rectifier & light |
| | | KR | KA with full wave rectifier plus light & M.O.V. |
| | | KS | |

Note: Blocking diode is located in the lead wire

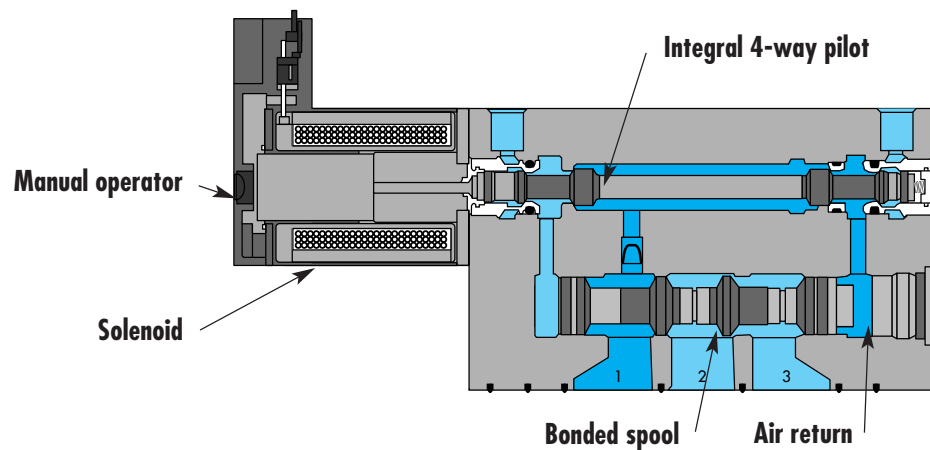
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

| | |
|----------------------------|--|
| Manifold base "plug-in" | |
|----------------------------|--|



SERIES FEATURES

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

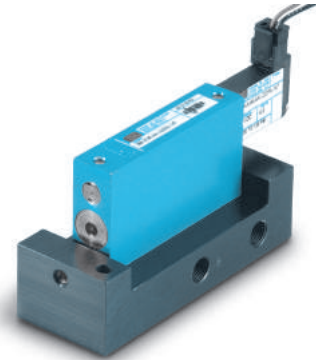


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual mounting |
|------------------|--------------|--------------------|------------------------|
| 3/2 NO-NC | G1/8" | 1200 NI/min | Sub-base non "plug-in" |

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1200 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|------------------------|-----------|----------------------|----------------------|----------------------|
| | | | | |
| Valve less base | Internal | 38B-BMA-000-Gxxx-xxx | 38B-AMA-000-Gxxx-xxx | |
| | External | 38B-BMB-000-Gxxx-xxx | 38B-AMB-000-Gxxx-xxx | 38B-GMB-000-Gxxx-xxx |
| G1/8" | Internal | 38B-BMA-BAL-Gxxx-xxx | 38B-AMA-BAL-Gxxx-xxx | |
| | External | 38B-BMB-BAM-Gxxx-xxx | 38B-AMB-BAM-Gxxx-xxx | 38B-GMB-BAM-Gxxx-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR >

G **XXX-XXX***

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

Note : AC voltage requires connector with rectifier.

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

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

OPTIONS

Pilot/Base Configuration :

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

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

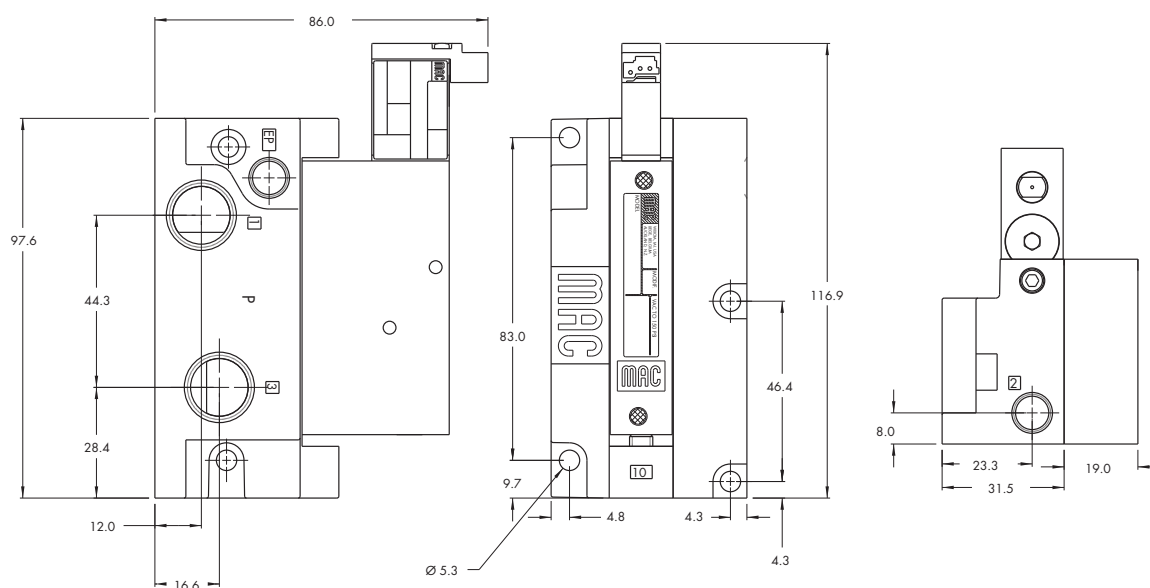
TECHNICAL DATA

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

Options : • NPTF threads

DIMENSIONS

Dimensions shown are metric (mm)



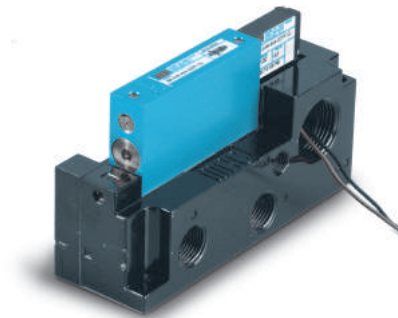


Direct solenoid and solenoid pilot operated valves

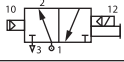
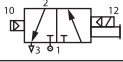
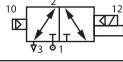
| Function | Port size | Flow [Max] | Individual mounting |
|------------------|--------------|--------------------|---------------------|
| 3/2 NO-NC | G1/8" | 1200 NI/min | Sub-base "plug-in" |

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1200 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|--------------|-----------|---|---|---|
| G1/8" | |  |  |  |
| | Internal | 38B-BMA-000-GxxP-xxx | 38B-AMA-000-GxxP-xxx | |
| | External | 38B-BMB-000-GxxP-xxx | 38B-AMB-000-GxxP-xxx | 38B-GMB-000-GxxP-xxx |
| | Internal | 38B-BMA-BAA-GxxP-xxx | 38B-AMA-BAA-GxxP-xxx | |
| | External | 38B-BMB-BAB-GxxP-xxx | 38B-AMB-BAB-GxxP-xxx | 38B-GMB-BAB-GxxP-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ►

G **xx** P-**xxx***

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

Note : AC voltage requires connector with rectifier.

* Other options available, see page options.

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

OPTIONS

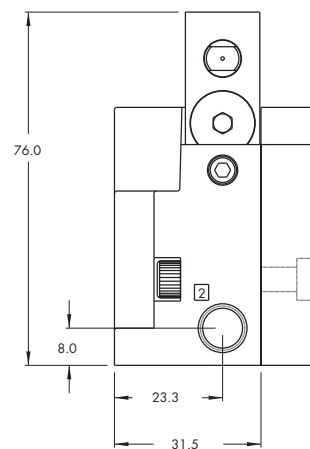
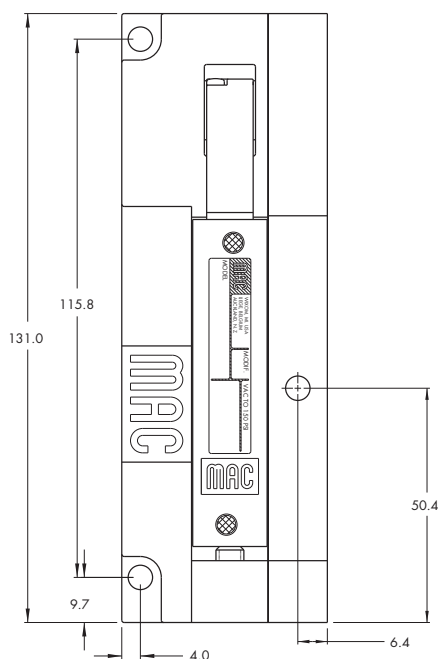
Pilot/Base Configuration :

| | |
|---|--|
| 38B-x M -x A -G xx P- xxx | A Individual base – Side port |
| | B Individual base – Bottom port |
| | M Pilot exhaust muffled |
| | R Pilot exhaust piped M5 |
| | U Pilot exhaust to main exhaust |

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

Options : • NPTF threads

DIMENSIONS Dimensions shown are metric (mm)



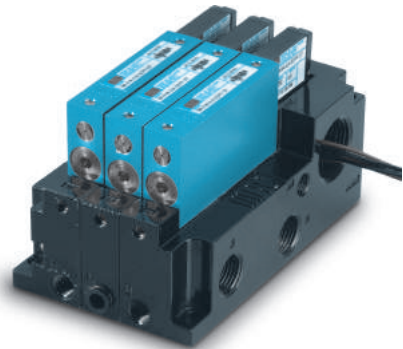


Direct solenoid and solenoid pilot operated valves

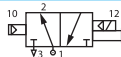
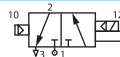
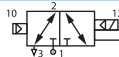
| Function | Port size | Flow [Max] | Manifold mounting |
|------------------|--------------|--------------------|-------------------------|
| 3/2 NO-NC | G1/8" | 1200 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

1. 3-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1200 NI/min).
4. Fast, repeatable response times.
5. Maximum shifting forces in both directions.



HOW TO ORDER

| Port size | Pilot air | NO valve | NC valve | Universal valve |
|------------------------|-----------|---|---|---|
| | |  |  |  |
| Valve less base | Internal | 38B-BMA-000-GxxP-xxx | 38B-AMA-000-GxxP-xxx | |
| | External | 38B-BMB-000-GxxP-xxx | 38B-AMB-000-GxxP-xxx | 38B-GMB-000-GxxP-xxx |
| G1/8" | Internal | 38B-BMA-BJA-GxxP-xxx | 38B-AMA-BJA-GxxP-xxx | |
| | External | 38B-BMB-BJB-GxxP-xxx | 38B-AMB-BJB-GxxP-xxx | 38B-GMB-BJB-GxxP-xxx |

Note : Above codes are for side port.

STANDARD SOLENOID OPERATOR ➤

G **xx** P-**xxx** *

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

Note : AC voltage requires connector with rectifier.

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

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

OPTIONS

Base only :

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

Base Configuration :

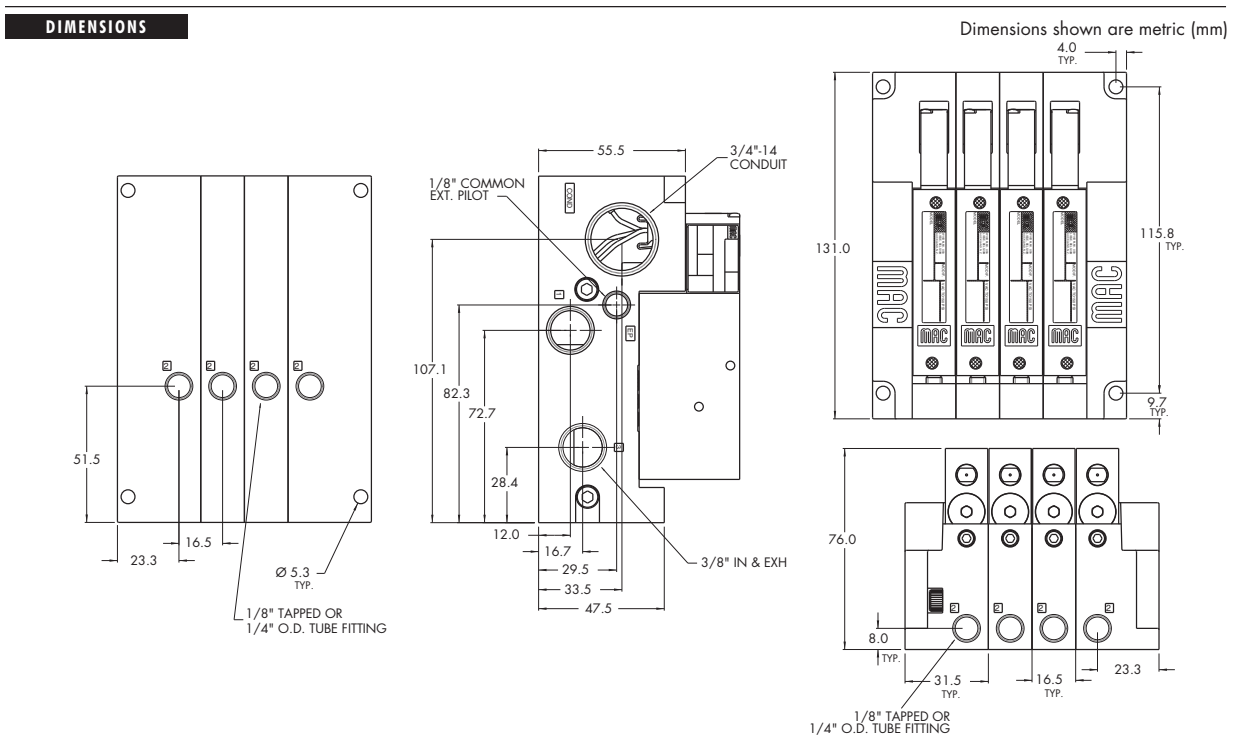
38B-xxx-Jx-Gxx P-xxx

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

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

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

Options : • NPTF threads



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤

G XX X-X XX
1 2 3 4

| 1. VOLTAGE | | |
|-------------|------------|--|
| G-XX X-X XX | VOLTAGE | |
| AA | 120V~/2,5W | Requires electrical connector with rectifier |
| AC | 24V~/4,0W | Requires electrical connector with rectifier |
| DA | 24V~/1,0W | |
| DC | 24V~/1,8W | |
| DD | 24V~/2,5W | |
| DE | 24V~/3,0W | |
| DF | 24V~/4,0W | |
| DG | 12V~/1,0W | |
| DJ | 12V~/1,8W | |
| DK | 12V~/2,5W | |
| DM | 12V~/3,0W | |
| DN | 12V~/4,0W | |
| DR | 6V~/1,8W | |
| DS | 6V~/3,0W | |
| EB | 48V~/1,8W | |
| EC | 48V~/3,0W | |
| ED | 120V~/2,5W | |
| GD | 12V~/0,5W | 34 series only |
| GE | 24V~/0,5W | 34 series only |

| 2. WIRE LENGTH | |
|----------------|---|
| G-XX X-X XX | WIRE LENGTH |
| 0 | No lead wires (used only with "KJ" & "KM" connectors) |
| A | 45 cm – 18" coil leads |
| B | 60 cm – 24" coil leads |
| C | 90 cm – 36" coil leads |
| D | 120 cm – 48" coil leads |
| E | 180 cm – 72" coil leads |
| F | 240 cm – 96" coil leads |
| G | 305 cm – 120" coil leads |
| H | 366 cm – 144" coil leads |
| 1 | 45 cm – 18" base leads |
| 2 | 60 cm – 24" base leads |
| 3 | 90 cm – 36" base leads |
| 4 | 120 cm – 48" base leads |
| 5 | 180 cm – 72" base leads |
| 6 | 240 cm – 96" base leads |
| 7 | 305 cm – 120" base leads |

| 3. MANUAL OPERATOR | |
|--------------------|----------------------|
| G-XX X-X XX | MANUAL OPERATOR |
| 1 | Non-locking recessed |
| 2 | Locking recessed |
| 3 | Non-locking extended |
| 4 | Locking extended |

| 4. ELECTRICAL CONNECTION | |
|--------------------------|--|
| G-XX X-X XX | ELECTRICAL CONNECTION |
| BA | Flying leads |
| BB | BA with ground wire |
| BC | BA with light |
| BD | BA with light and ground wire |
| BE | BA with suppression diode |
| BF | BA with suppression diode and ground wire |
| BG | BA with suppression diode and light |
| BH | BA with suppression diode, light and ground wire |
| BN | BA with suppression diode and blocking diode |
| BP | BA with suppression diode, blocking diode and ground wire |
| BR | BA with suppression diode, blocking diode and light |
| BS | BA with suppression diode, blocking diode, light and ground wire |
| GA | MAC JAC Solenoid plug-in |
| GB | MAC JAC Solenoid plug-in with diode |
| GC | MAC JAC Solenoid plug-in with MOV |
| GD | MAC JAC Solenoid plug-in with LED |
| GE | MAC JAC Solenoid plug-in with diode and LED |
| GF | MAC JAC Solenoid plug-in with MOV and LED |
| GG | MAC JAC Solenoid plug-in with rectifier |
| GH | MAC JAC Solenoid plug-in with rectifier and LED |
| KA | Mini connector |
| KB | KA with ground |
| KC | KA with rectifier and light |
| KD | KA with rectifier, light and ground |
| KE | KA with suppression diode |
| KF | KA with suppression diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | KA with suppression diode and blocking diode |
| KP | KA with suppression diode, blocking diode and ground |
| KT | KA with light |
| KU | KA with light and ground |
| KV | KA with suppression diode and light |
| KW | KA with suppression diode, light and ground |
| KX | KA with suppression diode, blocking diode and light |
| KY | KA with suppression diode, blocking diode, light & ground |

| ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
|--|--|
| G-XX X-X XX | PLUG-IN OPTIONS |
| SB | Base plug-in with ground |
| SC | Base plug-in with suppression & blocking diode |
| SD | Base plug-in with suppression & blocking diode & ground |
| SE | Base plug-in with MOV |
| SF | Base plug-in with MOV & ground |
| SG | Base plug-in with rectifier |
| SH | Base plug-in with rectifier & ground |
| SK | Base plug-in with light & ground |
| SL | Base plug-in with suppression & blocking diode & light |
| SM | Base plug-in with suppression & blocking diode with light & ground |
| SN | Base plug-in with MOV & light |
| SP | Base plug-in with MOV & light with ground |
| SR | Base plug-in with rectifier & light |

MAC 52 Series

MAC

52 Series

2/2-way & 3/2-way remote & solenoid pilot operated (5-way pilot)

| | |
|----------------------------------|---|
| Available configurations: | Individual inline, individual base mounted or manifold mounted bodies |
| Port sizes: | 1/8", 1/4" ports |
| Flow: | Up to 1500 NI/min (1.5 Cv) |
| Pressure range: | Vacuum to 8 bar |
| Function: | 3/2 (single & double operator), 3/2 (normally open & normally closed) |
| Operation: | Electrical / Remote air |
| Pilot valve: | DM / DP / DU / GM |
| Accessories: | Circuit bar / Flow controls |



Table of contents

- *MAC 52 Series - Solenoid pilot operated valve*
- *MAC 52 Series - Remote air valve*
- *MAC 52 Series - Spool configurations*
- *MAC 52 Series - How to order*
- *MAC 52 Series - References for DM pilot valve*
- *MAC 52 Series - References for GM pilot valve*
- *MAC 52 Series - Codification electrical connection DM pilot valve (coil / connector configurations)*
- *MAC 52 Series - Codification electrical connection GM pilot valve (coil / connector configurations)*
- *MAC 52 Series - Dimensions*
- *MAC 52 Series - Repair kits (main ones)*
- *MAC 52 Series - Circuit bar®*

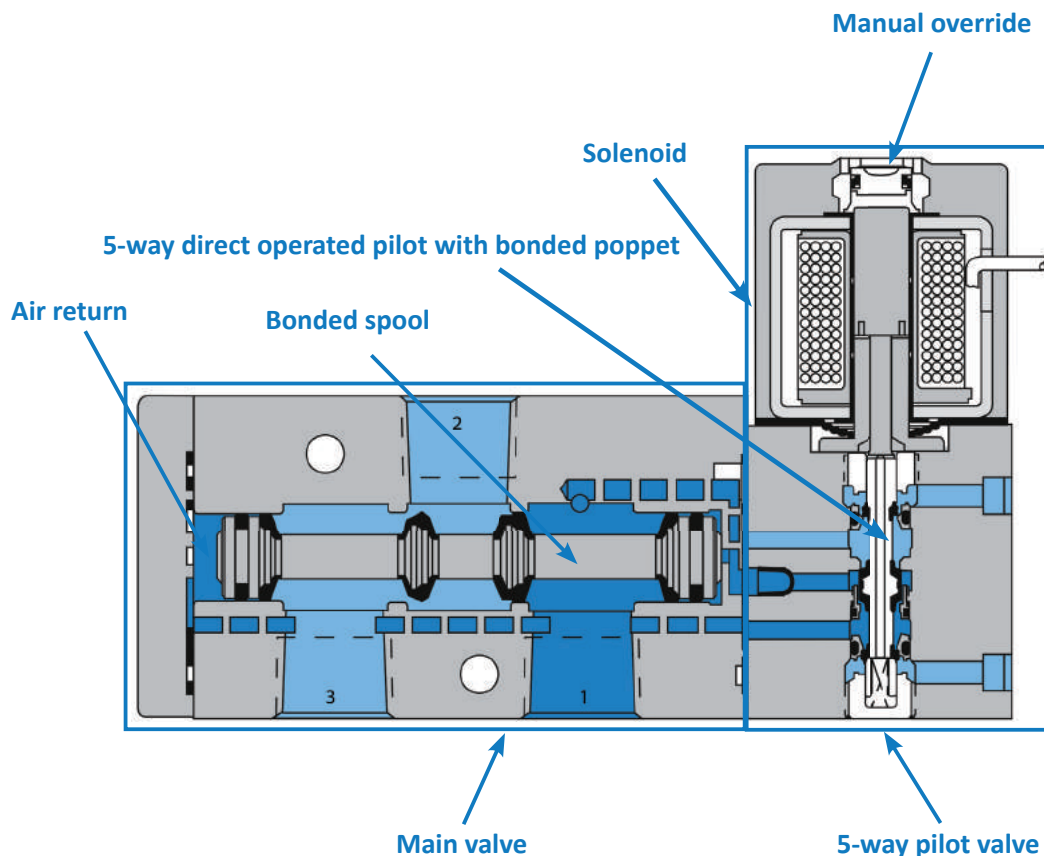
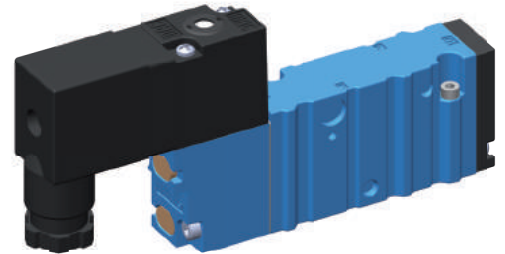
MAC 52 Series

MAC 52 Series - Solenoid pilot operated valve

2-way & 3-way, 2 position, spool

Flow up to 1500 NI/min (1.5 Cv)

- ◇ MAC unique patented 5-way direct operating pilot valve
- ◇ The 5-way pilot develops maximum shifting forces both ways
- ◇ Short stroke with high flow
- ◇ Balanced spool, immune to variations of pressure, also provides high flow
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect eliminates sticking
- ◇ Long service life
- ◇ Repair kit available for the complete valve



Valve with side ports, single operator, single pressure, internal pilot

MAC 52 Series - Solenoid pilot operated valve

Technical data

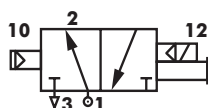
| | |
|----------------------------|--|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Internal pilot : 1.3 to 8 bar External pilot: vacuum to 8 bar |
| Pilot pressure: | 1.3 to 8 bar |
| Lubrication: | Not required, if used, select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to +50°C |
| Orifice: | 7.3 mm |
| Flow (at 6 bar, ΔP=1 bar): | G1/8": 1200 NI/min (1.2 Cv) - G1/4": 1500 NI/min (1.5 Cv) |
| Coil: | Epoxy encapsulated - Class A wires - 100% ED (mod 0449) |
| Voltage range: | -15% to +10% of nominal voltage |
| Protection: | IP54 (GM pilot) - IP65 (DM pilot) (Electrical connection) |
| Power: | ~ Inrush: 10.9 VA Holding: 7.7 VA = 1.8 to 12.7 W |
| Response times: | 24V=5.4W Energize: 7.3 ms De-energize: 5.3 ms 110V~/50Hz Energize: 8-12 ms De-energize: 7-11 ms |

Solenoid pilot operated valve

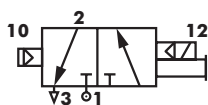
Single pressure models

3/2

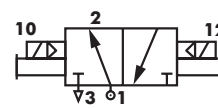
Single operator normally open valve



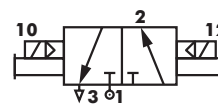
Single operator normally closed valve



Double operator normally open valve



Double operator normally closed valve



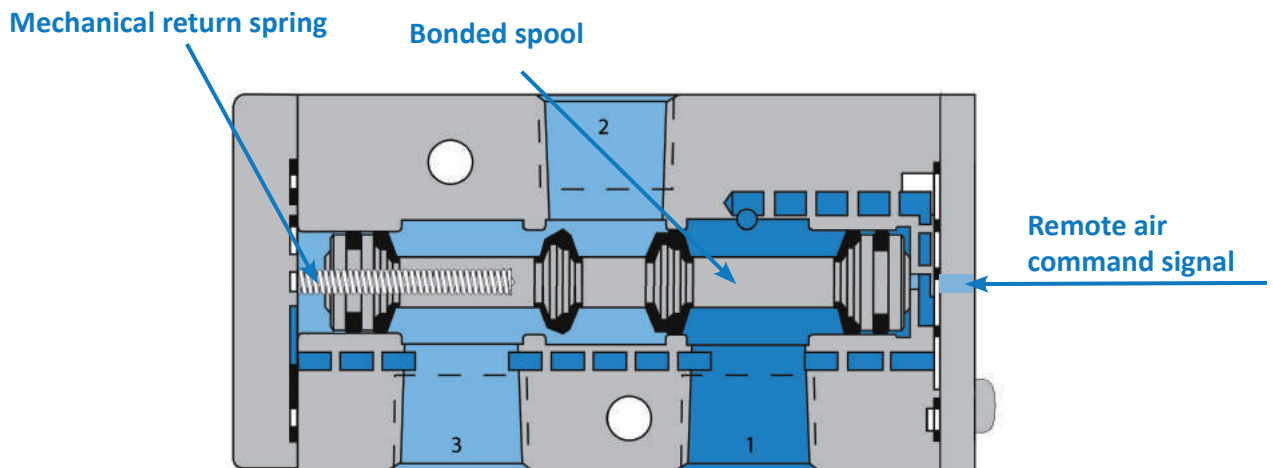
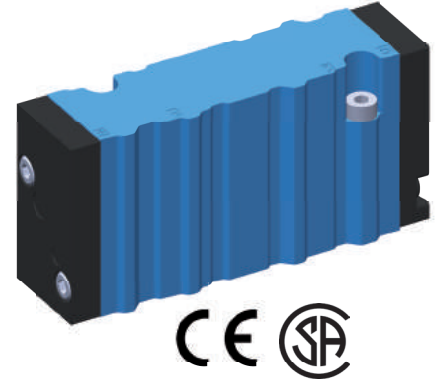
MAC 52 Series

MAC 52 Series - Remote air valve

2 ported & 3 ported, 2 position, spool

Flow up to 1500 NI/min (1.5 Cv)

- ◇ Balanced spool, immune to variations of pressure, also provides high flow
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Short stroke with high flow
- ◇ Wiping effect eliminates sticking
- ◇ Long service life
- ◇ Repair kit available for complete valve



Valve with single remote operator, single pressure, normally closed, side ports

MAC 52 Series - Remote air valve

Technical data

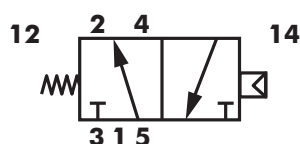
| | |
|-----------------------------------|---|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Single op.: vacuum to 6.7 bar - Double op.: vacuum to 10 bar |
| Air signal pressure: | Single op.: 2.7 to 10 bar - Double op.: 1.3 to 10 bar |
| Lubrication: | Not required, if used, select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to +50°C |
| Orifice: | 7.5 mm |
| Flow (at 6 bar, ΔP=1 bar): | G1/8": 1200 NI/min (1.2 Cv) - G1/4": 1500 NI/min (1.5 Cv) |

Remote air valve

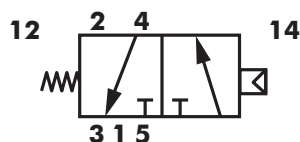
Single pressure models

3/2

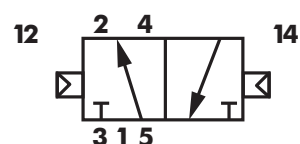
Single operator normally open valve



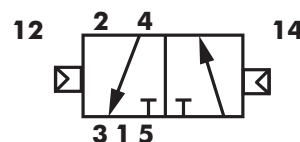
Single operator normally closed valve



Double operator normally open valve



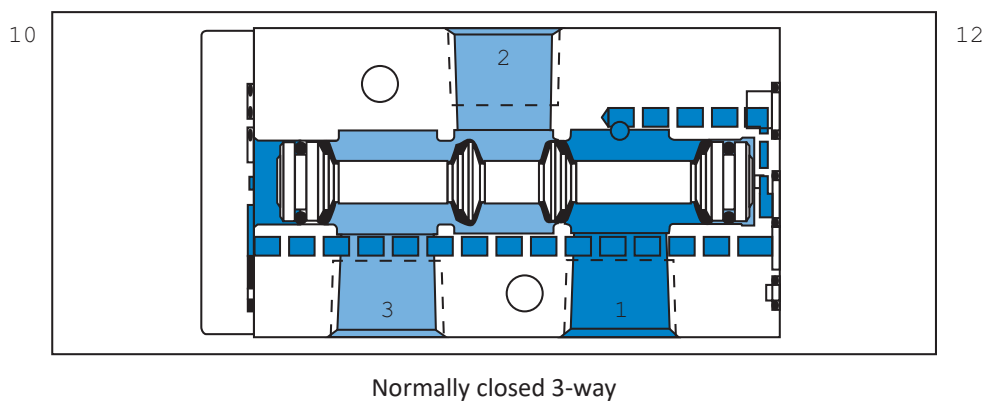
Double operator normally closed valve



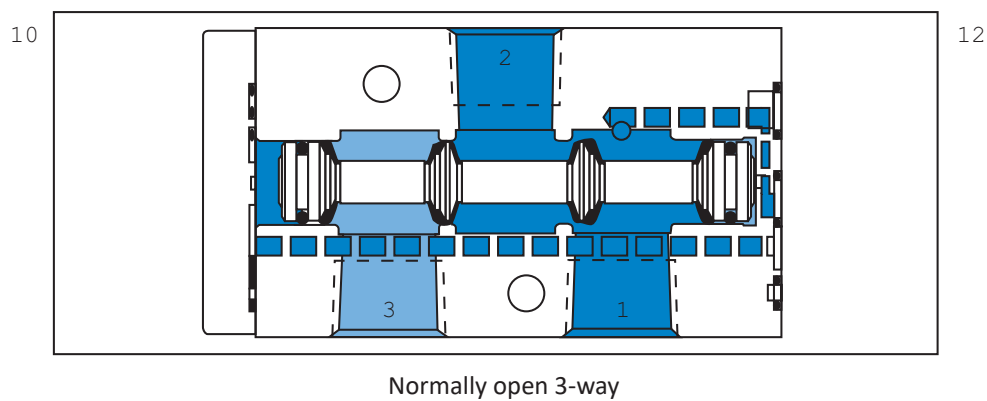
MAC 52 Series

MAC 52 Series - Spool configurations

Internal Pilot



Internal Pilot



MAC 52 Series

MAC 52 Series - How to order

How to order valve

52A - X X - X X X - X X - X X X X - X X X

PILOT VALVE - See below

| SPOOL TYPE | BODY OPTIONS | PORT SIZE & THREAD TYPE IN. & CYL. | BASE CONFIGURATION | INT./EXT. PILOT |
|--|--|--|----------------------------------|---|
| 1 Sgl. oper. N.C. main 2 Dbl. oper. N.C. main 3 Sgl.oper. N.O. main 4 Dbl.oper. N.O. main | 1 Inline 3 port 3 Manifold body 4 Inline 3 port w/ memory spring 6 Manifold body w/ memory spring | 0 Manifold body A 1/8 NPTF B 1/4 NPTF C 1/8 BSPPL D 1/4 BSPPL E 1/8 BSPTR F 1/4 BSPTR | 0 Inline or manifold body | A Internal pilot B External pilot - For inline bodies only C Common external pilot |

How to order remote air version

52A - X X - X X X - RA

Remote Air

| SPOOL TYPE | BODY TYPE | PORT SIZE & THREAD TYPE | CONFIGURATION | PILOT PORT |
|--|--|--|----------------------------------|---|
| 1 Sgl. oper. NC. 2 Dbl. oper. NC. 3 Sgl. oper. NO. 4 Dbl. oper. NO. | 1 Inline 3 port 3 Manifold body | 0 Manifold body A 1/8" NPTF B 1/4" NPTF C 1/8" BSPPL D 1/4" BSPPL E 1/8" BSPTR F 1/4" BSPTR | 0 Inline or manifold body | H Pilot port size #10-32 J Pilot port size M5 (Metric) |

* For single operator valves, use MOD 1493

MAC 52 Series

MAC 52 Series - How to order

How to order solenoid operator

DM - D X X X - X X X*

| VOLTAGE | LEAD WIRE LENGTH | MANUAL OVERRIDE | ELECTRICAL CONNECTOR* |
|--------------------------|--------------------|-------------------------------|--|
| JA 110 V~ / 50 Hz | O No wires | 0 No operator | BA Flying leads |
| JB 220 V~ / 50 Hz | A 45 cm | 1 Non-locking recessed | BK Flying leads with protection diode |
| JC 24 V~ / 50 Hz | B 60 cm | 2 Locking recessed | BL Flying leads with protection varistor |
| DA 24 V= / 5.4 W | C 90 cm | 3 Non-locking extended | JB DIN 43650 - Industrial type B connector (male + female) |
| DB 12 V= / 5.4 W | D 120 cm | 4 Locking extended | JD DIN 43650 - Industrial type B connector with light (male + female) |
| DC 12 V= / 7.5 W | E 180 cm | | JM DIN 43650 - Industrial type B connector (male only) |
| DD 24 V= / 7.3 W | F 240 cm | | KA DIN 43650 - Industrial type C connector |
| FA 12 V= / 1.8 W | J Connector | | KB DIN 43650 - Industrial type C connector with protection diode |
| FB 24 V= / 1.8 W | | | KJ DIN 43650 - Industrial type C connector with protection varistor |
| FE 12 V= / 2.4 W | | | TA Dual tabs with receptacles |
| FF 24 V= / 2.4 W | | | TB TA with protection diode |

* Other options available, see page 11

GM - G X X X - X X X*

| VOLTAGE | LEAD WIRE LENGTH | MANUAL OVERRIDE | ELECTRICAL CONNECTOR* |
|--------------------------|-------------------|-------------------------------|---|
| DC 24 V= / 1.8 W | O No wires | 1 Non locking recessed | BA Flying leads w/o ground wire |
| DD 24 V= / 2.5 W | A 45 cm | 3 Non locking extended | BB Flying leads w/ ground wire |
| DE 24 V= / 3.0 W | B 60 cm | | BT Flying leads with LED light on top (no ground wire) |
| DF 24 V= / 4.0 W | C 90 cm | | KA Plug-in wire assembly (no ground wire) |
| DJ 12 V= / 1.8 W | D 120 cm | | KB Plug-in wire assembly w/ ground wire |
| DK 12 V= / 2.5 W | E 180 cm | | KT Plug-in wire assembly w/ LED light on top |
| DM 12 V= / 3.0 W | F 240 cm | | |
| DN 12 V= / 4.0 W | G 305 cm | | |
| ED 120 V= / 2.5 W | H 366 cm | | |

* Other options available, see page 12

MAC 52 Series

MAC 52 Series - References for DM pilot valve

Codification table for voltages / Manual override / Electrical connection

VALVE CODE □ **-DM- XX X-X XX**
1 2 3 4

* From Lead wire length options choose A through F

Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads.

1. VOLTAGE

| D-XX X-X XX | VOLTAGE |
|-------------|---|
| DA | 24V=5,4W |
| DB | 12V=5,4W |
| DC | 12V=7,5W |
| DD | 24V=7,3W |
| DE | 12V=12,7W |
| DF | 24V=12,7W |
| DK | 110V=4,7W |
| DJ | 28V=5,2W |
| DL | 64V=6W |
| DM | 36V=5,3W |
| DN | 6V=6W |
| DR | 90V=6,6W |
| DS | 110V=7,3W |
| DT | 75V=5,6W |
| DP | 48V=5,8W |
| FA | 12V=1,8W |
| FB | 24V=1,8W |
| FE | 12V=2,4W |
| FF | 24V=2,4W |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) |
| JE | 220V~/60Hz (3,4W) |
| JF | 240V~/50Hz (2,8W) |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) |

2. WIRE LENGTH

| D-XX X-X XX | WIRE LENGTH |
|-------------|--------------|
| 0 | No wires |
| A | 45 cm – 18" |
| B | 60 cm – 24" |
| C | 90 cm – 36" |
| D | 120 cm – 48" |
| E | 180 cm – 72" |
| F | 240 cm – 96" |
| J | Connector |

3. MANUAL OVERRIDE

| D-XX X-X XX | MANUAL OVERRIDE |
|-------------|----------------------|
| 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 |
| CA* | 1/2" NPS conduit with flying leads |
| CM* | 1/2" NPS metal conduit with flying leads |
| CN* | 1/2" NPS metal conduit with flying leads & ground |
| CK | 1/2" NPS conduit with diode |
| CL | 1/2" NPS conduit with MOV |
| HA | MAC JAC plug-in |
| HB | MAC JAC plug-in with light |
| HC | MAC JAC plug-in with diode & light |
| JB | DIN 43650 - Industrial type B connector (male + female) |
| JD | DIN 43650 - Industrial type B connector with light (male + f.) |
| JM | DIN 43650 - Industrial type B connector (male only) |
| JA | DIN 43650 - Industrial type A connector (male + female) |
| JC | DIN 43650 - Industrial type A connector with light (male + f.) |
| JJ | DIN 43650 - Industrial type A connector (male only) |
| KA | DIN 43650 - Industrial type C connector |
| KB | DIN 43650 - Industrial type C connect. with protection diode |
| KC | DIN 43650 - Industrial type C conn. with protection varistor |
| KD | DIN 43650 - Industrial type C connector with light |
| KE | DIN 43650 - Indust. type C conn. w/ light & protection diode |
| KF | DIN 43650 - Indust. type C conn. w/ light & protection varistor |
| KG | DIN 43650 - Industrial type C connector with light & diode |
| KJ | DIN 43650 - Industrial type C connector (male only) |
| KK | DIN 43650 - Indust. type C conn. w/ protection diode (male) |
| KL | DIN 43650 - Indust. type C conn. w/ protection varistor (male) |
| LA | ISO 15217 standard connector plug-in (male only) |
| LB | ISO 15217 standard connector plug-in with diode (male only) |
| LC | ISO 15217 standard connector plug-in with MOV (male only) |
| LJ | ISO 15217 standard connector plug-in (male only) |
| LK | ISO 15217 standard connector plug-in with diode (male only) |
| LL | ISO 15217 standard connector plug-in with MOV (male only) |
| PA | Pico M8 (male only) |
| TA | Dual tabs with receptacles |
| TB | TA with protection diode |
| TD | TA with light |
| TE | TA with light and protection diode |
| TJ | Dual tabs (male only) |
| TK | TJ with protection diode |
| TM | TJ with light |
| TN | TJ with light and protection diode |
| RA | Euro (M12) - 2 Pin |
| RB | Euro (M12) - 2 Pin with diode (male only) |
| RC | Euro (M12) - 2 Pin with MOV |
| RD | Euro (M12) - 2 Pin with light |
| RE | Euro (M12) - 2 Pin with diode & light |
| RF | Euro (M12) - 2 Pin with MOV & light |

MAC 52 Series

MAC 52 Series - References for GM pilot valve

Codification table for voltages / Manual override / Electrical connection

VALVE CODE **-GM- XX X-X XX**
1 2 3 4

1. VOLTAGE

| G-XX X-X XX | VOLTAGE |
|-------------|--------------|
| DC | 24 V =/1.8 W |
| DD | 24 V =/1.8 W |
| DE | 24 V =/3.0 W |
| DF | 24 V =/4.0 W |
| DJ | 12 V =/1.8 W |
| DK | 12 V =/2.5 W |
| DM | 12 V =/3.0 W |
| DN | 12 V =/4.0 W |

2. WIRE LENGTH

| G-XX X-X XX | WIRE LENGTH |
|-------------|--|
| 0 | No lead wire (use only with "KJ" & "KM" electrical connectors) |
| A | 45 cm - 18" |
| B | 60 cm - 24" |
| C | 90 cm - 36" |
| D | 120 cm - 48" |
| E | 180 cm - 72" |
| F | 240 cm - 96" |
| G | 300 cm - 120" |
| H | 365 cm - 144" |

3. MANUAL OVERRIDE

| G-XX X-X XX | MANUAL OPERATOR |
|-------------|----------------------|
| 1 | Non-locking recessed |
| 2 | Locking recessed |
| 3 | Non-locking extended |
| 4 | Locking extended |

4. ELECTRICAL CONNECTION

| G-XX X-X XX | ELECTRICAL CONNECTION |
|-------------|---|
| BA | Flying leads |
| BB | Flying leads with ground wire |
| BC | Flying leads with LED light parallel to leads |
| BD | Flying leads with LED light parallel to leads & ground wire |
| BE | Flying leads with suppression diode |
| BF | Flying leads with supp. diode & ground wire |
| BG | Flying leads with supp. diode plus LED light parallel to leads |
| BH | Flying leads with supp. diode plus LED light parallel to leads & ground wire |
| BN | Flying leads with supp. diode plus blocking diode |
| BP | Flying leads w/ supp. diode plus blocking diode & ground wire |
| BR | Flying leads w/ supp. diode plus blocking diode & LED light parallel to leads |
| BS | Flying leads with supp. diode plus blocking diode & LED light parallel to leads & Ground Wire |

| | |
|----|--|
| BT | Flying leads with LED light on top |
| BU | Flying leads with LED light on top & ground wire |
| BV | Flying leads with supp. diode plus LED light on top |
| BW | Flying leads w/ supp. diode plus LED light on top & ground wire |
| BX | Flying leads w/ supp. diode plus blocking diode & LED on top |
| BY | Flying leads with supp. diode plus blocking diode & LED on top & ground wire |

4. ELECTRICAL CONNECTION

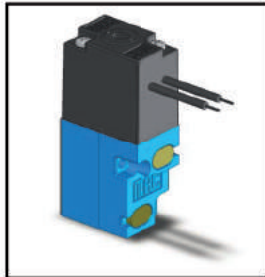
| G-XX X-X XX | SOLENOID PLUG-IN CONNECTOR WITH LEADS |
|-------------|---|
| GA* | MAC JAC Solenoid plug-in |
| GB* | MAC JAC Solenoid plug-in with diode |
| GC* | MAC JAC Solenoid plug-in with MOV |
| GD* | MAC JAC Solenoid plug-in with light |
| GE* | MAC JAC Solenoid plug-in with diode & light |
| GF* | MAC JAC Solenoid plug-in with MOV & light |
| GG* | MAC JAC Solenoid plug-in with rectifier |
| GH* | MAC JAC Solenoid plug-in with rectifier & light |
| GJ* | MAC JAC Solenoid plug-in (male only) |
| GK* | MAC JAC Solenoid plug-in with diode (male only) |
| GL* | MAC JAC Solenoid plug-in with MOV (male only) |
| GM* | MAC JAC Solenoid plug-in with LED (male only) |
| GN* | MAC JAC Solenoid plug-in with diode & LED (male only) |
| GP* | MAC JAC Solenoid plug-in with MOV & LED (male only) |
| GR* | MAC JAC Solenoid plug-in with rectifier (male only) |
| GS* | MAC JAC Solenoid plug-in with rectifier & LED (male only) |
| HA | Circuit board plug-in w/ full wave rectifier & LED (w/ ground wire) |
| HD | Same as "HA" without lead wire assembly |
| KA | Plug-in wire assembly |
| KB | Plug-in wire assembly with ground wire |
| KC | Solenoid plug-in wire assembly with rectifier and LED |
| KD | Solenoid plug-in wire ass. w/ rectifier and LED w/ ground |
| KE | Plug-in wire assembly w/ suppression diode |
| KF | Plug-in wire assembly w/ suppression diode & ground wire |
| KJ | Plug-in without wire assembly for "KA" above |
| KM | Plug-in without wire assembly for "KB" above |
| KN | Plug-in wire assembly w/ supp. diode plus blocking diode |
| KP | Plug-in wire ass. w/ supp. diode + blocking diode & ground wire |
| KT | Plug-in wire assembly with LED light on top (no ground wire) |
| KU | Plug-in wire assembly with LED light on top & ground wire |
| KV | Plug-in wire assembly with supp. diode plus LED light on top |
| KW | Plug-in wire ass. w/ supp. diode + LED light on top & ground wire |
| KX | Plug-in wire ass. w/ supp. diode + block. diode & LED light on top |
| KY | Plug-in wire assembly with suppression diode plus blocking diode & LED light on top & ground wire |
| PA | Pico |
| TJ | Dual Tabs - Mini Plug-in |

Note: Blocking diode is located in the lead wire

* MAC JAC Connector not available with AC Voltage options

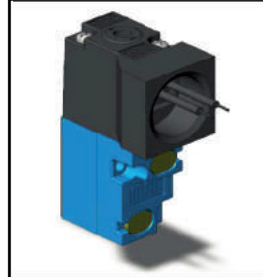
MAC 52 Series

MAC 52 Series - Codification electrical connection DM pilot valve (coil / connector configurations)



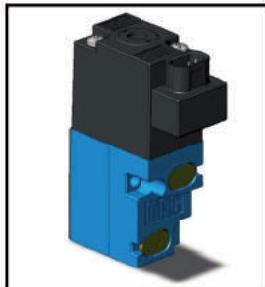
- BA* Flying leads
- BK* BA with protection diode
- BL* BA with protection varistor

* From lead wire length options choose

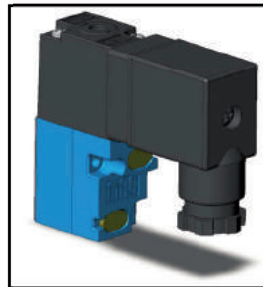


- CA* 1/2" NPS conduit with flying leads
- CM* 1/2" NPS metal conduit with flying leads
- CN* 1/2" NPS metal conduit with flying leads & ground
- CK 1/2" NPS conduit with diode
- CL 1/2" NPS conduit with MOV

* From lead wire length options choose

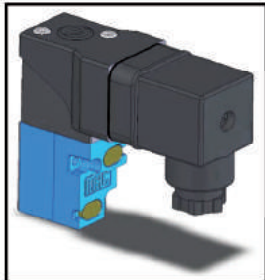


- HA MAC JAC plug-in
- HB MAC JAC plug-in with light
- HC MAC JAC plug-in with diode & light



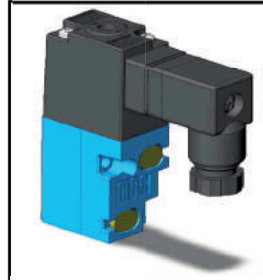
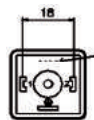
- JB DIN 43650 - Industrial type B connector (male + female)
- JD DIN 43650 - Industrial type B connector with light (male + female)
- JM DIN 43650 - Industrial type B connector (male only)

11mm pin spacing

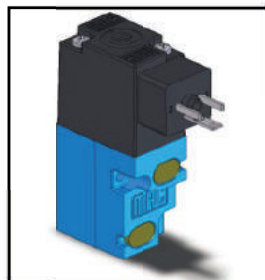


- JA DIN 43650 - Industrial type A connector (male + female)
- JC DIN 43650 - Industrial type A connector with light (male + female)
- JJ DIN 43650 - Industrial type A connector (male only)

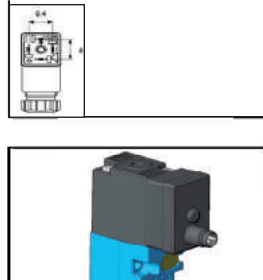
Form A - 18mm pin spacing



- KA DIN 43650 - Industrial type C connector
- KB DIN 43650 - Industrial type C connector with protection diode
- KC DIN 43650 - Industrial type C connector with protection varistor
- KD DIN 43650 - Industrial type C connector with light
- KE DIN 43650 - Industrial type C connector with light and protection diode
- KF DIN 43650 - Industrial type C connector with light and protection varistor
- KG DIN 43650 - Industrial type C connector with light & diode
- KJ DIN 43650 - Industrial type C connector (male only)
- KK DIN 43650 - Industrial type C connector with protection diode (male only)
- KL DIN 43650 - Industrial type C connector with protection varistor (male only)



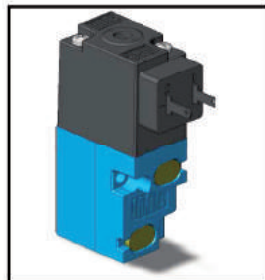
- LA ISO 15217 standard connector plug-in (male only)
- LB ISO 15217 standard connector plug-in with diode (male only)
- LC ISO 15217 standard connector plug-in with MOV (male only)
- LJ ISO 15217 standard connector plug-in (male only)
- LK ISO 15217 standard connector plug-in with diode (male only)
- LL ISO 15217 standard connector plug-in with MOV (male only)



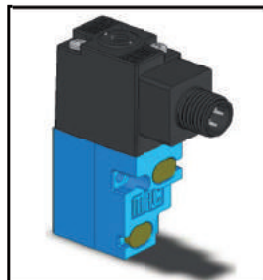
- PA Pico M8 (male only)



M* 2-pin thread or snap fit



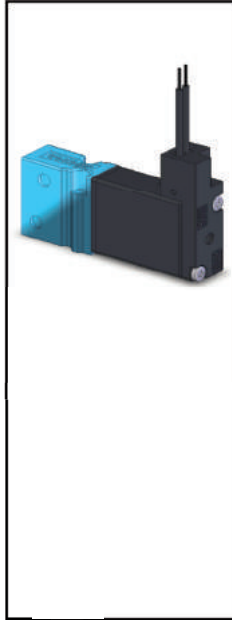
- TA Dual tabs with receptacles
- TB TA with protection diode
- TD TA with light
- TE TA with light and protection diode
- TJ Dual tabs (male only)
- TK TJ with protection diode
- TM TJ with light
- TN TJ with light and protection diode



- RA Euro (M12) - 2 Pin
- RB Euro (M12) - 2 Pin with diode (male only)
- RC Euro (M12) - 2 Pin with MOV
- RD Euro (M12) - 2 Pin with light
- RE Euro (M12) - 2 Pin with diode & light
- RF Euro (M12) - 2 Pin with MOV & light

MAC 52 Series

MAC 52 Series - Codification electrical connection GM pilot valve (coil / connector configurations)



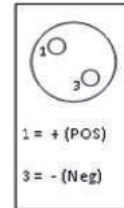
| | |
|----|---|
| BA | Flying leads |
| BB | Flying leads with ground wire |
| BC | Flying leads with LED light parallel to leads |
| BD | Flying leads with LED light parallel to leads & ground wire |
| BE | Flying leads with suppression diode |
| BF | Flying leads with supp. diode & ground wire |
| BG | Flying leads with supp. diode plus LED light parallel to leads |
| BH | Flying leads with supp. diode plus LED light parallel to leads & ground wire |
| BN | Flying leads with supp. diode plus blocking diode |
| BP | Flying leads with supp. diode plus blocking diode & ground wire |
| BR | Flying leads with supp. diode plus blocking diode & LED light parallel to leads |
| BS | Flying leads with supp. diode plus blocking diode & LED light parallel to leads & Ground Wire |
| BT | Flying leads with LED light on top |
| BU | Flying leads with LED light on top & ground wire |
| BV | Flying leads with supp. diode plus LED light on top |
| BW | Flying leads with supp. diode plus LED light on top & ground wire |
| BX | Flying leads with supp. diode plus blocking diode & LED on top |
| BY | Flying leads with supp. diode plus blocking diode & LED on top & ground wire |



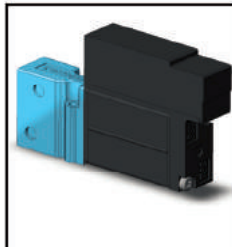
| | |
|----|---|
| KA | Plug-in wire assembly |
| KB | Plug-in wire assembly with ground wire |
| KC | Solenoid plug-in wire assembly with rectifier and LED |
| KD | Solenoid plug-in wire assembly with rectifier and LED with ground |
| KE | Plug-in wire assembly w/ suppression diode |
| KF | Plug-in wire assembly w/ suppression diode & ground wire |
| KJ | Plug-in without wire assembly for "KA" above |
| KM | Plug-in without wire assembly for "KB" above |
| KN | Plug-in wire assembly with suppression diode plus blocking diode |
| KP | Plug-in wire assembly with suppression diode plus blocking diode & ground wire |
| KT | Plug-in wire assembly with LED light on top (no ground wire) |
| KU | Plug-in wire assembly with LED light on top & ground wire |
| KV | Plug-in wire assembly with supp. diode plus LED light on top |
| KW | Plug-in wire assembly with supp. diode plus LED light on top & ground wire |
| KX | Plug-in wire assembly with suppression diode plus blocking diode & LED light on top |
| KY | Plug-in wire assembly with suppression diode plus blocking diode & LED light on top & ground wire |



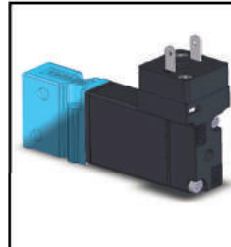
| | |
|---|---|
| GA* | MAC JAC Solenoid plug-in |
| GB* | MAC JAC Solenoid plug-in with diode |
| GC* | MAC JAC Solenoid plug-in with MOV |
| GD* | MAC JAC Solenoid plug-in with light |
| GE* | MAC JAC Solenoid plug-in with diode & light |
| GF* | MAC JAC Solenoid plug-in with MOV & light |
| GG* | MAC JAC Solenoid plug-in with rectifier |
| GH* | MAC JAC Solenoid plug-in with rectifier & light |
| GJ* | MAC JAC Solenoid plug-in (male only) |
| GK* | MAC JAC Solenoid plug-in with diode (male only) |
| GL* | MAC JAC Solenoid plug-in with MOV (male only) |
| GM* | MAC JAC Solenoid plug-in with LED (male only) |
| GN* | MAC JAC Solenoid plug-in with diode & LED (male only) |
| GP* | MAC JAC Solenoid plug-in with MOV & LED (male only) |
| GR* | MAC JAC Solenoid plug-in with rectifier (male only) |
| GS* | MAC JAC Solenoid plug-in with rectifier & LED (male only) |
| * MAC JAC Connector not available with AC Voltage options | |



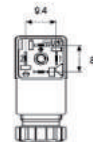
| | |
|-----------------------------|------|
| PA | Pico |
| M* 2-Pin Thread or Snap Fit | |
| 8mm | |



| | |
|----|---|
| HA | Circuit board plug-in with full wave rectifier & LED (with ground wire) |
| HD | Same as "HA" without lead wire assembly |



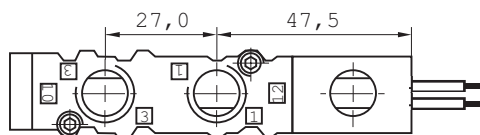
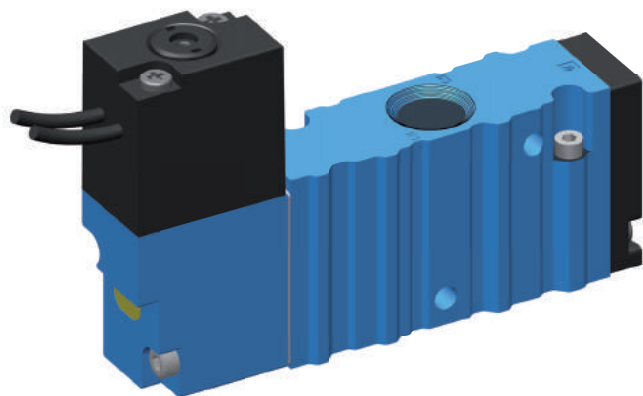
| | |
|---------------------------------------|--------------------------|
| TJ | Dual Tabs - Mini Plug-in |
| MICRO DIN 43650-Industrial Standard C | |
| 9.4mm Pin Spacing | |



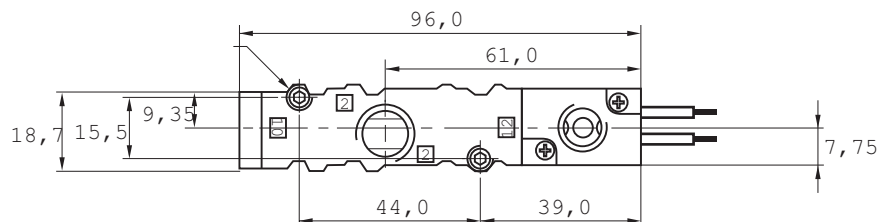
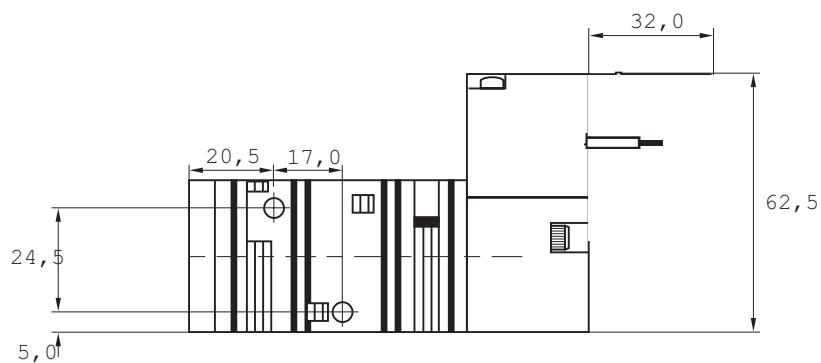
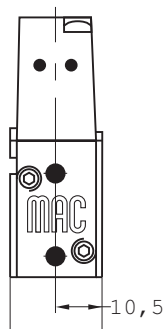
MAC 52 Series

MAC 52 Series - Dimensions

52 Series - Inline valve



All dimensions are in mm



MAC 52 Series

MAC 52 Series - Repair kits (main ones)

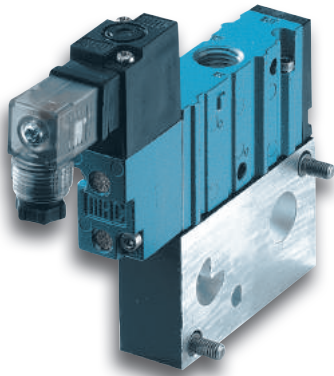
| PART REFERENCE | DESCRIPTION |
|----------------|---|
| S-52001 | Spool only, single pressure, single operator, normally closed |
| S-52002 | Spool only, single pressure, single operator, normally closed, with memory spring |
| S-52004 | Spool only, single pressure, single operator, normally open |
| S-52005 | Spool only, single pressure, single operator, normally open, with memory spring |
| K-52001 | Repair kit, single pressure, single operator, normally closed |
| K-52002 | Repair kit, single pressure, double operator, normally closed |
| K-52003 | Repair kit, single pressure, single operator, normally closed, with memory spring |
| K-52004 | Repair kit, single pressure, single operator, normally open, with memory spring |
| K-52005 | Repair kit, single pressure, double operator, normally closed, with memory spring |
| K-52006 | Repair kit, single pressure, single operator, normally open |
| K-52007 | Repair spool, single pressure, double operator, normally open |
| K-52009 | Single pressure, double operator, normally open, with memory spring |
| DM-D...-... | Complete pilot valve (45 series type) |
| GM-G...-... | Complete pilot valve (44 series type) |
| 16524 | Pressure seal - pilot valve to body |
| 17013-01 | O-Ring with manifold base (3 pieces required per valve) |
| 17015-01 | O-Ring with inline base (2 pieces required per valve) |

| MOST COMMON MODIFICATIONS | DESCRIPTION |
|---------------------------|----------------------|
| T65C | High temperatures |
| 532B | Washdown IP65 |
| 0389 | Solenoid turned 180° |
| 0650 | Food applications |

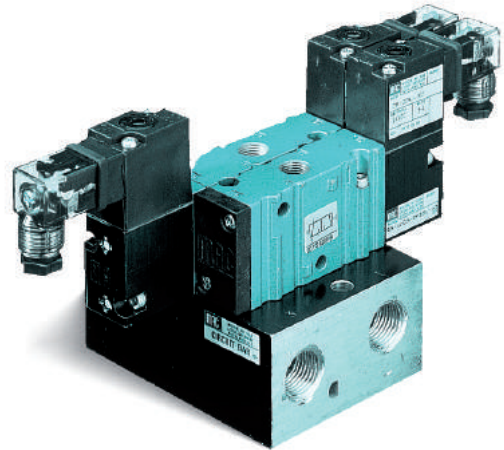
For other modifications, please consult factory

MAC 52 Series

MAC 52 Series - Circuit bar®



**ADD-ON STYLE BAR
WITH MANIFOLD MOUNT VALVES
CBP052A TYPE**



**STANDARD BAR WITH
INLINE MOUNTED VALVES
CBM052A TYPE**

Design description

General

The 52 series circuit bar® is machined from a single block of extruded anodized aluminium to provide a common inlet, common exhaust and optional common external pilot. Two different configurations are available, the standard bar (fixed number of stations), and the add-on style bar which provides a means to attach additional stations as needed.

Electrical

Both styles are non plug-in circuit bars®. All electrical connections are made at the solenoid.

Valving

Inline and manifold type valves can be mounted to the appropriate circuit bar®. Valves using both style pilot valves (44 and 45 series) can be mounted on the same circuit bar®. Both the inlet and exhaust passages can be isolated.

Porting

The common inlet and exhausts have a 3/8" tapped port. The optional common external pilot has an 1/8" tapped port. The CBP type bar is available in 1/8" and 1/4", bottom and side ports.

Accessories

Both the CBP and CBM style circuit bars® are available with an individual exhaust flow control. A blank station valve cover plate is available for both style bars. An end plate kit is supplied with the add-on style circuit bar®.

MAC 52 Series

MAC 52 Series - Circuit bar®

How to order standard bar

| CBM052 A - X X X X - X X - 9 | | | | | Valves, cover plates assembled to manifold |
|------------------------------|--|--|--|--|--|
| | | | | | Number of Stations |
| BAR TYPE | SPACING | CONFIGURATION | STYLE | PORT SIZE (COMMON PORTS) | |
| M Inline body bar | 00 19.5 mm (standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors) | A Inline body B Inline body with F.C. C Inline body - Common external pilot D Inline body with F.C. Common external pilot | A Standard bar B Add-on style bar C Add-on style bar Common external pilot E Add-a-unit station (21 mm minimum) | A 3/8" NPTF B 3/8" BSPPL C 3/8" BSPTR | |

Right-hand end plate kit included w/ bar ass'y on "B" & "C" style bar

Replacement parts & accessories

| | |
|--------------------|---|
| M-52001-01 | Right-Hand end plate kit (NPTF) |
| M-52001-01P | Right-Hand end plate kit (BSPPL) |
| M-52002-01 | Right-Hand end plate kit, common ext. pilot (NPTF) |
| M-52002-01P | Right-Hand end plate kit, common ext. pilot (BSPPL) |
| M-04001 | Blank station kit for inline body |
| N-04001 | Flow control assembly (1 per station) |
| 17015-01 | O-Ring body port seal (2 per station) |
| 35043 | Body to bar body mounting screw (2 per station) |

Ordering examples

CBM052A-00CCA-06

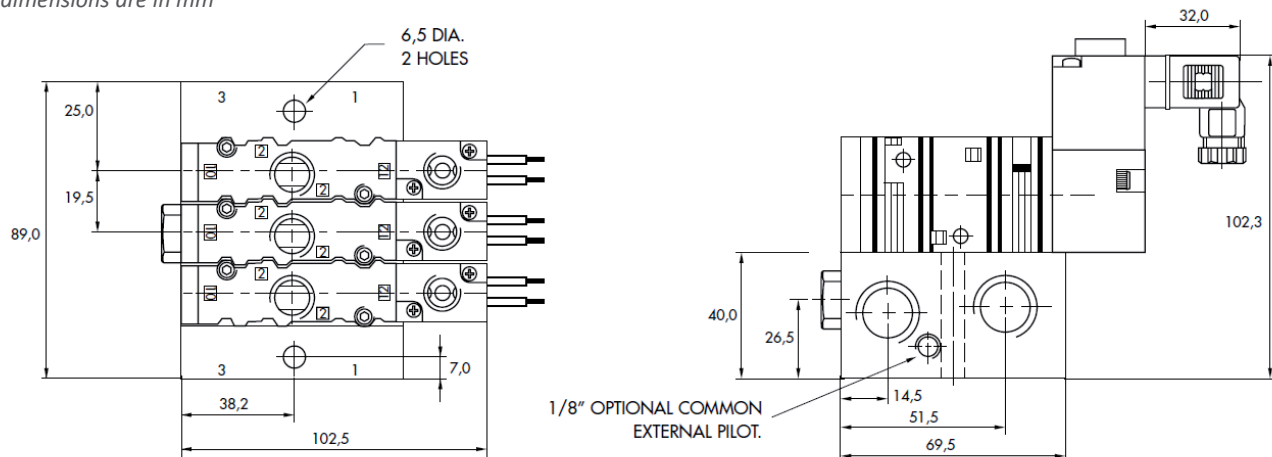
Inline body bar, 19.5 mm spacing, common external pilot, 3/8" NPTF common ports, add-on style bar, six identical stations.

CBM052A-01CEA-01

Inline body bar, 21 mm spacing, common external pilot, 3/8" NPTF common ports, one station add-a-unit, can be added to above 6 station bar.

Dimensions

All dimensions are in mm



Drawing for a standard bar, cylinder ports in valve

MAC 52 Series

MAC 52 Series - Circuit bar®

How to order add-on style bar



| BAR TYPE | SPACING | CONFIGURATION | STYLE | PORT SIZE (CYLINDER PORTS) |
|--|---|---|---|-------------------------------|
| P Manifold body bar | 00 19.5 mm (standard) | A Side cyl. port | A Standard bar | A 1/8" NPTF |
| | 01 21 mm | B Bottom cyl. port | B Add-on style bar | B 1/8" BSPPL |
| | 02 26 mm (conduit & rect. DIN type connectors) | C Side cyl. port w/ F.C. | C Add-on style bar Common external pilot | C 1/8" BSPTR |
| | | D Bottom cyl. port w/ F.C. | E Add-a-unit station (21 mm minimum) | D 1/4" NPTF |
| | | E Side cyl. port Common ext. pilot | | E 1/4" BSPPL |
| | | F Bottom cyl. port Common ext. pilot | | F 1/4" BSPTR |
| | | G Side cyl. port w/ F.C. Common ext. pilot | | |
| | | H Bottom cyl. port w/ F.C. Common ext. pilot | | |
| Right-hand end plate kit included w/ bar ass'y on "B" & "C" style bar | | | | |

Right-hand end plate kit included w/ bar ass'y
on "B" & "C" style bar

Replacement parts & accessories

| | |
|--------------------|---|
| M-52001-01 | Right-Hand end plate kit (NPTF) |
| M-52001-01P | Right-Hand end plate kit (BSPPL) |
| M-52002-01 | Right-Hand end plate kit, common ext. pilot (NPTF) |
| M-52002-01P | Right-Hand end plate kit, common ext. pilot (BSPPL) |
| M-52003 | Blank station kit for manifold body |
| N-04001 | Flow control assembly (1 per station) |
| 17013-01 | Body to base seal (3 per station) |
| 35043 | Body to bar mounting screw (2 per station) |

Ordering examples

CBP052A-00ABA-06

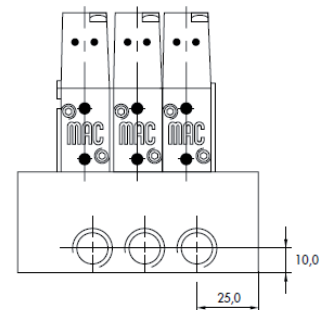
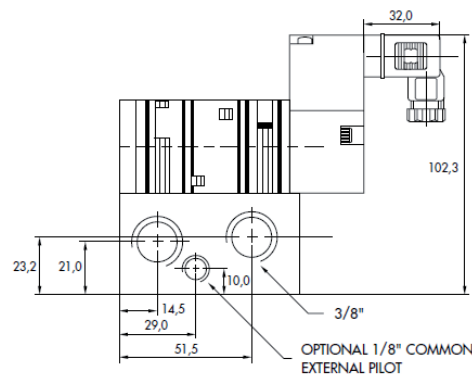
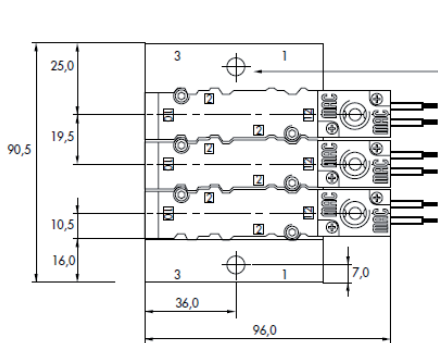
Manifold body bar, 19.5 mm spacing, side cyl. port 1/8" NPTF, add-on style bar, six identical stations.

CBP052A-01AEA-01

Manifold body bar, 21 mm spacing, one station add-a-unit, side cyl. port 1/8" NPTF, can be added to above 6 station bar.

Dimensions

All dimensions are in mm

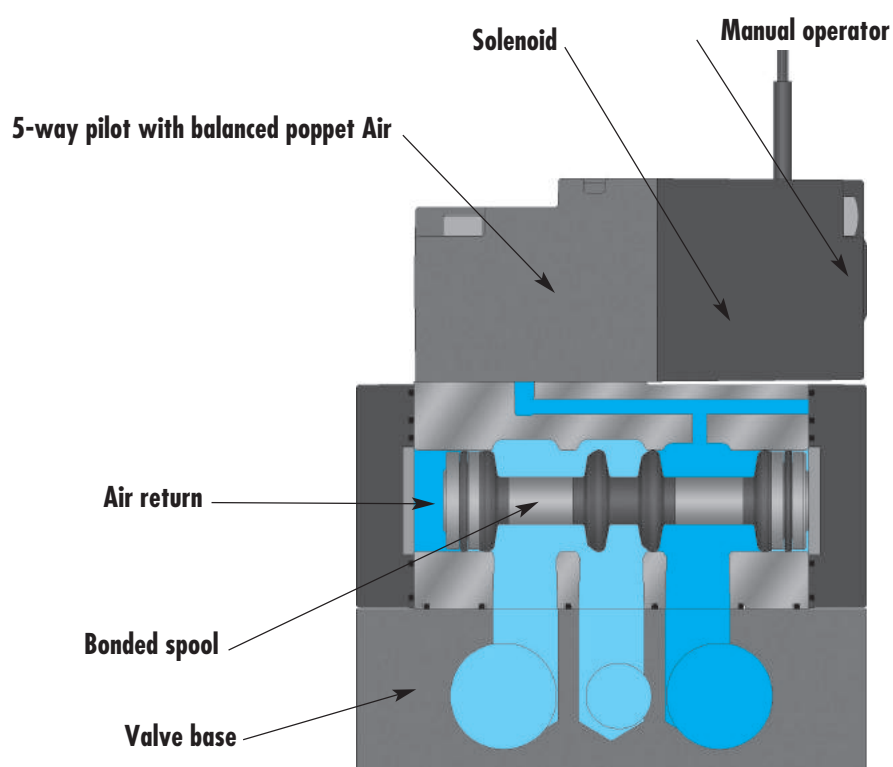


Drawing for an add-on style bar,
cylinder ports in base

Direct solenoid and solenoid pilot operated valves 8 mm valve

Individual mounting

Inline



SERIES FEATURES

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

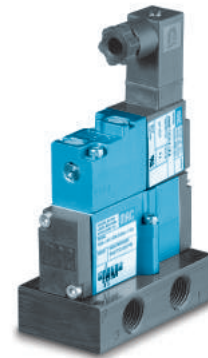


Direct solenoid and solenoid pilot operated valves

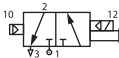
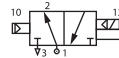
| Function | Port size | Flow [Max] | Individual mounting |
|------------------|---------------------|--------------------|---------------------|
| 3/2 NO-NC | G1/4"- G3/8" | 2000 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Pilot air | NC Valve | NO Valve |
|--------------|----------------------|---|---|
| | |  |  |
| G1/4" | Internal | 53A-1AC-XX-X-XXX-XXX | 53A-2AC-XX-X-XXX-XXX |
| G3/8" | | 53A-1AD-XX-X-XXX-XXX | 53A-2AD-XX-X-XXX-XXX |
| G1/4" | External from 10 end | 53A-1BC-XX-X-XXX-XXX | 53A-2BC-XX-X-XXX-XXX |
| | External from 12 end | 53A-1CC-XX-X-XXX-XXX | 53A-2CC-XX-X-XXX-XXX |
| G3/8" | External from 10 end | 53A-1BD-XX-X-XXX-XXX | 53A-2BD-XX-X-XXX-XXX |
| | External from 12 end | 53A-1CD-XX-X-XXX-XXX | 53A-2CD-XX-X-XXX-XXX |

SOLENOID OPERATOR ➤

DM-D XXX-XXX *

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

SOLENOID OPERATOR ➤

GM-G XXX-XXX**

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

* Other options available, see page options.

** Other options available, see page options.

OPTIONS

53A-X-AC-xx-xxxx-xxx

For Memory spring

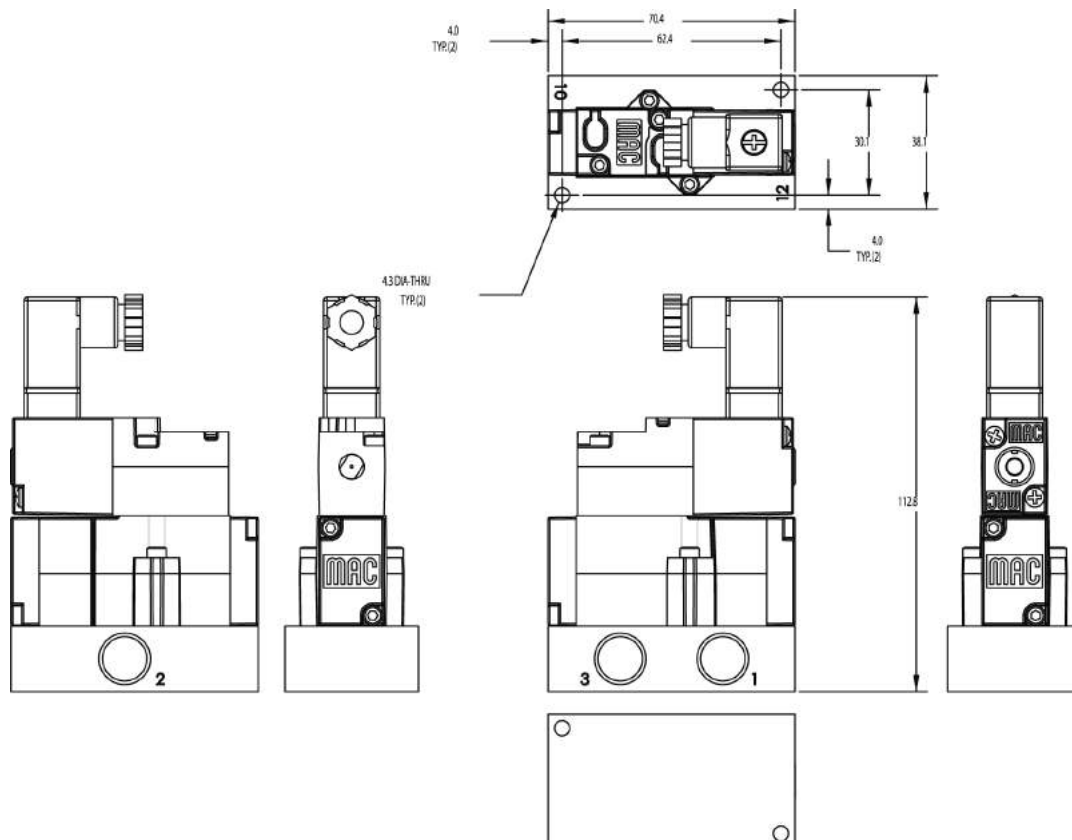
Replace by 5 (Normally closed)
Replace by 6 (Normally open)

TECHNICAL DATA

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

DIMENSIONS

Dimensions shown are metric (mm)



Codification table for voltages / Manual operator / Electrical connection

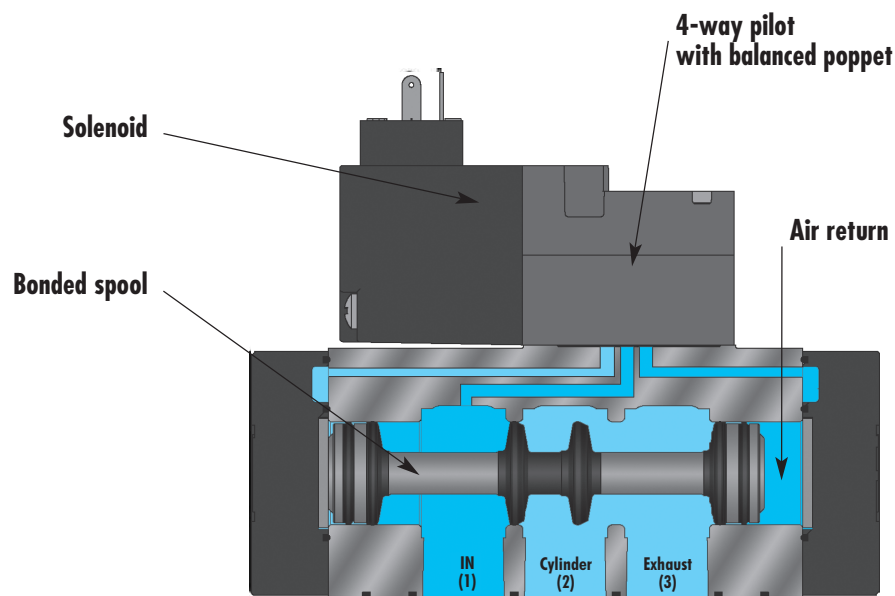
VALVE CODE ► **-DM- D XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|---|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| | | KF | Square connector with light and protection varistor |
| | | KG | Square connector with light & diode |
| | | KJ | Square connector (male only) |
| | | KK | Square connector with protection diode (male only) |
| | | KL | Square connector with protection varistor (male only) |
| | | TA | Dual tabs with receptacles |
| | | TB | TA with protection diode |
| | | TD | TA with light |
| | | TE | TA with light and protection diode |
| | | TJ | Dual tabs (male only) |
| | | TK | TJ with protection diode |
| | | TM | TJ with light |
| | | TN | TJ with light and protection diode |
| | | * From Lead wire length options choose A through F | |
| | | ** From Lead wire length options choose 0 through F | |
| | | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |
| 2. WIRE LENGTH | | | |
| D-XX X-X XX | WIRE LENGTH | | |
| 0 | No wires | | |
| A | 45 cm – 18" | | |
| B | 60 cm – 24" | | |
| C | 90 cm – 36" | | |
| D | 120 cm – 48" | | |
| E | 180 cm – 72" | | |
| F | 240 cm – 96" | | |
| 3. MANUAL OPERATOR | | | |
| D-XX X-X XX | MANUAL OPERATOR | | |
| 0 | No operator | | |
| 1 | Non-locking recessed | | |
| 2 | Locking recessed | | |
| 3 | Non-locking extended | | |
| 4 | Locking extended | | |

Direct solenoid and solenoid pilot operated valves 8 mm valve

Individual mounting

| Sub-base Non plug-in | Sub-base Plug-in | |
|-------------------------|---------------------|--|
| | | |



SERIES FEATURES

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

Function Port size Flow [Max] Individual mounting

3/2 NO-NC G3/8" - G1/2" - G3/4" 5100 NI/min

Sub-base
Non plug-in

OPERATIONAL BENEFITS

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

HOW TO ORDER



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

SOLENOID OPERATOR ➤

DM-D XXX-XXX*

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

* Other options available, see page options.

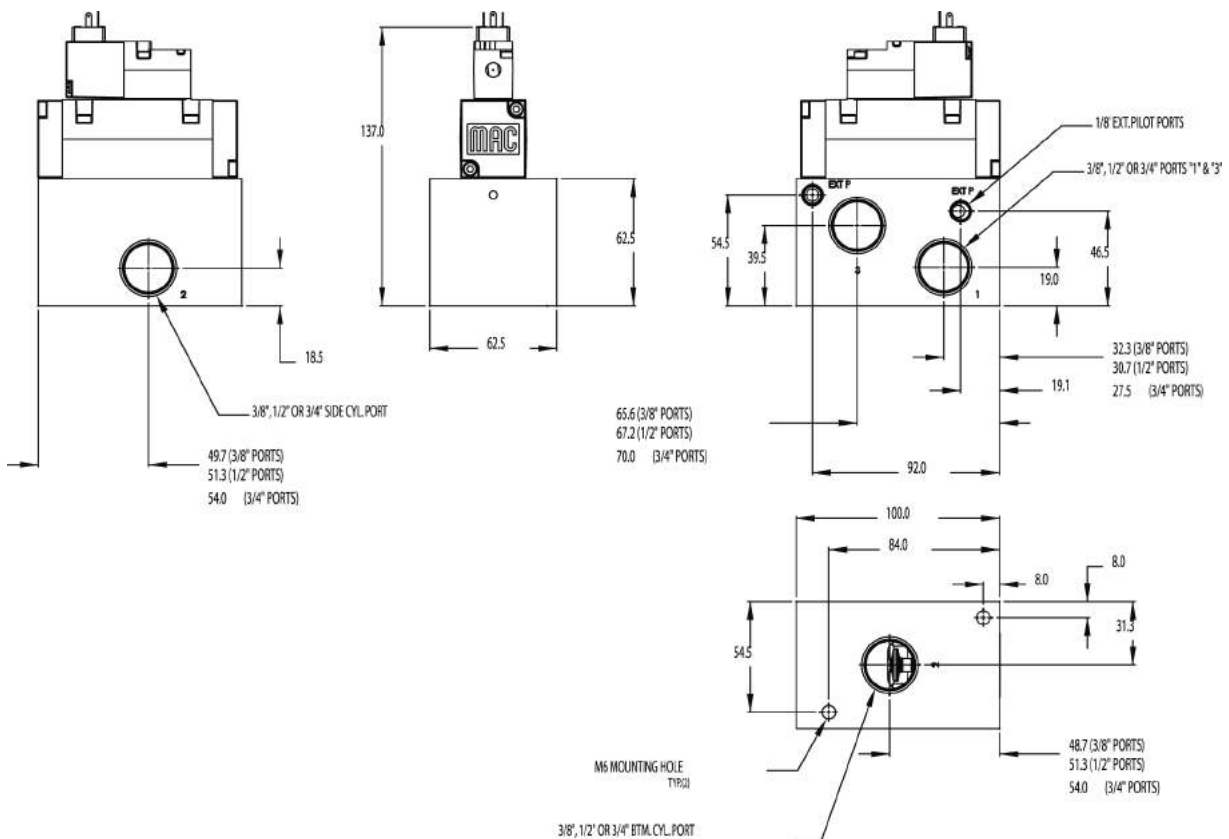
OPTIONS

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

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

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

DIMENSIONS Dimensions shown are metric (mm)



Function Port size Flow [Max] Individual mounting

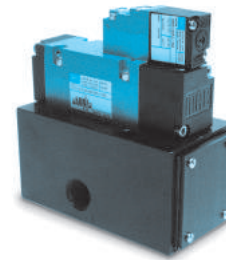
3/2 NO-NC G3/8" - G1/2" - G3/4" 5100 NI/min

Sub-base
plug-in

OPERATIONAL BENEFITS

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

HOW TO ORDER



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

SOLENOID OPERATOR ➤

DM-D XXX-XXX*

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

* Other options available, see page options.

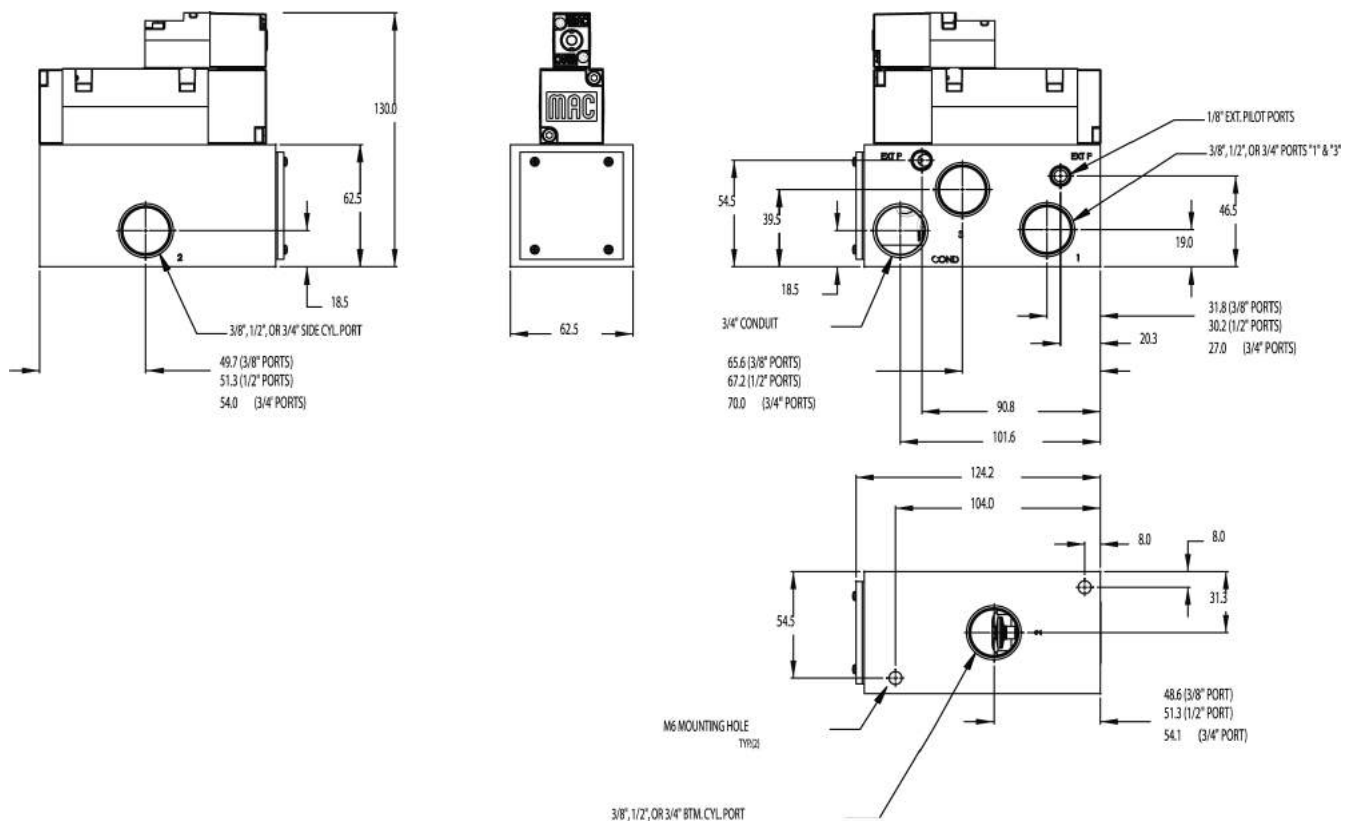
OPTIONS

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

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

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

DIMENSIONS Dimensions shown are metric (mm)





R e m o t e a i r v a l v e

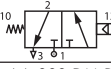
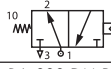
| Function | Port size | Flow [Max] | Individual mounting |
|------------|------------------------------|--------------------|---------------------|
| 3/2 | G3/8" - G1/2" - G3/4" | 5100 NI/min | Individual base |

OPERATIONAL BENEFITS

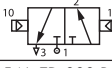
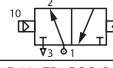
1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking
4. Long service life
5. Short stroke with high flow

HOW TO ORDER

SINGLE OPERATOR

| Port size | Pilot air | NC Valve | NO Valve |
|------------------------|----------------------|--|--|
| | |  |  |
| Valve less base | Internal | 54A-AA-000-DM-RA14 | 54A-BA-000-DM-RA14 |
| | External from 10 end | 54A-AC-000-DM-RA14 | 54A-BC-000-DM-RA14 |
| | External from 12 end | 54A-AB-000-DM-RA14 | 54A-BB-000-DM-RA14 |
| G3/8" | Internal | 54A-AA-D1A-DM-RA14 | 54A-BA-D1A-DM-RA14 |
| | External from 10 end | 54A-AC-D1A-DM-RA14 | 54A-BC-D1A-DM-RA14 |
| | External from 12 end | 54A-AB-D1A-DM-RA14 | 54A-BB-D1A-DM-RA14 |
| G1/2" | Internal | 54A-AA-E1A-DM-RA14 | 54A-BA-E1A-DM-RA14 |
| | External from 10 end | 54A-AC-E1A-DM-RA14 | 54A-BC-E1A-DM-RA14 |
| | External from 12 end | 54A-AB-E1A-DM-RA14 | 54A-BB-E1A-DM-RA14 |
| G3/4" | Internal | 54A-AA-F1A-DM-RA14 | 54A-BA-F1A-DM-RA14 |
| | External from 10 end | 54A-AC-F1A-DM-RA14 | 54A-BC-F1A-DM-RA14 |
| | External from 12 end | 54A-AB-F1A-DM-RA14 | 54A-BB-F1A-DM-RA14 |

DOUBLE OPERATOR

| Port size | Double operator NC Valve | Double operator NO Valve |
|------------------------|---|---|
| |  |  |
| Valve less base | 54A-ED-000-RA | 54A-FD-000-RA |
| G3/8" | 54A-ED-D1C-RA | 54A-FD-D1C-RA |
| G1/2" | 54A-ED-E1C-RA | 54A-FD-E1C-RA |
| G3/4" | 54A-ED-F1C-RA | 54A-FD-F1C-RA |

OPTIONS

SINGLE OPERATOR MODELS

54A-xX-xX-DM-RA14

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

DUAL OPERATOR MODELS

54A-xx-xX-RA

- 1 Individual Base – Side ports
- 2 Individual Base – Bottom Cylinder ports (No side cyl. port)

TECHNICAL DATA

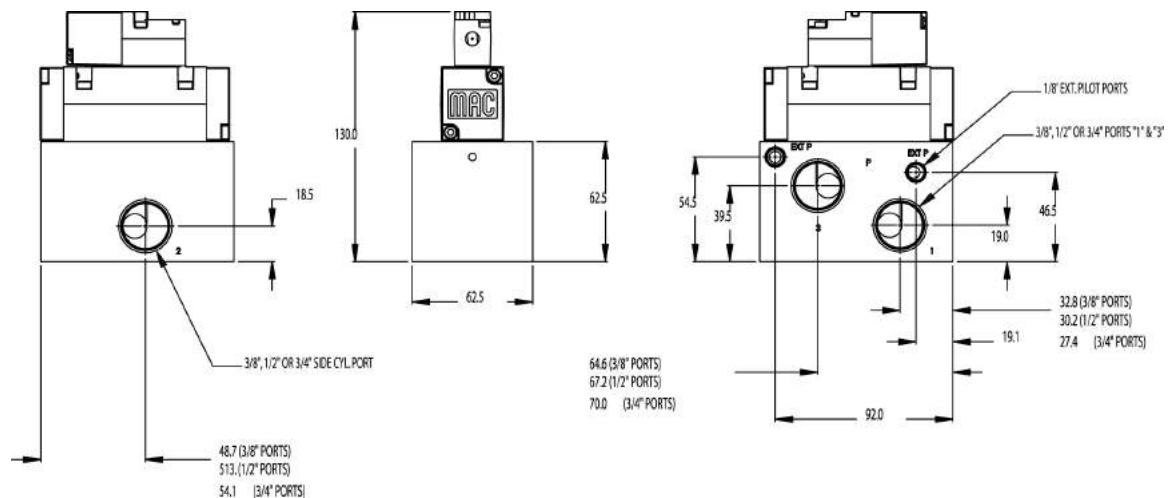
| | |
|-----------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Int. pilot & double remote: 1,3 to 8 bar External pilot: Vacuum to 8 bar |
| Air signal pressure : | Single operator: 2,3 to 4 bar - Double operator: 1,3 to 8 bar* |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 13,5 mm |
| Flow : | 5100 NI/min (Cv 5.1) |
| * Note : | For external pilot and double remote, air signal pressure must be \geq main valve pressure |

Options : • NPTF threads

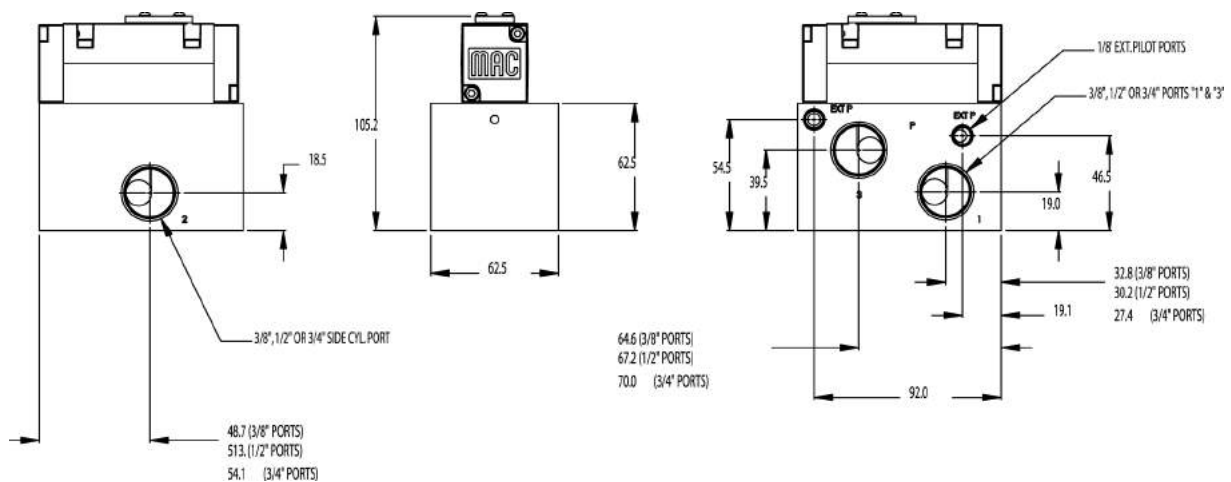
DIMENSIONS

Dimensions shown are metric (mm)

SINGLE REMOTE



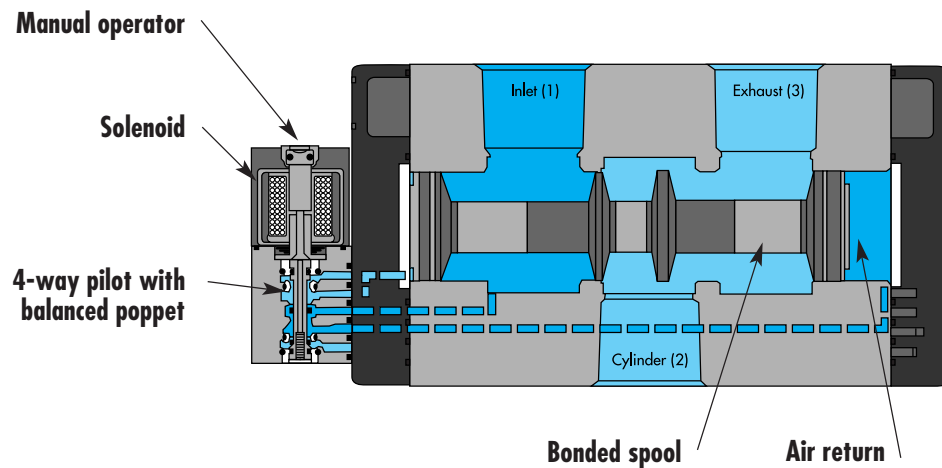
DOUBLE REMOTE



Direct solenoid and solenoid pilot operated valves

Individual mounting

Inline



SERIES FEATURES

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

Function Port size Flow [Max] Individual mounting

3/2 NO-NC, 2/2 NO-NC G3/4" - G1" 20000 NI/min

Inline

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Pilot air | Single Operator | | Double Operator | |
|--------------|-----------|------------------------|------------------------|------------------------|------------------------|
| | | NO Valve | NC Valve | NO Valve | NC Valve |
| | | | | | |
| G3/4" | Internal | 67A-Cx-CAA-DM-Dxxx-xxx | 67A-Ax-CAA-DM-Dxxx-xxx | 67A-Dx-CAA-DM-Dxxx-xxx | 67A-Bx-CAA-DM-Dxxx-xxx |
| G1" | | 67A-Cx-DAA-DM-Dxxx-xxx | 67A-Ax-DAA-DM-Dxxx-xxx | 67A-Dx-DAA-DM-Dxxx-xxx | 67A-Bx-DAA-DM-Dxxx-xxx |
| G3/4" | External | 67A-Cx-CAB-DM-Dxxx-xxx | 67A-Ax-CAB-DM-Dxxx-xxx | 67A-Dx-CAB-DM-Dxxx-xxx | 67A-Bx-CAB-DM-Dxxx-xxx |
| G1" | | 67A-Cx-DAB-DM-Dxxx-xxx | 67A-Ax-DAB-DM-Dxxx-xxx | 67A-Dx-DAB-DM-Dxxx-xxx | 67A-Bx-DAB-DM-Dxxx-xxx |

SOLENOID OPERATOR ►

DM-D **xxx-xxx***

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

* Other options available, see page options.

OPTIONS

Spool type :

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

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

Port configuration :

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

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

Mounting style :

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

- G O-Ring mount

Spool return :

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

- 1 Standard return
- 2 Standard return with memory spring

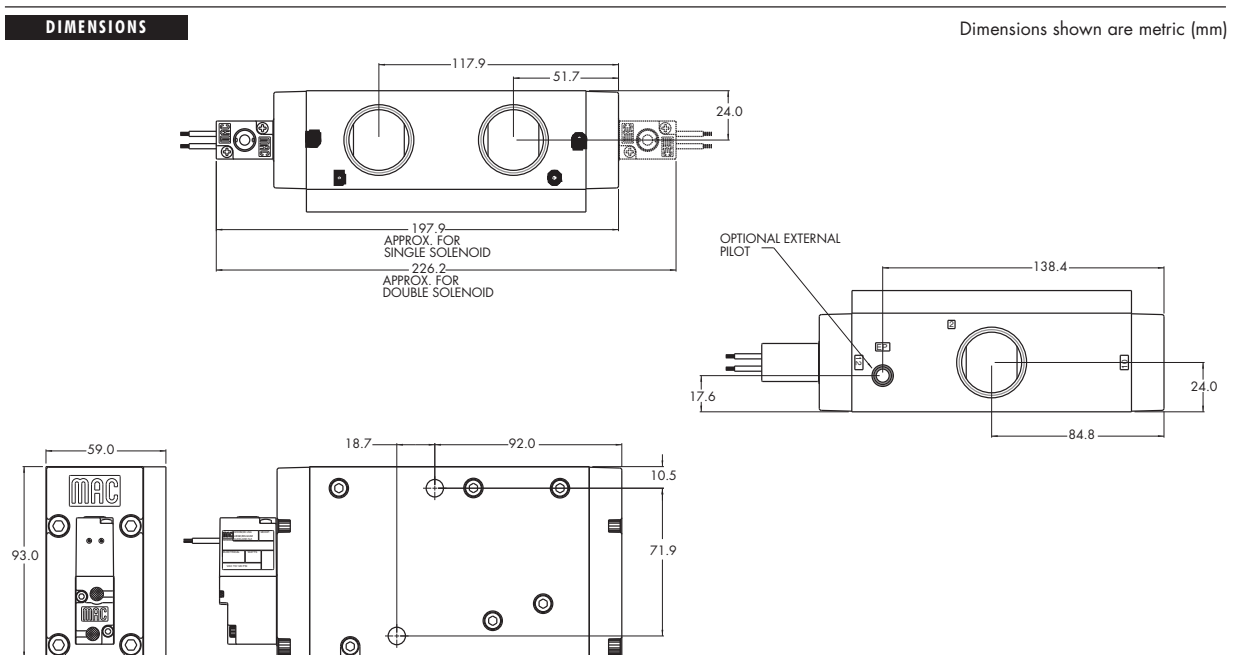
Pilot style :

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

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

| TECHNICAL DATA | |
|---------------------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal Pilot : 1,3 to 8 bar External Pilot : Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 26,8 mm |
| Flow (at 6 bar, ΔP=1bar) : | 3/4" : 14500 NI/min (Cv 14,5) – 1" : 20000 (Cv 20,0) |
| Coil : | Epoxy encapsulated – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~ Inrush : 7.6 VA Holding : 4.8 VA = 12.7 to 1.0 W |
| Response times : (with 5,4 W coil) | Energize : 29 ms De-energize : 21 ms |

Options : • NPTF threads



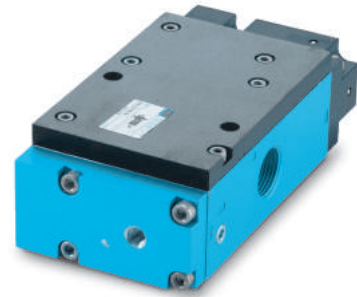


R e m o t e a i r v a l v e s

| Function | Port size | Flow [Max] | Individual mounting |
|------------|--------------------|---------------------|---------------------|
| 3/2 | G3/4" - G1" | 20000 NI/min | Inline |

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.



HOW TO ORDER

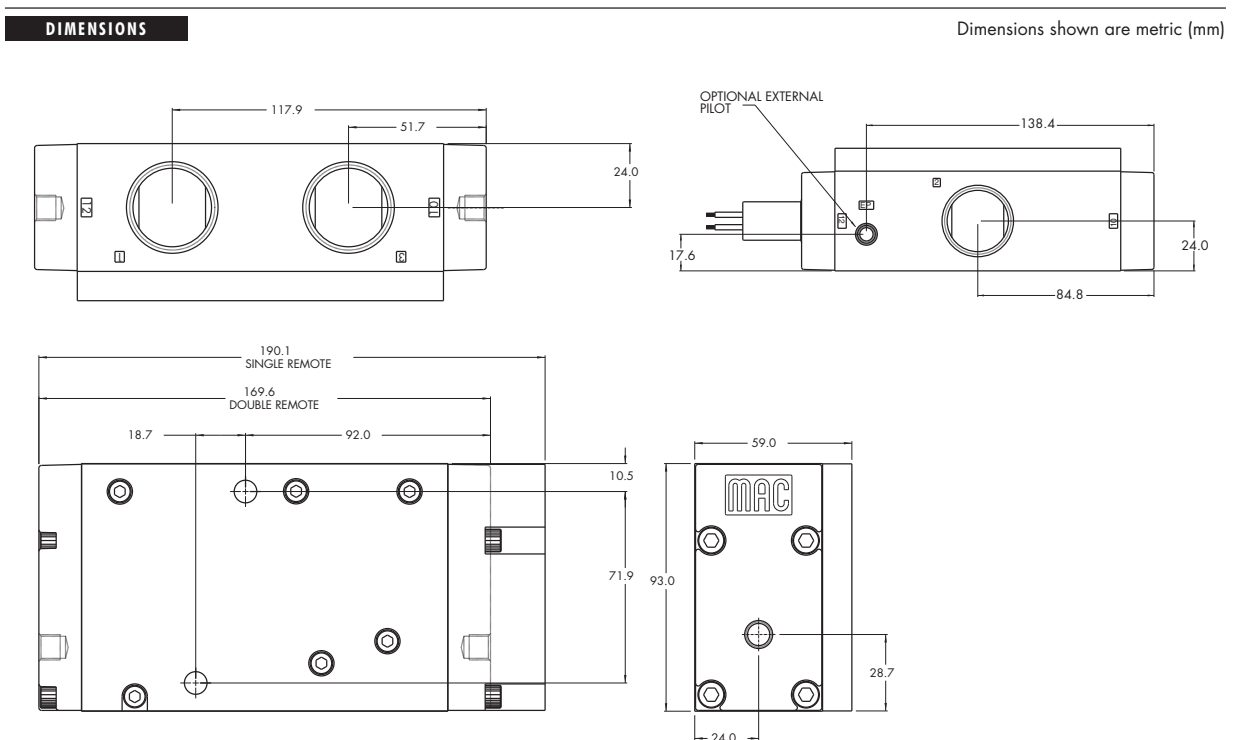
| Port size | Pilot air | Single Operator | | Double Operator | |
|--------------|-----------|-----------------|---------------|-----------------|---------------|
| | | NO Valve | NC Valve | NO Valve | NC Valve |
| | | | | | |
| G3/4" | Internal | 67A-C3-CRA-RA | 67A-A3-CRA-RA | 67A-D4-CRA-RA | 67A-B4-CRA-RA |
| G1" | Internal | 67A-C3-DRA-RA | 67A-A3-DRA-RA | 67A-D4-DRA-RA | 67A-B4-DRA-RA |
| G3/4" | External | 67A-C3-CRB-RE | 67A-A3-CRB-RE | - | - |
| G1" | External | 67A-C3-DRB-RE | 67A-A3-DRB-RE | - | - |

Note : Designation 'RE' required on remote air models with main valve pressures of vacuum to 1,3 bar.

'RE' provides an external pilot and should have a pressure range of 1,3 - 5 bar. Since the external pilot supplies the air spring, it must not exceed the remote air pilot pressure.

| TECHNICAL DATA | |
|-----------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 10 bar |
| Air signal pressure : | 1.3 to 10 bar (must be \geq main valve pressure) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 μ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 26.8 mm |
| Flow : | 3/4" : 14500 NI/min (Cv 14.5) - 1" : 20000 NI/min (Cv 20.0) |

Options : • NPTF threads



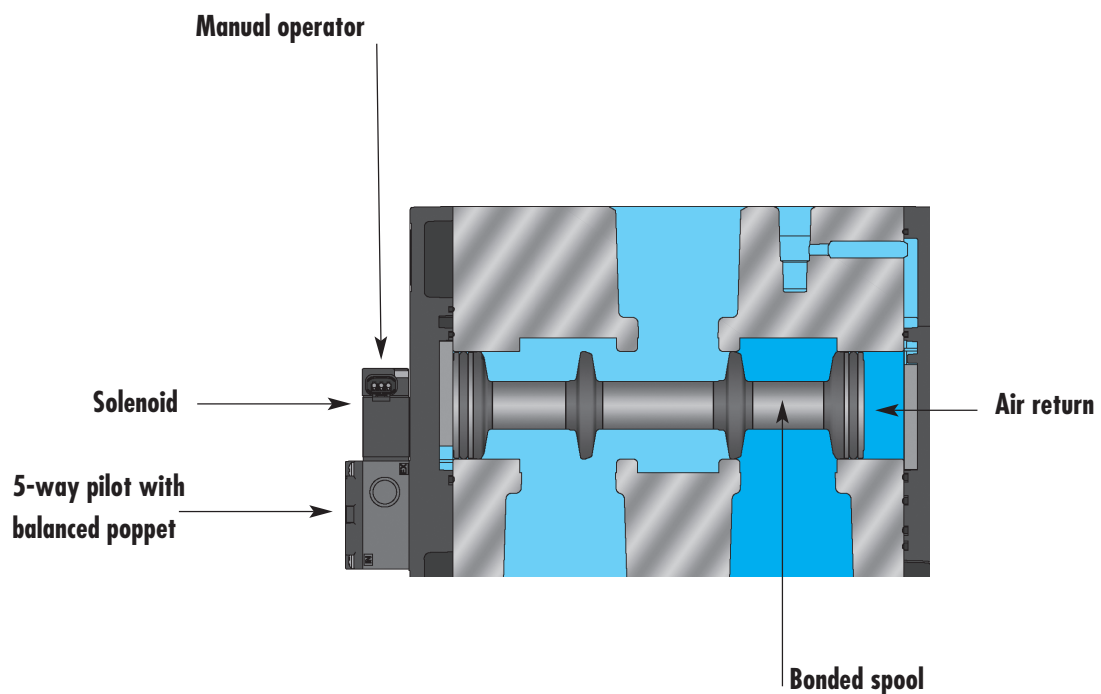
Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ► **-DM- D XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|---|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| | | KF | Square connector with light and protection varistor |
| | | KG | Square connector with light & diode |
| | | KJ | Square connector (male only) |
| | | KK | Square connector with protection diode (male only) |
| | | KL | Square connector with protection varistor (male only) |
| | | TA | Dual tabs with receptacles |
| | | TB | TA with protection diode |
| | | TD | TA with light |
| | | TE | TA with light and protection diode |
| | | TJ | Dual tabs (male only) |
| | | TK | TJ with protection diode |
| | | TM | TJ with light |
| | | TN | TJ with light and protection diode |
| | | * From Lead wire length options choose A through F | |
| | | ** From Lead wire length options choose 0 through F | |
| | | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |
| 2. WIRE LENGTH | | | |
| D-XX X-X XX | WIRE LENGTH | | |
| 0 | No wires | | |
| A | 45 cm – 18" | | |
| B | 60 cm – 24" | | |
| C | 90 cm – 36" | | |
| D | 120 cm – 48" | | |
| E | 180 cm – 72" | | |
| F | 240 cm – 96" | | |
| 3. MANUAL OPERATOR | | | |
| D-XX X-X XX | MANUAL OPERATOR | | |
| 0 | No operator | | |
| 1 | Non-locking recessed | | |
| 2 | Locking recessed | | |
| 3 | Non-locking extended | | |
| 4 | Locking extended | | |

Individual mounting

Inline



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Pilot air | Single operator NC | Single operator NO | Single operator Universal valve |
|----------------|-----------|---------------------|---------------------|---------------------------------|
| | | | | |
| G1" | Internal | 68A-A1-DAA-Jxxx-xxx | 68A-C1-DAA-Jxxx-xxx | - |
| | External | 68A-A1-DAB-Jxxx-xxx | 68A-C1-DAB-Jxxx-xxx | 68A-G1-DAB-Jxxx-xxx |
| G1 1/4" | Internal | 68A-A1-EAA-Jxxx-xxx | 68A-C1-EAA-Jxxx-xxx | - |
| | External | 68A-A1-EAB-Jxxx-xxx | 68A-C1-EAB-Jxxx-xxx | 68A-G1-EAB-Jxxx-xxx |
| G1 1/2" | Internal | 68A-A1-FAA-Jxxx-xxx | 68A-C1-FAA-Jxxx-xxx | - |
| | External | 68A-A1-FAB-Jxxx-xxx | 68A-C1-FAB-Jxxx-xxx | 68A-G1-FAB-Jxxx-xxx |

SOLENOID OPERATOR ➤

J **XXX-XXX****

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

* Note: AC voltage requires connector with rectifier

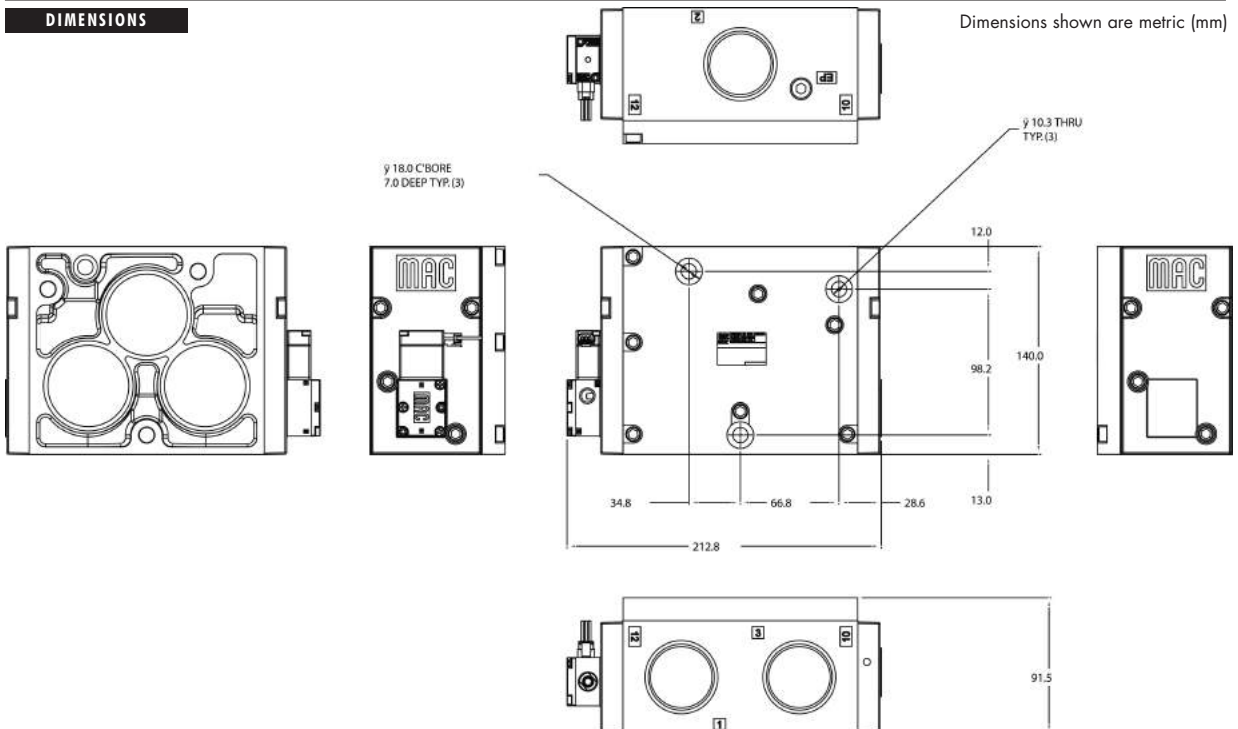
** Other options available, see page options.

OPTIONS

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

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

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





R e m o t e a i r v a l v e s

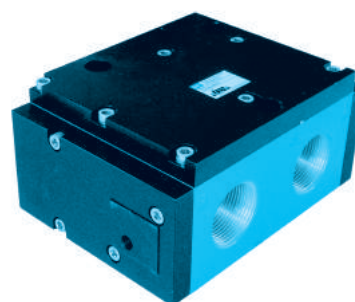
Function Port size Flow [Max] Individual mounting

3/2, 2/2 **G1", G1 1/4", G1 1/2"** **31000 NI/min**

Inline

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking
4. Long service life



HOW TO ORDER

SINGLE OPERATOR

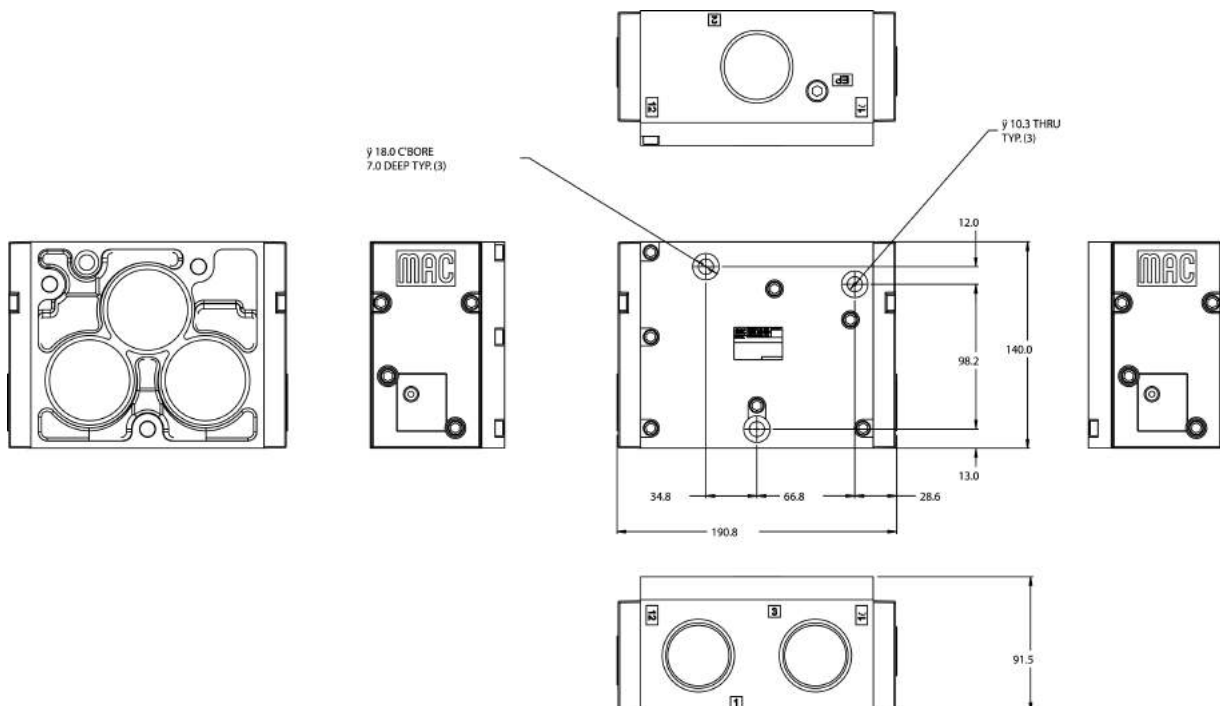
| Port size | Air Spring | Single Operator NO valve | Single Operator NC valve |
|-----------------|------------|--------------------------|--------------------------|
| | | | |
| G 1 | Internal | 68A-C3-DRA-RA | 68A-A3-DRA-RA |
| G 1 1/4" | | 68A-C3-ERA-RA | 68A-A3-ERA-RA |
| G 1 1/2" | | 68A-C3-FRA-RA | 68A-A3-FRA-RA |
| G 1 | External | 68A-C3-DRB-RE | 68A-A3-DRB-RE |
| G 1 1/4" | | 68A-C3-ERB-RE | 68A-A3-ERB-RE |
| G 1 1/2" | | 68A-C3-FRB-RE | 68A-A3-FRB-RE |

DOUBLE OPERATOR

| Port size | Double Operator NO valve | Double Operator NC valve |
|-----------------|--------------------------|--------------------------|
| | | |
| G 1 | 68A-D4-DRB-RA | 68A-B4-DRB-RA |
| G 1 1/4" | 68A-D4-ERB-RA | 68A-B4-ERB-RA |
| G 1 1/2" | 68A-D4-FRB-RA | 68A-B4-FRB-RA |

| TECHNICAL DATA | |
|-----------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Air signal pressure : | 1,3 to 8 bar (Must be \geq main valve pressure) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 μ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 33,4 mm |
| Flow : | 31000 Nl/min (Cv 31.0) |

| DIMENSIONS | Dimensions shown are metric (mm) |
|------------|----------------------------------|
|------------|----------------------------------|



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

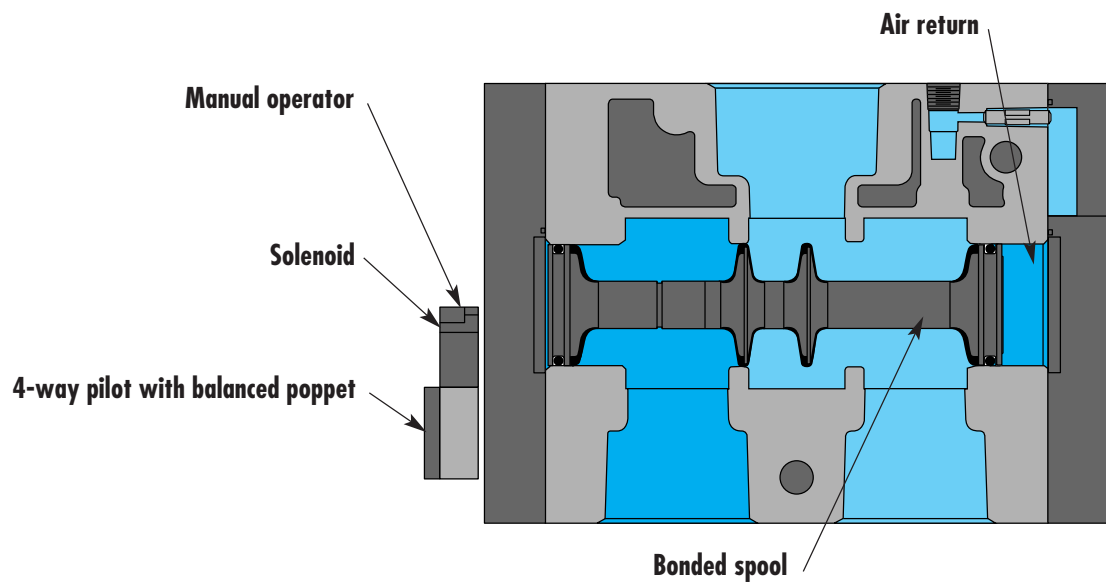
J XX X-X XX
1 2 3 4

(Non Plug-in series)

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

Individual mounting

Inline



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual mounting |
|-----------------------------|--------------------------------|---------------------|---------------------|
| 3/2 NO-NC, 2/2 NO-NC | G1 1/2" - G2" - G2 1/2" | 60000 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Pilot air | Single Operator NC valve | Single Operator NO valve |
|-----------------|-----------|--------------------------|--------------------------|
| | | | |
| G 1 1/2" | Internal | 69A-A1-DAA-Jxxx-xxx | 69A-C1-DAA-Jxxx-xxx |
| G 2" | | 69A-A1-EAA-Jxxx-xxx | 69A-C1-EAA-Jxxx-xxx |
| G 2 1/2" | | 69A-A1-FAA-Jxxx-xxx | 69A-C1-FAA-Jxxx-xxx |
| G 1 1/2" | External | 69A-A1-DAB-Jxxx-xxx | 69A-C1-DAB-Jxxx-xxx |
| G 2" | | 69A-A1-EAB-Jxxx-xxx | 69A-C1-EAB-Jxxx-xxx |
| G 2 1/2" | | 69A-A1-FAB-Jxxx-xxx | 69A-C1-FAB-Jxxx-xxx |

SOLENOID OPERATOR ➤

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

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

* Other options available, see page options.

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

OPTIONS

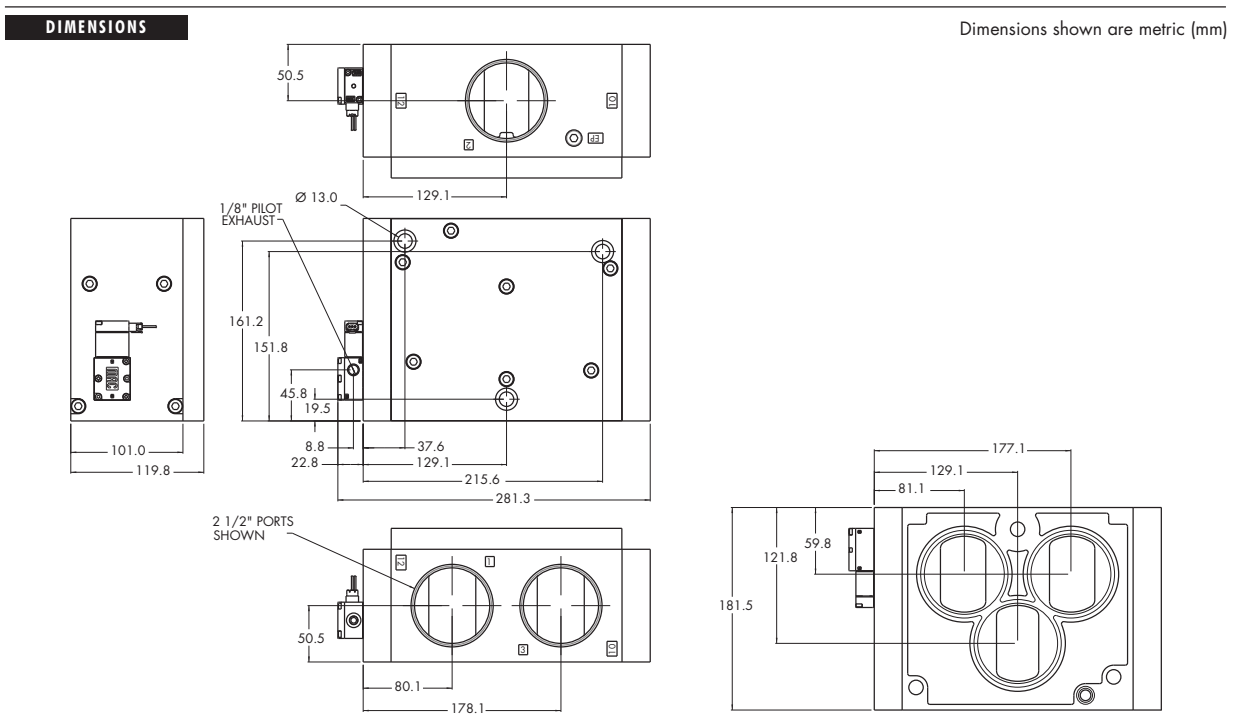
Pilot exhaust configuration:

69A-xx-**XX**-DM-Dxxx-xxx

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

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

Options : • NPTF threads



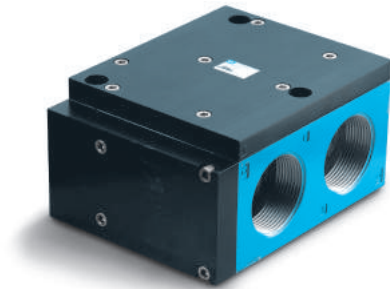


R e m o t e a i r v a l v e s

| Function | Port size | Flow [Max] | Individual mounting |
|-----------------------------|-----------------------------------|---------------------|---------------------|
| 3/2 NO-NC, 2/2 NO-NC | G 1 1/2" - G 2" - G 2 1/2" | 60000 NI/min | Inline |

OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure
2. Bonded spool with minimum friction, shifting in a glass like finished bore
3. Wiping effect eliminates sticking and contamination
4. Long service life



HOW TO ORDER

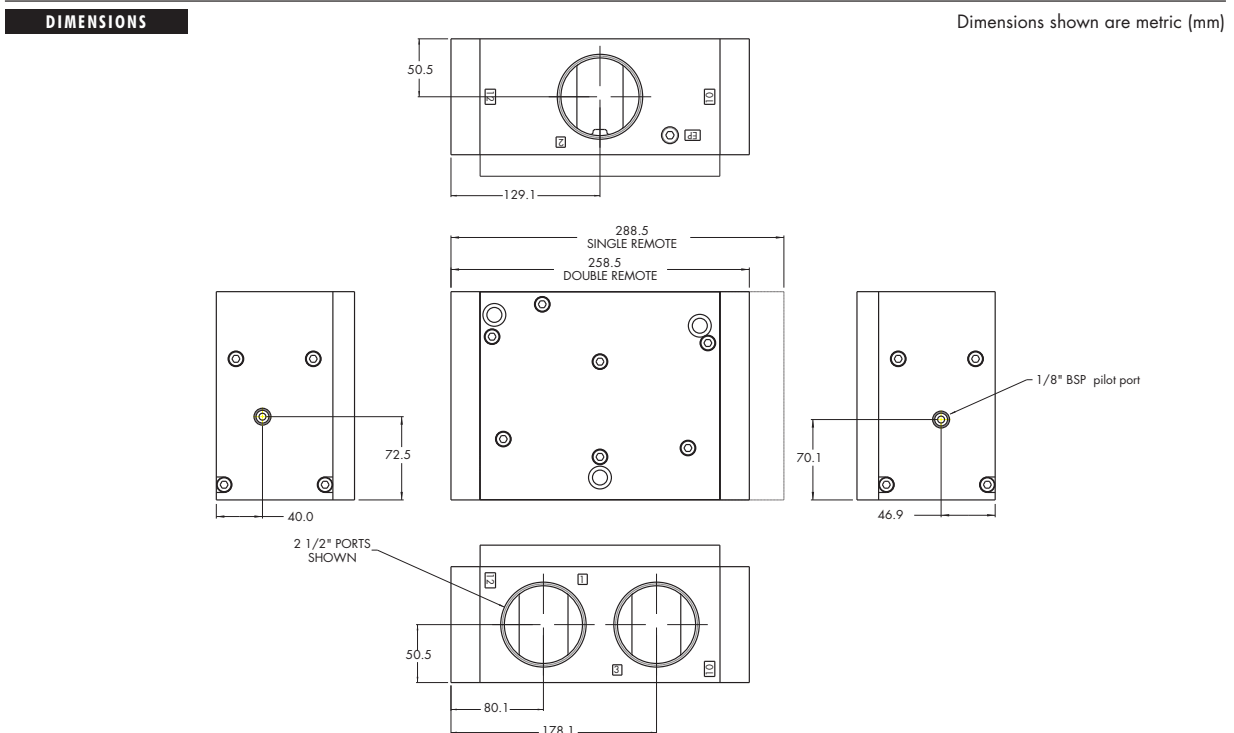
SINGLE OPERATOR

| Port size | Air Spring | Single Operator NO valve | Single Operator NC valve |
|-----------------|------------|--------------------------|--------------------------|
| | | | |
| G 1 1/2" | Internal | 69A-C3-DRA-RA | 69A-A3-DRA-RA |
| G 2" | | 69A-C3-ERA-RA | 69A-A3-ERA-RA |
| G 2 1/2" | | 69A-C3-FRA-RA | 69A-A3-FRA-RA |
| G 1 1/2" | External | 69A-C3-DRB-RE | 69A-A3-DRB-RE |
| G 2" | | 69A-C3-ERB-RE | 69A-A3-ERB-RE |
| G 2 1/2" | | 69A-C3-FRB-RE | 69A-A3-FRB-RE |

DOUBLE OPERATOR

| Port size | Double Operator NO valve | Double Operator NC valve |
|-----------------|--------------------------|--------------------------|
| | | |
| G 1 1/2" | 69A-D4-DRB-RA | 69A-B4-DRB-RA |
| G 2" | 69A-D4-ERB-RA | 69A-B4-ERB-RA |
| G 2 1/2" | 69A-D4-FRB-RA | 69A-B4-FRB-RA |

| TECHNICAL DATA | |
|-----------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Supply pressure: | Internal pilot: 1,3 to 10 bar External pilot: Vacuum to 10 bar |
| Air signal pressure : | 1,3 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 46,5 mm |
| Flow : | 60000 Nl/min (Cv 60.0) |



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

J XX X-X XX
1 2 3 4

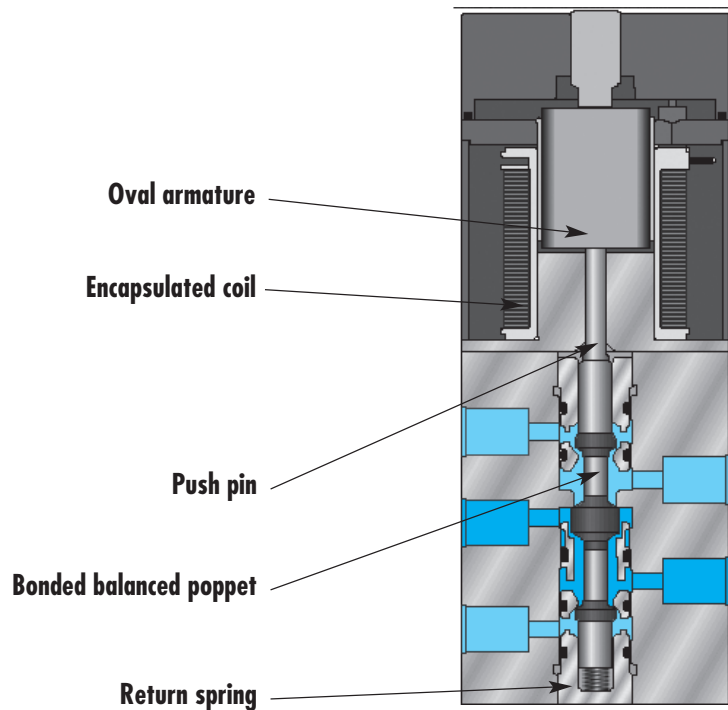
(Non Plug-in series)

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

Direct solenoid and solenoid pilot operated valves 6 mm valve

Individual mounting

Inline



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- 6 mm direct operating valve.
- Very fast response times.



Direct solenoid and solenoid pilot operated valves 6 mm valve

| Function | Port size | Flow [Max] | Individual mounting |
|------------|-----------|------------------------|---------------------|
| 5/2 | M3 | 22 to 35 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Valve |
|-----------|------------------|
| M3 | |
| M3 | 41A-AAA-Txxx-xxx |

SOLENOID OPERATOR ➤

T **xxx-xxx***

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

* Other options available, see page options.



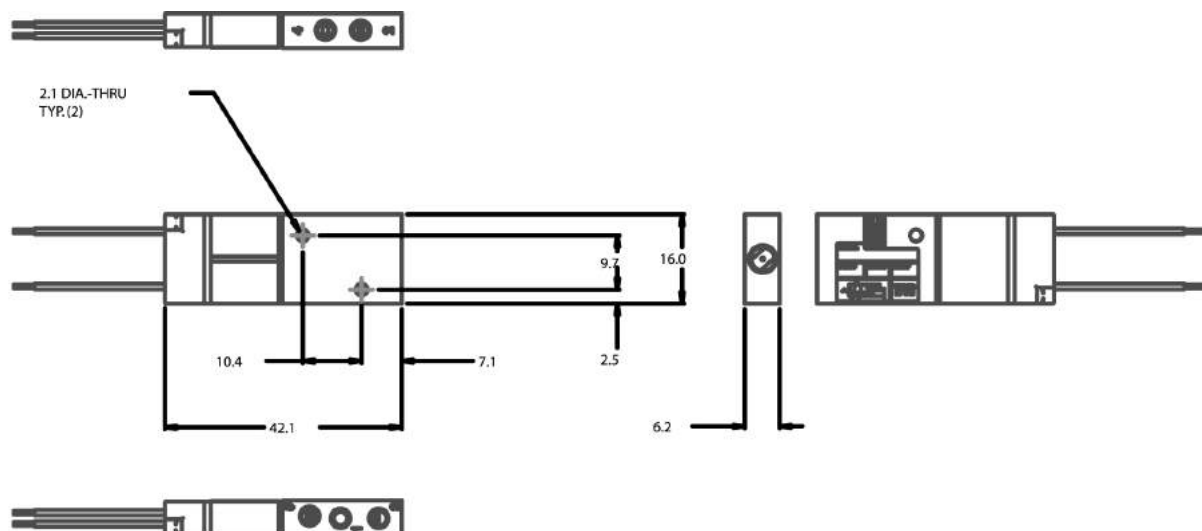
100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

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

DIMENSIONS

Dimensions shown are metric (mm)



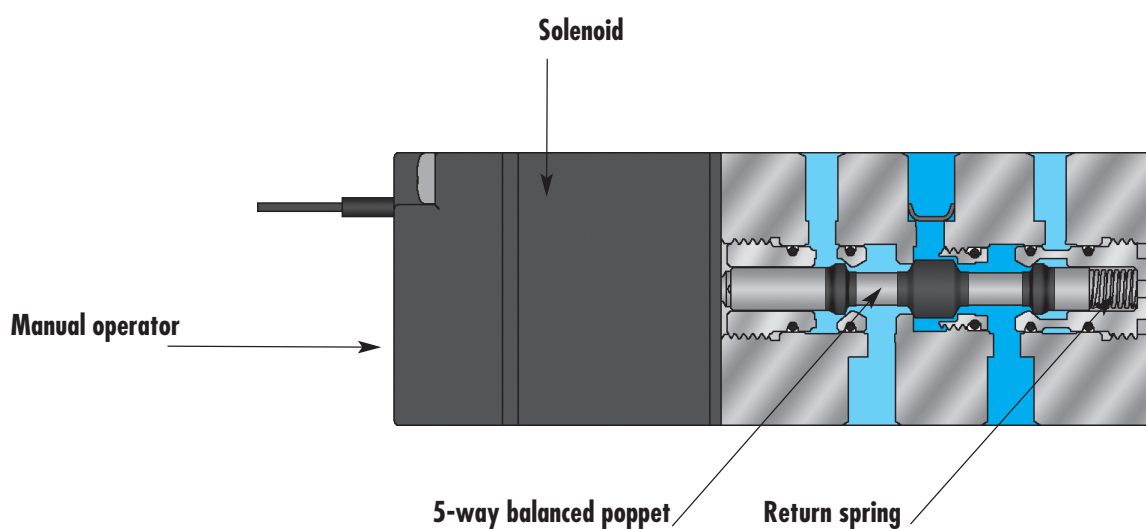
Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **T XX X - X XX**
1 2 3 4

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|---|---------------|--------------------------|----------------------|
| T XX X - XXX | VOLTAGE | T XX X - XXX | MANUAL OPERATOR |
| DC | 24 VDC (1.8W) | 0 | No operator |
| DD | 24 VDC (2.5W) | 1 | Recessed non-locking |
| DE | 24 VDC (3.0W) | 3 | Extended non-locking |
| DF | 24 VDC (4.0W) | | |
| DJ | 12 VDC (1.8W) | 4. ELECTRICAL CONNECTION | |
| DK | 12 VDC (2.5W) | T XX X - XXX | |
| DL | 12 VDC (3.0W) | ELECTRICAL CONNECTION | |
| DM | 12 VDC (4.0W) | BA | |
| FA* | 24 VDC (60W) | Flying leads | |
| FB* | 24 VDC (90W) | | |
| FC* | 24 VDC (230W) | | |
| * MOD numbers required for these voltages (consult factory) | | | |
| 2. WIRE LENGHT | | | |
| T XX X - XXX | WIRE LENGHT | | |
| A | 45 cm - 18" | | |
| B | 60 cm - 24" | | |
| C | 90 cm - 36" | | |
| D | 120 cm - 48" | | |
| E | 180 cm - 72" | | |
| F | 240 cm - 96" | | |
| G | 300 cm - 120" | | |
| H | 365 cm - 144" | | |

Individual mounting

Inline



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

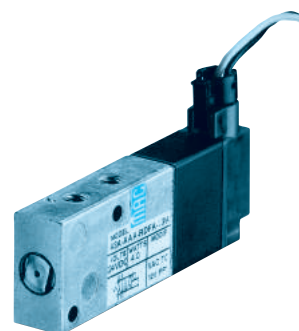
Function Port size Flow [Max] Individual mounting

5/2 M3 70 NI/min

Inline

OPERATIONAL BENEFITS

1. 8mm direct solenoid operated valve
2. Balanced poppet, immune to variations of pressure
3. Short stroke with high flow
4. The patented solenoid develops high shifting forces
5. Powerful return spring
6. Flow is specifically adjusted on each valve
7. Manual operator standard on each valve



HOW TO ORDER

| Port size | Valve |
|-----------|------------------|
| M3 | 43A-AAA-RXXX-XXX |



SOLENOID OPERATOR ►

R XXX-XXX*

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

* Other options available, see page options.

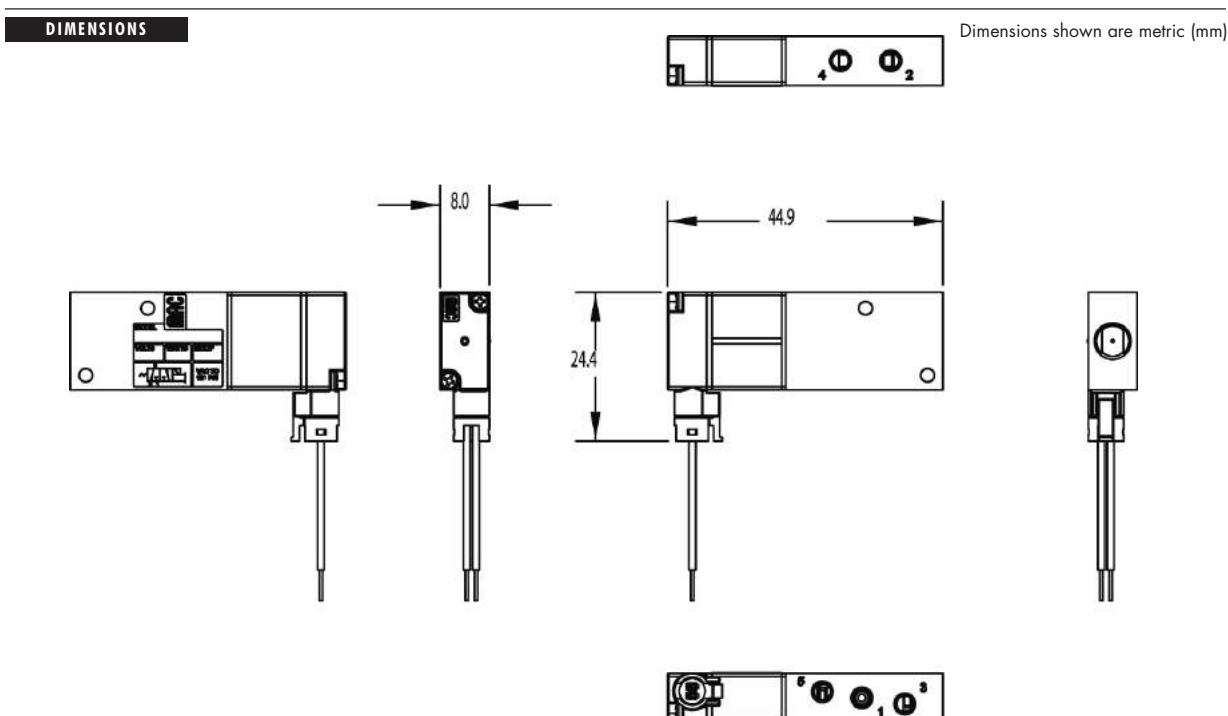


100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

| TECHNICAL DATA | |
|----------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 1,6 mm |
| Flow (at 6 bar, ΔP=1bar) : | 4,0 W: 70 NI/min (0.7 cv) – 3,0 W: 50 NI/min (0.5cv) – 2,5 W: 40 NI/min (0.4cv) – 1,8 W: 30 NI/min (0.3cv) |
| Voltage range : | -15% to +10% of nominal voltage |
| Power : | 4,0 W – 3,0 W – 2,5 W – 1,8 W |

Options : • NPTF threads



Codification table for voltages / Manual operators / Electrical connections

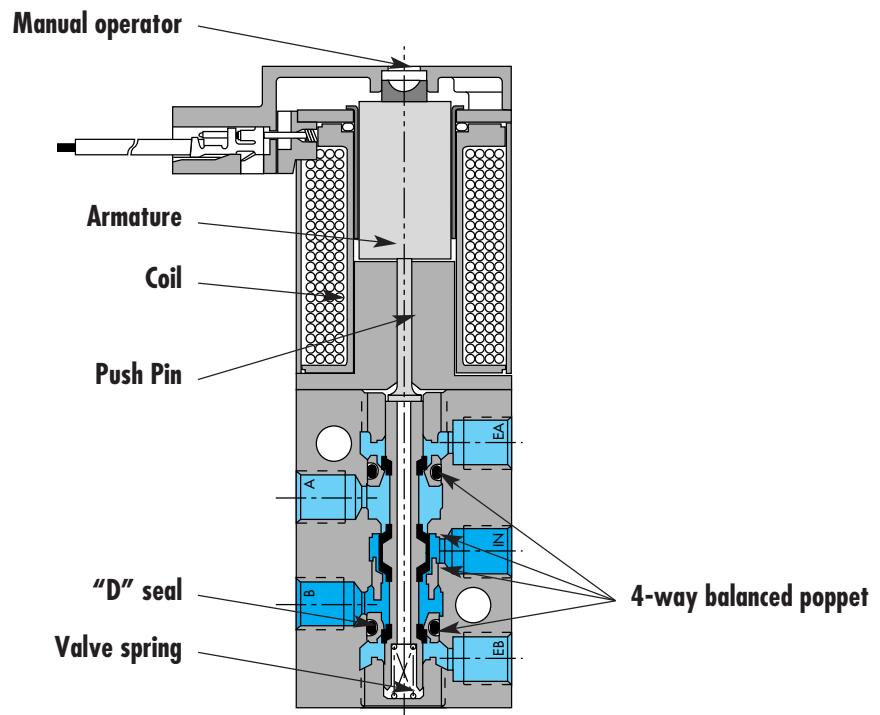
VALVE CODE ► **R XX X - X XX**
1 2 3 4

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|---|---------------|--|---------------------------------------|
| R XX X - XXX | VOLTAGE | R XX X - XXX | MANUAL OPERATOR |
| DB | 24 VDC (1.0W) | 0 | No operator |
| DC | 24 VDC (1.8W) | 1 | Non-locking recessed |
| DD | 24 VDC (2.5W) | 3 | Non-locking extended |
| DE | 24 VDC (3.0W) | | |
| DF | 24 VDC (4.0W) | | |
| DH | 12 VDC (1.0W) | | |
| DJ | 12 VDC (1.8W) | | |
| DK | 12 VDC (2.5W) | | |
| DL | 12 VDC (3.0W) | | |
| DM | 12 VDC (4.0W) | | |
| EA* | 24 VDC (60W) | | |
| EB* | 24 VDC (90W) | | |
| EC* | 24 VDC (230W) | | |
| * MOD numbers required for these voltages (consult factory) | | | |
| 2. WIRE LENGHT | | 4. ELECTRICAL CONNECTION | |
| R XX X - XXX | WIRE LENGHT | ELECTRICAL CONNECTION FOR NON PLUG-IN VALVES | |
| 0* | No lead wire | R XX X - XXX | |
| A | 45 cm - 18" | BA | Flying leads |
| B | 60 cm - 24" | BB | Flying leads with LED |
| C | 90 cm - 36" | BC | Flying leads with MOV |
| D | 120 cm - 48" | BD | Flying leads with LED and MOV |
| E | 180 cm - 72" | DA | Base plug-in |
| F | 240 cm - 96" | DB | Base plug-in with LED |
| G | 300 cm - 120" | DC | Base plug-in with MOV |
| H | 365 cm - 144" | DD | Base plug-in with LED and MOV |
| P | Base plug-in | RA | Mini JAC solenoid |
| * Not available for flying leads connector | | RB | Mini JAC solenoid with LED |
| | | RC | Mini JAC solenoid with MOV |
| | | RD | Mini JAC solenoid with LED and MOV |
| | | TA | JST solenoid plug-in |
| | | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |
| | | ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| | | R XX X - XXX | |
| | | PA | Base plug-in |
| | | PB | Base plug-in with light |
| | | PC | Base plug-in with MOV |
| | | PD | Base plug-in with light and MOV |

Direct solenoid and solenoid pilot operated valves

Individual mounting

Inline



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

Function Port size Flow [Max] Individual Mounting

5/2 M5 100 NI/min

Inline

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Model number | Model number For use with external flow controls |
|-----------|--------------------------|---|
| | | |
| M5 | 44C-ABA-G xxx-xxx | 44C-BBA-G xxx-xxx |

SOLENOID OPERATOR ►

G **xxx-xxx***

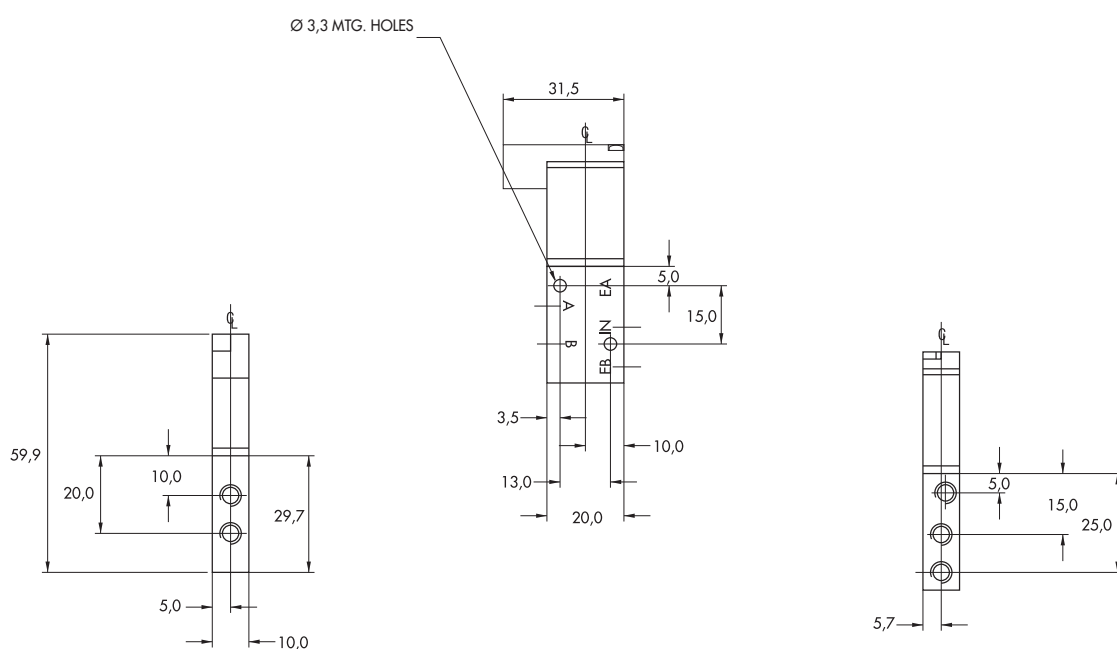
| XX Voltage | X Wire length | X Manual operator | XX Electrical connection |
|----------------------|----------------|----------------------|-------------------------------------|
| DA 24 V=/1W | A 45 cm | 1 Non-locking | BA Flying leads |
| DC 24 V=/1,8W | B 60 cm | 2 Locking | BT Flying leads with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

* Other options available, see page options.

| TECHNICAL DATA | |
|--|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 1,8 mm |
| Flow (at 6 bar, $\Delta P=1\text{bar}$) : | 4 W : 100 Nl/min (Cv 0,10) – 2,5 W : 80 Nl/min (Cv 0,08) – 1,8 W : 60 Nl/min (Cv 0,06) – 1,0W : 50 Nl/min (Cv 0,05) |
| Coil : | Epoxy encapsulated – Class A wires – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP54 (electrical connection) |
| Power : | 4 W – 2,5 W – 1,8 W – 1,0 W |
| Response times : (with 4 W coil) | Energize : 3,4 ms De-energize : 1,5 ms |

Note : • Valve and coil are not interchangeable.

DIMENSIONS Dimensions shown are metric (mm)



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤

G XX X-X XX
1 2 3 4

| 1. VOLTAGE | | |
|--------------------|---|--|
| G-XX X-X XX | VOLTAGE | |
| AA | 120V~/2,5W | Requires electrical connector with rectifier |
| AC | 24V~/4,0W | Requires electrical connector with rectifier |
| DA | 24V~/1,0W | |
| DC | 24V~/1,8W | |
| DD | 24V~/2,5W | |
| DE | 24V~/3,0W | |
| DF | 24V~/4,0W | |
| DG | 12V~/1,0W | |
| DJ | 12V~/1,8W | |
| DK | 12V~/2,5W | |
| DM | 12V~/3,0W | |
| DN | 12V~/4,0W | |
| DR | 6V~/1,8W | |
| DS | 6V~/3,0W | |
| EB | 48V~/1,8W | |
| EC | 48V~/3,0W | |
| ED | 120V~/2,5W | |
| GD | 12V~/0,5W | 34 series only |
| GE | 24V~/0,5W | 34 series only |
| 2. WIRE LENGTH | | |
| G-XX X-X XX | WIRE LENGTH | |
| 0 | No lead wires (used only with "KJ" & "KM" connectors) | |
| A | 45 cm – 18" coil leads | |
| B | 60 cm – 24" coil leads | |
| C | 90 cm – 36" coil leads | |
| D | 120 cm – 48" coil leads | |
| E | 180 cm – 72" coil leads | |
| F | 240 cm – 96" coil leads | |
| G | 305 cm – 120" coil leads | |
| H | 366 cm – 144" coil leads | |
| 1 | 45 cm – 18" base leads | |
| 2 | 60 cm – 24" base leads | |
| 3 | 90 cm – 36" base leads | |
| 4 | 120 cm – 48" base leads | |
| 5 | 180 cm – 72" base leads | |
| 6 | 240 cm – 96" base leads | |
| 7 | 305 cm – 120" base leads | |
| 3. MANUAL OPERATOR | | |
| G-XX X-X XX | MANUAL OPERATOR | |
| 1 | Non-locking recessed | |
| 2 | Locking recessed | |
| 3 | Non-locking extended | |
| 4 | Locking extended | |

| 4. ELECTRICAL CONNECTION | |
|--|--|
| G-XX X-X XX | ELECTRICAL CONNECTION |
| BA | Flying leads |
| BB | BA with ground wire |
| BC | BA with light |
| BD | BA with light and ground wire |
| BE | BA with suppression diode |
| BF | BA with suppression diode and ground wire |
| BG | BA with suppression diode and light |
| BH | BA with suppression diode, light and ground wire |
| BN | BA with suppression diode and blocking diode |
| BP | BA with suppression diode, blocking diode and ground wire |
| BR | BA with suppression diode, blocking diode and light |
| BS | BA with suppression diode, blocking diode, light and ground wire |
| GA | MAC JAC Solenoid plug-in |
| GB | MAC JAC Solenoid plug-in with diode |
| GC | MAC JAC Solenoid plug-in with MOV |
| GD | MAC JAC Solenoid plug-in with LED |
| GE | MAC JAC Solenoid plug-in with diode and LED |
| GF | MAC JAC Solenoid plug-in with MOV and LED |
| GG | MAC JAC Solenoid plug-in with rectifier |
| GH | MAC JAC Solenoid plug-in with rectifier and LED |
| KA | Mini connector |
| KB | KA with ground |
| KC | KA with rectifier and light |
| KD | KA with rectifier, light and ground |
| KE | KA with suppression diode |
| KF | KA with suppression diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | KA with suppression diode and blocking diode |
| KP | KA with suppression diode, blocking diode and ground |
| KT | KA with light |
| KU | KA with light and ground |
| KV | KA with suppression diode and light |
| KW | KA with suppression diode, light and ground |
| KX | KA with suppression diode, blocking diode and light |
| KY | KA with suppression diode, blocking diode, light & ground |
| ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| G-XX X-X XX | PLUG-IN OPTIONS |
| SB | Base plug-in with ground |
| SC | Base plug-in with suppression & blocking diode |
| SD | Base plug-in with suppression & blocking diode & ground |
| SE | Base plug-in with MOV |
| SF | Base plug-in with MOV & ground |
| SG | Base plug-in with rectifier |
| SH | Base plug-in with rectifier & ground |
| SK | Base plug-in with light & ground |
| SL | Base plug-in with suppression & blocking diode & light |
| SM | Base plug-in with suppression & blocking diode with light & ground |
| SN | Base plug-in with MOV & light |
| SP | Base plug-in with MOV & light with ground |
| SR | Base plug-in with rectifier & light |

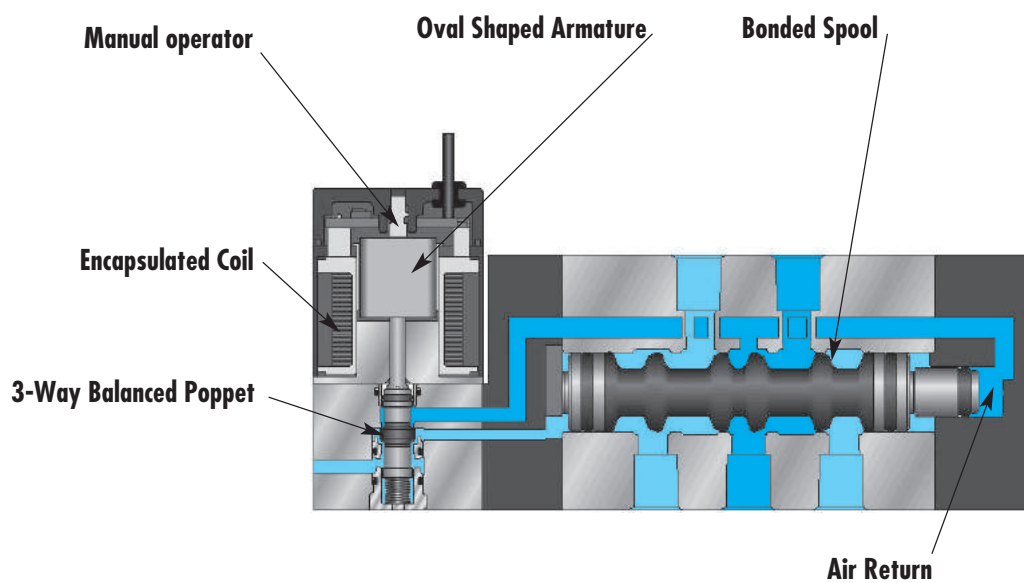
Direct solenoid and solenoid pilot operated valves 8 mm valve

Individual mounting

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

Manifold mounting

| |
|------------------------------|
| Manifold-base Non plug-in |
|------------------------------|



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- 8 mm solenoid pilot operated valve.
- Very fast and repeatable response times.

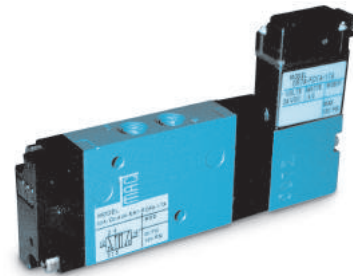


Direct solenoid and solenoid pilot operated valves 8 mm valve

| Function | Port size | Flow [Max] | Individual mounting |
|------------|--------------|-------------------|---------------------|
| 5/2 | M3,M5 | 230 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | Single solenoid | Double solenoid |
|-----------|-----------|---|---|
| | | | |
| M3 | Internal | 23A-A1-C00-E XX -R XXX - XXX | 23A-B1-C00-E XX -R XXX - XXX |
| | External | 23A-A4-C00-E XX -R XXX - XXX | 23A-B4-C00-E XX -R XXX - XXX |
| M5 | Internal | 23A-A1-B00-E XX -R XXX - XXX | 23A-B1-B00-E XX -R XXX - XXX |
| | External | 23A-A4-B00-E XX -R XXX - XXX | 23A-B4-B00-E XX -R XXX - XXX |

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

| Port size | Pilot air | Single solenoid | Double solenoid |
|-----------|-----------------------|---|---|
| | | | |
| M3 | Internal from port #3 | 23A-C2-C00-E XX -R XXX - XXX | 23A-D2-C00-E XX -R XXX - XXX |
| | Internal from port #5 | 23A-C3-C00-E XX -R XXX - XXX | 23A-D3-C00-E XX -R XXX - XXX |
| M5 | Internal from port #3 | 23A-C2-B00-E XX -R XXX - XXX | 23A-D2-B00-E XX -R XXX - XXX |
| | Internal from port #5 | 23A-C3-B00-E XX -R XXX - XXX | 23A-D3-B00-E XX -R XXX - XXX |

SOLENOID OPERATOR ➤

E **XX**-R**XXX**-**XXX***

| XX | Pilot type | XX | Voltage | X | Lead wire length | X | Manual operator | XX | Electrical connection |
|-----------|--------------------|-----------|--------------|--|------------------|----------|----------------------|-----------|------------------------------|
| M2 | Muffled exhaust | DB | 24VDC (1.0W) | 0 * | No lead wire | 0 | No manual operator | BA | Flying leads |
| P2 | Piped exhaust (M3) | DC | 24VDC (1.8W) | A | 45 cm | 1 | Recessed non locking | BB | Flying leads w/ LED |
| | | DD | 24VDC (2.5W) | B | 60 cm | 3 | Extended non locking | RA | Mini JAC solenoid plug-in |
| | | DE | 24VDC (3.0W) | C | 90 cm | | | RB | Mini JAC sol. plug-in w/ LED |
| | | DF | 24VDC (4.0W) | * Not available for flying lead connectors. Note: For pilot exhaust out main exhaust, Mod. 0353 is required | | | | TA | JST solenoid plug-in |
| | | DH | 12VDC (1.0W) | | | | | TB | JST sol. plug-in w/ LED |
| | | DJ | 12VDC (1.8W) | | | | | | |
| | | DK | 12VDC (2.5W) | | | | | | |
| | | DL | 12VDC (3.0W) | | | | | | |
| | | DM | 12VDC (4.0W) | | | | | | |

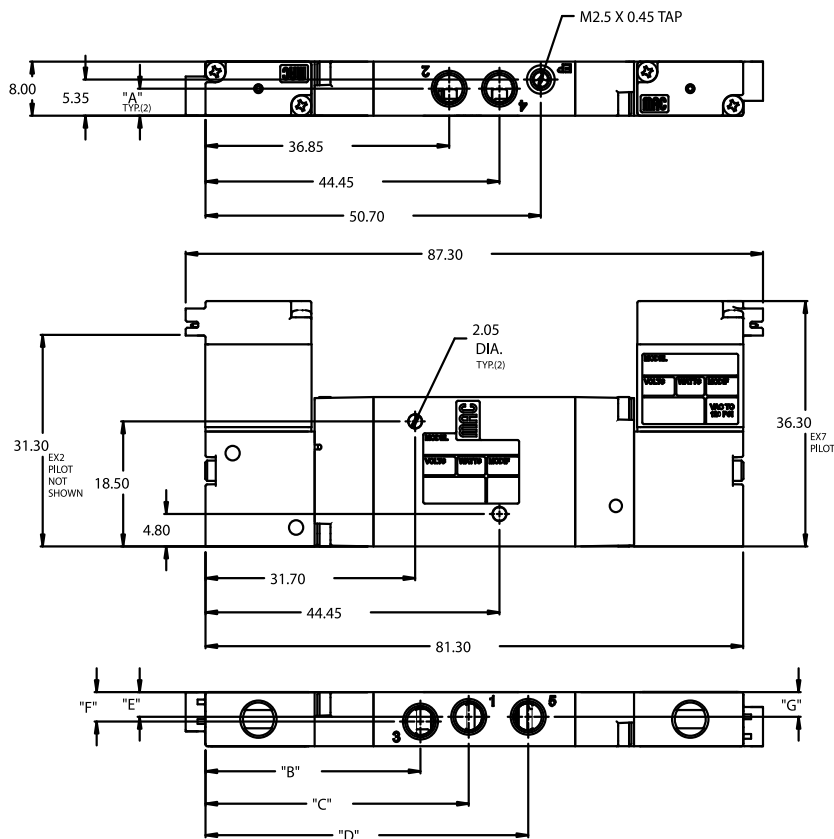
* Other options available, see page options.

TECHNICAL DATA

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

DIMENSIONS

Dimensions shown are metric (mm)



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



Direct solenoid and solenoid pilot operated valves 8 mm valve

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

OPERATIONAL BENEFITS

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

HOW TO ORDER

SINGLE PRESSURE MODELS

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

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

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

SOLENOID OPERATOR ➤

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

* Not available for flying lead connectors.

Note: For pilot exhaust out main exhaust, Mod. 0353 is required.
Must use M7 or P7 pilot type.

** Other options available, see page options.

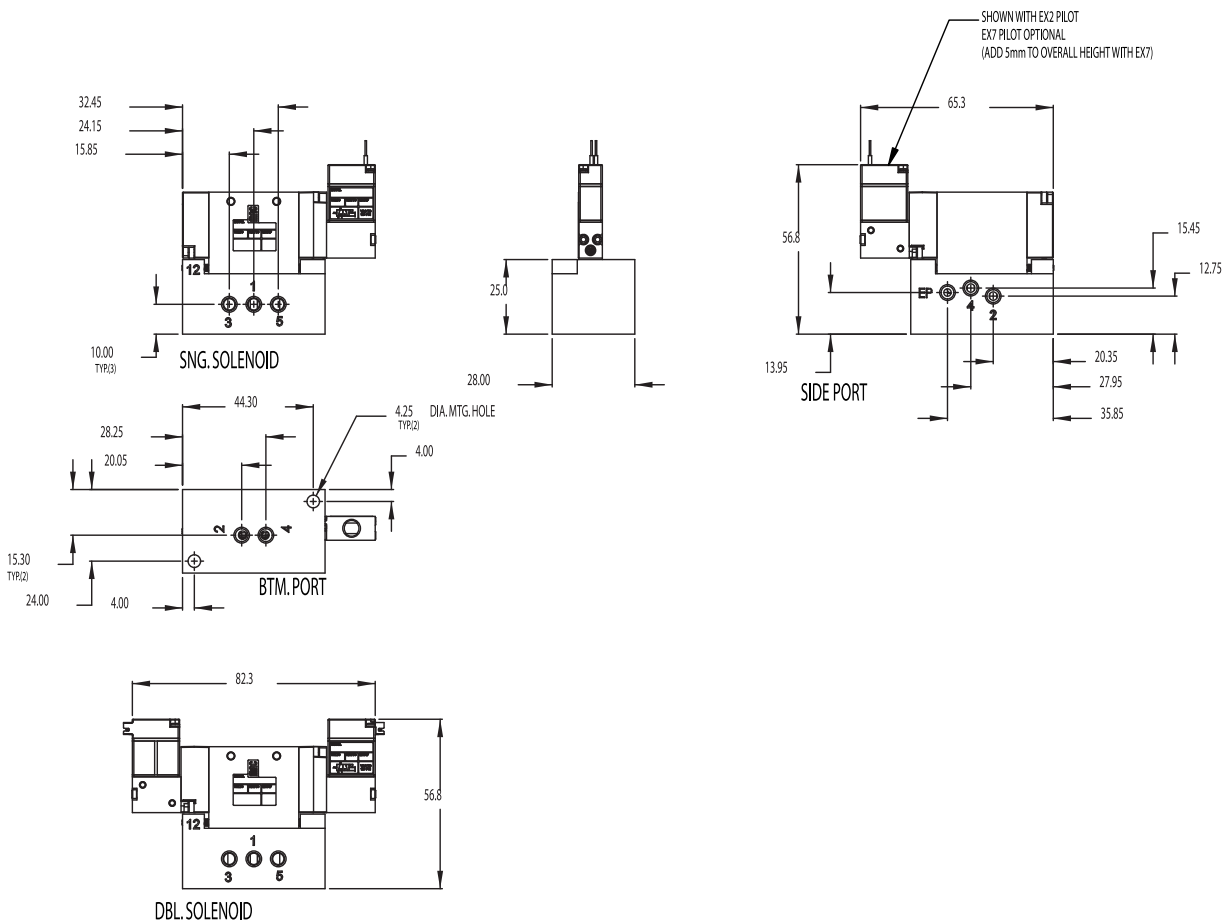
OPTIONS

23A-XX-Xx-Exx-Rxxx-xxx

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

| TECHNICAL DATA | |
|------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot: Single solenoid air return: 2 to 8 bar Single solenoid spring return: 2,7 to 8 bar Double solenoid: 1,3 to 8 bar External pilot: vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Flow : | 230 Nl/min (2.3 Cv) |
| Coil : | Class A (#26 AWG x 18), continuous duty |
| Voltage range : | -15% to +10% of nominal voltage |
| Power : | 4.0W, 3.0W, 2.5W, 1.8W, 1.0W |

DIMENSIONS Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves 8 mm valve

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

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

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

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

SOLENOID OPERATOR ►

E **XX-Rxxx-xxx** **

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

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

** Other options available, see page options.

OPTIONS

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

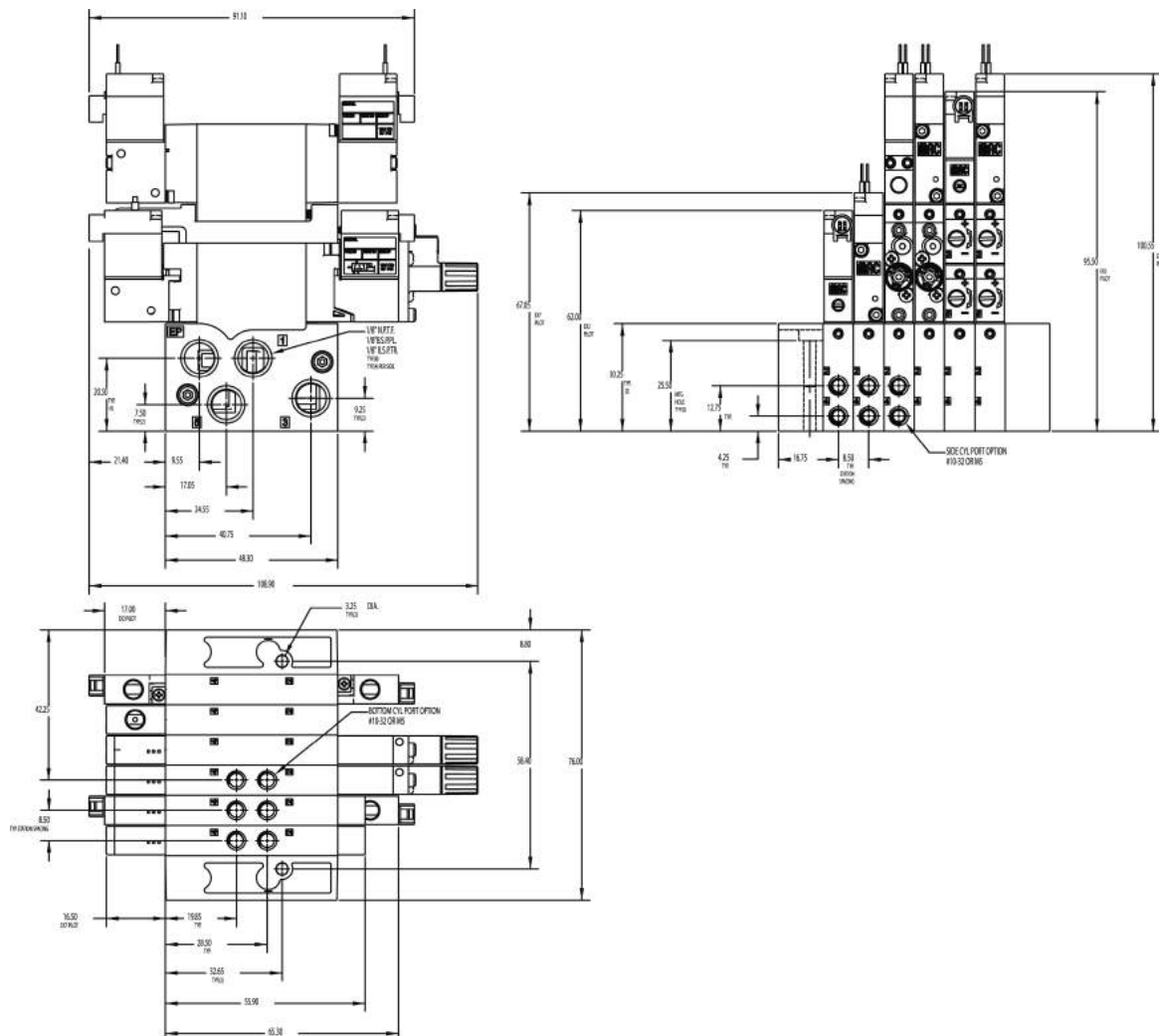
- A Manifold base – Side cylinder ports
- B Manifold base – Bottom cylinder ports (no side cylinder ports)

TECHNICAL DATA

| | |
|------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot: Single solenoid air return: 2 to 8 bar Single solenoid spring return: 2,7 to 8 bar Double solenoid: 1,3 to 8 bar External pilot: vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Flow : | 230 Nl/min (2.3 Cv) |
| Coil : | Class A (#26 AWG x 18), continuous duty |
| Voltage range : | -15% to +10% of nominal voltage |
| Power : | 4.0W, 3.0W, 2.5W, 1.8W, 1.0W |

DIMENSIONS

Dimensions shown are metric (mm)



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **EXX-R XX X - X XX**
1 2 3 4 5

| 1. PILOT OPTION | | 4. MANUAL OPERATOR | |
|---------------------------------------|----------------------------------|--|--|
| E XX - RXX X- X XX VOLTAGE | | E XX - RXX X- X XX MANUAL OPERATOR | |
| M2 | 12mm - muffled exhaust | 0 | No operator |
| P2 | 12mm - piped exhaust (M3) | 1 | Non-locking recessed |
| M7 | 17mm - muffled exhaust | 3 | Non-locking extended |
| P7 | 17mm - piped exhaust (M3) | | |
| 2. VOLTAGE | | 5. ELECTRICAL CONNECTION | |
| E XX - RXX X- X XX VOLTAGE | | ELECTRICAL CONNECTIONS FOR NON PLUG-IN VALVES | |
| E XX - RXX X- X XX | | E XX - RXX X- X XX | |
| DB | 24 VDC (1.0W) | BA | Flying leads |
| DC | 24 VDC (1.8W) | BB | Flying leads with LED |
| DD | 24 VDC (2.5W) | BC | Flying leads with MOV |
| DE | 24 VDC (3.0W) | BD | Flying leads with LED and MOV |
| DF | 24 VDC (4.0W) | RA | Mini JAC solenoid plug-in |
| DH | 12 VDC (1.0W) | RB | Mini JAC solenoid plug-in with LED |
| DJ | 12 VDC (1.8W) | RC | Mini JAC solenoid plug-in with MOV |
| DK | 12 VDC (2.5W) | RD | Mini JAC solenoid plug-in with LED and MOV |
| DL | 12 VDC (3.0W) | TA | JST solenoid plug-in |
| DM | 12 VDC (4.0W) | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |
| 3. WIRE LENGHT | | ELECTRICAL CONNECTIONS FOR PLUG-IN VALVES | |
| E XX - RXX X- X XX WIRE LENGHT | | E XX - RXX X- X XX | |
| 0* | No lead wire | FA | Base plug-in |
| A | 45 cm - 18" | FB | Base plug-in with LED |
| B | 60 cm - 24" | FC | Base plug-in with MOV |
| C | 90 cm - 36" | FD | Base plug-in with LED and MOV |
| D | 120 cm - 48" | | |
| E | 180 cm - 72" | | |
| F | 240 cm - 96" | | |
| G | 300 cm - 120" | | |
| H | 365 cm - 144" | | |
| P | Base plug-in (24 Series plug-in) | | |

* Not available for flying leads connector

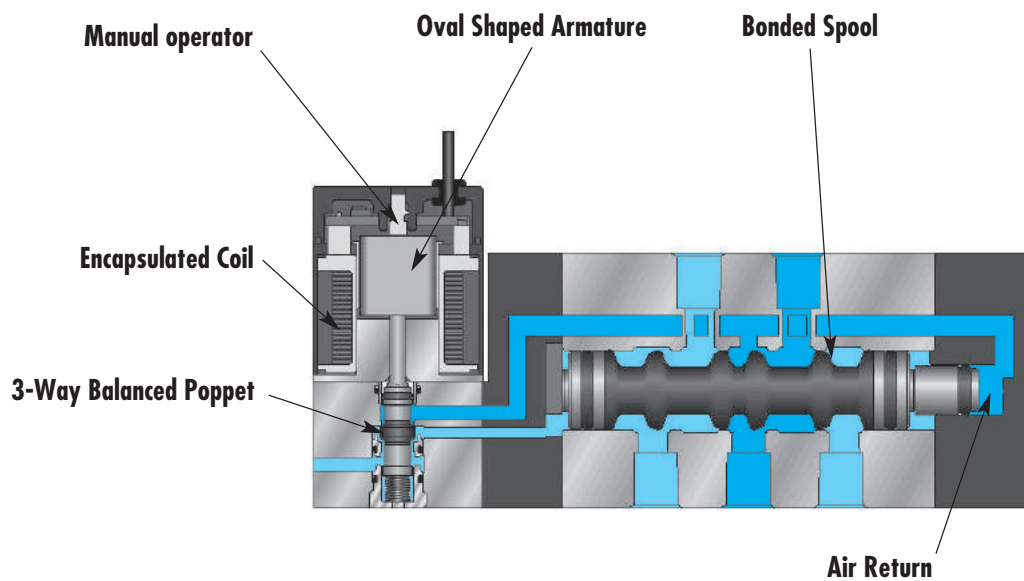
Direct solenoid and solenoid pilot operated valves 10 mm valve

Individual mounting

| | | |
|--------|-------------------------|---------------------|
| Inline | Sub-base Non plug-in | Sub-base Plug-in |
|--------|-------------------------|---------------------|

Manifold mounting

| | |
|------------------------------|--------------------------|
| Manifold-base Non plug-in | Manifold-base Plug-in |
|------------------------------|--------------------------|



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- 10 mm solenoid pilot operated valve.
- Very fast and repeatable response times.



Direct solenoid and solenoid pilot operated valves 10 mm valve

| Function | Port size | Flow [Max] | Individual mounting |
|-----------------|-----------|-------------------|---------------------|
| 5/2, 5/3 | M5 | 250 NI/min | Inline |

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Closed center | 5/3 Open center |
|-----------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | |
| M5 | Internal | 24A-A1-B00-Exx-Rxxx-xxx | 24A-B1-B00-Exx-Rxxx-xxx | 24A-E1-B00-Exx-Rxxx-xxx | 24A-F1-B00-Exx-Rxxx-xxx |
| | External | 24A-A4-B00-Exx-Rxxx-xxx | 24A-B4-B00-Exx-Rxxx-xxx | 24A-E4-B00-Exx-Rxxx-xxx | 24A-F4-B00-Exx-Rxxx-xxx |

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY)

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Pressure center |
|-----------|-----------------------|-------------------------|-------------------------|-------------------------|
| | | | | |
| M5 | Internal from port #3 | 24A-C2-B00-Exx-Rxxx-xxx | 24A-D2-B00-Exx-Rxxx-xxx | 24A-G2-B00-Exx-Rxxx-xxx |
| | Internal from port #5 | 24A-C3-B00-Exx-Rxxx-xxx | 24A-D3-B00-Exx-Rxxx-xxx | 24A-G3-B00-Exx-Rxxx-xxx |

SOLENOID OPERATOR ►

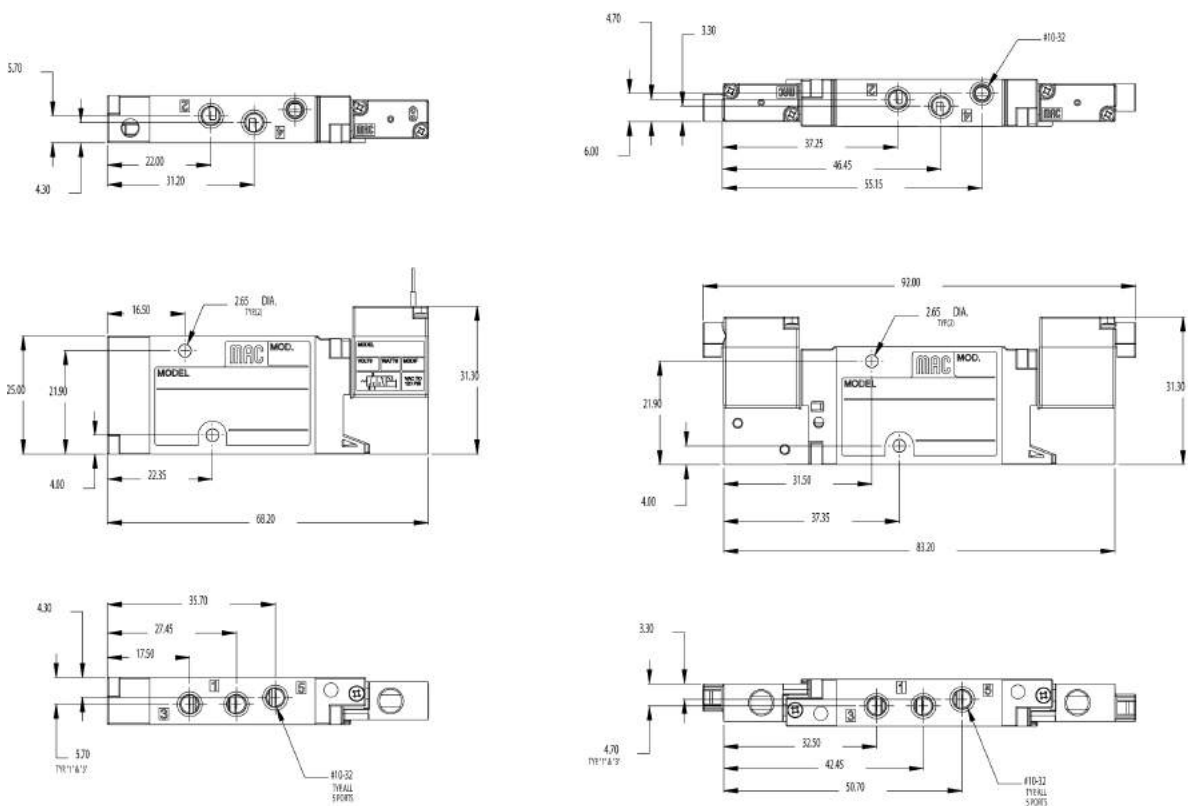
E **XX-Rxxx-xxx****

| XX | Pilot type | XX | Voltage | X | Lead wire length | X | Manual operator | XX | Electrical connection | |
|----|--------------------|----|-----------|--|------------------|---|----------------------|----|------------------------------|----------------------|
| M2 | Muffled exhaust | DB | 24V=/1.0W | 0* | No lead wire | 0 | No manual operator | BA | Flying leads | |
| P2 | Piped exhaust (M3) | DC | 24V=/1.8W | A | 45 cm | 1 | Recessed non locking | BB | Flying leads w/ LED | |
| | | DD | 24V=/2.5W | B | 60 cm | 3 | Extended non locking | RA | Mini JAC solenoid plug-in | |
| | | DF | 24V=/4.0W | C | 90 cm | | | RB | Mini JAC sol. plug-in w/ LED | |
| | | DH | 12V=/1.0W | * Not available for flying lead connectors | | | | | TA | JST solenoid plug-in |
| | | DJ | 12V=/1.8W | | | | | | | |
| | | DK | 12V=/2.5W | | | | | | | |
| | | DM | 12V=/4.0W | | | | | | | |

** Other options available, see page options.

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

DIMENSIONS Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves 10 mm valve

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS (SIDE PORTS)

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

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

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

SOLENOID OPERATOR ➤

E **XX-Rxxx-xxx****

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

* Not available for flying lead connectors

** Other options available, see page options.

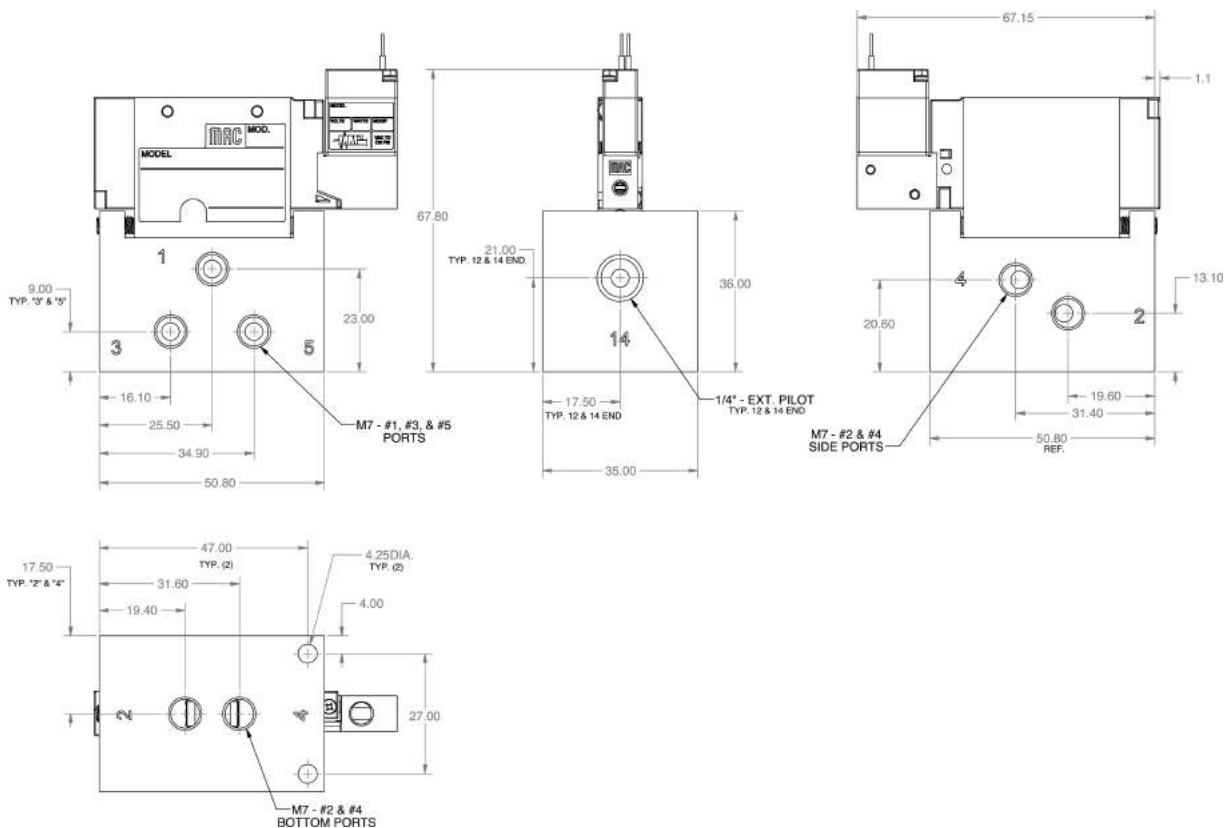
OPTIONS

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

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

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

DIMENSIONS Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves 10 mm valve

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS (SIDE PORTS)

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

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

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

SOLENOID OPERATOR ►

E **XX-RXXX-XXX***

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

* Other options available, see page options.

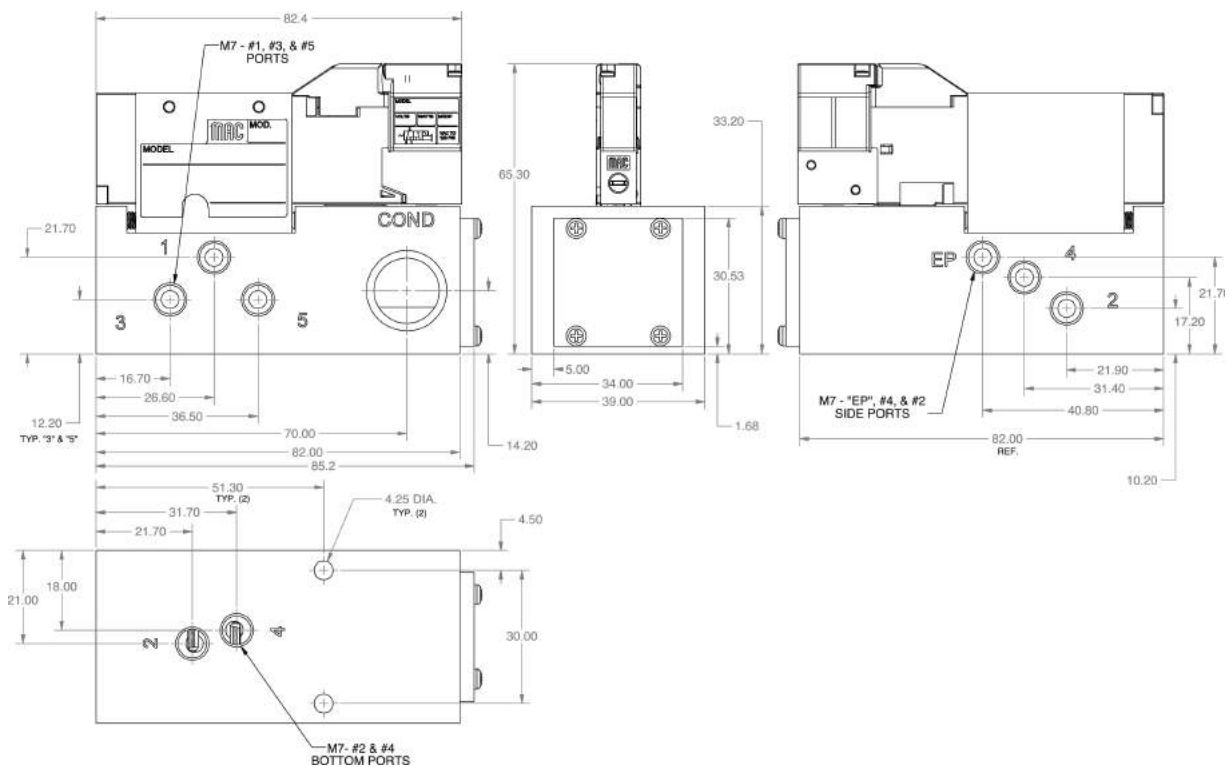
OPTIONS

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

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

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

DIMENSIONS Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves 10 mm valve

Function Port size Flow [Max] Manifold mounting

5/2, 5/3

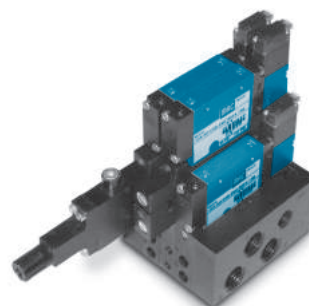
M5, M7

400 NI/min

Manifold base
non plugin

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS (SIDE PORTS)

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

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

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

SOLENOID OPERATOR >

E XX-Rxxx-xxx**

| XX | Pilot type | XX | Voltage | X | Lead wire length | X | Manual operator | XX | Electrical connection | | | | | |
|----|--------------------|----|-----------|--|------------------|---|----------------------|----|------------------------------|-----------------------------|--|--|----|-------------------------|
| M2 | Muffled exhaust | DB | 24V=/1.0W | 0* | No lead wire | 0 | No manual operator | BA | Flying leads | | | | | |
| P2 | Piped exhaust (M3) | DC | 24V=/1.8W | A | 45 cm | 1 | Recessed non locking | BB | Flying leads w/ LED | | | | | |
| | | DD | 24V=/2.5W | B | 60 cm | 3 | Extended non locking | RA | Mini JAC solenoid plug-in | | | | | |
| | | DF | 24V=/4.0W | C | 90 cm | | | RB | Mini JAC sol. plug-in w/ LED | | | | | |
| | | DH | 12V=/1.0W | * Not available for flying lead connectors | | | | | TA | JST solenoid plug-in w/ LED | | | | |
| | | DJ | 12V=/1.8W | | | | | | | | | | TB | JST sol. plug-in w/ LED |
| | | DK | 12V=/2.5W | | | | | | | | | | | |
| | | DM | 12V=/4.0W | | | | | | | | | | | |

** Other options available, see page options.

OPTIONS

End plate kit required (Port size 1/4"): M-24002-01-01P (internal pilot) – M-24002-02-01P (external pilot)

Note : For pilot exhaust out main exhaust mod. 0353 is required

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

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

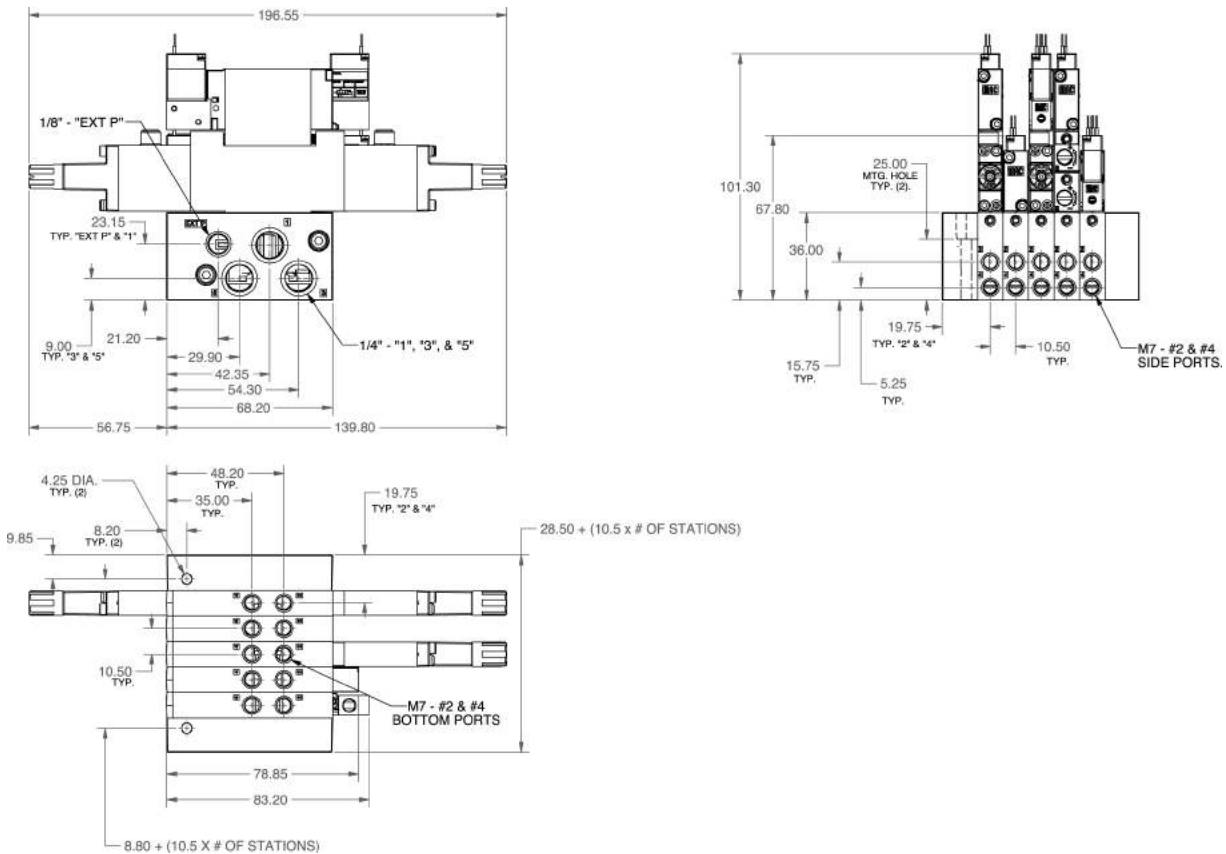
TECHNICAL DATA

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

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

DIMENSIONS

Dimensions shown are metric (mm)



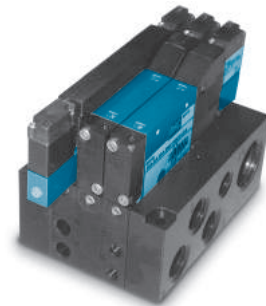


Direct solenoid and solenoid pilot operated valves 10 mm valve

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS (SIDE PORTS)

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

DUAL PRESSURE MODELS (INTERNAL PILOT ONLY – SIDE PORTS)

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

SOLENOID OPERATOR >

E **XX-RXXX-XXX***

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

* Other options available, see page options.

OPTIONS

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

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

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

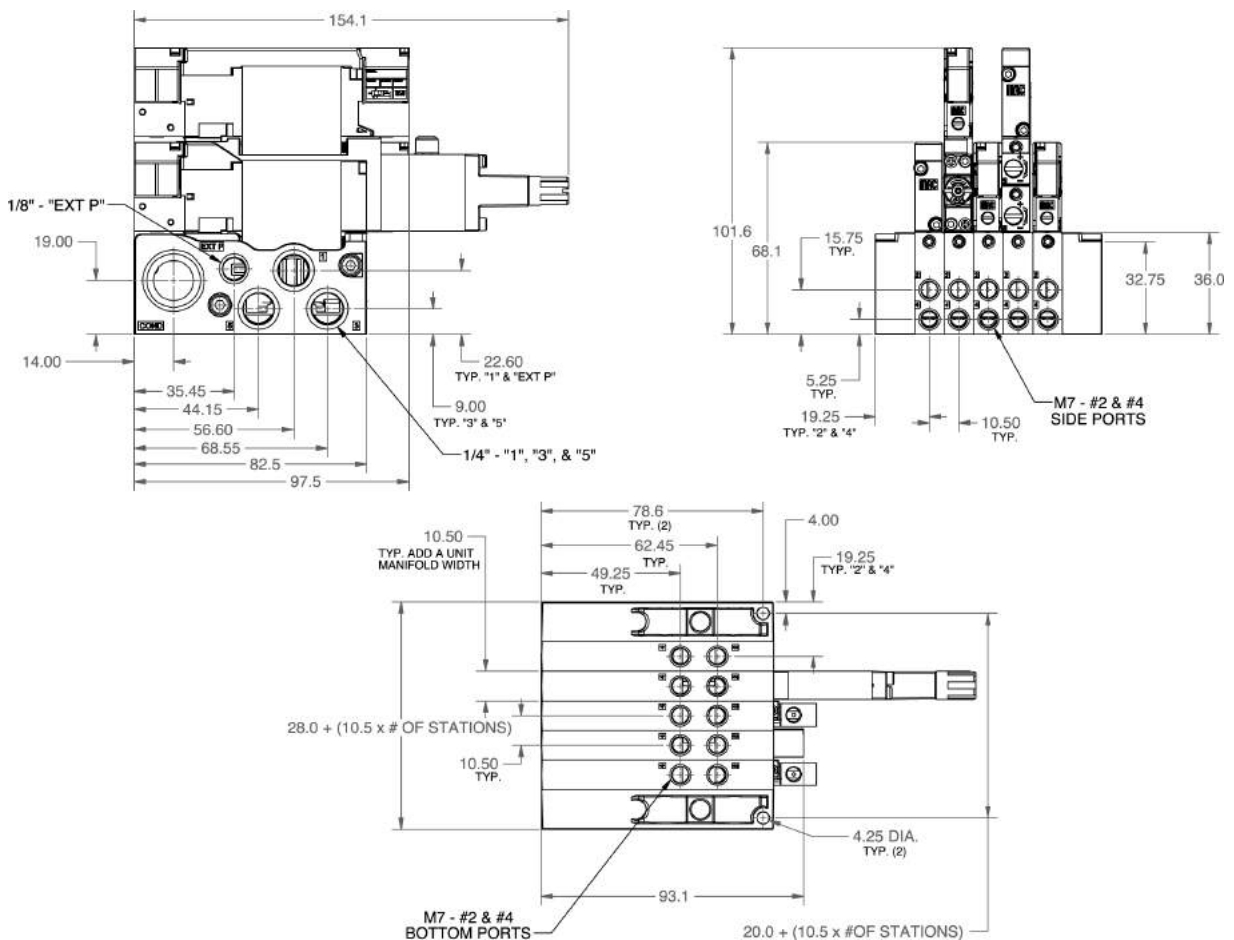
TECHNICAL DATA

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

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

DIMENSIONS

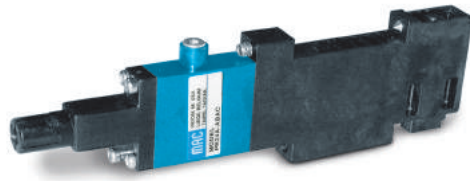
Dimensions shown are metric (mm)



Sandwich pressure regulators with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

NON PLUG-IN SANDWICH REGULATORS

| Gauge | Single pressure - Regulator "12" end | Dual pressure* - Regulator both ends |
|-----------------|--------------------------------------|--------------------------------------|
| No gauge port | PR42B-BAAA | PR42B-BCAA |
| With gauge Port | PR42B-BBAA | PR42B-BDAA |

PLUG-IN SANDWICH REGULATORS (WITH GAGE PORT)

| Single pressure Regulator "12" end Internal pilot | Single pressure Regulator "12" end External pilot |
|--|--|
| PR24A-AAAA | PR24A-ABAA |

* For use with dual pressure valves.

OPTIONS

Pressure range :

PR24A-xxxX

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2,7 bar

Notes:

- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 24 series valve.
- When an internal pilot regulator is used with the 24 series valve, the valve should be ordered as external pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve is used with an internal pilot regulator, the pilot supply is regulated.

TECHNICAL DATA

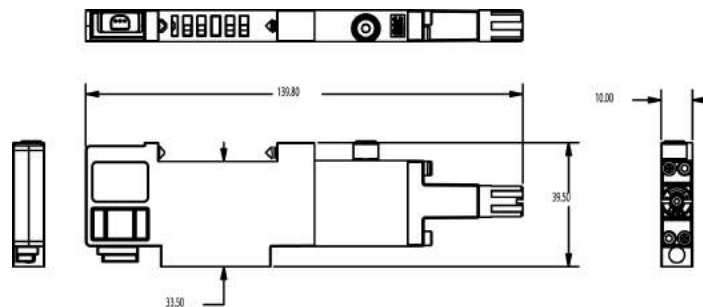
| | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Coil : | Class A (#26 AWG x 18), continuous duty |
| Temperature range : | 0°F to 120°F / -18°C to +50°C |

- Spare parts :
- Gage Kit No coupling: N-42004-01
With short coupling: N-42004-02 (required with double solenoid valve)
With long coupling: N-42004-03 (required with double solenoid valve)
 - Sandwich flow control Plug-in with flow control on same end: FC24A-AB
Non plug-in with flow control on same end: FC24A-BB
Non plug-in with flow control on each end: FC24A-CA

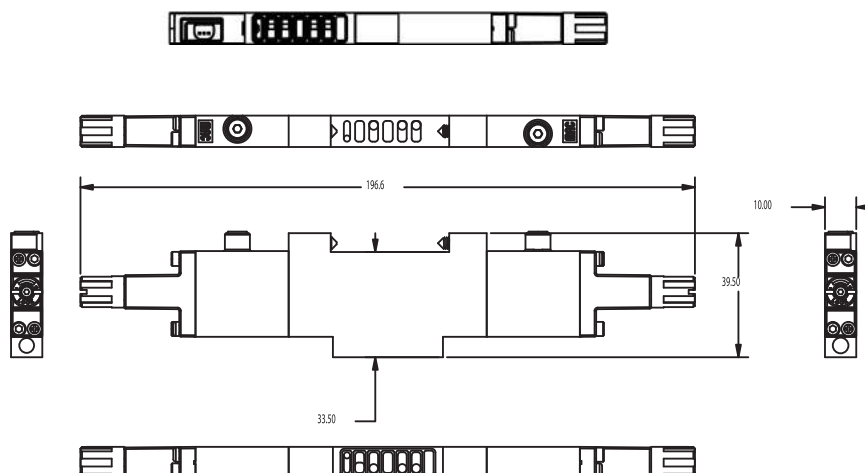
DIMENSIONS

Dimensions shown are metric (mm)

Single regulator



Double regulator



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ► **EXX-R XX X - X XX**
1 2 3 4 5

| 1. PILOT OPTION | | 4. MANUAL OPERATOR | |
|---------------------------------------|----------------------------------|--|--|
| E XX - RXX X- X XX VOLTAGE | | E XX - RXX X- X XX MANUAL OPERATOR | |
| M2 | 12mm – muffled exhaust | 0 | No operator |
| P2 | 12mm – piped exhaust (M3) | 1 | Non-locking recessed |
| M7 | 17mm – muffled exhaust | 3 | Non-locking extended |
| P7 | 17mm – piped exhaust (M3) | | |
| 2. VOLTAGE | | 5. ELECTRICAL CONNECTION | |
| E XX - RXX X- X XX VOLTAGE | | ELECTRICAL CONNECTIONS FOR NON PLUG-IN VALVES | |
| E XX - RXX X- X XX | | E XX - RXX X- X XX | |
| DB | 24 VDC (1.0W) | BA | Flying leads |
| DC | 24 VDC (1.8W) | BB | Flying leads with LED |
| DD | 24 VDC (2.5W) | BC | Flying leads with MOV |
| DE | 24 VDC (3.0W) | BD | Flying leads with LED and MOV |
| DF | 24 VDC (4.0W) | RA | Mini JAC solenoid plug-in |
| DH | 12 VDC (1.0W) | RB | Mini JAC solenoid plug-in with LED |
| DJ | 12 VDC (1.8W) | RC | Mini JAC solenoid plug-in with MOV |
| DK | 12 VDC (2.5W) | RD | Mini JAC solenoid plug-in with LED and MOV |
| DL | 12 VDC (3.0W) | TA | JST solenoid plug-in |
| DM | 12 VDC (4.0W) | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |
| 3. WIRE LENGHT | | ELECTRICAL CONNECTIONS FOR PLUG-IN VALVES | |
| E XX - RXX X- X XX WIRE LENGHT | | E XX - RXX X- X XX | |
| O* | No lead wire | FA | Base plug-in |
| A | 45 cm - 18" | FB | Base plug-in with LED |
| B | 60 cm - 24" | FC | Base plug-in with MOV |
| C | 90 cm - 36" | FD | Base plug-in with LED and MOV |
| D | 120 cm - 48" | | |
| E | 180 cm - 72" | | |
| F | 240 cm - 96" | | |
| G | 300 cm - 120" | | |
| H | 365 cm - 144" | | |
| P | Base plug-in (24 Series plug-in) | | |

* Not available for flying leads connector

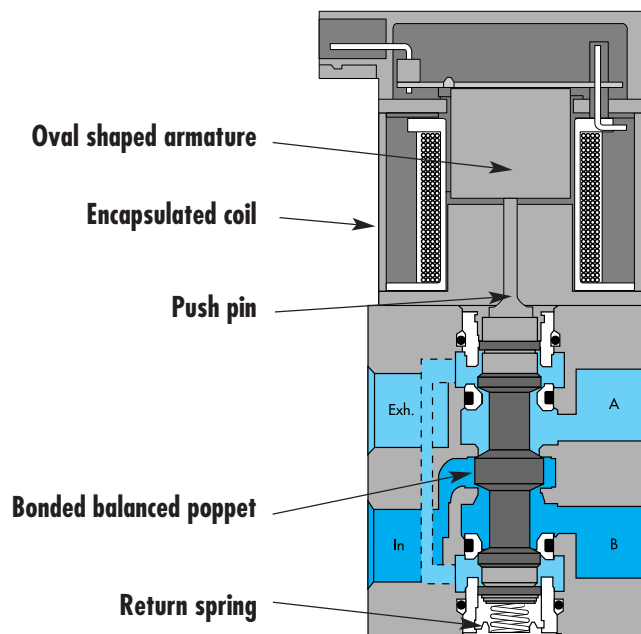
Direct solenoid and solenoid pilot operated valves

Individual mounting

| | |
|--------|--|
| Inline | |
|--------|--|

Manifold mounting

| | | | | | |
|----------|-------------------------|--|--|--------------------------------------|--|
| Stacking | Manifold base "plug-in" | Manifold base "plug-in" with pressure regulators | Manifold base "plug-in" with flow controls | Manifold base "plug-in" with PR & FC | |
|----------|-------------------------|--|--|--------------------------------------|--|



SERIES FEATURES

- Patented high force MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function — may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum, divertor, or selector applications.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- Manual overrides as standard.
- Various solenoid enclosures and plug-in connectors.
- Optional surge suppression available.
- Low wattage DC solenoids — down to 1.3 watts.
- Rectified AC voltage.

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Single Operator | | Double Operator | |
|--------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Without flow controls | With flow controls | Without flow controls | With flow controls |
| | | | | |
| G1/8" | 46A-AC1-J xxx-xxx | 46A-AC2-J xxx-xxx | 46A-GC1-J xxx-xxx | 46A-GC2-J xxx-xxx |
| M5 | 46A-AD1-J xxx-xxx | 46A-AD2-J xxx-xxx | 46A-GD1-J xxx-xxx | 46A-GD2-J xxx-xxx |

SOLENOID OPERATOR ➤

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

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

* Other options available, see page options.

Note : - AC voltage requires connector with rectifier.

- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.
- Double solenoid requires minimum 5,4 watts.

OPTIONS

46A-AC1-Jxxx-xxx

G Use with O ring mount (body option D and "H")

- A** Single operator - 4 port body with side ports
- C** Single operator - 4 port body with bottom ports (No side ports)
- D** Single operator - Bottom O ring mount - All ports (No side ports)
- F** Single operator - Bottom O ring mount - Cylinder ports only - Side inlet and exhaust
- G** Double operator - 4 Port body - with side ports
- H** Double operator - Bottom O ring mount. All ports (no side ports).

Examples : 46A-DG1-Jxxx-xxx (Bottom O ring mount - all ports)
46A-CD1-Jxxx-xxx (4 port body with bottom ports - no side ports)

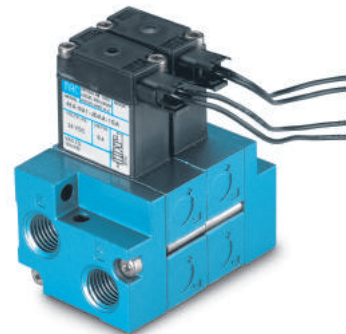


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold Mounting |
|------------|-------------------|-------------------|-------------------|
| 4/2 | G1/8" - M5 | 300 NI/min | Stacking |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Without flow controls | With flow controls |
|--------------|--------------------------|--------------------------|
| | | |
| G1/8" | 46A-SC1-J xxx-xxx | 46A-SC2-J xxx-xxx |
| M5 | 46A-SD1-J xxx-xxx | 46A-SD2-J xxx-xxx |

SOLENOID OPERATOR ►

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

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

* Other options available, see page options.

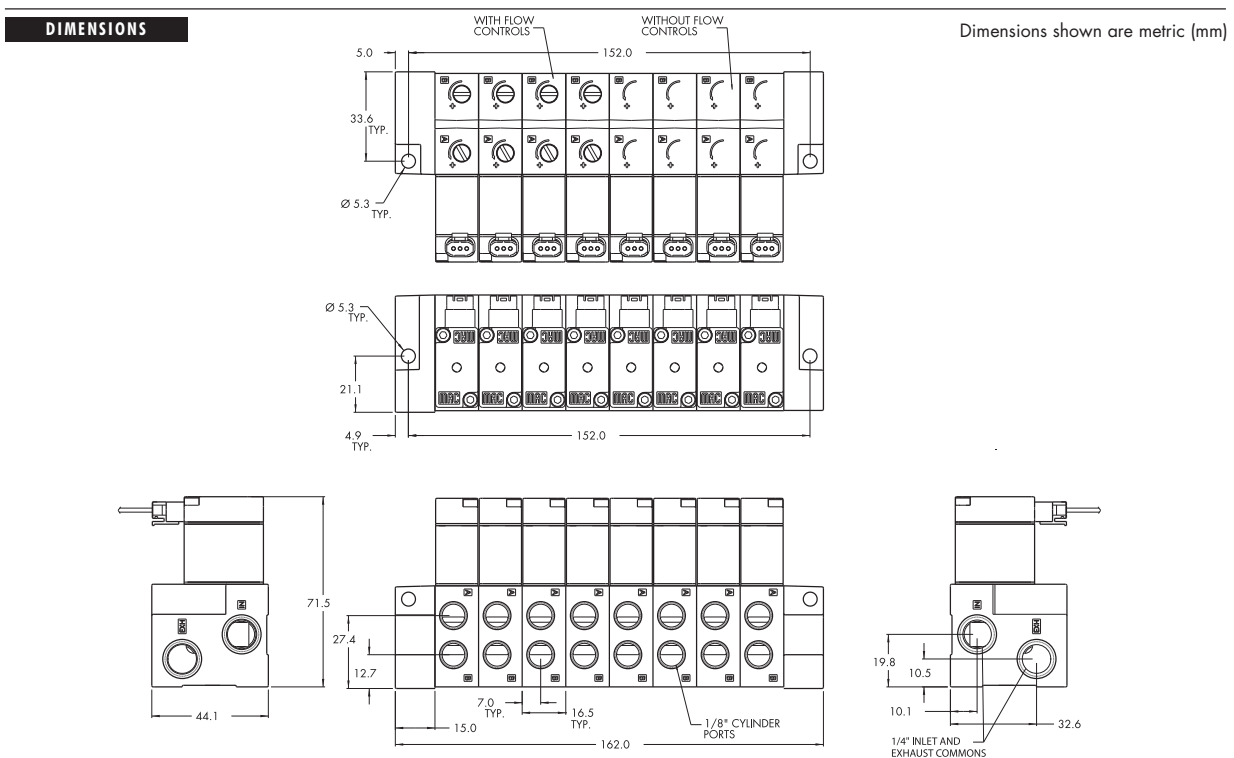
Note : - AC voltage requires connector with rectifier.

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

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

| TECHNICAL DATA | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 3,3 mm |
| Flow (at 6 bar, ΔP=1bar) : | 1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30) |
| Coil : | Epoxy encapsulated – Class A wires – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP54 (electrical connection) |
| Power : | 5,4W – 2,4W – 1,0W |
| Response times : | Energize : 7,20 ms De-energize : 4,20ms |

- Options : • NPTF threads
- Spare parts : • Inlet isolator : 28494 • Exhaust isolator : 28493 • Tie rod (x2) : 79411



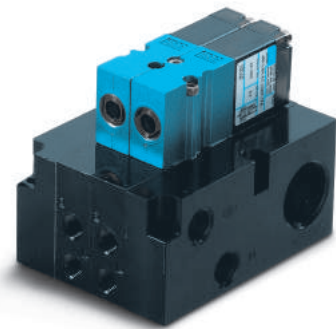


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold mounting |
|------------|--------------|-------------------|-------------------------|
| 4/2 | G1/8" | 300 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Single solenoid | Double solenoid |
|------------------------|--------------------------------------|--------------------------------------|
| | | |
| Valve less base | 46A-L00-00-J XX P- XXX | 46A-N00-00-J XX P- XXX |
| G1/8" | 46A-LSB-AC-J XX P- XXX | 46A-NSB-BL-J XX P- XXX |

SOLENOID OPERATOR ➤

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

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

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

OPTIONS

46A-LSB-AC-J**XX**P-**XXX**

- C** Single solenoid - Side cylinder ports
- L** Single & double solenoid - Bottom cylinder ports
- O** Base only - no valve
- L** Single solenoid - Base mount body
- M** Single solenoid - Base mount body with gage port
- N** Double solenoid - Base mount body
- P** Double solenoid - Base mount body with gage port

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

| TECHNICAL DATA | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 3,3 mm |
| Flow (at 6 bar, ΔP=1bar) : | 1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30) |
| Coil : | Epoxy encapsulated – Class A wires – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP54 (electrical connection) |
| Power : | 5,4W – 2,4W – 1,0W |
| Response times : | Energize : 7,20 ms De-energize : 4,20ms |

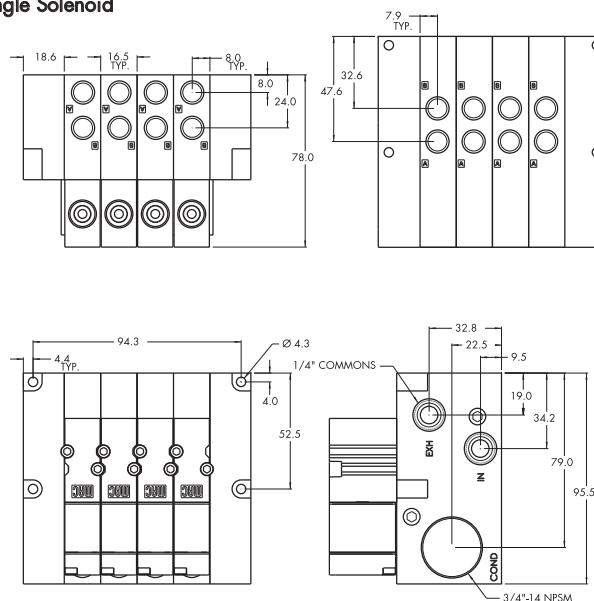
Options : • NPTF threads

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

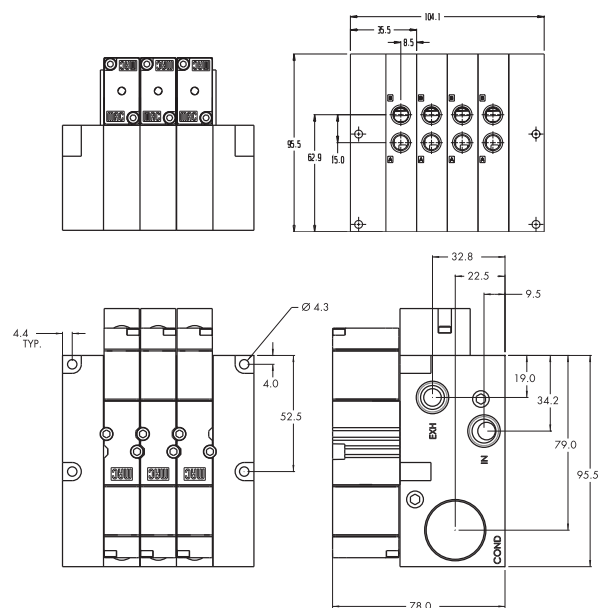
DIMENSIONS

Dimensions shown are metric (mm)

Single Solenoid



Double solenoid



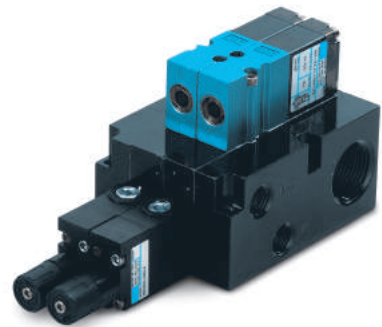


Direct solenoid and solenoid pilot operated valves

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

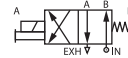
OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Model number |
|-----------------|-----------------------------|
| Valve less base | 46A-L00-00-J xxP-xxx |
| G1/8" | 46A-LSB-AJ-J xxP-xxx |



SOLENOID OPERATOR >

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

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

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

OPTIONS

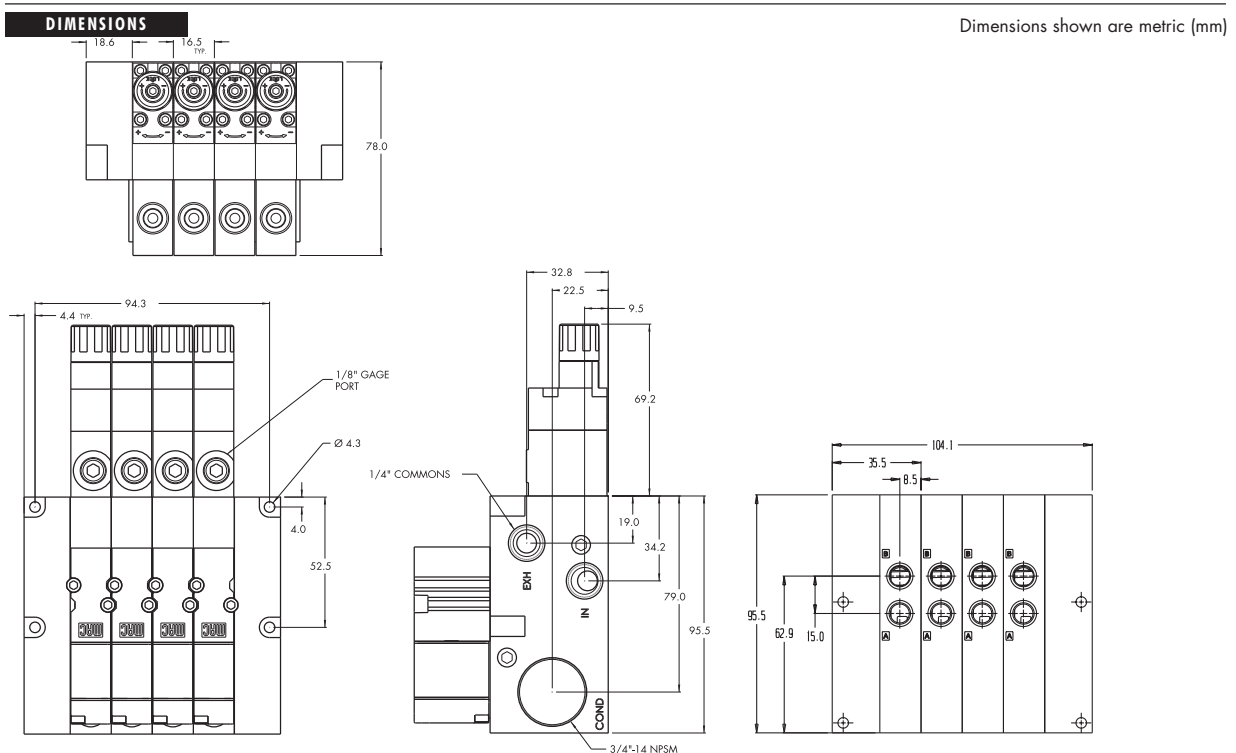
46A-LSB-AJ-J**xxP-xxx**

- J Regulator with adjusting knob
- E Regulator with slotted stem
- G Regulator with slotted stem with locknut
- O Base only – no valve
- L Base mount body
- M Base mount body with gage port

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

| TECHNICAL DATA | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 3,3 mm |
| Flow (at 6 bar, ΔP=1bar) : | 1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30) |
| Coil : | Epoxy encapsulated – Class A wires – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP54 (electrical connection) |
| Power : | 5,4W – 2,4W – 1,0W |
| Response times : | Energize : 7,20 ms De-energize : 4,20ms |

- Options : • NPTF threads
- Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
- Replacement regulators : PR46A-0AAA (slotted stem)
PR46A-0BAA (adjusting knob)
PR46A-0CAA (slotted stem with locknut)
- Regulating range options : • PR46A-xxx**A**
- A** 0 to 8 bar
 - B** 0 to 5,3 bar
 - C** 0 to 2 bar





Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Model number |
|------------------------|-----------------------------|
| Valve less base | 46A-L00-00-J xxP-xxx |
| G1/8" | 46A-LSB-AD-J xxP-xxx |



SOLENOID OPERATOR >

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

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

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

OPTIONS

46A-LSB-AJ-JxxP-xxx

D Side cylinder ports
M Bottom cylinder ports

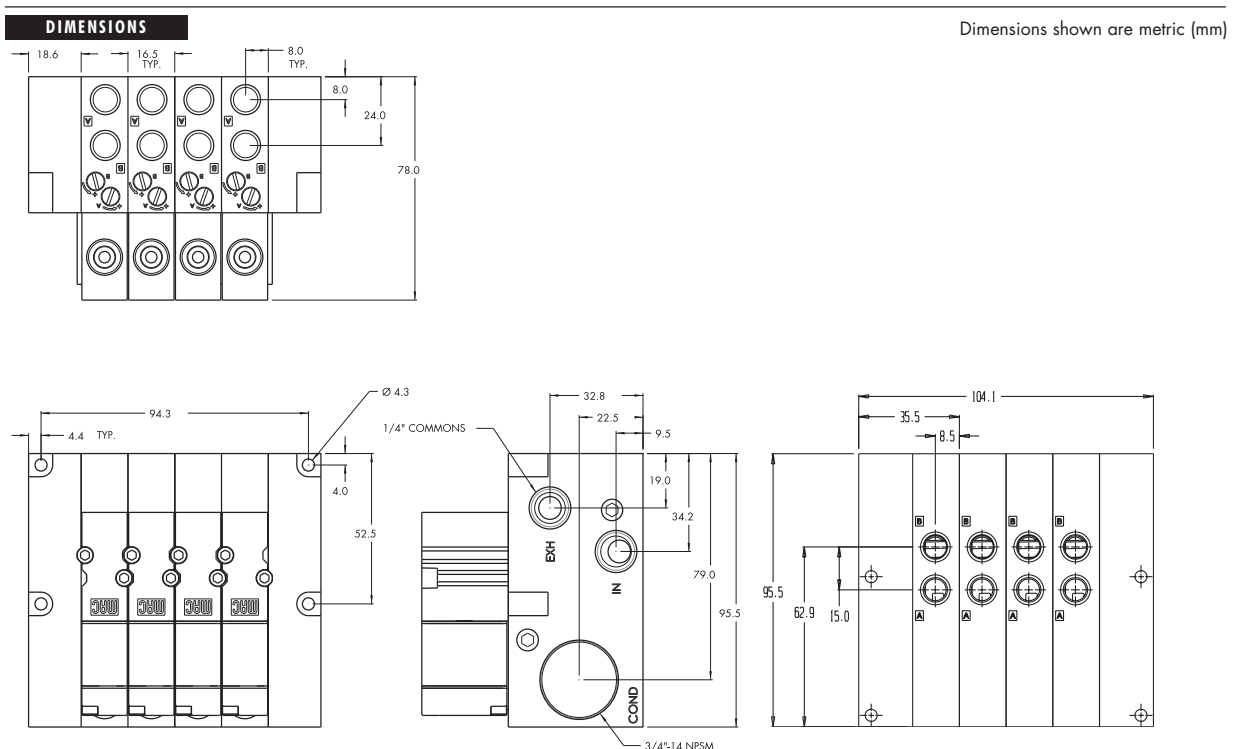
O Base only – no valve
L Base mount body
M Base mount body with gage port

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

| TECHNICAL DATA | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 3,3 mm |
| Flow (at 6 bar, ΔP=1bar) : | 1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30) |
| Coil : | Epoxy encapsulated – Class A wires – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP54 (electrical connection) |
| Power : | 5,4W – 2,4W – 1,0W |
| Response times : | Energize : 7,20 ms De-energize : 4,20ms |

Options : • NPTF threads

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





Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Model number |
|-----------------|-----------------------------|
| Valve less base | 46A-L00-00-J xxP-xxx |
| G1/8" | 46A-LSB-AK-J xxP-xxx |



SOLENOID OPERATOR >

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

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

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

OPTIONS

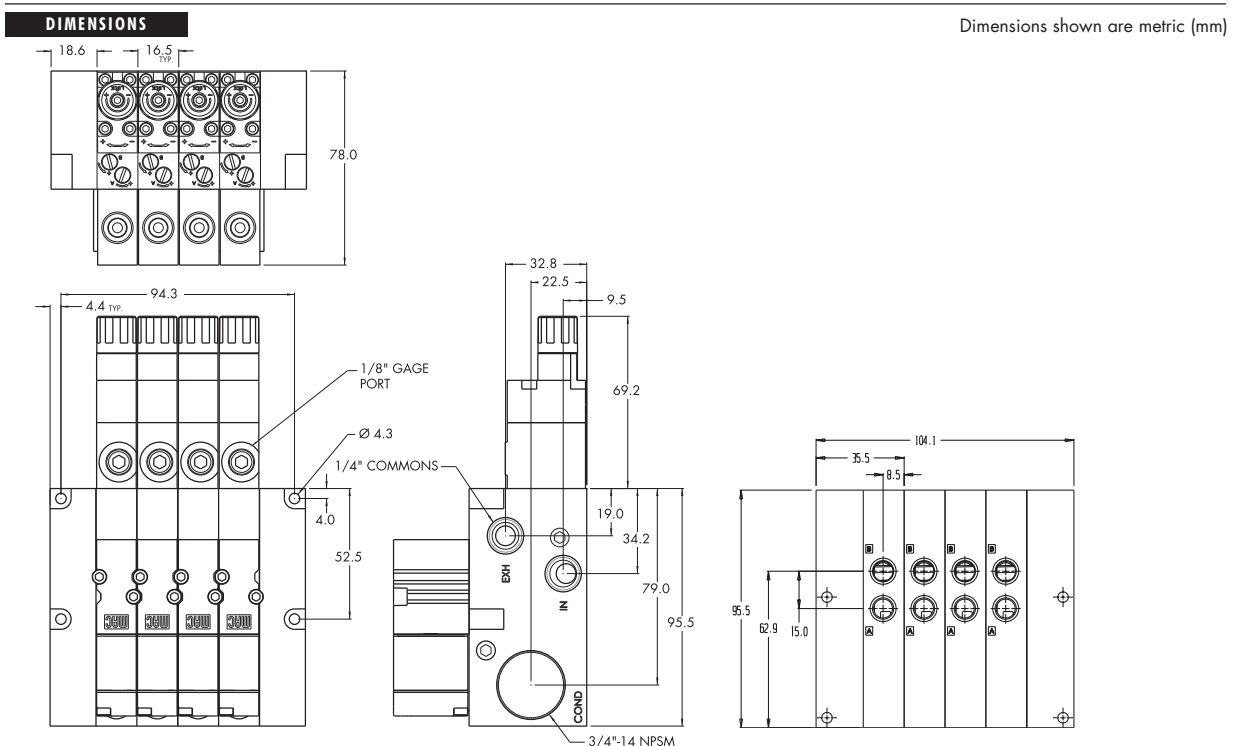
46A-LSB-AJ-JxxP-xxx

- K** Regulator with adjusting knob & flow controls
- F** Regulator with slotted stem & flow controls
- H** Regulator with slotted stem with locknut & flow controls
- O** Base only – no valve
- L** Base mount body
- M** Base mount body with gage port

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

| TECHNICAL DATA | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 3,3 mm |
| Flow (at 6 bar, ΔP=1bar) : | 1,8W : 200 NI/min (Cv 0,20) – 2,4W : 200 NI/min (Cv 0,20) – 5,4W : 300 NI/min (Cv 0,30) |
| Coil : | Epoxy encapsulated – Class A wires – 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP54 (electrical connection) |
| Power : | 5,4W – 2,4W – 1,0W |
| Response times : | Energize : 7,20 ms De-energize : 4,20ms |

- Options : • NPTF threads
- Spare parts : • Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
- Replacement regulators : PR46A-0AAA (slotted stem)
PR46A-0BAA (adjusting knob)
PR46A-0CAA (slotted stem with locknut)
- Regulating range options : • PR46A-xxx**A**
- A** 0 to 8 bar
 - B** 0 to 5,3 bar
 - C** 0 to 2 bar



Sandwich-pressure regulator

OPERATIONAL BENEFITS

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



HOW TO ORDER

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

| Gauge | For plug-in valves | For non plug-in valves |
|----------------------|--------------------|------------------------|
| Gauge port (plugged) | PR46A-AAAA | PR46A-BAAA |

OPTIONS

Pressure range :

PR46A-AAA A

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2,7 bar

- A** Manual adjust with slotted screwdriver stem
- B** Manual adjust with adjusting knob
- C** Manual adjust with slotted screwdriver stem and locknut

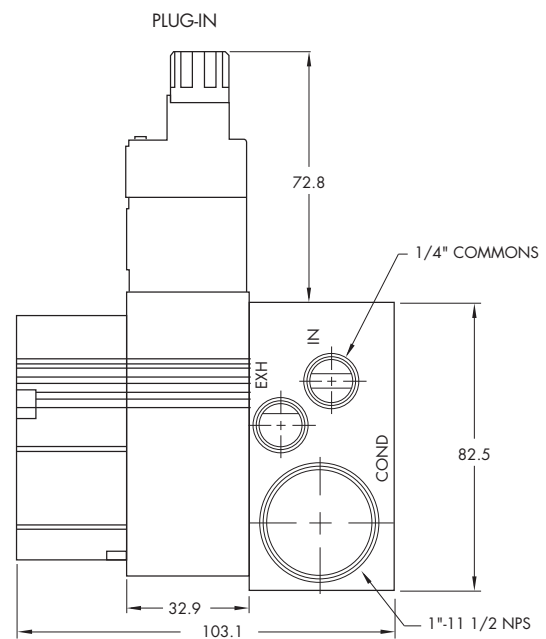
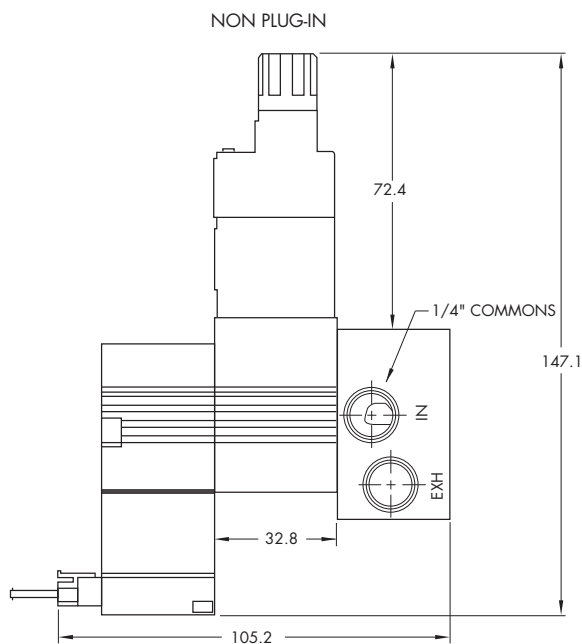
- 0** Regulator only (no sandwich block)

TECHNICAL DATA

| | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow : | 210 NL/min (Cv 0,21) |

DIMENSIONS

Dimensions shown are metric (mm)



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

J XX X-X XX
1 2 3 4

(Non Plug-in series)

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

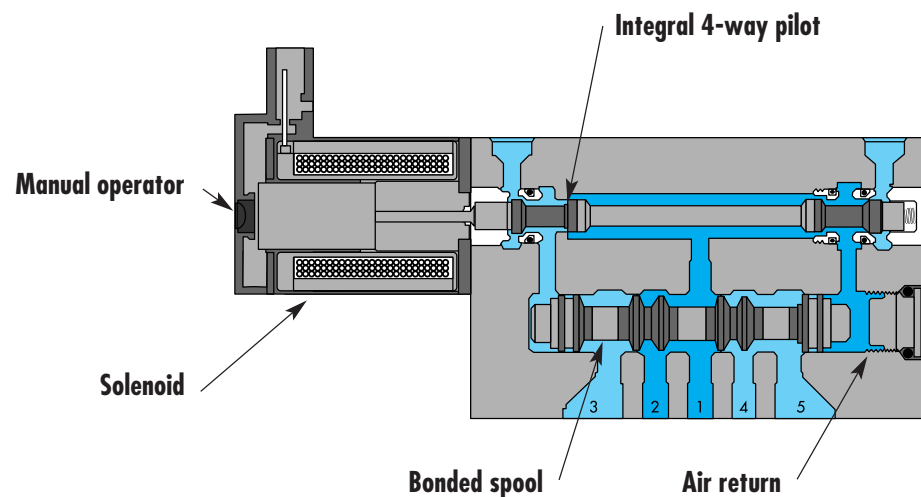
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

| | |
|--------------------------------|----------------------------|
| Manifold base non "plug-in" | Manifold base "plug-in" |
|--------------------------------|----------------------------|



SERIES FEATURES

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

| Function | Port size | Flow [Max] | Individual mounting |
|-----------------|---------------|-------------------|------------------------|
| 5/2, 5/3 | M5, M7 | 400 NI/min | Sub-base non "plug-in" |

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10,5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



HOW TO ORDER

SINGLE PRESSURE MODELS

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

DUAL PRESSURE MODELS

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

STANDARD SOLENOID OPERATOR ►

G **xxx-xxx***

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

Note : AC voltage requires connector with rectifier.

* Other options available, see page options.

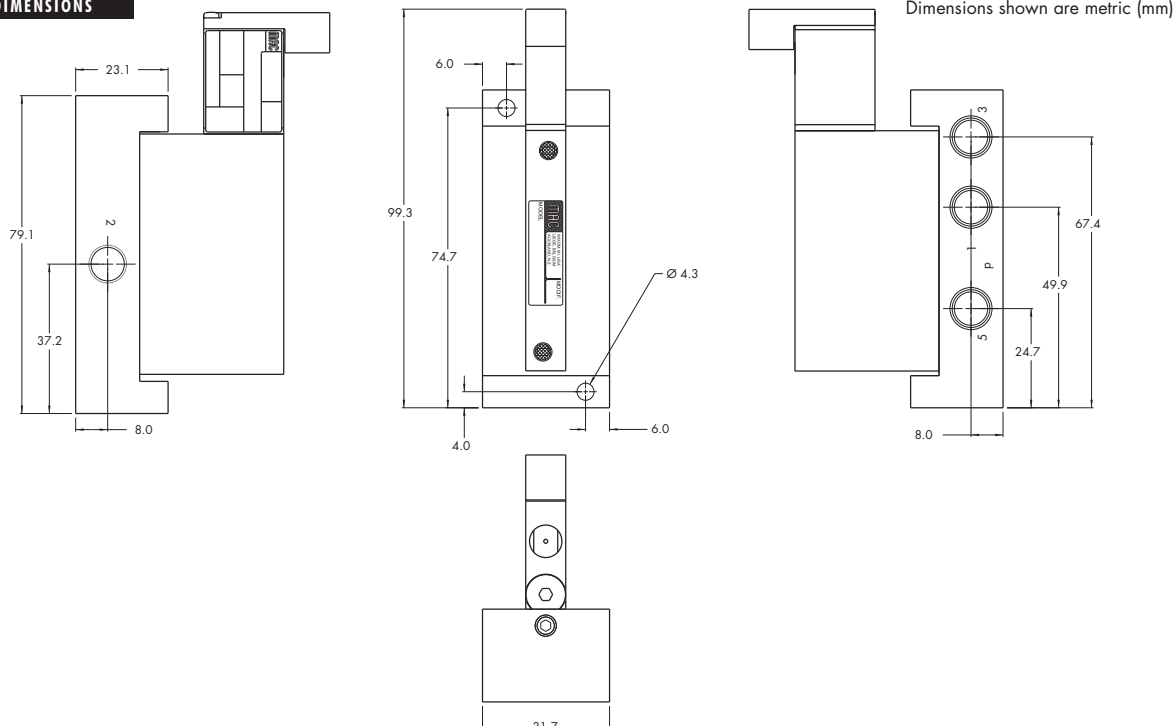
TECHNICAL DATA

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

Options :

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

DIMENSIONS



Function Port size Flow [Max] Individual mounting

5/2, 5/3

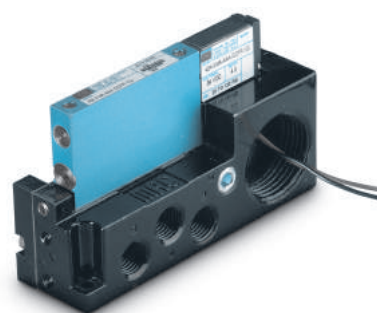
M5, M7

400 NI/min

Sub-base
"plug-in"

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10,5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.






HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|------------------------|------------------------|----------------------|----------------------|
| | | | | | |
| Valve less base | Internal | 42B-AMA-000-GxxP-xxx | 42B-BME-000-GxxP-xST | 42B-EME-000-GxxP-xST | 42B-FME-000-GxxP-xST |
| | External | 42B-AMD-000-GxxP-xxx | 42B-BMH-000-GxxP-xST | 42B-EMH-000-GxxP-xST | 42B-FMH-000-GxxP-xST |
| M5 | Internal | 42B-AMA-GAA-GxxP-xxx | 42B-BME-GAC-GxxP-xST | 42B-EME-GAC-GxxP-xST | 42B-FME-GAC-GxxP-xST |
| | External | 42B-AMD-GAB-GxxP-xxx | 42B-BMH-GAD-GxxP-xST | 42B-EMH-GAD-GxxP-xST | 42B-FMH-GAD-GxxP-xST |
| M7 | Internal | 42B-AMA-LAA-GxxP-xxx | 42B-BME-LAC-GxxP-xST | 42B-EME-LAC-GxxP-xST | 42B-FME-LAC-GxxP-xST |
| | External | 42B-AMD-LAB-GxxP-xxx | 42B-BMH-LAD-GxxP-xST | 42B-EMH-LAD-GxxP-xST | 42B-FMH-LAD-GxxP-xST |

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Pressure centre |
|-----------------|-----------|----------------|---|--|---|
| | | |  |  |  |
| Valve less base | Internal | Supply #3 port | 42B-CMB-000-GxxP-xxx | 42B-DMF-000-GxxP-xST | 42B-HMF-000-GxxP-xST |
| | | Supply #5 port | 42B-CMC-000-GxxP-xxx | 42B-DMG-000-GxxP-xST | 42B-HMG-000-GxxP-xST |
| | External | | 42B-CMD-000-GxxP-xxx | 42B-DMH-000-GxxP-xST | 42B-HMH-000-GxxP-xST |
| M5 | Internal | Supply #3 port | 42B-CMB-GAA-GxxP-xxx | 42B-DMF-GAC-GxxP-xST | 42B-HMF-GAC-GxxP-xST |
| | | Supply #5 port | 42B-CMC-GAA-GxxP-xxx | 42B-DMG-GAC-GxxP-xST | 42B-HMG-GAC-GxxP-xST |
| | External | | 42B-CMD-GAB-GxxP-xxx | 42B-DMH-GAD-GxxP-xST | 42B-HMH-GAD-GxxP-xST |
| M7 | Internal | Supply #3 port | 42B-CMB-LAA-GxxP-xxx | 42B-DMF-LAC-GxxP-xST | 42B-HMF-LAC-GxxP-xST |
| | | Supply #5 port | 42B-CMC-LAA-GxxP-xxx | 42B-DMG-LAC-GxxP-xST | 42B-HMG-LAC-GxxP-xST |
| | External | | 42B-CMD-LAB-GxxP-xxx | 42B-DMH-LAD-GxxP-xST | 42B-HMH-LAD-GxxP-xST |

STANDARD SOLENOID OPERATOR ►

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

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

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

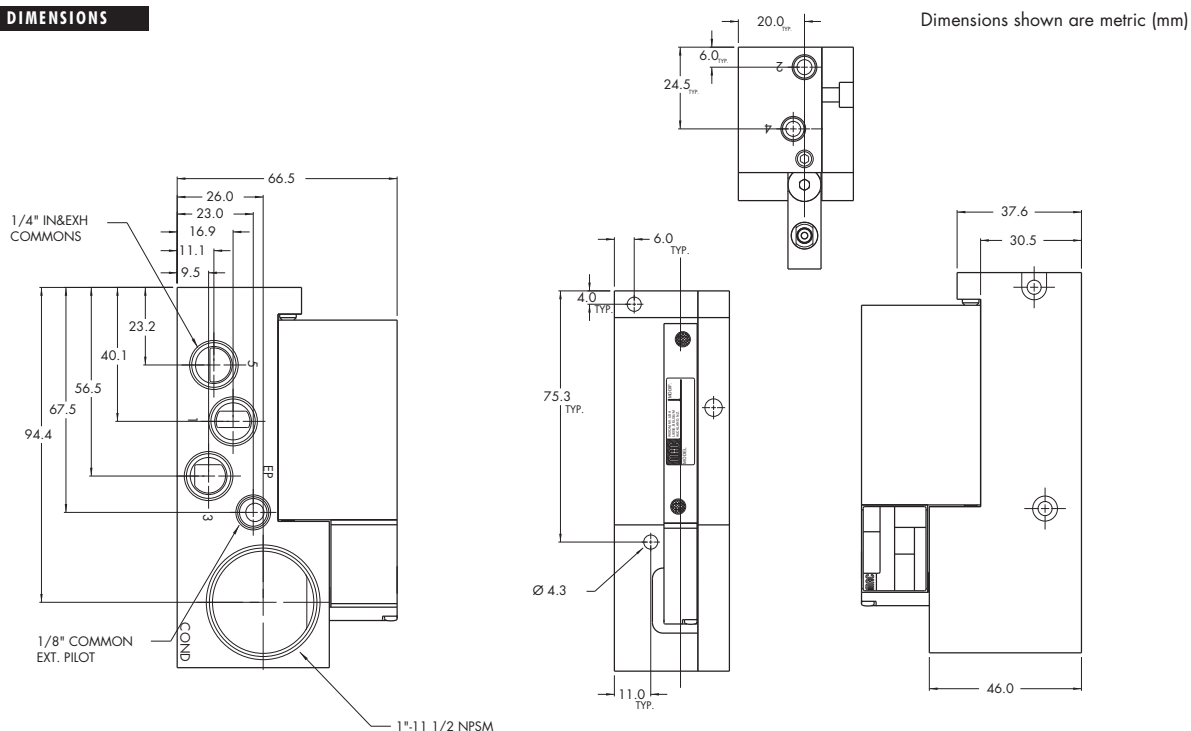
* Other options available, see page options.

TECHNICAL DATA

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

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

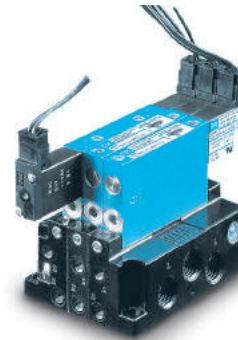
DIMENSIONS



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

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10,5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



HOW TO ORDER

SINGLE PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|----------------------|----------------------|----------------------|----------------------|
| | | | | | |
| Valve less base | Internal | 42B-AMA-000-Gxxx-xxx | 42B-BMA-000-Gxxx-xxx | 42B-EMA-000-Gxxx-xxx | 42B-FMA-000-Gxxx-xxx |
| | External | 42B-AMD-000-Gxxx-xxx | 42B-BMD-000-Gxxx-xxx | 42B-EMD-000-Gxxx-xxx | 42B-FMD-000-Gxxx-xxx |
| M5 | Internal | 42B-AMA-GJL-Gxxx-xxx | 42B-BMA-GJL-Gxxx-xxx | 42B-EMA-GJL-Gxxx-xxx | 42B-FMA-GJL-Gxxx-xxx |
| | External | 42B-AMD-GJM-Gxxx-xxx | 42B-BMD-GJM-Gxxx-xxx | 42B-EMD-GJM-Gxxx-xxx | 42B-FMD-GJM-Gxxx-xxx |
| M7 | Internal | 42B-AMA-LJL-Gxxx-xxx | 42B-BMA-LJL-Gxxx-xxx | 42B-EMA-LJL-Gxxx-xxx | 42B-FMA-LJL-Gxxx-xxx |
| | External | 42B-AMD-LJM-Gxxx-xxx | 42B-BMD-LJM-Gxxx-xxx | 42B-EMD-LJM-Gxxx-xxx | 42B-FMD-LJM-Gxxx-xxx |

DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

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

STANDARD SOLENOID OPERATOR ➤

G **XXX-XXX***

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

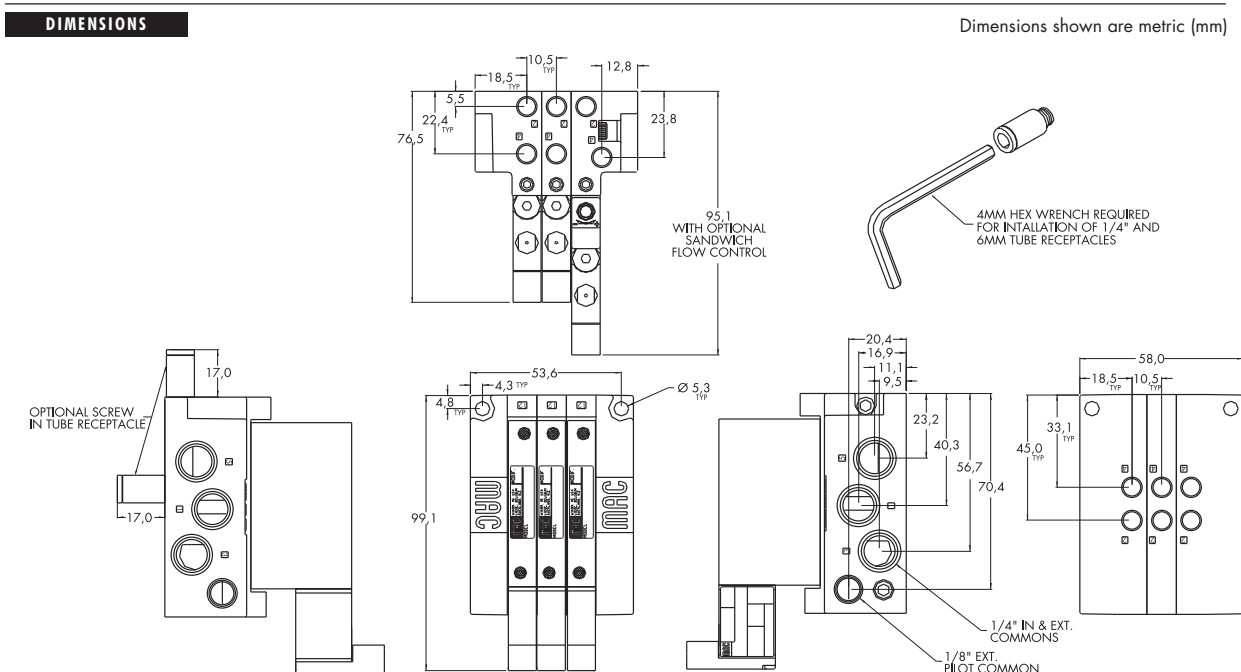
Note : - AC voltage requires connector with rectifier.

* Other options available, see page options.

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

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

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



Function Port size Flow [Max] Manifold mounting

5/2, 5/3

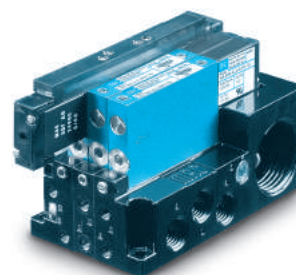
M5, M7

400 NI/min

Manifold base
"plug-in"

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 10 mm valve (stacks on 10,5 mm centres).
3. High flow (up to 400 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.



HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|----------------------|----------------------|----------------------|----------------------|
| | | | | | |
| Valve less base | Internal | 42B-AMA-000-GxxP-xxx | 42B-BME-000-GxxP-xST | 42B-EME-000-GxxP-xST | 42B-FME-000-GxxP-xST |
| | External | 42B-AMD-000-GxxP-xxx | 42B-BMH-000-GxxP-xST | 42B-EMH-000-GxxP-xST | 42B-FMH-000-GxxP-xST |
| M5 | Internal | 42B-AMA-GJA-GxxP-xxx | 42B-BME-GJC-GxxP-xST | 42B-EME-GJC-GxxP-xST | 42B-FME-GJC-GxxP-xST |
| | External | 42B-AMD-GJB-GxxP-xxx | 42B-BMH-GJD-GxxP-xST | 42B-EMH-GJD-GxxP-xST | 42B-FMH-GJD-GxxP-xST |
| M7 | Internal | 42B-AMA-LJA-GxxP-xxx | 42B-BME-LJC-GxxP-xST | 42B-EME-LJC-GxxP-xST | 42B-FME-LJC-GxxP-xST |
| | External | 42B-AMD-LJB-GxxP-xxx | 42B-BMH-LJD-GxxP-xST | 42B-EMH-LJD-GxxP-xST | 42B-FMH-LJD-GxxP-xST |

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

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

STANDARD SOLENOID OPERATOR ➤

G **XX** P-**xxx***

Above numbers are middle station manifold with side ports

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

* Other options available, see page options.

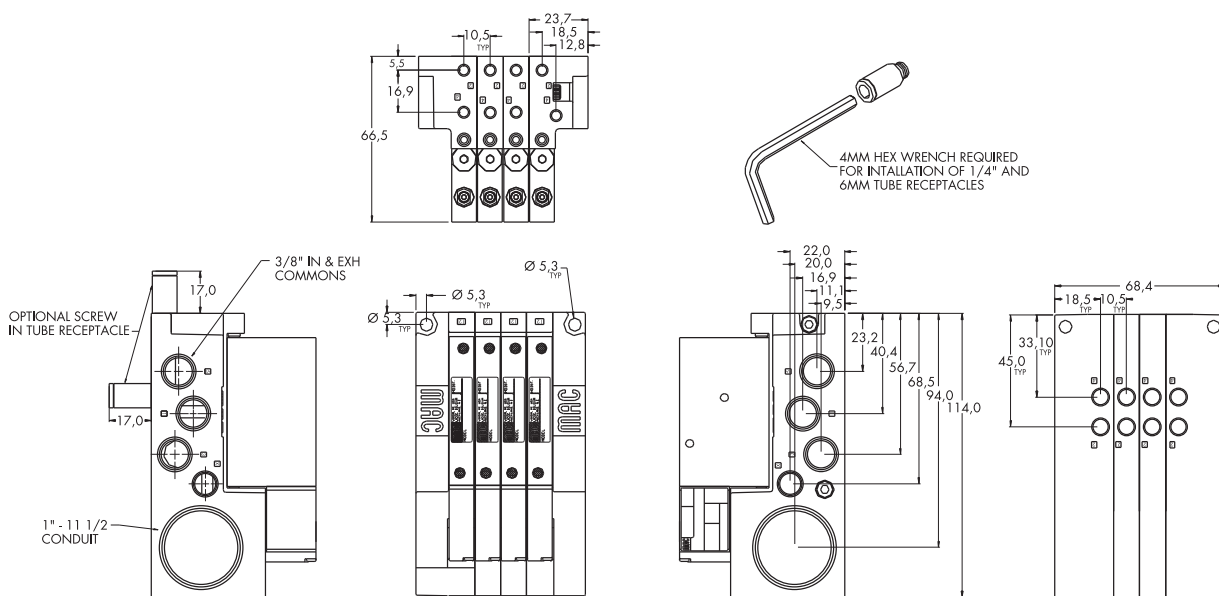
Note : - AC voltage requires connector with rectifier (for double solenoid consult factory).
- Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds (options "J" or "K").

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

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

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

OPTIONS FOR NON PLUG-IN VALVES

Base type :

Individual base

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

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

Manifold base

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

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

Universal spool

42B-RXX-XXX-G**xxx-xxx**

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

Base only :

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

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

Pilot style :

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

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



Direct solenoid and solenoid pilot operated valves

OPTIONS FOR PLUG-IN VALVES

Base type :

Individual base

42B-XXX-XAX-GxxP-xxx

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

Manifold base

42B-XXX-XJX-GxxP-xxx

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

Universal spool

42B-RXX-XXX-GxxP-xxx

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

Base only :

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

- Individual base wired for a double solenoid

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

- Manifold base wired for a single solenoid

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

42B-XXJ-XXX-GxxP-xGA

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

Pilot style :

42B-XXM-XXX-GxxP-xxx

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

Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

NON PLUG-IN SANDWICH REGULATORS

| Gauge | Regulator "12" end Internal pilot | Regulator "12" end External pilot |
|------------------------|-----------------------------------|-----------------------------------|
| No gauge port | PR42B-BAAA | PR42B-BBAA |
| With gauge Port | PR42B-BABA | PR42B-BBBA |

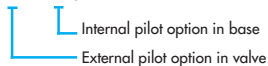
PLUG-IN SANDWICH REGULATORS

| Gauge | Regulator "12" end Internal pilot | Regulator "12" end External pilot |
|------------------------|-----------------------------------|-----------------------------------|
| No gauge port | PR42B-AAAA | PR42B-ABAA |
| With gauge Port | PR42B-AAAB | PR42B-ABBA |

Notes:

- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 42 series valve.
- When an internal pilot regulator is used with the 42 series valve, the valve should be ordered as external pilot and the base should be ordered as internal pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve and base are used with an internal pilot regulator, the pilot supply is regulated.

Example: Valve 42B-AM D-AA A-GxxP-xxx with PR42B-AAAA



OPTIONS

Pressure range :

PR42B-AAAA

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2,7 bar

TECHNICAL DATA

| | |
|-------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 250 NL/min (Cv 0,25) |

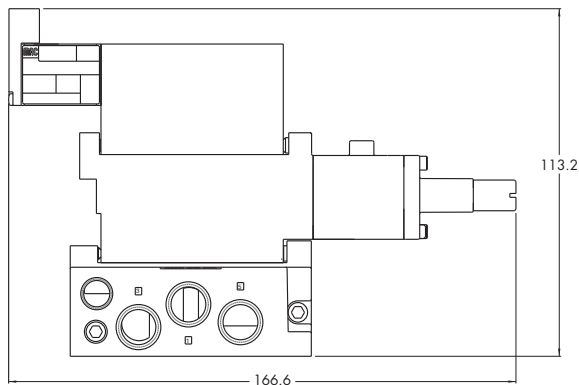
Spare parts :

- Pressure regulator (less sandwich block) : PR42B-C0xx • Gauge port plug: N-PE003
- M5 to 1/8" adapter : N-35005 • Gauge: 24177-160 (0 to 10,7 bar, 23 mm)
24177-100 (0 to 6,7 bar, 23 mm)
24177-060 (0 to 4 bar, 23 mm)

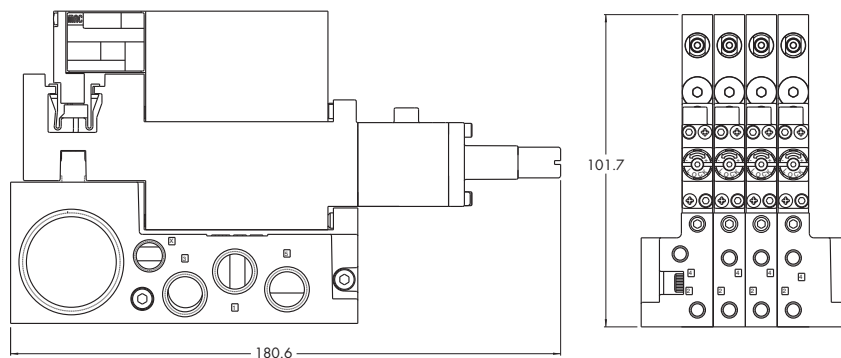
DIMENSIONS

Dimensions shown are metric (mm)

NON PLUG-IN



PLUG-IN



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤

G XX X-X XX
1 2 3 4

| 1. VOLTAGE | | |
|--------------------|---|--|
| G-XX X-X XX | VOLTAGE | |
| AA | 120V~/2,5W | Requires electrical connector with rectifier |
| AC | 24V~/4,0W | Requires electrical connector with rectifier |
| DA | 24V~/1,0W | |
| DC | 24V~/1,8W | |
| DD | 24V~/2,5W | |
| DE | 24V~/3,0W | |
| DF | 24V~/4,0W | |
| DG | 12V~/1,0W | |
| DJ | 12V~/1,8W | |
| DK | 12V~/2,5W | |
| DM | 12V~/3,0W | |
| DN | 12V~/4,0W | |
| DR | 6V~/1,8W | |
| DS | 6V~/3,0W | |
| EB | 48V~/1,8W | |
| EC | 48V~/3,0W | |
| ED | 120V~/2,5W | |
| GD | 12V~/0,5W | 34 series only |
| GE | 24V~/0,5W | 34 series only |
| 2. WIRE LENGTH | | |
| G-XX X-X XX | WIRE LENGTH | |
| 0 | No lead wires (used only with "KJ" & "KM" connectors) | |
| A | 45 cm – 18" coil leads | |
| B | 60 cm – 24" coil leads | |
| C | 90 cm – 36" coil leads | |
| D | 120 cm – 48" coil leads | |
| E | 180 cm – 72" coil leads | |
| F | 240 cm – 96" coil leads | |
| G | 305 cm – 120" coil leads | |
| H | 366 cm – 144" coil leads | |
| 1 | 45 cm – 18" base leads | |
| 2 | 60 cm – 24" base leads | |
| 3 | 90 cm – 36" base leads | |
| 4 | 120 cm – 48" base leads | |
| 5 | 180 cm – 72" base leads | |
| 6 | 240 cm – 96" base leads | |
| 7 | 305 cm – 120" base leads | |
| 3. MANUAL OPERATOR | | |
| G-XX X-X XX | MANUAL OPERATOR | |
| 1 | Non-locking recessed | |
| 2 | Locking recessed | |
| 3 | Non-locking extended | |
| 4 | Locking extended | |

| 4. ELECTRICAL CONNECTION | |
|--|--|
| G-XX X-X XX | ELECTRICAL CONNECTION |
| BA | Flying leads |
| BB | BA with ground wire |
| BC | BA with light |
| BD | BA with light and ground wire |
| BE | BA with suppression diode |
| BF | BA with suppression diode and ground wire |
| BG | BA with suppression diode and light |
| BH | BA with suppression diode, light and ground wire |
| BN | BA with suppression diode and blocking diode |
| BP | BA with suppression diode, blocking diode and ground wire |
| BR | BA with suppression diode, blocking diode and light |
| BS | BA with suppression diode, blocking diode, light and ground wire |
| GA | MAC JAC Solenoid plug-in |
| GB | MAC JAC Solenoid plug-in with diode |
| GC | MAC JAC Solenoid plug-in with MOV |
| GD | MAC JAC Solenoid plug-in with LED |
| GE | MAC JAC Solenoid plug-in with diode and LED |
| GF | MAC JAC Solenoid plug-in with MOV and LED |
| GG | MAC JAC Solenoid plug-in with rectifier |
| GH | MAC JAC Solenoid plug-in with rectifier and LED |
| KA | Mini connector |
| KB | KA with ground |
| KC | KA with rectifier and light |
| KD | KA with rectifier, light and ground |
| KE | KA with suppression diode |
| KF | KA with suppression diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | KA with suppression diode and blocking diode |
| KP | KA with suppression diode, blocking diode and ground |
| KT | KA with light |
| KU | KA with light and ground |
| KV | KA with suppression diode and light |
| KW | KA with suppression diode, light and ground |
| KX | KA with suppression diode, blocking diode and light |
| KY | KA with suppression diode, blocking diode, light & ground |
| ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| G-XX X-X XX | PLUG-IN OPTIONS |
| SB | Base plug-in with ground |
| SC | Base plug-in with suppression & blocking diode |
| SD | Base plug-in with suppression & blocking diode & ground |
| SE | Base plug-in with MOV |
| SF | Base plug-in with MOV & ground |
| SG | Base plug-in with rectifier |
| SH | Base plug-in with rectifier & ground |
| SK | Base plug-in with light & ground |
| SL | Base plug-in with suppression & blocking diode & light |
| SM | Base plug-in with suppression & blocking diode with light & ground |
| SN | Base plug-in with MOV & light |
| SP | Base plug-in with MOV & light with ground |
| SR | Base plug-in with rectifier & light |

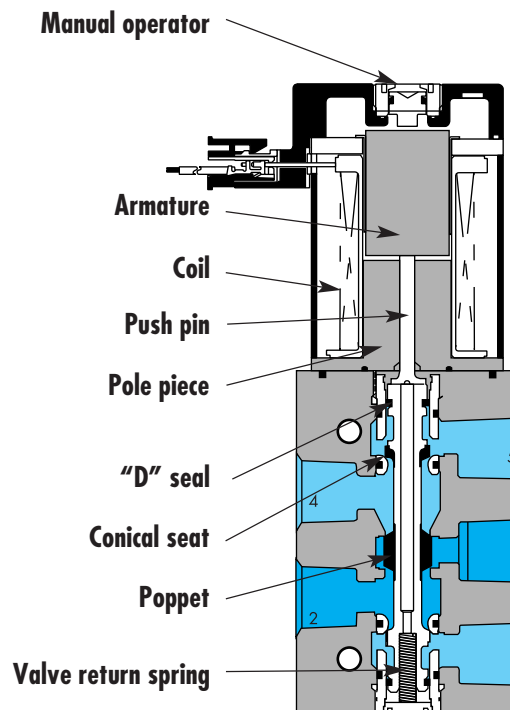
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

| | |
|----------|-------------------------|
| Stacking | Manifold base "plug-in" |
|----------|-------------------------|



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Without flow controls | With flow controls |
|--------------|-----------------------|--------------------|
| | | |
| G1/8" | 47A-AC0-H xxx-xxx | 47A-BC0-H xxx-xxx |
| G1/4" | 47A-AD0-H xxx-xxx | 47A-BD0-H xxx-xxx |

SOLENOID OPERATOR ➤

H **xxx-xxx** *

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

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

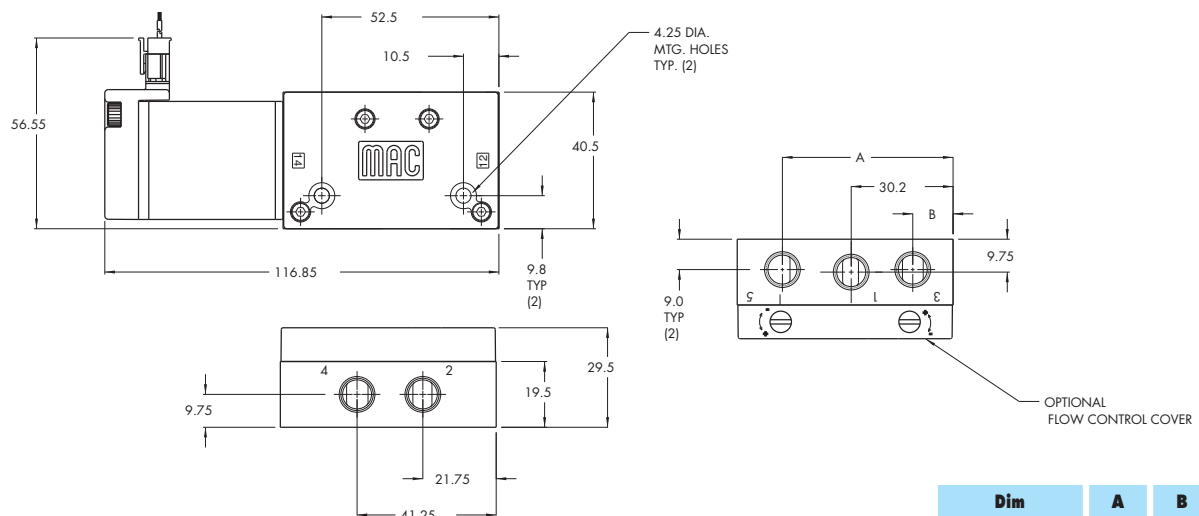
Options :
Mani Mount Option (w/o flow controls)

| |
|------------------|
| 47A-CXO-Hxxx-xxx |
| C 1/8" BSPPL |
| D 1/4" BSPPL |

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

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

DIMENSIONS Dimensions shown are metric (mm)



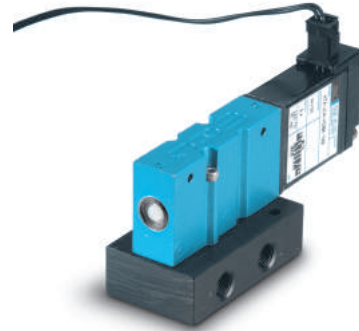


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual Mounting |
|------------|----------------------|-------------------|---------------------------|
| 5/2 | G1/8" - G1/4" | 500 NI/min | Sub-base non "plug-in" |

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Without flow controls | With flow controls |
|------------------------|--------------------------|--------------------------|
| | | |
| Valve less base | 47A-L10-H xxx-xxx | 47A-L10-H xxx-xxx |
| G1/8" | 47A-LCA-H xxx-xxx | 47A-LCB-H xxx-xxx |
| G1/4" | 47A-LDA-H xxx-xxx | 47A-LDB-H xxx-xxx |

SOLENOID OPERATOR ►

H **xxx-xxx***

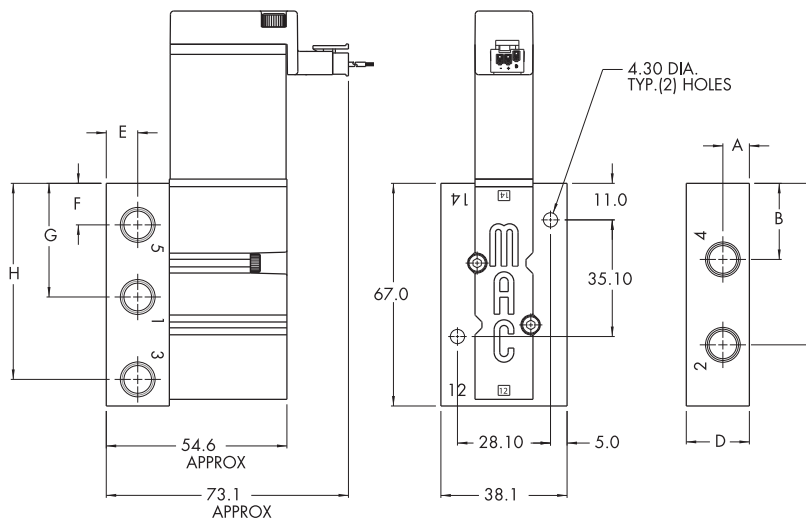
| XX Voltage | X Wire length | X Manual operator | XX Electrical connection |
|----------------------|----------------|----------------------|--|
| DA 24V~/5,2W | A 45 cm | 1 Non-locking | MA Plug-in wire assembly |
| DB 24V~/2,4W | B 60 cm | 2 Locking | MC Plug-in wire assembly with light |
| DC 24V~/1,8W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

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

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

- Options :
- NPTF threads
- Spare parts :
- Pressure seal body to base: 16628
 - Mounting screw (x2): 35043
 - Flow control assembly (x2): N-04001

DIMENSIONS Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves



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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Without flow controls | With flow controls |
|--------------|---|---|
| |  |  |
| G1/8" | 47A-SC0-H xxx-xxx | 47A-TC0-H xxx-xxx |
| G1/4" | 47A-SD0-H xxx-xxx | 47A-TD0-H xxx-xxx |

SOLENOID OPERATOR ►

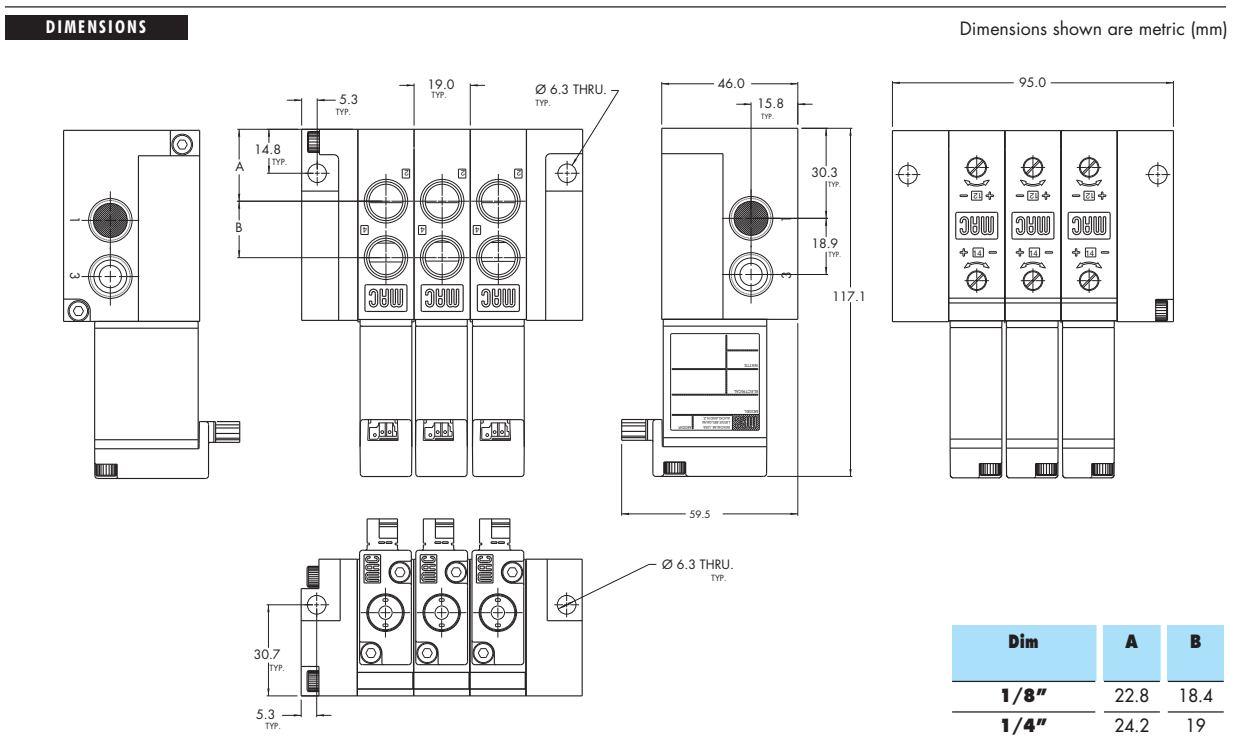
H **xxx-xxx***

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

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

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

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





Direct solenoid and solenoid pilot operated valves

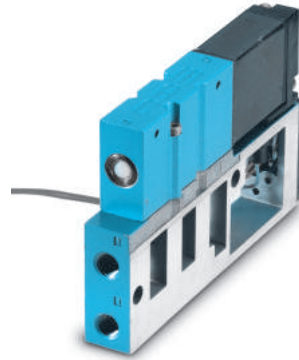
| Function | Port size | Flow [Max] | Manifold Mounting |
|------------|----------------------|-------------------|-------------------------|
| 5/2 | G1/8" - G1/4" | 500 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

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

HOW TO ORDER

| Port size | Model number |
|------------------------|-------------------|
| Valve less base | |
| G1/8" | 47A-L10-H xxP-xxx |
| G1/4" | 47A-LCJ-H xxP-xxx |
| | 47A-LDJ-H xxP-xxx |



SOLENOID OPERATOR ➤

H **xx** P-**xxx** *

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

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

OPTIONS

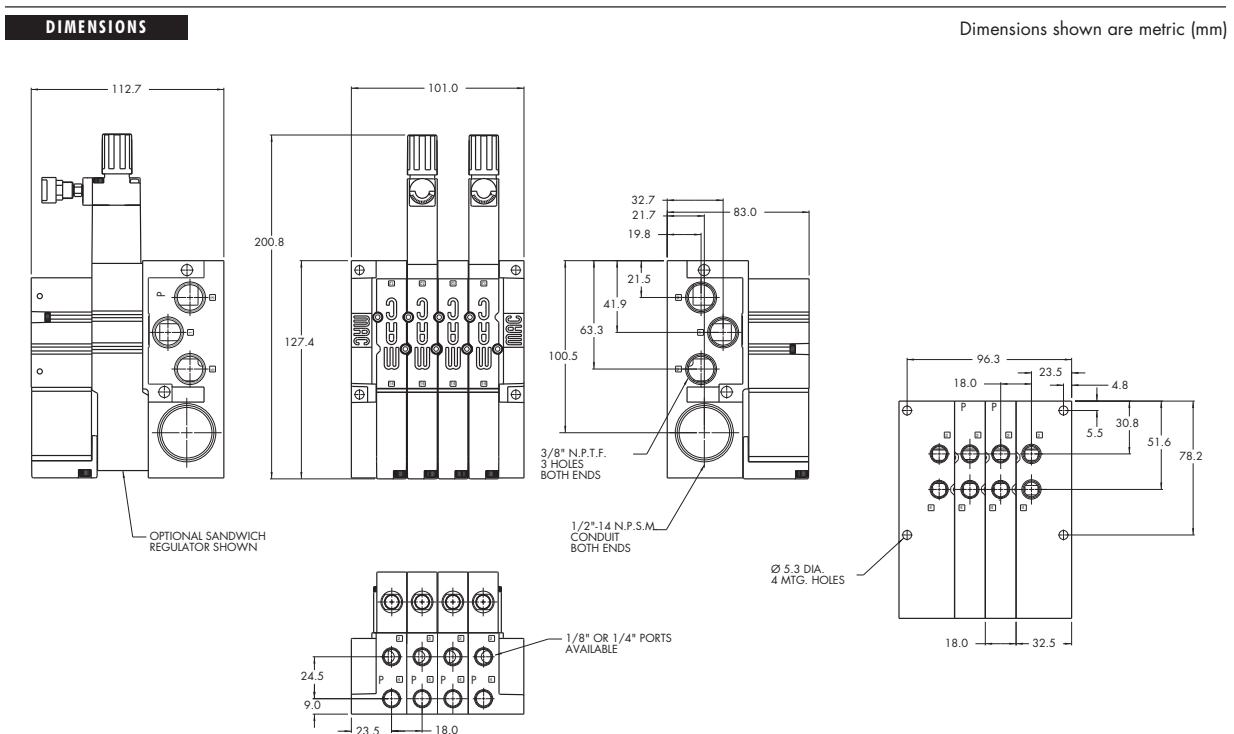
47A-**xxJ**-H-xxx-xxx

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

Fastening kit required: N-47005-01.
Note: Manifold assemblies consist of (1) left end manifold, (1) right end manifold, and middle station manifolds.

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

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



Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (KNOB ADJUSTMENT)

| Gauge | Single pressure |
|-----------------|-----------------|
| No gauge port | PR47A-EAAA |
| With gauge Port | PR47A-EABA |

REGULATORS FOR "NON PLUG-IN" VALVES (KNOB ADJUSTMENT)

| Gauge | Single pressure |
|-----------------|-----------------|
| No Gauge port | PR47A-FAAA |
| With Gauge Port | PR47A-FABA |

OPTIONS

Pressure range :

PR47A-**xxx****A**

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar

Adjustment for : Plug-in regulator

PR47A-**E****xxx**

- E** Knob
- A** Screwdriver slot
- J** Screwdriver slot with locknut

Non plug-in regulator

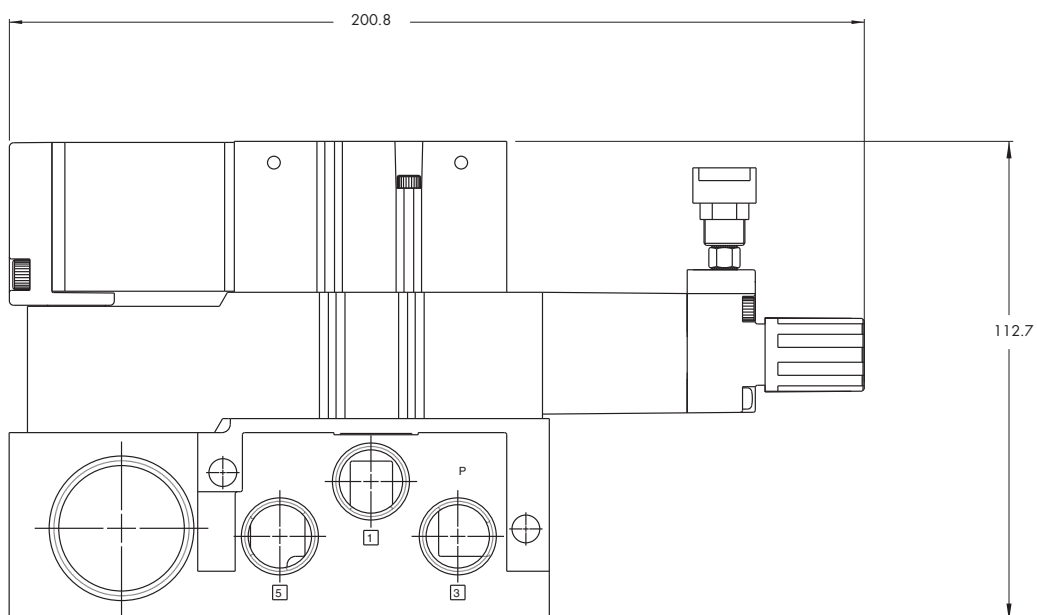
PR47A-**F****xxx**

- F** Knob
- B** Screwdriver slot
- K** Screwdriver slot with locknut

| TECHNICAL DATA | |
|------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar): | 400 NL/min (Cv 0.4) |

- Spare parts :
- Pressure regulator (less sandwich block) : PR47A-G0xx (knob), PR47A-C0xx (screwdriver slot), PR47A-L0xx (screwdriver slot with locknut)
 - Gauge: 24177-160 (0 to 10,7 bar, 23 mm)
24177-100 (0 to 6,7 bar, 23 mm)
24177-060 (0 to 4 bar, 23 mm)

DIMENSIONS Dimensions shown are metric (mm)



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤ **H XX X-X XX**
1 2 3 4

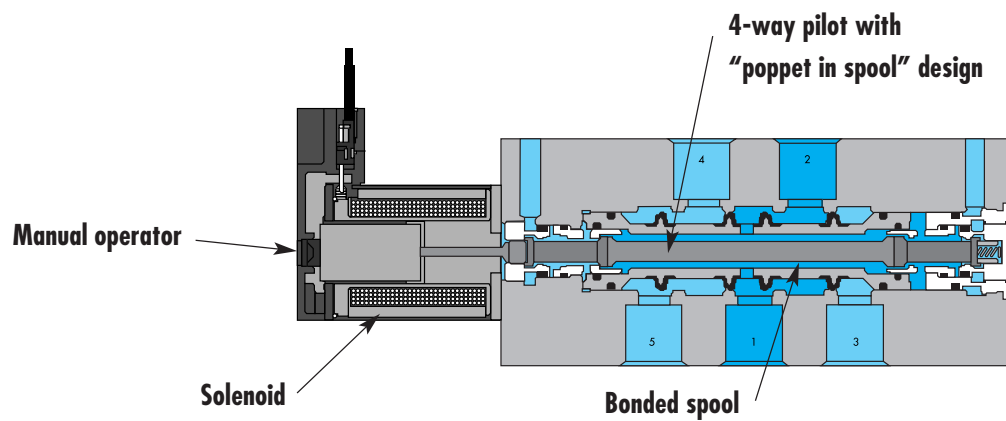
| 1. VOLTAGE | | H-XX X-X XX | ELECTRICAL CONNECTION |
|--------------------------|--|-------------------|---|
| H-XX X-X XX | VOLTAGE | BL | BA with full wave rectifier & ground wire |
| AA | 120 V~/ 50Hz, 120 V~/ 60Hz (6,7 W) (use connector with rectifier) | BT | BA with full wave rectifier plus light |
| AB | 220 V~/ 50Hz, 220 V~/ 60Hz (5,6 W) (use connector with rectifier) | BU | BA with full wave rectifier plus light & ground wire |
| AC | 240 V~/ 50Hz, 240 V~/ 60Hz (5,8 W) (use connector with rectifier) | PLUG-IN CONNECTOR | |
| AD | 24 V~/ 50Hz, 24 V~/ 60Hz (7,8 W) (use connector with rectifier) | FA | Base plug-in |
| DA | 24 V=/5,2 W | FB | FA with ground wire |
| DB | 24 V=/2,4 W | FC | FA with light |
| DC | 24 V=/1,8 W | FD | FA with light & ground wire |
| DD | 24 V=/1,0 W | FE | FA with suppression diode |
| DF | 12 V=/5,2 W | FF | FA with suppression diode & ground wire |
| DG | 12 V=/2,4 W | FG | FA with suppression diode & light |
| DH | 12 V=/1,8 W | FH | FA with suppression diode plus light & ground wire |
| DJ | 12 V=/1,0 W | FK | FA with full wave rectifier |
| DL | 120 V=/6,3 W | FL | FA with full wave rectifier & ground wire |
| 2. WIRE LENGTH | | *FN | FA with suppression diode plus blocking diode |
| H-XX X-X XX | WIRE LENGTH | *FP | FA with suppression diode plus blocking diode & ground wire |
| O | No lead wire (use with "MJ", "MM" & "K" style connectors) | *FR | FA with suppression diode plus blocking diode plus light |
| A | 45 cm = 18" | *FS | FA with suppression diode plus blocking diode & light & ground wire |
| B | 60 cm = 24" | FT | FA with full wave rectifier plus light |
| C | 90 cm = 36" | FU | FA with full wave rectifier plus light & ground wire |
| D | 120 cm = 48" | MA | Solenoid plug-in wire assembly |
| E | 180 cm = 72" | MB | MA with ground wire |
| F | 240 cm = 96" | MC | MA with light |
| G | 305 cm = 120" | MD | MA with light & ground wire |
| H | 366 cm = 144" | ME | MA with suppression diode |
| 3. MANUAL OPERATOR | | MF | MA with suppression diode & ground wire |
| H-XX X-X XX | MANUAL OPERATOR | MG | MA with suppression diode plus light |
| O | No operator | MH | MA with suppression diode plus light & ground wire |
| 1 | Non-locking recessed | MK | MA with full wave rectifier |
| 2 | Locking recessed | ML | MA with full wave rectifier & ground wire |
| 3 | Non-locking extended | *MN | MA with suppression diode plus blocking diode |
| 4 | Locking extended | *MP | MA with suppression diode plus blocking diode & ground wire |
| 4. ELECTRICAL CONNECTION | | *MR | MA with suppression diode plus blocking diode & light |
| H-XX X-X XX | ELECTRICAL CONNECTION | *MS | MA with suppression diode plus blocking diode & light & ground wire |
| BA | Flying leads | MT | MA with full wave rectifier plus light |
| BB | BA with ground wire | MU | MA with full wave rectifier plus light & ground wire |
| BC | BA with light | MJ | Plug-in housing without wire assembly ('MA' option without wire assembly) |
| BD | BA with light & ground wire | MM | Plug-in housing without wire assembly ('MB' option without wire assembly) |
| BE | BA with suppression diode | KA | Mini square connector |
| BF | BA with suppression diode & ground wire | KB | KA with suppression diode |
| BG | BA with suppression diode plus light | KC | KA with M.O.V. |
| BH | BA with suppression diode plus light & ground wire | KD | KA with light |
| *BN | BA with suppression diode plus blocking diode | KE | KA with light & suppression diode |
| *BP | BA with suppression diode plus blocking diode & ground wire | KF | KA with light & M.O.V. |
| *BR | BA with suppression diode plus blocking diode & light | KJ | Mini square connector – male only |
| *BS | BA with suppression diode plus blocking diode & light & ground wire | KK | KJ with suppression diode |
| BK | BA with full wave rectifier | KL | KJ with M.O.V. |
| | | KM | KA with full wave rectifier |
| | | KN | KA with full wave rectifier & M.O.V. |
| | | KP | KA with full wave rectifier & light |
| | | KR | KA with full wave rectifier plus light & M.O.V. |
| | | KS | |

Note: Blocking diode is located in the lead wire

Direct solenoid and solenoid pilot operated valves

Individual mounting

Inline

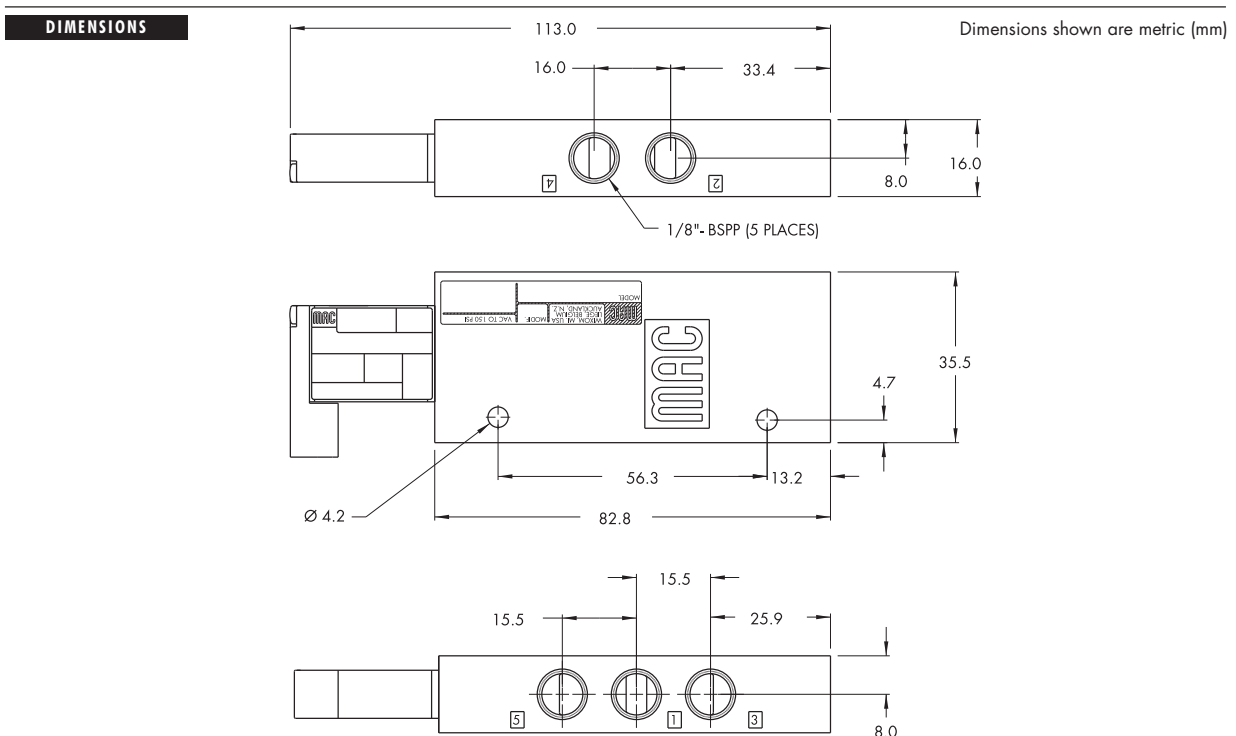


SERIES FEATURES

- High force MACSOLENOID®.
- Integral 4-way pilot with poppet inside the spool.
- Large flow in compact package.
- Single or dual pressure.
- Rectified AC voltage.

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

Options : NPTF Threads



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤

G XX X-X XX
1 2 3 4

| 1. VOLTAGE | | |
|-------------|------------|--|
| G-XX X-X XX | VOLTAGE | |
| AA | 120V~/2,5W | Requires electrical connector with rectifier |
| AC | 24V~/4,0W | Requires electrical connector with rectifier |
| DA | 24V~/1,0W | |
| DC | 24V~/1,8W | |
| DD | 24V~/2,5W | |
| DE | 24V~/3,0W | |
| DF | 24V~/4,0W | |
| DG | 12V~/1,0W | |
| DJ | 12V~/1,8W | |
| DK | 12V~/2,5W | |
| DM | 12V~/3,0W | |
| DN | 12V~/4,0W | |
| DR | 6V~/1,8W | |
| DS | 6V~/3,0W | |
| EB | 48V~/1,8W | |
| EC | 48V~/3,0W | |
| ED | 120V~/2,5W | |
| GD | 12V~/0,5W | 34 series only |
| GE | 24V~/0,5W | 34 series only |

| 2. WIRE LENGTH | |
|----------------|---|
| G-XX X-X XX | WIRE LENGTH |
| 0 | No lead wires (used only with "KJ" & "KM" connectors) |
| A | 45 cm – 18" coil leads |
| B | 60 cm – 24" coil leads |
| C | 90 cm – 36" coil leads |
| D | 120 cm – 48" coil leads |
| E | 180 cm – 72" coil leads |
| F | 240 cm – 96" coil leads |
| G | 305 cm – 120" coil leads |
| H | 366 cm – 144" coil leads |
| 1 | 45 cm – 18" base leads |
| 2 | 60 cm – 24" base leads |
| 3 | 90 cm – 36" base leads |
| 4 | 120 cm – 48" base leads |
| 5 | 180 cm – 72" base leads |
| 6 | 240 cm – 96" base leads |
| 7 | 305 cm – 120" base leads |

| 3. MANUAL OPERATOR | |
|--------------------|----------------------|
| G-XX X-X XX | MANUAL OPERATOR |
| 1 | Non-locking recessed |
| 2 | Locking recessed |
| 3 | Non-locking extended |
| 4 | Locking extended |

| 4. ELECTRICAL CONNECTION | |
|--------------------------|--|
| G-XX X-X XX | ELECTRICAL CONNECTION |
| BA | Flying leads |
| BB | BA with ground wire |
| BC | BA with light |
| BD | BA with light and ground wire |
| BE | BA with suppression diode |
| BF | BA with suppression diode and ground wire |
| BG | BA with suppression diode and light |
| BH | BA with suppression diode, light and ground wire |
| BN | BA with suppression diode and blocking diode |
| BP | BA with suppression diode, blocking diode and ground wire |
| BR | BA with suppression diode, blocking diode and light |
| BS | BA with suppression diode, blocking diode, light and ground wire |
| GA | MAC JAC Solenoid plug-in |
| GB | MAC JAC Solenoid plug-in with diode |
| GC | MAC JAC Solenoid plug-in with MOV |
| GD | MAC JAC Solenoid plug-in with LED |
| GE | MAC JAC Solenoid plug-in with diode and LED |
| GF | MAC JAC Solenoid plug-in with MOV and LED |
| GG | MAC JAC Solenoid plug-in with rectifier |
| GH | MAC JAC Solenoid plug-in with rectifier and LED |
| KA | Mini connector |
| KB | KA with ground |
| KC | KA with rectifier and light |
| KD | KA with rectifier, light and ground |
| KE | KA with suppression diode |
| KF | KA with suppression diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | KA with suppression diode and blocking diode |
| KP | KA with suppression diode, blocking diode and ground |
| KT | KA with light |
| KU | KA with light and ground |
| KV | KA with suppression diode and light |
| KW | KA with suppression diode, light and ground |
| KX | KA with suppression diode, blocking diode and light |
| KY | KA with suppression diode, blocking diode, light & ground |

| ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
|--|--|
| G-XX X-X XX | PLUG-IN OPTIONS |
| SB | Base plug-in with ground |
| SC | Base plug-in with suppression & blocking diode |
| SD | Base plug-in with suppression & blocking diode & ground |
| SE | Base plug-in with MOV |
| SF | Base plug-in with MOV & ground |
| SG | Base plug-in with rectifier |
| SH | Base plug-in with rectifier & ground |
| SK | Base plug-in with light & ground |
| SL | Base plug-in with suppression & blocking diode & light |
| SM | Base plug-in with suppression & blocking diode with light & ground |
| SN | Base plug-in with MOV & light |
| SP | Base plug-in with MOV & light with ground |
| SR | Base plug-in with rectifier & light |

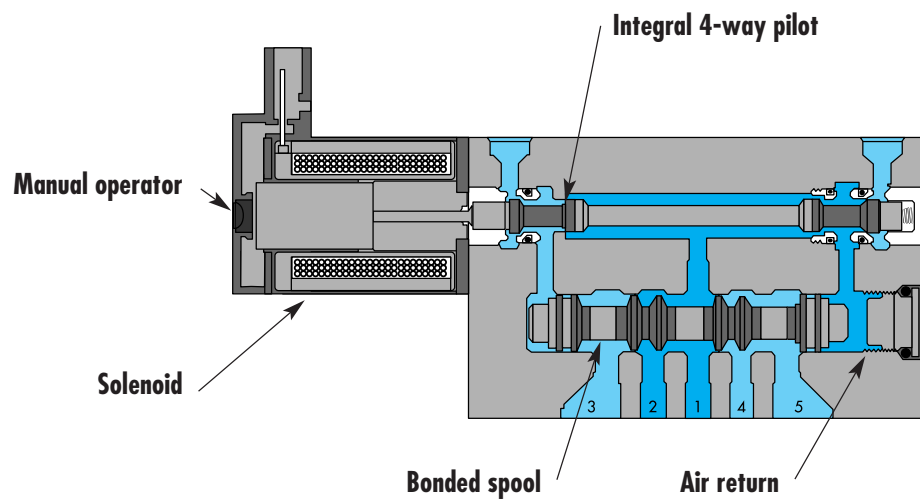
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

| | |
|--------------------------------|----------------------------|
| Manifold base non "plug-in" | Manifold base "plug-in" |
|--------------------------------|----------------------------|



SERIES FEATURES

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



Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Individual mounting |
|-----------------|--------------|--------------------|---------------------------|
| 5/2, 5/3 | G1/8" | 1100 NI/min | Sub-base non "plug-in" |

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.






HOW TO ORDER

SINGLE PRESSURE MODELS

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

DUAL PRESSURE MODELS

| Port size | Pilot air | | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Pressure centre |
|-----------------|-----------|----------------|---|--|---|
| | | |  |  |  |
| Valve less base | Internal | Supply #3 port | 48B-CMB-000-Gxxx-xxx | 48B-DMB-000-Gxxx-xxx | 48B-HMB-000-Gxxx-xxx |
| | | Supply #5 port | 48B-CMC-000-Gxxx-xxx | 48B-DMC-000-Gxxx-xxx | 48B-HMC-000-Gxxx-xxx |
| | External | | 48B-CMD-000-Gxxx-xxx | 48B-DMD-000-Gxxx-xxx | 48B-HMD-000-Gxxx-xxx |
| G1/8" | Internal | Supply #3 port | 48B-CMB-BAL-Gxxx-xxx | 48B-DMB-BAL-Gxxx-xxx | 48B-HMB-BAL-Gxxx-xxx |
| | | Supply #5 port | 48B-CMC-BAL-Gxxx-xxx | 48B-DMC-BAL-Gxxx-xxx | 48B-HMC-BAL-Gxxx-xxx |
| | External | | 48B-CMD-BAM-Gxxx-xxx | 48B-DMD-BAM-Gxxx-xxx | 48B-HMD-BAM-Gxxx-xxx |

STANDARD SOLENOID OPERATOR >

G **XXX-XXX***

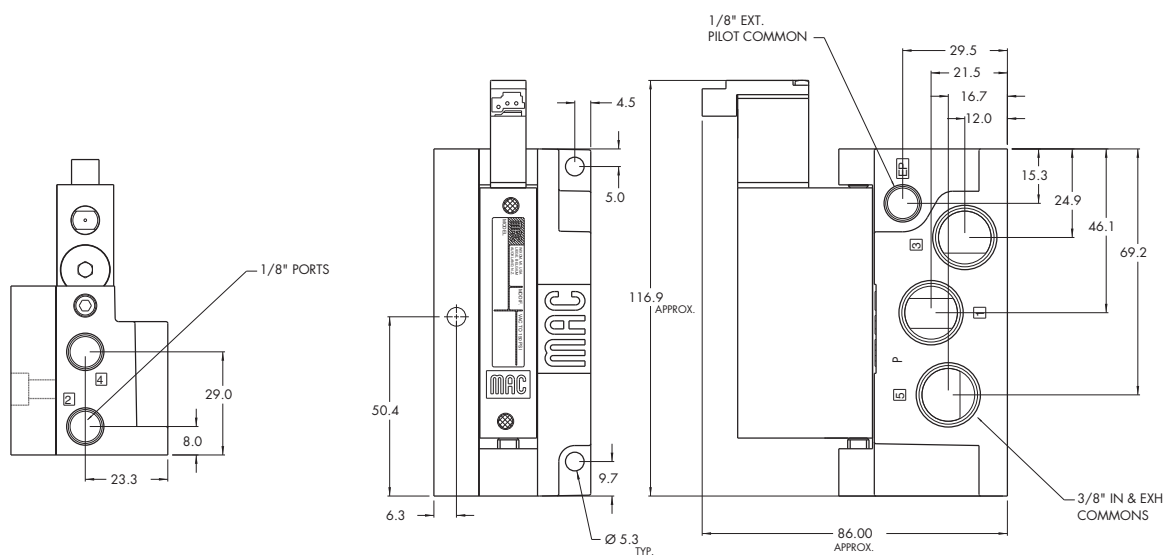
| XX Voltage | X Wire length | X Manual operator | XX Electrical connection |
|-----------------------|----------------|----------------------|--|
| AA 120 V~/2,5W | A 45 cm | 1 Non-locking | BA Flying leads |
| DC 24 V~/1,8W | B 60 cm | 2 Locking | BT Flying leads with light |
| DD 24 V~/2,5W | C 90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

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

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

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

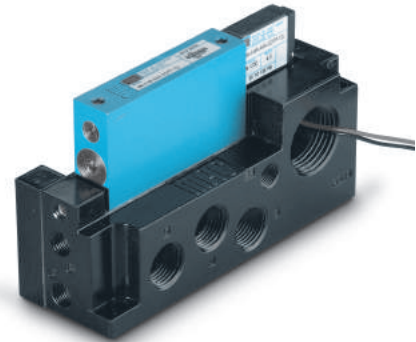
DIMENSIONS Dimensions shown are metric (mm)



| Function | Port size | Flow [Max] | Individual mounting |
|-----------------|--------------|--------------------|-----------------------|
| 5/2, 5/3 | G1/8" | 1100 NI/min | Sub-base "plug-in" |

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.






HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | 5/2 Single solenoid | 5/3 Double solenoid | 5/3 Closed centre | 5/3 Open centre |
|------------------------|--------------|------------------------|------------------------|----------------------|----------------------|
| | | | | | |
| Valve less base | Internal | 48B-AMA-000-GxxP-xxx | 48B-BME-000-GxxP-xST | 48B-EME-000-GxxP-xST | 48B-FME-000-GxxP-xST |
| | External | 48B-AMD-000-GxxP-xxx | 48B-BMH-000-GxxP-xST | 48B-EMH-000-GxxP-xST | 48B-FMH-000-GxxP-xST |
| | G1/8" | Internal | 48B-AMA-BAA-GxxP-xxx | 48B-EME-BAC-GxxP-xST | 48B-FME-BAC-GxxP-xST |
| | | External | 48B-AMD-BAB-GxxP-xxx | 48B-EMH-BAD-GxxP-xST | 48B-FMH-BAD-GxxP-xST |

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Pressure centre |
|-----------------|-----------|----------------|---|--|---|
| | | |  |  |  |
| Valve less base | Internal | Supply #3 port | 48B-CMB-000-GxxP-xxx | 48B-DMF-000-GxxP-xST | 48B-HMF-000-GxxP-xST |
| | | Supply #5 port | 48B-CMC-000-GxxP-xxx | 48B-DMG-000-GxxP-xST | 48B-HMG-000-GxxP-xST |
| | External | | 48B-CMD-000-GxxP-xxx | 48B-DMH-000-GxxP-xST | 48B-HMH-000-GxxP-xST |
| G1/8" | Internal | Supply #3 port | 48B-CMB-BAA-GxxP-xxx | 48B-DMF-BAC-GxxP-xST | 48B-HMF-BAC-GxxP-xST |
| | | Supply #5 port | 48B-CMC-BAA-GxxP-xxx | 48B-DMG-BAC-GxxP-xST | 48B-HMG-BAC-GxxP-xST |
| | External | | 48B-CMD-BAB-GxxP-xxx | 48B-DMH-BAD-GxxP-xST | 48B-HMH-BAD-GxxP-xST |

STANDARD SOLENOID OPERATOR >

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

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

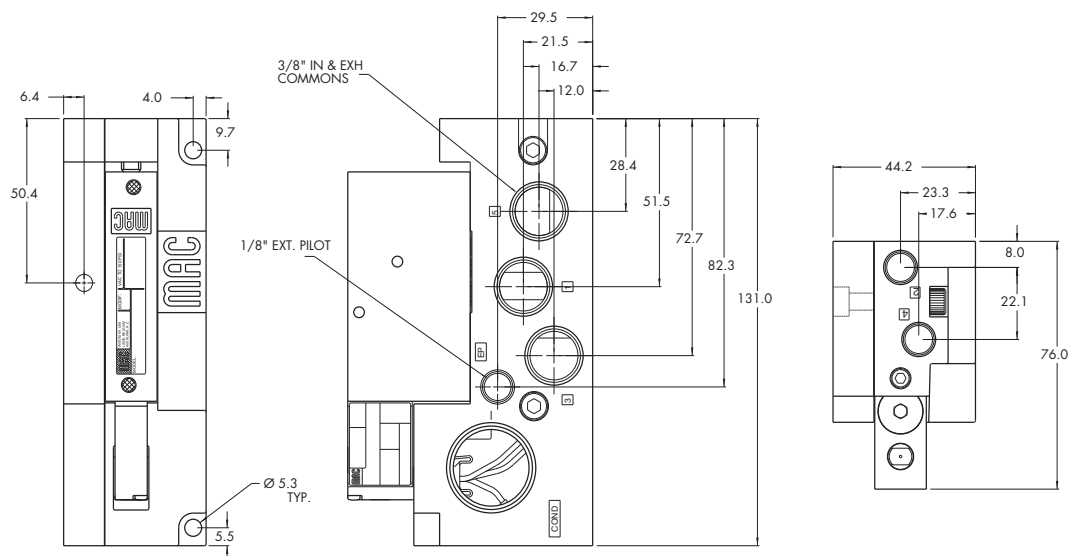
* Other options available, see page options.

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

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

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

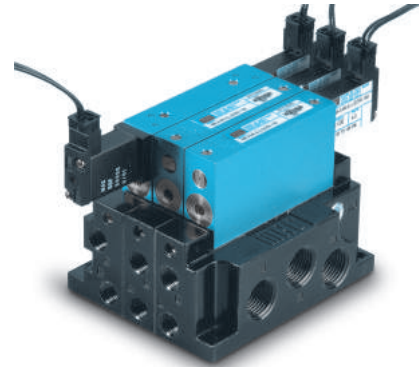
DIMENSIONS Dimensions shown are metric (mm)



| Function | Port size | Flow [Max] | Manifold mounting |
|-----------------|--------------|--------------------|-----------------------------|
| 5/2, 5/3 | G1/8" | 1100 NI/min | Manifold base non "plug-in" |

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.






HOW TO ORDER

SINGLE PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Closed centre | 5/3 Open centre |
|--|-----------|------------------------|------------------------|----------------------|----------------------|
| | | | | | |
| Valve less base G1/8" | Internal | 48B-AMA-000-Gxxx-xxx | 48B-BMA-000-Gxxx-xxx | 48B-EMA-000-Gxxx-xxx | 48B-FMA-000-Gxxx-xxx |
| | External | 48B-AMD-000-Gxxx-xxx | 48B-BMD-000-Gxxx-xxx | 48B-EMD-000-Gxxx-xxx | 48B-FMD-000-Gxxx-xxx |
| | Internal | 48B-AMA-BJL-Gxxx-xxx | 48B-BMA-BJL-Gxxx-xxx | 48B-EMA-BJL-Gxxx-xxx | 48B-FMA-BJL-Gxxx-xxx |
| | External | 48B-AMD-BJM-Gxxx-xxx | 48B-BMD-BJM-Gxxx-xxx | 48B-EMD-BJM-Gxxx-xxx | 48B-FMD-BJM-Gxxx-xxx |

DUAL PRESSURE MODELS (MIDDLE STATION MANIFOLDS WITH SIDE PORTS)

| Port size | Pilot air | | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Pressure centre |
|-----------------|-----------|----------------|---|--|---|
| | | |  |  |  |
| Valve less base | Internal | Supply #3 port | 48B-CMB-000-Gxxx-xxx | 48B-DMB-000-Gxxx-xxx | 48B-HMB-000-Gxxx-xxx |
| | | Supply #5 port | 48B-CMC-000-Gxxx-xxx | 48B-DMC-000-Gxxx-xxx | 48B-HMC-000-Gxxx-xxx |
| | External | | 48B-CMD-000-Gxxx-xxx | 48B-DMD-000-Gxxx-xxx | 48B-HMD-000-Gxxx-xxx |
| G1/8" | Internal | Supply #3 port | 48B-CMB-BJL-Gxxx-xxx | 48B-DMB-BJL-Gxxx-xxx | 48B-HMB-BJL-Gxxx-xxx |
| | | Supply #5 port | 48B-CMC-BJL-Gxxx-xxx | 48B-DMC-BJL-Gxxx-xxx | 48B-HMC-BJL-Gxxx-xxx |
| | External | | 48B-CMD-BJM-Gxxx-xxx | 48B-DMD-BJM-Gxxx-xxx | 48B-HMD-BJM-Gxxx-xxx |

STANDARD SOLENOID OPERATOR ►

G **xxx-xxx***

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

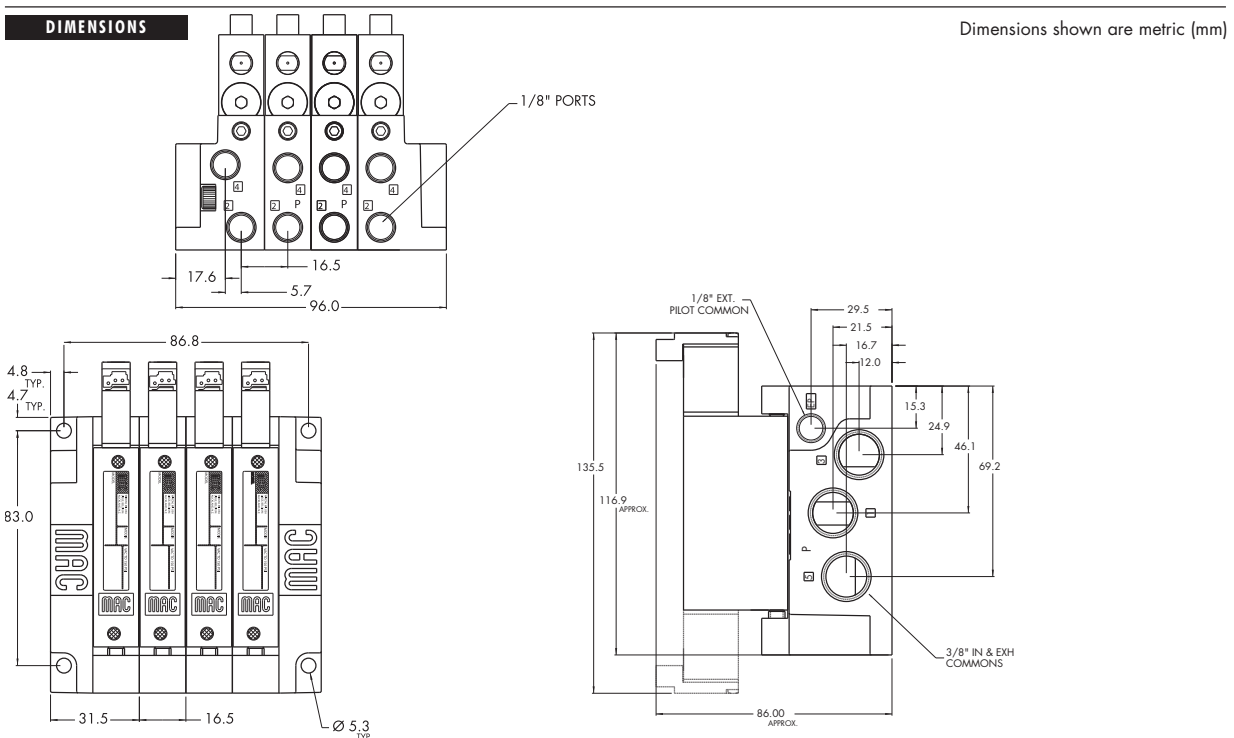
* Other options available, see page options.

Note : - AC voltage requires connector with rectifier.

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

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

- Options :
- NPTF threads • Sandwich flow controls: FC48B-BB
 - Sandwich regulator: see "regulators" section
 - Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471



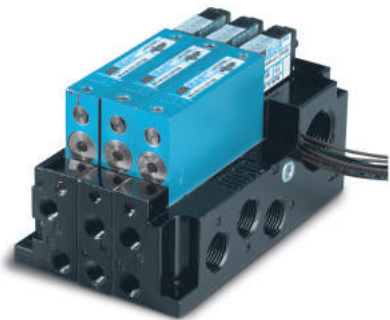


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold mounting |
|-----------------|--------------|--------------------|-------------------------|
| 5/2, 5/3 | G1/8" | 1100 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

1. 4-way valve with 4-way integral pilot.
2. 16 mm valve (stacks on 16.5 mm centers).
3. High flow (up to 1100 NI/min).
4. Fast repeatable response times.
5. Maximum shifting forces in both directions.
6. Long life.

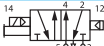
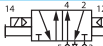



HOW TO ORDER

SINGLE PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Closed centre | 5/3 Open centre |
|------------------------|--------------|------------------------|------------------------|----------------------|----------------------|
| | | | | | |
| Valve less base | Internal | 48B-AMA-000-GxxP-xxx | 48B-BME-000-GxxP-xST | 48B-EME-000-GxxP-xST | 48B-FME-000-GxxP-xST |
| | External | 48B-AMD-000-GxxP-xxx | 48B-BMH-000-GxxP-xST | 48B-EMH-000-GxxP-xST | 48B-FMH-000-GxxP-xST |
| | G1/8" | Internal | 48B-AMA-BJA-GxxP-xxx | 48B-EME-BJC-GxxP-xST | 48B-FME-BJC-GxxP-xST |
| | | External | 48B-AMD-BJB-GxxP-xxx | 48B-EMH-BJD-GxxP-xST | 48B-FMH-BJD-GxxP-xST |

DUAL PRESSURE MODELS (LED STANDARD EXCEPT FOR SINGLE SOLENOIDS)

| Port size | Pilot air | | 5/2 Single solenoid | 5/2 Double solenoid | 5/3 Pressure centre |
|-----------------|-----------|----------------|---|--|---|
| | | |  |  |  |
| Valve less base | Internal | Supply #3 port | 48B-CMB-000-GxxP-xxx | 48B-DMF-000-GxxP-xST | 48B-HMF-000-GxxP-xST |
| | | Supply #5 port | 48B-CMC-000-GxxP-xxx | 48B-DMG-000-GxxP-xST | 48B-HMG-000-GxxP-xST |
| | External | | 48B-CMD-000-GxxP-xxx | 48B-DMH-000-GxxP-xST | 48B-HMH-000-GxxP-xST |
| G1/8" | Internal | Supply #3 port | 48B-CMB-BJC-GxxP-xxx | 48B-DMF-BJC-GxxP-xST | 48B-HMF-BJC-GxxP-xST |
| | | Supply #5 port | 48B-CMC-BJC-GxxP-xxx | 48B-DMG-BJC-GxxP-xST | 48B-HMG-BJC-GxxP-xST |
| | External | | 48B-CMD-BJD-GxxP-xxx | 48AB-DMH-BJD-GxxP-xST | 48B-HMH-BJD-GxxP-xST |

STANDARD SOLENOID OPERATOR ➤

G **xx** P-**xxx***

Above numbers are middle station manifold with side ports

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

* Other options available, see page options.

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

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

TECHNICAL DATA

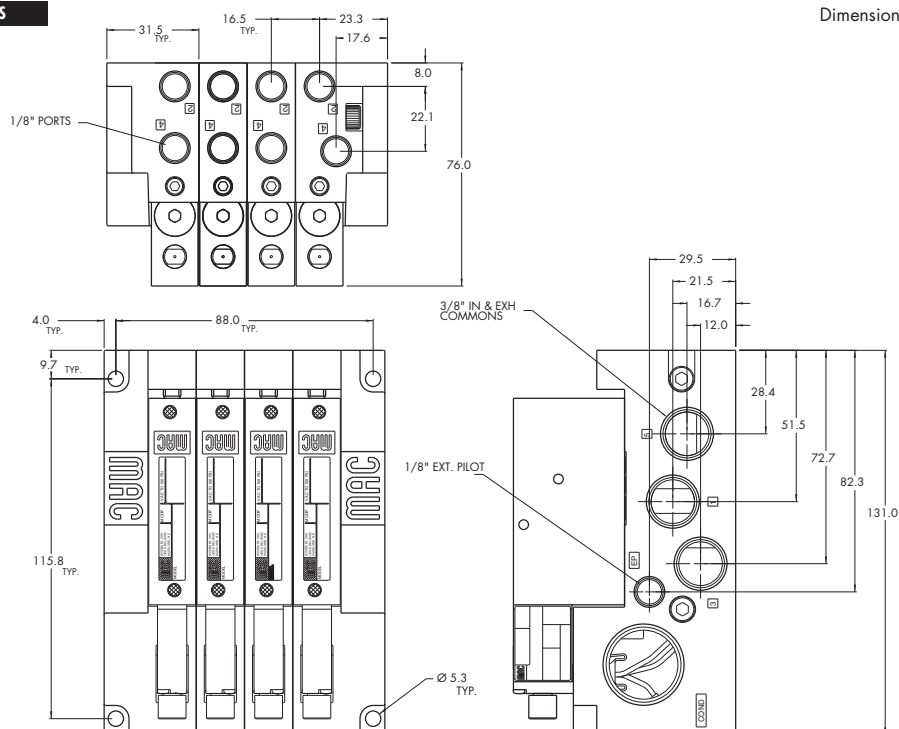
| | |
|-------------------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot: 2 pos.: 1,3 to 8 bar - 3 pos.: 2,3 to 8 bar External pilot: vacuum to 8 bar |
| Pilot pressure : | 2 position : 1,3 to 8 bar - 3 position : 2,3 to 8 bar |
| Lubrication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

Options :

- NPTF threads • Sandwich flow controls: FC48B-AB
- Sandwich regulator: see "regulators" section
- Valve blanking plate: M-48004 • Isolator disk for inlet/exhaust: 28471
- Plug-in wire protector: 24180

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

OPTIONS FOR NON PLUG-IN VALVES

Base type :

Individual base

48B-XXX-**AX**-G-**XXX-XXX**

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

Manifold base

48B-XXX-**XJX**-G-**XXX-XXX**

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

Universal spool

48B-**RXX**-XXX-G-**XXX-XXX**

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

Base only :

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

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

Pilot style :

48B-**XX**X-XXX-G-**XXX-XXX**

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



Direct solenoid and solenoid pilot operated valves

OPTIONS FOR PLUG-IN VALVES

Base type :

Individual base

48B-XXX-**AX**-GxxP-xxx

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

Manifold base

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

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

Universal spool

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

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

Base only :

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

- Individual base wired for a single solenoid valve

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

- Manifold base wired for a double solenoid valve

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

48B-XX**J**-XXX-GxxP-xGA

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

Pilot style :

48B-XX**MX**-XXX-GxxP-xxx

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

Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

NON PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

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

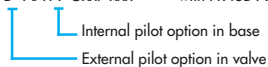
PLUG-IN SANDWICH REGULATORS (KNOB ADJUSTMENT)

| Gauge | Regulator "12" end Internal pilot | Regulator "12" end External pilot |
|------------|-----------------------------------|-----------------------------------|
| Gauge port | PR48B-AAAA | PR48B-ABAA |

Notes:

- External pilot regulator required only when supply pressure (primary) to the valve is below the minimum operating pressure of the 48 series valve.
- When an internal pilot regulator is used with the 48 series valve, the valve should be ordered as external pilot and the base should be ordered as internal pilot. This ensures that the pilot supply is not regulated. If an internal pilot valve and base are used with an internal pilot regulator, the pilot supply is regulated.

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



OPTIONS

Pressure range :

PR48B-xxx**A**

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar

Adjustment for : Plug-in regulator

PR48B-**A**xxx

- A** Knob
- D** Screwdriver slot
- G** Screwdriver slot with locknut

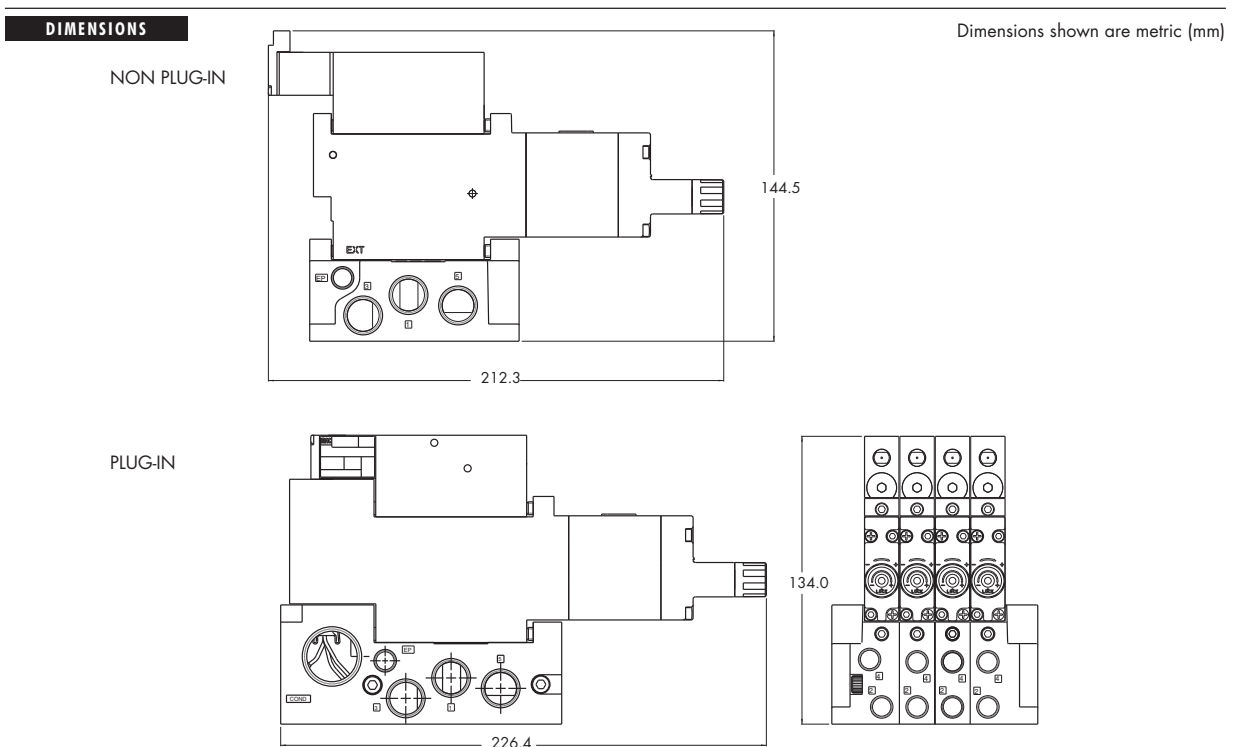
Non plug-in regulator

PR48B-**B**xxx

- B** Knob
- E** Screwdriver slot
- H** Screwdriver slot with locknut

| TECHNICAL DATA | |
|-------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 800 NL/min (Cv 0,8) |

- Spare parts :
- Pressure regulator (less sandwich block) : PR48B-C0xx (knob), PR48B-F0xx (screwdriver slot), PR48B-J0xx (screwdriver slot with locknut)
 - Gauge: 24177-160 (0 to 10,7 bar, 23 mm)
24177-100 (0 to 6,7 bar, 23 mm)
24177-060 (0 to 4 bar, 23 mm)



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤

G XX X-X XX
1 2 3 4

| 1. VOLTAGE | | |
|--------------------|---|--|
| G-XX X-X XX | VOLTAGE | |
| AA | 120V~/2,5W | Requires electrical connector with rectifier |
| AC | 24V~/4,0W | Requires electrical connector with rectifier |
| DA | 24V=/1,0W | |
| DC | 24V=/1,8W | |
| DD | 24V=/2,5W | |
| DE | 24V=/3,0W | |
| DF | 24V=/4,0W | |
| DG | 12V=/1,0W | |
| DJ | 12V=/1,8W | |
| DK | 12V=/2,5W | |
| DM | 12V=/3,0W | |
| DN | 12V=/4,0W | |
| DR | 6V=/1,8W | |
| DS | 6V=/3,0W | |
| EB | 48V=/1,8W | |
| EC | 48V=/3,0W | |
| ED | 120V=/2,5W | |
| GD | 12V=/0,5W | 34 series only |
| GE | 24V=/0,5W | 34 series only |
| 2. WIRE LENGTH | | |
| G-XX X-X XX | WIRE LENGTH | |
| 0 | No lead wires (used only with "KJ" & "KM" connectors) | |
| A | 45 cm – 18" coil leads | |
| B | 60 cm – 24" coil leads | |
| C | 90 cm – 36" coil leads | |
| D | 120 cm – 48" coil leads | |
| E | 180 cm – 72" coil leads | |
| F | 240 cm – 96" coil leads | |
| G | 305 cm – 120" coil leads | |
| H | 366 cm – 144" coil leads | |
| 1 | 45 cm – 18" base leads | |
| 2 | 60 cm – 24" base leads | |
| 3 | 90 cm – 36" base leads | |
| 4 | 120 cm – 48" base leads | |
| 5 | 180 cm – 72" base leads | |
| 6 | 240 cm – 96" base leads | |
| 7 | 305 cm – 120" base leads | |
| 3. MANUAL OPERATOR | | |
| G-XX X-X XX | MANUAL OPERATOR | |
| 1 | Non-locking recessed | |
| 2 | Locking recessed | |
| 3 | Non-locking extended | |
| 4 | Locking extended | |

| 4. ELECTRICAL CONNECTION | |
|--|--|
| G-XX X-X XX | ELECTRICAL CONNECTION |
| BA | Flying leads |
| BB | BA with ground wire |
| BC | BA with light |
| BD | BA with light and ground wire |
| BE | BA with suppression diode |
| BF | BA with suppression diode and ground wire |
| BG | BA with suppression diode and light |
| BH | BA with suppression diode, light and ground wire |
| BN | BA with suppression diode and blocking diode |
| BP | BA with suppression diode, blocking diode and ground wire |
| BR | BA with suppression diode, blocking diode and light |
| BS | BA with suppression diode, blocking diode, light and ground wire |
| GA | MAC JAC Solenoid plug-in |
| GB | MAC JAC Solenoid plug-in with diode |
| GC | MAC JAC Solenoid plug-in with MOV |
| GD | MAC JAC Solenoid plug-in with LED |
| GE | MAC JAC Solenoid plug-in with diode and LED |
| GF | MAC JAC Solenoid plug-in with MOV and LED |
| GG | MAC JAC Solenoid plug-in with rectifier |
| GH | MAC JAC Solenoid plug-in with rectifier and LED |
| KA | Mini connector |
| KB | KA with ground |
| KC | KA with rectifier and light |
| KD | KA with rectifier, light and ground |
| KE | KA with suppression diode |
| KF | KA with suppression diode and ground |
| KJ | Solenoid plug-in housing without wire assembly |
| KM | Solenoid plug-in housing with ground pin without wire assembly |
| KN | KA with suppression diode and blocking diode |
| KP | KA with suppression diode, blocking diode and ground |
| KT | KA with light |
| KU | KA with light and ground |
| KV | KA with suppression diode and light |
| KW | KA with suppression diode, light and ground |
| KX | KA with suppression diode, blocking diode and light |
| KY | KA with suppression diode, blocking diode, light & ground |
| ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| G-XX X-X XX | PLUG-IN OPTIONS |
| SB | Base plug-in with ground |
| SC | Base plug-in with suppression & blocking diode |
| SD | Base plug-in with suppression & blocking diode & ground |
| SE | Base plug-in with MOV |
| SF | Base plug-in with MOV & ground |
| SG | Base plug-in with rectifier |
| SH | Base plug-in with rectifier & ground |
| SK | Base plug-in with light & ground |
| SL | Base plug-in with suppression & blocking diode & light |
| SM | Base plug-in with suppression & blocking diode with light & ground |
| SN | Base plug-in with MOV & light |
| SP | Base plug-in with MOV & light with ground |
| SR | Base plug-in with rectifier & light |

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤

J XX X-X XX
1 2 3 4

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

MAC 400 Series

MAC

400 Series

5-way remote & solenoid pilot operated (5-way pilot)

| | |
|---------------------------|--|
| Available configurations: | Individual inline, individual base mounted or manifold mounted bodies |
| Port sizes: | 1/8", 1/4" ports |
| Flow: | Up to 1000 NI/min (1.0 Cv) |
| Pressure range: | Vacuum to 8 bar |
| Function: | 5/2 (single & double operator), 5/3 (closed centre, open centre & pressure centre) |
| Operation: | Electrical / Remote air |
| Pilot valve: | DM / DP / DU / GM |
| Accessories: | Circuit bar / Shut-off valve / Flow controls |



Table of contents

- *MAC 400 Series - Solenoid pilot operated valve*
- *MAC 400 Series - Remote air valve*
- *MAC 400 Series - Spool configurations*
- *MAC 400 Series - How to order*
- *MAC 400 Series - References for DM pilot valve*
- *MAC 400 Series - References for GM pilot valve*
- *MAC 400 Series - Codifi cati on electrical connecti on DM pilot valve (coil / connector configurations)*
- *MAC 400 Series - Codifi cati on electrical connecti on GM pilot valve (coil / connector configurations)*
- *MAC 400 Series - Dimensions*
- *MAC 400 Series - Repair kits (main ones)*
- *MAC 400 Series - Circuit bar®*

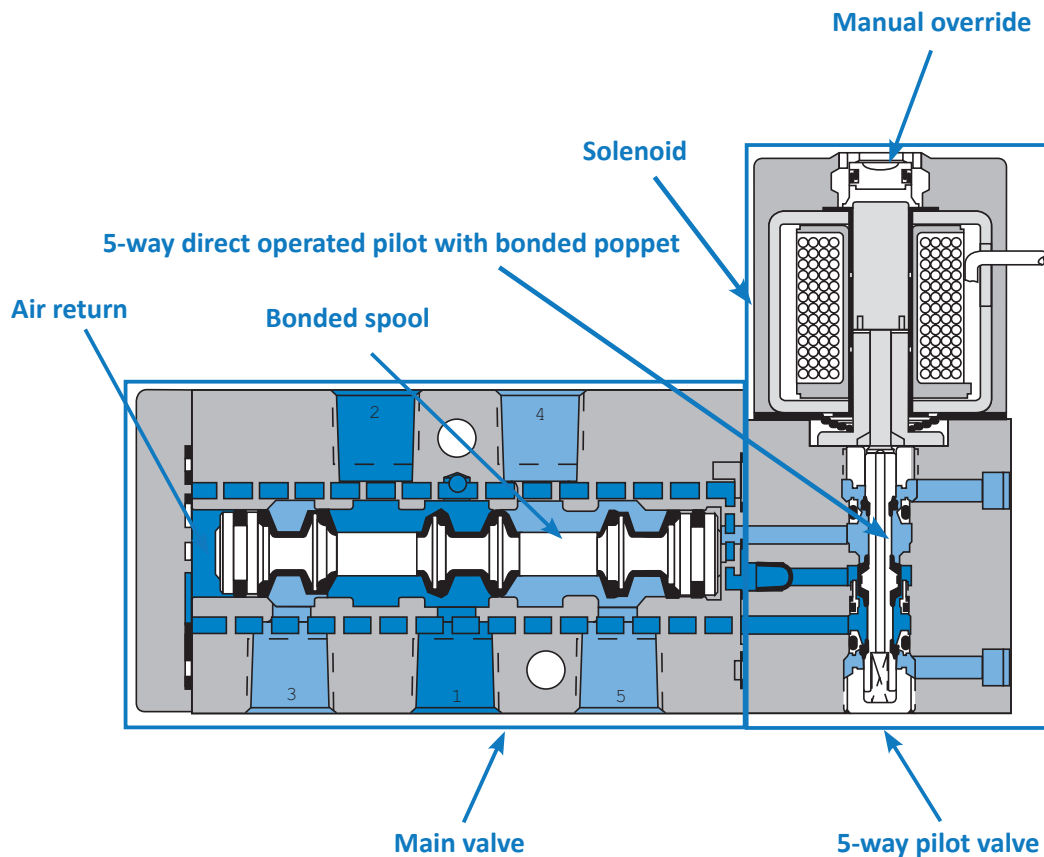
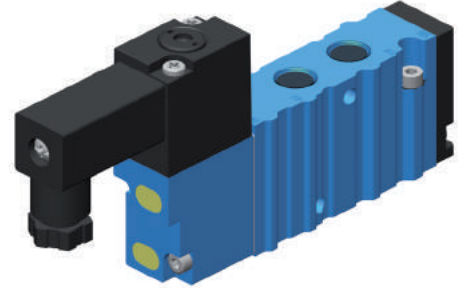
MAC 400 Series

MAC 400 Series - Solenoid pilot operated valve

5-way, 2 and 3 position, spool

Flow up to 1000 NI/min (1.0 Cv)

- ◇ MAC unique patented 5-way direct operating pilot valve
- ◇ The 5-way pilot develops maximum shifting forces both ways
- ◇ Short stroke with high flow
- ◇ Balanced spool, immune to variations of pressure, also provides high flow
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect eliminates sticking
- ◇ Long service life
- ◇ Repair kit available for the complete valve



Valve with side ports, single operator, single pressure, internal pilot

MAC 400 Series

Technical data

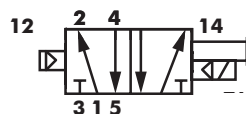
| | |
|-----------------------------------|---|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Internal pilot - 2 position: 1.3 to 8 bar 3 position: 2.3 to 8 bar External pilot: vacuum to 8 bar |
| Pilot pressure: | 2 position: 1.3 to 8 bar 3 position: 2.3 to 8 bar |
| Lubrication: | Not required, if used, select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to +50°C |
| Orifice: | 6.2 mm |
| Flow (at 6 bar, ΔP=1 bar): | 1000 NI/min (1.0 Cv) |
| Coil: | Epoxy encapsulated - Class A wires - 100% ED (mod 0449) |
| Voltage range: | -15% to +10% of nominal voltage |
| Protection: | IP54 (GM pilot) - IP65 (DM pilot) (Electrical connection) |
| Power: | ~ Inrush: 10.9 VA Holding: 7.7 VA = 1.8 to 12.7 W |
| Response times: | 24V=5.4W Energize: 7.3 ms De-energize: 5.3 ms 110V~/50Hz Energize: 8-12 ms De-energize: 7-11 ms |

Solenoid pilot operated valve

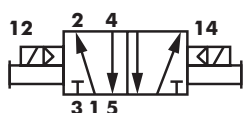
Single pressure models

5/2

Single operator

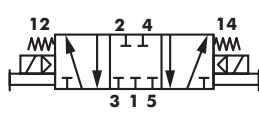


Double operator

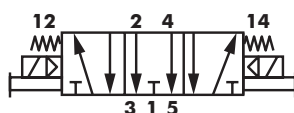


5/3

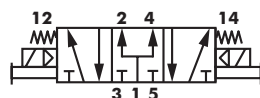
Closed centre



Open centre



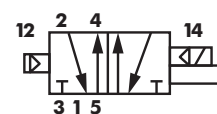
Pressure centre



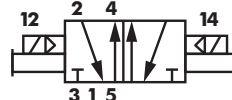
Dual pressure models

5/2

Single operator



Double operator



5/3

Pressure centre



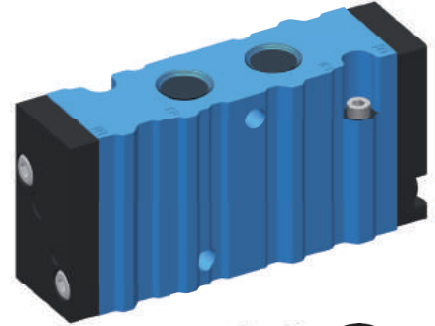
MAC 400 Series

MAC 400 Series - Remote air valve

5-way, 2 and 3 position, spool

Flow up to 1000 NI/min (1.0 Cv)

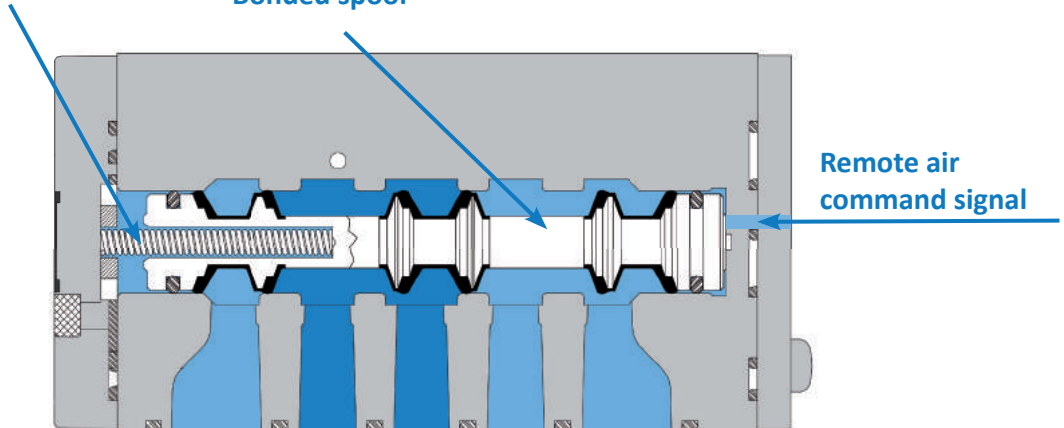
- ◇ Balanced spool, immune to variations of pressure, also provides high flow
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Short stroke with high flow
- ◇ Wiping effect eliminates sticking
- ◇ Long service life
- ◇ Repair kit available for the complete valve



Mechanical return spring

Bonded spool

Remote air
command signal



Valve with single remote operator, single pressure, 2 position, manifold

MAC 400 Series

Technical data

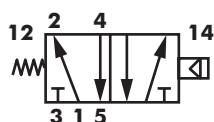
| | |
|-----------------------------------|---|
| Fluid: | Compressed air, vacuum, inert gases |
| Pressure range: | Single op.: vacuum to 6.7 bar - Double op.: vacuum to 10 bar |
| Air signal pressure: | Single op.: 2.7 to 10 bar Double op.: 2 pos.: 1.3 to 10 bar, 3 pos.: 2.3 to 10 bar |
| Lubrication: | Not required, if used, select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration: | 40 µ |
| Temperature range: | -18°C to +50°C |
| Orifice: | 6.2 mm |
| Flow (at 6 bar, ΔP=1 bar): | 1000 NI/min (Cv 1.0) |

Remote air valve

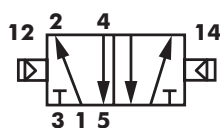
Single pressure models

5/2

Single operator

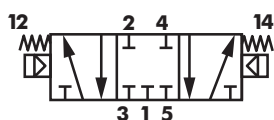


Double operator

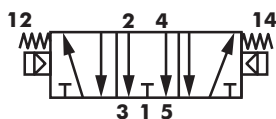


5/3

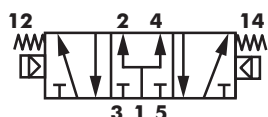
Closed centre



Open centre



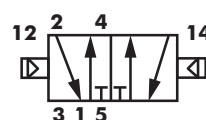
Pressure centre



Dual pressure models

5/2

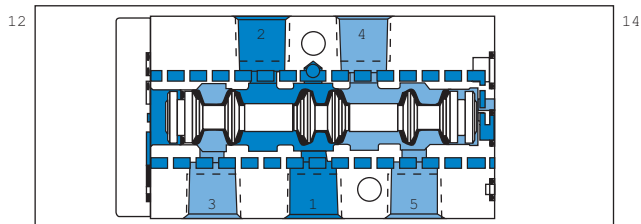
Double operator



MAC 400 Series

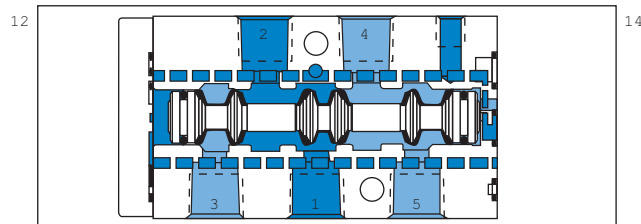
MAC 400 Series - Spool configurations

Internal Pilot



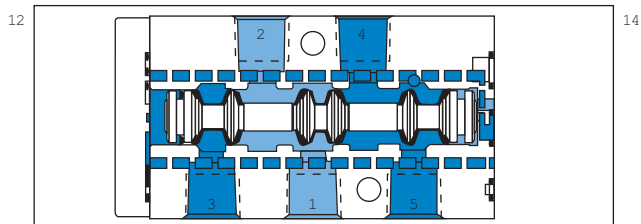
Single operator – Single inlet
Shown with 12 operator energized

Internal Pilot External Pilot Port



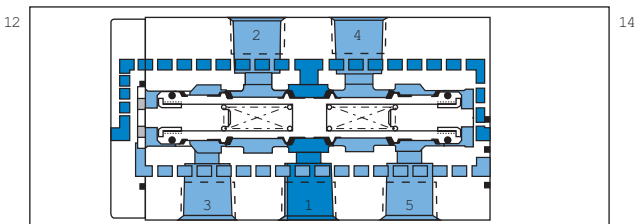
Single operator – Single inlet
Shown with 12 operator energized

Internal Pilot



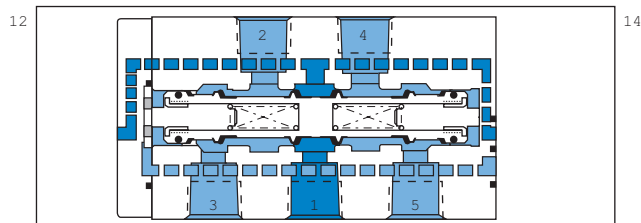
Single operator – Dual inlet
Shown with 12 operator energized

Internal Pilot



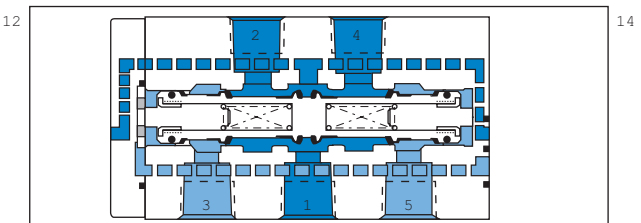
3 Position – Closed centre

Internal Pilot



3 Position – Open centre

Internal Pilot



3 Position – Pressure centre

MAC 400 Series

MAC 400 Series - How to order

How to order electrical version

4 X X A - X X X - X X - X X X X - X X X

REV.

PILOT VALVE - See below

| SPOOL TYPE | BODY OPTIONS | PORT SIZE & THREAD TYPE IN. & CYL. ** | BASE CONFIGURATION | INT./EXT. PILOT |
|---|--|--|---|---|
| 0 Base only 1 Sgl. oper. sgl. pres. 2 Dbl. oper. sgl. pres. 3 Sgl. oper. dual pres. 4 Dbl. oper. dual pres. 5 3 pos. closed centre 6 3 pos. open centre 7 3 pos. sgl. pres. - pres. centre | 0 Base only 1 Inline 5 port 3 Manifold body (base mount body) 4 Inline 5 port w/ memory 6 Manifold body w/ memory | 0 Manifold body A 1/8" NPTF B 1/4" NPTF C 1/8" BSPPL D 1/4" BSPPL E 1/8" BSPTR F 1/4" BSPTR | 0 Inline or manifold body A Base standard ports B Base standard ports w/ flow controls | A Internal pilot (on dual press. models pilot press. is from port #5) B External pilot (inline body) C Internal pilot (on dual press. models pilot press. is from port #3) D External & common external pilot (individual base & bar manifold) |

** Ports 3 & 5 always are G1/8

How to order remote air version

4 X X A - X X X - RA

REV.

Remote Air

| SPOOL TYPE | BODY OPTIONS | PORT SIZE & THREAD TYPE IN. & CYL. ** | BASE CONFIGURATION | PILOT PORT |
|--|--|--|---|---|
| *1 Sgl. oper. sgl. pres. 2 Dbl. oper. sgl. pres. 4 Dbl. oper. dual pres. 5 3 pos. closed centre 6 3 pos. open centre 7 3 pos. sgl. pres. - pres. centre | 1 Inline 5 port 3 Manifold body (base mount body) | 0 Manifold body A 1/8" NPTF B 1/4" NPTF C 1/8" BSPPL D 1/4" BSPPL E 1/8" BSPTR F 1/4" BSPTR | 0 Inline or manifold body A Base standard ports B Base standard ports w/ flow controls | H Pilot port size #10-32 J Pilot port size M5 (Metric) |

* Requires MOD 1493

** Ports 3 & 5 always are G1/8

MAC 400 Series

MAC 400 Series - How to order

How to order solenoid operator

DM - D X X X - X X X*

| VOLTAGE | LEAD WIRE LENGTH | MANUAL OVERRIDE | ELECTRICAL CONNECTOR* |
|--------------------------|--------------------|-------------------------------|--|
| JA 110 V~ / 50 Hz | O No wires | 0 No operator | BA Flying leads |
| JB 220 V~ / 50 Hz | A 45 cm | 1 Non-locking recessed | BK Flying leads with protection diode |
| JC 24 V~ / 50 Hz | B 60 cm | 2 Locking recessed | BL Flying leads with protection varistor |
| DA 24 V= / 5.4 W | C 90 cm | 3 Non-locking extended | JB DIN 43650 - Industrial type B connector (male + female) |
| DB 12 V= / 5.4 W | D 120 cm | 4 Locking extended | JD DIN 43650 - Industrial type B connector with light (male + female) |
| DC 12 V= / 7.5 W | E 180 cm | | JM DIN 43650 - Industrial type B connector (male only) |
| DD 24 V= / 7.3 W | F 240 cm | | KA DIN 43650 - Industrial type C connector |
| FA 12 V= / 1.8 W | J Connector | | KB DIN 43650 - Industrial type C connector with protection diode |
| FB 24 V= / 1.8 W | | | KJ DIN 43650 - Industrial type C connector with protection varistor |
| FE 12 V= / 2.4 W | | | TA Dual tabs with receptacles |
| FF 24 V= / 2.4 W | | | TB TA with protection diode |

* Other options available, see page 11

GM - G X X X - X X X*

| VOLTAGE | LEAD WIRE LENGTH | MANUAL OVERRIDE | ELECTRICAL CONNECTOR* |
|--------------------------|-------------------|-------------------------------|---|
| DC 24 V= / 1.8 W | O No wires | 1 Non locking recessed | BA Flying leads w/o ground wire |
| DD 24 V= / 2.5 W | A 45 cm | 3 Non locking extended | BB Flying leads w/ ground wire |
| DE 24 V= / 3.0 W | B 60 cm | | BT Flying leads with LED light on top (no ground wire) |
| DF 24 V= / 4.0 W | C 90 cm | | KA Plug-in wire assembly (no ground wire) |
| DJ 12 V= / 1.8 W | D 120 cm | | KB Plug-in wire assembly w/ ground wire |
| DK 12 V= / 2.5 W | E 180 cm | | KT Plug-in wire assembly w/ LED light on top |
| DM 12 V= / 3.0 W | F 240 cm | | |
| DN 12 V= / 4.0 W | G 305 cm | | |
| ED 120 V= / 2.5 W | H 366 cm | | |

* Other options available, see page 12

MAC 400 Series

MAC 400 Series - References for DM pilot valve

Codification table for voltages / Manual override / Electrical connection

VALVE CODE □ **-DM- XX X-X XX**
1 2 3 4

* From Lead wire length options choose A through F

Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads.

1. VOLTAGE

| D-XX X-X XX | VOLTAGE |
|-------------|---|
| DA | 24V=/5,4W |
| DB | 12V=/5,4W |
| DC | 12V=/7,5W |
| DD | 24V=/7,3W |
| DE | 12V=/12,7W |
| DF | 24V=/12,7W |
| DK | 110V=/4,7W |
| DJ | 28V=/5,2W |
| DL | 64V=/6W |
| DM | 36V=/5,3W |
| DN | 6V=/6W |
| DR | 90V=/6,6W |
| DS | 110V=/7,3W |
| DT | 75V=/5,6W |
| DP | 48V=/5,8W |
| FA | 12V=/1,8W |
| FB | 24V=/1,8W |
| FE | 12V=/2,4W |
| FF | 24V=/2,4W |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) |
| JE | 220V~/60Hz (3,4W) |
| JF | 240V~/50Hz (2,8W) |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) |

2. WIRE LENGTH

| D-XX X-X XX | WIRE LENGTH |
|-------------|--------------|
| 0 | No wires |
| A | 45 cm – 18" |
| B | 60 cm – 24" |
| C | 90 cm – 36" |
| D | 120 cm – 48" |
| E | 180 cm – 72" |
| F | 240 cm – 96" |
| J | Connector |

3. MANUAL OVERRIDE

| D-XX X-X XX | MANUAL OVERRIDE |
|-------------|----------------------|
| 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 |
| CA* | 1/2" NPS conduit with flying leads |
| CM* | 1/2" NPS metal conduit with flying leads |
| CN* | 1/2" NPS metal conduit with flying leads & ground |
| CK | 1/2" NPS conduit with diode |
| CL | 1/2" NPS conduit with MOV |
| HA | MAC JAC plug-in |
| HB | MAC JAC plug-in with light |
| HC | MAC JAC plug-in with diode & light |
| JB | DIN 43650 - Industrial type B connector (male + female) |
| JD | DIN 43650 - Industrial type B connector with light (male + f.) |
| JM | DIN 43650 - Industrial type B connector (male only) |
| JA | DIN 43650 - Industrial type A connector (male + female) |
| JC | DIN 43650 - Industrial type A connector with light (male + f.) |
| JJ | DIN 43650 - Industrial type A connector (male only) |
| KA | DIN 43650 - Industrial type C connector |
| KB | DIN 43650 - Industrial type C connect. with protection diode |
| KC | DIN 43650 - Industrial type C conn. with protection varistor |
| KD | DIN 43650 - Industrial type C connector with light |
| KE | DIN 43650 - Indust. type C conn. w/ light & protection diode |
| KF | DIN 43650 - Indust. type C conn. w/ light & protection varistor |
| KG | DIN 43650 - Industrial type C connector with light & diode |
| KJ | DIN 43650 - Industrial type C connector (male only) |
| KK | DIN 43650 - Indust. type C conn. w/ protection diode (male) |
| KL | DIN 43650 - Indust. type C conn. w/ protection varistor (male) |
| LA | ISO 15217 standard connector plug-in (male only) |
| LB | ISO 15217 standard connector plug-in with diode (male only) |
| LC | ISO 15217 standard connector plug-in with MOV (male only) |
| LJ | ISO 15217 standard connector plug-in (male only) |
| LK | ISO 15217 standard connector plug-in with diode (male only) |
| LL | ISO 15217 standard connector plug-in with MOV (male only) |
| PA | Pico M8 (male only) |
| TA | Dual tabs with receptacles |
| TB | TA with protection diode |
| TD | TA with light |
| TE | TA with light and protection diode |
| TJ | Dual tabs (male only) |
| TK | TJ with protection diode |
| TM | TJ with light |
| TN | TJ with light and protection diode |
| RA | Euro (M12) - 2 Pin |
| RB | Euro (M12) - 2 Pin with diode (male only) |
| RC | Euro (M12) - 2 Pin with MOV |
| RD | Euro (M12) - 2 Pin with light |
| RE | Euro (M12) - 2 Pin with diode & light |
| RF | Euro (M12) - 2 Pin with MOV & light |

MAC 400 Series

MAC 400 Series - References for GM pilot valve

Codification table for voltages / Manual override / Electrical connection

VALVE CODE **-GM- XX X-X XX**
1 2 3 4

1. VOLTAGE

| G-XX X-X XX | VOLTAGE |
|-------------|--------------|
| DC | 24 V =/1.8 W |
| DD | 24 V =/1.8 W |
| DE | 24 V =/3.0 W |
| DF | 24 V =/4.0 W |
| DJ | 12 V =/1.8 W |
| DK | 12 V =/2.5 W |
| DM | 12 V =/3.0 W |
| DN | 12 V =/4.0 W |

2. WIRE LENGTH

| G-XX X-X XX | WIRE LENGTH |
|-------------|--|
| 0 | No lead wire (use only with "KJ" & "KM" electrical connectors) |
| A | 45 cm - 18" |
| B | 60 cm - 24" |
| C | 90 cm - 36" |
| D | 120 cm - 48" |
| E | 180 cm - 72" |
| F | 240 cm - 96" |
| G | 300 cm - 120" |
| H | 365 cm - 144" |

3. MANUAL OVERRIDE

| G-XX X-X XX | MANUAL OPERATOR |
|-------------|----------------------|
| 1 | Non-locking recessed |
| 2 | Locking recessed |
| 3 | Non-locking extended |
| 4 | Locking extended |

4. ELECTRICAL CONNECTION

| G-XX X-X XX | ELECTRICAL CONNECTION |
|-------------|---|
| BA | Flying leads |
| BB | Flying leads with ground wire |
| BC | Flying leads with LED light parallel to leads |
| BD | Flying leads with LED light parallel to leads & ground wire |
| BE | Flying leads with suppression diode |
| BF | Flying leads with supp. diode & ground wire |
| BG | Flying leads with supp. diode plus LED light parallel to leads |
| BH | Flying leads with supp. diode plus LED light parallel to leads & ground wire |
| BN | Flying leads with supp. diode plus blocking diode |
| BP | Flying leads w/ supp. diode plus blocking diode & ground wire |
| BR | Flying leads w/ supp. diode plus blocking diode & LED light parallel to leads |
| BS | Flying leads with supp. diode plus blocking diode & LED light parallel to leads & Ground Wire |

| | |
|----|--|
| BT | Flying leads with LED light on top |
| BU | Flying leads with LED light on top & ground wire |
| BV | Flying leads with supp. diode plus LED light on top |
| BW | Flying leads w/ supp. diode plus LED light on top & ground wire |
| BX | Flying leads w/ supp. diode plus blocking diode & LED on top |
| BY | Flying leads with supp. diode plus blocking diode & LED on top & ground wire |

4. ELECTRICAL CONNECTION

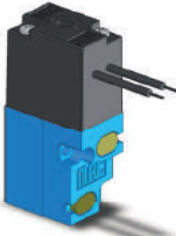
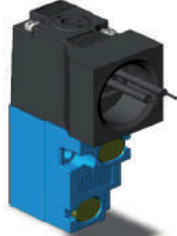
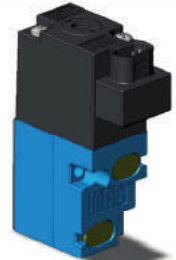
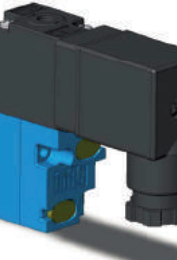

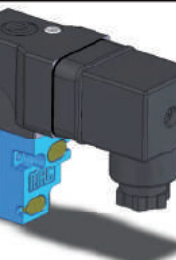
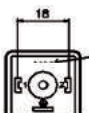
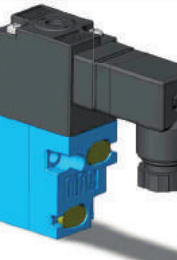
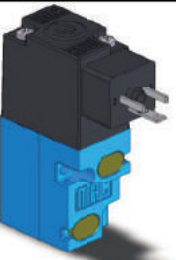

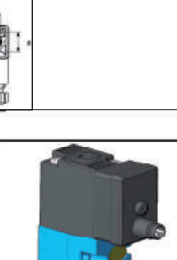

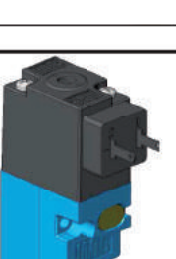
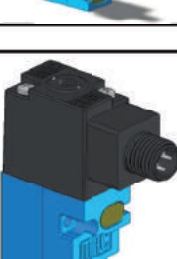
| G-XX X-X XX | SOLENOID PLUG-IN CONNECTOR WITH LEADS |
|-------------|---|
| GA* | MAC JAC Solenoid plug-in |
| GB* | MAC JAC Solenoid plug-in with diode |
| GC* | MAC JAC Solenoid plug-in with MOV |
| GD* | MAC JAC Solenoid plug-in with light |
| GE* | MAC JAC Solenoid plug-in with diode & light |
| GF* | MAC JAC Solenoid plug-in with MOV & light |
| GG* | MAC JAC Solenoid plug-in with rectifier |
| GH* | MAC JAC Solenoid plug-in with rectifier & light |
| GJ* | MAC JAC Solenoid plug-in (male only) |
| GK* | MAC JAC Solenoid plug-in with diode (male only) |
| GL* | MAC JAC Solenoid plug-in with MOV (male only) |
| GM* | MAC JAC Solenoid plug-in with LED (male only) |
| GN* | MAC JAC Solenoid plug-in with diode & LED (male only) |
| GP* | MAC JAC Solenoid plug-in with MOV & LED (male only) |
| GR* | MAC JAC Solenoid plug-in with rectifier (male only) |
| GS* | MAC JAC Solenoid plug-in with rectifier & LED (male only) |
| HA | Circuit board plug-in w/ full wave rectifier & LED (w/ ground wire) |
| HD | Same as "HA" without lead wire assembly |
| KA | Plug-in wire assembly |
| KB | Plug-in wire assembly with ground wire |
| KC | Solenoid plug-in wire assembly with rectifier and LED |
| KD | Solenoid plug-in wire ass. w/ rectifier and LED w/ ground |
| KE | Plug-in wire assembly w/ suppression diode |
| KF | Plug-in wire assembly w/ suppression diode & ground wire |
| KJ | Plug-in without wire assembly for "KA" above |
| KM | Plug-in without wire assembly for "KB" above |
| KN | Plug-in wire assembly w/ suppr. diode plus blocking diode |
| KP | Plug-in wire ass. w/ suppr. diode + blocking diode & ground wire |
| KT | Plug-in wire assembly with LED light on top (no ground wire) |
| KU | Plug-in wire assembly with LED light on top & ground wire |
| KV | Plug-in wire assembly with supp. diode plus LED light on top |
| KW | Plug-in wire ass. w/ supp. diode + LED light on top & ground wire |
| KX | Plug-in wire ass. w/ supp. diode + block. diode & LED light on top |
| KY | Plug-in wire assembly with suppression diode plus blocking diode & LED light on top & ground wire |
| PA | Pico |
| TJ | Dual Tabs - Mini Plug-in |

Note: Blocking diode is located in the lead wire

* MAC JAC Connector not available with AC Voltage options

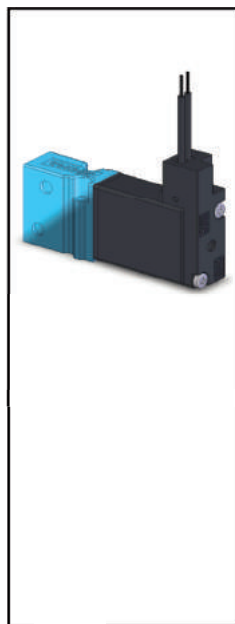
MAC 400 Series

MAC 400 Series - Codification electrical connection DM pilot valve (coil / connector configurations)

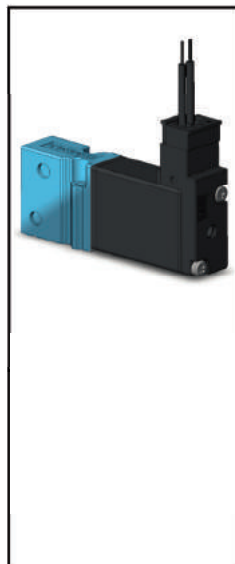
| | | | |
|---|---|--|--|
|  | <p>BA* Flying leads</p> <p>BK* BA with protection diode</p> <p>BL* BA with protection varistor</p> <p>* From lead wire length options choose</p> |  | <p>CA* 1/2" NPS conduit with flying leads</p> <p>CM* 1/2" NPS metal conduit with flying leads</p> <p>CN* 1/2" NPS metal conduit with flying leads & ground</p> <p>CK 1/2" NPS conduit with diode</p> <p>CL 1/2" NPS conduit with MOV</p> <p>* From lead wire length options choose</p> |
|  | <p>HA MAC JAC plug-in</p> <p>HB MAC JAC plug-in with light</p> <p>HC MAC JAC plug-in with diode & light</p> |  | <p>JB DIN 43650 - Industrial type B connector (male + female)</p> <p>JD DIN 43650 - Industrial type B connector with light (male + female)</p> <p>JM DIN 43650 - Industrial type B connector (male only)</p> <p>11mm pin spacing</p>  |
|  | <p>JA DIN 43650 - Industrial type A connector (male + female)</p> <p>JC DIN 43650 - Industrial type A connector with light (male + female)</p> <p>JJ DIN 43650 - Industrial type A connector (male only)</p> <p>Form A - 18mm pin spacing</p>  |  | <p>KA DIN 43650 - Industrial type C connector</p> <p>KB DIN 43650 - Industrial type C connector with protection diode</p> <p>KC DIN 43650 - Industrial type C connector with protection varistor</p> <p>KD DIN 43650 - Industrial type C connector with light</p> <p>KE DIN 43650 - Industrial type C connector with light and protection diode</p> <p>KF DIN 43650 - Industrial type C connector with light and protection varistor</p> <p>KG DIN 43650 - Industrial type C connector with light & diode</p> <p>KJ DIN 43650 - Industrial type C connector (male only)</p> <p>KK DIN 43650 - Industrial type C connector with protection diode (male only)</p> <p>KL DIN 43650 - Industrial type C connector with protection varistor (male only)</p> |
|  | <p>LA ISO 15217 standard connector plug-in (male only)</p> <p>LB ISO 15217 standard connector plug-in with diode (male only)</p> <p>LC ISO 15217 standard connector plug-in with MOV (male only)</p> <p>LJ ISO 15217 standard connector plug-in (male only)</p> <p>LK ISO 15217 standard connector plug-in with diode (male only)</p> <p>LL ISO 15217 standard connector plug-in with MOV (male only)</p>  |  | <p>PA Pico M8 (male only)</p>  <p>8mm</p> <p>M* 2-pin thread or snap fit</p> |
|  | <p>TA Dual tabs with receptacles</p> <p>TB TA with protection diode</p> <p>TD TA with light</p> <p>TE TA with light and protection diode</p> <p>TJ Dual tabs (male only)</p> <p>TK TJ with protection diode</p> <p>TM TJ with light</p> <p>TN TJ with light and protection diode</p> |  | <p>RA Euro (M12) - 2 Pin</p> <p>RB Euro (M12) - 2 Pin with diode (male only)</p> <p>RC Euro (M12) - 2 Pin with MOV</p> <p>RD Euro (M12) - 2 Pin with light</p> <p>RE Euro (M12) - 2 Pin with diode & light</p> <p>RF Euro (M12) - 2 Pin with MOV & light</p> |

MAC 400 Series

MAC 400 Series - Codification electrical connection GM pilot valve (coil / connector configurations)



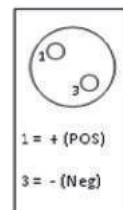
| | |
|----|---|
| BA | Flying leads |
| BB | Flying leads with ground wire |
| BC | Flying leads with LED light parallel to leads |
| BD | Flying leads with LED light parallel to leads & ground wire |
| BE | Flying leads with suppression diode |
| BF | Flying leads with supp. diode & ground wire |
| BG | Flying leads with supp. diode plus LED light parallel to leads |
| BH | Flying leads with supp. diode plus LED light parallel to leads & ground wire |
| BN | Flying leads with supp. diode plus blocking diode |
| BP | Flying leads with supp. diode plus blocking diode & ground wire |
| BR | Flying leads with supp. diode plus blocking diode & LED light parallel to leads |
| BS | Flying leads with supp. diode plus blocking diode & LED light parallel to leads & Ground Wire |
| BT | Flying leads with LED light on top |
| BU | Flying leads with LED light on top & ground wire |
| BV | Flying leads with supp. diode plus LED light on top |
| BW | Flying leads with supp. diode plus LED light on top & ground wire |
| BX | Flying leads with supp. diode plus blocking diode & LED on top |
| BY | Flying leads with supp. diode plus blocking diode & LED on top & ground wire |



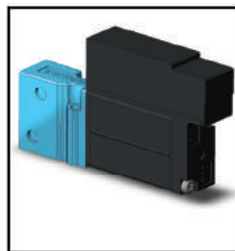
| | |
|----|---|
| KA | Plug-in wire assembly |
| KB | Plug-in wire assembly with ground wire |
| KC | Solenoid plug-in wire assembly with rectifier and LED |
| KD | Solenoid plug-in wire assembly with rectifier and LED with ground |
| KE | Plug-in wire assembly w/ suppression diode |
| KF | Plug-in wire assembly w/ suppression diode & ground wire |
| KJ | Plug-in without wire assembly for "KA" above |
| KM | Plug-in without wire assembly for "KB" above |
| KN | Plug-in wire assembly with suppression diode plus blocking diode |
| KP | Plug-in wire assembly with suppression diode plus blocking diode & ground wire |
| KT | Plug-in wire assembly with LED light on top (no ground wire) |
| KU | Plug-in wire assembly with LED light on top & ground wire |
| KV | Plug-in wire assembly with supp. diode plus LED light on top |
| KW | Plug-in wire assembly with supp. diode plus LED light on top & ground wire |
| KX | Plug-in wire assembly with suppression diode plus blocking diode & LED light on top |
| KY | Plug-in wire assembly with suppression diode plus blocking diode & LED light on top & ground wire |



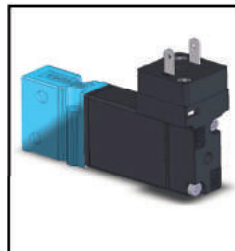
| | |
|---|---|
| GA* | MAC JAC Solenoid plug-in |
| GB* | MAC JAC Solenoid plug-in with diode |
| GC* | MAC JAC Solenoid plug-in with MOV |
| GD* | MAC JAC Solenoid plug-in with light |
| GE* | MAC JAC Solenoid plug-in with diode & light |
| GF* | MAC JAC Solenoid plug-in with MOV & light |
| GG* | MAC JAC Solenoid plug-in with rectifier |
| GH* | MAC JAC Solenoid plug-in with rectifier & light |
| GJ* | MAC JAC Solenoid plug-in (male only) |
| GK* | MAC JAC Solenoid plug-in with diode (male only) |
| GL* | MAC JAC Solenoid plug-in with MOV (male only) |
| GM* | MAC JAC Solenoid plug-in with LED (male only) |
| GN* | MAC JAC Solenoid plug-in with diode & LED (male only) |
| GP* | MAC JAC Solenoid plug-in with MOV & LED (male only) |
| GR* | MAC JAC Solenoid plug-in with rectifier (male only) |
| GS* | MAC JAC Solenoid plug-in with rectifier & LED (male only) |
| * MAC JAC Connector not available with AC Voltage options | |



| | |
|-----------------------------|------|
| PA | Pico |
| M* 2-Pin Thread or Snap Fit | |
| 8mm | |



| | |
|----|---|
| HA | Circuit board plug-in with full wave rectifier & LED (with ground wire) |
| HD | Same as "HA" without lead wire assembly |



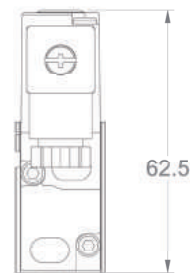
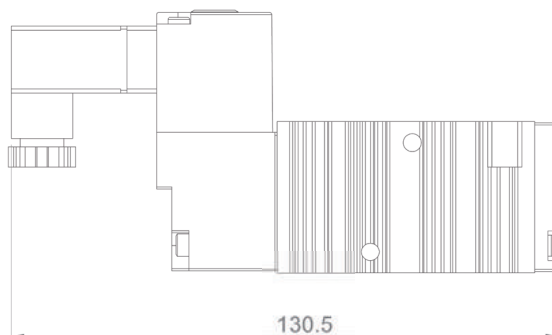
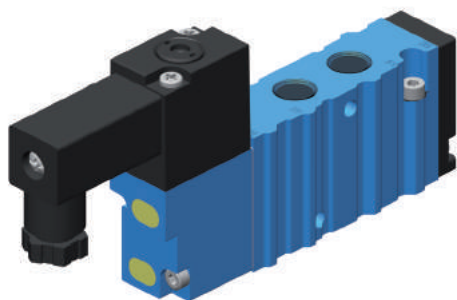
| | |
|---------------------------------------|--------------------------|
| TJ | Dual Tabs - Mini Plug-in |
| MICRO DIN 43650-Industrial Standard C | |
| 9.4mm Pin Spacing | |
| 8.4 | |
| 8 | |

MAC 400 Series

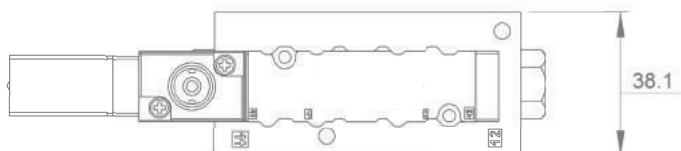
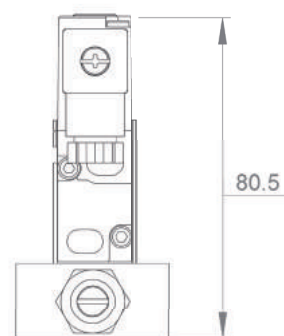
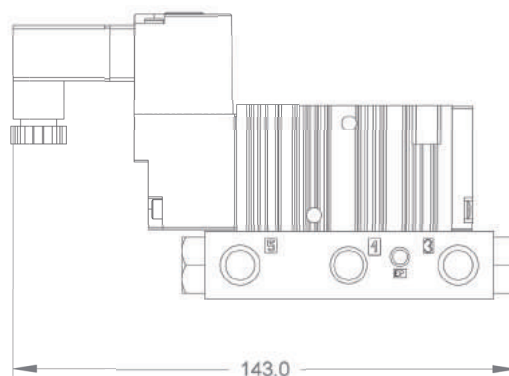
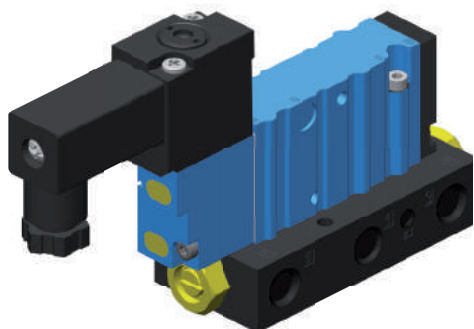
MAC 400 Series - Dimensions

400 Series - Inline valve

All dimensions are in mm



400 Series - Individual base



MAC 400 Series

MAC 400 Series - Repair kits (main ones)

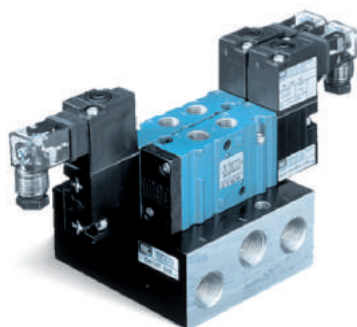
| PART REFERENCE | DESCRIPTION |
|----------------|--|
| K-04001 | Repair kit 2 position, single pressure, single operator |
| K-04001-01 | Repair kit 2 position, single pressure, single operator with memory spring |
| K-04002 | Repair kit 2 position, single pressure, double operator |
| K-04003 | Repair kit 2 position, dual pressure, single operator |
| K-04003-01 | Repair kit 2 position, dual pressure, single operator with memory spring |
| K-04004 | Repair kit 2 position, dual pressure, double operator |
| K-04005 | Repair kit 3 position, closed centre, single pressure |
| K-04006 | Repair kit 3 position, open centre, single pressure |
| K-04007 | Repair kit 3 position, single pressure, pressure centre |
| S-04001 | Spool assembly 2 position, single pressure |
| S-04002 | Spool assembly 2 position, single pressure - memory spring type |
| S-04003 | Spool assembly 2 position dual pressure |
| S-04004 | Spool assembly 2 position dual pressure - memory spring type |
| S-04005 | Spool assembly 3 position, single pressure, closed centre |
| S-04006 | Spool assembly 3 position, single pressure, open centre |
| S-04007 | Spool assembly 3 position, single pressure, pressure centre |
| DM-D...-... | Complete pilot valve (45 series type) |
| GM-G...-... | Complete pilot valve (44 series type) |
| 16524 | Pressure seal - pilot valve to body |
| 16525 | Body to base pressure seal (manifold body) |
| 17013-01 | O-Ring (2x) with manifold base (inline body) |
| 17015-01 | O-Ring (1x) port seal with manifold base (inline body) |

| MOST COMMON MODIFICATIONS | DESCRIPTION |
|---------------------------|-------------------|
| 1080 | Namur interface |
| T65C | High temperatures |
| 532B | Washdown IP65 |
| 0650 | Food applications |

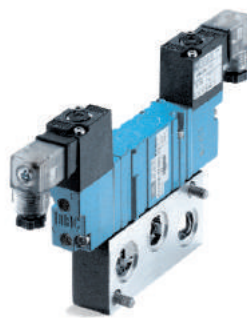
For other modifications, please consult factory

MAC 400 Series

MAC 400 Series - Circuit bar®



**MID PROFILE CIRCUIT BAR
CYLINDER PORTS IN VALVE**



**ADD-A-UNIT STATIONS
FOR CBM404A BAR**

Design description

General

The 400 series circuit bar® is available in five different configurations. The Low Profile version (CBM401A & CBM402A), the Mid Profile version (CBM403A & CBM404A), and the High Profile version (CBM405A). Each bar is machined from a single block extruded black anodized aluminium to provide a common inlet and dual common exhaust. The Mid and High Profile versions offer a common external pilot and an add-on version option which provides a means to attach additional stations to the circuit bar®.

Electrical

Each circuit bar® is a non plug-in bar. All electrical connections are made at the solenoid. Wire and optional prewired cables are available.

Valving

Inline and manifold type valves can be mounted on the circuit bars®. The common inlet and exhausts can be isolated to provide different pressures. Valves using both style pilot valves (44 and 45 series) can be mounted on the same circuit bar®.

Porting

The common inlet and exhausts have a 3/8" tapped port. The Low Profile and Mid Profile bars are available with 1/8" and 1/4" bottom ports only. The High Profile bar is available with 1/8" and 1/4" side ports only.

Accessories

The Low Profile and Mid Profile bars are available with individual exhaust flow controls. Flow controls are not available on the High Profile version. An end plate kit is supplied with the add-on version type bar. A blank station valve cover plate is available for all circuit bars®.

| | CBM401 | CBM402 | CBM403 | CBM404 | CBM405 |
|-------------------------|----------|-------------|---------------------|-------------|---------------------|
| Height | 32 | 32 | 38 | 38 | 52 |
| Cylinder ports in valve | Yes | No | Yes | No | No |
| Cylinder ports in base | No | Yes, bottom | No | Yes, bottom | Yes, side + bottom |
| Flow controls | Yes | Yes | Yes | Yes | Yes |
| Common Pilot | Internal | Internal | Internal / External | Internal | Internal / External |
| Cylinder Port Size | / | 1/8 | / | 1/8 - 1/4 | 1/8 - 1/4 |

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order low profile bar (32 mm)

CBM40 1 A - X X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

| BAR PROFILE (HEIGHT) | SPACING | CONFIGURATION | STYLE | PORT SIZE (COMMON PORTS) |
|-----------------------|---|--|------------|---|
| 1 Low Profile (32 mm) | 00 19.5 mm (Standard) 02 26 mm (conduit & rect. DIN type connectors) | A Inline body B Inline body with F.C. | A Standard | A 3/8" NPTF B 3/8" BSPPL C 3/8" BSPTR |

Replacement parts & accessories

| | |
|----------|---|
| M-04001 | Blank station kit for 5-port inline body |
| N-04001 | Flow control assembly (2 per station) |
| 17013-01 | O-Ring port seal (2 per station) |
| 17015-01 | O-Ring port seal (1 per station) |
| 35043 | Body to bar manifold mounting screw (2 per valve) |

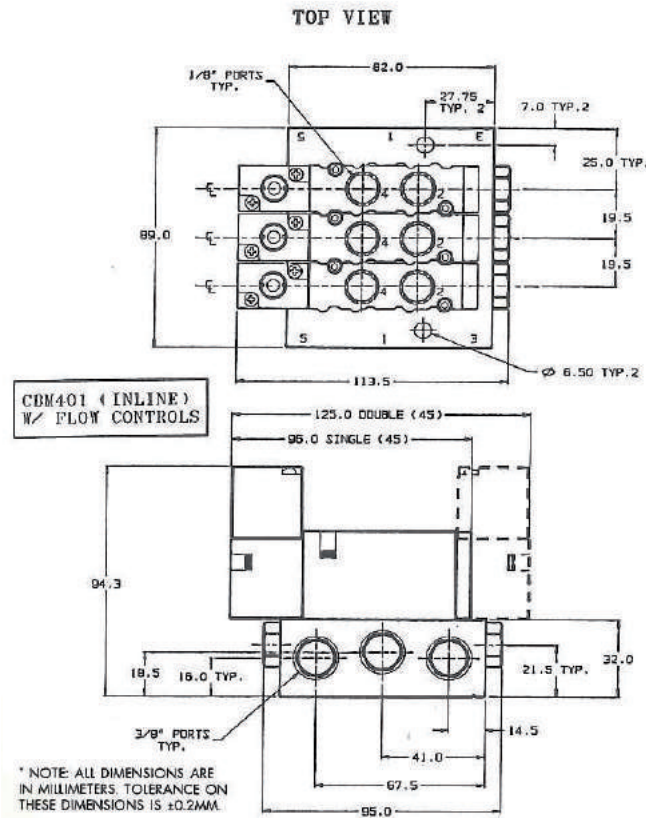
Ordering example

CBM401A-00BAA-06

Low profile bar, 19.5 mm spacing, for 5-port inline body, with flow controls, 3/8" NPTF common ports, six identical stations.

Dimensions

All dimensions are in mm



Drawing for a low profile bar, cylinder ports in valve

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order low profile bar (32 mm) - For manifold body

CBM40 2 A - X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

| BAR PROFILE (HEIGHT) | SPACING | CONFIGURATION | STYLE | PORT SIZE (CYLINDER PORTS) |
|---|--|---|-----------------------|--|
| 2 Low profile (32 mm) for manifold body | 00 19.5 mm (standard) 02 26 mm (conduit & rect. DIN type connectors) | A Manifold body bottom cyl. ports B Manifold body - Bottom cyl. ports & flow controls | A Standard bar | A 1/8" NPTF B 1/8" BSPPL C 1/8" BSPTR |

Replacement parts & accessories

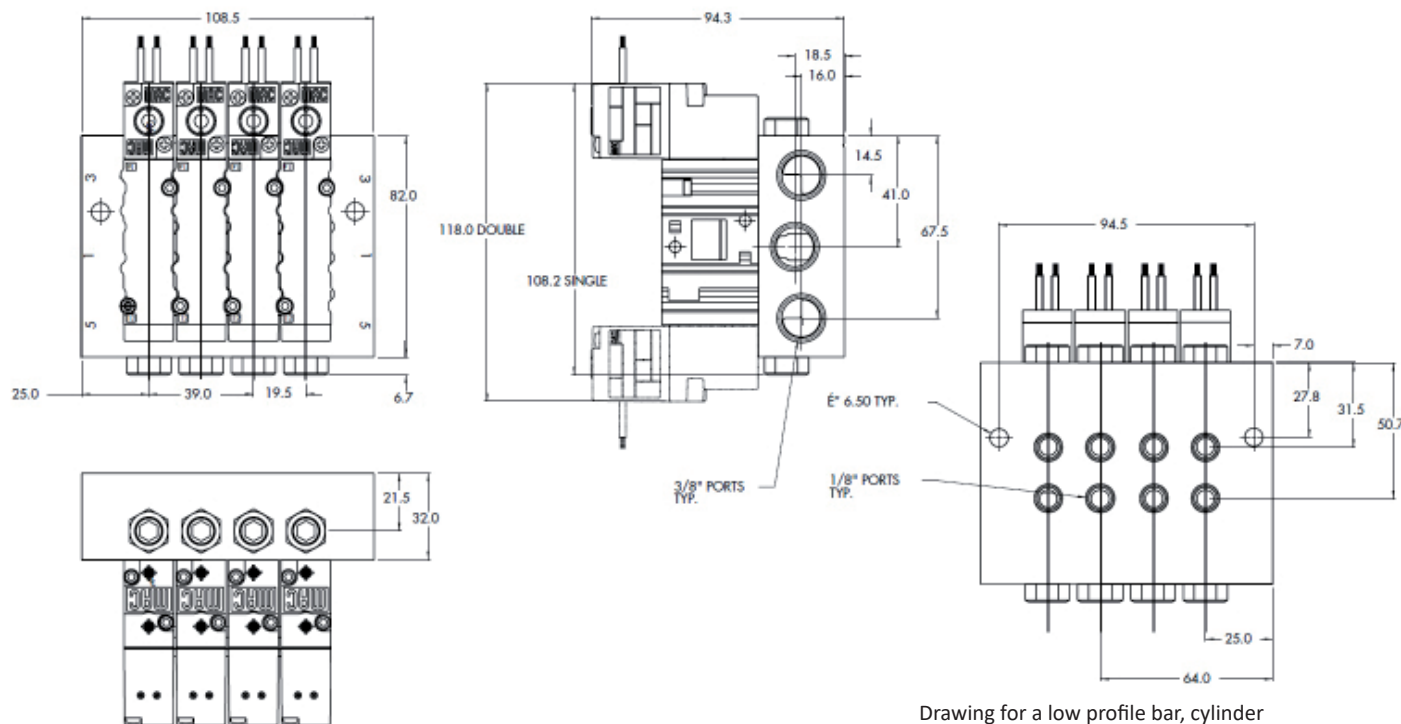
| | |
|----------------|---|
| M-04002 | Blank station kit for manifold body |
| N-04001 | Flow control assembly (2 per station) |
| 16525 | Body to base pressure seal, manifold body bar |
| 35043 | Body to bar mounting screw (2 per station) |

Ordering example

CBM402A-00AAB-06
Low profile bar, 19.5 mm spacing, for manifold bodies, bottom cylinders 1/8" BSPPL, six identical stations.

Dimensions

All dimensions are in mm



Drawing for a low profile bar, cylinder ports in base

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order mid profile bar (38 mm)

CBM40 3 A - X X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

| BAR PROFILE (HEIGHT) | SPACING | CONFIGURATION | STYLE | PORT SIZE (COMMON PORTS) |
|------------------------------|--|--|---|--|
| 3 Mid Profile (38 mm) | 00 19.5 mm (Standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors) | A Inline body B Inline body with F.C. C Inline body Common external pilot D Inline body with F.C. Common external pilot | A Standard bar B Add-on version C Add-on version Common external pilot E Add-on right hand stations (21 mm min.) | A 3/8" NPTF B 3/8" BSPPL C 3/8" BSPTR |

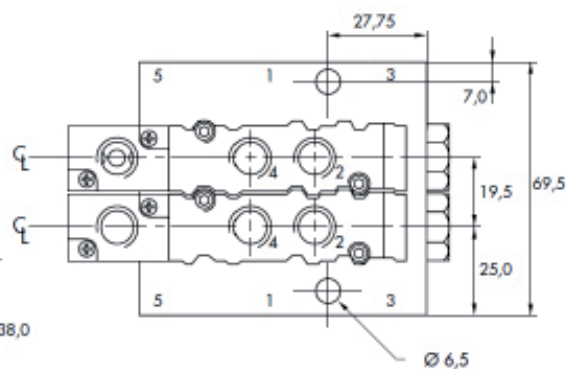
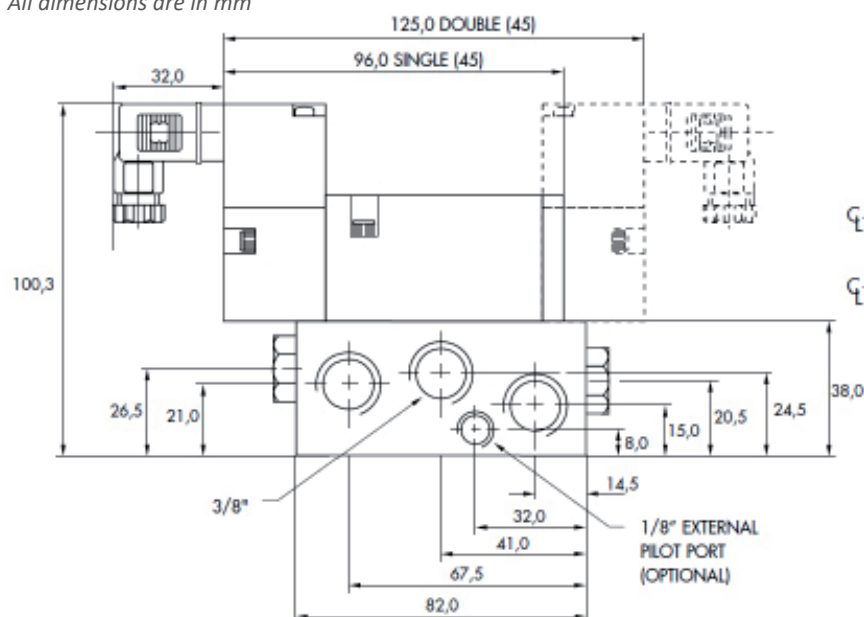
Right-hand end plate kit included w/ bar ass'y on "B" & "C" style add-on versions

Replacement parts & accessories

| | |
|--------------------|--|
| M-04003-01 | Right-hand end plate kit, for mid profile bars (NPTF) |
| M-04003-01P | Right-hand end plate kit, for mid profile bars (BSPPL) |
| M-04004-01 | Right-hand end plate kit, mid profile/ common ext. pilot (NPTF) |
| M-04004-01P | Right-hand end plate kit, mid profile/ common ext. pilot (BSPPL) |
| M-04001 | Blank station kit for 5-port inline body |
| N-04001 | Flow control assembly (2 per station) |
| 17013-01 | O-Ring body port seal (2 per station) |
| 17015-01 | O-Ring body port seal (1 per station) |
| 35043 | Body to body mounting screw (2 per station) |

Dimensions

All dimensions are in mm



Drawing for a mid profile bar, cylinder ports in valve

Ordering examples

CBM403A-00CCA-06

Mid profile bar, 19.5 mm spacing, for 5-port inline body, common external pilot, 3/8" NPTF common ports add-on version, six identical stations.

CBM403A-01CEA-01

Mid profile bar, 21 mm spacing, for 5-port inline body, common external pilot, 3/8" NPTF common ports, single unit for add-on version, can be added to above example bar.

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order mid profile bar (38 mm) - For manifold body

CBM40 4 A - X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

| BAR PROFILE (HEIGHT) | SPACING | CONFIGURATION | STYLE | PORT SIZE (CYLINDER PORTS) |
|---|---|---|---|--|
| 4 Mid Profile (38 mm) For manifold body | 00 19.5 mm (Standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors) | A Manifold body Bottom cyl. ports B Manifold body - Bottom cyl. ports & flow controls | A Standard bar B Add-on version E Add-on right hand stations (21 mm min.) | A 1/8" NPTF B 1/8" BSPPL C 1/8" BSPTR D 1/4" NPTF E 1/4" BSPPL F 1/4" BSPTR |

Right-hand end plate kit included w/ bar ass'y on "B"
style add-on version

Replacement parts & accessories

| | |
|--------------------|---|
| M-04003-01 | Right-Hand end plate kit, for mid profile bar (NPTF) |
| M-04003-01P | Right-Hand end plate kit, for mid profile bar (BSPPL) |
| M-04002 | Blank station kit for manifold body |
| N-04001 | Flow control assembly (2 per station) |
| 16525 | Body to base pressure seal, manifold body |
| 35043 | Body to bar mounting screw (2 per station) |

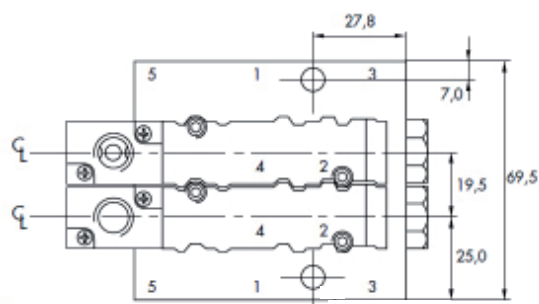
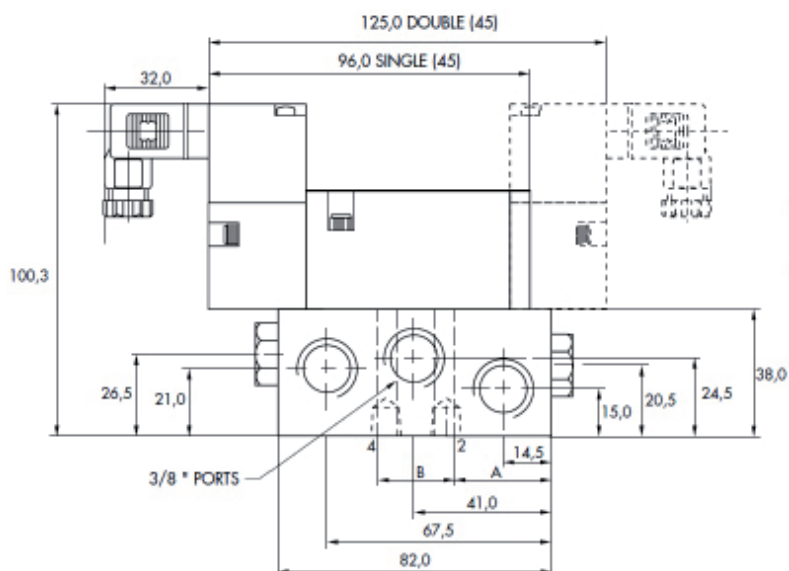
Ordering examples

CBM404A-00ABA-06
Mid profile bar, 19.5 mm spacing, for manifold bodies, bottom cylinders 1/8" NPTF, add-on version, six identical stations.

CBM404A-01AEA-01
Mid profile bar, 21 mm spacing, for manifold body, bottom cyl's 1/8" NPTF, single unit for add-on version, can be added to above example bar

Dimensions

All dimensions are in mm



Drawing for a mid profile bar, cylinder
ports in base

| Port size | A | B |
|-------------|------|------|
| 1/8" | 31.5 | 19.0 |
| 1/4" | 32.0 | 20.0 |

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order high profile bar (52 mm)

CBM40 5 A - X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

| BAR PROFILE (HEIGHT) | SPACING | CONFIGURATION | STYLE | PORT SIZE (CYLINDER PORTS) |
|------------------------|---|---|--|--|
| 5 High Profile (52 mm) | 00 19.5 mm (Standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors) | A Manifold body Side cyl. ports B Manifold body - Side cyl. ports & common external pilot | A Standard bar B Add-on version C Add-on version Common external pilot E Add-on right hand stations (21 mm min.) | A 1/8" NPTF B 1/8" BSPPL C 1/8" BSPTR D 1/4" NPTF E 1/4" BSPPL F 1/4" BSPTR |

Right-hand end plate kit included w/ bar ass'y on "B" & "C" style add-on versions

Replacement parts & accessories

| | |
|-------------|--|
| M-04005-01 | Right-Hand end plate kit, for high profile bars (NPTF) |
| M-04005-01P | Right-Hand end plate kit, for high profile bars (BSPPL) |
| M-04006-01 | Right-Hand end plate kit, high profile/common ext. pilot (NPTF) |
| M-04006-01P | Right-Hand end plate kit, high profile/common ext. pilot (BSPPL) |
| M-04002 | Blank station kit for manifold body |
| 16525 | Body to base pressure seal, manifold body |
| 35043 | Body to bar mounting screw (2 per station) |

Ordering examples

CBM405A-00ABD-06

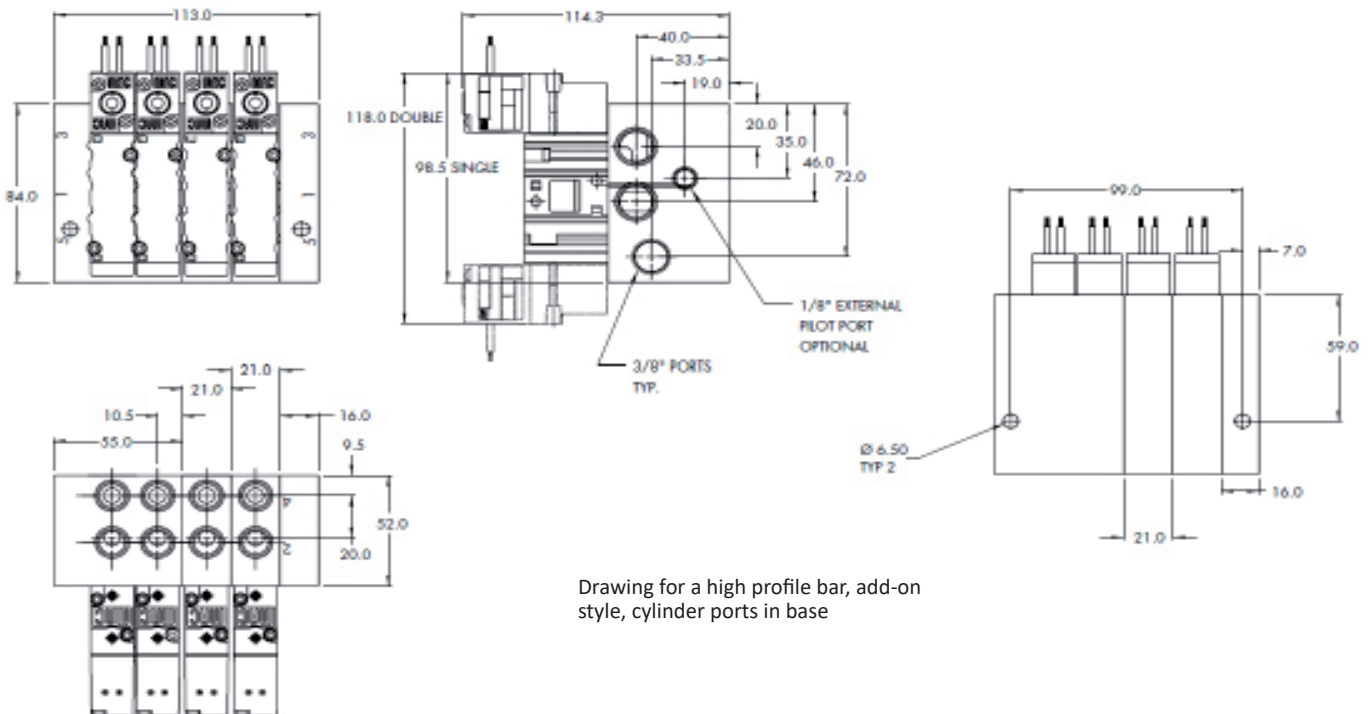
High profile bar, 19.5 mm spacing for manifold body, side cylinders 1/4" NPTF, add-on version, six identical stations.

CBM405A-01AED-01

High profile bar, 21 mm spacing, for manifold body, side cyl's 1/4" NPTF, single unit for add-on version, can be added to above example bar

Dimensions

All dimensions are in mm



Drawing for a high profile bar, add-on style, cylinder ports in base

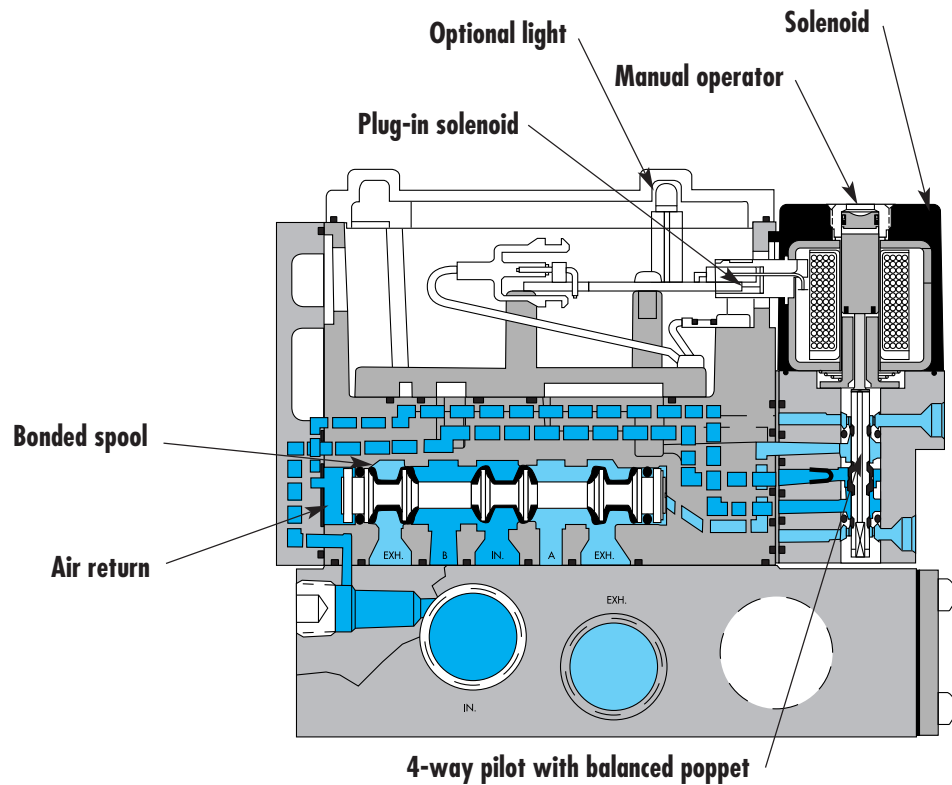
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

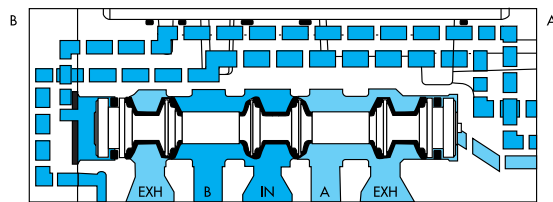
| | |
|--------------------------------|----------------------------|
| Manifold base non "plug-in" | Manifold base "plug-in" |
|--------------------------------|----------------------------|



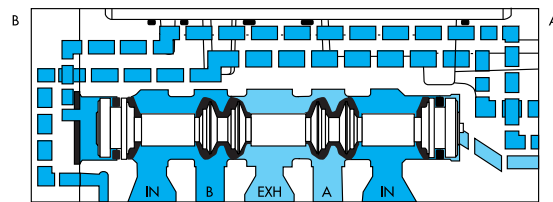
SERIES FEATURES

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

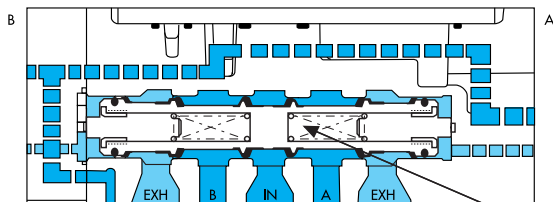
SPOOL CONFIGURATIONS



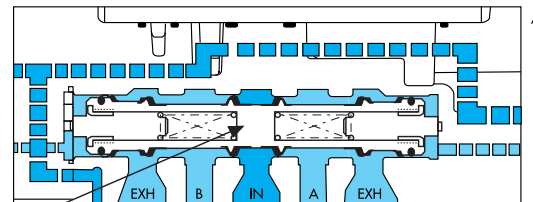
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

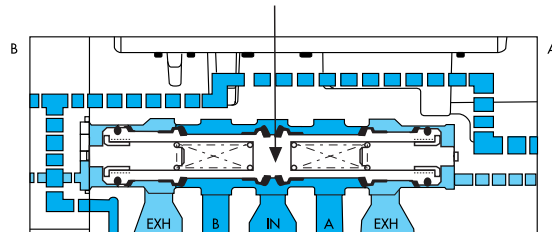


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

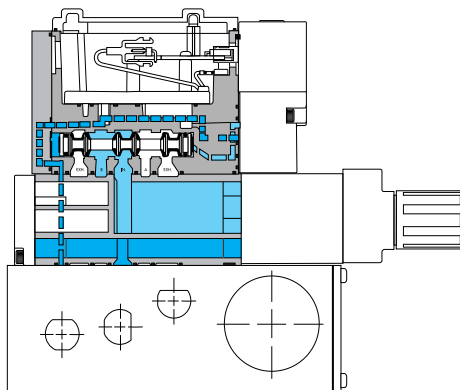


3 POSITION SINGLE PRESSURE, PRESSURE CENTER

REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

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

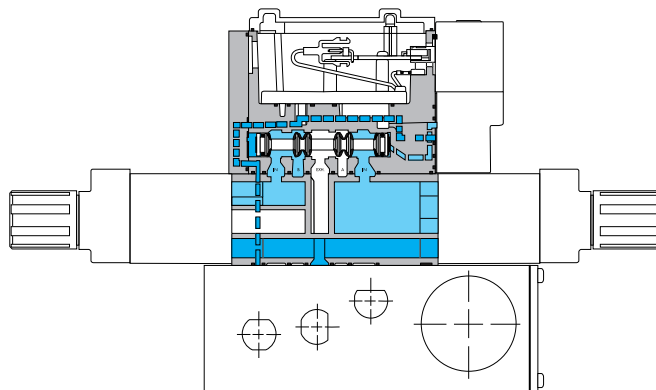


MANIFOLD WITH REGULATOR - SINGLE PRESSURE

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

DUAL REGULATOR - DUAL PRESSURE

Pressure supplied from each regulator is divided in the block. Regulated pressure from "A" regulator supplies cylinder port "A". Regulated pressure from "B" regulator supplies cylinder port "B". Dual pressure regulators require dual pressure spool in valve.



MANIFOLD WITH REGULATOR - DUAL PRESSURE

| Function | Port size | Flow [Max] | Individual mounting |
|-----------------|------------------------------|--------------------|------------------------|
| 5/2, 5/3 | G1/8" - G1/4" - G3/8" | 1200 Nl/min | Sub-base non "plug-in" |

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

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

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

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

Above models are shown with side ports.

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

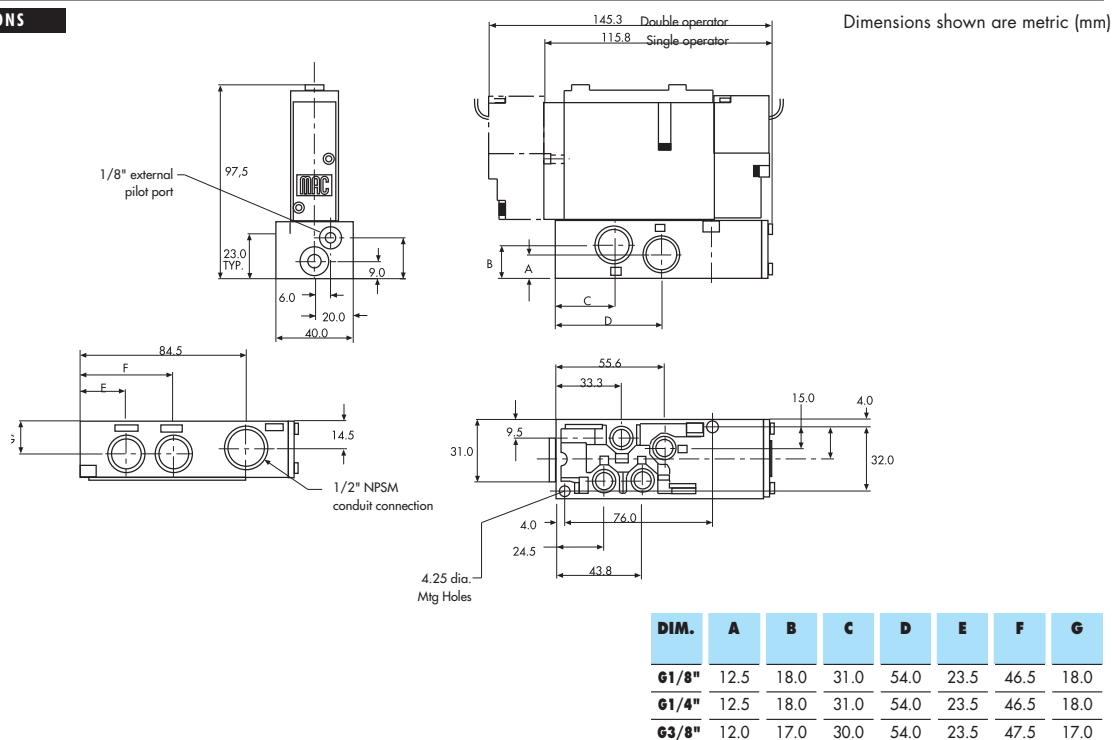
* Other options available, see page options.

TECHNICAL DATA

| | | | |
|----------------------------|---|--|--|
| Fluid : | Compressed air, vacuum, inert gases | | |
| Pressure range : | Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar | | |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) | | |
| Filtration : | 40 µ | | |
| Temperature range : | -18°C to +50°C | | |
| Orifice : | 6,2 mm | | |
| Flow (at 6 bar, ΔP=1bar) : | 1/8": 1000NI/min (Cv 1.0) – 1/4": 1100 NI/min (Cv 1.1) – 3/8": 1200 NI/min (Cv 1.2) | | |
| Coil : | Epoxy encapsulated – class A – 100%ED (specify mod 0449) | | |
| Voltage range : | -15% to +10% of nominal voltage | | |
| Protection : | IP65 (electrical connection) | | |
| Power : | ~Inrush 7,6 VA Holding : 4,8 VA = 1,8 to 12,7 W | | |
| Response times : | 24V~/5,4W Energize : 8 ms De-energize : 7 ms 120V~/60Hz Energize : 7-13 ms De-energize : 12-20 ms | | |

- Options : • NPTF thread. • Sandwich flow control: FC92B-CA
- Spare parts : • Pilot valve DM-Dxxx-xxx • Valve blanking plate: M-92002
• Pressure seal between valve and base : 16543. • Mounting screws valve to base (X2) : 35050.

DIMENSIONS



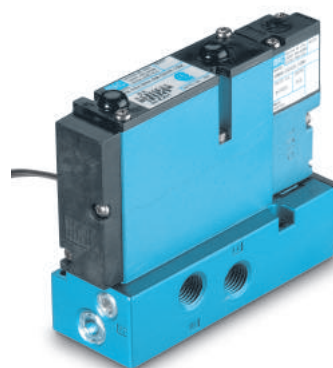
Function Port size Flow [Max] Individual mounting

5/2, 5/3 G1/8" - G1/4" - G3/8" 1200 NI/min

Sub-base
"plug-in"

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre | 5/3 Pressure centre |
|------------------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | | |
| Valve less base | | 92B-AAA-000-DM-DxxP-xxx | 92B-BAA-000-DM-DxxP-xxx | 92B-EAA-000-DM-DxxP-xxx | 92B-FAA-000-DM-DxxP-xxx | 92B-GAA-000-DM-DxxP-xxx |
| G1/8" | Internal | 92B-AAA-DAA-DM-DxxP-xxx | 92B-BAA-DAA-DM-DxxP-xxx | 92B-EAA-DAA-DM-DxxP-xxx | 92B-FAA-DAA-DM-DxxP-xxx | 92B-GAA-DAA-DM-DxxP-xxx |
| G1/4" | | 92B-AAA-EAA-DM-DxxP-xxx | 92B-BAA-EAA-DM-DxxP-xxx | 92B-EAA-EAA-DM-DxxP-xxx | 92B-FAA-EAA-DM-DxxP-xxx | 92B-GAA-EAA-DM-DxxP-xxx |
| G3/8" | | 92B-AAA-FAA-DM-DxxP-xxx | 92B-BAA-FAA-DM-DxxP-xxx | 92B-EAA-FAA-DM-DxxP-xxx | 92B-FAA-FAA-DM-DxxP-xxx | 92B-GAA-FAA-DM-DxxP-xxx |
| G1/8" | External | 92B-AAA-DAD-DM-DxxP-xxx | 92B-BAA-DAD-DM-DxxP-xxx | 92B-EAA-DAD-DM-DxxP-xxx | 92B-FAA-DAD-DM-DxxP-xxx | 92B-GAA-DAD-DM-DxxP-xxx |
| G1/4" | | 92B-AAA-EAD-DM-DxxP-xxx | 92B-BAA-EAD-DM-DxxP-xxx | 92B-EAA-EAD-DM-DxxP-xxx | 92B-FAA-EAD-DM-DxxP-xxx | 92B-GAA-EAD-DM-DxxP-xxx |
| G3/8" | | 92B-AAA-FAD-DM-DxxP-xxx | 92B-BAA-FAD-DM-DxxP-xxx | 92B-EAA-FAD-DM-DxxP-xxx | 92B-FAA-FAD-DM-DxxP-xxx | 92B-GAA-FAD-DM-DxxP-xxx |

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

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

SOLENOID OPERATOR ➤

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

Above models are shown with side ports.

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

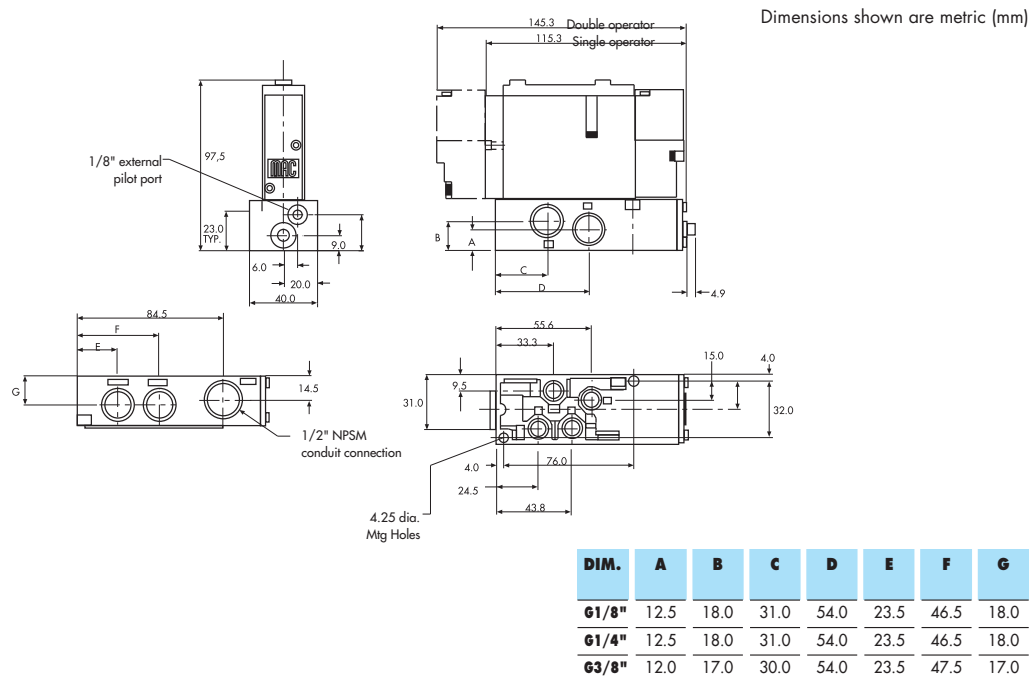
* Other options available, see page options.
Note: Ground required for 30 Volts or higher.

TECHNICAL DATA

| | | | |
|----------------------------|---|--|--|
| Fluid : | Compressed air, vacuum, inert gases | | |
| Pressure range : | Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar | | |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) | | |
| Filtration : | 40 µ | | |
| Temperature range : | -18°C to +50°C | | |
| Orifice : | 6,2 mm | | |
| Flow (at 6 bar, ΔP=1bar) : | 1/8": 1000NI/min (Cv 1.0) – 1/4": 1100 NI/min (Cv 1.1) – 3/8": 1200 NI/min (Cv 1.2) | | |
| Coil : | Epoxy encapsulated – class A – 100%ED (specify mod 0449) | | |
| Voltage range : | -15% to +10% of nominal voltage | | |
| Protection : | IP65 (electrical connection) | | |
| Power : | ~Inrush 7,6 VA Holding : 4,8 VA = 1,8 to 12,7 W | | |
| Response times : | 24V~/5,4W Energize : 8 ms De-energize : 7 ms 120V~/50Hz Energize : 7-13 ms De-energize : 12-20 ms | | |

- Options : • NPTF threads • Sandwich flow control: FC92B-AA (sgl. operator), FC92B-BA (dbl. operator)
- Spare parts : • Pilot valve DM-DxxP-xxx • Valve blanking plate: M-92002
• Pressure seal between valve and base : 16543. • Mounting screws valve to base (X2) : 35050.

DIMENSIONS



Function Port size Flow [Max] Manifold mounting

5/2, 5/3 G1/4" - G3/8" 1200 NI/min Manifold base non "plug-in"



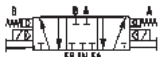


OPERATIONAL BENEFITS

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





HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre | 5/3 Pressure centre |
|------------------------|-----------|---|---|---|---|---|
| | |  |  |  |  |  |
| Valve less base | | 92B-ABA-000-DM-Dxxx-xxx | 92B-BBA-000-DM-Dxxx-xxx | 92B-EBA-000-DM-Dxxx-xxx | 92B-FBA-000-DM-Dxxx-xxx | 92B-GBA-000-DM-Dxxx-xxx |
| G1/4" | Internal | 92B-ABA-EJG-DM-Dxxx-xxx | 92B-BBA-EJG-DM-Dxxx-xxx | 92B-EBA-EJG-DM-Dxxx-xxx | 92B-FBA-EJG-DM-Dxxx-xxx | 92B-GBA-EJG-DM-Dxxx-xxx |
| G3/8" | | 92B-ABA-FJG-DM-Dxxx-xxx | 92B-BBA-FJG-DM-Dxxx-xxx | 92B-EBA-FJG-DM-Dxxx-xxx | 92B-FBA-FJG-DM-Dxxx-xxx | 92B-GBA-FJG-DM-Dxxx-xxx |

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

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

Above models are shown with side ports.

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

* Other options available, see page options.

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

M-92004-02-01P (External pilot)

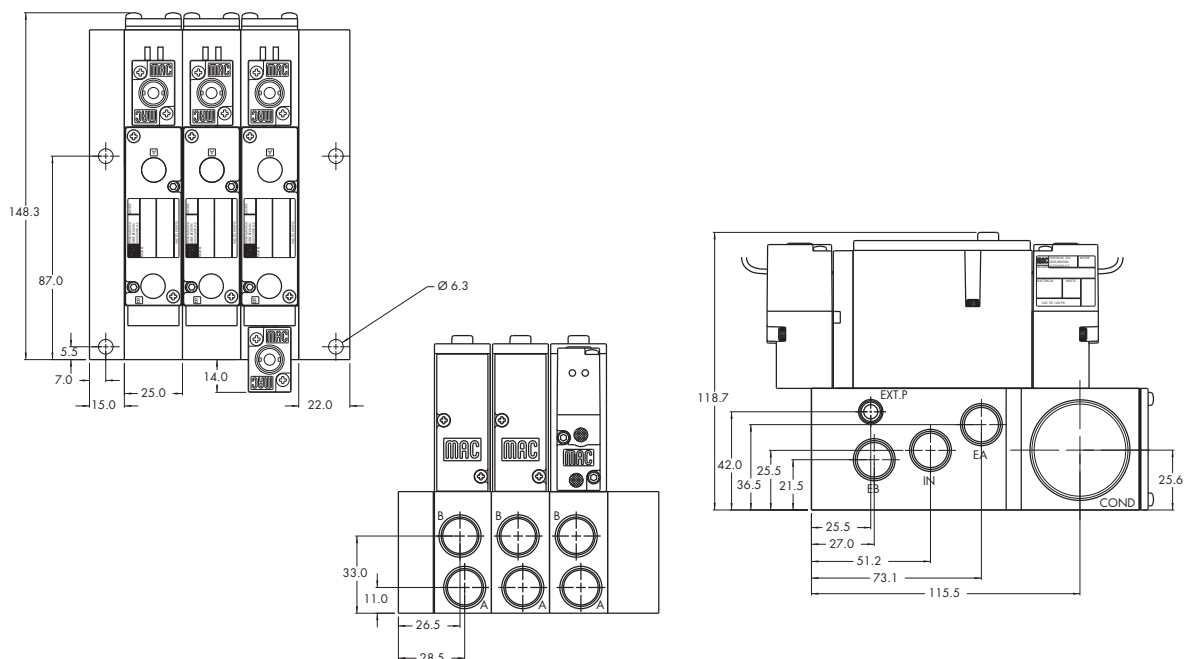
Inlet/exhaust Isolator disc: N-92018.

| TECHNICAL DATA | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 6,2 mm |
| Flow (at 6 bar, ΔP=1bar) : | 1/4": 1100 NI/min (Cv1.1) – 3/8": 1200 NI/min (Cv 1.2) |
| Coil : | Epoxy encapsulated – class A – 100%ED (specify mod 0449) |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~Inrush 7,6 VA Holding : 4,8 VA = 1,8 to 12,7 W |
| Response times : | 24V~/5,4W Energize : 8 ms De-energize : 7 ms 120V~/50Hz Energize : 7-13 ms De-energize : 12-20 ms |

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

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

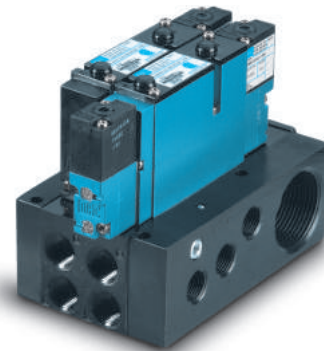
DIMENSIONS Dimensions shown are metric (mm)



| Function | Port size | Flow [Max] | Manifold mounting |
|-----------------|----------------------|--------------------|-------------------------|
| 5/2, 5/3 | G1/4" - G3/8" | 1200 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre | 5/3 Pressure centre |
|------------------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | | |
| Valve less base | | 92B-AAA-000-DM-DxxP-xxx | 92B-BAA-000-DM-DxxP-xxx | 92B-EAA-000-DM-DxxP-xxx | 92B-FAA-000-DM-DxxP-xxx | 92B-GAA-000-DM-DxxP-xxx |
| G1/4" | Internal | 92B-AAA-EJA-DM-DxxP-xxx | 92B-BAA-EJA-DM-DxxP-xxx | 92B-EAA-EJA-DM-DxxP-xxx | 92B-FAA-EJA-DM-DxxP-xxx | 92B-GAA-EJA-DM-DxxP-xxx |
| G3/8" | | 92B-AAA-FJA-DM-DxxP-xxx | 92B-BAA-FJA-DM-DxxP-xxx | 92B-EAA-FJA-DM-DxxP-xxx | 92B-FAA-FJA-DM-DxxP-xxx | 92B-GAA-FJA-DM-DxxP-xxx |

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

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

SOLENOID OPERATOR >

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

Above models are shown with side ports and no lights.

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

* Other options available, see page options.

Note: Ground required for 30 Volts or higher.

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

M-92004-02-01P (external pilot)

Inlet / exhaust isolator disc: N-92018.

TECHNICAL DATA

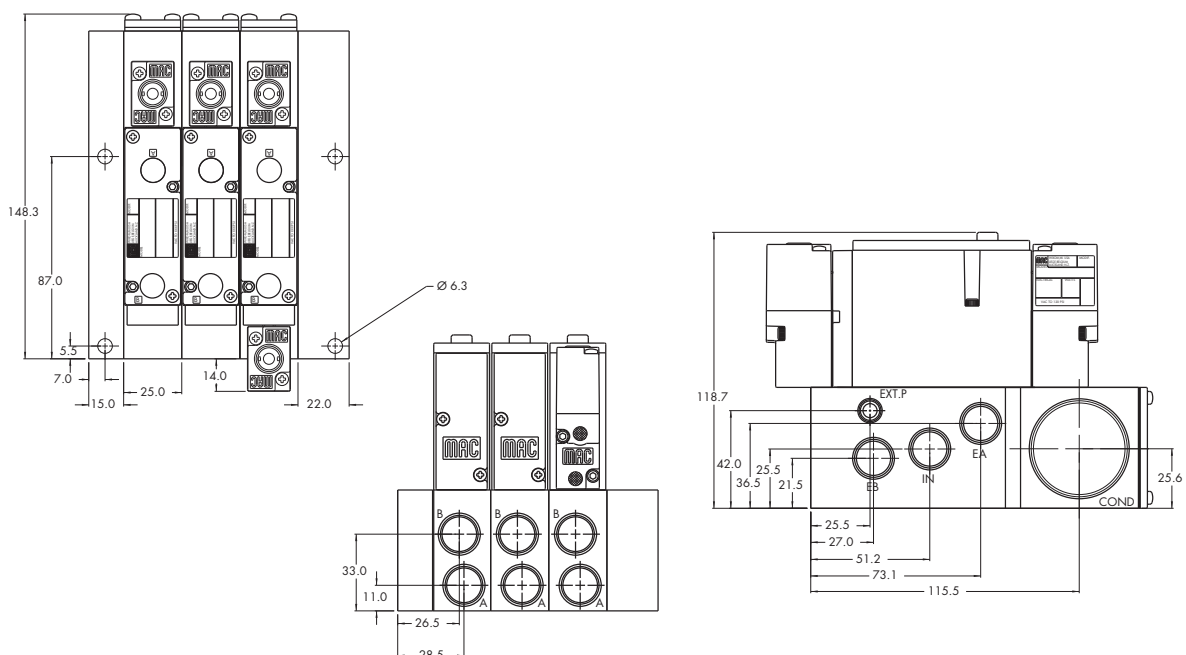
| | | | |
|----------------------------|---|--|--|
| Fluid : | Compressed air, vacuum, inert gases | | |
| Pressure range : | Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar | | |
| Pilot pressure: | 1,3 to 8 bar 3 positions 2,3 to 8 bar | | |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) | | |
| Filtration : | 40 µ | | |
| Temperature range : | -18°C to +50°C | | |
| Orifice : | 6,2 mm | | |
| Flow (at 6 bar, ΔP=1bar) : | 1/4": 1100 NI/min (Cv1.1) – 3/8": 1200 NI/min (Cv 1.2) | | |
| Coil : | Epoxy encapsulated – class A – 100%ED (specify mod 0449) | | |
| Voltage range : | -15% to +10% of nominal voltage | | |
| Protection : | IP65 (electrical connection) | | |
| Power : | ~Inrush 7,6 VA Holding : 4,8 VA = 1,8 to 12,7 W | | |
| Response times : | 24V~/5,4W Energize : 8 ms De-energize : 7 ms 120V~/50Hz Energize : 7-13 ms De-energize : 12-20 ms | | |

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

Spare parts : • Pilot valve: DM-DxxP-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base: 16543
• Mounting screws valve to base (x2): 35050

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

OPTIONS FOR NON PLUG-IN VALVES

Valve function

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

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

Pilot exhaust

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

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

Port configuration :

Individual sub-base

92B-XXX-**AX**X-XX-D**XXX-XXX**

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

Manifold sub-base

92B-XXX-**XJ**X-XX-D**XXX-XXX**

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

Pilot style :

92B-XXX-XXX-**DM**-D**XXX-XXX**

- DM** pilot exhaust muffled
- DP** pilot exhaust piped (#10-32)
- DU** pilot exhaust to main exhaust

Base only :

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

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

* Requires sandwich regulator.

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



Direct solenoid and solenoid pilot operated valves

OPTIONS FOR PLUG-IN VALVES

Valve function

92B-**H**XX-XXX-XX-D**XX**P-XXX

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

Pilot exhaust

92B-X**A**X-XXX-XX-D**XX**P-XXX

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

Body electrical

92B-XX**A**-XXX-XX-D**XX**P-XXX

- A** no light
- B** light(s)
- F** suppression and blocking diode with light(s)
- H** M.O.V. with light(s)

Port configuration :

Individual sub-base

92B-XXX-X**A**X-XX-D**XX**P-XXX

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

Manifold sub-base

92B-XXX-X**J**X-XX-D**XX**P-XXX

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

Base/manifold int./ext. pilot

92B-XXX-XX**A**-XX-D**XX**P-XXX

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

Pilot style :

92B-XXX-XXX-**DM**-D**XX**P-XXX

- DM** pilot exhaust muffled
- DP** pilot exhaust piped (#10-32)
- DU** pilot exhaust to main exhaust

Lead Wire Lengths : (manifold sub-base only)

92B-XXX-XXX-DM-D**XX**P-XXX

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

Base only :

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

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

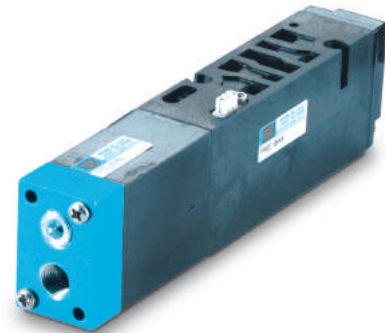
* Requires sandwich regulator.

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

Sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR92C-EAAA | PR92C-EBAA | PR92C-ECAA | PR92C-EDAA | PR92C-EEAA |
| Gauge with face perpendicular to manual operator | PR92C-EABA | PR92C-EBBA | PR92C-ECBA | PR92C-EDBA | PR92C-EEBA |
| Gauge with face parallel to manual operator | PR92C-EACA | PR92C-EBCA | PR92C-ECCA | PR92C-EDCA | PR92C-EECA |

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR92C-GAAA | PR92C-GBAA | PR92C-GCAA | PR92C-GDAA | PR92C-GEAA |
| Gauge with face perpendicular to manual operator | PR92C-GABA | PR92C-GBBA | PR92C-GCBA | PR92C-GDBA | PR92C-GEBA |
| Gauge with face parallel to manual operator | PR92C-GACA | PR92C-GBCA | PR92C-GCCA | PR92C-GDCA | PR92C-GECA |

* For use with dual pressure valves.

PLUG-IN OPTIONS

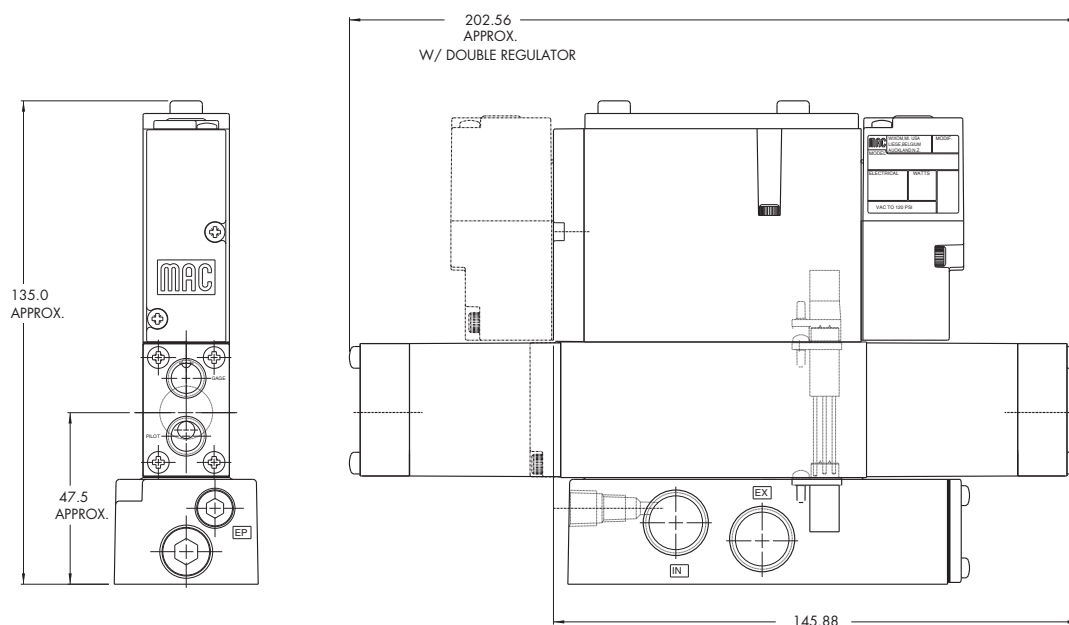
PR92C-Exxx

— F for double solenoid valve

| TECHNICAL DATA | |
|-------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 800 NL/min (Cv 0.8) |

- Spare parts :
- R-92003 : regulator end plate kit • Gauge kit 0 - 10,7 bar: N-92006-01
 - R-92003-01: regulator by-pass end plate kit
 - Pressure regulator (less sandwich block) : PR92C-H0AA

DIMENSIONS Dimensions shown are metric (mm)



Sandwich selector pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

| Gauge | Select to A port Regulator A end By-pass plate B end | Select to B port Regulator B end By-pass plate A end | Select to A port Reg. both ends A end low press. B end high press. | Select to B port Reg. both ends A end high press. B end low press. |
|--|--|--|--|--|
| No Gauge | PR92C-JPAA | PR92C-JRAA | PR92C-JSAA | PR92C-JTAA |
| Gauge with face perpendicular to manual operator | PR92C-JPBA | PR92C-JRBA | PR92C-JSBA | PR92C-JTBA |
| Gauge with face parallel to manual operator | PR92C-JPCA | PR92C-JRCA | PR92C-JSCA | PR92C-JTCA |

Note: above models are coded for use with single solenoid valves

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

| Gauge | Select to A port Regulator A end By-pass plate B end | Select to B port Regulator B end By-pass plate A end | Select to A port Reg. both ends A end low press. B end high press. | Select to B port Reg. both ends A end high press. B end low press. |
|--|--|--|--|--|
| No Gauge | PR92C-LPAA | PR92C-LRAA | PR92C-LSAA | PR92C-LTAA |
| Gauge with face perpendicular to manual operator | PR92C-LPBA | PR92C-LRBA | PR92C-LSBA | PR92C-LTBA |
| Gauge with face parallel to manual operator | PR92C-LPCA | PR92C-LRCA | PR92C-LSCA | PR92C-LTCA |

Notes: - Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page
- Use single pressure valve for all above models.

OPTIONS

Regulator less sandwich block

| | |
|--------------------|---------------------------|
| PR92C- XOXX | |
| M | Knob |
| D | Slotted stem |
| S | Slotted stem with locknut |

Other adjustment

| | |
|--------------------|--|
| PR92C- XXXX | |
| A | Slotted stem, single solenoid |
| B | Slotted stem, double solenoid |
| C | Slotted stem, non plug-in |
| K | Knob, double solenoid |
| N | Slotted stem w/ locknut, single solenoid |
| P | Slotted stem w/ locknut, double solenoid |
| R | Slotted stem w/ locknut, non plug-in |

TECHNICAL DATA

| | |
|------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar): | 800 NL/min (Cv 0.8) |

Spare parts :

- R-92003 : end plate kit • R-92003-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

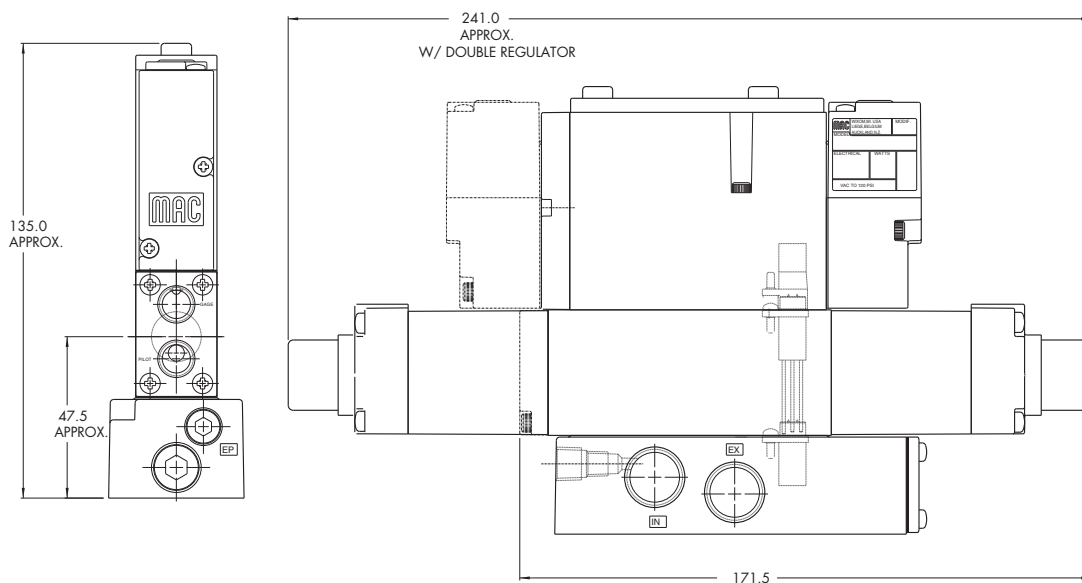
Options:

- Pressure range: PR92C-xxxA (A 0 to 8 bar)

- B 0 to 5,3 bar
- C 0 to 2 bar
- D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
- E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
- F 0 to 8 bar "A" end, 0 to 2 bar "B" end
- G 0 to 8 bar "B" end, 0 to 2 bar "A" end
- H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
- J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

DIMENSIONS

Dimensions shown are metric (mm)



Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| No Gauge | PR92C-JAAA | PR92C-JBAA | PR92C-JCAA | PR92C-JDAA | PR92C-JEAA |
| Gauge with face perpendicular to manual operator | PR92C-JABA | PR92C-JBBA | PR92C-JCBA | PR92C-JDBA | PR92C-JEBA |
| Gauge with face parallel to manual operator | PR92C-JACA | PR92C-JBCA | PR92C-JCCA | PR92C-JDCA | PR92C-JECA |

Note: above models are coded for use with single solenoid valves

REGULATORS FOR "NON PLUG-IN" VALVES

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR92C-LAAA | PR92C-LBAA | PR92C-LCAA | PR92C-LDAA | PR92C-LEAA |
| Gauge with face perpendicular to manual operator | PR92C-LABA | PR92C-LBBA | PR92C-LCBA | PR92C-LDBA | PR92C-LEBA |
| Gauge with face parallel to manual operator | PR92C-LACA | PR92C-LBCA | PR92C-LCCA | PR92C-LDCA | PR92C-LECA |

* For use with dual pressure valves.

Note: Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page.

OPTIONS

Regulator less sandwich block

PR92C-x0xx

- M** Knob
- D** Slotted stem
- S** Slotted stem with locknut

Other adjustment

PR92C-xxxx

- A** Slotted stem, single solenoid
- B** Slotted stem, double solenoid
- C** Slotted stem, non plug-in
- K** Knob, double solenoid
- N** Slotted stem w/ locknut, single solenoid
- P** Slotted stem w/ locknut, double solenoid
- R** Slotted stem w/ locknut, non plug-in

| TECHNICAL DATA | |
|------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar): | 800 NL/min (Cv 0.8) |

Spare parts :

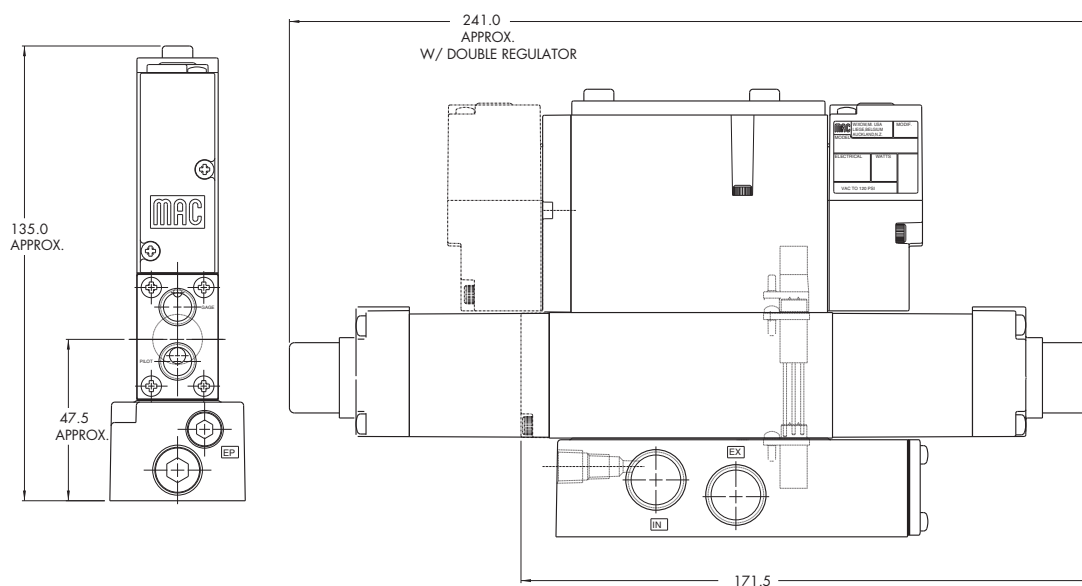
- R-92003 : end plate kit • R-92003-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

Options :

- Pressure range: PR92C-xxxA (A 0 to 8 bar)

- B 0 to 5,3 bar
- C 0 to 2 bar
- D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
- E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
- F 0 to 8 bar "A" end, 0 to 2 bar "B" end
- G 0 to 8 bar "B" end, 0 to 2 bar "A" end
- H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
- J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

DIMENSIONS Dimensions shown are metric (mm)



Codification table for voltages / Manual operator / Electrical connection

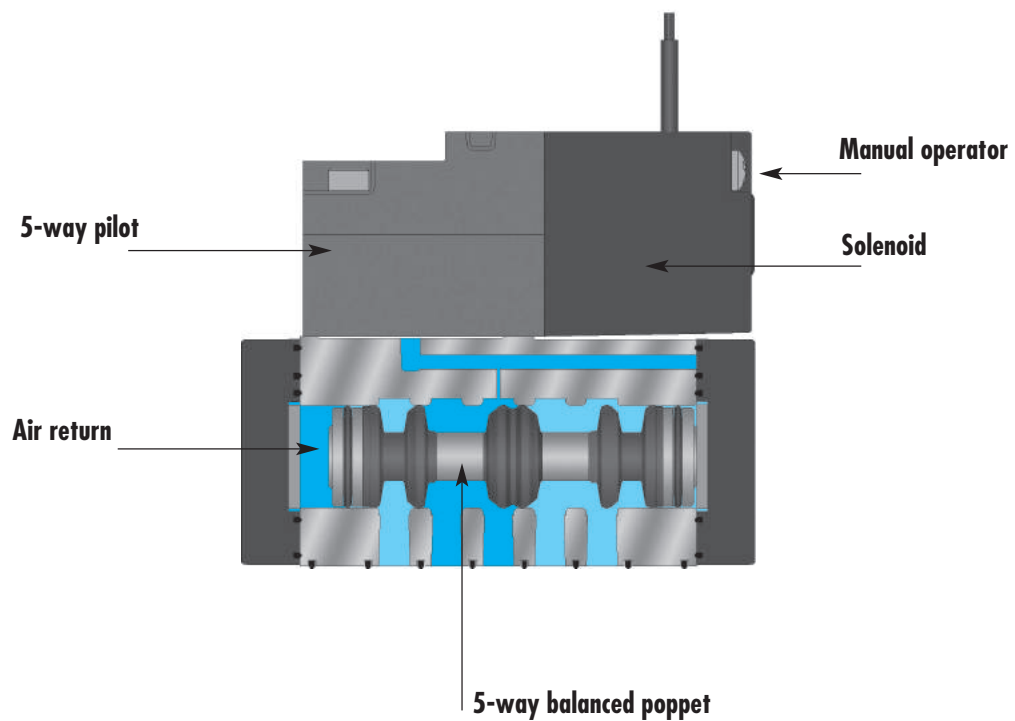
VALVE CODE ► **-DM- D XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|---|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| | | KF | Square connector with light and protection varistor |
| | | KG | Square connector with light & diode |
| | | KJ | Square connector (male only) |
| | | KK | Square connector with protection diode (male only) |
| | | KL | Square connector with protection varistor (male only) |
| | | TA | Dual tabs with receptacles |
| | | TB | TA with protection diode |
| | | TD | TA with light |
| | | TE | TA with light and protection diode |
| | | TJ | Dual tabs (male only) |
| | | TK | TJ with protection diode |
| | | TM | TJ with light |
| | | TN | TJ with light and protection diode |
| | | * From Lead wire length options choose A through F | |
| | | ** From Lead wire length options choose 0 through F | |
| | | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |
| 2. WIRE LENGTH | | | |
| D-XX X-X XX | WIRE LENGTH | | |
| 0 | No wires | | |
| A | 45 cm – 18" | | |
| B | 60 cm – 24" | | |
| C | 90 cm – 36" | | |
| D | 120 cm – 48" | | |
| E | 180 cm – 72" | | |
| F | 240 cm – 96" | | |
| 3. MANUAL OPERATOR | | | |
| D-XX X-X XX | MANUAL OPERATOR | | |
| 0 | No operator | | |
| 1 | Non-locking recessed | | |
| 2 | Locking recessed | | |
| 3 | Non-locking extended | | |
| 4 | Locking extended | | |

Direct solenoid and solenoid pilot operated valves

Individual Mounting

| | |
|---------------------------|---------------------------|
| Inline Single operator | Inline Double operator |
|---------------------------|---------------------------|



SERIES FEATURES

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

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Port size | Pilot air | Single pressure | Dual pressure |
|--------------|-----------------|---------------------|-----------------------|
| | | | |
| G1/4" | Internal | 83A-AAC-XX-XXXX-XXX | * 83A-CBC-XX-XXXX-XXX |
| | External 14 End | 83A-ADC-XX-XXXX-XXX | 83A-CDC-XX-XXXX-XXX |
| | External 12 End | 83A-AEC-XX-XXXX-XXX | 83A-CEC-XX-XXXX-XXX |
| G3/8" | Internal | 83A-AAD-XX-XXXX-XXX | * 83A-CBD-XX-XXXX-XXX |
| | External 14 End | 83A-ADD-XX-XXXX-XXX | 83A-CDD-XX-XXXX-XXX |
| | External 12 End | 83A-AED-XX-XXXX-XXX | 83A-CED-XX-XXXX-XXX |

* Pilot supply from port #5

SOLENOID OPERATOR ➤

DM-D XXX-XXX**

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

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

** Other options available, see page options.

GM-G XXX-XXX*

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

* Other options available, see page options.

RM-R XXX-XXX*

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

* Other options available, see page options.

OPTIONS

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

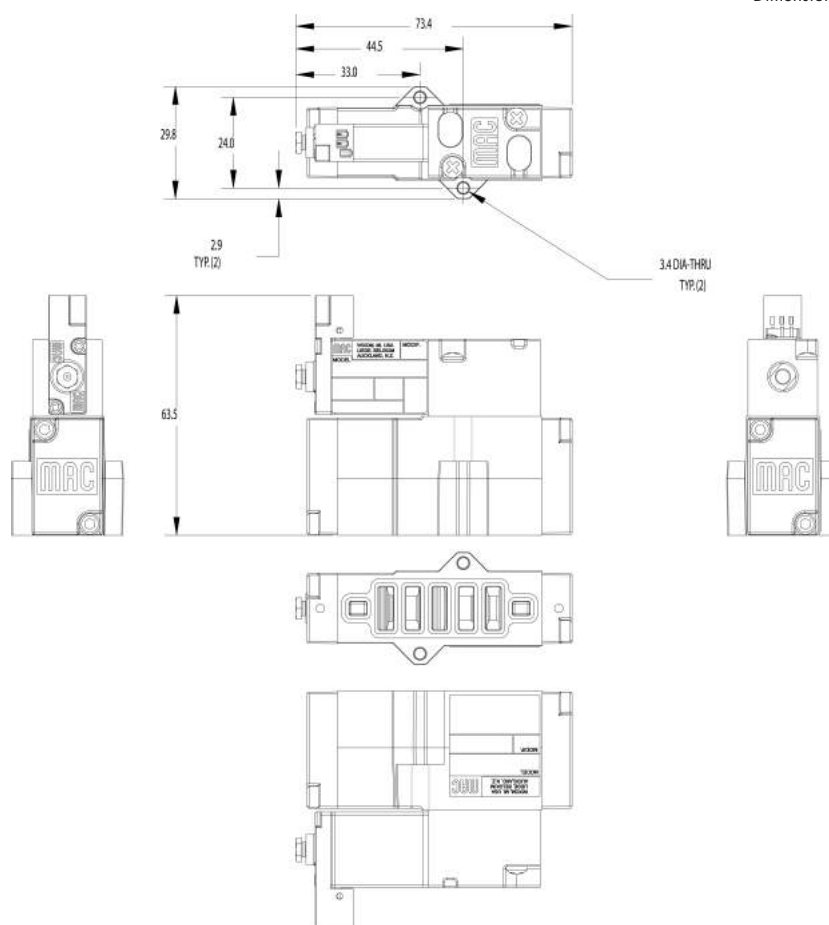
- M** Single operator – single pressure with memory spring
- N** Single operator – dual pressure with memory spring

TECHNICAL DATA

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

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function Port size Flow [Max] Individual mounting

5/2, 5/3 G1/4" - G3/8" 1500 NI/min




Individual base
Non plug-in
Double operator

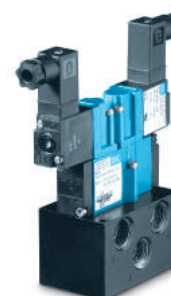
OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Double operator | 5/3 Closed center | 5/3 open center |
|-----------|-----------------|--|--|--|
| | |  |  |  |
| G1/4" | Internal | 83A-BAC-xx-xxxx-xxx | 83A-EAC-xx-xxxx-xxx | 83A-FAC-xx-xxxx-xxx |
| | External 14 End | 83A-BDC-xx-xxxx-xxx | 83A-EDC-xx-xxxx-xxx | 83A-FDC-xx-xxxx-xxx |
| | External 12 End | 83A-BEC-xx-xxxx-xxx | 83A-EEC-xx-xxxx-xxx | 83A-FEC-xx-xxxx-xxx |
| G3/8" | Internal | 83A-BAD-xx-xxxx-xxx | 83A-EAD-xx-xxxx-xxx | 83A-FAD-xx-xxxx-xxx |
| | External 14 End | 83A-BDD-xx-xxxx-xxx | 83A-EDD-xx-xxxx-xxx | 83A-FDD-xx-xxxx-xxx |
| | External 12 End | 83A-BED-xx-xxxx-xxx | 83A-EED-xx-xxxx-xxx | 83A-FED-xx-xxxx-xxx |



SINGLE PRESSURE MODELS

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

SOLENOID OPERATOR >

TM-D XXX-XXX**

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

** Other options available, see page options.

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

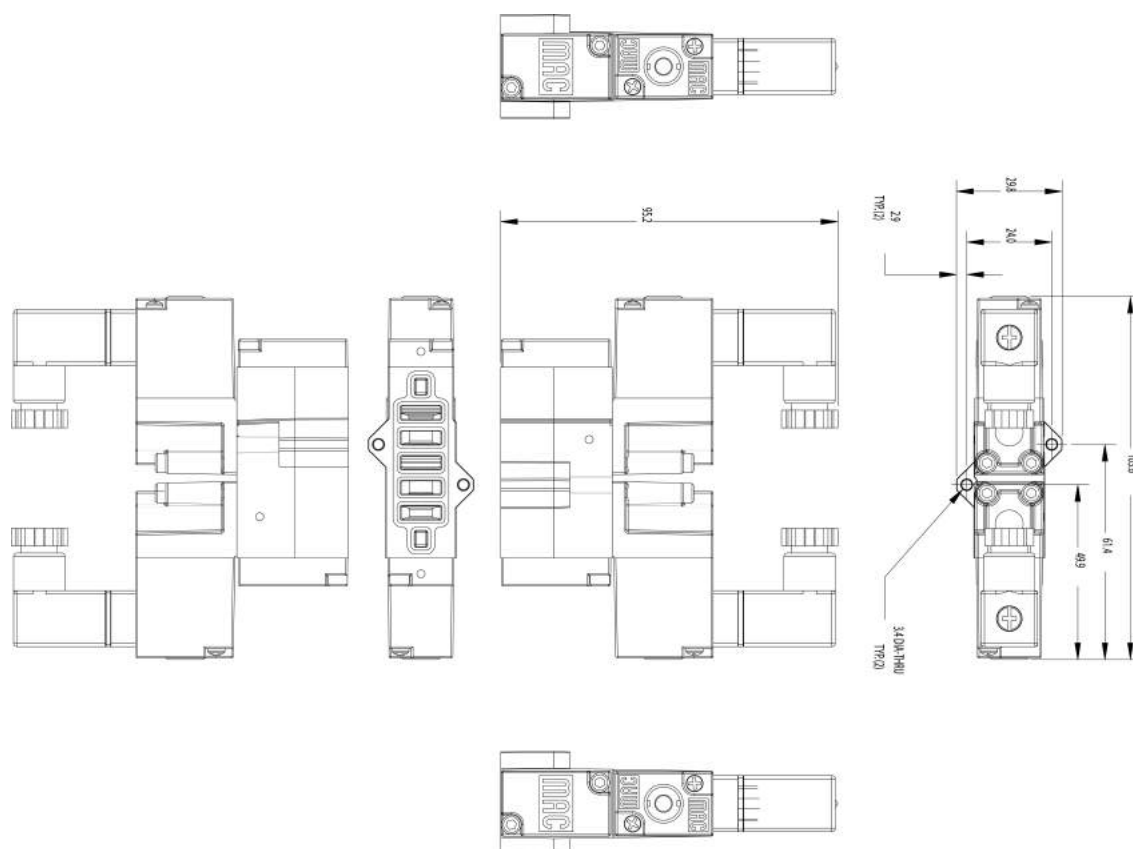
RM-R XXX-XXX*

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

* Other options available, see page options.

| TECHNICAL DATA | |
|---------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot : 1,3 to 8 bar (2 pos.) - 2 to 8 bar (3 pos.) External pilot : Vacuum to 8 bar |
| Pilot signal: | 1,3 to 8 bar 2 to 8 bar (3 positions) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow : | 2-position: 1500 NL/min (Cv 1.5) - 3-position: 1100 NL/min (Cv 1.1) |
| Coil : | Epoxy encapsulated - Class A wires - 100% ED |
| Voltage range : | -15% à +10% |
| Power : | 5.4 W - 1.8 W |
| Option : | • NPTF thread |

DIMENSIONS Dimensions shown are metric (mm)





R e m o t e a i r v a l v e s

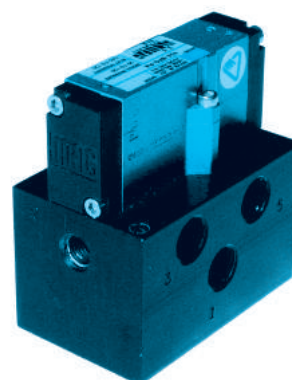
Function Port size Flow [Max] Individual mounting

5/2 - 5/3 G1/4" - G3/8" 3100 NI/min

Inline



OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure, also provides high flow.
2. Bonded spool with minimum friction, shifting in a glass-like finished bore.
3. Wiping effect eliminates sticking.
4. Long service life.
5. Short stroke with high flow.








HOW TO ORDER

SINGLE OPERATOR

| Port size | Port size | 5/2 Single operator | 5/2 Dual pressure |
|---------------|-----------------|---|---|
| | |  |  |
| G 1/4" | Internal | 83A-AAC-DM-RA14 | 83A-CBC-DM-RA14 |
| | External 14 end | 83A-ADC-DM-RA14 | 83A-CDC-DM-RA14 |
| | External 12 end | 83A-AEC-DM-RA14 | 83A-CEC-DM-RA14 |
| G 3/8" | Internal | 83A-AAD-DM-RA14 | 83A-CBD-DM-RA14 |
| | External 14 end | 83A-ADD-DM-RA14 | 83A-CDD-DM-RA14 |
| | External 12 end | 83A-AED-DM-RA14 | 83A-CED-DM-RA14 |

DOUBLE OPERATOR

| Port size | 5/2 Single pressure | 5/2 Dual pressure | 5/3 Closed centre | 5/3 Open centre | 5/3 Dual pressure Pressure centre |
|---------------|---|---|---|---|---|
| |  |  |  |  |  |
| G 1/4" | 83A-BFC-RA | 83A-DFC-RA | 83A-EFC-RA | 83A-FFC-RA | 83A-GFC-RA |
| G 3/8" | 83A-BFD-RA | 83A-DFD-RA | 83A-EFD-RA | 83A-FFD-RA | 83A-GFD-RA |

Note: Above models are for side cylinder ports

OPTIONS

Single operator

83A-**x**xx-DM-RA14

Replace by **M** for single pressure with memory spring
Replace by **N** for dual pressure with memory spring

Double operator

83A-**xx****x**-RA

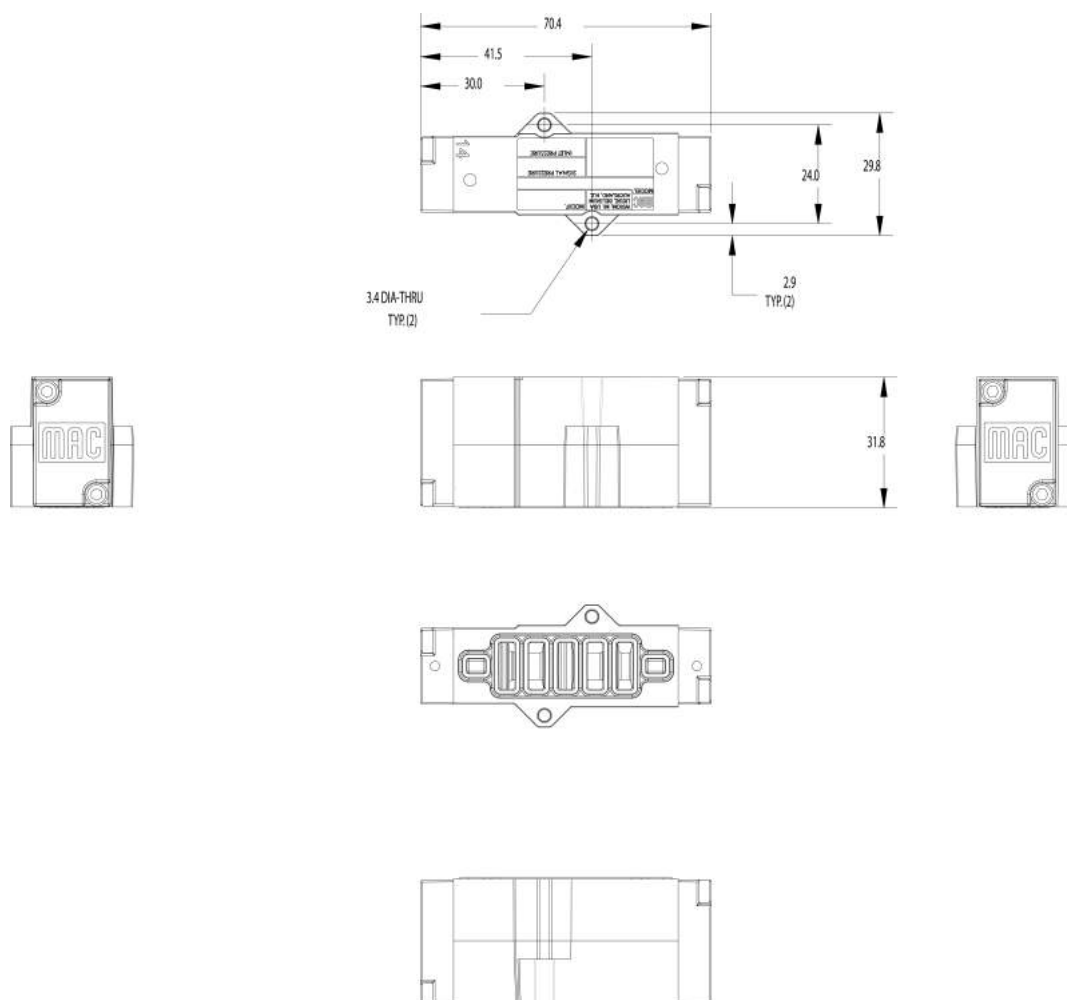
Replace by **H** for bottom cylinder ports (1/4" BSPP)

83A-**xx****x**-DM-RA14

Replace by **H** for bottom cylinder ports (1/4" BSPP)

| TECHNICAL DATA | |
|-----------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Sgl. operator : vacuum to 8 bar (external pilot) 1,3 to 8 bar (internal pilot) 2,3 to 8 bar (internal pilot with memory spring) Dbl. operator : 1,3 to 8 bar |
| Air signal pressure : | Sgl. operator: 2,3 to 4 bar – Dbl. operator: 1,3 to 8 bar (must be \geq main valve pressure) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 μ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 8,5 mm |
| Flow : | 1500 NI/min (2 pos.) – 1100 NI/min (3 pos.) |
| Option : | • NPTF threads |

DIMENSIONS Dimensions shown are metric (mm)



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤ -DM- D XX X-X XX
 1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|--|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| 2. WIRE LENGTH | | KF | Square connector with light and protection varistor |
| D-XX X-X XX | WIRE LENGTH | KG | Square connector with light & diode |
| O | No wires | KJ | Square connector (male only) |
| A | 45 cm – 18" | KK | Square connector with protection diode (male only) |
| B | 60 cm – 24" | KL | Square connector with protection varistor (male only) |
| C | 90 cm – 36" | TA | Dual tabs with receptacles |
| D | 120 cm – 48" | TB | TA with protection diode |
| E | 180 cm – 72" | TD | TA with light |
| F | 240 cm – 96" | TE | TA with light and protection diode |
| 3. MANUAL OPERATOR | | TJ | Dual tabs (male only) |
| D-XX X-X XX | MANUAL OPERATOR | TK | TJ with protection diode |
| O | No operator | TM | TJ with light |
| 1 | Non-locking recessed | TN | TJ with light and protection diode |
| 2 | Locking recessed | * From Lead wire length options choose A through F | |
| 3 | Non-locking extended | ** From Lead wire length options choose 0 through F | |
| 4 | Locking extended | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ► **-GM- G XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|--|---------------------------------------|---|
| G-XX X-X XX | VOLTAGE | G-XX X-X XX | ELECTRICAL CONNECTION |
| DC | 24 V=/1,8 W | BA | Flying leads |
| DD | 24 V=/2,5 W | BB | BA with ground wire |
| DE | 24 V=/3,0 W | BC | BA with light parallel to leads |
| DF | 24 V=/4,0 W | BD | BA with light parallel to leads & ground wire |
| DJ | 12 V=/1,8 W | BE | BA with suppression diode |
| DK | 12 V=/2,5 W | BF | BA with suppression diode & ground wire |
| DM | 12 V=/3,0 W | BG | BA with suppression diode plus light parallel to leads |
| DN | 12 V=/4,0 W | BH | BA with suppression diode plus light parallel to leads & ground wire |
| 2. WIRE LENGTH | | *BN | BA with suppression diode plus blocking diode |
| G-XX X-X XX | WIRE LENGTH | *BP | BA with suppression diode plus blocking diode & ground wire |
| 0 | No lead wire (use only with "KJ" & "KM" electrical connectors) | *BR | BA with suppression diode plus blocking diode & light parallel to leads |
| A | 45 cm = 18" | *BS | BA with suppression diode plus blocking diode & light parallel to leads & ground wire |
| B | 60 cm = 24" | BT | BA with light on top |
| C | 90 cm = 36" | BU | BA with light on top & ground wire |
| D | 120 cm = 48" | BV | BA with suppression diode plus light on top |
| E | 180 cm = 72" | BW | BA with suppression diode plus light on top & ground wire |
| F | 240 cm = 96" | *BX | BA with suppression diode plus blocking diode & light on top |
| G | 305 cm = 120" | *BY | BA with suppression diode plus blocking diode & light on top & ground wire |
| H | 366 cm = 144" | | |
| 3. MANUAL OPERATOR | | SOLENOID PLUG-IN CONNECTOR WITH LEADS | |
| G-XX X-X XX | MANUAL OPERATOR | G-XX X-X XX | SOLENOID PLUG-IN CONNECTOR WITH LEADS |
| 1 | Non-locking recessed | GA | MAC JAC Solenoid plug-in |
| 2 | Locking recessed | GB | MAC JAC Solenoid plug-in with diode |
| 3 | Non-locking extended | GC | MAC JAC Solenoid plug-in with MOV |
| 4 | Locking extended | GD | MAC JAC Solenoid plug-in with LED |
| | | GE | MAC JAC Solenoid plug-in with diode and LED |
| | | GF | MAC JAC Solenoid plug-in with MOV and LED |
| | | GG | MAC JAC Solenoid plug-in with rectifier |
| | | GH | MAC JAC Solenoid plug-in with rectifier and LED |
| | | KA | Plug-in wire assembly |
| | | KB | KA with ground wire |
| | | KE | KA with suppression diode |
| | | KF | KA with suppression diode & ground wire |
| | | KJ | Plug-in housing without wire assembly ('KA' without wire assembly) |
| | | KM | Plug-in housing without wire assembly ('KB' without wire assembly) |
| | | *KN | KA with suppression diode plus blocking diode |
| | | *KP | KA with suppression diode plus blocking diode & ground wire |
| | | KT | KA with light on top |
| | | KU | KA with light on top & ground wire |
| | | KV | KA with suppression diode plus light on top |
| | | KW | KA with suppression diode plus light & ground wire |
| | | *KX | KA with suppression diode plus blocking diode & light on top |
| | | *KY | KA with suppression diode plus blocking diode & light on top & ground wire |

Note: Blocking diode is located in the lead wire



0 p t i o n s

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ► **RM-R XX X - X XX**
 1 2 3 4

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|----------------|---------------|--------------------------|--|
| R XX X - XXX | VOLTAGE | R XX X - XXX | MANUAL OPERATOR |
| DB | 24 VDC (1.0W) | 0 | No operator |
| DC | 24 VDC (1.8W) | 1 | Non-locking recessed |
| DD | 24 VDC (2.5W) | 3 | Non-locking extended |
| DE | 24 VDC (3.0W) | | |
| DF | 24 VDC (4.0W) | | |
| DH | 12 VDC (1.0W) | | |
| DJ | 12 VDC (1.8W) | | |
| DK | 12 VDC (2.5W) | | |
| DL | 12 VDC (3.0W) | | |
| DM | 12 VDC (4.0W) | | |
| 2. WIRE LENGHT | | 4. ELECTRICAL CONNECTION | |
| R XX X - XXX | WIRE LENGHT | R XX X - XXX | ELECTRICAL CONNECTION |
| 0 | No lead wire | BA | Flying leads |
| A | 45 cm - 18" | BB | Flying leads with LED |
| B | 60 cm - 24" | BC | Flying leads with MOV |
| C | 90 cm - 36" | BD | Flying leads with LED and MOV |
| D | 120 cm - 48" | RA | Mini JAC solenoid plug-in |
| E | 180 cm - 72" | RB | Mini JAC solenoid plug-in with LED |
| F | 240 cm - 96" | RC | Mini JAC solenoid plug-in with MOV |
| G | 300 cm - 120" | RD | Mini JAC solenoid plug-in with LED and MOV |
| H | 365 cm - 144" | TA | JST solenoid plug-in |
| | | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ► **TM-D XX X - X XX**
(Double Operator) **1 2 3 4**

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|----------------|---|--------------------------|---|
| D XX X - XXX | VOLTAGE | D XX X - XXX | MANUAL OPERATOR |
| AA | 120 V~/60 Hz, 110V~/50Hz | 0 | No operator |
| AB | 240 V~/60 Hz, 220V~/50Hz | 1 | Non-locking recessed |
| AC | 24 V~/60 Hz, 24V~/50Hz | 2 | Locking recessed |
| AD | 24 V~/60 Hz | 3 | Non-locking extended |
| AE | 200 V~/60 Hz | 4 | Locking extended |
| AF | 240 V~/50 Hz | | |
| AG | 100 V~/50 Hz, 100V~/60Hz, 110 V~/ 60 Hz | 4. ELECTRICAL CONNECTION | |
| DA | 24V=/5.4W | D XX X - XXX | ELECTRICAL CONNECTION |
| DB | 12V=/5.4W | BA | Flying leads |
| DC | 12V=/7.5W | BK | BA with protection diode |
| DD | 24V=/7.3W | BL | BA with protection variator (MOV) |
| DE | 12V=/12.7W CLSF only | JB | Rectangular connector |
| DF | 24V=/12.7W CLSF only | JD | Rectangular connector with light |
| DK | 110V=/4.7W | JM | Rectangular connector, male only |
| DL | 64V=/6W | KA | Square connector |
| DM | 36V=/5.3W | KB | Square connector with protection diode |
| DN | 6V=/6W | KC | Square connector with protection variator (MOV) |
| DP | 18V=/5.8W | KD | Square connector with light |
| DU | 24V=/6W | KE | Square connector with light and protection diode |
| EA | 12V=/6W | KF | Square connector with light and protection variator (MOV) |
| FA | 12V=/1.8W | KG | Square connector with light and diode |
| FB | 24V=/1.8W | KJ | Square connector, male only |
| FE | 12V=/2.4W | KK | Square connector with protection diode (male only) |
| FF | 24V=/2.4W | KL | Square connector with protection variator (male only) (MOV) |
| 2. WIRE LENGHT | | TA | Dual tabs |
| D XX X - XXX | WIRE LENGHT | TB | TA with protection diode |
| A | 45 cm - 18" | TD | TA with light |
| B | 60 cm - 24" | TE | TA with light and protection diode |
| C | 90 cm - 36" | TJ | Dual tabs (male only) |
| D | 120 cm - 48" | TK | TJ with protection diode |
| E | 180 cm - 72" | TM | TJ with light |
| F | 240 cm - 96" | TN | TJ with light and protection diode |
| J | For external plug-in connectors ("J", "K", and "T" type electrical connection) | | |

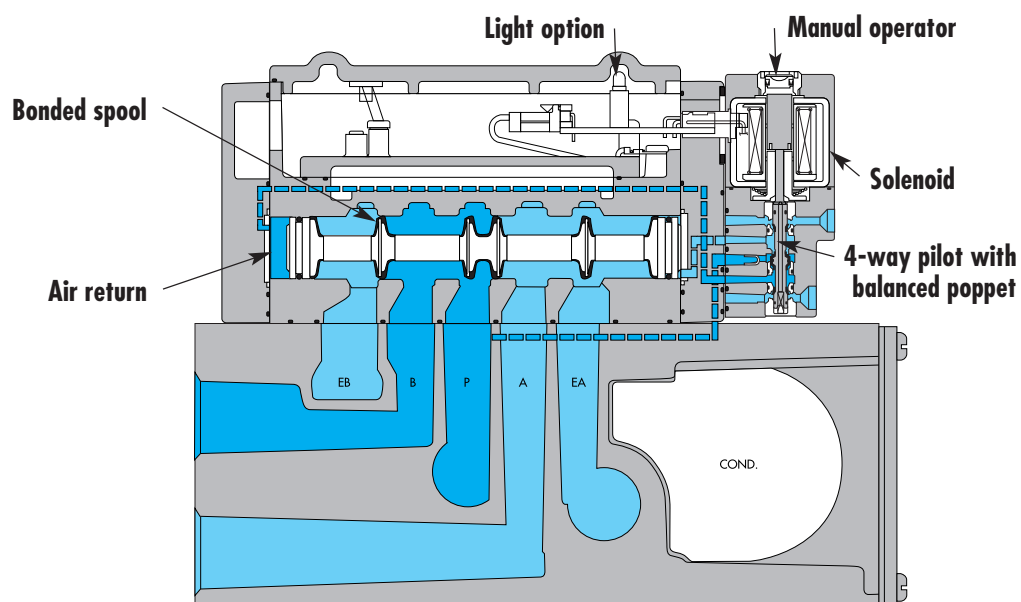
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

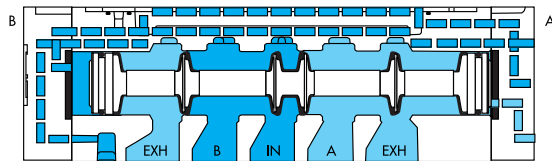
| | |
|-----------------------------|-------------------------|
| Manifold base non "plug-in" | Manifold base "plug-in" |
|-----------------------------|-------------------------|



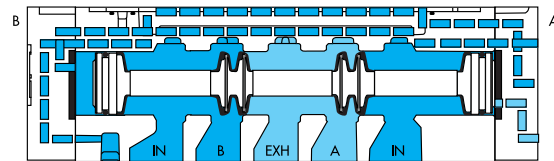
SERIES FEATURES

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

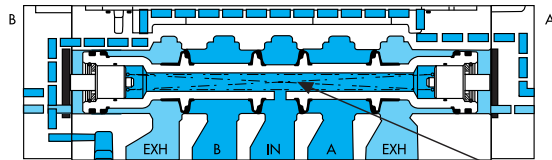
SPOOL CONFIGURATIONS



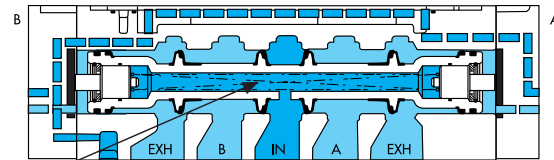
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

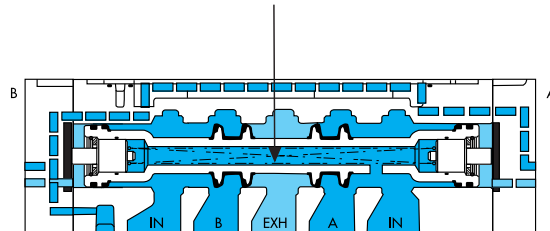


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

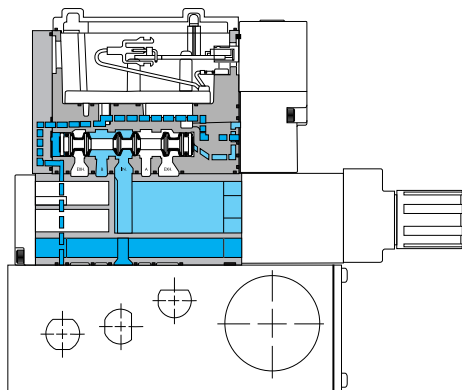


3 POSITION DUAL PRESSURE, PRESSURE CENTER

REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

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

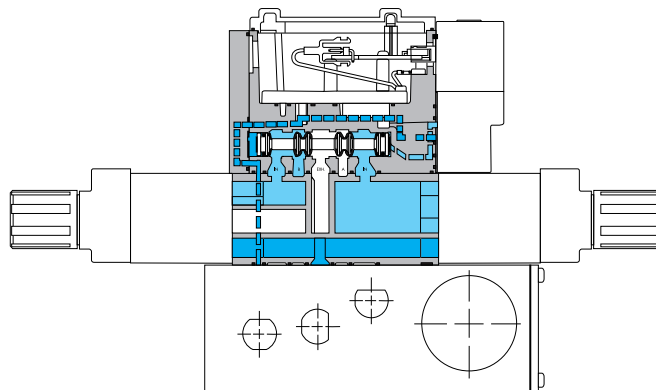


MANIFOLD WITH REGULATOR - SINGLE PRESSURE

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

DUAL REGULATOR - DUAL PRESSURE

Pressure supplied from each regulator is divided in the block. Regulated pressure from "A" regulator supplies cylinder port "A". Regulated pressure from "B" regulator supplies cylinder port "B". Dual pressure regulators require dual pressure spool in valve.



MANIFOLD WITH REGULATOR - DUAL PRESSURE

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

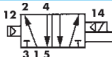
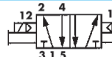


OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. Optional low wattage DC solenoid down to 1 watt.
5. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.

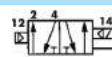
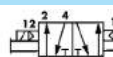



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|--------------|-----------|---|---|--|---|
| | |  |  |  |  |
| G3/8" | Internal | 93A-AJ0-E0J-DM-DXXX-XXX | 93A-BJ0-E0J-DM-DXXX-XXX | 93A-EJ0-E0J-DM-DXXX-XXX | 93A-FJ0-E0J-DM-DXXX-XXX |
| G1/2" | Internal | 93A-AJ0-F0J-DM-DXXX-XXX | 93A-BJ0-F0J-DM-DXXX-XXX | 93A-EJ0-F0J-DM-DXXX-XXX | 93A-FJ0-F0J-DM-DXXX-XXX |
| G3/8" | External | 93A-AJ0-E0K-DM-DXXX-XXX | 93A-BJ0-E0K-DM-DXXX-XXX | 93A-EJ0-E0K-DM-DXXX-XXX | 93A-FJ0-E0K-DM-DXXX-XXX |
| G1/2" | External | 93A-AJ0-F0K-DM-DXXX-XXX | 93A-BJ0-F0K-DM-DXXX-XXX | 93A-EJ0-F0K-DM-DXXX-XXX | 93A-FJ0-F0K-DM-DXXX-XXX |

DUAL PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Pressure centre |
|--------------|-----------|---|--|---|
| | |  |  |  |
| G3/8" | Internal | 93A-CJ0-E0J-DM-DXXX-XXX | 93A-DJ0-E0J-DM-DXXX-XXX | 93A-HJ0-E0J-DM-DXXX-XXX |
| G1/2" | Internal | 93A-CJ0-F0J-DM-DXXX-XXX | 93A-DJ0-F0J-DM-DXXX-XXX | 93A-HJ0-F0J-DM-DXXX-XXX |
| G3/8" | External | 93A-CJ0-E0K-DM-DXXX-XXX | 93A-DJ0-E0K-DM-DXXX-XXX | 93A-HJ0-E0K-DM-DXXX-XXX |
| G1/2" | External | 93A-CJ0-F0K-DM-DXXX-XXX | 93A-DJ0-F0K-DM-DXXX-XXX | 93A-HJ0-F0K-DM-DXXX-XXX |

SOLENOID OPERATOR ➤

DM-D **XXX-XXX***

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

* Other options available, see page options.

OPTIONS

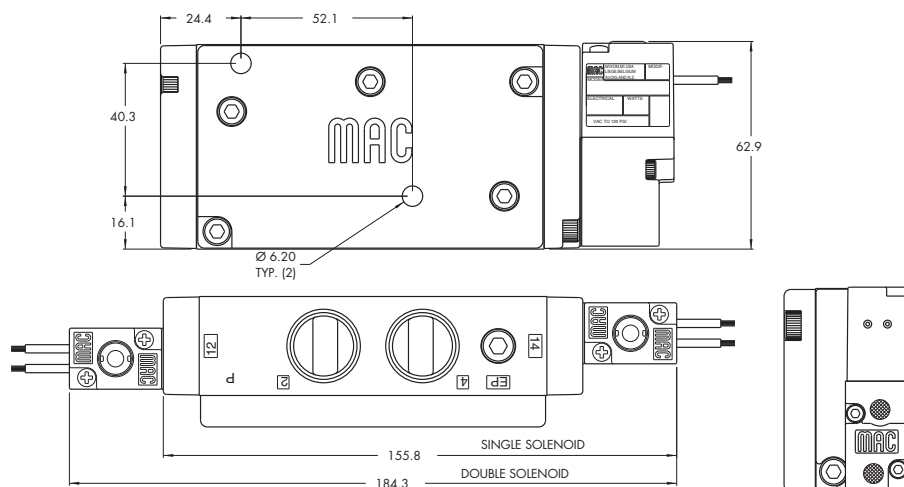
Pilot exhaust : 93A-XJX-XXX-DM-DXXX-XXX

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

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

Option : • NPTF thread

DIMENSIONS Dimensions shown are metric (mm)



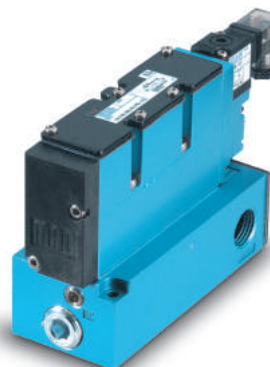
Function Port size Flow [Max] Individual mounting

5/2, 5/3 **G1/4" - G3/8" - G1/2"** **3400 NI/min**

Sub-base
non "plug-in"

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. Optional low wattage DC solenoid down to 1 watt.
5. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.



HOW TO ORDER

SINGLE PRESSURE MODELS (1/4" MODELS ARE BOTTOM PORTED)

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | |
| Valve less base | | 93A-ABA-000-DM-Dxxx-xxx | 93A-BBA-000-DM-Dxxx-xxx | 93A-EBA-000-DM-Dxxx-xxx | 93A-FBA-000-DM-Dxxx-xxx |
| G1/4" | Internal | 93A-ABA-DBG-DM-Dxxx-xxx | 93A-BBA-DBG-DM-Dxxx-xxx | 93A-EBA-DBG-DM-Dxxx-xxx | 93A-FBA-DBG-DM-Dxxx-xxx |
| G3/8" | | 93A-ABA-EAG-DM-Dxxx-xxx | 93A-BBA-EAG-DM-Dxxx-xxx | 93A-EBA-EAG-DM-Dxxx-xxx | 93A-FBA-EAG-DM-Dxxx-xxx |
| G1/2" | | 93A-ABA-FAG-DM-Dxxx-xxx | 93A-BBA-FAG-DM-Dxxx-xxx | 93A-EBA-FAG-DM-Dxxx-xxx | 93A-FBA-FAG-DM-Dxxx-xxx |
| G1/4" | External | 93A-ABA-DBH-DM-Dxxx-xxx | 93A-BBA-DBH-DM-Dxxx-xxx | 93A-EBA-DBH-DM-Dxxx-xxx | 93A-FBA-DBH-DM-Dxxx-xxx |
| G3/8" | | 93A-ABA-EAH-DM-Dxxx-xxx | 93A-BBA-EAH-DM-Dxxx-xxx | 93A-EBA-EAH-DM-Dxxx-xxx | 93A-FBA-EAH-DM-Dxxx-xxx |
| G1/2" | | 93A-ABA-FAH-DM-Dxxx-xxx | 93A-BBA-FAH-DM-Dxxx-xxx | 93A-EBA-FAH-DM-Dxxx-xxx | 93A-FBA-FAH-DM-Dxxx-xxx |

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

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

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

* Other options available, see page options.

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

Function Port size Flow [Max] Individual mounting

5/2, 5/3 **G1/4" - G3/8" - G1/2"** **3400 NI/min**


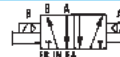
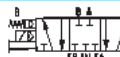

Sub-base
"plug-in"




OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. Optional low wattage DC solenoid down to 1 watt.
5. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.

HOW TO ORDER

SINGLE PRESSURE MODELS (1/4" MODELS ARE BOTTOM PORTED)

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|---|---|--|---|
| | |  |  |  |  |
| Valve less base | | 93A-AAA-000-DM-DxxP-xxx | 93A-BAA-000-DM-DxxP-xxx | 93A-EAA-000-DM-DxxP-xxx | 93A-FAA-000-DM-DxxP-xxx |
| G1/4" | Internal | 93A-AAA-DBA-DM-DxxP-xxx | 93A-BAA-DBA-DM-DxxP-xxx | 93A-EAA-DBA-DM-DxxP-xxx | 93A-FAA-DBA-DM-DxxP-xxx |
| G3/8" | | 93A-AAA-EAA-DM-DxxP-xxx | 93A-BAA-EAA-DM-DxxP-xxx | 93A-EAA-EAA-DM-DxxP-xxx | 93A-FAA-EAA-DM-DxxP-xxx |
| G1/2" | | 93A-AAA-FAA-DM-DxxP-xxx | 93A-BAA-FAA-DM-DxxP-xxx | 93A-EAA-FAA-DM-DxxP-xxx | 93A-FAA-FAA-DM-DxxP-xxx |
| G1/4" | | 93A-AAA-DBD-DM-DxxP-xxx | 93A-BAA-DBD-DM-DxxP-xxx | 93A-EAA-DBD-DM-DxxP-xxx | 93A-FAA-DBD-DM-DxxP-xxx |
| G3/8" | External | 93A-AAA-EAD-DM-DxxP-xxx | 93A-BAA-EAD-DM-DxxP-xxx | 93A-EAA-EAD-DM-DxxP-xxx | 93A-FAA-EAD-DM-DxxP-xxx |
| G1/2" | | 93A-AAA-FAD-DM-DxxP-xxx | 93A-BAA-FAD-DM-DxxP-xxx | 93A-EAA-FAD-DM-DxxP-xxx | 93A-FAA-FAD-DM-DxxP-xxx |

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

SOLENOID OPERATOR ➤

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

Above models are shown without light.

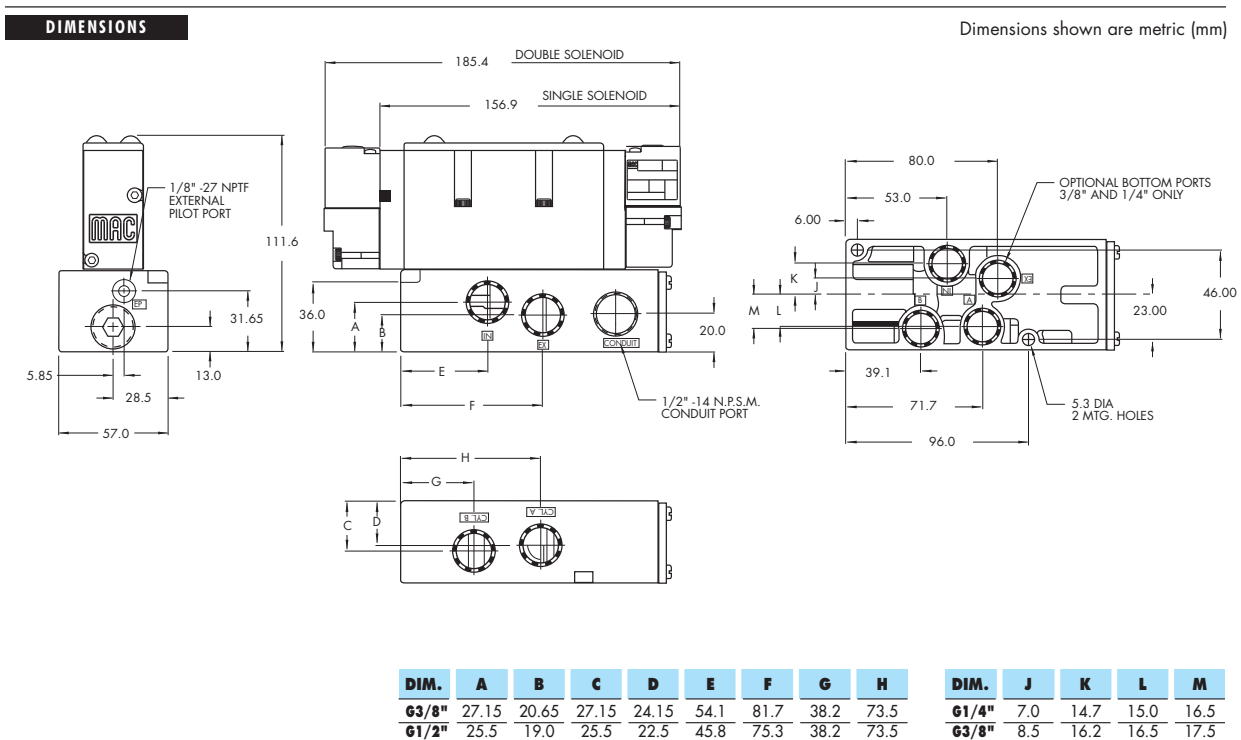
| XX Voltage | X Manual operator | XX Electrical connection |
|-----------------------|----------------------|-------------------------------|
| JA 110 V~/50Hz | 1 Non-locking | DM Plug-in |
| JB 220 V~/50Hz | 2 Locking | DN Plug-in with diode |
| JC 24 V~/50Hz | | DP Plug-in with M.O.V. |
| FB 24 V=/1,8W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

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

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

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

- Spare parts :
- Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622
 - Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249
 - Pilot valve mounting screws (x2): 35069



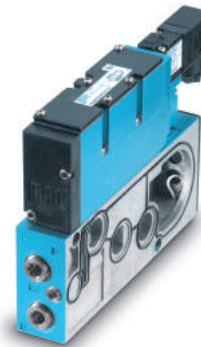


Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold mounting |
|-----------------|----------------------|--------------------|-----------------------------|
| 5/2, 5/3 | G3/8" - G1/2" | 3800 NI/min | Manifold base non "plug-in" |

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. Optional low wattage DC solenoid down to 1 watt.
5. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | |
| Valve less base | | 93A-ABA-000-DM-Dxxx-xxx | 93A-BBA-000-DM-Dxxx-xxx | 93A-EBA-000-DM-Dxxx-xxx | 93A-FBA-000-DM-Dxxx-xxx |
| G3/8" | Internal | 93A-ABA-EJG-DM-Dxxx-xxx | 93A-BBA-EJG-DM-Dxxx-xxx | 93A-EBA-EJG-DM-Dxxx-xxx | 93A-FBA-EJG-DM-Dxxx-xxx |
| G1/2" | | 93A-ABA-FJG-DM-Dxxx-xxx | 93A-BBA-FJG-DM-Dxxx-xxx | 93A-EBA-FJG-DM-Dxxx-xxx | 93A-FBA-FJG-DM-Dxxx-xxx |
| G3/8" | External | 93A-ABA-EJH-DM-Dxxx-xxx | 93A-BBA-EJH-DM-Dxxx-xxx | 93A-EBA-EJH-DM-Dxxx-xxx | 93A-FBA-EJH-DM-Dxxx-xxx |
| G1/2" | | 93A-ABA-FJH-DM-Dxxx-xxx | 93A-BBA-FJH-DM-Dxxx-xxx | 93A-EBA-FJH-DM-Dxxx-xxx | 93A-FBA-FJH-DM-Dxxx-xxx |

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

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

SOLENOID OPERATOR >

DM-D **xxx-xxx***

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

* Other options available, see page options.
End plate kit required (1/2" ports): M-93001-01-01P internal pilot.
M-93001-02-01P external pilot.

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

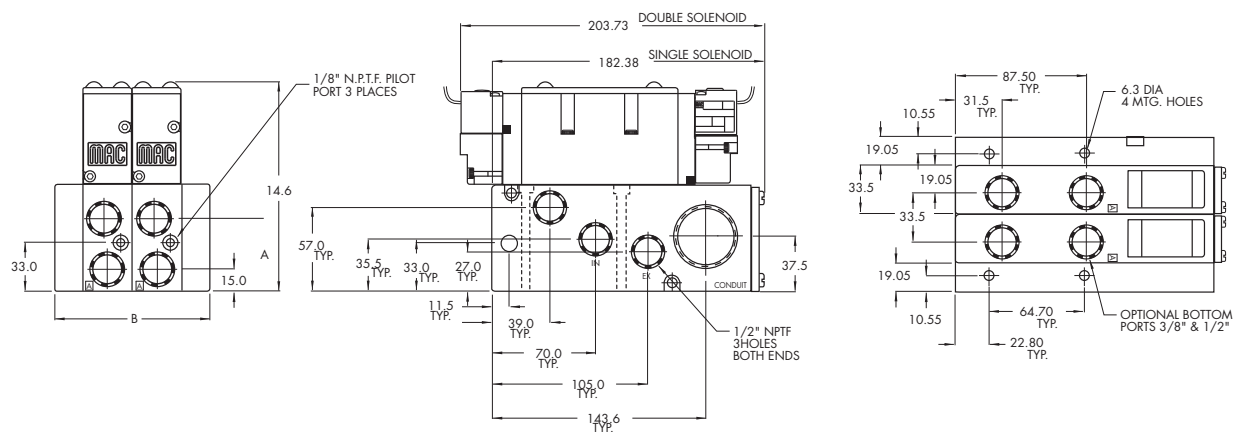
Options :

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

Spare parts :

- Pilot valve: DM-Dxxx-xxx • Valve to base pressure seal: 16622
- Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249
- Inlet/exh. Isolator disc: N-93008 • Valve blanking plate: M-93002

DIMENSIONS Dimensions shown are metric (mm)



| # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| B | 71.6 | 105.1 | 138.6 | 172.1 | 205.6 | 239.1 | 272.6 | 306.1 | 339.6 | 373.1 |

| DIM. | A |
|-------|-------|
| 63/8" | 47.66 |
| 61/2" | 49.32 |



Direct solenoid and solenoid pilot operated valves

| Function | Port size | Flow [Max] | Manifold mounting |
|-----------------|----------------------|--------------------|-------------------------|
| 5/2, 5/3 | G3/8" - G1/2" | 3800 NI/min | Manifold base "plug-in" |

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. Optional low wattage DC solenoid down to 1 watt.
5. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|------------------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | |
| Valve less base | | 93A-AAA-000-DM-DxxP-xxx | 93A-BAA-000-DM-DxxP-xxx | 93A-EAA-000-DM-DxxP-xxx | 93A-FAA-000-DM-DxxP-xxx |
| G3/8" | Internal | 93A-AAA-EJA-DM-DxxP-xxx | 93A-BAA-EJA-DM-DxxP-xxx | 93A-EAA-EJA-DM-DxxP-xxx | 93A-FAA-EJA-DM-DxxP-xxx |
| G1/2" | | 93A-AAA-FJA-DM-DxxP-xxx | 93A-BAA-FJA-DM-DxxP-xxx | 93A-EAA-FJA-DM-DxxP-xxx | 93A-FAA-FJA-DM-DxxP-xxx |
| G3/8" | External | 93A-AAA-EJD-DM-DxxP-xxx | 93A-BAA-EJD-DM-DxxP-xxx | 93A-EAA-EJD-DM-DxxP-xxx | 93A-FAA-EJD-DM-DxxP-xxx |
| G1/2" | | 93A-AAA-FJD-DM-DxxP-xxx | 93A-BAA-FJD-DM-DxxP-xxx | 93A-EAA-FJD-DM-DxxP-xxx | 93A-FAA-FJD-DM-DxxP-xxx |

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

| Port size | Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Pressure Centre |
|------------------------|-----------|-------------------------|-------------------------|-------------------------|
| | | | | |
| Valve less base | | 93A-CAA-000-DM-DxxP-xxx | 93A-DAA-000-DM-DxxP-xxx | 93A-HAA-000-DM-DxxP-xxx |
| G3/8" | Internal | 93A-CAA-EJA-DM-DxxP-xxx | 93A-DAA-EJA-DM-DxxP-xxx | 93A-HAA-EJA-DM-DxxP-xxx |
| G1/2" | | 93A-CAA-FJA-DM-DxxP-xxx | 93A-DAA-FJA-DM-DxxP-xxx | 93A-HAA-FJA-DM-DxxP-xxx |
| G3/8" | External | 93A-CAA-EJD-DM-DxxP-xxx | 93A-DAA-EJD-DM-DxxP-xxx | 93A-HAA-EJD-DM-DxxP-xxx |
| G1/2" | | 93A-CAA-FJD-DM-DxxP-xxx | 93A-DAA-FJD-DM-DxxP-xxx | 93A-HAA-FJD-DM-DxxP-xxx |

SOLENOID OPERATOR >

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

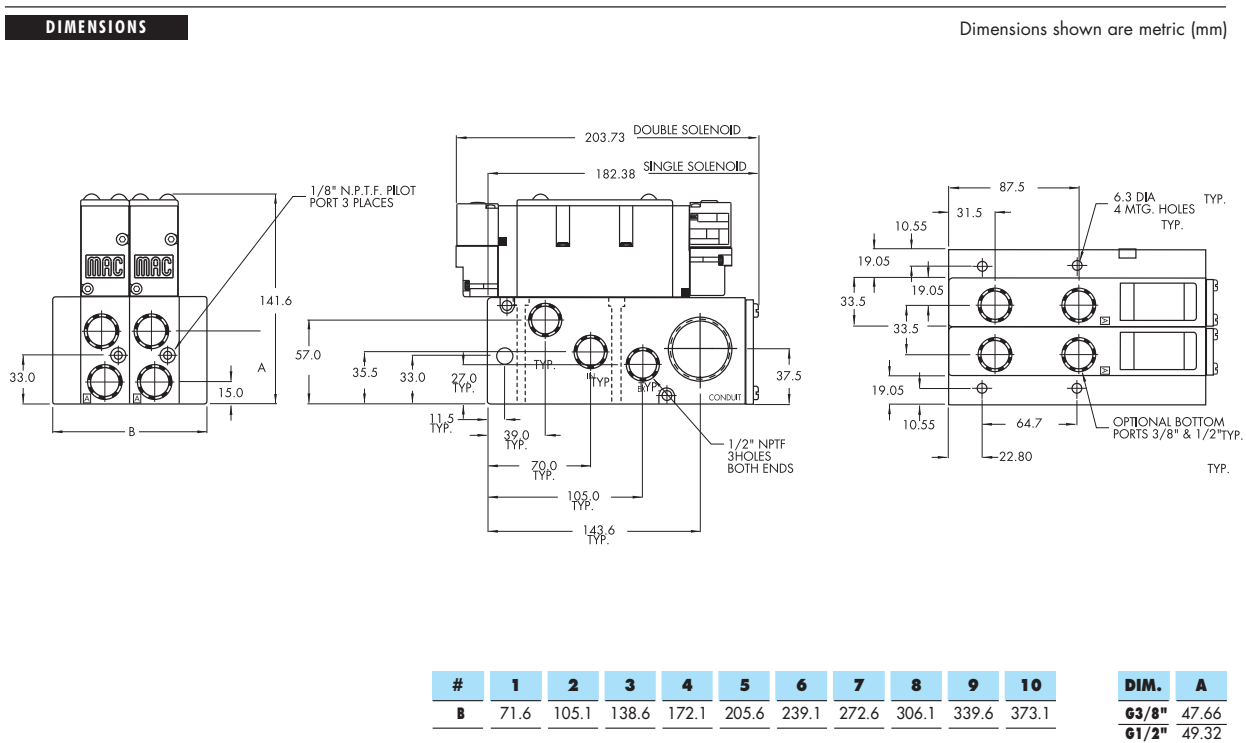
Above model numbers are shown with side ports without light.

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

* Other options available, see page options.
End plate required (1/2" ports): M-93001-01-01P Internal pilot.
M-93001-02-01P External pilot.

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

- Options :
- NPTF thread • Sandwich regulator (see ,regulators' section)
 - Sandwich flow controls FC93A-AA (screwdriver slot adjustment), FC93A-AB (locking knob adjustment)
- Spare parts :
- Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622
 - Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249
 - Inlet/exh. Isolator disc: N-93008 • Valve blanking plate: M-93002





Direct solenoid and solenoid pilot operated valves

OPTIONS FOR NON PLUG-IN VALVES

Valve function

93A-**L**XX-XXX-XX-D**XXX-XXX**

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

Pilot exhaust

93A-X**B**X-XXX-XX-D**XXX-XXX**

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

Port configuration :

Individual sub-base

93A-XXX-X**A**X-XX-D**XXX-XXX**

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

Manifold sub-base

93A-XXX-X**J**X-XX-D**XXX-XXX**

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

Pilot style :

93A-XXX-XXX-**DM**-D**XXX-XXX**

- DM** pilot exhaust muffled
- DP** pilot exhaust piped (#10-32)
- DU** pilot exhaust to main exhaust

Base only :

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

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

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



Direct solenoid and solenoid pilot operated valves

OPTIONS FOR PLUG-IN VALVES

Valve function

93A-**L**XX-XXX-XX-D**XX**P-XXX

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

Pilot exhaust

93A-X**A**X-XXX-XX-D**XX**P-XXX

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

Body electrical

92B-X**A**-XXX-XX-D**XX**P-XXX

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

Port configuration :

Individual sub-base

93A-XXX-X**A**X-XX-D**XX**P-XXX

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

Manifold sub-base

93A-XXX-X**J**X-XX-D**XX**P-XXX

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

Base/manifold int./ext. pilot

93A-XXX-X**A**-XX-D**XX**P-XXX

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

Pilot style :

93A-XXX-XXX-**DM**-D**XX**P-XXX

- DM** pilot exhaust muffled
- DP** pilot exhaust piped (#10-32)
- DU** pilot exhaust to main exhaust

Base only :

93A-000-XXX (i.e. 93A-000-DBA) - Individual base
(Note: bases are wired for double solenoid valves)

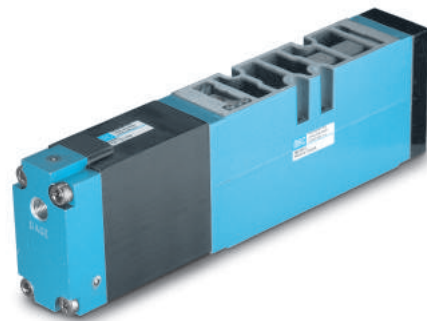
93A-000-XXX (i.e. 93A-000-DJA) - Manifold base

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

Sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR93A-DAAA | PR93A-DBAA | PR93A-DCAA | PR93A-DDAA | PR93A-DEAA |
| Gauge with face perpendicular to manual operator | PR93A-DABA | PR93A-DBBA | PR93A-DCBA | PR93A-DDBA | PR93A-DEBA |
| Gauge with face parallel to manual operator | PR93A-DACA | PR93A-DBCA | PR93A-DCCA | PR93A-DDCA | PR93A-DECA |

Note: above models are coded for use with single solenoid valves.

REGULATORS FOR "NON PLUG-IN" VALVES

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR93A-EAAA | PR93A-EBAA | PR93A-ECAA | PR93A-EDAA | PR93A-EEAA |
| Gauge with face perpendicular to manual operator | PR93A-EABA | PR93A-EBBA | PR93A-ECBA | PR93A-EDBA | PR93A-EEBA |
| Gauge with face parallel to manual operator | PR93A-EACA | PR93A-EBCA | PR93A-ECCA | PR93A-EDCA | PR93A-EECA |

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

* For use with dual pressure valves.

TECHNICAL DATA

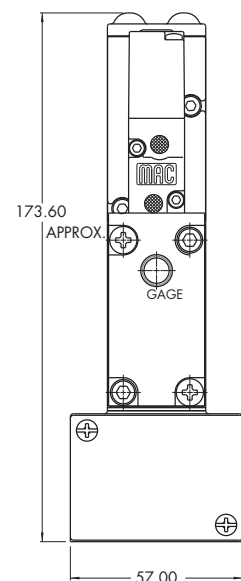
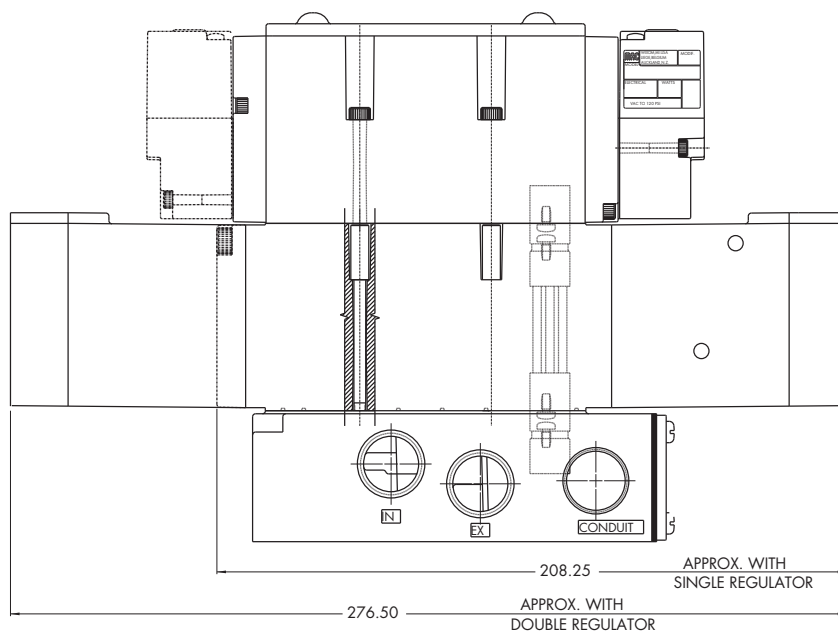
| | |
|-------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 2400 NI/min (Cv 2.4) |

Spare parts :

- Regulator end plate kit: R-93004 • Regulator by-pass end plate kit: R-93004-01
- Gauge kit: N-92006-01 (0 to 10,7 bar)
- Pressure regulator (less sandwich block): PR93A-F0AA

DIMENSIONS

Dimensions shown are metric (mm)



Sandwich selector pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

| Gauge | Select to A port Regulator A end By-pass plate B end | Select to B port Regulator B end By-pass plate A end | Select to A port Reg. both ends A end low press. B end high press. | Select to B port Reg. both ends A end high press. B end low press. |
|---|--|--|--|--|
| Gauge port only (plugged) | PR93A-GPAA | PR93A-GRAA | PR93A-GSAA | PR93A-GTAA |
| Gauge with face perpendicular to manual operator | PR93A-GPBA | PR93A-GRBA | PR93A-GSBA | PR93A-GTBA |
| Gauge with face parallel to manual operator | PR93A-GPCA | PR93A-GRCA | PR93A-GSCA | PR93A-GTCA |

REGULATORS FOR "NON PLUG-IN" VALVES

| Gauge | Select to A port Regulator A end By-pass plate B end | Select to B port Regulator B end By-pass plate A end | Select to A port Reg. both ends A end low press. B end high press. | Select to B port Reg. both ends A end high press. B end low press. |
|---|--|--|--|--|
| Gauge port only (plugged) | PR93A-HPAA | PR93A-HRAA | PR93A-HSAA | PR93A-HTAA |
| Gauge with face perpendicular to manual operator | PR93A-HPBA | PR93A-HRBA | PR93A-HSBA | PR93A-HTBA |
| Gauge with face parallel to manual operator | PR93A-HPCA | PR93A-HRCA | PR93A-HSCA | PR93A-HTCA |

Notes: - Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page
- Use single pressure valve for all above models.

OPTIONS

Regulator less sandwich block

PR93A-**XOXX**

- J** Knob
- C** Slotted stem
- M** Slotted stem with locknut

Other adjustment

PR93A-**XXXX**

- A** Slotted stem, plug-in
- B** Slotted stem, non plug-in
- K** Slotted stem w/ locknut, plug-in
- L** Slotted stem w/ locknut, non plug-in

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

TECHNICAL DATA

| | |
|---------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, ΔP=1bar): | 2400 NI/min (Cv 2.4) |

Spare parts :

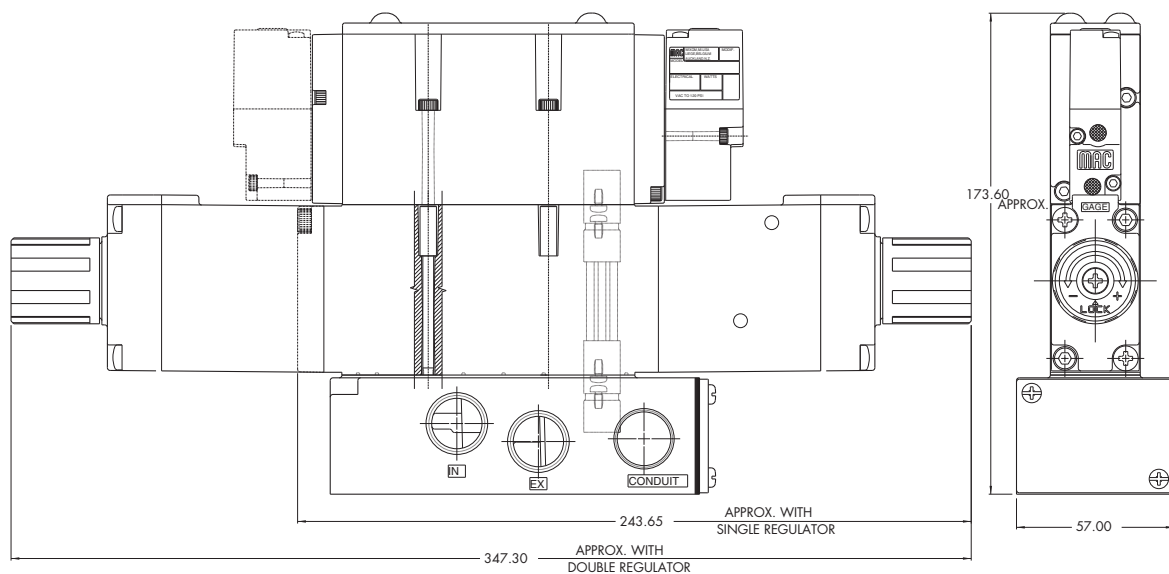
- R-93004 : end plate kit • R-93004-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

Option:

- Pressure range: PR93A-xxxA (A 0 to 8 bar)
 - B 0 to 5,3 bar
 - C 0 to 2 bar
 - D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
 - E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
 - F 0 to 8 bar "A" end, 0 to 2 bar "B" end
 - G 0 to 8 bar "B" end, 0 to 2 bar "A" end
 - H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
 - J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

DIMENSIONS

Dimensions shown are metric (mm)



Sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR "PLUG-IN" VALVES (CODED FOR KNOB ADJUSTMENT)

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR93A-GAAA | PR93A-GBAA | PR93A-GCAA | PR93A-GDAA | PR93A-GEAA |
| Gauge with face perpendicular to manual operator | PR93A-GABA | PR93A-GBBA | PR93A-GCBA | PR93A-GDBA | PR93A-GEBA |
| Gauge with face parallel to manual operator | PR93A-GACA | PR93A-GBCA | PR93A-GCCA | PR93A-GDCA | PR93A-GECA |

Note: above models are coded for use with single solenoid valves.

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

| Gauge | Regulator A end Single pressure | Regulator B end Single pressure | Regulator A * end with by-pass end plate B end | Regulator B* end with by-pass end plate A end | Regulator * both ends |
|--|------------------------------------|------------------------------------|---|--|--------------------------|
| Gauge port only (plugged) | PR93A-HAAA | PR93A-HBAA | PR93A-HCAA | PR93A-HDAA | PR93A-HEAA |
| Gauge with face perpendicular to manual operator | PR93A-HABA | PR93A-HBBA | PR93A-HCBA | PR93A-HDBA | PR93A-HEBA |
| Gauge with face parallel to manual operator | PR93A-HACA | PR93A-HBCA | PR93A-HCCA | PR93A-HDCA | PR93A-HECA |

* For use with dual pressure valves.

Note: Regulating range for above models is 0 to 8 bar. For other ranges, see technical data page.

OPTIONS

Regulator less sandwich block

PR93A-**x0xx**

- J** Knob
- C** Slotted stem
- M** Slotted stem with locknut

Other adjustment

PR93A-**xxxx**

- A** Slotted stem, plug-in
- B** Slotted stem, non plug-in
- K** Slotted stem w/ locknut, plug-in
- L** Slotted stem w/ locknut, non plug-in

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

TECHNICAL DATA

| | |
|------------------------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 8 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar): | 2400 Nl/min (Cv 2.4) |

Spare parts :

- R-93004 : end plate kit • R-93004-01 : by-pass end plate kit
- Gauge kit 0 – 10,7 bar: N-92006-01 • Gauge kit 0 – 6,7 bar: N-92006-02
- Gauge kit 0-4 bar: N-92006-03

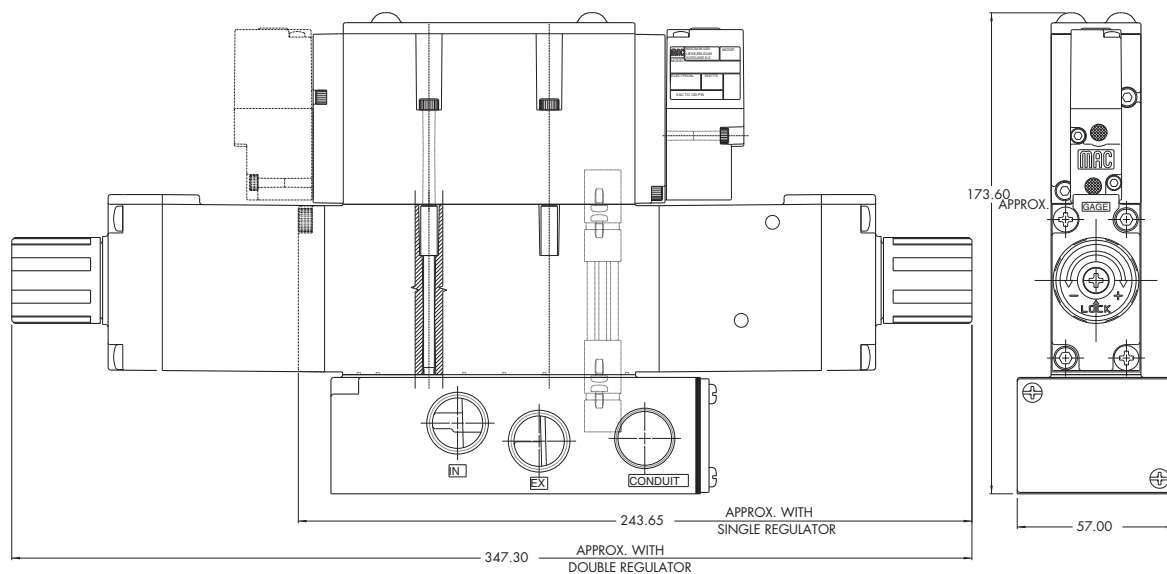
Option:

- Pressure range: PR93A-xxxA (A 0 to 8 bar)

- B 0 to 5,3 bar
- C 0 to 2 bar
- D 0 to 8 bar "A" end, 0 to 5,3 bar "B" end
- E 0 to 8 bar "B" end, 0 to 5,3 bar "A" end
- F 0 to 8 bar "A" end, 0 to 2 bar "B" end
- G 0 to 8 bar "B" end, 0 to 2 bar "A" end
- H 0 to 5,3 bar "A" end, 0 to 2 bar "B" end
- J 0 to 5,3 bar "B" end, 0 to 2 bar "A" end

DIMENSIONS

Dimensions shown are metric (mm)



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ► **-DM- D XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|---|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| | | KF | Square connector with light and protection varistor |
| | | KG | Square connector with light & diode |
| | | KJ | Square connector (male only) |
| | | KK | Square connector with protection diode (male only) |
| | | KL | Square connector with protection varistor (male only) |
| | | TA | Dual tabs with receptacles |
| | | TB | TA with protection diode |
| | | TD | TA with light |
| | | TE | TA with light and protection diode |
| | | TJ | Dual tabs (male only) |
| | | TK | TJ with protection diode |
| | | TM | TJ with light |
| | | TN | TJ with light and protection diode |
| | | * From Lead wire length options choose A through F | |
| | | ** From Lead wire length options choose 0 through F | |
| | | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |
| 2. WIRE LENGTH | | | |
| D-XX X-X XX | WIRE LENGTH | | |
| 0 | No wires | | |
| A | 45 cm – 18" | | |
| B | 60 cm – 24" | | |
| C | 90 cm – 36" | | |
| D | 120 cm – 48" | | |
| E | 180 cm – 72" | | |
| F | 240 cm – 96" | | |
| 3. MANUAL OPERATOR | | | |
| D-XX X-X XX | MANUAL OPERATOR | | |
| 0 | No operator | | |
| 1 | Non-locking recessed | | |
| 2 | Locking recessed | | |
| 3 | Non-locking extended | | |
| 4 | Locking extended | | |



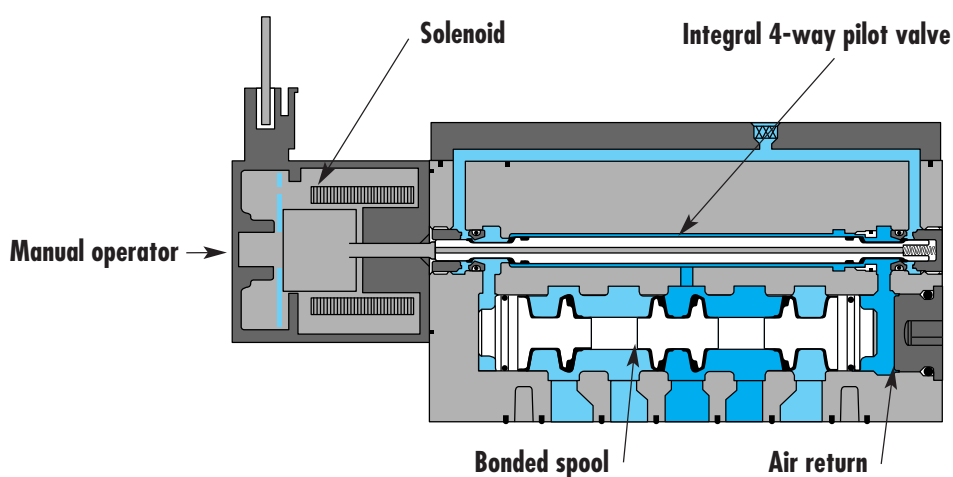
Direct solenoid and solenoid pilot operated valves

Individual mounting

| | |
|---|---|
| Valve only – No base non “plug-in” Conform to ISO 15407/1 | Valve only – No base plug-in Conform to ISO 15407/2 |
|---|---|

Manifold mounting

| | |
|---|---|
| Valve only – No base non “plug-in” Conform to ISO 15407/1 | Valve only – No base plug-in Conform to ISO 15407/2 |
|---|---|



SERIES FEATURES

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

Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3

G1/4"

1000 NI/min

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

OPERATIONAL BENEFITS

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



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|------------------------|------------------------|-----------------------|-----------------------|
| | | | | |
| Internal | MV-A01A-AAMA-Jxxx-xxx | MV-A01A-ABMA-Jxxx-xxx | MV-A01A-AEMA-Jxxx-xxx | MV-A01A-AFMA-Jxxx-xxx |
| External "12" end | MV-A01A-AAMD-Jxxx-xxx | MV-A01A-ABMD-Jxxx-xxx | MV-A01A-AEMD-Jxxx-xxx | MV-A01A-AFMD-Jxxx-xxx |
| External "14" end | MV-A01A-AAME-Jxxx-xxx | MV-A01A-ABME-Jxxx-xxx | MV-A01A-AEME-Jxxx-xxx | MV-A01A-AFME-Jxxx-xxx |

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤

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

* Other options available, see page options.

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

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

OPTIONS

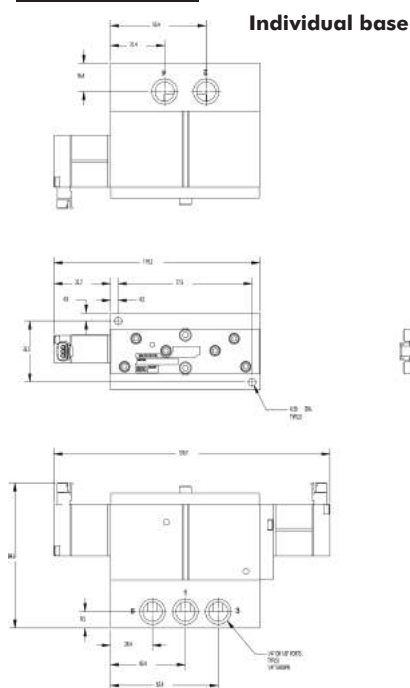
Pilot exhaust: MV-A01A-XX X Jxxx-xxx

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

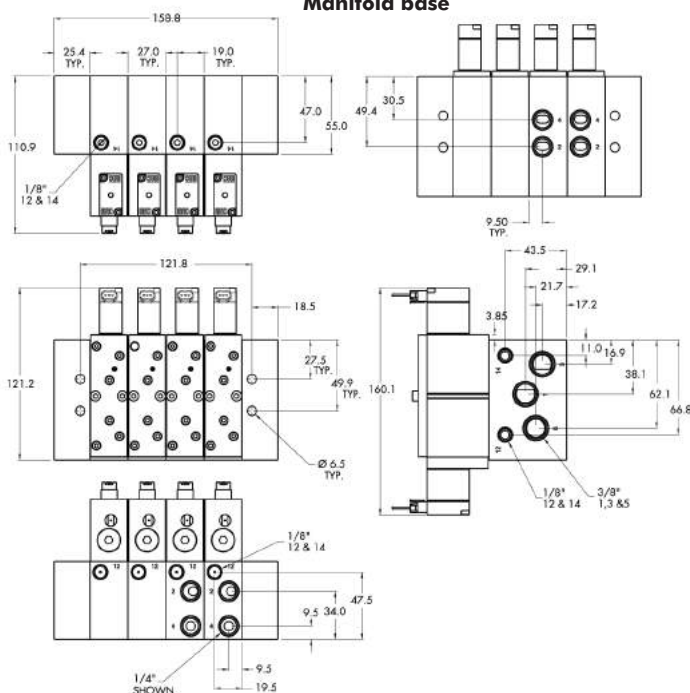
| TECHNICAL DATA | |
|--|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot – 2 pos.: 1,4 to 8 bar 3 pos.: 2,3 to 8 bar External pilot – Vacuum to 8 bar |
| Pilot pressure : | 2 pos.: 1,4 to 8 bar – 3 pos.: 2,3 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 6 mm |
| Flow (at 6 bar, $\Delta P=1\text{bar}$) : | 2 pos.: 1000 Nl/min (Cv 1.0) – 3 pos. 800 Nl/min (Cv 0.8) |
| Coil : | Epoxy encapsulated – Class F wires - 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Power : | 1,0 to 5,4 W |

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

DIMENSIONS



Manifold base





Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 5-way pilot provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service
4. Large spool area for maximum shifting forces, even at minimum operating pressure.
5. Very high flow in a compact package. Pilot valve and main valve in the same body.
6. Internal or external pilot operation.
7. Air only return
8. Valve width: 26 mm.



HOW TO ORDER

SINGLE PRESSURE MODELS

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

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ►

R **xxP-xxx** *

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

* Use either PA or PB connector

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

Other options available, see page options.

OPTIONS

Pilot exhaust: MV-P01A-XXxMVx-RxxP-xxx

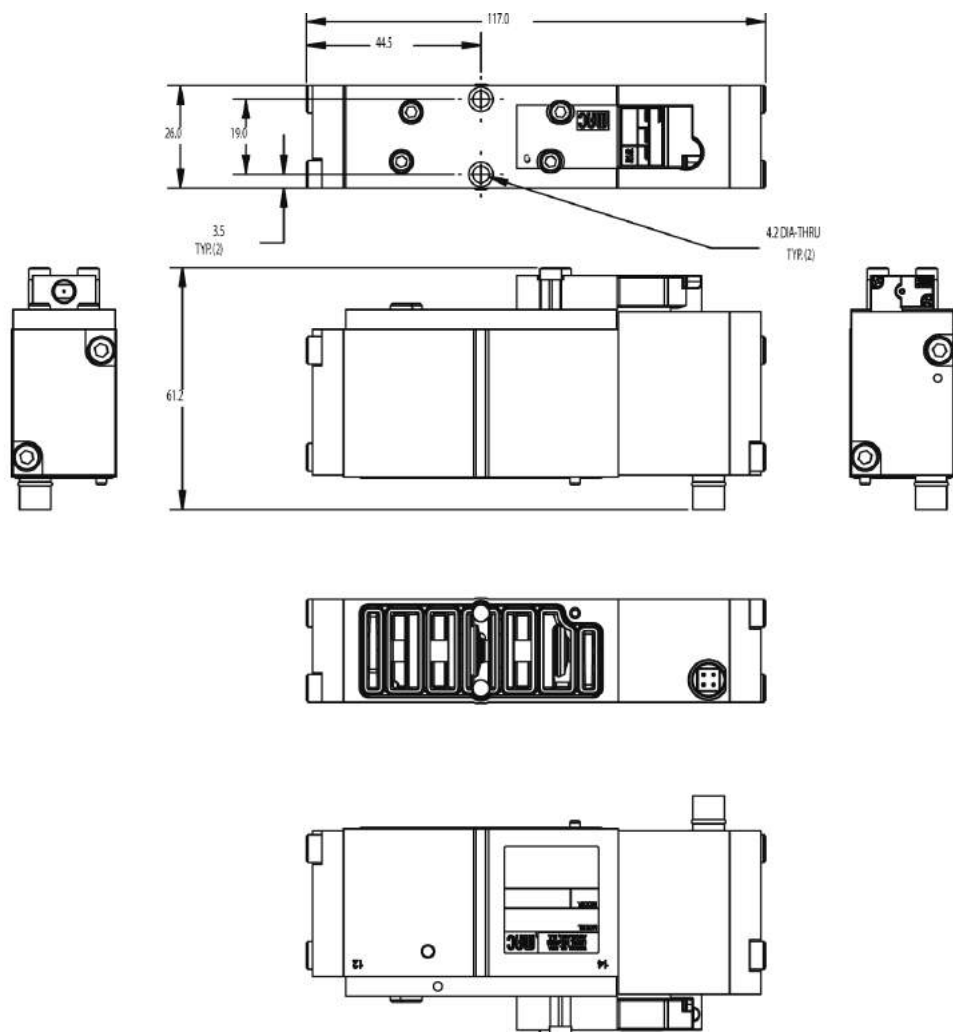
- C Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust out main exhaust

TECHNICAL DATA

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

DIMENSIONS

Dimensions shown are metric (mm)



Non plug-in individual / manifold base



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Pilot air | Side ports | Bottom 2 & 4 ports With all side ports |
|--------------|-----------|-------------|---|
| G1/4" | Internal | MB-A01A-221 | MB-A01A-222 |

MANIFOLD BASE

| Port size | Pilot air | Side ports | Bottom 2 & 4 ports With side 1, 3 & 5 ports |
|--------------|-----------|-------------|--|
| G1/4" | Internal | MM-A01A-221 | MM-A01A-222 |

Notes:

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

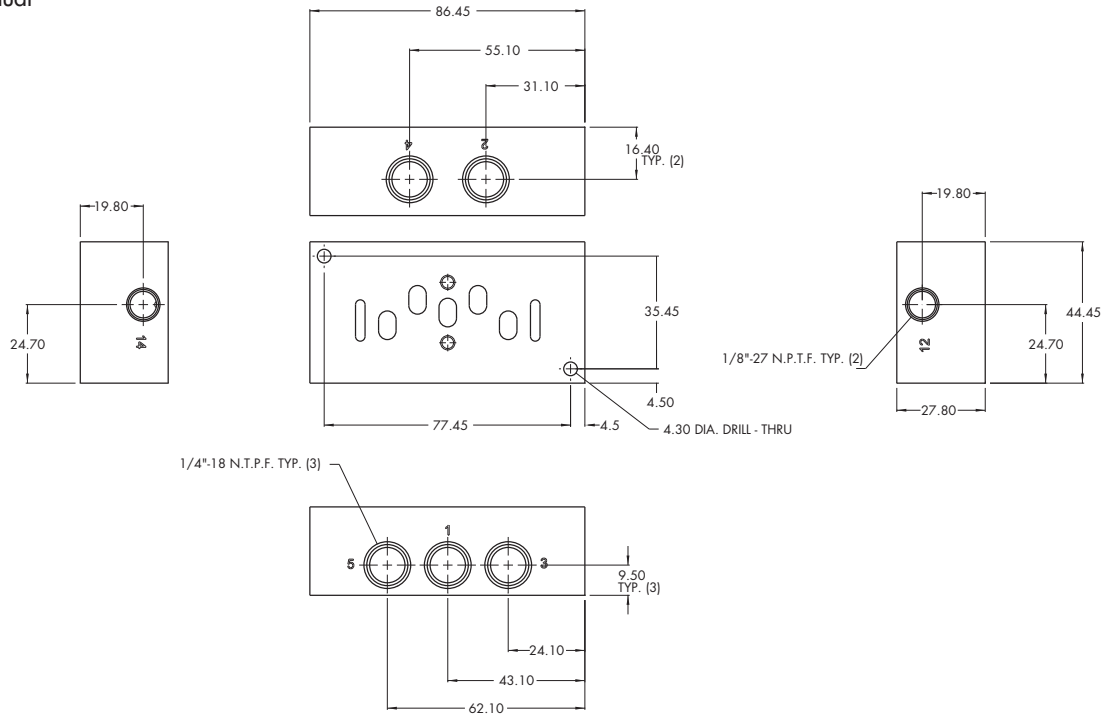
End plate kit: Internal pilot M-00017-01-01P
 External pilot M-00017-02-01P

Inlet/exhaust isolator: 28413

DIMENSIONS

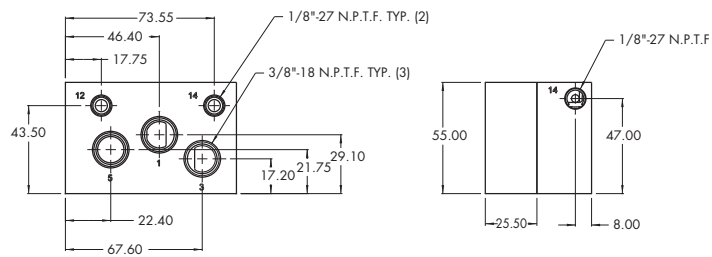
Dimensions shown are metric (mm)

Individual

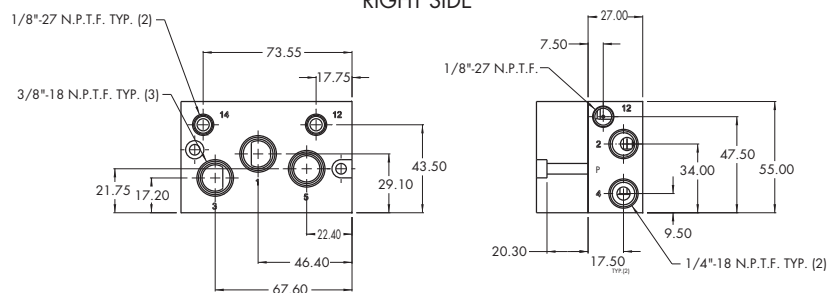


Manifold

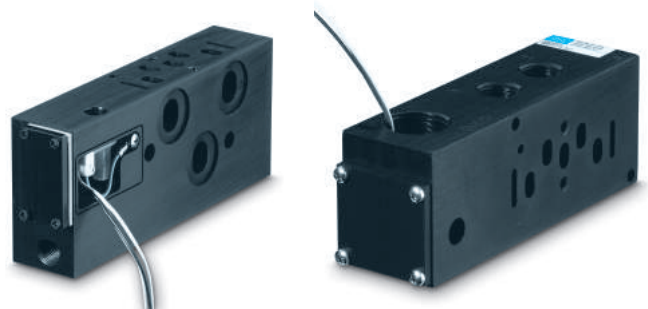
LEFT SIDE



RIGHT SIDE



Plug-in individual / manifold base



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Pilot air | Side ports with all side ports | Bottom 2 & 4 ports |
|--------------|-----------|-----------------------------------|--------------------|
| G1/4" | Internal | MB-P01A-221 | MB-P01A-222 |

MANIFOLD BASE

| Port size | Pilot air | Side ports With side 1, 3 & 5 ports | Bottom 2 & 4 ports |
|--------------|-----------|--|--------------------|
| G1/4" | Internal | MM-P01A-221 | MM-P01A-222 |

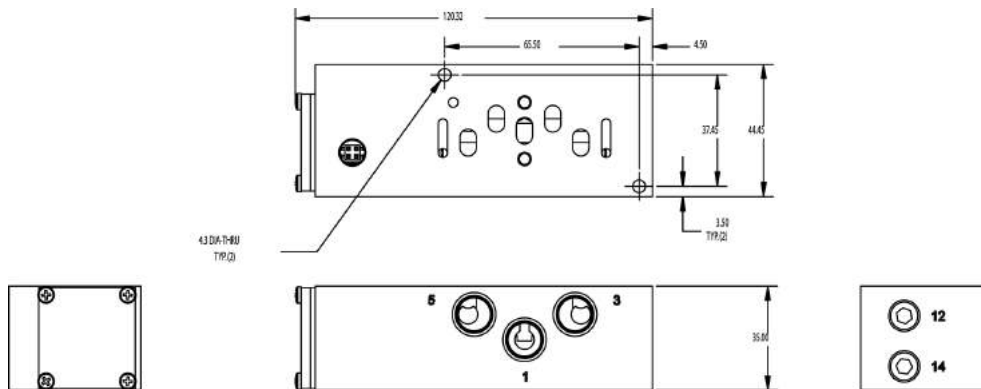
Notes:

- For manifold bases external pilot is common
- End plate kit: Internal pilot M-00020-01-01P
External pilot M-00020-02-01P

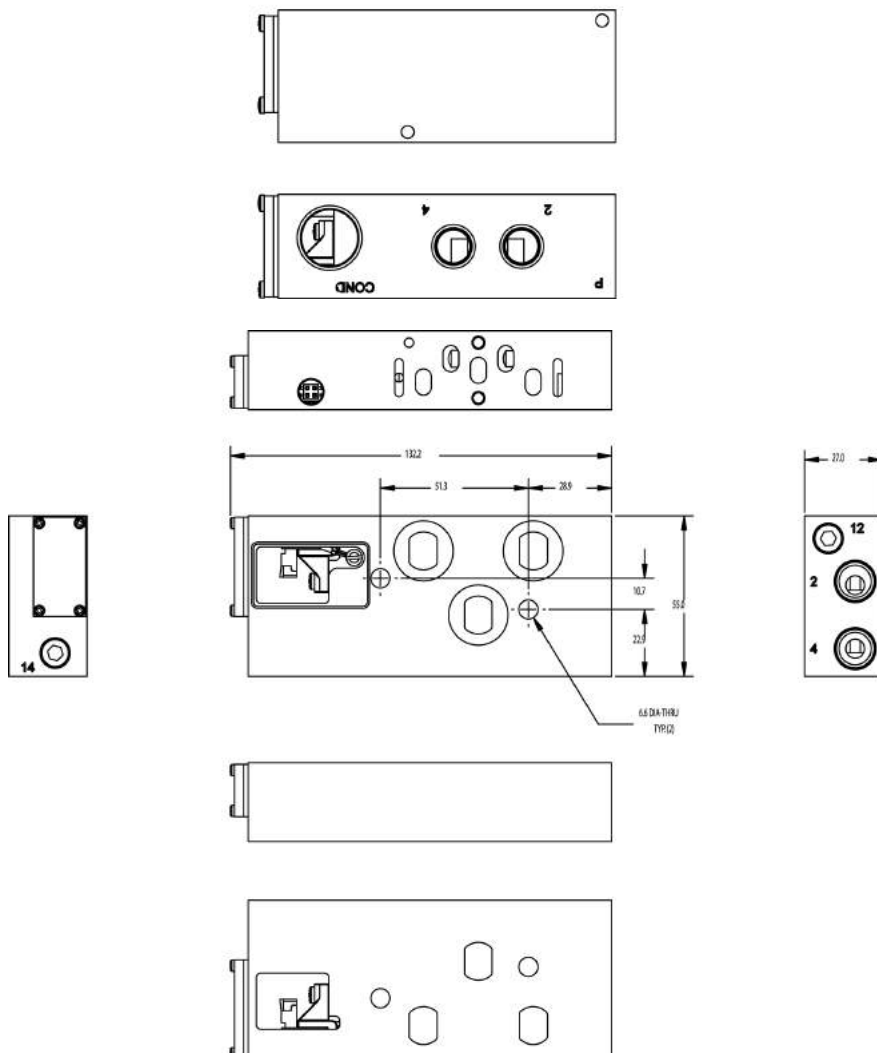
DIMENSIONS

Dimensions shown are metric (mm)

Individual



Manifold



Non plug-in sandwich pressure regulator with manual adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

| Pilot | Single pressure Regulator 12 end | Dual pressure Regulator 12 end with by-pass 14 end * | Dual pressure Regulator 14 end with by-pass 12 end * | Dual pressure Regulator both ends * |
|-----------------|-------------------------------------|--|--|--|
| Internal | PRA01A-AAAA | PRA01A-ABAA | PRA01A-ADAA | PRA01A-AEAA |
| External | PRA01A-BAAA | PRA01A-BBAA | PRA01A-BDAA | PRA01A-BEAA |

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

Note: Add -9 after part number for regulator block assembled to valve.

* To be used with dual pressure valves.

OPTIONS

Adjustments :

PRA01A - xxxx

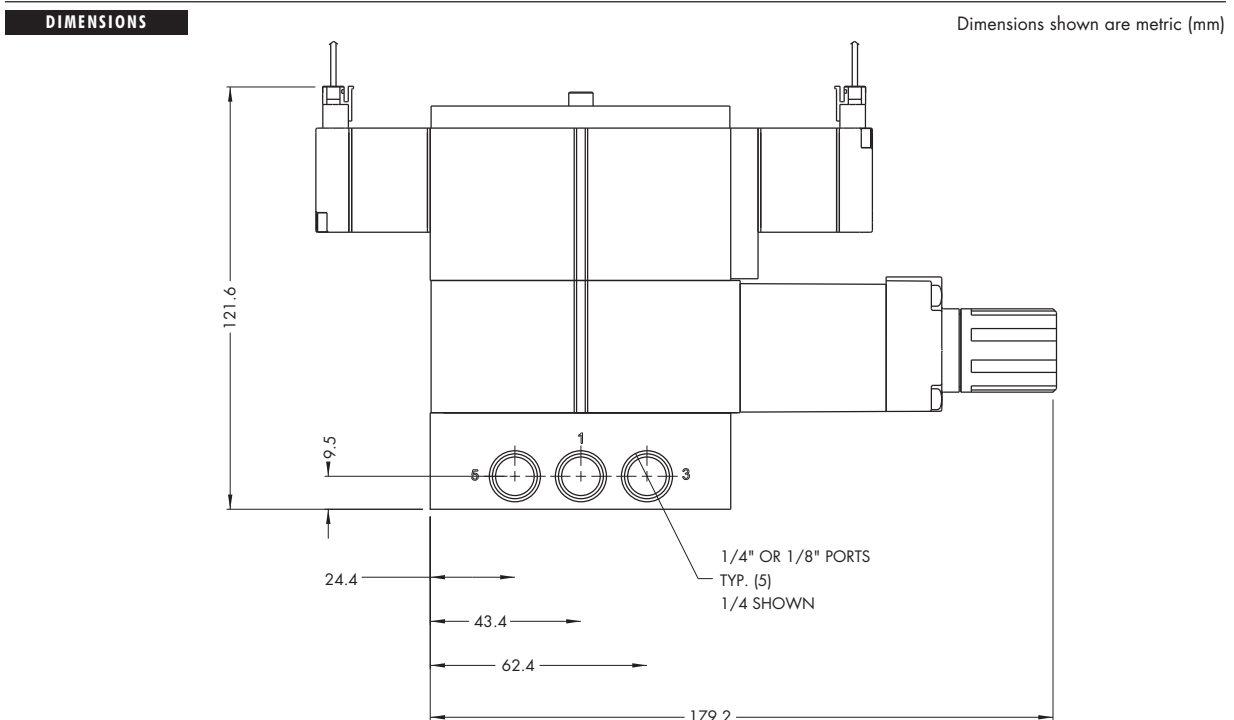
- A** Manual adjust with knob – Internal pilot
- B** Manual adjust with knob – External pilot
- G** Manual adjust with screwdriver slot – Internal pilot
- H** Manual adjust with screwdriver slot – External pilot
- K** Manual adjust with screwdriver slot with locknut – Internal pilot
- L** Manual adjust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

Regulated Pressure range :

PRA01A - xxxxx

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar
- D** 0 to 8 bar "14" end – 0 to 5,3 bar "12" end
- E** 0 to 8 bar "12" end – 0 to 5,3 bar "14" end
- F** 0 to 8 bar "14" end – 0 to 2 bar "12" end
- G** 0 to 8 bar "12" end – 0 to 2 bar "14" end
- H** 0 to 5,3 bar "14" end – 0 to 2 bar "12" end
- J** 0 to 5,3 bar "12" end – 0 to 2 bar "14" end

| TECHNICAL DATA | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure supply : | Higher than maximum regulated pressure (max. 8,5 bar) |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |





P r e s s u r e r e g u l a t o r s

Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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

HOW TO ORDER

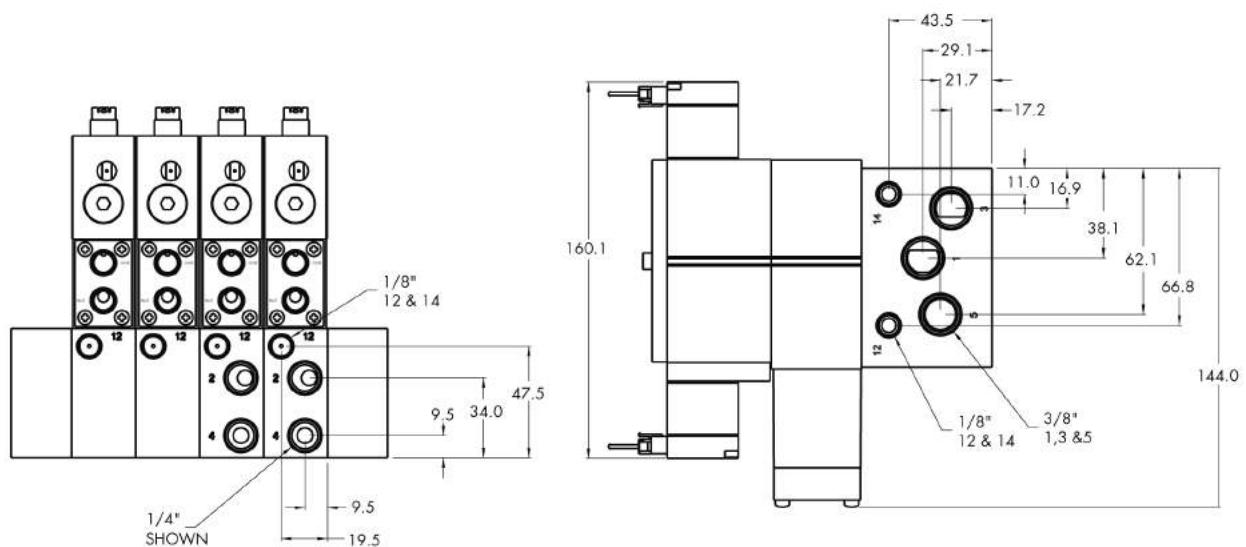
| Pilot | Single pressure Regulator 12 end | Dual pressure Regulator 12 end with by-pass 14 end * | Dual pressure Regulator 14 end with by-pass 12 end * | Dual pressure Regulator both ends * |
|-----------------|-------------------------------------|--|--|--|
| Internal | PRA01A-DAAA | PRA01A-DBAA | PRA01A-DDAA | PRA01A-DEAA |
| External | PRA01A-EAAA | PRA01A-EBAA | PRA01A-EDAA | PRA01A-EEAA |

Note : Only pressure range available for air adjust regulator is 0-8 bar.

* To be used with dual pressure valves.

| TECHNICAL DATA | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure range : | Higher than maximum regulated pressure (max. 8,5 bar) |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |

DIMENSIONS Dimensions shown are metric (mm)





P r e s s u r e r e g u l a t o r s

Plug-in sandwich pressure regulator with manual adjust

OPERATIONAL BENEFITS

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

HOW TO ORDER

| Pilot | Single pressure Regulator 12 end | Dual pressure Regulator 12 end with by-pass 14 end * | Dual pressure Regulator 14 end with by-pass 12 end * | Dual pressure Regulator both ends * |
|-----------------|-------------------------------------|--|--|--|
| Internal | PRP01A-AAAA | PRP01A-ABAA | PRP01A-ADAA | PRP01A-AEAA |
| External | PRP01A-BAAA | PRP01A-BBAA | PRP01A-BDAA | PRP01A-BEAA |

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

* To be used with dual pressure valves.

OPTIONS

Adjustments :

PRP01A - xxxx

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

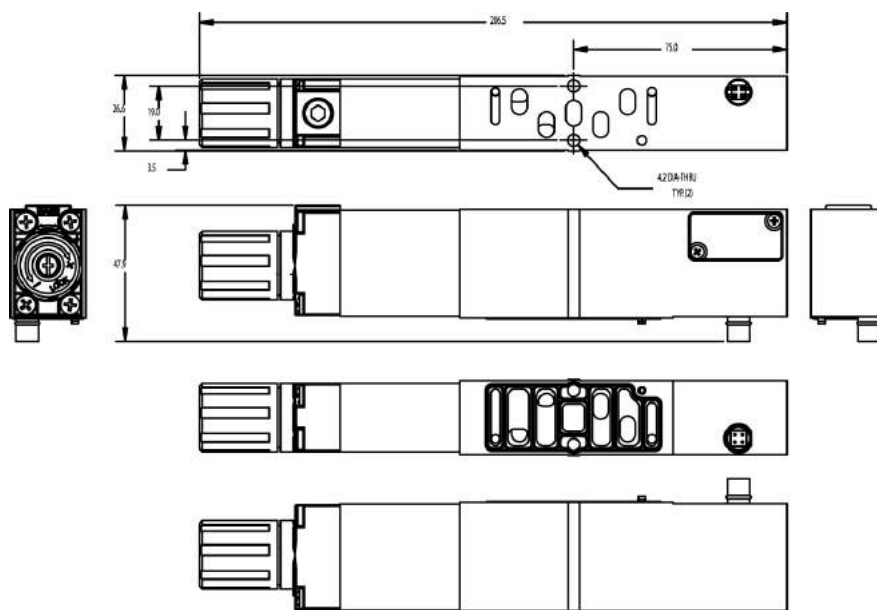
Regulated Pressure range :

PRP01A - xxxxx

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar
- D** 0 to 8 bar "14" end – 0 to 5,3 bar "12" end
- E** 0 to 8 bar "12" end – 0 to 5,3 bar "14" end
- F** 0 to 8 bar "14" end – 0 to 2 bar "12" end
- G** 0 to 8 bar "12" end – 0 to 2 bar "14" end
- H** 0 to 5,3 bar "14" end – 0 to 2 bar "12" end
- J** 0 to 5,3 bar "12" end – 0 to 2 bar "14" end

| TECHNICAL DATA | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure supply : | Higher than maximum regulated pressure (max. 8,5 bar) |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |

DIMENSIONS Dimensions shown are metric (mm)





Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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

HOW TO ORDER

| Pilot | Single pressure Regulator 12 end | Dual pressure Regulator 12 end with by-pass 14 end * | Dual pressure Regulator 14 end with by-pass 12 end * | Dual pressure Regulator both ends * |
|-----------------|-------------------------------------|--|--|--|
| Internal | PRP01A-DAAA | PRP01A-DBAA | PRP01A-DDAA | PRP01A-DEAA |
| External | PRP01A-EAAA | PRP01A-EBAA | PRP01A-EDAA | PRP01A-EEAA |

Note: Only pressure range available for air adjust is 0-8 bar

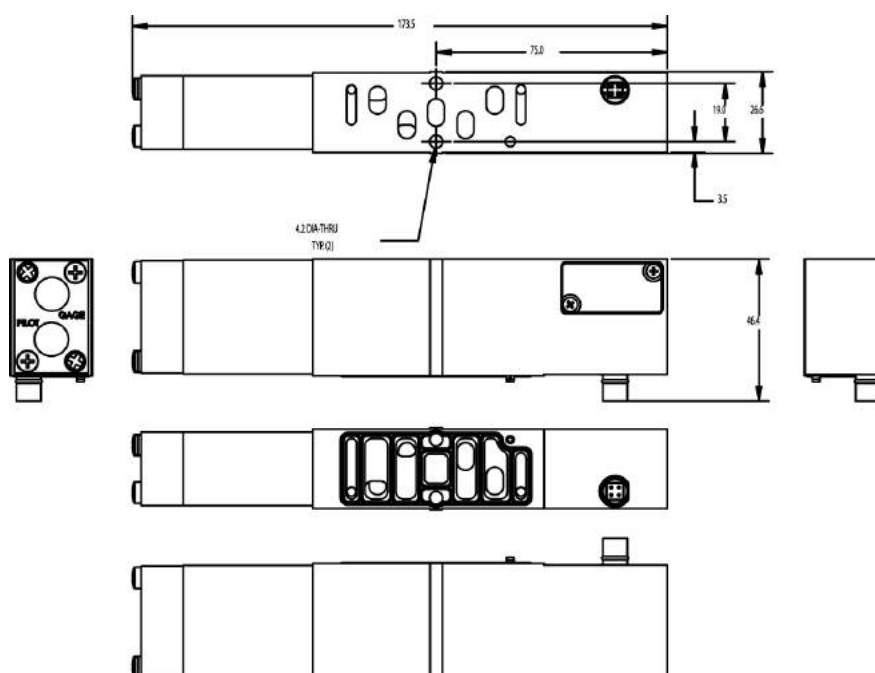
* To be used with dual pressure valves.

TECHNICAL DATA

| | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure supply : | Higher than maximum regulated pressure (max. 8,5 bar) |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |

DIMENSIONS

Dimensions shown are metric (mm)



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

J XX X-X XX
1 2 3 4

(Non Plug-in series)

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

(Plug-in series)

R XX X - X XX
1 2 3 4

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|---|---------------|--|---------------------------------------|
| R XX X - XXX | VOLTAGE | R XX X - XXX | MANUAL OPERATOR |
| DB | 24 VDC (1.0W) | 0 | No operator |
| DC | 24 VDC (1.8W) | 1 | Non-locking recessed |
| DD | 24 VDC (2.5W) | 3 | Non-locking extended |
| DE | 24 VDC (3.0W) | | |
| DF | 24 VDC (4.0W) | | |
| DH | 12 VDC (1.0W) | | |
| DJ | 12 VDC (1.8W) | | |
| DK | 12 VDC (2.5W) | | |
| DL | 12 VDC (3.0W) | | |
| DM | 12 VDC (4.0W) | | |
| EA* | 24 VDC (60W) | | |
| EB* | 24 VDC (90W) | | |
| EC* | 24 VDC (230W) | | |
| * MOD numbers required for these voltages (consult factory) | | | |
| 2. WIRE LENGHT | | 4. ELECTRICAL CONNECTION | |
| R XX X - XXX | WIRE LENGHT | ELECTRICAL CONNECTION FOR NON PLUG-IN VALVES | |
| 0* | No lead wire | R XX X - XXX | |
| A | 45 cm - 18" | BA | Flying leads |
| B | 60 cm - 24" | BB | Flying leads with LED |
| C | 90 cm - 36" | BC | Flying leads with MOV |
| D | 120 cm - 48" | BD | Flying leads with LED and MOV |
| E | 180 cm - 72" | DA | Base plug-in |
| F | 240 cm - 96" | DB | Base plug-in with LED |
| G | 300 cm - 120" | DC | Base plug-in with MOV |
| H | 365 cm - 144" | DD | Base plug-in with LED and MOV |
| P | Base plug-in | RA | Mini JAC solenoid |
| * Not available for flying leads connector | | RB | Mini JAC solenoid with LED |
| | | RC | Mini JAC solenoid with MOV |
| | | RD | Mini JAC solenoid with LED and MOV |
| | | TA | JST solenoid plug-in |
| | | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |
| | | ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| | | R XX X - XXX | |
| | | PA | Base plug-in |
| | | PB | Base plug-in with light |
| | | PC | Base plug-in with MOV |
| | | PD | Base plug-in with light and MOV |

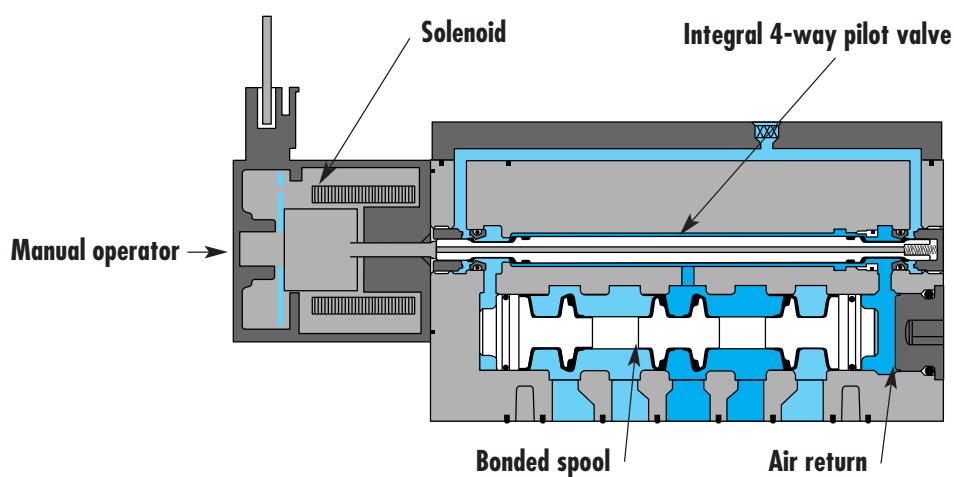
Direct solenoid and solenoid pilot operated valves

Individual mounting

| | |
|---|---|
| Valve only – No base non “plug-in” Conform to ISO 15407/1 | Valve only – No base plug-in Conform to ISO 15407/2 |
|---|---|

Manifold mounting

| | |
|---|---|
| Valve only – No base non “plug-in” Conform to ISO 15407/1 | Valve only – No base plug-in Conform to ISO 15407/2 |
|---|---|



SERIES FEATURES

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

Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3 **G1/8"** **430 NI/min**

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

OPERATIONAL BENEFITS

1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 5-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package. Pilot valve and main valve in the same body.
6. Internal or external pilot operation.
7. Air only return
8. Optional low wattage DC solenoid down to 1.0 Watt.
9. Valve width: 18 mm.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|------------------------|------------------------|-----------------------|-----------------------|
| | | | | |
| Internal | MV-A02A-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 |

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ▶

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

* Other options available, see page options.

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

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

OPTIONS

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

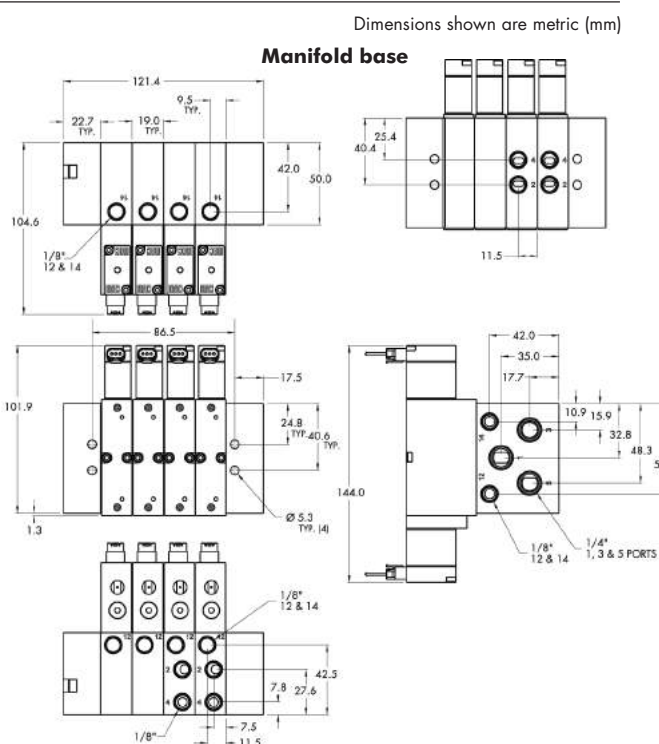
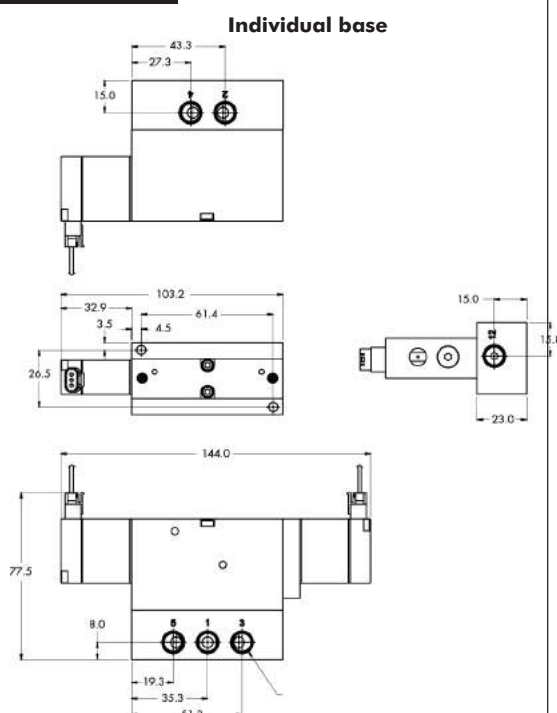
- M Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust out main exhaust

TECHNICAL DATA

| | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot – 2 pos.: 1,4 to 8 bar 3 pos.: 2,3 to 8 bar External pilot – Vacuum to 8 bar |
| Pilot pressure : | 2 pos.: 1,4 to 8 bar – 3 pos.: 2,3 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 4 mm |
| Flow (at 6 bar, ΔP=1bar) : | 2 pos.: 430 Nl/min (Cv 0.43) – 3 pos.: 280 Nl/min (Cv 0.28) |
| Coil : | Epoxy encapsulated – Class A wires - 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Power : | 1,0 to 5,4 W |

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

DIMENSIONS





Direct solenoid and solenoid pilot operated valves

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

OPERATIONAL BENEFITS

1. Unique patented MACsolenoid® with oval shaped armature for fastest possible response times.
2. Balanced poppet 5-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package. Pilot valve and main valve in the same body.
6. Internal or external pilot operation.
7. Air only return
8. Valve width: 18 mm.



HOW TO ORDER

SINGLE PRESSURE MODELS

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

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤

R **xxP-xxx** **

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

* Use either PA or PB connector
Note: ISO series, valve and base are ordered separately, see page for base codes.

** Other options available, see page options.

OPTIONS

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

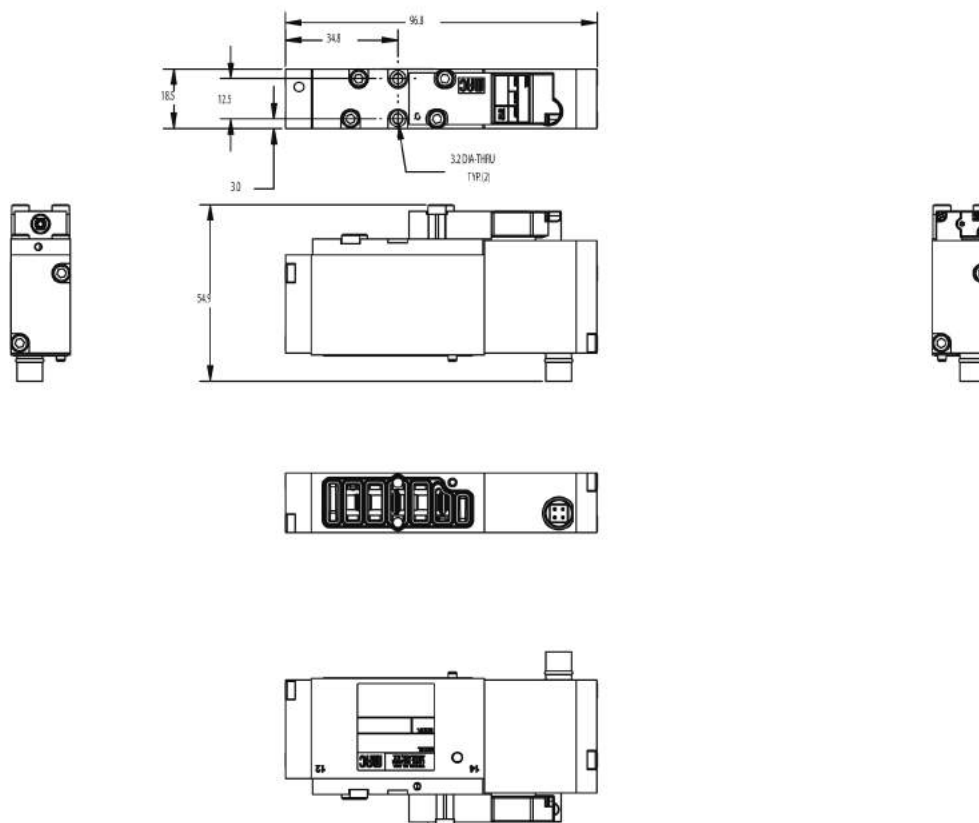
- C Pilot exhaust muffled
- R Pilot exhaust piped M5
- U Pilot exhaust out main exhaust

TECHNICAL DATA

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

DIMENSIONS

Dimensions shown are metric (mm)



Non plug-in individual / manifold base



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Pilot air | Side ports | Bottom 2 & 4 ports With all side ports |
|--------------|-----------|-------------|---|
| G1/8" | Internal | MB-A02A-211 | MB-A02A-212 |

MANIFOLD BASE

| Port size | Pilot air | Side ports | Bottom 2 & 4 ports With side 1, 3 & 5 ports |
|--------------|-----------|-------------|--|
| G1/8" | Internal | MM-A02A-211 | MM-A02A-212 |

Notes:

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

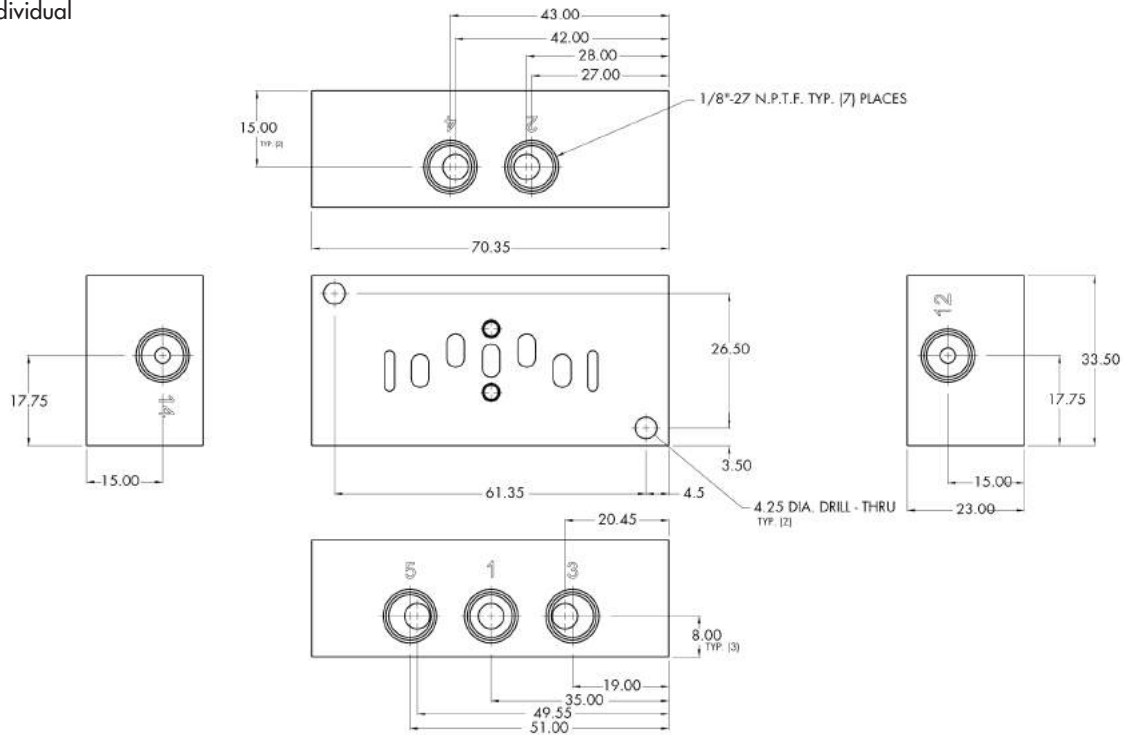
End plate kit: Internal pilot M-00018-01-01P
External pilot M-00018-02-01P

Inlet/exhaust isolator: 28499

DIMENSIONS

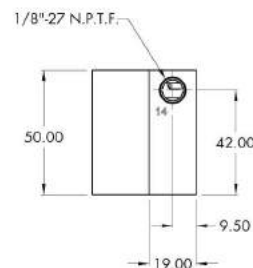
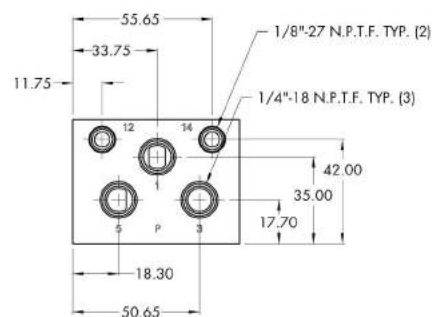
Dimensions shown are metric (mm)

Individual

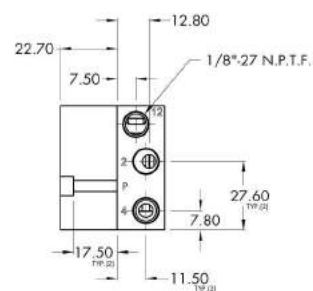
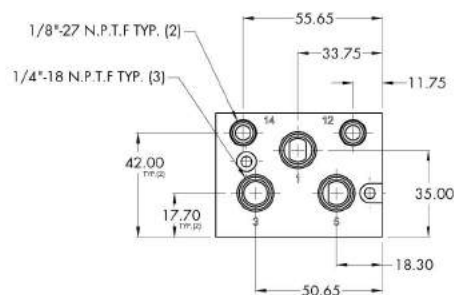


Manifold

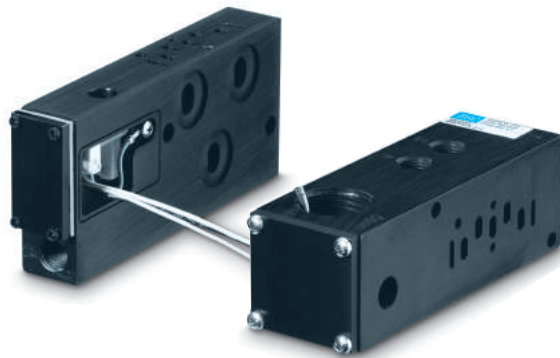
LEFT SIDE



RIGHT SIDE



Plug-in individual / manifold base



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Pilot air | Side ports with all side ports | Bottom 2 & 4 ports |
|--------------|-----------|-----------------------------------|--------------------|
| G1/8" | Internal | MB-P02A-211 | MB-P02A-212 |

MANIFOLD BASE

| Port size | Pilot air | Side ports With side 1, 3 & 5 ports | Bottom 2 & 4 ports |
|--------------|-----------|--|--------------------|
| G1/8" | Internal | MM-P02A-211 | MM-P02A-212 |

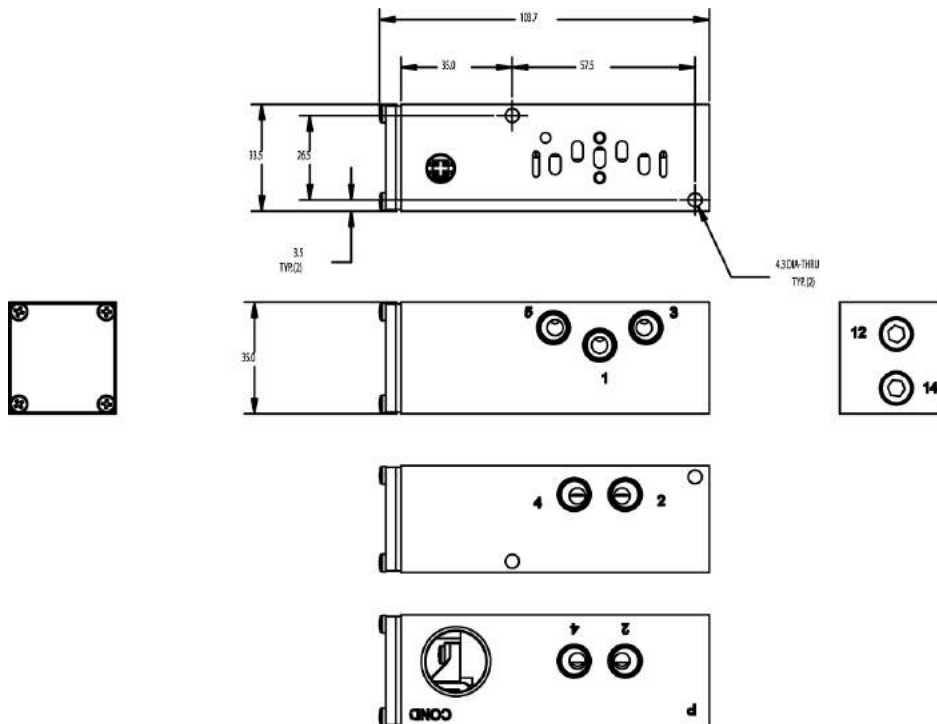
Notes:

- For manifold bases external pilot is common
- End plate kit: Internal pilot M-00021-01-01P
External pilot M-00021-02-01P

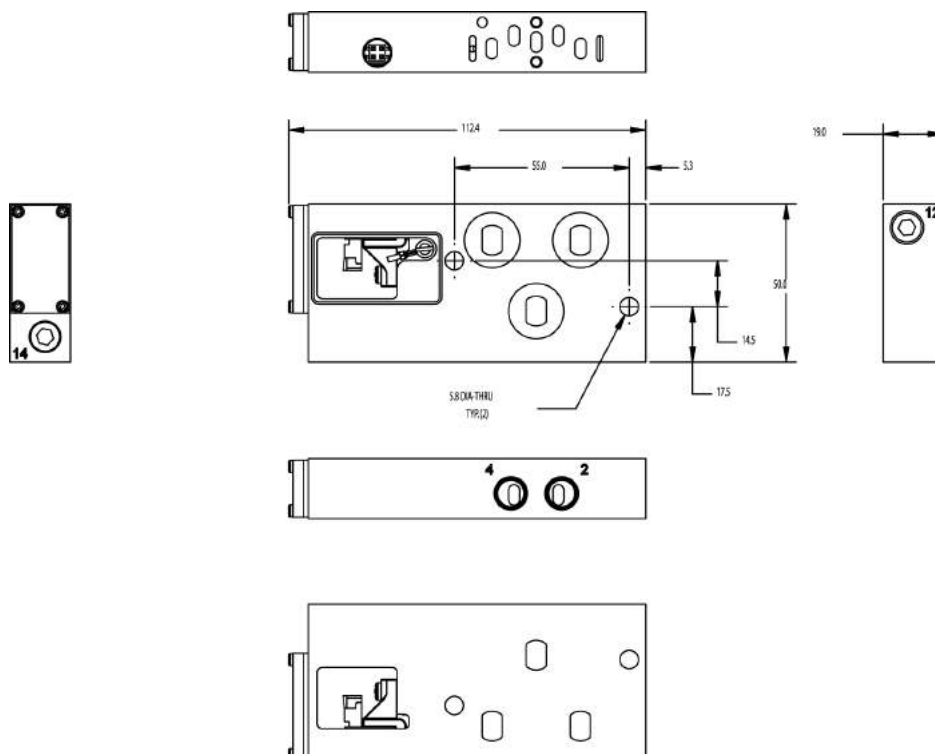
DIMENSIONS

Dimensions shown are metric (mm)

Individual



Manifold



Non plug-in sandwich pressure regulator with manual adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

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

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

Note: Add -9 after part number for regulator block assembled to valve.

* To be used with dual pressure valves.

OPTIONS

Adjustments :

PRA02A - xxxx

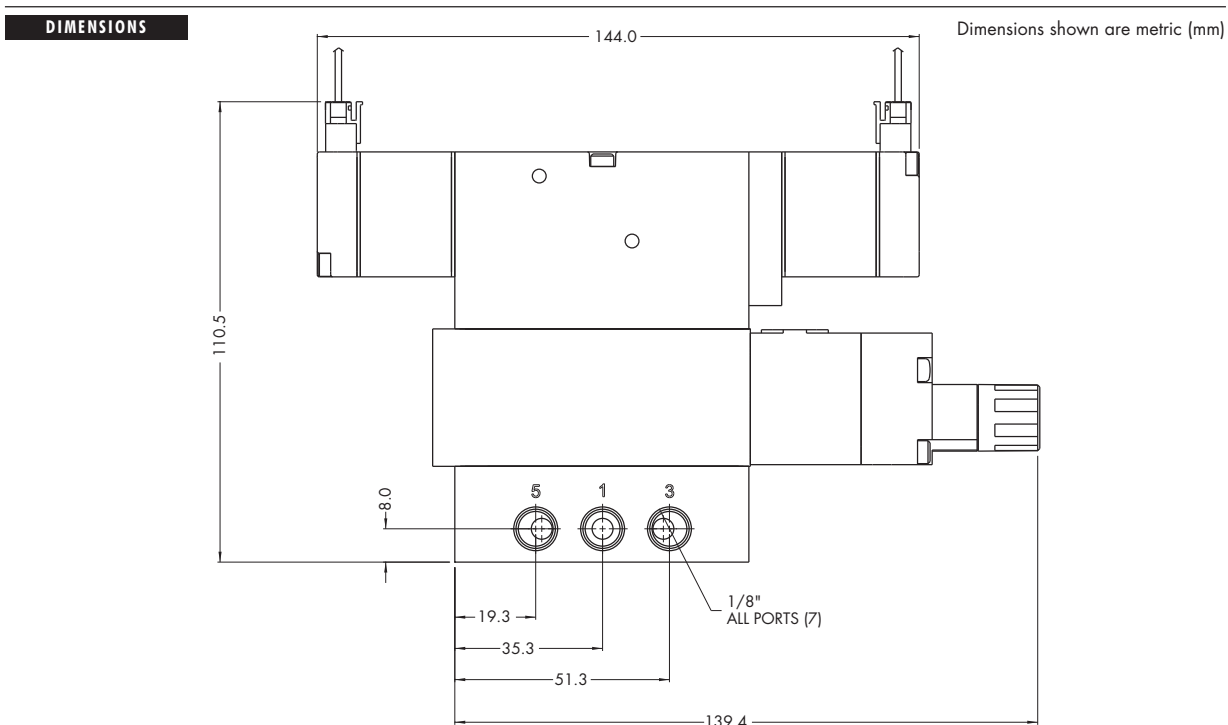
- A** Manual adjust with knob – Internal pilot
- B** Manual adjust with knob – External pilot
- G** Manual adjust with screwdriver slot – Internal pilot
- H** Manual adjust with screwdriver slot – External pilot
- K** Manual adjust with screwdriver slot with locknut – Internal pilot
- L** Manual adjust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

Regulated Pressure range :

PRA02A - xxxx

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar
- D** 0 to 8 bar "14" end – 0 to 5,3 bar "12" end
- E** 0 to 8 bar "12" end – 0 to 5,3 bar "14" end
- F** 0 to 8 bar "14" end – 0 to 2 bar "12" end
- G** 0 to 8 bar "12" end – 0 to 2 bar "14" end
- H** 0 to 5,3 bar "14" end – 0 to 2 bar "12" end
- J** 0 to 5,3 bar "12" end – 0 to 2 bar "14" end

| TECHNICAL DATA | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure supply : | Higher than maximum regulated pressure (max. 8,5 bar) |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |





P r e s s u r e r e g u l a t o r s

Plug-in sandwich pressure regulator with manual adjust

OPERATIONAL BENEFITS

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

HOW TO ORDER

| Pilot | Single pressure Regulator 1/2 end |
|----------|--------------------------------------|
| Internal | PRP02A-AAAA |
| External | PRP02A-BAAA |

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

Note: Add -9 after part number for regulator block assembled to valve.

OPTIONS

Adjustments :

PRP02A - xxxx

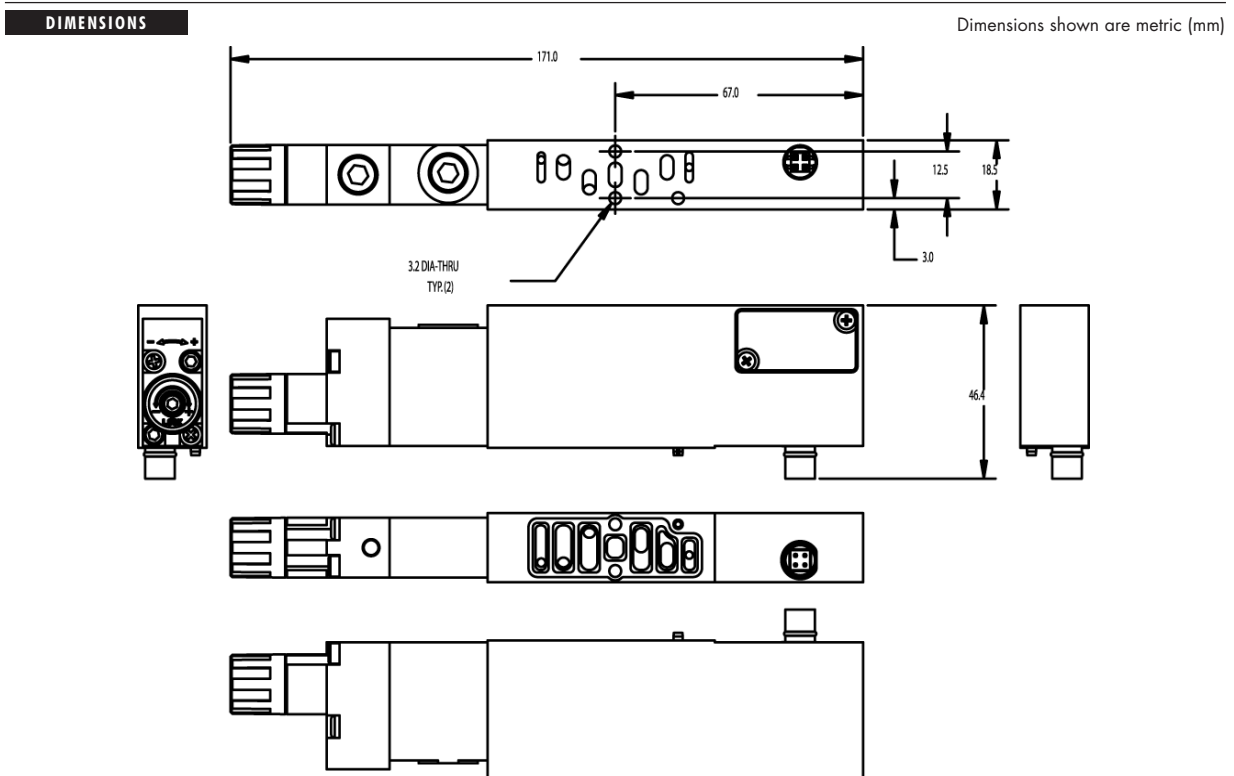
- A** Manual adjust with knob – Internal pilot
- B** Manual adjust with knob – External pilot
- G** Manual adjust with screwdriver slot – Internal pilot
- H** Manual adjust with screwdriver slot – External pilot
- K** Manual adjust with screwdriver slot with locknut– Internal pilot
- L** Manual adjust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

Regulated Pressure range :

PRP02A - xxxx

- A** 0 to 8 bar
- B** 0 to 5,3 bar
- C** 0 to 2 bar

| TECHNICAL DATA | |
|---------------------|--|
| Fluid : | Compressed air, inert gases |
| Pressure supply : | Higher than maximum regulated pressure (max. 8,5 bar) |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |



Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

J XX X-X XX
1 2 3 4

(Non Plug-in series)

| 1. VOLTAGE | | J-XX X-X XX | ELECTRICAL CONNECTION |
|---|---|--|---|
| J-XX X-X XX | VOLTAGE | *JJ | Square connector Male only (Plain) |
| AA | 120V~/5,4W | *JK | Square connector with rectifier |
| AC | 24V~/5,4W | *JL | Square connector with rectifier with light |
| DE | 24V~/1,8W | *JM | Rectangular connector Male only (Plain) |
| DF | 12V~/1,8W | *JN | Rectangular connector with diode |
| DJ | 24V~/1,3W | *JP | Rectangular connector with MOV |
| DL | 12V~/1,3W | *JR | Rectangular connector with diode/light |
| DN | 12V~/0,5W* | *JS | Rectangular connector with MOV/light |
| DR | 12V~/1,0W* | *JT | Rectangular connector with rectifier |
| DS | 24V~/0,5W* | *JU | Rectangular connector with rectifier with light |
| DU | 24V~/1,0W* | * Not available on manifold or stacking valves | |
| * Not available on 36 series universal valves | | J-XX X-X XX | MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS |
| 2. WIRE LENGHT | | KA | Mini plug-in |
| J-XX X-X XX | WIRE LENGHT | KB | Mini plug-in with diode |
| A | 45 cm - 18" coil leads | KC | Mini plug-in with MOV |
| B | 60 cm - 24" coil leads | KD | Mini plug-in with light |
| C | 90 cm - 36" coil leads | KE | Mini plug-in with diode and light |
| D | 120 cm - 48" coil leads | KF | Mini plug-in with MOV and light |
| E | 180 cm - 72" coil leads | KG | Mini plug-in with rectifier |
| F | 240 cm - 96" coil leads | KH | Mini plug-in with rectifier and light |
| P | Base plug-in | KJ | Mini plug-in - Male only |
| O | No leads (use with J, K & L type connectors) | KK | Mini plug-in with diode - Male only |
| 3. MANUAL OPERATOR | | KL | Mini plug-in with MOV - Male only |
| J-XX X-X XX | MANUAL OPERATOR | KM | Mini plug-in with light - Male only |
| 0 | No operator | KN | Mini plug-in with diode and light - Male only |
| 1 | Non-locking recessed | KP | Mini plug-in with MOV and light - Male only |
| 2 | Locking recessed | KR | Mini plug-in with rectifier - Male only |
| 3 | Non-locking extended | KS | Mini plug-in with rectifier and light - Male only |
| 4 | Locking extended | * Not available on manifold or stacking valves | |
| 4. ELECTRICAL CONNECTION | | J-XX X-X XX | CONNECTORS FOR NON PLUG-IN VALVES MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS ISO SPECIFICATION 15217 |
| J-XX X-X XX | ELECTRICAL CONNECTION | LA | Mini plug-in |
| BA | Flying leads | LB | Mini plug-in with diode |
| GA | MAC JAC solenoid plug-in | LC | Mini plug-in with MOV |
| GB | MAC JAC solenoid plug-in with diode | LD | Mini plug-in with light |
| GC | MAC JAC solenoid plug-in with MOV | LE | Mini plug-in with diode and light |
| GD | MAC JAC solenoid plug-in with light | LF | Mini plug-in with MOV and light |
| GE | MAC JAC solenoid plug-in with diode and light | LG | Mini plug-in with rectifier |
| GF | MAC JAC solenoid plug-in with MOV and light | LH | Mini plug-in with rectifier and light |
| GG | MAC JAC solenoid plug-in with rectifier | LJ | Mini plug-in - Male only |
| GH | MAC JAC solenoid plug-in with rectifier and light | LK | Mini plug-in with diode - Male only |
| GJ | MAC JAC solenoid plug-in - Male only | LL | Mini plug-in with MOV - Male only |
| GK | MAC JAC solenoid plug-in with diode - Male only | LM | Mini plug-in with light - Male only |
| GL | MAC JAC solenoid plug-in with MOV - Male only | LN | Mini plug-in with diode and light - Male only |
| GM | MAC JAC solenoid plug-in with light - Male only | LP | Mini plug-in with MOV and light - Male only |
| GN | MAC JAC solenoid plug-in with diode and light - Male only | LR | Mini plug-in with rectifier - Male only |
| GP | MAC JAC solenoid plug-in with MOV and light - Male only | LS | Mini plug-in with rectifier and light - Male only |
| GR | MAC JAC solenoid plug-in with rectifier - Male only | J-XX X-X XX | CONNECTORS FOR PLUG-IN VALVES |
| GS | MAC JAC solenoid plug-in with rectifier and light - Male only | FA | Base plug-in |
| *JA | Square connector | FB | Base plug-in with diode |
| *JB | Rectangular connector | FC | Base plug-in with MOV |
| *JC | Square connector with light | FD | Base plug-in with light |
| *JD | Rectangular connector with light | FE | Base plug-in with diode and light |
| *JE | Square connector with diode | FF | Base plug-in with MOV and light |
| *JF | Square connector with MOV | FG | Base plug-in with rectifier |
| *JG | Square connector with diode/light | FH | Base plug-in with rectifier and light |
| *JH | Square connector with MOV/light | | |

Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ► **R XX X - X XX**
(Plug-in series) **1 2 3 4**

| 1. VOLTAGE | | 3. MANUAL OPERATOR | |
|---|---------------|--|---------------------------------------|
| R XX X - XXX | VOLTAGE | R XX X - XXX | MANUAL OPERATOR |
| DB | 24 VDC (1.0W) | 0 | No operator |
| DC | 24 VDC (1.8W) | 1 | Non-locking recessed |
| DD | 24 VDC (2.5W) | 3 | Non-locking extended |
| DE | 24 VDC (3.0W) | | |
| DF | 24 VDC (4.0W) | | |
| DH | 12 VDC (1.0W) | | |
| DJ | 12 VDC (1.8W) | | |
| DK | 12 VDC (2.5W) | | |
| DL | 12 VDC (3.0W) | | |
| DM | 12 VDC (4.0W) | | |
| EA* | 24 VDC (60W) | | |
| EB* | 24 VDC (90W) | | |
| EC* | 24 VDC (230W) | | |
| * MOD numbers required for these voltages (consult factory) | | | |
| 2. WIRE LENGHT | | 4. ELECTRICAL CONNECTION | |
| R XX X - XXX | WIRE LENGHT | ELECTRICAL CONNECTION FOR NON PLUG-IN VALVES | |
| 0* | No lead wire | R XX X - XXX | |
| A | 45 cm - 18" | BA | Flying leads |
| B | 60 cm - 24" | BB | Flying leads with LED |
| C | 90 cm - 36" | BC | Flying leads with MOV |
| D | 120 cm - 48" | BD | Flying leads with LED and MOV |
| E | 180 cm - 72" | DA | Base plug-in |
| F | 240 cm - 96" | DB | Base plug-in with LED |
| G | 300 cm - 120" | DC | Base plug-in with MOV |
| H | 365 cm - 144" | DD | Base plug-in with LED and MOV |
| P | Base plug-in | RA | Mini JAC solenoid |
| * Not available for flying leads connector | | RB | Mini JAC solenoid with LED |
| | | RC | Mini JAC solenoid with MOV |
| | | RD | Mini JAC solenoid with LED and MOV |
| | | TA | JST solenoid plug-in |
| | | TB | JST solenoid plug-in with LED |
| | | TC | JST solenoid plug-in with MOV |
| | | TD | JST solenoid plug-in with LED and MOV |
| | | ELECTRICAL CONNECTION FOR PLUG-IN VALVES | |
| | | R XX X - XXX | |
| | | PA | Base plug-in |
| | | PB | Base plug-in with light |
| | | PC | Base plug-in with MOV |
| | | PD | Base plug-in with light and MOV |

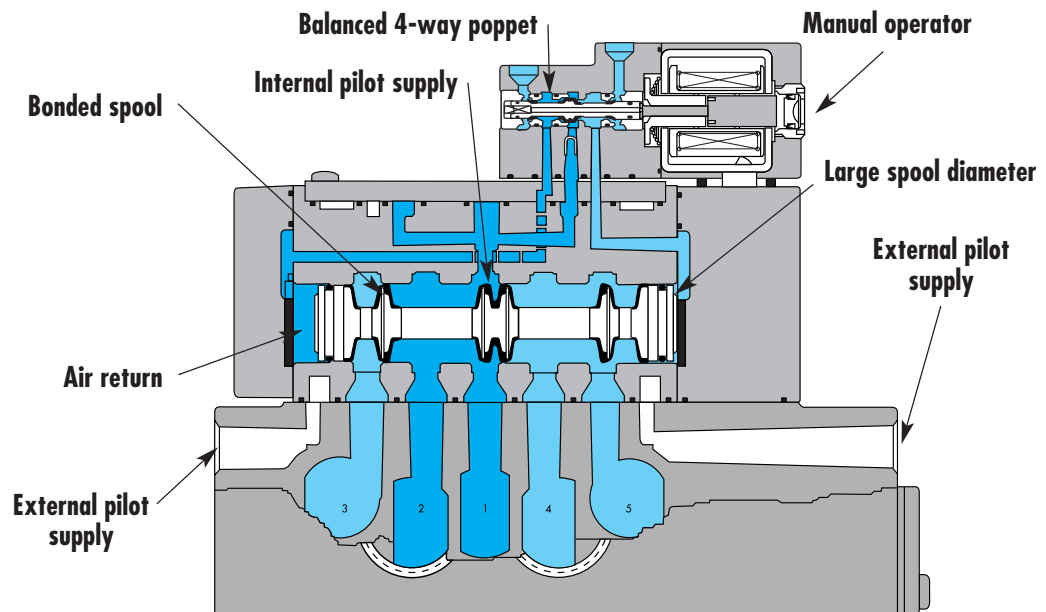
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

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



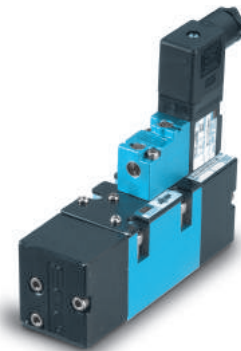
SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

| Function | Port size | Flow [Max] | Individual/Manifold mounting |
|-----------------|----------------------|--------------------|--|
| 5/2, 5/3 | G1/4" - G3/8" | 1800 NI/min | Valve only - No base non "plug-in" Conform to ISO 5599/1 |

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Internal | MV-B1A-AAAA-DM-Dxxx-xxx | MV-B1A-ABAA-DM-Dxxx-xxx | MV-B1A-AEAA-DM-Dxxx-xxx | MV-B1A-AFAA-DM-Dxxx-xxx |
| External "12" end | MV-B1A-AAAB-DM-Dxxx-xxx | MV-B1A-ABAB-DM-Dxxx-xxx | MV-B1A-AEAB-DM-Dxxx-xxx | MV-B1A-AFAB-DM-Dxxx-xxx |

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

* Other options available, see page options.

Note: ISO series, valve and base are ordered separately, see page for base code.

OPTIONS

Valve function :

MV-B1A-**AXXX**-XX-Dxxx-xxx

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

Pilot style :

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

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

Spool return :

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

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

TECHNICAL DATA

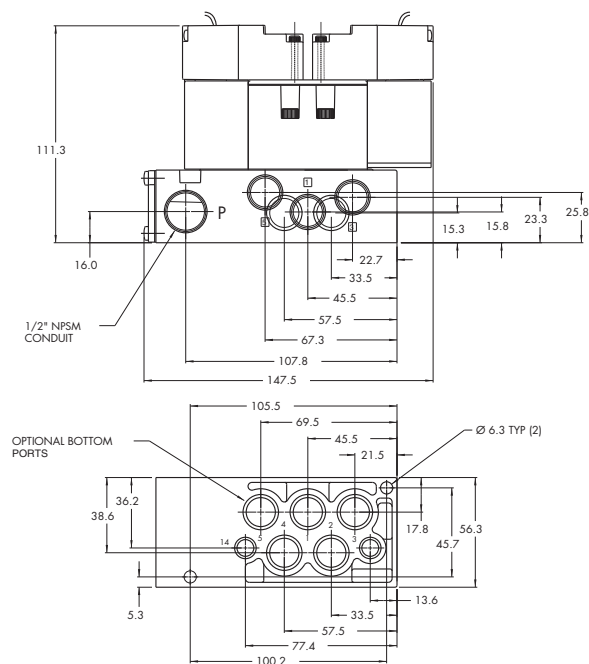
| | |
|---------------------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Pilot pressure : | Single / double operator : 1,3 to 8 bar 3 positions : 2 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 7.8 mm |
| Flow (at 6 bar, ΔP=1bar) : | 3/8": 1800 NI/min (Cv 1.8) - 1/4": 1600 NI/min (Cv 1.6) |
| Coil : | Epoxy encapsulated - Class A wires - 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~ Inrush 7,6 VA Holding: 4,8 VA = 1 to 12.7 W |
| Response times : (with 5,4 W coil) | Energize : 11.3 ms De-energize : 7.8 ms |

- Options :
- Sandwich flow controls: FCP1A-BA (screwdriver slot adjustment)
FCP1A-BB (locking knob adjustment)
 - Sandwich regulator, see 'Regulators' section

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

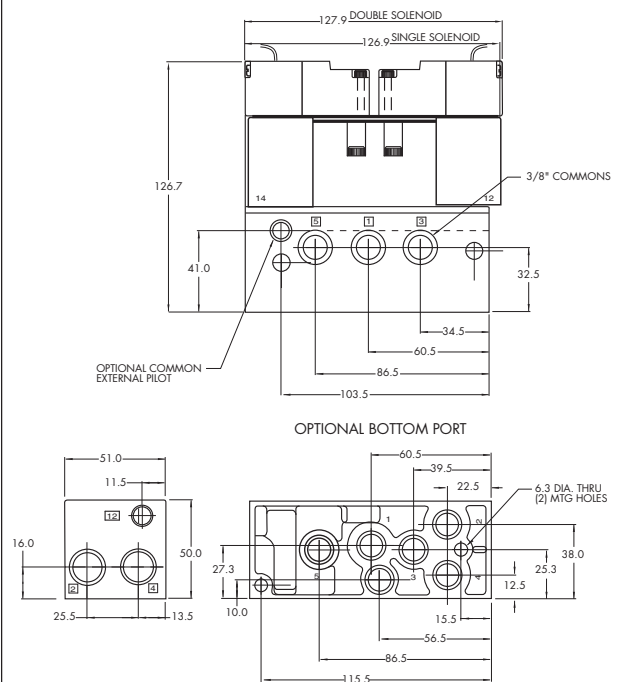
DIMENSIONS

Individual base



Dimensions shown are metric (mm)

Manifold base



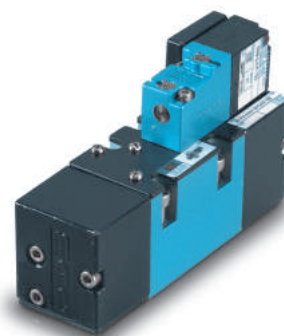
Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3 G1/4" - G3/8" 1800 NI/min

Valve only -
No base
"plug-in"
Conform to
ISO 5599/2

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | |
| Internal | MV-P1A-AAAA-DM-DxxP-xxx | MV-P1A-ABAA-DM-DxxP-xxx | MV-P1A-AEAA-DM-DxxP-xxx | MV-P1A-AFAA-DM-DxxP-xxx |
| External "12" end | MV-P1A-AAAB-DM-DxxP-xxx | MV-P1A-ABAB-DM-DxxP-xxx | MV-P1A-AEAB-DM-DxxP-xxx | MV-P1A-AFAB-DM-DxxP-xxx |

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤

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

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

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

OPTIONS

Valve function :

MV-P1A-AXXX-XX-DxxP-xxx

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

Pilot style :

MV-P1A-AXXX-DM-DxxP-xxx

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

Spool return :

MV-P1A-AXXX-XX-DxxP-xxx

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

TECHNICAL DATA

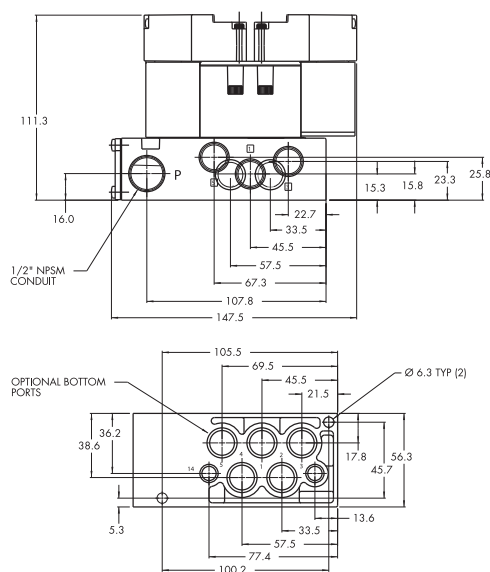
| | |
|---------------------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 8 bar |
| Pilot pressure : | Single / double operator : 1,3 to 8 bar 3 positions : 2 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 7.8 mm |
| Flow (at 6 bar, ΔP=1bar) : | 3/8": 1800 NI/min (Cv 1.8) - 1/4": 1600 NI/min (Cv 1.6) |
| Coil : | Epoxy encapsulated - Class A wires - 100% ED |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~ Inrush 7,6 VA Holding: 4,8 VA = 1 to 12.7 W |
| Response times : (with 5,4 W coil) | Energize : 10 ms De-energize : 9 ms |

- Options :
- Sandwich flow controls: FCP1A-AA (screwdriver slot adjustment)
FCP1A-AB (locking knob adjustment)
 - Sandwich regulator, see 'Regulators' section

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

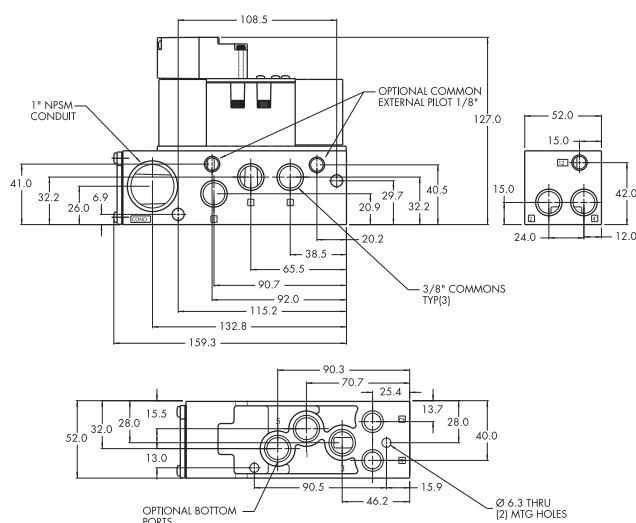
DIMENSIONS

Individual base



Dimensions shown are metric (mm)

Manifold base



Non plug-in base / manifold



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Side ports | Bottom ports | Bottom cylinder ports 2 and 4. | Bottom port 1 |
|--------------|------------|--------------|--------------------------------|---------------|
| G1/4" | MB-A1C-121 | MB-A1C-123 | MB-A1C-122 | MB-A1C-124 |
| G3/8" | MB-A1C-131 | MB-A1C-133 | MB-A1C-132 | MB-A1C-134 |

INDIVIDUAL BASE ACCORDING TO VDMA 24345

| Port size | Side ports | Bottom ports |
|--------------|------------|--------------|
| G1/4" | HB-A1A-A | HB-A1A-B |

MANIFOLD BASE

| Port size | Side ports | Bottom ports | Bottom cylinder ports 2 and 4. | Bottom port 1 |
|--------------|------------|--------------|--------------------------------|---------------|
| G1/4" | MM-A1C-121 | MM-A1C-123 | MM-A1C-122 | MM-A1C-124 |
| G3/8" | MM-A1C-131 | MM-A1C-133 | MM-A1C-132 | MM-A1C-134 |

Manifold fastening kit : N-63002-01.

MANIFOLD BASE ACCORDING TO VDMA 24345

| Port size | Side ports |
|--------------|------------|
| G1/4" | HM-A1A-C |

End plate kit: HM-A1A-D.

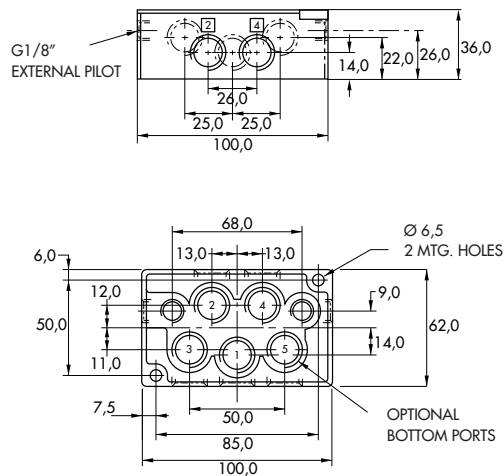
Valve blanking plate: MA1003.
Inlet/exhaust isolator plug: 32835.

DIMENSIONS

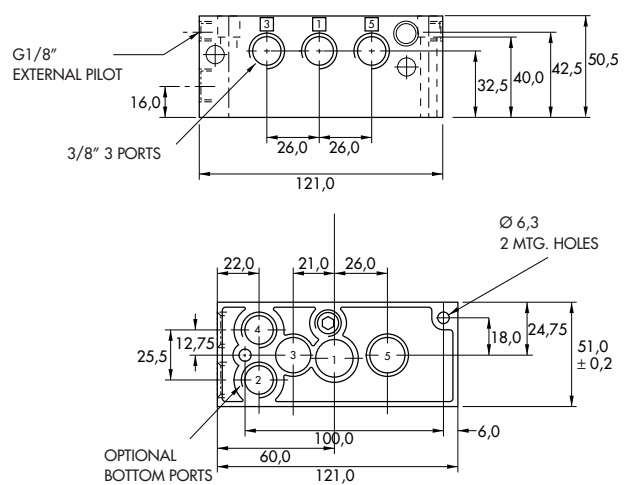
Dimensions shown are metric (mm)

Individual

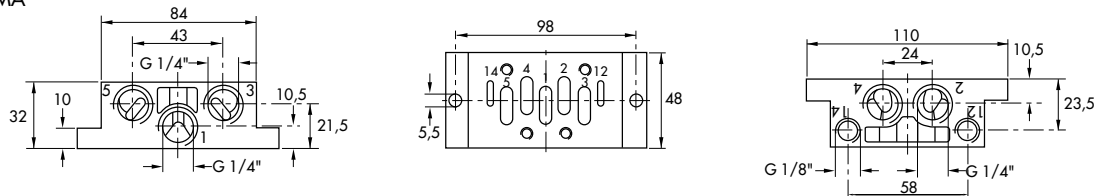
DIN 5599/1



Manifold



VDMA



Plug-in base / manifold



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Wired for | Side ports | Side ports w/ bottom 2 & 4 ports | All side & bottom ports |
|--------------|-----------------|--------------|----------------------------------|-------------------------|
| G1/4" | Single solenoid | MB-P1A-121-A | MB-P1A-122-A | MB-P1A-123-A |
| | Double solenoid | MB-P1A-121-B | MB-P1A-122-B | MB-P1A-123-B |
| G3/8" | Single solenoid | MB-P1A-131-A | MB-P1A-132-A | MB-P1A-133-A |
| | Double solenoid | MB-P1A-131-B | MB-P1A-132-B | MB-P1A-133-B |

MANIFOLD BASE

| Port size | Wired for | Side ports | Side ports w/ bottom 2 & 4 ports | All side & bottom ports (see note) |
|--------------|-----------------|--------------|----------------------------------|------------------------------------|
| G1/4" | Single solenoid | MM-P1A-121-A | MM-P1A-122-A | MM-P1A-123-A |
| | Double solenoid | MM-P1A-121-B | MM-P1A-122-B | MM-P1A-123-B |
| G3/8" | Single solenoid | MM-P1A-131-A | MM-P1A-132-A | MM-P1A-133-A |
| | Double solenoid | MM-P1A-131-B | MM-P1A-132-B | MM-P1A-133-B |

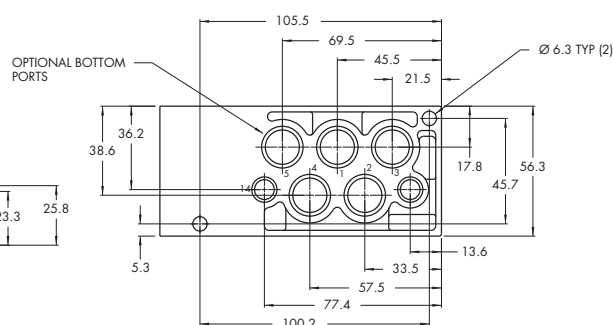
Note : Ports 1,3, and 5 are always 3/8".

OPTIONS

| | | | |
|----------------------------------|----------------|----------------------------------|--|
| Manifold options : | External pilot | MM-P1A-12x-xx | 32 for 1/4" port – common external pilot 33 for 3/8" port – common external pilot |
| | Terminal strip | MM-P1A-xxx-A (N/A with light) | J wired for sgl solenoid K wired for double solenoid |
| Base / Manifold option: light(s) | | MX-P1A-xxx-xJA | JA 110/120 volt JB 220/240 volt DA 24 volt |

Accessories: M-P1001 Valve blanking plate.
N-P1007-01 Manifold fastening kit.
32835 Inlet/exhaust isolator plug.

Dimensions shown are metric (mm)



Manifold

108.5

127.0

1" NPSM CONDUIT

OPTIONAL COMMON EXTERNAL PILOT 1/8"

41.0

32.2

26.0

6.9

20.9

29.7

40.5

32.2

20.2

38.5

65.5

90.7

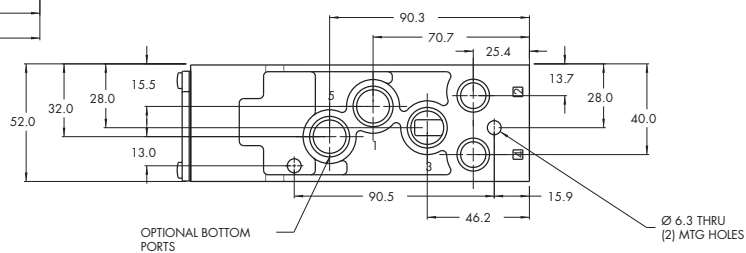
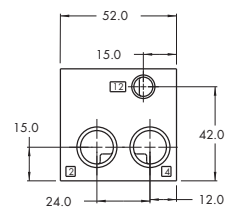
92.0

115.2

132.8

159.3

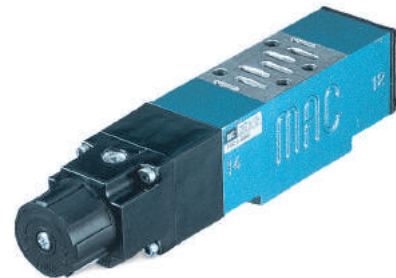
3/8" COMMONS TYP[3]



Non plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA1A-GAAA | PRA1A-GCAA | PRA1A-GBAA | PRA1A-GDAA | PRA1A-GEAA |
| Gauge perpendicular to regulator(s) | PRA1A-GABA | PRA1A-GCBA | PRA1A-GBBA | PRA1A-GDBA | PRA1A-GECA |
| Gauge parallel to regulator(s) | PRA1A-GADA | PRA1A-GCDA | PRA1A-GBDA | PRA1A-GDDA | PRA1A-GEEA |

EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA1A-HAAA | PRA1A-HCAA | PRA1A-HBAA | PRA1A-HDAA | PRA1A-HEAA |
| Gauge perpendicular to regulator(s) | PRA1A-HABA | PRA1A-HCBA | PRA1A-HBBA | PRA1A-HDBA | PRA1A-HECA |
| Gauge parallel to regulator(s) | PRA1A-HADA | PRA1A-HCDA | PRA1A-HBDA | PRA1A-HDDA | PRA1A-HEEA |

* - To be used with dual pressure valves.

Note : regulating range for above models is 0-8 bar. For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35336.

ADJUSTMENT OPTIONS

PRA1A-xxxx

- A** for slotted stem adjustment (internal pilot)
- B** for slotted stem adjustment (external/remote air)
- K** for slotted stem with locknut (internal pilot)
- L** for slotted stem with locknut (external/remote air)

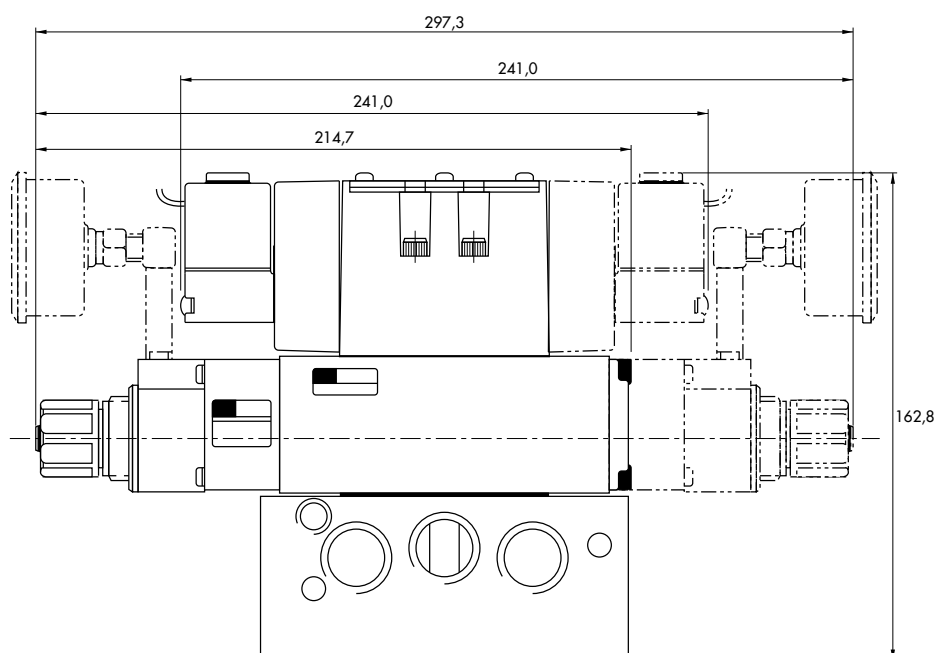
| TECHNICAL DATA | |
|---------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 8 bar (other ranges see below) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C to 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to 50°C |
| Flow : | 1000 Nl/min (Cv 1.0) |

- Spare parts :
- Pressure regulator (less sandwich block) : PRA1A-JOAA (KNOB), PRA1A-COAA (SLOTTED STEM), PRA1A-MOAA (SLOTTED STEM WITH LOCKNUT).
 - Gauge : N-82016-01 (0-8 bar perpendicular)
N-82016-02 (0-8 bar parallel)
N-82016-03 (0-5,3 bar perpendicular)
N-82016-04 (0-5,3 bar parallel)
N-82016-05 (0-2 bar perpendicular)
N-82016-06 (0-2 bar parallel)

Regulating range options : PRA1A-XXXXA

- | | |
|--------------|---|
| Replace by B | - 0 to 5,3 bar |
| Replace by C | - 0 to 2 bar |
| Replace by D | - 0 to 8 bar on "14" end - 0 to 5,3 bar on "12" end |
| Replace by E | - 0 to 8 bar on "12" end - 0 to 5,3 bar on "14" end |
| Replace by F | - 0 to 8 bar on "14" end - 0 to 2 bar on "12" end |
| Replace by G | - 0 to 8 bar on "12" end - 0 to 2 bar on "14" end |
| Replace by H | - 0 to 5,3 bar on "14" end - 0 to 2 bar on "12" end |
| Replace by J | - 0 to 5,3 bar on "12" end - 0 to 2 bar on "14" end |

DIMENSIONS Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA1A-DAAA | PRA1A-DCAA | PRA1A-DBAA | PRA1A-DDAA | PRA1A-DEAA |
| Gauge perpendicular to regulator(s) | PRA1A-DABA | PRA1A-DCBA | PRA1A-DBBA | PRA1A-DDBA | PRA1A-DECA |
| Gauge parallel to regulator(s) | PRA1A-DADA | PRA1A-DCDA | PRA1A-DBDA | PRA1A-DDDA | PRA1A-DEEA |

EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA1A-EAAA | PRA1A-ECAA | PRA1A-EBAA | PRA1A-EDAA | PRA1A-EEAA |
| Gauge perpendicular to regulator(s) | PRA1A-EABA | PRA1A-ECBA | PRA1A-EBBA | PRA1A-EDBA | PRA1A-EECA |
| Gauge parallel to regulator(s) | PRA1A-EADA | PRA1A-ECDA | PRA1A-EBDA | PRA1A-EDDA | PRA1A-EEEA |

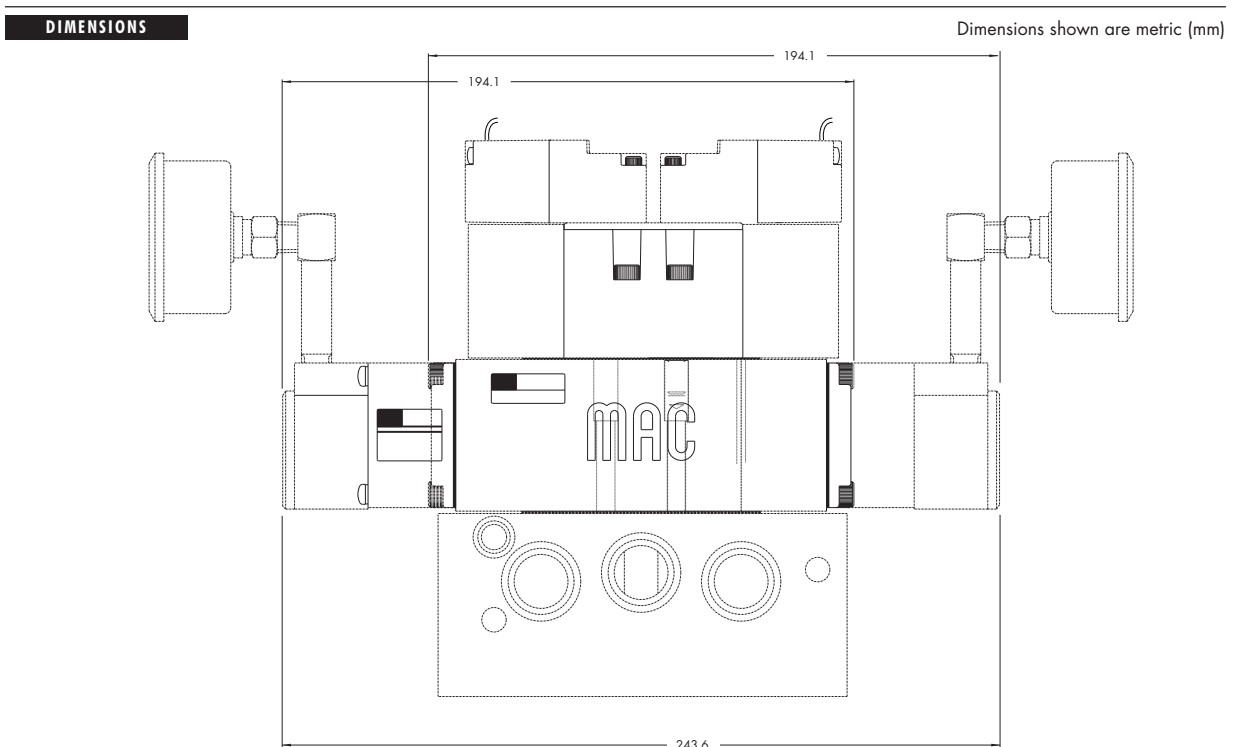
* - To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35336.

| TECHNICAL DATA | |
|---------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C to 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to 50°C |
| Flow : | 1000 NI/min (Cv 1.0) |

Spare parts :

- Pressure regulator (less sandwich block) : PRA1A-F0AA.
- Gauge : N-82016-01 (0-8 bar perpendicular)
N-82016-02 (0-8 bar parallel)



Plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|--|--|--|--|--|--|
| Gauge port only | PRP1A-GAKA | PRP1A-GCKA | PRP1A-GBKA | PRP1A-GDKA | PRP1A-GEKA |
| Gauge perpendicular to manual operator | PRP1A-GABA | PRP1A-GCBA | PRP1A-GBBA | PRP1A-GDBA | PRP1A-GECA |
| Gauge parallel to manual operator | PRP1A-GADA | PRP1A-GCDA | PRP1A-GBDA | PRP1A-GDDA | PRP1A-GEEA |

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|--|--|--|--|--|--|
| No gauge | PRP1A-HAKA | PRP1A-HCKA | PRP1A-HBKA | PRP1A-HDKA | PRP1A-HEKA |
| Gauge perpendicular to manual operator | PRP1A-HABA | PRP1A-HCBA | PRP1A-HBBA | PRP1A-HDBA | PRP1A-HECA |
| Gauge parallel to manual operator | PRP1A-HADA | PRP1A-HCDA | PRP1A-HBDA | PRP1A-HDDA | PRP1A-HEEA |

* For use with dual pressure valves.

Note: Regulating range for above models is 0-8 bar. For other ranges, see technical data page.

ADJUSTMENT OPTIONS

PRP1A-XXXX

- A** for slotted stem adjustment (internal pilot)
- B** for slotted stem adjustment (external/remote air)
- K** for slotted stem with locknut (internal pilot)
- L** for slotted stem with locknut (external/remote air)

Notes:

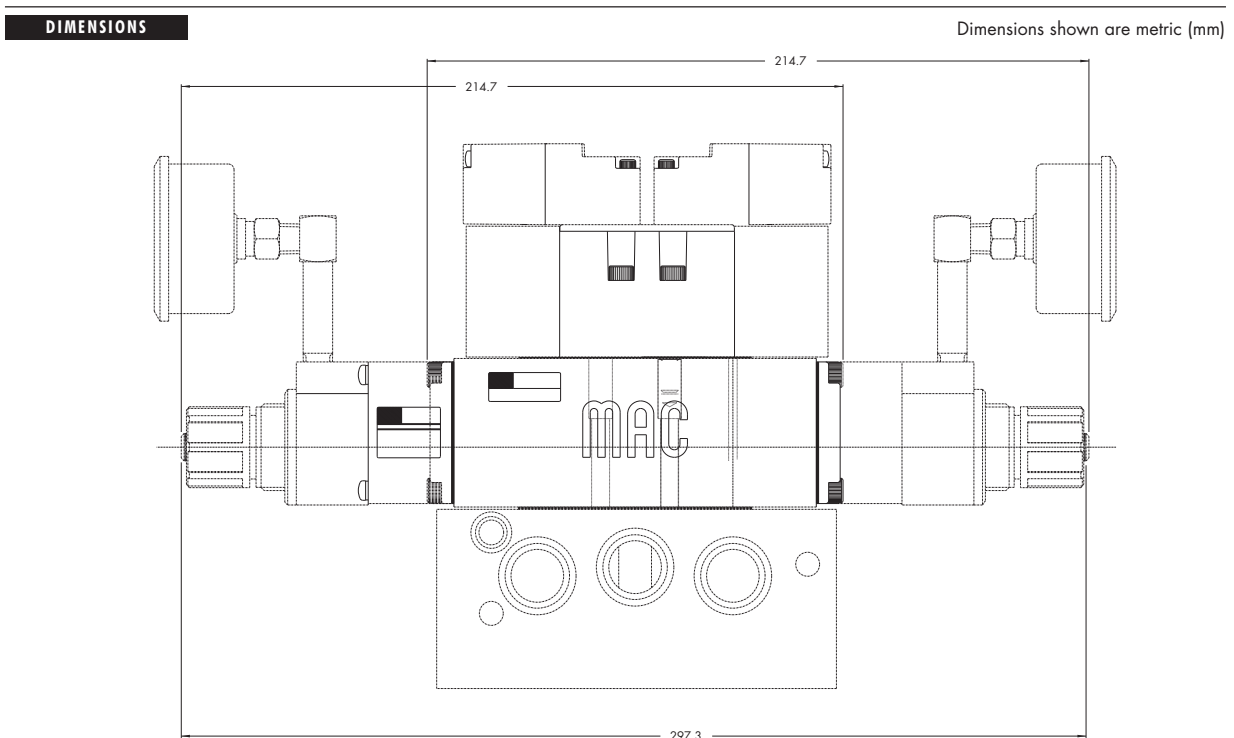
1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

| TECHNICAL DATA | |
|-------------------------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 1100 NI/min (Cv 1.1) |

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

Regulating range options : PRP1A-XXXX

| | |
|--------------|---|
| Replace by B | - 0 to 5,3 bar |
| Replace by C | - 0 to 2 bar |
| Replace by D | - 0 to 8 bar on "14" end - 0 to 5,3 bar on "12" end |
| Replace by E | - 0 to 8 bar on "12" end - 0 to 5,3 bar on "14" end |
| Replace by F | - 0 to 8 bar on "14" end - 0 to 2 bar on "12" end |
| Replace by G | - 0 to 8 bar on "12" end - 0 to 2 bar on "14" end |
| Replace by H | - 0 to 5,3 bar on "14" end - 0 to 2 bar on "12" end |
| Replace by J | - 0 to 5,3 bar on "12" end - 0 to 2 bar on "14" end |



Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|--|--|--|--|--|--|
| Gauge port only | PRP1A-DAKA | PRP1A-DCKA | PRP1A-DBKA | PRP1A-DDKA | PRP1A-DEKA |
| Gauge perpendicular to manual operator | PRP1A-DABA | PRP1A-DCBA | PRP1A-DBBA | PRP1A-DDBA | PRP1A-DECA |
| Gauge parallel to manual operator | PRP1A-DADA | PRP1A-DCDA | PRP1A-DBDA | PRP1A-DDDA | PRP1A-DEEA |

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|--|--|--|--|--|--|
| Gauge port only | PRP1A-EAKA | PRP1A-ECKA | PRP1A-EBKA | PRP1A-EDKA | PRP1A-EEKA |
| Gauge perpendicular to manual operator | PRP1A-EABA | PRP1A-ECBA | PRP1A-EBBA | PRP1A-EDBA | PRP1A-EECA |
| Gauge parallel to manual operator | PRP1A-EADA | PRP1A-ECDA | PRP1A-EBDA | PRP1A-EDDA | PRP1A-EEEA |

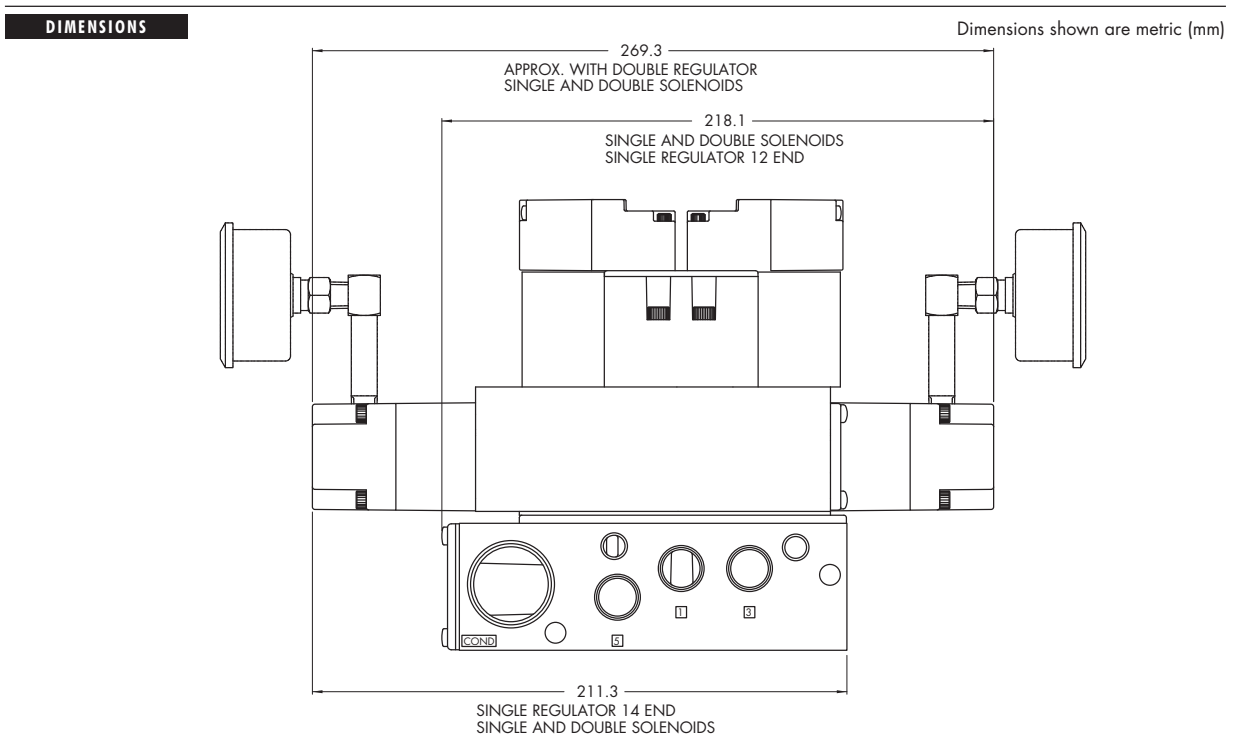
* - To be used with dual pressure valves.

Notes:

1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

| TECHNICAL DATA | |
|-------------------------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 1100 NI/min (Cv 1.1) |

- Spare parts :
- Pressure regulator (less sandwich block): PRP1A-FOKA
 - Regulator block to base mounting tie rod: 19496



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ► **-DM- D XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|---|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| | | KF | Square connector with light and protection varistor |
| | | KG | Square connector with light & diode |
| | | KJ | Square connector (male only) |
| | | KK | Square connector with protection diode (male only) |
| | | KL | Square connector with protection varistor (male only) |
| | | TA | Dual tabs with receptacles |
| | | TB | TA with protection diode |
| | | TD | TA with light |
| | | TE | TA with light and protection diode |
| | | TJ | Dual tabs (male only) |
| | | TK | TJ with protection diode |
| | | TM | TJ with light |
| | | TN | TJ with light and protection diode |
| | | * From Lead wire length options choose A through F | |
| | | ** From Lead wire length options choose 0 through F | |
| | | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |
| 2. WIRE LENGTH | | | |
| D-XX X-X XX | WIRE LENGTH | | |
| 0 | No wires | | |
| A | 45 cm – 18" | | |
| B | 60 cm – 24" | | |
| C | 90 cm – 36" | | |
| D | 120 cm – 48" | | |
| E | 180 cm – 72" | | |
| F | 240 cm – 96" | | |
| 3. MANUAL OPERATOR | | | |
| D-XX X-X XX | MANUAL OPERATOR | | |
| 0 | No operator | | |
| 1 | Non-locking recessed | | |
| 2 | Locking recessed | | |
| 3 | Non-locking extended | | |
| 4 | Locking extended | | |

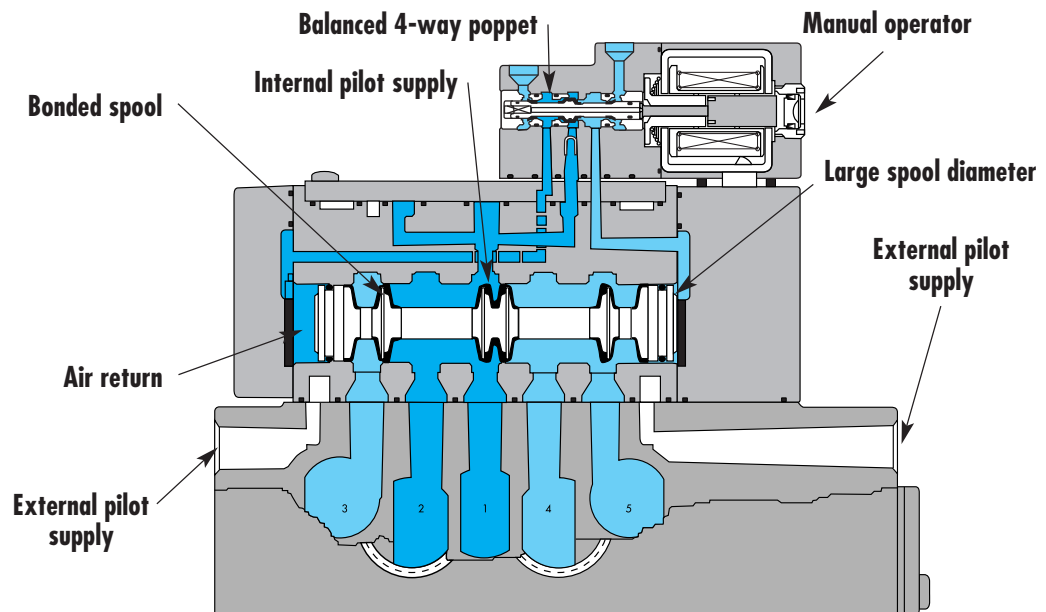
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

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



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

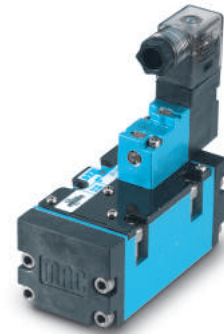
Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3 G3/8" - G1/2" 3000 NI/minn

Valve only -
No base
non "plug-in"
Conform to
ISO 5599/1

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | |
| Internal | MV-B2A-AAAA-DM-Dxxx-xxx | MV-B2A-ABAA-DM-Dxxx-xxx | MV-B2A-AEAA-DM-Dxxx-xxx | MV-B2A-AFAA-DM-Dxxx-xxx |
| External "12" end | MV-B2A-AAAB-DM-Dxxx-xxx | MV-B2A-ABAB-DM-Dxxx-xxx | MV-B2A-AEAB-DM-Dxxx-xxx | MV-B2A-AFAB-DM-Dxxx-xxx |

DUAL PRESSURE MODELS

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

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

* Other options available, see page options.

Note: ISO series, valve and base are ordered separately, see page for base code.

OPTIONS

Valve function :

MV-B2A-**AXXX**-XX-Dxxx-xxx

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

Pilot style :

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

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

Spool return :

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

- A** Standard return
B Memory spring return

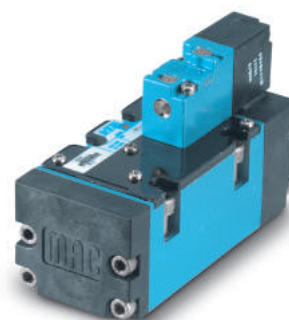
Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3 G3/8" - G1/2" 3000 NI/min

Valve only -
No base
"plug-in"
Conform to
ISO 5599/2

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Internal | MV-P2A-AAAA-DM-DxxP-xxx | MV-P2A-ABAA-DM-DxxP-xxx | MV-P2A-AEAA-DM-DxxP-xxx | MV-P2A-AFAA-DM-DxxP-xxx |
| External "12" end | MV-P2A-AAAB-DM-DxxP-xxx | MV-P2A-ABAB-DM-DxxP-xxx | MV-P2A-AEAB-DM-DxxP-xxx | MV-P2A-AFAB-DM-DxxP-xxx |

DUAL PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Pressure centre |
|------------------------|-------------------------|-------------------------|-------------------------|
| Internal From port #3 | MV-P2A-ACAD-DM-DxxP-xxx | MV-P2A-ADAD-DM-DxxP-xxx | MV-P2A-AGAD-DM-DxxP-xxx |
| Internal From port #5 | MV-P2A-ACAE-DM-DxxP-xxx | MV-P2A-ADAE-DM-DxxP-xxx | MV-P2A-AGAE-DM-DxxP-xxx |
| External From "12" end | MV-P2A-ACAB-DM-DxxP-xxx | MV-P2A-ADAB-DM-DxxP-xxx | MV-P2A-AGAB-DM-DxxP-xxx |

SOLENOID OPERATOR ➤

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

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

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

OPTIONS

Valve function :

MV-P2A-AXXX-XX-DxxP-xxx

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

Pilot style :

MV-P2A-AXXX-DM-DxxP-xxx

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

Spool return :

MV-P2A-AXXX-XX-DxxP-xxx

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

TECHNICAL DATA

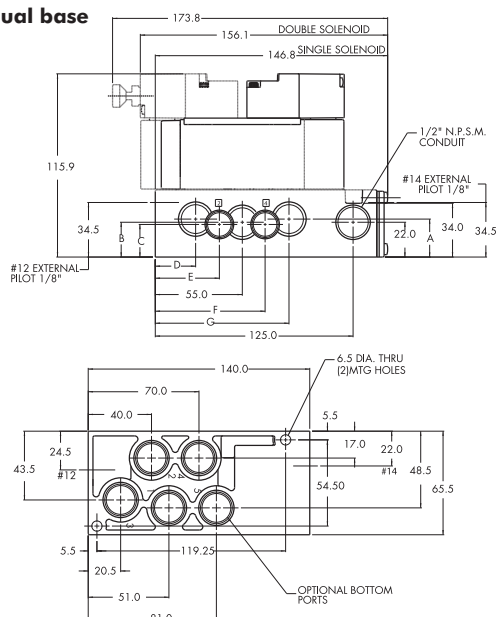
| | |
|----------------------------|---|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar |
| Pilot pressure : | Single operator and 3 positions : 1,3 to 8 bar double operator : 2 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 10.5 mm |
| Flow (at 6 bar, ΔP=1bar) : | G3/8": 2800 NI/min (Cv 2.8) - G1/2": 3000 NI/min (Cv 3,0) |
| Coil : | Epoxy encapsulated – class A wires – 100% ED (specify mod 0449) |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~ Inrush 14,8 VA Holding: 4,8 VA = 12.7 to 1,0 W |
| Response times : | 24 V= /5,4w Energize : 10 ms De-energize : 9.6 ms 110V~/50Hz Energize : 6-15 ms De-energize : 10-17 ms |

- Options :
- Sandwich flow controls: FCP2A-AA (screwdriver slot adjustment)
FCP2A-AB (locking knob adjustment)
 - Sandwich regulator, see 'Regulators' section

- Spare parts :
- Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16576
 - Valve mounting screws (x4): 35413

DIMENSIONS

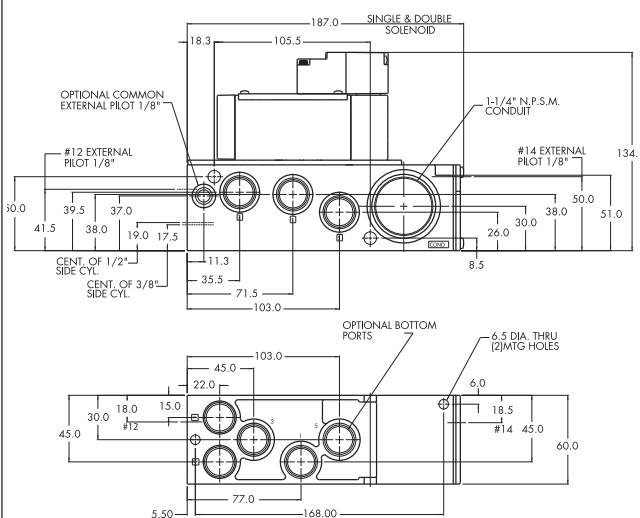
Individual base



| DIM. | A | B | C | D | E | F | G |
|-------|------|------|------|------|------|------|------|
| G3/8" | 25.2 | 22.7 | 20.6 | 26.7 | 40.5 | 69.4 | 83.3 |
| G1/2" | 24.0 | 21.0 | 19.0 | 25.5 | 40.0 | 70.0 | 84.5 |

Manifold base

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] | Individual/Manifold mounting |
|------------------|----------------------|--------------------|------------------------------|
| 5/2 - 5/3 | G3/8" - G1/2" | 3100 NI/min | Valve only no base |

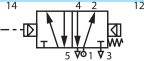
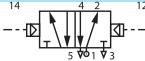
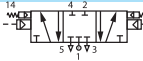
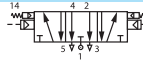
OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.

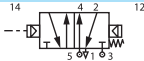
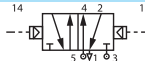
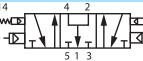
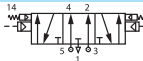


HOW TO ORDER

SINGLE PRESSURE MODELS

| Air spring | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|------------|---|---|--|---|
| |  |  |  |  |
| Internal | MV-R2A-BACF | MV-R2A-BBAK | MV-R2A-BEAK | MV-R2A-BFAK |
| External | MV-R2A-BACG | | | |

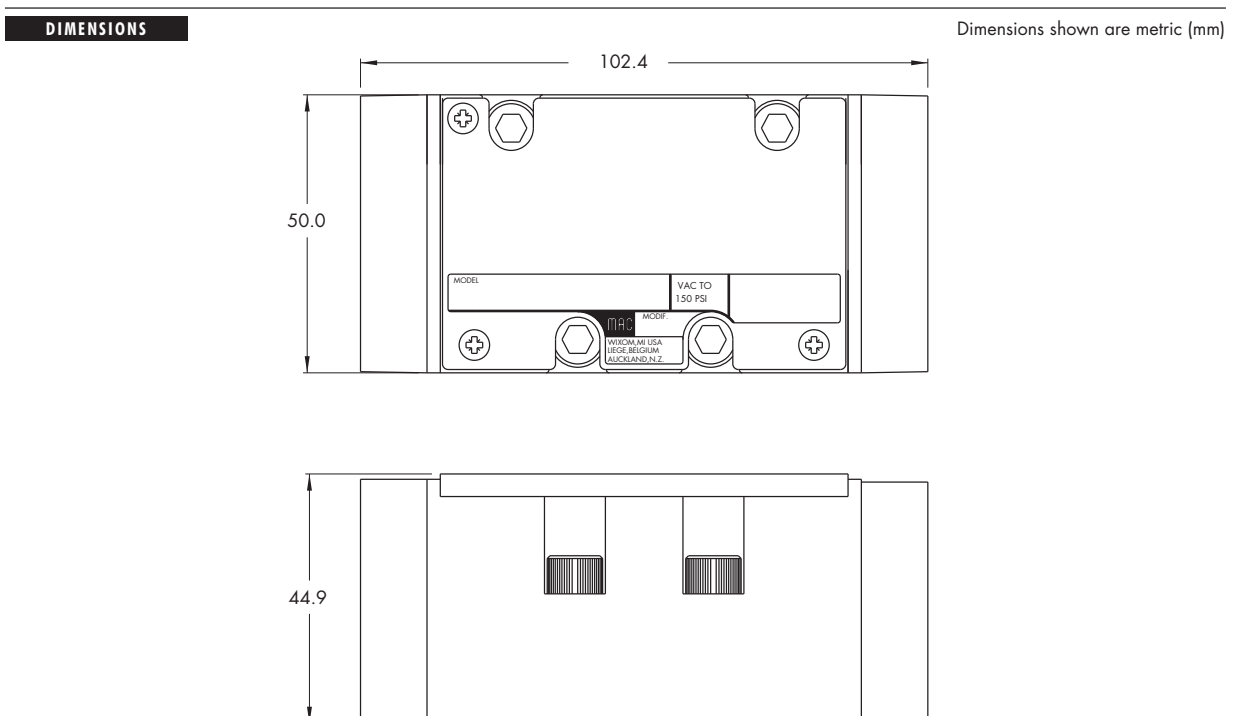
DUAL PRESSURE MODELS

| Air spring | 5/2 Single operator | 5/2 Double operator | 5/3 Open centre | 5/3 Pressure centre |
|------------------|---|---|--|---|
| |  |  |  |  |
| Internal port #3 | MV-R2A-BCCH | MV-R2A-BDAK | MV-R2A-BHAK | MV-R2A-BGAK |
| Internal port #5 | MV-R2A-BCCJ | | | |
| External | MV-R2A-BCCG | | | |

Note: ISO series, valve and base are ordered separately, see page for base code.

| TECHNICAL DATA | |
|----------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 10 bar |
| Air signal pressure : | Single/double operator: 1,3 to 10 bar 3 position: 2 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 10,6 mm |
| Flow (at 6 bar, ΔP=1bar) : | G3/8": 2800 Nl/min – G1/2" : 3100 Nl/min (Cv 3,1) |

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



Non plug-in base / manifold



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Side ports | Bottom ports | Bottom cylinder ports 2 and 4. | Bottom port 1 |
|--------------|------------|--------------|--------------------------------|---------------|
| G3/8" | MB-A2B-121 | MB-A2B-123 | MB-A2B-122 | MB-A2B-124 |
| G1/2" | MB-A2B-131 | MB-A2B-133 | MB-A2B-132 | MB-A2B-134 |

INDIVIDUAL BASE ACCORDING TO VDMA 24345

| Port size | Side ports | Bottom ports |
|--------------|------------|--------------|
| G3/8" | HB-A2B-A | HB-A2B-B |

MANIFOLD BASE

| Port size | Side ports | Bottom ports | Bottom cylinder ports 2 and 4. | Bottom port 1 |
|--------------|------------|--------------|--------------------------------|---------------|
| G3/8" | MM-A2B-121 | MM-A2B-123 | MM-A2B-122 | MM-A2B-124 |
| G1/2" | MM-A2B-131 | MM-A2B-133 | MM-A2B-132 | MM-A2B-134 |

Manifold fastening kit : N-63002-01.

MANIFOLD BASE ACCORDING TO VDMA 24345

| Port size | Side ports |
|--------------|------------|
| G3/8" | HM-A2B-C |

End plate kit: HM-A2B-D.

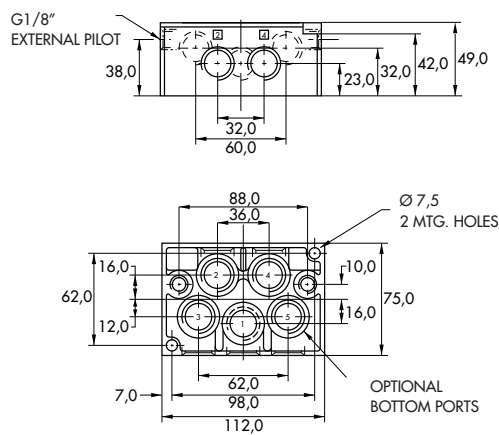
Valve blanking plate: MA2003.
Inlet/exhaust isolator plug: 32839.

DIMENSIONS

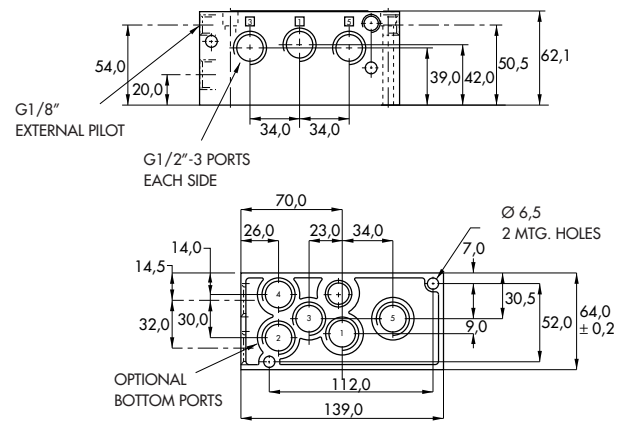
Dimensions shown are metric (mm)

Individual

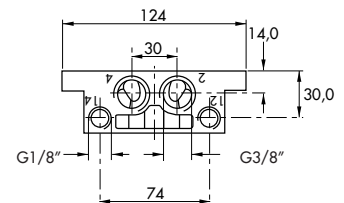
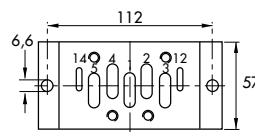
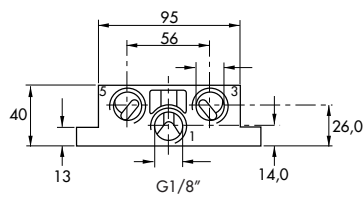
DIN 5599/1



Manifold



VDMA



Plug-in base / manifold



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Wired for | Side ports | Side ports w/ bottom 2 & 4 ports | All side & bottom ports |
|--------------|-----------------|--------------|----------------------------------|-------------------------|
| G3/8" | Single solenoid | MB-P2A-121-A | MB-P2A-122-A | MB-P2A-123-A |
| | Double solenoid | MB-P2A-121-B | MB-P2A-122-B | MB-P2A-123-B |
| G1/2" | Single solenoid | MB-P2A-131-A | MB-P2A-132-A | MB-P2A-133-A |
| | Double solenoid | MB-P2A-131-B | MB-P2A-132-B | MB-P2A-133-B |

MANIFOLD BASE

| Port size | Wired for | Side ports | Side ports w/ bottom 2 & 4 ports | All side & bottom ports (see note) |
|--------------|-----------------|--------------|----------------------------------|------------------------------------|
| G3/8" | Single solenoid | MM-P2A-121-A | MM-P2A-122-A | MM-P2A-123-A |
| | Double solenoid | MM-P2A-121-B | MM-P2A-122-B | MM-P2A-123-B |
| G1/2" | Single solenoid | MM-P2A-131-A | MM-P2A-132-A | MM-P2A-133-A |
| | Double solenoid | MM-P2A-131-B | MM-P2A-132-B | MM-P2A-133-B |

Note : Ports 1,3, and 5 are always 1/2".

OPTIONS

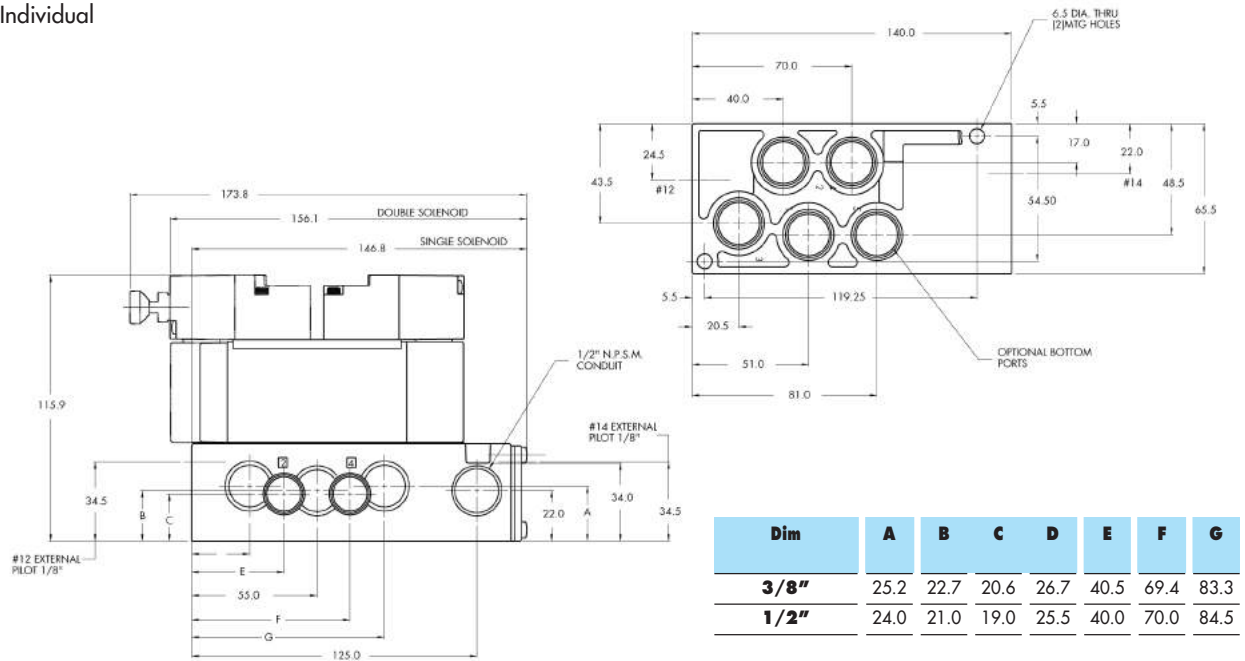
| | | | |
|----------------------------------|----------------|----------------------------------|--|
| Manifold options : | External pilot | MM-P2A-12x-xx | 32 for 3/8" port – common external pilot 33 for 1/2" port – common external pilot |
| | Terminal strip | MM-P2A-xxx-A (N/A with light) | J wired for sgl solenoid K wired for double solenoid |
| Base / Manifold option: light(s) | | MX-P2A-xxx-xJA | JA 110/120 volt JB 220/240 volt DA 24 volt |

| | | |
|--------------|------------|------------------------------|
| Accessories: | M-P2001 | Valve blanking plate. |
| | N-P2004-01 | Manifold fastening kit. |
| | 32839 | Inlet/exhaust isolator plug. |

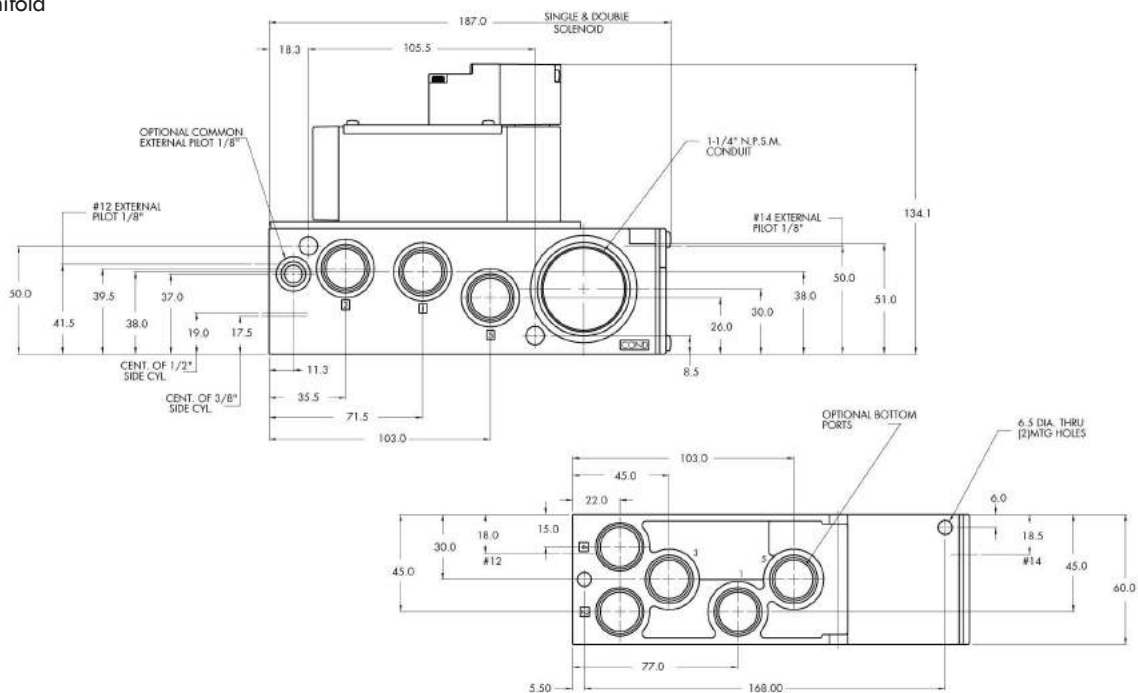
DIMENSIONS

Dimensions shown are metric (mm)

Individual



Manifold



Non plug-in 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

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 | Dual pressure Regulator 12 end Regulated pressure to port 2 | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 |
|---|--|--|--|--|--|
| No gauge | PRA2D-1AAA | PRA2D-1EAA | PRA2D-1BAA | PRA2D-1FAA | PRA2D-1JAA |
| Non-filled gauge on regulator(s) | PRA2D-1ADA | PRA2D-1EDA | PRA2D-1BDA | PRA2D-1FDA | PRA2D-1JEA |
| Non-filled gauge opposite to regulator | PRA2D-1CDA | PRA2D-1GDA | PRA2D-1DDA | PRA2D-1HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA2D-1ABA | PRA2D-1EBA | PRA2D-1BBA | PRA2D-1FBA | PRA2D-1JCA |
| Glycerine filled gauge opposite to regulator | PRA2D-1CBA | PRA2D-1GBA | PRA2D-1DBA | PRA2D-1HBA | ----- |

EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 | Dual pressure Regulator 12 end Regulated pressure to port 2 | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 |
|---|--|--|--|--|--|
| No gauge | PRA2D-2AAA | PRA2D-2EAA | PRA2D-2BAA | PRA2D-2FAA | PRA2D-2JAA |
| Non-filled gauge on regulator(s) | PRA2D-2ADA | PRA2D-2EDA | PRA2D-2BDA | PRA2D-2FDA | PRA2D-2JEA |
| Non-filled gauge opposite to regulator | PRA2D-2CDA | PRA2D-2GDA | PRA2D-2DDA | PRA2D-2HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA2D-2ABA | PRA2D-2EBA | PRA2D-2BBA | PRA2D-2FBA | PRA2D-2JCA |
| Glycerine filled gauge opposite to regulator | PRA2D-2CBA | PRA2D-2GBA | PRA2D-2DBA | PRA2D-2HBA | ----- |

* - To be used with dual pressure valves.

Note : regulating range for above models is 0-10 bar.

For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

ADJUSTMENT OPTIONS

PRA2D-xxxx

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

TECHNICAL DATA

| | |
|---------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar (other ranges see below) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C to 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to 50°C |
| Flow : | 2300 NI/min (Cv 2.3) |

Spare parts :

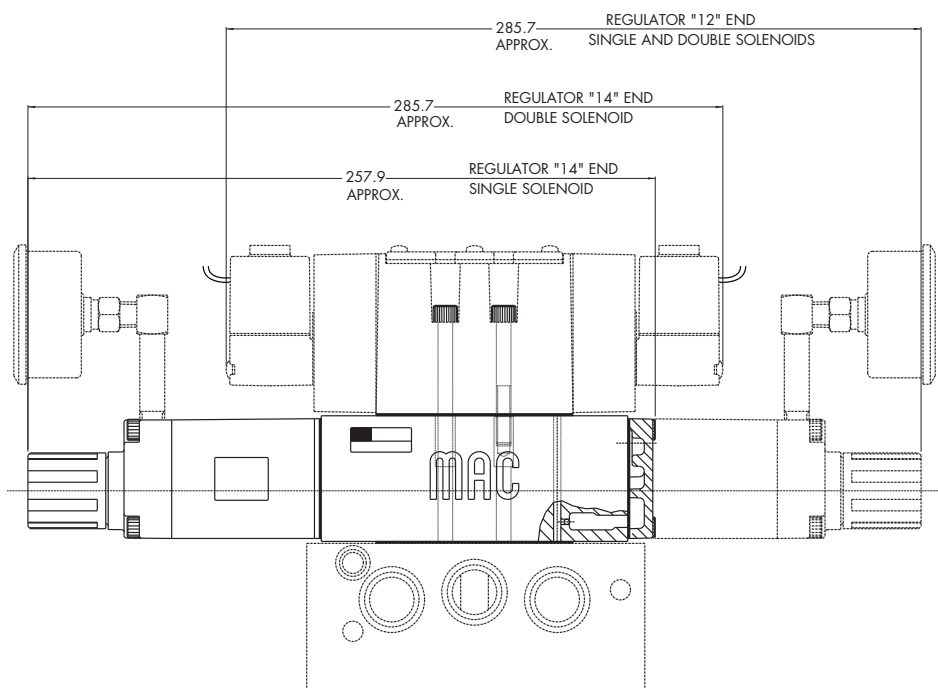
- Pressure regulator (less sandwich block) : PRA2D-30AA (KNOB), PRA2D-C0AA (SLOTTED STEM), PRA2D-F0AA (SLOTTED STEM WITH LOCKNUT).
- Gauge : • Glycerine filled : N-62015-01
- Non filled : N-62016-01

Regulating range options : PRA2D-XXXA

Replace by B - 0 to 6,7 bar
Replace by C - 0 to 3 bar

DIMENSIONS

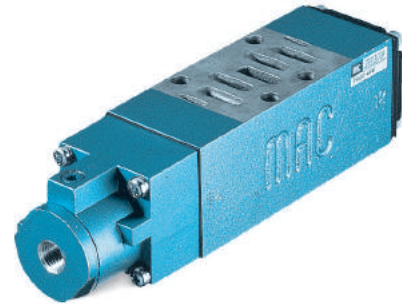
Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 | Dual pressure Regulator 12 end Regulated pressure to port 2 | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 |
|---|--|--|--|--|--|
| No gauge | PRA2D-4AAA | PRA2D-4EAA | PRA2D-4BAA | PRA2D-4FAA | PRA2D-4JAA |
| Non-filled gauge on regulator(s) | PRA2D-4ADA | PRA2D-4EDA | PRA2D-4BDA | PRA2D-4FDA | PRA2D-4JEA |
| Non-filled gauge opposite to regulator | PRA2D-4CDA | PRA2D-4GDA | PRA2D-4DDA | PRA2D-4HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA2D-4ABA | PRA2D-4EBA | PRA2D-4BBA | PRA2D-4FBA | PRA2D-4JCA |
| Glycerine filled gauge opposite to regulator | PRA2D-4CBA | PRA2D-4GBA | PRA2D-4DBA | PRA2D-4HBA | ----- |

EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 | Dual pressure Regulator 12 end Regulated pressure to port 2 | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 |
|---|--|--|--|--|--|
| No gauge | PRA2D-5AAA | PRA2D-5EAA | PRA2D-5BAA | PRA2D-5FAA | PRA2D-5JAA |
| Non-filled gauge on regulator(s) | PRA2D-5ADA | PRA2D-5EDA | PRA2D-5BDA | PRA2D-5FDA | PRA2D-5JEA |
| Non-filled gauge opposite to regulator | PRA2D-5CDA | PRA2D-5GDA | PRA2D-5DDA | PRA2D-5HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA2D-5ABA | PRA2D-5EBA | PRA2D-5BBA | PRA2D-5FBA | PRA2D-5JCA |
| Glycerine filled gauge opposite to regulator | PRA2D-5CBA | PRA2D-5GBA | PRA2D-5DBA | PRA2D-5HBA | ----- |

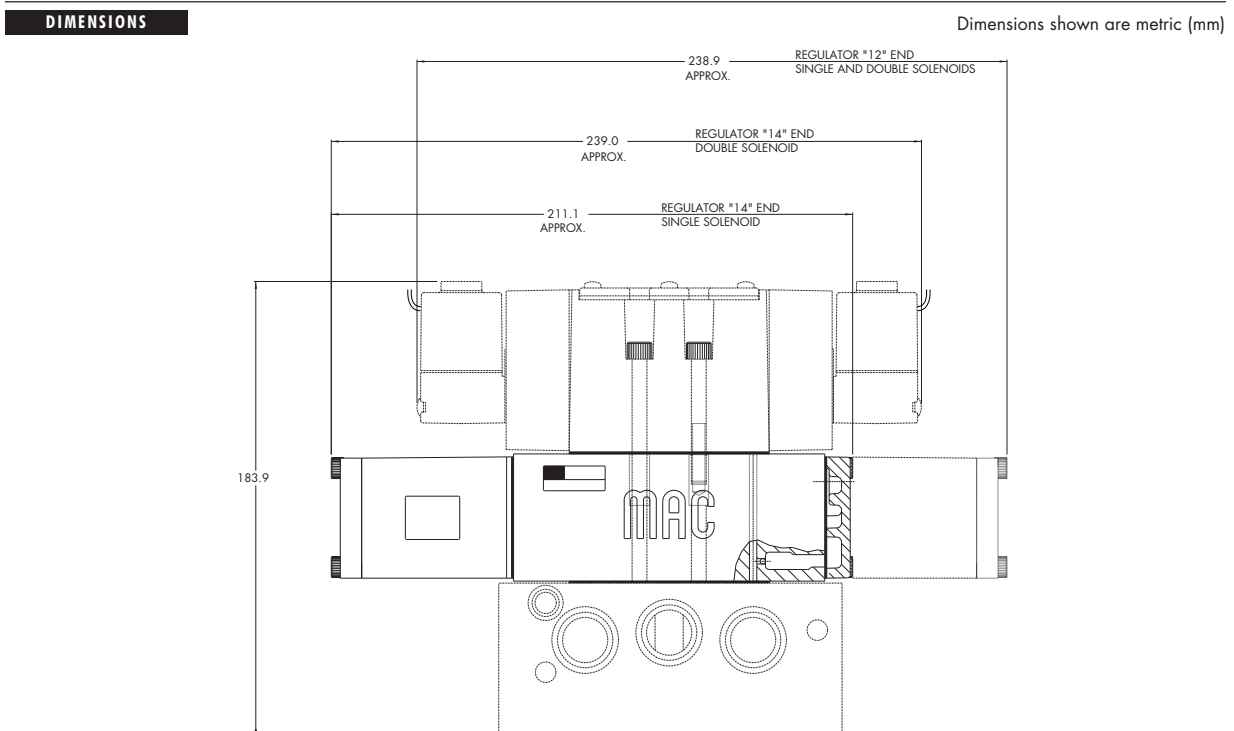
* - To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #19177.

| TECHNICAL DATA | |
|---------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C to 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to 50°C |
| Flow : | 2300 NI/min (Cv 2.3) |

Spare parts :

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



Plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP2B-AAAA | PRP2B-AEAA | PRP2B-ABAA | PRP2B-AFAA | PRP2B-AJAA |
| Glycerine gauge | PRP2B-AABA | PRP2B-AEBA | PRP2B-ABBA | PRP2B-AFBA | PRP2B-AJCA |
| Non-filled gauge | PRP2B-AADA | PRP2B-AEDA | PRP2B-ABDA | PRP2B-AFDA | PRP2B-AJEA |

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP2B-BAAA | PRP2B-BEAA | PRP2B-BBAA | PRP2B-BFAA | PRP2B-BJAA |
| Glycerine gauge | PRP2B-BABA | PRP2B-BEBA | PRP2B-BBBA | PRP2B-BFBA | PRP2B-BJCA |
| Non-filled gauge | PRP2B-BADA | PRP2B-BEDA | PRP2B-BBDA | PRP2B-BFDA | PRP2B-BJEA |

* For use with dual pressure valves.

Note: Regulating range for above models is 0-10 bar. For other ranges, see technical data page.

ADJUSTMENT OPTIONS

PRP2B-XXXX

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

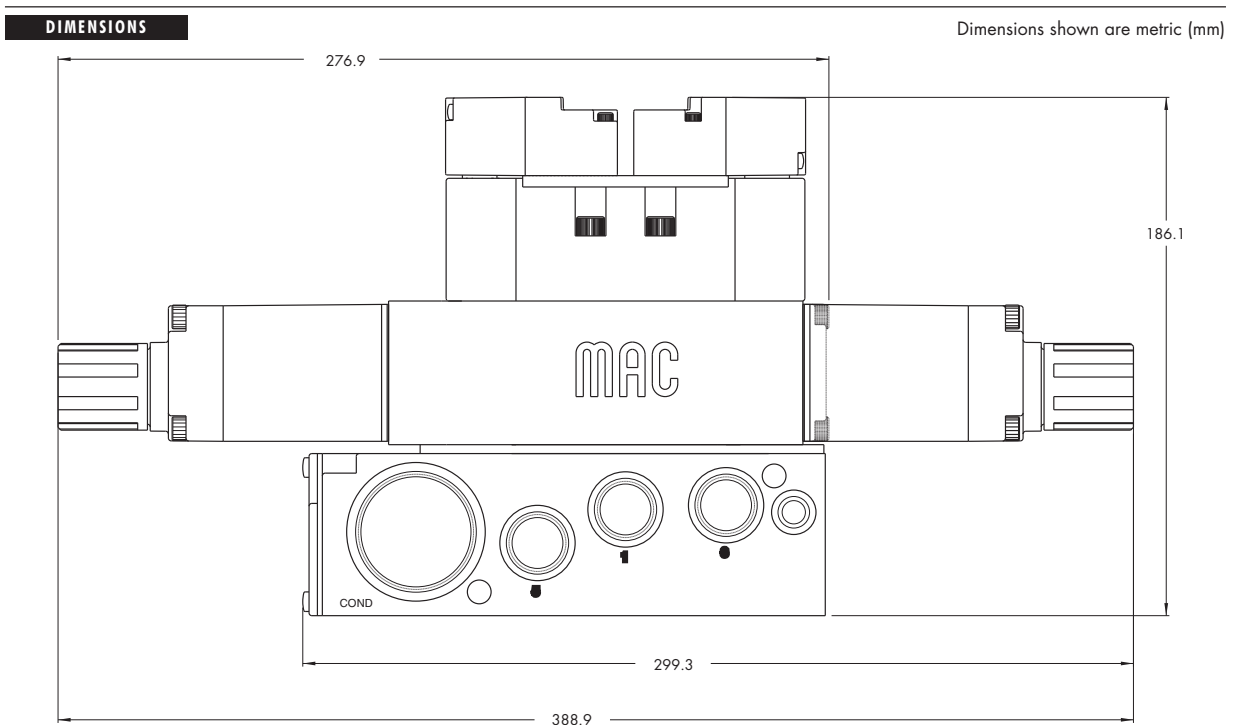
Notes:

1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

| TECHNICAL DATA | |
|-----------------------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) | 3100 NI/min (Cv 3.1) |

Spare parts :

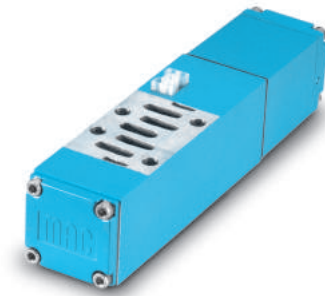
- Pressure regulator (less sandwich block) PRP2B-COAA (knob), PRP2B-JOAA (slotted stem), PRP2B-MOAA (slotted stem with locknut)
- Regulator block to base mounting screw: 19177
- Regulating range option: PRP2B-xxxA
 - Replace by B for 0 to 6,7 bar
 - Replace by C for 0 to 3 bar



Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP2B-DAAA | PRP2B-DEAA | PRP2B-DBAA | PRP2B-DFAA | PRP2B-DJAA |
| Glycerine gauge | PRP2B-DABA | PRP2B-DEBA | PRP2B-DBBA | PRP2B-DFBA | PRP2B-DJCA |
| Non-filled gauge | PRP2B-DADA | PRP2B-DEDA | PRP2B-DBDA | PRP2B-DFDA | PRP2B-DJEA |

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP2B-EAAA | PRP2B-EEAA | PRP2B-EBAA | PRP2B-EFAA | PRP2B-EJAA |
| Glycerine gauge | PRP2B-EABA | PRP2B-EEBA | PRP2B-EBBA | PRP2B-EFBA | PRP2B-EJCA |
| Non-filled gauge | PRP2B-EADA | PRP2B-EEDA | PRP2B-EBDA | PRP2B-EFDA | PRP2B-EJEA |

* - To be used with dual pressure valves.

Notes:

1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

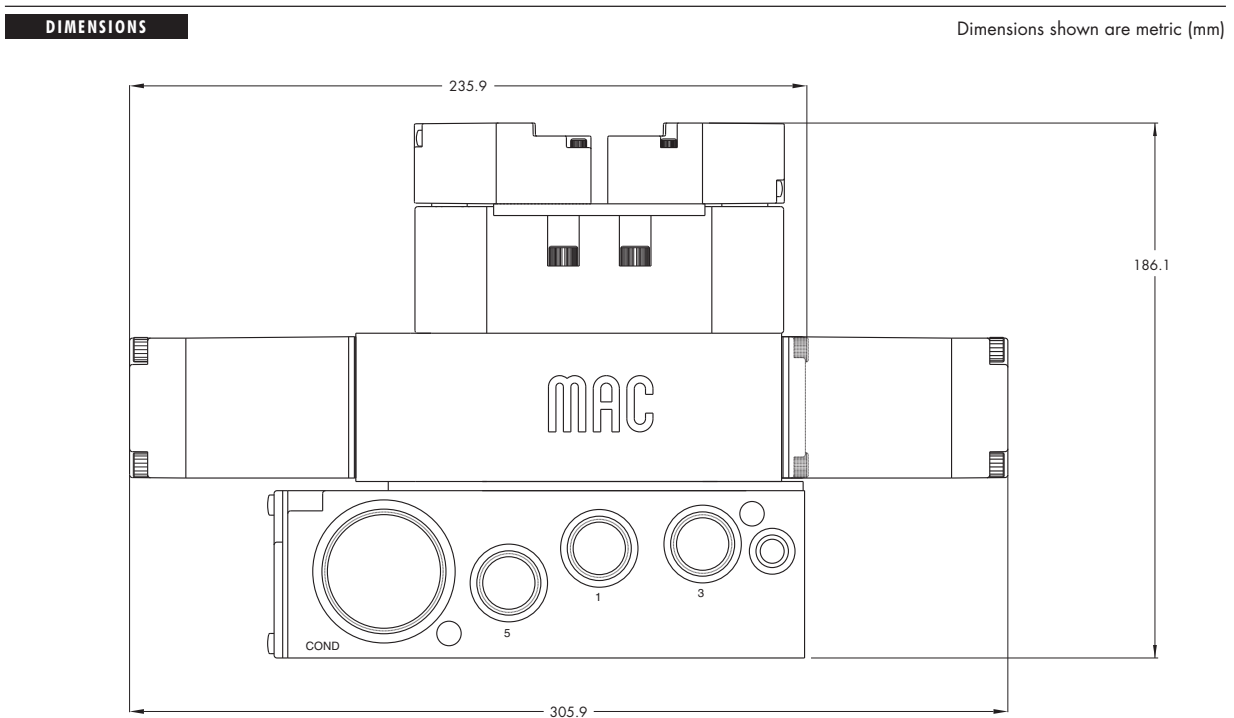


100%
OF
PRODUCTION
TESTED
100%

WARRANTY
18
MONTHS

| TECHNICAL DATA | |
|-------------------------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 3100 NI/min (Cv 3.1) |

- Spare parts :
- Pressure regulator (less sandwich block): PRP2B-FOAA
 - Body/block to base mounting screw: 19177



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ➤ -DM- D XX X-X XX
 1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|--------------------|--|---|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| 2. WIRE LENGTH | | KF | Square connector with light and protection varistor |
| D-XX X-X XX | WIRE LENGTH | KG | Square connector with light & diode |
| O | No wires | KJ | Square connector (male only) |
| A | 45 cm – 18" | KK | Square connector with protection diode (male only) |
| B | 60 cm – 24" | KL | Square connector with protection varistor (male only) |
| C | 90 cm – 36" | TA | Dual tabs with receptacles |
| D | 120 cm – 48" | TB | TA with protection diode |
| E | 180 cm – 72" | TD | TA with light |
| F | 240 cm – 96" | TE | TA with light and protection diode |
| 3. MANUAL OPERATOR | | TJ | Dual tabs (male only) |
| D-XX X-X XX | MANUAL OPERATOR | TK | TJ with protection diode |
| O | No operator | TM | TJ with light |
| 1 | Non-locking recessed | TN | TJ with light and protection diode |
| 2 | Locking recessed | * From Lead wire length options choose A through F | |
| 3 | Non-locking extended | ** From Lead wire length options choose 0 through F | |
| 4 | Locking extended | Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads. | |

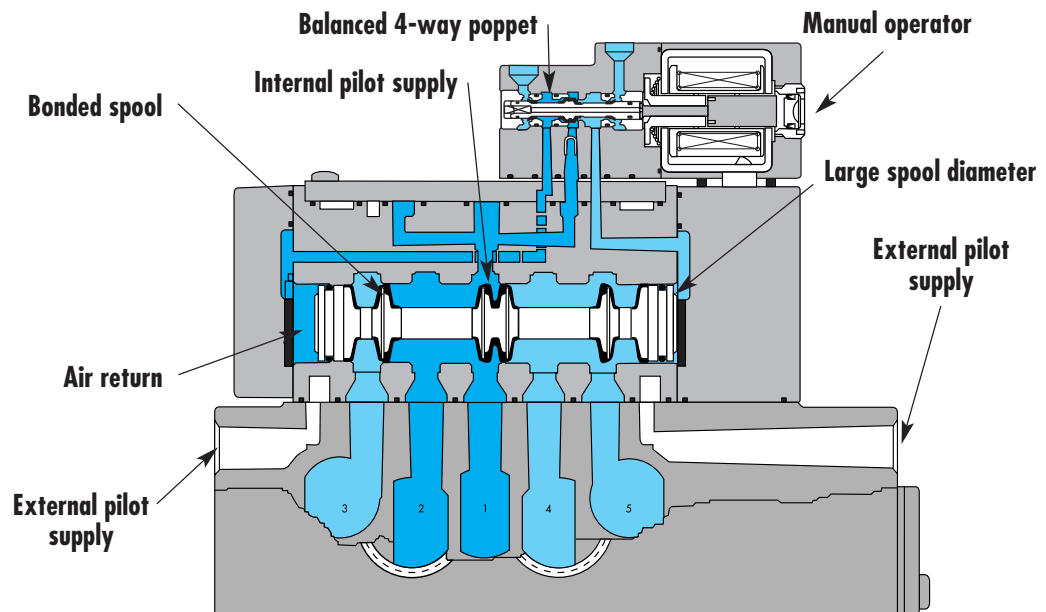
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

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



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3

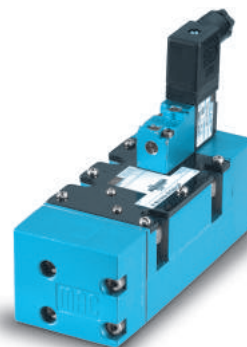
G1/2" - G3/4"

6100 NI/min

Valve only -
No base
"non plug-in"
Conform to
ISO 5599/1

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Internal | MV-B3A-AAAA-DM-Dxxx-xxx | MV-B3A-ABAA-DM-Dxxx-xxx | MV-B3A-AEAA-DM-Dxxx-xxx | MV-B3A-AFAA-DM-Dxxx-xxx |
| External "12" end | MV-B3A-AAAB-DM-Dxxx-xxx | MV-B3A-ABAB-DM-Dxxx-xxx | MV-B3A-AEAB-DM-Dxxx-xxx | MV-B3A-AFAB-DM-Dxxx-xxx |

DUAL PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Pressure centre |
|------------------------|-------------------------|-------------------------|-------------------------|
| Internal From port #3 | MV-B3A-ACAD-DM-Dxxx-xxx | MV-B3A-ADAD-DM-Dxxx-xxx | MV-B3A-AGAD-DM-Dxxx-xxx |
| Internal From port #5 | MV-B3A-ACAE-DM-Dxxx-xxx | MV-B3A-ADAE-DM-Dxxx-xxx | MV-B3A-AGAE-DM-Dxxx-xxx |
| External From "12" end | MV-B3A-ACAB-DM-Dxxx-xxx | MV-B3A-ADAB-DM-Dxxx-xxx | MV-B3A-AGAB-DM-Dxxx-xxx |

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

* Other options available, see page options.

Note: ISO series, valve and base are ordered separately, see page for base code.

OPTIONS

Valve function :

MV-B3A-**AXXX**-XX-Dxxx-xxx

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

Pilot style :

MV-B3A-AXXX-**DM**-Dxxx-xxx

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

Spool return :

MV-B3A-AX**AX**-XX-Dxxx-xxx

- A** Standard return
B Memory spring return

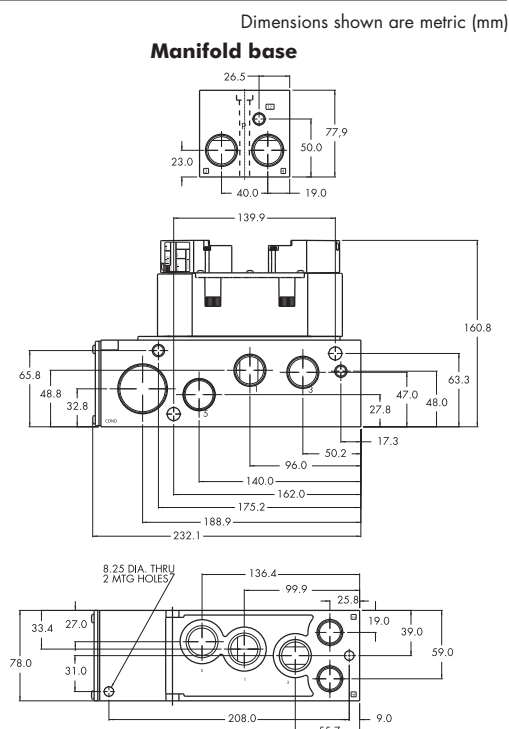
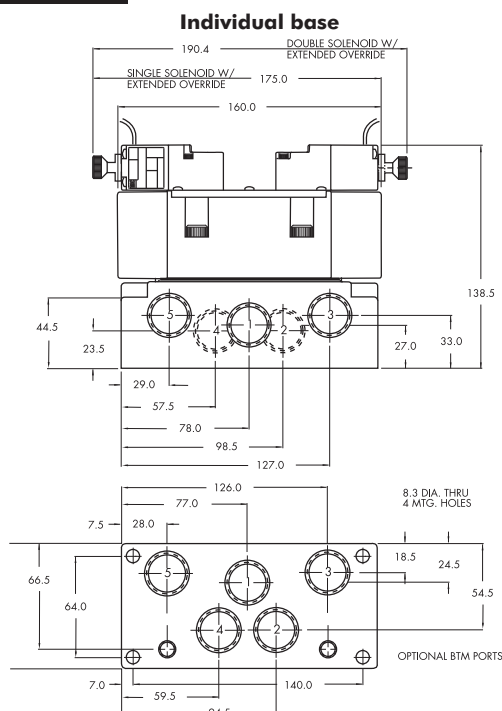
TECHNICAL DATA

| | |
|----------------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar |
| Pilot pressure : | Single operator and 3 positions : 1,3 to 8 bar double operator : 2 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 14.9 mm |
| Flow (at 6 bar, ΔP=1bar) : | G1/2": 5400 NI/min (Cv 5,4) – G3/4": 6100 NI/min (Cv 6,1) |
| Coil : | Epoxy encapsulated – class A wires – 100% ED (specify mod 0449) |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~ Inrush 7,6 VA Holding: 4,8 VA = 12.7 to 1,0 W |
| Response times : (5,4 W coil) | Energize : 16,2 ms De-energize : 13,6 ms |

Options : • Sandwich regulator, see 'Regulators' section

Spare parts : • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16614
• Valve mounting screws (x4): 35451

DIMENSIONS



Function Port size Flow [Max] Individual/Manifold mounting

5/2, 5/3

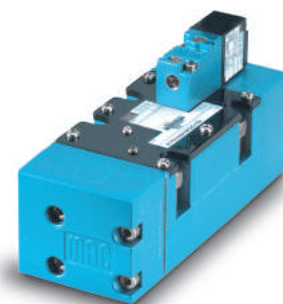
G1/2" - G3/4"

6100 NI/min

Valve only -
No base
"plug-in"
Conform to
ISO 5599/2

OPERATIONAL BENEFITS

1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



HOW TO ORDER

SINGLE PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Internal | MV-P3A-AAAA-DM-DxxP-xxx | MV-P3A-ABAA-DM-DxxP-xxx | MV-P3A-AEAA-DM-DxxP-xxx | MV-P3A-AFAA-DM-DxxP-xxx |
| External "12" end | MV-P3A-AAAB-DM-DxxP-xxx | MV-P3A-ABAB-DM-DxxP-xxx | MV-P3A-AEAB-DM-DxxP-xxx | MV-P3A-AFAB-DM-DxxP-xxx |

DUAL PRESSURE MODELS

| Pilot air | 5/2 Single operator | 5/2 Double operator | 5/3 Pressure centre |
|------------------------|-------------------------|-------------------------|-------------------------|
| Internal From port #3 | MV-P3A-ACAD-DM-DxxP-xxx | MV-P3A-ADAD-DM-DxxP-xxx | MV-P3A-AGAD-DM-DxxP-xxx |
| Internal From port #5 | MV-P3A-ACAE-DM-DxxP-xxx | MV-P3A-ADAE-DM-DxxP-xxx | MV-P3A-AGAE-DM-DxxP-xxx |
| External From "12" end | MV-P3A-ACAB-DM-DxxP-xxx | MV-P3A-ADAB-DM-DxxP-xxx | MV-P3A-AGAB-DM-DxxP-xxx |

SOLENOID OPERATOR ➤

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

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

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

OPTIONS

Valve function :

MV-P3A-**AXXX**-XX-DxxP-xxx

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

Pilot style :

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

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

Spool return :

MV-P3A-**AXXX**-XX-DxxP-xxx

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

TECHNICAL DATA

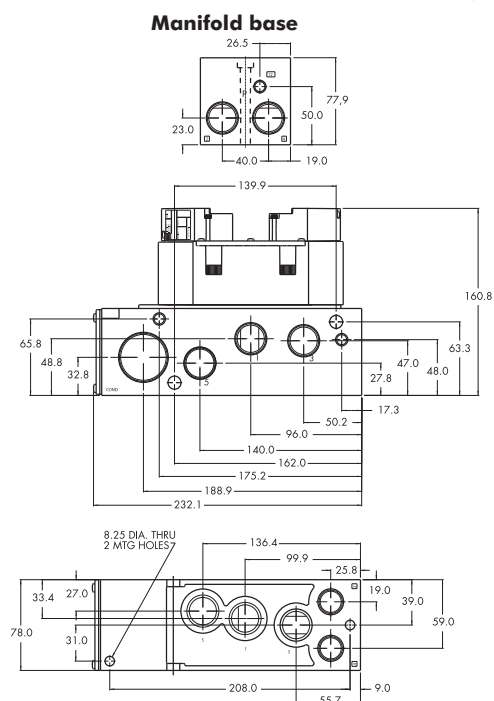
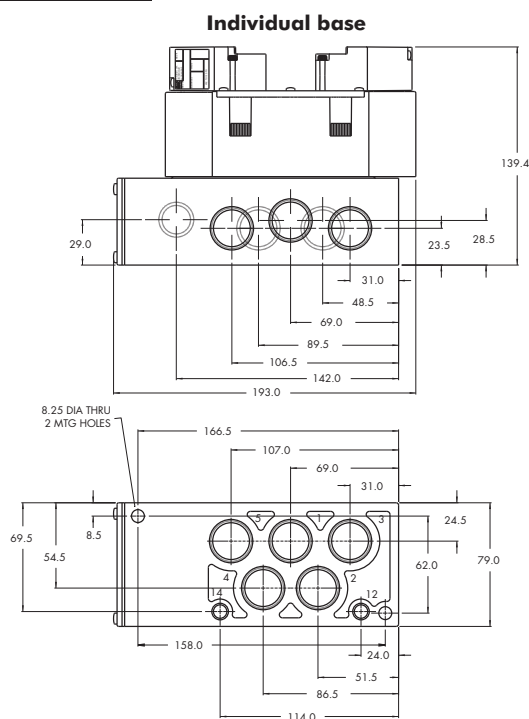
| | |
|----------------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Internal pilot: 1,3 to 8 bar External pilot : vacuum to 8 bar |
| Pilot pressure : | Single operator and 3 positions : 1,3 to 8 bar double operator : 2 to 8 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 14.9 mm |
| Flow (at 6 bar, ΔP=1bar) : | G1/2": 5400 NI/min (Cv 5,4) – G3/4": 6100 NI/min (Cv 6,1) |
| Coil : | Epoxy encapsulated – class A wires – 100% ED (specify mod 0449) |
| Voltage range : | -15% to +10% of nominal voltage |
| Protection : | IP65 (electrical connection) |
| Power : | ~ Inrush 7,6 VA Holding: 4,8 VA = 12.7 to 1,0 W |
| Response times : | Energize : 16,2 ms De-energize : 13,6 ms |

Options : • Sandwich regulator, see 'Regulators' section

Spare parts : • Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16614
 • Valve mounting screws (x4): 35451

DIMENSIONS

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] Individual/Manifold mounting

5/2 - 5/3

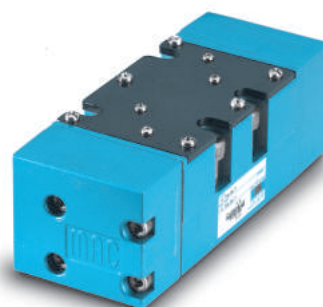
G1/2" - G3/4"

6200 NI/min

Valve only
no base

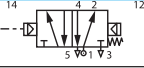
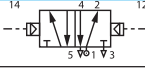
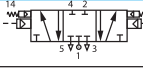
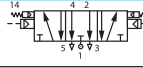
OPERATIONAL BENEFITS

1. Balanced spool, immune to variations of pressure.
2. Powerful return forces thanks to the combination of mechanical and air springs.
3. Bonded spool with minimum friction, shifting in a glass-like finished bore.
4. Wiping effect eliminates sticking.
5. Long service life.

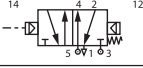
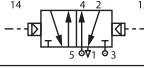
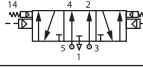


HOW TO ORDER

SINGLE PRESSURE MODELS

| Air spring | 5/2 Single operator | 5/2 Double operator | 5/3 Closed centre | 5/3 Open centre |
|------------|---|---|--|---|
| |  |  |  |  |
| Internal | MV-R3A-BACF | MV-R3A-BBAK | MV-R3A-BEAK | MV-R3A-BFAK |
| External | MV-R3A-BACG | | | |

DUAL PRESSURE MODELS

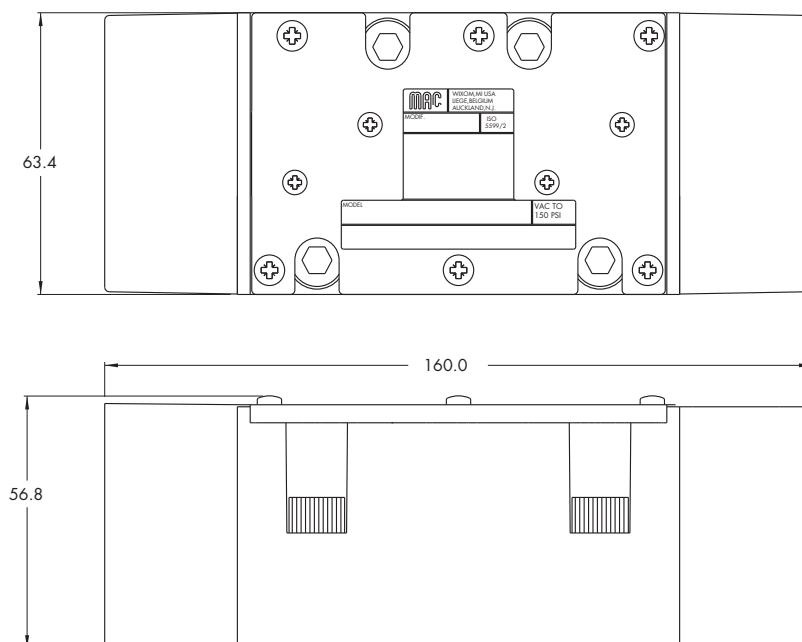
| Air spring | 5/2 Single operator | 5/2 Double operator | 5/3 Pressure centre |
|------------------|---|---|---|
| |  |  |  |
| Internal port #3 | MV-R3A-BCCH | MV-R3A-BDAK | MV-R3A-BGAK |
| Internal port #5 | MV-R3A-BCCJ | | |
| External | MV-R3A-BCCG | | |

Note: ISO series, valve and base are ordered separately, see page for base code.

| TECHNICAL DATA | |
|-----------------------|--|
| Fluid : | Compressed air, vacuum, inert gases |
| Pressure range : | Vacuum to 10 bar |
| Air signal pressure : | Single/double operator: 1,3 to 10 bar 3 position: 2 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Orifice : | 24 mm |
| Flow : | G1/2": 5400 Nl/min (Cv 5,4) – G3/4" : 6200 Nl/min (Cv 6,2) |

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

DIMENSIONS Dimensions shown are metric (mm)



Non plug-in base / manifold



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Side ports | Bottom ports | Bottom cylinder ports 2 and 4. | Bottom port 1 |
|--------------|--------------|--------------|--------------------------------|---------------|
| G1/2" | MB-B3A-121-A | MB-B3A-123-A | MB-B3A-122-A | MB-B3A-124-A |
| G3/4" | MB-B3A-131-A | MB-B3A-133-A | MB-B3A-132-A | MB-B3A-134-A |

INDIVIDUAL BASE ACCORDING TO VDMA 24345

| Port size | Side ports | Bottom ports |
|--------------|------------|--------------|
| G1/2" | HB-B3A-A | HB-B3A-B |

MANIFOLD BASE

| Port size | Side ports | Bottom ports | Bottom cylinder ports 2 and 4. | Bottom port 1 |
|--------------|--------------|--------------|--------------------------------|---------------|
| G1/2" | MM-B3A-121-A | MM-B3A-123-A | MM-B3A-122-A | MM-B3A-124-A |
| G3/4" | MM-B3A-131-A | MM-B3A-133-A | MM-B3A-132-A | MM-B3A-134-A |

MANIFOLD BASE ACCORDING TO VDMA 24345

| Port size | Side ports |
|--------------|------------|
| G1/2" | HM-B3A-C |

End plate kit: HM-B3A-D.

Manifold fastening kit: N-P3003-01.

Valve blanking plate: M-P3001.

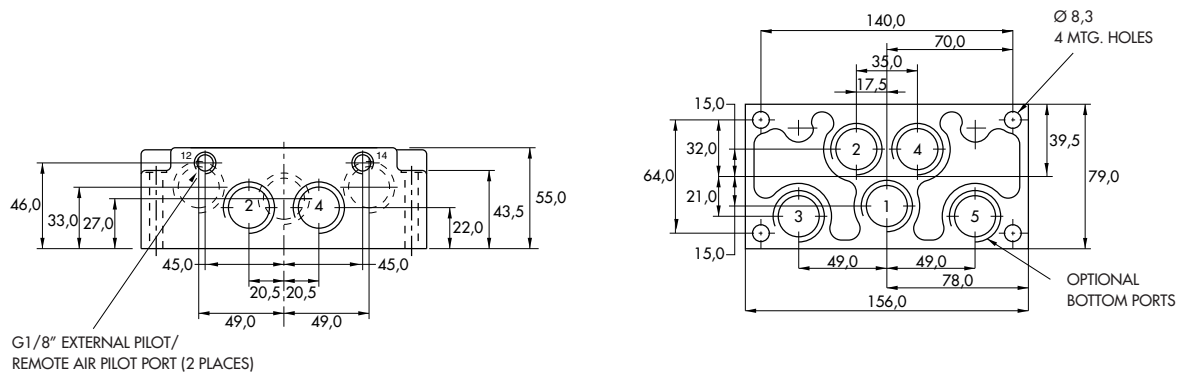
Inlet/exhaust isolator plug: 32845.

DIMENSIONS

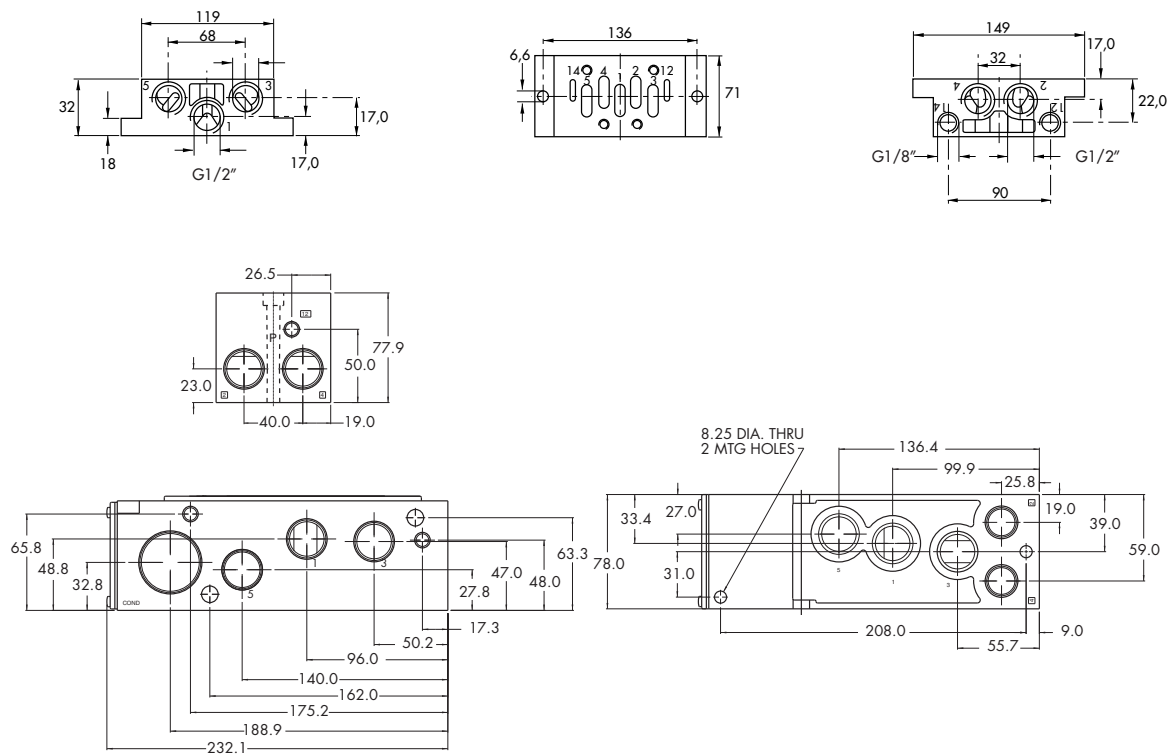
Dimensions shown are metric (mm)

Individual

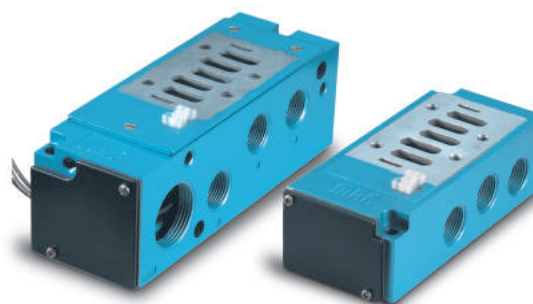
ISO DIN 5599/1



Manifold



Plug-in base / manifold



HOW TO ORDER

INDIVIDUAL BASE

| Port size | Wired for | Side ports | Side ports w/ bottom 2 & 4 ports | All side & bottom ports |
|--------------|-----------------|--------------|----------------------------------|-------------------------|
| G1/2" | Single solenoid | MB-P3A-121-A | MB-P3A-122-A | MB-P3A-123-A |
| | Double solenoid | MB-P3A-121-B | MB-P3A-122-B | MB-P3A-123-B |
| G3/4" | Single solenoid | MB-P3A-131-A | MB-P3A-132-A | MB-P3A-133-A |
| | Double solenoid | MB-P3A-131-B | MB-P3A-132-B | MB-P3A-133-B |

MANIFOLD BASE

| Port size | Wired for | Side ports | Side ports w/ bottom 2 & 4 ports | All side & bottom ports (see note) |
|--------------|-----------------|--------------|----------------------------------|------------------------------------|
| G1/2" | Single solenoid | MM-P3A-121-A | MM-P3A-122-A | MM-P3A-123-A |
| | Double solenoid | MM-P3A-121-B | MM-P3A-122-B | MM-P3A-123-B |
| G3/4" | Single solenoid | MM-P3A-131-A | MM-P3A-132-A | MM-P3A-133-A |
| | Double solenoid | MM-P3A-131-B | MM-P3A-132-B | MM-P3A-133-B |

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

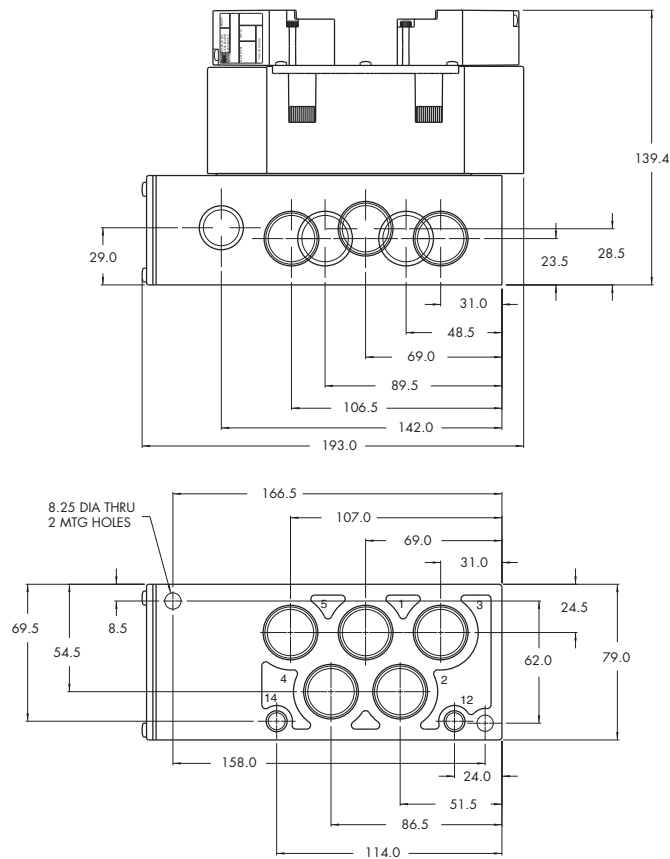
OPTIONS

| | | | |
|----------------------------------|----------------|----------------|--|
| Manifold options : | External pilot | MM-P3A-12x-xx | 32 for 1/2" port – common external pilot 33 for 3/4" port – common external pilot |
| | Terminal strip | MM-P3A-xxx-A | J wired for sgl solenoid K wired for double solenoid |
| Base / Manifold option: light(s) | | MX-P3A-xxx-xJA | JA 110/120 volt JB 220/240 volt DA 24 volt |

Accessories: M-P3001 Valve blanking plate.
N-P3003-01 Manifold fastening kit.
32845 Inlet/exhaust isolator plug.

DIMENSIONS

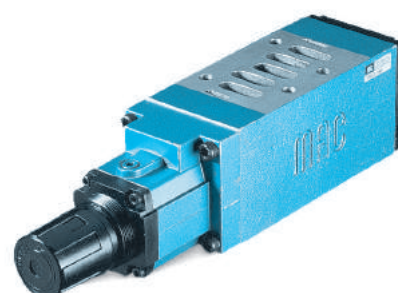
Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA3C-1AAA | PRA3C-1EAA | PRA3C-1BAA | PRA3C-1FAA | PRA3C-1JAA |
| Non-filled gauge on regulator(s) | PRA3C-1ADA | PRA3C-1EDA | PRA3C-1BDA | PRA3C-1FDA | PRA3C-1JEA |
| Non-filled gauge opposite to regulator | PRA3C-1CDA | PRA3C-1GDA | PRA3C-1DDA | PRA3C-1HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA3C-1ABA | PRA3C-1EBA | PRA3C-1BBA | PRA3C-1FBA | PRA3C-1JCA |
| Glycerine filled gauge opposite to regulator | PRA3C-1CBA | PRA3C-1GBA | PRA3C-1DBA | PRA3C-1HBA | ----- |

EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA3C-2AAA | PRA3C-2EAA | PRA3C-2BAA | PRA3C-2FAA | PRA3C-2JAA |
| Non-filled gauge on regulator(s) | PRA3C-2ADA | PRA3C-2EDA | PRA3C-2BDA | PRA3C-2FDA | PRA3C-2JEA |
| Non-filled gauge opposite to regulator | PRA3C-2CDA | PRA3C-2GDA | PRA3C-2DDA | PRA3C-2HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA3C-2ABA | PRA3C-2EBA | PRA3C-2BBA | PRA3C-2FBA | PRA3C-2JCA |
| Glycerine filled gauge opposite to regulator | PRA3C-2CBA | PRA3C-2GBA | PRA3C-2DBA | PRA3C-2HBA | ----- |

* - To be used with dual pressure valves.

Note : regulating range for above models is 0-10 bar.
For other ranges see technical data page.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

ADJUSTMENT OPTIONS

PRA3C-XXXX

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

TECHNICAL DATA

| | |
|---------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar (other ranges see below) |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C to 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to 50°C |
| Flow : | 5400 NI/min (Cv 5.4) |

Spare parts :

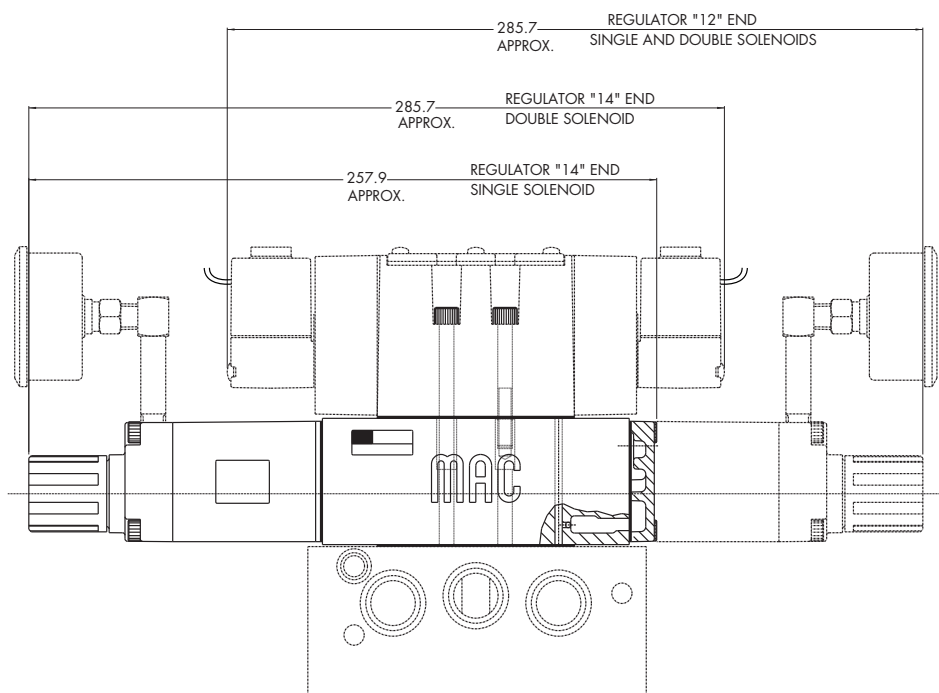
- Pressure regulator (less sandwich block) : PRA3C-30AA (KNOB), PRA3C-C0AA (SLOTTED STEM), PRA3C-F0AA (SLOTTED STEM WITH LOCKNUT).
- Gauge : • Glycerine filled : N-62015-01
- Non filled : N-62016-01

Regulating range options : PRA3C-XXXA

Replace by B - 0 to 6,7 bar
Replace by C - 0 to 3 bar

DIMENSIONS

Dimensions shown are metric (mm)



Non plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA3C-4AAA | PRA3C-4EAA | PRA3C-4BAA | PRA3C-4FAA | PRA3C-4JAA |
| Non-filled gauge on regulator(s) | PRA3C-4ADA | PRA3C-4EDA | PRA3C-4BDA | PRA3C-4FDA | PRA3C-4JEA |
| Non-filled gauge opposite to regulator | PRA3C-4CDA | PRA3C-4GDA | PRA3C-4DDA | PRA3C-4HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA3C-4ABA | PRA3C-4EBA | PRA3C-4BBA | PRA3C-4FBA | PRA3C-4JCA |
| Glycerine filled gauge opposite to regulator | PRA3C-4CBA | PRA3C-4GBA | PRA3C-4DBA | PRA3C-4HBA | ----- |

EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|---|--|--|--|--|--|
| No gauge | PRA3C-5AAA | PRA3C-5EAA | PRA3C-5BAA | PRA3C-5FAA | PRA3C-5JAA |
| Non-filled gauge on regulator(s) | PRA3C-5ADA | PRA3C-5EDA | PRA3C-5BDA | PRA3C-5FDA | PRA3C-5JEA |
| Non-filled gauge opposite to regulator | PRA3C-5CDA | PRA3C-5GDA | PRA3C-5DDA | PRA3C-5HDA | ----- |
| Glycerine filled gauge on regulator(s) | PRA3C-5ABA | PRA3C-5EBA | PRA3C-5BBA | PRA3C-5FBA | PRA3C-5JCA |
| Glycerine filled gauge opposite to regulator | PRA3C-5CBA | PRA3C-5GBA | PRA3C-5DBA | PRA3C-5HBA | ----- |

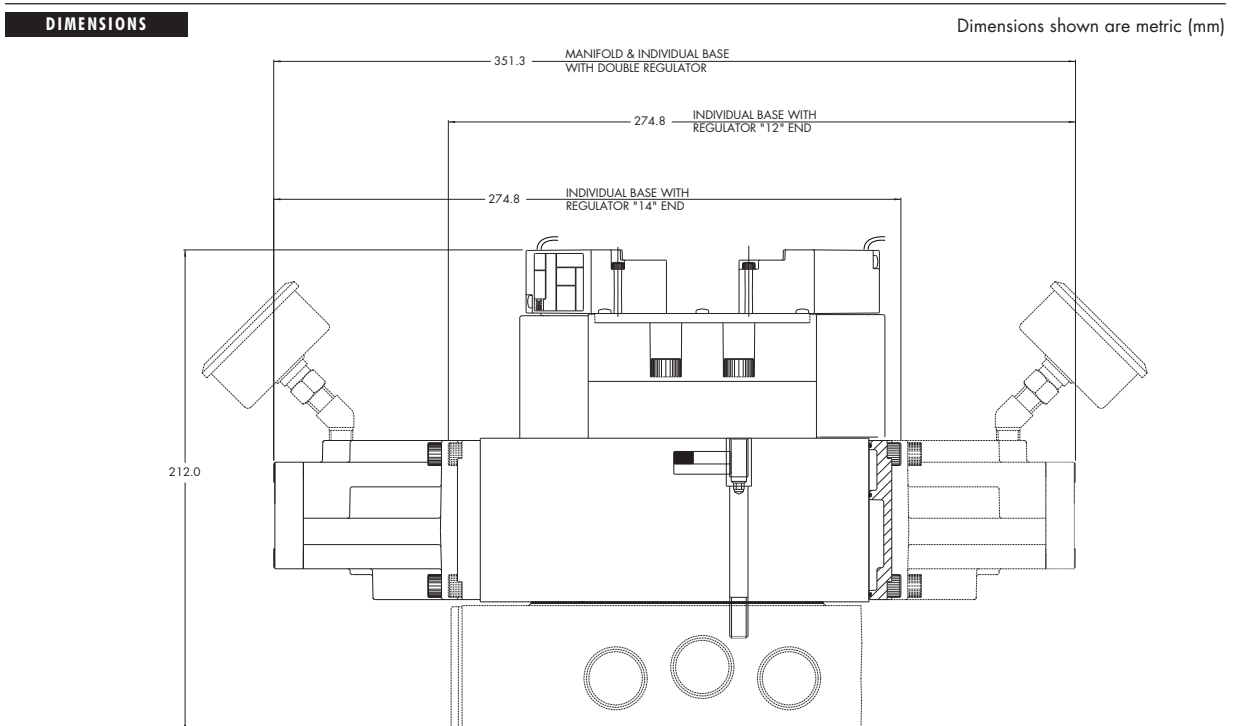
* - To be used with dual pressure valves.

Main valve body assembly must be external pilot model. Pilots are supplied internally from primary pressure in regulator block. Cannot field convert regulator block from Single Pressure to dual pressure. Body/Block to base mounting screw #35418.

| TECHNICAL DATA | |
|---------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C to 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to 50°C |
| Flow : | 5400 NI/min (Cv 5.4) |

Spare parts :

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



Plug-in sandwich pressure regulator with manual adjust knob

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT (CODED FOR KNOB ADJUSTMENT)

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP3B-AAAA | PRP3B-AEAA | PRP3B-ABAA | PRP3B-AFAA | PRP3B-AJAA |
| Glycerine gauge | PRP3B-AABA | PRP3B-AEBA | PRP3B-ABBA | PRP3B-AFBA | PRP3B-AJCA |
| Non-filled gauge | PRP3B-AADA | PRP3B-AEDA | PRP3B-ABDA | PRP3B-AFDA | PRP3B-AJEA |

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR (CODED FOR KNOB ADJUSTMENT)

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP3B-BAAA | PRP3B-BEAA | PRP3B-BBAA | PRP3B-BFAA | PRP3B-BJAA |
| Glycerine gauge | PRP3B-BABA | PRP3B-BEBA | PRP3B-BBBA | PRP3B-BFBA | PRP3B-BJCA |
| Non-filled gauge | PRP3B-BADA | PRP3B-BEDA | PRP3B-BBDA | PRP3B-BFDA | PRP3B-BJEA |

* For use with dual pressure valves.

ADJUSTMENT OPTIONS

PRP3B-XXXX

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

Notes:

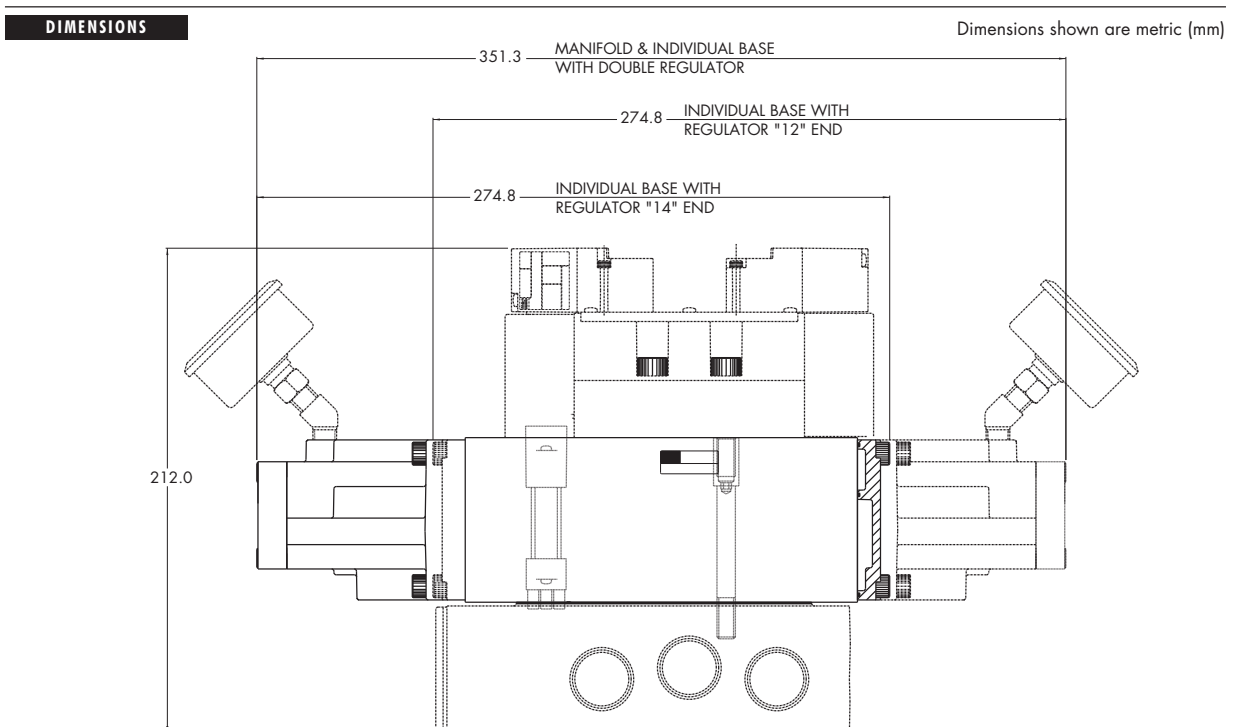
1. Regulating range for above models is 0-10 bar. For other ranges, see technical data page.
2. Valves used with above models must be external pilot models.
3. Cannot field convert regulator block from single pressure to dual pressure.
4. Cannot field convert from internal pilot to external pilot.
5. Wired for double solenoid valves.

| TECHNICAL DATA | |
|-----------------------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) | 5400 NI/min (Cv 5.4) |

Spare parts :

- Pressure regulator (less sandwich block): PRP3B-C0AA (knob), PRP3B-J0AA (slotted stem), PRP3B-M0AA (slotted stem with locknut)
- Regulating block to base mounting screw: 19457
- Regulating range options: PRP3B-xxxA

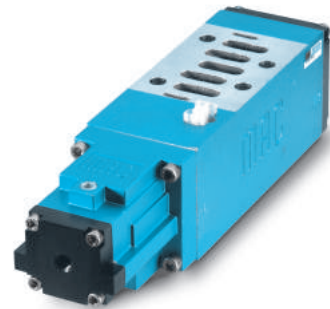
Replace by B for 0 to 6,7 bar
Replace by C for 0 to 3 bar



Plug-in sandwich pressure regulator with air pilot adjust

OPERATIONAL BENEFITS

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



HOW TO ORDER

REGULATORS FOR INTERNAL PILOT

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP3B-DAAA | PRP3B-DEAA | PRP3B-DBAA | PRP3B-DFAA | PRP3B-DJAA |
| Glycerine gauge | PRP3B-DABA | PRP3B-DEBA | PRP3B-DBBA | PRP3B-DFBA | PRP3B-DJCA |
| Non-filled gauge | PRP3B-DADA | PRP3B-DEDA | PRP3B-DBDA | PRP3B-DFDA | PRP3B-DJEA |

REGULATORS FOR EXTERNAL PILOT AND REMOTE AIR

| Gauge | Single pressure Regulator 14 end Same regulated pressure to ports 2 and 4 | Single pressure Regulator 12 end Same regulated pressure to ports 2 and 4 | Dual pressure Regulator 14 end Regulated pressure to port 4 * | Dual pressure Regulator 12 end Regulated pressure to port 2 * | Dual pressure Dual regulator Two regulated pressures to ports 2 and 4 * |
|------------------|--|--|--|--|--|
| No gauge | PRP3B-EAAA | PRP3B-EEAA | PRP3B-EBAA | PRP3B-EFAA | PRP3B-EJAA |
| Glycerine gauge | PRP3B-EABA | PRP3B-EEBA | PRP3B-EBBA | PRP3B-EFBA | PRP3B-EJCA |
| Non-filled gauge | PRP3B-EADA | PRP3B-EEDA | PRP3B-EBDA | PRP3B-EFDA | PRP3B-EJEA |

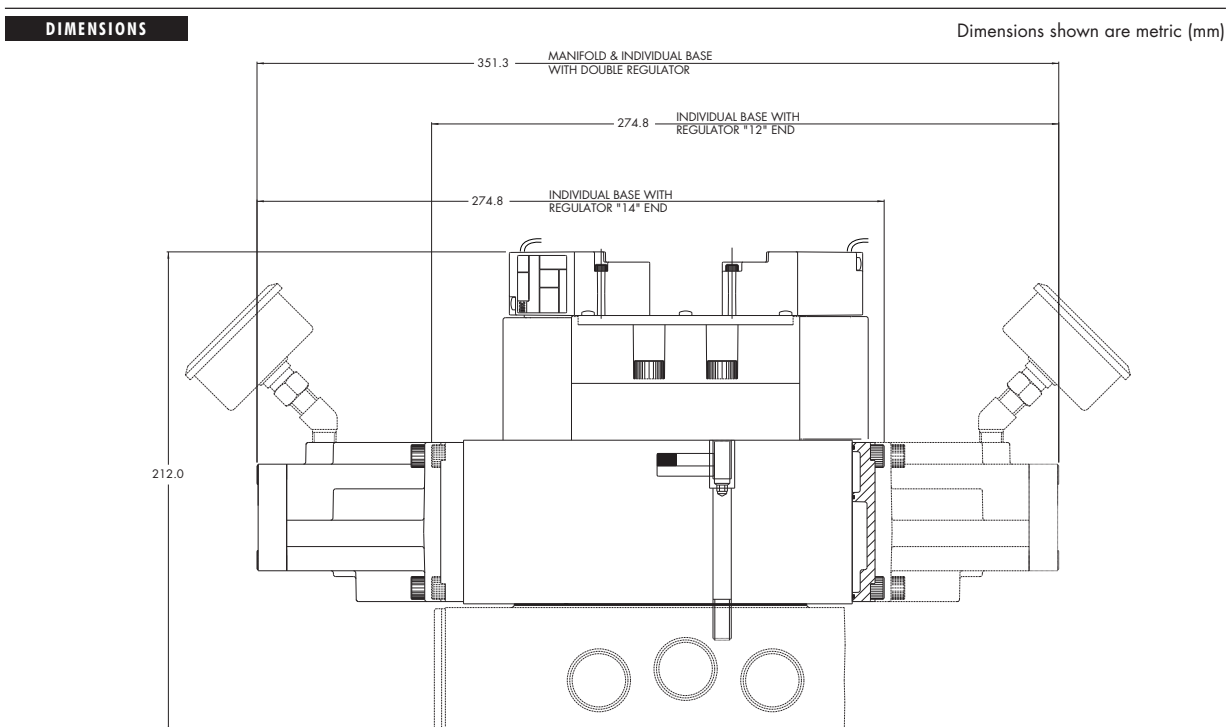
* - To be used with dual pressure valves.

Notes:

1. Valves used with above models must be external pilot models.
2. Cannot field convert regulator block from single pressure to dual pressure.
3. Cannot field convert from internal pilot to external pilot.
4. Wired for double solenoid valves.

| TECHNICAL DATA | |
|-------------------------------------|---|
| Fluid : | Compressed air, inert gases |
| Pressure range : | 0 to 10 bar |
| Regulating range : | 0 to 10 bar |
| Lubrication : | Not required, if used select a medium aniline point lubricant (between 80°C and 100°C) |
| Filtration : | 40 µ |
| Temperature range : | -18°C to +50°C |
| Flow (at 6 bar, $\Delta P=1$ bar) : | 5400 NI/min (Cv 5.4) |

- Spare parts :
- Pressure regulator (less sandwich block): PRP3B-F0AA
 - Regulator block to base mounting screw: 19457



Codification table for voltages / Manual operator / Electrical connection

VALVE CODE ► **-DM- D XX X-X XX**
1 2 3 4

| 1. VOLTAGE | | 4. ELECTRICAL CONNECTION | |
|-------------|---|--------------------------|---|
| D-XX X-X XX | VOLTAGE | D-XX X-X XX | ELECTRICAL CONNECTION |
| DA | 24V=/5,4W | BA* | Flying leads |
| DB | 12V=/5,4W | BK* | BA with protection diode |
| DC | 12V=/7,5W | BL* | BA with protection varistor |
| DD | 24V=/7,3W | BM** | Flying leads (solenoid plug-in) |
| DE | 12V=/12,7W | BN** | BM with protection diode |
| DF | 24V=/12,7W | BP** | BM with protection varistor |
| DK | 110V=/4,7W | BG** | BM with ground |
| DJ | 28V=/5,2W | BH** | BM with protection diode & ground |
| DL | 64V=/6W | BJ** | BM with protection varistor & ground |
| DM | 36V=/5,3W | CA* | 1/2" NPS conduit with flying leads |
| DN | 6V=/6W | CM* | 1/2" NPS metal conduit with flying leads |
| DR | 90V=/6,6W | CN* | 1/2" NPS metal conduit with flying leads & ground |
| DS | 110V=/7,3W | DG | Plug-in with ground |
| DT | 75V=/5,6W | DH | Plug-in with diode & ground |
| DP | 48V=/5,8W | DJ | Plug-in with M.O.V. & ground |
| FA | 12V=/1,8W | DM | Plug-in |
| FB | 24V=/1,8W | DN | Plug-in with diode |
| FE | 12V=/2,4W | DP | Plug-in with M.O.V. |
| FF | 24V=/2,4W | JB | Rectangular connector |
| JA | 120V~/60Hz, 110V~/50Hz (2,9W) | JD | Rectangular connector with light |
| JB | 240V~/60Hz, 220V~/50Hz (2,9W) | JM | Rectangular connector, male only |
| JC | 24V~/60Hz, 24V~/50Hz (3,7W) | KA | Square connector |
| JD | 100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W) | KB | Square connector with protection diode |
| JE | 220V~/60Hz (3,4W) | KC | Square connector with protection varistor |
| JF | 240V~/50Hz (2,8W) | KD | Square connector with light |
| JG | 200V~/60Hz, 200V~/50Hz (3,9W) | KE | Square connector with light and protection diode |
| | | KF | Square connector with light and protection varistor |
| | | KG | Square connector with light & diode |
| | | KJ | Square connector (male only) |
| | | KK | Square connector with protection diode (male only) |
| | | KL | Square connector with protection varistor (male only) |
| | | TA | Dual tabs with receptacles |
| | | TB | TA with protection diode |
| | | TD | TA with light |
| | | TE | TA with light and protection diode |
| | | TJ | Dual tabs (male only) |
| | | TK | TJ with protection diode |
| | | TM | TJ with light |
| | | TN | TJ with light and protection diode |

| 2. WIRE LENGTH | |
|----------------|--------------|
| D-XX X-X XX | WIRE LENGTH |
| 0 | No wires |
| A | 45 cm – 18" |
| B | 60 cm – 24" |
| C | 90 cm – 36" |
| D | 120 cm – 48" |
| E | 180 cm – 72" |
| F | 240 cm – 96" |

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

* From Lead wire length options choose A through F

** From Lead wire length options choose 0 through F

Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads.



MAC VALVES WARRANTY, WARRANTY LIMITATIONS, FLAT RATE REBUILD PROGRAM

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 Rate 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.



MAC Valves, Inc. is a global manufacturing leader in pneumatic and fluid valves, proportional valves, flow control and regulator technology. MAC was founded in 1948 with a focus on establishing and maintaining our position as the technological leader in our market, having since amassed over 80 patents related to pneumatic valves and their auxiliary components.

With our presence on four continents globally, and representation in every major industrial market in the world through the MDN (MAC Distributor Network), MAC has a global presence to support our customers need to keep their machines running profitability around the clock, around the world.

MAC Valves, Inc.

30569 Beck Rd.
Wixom, MI 48393, **USA**

1-800-MAC-VLVS
(US TOLL FREE ONLY)

☎ 1-248-624-7700
☎ 1-248-624-0549

✉ mac@macvalves.com

MAC Valves, Inc.

5555 Ann Arbor Rd.
Dundee, MI 48131, **USA**

☎ 1-734-529-5099
☎ 1-248-863-2111

MAC Valves Asia, Inc.

No.45, Dongyuan Rd.
Zhongli City
Taoyuan County 320-63
Taiwan

☎ (886) (3) 463 6868
☎ (886) (3) 463 4576

✉ sales@macasia.com.tw

MAC Valves Europe, Inc.

Rue Marie Curie, 12
B-4431 Ans (Liège)
Belgium

☎ 32 (4) 239 68 68
☎ 32 (4) 263 19 42

✉ info@macvalves.be

MAC Valves Pacific, Inc.

PO Box 1221
Penrose, Auckland
New Zealand

☎ NZ: 0800-770-780
☎ AUS: 1800-551-874

☎ 64 (09) 634 9401

✉ sales@macvalves.co.nz