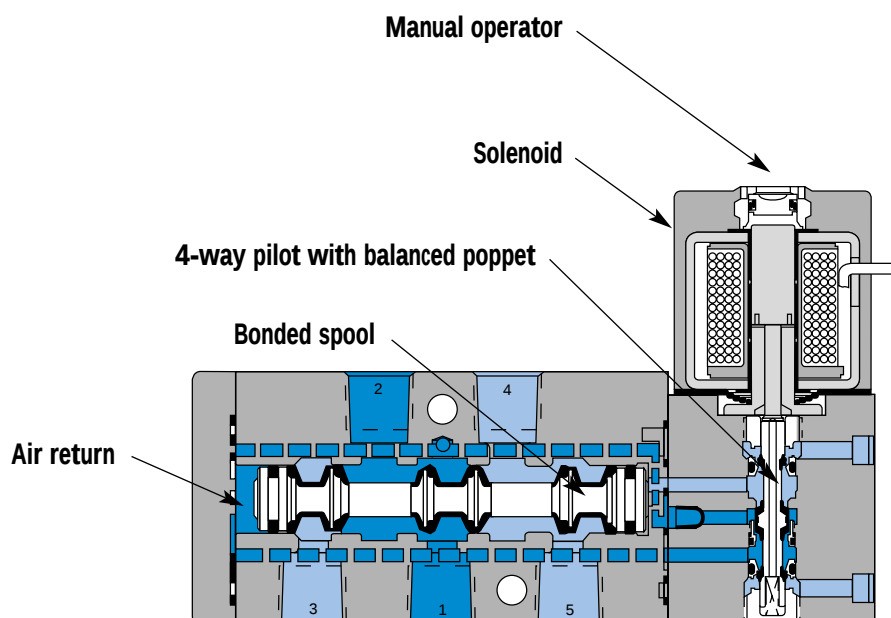


Individual mounting

Series

Inline	Sub-base non "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.
- Optional memory spring.
- 2 position or 3 position valve configurations.
- Internal or external pilot.

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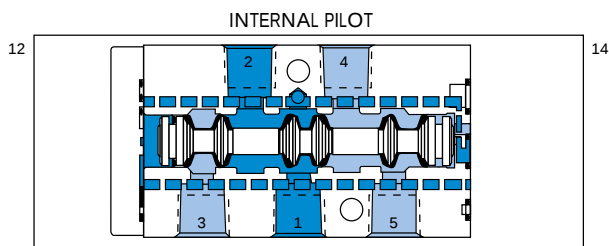
93

ISO 1

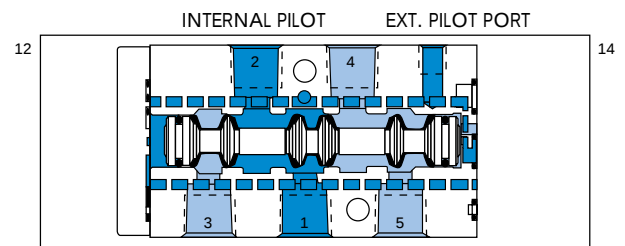
ISO 2

ISO 3

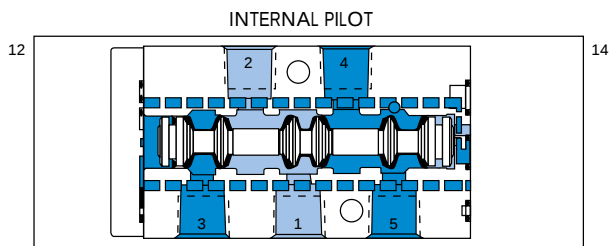
SPOOL CONFIGURATIONS



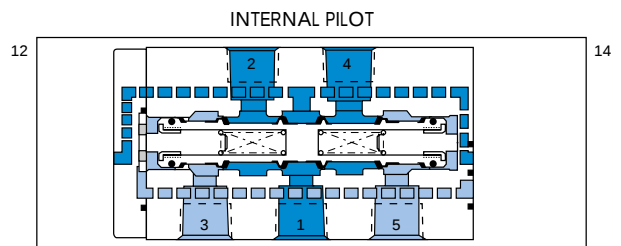
SINGLE OPERATOR - SINGLE INLET
SHOWN WITH 12 OPERATOR ENERGIZED



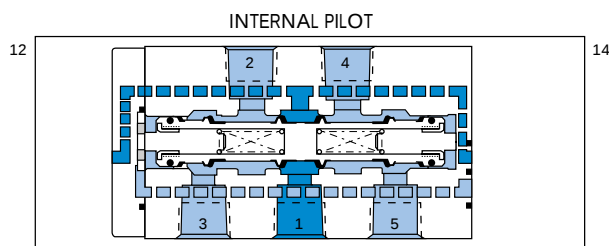
SINGLE OPERATOR - SINGLE INLET
SHOWN WITH 12 OPERATOR ENERGIZED



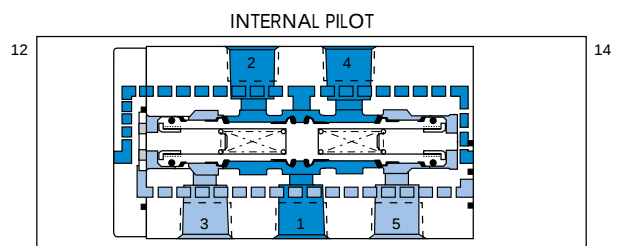
SINGLE OPERATOR - DUAL INLET
SHOWN WITH 12 OPERATOR ENERGIZED



3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER



3 POSITION PRESSURE CENTER

Function	Port size	Flow (Max)	Individual mounting	Series
5 / 2, 5 / 3	G 1 / 8 " - G 1 / 4 "	1000 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. Wiping effect eliminates sticking.
7. Long service life.



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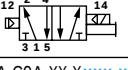
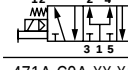
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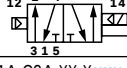
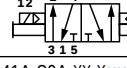
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HOW TO ORDER

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
						
G 1 / 8 "	Internal	411A-C0A-XX-XXX-XXX	421A-C0A-XX-XXX-XXX	451A-C0A-XX-XXX-XXX	461A-C0A-XX-XXX-XXX	471A-C0A-XX-XXX-XXX
G 1 / 4 "	Internal	411A-D0A-XX-XXX-XXX	421A-D0A-XX-XXX-XXX	451A-D0A-XX-XXX-XXX	461A-D0A-XX-XXX-XXX	471A-D0A-XX-XXX-XXX
G 1 / 8 "	External	411A-C0B-XX-XXX-XXX	421A-C0B-XX-XXX-XXX	451A-C0B-XX-XXX-XXX	461A-C0B-XX-XXX-XXX	471A-C0B-XX-XXX-XXX
G 1 / 4 "	External	411A-D0B-XX-XXX-XXX	421A-D0B-XX-XXX-XXX	451A-D0B-XX-XXX-XXX	461A-D0B-XX-XXX-XXX	471A-D0B-XX-XXX-XXX

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

Port size	Pilot air	5 / 2 Single operator	5 / 2 Double operator
			
G 1 / 8 "	Internal	431A-C0A-XX-XXX-XXX	441A-C0A-XX-XXX-XXX
G 1 / 4 "	Internal	431A-D0A-XX-XXX-XXX	441A-D0A-XX-XXX-XXX
G 1 / 8 "	External	431A-C0B-XX-XXX-XXX	441A-C0B-XX-XXX-XXX
G 1 / 4 "	External	431A-D0B-XX-XXX-XXX	441A-D0B-XX-XXX-XXX

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ISO 1

ISO 2

ISO 3

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						

SOLENOID OPERATOR ➤

GM-G XXX-XXX**

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

* Click here for other options available.

** Click here for other options available.

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

TECHNICAL DATA

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

Options :

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

411A-C0A-XX-XXX-XXX

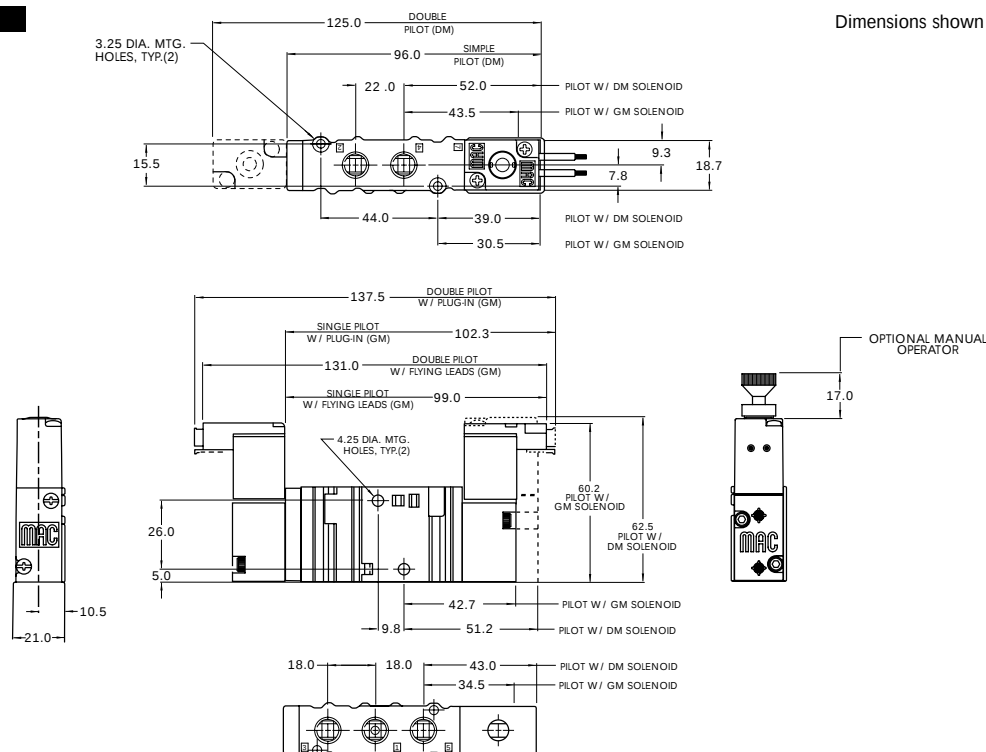
- Dual pressure models, replace by **C** for pilot supply from #3 port
- For memory spring, replace by **4** (single operator models only)
- Replace by **8** for 3 position dual pressure, pressure centre

Spare parts :

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

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow (Max)	Individual mounting	Series
5 / 2, 5 / 3	G 1 / 8 " - G 1 / 4 "	1000 NI / min	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

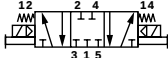
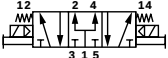
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
6. Wiping effect eliminates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



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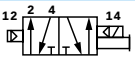
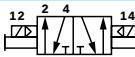
HOW TO ORDER

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 only	Internal	413A-00A-XX-XXX-XXX	423A-00A-XX-XXX-XXX	453A-00A-XX-XXX-XXX	463A-00A-XX-XXX-XXX	473A-00A-XX-XXX-XXX
	External	413A-00D-XX-XXX-XXX	423A-00D-XX-XXX-XXX	453A-00D-XX-XXX-XXX	463A-00D-XX-XXX-XXX	473A-00D-XX-XXX-XXX
G 1 / 8 "	Internal	413A-CAA-XX-XXX-XXX	423A-CAA-XX-XXX-XXX	453A-CAA-XX-XXX-XXX	463A-CAA-XX-XXX-XXX	473A-CAA-XX-XXX-XXX
G 1 / 4 "		413A-DAA-XX-XXX-XXX	423A-DAA-XX-XXX-XXX	453A-DAA-XX-XXX-XXX	463A-DAA-XX-XXX-XXX	473A-DAA-XX-XXX-XXX
G 1 / 8 "	External	413A-CAB-XX-XXX-XXX	423A-CAB-XX-XXX-XXX	453A-CAB-XX-XXX-XXX	463A-CAB-XX-XXX-XXX	473A-CAB-XX-XXX-XXX
G 1 / 4 "		413A-DAB-XX-XXX-XXX	423A-DAB-XX-XXX-XXX	453A-DAB-XX-XXX-XXX	463A-DAB-XX-XXX-XXX	473A-DAB-XX-XXX-XXX

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

Port size	Pilot air	5 / 2 Single operator	5 / 2 Double operator
			
Valve only	Internal	433A-00A-XX-XXX-XXX	443A-00A-XX-XXX-XXX
	External	433A-00D-XX-XXX-XXX	443A-00D-XX-XXX-XXX
G 1 / 8 "	Internal	433A-CAA-XX-XXX-XXX	443A-CAA-XX-XXX-XXX
G 1 / 4 "		433A-DAA-XX-XXX-XXX	443A-DAA-XX-XXX-XXX
G 1 / 8 "	External	433A-CAD-XX-XXX-XXX	443A-CAD-XX-XXX-XXX
G 1 / 4 "		433A-DAD-XX-XXX-XXX	443A-DAD-XX-XXX-XXX

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ISO 1
ISO 2
ISO 3

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						

SOLENOID OPERATOR ➤

GM-G XXX-XXX**

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

* Click here for other options available.

** Click here for other options available.

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

TECHNICAL DATA

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

Options :

- NPTF threads

413A-CAA-XX-XXX-XXX

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

Base only :

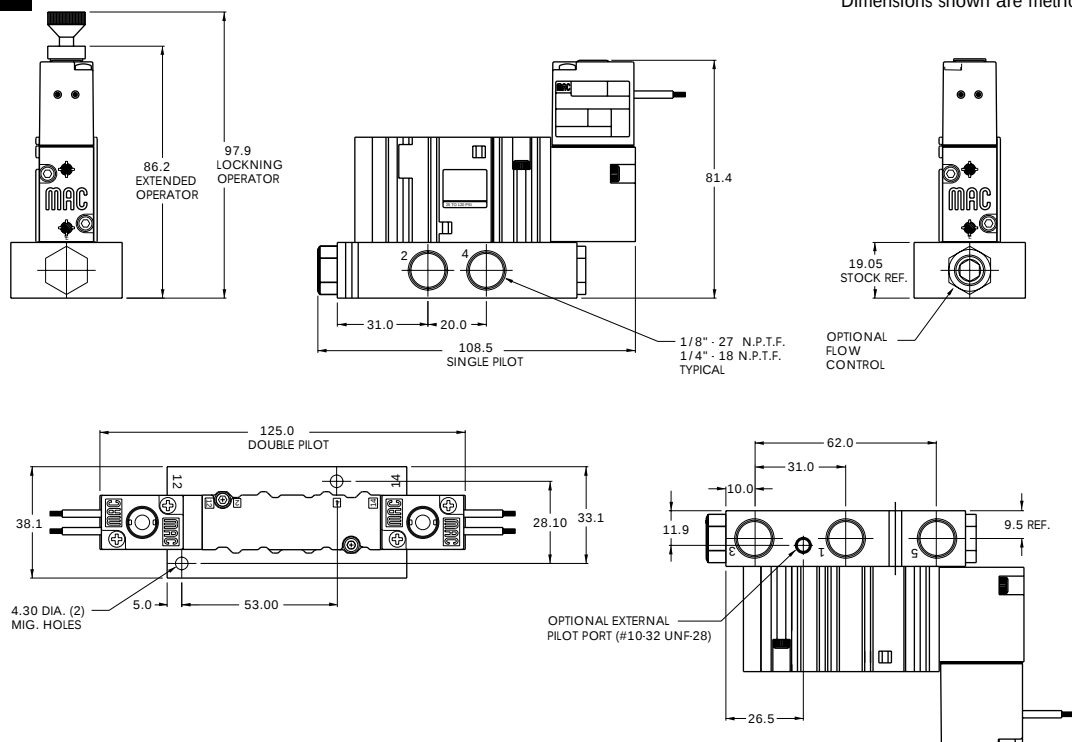
400A-XXX (i.e. 400A-CAA)

Spare parts :

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

DIMENSIONS

Dimensions shown are metric (mm)



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

Individual mounting

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

Series

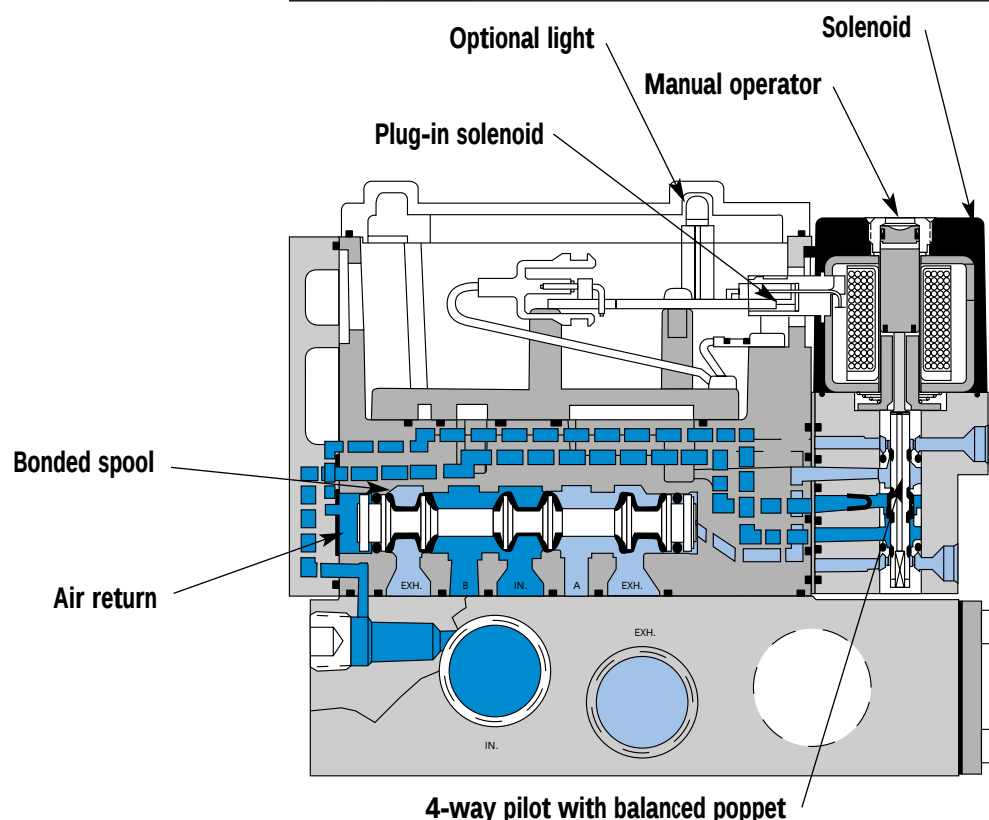
3 4

Manifold mounting

Sub-base non "plug-in"	Sub-base "plug-in"
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3 6

3 2



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3 8

5 2

6 7

4 4

4 6

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9 3

ISO 1

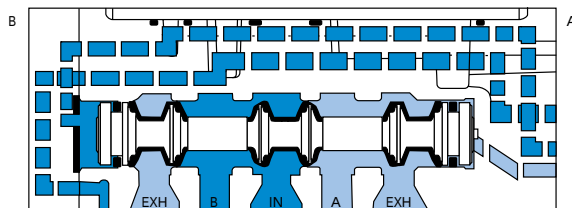
ISO 2

ISO 3

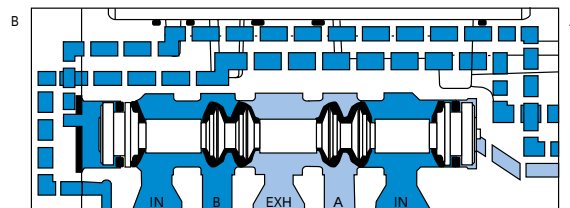
SERIES FEATURES

- 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.

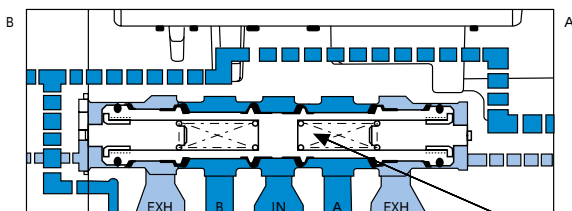
SPOOL CONFIGURATIONS



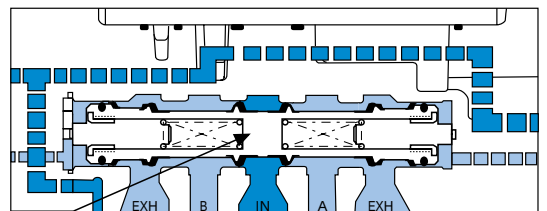
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

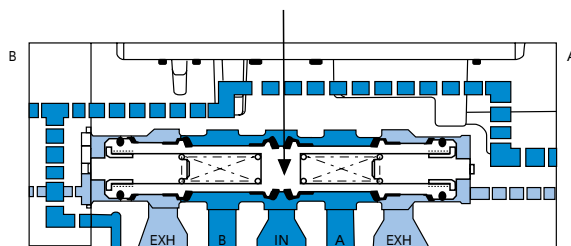


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

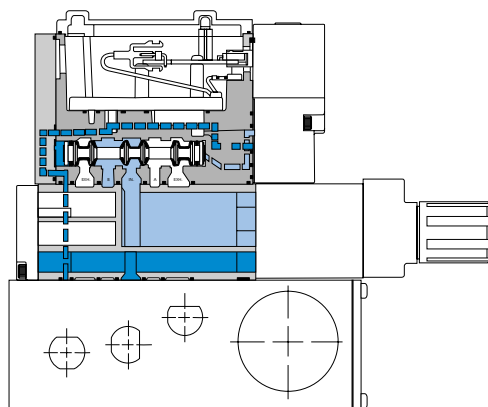


3 POSITION SINGLE PRESSURE, PRESSURE CENTER

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.

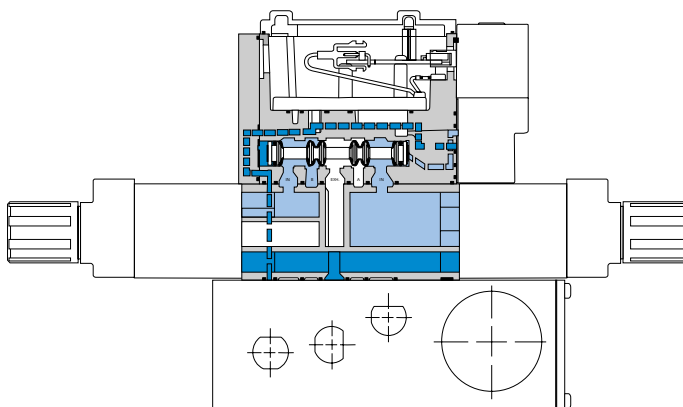


MANIFOLD WITH REGULATOR - SINGLE PRESSURE

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	Series
5 / 2, 5 / 3	G 1 / 8" - G 1 / 4" - G 3 / 8"	1200 NI/min	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

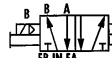
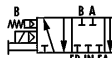
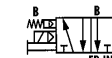
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded seal spool with minimum friction, shifting in a glass-like finished bore.
6. Pilot with balanced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



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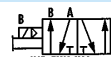
HOW TO ORDER

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
G 1 / 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
G 1 / 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
G 3 / 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
G 1 / 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
G 1 / 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
G 3 / 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

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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
G 1 / 8"	Internal	92B-CBA-DAG-DM-Dxxx-xxx	92B-DBA-DAG-DM-Dxxx-xxx
G 1 / 4"		92B-CBA-EAG-DM-Dxxx-xxx	92B-DBA-EAG-DM-Dxxx-xxx
G 3 / 8"		92B-CBA-FAG-DM-Dxxx-xxx	92B-DBA-FAG-DM-Dxxx-xxx
G 1 / 8"	External	92B-CBA-DAH-DM-Dxxx-xxx	92B-DBA-DAH-DM-Dxxx-xxx
G 1 / 4"		92B-CBA-EAH-DM-Dxxx-xxx	92B-DBA-EAH-DM-Dxxx-xxx
G 3 / 8"		92B-CBA-FAH-DM-Dxxx-xxx	92B-DBA-FAH-DM-Dxxx-xxx

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ISO 1
ISO 2
ISO 3

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

* Click here for other options available.
Other options available for the 92 series valves, click here.

Above models are shown with side ports.

TECHNICAL DATA

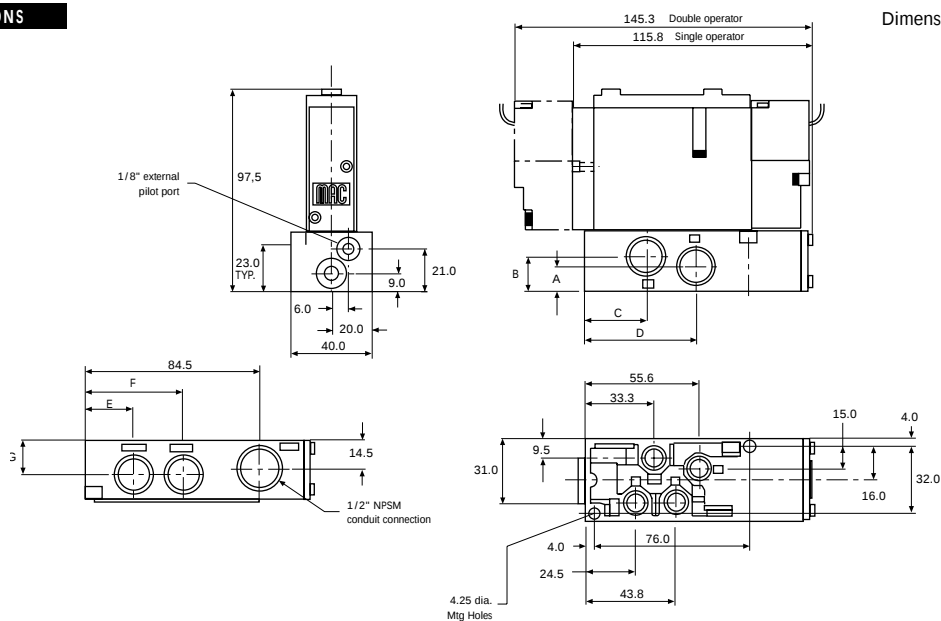
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature 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

Dimensions shown are metric (mm)



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

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

Function	Port size	Flow (Max)	Individual mounting	Series
5 / 2, 5 / 3	G 1 / 8" - G 1 / 4" - G 3 / 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.

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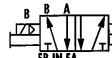
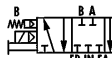
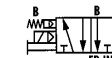
ISO 1

ISO 2

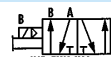
ISO 3

HOW TO ORDER

SINGLE PRESSURE MODELS

Port size	Pilot air	5 / 2 Single operator	5 / 2 Double operator	5 / 3 Closed 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
G 1 / 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
G 1 / 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
G 3 / 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
G 1 / 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
G 1 / 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
G 3 / 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
G 1 / 8"	Internal	92B-CAA-DAA-DM-DxxP-xxx	92B-DAA-DAA-DM-DxxP-xxx
G 1 / 4"		92B-CAA-EAA-DM-DxxP-xxx	92B-DAA-EAA-DM-DxxP-xxx
G 3 / 8"		92B-CAA-FAA-DM-DxxP-xxx	92B-DAA-FAA-DM-DxxP-xxx
G 1 / 8"	External	92B-CAA-DAD-DM-DxxP-xxx	92B-DAA-DAD-DM-DxxP-xxx
G 1 / 4"		92B-CAA-EAD-DM-DxxP-xxx	92B-DAA-EAD-DM-DxxP-xxx
G 3 / 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 diode & ground
DA 24 V=5,4W		DJ Plug-in with M.O.V. & ground
DF 24 V=12,7W		

* Click here for other options available.

Note: Ground required for 30 Volts or higher.

Other options available for the 92 series valves, click here.

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

TECHNICAL DATA

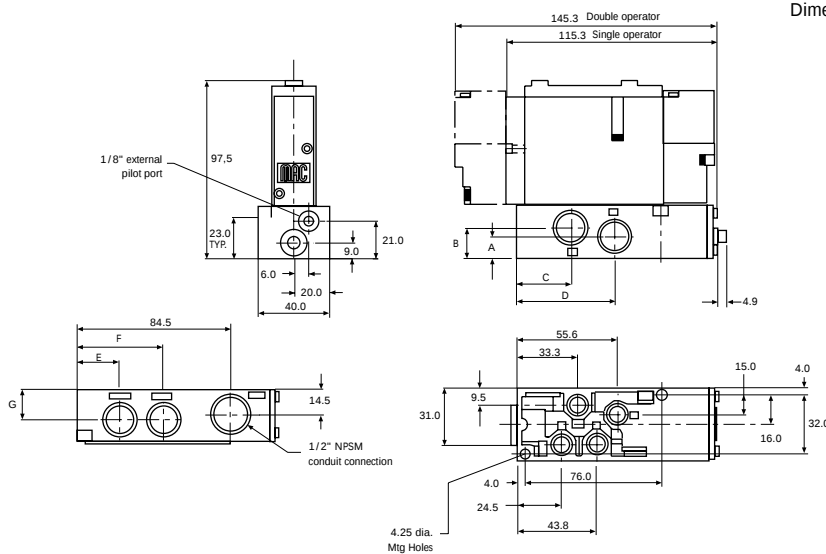
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
Filtration :	40 µ		
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

Dimensions shown are metric (mm)



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

Function	Port size	Flow (Max)	Manifold mounting	Series
5 / 2, 5 / 3	G 1 / 4 " - G 3 / 8 "	1200 NI/min	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

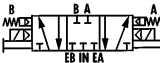
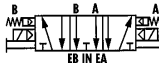
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded seal spool with minimum friction, shifting in a glass-like finished bore.
6. Pilot with balanced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



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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
G 1 / 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
G 3 / 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

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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
G 1 / 4 "	Internal	92B-CBA-EJG-DM-Dxxx-xxx	92B-DBA-EJG-DM-Dxxx-xxx
G 3 / 8 "		92B-CBA-FJG-DM-Dxxx-xxx	92B-DBA-FJG-DM-Dxxx-xxx

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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

* Click here for other options available.
End plate kit required (port size 3/8"):

M-92004-01-01P (internal pilot)
M-92004-02-01P (External pilot)

Inlet/exhaust Isolator disc: N-92018.

Other options available for the 92 series valves, click here.

Above models are shown with side ports.

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

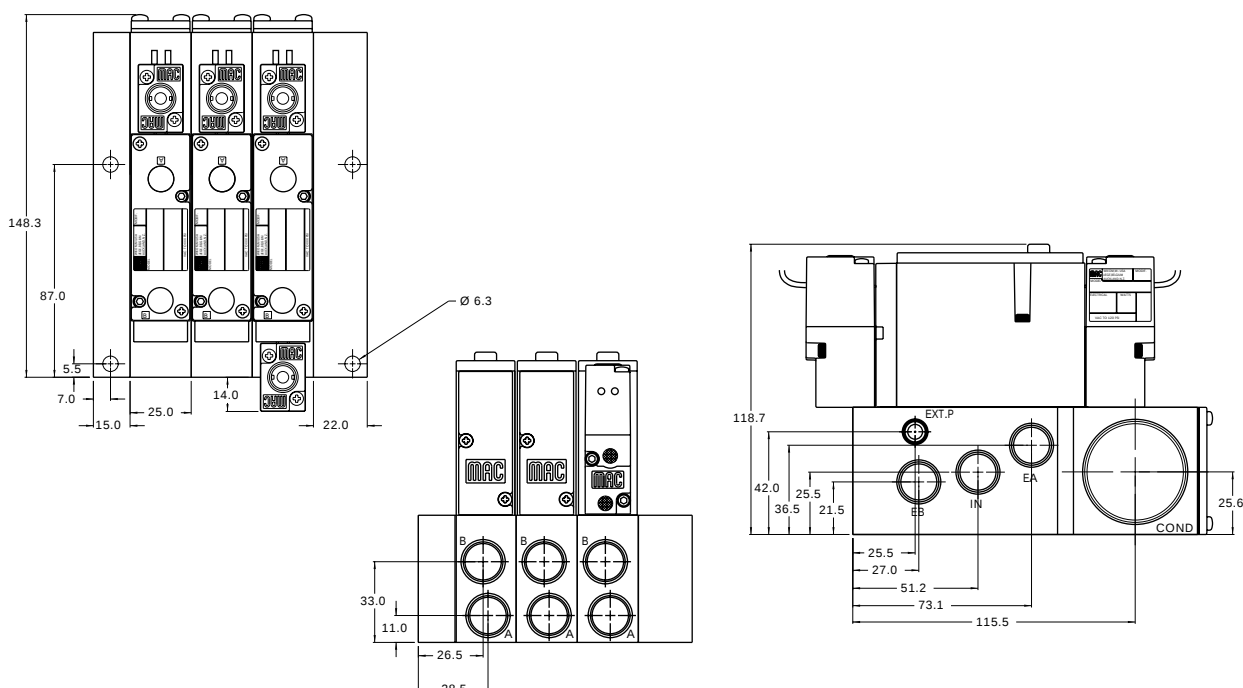
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Internal pilot : 1,3 to 8 bar	3 position : 2,3 to 8 bar	
	External pilot : vacuum to 8 bar	3 position : 2,3 to 8 bar	
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
Filtration :	40 μ		
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	Series
5 / 2, 5 / 3	G 1 / 4 " - G 3 / 8 "	1200 NI/min	Sub-base "plug-in"	

OPERATIONAL BENEFITS

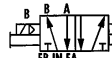
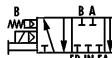
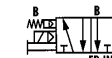
1. The 4-way pilot develops maximum shifting forces both ways.
2. Memory spring available.
3. Balanced spool, immune to variations of pressure, also provides high flow.
4. Short stroke with high flow.
5. Bonded seal spool with minimum friction, shifting in a glass-like finished bore.
6. Pilot with balanced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



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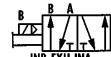
HOW TO ORDER

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
G 1 / 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
G 3 / 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

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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
G 1 / 4 "	Internal	92B-CAA-EJA-DM-DxxP-xxx	92B-DAA-EJA-DM-DxxP-xxx
G 3 / 8 "		92B-CAA-FJA-DM-DxxP-xxx	92B-DAA-FJA-DM-DxxP-xxx

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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 diode & ground
DA 24 V= /5,4W		DJ Plug-in with M.O.V. & ground
DF 24 V= /12,7W		

* Click here for other options available.

Note: Ground required for 30 Volts or higher.

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

M-92004-02-01P (external pilot)

Inlet / exhaust isolator disc: N-92018.

Other options available for the 92 series valves, click here.

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

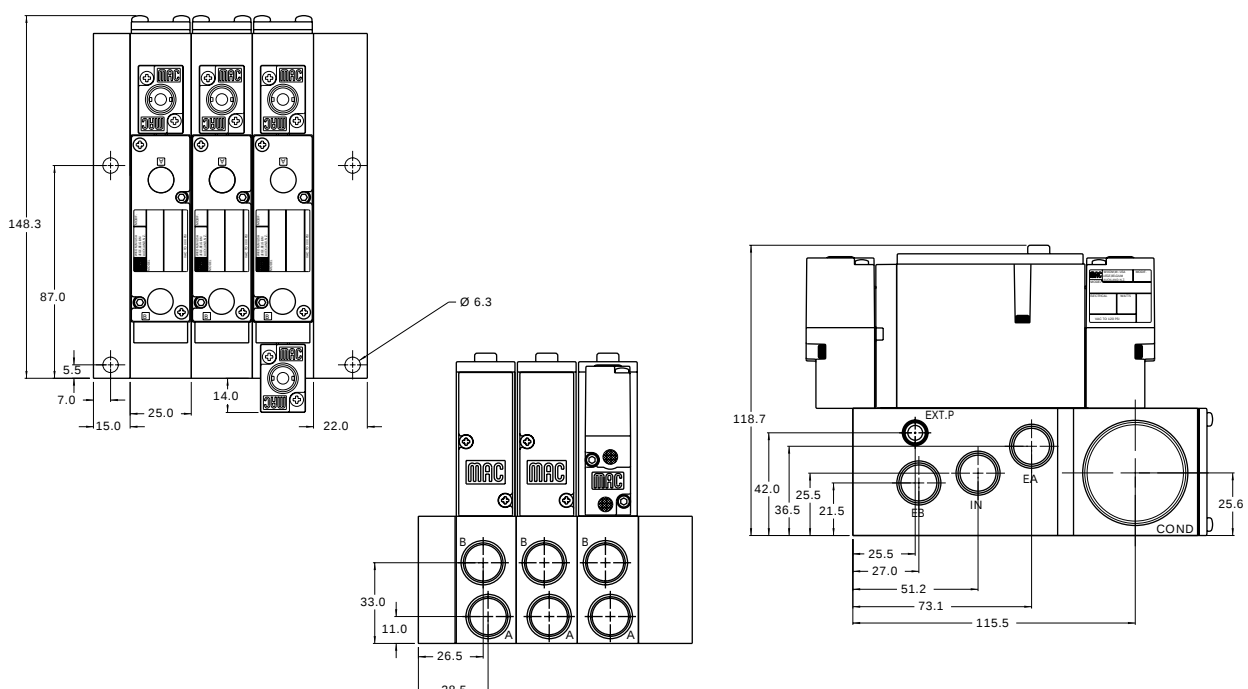
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 1,3 to 8 bar 3 position : 2,3 to 8 bar External pilot : vacuum to 8 bar 3 position : 2,3 to 8 bar
Pilot pressure:	1,3 to 8 bar 3 positions 2,3 to 8 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (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)



OPTIONS FOR NON PLUG-IN VALVES		3 4
Valve function		3 6
92B- H XX-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*		3 2
Pilot exhaust		3 7
92B-X B X-XXX-XX-D xxx -xxx		3 8
B standard pilot exhaust D pilot exhaust to main valve exhaust**		5 2
Port configuration :		6 7
Individual sub-base		4 4
92B-XXX-X A X-XX-D xxx -xxx		4 6
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		4 2
92B-XXX-X J X-XX-D xxx -xxx		4 7
J side ports K bottom ports		4 8
Pilot style :		4 0 0
92B-XXX-XXX- DM -D xxx -xxx		9 2
DM pilot exhaust muffled DP pilot exhaust piped (#10-32) DU pilot exhaust to main exhaust		
Base only :		9 3
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-**HXX**-XXX-XX-D**xxP**-**xxx**

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

Pilot exhaust

92B-X**AX**-XXX-XX-D**xxP**-**xxx**

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

Body electrical

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

- A** no light
- B** light(s)
- F** suppression and blocking diode with light(s)
- H** M.O.V. with light(s)

Port configuration :

Individual sub-base

92B-XXX-X**AX**-XX-D**xxP**-**xxx**

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

Manifold sub-base

92B-XXX-X**JX**-XX-D**xxP**-**xxx**

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

Base/manifold int./ext. pilot

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

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

Pilot style :

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

- DM** pilot exhaust muffled
- DP** pilot exhaust piped (#10-32)
- DU** pilot exhaust to main exhaust

Lead Wire Lengths : (manifold sub-base only)

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

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

Base only :

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

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

* Requires sandwich regulator.

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

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

Individual mounting

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

3 4

Manifold mounting

Sub-base non "plug-in"	Sub-base "plug-in"
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3 6

3 2

3 7

3 8

5 2

6 7

4 4

4 6

4 2

4 7

4 8

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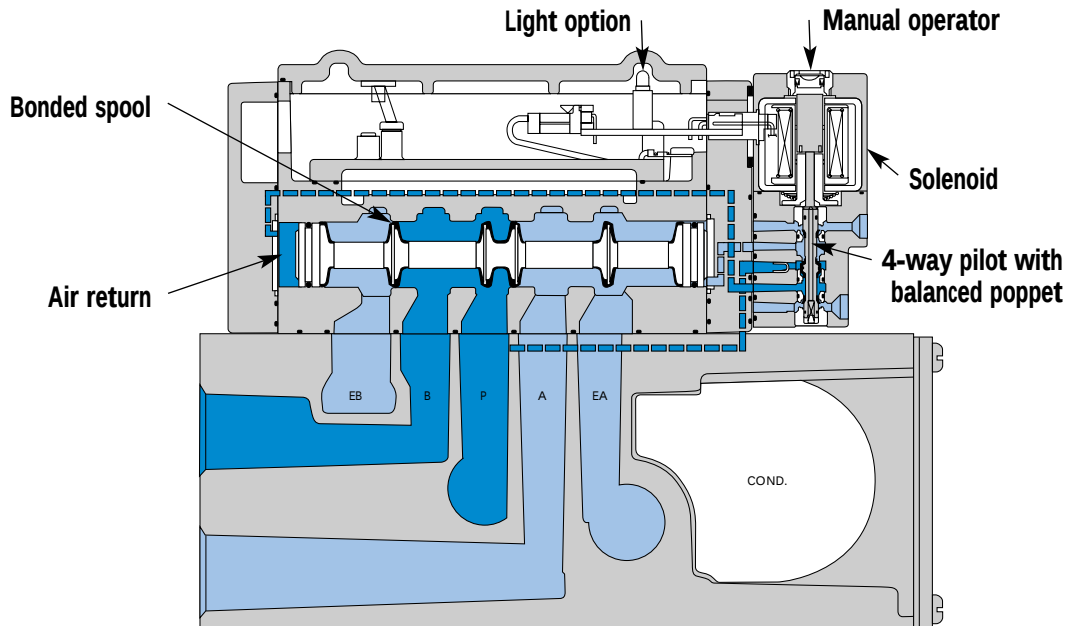
9 2

9 3

ISO 1

ISO 2

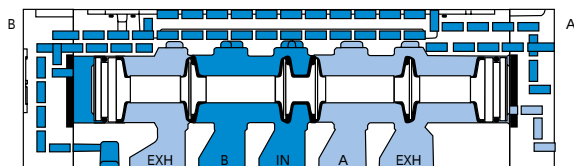
ISO 3



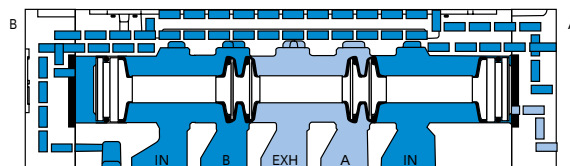
SERIES FEATURES

- 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.

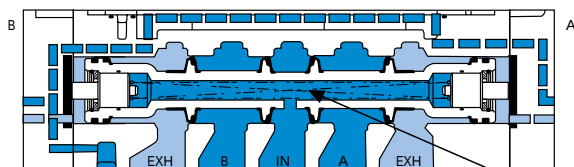
SPOOL CONFIGURATIONS



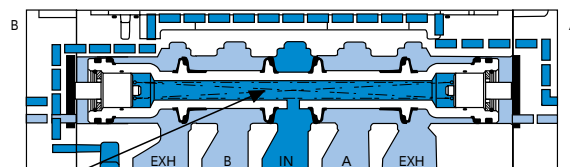
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

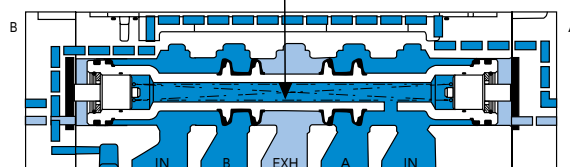


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

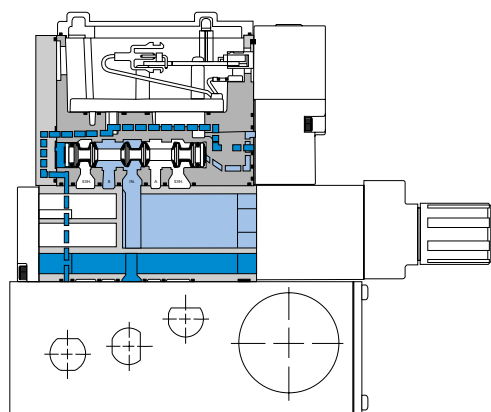


3 POSITION SINGLE PRESSURE, PRESSURE CENTER

REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

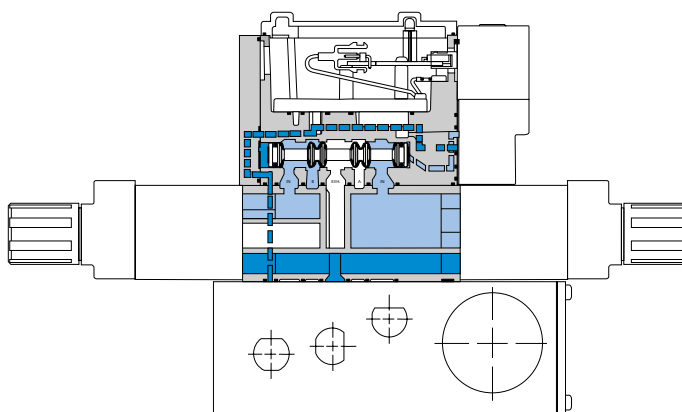
Pressure supplied to the individual or manifold base passes through the regulator. Regulated pressure is supplied to the pressure path of the valve.



MANIFOLD WITH REGULATOR - SINGLE PRESSURE

DUAL REGULATOR - DUAL PRESSURE

Pressure supplied from each regulator is divided in the block. Regulated pressure from "A" regulator supplies cylinder port "A". Regulated pressure from "B" regulator supplies cylinder port "B". Dual pressure regulators require dual pressure spool in valve.



MANIFOLD WITH REGULATOR - DUAL PRESSURE

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

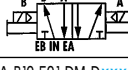
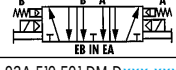
Function	Port size	Flow (Max)	Individual mounting	Series
5 / 2, 5 / 3	G 3 / 8 " - G 1 / 2 "	3 800 NI / min	Inline	

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
					
G 3 / 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
G 1 / 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
G 3 / 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
G 1 / 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 / 2 Pressure centre
				
G 3 / 8 "	Internal	93A-CJ0-E0J-DM-Dxxx-xxx	93A-DJ0-E0J-DM-Dxxx-xxx	93A-HJ0-E0J-DM-Dxxx-xxx
G 1 / 2 "	Internal	93A-CJ0-F0J-DM-Dxxx-xxx	93A-DJ0-F0J-DM-Dxxx-xxx	93A-HJ0-F0J-DM-Dxxx-xxx
G 3 / 8 "	External	93A-CJ0-E0K-DM-Dxxx-xxx	93A-DJ0-E0K-DM-Dxxx-xxx	93A-HJ0-E0K-DM-Dxxx-xxx
G 1 / 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						

* Click here for other options available.

OPTIONS

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

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

Other options available for the 93 series valves, click here.

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



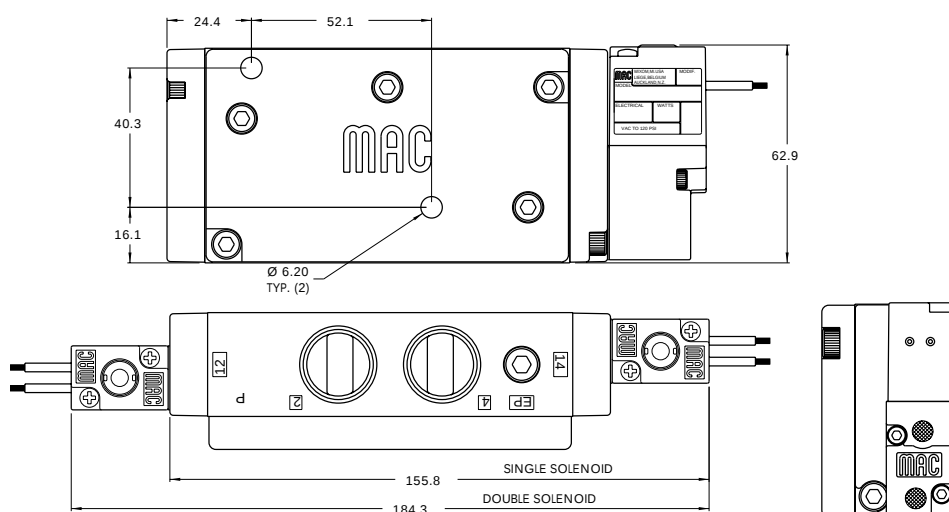
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 10 bar External Pilot: Vacuum 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 :	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	Series
5 / 2, 5 / 3	G 1 / 4 " - G 3 / 8 " - G 1 / 2 "	3 400 NI / min	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

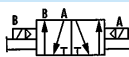
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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
G 1 / 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
G 3 / 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
G 1 / 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
G 1 / 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
G 3 / 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
G 1 / 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 / 2 Pressure centre
				
Valve less base		93A-CBA-000-DM-Dxxx-xxx	93A-DBA-000-DM-Dxxx-xxx	93A-HBA-000-DM-Dxxx-xxx
G 1 / 4 "	Internal	93A-CBA-DBG-DM-Dxxx-xxx	93A-DBA-DBG-DM-Dxxx-xxx	93A-HBA-DBG-DM-Dxxx-xxx
G 3 / 8 "		93A-CBA-EAG-DM-Dxxx-xxx	93A-DBA-EAG-DM-Dxxx-xxx	93A-HBA-EAG-DM-Dxxx-xxx
G 1 / 2 "		93A-CBA-FAG-DM-Dxxx-xxx	93A-DBA-FAG-DM-Dxxx-xxx	93A-HBA-FAG-DM-Dxxx-xxx
G 1 / 4 "	External	93A-CBA-DBH-DM-Dxxx-xxx	93A-DBA-DBH-DM-Dxxx-xxx	93A-HBA-DBH-DM-Dxxx-xxx
G 3 / 8 "		93A-CBA-EAH-DM-Dxxx-xxx	93A-DBA-EAH-DM-Dxxx-xxx	93A-HBA-EAH-DM-Dxxx-xxx
G 1 / 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

* Click here for other options available.

Other options available for the 93 series valves, click here.

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



TECHNICAL DATA

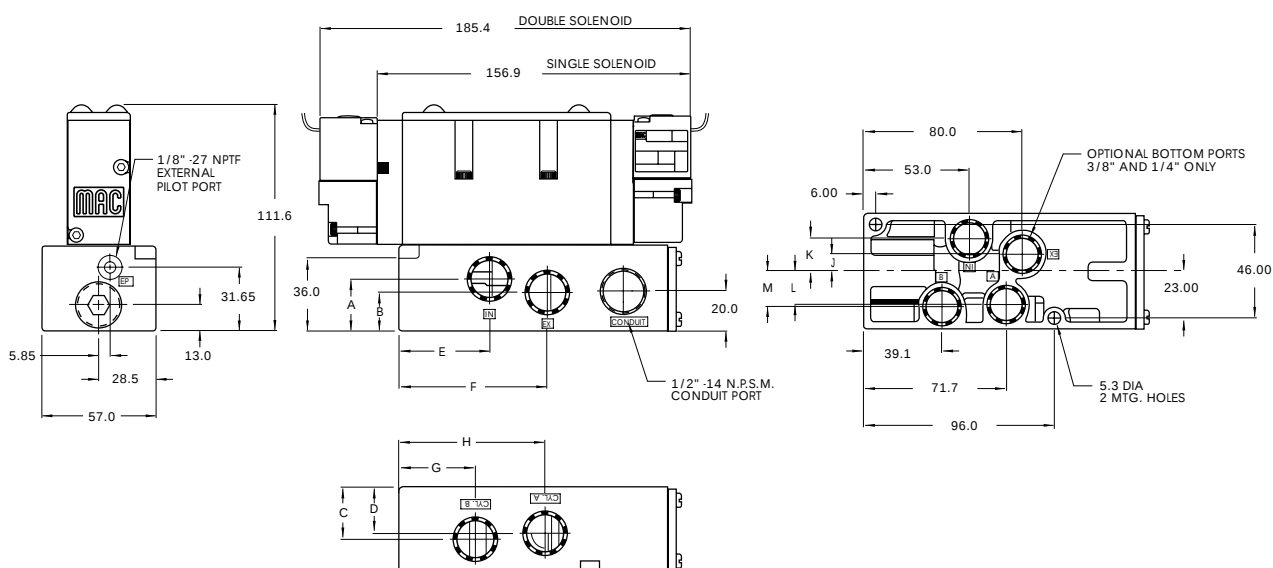
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 10 bar External Pilot: Vacuum to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow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

- Options :
- NPTF thread • Sandwich regulator (see „regulators“ section)
 - Sandwich flow controls FC93A-BA (screwdriver slot adjustment)
 FC93A-BB (locking knob adjustment)

- Spare parts :
- Pilot valve: DM-Dxxx-xxx • Valve to base pressure seal: 16622
 - Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249
 - Pilot valve mounting screws (x2): 35069

DIMENSIONS

Dimensions shown are metric (mm)



DIM.	A	B	C	D	E	F	G	H	DIM.	J	K	L	M
G3/8"	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5	G1/4"	7.0	14.7	15.0	16.5
G1/2"	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5	G3/8"	8.5	16.2	16.5	17.5

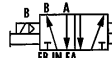
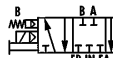
Function	Port size	Flow (Max)	Individual mounting	Series
5 / 2, 5 / 3	G 1 / 4" - G 3 / 8" - G 1 / 2"	3 400 NI / min	Sub-base "plug-in"	

OPERATIONAL BENEFITS

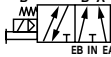
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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
G 1 / 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
G 3 / 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
G 1 / 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
G 1 / 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
G 3 / 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
G 1 / 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

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-CAA-000-DM-DxxP-xxx	93A-DAA-000-DM-DxxP-xxx	93A-HAA-000-DM-DxxP-xxx
G 1 / 4"	Internal	93A-CAA-DBA-DM-DxxP-xxx	93A-DAA-DBA-DM-DxxP-xxx	93A-HAA-DBA-DM-DxxP-xxx
G 3 / 8"		93A-CAA-EAA-DM-DxxP-xxx	93A-DAA-EAA-DM-DxxP-xxx	93A-HAA-EAA-DM-DxxP-xxx
G 1 / 2"		93A-CAA-FAA-DM-DxxP-xxx	93A-DAA-FAA-DM-DxxP-xxx	93A-HAA-FAA-DM-DxxP-xxx
G 1 / 4"		93A-CAA-DBD-DM-DxxP-xxx	93A-DAA-DBD-DM-DxxP-xxx	93A-HAA-DBD-DM-DxxP-xxx
G 3 / 8"	External	93A-CAA-EAD-DM-DxxP-xxx	93A-DAA-EAD-DM-DxxP-xxx	93A-HAA-EAD-DM-DxxP-xxx
G 1 / 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				

* Click here for other options available.
Note: Ground required for 30 Volts or higher.
Other options available for the 93 series valves, click here.

TECHNICAL DATA

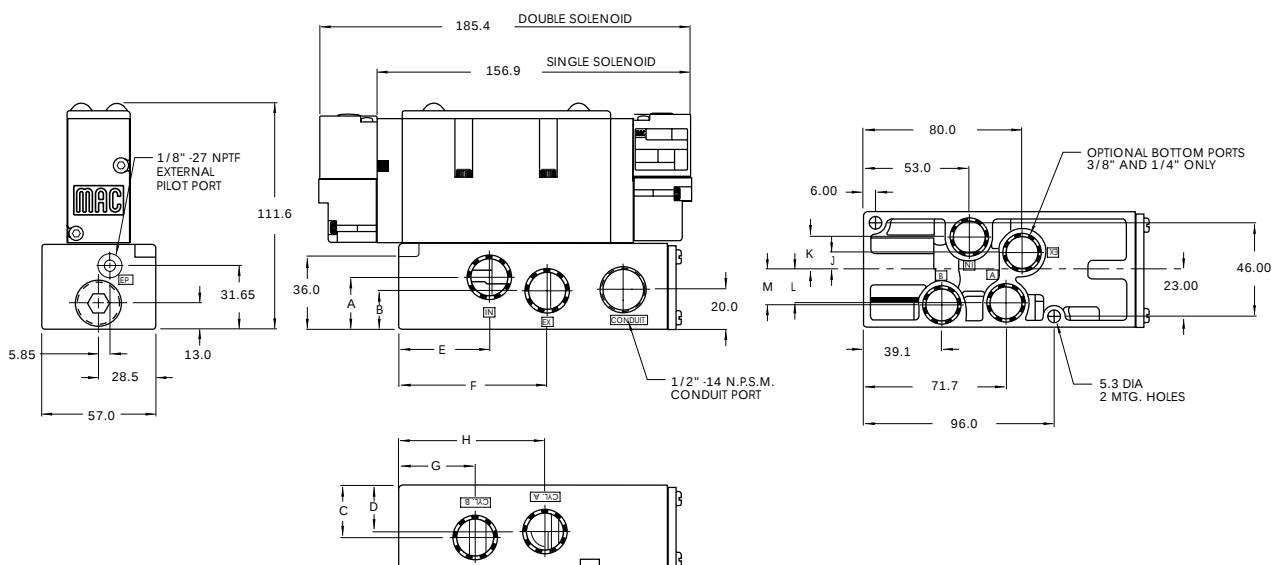
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 10 bar External Pilot: Vacuum to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	11,7 mm
Flow (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 :	Energize :13 ms (with 4 W coil) De-energize : 10 ms

- Options :
- NPTF thread • Sandwich regulator (see „regulators“ section)
 - Sandwich flow controls FC93A-AA (screwdriver slot adjustment)
 FC93A-AB (locking knob adjustment)

- Spare parts :
- Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622
 - Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249
 - Pilot valve mounting screws (x2): 35069

DIMENSIONS

Dimensions shown are metric (mm)



DIM.	A	B	C	D	E	F	G	H	DIM.	J	K	L	M
G3/8"	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5	G1/4"	7.0	14.7	15.0	16.5
G1/2"	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5	G3/8"	8.5	16.2	16.5	17.5

Function	Port size	Flow (Max)	Manifold mounting	Series
5 / 2, 5 / 3	G 3 / 8 " - G 1 / 2 "	3 800 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

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
G 3 / 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
G 1 / 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
G 3 / 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
G 1 / 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 / 2 Pressure centre
				
Valve less base		93A-CBA-000-DM-Dxxx-xxx	93A-DBA-000-DM-Dxxx-xxx	93A-HBA-000-DM-Dxxx-xxx
G 3 / 8 "	Internal	93A-CBA-EJG-DM-Dxxx-xxx	93A-DBA-EJG-DM-Dxxx-xxx	93A-HBA-EJG-DM-Dxxx-xxx
G 1 / 2 "		93A-CBA-FJG-DM-Dxxx-xxx	93A-DBA-FJG-DM-Dxxx-xxx	93A-HBA-FJG-DM-Dxxx-xxx
G 3 / 8 "	External	93A-CBA-EJH-DM-Dxxx-xxx	93A-DBA-EJH-DM-Dxxx-xxx	93A-HBA-EJH-DM-Dxxx-xxx
G 1 / 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						

* Click here for other options available.

End plate kit required (1/2" ports): M-93001-01-01P internal pilot.

M-93001-02-01P external pilot.

Other options available for the 93 series valves, click here.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 10 bar External Pilot: Vacuum 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 :	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 :

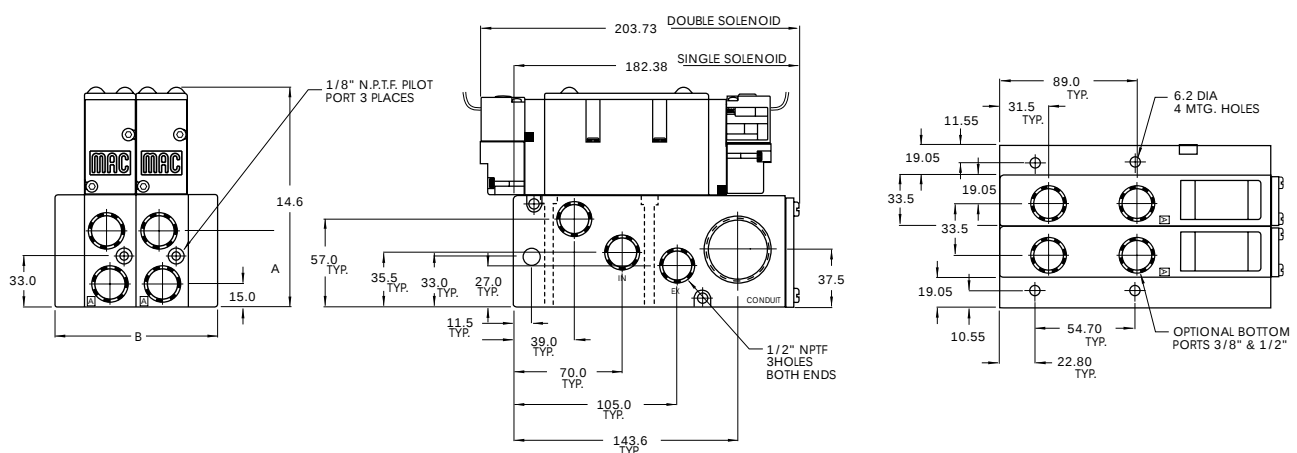
- NPTF thread • Sandwich regulator (see ,regulators' section)
- Sandwich flow controls FC93A-BA (screwdriver slot adjustment), FC93A-BB (locking knob adjustment)

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
G3/8"	47.66
G1/2"	49.32

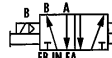
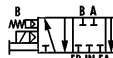
Function	Port size	Flow (Max)	Manifold mounting	Series
5 / 2, 5 / 3	G 3 / 8 " - G 1 / 2 "	3 800 NI / min	Sub-base "plug-in"	

OPERATIONAL BENEFITS

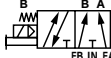
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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

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
G 3 / 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
G 1 / 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
G 3 / 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
G 1 / 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
G 3 / 8 "	Internal	93A-CAA-EJA-DM-DxxP-xxx	93A-DAA-EJA-DM-DxxP-xxx	93A-HAA-EJA-DM-DxxP-xxx
G 1 / 2 "		93A-CAA-FJA-DM-DxxP-xxx	93A-DAA-FJA-DM-DxxP-xxx	93A-HAA-FJA-DM-DxxP-xxx
G 3 / 8 "	External	93A-CAA-EJD-DM-DxxP-xxx	93A-DAA-EJD-DM-DxxP-xxx	93A-HAA-EJD-DM-DxxP-xxx
G 1 / 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				

* Click here for other options available.

End plate required (1/2" ports): M-93001-01-01P Internal pilot.
M-93001-02-01P External pilot.

Other options available for the 93 series valves, click here.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 1,3 to 10 bar External Pilot: Vacuum 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 :	11,7 mm
Flow (at 6 bar, ΔP=1bar) :	3/8": 3400 NI/min (Cv 3,4) – 1/2": 3800 NI/min (Cv 3.8)
Coil :	Epoxy encapsulated – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA Holding: 4,8 VA = 1 to 12.7 W
Response times : (with 4 W coil)	Energize :13 ms De-energize : 10 ms

Options :

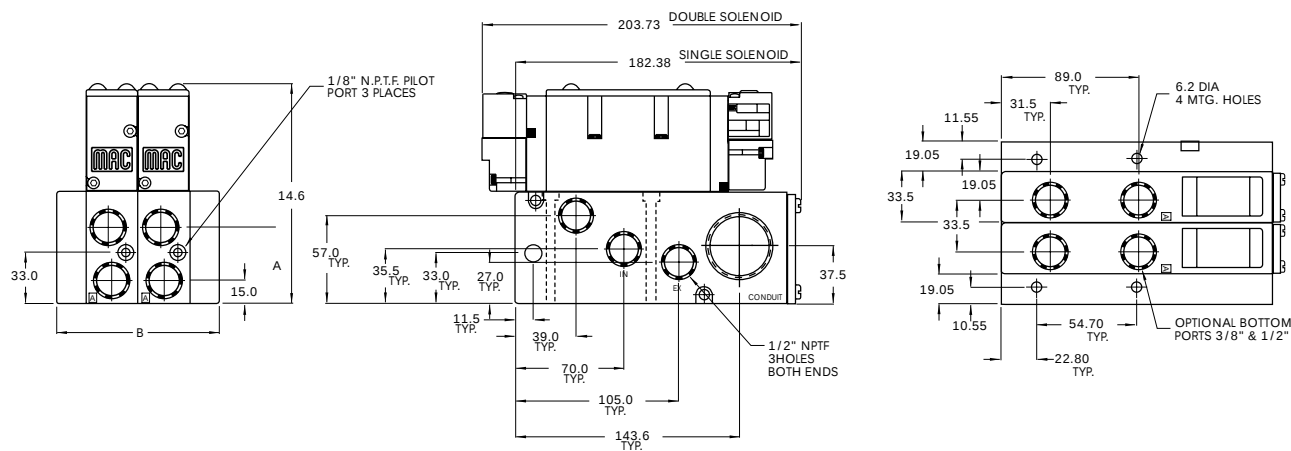
- NPTF thread • Sandwich regulator (see „regulators“ section)
- Sandwich flow controls FC93A-AA (screwdriver slot adjustment), FC93A-AB (locking knob adjustment)

Spare parts :

- Pilot valve: DM-DxxP-xxx • Valve to base pressure seal: 16622
- Pilot valve pressure seal: 16542 • Mounting screws valve to base (x4): 35249
- Inlet/exh. Isolator disc: N-93008 • Valve blanking plate: M-93002

DIMENSIONS

Dimensions shown are metric (mm)



#	1	2	3	4	5	6	7	8	9	10	DIM.	A
B	71.6	105.1	138.6	172.1	205.6	239.1	272.6	306.1	339.6	373.1	G3/8"	47.66
											G1/2"	49.32

OPTIONS FOR NON PLUG-IN VALVES		3 4
Valve function		3 6
93A-LXX-XXX-XX-Dxxx-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)		3 2
Pilot exhaust		3 7
93A-XXB-XXX-XX-Dxxx-xxx		3 8
B standard pilot exhaust D pilot exhaust to main valve exhaust*		5 2
Port configuration :		6 7
Individual sub-base		4 4
93A-XXX-XAX-XX-Dxxx-xxx		4 6
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		4 2
93A-XXX-XJX-XX-Dxxx-xxx		4 7
J side ports K bottom ports		4 8
Pilot style :		4 0 0
93A-XXX-XXX-DM-Dxxx-xxx		9 2
DM pilot exhaust muffled DP pilot exhaust piped (#10-32) DU pilot exhaust to main exhaust		
Base only :		9 3
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.

ISO 1
ISO 2
ISO 3



Direct solenoid and solenoid pilot operated valves

OPTIONS FOR PLUG-IN VALVES

Valve function

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

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

Pilot exhaust

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

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

Body electrical

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

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

Port configuration :

Individual sub-base

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

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

Manifold sub-base

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

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

Base/manifold int./ext. pilot

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

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

Pilot style :

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

- DM** pilot exhaust muffled
- DP** pilot exhaust piped (#10-32)
- DU** pilot exhaust to main exhaust

Base only :

93A-000-XXX (i.e. 93A-000-DBA) - Individual base
(Note: bases are wired for double solenoid valves)

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

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

Individual mounting

Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2
--	--

Series

3 4

Manifold mounting

Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2
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5 2

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4 4

4 6

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4 8

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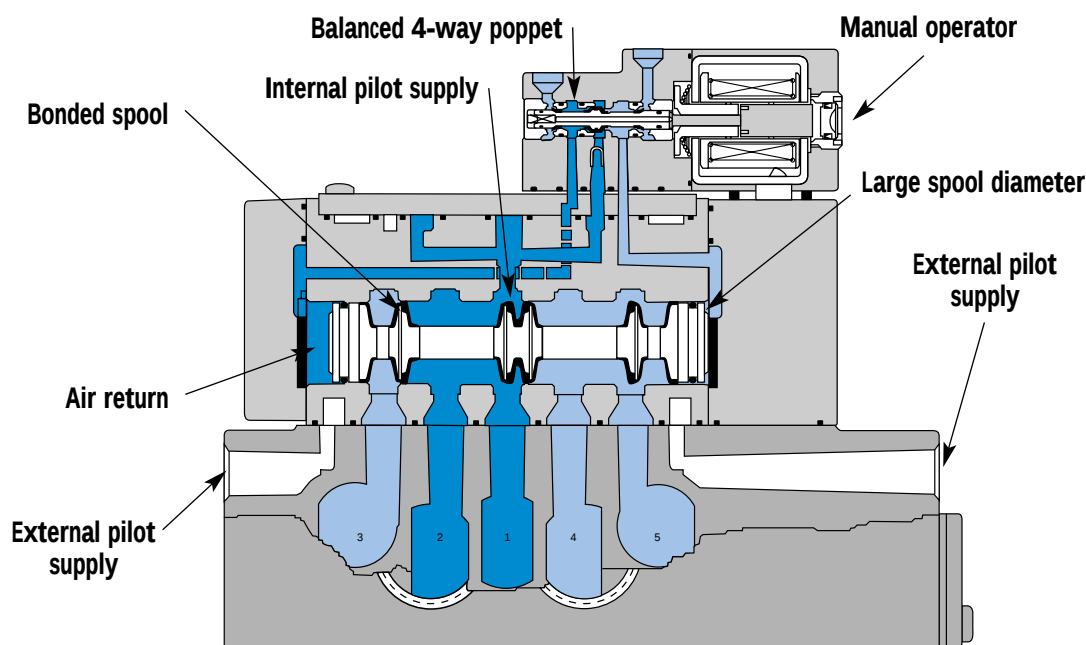
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ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5 / 2, 5 / 3	G 1 / 4 " - G 3 / 8 "	1800 NI / min	Valve only - No base non "plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

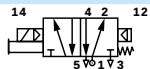
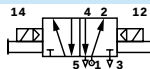
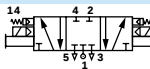
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates 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.



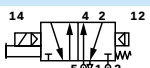
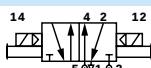
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HOW TO ORDER

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 / 2 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

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400
92
93

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						

* Click here for other options available.

Note: ISO series, valve and base are ordered separately, click here for base code.

OPTIONS

Valve function :

MV-B1A-A**xxx**-xx-D**xxx-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-D**xxx-xxx**

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

Spool return :

MV-B1A-AX**A**-xx-D**xxx-xxx**

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

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

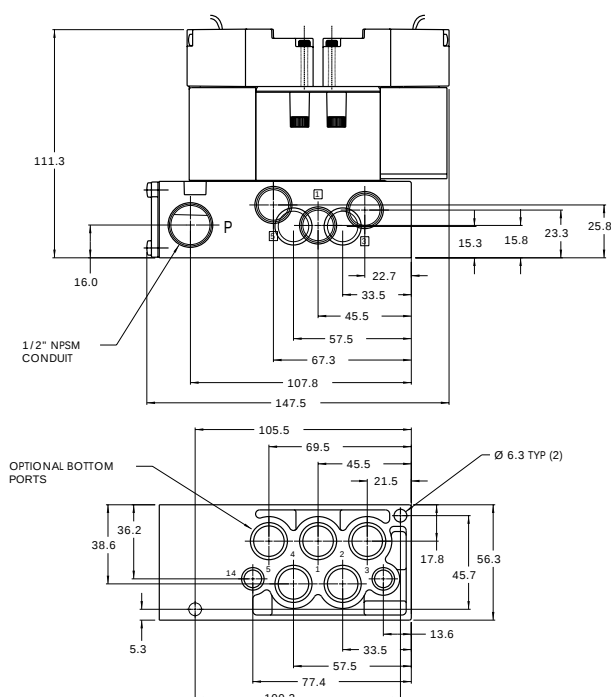
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 10 bar
Pilot pressure :	Single / double operator : 1,3 to 10 bar 3 positions : 2 to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	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 :	Energize :11.3 ms (with 5,4 W coil) 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

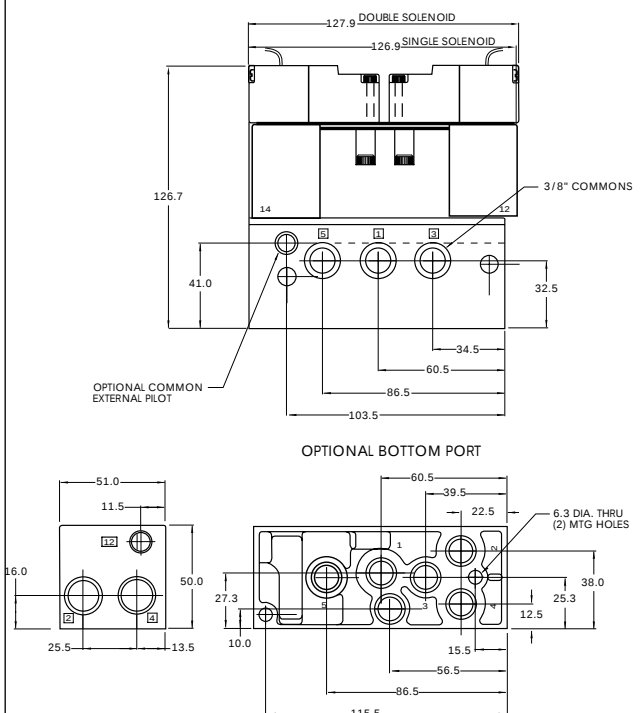
DIMENSIONS

Individual base



Dimensions shown are metric (mm)

Manifold base



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

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5 / 2, 5 / 3	G 1 / 4 " - G 3 / 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.



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32
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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 / 2 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

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400
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93

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		

* Click here for other options available.

Note: - ISO series, valve and base are ordered separately, click here for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function :

MV-P1A-A**XXX**-XX-D**xx**P-**xxx**

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

Pilot style :

MV-P1A-A**XXX**-**DM**-D**xx**P-**xxx**

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

Spool return :

MV-P1A-A**XX**A**XX**-XX-D**xx**P-**xxx**

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

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

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

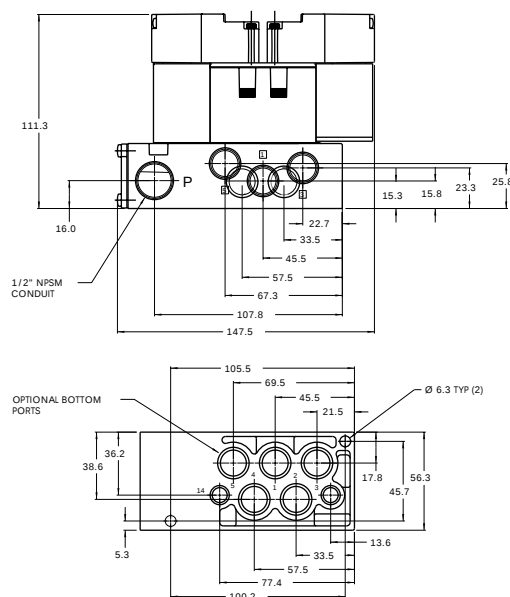
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 10 bar
Pilot pressure :	Single / double operator : 1,3 to 10 bar 3 positions : 2 to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	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 :	Energize :10 ms
(with 5,4 W coil)	De-energize : 9 ms

- Options :
- Sandwich flow controls: FCP1A-AA (screwdriver slot adjustment)
FCP1A-AB (locking knob adjustment)
 - Sandwich regulator, see 'Regulators' section

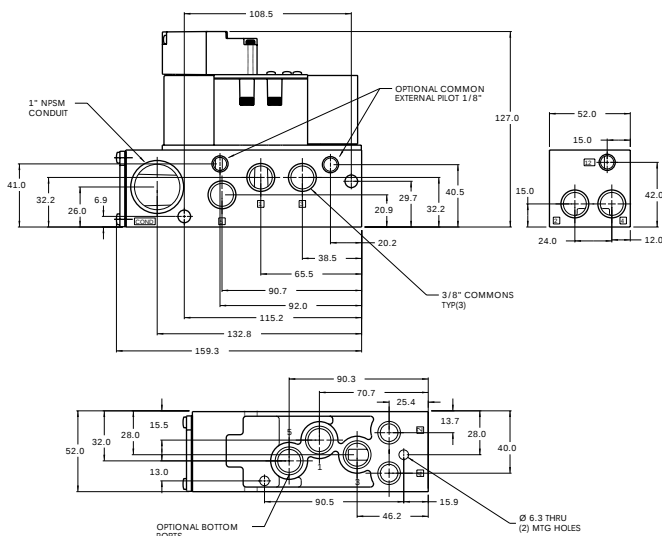
- Spare parts :
- Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16661

DIMENSIONS

Individual base



Manifold base



Individual mounting

Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2
--	--

Series

3 4

Manifold mounting

Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2
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3 7

3 8

5 2

6 7

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4 6

4 2

4 7

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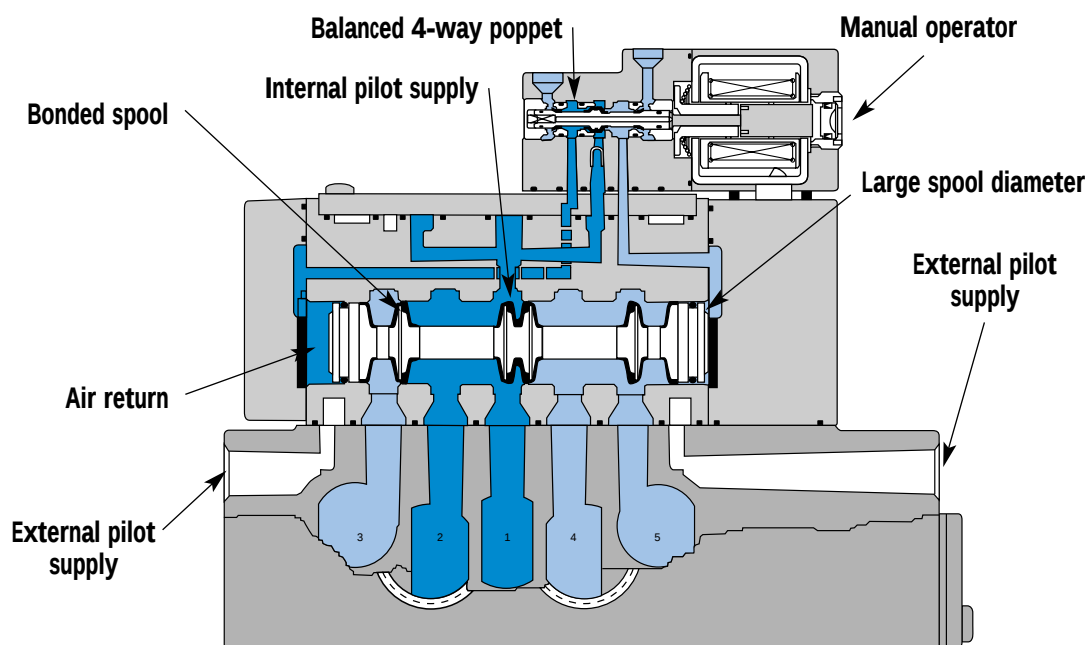
9 2

9 3

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5 / 2, 5 / 3	G 3 / 8 " - G 1 / 2 "	3 000 NI / minn	Valve only - No base non "plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

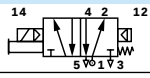
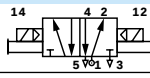
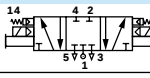
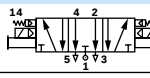
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof AC solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. MAC spool and bore combination wipes away contamination, eliminates 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.



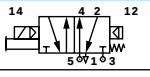
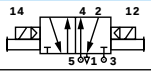
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3 6
3 2
3 7
3 8
5 2
6 7
4 4

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 / 2 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

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9 2
9 3

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						

* Click here for other options available.
Note: ISO series, valve and base are ordered separately, click here for base code.

OPTIONS

Valve function :

MV-B2A-**A**xxx-xx-Dxxx-xxx

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

Pilot style :

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

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

Spool return :

MV-B2A-xx**A**x-xx-Dxxx-xxx

- A** Standard return
B Memory spring return

ISO 1
ISO 2
ISO 3

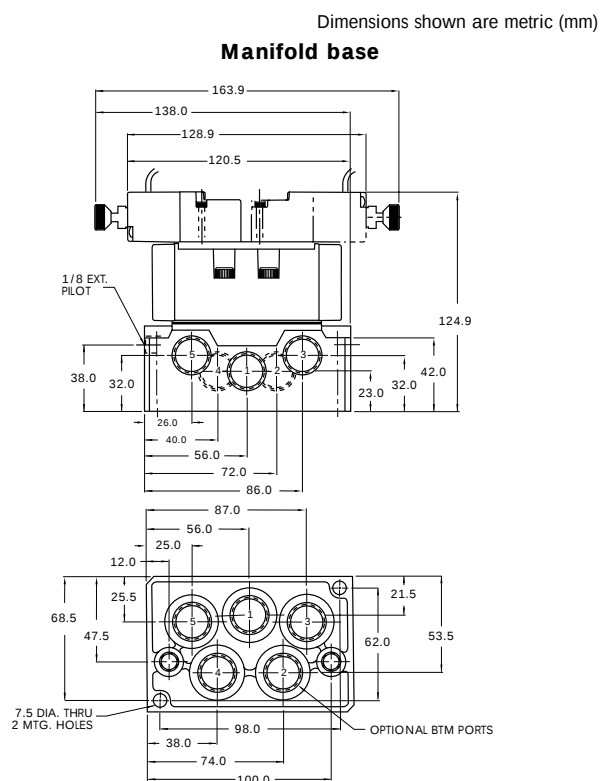
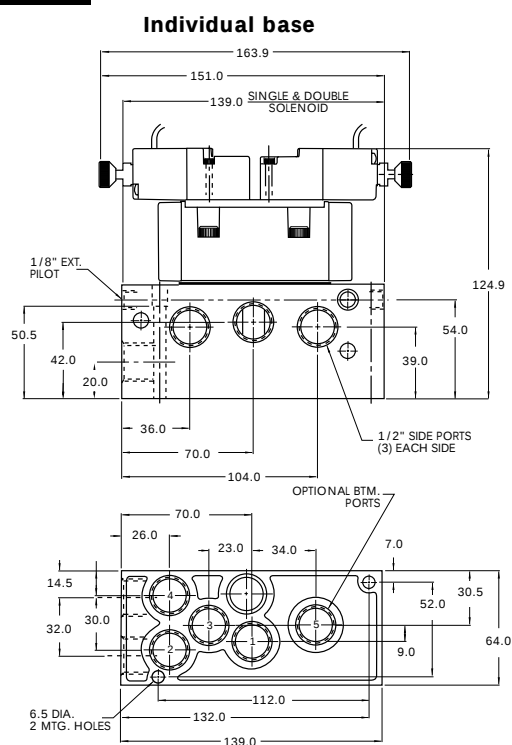
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 10 bar External pilot : vacuum to 10 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 10 bar double operator : 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 :	10.5 mm
Flow (at 6 bar, ΔP=1bar) :	G3/8": 2800 NI/min (Cv 2.8) - G1/2": 3000 NI/min (Cv 3,0)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 7,6 VA Holding: 4,8 VA = 12.7 to 1,0 W
Response times :	24 V~/5,4w Energize : 10 ms De-energize : 9.6 ms 110V~/50Hz Energize : 6-15 ms De-energize : 10-17 ms

- Options :
- Sandwich flow controls: FCP2A-BA (screwdriver slot adjustment)
FCP2A-BB (locking knob adjustment)
 - Sandwich regulator, see ,Regulators' section

- Spare parts :
- Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16576
 - Valve mounting screws (x4): 35413

DIMENSIONS



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

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5 / 2, 5 / 3	G 3 / 8 " - G 1 / 2 "	3 000 NI / min	Valve only - No base "plug-in" Conform to ISO 5599/2	

OPERATIONAL BENEFITS

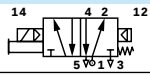
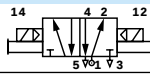
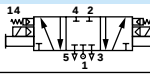
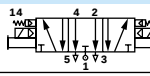
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3. MAC spool and bore combination wipes away contamination, eliminates sticking and allows for use on non-lube service.
4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in 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.



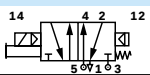
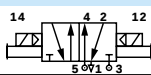
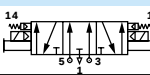
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HOW TO ORDER

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 / 2 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

4 6
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9 3

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				

* Click here for other options available.

Note: - ISO series, valve and base are ordered separately, click here for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function :

MV-P2A-A**XXX**-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-A**XXX**-**DM**-DxxP-xxx

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

Spool return :

MV-P2A-A**XX**A-XX-DxxP-xxx

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

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

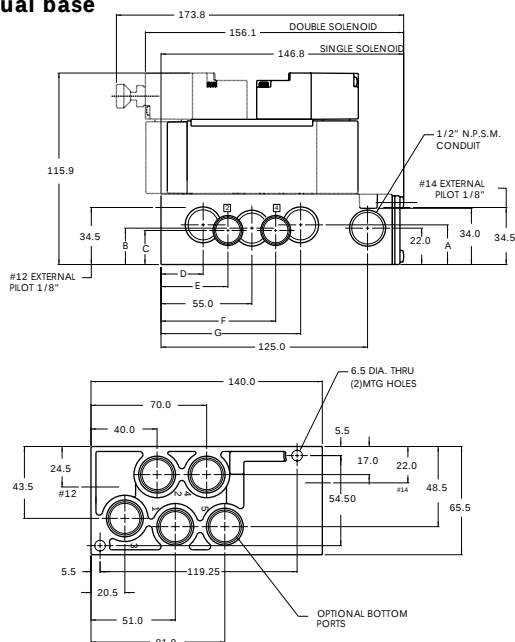
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 10 bar External pilot : vacuum to 10 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 10 bar double operator : 2 to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	10.5 mm
Flow (at 6 bar, ΔP=1bar) :	G3/8": 2800 NI/min (Cv 2.8) - G1/2": 3000 NI/min (Cv 3,0)
Coil :	Epoxy encapsulated – class A wires – 100% ED (specify mod 0449)
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP65 (electrical connection)
Power :	~ Inrush 14,8 VA Holding: 4,8 VA = 12.7 to 1,0 W
Response times :	24 V~/5,4w Energize : 10 ms De-energize : 9.6 ms 110V~/50Hz Energize : 6-15 ms De-energize : 10-17 ms

- Options :
- Sandwich flow controls: FCP2A-AA (screwdriver slot adjustment)
FCP2A-AB (locking knob adjustment)
 - Sandwich regulator, see 'Regulators' section

- Spare parts :
- Pilot valve: DMB-DxxP-xxx • Valve to base pressure seal: 16576
 - Valve mounting screws (x4): 35413

DIMENSIONS

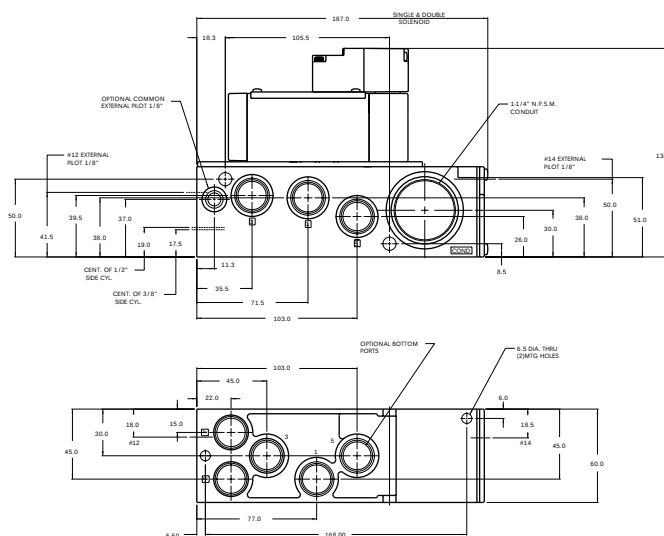
Individual base



DIM.	A	B	C	D	E	F	G
G3/8"	25.2	22.7	20.6	26.7	40.5	69.4	83.3
G1/2"	24.0	21.0	19.0	25.5	40.0	70.0	84.5

Dimensions shown are metric (mm)

Manifold base



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

Individual mounting

Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2
--	--

Series

3 4

Manifold mounting

Valve only - No base non "plug-in" Conform to ISO 5599/1	Valve only - No base "plug-in" Conform to ISO 5599/2
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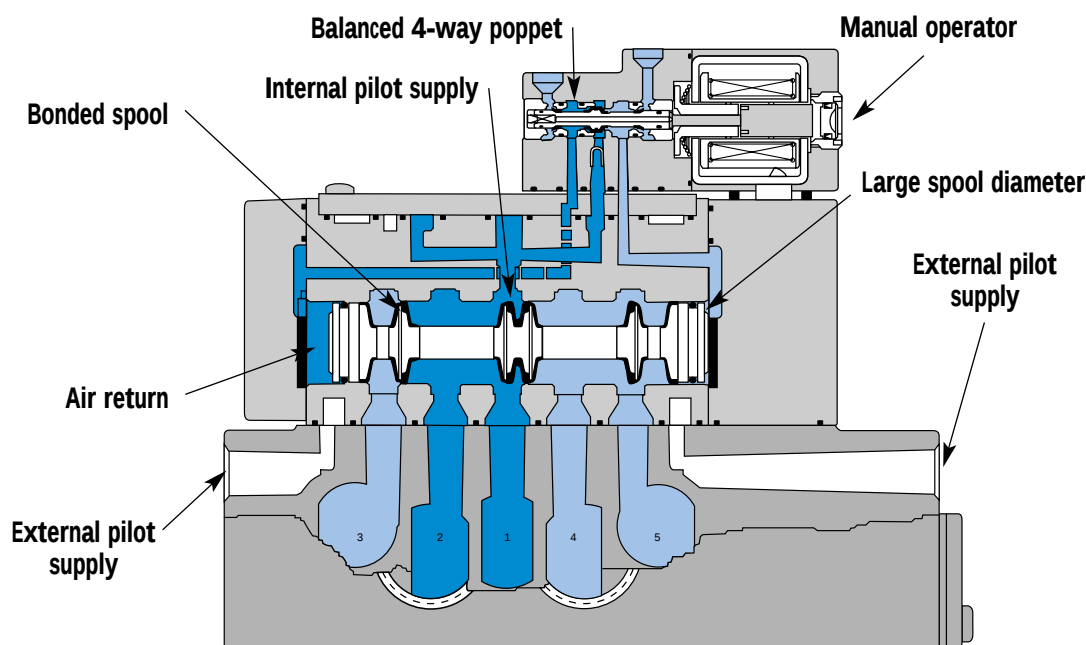
9 2

9 3

ISO 1

ISO 2

ISO 3



SERIES FEATURES

- Plug-in (5599/2) and non plug-in (5599/1) models.
- 2-position, single or double operator. (Solenoid or Remote Air)
- 3-position, double solenoid, open center, closed center, and pressure center.
- Extended or recessed manual operators.
- Single pressure and dual pressure.
- Individual base or add-a-unit manifold base.
- Plug-in, sandwich, single and dual pressure regulators for both individual and manifold valves.

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5 / 2, 5 / 3	G 1 / 2 " - G 3 / 4 "	6 100 NI / min	Valve only - No base "non plug-in" Conform to ISO 5599/1	

OPERATIONAL BENEFITS

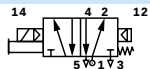
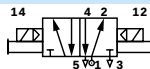
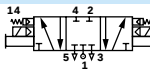
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4. Large spool area for maximum shifting forces even at minimum operating pressure.
5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot 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.



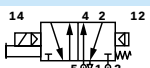
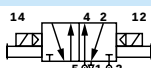
3 4
3 6
3 2
3 7
3 8
5 2
6 7
4 4

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 / 2 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

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9 2
9 3

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						

* Click here for other options available.

Note: ISO series, valve and base are ordered separately, click here for base code.

OPTIONS

Valve function :

MV-B3A-A**xxx**-XX-D**xxx**-xxx

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

Pilot style :

MV-B3A-A**xxx**-DM-D**xxx**-xxx

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

Spool return :

MV-B3A-AX**A**-XX-D**xxx**-xxx

- A** Standard return
B Memory spring return

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

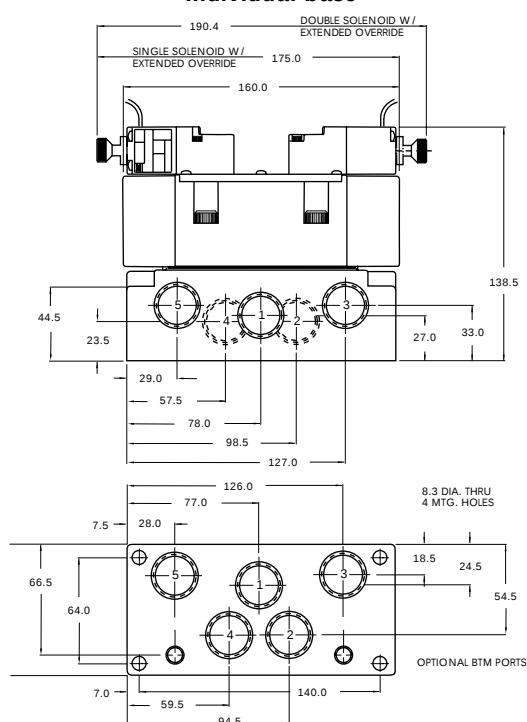
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 10 bar External pilot : vacuum to 10 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 10 bar double operator : 2 to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	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 (5,4 W coil) De-energize : 13,6 ms

Options : • Sandwich regulator, see „Regulators“ section

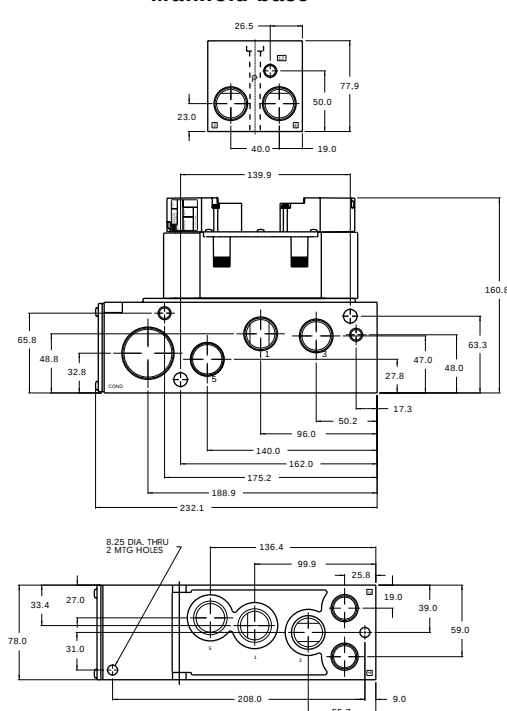
Spare parts : • Pilot valve: DMB-Dxxx-xxx • Valve to base pressure seal: 16614
• Valve mounting screws (x4): 35451

DIMENSIONS

Individual base



Manifold base

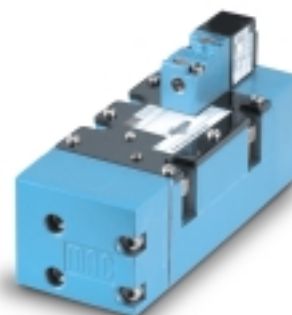


Consult "Precautions" before use, installation or service of MAC Valves..

Function	Port size	Flow (Max)	Individual/Manifold mounting	Series
5 / 2, 5 / 3	G 1 / 2 " - G 3 / 4 "	6 100 NI / min	Valve only - No base "plug-in" Conform to ISO 5599/2	

OPERATIONAL BENEFITS

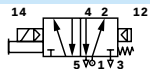
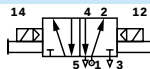
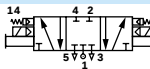
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5. Very high flow in a compact package.
6. Plug-in design of valves, bases and regulators for modular assembly and ease of maintenance.
7. Internal or external pilot operation. Manifolds supplied with common external pilot.
8. Air only return. Optional memory spring is also available.
9. Optional low wattage DC solenoid down to 1.0 watt.



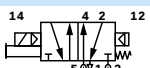
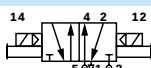
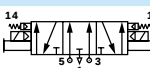
34
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44

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 / 2 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

46
42
47
48
400
92
93

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				

* Click here for other options available.

Note: - ISO series, valve and base are ordered separately, click here for base codes.
- Ground wire required for 30 volts or higher.

OPTIONS

Valve function :

MV-P3A-A**XXX**-XX-DxxP-xxx

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

Pilot style :

MV-P3A-A**XXX**-**DM**-DxxP-xxx

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

Spool return :

MV-P3A-A**XX**-XX-DxxP-xxx

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

ISO 1
ISO 2
ISO 3

TECHNICAL DATA

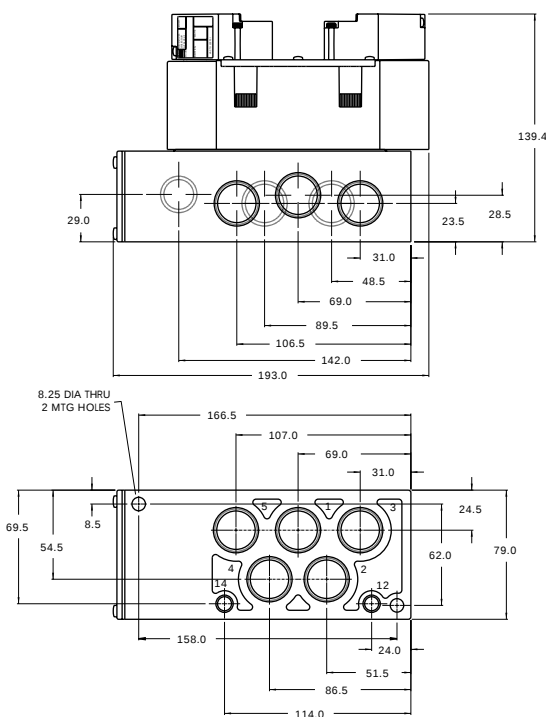
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot: 1,3 to 10 bar External pilot : vacuum to 10 bar
Pilot pressure :	Single operator and 3 positions : 1,3 to 10 bar double operator : 2 to 10 bar
Lubrication :	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration :	40 µ
Temperature range :	-18°C to +50°C
Orifice :	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

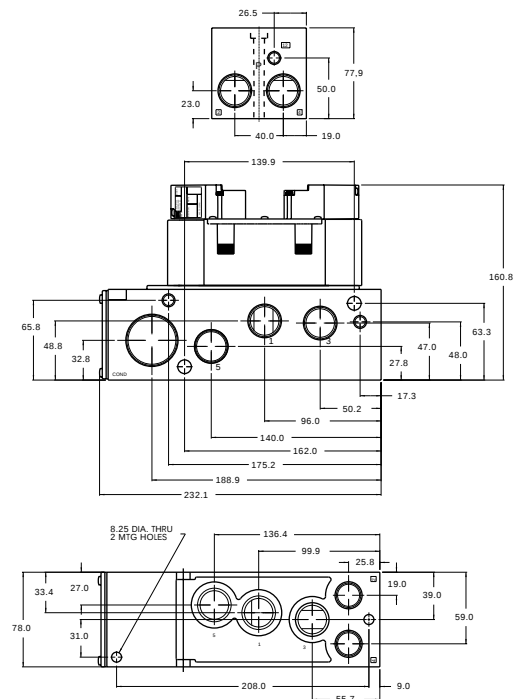
DIMENSIONS

Individual base



Dimensions shown are metric (mm)

Manifold base



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



Options



0 p t i o n s

Codification table for voltages / Manual operator / Electrical connection

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

OPTIONS AVAILABLE FOR

- Pilot operated valves 52, 67, 92, 93, 400, ISO1, ISO2, ISO3 Series

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	JB	Rectangular connector
DT	75V=/5,6W	JD	Rectangular connector with light
DP	48V=/5,8W	JM	Rectangular connector, male only
FA	12V=/1,8W	KA	Square connector
FB	24V=/1,8W	KB	Square connector with protection diode
FE	12V=/2,4W	KC	Square connector with protection varistor
FF	24V=/2,4W	KD	Square connector with light
JA	120V~/60Hz, 110V~/50Hz (2,9W)	KE	Square connector with light and protection diode
JB	240V~/60Hz, 220V~/50Hz (2,9W)	KF	Square connector with light and protection varistor
JC	24V~/60Hz, 24V~/50Hz (3,7W)	KG	Square connector with light & diode
JD	100V~/60Hz, 100V~/50Hz, 110V-60Hz (3,9W)	KJ	Square connector (male only)
JE	220V~/60Hz (3,4W)	KK	Square connector with protection diode (male only)
JF	240V~/50Hz (2,8W)	KL	Square connector with protection varistor (male only)
JG	200V~/60Hz, 200V~/50Hz (3,9W)	TA	Dual tabs with receptacles
2. WIRE LENGTH		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.	
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		



0 p t i o n s

Codification table for voltages / Manual operator / Electrical connection

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

OPTIONS AVAILABLE FOR

- Solenoid valves 32, 34, 38, 42, 44, & 48 Series

1. VOLTAGE		4. ELECTRICAL CONNECTION	
G-XX X-X XX	VOLTAGE	G-XX X-X XX	ELECTRICAL CONNECTION
AA	120V~/2,5W Requires electrical connector with rectifier	BA	Flying leads
AC	24V~/4,0W Requires electrical connector with rectifier	BB	BA with ground wire
DA	24V~/1,0W Not available for 34 series	BC	BA with light
DC	24V~/1,8W	BD	BA with light and ground wire
DD	24V~/2,5W	BE	BA with suppression diode
DE	24V~/3,0W	BF	BA with suppression diode and ground wire
DF	24V~/4,0W	BG	BA with suppression diode and light
DG	12V~/1,0W Not available for the 34 series	BH	BA with suppression diode, light and ground wire
DJ	12V~/1,8W	BN	BA with suppression diode and blocking diode
DK	12V~/2,5W	BP	BA with suppression diode, blocking diode and ground wire
DM	12V~/3,0W		
DN	12V~/4,0W	BR	BA with suppression diode, blocking diode and light
DR	6V~/1,8W	BS	BA with suppression diode, blocking diode, light and ground wire
DS	6V~/3,0W		
EB	48V~/1,8W	KA	Mini connector
EC	48V~/3,0W	KB	KA with ground
ED	120V~/2,5W	KC	KA with rectifier and light
		KD	KA with rectifier, light and ground
		KE	KA with suppression diode
		KF	KA with suppression diode and ground
		KJ	Solenoid plug-in housing without wire assembly
		KM	Solenoid plug-in housing with ground pin without wire assembly
		KN	KA with suppression diode and blocking diode
		KP	KA with suppression diode, blocking diode and ground
		KT	KA with light
		KU	KA with light and ground
		KV	KA with suppression diode and light
		KW	KA with suppression diode, light and ground
		KX	KA with suppression diode, blocking diode and light
		KY	KA with suppression diode, blocking diode, light & ground
2. WIRE LENGTH		ELECTRICAL CONNECTION FOR PLUG-IN VALVES	
G-XX X-X XX	WIRE LENGTH	G-XX X-X XX	PLUG-IN OPTIONS
0	No lead wires (used only with "KJ" & "KM" connectors)	DC	Base/manifold plug-in with rectifier and light
A	45 cm – 18" coil leads	DD	Base/manifold plug-in with rectifier, light and ground
B	60 cm – 24" coil leads	DE	Base/manifold plug-in with suppression diode
C	90 cm – 36" coil leads	DF	Base/manifold plug-in with suppression diode and ground
D	120 cm – 48" coil leads	DJ	Base/manifold plug-in
E	180 cm – 72" coil leads	DM	Base/manifold plug-in with ground
F	240 cm – 96" coil leads	DT	Base/manifold plug-in with light
G	305 cm – 120" coil leads	DU	Base/manifold plug-in with light and ground
H	366 cm – 144" coil leads	DV	Base/manifold plug-in with suppression diode and light
1	45 cm – 18" base leads	DW	Base/manifold plug-in with suppression diode, light and ground
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		



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Codification table for voltages / Manual operators / Electrical connections

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

OPTIONS AVAILABLE FOR

- Solenoid valves 52 & 400 Series

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	
1	Non-locking recessed	KA	Plug-in wire assembly
2	Locking recessed	KB	KA with ground wire
3	Non-locking extended	KE	KA with suppression diode
4	Locking extended	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



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Codification table for voltages / Manual operators / Electrical connections

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

OPTIONS AVAILABLE FOR

- Solenoid valves 37 & 47 Series

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

Note: Blocking diode is located in the lead wire



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Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

J XX X-X XX
1 2 3 4

OPTIONS AVAILABLE FOR

- Solenoid valves 36 and 46 Series

1. VOLTAGE		J-XX X-X XX	MINI SQUARE PLUG-IN CONNECTORS 9,4 MM SPACING BETWEEN PINS
J-XX X-X XX	VOLTAGE	KA	Mini plug-in
AA	120V~/5,4W	KB	Mini plug-in with diode
AC	24V~/5,4W	KC	Mini plug-in with MOV
DA	24V~/5,4W	KD	Mini plug-in with light
DB	12V~/5,4W	KE	Mini plug-in with diode and light
DC	24V~/2,4W	KF	Mini plug-in with MOV and light
DD	12V~/2,4W	KG	Mini plug-in with rectifier
DE	24V~/1,8W	KH	Mini plug-in with rectifier and light
DF	12V~/1,8W	KJ	Mini plug-in – Male only
2. WIRE LENGTH		KK	Mini plug-in with diode - Male only
J-XX X-X XX	WIRE LENGTH	KL	Mini plug-in with MOV - Male only
A	45 cm – 18" coil leads	KM	Mini plug-in with light - Male only
B	60 cm – 24" coil leads	KN	Mini plug-in with diode and light – Male only
C	90 cm – 36" coil leads	KP	Mini plug-in with MOV and light – Male only
D	120 cm – 48" coil leads	KR	Mini plug-in with rectifier – Male only
E	180 cm – 72" coil leads	KS	Mini plug-in with rectifier and light – Male only
F	240 cm – 96" coil leads	* Not available on manifold or stacking valves	
P	Base plug-in	J-XX X-X XX	CONNECTORS FOR NON PLUG-IN VALVES
3. MANUAL OPERATOR		MINI SQUARE PLUG-IN CONNECTORS 8.0 MM SPACING BETWEEN PINS	
J-XX X-X XX	MANUAL OPERATOR	ISO SPECIFICATION 15 2 1 7	
0	Manual operator	LA	Mini plug-in
1	Non-locking recessed	LB	Mini plug-in with diode
2	Locking recessed	LC	Mini plug-in with MOV
3	Non-locking recessed extended	LD	Mini plug-in with light
4	Locking extended	LE	Mini plug-in with diode and light
4. ELECTRICAL CONNECTION		LF	Mini plug-in with MOV and light
J-XX X-X XX	ELECTRICAL CONNECTION	LG	Mini plug-in with rectifier
BA	Flying leads	LH	Mini plug-in with rectifier and light
GA	MAC JAC solenoid plug-in	LJ	Mini plug-in – Male only
GB	MAC JAC solenoid plug-in with diode	LK	Mini plug-in with diode - Male only
GC	MAC JAC solenoid plug-in with MOV	LL	Mini plug-in with MOV - Male only
GD	MAC JAC solenoid plug-in with light	LM	Mini plug-in with light - Male only
GE	MAC JAC solenoid plug-in with diode and light	LN	Mini plug-in with diode and light – Male only
GF	MAC JAC solenoid plug-in with MOV and light	LP	Mini plug-in with MOV and light – Male only
GG	MAC JAC solenoid plug-in with rectifier	LR	Mini plug-in with rectifier – Male only
GH	MAC JAC solenoid plug-in with rectifier and light	LS	Mini plug-in with rectifier and light – Male only
GJ	MAC JAC solenoid plug-in – Male only	J-XX X-X XX	CONNECTORS FOR PLUG-IN VALVES
GK	MAC JAC solenoid plug-in with diode – Male only	FA	Base plug-in
GL	MAC JAC solenoid plug-in with MOV – Male only	FB	Base plug-in with diode
GM	MAC JAC solenoid plug-in with light – Male only	FC	Base plug-in with MOV
GN	MAC JAC solenoid plug-in with diode and light – Male only	FD	Base plug-in with light
GP	MAC JAC solenoid plug-in with MOV and light – Male only	FE	Base plug-in with diode and light
GR	MAC JAC solenoid plug-in with rectifier – Male only	FF	Base plug-in with MOV and light
GS	MAC JAC solenoid plug-in with rectifier and light – Male only	FG	Base plug-in with rectifier
*JA	Square plug-in	FH	Base plug-in with rectifier and light
*JB	Rectangular plug-in		
*JC	Square plug-in with light		
*JD	Rectangular plug-in with light		
*JJ	Square plug-in – Male only		
*JM	Rectangular plug-in – Male only		

* Not available on manifold or stacking valves



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Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ►

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

OPTIONS AVAILABLE FOR

- Solenoid valves 32, 38, 42, 44, 47 & 48 Series

1. VOLTAGE (32, 38, 42, 44, 48 SERIES)		1. VOLTAGE (47 SERIES)	
L- XX X-X XX	VOLTAGE	L- XX X-X XX	VOLTAGE
DF	24V=/4,0W	DA	24V=/5,2W
DN	12V=/4,0W	DF	12V=/5,2W
HA	24V=/1,95W		
HE	12V=/1,95W		

2. WIRE LENGTH	
L- XX X-X XX	WIRE LENGTH
0	No lead wire
A	45 cm – 18"
B	60 cm – 24"
C	90 cm – 36"
D	120 cm – 48"
E	180 cm – 72"
F	240 cm – 96"
G	300 cm – 120"
H	365 cm – 144"

3. MANUAL OPERATOR (all series)	
L- XX X-X XX	MANUAL OPERATOR
0	No operator
3	Non-locking extended

4. ELECTRICAL CONNECTOR (32, 38, 42, 44 & 48 series)		4. ELECTRICAL CONNECTOR (47 series)	
L-XX X-X XX	NON PLUG-IN	L- XX X-X XX	NON PLUG-IN
BA	2 wire flying leads	BA	2 wire flying leads
BB	2 wire flying leads with ground wire	BB	2 wire flying leads with ground wire
BC	2 wire flying leads with light	BC	2 wire flying leads with light
BD	2 wire flying leads with light & ground wire	BD	2 wire flying leads with light & ground wire
BJ	4 wire flying leads	BJ	4 wire flying leads
BK	4 wire flying leads with ground	BK	4 wire flying leads with ground
BL	4 wire flying leads with light	BL	4 wire flying leads with light
BM	4 wire flying leads with light & ground wire	BM	4 wire flying leads with light & ground wire
KA	2 wire plug-in assembly	EA	Base plug-in 3 pin (Polarity switching cover)
KB	2 wire plug-in assembly with ground wire	FA	Base plug-in with ground
KC	2 wire plug-in assembly with light	FB	Base plug-in with ground & light
KD	2 wire plug-in assembly with light and ground wire	FC	Base plug-in 4 wire with ground
KE	4 wire plug-in assembly	FD	Base plug-in 4 wire with light & ground
KF	4 wire plug-in assembly with ground wire	LA	3 wire plug-in assembly (Polarity switching cover)
KG	4 wire plug-in assembly with light	MA	2 wire plug-in assembly
KH	4 wire plug-in assembly and ground wire	MB	2 wire plug-in assembly with ground wire
LA	3 wire plug-in assembly (polarity switching cover)	MC	2 wire plug-in assembly with light
L-XX X-X XX	PLUG-IN	MD	2 wire plug-in assembly with light and ground wire
*DA	Base plug-in	ME	4 wire plug-in assembly
*DB	Base plug-in with ground pin	MF	4 wire plug-in assembly with ground wire
*DC	Base plug-in with light	MG	4 wire plug-in assembly with light
*DD	Base plug-in with light & ground pin	MH	4 wire plug-in assembly and ground wire
*EA	Base plug-in 3 pin (Polarity switching cover)		

* Use these options for plug-in base with 2 or 4 wire assemblies

** Use this option for plug-in bases with 3 wire assemblies

Note: FA through FD options are for use with plug-in manifold bases.



PRECAUTIONS CONCERNING THE APPLICATION, INSTALLATION AND SERVICE OF MAC VALVES

The precautions below are important to be read and understood before designing into a system any MAC valve, and before installing or servicing any MAC valve. Improper use, installation or servicing of any MAC valve in some systems could create a hazard to personnel or equipment.

APPLICATION PRECAUTIONS :

INDUSTRIAL USE -

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

POWER PRESSES -

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

2-POSITION VALVES -

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

3- POSITION VALVES-

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

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

A. CLOSED CENTER-

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

B. OPEN CENTER-

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

C. PRESSURE CENTER-

With this type valve, when in the center position, the inlet port(s) is connected to both outlet ports of the valve. If having pressurized air to either or both outlet ports would present a hazard in the application or servicing of the valve or system, a separate method in the system must be provided to remove the retained air.

OPERATING SPECIFICATIONS -

MAC valves are to be installed only on applications that meet all operating specifications described in the MAC catalog for the valve.

MANUAL OPERATORS-

Most MAC valves can be ordered with manual operators. Manual operators when depressed, are designed to shift the valve to the same position as would the corresponding solenoid or remote air pilot operator if it were activated. Care must be

taken to order a type, if any, that will be safe for the physical location of the manual operator in the system. Accidental activation of a manual operator could create a dangerous situation. If intentional or accidental operation of a valve by a manual operator could create a dangerous situation then the "no operator" option should be used.

REMOTE AIR OPERATED VALVES

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

INSTALLATION PRECAUTIONS :

- A. Do not install MAC valves on a machine without first turning off (bleed system completely) and electricity to the machine.
- B. MAC valves should only be installed by qualified, knowledgeable personnel who understand how the specific valve is to be pneumatically piped and electrically connected (where applicable). Flow paths through the valve are shown in the catalog and on the valve by use of ANSI or ISO type standard graphic symbols. Do not install unless these symbols and the valve functions and operations are thoroughly understood.

SERVICE PRECAUTIONS :

- A. Do not service or remove from service any MAC valve without first shutting off both the air and electricity to the valve and making certain no pressurized air which could present a hazard is retained in the system.
- B. MAC valves should only be serviced or removed from service by qualified, knowledgeable personnel who understand how the specific valve is piped and used and whether there is air retained in the connecting lines to the valve or electric power still connected to the valve.
- C. MAC valves are never to be stepped on while working on a machine. Damage to the valve, or lines to the valve (either air or electrical lines) or accidental activating of a manual operator on the valve could result in a dangerous situation.

WARNING:

Under no circumstances are Mac valves to be used on power presses for air clutch and/or brake operations where failure of the valve to operate as intended could in any way jeopardize the safety of the operator or any other person. Under no circumstances are Mac valves to be used in any circuit or in any manner intended to prevent unintended operation of any machinery or other equipment where failure of the valve to operate as intended could jeopardize the safety of the operator or any other person. Air valves are not safety devices nor should they be used in safety systems of any type.

LIMITATION OF GUARANTEE

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

DISCLAIMER OF GUARANTEE

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

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