

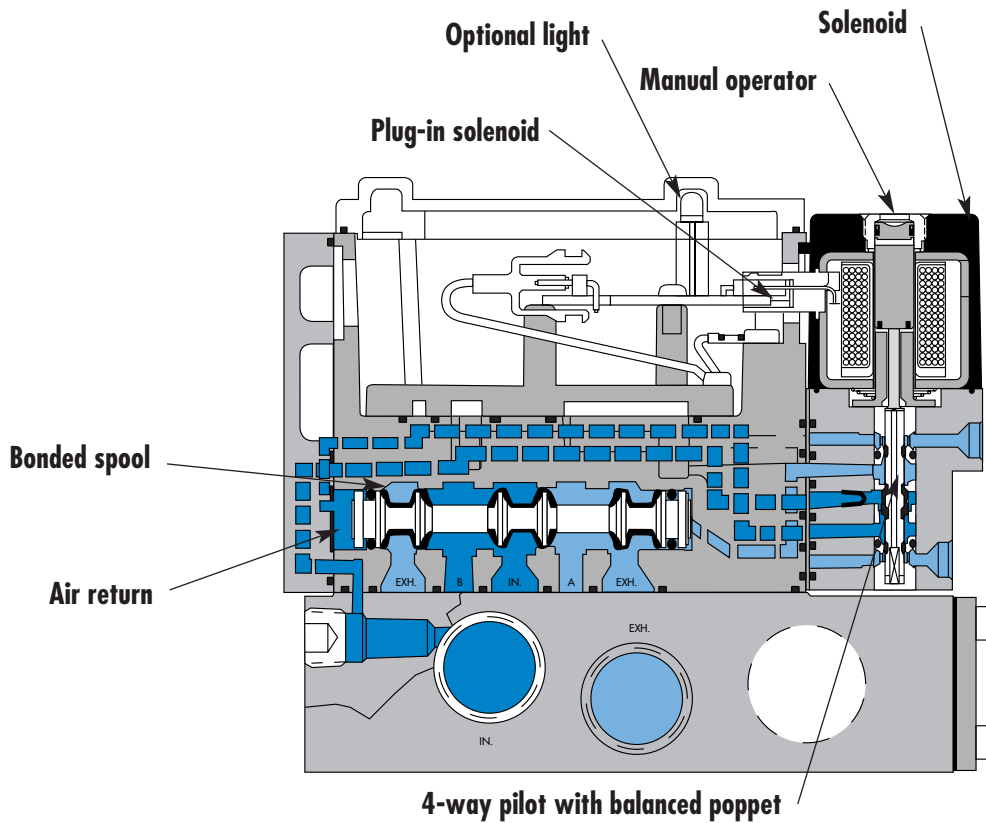
Individual mounting

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

Manifold mounting

Sub-base non "plug-in"	Sub-base "plug-in"
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48P

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SERIES FEATURES

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

93

ISO 01

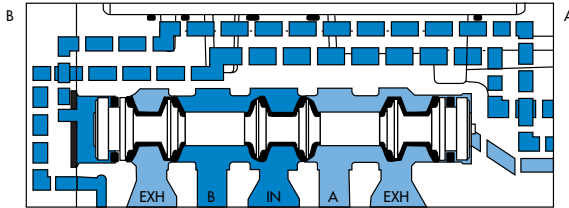
ISO 02

ISO 1

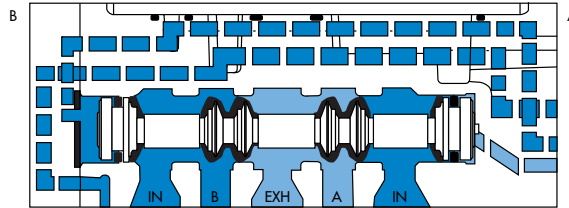
ISO 2

ISO 3

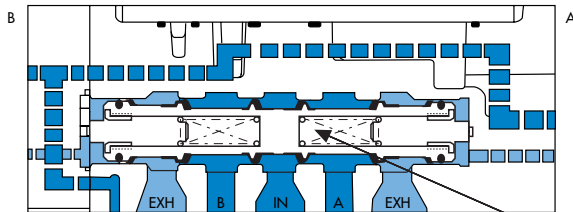
SPOOL CONFIGURATIONS



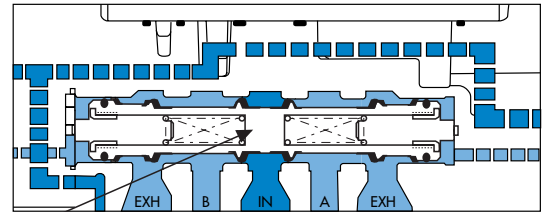
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

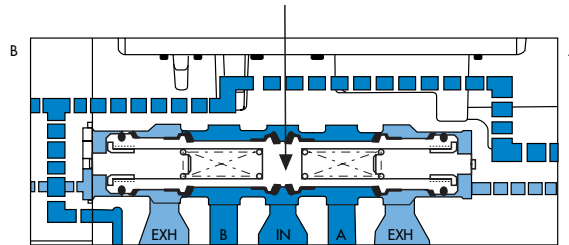


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING



3 POSITION SINGLE PRESSURE, PRESSURE CENTER

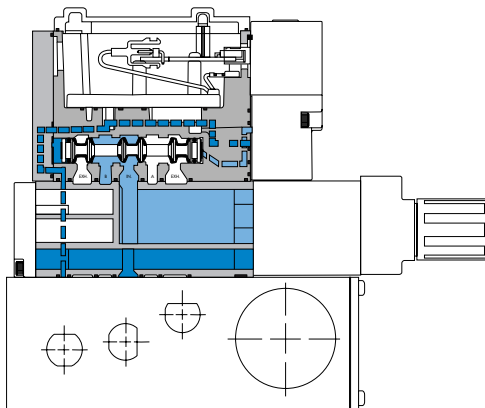
REGULATOR CONFIGURATIONS

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.

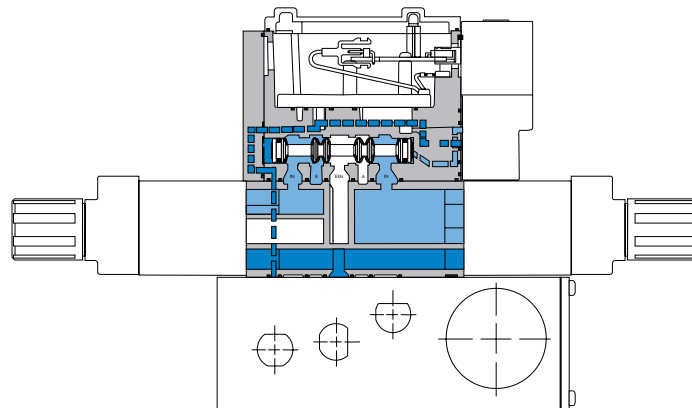
DUAL REGULATOR - DUAL PRESSURE

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 - SINGLE PRESSURE

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



MANIFOLD WITH REGULATOR - DUAL PRESSURE



Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Individual mounting	Series
5/2, 5/3	1/8" - 1/4" - 3/8"	1.2 C_v	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 center	5/3 Open center	5/3 Pressure center
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
1/8" NPTF		92B-ABA-AAG-DM-Dxxx-xxx	92B-BBA-AAG-DM-Dxxx-xxx	92B-EBA-AAG-DM-Dxxx-xxx	92B-FBA-AAG-DM-Dxxx-xxx	92B-GBA-AAG-DM-Dxxx-xxx
1/4" NPTF	Internal	92B-ABA-BAG-DM-Dxxx-xxx	92B-BBA-BAG-DM-Dxxx-xxx	92B-EBA-BAG-DM-Dxxx-xxx	92B-FBA-BAG-DM-Dxxx-xxx	92B-GBA-BAG-DM-Dxxx-xxx
3/8" NPTF		92B-ABA-CAG-DM-Dxxx-xxx	92B-BBA-CAG-DM-Dxxx-xxx	92B-EBA-CAG-DM-Dxxx-xxx	92B-FBA-CAG-DM-Dxxx-xxx	92B-GBA-CAG-DM-Dxxx-xxx
1/8" NPTF		92B-ABA-AAH-DM-Dxxx-xxx	92B-BBA-AAH-DM-Dxxx-xxx	92B-EBA-AAH-DM-Dxxx-xxx	92B-FBA-AAH-DM-Dxxx-xxx	92B-GBA-AAH-DM-Dxxx-xxx
1/4" NPTF	External	92B-ABA-BAH-DM-Dxxx-xxx	92B-BBA-BAH-DM-Dxxx-xxx	92B-EBA-BAH-DM-Dxxx-xxx	92B-FBA-BAH-DM-Dxxx-xxx	92B-GBA-BAH-DM-Dxxx-xxx
3/8" NPTF		92B-ABA-CAH-DM-Dxxx-xxx	92B-BBA-CAH-DM-Dxxx-xxx	92B-EBA-CAH-DM-Dxxx-xxx	92B-FBA-CAH-DM-Dxxx-xxx	92B-GBA-CAH-DM-Dxxx-xxx

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

Port size	Pilot air	5/2 Single operator	5/2 Double operator
Valve less base		92B-CBA-000-DM-Dxxx-xxx	92B-DBA-000-DM-Dxxx-xxx
1/8" NPTF		92B-CBA-AAG-DM-Dxxx-xxx	92B-DBA-AAG-DM-Dxxx-xxx
1/4" NPTF	Internal	92B-CBA-BAG-DM-Dxxx-xxx	92B-DBA-BAG-DM-Dxxx-xxx
3/8" NPTF		92B-CBA-CAG-DM-Dxxx-xxx	92B-DBA-CAG-DM-Dxxx-xxx
1/8" NPTF		92B-CBA-AAH-DM-Dxxx-xxx	92B-DBA-AAH-DM-Dxxx-xxx
1/4" NPTF	External	92B-CBA-BAH-DM-Dxxx-xxx	92B-DBA-BAH-DM-Dxxx-xxx
3/8" NPTF		92B-CBA-CAH-DM-Dxxx-xxx	92B-DBA-CAH-DM-Dxxx-xxx

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

SOLENOID OPERATOR >

DM-D **XXX-XXX***

Above models are shown with side ports.

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
JA 110 /50, 120/60 (2.9W)	A 18" (Flying leads)	1 Non-locking recessed	BM Flying leads
JB 220/50, 240/60 (2.9W)	B 24" (Flying leads)	2 Locking recessed	BN Flying leads with diode
JC 24/60 (2.9W)	J Connector		BP Flying leads with M.O.V.
FB 24 VDC (1.8W)			BG Flying leads with ground
DA 24 VDC (5.4W)			JB Rectangular connector
DF 24 VDC (12.7W)			JD Rectangular connector with light
			KA Square connector

* Other options available, see page 309.

Other options available for the 92 series valves, see page 155.

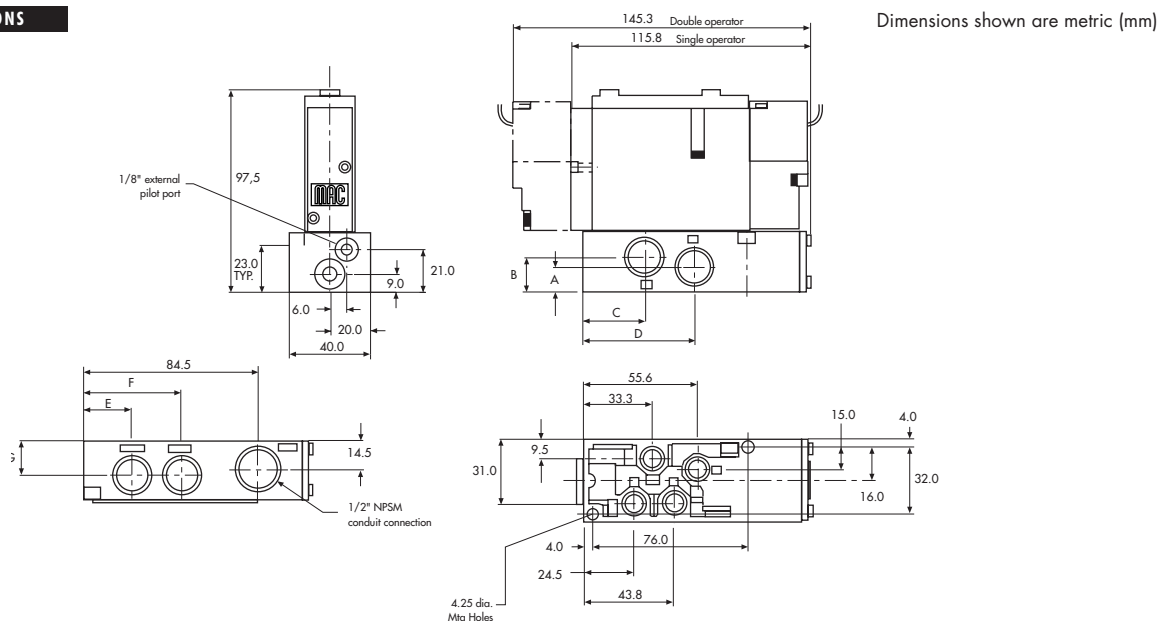
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 20 to 120 PSI 3 position : 35 to 120 PSI External pilot : vacuum to 120 PSI 3 position : 35 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/8": (1.0 C _v) – 1/4": (1.1 C _v) – 3/8": (1.2 C _v)
Coil :	Class A continuous duty, #22 AWG x 18 lead wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
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 120/60 Energize : 7-13 ms De-energize : 12-20 ms

Options : • BSPB threads • 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





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Individual mounting	Series
5/2, 5/3	1/8" - 1/4" - 3/8"	1.2 C_v	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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- 48P
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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 center	5/3 Open center	5/3 Pressure center
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
1/8"		92B-AAA-AAA-DM-DxxP-xxx	92B-BAA-AAA-DM-DxxP-xxx	92B-EAA-AAA-DM-DxxP-xxx	92B-FAA-AAA-DM-DxxP-xxx	92B-GAA-AAA-DM-DxxP-xxx
1/4"	Internal	92B-AAA-BAA-DM-DxxP-xxx	92B-BAA-BAA-DM-DxxP-xxx	92B-EAA-BAA-DM-DxxP-xxx	92B-FAA-BAA-DM-DxxP-xxx	92B-GAA-BAA-DM-DxxP-xxx
3/8"		92B-AAA-CAA-DM-DxxP-xxx	92B-BAA-CAA-DM-DxxP-xxx	92B-EAA-CAA-DM-DxxP-xxx	92B-FAA-CAA-DM-DxxP-xxx	92B-GAA-CAA-DM-DxxP-xxx
1/8"		92B-AAA-AAD-DM-DxxP-xxx	92B-BAA-AAD-DM-DxxP-xxx	92B-EAA-AAD-DM-DxxP-xxx	92B-FAA-AAD-DM-DxxP-xxx	92B-GAA-AAD-DM-DxxP-xxx
1/4"	External	92B-AAA-BAD-DM-DxxP-xxx	92B-BAA-BAD-DM-DxxP-xxx	92B-EAA-BAD-DM-DxxP-xxx	92B-FAA-BAD-DM-DxxP-xxx	92B-GAA-BAD-DM-DxxP-xxx
3/8"		92B-AAA-CAD-DM-DxxP-xxx	92B-BAA-CAD-DM-DxxP-xxx	92B-EAA-CAD-DM-DxxP-xxx	92B-FAA-CAD-DM-DxxP-xxx	92B-GAA-CAD-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
1/8"		92B-CAA-AAA-DM-DxxP-xxx	92B-DAA-AAA-DM-DxxP-xxx
1/4"	Internal	92B-CAA-BAA-DM-DxxP-xxx	92B-DAA-BAA-DM-DxxP-xxx
3/8"		92B-CAA-CAA-DM-DxxP-xxx	92B-DAA-CAA-DM-DxxP-xxx
1/8"		92B-CAA-AAD-DM-DxxP-xxx	92B-DAA-AAD-DM-DxxP-xxx
1/4"	External	92B-CAA-BAD-DM-DxxP-xxx	92B-DAA-BAD-DM-DxxP-xxx
3/8"		92B-CAA-CAD-DM-DxxP-xxx	92B-DAA-CAD-DM-DxxP-xxx

- 400
- 92
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- ISO 01
- ISO 02
- ISO 1
- ISO 2
- ISO 3

SOLENOID OPERATOR >

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

Above models are shown with side ports.

XX Voltage	X Manual operator	XX Electrical connection
JA 110 / 50, 120 / 60 (2.9W)	1 Non-locking recessed	DM Plug-in
JB 220 / 50, 240 / 60 (2.9W)	2 Locking recessed	DN Plug-in with diode
JC 24 / 60 (2.9W)		DP Plug-in with M.O.V.
FB 24 VDC (1.8W)		DG Plug-in with ground
DA 24 VDC (5.4W)		DJ Plug-in with M.O.V. & ground
DF 24 VDC (12.7W)		DH Plug-in with diode & ground

* Other options available, see page 309.
 Note: Ground required for 30 Volts or higher.
 Other options available for the 92 series valves, see page 156.

TECHNICAL DATA

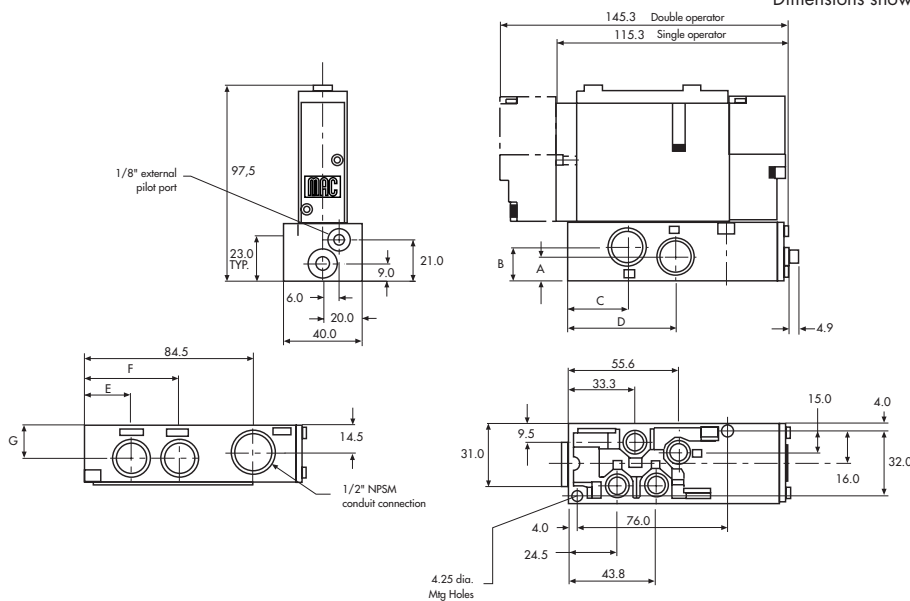
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 20 to 120 PSI 3 position : 35 to 120 PSI External pilot : vacuum to 120 PSI 3 position : 35 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/8": (1.0 C _v) – 1/4": (1.1 C _v) – 3/8": (1.2 C _v)
Coil :	Class A continuous duty, #22 AWG x 18 lead wire
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
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 120/60 Energize : 7-13 ms De-energize : 12-20 ms

Options : • BSPB 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
1/8"	12.5	18.0	31.0	54.0	23.5	46.5	18.0
1/4"	12.5	18.0	31.0	54.0	23.5	46.5	18.0
3/8"	12.0	17.0	30.0	54.0	23.5	47.5	17.0



Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting	Series
5/2, 5/3	1/4" - 3/8"	1.2 C_v	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 center	5/3 Open center	5/3 Pressure center
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
1/4" NPTF	Internal	92B-ABA-BJG-DM-DXXX-XXX	92B-BBA-BJG-DM-DXXX-XXX	92B-EBA-BJG-DM-DXXX-XXX	92B-FBA-BJG-DM-DXXX-XXX	92B-GBA-BJG-DM-DXXX-XXX
3/8" NPTF		92B-ABA-CJG-DM-DXXX-XXX	92B-BBA-CJG-DM-DXXX-XXX	92B-EBA-CJG-DM-DXXX-XXX	92B-FBA-CJG-DM-DXXX-XXX	92B-GBA-CJG-DM-DXXX-XXX

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48P

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
1/4" NPTF	Internal	92B-CBA-BJG-DM-DXXX-XXX	92B-DBA-BJG-DM-DXXX-XXX
3/8" NPTF		92B-CBA-CJG-DM-DXXX-XXX	92B-DBA-CJG-DM-DXXX-XXX

48
400

Above models are shown with side ports.

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93

SOLENOID OPERATOR >

DM-D XXX-XXX*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
JA 110 /50, 120/60 (2.9W)	A 18" (flying leads)	1 Non-locking recessed	KA Square connector
JB 220/50, 240/60 (2.9W)	J Connector	2 Locking recessed	KD Square connector with light
JC 24/60 (2.9W)			JB Rectangular connector
FB 24 VDC (1.8W)			JD Rect. connector with light
DA 24 VDC (5.4W)			BA Flying leads
DF 24 VDC (12.7W)			BK Flying leads with diode

* Other options available, see page 309.
End plate kit required (port size 3/8"): M-92004-01-01 (internal pilot)
M-92004-02-01 (External pilot)

Other options available for the 92 series valves, see page 155.

ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

TECHNICAL DATA

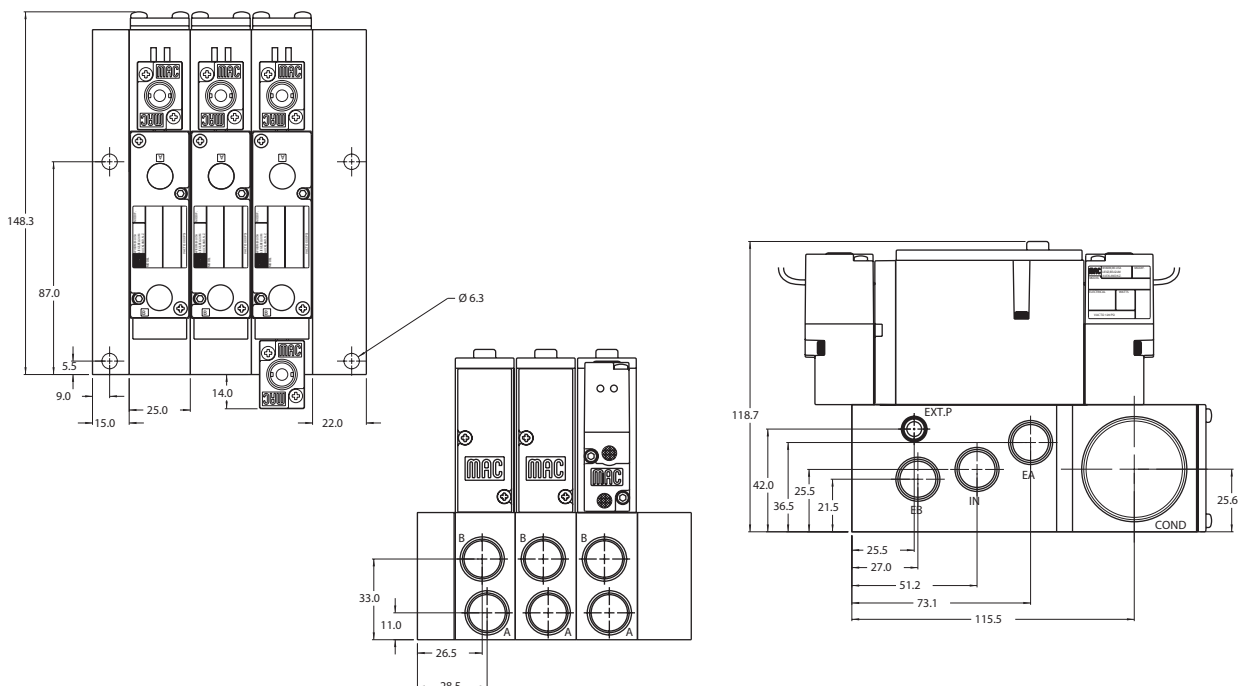
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 20 to 120 PSI 3 position : 35 to 120 PSI External pilot : vacuum to 120 PSI 3 position : 35 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 μ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/4": (1.1 C _v) – 3/8": (1.2 C _v)
Coil :	Class A continuous duty, #22 AWG x 18 leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
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 120/60 Energize : 7-13 ms De-energize : 12-20 ms

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

Spare parts : • Pilot valve: DM-Dxxx-xxx • Valve blanking plate: M-92002 • Pressure seal, valve to base 16543
• Inlet/Exhaust isolator disc: N-92018.

DIMENSIONS

Dimensions shown are metric (mm)





Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Manifold mounting	Series
5/2, 5/3	1/4" - 3/8"	1.2 C_v	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 center	5/3 Open center	5/3 Pressure center
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
1/4" NPTF	Internal	92B-AAA-BJA-DM-DxxP-xxx	92B-BAA-BJA-DM-DxxP-xxx	92B-EAA-BJA-DM-DxxP-xxx	92B-FAA-BJA-DM-DxxP-xxx	92B-GAA-BJA-DM-DxxP-xxx
3/8" NPTF		92B-AAA-CJA-DM-DxxP-xxx	92B-BAA-CJA-DM-DxxP-xxx	92B-EAA-CJA-DM-DxxP-xxx	92B-FAA-CJA-DM-DxxP-xxx	92B-GAA-CJA-DM-DxxP-xxx

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48P

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
1/4" NPTF	Internal	92B-CAA-BJA-DM-DxxP-xxx	92B-DAA-BJA-DM-DxxP-xxx
3/8" NPTF		92B-CAA-CJA-DM-DxxP-xxx	92B-DAA-CJA-DM-DxxP-xxx

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400

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 /50, 120/60 (2.9W)	1 Non-locking recessed	DM Plug-in
JB 220/50, 240/60 (2.9W)	2 Locking recessed	DN Plug-in with diode
JC 24/60 (2.9W)		DP Plug-in with M.O.V.
FB 24 VDC (1.8W)		DG Plug-in with ground
DA 24 VDC (5.4W)		DJ Plug-in with M.O.V. & ground
DF 24 VDC (12.7W)		DH Plug-in with diode & ground

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* Other options available, see page 309.
 Note: Ground required for 30 Volts or higher.
 End plate kit required (port size 3/8"): M-92004-01-01 (internal pilot)
 M-92004-02-01 (external pilot)

Other options available for the 92 series valves, see page 156.

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ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal pilot : 20 to 120 PSI 3 position : 35 to 120 PSI External pilot : vacuum to 120 PSI 3 position : 35 to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/4": (1.1 C _v) – 3/8": (1.2 C _v)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
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 120/60 Energize : 7-13 ms De-energize : 12-20 ms

Options : • BSPP 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 • Inlet/Exhaust isolator disc: N-92018.

DIMENSIONS

Dimensions shown are metric (mm)

