

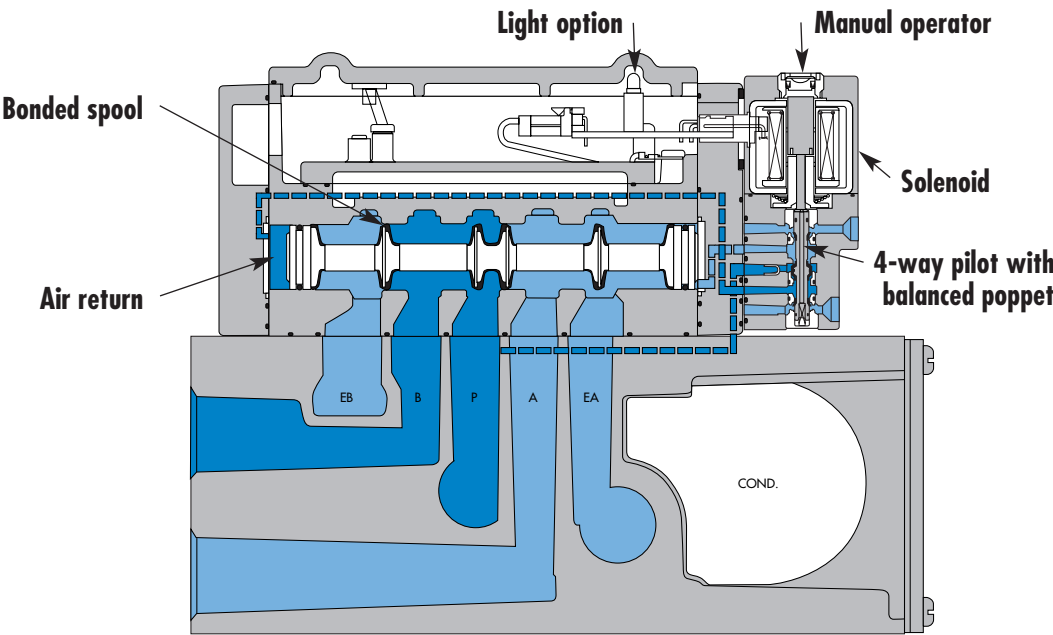
Direct solenoid and solenoid pilot operated valves

Individual mounting

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

Manifold mounting

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



SERIES FEATURES

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

Series

33

34

36

32

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48P

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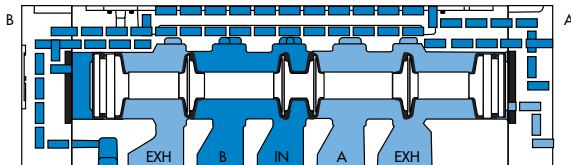
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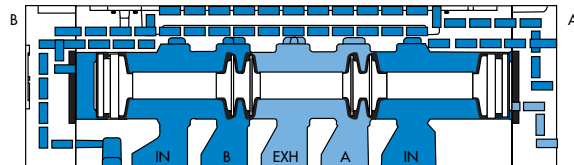
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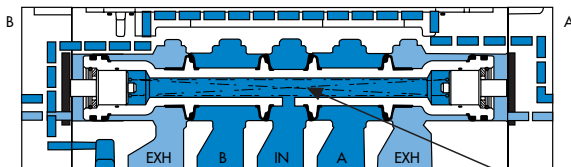
SPOOL CONFIGURATIONS



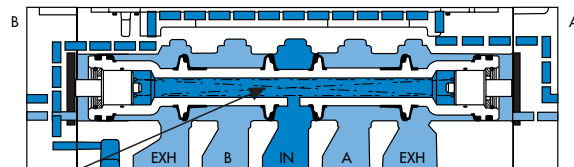
2 POSITION SINGLE PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED



2 POSITION DUAL PRESSURE
SHOWN WITH "B" OPERATOR ENERGIZED

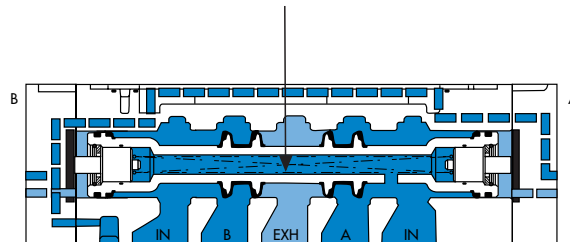


3 POSITION CLOSED CENTER



3 POSITION OPEN CENTER

SPRING CENTERING

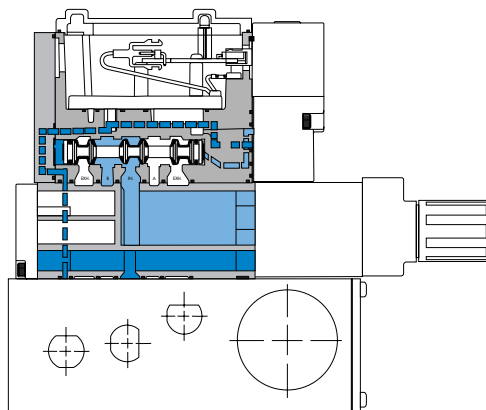


3 POSITION DUAL PRESSURE, PRESSURE CENTER

REGULATOR CONFIGURATIONS

SINGLE REGULATOR - SINGLE PRESSURE

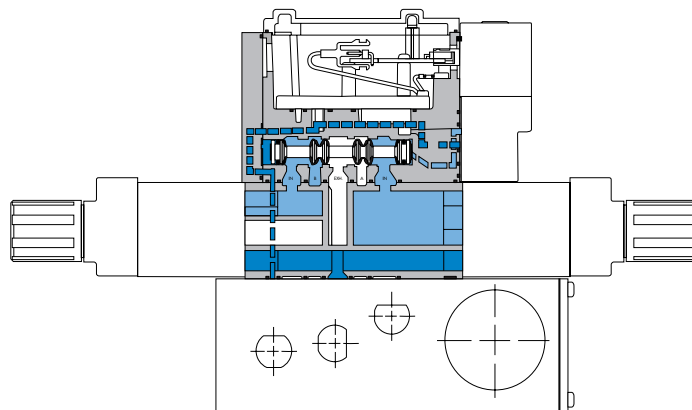
Pressure supplied to the individual or manifold base passes through the regulator. Regulated pressure is supplied to the pressure path of the valve.



MANIFOLD WITH REGULATOR - SINGLE PRESSURE

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.

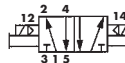
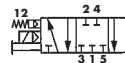
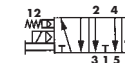
Function	Port size	Flow [Max]	Individual mounting	Series
5/2, 5/3	3/8" - 1/2"	3.8 C_v	Inline	

OPERATIONAL BENEFITS

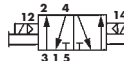
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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 center	5/3 Open center
					
3/8" NPTF	Internal	93A-AJ0-B0J-DM-Dxxx-xxx	93A-BJ0-B0J-DM-Dxxx-xxx	93A-EJ0-B0J-DM-Dxxx-xxx	93A-FJ0-B0J-DM-Dxxx-xxx
1/2" NPTF	Internal	93A-AJ0-C0J-DM-Dxxx-xxx	93A-BJ0-C0J-DM-Dxxx-xxx	93A-EJ0-C0J-DM-Dxxx-xxx	93A-FJ0-C0J-DM-Dxxx-xxx
3/8" NPTF	External	93A-AJ0-B0K-DM-Dxxx-xxx	93A-BJ0-B0K-DM-Dxxx-xxx	93A-EJ0-B0K-DM-Dxxx-xxx	93A-FJ0-B0K-DM-Dxxx-xxx
1/2" NPTF	External	93A-AJ0-C0K-DM-Dxxx-xxx	93A-BJ0-C0K-DM-Dxxx-xxx	93A-EJ0-C0K-DM-Dxxx-xxx	93A-FJ0-C0K-DM-Dxxx-xxx

DUAL PRESSURE MODELS

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
				
3/8" NPTF	Internal	93A-CJ0-B0J-DM-Dxxx-xxx	93A-DJ0-B0J-DM-Dxxx-xxx	93A-HJ0-B0J-DM-Dxxx-xxx
1/2" NPTF	Internal	93A-CJ0-C0J-DM-Dxxx-xxx	93A-DJ0-C0J-DM-Dxxx-xxx	93A-HJ0-C0J-DM-Dxxx-xxx
3/8" NPTF	External	93A-CJ0-B0K-DM-Dxxx-xxx	93A-DJ0-B0K-DM-Dxxx-xxx	93A-HJ0-B0K-DM-Dxxx-xxx
1/2" NPTF	External	93A-CJ0-C0K-DM-Dxxx-xxx	93A-DJ0-C0K-DM-Dxxx-xxx	93A-HJ0-C0K-DM-Dxxx-xxx

SOLENOID OPERATOR ➤

DM-D **xxx-xxx***

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

* Other options available, see page 309.

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, see page 169.

TECHNICAL DATA

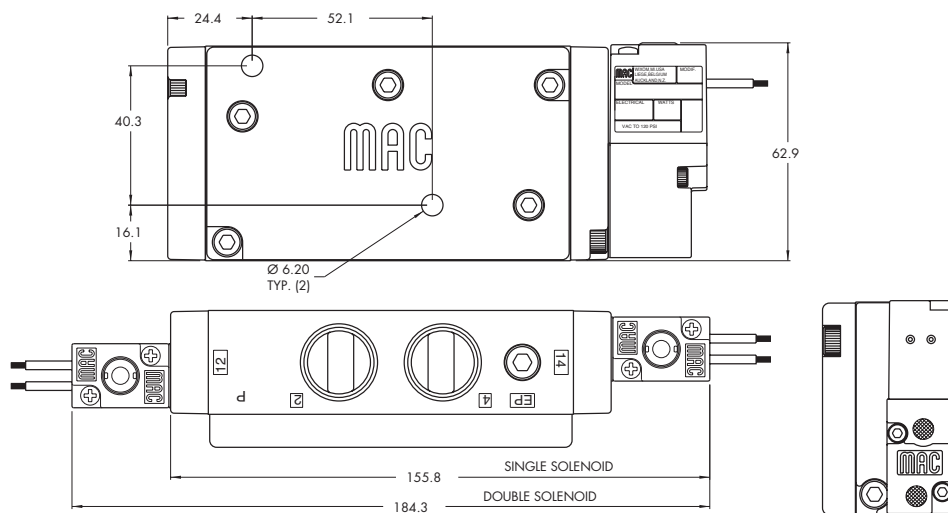
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3.8 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 : (with 5.4 W coil)	Energize : 13 ms De-energize : 10 ms

Option :

- BSPP threads

DIMENSIONS

Dimensions shown are metric (mm)



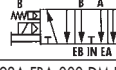
Function	Port size	Flow [Max]	Individual mounting	Series
5/2, 5/3	1/4" - 3/8" - 1/2"	3.4 C_v	Sub-base non "plug-in"	

OPERATIONAL BENEFITS

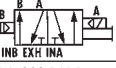
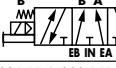
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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 center	5/3 Open center
					
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
1/4" NPTF	Internal	93A-ABA-ABG-DM-Dxxx-xxx	93A-BBA-ABG-DM-Dxxx-xxx	93A-EBA-ABG-DM-Dxxx-xxx	93A-FBA-ABG-DM-Dxxx-xxx
3/8" NPTF		93A-ABA-BAG-DM-Dxxx-xxx	93A-BBA-BAG-DM-Dxxx-xxx	93A-EBA-BAG-DM-Dxxx-xxx	93A-FBA-BAG-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CAG-DM-Dxxx-xxx	93A-BBA-CAG-DM-Dxxx-xxx	93A-EBA-CAG-DM-Dxxx-xxx	93A-FBA-CAG-DM-Dxxx-xxx
1/4" NPTF	External	93A-ABA-ABH-DM-Dxxx-xxx	93A-BBA-ABH-DM-Dxxx-xxx	93A-EBA-ABH-DM-Dxxx-xxx	93A-FBA-ABH-DM-Dxxx-xxx
3/8" NPTF		93A-ABA-BAH-DM-Dxxx-xxx	93A-BBA-BAH-DM-Dxxx-xxx	93A-EBA-BAH-DM-Dxxx-xxx	93A-FBA-BAH-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CAH-DM-Dxxx-xxx	93A-BBA-CAH-DM-Dxxx-xxx	93A-EBA-CAH-DM-Dxxx-xxx	93A-FBA-CAH-DM-Dxxx-xxx

DUAL PRESSURE MODELS REQUIRE SANDWICH REGULATOR, SEE „REGULATORS“ SECTION (1/4" MODELS ARE BOTTOM PORTED)

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
				
Valve less base		93A-CBA-000-DM-Dxxx-xxx	93A-DBA-000-DM-Dxxx-xxx	93A-HBA-000-DM-Dxxx-xxx
1/4" NPTF	Internal	93A-CBA-ABG-DM-Dxxx-xxx	93A-DBA-ABG-DM-Dxxx-xxx	93A-HBA-ABG-DM-Dxxx-xxx
3/8" NPTF		93A-CBA-BAG-DM-Dxxx-xxx	93A-DBA-BAG-DM-Dxxx-xxx	93A-HBA-BAG-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CAG-DM-Dxxx-xxx	93A-DBA-CAG-DM-Dxxx-xxx	93A-HBA-CAG-DM-Dxxx-xxx
1/4" NPTF	External	93A-CBA-ABH-DM-Dxxx-xxx	93A-DBA-ABH-DM-Dxxx-xxx	93A-HBA-ABH-DM-Dxxx-xxx
3/8" NPTF		93A-CBA-BAH-DM-Dxxx-xxx	93A-DBA-BAH-DM-Dxxx-xxx	93A-HBA-BAH-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CAH-DM-Dxxx-xxx	93A-DBA-CAH-DM-Dxxx-xxx	93A-HBA-CAH-DM-Dxxx-xxx

SOLENOID OPERATOR ►

DM-D **xxx-xxx***

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
JA	110/50, 120/60	A	18" (Flying leads)	1	Non-locking recessed	BM	Flying leads
JB	220/50, 240/60	B	24" (Flying leads)	2	Locking recessed	BN	Flying leads with diode
JC	24/50, 24/60	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

* Other options available, see page 309.

Other options available for the 93 series valves, see page 169.



TECHNICAL DATA

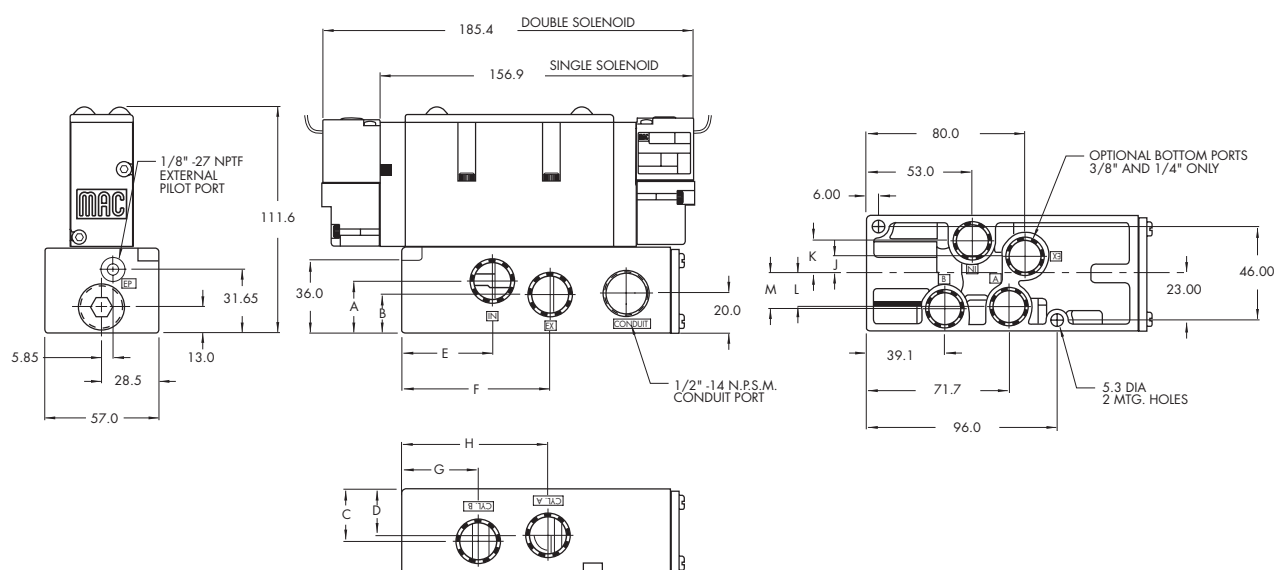
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/4", 3/8" : (3.0 C _v) - 1/2" : (3.4 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 to 12.7 W
Response times : (with 5.4 W coil)	Energize : 13 ms De-energize : 10 ms

- Options :
- BSPP 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
3/8"	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5	1/4"	7.0	14.7	15.0	16.5
1/2"	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5	3/8"	8.5	16.2	16.5	17.5

Function	Port size	Flow [Max]	Individual mounting	Series
5/2, 5/3	1/4" - 3/8" - 1/2"	3.4 C_v	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 center	5/3 Open center
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
1/4" NPTF	Internal	93A-AAA-ABA-DM-DxxP-xxx	93A-BAA-ABA-DM-DxxP-xxx	93A-EAA-ABA-DM-DxxP-xxx	93A-FAA-ABA-DM-DxxP-xxx
3/8" NPTF		93A-AAA-BAA-DM-DxxP-xxx	93A-BAA-BAA-DM-DxxP-xxx	93A-EAA-BAA-DM-DxxP-xxx	93A-FAA-BAA-DM-DxxP-xxx
1/2" NPTF		93A-AAA-CAA-DM-DxxP-xxx	93A-BAA-CAA-DM-DxxP-xxx	93A-EAA-CAA-DM-DxxP-xxx	93A-FAA-CAA-DM-DxxP-xxx
1/4" NPTF	External	93A-AAA-ABD-DM-DxxP-xxx	93A-BAA-ABD-DM-DxxP-xxx	93A-EAA-ABD-DM-DxxP-xxx	93A-FAA-ABD-DM-DxxP-xxx
3/8" NPTF		93A-AAA-BAD-DM-DxxP-xxx	93A-BAA-BAD-DM-DxxP-xxx	93A-EAA-BAD-DM-DxxP-xxx	93A-FAA-BAD-DM-DxxP-xxx
1/2" NPTF		93A-AAA-CAD-DM-DxxP-xxx	93A-BAA-CAD-DM-DxxP-xxx	93A-EAA-CAD-DM-DxxP-xxx	93A-FAA-CAD-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 Center
Valve less base		93A-CAA-000-DM-DxxP-xxx	93A-DAA-000-DM-DxxP-xxx	93A-HAA-000-DM-DxxP-xxx
1/4" NPTF	Internal	93A-CAA-ABA-DM-DxxP-xxx	93A-DAA-ABA-DM-DxxP-xxx	93A-HAA-ABA-DM-DxxP-xxx
3/8" NPTF		93A-CAA-BAA-DM-DxxP-xxx	93A-DAA-BAA-DM-DxxP-xxx	93A-HAA-BAA-DM-DxxP-xxx
1/2" NPTF		93A-CAA-CAA-DM-DxxP-xxx	93A-DAA-CAA-DM-DxxP-xxx	93A-HAA-CAA-DM-DxxP-xxx
1/4" NPTF	External	93A-CAA-ABD-DM-DxxP-xxx	93A-DAA-ABD-DM-DxxP-xxx	93A-HAA-ABD-DM-DxxP-xxx
3/8" NPTF		93A-CAA-BAD-DM-DxxP-xxx	93A-DAA-BAD-DM-DxxP-xxx	93A-HAA-BAD-DM-DxxP-xxx
1/2" NPTF		93A-CAA-CAD-DM-DxxP-xxx	93A-DAA-CAD-DM-DxxP-xxx	93A-HAA-CAD-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 110/50, 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 24/50, 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)		
DF 24 VDC (12.7W)		

* Other options available, see page 309.

Note: Ground required for 30 Volts or higher.

Other options available for the 93 series valves, see page 170.

TECHNICAL DATA

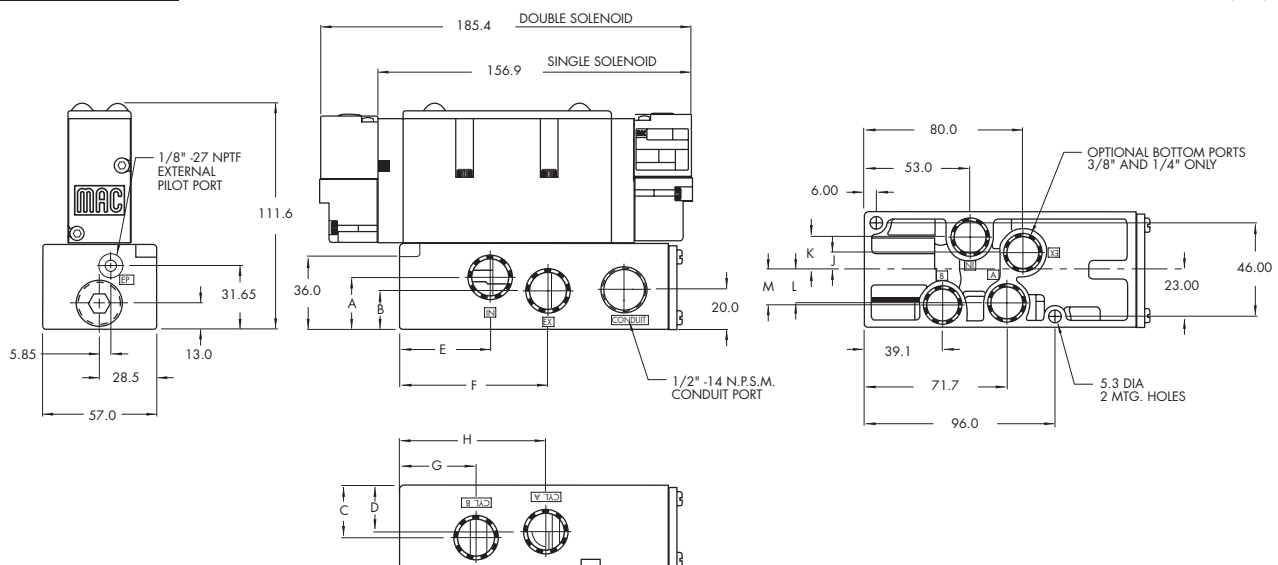
Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1/4", 3/8" : (3.0 C _v) - 1/2" : (3.4 C _v)
Coil :	Class A continuous duty, #22 AWG x 18 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 1 to 12.7 W
Response times : (with 5.4 W coil)	Energize : 13 ms De-energize : 10 ms

- Options :
- BSPP 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
3/8"	27.15	20.65	27.15	24.15	54.1	81.7	38.2	73.5	1/4"	7.0	14.7	15.0	16.5
1/2"	25.5	19.0	25.5	22.5	45.8	75.3	38.2	73.5	3/8"	8.5	16.2	16.5	17.5

Function	Port size	Flow [Max]	Manifold mounting	Series
5/2, 5/3	3/8" - 1/2"	3.8 C_v	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 center	5/3 Open center
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
3/8" NPTF	Internal	93A-ABA-BJG-DM-Dxxx-xxx	93A-BBA-BJG-DM-Dxxx-xxx	93A-EBA-BJG-DM-Dxxx-xxx	93A-FBA-BJG-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CJG-DM-Dxxx-xxx	93A-BBA-CJG-DM-Dxxx-xxx	93A-EBA-CJG-DM-Dxxx-xxx	93A-FBA-CJG-DM-Dxxx-xxx
3/8" NPTF	External	93A-ABA-BJH-DM-Dxxx-xxx	93A-BBA-BJH-DM-Dxxx-xxx	93A-EBA-BJH-DM-Dxxx-xxx	93A-FBA-BJH-DM-Dxxx-xxx
1/2" NPTF		93A-ABA-CJH-DM-Dxxx-xxx	93A-BBA-CJH-DM-Dxxx-xxx	93A-EBA-CJH-DM-Dxxx-xxx	93A-FBA-CJH-DM-Dxxx-xxx

DUAL PRESSURE MODELS (REQUIRE SANDWICH REGULATOR, SEE „REGULATORS“ SECTION)

Port size	Pilot air	5/2 Single operator	5/2 Double operator	5/3 Pressure center
Valve less base		93A-CBA-000-DM-Dxxx-xxx	93A-DBA-000-DM-Dxxx-xxx	93A-HBA-000-DM-Dxxx-xxx
3/8" NPTF	Internal	93A-CBA-BJG-DM-Dxxx-xxx	93A-DBA-BJG-DM-Dxxx-xxx	93A-HBA-BJG-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CJG-DM-Dxxx-xxx	93A-DBA-CJG-DM-Dxxx-xxx	93A-HBA-CJG-DM-Dxxx-xxx
3/8" NPTF	External	93A-CBA-BJH-DM-Dxxx-xxx	93A-DBA-BJH-DM-Dxxx-xxx	93A-HBA-BJH-DM-Dxxx-xxx
1/2" NPTF		93A-CBA-CJH-DM-Dxxx-xxx	93A-DBA-CJH-DM-Dxxx-xxx	93A-HBA-CJH-DM-Dxxx-xxx

SOLENOID OPERATOR ►

DM-D **xxx-xxx***

Above models are shown with side ports.

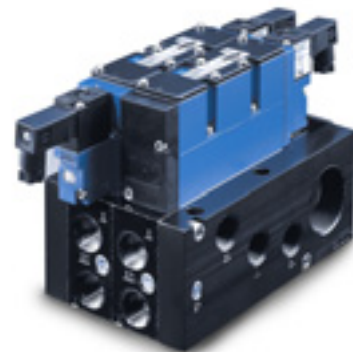
XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
JA	110/50, 120/60	A	18" (Flying leads)	1	Non-locking recessed	BM	Flying leads
JB	220/50, 240/60	B	24" (Flying leads)	2	Locking recessed	BN	Flying leads with diode
JC	24/50, 24/60	J	Connector			KA	Square connector
FB	24 VDC (1.8W)			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

* Other options available, see page 309.

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

M-93001-02-01 external pilot.

Other options available for the 93 series valves, see page 169.



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48P

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400

92

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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

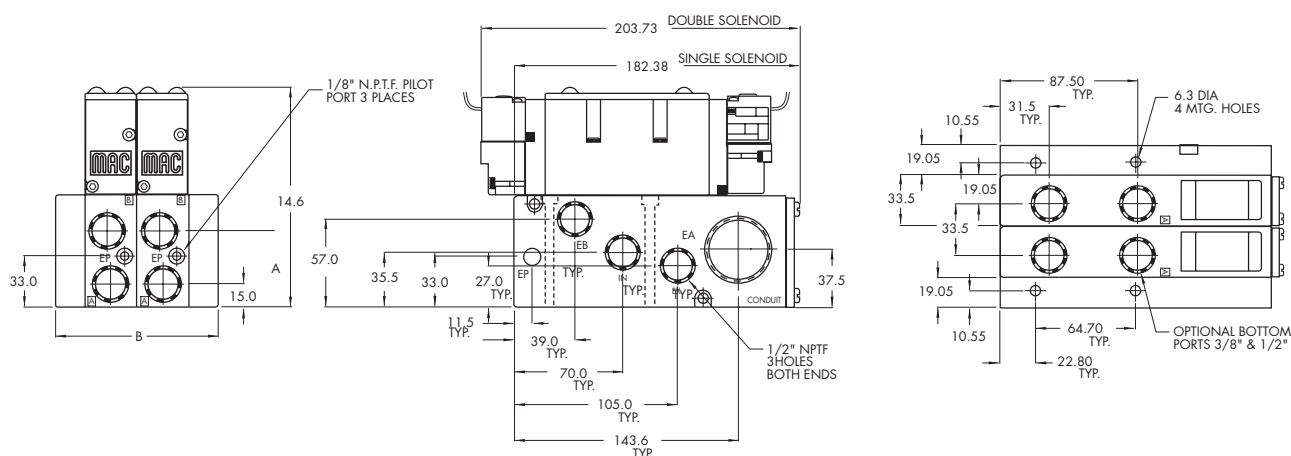
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Internal Pilot: 20 to 120 PSI External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3/8" : (3.4 C _v) - 1/2" : (3.8 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 to 12.7 W
Response times : (with 5.4 W coil)	Energize : 13 ms De-energize : 10 ms

- Options :
- BSPP 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
3/8"	47.66
1/2"	49.32

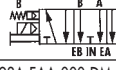
Function	Port size	Flow [Max]	Manifold mounting	Series
5/2, 5/3	3/8" - 1/2"	3.8 C_v	Sub-base "plug-in"	

OPERATIONAL BENEFITS

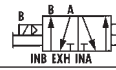
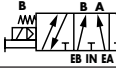
1. Unique patented Macsolenoid® for fastest possible response times and virtually burn-out proof solenoid operation.
2. Balanced poppet 4-way pilot valve provides maximum shifting forces, precise repeatability and consistent operation.
3. Air only return. Optional memory spring is also available.
4. 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 center	5/3 Open center
					
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
3/8" NPTF	Internal	93A-AAA-BJA-DM-DxxP-xxx	93A-BAA-BJA-DM-DxxP-xxx	93A-EAA-BJA-DM-DxxP-xxx	93A-FAA-BJA-DM-DxxP-xxx
1/2" NPTF		93A-AAA-CJA-DM-DxxP-xxx	93A-BAA-CJA-DM-DxxP-xxx	93A-EAA-CJA-DM-DxxP-xxx	93A-FAA-CJA-DM-DxxP-xxx
3/8" NPTF	External	93A-AAA-BJD-DM-DxxP-xxx	93A-BAA-BJD-DM-DxxP-xxx	93A-EAA-BJD-DM-DxxP-xxx	93A-FAA-BJD-DM-DxxP-xxx
1/2" NPTF		93A-AAA-CJD-DM-DxxP-xxx	93A-BAA-CJD-DM-DxxP-xxx	93A-EAA-CJD-DM-DxxP-xxx	93A-FAA-CJD-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 Center
				
Valve less base		93A-CAA-000-DM-DxxP-xxx	93A-DAA-000-DM-DxxP-xxx	93A-HAA-000-DM-DxxP-xxx
3/8" NPTF	Internal	93A-CAA-BJA-DM-DxxP-xxx	93A-DAA-BJA-DM-DxxP-xxx	93A-HAA-BJA-DM-DxxP-xxx
1/2" NPTF		93A-CAA-CJA-DM-DxxP-xxx	93A-DAA-CJA-DM-DxxP-xxx	93A-HAA-CJA-DM-DxxP-xxx
3/8" NPTF	External	93A-CAA-BJD-DM-DxxP-xxx	93A-DAA-BJD-DM-DxxP-xxx	93A-HAA-BJD-DM-DxxP-xxx
1/2" NPTF		93A-CAA-CJD-DM-DxxP-xxx	93A-DAA-CJD-DM-DxxP-xxx	93A-HAA-CJD-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 110/50, 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 24/50, 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)		
DF 24 VDC (12.7W)		

* Other options available, see page 309.
End plate required (1/2" ports): M-93001-01-01 Internal pilot.
M-93001-02-01 External pilot.

Other options available for the 93 series valves, see page 170.



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48P

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400
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93

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 External Pilot: Vacuum to 120 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	3/8" : (3.4 C _v) - 1/2" : (3.8 C _v)
Coil :	Class A continuous duty, #22 AWG x 18 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	~ Inrush 7.6 VA Holding: 4.8 VA = 1 to 12.7 W
Response times : (with 5.4 W coil)	Energize : 13 ms De-energize : 10 ms

Options :

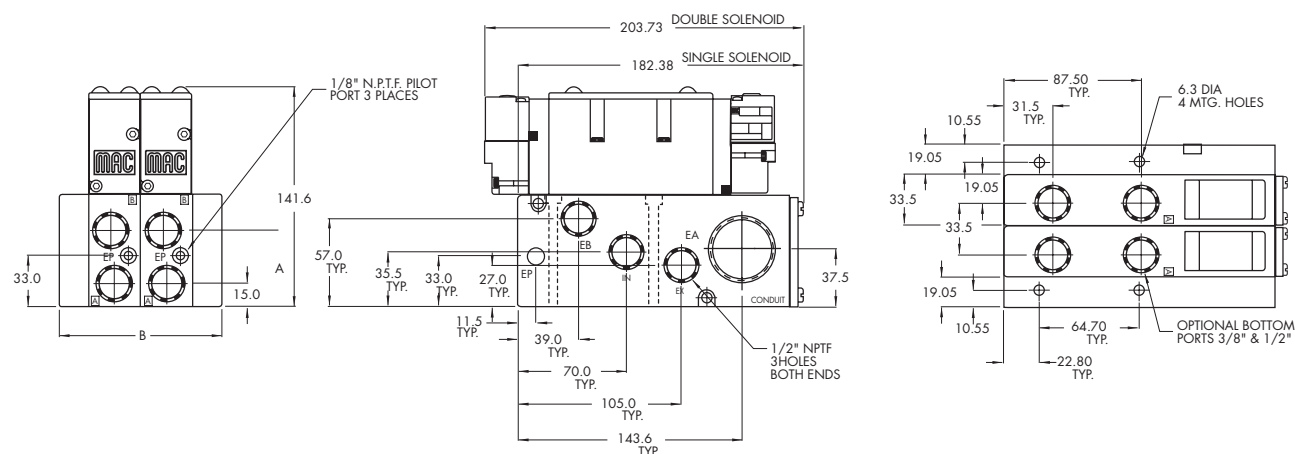
- BSPP thread • Sandwich regulator (see „regulators’ section)
- Sandwich flow controls FC93A-AA (screwdriver slot adjustment), FC93A-AB (locking knob adjustment)

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
B	71.6	105.1	138.6	172.1	205.6	239.1	272.6	306.1	339.6	373.1

DIM.	A
3/8"	47.66
1/2"	49.32

OPTIONS FOR NON PLUG-IN AND INLINE VALVES	33
Valve function	34
93A-LXX-XXX-XX-DXXX-XXX	36
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)	32
Pilot exhaust	37
93A-XXB-XXX-XX-DXXX-XXX	38
B standard pilot exhaust D pilot exhaust to main valve exhaust*	52
Port configuration :	67
Individual sub-base	69
93A-XXX-XAX-XX-DXXX-XXX	44
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)	46
Manifold sub-base	42
93A-XXX-XJX-XX-DXXX-XXX	47
J side ports K bottom ports	48P
Pilot style :	48
93A-XXX-XXX-DM-DXXX-XXX	400
DM pilot exhaust muffled DP pilot exhaust piped (#10-32) DU pilot exhaust to main exhaust	92
Base only :	
93A-000-XXX (i.e. 93A-000-BAG) - Individual base	93A-000-XXX (i.e. 93A-000-BJG) - Manifold base

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

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ISO 01
ISO 02
ISO 1
ISO 2
ISO 3

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-BAA) - Individual base
(Note: bases are wired for double solenoid valves)

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

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



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

D-XX X-X XX	VOLTAGE
DA	24 VDC (5.4W)
DB	12 VDC (5.4W)
DC	12 VDC (7.5W)
DD	24 VDC (7.3W)
DE	12 VDC (12.7W)
DF	24 VDC (12.7W)
DK	110 VDC (4.7W)
DJ	28 VDC (5.2W)
DL	64 VDC (6.0W)
DM	36 VDC (5.3W)
DN	6 VDC (6.0W)
DR	90 VDC (6.6W)
DS	110 VDC (7.3W)
DT	75 VDC (5.6W)
DP	48 VDC (5.8W)
FA	12 VDC (1.8W)
FB	24 VDC (1.8W)
FE	12 VDC (2.4W)
FF	24 VDC (2.4W)
JA	120/60, 110/50 (2.9W)
JB	240/60, 220/50 (2.9W)
JC	24/60, 24/50 (3.7W)
JD	100/60, 100/50, 110/60 (3.9W)
JE	220/60 (3.4W)
JF	240/50 (2.8W)
JG	200/60, 200/50 (3.9W)

2. WIRE LENGTH

D-XX X-X XX	WIRE LENGTH
0	No wires
A	18"
B	24"
C	36"
D	48"
E	72"
F	96"

3. MANUAL OPERATOR

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

4. ELECTRICAL CONNECTION

D-XX X-X XX	ELECTRICAL CONNECTION
BA*	Flying leads (grommet)
BK*	BA with protection diode
BL*	BA with protection varistor
BM**	Flying leads (solenoid plug-in)
BN**	BM with protection diode
BP**	BM with protection varistor
BG**	BM with ground
BH**	BM with protection diode & ground
BJ**	BM with protection varistor & ground
CA*	1/2" NPS conduit with flying leads
CM*	1/2" NPS metal conduit with flying leads
CN*	1/2" NPS metal conduit with flying leads & ground
JB	Rectangular connector
JD	JB with light
JM	Rectangular connector (male only)
KA	Mini square connector
KB	KA with protection diode
KC	KA with protection varistor
KD	KA with light
KE	KA with light and protection diode
KF	KA with light and protection varistor
KG	KA with light & diode
KJ	Mini square connector (male only)
KK	KJ with protection diode (male only)
KL	KJ with protection varistor (male only)
TA	Dual tabs with receptacles
TB	TA with protection diode
TD	TA with light
TE	TA with light and protection diode
TJ	Dual tabs (male only)
TK	TJ with protection diode
TM	TJ with light
TN	TJ with light and protection diode

* From Lead wire length options choose A through F

** From Lead wire length options choose 0 through F

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