

Individual mounting

Series

inline	
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Manifold mounting

stacking	sub-base non "plug-in"	sub-base with pressure regulators
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**35**

100

200

55

56

57

58

59

45

700

900

82

6300

6500

6600

1300

800

ISO 1

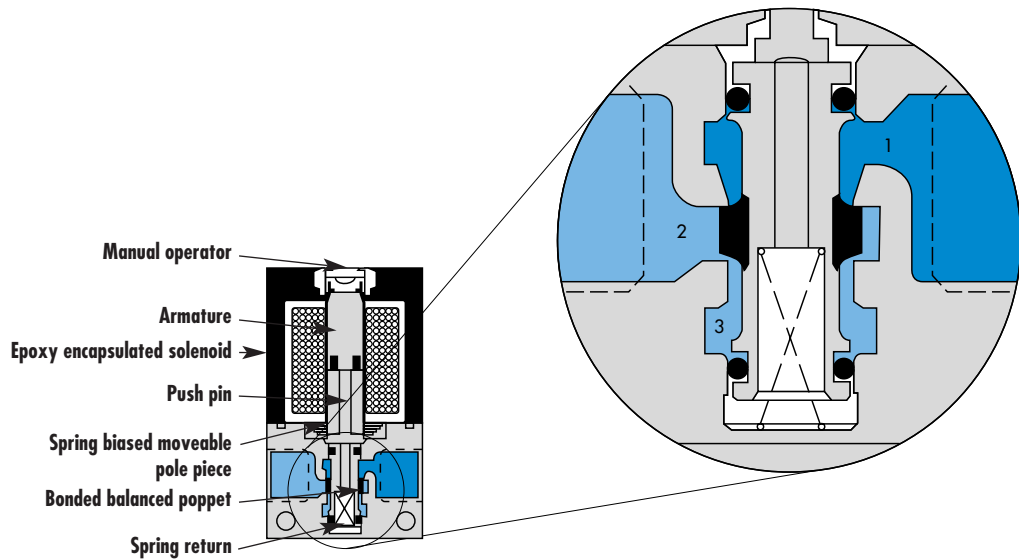
ISO 2

ISO 3

MAC 125A

MAC 250A

MAC 500A



**SERIES FEATURES**

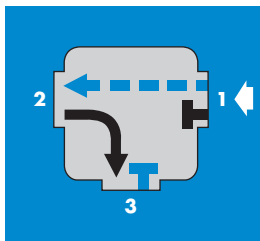
- Patented MACSOLENOID<sup>®</sup> for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function — may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum,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

**VALVE CONFIGURATIONS AVAILABLE :**

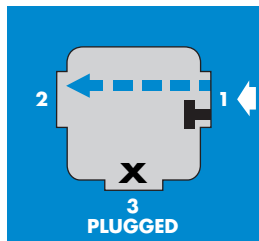
The 35 Series is a miniature 3 way or 2 way valve.  
This valve provides extremely fast response, long life and high flow in a surprisingly small package.

- Individual, stacking body or manifold base.
- 3 way—Normally Open or Normally Closed.
- 2 way—Normally Open or Normally Closed.
- Optional Normally Closed Only Models.
- Selectors & Divertors.

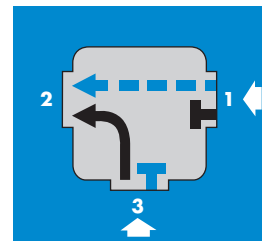
**PIPING CHART FOR INDIVIDUAL MODELS**



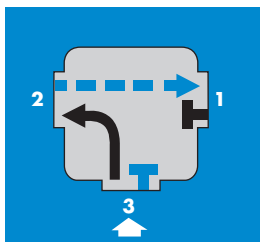
**3 Way  
Normally Closed**



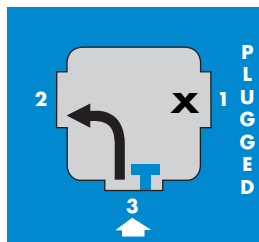
**2 Way  
Normally Closed**



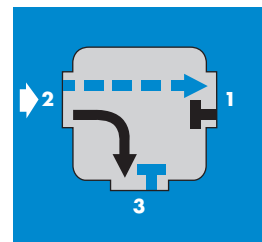
**Selector**



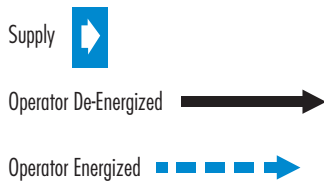
**3 Way  
Normally Open**



**2 Way  
Normally Open**



**Divertor**



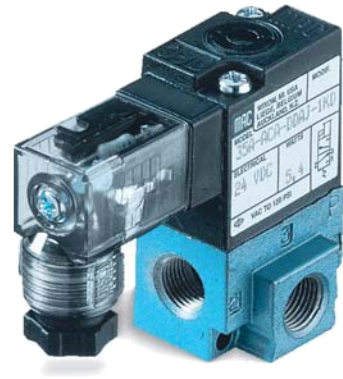


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>1/8"</b>	<b>0.17 C<sub>v</sub></b>	inline	

### OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



35

100

200

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56

57

58

59

### HOW TO ORDER

Port size	Universal valve	NC only valve
<b>1/8" NPTF</b>	35A-AAA-Dxxx-xxx	35A-AAB-Dxxx-xxx

45

### SOLENOID OPERATOR >

D **XX X- X XX**\*

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

700

900

82

\* Other options available, see page 353.

### OPTIONS

35A-CAX-Dxxx-xxx

- with (2) # 10-32 ports in backside of valve

6300

6500

6600

1300

800

ISO 1

ISO 2

ISO 3

MAC 125A

MAC 250A

MAC 500A

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 120 PSI		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.08 C <sub>v</sub> , 5.4 W : 0.15 C <sub>v</sub>		
<b>Leak rate :</b>	50 cm <sup>3</sup> /min		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Consult factory		
<b>Power :</b>	~ Inrush : 10.9 VA    Holding : 7.7 VA = 1.8 to 12.7 W		
<b>Response times :</b>	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

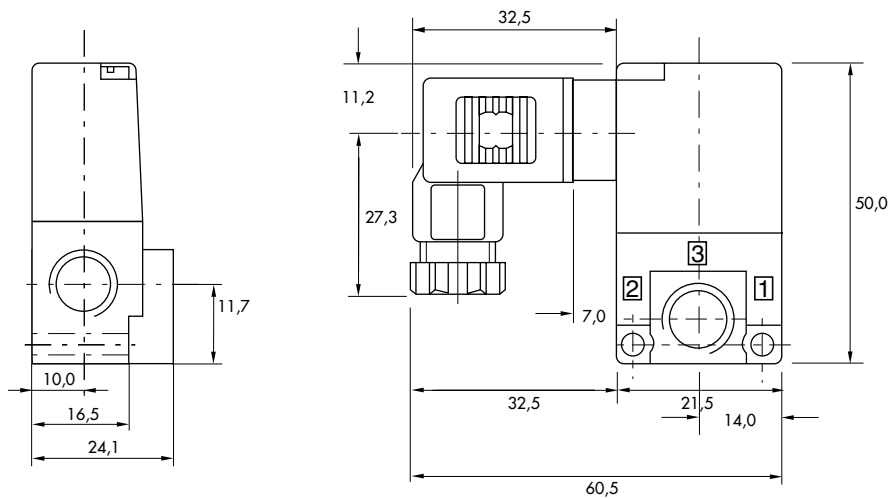
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402.

Options :

- BSPP threads. • High flow up to 0.25 C<sub>v</sub>, according to wattage and high flow mod.

**DIMENSIONS**

Dimensions shown are metric (mm)



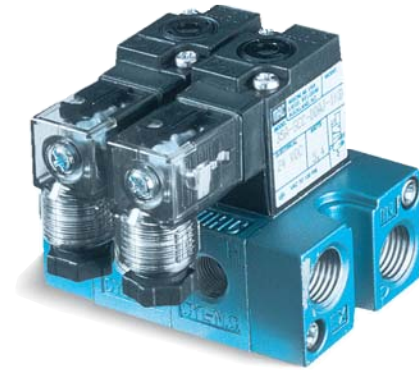


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b># 10-32, 1/8"</b>	<b>0.16 C<sub>v</sub></b>	stacking	

### OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



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100

200

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### HOW TO ORDER

Port size	NC only valve	NO only valve
<b>1/8" NPTF</b>	35A-SAC-Dxxx-xxx	35A-SAD-Dxxx-xxx
<b># 10-32 UNF</b>	35A-SBC-Dxxx-xxx	35A-SBD-Dxxx-xxx

45

### SOLENOID OPERATOR >

D **XX X- X XX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120/60, 110/50	<b>A</b> 18" (Flying leads)	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>AB</b> 240/60, 220/50	<b>J</b> Connector	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>AC</b> 24/60, 24/50			<b>BA</b> Flying leads
<b>FB</b> 24 VDC (1.8 W)			
<b>DA</b> 24 VDC (5.4 W)			
<b>DF</b> 24 VDC (12.7 W)			

700

900

82

\* Other options available, see page 353.

End plate kit required (Port size : 1/4") : M-35001-01  
 Note : upon request, manifolds are mounted at the factory.

### OPTIONS

35A-TXX-Dxxx-xxx  
 - Bottom Inlet

6300

6500

6600

1300

800

ISO 1

ISO 2

ISO 3

MAC 125A

MAC 250A

MAC 500A

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 120 PSI		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.12 C <sub>v</sub> , 5.4 to 12.7 W : 0.16 C <sub>v</sub>		
<b>Leak rate :</b>	50 cm <sup>3</sup> /min		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Consult factory		
<b>Power :</b>	~ Inrush : 10.9 VA      Holding : 7.7 VA = 1.8 to 12.7 W		
<b>Response times :</b>	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

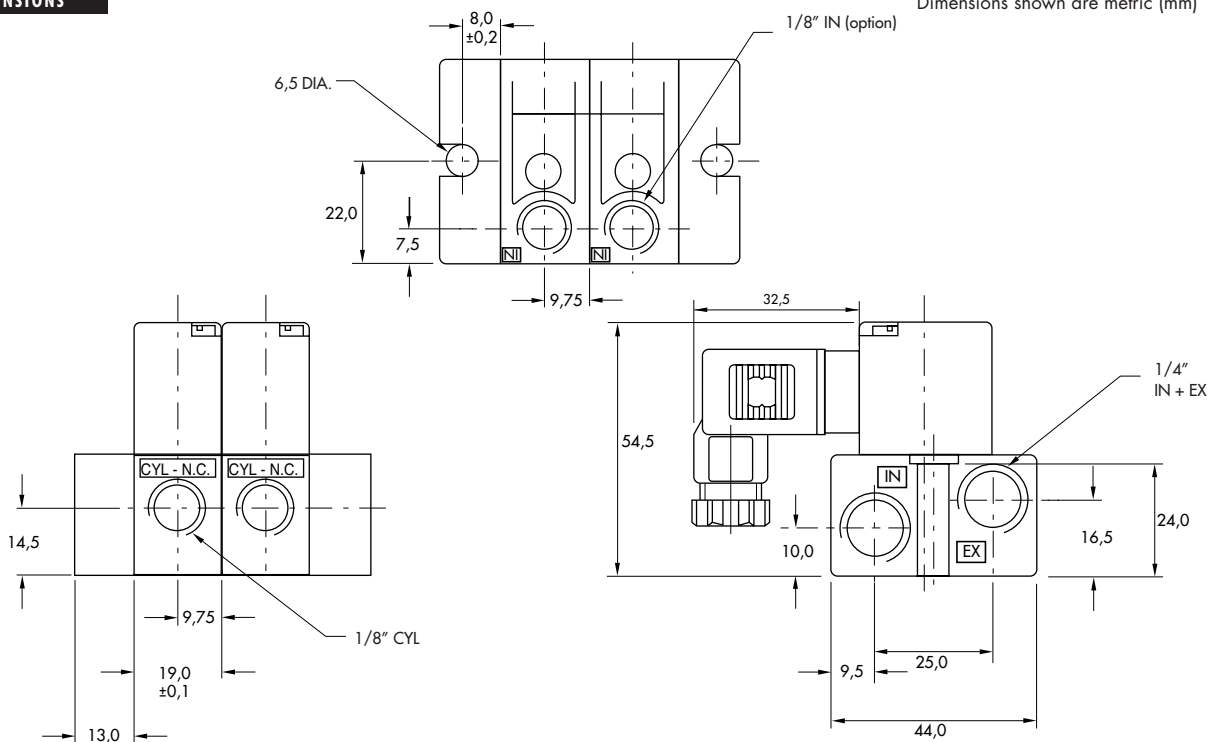
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valves) : 16433.
- Tie-rod (x2) : 19813. • Inlet isolator : N-35002. • Exhaust isolator : N-35003. • Inlet & Exhaust isolator : N-35001.

Options :

- BSPP threads. • High flow up to 0.25 C<sub>v</sub>, according to wattage and high flow mod.

**DIMENSIONS**

Dimensions shown are metric (mm)





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b># 10-32, 1/8"</b>	<b>0.10 C<sub>v</sub></b>	sub-base non "plug-in"	

### OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



35

100

200

55

56

57

58

59

45

700

900

82

6300

6500

6600

1300

800

ISO 1

ISO 2

ISO 3

MAC 125A

MAC 250A

MAC 500A

### HOW TO ORDER

#### SIDE CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
<b>Valve less base (universal)</b>	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
<b># 10-32 UNF base</b>	35A-BBE-Dxxx-xxx	35A-BBF-Dxxx-xxx
<b>1/8" NPTF base</b>	35A-BAE-Dxxx-xxx	35A-BAF-Dxxx-xxx

#### BOTTOM CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
<b>Valve less base (universal)</b>	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
<b># 10-32 UNF base</b>	35A-BGE-Dxxx-xxx	35A-BGF-Dxxx-xxx
<b>1/8" NPTF base</b>	35A-BFE-Dxxx-xxx	35A-BFF-Dxxx-xxx

#### SOLENOID OPERATOR ►

D **XX X- X XX\***

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

\* Other options available, see page 353.

End plate kit required (Port size : 1/4") : M-35003-01

Note : upon request, manifolds are mounted at the factory.

### OPTIONS

35A-EXX-Dxxx-xxx	35A-FXX-Dxxx-xxx	35A-OXX
- N.C. only valve	- universal w/gage port	- no valve body (base only)

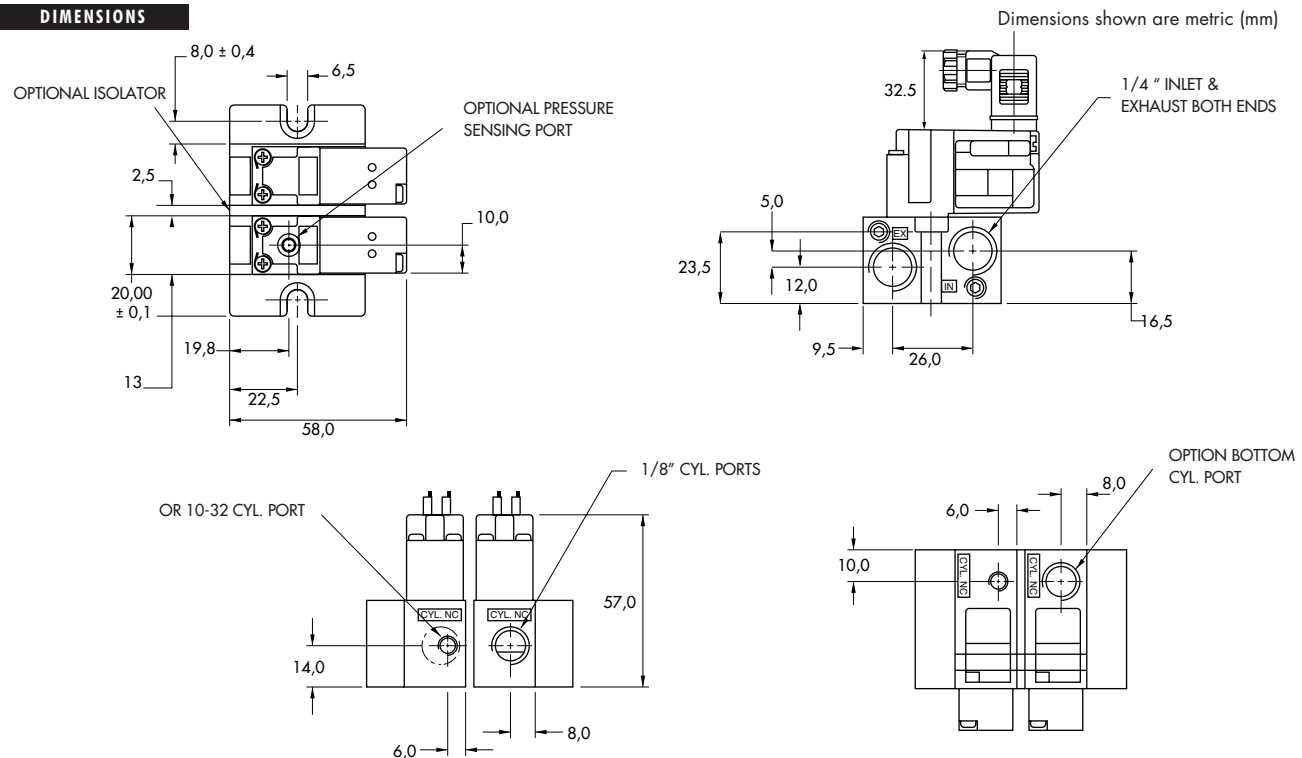
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 120 PSI		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.09 C <sub>v</sub> , 5.4 to 12.7 W : 0.1 C <sub>v</sub>		
<b>Leak rate :</b>	50 cm <sup>3</sup> /min		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Consult factory		
<b>Power :</b>	~ Inrush : 10.9 VA    Holding : 7.7 VA = 1.8 to 12.7 W		
<b>Response times :</b>	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

- Spare parts :
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
  - Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
  - Pressure seal (between bases) : 16461. • Tie-rod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.
  - Inlet & Exhaust isolator : N-35006.

- Options :
- BSPP threads. • High flow up to 0.18 C<sub>v</sub>, according to wattage and high flow mod.

**DIMENSIONS**





# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b># 10-32, 1/8"</b>	<b>0.10 C<sub>v</sub></b>	sub-base with pressure regulators	

### OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



35

100

200

55

56

57

58

59

45

700

900

82

6300

6500

6600

1300

800

ISO 1

ISO 2

ISO 3

MAC 125A

MAC 250A

MAC 500A

### HOW TO ORDER

#### SIDE CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
<b>Valve less base (universal)</b>	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
<b># 10-32 UNF base</b>	35A-BBJ-Dxxx-xxx	35A-BBK-Dxxx-xxx
<b>1/8" NPTF base</b>	35A-BAJ-Dxxx-xxx	35A-BAK-Dxxx-xxx

#### BOTTOM CYLINDER PORTS

Port size	Norm. closed Manifold base	Norm. open Manifold base
<b>Valve less base (universal)</b>	35A-B00-Dxxx-xxx	35A-B00-Dxxx-xxx
<b># 10-32 UNF base</b>	35A-BGJ-Dxxx-xxx	35A-BGK-Dxxx-xxx
<b>1/8" NPTF base</b>	35A-BFJ-Dxxx-xxx	35A-BFK-Dxxx-xxx

#### SOLENOID OPERATOR >

D **XX X- X XX**\*

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AA</b> 120/60, 110/50	<b>A</b> 18" (Flying leads)	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>AB</b> 240/60, 220/50	<b>J</b> Connector	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>AC</b> 24/60, 24/50			<b>BA</b> Flying leads
<b>FB</b> 24 VDC (1.8 W)			
<b>DA</b> 24 VDC (5.4 W)			
<b>DF</b> 24 VDC (12.7 W)			

\* Other options available, see page 353.

End plate kit required (Port size : 1/4") : M-35003-01

Note : upon request, manifolds are mounted at the factory.

### OPTIONS

35A-EXX-Dxxx-xxx	35A-FXX-Dxxx-xxx	35A-OXX
- N.C. only valve	- universal w/gage port	- no valve body (base w/regulator)

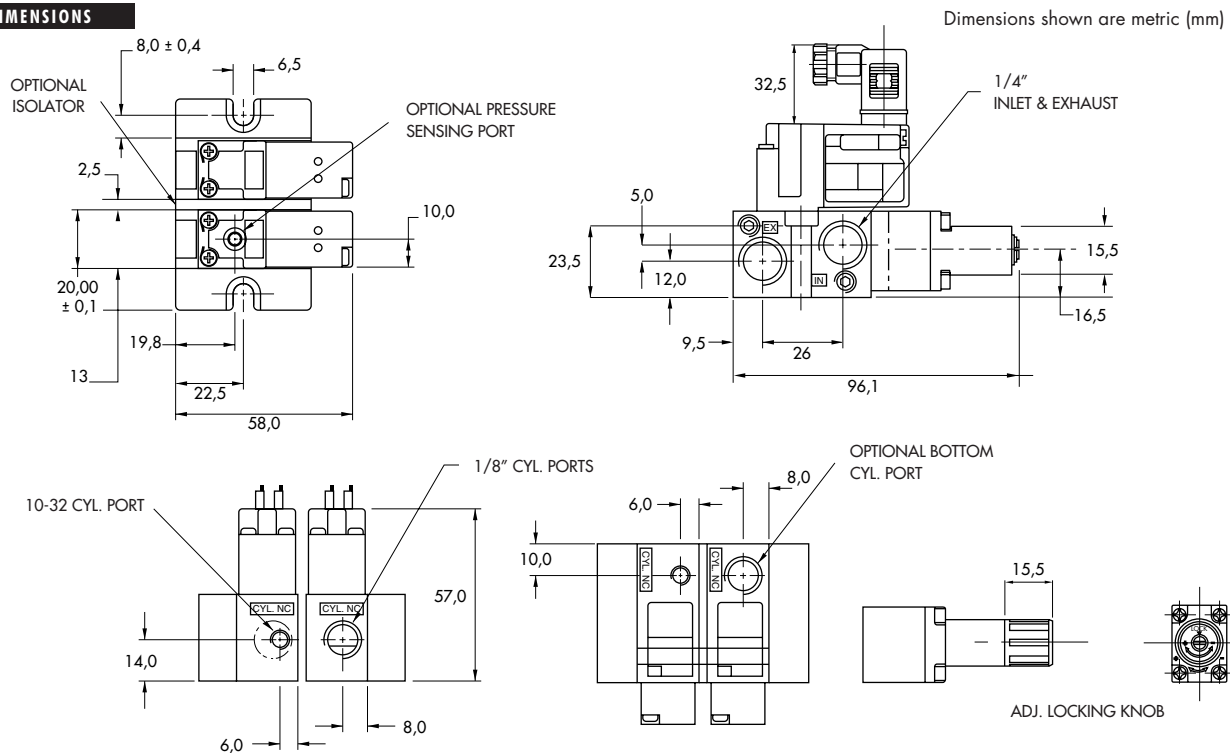
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 120 PSI		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.09 C <sub>v</sub> , 5.4 to 12.7 W : 0.1 C <sub>v</sub>		
<b>Leak rate :</b>	50 cm <sup>3</sup> /min		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Consult factory		
<b>Power :</b>	- Inrush : 10.9 VA      Holding : 7.7 VA = 1.8 to 12.7 W		
<b>Response times :</b>	24 VDC (5.4 W)	Energize : 6 ms	De-energize : 2 ms
	120/60	Energize : 3-8 ms	De-energize : 2-7 ms

- Spare parts :
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
  - Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
  - Pressure seal (between bases) : 16461. • Tie-rod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.
  - Inlet & Exhaust isolator : N-35006. • Pressure regulator : 35A-00M (ADJ, KNOB) - 35A-00L (SLOTTED STEM).

- Options :
- BSPP threads. • High flow up to 0.18 C<sub>v</sub>, according to wattage and high flow mod.

**DIMENSIONS**



**HOW TO ORDER**



BODY TYPE	PORT SIZE	VALVE FUNCTION/MANIFOLD TYPE
<b>Inline</b>	<b>O</b> Manifold Body Only	<b>O</b> Manifold Body Only
<b>A</b> Individual Inline	<b>B</b> #10-32 UNF (Inline Only)	<b>B</b> 3 way N.C. Only (Inline)
<b>D</b> Indiv. Inline w/2 Manifold Mount Ports	<b>D</b> M5 (Inline Only)	
<b>Manifold</b>		
<b>E</b> Manifold Body (N.C. Only)		
<b>G</b> Manifold Body w/Gage Port (N.C. Only)		

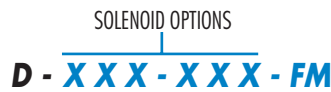
Note : there is no manifold base for the 35 series.  
The manifold valve can only mount to a circuit bar, see note below



BODY TYPE	PORT SIZE	VALVE FUNCTION/MANIFOLD TYPE
<b>Inline</b>	<b>O</b> Manifold Body Only	<b>Inline</b>
<b>A</b> 4 Port Body	<b>A</b> 1/8" NPT	<b>1</b> No Flow Controls
<b>B</b> 5 Port Body	<b>B</b> #10-32 UNF	<b>Bases - Regulators</b>
<b>D</b> 4 Port Body "O" Ring Mount -All Bottom Ports	<b>C</b> 1/8" BSPPL	<b>O</b> Valve Only - No Base
<b>E</b> 5 Port Body "O" Ring Mount -3 Bottom Ports Inlet and Cylinders	<b>D</b> M5 (Metric)	<b>A</b> Individual Base
<b>F</b> 4 Port Body "O" Ring Mount-Bottom Cylinder Ports Only	<b>F</b> #10-32 UNF Bottom Ports	<b>C</b> Manifold Base
	<b>G</b> M5 Bottom Ports	<b>E</b> Manifold w/Regulator w/Slotted Stem
	<b>H</b> "O" Ring Mount Ports	<b>G</b> Manifold w/Regulator w/Locking Slotted Stem
	<b>J</b> 1/8" NPT Bottom Ports	<b>J</b> Manifold w/Regulator w/Locking Knob
	<b>K</b> 1/8" BSPPL Bottom Ports	
<b>Base Mount</b>		
<b>O</b> For Base Only - No Valve		
<b>L</b> Base Mount Body		
<b>M</b> Base Mount Body with Gage Port		

**MANIFOLD MOUNT ACCESSORIES**

- M-45008-01** End Plate Kit
- 16455** Pressure Seal Between Manifold
- 19753** Tie Rod
- N-45008** Isolator Kit - Inlet and Exhaust
- N-45009** Isolator Kit - Inlet only
- N-45010** Isolator Kit - Exhaust only
- N-45015** End Cover Plate - Plain
- N-45016** End Cover Plate w/Flow Controls
- N-45017** Flow Control Needle Assembly



VOLTAGE	LEAD LENGTH	MANUAL OPERATOR	ELECTRICAL CONNECTION
<b>FR</b> 12VDC (0.6 W)	<b>A</b> 18" Leads	<b>0</b> No operator	<b>BA</b> Grommet
<b>FS</b> 24VDC (0.6 W)	<b>B</b> 24" Leads	<b>1</b> Non-locking Recessed	<b>CA</b> Conduit 1/2" NPS†
	<b>C</b> 36" Leads	<b>2</b> Locking Recessed	<b>CM</b> Metal Conduit 1/2" NPS†
	<b>D</b> 48" Leads	<b>3</b> Non-locking Extended	<b>CN</b> Metal Conduit w/grd. 1/2" NPS†
	<b>E</b> 72" Leads	<b>4</b> Locking Extended	<b>External Plug-in</b>
	<b>J*</b> 6" Leads		<b>FM</b> Plug-in (For ECD & ECE Bar)
			<b>JB</b> Rectangular Plug-in†
			<b>JM</b> Rectangular Male only†
			<b>KA</b> Mini Plug-in
			<b>KJ</b> Mini Plug-in Male only
			<b>TA</b> Dual Tabs (.110) Plain
			<b>TJ</b> Dual Tabs (.110) Plain

\*Use "J" for external plug-in connectors

NOTE : For valves mounted to a circuit bar reference MAC circuit bar Catalog for ordering info.  
For the 35 series circuit bar, use MOD FM01 after circuit bar part number.

† Available on individual valves and circuit bars.



0 p t i o n s

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

VALVE CODE >

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

**OPTIONS AVAILABLE FOR**

- Solenoid valves 35, 45 and 82 Series

## 1. VOLTAGE

- D XX X - X XX	VOLTAGE
<b>AA</b>	120/60, 110/50
<b>AB</b>	240/60, 220/50
<b>AC</b>	24/60, 24/50
<b>AD</b>	24/60
<b>AE</b>	200/60
<b>AF</b>	240/50
<b>AG</b>	100/50, 100/60, 110/60
<b>DA</b>	24 VDC (5.4 W)
<b>DB</b>	12 VDC (5.4 W)
<b>DC</b>	12 VDC (7.5 W)
<b>DD</b>	24 VDC (7.3 W)
<b>DE</b>	12 VDC (12.7 W) - CLSFonly
<b>DF</b>	24 VDC (12.7 W) - CLSF only
<b>DK</b>	110 VDC (4.7 W)
<b>DL</b>	64 VDC (6 W)
<b>DM</b>	36 VDC (5.3 W)
<b>DN</b>	6 VDC (6 W)
<b>DP</b>	48 VDC (5.8 W)
<b>DU</b>	24 VDC (6 W)
<b>EA</b>	12 VDC (6 W)
<b>FA</b>	12 VDC (1.8 W)
<b>FB</b>	24 VDC (1.8 W)
<b>FE</b>	12 VDC (2.4 W)
<b>FF</b>	24 VDC (2.4 W)

## 2. WIRE LENGTH

- D XX X - X XX	WIRE LENGTH
<b>A</b>	18"
<b>B</b>	24"
<b>C</b>	36"
<b>D</b>	48"
<b>E</b>	72"
<b>F</b>	96"
<b>J</b>	For external plug-in connector ("J", "K" & "T" type electrical connection)
<b>P</b>	For plug-in valves (82 Series only)

### 3. MANUAL OPERATOR

**- D XX X - X XX    MANUAL OPERATOR**

<b>0</b>	No operator
<b>1</b>	Non-locking recessed
<b>2</b>	Locking recessed
<b>3</b>	Non-locking extended
<b>4</b>	Locking extended

### 4. ELECTRICAL CONNECTION

**- D XX X - X XX    ELECTRICAL CONNECTION**

<b>BA</b>	Flying leads
<b>BK</b>	BA with protection diode
<b>BL</b>	BA with protection varistor (M.O.V.)
<b>** CA</b>	1/2" NPS conduit
<b>** CM</b>	1/2" NPS metal conduit
<b>** CN</b>	1/2" NPS metal conduit w/ground
<b>JB</b>	Rectangular connector
<b>JD</b>	Rectangular connector with light
<b>JM</b>	Rectangular connector, male only
<b>KA</b>	Square connector
<b>KB</b>	Square connector with protection diode
<b>KC</b>	Square connector with protection varistor (M.O.V.)
<b>KD</b>	Square connector with light
<b>KE</b>	Square connector with light and protection diode
<b>KF</b>	Square connector with light and protection varistor (M.O.V.)
<b>KG</b>	Square connector with LED light & diode
<b>KJ</b>	Square connector (male only)
<b>KK</b>	Square connector with protection diode (male only)
<b>KL</b>	Square connector with protection varistor (male only) (M.O.V.)
<b>*** MA</b>	Electrical common conduit
<b>TA</b>	Dual tabs
<b>TB</b>	TA with protection diode
<b>TD</b>	TA with light
<b>TE</b>	TA with light and protection diode
<b>TJ</b>	Dual tabs (male only)
<b>TK</b>	TJ with protection diode
<b>TM</b>	TJ with light
<b>TN</b>	TJ with light and protection diode
<b>DA*</b>	Plug-in connector
<b>DK*</b>	DA with protection diode
<b>DL*</b>	DA with protection varistor (M.O.V.)

- \* To be used with 82 Series only
- \*\* Inline valves only for 35 & 45 series. No restrictions for 82 series.
- \*\*\* Stacking valves only for 35 & 45 series. Conduit end plate kit required, one per stack.

35 series : M-35002-01  
45 series : M-45005-01



## 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 general use in industrial pneumatic and/or vacuum systems. 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 :

- Do not install MAC valves on a machine without first turning off air (bleed system completely) and electricity to the machine.
- 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 :

- 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.
- 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.
- 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 in any application where failure of the valve to operate as intended could jeopardize the safety of the operator or any other person or property.

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

### 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.