

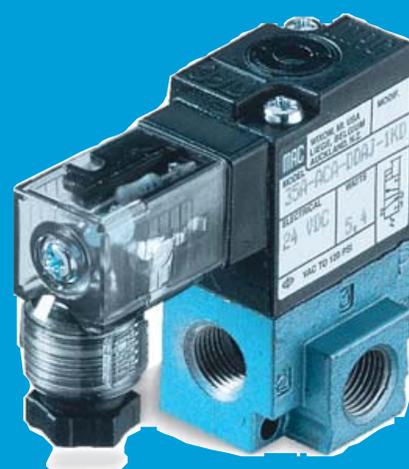
Handhabungstechnik  
Motore & Getriebe  
Pneumatik  
Hydraulik  
Systemlösungen

**as-tec**  
Mechatronik GmbH

## Produktkatalog

# MAC 3/2 Wegeventile

Serie 35 - 1/8"



# Über Uns

Die Firma **as-tec Mechatronik GmbH** ist ein herstellerunabhängiger Lieferant von Systemlösungen und Komponenten für pneumatische, hydraulische und elektrische Antriebs- und Steuerungstechnik.

Wir bieten unseren Kunden für ihre Projekte im Maschinen- und Anlagenbau, beziehungsweise für die Instandhaltung ihrer Fertigungseinrichtungen die am besten geeigneten Produkte aus unserem herstellerübergreifenden Produktportfolio.

In unserer Werkstätte produzieren wir kundenspezifische Lösungen wie zum Beispiel Ventileinheiten, Schaltschränke und Sonderzylinder. Weiters halten wir sowohl Standardkomponenten als auch speziell für Kunden bevorratete Produkte auf Lager.



# Direct solenoid and solenoid pilot operated valves

## Individual mounting

inline
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Series

## 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

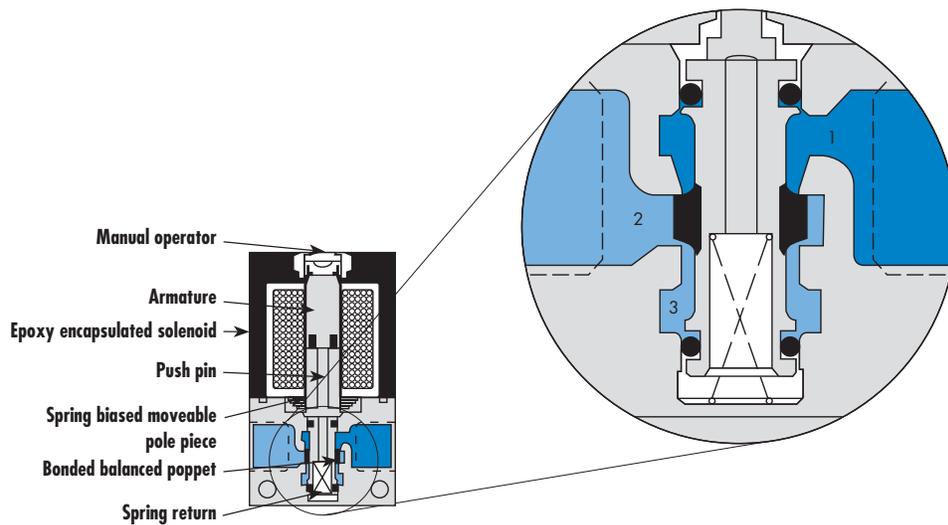
1300

800

ISO 1

ISO 2

ISO 3



## SERIES FEATURES

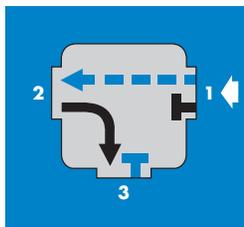
- Patented MACSOLENOID for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function — may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum, diverter, 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 — virtually burn-out proof on AC service.

**VALVE CONFIGURATIONS AVAILABLE :**

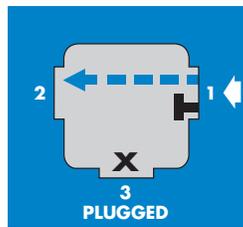
The 35 Series is a miniature 3 way or 2 way valve.  
This valve provides extremely fast response, long life and high flow in a surprisingly small package.

- 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.

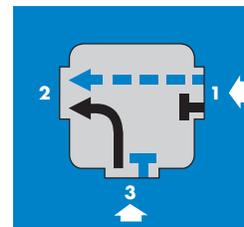
**PIPING CHART FOR INDIVIDUAL MODELS**



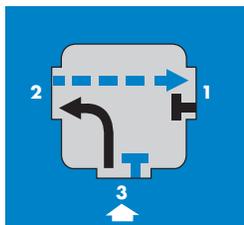
**3 Way  
Normally Closed**



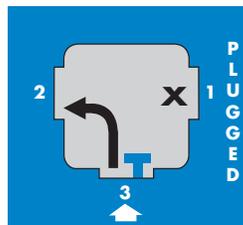
**2 Way  
Normally Closed**



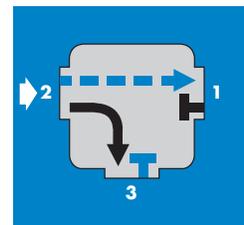
**Selector**



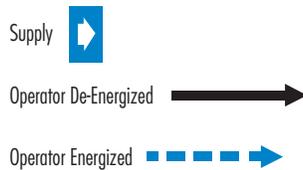
**3 Way  
Normally Open**



**2 Way  
Normally Open**



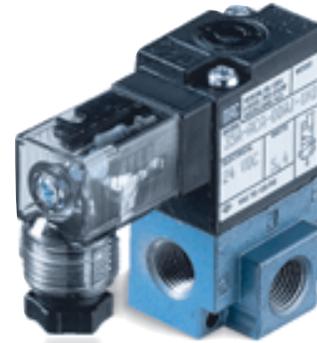
**Divertor**



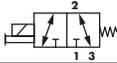
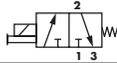
Function	Port size	Flow (Max)	Individual mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>G1/8"</b>	<b>170 NI/min</b>	inline	

### OPERATIONAL BENEFITS

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



### HOW TO ORDER

Port size	Universal valve	NC only valve
		
<b>G1/8"</b>	35A-ACA-D <b>xxx-xxx</b>	35A-ACB-D <b>xxx-xxx</b>

### SOLENOID OPERATOR >

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

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
<b>AB</b>	220V~/50Hz	<b>A</b>	45 cm (Flying leads)	<b>1</b>	Non-locking	<b>KA</b>	Square connector
<b>AA</b>	110V~/50Hz	<b>J</b>	Connector	<b>2</b>	Locking	<b>KD</b>	Square connector with light
<b>AC</b>	24V~/50Hz					<b>JB</b>	Rectangular connector
<b>FB</b>	24V=/1,8W					<b>JD</b>	Rectangular connector with light
<b>DA</b>	24V=/5,4W					<b>BA</b>	Flying leads
<b>DF</b>	24V=/12,7W						

\* Other options available, see page 309.

35

100

200

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59

45

700

900

82

6300

6500

6600

1300

800

ISO 1

ISO 2

ISO 3

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 8 bar		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	-18°C to 50°C (0°F to 120°F)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 80 NI/min, 5.4 W : 150 NI/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 V=5.4 W	Energize : 6 ms	De-energize : 2 ms
	50 Hz/6 W	Energize : 3-8 ms	De-energize : 2-7 ms

Spare parts :

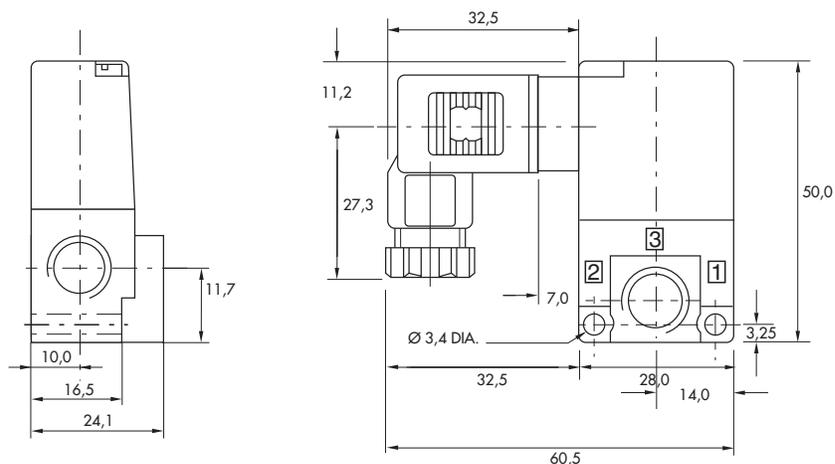
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402.

Options :

- NPTF threads. • High flow up to 250 NI/min, according to wattage and high flow mod.

**DIMENSIONS**

Dimensions shown are metric (mm)



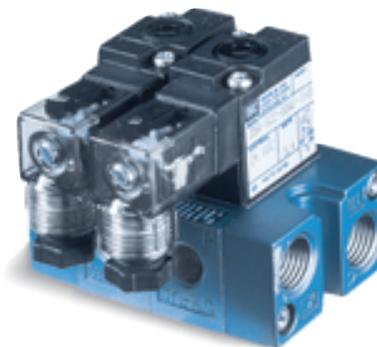


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	Manifold mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>M5, G1/8"</b>	<b>160 NI/min</b>	stacking	

### OPERATIONAL BENEFITS

- Balanced poppet, immune to variations of pressure.
- Short stroke with high flow.
- The patented solenoid develops high shifting forces.
- Powerful return spring.
- Manual operator standard on all valves.
- 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

### HOW TO ORDER

Port size	NC only valve	NO only valve
<b>G1/8"</b>	35A-SCC-Dxxx-xxx	35A-SCD-Dxxx-xxx
<b>M5</b>	35A-SDC-Dxxx-xxx	35A-SDD-Dxxx-xxx

### SOLENOID OPERATOR >

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AB</b> 220V~/50Hz	<b>A</b> 45 cm (Flying leads)	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>AA</b> 110V~/50Hz	<b>J</b> Connector	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>AC</b> 24V~/50Hz			<b>BA</b> Flying leads
<b>FB</b> 24V=/1,8W			
<b>DA</b> 24V=/5,4W			
<b>DF</b> 24V=/12,7W			

\* Other options available, see page 309.

End plate kit required (Port size : G1/4") : M-35001-01P  
 Note : upon request, manifolds are mounted at the factory.

### OPTIONS

35A-TXX-Dxxx-xxx  
 - Bottom Inlet

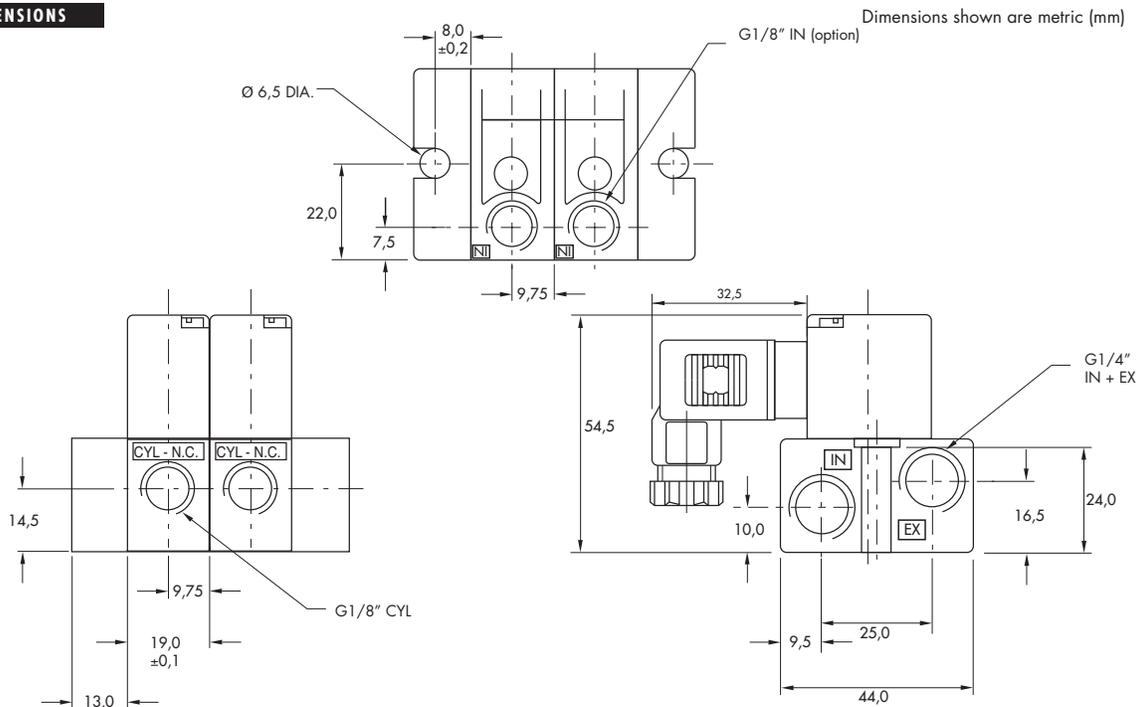
**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 8 bar		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	-18°C to 50°C (0°F to 120°F)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 120 NI/min, 5.4 to 12.7 W : 160 NI/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 V= / 5.4 W	Energize : 6 ms	De-energize : 2 ms
	50 Hz / 6 W	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 :
- NPTF threads. • High flow up to 250 NI/min, according to wattage and high flow mod.

**DIMENSIONS**



Function	Port size	Flow (Max)	Manifold mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>M5, G1/8"</b>	<b>100 NI/min</b>	sub-base non "plug-in"	

### OPERATIONAL BENEFITS

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



35

100

200

55

56

57

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59

### 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>M5 base</b>	35A-BDE-Dxxx-xxx	35A-BDF-Dxxx-xxx
<b>G1/8" base</b>	35A-BCE-Dxxx-xxx	35A-BCF-Dxxx-xxx

45

#### 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>M5 base</b>	35A-BJE-Dxxx-xxx	35A-BJF-Dxxx-xxx
<b>G1/8" base</b>	35A-BHE-Dxxx-xxx	35A-BHF-Dxxx-xxx

700

900

82

#### SOLENOID OPERATOR >

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AB</b> 220V~/50Hz	<b>A</b> 45 cm (Flying leads)	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>AA</b> 110V~/50Hz	<b>J</b> Connector	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>AC</b> 24V~/50Hz			<b>BA</b> Flying leads
<b>FB</b> 24V=/1,8W			
<b>DA</b> 24V=/5,4W			
<b>DF</b> 24V=/12,7W			

6300

6500

6600

1300

800

\* Other options available, see page 309.

End plate kit required (Port size : G1/4") : M-35003-01P

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)

ISO 1

ISO 2

ISO 3

**TECHNICAL DATA**

<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 8 bar		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	-18°C to 50°C (0°F to 120°F)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 90 NI/min, 5.4 to 12.7 W : 100 NI/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 V=5.4 W	Energize : 6 ms	De-energize : 2 ms
	50 Hz/6 W	Energize : 3-8 ms	De-energize : 2-7 ms

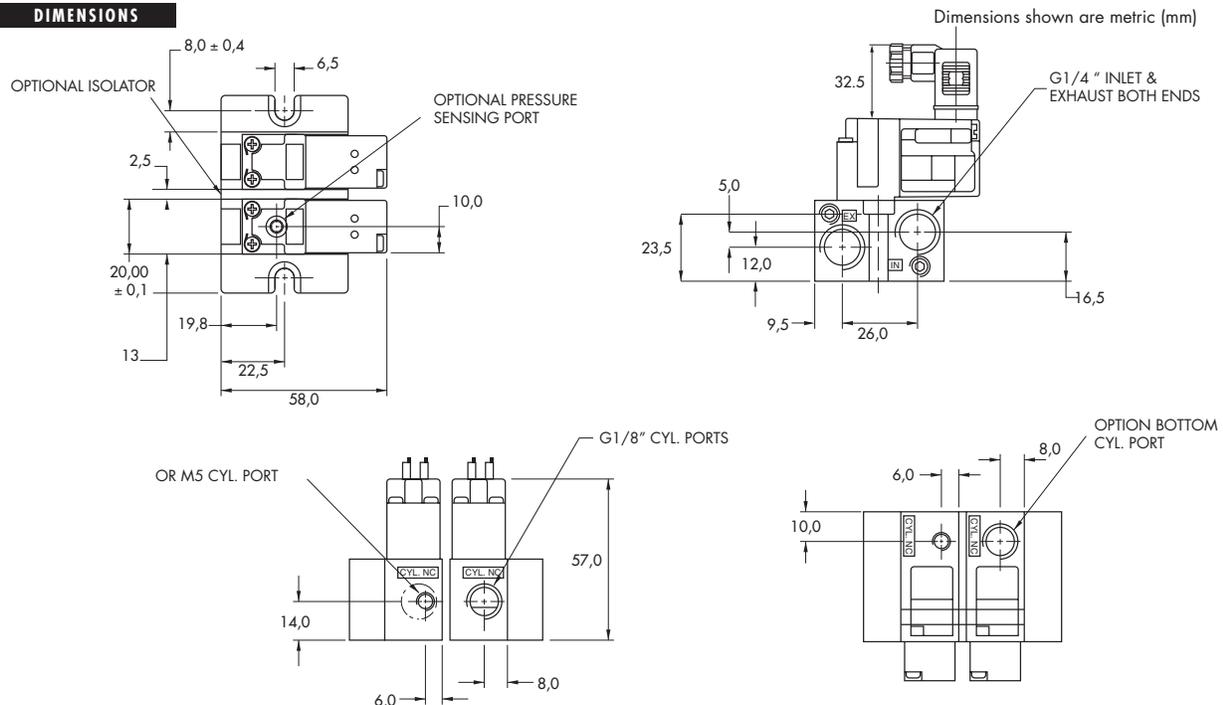
Spare parts :

- 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 :

- NPTF threads. • High flow up to 180 NI/min, according to wattage and high flow mod.

**DIMENSIONS**



Function	Port size	Flow (Max)	Manifold mounting	Series
<b>3/2 NO-NC, 2/2 NO-NC</b>	<b>M5, G1/8"</b>	<b>100 NI/min</b>	sub-base with pressure regulators	

### OPERATIONAL BENEFITS

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



35

100

200

55

56

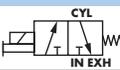
57

58

59

### 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>M5 base</b>	35A-BDJ-Dxxx-xxx	35A-BDK-Dxxx-xxx
<b>G1/8" base</b>	35A-BCJ-Dxxx-xxx	35A-BCK-Dxxx-xxx

45

#### 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>M5 base</b>	35A-BJJ-Dxxx-xxx	35A-BJK-Dxxx-xxx
<b>G1/8" base</b>	35A-BHJ-Dxxx-xxx	35A-BHK-Dxxx-xxx

700

900

82

#### SOLENOID OPERATOR >

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>AB</b> 220V~/50Hz	<b>A</b> 45 cm (Flying leads)	<b>1</b> Non-locking	<b>KA</b> Square connector
<b>AA</b> 110V~/50Hz	<b>J</b> Connector	<b>2</b> Locking	<b>KD</b> Square connector with light
<b>AC</b> 24V~/50Hz			<b>BA</b> Flying leads
<b>FB</b> 24V~/1,8W			
<b>DA</b> 24V~/5,4W			
<b>DF</b> 24V~/12,7W			

6300

6500

6600

1300

800

\* Other options available, see page 309.

End plate kit required (Port size : G1/4") : M-35003-01P

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

### OPTIONS

35A-EXX-Dxxx-xxx

- N.C. only valve

35A-FXX-Dxxx-xxx

- universal w/gage port

35A-OXX

- no valve body (base w/regulator)

ISO 1

ISO 2

ISO 3

**TECHNICAL DATA**

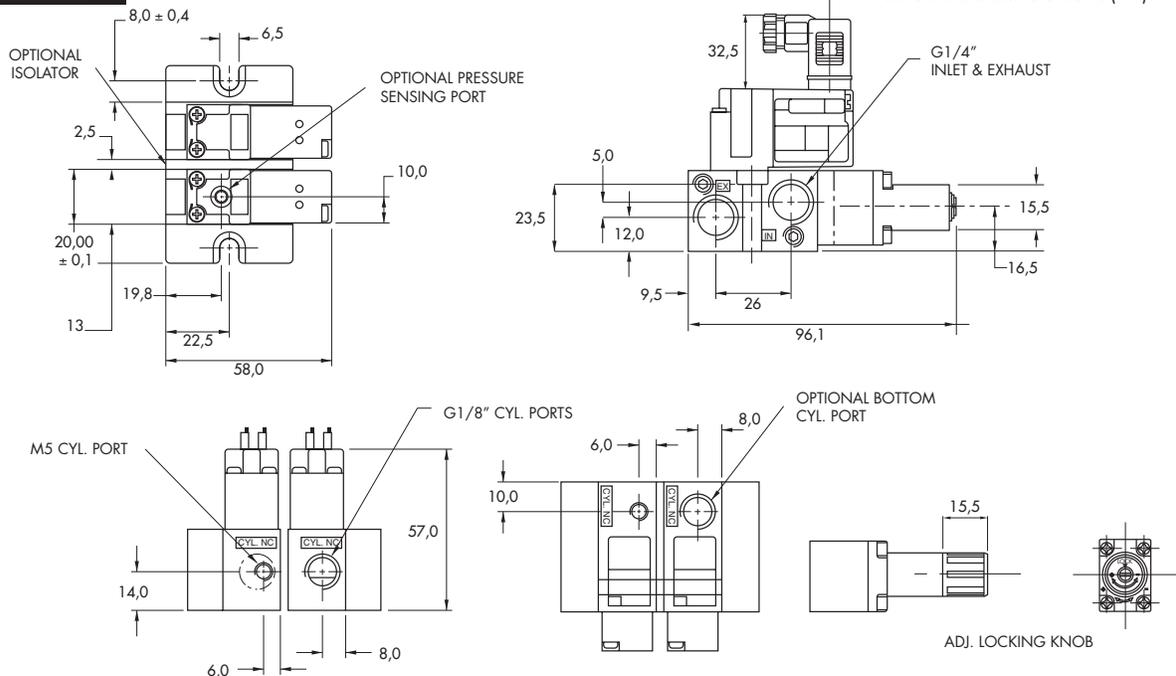
<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 8 bar		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	-18°C to 50°C (0°F to 120°F)		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 90 NI/min, 5.4 to 12.7 W : 100 NI/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 V=5.4 W	Energize : 6 ms	De-energize : 2 ms
	50 Hz/6 W	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 :
- NPTF threads. • High flow up to 180 NI/min, according to wattage and high flow mod.

**DIMENSIONS**

Dimensions shown are metric (mm)



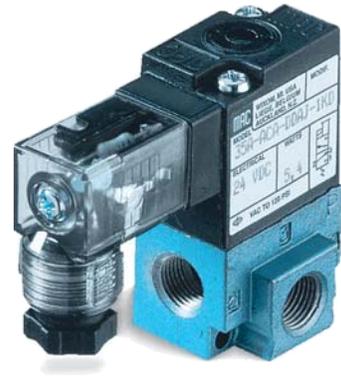


# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow (Max)	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

55

56

57

58

59

### HOW TO ORDER

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

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-D**xxx-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>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 :

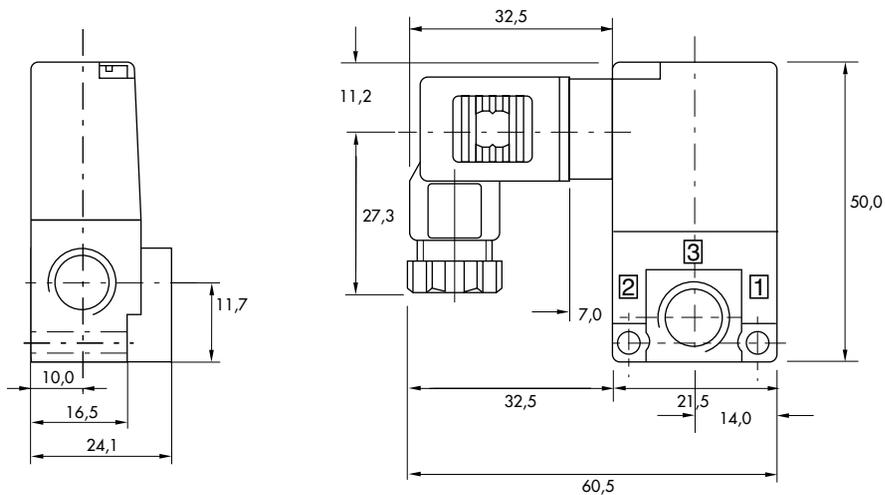
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402.

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.



35

100

200

55

56

57

58

59

### 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

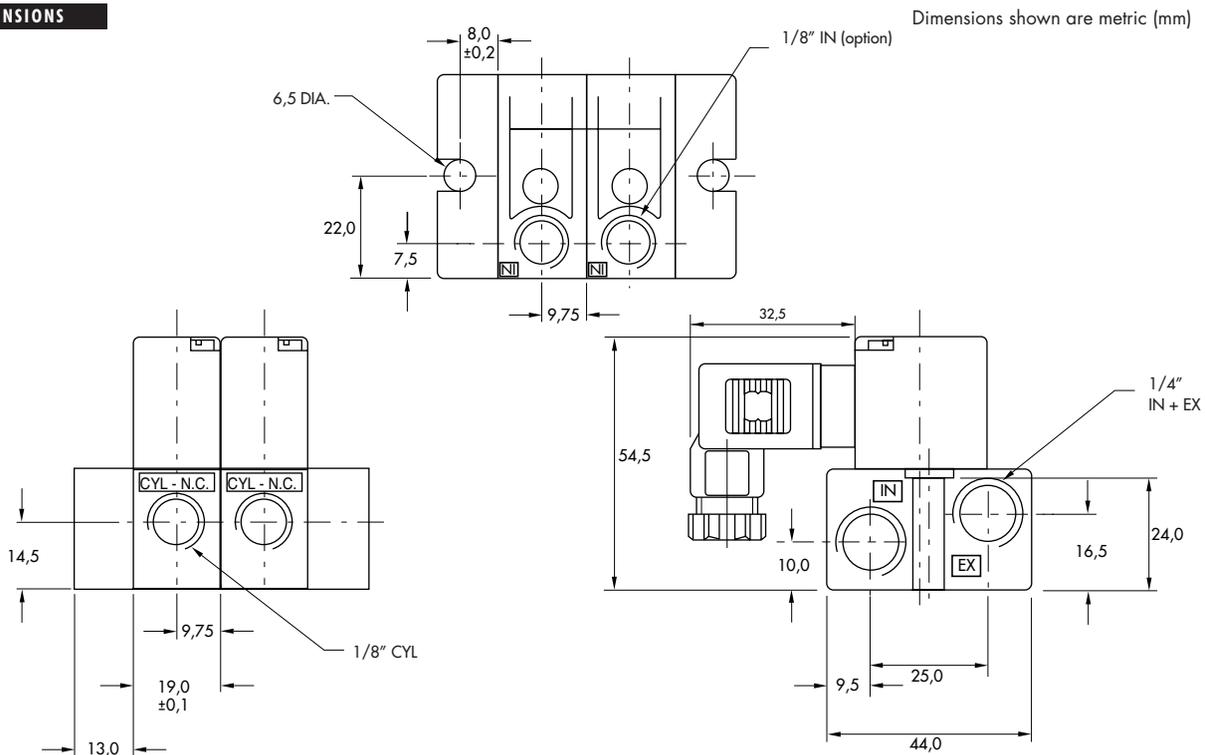
**TECHNICAL DATA**

<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>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**





# 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
<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 only)

**TECHNICAL DATA**

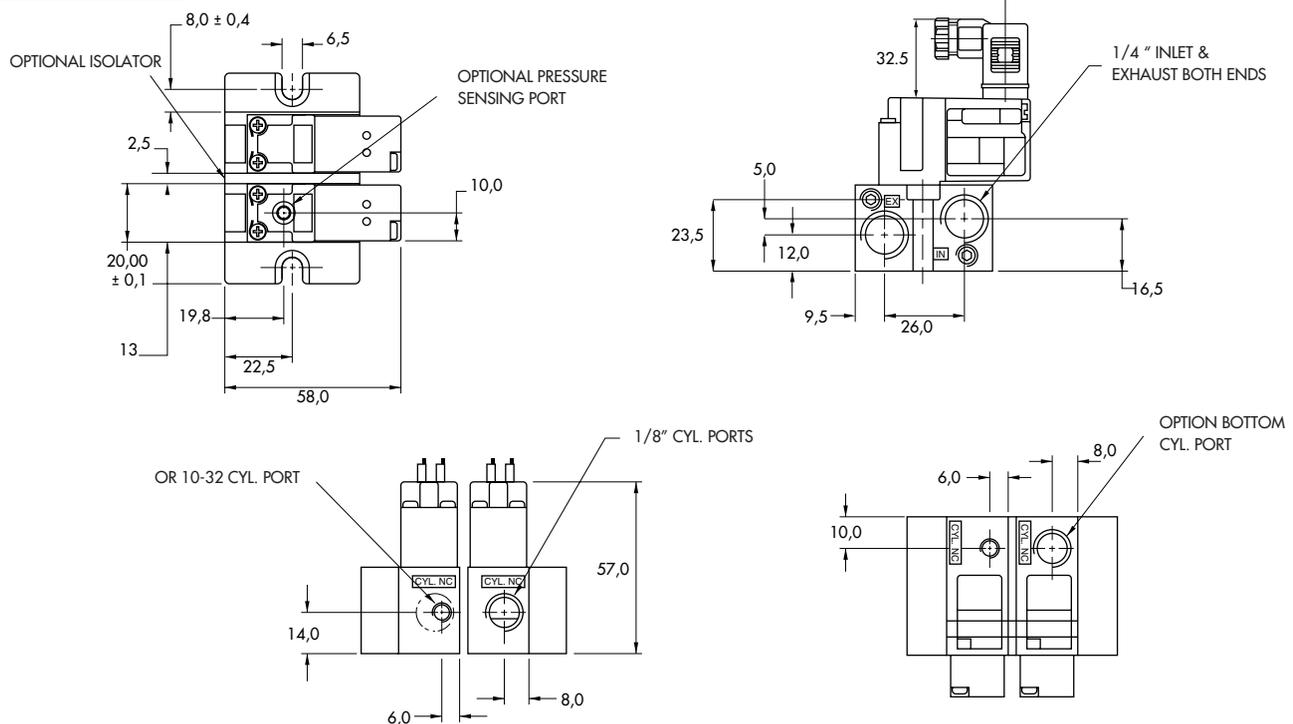
<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 120 PSI		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)		
<b>Flow (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>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**

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 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**

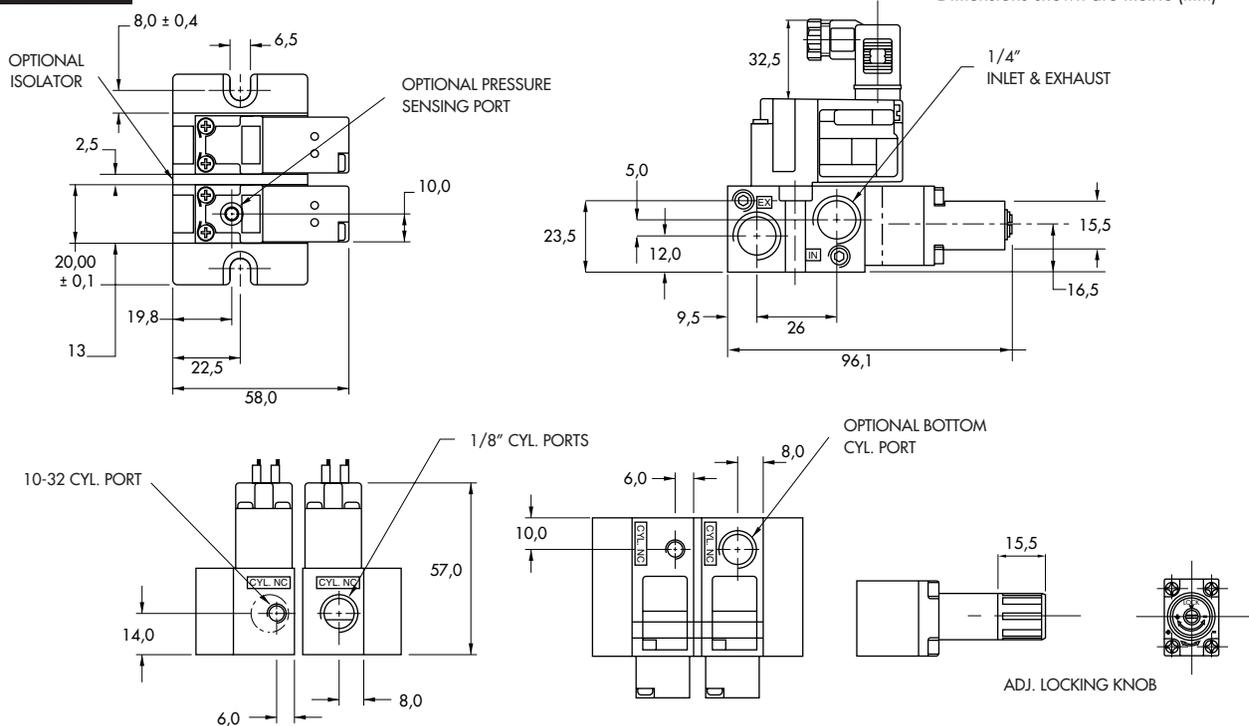
<b>Fluid :</b>	Compressed air, vacuum, inert gases		
<b>Pressure range :</b>	Vacuum to 120 PSI		
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
<b>Filtration :</b>	40 µ		
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)		
<b>Flow (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>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**

Dimensions shown are metric (mm)



Series 35-45

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)		

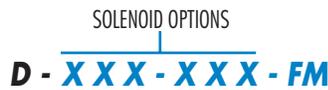
Note : there is no manifold base for the 35 series. The manifold valve can only mount to a circuit bar, see note below



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

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

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VALVE CODE >

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

**OPTIONS AVAILABLE FOR**

- Solenoid valves 35, 45 and 82 Series

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## 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
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

### 4. ELECTRICAL CONNECTION

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

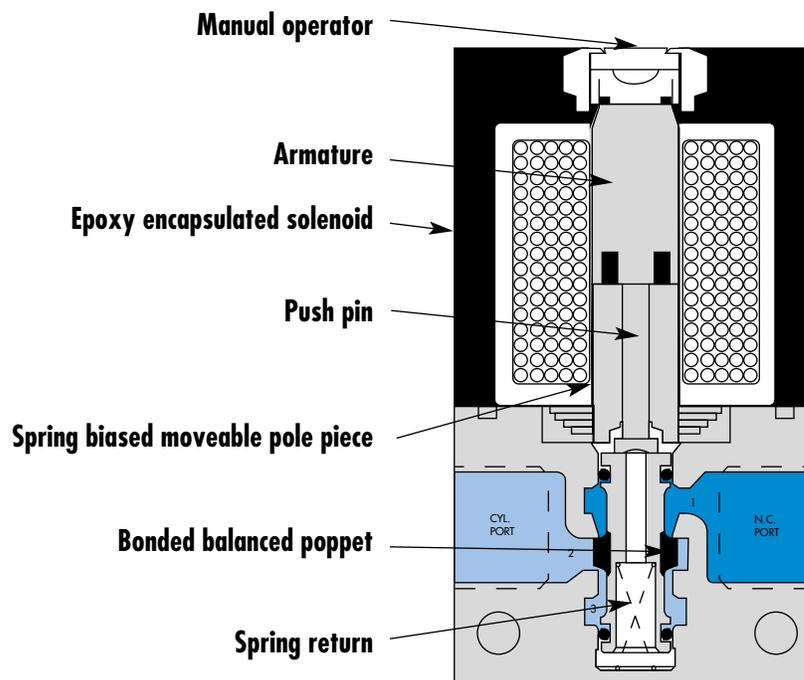
### DISCLAIMER OF GUARANTEE

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.

### Circuit bar mounting

non plug-in	non plug-in with Pr. Reg.	plug-in	plug-in with side Pr. Reg.	plug-in with integral terminal strip	plug-in with integral terminal strip and side Pr. Reg.
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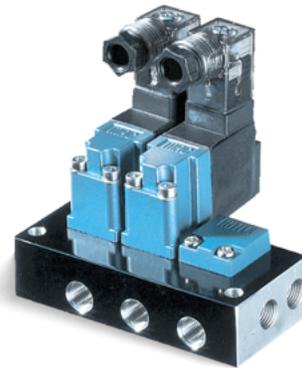
### SERIES FEATURES

- Patented MACSOLENOID<sup>®</sup> for fastest possible response times.
- Balanced poppet permits versatility in function :  
- 3 way N.C. - 3 way N.O. - Divertor - Selector
- Extremely high cycle rate capability.
- Various solenoid enclosures and plug-in connectors.
- Low wattage DC solenoids - down to 1.8 watts.
- Rated for lubricated or non-lubricated service.

Function	Port size	Flow [Max]	Circuit bar mounting
<b>3/2 NO-NC</b>	<b>1/8" NPTF - #10-32 UNF</b>	<b>0.10C<sub>v</sub></b>	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.



### HOW TO ORDER

HOW TO ORDER VALVE FOR CIRCUIT BAR MOUNTING

	<b>Universal valve</b>
	
<b>Valve less base</b>	35A-B00-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 Recessed	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking Recessed	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24VDC (1.8 W)						
DA	24VDC (5.4 W)						
DF	24VDC (12.7 W)						

HOW TO ORDER CIRCUIT BAR\*\*

Port size	Side cylinder ports Spacing 21 mm	Bottom cylinder ports Spacing 21 mm
<b>1/8" NPTF</b>	EBM35A-001A-xx	EBM35A-002A-xx
<b># 10-32 UNF</b>	EBM35A-001B-xx	EBM35A-002B-xx

Number of stations (03=3 stations)

\*\* Other options available. Consult factory.

Note : clic for valves mounted on base at the factory, add - 9 to the model number.

**TECHNICAL  
D A T A**

<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>Orifice :</b>	2 mm		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.08 C <sub>v</sub> , 5.4 W : 0.1 C <sub>v</sub>		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Nema 4		
<b>Power :</b>	120 VAC/60 = Inrush : 10.9 VA (0.09 AMPS)    Holding : 7.7VA (0.06 AMPS) DC VOLTS = 1.8 W to 12.7 W		
<b>Response times :</b>	24 VDC (5.4W)	Energize : 6 ms	De-energize : 2 ms
	120 VAC	Energize : 3-8 ms	De-energize : 2-7 ms

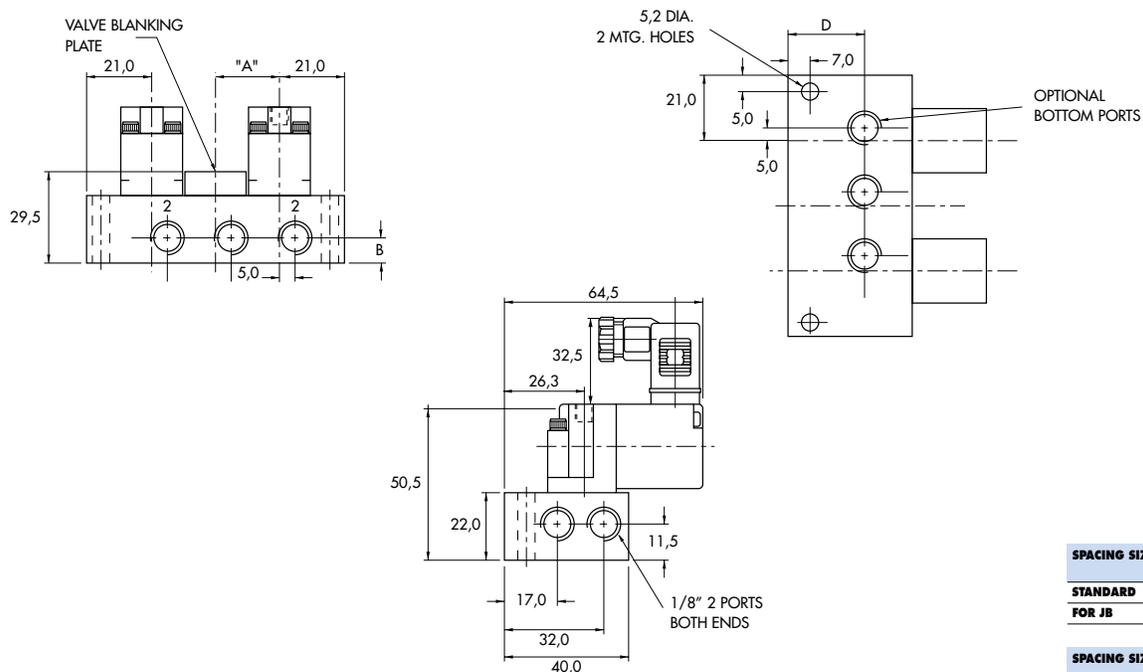
Spare parts :

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and valve body : 16402. • Seal between base and valve : 16447.
- Valve mounting screw (x2) : 35020. • Blanking plate valve : M-35004.

Options :

- BSPP threads. • High flow up to 0.14C<sub>v</sub>, according to wattage. • Isolation of inlet and/or exhaust.

**DIMENSIONS**



SPACING SIZE	A	
STANDARD	21.0	
FOR JB	26.0	

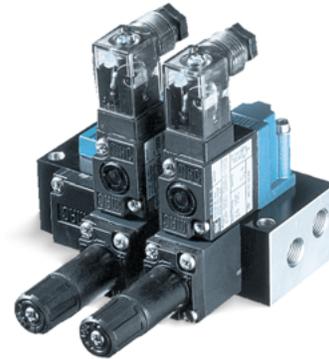
  

SPACING SIZE	B	D
1/8"	8.0	24.5
# 10-32	5.5	24.2

Function	Port size	Flow [Max]	Circuit bar mounting
<b>3/2 NO-NC</b>	<b>1/8" NPTF - #10-32 UNF</b>	<b>0.10C<sub>v</sub></b>	non plug-in with Pr. Reg.

### 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.



### HOW TO ORDER

HOW TO ORDER VALVE FOR CIRCUIT BAR MOUNTING

	<b>Universal valve</b>
	
<b>Valve less base</b>	35A-B00-Dxxx-xxx
<b>Valve less base w/ gage port</b>	35A-F00-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 Recessed	KA	Square connector
AB	240/60, 220/50	J	Connector	2	Locking Recessed	KD	Square connector with light
AC	24/60, 24/50					BA	Flying leads
FB	24VDC (1.8 W)						
DA	24VDC (5.4 W)						
DF	24VDC (12.7 W)						

HOW TO ORDER CIRCUIT BAR WITH PRESSURE REGULATORS (TO BE ORDERED SEPARATELY)\* \*

Port size Side cylinder ports	Spacing 21 mm	Spacing 40 mm
<b>1/8" NPTF</b>	EBM35A-003A-xx	EBM35A-023A-xx
<b># 10-32 UNF</b>	EBM35A-003B-xx	EBM35A-023B-xx
Port size Bottom cylinder ports	Spacing 21 mm	Spacing 40 mm
<b>1/8" NPTF</b>	EBM35A-004A-xx	EBM35A-024A-xx
<b># 10-32 UNF</b>	EBM35A-004B-xx	EBM35A-024B-xx

Number of stations (03=3 stations)

Other options available. Consult factory.

Note : clic for valves mounted on base at the factory, add - 9 to the model number.  
use 40 mm spacing for valves w/ gage port.

\*\* Pressure Regulators :

- 35A-00M (Adjusting knob)
- 35A-00L (Slotted stem)
- 35A-00U (Locking stem)

**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>Orifice :</b>	2 mm
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.08 C <sub>v</sub> , 5.4 W : 0.1 C <sub>v</sub>
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated
<b>Voltage range :</b>	-15% to +10% of nominal voltage
<b>Protection :</b>	Nema 4
<b>Power :</b>	120 VAC/60 = Inrush : 10.9 VA (0.09 AMPS)    Holding : 7.7VA (0.06 AMPS) DC VOLTS = 1.8 W to 12.7 W
<b>Response times :</b>	24 VDC (5.4W)    Energize : 6 ms    De-energize : 2 ms 120 VAC    Energize : 3-8 ms    De-energize : 2-7 ms

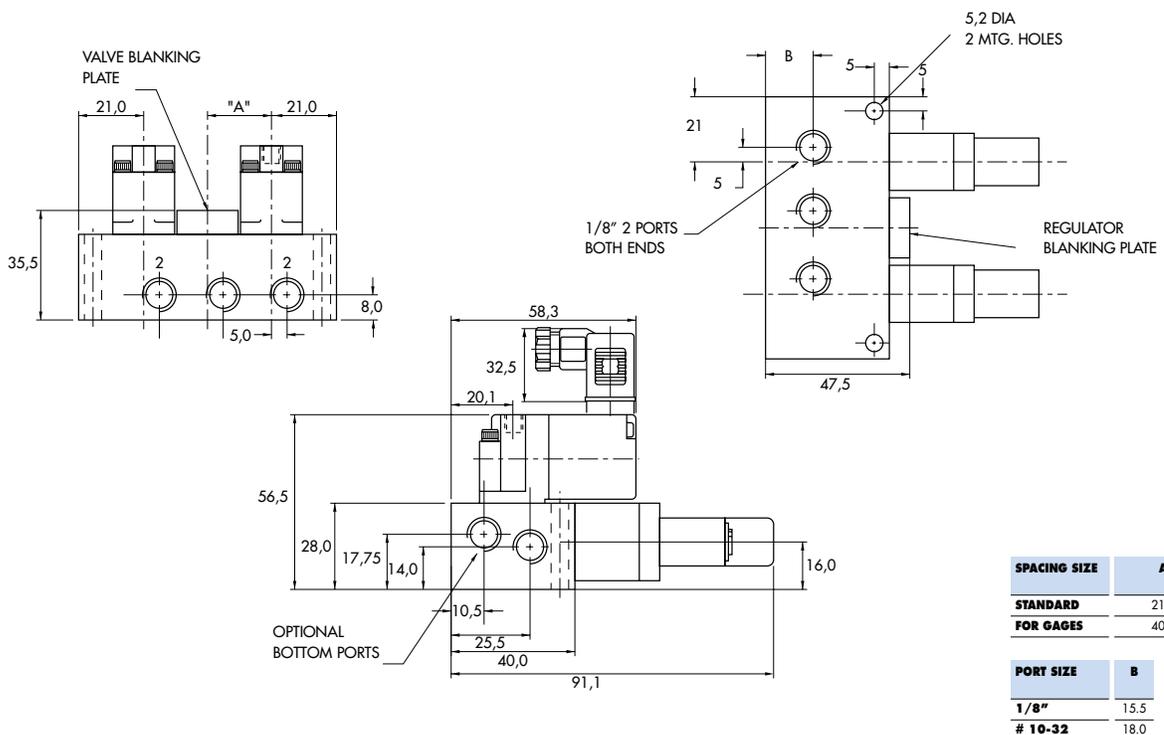
Spare parts :

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and valve body : 16402. • Seal between base and valve : 16447.
- Valve mounting screw (x2) : 35020. • Blanking plate valve : M-35004. • Blanking plate regulator : M-35005.

Options :

- BSPP threads. • High flow up to 0.14C<sub>v</sub>, according to wattage. • Isolation of inlet and/or exhaust.

**DIMENSIONS**



Function	Port size	Flow [Max]	Circuit bar mounting
<b>3/2 NO-NC</b>	<b>1/8" NPTF - #10-32 UNF</b>	<b>0.10C<sub>v</sub></b>	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.



### HOW TO ORDER

HOW TO ORDER VALVE FOR "PLUG-IN" CIRCUIT BAR

	<b>Universal valve</b>
	
<b>Valve less base</b>	35A-B00-DxxJ-xFM

SOLENOID OPERATOR >

D **XX** J- **X** FM \*

<b>XX Voltage</b>	<b>X Manual operator</b>
<b>AA</b> 120/60, 110/50	<b>1</b> Non-locking Recessed
<b>AB</b> 240/60, 220/50	<b>2</b> Locking Recessed
<b>AC</b> 24/60, 24/50	
<b>FB</b> 24VDC (1.8 W)	
<b>DA</b> 24VDC (5.4 W)	
<b>DF</b> 24VDC (12.7 W)	

HOW TO ORDER "PLUG-IN" CIRCUIT BAR \*\*

Port size	Spacing mm	Side cylinder ports	Bottom cylinder ports
<b>1/8" NPTF</b>	21	ECD35A-001A-A0-xx*	ECD35A-002A-A0-xx*
<b># 10-32 UNF</b>	21	ECD35A-001B-A0-xx*	ECD35A-002B-A0-xx*
<b>1/8" NPTF</b>	30	ECD35A-031A-C0-xx*	ECD35A-032A-C0-xx*
<b># 10-32 UNF</b>	30	ECD35A-031B-C0-xx*	ECD35A-032B-C0-xx*

Number of stations (03=3 stations)

\*\* Other options available. Consult factory.

Note : clic for valves mounted on base at the factory, add - 9 to the model number.  
clic for multi-pin connector (9, 15 or 25).

- \* A0 = without light
- AA = with light (120V)
- AB = with light (240V)
- AD = with light (24V)
- C0 = terminal strip
- CA = terminal w/light (120V)
- CB = terminal w/light (240V)
- CD = terminal w/light (24V)

**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>Orifice :</b>	2 mm
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.08 C <sub>v</sub> , 5.4 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>	Nema 4
<b>Power :</b>	120 VAC/60 = Inrush : 10.9 VA (0.09 AMPS)    Holding : 7.7VA (0.06 AMPS) DC VOLTS = 1.8 W to 12.7 W
<b>Response times :</b>	24 VDC (5.4W)    Energize : 6 ms    De-energize : 2 ms 120 VAC    Energize : 3-8 ms    De-energize : 2-7 ms

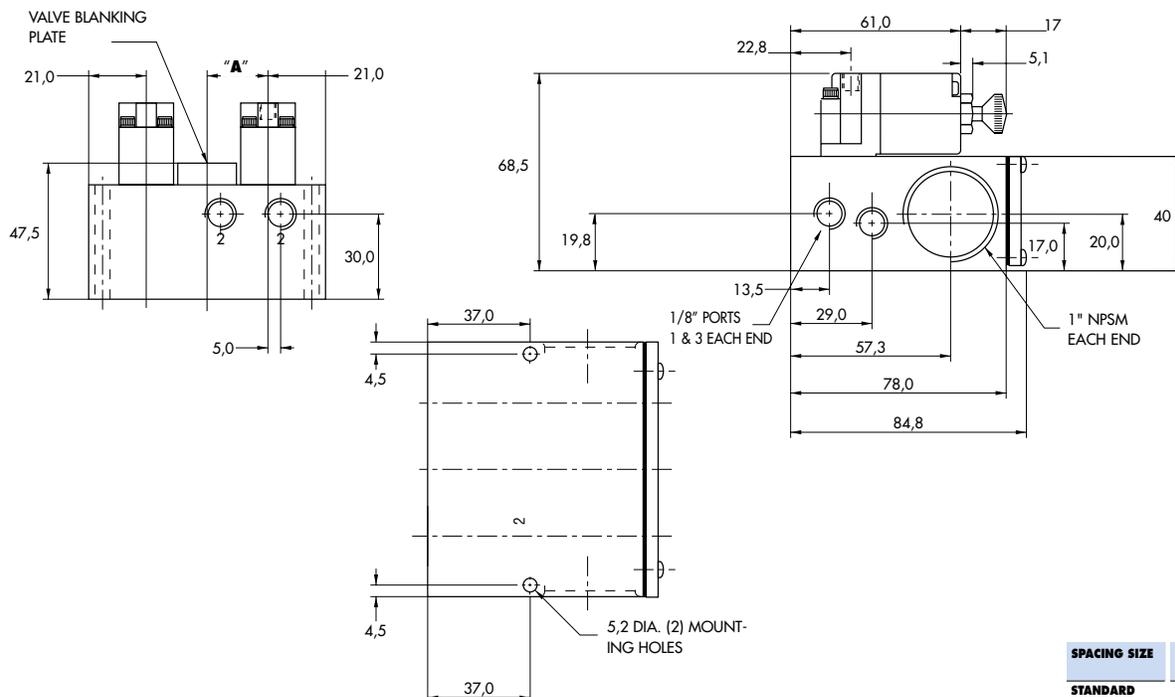
Spare parts :

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and valve body : 16402. • Seal between base and valve : 16447.
- Valve mounting screw (x2) : 35020. • Blanking plate valve : M-35004. • Plug-in protector : 16520.

Options :

- BSPP threads. • High flow up to 0.14C<sub>v</sub>, according to wattage. • Isolation of inlet and/or exhaust.

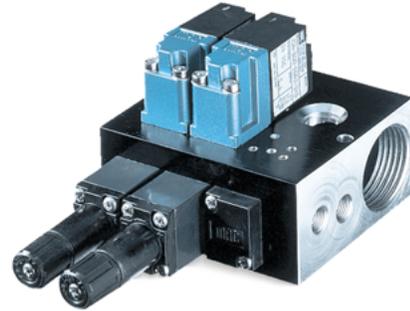
**DIMENSIONS**



Function	Port size	Flow [Max]	Circuit bar mounting
<b>3/2 NO-NC</b>	<b>1/8" NPTF - #10-32 UNF</b>	<b>0.10C<sub>v</sub></b>	plug-in with side Pr. Reg.

### OPERATIONAL BENEFITS

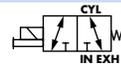
1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.



### HOW TO ORDER

HOW TO ORDER VALVE FOR "PLUG-IN" CIRCUIT BAR

	Universal valve
Valve less base	35A-B00-DxxJ-xFM
Valve less base w/ gage port	35A-F00-DxxJ-xFM



### SOLENOID OPERATOR >

D **XX** J- **X** FM \*

XX Voltage	X Manual operator
AA 120/60, 110/50	1 Non-locking Recessed
AB 240/60, 220/50	2 Locking Recessed
AC 24/60, 24/50	
FB 24VDC (1.8 W)	
DA 24VDC (5.4 W)	
DF 24VDC (12.7 W)	

HOW TO ORDER "PLUG-IN" CIRCUIT BAR WITH PRESSURE REGULATORS (TO BE ORDERED SEPARATELY)\* \*\*

Port size	Spacing mm	Bottom cylinder ports
<b>1/8" NPTF</b>	21	ECD35A-004A-A0-xx*
<b># 10-32 UNF</b>	21	ECD35A-004B-A0-xx*
<b>1/8" NPTF</b>	30	ECD35A-034A-C0-xx*
<b># 10-32 UNF</b>	30	ECD35A-034B-C0-xx*
<b>1/8" NPTF</b>	40	ECD35A-024A-A0-xx*
<b># 10-32 UNF</b>	40	ECD35A-024B-A0-xx*

Number of stations (03=3 stations)

\*\* Other options available. Consult factory.

Note : clic for valves mounted on base at the factory, add - 9 to the model number.  
 clic for multi-pin connector (9, 15 or 25).  
 minimum spacing for terminal strips is 30 mm.  
 use 40 mm spacing for valves w/gage port.

\*\* Pressure Regulators :

- 35A-00M (Adjusting knob)
- 35A-00L (Slotted stem)
- 35A-00U (Locking stem)

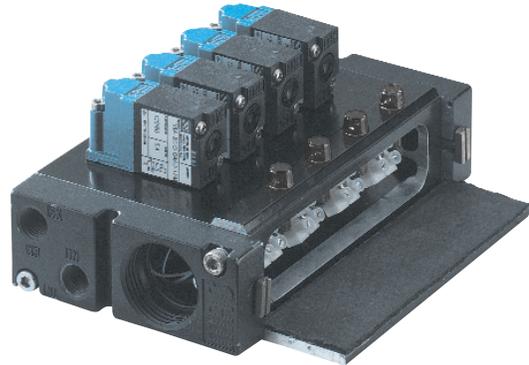
- \* A0 = without light
- AA = with light (120V)
- AB = with light (240V)
- AD = with light (24V)
- C0 = terminal strip
- CA = terminal w/light (120V)
- CB = terminal w/light (240V)
- CD = terminal w/light (24V)



Function	Port size	Flow [Max]	Circuit bar mounting
<b>3/2 NO-NC</b>	<b>1/8" NPTF - #10-32 UNF</b>	<b>0.10C<sub>v</sub></b>	plug-in with integral terminal strip

### 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.



### HOW TO ORDER

HOW TO ORDER VALVE FOR "PLUG-IN" CIRCUIT BAR

	<b>Universal valve</b>
	
<b>Valve less base</b>	35A-B00-DxxJ-xFM

SOLENOID OPERATOR >

D **XX** J- **X** FM \*

<b>XX Voltage</b>	<b>X Manual operator</b>
<b>AA</b> 120/60, 110/50	<b>1</b> Non-locking Recessed
<b>AB</b> 240/60, 220/50	<b>2</b> Locking Recessed
<b>AC</b> 24/60, 24/50	
<b>FB</b> 24VDC (1.8 W)	
<b>DA</b> 24VDC (5.4 W)	
<b>DF</b> 24VDC (12.7 W)	

HOW TO ORDER "PLUG-IN" CIRCUIT BAR \*\*

Port size	Spacing mm	Side cylinder ports	Bottom cylinder ports
<b>1/8" NPTF</b>	26	ECE35A-011A-C0-xx*	ECE35A-012A-C0-xx*
<b># 10-32 UNF</b>	26	ECE35A-011B-C0-xx*	ECE35A-012B-C0-xx*

Number of stations (03=3 stations)

\*\* Other options available. Consult factory.

Note : clic for valves mounted on base at the factory, add - 9 to the model number.  
end plate kit required: M-45017.

\* C0 = terminal strip  
CA = terminal strip w/light (120V)  
CB = terminal strip w/light (240V)  
CD = terminal strip w/light (24V)

**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>Orifice :</b>	2 mm		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.08 C <sub>v</sub> , 5.4 W : 0.1 C <sub>v</sub>		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Nema 4		
<b>Power :</b>	120 VAC/60 = Inrush : 10.9 VA (0.09 AMPS)    Holding : 7.7VA (0.06 AMPS) DC VOLTS = 1.8 W to 12.7 W		
<b>Response times :</b>	24 VDC (5.4W)	Energize : 6 ms	De-energize : 2 ms
	120 VAC	Energize : 3-8 ms	De-energize : 2-7 ms

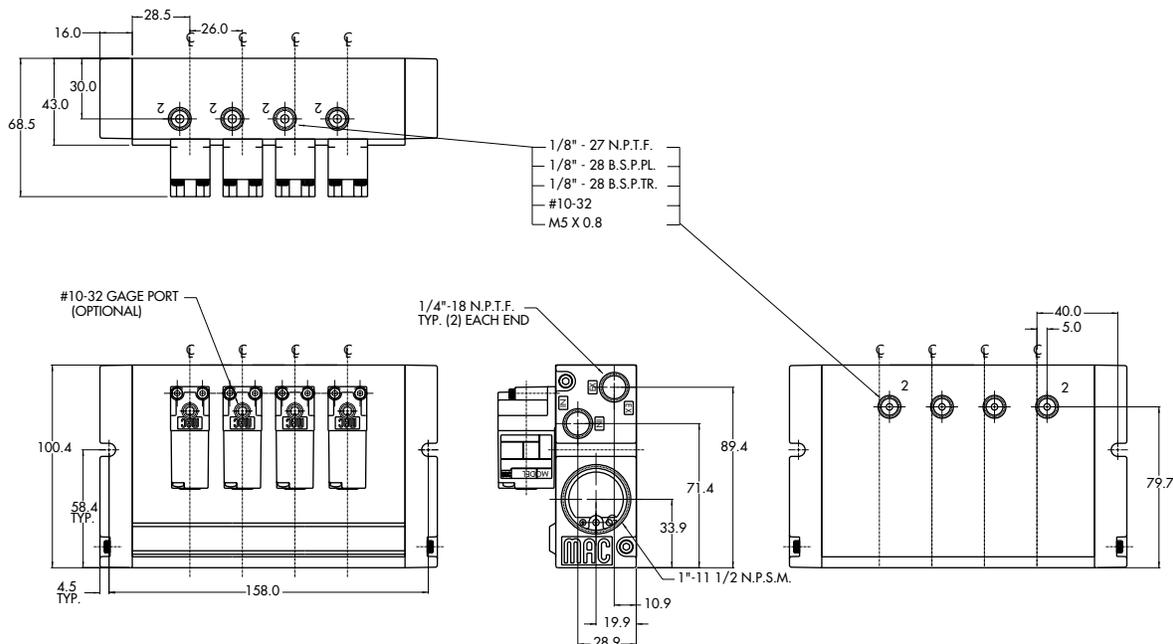
**Spare parts :**

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and valve body : 16402. • Seal between base and valve : 16447.
- Valve mounting screw (x2) : 35020. • Blanking plate valve : M-35004. • Plug-in protector : 16520.

**Options :**

- BSPP threads. • High flow up to 0.14C<sub>v</sub>, according to wattage. • Isolation of inlet and/or exhaust.

**DIMENSIONS**



Note: Bottom & side cylinder ports not available on the same station



# Direct solenoid and solenoid pilot operated valves

Function	Port size	Flow [Max]	Circuit bar mounting
<b>3/2 NO-NC</b>	<b>1/8" NPTF - #10-32 UNF</b>	<b>0.10C<sub>v</sub></b>	plug-in with integral terminal strip and side Pr. Reg.

### 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.



### HOW TO ORDER

HOW TO ORDER VALVE FOR "PLUG-IN" CIRCUIT BAR

	Universal valve
<b>Valve less base</b>	35A-B00-DxxJ-xFM
<b>Valve less base w/ gage port</b>	35A-F00-DxxJ-xFM



### SOLENOID OPERATOR >

D **XX** J- **X** FM \*

<b>XX Voltage</b>	<b>X Manual operator</b>
<b>AA</b> 120/60, 110/50	<b>1</b> Non-locking Recessed
<b>AB</b> 240/60, 220/50	<b>2</b> Locking Recessed
<b>AC</b> 24/60, 24/50	
<b>FB</b> 24VDC (1.8 W)	
<b>DA</b> 24VDC (5.4 W)	
<b>DF</b> 24VDC (12.7 W)	

HOW TO ORDER "PLUG-IN" CIRCUIT BAR WITH PRESSURE REGULATORS (TO BE ORDERED SEPARATELY)\*\*

Port size	Spacing mm	Bottom cylinder ports
<b>1/8" NPTF</b>	26	ECE35A-014A-C0-xx*
<b># 10-32 UNF</b>	26	ECE35A-014B-C0-xx*
<b>1/8" NPTF</b>	40	ECE35A-024A-C0-xx*
<b># 10-32 UNF</b>	40	ECE35A-024B-C0-xx*

Number of stations (03=3 stations)  
 Note : clic for valves mounted on base at the factory, add - 9 to the model number.  
 use 40 mm spacing for valves w/ gage port.  
 end plate kit required: M-45017.

\*\* Pressure Regulators :  
 35A-00M (Adjusting knob)  
 35A-00L (Slotted stem)  
 35A-00U (Locking stem)

\* C0 = terminal strip  
 CA = terminal strip w/light (120V)  
 CB = terminal strip w/light (240V)  
 CD = terminal strip w/light (24V)

**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>Orifice :</b>	2 mm		
<b>Flow (at 6 bar, ΔP=1bar) :</b>	1.8 W : 0.08 C <sub>v</sub> , 5.4 W : 0.1 C <sub>v</sub>		
<b>Coil :</b>	General purpose class A, continuous duty, encapsulated		
<b>Voltage range :</b>	-15% to +10% of nominal voltage		
<b>Protection :</b>	Nema 4		
<b>Power :</b>	120 VAC/60 = Inrush : 10.9 VA (0.09 AMPS)    Holding : 7.7VA (0.06 AMPS) DC VOLTS = 1.8 W to 12.7 W		
<b>Response times :</b>	24 VDC (5.4W)	Energize : 6 ms	De-energize : 2 ms
	120 VAC	Energize : 3-8 ms	De-energize : 2-7 ms

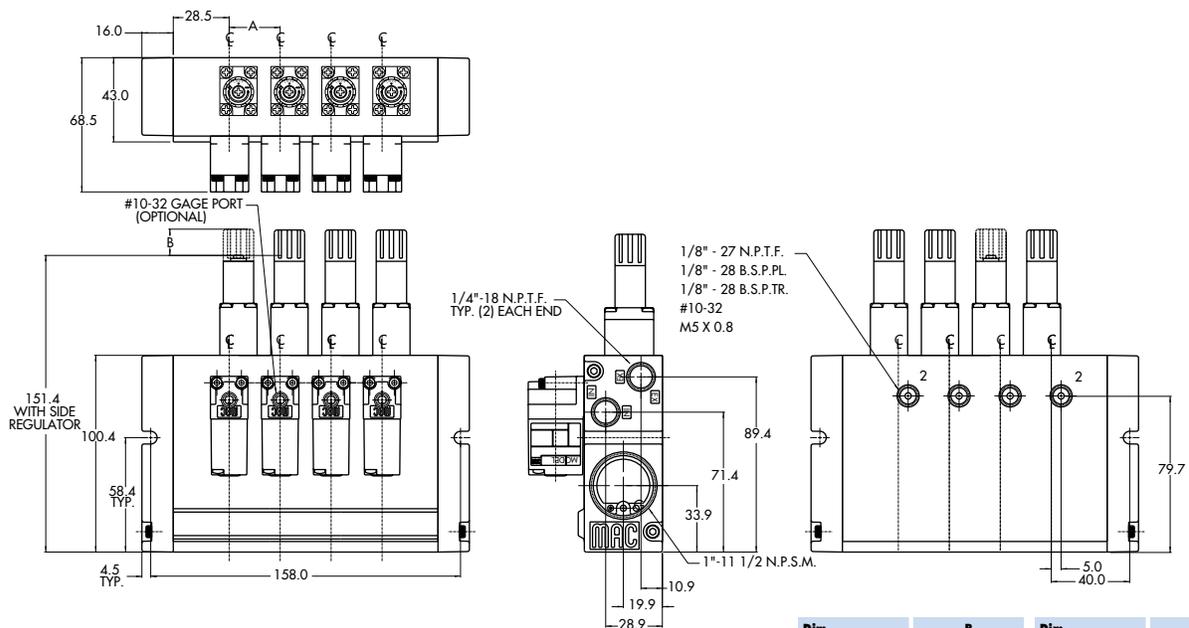
Spare parts :

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and valve body : 16402. • Seal between base and valve : 16447.
- Valve mounting screw (x2) : 35020. • Blanking plate valve : M-35004. • Blanking plate regulator : M-35005.
- Plug-in protector : 16520.

Options :

- BSPP threads. • High flow up to 0.14C<sub>v</sub>, according to wattage. • Isolation of inlet and/or exhaust.

**DIMENSIONS**



Dim.	B	Dim.	A
<b>SLOTTED LOCKING STEM</b>	6.0	<b>STANDARD SPACING</b>	26.0
<b>ADJUSTABLE KNOB</b>	13.4	<b>SPACING FOR GAUGES</b>	40.0



## Section 2

## Options



---

**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 Series

---

### 1. VOLTAGE

- D XX	X - X XX	VOLTAGE
AD		24/60
AE		200/60
AF		240/50
AG		100/50, 100/60, 110/60
DB		12 VDC (5.4 W)
DC		12 VDC (7.5 W)
DD		24 VDC (7.3 W)
DE		12 VDC (12.7 W) CLSF
DK		110 VDC (5.8 W)
DL		64 VDC (6.0 W)
DM		36 VDC (5.8 W)
DN		6 VDC (6.0 W)
DP		48 VDC (5.8 W)
DU		24 VDC (6.0 W)
EA		12 VDC (6.0 W)
FA		12 VDC (1.8 W)
FE		12 VDC (2.4 W)
FF		24 VDC (2.4 W)

### 2. WIRE LENGTH

- D XX	X - X XX	WIRE LENGTH
B		24"
C		36"
D		48"
E		72"
F		96"

### 3. MANUAL OPERATOR

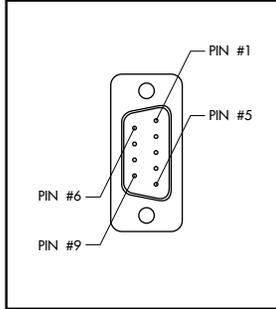
- D XX X - X XX	MANUAL OPERATOR
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

### 4. ELECTRICAL CONNECTION

- D XX X - X XX	ELECTRICAL CONNECTION
BA	Flying leads
BK	BA with protection diode
BL	BA with protection varistor
CA	1/2" NPS conduit
*FN	Plug-in with diode
*FP	Plug-in with M.O.V.
JB	Rectangular connector
JD	Rectangular connector with light
JM	Rectangular connector, male only
KA	Square connector
KB	Square connector with protection diode
KC	Square connector with protection varistor
KD	Square connector with light
KE	Square connector with light and protection diode
KF	Square connector with light and protection varistor
KJ	Square connector (male only)
KK	Square connector with protection diode (male only)
KL	Square connector with protection varistor (male only)
TA	Dual tabs
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

\* For use with the ECD and ECE style circuit bars.

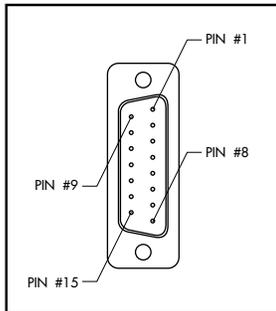
**MOD. S009**



**TECHNICAL DATA**

- Type «SUB\_D»
- Number of contacts : 9
- Solder termination (Dia. 0.6 mm/0.14 mm<sup>2</sup>/26-22 AWG)
- Operating current 5 A/contact
- Rated voltage 125 V~
- Temp. range -40° to +125°C
- Insulation resistance ≥ 5.0<sup>9</sup> Ω
- Protection class IP40 (DIN 40050)
- Number of solenoids : 7 max.
- Max. 24 V=/5.4 W per solenoid
- 2 common wires

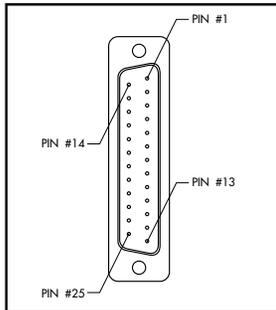
**MOD. S015**



**TECHNICAL DATA**

- Type «SUB\_D»
- Number of contacts : 15
- Solder termination (Dia. 0.6 mm/0.14 mm<sup>2</sup>/26-22 AWG)
- Operating current 5 A/contact
- Rated voltage 125 V~
- Temp. range -40° to +125°C
- Insulation resistance ≥ 5.0<sup>9</sup> Ω
- Protection class IP40 (DIN 40050)
- Number of solenoids : 12 max.
- Max. 24 V=/5.4 W per solenoid
- 3 common wires

**MOD. S025**

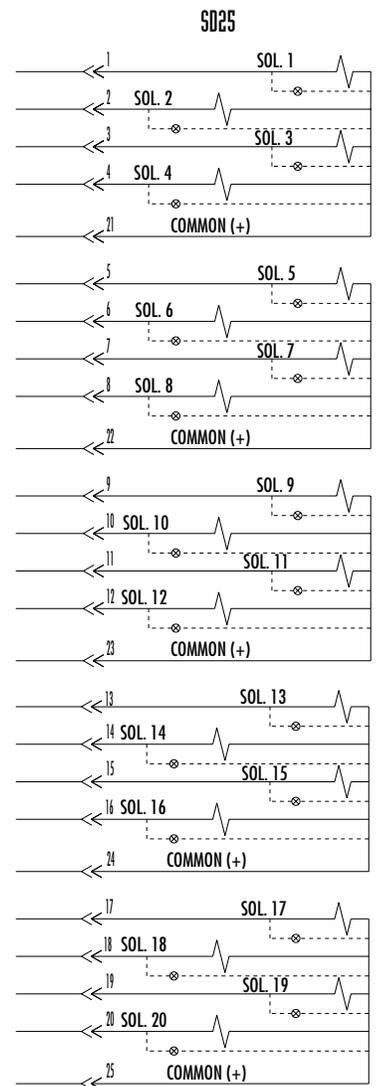
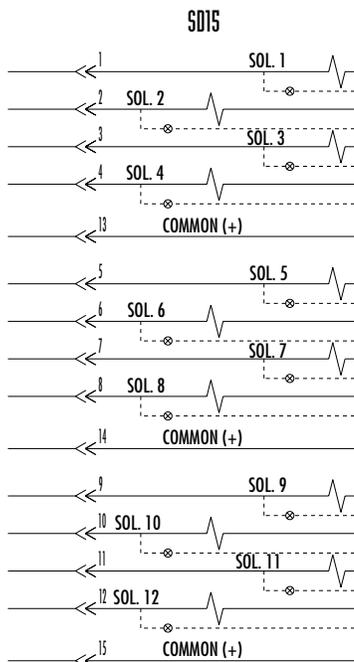
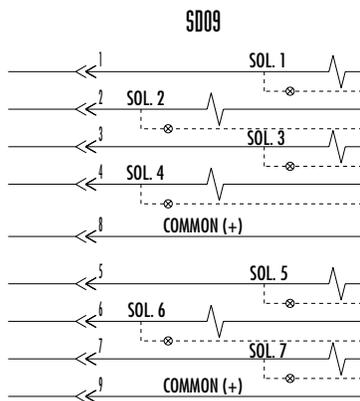
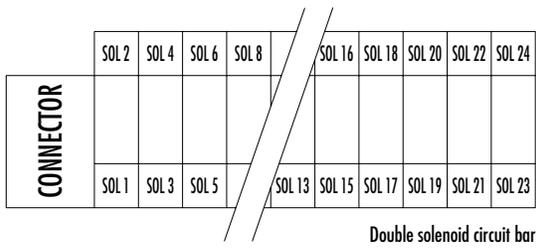
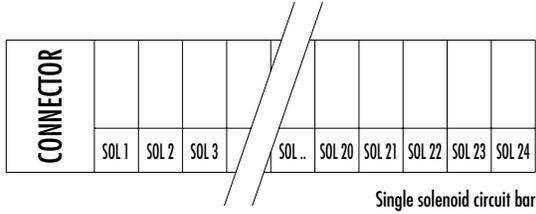


**TECHNICAL DATA**

- Type «SUB\_D»
- Number of contacts : 25
- Solder termination (Dia. 0.6 mm/0.14 mm<sup>2</sup>/26-22 AWG)
- Operating current 5 A/contact
- Rated voltage 125 V~
- Temp. range -40° to +125°C
- Insulation resistance ≥ 5.0<sup>9</sup> Ω
- Protection class IP40 (DIN 40050)
- Number of solenoids : 20 max.
- Max. 24 V=/5.4 W per solenoid
- 5 common wires

Note : Use desired MOD. number after circuit bar part number

Connector termination details





## 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 AND SERVICE PRECAUTIONS :

- A. Do not install or service MAC valves without first making sure both the air and electrical power to the machine are off and that all air has been completely bled from the system.
- B. MAC valves should only be installed and/or serviced 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 and graphic symbols. Do not install unless these symbols and the valve functions and operations are thoroughly understood.
- C. Before service, maintenance, repair or cleaning, consult local distributor or factory for Parts & Operation Sheet and information on proper cleaning and lubrication agents. Do not subject MAC valves' parts to any foreign substance including lubricants and cleaning agents not specifically recommended by MAC valves, Inc.
- D. 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 condition.

### 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.

- Do not operate outside of pressure range listed on valve label or outside of designated temperature range.
- Air supply must be clean. Contamination of valve can affect proper operation.
- 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 valve.
- If airline lubrication is used, consult catalog, parts & operation sheet, or factory for recommended lubricants.

### 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.

Series 35-45

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.

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

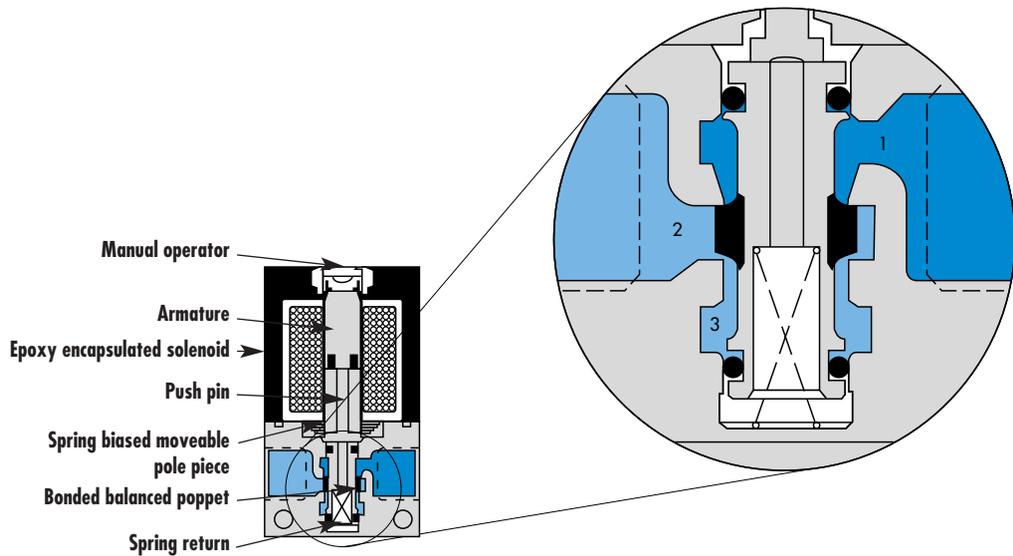
ISO 2

ISO 3

MAC 125A

MAC 250A

MAC 500A



**SERIES FEATURES**

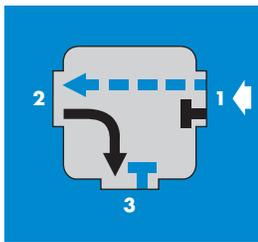
- Patented MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function — may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum, divertor, 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® — virtually burn-out proof on AC service.

**VALVE CONFIGURATIONS AVAILABLE :**

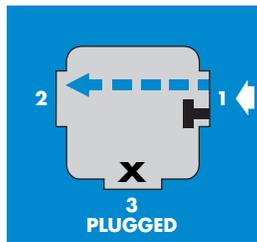
The 35 Series is a miniature 3 way or 2 way valve.  
This valve provides extremely fast response, long life and high flow in a surprisingly small package.

- 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.

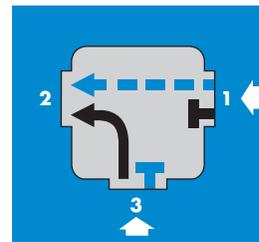
**PIPING CHART FOR INDIVIDUAL MODELS**



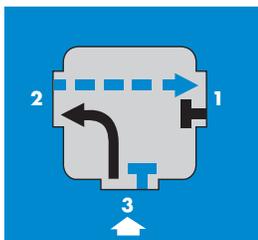
**3 Way  
Normally Closed**



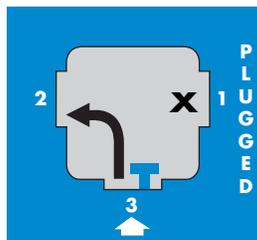
**2 Way  
Normally Closed**



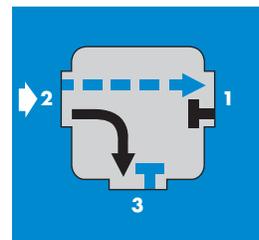
**Selector**



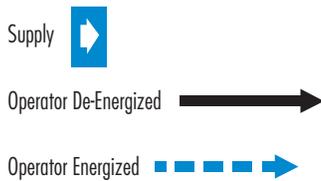
**3 Way  
Normally Open**



**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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### HOW TO ORDER

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

45

### SOLENOID OPERATOR >

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

xx Voltage	x Wire length	Manual operator	xx Electrical connection
<b>FB</b> 24 VDC (1.8 W)	<b>A</b> 18" (Flying leads)	<b>I</b> Non-locking	<b>KA</b> Square connector
<b>DA</b> 24 VDC (5.4 W)	<b>J</b> Connector		<b>KD</b> Square connector with light
<b>DF</b> 24 VDC (12.7 W)			<b>JB</b> Rectangular connector
			<b>JD</b> Rectangular connector with light
			<b>BA</b> Flying leads

700

900

82

\* Other options available, see page 353.

### OPTIONS

35LA-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 : 0.12 C <sub>v</sub> , 5.4 to 12.7 W : 0.16 C <sub>v</sub>
<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

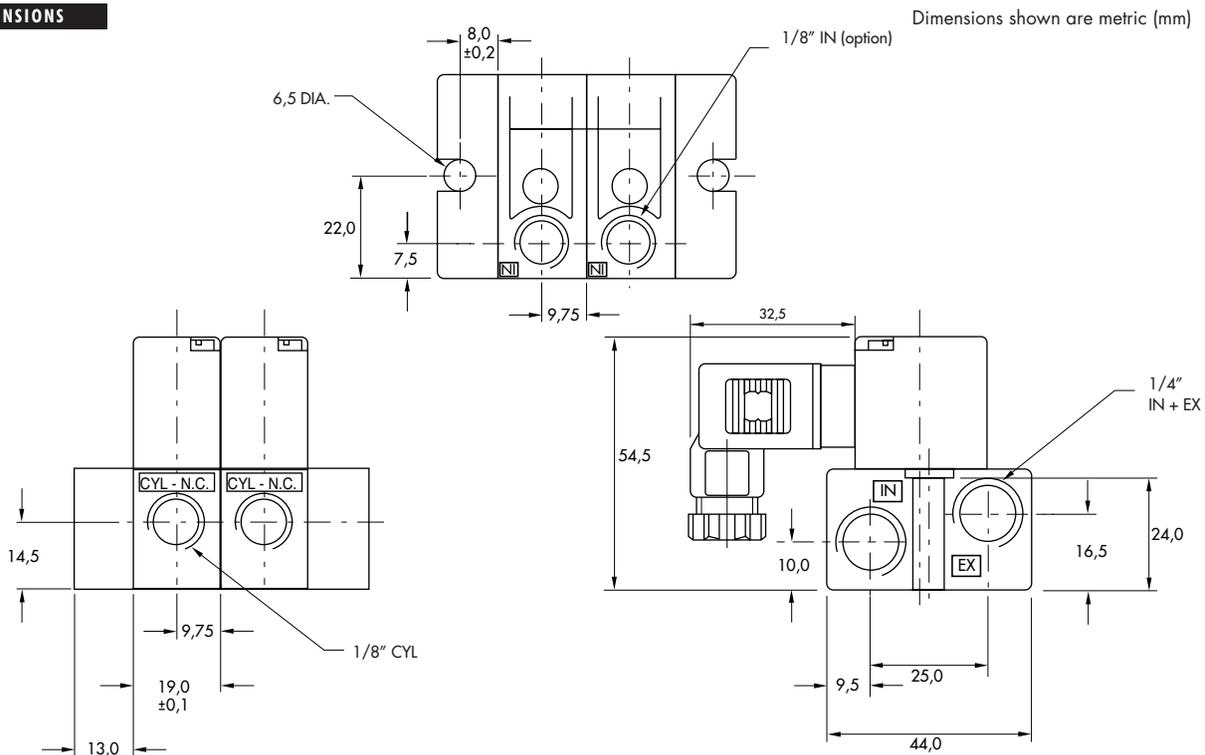
Spare parts :

- 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**



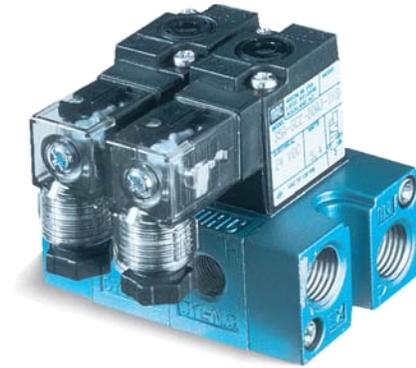


# Direct solenoid and solenoid pilot operated valves

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.



35

100

200

55

56

57

58

59

### HOW TO ORDER

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

45

### SOLENOID OPERATOR >

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
	<b>A</b> 18" (Flying leads)	<b>I</b> Non-locking	<b>KA</b> Square connector
	<b>J</b> Connector		<b>KD</b> Square connector with light
			<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

35LA-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>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

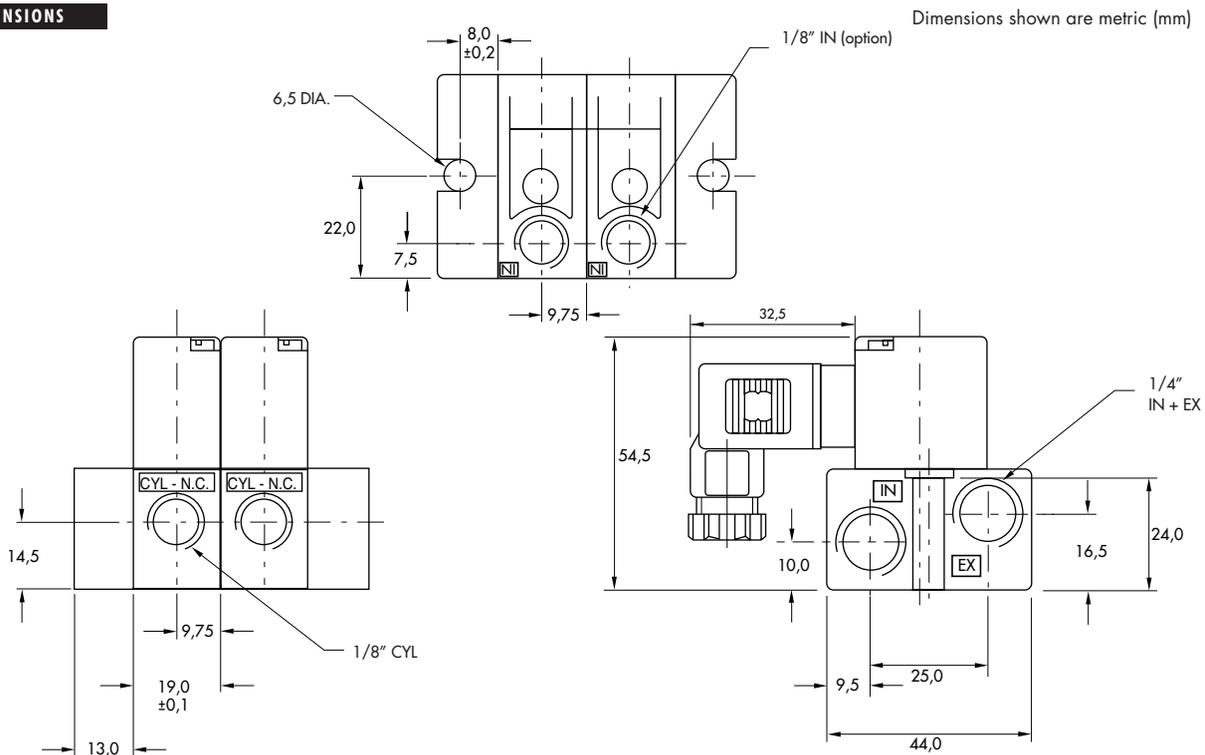
Spare parts :

- 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**





# 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

- Balanced poppet, immune to variations of pressure.
- Short stroke with high flow.
- The patented solenoid develops high shifting forces.
- Powerful return spring.
- Manual operator standard on all valves.
- 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>	35LA-B00-Dxxx-xxx	35LA-B00-Dxxx-xxx
<b># 10-32 UNF base</b>	35LA-BBE-Dxxx-xxx	35LA-BBF-Dxxx-xxx
<b>1/8" NPTF base</b>	35LA-BAE-Dxxx-xxx	35LA-BAF-Dxxx-xxx

#### BOTTOM CYLINDER PORTS

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

#### SOLENOID OPERATOR ▶

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>FB</b> 24 VDC (1.8 W)	<b>A</b> 18" (Flying leads)	<b>I</b> Non-locking	<b>KA</b> Square connector
<b>DA</b> 24 VDC (5.4 W)	<b>J</b> Connector		<b>KD</b> Square connector with light
<b>DF</b> 24 VDC (12.7 W)			<b>BA</b> Flying leads

\* 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

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

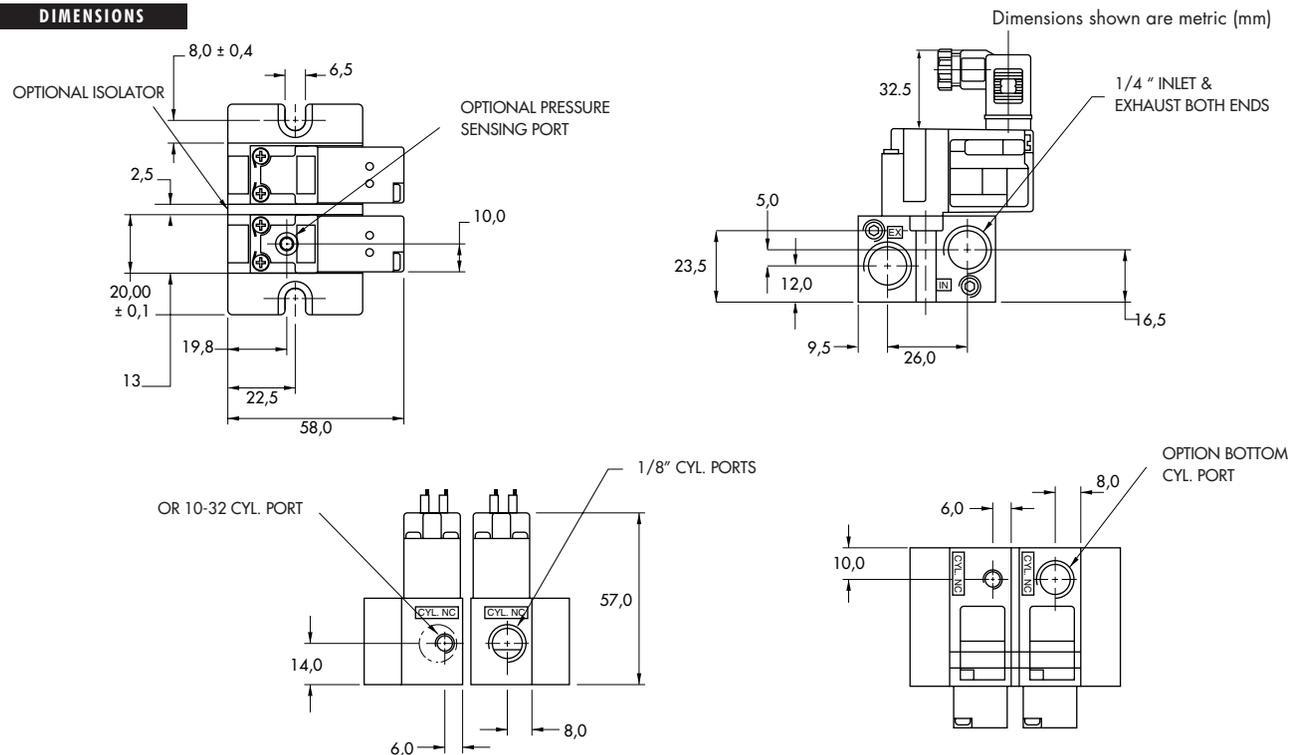
**TECHNICAL DATA**

<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>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

- 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>	35LA-B00-Dxxx-xxx	35LA-B00-Dxxx-xxx
<b># 10-32 UNF base</b>	35LA-BBJ-Dxxx-xxx	35LA-BBK-Dxxx-xxx
<b>1/8" NPTF base</b>	35LA-BAJ-Dxxx-xxx	35LA-BAK-Dxxx-xxx

#### BOTTOM CYLINDER PORTS

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

#### SOLENOID OPERATOR >

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

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
<b>FB</b> 24 VDC (1.8 W)	<b>A</b> 18" (Flying leads)	<b>I</b> Non-locking	<b>KA</b> Square connector
<b>DA</b> 24 VDC (5.4 W)	<b>J</b> Connector		<b>KD</b> Square connector with light
<b>DF</b> 24 VDC (12.7 W)			<b>BA</b> Flying leads

\* 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

35LA-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**

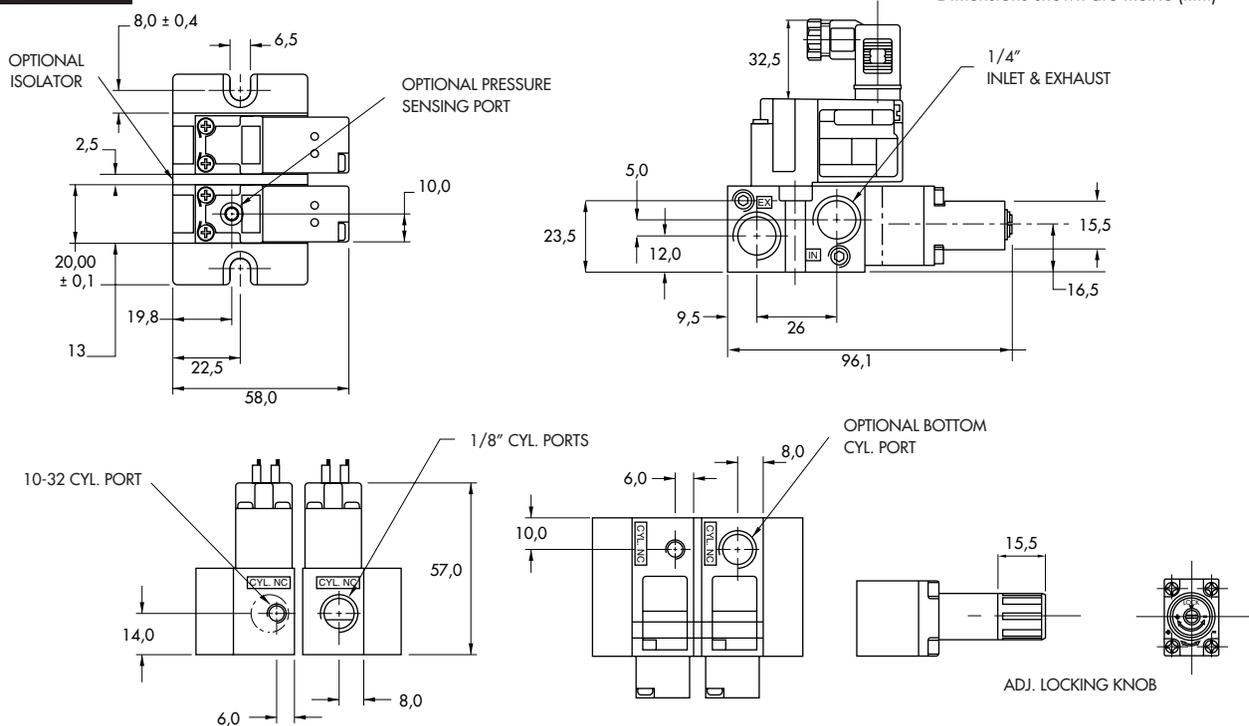
<b>Fluid :</b>	Compressed air, vacuum, inert gases
<b>Pressure range :</b>	Vacuum to 120 PSI
<b>Lubrication :</b>	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
<b>Filtration :</b>	40 µ
<b>Temperature range :</b>	0°F to 120°F (-18°C to 50°C)
<b>Flow (at 6 bar, 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>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

- 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**

Dimensions shown are metric (mm)





0 p t i o n s

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

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VALVE CODE >

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

**OPTIONS AVAILABLE FOR**

- Solenoid valves 35L Series

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## 1. VOLTAGE

### - D XX X - X XX VOLTAGE

<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)

### 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.



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