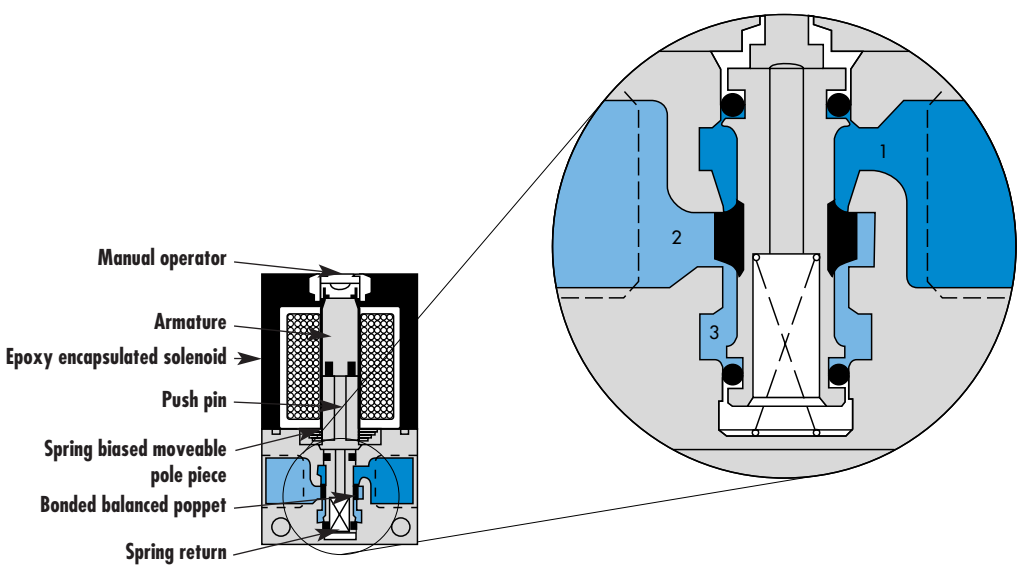
Individual mounting

inline

Manifold mounting

stacking | sub-base non "plug-in" | sub-base with pressure regulators



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.
- Pattended MACSOLENOID® — virtually burn-out proof on AC service.

Consult "Precautions" page 356 before use, installation or service of MAC Valves.

MAC®

Series 35

100% OF PRODUCTION TESTED 100%

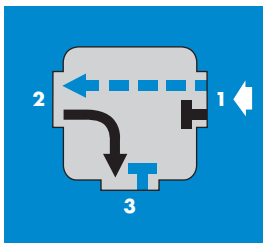
WARRANTY 18 MONTHS

VALVE CONFIGURATIONS AVAILABLE :

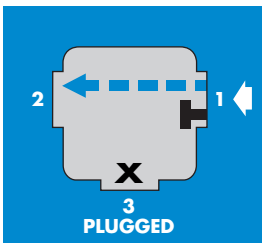
The 35 Series is a miniature 3 way or 2 way valve.
This valve provides extremely fast response, long life and high flow in a surprisingly small package.

- 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.

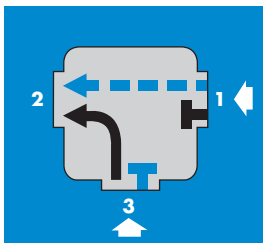
PIPING CHART FOR INDIVIDUAL MODELS



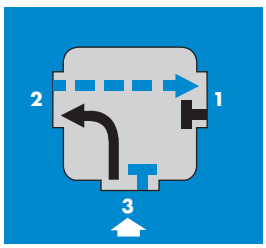
3 Way
Normally Closed



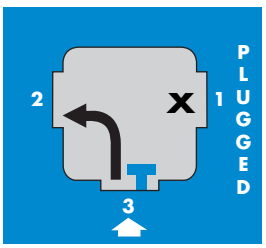
2 Way
Normally Closed



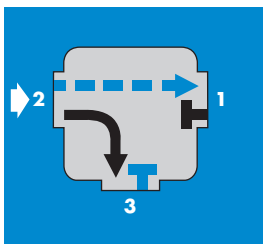
Selector



3 Way
Normally Open



2 Way
Normally Open



Divertor

Supply

Operator De-Energized

Operator Energized

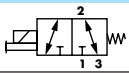
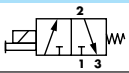
Consult "Precautions" page 356 before use, installation or service of MAC Valves.

Function	Port size	Flow (Max)	Individual mounting	Series
3/2 NO-NC, 2/2 NO-NC	**1/8"**	**0.17 C_v**	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.

HOW TO ORDER

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

SOLENOID OPERATOR ➤ D ***XX X- X XX****

XX	Voltage
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
FB	24 VDC (1.8 W)
DA	24 VDC (5.4 W)
DF	24 VDC (12.7 W)

X	Wire length
A	18" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
KA	Square connector
KD	Square connector with light
JB	Rectangular connector
JD	Rectangular connector with light
BA	Flying leads

* Other options available, see page 353.

OPTIONS

35A-CAX-D*xxx-xxx*

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

MAC

Series 35

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

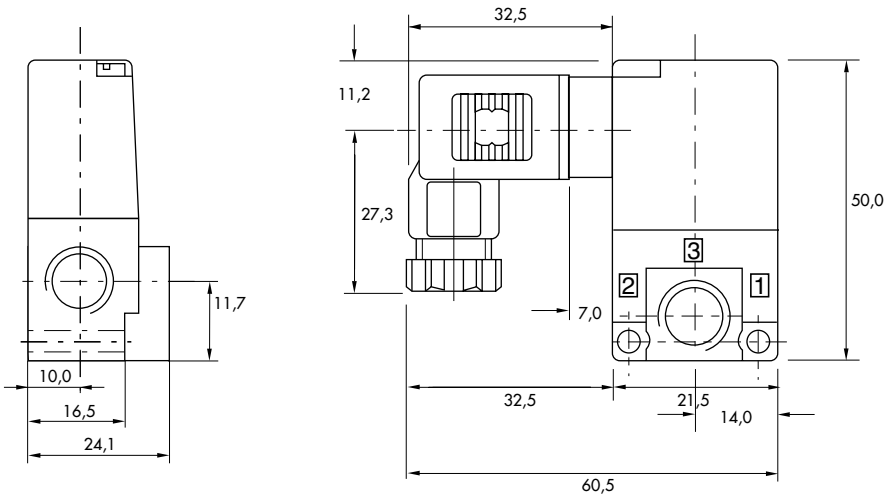
Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.08 C_v, 5.4 W : 0.15 C_v		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA	Holding : 7.7 VA	
	= 1.8 to 12.7 W		
Response times :	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_v, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)

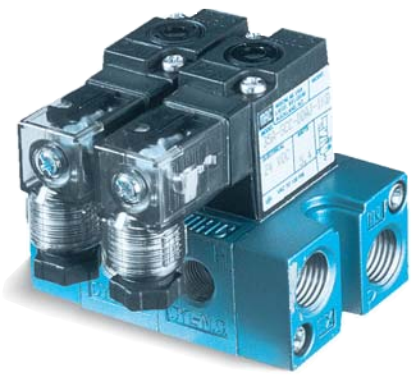


Consult "Precautions" page 356 before use, installation or service of MAC Valves.

Function	Port size	Flow (Max)	Manifold mounting	Series
3/2 NO-NC, 2/2 NO-NC	**# 10-32, 1/8"**	**0.16 C_v**	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.



HOW TO ORDER

Port size	NC only valve 	NO only valve 
1/8" NPTF	35A-SAC-D*XXX-XXX*	35A-SAD-D*XXX-XXX*
# 10-32 UNF	35A-SBC-D*XXX-XXX*	35A-SBD-D*XXX-XXX*

SOLENOID OPERATOR ➤ D *XX X- X XX**

XX	Voltage
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
FB	24 VDC (1.8 W)
DA	24 VDC (5.4 W)
DF	24 VDC (12.7 W)

X	Wire length
A	18" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
KA	Square connector
KD	Square connector with light
BA	Flying leads

* 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-D*XXX-XXX*
- Bottom Inlet

Consult "Precautions" page 356 before use, installation or service of MAC Valves.

MAC

Series 35

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.12 C_v, 5.4 to12.7 W : 0.16 C_v		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA	Holding : 7.7 VA	
	= 1.8 to 12.7 W		
Response times :	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 :

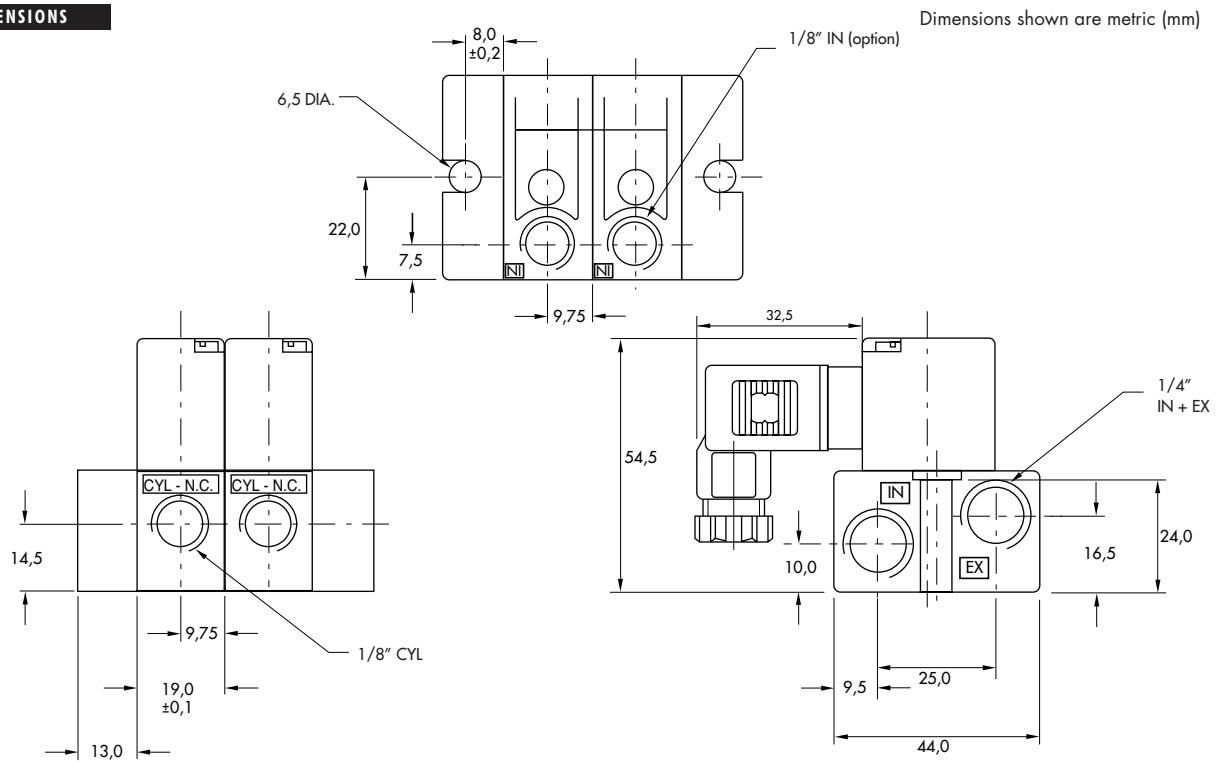
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valves) : 16433.
- Tie-rod (x2) : 19813. • Inlet isolator : N-35002. • Exhaust isolator : N-35003. • Inlet & Exhaust isolator : N-35001.

Options :

- BSPP threads. • High flow up to 0.25 C_v, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)



Consult "Precautions" page 356 before use, installation or service of MAC Valves.

Function	Port size	Flow (Max)	Manifold mounting	Series
3/2 NO-NC, 2/2 NO-NC	**# 10-32, 1/8"**	**0.10 C_v**	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.

HOW TO ORDER

SIDE CYLINDER PORTS

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

BOTTOM CYLINDER PORTS

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

SOLENOID OPERATOR ➤ D *XX X- X XX**

XX	Voltage
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
FB	24 VDC (1.8 W)
DA	24 VDC (5.4 W)
DF	24 VDC (12.7 W)

X	Wire length
A	18" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
KA	Square connector
KD	Square connector with light
BA	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

35A-EXX-D*xxx-xxx* — - N.C. only valve

35A-FXX-D*xxx-xxx* — - universal w/gage port

35A-OXX — - no valve body (base only)

MAC

Series 35

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.09 C_v, 5.4 to 12.7 W : 0.1 C_v		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA	Holding : 7.7 VA	
	= 1.8 to 12.7 W		
Response times :	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 :

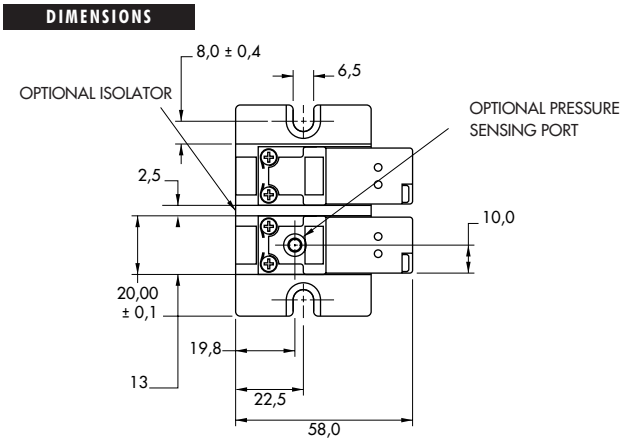
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
- Pressure seal (between bases) : 16461. • Tie-rod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.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

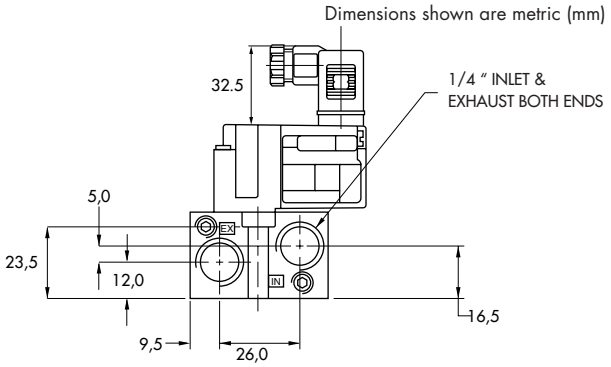
Options :

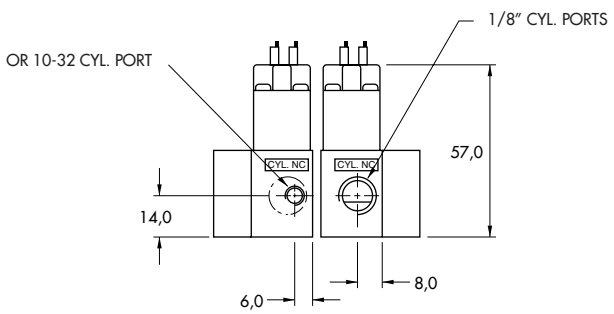
- BSPP threads. • High flow up to 0.18 Cv, according to wattage and high flow mod.

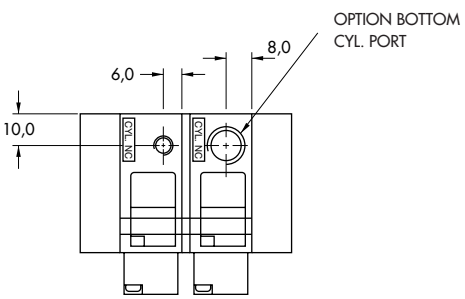
DIMENSIONS

Dimensions shown are metric (mm)









Consult "Precautions" page 356 before use, installation or service of MAC Valves.

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

OPERATIONAL BENEFITS

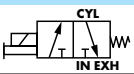
1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
5. Manual operator standard on all valves.
6. Burn-out proof solenoid on AC service.

HOW TO ORDER

SIDE CYLINDER PORTS

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

BOTTOM CYLINDER PORTS

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

SOLENOID OPERATOR ➤ D ***XX X- X XX****

XX	Voltage
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
FB	24 VDC (1.8 W)
DA	24 VDC (5.4 W)
DF	24 VDC (12.7 W)

X	Wire length
A	18" (Flying leads)
J	Connector

X	Manual operator
1	Non-locking
2	Locking

XX	Electrical connection
KA	Square connector
KD	Square connector with light
BA	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

35A-EXX-D*xxx-xxx* — N.C. only valve

35A-FXX-D*xxx-xxx* — universal w/gage port

35A-OXX — no valve body (base w/regulator)

Consult "Precautions" page 356 before use, installation or service of MAC Valves.

MAC

Series 35

100% OF PRODUCTION TESTED 100%

WARRANTY 18 MONTHS

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases		
Pressure range :	Vacuum to 120 PSI		
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration :	40 µ		
Temperature range :	0°F to 120°F (-18°C to 50°C)		
Flow (at 6 bar, ΔP=1bar) :	1.8 W : 0.09 C_v, 5.4 to 12.7 W : 0.1 C_v		
Coil :	General purpose class A, continuous duty, encapsulated		
Voltage range :	-15% to +10% of nominal voltage		
Protection :	Consult factory		
Power :	~ Inrush : 10.9 VA	Holding : 7.7 VA	
	= 1.8 to 12.7 W		
Response times :	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 :

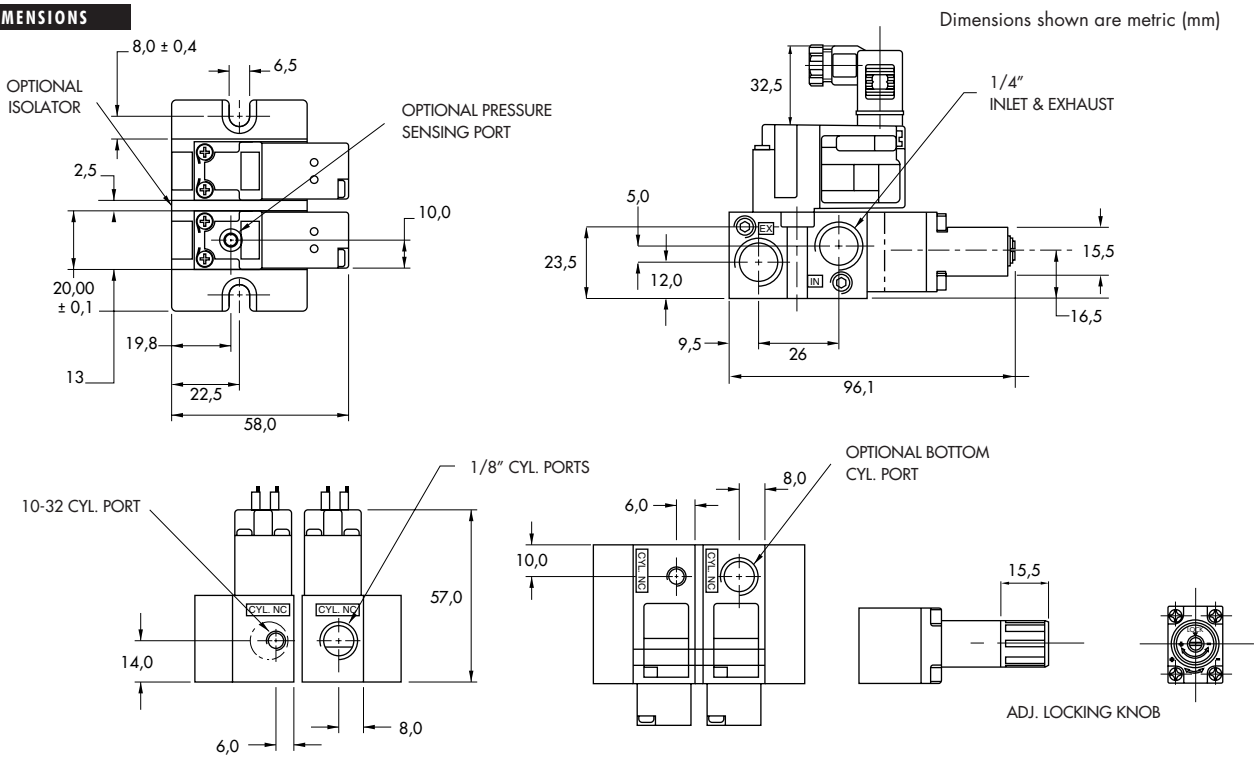
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
- Pressure seal (between bases) : 16461. • Tie-rod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.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

Options :

- BSPP threads. • High flow up to 0.18 Cv, according to wattage and high flow mod.

DIMENSIONS

Dimensions shown are metric (mm)



Consult "Precautions" page 356 before use, installation or service of MAC Valves.

HOW TO ORDER

BODY OPTIONS / SOLENOID OPTIONS

35A - X X X - (DXXX - XXX) - FM

BODY TYPE

Inline
- ***A*** Individual Inline
- ***D*** Indiv. Inline w/2 Manifold Mount Ports

Manifold
- ***E*** Manifold Body (N.C. Only)
- ***G*** Manifold Body w/Gage Port (N.C. Only)

PORT SIZE

- ***O*** Manifold Body Only
- ***B*** #10-32 UNF (Inline Only)
- ***D*** M5 (Inline Only)

VALVE FUNCTION/MANIFOLD TYPE

- ***O*** Manifold Body Only
- ***B*** 3 way N.C. Only (Inline)

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

BODY OPTIONS / SOLENOID OPTIONS

45A - X X X - (DXXX - XXX) - FM

BODY TYPE

Inline
- ***A*** 4 Port Body
- ***B*** 5 Port Body
- ***D*** 4 Port Body "O" Ring Mount -All Bottom Ports
- ***E*** 5 Port Body "O" Ring Mount -3 Bottom Ports Inlet and Cylinders
- ***F*** 4 Port Body "O" Ring Mount-Bottom Cylinder Ports Only

Base Mount
- ***O*** For Base Only - No Valve
- ***L*** Base Mount Body
- ***M*** Base Mount Body with Gage Port

PORT SIZE

- ***O*** Manifold Body Only
- ***A*** 1/8" NPT
- ***B*** #10-32 UNF
- ***C*** 1/8" BSPPL
- ***D*** M5 (Metric)
- ***F*** #10-32 UNF Bottom Ports
- ***G*** M5 Bottom Ports
- ***H*** "O" Ring Mount Ports
- ***J*** 1/8" NPT Bottom Ports
- ***K*** 1/8" BSPPL Bottom Ports

VALVE FUNCTION/MANIFOLD TYPE

Inline
- ***1*** No Flow Controls

Bases - Regulators
- ***O*** Valve Only - No Base
- ***A*** Individual Base
- ***C*** Manifold Base
- ***E*** Manifold w/Regulator w/Slotted Stem
- ***G*** Manifold w/Regulator w/Locking Slotted Stem
- ***J*** Manifold w/Regulator w/Locking Knob

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

SOLENOID OPTIONS

D - X X X - X X X - FM

VOLTAGE

- ***FR*** 12VDC (0.6 W)
- ***FS*** 24VDC (0.6 W)

LEAD LENGTH

- ***A*** 18" Leads
- ***B*** 24" Leads
- ***C*** 36" Leads
- ***D*** 48" Leads
- ***E*** 72" Leads
- ***J**** 6" Leads

*Use "J" for external plug-in connectors

MANUAL OPERATOR

- ***0*** No operator
- ***1*** Non-locking Recessed
- ***2*** Locking Recessed
- ***3*** Non-locking Extended
- ***4*** Locking Extended

ELECTRICAL CONNECTION

- ***BA*** Grommet
- ***CA*** Conduit 1/2" NPS†
- ***CM*** Metal Conduit 1/2" NPS†
- ***CN*** Metal Conduit w/grd. 1/2" NPS†

External Plug-in
- ***FM*** Plug-in (For ECD & ECE Bar)
- ***JB*** Rectangular Plug-in†
- ***JM*** Rectangular Male only†
- ***KA*** Mini Plug-in
- ***KJ*** Mini Plug-in Male only
- ***TA*** Dual Tabs (.110) Plain
- ***TJ*** Dual Tabs (.110) Plain

† Available on individual valves and circuit bars.

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.

Consult "Precautions" page 364 before use, installation or service of MAC Valves

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

VALVE CODE ➤ **-D XX X - X XX**
1 2 3 4

OPTIONS AVAILABLE FOR

- Solenoid valves 35, 45 and 82 Series

MAC

OPTIONS

1. VOLTAGE

-D XX X -X XX	VOLTAGE
AA	120/60, 110/50
AB	240/60, 220/50
AC	24/60, 24/50
AD	24/60
AE	200/60
AF	240/50
AG	100/50, 100/60, 110/60
DA	24 VDC (5.4 W)
DB	12 VDC (5.4 W)
DC	12 VDC (7.5 W)
DD	24 VDC (7.3 W)
DE	12 VDC (12.7 W) - CLSFonly
DF	24 VDC (12.7 W) - CLSF only
DK	110 VDC (4.7 W)
DL	64 VDC (6 W)
DM	36 VDC (5.3 W)
DN	6 VDC (6 W)
DP	48 VDC (5.8 W)
DU	24 VDC (6 W)
EA	12 VDC (6 W)
FA	12 VDC (1.8 W)
FB	24 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
A	18″
B	24″
C	36″
D	48″
E	72″
F	96″
J	For external plug-in connector (“J”, “K” & “T” type electrical connection)
P	For plug-in valves (82 Series only)

Consult “Precautions” page 356 before use, installation or service of MAC Valves.

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.)
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.)
FM	Plug-in
FN	Plug-in with diode
FP	Plug-in with M.O.V.

* To be used with 82 Series only
** Inline valves only for 35 & 45 series. No restrictions for 82 series.

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 :

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

SERVICE PRECAUTIONS :

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

WARNING:

Under no circumstances are Mac valves to be used 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.