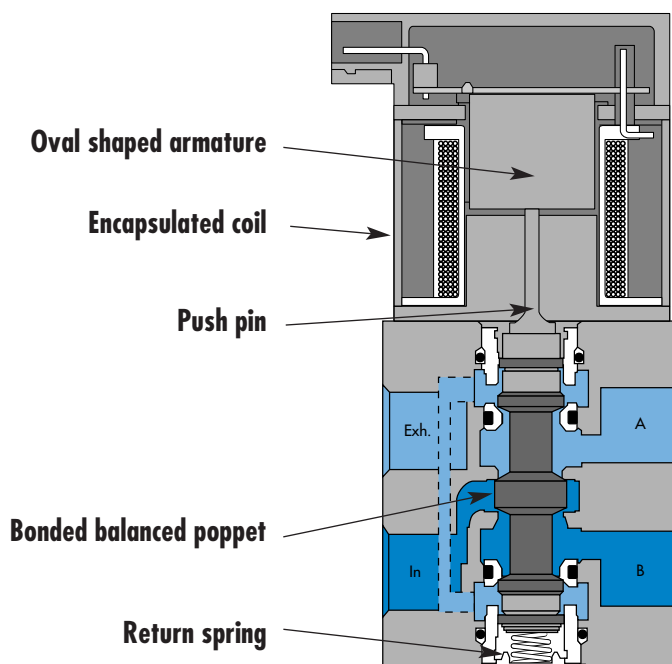


Individual mounting

Inline	
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Manifold mounting

Stacking	Manifold base "plug-in"	Manifold base "plug-in" with pressure regulators	Manifold base "plug-in" with flow controls	Manifold base "plug-in" with PR & FC
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SERIES FEATURES

- Patented high force 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 available.
- Low wattage DC solenoids — down to 1.3 watts.
- Rectified AC voltage.

Series

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48P

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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

Function	Port size	Flow [Max]	Individual mounting	Series
4/2	1/8" - # 10-32	0.3 C_v	Inline	

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Patented solenoid develops high shifting forces.
3. Short stroke with high flow.
4. Higher forces result in lower wattages for given flow.
5. Powerful return spring.



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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

Port size	Single Operator		Double Operator	
	Without flow controls	With flow controls	Without flow controls	With flow controls
1/8" NPTF	46A-AA1-J xxx-xxx	46A-AA2-J xxx-xxx	46A-GA1-J xxx-xxx	46A-GA2-J xxx-xxx
# 10-32	46A-AB1-J xxx-xxx	46A-AB2-J xxx-xxx	46A-GB1-J xxx-xxx	46A-GB2-J xxx-xxx

SOLENOID OPERATOR ➤

J **xxx-xxx*** (-G) Add "G" for ground

XX Voltage	X Wire length	X Manual operator	XX Electrical connection
Single & double solenoid	** O No leads	1 Non-locking recessed	BA Flying leads
AA 120 VAC (5.4W)	A 18"	2 Locking recessed	GA MAC JAC solenoid plug-in
DA 24 VDC (5.4W)	B 24"		GG MAC JAC solenoid plug-in with rectifier
DB 12 VDC (5.4W)	C 36"		JB Rectangular connector
Single solenoid only			JD Rectangular connector with light
DC 24 VDC (2.4W)			KA Mini square connector
DD 12 VDC (2.4W)			KD Mini square connector with light

* Other options available, see page 317.

** Use with rectangular and mini connectors

Note: - AC voltage requires connector with rectifier.

- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.

Double solenoid requires minimum 5.4 watts.

OPTIONS

46A-AA1-J**xxx-xxx**

G Use with O ring mount (body option 'D' & 'H')

- A** Single operator - 4 port body with side ports
- C** Single operator - 4 port body with bottom ports (No side ports - M5 or #10-32 ONLY)
- D** Single operator - Bottom O ring mount - All ports (No side ports)
- F** Single operator - Bottom O ring mount - Cylinder ports only - Side inlet & exhaust
- G** Double operator - 4 Port body - With side ports
- H** Double operator - Bottom O ring mount - All ports (No side ports)

Examples : 46A-DG1-Jxxx-xxx (Bottom O ring mount - all ports)
46A-CB1-Jxxx-xxx (4 port body with bottom ports - no side ports)

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 100 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)
Orifice :	3,3 mm
Flow :	1.8W : (0.20 C _v) – 2.4W : (0.20 C _v) – 5.4W : (0.30 C _v)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4W – 2.4W – 1.8W

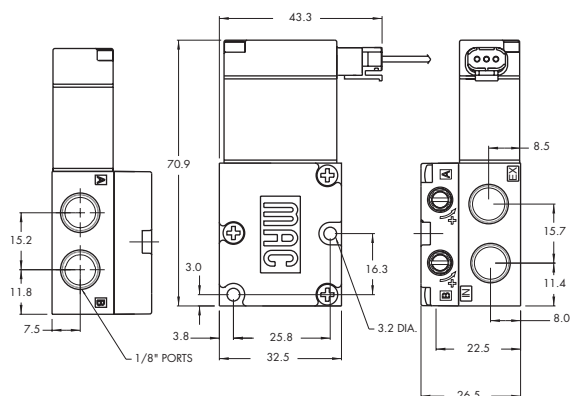
Options :

- BSPP threads

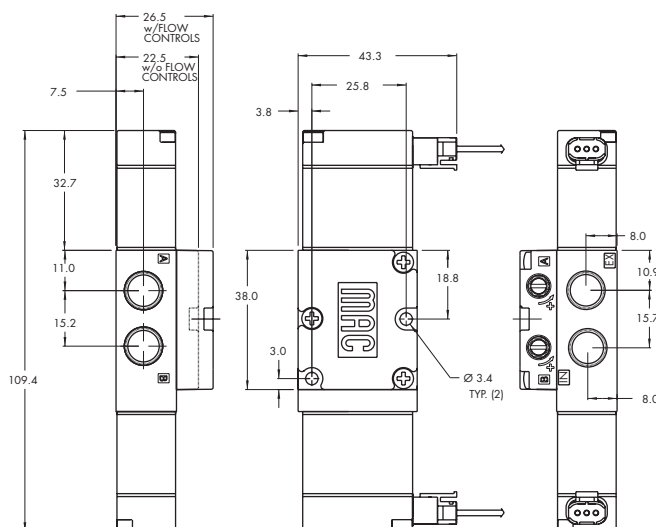
DIMENSIONS

Dimensions shown are metric (mm)

Single solenoid



Double solenoid



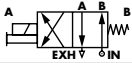
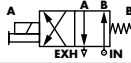
Function	Port size	Flow [Max]	Manifold Mounting	Series
4/2	1/8" - # 10-32	0.3 C_v	Stacking	

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Patented solenoid develops high shifting forces.
3. Short stroke with high flow.
4. Higher forces result in lower wattages for given flow.
5. Powerful return spring.



HOW TO ORDER

Port size	Without flow controls	With flow controls
		
1/8" NPTF	46A-SA1-J XXX-XXX	46A-SA2-J XXX-XXX
# 10-32	46A-SB1-J XXX-XXX	46A-SB2-J XXX-XXX

SOLENOID OPERATOR ➤

J **XXX-XXX*** (-G) Add "G" for ground

XX	Voltage	X	Wire length	X	Manual operator	XX	Electrical connection
AA	120 VAC (5.4W)	A	18"	1	Non-locking recessed	BA	Flying leads
DA	24 VDC (5.4W)	B	24"	2	Locking recessed	GA	MAC JAC solenoid plug-in
DB	12 VDC (5.4W)	C	36"			GB	MAC JAC solenoid plug-in with diode
DC	24 VDC (2.4W)					GG	MAC JAC solenoid plug-in with rectifier
DD	12 VDC (2.4W)						

* Other options available, see page 317.

Note : - AC voltage requires connector with rectifier.

- With the MAC JAC, washdown capability is possible. Consult factory for washdown modification number.

End plate kit required (port size 1/4") : M-46001-01.

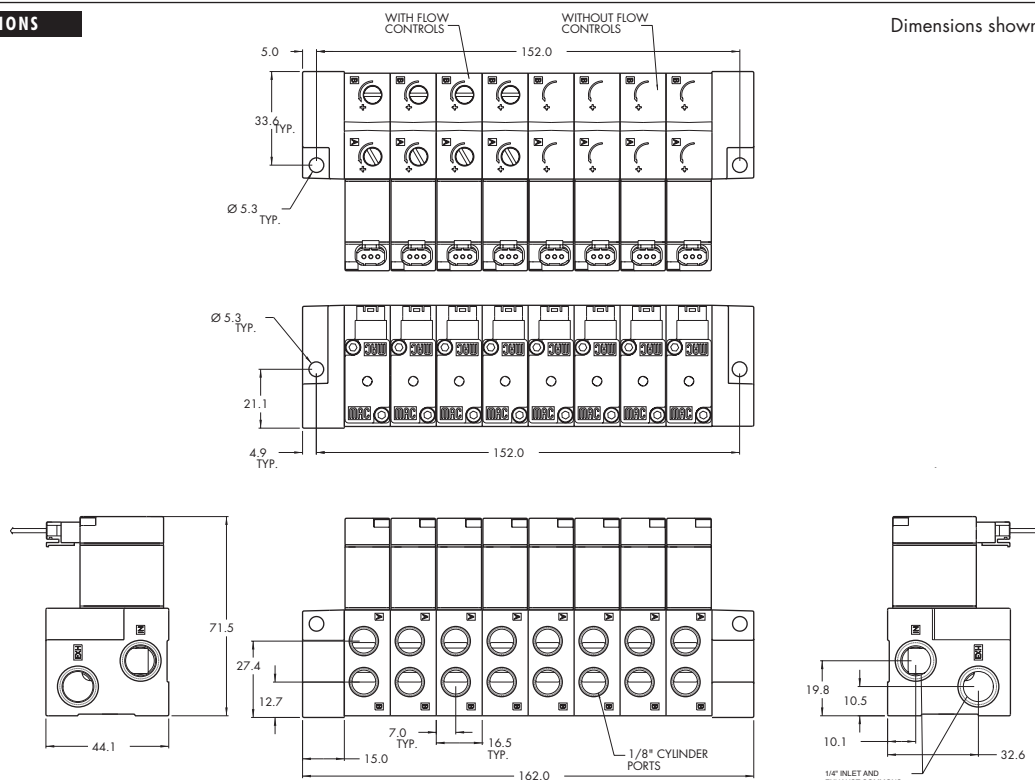
TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 100 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C _v) – 2.4W : (0.20 C _v) – 5.4W : (0.30 C _v)
Coil :	Class A wire (#22 AWG x 18), continuous duty
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4W – 2.4W – 1.8W
Response times : (with 5.4 W coil)	Energize : 7.20 ms De-energize : 4.20ms

- Options :
- BSPP threads
- Spare parts :
- Inlet isolator : 28494 • Exhaust isolator : 28493 • Tie rod (x2) : 79411

DIMENSIONS

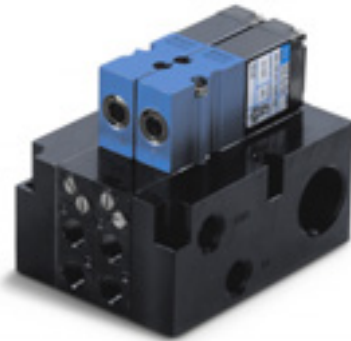
Dimensions shown are metric (mm)



Function	Port size	Flow [Max]	Manifold mounting	Series
4/2	1/8" - 5/32 O.D. Pressed-in tube receptacles	0.3 C_v	Manifold base "plug-in"	

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Patented solenoid develops high shifting forces.
3. Short stroke with high flow.
4. Higher forces result in lower wattages for given flow.
5. Powerful return spring.



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ISO 01

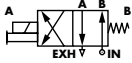
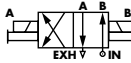
ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

Port size	Single solenoid	Double solenoid
		
Valve less base	46A-L00-00-J XX P- XXX	46A-N00-00-J XX P- XXX
1/8" NPTF	46A-LSA-AC-J XX P- XXX	46A-NSA-BL-J XX P- XXX
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AC-J XX P- XXX	46A-NSF-BL-J XX P- XXX

SOLENOID OPERATOR ➤

J **XX** P-**XXX*** (-G) Add "G" for ground

XX Voltage	X Manual operator	XX Electrical connection
Single & double solenoid		
AA 120 VAC (5,4W)	1 Non-locking	FA Base plug-in
AC 24 VAC (5,4W)	2 Locking	FB Base plug-in with diode
DA 24 VDC (5,4W)		FG Base plug-in with rectifier
DB 12 VDC (5,4W)		
Single solenoid only		
DC 24 VDC (2,4W)		
DD 12 VDC (2,4W)		

* Other options available, see page 317.

Note : AC voltage requires connector with rectifier. Double solenoid requires minimum 5.4 watts.

OPTIONS

46A-LSB-AC-J XX P- XXX	
C Single solenoid - Side cylinder ports	
L Single & double solenoid - Bottom cylinder ports	
O Base only - no valve	
L Single solenoid - Base mount body	
M Single solenoid - Base mount body with gage port	
N Double solenoid - Base mount body	
P Double solenoid - Base mount body with gage port	

Example : base only : 46A-OSA-AC.

End plate kit required (port size 1/4") : M-46003-01.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 100 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)
Orifice :	3.3 mm
Flow :	1.8W : (0.20 C _v) – 2.4W : (0.20 C _v) – 5.4W : (0.30 C _v)
Coil :	Epoxy encapsulated – Class A wires – 100% ED
Voltage range :	-15% to +10% of nominal voltage
Protection :	IP54 (electrical connection)
Power :	5.4W – 2.4W – 1.8W
Response times :	Energize : 7.20 ms De-energize : 4.20ms

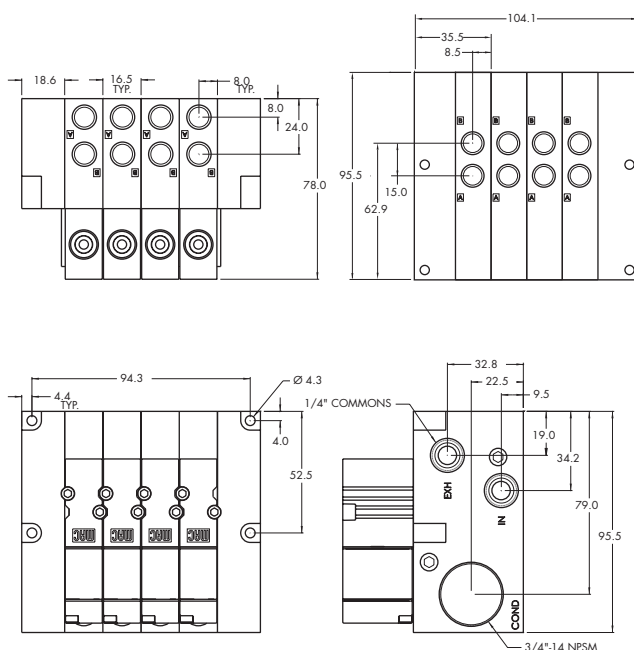
Options :

- BSPP threads

Spare parts :

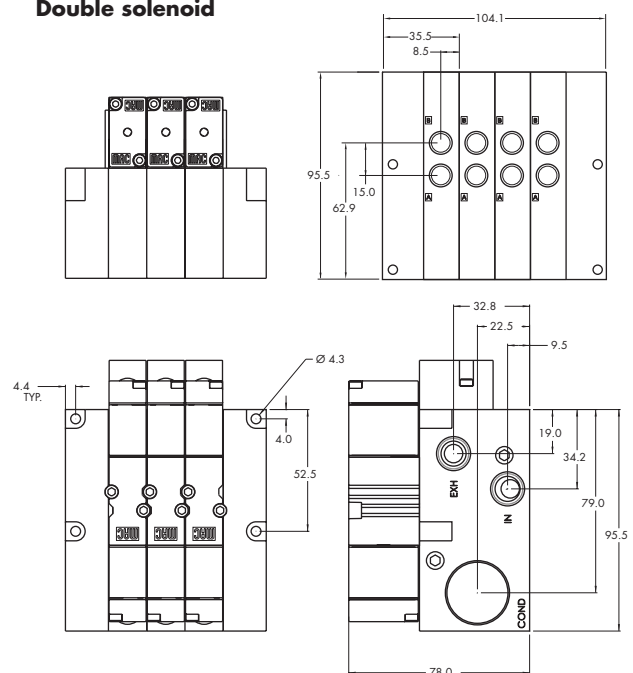
- Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002
- Tie rod (x2) : 79443

DIMENSIONS



Dimensions shown are metric (mm)

Double solenoid



Function	Port size	Flow [Max]	Manifold mounting	Series
4/2	1/8" - 5/32 O.D. Pressed-in tube receptacles	0.3 C_v	Manifold base "plug-in" with pressure regulators	

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Patented solenoid develops high shifting forces.
3. Short stroke with high flow.
4. Higher forces result in lower wattages for given flow.
5. Powerful return spring.



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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

Port size (Bottom ports only)	Model number
Valve less base	46A-L00-00-J XX P- XXX
1/8" NPTF	46A-LSA-AJ-J XX P- XXX
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AJ-J XX P- XXX

SOLENOID OPERATOR ➤

J **XX** P-**XXX*** (-G) Add "G" for ground

XX Voltage	X Manual operator	XX Electrical connection
AA 120 VAC (5.4W)	1 Non-locking recessed	FA Base plug-in
DA 24 VDC (5.4W)	2 Locking recessed	FB Base plug-in with diode
DB 12 VDC (5.4W)		FG Base plug-in with rectifier
DC 24 VDC (2.4W)		

* Other options available, see page 317.
Note : AC voltage requires connector with rectifier.

OPTIONS

46A-LSA-AJ-J**XX**P-**XXX**

- J** Regulator with adjusting knob
- E** Regulator with slotted stem
- G** Regulator with slotted stem with locknut

- O** Base only – no valve
- L** Base mount body
- M** Base mount body with gage port

Example : base only with regulator : 46A-OSA-AJ.
End plate kit required (port size 1/4") : M-46003-01.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 100 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C _v) – 2.4W : (0.20 C _v) – 5.4W : (0.30 C _v)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4W – 2.4W – 1.8W
Response times : (with 5.4 W coil)	Energize : 7.20 ms De-energize : 4.20ms

Options :

Spare parts :

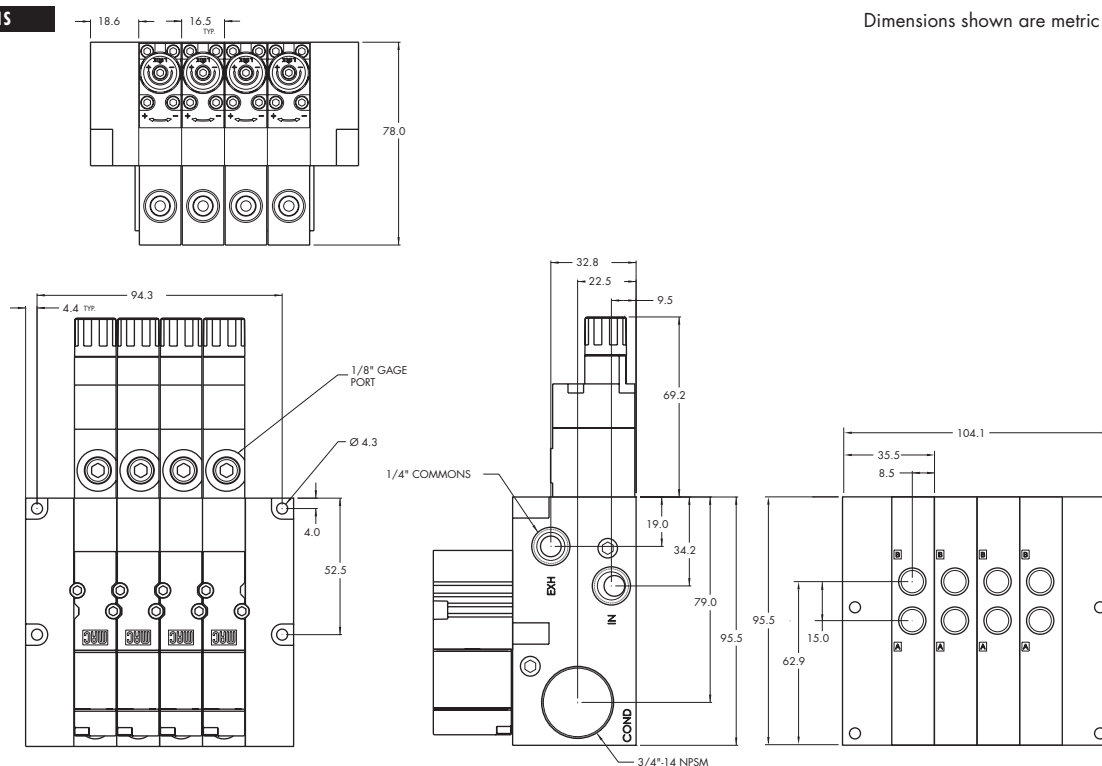
- BSPP threads
- Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
- Replacement regulators : PR46A-OAAA (slotted stem)
PR46A-OBAA (adjusting knob)
PR46A-OCAA (slotted stem with locknut)

Regulating range options :

- PR46A-xxx**A**
 - A** 0 to 120 PSI
 - B** 0 to 80 PSI
 - C** 0 to 30 PSI

DIMENSIONS

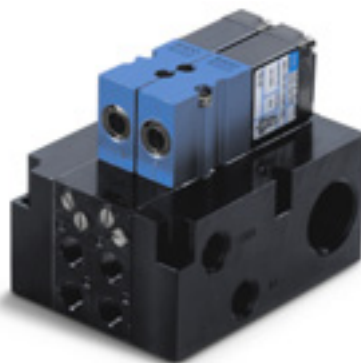
Dimensions shown are metric (mm)



Function	Port size	Flow [Max]	Manifold mounting	Series
4/2	1/8" - 5/32 O.D. Pressed-in tube receptacles	0.3 C _v	Manifold base "plug-in" with flow controls	

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Patented solenoid develops high shifting forces.
3. Short stroke with high flow.
4. Higher forces result in lower wattages for given flow.
5. Powerful return spring.



HOW TO ORDER

Port size	Model number
Valve less base	46A-L00-00-J XX P- XXX
1/8" NPTF	46A-LSA-AD-J XX P- XXX
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AD-J XX P- XXX



SOLENOID OPERATOR ➤

J **XX** P-**XXX*** (-G) Add "G" for ground

XX Voltage	X Manual operator	XX Electrical connection
AA 120 VAC (5.4W)	1 Non-locking recessed	FA Base plug-in
DA 24 VDC (5.4W)	2 Locking recessed	FB Base plug-in with diode
DB 12 VDC (5.4W)		FG Base plug-in with rectifier
DC 24 VDC (2.4W)		

* Other options available, see page 317.
Note : AC voltage requires connector with rectifier.

OPTIONS

46A-LSA-AD-J**XX**P-**XXX**

- D** Side cylinder ports
- M** Bottom cylinder ports
- O** Base only – no valve
- L** Base mount body
- M** Base mount body with gage port

Example : base only with flow controls: 46A-OSA-AD.
End plate kit required (port size 1/4") : M-46003-01.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 100 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C _v) – 2.4W : (0.20 C _v) – 5.4W : (0.30 C _v)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4W – 2.4W – 1.8W
Response times :	Energize : 7.20 ms De-energize : 4.20ms

Options :

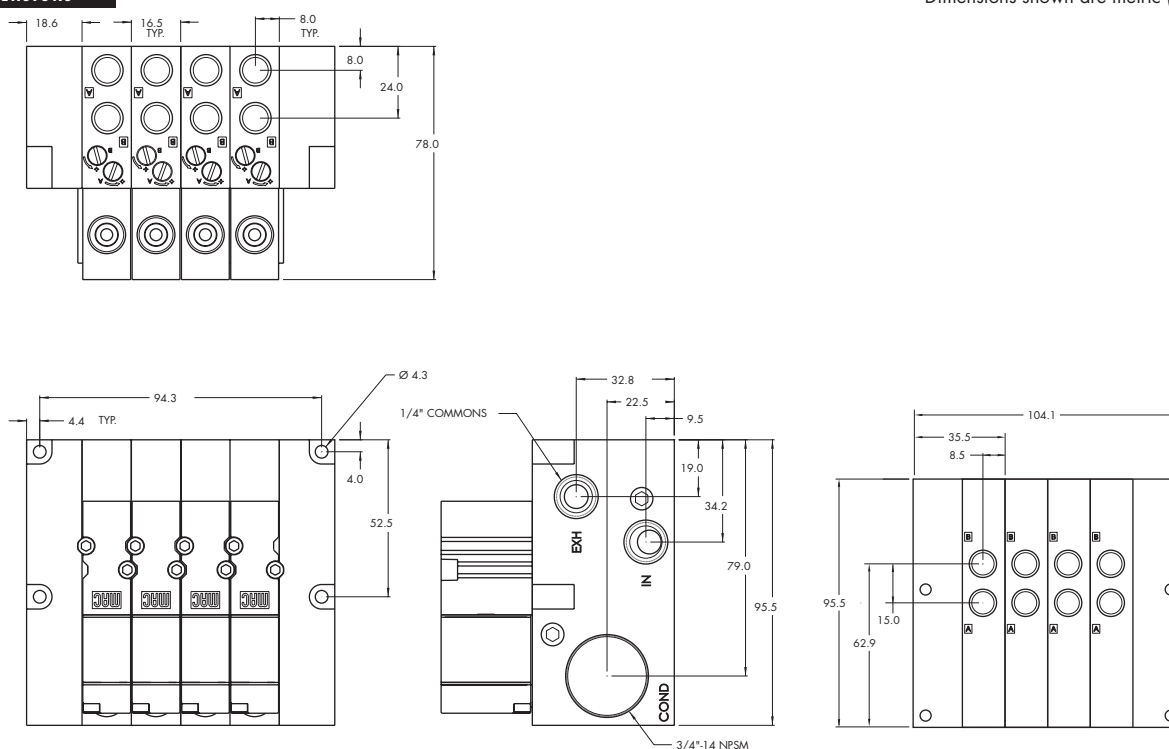
- BSPP threads

Spare parts :

- Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002
- Tie rod (x2) : 79443

DIMENSIONS

Dimensions shown are metric (mm)



Function	Port size	Flow [Max]	Manifold mounting	Series
4/2	1/8" - 5/32 O.D. Pressed-in tube receptacles	0.3 C_v	Manifold base "plug-in" with PR & FC	

OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Patented solenoid develops high shifting forces.
3. Short stroke with high flow.
4. Higher forces result in lower wattages for given flow.
5. Powerful return spring.



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ISO 01

ISO 02

ISO 1

ISO 2

ISO 3

HOW TO ORDER

Port size (Bottom ports only)	Model number
Valve less base	46A-L00-00-J XX P- XXX
1/8" NPTF	46A-LSA-AK-J XX P- XXX
5/32 O.D. Pressed-in tube receptacles	46A-LSF-AK-J XX P- XXX



SOLENOID OPERATOR ➤

J **XX** P-**XXX*** (-G) Add "G" for ground

XX Voltage	X Manual operator	XX Electrical connection
AA 120 VAC (5.4W)	1 Non-locking recessed	FA Base plug-in
DA 24 VDC (5.4W)	2 Locking recessed	FB Base plug-in with diode
DB 12 VDC (5.4W)		FG Base plug-in with rectifier
DC 24 VDC (2.4W)		

* Other options available, see page 317.
Note : AC voltage requires connector with rectifier.

OPTIONS

46A-LSA-AK-J**XX**P-**XXX**

- K** Regulator with adjusting knob & flow controls
- F** Regulator with slotted stem & flow controls
- H** Regulator with slotted stem with locknut & flow controls

- O** Base only – no valve
- L** Base mount body
- M** Base mount body with gage port

Example : base only with regulator : 46A-OSA-AK.
End plate kit required (port size 1/4") : M-46003-01.

TECHNICAL DATA

Fluid :	Compressed air, vacuum, inert gases
Pressure range :	Vacuum to 100 PSI
Lubrication :	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration :	40 µ
Temperature range :	0°F to 120°F (-18°C to +50°C)
Flow :	1.8W : (0.20 C _v) – 2.4W : (0.20 C _v) – 5.4W : (0.30 C _v)
Coil :	Class A continuous duty, #22 AWG x 12 base leads
Voltage range :	-15% to +10% of nominal voltage
Protection :	Consult factory
Power :	5.4W – 2.4W – 1.8W
Response times :	Energize : 7.20 ms De-energize : 4.20ms

Options :

Spare parts :

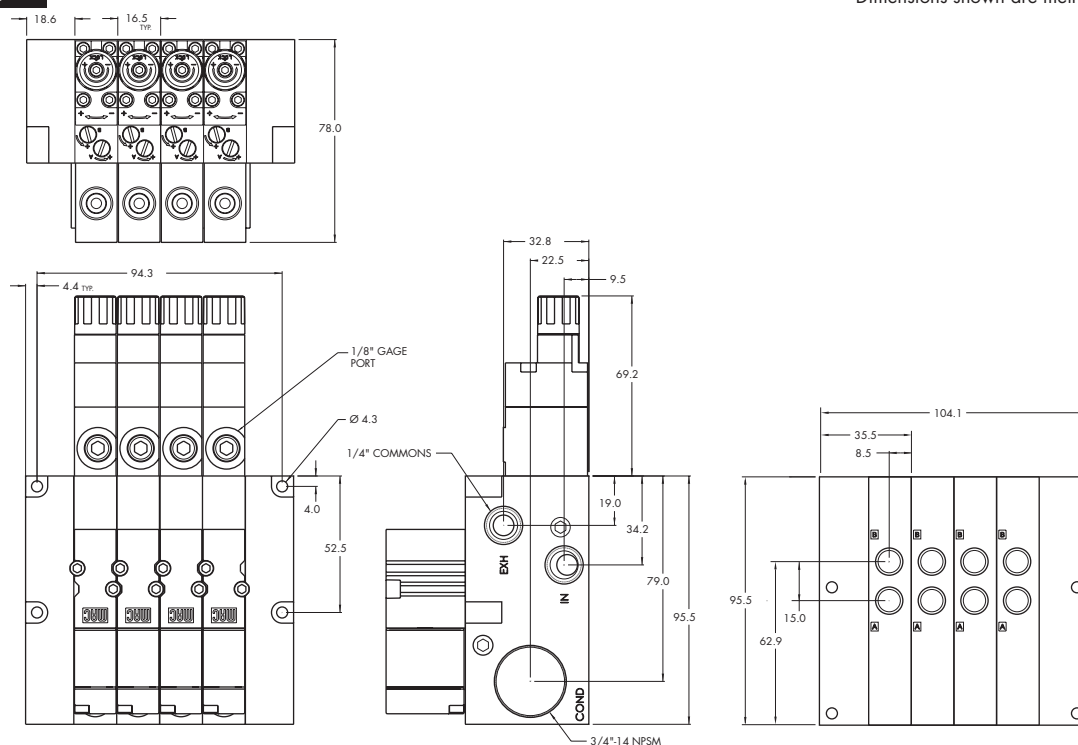
- BSPP threads
- Inlet isolator : 28501 • Exhaust isolator : 28502 • Valve cover plate : M-46002 • Tie rod (x2) : 79443
- Replacement regulators : PR46A-OAAA (slotted stem)
PR46A-OBAA (adjusting knob)
PR46A-OCAA (slotted stem with locknut)

Regulating range options :

- PR46A-xxx**A**
 - A** 0 to 120 PSI
 - B** 0 to 80 PSI
 - C** 0 to 30 PSI

DIMENSIONS

Dimensions shown are metric (mm)





Codification table for voltages / Manual operators / Electrical connections

VALVE CODE ➤

$\frac{J}{1} \frac{XX}{2} \frac{X-X}{3} \frac{XX}{4}$

OPTIONS AVAILABLE FOR

- Solenoid valves 36, 46, ISO 01 and ISO 02 Series



1. VOLTAGE	
<i>J-XX X-X XX</i>	VOLTAGE
<i>AA</i>	120VAC (5.4W)
<i>AC</i>	24VAC (5.4W)
<i>DE</i>	24VDC (1.8W)
<i>DF</i>	12VDC (1.8W)
<i>DJ</i>	24VDC (1.3W)
<i>DL</i>	12VDC (1.3W)
<i>DR</i>	12VDC (1.0W)*
<i>DU</i>	24VDC (1.0W)*
* Not available on 36 series universal valve	
2. WIRE LENGTH	
<i>J-XX X-X XX</i>	WIRE LENGTH
<i>A</i>	18" coil leads
<i>B</i>	24" coil leads
<i>C</i>	36" coil leads
<i>D</i>	48" coil leads
<i>E</i>	72" coil leads
<i>F</i>	96" coil leads
<i>P</i>	Base plug-in
<i>O</i>	No leads (use with J, K & L type connectors)
3. MANUAL OPERATOR	
<i>J-XX X-X XX</i>	MANUAL OPERATOR
<i>0</i>	No operator
<i>1</i>	Non-locking recessed
<i>2</i>	Locking recessed
<i>3</i>	Non-locking extended
<i>4</i>	Locking extended
4. ELECTRICAL CONNECTION	
<i>J-XX X-X XX</i>	CONNECTORS FOR NON PLUG-IN VALVES
<i>BA</i>	ELECTRICAL CONNECTION
<i>GA</i>	Flying leads
<i>GB</i>	MAC JAC solenoid plug-in
<i>GC</i>	MAC JAC solenoid plug-in with diode
<i>GD</i>	MAC JAC solenoid plug-in with MOV
<i>GE</i>	MAC JAC solenoid plug-in with light
<i>GF</i>	MAC JAC solenoid plug-in with diode and light
<i>GG</i>	MAC JAC solenoid plug-in with MOV and light
<i>GH</i>	MAC JAC solenoid plug-in with rectifier
<i>GJ</i>	MAC JAC solenoid plug-in with rectifier and light
<i>GK</i>	MAC JAC solenoid plug-in – Male only
<i>GL</i>	MAC JAC solenoid plug-in with diode – Male only
<i>GM</i>	MAC JAC solenoid plug-in with MOV – Male only
<i>GN</i>	MAC JAC solenoid plug-in with light – Male only
<i>GP</i>	MAC JAC solenoid plug-in with diode and light – Male only
<i>GR</i>	MAC JAC solenoid plug-in with MOV and light – Male only
<i>GS</i>	MAC JAC solenoid plug-in with rectifier and light – Male only
<i>*JA</i>	Square Connector
<i>*JC</i>	Square Connector with light
<i>*JE</i>	Square Connector with diode
<i>*JF</i>	Square Connector with MOV
<i>*JG</i>	Square Connector with diode/light
<i>*JH</i>	Square Connector with MOV /light
<i>*JK</i>	Square Connector with Rectifier
<i>J-XX X-X XX</i>	CONNECTORS FOR NON PLUG-IN VALVES
<i>*JL</i>	MINI SQUARE PLUG-IN CONNECTORS
<i>*JJ</i>	9.4 MM SPACING BETWEEN PINS
<i>*JB</i>	Mini plug-in
<i>*JD</i>	Mini plug-in with diode
<i>*JN</i>	Mini plug-in with MOV
<i>*JP</i>	Mini plug-in with light
<i>*JR</i>	Mini plug-in with diode and light
<i>*JS</i>	Mini plug-in with MOV and light
<i>*JT</i>	Mini plug-in with rectifier
<i>*JU</i>	Mini plug-in with rectifier and light
<i>*JM</i>	Mini plug-in – Male only
* Not available on manifold or stacking valves	
<i>J-XX X-X XX</i>	CONNECTORS FOR NON PLUG-IN VALVES
<i>KA</i>	MINI SQUARE PLUG-IN CONNECTORS
<i>KB</i>	9.4 MM SPACING BETWEEN PINS
<i>KC</i>	Mini plug-in
<i>KD</i>	Mini plug-in with diode
<i>KE</i>	Mini plug-in with MOV
<i>KF</i>	Mini plug-in with light
<i>KG</i>	Mini plug-in with diode and light
<i>KH</i>	Mini plug-in with MOV and light
<i>KJ</i>	Mini plug-in with rectifier
<i>KK</i>	Mini plug-in with rectifier and light
<i>KL</i>	Mini plug-in – Male only
<i>KM</i>	Mini plug-in with diode - Male only
<i>KN</i>	Mini plug-in with MOV - Male only
<i>KP</i>	Mini plug-in with light - Male only
<i>KR</i>	Mini plug-in with diode and light – Male only
<i>KS</i>	Mini plug-in with MOV and light – Male only
<i>J-XX X-X XX</i>	CONNECTORS FOR NON PLUG-IN VALVES
<i>LA</i>	MINI SQUARE PLUG-IN CONNECTORS
<i>LB</i>	8.0 MM SPACING BETWEEN PINS
<i>LC</i>	ISO SPECIFICATION 15217
<i>LD</i>	Mini plug-in
<i>LE</i>	Mini plug-in with diode
<i>LF</i>	Mini plug-in with MOV
<i>LG</i>	Mini plug-in with light
<i>LH</i>	Mini plug-in with diode and light
<i>LJ</i>	Mini plug-in with MOV and light
<i>LK</i>	Mini plug-in with rectifier
<i>LL</i>	Mini plug-in with rectifier and light
<i>LM</i>	Mini plug-in – Male only
<i>LN</i>	Mini plug-in with diode - Male only
<i>LP</i>	Mini plug-in with MOV - Male only
<i>LR</i>	Mini plug-in with light - Male only
<i>LS</i>	Mini plug-in with diode and light – Male only
<i>J-XX X-X XX</i>	CONNECTORS FOR PLUG-IN VALVES
<i>FA</i>	Base plug-in
<i>FB</i>	Base plug-in with diode
<i>FC</i>	Base plug-in with MOV
<i>FD</i>	Base plug-in with light
<i>FE</i>	Base plug-in with diode and light
<i>FF</i>	Base plug-in with MOV and light
<i>FG</i>	Base plug-in with rectifier
<i>FH</i>	Base plug-in with rectifier and light