MAC®

VALVES

PATENTED

BULLET VALVE®

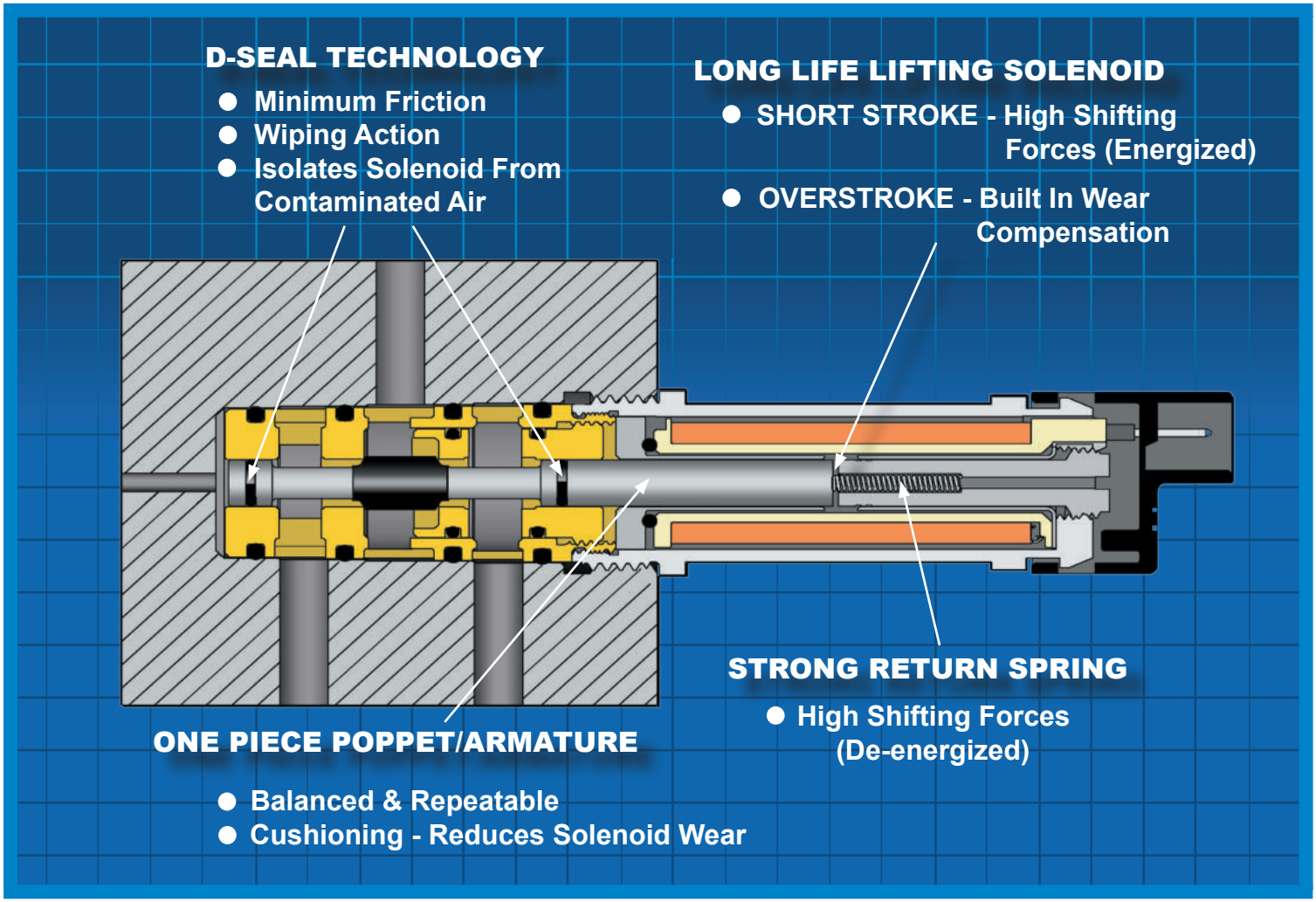
TECHNOLOGY

Bullet Valve® (BV) Series

The patented Bullet Valve® represents yet another evolution in air valve technology from MAC.

- *VERY FEW PARTS*
- *LONG LIFE LIFTING SOLENOID*
- *ONE PIECE POPPET / ARMATURE*
- *BALANCED DESIGN*
- *SOLENOID ISOLATED FROM CONTAMINATED AIR*
- *UNIQUE MOUNTING*

The threaded cartridge configuration allows for a variety of mounting possibilities, such as direct integration into pneumatic actuators or vacuum generators without the need of external tubing or fasteners. 2-way & 3-way models of the BV cartridge are available. A surface manifold mount configuration is also offered.



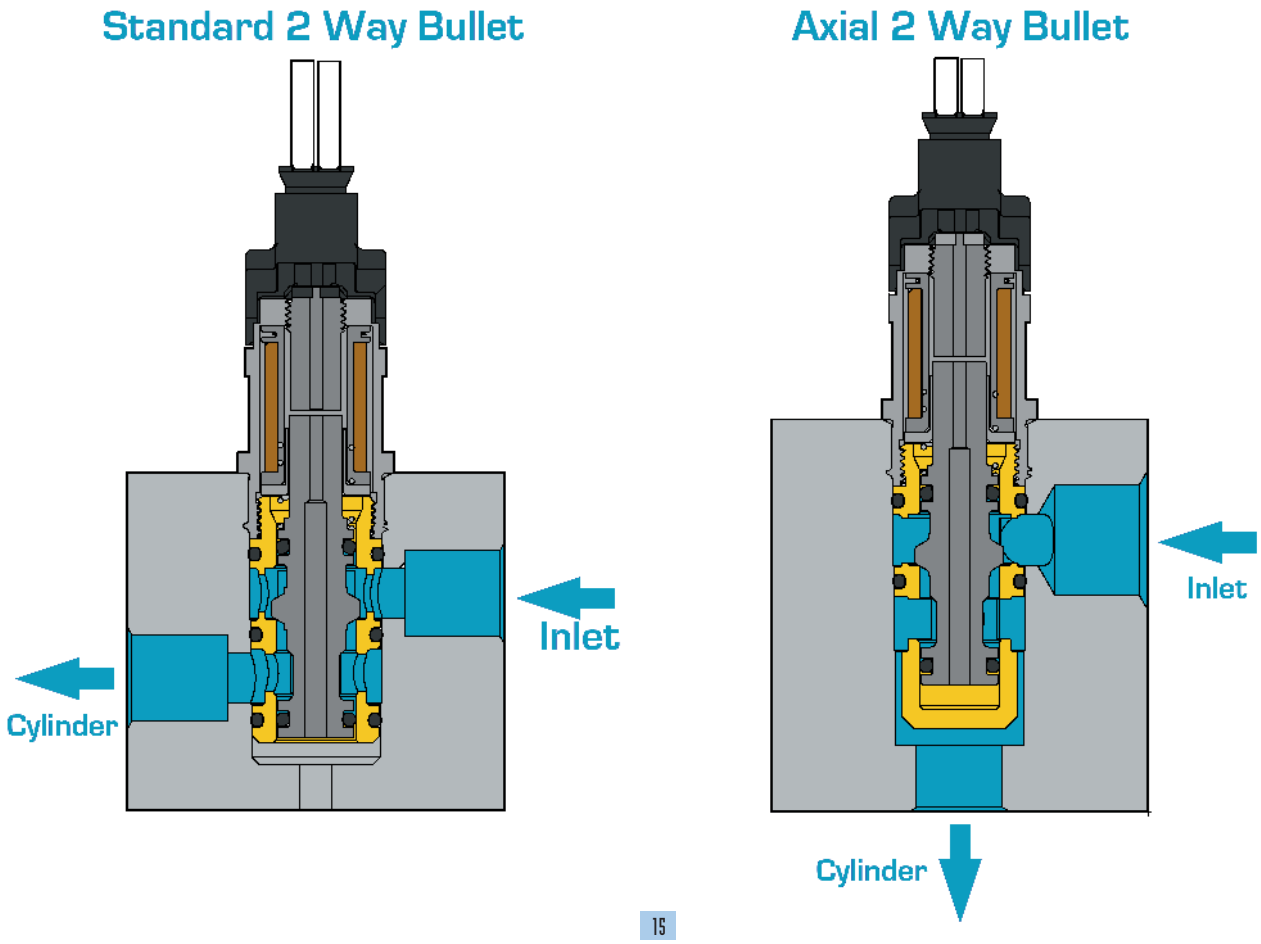
Valves That Don't Stick℠

Cartridge Modifications

Our manufacturing process of the Bullet Valve® cartridge body enables flexibility with regards to offering potential modifications that meet your specific application needs. An example of such modifications is the “axial flow” cartridge body we are currently offering for the BV209, BV210 and BV214 series.

The “axial flow” cartridge enables the valve to flow air between the bottom of the valve body and manifold it is housed in – see figure below. This modification allows for a linear flow path out of the manifold producing measurably higher outlet pulse height (force) in blow off type of applications. We have currently used this modification for applications in the sorting industry with excellent results.

If you have an application that would benefit from utilizing the axial flow cartridge option or wish to discuss other potential cartridge modifications, please consult your local MAC distributor (MDN Associate). By understanding your application and valve requirements we can optimize the valve settings accordingly.



BV Series

Bullet Valve™

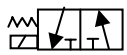
Function	Flow [Max]	Manifold mounting	Series
3/2 NC, Universal	**Up to 70 Nl/min**	**Cartridge**	**BV309A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces.
2. Balanced poppet, immune to variations of pressure.
3. Excellent repeatability.
4. Very few parts.
5. Unique mounting – no fasteners or screws required.
6. “Pull” or “ lift“ type solenoid.
7. Easy to fit in customer machine without specific. manifold settings.
8. Built-in solution allowing machine size reduction.

HOW TO ORDER

HOW TO ORDER VALVE

Size	3 Way N.C.	3 Way Universal
		
9 mm cartridge	BV309A-CC1-00-*xxxx*-*xxx*	BV309A-CD1-00-*xxxx*-*xxx*

SOLENOID OPERATOR **X XX X - X XX**

Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round	**HB** 24V=/1.8W **HC** 24V=/2.5W **HD** 24V=/3.0W **HE** 24V=/4.0W **HG** 12V=/1.8W **HH** 12V=/2.5W **HJ** 12V=/3.0W **HK** 12V=/4.0W	**0** No lead wire **A** 45 cm **B** 60 cm **C** 90 cm **D** 120 cm **E** 180 cm **F** 240 cm **H** 366 cm	**C** For Top Cover Option and Can with Outer Threads	**TA** JST Plug-in cover No ground wire **TC** TA with blocking & suppression diode & LED (no ground) **TE** TA with blocking & suppression diode (no ground) **TG** TA with LED (no ground) **TJ** TA with MOV (no ground) **TL** TA w/ LED & MOV (no ground)

HOW TO ORDER CIRCUIT BAR

Port size	Spacing (mm)	Side cylinder port
M5	11	CCMV09A-00ABB-*xx*
M7	11	CCMV09A-00ABC-*xx*

xx = Number of stations

BV Series

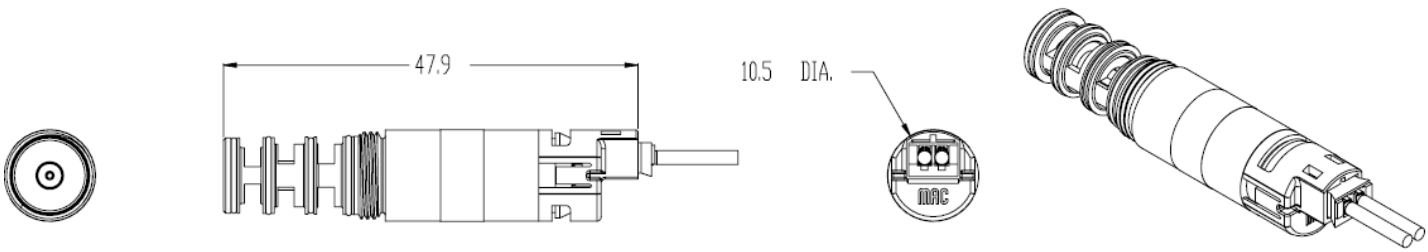
Bullet Valve™

TECHNICAL DATA

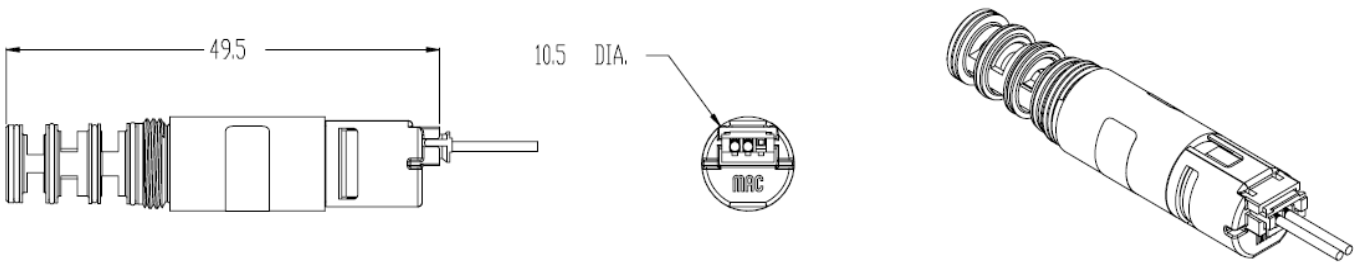
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40µ
Flow (at 6 bar ΔP=1bar):	Up to 70 Nl/min (0.07 Cv)
Voltage range:	-15% to +10% of nominal voltage

DIMENSIONS

Bullet valve with "JST" cover BV309A (3-way) – Standard Watt



Bullet valve with "JST" cover and circuit board for LED., MOV., & diode options BV309A (3-way) – Standard Watt



Bullet Valve®

BV Series

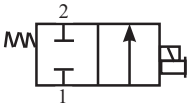
Function	Flow [max]	Manifold mounting	Series
2/2	**Up to 80 Nl/min**	**Cartridge**	**BV210A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life
7. Unique mounting - no fasteners or screws required

HOW TO ORDER

VALVE

Type	2 Way
	
Cartridge (Standard)	BV210A-CA1-00-***xxxx-xxx***
Cartridge (Axial flow)	BV210A-CB0-00-***xxxx-xxx***

SOLENOID OPERATOR

X XX X - X XX

Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round	**EH** 24V=/2.5W **EG** 24V=/4.0W **EK** 12V=/2.5W **EJ** 12V=/4.0W	**0**+ No lead wire **A** 45 cm **B** 60 cm **C** 90 cm **D** 120 cm **E** 180 cm **F** 240 cm **H** 365 cm	**C** For Top Cover Option and Can w/ Outer Threads	**JST / Pico / Flying Leads** **TA** / **BA** No ground wire **TC** / **PC** / **BC** Blocking & suppr. diode & LED (no ground) **TE** / **PE** / **BE** Blocking & suppr. diode (no ground) **TG** / **PG** / **BG** LED (no ground) **TJ** / **PJ** / **BJ** MOV (no ground) **TL** / **PL** / **BL** LED & MOV (no ground) **PN** Transfer board

+ Not available for flying leads cover
Only option for Pico cover

* High wattage - high speed options - consult factory.
High wattage configurations require intermittent duty cycles.
**ERC - Energy Reduction Circuitry - Reduces the effective wattage at continuous duty.
ERC wattage reduction options - consult factory.

Note: Pico covers PC-PL have a 3rd pin which is a location pin.

CIRCUIT BAR

Bullet valve type	Cyl. port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
Standard	**M5**	12	CCMV10A-00AAB-***xx***	CCMV10A-00BAB-***xx***
	M7	12	CCMV10A-00AAC-***xx***	CCMV10A-00BAC-***xx***
Axial flow	**M5**	12	-	CCMV10A-00BDB-***xx***
	M7	12	-	CCMV10A-00BDC-***xx***

xx = Number of stations
Note: for valves mounted to bar at factory, add -9 to model numbers.

BV Series

Bullet Valve®

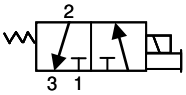
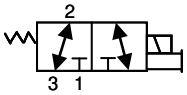
Function	Flow [max]	Manifold mounting	Series
3/2 NC, Universal	**Up to 90 Nl/min**	**Cartridge**	**BV310A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life
7. Unique mounting - no fasteners or screws required

HOW TO ORDER

VALVE

Type	3 Way N.C.	3 Way Universal
		
Cartridge (Standard)	BV310A-CC1-00-***xxxx-xxx***	BV310A-CD1-00-***xxxx-xxx***
Cartridge (Diaphragm)	BV310A-DC1-00-***xxxx-xxx***	-

SOLENOID OPERATOR

X XX X - X XX

Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round	**HA** 24V=/1.0W **HB** 24V=/1.8W **HC** 24V=/2.5W **HD** 24V=/3.0W **HE** 24V=/4.0W **HF** 12V=/1.0W **HG** 12V=/1.8W **HH** 12V=/2.5W **HJ** 12V=/3.0W **HK** 12V=/4.0W **HR**++ 24V=/0,75W **HS**++ 12V=/0,75W	**0**+ No lead wire **A** 45 cm **B** 60 cm **C** 90 cm **D** 120 cm **E** 180 cm **F** 240 cm **H** 365 cm	**C** For Top Cover Option and Can w/ Outer Threads	**JST Pico Flying Leads** **TA** **BA** No ground wire **TC** **PC** **BC** Blocking & suppr. diode & LED (no ground) **TE** **PE** **BE** Blocking & suppr. diode (no ground) **TG** **PG** **BG** LED (no ground) **TJ** **PJ** **BJ** MOV (no ground) **TL** **PL** **BL** LED & MOV (no ground) **PN** Transfer board

+ Not available for flying leads cover
Only option for Pico cover

++ Only available with diaphragm type valve
* High wattage - high speed options - consult factory
** ERC wattage reduction options - consult factory

Note: Pico covers PC-PL have a 3rd pin which is a location pin

CIRCUIT BAR

Port size	Spacing (mm)	Side cylinder port
M5	12	CCMV10A-00ABB-***xx***
M7	12	CCMV10A-00ABC-***xx***

xx = Number of stations
Note: for valves mounted to bar at factory, add -9 to model numbers.
* High wattage configurations require intermittent duty cycles.
** ERC - Energy Reduction Circuitry - Reduces the effective wattage at continuous duty.

BV Series

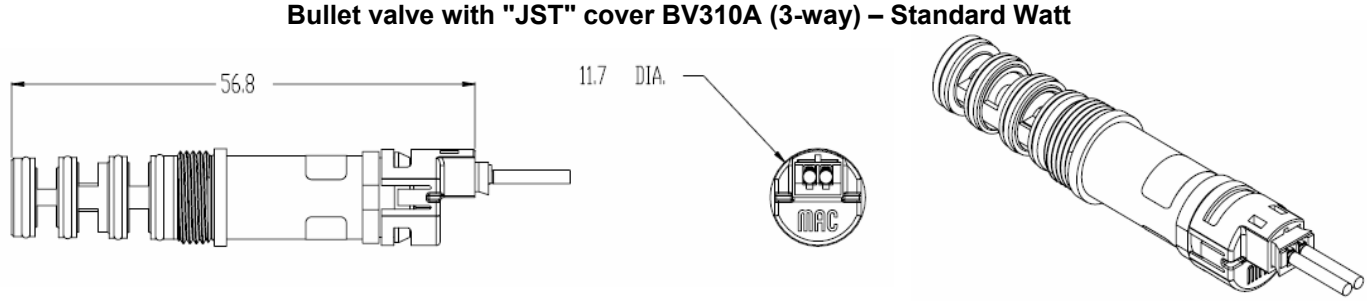
Bullet Valve™

TECHNICAL DATA

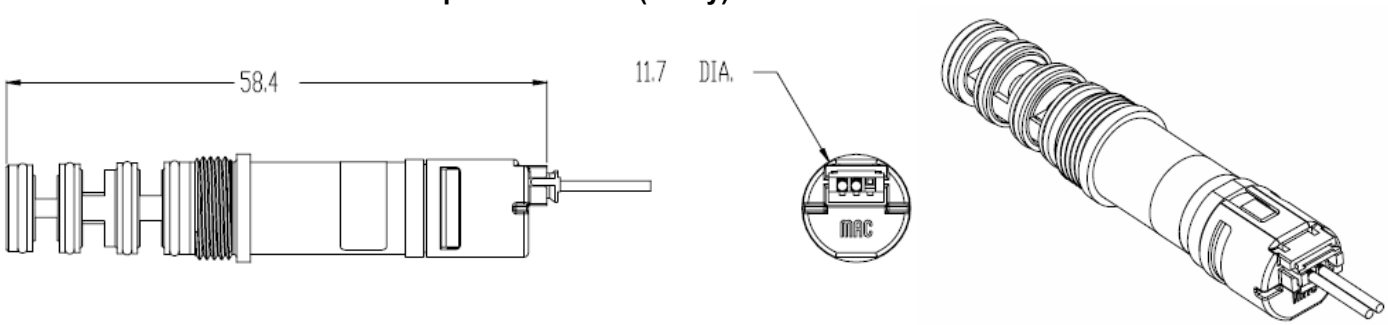
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40µ
Flow (at 6 bar ΔP=1bar):	Up to 80 Nl/min (Cv 0.08)
Voltage range:	-15% to +10% of nominal voltage

DIMENSIONS

Bullet valve with "JST" cover BV310A (3-way) – Standard Watt



Bullet valve with "JST" cover and circuit board for LED., MOV., & diode options BV310A (3-way) – Standard Watt



BV Series

Bullet Valve®

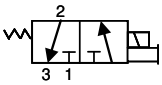
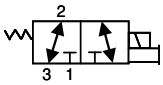
Function	Flow [max]	Manifold mounting	Series
3/2 NC, Universal	**Up to 80 Nl/min**	**Manifold mount - Non plug-in**	**BV310A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life

HOW TO ORDER

VALVE

Type	3 Way N.C.	3 Way Universal
		
Manifold Mount - Non plug-in	BV310A-LC1-00-***xxxx-xxx***	BV310A-LD1-00-***xxxx-xxx***

SOLENOID OPERATOR

X XX X - X XX

Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round	**HA** 24V=/1.0W **HB** 24V=/1.8W **HC** 24V=/2.5W **HD** 24V=/3.0W **HE** 24V=/4.0W * **HF** 12V=/1.0W **HG** 12V=/1.8W **HH** 12V=/2.5W **HJ** 12V=/3.0W **HK** 12V=/4.0W	**0**+ No lead wire **A** 45cm **B** 60 cm **C** 90 cm **D** 120 cm **E** 180 cm **F** 240 cm **H** 365 cm + Not available for flying leads cover Only option for Pico cover	**B** Cover For Manifold Body	JST / Pico / Flying Leads **TA** / **BA** No ground wire **TC** / **PC** / **BC** Blocking & suppr. diode & LED (no ground) **TE** / **PE** / **BE** Blocking & suppr. diode (no ground) **TG** / **PG** / **BG** LED (no ground) **TJ** / **PJ** / **BJ** MOV (no ground) **TL** / **PL** / **BL** LED & MOV (no ground) **PN** Transfer board Note: Pico covers PC-PL have a 3rd pin which is a location pin

* High wattage - high speed options - consult factory
** ERC wattage reduction options - consult factory

NON PLUG-IN CIRCUIT BAR

Port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
M5	12	CBMV10A-00ABB-***xx***	CBMV10A-00BBB-***xx***
M7	12	CBMV10A-00ABC-***xx***	CBMV10A-00BBC-***xx***

xx = Number of stations
Note: for valves mounted to bar at factory, add -9 to model numbers.

OPTIONS

BV310A- LC **1** -00-***xxxx-xxx***
Replace with **0** for no manual operator

How to order bar configured for regulator
CBMV10A-00 **A** BB- ***xx***
Replace with **D** for regulator - Side ports
Replace with **E** for regulator - Bottom ports

Note: Regulator must be ordered separately

* High wattage configurations require intermittent duty cycles
**ERC - Energy Reduction Circuitry - Reduces the effectiveness wattage at continuous duty

BV Series

Bullet Valve®

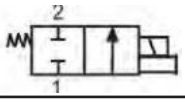
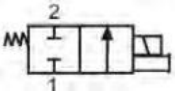
Function	Flow [max]	Manifold mounting	Series
2/2	**Up to 240 Nl/min**	**Cartridge**	**BV214A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life
7. Unique mounting - no fasteners or screws required

HOW TO ORDER

VALVE

Type	2-way (standard)	2-way (axial flow)
		
Cartridge	BV214A-CA1-00-**xxxx-xxx**	BV214A-CB0-00-**xxxx-xxx**

SOLENOID OPERATOR

X XX X - X XX

Solenoid

B Round

Voltage

CA	24V=/1.0W
CB	24V=/1.8W
CC	24V=/2.5W
CD	24V=/3.0W
CE	24V=/4.0W
CF	12V=/1.0W
CG	12V=/1.8W
CH	12V=/2.5W
CJ	12V=/3.0W
CK	12V=/4.0W

Lead wire length

0*	No lead wire
A	45 cm
B	60 cm
C	90 cm
D	120 cm
E	180 cm
F	240 cm
H	366 cm

* Not available for flying leads cover
Only option for Pico cover

Solenoid can (round)

C For Top Cover Option and Can w/ Outer Threads

Solenoid cover

JST	Pico	Flying Leads	
TA		**BA**	No ground wire
TC	**PC**	**BC**	Blocking & suppr. diode & LED (no ground)
TE	**PE**	**BE**	Blocking & suppr. diode (no ground)
TG	**PG**	**BG**	LED (no ground)
TJ	**PJ**	**BJ**	MOV (no ground)
TL	**PL**	**BL**	LED & MOV (no ground)
	PN		Transfer board
		+GA	MAC JAC Connector

Note: Pico covers PC-PL have a 3rd pin which is a location pin

CIRCUIT BAR

Bullet valve type	Cyl. port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
Standard	**M7**	17	CCMV14A-00AAD-***xx***	CCMV14A-00BAD-***xx***
	1/8”	17	CCMV14A-00AAE-***xx***	CCMV14A-00BAE-***xx***
Axial flow	**M7**	17	-	CCMV14A-00BDD-***xx***
	1/8”	17	-	CCMV14A-00BDE-***xx***

xx = Number of stations

Note: For valves mounted to bar at factory, add -9 to model numbers.

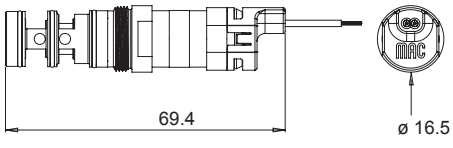
Technical Data

Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40µ
Temperature range:	-18°C to +50°C
Flow (at 6 bar, Δ P=1bar):	Up to 240 Nl/min (4.0 W)
Voltage range:	-15% to +10% of nominal voltage

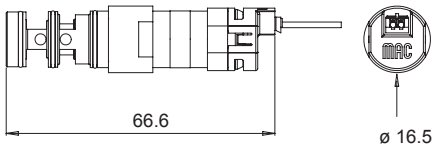
Tools: Manifold cavity step reamer: T-7331 • Insertion/removal socket: AT-1263 (Bit) AT-1185 (Bit Holder) AT-1264 (Handle)

Dimensions

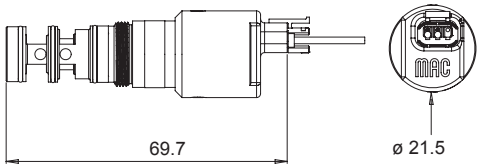
Flying leads



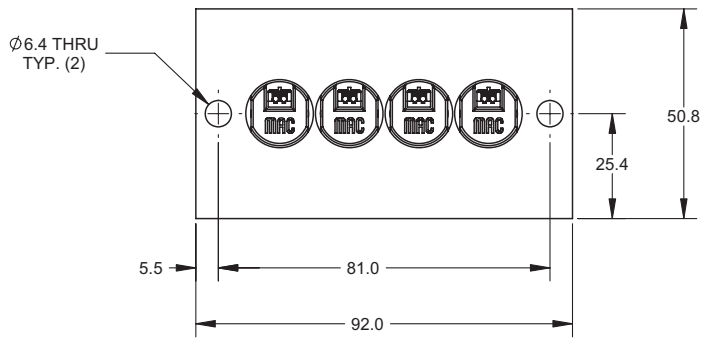
JST Connector

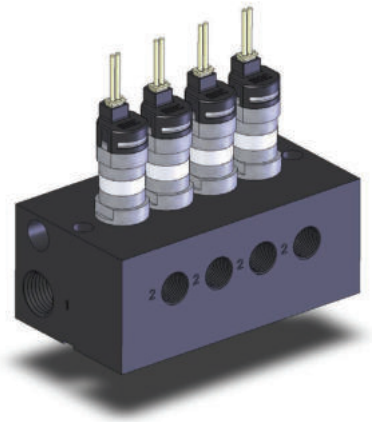


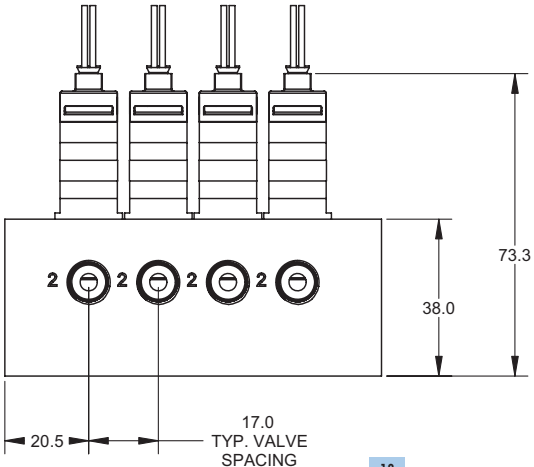
MAC Jac

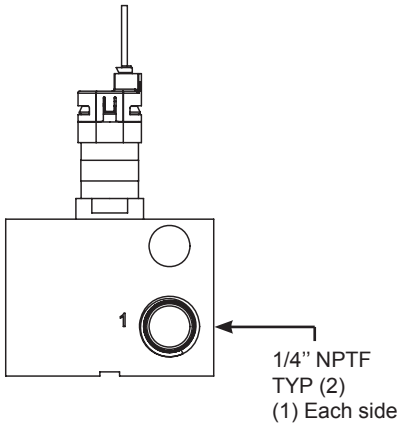


CCMV14A bar with BV214A valves









BV Series

Bullet Valve®

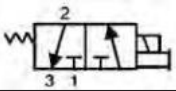
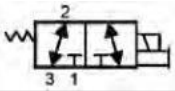
Function	Flow [max]	Manifold mounting	Series
3/2	**Up to 240 Nl/min**	**Cartridge**	**BV314A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life
7. Unique mounting - no fasteners or screws required

HOW TO ORDER

HOW TO ORDER VALVE

Type	3-Way N.C.	3- Way universal valve
		
Cartridge	BV314A-CC1-00-**xxxx-xxx**	BV314A-CD1-00-**xxxx-xxx**

SOLENOID OPERATOR

X XX X - X XX

Solenoid

B Round

Voltage

CA	24V=/1.0W
CB	24V=/1.8W
CC	24V=/2.5W
CD	24V=/3.0W
CE	24V=/4.0W
CF	12V=/1.0W
CG	12V=/1.8W
CH	12V=/2.5W
CJ	12V=/3.0W
CK	12V=/4.0W

Lead wire length

0*	No lead wire
A	45 cm
B	60 cm
C	90 cm
D	120 cm
E	180 cm
F	240 cm
H	365 cm

* Not available for flying leads cover
** Requires special spacing - consult factory

Solenoid can (round)

C For Top Cover Option and Can w/ Outer Threads

Solenoid cover

JST	Pico	Flying Leads	
TA		**BA**	No ground wire
TC	**PC**	**BC**	Blocking & suppr. diode & LED (no ground)
TE	**PE**	**BE**	Blocking & suppr. diode (no ground)
TG	**PG**	**BG**	LED (no ground)
TJ	**PJ**	**BJ**	MOV (no ground)
TL	**PL**	**BL**	LED & MOV (no ground)
	PN		Transfer board
		+GA	MAC JAC Connector

Note: Pico covers PC-PL have a 3rd pin which is a location pin

Port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
M7	17	CCMV14A-00ABD-**xx**	CCMV14A-00BBD-**xx**
1/8”	17	CCMV14A-00ABE-**xx**	CCMV14A-00BBE-**xx**

xx = Number of stations
Note: for valves mounted to bar at factory, add -9 to model numbers.

BV Series

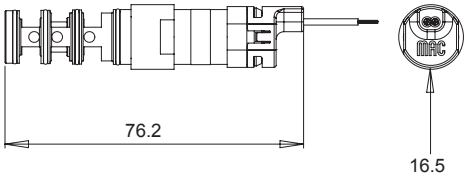
Technical Data

Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40µ
Temperature range:	-18°C to +50°C
Flow (at 6 bar, Δ P=1bar):	Up to 240 Nl/min (4.0 W)
Voltage range:	-15% to +10% of nominal voltage

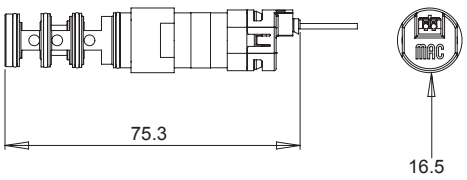
Tools: Manifold cavity step reamer: T-7321 • Insertion/removal socket: AT-1263 (Bit) AT-1185 (Bit Holder) AT-1264 (Handle)

Dimensions

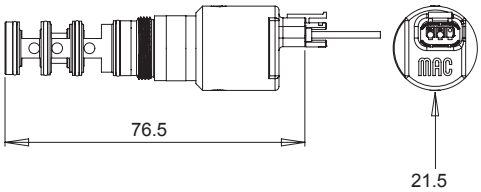
Flying leads



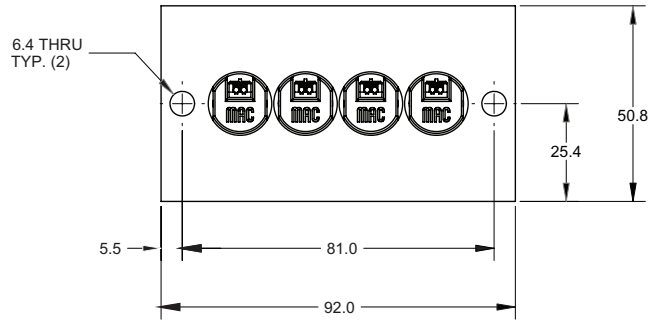
JST Connector

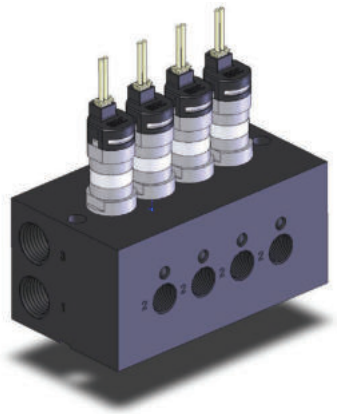


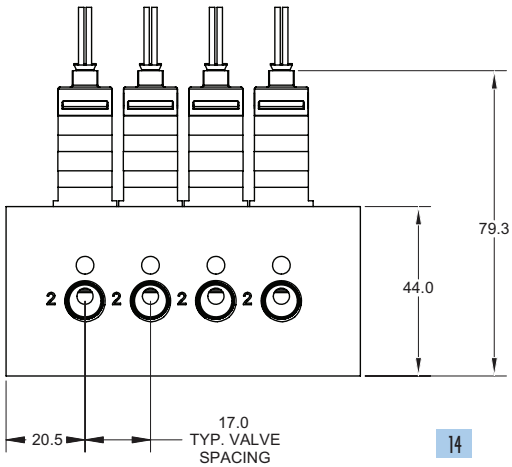
MAC Jac

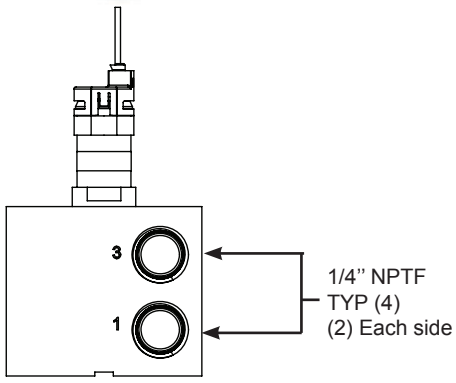


CCMV14A bar with BV314A valves









BV Series

Bullet Valve®

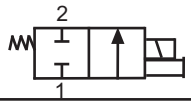
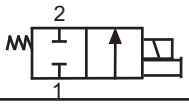
Function	Flow [max]	Manifold mounting	Series
2/2	**Up to 600 Nl/min**	**Cartridge**	**BV221A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life
7. Unique mounting - no fasteners or screws required

How To Order

VALVE

Type	2-Way (standard)	2-Way (axial flow)
		
Cartridge	BV221A-CA1-00-**xxxx-xxx**	BV221A-CB0-00-**xxxx-xxx**

SOLENOID OPERATOR

X XX X - X XX

Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round	**CA** 24V=/1.0W **CB** 24V=/1.8W **CC** 24V=/2.5W **CD** 24V=/3.0W **CE** 24V=/4.0W **CF** 12V=/1.0W **CG** 12V=/1.8W **CH** 12V=/2.5W **CJ** 12V=/3.0W **CK** 12V=/4.0W	**0*** No lead wire **A** 45 cm **B** 60 cm **C** 90 cm **D** 120 cm **E** 180 cm **F** 240 cm **H** 366 cm *Not available for flying leads cover Only option for Pico and M12 cover	**C** For Top Cover Option and Can w/ Outer Threads	

M12	JST	Pico	Flying Leads	
	TA		**BA**	No ground wire
RC	**TC**	**PC**	**BC**	Blocking & suppr. diode & LED (no ground)
RE	**TE**	**PE**	**BE**	Blocking & suppr. diode (no ground)
RG	**TG**	**PG**	**BG**	LED (no ground)
RJ	**TJ**	**PJ**	**BJ**	MOV (no ground)
RL	**TL**	**PL**	**BL**	LED & MOV (no ground)
RN		**PN**		Transfer Board
			GA	**MAC JAC Connector**

Note: Pico covers PC-PL have a 3rd Pin which is a location pin

Note:
For CIRCUIT BAR ordering information please consult factory

BV Series

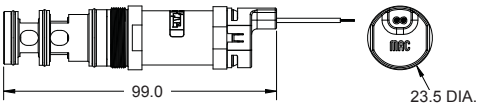
Bullet Valve®

Technical Data

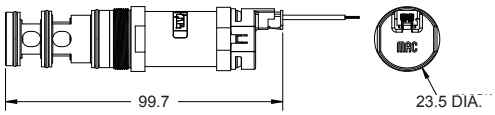
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40µ
Temperature range:	-18°C to +50°C
Flow:	Up to 600 Nl/min (4.0 W)
Voltage range:	-15% to +10% of nominal voltage

Dimensions

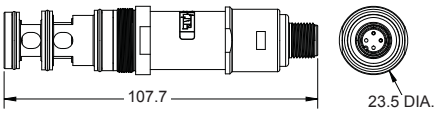
Flying leads



JST Connector



M12



BV221A valves

MAC
BV Series

Bullet Valve®

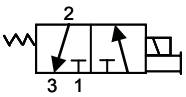
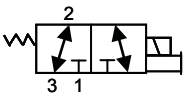
Function	Flow [max]	Manifold mounting	Series
3/2	**Up to 600 Nl/min**	**Cartridge**	**BV321A**

OPERATIONAL BENEFITS

1. Short stroke with high shifting forces
2. Balanced poppet, immune to pressure fluctuations
3. Precise repeatability
4. Solenoid isolated from contaminated air
5. Very few parts
6. Extremely long life
7. Unique mounting - no fasteners or screws required

How To Order

VALVE

Type	3-Way N.C.	3-Way universal valve
		
Cartridge	BV321A-CC1-00-**xxxx**-**xxx**	BV321A-CD1-00-**xxxx**-**xxx**

SOLENOID OPERATOR

X XX X - X XX

Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round	**CA** 24V=/1.0W **CB** 24V=/1.8W **CC** 24V=/2.5W **CD** 24V=/3.0W **CE** 24V=/4.0W **CF** 12V=/1.0W **CG** 12V=/1.8W **CH** 12V=/2.5W **CJ** 12V=/3.0W **CK** 12V=/4.0W	**0*** No lead wire **A** 45 cm **B** 60 cm **C** 90 cm **D** 120 cm **E** 180 cm **F** 240 cm **H** 366 cm *Not available for flying leads cover Only option for Pico and M12 cover	**C** For Top Cover Option and Can w/ Outer Threads	

M12	JST	Pico	Flying Leads	
	TA		**BA**	No ground wire
RC	**TC**	**PC**	**BC**	Blocking & suppr. diode & LED(no ground)
RE	**TE**	**PE**	**BE**	Blocking & suppr. diode (no ground)
RG	**TG**	**PG**	**BG**	LED (no ground)
RJ	**TJ**	**PJ**	**BJ**	MOV (no ground)
RL	**TL**	**PL**	**BL**	LED & MOV (no ground)
RN		**PN**		Transfer Board
			GA	**MAC JAC Connector**

Note: Pico covers PC-PL have a 3rd Pin which is a location pin

CIRCUIT BAR

Cyl. port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
1/8”	25	CCMV21A-00ABD-**xx**	CCMV21A-00BBD-**xx**
1/4”	25	CCMV21A-00ABE-**xx**	CCMV21A-00BBE-**xx**

xx = Number of stations

Note: for valves mounted to bar at factory, add -9 to model numbers.

Note: Common inlet & exhaust are 3/8’’ NPTF
For BSPPL or BSPTR threads consult factory

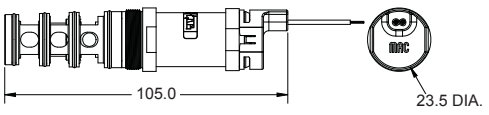
Technical Data

Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40µ
Temperature range:	-18°C to +50°C
Flow:	Up to 600 Nl/min (4.0 W)
Voltage range:	-15% to +10% of nominal voltage

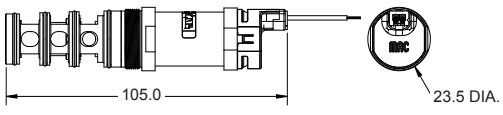
Tools: Manifold cavity step reamer: T-7573 • Insertion/removal socket: AT-1365 (Bit)

Dimensions

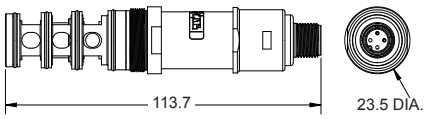
Flying leads



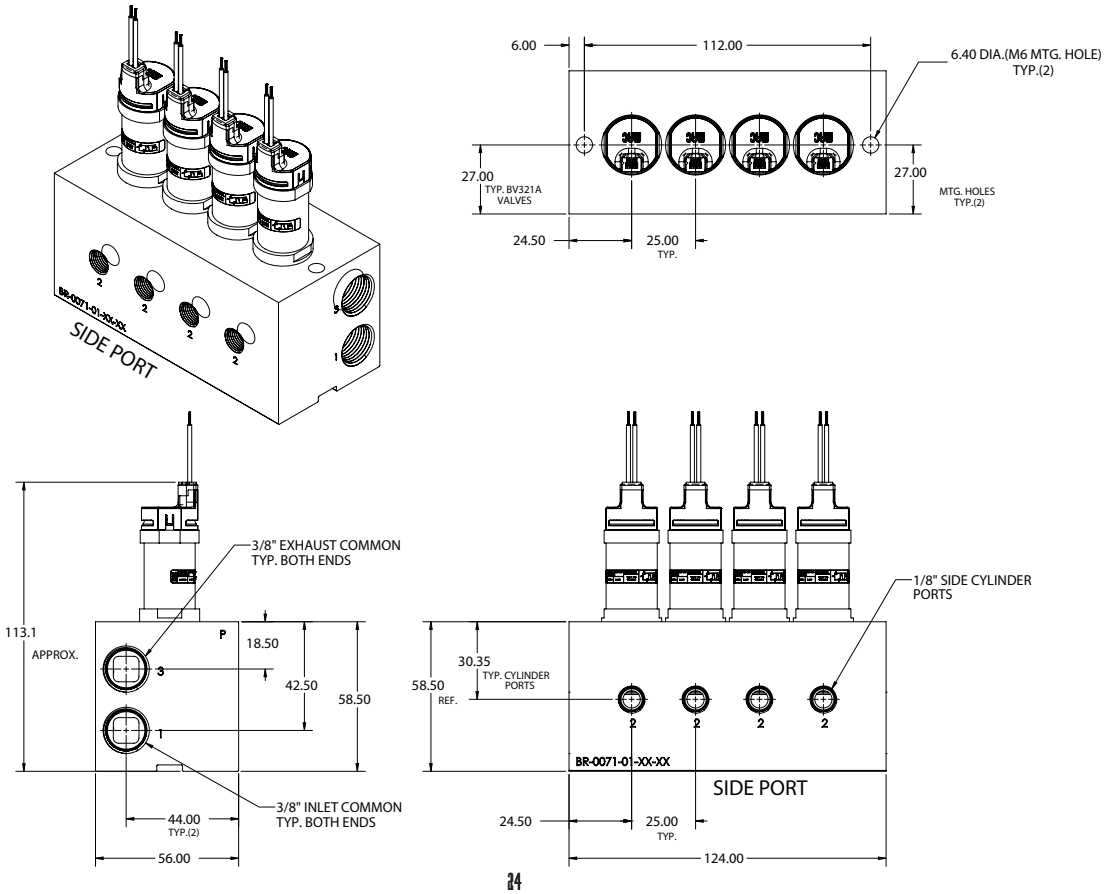
JST Connector



M12



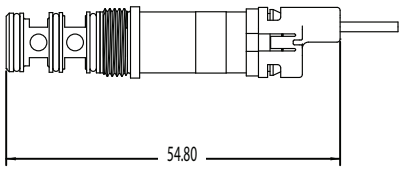
CCMV21A bar with BV321A valves

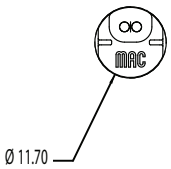


Connector Options

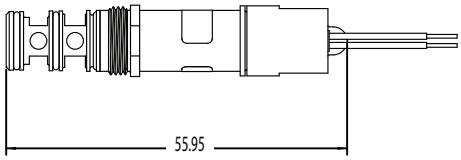
BV210

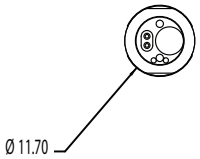
Flying Leads (BA)



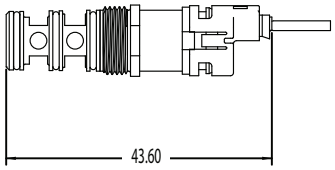


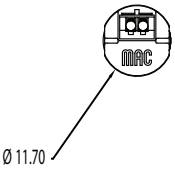
Flying Leads w/ LED (BC, BG, BL)



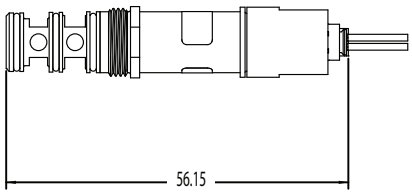


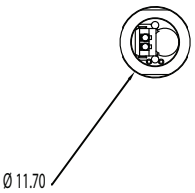
JST Connector (TA)



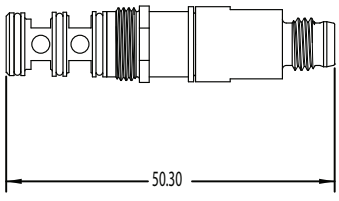


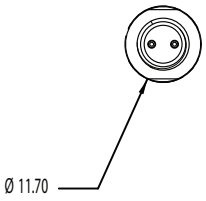
JST Connector w/ LED (TG, TL)



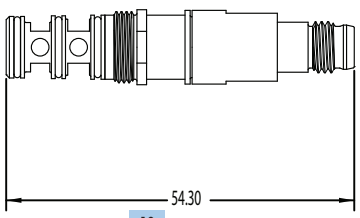


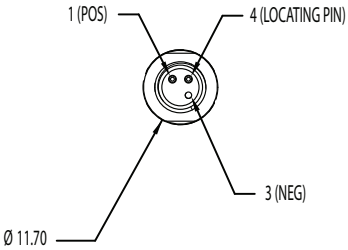
2 Pin PICO (PN)





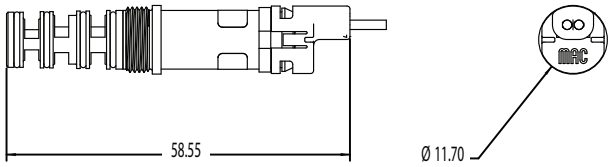
3 Pin PICO (PC, PE, PG, PJ, PL)



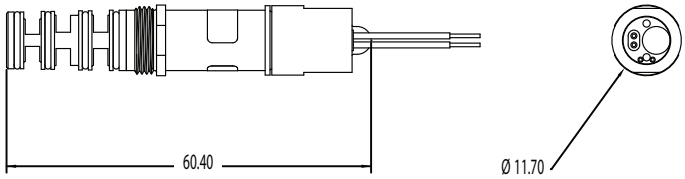


Connector Options
BV310

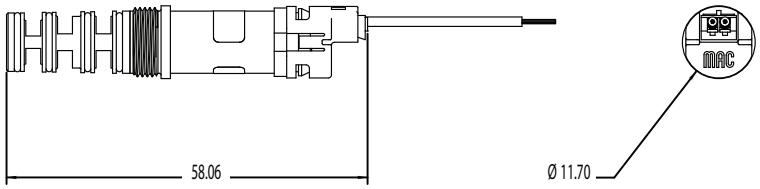
Flying Leads (BA)



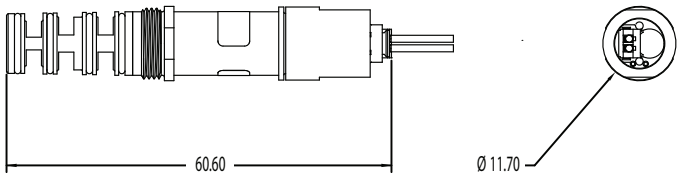
Flying Leads w/ LED (BC, BG, BL)



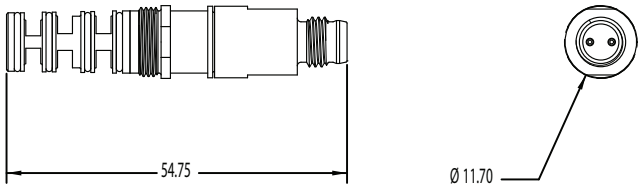
JST Connector (TA)



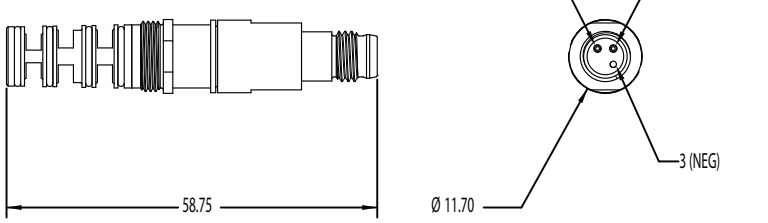
JST Connector w/ LED (TG, TL)



2 Pin PICO (PN)



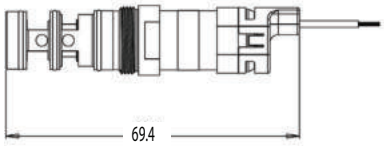
3 Pin PICO (PC, PE, PG, PJ, PL)

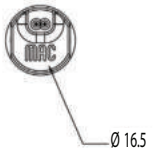


Connector Options

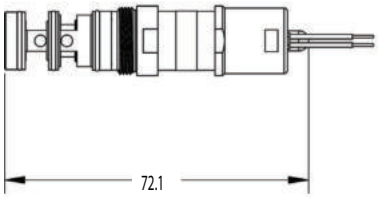
BV214

Flying Leads (BA)

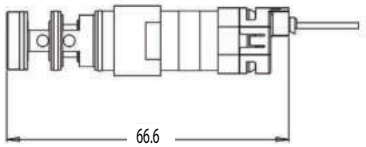




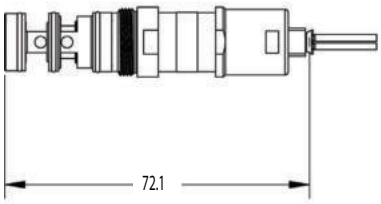
Flying Leads w/ LED (BC, BG, BL)



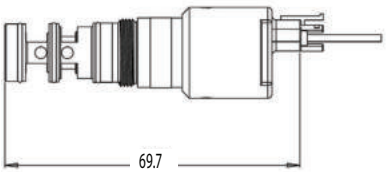
JST Connector (TA)



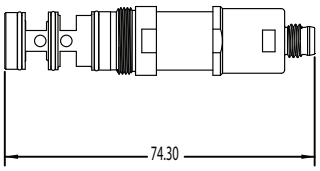
JST Connector w/ LED (TC, TG, TL)

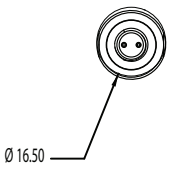


MAC Jac (GA)

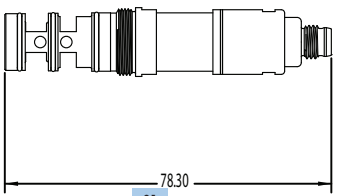


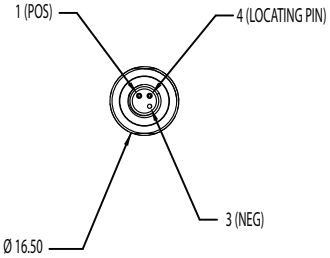
2 Pin PICO (PN)





3 Pin PICO (PC, PE, PG, PJ, PL)

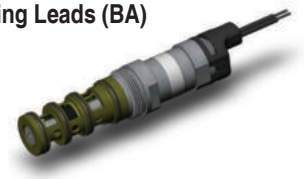


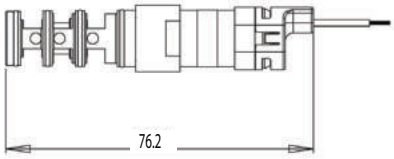


Connector Options

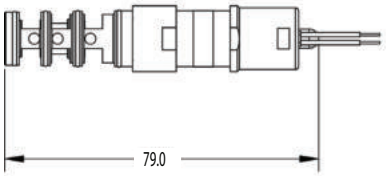
BV314

Flying Leads (BA)

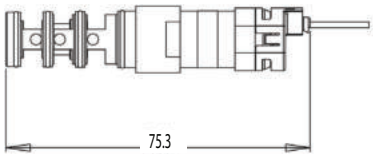


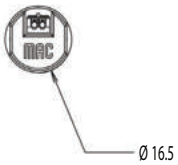


Flying Leads w/ LED (BC, BG, BL)

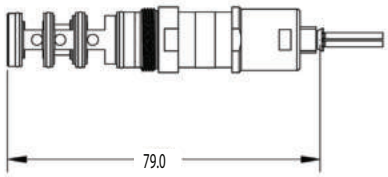


JST Connector (TA)

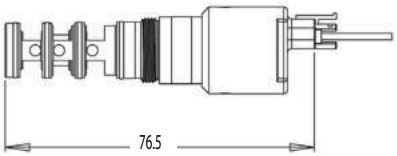


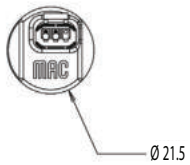


JST Connector w/ LED (TC, TG, TL)

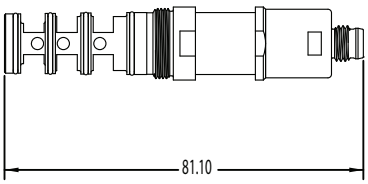


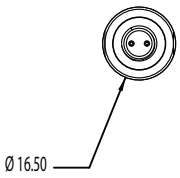
MAC Jac (GA)



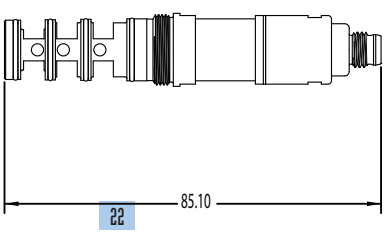


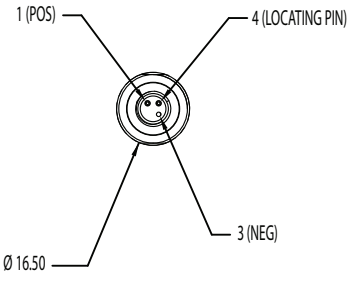
2 Pin PICO (PN)





3 Pin PICO (PC, PE, PG, PJ, PL)





PRECAUTIONS AND WARNINGS
CONCERNING THE APPLICATION, INSTALLATION AND SERVICE OF MAC VALVES AND OTHER MAC VALVES PRODUCTS

The warnings and precautions below are important to be read and understood before designing into a system any MAC Valves products, and before installing or servicing any MAC Valves product. Improper use, installation or servicing of any MAC Valves product in some systems could create a hazard to personnel or equipment. No distinction in importance should be made between the terms warnings and precautions.

WARNING :

Under no circumstances are MAC Valves products to be used in any application or in any manner where failure of the MAC Valves product to operate as intended could in any way jeopardize the safety of the operator or any other person or property.

- Do not operate outside of pressure range listed on a 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 a MAC Valves product, 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 sheet or by the factory.

APPLICATION PRECAUTIONS :

INDUSTRIAL USE -

- MAC Valve products are intended for general use in industrial pneumatic and/or vacuum systems. They are general purpose industrial products 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 Valve products 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 or this type valve should not be used.

OPERATING SPECIFICATIONS -

MAC Valves products are to be installed only on applications that meet all operating specifications described in the MAC catalog for the MAC Valves product.

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. If intentional or accidental operation of a valve by a manual operator could cause personal injury or property damage, a manual operator should not 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 any MAC Valves product without first turning off air (bleed system completely) and electricity to the machine.
B. MAC Valves products 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.
C. If air line lubrication is used do not use any lubrication other than those recommended in the catalog, parts & operation sheet or by the factory.

SERVICE PRECAUTIONS :

A. Do not service or remove from service any MAC Valves product 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 products should only be serviced or removed from service by qualified, knowledgeable personnel who understand how the specific product is used and/or 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. Before attempting to repair, adjust or clean a MAC Valves product, 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.
D. MAC Valves products are never to be stepped on while working on a machine. Damage to a MAC valve, or other product or lines to the product (either air or electrical lines) or accidental activation of a manual operator on the valve could result in personal injury or property damage.