



- 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



Function		Flow (r	nax]		Manifold mounting			Series			
2/2		Up t	o 0.08 Cv		Cartridge			BV210A			
OPERATIONAL	BENEFI	ſS									
 Short strol Balanced Precise re Solenoid is Very few p Extremely Unique model 	ke with poppet peatab solated parts long lif	high shifting force , immune to press ility from contaminate e - no fasteners or	es sure fluctuations ed air screws required								
How To Order VALVE									_2		
		Туре			2	Way					
		Cartridge	(Standard)		E	3V210	A-CA1	I-00- xxxx	-XXX		
		Cartridge	(Axial Flow)		E	3V210	A-CB)-00- xxxx	-XXX		
SOLENOID	OPE	RATOR	XX	<u>x x</u>	- <u>X XX</u>						
Solenoid		Voltage	Lead wire length	Sole	noid can (round)		2	Solenoid c	over		
B Round	EH	24VDC (2.5W)	0 [†] No lead wire	C Fo	For Top Cover Option and Can w/ Outer Threads	JST	Pico	Flying Le	ads		
	EG EK EJ	24VDC (4.0VV) 12VDC (2.5W) 12VDC (4.0W)	B 24" C 36"	Op Ou		TC	PC	BABC	Blocking & suppr. diode & LED (no ground)		
	20		D 48" E 72"			TE	PE	BE	Blocking & suppr. diode (no ground)		
			F 96" H 144" [†] Not available				PG	BG	LED (no ground)		
					or flying leads cover		PJ	BJ	MOV (no ground)		
			Only opti	Only option for Pico cover				DL	Transfer Board		
* High wattag High wattag ** ERC - Ener ERC wattag	ge - high ge config gy Redi ge reduc AR	n speed options - co gurations require int uction Circuitry - Re ction options - const	nsult factory ermittent duty cycles. duces the effective watt ult factory	age a	at continuous duty	Note is a l	: Pico c ocation	overs PC-I pin	PL have a 3rd Pin which		
Bullet valve	e type	Cyl. port size	Spacing (mm)		Side cylinder port			Bottom cylinder port			
		#10-32 UNF	12		CCMV10A-00AAA-xx			CCMV10A-00BAA-xx			
Standa	rd	M5	12		CCMV10A-00A	AB-x)	(CCM	V10A-00BAB- xx		
		 M7	M7 12						CCMV10A-00BAC-xx		

Axial flow

#10-32 UNF

М5

M7

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

-

-

CCMV10A-00BDA-xx

CCMV10A-00BDB-xx

CCMV10A-00BDC-xx

12

12



Technical Data	
Eluid	Compressed air vacuum inert gases
Fluid.	
Pressure range:	
Lubrication:	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
Filtration:	400

Filtration:	_40µ
Temperature range:	0°F to 120°F (-18°C to +50°C)
Flow (at 6 bar ΔP=1bar):	Up to 0.08 Cv
Voltage range:	-15% to +10% of nominal voltage

Tools: Manifold cavity step reamer: T-6960 • Insertion/removal socket: AT-1181 (Bit) AT-1185 (Bit Holder) AT-1184 (Handle)





unction	Flow [max]		1anifold mounting	Series				
3/2 NC, Universal	Up to 0.09 Cv	C	Cartridge	BV310A				
PERATIONAL BENEFITS								
. Short stroke with high s . Balanced poppet, immu . Precise repeatability . Solenoid isolated from . Very few parts . Extremely long life . Unique mounting - no f	shifting forces une to pressure fluctuat contaminated air fasteners or screws req	ions uired		C PARTING C PART				
Туре		3 Way N.	С.	3 Way Universal				
Cartridge (Stan	dard)	BV310A-CC1-00->	<i>XXX-XXX</i>	BV310A-CD1-00- xxxx-xxx				
OLENOID OPERATO	R	<u> </u>	<u>x xx</u>					
lenoid Ve	oltage	Lead wire length	Solenoid can (round)	Solenoid cover				
Round HA 24VDC (1 HB 24VDC (1 HC 24VDC (2 HD 24VDC (3 HE 24VDC (4	.0W) HF 12VDC (1.0W) .8W) HG 12VDC (1.8W) .5W) HH 12VDC (2.5W) .0W) HJ 12VDC (3.0W) .0W) HK 12VDC (4.0W)	 [†]0 No lead wire A 18" B 24" C 36" D 48" E 72" F 96" H 144" 	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				
High wattage - high speed ERC wattage reduction or	options - consult factory otions - consult factory	Not available for Only option for I	r flying leads cover ^D ico cover	(no ground) PN Transfer Board				
IRCUIT BAR				Note: Pico covers PC-PL have a 3rd Pin which is a location pin				
Port size		Spacing (m	m)	Side cylinder port				
# 10-32 UNF		12		CCMV10A-00ABA-xx				
845		12		CCMV10A-00ABB- xx				
IVI5		40						



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:	40µ
Temperature range:	0°F to 120°F (-18°C to +50°C)
Flow (at 6 bar ∆P=1bar):	Up to 0.09 Cv
Voltage range:	-15% to +10% of nominal voltage

Tools: Manifold cavity step reamer: T-6963 • Insertion/removal socket: AT-1181 (Bit) AT-1185 (Bit Holder) AT-1184 (Handle)





Function		Flow (max)		Manifold mounting			Series	
3/2 NC, Un	iversal	Up to 0	.08 Cv	Cv Manifold mount - Non plug-in				
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								
	Туре		3 Wa	y N.C.		3 Way Ui	niversal	
Manifold	Mount - Non plug	-in	BV310A-LC	1-00- <i>xxxx-xxx</i>	BV3	BV310A-LD1-00- xxxx-xxx		
SOLENOID	OPERATOR		<u>× xx x</u>	<u> </u>			7	
Solonoid	Voltago		Load wire length	Solonoid con (round)		Solonoi	d cover	
B Round	HA 24VDC (1. HB 24VDC (1. HC 24VDC (2. HD 24VDC (3. HE 24VDC (4. HF 12VDC (1. HG 12VDC (1. HH 12VDC (2. HJ 12VDC (2. HJ 12VDC (3. HK 12VDC (3.	0W) [†] 8W) 5W) 0W) 0W) 0W) 8W) 5W) 0W) 0W)	 No lead wire A 18" B 24" C 36" D 48" E 72" F 96" H 144" * Not availa Only optic 	B Cover For Manifold Body	JST F TA TC TE TE TJ TL	Pico Flying L BA PC BC PE BE PG BG PJ BJ PL BL	eads No ground wire Blocking & suppr. diode & LED(no ground) Blocking & suppr. diode (no ground) LED (no ground) MOV (no ground) LED & MOV (no ground)	
* High wattage ** ERC wattage	- high speed options	- consult consult fa	factory		Note:	PN Pico covers l	Transfer Board	
NON PLUG-	IN CIRCUIT BAF	R)		which	is a location	pin	
Port s	size	;	Spacing (mm)	Side cylinder p	ort	Bottom cylinder port		
# 10-3	2 UNF		12	CBMV10A-00AE	3A- xx	CBMV1	0A-00BBA- xx	
N	15		12	CBMV10A-00AE	3B- xx	CBMV10A-00BBB-xx		
N	17		12	CBMV10A-00ABC-xx		CBMV1	0A-00BBC- xx	
xx = Number Note: for valve	of stations es mounted to bar a -	at factory	/, add -9 to model nur	nbers.				
Options BV310A- LC 1 -	00- xxxx-xxx — Replace with "()" for no r	nanual operator	How to order bar con CBMV10A-00 A BB- x Note: Regulator n	figured for x Replace wit Replace wit nust be orde	<u>regulator</u> th D for regul th E for regul ered separate	ator - Side ports ator - Bottom ports ely - see next page	

* High wattage configurations require intermittent duty cycles

**ERC - Energy Reduction Circuitry - Reduces the effectiveness wattage at continuous duty







Function Flow			Flow [max]			Manifold mounting		Series			
2/2		Up	o to 0.	24 Cv		Cartridge	BV214A				
OPERATIONAL 1. Short stro 2. Balanced 3. Precise re 4. Solenoid i 5. Very few p 6. Extremely 7. Unique me	BENEFI ke with poppe peatak solated parts long li pounting	TS high shifting for t, immune to pre bility d from contamina fe g - no fasteners o	rces ssure ated ai	fluctuations r ws required							
VALVE								~			
	٦	Гуре		2-\	Nay (s	tandard)		2-Way (axial flow)			
	Ca	rtridge		BV214A-CA1-00-xxxx-xxx			B	/214A-CB0-00-xxxx-xxx			
SOLENOID	OPE	RATOR		X	<u>xx x</u>	· - <u>x xx</u>					
Solenoid		Voltage	Lead	d wire length Solenoid can (round)				Solenoid cover			
B Round	CA CB CC CD CE CF CG CH CJ CK	24VDC (1.0W) 24VDC (1.8W) 24VDC (2.5W) 24VDC (3.0W) 24VDC (4.0W) 12VDC (1.0W) 12VDC (1.8W) 12VDC (2.5W) 12VDC (3.0W) 12VDC (4.0W)	0* A B C C E E F C F C F K Not	No lead wire 18" 24" 36" 48" 72" 96" 144" available for flyin y option for Pico	C Fo O O O N D O	or Top Cover ption and Can w/ uter Threads s cover	JST Picc TA TC PC TE PE TG PG TJ PJ TL PL	Flying Leads BA No ground wire BC Blocking & suppr. diode & LED (no ground) BE Blocking & suppr. diode (no ground) BG LED (no ground) BJ MOV (no ground) BL LED & MOV (no ground) Transfer Board			
	٩R						Note: Pico	[†] GA MAC JAC Connector covers PC-PL have a 3rd Pin which			
Bullet valve type Cyl. port size		Spacing (mn	Spacing (mm) Side cylinder p		port	Bottom cylinder port					
		M7		17		CCMV14A-00A	AA- xx	CCMV14A-00BAA-xx			
Standa	rd	1/8"		17		CCMV14A-00A	AB- xx	CCMV14A-00BAB-xx			
		5/32 tube rec	pt.	17		CCMV14A-00A	AC- xx	CCMV14A-00BAC-xx			
Axial flow		M7		17 -				CCMV14A-00BDA-xx			

xx = Number of stations

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

1/8"

[†] Requires special spacing - - consult factory Note: Common inlet & exhaust are 1/4" NPTF For BSPPL or BSPTR threads consult factory

CCMV14A-00BDB-xx

-



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:	40µ
Temperature range:	0°F to 120°F (-18°C to +50°C)
Flow (at 6 bar, Δ P=1bar):	Up to 0.24 Cv (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)





Function	Flow [max]	Manifold mounting	Series			
3/2	Up	to 0.24 Cv	Cartridge	BV314A			
OPERATIONAL B	BENEFITS						
1. Short stroka 2. Balanced p 3. Precise rep 4. Solenoid isa 5. Very few pa 6. Extremely l 7. Unique mod How To Order	e with high shifting forc oppet, immune to prese beatability olated from contaminat arts ong life unting - no fasteners or	es sure fluctuations ed air screws required					
VALVL	Туре	:	3-Way N.C.	3-Way universal valve			
		~					
	Cartridge	BV314A	-CC1-00- xxxx-xxx	BV314A-CD1-00-xxxx-xxx			
SOLENOID	OPERATOR	X	<u>x x - x xx</u>				
Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover			
B Round	CA 24VDC (1.0W) CB 24VDC (1.8W) CC 24VDC (2.5W) CD 24VDC (3.0W) CE 24VDC (4.0W) CF 12VDC (1.0W) CG 12VDC (1.8W) CH 12VDC (2.5W) CJ 12VDC (3.0W)	0* No lead wire A 18" B 24" C 36" D 48" E 72" F 96" H 144" *Not available for flying	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)			

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

[†] GA MAC JAC Connector

Transfer Board

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

PN

CIRCUIT BAR

Cyl. port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
M7	17	CCMV14A-00ABA-xx	CCMV14A-00BBA-xx
1/8"	17	CCMV14A-00ABB-xx	CCMV14A-00BBB-xx
5/32 tube receptacle	17	CCMV14A-00ABC-xx	CCMV14A-00BBC-xx

xx = Number of stations

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

CK 12VDC (4.0W)

[†]Requires special spacing - - consult factory Note: Common inlet & exhaust are 1/4" NPTF For BSPPL or BSPTR threads consult factory



Compressed air, vacuum, inert gases
Vacuum to 120 PSI
Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)
40µ
0°F to 120°F (-18°C to +50°C)
Up to 0.24 Cv (4.0 W)
-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)





Function		F	loш [max]	Manifold mounting			Series					
2/2		ι	Jp to 0.	6 Cv		Cartridge					BV221A	
OPERATIONAL	. BENEFITS											
1. Short str 2. Balanced 3. Precise r 4. Solenoid 5. Very few 6. Extremel 7. Unique n How To Orde VALVE	oke with hig d poppet, im repeatability isolated fro parts ly long life nounting - n	h shifting f mune to p m contami o fastener	forces ressure f inated ain s or scre	luctuations ws required	; d							
	Туре	•		2-Way (standard)				2-Way (axial flow)				
	Cartrid	ge		BV221A-CA1-00-xxxx-xxx				BV221A-CB0-00-xxxx-xxx				
SOLENOI		TOR			<u>x xx</u>	<u>x - x xx</u>						
Solenoid	Volta	qe	Lead w	/ire length Solenoid can (round)				Solenoid cover				
P Pound		C (1.0W)	0* No	load wire	C For	Top Covor	M12	IST	Pico	Elving	leads	
		C (1.8W)	A 18'	, ,	Ont	ion and Can w/	10112	TA	1100	BA	No ground wire	
	CC 24VD	C (2.5W)	B 24'	,	Out	er Threads	RC	ТС	PC	BC	Blocking & suppr.	
	CD 24VD	C (3.0W)	C 36'	,				TE	05		diode & LED (no ground)	
	CE 24VD	C (4.0W)	D 48'	,			RE	IE.	PE	BE	BIOCKING & SUPPR.	
	CF 12VD	C (1.0W)	F 96'	,			RG	TG	PG	BG	LED (no ground)	
			H 14	4"			RJ	TJ	PJ	BJ	MOV (no ground)	
		(2.500)	*NI64	ovoiloble for	fluing	ada aavar	RL	TL	PL	BL	LED & MOV	
	CK 12VD	C(3.0W)			inying lea	aus cover	DN		DN		(no ground)	
		- ()	Only				RN		۲N		GA MAC JAC Connector	

Note:

For CIRCUIT BAR ordering information please consult factory

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



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:	40μ
Temperature range:	0°F to 120°F (-18°C to +50°C)
Flow:	Up to 0.60 Cv (4.0 W)
Voltage range:	-15% to +10% of nominal voltage

Tools: Manifold cavity step reamer: T-7571 • Insertion/removal socket: AT-1365 (Bit)



BV221A valves



Function	Floi	u [max]	Manifold mounting	Series
3/2	UI	o to 0.6 Cv	Cartridge	BV321A
OPERATIONAL BENE 1. Short stroke wi 2. Balanced popp 3. Precise repeata 4. Solenoid isolate 5. Very few parts 6. Extremely long 7. Unique mountin How To Order VALVE	FITS th high shifting fo et, immune to pre ability ed from contamin life ng - no fasteners	rces essure fluctuations ated air or screws required	1	
	Туре		3-Way N.C.	3-Way universal valve
С	artridge	BV3	321A-CC1-00- xxxx-xxx	BV321A-CD1-00-xxxx-xxx
SOLENOID OP	ERATOR		<u> </u>	
Solenoid	Voltage	Lead wire length	Solenoid can (round)	Solenoid cover
B Round CA CB CC CD CE CF CG CH CJ CK CIRCUIT BAR	24VDC (1.0W) 24VDC (1.8W) 24VDC (2.5W) 24VDC (3.0W) 24VDC (4.0W) 12VDC (1.0W) 12VDC (1.8W) 12VDC (2.5W) 12VDC (3.0W) 12VDC (4.0W)	 0* No lead wire A 18" B 24" C 36" D 48" E 72" F 96" H 144" *Not available for f Only option for Pier 	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
Cyl. port siz	ze Spa	cing (mm)	Side cylinder port	Bottom cylinder port

Cyl. port size	Spacing (mm)	Side cylinder port	Bottom cylinder port
1/8"	25	CCMV21A-00ABA-xx	CCMV21A-00BBA-xx
1/4"	25	CCMV21A-00ABB-xx	CCMV21A-00BBB-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 120 PSI		
Lubrication:	Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)		
Filtration:	40µ		
Temperature range:	0°F to 120°F (-18°C to +50°C)		
Flow:	Up to 0.60 Cv (4.0 W)		
Voltage range:	-15% to +10% of nominal voltage		

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









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





56.15 -

43.60



Ø 11.70

2 Pin PICO (PN)



JST Connector w/ LED (TG, TL)



JST Connector (TA)



Flying Leads (BA)



Ø 11.70 ·

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





Connector Options

BV210

|O|

 \bigcirc С Ø 11.70







2 Pin PICO (PN)



JST Connector w/ LED (TG, TL)



JST Connector (TA)



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





















Connector Options BV310





Ø 11.70 ·



- 58.75

20

60.60









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.







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.

www.macvalves.com

THINK GLOBAL [®]ACT Local

Our global distribution network is keeping your omeration machines running around the clock around the world





@

VALVES

36.0





MAC VALVES, INC. P.O. BOX 111 30569 BECK ROAD WIXOM, MI 48393-7011

MAC VALVES, INC. 5555 ANN ARBOR ROAD DUNDEE, MI 48131

MAC VALVES EUROPE, INC. RUE MARIE CURIE, 12 B- 4431 ANS (LIEGE) BELGIUM

MAC VALVES ASIA, INC. NO. 45, DONGYUAN ROAD JHONGLI CITY, TAOYUAN COUNTY TAIWAN

MAC VALVES PACIFIC, INC. P.O. BOX 12221 PENROSE, AUCKLAND NEW ZEALAND

0

TEL: 1 (248) 624-7700 FAX: 1 (248) 624-0549 www.macvalves.com mac@macvalves.com

76.0

TEL: 1-800-MAC VLVS

TEL: 1 (734) 529-5099 FAX: 1 (248) 863-2959

TEL: 32 (4) 239 68 68 FAX: 32 (4) 263 19 42 info@macvalves.be

TEL: 886 (3) 463-6868 FAX: 886 (3) 463-4576 mva@macasia.com.tw

TEL: 64 (9) 634-9400 FAX: 64 (9) 634-9401 www.macvalves.co.nz sales@macvalves.co.nz

TYP