



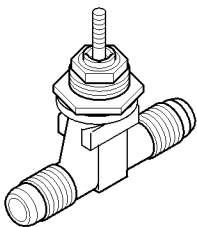
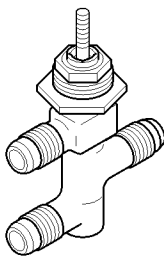
ENVIRONMENTAL CONTROLS

1354 Clifford Avenue
P.O. Box 2940
Loves Park, IL U.S.A. 61132-2940

VB-121-0-4-P VB-324-0-5-4

Valve Selection Guide Product Information

Table-1 Select Valve Body including P Code (Valve Size, Cv Rating, Port Code).

		Application	
		Chilled or Hot Water, 281°F (138°C) Maximum 35 psig Steam	Chilled or Hot Water 281°F (138°C) Maximum
		SAE Flared (Mating Nuts Not Included)	
			
Size		1/2" O.D. Tube	
Valve Body		VB-121-0-4-P	VB-324-0-5-4
Flow Type		Equal %	Three-Way Mixing
Material	Body	Brass	
	Seat		
	Stem	Stainless Steel	
	Plug	Brass	
	Stem Packing	Teflon "V" Rings	
	Disc	Teflon	None
Steam			
Pressure psig (kPa)	Maximum Operating	35 (242)	--
	Recommended Differential*	25 (173) *	
Fluid Temp. °F (°C)	Maximum	281 (138)	
Water			
Pressure psig (kPa)	Maximum Operating	250 (1725)	
	Recommended Differential	35 (242) *	
Fluid Temp. °F (°C)	Minimum	40 (4)	
	Maximum	281 (138)	
To Select a Port Code (P)			
P Code	Valve Size	Cv	
-1	1/2"	0.9	--
-2		1.4	
-3		1.9	
None		--	1.5

* Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected. Do not exceed close-off rating (refer to Table-2 and Table-4).

Two-Way

When using two-way valves, refer to Table-2 to select actuators. Refer to Table-3 to select valve assemblies. Select an actuator having sufficient close off pressure for the application.

NOTE

Close-off pressure ratings apply when valves are installed with pressure under the seat.

Install valves to close against flow. Arrow on valve body indicates flow direction.

Table-2 Actuator Selection for Two-Way Valves.

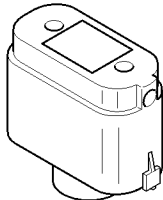
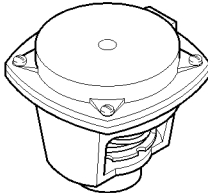
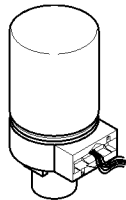
																
Actuator Models	MK-2690						MK-4601	MK-4611		MK-4621		MA-521X	MF-5413 MF-5513	MP-521X MP-541X MPR-561X		
Input Signal	Pneumatic											2-Position SPST	Floating SPDT	Proportional Electronic		
Valve Linkage	AV-400						AV-401						AV-600	AV-600 + AV-601		
Positive Positioner	AK-42309-500											--				
Normal Position	Open															
Spring Range (psig)	3 to 7		5 to 10		8 to 13		3 to 8		5 to 10		8 to 13		--			
Supply Air Pressure (psig)	15	20	15	20	15	20	15	20	15	20	15	20				
Close Off Pressure (psig)	190	250	90	220	--	160	250	250	180	250	40	250	125			
Valve Body	VB-121-0-4-P															
P Code	-1, -2, -3															
Size	1/2" O.D.															
Factory Available Valve Assembly	VA-1219-XXX-4-P															
	VF-1219-XXX-4-P															
	VK-1219-XXX-4-P															
	VS-1219-XXX-4-P															

Table-3 VB-121 Two-Way Valve Assemblies.

Valve Assembly Number	Valve Body	Linkage	Actuator
VA-1219-211-4-1,2,3	VB-121-0-4-1,2,3	AV-600	MA-5210
VA-1219-221-4-1,2,3			MA-5211
VA-1219-201-4-1,2,3			MA-5213
VF-1219-221-4-1,2,3		AV-600/AV-601	MF-5413
VF-1219-223-4-1,2,3			MF-5513
VK-1219-201-4-1,2,3		AV-400	MK-2690 (3 to 7 psig)
VK-1219-202-4-1,2,3			MK-2690 (5 to 10 psig)
VK-1219-203-4-1,2,3			MK-2690 (8 to 13 psig)
VS-1219-211-4-1,2,3		AV-600	MP-5210
VS-1219-221-4-1,2,3			MP-5211
VS-1219-201-4-1,2,3			MP-5213
VS-1219-244-4-1,2,3		AV-600/AV-601	MP-5410
VS-1219-245-4-1,2,3			MP-5411
VS-1219-247-4-1,2,3			MP-5413
VS-1219-264-4-1,2,3			MPR-5610
VS-1219-265-4-1,2,3			MPR-5611
VS-1219-267-4-1,2,3			MPR-5613

Three-Way

When using three-way valves, refer to Table-4 to select actuators. Refer to Table-5 to select valve assemblies. Select an actuator having sufficient close off pressure for the application.

NOTE

Fluid flow through the ports is as follows:

Stem Up - flow through Port B to Port AB.

Stem Down - Flow through Port A to Port AB.

Stem in Midsection - Flow through Ports A and B to Port AB.

Table-4 Actuator Selection for Three-Way Valves.

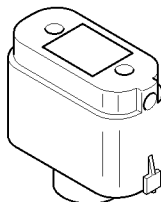
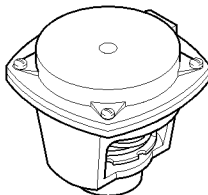
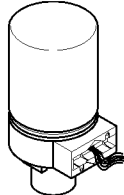
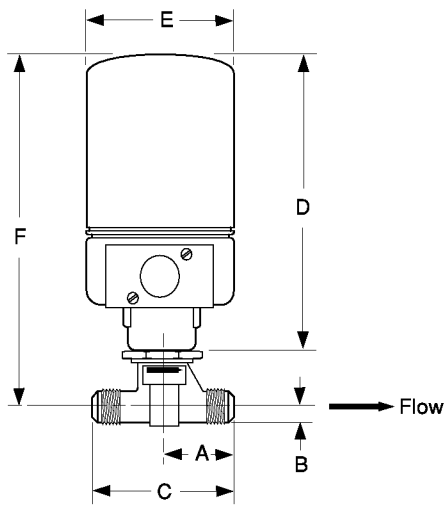
																			
Actuator Models		MK-2690						MK-4601		MK-4611		MK-4621		MA-521X		MF-5413 MF-5513		MP-521X MP-541X MPR-561X	
Input Signal		Pneumatic												2-Position SPST		Floating SPDT		Proportional Electronic	
Valve Linkage		AV-400						AV-401						AV-600		AV-600 + AV-601			
Positive Positioner		AK-42309-500												--					
Normal Position		Open						Stem Up											
Spring Range (psig)		3 to 7		5 to 10		8 to 13		3 to 8		5 to 10		8 to 13		--					
Supply Air Pressure (psig)		15	20	15	20	15	20	15	20	15	20	15	20						
Close Off Pressure (psig)	Stem Up	20		130		250		80		200		200		125					
	Stem Down	200	250	90	250	0	165	200	50			200							
Valve Body		VB-324-0-5-4																	
Size		1/2" O.D.																	
Factory Available Valve Assembly		VA-3249-XXX-4-P																	
		VF-3249-XXX-4-P																	
		VK-3249-XXX-4-P																	
		VS-3249-XXX-4-P																	

Table-5 VB-324 Three-Way Mixing Valve Assemblies.

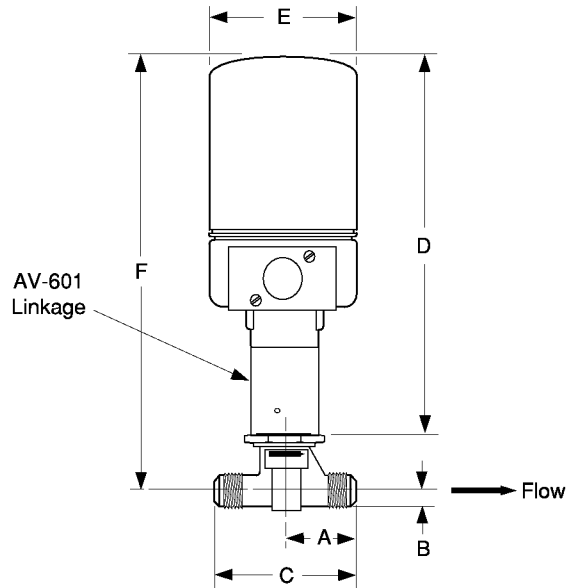
Valve Assembly Number	Valve Body	Linkage	Actuator
VA-3249-211-5-4	VB-324-0-5-4	AV-600	MA-5210
VA-3249-221-5-4			MA-5211
VA-3249-201-5-4			MA-5213
VF-3249-221-5-4		AV-600/AV-601	MF-5413
VF-3249-223-5-4			MF-5513
VK-3249-201-5-4		AV-400	MK-2690 (3 to 7 psig)
VK-3249-202-5-4			MK-2690 (5 to 10 psig)
VK-3249-203-5-4			MK-2690 (8 to 13 psig)
VS-3249-211-5-4		AV-600	MP-5210
VS-3249-221-5-4			MP-5211
VS-3249-201-5-4			MP-5213
VS-3249-244-5-4		AV-600/AV-601	MP-5410
VS-3249-245-5-4			MP-5411
VS-3249-247-5-4			MP-5413
VS-3249-264-5-4			MPR-5610
VS-3249-265-5-4			MPR-5611
VS-3249-267-5-4			MPR-5613

Table-6 Restrictions on Maximum Fluid Temperature for Valve Assemblies.

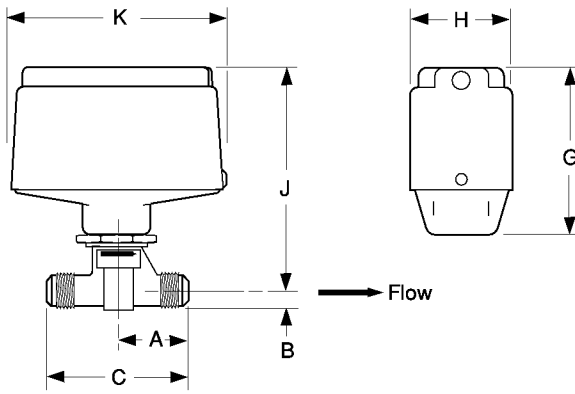
Valve Assembly	Maximum Allowable Ambient Temperature °F (°C)	Maximum Allowable Fluid Temperature for Steam and Water °F (°C)	Maximum Allowable Fluid Temperature for Water °F (°C)
VS-1219	115 (46)	281 (138)	--
	140 (60)	200 (93)	
VK-1219	160 (71)	281 (138)	
	220 (104)	250 (121)	
VS-3249	115 (46)	--	281 (138)
	140 (60)		200 (93)
VK-3249	160 (71)		281 (138)
	220 (104)		250 (121)



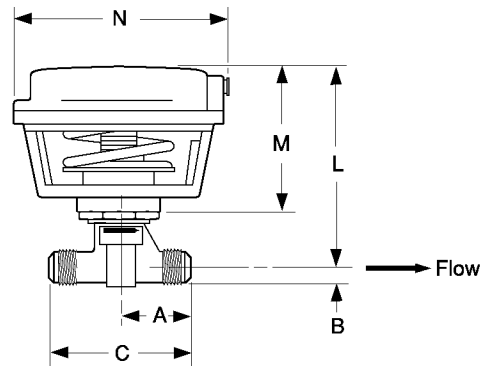
VA-1219-2X1-4-P, VS-1219-2X1-4-P
Valve Assembly with Solid State
Two-Position or Proportional Actuator



VF-1219-22X-4-P,
VS-1219-24X-4-P, VS-1219-26X-4-P
Valve Assembly with Solid State
Floating or Proportional Actuator



VK-1219-20X-4-P
Valve Assembly with
MK-2690 Pneumatic Actuator



VB-121-0-4-P Valve Body with
MK-46X1 Pneumatic Actuator
(Factory Assembly Not Available)

Figure-1 Dimensions of Two-Way Valve Assemblies.

Table-7 2-Way Valve Assembly Dimensions.

Valve Assembly Part Number	Valve Size	Dimensions in inches (mm)													
		Valve Body			Actuator										
		A	B	C	D	E	F	G	H	J	K	L	M	N	
VA-1219-2X1-4-P VS-1219-2X1-4-P	1/2"	1-5/8 (41)	3/8 (10)	3-1/8 (79)	6-3/4 (171)	3-1/4 (83)	8-1/8 (206)	--							
VF-1219-22X-4-P VS-1219-24X-4-P VS-1219-26X-4-P					8-25/32 (223)		10-5/32 (258)								
VK-1219-20X-4-P					--			3-5/8 (25)	2-1/4 (57)	5 (127)	4-5/8 (117)	--			
VB-121-0-4-P Valve with MK-46X1 Actuator (Factory Assembly Not Available)					--						5-1/4 (133)		3-7/8 (98)		4-3/4 (121)

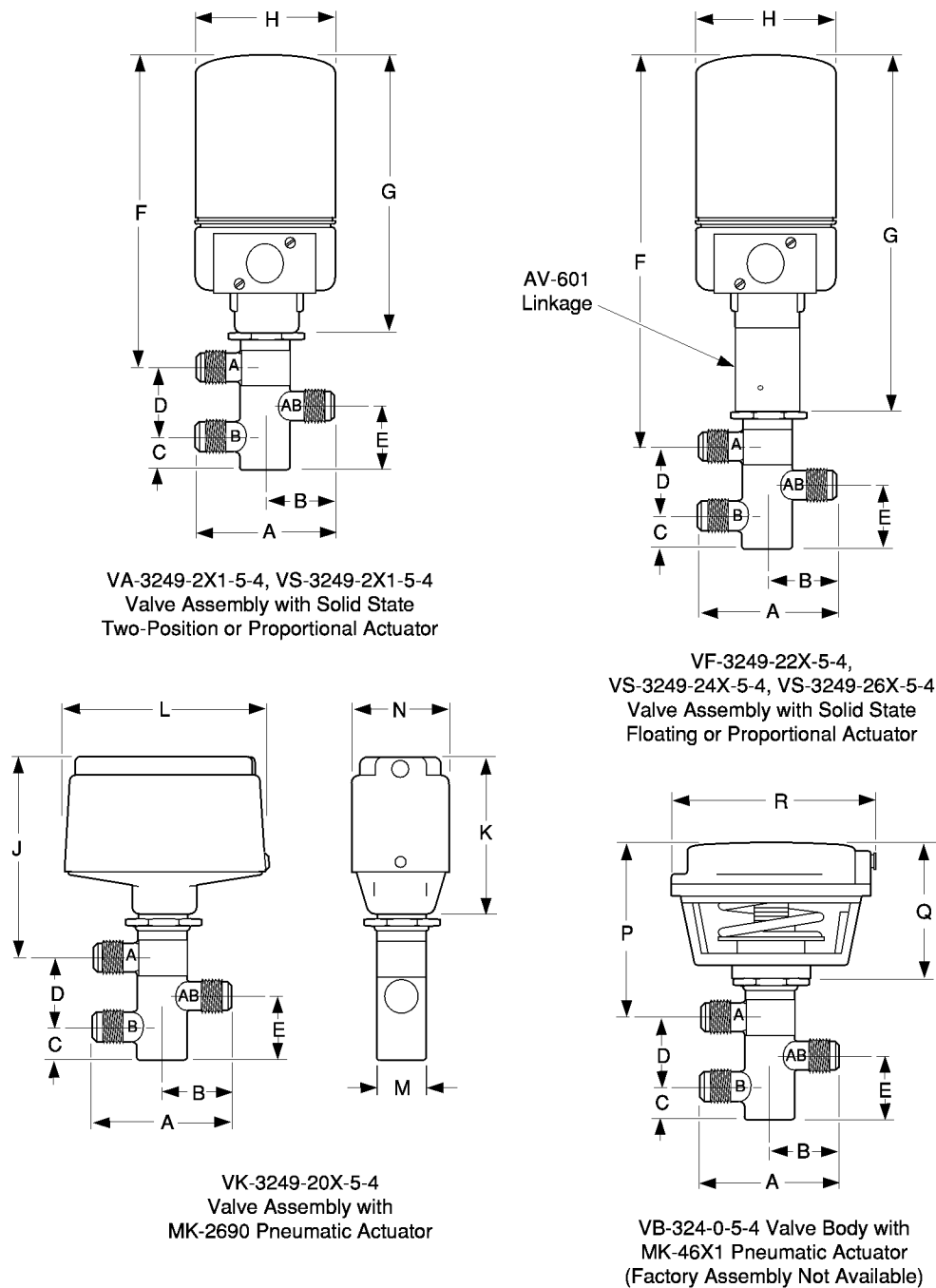


Figure-2 Dimensions of Three-Way Valve Assemblies.

Table-8 Three-Way Valve Assembly Dimensions.

Valve Assembly Part Number	Valve Size	Dimensions in inches (mm)															
		Valve Body					Actuator										
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
VA-3249-2X1-5-4 VS-3249-2X1-5-4	1/2"	3-1/8 (79)	1-5/8 (41)	3/4 (19)	1-7/8 (48)	1-5/8 (41)	8-1/8 (206)	6-3/4 (171)	3-1/4 (83)	--							
VF-3249-22X-5-4 VS-3249-24X-5-4 VS-3249-26X-5-4							10-5/32 (258)	8-25/32 (223)									
VK-3249-20X-5-4							--			5 (127)	3-5/8 (92)	4-5/8 (117)	1-1/16 (27)	2-1/4 (57)	--		
VB-324-0-5-4 Valve with MK-46X1 Actuator (Factory Assembly Not Available)							--							--			5-1/4 (133)

