



VA-MK Series

High-performance 2 way butterfly valves, ANSI Class 150



Overview

The VA-MK Series high performance butterfly valves set the quality and design standard by which all other high performance valves are measured. The VA-MK Series is ideally suited to high pressure, high temperature, and high cycle HVAC applications as well as mission critical HVAC applications.

All valves are tested for bubble tight close-off to API 598 standards at maximum rated differential pressure.

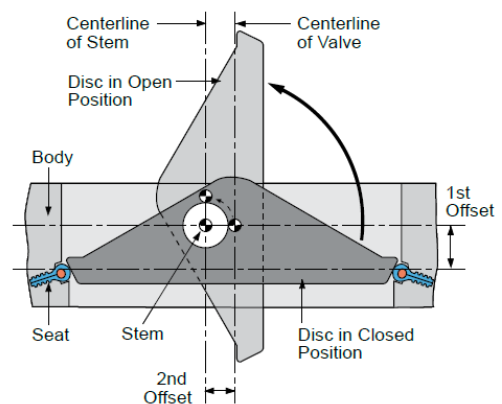
Applications

- High pressure, high temperature, and high cycle HVAC applications
- Mission critical HVAC applications

Features & Benefits

- Blow-out proof stem for safety and ease of use
- Energized RTFE seat is self-adjusting for wear and easily field replaceable
- Pressure assisted, but not pressure dependant seat design allows optimal performance and sealing at high or low differential pressures
- Adjustable PTFE packing can be adjusted while the valve is in service
- Dead-end rating equal to nominal pressure rating allows the control valve to also function as an isolation valve
- One piece wafer, lug or double flanged design with extended neck to allow for 2" of piping insulation.

- Externally adjustable stem packing system allows packing adjustment without removing the actuator.
- Hand-polished seat edge to minimize torque and maximize sealing capability.
- Rated for bi-directional tight shut-off at full pressure rating for liquid and de-rated for steam.
- Internal over-travel stop provided to prevent over-travel of the disc and minimize possible seat damage.
- Double offset stem/disc design allows reduced seat wear, zero leakage, and low torque



Model Selection

BVF - High Performance	VA-	MKL2-	C	XXX/	70-XXXX	XX	X
MK Series	ANSI 150 - Lug Body - 2-way						
Configuration	C = Normally Closed						
Valve Size	025 = 2.5" 030 = 3" 040 = 4" 050 = 5" 060 = 6" 080 = 8" 100 = 10" 120 = 12" 140 = 14" 160 = 16" 180 = 18" 200 = 20"						
Actuator (120V, On/Off)	70-0061 (for 2.5" to 4" valves only) 70-0121 (for 5" and 6" valves only) 70-0201 (for 8" valves only) 70-0301 (for 10" valves only) 70-0501 (for 12" valves only) 70-0651 (for 14" valves only) 70-1300 (for 16" valves only) 70-1800 (for 18" and 20" valves only)						
Modulating Signal	Add "SV" at the end of the part number						
Heater	H = Anti-Condensation Heater						

Product Specifications

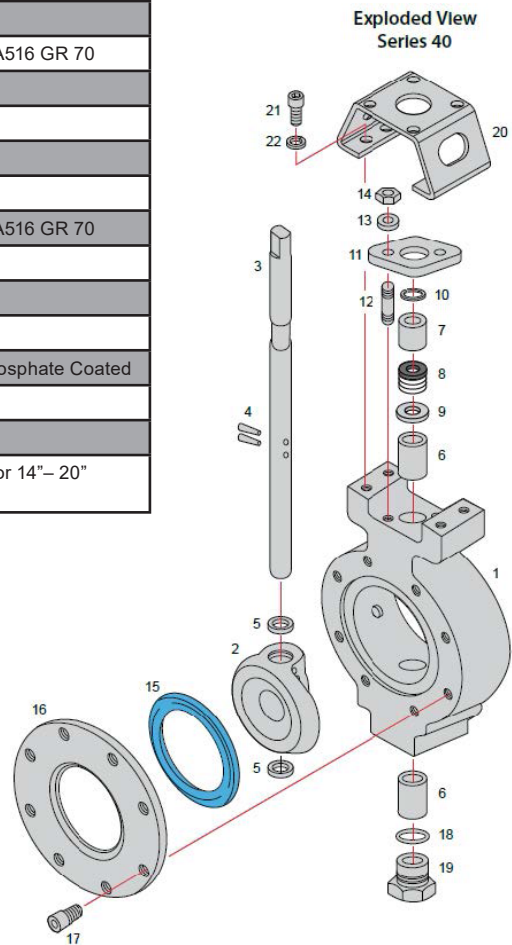
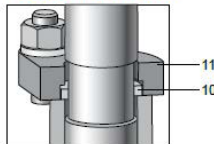
Service	Hot water, chilled water, condenser water, steam
Body style	Lug, 2-way ANSI 150
Size range	2-1/2" through 20" (DN 50 to 500)
Flow characteristic	Modified Equal Percentage
Close off liquid pressure	285 PSI (20 BAR)
Max steam pressure	
<input type="checkbox"/> On/Off applications	150 PSI (10 BAR)
<input type="checkbox"/> Modulating applications	50 PSI (3.5 BAR)
Leakage	Bubble tight at rated maximum differential pressure
Maximum fluid velocity	30 ft/second (9 m/second)
Flow coefficients	See Lug Data table
Fluid temperature limits	Water -40 to 500°F (-40 to 250°C)
Materials	See Materials of Construction chart

Materials of Construction

Item	Name	Material
1	Body	Carbon Steel, ASTM A216 GR WCB /A516 GR 70
2	Disc	Stainless Steel, ASTM A351 GR CF8M – Standard with Electroless Nickel Plating on disc edge – FIRE SAFE
3	Stem	17-4 PH SS, ASTM A564-Type 630
4	Taper pins	17-4 PH SS, ASTM A564-Type 630
5	Disc spacers	316 Stainless Steel, ASTM 276 Type 316
6	Bearing assembly	316 Stainless Steel with TFE & Glass Fabric Liner
7	Gland ring	316 Stainless Steel, ASTM 276 Type 316
8	Stem seal	PTFE rings plus 1 Carbon Fiber ring – Standard Valve Flexible Graphite rings – FIRE SAFE
9	Thrust washer	316 Stainless Steel, ASTM 276 Type 316
10	Retaining ring	18-8 Stainless Steel
11	Gland retainer	Carbon Steel, ASTM A216 GR WCB /A516 GR 70
12	Stud	316 Stainless Steel, ASTM A193-B8M
13	Lock washers	18-8 Stainless Steel
14	Hex nut	18-8 Stainless Steel
15	Seat assembly	RTFE ¹ with Silicone Rubber Energizer
16	Seat retainer plate	Carbon Steel, ASTM A216 GR WCB /A516 GR 70
17	Cap screws	18-8 Stainless Steel Alloy Steel
18	Gasket	PTFE – Standard Valve
19	Locating plug	Carbon Steel, Phosphate Coated
20	Mounting plate	18-8 Stainless Steel Carbon Steel, Phosphate Coated
21	Cap screws	18-8 Stainless Steel Alloy Steel
22	Lock washers	18-8 Stainless Steel Alloy Steel
Not Shown: Bellville Washer and Grounding Washer: 18-8 Stainless Steel, for 14" – 20" Class 150,		

1. RTFE is supplied as RPTFE (reinforced polytetrafluoroethylene).
2. Other materials are available, please consult factory for your specific application.

Blow-Out Proof Stem

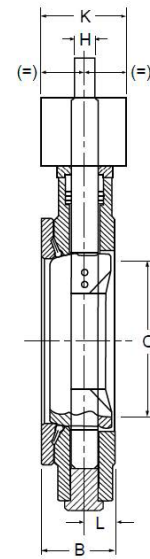
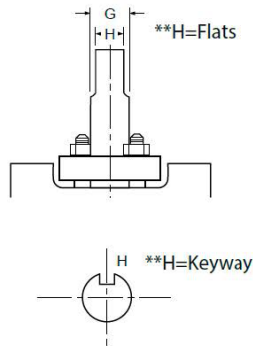
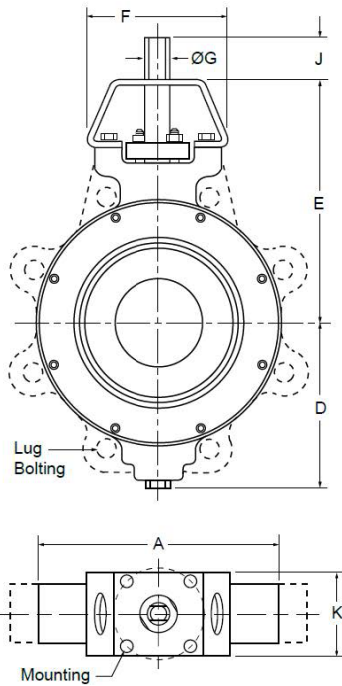


Dimensions - ANSI 150

LUG DATA

Valve Size		A	B	C \neq	D	E	F	Mounting Data			G	H**	J	K	L	Lug Bolt Data			Weights
in.	mm.							BCD	No. Holes	Hole Dia.						BCD	No. Holes	Hole Dia.	Lug
2-1/2	65	4.75	1.88	2.25	3.81	6.38	4.36	2.76	4	0.38	0.63	0.43	1.25	2.50	0.77	5.50	4	3/8-11	22
3	80	5.25	1.88	2.86	4.09	6.63	4.36	2.76	4	0.38	0.63	0.43	1.25	2.50	0.77	6.00	4	3/8-11	30
4	100	6.72	2.03	3.72	4.71	7.50	4.36	2.76	4	0.38	0.63	0.43	1.25	2.50	0.75	7.50	8	3/8-11	36
5	125	7.62	2.23	4.80	5.07	7.50	5.12	2.76	4	0.38	0.75	0.51	1.25	4.50	0.94	8.50	8	3/4-10	49
6	150	8.62	2.23	5.88	5.57	8.00	5.12	2.76	4	0.38	0.75	0.51	1.25	4.50	0.94	9.50	8	3/4-10	62
8	200	10.81	2.40	7.80	6.94	9.50	5.12	4.92	4	0.53	0.87	0.63	1.25	4.50	0.94	11.75	8	3/4-10	107
10	250	13.06	2.75	9.78	8.56	10.75	6.12	4.92	4	0.53	1.18	0.87	2.00	4.50	1.07	14.25	12	7/8-9	110
12	300	15.42	3.08	11.74	10.18	12.25	6.12	4.92	4	0.53	1.18	0.87	2.00	4.50	1.13	17.00	12	7/8-9	156
14	350	17.24	3.73	12.90	11.95	14.50	7.75	4.92	4	0.53	1.38	.39x.39	2.00	6.50	1.42	18.75	12	1-8	228
16	400	19.50	4.11	14.68	12.94	17.75	10.38	6.50	4	0.81	1.97	.47x.39	2.50	6.50	1.66	21.25	16	1-8	268
18	450	21.38	4.61	16.60	14.15	20.00	10.38	6.50	4	0.81	1.97	.47x.39	2.50	6.50	1.86	22.75	16	1 1/8-8	400
20	500	23.62	5.03	18.50	15.26	22.75	10.38	6.50	4	0.81	2.50	.62x.62	4.00	6.50	2.06	25.00	20	1 1/8-8	510

Dimensions are in inches and weights in pounds.



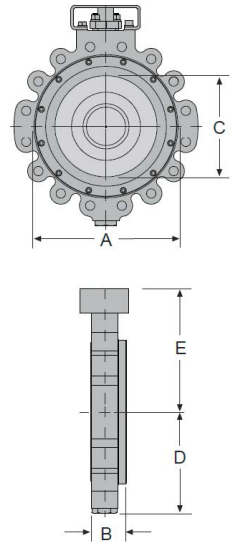
±C dimension is absolute minimum pipe ID at valve face (without gasket).

Dimensions - ANSI 150 w/ Industrial Electric Actuators

Valve body

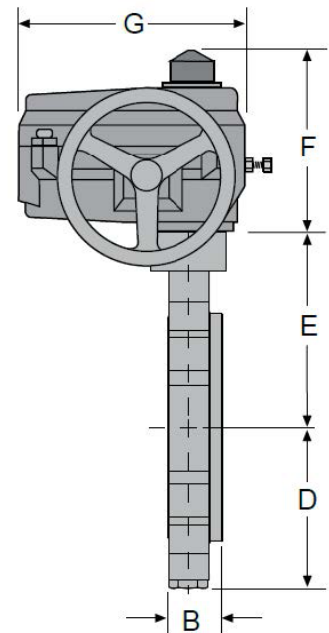
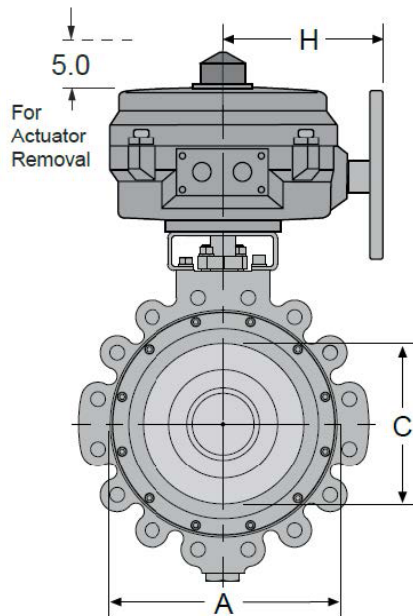
Valve Model	Size		Cv		A	B	C	D	E	Lug Bolting Data			Weight ¹	
	in.	mm.	90°	60°						BC	Holes	Threads	lbs	kg.
VA-MKL2-C025	2-1/2	65	160	78	4.75	1.88	2.28	3.81	6.38	5.50	4	5/8-11	22	10
VA-MKL2-C030	3	80	185	123	5.25	1.88	2.86	4.09	6.63	6.00	4	5/8-11	30	14
VA-MKL2-C040	4	100	375	250	6.72	2.03	3.72	4.71	7.50	7.50	8	5/8-11	36	16
VA-MKL2-C050	5	125	790	360	7.62	2.23	4.80	5.07	7.50	8.50	8	3/4-10	49	22
VA-MKL2-C060	6	150	1350	510	8.62	2.23	5.88	5.57	8.00	9.50	8	3/4-10	62	28
VA-MKL2-C080	8	200	2800	1060	10.81	2.40	7.80	6.94	9.50	11.75	8	3/4-10	107	49
VA-MKL2-C100	10	250	4300	1630	13.06	2.75	9.78	8.56	10.75	14.25	12	7/8-9	110	50
VA-MKL2-C120	12	300	6650	2530	15.42	3.08	11.74	10.18	12.25	17.00	12	7/8-9	156	71
VA-MKL2-C140	14	350	7650	2900	17.24	3.73	12.90	11.95	14.50	18.75	12	1-8	228	103
VA-MKL2-C160	16	400	9800	3700	19.50	4.11	14.68	12.94	17.75	21.25	16	1-8	268	122
VA-MKL2-C180	18	450	10500	5100	21.38	4.61	16.60	14.15	20.00	22.75	16	1-1/8-8	400	181
VA-MKL2-C200	20	500	13500	6500	23.62	5.03	18.50	15.26	22.75	25.00	20	1-1/8-8	510	231

Weights shown are for cast steel lug valve bodies only

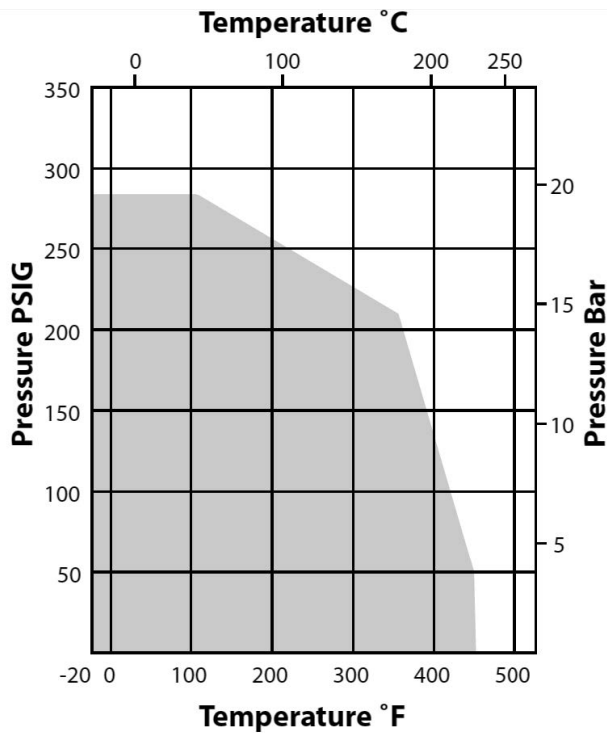


Industrial electric actuators

Model Number	F	G	H	Weight lbs.
70-0061	6.70	7.50	5.80	12
70-0121/0201	8.10	10.10	7.80	28
70-0301/0501/0651	8.8	12.10	9.50	48
70-1300/1800	12.50	18.80	9.50	118



Pressure/Temperature Chart



Cv Values - ANSI 150

Valve Size		Disc Position (degrees)								
in.	mm.	90°	80°	70°	60°	50°	40°	30°	20°	10°
2-1/2	65	160	136	100	78	50	30	16	8	3
3	80	185	178	155	123	87	56	32	14	5
4	100	375	365	315	250	175	115	63	31	10
5	125	790	675	500	360	238	146	78	41	16
6	150	1350	1090	750	510	330	218	140	81	35
8	200	2800	2230	1590	1060	685	456	280	165	65
10	250	4300	3450	2430	1630	1050	700	450	250	100
12	300	6650	5330	3750	2530	1630	1080	700	390	155
14	350	7650	6100	4300	2900	1890	1250	810	450	175
16	400	9800	7860	5510	3700	2420	1530	1020	580	230
18	450	10500	9100	6960	5100	3520	2220	1180	500	170
20	500	13500	11700	8800	6500	4500	2820	1530	640	200

Cv is defined as the volume of water in U.S.G.P.M. that will flow through a given restriction or valve opening with a pressure drop of one (1) p.s.i. at room temperature. Recommended control angles are between 25°–70° open. Preferred angle for control valve sizing is 60°–65° open.

Close-Off Charts

Actuator Model No.					UPSTREAM w/ Seat Retainer			DOWNSTREAM w/ Seat Retainer		
Valve Model No.	Size		Cv		Close-Off	On/Off	Modulating	Close-Off	On/Off	Modulating
	In.	mm.	90°	60°	PSI	Model	Model	PSI	Model	Model
VA-MKL2-C025	2.5	65	160	78	285	70-0061	70-0061SV	285	70-0061	70-0061SV
VA-MKL2-C030	3	80	185	123	285	70-0061	70-0061SV	285	70-0061	70-0061SV
VA-MKL2-C040	4	100	375	250	285	70-0061	70-0061SV	285	70-0061	70-0061SV
VA-MKL2-C050	5	125	790	360	285	70-0121	70-0121SV	285	70-0121	70-0121SV
VA-MKL2-C060	6	150	1350	510	285	70-0121	70-0121SV	285	70-0121	70-0121SV
VA-MKL2-C080	8	200	2800	1060	285	70-0201	70-0201SV	1	1	1
VA-MKL2-C100	10	250	4300	1630	285	70-0301	70-0301SV	1	1	1
VA-MKL2-C120	12	300	6650	2530	285	70-0501	70-0501SV	1	1	1
VA-MKL2-C140	14	350	7650	2900	285	70-0651	70-0651SV	1	1	1
VA-MKL2-C160	16	400	9800	3700	285	70-1300	70-1300SV	1	1	1
VA-MKL2-C180	18	450	10500	5100	285	70-1800	70-1800SV	1	1	1
VA-MKL2-C200	20	500	13500	6500	200	70-1800	70-1800SV	1	1	1

1. For Downstream combinations above 6", please call our Field Device associates for a quote.

The actuator sizes shown here are based on maximum valve pressure rating. Use Seat Retainer Upstream for Unidirectional Close-Off. Use Seat Retainer Downstream for Bi-Directional Close-Off. For applications at lower pressure requirements, consult factory for smaller actuator choices.

Actuators sized for 80 PSI air supply.

In accordance with the Pressure/Temperature Chart, close-off pressure will change for fluid temperatures above 100°F.

Specifications subject to change without notice. Performance specifications are nominal and conform to generally acceptable industry standards.

Manufacturer and/or Supplier shall not be liable for damages resulting from misapplication or misuse of these products.

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