


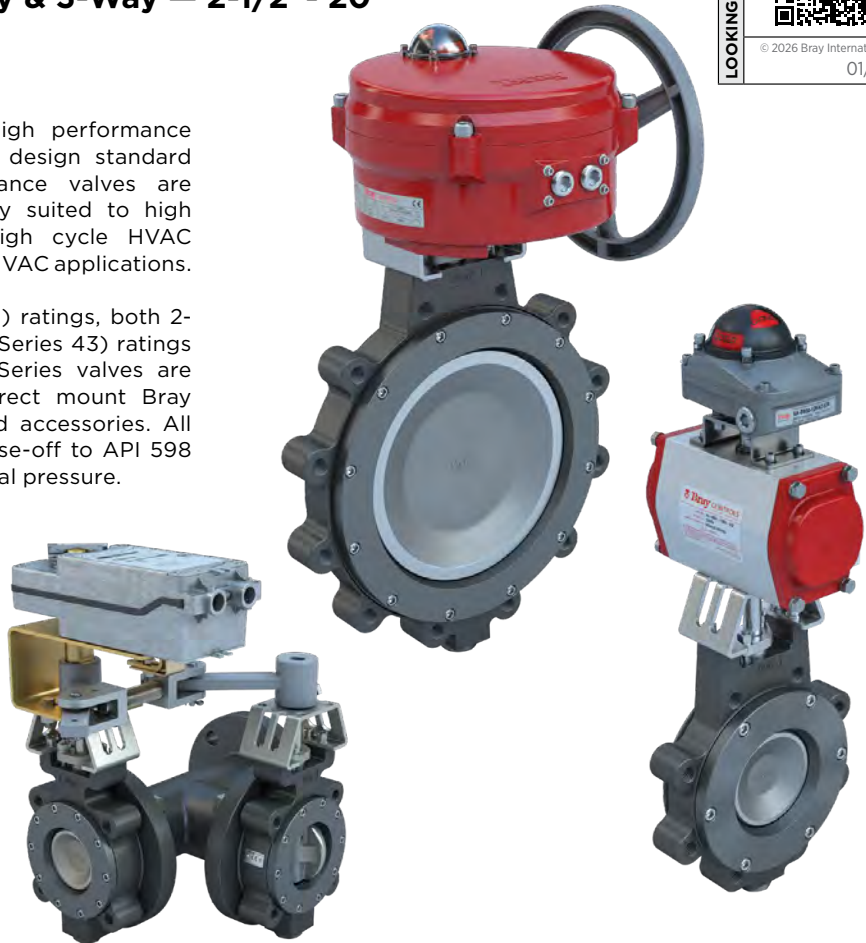
## MK Series High Performance Butterfly Valves 2-Way & 3-Way — 2-1/2" - 20"

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	Dimensions
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### Application

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

Available in ANSI Class 150 (Series 41) ratings, both 2-way and 3-way, and ANSI Class 300 (Series 43) ratings in 2-way configurations, Bray's MK Series valves are provided with a wide variety of direct mount Bray electric and pneumatic actuators and accessories. All valves are tested for bubble tight close-off to API 598 standards at maximum rated differential pressure.



### Features and Benefits

- **Double Offset Stem/Disc Design**

*Reduced seat wear, zero leakage, and low torque*

- **Blow-Out Proof Stem**

*Safety and ease of use*

- **Energized RPTFE Seat**

*Zero leakage, self adjusting for wear and easily field replaceable*

- **Pressure Assisted, but not Pressure Dependent Seat Design**

*Optimal performance and sealing at high or low differential pressures*

- **Adjustable PTFE Packing**

*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*

## MK Series Butterfly Valves - Valve Body Specifications

Technical Specifications		
Service	Hot Water, Chilled Water, Condenser Water up to 50% Glycol & Steam	
Size Range	2-1/2" through 20" (DN 65 to 500)	
Body Style	Lug	2-Way — ANSI 150 and ANSI 300 Flanges 3-Way — ANSI 150 Flanges only
Flow Characteristics	Modified Equal Percentage	
Fluid Temperature Limits	Water -40 to 500 °F (-40 to 260 °C)	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Leakage	Bubble tight at rated maximum differential pressure	
Body Cold Working Pressure Ratings	ANSI 150 ANSI 300	285 PSI (20 BAR) 740 PSI (50 BAR)
Close-Off Pressure Ratings	See pages MK-13 to MK-19	
Maximum Steam Pressure	On/Off Applications Modulating Applications	150 PSI (10 BAR) 50 PSI (3.5 BAR)
Materials  (other materials available upon request)	Body	Carbon Steel
	Disc	316 Stainless Steel
	Seat	RPTFE
	Packing	PTFE (adjustable)
	Stem	17-4 Stainless Steel
	Tee	Ductile Iron (3-Way ANSI 150 valves only)
Weights	See Dimensions - Page MK-10 to MK-12	
Design Standard	API 609 Category B, ASME B16.34, ASME BPVC VIII, EN 593, EN 12516, MSS SP 68	
Face to Face	API 609 Category B, ASME B16.10, EN 558, ISO 5752	
Approvals	ABS Type, ATEX 2014/34/EU, Bureau Veritas Type, China Classification Society (CCS) Type, CRN, DNV, EC1935, TR CU	
Certifications	ANSI/NSF 61/372 (SS Bodies Only), CE: PED 2014/68/EU, SIL 3 Capable	

**Disclaimer** - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

### MK Series Butterfly Valves - Double Offset Stem & Disc Design

The disc motion of the double offset design provides many performance benefits:

#### DISC OPENING

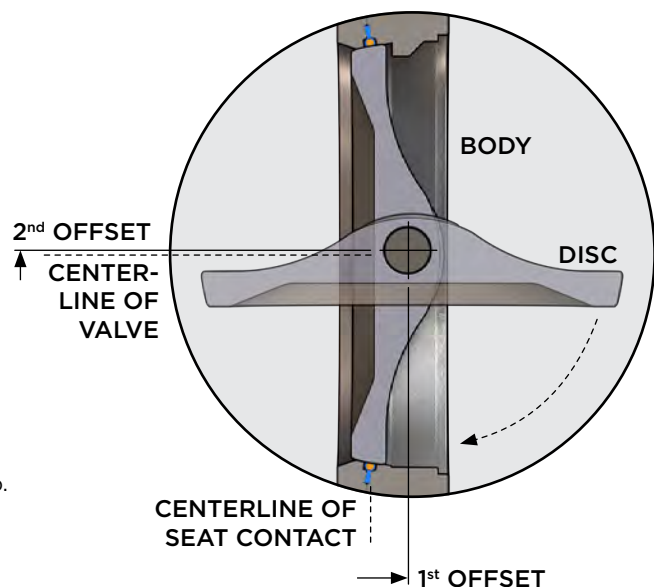
- Cam-action movement pulls disc away from seat.
- Reduces seat wear.

#### OPEN POSITION

- Disc does not contact seat.
- Eliminates seat deformation.
- Reduces operating torques.
- Extends service life.

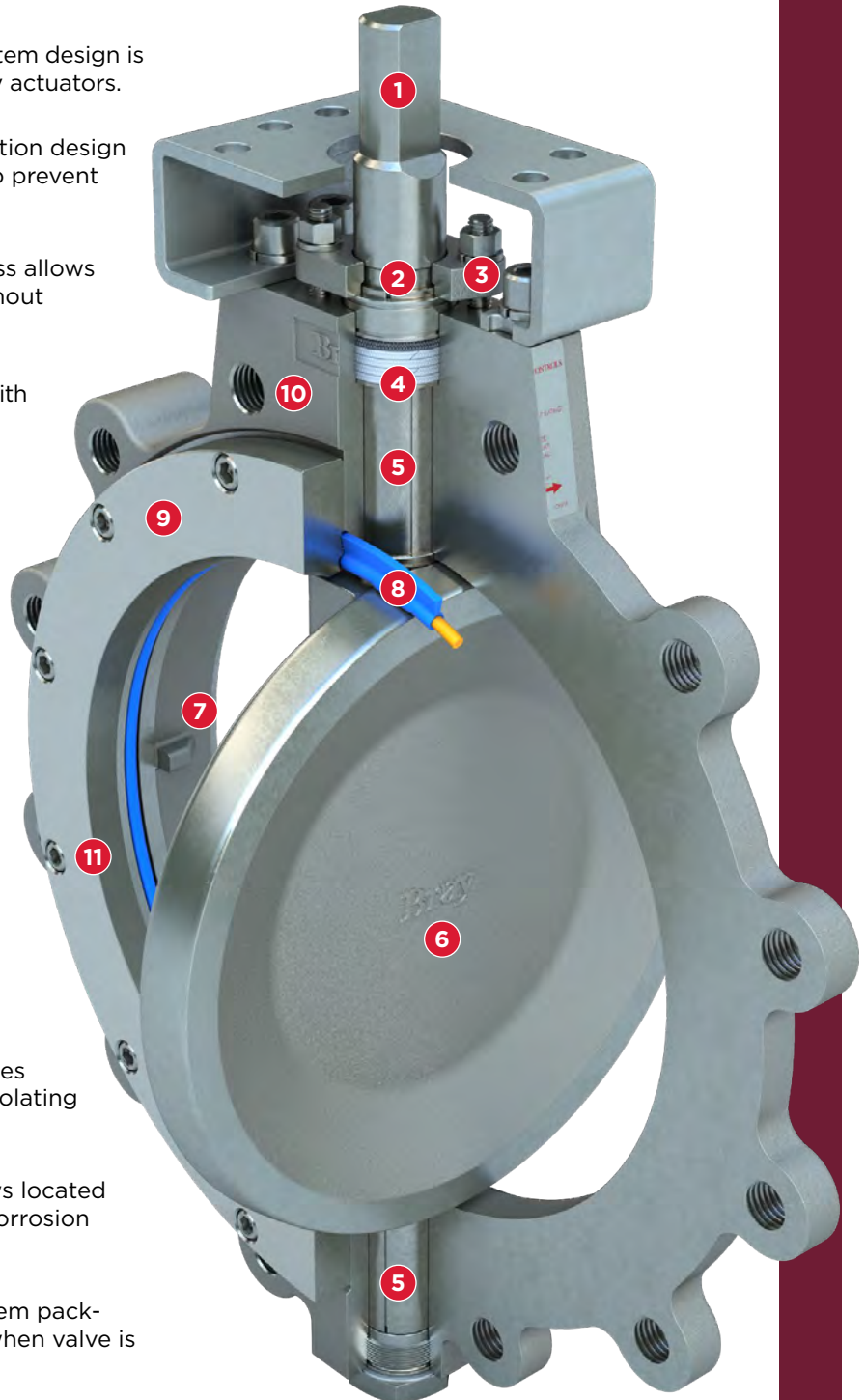
#### DISC CLOSING

- Linear motion pushes disc onto seat.
- Wiping action prevents undesirable material buildup.



### Design Features

- 1 STEM DESIGN:** High-strength, one-piece stem design is standardized for interchangeability of Bray actuators.
- 2 BLOWOUT-PROOF STEM:** The stem retention design does not rely on actuation components to prevent stem blowout.
- 3 ADJUSTABLE STEM PACKING:** Easy access allows simple quarter-turn field adjustments without actuator removal.
- 4 STEM SEAL SYSTEM:** PTFE packing rings with carbon fiber anti-extrusion ring provides constant compression for a positive seal around the stem. Options are available for high temperature, high cycle and firesafe applications.
- 5 STEM BEARINGS:** Top and bottom bearings securely support the stem, provide excellent corrosion resistance, and minimize deflection from high temperatures and mechanical loading forces.
- 6 DISC:** The disc is engineered to maximize flow and minimize resistance for optimal flow rates.
- 7 INTERNAL OVER-TRAVEL STOP:** Designed to minimize possible seat damage — extending the service life of the seat.
- 8 BIDIRECTIONAL RESILIENT SEAT:** Provides bidirectional zero-leakage sealing while isolating the energizer from line media.
- 9 FULL-FACED SEAT RETAINER:** Cap screws located outside sealing area are protected from corrosion while allowing simple seat replacement.
- 10 BODY:** Extended neck allows access to stem packing adjustments and actuator mounting when valve is fully insulated.
- 11 DEAD-END SERVICE:** Lug and double-flanged bodies are full rated for bidirectional dead-end service.



## MK Series Butterfly Valves - Materials of Construction

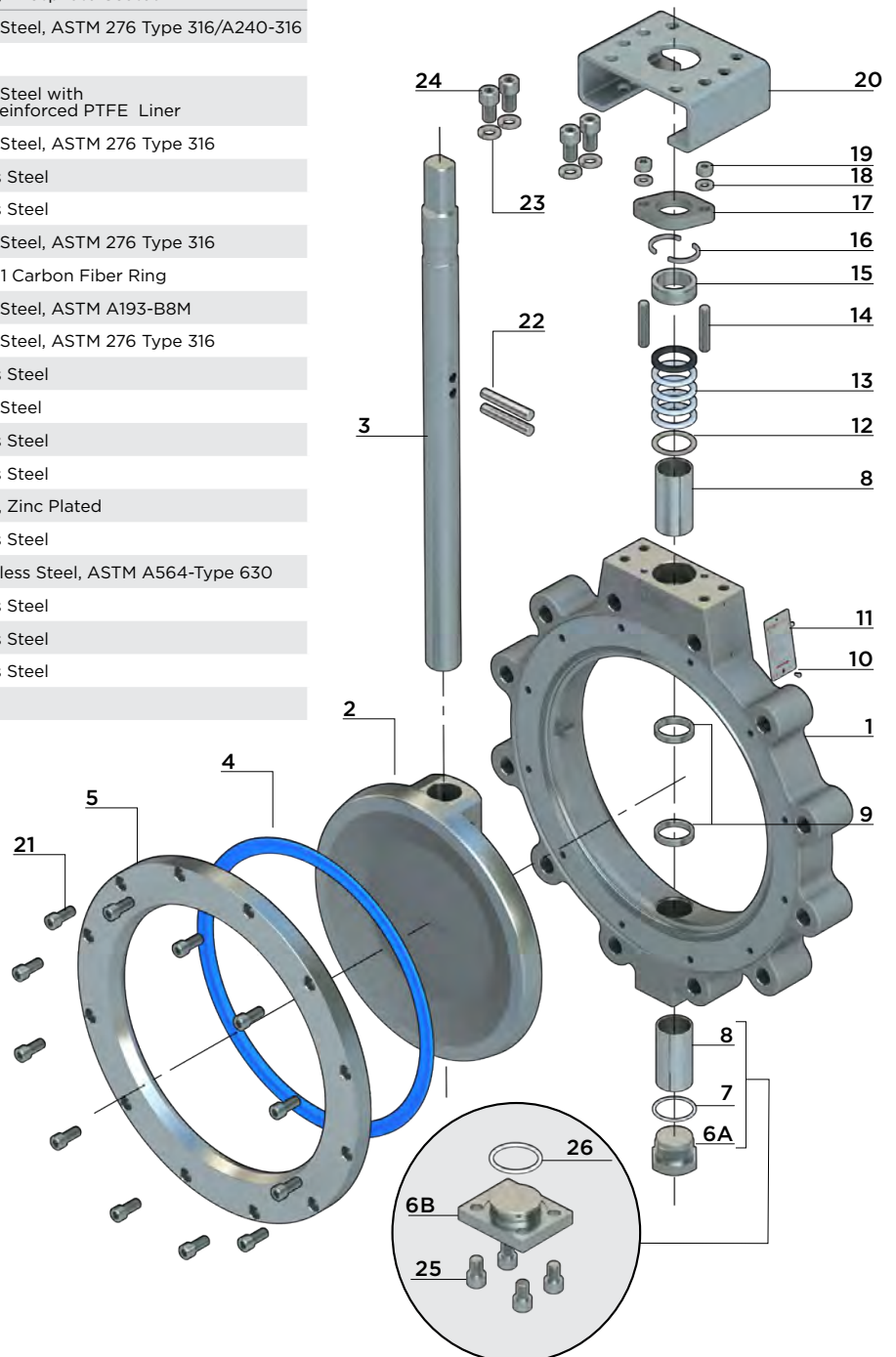
ITEM	DESCRIPTION	MATERIAL
1	Body	Carbon Steel, ASTM A216 Gr. WCB/A516 Gr. 70
		Stainless Steel, ASTM A351 Gr. CF8M
2	Disc	Stainless Steel, ASTM A351 Gr. CF8M
3	Stem	17-4 PH Stainless Steel, ASTM A564-Type 630
4	Seat Assembly	RPTFE <sup>1</sup> with Resilient Energizer
5	Seat Retainer	Carbon Steel, ASTM A216 Gr. WCB/A516 Gr. 70
		Stainless Steel, ASTM A351 Gr. CF8M
6A	Locating Plug	316 Stainless Steel, ASTM 276 Type 316/A240-316
6B	Bottom Plate	Carbon Steel, Phosphate Coated
		316 Stainless Steel, ASTM 276 Type 316/A240-316
7	Gasket, Locating Plug	PTFE
8	Bearing	316 Stainless Steel with Glass Fiber Reinforced PTFE Liner
9	Disc Spacers	316 Stainless Steel, ASTM 276 Type 316
10	Drive Screw	18-8 Stainless Steel
11	ID Tag	18-8 Stainless Steel
12	Thrust Washer	316 Stainless Steel, ASTM 276 Type 316
13	Stem Seal Set	PTFE rings + 1 Carbon Fiber Ring
14	Stud	316 Stainless Steel, ASTM A193-B8M
15	Gland Ring	316 Stainless Steel, ASTM 276 Type 316
16	Retaining Ring	18-8 Stainless Steel
17	Gland Retainer	316 Stainless Steel
18	Lock Washers	18-8 Stainless Steel
19	Hex Nut	18-8 Stainless Steel
20	Mounting Bracket	Carbon Steel, Zinc Plated
21	Cap Screws	18-8 Stainless Steel
22	Taper Pins	17-4 PH Stainless Steel, ASTM A564-Type 630
23	Lock Washers	18-8 Stainless Steel
24	Cap Screws	18-8 Stainless Steel
25	Cap Screws	18-8 Stainless Steel
26	Gasket, Bottom Plate	PTFE

### NOTES

Material specifications provided for reference only, and are subject to change without notice.

Additional materials available upon request.

<sup>1</sup>RPTFE is supplied by Bray as RPTFE (reinforced polytetrafluoroethylene.)



For Sizes Greater than 14" (DN 350)

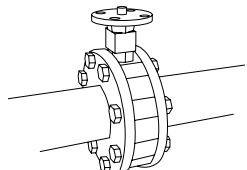
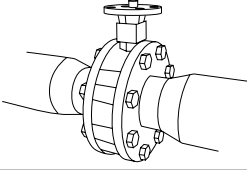
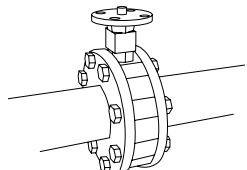
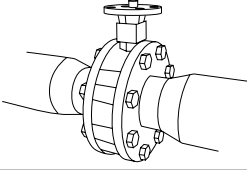
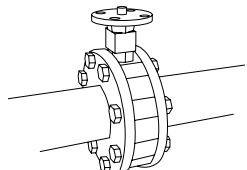
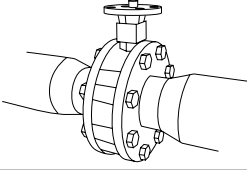
## MK Series Butterfly Valves - Cv's at Various Angles of Openings

<b>ANSI Class 150 - Low and Standard Pressure Cv Disc Values</b>									
<b>ANGLE OF DISC OPENING</b>									
Valve Size	10°	20°	30°	40°	50°	60°*	70°	80°	90°
2.5"	3	8	16	30	50	78	100	136	160
3"	5	14	32	56	87	123	155	178	185
4"	10	31	63	115	175	250	315	365	375
5"	16	41	78	146	238	360	500	675	790
6"	35	81	140	218	330	510	750	1,070	1,350
8"	65	165	280	456	685	1,060	1,590	2,230	2,800
10"	100	250	450	700	1,050	1,630	2,430	3,450	4,300
12"	155	390	700	1,080	1,630	2,530	3,750	5,330	6,650
14"	175	450	810	1,250	1,890	2,900	4,300	6,100	7,650
16"	230	580	1,020	1,530	2,420	3,700	5,510	7,860	9,800
18"	170	500	1,180	2,220	3,520	5,100	6,960	9,100	10,500
20"	200	640	1,530	2,820	4,500	6,500	8,800	11,700	13,500

<b>ANSI Class 300 - Low and Standard Pressure Cv Disc Values</b>									
<b>ANGLE OF DISC OPENING</b>									
Valve Size	10°	20°	30°	40°	50°	60°*	70°	80°	90°
2.5"	3	8	16	30	50	78	100	136	160
3"	5	14	32	56	87	123	155	178	185
4"	10	31	63	115	175	250	315	365	375
5"	16	41	78	146	238	360	500	675	790
6"	26	79	138	240	370	530	710	875	1,000
8"	47	121	240	405	630	950	1,360	1,720	2,000
10"	61	150	295	510	780	1,200	1,740	2,250	2,650
12"	92	220	430	710	1,100	1,690	2,500	3,400	4,000
14"	100	240	490	830	1,200	1,770	2,600	3,500	4,100
16"	180	420	730	1,160	1,840	2,970	4,550	6,540	7,800
18"	94	440	1,080	1,970	3,110	4,530	6,170	8,000	9,500
20"	110	530	1,250	2,330	3,720	5,400	7,300	9,570	11,000

\* When selecting a butterfly valve for a modulating application, use a valve where the calculated Cv falls between 0 - 60 degrees.

## MK Series Butterfly Valves - Valve Sizing Steps

MK Series - Valve Sizing Tips															
<b>Step One</b>	<p>Determine the designed Cv by using the following equation.*</p> $Cv = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$ <p><b>Where</b>  <b>Q</b> = Flow in gallons per minute (GPM) required to pass through the valve  <b>G</b> = Specific gravity of fluid**  <b>ΔP</b> = Designed pressure drop across the valve in PSI  <b>Cv</b> = Flow coefficient</p> <p><b>Notes</b>    ** Specific gravity is negligible (equal to 1) for water below 200°F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H<sub>2</sub>O mixture will not be affected by the specific gravity.</p> <p><b>Example</b>    The Specific Gravity of 50% Water (Compound 1) and 50% Ethylene Glycol Solution (Compound 2):</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">=</td> <td style="text-align: center;">0.5</td> <td style="text-align: center;">+</td> <td style="text-align: center;">0.5</td> <td style="text-align: center;">=</td> <td style="text-align: center;">1.05</td> </tr> <tr> <td style="text-align: center;"><math>\frac{1}{G_{soln}}</math></td> <td></td> <td style="text-align: center;"><math>\frac{wt\% \text{ of Compound 1}}{\text{Specific Gravity (G)}}</math></td> <td></td> <td style="text-align: center;"><math>\frac{wt\% \text{ of Compound 2}}{\text{Specific Gravity (G)}}</math></td> <td></td> <td></td> </tr> </table>	1	=	0.5	+	0.5	=	1.05	$\frac{1}{G_{soln}}$		$\frac{wt\% \text{ of Compound 1}}{\text{Specific Gravity (G)}}$		$\frac{wt\% \text{ of Compound 2}}{\text{Specific Gravity (G)}}$		
1	=	0.5	+	0.5	=	1.05									
$\frac{1}{G_{soln}}$		$\frac{wt\% \text{ of Compound 1}}{\text{Specific Gravity (G)}}$		$\frac{wt\% \text{ of Compound 2}}{\text{Specific Gravity (G)}}$											
<b>Step Two</b>	<p>Determine whether the valve should be line size or sized to match the designed pressure drop (typical for modulating applications where precise control is required.)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;"><b>Option 1</b></td> <td style="padding: 5px;"> <p><b>LINE SIZE</b> On/Off Valves Select the valve size to equal the pipe size.</p> </td> <td style="text-align: center; vertical-align: middle;"></td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Option 2</b></td> <td style="padding: 5px;"> <p><b>SIZE FOR MODULATING CONTROL</b> Modulating Valves Size the valve for design flow at 60 degrees open.  <i>60° rotation for modulating control</i></p> </td> <td style="text-align: center; vertical-align: middle;"></td> </tr> </table>	<b>Option 1</b>	<p><b>LINE SIZE</b> On/Off Valves Select the valve size to equal the pipe size.</p>		<b>Option 2</b>	<p><b>SIZE FOR MODULATING CONTROL</b> Modulating Valves Size the valve for design flow at 60 degrees open.  <i>60° rotation for modulating control</i></p>									
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<b>Option 2</b>	<p><b>SIZE FOR MODULATING CONTROL</b> Modulating Valves Size the valve for design flow at 60 degrees open.  <i>60° rotation for modulating control</i></p>														
<b>Step Three</b>	<p>Determine the actual pressure drop using the below equation.</p> $\Delta P = \left( \frac{Q\sqrt{G}}{Cv} \right)^2$ <p>If the pressure drop is acceptable†, go to Step 4. If not, repeat Steps 2 and 3, selecting an alternate valve.</p>														
<b>Step Four</b>	<p>Check to be sure that the Close-Off requirements are met. Refer to Page MK-13 to MK-19</p>														

† Recommended to be no higher than 25 PSI or match the designed pressure drop, 3, 4, 5, and 6 PSI are commonly accepted for modulating applications.

\* For modulating butterfly valves, size for design flow at 60° rotation

### MK Series Butterfly Valves - Set Features

- Proven zero-leakage shutoff in both directions. Interference-fit sealing, even when there is no differential line pressure.
- Pressure-assisted sealing is energized by line media pressure, providing a tighter seal in higher differential pressure services.
- Extended service life with reliable sealing after 1 million cycles.
- Resilient energizer ring is fully encapsulated by the seat and isolated from all line media contact.
- Full-faced retainer secures seat in the correct position, even without mating flange.
- Seat self-adjusts for wear and temperature changes, providing longer service life.
- Simplified seat replacement.

#### INTERFERENCE-FIT SEALING

Provides bidirectional sealing for low pressure applications.



**Disc in Open Position.**  
Seat non-compressed.



**Disc in Closed Position.**  
No line pressure.

#### PRESSURE-ASSISTED SEALING

Provides tighter bidirectional sealing in higher pressure applications.



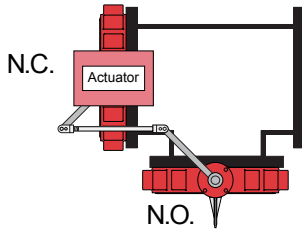
**Disc in Closed Position.**  
Line pressure applied from the preferred flow direction.



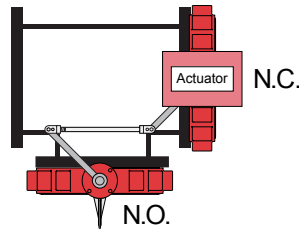
**Disc in Closed Position.**  
Line pressure applied from the non-preferred flow direction.

## Spring Return and Non-Spring Return

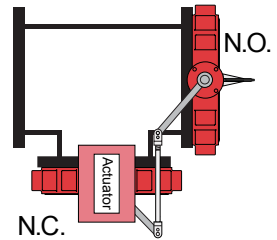
**Configuration 1**



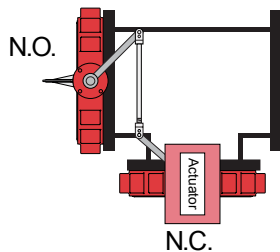
**Configuration 2**



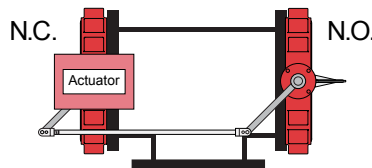
**Configuration 3**



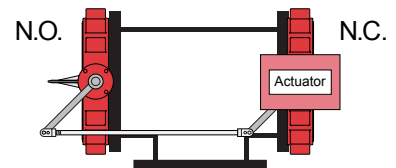
**Configuration 4**



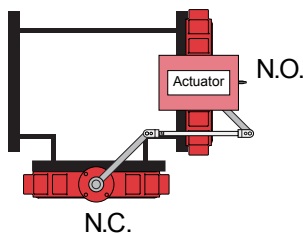
**Configuration 5**



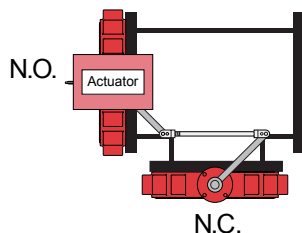
**Configuration 6**



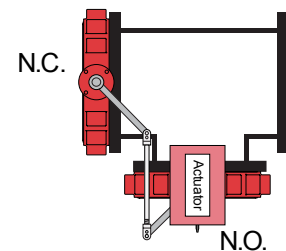
**Configuration 7**



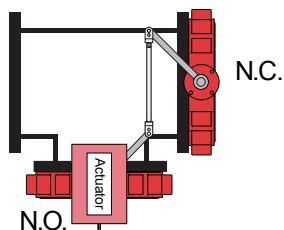
**Configuration 8**



**Configuration 9**



**Configuration 10  
(PN placeholder is 0)**



**Note:** All 3-Way butterfly valve assembly orders should have configuration specified. Pricing remains the same, however Bray must know the specifications in order to manufacture the appropriate linkage kit.

**Note:** Configurations 7, 8, 9, & 10 with power fail-safe actuators will be configured as Forward Acting & Fail Open. Actuators without power fail-safe capabilities will be set to Reverse Acting, when configurable.

**Note:** Unless otherwise requested valve will be shipped as illustrated by Configuration 3.

## MK Series Butterfly Valves - Part Number Matrix

<b>MK</b>	Series 41, ANSI 150, Carbon Steel Body, 316 Stainless Steel Disc, 17-4 SS Stem, RPTFE Seat. Series 43 , ANSI 300, Carbon Steel Body, 316 Stainless Steel Disc, 17-4 SS Stem, RPTFE Seat.								Valve Series		
	<b>L</b>	Lug Body							Body Type		
	<b>2</b>	2-Way Valve Assembly							Valve Type		
	<b>3</b>	3-Way Valve Assembly									
	-										
	<b>C</b>	2-way Assembly, Normally Closed							Configuration		
	<b>N</b>	2-way Assembly, Normally Open									
	<b>X</b>	For 3-Way only - (X= Configuration # - See page MK-7)									
	<b>XX</b>	Size (in.) 08=8", 12=12", etc.							Valve Size		
	<b>0</b>	Series 41 Carbon Steel Body,							Valve Shut-Off Rating		
<b>3</b>	Series 43 Carbon Steel Body,										
/											
<b>70-xxxx</b>	Series 70 Electric Actuators							Actuator			
<b>AU</b>	Auma Actuators										
<b>92-xxx</b>	High Pressure Pneumatic, Double Acting										
<b>93-xxx</b>	High Pressure Pneumatic, Spring Return										
<b>D or DC</b>	Commercial Electric Actuators										
<b>SV</b>	Servo Card for 0-10 VDC or 4-20 mA modulation							Electric Actuator Accessories			
<b>H</b>	Anti-Condensation Heater										
<b>BBU</b>	Battery Back-Up Unit										
<b>-S</b>	120 VAC Solenoid Valve							Pneumatic Actuator Accessories			
<b>-S4</b>	24 VAC Solenoid Valve										
<b>-SW</b>	Valve Status Monitor for Pneumatic Actuator										
<b>-C</b>	1-Set Speed Controls for Solenoids										
<b>-P</b>	3-15 PSI Pneumatic Positioner										
<b>-EP</b>	4-20 mA Electro-Pneumatic Positioner										
<b>-05</b>	Declutchable Handwheel Manual Override										
<b>MK</b>	<b>L</b>	<b>2</b>	<b>-</b>	<b>C</b>	<b>12</b>	<b>3</b>	<b>/</b>	<b>70-1300</b>	<b>SVH</b>	<b>12" lugged 2-way butterfly valve, carbon steel body, 316 SS Disc,17-4 SS Stem, RPTFE Seat, Series 70-1300, 120 VAC modulating electric actuator with heater</b>	Examples

## MK Series Butterfly Valves - Piping Geometry Charts

ANSI 150

60° Rotation

2-Way & 3-Way - ANSI 150 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 60° Rotation																
Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL_*025	78	78	77	74											
3"	MKL_*030	123		123	119	116										
4"	MKL_*040	250			250	244	236									
5"	MKL_*050	360				360	354	339								
6"	MKL_*060	510					510	494	478							
8"	MKL_*080	1060						1060	1030	992						
10"	MKL_*100	1630							1630	1597	1549					
12"	MKL_*120	2530								2530	2485	2413				
14"	MKL_*140	2900									2900	2872	2820			
16"	MKL_*160	3700										3700	3672	3618		
18"	MKL_*180	5100											5100	5062	4987	
20"	MKL_*200	6500												6500	6457	6369

90° Rotation

2-Way & 3-Way - ANSI 150 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 90° Rotation																
Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL_*025	160	160	152	135											
3"	MKL_*030	185		185	174	163										
4"	MKL_*040	375			375	354	331									
5"	MKL_*050	790				790	734	620								
6"	MKL_*060	1350					1350	1120	962							
8"	MKL_*080	2800						2800	2351	1982						
10"	MKL_*100	4300							4300	3785	3253					
12"	MKL_*120	6650								6650	5941	5118				
14"	MKL_*140	7650									7650	7162	6464			
16"	MKL_*160	9800										9800	9307	8530		
18"	MKL_*180	10500											10500	10180	9611	
20"	MKL_*200	13500												13500	13126	12432

ANSI 300

60° Rotation

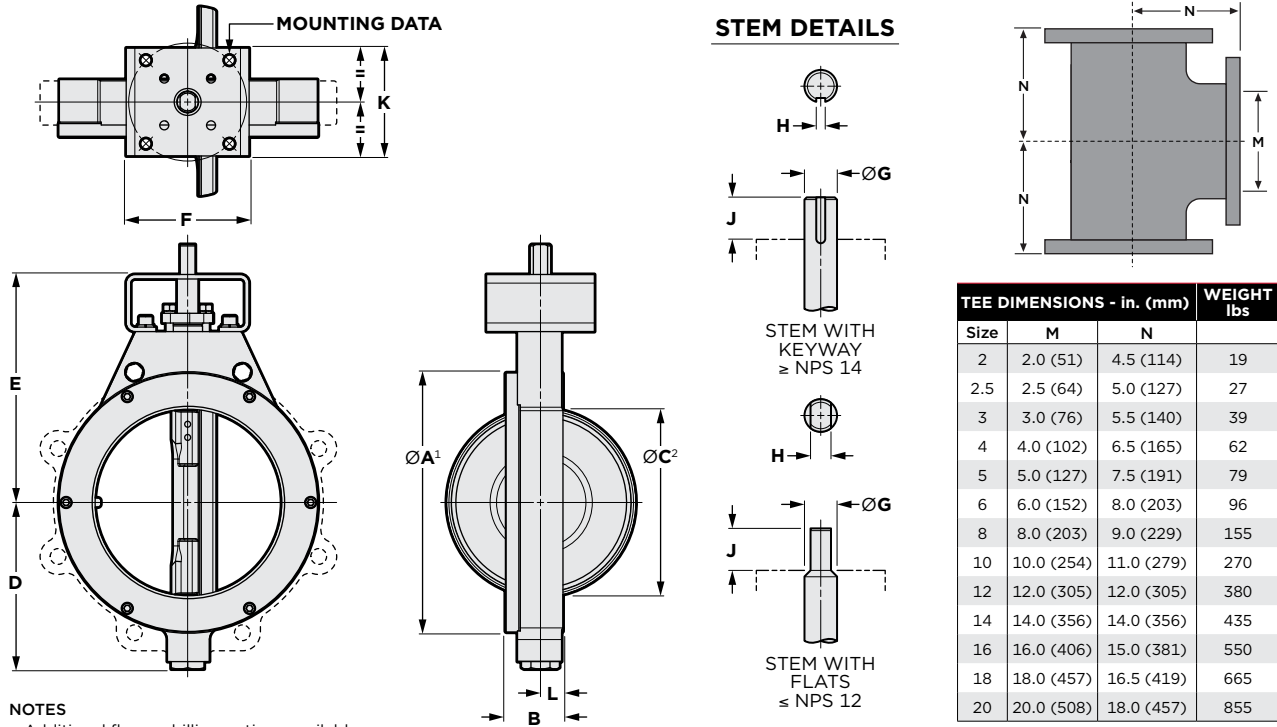
2-Way - ANSI 300 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 60° Rotation																
Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL2-*253	78	78	77	74											
3"	MKL2-*033	123		123	119	116										
4"	MKL2-*043	250			250	244	236									
5"	MKL2-*053	360				360	354	339								
6"	MKL2-*063	530					530	512	494							
8"	MKL2-*083	950						950	928	900						
10"	MKL2-*103	1200							1200	1187	1167					
12"	MKL2-*123	1690								1690	1676	1654				
14"	MKL2-*143	1770									1770	1763	1751			
16"	MKL2-*163	2970										2970	2955	2927		
18"	MKL2-*183	4530											4530	4503	4451	
20"	MKL2-*203	5400												5400	5375	5324

90° Rotation

2-Way - ANSI 300 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 90° Rotation																
Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL2-*253	160	160	152	135											
3"	MKL2-*033	185		185	174	163										
4"	MKL2-*043	375			375	354	331									
5"	MKL2-*053	790				790	734	620								
6"	MKL2-*063	1000					1000	895	808							
8"	MKL2-*083	2000						2000	1816	1629						
10"	MKL2-*103	2650							2650	2515	2339					
12"	MKL2-*123	4000								4000	3829	3579				
14"	MKL2-*143	4100									4100	4019	3883			
16"	MKL2-*163	7800										7800	7544	7112		
18"	MKL2-*183	9500											9500	9261	8827	
20"	MKL2-*203	11000												11000	10795	10399

- = 2-Way or 3-Way  
\* = Configuration (N) = Normally Open, (C) = Normally Closed

# MK Series Butterfly Valves - Valve Dimensions



- NOTES**
- Additional flange drilling options available
  - Weights are for cast steel bodies, except when noted.
  - 1 Dimension A is diameter of raised face flange.
  - 2 Dimension C is absolute minimum pipe ID at valve face (without gasket).
  - 3 Flame cut body weights. Flame cut steel and Stainless Steel bodies vary.

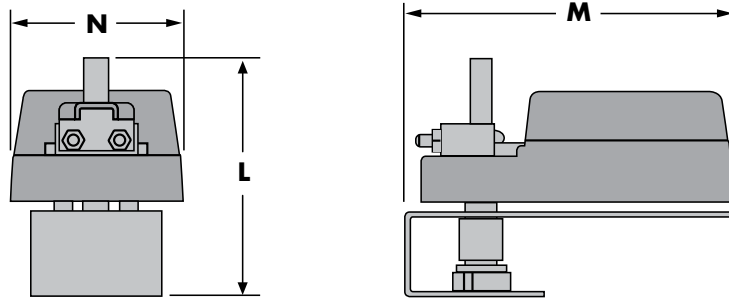
TEE DIMENSIONS - in. (mm)			WEIGHT lbs
Size	M	N	
2	2.0 (51)	4.5 (114)	19
2.5	2.5 (64)	5.0 (127)	27
3	3.0 (76)	5.5 (140)	39
4	4.0 (102)	6.5 (165)	62
5	5.0 (127)	7.5 (191)	79
6	6.0 (152)	8.0 (203)	96
8	8.0 (203)	9.0 (229)	155
10	10.0 (254)	11.0 (279)	270
12	12.0 (305)	12.0 (305)	380
14	14.0 (356)	14.0 (356)	435
16	16.0 (406)	15.0 (381)	550
18	18.0 (457)	16.5 (419)	665
20	20.0 (508)	18.0 (457)	855

Tee weight is the weight of the Tee alone. For 3-Way assemblies add the weight of two lug valves.

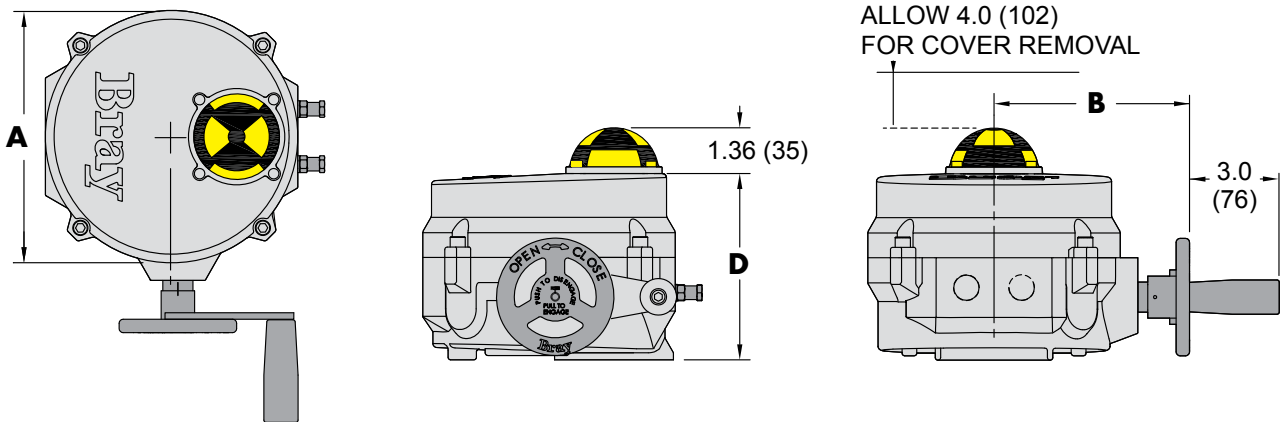
ANSI CLASS 150 (Series 41) DIMENSIONS - in.												Mounting Data			WEIGHT lbs	
Size	ØA <sup>1</sup>	B	ØC <sup>2</sup>	D	E	F	ØG	H	J	K	L	Bolt Circle	Hole Qty	Hole Dia	Wafer	Lug
2 ½	4.75	1.88	2.32	3.82	6.38	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	11	13
3	5.25	1.88	2.90	4.10	6.63	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	13	15
4	6.72	2.03	3.83	4.72	7.50	4.36	0.63	0.43	1.25	2.50	0.75	2.76	4	0.38	20	23
5	7.62	2.23	4.81	5.07	7.50	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	27	32
6	8.62	2.23	5.88	5.57	8.00	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	32	36
8	10.81	2.40	7.94	6.94	9.50	5.12	0.88	0.63	1.25	4.50	0.94	4.92	4	0.53	48	54
10	13.06	2.75	10.02	8.56	10.75	6.12	1.18	0.87	2.00	4.50	1.07	4.92	4	0.53	79	93
12	15.42	3.08	11.87	10.18	12.25	6.12	1.18	0.87	2.00	4.50	1.13	4.92	4	0.53	118	134
14	17.24	3.73	13.00	11.95	14.50	7.75	1.38	.39 x .39	2.00	6.50	1.42	4.92	4	0.53	211	221
16	19.50	4.11	14.75	13.10	11.75	10.38	1.97	.47 x .39	2.50	6.50	1.66	6.50	4	0.81	314	337
18	21.38	4.61	16.62	14.37	20.00	10.38	1.97	.47 x .39	2.50	6.50	1.86	6.50	4	0.81	404	429
20	23.62	5.03	18.50	15.55	22.75	10.38	2.50	.63 x .63	4.00	6.50	2.06	6.50	4	0.81	533	568

ANSI CLASS 300 (Series 43) DIMENSIONS - in.												Mounting Data			WEIGHT lbs	
Size	ØA <sup>1</sup>	B	ØC <sup>2</sup>	D	E	F	ØG	H	J	K	L	Bolt Circle	Hole Qty	Hole Dia	Wafer	Lug
2 ½	4.75	1.88	2.32	3.82	6.38	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	11	13
3	5.25	1.88	2.90	4.10	6.63	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	13	15
4	6.72	2.03	3.83	4.72	7.50	4.36	0.63	0.43	1.25	2.50	0.75	2.76	4	0.38	20	23
5	8.25	2.23	4.81	5.07	8.00	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	33	39
6	8.88	2.42	5.76	6.25	8.75	5.12	0.87	0.63	1.25	4.50	0.99	4.92	4	0.53	41	51
8	10.94	2.82	7.63	7.55	10.00	6.12	1.18	0.87	2.00	4.50	1.10	4.92	4	0.53	69	83
10	13.26	3.28	9.50	9.36	11.38	6.12	1.38	.39 x .39	2.00	4.50	1.28	4.92	4	0.53	114	137
12	15.42	3.62	11.37	10.89	13.50	7.75	1.38	.39 x .39	2.00	6.50	1.40	4.92	4	0.53	173	210
14	17.27	4.66	11.50	12.50	18.25	10.38	1.97	.47 x .39	2.50	6.50	2.13	6.50	4	0.81	333	445
16	19.50	5.35	14.38	14.18	21.00	10.38	2.50	.63 x .63	4.00	6.50	2.50	6.50	4	0.81	454	531
18	21.38	5.98	15.25	15.43	21.00	15.38	2.50	.63 x .63	4.00	11.75	2.65	10.00	8	0.67	609	753
20	23.76	6.33	16.50	16.80	22.25	15.38	3.00	.75 x .75	4.00	11.75	2.90	10.00	8	0.67	783	960

## MK Series Butterfly Valves - Actuator Dimensions



COMMERCIAL ACTUATOR DIMENSIONS — in. (mm)				
Actuator Model Number	L	M	N	Weight lbs. (kg)
DCS-140 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.9 (2.2)
DC-310 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.4 (2.0)
D-140/210 Series	6.7 (170)	7.5 (191)	4.0 (102)	2.9 (1.3)
DS-180 Series	7.4 (188)	11.0 (279)	4.0 (102)	6.4 (2.9)
Tandem Actuators	11.8 (300)	18.0 (457)	4.0 (102)	12.8 (5.8)



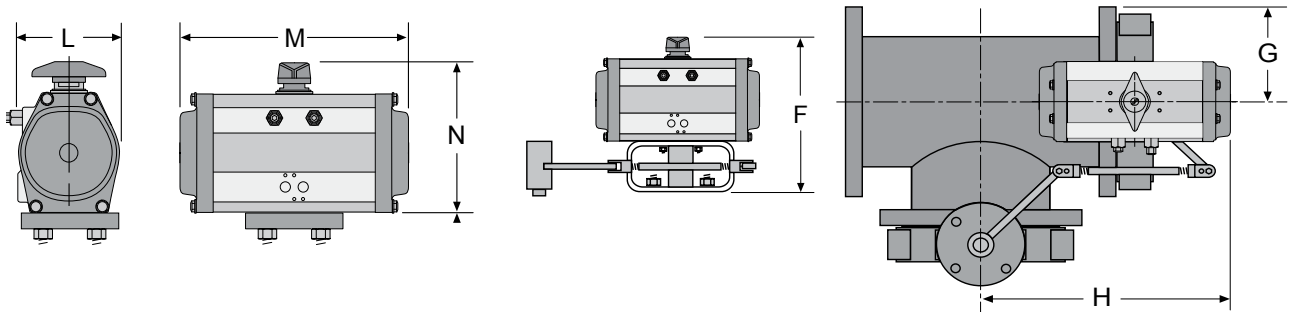
INDUSTRIAL ACTUATOR DIMENSIONS — in. (mm)					
Actuator Model Number	A	B	D*		Weight lbs. (kg)
			2-Way	3-Way	
70-0081	7.5 (191)	5.8 (147)	5.6 (141)	8.6 (218)	13 (6)
70-0121/0201/E301	10.1 (256)	7.8 (198)	6.6 (168)	10.7 (273)	28 (13)
70-0501/0651	12.1 (308)	9.5 (241)	7.2 (183)	13.2 (335)	48 (22)
70-1300/1800	12.1 (308)	9.5 (241)	12.5 (316)	20.5 (521)	118 (54)
AU-4068	32.1 (815)	28.9 (734)	12.3 (312)	22.3 (566)	195 (88)
AU-7080	32.1 (815)	31.9 (810)	12.3 (312)	-	285 (129)

## MK Series Butterfly Valves - Actuator Dimensions

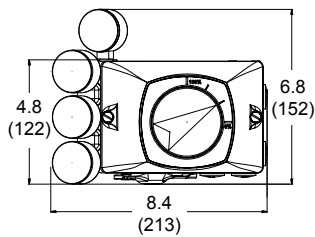
### PNEUMATIC ACTUATOR DIMENSIONS — in. (mm)

Actuator Model Number	L	M	N	F	G	H	Weight lbs. (kg)	
							Double Acting	Spring Return
92/93-063	3.1 (79)	5.6 (142)	4.5 (114)	7.5 (191)	3.0 (76)	9.1 (231)	3.4 (1.5)	4.1 (1.9)
92/93-083	4.1 (104)	7.4 (188)	5.4 (137)	8.4 (213)	4.5 (114)	13.3 (338)	6.3 (3)	8.1 (4)
92/93-093	4.4 (112)	9.1 (231)	5.8 (147)	8.8 (224)	5.5 (140)	14.9 (378)	8.5 (4)	10.8 (5)
92/93-119	5.2 (132)	12.4 (325)	7.3 (185)	11.4 (290)	8.0 (203)	19.9 (505)	16.9 (8)	22.3 (10)
92/93-128	5.6 (142)	12.8 (734)	8.1 (2.6)	12.2 (310)	8.0 (203)	19.9 (505)	21.0 (10)	27.6 (13)
92/93-160	7.2 (183)	15.5 (394)	9.4 (239)	13.5 (343)	10.5 (267)	26.6 (676)	38.8 (18)	53.2 (24)
92/93-210	9.0 (229)	19.6 (498)	11.6 (295)	17.6 (447)	13.8 (351)	33.1 (841)	77.8 (35)	109.6 (50)
92/93-255	10.8 (274)	28.8 (732)	13.5 (343)	19.5 (495)	13.8 (351)	33.1 (841)	167.0 (76)	210.8 (96)
98-45E2-...	14.8 (376)	52.8 (1341)	9.7 (246)	-	-	-	183 (83)	355 (161)
98-14E3-...	21.3 (541)	72.6 (1844)	12.1 (307)	-	-	-	485 (220)	937 (425)
98-73E2-...	16.8 (427)	60.1 (1527)	11.8 (300)	-	-	-	254 (115)	547 (248)

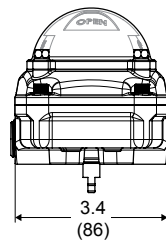
Allow 3.0" for Series 92/93 actuator removal and up to 12" for Series 98



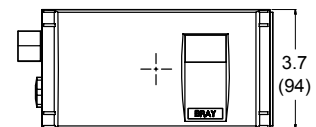
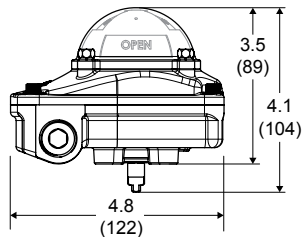
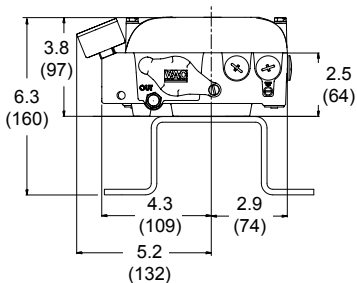
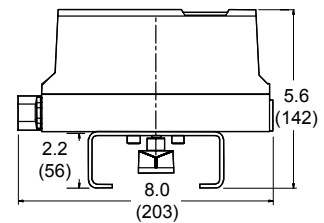
**VP200 Pneumatic Positioner**



**Series 5A Switch Box**



**Series 6A Electro Pneumatic Positioner**



## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 2 & 3-Way with NSR/SR DC-Series Commercial Electric Actuators (ANSI 150)

2-Way

2-Way, On/Off or Floating - ANSI 150									
Actuator Model Details						Non-Spring Return		Spring Return	
						DC24-310-T	DC24-310-T-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off PSI	Cv		Floating		On/Off	
	In.	mm		90°	60°	24 VAC		24 VAC/DC	
	2.5	65	285	160	78	x	-	x	-
MKL2-C030	3	80		185	123	x	-	-	x
MKL2-C040	4	100		375	250	-	x	-	x

2-Way, Modulating - ANSI 150									
Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off PSI	Cv		Modulating			
	In.	mm		90°	60°	24 VAC		24 VAC/DC	
MKL2-C025	2.5	65	285	160	78	x	-	x	-
MKL2-C030	3	80		185	123	x	-	-	x
MKL2-C040	4	100		375	250	-	x	-	x

3-Way

3-Way, On/Off or Floating - ANSI 150									
Actuator Model Details						Non-Spring Return		Spring Return	
						DC24-310-T	DC24-310-T-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off PSI	Cv		Floating		On/Off	
	In.	mm		90°	60°	24 VAC		24 VAC/DC	
MKL3-x025	2.5	65	285	160	78	x	-	-	x
MKL3-x030	3	80		185	123	-	x	-	x
MKL3-x040	4	100		375	250	-	x	-	-

3-Way, Modulating - ANSI 150									
Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off PSI	Cv		Modulating			
	In.	mm		90°	60°	24 VAC		24 VAC/DC	
MKL3-x025	2.5	65	285	160	78	x	-	-	x
MKL3-x030	3	80		185	123	-	x	-	x
MKL3-x040	4	100		375	250	-	x	-	-

**Options/Adders**  
 For optional auxiliary switches, add -A to the end of the actuator part number.  
 X = 3-Way Assemblies (Refer to Configuration Chart, Page 22)  
 For Spring Return Units:  
 N = Normally Open  
 C = Normally Closed - Factory default  
 -D = Dual mounted actuators

## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 2-Way with Industrial Electric Actuators (ANSI 150)

2-Way, 120 VAC, On/Off & Modulating - ANSI 150										
Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90°	60°		120 VAC	120 VAC		120 VAC	120 VAC
MKL2-C025	2.5	65	160	78	285	70-0081	70-0081SV	285	70-0081	70-0081SV
MKL2-C030	3	80	185	123		70-0081	70-0081SV		70-0081	70-0081SV
MKL2-C040	4	100	375	250		70-0081	70-0081SV		70-0081	70-0081SV
MKL2-C050	5	125	790	360		70-0121	70-0121SV		70-0121	70-0121SV
MKL2-C060	6	150	1350	510		70-0121	70-0121SV		70-0121	70-0121SV
MKL2-C080	8	200	2800	1060		70-0201	70-0201SV		70-E301	70-E301SV
MKL2-C100	10	250	4300	1630		70-E301	70-E301SV		70-0501	70-0501SV
MKL2-C120	12	300	6650	2530		70-0501	70-0501SV		70-0651	70-0651SV
MKL2-C140	14	350	7650	2900		70-0651	70-0651SV		70-1300	70-1300SV
MKL2-C160	16	400	9800	3700		70-1300	70-1300SV		70-1800	70-1800SV
MKL2-C180	18	450	10500	5100	70-1800	70-1800SV	250	AU-2130	AU-2130SV	
MKL2-C200	20	500	13500	6500	200	70-1800	70-1800SV	200	AU-2130	AU-2130SV

2-Way, 24 VAC, On/Off & Modulating - ANSI 150										
Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90°	60°		24 VAC	24 VAC		24 VAC	24 VAC
MKL2-C025	2.5	65	160	78	285	70-24-0081	70-24-0081SV	285	70-24-0081	70-24-0081SV
MKL2-C030	3	80	185	123		70-24-0081	70-24-0081SV		70-24-0081	70-24-0081SV
MKL2-C040	4	100	375	250		70-24-0081	70-24-0081SV		70-24-0081	70-24-0081SV
MKL2-C050	5	125	790	360		70-24-0201	70-24-0201SV		70-24-0201	70-24-0201SV
MKL2-C060	6	150	1350	510		70-24-0201	70-24-0201SV		70-24-0201	70-24-0201SV
MKL2-C080	8	200	2800	1060		70-24-0201	70-24-0201SV		70-24-0501	70-24-0501SV
MKL2-C100	10	250	4300	1630		70-24-0501	70-24-0501SV		70-24-0501	70-24-0501SV
MKL2-C120	12	300	6650	2530		70-24-0501	70-24-0501SV		-	-

**Options/Adders**  
 For Heater/Thermostat kit, add "H" to the actuator part number.  
 For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU"  
 For Battery Back-UP Failsafe units:  
 N = Normally Open  
 C = Normally Closed - Factory default

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

## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 2-Way with Industrial Electric Actuators (ANSI 300)

2-Way, 120 VAC, On/Off & Modulating - ANSI 300										
Actuator Model Details					Series 70 & AU Series Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90°	60°		120 VAC	120 VAC		120 VAC	120 VAC
MKL2-C253	2.5	65	160	78	740	70-0081	70-0081SV	550	70-0081	70-0081SV
MKL2-C033	3	80	185	123	740	70-0081	70-0081SV	550	70-0081	70-0081SV
MKL2-C043	4	100	375	250	550	70-0081	70-0081SV	350	70-0081	70-0081SV
MKL2-C053	5	125	790	360	350	70-0121	70-0121SV	550	70-0201	70-0201SV
MKL2-C063	6	150	1000	530	550	70-0201	70-0201SV	350	70-0201	70-0201SV
MKL2-C083	8	200	2000	950	350	70-E301	70-E301SV	550	70-0501	70-0501SV
MKL2-C103	10	250	2650	1200	350	70-0501	70-0501SV	350	70-0651	70-0651SV
MKL2-C123	12	300	4000	1690	740	70-1300	70-1300SV	550	70-1300	70-1300SV
MKL2-C143	14	350	4100	1770	350	70-1300	70-1300SV	350	70-1800	70-1800SV
MKL2-C163	16	400	7800	2970	350	70-1800	70-1800SV	740	AU-4068	AU-4068SV
MKL2-C183	18	450	9500	4530	740	AU-4068	AU-4068SV	550	AU-4068	AU-4068SV
MKL2-C203	20	500	11000	5400	550	AU-4068	AU-4068SV	350	AU-4068	AU-4068SV

2-Way, 24 VAC, On/Off & Modulating - ANSI 300										
Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90°	60°		24 VAC	24 VAC		24 VAC	24 VAC
MKL2-C253	2.5	65	160	78	740	70-24-0081	70-24-0081SV	550	70-24-0081	70-24-0081SV
MKL2-C033	3	80	185	123	740	70-24-0081	70-24-0081SV	550	70-24-0081	70-24-0081SV
MKL2-C043	4	100	375	250	550	70-24-0081	70-24-0081SV	350	70-24-0081	70-24-0081SV
MKL2-C053	5	125	790	360	350	70-24-0201	70-24-0201SV	550	70-24-0201	70-24-0201SV
MKL2-C063	6	150	1000	530	550	70-24-0201	70-24-0201SV	350	70-24-0201	70-24-0201SV
MKL2-C083	8	200	2000	950	350	70-24-0501	70-24-0501SV	550	70-24-0501	70-24-0501SV
MKL2-C103	10	250	2650	1200	350	70-24-0501	70-24-0501SV	-	-	-

**Options/Adders**

For Heater/Thermostat kit, add "H" to the actuator part number.  
 For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU"  
 For Battery Back-UP Failsafe units:  
 N = Normally Open  
 C = Normally Closed - Factory default

**Note**

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

## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 3-Way with Industrial Electric Actuators (ANSI 150)

3-Way, 24 VAC & 120 VAC, On/Off - ANSI 150								
Actuator Model Details					Series 70 120 VAC	Series 70 24 VAC	AU-Series 120 VAC	
Valve Model Details	Size		Close-Off PSI	Cv		Model #	Model #	Model #
	In.	mm		90°	60°			
MKL3-X025	2.5	65	250	160	78	70-0081	70-24-0081	-
MKL3-X030	3	80		185	123	70-0081	70-24-0081	-
MKL3-X040	4	100		375	250	70-0121	70-24-0201	-
MKL3-X050	5	125		790	360	70-0121	70-24-0201	-
MKL3-X060	6	150		1350	510	70-0121	70-24-0201	-
MKL3-X080	8	200		2800	1060	70-0201	70-24-0201	-
MKL3-X100	10	250		4300	1630	70-0501	70-24-0501	-
MKL3-X120	12	300		6650	2530	70-0651	-	-
MKL3-X140	14	350		7650	2900	70-1300	-	-
MKL3-X160	16	400		9800	3700	-	-	AU-2130
MKL3-X180	18	450		10500	5100	-	-	AU-4068
MKL3-X200	20	500		13500	6500	-	-	AU-4068

3-Way, 24 VAC & 120 VAC, Modulating - ANSI 150								
Actuator Model Details					Series 70 120 VAC	Series 70 24 VAC	AU-Series 120 VAC	
Valve Model Details	Size		Close-Off PSI	Cv		Model #	Model #	Model #
	In.	mm		90°	60°			
MKL3-X025	2.5	65	250	160	78	70-0081SV	70-24-0081SV	-
MKL3-X030	3	80		185	123	70-0081SV	70-24-0081SV	-
MKL3-X040	4	100		375	250	70-0121SV	70-24-0201SV	-
MKL3-X050	5	125		790	360	70-0121SV	70-24-0201SV	-
MKL3-X060	6	150		1350	510	70-0121SV	70-24-0201SV	-
MKL3-X080	8	200		2800	1060	70-0201SV	70-24-0201SV	-
MKL3-X100	10	250		4300	1630	70-0501SV	70-24-0501SV	-
MKL3-X120	12	300		6650	2530	70-0651SV	-	-
MKL3-X140	14	350		7650	2900	70-1300SV	-	-
MKL3-X160	16	400		9800	3700	-	-	AU-2130SV
MKL3-X180	18	450		10500	5100	-	-	AU-4068SV
MKL3-X200	20	500		13500	6500	-	-	AU-4068SV

**Options/Adders**

For Heater/Thermostat kit, add "H" to the actuator part number.

For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU"

## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 2-Way with Double Acting Pneumatic Actuators (ANSI 150 & 300)

2-Way, Double Acting Pneumatic - ANSI 150							
Actuator Model Details					Series 92 Seat Retainer UPSTREAM	Series 92 Seat Retainer DOWNSTREAM	
Valve Model Details	Size		Close-Off PSI	Cv			
	In.	mm		90°	60°	Model #	Model #
MKL2-C025	2.5	65	285	160	78	S92-83	S92-83
MKL2-C030	3	80		185	123	S92-83	S92-83
MKL2-C040	4	100		375	250	S92-83	S92-83
MKL2-C050	5	125		790	360	S92-92	S92-119
MKL2-C060	6	150		1350	510	S92-92	S92-119
MKL2-C080	8	200		2800	1060	S92-119	S92-119
MKL2-C100	10	250		4300	1630	S92-128	S92-160
MKL2-C120	12	300		6650	2530	S92-160	S92-210
MKL2-C140	14	350		7650	2900	S92-210	S92-210
MKL2-C160	16	400		9800	3700	S92-210	S92-255
MKL2-C180	18	450		10500	5100	S92-255	S92-255
MKL2-C200	20	500		13500	6500	S92-255	S92-255

2-Way, Double Acting Pneumatic - ANSI 300							
Actuator Model Details					Series 92 Seat Retainer UPSTREAM	Series 92 Seat Retainer DOWNSTREAM	
Valve Model Details	Size		Close-Off PSI	Cv			
	In.	mm		90°	60°	Model #	Model #
MKL2-C253	2.5	65	740	160	78	S92-83	S92-83
MKL2-C033	3	80		185	123	S92-83	S92-93
MKL2-C043	4	100		375	250	S92-83	S92-93
MKL2-C053	5	125		790	360	S92-119	S92-128
MKL2-C063	6	150		1000	530	S92-119	S92-160
MKL2-C083	8	200		2000	950	S92-160	S92-160
MKL2-C103	10	250		2650	1200	S92-210	S92-210
MKL2-C123	12	300		4000	1690	S92-210	S92-255
MKL2-C143	14	350		4100	1770	S92-255	S92-255
MKL2-C163	16	400		7800	2970	S92-255	Consult Factory

**Options/Adders**

- \* For Manual Override, add "-5" to the end of the part number.
- \* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.

**Note**

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

## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 2-Way with Spring Return Pneumatic Actuators (ANSI 150 & 300)

2-Way, Spring Return - ANSI 150									
Actuator Model Details					Series 92 Seat Retainer UP- STREAM		Series 92 Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Close-Off PSI	Cv		Normally Open (N.O.)	Normally Closed (N.C.)	Normally Open (N.O.)	Normally Closed (N.C.)
	In.	mm		90°	60°	Model #	Model #	Model #	Model #
	MKL2-C025	2.5		65	285	160	78	93-833	93-834
MKL2-C030	3	80	185	123		93-833	93-834	93-834	93-836
MKL2-C040	4	100	375	250		93-834	92-836	93-934	93-936
MKL2-C050	5	125	790	360		93-1193	93-1194	93-1283	93-1196
MKL2-C060	6	150	1350	510		93-1193	93-1195	93-1283	93-1285
MKL2-C080	8	200	2800	1060		93-1602	93-1604	93-1603	93-1605
MKL2-C100	10	250	4300	1630		93-2102	93-2103	93-2103	93-2105
MKL2-C120	12	300	6650	2530		93-2103	93-2105	93-2552	93-2553
MKL2-C140	14	350	7650	2900		93-2552	93-2553	93-2553	93-2555
MKL2-C160	16	400	9800	3700		93-2553	93-2555	Consult Factory	

2-Way, Spring Return - ANSI 300									
Actuator Model Details					Series 92 Seat Retainer UP- STREAM		Series 92 Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Close-Off PSI	Cv		Normally Open (N.O.)	Normally Closed (N.C.)	Normally Open (N.O.)	Normally Closed (N.C.)
	In.	mm		90°	60°	Model #	Model #	Model #	Model #
	MKL2-C253	2.5		65	740	160	78	93-934	93-1193
MKL2-C033	3	80	185	123		93-934	93-1193	93-1193	93-1194
MKL2-C043	4	100	375	250		93-1193	93-1194	93-1283	93-1196
MKL2-C053	5	125	790	360		93-1603	93-1604	93-1604	93-1606
MKL2-C063	6	150	1000	530		93-1603	93-1605	93-2102	93-2104
MKL2-C083	8	200	2000	950		93-2103	93-2104	93-2104	93-2106
MKL2-C103	10	250	2650	1200		93-2552	93-2553	93-2553	93-2555
MKL2-C123	12	300	4000	1690		93-2553	93-2555	Consult Factory	

#### Options/Adders

\* For Manual Override, add "-5" to the end of the part number.  
 \* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.  
 For Spring Return Units:  
 N = Normally Open  
 C = Normally Closed - Factory default

#### Note

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

## MK Series Butterfly Valves - Close-Off Charts

### MK Series Butterfly Valves 3-Way with Double Acting & Spring Return Pneumatic Actuators (ANSI 150)

3-Way, Double Acting Pneumatic - ANSI 150						
Actuator Model Details					Series 92 Double Acting	
Valve Model Details	Size		Close-Off PSI	Cv		Model #
	In.	mm		90°	60°	
MKL3-x025	2.5	65	250	160	78	S92-083
MKL3-x030	3	80		185	123	S92-083
MKL3-x040	4	100		375	250	S92-083
MKL3-x050	5	125		790	360	S92-119
MKL3-x060	6	150		1350	510	S92-119
MKL3-x080	8	200		2800	1060	S92-128
MKL3-x100	10	250		4300	1630	S92-160
MKL3-x120	12	300		6650	2530	S92-210
MKL3-x140	14	350		7650	2900	S92-210
MKL3-x160	16	400		9800	3700	S92-255
MKL3-x180	18	450		10500	5100	S92-255
MKL3-x200	20	500		13500	6500	S92-255

3-Way, Spring Return Pneumatic - ANSI 150						
Actuator Model Details					Series 92 Spring Return	
Valve Model Details	Size		Close-Off PSI	Cv		Model #
	In.	mm		90°	60°	
MKL3-x025	2.5	65	250	160	78	S93-924
MKL3-x030	3	80		185	123	S93-924
MKL3-x040	4	100		375	250	S93-1193
MKL3-x050	5	125		790	360	S93-1284
MKL3-x060	6	150		1350	510	S93-1603
MKL3-x080	8	200		2800	1060	S93-2103
MKL3-x100	10	250		4300	1630	S93-2552
MKL3-x120	12	300		6650	2530	S93-2553
MKL3-x140	14	350		7650	2900	S93-2553
MKL3-x160	16	400		9800	3700	Consult Factory
MKL3-x180	18	450		10500	5100	Consult Factory
MKL3-x200	20	500		13500	6500	Consult Factory

**Options/Adders**

X = 3-Way Assemblies (Refer to Configuration Chart, Page 22)

\* For Manual Override, add "-5" to the end of the part number.

\* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.

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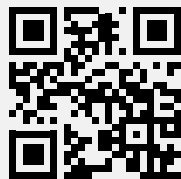
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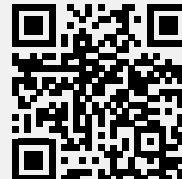
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