

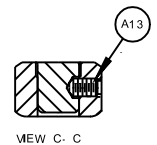
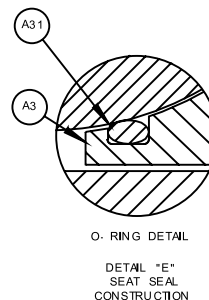
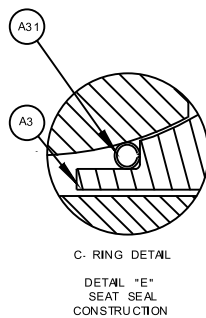
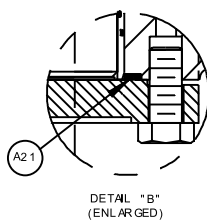
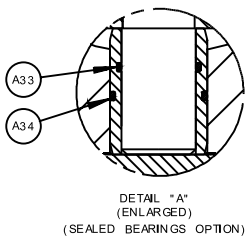
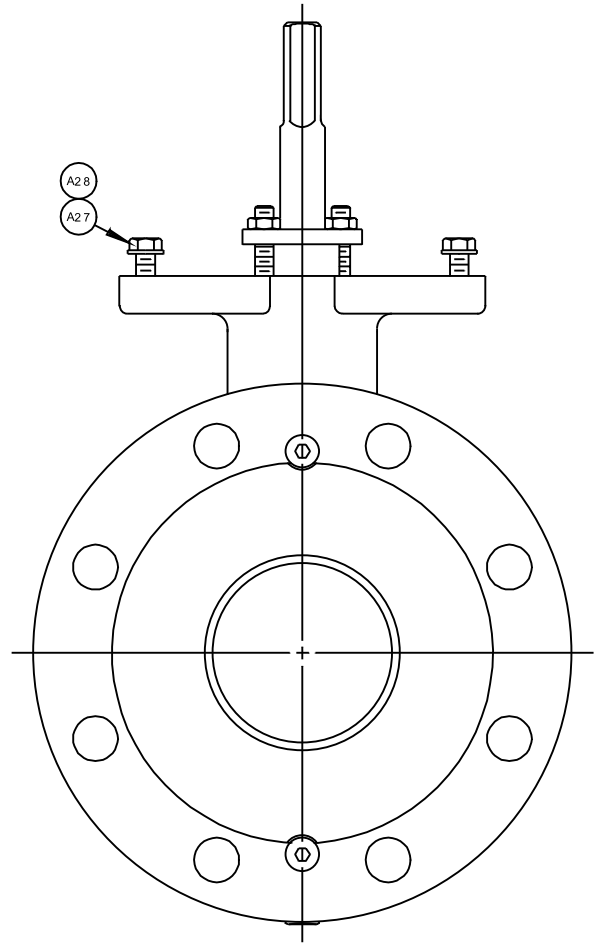
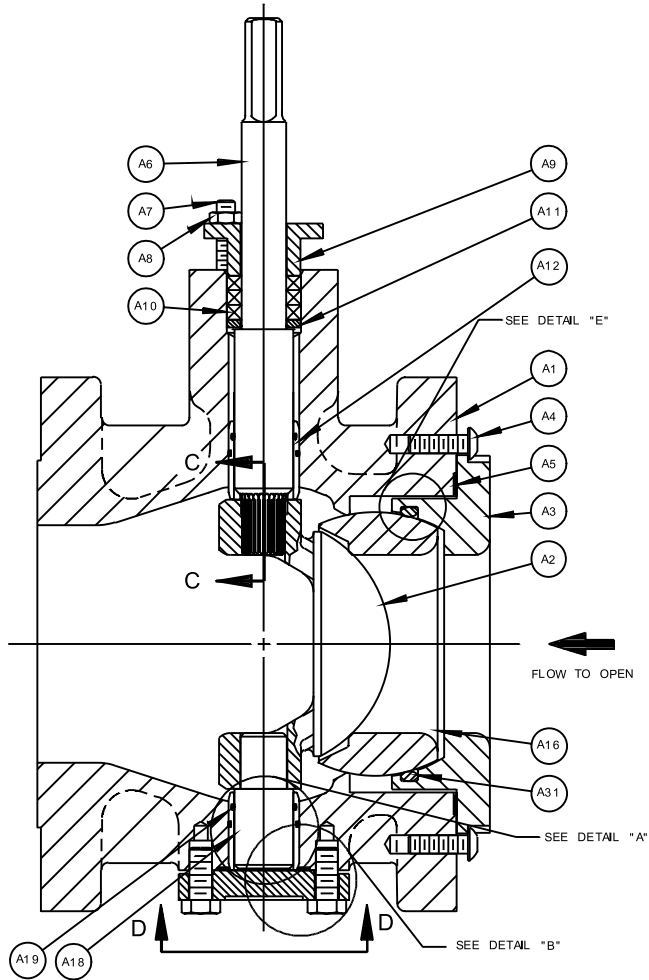
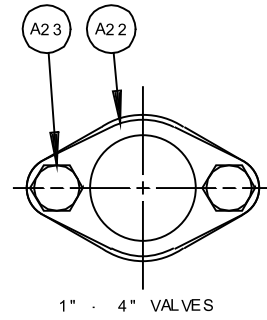
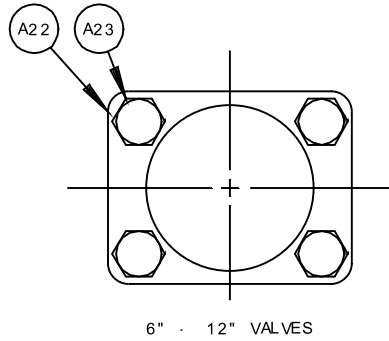
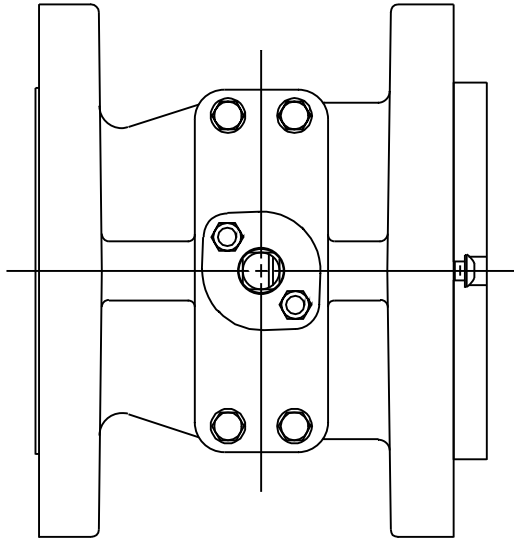


## MAXUM™ RCV ROTARY CONTROL VALVES TECHNICAL SPECIFICATIONS

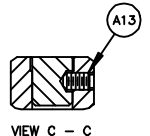
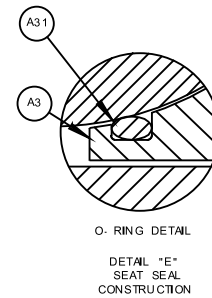
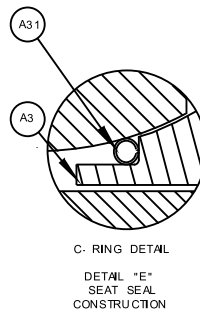
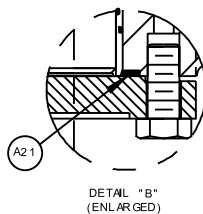
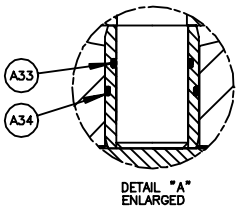
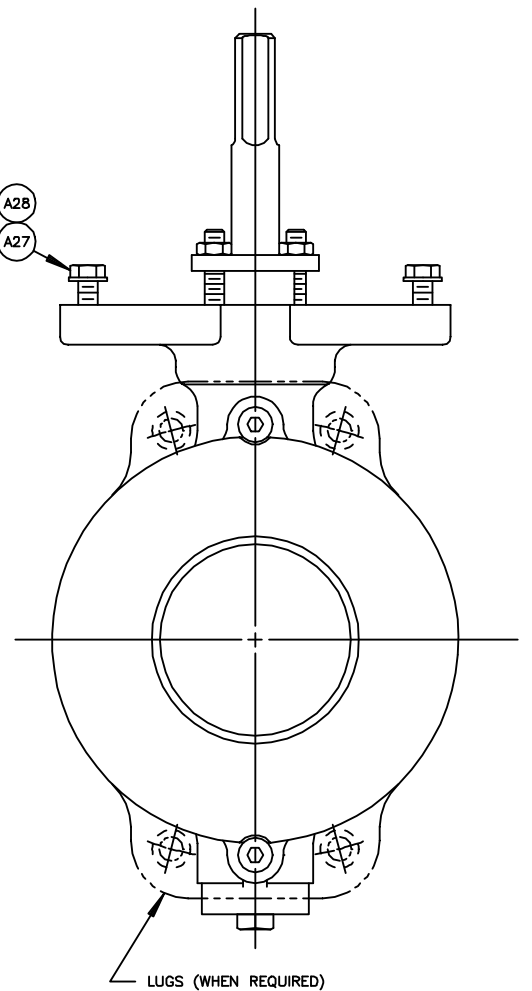
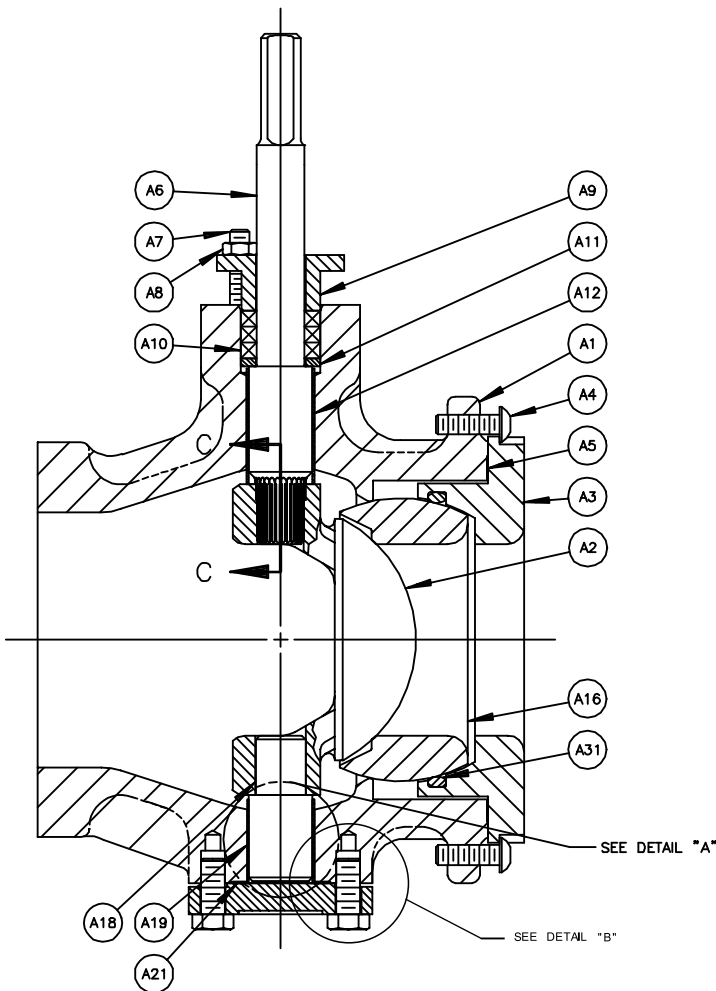
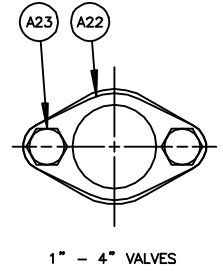
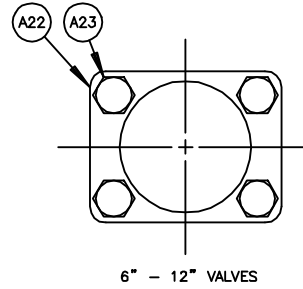
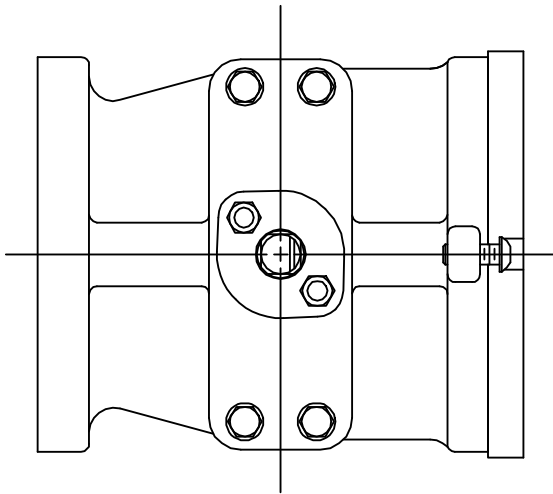


# Flanged Construction

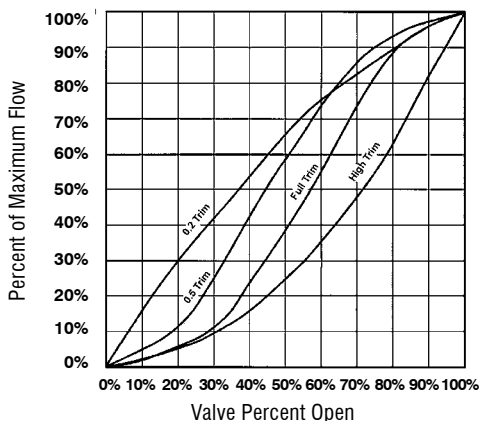
1" - 12" (25-300mm) Class 150 & 300



**Flangeless Construction**  
**1" - 12" (25-300mm) Class 150 & 300**



## Valve Selection Flow Characteristic



## Shutoff

## Cv/Kv Values with Valve 100% Open (Flow-to-Open)

Valve Size	High Trim Cv/Kv	Full Trim Cv/Kv	0.5 Trim Cv/Kv	0.5 Trim Cv/Kv
<u>1"</u> 25mm	<u>17</u> 14.7	<u>147</u> 12.1	<u>3</u> 6.1	<u>2.6</u>
<u>1.5"</u> 40mm	<u>45</u> 38.9	<u>32</u> 27.7	<u>16</u> 13.8	<u>6</u> 5.2
<u>2"</u> 50mm	<u>85</u> 73.5	<u>50</u> 43.3	<u>25</u> 21.6	<u>10</u> 8.7
<u>2.5"</u> 65mm	<u>125</u> 108.1	<u>90</u> 77.9	<u>45</u> 38.9	<u>18</u> 15.6
<u>3"</u> 80mm	<u>185</u> 160	<u>150</u> 129.8	<u>75</u> 64.9	<u>30</u> 26
<u>4"</u> 100mm	<u>370</u> 320.1	<u>250</u> 216.3	<u>125</u> 108.1	<u>50</u> 43.3
<u>6"</u> 150mm	<u>800</u> 692	<u>525</u> 454.1	<u>260</u> 224.9	<u>105</u> 90.8
<u>8"</u> 200mm	<u>1400</u> 1211	<u>875</u> 756.9	<u>435</u> 376.3	<u>175</u> 151.4
<u>10"</u> 250mm	<u>2050</u> 1773.3	<u>1300</u> 1124.5	<u>600</u> 519	<u>260</u> 224.9
<u>12"</u> 300mm	<u>2600</u> 2249	<u>1750.1</u> 1513.8	<u>825</u> 713.6	<u>350</u> 302.8

For Flow-to-Close values subtract 2%

## ANSI Body Rating/Face-to-Face

Class 150 Flanged 1-12" (25-300mm)	Flanged Class 150 ANSI B16.10 ISO 5752 PN 10/16 EN 558-1 PN 10/16
	Flanged Class 150 ISA 75.04 or IEC 534-3-2: Flanged Class 150 Long Body B16.10, ISO 5752 and EN 558-1PN 10/16
Class 150 Flangeless 1-12" (25-300mm)	Flangeless Class 150 ISA 75.04 or IEC 534-3-2
Class 300 Flanged 1-12" (25-300mm)	Flanged Class 300 ISA 75.04, IEC 534-3-2

## Applicable Standards

ANSI/FCI 70-2	Control valve seat leakage
ANSI B16.5	Pipe flanges and flanged fittings for Class 150 and 300
ANSI B16.34	Pressure/temperature ratings for Class 150 and 300 valves
MSS-SP-25	Marking requirements
Bolting	ANSI 150 & 300, PN 10, 16, 25 & 40, JIS 10, 16 & 20
ISA S75.04	Face-to-Face dimensions
ANSI B16.10	Face-to-Face dimensions
IEC 534-3-2	Face-to-Face dimensions
ISO 5752 PN 10/16	Basic Series 3 Face-to-Face dimensions
EN 558-1 PN 10/16	Basic Series 3 Face-to-Face dimensions

## Valve Weights (Excludes Titanium Design)

Valve Size	Class 150 Flanged lbs/kg	Class 150 Flangeless lbs/kg	Class 300 Flanged lbs/kg	ANSI (Long) Face-to-Face Class 150 Flanged lbs./kg.
<u>1"</u> 25mm	<u>12</u> 5.4	<u>9</u> 4.1	<u>15</u> 6.8	<u>13</u> 5.9
<u>1.5"</u> 40mm	<u>17</u> 7.7	<u>12</u> 5.4	<u>24</u> 10.9	<u>19</u> 8.6
<u>2"</u> 50mm	<u>21</u> 9.5	<u>13</u> 5.9	<u>27</u> 12.2	<u>24</u> 10.9
<u>2.5"</u> 65mm	<u>32</u> 14.5	<u>20</u> 9.1	<u>40</u> 18.1	<u>35</u> 15.9
<u>3"</u> 80mm	<u>47</u> 21.3	<u>35</u> 15.9	<u>58</u> 26.3	<u>50</u> 22.7
<u>4"</u> 100mm	<u>63</u> 28.6	<u>42</u> 19.1	<u>79</u> 35.8	<u>67</u> 30.4
<u>6"</u> 150mm	<u>95</u> 43.1	<u>74</u> 33.6	<u>142</u> 64.4	<u>106</u> 48.1
<u>8"</u> 200mm	<u>152</u> 68.9	<u>116</u> 52.6	<u>208</u> 94.3	<u>167</u> 75.8
<u>10"</u> 250mm	<u>236</u> 107	<u>182</u> 82.5	<u>342</u> 155	<u>254</u> 115
<u>12"</u> 300mm	<u>368</u> 167	<u>314</u> 142	<u>516</u> 234	<u>379</u> 172

**Materials of Construction**  
**316 and 317 Stainless Steel Bodies**

<b>Description</b>	<b>316 Stainless Steel Body (Class 300 only)</b>	<b>317 Stainless Steel Body</b>
<b>A1 Body</b>	316 stainless steel, ASTM A351, Grade CF8M	317 stainless steel, ASTM A351, Grade CG8M
<b>A2 Plug</b>	317 stainless steel heat treated nickel overlay, ASTM A351, Grade CG8M	317 stainless steel with heat treated nickel overlay, A351, Grade CG8M
	317 stainless steel with tungsten carbide overlay, ASTM A351, Grade CG8M	317 stainless steel with tungsten carbide overlay, A351, Grade CG8M
<b>A3 Retainer</b>	317 stainless steel, ASTM A351, Grade CG8M	317 stainless steel, ASTM A351, Grade CG8M
<b>A4 Retainer Screw</b>	18-8 stainless steel	18-8 stainless steel
<b>A5 Retainer Gasket</b>	Graphite	Graphite
<b>A6 Upper Shaft</b>	2205 Duplex stainless steel, ASTM A276	2205 Duplex stainless steel, ASTM A276
	17-4 PH stainless steel, ASTM A564, H900	17-4 PH stainless steel, ASTM A564, H900
<b>A7 Packing Stud</b>	18-8 stainless steel	18-8 stainless steel
<b>A8 Nut</b>	316 stainless steel	316 stainless steel
<b>A9 Packing Gland</b>	317 stainless steel, ASTM A351, Grade CG8M	317 stainless steel, ASTM A351, Grade CG8M
<b>A10 Packing</b>	PTFE or carbon graphite	PTFE or carbon graphite
<b>A11 Packing Washer</b>	317 stainless steel, ASTM A276	317 stainless steel, ASTM A276
<b>A12 Upper Bearing</b>	440C stainless steel, ASTM A276	440C stainless steel, ASTM A276
	Alloy 6, AMS 5387B, Stellite®	Alloy 6, AMS 5387B, Stellite®
<b>A13 Lock Screw</b>	Alloy 20, B473	Alloy 20, B473
<b>A16 Seat</b>	Rigid 317 stainless steel with tungsten carbide overlay, ASTM A351, Grade CG8M or ASTM A240/A276	Rigid 317 stainless steel with tungsten carbide overlay, ASTM A351, Grade CG8M or ASTM A240/A276
	Rigid 317 stainless steel with heat treated nickel overlay, ASTM A351, Grade CG8M or ASTM A240/A276	Rigid 317 stainless steel with heat treated nickel overlay, ASTM A351, Grade CG8M or ASTM A240/A276
<b>A18 Lower Shaft</b>	2205 Duplex stainless steel, ASTM A276	2205 Duplex stainless steel, ASTM A276
	17-4 PH stainless steel, ASTM A564, H900	17-4 PH stainless steel, ASTM A564, H900
<b>A19 Lower Bearing</b>	440C stainless steel, ASTM A276	440C stainless steel, ASTM A276
	Alloy 6, AMS 5387B, Stellite®	Alloy 6, AMS 5387B, Stellite®
<b>A21 Gasket</b>	Graphite	Graphite
<b>A22 Cover</b>	317 stainless steel, ASTM A351, Grade CG8M	317 stainless steel, ASTM A351, Grade CG8M
<b>A23 Screws</b>	18-8 stainless steel	18-8 stainless steel
<b>A27/A28 Adapter/Screws/ Lock Washer</b>	316 stainless steel	316 stainless steel
<b>A31 Seal</b>	Fluoroelastomer, PFA encapsulated or Inconel 750X "C" Ring	Fluoroelastomer, PFA encapsulated or Inconel 750X "C" Ring
<b>A33/A34 Seal (Sealed Bearing Only)</b>	Fluoroelastomer, PFA encapsulated	Fluoroelastomer, PFA encapsulated
	Kalrez®	Kalrez®

**Materials of Construction**  
**Hastelloy C & Carbon Steel Bodies**

Description	Hastelloy C Body	Carbon Steel Body
<b>A1 Body</b>	Hastelloy C, ASTM A494, Grade CW2M	Carbon steel, ASTM A216, Grade WCB
<b>A2 Plug</b>	Hastelloy C with heat treated electroless nickel overlay, ASTM A494, Grade CW2M	317 stainless steel with tungsten carbide overlay, A351, Grade CG8M
		317 stainless steel with heat treated nickel overlay, A351, Grade CG8M
<b>A3 Retainer</b>		317 stainless steel, ASTM A351, Grade CG8M
<b>A4 Retainer Screw</b>	18-8 stainless steel	18-8 stainless steel
<b>A5 Retainer Gasket</b>	Graphite	Graphite
<b>A6 Upper Shaft</b>	Hastelloy C, ASTM B574/B575 with Ceramic Coating	17-4 PH stainless steel, ASTM A564, H900
		2205 Duplex stainless steel, ASTM A276
<b>A7 Packing Stud</b>	18-8 stainless steel	18-8 stainless steel
<b>A8 Nut</b>	316 stainless steel	316 stainless steel
<b>A9 Packing Gland</b>	Hastelloy C, ASTM A494, Grade CW2M	317 stainless steel, ASTM A351, Grade CG8M
<b>A10 Packing</b>	PTFE or carbon graphite	PTFE or carbon graphite
<b>A11 Packing Washer</b>	Hastelloy C, ASTM B574/B575	317 stainless steel, ASTM A276
<b>A12 Upper Bearing</b>	Hastelloy C, ASTM B574/B575	440C stainless steel, ASTM A276
		Alloy 6 AMS 5387B, Stellite®
<b>A13 Lock Screw</b>	Alloy 20, B473	Alloy 20, B473
<b>A16 Seat</b>	Rigid Hastelloy with heat treated electroless nickel overlay, ASTM A494, Grade CW2M or ASTM B574/B575	Rigid 317 stainless steel with tungsten carbide overlay, ASTM A351, Grade CG8M or ASTM A240/A276
		Rigid 317 stainless steel with heat treated nickel overlay, ASTM A351, Grade CG8M or ASTM A240/A276
<b>A18 Lower Shaft</b>	Hastelloy C, ASTM B574/B575 with Ceramic Coating	2205 Duplex stainless steel, ASTM A276
		17-4 stainless steel, ASTM A564, H900
<b>A19 Lower Bearing</b>	Hastelloy C, ASTM B574 or B575	440C stainless steel, ASTM A276
		Alloy 6 AMS 5387B, Stellite®
<b>A21 Gasket</b>	Graphite	Graphite
<b>A22 Cover</b>	Hastelloy C, ASTM A494, Grade CW2M	317 stainless steel, ASTM A351, Grade CG8M
<b>A23 Screws</b>	18-8 stainless steel	18-8 stainless steel
<b>A27/A28 Adapter/Screws/ Lock Washer</b>	316 stainless steel	316 stainless steel
<b>A31 Seal</b>	Flouroelastomer, PFA encapsulated or Inconel 750X "C" Ring	Flouroelastomer, PFA encapsulated or Inconel 750X "C" Ring
<b>A33/A34 Seal</b>	Flouroelastomer, PFA encapsulated	Flouroelastomer, PFA encapsulated
	Kalrez®	Kalrez®

**Materials of Construction**  
**Titanium**

Description	Titanium Body With Extended Neck
A1 Body	Titanium, ASTM B367 Alloy C-3 (Grade 3)
A2 Plug	Titanium, ASTM B367 Alloy C-3 (Grade 3) with Tiodized overlay
A3 Retainer	Titanium, ASTM B367 Alloy C-3 (Grade 3) or ASTM B265/B348
A4 Retainer Screw	18-8 stainless steel
A5 Retainer Gasket	Graphonic
A6 Upper Shaft	Titanium ASTM B265/B348 Grade 5 with ceramic coating
A7 Packing Stud	18-8 stainless steel
A8 Nut	316 stainless steel
A9 Packing Gland	Titanium, ASTM B367 Alloy C-3 or ASTM B265/B348 Grade 3
A10 Packing	Carbon graphite or PTFE
A11 Packing Washer	Titanium, ASTM B265/B348 Grade 2
A12 Upper Bearing	Titanium , B265/B348 Grade 5
A13 Lock Screw	Titanium
A16 Seat	Titanium, ASTM B367 Alloy C-3 or ASTM B265/B348 Grade 5 with Tiodized overlay
A18 Lower Shaft	Titanium, ASTM B265/B348 Grade 5 with ceramic coating
A19 Lower Bearing	Titanium, B265/B348 Grade 5
A21 Gasket	Graphonic
A21 Cover	Titanium, ASTM B367, Alloy C-3 (Grade 3)
A23 Screws	Titanium, Grade 5
A27/A28 Adapter/Screws/Lock Washer	316 stainless steel
A31 Seal	Inconel 750X (C-Ring) or Kalrez® (O-Ring)
A33/A34 Seal	Kalrez® or PFA Encapsulated

## Ordering Information

To order, simply complete the valve order code from the information shown.

An ordering example is shown for your reference.

### Valve Style

Give valve style code as follows:

RCV = Rotary Control Valve

### Valve Size

Give size code as follows:

1 = 1" (25mm)	4 = 4" (100mm)
1.5 = 1.5" (40mm)	6 = 6" (150mm)
2 = 2" (50mm)	8 = 8" (200mm)
2.5 = 2.5" (65mm)	10 = 10" (250mm)
3 = 3" (80mm)	12 = 12" (300mm)

### End Connection

Give end connection code as follows:

#### Flangeless

W1S = Class 150  
ISA 75.04 and IEC 534-3-2F-F  
1-12" (25-300mm) valves

#### Flanged

F1S = Class 150  
ISA 75.04, and IEC 534-3-2F-F  
1-12" (25-300mm) valves

F2S = Class 300  
ISA 75.04, and IEC 534-3-2F-F  
1-12" (25-300mm) valves

F1A = Class 150  
ANSI B16.10, ISO 5752 and EN  
558-1 PN 10/16  
1-12" (25-300mm) excluding 2.5"  
(65mm) valve size (Long body)

### Body Material

Give body material code as follows:

S2 = 316 stainless steel (Class 300 only)  
S2 bodies must be ordered with S3 or S3S  
ball, S5 or S10 shaft, and S3 or S3S seat

S3 = 317 stainless steel (Class 150 only)  
S3 bodies must be ordered with S3 or S3S  
ball, S10 shaft and S3 or S3S seat

CS = Carbon Steel  
CS bodies must be ordered with S3 or  
S3S ball, S5 or S10 shaft, and S3 or S3S  
seat

HC = Hastelloy C  
HC body must be ordered with HC ball,  
HCC or TNC shaft, HC seat, and HC,  
HCVS or HCKS bearings.

TN = Titanium (1"-8" only except 2 1/2" & 5")  
TN body must be ordered with TN ball,  
TNC shaft,  
TN seat, and TN or TNKS bearings.

### Packing Material

Give packing material code as follows:

TC = PTFE chevron, 500° F (260° C)  
G2 = Braided carbon graphite, 1000° F (540° C)

Note: Limited by seat temperature rating.

### Trim Combination

Give plug, seat, trim size, shaft and bearing codes as follows:

#### Plug Material:

S3 = 317 SST, electroless nickel coated, 800° F (427° C)  
S3S = 317 SST with tungsten carbide overlay, 1000° F (538° C)  
HC = Hastelloy C, 800°F (427°C)  
TN = Titanium Tiodized, 800°F (427°C)

#### Seat Material:

S3 = 317 SST, electroless nickel coated, 800° F (427° C)  
S3S = 317 SST with tungsten carbide overlay, 1000° F (538° C)  
HC = Hastelloy C with Heat Treated Electroless Nickel overlay  
800°F (427°C)  
TN = Titanium Tiodized, 800°F (427°C)

#### Trim Size:

H = High capacity  
F = Full capacity  
.5 = Reduced capacity  
.2 = Reduced capacity

#### Shaft Material:

S10 = 2205 Duplex SST, 650°F (343°C)  
Standard Class 150. On ANSI 300 valves, refer to  
pressure ratings chart.

S5 = 17-4 pH SST. 800°F (427°C)  
Must be used on CL300 Sizes 2", 4", 6", 8" or 12"

TNC = Titanium, Ceramic Coated, 800°F (427°C)  
HCC = Hastelloy C Ceramic Coated, 800°F (427°C)

#### Bearing Material:

S9 = 440C Stainless Steel bearings, 800° F (427° C)  
S9VS = 440C Stainless Steel with PFA/Viton seal, 450° F (230° C)  
SL = Solid Stellite® alloy, 1000° F (540° C)  
SLVS = Solid Stellite® with PFA/Viton seal, 450° F (232° C)  
SLKS = Solid Stellite® with Kalrez® seal, 550° F (288° C)  
HC = Hastelloy C, 1000° F (540° C)  
HCVS = Hastelloy C with PFA/Viton seal, 450° F (232° C)  
HCKS = Hastelloy C with Kalrez® seal, 550° F (288° C)  
TN = Titanium, 800°F (427°C)  
TNKS = Titanium with Kalrez Seal, 550°F (288°C)

### Options

Give option codes as follows:

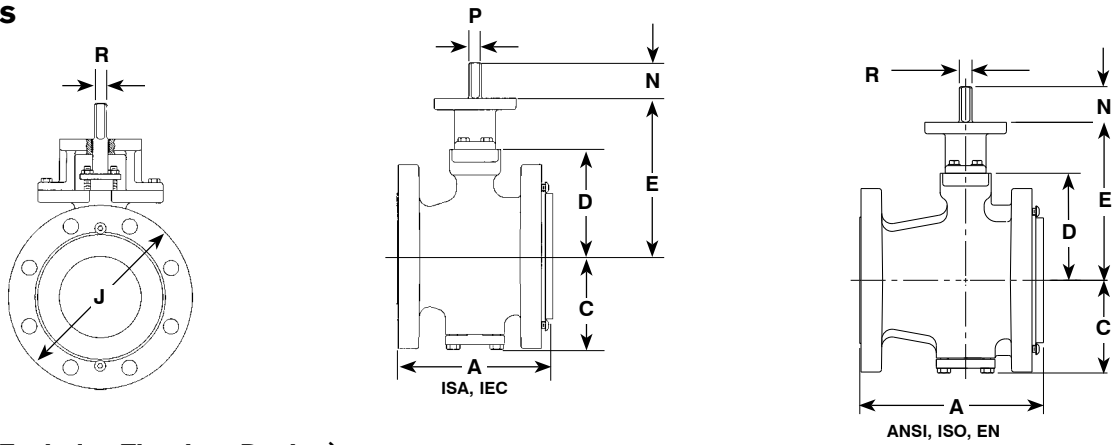
G1 = DIN 10 or BS4504/10 Drilling  
G2 = DIN 16 or BS4504/16 Drilling  
G3 = DIN 25 or BS4504/25 Drilling (F2S only)  
G4 = DIN 40 or BS4504/40 Drilling (F2S only)  
J1 = J1S 10 Flange Drilling (F1L or F1S only)  
J6 = J1S 16 Flange Drilling (F1L or F1S only)  
J2 = J1S 20 Flange Drilling (F2S only)

### Ordering Example:

RCV,4,F1S,S3,TC,S3-S3S-F-S10-S9 \*PR-R1A-PC4

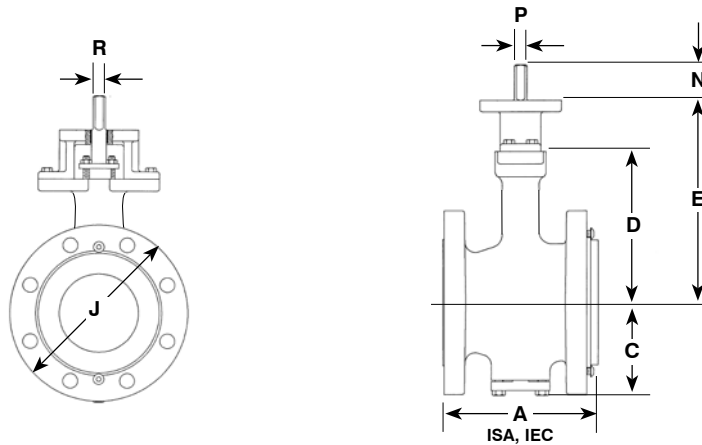


## Dimensions



### Basic Valve (Excludes Titanium Design)

Valve Size	A		C	D	E	J			N	R Diameter	P Square
	ISA IEC	ANSI ISO EN				Flanged Class 150	Flangeless Class 150	Flanged Class 300			
1" 25mm	4.00 102	5.00 127	2.75 70	3.25 83	5.62 143	4.25 108	2.44 62	4.88 124	1.75 44	.62 16	.50 13
1.5" 40mm	4.50 114	6.50 165	2.94 75	3.47 88	5.84 148	5.00 127	3.06 78	6.12 155	1.75 44	.62 16	.50 13
2" 50mm	4.88 124	7.00 178	3.22 82	3.75 95	6.12 155	6.00 152	3.81 97	6.50 165	1.75 44	.62 16	.50 13
2.5" 65mm	5.50 140	7.50 191	3.75 95	4.44 113	6.94 176	7.00 178	4.38 111	7.50 190	1.75 44	.75 19	.62 16
3" 80mm	6.50 165	8.00 203	4.00 102	4.69 119	7.19 183	7.50 191	5.19 132	8.25 210	1.75 44	.75 19	.62 16
4" 100mm	7.62 194	9.00 229	4.56 116	5.25 133	7.75 197	9.00 229	6.38 162	10.00 254	1.75 44	.75 19	.62 16
6" 150mm	9.00 229	10.50 267	5.72 145	6.50 165	9.50 241	11.00 279	8.50 216	12.50 317	1.75 44	1.25 32	.94 24
8" 200mm	9.56 243	11.50 292	7.28 185	8.12 206	11.12 282	13.50 343	10.62 270	15.00 381	1.75 44	1.50 38	1.19 30
10" 250mm	11.69 297	13.00 330	8.91 226	9.50 241	13.38 340	16.00 406	13.12 333	17.50 444	1.75 44	2.00 51	1.62 41
12" 300mm	13.31 338	14.00 356	9.91 252	10.50 267	14.38 365	19.00 483	15.38 391	20.50 521	1.75 44	2.00 51	1.62 41



### Basic Valve (Titanium Only Design)

Valve Size	A ISA IEC	C	D	E	J Flange Class 150/300	N	R Diameter	P Square
1" 25mm	4.00 102	2.75 70	5.50 140	7.87 200	4.88 124	1.75 44	.62 16	.50 13
1.5" 40mm	4.50 114	2.94 75	5.72 145	8.09 205	6.12 155	1.75 44	.62 16	.50 13
2" 50mm	4.88 124	3.22 82	6.00 152	8.37 213	6.50 165	1.75 44	.62 16	.50 13
3" 80mm	6.50 165	4.00 102	7.00 178	9.50 241	8.25 210	1.75 44	.75 19	.62 16
4" 100mm	7.62 194	4.56 116	7.56 192	10.06 256	10.00 254	1.75 44	.75 19	.62 16
6" 150mm	9.00 229	5.72 145	9.00 229	12.00 305	12.50 317	1.75 44	1.25 32	.94 24
8" 200mm	9.56 243	7.28 185	10.50 267	13.50 343	15.00 381	1.75 44	1.50 38	1.19 30

### Manual Gear Actuators

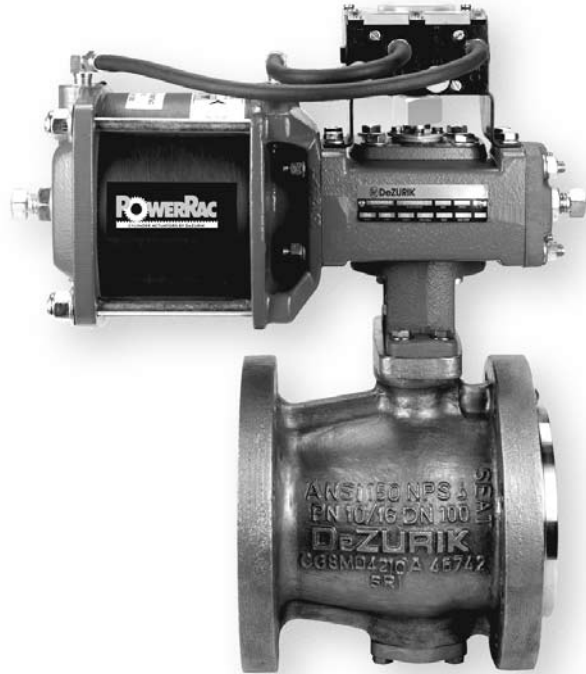
Manual gear actuators are available in cast iron construction. They feature sintered bronze bearings on each end of the input shaft for durability and performance.

### Cylinder Actuators

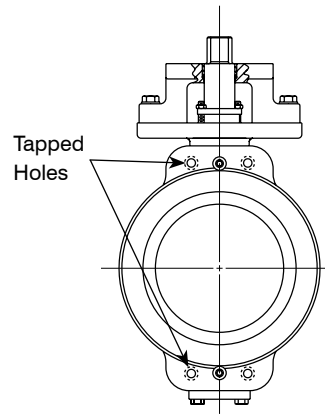
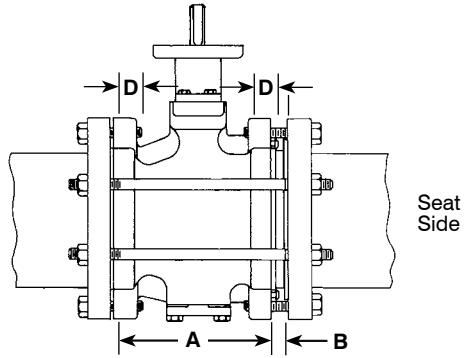
PowerRac® Cylinder actuators are available as double-acting or spring return. They feature a high opening torque for on-off applications and also maintain a high operating torque throughout the full stroke for modulating service.

### Spring-Diaphragm Actuators

DeZURIK spring-diaphragm actuators feature all steel, cast iron and stainless steel construction with no aluminum parts to corrode in caustic environments. The output shaft is supported at the top and bottom with bronze bearings that absorb side thrust and ensure smooth, efficient throttling control. Diaphragm actuators provide on-off or modulating control with either spring-to-open or spring-to-close operation. All diaphragm actuators feature external position indication and are available with safety lockout devices.



## Tie Bolt & Bolt Lengths Flangeless Valves



Valve Size	A	B	D
		ISA & IEC	
1" 25mm	3.69 94	.31 8	.44 11
1.5" 40mm	4.19 106	.31 8	.56 14
2" 50mm	4.57 116	.31 8	.62 16
2.5" 65mm	4.94 125	.56 15	.69 18
3" 80mm	5.94 151	.56 15	.75 19
4" 100mm	7.06 179	.56 15	.94 24
6" 150mm	8.50 216	.50 13	1 25
8" 200mm	9.06 230	.50 13	1.12 28
10" 250mm	11.07 281	.62 16	1.19 30
12" 300mm	12.69 322	.62 16	1.25 32

Valve Size	Quantity of Tapped Holes/Flange			
	ANSI 150	PN 10	JIS 10	JIS 16
1" 25mm	-	-	-	-
1.5" 40mm	-	-	-	-
2" 50mm	-	-	-	4
2.5" 65mm	-	-	-	4
3" 80mm	-	-	4	4
4" 100mm	-	-	4	4
6" 150mm	-	-	-	4
8" 200mm	-	-	4	4
10" 250mm	4	4	4	4
12" 300mm	4	4	4	4

### Tie Bolt Length

To determine the minimum tie bolt length on flangeless valves:

- add body length (dimension A from chart)
- add seat retainer length (dimension B from chart)
- add the two adjoining pipe flange thicknesses (customer determined)
- add the thicknesses of the two nuts (customer determined)

### Bolt Length for Tapped Holes – Side Opposite Seat

To determine the minimum bolt length on flangeless valves for the side opposite the seat:

- add the tapped lug thickness (dimension D from chart)
- add the adjoining pipe flange thickness (customer determined)

### Bolt Length for Tapped Holes – Seat Side

To determine the minimum bolt length on the seat side of flangeless valves:

- add the tapped lug thickness (dimension D from chart)
- add the seat retainer length (dimension B from chart)
- add the adjoining pipe flange thickness (customer determined)

### Bolt Length for Tapped Holes – Side Opposite Seat

To determine the minimum bolt length on the side opposite the seat for those valves with tapped holes:

- add the valve flange thickness (dimension D from chart)
- add adjoining pipe flange thickness (customer determined)

### Bolt Length for Tapped Holes – Seat Side

To determine the minimum bolt length on the seat side for those valves with tapped holes:

- add the valve flange thickness (dimension D from chart)
- add seat retainer length (dimension B from chart)
- add adjoining pipe flange thickness (customer determined)

### Bolt Length – Side Opposite Seat

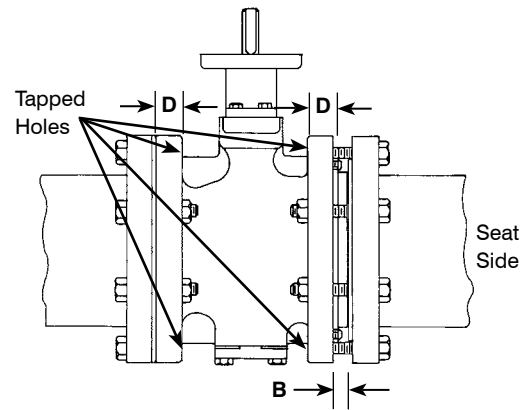
To determine the minimum bolt length on the side opposite the seat:

- add the valve flange thickness (dimension D from chart)
- add the adjoining pipe flange thickness (customer determined)
- add nut thickness (customer determined)

### Bolt Length – Seat Side

To determine the minimum bolt length on the seat side of flanged valves:

- add the valve flange thickness (dimension D from chart)
- add seat retainer length (dimension B from chart)
- add adjoining pipe flange thickness (customer determined)
- add nut thickness (customer determined)



### Bolt Lengths - Flanged Valves

Valve Size	Quantity of Tapped Holes/Flange					
	ANSI 150	ANSI 300	PN 10/16	PN 25/40	JIS 10	JIS 16/20
1" 25mm	-	-	-	-	4	4
1.5" 40mm	-	-	-	-	4	4
2" 50mm	-	4	-	-	4	4
2.5" 65mm	-	4	-	4	4	4
3" 80mm	-	-	-	-	8	4
4" 100mm	-	-	-	-	8	8
6" 150mm	-	4	-	-	8	4
8" 200mm	-	4	-	4	12	4
10" 250mm	-	-	-	-	12	-
12" 300mm	-	-	-	-	16	4

Valve Size	B	D Flange Thickness	
		Class 150	Class 300
1" 25mm	0.31 8	.44 11	.69 18
1.5" 40mm	0.31 8	.56 14	.81 21
2" 50mm	0.31 8	.62 16	.88 22
2.5" 65mm	0.56 15	.69 18	1 25
3" 80mm	0.56 15	.75 19	1.12 28
4" 100mm	0.56 15	.94 24	1.25 32
6" 150mm	0.50 13	1 25	1.44 37
8" 200mm	0.50 13	1.12 28	1.62 41
10" 250mm	0.62 16	1.19 30	1.88 48
12" 300mm	0.62 16	1.25 32	2 51

### Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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