BULLETIN 15.00-2
APRIL 2017

DeZURIK
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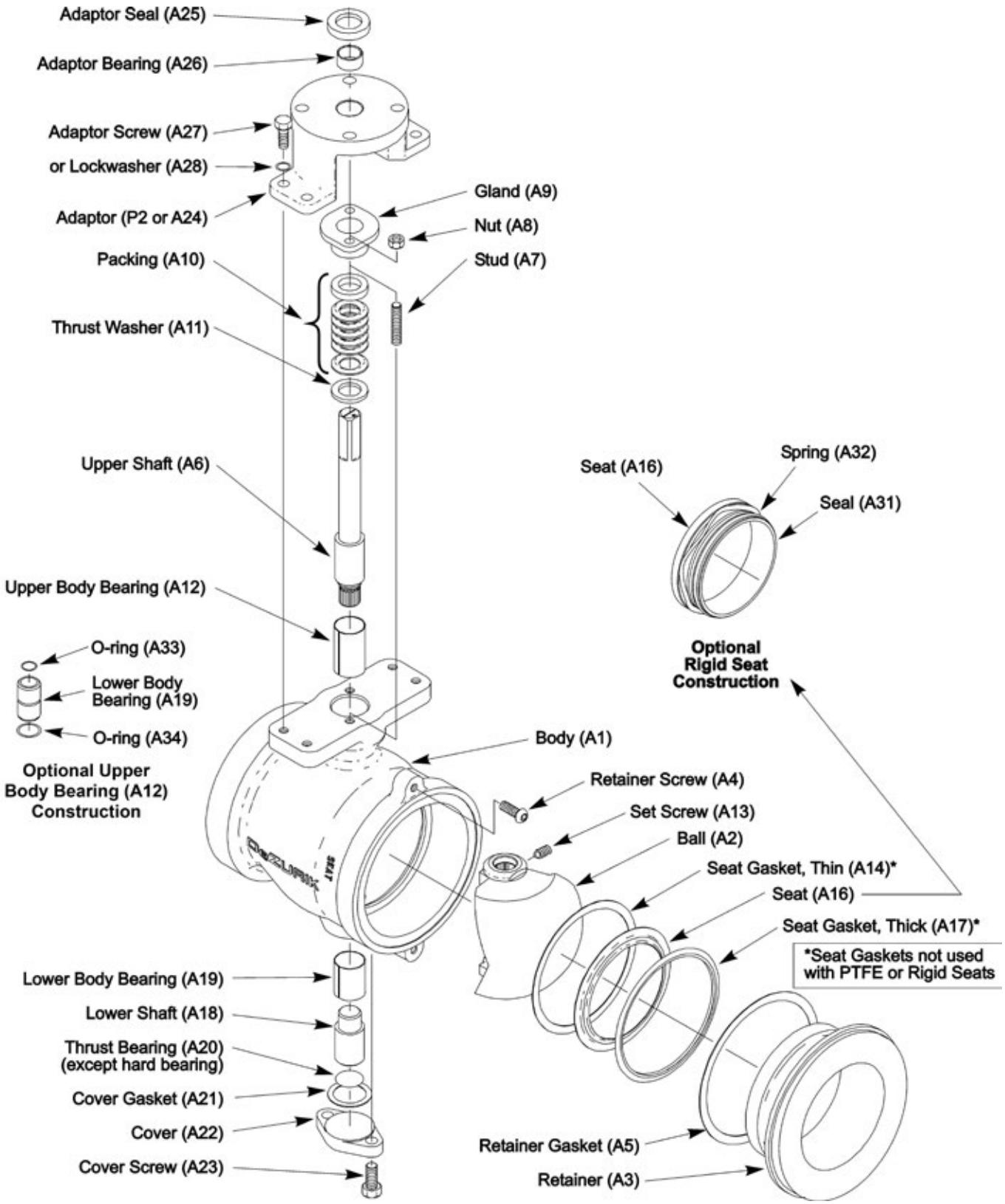
DeZURIK VPB V-PORT BALL VALVES TECHNICAL SPECIFICATIONS

Materials of Construction

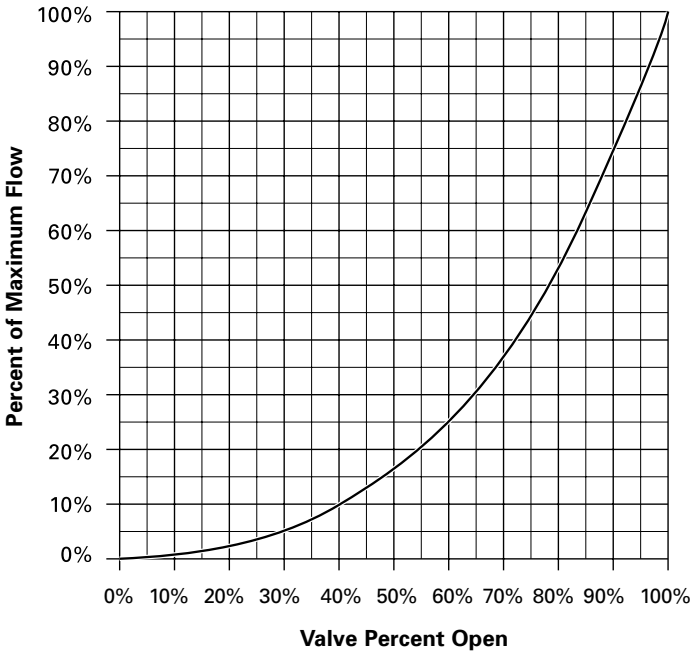


Materials of Construction

Item	Description	Order Code	Material
A1	Body	S2	316 Stainless Steel, ASTM A 351, Grade CF8M
		S3	317 Stainless Steel, ASTM A 351, Grade CG8M
		CS	Carbon Steel, ASTM A 216, Grade WCB
		HC	Hastelloy C, ASTM A 494, Grade CW2M
A2	Ball	S3NH	317 Stainless Steel, ASTM A 351, Grade CF8M, with Heat Treated Nickel Overlay
		S3S	317 Stainless Steel, ASTM A 351, Grade CF8M, with Tungsten Carbide Overlay
		HCNH	Hastelloy C, ASTM A494, Grade CW2M with Heat Treated Electroless Nickel Overlay
A3	Retainer	S2	316 Stainless Steel, ASTM A 351, Grade CF8M
		S3	317 Stainless Steel, ASTM A 351, Grade CG8M
		CS	Carbon Steel, ASTM A 216, Grade WCB
		HC	Hastelloy C, ASTM A 494, Grade CW2M
A4	Screw, Retainer	All	18-8 Stainless Steel
A5	Gasket, Retainer	All	Flexible Graphite
A6	Shaft, Upper	S10	2205 Duplex Stainless Steel
		S5	17-4 PH Stainless Steel
		HCC	Hastelloy C, ASTM B 574, Alloy N06022 Ceramic Coated
		TNC	Titanium, Ceramic Coated
A7	Stud, Packing	All	18-8 Stainless Steel
A8	Nut, Packing	All	18-8 Stainless Steel
A9	Gland	S2, CS	316 Stainless Steel, ASTM A 351, Grade CF8M
		S3	317 Stainless Steel, ASTM A 351, Grade CG8M
		HC	Hastelloy C, ASTM A 494, Grade CW2M
A10	Packing	TC	PTFE Chevron
		G2	Braided Carbon Graphite
A11	Thrust Washer	S2, CS	316 Stainless Steel, ASTM A 276, Type 316
		S3	317 Stainless Steel, ASTM A 276, Type 317
		HC	Hastelloy C, ASTM B 574 or B 575
A12	Bearing, Upper	FT	317 Stainless Steel Wire Mesh Reinforced PTFE
		HC	Hastelloy C
		SL	Cobalt Chromium Alloy
		S9	440C Stainless Steel
A13	Set Screw	S2, CS	316 Stainless Steel
		S3, HC	Alloy 20 Stainless Steel
A14	Gasket, Seat	S2, S3, HC	Flexible Graphite
A16	Seat	S3	317 Stainless Steel, Electroless Nickel Overlay, Heat Treated
		RT	Reinforced PTFE, Filled 15% Glass, 5% Molybdenum
		S3S, S3SI	317 Stainless Steel, ASTM A 351, Grade CF8M, Tungsten Carbide Overlay
		S3R, S3RI	317 Stainless Steel, ASTM A 743, Grade CG8M, Electroless Nickel Overlay, Heat Treated
		S5C	17-4 PH Stainless Steel , H1150
		HCRI	Hastelloy C, ASTM A 494, Grade CW2M, Heat Treated, Electroless Nickel Overlay
A17	Gasket, Seat	S3	317L Stainless Steel, Flexible Graphite Filled
		HC	Hastelloy C, Flexible Graphite Filled
A18	Shaft, Lower	S10	2205 Duplex Stainless Steel
		S5	17-4 PH Stainless Steel
		HCC	Hastelloy C, ASTM B 574, Alloy N06022 Ceramic Coated
		TNC	Titanium, Ceramic Coated
A19	Bearing, Lower	FT	317 Stainless Steel Wire Mesh Reinforced PTFE
		HC	Hastelloy C
		SL	Cobalt Chromium Alloy
		S9	440C Stainless Steel
A20	Bearing, Thrust	FT	PTFE Fabric Bonded to 317 SS
		FT, HC	PTFE Fabric Bonded to Hastelloy C
		SL	Graphite
A21	Gasket, Cover	All	Graphite
A22	Cover	S2	316 Stainless Steel, ASTM A 351, Grade CF8M
		S3	317 Stainless Steel, ASTM A 351, Grade CG8M
		CS	Carbon Steel, ASTM A 216, Grade WCB
		HC	Hastelloy C, ASTM A 494, Grade CW2M
A23	Screw, Cover	All	316 Stainless Steel
A24	Adaptor	All	Ductile Iron
A25	Seal, Adaptor	DR, PR	Nitrile Rubber, Carbon Steel Case
A26	Bearing, Adaptor	DR55, 85	Oil-Impregnated Bronze
A27	Screw, Adaptor	All	18-8 Stainless Steel
A28	Lockwasher, Adaptor	All	18-8 Stainless Steel
A31	Seal, O-Ring	All	Fluoro Rubber, Encapsulated in PFA
A32	Spring	All	Fluoro Rubber, Encapsulated in PFA
A33	O-ring	S9VS, SLVS, HCVS	Fluoropolymer Seal
		SLKS, HCKS	FFKM Perfluoroelastomer Seal
A34	O-ring	S9VS, SLVS, HCVS	Fluoropolymer Seal
		SLKS, HCKS	FFKM Perfluoroelastomer Seal

Valve Selection

Flow Characteristic



Applicable Standards

DeZURIK VPB V-Port Ball Valves are designed and/or tested to meet the following standards:	
ASME B16.10	Face-to-Face dimensions, short pattern requirements
ASME B16.34	Body Wall Thickness and Pressure/temperature ratings for Class 150 and 300 Valves
ASME B16.5	Flange dimensions conform to Pipe flanges and Flanged Fittings for Class 150 and 300
ANSI/FCI 70.2	Control valve seat leakage
EN 558-1 PN 10/16	Basic Series 3, Face-to-Face dimensions
IEC 534-3-2 F-F	Face-to-Face dimensions, Industrial Process Control Valves
ANSI/ISA-75.02	Control Valve Capacity Test Procedures
ANSI/ISA-75.08.02	Face-to-Face dimensions for Flanged and Flangeless Rotary Control Valves
ISO 5211/1 & 2	Part-turn valve actuator attachment, Part 1: Flange dimensions and Part 2: Flange and Coupling performance characteristics
ISO 5752 PN 10/16	Basic Series 3, Face-to-Face dimensions
MSS-SP-25	Data Plate and body identification conform to marking requirements

Flow Parameters

Valve Size	Cv*/Kv* 100% Open	
	Flexible Metal & Rigid Metal Seats	Reinforced PTFE & Clearance Seats
1" / 25mm	36 / 31	40 / 35
1.5" / 40mm	120 / 104	135 / 117
2" / 50mm	210 / 182	235 / 203
2.5" / 65mm	260 / 225	295 / 255
3" / 80mm	360 / 311	420 / 363
4" / 100mm	600 / 519	690 / 597
6" / 150mm	1230 / 1064	1290 / 1116
8" / 200mm	2015 / 1743	2190 / 1894
10" / 250mm	3000 / 2595	3180 / 2751
12" / 300mm	4225 / 3655	4390 / 3797
14" / 350mm	5830 / 5043	6060 / 5242
16" / 400mm	7500 / 6488	7770 / 6721
18" / 450mm	9500 / 8218	9840 / 8512
20" / 500mm	12000 / 10380	12430 / 10752

*Cv = Flow in GPM of water at 1 psi pressure drop.
Kv = Flow in m3/hr. of water at 100 kPa pressure drop.

Valve Weights

Valve Size	Class 150			Class 300
	Flanged (F1S & F1A)	Flangeless (W1S)	Add for Long Body (F1L)	Flanged (F2S)
1" / 25mm	12 / 6	9 / 5	0.5 / 1	15 / 7
1.5" / 40mm	17 / 8	12 / 6	2.0 / 1	24 / 11
2" / 50mm	21 / 10	13 / 6	2.8 / 2	27 / 13
2.5" / 65mm	32 / 15	20 / 10	—	40 / 19
3" / 80mm	47 / 22	35 / 16	3.3 / 2	58 / 27
4" / 100mm	63 / 29	42 / 20	3.5 / 2	79 / 36
6" / 150mm	95 / 44	74 / 34	10.5 / 5	142 / 65
8" / 200mm	152 / 69	116 / 53	15.3 / 7	208 / 95
10" / 250mm	236 / 108	182 / 83	17.5 / 8	342 / 156
12" / 300mm	368 / 167	314 / 143	11.3 / 6	516 / 235
14" / 350mm	560 / 255	—	—	—
16" / 400mm	695 / 316	—	—	—
18" / 450mm	890 / 404	—	—	—
20" / 500mm	1105 / 501	—	—	—

Pounds
Kilograms

Valve Selection

Shut-Off Capabilities

Seat type	Flow	Shut-Off Class (ANSI /FCI 70-2)
Flexible Metal*	Bi-Directional	IV
Rigid Metal	Uni-Directional	IV
Reinforced PTFE**	Uni-Directional	VI
Clearance Seat	Bi-Directional	5% of max flow when closed

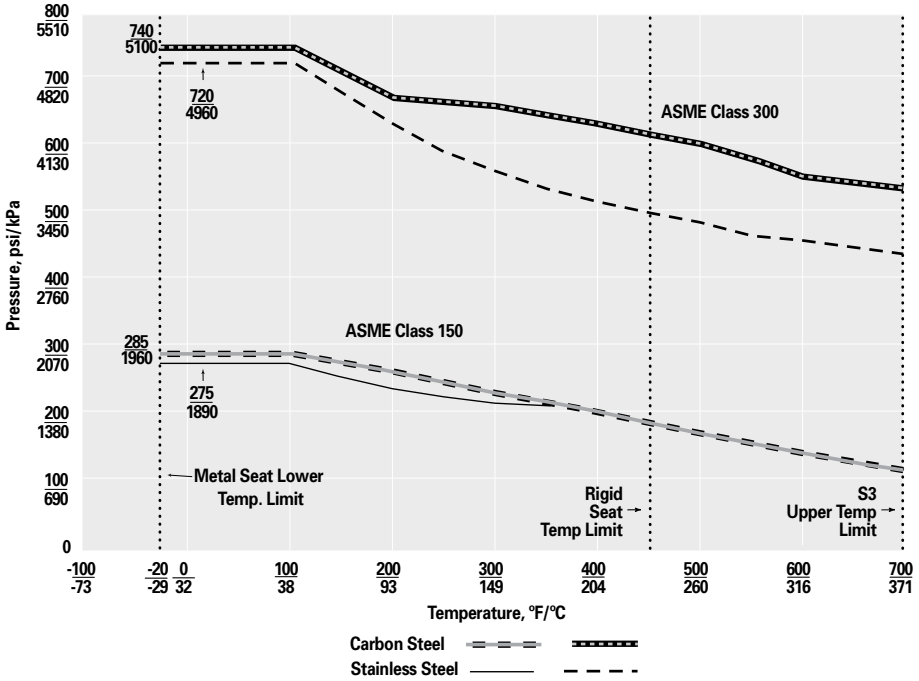
NOTE: Uni-directional valves must be installed with flow-to-open (forward flow; flow into the convex side of ball). Flow-to-open is the preferred direction for bi-directional valves. Seats are rated to the full valve pressure rating unless noted below.

* Flexible metal seats are rated to 150 psi (1030kPa) pressure differential when installed in the flow-to-close direction.

** Reinforced PTFE seats are rated to 285 psi (1895 kPa) maximum shutoff pressure differential.

Pressure Ratings

Flex Metal*, Rigid Metal and Clearance Seats (S3, S3R, S35, S3RI, S3SI, HCRI)



Ordering

To order, simply complete the valve order code from information shown. An ordering example is shown for your reference.

Valve Style
Give valve style code as follows:

VPB	=	V-Port Ball Valve

Valve Size
Give valve size code as follows:

1	=	1"	(25mm)	8	=	8"	(200mm)
1.5	=	1.5"	(40mm)	10	=	10"	(250mm)
2	=	2"	(50mm)	12	=	12"	(300mm)
2.5	=	2.5"	(65mm)	14	=	14"	(350mm)
3	=	3"	(80mm)	16	=	16"	(400mm)
4	=	4"	(100mm)	18	=	18"	(450mm)
6	=	6"	(150mm)	20	=	20"	(500mm)

End Connection
Give end connection code as follows:

Flangeless

W1S	=	Class 150, ANSI/ISA-75.08.02 and IEC 534-3-2-F 1-12" valves

Flanged

F1S	=	Class 150, ANSI/ISA-75.08.02 and IEC 534-3-2F-F 1-20" valves
F2S	=	Class 300, ANSI/ISA-75.08.02 and IEC 534-3-2F-F 1-12" valves
F1L	=	Class 150, ASME B16.10, ISO 5752 and EN 558-1 PN 10/16, 1-12" valves
F1A	=	Class 150, ASME B16.10, ISO 5752 and EN 558-1 PN 10/16 (Long body) 1-12" excluding 2.5" valve size.

Body Material
Give body material code as follows:

S3	=	317 stainless steel (Class 150 only) S3 bodies must be ordered with S3NH or S3S ball , S10 shaft and S3, S3S, S3R or RT seat.
CS	=	Carbon Steel. CS bodies must be ordered with S3NH or S3S ball, S10 shaft, and S3, S3S, S3R or RT seat.
S2	=	316 stainless steel (Class 300 only). S2 bodies must be ordered with S3NH or S3S ball, S5 or S10 shaft, and either S3, S3S, S3R or RT seat.
HC	=	Hastelloy C. HC body must be ordered with HCNH ball, HCC or TNC shaft, HCRI or RT seat, and HC, HCVS or HCKS bearings.

Packing Material
Give packing material code as follows:

TC	=	PTFE Chevron, to 500°F (260°C)
G2	=	Braided carbon graphite, to 1000°F (540°C) (Available with S3 seat and S9 or SL bearings)

Trim Combination
Give ball, shaft, seat and bearing codes as follows:

S3NH	=	317 stainless steel heat treated nickel overlay, to 700°F (370°C)
S3S	=	317 stainless steel with tungsten carbide overlay, to 1000°F (540°C) (Available with S3S, S3SI or S3 seats only)
HCNH	=	Hastelloy C with heat treated electroless nickel overlay, to 700°F (370°C)

Shaft Material

S10	=	2205 Duplex stainless steel
S5	=	17-4 PH stainless steel
HCC	=	Hastelloy C Ceramic Coated (HC Bearings only)
TNC	=	Titanium Ceramic Coated

Seat Material

RT	=	Reinforced PTFE, to 500°F (260°C)
S3	=	Flexible 317 stainless steel with heat treated electroless nickel overlay, to 700°F (370°C)
S5C	=	Clearance Seat, 17-4PH Stainless Steel to 1000°F (540°C)
S3R	=	Rigid 317 stainless steel with heat treated nickel overlay, to 450°F (230°C)
S3S	=	Rigid 317 stainless steel with tungsten carbide overlay, to 450°F (230°C) (Available with S3S Ball only)
S3RI	=	Rigid 317 stainless steel with heat treated electroless nickel overlay and nickel-chromium spring, to 450°F (230°C)
S3SI	=	Rigid 317 stainless steel with tungsten carbide overlay and nickel-chromium alloy spring, to 450°F (230°C)
HCRI	=	Rigid Hastelloy C with heat treated electroless nickel overlay and nickel-chromium alloy spring, to 450°F (230°C)

Bearing Material

FT	=	317 stainless steel wire mesh reinforced PTFE, to 500°F (260°C)
S9	=	440C stainless steel bearings, to 1000°F (540°C)
S9VS	=	440C stainless steel bearings with PFA Fluoropolymer seal to 450°F (230°C)
SL	=	Solid Cobalt-Chromium Alloy, to 1000°F (540°C)
SLVS	=	Solid Cobalt-Chromium Alloy with PFA Fluoropolymer seal, to 450°F (230°C)
SLKS	=	Solid Cobalt-Chromium Alloy with FFKM Perfluoroelastomer seal, to 550°F (288°C)

On Application

HC	=	Hastelloy C 1000°F (540°C)
HCVS	=	Hastelloy C with PFA Fluoropolymer seal, to 450°F (230°C)
HCKS	=	Hastelloy C with FFKM Perfluoroelastomer seal, to 550°F (288°C)

On Application
Give options code as follows:

BAA	=	Buy American Act
CMC	=	Certificate of Material Conformance
CRT	=	Certified Material Physical & Chemical Test Report
DTR	=	DeZURIK Standard Certified Production Hydrostatic Shell & Seat Test Report
ST3	=	Pennsylvania Steel Procurement Act
G1	=	DIN 10 or BS4504/10 Drilling (W1S, F1L & F1S only)
G2	=	DIN 16 or BS4504/16 Drilling (W1S, F1L & F1S only)
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)

On Application

Pressure Equipment Directive (CE Mark)

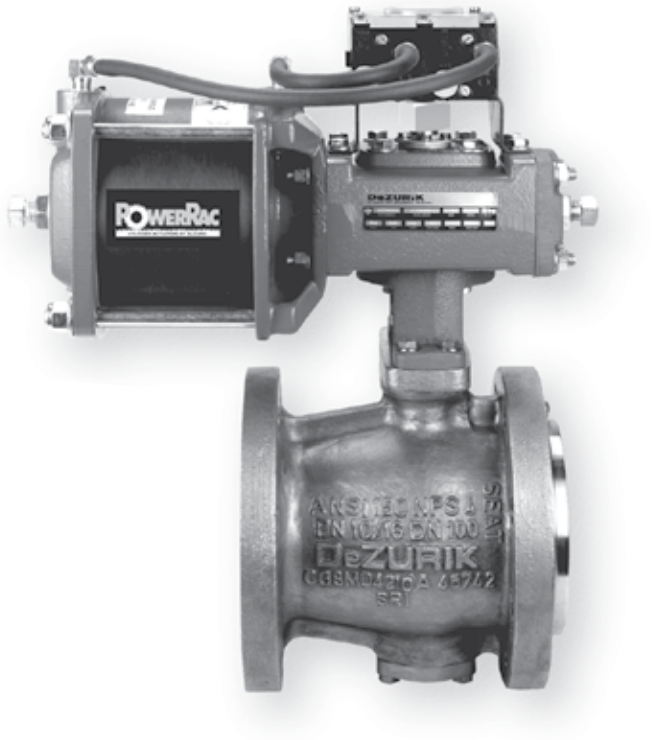
Ordering Example

VPB,4,F1L,S3,TC,S3NH-S10-RT-FT,G1*PR-R1A-PC4

Actuators

Manual Gear Actuators

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



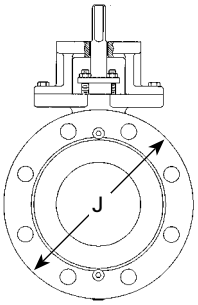
Cylinder Actuators

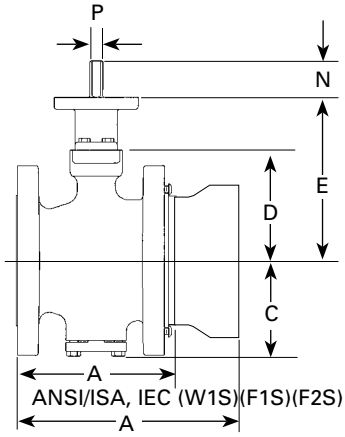
PowerRac® Cylinder actuators are available as double-acting or spring return. They feature a high opening torque for on-off applications and also maintain a high operating torque throughout the full stroke for modulating service.

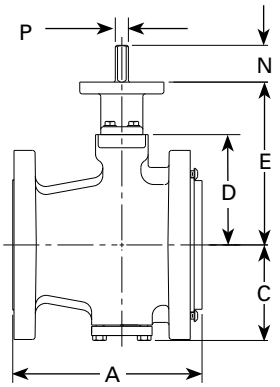
Diaphragm Actuators

Diaphragm actuators may be specified also. They're available with 40, 55, 85, 125, 145 and 250 square inch (0.026m^2, 0.036m^2, 0.055m^2, 0.094m^2, 0.161m^2) sizes and with 20, 35 or 60 psi (140, 240 or 410 kPa) spring options.

Dimensions







Basic Valve

Inches
Millimeters

Valve Size	A		C	D	E	J			N	P Diameter	P Square
	ANSI/ISA IEC	ASME 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
14" 350mm	15.75 400	—	10.86 276	11.47 291	15.34 390	21.00 533	—	—	1.75 44	2.00 51	1.62 41
16" 400mm	15.75 400	—	13.25 337	14.06 375	18.56 471	23.50 597	—	—	1.75 44	2.50 64	1.81 46
18" 450mm	18.00 457	—	14.44 367	15.25 387	19.75 502	25.00 635	—	—	1.75 44	2.50 64	1.81 46
20" 500mm	20.00 508	—	15.56 395	16.38 416	20.38 518	27.50 686	—	—	1.75 44	2.50 64	1.81 46

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.

*6" (150mm) $\frac{.88}{22}$ for DR-40 actuators

**10" (250mm) $\frac{1.19}{30}$ for DR-85 actuators

Sales and Service

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