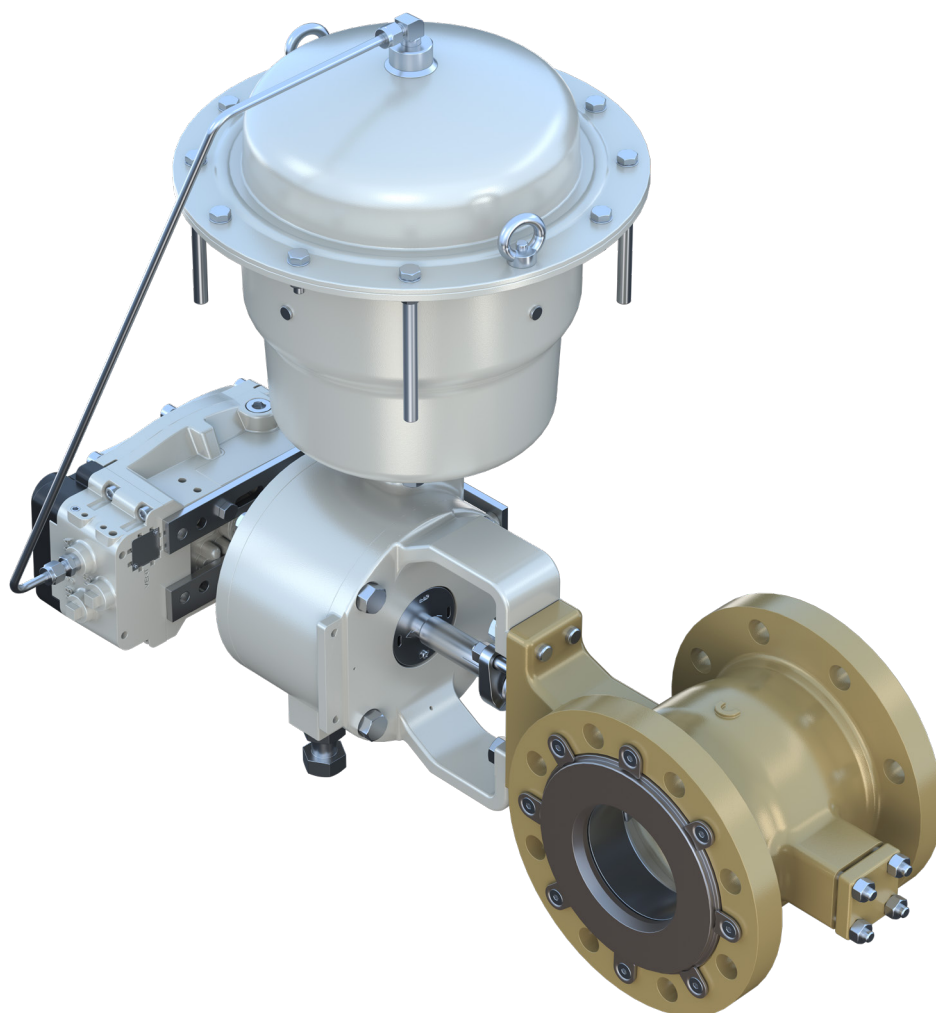


Valtek® ShearStream™

Segmented Control Ball Valve



Valtek ShearStream control valve

The Valtek ShearStream control valve is a high-performance, segmented ball valve design, which is used in low-pressure, high-capacity applications. It is recommended to overcome the problems of harsh, particle-entrained processes in chemical and petrochemical and midstream oil and gas applications.

300:1 rangeability

The ShearStream segmented ball is designed to give high rangeability and a shearing action to slice or displace fibrous particles in non-homogenous fluid streams. Fluid pressure assists the seat to seal tightly against the surface of the ball in either shaft upstream or downstream orientations. A splined shaft connected to a clamped actuator lever and a pinned shaft/ball connection provide excellent throttling control at a lower comparative cost. The ShearStream control valve with

a cylinder or diaphragm actuator is rated for ANSI/FCI 70.2 Class IV (metal seat) or Class VI (soft seat) shut-off. A spring-loaded, heavy-duty seat is available for higher-pressure applications in metal and soft seat configurations. It is available in sizes 1 through 16 in., ANSI Classes 150, 300 and 600, and in stainless steel, carbon steel and other alloys. The overall design facilitates easy maintenance and performance that has been proven through decades of successful service.

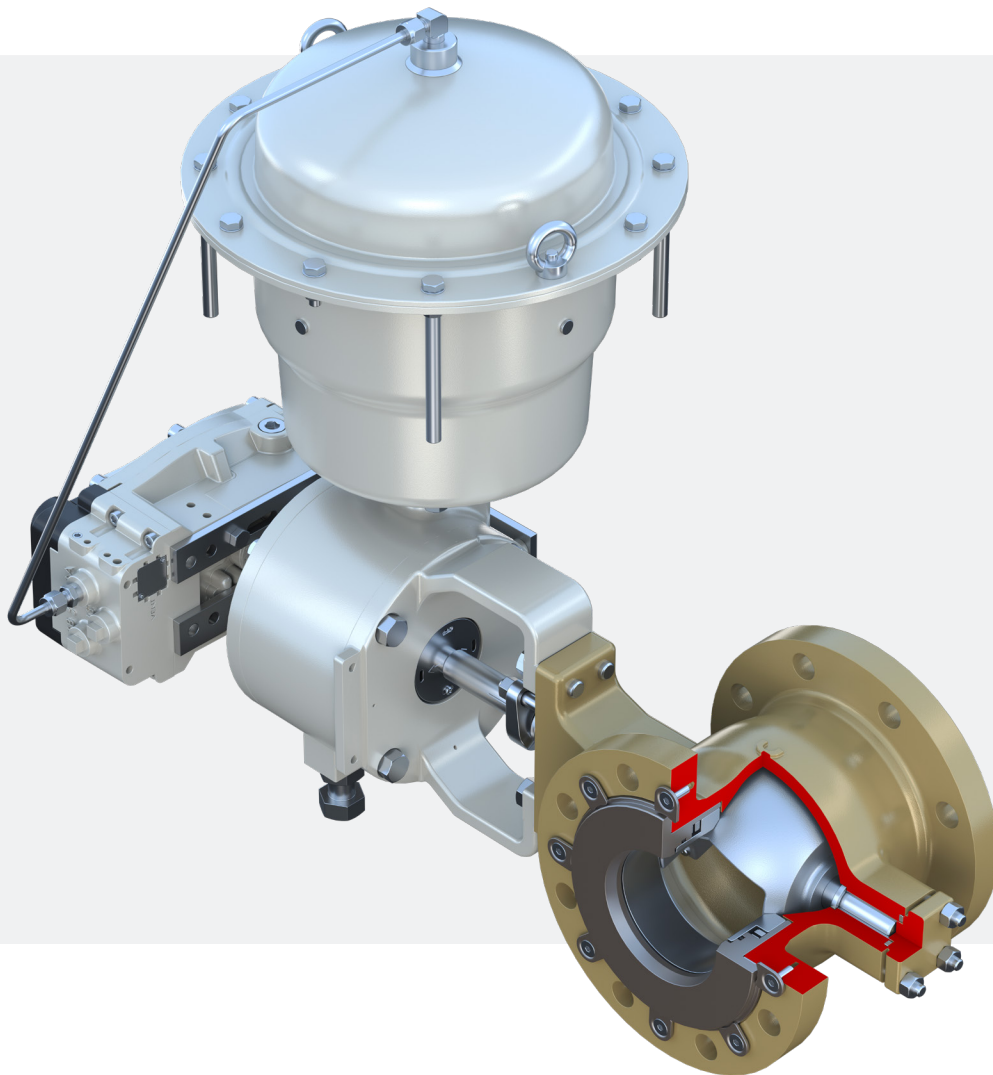


Table 1: Features and advantages

Features	Advantages
Segmented V-notch ball	Clogging resistant reduced “V”-shaped orifice exceeds 300:1 rangeability; excellent shearing action and control in fibrous fluid media
Tight shut-off seats	Soft seat (ANSI/FCI Class VI) and metal seat (ANSI/FCI Class IV) provide reliable long life and shut-off capability through a wide range of temperatures.
Self-centering clamped seat	Improved seat installation for simplified and more reliable shut-off ⁽¹⁾
Multiple seat options	Soft, metal, dual and heavy-duty metal and soft seat options available to meet a wide variety of applications
No-shims required for shut-off	Reduces servicing and installation problems, resulting in lower relative costs
Zero backlash	A splined shaft end, combined with an actuator lever clamp and a pinned ball-to-shaft connection, eliminates all lost motion between shaft and actuator; improves throttling control and stiffness for better reliability and control.
Pinned shaft to ball	Tapered pins connecting shaft to ball provide tight connection for excellent control without drilling the shaft; allows for simple assembly and disassembly
Multiple packing options	Packing provides low emissions for a variety of applications, complying with industry and environmental standards.
Clamped seat retainer	A clamped seat retainer allows for self-centering of the seat ring for tight shut-off and the use of various gasket types; also allows for easy replacement of seat ring without special tools
Bolted shaft flange	Four-bolt shaft flange design provides robust seal and easy maintenance.
Anti-blowout shaft	Standard feature ensures the shaft cannot blow out, even if the actuator is removed, improving safety and reliability.
Position indication on shaft	The shaft and gland flange are marked for easy visual indication of ball position.
Long-life bearings	Improved bearing designs with multiple material options available. Bearings are capable of more than 1 million full-stroke cycles.

(1) For standard metal and soft seats

Table 2: Specifications

Item	Options
Size	NPS 1 to 16
Pressure class	ASME Class 150, 300 and 600
End connection	ASME 16.5 integral flange
Body material	A216-WCC, A351-CF8M; alloys upon request
Face-to-face	ISA 75.08.02
Packing	PTFE V-ring, braided PTFE, graphite, carbon braid, SureGuard XT™, SafeGuard™
Packing type	Single, twin, vacuum, live-loaded, fire-safe
Fire safety	API 607 (1 to 4 in., Class 150 to 600) and (6 to 12 in., Class 150 to 300)
Fugitive emissions	ISO 15848-1 certified options (1.5 to 16 in., up to Class 600) ISO FE BH – CC1 - SSA 0 – t (RT, 400°C) – Class 600 – ISO 15848-1
Temperature	-46°C to 427°C (-51°F to 800°F)
Actuators	Single acting: NR, SuperNova; Double acting: VR, VR-UHC, SuperNova, RG

Design standards

ASME (B16.34, 16.5, ISA 75.08.02)

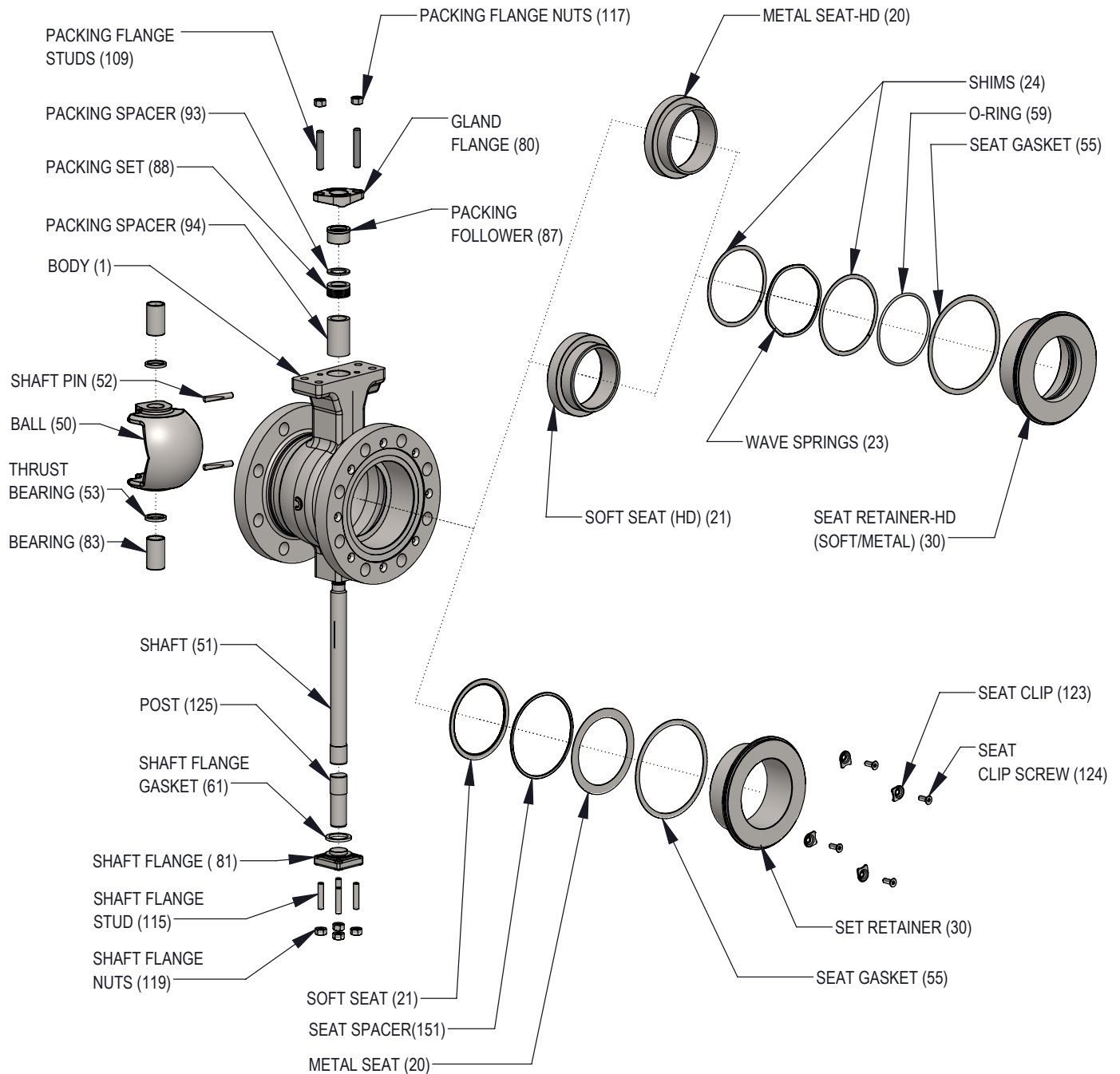
Test standards

ASME B16.34, ANSI/FCI 70-2,
ANSI/ISA-75.19.01

Certifications/approvals

ISO 15848-1, PED, SIL, CRN

**Parts list and materials of construction –
Sizes 2 to 16 in.**



**Parts list and materials of construction –
Sizes 1 and 1.5 in.**

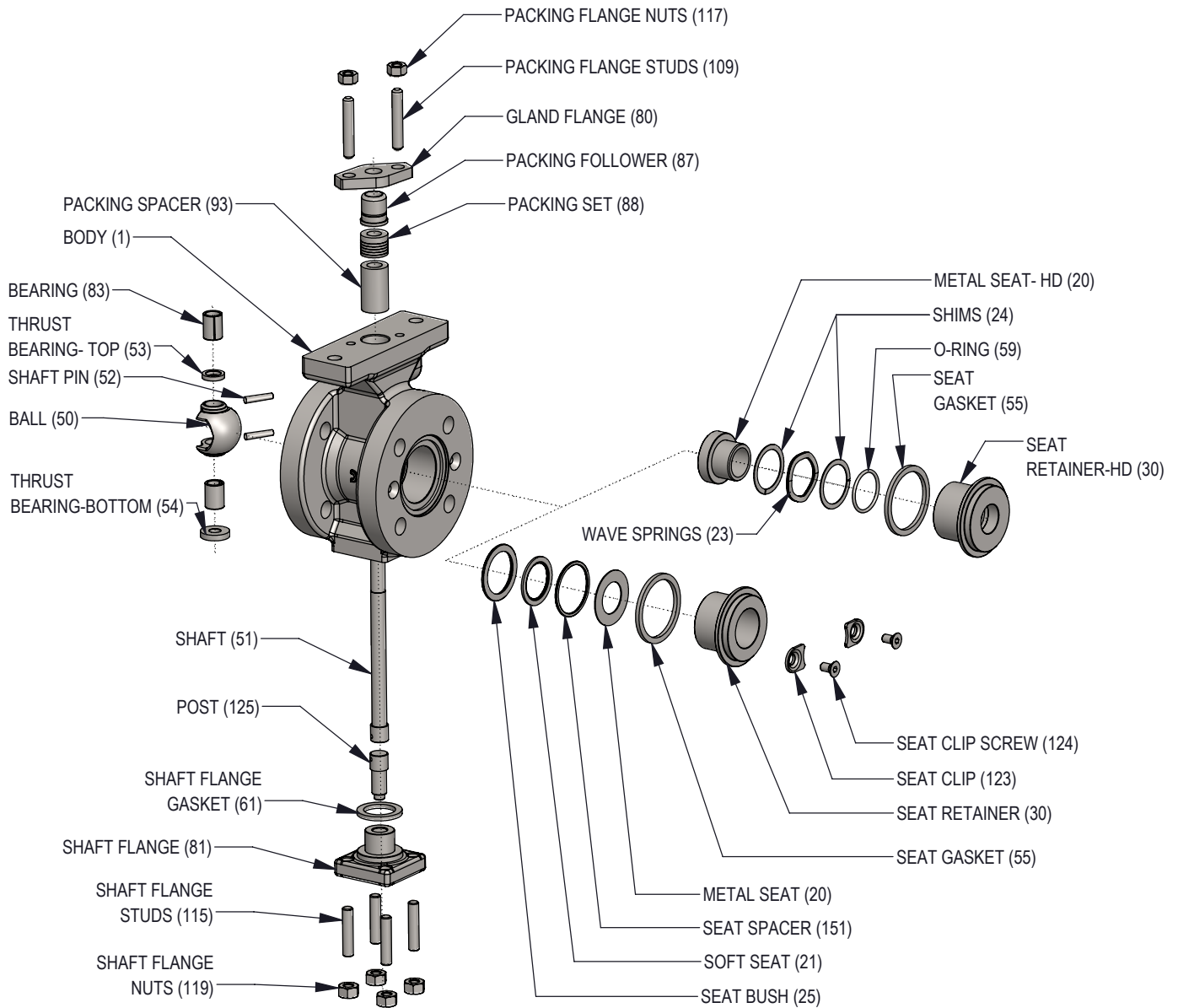


Table 3: Materials of construction

BOM Item Number	Part Name	Material	Proposed Temp. (°F)
1	Body	A216-WCC	-20 to 800
		A216-WCB	-20 to 800
		A351-CF8	-51 to 800
		A351-CF3	-51 to 800
		A351-CF3M	-51 to 800
		A351-CF8M	-51 to 800
		Monel 400	-20 to 800
		Hastelloy C; C-276	-51 to 700
		Hastelloy B; B-3	-20 to 500
		Alloy 20	-51 to 600
		Titanium Gr3	-20 to 500
50	Ball	Chrome-plated 317 SS	-51 to 800
		Alloy 6	-51 to 800
		Chrome-plated 316L SS	-51 to 800
		Chrome-plated 304 SS	-51 to 800
		Chrome-plated 304L SS	-51 to 800
		Hastelloy C; C-276	-51 to 700
		Monel 400	-20 to 800
		Alloy 20	-51 to 600
		Hastelloy B; B-2	-20 to 500
		Titanium Gr3	-20 to 500
51/125/52	Shaft/ post/pin	17-4PH H1025	-40 to 800
		Inconel 718 HT/(Alloy 6)	-51 to 800
		XM-19 (Nitronic 50) SH	-51 to 800
		Nitronic 50 SH/Alloy 6	-51 to 800
		Hastelloy C	-51 to 700
		Monel K-500	-51 to 700
		Alloy 20	-51 to 800
		Hastelloy B; B-2	-20 to 500
		Titanium Gr3	-20 to 600
83	Bearings	316/PTFE/Kevlar	-51 to 450
		Inconel 625/PTFE/Kevlar	-51 to 450
		Monel/PTFE/Kevlar	-51 to 450
		Alloy 6	-51 to 800
		Ultimet	-51 to 800
20/21	Seat ring	316 SS, strain-hardened	-51 to 800
		Inconel 718 HT	-51 to 800
		Alloy 6	-51 to 800
		PTFE	-51 to 350
		UHMWPE	-51 to 185
		Glass-filled PTFE	-51 to 450
		PEEK	-51 to 500

BOM Item Number	Part Name	Material	Proposed Temp. (°F)
30	Seat retainer	Carbon steel nickel plated	-20 to 800
		316 SS	-51 to 800
		316L SS	-51 to 800
		316 SS/Alloy 6	-51 to 800
		316L/Alloy 6	-51 to 800
		304 SS	-51 to 800
		304L SS	-51 to 800
		Monel 400	-20 to 800
		Hastelloy C; C-276	-51 to 700
		Alloy 20	-51 to 600
		Hastelloy B; B-2	-20 to 500
		Titanium Gr3	-20 to 800
81	Shaft flange	Same as body	
88	Packing material	PTFE V-ring or braid	-51 to 400
		PTFE/glass V-ring	-51 to 500
		LATTYflon 3265 LM	-51 to 400
		SafeGuard	-51 to 450
		SureGuard XT	-20 to 550
		Graphite braid or graphite	-51 to 800
		Carbon braid	-51 to 800
		Carbon steel	-20 to 800
109/117	Packing flange stud/nut	Stainless steel	-51 to 800
115/119	Shaft flange stud/nut	Carbon steel	-20 to 800
		Stainless steel	-51 to 800
80	Gland flange	WCC carbon steel	-20 to 800
		CF8M stainless steel	-51 to 800
61	Shaft flange gasket	Spiral graphite	-51 to 800
		PTFE	-51 to 350
53	Thrust bearing	316 stainless steel with nitrided surface	-51 to 800
93/94/95	Packing spacer	Same as body	
87	Packing follower	Same as body	
55	Seat retainer gasket	Graphite (Class 150/300 only)	-51 to 800
		PTFE (Class 600 only)	-51 to 350
		Spiral graphite (Class 600 only)	Same as body
123/124	Seat clip and screw	316 SS	N/A

Seat design options

Metal seat

The metal seat uses the pressure drop across the seat to enhance its shut-off characteristics in the shaft upstream and downstream flow directions. In both cases, the flexible seat conforms to the surface of the ball. As the differential pressure increases, the metal seat uses the pressure to increase sealing force.

Shut-off: ANSI/FCI 70-2 Class IV

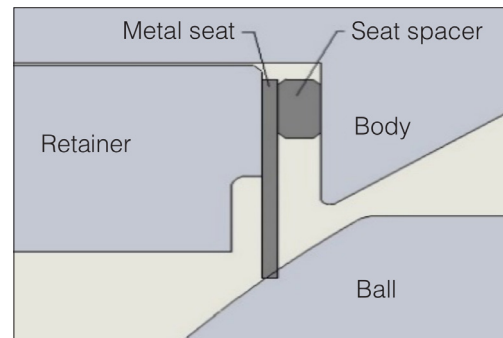


Figure 1: Metal seat

Soft seat

The soft seat utilizes a filled-PTFE or PEEK insert. The soft seat is also available with a metal back-up seat in the dual seat configuration for fire-safe applications.

Shut-off: ANSI/FCI 70-2 Class VI

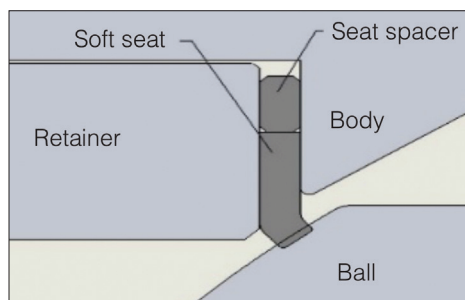


Figure 2: Soft seat

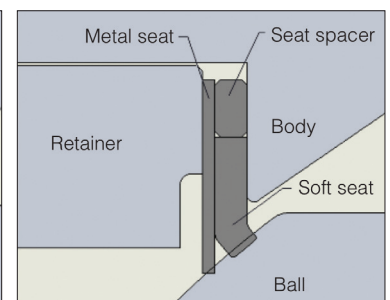


Figure 3: Dual seat

Flow ring

A metal flow ring design (not shown) is available without a soft seat for minimum flow applications.

Shut-off: ANSI/FCI 70-2 Class II

Heavy-duty seat

For applications requiring high pressure drops, the heavy-duty seat provides tight shut-off and reliability in the shaft downstream flow direction. The wave springs give the seat consistent seating pressure that is long-lasting. An optional O-ring is available to seal wave springs for dirty service applications. The heavy-duty soft seat utilizes a UHMWPE or filled PTFE or PEEK soft seal.

Shut-off: Metal, ANSI/FCI 70-2 Class IV

Soft: ANSI/FCI 70-2 Class VI; not available <2 in.

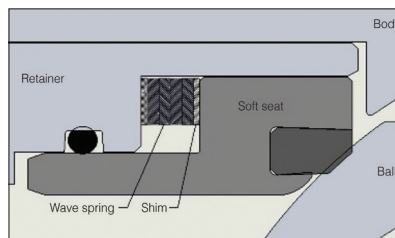


Figure 4: Heavy-duty soft seat

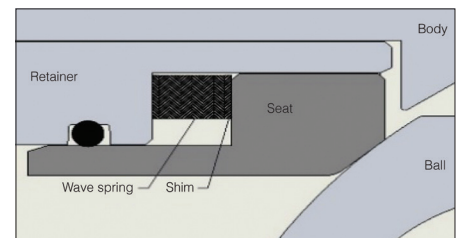


Figure 5: Heavy-duty metal seat

Table 4: Seat configurations

Seat Type	Description	Shaft Orientation	ANSI/FCI 70-2 Class Shut-off
Metal ¹⁾	One metal seat	Upstream or downstream	IV
Soft	One soft seat	Upstream or downstream	VI
Dual	One soft seat plus one metal backup seat	Upstream or downstream	VI
Heavy-duty, metal	Spring-loaded metal seal	Upstream or downstream	IV
Heavy-duty, soft	Spring-loaded soft seal	Upstream or downstream	VI
Flow ring	No seat	Upstream or downstream	II or custom

1. Lubricated service only

Table 5: ShearStream Cv (soft seat, metal seat, HD soft/metal seat)

Valve Size (NPS)	Pressure Class	Soft Seat		Metal/Dual Seat		HD Soft/Metal Seat	
		Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
1	150	41	38	41	38	36	41
	300	41	38	41	38	36	41
	600	41	38	41	38	36	41
1.5	150	90	89	90	89	101	99
	300	90	89	90	89	101	99
	600	90	89	90	89	101	99
2	150	148	142	148	142	167	122
	300	148	142	148	142	167	122
	600	148	142	148	142	167	122
3	150	439	399	393	392	336	403
	300	439	399	393	392	336	403
	600	439	399	393	392	336	403
4	150	644	576	592	531	595	638
	300	644	576	592	531	595	638
	600	644	576	592	531	595	638
6	150	1,363	1,226	1,262	1,147	1,333	1,071
	300	1,363	1,226	1,262	1,147	1,333	1,071
	600	1,363	1,226	1,262	1,147	1,333	1,071
8	150	2,002	1,819	1,987	1,804	1,825	1,653
	300	2,002	1,819	1,987	1,804	1,825	1,653
	600	1,664	1,453	1,490	1,366	1,352	1,193
10	150	3,379	3,075	3,076	2,863	3,457	2,601
	300	3,379	3,075	3,076	2,863	3,457	2,601
	600	3,557	2,876	3,220	2,817	3,457	2,601
12	150	4,447	3,493	4,233	3,395	4,158	3,162
	300	4,214	3,769	4,067	3,663	4,238	3,185
	600	4,214	3,769	4,067	3,663	4,238	3,185
16	150	7,746	6,735	7,431	6,618	7,331	5,414
	300	8,130	6,865	7,842	6,917	6,743	5,455
	600	8,130	6,865	7,842	6,917	6,743	5,455

Table 6: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, bar

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°C	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
1	150	-46	-	-	20	20	20	20	20	20
1	150	-40 to 20	20	20	20	20	20	20	20	20
1	150	38	20	20	20	20	20	20	20	20
1	150	93	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
1	150	149	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
1	150	204	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
1	150	260	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
1	150	316	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
1	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
1	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
1	300	-46	-	-	45.9	51.7	51.7	51.7	36.8	51.7
1	300	-40 to 20	51.7	51.7	45.9	51.7	51.7	51.7	36.8	51.7
1	300	38	51.7	51.7	45.9	51.7	51.7	51.7	36.8	51.7
1	300	93	51.7	51.7	36.7	51.7	51.7	51.7	34.3	51.7
1	300	149	50.3	50.3	32.3	49.8	50.3	50.3	33.2	50.3
1	300	204	48.6	48.6	29.4	46.8	48.6	48.6	32.4	48.6
1	300	260	45.9	45.9	27.2	44.5	45.9	45.9	32	45.9
1	300	316	41.7	41.7	25.5	41.7	41.7	41.7	31.7	41.7
1	300	371	38.3	38.3	24.2	38.3	38.3	38.3	31.4	38.3
1	300	427	28.3	28.3	23.2	28.3	28.3	28.3	-	-
1	600	-46	-	-	45.9	64	80.9	100.8	36.8	54.5
1	600	-40 to 20	70	89.4	45.9	64	80.9	100.8	36.8	54.5
1	600	38	70	89.4	45.9	64	80.9	100.8	36.8	54.5
1	600	93	63.4	82.5	36.7	54.4	79.9	99.7	34.3	51.9
1	600	149	60	78.8	32.3	49.8	79	98.9	33.2	50.7
1	600	204	57.2	76	29.4	46.8	78.2	96.9	32.4	49.9
1	600	260	55	73.6	27.2	44.5	77.4	91.7	32	49.4
1	600	316	53	71.5	25.5	42.7	76.6	83.4	31.7	49.2
1	600	371	51.2	69.7	24.2	41.3	75.4	76.6	31.4	48.9
1	600	427	49.7	56.9	23.2	40.2	56.9	56.9	-	-
1.5	150	-46	-	-	20	20	20	20	20	20
1.5	150	-40 to 20	20	20	20	20	20	20	20	20
1.5	150	38	20	20	20	20	20	20	20	20
1.5	150	93	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
1.5	150	149	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
1.5	150	204	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
1.5	150	260	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
1.5	150	316	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
1.5	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
1.5	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
1.5	300	-46	-	-	51.7	51.7	51.7	51.7	51.7	51.7
1.5	300	-40 to 20	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7
1.5	300	38	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7
1.5	300	93	51.7	51.7	51.7	51.7	51.7	51.7	50.6	51.7
1.5	300	149	50.3	50.3	48.1	50.3	50.3	50.3	49.2	50.3
1.5	300	204	48.6	48.6	44.6	48.6	48.6	48.6	48.3	48.6
1.5	300	260	45.9	45.9	41.9	45.9	45.9	45.9	45.9	45.9
1.5	300	316	41.7	41.7	39.9	41.7	41.7	41.7	41.7	41.7
1.5	300	371	38.3	38.3	38.2	38.3	38.3	38.3	38.3	38.3
1.5	300	427	28.3	28.3	28.3	28.3	28.3	28.3	-	-
1.5	600	-46	-	-	64.7	103.4	103.4	103.4	53.6	103.4
1.5	600	-40 to 20	94.3	103.4	64.7	103.4	103.4	103.4	53.6	103.4
1.5	600	38	94.3	103.4	64.7	103.4	103.4	103.4	53.6	103.4
1.5	600	93	86.2	103.4	53.5	103.4	103.4	103.4	50.6	99.9
1.5	600	149	82	100.3	48.1	95.7	100.3	100.3	49.2	97.4
1.5	600	204	78.6	96.9	44.6	89.7	96.9	96.9	48.3	95.9
1.5	600	260	75.9	91.7	41.9	85.2	91.7	91.7	47.7	91.7
1.5	600	316	73.4	83.4	39.9	81.7	83.4	83.4	47.4	83.4
1.5	600	371	71.2	76.6	38.2	76.6	76.6	76.6	47.1	76.6
1.5	600	427	56.9	56.9	37	56.9	56.9	56.9	-	-

Table 6: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, bar (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°C	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
2	150	-46	-	-	20	20	20	20	20	20
2	150	-40 to 20	20	20	20	20	20	20	20	20
2	150	38	20	20	20	20	20	20	20	20
2	150	93	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
2	150	149	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
2	150	204	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
2	150	260	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
2	150	316	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
2	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
2	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
2	300	-46	-	-	43.1	51.7	51.7	51.7	35	51.7
2	300	-40 to 20	51.7	51.7	43.1	51.7	51.7	51.7	35	51.7
2	300	38	51.7	51.7	43.1	51.7	51.7	51.7	35	51.7
2	300	93	51.7	51.7	35	51.7	51.7	51.7	32.9	51.7
2	300	149	50.3	50.3	31	50.3	50.3	50.3	31.8	50.3
2	300	204	48.6	48.6	28.5	48.6	48.6	48.6	31.2	48.6
2	300	260	45.9	45.9	26.6	45.9	45.9	45.9	30.8	45.9
2	300	316	41.7	41.7	25	41.7	41.7	41.7	30.5	41.7
2	300	371	38.3	38.3	23.9	38.3	38.3	38.3	30.3	38.3
2	300	427	28.3	28.3	22.9	28.3	28.3	28.3	-	-
2	600	-46	-	-	43.1	76.3	74.3	103.4	35	64.4
2	600	-40 to 20	64.6	103.4	43.1	76.3	74.3	103.4	35	64.4
2	600	38	64.6	103.4	43.1	76.3	74.3	103.4	35	64.4
2	600	93	58.8	99.5	35	64.3	73.4	103.4	32.9	61.2
2	600	149	55.7	95	31	58.5	72.7	100.3	31.8	59.7
2	600	204	53.2	91.4	28.5	54.7	71.9	96.9	31.2	58.7
2	600	260	51.2	88.4	26.6	51.8	71.2	91.7	30.8	58.1
2	600	316	49.4	83.4	25	49.6	70.5	83.4	30.5	57.7
2	600	371	47.9	76.6	23.9	47.9	69.4	76.6	30.3	57.4
2	600	427	46.5	56.9	22.9	46.5	56.9	56.9	-	-
3	150	-46	-	-	13.2	20	20	20	9.9	20
3	150	-40 to 20	20	20	13.2	20	20	20	9.9	20
3	150	38	20	20	13.2	20	20	20	9.9	20
3	150	93	17.9	17.9	9.9	17.9	17.9	17.9	9	17.9
3	150	149	15.9	15.9	8.3	15.9	15.9	15.9	8.6	15.9
3	150	204	13.8	13.8	7.2	13.8	13.8	13.8	8.3	13.8
3	150	260	11.7	11.7	6.3	11.7	11.7	11.7	8.1	11.7
3	150	316	9.7	9.7	5.7	9.7	9.7	9.7	8	9.7
3	150	371	7.6	7.6	5.2	7.6	7.6	7.6	7.6	7.6
3	150	427	5.5	5.5	4.9	5.5	5.5	5.5	-	-
3	300	-46	-	-	30.9	35.2	51.7	51.7	23.1	29
3	300	-40 to 20	51.7	51.5	30.9	35.2	51.7	51.7	23.1	29
3	300	38	51.7	51.5	30.9	35.2	51.7	51.7	23.1	29
3	300	93	46.1	47.1	23	29	51.7	51.7	21	27.4
3	300	149	43.1	44.8	19.2	26	50.3	50.3	19.9	26.6
3	300	204	40.8	42.9	16.7	24.1	48.6	48.6	19.3	26.1
3	300	260	38.8	41.4	14.8	22.6	45.9	45.9	19	25.8
3	300	316	37.1	40.1	13.4	21.4	41.7	41.7	18.7	25.6
3	300	371	35.6	38.3	12.2	20.6	38.3	38.3	18.5	25.4
3	300	427	28.3	28.3	11.4	19.9	28.3	28.3	-	-
3	600	-46	-	-	36.1	56.3	63.6	91.1	29	47.4
3	600	-40 to 20	55	80.3	36.1	56.3	63.6	91.1	29	47.4
3	600	38	55	80.3	36.1	56.3	63.6	91.1	29	47.4
3	600	93	49.9	73.8	29	47.3	62.8	90.1	27.2	45
3	600	149	47.2	70.3	25.5	42.9	62.1	89.3	26.2	43.8
3	600	204	45.1	67.7	23.2	40.1	61.5	88.5	25.7	43
3	600	260	43.3	65.4	21.6	37.9	60.9	87.7	25.3	42.6
3	600	316	41.8	63.4	20.3	36.2	60.3	83.4	25.1	42.3
3	600	371	40.3	61.7	19.2	34.9	59.3	76.6	24.9	42.1
3	600	427	39.1	56.9	18.4	33.9	56.9	56.9	-	-

Table 6: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, bar (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°C	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
4	150	-46	-	-	13.5	20	20	20	10.1	20
4	150	-40 to 20	20	20	13.5	20	20	20	10.1	20
4	150	38	20	20	13.5	20	20	20	10.1	20
4	150	93	17.9	17.9	10.1	17.9	17.9	17.9	9.2	17.9
4	150	149	15.9	15.9	8.5	15.9	15.9	15.9	8.8	15.9
4	150	204	13.8	13.8	7.4	13.8	13.8	13.8	8.6	13.8
4	150	260	11.7	11.7	6.6	11.7	11.7	11.7	8.4	11.7
4	150	316	9.7	9.7	6	9.7	9.7	9.7	8.3	9.7
4	150	371	7.6	7.6	5.5	7.6	7.6	7.6	7.6	7.6
4	150	427	5.5	5.5	5.2	5.5	5.5	5.5	-	-
4	300	-46	-	-	31.2	51.7	51.7	51.7	23.4	43.7
4	300	-40 to 20	51.7	51.7	31.2	51.7	51.7	51.7	23.4	43.7
4	300	38	51.7	51.7	31.2	51.7	51.7	51.7	23.4	43.7
4	300	93	46.1	51.7	23.4	43.6	51.7	51.7	21.4	41.4
4	300	149	43.2	50.3	19.7	39.5	50.3	50.3	20.3	40.3
4	300	204	40.9	48.6	17.2	36.9	48.6	48.6	19.7	39.7
4	300	260	39	45.9	15.3	34.9	45.9	45.9	19.4	39.2
4	300	316	37.3	41.7	13.9	33.4	41.7	41.7	19.2	39
4	300	371	35.7	38.3	12.8	32.1	38.3	38.3	19	38.3
4	300	427	28.3	28.3	11.9	28.3	28.3	28.3	-	-
4	600	-46	-	-	33.2	51.9	65	84.1	25	43.7
4	600	-40 to 20	55.1	74.1	33.2	51.9	65	84.1	25	43.7
4	600	38	55.1	74.1	33.2	51.9	65	84.1	25	43.7
4	600	93	49.1	68.1	24.9	43.6	64	83.2	22.8	41.4
4	600	149	46	64.9	21	39.5	63.3	82.4	21.7	40.3
4	600	204	43.5	62.4	18.3	36.9	62.6	81.7	21	39.7
4	600	260	41.4	60.3	16.3	34.9	61.8	80.9	20.7	39.2
4	600	316	39.7	58.6	14.8	33.4	61.1	80.2	20.4	39
4	600	371	38.1	56.9	13.6	32.1	60	76.6	20.1	38.8
4	600	427	36.6	55.4	12.7	31.2	56.9	56.9	-	-
6	150	-46	-	-	16.6	20	20	20	12.8	20
6	150	-40 to 20	20	20	16.6	20	20	20	12.8	20
6	150	38	20	20	16.6	20	20	20	12.8	20
6	150	93	17.9	17.9	12.8	17.9	17.9	17.9	11.9	17.9
6	150	149	15.9	15.9	11	15.9	15.9	15.9	11.3	15.9
6	150	204	13.8	13.8	9.8	13.8	13.8	13.8	11	13.8
6	150	260	11.7	11.7	8.9	11.7	11.7	11.7	10.8	11.7
6	150	316	9.7	9.7	8.2	9.7	9.7	9.7	9.7	9.7
6	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
6	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
6	300	-46	-	-	35.5	35.8	51.7	51.7	27.4	29.8
6	300	-40 to 20	51.7	51.6	35.5	35.8	51.7	51.7	27.4	29.8
6	300	38	51.7	51.6	35.5	35.8	51.7	51.7	27.4	29.8
6	300	93	51.2	47.3	27.4	29.8	51.7	51.7	25.3	28.2
6	300	149	48.1	45	23.5	26.9	50.3	50.3	24.3	27.4
6	300	204	45.7	43.2	21	25	48.6	48.6	23.6	27
6	300	260	43.7	41.7	19	23.6	45.9	45.9	23.2	26.7
6	300	316	41.7	40.5	17.5	22.4	41.7	41.7	23	26.5
6	300	371	38.3	38.3	16.3	21.6	38.3	38.3	22.8	26.3
6	300	427	28.3	28.3	15.4	20.9	28.3	28.3	-	-
6	600	-46	-	-	53.2	50.8	90.1	81.9	43.7	42.7
6	600	-40 to 20	72.3	72.2	53.2	50.8	90.1	81.9	43.7	42.7
6	600	38	72.3	72.2	53.2	50.8	90.1	81.9	43.7	42.7
6	600	93	71.7	66.3	43.7	42.7	89	81	41.2	40.6
6	600	149	68.1	63.3	39	38.8	88.2	80.3	39.9	39.5
6	600	204	65.2	60.9	36	36.2	87.3	79.5	39.2	38.8
6	600	260	62.8	58.9	33.7	34.3	86.5	78.8	38.7	38.5
6	600	316	60.8	57.2	31.9	32.8	83.4	78.1	38.4	38.2
6	600	371	58.9	55.5	30.6	31.6	76.6	76.6	38.1	38
6	600	427	56.9	54.1	29.4	30.6	56.9	56.9	-	-

Table 6: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, bar (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°C	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
8	150	-46	-	-	18.5	16.4	20	20	14.6	13.7
8	150	-40 to 20	20	20	18.5	16.4	20	20	14.6	13.7
8	150	38	20	20	18.5	16.4	20	20	14.6	13.7
8	150	93	17.9	17.9	14.6	13.7	17.9	17.9	13.4	13
8	150	149	15.9	15.9	12.3	12.4	15.9	15.9	12.8	12.7
8	150	204	13.8	13.8	10.9	11.5	13.8	13.8	12.4	12.4
8	150	260	11.7	11.7	9.7	10.9	11.7	11.7	11.7	11.7
8	150	316	9.7	9.7	8.9	9.7	9.7	9.7	9.7	9.7
8	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
8	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
8	300	-46	-	-	34.9	36.6	51.7	51.7	26.5	30.5
8	300	-40 to 20	51.7	51.7	34.9	36.6	51.7	51.7	26.5	30.5
8	300	38	51.7	51.7	34.9	36.6	51.7	51.7	26.5	30.5
8	300	93	51.2	47.6	26.5	30.4	51.7	51.7	24.3	28.8
8	300	149	48.1	45.4	22.3	27.4	50.3	50.3	23.2	28
8	300	204	45.5	43.8	19.7	25.4	48.6	48.6	22.5	27.4
8	300	260	43.4	42.3	17.7	23.9	45.9	45.9	22.1	27.2
8	300	316	41.6	41.1	16.1	22.8	41.7	41.7	21.8	27
8	300	371	38.3	38.3	14.8	21.9	38.3	38.3	21.6	26.8
8	300	427	28.3	28.3	13.9	21.2	28.3	28.3	-	-
8	600	-46	-	-	91.2	61.4	103.4	98.2	77.2	51.9
8	600	-40 to 20	103.4	86.8	91.2	61.4	103.4	98.2	77.2	51.9
8	600	38	103.4	86.8	91.2	61.4	103.4	98.2	77.2	51.9
8	600	93	103.4	79.9	77	51.9	103.4	97.1	73.4	49.4
8	600	149	100.3	76.3	70.2	47.2	100.3	96.3	71.5	48.1
8	600	204	96.9	73.4	65.7	44.2	96.9	95.4	70.3	47.4
8	600	260	91.7	71	62.3	41.9	91.7	91.7	69.7	46.9
8	600	316	83.4	69	59.7	40.1	83.4	83.4	69.2	46.6
8	600	371	76.6	67.1	57.6	38.8	76.6	76.6	68.8	46.3
8	600	427	56.9	56.9	55.9	37.7	56.9	56.9	-	-
10	150	-46	-	-	20	20	20	20	19.1	17.4
10	150	-40 to 20	20	20	20	20	20	20	19.1	17.4
10	150	38	20	20	20	20	20	20	19.1	17.4
10	150	93	17.9	17.9	17.9	17.4	17.9	17.9	17.9	16.6
10	150	149	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
10	150	204	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
10	150	260	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
10	150	316	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
10	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
10	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
10	300	-46	-	-	37.2	37	51.7	51.7	31.8	31.4
10	300	-40 to 20	51.6	51.6	37.2	37	51.7	51.7	31.8	31.4
10	300	38	51.6	51.6	37.2	37	51.7	51.7	31.8	31.4
10	300	93	47.7	47.6	31.7	31.4	51.7	51.7	30.3	29.9
10	300	149	45.7	45.5	29.1	28.7	50.3	50.3	29.6	29.2
10	300	204	44	43.9	27.4	26.9	48.6	48.6	29.2	28.8
10	300	260	42.6	42.5	26.1	25.6	45.9	45.9	28.9	28.5
10	300	316	41.5	41.3	25	24.6	41.7	41.7	28.8	28.3
10	300	371	38.3	38.3	24.2	23.7	38.3	38.3	28.6	28.2
10	300	427	28.3	28.3	23.6	23.1	28.3	28.3	-	-
10	600	-46	-	-	76.7	57.2	103.4	91.4	64.9	48.4
10	600	-40 to 20	103.4	80.8	76.7	57.2	103.4	91.4	64.9	48.4
10	600	38	103.4	80.8	76.7	57.2	103.4	91.4	64.9	48.4
10	600	93	99.6	74.3	64.8	48.3	103.4	90.3	61.7	46.1
10	300	149	95.1	71	59	44.1	100.3	89.6	60.1	44.9
10	600	204	91.6	68.3	55.2	41.2	96.9	88.8	59.2	44.2
10	600	260	88.6	66.1	52.4	39.2	91.7	88	58.6	43.8
10	600	316	83.4	64.3	50.2	37.5	83.4	83.4	58.3	43.5
10	600	371	76.6	62.5	48.5	36.2	76.6	76.6	57.9	43.2
10	600	427	56.9	56.9	47.2	35.2	56.9	56.9	-	-

Table 6: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, bar (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°C	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
12	150	-46	-	-	20	20	20	20	20	19.5
12	150	-40 to 20	20	20	20	20	20	20	20	19.5
12	150	38	20	20	20	20	20	20	20	19.5
12	150	93	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
12	150	149	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
12	150	204	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
12	150	260	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
12	150	316	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
12	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
12	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
12	300	-46	-	-	51.7	51.7	51.7	51.7	51.7	49.9
12	300	-40 to 20	51.7	51.7	51.7	51.7	51.7	51.7	51.7	49.9
12	300	38	51.7	51.7	51.7	51.7	51.7	51.7	51.7	49.9
12	300	93	51.7	51.7	51.7	49.9	51.7	51.7	51.7	47.6
12	300	149	50.3	50.3	50.3	45.5	50.3	50.3	50.3	46.3
12	300	204	48.6	48.6	48	42.6	48.6	48.6	48.6	45.7
12	300	260	45.9	45.9	45.7	40.5	45.9	45.9	45.9	45.2
12	300	316	41.7	41.7	41.7	38.8	41.7	41.7	41.7	41.7
12	300	371	38.3	38.3	38.3	37.5	38.3	38.3	38.3	38.3
12	300	427	28.3	28.3	28.3	28.3	28.3	28.3	-	-
12	600	-46	-	-	64.9	58.9	101	93.7	55.6	49.9
12	600	-40 to 20	89.8	82.8	64.9	58.9	101	93.7	55.6	49.9
12	600	38	89.8	82.8	64.9	58.9	101	93.7	55.6	49.9
12	600	93	83	76.3	55.5	49.9	99.9	92.6	53.1	47.6
12	600	149	79.5	72.9	51	45.5	99.2	91.9	51.9	46.3
12	600	204	76.7	70.2	48	42.6	96.9	91	51.1	45.7
12	600	260	74.3	67.9	45.7	40.5	91.7	90.2	50.7	45.2
12	600	316	72.3	66.1	44	38.8	83.4	83.4	50.3	44.9
12	600	371	70.5	64.3	42.6	37.5	76.6	76.6	50.1	44.7
12	600	427	56.9	56.9	41.6	36.5	56.9	56.9	-	-
16	150	-46	-	-	18.7	18.3	20	20	16	15.6
16	150	-40 to 20	20	20	18.7	18.3	20	20	16	15.6
16	150	38	20	20	18.7	18.3	20	20	16	15.6
16	150	93	17.9	17.9	15.9	15.6	17.9	17.9	15.2	14.9
16	150	149	15.9	15.9	14.6	14.3	15.9	15.9	14.9	14.6
16	150	204	13.8	13.8	13.8	13.4	13.8	13.8	13.8	13.8
16	150	260	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
16	150	316	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
16	150	371	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
16	150	427	5.5	5.5	5.5	5.5	5.5	5.5	-	-
16	300	-46	-	-	48.3	47.2	51.7	51.7	41.3	40.4
16	300	-40 to 20	51.7	51.7	48.3	47.2	51.7	51.7	41.3	40.4
16	300	38	51.7	51.7	48.3	47.2	51.7	51.7	41.3	40.4
16	300	93	51.7	51.7	41.3	40.4	51.7	51.7	39.4	38.6
16	300	149	50.3	50.3	37.9	37.1	50.3	50.3	38.6	37.7
16	300	204	48.6	48.6	35.7	34.9	48.6	48.6	38	37.2
16	300	260	45.9	45.9	34	33.2	45.9	45.9	37.7	36.8
16	300	316	41.7	41.7	32.8	32	41.7	41.7	37.4	36.6
16	300	371	38.3	38.3	31.7	31	38.3	38.3	37.2	36.4
16	300	427	28.3	28.3	28.3	28.3	28.3	28.3	-	-
16	600	-46	-	-	48.3	47.2	75	73.7	41.3	40.4
16	600	-40 to 20	66.7	65.4	48.3	47.2	75	73.7	41.3	40.4
16	600	38	66.7	65.4	48.3	47.2	75	73.7	41.3	40.4
16	600	93	61.7	60.5	41.3	40.4	74.2	72.9	39.4	38.6
16	600	149	59	57.9	37.9	37.1	73.6	72.3	38.6	37.7
16	600	204	57	55.9	35.7	34.9	73	71.7	38	37.2
16	600	260	55.2	54.1	34	33.2	72.3	71	37.7	36.8
16	600	316	53.7	52.7	32.8	32	71.8	70.5	37.4	36.6
16	600	371	52.3	51.3	31.7	31	70.8	69.6	37.2	36.4
16	600	427	51.2	50.1	31	30.2	56.9	56.9	-	-

Table 7: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, psi

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°F	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
1	150	-51	-	-	290	290	290	290	290	290
1	150	-40 to 70	290	290	290	290	290	290	290	290
1	150	100	290	290	290	290	290	290	290	290
1	150	200	260	260	260	260	260	260	260	260
1	150	300	230	230	230	230	230	230	230	230
1	150	400	200	200	200	200	200	200	200	200
1	150	500	170	170	170	170	170	170	170	170
1	150	600	140	140	140	140	140	140	140	140
1	150	700	110	110	110	110	110	110	110	110
1	150	800	80	80	80	80	80	80	-	-
1	300	-51	-	-	665	750	750	750	533	750
1	300	-40 to 70	750	750	665	750	750	750	533	750
1	300	100	750	750	665	750	750	750	533	750
1	300	200	750	750	532	750	750	750	498	750
1	300	300	730	730	468	722	730	730	481	730
1	300	400	705	705	426	678	705	705	470	705
1	300	500	665	665	395	645	665	665	464	665
1	300	600	605	605	370	605	605	605	460	605
1	300	700	555	555	351	555	555	555	456	555
1	300	800	410	410	336	410	410	410	-	-
1	600	-51	-	-	665	928	1,173	1,461	533	790
1	600	-40 to 70	1,015	1,296	665	928	1,173	1,461	533	790
1	600	100	1,015	1,296	665	928	1,173	1,461	533	790
1	600	200	920	1,196	532	789	1,158	1,446	498	753
1	600	300	870	1,143	468	722	1,146	1,434	481	735
1	600	400	830	1,102	426	678	1,134	1,405	470	724
1	600	500	797	1,067	395	645	1,123	1,330	464	717
1	600	600	769	1,037	370	619	1,111	1,210	460	713
1	600	700	743	1,010	351	599	1,094	1,110	456	709
1	600	800	720	825	336	583	825	825	-	-
1.5	150	-51	-	-	290	290	290	290	290	290
1.5	150	-40 to 70	290	290	290	290	290	290	290	290
1.5	150	100	290	290	290	290	290	290	290	290
1.5	150	200	260	260	260	260	260	260	260	260
1.5	150	300	230	230	230	230	230	230	230	230
1.5	150	400	200	200	200	200	200	200	200	200
1.5	150	500	170	170	170	170	170	170	170	170
1.5	150	600	140	140	140	140	140	140	140	140
1.5	150	700	110	110	110	110	110	110	110	110
1.5	150	800	80	80	80	80	80	80	-	-
1.5	300	-51	-	-	750	750	750	750	750	750
1.5	300	-40 to 70	750	750	750	750	750	750	750	750
1.5	300	100	750	750	750	750	750	750	750	750
1.5	300	200	750	750	750	750	750	750	734	750
1.5	300	300	730	730	698	730	730	730	713	730
1.5	300	400	705	705	646	705	705	705	700	705
1.5	300	500	665	665	608	665	665	665	665	665
1.5	300	600	605	605	578	605	605	605	605	605
1.5	300	700	555	555	554	555	555	555	555	555
1.5	300	800	410	410	410	410	410	410	-	-
1.5	600	-51	-	-	938	1,500	1,500	1,500	777	1,500
1.5	600	-40 to 70	1,367	1,500	938	1,500	1,500	1,500	777	1,500
1.5	600	100	1,367	1,500	938	1,500	1,500	1,500	777	1,500
1.5	600	200	1,250	1,500	776	1,500	1,500	1,500	734	1,448
1.5	600	300	1,189	1,455	698	1,387	1,455	1,455	713	1,412
1.5	600	400	1,140	1,405	646	1,300	1,405	1,405	700	1,391
1.5	600	500	1,100	1,330	608	1,235	1,330	1,330	692	1,330
1.5	600	600	1,065	1,210	578	1,185	1,210	1,210	687	1,210
1.5	600	700	1,033	1,110	554	1,110	1,110	1,110	683	1,110
1.5	600	800	825	825	536	825	825	825	-	-

Table 7: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, psi (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°F	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
2	150	-51	-	-	290	290	290	290	290	290
2	150	-40 to 70	290	290	290	290	290	290	290	290
2	150	100	290	290	290	290	290	290	290	290
2	150	200	260	260	260	260	260	260	260	260
2	150	300	230	230	230	230	230	230	230	230
2	150	400	200	200	200	200	200	200	200	200
2	150	500	170	170	170	170	170	170	170	170
2	150	600	140	140	140	140	140	140	140	140
2	150	700	110	110	110	110	110	110	110	110
2	150	800	80	80	80	80	80	80	-	-
2	300	-51	-	-	625	750	750	750	508	750
2	300	-40 to 70	750	750	625	750	750	750	508	750
2	300	100	750	750	625	750	750	750	508	750
2	300	200	750	750	507	750	750	750	477	750
2	300	300	730	730	450	730	730	730	461	730
2	300	400	705	705	413	705	705	705	452	705
2	300	500	665	665	385	665	665	665	446	665
2	300	600	605	605	363	605	605	605	442	605
2	300	700	555	555	346	555	555	555	439	555
2	300	800	410	410	332	410	410	410	-	-
2	600	-51	-	-	625	1,107	1,077	1,500	508	934
2	600	-40 to 70	937	1,500	625	1,107	1,077	1,500	508	934
2	600	100	937	1,500	625	1,107	1,077	1,500	508	934
2	600	200	852	1,443	507	933	1,064	1,500	477	888
2	600	300	807	1,378	450	848	1,054	1,455	461	865
2	600	400	772	1,326	413	793	1,043	1,405	452	851
2	600	500	742	1,282	385	751	1,032	1,330	446	843
2	600	600	717	1,210	363	719	1,022	1,210	442	837
2	600	700	694	1,110	346	694	1,007	1,110	439	832
2	600	800	674	825	332	674	825	825	-	-
3	150	-51	-	-	192	290	290	290	144	290
3	150	-40 to 70	290	290	192	290	290	290	144	290
3	150	100	290	290	192	290	290	290	144	290
3	150	200	260	260	143	260	260	260	131	260
3	150	300	230	230	120	230	230	230	124	230
3	150	400	200	200	104	200	200	200	120	200
3	150	500	170	170	92	170	170	170	118	170
3	150	600	140	140	83	140	140	140	116	140
3	150	700	110	110	76	110	110	110	110	110
3	150	800	80	80	71	80	80	80	-	-
3	300	-51	-	-	448	510	750	750	335	421
3	300	-40 to 70	750	747	448	510	750	750	335	421
3	300	100	750	747	448	510	750	750	335	421
3	300	200	668	683	334	421	750	750	305	397
3	300	300	625	649	279	377	730	730	289	386
3	300	400	591	622	242	349	705	705	280	378
3	300	500	562	600	215	327	665	665	275	374
3	300	600	538	581	194	311	605	605	271	371
3	300	700	516	555	177	298	555	555	268	369
3	300	800	410	410	165	288	410	410	-	-
3	600	-51	-	-	524	817	922	1,321	421	687
3	600	-40 to 70	798	1,165	524	817	922	1,321	421	687
3	600	100	798	1,165	524	817	922	1,321	421	687
3	600	200	724	1,070	421	686	910	1,306	394	652
3	600	300	685	1,020	370	622	901	1,295	380	635
3	600	400	654	981	337	581	892	1,283	372	624
3	600	500	628	948	313	549	883	1,272	367	618
3	600	600	606	920	294	525	874	1,210	364	614
3	600	700	585	894	279	506	860	1,110	361	610
3	600	800	567	825	267	491	825	825	-	-

Table 7: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, psi (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°F	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
4	150	-51	-	-	196	290	290	290	147	290
4	150	-40 to 70	290	290	196	290	290	290	147	290
4	150	100	290	290	196	290	290	290	147	290
4	150	200	260	260	147	260	260	260	134	260
4	150	300	230	230	123	230	230	230	128	230
4	150	400	200	200	108	200	200	200	124	200
4	150	500	170	170	96	170	170	170	122	170
4	150	600	140	140	87	140	140	140	120	140
4	150	700	110	110	80	110	110	110	110	110
4	150	800	80	80	75	80	80	80	-	-
4	300	-51	-	-	452	750	750	750	340	633
4	300	-40 to 70	750	750	452	750	750	750	340	633
4	300	100	750	750	452	750	750	750	340	633
4	300	200	669	750	339	632	750	750	310	601
4	300	300	626	730	285	573	730	730	295	585
4	300	400	593	705	249	535	705	705	286	575
4	300	500	565	665	222	506	665	665	281	569
4	300	600	541	605	202	484	605	605	278	565
4	300	700	518	555	185	466	555	555	275	555
4	300	800	410	410	172	410	410	410	-	-
4	600	-51	-	-	481	753	942	1,219	362	633
4	600	-40 to 70	799	1,075	481	753	942	1,219	362	633
4	600	100	799	1,075	481	753	942	1,219	362	633
4	600	200	712	987	361	632	928	1,206	330	601
4	600	300	667	941	304	573	918	1,195	315	585
4	600	400	631	905	265	535	907	1,184	305	575
4	600	500	601	875	237	506	896	1,173	300	569
4	600	600	576	849	215	484	886	1,163	296	565
4	600	700	552	825	197	466	870	1,110	292	562
4	600	800	531	804	184	452	825	825	-	-
6	150	-51	-	-	241	290	290	290	186	290
6	150	-40 to 70	290	290	241	290	290	290	186	290
6	150	100	290	290	241	290	290	290	186	290
6	150	200	260	260	186	260	260	260	172	260
6	150	300	230	230	159	230	230	230	164	230
6	150	400	200	200	142	200	200	200	160	200
6	150	500	170	170	129	170	170	170	157	170
6	150	600	140	140	119	140	140	140	140	140
6	150	700	110	110	110	110	110	110	110	110
6	150	800	80	80	80	80	80	80	-	-
6	300	-51	-	-	515	519	750	750	398	432
6	300	-40 to 70	749	748	515	519	750	750	398	432
6	300	100	749	748	515	519	750	750	398	432
6	300	200	742	686	398	432	750	750	367	409
6	300	300	697	653	341	390	730	730	352	398
6	300	400	662	627	304	362	705	705	342	391
6	300	500	633	605	276	342	665	665	337	387
6	300	600	605	587	254	325	605	605	333	384
6	300	700	555	555	237	313	555	555	330	382
6	300	800	410	410	223	303	410	410	-	-
6	600	-51	-	-	772	736	1,306	1,187	634	619
6	600	-40 to 70	1,048	1,047	772	736	1,306	1,187	634	619
6	600	100	1,048	1,047	772	736	1,306	1,187	634	619
6	600	200	1,040	962	633	619	1,291	1,174	597	588
6	600	300	988	918	566	562	1,279	1,164	579	573
6	600	400	946	883	522	525	1,266	1,153	568	563
6	600	500	911	854	489	497	1,254	1,143	561	558
6	600	600	882	829	463	475	1,210	1,133	557	554
6	600	700	854	805	443	458	1,110	1,110	553	551
6	600	800	825	785	427	444	825	825	-	-

Table 7: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, psi (*cont'd.*)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°F	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
8	150	-51	-	-	268	238	290	290	212	199
8	150	-40 to 70	290	290	268	238	290	290	212	199
8	150	100	290	290	268	238	290	290	212	199
8	150	200	260	260	212	199	260	260	194	189
8	150	300	230	230	179	180	230	230	185	184
8	150	400	200	200	158	167	200	200	180	180
8	150	500	170	170	141	158	170	170	170	170
8	150	600	140	140	129	140	140	140	140	140
8	150	700	110	110	110	110	110	110	110	110
8	150	800	80	80	80	80	80	80	-	-
8	300	-51	-	-	506	531	750	750	384	442
8	300	-40 to 70	750	750	506	531	750	750	384	442
8	300	100	750	750	506	531	750	750	384	442
8	300	200	743	690	384	441	750	750	352	418
8	300	300	697	659	324	397	730	730	336	406
8	300	400	660	635	285	368	705	705	326	398
8	300	500	629	614	256	347	665	665	320	394
8	300	600	603	596	233	330	605	605	316	391
8	300	700	555	555	215	317	555	555	313	389
8	300	800	410	410	201	307	410	410	-	-
8	600	-51	-	-	1,323	891	1,500	1,424	1,119	753
8	600	-40 to 70	1,500	1,258	1,323	891	1,500	1,424	1,119	753
8	600	100	1,500	1,258	1,323	891	1,500	1,424	1,119	753
8	600	200	1,500	1,158	1,117	752	1,500	1,408	1,064	716
8	600	300	1,455	1,106	1,018	685	1,455	1,396	1,037	698
8	600	400	1,405	1,064	952	641	1,405	1,383	1,020	687
8	600	500	1,330	1,030	903	608	1,330	1,330	1,011	680
8	600	600	1,210	1,000	865	582	1,210	1,210	1,004	676
8	600	700	1,110	973	835	562	1,110	1,110	998	672
8	600	800	825	825	811	546	825	825	-	-
10	150	-51	-	-	290	290	290	290	277	253
10	150	-40 to 70	290	290	290	290	290	290	277	253
10	150	100	290	290	290	290	290	290	277	253
10	150	200	260	260	260	253	260	260	260	241
10	150	300	230	230	230	230	230	230	230	230
10	150	400	200	200	200	200	200	200	200	200
10	150	500	170	170	170	170	170	170	170	170
10	150	600	140	140	140	140	140	140	140	140
10	150	700	110	110	110	110	110	110	110	110
10	150	800	80	80	80	80	80	80	-	-
10	300	-51	-	-	539	536	750	750	461	456
10	300	-40 to 70	748	748	539	536	750	750	461	456
10	300	100	748	748	539	536	750	750	461	456
10	300	200	691	690	460	455	750	750	440	434
10	300	300	662	660	422	416	730	730	429	424
10	300	400	638	636	397	390	705	705	423	417
10	300	500	618	616	378	371	665	665	419	413
10	300	600	602	599	363	356	605	605	417	411
10	300	700	555	555	351	344	555	555	414	409
10	300	800	410	410	342	335	410	410	-	-
10	600	-51	-	-	1,112	830	1,500	1,325	941	702
10	600	-40 to 70	1,500	1,171	1,112	830	1,500	1,325	941	702
10	600	100	1,500	1,171	1,112	830	1,500	1,325	941	702
10	600	200	1,444	1,078	940	701	1,500	1,310	895	668
10	600	300	1,379	1,030	856	639	1,455	1,299	872	651
10	600	400	1,328	991	801	598	1,405	1,287	858	641
10	600	500	1,285	959	760	568	1,330	1,276	850	635
10	600	600	1,210	932	728	544	1,210	1,210	845	631
10	600	700	1,110	906	703	525	1,110	1,110	840	627
10	600	800	825	825	684	510	825	825	-	-

Table 7: Maximum allowable shut-off pressure drops with PTFE packing shaft limits, psi (cont'd.)

Valve Size	Class	Temp.	17-4PH H1025		XM-19 (Nitronic 50) SH		Inconel 718 HT		Monel K-500	
NPS		°F	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
12	150	-51	-	-	290	290	290	290	290	283
12	150	-40 to 70	290	290	290	290	290	290	290	283
12	150	100	290	290	290	290	290	290	290	283
12	150	200	260	260	260	260	260	260	260	260
12	150	300	230	230	230	230	230	230	230	230
12	150	400	200	200	200	200	200	200	200	200
12	150	500	170	170	170	170	170	170	170	170
12	150	600	140	140	140	140	140	140	140	140
12	150	700	110	110	110	110	110	110	110	110
12	150	800	80	80	80	80	80	80	-	-
12	300	-51	-	-	750	750	750	750	750	724
12	300	-40 to 70	750	750	750	750	750	750	750	724
12	300	100	750	750	750	750	750	750	750	724
12	300	200	750	750	750	723	750	750	750	690
12	300	300	730	730	730	660	730	730	730	672
12	300	400	705	705	696	618	705	705	705	662
12	300	500	665	665	663	587	665	665	665	656
12	300	600	605	605	605	563	605	605	605	605
12	300	700	555	555	555	544	555	555	555	555
12	300	800	410	410	410	410	410	410	-	-
12	600	-51	-	-	941	854	1,465	1,358	806	724
12	600	-40 to 70	1,302	1,201	941	854	1,465	1,358	806	724
12	600	100	1,302	1,201	941	854	1,465	1,358	806	724
12	600	200	1,204	1,107	805	723	1,449	1,343	770	690
12	600	300	1,153	1,057	739	660	1,438	1,332	752	672
12	600	400	1,112	1,018	696	618	1,405	1,319	741	662
12	600	500	1,078	985	663	587	1,330	1,308	735	656
12	600	600	1,049	958	638	563	1,210	1,210	730	651
12	600	700	1,022	932	618	544	1,110	1,110	726	648
12	600	800	825	825	603	529	825	825	-	-
16	150	-51	-	-	271	265	290	290	232	226
16	150	-40 to 70	290	290	271	265	290	290	232	226
16	150	100	290	290	271	265	290	290	232	226
16	150	200	260	260	231	226	260	260	221	216
16	150	300	230	230	212	207	230	230	216	211
16	150	400	200	200	200	194	200	200	200	200
16	150	500	170	170	170	170	170	170	170	170
16	150	600	140	140	140	140	140	140	140	140
16	150	700	110	110	110	110	110	110	110	110
16	150	800	80	80	80	80	80	80	-	-
16	300	-51	-	-	700	685	750	750	599	586
16	300	-40 to 70	750	750	700	685	750	750	599	586
16	300	100	750	750	700	685	750	750	599	586
16	300	200	750	750	599	586	750	750	572	560
16	300	300	730	730	550	538	730	730	559	547
16	300	400	705	705	518	506	705	705	551	539
16	300	500	665	665	493	482	665	665	546	534
16	300	600	605	605	475	464	605	605	543	531
16	300	700	555	555	460	449	555	555	540	528
16	300	800	410	410	410	410	410	410	-	-
16	600	-51	-	-	700	685	1,087	1,068	599	586
16	600	-40 to 70	967	949	700	685	1,087	1,068	599	586
16	600	100	967	949	700	685	1,087	1,068	599	586
16	600	200	894	877	599	586	1,076	1,057	572	560
16	600	300	856	840	550	538	1,067	1,048	559	547
16	600	400	826	810	518	506	1,058	1,039	551	539
16	600	500	801	785	493	482	1,049	1,030	546	534
16	600	600	779	764	475	464	1,041	1,022	543	531
16	600	700	759	744	460	449	1,027	1,009	540	528
16	600	800	742	727	449	438	825	825	-	-

Table 8: Maximum allowable shut-off pressure drops, bar, bearing limits

	Temp. °C	NPS 1		NPS 1.5		NPS 2		NPS 3		NPS 4		NPS 6		NPS 8		NPS 10		NPS 12		NPS 16	
		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600	
		Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
MBT	-46	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	97	97
	38	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	97	97
	93	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	97	97
	149	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	90	90
	204	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	76	76
	260	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	28	28
Alloy 6	-46	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103
	38	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103
	93	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103
	149	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103
	204	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
	260	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
	316	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
	371	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	427	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
Ultimet	-46	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	38	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	93	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	149	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
	204	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
	260	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
	316	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
	371	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
	427	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48

Table 9: Maximum allowable shut-off pressure drops, psi, bearing limits

[illegible]

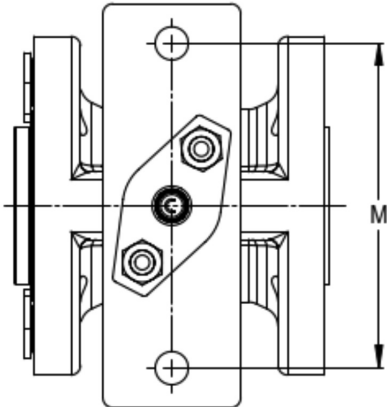
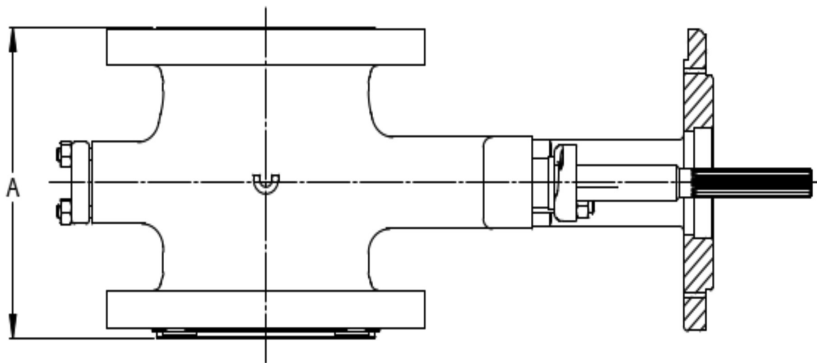
Table 10: Maximum allowable shut-off pressure drops, bar, seat limits

	Temp. °C	NPS 1		NPS 1.5		NPS 2		NPS 3		NPS 4		NPS 6		NPS 8		NPS 10		NPS 12		NPS 16	
		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600	
		Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
316 SS Metal Seat	-46	51.7	51.7	51.7	51.7	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	22.8	22.8	13.8	13.8	10.3	10.3
	38	51.7	51.7	51.7	51.7	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	22.8	22.8	13.8	13.8	10.3	10.3
	93	44.6	44.6	44.6	44.6	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	19.6	19.6	11.9	11.9	8.9	8.9
	149	40.2	40.2	40.2	40.2	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	17.7	17.7	10.7	10.7	8.1	8.1
	204	37.0	37.0	37.0	37.0	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	16.3	16.3	9.9	9.9	7.4	7.4
	260	34.5	34.5	34.5	34.5	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	15.2	15.2	9.2	9.2	7.0	7.0
	316	32.3	32.3	32.3	32.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	14.2	14.2	8.6	8.6	6.6	6.6
	371	31.2	31.2	31.2	31.2	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	13.7	13.7	8.3	8.3	6.3	6.3
	427	30.1	30.1	30.1	30.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	13.2	13.2	8.1	8.1	6.1	6.1
Inconel Metal Seat	-46	51.7	51.7	51.7	51.7	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	22.8	22.8	13.8	13.8	10.3	10.3
	38	51.7	51.7	51.7	51.7	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	22.8	22.8	13.8	13.8	10.3	10.3
	93	51.7	51.7	51.7	51.7	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	22.8	22.8	13.8	13.8	10.3	10.3
	149	50.3	50.3	50.3	50.3	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	22.1	22.1	13.4	13.4	10.1	10.1
	204	48.6	48.6	48.3	48.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	21.4	21.4	13.0	13.0	9.7	9.7
	260	45.9	45.9	45.9	45.9	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	20.1	20.1	12.2	12.2	9.2	9.2
	316	41.7	41.7	41.7	41.7	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	18.3	18.3	11.1	11.1	8.3	8.3
	371	39.3	39.3	39.3	39.3	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	17.3	17.3	10.5	10.5	7.9	7.9
	427	35.2	35.2	35.2	35.2	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	15.5	15.5	9.4	9.4	7.0	7.0
Filled PTFE Soft Seat	-46	82.8	82.8	82.8	82.8	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	36.6	36.6	21.9	21.9	18.3	18.3
	38	82.8	82.8	82.8	82.8	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	36.6	36.6	21.9	21.9	18.3	18.3
	93	43.0	43.0	43.0	43.0	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	19.0	19.0	11.4	11.4	9.5	9.5
	149	15.5	15.5	15.5	15.5	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	6.8	6.8	4.1	4.1	3.4	3.4
	204	8.6	8.6	8.6	8.6	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	3.8	3.8	2.3	2.3	1.9	1.9
	260	3.9	3.9	3.9	3.9	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.7	1.7	1.0	1.0	0.8	0.8
PEEK Soft Seat	-46	82.8	82.8	82.8	82.8	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	36.6	36.6	21.9	21.9	18.3	18.3
	38	82.8	82.8	82.8	82.8	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	36.6	36.6	21.9	21.9	18.3	18.3
	93	43.0	43.0	43.0	43.0	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	19.0	19.0	11.4	11.4	9.5	9.5
	149	15.5	15.5	15.5	15.5	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	6.8	6.8	4.1	4.1	3.4	3.4
	204	8.6	8.6	8.6	8.6	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	3.8	3.8	2.3	2.3	1.9	1.9
	260	3.9	3.9	3.9	3.9	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.7	1.7	1.0	1.0	0.8	0.8
UHMPE Soft Seat	-46	82.8	82.8	82.8	82.8	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	36.6	36.6	21.9	21.9	18.3	18.3
	38	82.8	82.8	82.8	82.8	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	36.6	36.6	21.9	21.9	18.3	18.3
	93	43.0	43.0	43.0	43.0	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	19.0	19.0	11.4	11.4	9.5	9.5
Heavy Duty Soft Seat	-46	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	6.9	41.4	6.9	24.8	6.9	20.7
	38	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	6.9	41.4	6.9	24.8	6.9	20.7
	93	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	5.9	35.7	5.9	21.4	5.9	17.8
	149	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	5.4	32.2	5.4	19.3	5.4	16.1
	204	14.8	37.0	14.8	37.0	14.8	37.0	14.8	37.0	14.8	37.0	14.8	37.0	14.8	37.0	5.0	29.6	5.0	17.8	5.0	14.8
Heavy Duty Metal Seat	-46	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	6.9	41.4	6.9	24.8	6.9	20.7
	38	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	20.7	51.7	6.9	41.4	6.9	24.8	6.9	20.7
	93	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	17.8	44.6	5.9	35.7	5.9	21.4	5.9	17.8
	149	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	16.1	40.2	5.4	32.2	5.4	19.3	5.4	16.1
	204	14.8	37	14.8	37	14.8	37	14.8	37	14.8	37	14.8	37	14.8	37	5	29.6	5	17.8	5	14.8
	260	13.7	34.5	13.7	34.5	13.7	34.5	13.7	34.5	13.7	34.5	13.7	34.5	13.7	34.5	4.6	27.6	4.6	16.6	4.6	13.7
	316	12.9	32.3	12.9	32.3	12.9	32.3	12.9	32.3	12.9	32.3	12.9	32.3	12.9	32.3	4.3	25.9	4.3	15.5	4.3	12.9

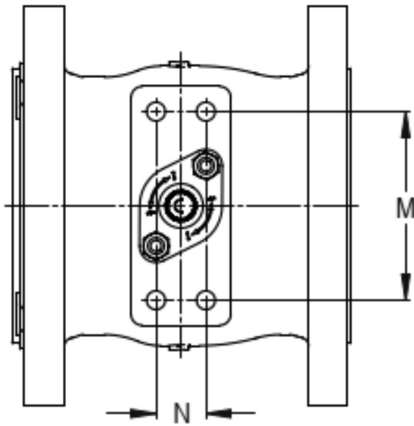
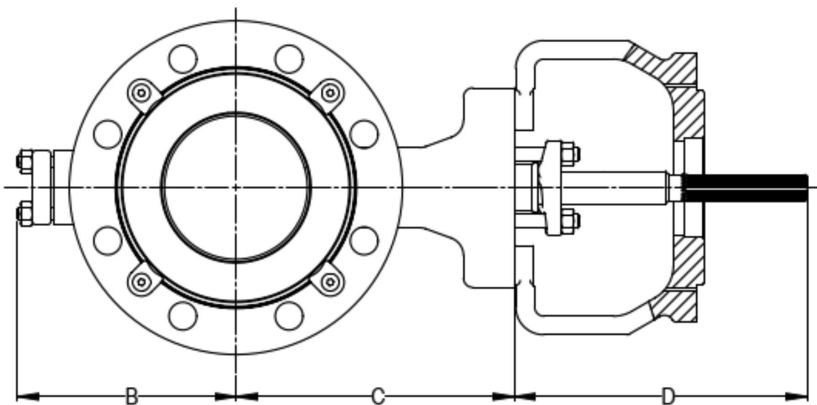
Table 11: Maximum allowable shut-off pressure drops, psi, seat limits

	Temp. °F	NPS 1		NPS 1.5		NPS 2		NPS 3		NPS 4		NPS 6		NPS 8		NPS 10		NPS 12		NPS 16	
		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600		Class 150 to 600	
		Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream	Shaft Upstream	Shaft Downstream
316 SS Metal Seat	-51	750	750	750	750	450	450	450	450	450	450	450	450	450	450	330	330	200	200	150	150
	100	750	750	750	750	450	450	450	450	450	450	450	450	450	450	330	330	200	200	150	150
	200	646	646	646	646	388	388	388	388	388	388	388	388	388	388	284	284	172	172	129	129
	300	583	583	583	583	350	350	350	350	350	350	350	350	350	350	257	257	155	155	117	117
	400	536	536	536	536	322	322	322	322	322	322	322	322	322	322	236	236	143	143	108	108
	500	500	500	500	500	300	300	300	300	300	300	300	300	300	300	220	220	133	133	101	101
	600	469	469	469	469	281	281	281	281	281	281	281	281	281	281	206	206	125	125	95	95
	700	453	453	453	453	272	272	272	272	272	272	272	272	272	272	199	199	121	121	92	92
Inconel Metal Seat	800	437	437	437	437	263	263	263	263	263	263	263	263	263	263	192	192	117	117	89	89
	-51	750	750	750	750	450	450	450	450	450	450	450	450	450	450	330	330	200	200	150	150
	100	750	750	750	750	450	450	450	450	450	450	450	450	450	450	330	330	200	200	150	150
	200	750	750	750	750	450	450	450	450	450	450	450	450	450	450	330	330	200	200	150	150
	300	730	730	730	730	438	438	438	438	438	438	438	438	438	438	321	321	195	195	146	146
	400	705	705	700	700	423	423	423	423	423	423	423	423	423	423	310	310	188	188	141	141
	500	665	665	665	665	399	399	399	399	399	399	399	399	399	399	292	292	177	177	133	133
	600	605	605	605	605	363	363	363	363	363	363	363	363	363	363	266	266	161	161	121	121
Filled PTFE Soft Seat	700	570	570	570	570	342	342	342	342	342	342	342	342	342	342	251	251	152	152	114	114
	800	510	510	510	510	306	306	306	306	306	306	306	306	306	306	225	225	136	136	102	102
	-51	1,200	1,200	1,200	1,200	750	750	750	750	750	750	750	750	750	750	530	530	318	318	265	265
	100	1,200	1,200	1,200	1,200	750	750	750	750	750	750	750	750	750	750	530	530	318	318	265	265
	200	624	624	624	624	390	390	390	390	390	390	390	390	390	390	276	276	165	165	138	138
	300	225	225	225	225	140	140	140	140	140	140	140	140	140	140	99	99	60	60	50	50
PEEK Soft Seat	400	124	124	124	124	77	77	77	77	77	77	77	77	77	77	55	55	33	33	27	27
	450	56	56	56	56	35	35	35	35	35	35	35	35	35	35	25	25	15	15	12	12
	-51	1,200	1,200	1,200	1,200	750	750	750	750	750	750	750	750	750	750	530	530	318	318	265	265
	100	1,200	1,200	1,200	1,200	750	750	750	750	750	750	750	750	750	750	530	530	318	318	265	265
	200	624	624	624	624	390	390	390	390	390	390	390	390	390	390	276	276	165	165	138	138
	300	225	225	225	225	140	140	140	140	140	140	140	140	140	140	99	99	60	60	50	50
UHMPE Soft Seat	400	124	124	124	124	77	77	77	77	77	77	77	77	77	77	55	55	33	33	27	27
	500	56	56	56	56	35	35	35	35	35	35	35	35	35	35	25	25	15	15	12	12
	-51	1,200	1,200	1,200	1,200	750	750	750	750	750	750	750	750	750	750	530	530	318	318	265	265
Heavy Duty Soft Seat	100	1,200	1,200	1,200	1,200	750	750	750	750	750	750	750	750	750	750	530	530	318	318	265	265
	200	624	624	624	624	390	390	390	390	390	390	390	390	390	390	276	276	165	165	138	138
	-51	300	750	300	750	300	750	300	750	300	750	300	750	300	750	100	600	100	360	100	300
	100	300	750	300	750	300	750	300	750	300	750	300	750	300	750	100	600	100	360	100	300
	200	258	646	258	646	258	646	258	646	258	646	258	646	258	646	86	517	86	310	86	258
Heavy Duty Metal Seat	300	233	583	233	583	233	583	233	583	233	583	233	583	233	583	78	467	78	280	78	233
	400	214	536	214	536	214	536	214	536	214	536	214	536	214	536	72	429	72	258	72	214
	-51	300	750	300	750	300	750	300	750	300	750	300	750	300	750	100	600	100	360	100	300
	100	300	750	300	750	300	750	300	750	300	750	300	750	300	750	100	600	100	360	100	300
	200	258	646	258	646	258	646	258	646	258	646	258	646	258	646	86	517	86	310	86	258
	300	233	583	233	583	233	583	233	583	233	583	233	583	233	583	78	467	78	280	78	233
	400	214	536	214	536	214	536	214	536	214	536	214	536	214	536	72	429	72	258	72	214
	500	199	500	199	500	199	500	199	500	199	500	199	500	199	500	67	400	67	240	67	199
	600	187	469	187	469	187	469	187	469	187	469	187	469	187	469	63	375	63	225	63	187

Dimensions



1 to 1.5 in.



2 to 16 in.

Table 12: Dimensions

Valve Size	Class	mm						in.					
		A	B	C	D	M	N	A	B	C	D	M	N
1	150	102	95	100.3	200.7	104.6	-	4.00	3.7	4.0	7.9	4.12	-
	300	102	95	100.3	200.7	104.6	-	4.00	3.7	4.0	7.9	4.12	-
	600	102	95	100.3	200.7	104.6	-	4.00	3.7	4.0	7.9	4.12	-
1.5	150	114	107	118.9	200.7	104.6	-	4.50	4.2	4.7	7.9	4.12	-
	300	114	107	118.9	200.7	104.6	-	4.50	4.2	4.7	7.9	4.12	-
	600	114	107	118.9	200.7	104.6	-	4.50	4.2	4.7	7.9	4.12	-
2	150	124	111	133.1	200.7	104.6	-	4.88	4.4	5.2	7.9	4.12	-
	300	124	111	133.1	200.7	104.6	-	4.88	4.4	5.2	7.9	4.12	-
	600	124	111	133.1	200.7	104.6	-	4.88	4.4	5.2	7.9	4.12	-
3	150	165	122	148.3	200.7	108.0	28.4	6.50	4.8	5.8	7.9	4.25	1.12
	300	165	122	148.3	200.7	108.0	28.4	6.50	4.8	5.8	7.9	4.25	1.12
	600	165	126	170.7	200.7	108.0	28.4	6.50	5.0	6.7	7.9	4.25	1.12
4	150	194	150	191.3	200.7	108.0	28.4	7.62	5.9	7.5	7.9	4.25	1.12
	300	194	150	191.3	200.7	108.0	28.4	7.62	5.9	7.5	7.9	4.25	1.12
	600	194	156	191.3	200.7	108.0	28.4	7.62	6.2	7.5	7.9	4.25	1.12
6	150	229	188	224.0	200.7	133.4	31.8	9.00	7.4	8.8	7.9	5.25	1.25
	300	229	188	224.0	200.7	133.4	31.8	9.00	7.4	8.8	7.9	5.25	1.25
	600	229	235	228.6	200.7	133.4	31.8	9.00	9.3	9.0	7.9	5.25	1.25
8	150	243	206	241.6	200.7	108.0	28.4	9.56	8.1	9.5	7.9	4.25	1.12
	300	243	236	249.4	200.7	133.4	31.8	9.56	9.3	9.8	7.9	5.25	1.25
	600	243	241	254.0	200.7	133.4	31.8	9.56	9.5	10.0	7.9	5.25	1.25
10	150	297	263	292.6	200.7	133.4	31.8	11.69	10.3	11.5	7.9	5.25	1.25
	300	297	303	314.5	200.7	149.4	38.1	11.69	11.9	12.4	7.9	5.88	1.50
	600	297	314	330.2	226.1	190.5	50.8	11.69	12.4	13.0	8.9	7.50	2.00
12	150	338	299	315.5	200.7	133.4	31.8	13.31	11.8	12.4	7.9	5.25	1.25
	300	338	340	355.6	226.1	190.5	50.8	13.31	13.4	14.0	8.9	7.50	2.00
	600	338	340	355.6	226.1	190.5	50.8	13.31	13.4	14.0	8.9	7.50	2.00
16	150	400	401	410.0	228.6	190.5	50.8	15.75	15.8	16.1	9.0	7.50	2.00
	300	400	422	455.2	228.6	190.5	50.8	15.75	16.6	17.9	9.0	7.50	2.00
	600	400	422	455.2	228.6	190.5	50.8	15.75	16.6	17.9	9.0	7.50	2.00

Table 13: Estimated shipping weight with standard NR actuator and positioner

Size	Class	NR 25		NR 50		NR 100	
		(kg)	(lbs)	(kg)	(lbs)	(kg)	(lbs)
1	600	26	57	-	-	-	-
1.5	600	29	64	-	-	-	-
2	600	31	68	-	-	-	-
3	150	35	77	56	123	-	-
	300	39	86	60	132	-	-
	600	42	93	63	139	-	-
4	150	44	97	65	143	-	-
	300	52	115	73	161	-	-
	600	63	139	84	185	-	-
6	150	-	-	81	179	128	282
	300	-	-	100	220	147	324
	600	-	-	127	280	174	384
8	150	-	-	98	216	145	320
	300	-	-	126	278	173	381
	600	-	-	-	-	213	470
10	150	-	-	-	-	184	406
	300	-	-	-	-	225	496
	600	-	-	-	-	323	712
12	150	-	-	-	-	230	507
	300	-	-	-	-	302	666
	600	-	-	-	-	372	820
16	150	-	-	-	-	356	785
	300	-	-	-	-	475	1,047
	600	-	-	-	-	596	1,312



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