

Masoneilan™ 75000 Series Tank Drain and Level Control Valve

**High Pressure Drop,
Sweep Angle Control
Valve**

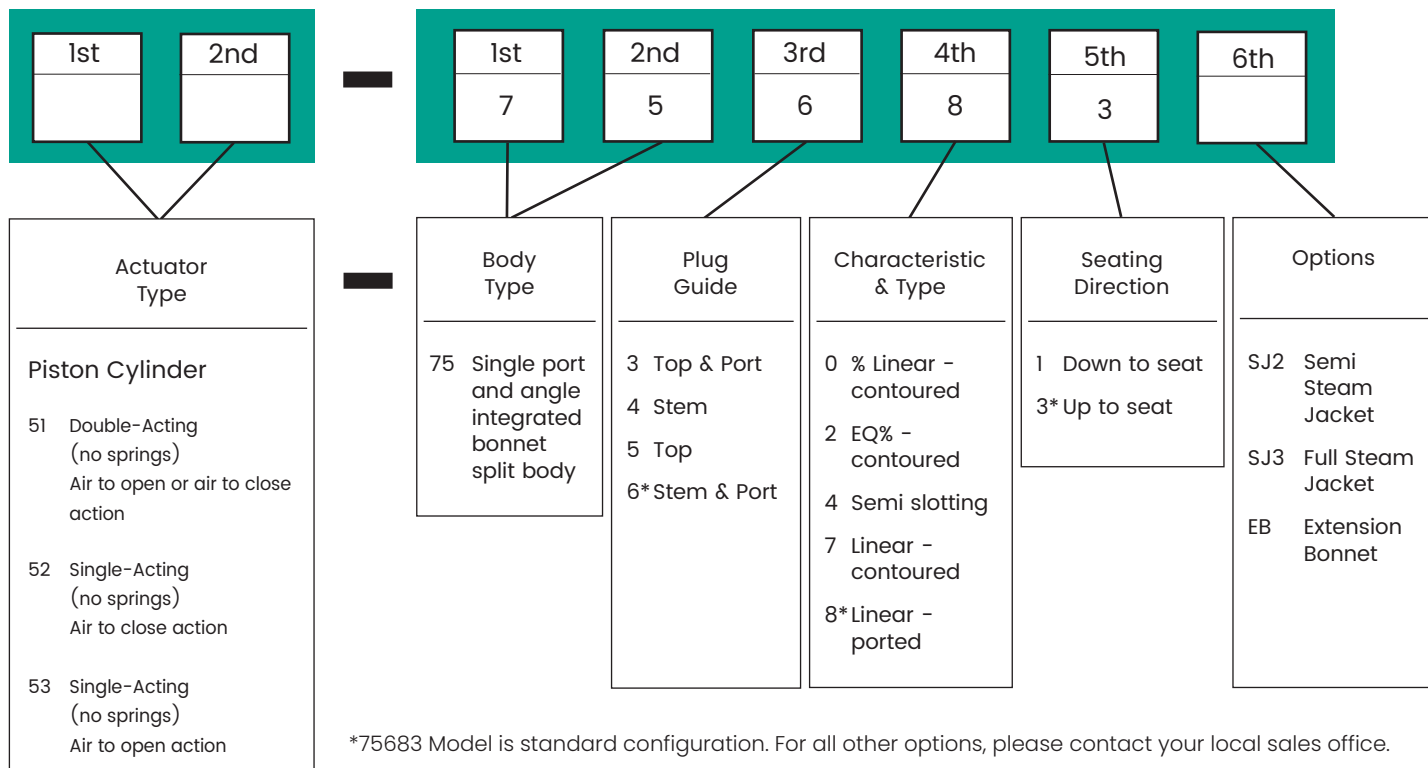
Engineered Solutions
for Corrosive and
Erosive Severe Service
Applications



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Numbering System



Features and Benefits

The Masoneilan 75000 Series is an erosive, flashing-resistant tank level control valve, designed primarily for use in level control applications with corrosive or viscous fluids prevalent in the PTA (Purified Terephthalic Acid) chemical industry. The 75000 Series has a rich history of providing solutions to highly corrosive and erosive applications in this space. A typical PTA process diagram is shown Figure 1, where the 75000 Series valves are used to manage the fluid levels within tanks and reactors across the process.

Typical PTA Process

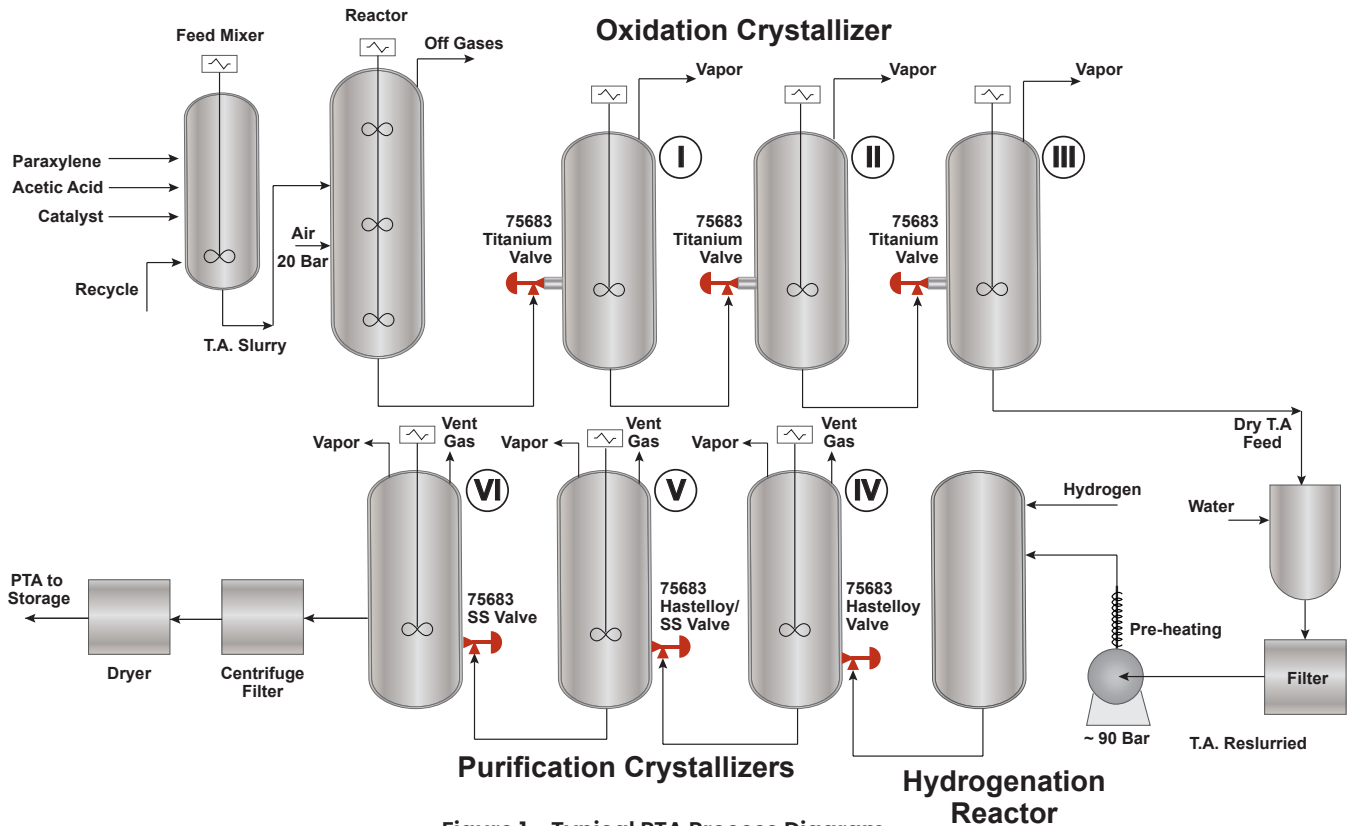


Figure 1 - Typical PTA Process Diagram

Body Design and Installation

The 75000 Series valve is a fully ported sweep angle body with a contoured gallery design to reduce body pressure losses and help mitigate erosion from direct impingement of particles within the flow path.

To accommodate tight installations and piping hook-ups in these tank areas, the 75000 Series comes in 3 angle configurations (90°, 120°, 135° as shown in Figures 2-4), and eliminates the need for separable bonnet that increases weight and takes up wasted space. Additionally, the latest design of the 75000 Series now includes extended guiding along the stem and plug for stabilization and support of the heavy plug design in horizontal installations.

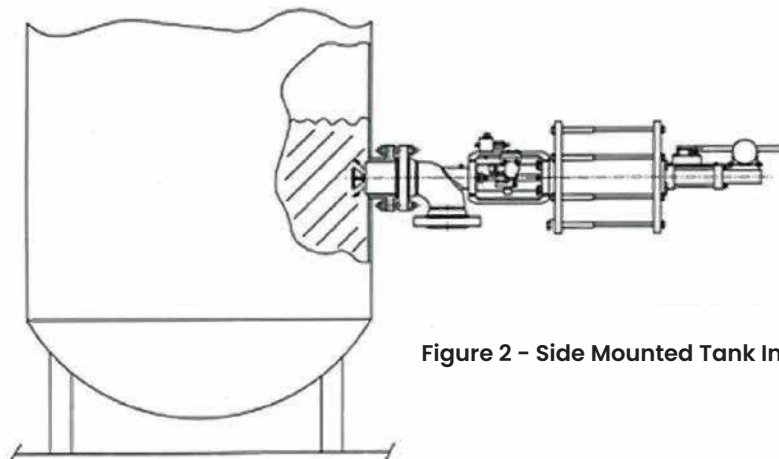


Figure 2 - Side Mounted Tank Installation

Internal Design Features

The 75000 Series plug length is custom designed (as shown in Figure 3) to match each customer's installation, so the plug seat is installed flush with the end of the seat ring aligned to the inside of the tank shell. Equipped with high force actuation, the one-piece plug/stem is designed with a robust surface and guiding fins to break across a solid layer of crystallized fluid that can build up within the tank and throttle the process that include solids within the flow. Heavy top guiding through a stem bearing, along with port guiding with full stroke length plug flutes reduce trim vibration and easy overall fatigue to withstand a longer installed life under severe service.

Additionally, flushing and purge ports can be added to the valve design to clear out PTA slurry that builds up within the trim.

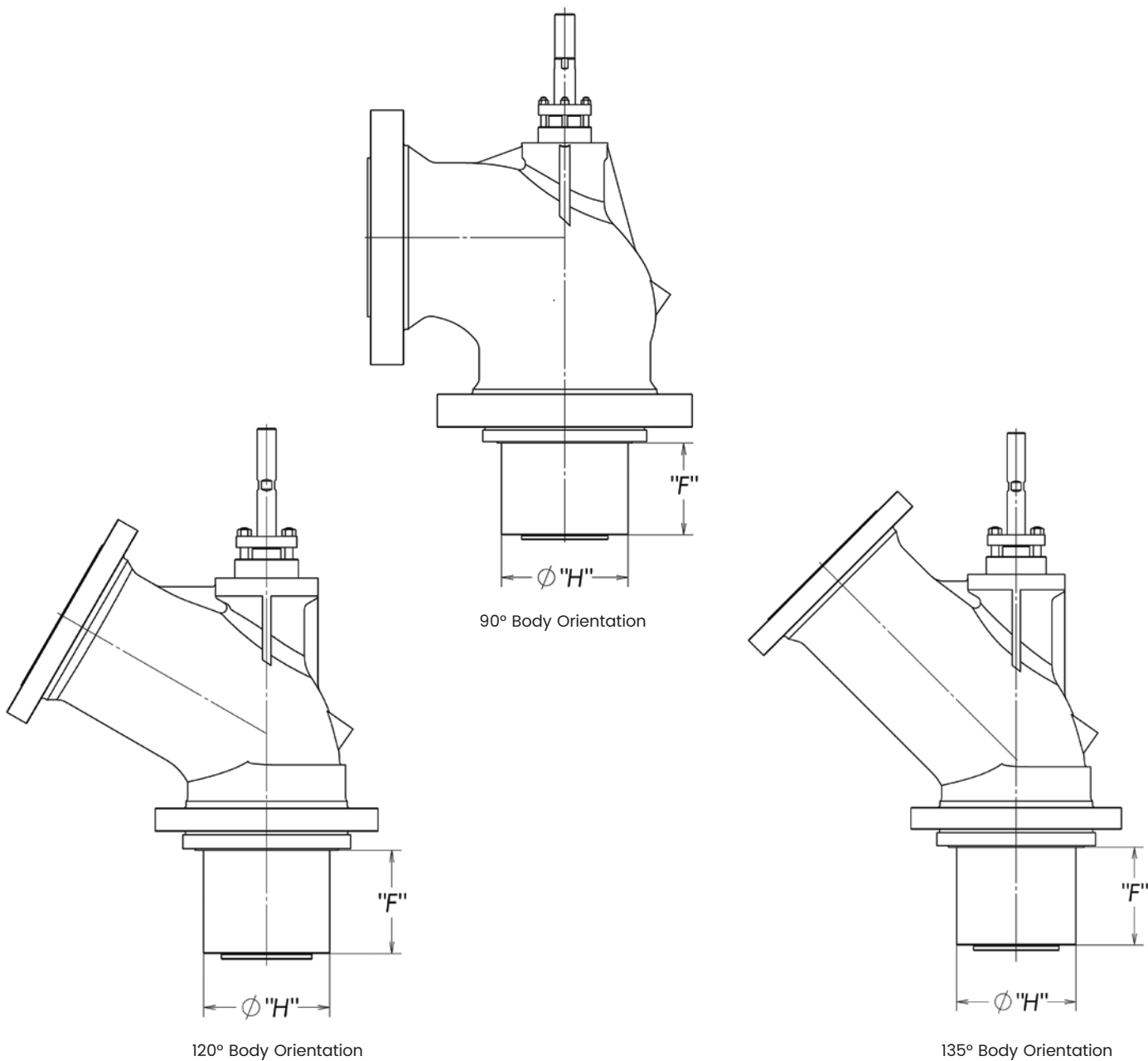


Figure 3 - Plug and Seat Dimensions
(diameter and length to be specified by the Customer)

General Specification Data

Flow Direction : flow-to-open (flow to stem down) [Fill in]
flow-to-close (flow to stem up) [Drain out]

Body

Type : Cast angle (90°, 120°, 135°)
End connections : Flanged – RF/RTJ (ASME B16.5)
Materials : 316 Stainless steel
304 Stainless steel
Duplex Stainless steel
Titanium
Hastelloy C

Flashing and purge ports : Optional

Trim

Guide & plug type : Top & Bottom Guide,
Single Seat Contoured Plug
Flow characteristic : Linear
Cv Ratio : 50:1
Seat ring type : Quick change
Trim Capacity : Reduced capacity

Actuator

Type : Piston Actuator (51/52/53)
Hydraulic Hand jack : Optional
Hand wheel : Optional

Temperature Range/Seat Leakage

Valve Body Sizes		Body Rating ⁽¹⁾	Seat Type	Temperature Range ⁽²⁾		Seat Leakage Class
In.	DN			Min.	Max.	
1 to 18	25 to 450	ASME Class 150 to 1500	Metal	-29°C [-20°F]	360°C [680°F]	IV, V ⁽³⁾

- ASME Class 900 to 1500 available only in 2 to 18 inch (50 to 450 mm) sizes.
- See Materials of Construction Tables for other temperature limitations.
- Seat leakage class ratings per IEC 60534-4 and ANSI/FCI 70.2.

Ratings/Connections

◆ RF Flanged △ RT Joint

Valve Size ¹		Pressure Class ²	
inches	DN	150-600	900-1500
1 & 1.5	25 & 40	◆△	-
2-18	50-450	◆△	◆△

1. Pressure classes shown represent ASME ratings and equivalent PN ratings.
2. ASME class 900 -1500 are only available for end sizes 2" and larger.

Flow Capacity and F_L

Standard Capacity - Class 150-600

Valve Size In.	Orifice Dia	FL Travel	0,93	0,93	0,92	0,92	0,91	0,91	0,91	0,9	0,9	0,9
			10	20	30	40	50	60	70	80	90	100/ Rated Cv
Body	in.	in.										
1	0.625	0.8	0,11	0,27	0,75	1,2	1,6	2	2,4	2,8	3,3	3,5
1	0.688	0.8	0,16	0,39	1,1	1,7	2,3	2,9	3,5	4	4,7	5
1,5	1.063	0.8	0,34	0,8	2,4	3,8	5,1	6,4	7,6	8,8	10,2	11
1,5	1.2	0.8	0,43	1,1	3	4,8	6,5	8,2	9,7	11	13	14
2	1.2	0.8	0,43	1,1	3	4,8	6,5	8,2	9,7	11	13	14
2	1.3	1	0,56	1,4	3,9	6,2	8,4	10,5	12	14	17	18
2	1.5	1	0,71	1,8	4,9	7,9	11	13	16	18	21	23
3	1.625	1	0,87	2,2	6	9,6	13	16	19	22	26	28
3	1.875	1	0,92	2,2	6	9,6	13	16	19	22	26	28
3	2.25	1.5	1,2	7,1	13	19	25	31	36	42	50	54
4	1.875	1	0,92	2,2	6	9,6	13	16	19	22	26	28
4	2.625	1.5	2	11	21	31	40	48	56	66	79	85
4	3.25	2	8,6	26	42	57	71	86	101	117	135	145
6	3	2	7,4	22	36	49	62	74	87	101	116	125
6	4	2	15	44	72	98	123	148	174	202	232	250
6	4.5	2.5	21	63	103	141	177	213	250	291	334	360
8	4	2	15	44	72	98	123	148	174	202	232	250
8	5.25	3	32	95	155	211	266	320	375	437	502	540
8	6.5	3.5	50	150	244	332	418	503	591	688	790	850
10	5.25	3	32	95	155	211	266	320	375	437	502	540
10	7	3.5	55	165	270	368	462	556	653	760	873	940
10	8	3.5	86	206	324	440	560	684	814	949	1079	1200
12	5.5	3	35	106	172	235	295	355	417	485	557	600
12	8	3.5	86	206	324	440	560	684	814	949	1079	1200
12	9.75	4	130	310	486	661	841	1026	1220	1424	1618	1800
14	7	3.5	55	165	270	368	462	556	653	760	873	940
14	8.75	4	108	258	405	551	701	855	1017	1187	1349	1500
14	10.75	4.5	158	378	594	807	1027	1254	1492	1740	1978	2200
16	8.75	4	108	258	405	551	701	855	1017	1187	1349	1500
16	11.25	4.5	180	430	675	918	1168	1425	1695	1978	2248	2500

Flow Capacity and F_L

Standard Capacity - Class 900

FL			0,93	0,93	0,92	0,92	0,91	0,91	0,91	0,9	0,9	0,9
Valve Size In.	Orifice Dia	Travel	10	20	30	40	50	60	70	80	90	100/ Rated Cv
Body	in.	in.										
2	1.2	0.8	0,43	1,1	3	4,8	6,5	8,2	9,7	11	13	14
3	1.875	1	0,92	5,2	10	14	19	23	26	31	37	40
4	2.25	1.5	1,2	7,1	13	19	25	31	36	42	50	54
4	2.5	1.5	1,6	9,2	17	25	33	40	46	54	65	70
6	2.625	1.5	2	11	21	31	40	48	56	66	79	85
6	3.25	2	8,6	26	42	57	71	86	101	117	135	145
6	3.75	2	12	37	60	81	102	123	145	168	193	208
8	3.75	2	12	37	60	81	102	123	145	168	193	208
8	4.5	2	21	63	103	141	177	213	250	291	334	360
8	5.25	3	32	95	155	211	266	320	375	437	502	540
10	5.25	3	32	95	155	211	266	320	375	437	502	540
10	6	3.5	41	123	201	274	344	414	487	566	650	700
10	7	3.5	55	165	270	368	462	556	653	760	873	940
12	5.5	3	35	106	172	235	295	355	417	485	557	600
12	6.75	3.5	53	158	258	352	443	533	626	728	836	900
12	8	3.5	86	206	324	440	560	684	814	949	1079	1200
14	8	3.5	86	206	324	440	560	684	814	949	1079	1200
14	8.75	4	108	258	405	551	701	855	1017	1187	1349	1500
14	9.75	4	130	310	486	661	841	1026	1220	1424	1618	1800
16	8	3.5	86	206	324	440	560	684	814	949	1079	1200
16	8.75	4	108	258	405	551	701	855	1017	1187	1349	1500
16	11.25	4.5	180	430	675	918	1168	1425	1695	1978	2248	2500
18	8	3.5	86	206	324	440	560	684	814	949	1079	1200
18	8.75	4	108	258	405	551	701	855	1017	1187	1349	1500
18	11.25	4.5	180	430	675	918	1168	1425	1695	1978	2248	2500

Standard Capacity - Class 1500

FL			0,93	0,93	0,92	0,92	0,91	0,91	0,91	0,9	0,9	0,9
Valve Size In.	Orifice Dia	Travel	10	20	30	40	50	60	70	80	90	100/ Rated Cv
Body	in.	in.										
2	1.2	0.8	0,43	1,1	3	4,8	6,5	8,2	9,7	11	13	14
3	1.875	1	0,92	5,2	10	14	19	23	26	31	37	40
4	2.25	1.5	1,2	7,1	13	19	25	31	36	42	50	54
4	2.5	1.5	1,6	9,2	17	25	33	40	46	54	65	70
6	2.625	1.5	2	11	21	31	40	48	56	66	79	85
6	3.25	2	8,6	26	42	57	71	86	101	117	135	145
6	3.75	2	12	37	60	81	102	123	145	168	193	208
8	3.75	2	12	37	60	81	102	123	145	168	193	208
8	4.5	2	21	63	103	141	177	213	250	291	334	360
8	5.25	3	32	95	155	211	266	320	375	437	502	540
10	4	2	15	44	72	98	123	148	174	202	232	250
10	5.25	3	32	95	155	211	266	320	375	437	502	540
10	6.5	3.5	50	150	244	332	418	503	591	688	790	850
12	4.25	2	17	51	83	113	143	172	202	235	269	290
12	5.5	3	35	106	172	235	295	355	417	485	557	600
12	7	3.5	55	165	270	368	462	556	653	760	873	940
14	5.25	3	32	95	155	211	266	320	375	437	502	540
14	6	3.5	41	123	201	274	344	414	487	566	650	700
14	7	3.5	55	165	270	368	462	556	653	760	873	940
16	5.5	3	35	106	172	235	295	355	417	485	557	600
16	6	3.5	41	123	201	274	344	414	487	566	650	700
16	7	3.5	55	165	270	368	462	556	653	760	873	940
18	5.625	3	35	106	172	235	295	355	417	485	557	640
18	7	3.5	55	165	270	368	462	556	653	760	873	940
18	8	3.5	86	206	324	440	560	684	814	949	1079	1200

Materials of Construction

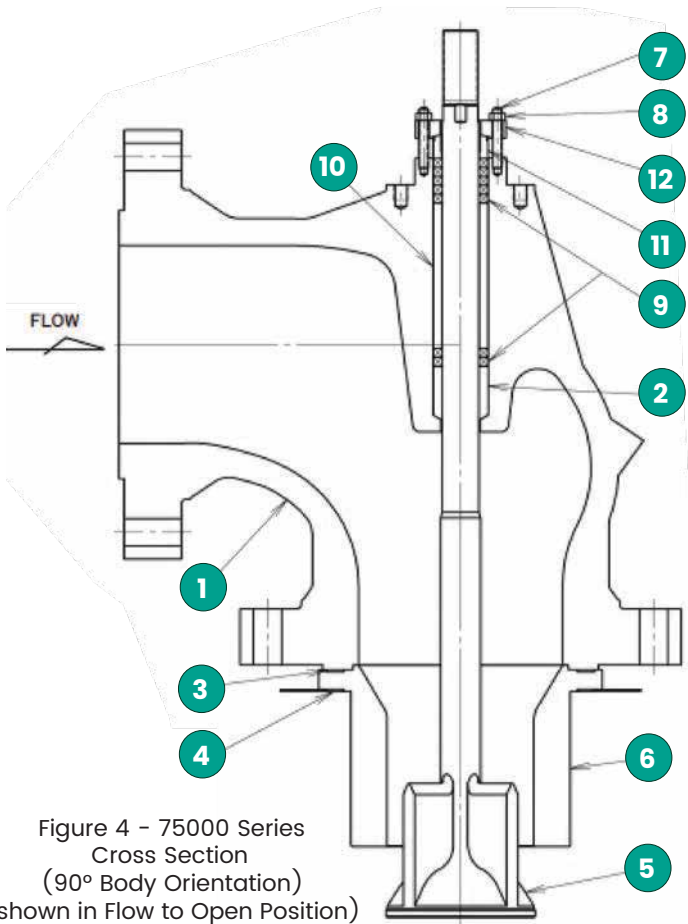


Figure 4 - 75000 Series
Cross Section
(90° Body Orientation)
(shown in Flow to Open Position)

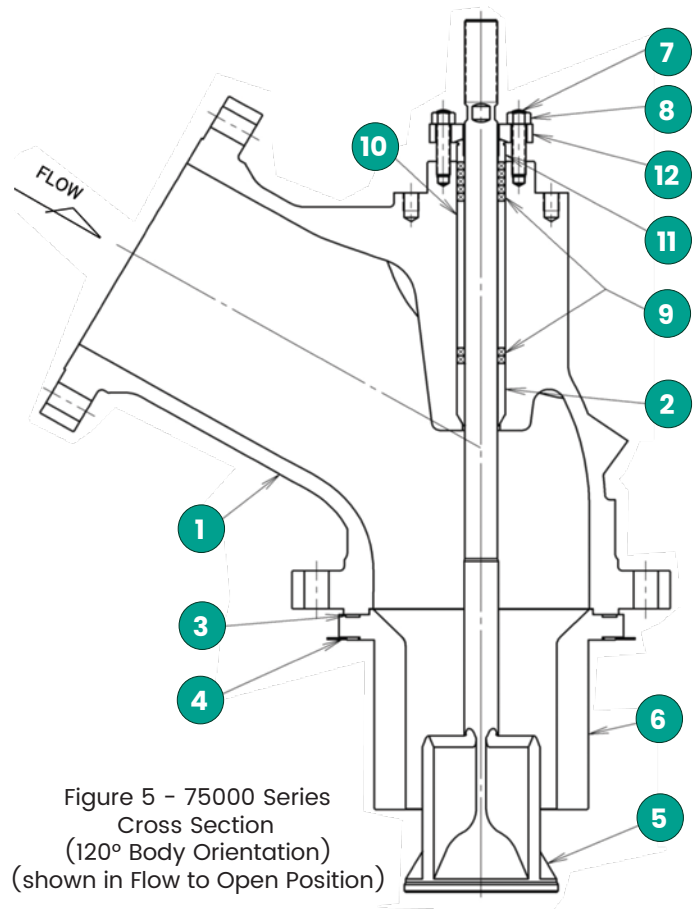


Figure 5 - 75000 Series
Cross Section
(120° Body Orientation)
(shown in Flow to Open Position)

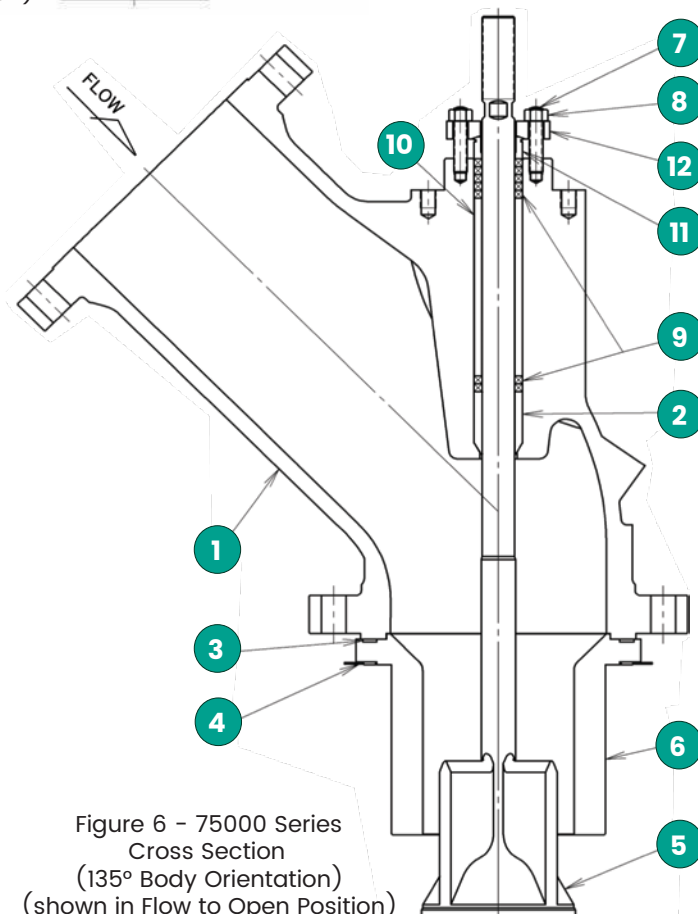


Figure 6 - 75000 Series
Cross Section
(135° Body Orientation)
(shown in Flow to Open Position)

Materials of Construction

316 Stainless Steel Construction

Ref. No.	Description	-29°C [-20°F]	232°C [450°F]	316°C [600°F]
1	BODY (PC parts)	ASTM A351 GRADE CF8M / EN 1.4408 CMS-1040 HRc 22 MAXIMUM		
		ASTM A351 GR CF3M /EN 14408 C:0.03/14409 CMS-1040 HRc 22 MAXIMUM		
2	GUIDE BUSHING	STELLITE NO.6 OR EQUIVALENT (CES-1031)		
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED		
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED WITH ANODIC COATED		
3	GASKET	316L ST ST SPIRAL W/ GASKET + GRAPHITE FILLER		
		SPIRAL WOUND GASKET-INTERLOCKED PLYS OF PREFORMED TITANIUM WITH GRAPHITE FILLER		
4	GASKET WITH OUTER RING	316L ST ST SPIRAL W/ GASKET + GRAPHITE FILLER (OUTER RING : 316L SS)		
		SPIRAL WOUND GASKET-INTERLOCKED PLYS OF PREFORMED TITANIUM WITH GRAPHITE FILLER (OUTER RING : TITANIUM)		
5	PLUG	HARDFACING STELLITE NO.6 ON 316 STAINLESS STEEL + CHROMIUM PLATED PER CES-197, STELLITE SEAT or SEAT & GUIDE		
		HARDFACING STELLITE NO.6 ON 316L STAINLESS STEEL + CHROMIUM PLATED PER CES-197, STELLITE SEAT or SEAT & GUIDE		
		TITANIUM GRADE 5		
		TITANIUM GRADE 5 WITH ANODIC COATED		
6	SEAT RING (PC parts)	HARDFACING STELLITE NO.6 ON ASTM A182 GRADE F316 (CES-1031), STELLITE SEAT or BORE		
		HARDFACING STELLITE NO.6 ON ASTM A182 GRADE F316L (CES-1031), STELLITE SEAT or BORE		
		B381 Gr F-5		
		B381 Gr F-5 WITH ANODIC COATED		
7	PACKING FLANGE STUD	ASTM A193 GRADE B8 CLASS 2		
8	PACKING FLANGE NUT	ASTM A194 GRADE 8		
9	PACKING	CARBON CORE BRAIDED PTFE PACKING (CES-1031)	EXPANDED GRAPHITE WITH CORROSION INHIBITOR OR EQUIVALENT BRAIDED GRAPHITE PACKING RING - LATTYGRAF 6118/6940 OR EQUIVALENT	
10	PACKING SPACER	SOLUTION ANNEALED 316L HRc 22 MAXIMUM STAINLESS STEEL (CES-1031)		
		TITANIUM		
11	PACKING FOLLOWER	SOLUTION ANNEALED 316L HRc 22 MAXIMUM STAINLESS STEEL (CES-1031)		
		TITANIUM		
12	PACKING FLANGE	SOLUTION ANNEALED 316 STAINLESS STEEL HRc 22 MAXIMUM (CES-1031)		

Materials of Construction

304 Stainless Steel Construction

Ref. No.	Description	-29°C [-20°F]		232°C [450°F]		316°C [600°F]		
1	BODY (PC parts)	ASTM A351 GRADE CF8 HRC 22 MAXIMUM CMS-1040						
		ASTM A351 GRADE CF3 CMS-1040						
2	GUIDE BUSHING	STELLITE NO.6 OR EQUIVALENT (CES-1031)						
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED						
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED WITH ANODIC COATED						
3	GASKET	304L ST. ST SPIRAL WOUND GASKET WITH GRAPHITE FILLER						
		SPIRAL WOUND GASKET-INTERLOCKED PLIES OF PREFORMED TITANIUM WITH GRAPHITE FILLER						
4	GASKET WITH OUTER RING	304L ST. ST SPIRAL WOUND GASKET WITH GRAPHITE FILLER (OUTER RING : 304L SS)						
		SPIRAL WOUND GASKET-INTERLOCKED PLIES OF PREFORMED TITANIUM WITH GRAPHITE FILLER (OUTER RING : TITANIUM)						
5	PLUG	HARDFACING STELLITE NO. 6 ON 304 STAINLESS STEEL + CHROMIUM PLATED PER CES-197, STELLITE SEAT or SEAT & GUIDE						
		HARDFACING STELLITE NO. 6 ON 304L STAINLESS STEEL + CHROMIUM PLATED PER CES-197, STELLITE SEAT or SEAT & GUIDE						
		TITANIUM GRADE 5						
		TITANIUM GRADE 5 WITH ANODIC COATED						
6	SEAT RING (PC parts)	HARDFACING STELLITE NO. 6 ON ASTM A182 GRADE F304 (CES-1031), STELLITE SEAT or BORE						
		HARDFACING STELLITE NO. 6 ON ASTM A182 GRADE F304L (CES-1031), STELLITE SEAT or BORE						
		B381 Gr F-5						
		B381 Gr F-5 WITH ANODIC COATED						
7	PACKING FLANGE STUD	ASTM A193 GRADE B8 CLASS 2						
8	PACKING FLANGE NUT	ASTM A194 GRADE 8						
9	PACKING	CARBON CORE BRAIDED PTFE PACKING (CES-1031)			EXPANDED GRAPHITE WITH CORROSION INHIBITOR OR EQUIVALENT			
					BRAIDED GRAPHITE PACKING RING - LATTYGRAF 6118/6940 OR EQUIVALENT			
10	PACKING SPACER	SOLUTION ANNEALED 304L STAINLESS STEEL HRC 22 MAXIMUM (CES-1031)						
		TITANIUM						
11	PACKING FOLLOWER	SOLUTION ANNEALED 304L STAINLESS STEEL HRC 22 MAXIMUM (CES-1031)						
		TITANIUM						
12	PACKING FLANGE	SOLUTION ANNEALED 316 STAINLESS STEEL HRC 22 MAXIMUM (CES-1031)						

Materials of Construction

Duplex Stainless Steel Construction

Ref. No.	Description	-29°C [-20°F]	232°C [450°F]	260°C [500°F]
1	BODY (PC parts)	ASTM A995 GR 4A HRC 28 MAXIMUM (UNS J92205) PER CMS-1044		
2	GUIDE BUSHING	STELLITE NO.6 OR EQUIVALENT (CES-1031)		
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED		
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED WITH ANODIC COATED		
3	GASKET	ASTM A240 UNS S31803 SPIRAL WOUND GASKET WITH GRAPHITE RIBBON FILLER		
		SPIRAL WOUND GASKET-INTERLOCKED PLIES OF PREFORMED TITANIUM WITH GRAPHITE FILLER		
4	GASKET WITH OUTER RING	ASTM A240 UNS S31803 SPIRAL WOUND GASKET WITH GRAPHITE RIBBON FILLER (OUTER RING : Duplex SS)		
		SPIRAL WOUND GASKET-INTERLOCKED PLIES OF PREFORMED TITANIUM WITH GRAPHITE FILLER (OUTER RING : TITANIUM)		
5	PLUG	HARDFACING STELLITE NO.6 ON S31803 + CHROMIUM PLATED PER CES-197, STELLITE SEAT or SEAT & GUIDE		
		TITANIUM GRADE 5		
		TITANIUM GRADE 5 WITH ANODIC COATED		
6	SEAT RING (PC parts)	ASTM A182 GR F51, UNS S31803 HRC 28 MAXIMUM + STELLITE NO.6, STELLITE SEAT or BORE		
		B381 Gr F-5		
		B381 Gr F-5 WITH ANODIC COATED		
7	PACKING FLANGE STUD	ASTM A193 GRADE B8 CLASS 2		
8	PACKING FLANGE NUT	ASTM A194 GRADE 8		
9	PACKING	CARBON CORE BRAIDED PTFE PACKING (CES-1031)	EXPANDED GRAPHITE WITH CORROSION INHIBITOR OR EQUIVALENT BRAIDED GRAPHITE PACKING RING - LATTYGRAF 6118/6940 OR EQUIVALENT	
10	PACKING SPACER	SOLUTION ANNEALED 2205 STAINLESS STEEL (DUPLEX) HRC 28 MAXIMUM (CES-1031)		
		TITANIUM		
11	PACKING FOLLOWER	SOLUTION ANNEALED 2205 STAINLESS STEEL (DUPLEX) HRC 28 MAXIMUM (CES-1031)		
		TITANIUM		
12	PACKING FLANGE	SOLUTION ANNEALED 316 STAINLESS STEEL HRC 22 MAXIMUM (CES-1031)		

Materials of Construction

Titanium Construction

Ref. No.	Description	-29°C [-20°F]	232°C [450°F]	260°C [500°F]
1	BODY (PC parts)		ASTM B367 GR C-2 ASTM B367 Grade C-3	
2	GUIDE BUSHING		ASTM B348 GRADE 5 (UNS R56400) ANNEALED ASTM B348 GRADE 5 (UNS R56400) ANNEALED WITH ANODIC COATED	
3	GASKET		SPIRAL WOUND GASKET-INTERLOCKED PLIES OF PREFORMED TITANIUM WITH GRAPHITE FILLER	
4	GASKET WITH OUTER RING		SPIRAL WOUND GASKET-INTERLOCKED PLIES OF PREFORMED TITANIUM WITH GRAPHITE FILLER (OUTER RING : TITANIUM)	
5	PLUG		TITANIUM GRADE 5 TITANIUM GRADE 5 WITH ANODIC COATED	
6	SEAT RING (PC parts)		B381 Gr F-5 B381 Gr F-5 WITH ANODIC COATED	
7	PACKING FLANGE STUD		ASTM A193 GRADE B8 CLASS 2	
8	PACKING FLANGE NUT		ASTM A194 GRADE 8	
9	PACKING	CARBON CORE BRAIDED PTFE PACKING (CES-1031)	EXPANDED GRAPHITE WITH CORROSION INHIBITOR OR EQUIVALENT BRAIDED GRAPHITE PACKING RING - LATTYGRAF 6118/6940 OR EQUIVALENT	
10	PACKING SPACER		TITANIUM	
11	PACKING FOLLOWER		TITANIUM	
12	PACKING FLANGE		SOLUTION ANNEALED 316 STAINLESS STEEL HRC 22 MAXIMUM (CES-1031)	

Materials of Construction

Hastelloy C Construction

Ref. No.	Description	-29°C [-20°F]	232°C [450°F]	360°C [680°F]
1	BODY (PC parts)	ASTM A494 GRADE CW-12MW HRc 35 MAXIMUM PER CMS-1044		
		ASTM A494 GRADE CW-2M HRc 35 MAXIMUM SOLUTION ANNEALED		
2	GUIDE BUSHING	ASTM B348 GRADE 5 (UNS R56400) ANNEALED		
		ASTM B348 GRADE 5 (UNS R56400) ANNEALED WITH ANODIC COATED		
3	GASKET	SPIRAL WOUND GASKET-INTERLOCKED PLYS OF PREFORMED TITANIUM WITH GRAPHITE FILLER		
4	GASKET WITH OUTER RING	SPIRAL WOUND GASKET-INTERLOCKED PLYS OF PREFORMED TITANIUM WITH GRAPHITE FILLER (OUTER RING : TITANIUM)		
5	PLUG	TITANIUM GRADE 5		
		TITANIUM GRADE 5 WITH ANODIC COATED		
6	SEAT RING (PC parts)	B381 Gr F-5		
		B381 Gr F-5 WITH ANODIC COATED		
7	PACKING FLANGE STUD	ASTM A193 GRADE B8 CLASS 2		
8	PACKING FLANGE NUT	ASTM A194 GRADE 8		
9	PACKING	CARBON CORE BRAIDED PTFE PACKING (CES-1031)	EXPANDED GRAPHITE WITH CORROSION INHIBITOR OR EQUIVALENT BRAIDED GRAPHITE PACKING RING - LATTYGRAF 6118/6940 OR EQUIVALENT	
10	PACKING SPACER	TITANIUM		
11	PACKING FOLLOWER	TITANIUM		
12	PACKING FLANGE	SOLUTION ANNEALED 316 STAINLESS STEEL HRc 22 MAXIMUM (CES-1031)		



CONTROLS SUPPLY CHAIN

VALVES ACTUATORS INSTRUMENTATIONS