



A-T Controls, Inc.

POWER-SEAL

Series P1S / P1F / P1M / P1H

Manual and Automated
High Performance Butterfly Valves
ANSI/ASME Class 150 and 300

NEW DESIGN
- Reduced Torque -



Featuring **TRIAQ**® Actuators and Accessories

AT POWER-SEAL

Series P1S / P1F / P1M / P1H
Manual and Automated
High Performance Butterfly Valves
ANSI/ASME Class 150 and 300



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Square Stem

Stem design facilitates direct mounting of pneumatic and electric actuators or gear operators through 12".

Live Loaded Packing

Power-Seal HPBFVs come standard with Live Loaded packing. Three sets of Belleville washers are added to each gland stud to maintain a self-adjusting packing load.

Application Specific Stem Packing

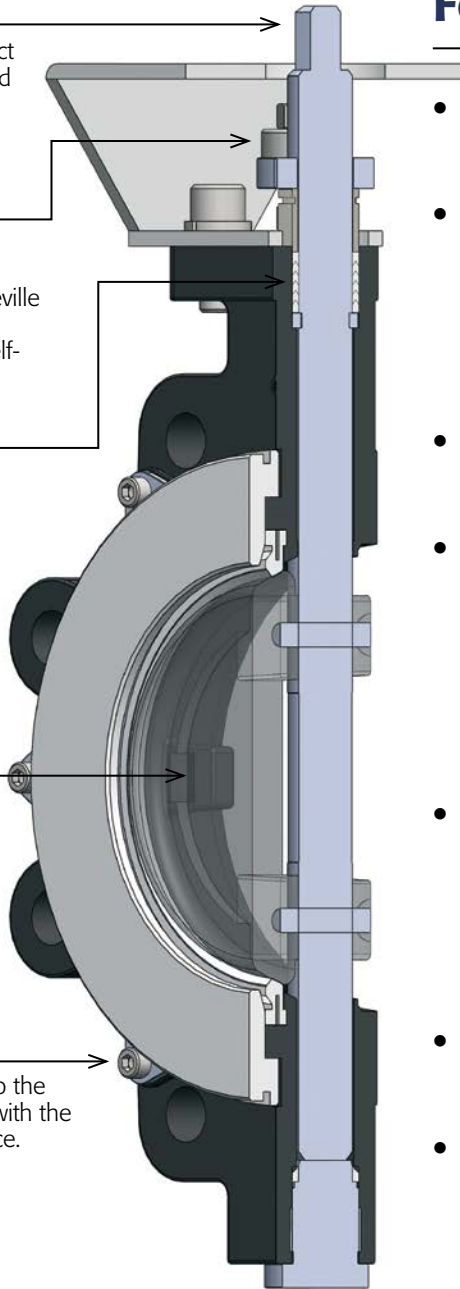
Standard packing is PTFE V-Ring for P1S and Graphite for Series P1M, P1F and P1H. Application specific packing options include: PTFE Inverted V-Ring or PTFE Pressure & Vacuum V-Ring.

Internally Cast Travel Stop

Travel Stop prevents over rotation of the disc in an effort to limit possible seat damage.

Seat Retainer Design

Seat retainer is designed so the fasteners do not interfere with the flange gasket sealing surface.

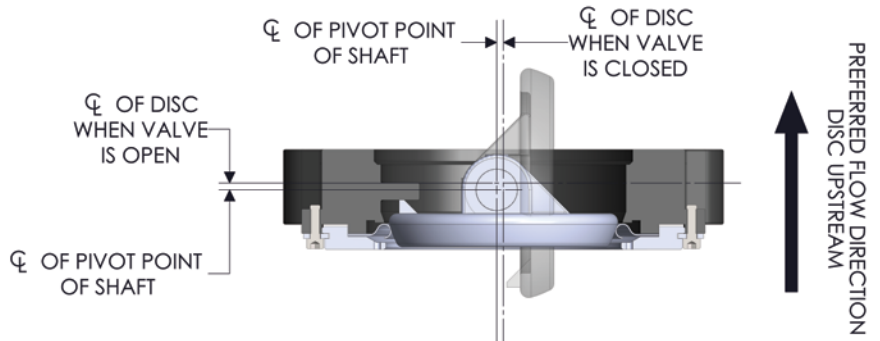


Features and Benefits

- Available inventory includes sizes 2"-36". Larger sizes are available upon request.
- Standard body materials are 316 SST or WCB. Application specific options include: Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Aluminum Bronze, LCB and others.
- ANSI/ASME Class 150 and 300 Lug and Wafer
- New & improved standard seat material: G2TFE. The new G2TFE seat contains 80% PTFE, 15% glass fiber and 5% molybdenum. The molybdenum is an element found in stainless steels which adds lubricity and longevity to the seat.
- Standard seat materials are G2TFE (soft seat), G2TFE/316L SST (Firesafe), and 316L SST (metal seat). Application specific seat materials include: 50/50 STFE, PTFE, TFM-1600 and Inconel 625.
- Standard Stem Material is 17-4 PH®. Another option is XM-19.
- Soft seat and Firesafe seat designs offer bubble-tight, bi-directional shutoff to full ANSI/ASME Class 150 and 300 standards. Metal seat design offers Class V shutoff.
- Blow out proof stem design

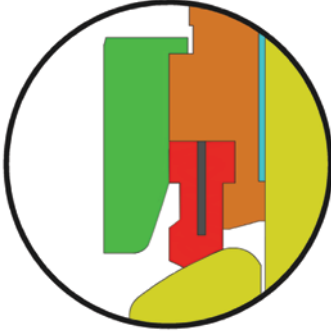
Standards

ANSI-B16.34	MSS SP-67
API-598	MSS SP-68
API-607, 6th Ed.	CE 97/23/EC
API-6D	ATEX 94/9/EC
API-609	IEC 61508:2010
ASME-B16.5	CRN
FCI 70-2	ISO 5211
MSS SP-25	
MSS SP-55	

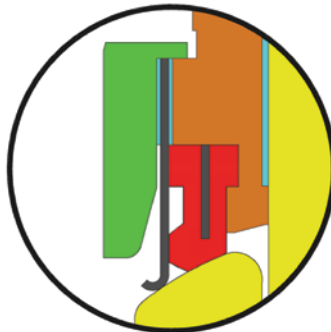


POWER-SEAL High Performance Butterfly Valve seat designs:

- **P1S Series** Soft Seat design (standard G2TFE)
- **P1F Series** G2TFE/316L SST fire-safe seat design
- **P1M/P1H Series** Metal seat design for high temperature and specialized applications

**P1S Series**

Soft seat for bubble-tight shutoff of general purpose applications.*

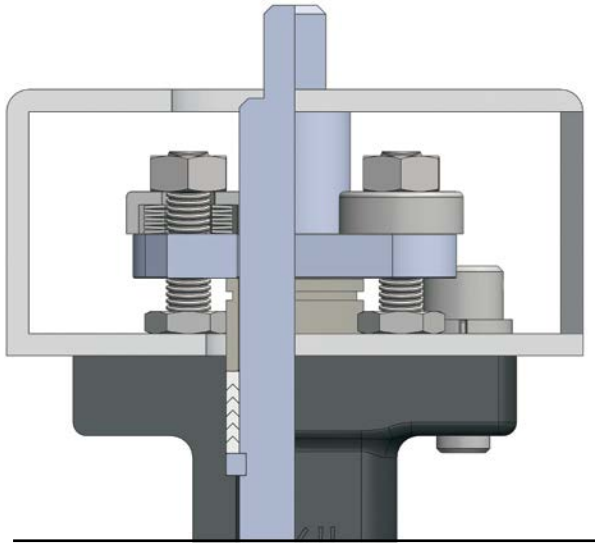
**P1F Series**

Primary G2TFE seat for bubble-tight shutoff backed up by secondary 316L SST fire-safe seat. Secondary fire-safe seat provides Class V shutoff when primary G2TFE seat is compromised in a fire event.*

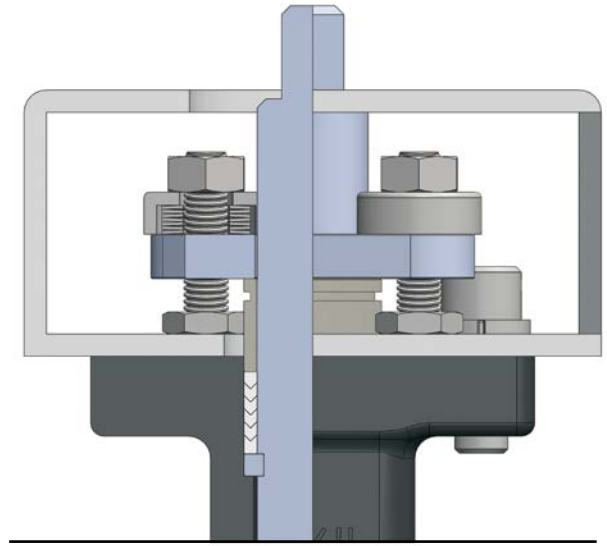
**P1M/P1H Series**

316L SST seat for Class V shutoff of high temperature applications (Inconel 625 seat and 316 SST with Stellite disc optional for extreme temperature).*

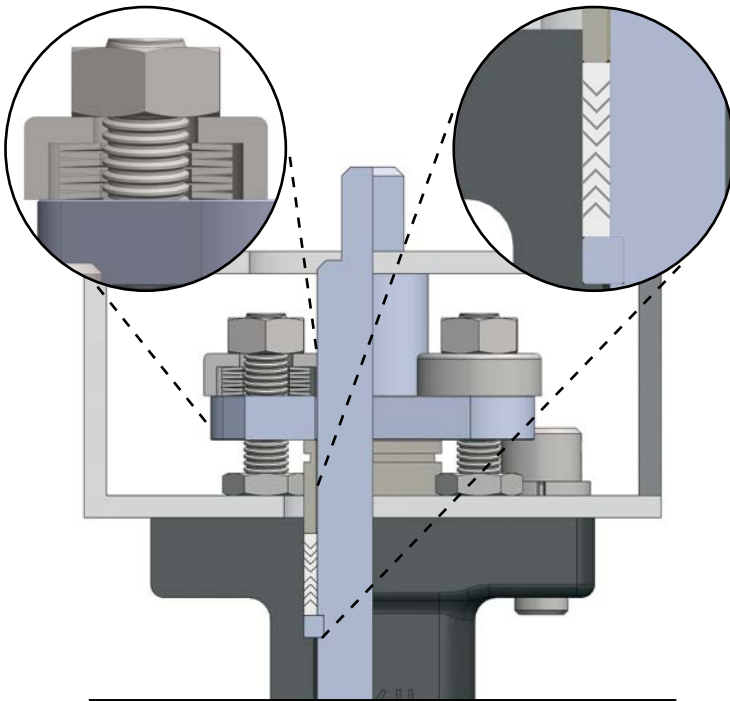
* Refer to Pressure Temperature Chart (pg. 13)

Stem Packing Options for **POWER-SEAL** High Performance Butterfly Valves

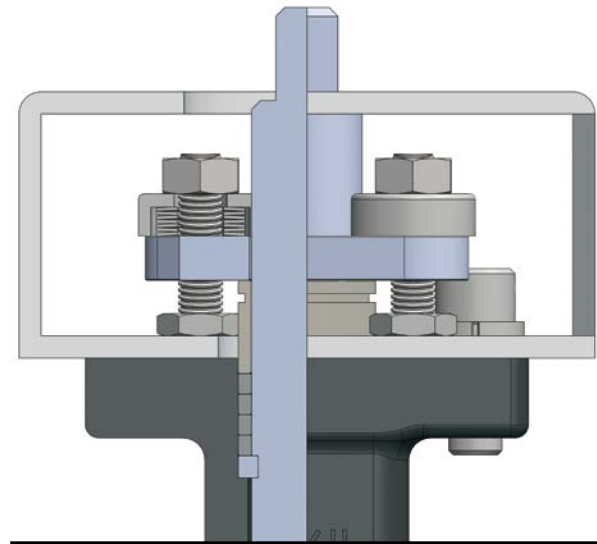
PTFE V-Ring (P) (standard for P1S Series)
Live Loaded PTFE Chevron packing for standard applications.



PTFE Inverted V-Ring (V)
Live Loaded Inverted PTFE Chevron packing will facilitate vacuum service applications.



PTFE Pressure & Vacuum V-Ring (D)
Live Loaded PTFE Chevron packing comes together with Inverted PTFE Chevron packing to support applications of pressure and vacuum.

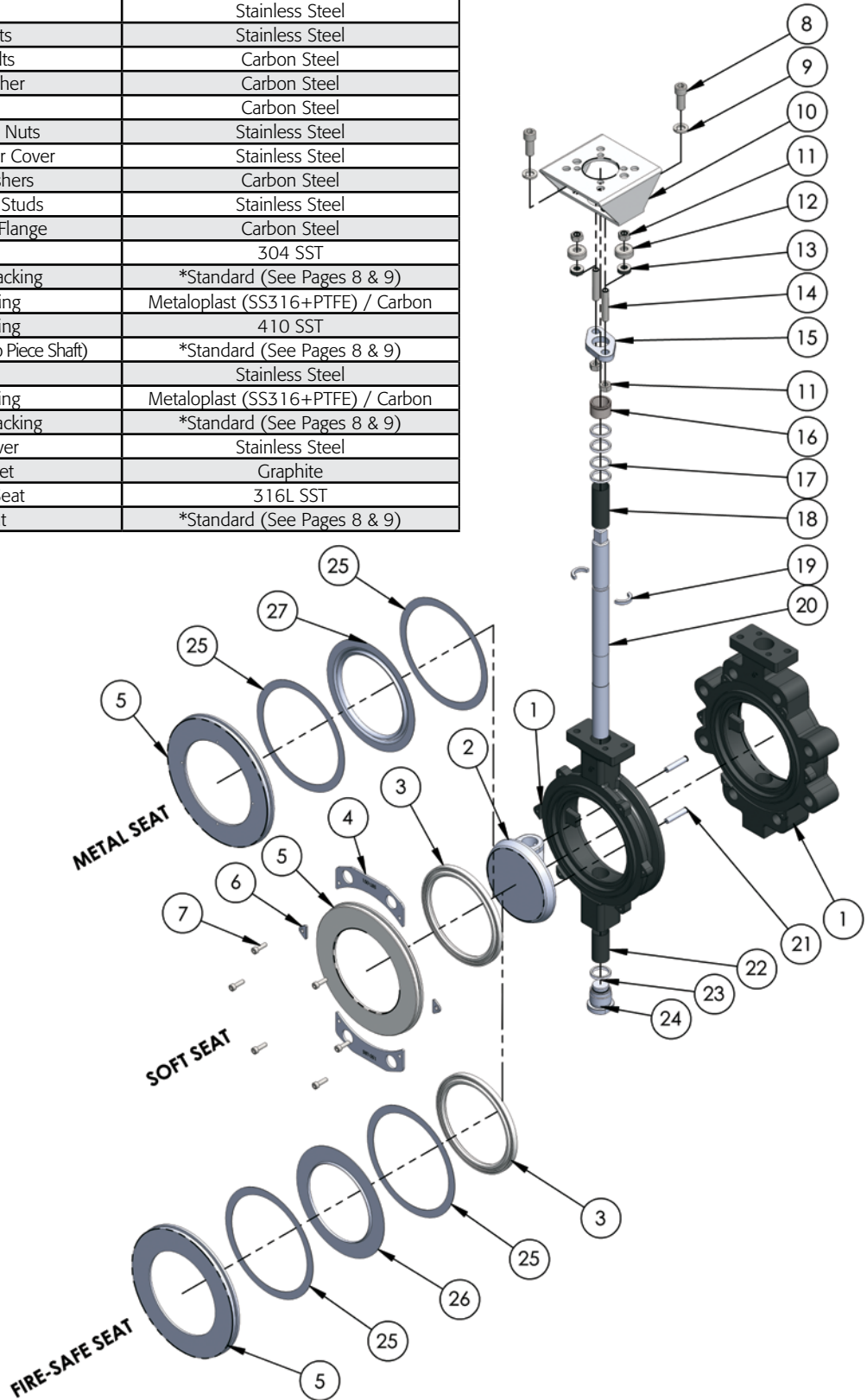


Graphite (G) (standard for P1F, P1M, P1H Series)
Power-Seal High Performance Butterfly valves with Live Loaded Graphite packing accommodate a wide range of applications.

Industry Leading High Performance Butterfly Valve Packing Design

Bill of Materials for **POWER-SEAL** High Performance Butterfly Valves

Item No.	Description	Material
1	Body	*Standard (See Pages 8 & 9)
2	Disc	*Standard (See Pages 8 & 9)
3	Seat	*Standard (See Pages 8 & 9)
4	Clamp Plate (Wafer Only)	Stainless Steel
5	Retainer Ring	Carbon Steel / Stainless Steel
6	Clamps	Stainless Steel
7	Clamp Bolts	Stainless Steel
8	Bracket Bolts	Carbon Steel
9	Bracket Washer	Carbon Steel
10	Bracket	Carbon Steel
11	Packing Gland Nuts	Stainless Steel
12	Belleville Washer Cover	Stainless Steel
13	Belleville Washers	Carbon Steel
14	Packing Gland Studs	Stainless Steel
15	Packing Gland Flange	Carbon Steel
16	Gland	304 SST
17	Shaft Upper Packing	*Standard (See Pages 8 & 9)
18	Upper Bearing	Metaloplast (SS316+PTFE) / Carbon
19	Thrust Bearing	410 SST
20	Shaft (2" - 3" have Two Piece Shaft)	*Standard (See Pages 8 & 9)
21	Disc Pin	Stainless Steel
22	Lower Bearing	Metaloplast (SS316+PTFE) / Carbon
23	Shaft Lower Packing	*Standard (See Pages 8 & 9)
24	Bottom Cover	Stainless Steel
25	Body Gasket	Graphite
26	Secondary Seat	316L SST
27	Metal Seat	*Standard (See Pages 8 & 9)



Standard Materials of Construction for **POWER-SEAL Class 150**

Soft Seat Materials

Component	Carbon Steel Standard Material	Stainless Steel Standard Material	Options
Body	A216 Gr WCB	A351 Gr CF8M-316	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316	A351 Gr CF8M-316	Same as body; except CS (316 standard)
Shaft	17-4 PH®	17-4 PH®	XM-19, K-Monel, Duplex 2205, Inconel 718
Seat	G2TFE	G2TFE	PTFE, 50/50 STFE, TFM-1600
Packing	PTFE V-Ring	PTFE V-Ring	Graphite, PTFE V-Rings (Vacuum, Pressure & Vacuum)
Bearing	Composite	Composite	Bronze, Carbon Graphite

Fire Safe Seat Materials

Component	Carbon Steel Standard Material	Stainless Steel Standard Material	Options
Body	A216 Gr WCB	A351 Gr CF8M-316	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316 / HCr	A351 Gr CF8M-316/ HCr	Same as body; except CS (316 standard)
Shaft	17-4 PH®	17-4 PH®	XM-19, K-Monel, Duplex 2205, Inconel 718
Seat	G2TFE	G2TFE	PTFE, 50/50 STFE, TFM-1600
Secondary Seat	316L SST	316L SST	
Packing	Graphite	Graphite	
Bearing	Composite	Composite	Bronze, Carbon Graphite

Metal Seat Materials (Carbon Steel)

Component	Carbon Steel Standard		Options
	Material (-20°F to 660°F)	Material (-20°F to 800°F)	
Body	A216 Gr WCB	A216 Gr WCB	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316/ HCr	A351 Gr CF8M-316/ Stellite	
Shaft	17-4 PH®	17-4 PH®	
Seat	316L SST	Inconel 625	
Packing	Graphite	Graphite	PTFE V-Ring to 450°F
Bearing	Carbon Graphite	Carbon Graphite	Bronze

Metal Seat Materials (Stainless Steel)

Component	Stainless Steel Standard		Options
	Material (-100°F to 660°F)	Material (-100°F to 1100°F)	
Body	A351 Gr CF8M-316	A351 Gr CF8M-316	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Aluminum Bronze, LCB, Other
Disc	A351 Gr CF8M-316/ HCr	A351 Gr CF8M-316/ Stellite	
Shaft	17-4 PH®	17-4 PH®	XM-19
Seat	316L SST	Inconel 625	
Packing	Graphite	Graphite	PTFE V-Ring to 450°F
Bearing	Carbon Graphite	Carbon Graphite	Bronze

Standard Materials of Construction for **POWER-SEAL Class 300****Soft Seat Materials**

Component	Carbon Steel Standard Material	Stainless Steel Standard Material	Options
Body	A216 Gr WCB	A351 Gr CF8M-316	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316	A351 Gr CF8M-316	Same as body; except CS (316 standard)
Shaft	17-4 PH®	17-4 PH®	XM-19, K-Monel, Duplex 2205, Inconel 718
Seat	G2TFE	G2TFE	PTFE, 50/50 STFE, TFM-1600
Packing	PTFE V-Ring	PTFE V-Ring	Graphite, PTFE V-Rings (Vacuum, Pressure & Vacuum)
Bearing	Composite	Composite	Bronze, Carbon Graphite

Fire Safe Seat Materials

Component	Carbon Steel Standard Material	Stainless Steel Standard Material	Options
Body	A216 Gr WCB	A351 Gr CF8M-316	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316 / HCr	A351 Gr CF8M-316/ HCr	Same as body; except CS (316 standard)
Shaft	17-4 PH®	17-4 PH®	XM-19, K-Monel, Duplex 2205, Inconel 718
Seat	G2TFE	G2TFE	PTFE, 50/50 STFE, TFM-1600
Secondary Seat	316L SST	316L SST	
Packing	Graphite	Graphite	
Bearing	Composite	Composite	Bronze, Carbon Graphite

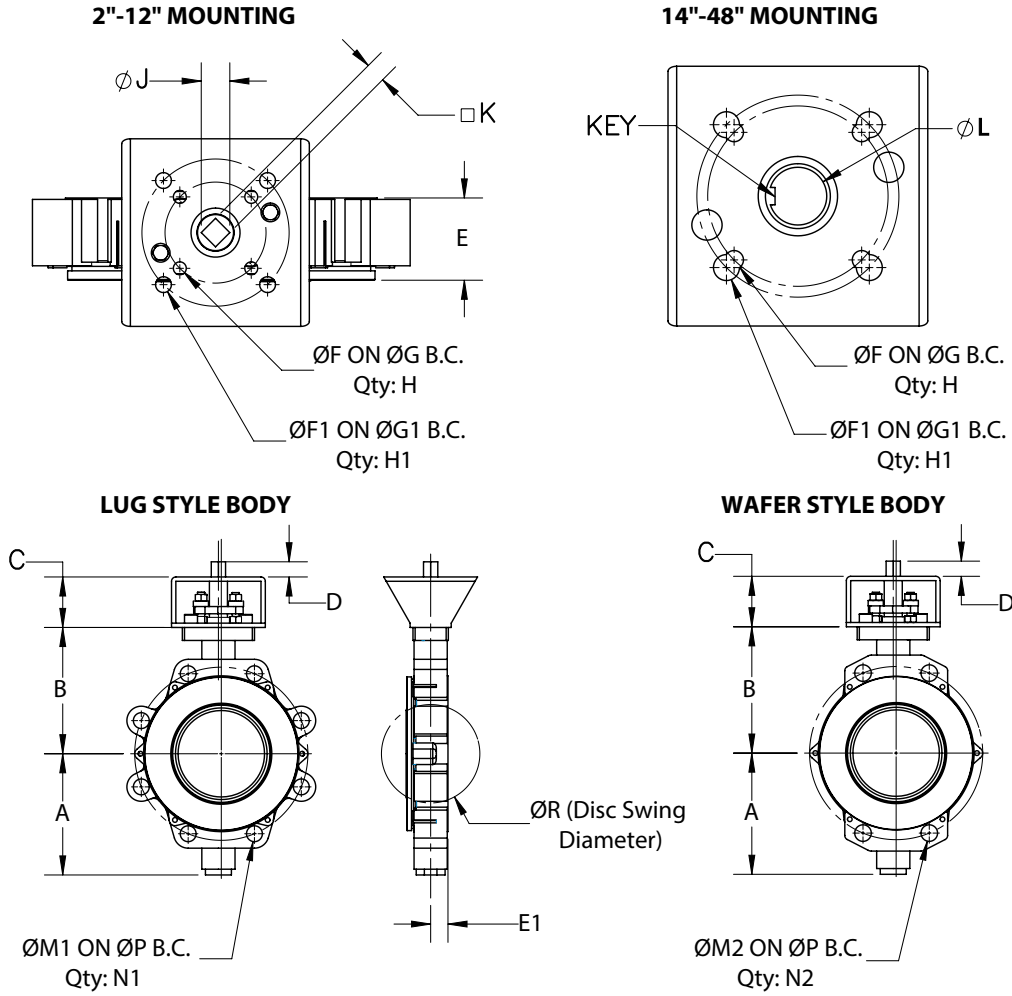
Metal Seat Materials (Carbon Steel)

Component	Carbon Steel Standard		Options
	Material (-20°F to 660°F)	Material (-20°F to 800°F)	
Body	A216 Gr WCB	A216 Gr WCB	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316/ HCr	A351 Gr CF8M-316/ Stellite	
Shaft	17-4 PH®	17-4 PH®	XM-19
Seat	316L SST	Inconel 625	
Packing	Graphite	Graphite	PTFE V-Ring to 450°F
Bearing	Carbon Graphite	Carbon Graphite	Bronze

Metal Seat Materials (Stainless Steel)

Component	Stainless Steel Standard		Options
	Material (-100°F to 660°F)	Material (-100°F to 1100°F)	
Body	A351 Gr CF8M-316	A351 Gr CF8M-316	Alloy 20, Monel, CD3MN, Hastelloy C-276, Inconel 625, Alum-Bronze, LCB, Other
Disc	A351 Gr CF8M-316/ HCr	A351 Gr CF8M-316/ Stellite	
Shaft	17-4 PH®	XM-19	
Seat	316L SST	Inconel 625	
Packing	Graphite	Graphite	PTFE V-Ring to 450°F
Bearing	Carbon Graphite	Carbon Graphite	Bronze

Dimensions for **POWER-SEAL Class 150**

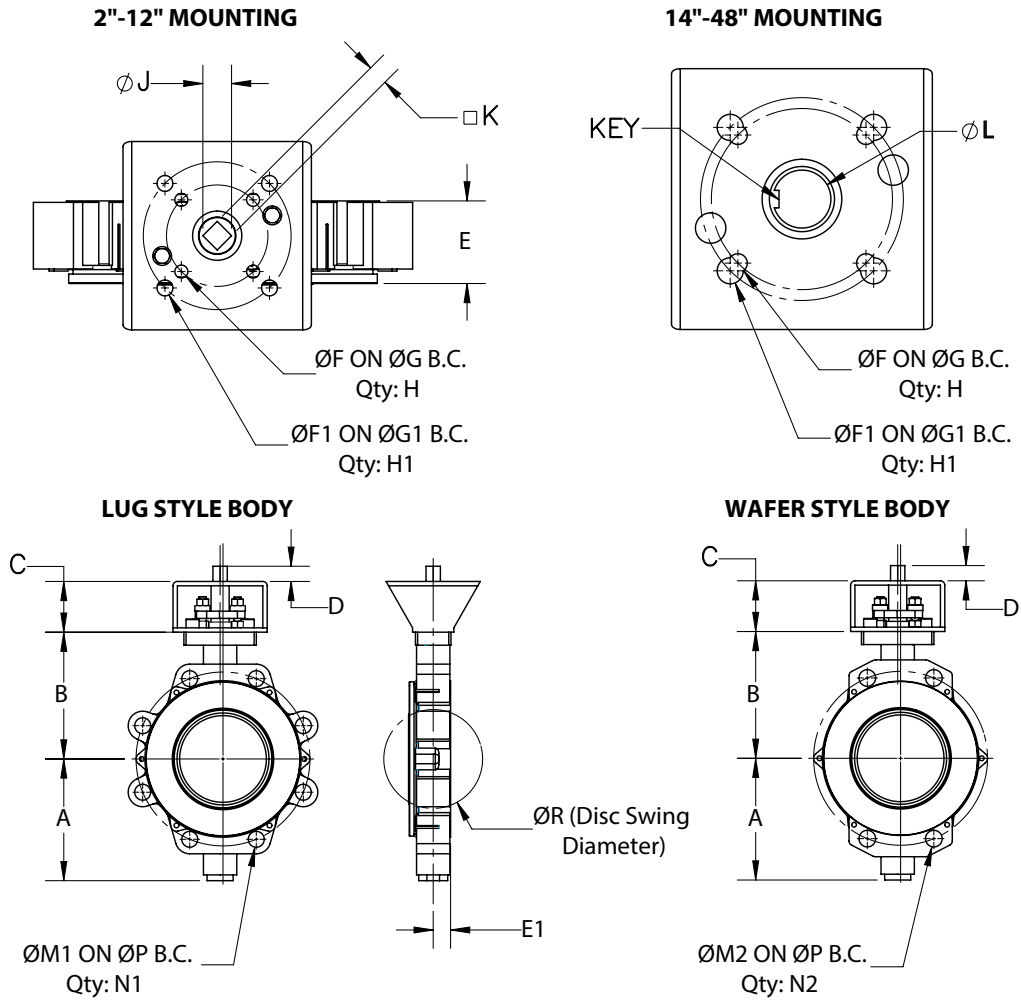


ANSI/ASME Class 150

Size	A	B	C	D	E	E1	ØF	ØG	H	ØF1	ØG1	H1	ØJ	K	ØL	Key (mm)	ØM1	N1	ØM2	N2	ØP	ØR	Lug (lbs)	Wafer (lbs)
2"	3.94	4.33	2.36	0.71	1.77	0.71	0.35	2.756 (F07)	4	-	-	-	0.480	0.354	-	-	5/8 - 11	4	0.75	4	4.75	2.14	12	9
2-1/2"	3.98	4.33	2.36	0.71	1.89	0.75	0.35	2.756 (F07)	4	-	-	-	0.480	0.354	-	-	5/8 - 11	4	0.75	4	5.50	2.79	14	10
3"	4.84	5.24	2.76	0.75	1.89	0.81	0.35	2.756 (F07)	4	-	-	-	0.591	0.433	-	-	5/8 - 11	4	0.75	4	6.00	3.15	17	15
4"	5.31	5.71	2.76	0.83	2.13	0.87	0.35	2.756 (F07)	4	0.43	4.016 (F10)	4	0.591	0.433	-	-	5/8 - 11	8	0.75	4	7.50	3.66	28	19
5"	6.38	6.50	2.76	0.83	2.20	0.91	0.35	2.756 (F07)	4	0.43	4.016 (F10)	4	0.591	0.433	-	-	3/4 - 10	8	0.88	4	8.50	4.69	39	23
6"	6.61	6.89	2.76	0.83	2.24	0.94	0.35	2.756 (F07)	4	0.43	4.016 (F10)	4	0.756	0.551	-	-	3/4 - 10	8	0.88	4	9.50	5.37	52	32
8"	7.68	7.87	2.76	1.02	2.52	1.06	0.43	4.016 (F10)	4	0.51	4.921 (F12)	4	1.031	0.748	-	-	3/4 - 10	8	0.88	4	11.75	7.34	63	47
10"	9.51	10.43	3.15	1.18	2.80	1.10	0.43	4.016 (F10)	4	0.51	4.921 (F12)	4	1.031	0.748	-	-	7/8 - 9	12	1.00	4	14.25	8.86	103	79
12"	10.55	11.42	3.15	1.18	3.19	1.22	0.43	4.016 (F10)	4	0.51	4.921 (F12)	4	1.181	0.866	-	-	7/8 - 9	12	1.00	4	17.00	10.91	155	115
14"	11.57	12.20	3.54	2.17	3.62	1.57	0.51	4.921 (F12)	4	0.71	5.512 (F14)	4	-	-	1.378	10x8	1 - 8	12	1.13	4	18.75	12.35	181	159
16"	14.02	14.57	3.94	2.56	4.02	1.78	0.51	4.921 (F12)	4	0.71	5.512 (F14)	4	-	-	1.575	12x8	1 - 8	16	1.13	4	21.25	14.50	251	216
18"	14.69	15.35	3.94	2.95	4.49	1.97	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	-	-	1.772	14x9	1 1/8 - 8	16	1 1/8 - 8	4	22.75	16.46	353	287
20"	16.06	15.94	3.94	2.95	5.00	2.17	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	-	-	2.165	18x11	1 1/8 - 8	20	1 1/8 - 8	4	25.00	18.36	432	377
24"	18.90	18.90	4.72	3.35	6.06	2.52	0.71	8.071 (F20)	8	-	-	-	-	-	2.559	18x11	1 1/4 - 8	20	1 1/4 - 8	4	29.50	22.25	697	582
26"	20.28	23.03	4.72	3.74	6.50	2.87	0.71	8.071 (F20)	8	0.71	10.000 (F25)	8	-	-	2.559	18x11	1 1/4 - 8	24	1 1/4 - 8	4	31.75	23.88	750	631
28"	20.63	21.46	5.12	3.74	6.50	2.82	0.71	8.071 (F20)	8	0.71	10.000 (F25)	8	-	-	2.559	18x11	1 1/4 - 8	28	1 1/4 - 8	4	34.00	26.00	926	741
30"	21.65	24.02	5.12	4.13	7.48	3.43	0.71	10.000 (F25)	8	-	-	-	-	-	3.346	25x14	1 1/4 - 8	28	1 1/4 - 8	4	36.00	28.00	992	860
32"	22.64	25.04	5.51	5.12	7.48	3.43	0.71	10.000 (F25)	8	0.87	11.732 (F30)	8	-	-	3.543	25x14	1 1/2 - 8	28	1 1/2 - 8	4	38.50	30.00	1433	1036
36"	26.14	28.15	5.51	5.12	7.99	3.90	0.71	10.000 (F25)	8	0.87	11.732 (F30)	8	-	-	3.543	25x14	1 1/2 - 8	32	1 1/2 - 8	4	42.75	33.69	1631	1301
40"	29.25	29.13	5.91	5.12	8.50	4.25	0.87	11.732 (F30)	8	1.26	14.016 (F35)	8	-	-	3.937	28x16	1 1/2 - 8	36	1 1/2 - 8	4	47.25	37.72	1808	1433
44"	31.65	31.50	5.91	5.12	10.00	4.72	0.87	11.732 (F30)	8	1.26	14.016 (F35)	8	-	-	4.331	28x16	1 1/2 - 8	40	1 1/2 - 8	4	51.75	42.06	2712	1962
48"	34.29	35.04	5.91	5.91	10.00	4.33	1.26	14.016 (F35)	8	1.50	15.984 (F40)	8	-	-	4.724	32x18	1 1/2 - 8	44	1 1/2 - 8	4	56.00	45.25	2976	2161

• Unless otherwise specified, all dimensions are in inches.
 • For ØM2, 2"-18" are clearance holes and 20"-48" are threaded holes. Refer to the High Performance Butterfly Valve Stud & Bolt Sizing document for more information.
 End Connection: 2"-24": ANSI B16.5 Class 150 26"-48": ANSI B16.47 Series A Class 150

Dimensions for **POWER-SEAL Class 300**

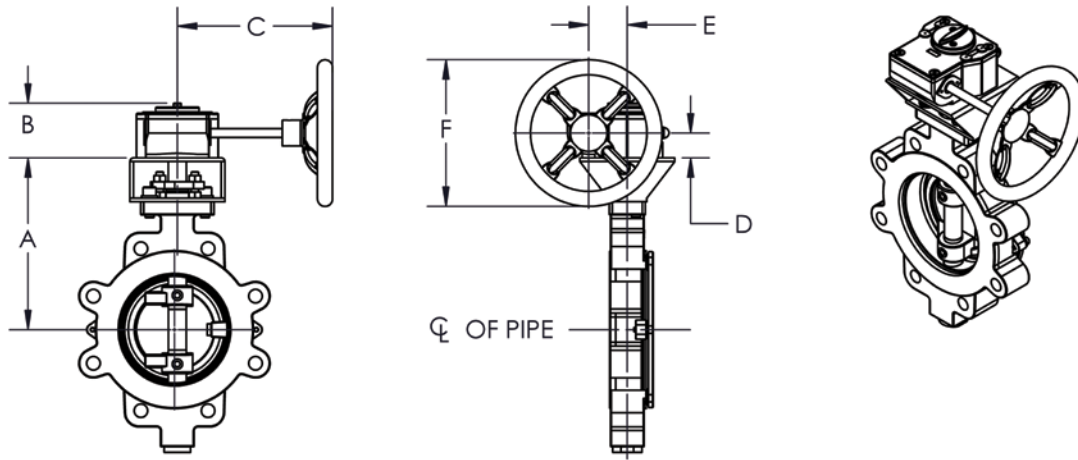


ANSI/ASME Class 300

Size	A	B	C	D	E	E1	ØF	ØG	H	ØF1	ØG1	H1	ØJ	K	ØL	Key (mm)	ØM1	N1	ØM2	N2	ØP	ØR	Lug (lbs)	Wafer (lbs)
2"	3.94	4.33	2.36	0.71	1.77	0.71	0.35	2.756 (F07)	4	-	-	-	0.480	0.354	-	-	5/8 - 11	8	0.75	4	5.00	2.14	12	9
2-1/2"	3.98	4.33	2.36	0.71	1.89	0.75	0.35	2.756 (F07)	4	-	-	-	0.480	0.354	-	-	3/4 - 10	8	0.88	4	5.88	2.79	14	10
3"	4.84	5.24	2.76	0.75	1.89	0.81	0.35	2.756 (F07)	4	-	-	-	0.591	0.433	-	-	3/4 - 10	8	0.88	4	6.62	3.15	25	15
4"	5.31	5.71	2.76	0.83	2.13	0.87	0.35	2.756 (F07)	4	0.43	4.016 (F10)	4	0.591	0.433	-	-	3/4 - 10	8	0.88	4	7.88	3.66	36	19
5"	6.38	6.50	2.76	0.83	2.20	0.91	0.35	2.756 (F07)	4	0.43	4.016 (F10)	4	0.591	0.433	-	-	3/4 - 10	8	0.88	4	9.25	4.69	39	23
6"	6.61	6.89	2.76	1.02	2.32	1.00	0.35	2.756 (F07)	4	0.43	4.016 (F10)	4	1.031	0.748	-	-	3/4 - 10	12	0.88	4	10.62	5.37	75	36
8"	8.03	8.27	2.76	1.18	2.87	1.42	0.43	4.016 (F10)	4	0.51	4.921 (F12)	4	1.181	0.866	-	-	7/8 - 9	12	1.00	4	13.00	7.34	94	59
10"	9.51	10.43	3.15	1.18	3.27	1.57	0.43	4.016 (F10)	4	0.51	4.921 (F12)	4	1.181	0.866	-	-	1 - 8	16	1.13	4	15.25	8.86	171	111
12"	11.18	12.20	3.15	1.18	3.62	1.65	0.43	4.016 (F10)	4	0.51	4.921 (F12)	4	1.181	0.866	-	-	1 1/8 - 8	16	1.25	4	17.75	10.91	268	154
14"	12.76	13.39	3.54	2.56	4.61	2.56	0.51	4.921 (F12)	4	0.71	5.512 (F14)	4	-	-	1.969	18x9	1 1/8 - 8	20	1 1/8 - 8	4	20.25	12.35	370	284
16"	14.57	14.57	3.94	2.95	5.24	2.76	0.51	4.921 (F12)	4	0.71	5.512 (F14)	4	-	-	2.165	18x11	1 1/4 - 8	20	1 1/4 - 8	4	22.50	14.50	477	419
18"	15.55	15.94	3.94	2.95	5.87	2.87	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	-	-	2.362	18x11	1 1/4 - 8	24	1 1/4 - 8	4	24.75	16.46	687	542
20"	16.65	17.52	3.94	3.74	6.26	3.11	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	-	-	2.559	18x11	1 1/4 - 8	24	1 1/4 - 8	4	27.00	18.36	770	612
24"	20.08	20.04	4.72	4.13	7.13	3.59	0.71	8.071 (F20)	8	-	-	-	-	-	2.953	20x12	1 1/2 - 8	24	1 1/2 - 8	4	32.00	22.25	1319	997
26"	21.46	23.03	4.72	4.13	6.50	2.68	0.71	10.000 (F25)	8	0.87	11.732 (F30)	8	-	-	3.149	22x14	1 5/8 - 8	28	1 5/8 - 8	4	34.50	23.88	1414	1069
28"	22.44	23.23	5.12	4.13	6.50	2.80	0.71	10.000 (F25)	8	0.87	11.732 (F30)	8	-	-	3.543	22x14	1 5/8 - 8	28	1 5/8 - 8	4	37.00	26.00	1781	1195
30"	24.02	25.79	5.12	5.12	7.48	3.43	0.87	11.732 (F30)	8	-	-	-	-	-	3.740	25x14	1 3/4 - 8	28	1 3/4 - 8	4	39.25	28.00	1895	1335
32"	25.2	26.57	5.51	5.12	7.48	3.23	0.87	11.732 (F30)	8	1.26	14.016 (F35)	8	-	-	4.134	28x16	1 7/8 - 8	28	1 7/8 - 8	4	41.50	30.00	2388	1671
36"	26.14	28.15	5.51	5.12	7.99	3.58	0.87	11.732 (F30)	8	1.26	14.016 (F35)	8	-	-	4.528	32x18	2 - 8	32	2 - 8	4	46.00	33.69	2604	2168
40"	30.43	29.13	5.91	5.90	8.50	3.94	1.26	14.016 (F35)	8	1.50	15.984 (F40)	8	-	-	4.921	32x18	1 5/8 - 8	32	1 5/8 - 8	4	45.50	37.72	3013	2429
44"	31.65	31.69	5.91	7.09	10.00	4.72	1.50	15.984 (F40)	8	1.50	19.016 (F48)	12	-	-	5.315	36x20	1 3/4 - 8	32	1 3/4 - 8	4	49.75	42.06	4519	3383
48"	34.29	35.04	5.91	7.09	10.00	4.33	1.50	15.984 (F40)	8	1.50	19.016 (F48)	12	-	-	5.709	36x20	1 7/8 - 8	32	1 7/8 - 8	4	54.00	45.25	4960	3725

• Unless otherwise specified, all dimensions are in inches.
 • For ØM2, 2"-8" are clearance holes and 10"-48" are threaded holes. Refer to the High Performance Butterfly Valve Stud & Bolt Sizing document for more information.
 End Connection: 2"-24": ANSI B16.5 Class 300 26"-48": ANSI B16.47 Series A Class 300

Dimensions for **POWER-SEAL** Manual Handles / Gear Operators

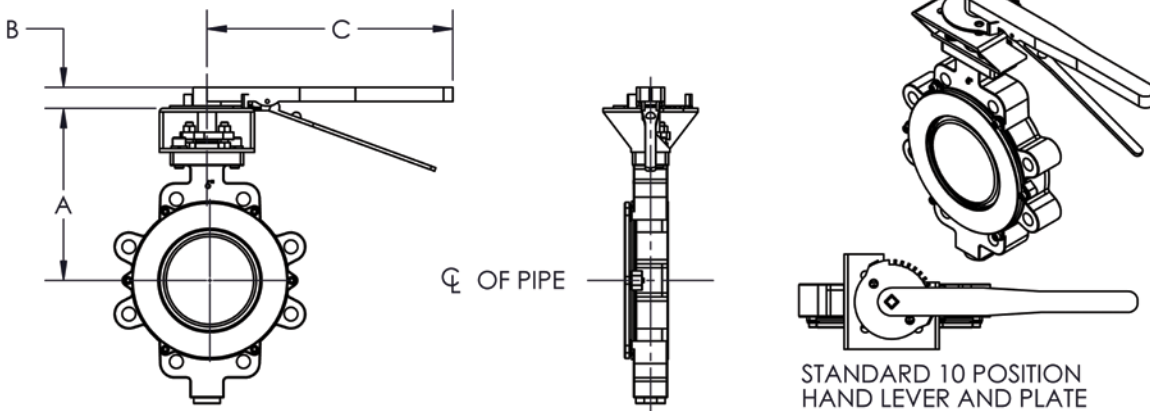


CLASS 150

SIZE	GEAR	A	B	C	D	E	HANDWHEEL DIAMETER (F)
2"	Q200-S	6.69	2.52	5.16	1.12	1.71	4
3"	Q200-S	7.99	2.52	5.16	1.12	1.71	4
4"	Q200-S	8.46	2.52	5.16	1.12	1.71	4
5"	Q400-S	9.25	2.94	7.12	1.34	2.07	4
6"	Q400-S	9.65	2.94	7.28	1.34	2.07	6
8"	Q800-S	10.63	3.56	10.24	1.67	2.71	12
10"	Q800-S	13.58	3.56	10.24	1.67	2.71	12
12"	Q800-S	14.57	3.56	11.71	1.67	2.71	16
14"	Q2000-S	15.75	3.94	12.64	1.97	3.8	16
16"	Q2000-S	18.5	3.94	13.39	1.97	3.8	20
18"	Q4000-S	19.29	5.04	16.07	2.15	5.41	20
20"	Q4000-S	19.88	5.04	17.61	2.15	5.41	27
24"	Q6500-S	23.23	5.04	16.58	2.15	5.41	16

CLASS 300

SIZE	GEAR	A	B	C	D	E	HANDWHEEL DIAMETER (F)
2"	Q200-S	6.69	2.52	5.16	1.12	1.71	4
3"	Q200-S	7.99	2.52	5.16	1.12	1.71	4
4"	Q200-S	8.46	2.52	5.16	1.12	1.71	4
5"	Q400-S	9.25	2.94	7.12	1.34	2.07	4
6"	Q400-S	9.65	2.94	7.28	1.34	2.07	6
8"	Q800-S	11.02	3.56	10.73	1.67	2.71	12
10"	Q800-S	13.58	3.56	11.71	1.67	2.71	16
12"	Q2000-S	15.35	3.94	12.64	1.97	3.8	16
14"	Q4000-S	16.93	5.04	16.07	2.15	5.41	20
16"	Q4000-S	18.5	5.04	17.61	2.15	5.41	27
18"	Q4000-S	19.88	5.04	17.61	2.15	5.41	27
20"	Q6500-S	21.46	5.04	16.58	2.15	5.41	16
24"	Q6500-S	24.76	5.04	17.33	2.15	5.41	20



STANDARD 10 POSITION HAND LEVER AND PLATE

CLASS 150

SIZE	A	B	C
2"	6.69	1.02	11
3"	7.99	1.02	17
4"	8.46	1.02	17
5"	9.25	1.02	17
6"	9.65	1.14	17
8"	10.63	1.14	22

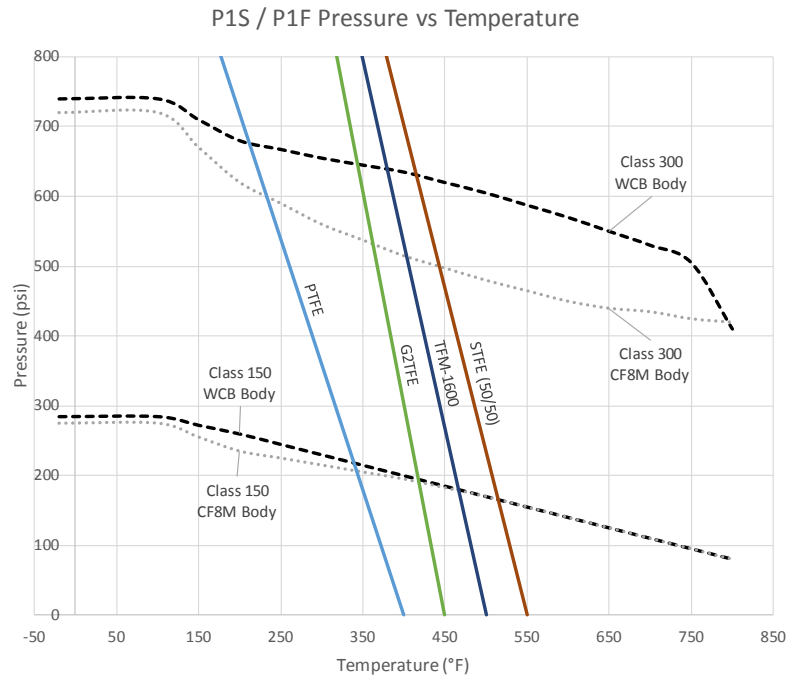
CLASS 300

SIZE	A	B	C
2"	6.69	1.02	11
3"	7.99	1.02	17
4"	8.46	1.02	17
5"	9.25	1.02	17
6"	9.65	1.14	17
8"	11.02	1.14	22

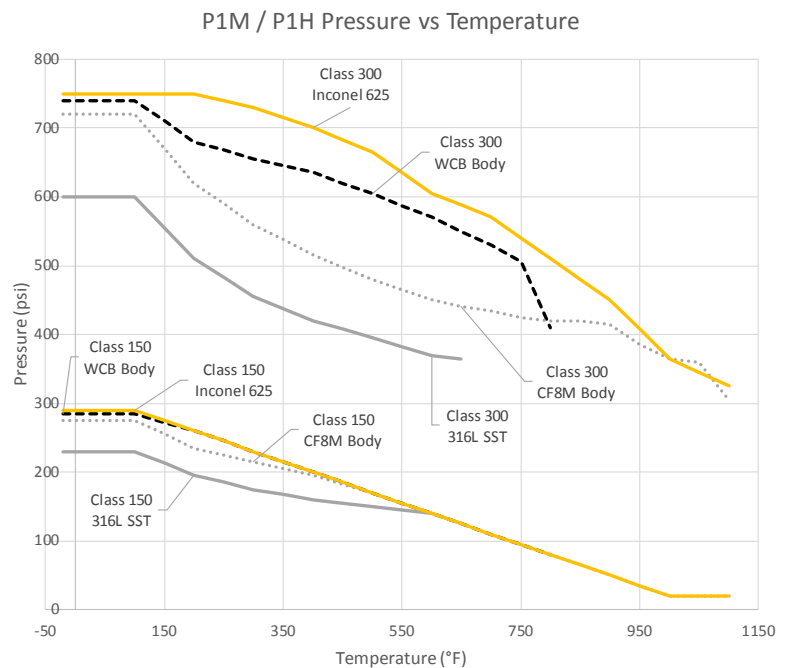
Pressure Temperatures for **POWER-SEAL** High Performance Butterfly Valves

Component Ratings

Component	Material	Temperature (°F)
SEATS - SOFT	PTFE	-50 to 400° F
	G2TFE	-50 to 450° F
	50/50 STFE	-50 to 550° F
	TFM-1600	-75 to 500° F
SEATS - FIRESAFE	G2TFE/316L- HCr	-50 to 450° F
SEATS - METAL	Inconel 625	-100 to 1100° F
	316L SST	-100 to 660° F
STEM PACKING	Graphite	-100 to 1100° F
	PTFE V-Ring	-100 to 400° F
STEM	K-Monel	-100 to 1100° F
	17-4 PH®	-100 to 1100° F
	XM-19	-100 to 1100° F
BEARINGS	PTFE Composite	-50 to 500° F
	Bronze	-100 to 650° F
	Carbon Graphite	-100 to 1100° F
DISC	316/HCr	-100 to 660° F
	316/Stellite 6	-100 to 1100° F



Temp. (°F)	BODY RATINGS				METAL SEAT RATINGS			
	Pressure (psi)							
	Class 150		Class 300		Class 150		Class 300	
	WCB	CF8M	WCB	CF8M	316L SST	Inconel 625	316L SST	Inconel 625
-20°	285	275	740	720	230	290	600	750
100°	285	275	740	720	230	290	600	750
150°	273	255	710	670	213	275	555	750
200°	260	235	680	620	195	260	510	750
250°	245	225	668	590	185	245	483	740
300°	230	215	655	560	175	230	455	730
350°	215	205	645	538	168	215	438	715
400°	200	195	635	515	160	200	420	700
450°	185	183	620	498	155	185	408	683
500°	170	170	605	480	150	170	395	665
550°	155	155	588	465	145	155	383	635
600°	140	140	570	450	140	140	370	605
650°	125	125	550	440	125	125	365	588
700°	110	110	530	435	-	110	-	570
750°	95	95	505	425	-	95	-	540
800°	80	80	410	420	-	80	-	510
850°	-	65	-	420	-	65	-	480
900°	-	50	-	415	-	50	-	450
950°	-	35	-	385	-	35	-	408
1000°	-	20	-	365	-	20	-	365
1050°	-	20	-	360	-	20	-	345
1100°	-	20	-	305	-	20	-	325



- At temperature, the maximum pressure for the valve is limited by either the valve body or the valve seat, whichever is lower.
- Reference ASME B16.34 for metal working pressures at temperature.

Part Number Matrix for **POWER-SEAL** High Performance Butterfly Valves

1 Valve Series	
P1S	Power-Seal Soft seat
P1F	Power-Seal Firesafe Seat
P1M	Power-Seal Metal seat
P1H	Power-Seal Metal Seat High Temp

2 Body Material			
<i>blank</i>	(No Designation)= Stainless Steel (SST) Body		
C	Carbon Steel	5	LCB
A	Alloy 20	N	Inconel 625
M	Monel	B	Aluminum-Bronze
D	CD3MN Duplex SST	*	Other
W	Hastelloy C-276		

3 End Connection	
L1	Class 150 Lug
L3	Class 300 Lug
W1	Class 150 Wafer with Guide Holes
W3	Class 300 Wafer with Guide Holes

4 Valve Size			
0200	2"	2000	20"
0250	2-1/2"	2400	24"
0300	3"	2600	26"
0400	4"	2800	28"
0500	5"	3000	30"
0600	6"	3200	32"
0800	8"	3600	36"
1000	10"	4000	40"
1200	12"	4400	44"
1400	14"	4800	48"
1600	16"		
1800	18"		

5 Seat Material			
P	PTFE	6	316L SST <i>(Standard on P1M)</i>
G	G2TFE <i>(Standard on P1S)</i>	7	Inconel 625 <i>(Standard on P1H)</i>
S	50/50 STFE	F	G2TFE/ 316L SST <i>(Standard on P1F)</i>
T	TFM-1600		

6 Disc Material/Style	
S	316 SST <i>(Standard on P1S)</i>
X	Same as Body Material
7	316 SST/Stellite <i>(Standard on P1H)</i>
6	316 SST/HCr <i>(Standard on P1M & P1F)</i>

7 Stem Bearing	
R	PTFE Composite <i>(Standard on P1S)</i>
C	Carbon Graphite <i>(Standard on P1M/P1H & P1F)</i>
B	Bronze
*	Other

8 Operator Designation	
X	Bare Stem
H	Standard 10 point Handle
G	Gear Operator

9 Stem	
A	17-4 PH® Stem <i>(Standard)</i>
B	XM-19
*	Other

10 Packing (Live Loaded)	
G	Graphite <i>(Standard on P1F, P1M, & P1H)</i>
P	PTFE V-Ring <i>(Standard on P1S)</i>
V	PTFE Inverted V-Ring (Vacuum Service)
D	PTFE Pressure & Vacuum V-Ring

How To Order **POWER-SEAL** High Performance Butterfly Valves

How To Order Manual Power-Seal High Performance Butterfly Valves	
1 2	3 - 4 - 5 6 7 - 8 9 10
↓ ↓	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
P1SC	- W1 - 0300 - GS R - X A P

How To Order Automated Power-Seal High Performance Butterfly Valves	
1 2	3 - 4 - 5 6 7 - 8 9 10/ actuator size - options
↓ ↓	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
P1SC	- W1 - 0300 - GS R - X A P/ 2R5S - XX
(see Actuator Size Legend & Automated Accessories)	

Pneumatic Accessories



Stainless Steel Actuators



Solenoids, Positioners, Limit Switches, Lock Up Valves, Declutchable Gear Operators, Speed Controls, Quick Exhaust Valves and more

See product brochures for Rack & Pinion, Heavy Duty (THD) and other pneumatic automation options

Electric Actuator Options & Features



Explosion Proof

Options Specification

- Voltage Options: 110VAC, 220 VAC, 24 VDC/VAC, 12 VDC, 440 VAC, 460 VAC, 480 VAC
- Potentiometer unit (1K)
- (TMC) Electronic Modulating Card
- 4-20mA, 1-5mA, 0-10 VDC, 1-5 VDC, 0-135 Ohm Command Signal
- Current position transmitter (Output 4~20mA DC)
- Multi (24 VAC/DC)
- DC motor (24 VDC)
- Local control unit: remote/local/stop and open/close



TMC3 Electronic Modulating Card

- Auto Calibration for easy setup
- 10 Bit Microprocessor controller for precise positioning and control
- 4-20mA, 1-5mA, 0-10 VDC, 1-5 VDC, 0-135 Ohm or Command Signal Potentiometer
- TMC3 can be programmed to Fail in Place, Fail CW, or Fail CCW on loss of command signal
- Characterized Control-Linear, quick opening (Square root), or Equal Percentage (Square)
- OnBoard 4-20 mA transmitter (optional)
- AS-i Network Card
- Boiler Feedwater Application

See electric actuator product brochures for ratings and other options



POWER-SEAL

Series P1S / P1F / P1M / P1H

**Manual and Automated
High Performance Butterfly Valves**
ANSI/ASME Class 150 and 300




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