



VBFLY-CLH-CWH

High Performance Butterfly Valves

Available with Soft Seating, Metal Seating & Fire Safe Design



20" Lug



6" Wafer

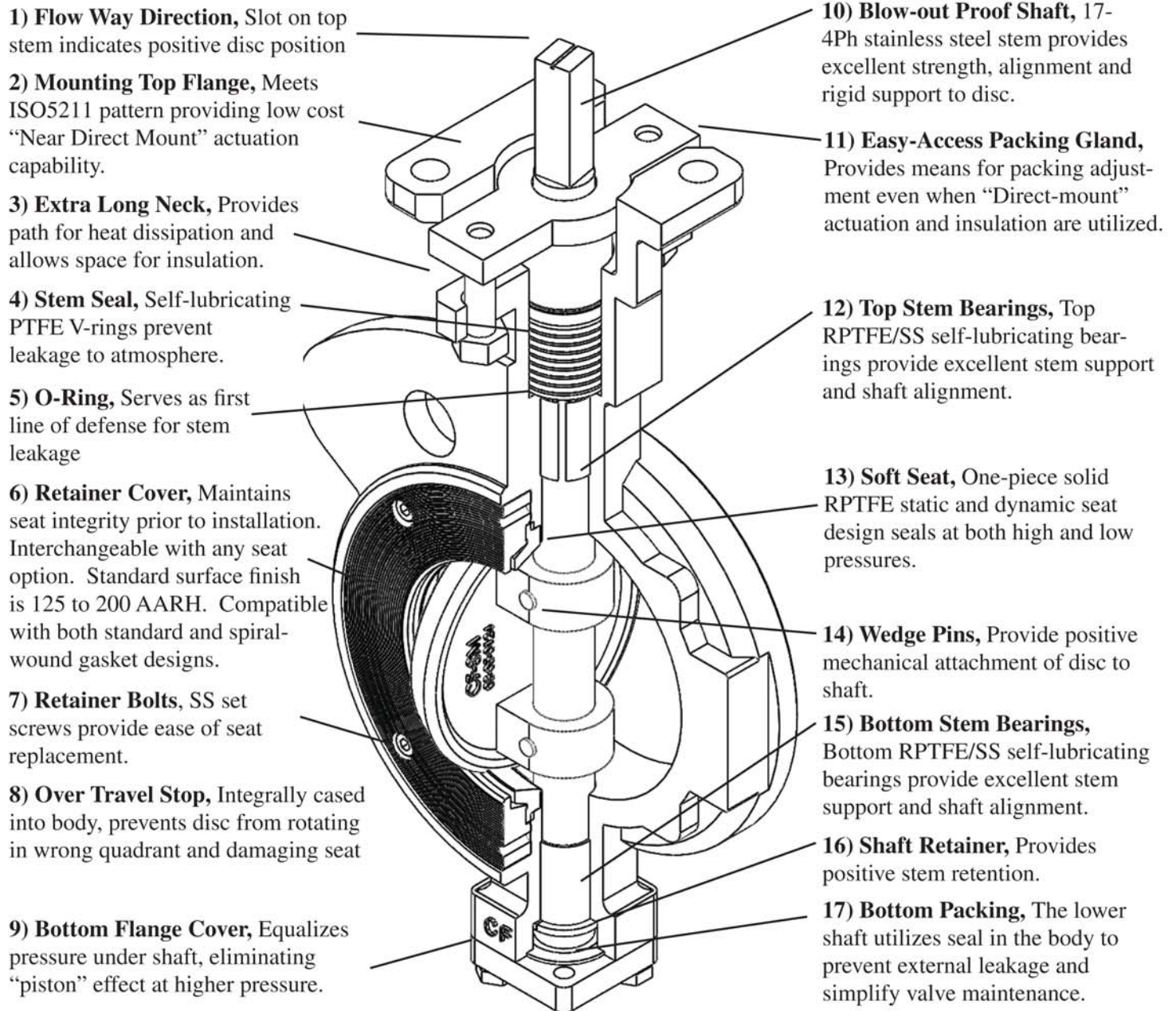
Size Range

2" thru 24", optional thru 120"

ANSI Class 150/300/600/900

VALVE DESIGN FEATURES

Stayflow's high performance butterfly was introduced in 1987. The Stayflow valve is the result of years of experience in the design and manufacture of ball and butterfly valves. All valves are leak tested per API 598 standards, and tagged per MSS-SP25 & API 609B specifications.



Stayflow Series High Performance Butterfly Valves, serving Multi-National end users in a wide range of applications in many industries including:

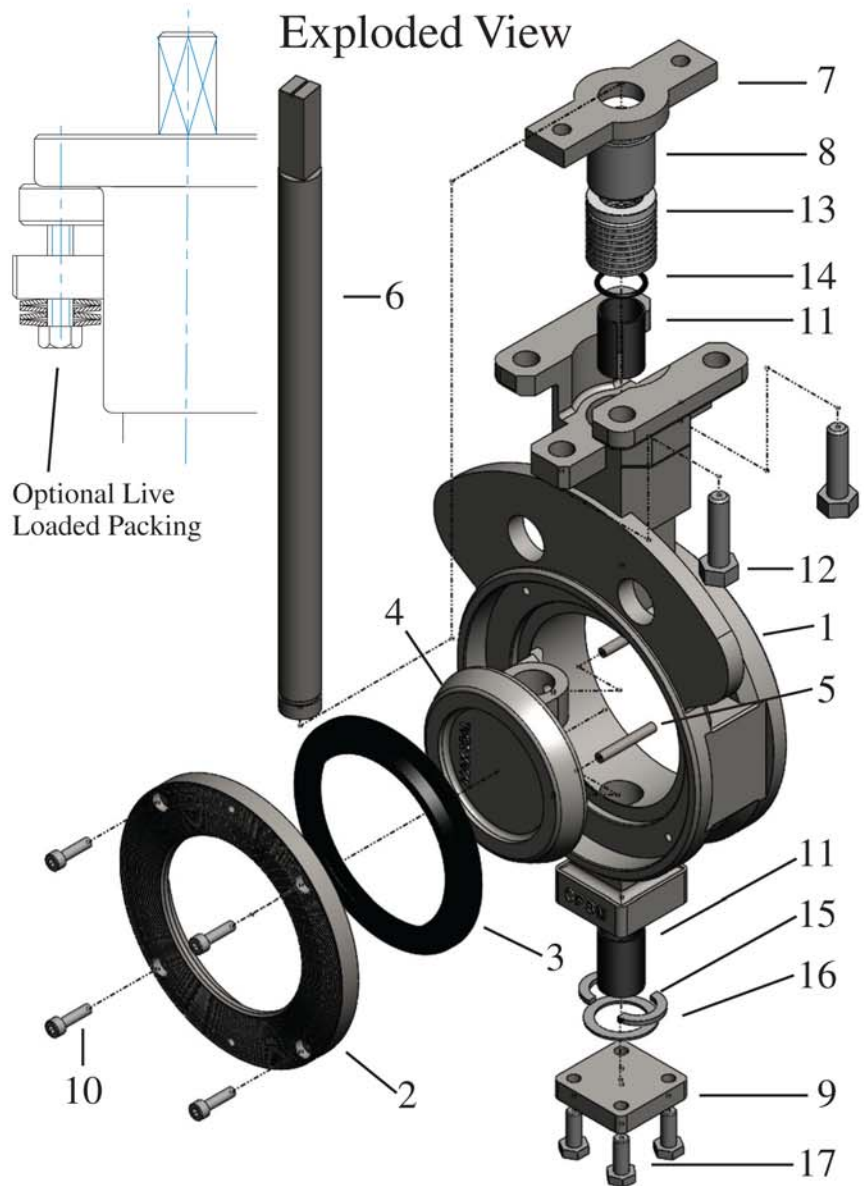
- | | | |
|----------------------------|---------------------------|--------------------------------------|
| 1 Chemical & petrochemical | 5 Food industries | 9 Steel & iron industries |
| 2 Power generation plants | 6 LNG, HRSG industries | 10 Pulp & paper plants |
| 3 Ship building industries | 7 Oil refinery industries | 11 Coal & mining industries |
| 4 Fiber industries | 8 Desalination industries | 12 Higher Pressure HVAC Applications |

Specific descriptions, dimensions and construction details illustrated may vary slightly from this bulletin. They are for general use only. We reserve the right to revise or modify product design without prior notice.

BUTTERFLY VALVES - DOUBLE OFFSET / ECCENTRIC DESIGN

STANDARD PARTS LIST

No	Part	Qty	Material	Code
1	Valve Body	1	Carbon Steel A216 Gr. WCB	CS
			SS304 A351 Gr. CF8	S4
			SS316 A351 Gr. CF8M	SS
			Alloy 20 A351 Gr. CN7M	A2
			Al-Bronze B148 C95800	AB
2	Seat Retainer	1	Ductile Iron ASTM A395	DI
			Carbon Steel A216 Gr. WCB	CS
			SS304 A351 Gr. CF8	S4
			SS316 A351 Gr. CF8M	SS
3	Seat	1	Al-Bronze B148 C95800	AB
			PTFE	T
			TFM	F
			RPTFE	R
			Fire Safe Metal	FS M
4	Disc	1	SS304 A351 Gr. CF8	S4
			SS316 A351 Gr. CF8M	SS
			Alloy 20 A351 Gr. CN7M	A2
			Monel 400 M35-1	M4
5	Disc Pin	2	SS304 A240 Tp 304	S4
			SS316 A240 Tp 316	SS
			Monel K500	M5
6	Stem	1	SS304 A276 Tp 304	S4
			SS316 A276 Tp 316	SS
			Monel K500	M5
			17-4PH A564 Gr. 630	S7
7	Packing Gland	1	SS400 A283-C	CS
			SS304 A351 Gr. CF8	S4
8	Packing Follower	1	SS400 A283-C	CS
			SS304 A351 Gr. CF8	S4
9	Bottom Cover	1	SS400 A283-C	CS
			SS304 A240 Tp 304	S4
			SS316 A240 Tp 316	S6
10	Retainer Bolt	1 set	SS304 A193 Gr. B8	S4
			SS316 A193 Gr. B8M	SS
			Stainless Steel	SS
11	Stem Bearing	2	SPCC	SP
			Stainless Steel & RTFE	SR
			Stainless Steel	SS
12	Gland Bolt	2	SS304 A193 Gr. B8	S4
			Stainless Steel	SS
13	Stem Packing	1 set	PTFE	T
			Graphite	G
14	Packing Retainer	1	Viton	V
			Stainless Steel	SS
15	Shaft Retainer	1	SS316 A276 Tp 316	SS
16	Bottom Packing	1	PTFE	T
			Graphite	G
17	Bottom Bolt	4	SS304 A193 Gr. B8	S4



* Special material can be produced to meet customer's special requirements.

HIGH PERFORMANCE BUTTERFLY VALVE MODEL NUMBER CODES

Model	Pressure Class		Body Material		Disc Material		Stem Material		Seat Material		Stem Seal		Operator	
Wafer - BW Lug - BL	150	630	316SS	SS	316SS	SS	316SS	SS	RPTFE	R	PTFE	T	Lever	L
	300	730	WCB	CS	304SS	S4	304SS	S4	PTFE	T	GRAPHITE	G	Gear	G
	600	830	Ductile Iron	DI			17-4PH	S7	Metal	M			Bare Stem	N
									Fire Safe	F				

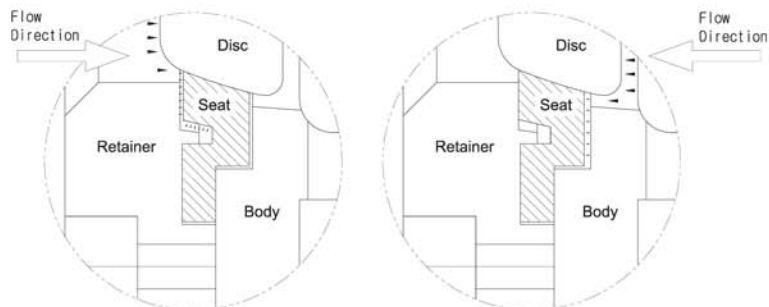
ORDERING EXAMPLE BY PART NUMBER

Wafer	Class 150	316SS	316SS	17-4PH	RPTFE	Graphite	Lever
Model	Pressure Class	Body	Disc	Stem	Seat	Stem Seal	Operator
BW	- 630	- SS	- SS	- S7	- R	- G	- L

SEATS / SPECIFICATIONS / TECH DATA

Structural Characteristics of the Stayflow High Performance Butterfly Valve Seat Design

Soft Seat High Performance Butterfly Valve



Seat material Maximum Working Temperature

PTFE-SEAT 190°C (375°F)

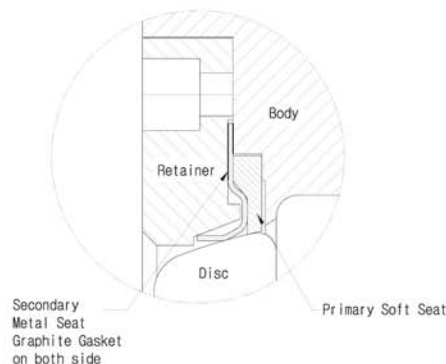
RPTFE-SEAT 230°C (446°F)

TFM-SEAT 246°C (475°F)

PEEK-SEAT 270°C (529°F)

UHMWPE-SEAT 82°C (180°F)

Fire-Safe Seat High Performance Butterfly Valve



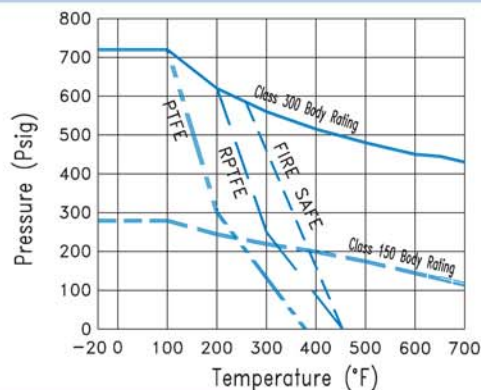
Seat material Maximum Working Temperature

SS316L*RPTFE 230°C (446°F)

FIRE-SAFE to API 607 5th Edition

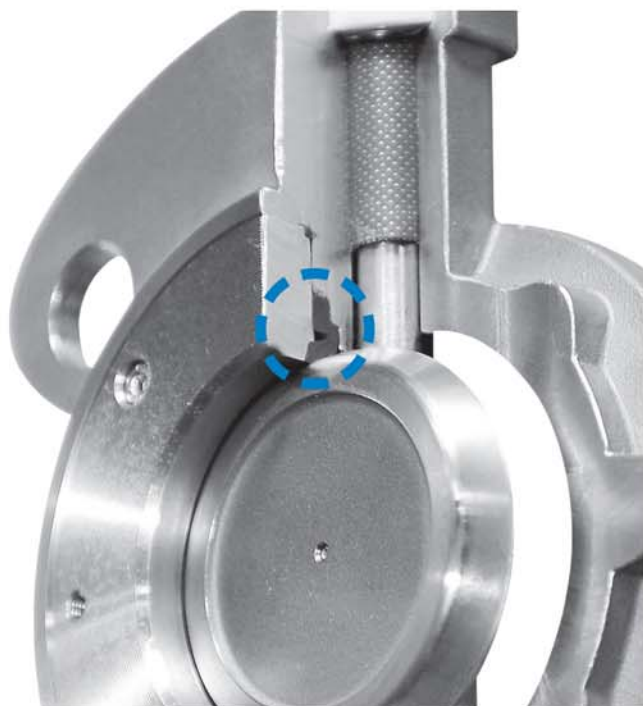
SEAT LEAKAGE - Leakage of soft seated version is ZERO

PRESSURE TEMPERATURE RATING:



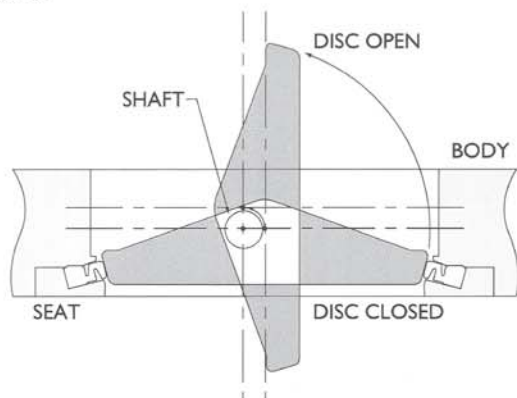
Steam Service

Stayflow standard valves are ideally suited for saturated steam applications to 120 psig steam (RPTFE seat). Carbon filled TFM seats and high temperature graphite stem packing can handle pressure up to 200 psig steam.



Eccentric Double Offset Design Seating

The double offset shaft/disc design ensures bi-directional sealing throughout the full pressure range of the valve. The cam-like action produced by the offset stem and disc, effectively lifts the disc off the seat during the initial opening of the valve, reducing seat wear and eliminating seat deformation at the top and bottom. When the disc is in the open position, there is no contact between the disc and seat. Operating torques are reduced and seat life is extended.



Vacuum Service

The drop tight sealing capabilities of Stayflow valves are excellent for vacuum service. Soft seated standard valves are suitable for vacuum service to 20 microns. Denote vacuum service on the order.

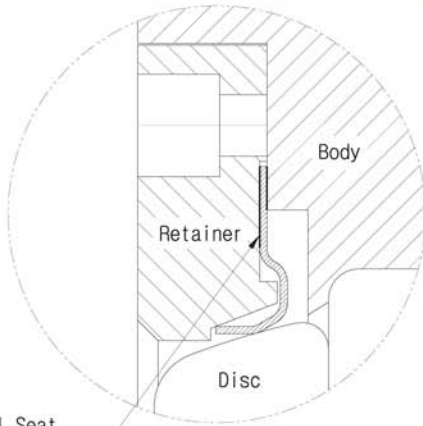
Dead End Service

Stayflow lug bodies for dead-end service are offered as standard in full ANSI Class 150 and 300.

SEVERE SERVICE-METAL SEATED VALVES

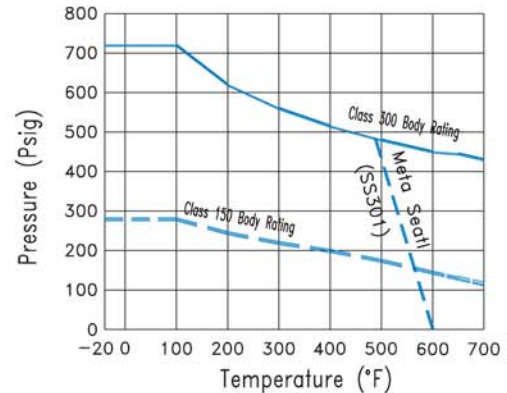
The Stayflow metal seated valves are designed to provide high performance service in abrasive, dirty and/or high temperature applications. Uniquely designed for reliable, tight shut-off-performance up to ANSI-FCI 70-2 Class V leakage criteria.

Metal Seat High Performance Butterfly Valve



Metal Seat
Graphite Gasket
on both sides

PRESSURE TEMPERATURE RATING:



Standard Specifications

- Body Style: Wafer, Lug
- Valve Size: 2"-40" (50-1000mm)
- Rating: ANSI Class 150, ANSI Class 300
- Applicable Flange Standard: ANSI B16.5
- Face to Face Dimensions: API 609, MSS SP68, ISO5752
- Actuator Mounting Flange: ISO 5211
- Valve Design: MSS SP-68
- Valve Design: API 609
- Valve Marking: MSS SP-25
- Valve Testing: API 598 Inspection and Testing
- Valve Testing: MSS SP-61 Testing of Steel Valves
- Valve Design: ANSI B16.34
- Valve Material: NACE MR-01-75
- Valve to have Official API Monogram
- Valve to API Specification Q1
- Valve to API ISO 9001:2000
- Valve to ISO/TS 29001

PRODUCT IDENTIFICATION:

=Stayflow=

Model #: _____
Trim: _____
Size: _____
Rating: _____
Body
Disc
Seat
Psi/CWP
Max-T
No: _____
Date: _____

www.stayflowproducts.com

Every Stayflow valve has a special identification tag attached to the valve body. Information includes valve figure number, the size and pressure class, the materials of construction, and the operating pressures and temperatures.

The metal tag also includes a serial number. The serial number is recorded by the Stayflow Quality Control Department along with the test results and material certification data, for individual traceability and certification of every valve produced.

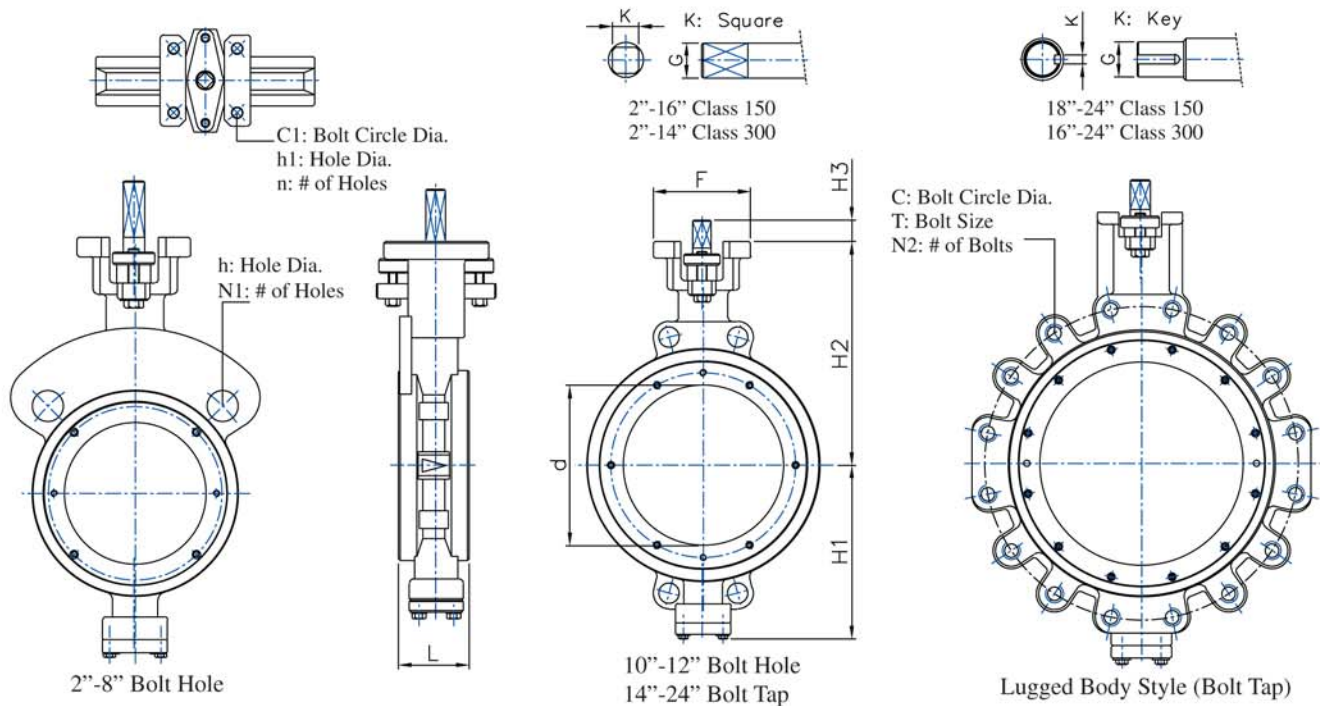
A wider selection of higher pressures & sizes reaching up to 120 inch, ANSI Class 600 & 900 are available on a special order basis.

Every Valve is Strength Tested

Shell tested to 150% of rated pressure with the disc open... hydrostatic seat tested for bi-directional positive shutoff without leakage at 110% of rated pressure. We also test for absence of leakage into valve shaft bearing areas. Only valves meeting a positive shut-off standard are approved for shipment.



DIMENSIONAL DATA:



Note 1. Face to face Dimension: comply to API 609 Category B, ISO-5752 Short
2. End Connection Flange Dimension: comply to ANSI-B16.47

C/F Factory for larger sizes from 28" thru 120"

ANSI Class 150 High Performance Butterfly Valves

			H1		H2						Lug / Wafer Drilling					Top Plate Drilling				Weight Lb	
Size	d	L	Wafer	Lug	Wafer	Lug	H3	F	G	K	C	h	T	N1	N2	C1	n	h1	ISO	Wafer	lug
2"	1.93	1.69	3.31	3.31	4.84	4.84	1.38	2.76	0.512	0.433	4.75	0.79	5/8-11	2	4	2.76	4	0.39	F07	6.0	11.5
2.5"	2.44	1.81	3.66	3.66	5.67	5.67	1.38	2.76	0.512	0.433	5.50	0.79	5/8-11	2	4	2.76	4	0.39	F07	8.5	16.0
3"	2.87	1.89	4.13	4.06	6.06	6.06	1.38	2.76	0.630	0.433	6.00	0.79	5/8-11	2	4	2.76	4	0.39	F07	10.5	20.5
4"	3.74	2.13	4.65	4.57	6.85	6.85	1.38	2.76	0.630	0.433	7.50	0.79	5/8-11	2	8	2.76	4	0.39	F07	14.0	26.5
5"	4.72	2.20	5.39	5.67	7.68	7.36	1.38	2.76	0.748	0.551	8.50	0.91	3/4-10	2	8	2.76	4	0.39	F07	C/F	C/F
6"	5.55	2.24	6.14	5.98	8.50	8.66	1.38	2.76	0.866	0.669	9.50	0.91	3/4-10	2	8	2.76	4	0.39	F07	27.5	39.5
8"	7.64	2.52	7.28	6.97	9.84	10.04	1.97	4.53	1.102	0.866	11.75	0.91	3/4-10	2	8	4.02	4	0.47	F10	46.0	62.0
10"	9.41	2.83	9.17	8.98	11.22	11.14	1.97	4.53	1.181	0.866	14.25	1.02	7/8-9	4	12	4.92	4	0.51	F12	73.5	100.5
12"	11.30	3.19	10.24	10.20	12.80	12.76	1.97	5.12	1.378	1.063	17.00	1.02	7/8-9	4	12	4.92	4	0.59	F12	106.5	157.5
14"	13.03	3.62	11.65	12.05	14.57	14.57	1.97	5.12	1.575	1.063	18.75	1.14	1-8	4	12	4.92	4	0.59	F12	C/F	178.0
16"	15.08	4.02	13.35	13.35	16.54	16.54	2.17	6.10	1.772	1.417	21.25	1.14	1-8	4	16	5.51	4	0.75	F14	C/F	C/F
18"	17.09	4.49	14.29	14.29	17.52	17.52	3.15	6.50	1.969	0.63x0.39	22.75	1-1/8-8		4	16	6.50	4	0.91	F16	C/F	C/F
20"	18.98	5.00	16.46	16.46	19.69	19.29	3.15	6.50	2.165	0.63x0.39	25.00	1-1/8-8		4	20	6.50	4	0.91	F16	C/F	C/F
22"	20.47	6.06	17.05	-	20.87	-	3.15	9.06	2.362	0.71x0.43	27.25	1-1/4-8		4	20	10.0	8	0.75	F25	C/F	C/F
24"	22.83	6.06	18.43	18.43	22.64	21.85	4.33	9.84	2.559	0.79x0.47	29.50	1-1/4-8		6	20	10.0	8	0.75	F25	C/F	C/F

Valve Weights are for Bare Stem Valves

ANSI Class 300 High Performance Butterfly Valves

			H1		H2							Lug / Wafer Drilling					Top Plate Drilling				Weight Lb	
Size	d	L	Wafer	Lug	Wafer	Lug	H3	F	G	K	C	h	T	N1	N2	C1	n	h1	ISO	Wafer	lug	
2"	1.93	1.69	3.31	3.39	4.84	4.84	1.38	2.76	0.512	0.433	5.00	0.79	5/8 - 11	2	8	2.76	4	0.39	F07	C/F	11.5	
2.5"	2.44	1.81	3.66	3.86	5.67	5.67	1.38	2.76	0.512	0.433	5.88	0.91	3/4 - 10	2	8	2.76	4	0.39	F07	C/F	16.0	
3"	2.87	1.89	4.13	4.13	6.06	6.06	1.38	2.76	0.630	0.433	6.62	0.91	5/8 - 11	2	8	2.76	4	0.39	F07	C/F	20.5	
4"	3.74	2.13	4.65	4.72	6.85	6.85	1.38	2.76	0.630	0.433	7.88	0.91	5/8 - 11	2	8	2.76	4	0.39	F07	C/F	26.5	
5"	4.72	2.20	5.39	5.67	7.68	7.36	1.38	2.76	0.748	0.551	9.25	0.91	3/4 - 10	2	8	2.76	4	0.39	F07	C/F	C/F	
6"	5.55	2.32	6.14	6.89	8.50	9.06	1.38	2.76	0.866	0.669	10.63	0.91	3/4 - 10	2	12	2.76	4	0.39	F07	C/F	52	
8"	7.64	2.87	7.83	7.83	10.63	10.63	1.97	4.53	1.181	0.866	13.00	1.02	7/8 - 9	2	12	4.92	4	0.51	F12	C/F	94.5	
10"	9.41	3.27	9.49	9.61	12.28	12.28	1.97	5.12	1.378	1.063	15.25	1 - 8		4	16	4.92	4	0.51	F12	C/F	145	
12"	11.30	3.62	10.83	10.83	14.29	14.29	1.97	6.50	1.772	1.417	17.75	1-1/8 - 8		4	16	5.51	4	0.75	F14	C/F	228.5	
14"	13.03	4.61	12.72	12.72	15.55	15.55	2.17	6.69	1.969	0.63x0.39	20.25	1-1/8 - 8		4	20	6.50	4	0.91	F16	C/F	C/F	
16"	15.08	5.24	13.86	13.86	17.32	17.32	3.15	6.50	2.165	0.63x0.39	22.50	1 - 8		4	20	6.50	4	0.91	F16	C/F	C/F	
18"	17.09	5.87	15.31	15.31	19.09	19.09	3.15	7.09	2.559	0.79x0.47	24.75	1-1/8 - 8		4	24	6.50	4	0.91	F16	C/F	C/F	
20"	18.98	6.26	16.46	16.46	21.26	21.26	3.15	11.81	2.756	0.79x0.47	27.00	1-1/8 - 8		4	24	10.0	8	0.75	F25	C/F	C/F	
24"	22.83	7.13	19.02	-	24.61	-	4.33	11.81	3.346	0.98x0.55	32.00	1-1/4 - 8		4	24	10.0	8	0.75	F25	C/F	C/F	

Valve Weights are for Bare Stem Valves

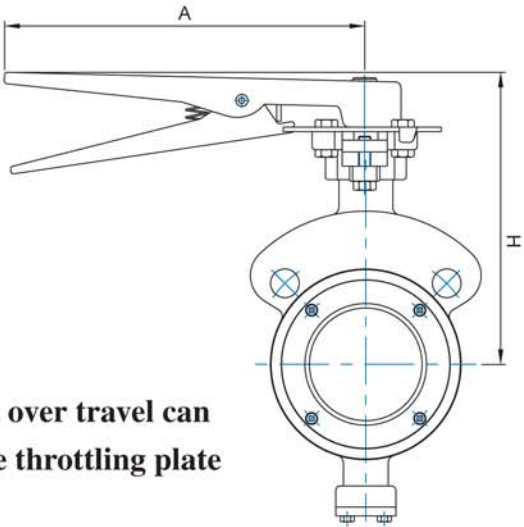
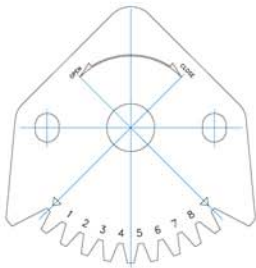
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HANDLE AND GEAR OPERATOR DIMENSIONS



Latch Lock Handle
10 degree Increments with off stop to prevent over travel can also be used with a padlock. Optional: infinite throttling plate



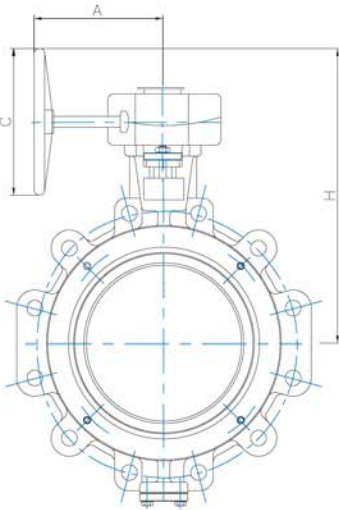
LOCK-LEVER TYPE HANDLE

SIZE	2"	2.5"	3"	4"	5"	6"	8" and Larger
H	6.26	7.09	7.48	8.27	9.02	9.80	Gear Operator Is Recommended
A	8.78	8.78	8.78	8.78	10.35	10.35	

WORM GEAR TYPE OPERATOR (ANSI CLASS 150)

SIZE	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"
H	8.50	9.33	9.72	10.51	12.36	13.15	16.34	17.32	20.59	21.54	23.90
C	4.72	4.72	4.72	4.72	6.89	6.89	9.84	9.84	13.78	13.78	13.78
A	4.65	4.65	4.65	4.65	8.66	8.66	9.06	9.06	11.02	11.02	11.02

SIZE	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"
H	25.59	26.77	28.54	39.13	37.80	38.19	44.09	46.06	50.39	51.57	55.51
C	13.78	13.78	13.78	13.78	23.62	23.62	25.59	25.59	27.56	27.56	27.56
A	11.81	11.81	11.81	11.81	12.60	12.60	12.60	12.60	15.75	15.75	15.75



Stayflow offers a broad line of automation systems for precise proportioning or on-off control in either pneumatic or electrically powered units.



Actuator mounting flange - universally designed to mount valve automation equipment complying to ISO 5211. Sizes 2" thru 14" Class 150 & 2" thru 12" Class 300 can be directly mounted, larger sizes require a mounting bracket. For direct mount option, a mounting plate spacer is usually needed to compensate for the longer shaft of butterfly valves.



VALVE FLOW COEFFICIENTS & TECHNICAL DATA

STAYFLOW SERIES CV VALUE, CLASS 150

SIZE		Angle of Opening									
INCH	MM	10°	20°	30°	40°	50°	60°	70°	80°	90°	
2"	50	2	5	13	21	31	46	65	80	85	
2 1/2"	65	4	8	21	35	52	76	106	130	140	
3"	80	6	15	36	61	89	120	153	170	178	
4"	100	14	35	70	107	170	258	320	360	374	
5"	125	22	50	106	177	263	394	545	685	768	
6"	150	40	100	165	265	405	605	815	980	1060	
8"	200	65	160	295	505	810	1140	1605	1980	2120	
10"	250	101	280	449	742	1131	1700	2315	3105	3340	
12"	300	152	410	667	1091	1661	2545	3619	4450	4850	
14"	350	211	584	900	1483	2167	3167	4511	5665	6344	
16"	400	271	725	1199	1967	2939	4215	6128	7350	7980	
18"	450	326	779	1401	2174	3520	5105	7325	9478	10275	
20"	500	412	1045	1861	3070	4606	6717	9499	11905	13050	
24"	600	624	1283	2821	4634	7004	10267	14297	17500	18896	
26"	650	788	1830	3535	5757	8686	12827	17250	22500	23850	
28"	700	667	2100	4010	6555	9807	14403	19800	24500	28081	
30"	750	677	2500	4737	7444	11166	15902	22491	29850	32135	
32"	800	1162	3010	5757	9494	14140	21109	27500	34050	38430	
36"	900	1111	3700	7777	12221	18332	26109	35329	43500	48550	
40"	1000	1414	4500	9598	15554	23331	33200	43900	55000	61000	
Pressure Recovery Factor FL		0.88	0.85	0.82	0.80	0.74	0.68	0.61	0.60	0.59	

STAYFLOW SERIES TORQUE VALUE, CLASS 150

SIZE		Soft Seated				Metal Seated			
INCH	MM	70 psi	150 psi	210 psi	285 psi	70 psi	150 psi	210 psi	285 psi
2"	50	218	244	261	270	435	479	487	496
2 1/2"	65	318	341	365	400	636	671	682	735
3"	80	387	429	456	525	787	829	856	927
4"	100	458	536	615	720	1008	1099	1151	1193
5"	125	785	882	962	1250	1458	1634	1746	2067
6"	150	978	1215	1417	1535	1890	2007	2125	2262
8"	200	1327	1857	1960	2270	2535	2786	3095	3417
10"	250	2099	2657	3200	3700	3599	4199	4956	5549
12"	300	2918	3824	4729	5635	4528	5837	7144	8375
14"	350	4325	5610	7165	9100	7913	10385	12858	13813
16"	400	5624	7652	9734	12775	9464	13248	15614	21523
18"	450	8130	10904	13356	17350	13380	17846	21811	25062
20"	500	10022	15818	17182	24000	17454	22909	29454	37028
24"	600	15195	20894	26117	31340	23268	30391	37513	47009

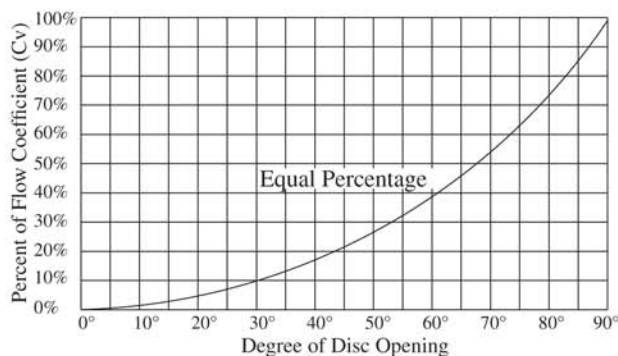
STAYFLOW SERIES TORQUE VALUE, Class 300

SIZE		Soft Seated				Metal Seated			
INCH	MM	150 psi	350 psi	600 psi	740 psi	150 psi	350 psi	600 psi	740 psi
2"	50	353	444	466	478	671	727	773	784
2 1/2"	65	444	554	596	610	846	915	970	1025
3"	80	475	601	654	685	894	1006	1048	1160
4"	100	674	980	1072	1180	1379	1608	1900	2007
5"	125	975	1388	1618	1800	1866	2229	2543	2725
6"	150	1138	1611	1862	1965	1891	2438	2777	2999
8"	200	2055	2805	3278	3538	3309	4533	5266	5511
10"	250	2888	4470	5282	5892	4571	6965	7952	8489
12"	300	3992	6666	8039	8627	6092	12604	15327	17856
14"	350	5891	11577	14472	15925	10136	17366	22190	24119
16"	400	8847	13447	20323	22356	14227	25404	33534	35566
18"	450	11749	16774	27769	29904	19225	36313	48060	52874
20"	500	18577	33119	39141	42152	26872	53744	72938	79336
24"	600	24193	41399	51232	54845	35190	65980	89074	98970

STAYFLOW SERIES CV VALUE, CLASS 300

SIZE		Angle of Opening									
INCH	MM	10°	20°	30°	40°	50°	60°	70°	80°	90°	
2"	50	2	5	13	21	31	46	65	80	85	
2 1/2"	65	4	8	21	35	52	76	106	130	140	
3"	80	6	15	36	61	89	120	153	170	178	
4"	100	14	35	70	107	170	258	320	360	374	
5"	125	22	50	106	177	263	394	545	685	768	
6"	150	40	100	165	265	405	605	815	980	1060	
8"	200	61	112	268	444	672	990	1364	1750	1919	
10"	250	91	180	394	651	990	1485	2005	2650	2828	
12"	300	131	255	581	954	1449	2222	2985	3755	4085	
14"	350	182	330	778	1278	1869	2732	3889	4750	5205	
16"	400	237	430	1066	1747	2611	3742	5439	6400	7105	
18"	450	323	600	1389	2192	3353	5050	7050	8650	9350	
20"	500	404	780	1818	3000	4505	6565	9382	11035	12100	
24"	600	611	1200	2757	4530	6848	10039	13978	17080	18200	
Pressure Recovery Factor FL		0.88	0.85	0.82	0.80	0.74	0.68	0.61	0.60	0.59	

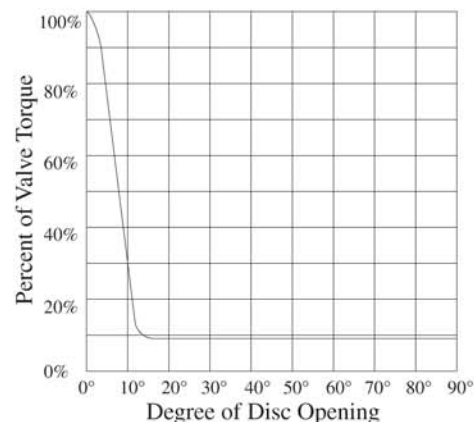
Flow Data Rated Cv



The volume of water in United States gallons per minute that will pass through a given valve opening with a pressure drop of 1 pound per square inch. (water at temp = 60 deg.f)

Valve Torque Vs Degree of Disc Opening

The torque in the table above is rated for maximum pressure drop when valve is in the closed position. Butterfly valve torque varies from full close to full open. It generally follows as indicated in the chart on the right.



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