

- 1 ISO 5211 Top Flange.
- 2 In addition to durable, standard V-ring packing, you can also choose from optional, graphite high-temperature packing or emissions control design.
- 3 Bi-Directional, Shut off performance.
- 4 Optional seat: Rubber, PTFE, RPTFE, Fire Safe PTFE.
- 5 Long life durability of double offset operating principle minimize seat wear & lower operating torques.
- 6 Positive sealing which is mechanically achieved and does not rely on line pressure assistant.

Industrial valves normally require wider temperature and pressure ranges, which conventional resilient seated butterfly valve can not comply, this have led to development of high performance butterfly valve Rhinoflex Double offset series butterfly valve is double offset design which has an advantage of light weight, compact design, cost effective and low operation torque .



## Products Range:

<b>Size:</b>	2" ~ 48"
<b>Rating:</b>	ANSI 150LB ~ 600LB
<b>BodyMaterials:</b>	Carbon steel,Stainless steel, Alloy Steel, Duplex steel
<b>Seat</b>	NBR,EPDM,VITON ,PTFE,RPTFE
<b>End Connection:</b>	Wafer, Lug, Double Flange

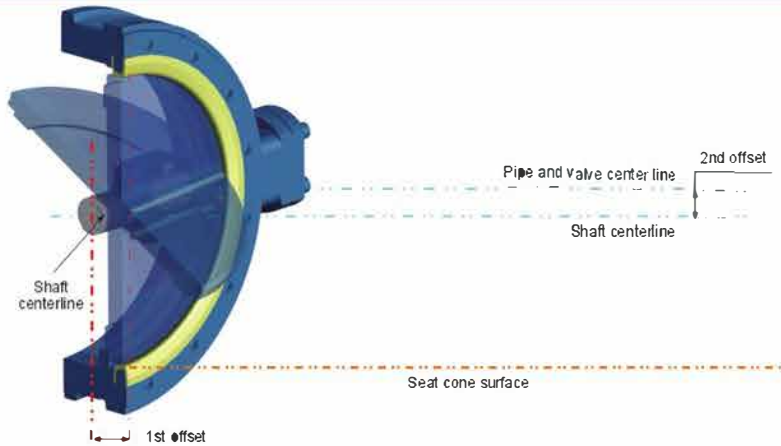
## Typical Application:

- Petrochemical plant
- Refinery
- Offshore platform
- Power plant
- LNG
- Steel Mills
- Commercial
- Pulp and Paper
- Hydrocarbon Processing
- Industrial



The double offset shaft and disc arrangement provides camming action to the disc which disengages from the seat at minimal rotation. This design minimizes wear points at the top and bottom of the seat typical with conventional butterfly valves.

# Design Feature



## Double Offset Frictionless Design

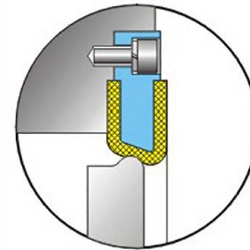
1<sup>st</sup> offset: Shaft is positioned downstream of the centerline of the seat.

2<sup>nd</sup> offset: Shaft is off center of the vertical axis of the seat.

## Seat Structure

### 1. Double offset Rubber Seat Butterfly Valve

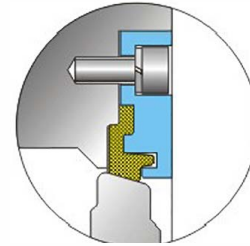
NBR seat are sulfured into the framework increasing the sealing performance. The disc surface is designed into sphere type to reducing contacting area and frictional force which extends the usage life. Valve seat can be replaced or recharge easily.



RUBBER

### 2. Double Offset PTFE Seat Butterfly Valve

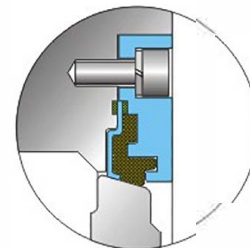
A surplus between PTFE Seat and Disc ensures the seal in low pressure. The force of medium always pushes seat contacting to sealing surface and becomes more reliable in high pressure. The disc surface is a sphere design to reduce frictional force, and the valve seat can be replaced easily.



PTFE/RPTFE

### 3. Double Offset Fire Safe PTFE Butterfly Valve

Fire Safe valve Seat with dual seal including primary PTFE seat insert and metal seat. In the event that the PTFE insert is destroyed, the secondary metal seat provides effective shut-off. The DOV fire safe certificate approved by Lloyd's Register.

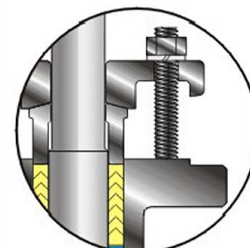


PTFE FIRE

## Shaft Retention

Externally retained, double blowout proof stem design as API 609.

External: Shaft is designed with an integral collar and blowout prevented by gland follower.



Externally retained

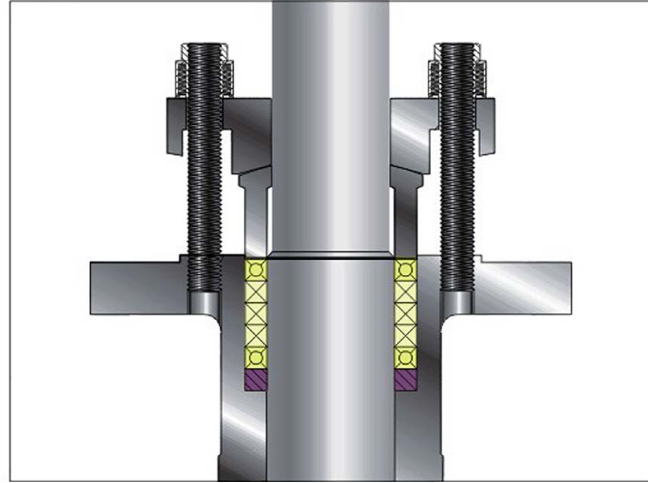
## Zero Leakage

Disc-Seat sealing is achieved by torque force evenly loaded on disc laminated seal edge, which has resilient function to assure Zero Leakage in both hydrostatic or air test per API 598.

## Low Emission Shaft Seal

Rhinoflex standard emission control is 20 PPM

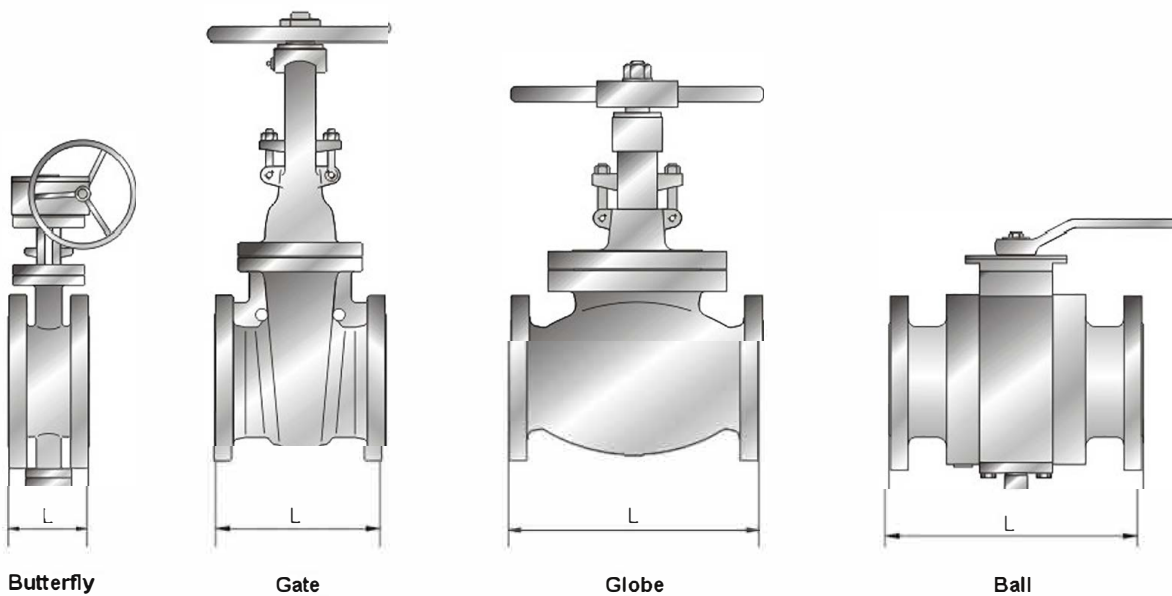
- Shaft is fully guided by shaft bearing & gland follower to avoid any side load due to line pressure thrust.
- The packing set is pre-compressed and is a combination of braided graphite rings top and bottom with die formed flexible graphite rings between.
- Controlled Ra0.4 ~ Ra0.8 finish on the shaft and Ra1.6 on the Stuffing box provides optimum packing and shaft sealing Performance.
- Optional Live Loaded gland flange is available to provide constant packing compression to reduce fugitive emission from shaft seal.
- Optional shaft seal design per Shell MESC 77/312 & TA-Luft is also available upon request.



## Compact & light Design

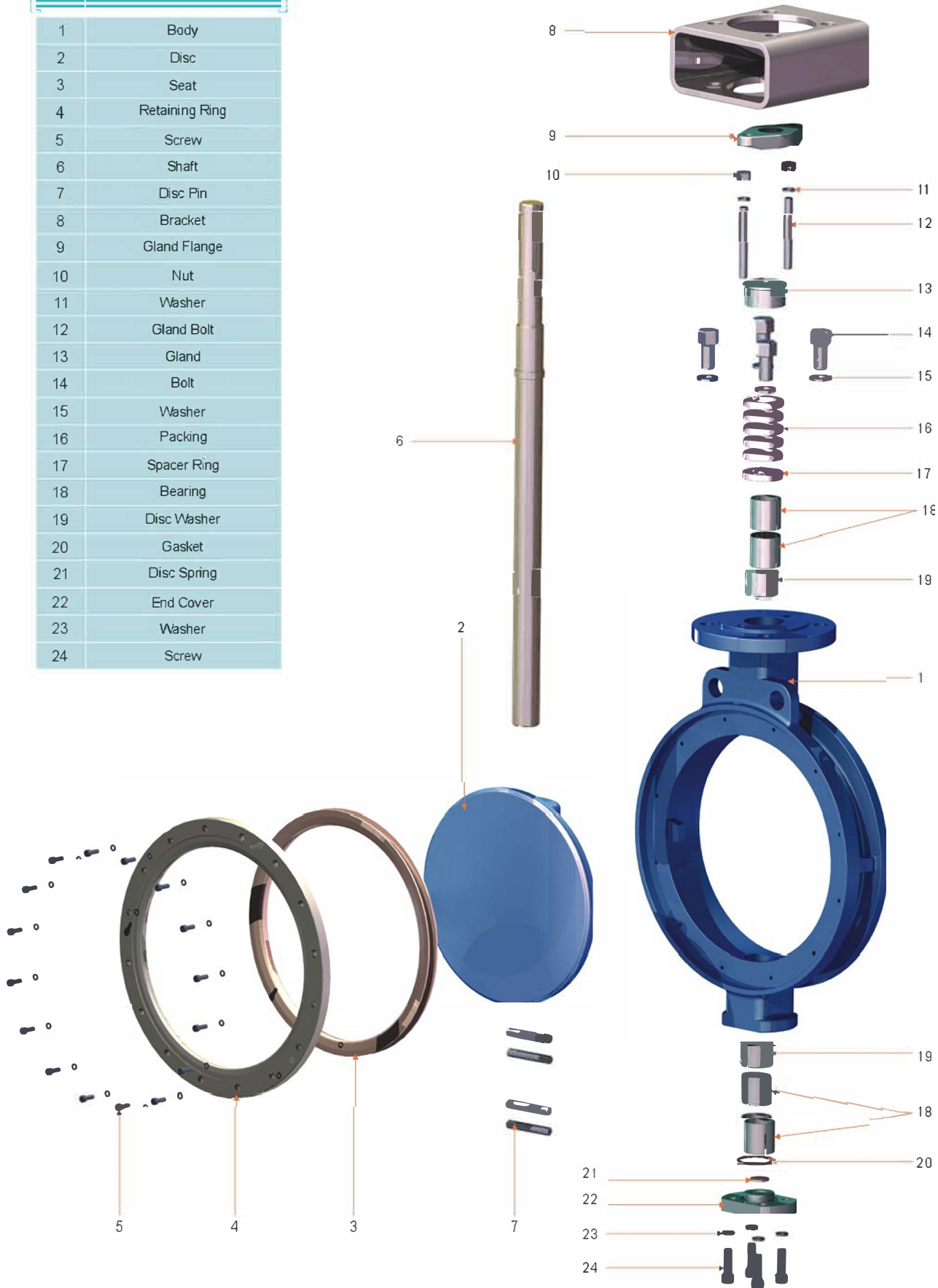
Rhinoflex Double offset butterfly valve is designed as API 609, due to its compact & light design, it is an economical substitute for gate, globe and ball valves. Below is a comparison table based on a Rhinoflex 6" valve

Class	150LB				300LB				600LB			
	Butterfly	Gate	Globe	Ball	Butterfly	Gate	Globe	Ball	Butterfly	Gate	Globe	Ball
Face to Face (mm)	140	267	406	394	140	403	445	403	210	559	559	559
Weight (kg)	21	77	100	190	34	144	168	211	87	234	284	248



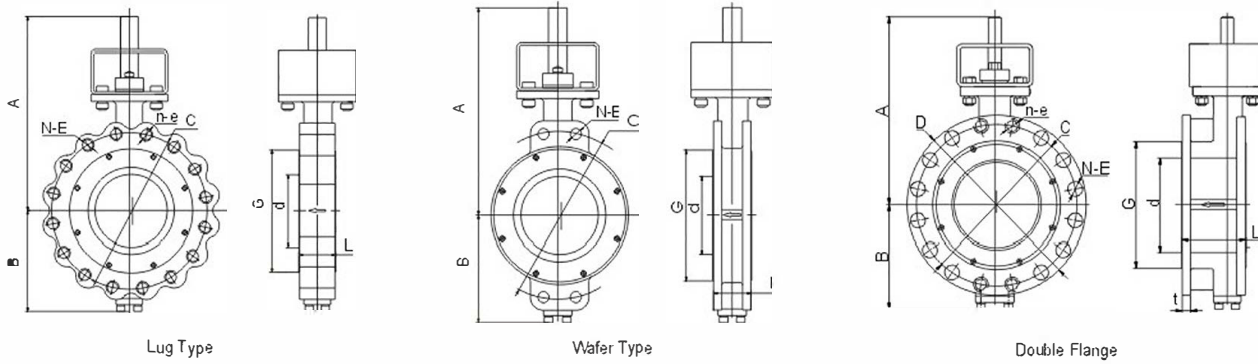
# Material Specifications

No	Part
1	Body
2	Disc
3	Seat
4	Retaining Ring
5	Screw
6	Shaft
7	Disc Pin
8	Bracket
9	Gland Flange
10	Nut
11	Washer
12	Gland Bolt
13	Gland
14	Bolt
15	Washer
16	Packing
17	Spacer Ring
18	Bearing
19	Disc Washer
20	Gasket
21	Disc Spring
22	End Cover
23	Washer
24	Screw



# Material Specifications

No	Part	Standard	Stainless steel
1	Body	ASTM A216-WCB	ASTM A351-CF8M
2	Disc	ASTM A351-CF8M	ASTM A351-CF8M
3	Seat	NBR/EPDM/PTFE	NBR/EPDM/PTFE
4	Retaining Ring	ASTM A105N	ASTM A182-F316
5	Screw	S.S.	S.S.
6	Shaft	17-4PH	17-4PH
7	Disc Pin	17-4PH	17-4PH
8	Bracket	Carbon Steel	Carbon Steel
9	Gland Flange	ASTM A216-WCB	ASTM A351-CF8
10	Nut	ASTM A194-2H	ASTM A194-8
11	Washer	Carbon Steel	S.S.
12	Gland Bolt	ASTM A193-B7	ASTM A193-B8
13	Gland	ASTM A182-F316	ASTM A182-F316
14	Bolt	ASTM A193-B7	ASTM A193-B8
15	Washer	Carbon Steel	S.S.
16	Packing	NBR / PTFE / Graphite	NBR / PTFE / Graphite
17	Spacer Ring	ASTM A182-F316	ASTM A182-F316
18	Bearing	ASTM A182-F316 with PTFE / Graphite	ASTM A182-F316 with PTFE / Graphite
19	Disc Washer	ASTM A182-F316	ASTM A182-F316
20	Gasket	NBR / PTFE / Graphite	NBR / PTFE / Graphite
21	Disc Spring	PTFE / 316	PTFE / 316
22	End Cover	ASTM A105N	ASTM A182-F316
23	Washer	Carbon Steel	S.S.
24	Screw	ASTM A193-B7	ASTM A193-B8



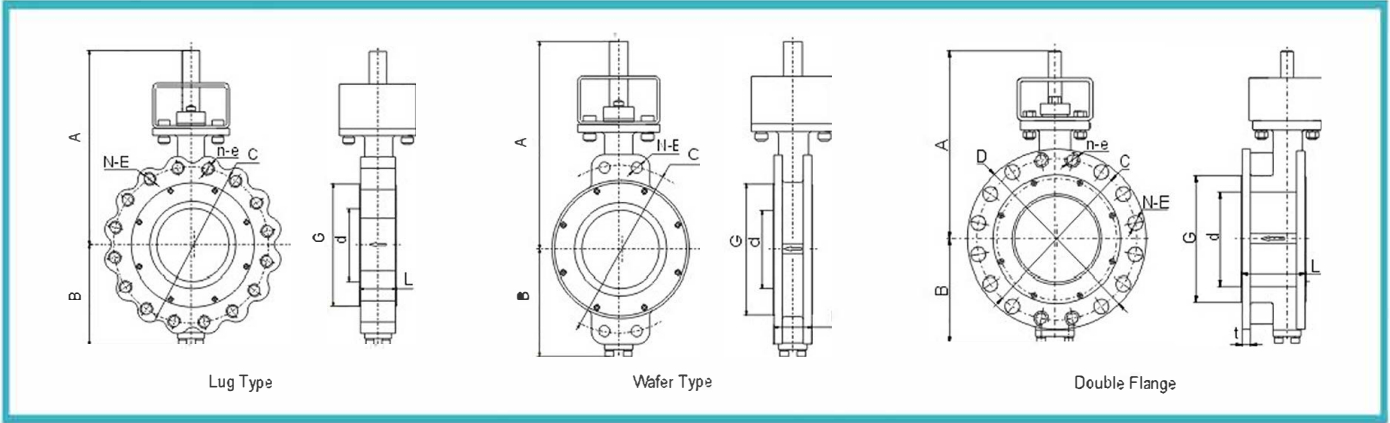
150LB LUG TYPE

Size	d		G		C		N	E	n	e	L		A		B		Weight		
	in	mm	in	mm	in	mm					in	mm	in	mm	in	mm	in	Kg	Lbs
2	80	51	2.01	92	3.62	120.7	4.75	4	5/8-11	*	*	43	1.69	194	7.64	80	3.15	6	12.79
3	80	86	3.39	127	5.00	152.5	6.00	4	5/8-11	*	*	48	1.89	214	8.43	80	3.15	9	19.40
4	100	110	4.33	157	6.18	190.5	7.50	8	5/8-11	*	*	54	2.13	233	9.17	100	3.94	12	26.01
5	125	131	5.16	186	7.32	216	8.50	8	3/4-10	*	*	57	2.24	264	10.39	119	4.69	16	34.83
6	150	156	6.14	212	8.35	241.5	9.51	8	3/4-10	*	*	57	2.24	280	11.02	135	5.31	14	30.86
8	200	203	7.99	270	10.63	298.5	11.75	8	3/4-10	*	*	64	2.52	310	12.20	190	7.48	32	69.44
10	250	254	10.00	324	12.76	362	14.25	12	7/8-9	*	*	71	2.80	354	13.94	250	9.84	48	104.72
12	300	305	12.01	381	15.00	432	17.01	12	7/8-9	*	*	81	3.19	450	17.72	290	11.42	70	153.22
14	350	337	13.27	413	16.26	476	18.74	12	1-8	*	*	92	3.62	480	18.90	300	11.81	102	224.87
16	400	387	15.24	470	18.50	539.5	21.24	16	1-8	*	*	102	4.02	505	19.88	340	13.39	144	317.46
18	450	438	17.24	533	20.98	578	22.76	16	1-1/8-8	*	*	114	4.49	600	23.62	380	14.96	188	414.46
20	500	489	19.25	584	22.99	635	25.00	16	1-1/8-8	4	1-1/8-8	127	5.00	740	29.13	390	15.35	244	537.92
24	600	591	23.27	692	27.24	749.5	29.51	16	1-1/4-8	4	1-1/4-8	154	6.06	860	33.86	470	18.50	378	833.33
28	700	692	27.24	762	30.00	795	31.30	36	3/4-10	4	3/4-10	165	6.50	864	34.02	485	19.09	486	1071.43
30	750	743	29.25	813	32.01	846	33.31	37	3/4-10	7	3/4-10	190	7.48	945	37.20	517	20.35	655	1444.00
32	800	781	30.75	864	37.95	900	35.43	41	3/4-10	7	3/4-10	190	7.48	1000	39.37	537	21.14	755	1664.46
36	900	876	34.49	972	38.27	1010	39.76	39	7/8-9	5	7/8-9	203	7.99	1051	41.38	610	24.02	820	1807.76
40	1000	976	38.42	1080	42.52	1120.5	44.11	40	1-8	4	1-8	216	8.50	1220	48.03	684	26.93	1054	2324.07
48	1200	1168	45.98	1289	50.74	1335	52.56	39	1-1/8-8	5	1-1/8-8	254	10.00	1370	54.00	800	31.50	1849	4077.05

150LB WAFER TYPE

Size	d		G		C		N	E	n	e	L		A		B		Weight		
	in	mm	in	mm	in	mm					in	mm	in	mm	in	mm	in	Kg	Lbs
2	50	51	2.01	92	3.62	120.7	4.75	2	ϕ19			43	1.69	160	6.30	80	3.15	4	8.38
3	80	86	3.39	127	5.00	152.5	6.00	2	ϕ19			48	1.89	180	7.09	80	3.15	7	14.99
4	100	110	4.33	157	6.18	190.5	7.50	2	ϕ19			54	2.13	200	7.87	100	3.94	10	21.60
5	125	131	5.16	186	7.32	216	8.50	2	ϕ22			57	2.24	235	9.25	119	4.69	14	30.42
6	150	156	6.14	216	8.50	241.5	9.51	2	ϕ22			57	2.24	252	9.92	135	5.31	11	24.25
8	200	203	7.99	270	10.63	298.5	11.75	2	ϕ22			64	2.52	293	11.54	190	7.48	25	54.01
10	250	254	10.00	324	12.76	362	14.25	2	ϕ25			71	2.80	337	13.27	250	9.84	39	84.88
12	300	305	12.01	381	15.00	432	17.01	2	ϕ25			81	3.19	373	14.69	290	11.42	51	111.33
14	350	337	13.27	413	16.26	476	18.74	2	ϕ29			92	3.62	521	20.51	300	11.81	80	176.37
16	400	387	15.24	470	18.50	539.5	21.24	4	ϕ29			102	4.02	555	21.85	340	13.39	104	229.28
18	450	438	17.24	533	20.98	578	22.76	4	ϕ32			114	4.49	620	24.41	380	14.96	153	337.30
20	500	489	19.25	584	22.99	635	25.00	4	1-1/8			127	5.00	673	26.50	390	15.35	192	423.28
24	600	591	23.27	692	27.24	749.5	29.51	4	1-1/4-8			154	6.06	772	30.39	470	18.50	288	634.92
28	700	692	27.24	762	30.00	795	31.30	4	ϕ22										
								4	3/4-10			165	6.50	935	36.81	485	19.09	340	749.56
30	750	743	29.25	813	32.01	846	33.31	2	ϕ22										
								6	3/4-10			190	7.48	993	39.09	517	20.35	510	1124.34
32	800	781	30.75	864	37.95	900	35.43	1	ϕ22										
								7	3/4-10			190	7.48	1000	39.37	537	21.14	535	1311.73
36	900	876	34.49	972	38.27	1010	39.76	8	7/8-9			203	7.99	1113	43.80	610	24.02	680	1499.12
40	1000	976	38.42	1080	42.52	1120.5	44.11	4	ϕ29										
								4	1-8			216	8.50	1220	48.03	684	26.93	1054	1973.48
48	1200	1168	45.98	1289	50.74	1335	52.56	3	ϕ32										
								5	1-1/8-8			254	10.00	1370	53.94	800	31.50	1849	3397.91

Note: 1. Flange Dimensions of 26" and large size are according to ASME B1 6.47 B Series.



## 150LB DOUBLE FLANGE

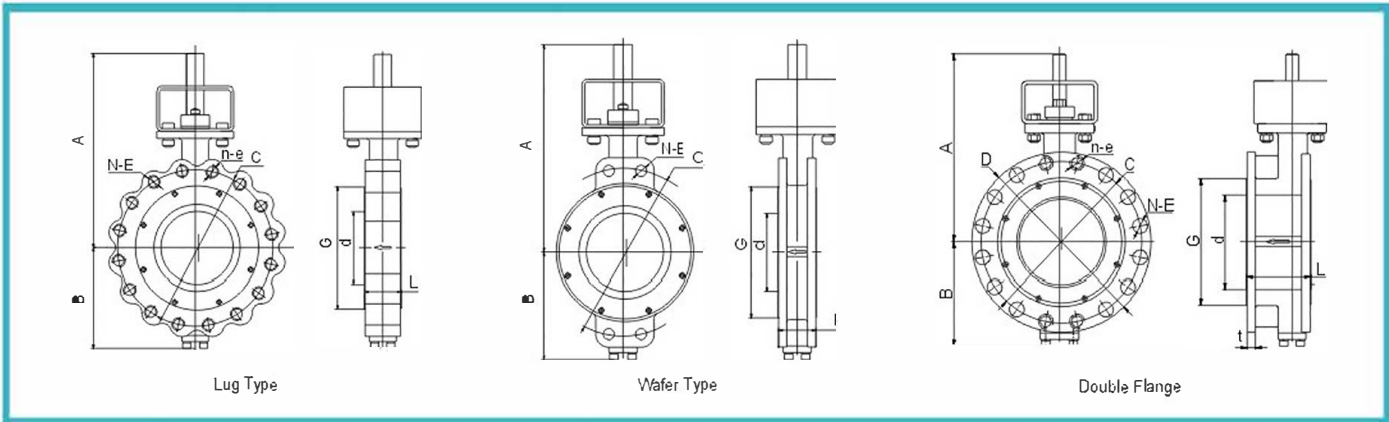
Size	d		D		G		C		N	E	n	e	L		t		A		B		Weight		
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	Kg	Lbs
2	50	51	2.01	150	5.91	92	3.62	120.7	4.75	4	∅ 19	*	*	108	4.25	19	0.75	160	6.30	80	3.15	8	17.20
3	80	86	3.39	190	7.48	127	5.00	152.5	6.00	4	∅ 19	*	*	114	4.49	24	0.94	180	7.09	80	3.15	12	26.01
4	100	110	4.33	230	9.06	157	6.18	190.5	7.50	4	∅ 19	4	5-8/11	127	5.00	24	0.94	200	7.87	105	4.13	16	34.61
5	125	131	5.16	255	10.04	186	7.32	216	8.50	4	∅ 22	4	3-4/10	140	5.51	24	0.94	235	9.25	119	4.69	21	46.08
6	150	156	6.14	280	11.02	216	8.50	241.5	9.51	4	∅ 22	4	3-4/10	140	5.51	25.4	1.00	252	9.92	135	5.31	21	46.30
8	200	203	7.99	345	13.58	270	10.63	298.5	11.75	4	∅ 22	4	3-4/10	152	5.98	28.6	1.13	293	11.54	190	7.48	54	117.95
10	250	254	10.00	405	15.94	324	12.76	362	14.25	8	∅ 25	4	7/8-9	165	6.50	30	1.18	337	13.27	250	9.84	82	181.00
12	300	305	12.01	485	19.09	381	15.00	432	17.01	8	∅ 25	4	7/8-9	178	7.01	32	1.26	373	14.69	290	11.42	136	298.94
14	350	337	13.27	535	21.06	413	16.26	476	18.74	8	∅ 29	4	1-8	190	7.48	35	1.38	521	20.51	300	11.81	151	332.23
16	400	387	15.24	595	23.43	470	18.50	539.5	21.24	12	∅ 29	4	1-8	216	8.50	36.6	1.44	555	21.85	340	13.39	213	469.80
18	450	438	17.24	635	25.00	533	20.98	578	22.76	12	∅ 32	4	1-1/8-8	222	8.74	39.7	1.56	620	24.41	380	14.96	313	690.04
20	500	489	19.25	700	27.56	584	22.99	635	25.00	16	∅ 32	4	1-1/8-8	229	9.02	43	1.69	673	26.50	390	15.35	386	850.97
24	600	591	23.27	815	32.09	692	27.24	749.5	29.51	16	∅ 35	4	1-1/4-8	267	10.51	47.7	1.88	772	30.39	470	18.50	562	1216.93
28	700	692	27.24	837	32.95	762	30.00	795	31.30	34	∅ 22	6	1/4	292	11.50	44.5	1.75	935	36.81	485	19.09	578	1274.25
30	750	743	29.25	887	34.92	813	32.01	846	33.31	37	∅ 22	7	3/4-10	318	12.52	44.5	1.75	993	39.09	517	20.35	798	1759.26
32	800	781	30.75	941	37.05	864	37.95	900	35.43	40	∅ 22	8	3/4-10	318	12.52	46	1.81	1000	39.37	537	21.14	929	2048.06
36	900	876	34.49	1057	41.61	972	38.27	1010	39.76	39	∅ 25	5	7/8-9	330	12.99	52	2.05	1113	43.82	610	24.02	1015	2237.65
40	1000	976	38.42	1175	46.25	1080	42.52	1120.5	44.11	37	∅ 29	7	1-8	410	16.14	55.6	2.19	1220	48.03	684	26.93	1441	3177.41
48	1200	1168	45.98	1392	54.81	1289	50.74	1335	52.56	40	∅ 32	4	1-1/8-8	470	18.50	65	2.56	1370	53.94	800	31.50	2502	5516.91

## 300LB LUG TYPE

Size	d		G		C		N	E	n	e	L		A		B		Weight		
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	Kg	Lbs
2	50	44	1.73	92	3.62	127	5.00	8	5/8-11	*	*	43	1.69	160	6.30	80	3.15	10	21.60
3	80	86	3.39	127	5.00	168.5	6.63	8	3/4-10	*	*	48	1.89	189	7.44	98	3.86	13	28.22
4	100	110	4.33	157	6.18	200	7.87	8	3/4-10	*	*	54	2.13	208	8.19	110	4.33	16	34.83
5	125	127	5.00	186	7.32	235	9.25	8	3/4-10	*	*	59	2.32	233	9.17	128	5.04	19	40.78
6	150	152	5.98	216	8.50	269.9	10.63	12	3/4-10	*	*	59	2.32	252	9.92	149	5.87	24	51.81
8	200	203	7.99	270	10.63	330	12.99	12	7/8-9	*	*	73	2.87	321	12.64	235	9.25	45	98.10
10	250	254	10.00	324	12.76	387	15.24	12	1-8	4	1-8	83	3.27	393	15.47	290	11.42	49	108.02
12	300	305	12.01	381	15.00	451	17.76	12	1-1/8-8	4	1-1/8-8	92	3.62	455	17.91	305	12.01	74	163.14
14	350	337	13.27	413	16.26	514.5	20.26	16	1-1/8-8	4	1-1/8-8	117	4.61	648	25.51	348	13.70	194	427.69
16	400	388	15.28	470	18.50	571.5	22.50	16	1-1/4-8	4	1-1/4-8	133	5.24	765	30.12	365	14.37	245	540.12
18	450	432	17.01	533	20.98	628.5	24.74	20	1-1/4-8	4	1-1/4-8	149	5.87	735	28.94	415	16.34	393	866.40
20	500	483	19.02	584	22.99	686	27.01	20	1-1/4-8	4	1-1/4-8	159	6.26	844	33.23	430	16.93	490	1080.25
24	600	584	22.99	692	27.24	813	32.01	20	1-1/2-8	4	1-1/2-8	181	7.13	962.5	37.89	501	19.72	834	1838.62

Note: 1. Flange Dimensions of 26" and large size are according to ASME B16.47 B Series.





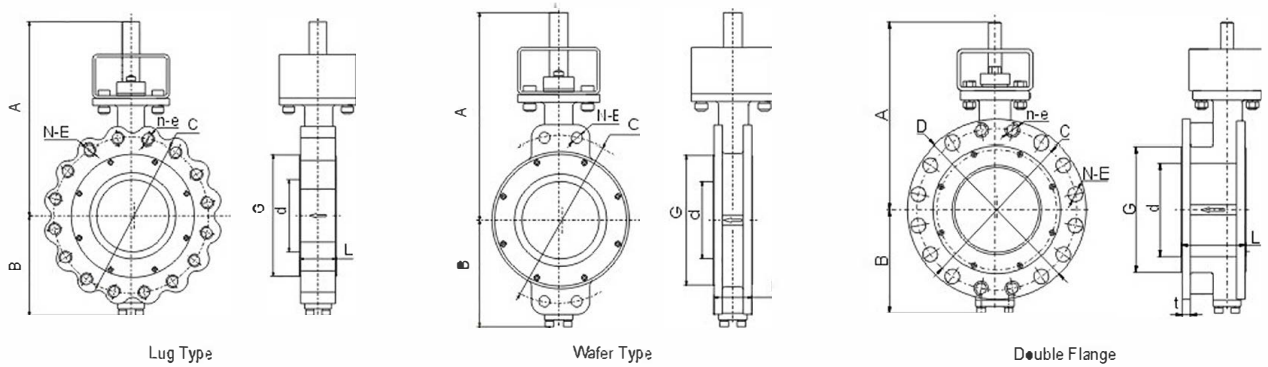
300LB WAFER TYPE

Size	d		G		C		N	E	L		A		B		Weight		
in	mm	mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	Kg	Lbs	
2	50	44	1.73	92	3.62	127	5.00	2	ø19	43	1.69	160	6.30	80	3.15	6	12.79
3	80	86	3.39	127	5.00	168.5	6.63	2	ø22	48	1.89	189	7.44	88	3.46	9	20.17
4	100	110	4.33	157	6.18	200	7.87	2	ø22	54	2.13	208	8.19	105	4.13	11	25.24
5	125	127	5.00	186	7.32	235	9.25	2	ø22	59	2.32	233	9.17	128	5.04	14	29.76
6	150	152	5.98	216	8.50	269.9	9.51	2	ø22	59	2.32	252	9.92	149	5.87	18	38.58
8	200	203	7.99	270	10.63	330	12.99	4	ø25	73	2.87	321	12.64	195	7.68	33	71.65
10	250	254	10.00	324	12.76	387	15.24	4	1-8	83	3.27	393	15.47	290	11.42	26	57.32
12	300	305	12.01	381	15.00	451	17.76	4	1-1/8-8	92	3.62	455	17.91	305	12.01	40	88.18
14	350	337	13.27	413	16.26	514.5	20.26	4	1-1/8-8	117	4.61	648	25.51	348	13.70	125	275.57
16	400	388	15.28	470	18.50	571.5	22.50	4	1-1/4-8	133	5.24	765	30.12	365	14.37	139	306.44
18	450	432	17.01	533	20.98	628.5	24.74	4	1-1/4-8	149	5.87	735	28.94	415	16.34	252	555.56
20	500	483	19.02	584	22.99	686	27.01	4	1-1/4-8	159	6.26	844	33.23	430	16.93	284	626.10
24	600	584	22.99	692	27.24	813	32.01	4	1-1/2-8	181	7.13	962.5	37.89	501	19.72	509	1122.13

300LB DOUBLE FLANGE

Size	d		D		G		C		N	E	n	e	L		t		A		B		Weight		
in	mm	mm	in	mm	in	mm	in	mm	in				mm	in	mm	in	mm	in	mm	in	Kg	Lbs	
2	50	44	1.73	165	6.50	92	3.62	127	5.00	4	ø19	4	5/8-11	108	4.25	22.3	0.88	160	6.30	80	3.15	13	28.22
3	80	86	3.39	210	8.27	127	5.00	168.5	6.63	4	ø22	4	3/4-10	114	4.49	28.5	1.12	189	7.44	98	3.86	17	37.48
4	100	110	4.33	255	10.04	157	6.18	200	7.87	4	ø22	4	3/4-10	127	5.00	31.8	1.25	231	9.09	110	4.33	21	46.08
5	125	127	5.00	280	11.02	186	7.32	235	9.25	4	ø22	4	3/4-10	140	5.51	35	1.38	259	10.20	128	5.04	28	60.63
6	150	152	5.98	320	12.60	216	8.50	269.9	9.51	8	ø22	4	3/4-10	140	5.51	36.6	1.44	276	10.87	149	5.87	34	74.96
8	200	203	7.99	360	14.96	270	10.63	330	12.99	8	ø25	4	7/8-9	152	5.98	41.2	1.62	340	13.39	235	9.25	63	138.45
10	250	254	10.00	445	17.52	324	12.76	387	15.24	12	ø29	4	1-8	165	6.50	47.8	1.88	412	16.22	290	11.42	73	160.27
12	300	305	12.01	520	20.47	381	15.00	451	17.76	12	ø32	4	1-1/8-8	178	7.01	50.8	2.00	459	18.07	305	12.01	108	237.21
14	350	337	13.27	584	22.99	413	16.26	514.5	20.26	16	ø32	4	1-1/8-8	190	7.48	53.9	2.12	600	23.62	348	13.70	264	581.13
16	400	388	15.28	648	25.51	470	18.50	571.5	22.50	16	ø35	4	1-1/4-8	216	8.50	57.2	2.25	791	31.14	365	14.37	335	739.20
18	450	432	17.01	711	27.99	533	20.98	628.5	24.74	20	ø35	4	1-1/4-8	222	8.74	60.5	2.38	808	31.81	415	16.34	533	1173.94
20	500	483	19.02	775	30.51	584	22.99	686	27.01	20	ø35	4	1-1/4-8	229	9.02	63.5	2.50	789	31.06	430	16.93	674	1485.01
24	600	584	22.99	914	35.98	692	27.24	813	32.01	20	ø41	4	1-1/2-8	267	10.51	69.9	2.75	869	34.21	501	19.72	1121	2471.34

Note: 1. Flange Dimensions of 26" and large size are according to ASME B16.47 B Series.



## 600LB LUG TYPE

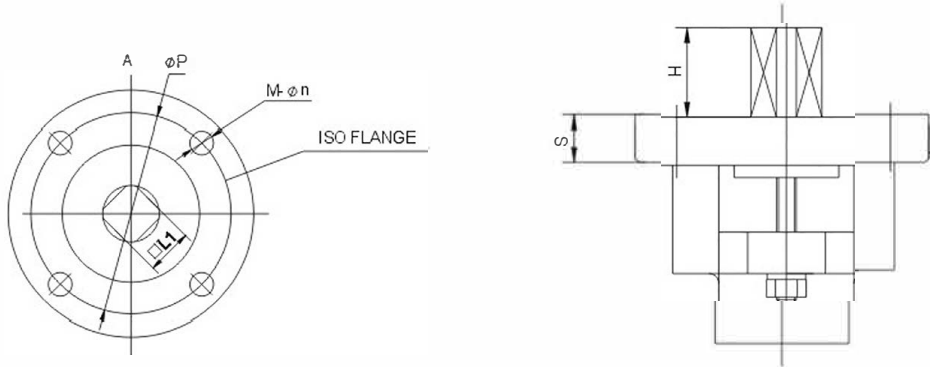
Size	d		G		C		N	E	n	e	L		A		B		Weight		
	in	mm	mm	in	mm	in					mm	in	mm	in	mm	in	mm	in	Kg
3	80	88	3.46	127	5.00	168	6.61	8	3/4-10	*	*	54	2.05	303	11.93	102	4.02	14	30.87
4	100	114	4.49	157	6.18	216	8.50	8	7/8-9	*	*	64	2.52	347.5	13.68	124	4.88	35	77.18
6	150	164	6.46	216	8.50	292	11.50	10	1-8	2	1-8	78	3.07	475	18.70	166	6.54	70	154.35
8	200	200	7.87	270	10.63	349	13.74	8	1-1/8-8	4	1-1/8-8	102	4.02	482	18.98	256	10.08	90	198.45
10	250	248	9.76	324	12.76	432	17.01	12	1-1/4-8	4	1-1/4-8	117	4.61	651	25.63	309	12.17	162	357.21
12	300	298.5	11.75	381	15.00	489	19.25	16	1-1/4-8	4	1-1/4-8	140	5.51	666	26.22	348	13.70	218	480.69

## 600LB WAFER TYPE

Size	d		G		C		N	E	L		A		B		Weight		
	in	mm	mm	in	mm	in			mm	in	mm	in	mm	in	Kg	Lbs	
3	80	88	3.46	127	5.00	168	6.61	4	3/4-10	54	2.05	303	11.93	102	4.02	11	24.26
4	100	114	4.49	157	6.18	216	8.50	4	7/8-9	64	2.52	347.5	13.68	124	4.88	20	44.10
6	150	164	6.46	216	8.50	292	11.50	4	1-8	78	3.07	475	18.70	166	6.54	50	110.25
8	200	200	7.87	270	10.63	349	13.74	4	1-1/8-8	102	4.02	482	18.98	256	10.08	70	154.35
10	250	248	9.76	324	12.76	432	17.01	4	1-1/4-8	117	4.61	651	25.63	308	12.13	112	246.96
12	300	298.5	11.75	381	15.00	489	19.25	4	1-1/4-8	140	5.51	666	26.22	348	13.70	163	359.42

## 600LB DOUBLE FLANGE

Size	d		D		G		C		N	E	n	e	L		t	A		B		Weight			
	in	mm	mm	in	mm	in	mm	in					mm	in		mm	in	mm	in	mm	in	Kg	Lbs
3	80	88	3.46	210	8.27	127	5.00	168	6.61	4	ø22	4	3/4-10	180	7.09	38.2	1.50	303	11.93	102	4.02	24	52.92
4	100	114	4.49	273	10.75	157	6.18	216	8.50	8	ø25	*	*	190	7.48	44.5	1.75	348	13.68	124	4.88	49	108.05
6	150	164	6.46	356	14.02	216	8.50	292	11.50	10	ø29	2	1-8	210	8.27	54.1	2.13	475	18.70	166	6.54	100	220.50
8	200	200	7.87	419	16.50	270	10.63	349	13.74	8	ø32	4	1-1/8-8	230	9.06	62	2.44	482	18.98	256	10.08	126	277.83
10	250	248	9.76	508	20.00	324	12.76	432	17.01	12	ø35	4	1-1/4-8	250	9.84	69.9	2.75	651	25.63	309	12.17	220	485.10
12	300	298.5	11.75	559	22.01	381	15.00	489	19.25	16	ø35	4	1-1/4-8	270	10.63	73.1	2.88	666	26.22	348	13.70	305	672.53

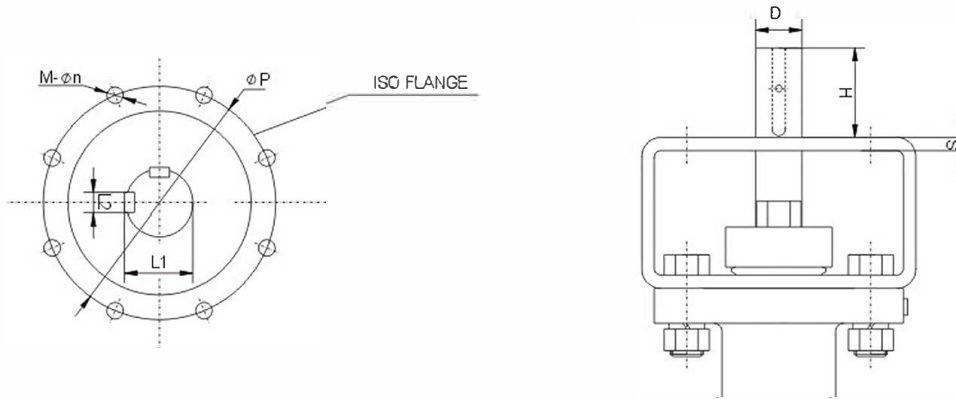


## 150LB

Size		H		S		ISO	L1		P		M-n
in	mm	mm	in	mm	in		mm	in	mm	in	
2	50	16	0.63	11	0.43	F07	11	0.43	70	2.76	4-9.5
3	80	16	0.63	13	0.51	F10	14	0.55	102	4.02	4-11
4	100	19	0.75	13	0.51	F10	17	0.67	102	4.02	4-11
5	125	21	0.83	13	0.51	F10	19	0.75	102	4.02	4-11
6	150	21	0.83	13	0.51	F10	19	0.75	102	4.02	4-11
8	200	24	0.94	15	0.59	F12	22	0.87	125	4.92	4-14
10	250	29	1.14	15	0.59	F12	27	1.06	125	4.92	4-14
12	300	29	1.14	20	0.79	F14	27	1.06	140	5.51	4-18

## 300LB

Size		H		S		ISO	L1		P		M-n
in	mm	mm	in	mm	in		mm	in	mm	in	
3	80	16	0.63	13	0.51	F10	14	0.55	102	4.02	4-11
4	100	24	0.94	13	0.51	F10	17	0.67	102	4.02	4-11
5	125	26	1.02	13	0.51	F10	19	0.75	102	4.02	4-11
6	150	26	1.02	13	0.51	F10	19	0.75	102	4.02	4-11
8	200	35	1.38	15	0.59	F12	27	1.06	125	4.92	4-14
10	250	35	1.38	25	0.98	F16	32	1.26	165	6.50	4-22
12	300	40	1.57	25	0.98	F16	36	1.42	165	6.50	4-22



## 150LB

Size		D		H		S		L1		L2		ISO	P		M-n
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in		mm	in	
14	350	35	1.38	95	3.74	10	0.39	38	1.50	10	0.39	F16	165	6.50	4-22
16	400	40	1.57	104	4.09	10	0.39	43	1.69	12	0.47	F16	165	6.50	4-22
18	450	46	1.81	104	4.09	10	0.39	49.5	1.95	14	0.55	F25	254	10.00	8-18
20	500	50	1.97	104	4.09	12	0.47	53.5	2.11	14	0.55	F25	254	10.00	8-18
24	600	60	2.36	105	4.13	12	0.47	64	2.52	18	0.71	F25	254	10.00	8-18
28	700	75	2.95	185	7.28	12	0.47	79.5	3.13	20	0.79	F30	298	11.73	8-22
30	750	80	3.15	185	7.28	12	0.47	85	3.35	22	0.87	F30	298	11.73	8-22
32	800	85	3.35	185	7.28	12	0.47	90	3.54	22	0.87	F30	298	11.73	8-22
36	900	90	3.54	190	7.48	40	1.57	95	3.74	25	0.98	F35	356	14.02	8-33
40	1000	100	3.94	210	8.27	40	1.57	106	4.17	28	1.10	F35	356	14.02	8-33
48	1200	120	4.72	235	9.25	50	1.97	127	5.00	32	1.26	F40	406	15.98	8-39

## 300LB

Size		D		H		S		L1		L2		ISO	P		M-n
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in		mm	in	
14	350	50	1.97	114	4.49	12	0.47	53.5	2.11	14	0.55	F25	254	10.00	8-18
16	400	55	2.17	125	4.92	12	0.47	59	2.32	16	0.63	F25	254	10.00	8-18
18	450	60	2.36	125	4.92	12	0.47	64	2.52	18	0.71	F25	254	10.00	8-18
20	500	70	2.76	145	5.71	12	0.47	74.5	2.93	20	0.79	F30	298	11.73	8-22
24	600	80	3.15	185	7.28	12	0.47	85	3.35	22	0.87	F30	298	11.73	8-22

## 600LB

Size		D		H		S		L1		L2		ISO	P		M-n
mm	in	mm	in	mm	in	mm	in	in	in	mm	in		in	mm	
3	80	25	0.98	50	1.97	8	0.31	28	1.10	8	0.31	F10	102	4.02	4-11
4	100	28	1.10	66	2.60	8	0.31	31	1.22	8	0.31	F12	125	4.92	4-14
6	150	35	1.38	94	3.70	10	0.39	38	1.50	10	0.39	F16	165	6.50	4-22
8	200	40	1.57	103	4.06	10	0.39	43	1.69	12	0.47	F16	165	6.50	4-22
10	250	50	1.97	121	4.76	12	0.47	53.5	2.11	14	0.55	F25	254	10.00	8-18
12	300	60	2.36	121	4.76	12	0.47	64	2.52	18	0.71	F25	254	10.00	8-18

# 150LB

Valve Size		Disc Opening Angle								
60°	60°	60°	80°	60°	80°	60°	60°	80°	80°	60°
3	80	6	16	24	36	52	76	113	146	162
4	100	15	37	55	80	117	172	256	329	365
6	150	39	98	147	215	313	460	685	880	978
8	200	70	176	264	387	563	827	1232	1584	1760
10	250	131	328	492	722	1050	1542	2296	2952	3280
12	300	196	490	735	1078	1568	2303	3430	4410	4900
14	350	214	536	804	1179	1715	2519	3752	4824	5360
16	400	307	768	1152	1690	2458	3610	5376	6912	7680
18	450	380	950	1425	2090	3040	4465	6650	8550	9500
20	500	537	1342	2013	2952	4294	6307	9394	12078	13420
24	600	752	1880	2820	4136	6016	8836	13160	16920	18800
28	700	1088	2720	4080	5984	8704	12784	19040	24480	27200
30	750	1300	3250	4875	7150	10400	15275	22750	29250	32500
32	800	1673	4182	6273	9200	13382	19655	29274	37638	41820
36	900	2128	5320	7980	11704	17024	25004	37240	47880	53200
40	1000	1098	4802	7889	11182	17699	25588	36358	51450	68600
48	1200	1728	7560	12420	17604	27864	40284	57240	81000	108000

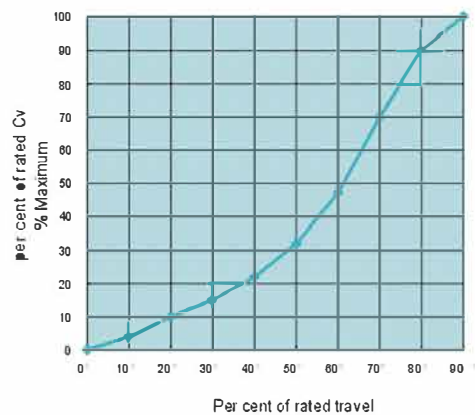
# 300LB

Valve Size		Disc Opening Angle								
60°	60°	10°	20°	30°	40°	50°	60°	60°	80°	60°
3	80	6	16	24	36	52	76	113	146	162
4	100	15	37	55	80	117	172	256	329	365
6	150	39	98	147	215	313	460	685	880	978
8	200	65	163	245	359	522	766	1141	1467	1630
10	250	124	310	465	682	992	1457	2170	2790	3100
12	300	182	456	684	1003	1459	2143	3192	4104	4560
14	350	205	512	768	1126	1638	2406	3584	4608	5120
16	400	269	672	1008	1478	2150	3158	4704	6048	6720
18	450	352	880	1320	1936	2816	4136	6160	7920	8800
20	500	460	1150	1725	2530	3680	5405	8050	10350	11500
24	600	647	1618	2427	3560	5178	7605	11326	14562	16180

# 600LB

Valve Size		Disc Opening Angle								
inch	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3	80	6	16	23	34	50	73	109	140	156
4	100	10	26	39	57	82	121	180	231	257
6	150	29	72	108	159	231	340	506	661	723
8	200	53	132	199	291	424	622	927	1192	1324
10	250	81	201	302	443	644	946	1409	1812	2013
12	300	112	279	418	614	892	1311	1952	2510	2789
14	350	159	399	598	877	1276	1873	2790	3587	3986
16	400	201	502	753	1105	1607	2361	3516	4521	5023
18	450	225	562	843	1237	1799	2642	3935	5059	5621
20	500	317	793	1190	1745	2538	3727	5551	7137	7930
24	600	461	1152	1728	2534	3686	5414	8064	10668	11520

Cv curve



**Notes:**

- 1) Definition:  
 Cv: The volume of water in gpm at 15°C that will pass through a valve with differential pressure of 1 PSI.  
 Kv: The volume of water in m³/hr at 15°C that will pass through a valve with differential pressure of 1 bar.
- 2) Cv = 1.155 Kv

Torque for series TB with NBR seat and shaft up stream at specified pressure.

## 150LB(Shaft Upstream)

Size		100Psi(0.7MPa)		150psi(1.0MPa)		200psi(1.4MPa)		285psi(1.97MPa)	
		N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.Lbs	N.m	Ft.lbs
2	50	42	31	42	31	43	32	44	33
3	80	51	37	55	41	61	45	68	50
4	100	80	59	89	65	101	74	117	86
5	125	121	89	134	99	151	111	175	129
6	150	175	129	196	144	224	165	263	194
8	200	311	229	351	259	405	298	481	354
10	250	464	342	532	392	622	459	749	552
12	300	681	502	789	582	932	687	1132	835
14	350	978	721	1130	833	1332	982	1615	1191
16	400	1299	958	1508	1112	1787	1318	2178	1606
18	450	1647	1214	1931	1424	2310	1703	2840	2095
20	500	2424	1788	2820	2080	3349	2470	4090	3016
24	600	3716	2741	4377	3228	5258	3878	6491	4787
28	700	5612	4139	6579	4851	7867	5802	9671	7132
30	750	6592	4861	7766	5727	9331	6881	11522	8497
32	800	7520	5546	8881	6549	10695	7887	13235	9761
36	900	9191	6778	10986	8102	13380	9867	16732	12339
40	1000	15155	11200	16653	12307	18650	13782	21640	15992
48	1200	24452	18070	27319	20189	31141	23013	36876	27251

## 300LB(Shaft Upstream)

Size		220psi(1.5MPa)		290psi(2.0MPa)		435psi(3.0MPa)		580psi(4.0MPa)	
		N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs
3	80	85	63	93	68	107	79	122	90
4	100	104	76	119	88	149	110	179	132
5	125	179	132	203	150	249	184	296	218
6	150	216	159	253	187	328	242	402	297
8	200	558	412	628	463	766	565	905	668
10	250	904	667	1025	756	1266	934	1508	1112
12	300	1364	1006	1570	1158	1982	1462	2395	1766
14	350	1699	1253	1253	1989	2569	1895	3149	2322
16	400	2284	1684	1684	2704	6545	2614	4386	3234
18	450	2196	2151	2151	3483	4617	3405	5752	4242
20	500	5291	3902	3902	6088	7680	5664	9273	6838
24	600	7852	5790	5790	9163	11784	8690	14405	10623

**Note:** 1.The above datas are calculated in normal temperature,it need a save modulus 1.2~1.5 to select driver.

Torque for series TBT with PTFE seat and shaft down stream at specified pressure.

### 150LB(Shaft Downstream)

Size		100psi(0.7MPa)		150psi(1.0MPa)		200psi(1.4MPa)		285psi(1.97MPa)	
		N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs
2	50	18	13	19	14	21	16	23	17
3	80	28	21	31	23	34	25	38	28
4	100	44	33	49	36	56	41	65	48
5	125	67	49	74	55	84	62	97	72
6	150	97	72	109	80	124	92	146	108
8	200	173	127	195	144	225	166	267	197
10	250	258	190	296	218	346	255	416	307
12	300	378	279	438	323	518	382	629	464
14	350	543	401	628	463	740	546	897	662
16	400	722	532	838	618	993	732	1210	892
18	450	915	675	1073	791	1283	946	1578	1164
20	500	1347	993	1567	1156	1861	1372	2272	1676
24	600	2065	1523	2432	1793	2921	2154	3606	2659
28	700	3040	2299	3560	2695	4270	3223	5250	3962
30	750	3570	2701	4210	3182	5060	3823	6260	4721
32	800	4020	3081	4760	3638	5740	4382	7120	5423
36	900	5106	3765	6103	4501	7433	5482	9295	6855
40	1000	7800	5764	9200	6799	11000	8129	13700	10124

### 300LB(Shaft Downstream)

Size		220psi(1.5MPa)		290psi(2.0MPa)		435psi(3.0MPa)		580psi(4.0MPa)		740psi(5.1MPa)	
		N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs
3	80	47	35	51	38	59	44	68	50	76	56
4	100	58	42	66	49	83	61	99	73	118	87
5	125	100	74	113	83	138	102	164	121	193	142
6	150	120	89	141	104	182	134	224	165	269	198
8	200	310	229	349	257	426	314	503	371	588	433
10	250	502	370	569	420	704	519	838	618	985	727
12	300	758	559	872	643	1101	812	1330	981	1582	1167
14	350	944	696	1105	815	1427	1053	1750	1290	2104	1552
16	400	1269	936	1502	1108	1969	1452	2436	1797	2950	2176
18	450	1620	1195	1935	1427	2565	1892	3195	2356	3888	2868
20	500	2940	2168	3382	2494	4267	3147	5151	3799	6125	4517
24	600	4362	3217	5090	3754	6547	4828	8003	5902	9605	7083

### 600LB(Shaft Downstream)

Size		580psi(4.0MPa)		725psi(5.0MPa)		870psi(6.0MPa)		1160psi(8.0MPa)		1508psi(10.0MPa)	
		N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs	N.m	Ft.lbs
3	80	119	88	126	93	134	99	150	111	164	121
4	100	183	135	198	146	212	157	242	179	272	201
5	125	294	217	315	233	335	248	375	277	415	307
6	150	365	270	400	296	430	318	500	370	568	420
8	200	685	506	750	554	816	603	945	698	1076	795
10	250	1135	839	1245	920	1355	1001	1570	1160	1790	1323
12	300	2070	1530	2300	1700	2525	1866	2975	2199	3430	2535

Note: 1.The above datas are calculated in normal temperature,it need a save modulus 1.2~1.5 to select driver.

Torque for series TBF with PTFE fire safe seat and shaft down stream at specified pressure.

## 150LB(Shaft Downstream)

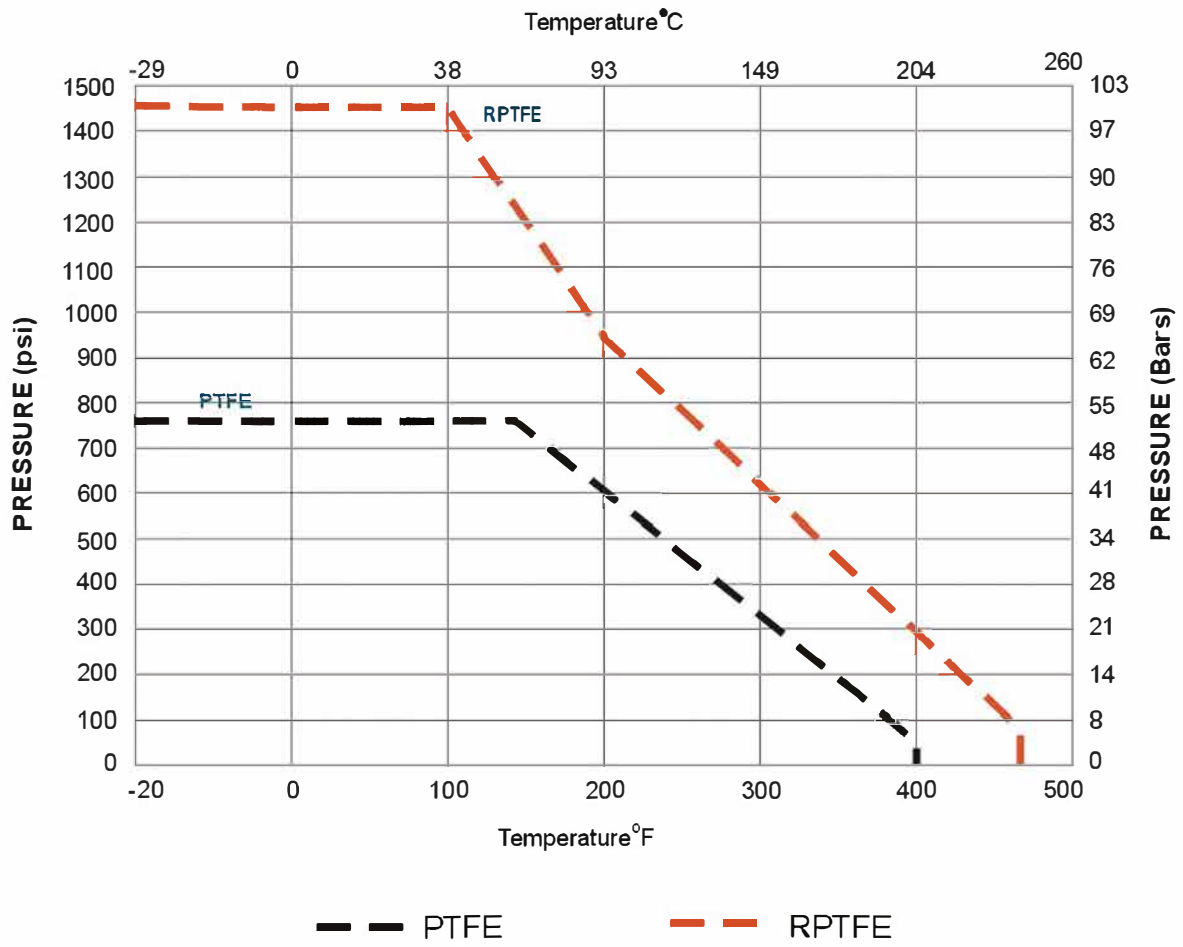
Size		100psi(0.7MPa)		150psi(1.0MPa)		200psi(1.4MPa)		285psi(1.97MPa)	
		N.m	ft.lbs	N.m	ft.lbs	N.m	ft.lbs	N.m	ft.lbs
2	50	22	16	23	17	25	19	28	20
3	80	42	31	46	34	51	37	57	42
4	100	66	49	74	55	84	62	98	72
5	125	101	74	111	82	126	93	146	107
6	150	145	107	163	120	186	137	219	162
8	200	259	191	293	216	337	249	401	295
10	250	387	285	443	327	519	383	624	460
12	300	568	419	657	485	776	573	944	696
14	350	815	601	941	694	1110	819	1346	992
16	400	1082	798	1257	927	1489	1098	1815	1338
18	450	1372	1012	1609	1187	1925	1419	2367	1746
20	500	2020	1480	2350	1733	2751	2058	3408	2513
24	600	3097	2284	3648	1793	4382	3231	5409	3889
28	700	4677	3449	5482	2960	6556	4835	8059	5943
30	750	5493	4051	5482	4043	7776	5734	9602	7081
32	800	6267	4621	6471	4772	8913	6573	11030	8134
36	900	7659	5648	9155	6752	11150	8223	13943	10283

## 300LB(Shaft Downstream)

Size		220psi(1.5MPa)		290psi(2.0MPa)		435psi(3.0MPa)		580psi(4.0MPa)		740psi(5.1MPa)	
		N.m	ft.lbs	N.m	ft.lbs	N.m	ft.lbs	N.m	ft.lbs	N.m	ft.lbs
3	80	71	52	77	57	89	66	101	75	115	85
4	100	86	64	99	73	124	91	149	110	176	130
5	125	150	110	169	125	208	153	246	182	289	213
6	150	180	133	211	156	273	201	335	247	404	298
8	200	465	343	523	386	639	471	754	556	882	650
10	250	753	556	854	630	1055	778	1257	927	1478	1090
12	300	1137	838	1309	965	1652	1218	1996	1472	2373	1750
14	350	1416	1044	1657	1222	2141	1579	2624	1935	3156	2328
16	400	1903	1792	2253	1662	2954	2178	3655	2695	4425	3263
18	450	2430	1782	2903	2141	3848	2838	4793	3535	5833	4301
20	500	4409	3252	5073	3741	6400	4720	7727	5698	9187	6775
24	600	6543	4825	7635	5631	9820	7242	12004	8853	14407	10625

**Note:** 1.The above datas are calculated in normal temperature,it need a save modulus 1.2~1.5 to select driver.





Seat materials for Double Offset Butterfly Valve

Above Ratings are for soft seal components. Please consult ASME B16.34 for Body and Disc Pressure / Temperature ratings.