

NW NEWAY

Triple Offset Butterfly Valves

Complete Solutions for Industrial Valves



NEWAY
12-150

WCB
07143

NEWAY VALVE

Cat. No.: E-TOV-2013-WIP

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Complete Solutions for Industrial Valves

As one of the leading valve manufacturers in the world, Neway specializes in the development of innovative designs through intensive research and development programs along with a commitment to excellence and engineering in manufacturing valve solutions for all industries.

Neway's main product lines include gate, globe, check, butterfly, and ball valves with quality innovative designs that are recognized by many global users and EPCs. These products have been installed throughout the world in gas, oil, refining, chemical, and marine, power generation, and pipeline transmission industrial applications.

Neway's Facilities

Neway's management structure is based on multi-plant manufacturing. We currently operate one R&D center, two valve assembly plants, and four specialized foundries in China. Our newest assembly plant was recently expanded in 2013, and it now covers nearly 35,000 square meters. Additionally, we have opened two overseas assembly plants in Mexico and Saudi Arabia.

Neway runs the most advanced manufacturing and management systems available. Our R&D software includes ANSYS, fe-safe, CF-Design, and SolidWorks. We are one of the few valve manufacturers performing Enterprise Resource Planning (ERP) using SAP ERP software in addition to utilizing automatic inventory management systems. Our in-house testing capabilities include fire-safe, cryogenic, high pressure gas and fugitive emission testing. These processes ensure that our products are safe, reliable, and environmentally-friendly.

Neway's goal is to occupy leading market positions through collaboration with value-adding business partners worldwide. In the last few years, Neway successively established new subsidiaries in Brazil, Dubai, Europe, Singapore, and the USA along with nearly 80 distributors around the world.

Quality Assurance

Neway is dedicated to the pursuit of having zero defect valves leave our facility. We perform active Six Sigma quality management to continually enhance process control management based on advanced statistical data analysis. Neway's industrial certificates include ISO 9001, CEIPED, TA-Luft, API 6A, API 6D, ABS, API Q1 and Fire Safe approvals.

Quality Commitment

ISO 9001

API 6D



API 6A



Neway recognizes the important role a high quality valve plays in the safety and health of personnel as well as the protection of property. Neway concentrates its effort to provide customers with consistent products designed, manufactured, inspected, and tested in accordance with our customers' specifications at a competitive price in accordance with international standards.



CE/PED



ABS

TA Luft



API 591



Fire Safe Test

How to Order

Figure Numbers



Newway figure numbers are designed to cover essential features. When ordering, please show the figure number to avoid misunderstanding any of your requirements. However, a detailed description must accompany any special orders.

① Valve Size

3 = 3" (DN80)	24 = 24" (DN600)
4 = 4" (DN100)	28 = 28" (DN700)
6 = 6" (DN150)	30 = 30" (DN750)
8 = 8" (DN200)	36 = 36" (DN900)
10 = 10" (DN250)	42 = 42" (DN1050)
12 = 12" (DN300)	48 = 48" (DN1200)
14 = 14" (DN350)	52 = 52" (DN1300)
16 = 16" (DN400)	56 = 56" (DN1400)
18 = 18" (DN450)	60 = 60" (DN1500)
20 = 20" (DN500)	64 = 64" (DN1600)

② Triple Offset Butterfly Valve

Symbol	Type
TC	Triple Offset Butterfly Valve

④ End Connection

Symbol	Type
R	Raised Face Flanged End
B	Butt-Welding End
W	Wafer
L	Lug
G	ANSI B16.10 Gate Valve Face-to-Face

③ ANSI Class

Code	1	3	6
Class(LB)	150	300	600

⑤ Operator

G	Gear Operator
M	Electric Actuator
P	Pneumatic Actuator
BS	Bare Stem

⑥ Body Material*

Material	ASTM Ref.
WCB	A216 Grade WCB
LCB	A352 Grade LCB
LCC	A352 Grade LCC
CF8M	A351 Grade CF8M
CF8	A351 Grade CF8
CF3M	A351 Grade CF3M
CF3	A351 Grade CF3
CN7M (Alloy 20)	CN7M (Alloy 20)

⑦ Trim Code

First Number		Second Number		Third Number		Fourth Number	
Stem		Seat		Metal Seal Ring		Soft Seat Ring	
Code	Material	Code	Material	Code	Material	Code	Material
1	F316	2	304	2	F304	5	PTFE
2	F304	3	316	3	F316	8	GRAPHITE
3	F316	4	MONEL	6	1Cr13(F6a)		
4	MONEL kK500	7	410	7	F316L		
5	17-4PH	9	STL.21	8	F304L		
6	F6a			9	F51		
7	F316L						
8	F304L						
9	F51						

Note: Additional materials available upon request
*Additional body materials listed on page 31

Triple Offset Butterfly Valve

Design Features

Industrial valves require higher temperature and pressure ranges that are beyond the capacity of conventional butterfly valves. For this reason, Neway has developed the metal-seated Triple Offset butterfly valve as a solution for the toughest industrial applications. Neway's TC Series butterfly valve offers a light-weight, cost-effective, and compact design with a low operating torque. Additionally, it can replace traditional Gate, Globe, and Ball valves in most industry applications.



Product Range:

Design Standard:	API 609, ASME B16.34
Flange:	ASME B16.5, ASME B16.47
Structure Length:	API 609, ISO 5752
Size:	3" - 64", DN80 - DN1600
Rating:	ANSI 150LB - 600LB, PN16 - 100
Temperature Range:	-46°C - 450°C
Disc Sealing:	Graphite/Metal Laminated, Solid Metal
End Connection:	Wafer, Lug, Double Flange, ANSI B16.10 Gate Valve Face-to-Face

Typical Applications:

- Petrochemical
- Refinery
- Shipbuilding Industry
- Power Plant
- Steel Mill
- Water Treatment



The Neway TC Series butterfly valve is a true metal-seated design, featured with quarter-turn, **bi-directional***, and Zero-Leakage properties. Due to its metal sealing, it is inherently fire safe and can completely eliminate traditional butterfly leakage problems due to seat aging or deformation. A wide range of available body materials make the TC series not only good for isolation service, but also ideal for most process & control applications.

Bi-directional* Non-preferred direction zero leakage limited to specific material configuration at full pressure differential.

Triple Offset Butterfly Valve

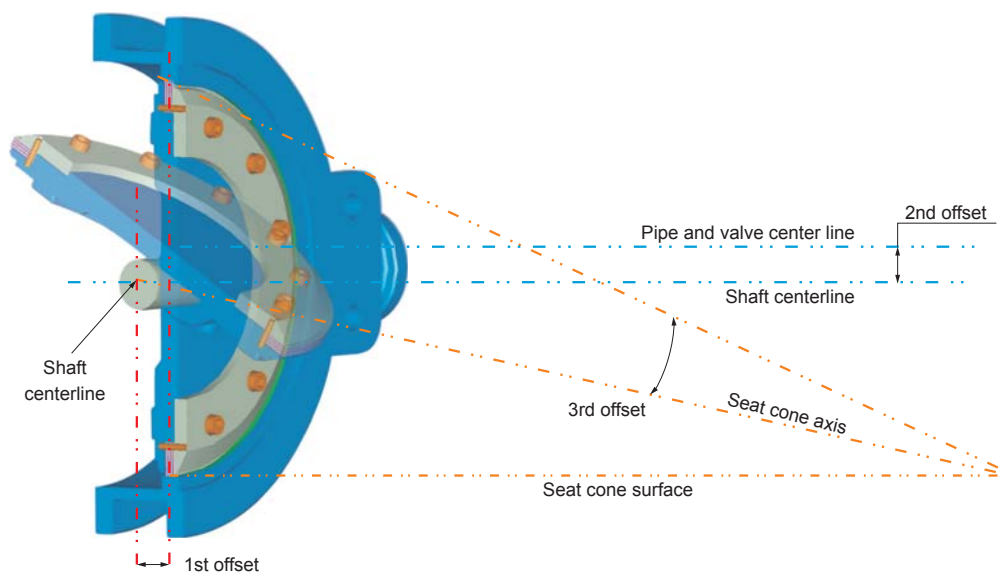
Design Features

Triple Offset Frictionless Design

1st offset: The stem shaft is offset from the sealing surface plane, allowing for a continuous engagement of the seating surface.

2nd offset: The stem shaft's rotation axis is offset from the center of the bore, removing contact between the seat and the seal ring through most of the disc's travel.

3rd offset: The conical seating surface is offset asymmetrically to eliminate friction during opening and closing.



Low Opening & Closing Torque

Neway TC Series butterfly valves combine the three offsets of the seating surface with the flexibility of graphite lamination to achieve a tight and uniform seal with a low required torque.

Anti-blowout Shaft

Double anti-blowout design satisfies API 609 and ASME B31.1 requirements through both internal and external stem retention.

Top Retention: Packing gland follower retains the stem integral collar.

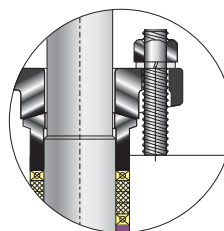
Bottom Retention: T shaped attachment prevents stem blow-out.

Zero Leakage

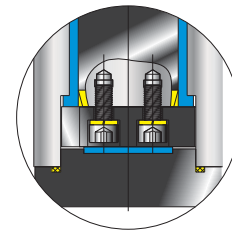
Laminated seal rings are designed to self align and allow valves to meet zero leakage per API 598.

Fire Safe Design

Standard TC Series butterfly valves are not soft seated and can meet API 607 fire test requirements.



Upper part retained



Lower part retained

Triple Offset Butterfly Valve

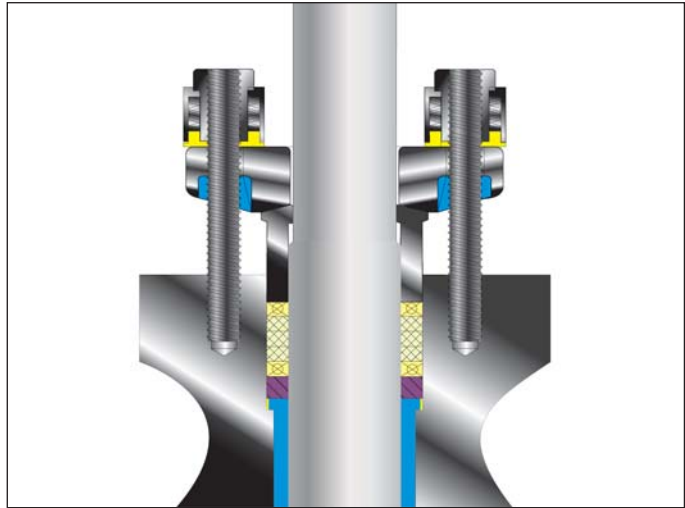
Design Features

Low Emission Shaft Seal

Neway can supply packing that limits fugitive emission rates down to 20 ppm*

- a.) The shaft is fully guided by a nitrided shaft bearing to reduce stem movement load due to line pressure thrust.
- b.) The packing set is a pre-compressed combination of braided graphite rings and die formed flexible graphite rings.
- c.) The controlled Ra0.4-Ra0.8 finishes of the shaft and Ra1.6 finish of the stuffing box provide optimum packing and shaft sealing performance.
- d.) Optional Live Loaded gland flange is available to provide constant packing compression to reduce fugitive emissions.
- e.) Optional shaft seal design is available per Shell MESC 77/312 & TA-Luft.

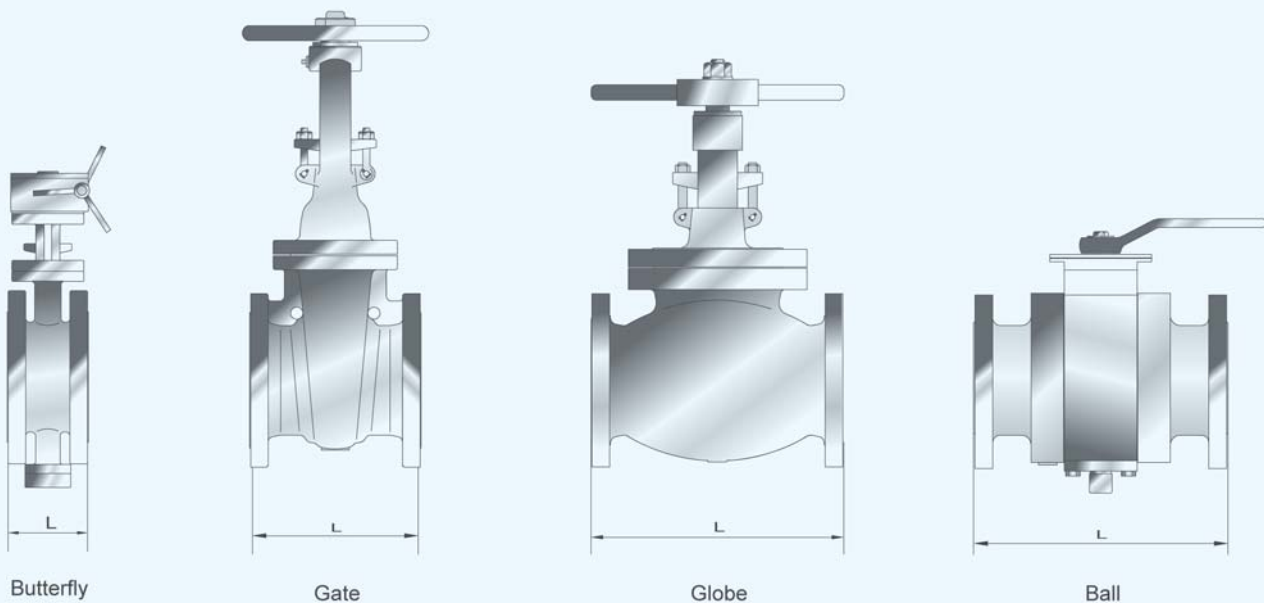
*20 ppm per the ISO 15848 sniffing method with helium gas.



Compact Design

Neway triple offset butterfly valves are designed in accordance with API 609 and offer flow control solutions in a compact design. The TC series provides a light weight solution to bulky gate, globe, and ball valves when space or weight are at a premium.

6" Valve	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)	49	77	100	190	70	144	168	211	140	234	284	248



Triple Offset Butterfly Valve

Design Features

High Strength Stem

Provides positive maximum strength

Mounting Pad

Designed per ISO 5211 to allow for the easy installation of gear box, pneumatic, or electric actuators

Upper Anti Blowout

Low Emission Packing (optional)

Braided (top and bottom) low emission packing limits fugitive emissions down to 20 ppm.

Extended Bearing

Fine-machined and hardened to reduce stem friction in order to achieve lower torque.

Laminated Seal

Seal ring flexes to achieve zero leakage. Parts are easily replaced with interchangeable parts.

Stellited Seat

Integral hardfaced seat results longer valve life and reduces maintenance.

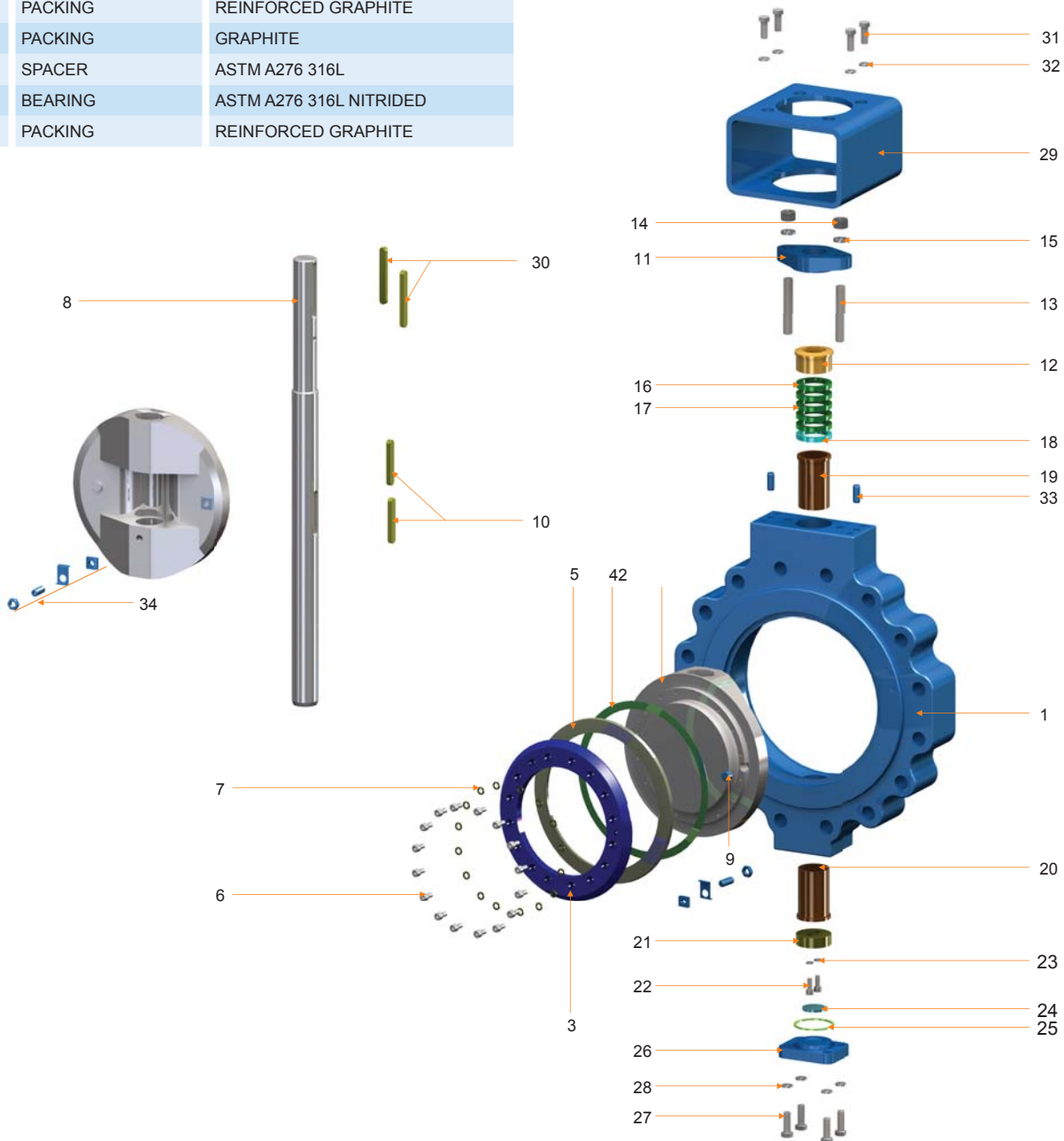
Lower Anti Blowout

Triple Offset Butterfly Valve

Material Specifications

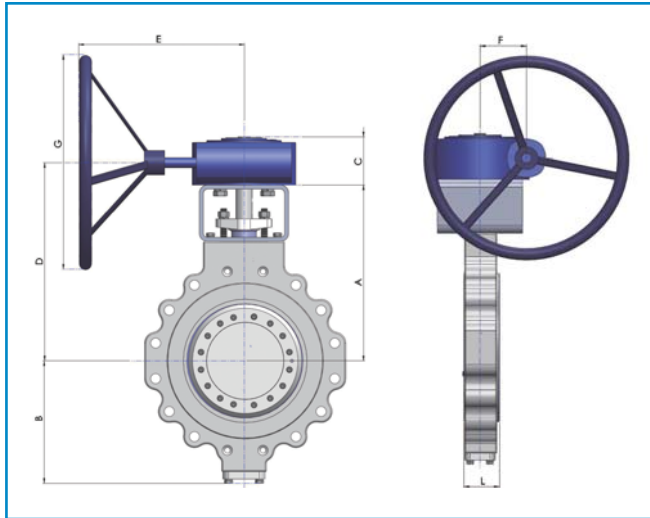
No.	Part	Standard Material
1	BODY	ASTM A216 WCB/STL.21 OVERLAY
2	DISC	ASTM A216 WCB
3	RING RETAINER	ASTM A105N NITRIDED
4	GASKET	SPIRAL WOUND GRAPHITE/SS316L
5	SEAL RING	LAMINATED UNS31803+GRAPHITE
6	SCREW	ASTM A193 B8
7	WASHER	S.S
8	STEM	17-4PH
9	PIN	S.S
10	KEY	17-4PH
11	GLAND FLANGE	ASTM A216 WCB
12	PACKING FOLLOWER	ASTM A276 420
13	BOLT	ASTM A193 B7
14	NUT	ASTM A194 2H
15	WASHER	AISI 1066
16	PACKING	REINFORCED GRAPHITE
17	PACKING	GRAPHITE
18	SPACER	ASTM A276 316L
19	BEARING	ASTM A276 316L NITRIDED
20	PACKING	REINFORCED GRAPHITE

No.	Part	Standard Material
21	BLOWOUT PROOF BLOCK	ASTM A276 316L NITRIDED
22	BOLT	ASTM A193 B8
23	WASHER	S.S
24	THRUST BEARING	ASTM A276 316L NITRIDED
25	GASKET	SPIRAL WOUND GRAPHITE/SS316L
26	BOTTOM FLANGE	ASTM A105N
27	STUD	ASTM A193 B7
28	WASHER	AISI 1066
29	BRACKET	AISI 1020
30	KEY	C.S
31	STUD	ASTM A193 B7
32	WASHER	AISI 1066
33	PIN	S.S
34	RETAINER DEVICE	S.S

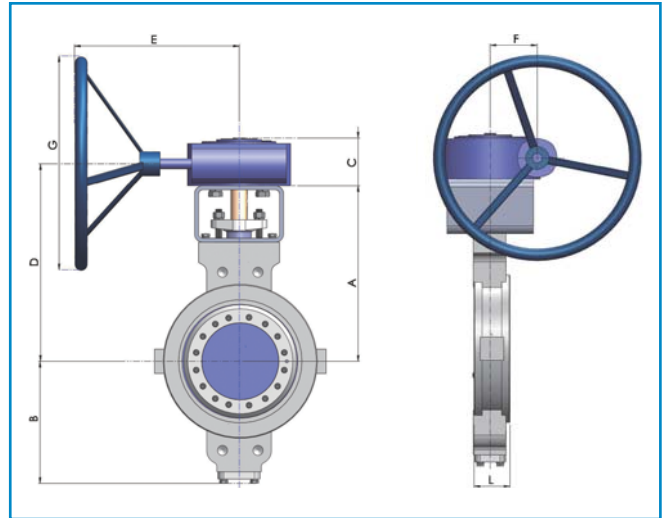


Triple Offset Butterfly Valve

Dimensions & Weight



Lug



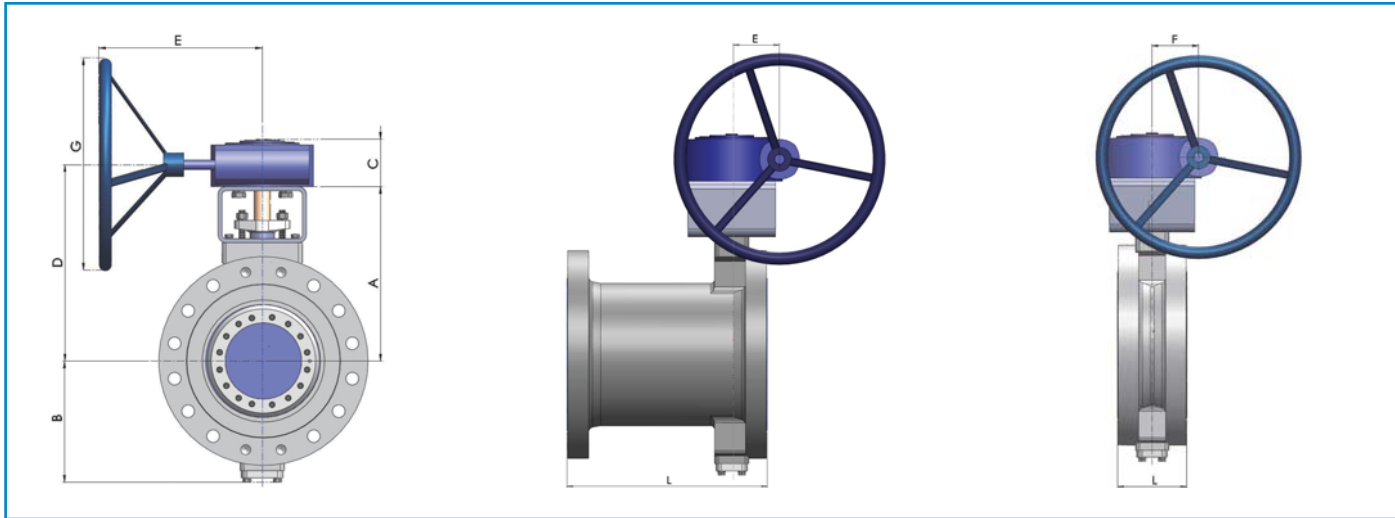
Wafer

Class 150LB (inch)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (lb)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	1.89	1.89	4.49	7.99	7.60	5.25	2.64	8.86	6.06	1.97	7.99	30.9	35.3	50.6	55.0	SW2
4"	2.13	2.13	5.00	9.02	8.03	5.75	2.64	9.29	6.06	1.97	7.99	39.6	46.2	74.8	79.2	SW2
6"	2.24	2.24	5.51	10.51	9.49	7.32	3.54	11.26	9.06	2.48	11.81	66.0	77.2	116.8	132.0	SW7
8"	2.52	2.52	5.98	11.50	13.07	8.25	3.54	14.84	9.06	2.48	11.81	105.6	116.8	184.8	204.6	SW7
10"	2.80	2.80	6.50	12.99	14.84	9.67	3.82	16.69	10.63	3.15	15.75	136.4	156.5	242.0	290.4	SW10
12"	3.19	3.19	7.01	14.02	15.75	10.85	5.16	17.87	16.54	4.72	19.69	187.0	220.0	332.2	400.2	SW20
14"	3.62	3.62	7.48	15.00	16.89	11.95	5.16	19.02	16.54	4.72	19.69	275.0	330.0	467.4	518.1	SW20
16"	4.02	4.02	8.50	15.98	18.50	13.21	5.16	20.63	16.54	4.72	19.69	396.0	462.0	572.0	638.0	SW20
18"	4.49	4.49	8.74	17.01	22.56	14.85	5.24	24.80	18.11	4.96	23.62	572.0	607.2	720.9	809.1	SW40
20"	5.00	5.00	9.02	17.99	24.69	16.60	5.63	30.43	20.08	5.43	23.62	682.0	793.7	946.0	1047.2	SW60
24"	6.06	6.06	10.51	20.00	27.36	19.28	5.63	34.41	20.08	5.43	29.92	990.0	1221.0	1419.0	1573.0	SW70
28"	6.50	6.50	11.50		30.91	21.54	8.15	35.20	25.59	8.07	29.92					SW200
30"	7.48	7.48	12.52		29.96	21.81	8.15	34.25	25.59	8.07	29.92					SW200
32"	7.48	7.48	12.52		33.27	22.68	8.15	37.56	25.59	8.07	29.92					SW270
36"	7.99	7.99	12.99		36.61	25.59	9.41	41.26	27.17	9.09	29.92					SW300
38"	8.50	8.50	16.14		38.11	27.80	9.41	42.76	27.17	9.09	29.92					SW300
40"	8.50	8.50	16.14		38.78	28.11	9.41	43.43	27.17	9.09	29.92					SW300
42"	9.02	9.02	16.14		39.84	29.17	9.41	48.43	24.41	9.09	29.92					SW400
44"	10.00	10.00	18.50		40.83	30.24	9.41	49.41	24.41	9.09	29.92					SW400
48"	10.00	10.00	18.50		45.00	33.35	10.48	53.59	29.14	10.11	35.44					SW600

Triple Offset Butterfly Valve

Dimensions & Weight



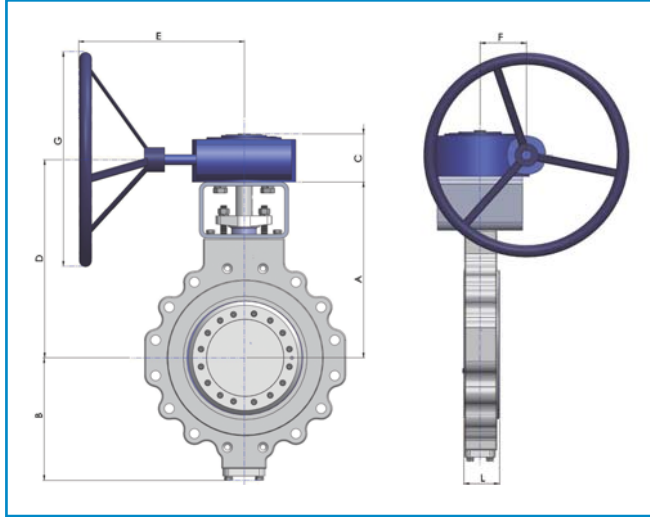
RF

Class 150LB (mm)

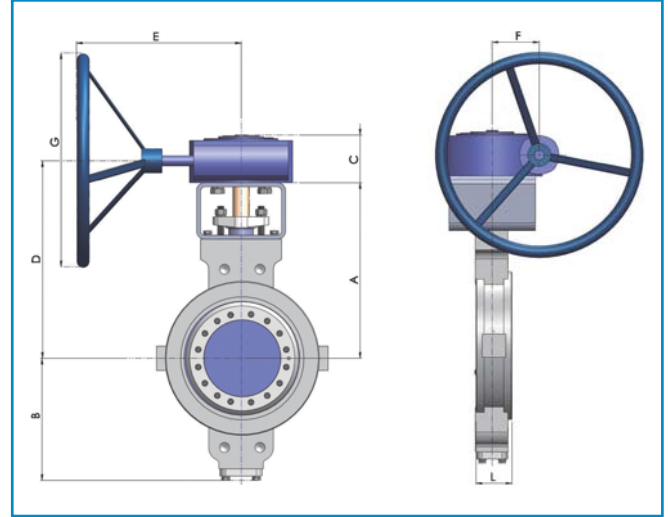
Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (kg)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
DN80	48	48	114	203	193	133.4	67	225	154	50	203	14	16	23	25	SW2
DN100	54	54	127	229	204	146	67	236	154	50	203	18	21	34	36	SW2
DN150	57	57	140	267	241	186	90	286	230	63	300	30	35	53	60	SW7
DN200	64	64	152	292	332	209.6	90	377	230	63	300	48	53	84	93	SW7
DN250	71	71	165	330	377	245.6	97	424	270	80	400	62	71	110	132	SW10
DN300	81	81	178	356	400	275.6	131	454	420	120	500	85	100	151	182	SW20
DN350	92	92	190	381	429	303.6	131	483	420	120	500	125	150	212	235	SW20
DN400	102	102	216	406	470	335.6	131	524	420	120	500	180	210	260	290	SW20
DN450	114	114	222	432	573	377.1	133	630	460	126	600	260	276	327	367	SW40
DN500	127	127	229	457	627	421.6	143	773	560	138	600	310	360	430	475	SW60
DN600	154	154	267	508	695	489.6	143	874	570	138	760	450	555	645	715	SW70
DN700	165	165	292		785	547	207	894	650	205	760					SW200
DN750	190	190	318		761	554	207	870	650	205	760					SW200
DN800	190	190	318		845	576	207	954	650	205	760					SW270
DN900	203	203	330		930	650	239	1048	690	231	760					SW300
DN950	216	216	410		968	706	239	1086	690	231	760					SW300
DN1000	216	216	410		985	714	239	1103	690	231	760					SW300
DN1050	229	229	410		1012	741	239	1230	620	231	760					SW400
DN1100	254	254	470		1037	768	239	1255	620	231	760					SW400
DN1200	254	254	470		1143	847	266	1361	740	256.75	900					SW600

Triple Offset Butterfly Valve

Dimensions & Weight



Lug



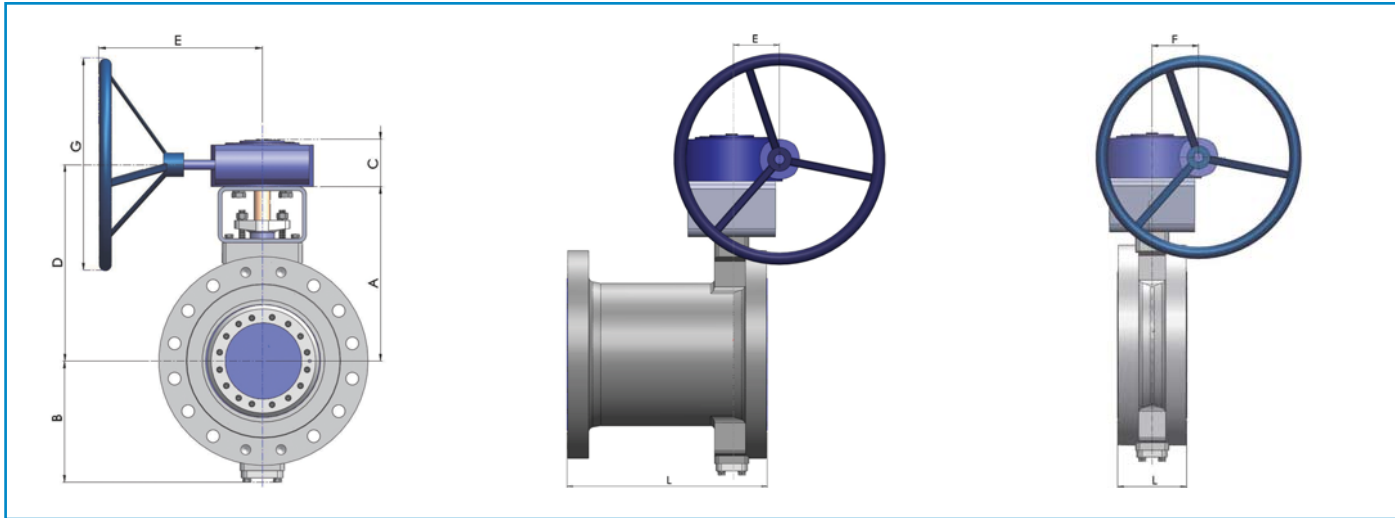
Wafer

Class 300LB (inch)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (lb)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	1.89	1.89	4.49	11.14	7.68	5.33	2.64	8.94	6.06	1.97	7.99	33.1	37.5	61.7	72.8	SW2
4"	2.13	2.13	5.00	12.01	8.50	6.22	2.64	9.76	6.06	1.97	7.99	41.8	48.4	90.2	107.8	SW2
6"	2.32	2.32	5.51	15.87	12.52	7.70	3.54	14.29	9.06	2.48	11.81	92.4	105.6	165.0	224.4	SW7
8"	2.87	2.87	5.98	16.50	13.98	8.88	3.82	15.83	10.63	3.15	15.75	136.4	158.7	242.0	308.0	SW10
10"	3.27	3.27	6.50	17.99	15.43	10.50	5.16	17.56	16.54	4.72	19.69	211.2	257.4	363.0	473.0	SW20
12"	3.62	3.62	7.01	19.76	17.13	11.85	5.16	19.25	16.54	4.72	19.69	286.0	352.0	488.4	649.0	SW20
14"	4.61	4.61	7.48	30.00	21.73	13.51	5.63	27.48	20.08	5.43	23.62	462.0	627.0	737.0	1001.0	SW60
16"	5.24	5.24	8.50	32.99	23.15	14.89	5.63	30.20	20.08	5.43	23.62	638.0	837.8	959.0	1291.9	SW70
18"	5.87	5.87	8.74	35.98	24.41	16.42	6.61	32.13	20.87	5.43	27.56	781.0	1045.0	1157.4	1631.4	SW100
20"	6.26	6.26	9.02	39.02	25.75	17.48	8.15	30.04	25.59	8.07	29.92	1133.0	1441.0	1617.0	2167.0	SW200
24"	7.13	7.13	10.51	45.00	28.70	20.44	8.15	32.99	25.59	8.07	29.92	1430.0	1995.2	2257.5	3141.6	SW200
28"	9.02	9.02	11.50		32.72	22.44	9.41	37.36	27.17	9.09	29.92					SW300
30"	9.02	9.02	12.52		34.31	24.67	9.41	42.89	24.41	9.09	29.92					SW400
32"	9.49	9.49	12.52		36.22	24.61	9.41	44.80	24.41	9.09	29.92					SW400
36"	9.49	9.49	12.99		39.57	27.36	10.48	48.15	29.14	10.11	35.44					SW600
40"	11.81	11.81	16.14		40.63	29.72	10.48	49.22	29.14	10.11	35.44					SW600

Triple Offset Butterfly Valve

Dimensions & Weight



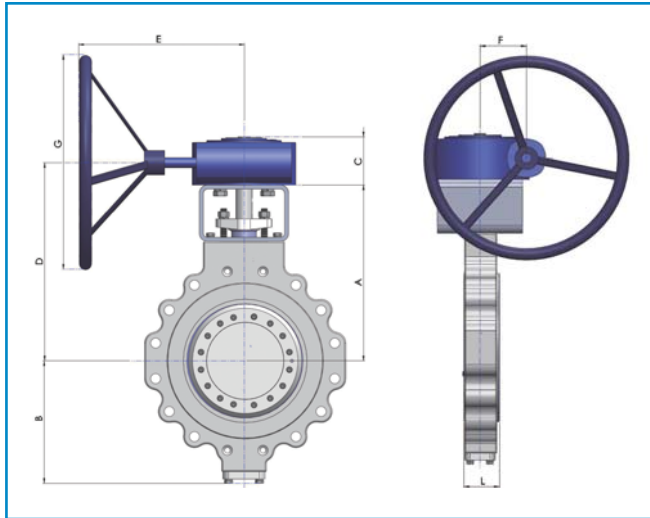
RF

Class 300LB (mm)

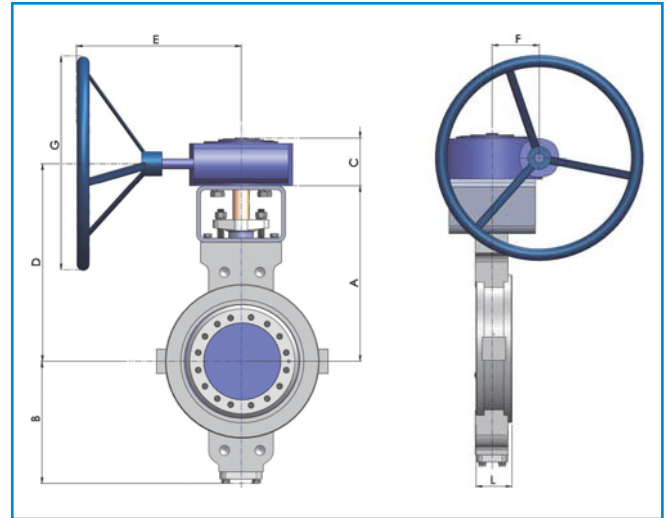
Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (kg)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
DN80	48	48	114	283	195	135.4	67	227	154	50	203	15	17	28	33	SW2
DN100	54	54	127	305	216	158	67	248	154	50	203	19	22	41	49	SW2
DN150	59	59	140	403	318	195.6	90	363	230	63	300	42	48	75	102	SW7
DN200	73	73	152	419	355	225.6	97	402	270	80	400	62	72	110	140	SW10
DN250	83	83	165	457	392	266.6	131	446	420	120	500	96	117	165	215	SW20
DN300	92	92	178	502	435	301.1	131	489	420	120	500	130	160	222	295	SW20
DN350	117	117	190	762	552	343.1	143	698	510	138	600	210	285	335	455	SW60
DN400	133	133	216	838	588	378.1	143	767	510	138	600	290	380	435	586	SW70
DN450	149	149	222	914	620	417.1	168	816	530	138	700	355	475	525	740	SW100
DN500	159	159	229	991	654	444.1	207	763	650	205	760	515	655	735	985	SW200
DN600	181	181	267	1143	729	519.1	207	838	650	205	760	650	905	1024	1425	SW200
DN700	229	229	292		831	570	239	949	690	231	760					SW300
DN750	229	229	318		871.5	626.5	239	1090	620	231	760					SW400
DN800	241	241	318		920	625	239	1138	620	231	760					SW400
DN900	241	241	330		1005	695	266	1223	740	256.75	900					SW600
DN1000	300	300	410		1032	755	266	1250	740	256.75	900					SW600

Triple Offset Butterfly Valve

Dimensions & Weight



Lug



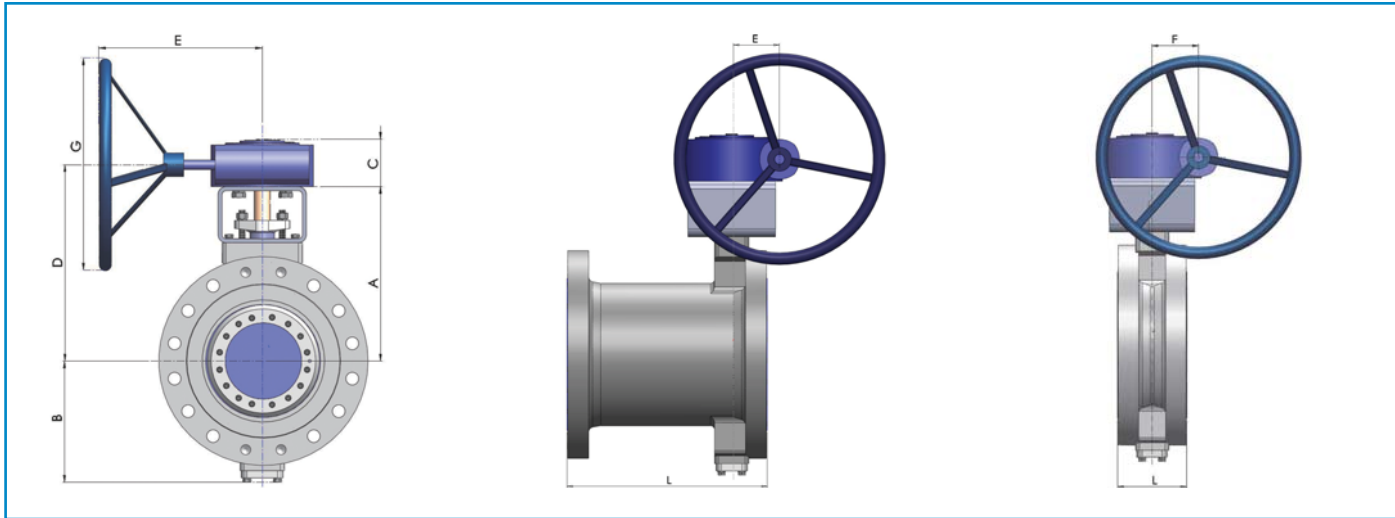
Wafer

Class 600LB (inch)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (lb)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
4"	2.52	2.52	7.48	17.01	11.54	7.19	3.54	13.31	9.06	2.48	11.81	83.60	105.82	171.96	198.42	SW7
6"	3.07	3.07	8.27	22.01	13.70	9.14	5.16	15.83	16.54	4.72	19.69	171.60	205.03	308.65	374.79	SW20
8"	4.02	4.02	9.06	25.98	15.12	10.24	5.24	17.24	18.11	4.96	23.62	253.00	308.65	453.20	616.00	SW40
10"	4.61	4.61	9.84	30.98	20.24	12.22	5.63	25.98	20.08	5.43	23.62	418.00	529.11	748.00	990.00	SW60
12"	5.51	5.51	10.63	32.99	21.97	14.16	6.61	29.69	20.87	5.43	27.56	616.00	770.00	976.80	1320.00	SW100
14"	6.10	6.10	11.42	35.00	22.56	14.69	6.61	30.28	21.65	5.43	29.92	704.00	1146.40	1263.25	1829.83	SW130
16"	7.01	7.01	12.20	39.02	24.25	16.28	7.40	27.60	25.59	6.73	29.92	943.80	1399.93	1532.21	2204.62	SW180
18"	7.87	7.87	12.99	42.99	28.86	18.27	9.41	33.50	27.17	9.09	29.92	1227.60	1851.90	2336.90	3130.60	SW300
20"	8.50	8.50	13.78	47.01	29.65	19.67	9.41	38.23	24.41	9.09	29.92	1601.60	2400.83	2788.84	3858.09	SW400
24"	9.13	9.13	15.35	55.00	33.66	22.13	9.41	42.24	24.41	9.09	29.92	2189.00	3048.99	3622.19	4916.30	SW400

Triple Offset Butterfly Valve

Dimensions & Weight



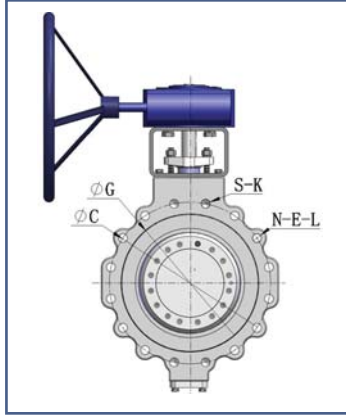
RF

Class 600LB (mm)

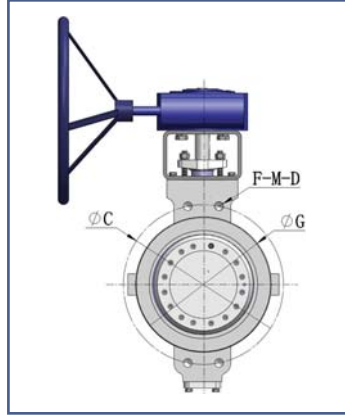
Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (kg)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
DN100	64	64	190	432	293	182.6	90	338	230	63	300	38	48	78	90	SW7
DN150	78	78	210	559	348	232.1	131	402	420	120	500	78	93	140	170	SW20
DN200	102	102	230	660	384	260.1	133	438	460	126	600	115	140	206	280	SW40
DN250	117	117	250	787	514	310.5	143	660	510	138	600	190	240	340	450	SW60
DN300	140	140	270	838	558	359.6	168	754	530	138	700	280	350	444	600	SW100
DN350	155	155	290	889	573	373	168	769	550	138	760	320	520	573	830	SW130
DN400	178	178	310	991	616	413.5	188	701	650	171	760	429	635	695	1000	SW180
DN450	200	200	330	1092	733	464	239	851	690	231	760	558	840	1060	1420	SW300
DN500	216	216	350	1194	753	499.5	239	971	620	231	760	728	1089	1265	1750	SW400
DN600	232	232	390	1397	855	562	239	1073	620	231	760	995	1383	1643	2230	SW400

Engineering Data

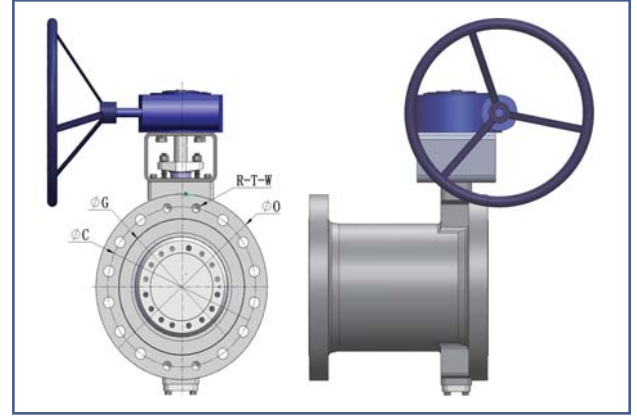
End Connection Dimensions



Lug



Wafer



RF

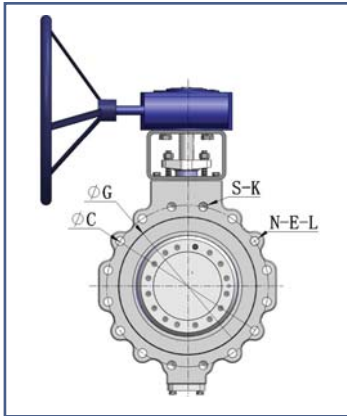
Class 150LB (Lug and Wafer)

Size		G		C		F	M	D		N	E	L		S	K	
inch	mm	inch	mm	inch	mm			inch	mm			inch	mm		inch	mm
3"	80	5.00	127	6.00	152.5		NONE	NONE		4	5/8-11UNC-2B	full thread	NONE	NONE	NONE	
4"	100	6.18	157	7.50	190.5	2	φ19	through hole		8	5/8-11UNC-2B	full thread	NONE	NONE	NONE	
6"	150	8.50	216	9.51	241.5	2	φ21	through hole		8	3/4-10UNC-2B	full thread	NONE	NONE	NONE	
8"	200	10.63	270	11.75	298.5	2	φ22	through hole		8	3/4-10UNC-2B	full thread	NONE	NONE	NONE	
10"	250	12.76	324	14.25	362	4	φ25	through hole		12	7/8-9UNC-2B	full thread	NONE	NONE	NONE	
12"	300	15.00	381	17.01	432	4	φ25	through hole		12	7/8-9UNC-2B	1.30	33	NONE	NONE	NONE
14"	350	16.26	413	18.74	476	4	φ29	through hole		12	1-8UNC-2B	1.30	33	NONE	NONE	NONE
16"	400	18.50	470	21.24	539.5	4	1-8UNC-2B	0.67	17	16	1-8UNC-2B	1.50	38	4	0.67	17
18"	450	20.98	533	22.76	578	4	1-1/8-8UN-2B	0.79	20	16	1-1/8-8UN-2B	1.50	38	4	0.79	20
20"	500	22.99	584	25.00	635	4	1-1/8-8UN-2B	0.79	20	20	1-1/8-8UN-2B	1.69	43	4	0.79	20
24"	600	27.24	692	29.51	749.5	4	1-1/8-8UN-2B	0.87	22	20	1-1/8-8UN-2B	1.89	48	4	0.87	22

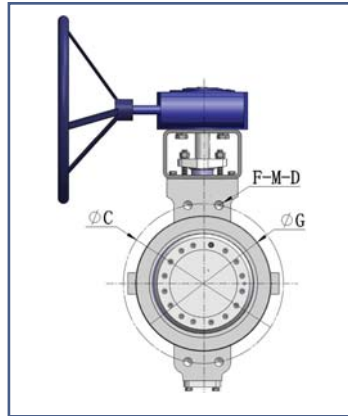
Class 300LB (Lug and Wafer)

Size		G		C		F	M	D		N	E	L		S	K	
inch	mm	inch	mm	inch	mm			inch	mm			inch	mm		inch	mm
3"	80	5.00	127	6.63	168.5	4	3/4-10UNC-2B	0.51	13	8	3/4-10UNC-2B	full thread	4	0.51	13	
4"	100	6.18	157	7.87	200	4	φ22	through hole		8	3/4-10UNC-2B	full thread	NONE	NONE	NONE	
6"	150	8.50	216	10.63	270	4	φ22	through hole		12	3/4-10UNC-2B	full thread	NONE	NONE	NONE	
8"	200	10.63	270	12.99	330	4	φ25	through hole		12	7/8-9UNC-2B	full thread	NONE	NONE	NONE	
10"	250	12.76	324	15.26	387.5	4	1-8UNC-2B	0.67	17	16	1-8UNC-2B	full thread	4	0.67	17	
12"	300	15.00	381	17.76	451	4	1-1/8-8UN-2B	0.79	20	16	1-1/8-8UN-2B	full thread	4	0.79	20	
14"	350	16.26	413	20.26	514.5	4	1-1/8-8UN-2B	0.79	20	20	1-1/8-8UN-2B	1.69	43	4	0.79	20
16"	400	18.50	470	22.50	571.5	4	1-1/4-8UN-2B	0.87	22	20	1-1/4-8UN-2B	1.89	48	4	0.87	22
18"	450	21.02	534	24.76	629	4	1-1/4-8UN-2B	0.87	22	24	1-1/4-8UN-2B	1.89	48	4	0.87	22
20"	500	22.99	584	27.01	686	4	1-1/4-8UN-2B	0.87	22	24	1-1/4-8UN-2B	1.89	48	4	0.87	22
24"	600	27.24	692	32.01	813	4	1-1/2-8UN-2B	0.98	25	24	1-1/2-8UN-2B	2.24	57	4	0.98	25

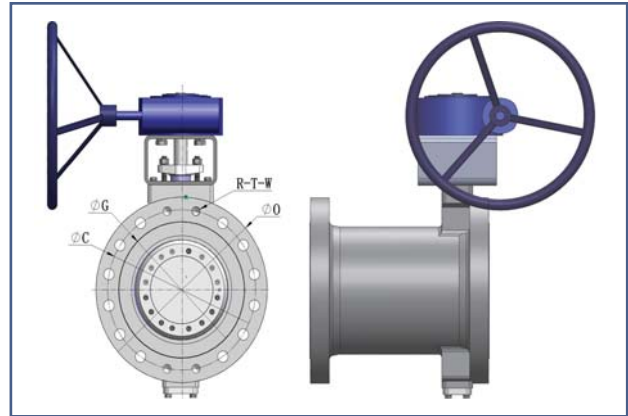
End Connection Dimensions



Lug



Wafer



RF

Class 600LB (Lug and Wafer)

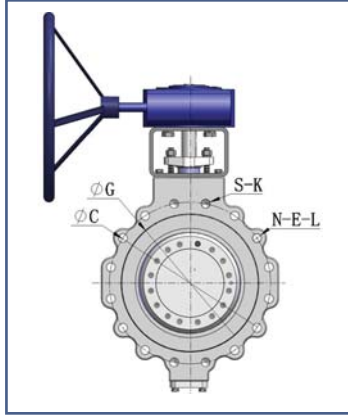
Size		G		C		F	M	D		N	E	L		S	K	
inch	mm	inch	mm	inch	mm			inch	mm			inch	mm		inch	mm
4"	100	6.18	157	8.50	216	4	7/8-9UNC-2B	0.59	15	8	7/8-9UNC-2B	full thread	4	0.59	15	
6"	150	8.50	216	11.50	292	4	1-8UNC-2B	0.67	17	12	1-8UNC-2B	full thread	4	0.67	17	
8"	200	10.63	270	13.74	349	4	1-1/8-8UN-2B	0.79	20	12	1-1/8-8UN-2B	full thread	4	0.79	20	
10"	250	12.76	324	17.01	432	4	1-1/4-8UN-2B	0.87	22	16	1-1/4-8UN-2B	1.89	48	4	0.87	22
12"	300	15.00	381	19.25	489	4	1-1/4-8UN-2B	0.87	22	20	1-1/4-8UN-2B	1.89	48	4	0.87	22
14"	350	16.26	413	20.75	527	4	1-3/8-8UN-2B	0.94	24	20	1-3/8-8UN-2B	1.77	52	4	0.94	24
16"	400	18.50	470	23.74	603	4	1-1/2-8UN-2B	0.98	25	20	1-1/2-8UN-2B	2.24	57	4	0.98	25
18"	450	20.98	533	25.75	654	4	1-5/8-8UN-2B	1.06	27	20	1-5/8-8UN-2B	2.44	62	4	1.06	27
20"	500	22.99	584	28.50	724	4	1-5/8-8UN-2B	1.06	27	24	1-5/8-8UN-2B	2.44	62	4	1.06	27
24"	600	27.24	692	32.99	838	4	1-7/8-8UN-2B	1.26	32	24	1-7/8-8UN-2B	2.83	72	4	1.26	32

Class 150LB (RF)

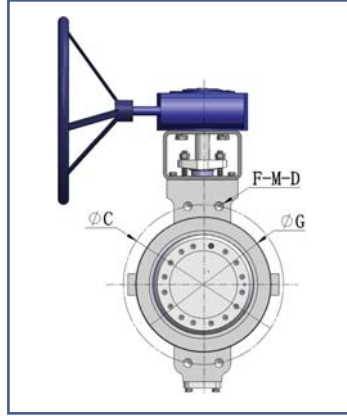
Size		G		C		O		R	T	W		H	P
inch	mm	inch	mm	inch	mm	inch	mm			inch	mm		
3"	80	5.00	127	6.00	152.5	7.48	190	4	3/4-10UNC-2B	0.94	24	8	φ22
4"	100	6.18	157	7.50	190.5	9.02	229	4	3/4-10UNC-2B	0.79	20	8	φ22
6"	150	8.50	216	9.51	241.5	10.98	279	4	3/4-10UNC-2B	0.94	24	12	φ22
8"	200	10.63	270	11.75	298.5	13.58	345	4	7/8-9UNC-2B	0.94	24	12	φ25
10"	250	12.76	324	14.25	362	15.98	406	4	1-8UNC-2B	1.10	28	16	φ29
12"	300	15.00	381	17.01	432	19.02	483	4	1-1/8-8UN-2B	1.26	32	16	φ32
14"	350	16.26	413	18.74	476	21.06	535	4	1-1/8-8UN-2B	1.26	32	20	φ32
16"	400	18.50	470	21.24	539.5	23.50	597	4	1-1/4-8UN-2B	1.57	40	20	φ35
18"	450	20.98	533	22.76	578	25.00	635	4	1-1/4-8UN-2B	1.42	36	24	φ35
20"	500	22.99	584	25.00	635	27.48	698	6	1-1/4-8UN-2B	1.42	36	24	φ35
24"	600	27.24	692	29.51	749.5	32.01	813	6	1-1/2-8UN-2B	1.57	40	24	φ41

Engineering Data

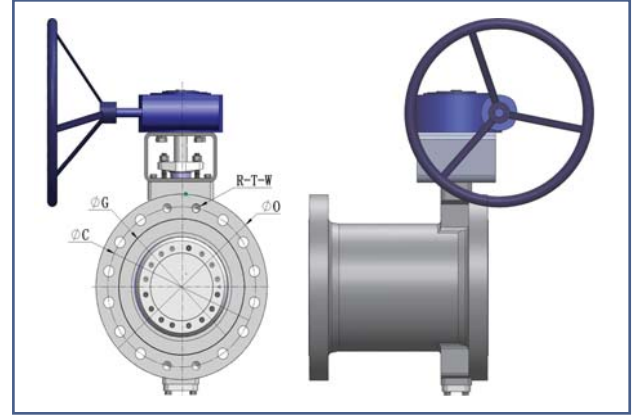
End Connection Dimensions



Lug



Wafer



RF

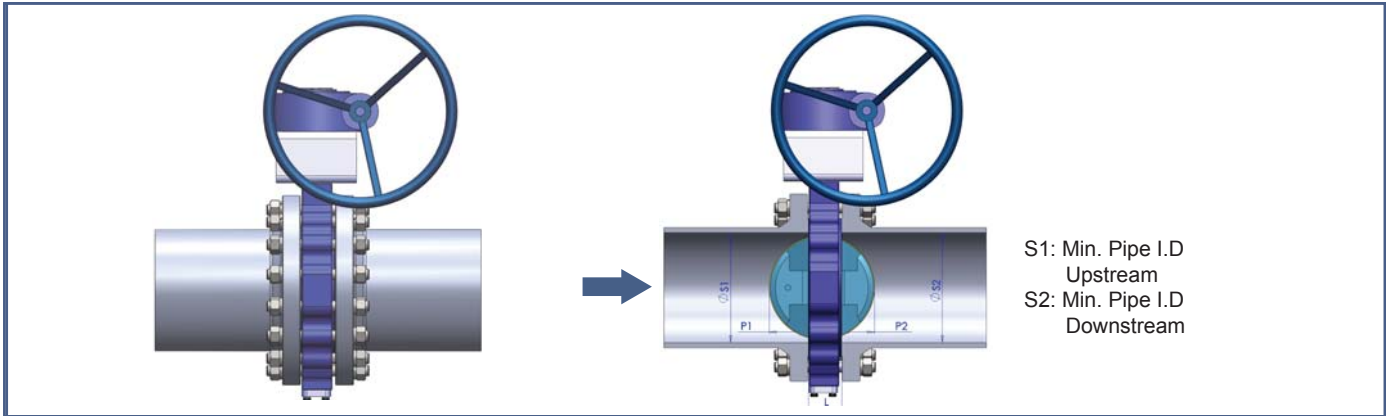
Class 300LB (RF)

Size		G		C		O		R	T	W		H	P
inch	mm	inch	mm	inch	mm	inch	mm			inch	mm		
3"	80	5.00	127	6.63	168.5	8.27	210	4	3/4-10UNC-2B	0.94	24	8	φ22
4"	100	6.18	157	7.87	200	10.00	254	4	3/4-10UNC-2B	0.94	24	8	φ22
6"	150	8.50	216	10.63	270	12.60	320	4	3/4-10UNC-2B	0.94	24	12	φ22
8"	200	10.63	270	12.99	330	14.96	380	4	7/8-9UNC-2B	1.06	27	12	φ25
10"	250	12.76	324	15.26	387.5	17.52	445	4	1-8UNC-2B	1.18	30	16	φ29
12"	300	15.00	381	17.76	451	20.51	521	4	1-1/8-8UN-2B	1.42	36	16	φ32
14"	350	16.26	413	20.26	514.5	23.03	585	4	1-1/8-8UN-2B	1.34	34	20	φ32
16"	400	18.50	470	22.50	571.5	25.51	648	4	1-1/4-8UN-2B	1.57	40	20	φ35
18"	450	21.02	534	24.76	629	27.99	711	4	1-1/4-8UN-2B	1.57	40	24	φ35
20"	500	22.99	584	27.01	686	30.51	775	6	1-1/4-8UN-2B	1.57	40	24	φ35
24"	600	27.24	692	32.01	813	36.02	915	6	1-1/2-8UN-2B	1.89	48	24	φ41

Class 600LB (RF)

Size		G		C		O		R	T	W		H	P
inch	mm	inch	mm	inch	mm	inch	mm			inch	mm		
4"	100	6.18	157	8.50	216	10.75	273	4	7/8-9UNC-2B	1.10	28	8	φ25
6"	150	8.50	216	11.50	292	14.02	356	4	1-8UNC-2B	1.26	32	12	φ29
8"	200	10.63	270	13.74	349	16.50	419	4	1-1/8-8UN-2B	1.42	36	12	φ32
10"	250	12.76	324	17.01	432	20.00	508	4	1-1/4-8UN-2B	1.57	40	16	φ35
12"	300	15.00	381	19.25	489	22.01	559	4	1-1/4-8UN-2B	1.57	40	20	φ35
14"	350	16.42	417	20.75	527	23.82	605	4	1-3/8-8UN-2B	1.73	44	20	φ38
16"	400	18.50	470	23.74	603	26.97	685	4	1-1/2-8UN-2B	1.89	48	20	φ41
18"	450	20.98	533	25.75	654	29.33	745	4	1-5/8-8UN-2B	2.05	52	20	φ45
20"	500	22.99	584	28.50	724	32.09	815	6	1-5/8-8UN-2B	2.05	52	24	φ45
24"	600	27.24	692	32.99	838	37.01	940	4	1-7/8-8UN-2B	2.36	68	24	φ51

Min. Pipe I.D. for Disc Clearance



Class 150LB

Size		L		S1		S2		P1		P2	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
3"	80	1.89	48	2.68	68	1.46	37	0.83	21	0.16	4
4"	100	2.13	54	3.74	95	2.99	76	1.22	31	0.63	16
6"	150	2.24	57	5.55	141	5.12	130	2.01	51	1.46	37
8"	200	2.52	64	7.48	190	7.01	178	2.87	73	2.20	56
10"	250	2.80	71	9.37	238	8.94	227	3.70	94	3.03	77
12"	300	3.19	81	11.34	288	10.94	278	4.57	116	3.78	96
14"	350	3.62	92	12.36	314	11.89	302	4.88	124	4.09	104
16"	400	4.02	102	14.21	361	13.74	349	5.59	142	4.80	122
18"	450	4.49	114	16.22	412	15.63	397	6.50	165	5.47	139
20"	500	5.00	127	17.80	452	17.20	437	7.05	179	6.02	153
24"	600	6.06	154	21.69	551	21.14	537	8.50	216	7.48	190

Class 300LB

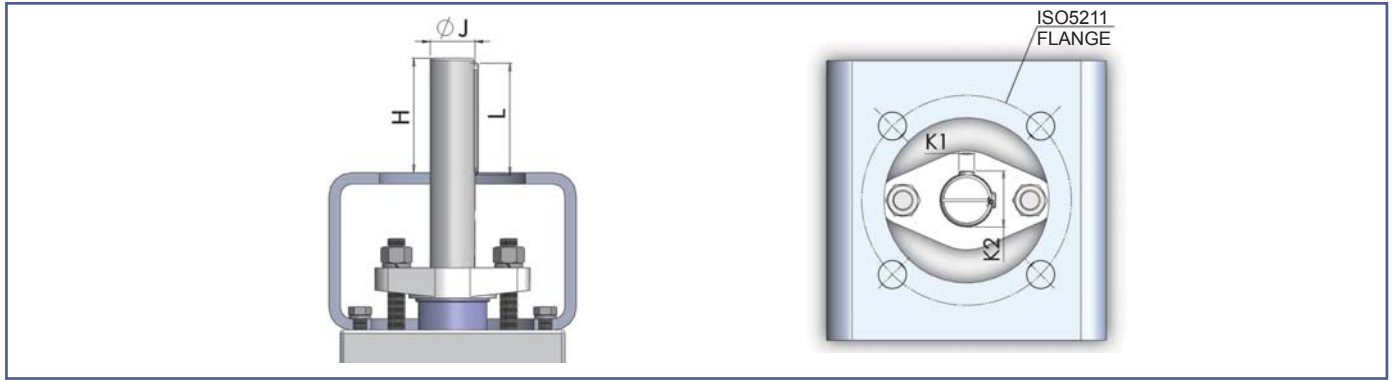
Size		L		S1		S2		P1		P2	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
3"	80	1.89	48	2.68	68	1.46	37	0.83	21	0.16	4
4"	100	2.13	54	3.74	95	2.99	76	1.22	31	0.63	16
6"	150	2.32	59	5.55	141	5.04	128	2.01	51	1.42	36
8"	200	2.87	73	7.40	188	6.81	173	2.76	70	2.01	51
10"	250	3.27	83	9.29	236	8.82	224	3.50	89	2.76	70
12"	300	3.62	92	11.30	287	10.87	276	4.33	110	3.58	91
14"	350	4.61	117	12.13	308	11.69	297	4.33	110	3.62	92
16"	400	5.24	133	13.98	355	13.15	334	5.08	129	4.02	102
18"	450	5.89	149	15.55	395	14.65	372	5.63	143	4.49	114
20"	500	6.26	159	17.36	441	16.54	420	6.34	161	5.20	132
24"	600	7.13	181	21.14	537	20.51	521	7.72	196	6.81	173

Class 600LB

Size		L		S1		S2		P1		P2	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
4"	100	2.52	64	3.70	94	2.72	69	1.06	27	0.43	11
6"	150	3.07	78	5.63	143	4.88	124	1.73	43.84	1.10	28
8"	200	4.02	102	7.05	179	6.30	160	2.05	52	1.50	38
10"	250	4.61	117	8.90	226	8.19	208	2.76	70	2.09	53
12"	300	5.51	140	10.55	268	9.92	252	3.15	80	2.56	65
14"	350	6.10	155	11.50	292	10.51	267	3.50	89	2.60	66
16"	400	7.01	178	13.19	335	11.93	303	4.06	103	2.91	74
18"	450	7.87	200	14.33	364	13.54	344	4.17	106	3.46	88
20"	500	8.50	216	15.91	404	15.04	382	4.69	119	3.90	99
24"	600	9.13	232	19.84	504	18.82	478	6.34	161	5.28	134

Engineering Data

Dimensions of Top Flange



Class 150LB

Size		H		J		K1		K2		L		ISO 5211
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
3"	80	1.38	35	0.63	16	0.20	5	0.71	18	1.26	32	F10
4"	100	1.54	39	0.71	18	0.24	6	0.81	20.5	1.42	36	F10
6"	150	1.61	41	0.87	22	0.31	8	1.00	25.5	1.57	40	F10
8"	200	2.28	58	1.02	26	0.31	8	1.14	29	2.20	56	F12
10"	250	2.28	58	1.10	28	0.31	8	1.22	31	2.20	56	F12
12"	300	2.48	63	1.26	32	0.39	10	1.38	35	2.48	63	F12
14"	350	2.83	72	1.38	35	0.39	10	1.50	38	2.76	70	F16
16"	400	4.06	103	1.57	40	0.47	12	1.69	43	3.94	100	F16
18"	450	4.45	113	1.77	45	0.55	14	1.91	48.5	4.33	110	F25
20"	500	4.41	112	1.97	50	0.55	14	2.11	53.5	4.33	110	F25
24"	600	4.45	113	2.36	60	0.71	18	2.52	64	4.33	110	F25

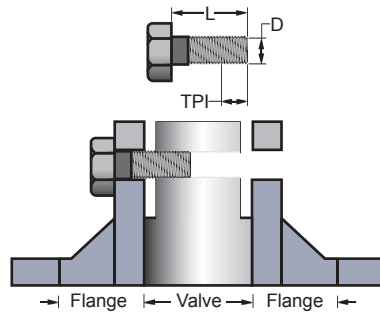
Class 300LB

Size		H		J		K1		K2		L		ISO 5211
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
3"	80	1.30	33	0.63	16	0.20	5	0.71	18	1.26	32	F10
4"	100	1.46	37	0.71	18	0.24	6	0.81	20.5	1.42	36	F10
6"	150	1.89	48	1.02	26	0.31	8	1.14	29	1.77	45	F12
8"	200	2.28	58	1.10	28	0.31	8	1.22	31	2.20	56	F12
10"	250	2.87	73	1.38	35	0.39	10	1.50	38	2.76	70	F16
12"	300	4.06	103	1.57	40	0.47	12	1.69	43	3.94	100	F16
14"	350	4.45	113	1.97	50	0.55	14	2.11	53.5	4.33	110	F25
16"	400	4.45	113	2.17	55	0.63	16	2.32	59	4.33	110	F25
18"	450	5.63	143	2.36	60	0.71	18	2.52	64	5.51	140	F25
20"	500	6.26	159	2.76	70	0.79	20	2.93	74.5	6.30	160	F30
24"	600	6.42	163	3.15	80	0.87	22	3.35	85	6.30	160	F30

Class 600LB

Size		H		J		K1		K2		L		ISO 5211
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
4"	100	2.17	55	1.02	26	0.31	8	1.14	29	2.20	56	F12
6"	150	2.68	68	1.38	35	0.39	10	1.50	38	2.76	70	F16
8"	200	4.41	112	1.57	40	0.47	12	1.69	43	3.94	100	F16
10"	250	4.45	113	1.97	50	0.55	14	2.11	53.5	4.33	110	F25
12"	300	4.45	113	2.36	60	0.71	18	2.52	64	4.33	110	F25
14"	350	5.71	145	2.56	65	0.71	18	2.72	69	5.51	140	F25
16"	400	6.22	158	2.95	75	0.79	20	3.13	79.5	6.30	160	F30
18"	450	6.89	175	3.35	85	0.87	22	3.54	90	7.09	180	F35
20"	500	7.28	185	3.74	95	0.98	25	3.94	100	7.09	180	F35
24"	600	8.03	204	4.53	115	1.26	32	4.80	122	8.27	210	F35

Lug Valve Cap Screw Dimensions

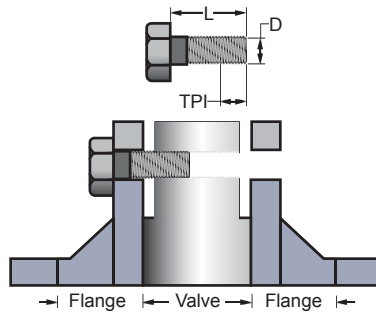


Class 150LB

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	80	0.63	15.88	11	1.97	50	8
4	100	0.63	15.88	11	1.97	50	16
6	150	0.75	19.05	10	2.17	55	16
8	200	0.75	19.05	10	2.36	60	16
10	250	0.88	22.23	9	2.56	65	24
12	300	0.88	22.23	9	2.56	65	24
14	350	1	25.4	8	2.76	70	12
					2.95	75	12
16	400	1	25.4	8	2.95	75	24
					2.17	55	4
18	450	1.125	28.58	8	2.56	65	4
					3.15	80	24
20	500	1.125	28.58	8	2.56	65	4
					2.76	70	4
24	600	1.25	31.75	8	3.54	90	32
					2.56	65	4
					2.95	75	4
					3.94	100	32
					3.15	80	4
					3.54	90	4

Engineering Data

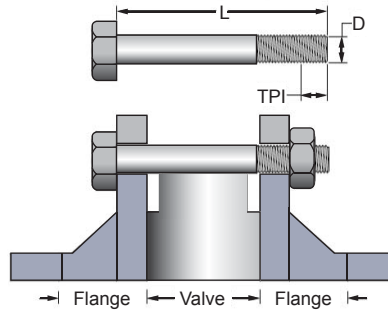
Lug Valve Cap Screw Dimensions



Class 300LB

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	80	0.75	19.05	10.00	5.51	140	4
					1.97	50	8
4	100	0.75	19.05	10	5.91	150	8
6	150	0.75	19.05	10	6.69	170	12
8	200	0.88	22.23	9	7.68	195	12
10	250	1	25.4	8	8.66	220	8
					2.56	65	8
12	300	1.125	28.58	8	9.45	240	12
					2.95	75	8
14	350	1.125	28.58	8	10.63	270	16
					2.95	75	4
					3.15	80	4
16	400	1.25	31.75	8	11.81	300	16
					3.15	80	4
					3.54	90	4
18	450	1.25	31.75	8	12.60	320	20
					3.35	85	4
					3.74	95	4
20	500	1.25	31.75	8	13.39	340	20
					3.54	90	4
					3.74	95	4
24	600	1.5	38.1	8	14.96	380	20
					3.94	100	4
					4.13	105	4

Wafer Valve Cap Screw Dimensions

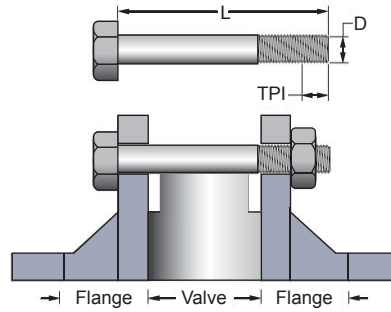


Class 150LB (inch)

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	80	0.63	15.88	11	1.97	50	8
4	100	0.63	15.88	11	1.97	50	16
6	150	0.75	19.05	10	2.17	55	16
8	200	0.75	19.05	10	2.36	60	16
10	250	0.88	22.23	9	2.56	65	24
12	300	0.88	22.23	9	2.56	65	24
14	350	1	25.4	8	2.76	70	12
					2.95	75	12
16	400	1	25.4	8	2.95	75	24
					2.17	55	4
18	450	1.125	28.58	8	2.56	65	4
					3.15	80	24
20	500	1.125	28.58	8	2.56	65	4
					2.76	70	4
24	600	1.25	31.75	8	3.54	90	32
					2.56	65	4
					2.95	75	4
					3.94	100	32
					3.15	80	4
					3.54	90	4

Engineering Data

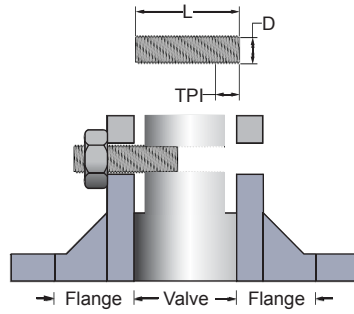
Wafer Valve Cap Screw Dimensions



Class 150LB (mm)

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	80	0.75	19.05	10	2.17	55	8
					1.77	45	4
					1.97	50	4
4	100	0.75	19.05	10	2.36	60	16
6	150	0.75	19.05	10	2.56	65	24
8	200	0.88	22.23	9	3.15	80	24
						90	16
						65	4
10	250	1	25.4	8	3.543	70	4
						95	24
						75	16
12	300	1.125	28.58	8	3.740	100	32
						75	4
						80	4
14	350	1.125	28.58	8	3.937	110	32
						80	4
						85	4
16	400	1.25	31.75	8	4.331	90	4
						110	40
						85	4
18	450	1.25	31.75	8	4.331	95	4
						115	40
						95	4
20	500	1.25	31.75	8	4.528	120	20
						90	4
						95	4
24	600	1.5	38.1	8	4.724	130	20
						100	4
						110	4

Lug Valve Stud Bolt Dimensions

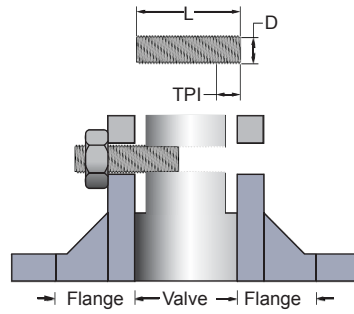


Class 150LB (inch)

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	89	0.63	15.88	11	2.95	75	8
4	100	0.63	15.88	11	2.95	75	16
6	150	0.75	19.05	10	3.35	85	16
8	200	0.75	19.05	10	3.54	90	16
10	250	0.88	22.23	9	3.94	100	24
12	300	0.88	22.23	9	4.13	105	12
					3.94	100	12
14	350	1.00	25.4	8	4.13	105	12
					4.33	110	12
16	400	1.00	25.4	8	4.53	115	24
					3.94	100	4
					3.74	95	4
18	450	1.13	28.58	8	4.92	125	12
					4.72	120	12
					4.33	110	4
					4.13	105	4
20	500	1.13	28.58	8	5.31	135	16
					5.12	130	16
					4.53	115	4
					4.33	110	4
24	600	1.25	31.75	8	5.71	145	16
					5.51	140	16
					5.12	130	4
					4.92	125	4

Engineering Data

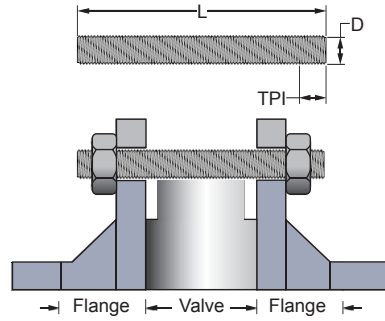
Lug Valve Stud Bolt Dimensions



Class 150LB (mm)

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	89	0.75	19.05	10	3.15	80	8
					2.95	75	8
4	100	0.75	19.05	10	3.54	90	16
6	150	0.75	19.05	10	3.74	95	24
8	200	0.88	22.23	9	4.33	110	24
10	250	1.00	25.40	8	4.92	125	16
					4.13	105	16
12	300	1.13	28.58	8	5.31	135	24
					4.53	115	4
					4.33	110	4
14	350	1.13	28.58	8	5.51	140	32
					4.53	115	8
16	400	1.25	31.75	8	6.10	155	32
					5.31	135	4
					4.92	125	4
18	450	1.25	31.75	8	6.30	160	20
					6.10	155	20
					5.31	135	4
					5.12	130	4
20	500	1.25	31.75	8	6.50	165	20
					6.10	155	20
					5.51	140	4
					5.31	135	4
24	600	1.50	38.1	8	7.28	185	40
					6.30	160	4
					5.91	150	4

Wafer Valve Stud Bolt Dimensions

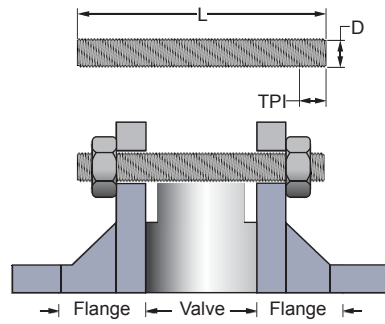


Class 150LB (inch)

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	80	0.63	15.88	11	5.91	150	4
4	100	0.63	15.88	11	6.10	155	8
6	150	0.75	19.05	10	6.69	170	8
8	200	0.75	19.05	10	7.09	180	8
10	250	0.88	22.23	9	7.87	200	12
12	300	0.88	22.23	9	8.46	215	12
14	350	1.00	25.4	8	9.45	240	12
16	400	1.00	25.4	8	10.04	255	12
					3.94	100	4
					3.74	95	4
18	450	1.13	28.58	8	11.02	280	12
					4.13	105	8
20	500	1.13	28.58	8	11.81	300	16
					4.53	115	4
					4.33	110	4
24	600	1.25	31.75	8	13.39	340	16
					5.12	130	4
					4.92	125	4

Engineering Data

Wafer Valve Stud Bolt Dimensions



Class 150LB (mm)

Size		D		TPI	L		Qty
in	mm	in	mm		in	mm	
3	80	0.75	19.05 19.05	10	6.50	165	4
					2.95	75	8
4	100	0.75	19.05	10	7.09	180	8
6	150	0.75	19.05	10	7.68	195	12
8	200	0.88	22.23	9	8.86	225	12
10	250	1.00	25.4	8	10.04	255	12
					4.13	105	8
12	300	1.13	28.58	8	11.02	280	12
					4.53	115	8
14	350	1.13	28.58	8	12.20	310	16
					4.72	120	8
16	400	1.25	31.75	8	13.39	340	16
					5.31	135	4
					4.92	125	4
18	450	1.25	31.75	8	14.17	360	20
					5.51	140	4
					5.12	130	4
20	500	1.25	31.75	8	14.96	380	20
					5.51	140	4
					5.12	130	4
24	600	1.50	38.1	8	16.93	430	20
					6.10	155	4
					5.91	150	4

Engineering Data

Valve Operating Torque

Class 150LB (Preferred Direction, Shaft Side)

Valve Nominal Diameter		Running Torque		Operating Pressure															
				0.6MPa (87 psi)				1.0MPa (145 psi)				1.6MPa (232 psi)				2.0MPa (290 psi)			
				Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close	
in	mm	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb
3"	80	35	26	77	57	77	57	77	57	77	57	77	57	77	57	77	57	77	57
4"	100	43	32	100	74	100	74	100	74	100	74	110	81	100	74	110	81	100	74
6"	150	61	45	126	93	130	96	126	93	130	96	164	121	130	96	190	140	130	96
8"	200	83	61	205	151	240	177	205	151	240	177	290	214	240	177	330	243	240	177
10"	250	139	103	340	251	370	273	340	251	370	273	461	340	370	273	541	399	370	273
12"	300	167	123	471	347	550	406	471	348	550	406	654	483	550	406	776	572	550	406
14"	350	218	161	602	444	715	527	602	444	715	527	832	614	715	527	986	727	715	527
16"	400	340	251	874	645	1050	774	874	644	1050	774	1194	881	1050	774	1408	1038	1050	774
18"	450	504	372	1021	753	1230	907	1365	1007	1230	907	1882	1388	1230	907	2227	1643	1230	907
20"	500	815	601	1557	1148	1786	1317	2052	1513	1786	1317	2794	2061	1786	1317	3289	2426	1786	1317
24"	600	1138	839	2321	1712	2584	1906	3111	2294	2584	1906	4295	3168	2584	1906	5084	3750	2584	1906
28"	700	1942	1432	3788	2794	4493	3314	5019	3702	4493	3314	6865	5064	4493	3314	8096	5972	4493	3314
30"	750	2192	1617	4357	3214	5914	4362	5801	4278	5914	4362	7966	5876	5914	4362	9410	6940	5914	4362
32"	800	3265	2408	5945	4385	7275	5366	7731	5702	7275	5366	10410	7678	7275	5366	12196	8995	7275	5366
36"	900	3638	2683	6667	4917	9819	7242	8685	6406	9819	7242	11713	8640	9819	7242	13732	10128	9819	7242
38"	950	4032	2974	7805	5757	11836	8730	10320	7612	11836	8730	14093	10395	11836	8730	16608	12250	11836	8730
40"	1000	4445	3279	8630	6365	13227	9756	11419	8423	13227	9756	15604	11509	13227	9756	18393	13567	13227	9756
42"	1050	4878	3598	9589	7073	14908	10996	12730	9390	14908	10996	17441	12864	14908	10996	20582	15181	14908	10996
44"	1100	5805	4282	12108	8931	16654	12284	16310	12030	16654	12284	22613	16679	16654	12284	26815	19779	16654	12284
48"	1200	6813	5025	15304	11288	19650	14494	20965	15464	19650	14494	29455	21726	19650	14494	35116	25901	19650	14494

Class 150LB (Reverse Direction)

Valve Nominal Diameter		Running Torque		Operating Pressure															
				0.6MPa (87 psi)				1.0MPa (145 psi)				1.6MPa (232 psi)				2.0MPa (290 psi)			
				Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close	
in	mm	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb
3"	80	35	26	77	57	80	59	77	57	80	59	77	57	100	74	77	57	100	74
4"	100	43	32	100	74	120	89	100	74	120	89	110	81	150	111	110	81	150	111
6"	150	61	45	126	93	210	155	126	93	210	155	164	121	262	194	190	140	296	218
8"	200	83	61	205	151	319	235	205	151	383	283	290	214	480	354	330	243	545	402
10"	250	139	103	340	251	513	379	340	251	619	456	461	340	777	573	541	399	882	650
12"	300	167	123	471	347	755	557	471	348	917	676	654	483	1159	855	776	572	1321	974
14"	350	218	161	602	444	934	689	602	444	1135	837	832	614	1437	1060	986	727	1638	1208
16"	400	340	251	874	645	1303	961	874	644	1579	1165	1194	881	1993	1470	1408	1038	2270	1674
18"	450	504	372	1021	753	1856	1369	1365	1007	2283	1684	1882	1388	2922	2155	2227	1643	3349	2470
20"	500	815	601	1557	1148	2688	1983	2052	1513	3293	2429	2794	2061	4201	3099	3289	2426	4807	3545
24"	600	1138	839	2321	1712	4016	2962	3111	2294	4971	3667	4295	3168	6403	4723	5084	3750	7358	5427
28"	700	1942	1432	3788	2794	6200	4573	5019	3702	7666	5655	6865	5064	9866	7277	8096	5972	11332	8358
30"	750	2192	1617	4357	3214	7568	5582	5801	4278	9325	6878	7966	5876	11960	8822	9410	6940	13717	10118
32"	800	3265	2408	5945	4385	9884	7290	7731	5702	12054	8891	10410	7678	15310	11292	12196	8995	17480	12893
36"	900	3638	2683	6667	4917	11466	8458	8685	6406	13953	10292	11713	8640	17684	13043	13732	10128	20170	14878
38"	950	4032	2974	7805	5757	13622	10048	10320	7612	16705	12322	14093	10395	21329	15732	16608	12250	24412	18006
40"	1000	4445	3279	8630	6365	14923	11007	11419	8423	18326	13517	15604	11509	23432	17283	18393	13567	26835	19794
42"	1050	4878	3598	9589	7073	16509	12177	12730	9390	20324	14991	17441	12864	26048	19213	20582	15181	29863	22027
44"	1100	5805	4282	12108	8931	20195	14896	16310	12030	25186	18577	22613	16679	32672	24099	26815	19779	37663	27780
48"	1200	6813	5025	15304	11288	24335	17949	20965	15464	30876	22774	29455	21726	40688	30012	35116	25901	47230	34837

Engineering Data

Valve Operating Torque

Class 300LB (Preferred Direction, Shaft Side)

Valve Nominal Diameter		Running Torque		Operating Pressure															
				1.0MPa (145 psi)				2.5MPa (363 psi)				4.0MPa (580 psi)				5.1MPa (740 psi)			
				Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close	
in	mm	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb
3"	80	42	31	77	57	77	57	88	65	77	57	120	89	77	57	144	106	77	57
4"	100	52	38	100	74	100	74	131	97	100	74	184	136	100	74	223	165	100	74
6"	150	100	74	166	123	150	111	291	214	150	111	415	306	150	111	507	374	150	111
8"	200	167	123	294	217	278	205	527	389	278	205	760	561	278	205	931	687	278	205
10"	250	262	193	479	354	436	322	873	644	436	322	1266	934	436	322	1555	1147	436	322
12"	300	408	301	676	499	951	701	1182	872	951	701	1687	1245	951	701	2058	1518	951	701
14"	350	978	721	1410	1040	1235	911	2304	1700	1235	911	3198	2359	1235	911	3854	2843	1235	911
16"	400	1163	858	1760	1299	1453	1072	2948	2174	1453	1072	4135	3050	1453	1072	5005	3692	1453	1072
18"	450	1366	1008	2158	1592	1897	1399	3689	2721	1897	1399	5220	3850	1897	1399	6343	4679	1897	1399
20"	500	1705	1258	3053	2252	3043	2245	5075	3743	3043	2245	7097	5235	3043	2245	8580	6328	3043	2245
24"	600	2627	1938	4078	3008	5318	3923	6911	5098	5318	3923	9744	7187	5318	3923	11821	8719	5318	3923
28"	700	3890	2869	6365	4695	8110	5982	11047	8148	8110	5982	15730	11602	8110	5982	19164	14135	8110	5982
30"	750	4860	3585	8342	6153	11224	8279	14780	10902	11224	8279	21218	15650	11224	8279	25939	19132	11224	8279
32"	800	5358	3952	8754	6457	13788	10170	15185	11201	13788	10170	21617	15945	13788	10170	26334	19424	13788	10170
36"	900	7000	5163	11540	8512	18658	13762	20102	14827	18658	13762	28663	21142	18658	13762	34941	25772	18658	13762
40"	1000	8214	6059	15424	11377	22037	16254	28291	20868	22037	16254	41159	30359	22037	16254	50595	37319	22037	16254

Class 300LB (Reverse Direction)

Valve Nominal Diameter		Running Torque		Operating Pressure															
				1.0MPa (145 psi)				2.5MPa (363 psi)				4.0MPa (580 psi)				5.1MPa (740 psi)			
				Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close	
in	mm	N.m	ft lb	N.m	ft lb	N.m	v	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb
3"	80	42	31	77	57	77	57	88	65	116	86	120	89	156	115	144	106	185	136
4"	100	52	38	100	74	119	88	131	97	186	137	184	136	252	186	223	165	301	222
6"	150	100	74	166	123	253	187	291	214	406	300	415	306	560	413	507	374	673	496
8"	200	167	123	294	217	473	349	527	389	766	565	760	561	1059	781	931	687	1273	939
10"	250	262	193	479	354	761	561	873	644	1248	920	1266	934	1735	1280	1555	1147	2092	1543
12"	300	408	301	676	499	1125	830	1182	872	1780	1313	1687	1245	2435	1796	2058	1518	2916	2151
14"	350	978	721	1410	1040	1950	1439	2304	1700	3025	2231	3198	2359	4099	3023	3854	2843	4886	3604
16"	400	1163	858	1760	1299	2541	1875	2948	2174	3989	2942	4135	3050	5436	4010	5005	3692	6498	4793
18"	450	1366	1008	2158	1592	3133	2311	3689	2721	4989	3680	5220	3850	6845	5049	6343	4679	8207	6053
20"	500	1705	1258	3053	2252	4267	3147	5075	3743	6693	4937	7097	5235	9120	6727	8580	6328	10899	8039
24"	600	2627	1938	4078	3008	6173	4553	6911	5098	9704	7158	9744	7187	13236	9763	11821	8719	15825	11673
28"	700	3890	2869	6365	4695	9349	6896	11047	8148	15027	11084	15730	11602	20704	15271	19164	14135	24868	18342
30"	750	4860	3585	8342	6153	13137	9690	14780	10902	21173	15617	21218	15650	29209	21544	25939	19132	35102	25891
32"	800	5358	3952	8754	6457	13041	9619	15185	11201	20902	15417	21617	15945	28762	21215	26334	19424	34527	25467
36"	900	7000	5163	11540	8512	16866	12441	20102	14827	27203	20065	28663	21142	37539	27689	34941	25772	45119	33280
40"	1000	8214	6059	15424	11377	22457	16564	28291	20868	37669	27785	41159	30359	52881	39005	50595	37319	64036	47233

Valve Operating Torque

Class 600LB (Preferred Direction, Shaft Side)

Valve Nominal Diameter		Running Torque		Operating Pressure															
				2.5MPa (363 psi)				5.0MPa (725 psi)				7.5MPa (1088 psi)				10.2MPa (1479 psi)			
				Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close	
in	mm	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb
3"	80	92	68	114	84	100	74	153	113	100	74	191	141	100	74	232	171	100	74
4"	100	125	92	177	131	144	106	250	184	144	106	323	238	144	106	402	297	144	106
6"	150	327	241	464	342	528	389	656	484	528	389	848	626	528	389	1056	779	528	389
8"	200	510	376	830	612	650	479	1236	912	650	479	1643	1212	650	479	2081	1535	650	479
10"	250	1223	902	1694	1250	1692	1248	2371	1749	1692	1248	3048	2248	1692	1248	3778	2787	1692	1248
12"	300	1707	1259	2190	1615	2412	1779	3243	2392	2412	1779	4295	3168	2412	1779	5432	4007	2412	1779
14"	350	1978	1459	2973	2193	3388	2499	4298	3170	3388	2499	5623	4147	3388	2499	7053	5203	3388	2499
16"	400	2912	2148	4566	3368	4180	3083	6705	4945	4180	3083	8844	6523	4180	3083	11154	8227	4180	3083
18"	450	4893	3609	7260	5355	5692	4198	10443	7702	5692	4198	13625	10050	5692	4198	17062	12585	5692	4198
20"	500	6040	4455	9119	6726	7735	5705	13204	9739	7735	5705	17288	12752	7735	5705	21700	16006	7735	5705
24"	600	8700	6417	13740	10134	14122	10416	20231	14922	14122	10416	26722	19710	14122	10416	33732	24881	14122	10416

Class 600LB (Reverse Direction)

Valve Nominal Diameter		Running Torque		Operating Pressure															
				2.5MPa (363 psi)				5.0MPa (725 psi)				7.5MPa (1088 psi)				10.2MPa (1479 psi)			
				Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close		Start to Open		End to Close	
in	mm	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb	N.m	ft lb
3"	80	92	68	114	84	153	113	153	113	208	153	191	141	262	193	232	171	321	237
4"	100	125	92	177	131	245	181	250	184	347	256	323	238	448	331	402	297	558	412
6"	150	327	241	464	342	645	475	656	484	912	673	848	626	1180	870	1056	779	1469	1084
8"	200	510	376	830	612	1132	835	1236	912	1665	1228	1643	1212	2197	1620	2081	1535	2772	2044
10"	250	1223	902	1694	1250	2214	1633	2371	1749	3107	2291	3048	2248	4000	2950	3778	2787	4964	3661
12"	300	1707	1259	2190	1615	2943	2171	3243	2392	4309	3178	4295	3168	5676	4186	5432	4007	7151	5275
14"	350	1978	1459	2973	2193	3893	2871	4298	3170	5601	4131	5623	4147	7308	5391	7053	5203	9153	6751
16"	400	2912	2148	4566	3368	5758	4247	6705	4945	8394	6191	8844	6523	11030	8136	11154	8227	13877	10235
18"	450	4893	3609	7260	5355	8779	6476	10443	7702	12595	9290	13625	10050	16411	12105	17062	12585	20532	15144
20"	500	6040	4455	9119	6726	10965	8088	13204	9739	15819	11668	17288	12752	20674	15249	21700	16006	25916	19116
24"	600	8700	6417	13740	10134	16750	12355	20231	14922	24495	18067	26722	19710	32240	23780	33732	24881	40605	29950

Notes:

1. Torques shown are calculated at ambient temperature.
2. Torques shown in this table are to be used as a guide for actuator selection. A minimum safety factor of 1.3~1.5 is recommended for actuator sizing.
3. It is recommended that a margin of 5% should be kept for adjustment at the opening and closing positions of the actuator.
4. For more information, please contact the Neway engineering department.

Engineering Data

Flow Coefficient (C_v Value)

Class 150LB

Size		Disc Opening Angle								
in	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	80	6	16	24	35	51	75	112	144	160
4"	100	12	29	44	64	93	136	203	261	290
6"	150	32	79	119	174	253	371	553	711	790
8"	200	58	146	219	321	467	686	1022	1314	1460
10"	250	101	253	380	557	810	1189	1771	2277	2530
12"	300	159	398	597	876	1274	1871	2786	3582	3980
14"	350	222	556	834	1223	1779	2613	3892	5004	5560
16"	400	318	794	1191	1747	2541	3732	5558	7146	7940
18"	450	382	956	1434	2103	3059	4493	6692	8604	9560
20"	500	544	1360	2040	2992	4352	6392	9520	12240	13600
24"	600	752	1880	2820	4136	6016	8836	13160	16920	18800
28"	700	1072	2680	4020	5896	8576	12596	18760	24120	26800
30"	750	1228	3070	4605	6754	9824	14429	21490	27630	30700
32"	800	1400	3500	5250	7700	11200	16450	24500	31500	35000
36"	900	1720	4300	6450	9460	13760	20210	30100	38700	43000
40"	1000	2276	5690	8535	12518	18208	26743	39830	51210	56900
42"	1050	2468	6170	9255	13574	19744	28999	43190	55530	61700
48"	1200	3240	8100	12150	17820	25920	38070	56700	72900	81000

Class 300LB

Size		Disc Opening Angle								
in	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	80	6	16	24	35	51	75	112	144	160
4"	100	12	29	44	64	93	136	203	261	290
6"	150	32	79	119	174	253	371	553	711	790
8"	200	53	133	200	293	426	625	931	1197	1330
10"	250	84	211	317	464	675	992	1477	1899	2110
12"	300	146	365	548	803	1168	1716	2555	3285	3650
14"	350	185	462	693	1016	1478	2171	3234	4158	4620
16"	400	251	628	942	1382	2010	2952	4396	5652	6280
18"	450	344	859	1289	1890	2749	4037	6013	7731	8590
20"	500	418	1045	1568	2299	3344	4912	7315	9405	10450
24"	600	651	1628	2442	3582	5210	7652	11396	14652	16280
28"	700	936	2340	3510	5148	7488	10998	16380	21060	23400
30"	750	1160	2900	4350	6380	9280	13630	20300	26100	29000
32"	800	1304	3260	4890	7172	10432	15322	22820	29340	32600
36"	900	1660	4150	6225	9130	13280	19505	29050	37350	41500
40"	1000	1996	4990	7485	10978	15968	23453	34930	44910	49900

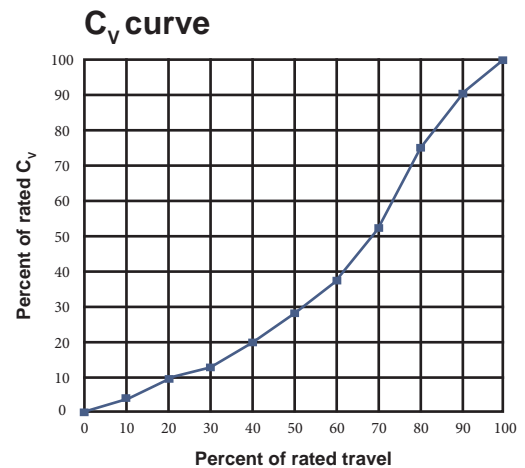
Class 600LB

Size		Disc Opening Angle								
in	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	80	6	15	23	33	48	71	105	135	150
4"	100	10	25	38	55	80	118	175	225	250
6"	150	24	60	90	132	192	282	420	540	600
8"	200	43	108	162	238	346	508	756	972	1080
10"	250	68	170	255	374	544	799	1190	1530	1700
12"	300	101	252	378	554	806	1184	1764	2268	2520
14"	350	163	407	610	895	1302	1912	2848	3661	4068
16"	400	215	538	807	1184	1722	2529	3766	4842	5380
18"	450	299	747	1121	1643	2390	3511	5229	6723	7470
20"	500	393	982	1473	2160	3142	4615	6874	8838	9820
24"	600	598	1494	2241	3287	4781	7022	10458	13446	14940

Notes:

- Definition:
 C_v : The volume of water in gpm at 15 C that will pass through a valve with a differential pressure of 1 PSI.

 K_v : The volume of water in m³/hr at 15 C that will pass through a valve with a differential pressure of 1 bar.
- Flow direction from shaft side
- $C_v = 1.155 K_v$



Additional Body Materials

ASTM A216 WCC

ASTM A995 4A

ASTM A995 6A

ASTM A995 1B

ASTM A995 5A

ASTM A217 WC1

ASTM A217 WC6

ASTM A217 WC9

ASTM A217 C5

ASTM A217 C12

ASTM A217 C12A

ASTM A352 LC1

ASTM A352 LC2

ASTM A352 LC3

ASTM A494 M35-1

ASTM A351 CF8C

ASTM A351 CF10

ASTM A351 CG8M

ASTM A351 CG3M

ASTM A351 CF10M

ASTM A351 CK3MCuN

ASTM A351 CN3MN

NEWAY Huashan Plant

Main Products: Ball Valve
Covers area: 33,000 sqm
Workshop: 21,000 sqm

Founded in 2003



NEWAY Taishan Plant

Main Products: Gate Valve, Globe Valve, Check Valve, Forged Steel Valve, Butterfly Valve
Covers area: 160,000 sqm
Workshop: 92,000 sqm

Founded in 2006



NEWAY Foundry (Suzhou)

Main Products: Sand Casting
Covers area: 112,500 sqm
Workshop: 98,000 sqm

Founded in 2008



NEWAY Foundry (Suzhou)

Main Products: Sand Casting
Covers area: 45,000 sqm
Workshop: 25,000 sqm

Founded in 2003



NEWAY Foundry (Dafeng)

Main Products: Lost wax investment casting
Covers area: 46,000 sqm
Workshop: 12,000 sqm

Founded in 2004



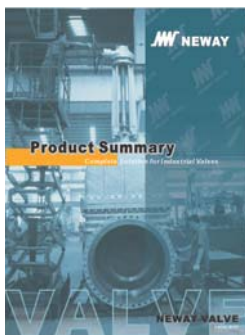
NEWAY Foundry (Dafeng)

Main Products: Lost wax investment casting
Covers area: 40,000 sqm
Workshop: 20,000 sqm

Founded in 2008



Seller will replace without charge or refund the purchase price of products which prove to be defective in material or workmanship; provided that the product is properly installed and is used in the service for which the Seller recommends it and that the written claim, specifying the alleged defect, is presented to the Seller within 18 months from the date of shipment or 12 months after installation, whichever occurs first. Seller shall in no event bear any labor, equipment, engineering or other costs incurred in connection with any repairs or replacement. The warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states the Buyer's exclusive remedy and seller's exclusive liability.



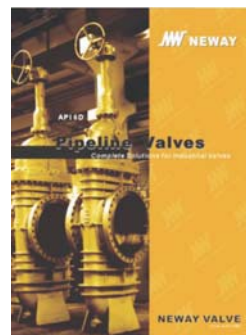
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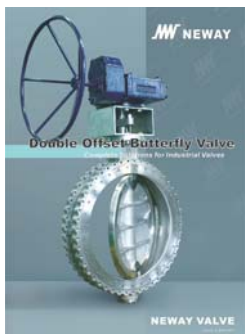
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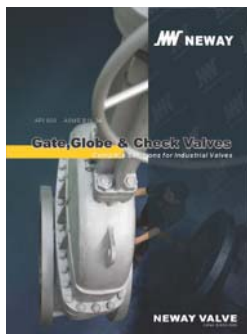
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Cat.no.:E-PLV



Cat.no.:E-TOV



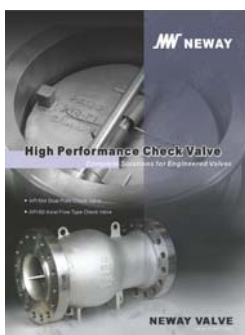
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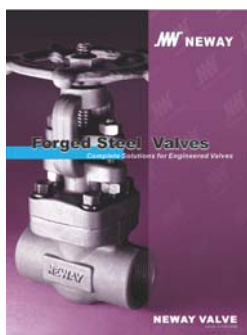
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Cat.no.:E-AV



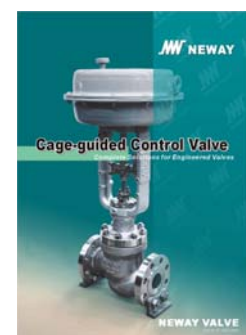
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Cat.no.:E-FSV



Cat.no.:E-CSS



Cat.no.:E-CSC

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