Double Flanged Butterfly valve

Introduction of the valve

Resilient seated butterfly valve is a Double Flangedesign which can be used for dead-end service. This butterfly valve series has many of the design features and benefits , such as high Cv ratings, minimum parts exposed to the line media, greater reliability and a proven record of long service life.

A major design advantage of this valve product lines is inter national compatibility. The same valve is compatible with most world flange standards – ASME Class 125/150, BS 10 Tables D and E, BS 4504 PN 10/16, DIN PN 10/16, AS 2129 and JIS10. In addition, the valves are designed to comply with ISO 5752-Table 2 (EN558 Table 13) face-to-face and ISO 5211 actuator mounting flanges. Therefore, one valve design can be used in different world markets. Double flange butterfly valve are designed to the requirements of BS EN 593

GENERAL APPLICATIONS

- Offshore
- Water and waste water technology
- Shipbuilding
- Power plantsBigger

Worlds Valve

Double Flanged Butterfly valve

Max working pressure

DN50-DN300 16Bar

Flange PN10 PN16 150LB JIS10K

DN350-DN1100 10Bar

Flange PN10 PN16 150LB JIS10K

DN1200-DN2000 6Bar

Flange PN10 PN16 150LB JIS10K

Design

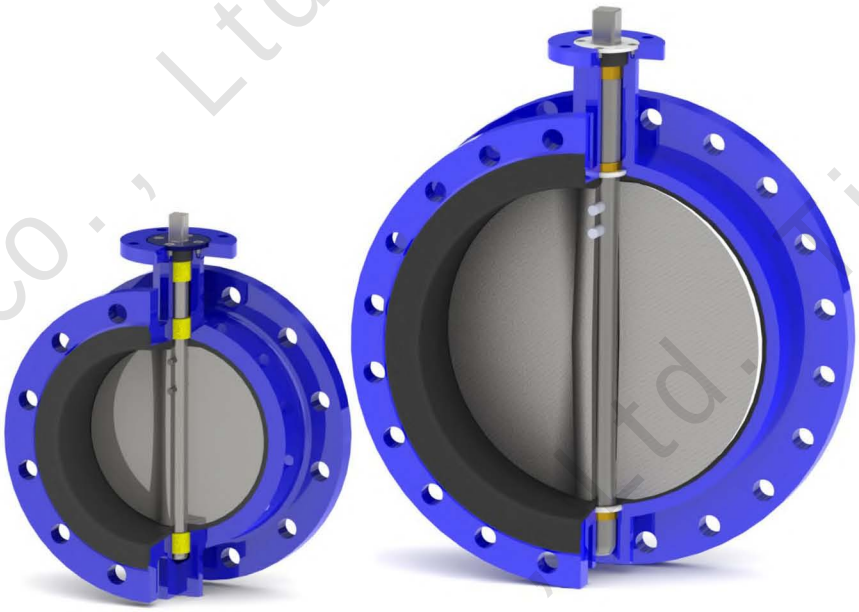
EN593 API 609 BS5155 EN1092 ISO5211

Face to Face

DIN558-1 API609 DIN3202 ISO5752 BS5155

Testing

EN 12266-1 ISO5208 API598



Body

Material	Referencesstandard	Coating
Cast iron	GG20 GG25 A126	Epoxy Ral 5005
Ductile iron	GGG40 GGG45 GGG50 A536 A395	Epoxy Ral 5005
Carbon steel	WCB WCC LCC LCB	
Stainless steel	CF8 CF8M CF3 CF3M SAF2507 SAF2205	
Aluminuim-bronze		

Disc

Material	References	Standard coating
Ductile iron	GGG40 GGG45 GGG50 A536	Nickel Brass-Nikle
Carbon steel	WCB WCC LCC LCB	
Stainless steel	CF8 CF8M CF3 CF3M SAF2507 SAF2205	
Aluminuim-bronze	C95400 C95500 C95800	

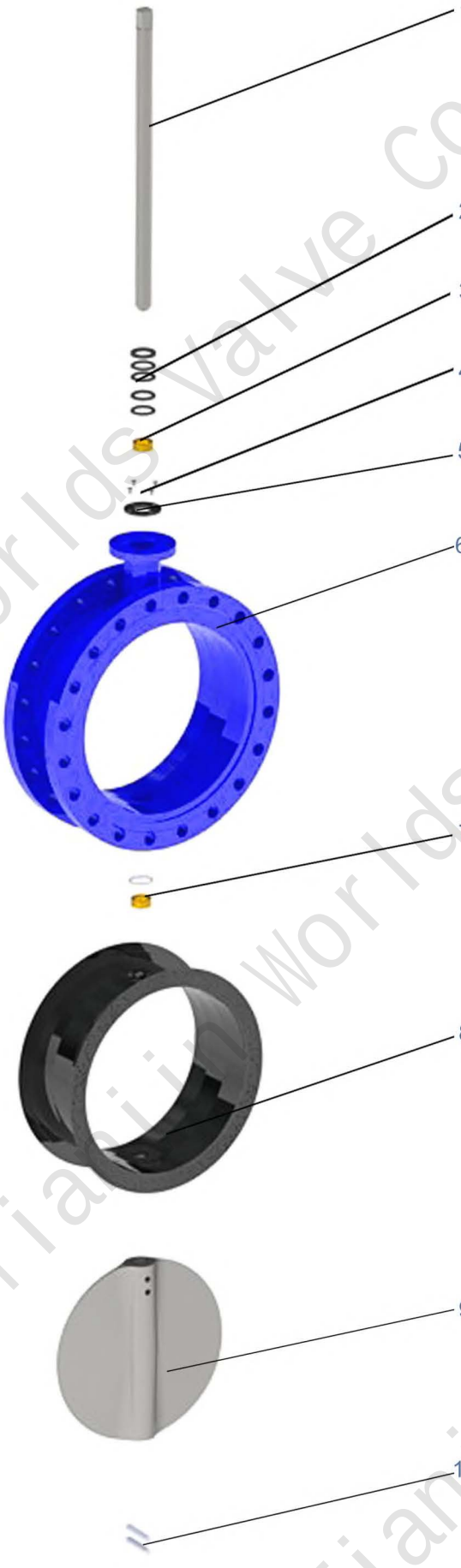
Body Rubber Seat

References	Desigation	Trade Name	Working temp	Applications
NBR	Nitrile Rubber	BUNA-N	-25/+100	Oils ,Hydrocarbons ,Gas, Air ,Water
EPDM	Copolymer	EPDM	-35/+130	Water ,Sea Water,Steam,Diluted Acids
FKM	Fluoroelastomer	VITON	-20/+200	Oils, Hydrocarbons, Acids
CR	Polychloroprene	NEOPRENE	-20/+100	Alkail, Bases,Water
NR	Natural Rubber	NR	-40/+80	Glycols,Abrasive media
MVQ	Sillicon Rubber	SR	-60/+190	Water,food,Drinks
CSM	Chlorosulfonate Polychloroprene	HYPALON	-20/+125	Acids,mineral bases,Alcohols,Hydrocarbons
PTFE	PolyTetraFluoroEthyl -ene	TEFLON	-35/+150	Acidity Alkaline

Main Spare Part Material Quality（DN50-DN300）

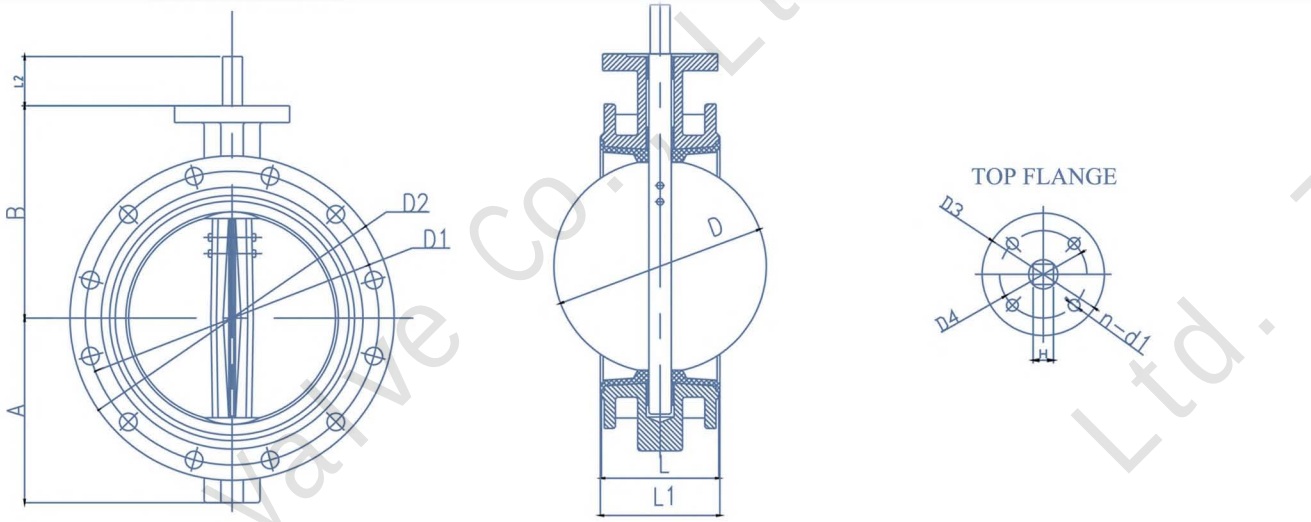
1	Shaft	SS410 SS304 SS431 SS316 MONEL K500 17-4PH C63000 C92200 2507 2205
2	"O"Ring	NBR VITON
3	short Bushing	FRP
4	Screw	Stainless Steel
5	Packing Cap	
6	Body	GG20 GG25 GG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95500 C95400
7	Short Bushing	FRP
8	Body seat	NBR(BUNA) EPDM HEPDM FKM(VITON) Polychloroprene Natural Rubber Sillicon Rubber
9	Disc	GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95500 C95400
10	Pin	SS410 SS304 SS431 SS316

Main Spare Part Material Quality（DN350-DN1200）



1	Shaft	SS410 SS304 SS431 SS316 MONEL K500 17-4PH C63000 C92200 2507 2205
2	"O"Ring	NBR VITON
3	Short Bushing	FRP
4	Screw	
5	Packing cap	
6	Body	GG20 GG25 GG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95400 C95500
7	Short Bushing	FRP
8	Body seat	NBR(BUNA) EPDM HEPDM FKM(VITON) Polychloroprene Natural Rubber Sillicon Rubber
9	Disc	GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95400 C95500
10	Pin	SS410 SS304 SS431 SS316 Monel

Drawing(50-350)



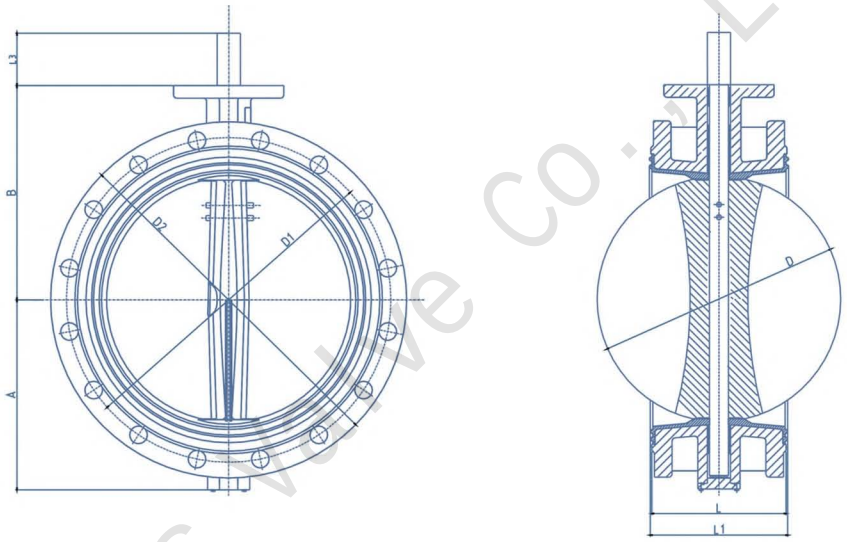
Outline Dimensions

Size	A	B	D	L	ISO5211	D3	D4	n-d1	L2	HXH
2"	80	110	52.9	108	F07	90	70	4-10	14	11X11
2.5"	82	137	64.5	112	F07	90	70	4-10	14	11X11
3"	98	146	78.8	114	F07	90	70	4-10	14	11X11
4"	115	155	104	127	F07	90	70	4-10	14	11X11
5"	115	171	123.3	140	F07	90	70	4-10	17	14X14
6"	142	182	155.6	140	F07	90	70	4-10	17	14X14
8"	176	212	202.5	152	F10	125	102	4-12	22	17X17
10"	210	250	250.5	165	F10	125	102	4-12	22	22X22
12"	242	278	301.5	178	F10	125	102	4-12	22	22X22
14"	254	313	333.3	190	F10	125	102	4-12	22	22X22

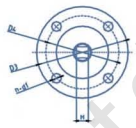
Connection Dimensions

	Outer Diameter Of Flange				Diameter Of Center Circle				Number And Diameter Of Bolt Holes			
DN	150LB	PN10	PN16	JIS10K	150LB	PN10	PN16	JIS10K	150LB	PN10	PN16	JIS10K
50	150	165	165	155	120.7	125	125	120	4-19	4-19	4-19	4-19
65	180	185	185	175	139.7	145	145	140	4-19	4-19	4-19	4-19
80	190	200	200	185	152.4	160	160	150	4-19	8-19	8-19	8-19
100	230	220	220	210	190.5	180	180	175	8-19	8-19	8-19	8-19
125	255	250	250	250	215.9	210	210	210	8-22	8-19	8-19	8-23
150	280	285	285	280	241.3	240	240	240	8-22	8-23	8-23	8-23
200	345	340	340	330	298.5	295	295	290	8-22	8-23	12-23	12-23
250	405	395	405	400	362	350	355	355	12-26	12-23	12-28	12-25
300	485	445	460	445	431.8	400	410	400	12-26	12-23	12-28	16-25
350	535	505	520	490	476.3	460	470	445	12-29	16-23	16-28	16-25

Drawing(400-600)



TOP FLANGE



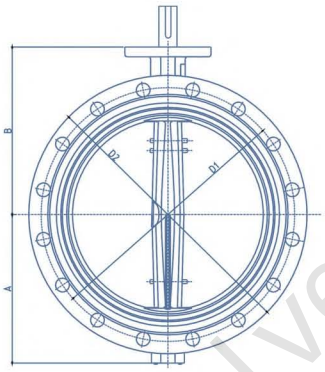
Outline Dimensions

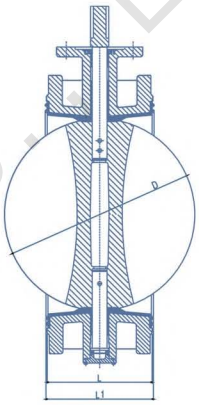
Size	A	B	D	L	ISO5211	D3	D4	n-d1	H*H	L3
16	298	349	389.6	216	F14	175	140	4-18	27*27	36
18	330	380	440.5	222	F14	175	140	4-18	27*27	36
20	348	445	491.6	229	F14	175	140	4-18	36*36	36
24	430	520	592.5	267	F16	210	165	4-22	36*36	46

Connection Dimensions

	Outer Diameter Of Flange				Diameter Of Center Circle				Number And Diameter Of Bolt Holes			
DN	150LB	PN10	PN16	JIS10K	150LB	PN10	PN16	JIS10K	150LB	PN10	PN16	JIS10K
400	595	565	580	560	539.8	515	525	510	16-29	16-28	16-31	16-27
450	635	615	640	620	577.9	565	585	565	16-32	20-28	20-31	20-27
500	700	670	715	675	635	620	650	620	20-32	20-28	20-34	20-27
600	815	780	840	795	749.3	725	770	730	20-35	20-31	20-37	24-33

Drawing(700-2000)





TOP FLANGE

Outline Dimensions

Size	A	B	D	L	ISO5211	D3	D4	n-d	J
28"	468	565	695	292	F25	300	254	8-18	18
32"	525	620	794.7	318	F25	300	254	8-18	18
36"	609	695	864.7	330	F25	300	254	8-18	20
40"	652	739	965	410	F25	300	254	8-18	22
48"	782	928	1160	470	F30	350	298	8-22	28
52"	890	990	1275	490	F35	415	356	8-32	32
56"	920	1018	1393.7	530	F35	415	356	8-32	36
60"	925	1050	1500	570	F35	415	356	8-32	40
64"	1040	1150	1587	600	F35	415	356	8-32	40
72"	1146	1260	1790	670	F48	560	483	12-38	45
80"	1340	1363	2001.5	760	F48	560	483	12-38	45

Connection Dimensions

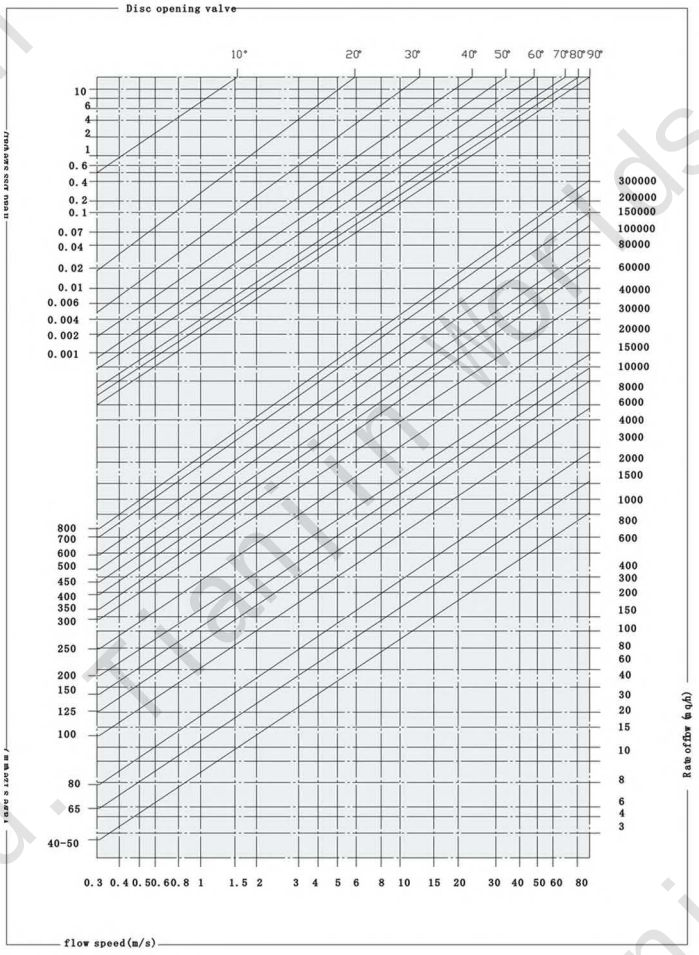
	Outer Diameter Of Flange			Diameter Of Center Circle			Number And Diameter Of Bolt Holes					
DN	150LB	PN10	PN16	JIS10K	150LB	PN10	PN16	JIS10K	150LB	PN10	PN16	JIS10K
28"	927.1	895	910	905	863.6	840	840	840	28/35	24/31	24/37	24/33
32"	1060	1015	1025	1020	977.9	950	950	950	28/41	24/34	24/41	28/33
36"	1168.4	1115	1125	1120	1085.85	1050	1050	1050	32/41	28/34	28/41	28/33
40"	1289	1230	1255	1235	1200.1	1160	1170	1160	36/42	28/37	28/44	28/39
44"	1403.3	1340	1355	1345	1314.4	1270	1270	1270	40/42	32/37	32/44	28/39
48"	1511.3	1455	1485	1465	1422.4	1380	1390	1380	44/42	32/41	32/50	32/39
52"	1625.6	/	/	/	1536.7	/	/	/	44/48	/	/	/
56"	1746.2	1675	1685	/	1651	1590	1590	/	48/48	36/44	36/50	/
60"	1854.2	1785	1820	1795	1758.9	1700	1710	1700	52/48	36/44	36/57	40/45
64"	/	1915	1930	/	/	1820	1820	/	/	40/50	40/57	/
72"	2197.1	2115	2130	/	2095.5	2020	2020	/	60/48	44/50	44/57	/
80"	/	/	2345	/	/	2230	2230	/	/	48/50	48/62	/

Torque values-Nm

APPLICATION IN WATER								
SIZE		6 Bar	10 Bar	16 Bar	SIZE		6 Bar	10 Bar	16 Bar
mm	inch				mm	inch			
DN40	1.5"	8	10	11	DN350	14"		610	920
DN50	2"	9	11	12	DN400	16"		890	1440
DN65	2.5"	15	18	20	DN450	18"		1240	1780
DN80	3"	22	25	30	DN500	20"		1670	2210
DN100	4"	39	43	50	DN600	24"		2560	3980
DN125	5"	60	67	77	DN700	28"		3720	4920
DN150	6"	94	110	121	DN800	32"		5640	7840
DN200	8"	165	201	242	DN900	36"		7650	9760
DN250	10"	253	310	352	DN1000	40"		9800	13560
DN300	12"	352	473	490	DN1200	48"		16800	21200

Head losses

Notes:Values indicated in this page is only for information



Formulae for calculation of rate flow

Liquids: $Q = \frac{KV}{\sqrt{\frac{PS}{\Delta P}}}$

Q rate of flow (m3/h)

PS specific gravity (water=1)

ΔP pressure drop (bar)

Gas: $Q = 28.5 \frac{KV}{\sqrt{\frac{PS}{P_2 \cdot \Delta P}}}$

Q rate of flow (m3/h)

PS specific gravity (air=1)

ΔP pressure drop (bar)
(less than 1/2 inlet pressure)

P2 outlet pressure

Steam: $Q = 22.5 \cdot KV \cdot \sqrt{P_2 \cdot \Delta P}$

Q rate of flow (Kg/h)

ΔP pressure drop (bar)
(less than 1/2 inlet pressure)

P2 outlet pressure

Calculation of the rate of flow equivalent to H2O:

For different liquid, gas or steam head losses are determined by equivalent water of flow, as followsw:

Qe equivalent water flow
(mc/l o l/s)

Q fluid flow
(mc/l o l/s)

d fluid specific gravity
(Kg/mc)

Values CV（CV=1.16KV）

Size	Flow in Gpm@1 PSI P@ Various Disc Angles(CV)								
(mm)	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.1	5	12	24	45	64	90	125	135
2½"	0.2	8	20	37	65	98	144	204	220
3"	0.3	12	22	39	70	116	183	275	302
4"	0.5	17	36	78	139	230	364	546	600
5"	0.8	29	61	133	237	392	620	930	1022
6"	2	45	95	205	366	605	958	1437	1579
8"	3	89	188	408	727	1202	1903	2854	3136
10"	4	151	320	694	1237	2047	3240	4859	5340
12"	5	234	495	1072	1911	3162	5005	7507	8250
14"	6	338	715	1549	2761	4568	7230	10844	11917
16"	8	464	983	2130	3797	6282	9942	14913	16388
18"	11	615	1302	2822	5028	8320	13168	19752	21705
20"	14	971	1674	3628	6465	10698	16931	25396	27908
24"	22	1222	2587	5605	9989	16528	26157	39236	43116
28"	30	1633	3522	7630	12599	20036	30482	46899	58696
32"	45	2387	4791	8736	13786	20613	31395	48117	68250
36"	60	3021	6063	11055	17449	26086	39731	60895	86375
40"	84	4183	8395	15307	24159	36166	55084	84425	119750
48"	102	4651	10365	17010	27242	43853	70431	108968	132888
60"	148	6400	14500	24500	39400	63200	10200	154000	190000
72"	190	8220	18600	31500	50700	81200	13100	198000	244000

Installation Instructions

The butterfly valve can be installed on the pipeline, which is at any angle.

1.The valve should be installed in the location being sure to provide convenient operation, maintenance and replacement.

2.As mounting the butterfly valve, fail to consider flow direction of mediums in pipeline, that is to say, the valve can be used in double way.

3.Before installation, the butterfly valve should be stored in ware house and prevent it from moisture and in so doing, the disc should be kept to open at an angle of 15 degree.

4.Before installation, the following processes should be completed:

(1)Check carefully and confirm the operation condition of the valve is in line with the technical specification and requirements.

(2)Clean the disc sealing area and body sealing completely. It is not permitted to open the disc before cleaning.

(3)Check and confirm the handle is strongly collected to the flange and stem.

5.As mounting the butterfly valve in pipeline, the load for tightening connection bolts should be uniformed.

6.After installation, the disc must be opened in the case of the strength pressure test on pipeline being carried out.

7.After being installed, the valve should be examined regularly. The main item to be checked are as follows:

(1)Whether the valve seat and 'O' sealing ring have been damaged.

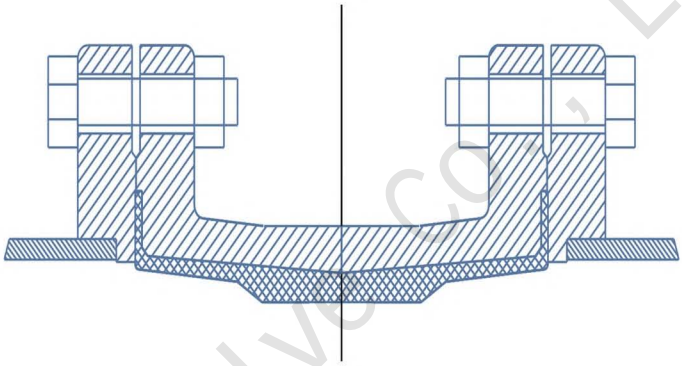
(2)Check the sealing effects of the disc sealing area.

(3)After the valve was examined and assembled, no scuffing happens at the time of on-off rotation.

(4)After the valve was examined and assembled, the sealing test should be carried out as the introduction.

(5)After each examination, detailed records should be filed for reference.

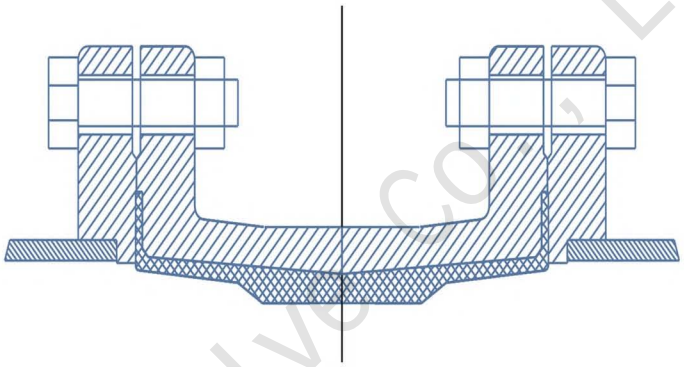
Length & Quantity of Bolts for Valve Installation



EN1092-1 PN10/16 ISO7005 PN10/16

SIZE	PN10				PN16			
DN	Qty	Diam of Bolt	Length	Total Qty	Qty	Diam of Bolt	Length	Total Qty
50	4	M16	69	8	4	M16	69	8
65	4	M16	69	8	4	M16	69	8
80	8	M16	69	16	8	M16	69	16
100	8	M16	71	16	8	M16	71	16
125	8	M16	75	16	8	M16	75	16
150	8	M20	80	16	8	M20	80	16
200	8	M20	86	16	12	M20	86	24
250	12	M20	92	24	12	M24	96	24
300	12	M20	100	24	12	M24	104	24
350	16	M20	106	32	16	M24	110	32
400	16	M24	116	32	16	M27	118	32
450	20	M24	122	40	20	M27	124	40
500	20	M24	128	40	20	M30	132	40
600	20	M27	144	40	20	M33	149	40
700	24	M27	144	48	24	M33	149	48
800	24	M30	146	48	24	M36	151	48
900	28	M30	148	56	28	M36	151	56
1000	28	M33	151	56	28	M39	154	56
1100	32	M33	151	64	32	M39	154	64
1200	32	M36	153	64	32	M45	160	64
1400	36	M39	168	72	36	M45	166	72
1500	36	M39	174	72	36	M52	178	72
1600	40	M45	182	80	40	M52	182	80
1800	44	M45	186	88	44	M52	192	88
2000	48	M45	194	96	48	M56	205	96

Length & Quantity of Bolts for Valve Installation



ASME B 16.5 150LB JIS B2220 10K

SIZE	150LB				10K			
DN	Qty	Diam of Bolt	Length	Total Qty	Qty	Diam of Bolt	Length	Total Qty
50	4	5/8″	59	8	4	M16	57	8
65	4	5/8″	65	8	4	M16	61	8
80	4	5/8″	68	8	8	M16	61	16
100	8	5/8″	68	16	8	M16	61	16
125	8	3/4″	71	16	8	M20	68	16
150	8	3/4″	74	16	8	M20	72	16
200	8	3/4″	80	16	12	M20	72	24
250	12	7/8″	85	24	12	M22	78	24
300	12	7/8″	88	24	16	M22	78	32
350	12	1″	96	24	16	M22	82	32
400	16	1″	99	32	16	M24	88	32
450	16	9/8″	108	32	20	M24	92	40
500	20	9/8″	114	40	20	M24	92	40
600	20	5/4″	126	40	24	M30	104	48
700	28	5/4″	174	56	24	M30	116	48
800	28	3/2″	192	56	28	M30	128	56
900	32	3/2″	216	64	28	M30	136	56
1000	36	3/2″	216	72	28	M36	154	56
1100	40	3/2″	238	80	28	M36	166	56
1200	44	3/2″	251	88	32	M36	174	64
1500	52	7/4″	313	104	40	M42	208	80

Work principle

This product mainly consists of body, stem, disc, seat AL-Bronze bushings etc. The rotation of actuating device makes stem and disc revolved, which ensures on-off operations and flow control.

The rotation of the actuating device ensures dependability and position disc control and position disc control and water flow control. Rotate handle wheel clockwise, the valve is close.

Features

1.Absolutely tight sealing with flow in either direction
2.The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
3.Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
4.Can be disassembled, material-specific recycling possible
5.Single flange mounting is possible
6. Can be installed in any desired position
7. Maintenance-free
8.Fully repairable valveGENERAL

Trouble & remedy

Trouble	cause	remedy
Leakage in sealing area	Disc sealing area or body sealing seat scratched, disc is not closed completely. Hexagonal socket head bolts on clamping ring are not tightened completely.	Repair the disc sealing replace repair the body sealing seat, adjust actuator to close the disc completely, tighten loosed hexagonal socket head bolts.
Leakage in shaft end	The seat or The 'O' ring is not pressed completely.	Replace the body sealing seat
Leakage in joint area between valve face and relevant flange on pipeline	Connection bolts are not screwed up uniformly.	Tighten the connection bolts evenly.