

## Triple Eccentric Butterfly Valve

Fig. 3725/35/45

### Specification

Design in accordance with ASME SEC, EN 13445, ASME B16.34, DIN 3840, ASME B31.3, API 609, MSS-SP68, B/T8527, JB/T8692/

Face to face dimensions comply with ANSI B16.10, ISO 5752, API 609, EN 558-1

Flanges comply with EN1092-2, ISO 7005, GB/T 9119, ASME B16.5, ASME B16.47

Pressure test according to standards GB/T13927, ISO 5208, API 598

### Technical data

Working Pressure: PN10, PN16, PN25, PN40, PN63, PN100  
CL150, 300, 600, 900, 1500

Dimensions: DN50~DN1200

(For other specifications, please consult)

Test Pressure: Shell: 1.5\*WP

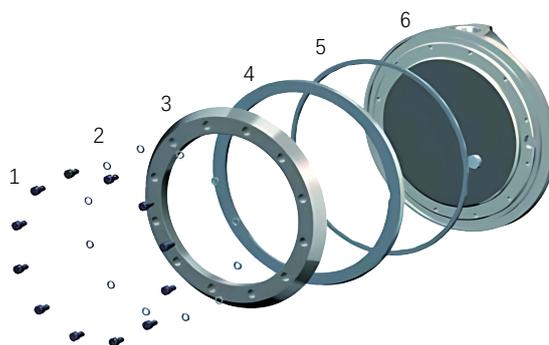
Seal: 1.1\*WP

Working Temperature: - 196°C ~ 550°C

### Product Features

- The open/close indicator facilitates quick actuator installation when the valve is mounted on a pipeline;
- Three eccentric butterfly valves do not have pins that can reduce the strength performance of the valve stem.
- Maximum stem integrity is guaranteed under torque sealing.
- Butterfly valve design is fully compliant with API 609 standard way to deal with the risk of blow out inside and outside the valve stem.
- Minimize external emissions with two-piece packing gland for packing. Proprietary packing design meets ISO 15848-1, EPA method 21, TÜV TA-luft/VDI 2440 certification requirements.
- Robust bearing and thrust bearing design withstands high pressure loads and minimizes galling.
- Flange countersinks maximize the integrity of the connection to the pipeline, thus limiting the possibility of future leakage.
- Configurable with multiple actuator controls

### Schematic



- 1: Bolt    2: Gasket    3: Valve plate retainer  
4: Sealing ring    5: Spiral-wound gasket  
6: Valve plate and locating pin

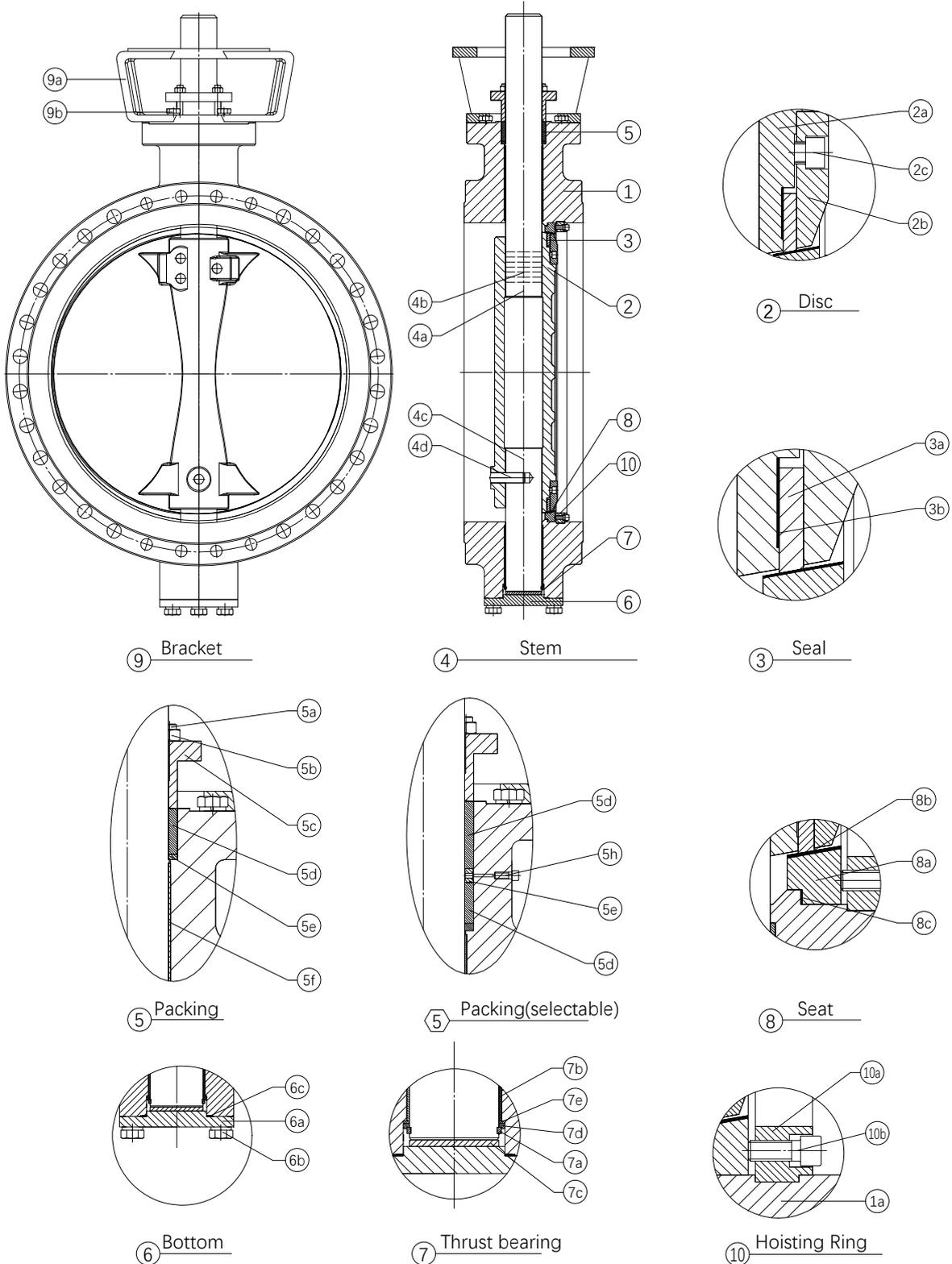
### Sealing characteristics

Due to the elasticity and radial compression of the sealing rings, the contact pressure is evenly distributed over the surface of the valve seat, thus ensuring zero leakage. As with all triple eccentric valves, all sealing rings are easily interchangeable thanks to their self-aligning capability, and assembly is simplified by the presence of locating pins.

The use of graphite ensures tightness between the layers of the sealing ring as well as ideal elasticity, allowing each metal layer to find the optimal sealing position independently.

For specific demanding applications, one-piece solid metal sealing rings are used instead.

Part Name

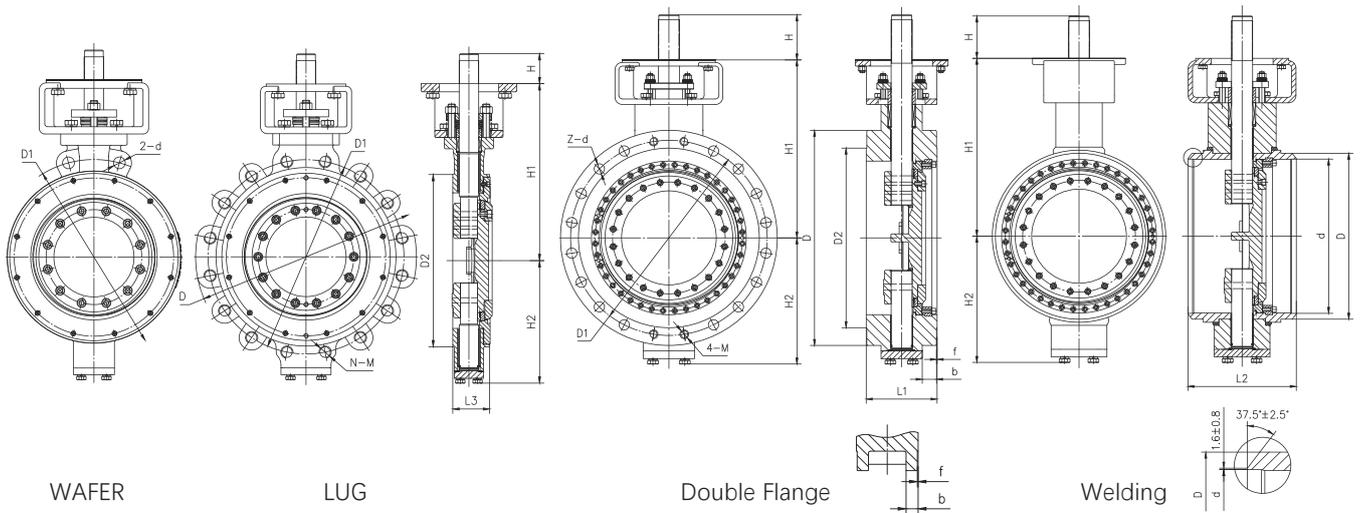


## Material Specifications

NO.	Name	Valve Material	Valve Stainless Steel Material
1a	Body	ASTM A216 WCB/EN10213 1.0619	ASTM A351 CF8M/EN10213 1.4408
2a	Disc	ASTM A216 WCB/EN10213 1.0619	ASTM A351 CF8M/EN10213 1.4408
2b	Press Board	ASTM A276 420	ASTM A182 Type F316/EN10222-5 1.4401
2c	Screw	UNSS31600	UNS S31600
3a	Sealing Ring	ASTM A182 Type F304/EN10222-T5	ASTM A182 Type F316/EN10222-5 1.4401
3b	Graphite Gasket	UNSS31600+Graphite	UNS S31600+Graphite
4a	Upper Stem	UNS S17400(17-4PH)	UNS S17400(17-4PH)
4b	Pin	UNSS17400(17-4PH)	UNS S17400(17-4PH)
4c	Lower Stem	UNS S17400(17-4PH)	UNS S17400(17-4PH)
4d	Pin	UNS S17400(17-4PH)	UNS S17400(17-4PH)
5a	Double-end Stud	ISO3506 A4(AISI 316)	ISO3506 A4(AISI 316)
5b	Nut	UNS S31600	UNS S31600
5c	Packing Gland	ASTM A216 WCB/EN10213 1.0619	ASTM A351 CF8M/EN10213 1.4408
5d	Packing	Graphite	Graphite
5e	Packing Seat Ring	UNS S31600	UNS S31600
5f	Upper Sleeve	UNS S31600+H60	UNS S31600+H60
5h	Cock	UNS S31600	UNS S31600
6a	Blind Flange	A105	ASTM A182 Type F316/EN10222-5 1.4401
6b	Screw	UNS S31600	UNS S31600
6c	Spiral Graphite Gasket	UNSS31600+Graphite	UNS S31600+Graphite
7a	Lock Ring	UNS S31600	UNS S31600
7b	Lower Sleeve	UNS S31600+H60	UNS S31600+H60
7c	Heel	A105	UNS S31600
7d	Thrust Bearings	A105	UNS S31600
7e	Thrust Bearing Shims	A105	UNS S31600
8a	Seat Ring	ASTM A182 Type F304/EN10222-T5	ASTM A182 Type F316/EN10222-5 1.4401
8b	Seat Surface Hardening	Stellite* gr.21	Stellite* gr.21
8c	Graphite Gasket	UNSS31600+Graphite	UNS S31600+Graphite
9a	Bracket	ASTM A216 WCB/EN10213 1.0619	ASTM A216 WCB/EN10213 1.0619
9b	Screw	UNS S31600	UNS S31600
10a	Hoisting Ring	ASTM A276 420	ASTM A182 Type F316/EN10222-5 1.4401
10b	Screw	UNS S31600	UNS S31600

Notes: Triple eccentric valves are manufactured using a variety of valve body materials.  
 Including carbon steel and low temperature carbon steel, such as: WCB, 1.0619, LCB, LCC;  
 High temperature alloy steel, such as: WC6, WC9, C5, C12;  
 Austenitic stainless steels, such as: CF8M, 1.4408, CF8, CF3M, CF3, CF8C;  
 Duplex and super duplex stainless steel, such as: CD3MN, CD3MWCuN;  
 High-alloyed austenitic stainless steels, e.g. 6Mo (CN3MN) and 20 alloy (CN7M);  
 Various unalloyed alloys, including: Monel, Hastelloy, Inconel; nickel-aluminum bronze alloys and titanium.  
 Seats and seals are smooth ground to 0.8 microns. Seats are welded with standard 2mm Stellite® 21 overlay.

**Dimensions**



150LB

Dimensions in mm

DN (mm)	NPS (inch)	L1	L2	L3	D	D1	D2	b (Min)	f	N	Z-Ød	M(in)	d1	Dn	H1	H2	H
50	2	108	150	43	150	120.7	92.1	17.5	2	4	4-Ø19	5/8-11UNC-2B	52.5	60.3	193	94	20
80	3	114	180	48	190	152.4	12.0	22.3	2	4	4-Ø19	5/8-11UNC-2B	77.9	88.9	221	118	25
100	4	127	190	54	230	190.5	157.2	22.3	2	8	4-Ø19	5/8-11UNC-2B	102.3	114.3	243	130	30
125	5	140	200	56	255	215.9	185.7	22.3	2	8	4-Ø22	3/4-10UNC-2B	128.2	139.7	261	153	35
150	6	140	210	57	280	241.3	215.9	23.9	2	8	4-Ø22	3/4-10UNC-2B	154.1	168.3	273	165	40
200	8	152	230	64	345	298.5	269.9	27.0	2	8	4-Ø22	3/4-10UNC-2B	202.7	219.1	309	198	45
250	10	165	250	71	405	362.0	323.8	28.6	2	12	8-Ø26	7/8-9UNC-2B	254.5	273	337	235	50
300	12	178	270	81	485	431.8	381.0	30.2	2	12	8-Ø26	7/8-9UNC-2B	304.8	323.9	382.5	274.5	67
350	14	190	290	92	535	476.3	412.8	33.4	2	12	8-Ø29	1-8UNC-2B	336.6	355.6	435	314	81
400	16	216	310	102	595	539.8	469.9	35.0	2	16	12-Ø29	1-8UNC-2B	387.4	406.4	457	344	87
450	18	222	330	114	635	577.9	533.4	38.1	2	16	12-Ø32	1-1/8-8UN-2B	434.9	457	510	369	98
500	20	229	350	127	700	635.0	584.2	41.3	2	20	16-Ø32	1-1/8-8UN-2B	482.6	508	579	410.5	105
600	24	267	390	154	815	749.3	692.2	46.1	2	20	16-Ø35	1-1/4-8UN-2B	581.1	610	635	472.5	117
700	28	292	430	165	925	863.6	800	69.9	2	28	24-Ø35	1-1/4-8UN-2B	672.7	711.2	671	529.5	117
800	32	318	470	200	1060	977.9	914	79.4	2	28	24-Ø2	1-1/2-8UN-2B	770.7	812.8	800	648	120
900	36	330	510	200	1170	1085.8	1022	88.9	2	32	28-Ø42	1-1/2-8UN-2B	869.3	914.4	862	708.2	128
1000	40	410	550	251	1290	1200.2	1124	88.9	2	36	32-Ø42	1-1/2-8UN-2B	967.3	1016	955	766.2	170
1200	48	470	630	276	1510	1422.4	1359	106.4	2	44	40-Ø42	1-1/2-8UN-2B	1164	1219.2	1088	884	182

## Dimensions

300LB

Dimensions in mm

DN (mm)	NPS (inch)	L1	L2	L3	D	D1	D2	b (Min)	f	N	Z-Ød	M(in)	d1	Dn	H1	H2	H
50	2	150	150	43	165	127	92.1	20.7	2	8	4-Ø19	5/8-11UNC-2B	52.5	603	135	120	30
80	3	180	180	48	210	168	127	27	2	8	4-Ø22	3/4-10UNC-2B	77.9	88.9	159	145	34
100	4	190	190	54	255	200	157.2	30.2	2	8	4-Ø22	3/4-10UNC-2B	102.3	114.3	194	165	34
125	5	200	200	56	280	235	185.7	33.4	2	8	4-Ø22	3/4-10UNC-2B	128.2	139.7	269	200	64
150	6	210	210	59	320	270	215.9	35	2	12	8-Ø22	3/4-10UNC-2B	154.1	168.3	269	200	64
200	8	230	230	73	380	330	269.9	39.7	2	12	8-Ø26	7/8-9UNC-2B	202.7	219.1	285	235	79
250	10	250	250	83	445	387	323.8	46.1	2	16	12-Ø29	1-8UNC-2B	254.5	273	325	275	79
300	12	270	270	92	520	451	381	49.3	2	16	12-Ø32	1-1/8-8UN-2B	304.8	323.9	387	315	79
350	14	290	290	117	585	514	412.8	52.4	2	20	16-Ø32	1-1/8-8UN-2B	336.6	355.6	410	350	79
400	16	310	310	133	650	572	469.9	55.6	2	20	16-Ø35	1-1/4-8UN-2B	387.4	406.4	465	385	109
450	18	330	330	149	710	629	533.4	58.8	2	24	20-Ø35	1-1/4-8UN-2B	434.9	457	528	415	109
500	20	350	350	159	775	686	584.2	62	2	24	20-Ø35	1-1/4-8UN-2B	482.6	508	561	450	129
600	24	390	390	181	915	813	692.2	68.3	2	24	20-Ø42	1-1/2-8UN-2B	581.1	610	636	530	129
700	28	430	430	229	1035	939.8	800	84.2	2	28	24-Ø45	1-5/8-8UN-2B	672.7	711.2	800	590	199
800	32	470	470	241	1150	1054	914	96.9	2	28	24-Ø52	1-7/8-8UN-2B	770.7	812.8	860	720	199
900	36	510	510	241	1270	1168.4	1022	103.2	2	32	28-Ø54	2-8UN-2B	869.3	914.4	940	780	199
1000	40	550	550	300	1240	1156	1086	112.8	2	32	28-Ø45	1-5/8-8UN-2B	967.3	1016	910	750	199
1200	48	630	630	360	1465	1372	1302	131.8	2	32	28-Ø52	1-7/8-8UN-2B	1164	1219.2	1000	850	249

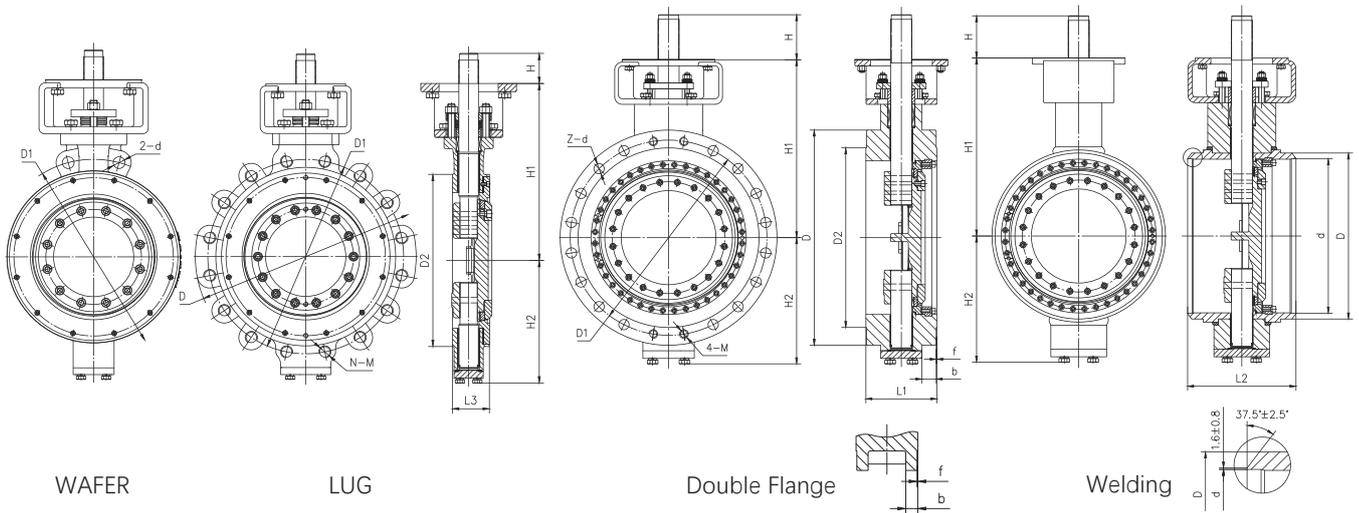
600LB

Dimensions in mm

DN (mm)	NPS (inch)	L1	L2	L3	D	D1	D2	b (Min)	f	N	Z-Ød	M(in)	d1	Dn	H1	H2	H
50	2	150	150	43	165	127	92.1	25.4	7	8	4-Ø19	5/8-11UNC-2B	52.5	60.3	175	125	40
80	3	180	180	54	210	168.3	127	31.8	7	8	4-Ø22	3/4-10UNC-2B	77.9	88.9	202	145	44
100	4	190	190	64	275	215.9	157.2	38.1	7	8	4-Ø26	7/8-9UNC-2B	102.3	114.3	208	180	44
125	5	200	200	70	330	266.7	185.7	44.5	7	8	4-Ø29	1-8UNC-2B	128.3	139.7	235	210	79
150	6	210	210	78	355	292.1	215.9	47.7	7	12	8-Ø29	1-8UNC-2B	154.1	168.3	302	225	79
200	8	230	230	102	420	349.2	269.9	55.6	7	12	8-Ø32	1-1/8-8UN-2B	198.5	219.1	315	265	79
250	10	250	250	117	510	431.8	323.8	63.5	7	16	12-Ø35	1-1/4-8UN-2B	247.7	273	376	310	79
300	12	270	270	140	560	489	381	66.7	7	20	16-Ø35	1-1/4-8UN-2B	295.3	323.9	442	340	109
350	14	290	290	155	605	527	412.8	69.9	7	20	16-Ø39	1-3/8-8UN-2B	325.4	355.6	457	365	109
400	16	310	310	178	685	603.2	469.9	76.2	7	20	16-Ø42	1-1/2-8UN-2B	363.5	406.4	561	410	129
450	18	330	330	200	745	654	533.4	82.6	7	20	16-Ø45	1-5/8-8UN-2B	409.5	457	610	450	129
500	20	350	350	216	815	723.9	584.2	88.9	7	24	20-Ø45	1-5/8-8UN-2B	455.6	508	645	485	129
600	24	390	390	232	940	838.2	692.2	101.6	7	24	20-Ø52	1-7/8-8UN-2B	547.7	610	730	555	178

WARCO reserves the right to change dimensions without notice.

## Dimensions



PN10 (1.0MPa)

Dimensions in mm

DN (mm)	NPS (inch)	L1	L2	L3	D	D1	D2	b	f	Z-Ød	N	M	d1	Dn	H1	H2	H
50	2	108	150	43	165	125	102	20	2	4-Ø18	4	16	47	57	193	94	20
80	3	114	180	49	200	160	138	20	2	4-Ø18	8	16	78	90	221	118	25
100	4	127	190	56	220	180	158	22	2	4-Ø18	8	16	96	110	243	130	30
125	5	140	200	64	250	210	188	22	2	4-Ø18	8	16	121	135	261	153	35
150	6	140	210	70	285	240	212	24	2	4-Ø22	8	20	146	161	273	165	40
200	8	152	230	71	340	295	268	24	2	4-Ø22	8	20	202	222	309	198	45
250	10	165	250	76	395	350	320	26	2	8-Ø22	12	20	245	278	337	235	50
300	12	178	270	83	445	400	370	26	2	8-Ø22	12	20	303	330	382	274	67
350	14	190	290	92	505	460	430	26	2	12-Ø22	16	20	351	382	435	314	81
400	16	216	310	102	565	515	482	26	2	12-Ø26	16	24	398	432	457	344	87
450	18	222	330	114	615	565	532	28	2	16-Ø26	20	24	450	484	510	369	98
500	20	229	350	127	670	620	585	28	2	16-Ø26	20	24	501	535	579	410	105
600	24	267	390	154	780	725	685	34	2	16-Ø30	20	27	602	636	635	472	117
700	28	292	430	165	895	840	800	34	5	20-Ø30	24	27	692	726	671	529	117
800	32	318	470	190	1015	950	905	36	5	20-Ø33	24	30	792	826	800	648	120
900	36	330	510	200	1115	1050	1005	38	5	24-Ø33	28	30	892	926	862	708	128
1000	40	410	550	216	1230	1160	1110	38	5	24-Ø36	28	33	992	1028	955	766	170
1200	48	470	630	276	1455	1380	1330	44	5	28-Ø39	32	36	1192	1228	1088	884	182
1400	56	530	710	390	1675	1590	1535	48	5	32-Ø42	36	39	1392	1428	1188	1022	202
1600	64	600	790	440	1915	1820	1760	52	5	36-Ø48	40	45	1592	1628	1227	1095	245
1800	72	670	870	490	2115	2020	1960	56	5	40-Ø48	44	45	1792	1828	1300	1165	245
2000	80	760	950	540	2325	2230	2170	60	5	44-Ø48	48	45	1992	2028	1390	1280	245

WARCO reserves the right to change dimensions without notice.

**Dimensions**

PN16 (1.6MPa)

Dimensions in mm

DN (mm)	NPS (inch)	L1	L2	L3	D	D1	D2	b	f	Z-Ød	N	M	d1	Dn	H1	H2	H
50	2	108	150	43	165	125	102	20	2	4-Ø18	4	16	47	57	193	94	20
80	3	114	180	49	200	160	138	20	2	4-Ø18	8	16	78	90	221	118	25
100	4	127	190	56	220	180	158	22	2	4-Ø18	8	16	96	110	243	130	30
125	5	140	200	64	250	210	188	22	2	4-Ø18	8	16	121	135	261	153	35
150	6	140	210	70	285	240	212	24	2	4-Ø22	8	20	146	161	273	165	40
200	8	152	230	71	340	295	268	24	2	8-Ø22	12	20	202	222	309	198	45
250	10	165	250	76	405	355	320	26	2	8-Ø26	12	24	245	278	337	235	50
300	12	178	270	83	460	410	378	28	2	8-Ø26	12	24	303	330	383	275	67
350	14	190	290	92	520	470	438	30	2	12-Ø26	16	24	351	382	435	314	81
400	16	216	310	102	580	525	490	32	2	12-Ø30	16	27	398	432	457	344	87
450	18	222	330	114	640	585	550	34	2	16-Ø30	20	27	450	484	510	369	98
500	20	229	350	127	715	650	610	36	2	16-Ø33	20	30	501	535	579	411	105
600	24	267	390	154	840	770	725	38	2	16-Ø36	20	33	602	636	635	473	117
700	28	292	430	165	910	840	795	40	5	20-Ø36	24	33	692	726	671	53	117
800	32	318	470	190	1025	950	900	42	5	20-Ø39	24	36	792	826	800	648	120
900	36	330	510	200	1125	1050	1000	44	5	24-Ø39	28	36	892	926	862	708	128
1000	40	410	550	216	1255	1170	1115	46	5	24-Ø42	28	39	992	1028	955	766	170
1200	48	470	630	276	1485	1390	1330	52	5	28-Ø48	32	45	1192	1228	1088	884	182
1400	56	530	710	390	1685	1590	1530	58	5	32-Ø48	36	45	1392	1428	1188	1022	202
1600	64	600	790	440	1930	1820	1750	64	5	36-Ø55	40	52	1592	1628	1227	1095	245
1800	72	670	870	490	2130	2020	1950	68	5	40-Ø55	44	52	1792	1828	1300	1165	245
2000	80	760	950	540	2345	2230	2150	70	5	44-Ø60	48	56	1992	2028	1390	1280	245

WARCO reserves the right to change dimensions without notice.

## Dimensions

PN25(2.5MPa)

Dimensions in mm

DN (mm)	NPS (inch)	L1	L2	L3	D	D1	D2	b	f	Z-Ød	N	M	d1	Dn	H1	H2	H
50	2	108	150	43	165	125	102	20	2	4-Ø18	4	16	47	57	193	94	20
80	3	114	180	49	200	160	138	24	2	4-Ø18	8	16	78	90	221	118	25
100	4	127	190	56	235	190	162	24	2	4-Ø22	8	20	96	110	243	130	30
125	5	140	200	64	270	220	188	26	2	4-Ø26	8	24	121	135	261	153	35
150	6	140	210	70	300	250	218	28	2	4-Ø26	8	24	146	161	273	165	40
200	8	152	230	71	360	310	278	30	2	8-Ø26	12	24	202	222	309	198	45
250	10	165	250	76	425	370	335	32	2	8-Ø30	12	27	245	278	337	235	50
300	12	178	270	83	485	430	395	34	2	12-Ø30	16	27	303	330	383	274.5	67
350	14	190	290	92	555	490	450	38	2	12-Ø33	16	30	351	382	435	314	81
400	16	216	310	102	620	550	505	40	2	12-Ø36	16	33	398	432	457	344	87
450	18	222	330	114	670	600	555	46	2	16-Ø36	20	33	450	484	510	369	98
500	20	229	350	127	730	660	615	48	2	16-Ø36	20	33	501	535	579	410.5	105
600	24	267	390	154	845	770	720	58	2	16-Ø39	20	36	602	636	635	472.5	117
700	28	292	430	165	960	875	820	50	5	20-Ø42	24	39	692	726	671	529.5	117
800	32	318	470	190	1085	990	930	54	5	20-Ø48	24	45	792	826	800	648	120
900	36	330	510	200	1185	1090	1030	58	5	24-Ø48	28	45	892	926	862	708.2	128
1000	40	410	550	216	1320	1210	1140	62	5	24-Ø55	28	52	992	1028	955	766.2	170
1200	48	470	630	276	1530	1420	1350	70	5	28-Ø55	32	52	1192	1228	1088	884	182
1400	56	530	710	390	1755	1640	1560	76	5	32-Ø60	36	56	1392	1428	1171	985	245
1600	64	600	790	440	1975	1860	1780	84	5	36-Ø60	40	56	1592	1628	1237	1075	245
1800	72	670	870	490	2195	2070	1985	90	5	40-Ø68	44	64	1792	1828	1390	1190	245
2000	80	760	950	540	2425	2300	2210	96	5	44-Ø68	48	64	1992	2028	1515	1305	245

## Flow coefficient

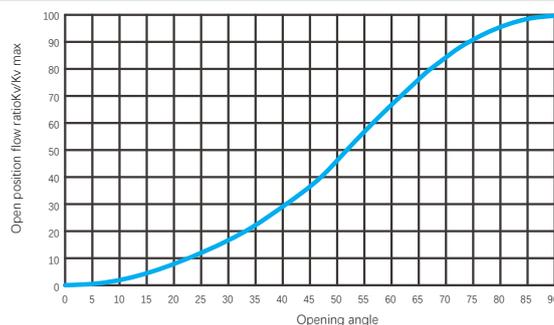
Cv value:

150Lb

Valve size		5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
mm	inch																		
80	3	1	6	14	23	31	39	47	54	62	71	82	96	112	128	143	156	163	165
100	4	2	12	26	42	57	72	85	98	113	130	150	176	205	234	262	285	299	302
150	6	16	31	45	59	76	101	134	178	233	297	369	448	531	616	698	758	796	796
200	8	30	57	82	108	140	185	246	327	427	544	676	821	974	1130	1280	1390	1460	1460
250	10	52	99	142	187	242	320	426	566	739	942	1170	1420	1690	1960	2220	2410	2530	2530
300	12	78	147	212	279	362	478	636	846	1100	1410	1750	2120	2520	2920	3310	3600	3780	3780
350	14	106	201	289	380	493	651	866	1150	1500	1920	2380	2890	3430	3980	4510	4890	5140	5140
400	16	165	313	451	594	769	1020	1350	1800	2350	2990	3720	4510	5350	6210	7040	7640	8020	8020
450	18	217	413	594	782	1010	1340	1780	2370	3090	3940	4890	5940	7050	8180	9270	10100	10600	10600
500	20	268	509	733	965	1250	1650	2200	2920	3820	4860	6040	7340	8710	10100	11400	12400	13000	13000
600	24	386	734	1060	1390	1800	2380	3170	4210	5500	7000	8700	10600	12500	14500	16500	17900	18800	18800
700	28	559	1060	1530	2010	2610	3450	4590	6100	7960	10100	12600	15300	18200	21100	23900	25900	27200	27200
750	30	630	1200	1720	2270	2940	3880	5160	6870	8960	11400	14200	17200	20400	23700	28900	29200	30700	30700
800	32	719	1370	1970	2590	3360	4440	5900	7840	10200	13000	16200	19700	23300	27100	30700	33300	35000	35000
900	36	884	1680	2420	3180	4120	5450	7250	9630	12600	16000	19900	24200	28700	33300	37700	40900	43000	43000
1000	40	1170	2220	3190	4210	5450	7210	9580	12700	16600	21200	26300	31900	37900	44000	49800	54100	56900	56900
1050	42	1230	2340	3370	4440	5760	7610	10100	13400	17600	22400	27800	33700	40000	46500	52600	57100	60000	60000
1200	48	1640	3120	4490	5920	7670	10100	13500	17900	23400	29800	37000	45000	53400	61900	70100	76100	80000	80000

300Lb

Valve size		5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
mm	inch																		
80	3	1	6	14	23	31	39	47	54	62	71	82	96	112	128	143	156	163	165
100	4	2	12	26	42	57	72	85	98	113	130	150	176	205	234	262	285	299	302
150	6	6	25	41	54	69	91	121	162	212	268	334	407	482	559	634	689	725	725
200	8	11	45	74	98	126	166	222	298	389	492	613	746	884	1030	1160	1260	1330	1330
250	10	19	82	135	178	229	301	402	540	705	891	1110	1350	1600	1860	2110	2290	2410	2410
300	12	29	122	202	266	342	450	601	807	1050	1330	1660	2020	2400	2780	3150	3420	3600	3600
350	14	39	167	274	363	466	613	818	1100	1430	1810	2260	2750	3260	3780	4290	4660	4900	4900
400	16	58	248	408	539	692	910	1220	1630	2130	2690	3360	4090	4840	5610	6370	6920	7280	7280
450	18	77	326	537	710	911	1200	1600	2150	2810	3550	4420	5380	6380	7400	8390	9110	9590	9590
500	20	95	403	663	876	1130	1480	1980	2650	3460	4380	5460	6640	7880	9130	10400	11300	11800	11800
600	24	136	580	955	1260	1620	2130	2850	3820	4990	6310	7860	9570	11300	13100	14900	16200	17100	17100
700	28	199	844	1390	1840	2360	3100	4150	5560	7260	9190	11400	13900	16500	19100	21700	23600	24800	24800
750	30	232	986	1620	2150	2750	3620	4840	6490	8480	10700	13400	16300	19300	22400	25400	27500	29000	29000
800	32	261	1110	1830	2420	3100	4080	5450	7310	9550	12100	15000	18300	21700	25200	28600	31000	32600	32600
900	36	332	1410	2320	3070	3940	5190	6930	9300	12100	15400	19100	23300	27600	32000	36300	39400	41500	41500
1000	40	399	1700	2790	3690	4740	6230	8330	11200	14600	18400	23000	28000	33200	38400	43600	47400	49900	49900
1050	42	457	1940	3200	4230	5430	7140	9540	12800	16700	21100	26300	32000	38000	44000	50000	54200	57100	57100
1200	48	480	2040	3360	4440	5700	7500	10000	13400	17500	22200	27700	33700	39900	46300	52500	57000	60000	60000



**Operating Torque**

Butterfly valve torque:Class150LB

Nominal Size		Torque									
DN	NPS	0.6MPa		1.0MPa		1.6MPa		2.0MPa		2.5MPa	
		OFF	ON								
80	3"	60	55	70	63	85	73	95	81	108	90
100	4"	94	86	112	97	138	114	155	126	177	140
150	6"	186	164	233	197	304	245	351	278	410	319
200	8"	353	306	446	367	585	459	678	520	794	596
250	10"	540	455	691	550	919	693	1070	788	1260	907
300	12"	908	751	1157	896	1531	1113	1780	1258	2092	1486
350	14"	1371	1149	1716	1348	2235	1645	2580	1843	3012	2091
400	16"	1947	1628	2436	1904	3169	2319	3658	2595	4269	2941
450	18"	2664	2203	3328	2559	4323	3093	4987	3449	5816	3895
500	20"	3679	3007	4594	3473	5966	4173	6881	4640	8025	5223
600	24"	6201	4975	7735	5692	10037	6767	11571	7483	13488	8870
700	28"	8537	6777	10829	7894	14266	9571	16558	10689	19422	13014
750	30"	10375	8209	13155	9546	17324	11551	20104	12887	23579	15560
800	32"	12547	9846	15892	11391	20910	13709	24256	15387	28437	18763
900	36"	16482	12550	21057	14504	27920	17537	32496	21298	38215	25999
1000	40"	22546	17199	28963	20050	38587	24327	45004	29326	53024	35922
1050	42"	25370	19044	32711	22167	43721	27803	51062	33895	60237	41509
1200	48"	35609	26383	46021	30643	61638	38687	72050	47299	85065	58063

Butterfly valve torque: Class300LB

Nominal Size		Torque													
DN	NPS	0.6MPa		1.0MPa		1.6MPa		2.0MPa		2.5MPa		4.0MPa		5.0MPa	
		OFF	ON												
80	3"	60	55	70	63	85	73	95	81	108	90	175	145	204	167
100	4"	94	86	112	97	138	114	155	126	177	140	287	229	336	264
150	6"	210	185	259	217	333	266	282	299	444	340	738	572	876	668
200	8"	413	357	513	419	662	512	761	514	886	651	1480	1105	1758	1289
250	10"	681	574	852	673	1107	822	1278	922	1441	1072	2480	1767	2952	2062
300	12"	1057	876	1328	1027	1736	1255	2008	1406	2348	1646	3952	2748	4710	3207
350	14"	1756	1490	2140	1697	2717	2008	3101	2215	3581	2774	5290	3519	6286	4268
400	16"	2519	2108	3081	2395	3925	2827	4487	3114	5189	3474	7690	5070	9148	6179
450	18"	3219	2644	3976	3017	5110	3576	5867	3949	6813	4506	10159	6767	12118	8274
500	20"	4573	3754	5602	4235	7144	4958	8172	5440	9457	6329	14003	9403	14666	11452
600	24"	7115	5681	8803	6413	11336	7511	13024	8496	15134	10194	22555	15290	26921	18687
700	28"	10231	8055	12854	9228	16789	10987	19412	12784	22691	15460	34122	23489	40893	28842
750	30"	12175	9415	15374	10773	20172	13054	23371	15695	27369	18995	41211	28897	49454	35498
800	32"	14126	11020	17798	12620	23305	15021	26976	17349	31565	21063	47650	32205	57137	39634
900	36"	18839	14221	23944	16247	31608	20311	36705	24530	43085	29804	65156	45624	78308	52122