



BR 14† - LTR 43 · Triple eccentric control and shut-off butterfly valve DIN and ANSI version



Applications

Triple eccentric, metal seated control and shut-off Butterfly valve for high-pressure applications in the process industry

- Nominal size DN 80 up to 1000 and NPS3 up to 40
- Nominal pressure PN 10 up to 63 bis cl150 up to 600
- Temperatures -60 up to +400 °C (-76 up to +752 °F)

Special features

- Wafer-Type and Lug-Type design (threaded holes according to EN 1092-1, ASME B16.5 or ASME B16.47) as well as double-flange version according to ISO 5752, EN 558, BS 5155 or B16.10
- Leakage free tightness
- Two-way flow with maximum pressure differential
- Use as a quick-closing unit (ESD) possible
- Body made of
 - Cast steel (C-steel)
 - Stainless steel
 - Special alloys
- Seal ring made of
 - Stainless steel/graphite laminated
 - Special materials

The control and shut-off valves can be operated with a pneumatic, electric or hydraulic actuator or manual gear.

Versions and options

- Fire-safe according to API 607, BS 6755 Part 2 and API 6FA
- Versions for cryogenic applications down to -196 °C (-321 °F)
- Body made of C-steel, stainless steel
- Seal ring made of several materials
- Packing according to TA-Luft/ISO 15848
- Low-noise and anti-cavitation
- NACE nach MR0103/MR0175/ISO 15156
- Heating jacket
- Outer bearing, inner packing
- Quick closing, less than 0.5 seconds
- NACE according to MR0103/MR0175/ISO 15156



Fig. 1: Control and shut-off butterfly valve BR 14† - LTR 43

Design and principle of operation

The media can flow through the shut-off valve in any direction.

The flow characteristic value depends on the opening angle of the throttle disc and therefore on the area freed between the disc and the body.

The seal takes place between the seat in the body and the seal ring.

The seat adapts elastically to the seal ring. Friction forces are minimised by the triple eccentric and conical geometry.

Fail-safe position

The pneumatic rotary actuators can be designed with a fail-safe positions that are activated when the pressure is released as well when the supply energy fails.

- **Shut-off valve without supply energy "CLOSED"**
upon supply energy disc is closed.
- **Process valve without supply energy "OPEN"**
upon supply energy disc is opened.

The principle of triple eccentricity

See figure 3

- **1OS: Offset between the seat and the centre of the shaft**
The shaft is mounted completely behind the sealing surface of the disc and seat. This results in an uninterrupted sealing surface. The uninterrupted sealing surface provides maximum tightness.
- **2OS: Offset between centre of the shaft and the centre of the body**
The shaft is positioned slightly offset from the centre of the body. Depending on flow-direction, the differential pressure has an opening or closing effect on the sealing system. In the case of a shaft-side inflow, the pressure supports the tightness.
- **3OS: Offset of the seat intersection point from the centre of the body**
The inclined conical seat geometry permits a friction free rotation and therefore reduces wear when opening and closing the seat seals. Breakaway torques caused by deformation are excluded. The conical sealing surface guarantees maximal tightness even with extreme requirements.

Seat version

- **BR 14t - LTR 43**
For less wear-critical applications, see figure 4. Only the seal ring can be replaced. The seat is coated with Stellite® as standard for better wear protection.

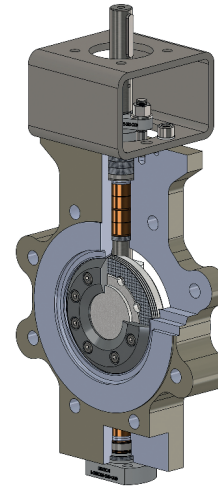


Fig. 2: Design of the control and shut-off valve BR 14t - LTR 43

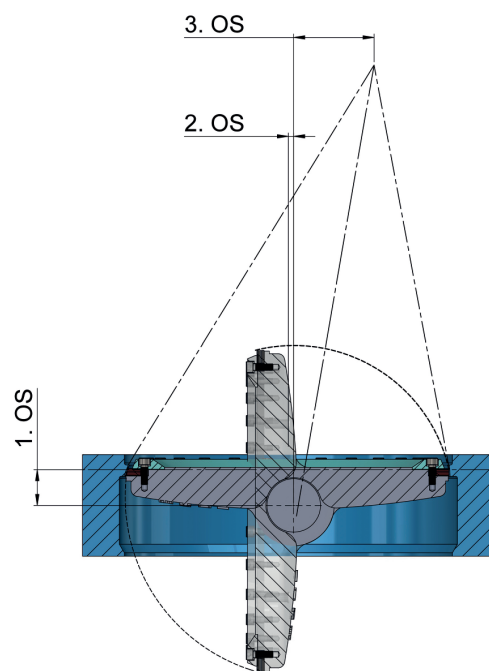


Fig. 3: Triple eccentricity

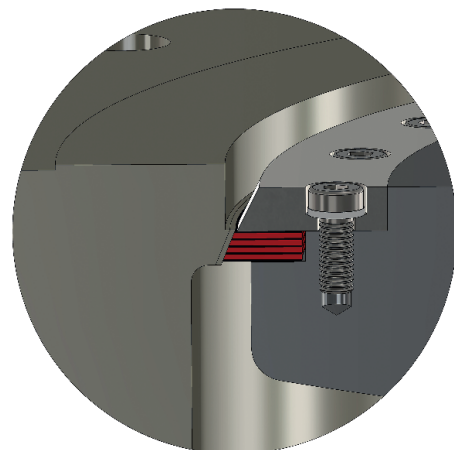


Fig. 4: Seat version

Table 1: Technical data

Nominal size	DN 80 up to 1000 and NPS3 up to 40	
Nominal pressure	PN 10 up to 63 and cl150 up to 600	
Body form	Wafer-Type · Lug-Type · Double-flange	
Overall lengths	API 609, ASME B16.10, ISO 5752, DIN EN 558	
Seat	Solid and Stellite-coated	
Characteristic curve	Equal percentage	
Max. opening angle	80° (90°)	
Adjustment rating	> 50:1	
Continuous operating pressure	See the Pressure-Temperature rating	
Temperature range	(-60 up to +400 °C) (-76 up to 752 °F)	
Leakage class	Control applications	≤VI acc. to ANSI FCI 70-2/EN 60534-4
	Open/close applications	Sealed acc. to API 598, EN 12266

Table 2: Material

Version		DIN	ANSI
Body	Steel	1.0619 1.0425 (plate material)	A216 WCB/WCC A516 Gr.70 (plate material)
	Stainless steel	1.4408 1.4404	A351 CF8M 316L (plate material)
Disc	For steel bodies	1.4408 1.0619	A351 CF8M A216 WCB/WCC
	For stainless steel bodies:	1.4408 1.4404	A351 CF8M 316 L
Seal ring		1.4404/graphite	
Seat		Stellite coated	
Shaft		17-4PH	

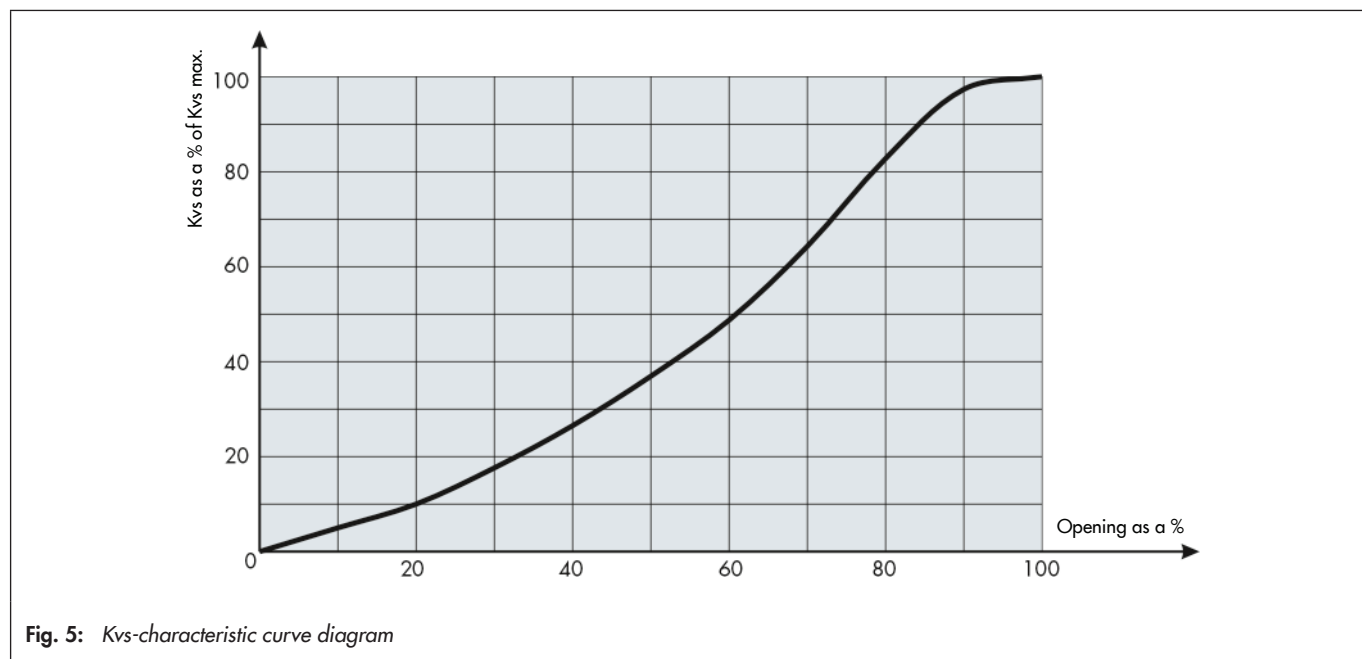


Fig. 5: Kvs-characteristic curve diagram

K_{V5} coefficients

Table 3: *k_{v5}-coefficients for PN 10 to 25 and cl150*

Nominal size		Opening angle							
DN	NPS	10°	20°	30°	40°	50°	60°	70°	80°
80	3	13	29	46	69	103	157	193	223
100	4	20	43	67	102	150	228	308	356
150	6	48	103	160	243	360	551	741	860
200	8	85	183	284	434	641	979	1321	1530
250	10	135	292	452	691	1022	1568	2100	2427
300	12	197	424	657	1005	1488	2280	3058	3534
350	14	265	572	887	1356	2005	3069	4124	4770
400	16	352	760	1180	1803	2669	4085	5486	6341
450	18	458	987	1537	2348	3478	5349	7177	8295
500	20	555	1195	1853	2832	4192	6422	8617	9961
600	24	810	1747	2708	4139	6126	9386	12593	14559
700	28	1099	2369	3674	5614	8309	12730	17082	19741
800	32	1449	3125	4845	7403	10957	16787	22525	26035
900	36	1848	3981	6170	9429	13956	21375	28685	33155
1000	40	2275	4902	7605	11619	17195	25175	35345	40850

Table 4: *k_{v5}-coefficients for PN 40 and cl300*

Nominal size		Opening angle							
DN	NPS	10°	20°	30°	40°	50°	60°	70°	80°
80	3	12	27	43	64	96	146	179	208
100	4	19	40	62	95	140	212	286	331
15	6	45	96	149	226	335	512	389	800
200	8	79	170	264	404	596	910	1229	1422
250	10	126	272	420	643	950	1458	1953	2257
300	12	183	394	611	935	1384	2120	2844	3287
350	14	246	532	825	1261	1865	2854	3835	4436
400	16	327	707	1097	1677	2482	3799	5102	5897
450	18	426	918	1429	2184	3235	4975	6675	7715
500	20	516	1111	1723	2634	3899	5972	8014	9264
600	24	753	1625	2518	3849	5697	8729	11711	13540
700	28	1022	2203	3417	5221	7727	11839	15886	18359
800	32	1348	2906	4506	6885	10190	15612	20948	24212
900	36	1719	3702	5738	8769	12979	19879	26677	30834
1000	40	2116	4559	7073	10806	15991	23413	32871	37991

Table 5: *k_{v5}-coefficients for PN 63 and cl600*

Nominal size		Opening angle							
DN	NPS	10°	20°	30°	40°	50°	60°	70°	80°
80	3	11	23	37	56	83	127	156	181
100	4	16	35	54	83	122	185	249	289
150	6	39	83	130	197	292	446	600	696
200	8	69	148	230	352	519	793	1070	1239
250	10	109	237	366	560	828	1270	1701	1966
300	12	160	343	532	814	1205	1847	2477	2863
350	14	215	463	718	1098	1624	2486	3340	3864
400	16	285	616	956	1460	2162	3309	4444	5136
450	18	371	799	1245	1902	2817	4333	5813	6719
500	20	450	968	1501	2294	3396	5202	6980	8068
600	24	656	1415	2193	3353	4962	7603	10200	11793

Conversion of the flow coefficients: C_v (US gallons/min) = $1.17 \cdot K_{v5}$ (m³/h) or $K_{v5}/C_v = 0.865$
 K_{v5} coefficients for other nominal pressures upon request.

Pressure-Temperature rating

Table 6: DIN-body made of cast steel (1.0619, DIN EN 12516)

	Temperature in °C											
	-10	20	50	100	150	200	250	300	350	375	380	400
PN 10	10	10	10	9.4	8.9	8.4	7.7	7	6.5	6.2	6.2	6
PN 16	16	16	16	15	14.2	13.4	12.3	11.1	10.4	10	9.9	9.6
PN 25	25	25	25	23.4	22.2	21	19.2	17.4	16.2	15.6	15.5	15
PN 40	40	40	40	37.4	35.5	33.6	30.7	27.8	25.9	25	24.8	24
PN 63	63	63	63	59	55.9	52.9	48.4	43.8	40.8	39.3	39	37.8

Table 7: ANSI-body made of cast steel (A216 WCB / ASME 16.34 Group 1.1)

	Temperature in °C											
	-29 ...bis 38	50	100	150	200	250	300	325	350	375	400	425
Class 150	19.6	19.2	17.7	15.8	13.8	12.1	10.2	9.3	8.4	7.4	6.5	5.5
Class 300	51.1	50.1	46.4	45.1	43.8	41.9	39.8	38.7	37.6	36.4	34.7	28.8
Class 600	102.1	100.2	93.2	90.2	87.6	83.9	79.6	77.4	75.1	72.7	69.4	57.5

Table 8: DIN-body made of stainless steel (1.4408, DIN EN 12516-1 2018)

	Temperature in °C												
	-10	20	50	100	150	200	250	300	350	400	450	500	550
PN 10	10	10	10	9.5	8.5	7.6	7	6.4	6.2	5.9	5.7	5.5	5.2
PN 16	16	16	16	15.2	13.7	12.1	11.2	10.3	9.9	9.4	9.1	8.9	8.3
PN 25	25	25	25	23.8	21.4	18.9	17.5	16.1	15.4	14.7	14.1	19.9	12.9
PN 40	40	40	40	38.1	34.2	30.2	28	25.8	24.6	23.5	22.6	22.2	20.7
PN 63	63	63	63	60	53.8	47.6	44.1	40.6	38.8	37	35.6	34.9	32.6

Table 9: ANSI-body made of stainless steel (A351 CF3M & CF8M / ASME 16.34 Group 2.2)

	Temperatur in °C											
	-29 bis 38	50	100	150	200	250	300	350	400	450	500	538
Class 150	19	18,4	16,2	14,8	13,7	12,1	10,2	8,4	6,5	4,6	2,8	1,4
Class 300	49,6	48,1	42,2	38,5	35,7	33,4	31,6	30,3	39,4	28,8	28,2	25,2
Class 600	99,3	96,2	84,4	77	71,3	66,8	63,2	60,7	58,9	57,7	56,5	50

Dimensions and weights of the control and shut off butterfly valve with an Wafer-Type design

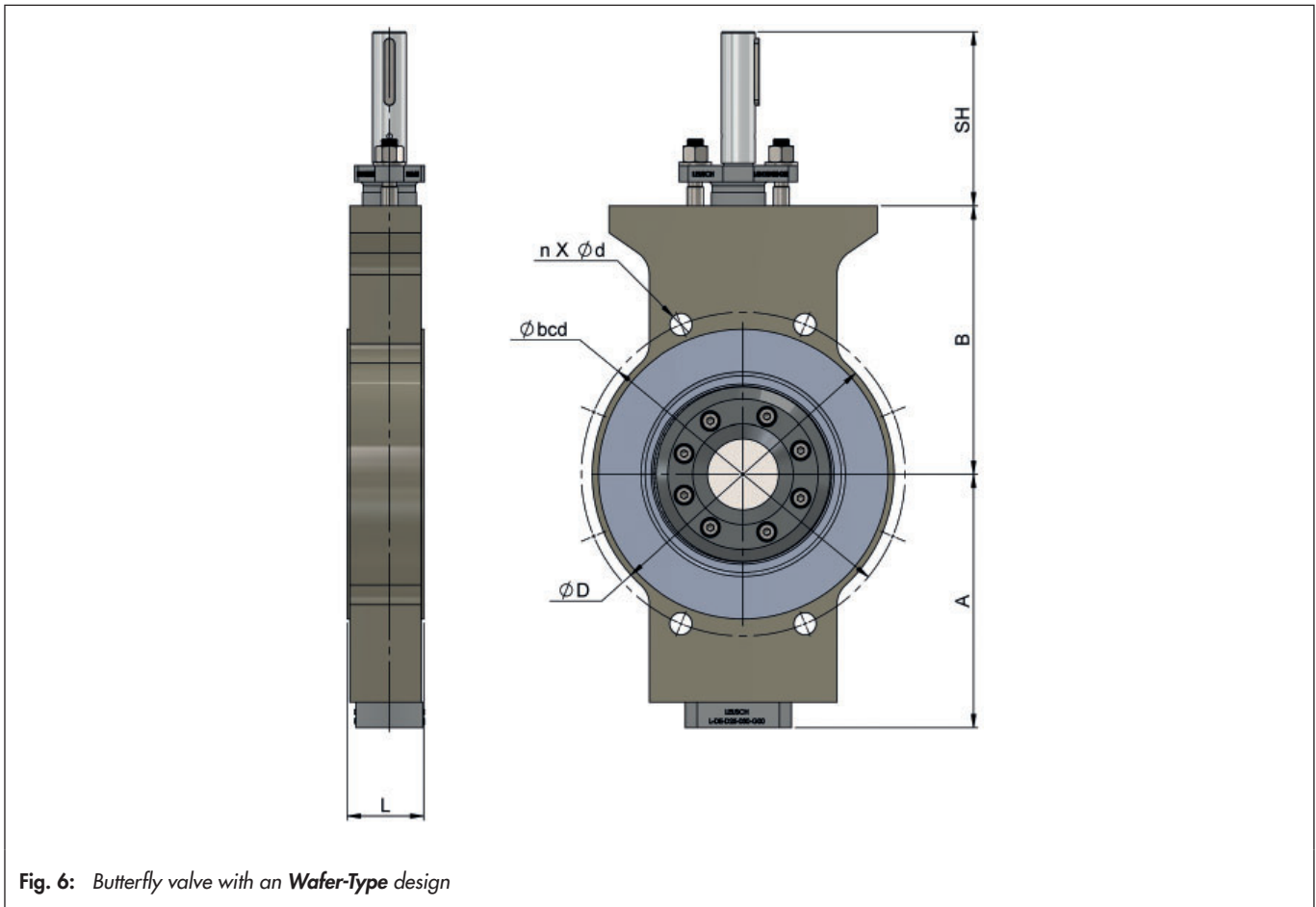


Fig. 6: Butterfly valve with an **Wafer-Type** design

Table 10: Butterfly valve with an **Wafer-Type** design, dimensions in mm and weights in kg

Nominal size		PN 10 to 25 / c150					PN 40 / c1300					PN 63 / c1600			
		A	B	L		Weight	A	B	L		Weight	A	B	L	Weight
DN	NPS			ANSI	DIN				ANSI	DIN					
80	3	120	125	48	64	9	120	125	48	64	10	155	135	54	14
100	4	150	160	54	64	15	160	165	54	64	16	175	180	64	24
150	6	190	200	57	76	26	200	210	59	76	28	235	235	78	46
200	8	220	235	64	89	38	235	240	73	89	48	265	275	102	79
250	10	250	265	71	114	53	260	270	83	114	70	310	320	117	114
300	12	290	305	81	114	81	300	310	92	114	100	335	340	140	161
350	14	320	330	92	127	112	329	335	117	127	159	386	385	155	204
400	16	350	360	102	140	141	380	370	133	140	230	420	420	178	345
450	18	375	400	114	152	175	410	410	149	152	262	440	450	200	401
500	20	415	450	127	152	239	455	460	159	152	333	485	490	216	593
600	24	460	480	154	178	347	530	540	181	178	548	580	610	232	705
700	28	525	535	165	229	489	598	610	209	229	832	620	640	292	1172
750	30	590	610	165	-	551	640	630	241	-	1050	620	670	318	1568
800	32	600	620	190	241	738	658	660	241	241	1139	660	700	318	1797
900	36	640	670	200	241	836	700	730	260	241	1388	720	740	330	1954
1000	40	710	730	216	300	1057	720	740	300	300	1462	On Request			

Table 11: Butterfly valve with an Wafer-Type design, connection dimensions in mm for PN 10, PN 16 and PN 25

Nominal size DN	Flow-direction	PN 10			PN 16			PN 25		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
80	A / B	4x M16	160	141	4x M16	160	141	4x M16	160	141
100	A / B	4x M16	180	160	4x M16	180	160	4x M20	200	165
150	A / B	4x M20	240	218	4x M20	240	218	4x M24	250	218
200	A / B	4x M20	295	272	4x M20	295	272	4x M24	310	278
250	A / B	4x M20	350	327	4x M24	355	327	4x M27	370	338
300	A / B	4x M20	400	370	4x M24	410	395	4x M27	430	395
350	A / B	4x M20	460	450	4x M24	470	450	4x M30	490	450
400	A / B	4x M24	515	490	4x M27	525	490	4x M33	550	505
450	A / B	4x M24	565	535	4x M27	585	560	4x M33	600	560
500	A / B	4x M24	620	585	4x M30	650	615	4x M33	660	615
600	A / B	4x M27	725	690	4x M33	770	725	4x M36	770	725
700	A / B	4x M27	840	806	4x M33	840	800	4x M39	875	822
750	A / B	On request								
800	A / B	4x M30	950	930	4x M36	950	930	4x M45	990	930
900	A / B	4x M30	1050	1030	4x M36	1050	1030	4x M52	1090	1030
1000	A / B	4x M33	1160	1030	4x M39	1170	1120	4x M52	1210	1150

Table 12: Butterfly valve with an Wafer-Type design, connection dimensions in mm for PN 40 and PN 63

Nominal size DN	Flow-direction	PN 40			PN 63		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
80	A / B	4x M16	160	141	4x M20	170	140
100	A / B	4x M20	200	165	4x M24	200	164
150	A / B	4x M24	250	220	4x M30	280	250
200	A / B	4x M27	320	278	4x M33	345	306
250	A / B	4x M30	385	350	4x M33	400	356
300	A / B	4x M30	450	410	4x M33	460	413
350	A / B	4x M33	510	470	4x M36	525	480
400	A / B	4x M36	585	535	4x M39	585	535
450	A / B	4x M36	610	566	On request		
500	A / B	4x M39	670	615	4x M45	705	650
600	A / B	4x M45	795	735	4x M52	820	762
700	A / B	4x M45	900	845	4x M52	935	861
750	A / B	On request					
800	A / B	4x M52	1030	960	On request		
900	A / B	4x M52	1140	1080			
1000	A / B	4x M52	1250	1190			

Table 13: Butterfly valve with an Wafer-Type design, connection dimensions in mm for cl150, cl150 Series A and cl150 Series B

Nominal size NPS	Flow-direction	cl150			cl150 Series A			cl150 Series B		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
3	A / B	-	152.4	129						
4	A / B	4x 5/8"-11	190.5	160						
6	A / B	4x 3/4"-10	241.3	218						
8	A / B	4x 3/4"-10	298.5	272						
10	A / B	4x 7/8"-9	362	327						
12	A / B	4x 7/8"-9	431.8	395						
14	A / B	4x 1"-8	476.3	450						
16	A / B	4x 1"-8	539.8	490						
18	A / B	4x 1.1/8"-8	577.9	535						
20	A / B	4x 1.1/8"-8	635	585						
24	A / B	4x 1.1/4"-8	749.3	694						
28	A / B				4x 1.1/4"-8	863.6	806	4x 3/4"-10	795.3	845
30	A / B				4x 1.1/4"-8	914.4	868	4x 3/4"-10	846.1	912
32	A / B				4x 1.1/2"-8	977.9	930	4x 3/4"-10	900.1	864
36	A / B				4x 1.1/2"-8	1085.8	1030	4x 7/8"-9	1009.7	980
40	A / B				4x 1.1/2"-8	1200.2	1130	4x 1"-8	1120.6	1090

Table 14: Butterfly valve with an Wafer-Type design, connection dimensions in mm for cl300, cl300 Series A and cl300 Series B

Nominal size NPS	Flow-direction	cl300			cl300 Series A			cl300 Series B		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
3	A / B	4x 3/4"-10	168.1	141						
4	A / B	4x 3/4"-10	200.2	165						
6	A / B	4x 3/4"-10	269.7	220						
8	A / B	4x 7/8"-9	330.2	290						
10	A / B	4x 1"-8	387.4	350						
12	A / B	4x 1.1/8"-8	450.9	410						
14	A / B	20x 1.1/8"-8	514.4	470						
16	A / B	4x 1.1/4"-8	571.5	535						
18	A / B	4x 1.1/4"-8	628.7	566						
20	A / B	4x 1.1/4"-8	685.8	615						
24	A / B	4x 1.1/2"-8	812.8	735						
28	A / B				4x 1.5/8"-8	939.8	765	4x 1.1/4"-8	857.3	800
30	A / B				4x 1.3/4"-8	997	917	4x 1.3/8"-8	920.8	864
32	A / B				4x 1.7/8"-8	1054.1	864	4x 1.1/2"-8	977.9	960
36	A / B				4x 2"-8	1168.4	1080	4x 1.5/8"-8	1089.2	1080
40	A / B				4x 1.5/8"-8	1155.7	1130	4x 1.5/8"-8	1190.6	1115

Table 15: Butterfly valve with an **Wafer-Type** design, **connection dimensions** in mm for **cl600**, **cl600 Series A** and **cl600 Series B**

Nominal size NPS	Flow-direction	cl600			cl600 Series A			cl600 Series B		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
3	A / B	4x 3/4"-10	168.1	140						
4	A / B	4x 7/8"-9	215.9	164						
6	A / B	4x 1"-8	292.1	250						
8	A / B	4x 1.1/8"-8	349.3	306						
10	A / B	8x 1.1/4"-8	431.8	356						
12	A / B	4x 1.1/4"-8	489	413						
14	A / B	4x 1.3/8"-8	527.1	413						
16	A / B	4x 1.1/2"-8	603.3	535						
18	A / B	4x 1.5/8"-8	654.1	587						
20	A / B	4x 1.5/8"-8	723.9	650						
24	A / B	4x 1.7/8"-8	838.2	762						
28 ... 40	A / B	-	-	-						On request

Dimensions and weights of the control and shut-off butterfly valve with Lug-Type design

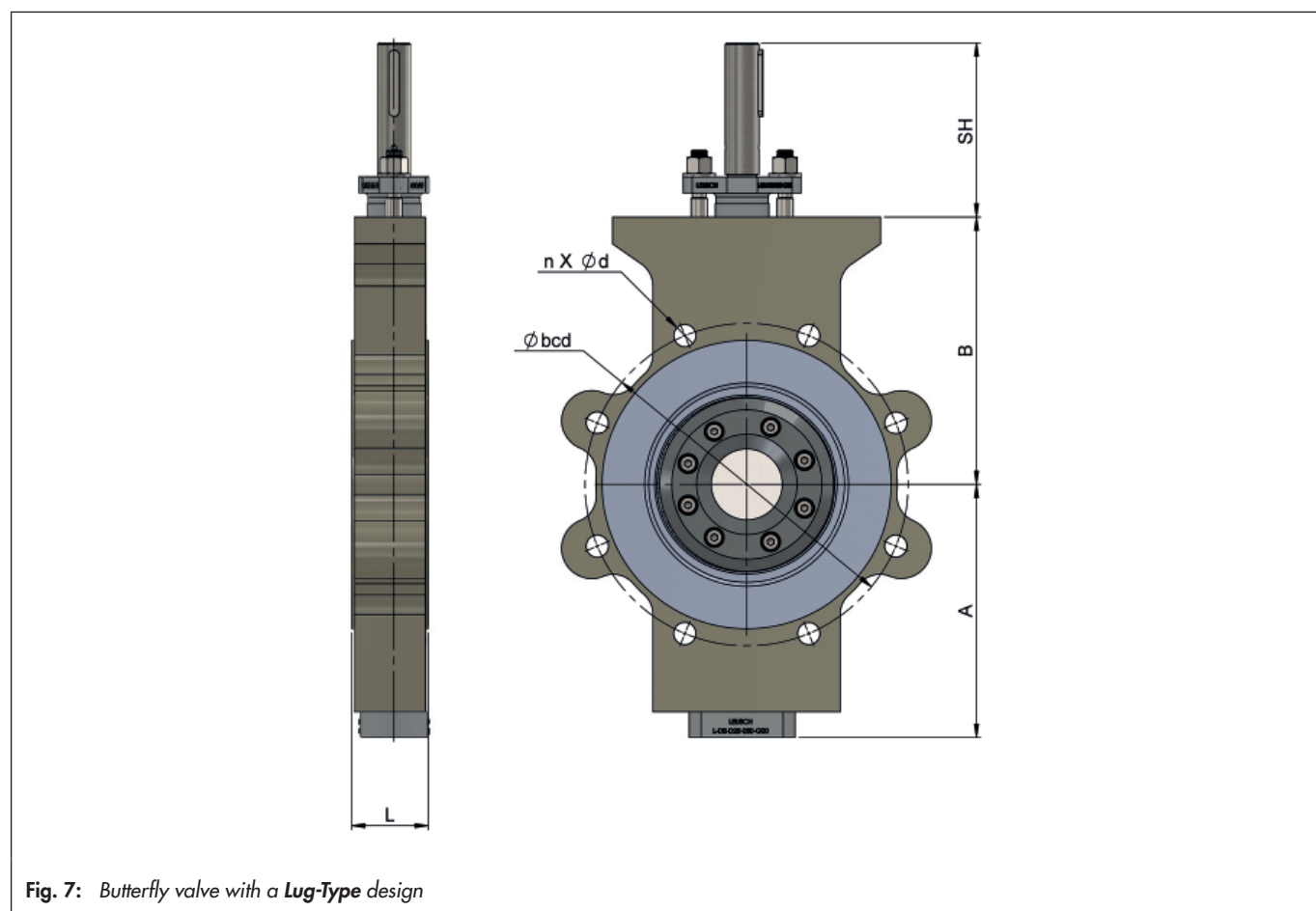


Fig. 7: Butterfly valve with a **Lug-Type** design

Table 16: Butterfly valve with a **Lug-Type** design, dimensions in mm and weights in kg

Nominal size		PN 10 to 25 / cl150					PN 40 / cl300					PN 63 / cl600			
		A	B	L		Gew.	A	B	L		Gew.	A	B	L	Gew.
DN	NPS			ANSI	DIN				ANSI	DIN					
80	3	120	125	48	64	10	120	125	48	64	14	155	135	54	21
100	4	150	160	54	64	17	160	165	54	64	25	175	180	64	30
150	6	190	200	57	76	37	200	210	59	76	37	235	235	78	56
200	8	220	235	64	89	52	235	240	73	89	56	265	275	102	107
250	10	250	265	71	114	63	260	270	83	114	86	310	320	117	176
300	12	290	305	81	114	111	300	310	92	114	136	335	340	140	235
350	14	320	330	92	127	127	329	335	117	127	214	386	385	155	319
400	16	350	360	102	140	179	380	370	133	140	293	420	420	178	465
450	18	375	400	114	152	229	410	410	149	152	359	440	450	200	572
500	20	415	450	127	152	297	455	460	159	152	499	485	490	216	812
600	24	460	480	154	178	502	530	540	181	178	806	580	610	232	1137
700	28	525	535	165	229	632	598	610	209	229	1193	620	640	292	1586
750	30	590	610	165	-	803	640	630	241	-	1493	620	670	318	1856
800	32	600	620	190	241	749	658	660	241	241	509	660	700	318	2245
900	36	640	670	200	241	1263	700	730	260	241	596	720	740	330	2410
1000	40	710	730	216	300	1640	720	740	300	300	2397	On request			

Table 17: Butterfly valve with a **Lug-Type** design, connection dimensions in mm for **PN 10, PN 16 and PN 25**

Nominal size DN	Flow-direction	PN 10		PN 16		PN 25	
		n x Ød	Øbcd	n x Ød	Øbcd	n x Ød	Øbcd
80	A / B	8x M16	160	8x M16	160	8x M16	160
100	A / B	8x M16	180	8x M16	180	8x M20	200
150	A / B	8x M20	240	8x M20	240	8x M24	250
200	A / B	8x M20	295	12x M20	295	12x M24	310
250	A / B	12x M20	350	12x M24	355	12x M27	370
300	A / B	12x M20	400	12x M24	410	16x M27	430
350	A / B	16x M20	460	16x M24	470	16x M30	490
400	A / B	16x M24	515	16x M27	525	16x M33	550
450	A / B	20x M24	565	20x M27	585	20x M33	600
500	A / B	20x M24	620	20x M30	650	20x M33	660
600	A / B	20x M27	725	20x M33	770	20x M36	770
700	A / B	24x M27	840	24x M33	840	24x M39	875
750	A / B	On request					
800	A / B	24x M30	950	24x M36	950	24x M45	990
900	A / B	28x M30	1050	28x M36	1050	28x M45	1090
1000	A / B	28x M33	1160	28x M39	1170	28x M52	1210

Table 18: Butterfly valve with a Lug-Type design, connection dimensions in mm for PN 40 and PN 63

Nominal size DN	Flow-direction	PN 40		PN 63			PN 100	
		n x Ød	Øbcd	n x Ød	Øbcd	ØD	n x Ød	Øbcd
80	A / B	8x M16	160	8x M20	170	230	8x M24	180
100	A / B	8x M20	200	8x M24	200	273	8x M27	210
150	A / B	8x M24	250	8x M30	280	356	12x M30	300
200	A / B	12x M27	320	12x M33	345	430	12x M33	360
250	A / B	12x M30	385	12x M33	400	508	12x M36	430
300	A / B	12x M30	450	16x M33	460	585	16x M39	500
350	A / B	16x M33	510	16x M36	525	655	16x M45	560
400	A / B	16x M36	585	16x M39	585	666	16x M45	620
450	A / B	20x M36	610	On request				
500	A / B	20x M39	670	20x M45	705	870	20x M52	760
600	A / B	20x M45	795	20x M52	820	940	On request	
700	A / B	24x M45	900	24x M52	935	1050		
750	A / B	On request						
800	A / B	24x M52	1030	On request				
900	A / B	28x M52	1140					
1000	A / B	28x M52	1250					

Table 19: Butterfly valve with a Lug-Type design, connection dimensions in mm for cl150, cl150 Series A and cl150 Series B

Nominal size DN	Flow-direction	cl150		cl150 Series A		cl150 Series B	
		n x Ød	Øbcd	n x Ød	Øbcd	n x Ød	Øbcd
3	A / B	4x 5/8"-11	152.4				
4	A / B	8x 5/8"-11	190.5				
6	A / B	8x 3/4"-10	241.3				
8	A / B	8x 3/4"-10	298.5				
10	A / B	12x 7/8"-9	362				
12	A / B	12x 7/8"-9	431.8				
14	A / B	12x 1"-8	476.3				
16	A / B	16x 1"-8	539.8				
18	A / B	16x 1.1/8"-8	577.9				
20	A / B	20x 1.1/8"-8	635				
24	A / B	20x 1.1/4"-8	749.3				
28	A / B			28x 1.1/4"-8	863.6	40x 3/4"-10	795,3
30	A / B			28x 1.1/4"-8	914.4	44x 3/4"-10	846.1
32	A / B			28x 1.1/2"-8	977.9	48x 3/4"-10	900.1
36	A / B			32x 1.1/2"-8	1085.8	44x 7/8"-9	1009.7
40	A / B			32x 1.1/2"-8	1200.2	44x 1"-8	1120.6

Table 20: Butterfly valve with a *Lug-Type* design, **connection dimensions** in mm for **cl300**, **cl300 Serie A** and **cl300 Serie B**

Nominal size NPS	Flow-direction	cl300		cl300 Series A		cl300 Series B					
		n x Ød	Øbcd	n x Ød	Øbcd	n x Ød	Øbcd				
3	A / B	8x 3/4"-10	168.1								
4	A / B	8x 3/4"-10	200.2								
6	A / B	8x 3/4"-10	269.7								
8	A / B	12x 7/8"-9	330.2								
10	A / B	16x 1"-8	387.4								
12	A / B	16x 1.1/8"-8	450.9								
14	A / B	20x 1.1/8"-8	514.4								
16	A / B	20x 1.1/4"-8	571.5								
18	A / B	24x 1.1/4"-8	628.7								
20	A / B	24x 1.1/4"-8	685.8								
24	A / B	20x 1.1/2"-8	812.8								
28	A / B							28x 1.5/8"-8	939.8	36x 1.1/4"-8	857.3
30	A / B							28x 1.3/4"-8	997	36x 1.3/8"-8	920.8
32	A / B			28x 1.7/8"-8	1054.1	32x 1.1/2"-8	977.9				
36	A / B			32x 2"-8	1168.4	32x 1.5/8"-8	1089.2				
40	A / B			32x 1.5/8"-8	1155.7	40x 1.5/8"-8	1190.6				

Table 21: Butterfly valve with a *Lug-Type* design, **connection dimensions** in mm for **cl600**, **cl600 Serie A** and **cl600 Serie B**

Nominal size NPS	Flow-direction	cl600		cl600 Series A		cl600 Series B					
		n x Ød	Øbcd	n x Ød	Øbcd	n x Ød	Øbcd				
3	A / B	8x 3/4"-10	168.1								
4	A / B	8x 7/8"-9	215.9								
6	A / B	12x 1"-8	292.1								
8	A / B	12x 1.1/8"-8	349.3								
10	A / B	16x 1.1/4"-8	431.8								
12	A / B	20x 1.1/4"-8	489								
14	A / B	20x 1.3/8"-8	527.1								
16	A / B	20x 1.1/2"-8	603.3								
18	A / B	20x 1.5/8"-8	654.1								
20	A / B	24 x 1.5/8"-8	723.9								
24	A / B	24 x 1.7/8"-8	838.2								
28 ... 40	A / B							On request			

Dimensions and weights of the control and shut-off butterfly valve with a double-flange design

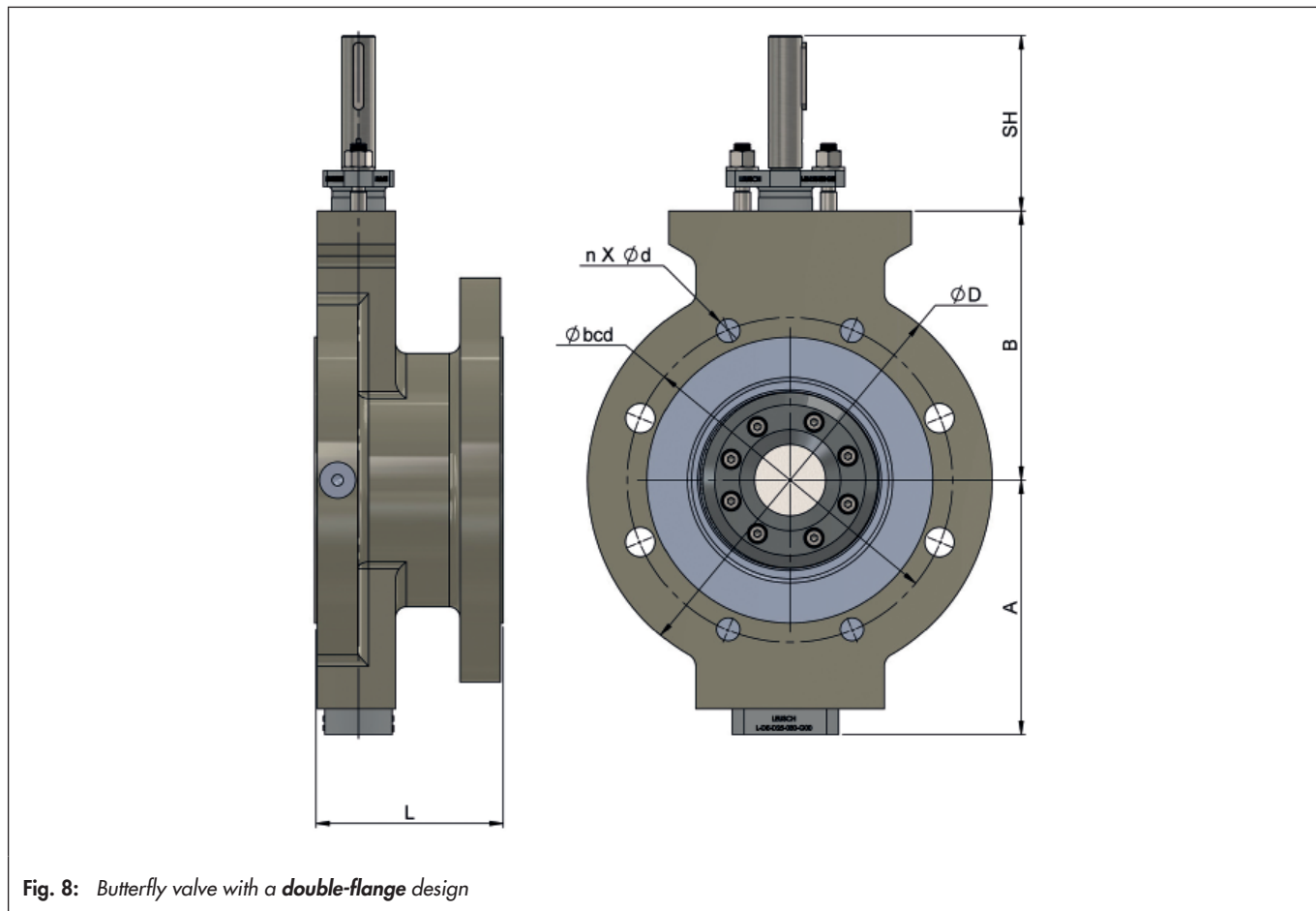


Fig. 8: Butterfly valve with a **double-flange** design

Table 22: Butterfly valve with a **double-flange** design, dimensions in mm and weights in kg

Nominal size		PN 10 to 25 / cl150				PN 40 / cl300				PN 63 / cl600			
DN	NPS	A	B	L	Gew.	A	B	L	Gew.	A	B	L	Gew.
80	3	120	125	114	17	120	125	114	22	155	135	180	36
100	4	150	160	127	29	160	165	127	39	175	180	190	53
150	6	190	200	140	47	200	210	140	63	235	235	210	99
200	8	220	235	152	70	235	240	152	89	265	275	230	171
250	10	250	265	165	96	260	270	165	130	310	320	250	252
300	12	290	305	178	126	300	310	178	196	335	340	270	327
350	14	320	330	190	187	329	335	190	279	386	385	290	417
400	16	350	360	216	238	380	370	216	363	420	420	310	571
450	18	375	400	222	267	410	410	222	461	440	450	330	729
500	20	415	450	229	370	455	460	229	529	485	490	350	1118
600	24	460	480	267	526	530	540	267	624	580	610	390	1341
700	28	525	535	292	698	598	610	292	1229	620	640	450	2034
750	30	590	610	318	850	640	630	318	1460	620	670	480	2019
800	32	600	620	318	1066	658	660	318	1672	660	700	480	2454
900	36	640	670	330	1314	700	730	330	1914	720	740	480	2639
1000	40	710	730	410	1640	720	740	410	1949	On request			

Table 23: Butterfly valve with a double-flange design, connection dimensions in mm for PN 10, PN 16 and PN 25

Nominal size DN	Flow-direction	PN 10			PN 16			PN 25		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
80	A	4x M16 / 4x Ø18	160	210	4x M16 / 4x Ø18	160	210	4x M16 / 4x Ø18	160	210
	B	8x Ø18			8x Ø18			8x Ø18		
100	A	4x M16 / 4x Ø18	180	240	4x M16 / 4x Ø18	190	240	4x M20 / 4x Ø22	190	240
	B	8x Ø18			8x Ø18			8x Ø22		
150	A	4x M20 / 4x Ø22	240	285	4x M20 / 4x Ø22	240	285	4x M24 / 4x Ø26	250	300
	B	8x Ø22			8x Ø22			8x Ø26		
200	A	4x M20 / 4x Ø22	295	360	4x M20 / 8x Ø22	295	360	4x M24 / 8x Ø26	310	360
	B	8x Ø22			12x Ø22			12x Ø26		
250	A	4x M20 / 8x Ø22	350	425	4x M24 / 8x Ø26	355	425	4x M27 / 8x Ø30	370	425
	B	12x Ø22			12x Ø26			12x Ø30		
300	A	4x M20 / 8x Ø22	400	485	4x M24 / 8x Ø26	410	485	4x M27 / 12x Ø30	430	485
	B	12x Ø22			12x Ø26			16x Ø30		
350	A	4x M20 / 12x Ø22	460	556	4x M24 / 12x Ø26	470	556	4x M30 / 12x Ø33	490	556
	B	16x Ø22			16x Ø26			16x Ø33		
400	A	4x M24 / 12x Ø26	515	620	4x M27 / 12x Ø30	525	620	4x M33 / 12x Ø36	550	620
	B	16x Ø26			16x Ø30			16x Ø36		
450	A	4x M24 / 16x Ø26	565	670	4x M27 / 16x Ø30	585	670	4x M33 / 16x Ø36	600	670
	B	20x Ø26			20x Ø30			20x Ø36		
500	A	4x M24 / 16x Ø26	620	730	4x M30 / 16x Ø33	650	730	4x M33 / 16x Ø36	660	730
	B	20x Ø26			20x Ø33			20x Ø36		
600	A	4x M27 / 16x Ø30	725	840	4x M33 / 16x Ø36	770	840	4x M36 / 16x Ø39	770	845
	B	20x Ø30			20x Ø36			20x Ø39		
700	A	4x M27 / 20x Ø30	840	925	4x M33 / 20x Ø36	840	910	4x M39 / 20x Ø42	875	960
	B	24x Ø30			24x Ø36			24x Ø42		
750	A	On request								
	B									
800	A	4x M30 / 20x Ø33	950	1085	4x M36 / 20x Ø39	950	1085	4x M45 / 20x Ø48	990	1085
	B									
900	A	4x M30 / 24x Ø33	1050	1185	4x M36 / 24x Ø39	1050	1185	4x M45 / 24x Ø48	1090	1185
	B							28x Ø48		
1000	A	4x M33 / 24x Ø36	1160	1290	4x M39 / 24x Ø42	1170	1290	4x M52 / 24x Ø56	1210	1320
	B				28x Ø36			28x Ø42		

Table 24: Butterfly valve with a **double-flange** design, **connection dimensions** in mm for **PN 40** and **PN 63**

Nominal size DN	Flow-direction	PN 40			PN 63		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
80	A	4x M16 / 4x Ø18	160	210	4x M20 / 4x Ø22	170	230
	B	8x Ø18			8x Ø22		
100	A	4x M20 / 4x Ø22	190	240	4x M24 / 4x Ø26	200	273
	B	8x Ø22			8x Ø26		
150	A	4x M24 / 4x Ø26	250	318	4x M30 / 4x Ø33	280	356
	B	8x Ø26			8x Ø33		
200	A	4x M27 / 8x Ø30	320	381	4x M33 / 8x Ø36	345	430
	B	12x Ø30			12x Ø36		
250	A	4x M30 / 8x Ø33	385	450	4x M33 / 8x Ø36	400	508
	B	12x Ø33			12x Ø36		
300	A	4x M30 / 8x Ø33	450	521	4x M33 / 12x Ø36	460	585
	B	12x Ø33			16x Ø36		
350	A	4x M33 / 12x Ø36	510	585	4x M36 / 12x Ø39	525	655
	B	16x Ø36			16x Ø39		
400	A	4x M36 / 12x Ø39	585	660	4x M39 / 12x Ø42	585	666
	B	16x Ø39			16x Ø42		
450	A	4 M36 / 16x Ø39	610	710	On request		
	B	20x Ø39					
500	A	4x M39 / 16x Ø42	670	775	4x M45 / 16x Ø48	705	870
	B				20x Ø48		
600	A	4x M45 / 16x Ø48	795	915	4x M52 / 16x Ø56	820	940
	B				20x Ø56		
700	A	4x M45 / 20x Ø48	900	1035	4x M52 / 16x Ø56	935	1050
	B				24x Ø56		
750	A	On request					
	B						
800	A	4x M52 / 20x Ø56	1030	1093	On request		
	B						
900	A	4x M52 / 24x Ø56	1140	1270			
	B						
1000	A	4x M52 / 24x Ø56	1250	1360			
	B	28x Ø56					

Table 25: Butterfly valve with a double flange design, connection dimensions in mm for c150, c150 Series A and c150 Series B

Nominal size DN	Flow-direction	c150			c150 Series A			c150 Series B		
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD
3	A	4x Ø19,1	152.4	200						
	B									
4	A	4x 5/8"-11 / 4x Ø19,1	190.5	240						
	B	8x Ø19,1								
6	A	4x 3/4"-10 / 4x Ø22,4	241.3	285						
	B	8x Ø22,4								
8	A	4x 3/4"-10 / 4x Ø22,4	298.5	360						
	B	8x Ø22,4								
10	A	4x 7/8"-9 / 8x Ø25,4	362	410						
	B	12x Ø25,4								
12	A	4x 7/8"-9 / 8x Ø25,4	431.8	485						
	B	12x Ø25,4								
14	A	4x 1"-8 / 8x Ø28,4	476.3	556						
	B	12x Ø28,4								
16	A	4x 1"-8 / 12x Ø28,4	539.8	620						
	B	16x Ø28,4								
18	A	4x 1.1/8"-8 / 12x Ø31,8	577.9	670						
	B	16x Ø31,8								
20	A	4x 1.1/8"-8 / 16x Ø31,8	635	730						
	B	20x Ø31,8								
24	A	4x 1.1/4"-8 / 16x Ø31,8	749.3	840						
	B	20x Ø31,8								
28	A				4x 1.1/4"-8 / 24x Ø34,9	863.6	925	4x 3/4"-10 / 36x Ø22,2	795.3	835
	B							28x Ø34,9		
30	A				4x 1.1/4"-8 / 24x Ø34,9	914.4	985	8x 3/4"-10 / 36x Ø22,2	846.1	890
	B							28x Ø34,9		
32	A				4x 1.1/2"-8 / 24x Ø41,1	977.9	1085	8x 3/4"-10 / 40x Ø22,2	900,1	1085
	B							48x Ø22,2		
36	A				4x 1.1/2"-8 / 28x Ø41,1	1085.9	1185	12x 7/8"-9 / 32x Ø25,4	1009,7	1060
	B							44x Ø25,4		
40	A				4x 1.1/2"-8 / 28x Ø41,1	1200.2	1290	12x 1"-8 / 32x Ø28,4	1120.6	1175
	B							44x Ø28,4		

Table 26: Butterfly valve with a double flange design, connection dimensions in mm for cl300, cl300 Series A and cl300 Series B

Nominal size DN	Flow-direction	cl300			cl300 Series A			cl300 Series B																	
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD															
3	A	4x 3/4"-10 / 4x Ø22,4	168.1	210																					
	B	8x Ø22,4																							
4	A	4x 3/4"-10 / 4x Ø22,4	200.2	260																					
	B	8x Ø22,4																							
6	A	4x 3/4"-10 / 4x Ø22,4	269.7	318																					
	B	8x Ø22,4																							
8	A	4x 7/8"-9 / 8x Ø25,4	330.2	381																					
	B	12x Ø25,4																							
10	A	4x 1"-8 / 12x Ø31,8	387.4	450																					
	B																								
12	A	4x 1.1/8"-8 / 12x Ø31,8	450.9	521																					
	B																								
14	A	8x 1.1/8"-8 / 12x Ø31,8	514.4	585																					
	B																								
16	A	4x 1.1/4"-8 / 16x Ø35,1	571.5	660																					
	B																								
18	A	8x 1.1/4"-8 / 16x Ø35,1	628.7	710																					
	B																								
20	A	4x 1.1/4"-8 / 20x Ø35,1	685.8	775																					
	B																								
24	A	4x 1.1/2"-8 / 20x Ø41,1	812.8	915																					
	B																								
28	A																								
	B																8x 1.5/8"-8 / 20x Ø44,5	939.8	1035	12x 1.1/4"-8 / 24x Ø35,1	857.3	1035			
30	A																								
	B																								
32	A																								
	B																								
36	A																								
	B																			8x 2"-8 / 24x Ø54	1168.4	1270	8x 1.5/8"-8 / 24x Ø44,5	1089.2	1172
40	A																								
	B																			4x 1.5/8"-8 / 28x Ø44,5	1155.7	1239	8x 1.5/8"-8 / 32x Ø44,5	1190.6	1275

Table 27: Butterfly valve with a **double flange** design, **connection dimensions** in mm for **cl600**, **cl600 Series A** and **cl600 Series B**

Nominal size NPS	Flow-direction	cl600			cl600 Series A			cl600 Series B			
		n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	n x Ød	Øbcd	ØD	
3	A	4x 3/4"-10 / 4x Ø22,4	168.1	230							
	B	8x Ø22,4									
4	A	4x 7/8"-9 / 4x Ø25,4	215.9	273							
	B	8x Ø25,4									
6	A	4x 1"-8 / 8x Ø28,4	292.1	356							
	B	12x Ø28,4									
8	A	4x 1.1/8"-8 / 8x Ø31,8	349.3	430							
	B	12x Ø31,8									
10	A	8x 1.1/4"-8 / 8x Ø35,1	431.8	508							
	B	16x Ø35,1									
12	A	4x 1.1/4"-8 / 16x Ø35,1	489	585							
	B	20x Ø35,1									
14	A	8x 1.3/8"-8 / 12x Ø38,1	527.1	655							
	B	20x Ø38,1									
16	A	4x 1.1/2"-8 / 16x Ø41,1	603.3	666							
	B	20x Ø41,1									
18	A	4x 1.5/8"-8 / 16x Ø44,5	654.1	745							
	B										
20	A	8x 1.5/8"-8 / 16x Ø44,5	723.9	870							
	B										
24	A	8x 1.7/8"-8 / 16x Ø50,8	838.2	940							
	B										
28 ... 40	A	-									On request
	B										

Flow-direction

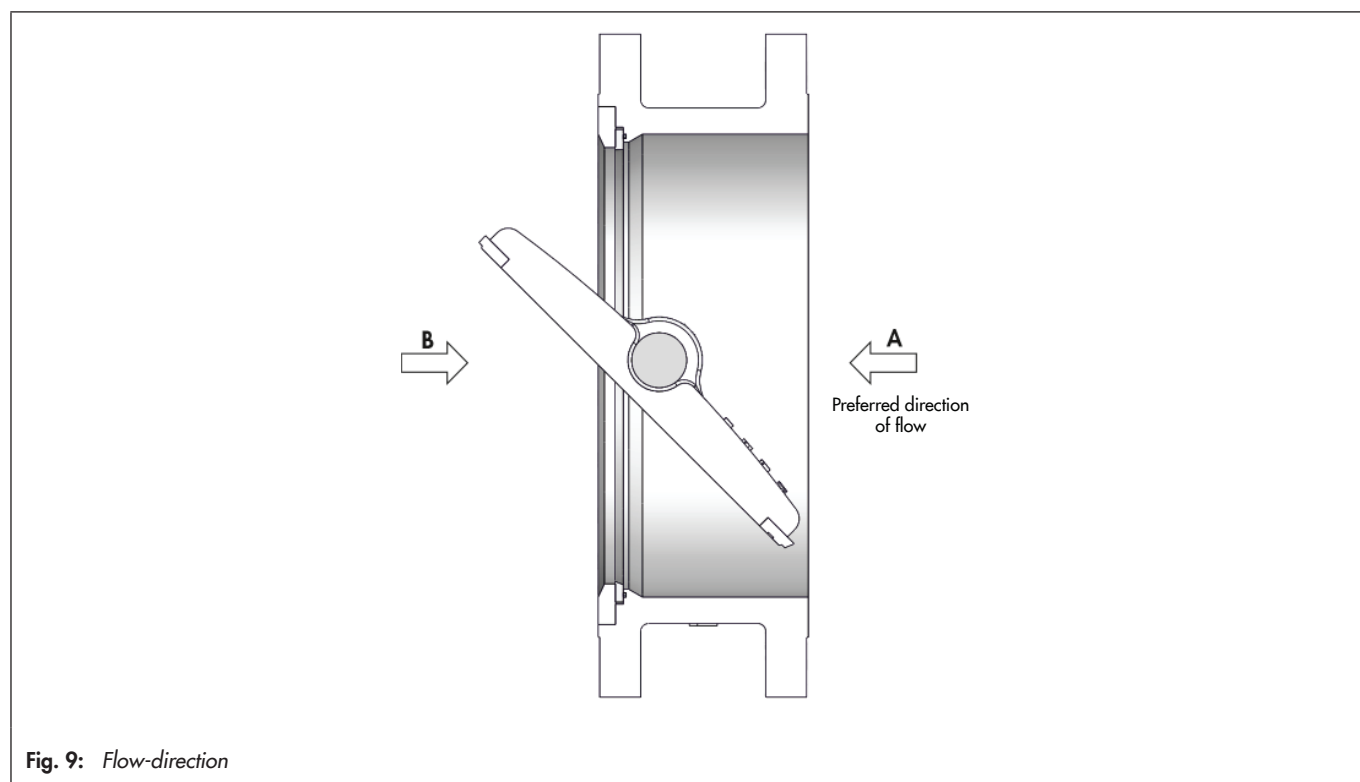


Fig. 9: Flow-direction

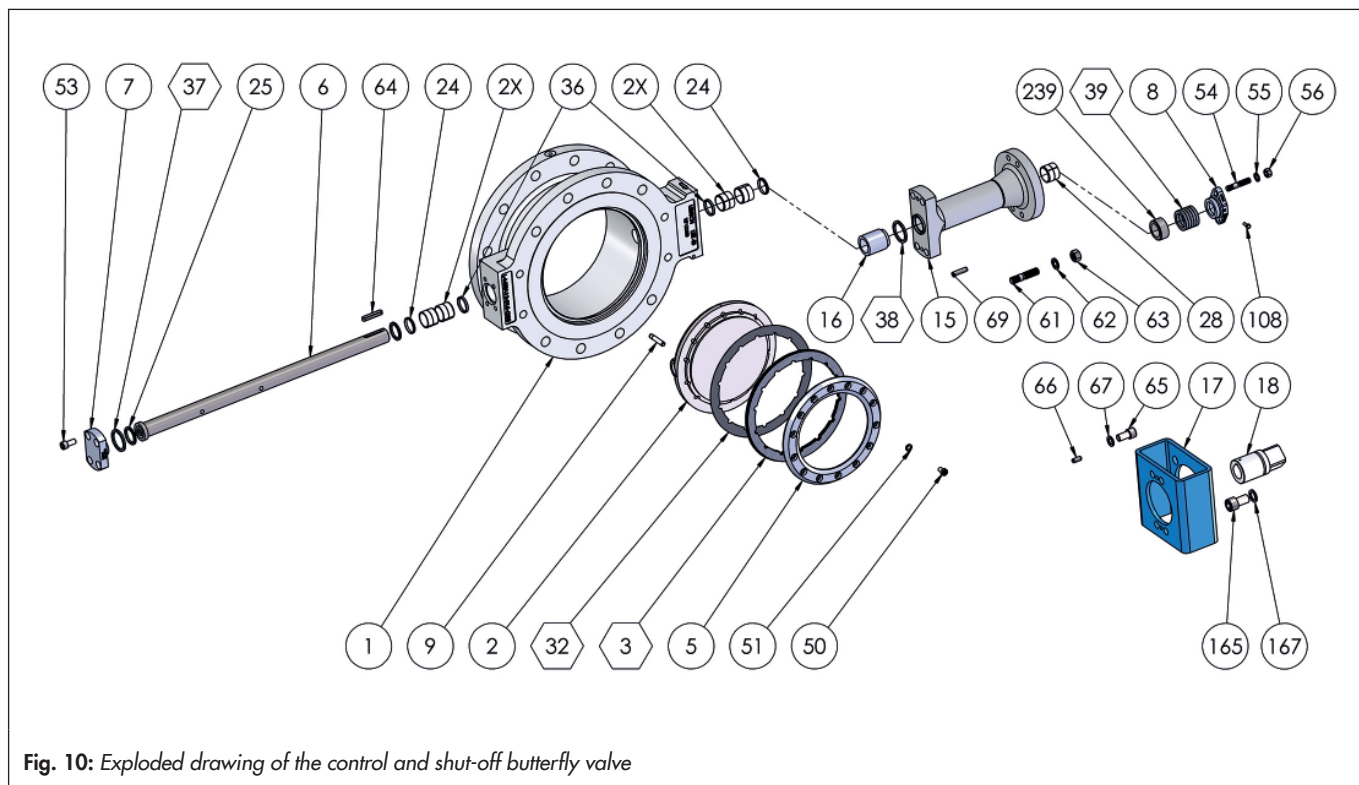


Fig. 10: Exploded drawing of the control and shut-off butterfly valve

Table 28: Parts list for the control and shut-off butterfly valve

Item	Description
1	Body
2	Disc
3 ¹⁾	Seal ring
4 ¹⁾	Seat
5	Retaining ring
6	Shaft
7	Cover
8	Gland
9	Pin
15	Extension
16	Extension spacer
17	Bracket
18	Coupling (option)
2X	Bearing
24	Spacer ring
25	Thrust ring
28	Bearing
31 ¹⁾	Gasket body
32 ¹⁾	Gasket disc
36	Bearing protector
37 ¹⁾	Gasket cover
38 ¹⁾	Gasket extension

Item	Description
39 ¹⁾	Packing
50	Screw
51	Wedge-lock-washer
52	Screw
53	Screw
54	Stud bolt
55	Washer
56	Nut
57	Wedge-lock-washer
61	Stud bolt
62	Wedge-lock-washer
63	Nut
64	Key
65	Screw
66	Pin
67	Wedge-lock-washer
69	Pin
108	Screw
165	Screw
167	Wedge-lock-washer
239	Support ring

¹⁾ Recommended spare parts

Selecting and sizing the actuator

1. Calculate the appropriate Kvs coefficient
2. Select the DN and Kvs coefficient from Tables 9 to 12
3. Check the operation condition taking the pressure-temperature diagram into account
4. Select a suitable rotary actuator

Ordering text

Process valve: BR 14t - LTR 43,
Nominal size: DN / NPS
Nominal pressure: PN / cl
Any special version:

Manual gear or actuator (brand name):
Signal pressure: bar
Fail-safe position:

Limit signal transmitter (brand name):
Solenoid valve (brand name):
Positioner (brand name):

Miscellaneous:

Associated Data Sheets

- For pneumatic diaphragm rotary actuators ▶ TB 30a
- For pneumatic rotary actuators ▶ TB 31a

Info

All relevant details regarding the version ordered, which deviate from the specified version in this technical description data, can be taken if required, from the corresponding order confirmation.
