



AB VALVES GmbH
Wafer type butterfly Valves

DIN EN 558 - series 20
(DIN 3202 - P1 K1)





Wafer type butterfly valves:

Design: body is suitable for installation between flanges that are drilled in accordance with DIN EN 1092-2 or ANSI Class 150 for pressures up to 16 bars (ANSI Class 300 and higher as per request). In open position, disc will be right in the middle, allowing best flow condition with minimum pressure loss. The seat is in U-shape rubber liner which covers inside of the body, is replaceable and provides a reliable sealing from both directions. The lug types can be supplied with all above mentioned specification for end of pipe installation.

Note: There is no need for sealing washer in these types of valves, as sealing washer would disrupt performance of the valve.

Coating: the inside and outside of the valves are covered with Electro-static powder coating.

Range of application: Wafer types can be used for fluid (water) temperature up to 80°C and flow speed under 3 m/s. For other conditions indicate; working condition, type, speed, pressure and temperature of the fluid in your order.

Valve parts:

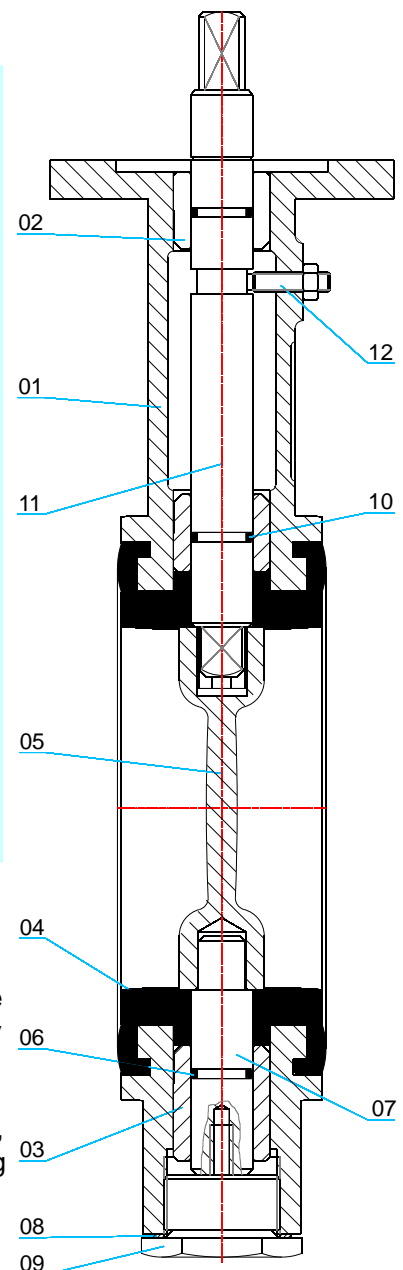
Part No.	Description	standard material	optional material
1	Body	Ductile iron EN-GJS-400-15 (1)	
2	Bush	Brass	
3	Bush	Brass	
4	Seat (1)	NBR (2)	
5	Disc	DN 50-200 mm forged corrosion resistant steel. DN 250-600 mm EN-GJS-400-15 With electro static powder coating.	DN 250-600 mm: - Copper or nickel plated EN-GJS-400-15 (1) - Aluminum bronze. - Corrosion resistant steel.
6	O-ring	NBR (2)	EPDM (2)
7	Lower shaft	Corrosion resistant steel 1.4021	
8	Sealing washer	Copper	
9	Plug	Brass	
10	O-ring	NBR (2)	EPDM (2)
11	upper shaft	Corrosion resistant steel 1.4021	1.4301-1.4401
12	Screw and lock nut	A2 corrosion resistant steel.	

(1) EN-GJS-500-7 can be product as requested.

(2) NBR for temperature up to 80°C, EPDM for temperature up to 120°C.

Product advantages:

- Light weight and smaller diminutions due to small thickness, in accordance with ISO 5752 series 20 or EN 558 series 20, gives the advantages of easy installation and minimum space required.
- Can be installed in all positions (vertical, horizontal, diagonal, etc.)
- U-shaped rubber lining inside the valves insulates valve body from the fluid, eliminates the need for sealing washer between valve and the connecting flanges, and is replaceable.
- Completely sealed on both directions.
- Suitable for shut-off and flow control applications.
- Cause small pressure loss.

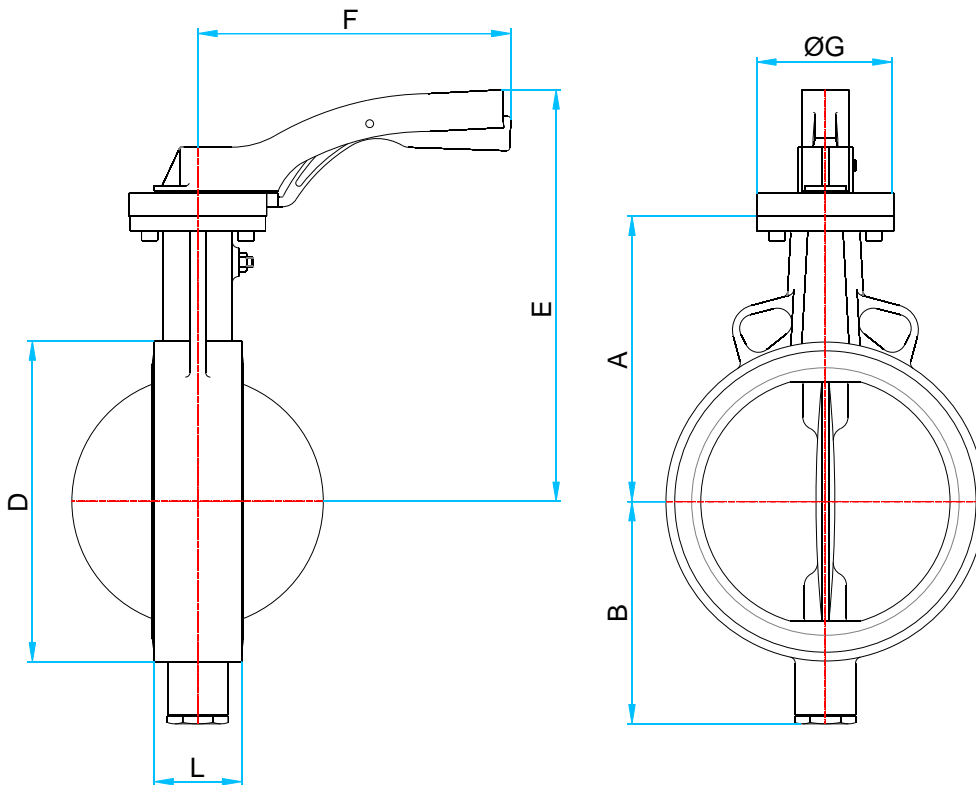




Wafer type butterfly valves are tested according to the following table.

Nominal pressure PN (bar)	Test pressure according to ISO 5208 standard	
	Test pressure, with water, (bar)	
	Body	Seal
6	9	6.6
10	15	11
16	24	17.6

Wafer type valve with handle:

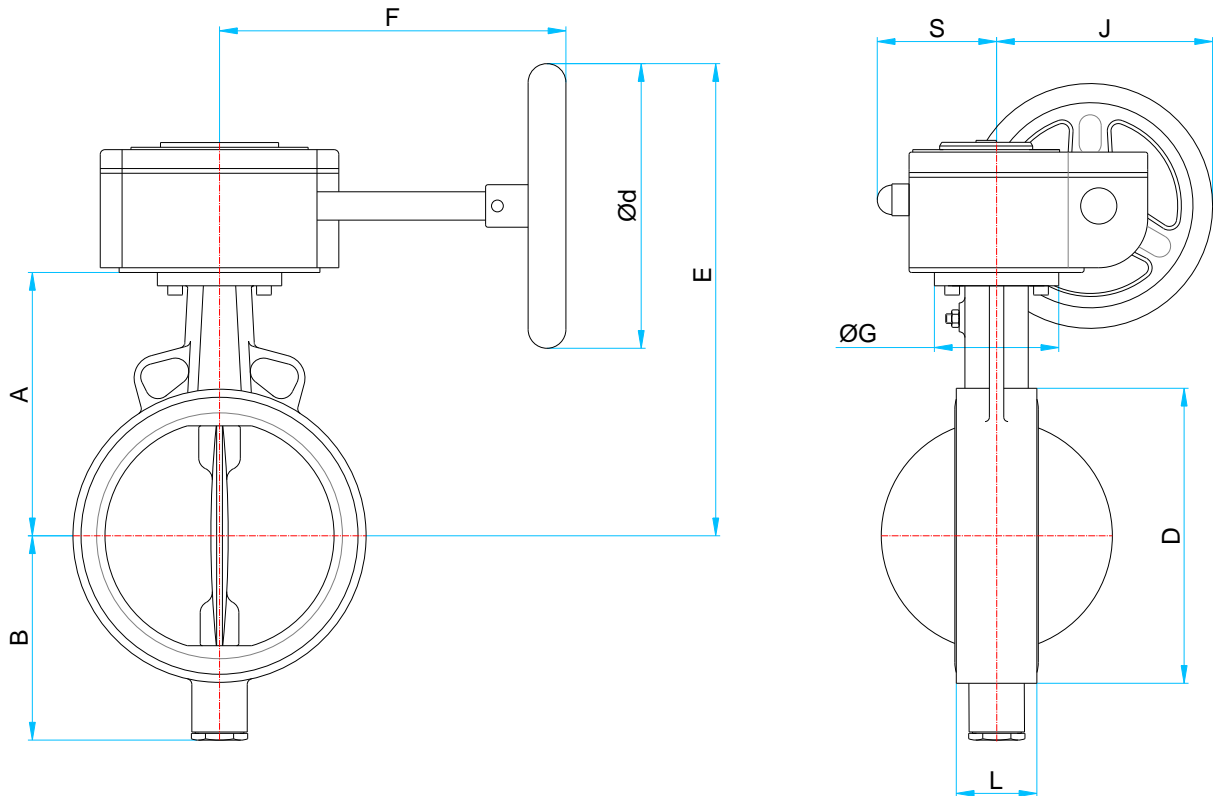


DN mm	●L mm	A mm	B mm	D mm	E mm	F mm	●ØG mm	Flange	Weight kg
50	43	126	82	95	200	175	65	F05	2.9
65	46	136	92	116	210	175	65	F05	3.6
80	46	159	104	130	249	198	90	F07	4.7
100	52	167	113	151	248	198	90	F07	5.8
125	56	181	127	181	272	198	90	F07	7.5
150	56	203	152	205	309	281	90	F07	9.4
200	60	228	176	250	332	281	90	F07	12.6

- L = valve length according to ISO 5752 series 20 or EN 558 series 20 standard.
- G = flange dimensions according to ISO 5211 standard.



Wafer type with gearbox and hand wheel:

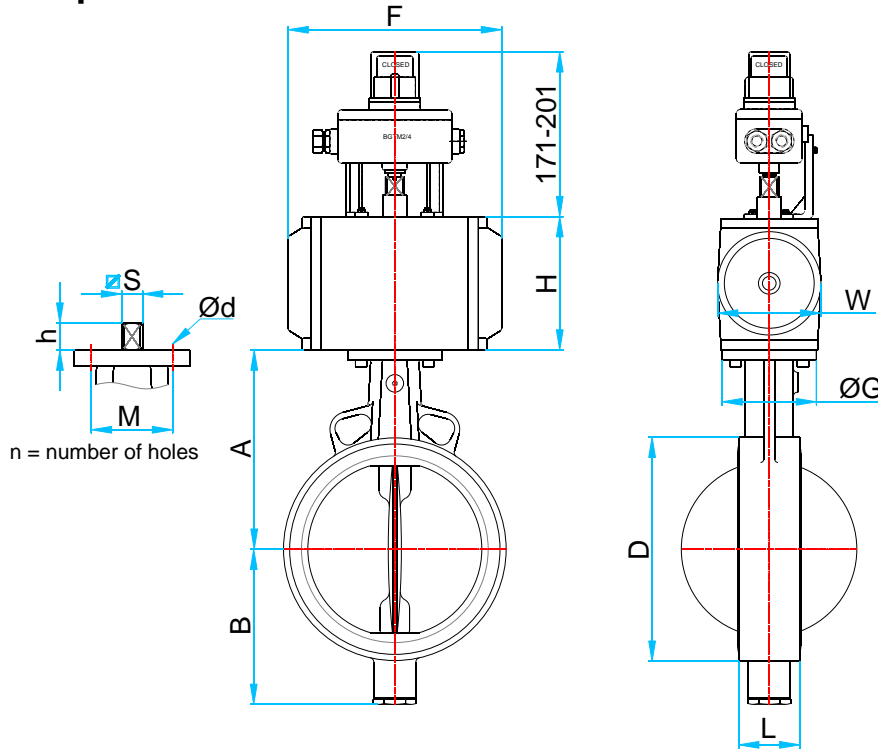


DN mm	PN bar	•L mm	A mm	B mm	D mm	E mm	F mm	•ØG mm	J mm	Ød mm	S mm	Weight kg
50	6-10-16	43	126	82	95	202	114	65	93	100	45	3.7
65	6-10-16	46	136	92	116	212	114	65	93	100	45	4.4
80	6-10-16	46	159	104	130	235	114	90	93	100	45	5.5
100	6-10-16	52	167	113	151	243	114	90	113	125	55	7.6
125	6-10-16	56	181	127	181	257	114	90	113	125	55	9.3
150	6-10-16	56	203	152	205	341	155	90	160	200	80	12.7
200	6-10-16	60	228	176	250	366	155	90	160	200	80	15.9
250	6-10-16	68	266	214	318	406	212	125	180	200	91	31.0
300	6-10-16	78	293	239	358	433	212	125	180	200	91	33.5
350	6-10-16	78	332	273	409	487	251	150	170	200	94	129
400	6-10-16	102	364	318	472	565	219	180	205	250	107	172
500	6-10	127	437	377	574	723	346	216	265	360	125	246
500	16	127	437	405	574	723	396	216	290	360	214	265
600	6-10-16	154	498	440	675	784	396	216	290	360	198	298

- L = valve length according to ISO 5752 series 20 or EN 558 series 20 standard.
- G = flange dimensions according to ISO 5211 standard.



Wafer type with pneumatic actuator:



	DN mm	● L mm	A mm	B mm	Ød x n mm	D mm	F mm	● ØG mm	h mm	H mm	M mm	S mm	W mm	Weight (kg)	
														without actuator	with actuator
PN 06	50	43	126	82	7x4	95	132	65	15	74	50	14	68.5	2.7	3.6
	65	46	136	92	7x4	116	132	65	16	74	50	14	68.5	3.35	4.3
	80	46	159	104	7x4	130	132	65	27	74	50	14	68.5	4.35	5.3
	100	52	167	113	7x4	151	132	65	14	74	50	14	68.5	5.45	6.4
	125	56	181	127	7x4	181	137	65	14	88	50	14	70	7.15	8.6
	150	56	203	152	9x4	205	161	90	17	100	70	22	83	9	11.1
	200	60	228	176	9x4	250	209	90	17	117	70	22	100	12.2	15.5
	250	68	266	213	9x4	318	292	90	22	140	70	22	120	23.9	31.0
	300	78	293	338	11x4	358	298	125	22	160	102	22	137	26.5	35.5
	350	78	332	274	13x4	409	420	150	23	255	125	27	224	45.5	60
	400	102	364	318	17x4	472	462	180	35	255	140	36	274	71.2	99
500	127	473	405	17x4	574	603	180	35	302	140	36	272	108.2	140	
600	154	498	469	21x4	675	683	216	58	360	165	46	360	173	228	
PN 10	50	43	126	82	7x4	95	132	65	15	74	50	14	59	2.7	3.6
	65	46	136	92	7x4	116	132	65	16	74	50	14	59	3.35	4.3
	80	46	159	104	7x4	130	132	65	14	74	50	14	59	4.35	5.3
	100	52	167	113	9x4	151	161	90	17	100	70	17	83	5.45	7.5
	125	56	181	127	9x4	181	161	90	17	100	70	17	83	7.15	9.2
	150	56	203	152	9x4	205	222	90	21	140	70	17	120	9	12.4
	200	60	228	176	9x4	250	292	90	21	140	70	17	120	12.2	19.3
	250	68	266	213	11x4	318	292	90	21	140	70	17	120	23.9	32.9
	300	78	293	338	11x4	358	298	125	21	160	102	22	137	26.5	35.5
	350	78	332	274	21x4	409	420	180	35	255	140	36	224	45.5	73.5
	400	102	364	318	21x4	472	462	180	35	302	140	36	272	71.2	99.2
500	127	473	405	21x4	574	603	216	41	360	165	46	360	108.5	177.7	
600	154	498	469	21x4	675	683	216	58	360	165	55	360	173	265	
PN 16	50	43	126	82	7x4	95	132	65	14	74	50	14	59	2.7	3.6
	65	46	400	92	7x4	116	132	65	14	74	50	14	59	3.35	4.3
	80	46	159	104	7x4	130	137	65	14	88	50	14	70	4.35	5.8
	100	52	167	113	9x4	151	161	90	17	100	70	17	83	5.45	7.6
	125	56	181	127	9x4	181	180	90	17	108	70	22	91	7.15	9.7
	150	56	203	152	9x4	205	222	90	21	140	70	22	120	9	14.2
	200	60	228	176	9x4	250	292	90	21	140	70	22	120	12.2	19.3
	250	68	266	213	11x4	318	298	125	21	160	102	22	137	23.9	32.9
	300	78	293	338	11x4	358	337	125	23	198	102	27	172	26.5	40.9
	350	78	332	274	21x4	409	462	180	35	255	140	36	224	45.5	73.5
	400	102	364	318	21x4	472	603	180	35	302	140	36	272	71.2	99.2
500	127	473	405	21x4	574	683	216	58	360	165	55	360	108	200	

● L = valve length according to ISO 5752 series 20 or EN 558 series 20 standard.

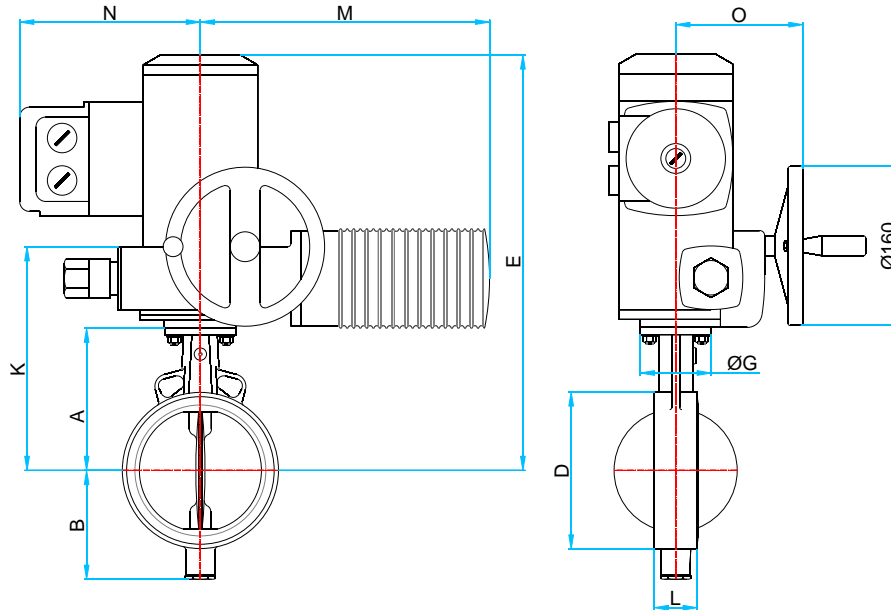
● G = flange dimensions according to ISO 5211 standard.

Note: a) above mentioned dimensions are for pressure of 6 bar. For more information refer to the catalogue on pneumatic actuators.

b) For size DN 600 with PN 16 bar, the actuator would be offered with air pressure amplifier.



Wafer type with electric actuator

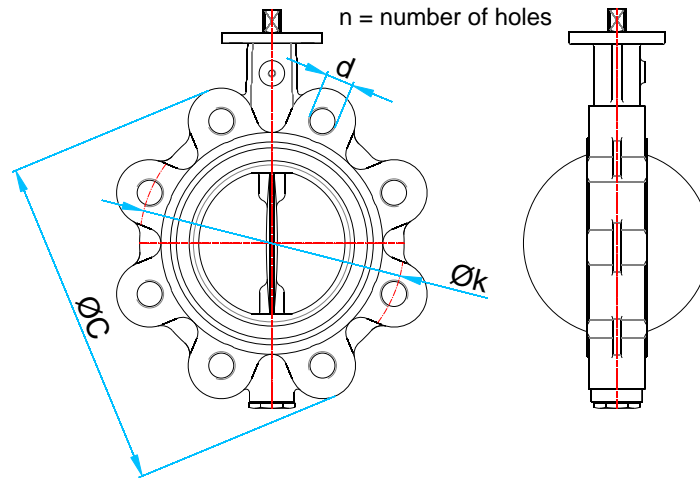


	DN mm	•L mm	A mm	B mm	D mm	•ØG mm	E mm	K mm	M mm	N mm	O mm	Type actuator	Weight kg
PN 10	50	43	126	82	95	65	333	195	215	195	119	SG	11
	65	46	136	92	116	65	343	205	215	195	119	SG	11.7
	80	46	159	104	130	65	364	228	215	195	119	SG	12.7
	100	52	167	113	151	90	374	236	215	195	119	SG	13.8
	125	56	181	127	181	90	388	250	215	195	119	SG	15.5
	150	56	203	152	205	90	478	285	291	195	119	SG	18
	200	60	228	176	250	90	503	310	291	195	128	SG	22.2
	250	68	266	214	318	90	559	354	300	205	128	SG	23.9
	300	78	293	239	358	125	584	381	300	205	153	SG	51.5
	350	78	332	274	409	180	645	434	300	205	170	SG	74.5
	400	102	364	318	472	180	664	566	300	205	170	SG	100.2
	500	127	437	405	574	216	★	★	★	★	★	SA	★
600	154	498	469	675	216	★	★	★	★	★	SA	★	
PN 16	50	43	126	82	95	65	333	195	215	195	119	SG	11
	65	46	136	92	116	65	343	205	215	195	119	SG	11.7
	80	46	159	104	130	65	364	226	215	195	119	SG	12.7
	100	52	167	113	151	90	374	236	215	195	119	SG	13.8
	125	56	181	127	181	90	388	250	215	195	128	SG	15.5
	150	56	203	152	205	90	478	285	291	195	128	SG	18
	200	60	228	176	250	90	503	310	291	195	128	SG	22.2
	250	68	266	213	318	125	559	354	300	205	153	SG	23.9
	300	78	293	239	358	125	584	381	300	205	153	SG	51.5
	350	78	332	274	409	180	623	434	300	205	170	SG	74.5
	400	102	364	318	472	180	676	566	300	205	170	SG	100.2
	500	127	437	405	574	216	★	★	★	★	★	SA	★
600	154	498	469	675	216	★	★	★	★	★	SA	★	

- L = valve length according to ISO 5752 series 20 or EN 558 series 20 standard.
- G = flange dimensions according to ISO 5211 standard.



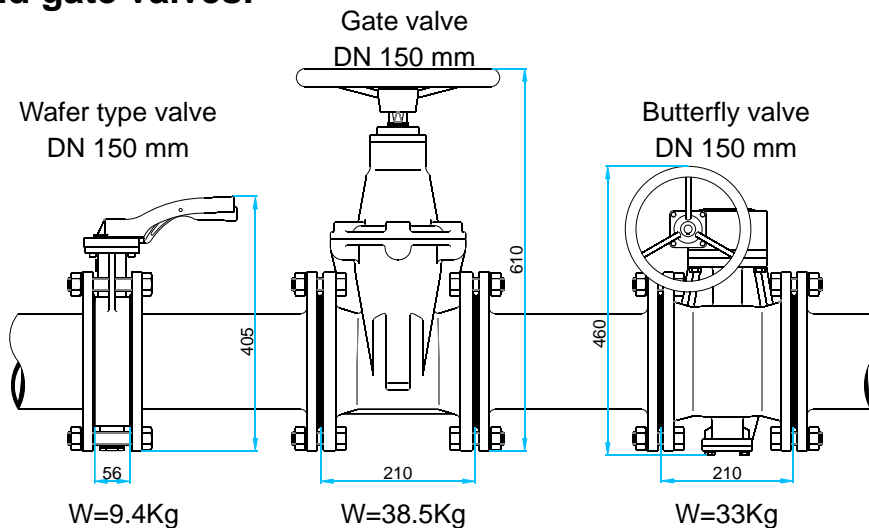
Lug type butterfly valve (end of the line)



DN	PN 06				PN 10			PN 16			Weight
mm	ØC	ØK	d	n	ØK	d	n	ØK	d	n	kg
50	165	110	M12	4	125	M16	4	125	M16	4	4.8
65	185	130	M12	4	145	M16	4	145	M16	4	5.5
80	200	150	M16	4	160	M16	8	160	M16	8	8.6
100	225	170	M16	4	180	M16	8	180	M16	8	9.8
125	250	200	M16	8	210	M16	8	210	M16	8	10.1
150	285	225	M16	8	240	M20	8	240	M20	8	13.1
200	340	280	M16	8	295	M20	12	295	M20	12	18.8
250	400	335	M16	12	350	M20	12	355	M24	12	32.5
300	455	395	M20	12	400	M20	12	410	M24	12	40.5
350	520	445	M20	12	460	M20	16	470	M24	16	60.4
400	580	495	M20	16	515	M24	16	525	M27	16	87.3
500	715	600	M20	20	620	M24	20	650	M30	20	142.8
600	840	705	M24	20	725	M27	20	770	M33	20	267.5

Note: 1- Flange dimensions are according to DIN EN 1092-1 standard.
 2- All other dimensions are the same as those of wafer type valves.
 3- Different types of actuators are possible.

Weight and dimensional comparison between wafer and flange type butterfly and gate valves:





Hydraulic specification of wafer type valves:

1-Pressure loss: pressure calculation with valve in completely open position.

= coefficient of pressure loss as per following table
 g = 9.81 (m/s²) gravity acceleration
 v = flow speed in the pipe (m/s)
 h = pressure loss (m)

$$h = \left(\frac{v^2}{2g} \right)$$

Coefficient of pressure loss in different opening positions

DN mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	7150	390	31	19	6.4	4.1	3.8	1.9	1.1
65	5900	380	30	18	5.8	4.2	3.5	1.6	1.1
80	6250	365	27	17	5.6	4.0	2.9	1.3	1.2
100	6050	350	26	16	5.3	3.8	2.7	0.9	0.7
125	6040	325	24	15	4.8	3.6	2.4	0.6	0.4
150	5530	310	22	14	4.5	3.1	2.2	0.5	0.3
200	4900	280	20	12	4.0	2.8	1.9	0.3	0.2
300	4900	280	20	12	4.0	2.8	1.9	0.3	0.15
350	4800	280	20	12	4.0	2.8	1.9	0.3	0.15
350	4500	245	17	9	3.8	2.5	1.7	0.2	0.13
400	4500	245	17	9	3.8	2.5	1.7	0.2	0.12
500	4500	245	17	9	3.8	2.5	1.7	0.2	0.12
600	4400	240	16	8.5	3.6	2.2	1.6	0.15	0.11

2- Flow rate: flow rate calculation with valve in completely open position.

P = head loss (bar)
 Kv = flow rate (m³/h)
 Q = flow rate (m³/h)

$$Q = Kv \sqrt{P} \quad P = \left(\frac{Q}{Kv} \right)^2$$

Kv (m³/h) values in terms of valve opening (degree)

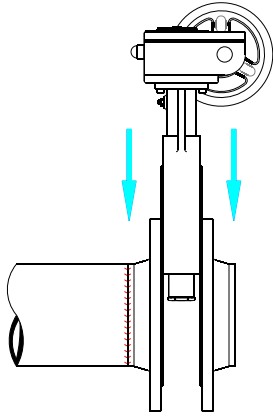
DN mm	20°	30°	40°	50°	60°	70°	80°	90°
50	1.2	8	13.65	23	40	52	68	89
65	2	9	23	44	81	120	178	226
80	8	25	53	100	157	252	346	441
100	13	29	68	136.5	189	357	577	840
125	27	68	136	241	367.5	556	913	1060
150	36	94	210	378	672	945	1417	2205
200	45	189	367	609	1050	1680	3150	4200
250	131	378	693	1155	1890	3255	5565	6720
300	210	577	1050	1680	2730	5250	7875	8925
350	367	819	1470	2520	4200	8400	11340	12075
400	514	1102	1890	3255	5775	11550	12600	15225
450	535	1134	2142	3517	6405	12075	15330	21525
500	456	1155	2310	3675	6510	12600	15855	22050
600	787.5	1470	2940	5355	9240	14700	23100	30765

Definition of Kv:

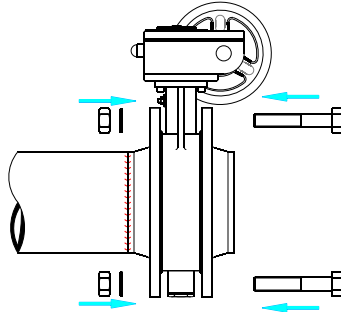
The amount of flow in m³ that passes through the valve in one hour in ambient temperature of 20°C, causing a pressure loss of 1 bar when the valve is fully open.



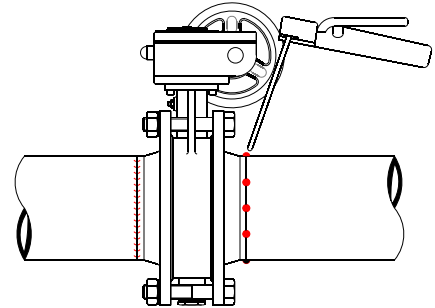
Installation procedure:



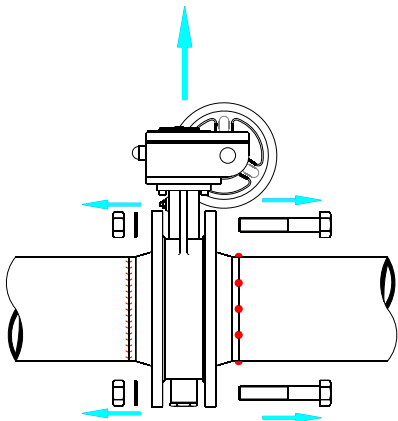
1- Position the valve in between the flanges.



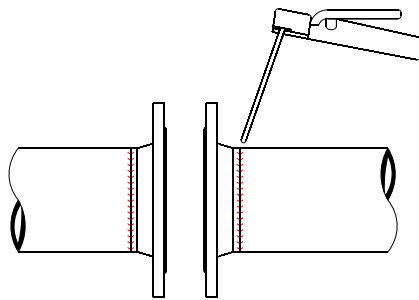
2- Adjust the valve and fasten 4 nuts and bolts slightly.



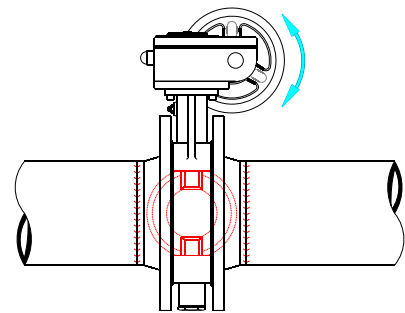
3- Spot weld flanges to the pipes.



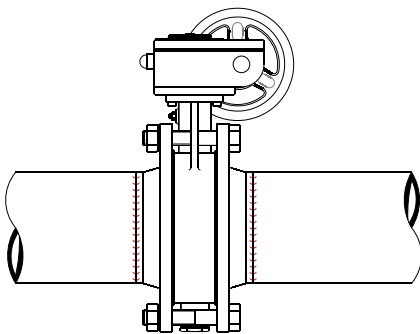
4- Carefully remove the valve from between the flanges.



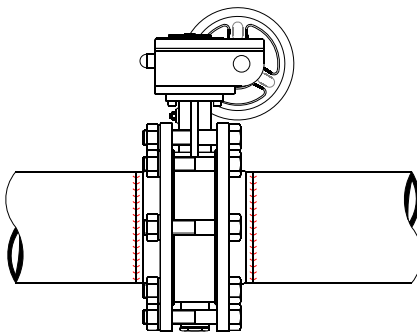
5- Completely weld flanges to the pipes.



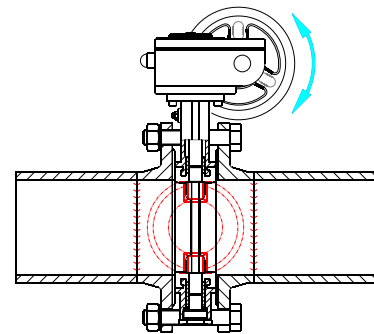
6- When the welding is cooled down place the valve between flanges. The valve must easily open and close. Keep the valve in slightly open position to prevent damages to the sealing rubber.



7- Adjust the valve between flanges and slightly fasten the 4 nuts and bolts cross wise.



8- Fasten the other nuts and bolts in cross sequence, not one after the other.



9- Open and close valve few times and make sure it is smooth and disc does not stick to the pipe. Keep disc in open position.



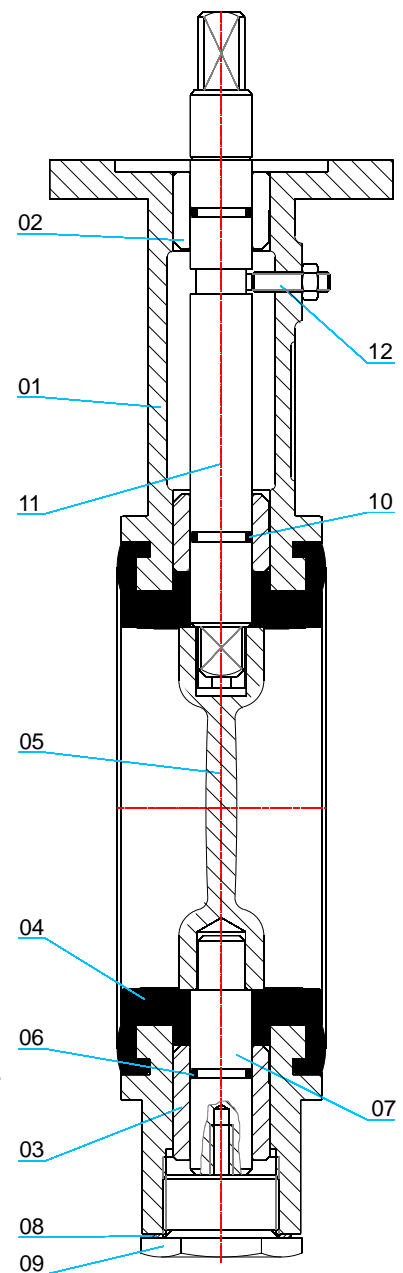
Rubber lining replacement procedure:

a) Removing the rubber lining:

- 1 - Keep the valve in open position.
- 2 - Disconnect and remove any actuating device from the valve.
- 3 - Loosen lock nut on screw (12). Turn screw (12) anti-clockwise by few turns to allow upper shaft (11) to be removed.
- 4 - Remove the upper shaft (11) from the valve, O-ring (10) can stay on the shaft.
- 5 - Remove the plug (09) on the lower shaft end.
- 6 - Remove the lower shaft (07) from the valve by a screw which to be fastened to the shaft end.
- 7 - Remove disc (05) from the valve.
- 8 - Take the rubber lining off the valve body by twisting it by hand.

b) Installing rubber lining on the valve body.

- 1 - Make sure that all bushes are present in the body.
- 2 - Make sure that outside surface of the rubber lining and inside surface of the valve is not greasy.
- 3 - Collapse rubber liner and put inside the body side way so that the dovetail on the liner inserts in to the hole in the body.
- 4 - Insert the second dovetail on the liner into the other hole in the body and make sure that the rubber liner is perfectly mounted on the valve body.
- 5 - Lubricate the following parts with silicon grease for easy mounting (do not use grease for EPDM):
 - The liner surface to be in contact with the valve body.
 - Upper shaft's square end and the lower shaft's end entering the disc.
- 6 - Place the disc in the body in open position so that the square hole of the disc is aligned with the square end of the shaft.
- 7 - Insert the lower shaft through the body in to the disc. put the plug (09) in and tighten.
- 8 - Insert the upper shaft's square end through the body in to the disc.
- 9 - Turn the screw (12) so that it enters the groove on the shaft.
- 10 - Tighten the lock nut on the screw (12).
- 11 - Install actuator on the valve.



Part No.	Description
1	Body
2	Bush
3	Bush
4	Seat (U-shape liner)
5	Disc
6	O-ring
7	Lower shaft
8	Sealing washer
9	Plug
10	O-ring
11	Upper shaft
12	Screw and lock nut



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