



MIRAB CO.
Manufacturer of Industrial Valves
and Relevant Equipment



Wafer Type Butterfly Valves
BCW

Wafer Type Butterfly Valves

Size: DN 20 -600 mm
Pressure: PN 6-16 bar

Face to Face Dimension: DIN EN558-1 series20/ISO5752-20 (DIN3202-P3-K1)

Flange Dimension: DIN EN 1092 (DIN2501) & ASME/ ANSI B16.5 Class 150

Product features:

This valve is compatible to be installed between flanges that are drilled by DIN EN 1092 or ANSI Class #150 for pressure up to 16 bar (size more than DN450 and larger as per request). In the open position, the disc will be in the middle, allowing the best flow pass with minimum pressure loss. The seat is replaceable U-shape elastomer which covers the inside of the body and provides a reliable sealing from both directions. The lug type is available with all the above-mentioned specifications for end-of-pipe installation.

Note:

- There is no need for a sealing washer (Gasket) in these types of valves, sealing washers disrupt valve performance.
- Centric Wafer and Lug-type butterfly valves (with replaceable sealing), regarding the design, are not compatible with Polyethylene pipes, Carbon steel flanges acc. to DIN EN 1092-1 type 01 (Plate flanges for welding) & type12 (Hubbed slip-on flange for welding) & Flanges acc. to ASME/ ANSI B16.5 model slip-on and lapped.

Product advantages:

- These valves have a low-pressure loss.
- Tight shut-off sealing on both sides.
- Easy renewable Liner (Elastomer seat)
- Suitable for shut-off and flow control.
- Can be installed in all positions (vertical, horizontal, diagonal, etc).
- Light weight and small dimensions due to small thickness, by ISO 5752 series 20 or EN 558 series 20, gives the advantages of easy installation and minimum required space.
- A replaceable U-shaped rubber liner inside the valve insulates the valve body from the fluid and eliminates the need for a sealing washer between the valve and the mating flanges.

Wafer Type Butterfly Valves

Application:

Wafer types can be used as isolating or regulating valves for fluid (water) with flow speed up to 1.5 m/s, for other services, let us know working conditions such as type, speed, pressure, and temperature of the fluid.

Coating:

Color coating and working temperature are according to the table below.

Temperature of coating	
Coating	Temperature(°c)
RAL 5005 (Epoxy Powder)	Up to 70
RAL 7001 (Epoxy Powder)	Up to 110
RAL 9001 (ZINGA)	Up to 150
RAL 9001 (SILICONE ACRYLIC)	Up to 250

Hydrostatic test Pressure:

The test is according to the table below.

Hydrostatic test Pressure (bar) according to DIN EN 12266-1	
Nominal Pressure PN (bar)	Test Pressure, with water, (bar)
	Closure Test
6	7
10	11
16	18

Materials:

The types of materials used in wafer valves, which can be changed based on the type of passing fluid, are specified in the table below.

Material	Description
Body & Disc	
Cast Iron	EN 1563/ EN GJS-400-15
Cast Iron	EN 1563/ EN GJS-500-7
Carbon Steel	ASTM A216 Gr. WCB
Stainless Steel	AISI 304 (1.4301)
Stainless Steel	AISI 304L (1.4307)
Stainless Steel	AISI 316 (1.4401)
Stainless Steel	AISI 316L (1.4404)
Stainless Steel	Duplex
Stainless Steel	Super Duplex
Aluminum Bronze	ASTM B148 UNS No. C95200
Nickle Aluminum Bronze	ASTM B148 UNS No. C95800
Seat	
NR	Temp. Up to 50 °C
NBR	Temp. Up to 70 °C
NBR (Hi Temp.)	Temp. Up to 120 °C
EPDM	Temp. Up to 120 °C
EPDM (Hi Temp.)	Temp. Up to 150 °C
Viton	Temp. Up to 200 °C
Shaft	
Stainless Steel	AISI 420 (1.4021)
Stainless Steel	AISI 304 (1.4301)
Stainless Steel	AISI 304L (1.4307)
Stainless Steel	AISI 316 (1.4401)
Stainless Steel	AISI 316L (1.4404)
Stainless Steel	Duplex (1.4462)
Nickle Alloy	ASTM B148 UNS No. 4400 (Monel 400)

Hydraulic specification of wafer type butterfly valves:

1-Pressure loss: pressure calculation with valve in the fully open position

φ = Coefficient of pressure loss as
Per the following table

g = 9.81 (m/s²) gravity acceleration

v = flow speed in the pipe (m/s)

Δh = Head loss (m)

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

Coefficient of pressure loss φ in the 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
250	4900	280	20	12	4.0	2.8	1.9	0.3	0.15
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
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
700	4157	223	15	8.4	3.3	2.2	1.4	0.12	0.07
800	4057	217	15	8	3.2	2.1	1.4	0.1	0.06
900	3970	211	14	7.7	3.1	2.1	1.3	0.09	0.05
1000	3895	206	14	7.5	3.1	2	1.3	0.08	0.05

Hydraulic specification of wafer type butterfly valves:

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

ΔP = head loss (bar)

K_v = flow coefficient (m³/h)

Q = flow rate (m³/h)

$$Q = K_v \sqrt{\Delta P}$$

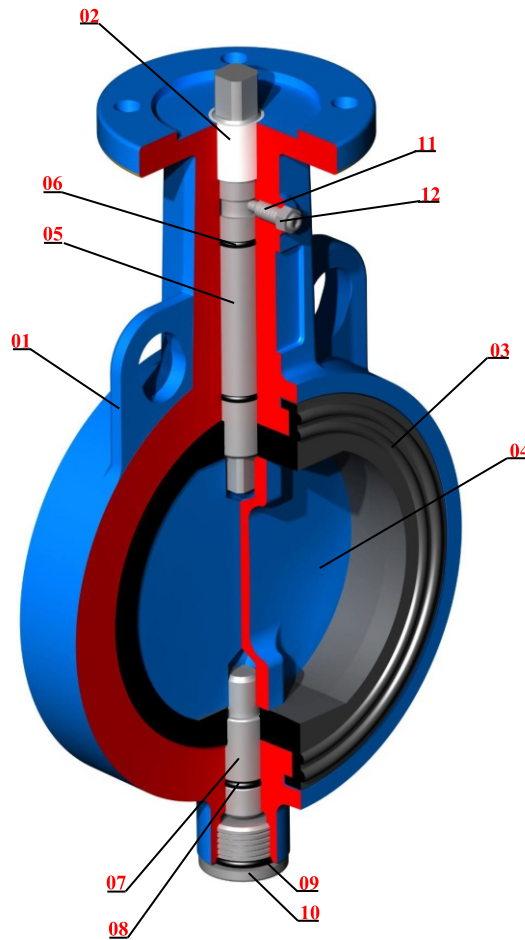
$$\Delta P = \left(\frac{Q}{K_v}\right)^2$$

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

DN mm	20°	30°	40°	50°	60°	70°	80°	90°
20	-	1	4	8	11	19	27	32
25	-	1.5	5	10	15	24	32	36
32	-	1.5	5	11	16	27	35	40
40	-	2.2	8	15	21	33	43	50
50	1.2	8	13	22	38	50	65	85
65	2	9	22	42	77	115	170	215
80	8	24	50	95	150	240	330	420
100	13	28	65	130	180	340	550	800
125	26	65	130	230	350	530	870	1010
150	35	90	200	360	640	900	1350	2100
200	43	180	350	580	1000	1600	3000	4000
250	125	360	660	1100	1800	3100	5300	6400
300	200	550	1000	1600	2600	5000	7500	8500
350	350	780	1400	2400	4000	8000	10800	11500
400	490	1050	1800	3100	5500	11000	12000	14500
450	510	1080	2040	3350	6100	11500	14600	20500
500	520	1100	2200	3500	6200	12000	15100	21000
600	750	1400	2800	5100	8800	14000	22000	29300
700	770	1755	3260	5980	10600	17100	25300	36000
800	1200	2260	4550	8230	12900	20300	29300	44600
900	1540	2280	6030	10500	17600	29200	42150	59000
1000	2200	3970	8300	14480	24000	37100	60300	81500

Definition of K_v : 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.

PART LIST DN20 to DN300



Part No.	Part Name	Part Material	1	2
1	Body	EN 1563/ EN-GJS-400-15		
2	Bush	Steel/PTFE		
3	Seat	EPDM(NBR on Request)	•	•
4	Disc	EN 1563/ EN-GJS-400-15		
5	Upper shaft	DIN EN 10088-3/1.4021		
6	O-ring	NBR (EPDM on Request)	•	
7	Lower shaft	DIN EN 10088-3/1.4021		
8	O-ring	NBR (EPDM on Request)	•	
9	O-ring	NBR (EPDM on Request)	•	
10	Plug	Polyamide	•	
11	Countersunk Socket	ISO 3506-1 Gr.A2 Property Class 70		
12	Nut	ISO 3506-2 Gr.A2 Property Class 70		

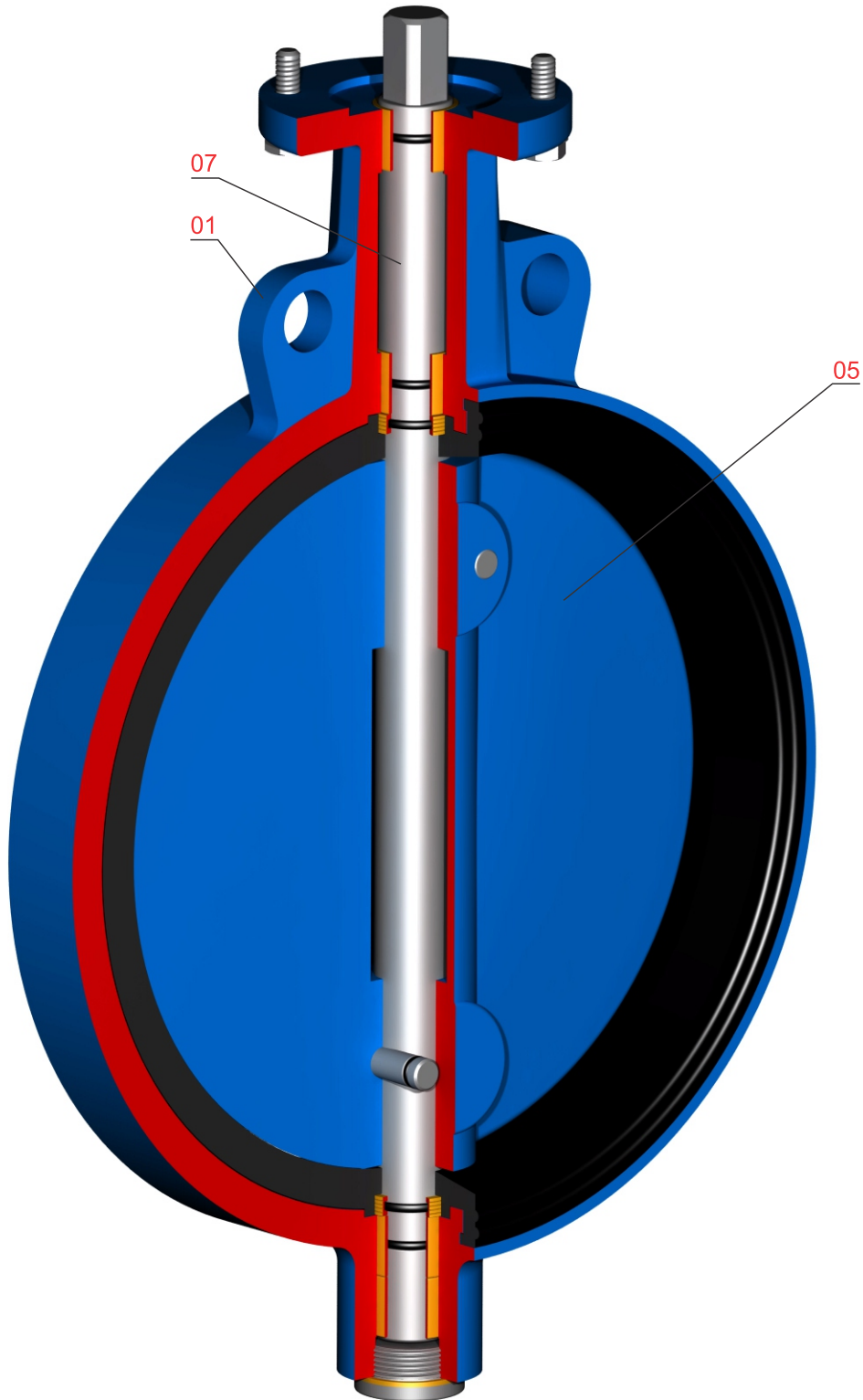
1- Recommended Spare Parts

2- Depreciable Parts

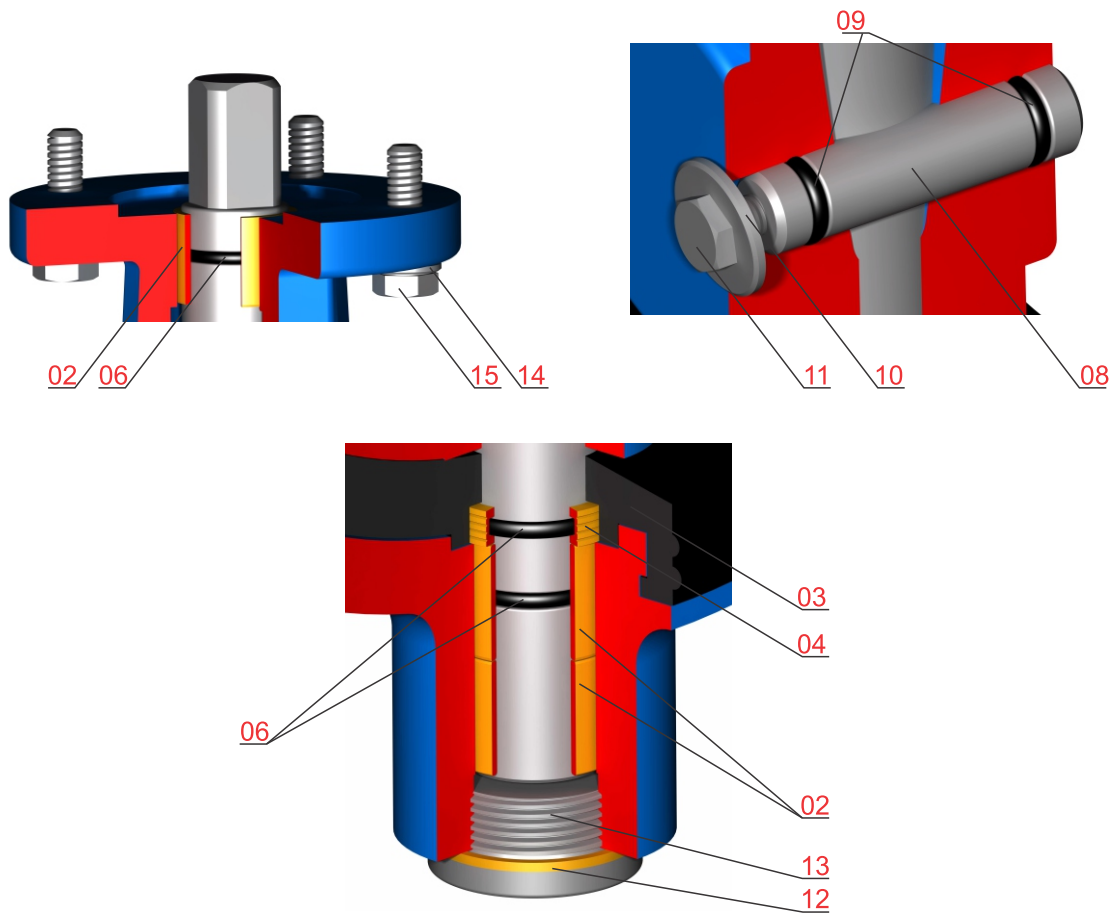
NBR for temperature up to 70°C, EPDM for temperature up to 120°C.



PART LIST DN350 to DN600



Wafer Type Butterfly Valves



Part No.	Part Name	Part Material	1	2
1	Body	EN 1563/ EN-GJS-400-15		
2	Bush	* Steel-PTFE/C95200		
3	Seat	EPDM(NBR on Request)	•	•
4	Bush	Brass		
5	Disc	EN 1563/ EN-GJS-400-15		
6	O-ring	NBR(EPDM on Request)	•	•
7	Shaft	DIN EN 10088-3/1.4021	•	
8	Pin	DIN EN 10088-3/1.4301		
9	O-ring	NBR(EPDM on Request)	•	•
10	Washer	ISO 3506-2 Gr.A2 Property Class 70		
11	Hexagonal Bolt	ISO 3506-1 Gr.A2 Property Class 70		
12	Sealing Washer	CU	•	
13	Plug	EN 1563/ EN-GJS-400-15	•	
14	Washer	ISO 3506-2 Gr.A2 Property Class 70		
15	Hexagonal Bolt	ISO 3506-1 Gr.A2 Property Class 70		

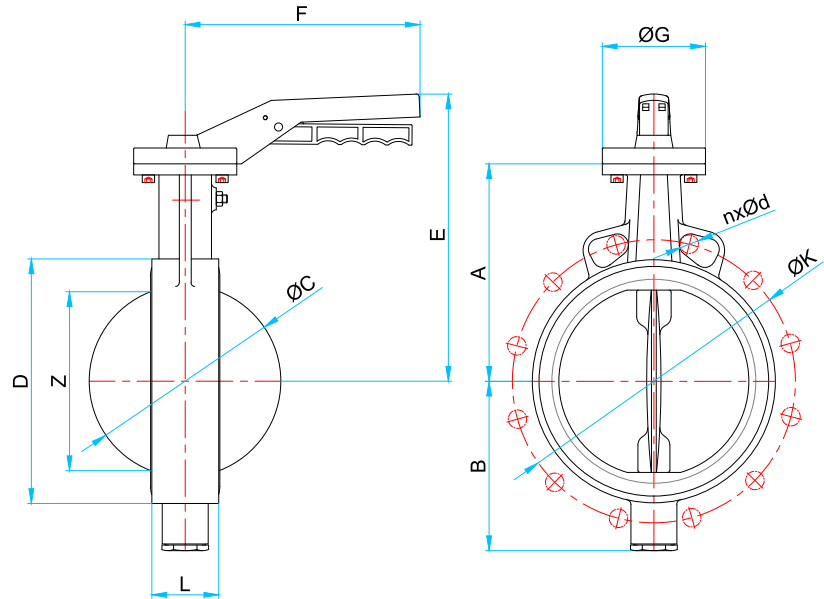
1- Recommended Spare Parts

2- Depreciable Parts

* Up to DN450, Bushes is Self-lubricated (Steel-PTFE), Over DN450 is Al.Bz. Material (C95200).

NBR for temperature up to 70°C, EPDM for temperature up to 120°C.

Dimensions of Wafer Type with Hand Lever



DN mm	PN 6			PN 10			PN 16			Class150		
	ø k mm	d mm	n	ø k mm	d mm	n	ø k mm	d mm	n	ø k mm	d mm	n
20	65	11	4	75	14	4	75	14	4	69.9	15.8	4
25	75	11	4	85	14	4	85	14	4	79.4	15.8	4
32	90	14	4	100	19	4	100	19	4	88.9	15.8	4
40	100	14	4	110	19	4	110	19	4	98.4	15.8	4
50	110	14	4	125	19	4	125	19	4	120.7	19.1	4
65	130	14	4	145	19	4	145	19	4	139.7	19.1	4
80	150	19	4	160	19	8	160	19	8	152.4	19.1	4
100	170	19	4	180	19	8	180	19	8	190.5	19.1	8
125	200	19	8	210	19	8	210	19	8	215.9	22.3	8
150	225	19	8	240	23	8	240	23	8	241.3	22.3	8
200	280	19	8	295	23	8	295	23	12	298.5	22.3	8
250	335	19	12	350	23	12	355	28	12	362	25.4	12
300	395	23	12	400	23	12	410	28	12	431.8	25.4	12

DN mm	L mm	ØC mm	Z mm	A mm	B mm	D mm	E mm	F mm	ØG mm	Flange	Weight Kg
20	33	30	-	104	60	57	170	196	65	F05	1.6
25	33	30	-	104	60	66	170	196	65	F05	1.7
32	33	30	-	104	60	76	170	196	65	F05	1.8
40	33	40	17.4	113	70	84	179	196	65	F05	2.2
50	43	50	19.6	126	82	95	192	196	65	F05	2.7
65	46	65.7	43.2	136	92	116	202	196	65	F05	3.3
80	46	79.5	61.8	159	104	130	228	230	90	F07	4.5
100	52	99.6	82.3	167	113	151	236	230	90	F07	5.4
125	56	124	108.5	181	127	181	250	230	90	F07	7.3
150	56	151.4	139	203	152	205	287	267	90	F07	9.2
200	60	199	188.4	228	176	250	311	267	90	F07	12
250	68	251	240.1	266	214	318	386	445	125	F10	24
300	78	299	286.9	293	239	358	413	445	125	F10	26

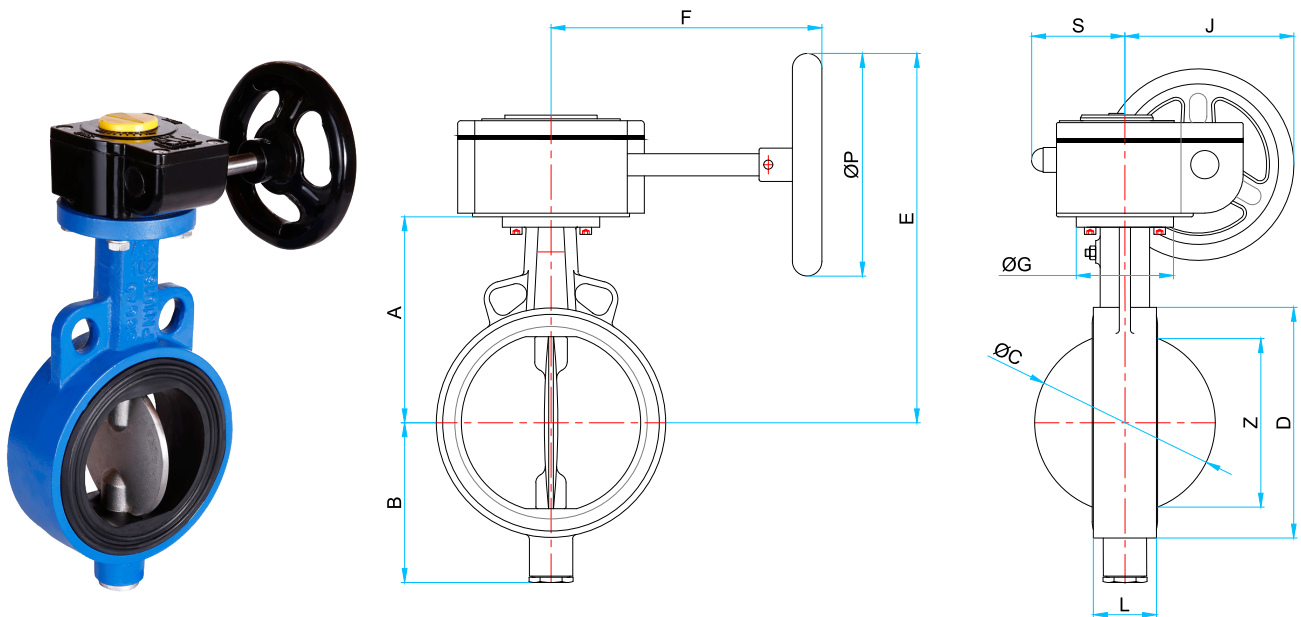
L = valve length per ISO 5752 series 20 or EN 558 series 20 standard.

G = flange dimensions according to ISO 5211 standard.

Data from this table is also usable for seawater wafer type butterfly valves.

According to the type of body design, all the sizes in the above table can be installed to the ANSI Class150 flange.

Dimensions of Wafer Type DN 20 to DN 300 up to 16 bar with Gearbox and Hand wheel



DN mm	L mm	ØC mm	Z mm	A mm	B mm	D mm	E mm	F mm	ØG mm	J mm	P mm	S mm	Weight Kg
20	33	30	-	104	60	57	180	110	65	93	100	45	2.3
25	33	30	-	104	60	66	180	110	65	93	100	45	2.4
32	33	30	-	104	60	76	180	110	65	93	100	45	2.6
40	33	40	17.4	113	70	84	189	110	65	93	100	45	2.9
50	43	50	19.6	126	82	95	202	110	65	93	100	45	3.4
65	46	65.7	43.2	136	92	116	212	110	65	93	100	45	4
80	46	79.5	61.8	159	104	130	235	110	90	103	120	45	5.1
100	52	99.6	82.3	167	113	151	243	110	90	103	120	55	5.9
125	56	124	108.5	181	127	181	257	110	90	103	120	55	7.5
150	56	151.4	139	203	152	205	341	119	90	150	200	80	10.5
200	60	199	188.4	228	176	250	366	119	90	150	200	80	13.2
250	68	251	240.1	266	214	318	435	223	125	190	260	86	29
300	78	299	286.9	293	239	358	463	223	125	190	260	86	33

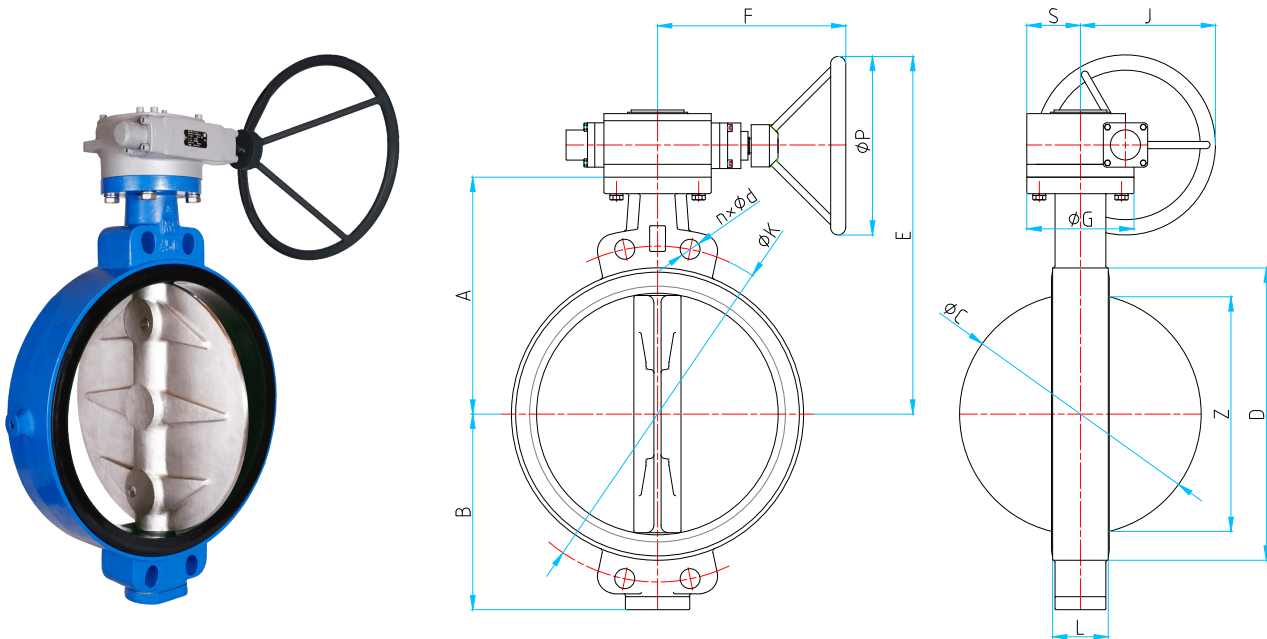
L = valve length according to ISO 5752 series 20 or EN 558 series 20 standard.

G = flange dimensions according to ISO 5211 standard.

Data from this table is also usable for seawater wafer type butterfly valves.

According to the type of body design, all the sizes in the above table can be installed to the ANSI Class150 flange.

Dimensions of Wafer Type DN 350 to DN 600 with Gearbox and Hand wheel



DN mm	PN 6			PN 10			PN 16			Class150		
	Ø k mm	d mm	n	Ø k mm	d mm	n	Ø k mm	d mm	n	Ø k mm	d mm	n
350	445	23	12	460	23	16	470	28	16	476.3	28.6	12
400	495	23	16	515	28	16	525	31	16	539.8	28.6	16
450	550	23	16	565	28	20	585	31	20	577.9	31.8	16
500	600	23	20	620	28	20	650	34	20	635	31.8	20
600	705	28	20	725	31	20	770	37	20	749.3	35	20

DN mm	L mm	ØC mm	Z mm	A mm	B mm	D mm	E mm	F mm	ØG mm	J mm	P mm	S mm	Weight Kg
350	78	341	331.3	332	273	409	492	323	150	230	250	87.5	52.2
400	102	392	377.6	364	318	472	620	334	175	280	400	87.5	84
450	114	442.5	427.5	395	335	516	652	334	175	280	400	87.5	101
500	127	492.5	484.2	437	377	574	712	416	210	298	500	105	146
600	154	584	562.3	498	440	675	802	465	210	350	500	107	PN6,10=213
								537					PN16=221

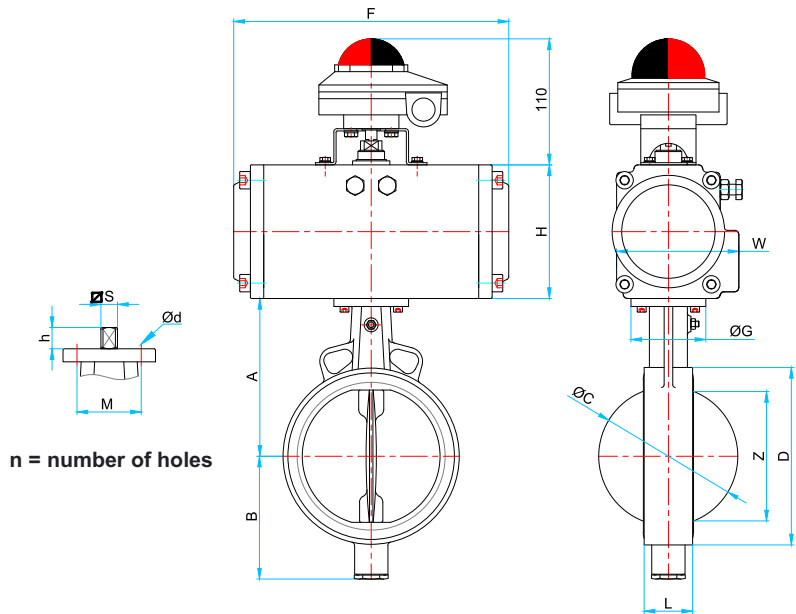
L= valve length according to ISO 5752 series 20 or EN 558 series 20 standard.

G = flange dimensions according to ISO 5211 standard.

Data from this table is also usable for seawater wafer type butterfly valves

According to the type of body design in sizes 350 and 400, it can also be installed on the Class 150 flange, and for higher sizes, it can be custom produced to install the valve on the Class 150 flange according to the dimensions of the above table.

Dimensions of Wafer Type with Pneumatic Actuator



	DN mm	L mm	ØC mm	Z mm	A mm	B mm	d × 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 6	20	33	30	-	104	60	7×4	57	110	65	12	65	36	9	68	1.3	2
	25	33	30	-	104	60	7×4	66	110	65	12	65	36	9	68	1.4	2.1
	32	33	30	-	104	60	7×4	76	110	65	12	65	36	9	68	1.6	2.3
	40	33	40	17.4	113	70	7×4	84	110	65	12	65	36	9	68	1.9	2.6
	50	43	50	19.6	126	82	7×4	95	143	65	14	92	50	11	113	2.4	3.9
	65	46	65.7	43.2	136	92	7×4	116	143	65	14	92	50	11	113	3	4.5
	80	46	79.5	61.8	159	104	7×4	130	143	65	14	92	50	11	113	4.6	6.1
	100	52	99.6	82.3	167	113	7×4	151	190	65	18	108	50	14	133	4.9	7.1
	125	56	124	108.5	181	127	7×4	181	190	65	18	108	50	14	133	6.5	8.7
	150	56	151.4	139	203	152	9×4	205	207	90	20.5	119.5	70	14	152	8.1	11.1
	200	60	199	188.4	228	176	9×4	250	258	90	21	137	70	17	178	11.4	16
	250	68	251	240.1	266	213	9×4	318	340	125	27.5	175	70	22	225	23	32.8
	300	78	299	286.9	293	338	11×4	358	340	125	27.5	175	102	22	225	24.9	34.7
	350	78	341	331.3	332	274	13×4	409	476	150	34	217	125	27	284.5	47	69
	400	102	392	377.6	364	318	17×4	472	515	180	40	260	140	36	332	67	89
	450	114	442.5	427.5	395	335	17×4	610	515	180	40	260	140	36	332	87	109
500	127	492.5	484.2	473	405	17×4	574	580	180	40	285	140	36	368	121	165	
600	154	584	562.3	498	469	21×4	675	725	216	50	350	165	46	467	188	270	

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) The above-mentioned dimensions are for 6 bar air supply pressure. (For more information refer to the pneumatic catalogue of ITG Co.)

b) For size DN 600 with PN16 bar, use Mirab-made pneumatic actuators.

c) As per request, FESTO pneumatic actuators are available.

d) For better performance of pneumatic actuator, Air filter regulator & solenoid valve with desirable voltage are available.

Data from this table is also usable for lug type and seawater wafer type butterfly valves.

Dimensions of Wafer type with Pneumatic Actuator

	DN mm	L mm	ØC mm	Z mm	A mm	B mm	d × 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 10	20	33	30	-	104	60	7×4	57	110	65	12	65	36	9	68	1.3	2
	25	33	30	-	104	60	7×4	66	110	65	12	65	36	9	68	1.4	2.1
	32	33	30	-	104	60	7×4	76	110	65	12	65	36	9	68	1.6	2.3
	40	33	40	17.4	113	70	7×4	84	110	65	12	65	36	9	68	1.9	2.6
	50	43	50	19.6	126	82	7×4	95	143	65	14	92	50	11	113	2.4	3.9
	65	46	65.7	43.2	136	92	7×4	116	143	65	14	92	50	11	113	3	4.5
	80	46	79.5	61.8	159	104	7×4	130	190	65	18	108	50	14	133	4.6	6.8
	100	52	99.6	82.3	167	113	9×4	151	190	90	18	108	70	14	133	4.9	7.1
	125	56	124	108.5	181	127	9×4	181	207	90	20.5	119.5	70	14	152	6.5	9.5
	150	56	151.4	139	203	152	9×4	205	258	90	21	137	70	17	178	8.1	12.7
	200	60	199	188.4	228	176	9×4	250	267	90	26	153	70	22	197	11.4	17.6
	250	68	251	240.1	266	213	11×4	318	340	125	27.5	175	70	22	225	23	32.8
	300	78	299	286.9	293	338	11×4	358	340	125	27.5	175	102	22	225	24.9	34.7
	350	78	341	331.3	332	274	21×4	409	515	180	40	260	140	36	332	47	69
	400	102	392	377.6	364	318	21×4	472	515	180	40	260	140	36	332	67	89
	450	114	442.5	427.5	395	335	17×4	610	515	180	40	260	140	36	332	87	109
500	127	492.5	484.2	473	405	21×4	574	725	216	50	350	165	46	467	121	203	
600	154	584	562.3	498	469	21×4	675	742	216	57	387	165	46	547	188	293	
PN 16	20	33	30	-	104	60	7×4	57	110	65	12	65	36	9	68	1.3	2
	25	33	30	-	104	60	7×4	66	110	65	12	65	36	9	68	1.4	2.1
	32	33	30	-	104	60	7×4	76	110	65	12	65	36	9	68	1.6	2.3
	40	33	40	17.4	113	70	7×4	84	110	65	12	65	36	9	68	1.9	2.6
	50	43	50	19.6	126	82	7×4	95	143	65	14	92	50	11	113	2.4	3.9
	65	46	65.7	43.2	400	92	7×4	116	190	65	18	108	50	14	133	3	5.2
	80	46	79.5	61.8	159	104	7×4	130	190	65	18	108	50	14	133	4.6	6.8
	100	52	99.6	82.3	167	113	9×4	151	207	90	20.5	119.5	70	14	152	4.9	7.9
	125	56	124	108.5	181	127	9×4	181	213	90	21	129	70	17	161.5	6.5	9.8
	150	56	151.4	139	203	152	9×4	205	267	90	26	153	70	22	197	8.1	14.3
	200	60	199	188.4	228	176	9×4	250	340	90	27.5	175	70	22	225	11.4	21.2
	250	68	251	240.1	266	213	11×4	318	340	125	27.5	175	102	22	225	23	32.8
	300	78	299	286.9	293	338	11×4	358	414	125	32	191.5	102	27	247.5	24.9	38.9
	350	78	341	331.3	332	274	21×4	409	515	180	40	260	140	36	332	47	69
	400	102	392	377.6	364	318	21×4	472	515	180	40	260	140	36	332	67	89
	450	114	442.5	427.5	395	335	17×4	610	654	180	50	320	140	46	420	87	141
500	127	492.5	484.2	473	405	21×4	574	865	216	60	436	165	46	621	121	274	

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) The above-mentioned dimensions are for 6 bar air supply pressure. (For more information refer to the pneumatic catalogue of ITG Co.)

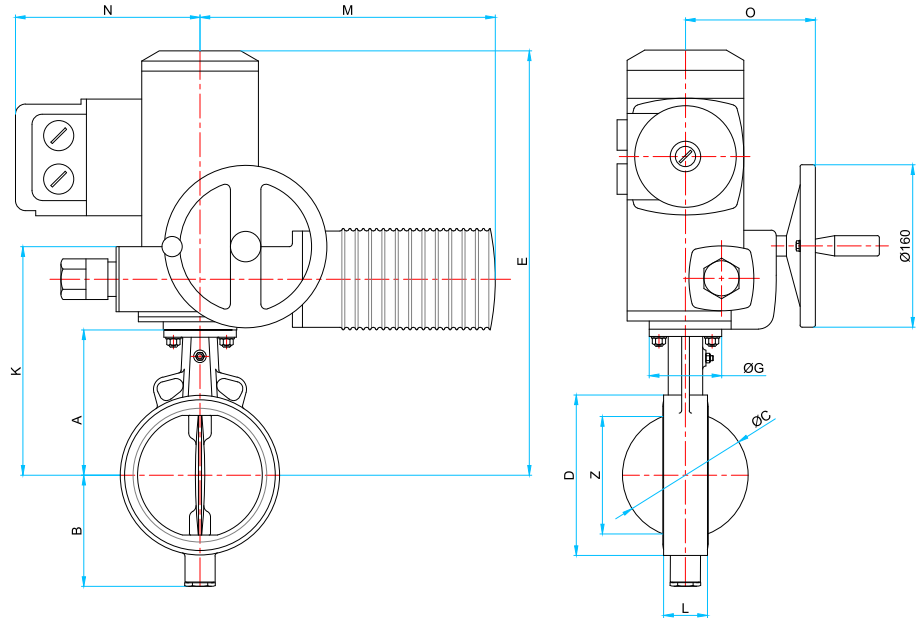
b) For size DN 600 with PN16 bar, use Mirab-made pneumatic actuators.

c) As per request, FESTO pneumatic actuators are available.

d) For better performance of pneumatic actuator, Air filter regulator & solenoid valve with desirable voltage are available.

Data from this table is also usable for lug type and seawater wafer type butterfly valves.

Dimensions of Wafer Type DN 20 to DN 200 with Quarter Turn Electric Actuator



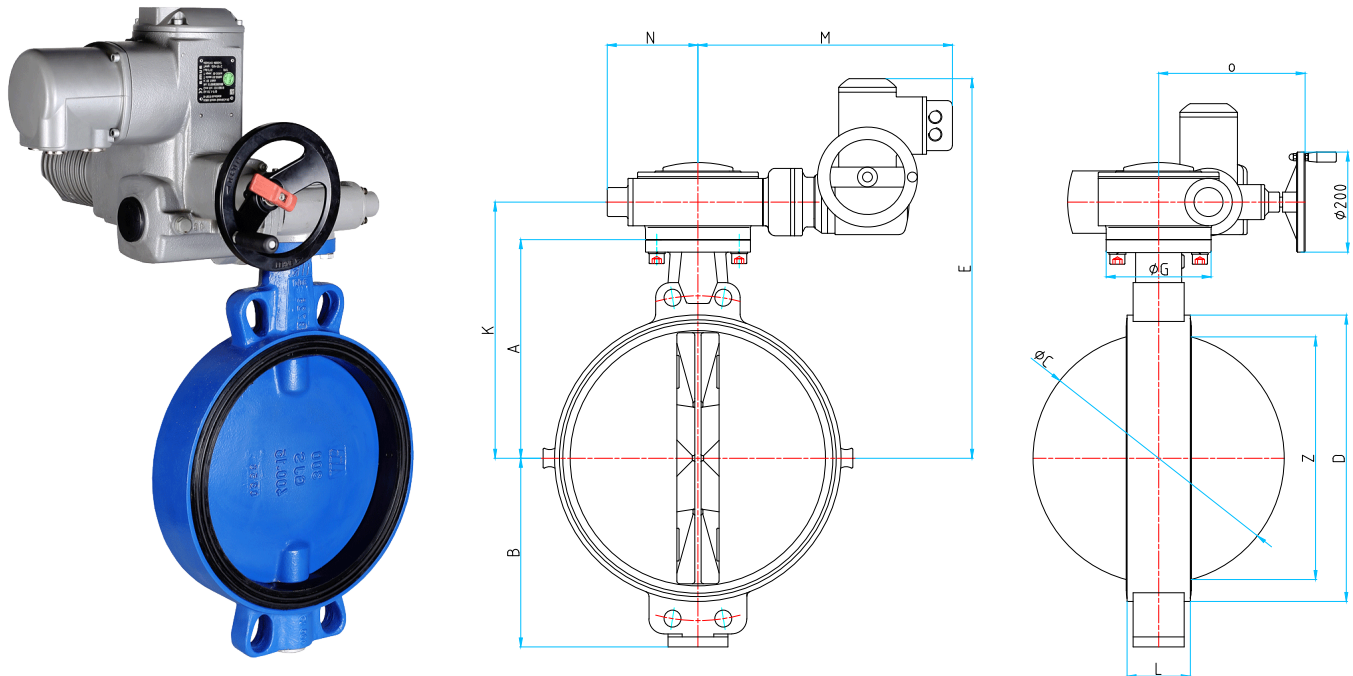
	DN mm	L mm	ØC mm	Z mm	A mm	B mm	D mm	ØG mm	E mm	K mm	M mm	N mm	O mm	Weight Kg
PN10	20	33	30	-	104	60	57	65	311	173	215	195	119	7.4
	25	33	30	-	104	60	66	65	311	173	215	195	119	7.7
	32	33	30	-	104	60	76	65	311	173	215	195	119	8
	40	33	40	17.4	113	70	84	65	320	182	215	195	119	8.5
	50	43	50	19.6	126	82	95	65	333	195	215	195	119	10.7
	65	46	65.7	43.2	136	92	116	65	343	205	215	195	119	11.3
	80	46	79.5	61.8	159	104	130	65	364	228	215	195	119	12.9
	100	52	99.6	82.3	167	113	151	90	374	236	215	195	119	13.2
	125	56	124	108.5	181	127	181	90	388	250	215	195	119	14.8
	150	56	151.4	139	203	152	205	90	478	285	291	195	119	26.1
200	60	199	188.4	228	176	250	90	503	310	291	195	128	29.4	
PN16	20	33	30	-	104	60	57	65	311	173	215	195	119	7.4
	25	33	30	-	104	60	66	65	311	173	215	195	119	7.7
	32	33	30	-	104	60	76	65	311	173	215	195	119	8
	40	33	40	17.4	113	70	84	65	320	182	215	195	119	8.5
	50	43	50	19.6	126	82	95	65	333	195	215	195	119	10.7
	65	46	65.7	43.2	136	92	116	65	343	205	215	195	119	11.3
	80	46	79.5	61.8	159	104	130	65	364	226	215	195	119	12.9
	100	52	99.6	82.3	167	113	151	90	374	236	215	195	119	13.2
	125	56	124	108.5	181	127	181	90	388	250	215	195	128	24.5
	150	56	151.4	139	203	152	205	90	478	285	291	195	128	26.1

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

G = Flange dimensions according to ISO 5211 standard.

Data from this table is also usable for lug type and seawater wafer type butterfly valves.

Dimensions of Wafer Type DN 250 to DN 600 with Gearbox & Electric Actuator



	DN mm	L mm	ØC mm	Z mm	A mm	B mm	D mm	ØG mm	E mm	K mm	M mm	N mm	O mm	Weight Kg
PN 10	250	68	251	240.1	266	214	318	125	566	306	373	96	236	49
	300	78	299	286.9	293	239	358	125	593	333	373	96	236	51
	350	78	341	331.3	332	274	409	180	632	377	398	128	249	77
	400	102	392	377.6	364	318	472	180	664	421	403	133	266	101
	450	114	442.5	427.5	395	335	516	140	708	452	403	133	271	126
	500	127	492.5	484.2	437	405	574	216	637	512	532	187	286	174
	600	154	584	562.3	498	469	675	216	798	573	532	187	286	241
PN16	250	68	251	240.1	266	213	318	125	566	306	373	96	236	49
	300	78	299	286.9	293	239	358	125	593	333	373	96	236	51
	350	78	341	331.3	332	274	409	180	632	377	398	128	249	77
	400	102	392	377.6	364	318	472	180	664	421	403	133	266	101
	450	114	442.5	427.5	395	335	516	140	708	452	403	133	271	126
	500	127	492.5	484.2	437	405	574	216	637	512	532	187	286	174
	600	154	584	562.3	498	469	675	216	811	573	532	187	291	246

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

G = Flange dimensions according to ISO 5211 standard.

Data from this table is also usable for lug type and seawater wafer type butterfly valves.

Wafer type Butterfly Valves for Hot Water Service

Size: DN 20 -600 mm
Pressure: PN 10-16 bar

Face to Face Dimension: DIN EN558-1 series 20/ ISO5752-20 (DIN3202-P3-K1)

Flange Dimension: DIN EN 1092 (DIN2501) & ASME/ ANSI B16.5 Class 150

Product features:

Mirab company's wafer butterfly valve for hot water has a cast iron body, which is made of EPDM sealing rubber up to a temperature of 120°C, and a special sealing rubber made of EPDM for a temperature of up to 150°C.

Application:

This valve is used to isolate Hot water, water steam, and Air. This valve can be applied for flow regulation if the fluid velocity is less than 1.5 m/s.

Corrosion protection:

The surfaces of the body are covered with powder epoxy paint (RAL 7001) up to 110°C temperature and with aluminum base paint (RAL 9006) up to 250 °C with a thickness of 80 microns.

Actuator:

These valves are equipped with a Lever or Worm type gearbox. An electrical or Pneumatic actuator is also available as per request

Hydrostatic test Pressure (bar) according to DIN EN 12266-1	
Nominal Pressure PN (bar)	Test Pressure, with water, (bar)
	Closure Test
6	7
10	11
16	18



Wafer type Butterfly Valves With Special Seat

Size: DN 20 -600 mm
Pressure: PN 10-16 bar

Face to Face Dimension: DIN EN558-1 series 20/ ISO5752-20 (DIN3202-P3-K1)

Flange Dimension: DIN EN 1092 (DIN2501) & ASME/ ANSI B16.5 Class 150

Product features:

This type of wafer type Butterfly valve is designed for High-velocity services that are frequently under vacuum pressure such as Fire hydrant systems. In this process, rubber is produced by vulcanization method and baked inside the body.

Application:

Wafer type Butterfly valves with Special seats are specialized for Hydrant monitors of power plants, Refineries, Petrochemicals, etc.

Corrosion protection:

The body is fully coated with electrostatic epoxy powder (RAL3020).

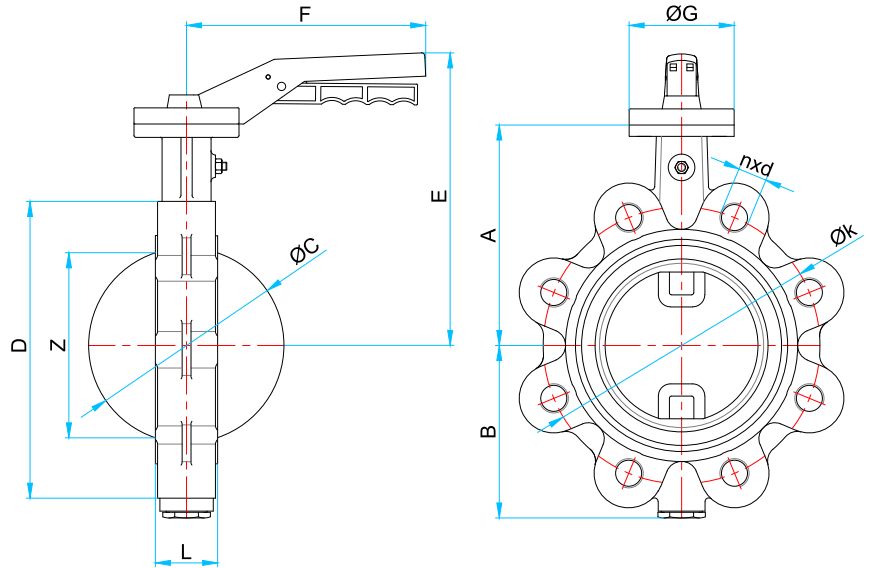
Actuator:

These valves are equipped with a Lever or Worm type gearbox. An electrical or Pneumatic actuator is also available as per request.

Hydrostatic test Pressure (bar) according to DIN EN 12266-1	
Nominal Pressure PN (bar)	Test Pressure, with water, (bar)
	Closure Test
6	7
10	11
16	18



Dimensions of LUG Type Butterfly Valves With Lever



DN mm	PN 6				PN 10				PN 16				Class 150			
	ø D	ø k	d	n	ø D	ø k	d	n	ø D	ø k	d	n	ø D	ø k	d	n
20	90	65	M10	4	105	75	M12	4	105	75	M12	4	100	69.9	UNC 1/2"	4
25	100	75	M10	4	115	85	M12	4	115	85	M12	4	110	79.4	UNC 1/2"	4
32	120	90	M12	4	140	100	M16	4	140	100	M16	4	115	88.9	UNC 1/2"	4
40	130	100	M12	4	150	110	M16	4	150	110	M16	4	125	98.4	UNC 1/2"	4
50	140	110	M12	4	165	125	M16	4	165	125	M16	4	150	120.7	UNC 5/8"	4
65	160	130	M12	4	185	145	M16	4	185	145	M16	4	180	139.7	UNC 5/8"	4
80	190	150	M16	4	200	160	M16	8	200	160	M16	8	190	152.4	UNC 5/8"	4
100	210	170	M16	4	220	180	M16	8	220	180	M16	8	230	190.5	UNC 5/8"	8
125	240	200	M16	8	250	210	M16	8	250	210	M16	8	255	215.9	UNC 3/4"	8
150	265	225	M16	8	285	240	M20	8	285	240	M20	8	280	241.3	UNC 3/4"	8
200	320	280	M16	8	340	295	M20	12	340	295	M20	12	345	298.5	UNC 3/4"	8
250	375	335	M16	12	395	350	M20	12	405	355	M24	12	405	362	UNC 7/8"	12
300	440	395	M20	12	445	400	M20	12	460	410	M24	12	485	431.8	UNC 7/8"	12

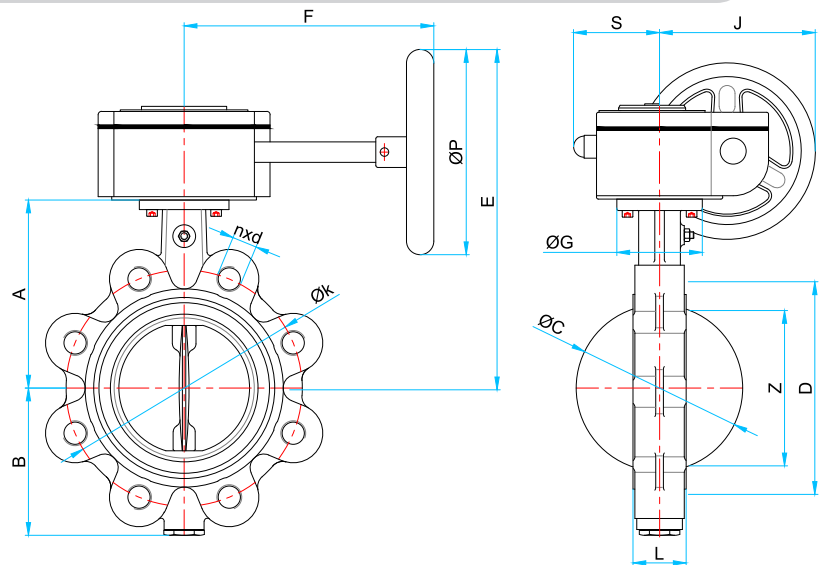
DN mm	L mm	ØC mm	Z mm	A mm	B mm	E mm	F mm	ØG mm
20	33	-	-	104	60	170	196	65
25	33	-	-	104	60	170	196	65
32	33	-	-	104	60	170	196	65
40	33	-	-	113	70	179	196	65
50	43	50	19.6	126	82	192	196	65
65	46	65.7	43.2	136	92	202	196	65
80	46	79.5	61.8	159	104	228	230	90
100	52	99.6	82.3	167	113	236	230	90
125	56	124	108.5	181	127	250	230	90
150	56	151.4	139	203	152	287	267	90
200	60	199	188.4	228	176	311	267	90
250	68	251	240.1	266	214	386	445	125
300	78	299	286.9	293	239	413	445	125

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

G = flange dimensions according to ISO 5211 standard.

Data from this table is also usable for seawater lug type butterfly valve

Dimensions of LUG Type Butterfly Valves DN 20 to DN 300 with Gearbox and Hand wheel



DN mm	PN 6				PN 10				PN 16				Class 150			
	Ø D	Ø k	d	n	Ø D	Ø k	d	n	Ø D	Ø k	d	n	Ø D	Ø k	d	n
20	90	65	M10	4	105	75	M12	4	105	75	M12	4	100	69.9	UNC 1/2"	4
25	100	75	M10	4	115	85	M12	4	115	85	M12	4	110	79.4	UNC 1/2"	4
32	120	90	M12	4	140	100	M16	4	140	100	M16	4	115	88.9	UNC 1/2"	4
40	130	100	M12	4	150	110	M16	4	150	110	M16	4	125	98.4	UNC 1/2"	4
50	140	110	M12	4	165	125	M16	4	165	125	M16	4	150	120.7	UNC 5/8"	4
65	160	130	M12	4	185	145	M16	4	185	145	M16	4	180	139.7	UNC 5/8"	4
80	190	150	M16	4	200	160	M16	8	200	160	M16	8	190	152.4	UNC 5/8"	4
100	210	170	M16	4	220	180	M16	8	220	180	M16	8	230	190.5	UNC 5/8"	8
125	240	200	M16	8	250	210	M16	8	250	210	M16	8	255	215.9	UNC 3/4"	8
150	265	225	M16	8	285	240	M20	8	285	240	M20	8	280	241.3	UNC 3/4"	8
200	320	280	M16	8	340	295	M20	12	340	295	M20	12	345	298.5	UNC 3/4"	8
250	375	335	M16	12	395	350	M20	12	405	355	M24	12	405	362	UNC 7/8"	12
300	440	395	M20	12	445	400	M20	12	460	410	M24	12	485	431.8	UNC 7/8"	12

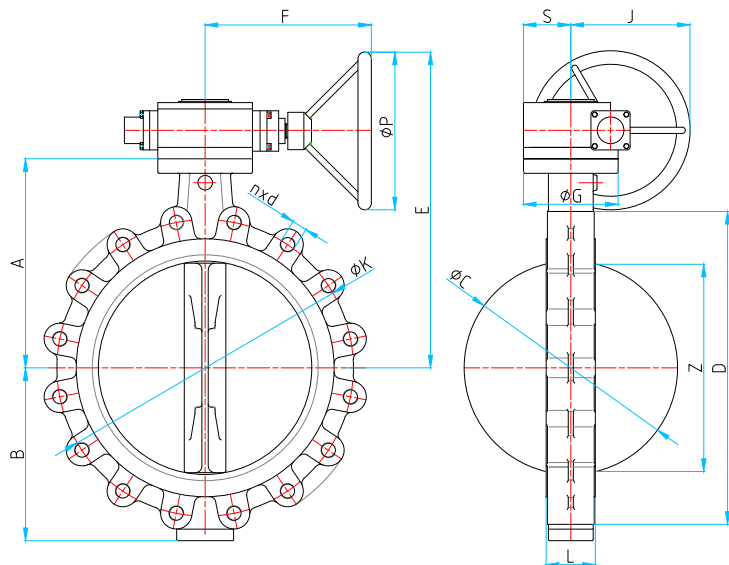
DN mm	L mm	ØC mm	Z mm	A mm	B mm	E mm	F mm	ØG mm	J mm	P mm	S mm	Weight Kg
20	33	30	-	104	60	180	110	65	93	100	45	3.3
25	33	30	-	104	60	180	110	65	93	100	45	3.5
32	33	30	-	104	60	180	110	65	93	100	45	3.8
40	33	40	17.4	113	70	189	110	65	93	100	45	4
50	43	50	19.6	126	82	202	110	65	93	100	45	4.8
65	46	65.7	43.2	136	92	212	110	65	93	100	45	5.3
80	46	79.5	61.8	159	104	235	110	90	103	120	45	7.3
100	52	99.6	82.3	167	113	243	110	90	103	120	55	9.5
125	56	124	108.5	181	127	257	110	90	103	120	55	10.7
150	56	151.4	139	203	152	341	119	90	150	200	80	14.2
200	60	199	188.4	228	176	366	119	90	150	200	80	19.1
250	68	251	240.1	266	214	435	223	125	190	260	86	36.2
300	78	299	286.9	293	239	463	223	125	190	260	86	41.7

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

G = flange dimensions according to ISO 5211 standard.

Data from this table is also usable for seawater lug type butterfly valve.

Dimensions of LUG Type Butterfly Valves DN 350 to DN 1000 with Gearbox and Hand wheel



DN mm	PN 6				PN 10				PN 16				Class 150			
	Ø D	Ø k	d	n	Ø D	Ø k	d	n	Ø D	Ø k	d	n	Ø D	Ø k	d	n
350	490	445	M20	12	505	460	M20	16	520	470	M24	16	535	476.3	UNC 1"	12
400	540	495	M20	16	565	515	M24	16	580	525	M27	16	595	539.8	UNC 1"	16
450	595	550	M20	16	615	565	M24	20	640	585	M27	20	635	577.9	8UN 1 1/8"	16
500	645	600	M20	20	670	620	M24	20	715	650	M30	20	700	635	8UN 1 1/8"	20
600	755	705	M24	20	780	725	M27	20	840	770	M33	20	815	749.3	8UN 1 1/4"	20
700	860	810	M24	24	895	840	M27	24	910	840	M33	24	925	863.6	8UN 1 1/4"	28
800	975	920	M27	24	1015	950	M30	24	1025	950	M36	24	1060	977.9	8UN 1 1/2"	28
900	1075	1020	M27	24	1115	1050	M30	28	1125	1050	M36	28	1170	1085.8	8UN 1 1/2"	32
1000	1175	1120	M27	28	1230	1160	M33	28	--	--	--	--	1290	1200.2	8UN 1 1/2"	36

DN mm	L mm	ØC mm	Z mm	A mm	B mm	E mm	F mm	ØG mm	J mm	P mm	S mm
350	78	341	331.3	332	273	492	323	150	230	250	87.5
400	102	392	377.6	364	318	620	334	175	280	400	87.5
450	114	442.5	427.5	395	335	652	334	175	280	400	87.5
500	127	492.5	484.2	437	377	712	416	210	298	500	105
600	154	584	562.3	498	440	802	465	210	350	500	107
							537				
700	165	688.3	667	581	517	856	399	210	150	500	325
800	190	781.5	757	609	573	934	478	300	150	500	375
900	203	883.5	859	660	636	951	478	300	175	500	360
1000	216	980.5	955	760	691	1051	478	300	175	500	360

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

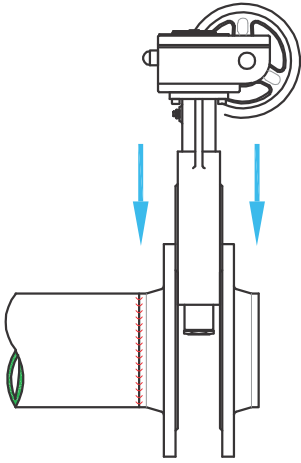
G = flange dimensions according to ISO 5211 standard.

Different types of actuators are possible.

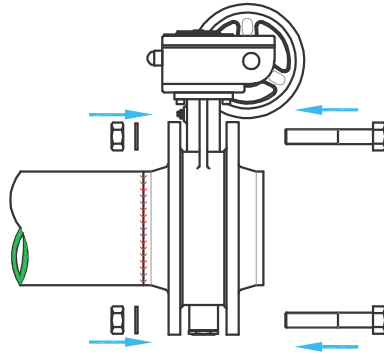
Data from this table is also usable for seawater lug type butterfly valves.

ANSI Class150 flange dimensions for sizes 700 to 1000 are based on the Ser A table.

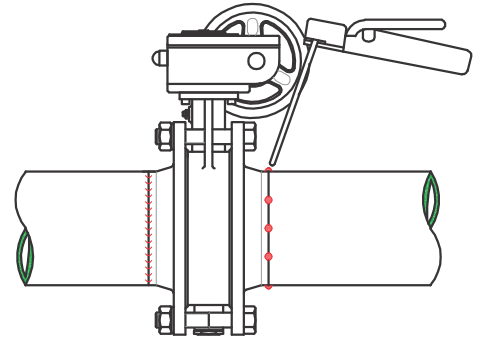
Installation procedure



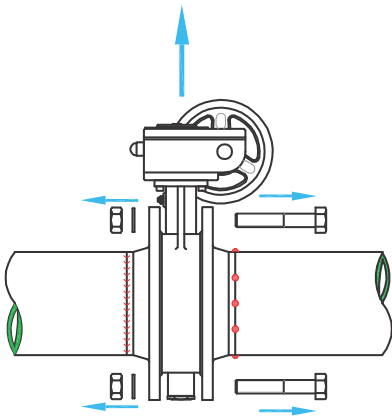
1- Position the valve between The flanges.



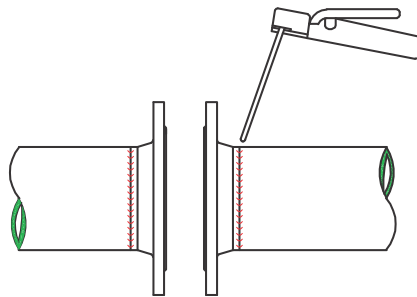
2- Adjust the valve and fasten 4 nuts and bolts slightly.



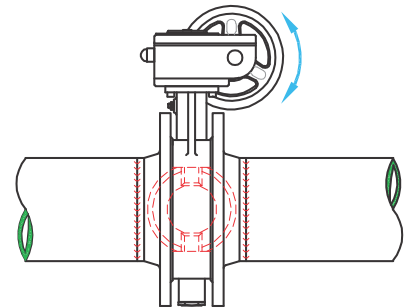
3- Spot weld flanges to the pipes.



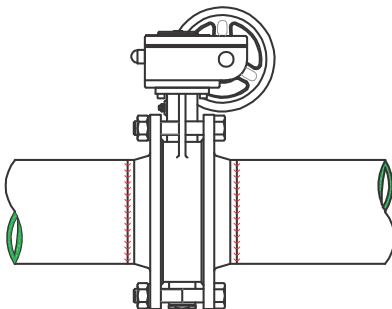
4- Carefully remove the valve from flanges.



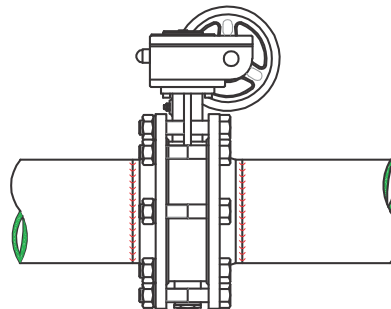
5- Fully weld flanges to the pipes.



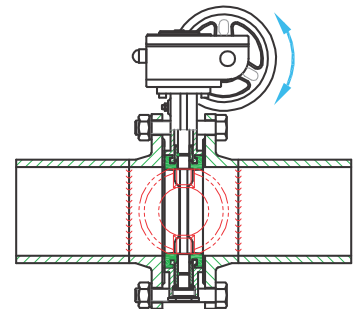
6- When the welding area cooled position the valve between flanges. The valve must easily open and close. Keep the valve in slightly open position to prevent damages to the sealing rubber.



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.

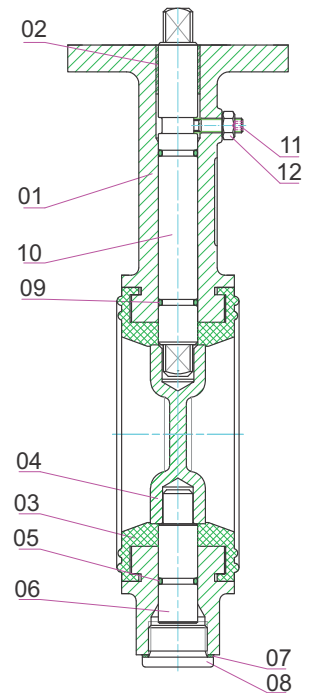
Rubber Seat replacement procedure

a) Removing the rubber seat (Liner):

- 1 - Keep the valve in the open position.
- 2 - Disconnect and remove any actuating device from the valve.
- 3 - Loosen the lock nut on the screw (12). Turn screw (11) counterclockwise by a few turns to allow the upper shaft (10) to be removed.
- 4 - Remove the upper shaft (10) from the valve, O-ring (09) can stay on the shaft.
- 5 - Remove the plug (08) on the lower shaft end.
- 6 - Remove the lower shaft (06) from the valve with a screw which to be fastened to the shaft end.
- 7 - Remove disc (04) from the valve.
- 8 - Take the rubber seat off the valve body by twisting it by hand.

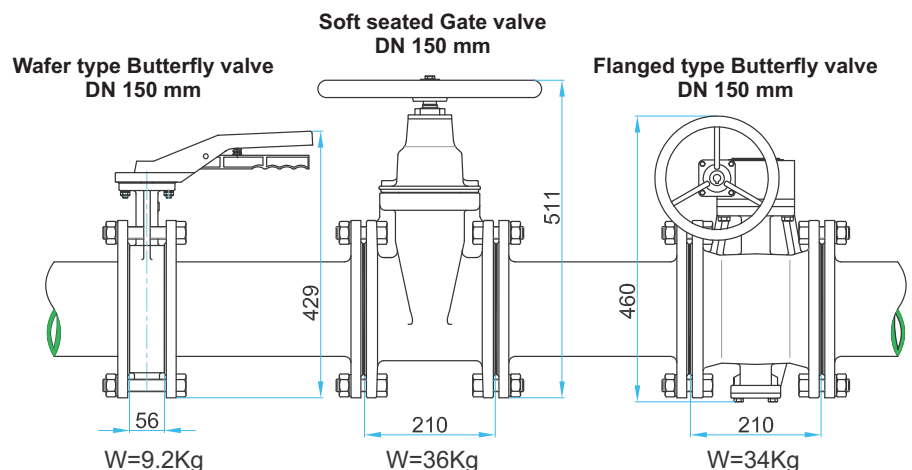
b) Installing a rubber seal on the valve body.

- 1 - Make sure that all bushes are assembled in the body.
- 2 - Make sure that the outer surface of the rubber seat and inner surface of the valve is grease-free.
- 3 - Fold the rubber liner by hand and put it inside the body so that the bump on the liner inserts to the hole inside the body.
- 4 - Insert the second bump 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 assembly (do not use grease for EPDM):
 - The inner surface of the rubber seal.
 - The upper shaft's square end and the lower shaft's end enter the disc.
- 6 - Place the disc in the body in the 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 into the disc. put the plug (08) in and tighten it.
- 8 - Insert the upper shaft's square end through the body into the disc.
- 9 - Turn the screw (11) so that it enters the groove on the shaft.
- 10 - Tighten the lock nut on the screw (12).
- 11 - Install an actuator on the valve.



Part No.	Description
01	Body
02	Bush
03	Seat (U-shape liner)
04	Disc
05	O-ring
06	Lower shaft
07	Sealing washer
08	Plug
09	O-ring
10	Upper shaft
11	Screw
12	Lock nut

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



Flanged short body Type Butterfly Valves

Size: DN 500-1000 mm

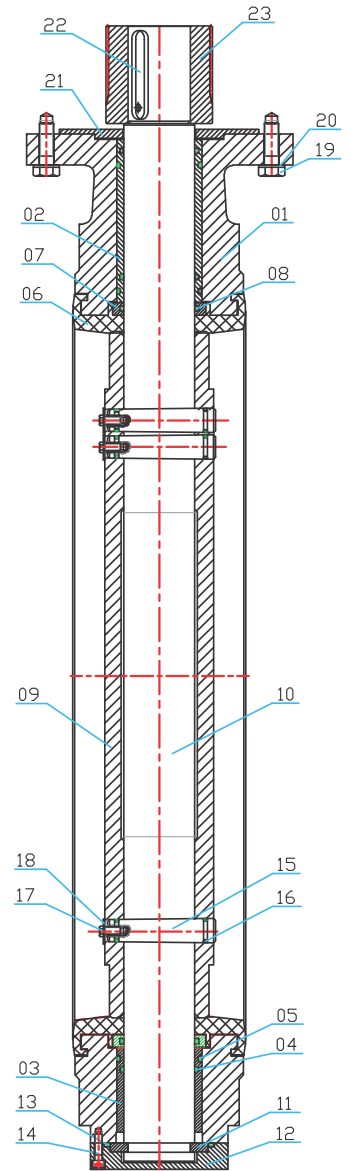
Pressure: PN 6-16 bar

Flange Dimension:

DIN EN 1092 (DIN2501) & ASME/ ANSI B16.5 Class 150

Face to Face Dimension:

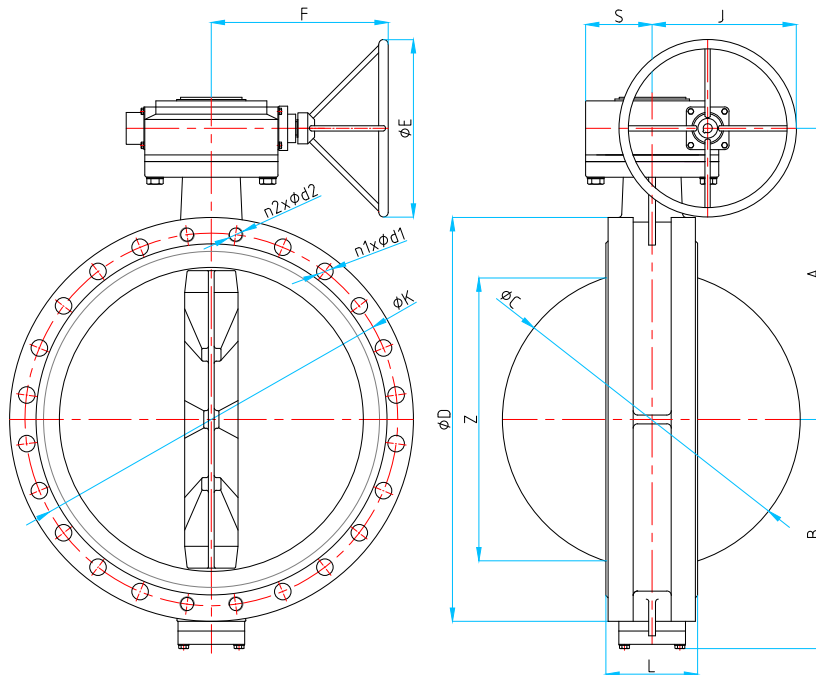
DIN EN 558 – 1 series 20 (DIN 3202 – Part 3 – K1) / API 609 Cat. A



Part No.	Description	Standard Material	1	Part No.	Description	Standard Material	1
01	Body	EN-GJS-400-15		13	O-ring	NBR/EPDM	●
02	Bush	Al.Bz		14	Socket Screw	A2	
03	Bush	Al.Bz		15	Pin	1.4301	
04	O-ring	NBR/EPDM	●	16	O-ring	NBR/EPDM	●
05	O-ring	NBR/EPDM	●	17	Hexagonal Bolt	A2	
06	Seat (U-shape liner)	NBR/EPDM	●	18	washer	A2	
07	Bush	Brass		19	Hexagonal Bolt	A2	
08	O-ring	NBR/EPDM	●	20	washer	A2	
09	Disc	EN-GJS-400-15		21	Ring	EN-GJS-400-15	
10	Shaft	1.4021		22	Key	St 60	
11	Sealing	Brass		23	Coupling	1.0503	
12	Plug	EN-GJS-400-15					

1- Recommended Spare Parts

Flanged Short Body Type Butterfly Valves (Gearbox & Hand wheel Operated)



DN	L mm	ØC mm	Z mm	F mm	J mm	S mm	B mm	A mm	ØE mm	Weight Kg
500	127	492.5	475	416	298	105	378	513	500	170
600	154	584	562	465	350	150	440	573	500	260
700	165	688.3	667	399	325	150	517	656	500	345
800	190	781.5	757	464	375	150	572	684	500	466
900	203	883.5	859	466	360	165	636	735	500	610
1000	216	980.5	955	560	360	165	691	850	500	722

DN	PN10						PN16						Class 150					
	ØD mm	ØK mm	n1 mm	Ød1 mm	n2 mm	d2 mm	ØD mm	ØK mm	n1 mm	Ød1 mm	n2 mm	d2 mm	ØD mm	ØK mm	n1 mm	Ød1 mm	n2 mm	d2 in
500	670	620	16	28	4	M24	715	650	16	34	4	M30	700	635	16	31.8	4	8 UN 1 1/8"
600	780	725	16	31	4	M27	840	770	16	37	4	M33	815	749.3	16	35	4	8 UN 1 1/4"
700	895	840	20	31	4	M27	910	840	20	37	4	M33	925	863.6	24	35	4	8 UN 1 1/4"
800	1015	950	20	34	4	M30	1025	950	20	41	4	M36	1060	977.9	24	41.3	4	8 UN 1 1/2"
900	1115	1050	24	34	4	M30	1125	1050	24	41	4	M36	1170	1085.8	28	41.3	4	8 UN 1 1/2"
1000	1230	1160	24	37	4	M33	-	-	-	-	-	-	1290	1200.2	32	41.3	4	8 UN 1 1/2"

Data from this table is also usable for seawater Flanged Short Body Type butterfly valves.

ANSI Class150 flange dimensions for sizes 700 to 1000 are based on the Ser A table.

Wafer type Butterfly Valves for Sea Water

Size: DN 20-600 mm

Pressure: PN 6-16 bar

Face to Face Dimension: DIN EN558-1 series20/ ISO 5752-20 (DIN3202-P3-K1)

Flanges: according to DIN EN 1092 (DIN2501) & ASME/ ANSI B16.5 Class 150

Application:

Used in the oil rig industry, offshore, onshore & marine industry, gas station, etc. these types of Wafer Type Butterfly Valves are used as isolating & regulating valves with seawater media & gas in a corrosion base atmosphere.

a) Ni-Al-Bz (ASTM B148)

This Alloy is one of the best choices for corrosive seawater media. Some categories of stainless-steel materials are available too upon request.

Advantages:

- Average corrosive rate: 2 mpy to 5 mpy.
- Copper corrosion resistance & Al₂O₃ protective film.
- Corrosion resistance against mineral & organic acid bases.

b) Application of Ni-Cu alloy (ASTM B164 UNS. No. 4400)

Parts in these valves that are in direct contact with sea water such as shafts, stems, screws & nuts should have suitable resistance against other imposed forces in addition to their resistance against corrosion. Ni-Cu alloy (Monel) is the best choice for this application. Stainless steel alloys are available upon request.

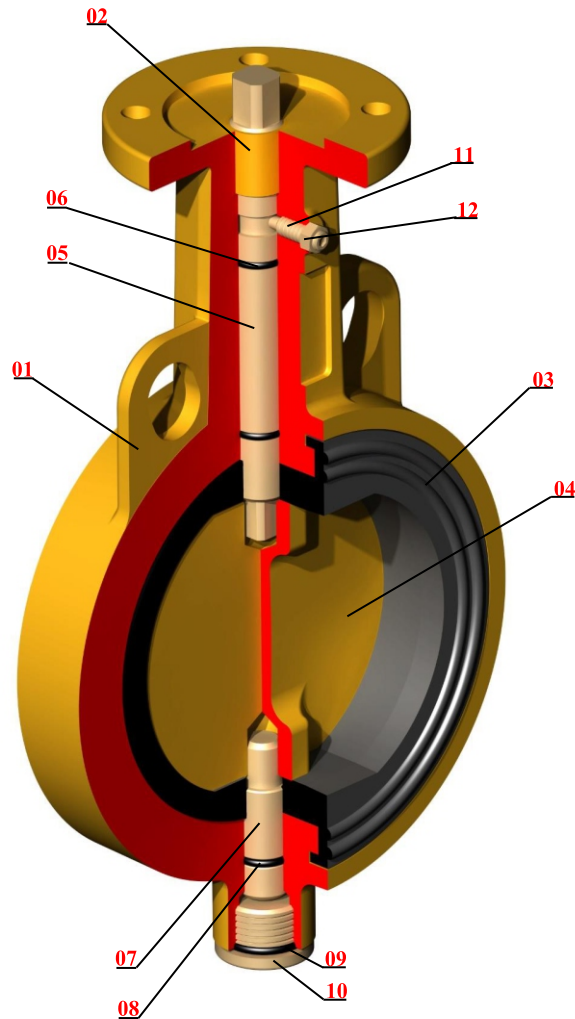
Advantages:

- Applicable & useful to produce valves, pumps & ship propellers
- Good chemical and mechanical properties against corrosion & erosion.

Hydrostatic test Pressure (bar) according to DIN EN 12266-1	
Nominal Pressure PN (bar)	Test Pressure, with water, (bar)
	Closure Test
6	7
10	11
16	18



PART LIST DN20 to DN300



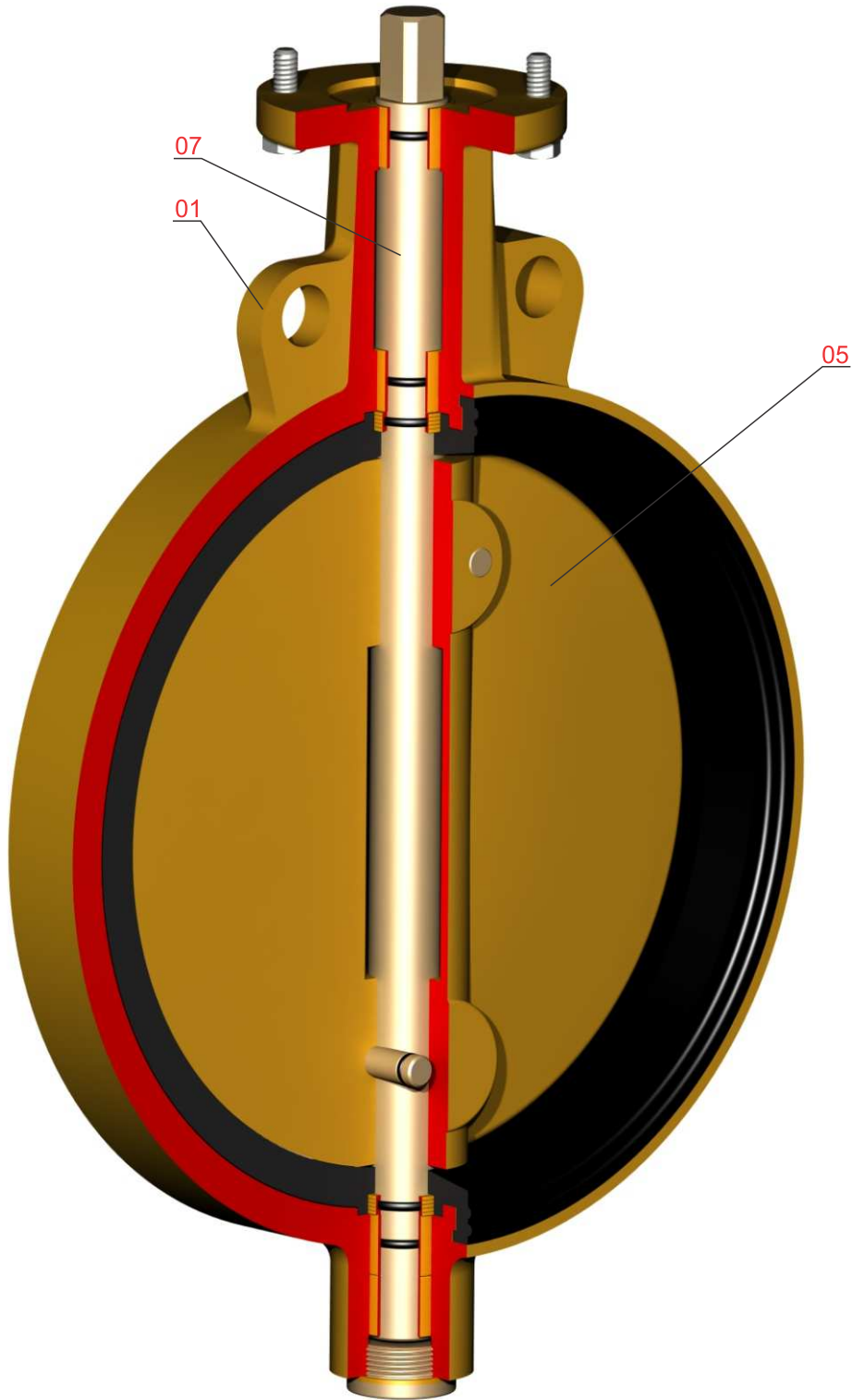
Part No.	Part Name	Part Material	1	2
1	Body	NiAlBz (C95800)		
2	Bush	AlBz(C95200)		
3	Liner	EPDM	•	•
4	Disc	NiAlBz (C95800)		
5	Long shaft	1.4462 (Duplex)		
6	O-ring	EPDM	•	
7	Short shaft	1.4462 (Duplex)		
8	O-ring	EPDM	•	
9	Washer	CU		
10	End cap	NiAlBz (C95800)	•	
11	Lock set	1.4462 (Duplex)		
12	Nut	1.4462 (Duplex)	•	

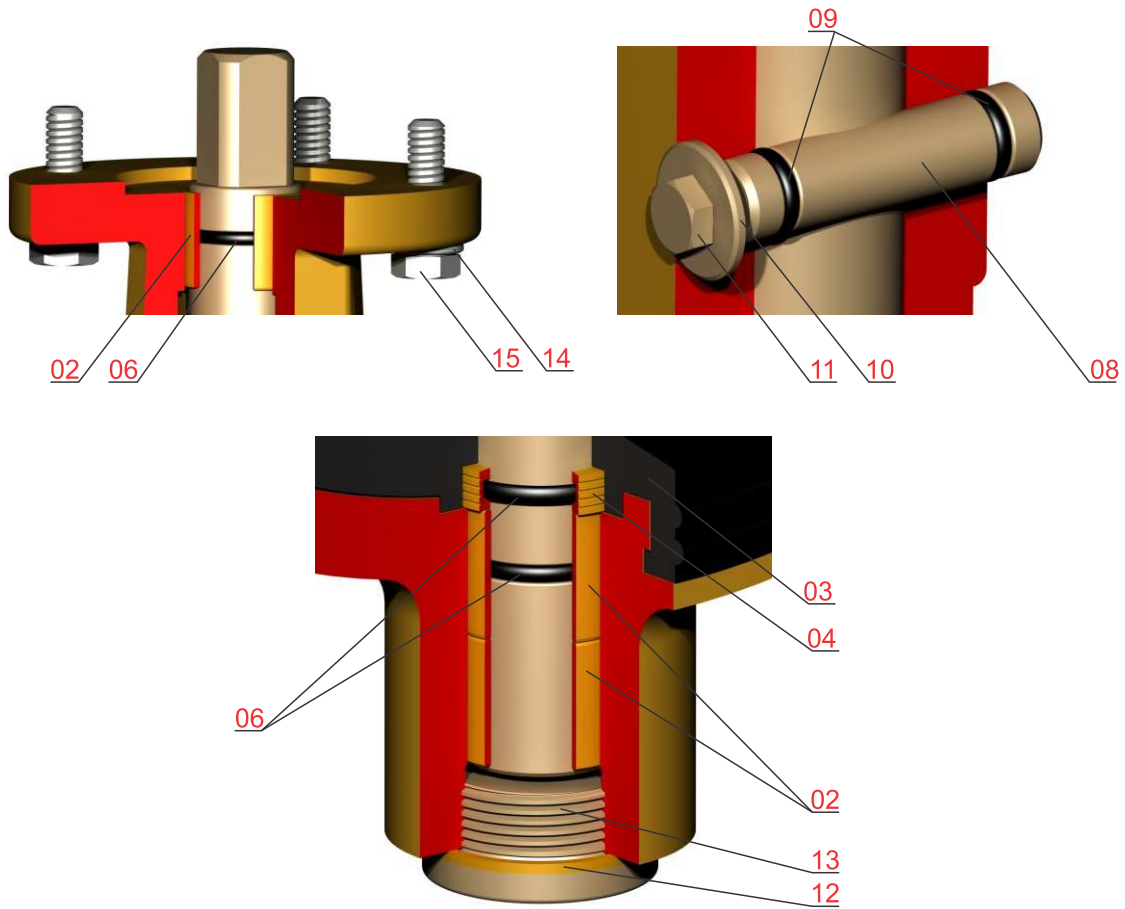
1- Recommended Spare Parts

2- Parts Subjected to Wear

NBR for temperature up to 70°C, EPDM for temperature up to 120°C.

PART LIST DN350 to DN600





Part No.	Part Name	Part Material	1	2
1	Body	NiAlBz (C95800)		
2	Bush	AlBz(C95200)		
3	Seat	EPDM	•	•
4	Bush	Brass		
5	Disc	NiAlBz (C95800)		
6	O-ring	EPDM	•	•
7	Shaft	1.4462 (Duplex)	•	
8	Pin	1.4462 (Duplex)		
9	O-ring	EPDM	•	•
10	Washer	1.4462 (Duplex)		
11	Hexagonal Bolt	1.4462 (Duplex)		
12	Sealing Washer	CU	•	
13	Plug	NiAlBz (C95800)	•	
14	Washer	ISO 3506-2 Gr.A2 Property Class 70		
15	Hexagonal Bolt	ISO 3506-1 Gr.A2 Property Class 70		

1- Recommended Spare Parts
2- Depreciable Parts

NBR for temperature up to 70°C, EPDM for temperature up to 120°C.

Wafer type and Flanged short body type Butterfly valve, with special internal coating for seawater service (Halar)

Size: DN20-DN1000 mm

Pressure: PN10-PN16 bar

End connection std.: DIN EN 1092 (DN2501) & ASME/ ANSI B16.5 Class 150

Face to Face std.: DIN EN 558 series 20 (DIN 3202 P3 K1) ISO 5752 - series 20

Valve features:

The valve is coated with special epoxy paint (Halar) which prepares protection on the surface and prevents corrosion against corrosive agents. This coating is meltable semi-crystalline Fluoropolymer. The chemical resistance and Electrical conductivity of this coating are perfect in extensive ranges from low temperatures up to 150 °C (Tested acc. to UL). One of the best Fluoropolymers that has excellent resistance to impact and penetration.

Application:

A chemical process, pharmaceutical, semi-conductor parts, refineries, power plants, and a vast variety of applications with corrosive chemicals or special services such as corrosive mineral bases and acids, oxidizers, and seawater.

Actuators:

This valve is equipped with a lever or worm-type gearbox.

An electrical or pneumatic actuator is also available per request.





IRAN



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