



# BUTTERFLY VALVE

A butterfly valve is a quarter-turn rotational motion valve, that is used to stop, regulate, and start flow. Butterfly valves are easy and fast to open. A 90° rotation of the handle provides a complete closure or opening of the valve. Large butterfly valves are usually equipped with a so-called gearbox, where the handwheel by gear is connected to the stem. This simplifies the operation of the valve, but at the expense of speed.

## Types of butterfly valve

Butterfly valves have a short circular body, a round disc, metal-to-metal or soft seats, top and bottom shaft bearings, and a stuffing box. The construction of a butterfly valve body varies. A commonly used design is the wafer type that fits between two flanges. Another type, the lug wafer design, is held in place between two flanges by bolts that join the two flanges and pass through holes in the valve's outer casing. Butterfly valves are even available with flanged, threaded and butt welding ends, but they are not often applied.

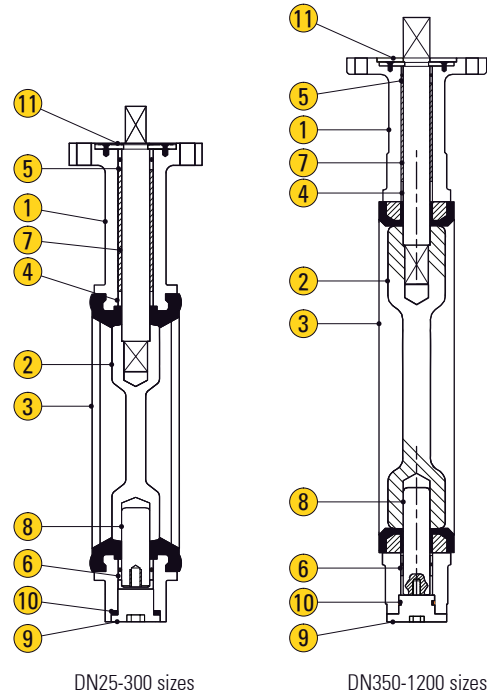
Butterfly valve possess many advantages over gate, globe, plug, and ball valve, especially for large valve applications. Savings in weight, space, and cost are the most obvious advantage. The maintenance costs are usually low because there is a minimal number of moving parts and there are no pockets to trap fluids. Butterfly valves are especially well-suited for the handling of large flows of liquids or gases at relatively low pressures and for the handling of slurries or liquids with large amounts of suspended solids. Butterfly valve are built on the principle of a pipe damper. The flow control element is a disc of approximately the same diameter as the internal diameter of the adjoining pipe, which rotates on either a vertical or horizontal axis. When the disc lies parallel to the piping run, the valve is fully opened. When the disc approaches the perpendicular position, the valve is shut. Intermediate positions, for throttling purposes, can be secured in place by handle-locking devices.

# SOFT SEAT BUTTERFLY VALVE WAFER / LUG



**FIG V102**  
Lug type

**FIG V101**  
Wafer type



DN25-300 sizes

DN350-1200 sizes

## APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media  
(Refer to corrosion resistance table for valve materials selection).

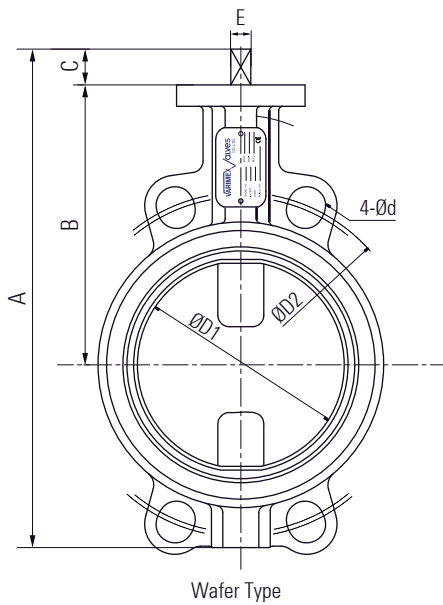
## SPECIFICATION

Face To Face Dimension	BS EN 558-1 and API 609
Standard Compliance	Conform to BS EN 593 and API 609
End Connection	Wafer type to suit DIN, BS, ANSI and JIS flanges
Pressure Rating	16 Bar for DN50 to DN600 10 Bar for DN700 to DN1200 (optional 16 Bar)
Temperature (Seat)	-10°C to 80°C NBR, 15°C to 120°C EPDM -10°C to 150°C Viton, 45°C to 180°C PTFE
Top Flange Dimensions	ISO 5211
Actuation	Lever operated for DN50 to DN200 (Gear operated on request) Gear operated for DN250 & above Pneumatic or electric actuated
Optional	

## MATERIAL

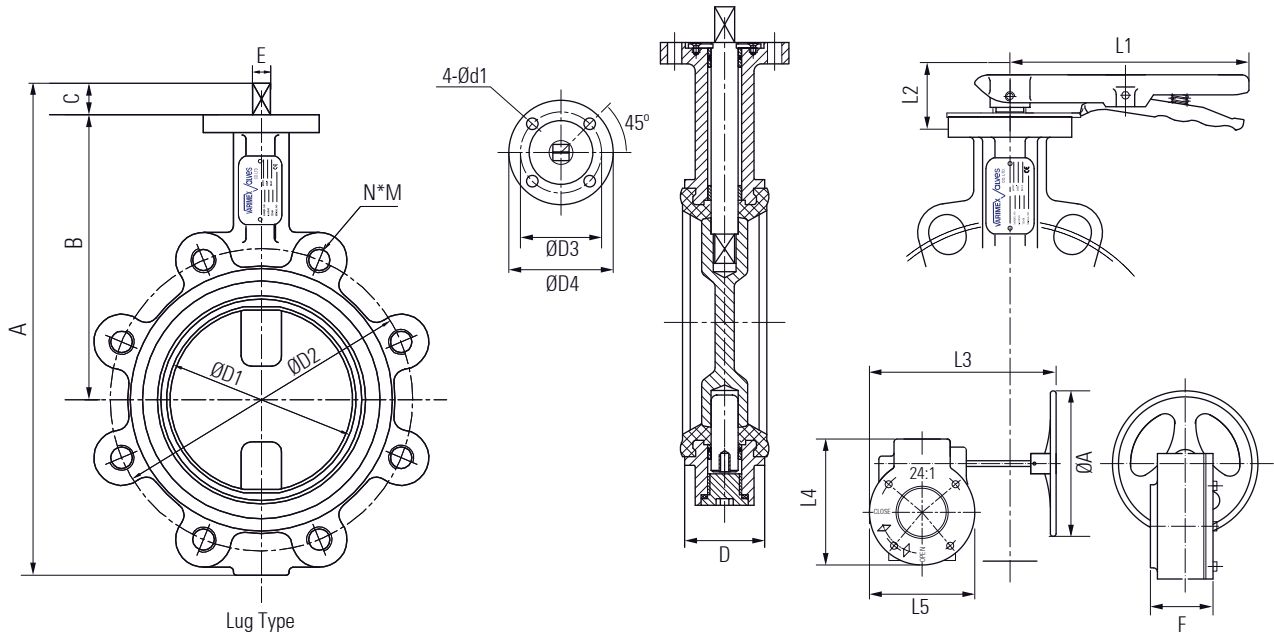
Parts	Available Material
1 Body	GG25 Cast Iron
	GGG40 Ductile Iron
	AISI 304 Stainless Steel
	AISI 316 Stainless Steel
2 Disc	AISI 304 Stainless Steel
	AISI 316 Stainless Steel
	Aluminium Bronze
	PFA Coated AISI 304
3 Seat	EPDM (-30°C ~ +120°C)
	NBR (-20° C ~ +110°C)
	NEOPRENE (-20°C ~ +110°C)
	PTFE + EPDM (-30°C ~ +120°C)
4/5/6 Bushing	PTFE
7 Upper Stem	AISI 420 Stainless Steel
	AISI 316 Stainless Steel
8 Lower Stem	AISI 420 Stainless Steel
	AISI 316 Stainless Steel
9 Cap	Carbon Steel
10 O-Ring	NBR / Copper
11 Stopper Plate	Carbon Steel

\*Specification given are subject to changed without further notice.



**FIG V102**  
Lug type

**FIG V101**  
Wafer type



## DIMENSIONS

Unit : mm

Size (DN)	ØD1	ØD2	ØD3	ØD4	4-Ød	4-Ød1	A	B	C	D	E	L1	L2	L3	L4	L5	ØA	F	Weight(Kg)		
																			Free Shaft	Lever Op.	Gear Op.
25/32	31.5	85	42	55	18	6	145	92	12	33	9	100	28	245	125	105	152	68	1.0	1.3	6.2
40	38	110	42	55	18	6	155	98	12	33	9	100	28	245	125	105	152	68	1.0	1.3	6.2
50	50.8	125	50	65	18	7	205	126	16	43	9	180	28	245	125	105	152	68	2.1	1.3	7.3
65	65.1	145	50	65	18	7	218	133	16	46	9	180	28	245	125	105	152	68	2.5	2.8	7.7
80	78.5	160	50	65	18	7	244	150	16	46	9	180	28	245	125	105	152	68	3.0	3.3	8.2
100	102.0	180	70	90	18	10	295	170	19	52	11	284	28	245	125	105	152	68	4.8	5.2	10.0
125	125.1	210	70	90	18	10	321	181	25	56	14	284	28	245	125	105	152	68	6.6	7.0	11.8
150	150.1	240	70	90	22	10	349	196	25	56	14	284	28	245	125	105	152	68	7.5	7.9	12.7
200	199.8	295	102	125	22	12	428	238	30	60	17	350	38	400	185	153	300	85	13.8	14.9	26.1
250	248.3	355	102	125	26	12	487	258	39	68	22	350	38	400	185	153	300	85	21.2	22.3	33.5
300	298.3	410	102	125	26	12	574	300	39	78	22	350	38	400	185	153	300	85	31.5	42.6	45.9

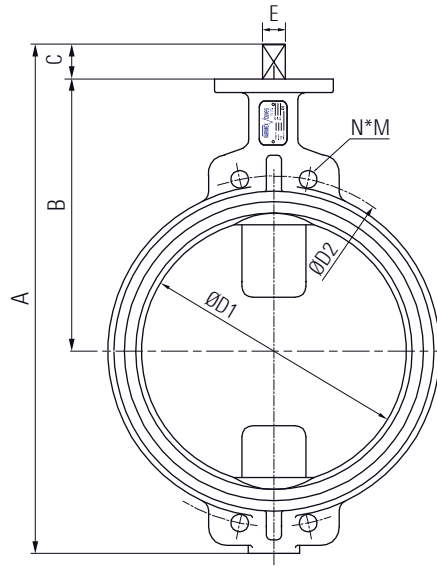
\*Specification given are subject to changed without further notice.

# BUTTERFLY VALVE WAFER / LUG

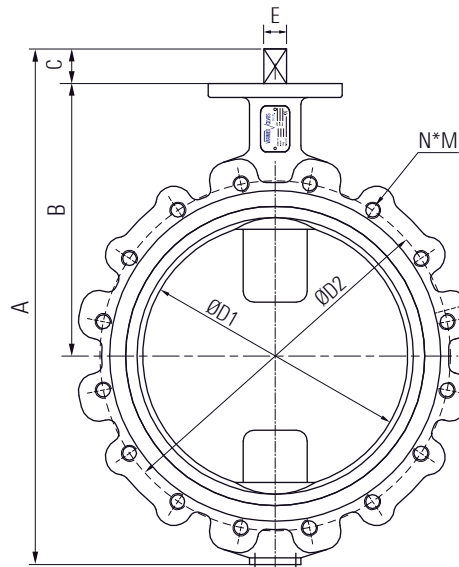
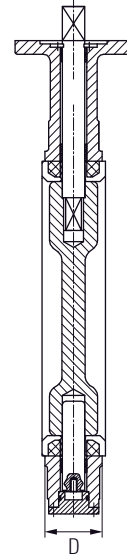
**VALVES**  
MALAYSIA

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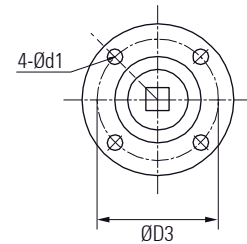
**VARIMEX** valves<sup>®</sup>  
CO. LTD.



Wafer Type



Lug Type



## DIMENSIONS

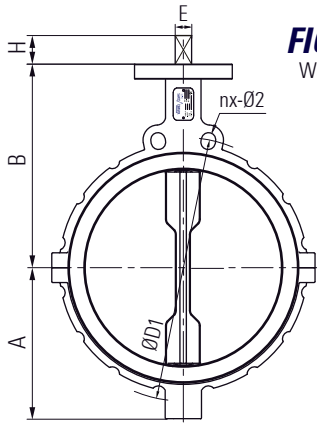
Unit : mm

Size (DN)	ØD1	ØD3	ØD4	PN10		PN16		4-Ød1	A	B	C	D	E	ØD3	Weight(Kg)			
				ØD2	nxM	ØD2	nxM								Wafer Type		Lug Type	
															Free Shaft	Gear Op.	Free Shaft	Gear Op.
350	333	102	125	460	16xM20	470	16xM24	12	680	358	45	78	36	F12	41.3	55.7	69.0	83.5
400	340	140	175	515	16xM24	525	16xM27	18	748	400	51	102	36	F14	61.0	93.0	90.0	125.0
450	440	140	175	565	20xM24	585	20xM27	18	788	422	51	114	36	F14	79.0	111.0	119.0	151.0
500	490	140	175	620	20xM24	650	20xM30	18	885	480	57	127	36	F14	128.0	162.5	179.0	213.5
600	593.0	165	210	725	20xM27	770	20xM33	23	1086	562	70	154	46	F16	188.0	236.0	253.0	301.0

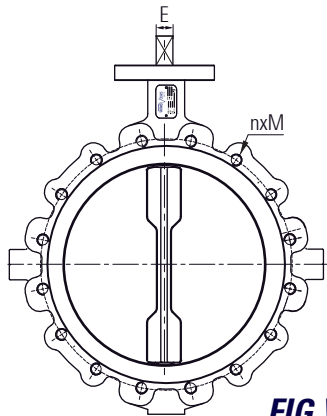
\* For larger size up to DN1200 also available on request

\*Specification given are subject to changed without further notice.

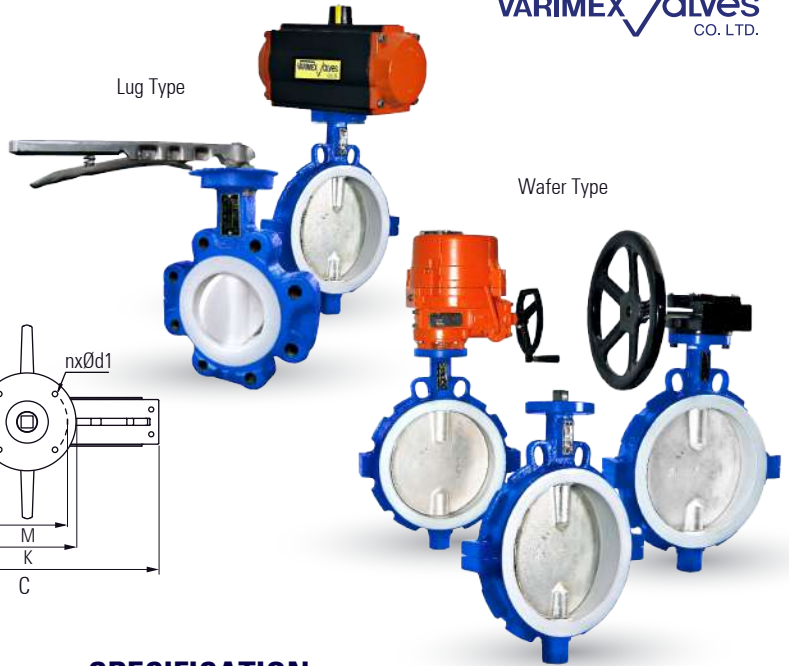
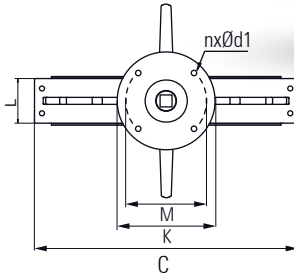
# PTFE SEATED BUTTERFLY VALVE WAFER / LUG



**FIG V108**  
Wafer Type



**FIG V109**  
Lug Type



## SPECIFICATION

Face To Face Dimension  
Standard Compliance  
End Connection

Pressure Rating

Temperature (Seat)

Top Flange Dimensions  
Actuation

Optional

BS EN 558-1 and API 609  
Conform to BS EN 593 and API 609  
Wafer type to suit DIN, BS, ANSI  
and JIS flanges  
16 Bar for DN50 to DN600  
10 Bar for DN700 to DN1200 (optional 16 Bar)  
-10°C to 80°C NBR, 15°C to 120°C EPDM  
-10°C to 150°C Viton, 45°C to 180°C PTFE  
ISO 5211  
Lever operated for DN50 to DN200  
(Gear operated on request)  
Gear operated for DN250 & above  
Pneumatic or electric actuated

## APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media  
(Refer to corrosion resistance table for valve materials selection).

## MATERIAL

Parts	Material
1 Body	GG25 Cast Iron
	GGG40 Ductile Iron
	AISI 304 Stainless Steel
	AISI 316 Stainless Steel
2 Disc	AISI 316 Stainless Steel
	AISI 304 + PTFE Lined
3 Seat	PTFE + EPDM (-30°C ~ +120°C)
	FULLY PTFE (-30°C ~ +180°C)
4/5/6 Bushing	PTFE
7 Upper Stem	AISI 316 Stainless Steel
8 Lower Stem	AISI 316 Stainless Steel
10 O-Ring	NBR
11 Disc Spring	Stainless Steel
12 Bolt	Stainless Steel

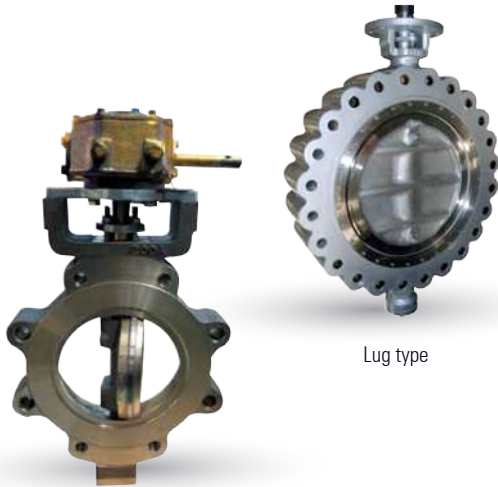
## DIMENSIONS

Unit : mm

Size (DN)	PN10		PN16		4-Ød1	A	B	C	H	L	E	K	M
	ØD1	nxM	ØD1	nxM									
50	125	4xM16	125	4xM16	7	77	135	130	16	43	9	77	50
65	145	4xM16	145	4xM16	7	91	138	150	16	46	9	77	50
80	160	8xM16	160	8xM16	7	95	138	164	16	52	9	77	50
100	180	8xM16	180	8xM16	10	121	149	188	19	56	11	92	70
125	210	8xM16	210	8xM16	10	125	173	220	25	56	14	92	70
150	240	8xM20	240	8xM20	10	150	187	252	25	60	14	92	70
200	295	8xM20	295	12xM20	12	182	225	305	30	68	17	115	102
250	350	12xM20	355	12xM24	12	226	247	370	39	78	22	115	102
300	400	16xM20	410	12xM24	12	260	285	430	39	56	22	140	125
350	460	16xM20	470	16xM24	12	275	335	470	45	60	36	140	125
400	515	16xM24	525	16xM27	12	305	410	565	51	68	36	197	140
450	565	20xM24	585	20xM27	12	338	440	620	51	68	36	197	140
500	620	20xM24	650	20xM30	12	375	495	695	57	78	36	197	140

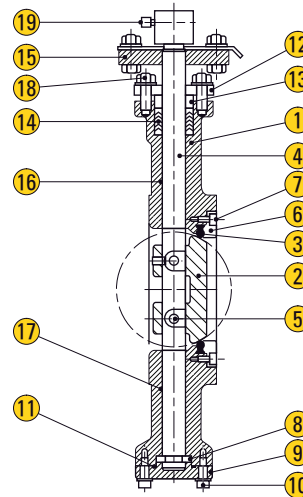
\*Specification given are subject to changed without further notice.

# HIGH-PERFORMANCE BUTTERFLY VALVE WAFER / LUG



Wafer type

Lug type



## SPECIFICATION

Face To Face Dimension  
Standard Compliance  
End Connection

Pressure Rating

Temperature (Seat)

Top Flange Dimensions  
Actuation

Optional

BS EN 558-1 and API 609  
Conform to BS EN 593 and API 609  
Wafer type to suit DIN, BS, ANSI  
and JIS flanges  
16 Bar for DN50 to DN600  
10 Bar for DN700 to DN1200 (optional 16 Bar)  
-10°C to 80°C NBR, 15°C to 120°C EPDM  
-10°C to 150°C Viton, 45°C to 180°C PTFE  
ISO 5211  
Lever operated for DN50 to DN200  
(Gear operated on request)  
Gear operated for DN250 & above  
Pneumatic or electric actuated

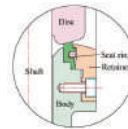
## APPLICATION

Suitable for water, steam, oil, gases and non-abrasive media  
(Refer to corrosion resistance table for valve materials selection).

## MATERIAL

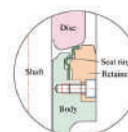
Parts	Material
1 Body	Ductile Iron, Cast Steel, Stainless Steel, AL-Bronze, Duplex
2 Disc	Cast Steel, Stainless Steel, AL-Bronze
3 Seat	SS. Steel, Teflon, Rubber
4 Stem	SS. Steel (304, 316, 316L, 630, 17-4PH, Monel)
5 Disc Pin	Stainless Steel
6 Retainer	Stainless Steel, Ductile Iron, Mild Steel
7 Retainer Bolt	Stainless Steel
8 Thrust Plate	Bronze, Stainless Steel
9 Bottom Cover	Stainless Steel, AL-Bronze
10 Bottom Bolt	Stainless Steel
11 Bottom Gasket	Teflon, Graphite
12 Packing Gland	SS. Steel
13 Gland Ring	Brass, Stainless Steel
14 Packing	Teflon, Graphite, Rubber
15 Top Flange	SS. Steel
16 / 17 Stem Bearing	Metaloplast, Stainless Steel
18 Bolt & Nut	Stainless Steel
19 Lever	Steel, Ductile Iron

## DESIGN FEATURES



**Soft Seated (-45°C ~ +180°C)**  
The RTFE seat ring is well-suited for extremely corrosive chemical solutions and high-temperature fluids of up to +210°C

**Applications**  
Pharmaceuticals, water, jet fuel, Saturated steam, chlorine, ammonia, natural gas vacuum, oxygen, nitrogen, air-conditioning chilled, exhaust gas, town gas, hot water. Abrasives, suspended solids, scaling mediums



**Metal Seated (up to 450°C)**  
The metal seat ring allows control of extremely high-temperature fluids, thereby replacing conventional gate valves, and ball valves.

**Applications**  
High temperature, low temperature, abrasives, fly ash, slurries, steam, air, combustion gas, exhaust gas, nitroten gas, sulfuric-acid gas.

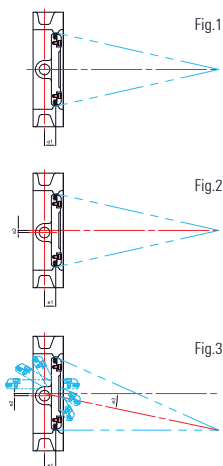


**Fire Seated (-45°C ~ +210°C)**  
• PTFE-metal-seat system  
- Bidirectional sealing and fire safe design.

• Bidirectional  
- The primary PTFE : seat ring will be replenished with a secondary metal back-up ring. This metal seat provides a mechanical load to energize the PTFE-seat. In combination with the line pressure a bidirectional sealing against the design pressure is obtained.

• Fire safe design  
- After a fire, when the PTFE-seat ring has burned away, the secondary metal seat gives bidirectional sealing. This sealing systems meets the fire test requirement

**Applications**  
Fire-safe installations, abrasives, slurries, steam



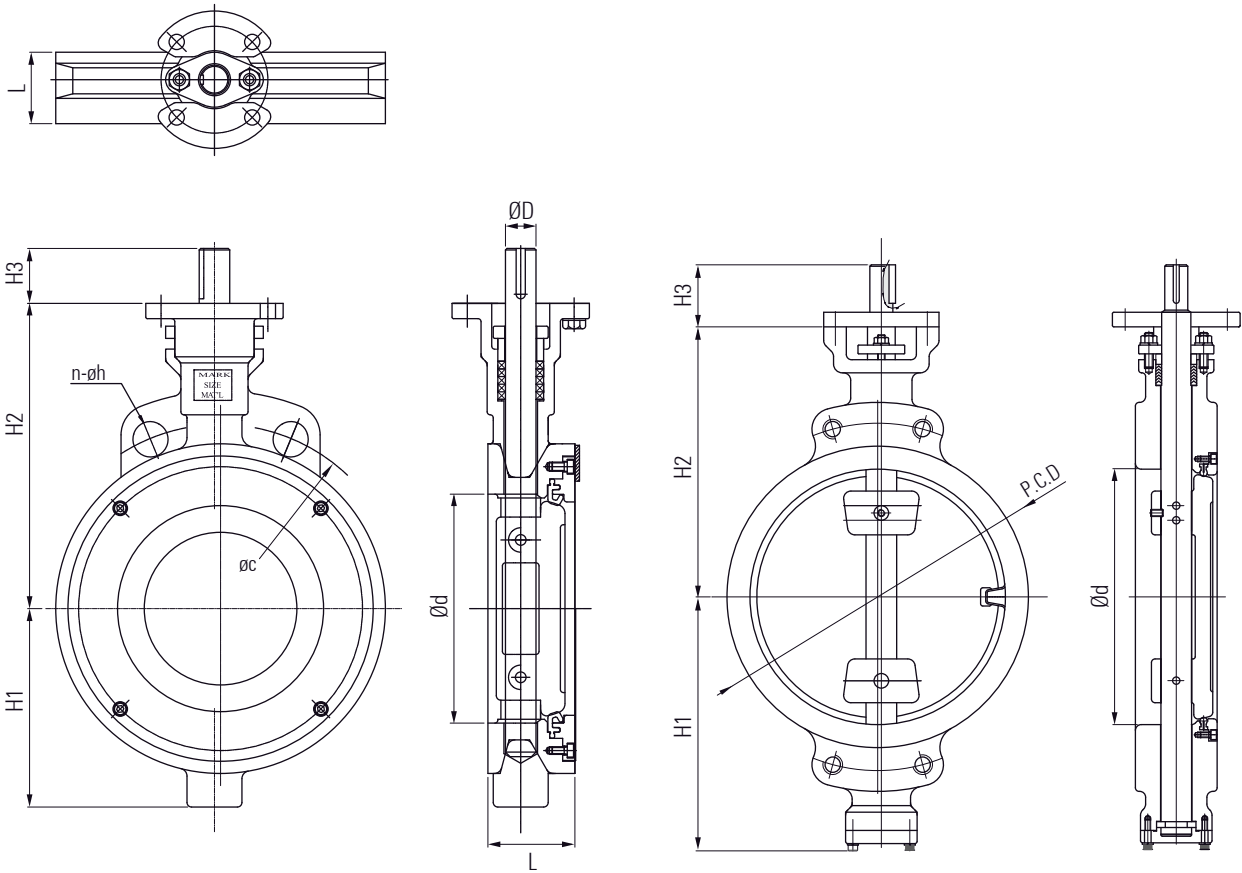
**SINGLE OFFSET (Fig.1)**  
The centre of rotation is moved back from the centreline of the valve disc. The seat and seal are designed conically and on centre. This design relies on a frictional, interference seal and so is applicable only to soft seated valves.

**DOUBLE OFFSET (Fig.2)**  
The centre of rotation is moved from the centerline of the valve body. The seat and seal design remains conical and on centre. This design again relies on a frictional, interference seal, but the length of rotation over which this friction occurs is reduced, allowing a larger range of process-resistant seat materials to be used. However these materials must be relatively soft or highly elastic to prevent "jamming".

**TRIPLE OFFSET (Fig.3)**  
The centreline of the cone is rotated away from the valve centreline resulting in an ellipsoidal profile and providing the third offset. With this geometry, seat seal interference is completely eliminated ensuring long sealing life. The result is a torque seated, process pressure aided FRICTIONLESS seal. The geometry allows the body seat to be used as the closed limit stop, aiding operator adjustment. The Triple Offset design is ideally suited to metal seated valves providing bubble-tight performance on high temperature, high pressure and firesafe applications.

\*Specification given are subject to changed without further notice.

# HIGH-PERFORMANCE BUTTERFLY VALVE WAFER TYPE



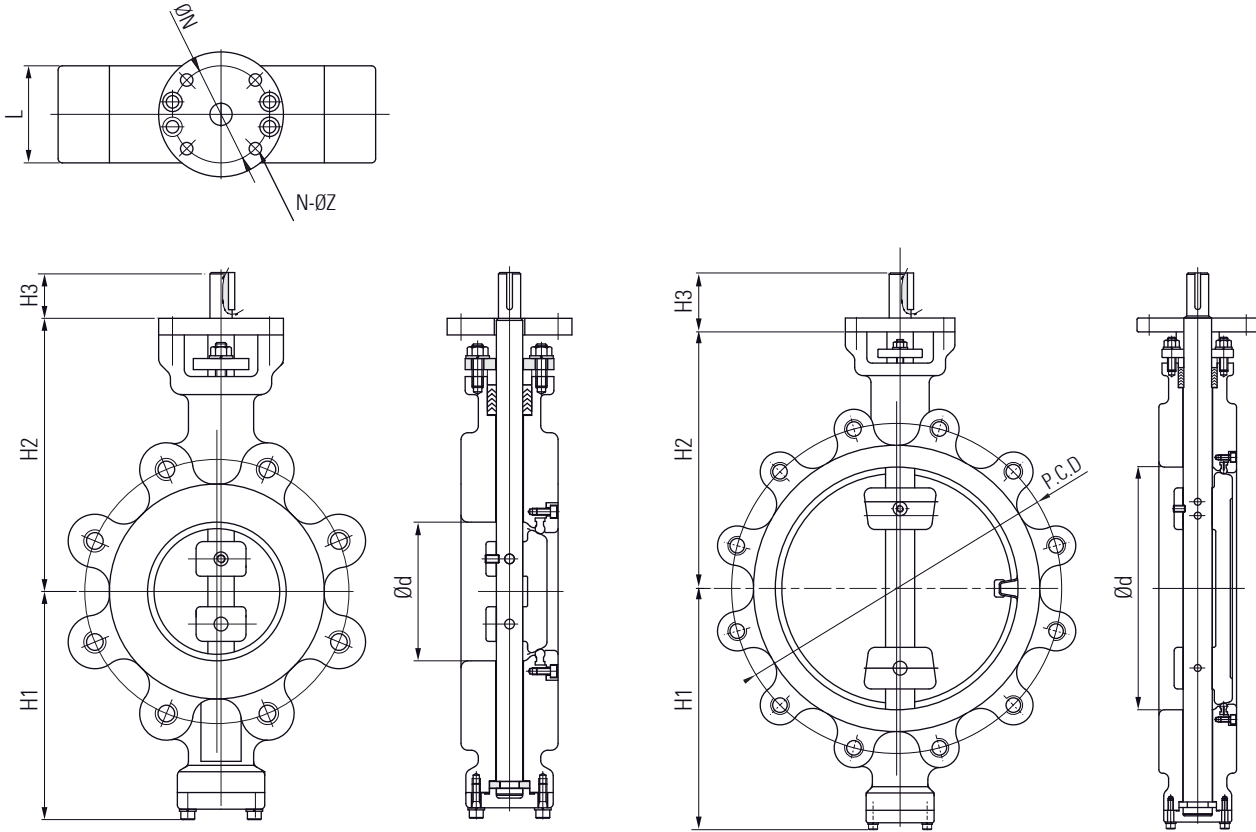
## DIMENSIONS

Unit : mm

Size		Ød	L		H1	H2	H3	ØD	Top Flan GE Type	JIS 10K			ANSI 150LB			BS 4504 PN10			Weight (approx) (Kg)
inch	mm		#150	#300						ØC	n	h	ØC	n	h	ØC	n	h	
2"	50	50	43	43	60	180	35	16	F 07	120	4	19	120.5	4	19	125	4	19	4.5
2.5"	65	65	46	46	70	180	35	16	F 07	140	4	19	139.5	4	19	145	4	19	5.5
3"	80	80	48	48	75	185	35	19	F 07	150	8	19	152.5	4	19	160	8	19	9.0
4"	100	100	54	54	100	200	35	19	F 07	175	8	19	190.5	8	19	180	8	19	10.0
5"	125	125	57	57	110	215	35	20	F 07	210	8	23	216.0	8	22	210	8	19	13.0
6"	150	150	57	59	130	235	35	20	F 07	240	8	23	241.5	8	22	240	8	23	17.0
8"	200	200	64	73	150	255	50	25	F 10	290	12	23	298.5	8	22	295	8	23	26.0
10"	250	250	71	83	245	300	50	32	F 10	355	12	25	362.0	12	25	350	12	23	40.0
12"	300	300	81	92	285	320	50	32	F 10	400	16	M22	432.0	12	25	400	12	23	68.0
14"	350	350	92	117	342	440	80	42	F 14	445	16	M22	476.0	12	29	460	16	M20	93.0
16"	400	400	102	133	380	460	80	42	F 14	510	16	M24	539.5	16	29	515	16	M24	121.0
18"	450	450	114	149	402	492	120	50	F 16	565	20	M24	578.0	16	32	565	20	M24	144.0
20"	500	500	127	159	432	552	120	50	F 16	620	20	M24	635.0	20	32	620	20	M24	160.0
22"	550	550	154	159	465	572	120	65	F 16	680	20	M30	692.2	20	32	-	-	-	228.0
24"	600	600	154	181	510	610	120	65	F 16	730	24	M30	749.5	20	35	725	20	M27	284.0

\*Specification given are subject to changed without further notice.

# HIGH-PERFORMANCE BUTTERFLY VALVE LUG TYPE



## DIMENSIONS

Unit : mm

Size		Ød	L		H1	H2	H3	ØD	Top Flange Type	JIS 10K			ANSI 150LB			BS 4504 PN10			Weight (approx) (Kg)
inch	mm		#150	#300						ØC	n	h	ØC	n	h	ØC	n	h	
2"	50	50	43	43	115	182	45	16	F 07	120	4	19	120.5	4	19	125	4	M16	4.5
2.5"	65	65	46	46	130	200	45	16	F 07	140	4	19	139.5	4	19	145	4	M16	5.5
3"	80	80	48	48	140	215	45	19	F 07	150	8	19	152.5	4	19	160	8	M16	9.0
4"	100	100	54	54	160	232	45	19	F 07	175	8	19	190.5	8	19	180	8	M16	10.0
5"	125	125	57	57	185	245	45	20	F 07	210	8	23	216.0	8	22	210	8	M16	13.0
6"	150	150	57	59	190	260	45	20	F 07	240	8	23	241.5	8	22	240	8	M20	17.0
8"	200	200	64	73	220	292	65	25	F 10	290	12	23	298.5	8	22	295	8	M20	26.0
10"	250	250	71	83	270	353	65	32	F 10	355	12	25	362.0	12	25	350	12	M20	40.0
12"	300	300	81	92	300	372	65	32	F 10	400	16	M22	432.0	12	25	400	12	M20	68.0
14"	350	350	92	117	342	440	80	42	F 14	445	16	M22	476.0	12	29	460	16	M20	93.0
16"	400	400	102	133	380	460	80	42	F 14	510	16	M24	539.5	16	29	515	16	M24	121.0
18"	450	450	114	149	402	492	120	50	F 16	565	20	M24	578.0	16	32	565	20	M24	144.0
20"	500	500	127	159	432	552	120	50	F 16	620	20	M24	635.0	20	32	620	20	M24	160.0
22"	550	550	154	159	465	572	120	65	F 16	680	20	M30	692.2	20	32	-	-	-	228.0
24"	600	600	154	181	510	610	120	65	F 16	730	24	M30	749.5	20	35	725	20	M27	284.0