

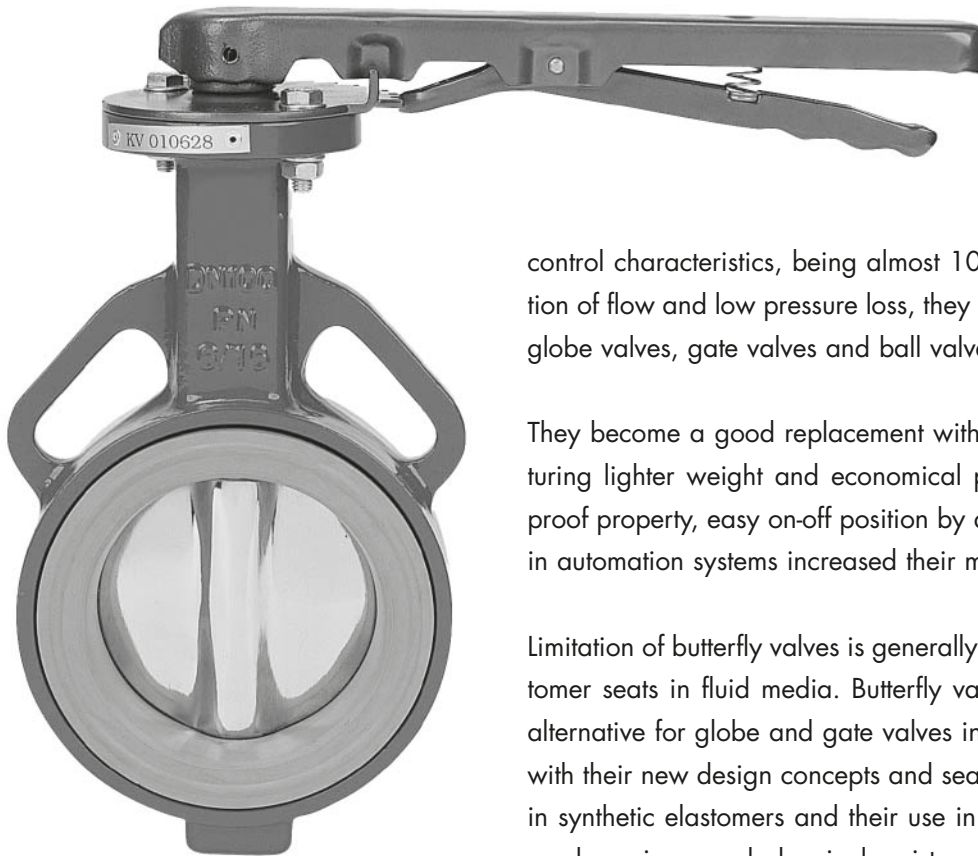


CMB CONCENTRIC BUTTERFLY VALVES

BUTTERFLY VALVES

Wafer type butterfly valves	ND 50-ND 300
Lug type butterfly valves	ND 50-ND 300
Wafer type butterfly valves	ND 350-ND 600
Lug type butterfly valve	ND 350-ND 600
Wafer type butterfly valve	ND 700-ND 1200
Double flange type butterfly valve	ND 50-ND 1200

BUTTERFLY VALVES CMB



Butterfly valves have become a process control instrument since they had been first introduced to the market in early 1960's. Due to their properties such as perfect

control characteristics, being almost 100% leakage proof in both direction of flow and low pressure loss, they have been a good alternative for globe valves, gate valves and ball valves as the application permits.

They become a good replacement within short time for gate valves featuring lighter weight and economical price, their reliability in leakage proof property, easy on-off position by quarter-turn and easy application in automation systems increased their market share.

Limitation of butterfly valves is generally set by the durability of their elastomer seats in fluid media. Butterfly valves recently have been a good alternative for globe and gate valves in the critical process applications with their new design concepts and seat materials. Recent developments in synthetic elastomers and their use in seat production for butterfly valves have increased chemical resistance and temperature range in the applications where butterfly valves are used.

Advantages of Butterfly Valves

- Smaller, lighter and economical
- On-off flow control capability at quarter turn
- Unaffected by precipitates
- Scratch proof: no metal to metal friction
- Easy installation for all actuators: Hand lever, pneumatic, hydraulic and electrical
- Low pressure loss
- Full tightness prevents jamming
- Easy replaceable seat

The Superiority of Butterfly Valves

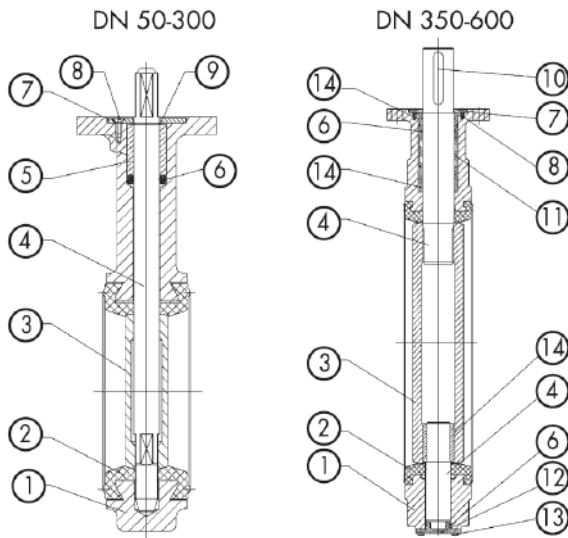
- Long neck top flange; long neck permits easy access to the control unit for insulated lines
- ND 350 - ND 600 valves; double stem regulated leak proof discs.
- Leakage proofing is superior.

Applications of Butterfly Valves

- Water treatment
- Sea water
- Food industry
- Steel industry
- Shipbuilding and offshore
- Waste treatment plants
- Chemical-petrochemical industries
- Cement industry
- Heating, ventilating and air conditioning
- Paper industry
- Power generation plants
- Agriculture irrigation
- General utilities

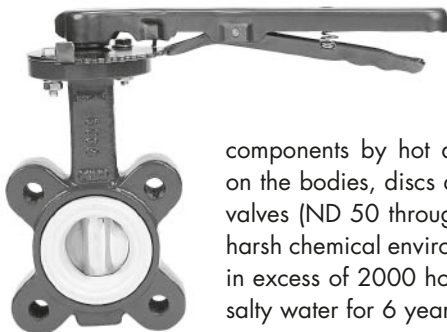
BUTTERFLY VALVES

ND 50 - ND 600 BUTTERFLY VALVES



Pos. No	Component	Material
1	Body	GJS400, GJL250, A216WCB, CF8M, Aluminium
2	Rubber Seat	EPDM, EPDM-High Temp., NBR (BUNA-N), VITON, SILICON, HYPALON.
3	Disc	A216WCB, GJS400, CF8M mirror polished bronze-aluminium
4	Stem	AISI 316, AISI 420
5	Bushing	PTFE, PVC, Bronze
6	O-ring	EPDM, BUNA-N, Viton, Silicon, Hypalon
7	Washer	5275JR
8	Bolt	M8.8, A2
9	Circlip	5275JR
10	Wedge	Ck 45
11	Spacer Sleeve	PVC
12	Cap	GJS400
13	Bolt	M8.8, A2
14	Bushing	Bronze

"RILSAN" INFORMATION



Rilsan is thermoplastic polyamide based coating applied on metal components by hot dipping. It is applied on the bodies, discs and levers of butterfly valves (ND 50 through ND 600). It resists harsh chemical environments. Slat pray test in excess of 2000 hours and immersion in salty water for 6 years provided corrosion-

free results. For sanitary applications Rilsan is inert to fungus growth, highly stain resistant. Due to the low coefficient of friction and high abrasion resistance the tests have shown that Rilsan-coated objects if deformed, indicated no sign of peeling or exposure to bare metal. Rilsan-coated products are chemically resistant to many kinds of alkalis, acids, grease, oil, commercial solvents, LPG, natural gas, petroleum products and weatherproof.

"RILSAN" PHYSICAL TEST RESULTS



- Surface hardness: Shore D 75
- Impact resistance: Steel ball weighting 20 N, falling from height of 50 cm. No fracture of coating and metal bared (Coating Thickness 300 µm)
- Abrasion resistance: At "Taber" abrasimeter (type CS 17, load 9,81 N) loss of weight after 1000 turns 5-8 mg. ("Excellent") 30-40 kV/mm (generally required satisfactory value: 18 kV/mm, min)
- Melting point: 184-186°C
- Inflammability: "Self extinguishing" acc. to ASTM D635
- (Long-run resistance test results in various media are available. Please require for special service)

SEAT TYPES AND FIELDS OF APPLICATION

Rubber Type	Composition	Temperature Limits	General Applications *	Other Limitations
EPDM	Ethylene Propylene Terpolimere	-30°C / +125°C	Water, Steam, Seawater, Brine, Esters, Ketones, Caustic Soda, Alkalis	Hydrocarbons, Oils, Fats, Solvents
EPDM-H.T. (High Temp.)	Ethylene Propylene Terpolimere	-40°C / +135°C	Hot water	Hydrocarbons, Oils, Fats, Solvents
NBR (Buna-N / Nitrile)	Copolymer of Butadiene and Acrylonitrile	-20°C / +100°C	Hydrocarbons, Natural Gas, Air, Oils, Petroleum Products, Gasoline (Aromatics 40% or more)	Solvent
CSM (Hypalon)	Poliethylene Chlorosulfine	-25°C / +120°C	Organic and Inorganic Acids, Corrosive Minerals	Mineral and Herbal Oils, Animal Fats, Ketones
FMP (Viton)	Fluoroelastomer	-15°C / +190°C	Acids, Oils, Fats, Hydrocarbons, Animal Fats	Steam, Hot Water, Ketones, Amines, Freon 22
MVQ (Silicon)	Polysiloxane	-60°C / +200°C	Food Industry, Base, Hot Water, Steam	Hydrocarbons, Acids
PTFE (Teflon)	Polytetra Fluoro Ethylene	-30°C / +190°C	Suitable for 95% of industrial chemicals	Not suitable for frictional medium

* Buyers are expected to make the final decision on suitability of seat materials for their specific applications.
Please consult manufacturer, especially in case of aggressive liquids, fuels, hydrocarbon base fluids and solvent containing substances.

Ti (Nm) TORQUE REQUIREMENT DUE TO DISC / SEAT INTERFERENCE (FRICTION)

Dimensions	DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000
Working pressure	0 Bar	11	16	20	30	46	75	140	200	250	310	480	880	1210	2210	2850	4465	6780	10050
	10 Bar	12	18	26	38	58	90	170	250	320	380	620	1080	1510	2810	3540	5535	8400	12550
	16 Bar	13	19	30	44	65	106	195	280	380	475	705	1220	1690	3135	3955	6180	9370	14050

KV*

DN	90°	80°	70°	60°	50°	40°	30°	20°
50	40	32	20	14	9	5	3	1,4
65	70	55	36	25	15	9	5	2,4
80	110	90	57	38	24	14	8	4
100	180	145	94	63	40	23	12	6
125	320	255	165	110	70	40	25	10
150	470	375	245	165	105	60	35	15
200	790	630	410	275	175	100	55	25
250	1250	1000	650	440	275	155	85	40
300	1800	1440	935	630	395	225	125	60
350	2400	1920	1250	840	530	300	170	80
400	3080	2465	1600	1080	680	390	215	105
450	4150	3320	2160	1450	915	520	290	140
500	5200	4160	2705	1820	1145	655	375	175
600	7100	5680	3690	2485	1560	895	495	240
700	10100	8075	5250	3030	1820	1000	500	200
800	13000	10400	6760	3900	2340	1300	660	260
900	16400	13120	8500	4920	2950	1640	825	330
1000	20700	16560	10765	6210	3725	2070	1040	415

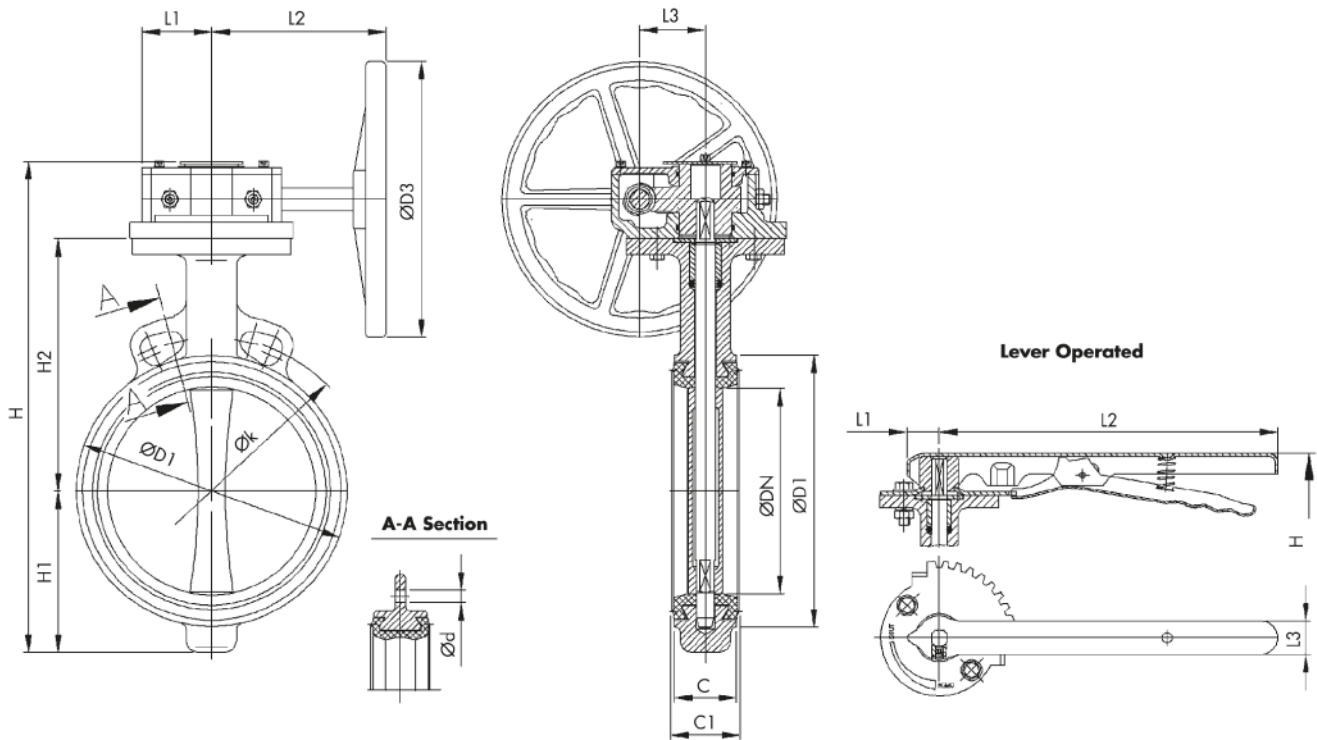
* Kv expresses flow rate in m³/h of water with 1 bar pressure drop across valve 100% open.

Kv/Cv Equivalence $Kv = 0,865 \times Cv$ $Cv = Kv / 0,865$

BUTTERFLY VALVES

ND 50 - ND 300 WAFER TYPE BUTTERFLY VALVES

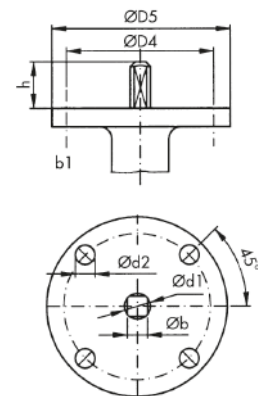
Gearbox Operated



Dimensions (mm)

Type	ND	32	40	50	65	80	100	125	150	200	250	300
Lever / Gearbox Operated	C	33	33	43	46	46	52	56	56	60	68	79.4
	C1	37	37	47	50	50	56.5	60.5	60.5	64.5	72.5	84.5
	ØD1	76	76	92	108.5	125	151	181	204	261	316	371
	H1	50	50	60	70	80	90	112	128	155	187	220
	H2	125	125	140	152	159	176	191	203	243	273	311
	PN 6	Ød	14	14	14	14	18	18	18	18	18	23
		Øk	90	100	110	130	150	170	200	225	280	335
	PN 10	Ød	18	18	18	18	18	18	23	23	23	23
		Øk	100	110	125	145	160	180	210	240	295	350
	PN 16	Ød	18	18	18	18	18	18	23	23	27	27
		Øk	100	110	125	145	160	180	210	240	295	355
	ANSI 150	Ød	-	16	19	19	19	23	23	23	25	25.4
		Øk	-	98.6	120.7	139.7	152.4	190.5	215.9	241.3	298.4	431.8
Lever Operated	H	207	207	232	255	270	298	335	363	439	502	573
	L1	25	25	25	25	25	25	25	25	45	45	45
	L2	260	260	260	260	260	260	260	260	350	350	350
	L3	26	26	26	26	26	26	26	26	35	35	35
	tl.kg	2.3	2.3	3	3.5	4	5.6	7.3	8.8	15.8	21.8	30.8
Gearbox Operated	ØD3	140	140	140	140	140	140	140	140	300	300	300
	H	231	231	256	279	295	322	359	386.5	466.5	529	600
	L1	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	67	67	67
	L2	130	130	130	143	30	130	130	130	270	270	270
	L3	40	40	40	40	40	40	38	40	65	65	65
	tl.kg.	3.5	3.5	4.7	5.7	5.7	7.2	8.6	9.7	18.7	24.7	33.7

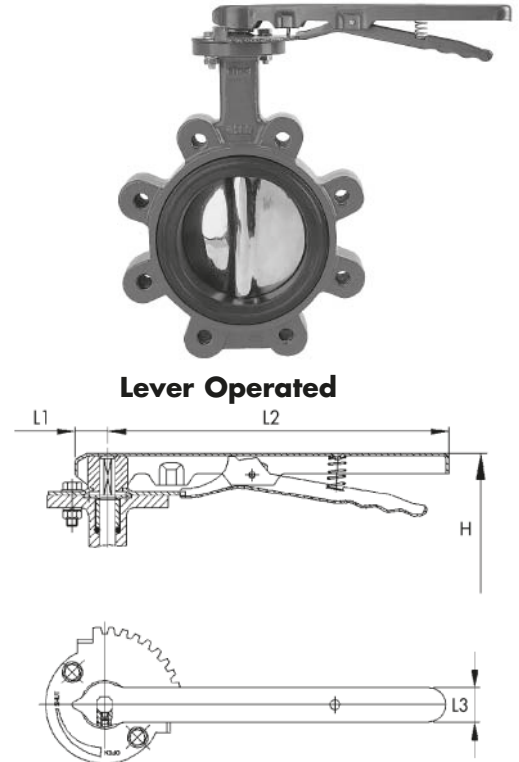
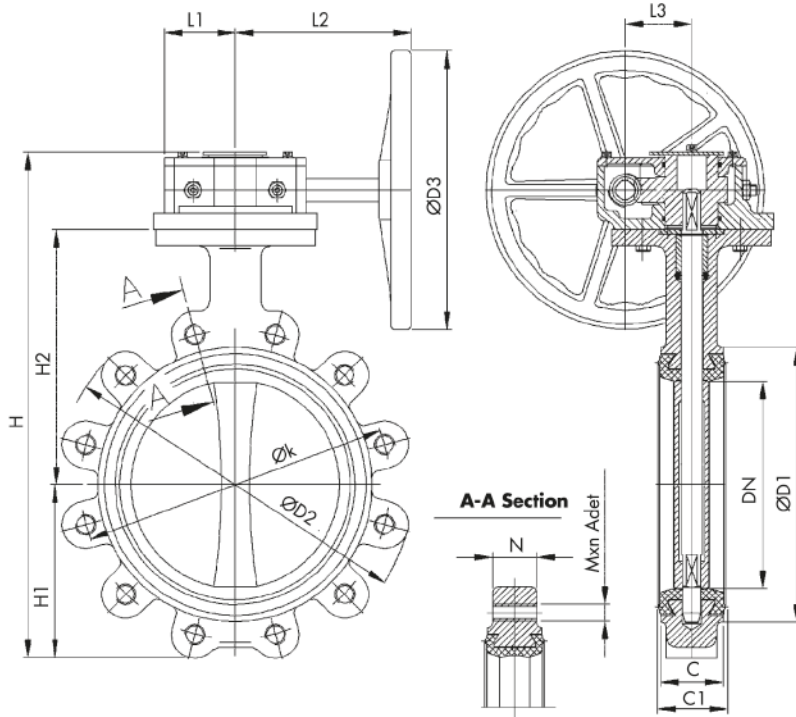
Top works



ND	50	65	80	100	125	150	200	250	300
b	11	14	14	14	14	17	19	19	25
Ød1	14,1	18,1	18,1	25,2	28,2	36,2	36,2		
Ød2	10	10	10	10	12/14	12/14	12/14		
ØD5	90	90	90	90	150	150	150		
ØD4	70	70	70	70	102/125	102/125	102/125		
ISO 5211	F7	F7	F7	F12	F10/F12	F10/F12	F10/F12		
h	22	22	22	32	32	32	32		

ND 50 - ND 300 LUG TYPE BUTTERFLY VALVES

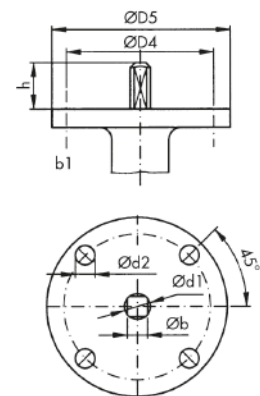
Gearbox Operated



Dimensions (mm)

Type	ND	50	65	80	100	125	150	200	250	300
Lever / Gearbox Operated	C	43	46	46	52	56	56	60	68	78
	C1	47	50	50	56.5	60.5	60.5	64.5	72.5	84.5
	ØD2	165	185	200	229	254	290	343	412	486
	ØD1	92	109	125	152	181	210	262	316	372
	H1	65	71	94	108	122	136	160	201	237
	H2	140	152	159	177	191	203	241	273	311
	N	37	40	40	42	46	46	48	58	64
	PN 6	M	M12	M12	M16	M16	M16	M16	M16	M20
		N	4	4	4	8	8	8	12	12
		Øk	125	145	160	180	210	240	295	350
	PN 10	M	M16	M16	M16	M16	M20	M20	M20	M20
		n	4	4	8	8	8	12	12	12
		Øk	125	145	160	180	210	240	295	355
	PN 16	M	16	16	16	16	20	20	24	24
		n	4	4	8	8	8	12	12	12
		Øk	125	145	160	180	210	240	295	355
	ANSI 150	M	5/8" 11 unc	5/8" 11 unc	5/8" 11 unc	5/8" 11 unc	3/4" 10 unc	3/4" 10 unc	7/8" 9 unc	7/8" 9 unc
		n	4	4	4	8	8	8	12	12
		Øk	120.7	139.7	152.4	190.5	215.9	241.3	298.4	361.9
Lever Operated	H	235	254	283	315	340	367	439	512	600
	L1	28	28	28	28	28	28	45	45	45
	L2	260	260	260	260	260	260	350	350	350
	L3	26	26	26	26	26	26	35	35	35
	ttl.kg.	4.1	4.7	6.5	7.8	10	12	19.8	30	44
Gearbox Operated	ØD3	140	140	140	140	140	140	300	300	300
	H	262	279	308	341	366	395	470	543	617
	L1	45	45	45	45	45	45	78	67	78
	L2	128	128	128	128	128	128	260	260	260
	L3	40	40	40	40	40	40	65	65	65
	ttl.kg.	5.8	6.4	8	9.5	11.7	13.7	22.7	32.7	47.7

Top works



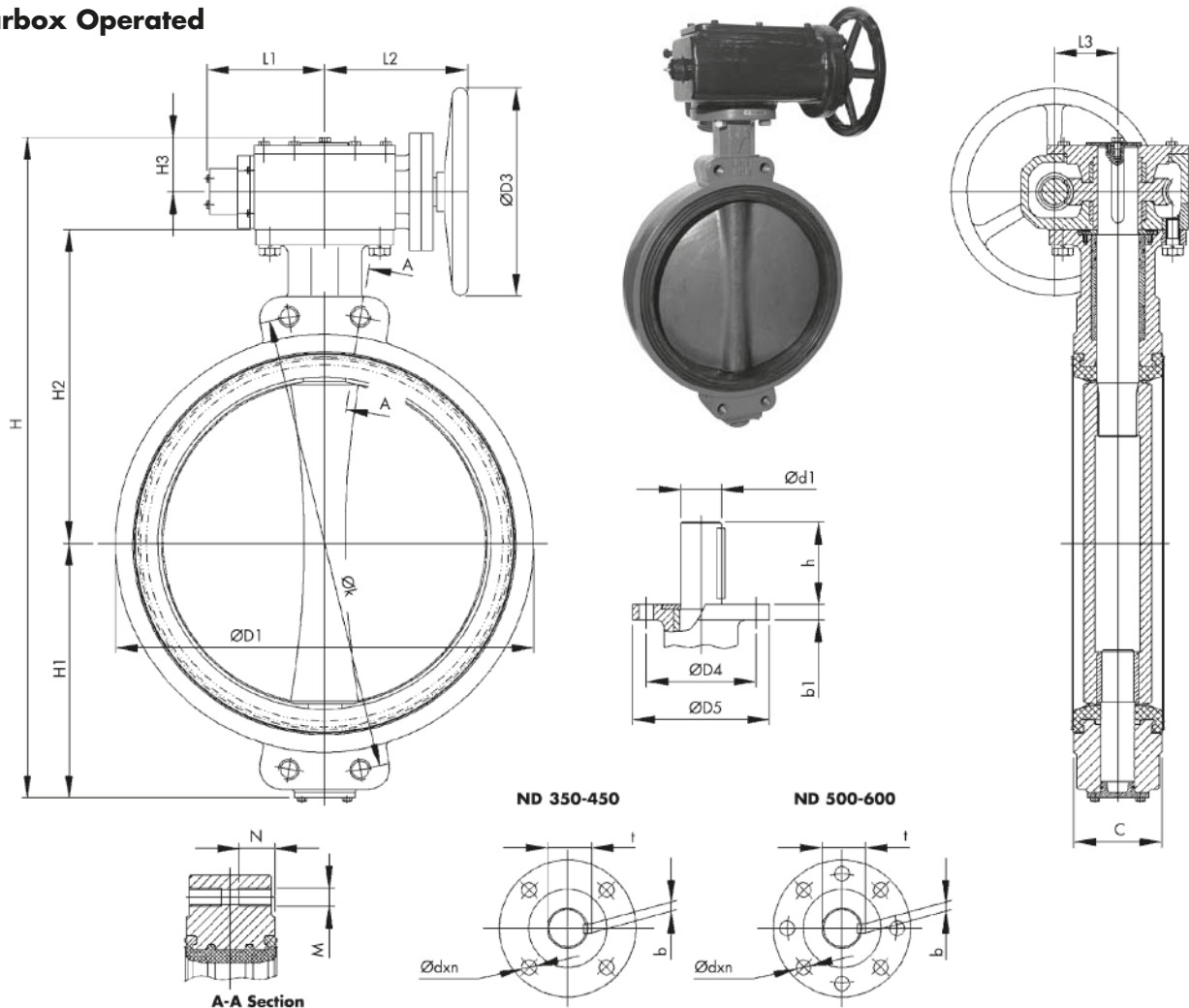
ND	50	65	100	125	150	200	250	300
b								
Bare shaft	11	14	14	19	22	27	27	
Gearbox lever	11	12	14	14	17	19	25	
Ød1	14,1	18,1	18,1	25,2	28,2	36,2	36,2	
	14,1	14,1	18,1	18,1	22,2	25,2	28	
Ød2	10	10	10	10	12/14	12/14	12/14	
ØD5	90	90	90	90	150	150	150	
ØD4	70	70	70	70	102/125	102/125	102/125	
ISO 5211	F7	F7	F7	F12	F10/F12	F10/F12	F10/F12	
h	22	22	22	32	32	32	32	

BUTTERFLY VALVES

ND 350 - ND 600 WAFER TYPE BUTTERFLY VALVES

(PN 10 / 16 - ANSI 150 SERIES)

Gearbox Operated



Dimensions (mm)

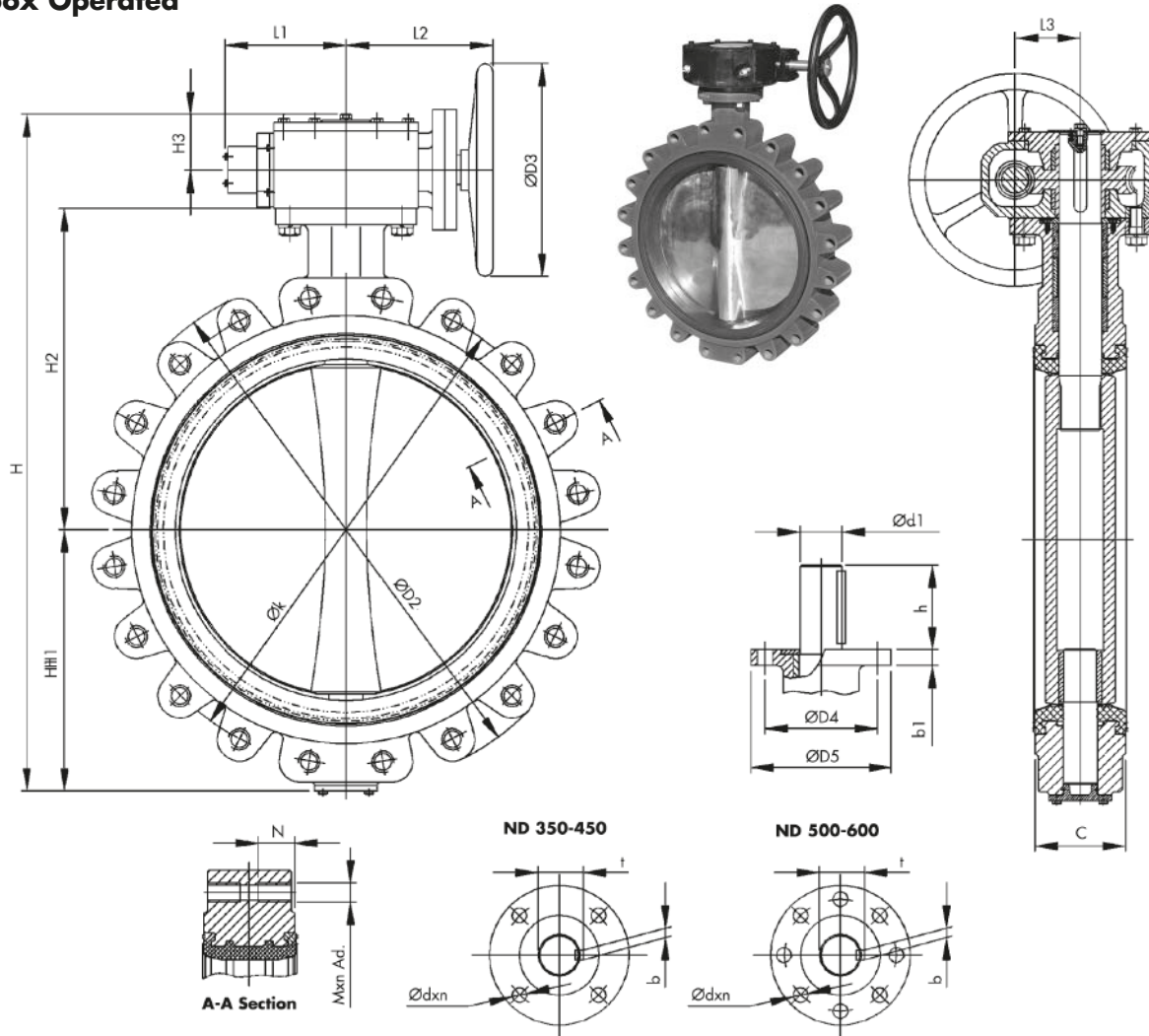
ND	H1	H2	H3	H	L1	L2	L3	ØD1	ØD3	Ød1	Ødxn	ØD4	ISO5211	ØD5	h	b	b1	t
350	267	350	59	727	117.5	305	103.5	433	500	42	19X4	140	F14	175	90	12	20	45
400	302	375	59	787	117.5	305	103.5	484	500	48	19X4	140	F14	175	90	14	23	51.5
450	325	400	59	835	117.5	305	103.5	534	500	52	19X4	140	F14	175	90	16	20	56
500	362	450	70	942	127	370	130	589	600	58	23X8	165	F16	210	90	18	25	62
600	422	510	70	1062	127	370	130	690	600	68	23X8	165	F16	210	90	20	25	72.5

ND	C	Øk			M			N			Weight (Kg)	
		PN 10	PN 16	ANSI 150	PN 10	PN 16	ANSI 150	PN 10	PN 16	ANSI 150	Without Gearbox	With Gearbox
350	78	460	470	476.2	M20	M24	1" 8UNC	38	38	38	54	31
400	102	515	525	539.7	M24	M27	1" 8UNC	40	42	42	76	31
450	114	565	585	577.8	M24	M27	1 1/8" 7UNC	40	40	40	93	31
500	127	620	650	635	M24	M30	1 1/8" 7UNC	40	45	45	133	44
600	154	725	770	749.3	M27	M33	1 1/4" 7UNC	55	55	55	198	44

ND 350 - ND 600 LUG TYPE BUTTERFLY VALVE

(PN 10 / 16 - ANSI 150 SERIES)

Gearbox Operated



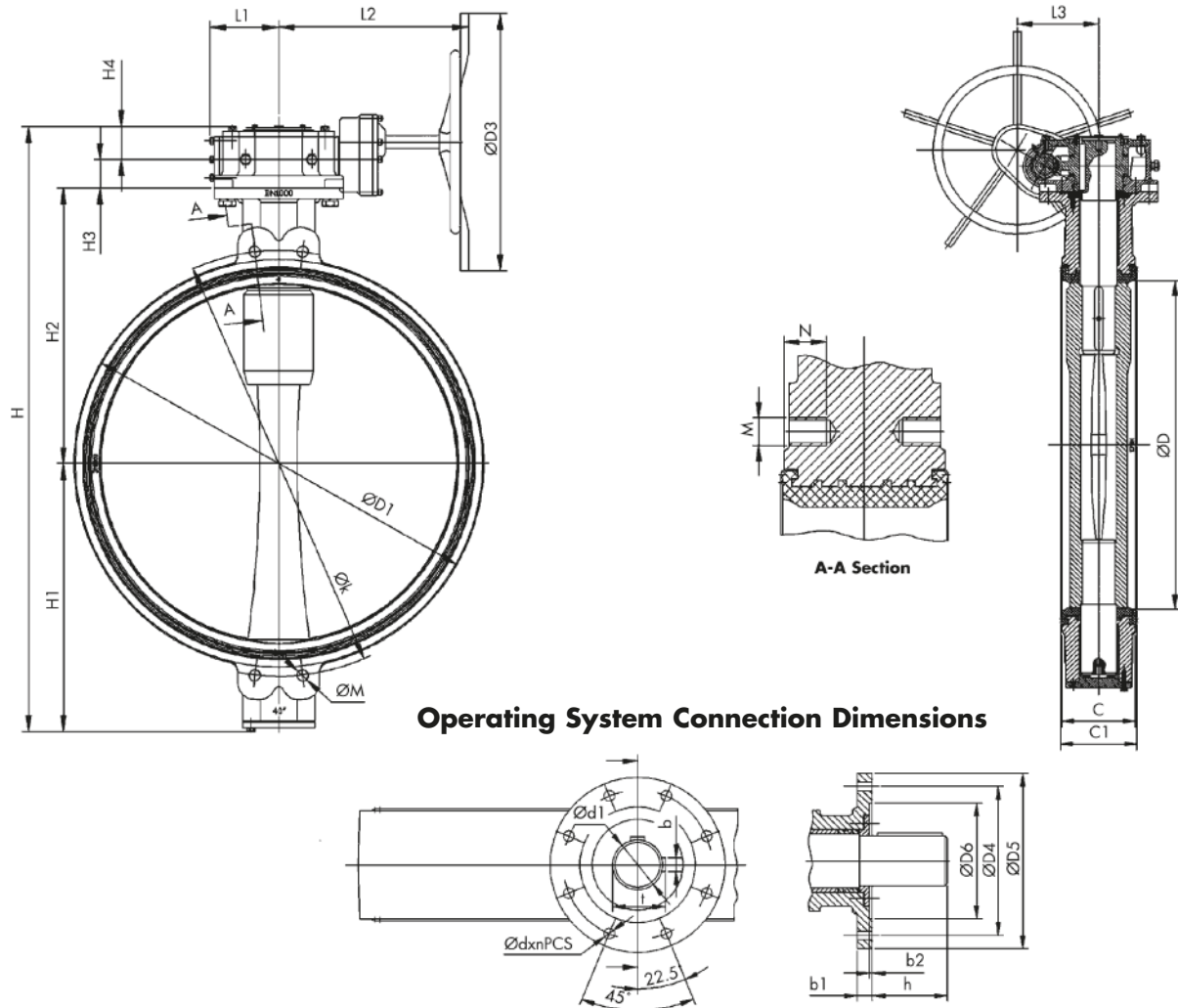
Dimensions (mm)

ND	H1	H2	H3	H	L1	L2	L3	ØD2	ØD3	Ød1	Ødxn	ØD4	ISO5211	ØD5	h	b	b1	t
350	271	350	55	731	120	305	105	532	500	42	19X4	140	F14	175	90	12	20	45
400	302	375	55	787	120	305	105	596	500	48	19X4	140	F14	175	90	14	23	51.5
450	325	400	55	835	120	305	105	634	500	52	19X4	140	F14	175	90	16	20	56
500	362	450	65	942	150	370	125	710	600	58	23X8	165	F16	210	90	18	25	62
600	422	510	65	1062	150	370	125	830	600	68	23X8	165	F16	210	90	20	25	72.5

ND	C	Øk			n			M			N			Weight (Kg)	
		PN 10	PN 16	ANSI 150	PN 10	PN 16	ANSI 150	PN 10	PN 16	ANSI 150	PN 10	PN 16	ANSI 150	Without Gearbox	With Gearbox
350	78	460	470	476.2	16	16	12	M20	M24	1" 8UNC	38	38	38	71	31
400	102	515	525	539.7	16	16	16	M24	M27	1" 8UNC	40	42	42	107	31
450	114	565	585	577.8	20	20	16	M24	M27	1 1/8" 7UNC	40	40	40	140	31
500	127	620	650	635	20	20	20	M24	M30	1 1/8" 7UNC	40	45	45	186	44
600	154	725	770	749.3	20	20	20	M27	M33	1 1/4" 7UNC	55	55	55	267	44

BUTTERFLY VALVES

ND 700 - ND 1200 WAFER TYPE BUTTERFLY VALVE



Dimensions (mm)

Valve Size															Stem			
inch	mm	C	C1	ØD	ØD1	ØD3	H	H1	H2	H3	H4	L1	L2	L3	Ød1	t	b	h
28	700	165	172	673	794	700	1240	533	560	70	88	174	466	209	70	74.6	20	150
32	800	190	197	773	905	700	1369	597	625	70	88	174	466	209	80	85.5	22	150
36	900	203	211	873	1007	800	1522	662	690	80	90	187	516	242	90	95.3	25	150
40	1000	216	224	973	1116	800	1650	730	750	80	90	187	516	242	100	106.1	28	150
48	1200	254	262	1173	1330	800	1933	870	870	101	92	187	540	292	120	126.9	32	190

Dimensions		Top works							PN 10			PN 16			ANSI 150			Weight (Kg)	
inch	mm	ØD6	ØD4	ØD5	Ød	n	b1	b2	Øk	M	N	Øk	M	N	Øk	M	N	Without Gearbox	With Gearbox
28	700	201	254	300	18	8	25	6	840	M27	41	840	M33	38	863.6	11/4" 8UNC	33	313	387
32	800	201	254	300	18	8	25	6	950	M30	48	950	M36	48	977.9	11/2" 8UNC	43	451	525
36	900	231	298	350	22	8	30	6	1050	M30	45	1050	M36	43	1085.8	21/2" 8UNC	38	-	-
40	1000	231	298	350	22	8	30	6	1160	M33	48	1170	M39	48	1200.2	31/2" 8UNC	41	752	850
48	1200	261	356	415	32	8	35	5	1380	M36	50	1390	M45	48	-	-	-	-	-