eko1000 & eko1100
PN 16 WAFER & LUG TYPE BUTTERFLY VALVES

DESIGN STANDARDS	
Valve Design	BS EN 593
Connection	PN 10&16 Wafer acc to EN 1092-2
Face to Face Dimensions	EN 558-1
Valve Test	EN 12266-1
Marking	EN 19
Top Flange	ISO 5211

GENERAL FEATURES

- Body: EN GJL 250 Cast Iron, Ductile Iron
- Disc: Stainless Steel 304, Stainless Steel 316, Aluminum Bronze
- Stem: Stainless Steel 420, Stainless Steel 316
- Powder Epoxy Coating (Min 250 Microns), Liquid Epoxy for high temperatures
- Seat Options: EPDM, VITON or NBR

TECHNICAL ADVANTAGES

- Very high flow values with 2 pieces stem structure
- Inner and outer surface of the valve is powder epoxy coated
- 3 O-rings on both stems for advanced sealing
- Easy gasket replacing
- Lower torque values (can easily be operated with Pneumatic or Electrical actuators)

REMARKS

EKOVAL 1000 Series Butterfly Valves can be used as throttling valves with gearbox

For every size gearbox can also be supplied by Ekoval Co.

Ekoval 1000 Model Wafer type butterfly valves can be mounted between PN 10 and 16 flanges

Ekoval 1100 Model Lug type butterfly valve can only be mounted between PN 16 flanges

APPLICATIONS

Application fields and temperatures of eko1000 series valves vary according to the selection of the seat.

Please choose and order the seat material considering the requirements of application.

PLEASE NOTE: Items written in grey are optional and can be supplied upon request.

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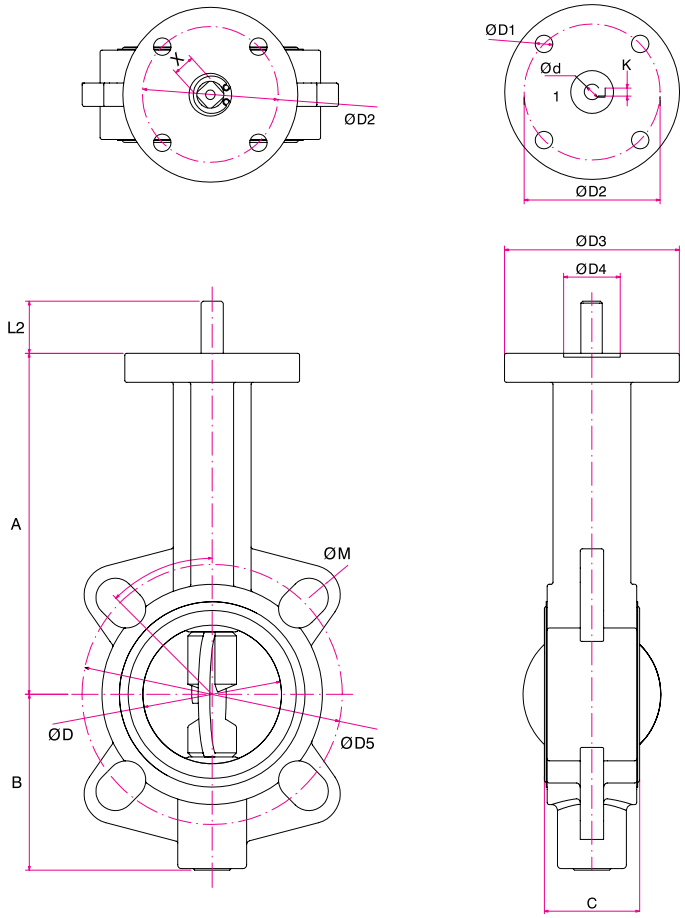
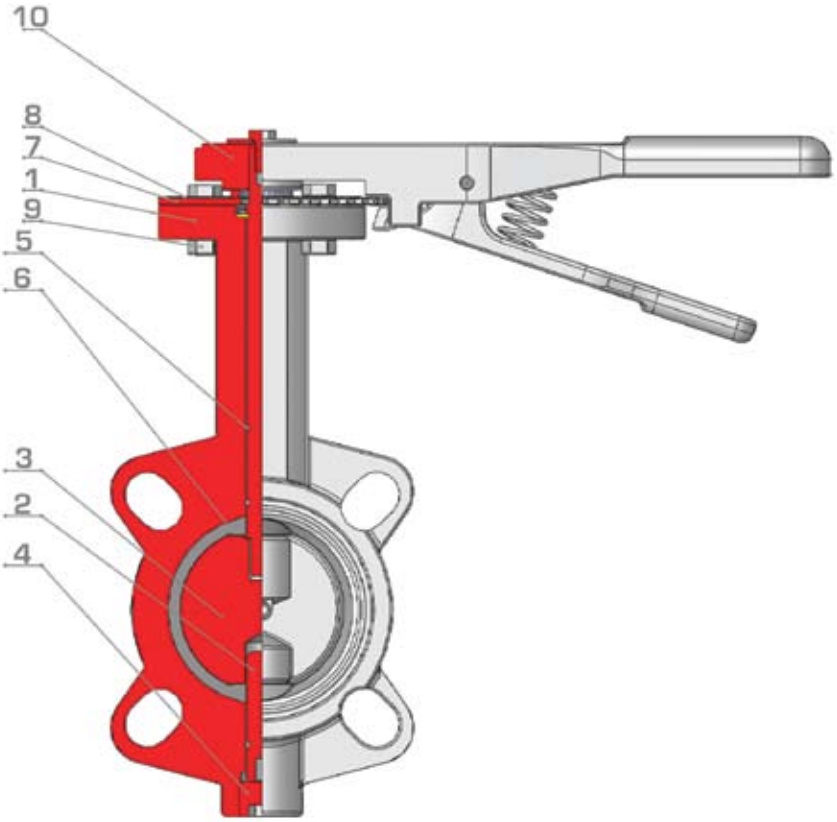
TECHNICAL DRAWING AND DIMENSIONS



DIMENSION TABLE

DN	A	B	C	ØD	n-ØD1	ØD2	ØD3	ØD4	WAFER		LUG		X	L2	Ød1	K	a	Weight	
									ØD5	ØM	ØD5	ØM						WAFER	LUG
40	138	75	33	45	4-9	70	90	22	110	19	110	M16	11x11	30	-	-	45°	3.60	3.80
50	161	80	43	55	4-9	70	90	22	125	19	125	M16	11x11	30	-	-	45°	4.5	4.80
65	175	91	46	70	4-9	70	90	22	145	19	145	M16	11x11	30	-	-	45°	5.4	5.60
80	181	95	46	80	4-9	70	90	22	160	19	160	M16	11x11	30	-	-	22.5°	5.6	8.90
100	200	115	52	101	4-9	70	90	24.5	180	19	180	M16	14x14	30	-	-	22.5°	6.9	8.50
125	215	134	56	126	4-9	70	90	29.5	210	19	210	M16	14x14	30	-	-	22.5°	10	10.56
150	225	138	56	151	4-9	70	90	29.5	240	23	240	M20	17x17	30	-	-	22.5°	12	12.50
200	241	174	60	200.5	4-11	102	125	35.5	295	23	295	M20	17x17	30	-	-	15°	14.5	17.20
250	296	198	68	250	4-11	102	125	39.5	355	28	355	M24	22x22	30	-	-	15°	32.3	36.00
300	336	234	78	300.5	4-11	102	125	41	410	28	410	M24	22x22	30	-	-	15°	44.5	44.60
350	370	284	78	349	4-13	140	150	72	470	28	470	M24	22x22	46	-	-	11.25°	66	-
400	400	310	88	400	4-18	140	175	73	525	31	525	M27	27x27	46	-	-	11.25°	104	-
450	422	328	112	445	4-18	140	198	100	585	31	585	M27	-	50	38	10	9°	132	-
500	490	390	127	500	4-22	165	210	135	650	34	650	M30	-	48	48	14	9°	157	-
600	575	456	154	600	4-22	165	210	135	770	37	770	M33	-	48	48	14	9°	222	-
700	630	541	165	695	8-18	254	300	-	840	37	840	M33	-	55	60	20	8°	380	-

PRODUCT DATA



PARTS AND MATERIALS

No.	Part Name	Material
1	Body	EN-GJL 250 Cast Iron
2	Stem	Stainless Steel 420
3	Disc	Stainless Steel 304
4	Bottom Screw Gland	Stainless Steel 420
5	O-Rings	EPDM
6	Seat	EPDM (NBR and VITON are optional)
7	Limiting Plate	St37 Steel
8	Bolts	Galvanized Steel
9	Nuts	Galvanized Steel
10	Hand Lever	St 27 Steel / Alloy Iron

TORQUE VALUES

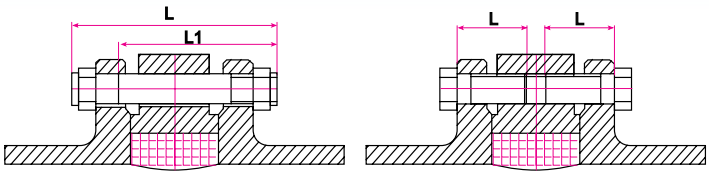
NM	1.6MPa	
	Wet	Dry
DN 40	19	21
DN 50	25	27
DN 65	41	49
DN 80	55	65
DN 100	63	79
DN 125	75	103
DN 150	92	111
DN 200	155	192
DN 250	215	278
DN 300	290	517
DN 350	670	1040
DN 400	1110	1715
DN 450	1152	1821
DN 500	1330	2145
DN 600	2152	3471

Average Number of Open-Close Cycles

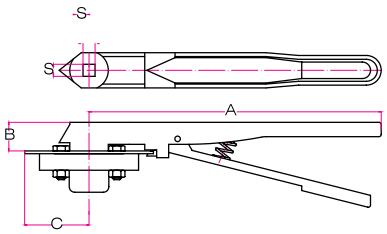
PN	10	16
40	5100	4250
50		
65		
80		
100		
125	3950	3500
150		
200	3450	3000
250		
300		
400	3000	2500
450	2500	1900
500	1800	1500
600	1500	1400

Guaranteed Number of Open-Close Cycles

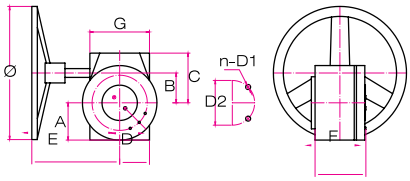
PN	10	16
40	1800	1500
50		
65		
80		
100		
125	1400	1250
150		
200	1200	1000
250		
300		
400	875	900
450	900	700
500	700	600
600	600	550



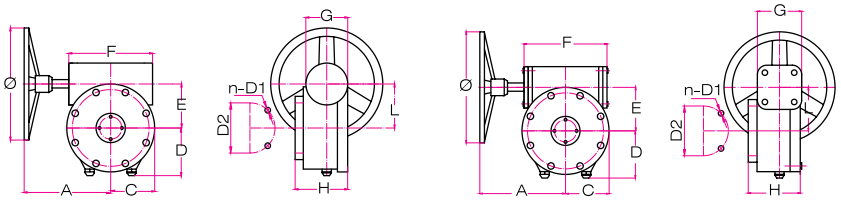
		WAFER TYPE			LUG TYPE	
		STUD			BOLT	
DN	DIAMETER	NUMBER OF STUDS	STUD DIAMETER xL1	STUD LENGTH	NUMBER OF BOLTS	BOLT DIAMETER xL
40	M 16	4	M 16 X 100	120	4x2	M 16 X 30
50	M 16	4	M 16 X 110	130	4x2	M 16 X 40
65	M 16	4	M 16 X 120	140	4x2	M 16 X 45
80	M 16	4	M 16 X 120	140	8x2	M 16 X 45
100	M 16	4	M 16 X 130	150	8x2	M 16 X 50
125	M 16	4	M 16 X 130	150	8x2	M 16 X 50
150	M 20	4	M 20 X 140	165	8x2	M 20 X 50
200	M 20	4	M 20 X 150	175	12x2	M 20 X 55
250	M 24	4	M 24 X 160	185	12x2	M 24 X 60
300	M 24	4	M 24 X 170	200	12x2	M 24 X 65
350	M 24	4	M 24 X 170	200	16x2	M 24 X 65
400	M 27	4	M 27 X 200	230	16x2	M 27 X 75
450	M 27	4	M 27 X 220	254	20x2	M 27 X 80
500	M 30	4	M 30 X 260	294	20x2	M 30 X 90
600	M 30	4	M 33 X 290	334	20x2	M 33 X 100



DN mm	A	B	C	S	Weight
40-80	263	26	55	11x11	1.08
100-125	263	26	55	14x14	1.27
150	263	26	55	17x17	1.25
200	263	26	70	17x17	1.70

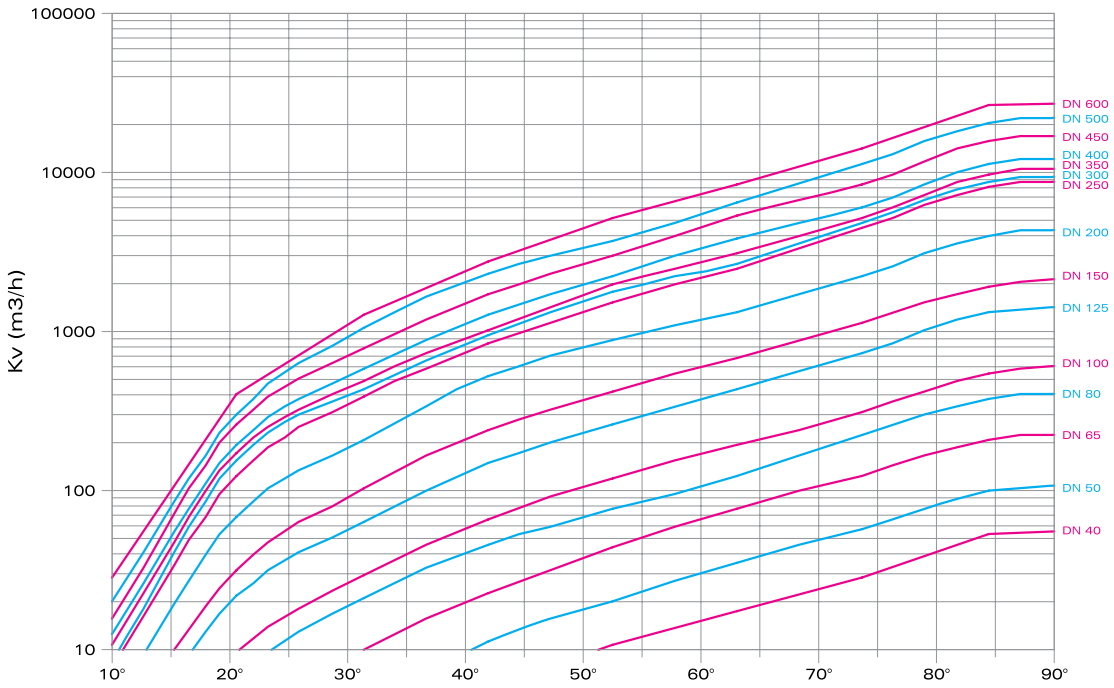


DN mm	A	B	C	D	E	F	G	Ø	D2	n-D1	Weight
250	76	76	102	76	205	82	121	298	102	4-M10	8.07
300	80	82	115	60	200	95	138	298	102	4-M10	11.9
350	80	82	115	60	200	95	138	298	125	4-M12	11.9



DN mm	A	C	D	E	F	G	H	L	Ø	D2	n-D1	Weight
400	245	125	100	125	200	72	122	132.5	385	140	4-M16	24.67
450	107.5	100	107.5	180	60	60	123	-	-	-	4-M16	24.67
500-600	211	132.5	112.5	132.5	230	83	122	132.5	385	165	4-M20	33.6
700	183	96.5	95	95	190	110	418	-	380	250	8-M16	43.2

KV GRAPH



KV									
DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
40	0.06	1.39	2.93	5.63	10.73	17	27	51	56
50	0.07	1.85	4.38	10.98	20.01	34	55	99	105
65	0.14	3.57	9.95	22.27	42.77	76	122	207	226
80	0.92	6.75	20.43	44.49	74.35	124	223	365	417
100	1	9	29	66	118	191	310	538	617
125	2	22	64	148	256	429	723	1334	1424
150	3	31	102	241	417	665	1116	1905	2212
200	4	68	207	528	878	1318	2202	4011	4391
250	8	122	387	849	1507	2417	4485	8149	9001
300	8	151	430	930	1750	2607	4831	8718	9756
350	11	169	484	1011	1973	3118	5219	9788	10421
400	12	192	577	1257	2203	3773	5948	11397	12146
450	15	259	789	1707	2931	5389	8272	15570	16863
500	20	302	1064	2301	3757	6524	11201	20123	22795
600	28	406	1263	2721	5105	8484	13842	26775	27502

KV- The rate of flow of water in cubic meter per hour that will generate a pressure drop of 1 bar across the valve.

$$KV = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$$

Q : Flow Rate m^3/h
G : Specific Gravity of Liquid
ΔP : Pressure Drop
C_V : 1.17 KV

GENERAL INSTRUCTIONS AND INSTALLATION

SEAT APPLICATIONS

NBR
- -20˚C to +90˚C
- Good resistance to petroleum, hydrocarbons, fuels.
- Widely used with most oils, hydraulic fluids, alcohol.
- Poor resistance to sunlight, weathering and ozone.
- General Applications, Hydocarbon Service, less than 40% Aromatics, Food&Beverage Applications.

VITON
- -20˚C to +200˚C
- Excellent temperature and chemical resistance.
- Excellent mechanical and physical properties.
- Low compression set and low gas permeability.
- All Aromatic, Aliphatic and Halogenated Hydrocarbons.
- Not for Ketones, Ester or in combination with Hot water and oil.

EPDM
- -20˚C to +130˚C
- Resistance to sunlight, weathering and ozone.
- Poor resistance topetrolium oils and fuel.
- Good heat and compression set resistance.
- Less than 10% acids, inorganic and organic alcohols, alkaline salts and solutions, dry bulk, hot-cold water, steam.
- Not suitable for Hydrocarbons.

Handle valve with precaution
Take care of the coatings and protections. Do not drag the valves, avoid shocks and frictions which may cause starters of corrosion.

Store the equipment under good conditions
The valves must be protected from:
Humidity and rain to avoid corrosion;
Wind, sand to avoid the penetration of sold particles whose presense is catastrophic for the tightness;
Sunshine and heat; they damage the coatings, particularly harmful for plastic valves and fittings very sensitive to the ultraviolet.
Valves with rubber seat must always be stored half-opened.
The aparatuses with metal seat must be stored closed (except particular specifications) to avoid the penetration of the particles in internal volumes.
Ball valves must be stored in open position.
Preserve the aparatuses with their plastic caps which should be taken away when mounting the valves.

Clean the pipes
Rinsing the pipes is essential (water, air, steam if compatible) before testing and starting of the installations. It is critical to eliminate all the particles and several objects which could remain in the pipes and especially welding residues which could definitively damage the valve seat.

Clean the gasket seat
Be sure that the gasket seats are perfectly clean and free from stripes.

Align pipings
Control piping alignment. For correcting bad alignments do not rely on the valves: this may cause leakage and operating defect or even of breaking.

Avoide Water Hammers
A rise in pressure of extreme brutality can be generated by a water hammer. A water hammer can cause the damage: butterfly valve disc splits, destroyed various aparatus, axes deformed. There are very varied causes of the water hammers but generally: the starting of pump and the sudden closing of valve.

Respect assembly direction
Certain valves are one-way (non-return valve, knife gate valves, etc.)
Take care of an assembly in conformity with the arrow direction or of the instructions of assembly.

Use support for heavy valves
In certain cases, valves of large lenght, heavy servo-motor, it can be essential to provide for supports which will avoid tensions prejudicial with the operating risking the fast deterioration of the stem and of the tightness.

Maintenance and control
- Control the valves yearly.
- Change the gaskets after each disassembling.
- Any maintanance action must be carried out when the installation is in the atmospheric pressure.
- Cut energy supply of the actuators.
- Put butterfly in 1/4 open position before carrying out the assembly.
- Open sufficiently the flanges not to damage the sleeve.
- Tighten the bolts gradually.
- Dimensions of the pipe flanges must be identical to the DN of the valve.
- Do not use gasket between the valve and the flanges.