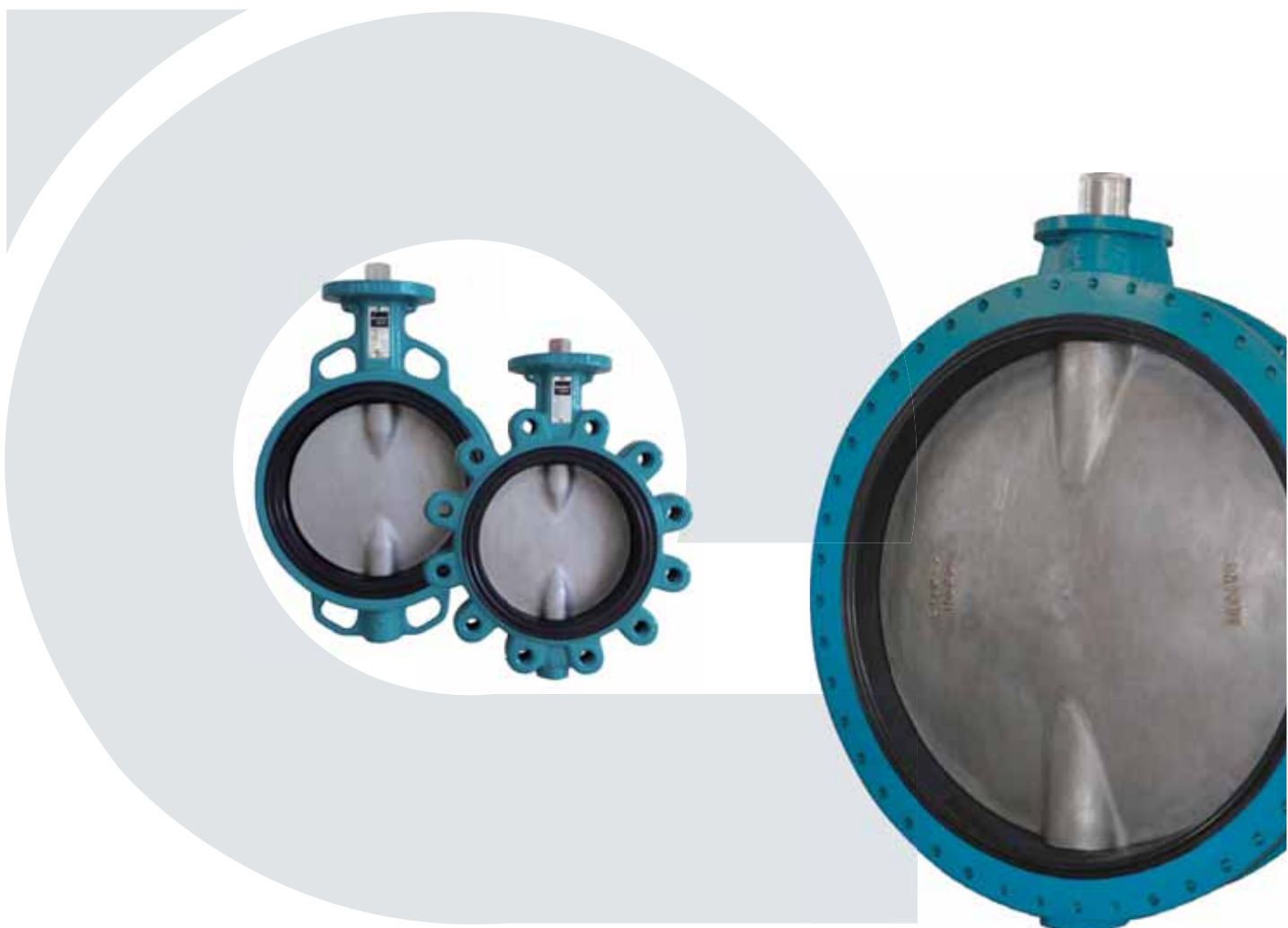


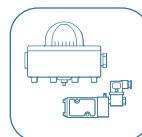
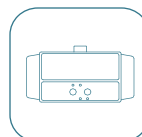
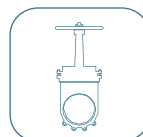
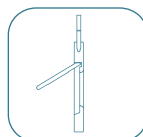
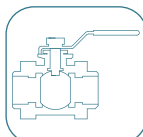
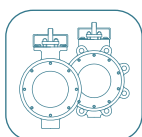
Rubber seat butterfly valves

Fig.223 : Wafer

Fig.224 : Lug



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General applications and specifications

General applications

Food and beverage industries
Pneumatic materials handling technologies
Shipbuilding
Water treatments
Power plants
Chemical and petrochemical industries
Pharmaceutical industries
Painting industries
Civil engineering
Pulp and paper industries



Specifications

Nominal diameter:	DN40-DN2000
Standard differential pressure:	16 bar for DN40-DN200, 10 bar for DN250-DN2000
Max. differential pressure:	20 bar for DN40-DN600 16 bar for DN700-DN2000
Vacuum:	0.001 bar absolute (depending on medium and temperature)
Flange accommodation:	DN40-DN300: EN1092 PN10, PN16. ASME B16.5 Class150. JIS B 2239 10K, 16K. BS10 Table D, Table E DN350-DN2000: EN1092 PN10, PN16. ASME B16.5 Class150. BS10 Table D, Table E
Face to face:	EN558 Series 20; API 609 Table 1
Top flange:	EN ISO 5211
Temperature range:	-20°C to +180°C (depending on pressure, medium and material)
Tightness test:	ISO 5208 Rate A, API 598 Table 5 (medium: water)



The butterfly valves meet the safety requirements of the pressure Equipments
Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.



EU1935/2004



Design features and chart for medium resistance

Design features DN40 to DN300

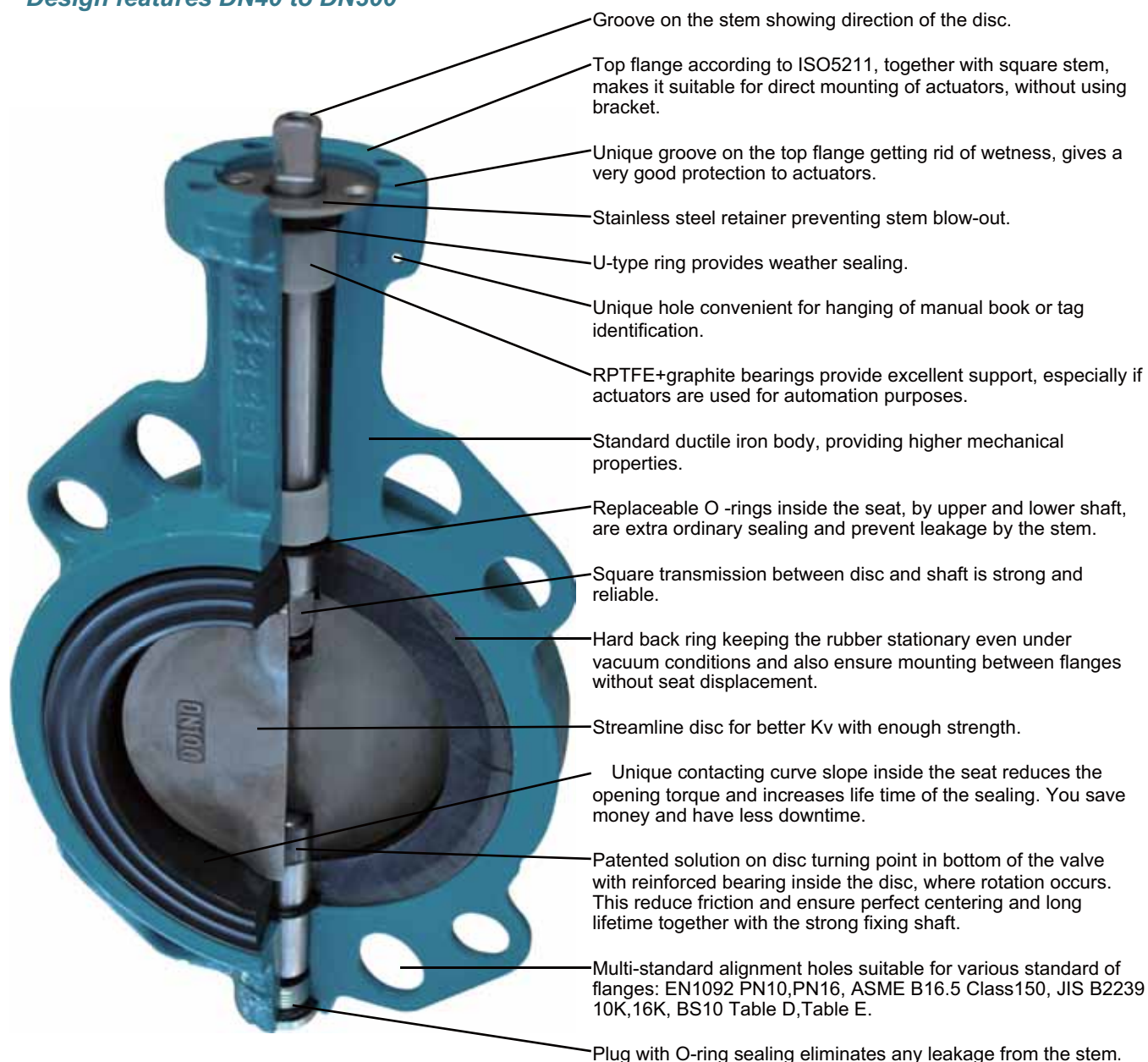
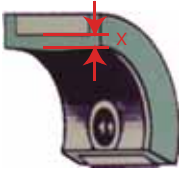
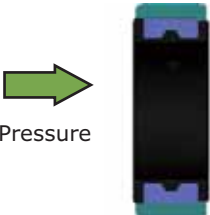
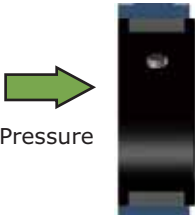


Chart for medium resistance

Liner	Suitable for	Unsuitable for
EPDM	Water, steam, alcohol, glycol, caustic soda, ozone, food products, glycerine, milk, oxygen, air, saturated salt, iron chloride, gelatine, dry hydrogen sulphide, potassium chloride, sodium, magnesium chloride	Mineral oil, chlorine compounds, ketones, acetyl, chloride, asphalt, bromine, butane, butyl, petrol, diesel oil, acid, fish oil, freon, chlorine, natural gas, exhaust gas, nitric acid
NBR	Mineral oil, grease, air, seawater, gas, boric acid, aluminium chloride, ammonia gas, citric acid, diesel oil, fish oil, petrol, gelatine, glycerine, magnesium chloride, lactic acid, linseed oil, natural gas	Ozone, acetone, aniline, chlorine dioxide, chromic acid, phenol, ethyl acetate, freon 21+22+23, hot nitric acid, styrene, hydrogen sulphide, isopropyl acetate, oxygen, sulphuric acid
NATURAL RUBBER	Abrasive medium, aluminium chloride, sugar beet fluid, boric acid, potassium chloride, citric acid, magnesium chloride, ferritic nitrate, formic acid, gelatine, sugar, glycerine, lactic acid, nitrogen	Steam, aniline, asphalt, butadiene, diesel oil, ethane, ethyl acetate, hydraulic oil, hydrochloric acid, linseed oil, methane, mineral oil, oxygen, styrene, soyabean oil, turpentine
HYPALON	Mineral, organic and inorganic chemicals, air, oxygen, fish oil, glycerine, citric acid, ozone, sodium sulphate	Ammonia, diesel oil, grease, ketone, methyl, phenol, propyl, bromine, nitric acid, tar, urea, varnish, lectine
SILICONE	Food products, ammonia gas, barium, boric acid, potassium, bisulphite, citric acid, copper cyanide, glycerine, nitrogen, lactic acid	Steam and hot water (max. 100° C), asphalt, diesel oil, ethane, freon, ethyl chloride, methane, nitric acid, olive oil, propane, turpentine
FPM	Oil, mineral acid, grease, phosphorus, tannic acid, gelatine, glycol, oxygen, slaked lime, carbon acid, natural gas, pulp, salt, sugar, sulphur	Hot water, steam, ketone, ammonia gas, acetone, formaldehyde, cellulose acetate, freon, urea, ethanoic acid, methyl
FPM-B	Acid, alkali, amine hot water, steam	Gasoline, naphtha, hydrocarbon solvent, chlorine solvent

Design advantages comparing

Coreline Fig. 223/224 design	Normal product design
 <i>Patent No. 2011 2 0165162.2</i> Seat designed with a curve slope. Flexibility reduces torque value, saving money for actuator. Furthermore we achieve longer lifetime than traditional seats.	 No curve slope, with higher torque value and shorter life time.
 <i>Patent No. 2011 2 0165189.1</i> By bonding the rubber to a hard back ring, complete stability of the seat is assured. Advantages for tolerances, vacuum and also ensure mounting between flanges without seat displacement.	 Simple "boot" seat has no rigid support. I.D. of seating area is severely distorted when seat is installed between flanges. Disc must be opened during installation to prevent binding of disc.
 <i>Patent No. 2011 2 0165189.1</i> There is a groove inside back ring and together with curve slope, it brings a low torque between the disc and the seat by operating.	 No groove inside backing ring and narrow rubber thickness causes high torque and makes the rubber easily damaged.
 <i>Patent No. 2013 2 0110388.1</i> Retaining edge design on the Lug body/seat back ring. This makes the Lug valve bear uni-directional full pressure when mounted against single flange at the end of pipeline.	 No retaining edge on the LUG body/seat back ring, then the seat will be pushed using single flange connection. Beside leakage, this force can even bend the stem and destroy the valve.
 Disc sealing area is precisely machined and polished for torque and wears control. Two-piece shaft design enhances low Kv and avoids turbulence.	 Disc sealing area is roughly machined or just made by casting. One-piece shaft design results in high Kv and turbulence.

Design advantages comparing

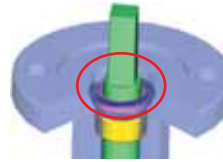
Coreline Fig. 223/224 design

Normal product design



Patent No. 2011 2 0165126.6

Stainless steel retainer preventing stem blow-out and works in whole life time of the valve. Below is U-ring as weather sealing.



Thinner spring steel ring has limited lifetime and is not safe. The stem might blow out and injury may result to humans. A result can also be that the disc might cause damage in the pipe system. It is same problem when using steel pins.

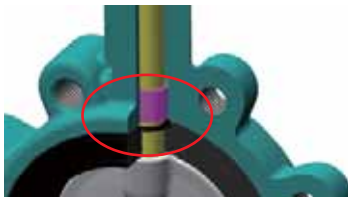


Patent No. 2011 2 0165152.9

Groove on top flange offer good protection to direct mount actuator and supply air system, if high pressure accident happens in pipeline.



No groove and no protection to actuator and air supply system.



Second sealing with replaceable O-ring on the back of the seat, prevent any leakage from the stem. Strong square interface between disc and stem ensure no operation stop.



No second sealing. Stem connected by pin, which may cause leakage and by vibrations or high torque, it can shake out or break.



Plug is used on the bottom of the valve, preventing blow-out. O-ring by the plug offers a third sealing to the stem and protect inside of body against external corrosive environment.

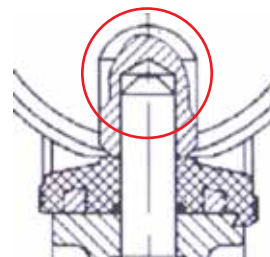


Pin prevents stem blow-out. Risk of failing because of pin corrosion or pin moving out after stem rotating. There is no external sealing, so corrosion might prevent maintenance.



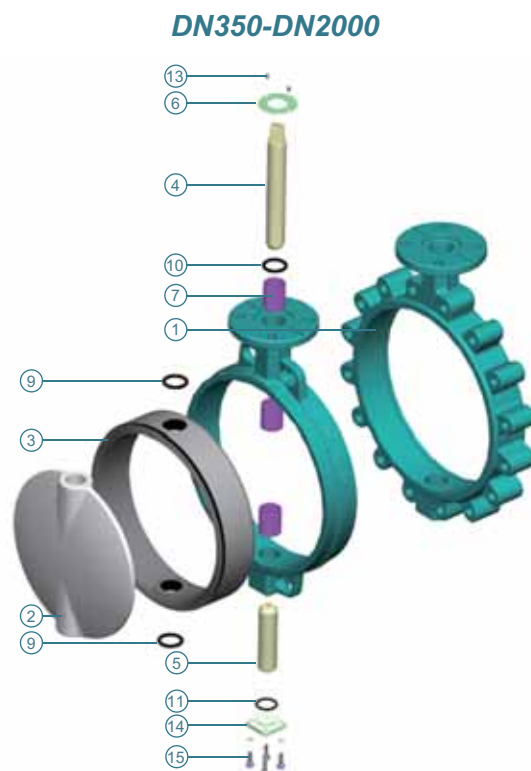
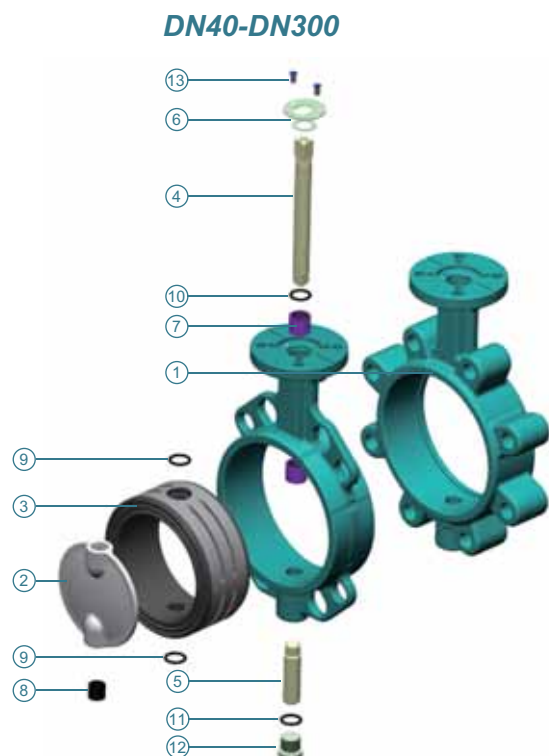
Patent No. 2011 2 0165128.5

Bearing inside the disc gives perfect tolerances, reduced torque and longer life span without trouble.



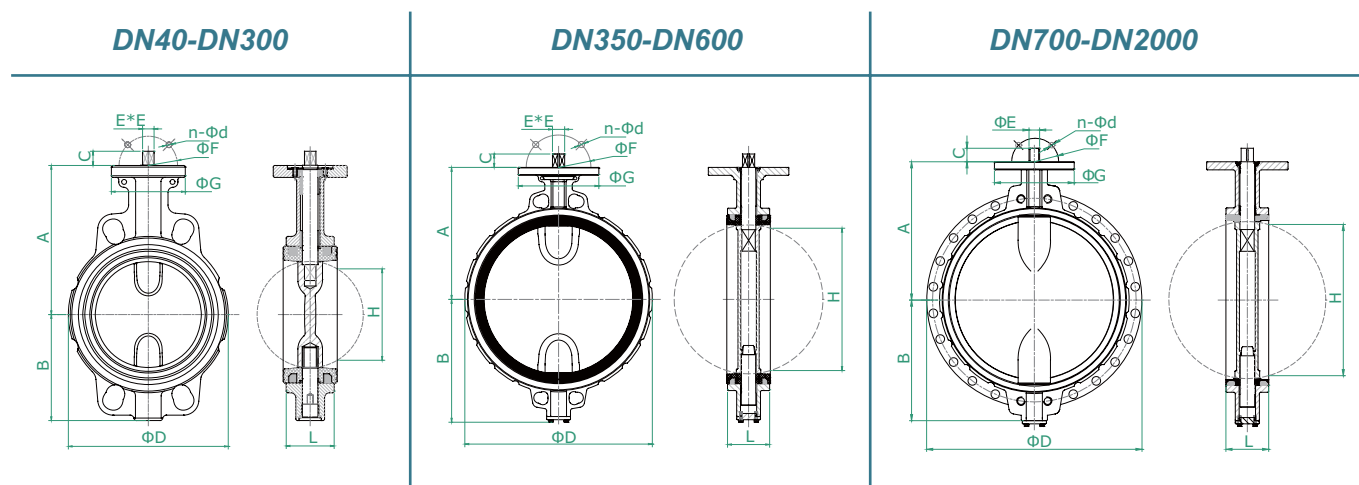
Direct metal to metal interface gives lower tolerances and risk of tearing and higher torque.

Parts list and material specification



No.	Part name	Material	Specification	No.	Part name	Material
1	Body	Ductile iron	EN1563 JS1030	4/5	Shafts	SS420
		Carbon steel	ASTM A216 WCB			SS431
		Stainless steel	ASTM A351 CF8M			17-4PHSS
2	Disc	Stainless steel	ASTM A351 CF8	6	Retainer	SS304
			ASTM A351 CF8M			SS316
			ASTM A351 CF3M	7	Body bearing	RPTFE with Graphite on I.D.
		Alloy steel	2507	8	Disc bearing	Reinforced nylon
			1.4462	9	O-ring	Same as seat
			1.4529	10	Weather seal	NBR
			1.4539	11	Anti-dust seal	NBR
			Hastelloy	12	Plug	Steel galvanized
3	Seat	Aluminium Bronze	C95800	13	Screw	SS304
		Ductile iron	Rilsan, Halar coated			SS316
		NBR	-15°C~+85°C	14	Cover	Same as body
		X-NBR	-15°C~+85°C	15	Bolt	SS304
		NBR-DVGW	-15°C~+60°C			SS316
		EPDM	-20°C~+120°C			
		EPDM-H	-20°C~+130°C			
		EPDM FDA (white)	-20°C~+110°C			
		EPDM-H FDA (black)	-20°C~+130°C			
		EPDM WRAS	-20°C~+110°C			
		FPM	-15°C~+180°C			
		FPM-B	-15°C~+180°C			

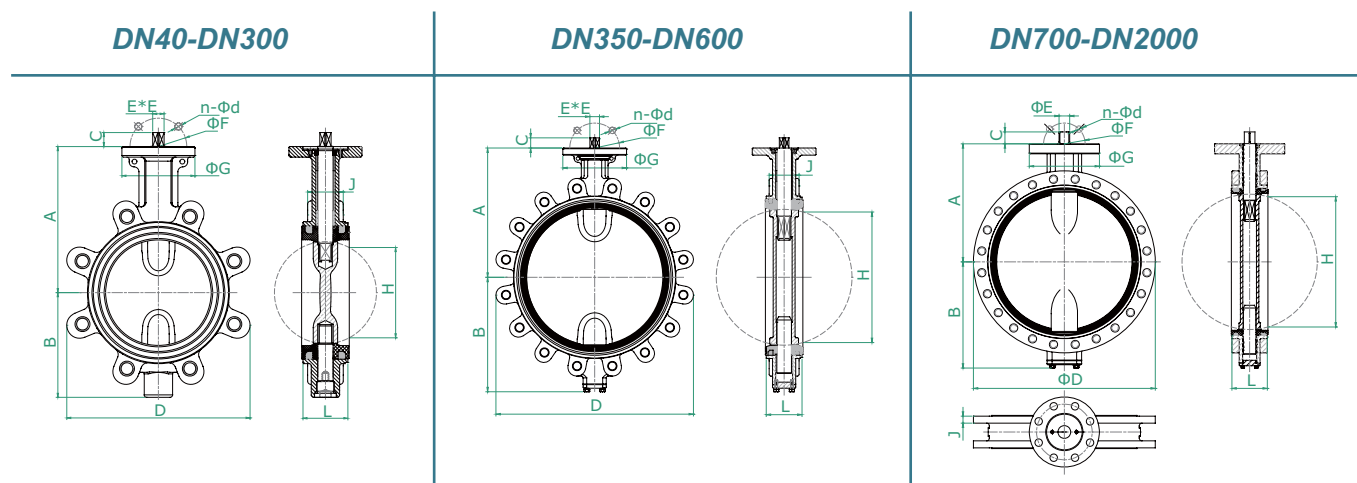
Fig. 223 Dimensions



DN	A	B	C	D	E	F	n	d	G	H	L	[kg]
40	113	67.5	13.5	86	11	50	4	7	65	30	33	1.7
50	126	76	13.5	102	11	50	4	7	65	35	43	2
65	134	82	13.5	116	11	50	4	7	65	47	46	2.6
80	157	95.5	13.5	132	11	50	4	7	65	70	46	3.3
100	167	113.5	17.5	157	14	50+70	4	7+9	90	87	52	5
125	180	129	17.5	195	14	70	4	9	90	117	56	6.4
150	203	142	18.5	218	17	70	4	9	90	144	56	7.8
200	228	172	24.5	271	22	102	4	11	125	191	60	12.2
250	266	213	24.5	329	22	102	4	11	125	241	68	19
300	291	242	26.5	382	27	102+125	4+4	12+14	150	291	78	26
350	332	273	30	422	27	125+140	4+4	14+18	175	329	78	41
400	363	317	30	484	27	125+140	4+4	14+18	175	376	102	58
450	397	348	39	542	36	140+165	4+4	18+22	210	425	114	80
500	425	393	49	597	46	140+165	4+4	18+22	210	475	127	97
600	498	453	49	708	46	165+254	4+8	22+18	300	573	154	169
700	626	531	90	928	63.1	254	8	18	300	674	165	252
750	660	564	90	984	63.1	254	8	18	300	727	165	290
800	666	601	90	1061	63.1	254	8	18	300	771	190	367
900	722	660	110	1170	74.7	254	8	18	300	839	203	465
1000	806	728	120	1290	83.7	298	8	22	350	939	216	606
1100	826	771	140	1404	94.7	298	8	22	350	1036	255	805
1200	941	874	150	1511	104.7	298	8	22	350	1137	276	900
1400	1000	940	175	1685	139.9	356	8	32	415	1351	279	1158
1600	1155	1085	195	1930	160	356	8	32	415	1548	318	1684
1800	1200	1170	195	2170	174.5	406	8	39	475	1703	356	2645
2000	1363	1360	245	2345	199	406	8	39	475	1938	406	4000

Different pressure may cause different dimension of "D".

Fig. 224 Dimensions



DN	A	B	C	D	E	F	n	d	G	H	J	L	[kg]
40	113	67.5	13.5	113	11	50	4	7	65	30	30	33	2.5
50	126	76	13.5	117	11	50	4	7	65	35	34	43	2.8
65	134	82	13.5	131	11	50	4	7	65	47	36	46	3.7
80	157	95.5	13.5	176	11	50	4	7	65	70	36	46	5.1
100	167	113.5	17.5	206	14	50+70	4	7+9	90	87	40	52	6.9
125	180	129	17.5	236	14	70	4	9	90	117	44	56	9.3
150	203	142	18.5	258	17	70	4	9	90	144	44	56	10.5
200	228	172	24.5	321	22	102	4	11	125	191	50	60	17.4
250	266	213	24.5	395	22	102	4	11	125	241	57	68	28.1
300	291	242	26.5	461	27	102+125	4+4	12+14	150	291	66	78	40
350	332	273	30	511	27	125+140	4+4	14+18	175	329	62	78	55
400	363	317	30	580	27	125+140	4+4	14+18	175	376	84	102	85
450	397	348	39	630	36	140+165	4+4	18+22	210	425	94	114	114
500	425	393	49	700	46	140+165	4+4	18+22	210	475	110	127	144
600	498	453	49	823	46	165+254	4+8	22+18	300	573	120	154	227
700	626	531	90	928	63.1	254	8	18	300	674	54	165	342
750	660	564	90	984	63.1	254	8	18	300	727	54	165	400
800	666	601	90	1061	63.1	254	8	18	300	771	60	190	485
900	722	660	110	1170	74.7	254	8	18	300	839	60	203	605
1000	806	728	120	1290	83.7	298	8	22	350	939	60	216	776
1100	826	771	140	1404	94.7	298	8	22	350	1036	50	255	985
1200	941	874	150	1511	104.7	298	8	22	350	1137	62	276	1190
1400	1000	940	175	1685	139.9	356	8	32	415	1351	62	279	1380
1600	1155	1085	195	1930	160	356	8	32	415	1548	65	318	2054
1800	1200	1170	195	2170	174.5	406	8	39	475	1703	70	356	3075
2000	1363	1360	245	2345	199	406	8	39	475	1938	75	406	4500

Valve torques (N*M)

Size	Standard disc differential pressure					Increased PN16 disc	Increased PN20 disc	Reduced PN6 disc
	EPDM/ NBR/ FPM seat				FDA seat	EPDM/ NBR/ FPM seat		
	$\Delta P=3\text{bar}$	$\Delta P=6\text{bar}$	$\Delta P=10\text{bar}$	$\Delta P=16\text{bar}$	$\Delta P=16\text{bar}$	$\Delta P=16\text{bar}$	$\Delta P=20\text{bar}$	$\Delta P=6\text{bar}$
DN40	9	9	10	11	15		15	7
DN50	10	10	11	12	20		16	8
DN65	15	16	17	18	30		25	10
DN80	23	24	25	26	40		40	15
DN100	35	36	37	38	60		60	22
DN125	45	48	52	57	90		80	35
DN150	90	95	100	105	150		150	55
DN200	185	190	195	200	300		256	91
DN250	260	270	280		450	380	450	170
DN300	300	320	340		550	400	510	230
DN350	500	550	600			720	870	400
DN400	620	700	800			870	1100	500
DN450	920	1000	1200			1600	2000	700
DN500	1600	1900	2200			3700	5700	950
DN600	2200	2500	2800			4900	7800	1600
DN700	3300	3600	3900			7300		2520
DN750	4400	4800	5300			8900		3400
DN800	6200	6700	7300			11000		4700
DN900	7100	7700	8300			13000		5400
DN1000	10000	11000	12000			24000		7700
DN1100	14000	15000	16000			32000		11000
DN1200	17000	19000	21000			42000		14000
DN1400	21000	23000	25000			50000		17000
DN1600	30000	32000	34000			70000		23000
DN1800	33000	36000	38000			80000		26000
DN2000	36000	38000	40000			90000		30000

Service and medium factor - Actuator Sizing

Service factor [SF]	Multiply by	Medium factor [MF]	Multiply by	Medium factor [MF]	Multiply by
ON/OFF operation	1.15	Lubricating liquid/gas	0.90	For dry service (Dry gas/air)	1.25
Modulating operation	1.25	Viscous Liquids, Molasses	1.30	Dirty air slurry, natural gas, dirty slurry,	1.50-1.80
*) 2 cycle/day "NC"	1.15	Degreasing liquid	1.25	Lime water, chlorin gas, oxygen, powder	1.50-1.80
**) 1 cycle/week "NC"	1.50	Saturated steam	1.20	Hydrodynamic torque	NA

OBS: Butterfly valve torque is 100% by 0° to 6° angle and 33% from 7° to 90° angle.

* Valve is completely closed and opened 2 times a day minimum.

** Valve is completely closed and opened only one time per week or longer.

Having a long period without maneuvering the valve, will increase the breakaway torque.

EXAMPLE OF ACTUATOR SIZING: Simple ON/OFF operation, Medium: Molasses,

Valve: 223 DN100. $1.15[\text{SF}] \times 1.30[\text{MF}] \times 38[\text{Nm}] = 56.8\text{Nm}$ (Sizing torque actuator)

Only choose one Service factor [SF] and one Medium factor [MF] when calculating the sizing torque.

Flow capacities and valve sizing

Kv values-valve sizing Coefficients (M³/H at 1Bar P)

DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
40		1	3	7	14	26	38	47	52
50		2	6	13	29	47	70	97	105
65		3	11	26	49	77	121	170	212
80		6	28	54	91	140	213	301	390
100		19	38	79	140	232	412	590	676
125		27	84	156	248	385	624	945	1120
150	7	51	129	224	363	572	977	1490	1798
200	22	114	229	401	639	1018	1755	2680	3100
250	33	171	334	634	970	1530	2650	4105	5200
300	49	250	490	925	1416	2231	3865	6351	7350
350	118	301	631	1131	1918	3081	4963	8035	9993
400	153	393	824	1478	2506	4024	6482	10983	12595
450	195	498	1043	1871	3170	5093	8210	13695	16850
500	240	615	1288	2309	3913	6287	10128	17250	19306
600	345	885	1853	2958	5635	9054	14584	24980	28323
700	390	930	2210	3750	6959	11100	19200	33080	39700
750	450	1160	2400	4350	7890	12900	21200	36750	45350
800	520	1330	2650	5030	8890	14350	23750	39900	49530
900	600	1680	3350	6470	11890	19520	31700	52750	62000
1000	710	2210	4300	8100	15130	23720	40050	67000	81000
1100	990	3020	5980	10050	17580	28970	48950	83500	10580
1200	1278	4050	7650	12600	20100	34500	56750	99570	121000
1400	1470	5180	10100	18150	32000	51370	88900	142100	161000
1600	1730	7200	14530	26530	45400	71500	118700	198000	229000
1800	2020	8100	18750	34230	52130	90350	143780	243250	280000
2000	2320	9000	21320	40350	57980	110200	169870	278980	320000

Valve Sizing

Determining the size of butterfly valves for control purposes should not be done on the basis of the nominal diameter of the pipe but should be calculated on the basis of the operating characteristics in order to attain the correct control characteristics.

Butterfly valves Fig. 223 / Fig. 224 from Coreline valve are designed with approximately equal percentage characteristics over an opening angle of 65°.

You only need to consider the opening angle when determining the size of control valves. When determining the valve nominal diameter calculate the Kv value from the below formula:

Liquid:

$$K_v = Q \times \sqrt{\frac{W}{\Delta p}}$$

Gas:

$$K_v = \frac{V_N}{514} \sqrt{\frac{G \times T}{\Delta p \times p_d}}$$

Kv = Flow coefficient

Q = Max. flow volume in m³/h

w = Exact weight in kg/m³

Δp = Pressure drop in bar

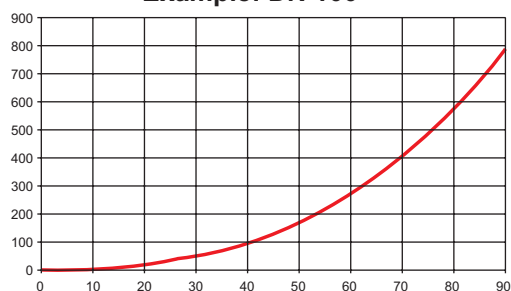
V_N = Max. flow in Nm³/h

G = Exact weight in kg/Nm³

T = Absolute temp. in ° Kelvin

P_d = Absolute pressure downstream in bar

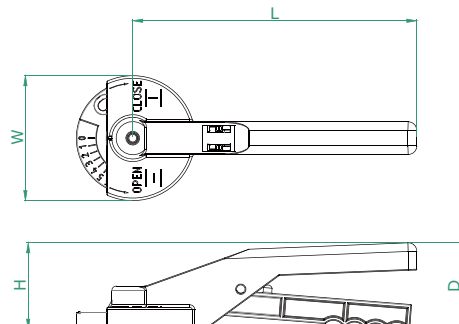
Example: DN 100



Hand lever dimensions

Aluminium hand lever

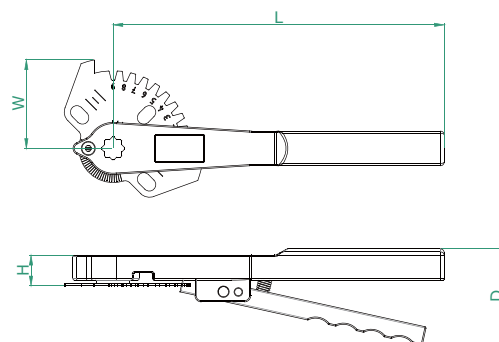
Convenient installation and usage. Excellent surface design and comfortable operating.
Position can be locked by fixing one bolt and nut in the lever hole.



Size	D	H	L	W	Stem drive	[kg]
DN40-DN80	56	65	195	74	F05 - 11×11	0.28
DN100-DN125	78	82	269	101	F07 - 14×14	0.63
DN125-DN200	78	82	269	101	F07 - 17×17	0.63
DN250-DN300	101	100	330	145	F10 - 22×22	1.46

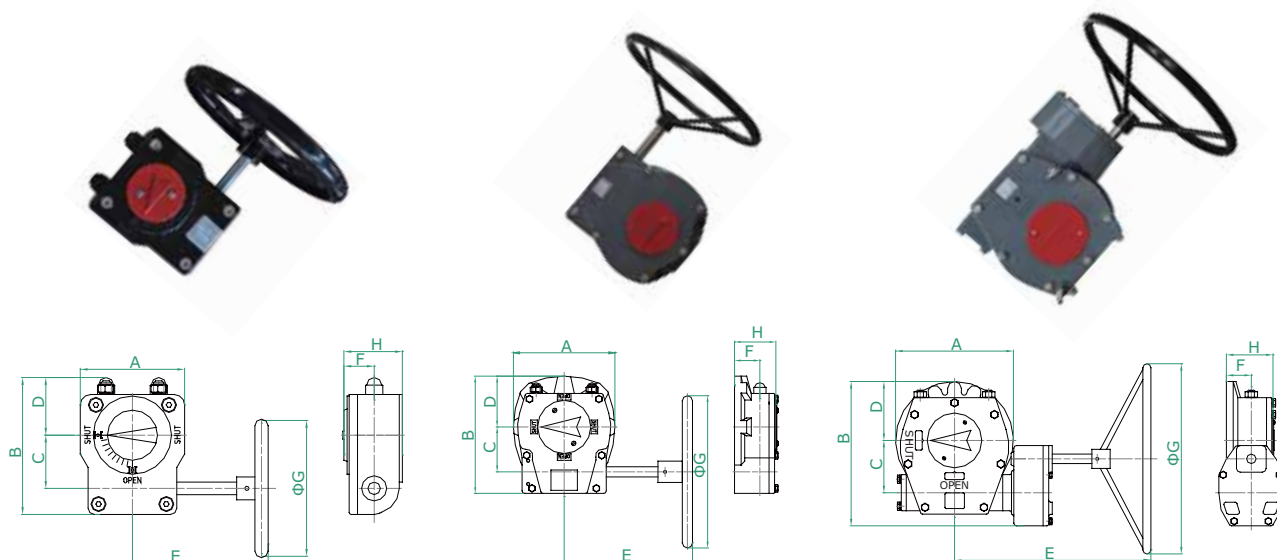
Stainless steel hand lever

Lever, locker and plate are made from cast stainless steel.
Convenient installation and usage. Excellent surface design and comfortable operating.
Position can be locked by fixing one bolt and nut in the lever hole.
Any position can be fixed by the screw beside the retainer screw for regulating application.



Size	D	H	L	W	Stem drive	[kg]
DN40-DN80	53	23	195	60	F05 - 11×11	0.8
DN100-DN125	77	30	267	73	F07 - 14×14	1.2
DN150	77	30	267	73	F07 - 17×17	1.2

Gear box dimensions



DN	Code	Material	Ratio	A	B	C	D	E	F	G	H	[kg]
40-80	002092910004	Housing: Aluminium	40:1	80	98	43	45	99	26	100	48	1.3
100	002092910010	Input shaft: SS410/SS304	40:1	80	98	43	45	99	26	100	48	1.3
125	002092910012		37:1	100	115	50	55	115	27	120	54	2
150	002092910015	Worm: Steel	37:1	100	115	50	55	115	27	200	54	2
200-250	002092910020	Gear: Ductile iron	45:1	146	155	60	81	220	38	300	71	5.6
300	002092910030		45:1	146	155	60	81	220	38	300	71	5.6
350	002092920035	Housing: Cast iron/ CF8/CF8M	42:1	165	182	66	76	208	42	300	72	11
400	002092920040	Worm shaft: Steel Nickel plated/ SS304/SS316	60:1	200	231	89	100	277	50	300	81	17
450	002092920045		68:1	252	296	123	118	357	50	400	91	32
500	002092920050		68:1	252	296	123	118	357	50	400	91	32
600	002092920060		88:1	315	354	153	145	382	50	500	93	44
700-800	002092920070	Gear: Ductile iron/ Bronze	184:1	310	380	138	155	448	65	500	122	65
900	002092920090		184:1	310	380	138	155	448	65	500	122	65
1000	002092920100		250:1	355	446	181	178	480	80	600	160	110
1100	002092920110		720:1	415	642	237	208	575	74	600	155	185
1200	002092920120		720:1	415	642	237	208	575	74	600	155	185
1400	002092920140		816:1	628	825	440	305	662	192	600	322	500
1600	002092920160		1872:1	844	977	537	367	830	217	800	372	1020
1800	002092920180		1872:1	844	977	537	367	830	217	800	372	1020
2000	002092920200		1872:1	844	977	537	367	830	217	800	372	1020

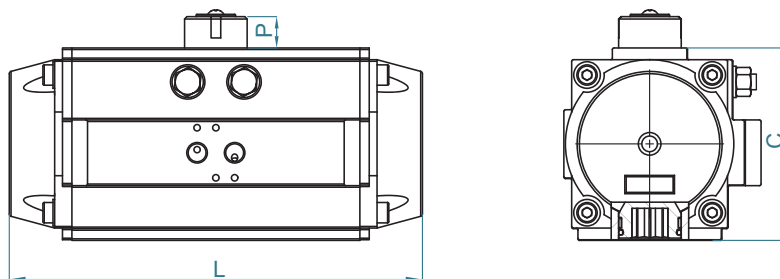
For DN50 to DN300 valve, Cast iron and SS gear box also available, consulting from us for dimensions.

The sizing of gear box is calculated on standard working conditions for our butterfly valves.

The gear boxes can also be delivered to other kind of quarter turn valves.

Rack pinion pneumatic actuators - 6bar air supply

Housing: Aluminium



Double acting actuators for butterfly valves

Fig.223/224		Sizing - Fig.540 Double acting							
Size	Torque /Nm	Size	Output torque /Nm	ISO5211	Stem	C /mm	P /mm	L /mm	[kg]
DN40	11	40	14.3	F03+F05	11×11	60	20	110	1
DN50	12	50	21.6	F03+F05	11×11	70	20	154	1.13
DN65	18	50	21.6	F03+F05	11×11	70	20	154	1.13
DN80	26	65	43.9	F03+F05	14×14	89	20	189	1.97
DN100	38	75	68.2	F05+F07	14×14	100	20	210	2.93
DN125	57	85	100.1	F05+F07	17×17	113	20	229	3.78
DN150	105	95	140.6	F05+F07	17×17	123	20	264	5.14
DN200	200	125	327.4	F07+F10	22×22	161	30	337	10.86
DN250	280	125	327.4	F07+F10	22×22	161	30	337	10.86
DN300	340	140	482.9	F10+F12	27×27	178	30	377	13.77
DN350	600	190	1053.9	F10+F14	27×27	232	30	488	28.41
DN400	800	190	1053.9	F10+F14	27×27	232	30	488	28.41
DN450	1200	210	1471.3	F14	36×36	255	30	550	40.03
DN500	2200	270	3207.5	F16	46×46	331	30	672	73.64

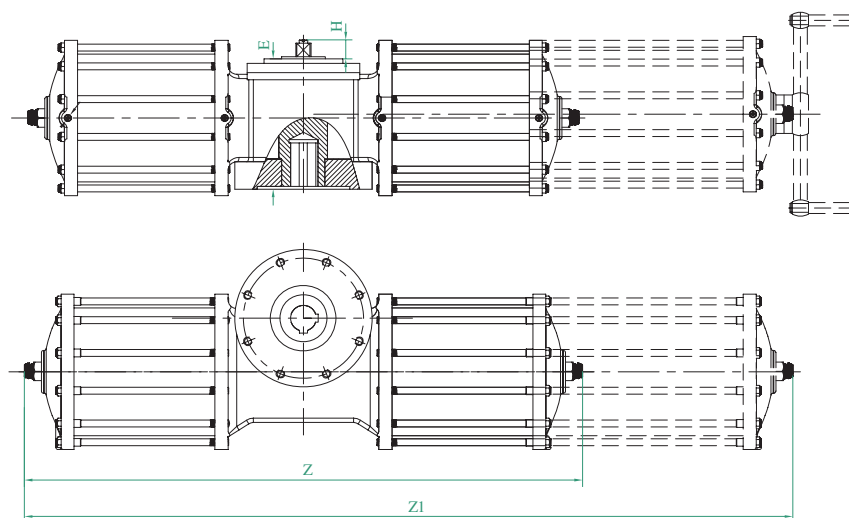
Spring return actuators for butterfly valves

Fig.224/224		Sizing - Fig.541 Spring return								
Size	Torque /Nm	Size	Torque air /Nm 0° - 90°	Torque spring /Nm 90° - 0°	ISO5211	Stem	C /mm	P /mm	L /mm	[kg]
DN40	11	65 S10	26.5 - 17.7	26.2 - 17.4	F03+F05	11×11	89	20	189	2.21
DN50	12	65 S10	26.5 - 17.7	26.2 - 17.4	F03+F05	11×11	89	20	189	2.21
DN65	18	75 S12	42.5 - 27.7	40.4 - 25.7	F05+F07	14×14	100	20	210	3.29
DN80	26	85 S12	60.3 - 37.5	62.5 - 39.7	F05+F07	14×14	113	20	229	4.26
DN100	38	95 S12	87.6 - 57.0	83.6 - 53	F05+F07	14×14	123	20	264	5.86
DN125	57	110 S12	114.6 - 73.2	110 - 68.6	F07+F10	14×14	136	20	266	7.17
DN150	105	125 S12	205 - 134	193.3 - 122.4	F07+F10	17×17	161	30	337	12.54
DN200	200	160 S12	406.4 - 281	389.4 - 264	F10+F12	22×22	200	30	412	23.75
DN250	280	190 S12	617.7 - 427.1	626.8 - 436.2	F10+F14	27×27	232	30	488	33.81
DN300	340	190 S12	617.7 - 427.1	626.8 - 436.2	F10+F14	27×27	232	30	488	33.81
DN350	600	240 S12	1296.9 - 952.5	1329.6 - 985.2	F14+F16	27×27	292	30	602	77.76
DN400	800	240 S12	1296.9 - 952.5	1329.6 - 985.2	F14+F16	27×27	292	30	602	77.76

The matching of actuator to valve dimension are calculated on standard working conditions for our butterfly valves.
The actuators can also be delivered to other kind of quarter turn valves.

Scotch yoke pneumatic actuators - Standard conditions - 6bar air supply

Housing: Ductile iron



Double acting actuators for butterfly valves

DN	Code	Actuator size	Output torque [Nm]	ISO 5211	Stem drive	E/mm	H/mm	Z/mm	[kg]
600	005150200060	200	4300	F16	46x46	296	30	1150	170
700-750	005150250070	250	5720	F25	Ø63.1	296	30	1250	195
800-900	005150280080	280	10300	F25	Ø74.7	366	30	1460	325
1000-1100	005150350100	350	20250	F30	Ø94.7	410	30	1900	600
1200	005150400120	400	26450	F30	Ø104.7	460	30	1900	800
1400-1600	005150500140	500	44930	F35	Ø160	570	30	2350	1070
1800-2000	005150600180	600	94510	F40	Ø199	670	30	2800	1580

Spring return actuators for butterfly valves

DN	Code	Actuator size	Torque air 12 springs Start - End	Torque spring 12 springs Start - End	ISO 5211	Stem drive	E/mm	H/mm	Z/mm	[kg]
400	005151200040	200	3110 - 2320	1980 - 1190	F16	27x27	296	30	1635	223
450	005151250045	250	5120 - 4210	2510 - 1600	F16	36x36	296	30	1750	280
500	005151028050	280	7400 - 4880	5610 - 2900	F16	46x46	366	30	2350	450
600-750	005151035060	350	14720 - 9510	10740 - 5520	F25	Ø63.1	410	30	2600	845
800-900	005151040080	400	17670 - 12060	14400 - 8770	F25	Ø74.7	460	30	2600	1070
1000	005151050100	500	37700 - 23310	27490 - 13110	F30	Ø83.7	570	30	2600	1400
1100-1200	005151060120	600	75020 - 47255	49880 - 22115	F30	Ø104.7	670	30	2800	2000

The matching of actuator code to valve dimension are calculated on standard working conditions for our butterfly valves. The actuators can also be delivered to other kind of quarter turn valves.

Aluminum shell electric actuators

Fig. 006050 electric on-off actuators

Standard Features:

Compact

On-off

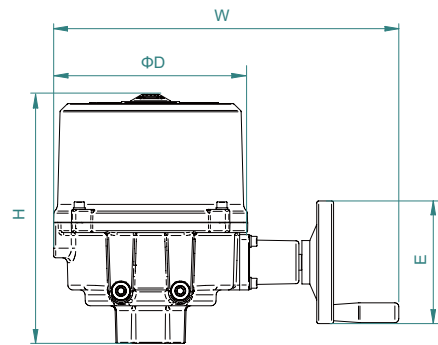
Local control

Position indicator

Manual override

Mechanical stops

Single-phase, three-phase and DC versions



DN	Code	Output torque [Nm]	ISO 5211	Stem drive	D/mm	H/mm	W/mm	E/mm	[kg]
40-80	6050000005	50	F05&F07	17x17	115	171	250	80	3
100-125	6050000009	90	F07	22x22	200	253	350	125	11
150	6050000015	150	F07	22x22	200	313	350	125	11
200	6050000040	400	F10	36x36	255	360	450	160	25
250	6050000050	500	F10	36x36	255	360	450	160	25
300	6050000065	650	F10	36x36	255	360	450	160	25

Fig. 006051 remote control electric on-off actuators

Standard Features:

Compact

On-off

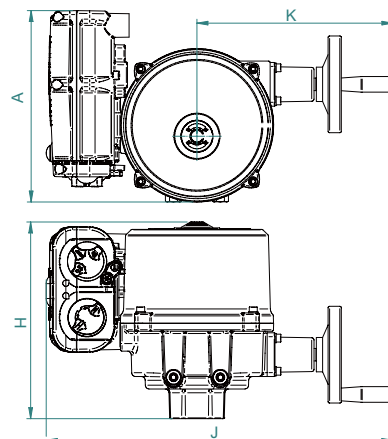
Local/remote control

Position indicator

Manual override

Mechanical stops

Single-phase, three-phase and DC versions



DN	Code	Output torque [Nm]	ISO 5211	Stem drive	A/mm	H/mm	J/mm	K/mm	[kg]
40-80	6051000005	50	F05&F07	17x17	226	171	335	183	5
100-125	6051000009	90	F07	22x22	246	253	445	252	13
150	6051000015	150	F07	22x22	246	313	445	252	13
200	6051000040	400	F10	36x36	274	360	542	320	27
250	6051000050	500	F10	36x36	274	360	542	320	27
300	6051000065	650	F10	36x36	274	360	542	320	27

The matching of actuator code to valve dimension are calculated on standard working conditions for our butterfly valves. The actuators can also be delivered to other kind of quarter turn valves.

Modulating electric actuators and ductile iron shell electric actuators

Fig. 006052 electric modulating actuators

Standard Features:

Manual override

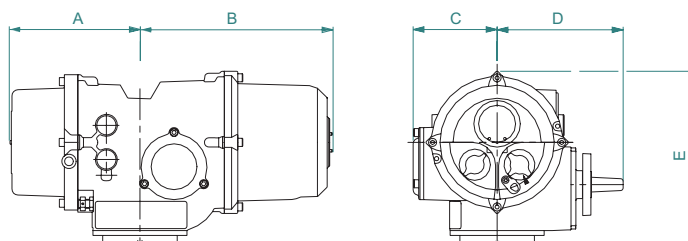
Local/remote control

Rapid response to control signals

Simplified torque and position control of high reliability

Text display for status and setup

Single-phase, three-phase and DC versions



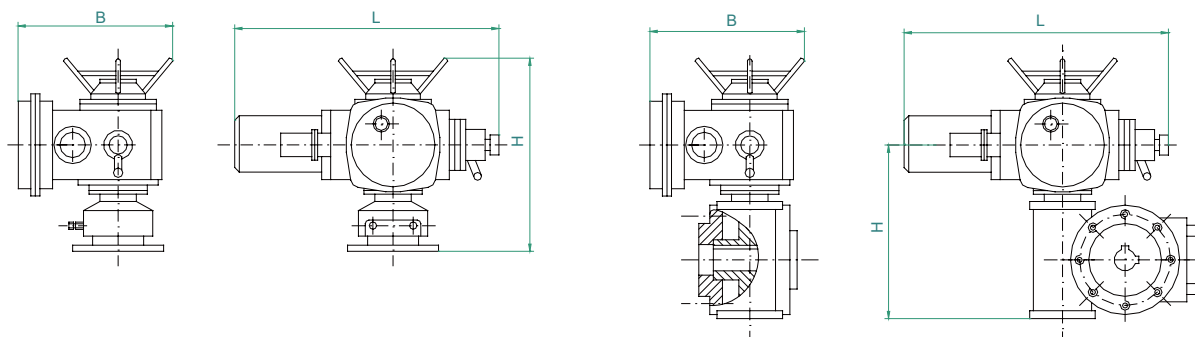
DN	Code	Output torque [Nm]	ISO 5211	Stem drive	A/mm	B/mm	C/mm	D/mm	E/mm	90° Max/S	90° Min/S	[kg]
50-80	6052000012	50~125	F05/F07/F10	11x11	130	310	135	203	277	20	5	22
100-150	6052000025	100~250	F07/F10	17x17	130	310	135	203	277	30	8	22
200-250	6052000050	200~500	F10	22x22	130	310	135	203	277	60	15	22
300-350	6052000100	400~1000	F12/F14	27x27	128	312	123	245	339	120	30	37
400-450	6052000200	800~2000	F14	36x36	128	312	123	245	339	120	60	37

Ductile iron shell electric actuators

Fig. 006150 electric on-off actuators

Fig. 006151 remote control electric on-off actuators

Fig. 006152 electric modulating actuators

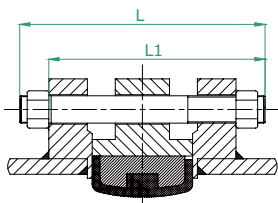


DN	006150 Code	006151 Code	006152 Code	Output torque [Nm]	ISO 5211	Stem drive	B/mm	L/mm	H/mm	[kg]
350	6050000120	6051000120	6052000120	1200	F12	27x27	340	400	395	60
400	6050000180	6051000180	6052000180	1800	F14	27x27	420	550	520	118
450	6050000250	6051000250	6052000250	2500	F14	36x36	420	555	520	122
500-600	6050000500	6051000500	6052000500	5000	F16	46x46	420	595	520	125
700-750	6050000800	6051000800	6052000800	8000	F25	Ø63.1	576	675	655	191
800-900	6050001200	6051001200	6052001200	12000	F25	Ø74.7	576	730	600	284
1000	6050001600	6051001600	6052001600	16000	F30	Ø83.7	576	730	650	374
1100	6050002300	6051002300	6052002300	23000	F30	Ø94.7	576	750	650	380
1200-1400	6050003200	6051003200	6052003200	32000	F35	Ø139.9	576	780	800	650
1600	6050004000	6051004000	6052004000	40000	F35	Ø160	680	810	800	640
1800-2000	6050006300	6051006300	6052006300	63000	F40	Ø199	680	810	980	857

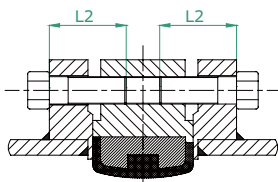
The matching of actuator code to valve dimension are calculated on standard working conditions for our butterfly valves. The actuators can also be delivered to other kind of quarter turn valves.

Bolt quantity and length for valve installation

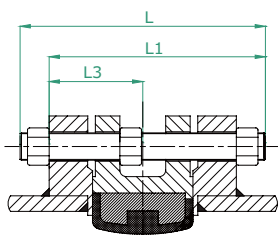
223 DN40-DN2000



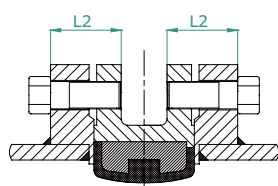
224 DN40-DN600



224 DN700-DN2000 Type 1 Connection



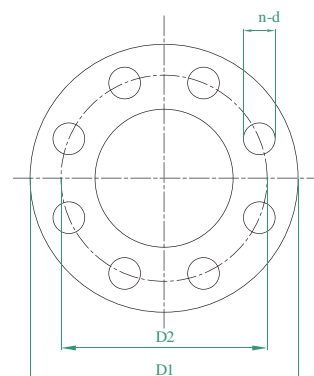
224 DN700-DN2000 Type 2 Connection



DN	Flange	Wafer type connection				Lug type connection		
		Bolt Dia.	Qty of bolts	L	L1	Qty of bolts	L2	L3
40	PN10	M16	4	135	115	4x2	35	
	ANSI150	1/2" - 10 UNC	4	120	100	4x2	35	
50	PN10	M16	4	145	125	4x2	40	
	ANSI150	5/8" - 11 UNC	4	130	110	4x2	40	
65	PN10	M16	4	150	130	4x2	40	
	ANSI150	5/8" - 11 UNC	4	140	120	4x2	45	
80	PN10	M16	8	150	130	8x2	40	
	ANSI150	5/8" - 11 UNC	4	145	125	4x2	45	
100	PN10	M16	8	160	140	8x2	45	
	ANSI150	5/8" - 11 UNC	8	150	130	8x2	45	
125	PN10	M16	8	165	145	8x2	50	
	ANSI150	3/4" - 10 UNC	8	155	130	8x2	50	
150	PN10	M20	8	175	150	8x2	50	
	ANSI150	3/4" - 10 UNC	8	160	135	8x2	50	
200	PN10	M20	8	180	155	8x2	55	
	ANSI150	3/4" - 10 UNC	8	170	145	8x2	55	
250	PN10	M20	12	200	175	12x2	60	
	ANSI150	7/8" - 9 UNC	12	190	165	12x2	60	
300	PN10	M20	12	210	185	12x2	65	
	ANSI150	7/8" - 9 UNC	12	200	175	12x2	60	
350	PN10	M20	16	215	190	16x2	65	
	ANSI150	1" - 8 UNC	16	240	210	16x2	65	
400	PN10	M24	16	220	190	12x2	65	
	ANSI150	1" - 8 UNC	16	255	230	16x2	75	
450	PN10	M27	16	280	250	16x2	75	
	ANSI150	1 1/8" - 7 UNC	16	245	215	16x2	80	
500	PN10	M24	20	275	245	20x2	80	
	ANSI150	1 1/8" - 7 UNC	20	310	280	20x2	80	
600	PN10	M24	20	295	260	20x2	85	
	ANSI150	1 1/8" - 7 UNC	20	335	300	20x2	90	
700	PN10	M27	20	310	280	20x2	100	
	ANSI150	1 1/4" - 7 UNC	20	385	350	20x2	100	
800	PN10	M27	24	335	300	24x2	100	130
	ANSI150	1 1/4" - 7 UNC	24	370	330	24x2	115	150
900	PN10	M30	24	375	340	24x2	115	150
	ANSI150	1 1/2" - 6 UNC	24	425	380	24x2	130	175
1,000	PN10	M30	28	400	365	28x2	115	155
	ANSI150	1 1/2" - 6 UNC	28	440	395	28x2	135	185
1,200	PN10	M33	28	435	395	28x2	125	165
	ANSI150	1 1/2" - 6 UNC	36	485	440	36x2	145	190
1,400	PN10	M36	32	505	365	32x2	145	195
	ANSI150	1 1/2" - 6 UNC	44	560	515	44x2	170	220
1,600	PN10	M39	36	500	455	36x2	120	175
	ANSI150	1 3/4" - 5 UNC	48	545	495	36x2	140	195
1,800	PN10	M45	40	565	515	40x2	135	190
	ANSI150	1 3/4" - 5 UNC	52	620	575	48x2	180	235
2,000	PN10	M45	48	680	635	48x2	160	215
	ANSI150	2" - 4.5 UNC	64	770	710	48x2	190	250

Mating flange dimensions

- ☐ ISO 7005/1/2/3 PN6,10,16,20 Metallic Flanges
- ☐ DIN2501 PN6,10,16 Flanges, Mating Dimensions
- ☐ BS4504 PN6,10,16 Flanges and Bolting, Metric Series
- ☐ ANSI B16.5 CLASS150 Pipe Flanges and Flanged Fittings
- ☐ MSSSP44 Class150 Steel Pipeline Flanges
- ☐ BS10 Flanges and Bolting for Pipes, Valves and Fittings
- ☐ API605 CLASS150 Large Diameter Carbon Steel Flanges
- ☐ JISB2211 JIS 5K Basic Dimensions of 5bar Ferrous Materials Pipe Flanges
- ☐ JISB2212 JIS 10K Basic dimensions of 10bar Ferrous Materials Pipe Flanges
- ☐ JISB2213 JIS 16K Basic dimensions of 16bar Ferrous Materials Pipe Flanges

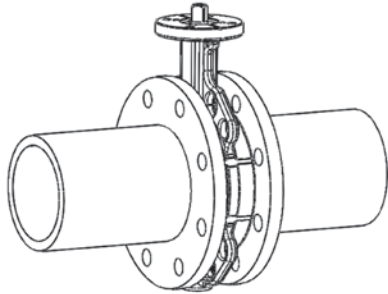


Size		PN6 (cast iron)					PN10 (cas tiron)					PN16 (cas tiron)					PN20					ANSI Class150					MSS/BS. Class150				
DN	NPS	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n
40	1 1/2"	130	110	14	M12	4	150	110	18	M16	4	150	110	18	M16	4	130	98.5	16	M14	4	127	98.5	15.9	1/2	4					
50	2"	140	110	14	M12	4	165	125	19	M16	4	165	125	19	M16	4	150	120.5	18	M16	4	152	120.6	19.1	5/8	4					
65	2.5"	160	130	14	M12	4	185	145	19	M16	4	185	145	19	M16	4	180	139.5	18	M16	4	178	139.7	19.1	5/8	4					
80	3"	190	150	19	M16	4	200	160	19	M16	8	200	160	19	M16	8	190	152.5	18	M16	4	191	152.4	19.1	5/8	4					
100	4"	210	170	19	M16	4	220	180	19	M16	8	220	180	19	M16	8	230	190.5	18	M16	8	229	190.5	19.1	5/8	8					
125	5"	240	200	19	M16	8	250	210	19	M16	8	250	210	19	M16	8	255	216.0	22	M20	8	254	215.9	22.4	3/4	8					
150	6"	265	225	19	M16	8	285	240	23	M20	8	285	240	23	M20	8	280	241.5	22	M20	8	279	241.3	22.4	3/4	8					
200	8"	320	280	19	M16	8	340	295	23	M20	8	340	295	23	M20	12	345	298.5	22	M20	8	343	298.5	22.4	3/4	8					
250	10"	375	335	19	M16	12	395	350	23	M20	12	400	355	28	M24	12	405	362.0	26	M24	12	406	362.0	25.4	7/8	12					
300	12"	440	395	23	M20	12	445	400	23	M20	12	455	410	28	M24	12	485	432.0	26	M24	12	483	431.8	25.4	7/8	12	483	432	25	7/8	12
350	14"	490	445	23	M20	12	505	460	23	M20	16	520	470	28	M24	16	535	476.0	29.5	M27	12	533	476.3	28.5	1	12	535	476	29	1	12
400	16"	540	495	23	M20	16	565	515	28	M24	16	580	525	31	M27	16	600	540.0	29.5	M27	16	597	539.8	28.5	1	16	595	540	29	1	16
450	18"	595	550	23	M20	16	615	565	28	M24	20	640	585	31	M27	20	635	578.0	32.5	M30	16	635	577.9	31.8	1 1/8	16	635	578	32	1 1/8	16
500	20"	645	600	23	M20	20	670	620	28	M24	20	715	650	34	M30	20	700	635.0	32.5	M30	20	699	635.0	31.8	1 1/8	20	700	635	32	1 1/8	20
600	24"	755	705	26	M24	20	780	725	31	M27	20	840	770	37	M33	20	815	749.5	32.5	M33	20	813	749.3	31.1	1 1/4	20	815	749	35	1 1/4	20
700	28"	860	810	26	M24	24	895	840	31	M27	24	910	840	37	M33	24											925	863	35	1 1/4	28
750	30"	920	865	31	M27	24	965	900	34	M30	24	970	900	37	M33	24											985	914	35	1 1/4	28
800	32"	975	920	31	M27	24	1015	950	34	M30	24	1025	950	40	M36	24											1060	978	41	1 1/2	28
900	36"	1075	1020	31	M27	24	1115	1050	34	M30	28	1125	1050	40	M36	28											1170	1086	41	1 1/2	32
1000	40"	1175	1120	31	M27	28	1230	1160	37	M33	28	1255	1170	43	M39	28											1290	1200	41	1 1/2	36
1100	44"	1305	1240	34	M30	32	1340	1270	37	M33	32	1355	1270	43	M39	32											1405	1314	41	1 1/2	40
1200	48"	1405	1340	34	M30	32	1455	1380	40	M36	32	1485	1390	49	M45	32											1510	1422	41	1 1/2	44

It should be noted that the diameters of the bolt holes in steel and copper alloy flanges are different from cast iron flanges.

Size		BS TABLE D					BS TABLE E					JIS 5K					JIS 10K					JIS 16K				
DN	NPS	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n	D1	D2	d	Bolt	n
40	1 1/2"	133.4	98.4	15.9	1/2	4	133.4	98.4	15.9	1/2	4	120	95	15	M12	4	140	105	19	M16	4	140	105	19	M16	4
50	2"	152.4	114.3	19.1	5/8	4	152.4	114.3	19.1	5/8	4	130	105	15	M12	4	155	120	19	M16	4	155	120	19	M16	8
65	2.5"	165.1	127.0	19.1	5/8	4	165.1	127.0	19.1	5/8	4	155	130	15	M12	4	175	140	19	M16	4	175	140	19	M16	8
80	3"	184.2	146.1	19.1	5/8	4	184.2	146.1	19.1	5/8	4	180	145	19	M16	4	185	150	19	M16	8	200	160	23	M20	8
100	4"	215.9	177.8	19.1	5/8	4	215.9	177.8	19.1	5/8	8	200	165	19	M16	8	210	175	19	M16	8	225	185	23	M20	8
125	5"	254.0	209.6	19.1	5/8	8	254.0	209.6	19.1	5/8	8	235	200	19	M16	8	250	210	23	M20	8	270	225	25	M22	8
150	6"	279.4	235.0	19.1	5/8	8	279.4	235.0	22.2	3/4	8	265	230	19	M16	8	280	240	23	M20	8	305	260	25	M22	12
200	8"	336.6	292.1	19.1	5/8	8	336.6	292.1	22.2	3/4	8	320	280	23	M20	8	330	290	23	M20	12	350	305	25	M22	12
250	10"	406.4	355.6	22.2	3/4	8	406.4	355.6	22.2	3/4	12	385	345	23	M20	12	400	355	25	M22	12	430	380	27	M24	12
300	12"	457.2	406.4	22.2	3/4	12	457.2	406.4	25.4	7/8	12	430	390	23	M20	12	445	400	25	M22	16	480	430	27	M24	16
350	14"	527.1	469.9	25.4	7/8	12	527.1	469.9	25.4	7/8	12	480	435	25	M22	12	490	445	25	M22	16	540	480	33	M30	16
400	16"	577.9	520.7	25.4	7/8	12	577.9	520.7	25.4	7/8	12	540	495	25	M22	16	560	510	27	M24	16	605	540	33	M30	16
450	18"	641.4	584.2	25.4	7/8	12	641.4	584.2	25.4	7/8	16	605	555	25	M22	16	620	565	27	M24	20	675	605	33	M30	20
500	20"	704.9	641.4	25.4	7/8	16	704.9	641.4	25.4	7/8	16	655	605	25	M22	20	675	620	27	M24	20	730	660	33	M30	20
600	24"	825.5	755.7	28.5	1	16	825.5	755.7	31.7	1 1/8	16	770	715	27	M24	20	795	730	33	M30	24	845	770	39	M36	24
700	28"											875	820	27	M24	24	905	840	33	M30	24	960	875	42	M39	24
750	30"	997.0	927.1	31.7	1 1/8	20	997.0	927.1	34.9	1 1/4	20	945	880	33	M30	24	970	900	33	M30	24	1020	935	42	M39	24
800	32"											995	930	33	M30	24	1020	950	33	M30	28	1085	990	48	M45	24
900	36"	1174.8	1092.2	34.9	1 1/4	24	1174.8	1092.2	34.9	1 1/4	24	1095	1030	33	M30	24	1120	1050	33	M30	28	1185	1090	48	M45	28
1000	40"											1195	1130	33	M30	28	1235	1160	39	M36	28	1320	1210	56	M52	28
1100	44"											1305	1240	33	M30	28	1345	1270	39	M36	28	1420	1310	56	M52	32
1200	48"	1492.3	1409.7	34.9	1 1/4	32	1492.3	1409.7	38.1	1 3/8	32	1420	1350	33	M30	32	1465	1380	39	M36	32	1530	1420	56	M52	32

Installation Guide



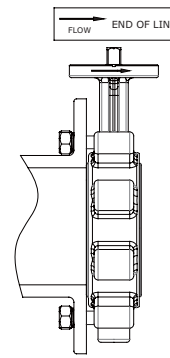
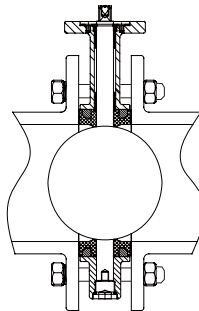
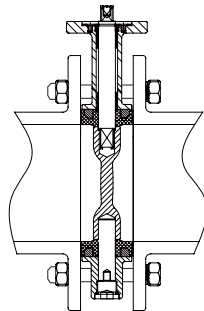
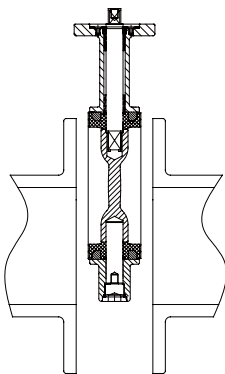
- ☐ Check that the specifications on the identification plate meet the requirements regarding pressure, temperature and media.
- ☐ The piping must have a straight line and the flanges have to be parallel. Furthermore there must be a distance between the flanges, corresponding to the face-to-face dimensions of the butterfly valve.
- ☐ The butterfly valve can be mounted in any direction. However if there are a lot of dirt particles on the bottom of the pipe, it will be suitable to mount the disc.
- ☐ Before commissioning, the pipework has to be rinsed out to remove dirt and remnants of welding material, to avoid damage on the liner. During the rinsing procedure, the butterfly valve has to be positioned as open and may not be operated before the rinsing has been completed.
- ☐ Welding operations may not be performed nearby the butterfly valve, as welding drops can damage the liner.
- ☐ Do not use gaskets. The liner works as sealing to the atmosphere.
- ☐ Where vacuum, high flow rate or water hammering can occur, flanges without a loose collar should be used, to obtain the best conditions.

Carefully place the butterfly valve between the flanges, with the disc in closed position.

Check that the flange covers the area of the liner. Afterwards tighten the bolt on the flange by hand.

Carefully open and close the valve to check that the disc centralizes and the disc does not touch the flange. With the disc in the open position, tighten crosswise with a wrench.

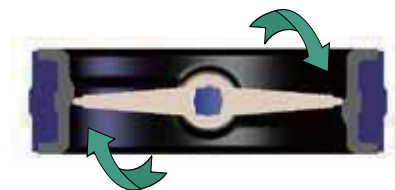
Ensure that 2240 lug butterfly valve is installed in proper flow direction for end of pipe service: the flow arrow direction on valve nameplate or body should be in accordance with the flow direction of medium.



As the butterfly valves are equipped with the unique wave shaped liner, the operation of the valves, either free stem, handle or gear operated, has to follow the guidelines as shown below.



A small triangular shaped figure is placed on the liner, this triangle indicates which way the disc opening. Turn disc Anticlockwise towards arrow to open



Turn Clockwise to close the valve, the valve sealing in the area of -2° to 2° range. If lower torque necessary, stop the disc to the 2° to 0° range; If tighter sealing necessary, stop the disc to the 0° to -2° range.

The content or parameters are indicative and can be changed without any notice.

Coreline

The contents of this catalogue are confidential and proprietary to Coreline, we reserve the right to change the specifications without any notice.

WUXI CORELINE VALVE CO., LTD.

Production add: No.210 Xinyuan Road, Ehu Industrial Park, 214116 Wuxi, China

Phone: +86 510 68870699

Http: // www.coreline.dk

Fax : +86 510 80257770

E-mail : mail@coreline-valve.cn