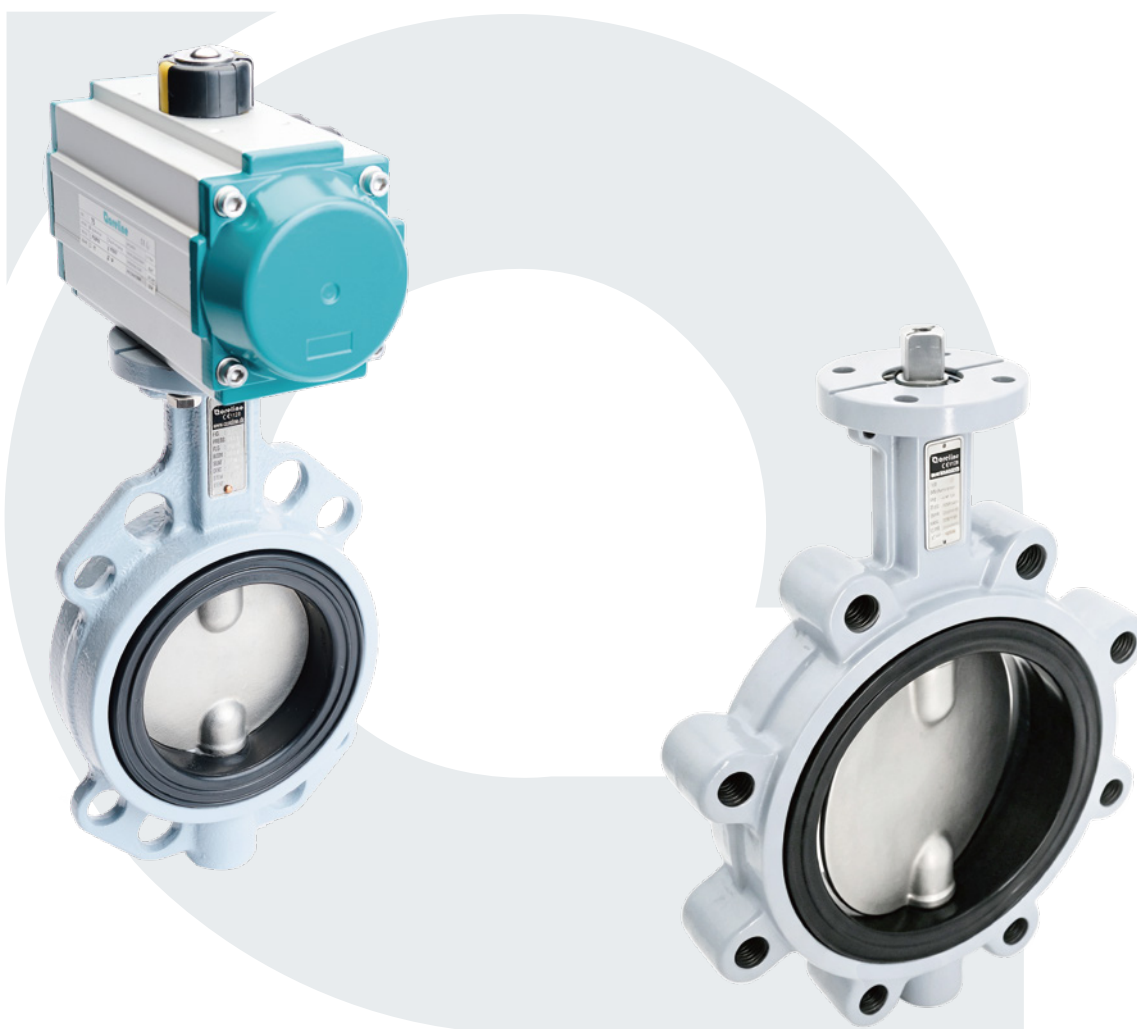


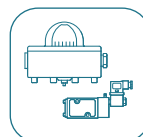
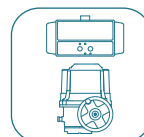
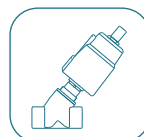
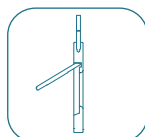
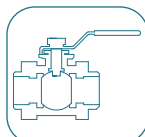
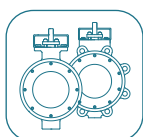
Rubber seat butterfly valves

Fig.223N : Wafer

Fig.224N : Lug



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General description and specifications

General description

Butterfly valves are suitable for on/off and regulation for many different medias in pipelines.

The advantages are short face to face dimension, low weight, low torque and cheap price compare to many other valve types.

Please notice that rubber have limitations for media and temperature. Check table.

The disc for open/close is in center of valve. There may be situation where this is not applicable.



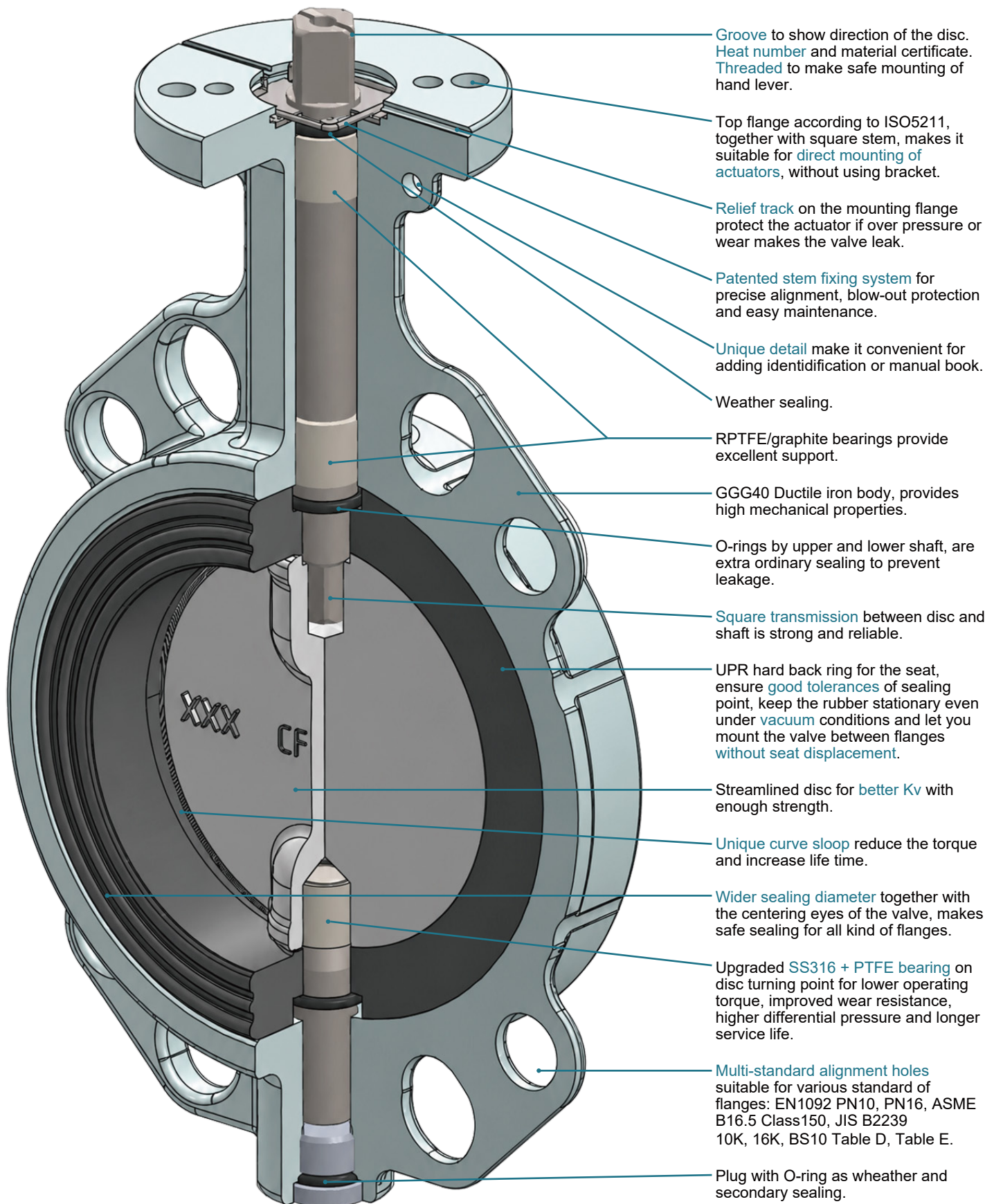
Specification

Nominal diameter:	DN25-DN2000
Standard differential pressure:	16 bar for DN25-DN200, 10 bar for DN250-DN2000
Max. differential pressure:	20 bar for DN25-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 +150°C (depending on pressure, medium and material)
Tightness test:	ISO 5208 Rate A; EN 12266-1 Rate A; ANSI/FCI 70-2 Class VI



Design features

DN40 - DN300

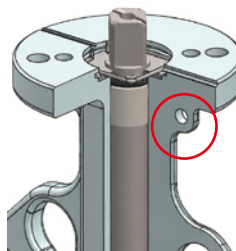


Design features



Advantages by bonding rubber to UPR hard back ring:

- Better tolerance;
- Suitable for vacuum application;
- Mounting between flanges without seat displacement.

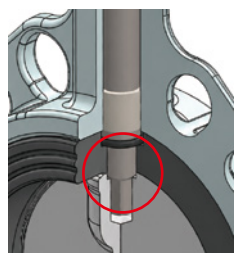


Unique hole under mounting top:
Make it convenient to hang IOM or tag identification.

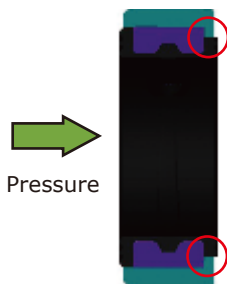


Seat designed with curve slope:

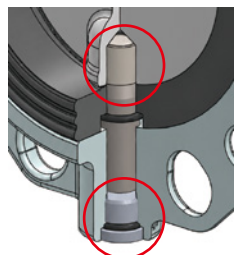
- Flexibility reduces torque value, saving money for actuator.
- Achieve longer lifetime than traditional seats.



Strong square interface between disc and shaft ensure no operation stop.
Second sealing with replaceable O-ring on the back of the seat.



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.

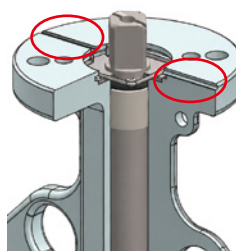


The SS316 + PTFE bearing inside the disc turning point ensures precise tolerances, reduces operating torque and extends service life.

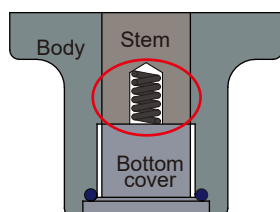
Plug is used on the bottom of the valve, preventing shaft to blow-out. O-ring by the plug offers a third sealing.



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.

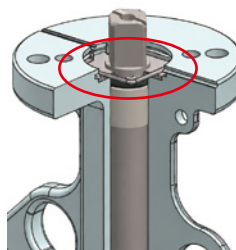


Groove on top flange will protect direct mounted actuator, if high pressure leakage happens.



Optional anti-static spring

For ATEX applications, an optional contact spring provides a continuous metallic path from the disc through the stem and bottom cover to the valve body, safely dissipating internally generated electrostatic charges.



Patented stem fixing system for precise alignment, blow-out protection and easy maintenance.
Below is O-ring as weather sealing.

Protective coating system

ADVANCED COATING FACILITY

Controlled coating processes for consistent, long-lasting corrosion protection.
Produced at a state-of-the-art, environmentally approved facility.



AUTOMATED COATING LINE

Continuous conveying ensures consistent coating quality and efficient production.



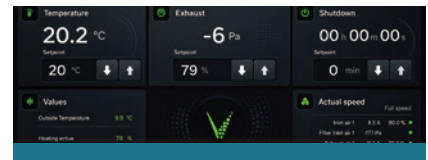
AUTOMATED PAINT MIXING

The Graco ProMix 2KS ensures accurate, consistent mixing of plural-component coatings.



ELECTROSTATIC SPRAYING

The PRO Xp 85 kV AA STD spray gun provides fine atomization and electrostatic 360° wraparound coverage for a uniform coating, high transfer efficiency and reduced paint waste.



REAL-TIME PROCESS CONTROL

Temperature, exhaust, airflow and humidity are continuously monitored to maintain stable coating conditions.

JOTUN COATING SYSTEM

Premium Two-Component Coatings from JOTUN
- A trusted Norwegian Coating Brand

Penguard EXA II Epoxy primer
Futura Classic Polyurethane topcoat



Approved butterfly valves for marine applications.

Certificate No.: [25-0254693-PDA]

CORROSION PROTECTION

C3

CORELINE STANDARD

Industrial applications

120 µm

C4

OPTIONAL

Marine environments

180 µm

C5

OPTIONAL

Highly corrosive environments

240 µm

COATING PROCESS

01

PRE-TREATMENT

>

02

AUTO MIXING

>

03

SPRAY APPLICATION

>

04

CURING

>

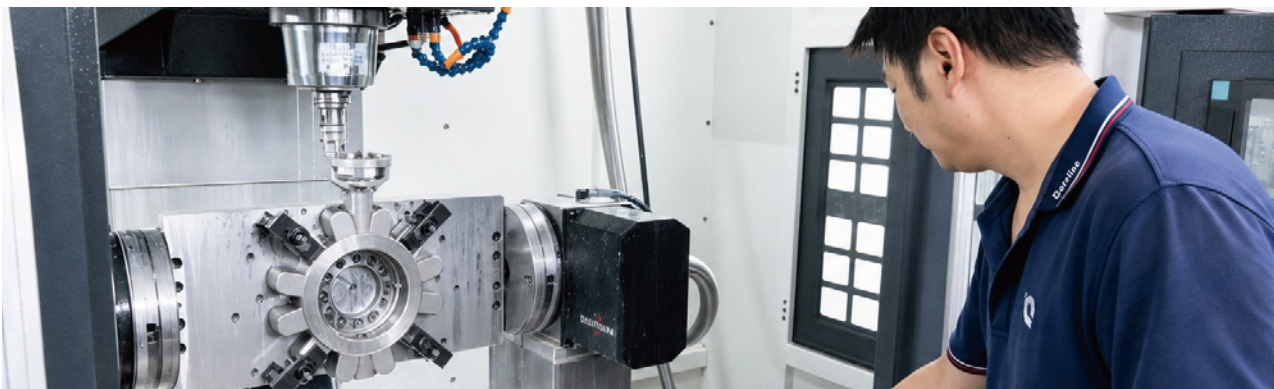
05

INSPECTION

Production & quality control

CONTROLLED PRODUCTION PROCESS

Manufacturing and inspection designed for reliable valve performance.



PRECISION CNC MACHINING

Multi-axis CNC machining ensures dimensional accuracy and consistent quality.



PMI MATERIAL VERIFICATION

Handheld XRF analysis verifies material grade and chemical composition.



VALVE ASSEMBLY

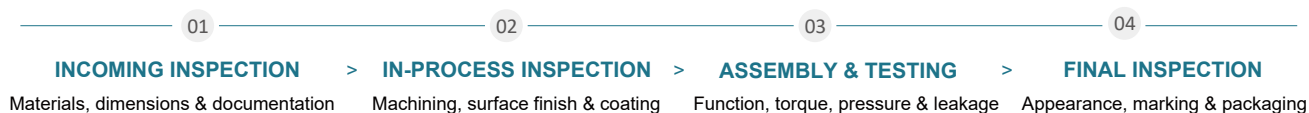
Assembly equipment ensures precise alignment and reliable operation.



100% PRESSURE TESTING

Pressure and torque tests are performed on each valve before final inspection.

QUALITY CONTROL PROCESS



QUALITY ASSURANCE

100%

PRESSURE & TORQUE TESTED

Each valve individually tested

EN 10204 3.1

MATERIAL CERTIFICATION

Material traceability
from raw materials to finished valves

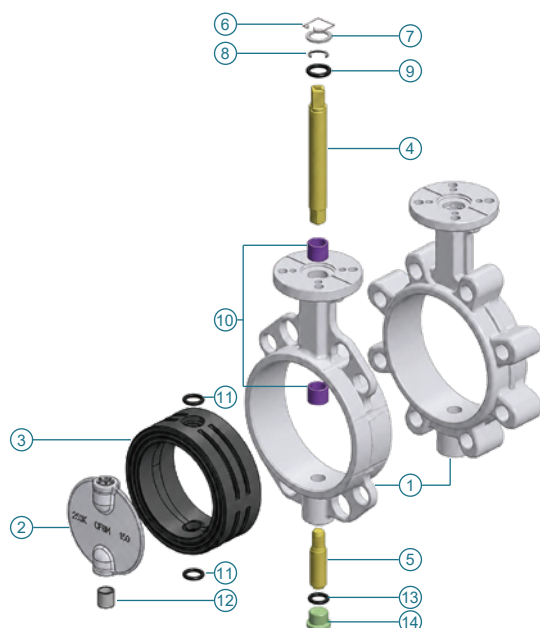
MIN. 5 YEARS

PRODUCTION & QUALITY RECORDS

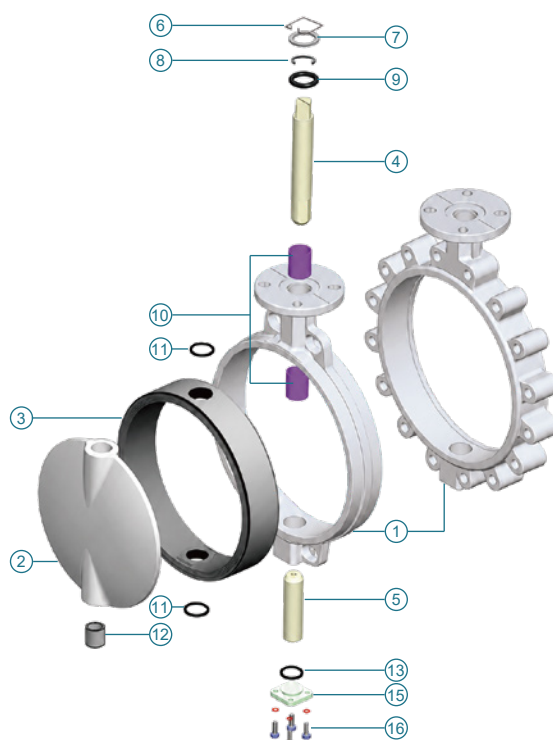
For full product traceability

Parts list and material specification

DN40 - DN300



DN350 - DN600



No.	Part name	Material	Specification	No.	Part name	Material
1	Body	Ductile iron	EN 1563 EN-GJS-400-15	4/5	Stem	SS420
		Low-temp. ductile iron	GB/T 32247 QT400-18L (-40℃)			SS431
		Stainless steel	ASTM A351 CF8M ¹⁾			SS316
2	Disc	Stainless steel	ASTM A351 CF8			17-4PH
			ASTM A351 CF8M			2507
			ASTM A351 CF3M			2205
			SS with tungsten carbide coating	6	Square spring	SS304
	Alloy steel	2507 (UNS S32750 / EN 1.4410)	7	Preventing plate	SS201	
		2205 (UNS S32205 / EN 1.4462)	8	Crescent ring	65Mn, Dacromet Coated	
		Hastelloy C-276 (UNS N10276 / EN 2.4819)	9	O-ring	NBR	
		Aluminium bronze	10	Bushing	PTFE + Graphite	
	Ductile iron	Halar or Nylon coated	11	Seat O-ring ⁴⁾	Same as seat	
3	Seat ²⁾	EPDM-H	-20℃~+125℃	12	Disc bearing ⁴⁾	SS316+PTFE
		EPDM-H, FDA/EU1935 (Black)	-20℃~+125℃	13	Anti-dust seal	NBR
		EPDM, FDA/EU1935 (White)	-20℃~+85℃	14	Plug	Steel galvanized
		NBR (equivalent to nitrile)	-15℃~+85℃			CF8M
		X-NBR (wear-resistant)	-15℃~+85℃	15	Bottom cover	Same as body
		HNBR	-30℃~+150℃	16	Bolt	SS304
		Hi-NBR (for oil sludge)	-15℃~+100℃			SS316
		FPM (equivalent to FKM/Viton)	-15℃~+150℃			
		FEPM (for steam)	-15℃~+150℃			
		Natural rubber	-30℃~+80℃			
		Silicone rubber (not for steam)	-20℃~+150℃			
		Silicone rubber (for steam)	-20℃~+120℃			
		PTFE ³⁾	-15℃~+150℃			

1) Only available for Fig.223N DN40-DN300.

2) Rubber seat with hard UPR backup.

3) Available with EPDM and FPM backup. Temperature range depends on backup material.

4) Not applicable for sizes ≥ DN700.

The above temperature range for the valve seats are provided as reference for general working conditions. Please note that the actual applications may vary due to the different media, pressure etc. in the pipeline.

Contact Coreline for other materials or special requirements.

Parts list and material specification

DN700 - DN2000



No.	Part name	Material	Specification	No.	Part name	Material
1	Body	Ductile iron	EN 1563 EN-GJS-400-15	4/5	Stem	SS420
		Low-temp. ductile iron	GB/T 32247 QT400-18L (-40℃)			SS431
2	Disc	Stainless steel	ASTM A351 CF8			SS316
			ASTM A351 CF8M			17-4PH
			ASTM A351 CF3M			2507
		Alloy steel	2507 (UNS S32750 / EN 1.4410)			2205
			2205 (UNS S32205 / EN 1.4462)	6	Screw	SS304
			Hastelloy C-276 (UNS N10276 / EN 2.4819)	7	Preventing plate	SS201
3	Seat ¹⁾	Aluminium bronze	C95800	8	O-ring	NBR
		Ductile iron	Halar or Nylon coated	9	Key	SS304
		EPDM	-20℃~+110℃	10	Bushing	PTFE + Graphite
		EPDM-H	-20℃~+125℃	11	Anti-dust seal	NBR
		EPDM, FDA (black)	-20℃~+110℃	12	Bottom cover	Same as body
		EPDM, WRAS (black)	-20℃~+85℃	13	Bolt	SS304
		NBR (Nitrile)	-15℃~+85℃			SS316
		HNBR (Hydrogenated nitrile)	-30℃~+150℃			
		FPM (equivalent to FKM/Viton)	-15℃~+150℃			
		CR (equivalent to Neoprene)	-20℃~+85℃			
		CSM (equivalent to Hypalon)	-15℃~+120℃			

1) The stated temperature ranges are general guidelines. Actual limits depend on the medium, pressure and operating conditions. Contact Coreline for other materials or special requirements.

Seat options and specifications

Applicable medium temperature range

SEAT MATERIAL	Safety temp. range	Lowest instantaneous temp.	Max. instantaneous temp.
EPDM-H	-20°C~+125°C	-40°C	+130°C
EPDM-H black FDA/EU1935	-20°C~+125°C	-40°C	+130°C
EPDM white FDA	-20°C~+85°C	-30°C	+100°C
NBR (Eq. Nitrile)	-15°C~+85°C	-30°C	+100°C
X-NBR (wear resistant)	-15°C~+85°C	-30°C	+110°C
HNBR	-30°C~+150°C	-40°C	+170°C
Hi-NBR (for heavy oil)	-15°C~+100°C	-30°C	+110°C
FPM (Eq. FKM, Viton)	-15°C~+150°C	-20°C	+150°C
FEPM (for steam)	-15°C~+150°C	-20°C	+150°C
Natural rubber	-30°C~+80°C	-40°C	+100°C
Silicone rubber (no steam)	-20°C~+150°C	-30°C	+150°C
Silicone rubber (for steam)	-20°C~+120°C	-30°C	+150°C
PTFE	-15°C~+150°C	-20°C	+150°C

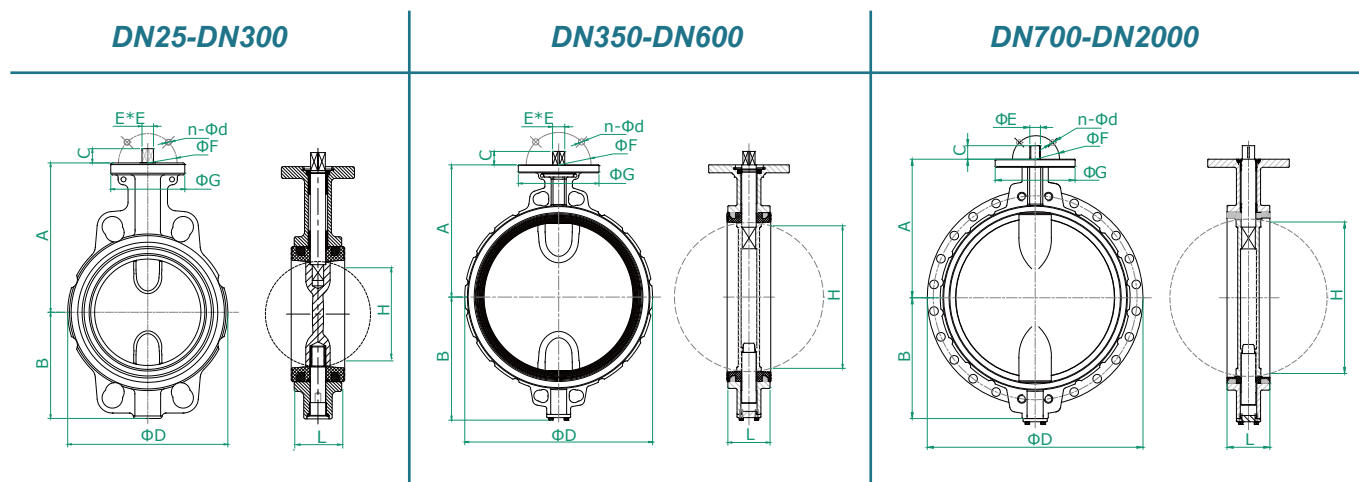
*) The temperature specifications for the above rubber valve seats apply to standard conditions. For special operating scenarios, please contact Coreline for technical supports.

Chart for medium resistance

RUBBER MATERIAL	SUITABLE FOR	NOT SUITABLE FOR
EPDM	Water, steam (<125°C), alcohol, glycol, caustic soda, ozone, food products, glycerine, salts, acids	Mineral oil, petrol, diesel oil, strong acids, aromatic hydrocarbons, polar solvents, steam (>125°C)
NBR	Mineral oil, grease, air, seawater, glycerine, natural gas, vegetable oils, diluted acids	Ozone, aromatic hydrocarbons, ketones, strong acids, strong bases, chlorinated hydrocarbons, steam
FPM	Oil, grease, acids, aromatic hydrocarbons, fuels, hydraulic fluids, hot water and steam (up to 150°C)	Steam (>150°C), ketones, polar solvents, chlorinated hydrocarbons, strong oxidizers
FEPM	Acids, alkalis (low concentration), fuels, steam (up to 230°C), oxidizers	Gasoline (high aromatic), hydrocarbons, chlorinated solvents, strong alkalis, superheated steam (>230°C)
Natural Rubber	Abrasive medium, boric acid, citric acid, glycerine, nitrogen, lactic acid, water, mild alkalines	Steam, petrol, diesel oil, aromatic hydrocarbons, ketones, strong acids, strong bases
Silicone	Food products, ammonia, glycerine, low-pressure steam (<120°C), mild acids and alkalines, alcohols	Steam (>120°C), diesel oil, aromatic hydrocarbons, ketones, strong acids, chlorinated hydrocarbons
PTFE	Almost all mediums	Strong abrasives, high mechanical loads, molten alkali metals, high-energy radiation

*) The listed media compatibility covers only typical examples. If you are uncertain about specific applications, please consult Coreline.

Fig. 223N Dimensions

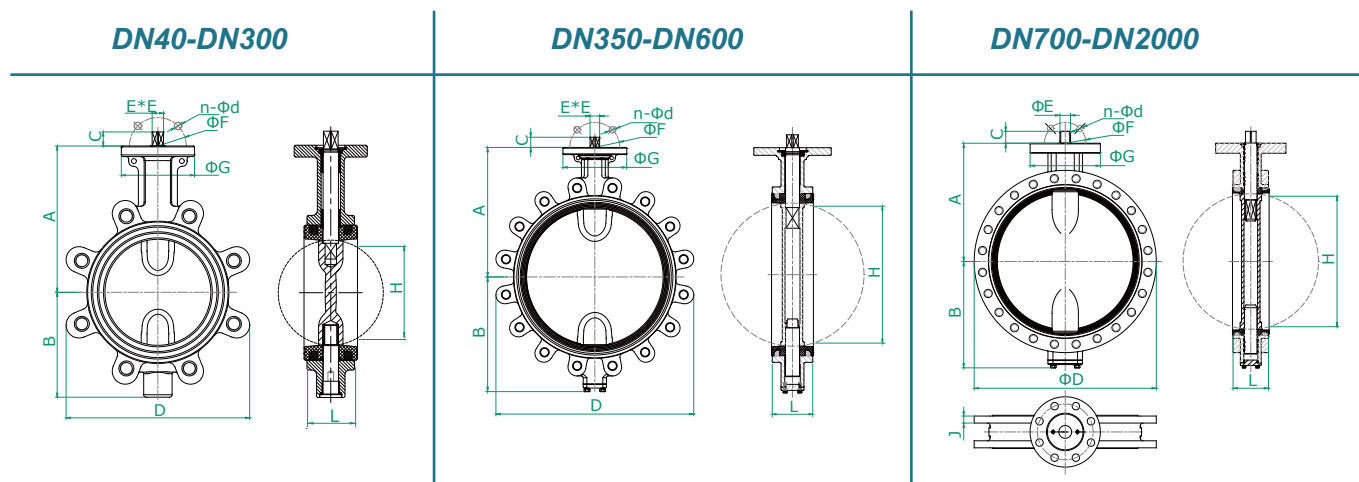


DN	INCH	A	B	C	D	E	F	n	d	G	H		Rubber sealing Dia.	L	[kg]
											Rubber	PTFE			
25/32	1", 1-1/4"	108	60	13.5	72	9×9	50	4	7	65	13.5	-	60	32	1.4
40	1-1/2"	113	67.5	13.5	86	11×11	50	4	7	65	30	-	67.98	33	1.6
50	2"	126	76	13.5	102	11×11	50	4	7	65	36.43	37.1	84.3	43	1.9
65	2-1/2"	134	82	13.5	116	11×11	50	4	7	65	48.45	51.05	96.7	46	2.3
80	3"	157	95.5	13.5	132	11×11	50	4	7	65	70.32	66.42	109.8	46	3
100	4"	167	113.5	17.5	157	14×14	50+70	4	7+9	90	87.64	93.1	136.4	52	4.8
125	5"	180	129	17.5	195	14×14	70	4	9	90	117.27	118.46	169.1	56	6.4
150	6"	203	142	18.5	218	17×17	70	4	9	90	144.65	143.09	190.9	56	7
200	8"	228	172	24.5	271	22×22	102	4	11	125	192.34	195.7	242	60	12.2
250	10"	266	213	24.5	329	22×22	102	4	11	125	241.78	246.42	296.9	68	19
300	12"	291	242	26.5	382	27×27	102+125	4+4	12+14	150	291.6	296.7	346.2	78	26
350	14"	332	273	30	422	27×27	125+140	4+4	14+18	175	329	-	380.77	78	35
400	16"	363	317	30	484	27×27	125+140	4+4	14+18	175	376	-	437.93	102	52
450	18"	397	348	39	542	36×36	140+165	4+4	18+22	210	425	-	488.55	114	70
500	20"	425	393	49	597	46×46	140+165	4+4	18+22	210	475	-	539.35	127	83
600	24"	498	453	49	708	46×46	165+254	4+8	22+18	300	573	-	640.9	154	157
700	28"	626	531	90	928	φ 63.1	254	8	18	300	674	-	744.1	165	252
750	30"	660	564	90	984	φ 63.1	254	8	18	300	727	-	794.2	165	290
800	32"	666	601	90	1061	φ 63.1	254	8	18	300	771	-	849.4	190	367
900	36"	722	660	110	1170	φ 74.7	254	8	18	300	839	-	946.5	203	465
1000	40"	806	728	120	1290	φ 83.7	298	8	22	350	939	-	1052.55	216	606
1100	44"	826	771	140	1404	φ 94.7	298	8	22	350	1036	-	1162.25	255	805
1200	48"	941	874	150	1511	φ 104.7	298	8	22	350	1137	-	1263.65	276	900
1400	56"	1000	940	175	1685	φ 139.9	356	8	32	415	1351	-	-	279	1158
1600	64"	1155	1085	195	1930	φ 160	356	8	32	415	1548	-	-	318	1684
1800	72"	1200	1170	195	2170	φ 174.5	406	8	39	475	1703	-	-	356	2645
2000	80"	1363	1360	245	2345	φ 199	406	8	39	475	1938	-	-	406	4000

Notes:

- 1) Different pressure may cause different dimension of "D".
- 2) To ensure proper installation and operation, the inner diameter of the pipe shall be larger than the disc chord length "H".
If the pipe bore is equal to or close to the disc chord length, the valve disc may interfere with the pipe or flange during opening/closing, which could cause damage.
- 3) The listed weights are for reference only.

Fig. 224N Dimensions



DN	INCH	A	B	C	D	E	F	n	d	G	H		Rubber sealing Dia.	L	[kg]
											Rubber	PTFE			
40	1-1/2"	113	67.5	13.5	113	11×11	50	4	7	65	30	-	67.98	33	2.3
50	2"	126	76	13.5	117	11×11	50	4	7	65	36.43	37.1	84.3	43	2.8
65	2-1/2"	134	82	13.5	131	11×11	50	4	7	65	48.45	51.05	96.7	46	3.1
80	3"	157	95.5	13.5	176	11×11	50	4	7	65	70.32	66.42	109.8	46	4
100	4"	167	113.5	17.5	206	14×14	50+70	4	7+9	90	87.64	93.1	136.4	52	5.8
125	5"	180	129	17.5	236	14×14	70	4	9	90	117.27	118.46	169.1	56	9.3
150	6"	203	142	18.5	258	17×17	70	4	9	90	144.65	143.09	190.9	56	10.5
200	8"	228	172	24.5	321	22×22	102	4	11	125	192.34	195.7	242	60	17.4
250	10"	266	213	24.5	395	22×22	102	4	11	125	241.78	246.42	296.9	68	28.1
300	12"	291	242	26.5	461	27×27	102+125	4+4	12+14	150	291.6	296.7	346.2	78	40
350	14"	332	273	30	511	27×27	125+140	4+4	14+18	175	329	-	380.77	78	49
400	16"	363	317	30	580	27×27	125+140	4+4	14+18	175	376	-	437.93	102	79
450	18"	397	348	39	630	36×36	140+165	4+4	18+22	210	425	-	488.55	114	104
500	20"	425	393	49	700	46×46	140+165	4+4	18+22	210	475	-	539.35	127	135
600	24"	498	453	49	823	46×46	165+254	4+8	22+18	300	573	-	640.9	154	215
700	28"	626	531	90	928	φ 63.1	254	8	18	300	674	-	744.1	165	342
750	30"	660	564	90	984	φ 63.1	254	8	18	300	727	-	794.2	165	400
800	32"	666	601	90	1061	φ 63.1	254	8	18	300	771	-	849.4	190	485
900	36"	722	660	110	1170	φ 74.7	254	8	18	300	839	-	946.5	203	605
1000	40"	806	728	120	1290	φ 83.7	298	8	22	350	939	-	1052.55	216	776
1100	44"	826	771	140	1404	φ 94.7	298	8	22	350	1036	-	1162.25	255	985
1200	48"	941	874	150	1511	φ 104.7	298	8	22	350	1137	-	1263.65	276	1190
1400	56"	1000	940	175	1685	φ 139.9	356	8	32	415	1351	-	-	279	1380
1600	64"	1155	1085	195	1930	φ 160	356	8	32	415	1548	-	-	318	2054
1800	72"	1200	1170	195	2170	φ 174.5	406	8	39	475	1703	-	-	356	3075
2000	80"	1363	1360	245	2345	φ 199	406	8	39	475	1938	-	-	406	4500

Notes:

- 1) Different pressure may cause different dimension of "D".
- 2) To ensure proper installation and operation, the inner diameter of the pipe shall be larger than the disc chord length "H".
If the pipe bore is equal to or close to the disc chord length, the valve disc may interfere with the pipe or flange during opening/closing, which could cause damage.
- 3) The listed weights are for reference only.

Valve torques (N*M)

Size	Standard disc differential pressure						Increased PN16 disc	Increased PN20 disc	Reduced PN6 disc	MAST value		
	EPDM/ NBR/ FPM seat				FDA seat	PTFE seat	EPDM/ NBR/ FPM seat					
	△P=3bar	△P=6bar	△P=10bar	△P=16bar	△P=16bar	△P=10bar	△P=16bar	△P=20bar	△P=6bar	SS420	SS431	17-4 PH
DN40	9	9	10	11	15			15	7	55	87	163
DN50	10	10	11	12	20	13		16	8	55	87	163
DN65	15	16	17	18	30	20		25	10	100	159	298
DN80	23	24	25	26	40	30		40	15	100	159	298
DN100	35	36	37	38	60	50		60	22	121	193	361
DN125	45	48	52	57	90	60		80	35	206	328	615
DN150	90	95	100	105	150	125		150	55	206	328	615
DN200	185	190	195	200	300	245		256	91	331	527	986
DN250	260	270	280		450	350	380	450	170	719	1144	2140
DN300	300	320	340		550	400	400	510	230	931	1481	2771
DN350	500	550	600				720	870	400	1481	2356	4408
DN400	620	700	800				870	1100	500	1481	2356	4408
DN450	920	1000	1200				1600	2000	700	3510	5584	10449
DN500	1600	1900	2200				3700	5700	950	3510	5584	10449
DN600	2200	2500	2800				4900	7800	1600	6540	10404	19471
DN700	3300	3600	3900				7300		2520	12157	19341	36195
DN750	4400	4800	5300				8900		3400	12157	19341	36195
DN800	6200	6700	7300				11000		4700	12157	19341	36195
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			

Notes:

- 1) The torque values are measured at the specified pressures without a safety factor (medium: water at room temperature).
Add a safety factor 1.2~1.3 for sizing or consult the factory.
- 2) MAST: Maximum Allowable Stem Torque. Please contact Coreline for MAST values for other materials.

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: 223N DN100. 1.15[Sf] x 1.30[MF] x 38[Nm] = 56.8Nm (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 ΔP)

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. 223N / Fig. 224N 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

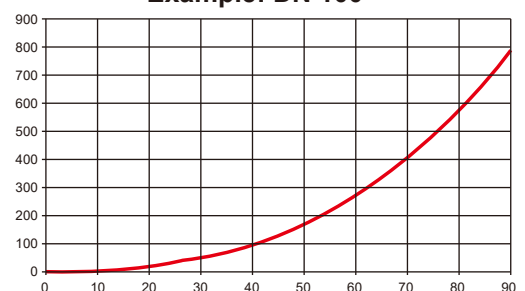
V_N = Max. flow in Nm³/h

G = Exact weight in kg/Nm³

T = Absolute temp. in ° Kelvin

p_d = Absolute pressure downstream in bar

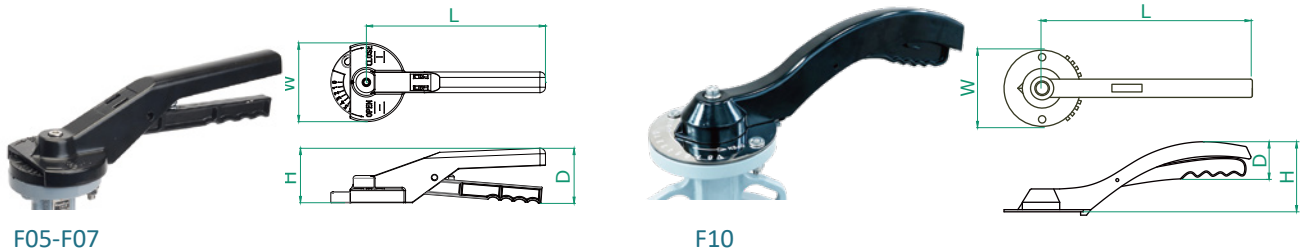
Example: DN 100



Hand lever dimensions

Fig.500 Aluminium hand lever

- Excellent design and comfortable operating 90° in 10 positions. The lever is fixed by screw on top of stem to avoid the lever getting loose by operation or vibrations. For safety, the hand lever can be locked in position by bolt/nut or a locker.
- Material is AL-Si alloy, which has better performance than Al-Mg and Al-Zn alloy.
- Electrophoresed surface treatment, which has stronger adhesion than traditional painting and much better resistance to corrosion. The positionplate for F10 is in stainless steel SS304.

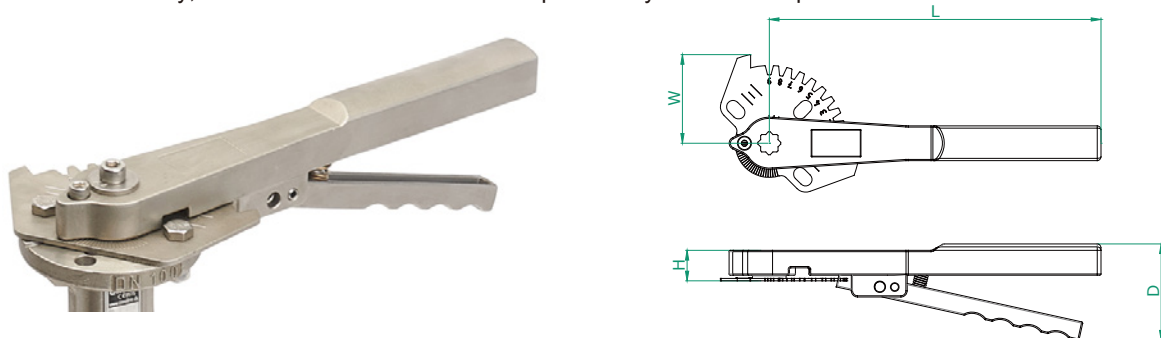


Size	D	H	L	W	Stem drive	[kg]
DN25-DN80	56	65	195	74	F05 - 9×9/11×11	0.28
DN100-DN125	78	82	269	101	F07 - 14×14	0.63
DN150	78	82	269	101	F07 - 17×17	0.63
DN200-DN250	101	100	330	145	F10 - 22×22	1.46

Notes: Above hand levers apply to Coreline Fig. 223N/224N; they can also be used on other butterfly valves.

Fig.503 GGG40 and CF8M hand lever

- GGG40 and CF8M hand lever have the same shape and share the same angle plate and locker.
- GGG40 hand lever has strong electrophoresed surface treatment. CF8M hand lever is with precise casting which has very smooth surface.
- Locker and plate in stainless steel SS316 and spring in SS321.
- Good design and comfortable operating 90° in 10 positions, but also adjustable screw to choose any position for regulation.
- The lever is fixed by screw on top of stem and not by side of stem, to avoid the lever getting loose by operation or vibrations. For safety, the hand lever can be locked in position by bolt/nut or a padlock.



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

Notes: Above hand levers apply to Coreline Fig. 223N/224N; they can also be used on other butterfly valves.

Gear box dimensions

Fig.520

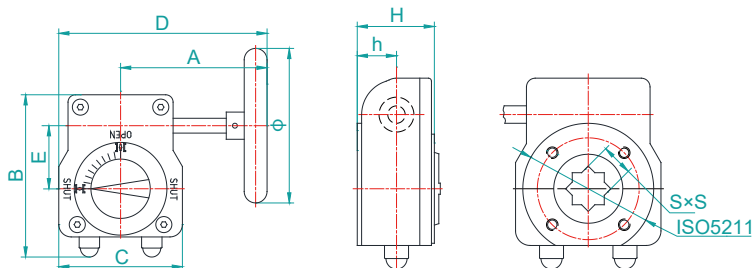


Fig.521

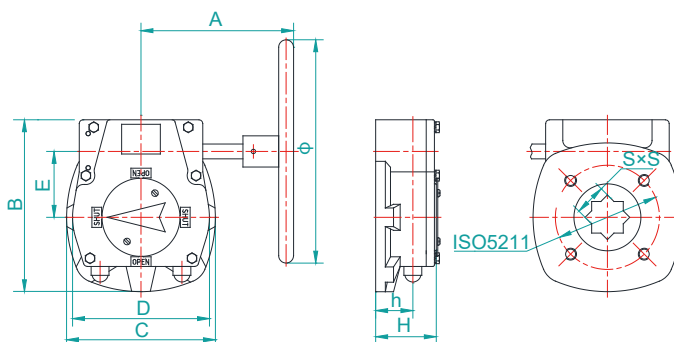
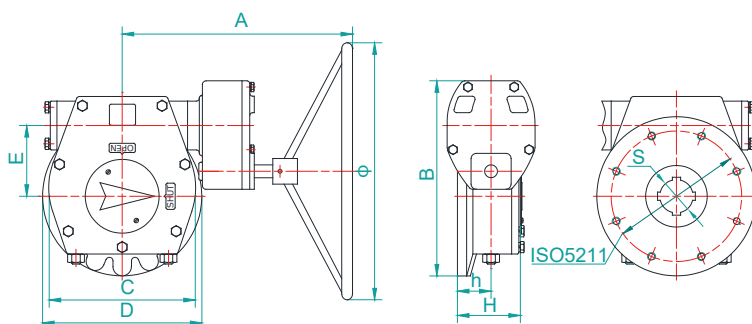


Fig.521



Size	Gear Box Model	Output [Nm]	Ratio	Input [Nm]	A	B	C	D	E	Φ	h	H	ISO5211	S	[kg]	Material		
DN25/32	520-10S	150	40:1	13	115	114	80	155	40	125	24	49	F05+F07	9 x 9	1.3	Housing: Aluminium		
DN40-DN80														11 x 11				
DN100-DN125														14 x 14				
DN150	520-10AS	250	40:1	25	178	114	80	218	40	200	26	52	F05+F07	17 x 17	1.7	Input shaft: SS410		
DN200-DN250	520-15S	500	37:1	50	200	132	100	250	50	250	30	60	F07+F10	22 x 22	3.1		Gear: Ductile iron	
DN300														27 x 27				
DN350	521-MX12	1200	42:1	125	210	184	134	-	70	300	38	68.5	F10+F12, F10+F14	27 x 27	8	Housing: Cast iron		
DN400																		
DN450	521-MX15	2800	70:1	185	302	252	210	-	105	500	66	98.5	F12+F16, F14	36 x 36	19		Worm shaft: SS410	
DN500														46 x 46				
DN600	521-MX16	4000	88:1	200	325	330	300	-	130	500	56	98.5	F16+F25	46 x 46	33			Gear: Ductile iron
DN700-DN750	521-M36	8000	210:1	180	448	380	286	310	138	500	73	130	F25	φ _{max} 85	66			
DN800-DN900	521-M50S	11000	250:1	180	480	446	355	355	181	500	80	160	F25	φ _{max} 110	109			Gear: Ductile iron
DN1000	521-M50	16000	612:1	190	555	440	355	355	181	600	80	160	F30	φ _{max} 110	122			
DN1100	521-M60	24000	720:1	220	616	528	463	415	237	700	82	165	F30	φ _{max} 160	188			Gear: Ductile iron
DN1200	521-M65	35000	882:1	230	648	572	558	415	282	700	84	172	F30	φ _{max} 160	255			
DN1400													F35					
DN1800	521-M70	50000	1242:1	200	686	657	610	475	309	700	107	225	F35	φ _{max} 160	310			
DN1800													F40					
DN2000	521-M75	70000	1430:1	240	706	697	692	475	349	700	110	231	F40	φ _{max} 180	440			

Notes:

- Gearbox sizing is based on the torque of Fig. 223N/224N valves with EPDM-H, EPDM, NBR, or FPM seats under standard pressure. Seats such as FDA-EPDM or PTFE require higher torque (see page 10 for values at different materials and pressure ratings).
- Standard gearbox is supplied with C3 painting. For other materials or painting requirements, contact Coreline.

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